

# Adiatec® Ultrasonic Humidifier

## Models BR and BA

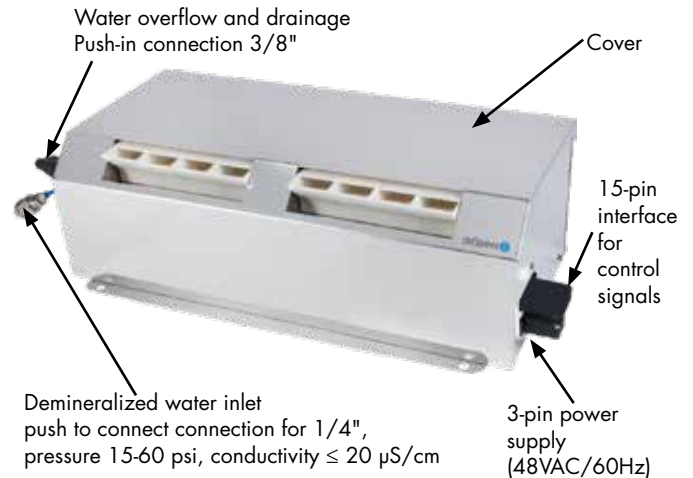
### MODEL BR ROOM ULTRASONIC HUMIDIFIER

The room type Ultrasonic humidifier provides adiabatic humidification to in-space or room type applications. The cooling mist is distributed through the distribution outlets through integral fan(s).

Ultrasonic humidifiers are a cost effective solution as it uses 93% of electricity compared to isothermal humidifiers.

This technology requires treated water (RO or DI) as to protect the humidifier and to produce high purity mist. This also helps prevent white dust settling which can contaminate processes and accumulate in ducts and on furnishings.

**FIGURE 1-1: MODEL BR ROOM HUMIDIFIER**



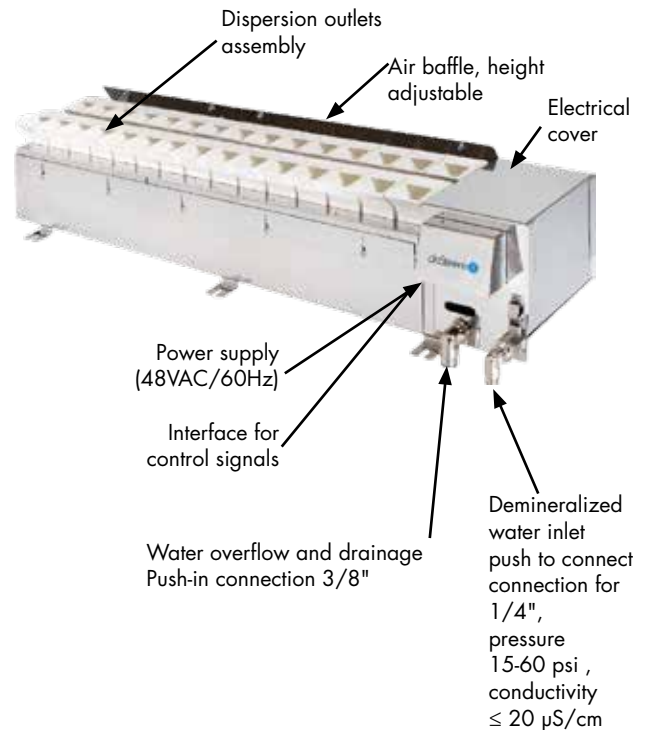
### MODEL BA DUCT/AHU ULTRASONIC HUMIDIFIER

The Duct/AHU Ultrasonic humidifier provides adiabatic humidification to in-space or room type applications. The main force for this humidifier is through existing air movement caused by the duct/AHU blower/fan. The adjustable air baffles allow for ultimate adjustment to optimize capacity.

Ultrasonic humidifiers are a cost effective solution as it uses 93% of electricity compared to isothermal humidifiers.

This technology requires treated water (RO or DI) as to protect the humidifier and to produce high purity mist. This also helps prevent white dust settling which can contaminate processes and accumulate in ducts and on furnishings.

**FIGURE 1-2: MODEL BA DUCT HUMIDIFIER**



# Models, capacities, and electrical specifications

**Table 2-1:**  
Ultrasonic humidifier specifications

Specifications	Model BR Humidifier						Model BA Humidifier						
	BR-02	BR-04	BR-06	BR-08	BR-10	BR-16	BA-06	BA-12	BA-18	BA-24	BA-30	BA-36	BA-42
Capacity* lbs/hr	2.2	4.4	6.6	8.8	11	17.6	7.9	15.8	23.7	31.6	39.5	47.4	55.3
Capacity* kg/h	1.0	2.0	3.0	4.0	5.0	8.0	3.6	7.2	10.8	14.4	18.0	21.6	25.2
Piezoelectric transducer (each)	2	4	6	8	10	16	6	12	18	24	30	36	42
Power supply VAC/60 Hz (transformer)	120	120	120	120	120	120	120	120	120	120	120	120	120
Power supply VAC/60 Hz (humidifier)	48	48	48	48	48	48	48	48	48	48	48	48	48
Power consumption VA/60 Hz	135	220	290	360	430	780	220	448	660	875	1089	1303	1518
Transformer (VA)**	500	500	500	500	500	1000	500	500	1000	1000	1600	1600	1600
Maximum fan performance (cfm)	60	60	85	85	85	175	-	-	-	-	-	-	-

• \* The effective humidifying capacity depends on the level of supply voltage under load (set 48 V) and on the length and cross section of the duct/AHU leading to the place of humidification.  
 • \*\* The power output of the transformers stated is optimized for the humidifier types. Their power reserves are sufficient to bear the power consumption of a correctly laid supply cable with short distance between humidifier and transformer. Nevertheless, it is recommended to check transformer selection mathematically according to local conditions.

**Table 2-2:**  
Safety conditions

Safety device	Description
Dry-running protection with functional redundancy	If the water level falls below the minimum level in the water tank, the humidification switches off. For this purpose, both level switches are monitored separately.
Overheating protection	The humidifier stops humidifying at water temperatures > 140°F (60°C).
Overflow protection	If the humidifier water tank is overfilled, the excess water is drained off to the outside through the overflow.
Disconnect protection	There are no defects in the event of electrical interruptions between the driver board and the piezoelectric transducer.
Monitoring	Monitoring of important system components with integrated problem solver routines.

**Table 2-3:**  
Operating conditions

Operation conditions	Parameter
Maximum air humidity	<90% relative humidity - non-condensing
Air temperature	41 - 113°F (5 - 45°C)
Demineralized water pressure	15 - 60 psi (100 - 400 kPa)
Demineralized water quality	Fully demineralized
Demineralized water conductivity	≤20 µS/cm

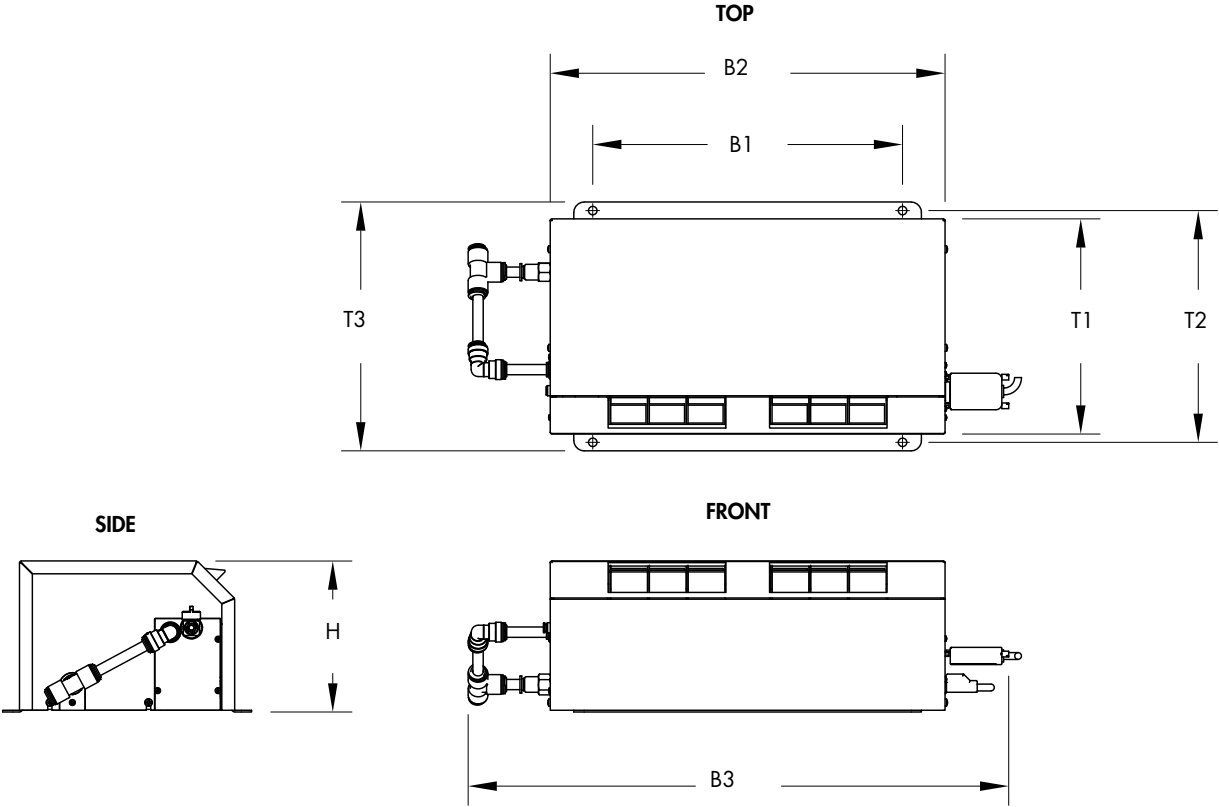
## Models, capacities, and electrical specifications (continued)

**Table 3-1:**  
**Transformer specifications**

Model	Power (VA)	Input voltage	Output voltage	Width		Height		Depth		Weight (Installed)		Weight (Shipping)	
				inches	mm	inches	mm	inches	mm	lbs	kg	lbs	kg
Transformer (enclosure)	500	120 VAC	48 VAC	7	178	8.4	213	8.7	220	21	9.6	28	12.6
Transformer (enclosure)	1000			10.7	271	12.3	313	15.1	383	45	20.4	52	23.4
Transformer (enclosure)	1600			10.7	271	12.3	313	15.1	383	62	28	68	31
Transformer (no enclosure)	500			4.8	120	5.1	130	5.3	135	15	6.8	22	9.8
Transformer (no enclosure)	1000			6.0	150	8.7	220	6.1	160	30	13.4	36	16.4
Transformer (no enclosure)	1600			6.9	174	9.1	230	6.1	180	46	21	53	24

# Dimensions and weights:Model BR

FIGURE 4-1: DIMENSIONS (ROOM)



See Table 4-1 for dimensions

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Table 4-1: Ultrasonic humidifier specifications (Room)																
Model	Width						Depth						Height H		Weight (Installed)	
	B1		Width (without plugs) B2		B3		T1		T2		T3					
	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	lbs	kg
BR-02	6	162	10	261	17	444	10	251	11	270	11	290	7	176	15	7
BR-04	11	271	15	370	22	553	10	251	11	270	11	290	7	176	20	9
BR-06	14	361	18	460	25	643	10	251	11	270	11	290	7	176	24	11
BR-08	18	451	22	550	29	733	10	251	11	270	11	290	7	176	29	13
BR-10	21	541	25	640	32	823	10	251	11	270	11	290	7	176	33	15
BR-16	32	811	36	910	43	1093	10	251	11	270	11	290	7	176	46	21

## Dimensions and weights:

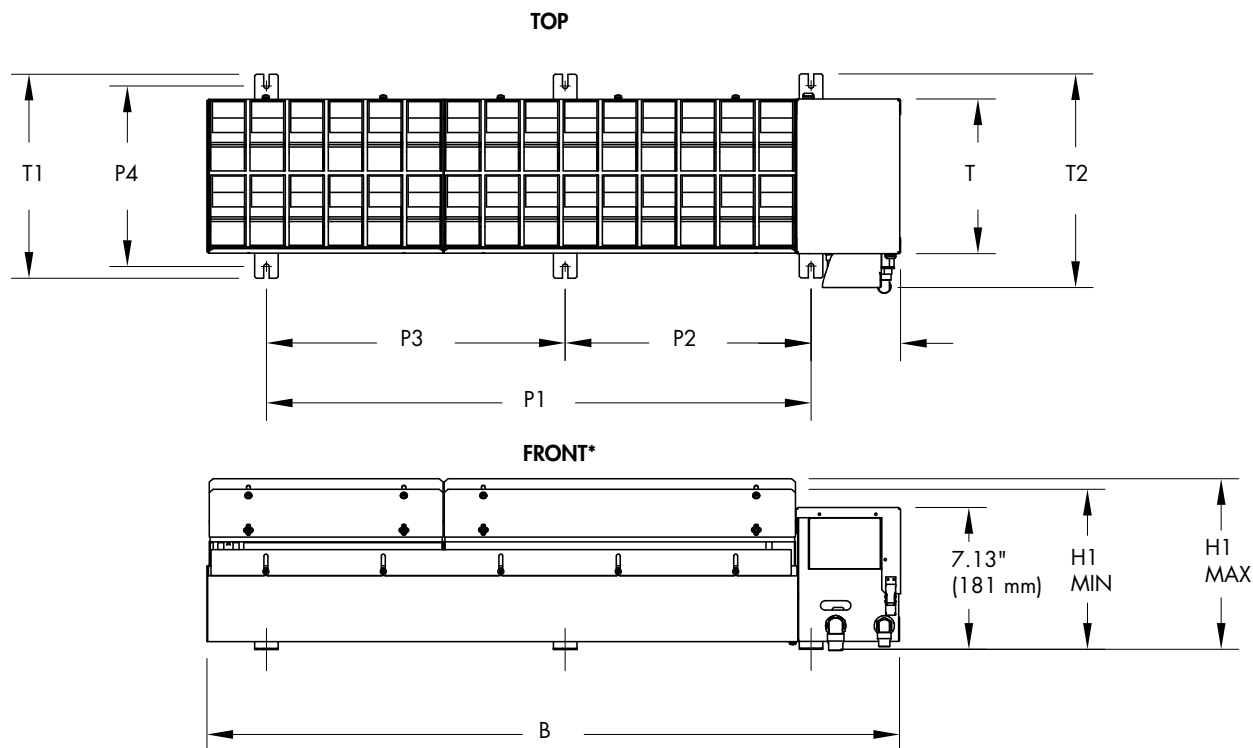
**Table 5-1:**  
**Model BR transformers**

Model	Power required	Transformer (VA)
BR-02	135VA	500
BR-04	220VA	500
BR-06	290VA	500
BR-08	360VA	500
BR-10	430VA	500
BR-16	780VA	1000

The power output of the transformers stated is optimized for the humidifier types. Their power reserves are sufficient to bear the power consumption of a correctly laid supply cable with short distance between humidifier and transformer. Nevertheless, it is recommended to check transformer selection mathematically according to local conditions.

# Dimensions and weights:Model BA

FIGURE 6-1: DIMENSIONS (DUCT/AHU)



See Table 6-1 and 7-1 for dimensions.

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Table 6-1: Ultrasonic humidifier specifications (Duct/AHU)														
Model	Width		Depth						Height H1				Weight (Installed)	
	B		T		T1		T2		Minimum		Maximum			
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
BA-06	11	286	8	198	10	261	11	288	8	201	9	241	13	6
BA-12	17	436	8	198	10	261	11	288	8	201	9	241	17	7.7
BA-18	23	586	8	198	10	261	11	288	8	201	9	241	21	9.5
BA-24	29	736	8	198	10	261	11	288	8	201	9	241	26	11.7
BA-30	35	886	8	198	10	261	11	288	8	201	9	241	30	13.7
BA-36	41	1036	8	198	10	261	11	288	8	201	9	241	34	15.2
BA-42	47	1186	8	198	10	261	11	288	8	201	9	241	38	17.2

## Dimensions and weights:

**Table 7-1:**  
**Ultrasonic humidifier specifications (Duct)**

Model	Mounting point							
	P1		P2		P3		P4	
	in	mm	in	mm	in	mm	in	mm
BA-06	5	124	-	-	-	-	9	231
BA-12	11	274	-	-	-	-	9	231
BA-18	16	394	-	-	-	-	9	231
BA-24	21	544	-	-	-	-	9	231
BA-30	27	694	12	312	15	382	9	231
BA-36	33	844	15	387	18	457	9	231
BA-42	39	994	22	562	21	532	9	231

**Table 7-2:**  
**Model BA transformer specifications**

Model	Power required	Transformer (VA)
BA-06	220VA	500
BA-12	448VA	500
BA-18	660VA	1000
BA-24	875VA	1000
BA-30	1089VA	1600
BA-36	1303VA	1600
BA-42	1518VA	1600

The power output of the transformers stated is optimized for the humidifier types. Their power reserves are sufficient to bear the power consumption of a correctly laid supply cable with short distance between humidifier and transformer. Nevertheless, it is recommended to check transformer selection mathematically according to local conditions.

## Mounting: Model BR

- The humidifier must be level to ensure that the water level is the same above all Ultrasonic piezoelectric transducers.
- The installation site must allow for the humidifier to be easily removed and replaced for maintenance and inspection purposes.
- The installation site must allow an even mist distribution in the room.
- Impacts by external air directly next to the humidifier by fans, ventilation system, etc., or even a strong natural airflow must be avoided.
- The humidistat or measurement sensor of the modulating control must be positioned in such way that it is located in the area of the humidifier, but that direct influence by the aerosol flow is excluded. Refer to Figure 12-1 for sensor placement.
- The installation site must provide sufficient structure for mounting BR units to the wall, keeping in mind weight of unit and access to water/electrical.
- For transformer clearance follow NEC code.

### WARNING

The humidifier must not be exposed to large temperature difference during installation as there is otherwise a danger of condensation inside the humidifier which could lead to a failure of the integrated electronics.

### WARNING

Protect humidifier from contamination. The protective foil on the dispersion outlets assembly should only be removed immediately prior to commissioning.

**Table 8-1:**  
Mist distribution clearances mounting location based on room conditions

RH (%)	Floor Height above ground		Front Distance outwards	
	ft	m	ft	m
30	5.5	1.7	10	3.0
40	6	1.8	10	3.0
50	7	2.1	12	3.7
60	8	2.4	13	4.0

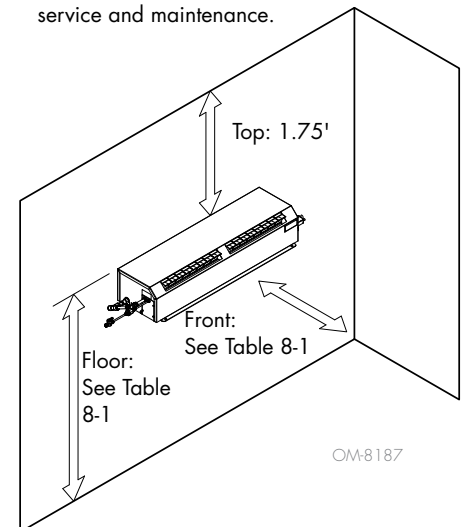
**Table 8-2:**  
Non-wetting distances

Temperature		Outlet RH (%)							
°F	°C	≤ 30		≤ 31 - 50		≤ 31 - 50		≤ 31 - 50	
		ft	m	ft	m	ft	m	ft	m
45	7.2	> 7	> 2.13	> 8	> 2.44	> 12	> 3.66	> 12	> 3.66
55	12.8	> 7	> 2.13	> 8	> 2.44	> 9	> 2.74	> 12	> 3.66
65	18.3	> 7	> 2.13	> 8	> 2.44	> 9	> 2.74	> 12	> 3.66
75	23.9	> 7	> 2.13	> 8	> 2.44	> 9	> 2.74	> 12	> 3.66
105	40.6	> 6	> 1.83	> 7	> 2.13	> 8	> 2.44	> 12	> 3.66

Note: Testing completed at 500 fpm using laminar flow and tight temperature control  $\pm 0.5^{\circ}\text{F}$ .

**FIGURE 8-1: MODEL BR CLEARANCE RECOMMENDATIONS**

Maintain these clearances for service and maintenance.

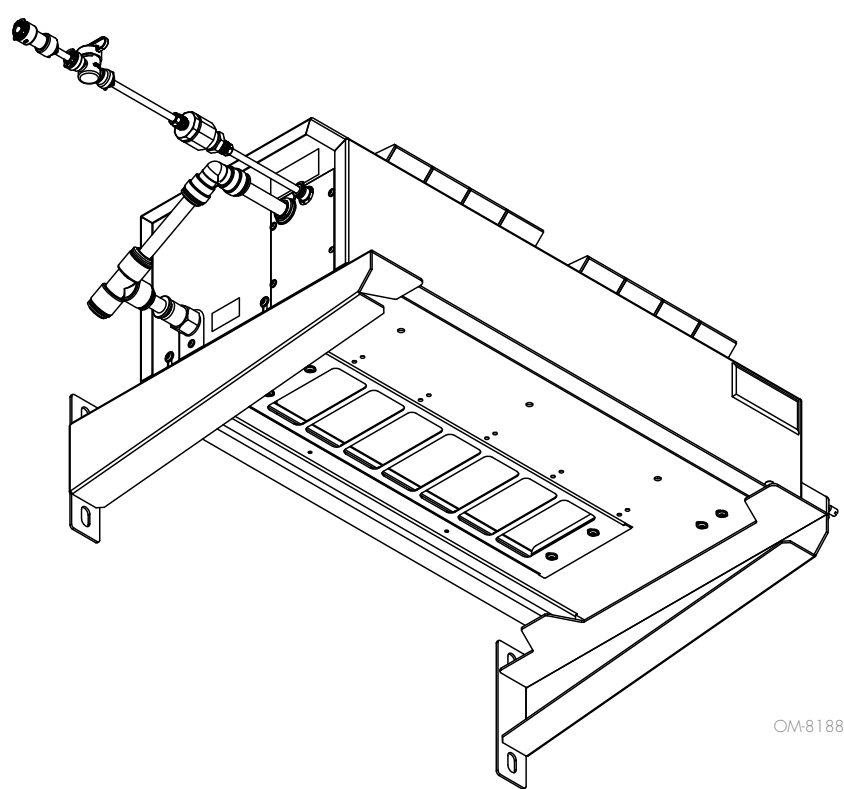




# Location and clearance recommendations: Model BR

When selecting a location for the humidifier, consider a location that the humidifier is easy to inspect and easily accessible on site.

**FIGURE 9-1: WALL BRACKET INSTALLATION (ROOM)**

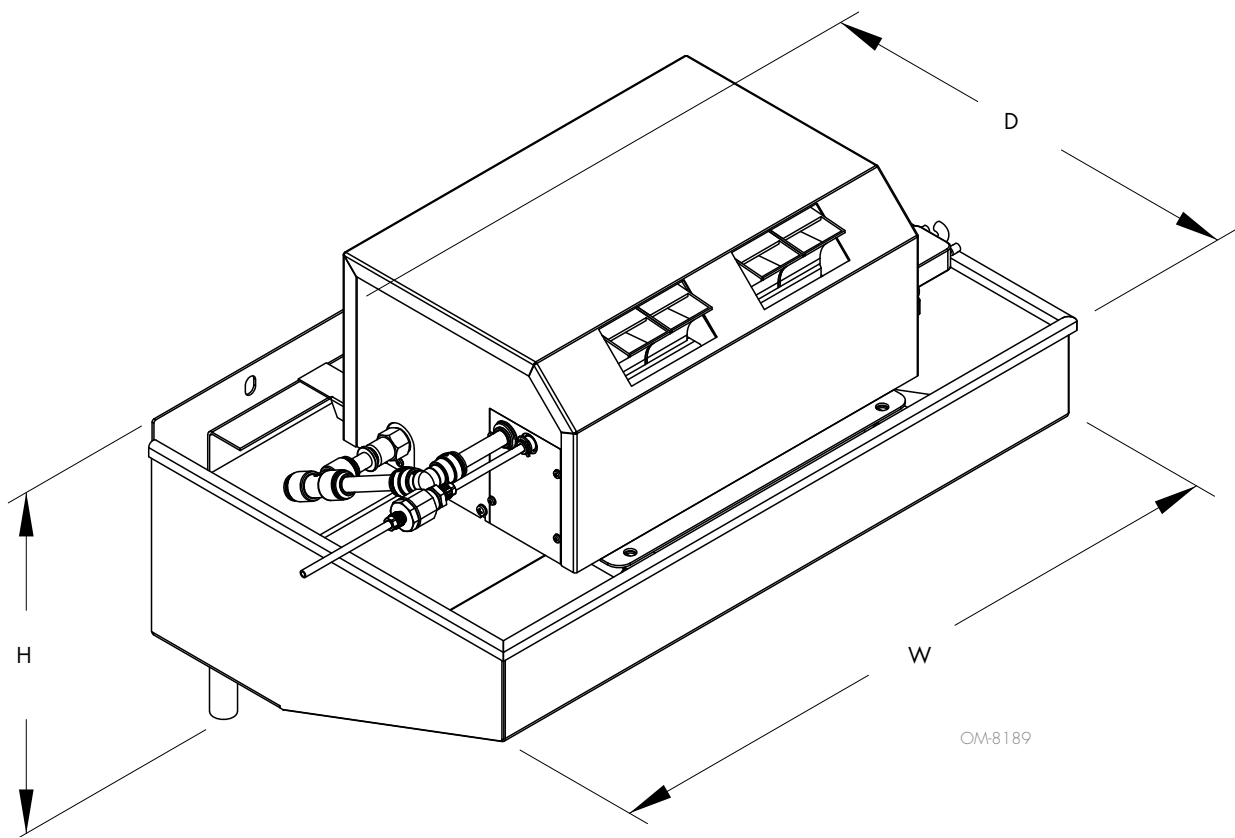


See Table 9-1 for dimensions.

Table 9-1: Wall bracket specifications										
Model	Width (W)		Height (H)		Depth (D)		Weight		Shipping Weight	
	inches	mm	inches	mm	inches	mm	lbs	kg	lbs	kg
601139	2.75	70	5.50	140	14.50	365	2*	0.9	4	1.8
*Weight of 1 bracket. Kit 601139 includes two brackets.										

# Location and clearance recommendations: Model BR

FIGURE 10-1: INSTALLATION ON DRIP TRAY (ROOM)



See Table 10-1 for dimensions.

Table 10-1: Model BR Ultrasonic humidifier drip tray specifications										
Model	Width (W)		Height (H)		Depth (D)		Weight (Installed)		Weight (Shipping)	
	inches	mm	inches	mm	inches	mm	lbs	kg	lbs	kg
Drip tray (small)	13.3	338	8.1	205	10.3	261	18	8	24	11
Drip tray (medium)	32.4	823	8.6	219	11.4	290	33	15	40	18
Drip tray (large)	38.6	980	10.6	268	14.5	368	62	28	68	31
Note: Small drip tray is for Models BR-02 - BR06. Medium drip tray is for Models BR-08 and BR-10. The large drip tray is for Model BR-16.										

## Mounting: Model BA

The location of the humidifier installation is predetermined by the requirements of the ventilation system and should be defined before installation work starts.

- The place of installation must allow the humidifier to be easily removed and replaced. Access panel in duct or AHU is required.
- The Model BA must be installed in an absolutely level position to ensure that ALL the ultrasonic transducers are covered by the same level of water.
- The automatic drainage of the water tank and the automatic flushing of the demineralized water line requires an open drain.
- In the immediate vicinity of the duct humidifier, the ventilation unit should be waterproof (stainless steel or with corrosion-proof coating) and should be provided with an open drain. Install a drain pan under the humidifier extending a minimum of two feet downstream.
- The air velocity in the free duct cross section (net area after installation of the humidifiers)  $V = 200\text{-}800\text{ ft/min}$  ( $1.0\text{ - }4.0\text{ m/s}$ ).
- Solid objects must not be installed within the humidification distance in order to avoid condensation. See Table 8-2.
- If downstream equipment is within non-wetting distance, a mist eliminator can be used.

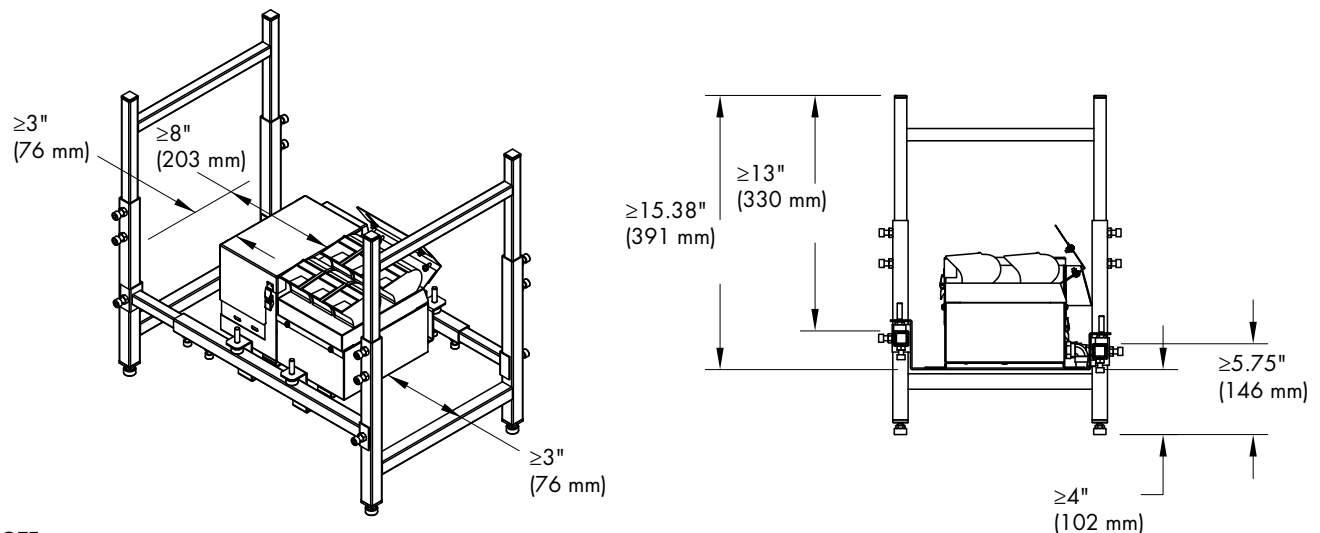
### WARNING

The humidifier must not be exposed to large temperature differences during installation as there is otherwise a danger of condensation inside the humidifier which could lead to a failure of the integrated electronics.

### WARNING

Protect humidifier from contamination! The protective tape on the dispersion outlets assembly should only be removed immediately prior to commissioning.

**FIGURE 11-1: MODEL BA CLEARANCE RECOMMENDATIONS**



**NOTE:**

- See Table 8-2 for obstruction free distances.
- A minimum clearance of 20" upstream from humidifier is needed.

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## Placement: Model BA

A. A1: This is the ideal RH sensing location because this placement ensures the best uniform mix of dry and moist air with stable temperature control.

A2: This is the ideal dewpoint sensing location for discharge control schemes.

B. This location is acceptable, but the room environment may affect controllability such as when the sensor is too close to air grilles, registers, or heat radiation from room lighting.

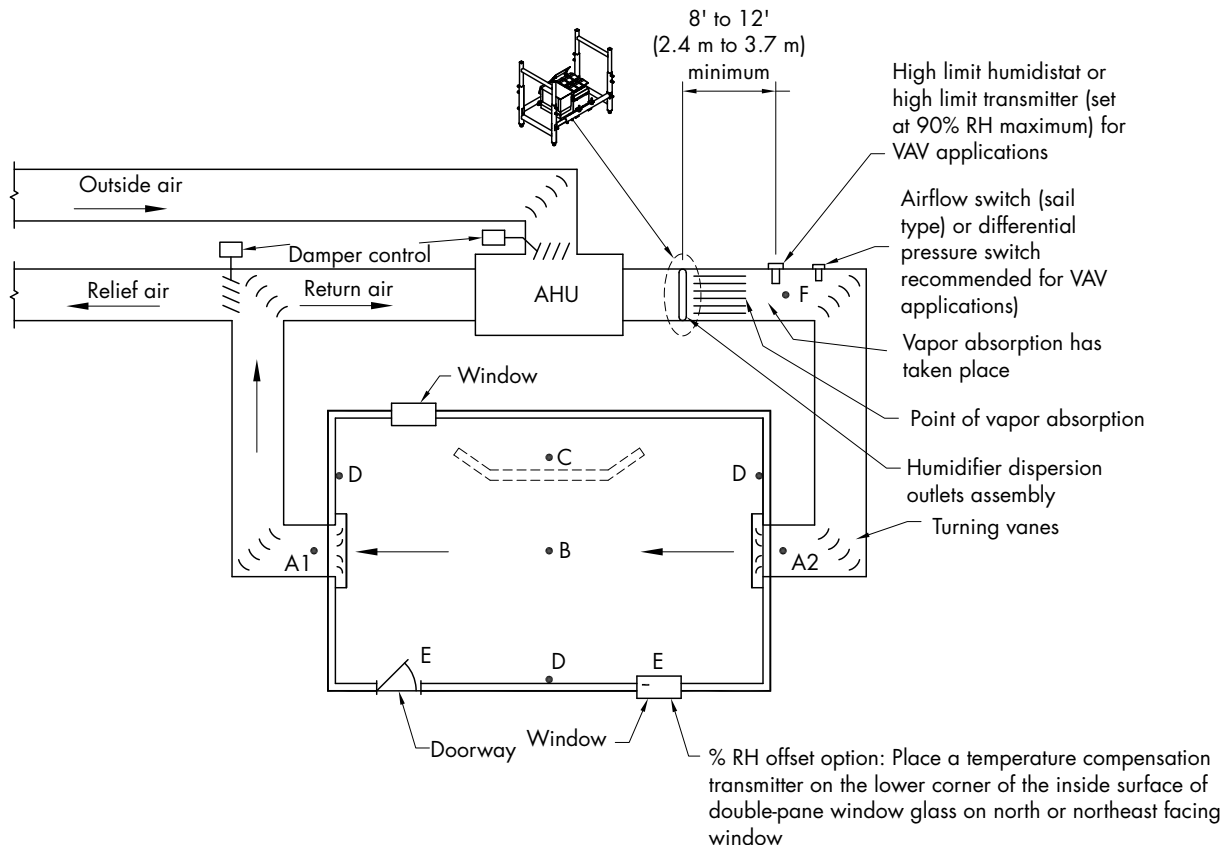
C. This location behind a wall or partition is acceptable for sampling the entire room if the sensor is near an exhaust return outlet. This location is also typical of sensor placement for sampling a critical area.

D. These locations are not acceptable because they may not represent actual overall conditions in the space.

E. These locations are not acceptable. Do not place sensors near windows, door passageways, or areas of stagnant airflow.

F. This is the best location for a duct high limit humidistat.

**FIGURE 12-1: RECOMMENDED SENSOR LOCATIONS**



# Location and clearance recommendations: Model BA

FIGURE 13-1: MOUNTING POINT ONE HUMIDIFIER

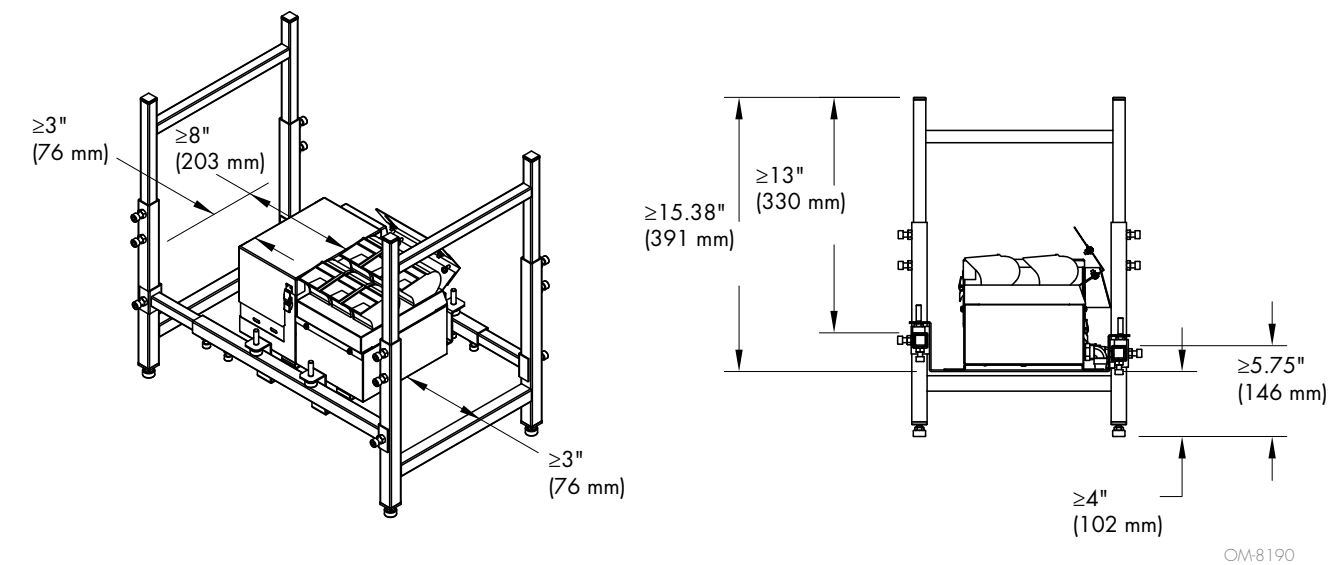
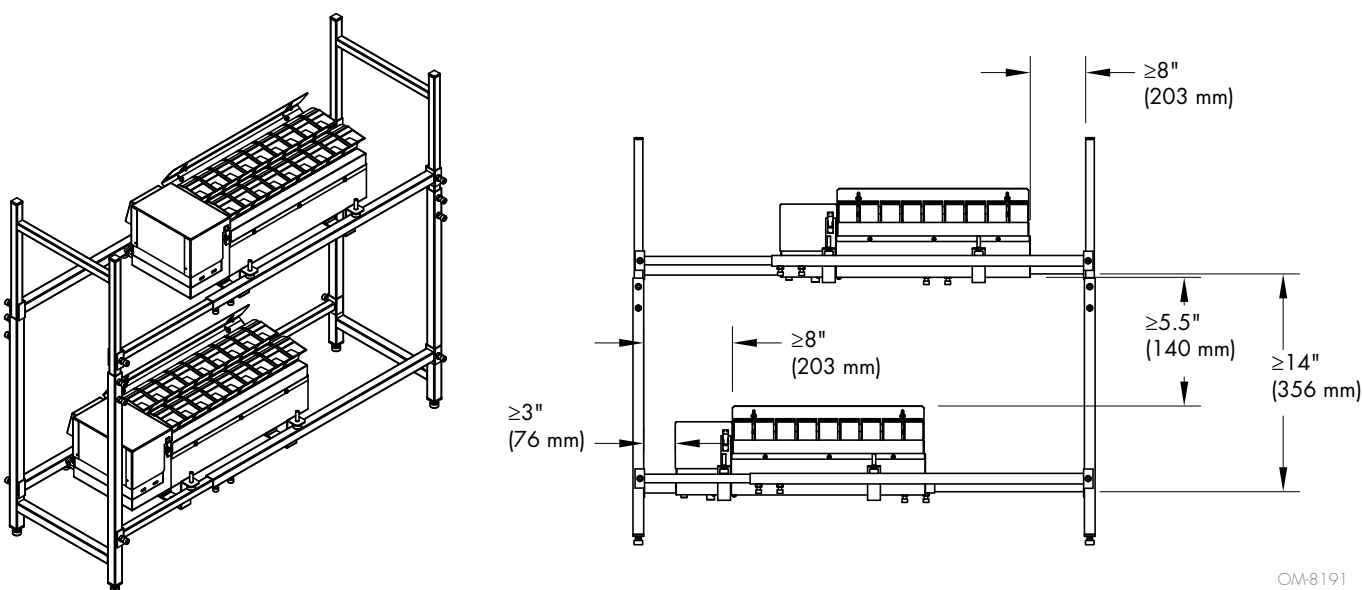
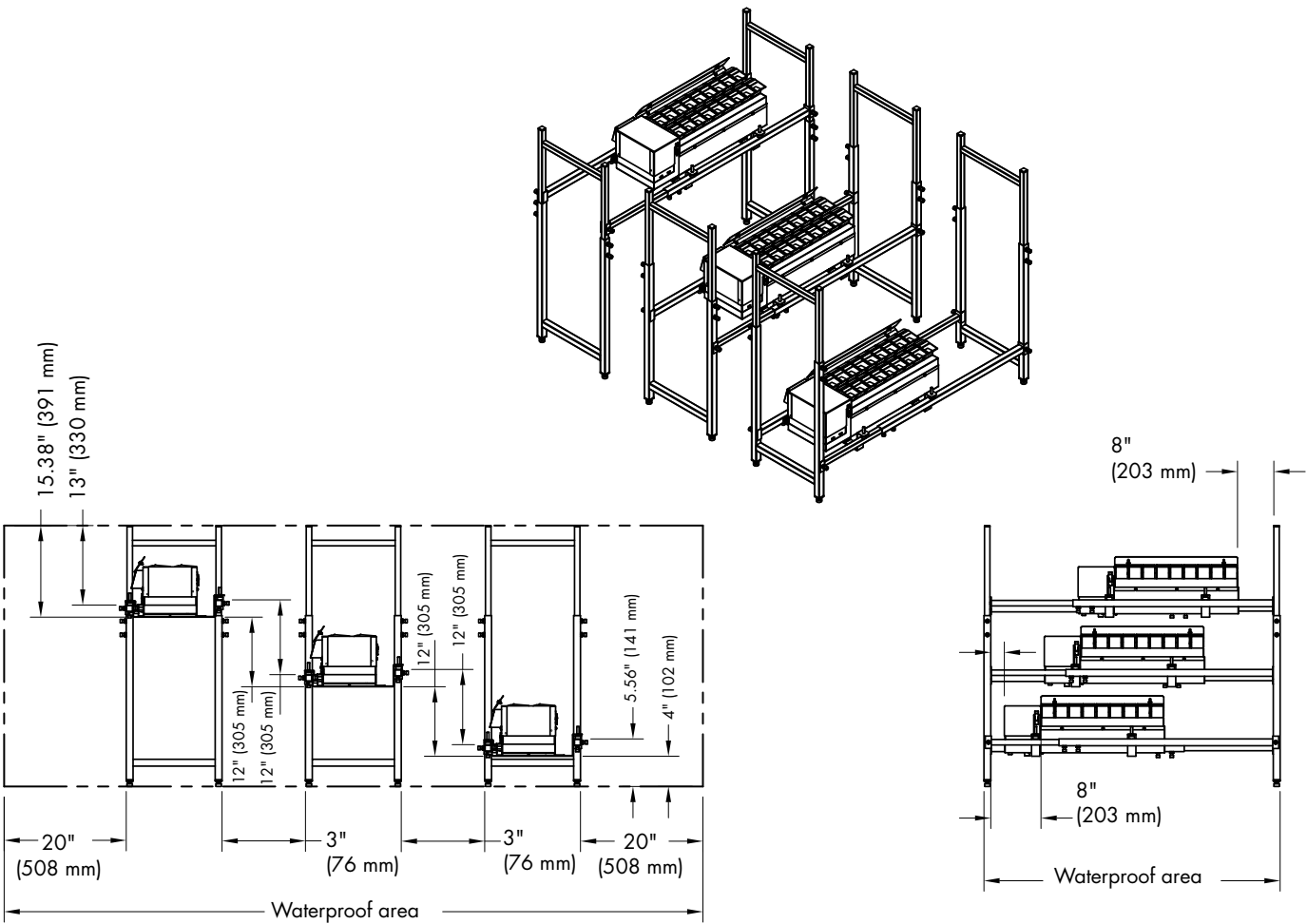


FIGURE 13-2: MOUNTING POINT TWO HUMIDIFIERS



# Location and clearance recommendations: Model BA

FIGURE 14-1: TELESCOPIC STRUT



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