

GF1, HF1 AND SF1 FAN INLET SENSOR PROBE INSTALLATION

OVERVIEW

This document provides the instructions necessary to install Fan Inlet sensor probes for centrifugal, vane axial and plenum fan applications. Fan inlet sensor probes are supplied in throat mount or face mount versions as shown in Figure 1. The throat mount version is designed for mounting directly in the inlet bell of centrifugal fans, or upstream of the impeller in vane axial fan applications. The face mount version is designed for mounting on the inlet face of more sensitive plenum fan applications.

Probes are supplied in either a single or dual fan inlet configurations designated with model suffix “-F/SI” (for single inlet) or “-F/DI” (for dual inlet) applications. Each fan inlet is provided with two sensor probes and two pairs of adjustable rods with integral mounting brackets. Six standard sizes are available as shown in Table 1 for Throat Mount, and Table 2 for Face Mount applications.

Installation consists of measuring, marking and preparing the mounting rod bracket locations, installing the sensors onto the rods, and then securing the rod brackets and sensor assemblies to each fan inlet. For detailed fan inlet probe information, refer to the Fan Inlet Probe technical manual under separate cover. For detailed information on transmitter set up and operation of the complete airflow measurement station, refer to the associated transmitter technical manual (under separate cover). Observe the following precautions during installation:

CAUTIONS/WARNINGS



Select suitable hardware for the installation and ensure that the hardware will not interfere with the moving parts of the fan. Failure to properly secure the fan inlet sensors can result in personal injury and damage to sensors and fan.



Setting the specified rod length is essential for proper installation and sensor performance.



The cable ordered must be of sufficient length for the distance between the transmitter and the furthest sensor probe as well as any necessary cable routing at the site.



Improper or excessive lubrication of the fan bearings can result in lubricant carry over and build up of foreign material on the sensor.



Avoid placement in the absorption area of humidifiers which will adversely affect performance.

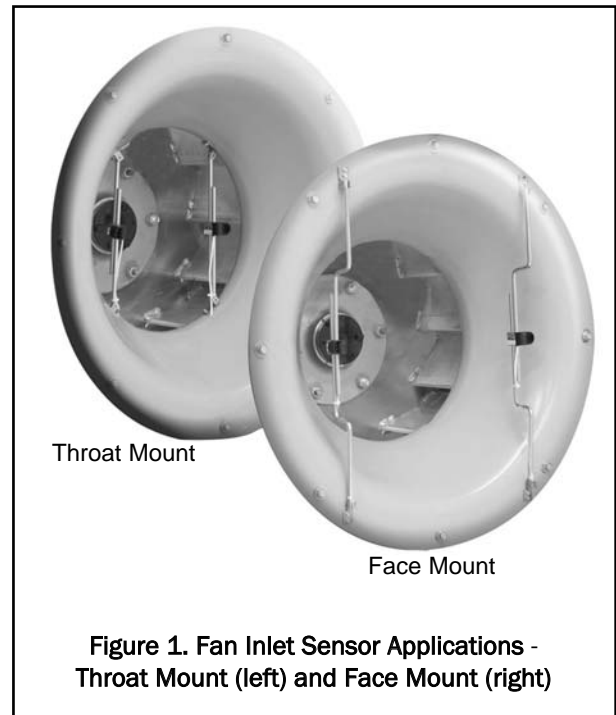


Figure 1. Fan Inlet Sensor Applications - Throat Mount (left) and Face Mount (right)

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Table 1. Throat Mount Standard Sizes

Standard Size Code	Inlet Throat Diameter				Rod 4 Pack Part Number
	is greater than or equal to		and is less than		
	inches	mm	inches	mm	
1	11	279.40	14	355.60	700-3055
2	14	355.60	17	431.80	700-3056
3	17	431.80	29	736.60	700-3057
4	29	736.60	43	1092.20	700-3058
5	43	1092.20	57	1447.80	700-3059
6	57	1447.80	64	1625.60	700-3060

Table 2. Face Mount Standard Sizes

Standard Size Code	Inlet Face Diameter				Rod 4 Pack Part Number
	is greater than or equal to		and is less than		
	inches	mm	inches	mm	
1	11	279.40	13	330.20	700-4055
2	13	330.20	18	457.20	700-4056
3	18	457.20	23	584.20	700-4057
4	23	584.20	32	812.80	700-4058
5	32	812.80	46	1168.40	700-4059
6	46	1168.40	64	1625.60	700-4060

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IDENTIFICATION OF THROAT MOUNT AND FACE MOUNT SENSOR RODS

The methods for measuring the diameters are very different for throat and face mount applications. Identification of the rod types provided will ensure that the correct installation and sensor placement dimensions are used. Throat mount sensors are supplied with straight rods and brackets designed for installation in the throat of the inlet cone as shown in Figures 2 and 3. Face mount sensors are supplied with rods that have an offset bend and brackets designed for mounting on the face of plenum fans as shown in Figure 4.

CAUTION

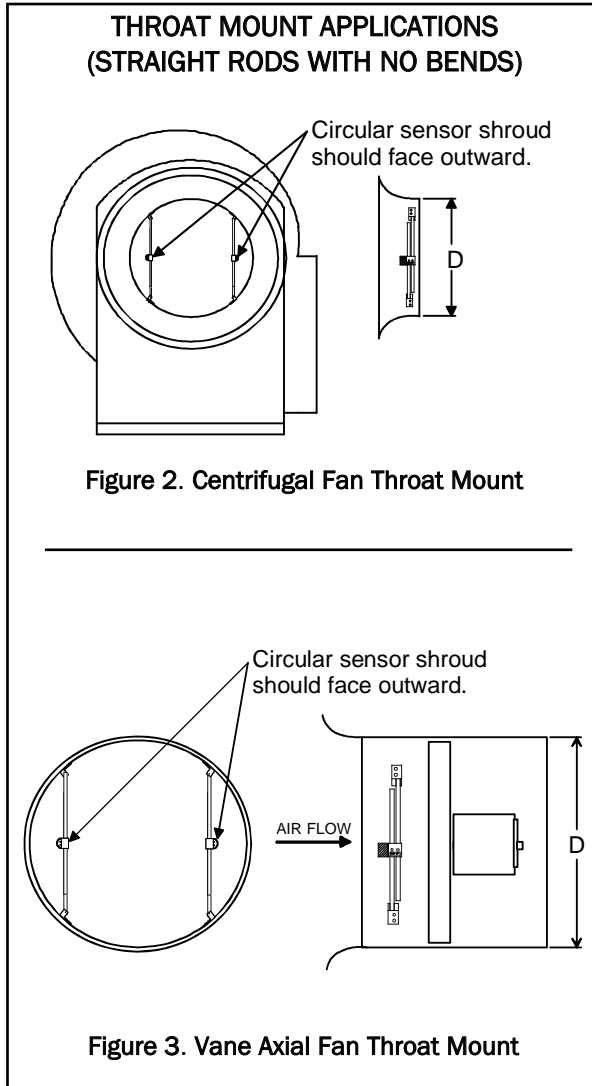


Ensure that the proper rods have been supplied for the intended installation before proceeding with installation. Measurement of the fan inlet diameter is critical to ensure optimum sensor placement and performance of the airflow measurement station.

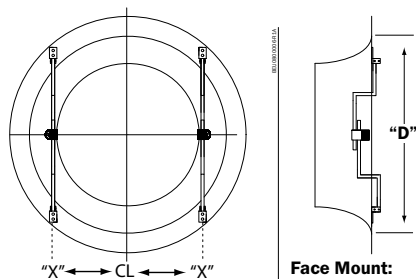
Read and understand all Cautions/Warnings and installation steps prior to installation. The sensors must always be installed in pairs at the specified locations in the fan inlet and in parallel with one another.

Check for obstructions at the fan inlet prior to installation. It may be necessary to rotate the orientation of the sensors to avoid any interfering obstructions in the fan inlet. For specific installation questions, concerns or assistance, please contact **EBTRON** Applications Engineering Team at 800.2EBTRON (800.232-8766).

Installation procedures for throat mount sensors is detailed in the first installation section, while face mount installation procedures are detailed in last installation section. Convenient check boxes are included to ensure that each step is completed.



FACE MOUNT APPLICATIONS (RODS WITH OFFSET BENDS)



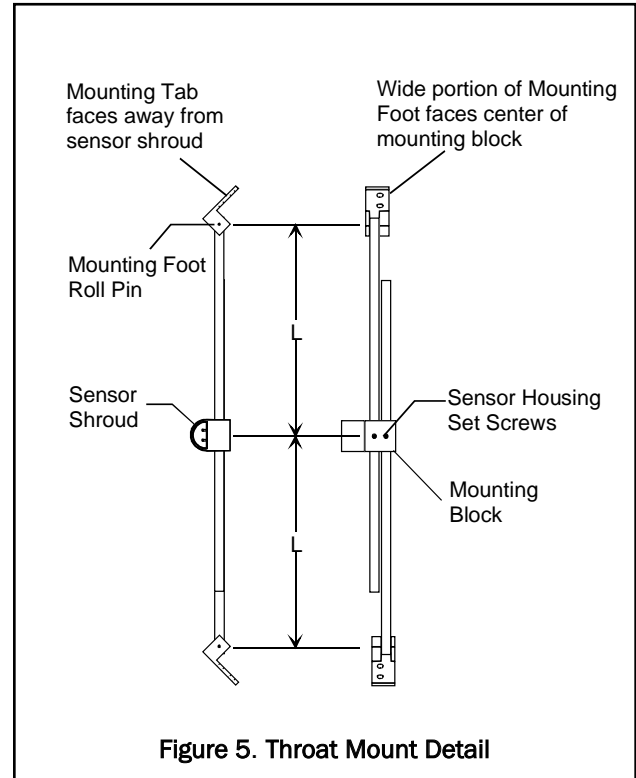
Face Mount:
"X" is the fan centerline to the sensor center dimension.

Face Mount:
"D" is the diameter of the face mount determined by the diameter of the flat portion of large inlet opening at the point where the flare begins.

Figure 4. Plenum Fan Face Mount

Throat Mount Sensor Installation

1. Physically locate the fan indicated on the engineer's plans where the air flow measuring station is to be installed.
2. Carefully measure the diameter ("D") of the inlet of the fan where the sensor assemblies will be installed as shown in Figures 2 and 3. Refer to Table 1 to verify that the proper sensors and rod 4 packs have been received.
3. Insert one mounting rod into the outer most sensor rod hole so that the widest portion of the mounting foot is towards the center of the sensor housing as shown in Figure 5.
4. Insert a second mounting rod from the opposite direction into the inner most hole as shown in Figure 5.
5. Locate **DIMENSION 'L'** in Table 3 to determine the setup distance, "L", measured from roll pin to sensor set screws.
6. Adjust inner and outer rods so that the distance between the roll pin of each foot and the set screws on the mounting block are equal to "L".
7. Tighten the set screws using the hex wrench provided.
8. Repeat Steps 3 thru 7 for each of the sensor assemblies. Sensors are now ready for installation.
9. Install the sensor assembly labeled "inside left" into the left side of the fan inlet with the sensor shroud pointing outward. Select suitable hardware for the installation and make sure that the screws do not hinder rotation of the fan.
10. Install the sensor assembly labeled "inside right" into the right side of the fan inlet with the sensor shroud pointing outward.
11. Strap down sensor cables to mounting rods using the tie wraps provided (two tie wraps per sensor), and secure the cables with appropriate hardware.
12. For dual fan inlet applications, repeat steps 2 through 11.
13. Connect all sensor probes to the transmitter supplied for the specific location. This completes probe installation. Complete the installation, wiring and set up of the associated transmitter as detailed in the separate Transmitter Installation Guide and in the Installation, Operation and Maintenance Manual (each provided under separate cover).



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Table 3. Throat Mount Dimension 'L'

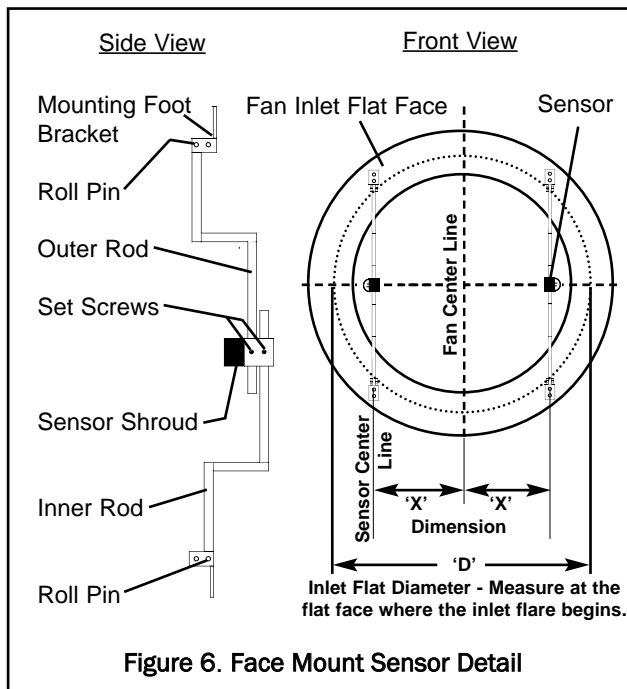
Inlet Diameter "D" (in.)	L (in.)	Inlet Diameter "D" (mm)	L (mm)	Inlet Diameter "D" (in.)	L (in.)	Inlet Diameter "D" (mm)	L (mm)	Inlet Diameter "D" (in.)	L (in.)	Inlet Diameter "D" (mm)	L (mm)
11	3 11/16	279.40	93.84	29	11 1/4	736.60	286.25	47	18 7/8	1193.80	478.66
12	4 1/8	304.80	104.53	30	11 11/16	762.00	296.94	48	19 1/4	1219.20	489.35
13	4 9/16	330.20	115.22	31	12 1/8	787.40	307.63	49	19 11/16	1244.60	500.04
14	4 15/16	355.60	125.91	32	12 1/2	812.80	318.32	50	20 1/8	1270.00	510.73
15	5 3/8	381.00	136.59	33	12 15/16	838.20	329.01	51	20 1/2	1295.40	521.42
16	5 13/16	406.40	147.28	34	13 3/8	863.60	339.70	52	20 15/16	1320.80	532.11
17	6 1/4	431.80	157.97	35	13 13/16	889.00	350.39	53	21 3/8	1346.20	542.80
18	6 5/8	457.20	168.66	36	14 3/16	914.40	361.08	54	21 13/16	1371.60	553.49
19	7 1/16	482.60	179.35	37	14 5/8	939.80	371.77	55	22 3/16	1397.00	564.18
20	7 1/2	508.00	190.04	38	15 1/16	965.20	382.46	56	22 5/8	1422.40	574.87
21	7 7/8	533.40	200.73	39	15 1/2	990.60	393.15	57	23 1/16	1447.80	585.56
22	8 5/16	558.80	211.42	40	15 7/8	1016.00	403.83	58	23 8/16	1473.20	596.25
23	8 3/4	584.20	222.11	41	16 5/16	1041.40	414.52	59	23 7/8	1498.60	606.94
24	9 3/16	609.60	232.80	42	16 3/4	1066.80	425.21	60	24 5/16	1524.00	617.63
25	9 9/16	635.00	243.49	43	17 3/16	1092.20	435.90	61	24 3/4	1549.40	628.32
26	10	660.40	254.18	44	17 9/16	1117.60	446.59	62	25 3/16	1574.80	639.01
27	10 7/16	685.80	264.87	45	18	1143.00	457.28	63	25 9/16	1600.20	649.70
28	10 7/8	711.20	275.56	46	18 7/16	1168.40	467.97	64	26	1625.60	660.38

L = distance between locking set screw at sensor housing and mounting foot roll pin

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Face Mount Sensor Installation

1. Physically locate the fan where the air flow measuring station is to be installed on the engineer's plans.
2. Use the hex wrench provided to loosen the sensor housing set screws on the sensor mounting block as shown in Figure 6.
3. Insert an 'inner mounting rod' (attached to inner roll pin on bracket) into the sensor mounting block 'inner rod hole' as shown in Figure 6.
4. Similarly, insert an 'outer mounting rod' (attached to outer roll pin on bracket) into the sensor mounting block 'outer rod hole' as shown in Figure 6.
5. Repeat Steps 2 through 4 for each of the sensor assemblies.
6. Measure the diameter ('D') of the fan inlet **FLAT FACE**, measured at the **flat portion of the flat face of the inlet at the point where the inlet flare just begins**.
7. Using Diameter 'D', locate DIMENSION 'X' in Table 4 to determine the fan inlet center line to sensor mounting center line for each sensor as shown in Figure 6.



8. While holding the brackets at Dimension 'X', adjust the inner and outer rods so that the distance between the set screws on the mounting block and the roll pin of each mounting foot bracket is equal. Tighten the set screws using the hex wrench provided. Sensors are now ready for installation.
9. Install the sensor assembly labeled "inside left" onto the left side of the flat face of the fan inlet as shown in Figure 6. Select suitable hardware for installation, making sure that the screws do not hinder the rotation of the fan.
10. Install the sensor assembly labeled "inside right" onto the right side of the flat face of the fan inlet as shown in Figure 6. Select suitable hardware for installation, making sure that the screws do not hinder the rotation of the fan.
11. Strap down sensor cables to mounting rods using the tie wraps provided (two tie wraps per sensor), and secure the cables with appropriate hardware.
12. For dual fan inlet applications, repeat steps 2 through 11.
13. Connect all sensor probes to the transmitter supplied for the specific location. This completes probe installation. Complete the installation, wiring and set up of the associated transmitter as detailed in the separate Transmitter Installation Guide and in the Installation, Operation and Maintenance Manual (each provided under separate cover).

Table 4. Face Mount Dimension "X" Determination

Inlet Diameter "D" (in.)	X (in.)	Inlet Diameter "D" (mm)	X (mm)	Inlet Diameter "D" (in.)	X (in.)	Inlet Diameter "D" (mm)	X (mm)	Inlet Diameter "D" (in.)	X (in.)	Inlet Diameter "D" (mm)	X (mm)
11	3 3/8	279.40	86.08	29	9 3/4	736.60	247.73	47	16 1/8	1193.80	409.37
12	3 3/4	304.80	95.06	30	10 1/8	762.00	256.71	48	16 1/2	1219.20	418.35
13	4 1/8	330.20	104.04	31	10 7/16	787.40	265.69	49	16 13/16	1244.60	427.33
14	4 7/16	355.60	113.02	32	10 13/16	812.80	274.67	50	17 3/16	1270.00	436.31
15	4 13/16	381.00	122.00	33	11 3/16	838.20	283.65	51	17 1/2	1295.40	445.29
16	5 3/16	406.40	130.98	34	11 1/2	863.60	292.63	52	17 7/8	1320.80	454.27
17	5 1/2	431.80	139.96	35	11 7/8	889.00	301.61	53	18 1/4	1346.20	463.25
18	5 7/8	457.20	148.94	36	12 1/4	914.40	310.59	54	18 9/16	1371.60	472.23
19	6 3/16	482.60	157.92	37	12 9/16	939.80	319.57	55	18 15/16	1397.00	481.21
20	6 9/16	508.00	166.91	38	12 15/16	965.20	328.55	56	19 5/16	1422.40	490.19
21	6 15/16	533.40	175.89	39	13 5/16	990.60	337.53	57	19 5/8	1447.80	499.17
22	7 1/4	558.80	184.87	40	13 5/8	1016.00	346.51	58	20	1473.20	508.15
23	7 5/8	584.20	193.85	41	14	1041.40	355.49	59	20 3/8	1498.60	517.14
24	8	609.60	202.83	42	14 3/8	1066.80	364.47	60	20 11/16	1524.00	526.12
25	8 5/16	635.00	211.81	43	14 11/16	1092.20	373.45	61	21 1/16	1549.40	535.10
26	8 11/16	660.40	220.79	44	15 1/16	1117.60	382.43	62	21 7/16	1574.80	544.08
27	9 1/16	685.80	229.77	45	15 7/16	1143.00	391.41	63	21 3/4	1600.20	553.06
28	9 3/8	711.20	238.75	46	15 3/4	1168.40	400.39	64	22 1/8	1625.60	562.04

"D" Inlet Diameter Must be Measured Across Flat Face at Flare Edge - See Text

"X" = distance between fan center line and sensor center line.