

THERMAL **CORPORATION**

A Division of Nailor International Inc.



MODEL TCU: TRANQUILITY COLUMN UNIT

3,000 - 15,000 CFM UNDERFLOOR AHU

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TRANQUILITY COLUMN UNIT

PRODUCT OVERVIEW

Thermal Corporation's Model TCU (Mixed Air Unit) mixes a pre-treated, primary air stream with the space return air. An extremely quiet 12-blade, direct drive plenum fan draws the mixed air through 2" or 4" pleated filters and supplies 62 degree air into the raised floor plenum. This unit can be provided with Thermal Corporation's original vortex induction top to reduce the inlet and discharge sound power levels or with a separate duct collar and integral, low leakage control damper.

CASING

Unit casing constructed of galvanized steel exterior panels attached to a die-formed and welded galvanized steel frame. Unit side, end, roof and floor panels shall be reinforced with galvanized steel stiffeners as necessary to limit panel deflections to 1/200th of span at design working pressures.

Unit casing is modular, and shipped in two or more pieces depending on specific project details.

Frame and panel members are hot dip galvanized steel sheet in accordance with ASTM A526, with a minimum of 0.70 ounce of zinc per square foot, bright spangled finish.

All side, end and roof panels provide a flush, smooth, architecturally pleasing exterior appearance. Panels are sealed with closed cell neoprene gaskets and welds are cleaned and coated with a cold galvanizing coating. Double wall panels are removable and fully gasketed around the entire perimeter of each panel, attached to the frame with screws.

Panel interior liners, roof, doors, frame and floor are lined with perforated, 20 ga. galvanized steel sheet.

Options:

- #304 or 316 Stainless steel exterior and/or interior.
- Painted casing

The frame is die-formed, welded and constructed of G90 mill-galvanized steel sheet. Tubular frames, frameless, bolted and screwed frames are not acceptable.

ACCESS DOORS

Double wall, hinged and latched access doors are provided for fan access, filter access, and the controls vestibule. Access doors are constructed with the same materials as the unit casing specified above. Doors are complete with closed cell neoprene bulb gasketing, 3-way adjustable zinc plated hinges (where necessary) and durable glass-reinforced nylon handles.

Options:

- Fan access doors provided with a 12" x 12" Lexan view glass window
- Key-locking door handles

INSULATION

Entire casing insulated with 2 inch thick, 3 pcf density FSK faced fiber insulation, rated and marked for compliance with smoke and flame spread requirements of NFPA 90A&B. Insulation is applied with 100% coverage of a bonding adhesive.

Options:

- 2 inch thick, 3 pcf density mat faced insulation.
- 3 inch thick, 3 pcf density mat faced insulation.
- 3 inch thick, 3 pcf density FSK faced insulation.

FANS AND MOTORS

Unit fan selection and ratings shall be based on tests made in accordance with ASHRAE 51, AMCA 210, and ARI 430.

Fans selected are direct drive SWSI air foil blade plenum with sizes as shown on the tables. Fans are selected to be capable of operating safely at every point of rating on or below the minimum performance class limit and have stable operation over the entire operating range from shut off to free delivery.

Fan and motor assembly mounted on a tubular steel roll out base, isolated from the unit frame with unhooused, bolted spring type vibration isolators having a minimum of 1 inch deflection. A neoprene coated flexible connector with quick release latch is provided between fan and inlet panel. Fan base is coated with a self-priming urethane enamel.

Motors selected are 900 RPM, ODP standard efficiency with horsepower as shown on the tables and voltage as determined by project specifications.

Options:

- Seismic restraints.
- TEFC, XP or Premium Efficiency Motors.

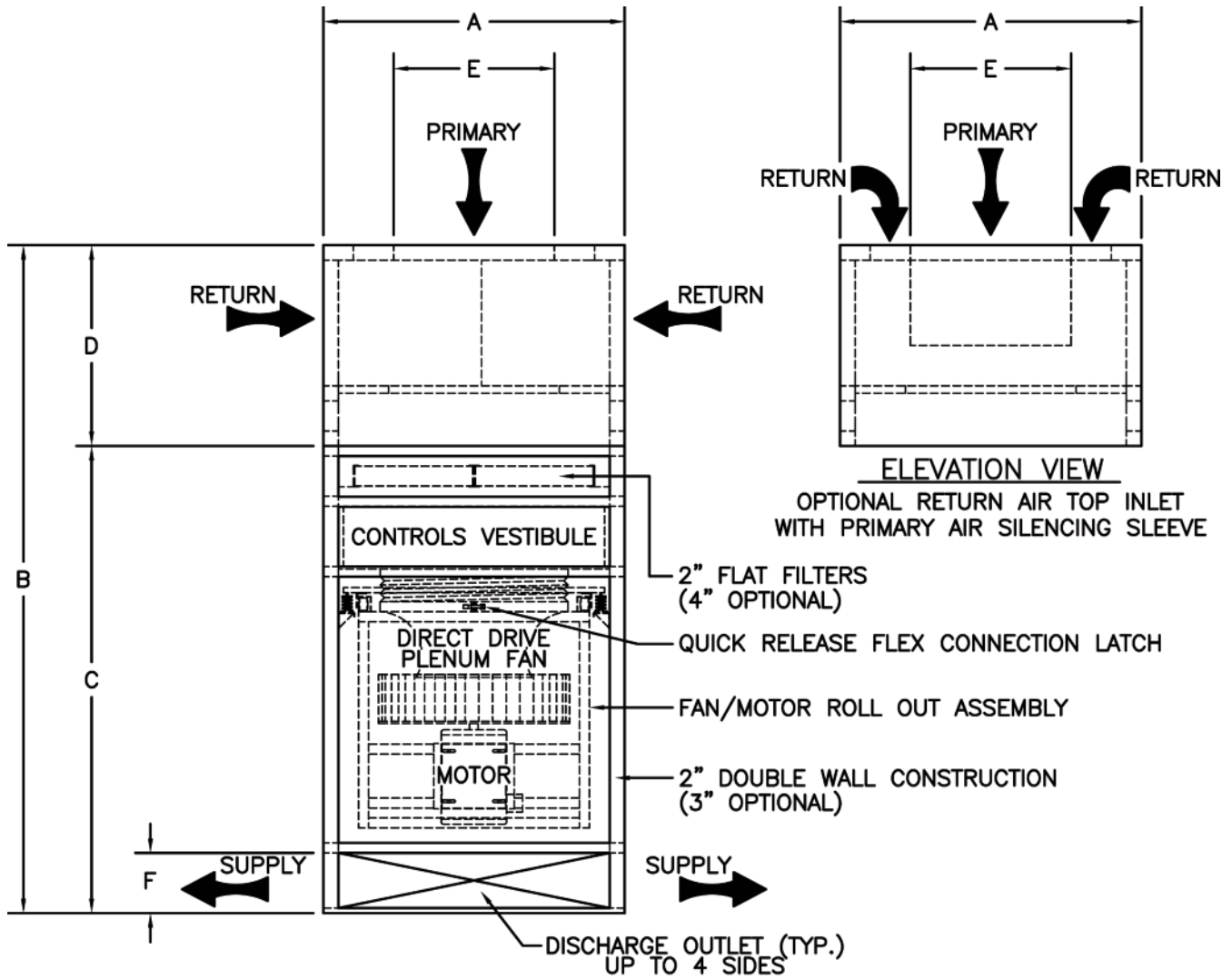
FILTER SECTION (Optional)

Filter section is equipped with a latched access door on the front of the unit casing. This allows filters to be changed from within the mechanical room closet.

Options:

- 2" thick, pleated media type.
- 4" thick, pleated media type.

DIMENSIONS AND TECHNICAL DATA

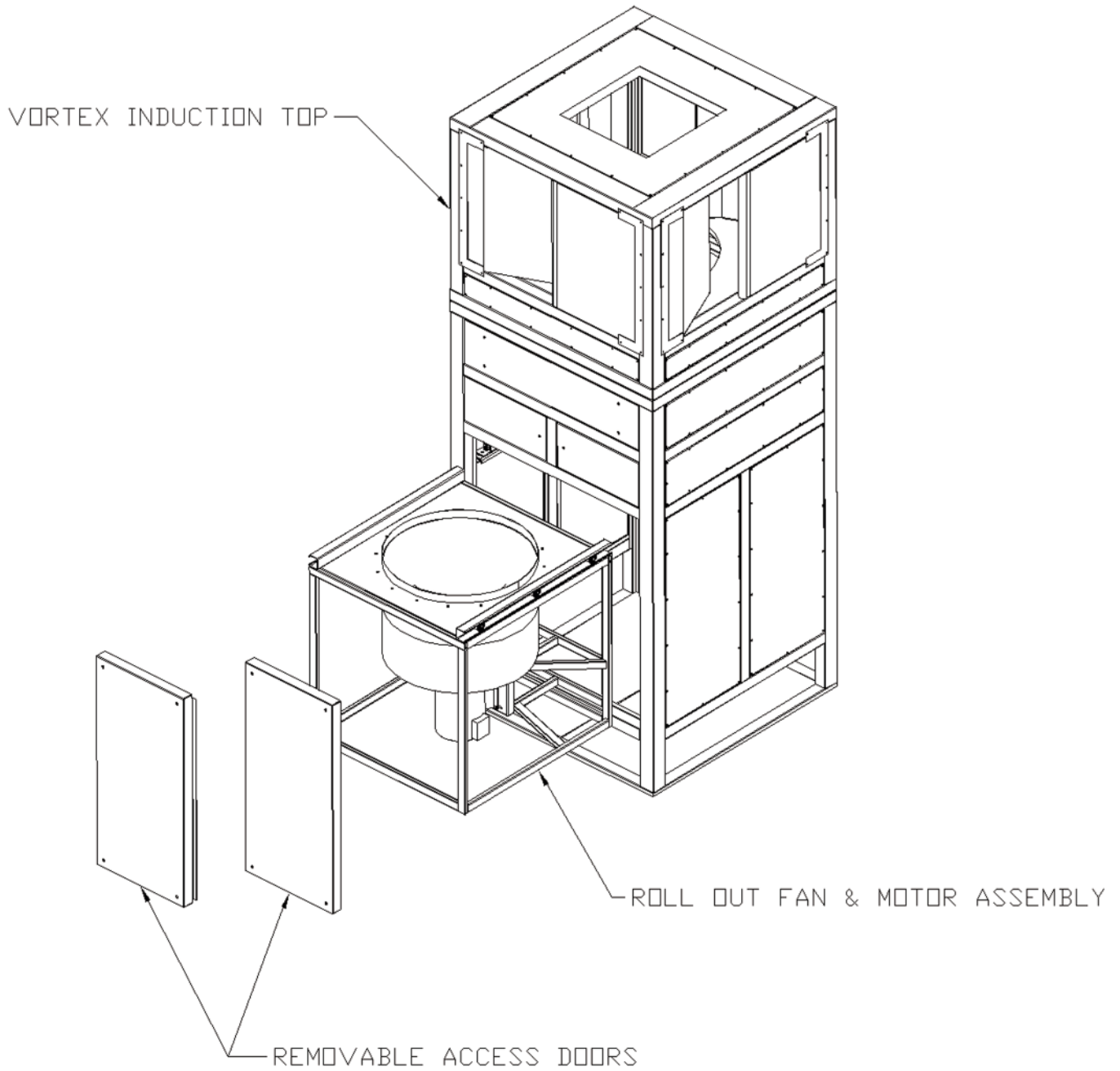


**ELEVATION VIEW
WITH VORTEX INDUCTION TOP**

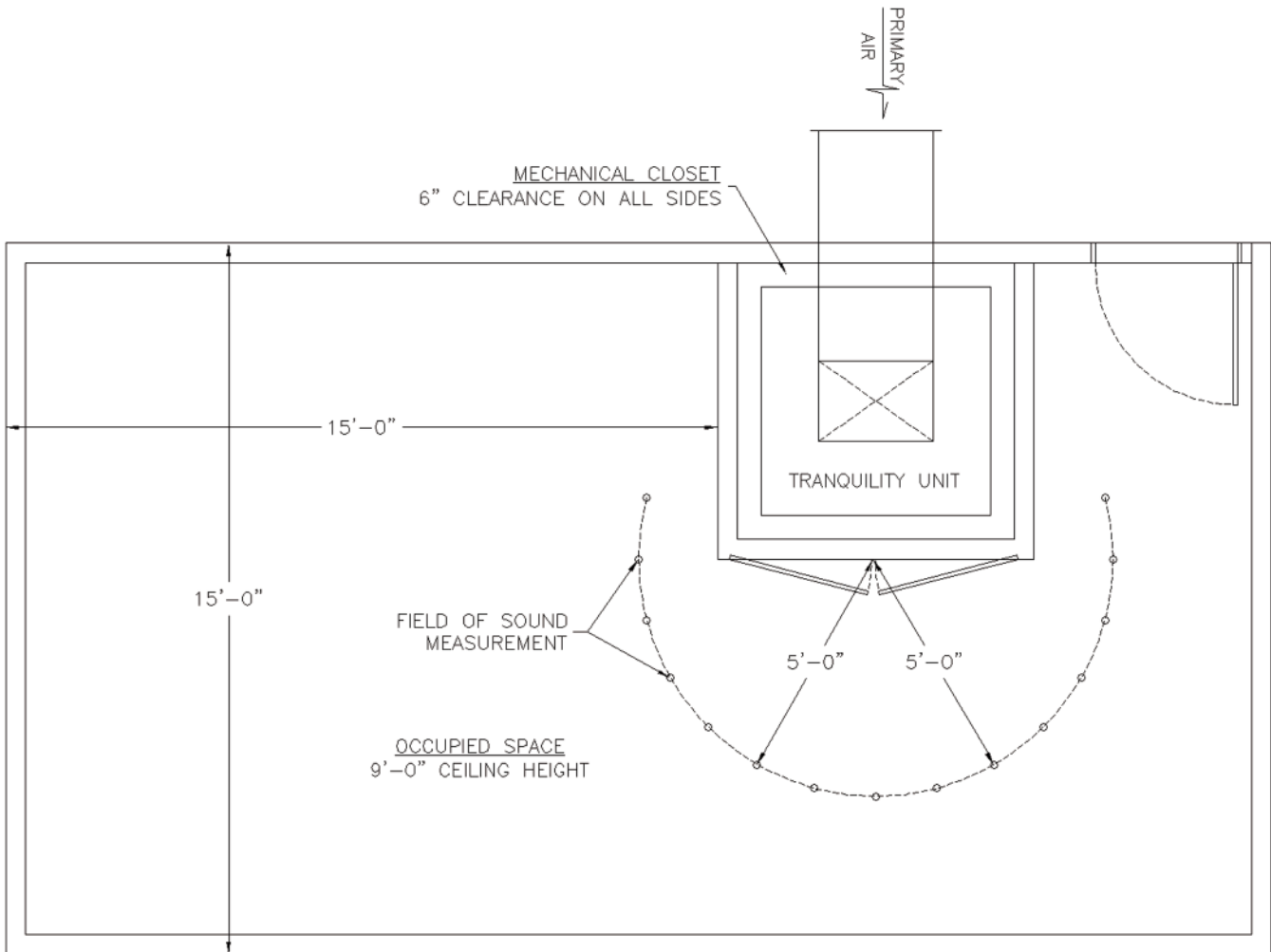
DIMENSIONAL DATA									
MODEL	CFM RANGE	"A"	"B"	"C"	"D"	"E"	"F"		
TCU-500	3,000-5,000	54"	127" ¹	91" ¹	36"	Project Specific	Project Specific		
TCU-1000	7,500-10,000	58"	135" ²	99" ²	36"	Project Specific	Project Specific		
TCU-1500	13,000-15,000	66"	161" ³	116" ³	45"	Project Specific	Project Specific		
1 - "F" = 12" used to determine "B" and "C" 2 - "F" = 18" used to determine "B" and "C" 3 - "F" = 24" used to determine "B" and "C"									
TECHNICAL DATA									
MODEL	CFM RANGE	FILTER AREA	MAX FILTER VELOCITY	FILTER SIZES		FAN SIZE	MOTOR HP	MOTOR RPM	NC RATING
				Qty.	Size				
TCU-500	3,000-5,000	13.33	375	6	16 x 20	27"	2	900	37
TCU-1000	7,500-10,000	18.00	555	6	18 x 24	36.5"	5	900	40
TCU-1500	13,000-15,000	22.22	675	8	16 x 25	40"	5	900	45

Thermal Corporation reserves the right to change any information concerning product or pricing without notice.

ROLL OUT FAN AND MOTOR ASSEMBLY DETAIL



TYPICAL TEST SET-UP DETAIL



CERTIFIED SOUND PERFORMANCE

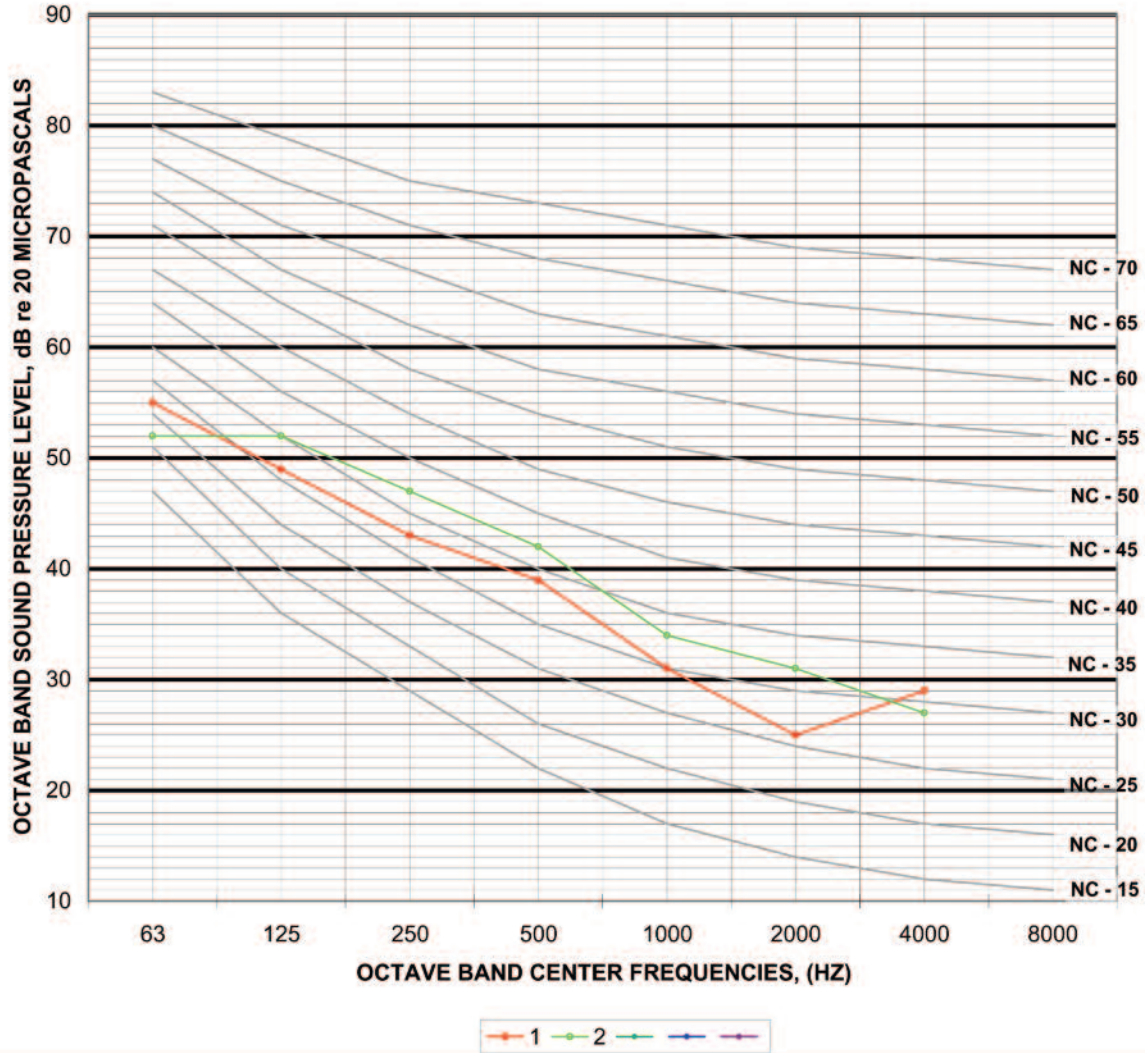
DESCRIPTION	TEST#	63	125	250	500	1000	2000	4000	NC
FAN ONLY 5,000 CFM	1	55	49	43	39 PEAK	31	25	29	34
5,000 CFM FAN; 1,500 PRIMARY CFM@ 1.5" SP	2	52	52	47	42 PEAK	34	31	27	37.2

DESCRIPTION	TEST#	63	125	250	500	1000	2000	4000	NC
FAN ONLY 5,000 CFM	1	53.1	51	48 PEAK	42.3	34.4	27.5	23.1	37.9
10,000 CFM FAN; 3,000 PRIMARY CFM@ 1" SP	2	62.2	54.5	48.2 PEAK	44 PEAK	37.5	30.5	26.3	39.4
10,000 CFM FAN; 3,000 PRIMARY CFM@ 1.5" SP	3	62	56.1 PEAK	48.8	44.9	37.9	31.6	27.9	40.0

DESCRIPTION	TEST#	63	125	250	500	1000	2000	4000	NC
FAN ONLY 15,000 CFM	1	64	59.9	54.7 PEAK	49 PEAK	43.8	35.5	32.8	45.0
15,000 CFM FAN; 4,500 PRIMARY CFM@ 1.5" SP	2	60.6	59.9	54.9 PEAK	49.3 PEAK	44.8	36.8	32.1	45.0

SOUND DATA Model: TCU-500 w/ Vortex Induction Top

NC (NOISE CRITERIA) CURVES

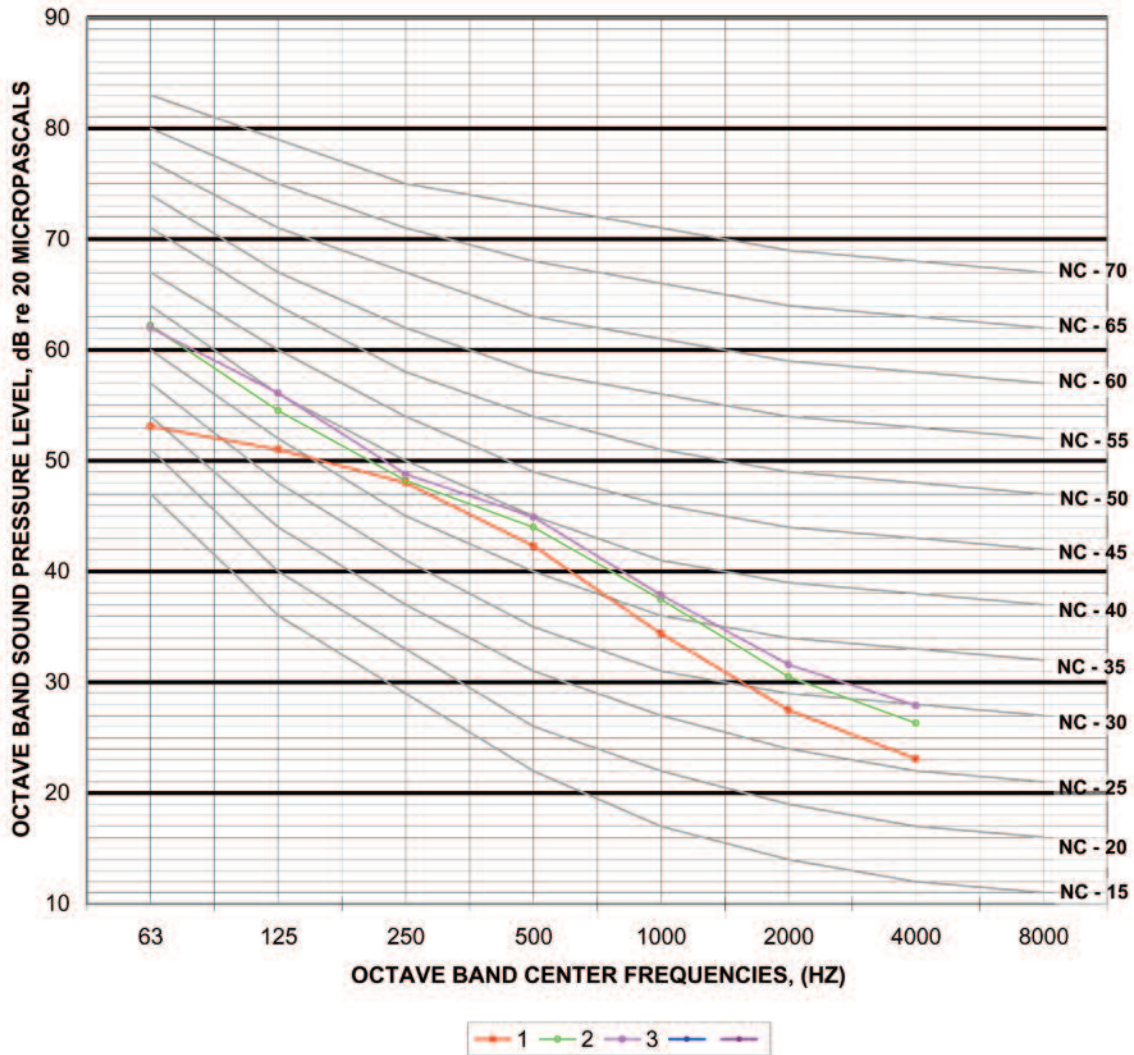


DESCRIPTION	TEST#	63	125	250	500	1000	2000	4000	NC
FAN ONLY 5,000 CFM	1	55	49	43	39 PEAK	31	25	29	34
5,000 CFM FAN; 1,500 PRIMARY CFM@ 1.5" SP	2	52	52	47	42 PEAK	34	31	27	37.2

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SOUND DATA Model: TCU-1000 w/ Vortex Induction Top

NC (NOISE CRITERIA) CURVES

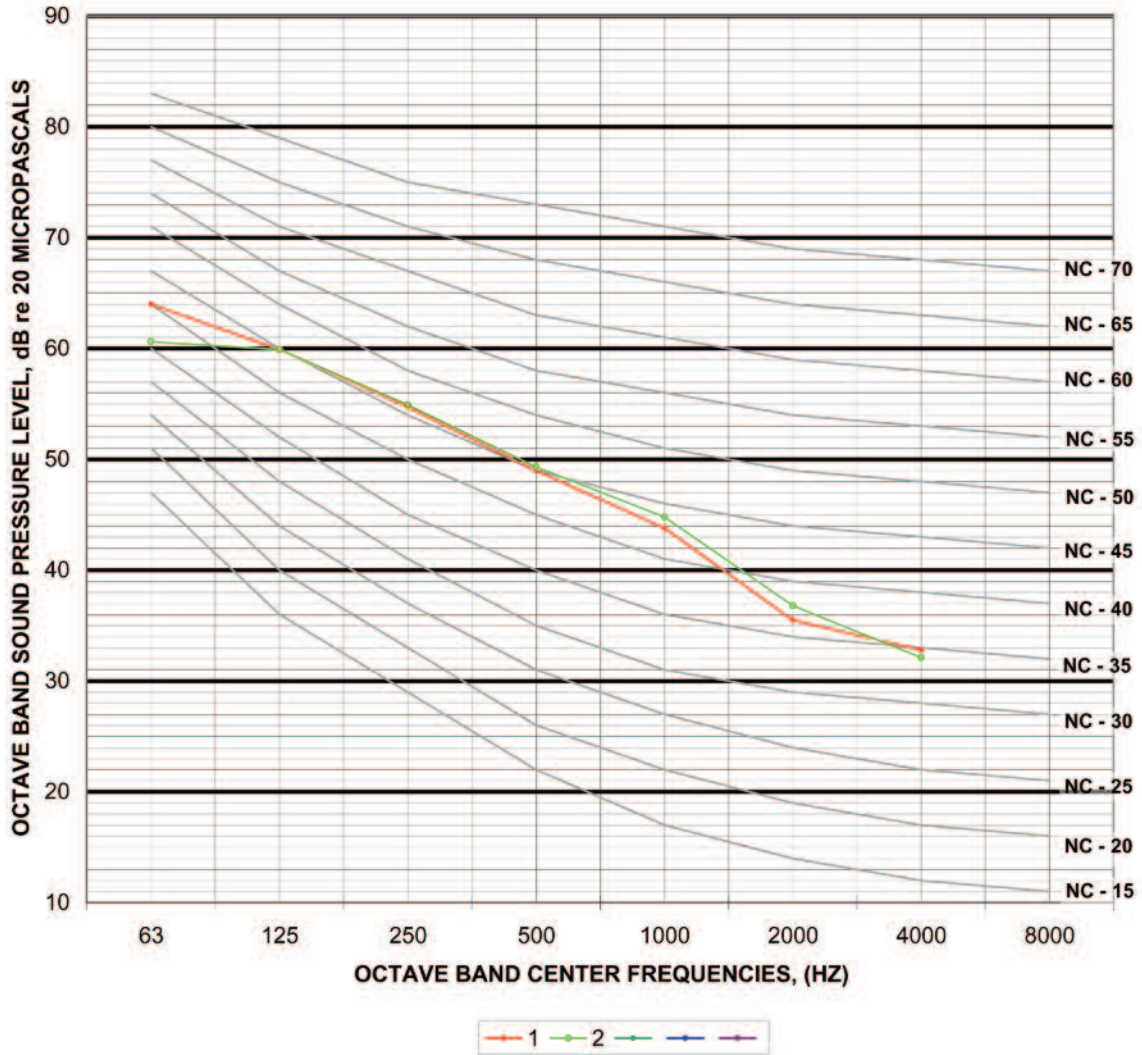


DESCRIPTION	TEST#	63	125	250	500	1000	2000	4000	NC
FAN ONLY 5,000 CFM	1	53.1	51	48 PEAK	42.3	34.4	27.5	23.1	37.9
10,000 CFM FAN; 3,000 PRIMARY CFM@ 1" SP	2	62.2	54.5	48.2 PEAK	44 PEAK	37.5	30.5	26.3	39.4
10,000 CFM FAN; 3,000 PRIMARY CFM@ 1.5" SP	3	62	56.1 PEAK	48.8	44.9	37.9	31.6	27.9	40.0

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SOUND DATA Model: TCU-1500 w/ Vortex Induction Top

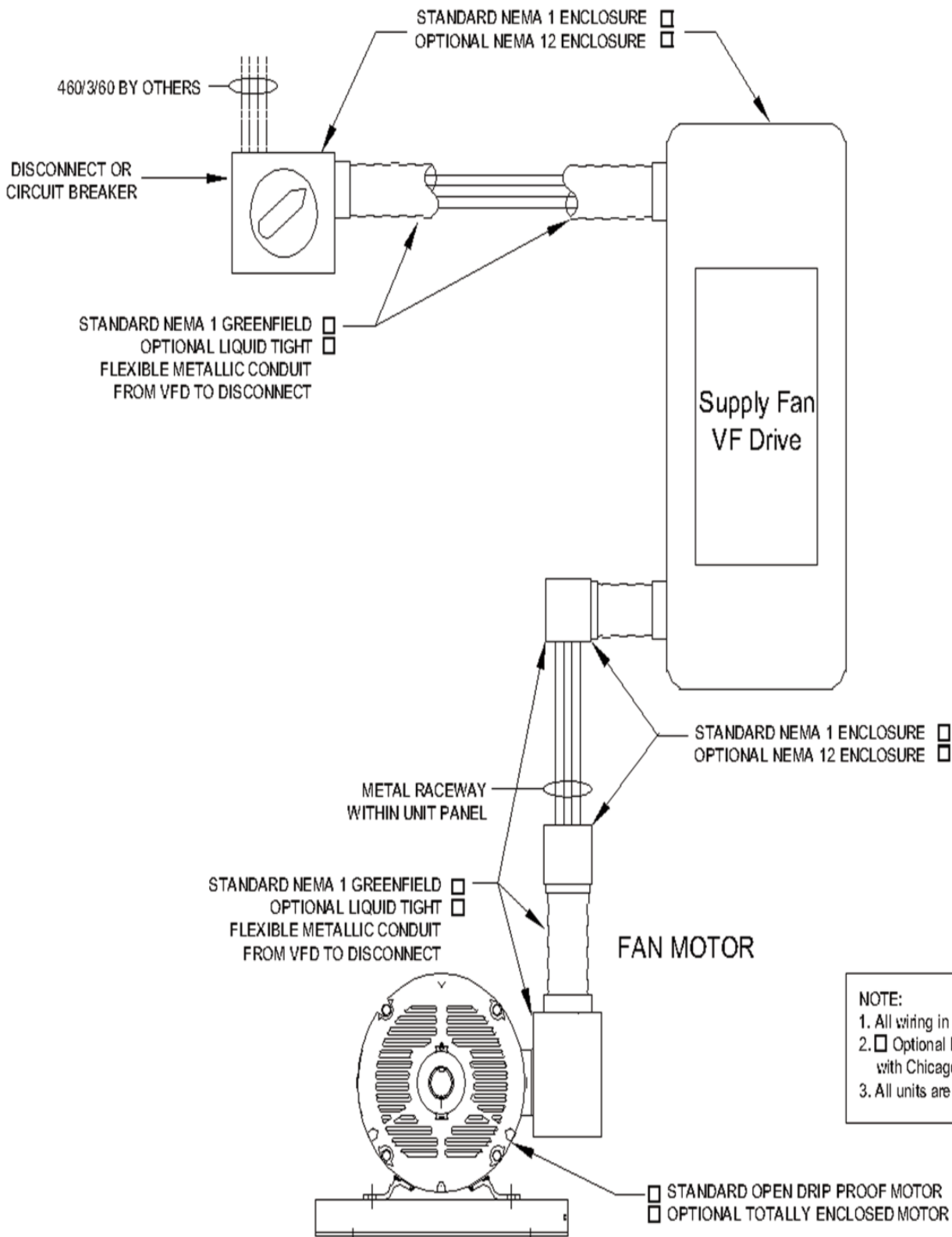
NC (NOISE CRITERIA) CURVES



DESCRIPTION	TEST#	63	125	250	500	1000	2000	4000	NC
FAN ONLY 15,000 CFM	1	64	59.9	54.7 PEAK	49 PEAK	43.8	35.5	32.8	45.0
15,000 CFM FAN; 4,500 PRIMARY CFM@ 1.5" SP	2	60.6	59.9	54.9 PEAK	49.3 PEAK	44.8	36.8	32.1	45.0

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TYPICAL WIRING DIAGRAM



NOTE:
 1. All wiring in accordance with NEC
 2. Optional NEMA 12 construction complies with Chicago Building Code.
 3. All units are ETL Certified



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