

TCS Series Fan-Powered, VAV Terminals



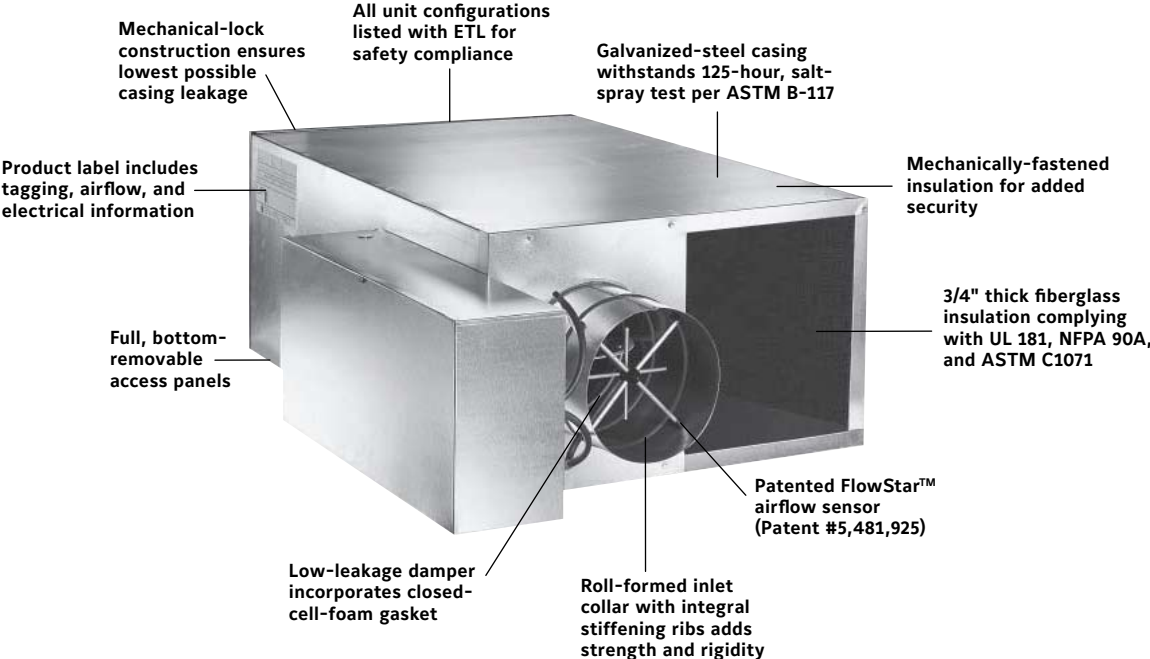
Model TCS construction features

Integral discharge collar
simplifies field installation



Electrical devices installed
within a NEMA 1 enclosure, with
single-point-power connection

Fan assembly utilizes a
forward-curved, dynamically
balanced, galvanized wheel
with a direct-drive motor



Mechanical-lock
construction ensures
lowest possible
casing leakage

All unit configurations
listed with ETL for
safety compliance

Galvanized-steel casing
withstands 125-hour, salt-
spray test per ASTM B-117

Mechanically-fastened
insulation for added
security

Product label includes
tagging, airflow, and
electrical information

Full, bottom-
removable
access panels

3/4" thick fiberglass
insulation complying
with UL 181, NFPA 90A,
and ASTM C1071

Patented FlowStar™
airflow sensor
(Patent #5,481,925)

Low-leakage damper
incorporates closed-
cell-foam gasket

Roll-formed inlet
collar with integral
stiffening ribs adds
strength and rigidity

TCS Fan-Powered, VAV Terminals: Quiet operation, constant airflow

Owners

TCS terminals are specifically designed for quiet operation. They also offer improved space comfort and flexibility for a wide variety of heating, ventilating and air-conditioning (HVAC) systems. This is critical in today's buildings where occupants are placing more emphasis on indoor acoustics.

Occupants benefit from a TCS design that minimizes low-frequency (125-250 Hz) sound levels that typically dominate the space sound level.

Superior flow-measuring allows control at lower minimum cubic-feet-per-minute (CFM) values, which reduces energy costs and sound levels while maintaining comfort in the occupied space.

Designers

Due to heightened interest in indoor air quality, many HVAC system designers are focusing on the effects of particulate contamination within a building's occupied space. Often, HVAC system noise is overlooked as a source of occupied-space contamination. The TCS terminal is specifically designed to eliminate obtrusive fan noise from reaching the occupants, while providing constant air motion in the space.

The TCS terminal is manufactured and assembled with a multi-axis, multi-point, center-averaging, airflow sensor. This sensor provides a signal to the controller enabling it to quietly and precisely measure airflow.

TCS terminals can be used in these types of applications:

- Series Fan, Cooling Only
- Series Fan with Reheat

Model TCS-E EH offers electric heat (available with Electronically Commutated Motor (ECM)), and model TCS-WC offers hot-water heat.

Contractors

An integrated VAV box with direct-digital controls eliminates the coordination and difficulties associated with field-mounting.

Bundled with the TCS terminal is a digital controller from the VAV Modular Assembly (VMA) Series or the LN Series, combining a controller, pressure sensor, and actuator housed in one pre-assembled unit. Features include automated commissioning, damper-stall detection, starved-box detection, actuator motor duty cycle, VAV box-flow test, and other diagnostics on most models.



VMA Series Controller (left) and LN Series Controller (right)

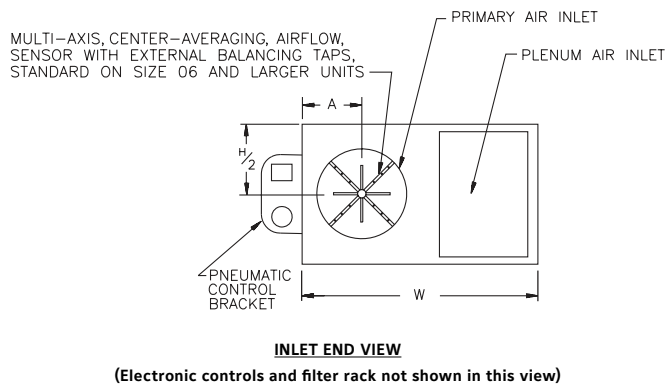
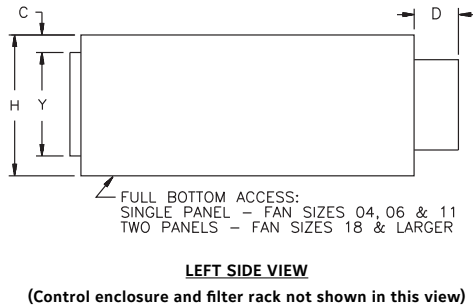
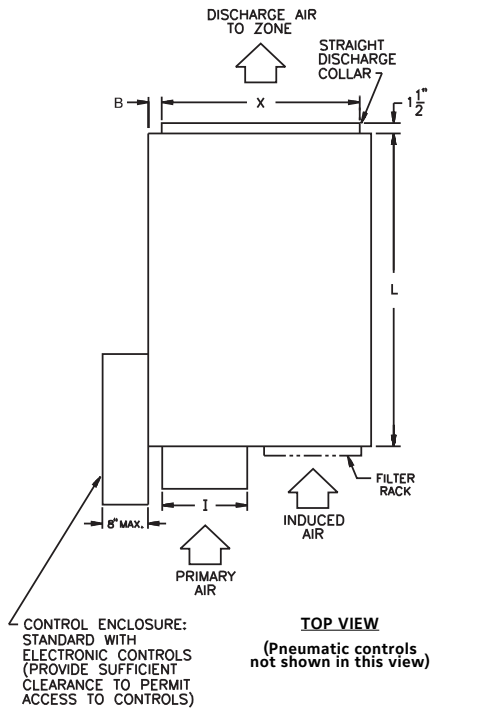
Downloading of software, setting of parameters, addressing, and testing at the factory reduce startup time and lessen risk.

Installation is simple with low-profile, compact design, and standard metal hanging straps.

Complies with National Electric Code (NEC) wiring requirements and meets Air-Conditioning and Refrigeration Institute (ARI) Standard 880.



Model TCS



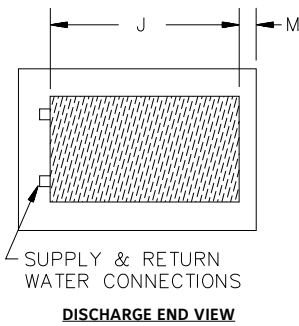
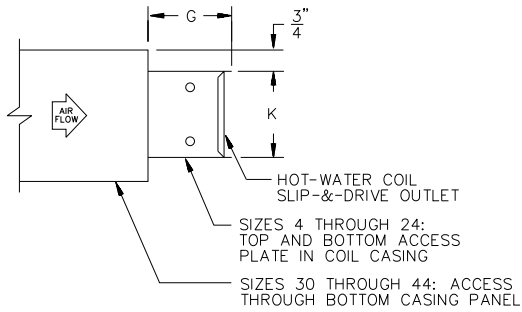
Unit Size	Dimensions									
	I	A	B	C	D	X	Y	W	H	L
0404	3-7/8" [98]	6" [152]	5" [127]	3/4" [19]	10-1/2" [267]	8-3/8" [213]	8" [203]	18" [457]	12" [305]	28" [711]
0504	4-7/8" [124]	6" [152]	5" [127]	3/4" [19]	10-1/2" [267]	8-3/8" [213]	8" [203]	18" [457]	12" [305]	28" [711]
0604	5-7/8" [149]	6" [152]	5" [127]	3/4" [19]	6-1/2" [165]	8-3/8" [213]	8" [203]	18" [457]	12" [305]	28" [711]
0506	4-7/8" [124]	6" [152]	2-1/4" [57]	3/4" [19]	10-1/2" [267]	11" [279]	11" [279]	23-3/8" [594]	14" [356]	35" [889]
0606	5-7/8" [149]	6" [152]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	11" [279]	11" [279]	23-3/8" [594]	14" [356]	35" [889]
0806	7-7/8" [251]	6" [152]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	11" [279]	11" [279]	23-3/8" [594]	14" [356]	35" [889]
0611	5-7/8" [149]	6" [152]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	11" [279]	11" [279]	23-3/8" [594]	14" [356]	35" [889]
0811	7-7/8" [200]	6" [152]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	11" [279]	11" [279]	23-3/8" [594]	14" [356]	35" [889]
1011	9-7/8" [251]	7" [178]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	11" [279]	11" [279]	23-3/8" [594]	14" [356]	35" [889]
0818	7-7/8" [200]	8" [203]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	15" [381]	13-1/2" [343]	29-3/8" [746]	17" [432]	40" [1016]
1018	9-7/8" [251]	8" [203]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	15" [381]	13-1/2" [343]	29-3/8" [746]	17" [432]	40" [1016]
1218	11-7/8" [302]	8" [203]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	15" [381]	13-1/2" [343]	29-3/8" [746]	17" [432]	40" [1016]
1021	9-7/8" [251]	8" [203]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	15" [381]	13-1/2" [343]	29-3/8" [746]	17" [432]	40" [1016]
1221	11-7/8" [302]	8" [203]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	15" [381]	13-1/2" [343]	29-3/8" [746]	17" [432]	40" [1016]
1421	13-7/8" [352]	9" [229]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	15" [381]	13-1/2" [343]	29-3/8" [746]	17" [432]	40" [1016]
1224	11-7/8" [302]	10" [254]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	28" [711]	15" [381]	38" [965]	19" [483]	54" [1372]
1424	13-7/8" [352]	10" [254]	2-1/4" [57]	3/4" [19]	6-1/2" [165]	28" [711]	15" [381]	38" [965]	19" [483]	54" [1372]
1230	11-7/8" [302]	10" [254]	9-3/4" [248]	1-1/4" [32]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]
1430	13-7/8" [352]	11-1/2" [292]	9-3/4" [248]	1-1/4" [32]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]
1630	15-7/8" [352]	11-1/2" [292]	9-3/4" [248]	1-1/4" [32]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]
1440	13-7/8" [403]	11-1/2" [292]	9-3/4" [248]	1-1/4" [32]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]
1640	15-7/8" [352]	11-1/2" [292]	9-3/4" [248]	1-1/4" [32]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]
1644	15-7/8" [352]	11-1/2" [292]	9-3/4" [248]	3-1/4" [83]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]
1844	15-7/8" [352] x 15-7/8" [352]	11-1/2" [292]	9-3/4" [248]	3-1/4" [83]	6-1/2" [165]	40" [1016]	15" [381]	52" [1321]	19" [483]	62" [1575]

NOTE:

1. All dimensions are in inches [mm] with a tolerance of ±1/8" [3mm].

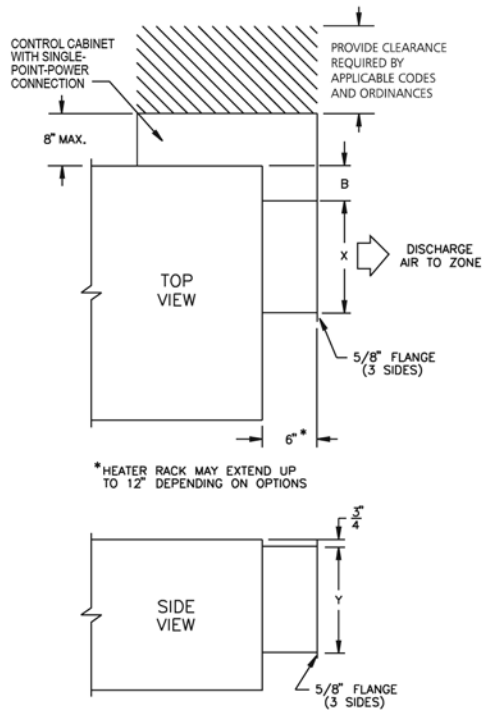
NOTE: Drawings are not to scale and are not for installation purposes. Contact your Johnson Controls representative for more information. All data and dimensions are subject to change without notice.

**Model TCS-WC
(Hot-Water Coil)**

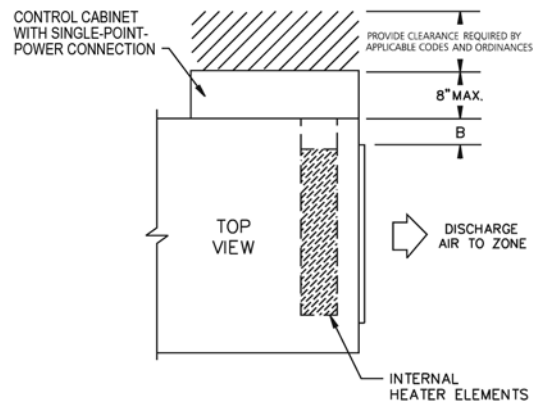


Fan Size	G	J	K	M
04	10" [254]	12" [305]	10" [254]	3" [76]
06, 11	10" [254]	16" [406]	12-1/2" [318]	1/2" [13]
18, 21	10" [254]	22" [559]	12-1/2" [318]	1/2" [13]
24	10" [254]	28" [711]	17-1/2" [445]	1/2" [13]
30, 40	6" [152]	40" [1016]	17-1/2" [445]	9-3/4" [248]
44	6" [152]	44" [1118]	17-1/2" [445]	5-3/4" [146]

**Model TCS-EH
(Electric Heat)**



FAN SIZES 04, 06, 11, 18, 21 AND 24



FAN SIZES 30, 40 AND 44

TCS Terminal Features

STANDARD FEATURES:

Construction

- ARI Standard 880-certified and labeled
- 22-gauge, galvanized-steel casing and valve
- 3/4" thick, fiberglass insulation, mechanically fastened for added security

Hot-Water Coils

- ARI Standard 410-certified and labeled
- 1, 2, 3, 4-row coils
- Tested at a minimum of 350 psig under water

Fan Assemblies

- Forward-curved, dynamically-balanced, direct-drive, galvanized blower wheel
- 115 to 277-volt, single-phase, three-tap, permanent-split-capacitor (PSC) motor
- SCR fan-speed controller
- Quick-select, motor-speed terminal
- Permanently lubricated motor bearings
- Thermally protected motor
- Vibration-isolation motor mounts
- Single-point wiring

Primary Air Valve

- Embossed rigidity rings
- Low-thermal-conductance damper shaft with position indicator
- Mechanical stops for open and closed position
- Multi-point, center-averaging, airflow sensor
- Balancing tees
- Plenum-rated sensor tubing

Electrical Components

- cETL listed for safety compliance with UL 1996 inin
- National Electrical Manufacturers Association (NEMA) Type 1 wiring enclosure

Electric Heat

- cETL listed as an assembly for safety compliance
- Integral, electric-heat assembly
- Automatic-reset primary and back-up secondary thermal limits
- Single-point-power connection
- Hinged, electrical-enclosure door
- Fusing per NEC
- Ni-chrome elements
- Wiring diagram and ETL label
- Fan-interlock device (relay or pneumatic-electric [PE] switch)

OPTIONAL FEATURES:

Construction

- 20-gauge, galvanized-steel construction
- 1" insulation
- Scrim-reinforced, foil-faced insulation meeting American Society for Testing and Materials (ASTM) C1136 for mold, mildew, and humidity resistance
- Double-wall construction with 22-gauge liner
- Mounting brackets to accept all threaded hanging rods or wire hangers
- Low-temperature construction for use in thermal-storage applications, including a thermally-isolated, primary air inlet and a composite damper shaft
- Low-velocity, low-pressure-drop, filter rack and filters located at induction inlet and/or radiated sound damper
- Hot-water, steam, or electric heating coils mounted at unit discharge—access plate upstream of hydronic coil (standard)

Fan Assemblies

- 208, 230, 240 and 480-volt, single-phase, PSC motors
- 220/240-volt, 50 Hz motors
- 120, 208, 240, and 277-volt ECM™ motors

Electrical Components

- Full-unit, toggle disconnect and inline motor fusing
- Primary and secondary transformer fusing

Electric Heat

- Proportional, solid-state-relay (SSR) heater control
- Door-interlocking disconnect switches
- Disconnect (toggle or door-interlocking)
- Pneumatic-electric (PE) switches
- Mercury or magnetic contactors
- Manual-reset secondary limit
- Airflow switch

Controls

- Factory-provided controls include:
 - Direct-digital controls (DDC) for BACnet, N2, or LON® networks
 - Pneumatic controls
 - Analog electronic controls
- Consignment DDC controls (factory-mount and wire controls provided by others)