

Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.



XG-RA Retrofit VAV Terminals

Receiving Inspection

Prior to removing the shipping materials, visually inspect the packing materials. There should be a black plastic strip wrapped in the clear plastic stretch wrap. If this black plastic strip is missing, the shipment may have been repacked by the shipper and you should make a note of this on the shipping documents and inform the delivering carrier.

After unpacking the terminals, check for shipping damage. If any shipping damage is found, report it immediately to the delivering carrier.

Always store the product in a clean dry location prior to installation.

Units with controls are not recommended for use in ambient temperatures greater than 95° F. For protection of controls, do not store in temperatures above 135°F.



Caution: Do not use the flow sensor, connecting tubing or damper shaft as a lift point. Damage to the components may result.

Note: Round Retrofit Air Terminals are not designed nor suitable for outdoor use.

In advance of startup, verify all electrical connections are tight and that the correct voltage is supplied to the XG-RA Retrofit Air Terminal per the voltage listed on the label. If factory supplied controls are present, review all wiring diagrams for complete working knowledge.

XG-RA Installation

XG-RA Retrofit Assembly valves are intended for use as replacements for mechanical constant volume regulators in circa 1960-1970 single duct and dual duct air terminals.

XG-RA valves are custom designed for each of several manufactures air terminals, i.e. Titus, Tuttle and Bailey, Anemostat, Buensod, Carnes, Krueger, Barber Colman, Connor and Trane.

For air terminals refer to the submittal sheets for arrangements of replacement XG-RA air valves. All listed manufactures of air terminals have access doors or panels near the mechanical regulators. Some of these terminals require multiple regulators. In such cases multiple XG-RA valve assemblies are used to retrofit the existing mechanical regulators.

For all manufactures the following procedure must be followed while removing and reinstalling the new XG-RA valves.

1. After opening the access to the interior of these old air terminals, it is best to use a small vacuum to remove years of dust and dirt that has collected on the old regulator.
2. Remove existing mechanical regulator(s) and vacuum any remaining dust and dirt. Clean old gasket material from seat where regulator has been secured to ensure a good seal for the new XG-RA valve plate.
3. Secure new XG-RA valve and plate to existing seat where old regulator was secured. Reuse existing studs, nuts or cap screws that were used to attach old mechanical regulator to seat.
4. Drill or punch holes inside of old casing for passage of the velocity pressure tubes (2). Drill another hole for pneumatic actuator(s) or wire if electric actuator is used on XG-RA air valve. Tubing grommets require a 3/8" hole. Wire grommet requires one 9/16" hole.
5. If multiple valves and actuators are used header low pickup lines together, high pickup lines together, branch air lines or wires to actuators together, and extend to outside of existing casing.
6. Install control panel on side of existing casing and connect piping as per control diagram. After ensuing all lines are properly connected, close opening with access panel first removed.
7. Connect main air and branch line tubes to controller per control diagram. If additional relays are used in control sequence, be sure they are set and piped or wired correctly.

Note: After retrofitting to the existing air terminal, central fan system modifications should be considered.

Notes: On larger air terminals, multiple regulators were used. Blank-off-plates are used to cover excess holes where mechanical regulators were removed but spaces were not required for new XG-RA valves due to higher capacity of each XG-RA unit. A simple blank-off-plate may be field fabricated or ordered from the factory.

On Tuttle and Bailey terminals, a central metal baffle runs horizontally across the air terminal. It must be notched to make room for the new XG-RA air valve.

Field Electrical Wiring

- ☑ All field wiring must comply with local building codes and NEC. (ANSI/NFPA 70-2002)
- ☑ When Applicable, electrical control and piping diagrams are attached to exterior of XG-RA Retrofit Air Terminal.
- ☑ Use copper only conductors.
- ☑ XG-RA Retrofit Air Terminal must be properly grounded per NEC 424-14 and 250.
- ☑ Always check product label for voltage and current data to determine the proper wire size and over current protection.
- ☑ These recommendations are not meant to preclude NEC requirements or applicable local building codes and are the sole responsibility of the installing contractor.

Important

If equipped with pneumatic controls, the orientation of the Round Retrofit Air Terminal unit is critical. The pneumatic controls must be mounted right side up. The Round Retrofit Air Terminal must be level within + or - 10 degrees of horizontal, both parallel to the air flow and at right angle of air flow. The control side of the Round Retrofit Air Terminal is labeled with an arrow indicating up. Unless otherwise noted, most electric, analog electronic and digital are not position sensitive and may be installed in any orientation.

Controls

For information on controls provided by other manufactures and installed on the XG-RA Retrofit Air Terminals, contact the local branch or dealer.

Important

XG-RA retrofit Air Terminals with digital controls, if factory programmed, incorporate specific communication addresses. Installing the XG-RA Retrofit Air Terminal in a different location than noted on the XG-RA Retrofit Air Terminal label and building plans, may result in excessive start up labor and is the sole responsibility of the contractor.

Inlet Flow Sensor

XG-RA retrofit Air Terminals are shipped with factory installed (where applicable) pressure differential inlet flow sensors in the primary inlet. **See figure 1** for calibration curve and K factors.

Labeling

XG-RA retrofit Air Terminals are shipped from the factory with multiple information labels.

Control Sequence Label: Affixed to the exterior of the XG-RA retrofit Air Terminal casing. Displays piping/wiring diagram, control sequence number and any optional components.

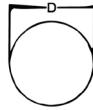
Terminal I.D. Label: Affixed to the exterior of XG-RA Retrofit Air Terminal-Shows tagging, representative name, sales order number, applicable certifications, model number, Made in USA, any applicable electrical data and UL compliance markings.

Orientation Label: Identifies the proper air flow direction and top of XG-RA retrofit Air Terminal.

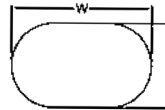
Figure 1
MULTI-QUADRANT AVERAGING FLOW SENSOR


MODEL	INLET SIZE	K FACTOR
XG-TH, XG-FCL, XG-FCQ XG-FVI, XG-DD XG-DH, XG-BP XG-RT, XG-RA XG-TL (4 TO 10) XG-FCL C2 (4 TO 8) XG-FVL C2 (4 TO 8)	04 Rnd	300
	05 Rnd	375
	06 Rnd	540
	07 Rnd	760
	08 Rnd	990
	09 Rnd	1250
	10 Rnd	1640
	12 Rnd	2350
	14 Rnd	3250
	16 Rnd	4100
XG-TL (12)	12 Flat Oval	2270
XG-TL(14) & XG-FVL C6	14 Flat Oval	2850
XG-TL (16)	16 Flat Oval	3550
XG-FVL C4	14x8 Rect	2450
XG-FCL C4	16x8 Rect	2770
XG-FCI, XG-FCQ, & XG-FVI C7	18x16 Rect	6200
XG-TH 20	20x16 Rect	6430
XG-TH 24	24x16 Rect	7270

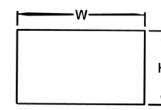
Note: K-factor is the calibration flow constant at 1" w.g. delta P

Rnd


SIZE	D (in.)
04 Rnd	4
05 Rnd	5
06 Rnd	6
07 Rnd	7
08 Rnd	8
09 Rnd	9
10 Rnd	10
12 Rnd	12
14 Rnd	14
16 Rnd	16

Flat Oval


SIZE	W (in.)	H (in.)
12 Flat Oval	13	10
14 Flat Oval	16.25	10
16 Flat Oval	16.25	10

Rect


SIZE	W (in.)	H (in.)
14x8 Rect	14	10
16x8 Rect	16	10
20x16 Rect	20	10
24x16 Rect	24	16

$$Cfm = \sqrt{\Delta p} \times K \text{ Factor}$$

