Approval and Installation Booklet

Motorized Retractable Ceiling Column

Order #: _____

Project Name: _____

Model Number: _____

Quantity: _____

Address: _____

Amico

The Evolution of the Amico Group

Amico was incorporated in 1981 to manufacture Industrial equipment for the construction industry. Within 5 years, the company began a transition to manufacturing Medical products for the Health Care Industry. In 1991, Amico discontinued its Industrial business to focus entirely on manufacturing medical products for the Patient Rooms, Operating Rooms and the Emergency Rooms in a Hospital. By 2023, the company had grown significantly due to the needs of an aging population, new technology, and the pressures imposed by the COVID pandemic. Today Amico manufactures a very broad range of hospital products within a campus of 8 buildings occupying over 800,000 square feet.

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NOTE: Amico requires all pages to be signed and dated before fabrication begins.

Product Description

The motorized retractable ceiling column shall be an Amico Alert-1 series. The column shall consist of an outer housing for rigid mounting at the finished ceiling level and a telescopic inner housing capable of being extended to a maximum of 18" (457 mm).

The retractable inner housing of the column is activated by a motorized actuator. Extension or retraction of the column can be controlled via the use of either the local switch and/or remote wall switch (see page 12). Internal guide rollers allow for smooth movement when extending or retracting.

The housings are made of 16 gauge stainless steel with a #4 satin finish and are complete with removable access panel, stainless steel ceiling collar and a heavy gauge steel mounting plate.

The routing of medical gas hoses and electrical conduits is as follows:

- Medical gases: gas-specific hose assemblies are connected to copper riser pipes (type “K”) for connection above the finished ceiling. Gas riser pipes extend 8" (203 mm) above the riser plate.
- Electrical devices: flexible metal conduits are routed to the top of the unit.

All threaded connections comply with NFPA, CSA and DISS recommendations preventing interchanging of connections. All services are pre-assembled and factory tested.

Line voltage devices are pre-wired. Pull strings are provided for low voltage provisions and ground jacks, unless otherwise specified.

Cleaning

The Amico outlets are factory cleaned for oxygen service. Exposed surfaces of the outlet may be cleaned with a mild detergent solution or wiped with a disinfectant commonly used in patient rooms that is compatible with plastics, anodized aluminium and die cast zinc.

Inspection and Testing

Medical gas outlets should be inspected periodically or at least once a year. The test should be in accordance with NFPA 99 “Gas and Vacuum Systems,” or CSA Z7396.1 “Nonflammable Medical Gas Piping System.”

Test for Leaks: ensure that no leaks exist, with or without the adapter inserted.

Test for indexing: only a mating gas specific adapter should insert smoothly into the outlet, latch and be retained.

Test for flow:

- Gas outlets: 120 l/min. (4.2 Scfm) @ 345 kpa (50 psi), maximum allowable pressure drop is 28 kpa (4 psi)
- Nitrogen outlet: 400 l/min. (14.1 Scfm) @ 1,250 kpa (180 psi), maximum allowable pressure drop is 70 kpa (10 psi)
- Vacuum outlet: 30 l/min. (1.1 Scfm) @ 54 kpa (16 inHg), maximum allowable pressure drop is 13 kpa (4 inHg)

Refer to the appropriate standards for the proper way of performing the flow test.

NOTE: Amico medical gas and vacuum outlets meet and exceed these requirements at the time of manufacture. However, piping source capacity, sizing and restrictions may prevent outlets from attaining these values.

Standard Range of Column Retraction

Please Select One of the Following Options:

14" (356 mm) Retraction

LOW CEILING HEIGHT

☐ 108" (2743 mm)

18" (457 mm) Retraction

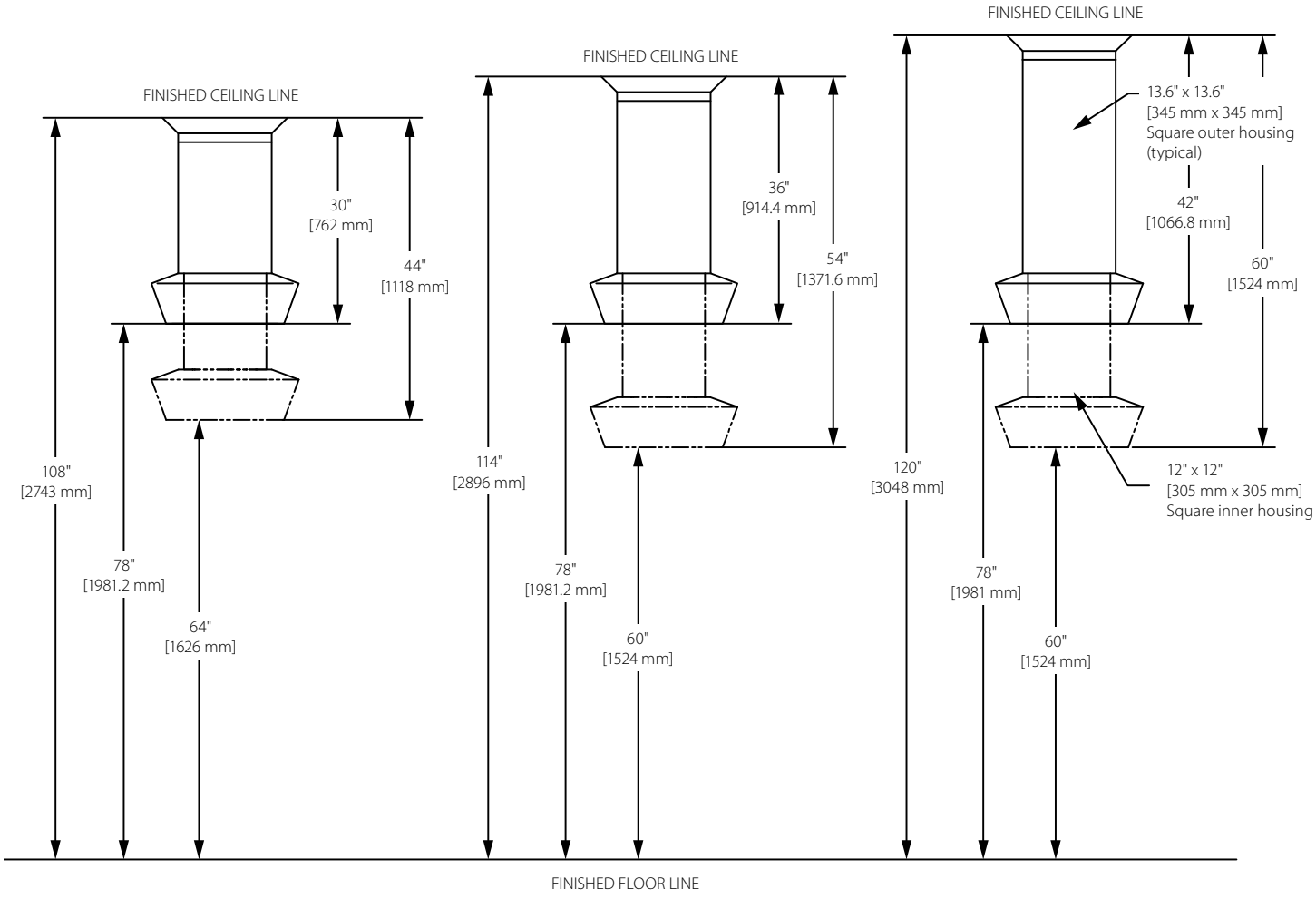
MEDIUM CEILING HEIGHT

☐ 114" (2896 mm)

18" (457 mm) Retraction

HIGH CEILING HEIGHT

☐ 120" (3048 mm)



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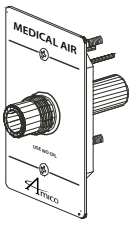
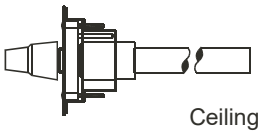
Device and Accessory Chart



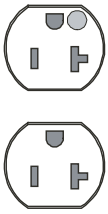
☐ ***DI XXX**

DISS



☐ **PE**

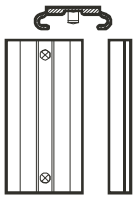
Ceiling Column
Passive Evacuation
(19 mm/33 mm)



☐ **E9-RED**
☐ **E10-IVORY**

Duplex Receptacle
125V/20a
(US/International)

Quick Connect Style Latch Valves
available upon request
(Check local code first)



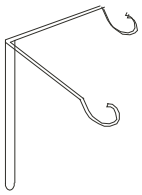
☐ **SL**

Vacuum
Bottle Slide

☐ **E11-RED**
☐ **E12-IVORY**

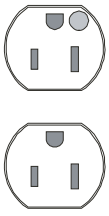
Single Receptacle
125V/20a
(US/International)

Quick Connect Style Latch Valve Requested:



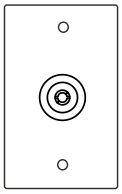
☐ **IV**

Stainless Steel
IV Hook
(Duplex only)



☐ **E5-RED**
☐ **E6-IVORY**

Duplex Receptacle
125V/15a
(CAN/International)



☐ **GJ**

Ground Jack Receptacle
Single Bender
(SLR-3)
GREEN

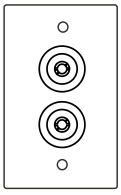
☐ **DJ** ☐ **DP**

DJ: Data-Telephone Communication
Jack or Duplex Receptacle
(Provision Only)

DP:Duplex Receptacle Provision

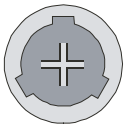
☐ **E7-RED**
☐ **E8-IVORY**

Single Receptacle
125V/15a
(CAN/International)



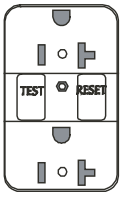
☐ **GJ2**

Ground Jack Receptacle
Dual Bender
(SLR-3)
GREEN



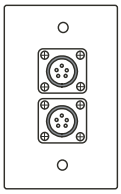
☐ **TL**

Twist-Lock
Receptacle
Hubble 23000-HG
125V/20a



☐ **E13C-RED** ☐ **E13-RED**
☐ **E14C-IVORY** ☐ **E14-IVORY**

Ground Fault Circuit
Interrupter
(C = Canadian)



☐ **MJ**

Monitor Jack Duplex
(5-pin shown)
Amphenol Model
10-825806-05S
97-14S-5S

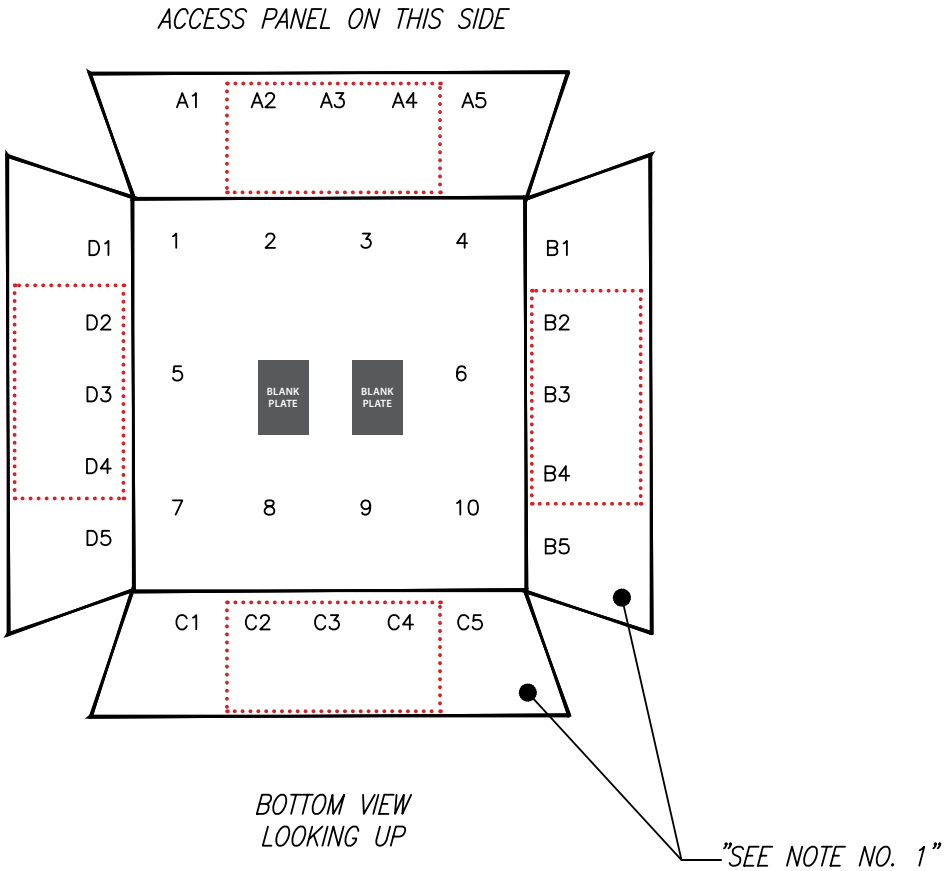
NOTES:

1. All electrical devices are Hospital Grade.
2. DISS outlets recommended per NFPA 99 current code.
3. Carbon dioxide outlets are not available in Puritan-Bennett. Nitrogen outlets are only available in DISS.
4. Passive WAGD outlets are available in DISS only.
5. * PE – Passive Evacuation for retractable ceiling columns will provide 240" (6,096 mm) length of 0.75" (19.05 mm) PVC hose for connection in ceiling.
6. Instrument Air is available in DISS only.

Approval Signature	Date	Phone No.

Device Placement (Bottom View)

Please populate the diagram below by indicating the locations of all required services.



Is a Local Switch Required?
If YES, please provide the location (e.g. B1)
- Yes ☐
- No ☐

Is a Remote Wall Switch Required?
- Yes ☐
- No ☐

Nitrogen Control Panel
- Yes (for US orders only) ☐
- No ☐

Location of Nitrogen Control Panel
- Side A ☐
- Side B ☐
- Side C ☐
- Side D ☐

Please Specify Outlet Language
- English (NFPA) ☐
- English (ISO) ☐
- French ☐
- Spanish (NFPA) ☐
- Spanish (ISO) ☐

Gas Legend

Oxygen	= O	☐
Medical Air	= A	☐
Vacuum	= V	☐
Nitrous Oxide	= 2	☐
Nitrogen	= N	☐
Carbon Dioxide	= C	☐
WAGD (NFPA)	= W	☐
AGSS (ISO)	= E	☐
Instrument Air	= I	☐

NOTES:

1. Two electrical/communication/medical gas devices cannot be placed together at any corner.
2. A maximum of 10 gas outlets are allowed on the column.
3. All electrical devices must be located within section A, B, C or D only.
4. A Nitrogen Control Panel will occupy three spaces on the bulkhead (e.g. A2 to A4). Indicated in drawing with red dotted line:

Approval Signature _____ Date _____ Phone No. _____

Electrical Diagram (Bottom View)

Please Select One of the Following:

☐ Amico recommended circuit schedule based on layout

☐ Custom circuit schedule – Please specify on circuit chart

Receptacle Type:

North America ☐

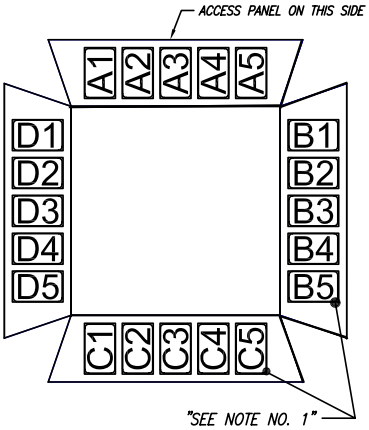
British ☐ (Simplex only)

German ☐ (Simplex only)

Input Voltage:

120V ☐

230V ☐



Circuit Chart

CIRCUIT NUMBER	CIRCUIT NUMBER
A1 *	B1 *
A2	B2
A3	B3
A4	B4
A5 *	B5 *

CIRCUIT NUMBER	CIRCUIT NUMBER
C1 *	D1 *
C2	D2
C3	D3
C4	D4
C5 *	D5 *

* SEE NOTE NO. 1

Please Select One of the Following Wiring Standards:

☐ **Standard Wiring for US/International (NFPA):**
LIVE/HOT - 12 Ga. THHN Wire Black
NEUTRAL - 12 Ga. THHN Wire White
GROUND - 10 Ga. THHN Wire Green

☐ **Isolated Power Wiring for US/International (NFPA):**
LIVE/HOT - 12 Ga. XHHW Wire Brown
Distinctive Color Stripe
NEUTRAL - 12 Ga. XHHW Wire Orange with
GROUND - 10 Ga. XHHW Wire Green

☐ **Standard Wiring for Canada (ISO):**
LIVE/HOT - 12 Ga. RW90 Wire Black
NEUTRAL - 12 Ga. RW90 Wire White
GROUND - 10 Ga. RW90 Wire Green

☐ **Isolated Power Wiring for Canada (ISO):**
LIVE/HOT - 12 Ga. RW90 XLPE Wire Brown
NEUTRAL - 12 Ga. RW90 XLPE Wire Orange
GROUND - 10 Ga. RW90 XLPE Wire Green

Please Select One of the Following Ground Pin Orientations for Receptacles:

☐ UP ☐ DOWN

NOTES:

1. Two electrical/communication/medical gas devices cannot be placed together at any corner.
2. Flex Metal Conduit 9/16" (14.28 mm), to be used for all electrical devices/provisions.
3. All conduits and wires will extend a minimum of 12" (305 mm) above finish column for connection to riser plate.
4. Line voltage devices are pre-wired. Pull strings are provided for low voltage provisions and ground jacks unless otherwise specified.
5. British or German receptacles cannot be positioned side by side e.g. A1 and A2.

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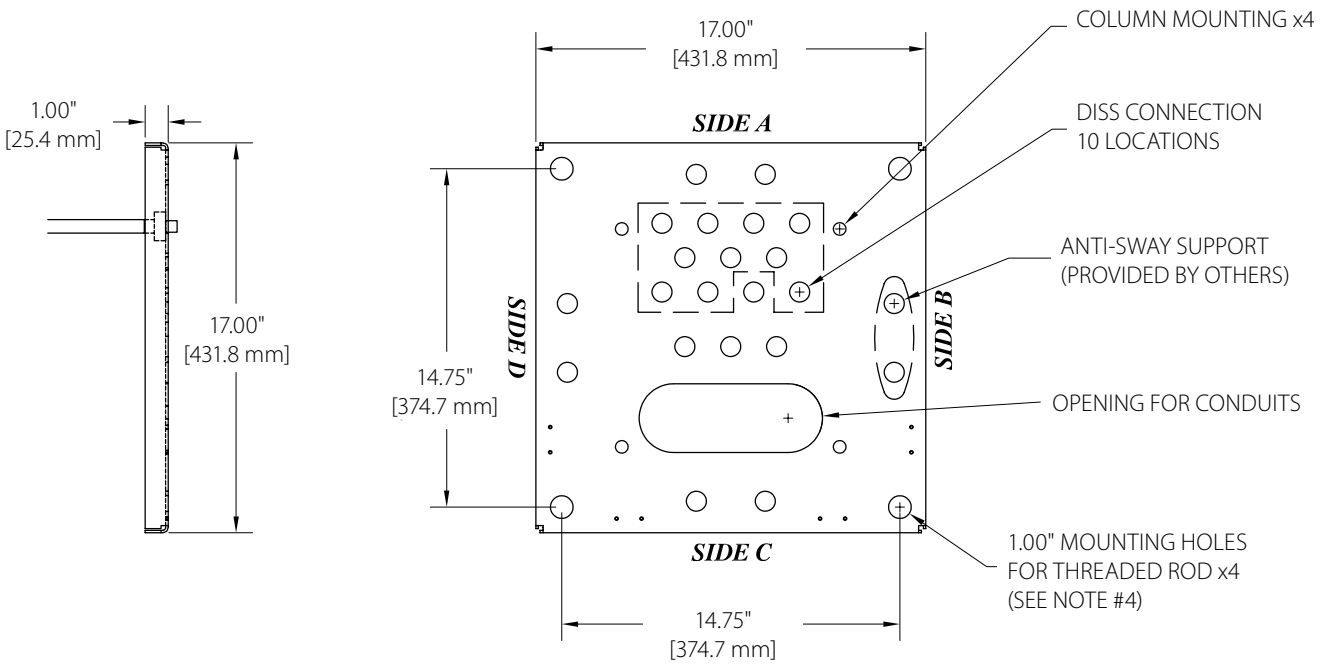
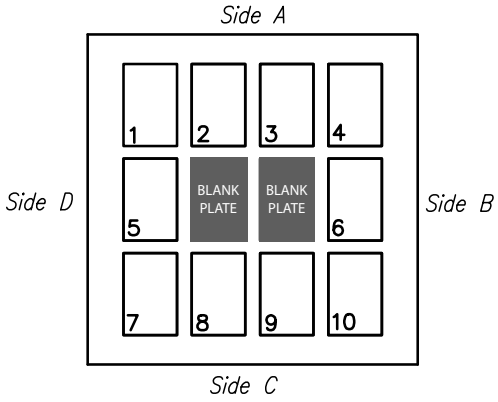
Riser Plate Detail

Access Panel This Side
Bottom View Looking Up

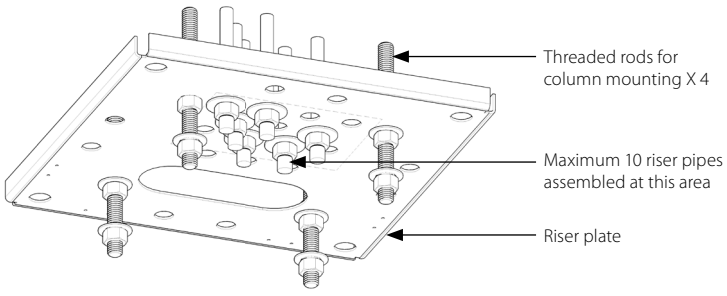


Access Panel This Side



Bottom View Looking Up

Riser Plate



Bottom View Looking Up

NOTES:

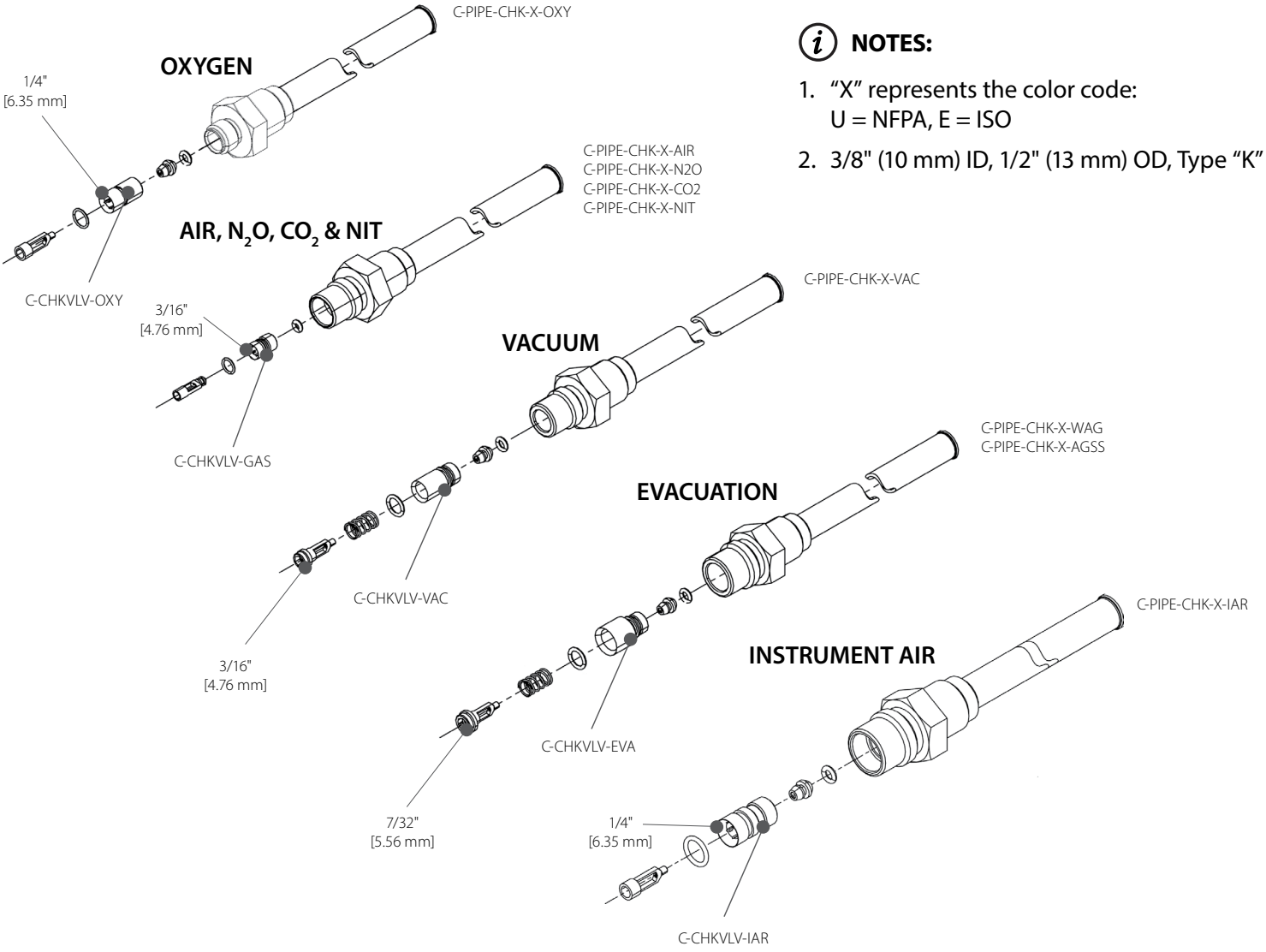
1. Riser plate is assembled with riser pipes.
2. Gas riser pipes: 3/8" (10 mm) ID, 1/2" (13 mm) OD (Type K). They extend 8" (203 mm) above the riser plate.
3. Final layout of services, as specified in this booklet, will determine exact gas termination locations.
4. There will be four 1/2"-13 x 8" threaded rods attached to the riser plate. Each rod contains four 1/2" nuts, four 1/2" washers and a nylon retaining washers.

Approval Signature	Date	Phone No.

Gas Riser Pipe Assembly

⚠ CAUTION

- Before brazing the riser, an intermittent blow-out purge is required to ensure all debris is cleared from the pipeline system
- Installations of the Riser should be done in accordance with NFPA 99 and CSA Z7396.1
- Risers with demand checks should avoid excess or direct heat near the brass end



ⓘ NOTES:

1. "X" represents the color code:
   U = NFPA, E = ISO
2. 3/8" (10 mm) ID, 1/2" (13 mm) OD, Type "K"

Removable Check Steps with Allen Key:

Appropriate Allen Key size	Gas Type
1/4" (6.35 mm)	Oxygen
3/16" (4.76 mm)	Air, N2O, CO2, NIT
3/16" (4.76 mm)	Vacuum
7/32" (5.56 mm)	Evacuation
1/4" (6.35 mm)	Instrument Air

Approval Signature _____ Date _____ Phone No. _____

Mounting of the Ceiling Column

1. Remove the outer and inner access panels from the ceiling column.

2. Cut the red cable tie(s) holding the gas hose(s) at the top of the ceiling column.

IMPORTANT: Do not cut free the bundle(s) of gas hose(s) and/or electrical conduit(s) held with white cable ties. If the white cable ties must be cut, be sure to replace the cable ties at the same location after connection.

3. Cut and remove the excess length of conduit(s) that are not required to attach to the appropriate junction box(es) (by others).

NOTE: The smooth movement of the retractable ceiling column will be affected if the above instructions are not followed.

4. Remove the four nuts and flat washers from the bottom of the riser plate and hoist the ceiling column onto the riser plate.

NOTE: Ensure that the open access panel of the ceiling column is aligned with the access panel label on the riser plate, then secure the ceiling column into place with four washers and four nuts. Ensure the ceiling column is level.

5. Attach the conduit(s) to the appropriate junction box(es) (by others) with the ceiling column fully extended. Ensure the electrical conduit(s) are coiling around the handle shaft with very little slack as it heads up towards the top of the ceiling column.

6. Attach the gas hoses to the appropriate outlets in the riser plate. Slowly retract the lower telescoping portion of the ceiling column and ensure that the electrical conduit(s) and gas hoses do not interfere with the smooth movement of the ceiling column as it retracts.

IMPORTANT: Extend and retract the lower telescoping portion of the ceiling column a few times and ensure that the electrical conduit(s) and gas hoses do not get pinched by the springs, the lower telescoping portion itself or the riser plate mounting bolts.

7. Remove the plastic film from the access plates. Attach the inner access plates onto the lower telescoping portion of the ceiling column and test the movement of the ceiling column to ensure that the movement is smooth.

8. Attach the outer access plate onto the ceiling column and remove the plastic film from the mounted ceiling column.

9. Remove the plastic film from the ceiling trim plate. attach the four ceiling trim plates at the top of the ceiling column.

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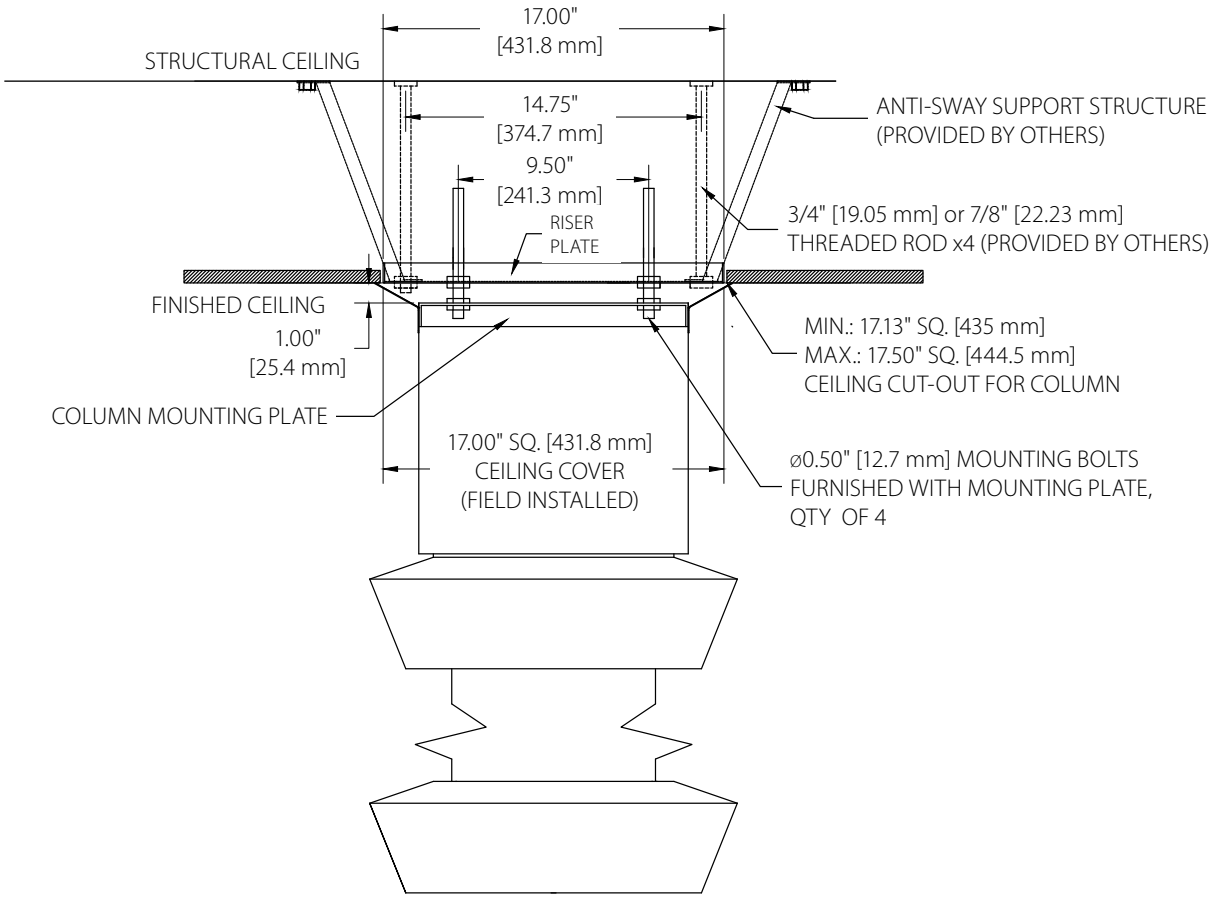
Mounting of the Ceiling Column

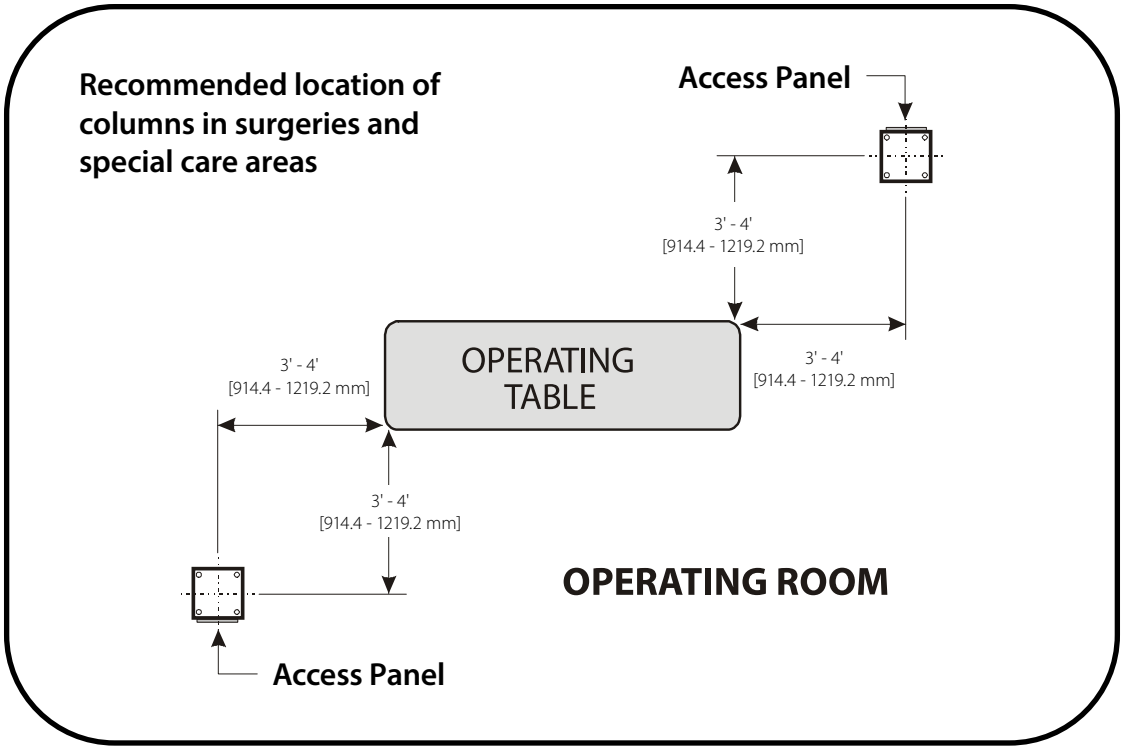


NOTES:

1. All labour and material for installation of riser plate to anti-sway support structure supplied by others.
2. General contractor has final responsibility for the strength and stability of the mounting structure that is supplied by others.
3. Gas riser pipes extend 8" (203 mm) above the riser plate.
4. Early delivery of the riser assembly is available upon customer's request.

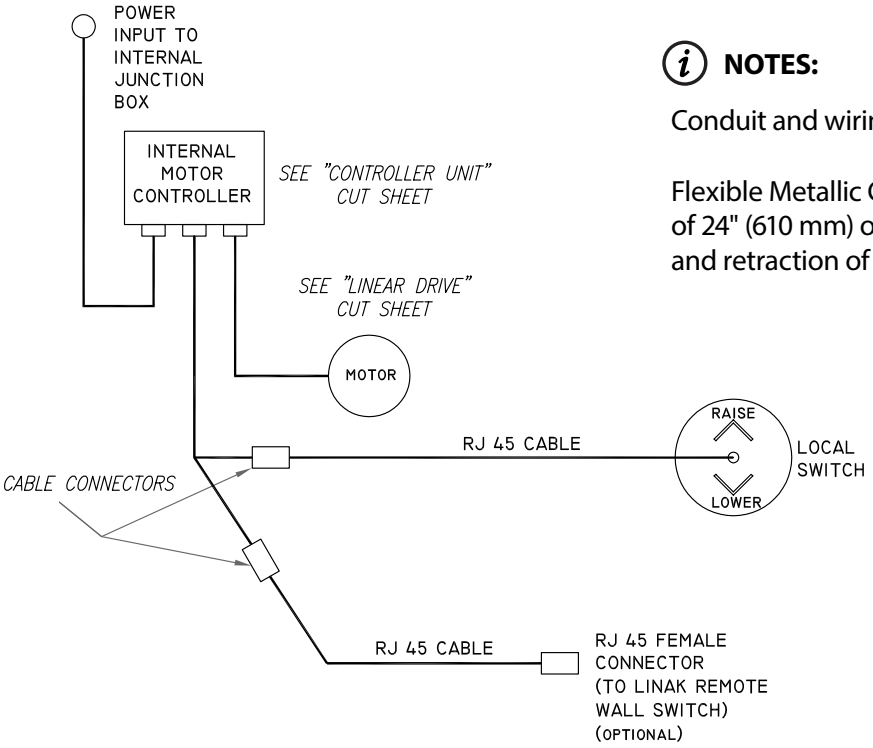
Approval Signature	Date	Phone No.

Typical Location View



Approval Signature | Date | Phone No.

Wiring Diagram

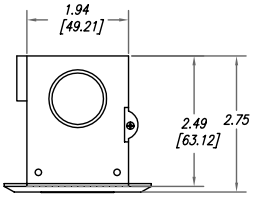


NOTES:

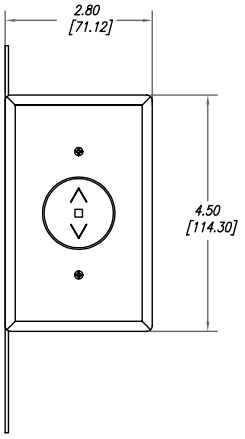
Conduit and wiring to internal junction box by others.

Flexible Metallic Conduit (FMC) must be used. Allow a minimum of 24" (610 mm) of wiring to internal junction box for extension and retraction of column.

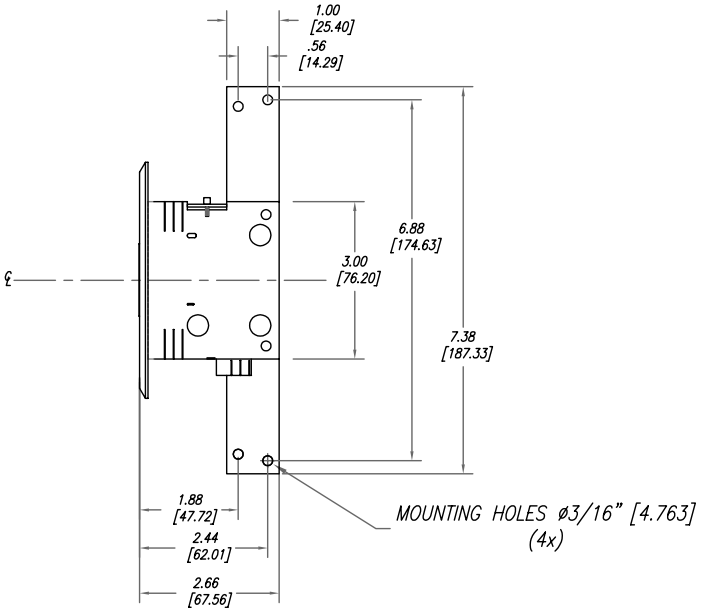
Optional Remote Wall Switch Assembly



TOP VIEW



FRONT VIEW



SIDE VIEW

Approval Signature | Date | Phone No.

Control Box Specifications

The control box is designed to operate a maximum of two linear, 24 V, direct current actuators.

It has an integrated transformer and rectifier with two plug connectors for linear actuators and one 8 pin DIN-socket connector for a switch.

The switch shall be an optimal hand-held or foot switch or an infrared receiver that can be plugged in directly at the control element connection. All control and motor supply cables are locked after correct connection and sealed by sealing rings.

When in no-load operation, the Amico control unit shall be the auxiliary transformer which is active and only the control voltage for the operating element (standby circuit) shall be maintained. The transformer shall have thermal protection to avoid overheating.

Amico products comply with NFPA 99 and CSA Z7396.1.

- Low voltage control unit
- Protected against overheating
- Maintenance free
- Minimum electromagnetic interference fields radiated
- Total current cut-off prevents exceeding of current consumption and protects drives

Actuator Connection	2
Mains Voltage	120 V / 60 Hz & 230 V / 50 Hz
Output Voltage	24 V DC
Duty Cycle (On/Off)	1 min. / 19 min.
Ambient Temperature	+5°C to +40°C
Protection Class	IPX5
Weight	3.2 lb (1.5 kg)

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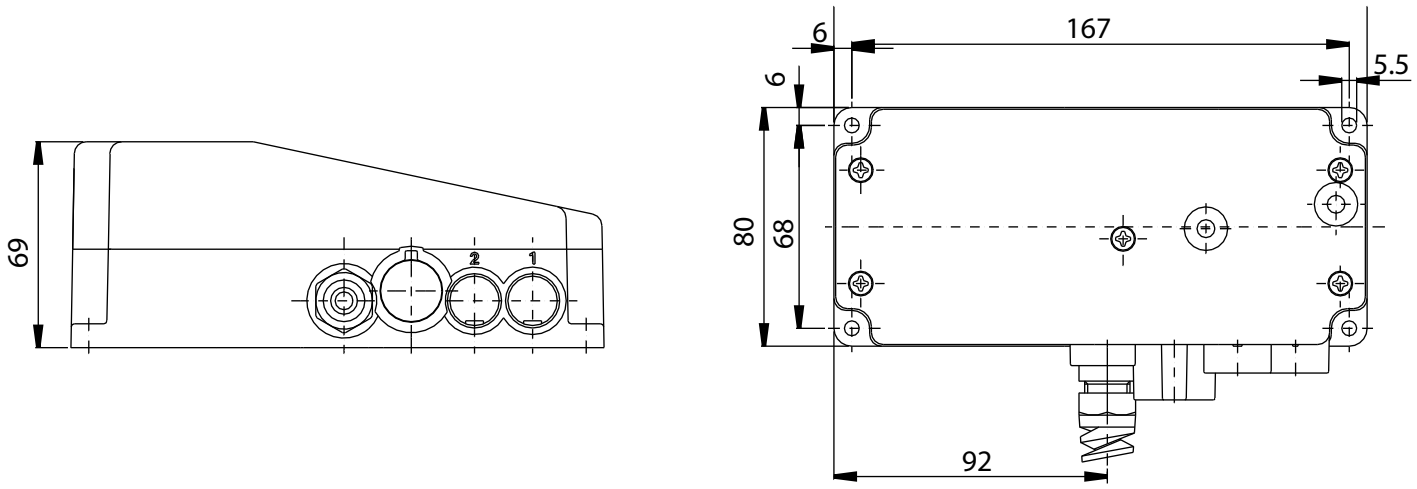
Control Box Dimensions



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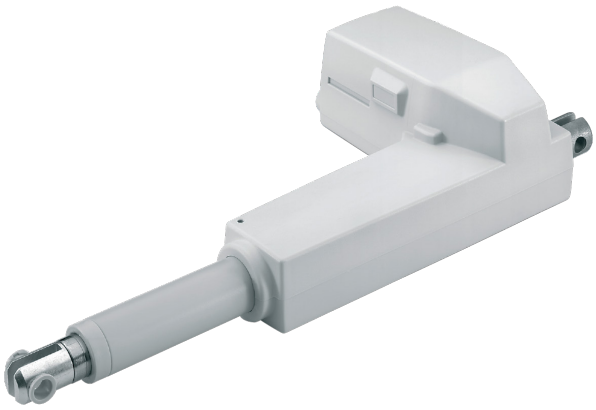
Linear Drive Specifications



The linear actuators shall be designed for seating and reclining operations. It adjusts the column to the required level by raising and lowering it.

The drive is provided by a DC motor with worm gear which acts on a trapezoidal threaded spindle drive or ball screw system.

The actuators shall be protected against overheating by the Magnetic control unit.

Amico actuators shall use a push / pull force. They shall have a self-locking function which is activated by a built-in brake. A safety nut shall also prevent overload of the actuator.

All forces shall be transmitted through die-cast metal parts.

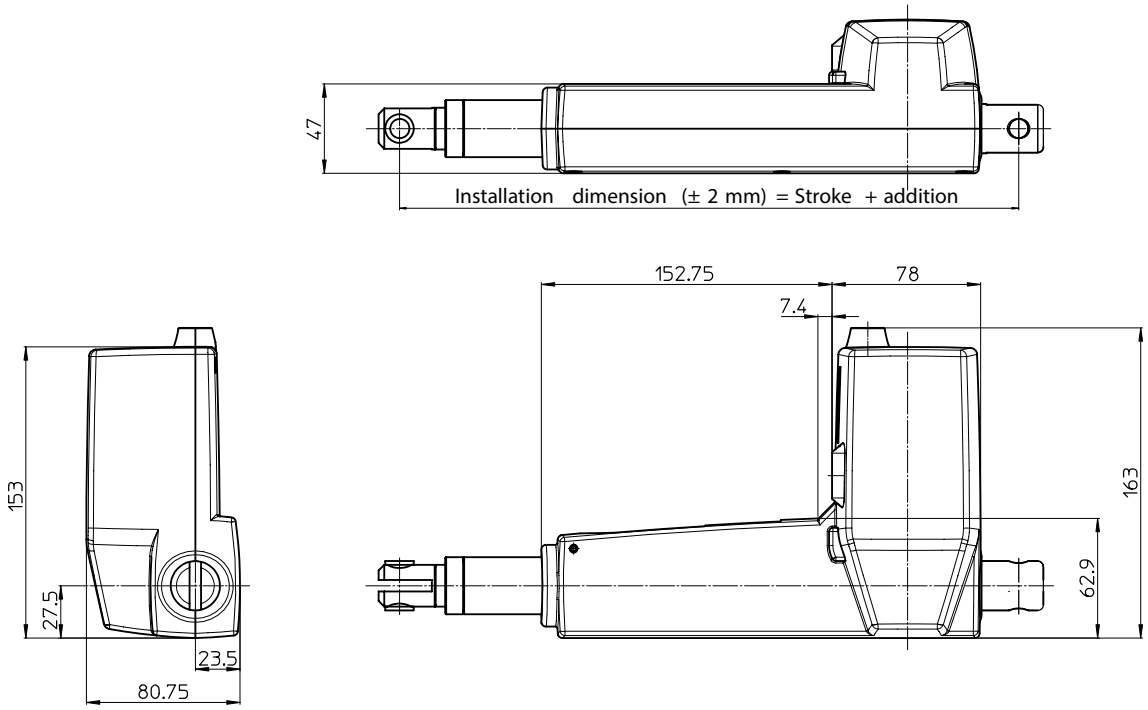
Amico products comply with NFPA-99 and CSA Z7396.1.

- High-quality, die-cast plastic parts, stainless steel push tubes and ultrasonic-welded plastic parts guarantee high performance
- Customizable stroke and mounting lengths in increments of 1.97" - 15.75" (50 - 400 mm) and increments of 3.94" (100 mm) over the range of 15.75" - 27.56" (400 - 700 mm); other options are available upon request
- Maintenance free with a long lifetime
- Push force is reduced by 50% when operated in parallel with the control unit.
- Quiet running

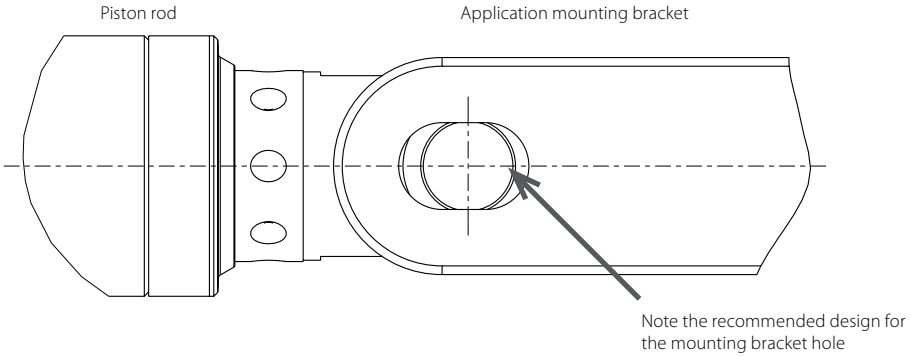
Push / Pull Force	1.5 KN
Constant Speed at 24 V	14 mm/sec.
Stroke	1.97" - 27.56" (50-700 mm)
Voltage	24 VDC
Power Consumption	70 W
Current Consumption 24 V	2.9 A
Duty Cycle (On/Off)	2 min. / 18 min.
Ambient Temperature	+5°C to +40°C
Protection Class	IPX6
Protective Tube	1.18" (30 mm) OD
Weight	6.8 lb (2.8 kg)

Approval Signature _____ Date _____ Phone No. _____

Linear Drive Dimensions



Mounting Bracket Instructions:



NOTE: To avoid damage to the actuator. When the application is in the "rest" position there should be no load / tension on the actuator.

Approval Signature _____ Date _____ Phone No. _____

Servicing

⚠ **WARNING:** Always shut off source pressure at designated zone valves before servicing any gas outlet. The periodic inspection of gas outlets and electrical outlets is recommended to ensure proper safety and operation.

A) Gas Outlet

Inspect the gas outlet connection points for the following:

1. Proper and legible identification
2. Worn or defective engagement mechanisms
3. Leaks
4. Deformed or damaged threaded connections
5. Loose fasteners

⚠ **WARNING:** Use care when wiping down electrical outlets to prevent electrical shock.

B) Electrical

Inspect the electrical outlet connection points for the following:

1. Proper and legible identification
2. Deformation or damage
3. Discoloration

Approval Signature	Date	Phone No.

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