

**Subject: EpiCare™ Powered Telescoping Ceiling Column (P680CPT01)  
Installation Instructions**

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Tools required:	Ratchet wrench	3/4" deep socket
	Drive extension	Level
	Phillips head screwdriver	Portable lift
	Screwdriver	Ladder
	Pneumatic supply source	Sharp knife
	Lift supports	

**Setup**

1. Make sure the rough-in plate (A) has been installed (see figure 1 on page 2). Refer to the latest revision of the *EpiCare™ Telescoping Ceiling Column Rough-In (P684TP) Installation Instructions (is197)*.
2. Make sure the powered telescoping ceiling column (G) is in the proper room for its length and that other equipment is installed around the ceiling column.

**NOTE:**

The ceiling column is shipped in the upright and retracted position.

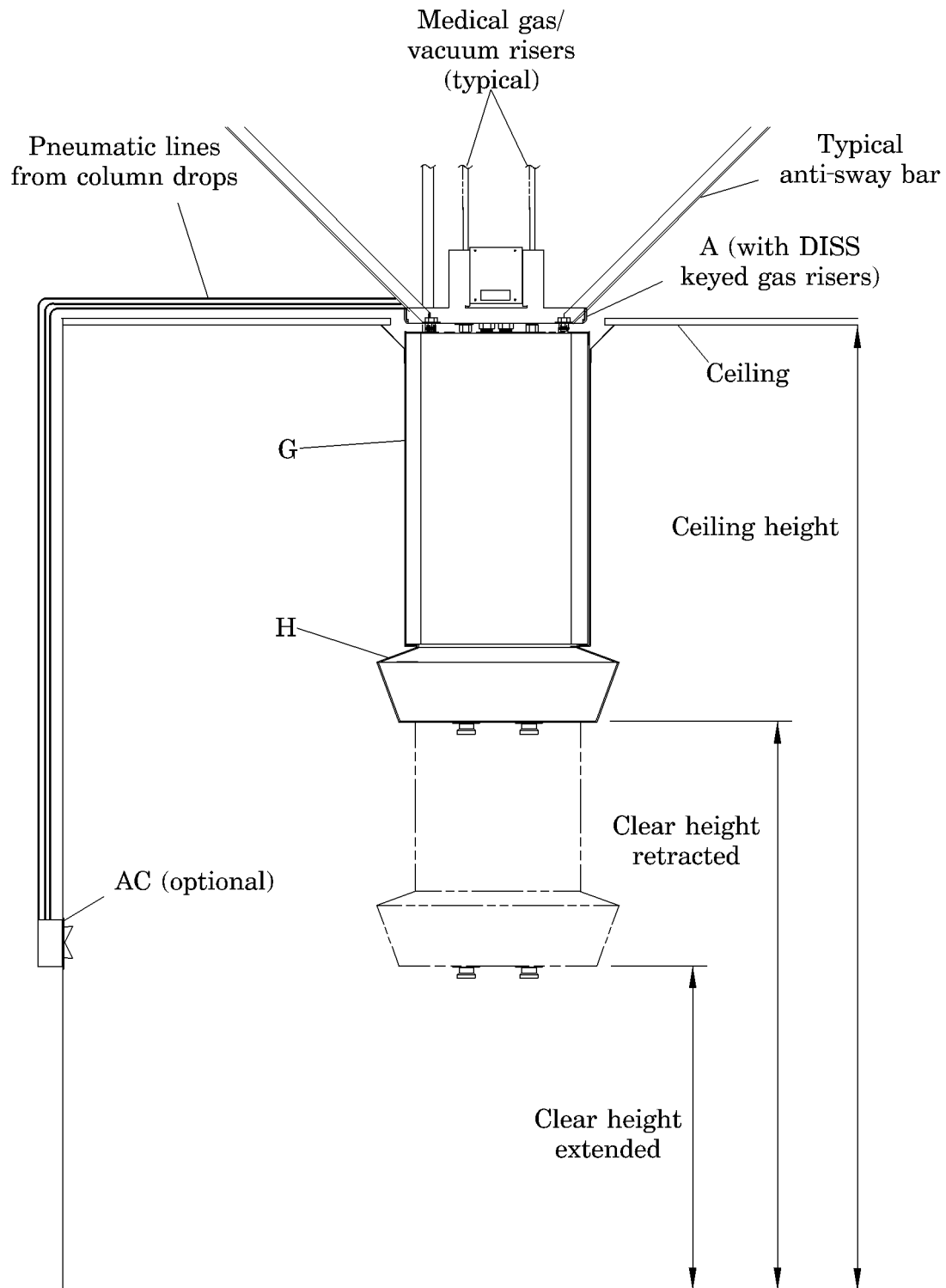


**CAUTION:**

Carefully read and follow all installation instructions. Failure to follow these installation instructions exactly could result in equipment damage due to premature component fatigue.

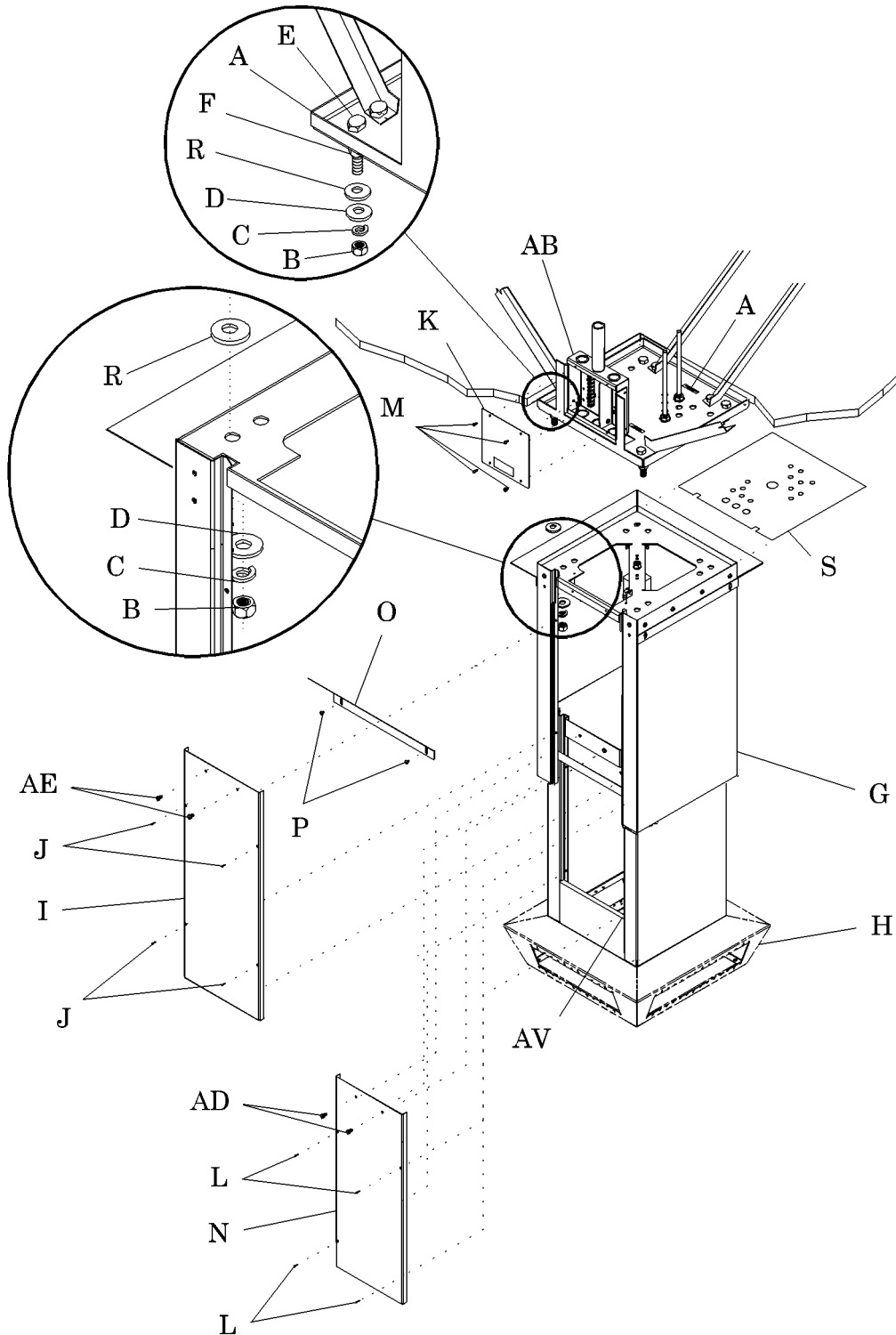
3. Follow these installation instructions carefully.

**Figure 1. Setup Information**



- Remove the ceiling column (G), screws (P), and ceiling trim (O) from the shipping container (see figure 2 on page 3).

**Figure 2. Installation Information**



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5. Ensure the cardboard rough-in template (S) remains on top of the unit.
6. When determining how to position the ceiling column (G), consider the following:

**NOTE:**

The ceiling column is typically installed with the access panels facing opposite the surgical area.

- Avoid interference between the access panels (I) and (N) and other equipment.
- If you need to determine the orientation of the services on the service head (H), consult the as-built drawings.
- Align the access panels (I) and (N) with the label on the rough-in plate (A).
- Make sure the facility medical gas labels match the color-coded tubes of the ceiling column (G) (see table 1 on page 4 and table 2 on page 5).

**Table 1. Gas Labels and Color Codes for the United States**

<b>Gas Service</b>	<b>Hose Color</b>	<b>Label</b>
Oxygen	Green	Black lettering, green background
Nitrous oxide	Blue	White lettering, blue background
Air	Yellow	Black lettering, yellow background
Vacuum	White	Black lettering, white background
Evacuation	Purple	White lettering, purple background
Nitrogen	Black	White lettering, black background
Carbon dioxide	Gray	Gray lettering, white background
Helium	Brown	Brown lettering, white background

**Table 2. Gas Labels and Color Codes for Canada**

Gas Service	Hose Color	Label
Oxygen	White	Green lettering, white background
Nitrous oxide	Blue	White lettering, blue background
Air	Black/white	Black and white alternating lettering and background
Vacuum	Yellow	Black lettering, yellow background
Evacuation	Purple	White lettering, purple background
Nitrogen	Black	White lettering, black background
Carbon dioxide	Gray	Gray lettering, white background
Helium	Brown	Brown lettering, white background

7. Using a ratchet wrench, a drive extension (6" - 8" long), and a ¾" deep socket, remove the four nuts (B), lockwashers (C), washers (D), and washers (R) from the bolts (E) on the rough-in plate (A).
8. Keep all the nuts, lockwashers, and washers for later installation.
9. Ensure the nut (F) remains securely tightened to the bolt (E).



**WARNING:**

Make sure the pneumatic supply has no oil in it. Failure to do so could result in contamination of the surgical area.

10. For procedures on making pneumatic line connections, see the latest revision of the [EpiCare™ Ceiling Column Service Manual \(man134\)](#).



**CAUTION:**

Do not to break off the red plastic plug when removing it from the ¼" pneumatic connector. Doing so could result in equipment damage.

11. Get the temporary pneumatic supply source. It can be from a bottled or mechanically compressed supply of gaseous nitrogen, air, or other inert gas.
12. Connect a temporary pneumatic line from the pneumatic supply to the ¼" opaque nylon pneumatic line coming out of the top of the ceiling column (G).
  - a. Make sure the pneumatic supply is regulated to 80-110 psi (552-758 kPa).
  - b. Before attaching the pneumatic line, be sure to remove the red plastic plug from the connector without breaking it off.

**NOTE:**

This is a temporary connection. The ceiling column needs to be extended to gain access to the inside of the ceiling column.

13. Connect or block off the remote switch (AC) lines as applicable (see figure 1 on page 2).



**WARNING:**

Wear safety glasses when applying pneumatic pressure. Failure to do so could result in eye injury.

14. Put on safety glasses.
15. While holding the ceiling column (G) stationary, press and hold the *down* side of the UP/DOWN pneumatic control switch located on one side of the service head (H) (and/or on a remote) and pull on the service head to fully extend the ceiling column (G). Make sure no gas hoses are bent, kinked, or damaged.
16. Using a screwdriver, remove the two screws (AE) at the top of the outer access panel (I) (see figure 2 on page 3).
17. Using a phillips head screwdriver, loosen the screws (J), and remove the outer access panel (I).

**NOTE:**

It may be necessary to lightly tap the outer panel to assist in removal.

18. Using a screwdriver, remove the two screws (AD) at the top of the inner access panel (N).
19. Using a phillips head screwdriver, loosen the screws (L), and remove the inner access panel (N).

**NOTE:**

The bottom panel does not have to be removed for installation of the ceiling column.

20. To retract the ceiling column (G), press the *up* side of the UP/DOWN pneumatic control switch and retract the ceiling column (G) approximately 12" (30 cm).
21. Make sure the conduit and hoses do not catch or bind.
22. Turn off the temporary pneumatic source connected in step 12.
23. Relieve the pneumatic pressure from the system by pressing and holding the pneumatic UP/DOWN switch in the *up* position, and then the *down* position for a short period of time.



**WARNING:**

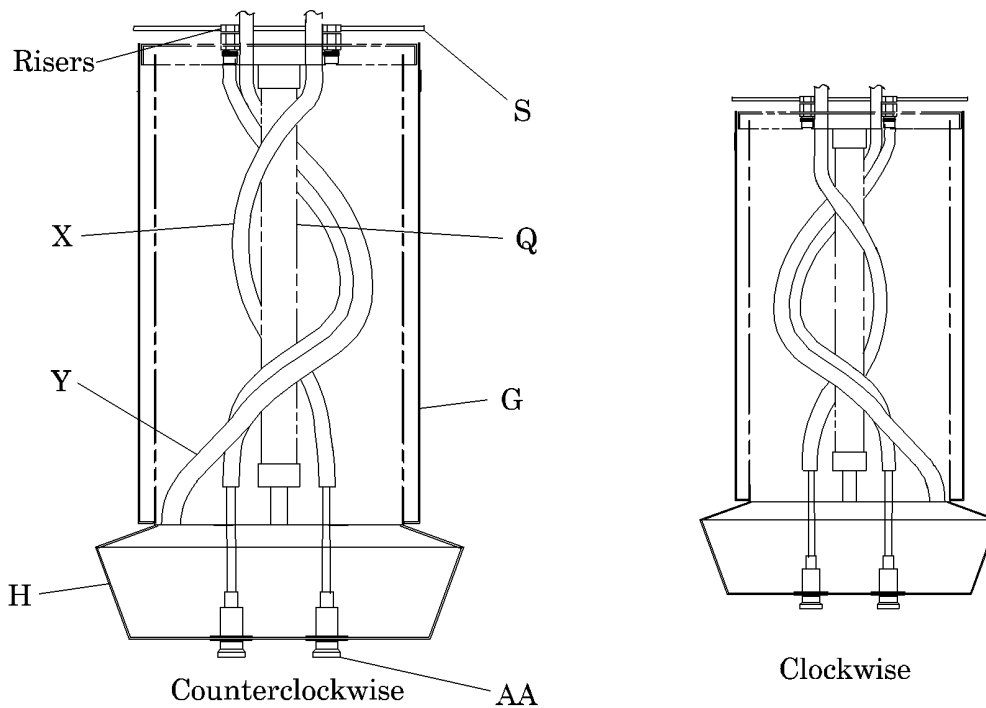
Do not disconnect pneumatic system components or pneumatic lines from fittings without turning off the pneumatic source and relieving the pneumatic pressure. Personal injury or equipment damage could occur.

24. Disconnect the temporary pneumatic connection.

The gas hoses and electrical conduits are pre-arranged within the ceiling column at the factory in a clockwise or counterclockwise spiral pattern around the pneumatic cylinder (Q) (see figure 3 on page 7). This hose and conduit routing must be maintained to ensure the optimal performance and life of the flexible components.

25. If they are not already, route the hoses (X) and electrical conduits (Y) in a spiral pattern around the pneumatic cylinder (Q).

**Figure 3. Gas Hose and Conduit Routing**



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26. To determine the correct holes for the gas hoses (X) in the cardboard rough-in template, consult the as-built drawings.
27. Pull the gas hoses (X) and electrical conduits (Y) through the correct holes in the cardboard rough-in template (S), extending them 3.0" (7.6 cm) to 4" (10 cm) above the template.
28. Consult the as-built drawings to determine the correct holes for the hoses (X) and conduits (Y) in the cardboard rough-in template.

29. Do not remove the cardboard template until all the gas hoses and conduits are connected.
30. Position the ceiling column (G) on a lift capable of safely lifting the ceiling column in position:
  - Make sure the ceiling column (G) is stable on the lift.
  - Make sure the ceiling column (G) is not sitting on any gas outlets (AA) located on the bottom of the service head (H).

## Installation

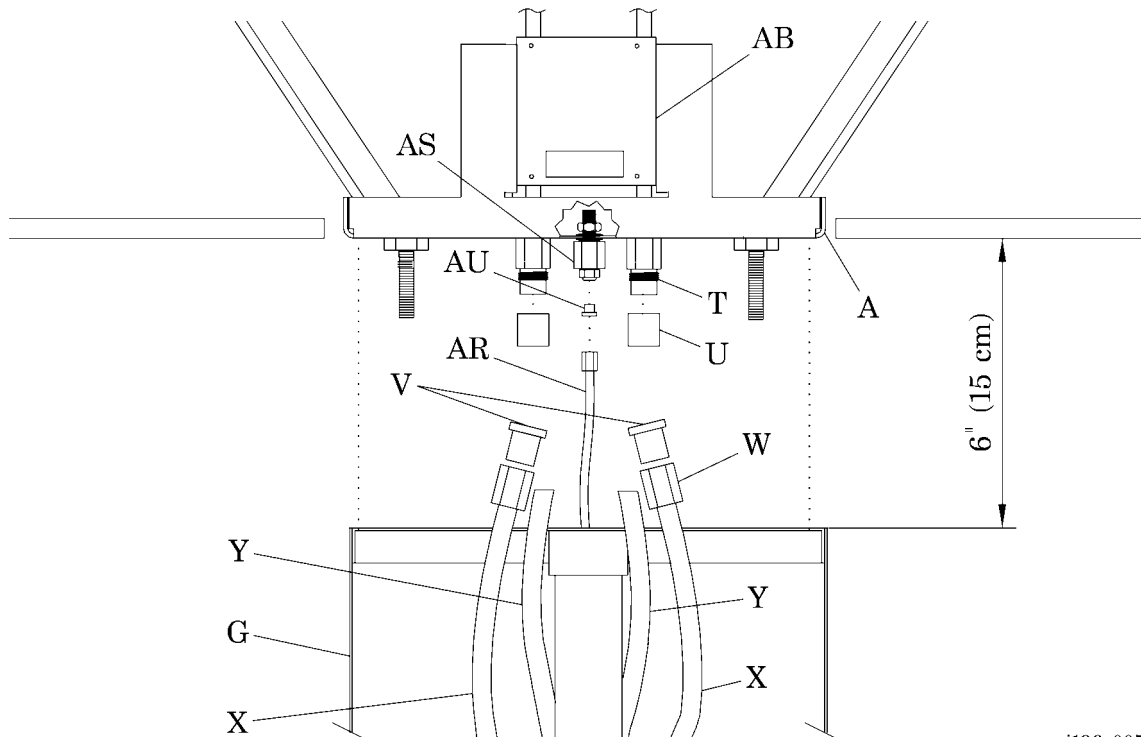


### WARNING:

Follow the product manufacturer's instructions for operating the lift. Failure to do so could result in personal injury or equipment damage.

1. Following the lift manufacturer's instructions, lift the ceiling column (G) into position as follows:
  - a. Carefully lift the ceiling column (G) up close to the rough-in plate (A) (see figure 4 on page 8).
  - b. Make sure there is enough room to connect the hose nuts (W) to the fittings (T).

**Figure 4. Medical Hose, Pneumatic, and Conduit Connection**



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**WARNING:**

Do not work under an unsupported load. Doing so could result in personal injury or equipment damage.

2. If necessary, support the ceiling column (G).
3. Remove the caps (U) from the fittings (T).
4. Remove the plastic caps (V) from the hose nuts (W).



**WARNING:**

Do not cross-connect the medical gas types or vacuum systems. Personal injury and equipment damage could occur.

5. Connect the hose nuts (W) to the correct fittings (T) on the rough-in plate (A) (see table 1 on page 4).
6. Twist the gas hoses (X)  $\frac{3}{4}$  of a turn in the same direction as the spiral pattern (clockwise or counterclockwise) while tightening the hose nuts (W).

**NOTE:**

This gives the hoses a precondition to spiral properly.



**WARNING:**

Test the medical gas/vacuum systems. Failure to do so could result in personal injury or equipment damage.

7. Test the medical gas and/or vacuum systems in accordance with NFPA 99. Refer to it for the following:
  - Make sure there are no leaks.
  - Ensure the medical gas/vacuum systems have the correct flow.
  - Make sure there are no cross connections of the medical gas/vacuum system lines.
8. If there are leaks in the medical gas/vacuum systems, make adjustments and corrections until there are no more leaks. For leak test procedures, refer to the latest revision of the *EpiCare™ Ceiling Column Service Manual (man134)*.
9. For units without a remote pneumatic UP/DOWN switch, connect the pneumatic line from the ceiling column (G) to the facility pneumatic supply as follows (see figure 4 on page 8):
  - a. Ensure the pneumatic supply is capable of supplying between 80 to 110 psi (552 to 758 kPa).

- b. Make sure the red plastic plug (AU) has been removed and has not been broken off in the connector (AS).

**NOTE:**

For procedures on connecting pneumatic lines, see the latest revision of the *EpiCare™ Ceiling Column Service Manual (man134)*.

- c. If necessary, use a sharp knife to trim the end of the ¼" pneumatic lines (AR).
- d. Make sure the ends of the pneumatic hoses are cut off square.
- e. Make sure there is enough hose to allow for travel of the ceiling column (G).

**NOTE:**

If the pneumatic line ends are not cut off perpendicular (at 90°) to the length of the line, the connectors may not seal properly.

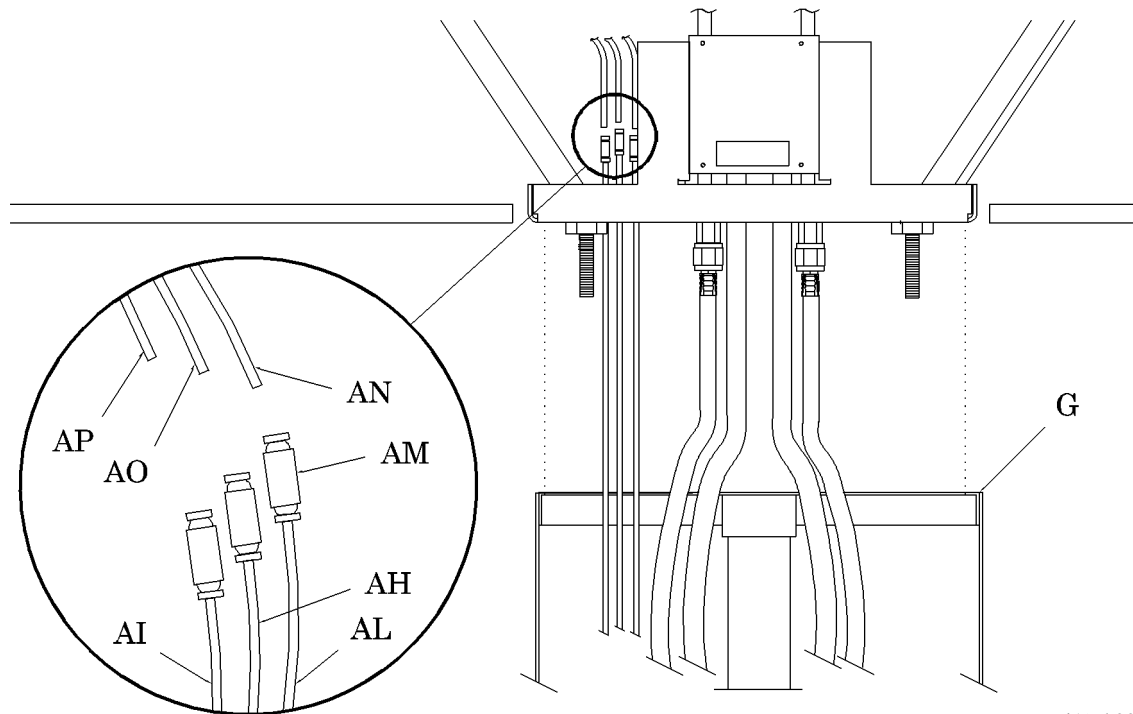
- f. Fully insert the ¼" pneumatic lines (AR) into the connector (AS) by pushing the pneumatic lines (AR) into the connector (AS) until they go no further.

**NOTE:**

The internal O-rings on the connector provide a slight resistance when the pneumatic lines are inserted. Be sure to push the hose in until it will go no further.

10. If you have a remote UP/DOWN pneumatic control switch, connect the pneumatic lines as follows:
  - a. Make sure the UP/DOWN switch (AC) is installed (see figure 1 on page 2). Refer to the *EpiCare™ Powered Telescoping Ceiling Column or Support Arm (P680CPT/P680-PT or P681)—Remote Switch Installation Instruction Sheet—P680-SR or P680-DR (is211)*.
  - b. If necessary, use a sharp knife to cut off squarely the ends of the pneumatic lines (AH), (AI), (AL), (AN), (AO), or (AP) (see figure 5 on page 11).

**Figure 5. Remote Pneumatic Switch Connection**



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**NOTE:**

If the pneumatic line ends are not cut off perpendicular (at 90°) to the length of the line, the connectors may not seal properly.

- c. Connect the pneumatic line connectors (AM) to each of the 1/8" diameter pneumatic lines (AI), (AH), and (AL) by inserting the hose and pushing until it will go no further.

**NOTE:**

The internal O-rings on the connector provide a slight resistance when the pneumatic lines are inserted. Be sure to push the hose in until it will go no further.

**NOTE:**

The connectors necessary to connect the pneumatic lines are shipped with the ceiling column.

- d. Matching the hose colors (red, black, and opaque), connect the pneumatic lines (AP), (AO), and (AN) from the remote switch to the lines from the ceiling column (AI), (AH), and (AL) by inserting the ends into the connectors (AM) and pushing until fully seated.



**WARNING:**

Wear safety glasses when applying pneumatic pressure. Failure to do so could result in eye injury.

11. Put on safety glasses.
12. Test the pneumatic supply lines and fittings for leaks. Refer to the latest revision of the *EpiCare™ Ceiling Column Service Manual (man134)*.
13. Following all local codes and National Electrical Code®<sup>1</sup>, connect the electrical conduit (Y) as follows (see figure 4 on page 8):
  - a. Using a phillips head screwdriver, remove the four screws (M) and the cover plate (K) from the junction box (AB) (see figure 2 on page 3).
  - b. Twist the conduits  $\frac{3}{4}$  of a turn in the same direction as the spiral pattern (clockwise or counterclockwise), and secure them to the junction box with the conduit connectors provided (see figure 3 on page 7).
  - c. Following the wiring diagram from the as-built drawings, connect wiring from the electrical conduit (Y) with the facility wiring in the junction box (AB) (see figure 4 on page 8).



**CAUTION:**

Do not use a knife or other sharp instrument to cut the cardboard rough-in template. Use only your hands to tear the cardboard. Failure to do so could cause equipment damage.

- d. With your hands, carefully tear off the cardboard rough-in template (S), being sure not to stress the conduit or hoses (see figure 3 on page 7). Do not use sharp instruments near the gas hoses.
14. Align the four washers (R) with the four corner holes in the ceiling column (G) (see figure 2 on page 3).



**WARNING:**

Follow the product manufacturer's instructions for operating the lift. Failure to do so could result in personal injury or equipment damage.

15. Following the lift manufacturer's instructions, use a portable lift to carefully lift the ceiling column (G) in alignment with four bolts (E) until the four bolts (E) are fully inserted in the ceiling column (G).
16. Install the four washers (D), lockwashers (C), and nuts (B) on the bolts (E).
17. Using a ratchet and the  $\frac{3}{4}$ " deep socket, tighten the nuts (B) until the lockwashers (C) are fully collapsed.
18. Using a level, make sure the ceiling column (G) is plumb.
19. If the unit is not plumb, make the ceiling column (G) plumb with shims.

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1. National Electrical Code® is a registered trademark of the National Fire Protection Association, Inc.

20. Remove the lift supports and lift from the ceiling column (G).

## Test



### WARNING:

Failure to perform an operational check may result in premature failure of the gas hoses, tubing, or conduit. Personal injury or equipment damage could occur.

21. Verify correct operation of the electrical components installed on the service head (H).
22. Verify correct operation of the medical gas/vacuum connections on the service head (H).
23. Follow the applicable local codes, regulations, and NFPA 99 to test the medical gas/vacuum systems.



### WARNING:

Make sure the hoses, pneumatic lines, or conduits do not get pinched or kinked. Personal injury and equipment damage could occur.

24. Verify correct movement of the ceiling column (G) as follows:
  - a. Using the UP/DOWN pneumatic control switch, fully extend and retract the ceiling column (G) several times.
  - b. Make sure that none of the gas hoses or pneumatic lines have the following:
    - Pinch points
    - Excessive pulling
    - Sharp bends or kinks
    - Scraping
    - Obstructions
  - c. With the system under normal pressure, check the pneumatic lines and connectors for leaks, by referring to the *EpiCare™ Ceiling Column Service Manual* (man134).
25. If necessary, correct any problems that were found during any of the equipment tests.
26. Repeat the test(s) and corrections until no more problems occur.

## Close-up

1. Align the four holes on the cover plate (K) with the four screw holes on the junction box (AB) (see figure 2 on page 3).

2. Using a phillips head screwdriver, secure the cover plate (K) to the junction box (AB) with the four screws (M).
3. Install the inner access panel (N) on the ceiling column (G) as follows:
  - a. Tighten the four screws (L) to hold the access panel (N) on the ceiling column (G), but leave the access panel (N) loose enough to align two holes for the screws (AD).
  - b. Install the two screws (AD) in the ceiling column (G).
  - c. Using a screwdriver, fully tighten the screws (AD).
  - d. Using a phillips head screwdriver, fully tighten the screws (L).
4. Install the outer access panel (I) on the ceiling column (G) as follows:
  - a. Tighten the four screws (J) to hold the access panel (I) on the ceiling column (G), but leave the access panel (I) loose enough to align the two holes for the screws (AE).
  - b. Install the two screws (AE) in the ceiling column (G).
  - c. Using a screwdriver, fully tighten the screws (AE).
  - d. Using a phillips head screwdriver, fully tighten the screws (J).
5. If necessary, remove the screws (P) and the ceiling trim (O) from the packing material.
6. Using a phillips head screwdriver, install the ceiling trim (O) flush with the ceiling, and secure with the screws (P).
7. Repeat step 6 for the three remaining pieces of the ceiling trim (O).