

INSTALLATION INSTRUCTIONS

Prima® Xtend™ Ceiling Arm From Hill-Rom



Product No. P1365

**For Parts or Technical Assistance
USA 800-445-3720 Canada 800-267-2337
International: Contact your distributor.**

is546rb

Prima® Xtend™ Ceiling Arm Installation Instructions

Revisions

Revision Letter	Pages Affected	Date
Original Issue		January 2002
A	All	August 2003
B	All	September 2004

is546rb

© 2004 by Hill-Rom Services, Inc. ALL RIGHTS RESERVED.

No part of this text shall be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information or retrieval system without written permission from Hill-Rom Services, Inc. (Hill-Rom).

Third Edition

First Printing 2002

Printed in the USA

Allen™ is a trademark of Industrial Fasteners, Inc.

Hill-Rom® is a registered trademark of Hill-Rom Services, Inc.

NEC® is a registered trademark of National Fire Protection Association, Inc.

NFPA® is a registered trademark of National Fire Protection Association, Inc.

Prima® is a registered trademark of Hill-Rom Services, Inc.

Xtend™ is a trademark of Hill-Rom Services, Inc.

The information contained in this document is subject to change without notice. Hill-Rom makes no commitment to update or keep current, the information contained in this manual.

The only product warranty intended by Hill-Rom is the express, written warranty accompanying the bill of sale to the original purchaser. Hill-Rom makes no other warranty, express or implied, and in particular, makes no warranty of merchantability or fitness for a particular purpose.

To order additional copies of this instruction sheet, call Hill-Rom Technical Support at 800-445-3720 and place an order for is546rb.

Table of Contents

Install the First Fix Rough-In Assembly	2
Install the Fixed or Retractable Ceiling Arm	6
Install the Lower Arm on the Upper Arm.	6
Install the Ceiling Arm	8
Install the Alignment Spacer (Retractable Arms Only) or Drop Tube	11
Install the Service Head	13
Connect the Hoses and Wiring	16
Connect the Brake Hose	20
Do a Test on the Unit	21
Adjust the Stops	22
Level the Retractable Arm	24
Install the Ceiling Cover	26
Install the Bearing Covers.	28
Install the Retractable Arm Covers (Retractable Arms Only)	29
Install the End Caps	31
Install the Monitor Carrier Arm	33
Adjust the Horizontal Brakes	44
Adjust the Spring Force	44

NOTES:

Subject: Prima® Xtend™ Ceiling Arm Installation Instructions

Tools required:

6" extension	Equipment lift, 350 lb capacity
Tape measure	Two ladders
8 mm ball hex head wrench	Phillips head screwdriver
17 mm crow foot adapter	4 mm hex head socket driver
Pneumatic pressure gauge	6 mm hex head wrench
Electronic level, accurate to 0.1°	8 mm hex head socket driver
4 mm ball hex head wrench	17 mm wrench
Small bladed screwdriver	16 mm wrench
Tape	Hacksaw
As-built drawings	
Torque wrench, 5 ft-lb to 75 ft-lb (7 N·m to 102 N·m)	
Torque wrench, 30 ft-lb to 150 ft-lb (41 N·m to 203 N·m)	

Parts required:

(4)	T10573	Screw
(4)	T17383	Lockwasher
(4) or (8)	T14451	Screw
(6)	T17163	Nut
(6)	T11046	Washer
(6)	T16105	Threaded rod
(6)	T65547	Screw
(6) or (12)	V37054	Threaded rod
(12) or (24)	T13861	Plastic insulator disk
(18) or (36)	T65590	Nut
(12) or (24)	T62194	Washer
(4)	T66528	Screw
(1)	1883696	Bearing cover kit
and		
(2)**	V1508135	End cap, plastic
or		
(2)**	V81570	End cap (metal)
(8)**	V1506718	Screw
(8)**	V1507839	End cap, Allen™ ¹ screw

** Quantity per arm

NOTE:

All hardware required to attach the arms to the rough-in assembly are provided by Hill-Rom.

Related Documents: [*Prima® Xtend™ Ceiling Arm—Rough-In Assembly Installation Instructions \(is547\)*](#)

1. Allen™ is a trademark of Industrial Fasteners, Inc.

Install the First Fix Rough-In Assembly



WARNING:

Only facility-authorized personnel should install the Prima[®] Xtend[™] Ceiling Arm. Installation by unauthorized personnel could result in personal injury or equipment damage.

1. Refer to the as-built drawings for correct arm placement and configuration.
2. Make sure the rough-in assembly is correctly installed. Refer to the *Prima[®] Xtend[™] Ceiling Arm—Rough-In Assembly Installation Instructions (is547)*.
3. Install the nuts (A) on the threaded rods (B):
 - On a double mount installation, see figure 1 on page 3.
 - On a single mount installation, see figure 2 on page 4.
4. Install the lockwashers (C) on the threaded rods (B).



WARNING:

For physical strength, the threaded rods used to mount the arm to the rough-in assembly must **not** exceed a length of 9.8" (249 mm) below the bottom of the mounting plate. A length longer than 9.8" (249 mm) could cause the ceiling arm to fall. Patient injury, personal injury, or equipment damage could occur.



WARNING:

If the threaded rods are **not** completely screwed in and/or the mounting plate is installed on a raw ceiling, the ceiling arm could fall. Patient injury, personal injury, or equipment damage could occur.

5. Completely screw the threaded rods (B) into the mounting plate (D) so that 9.8" (249 mm) is left from the bottom of the mounting plate (D) to the ends of the threaded rods (B).

Figure 1. Double Mount Ceiling Arm Threaded Rod Installation

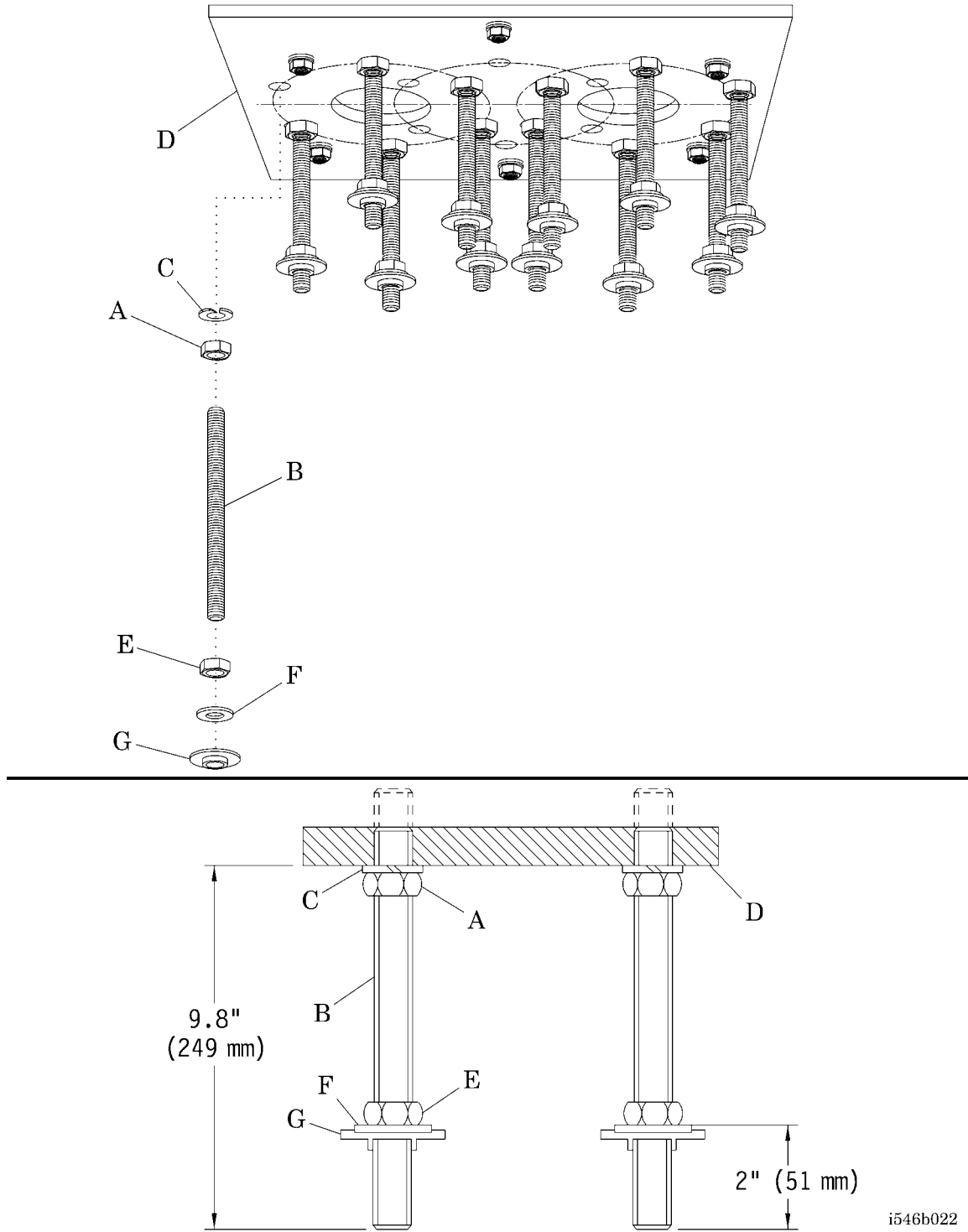
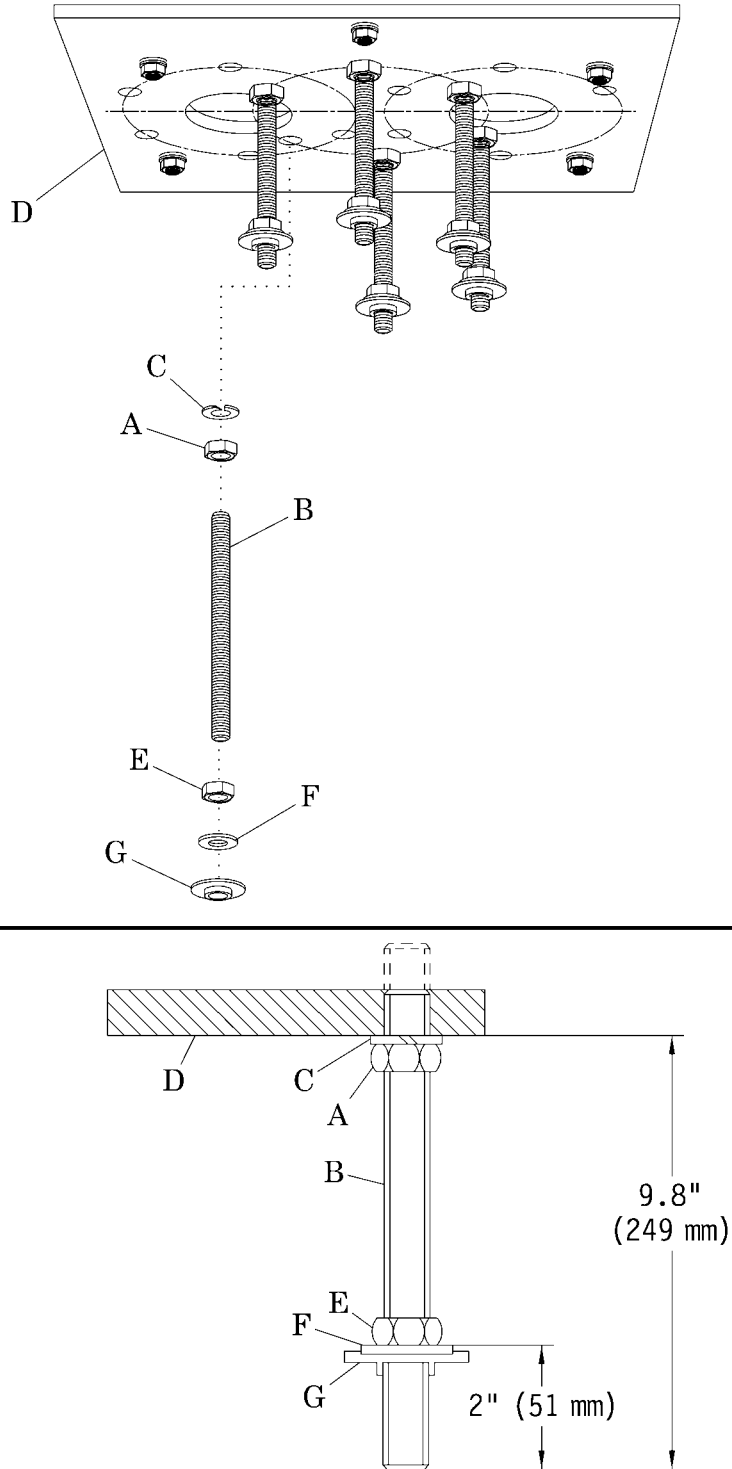


Figure 2. Single Mount Ceiling Arm Threaded Rod Installation



i546b023



WARNING:

Nuts must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

6. Tighten the nuts (A) to 144 ft-lb (195 N·m) of torque.
7. Thread the nuts (E) up the threaded rods (D) a distance of approximately 2" (51 mm) (see figure 2 on page 4).

NOTE:

In some installations, the threaded rods may need to be cut off on the top side of the mounting plate.

8. Install the washer (F) and plastic disk (G) on the threaded rod (D), and use tape to temporarily hold them in place.
9. Do **one** of the following:
 - To install a fixed or retractable ceiling arm, go to “Install the Fixed or Retractable Ceiling Arm” on page 6.
 - To install a monitor carrier arm, go to “Install the Monitor Carrier Arm” on page 33.

Install the Fixed or Retractable Ceiling Arm

Install the Lower Arm on the Upper Arm

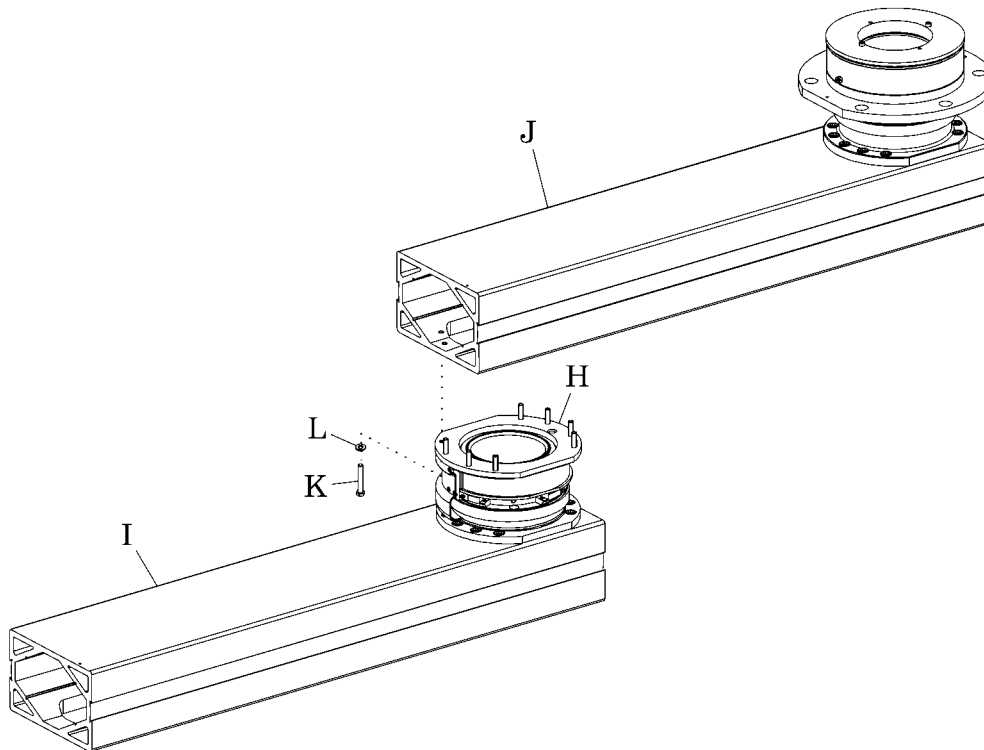


CAUTION:

Failure to use caution when removing the arm from the shipping container can result in equipment damage.

1. Align the holes in the middle bearing (H) of the lower arm (I) with the holes in the upper arm (J):
 - On a **fixed** lower arm installation, see figure 3 on page 6.
 - On a **retractable** lower arm installation, see figure 4 on page 7.

Figure 3. Fixed Lower Arm Installation



i546b034

2. Install the bolts (K) and washers (L) to attach the lower arm (I) to the upper arm (J).

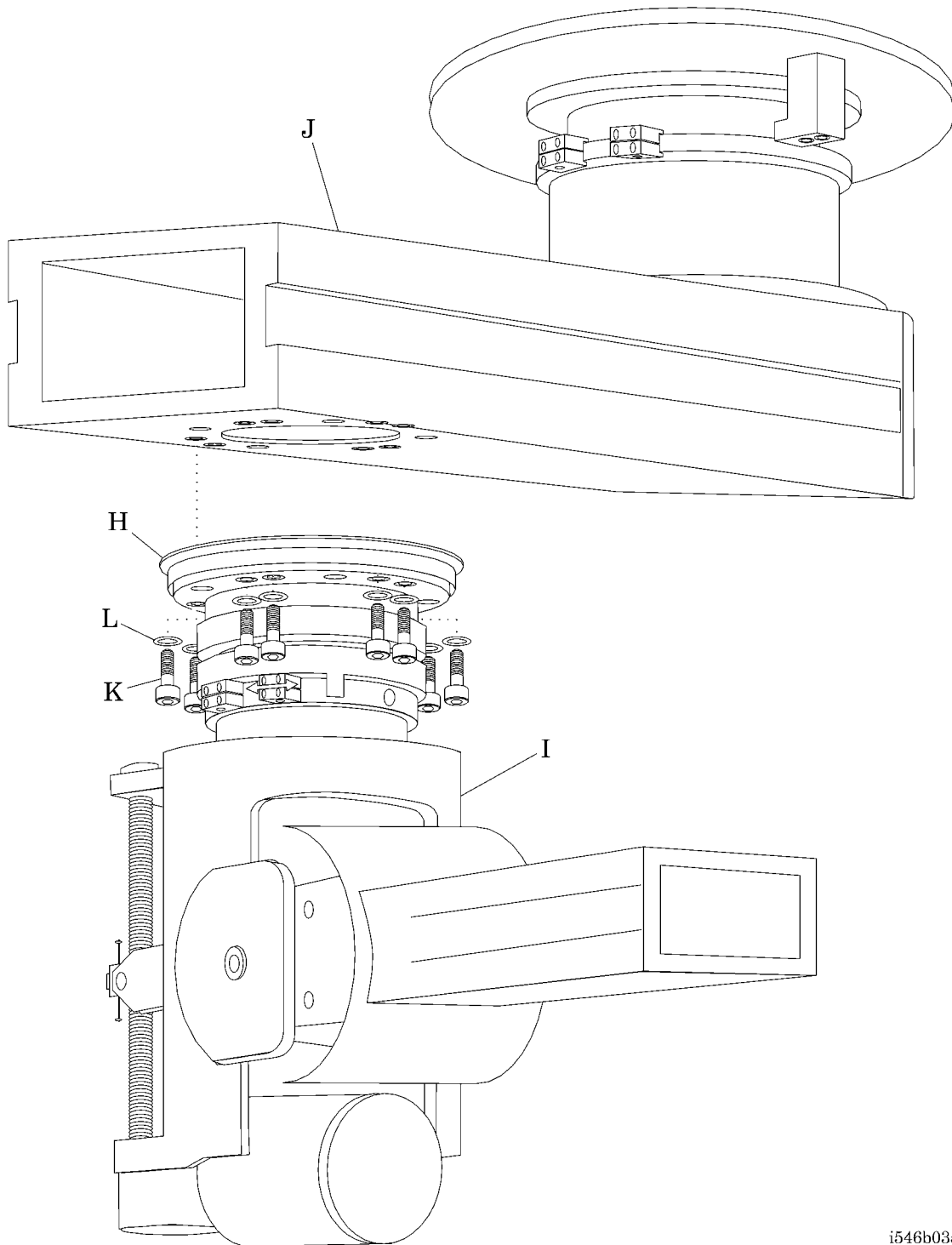


WARNING:

Bolts must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

3. Tighten the bolts (K) to 18 ft-lb (25 N·m) of torque.

Figure 4. Retractable Lower Arm Installation



i546b035

Install the Ceiling Arm

1. Use a suitable lift to raise the lower arm (I) (see figure 3 on page 6 or figure 4 on page 7) and upper arm (J) and lower arm (I) up to the threaded rods (B):
 - On a **single** mount installation, see figure 5 on page 9.
 - On a **double** mount installation, see figure 6 on page 9.
2. For a **double** mount installation, make sure the flat sides (CM) of the mounting flange (R) on the bearings face each other (see figure 6 on page 9).



WARNING:

Always install the upper nuts. The nuts for the upper arm must be installed, or the threaded bolts may break, causing the ceiling arm to fall. Patient injury, personal injury, or equipment damage could occur.



WARNING:

Do not allow anyone to be under the ceiling arm during installation. The ceiling arm could fall, resulting in patient injury, personal injury, or equipment damage.

3. Slide the upper arm (J) on the six threaded rods (B) of the mounting plate (D). Then, in a triangular pattern, **temporarily** install a nut (N) on each of the three threaded rods (B) to attach the upper arm (J) to the mounting plate (D):



WARNING:

Always install the nuts completely on the threaded bolts. Failure to do so could cause the ceiling arm to fall. Patient injury, personal injury, or equipment damage could occur.

4. On the three threaded rods (B) **without** the nut (N) installed in step 3, **completely** install the plastic disk (O), washer (P), lockwasher (Q), and nut (N).
5. Remove the three nuts (N) temporarily installed in step 3. Then, install the plastic disk (O), washer (P), lockwasher (Q), and nut (N) on the threaded rods (B).

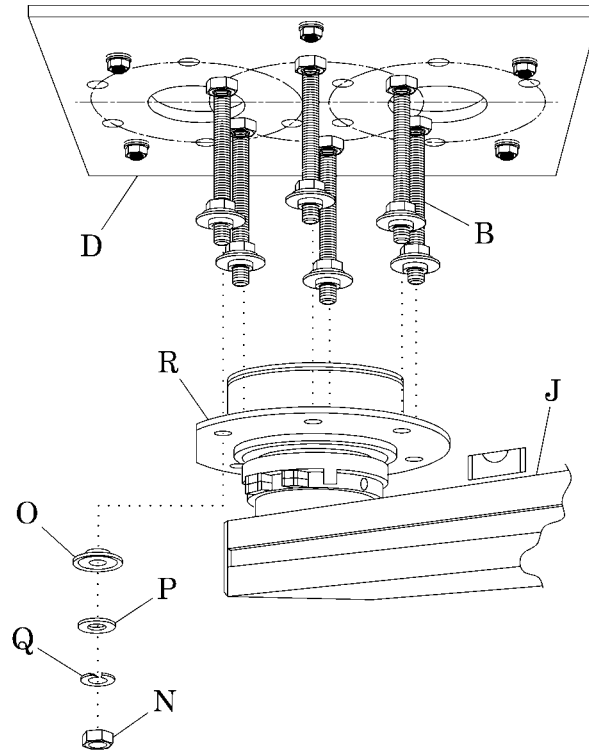


CAUTION:

The horizontal alignment must be exact for the ceiling arm to be flexible and in a safe position. Failure to correctly align the upper arm could result in equipment damage.

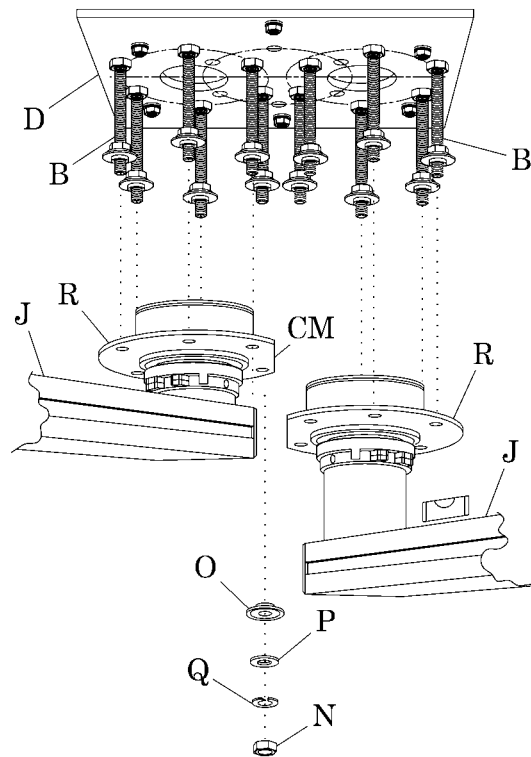
6. Use an electronic level to adjust the upper arm (J) at the mounting flange (R) to 0.0° deflection, $\pm 0.2^\circ$.

Figure 5. Single Arm Installation



i546b004

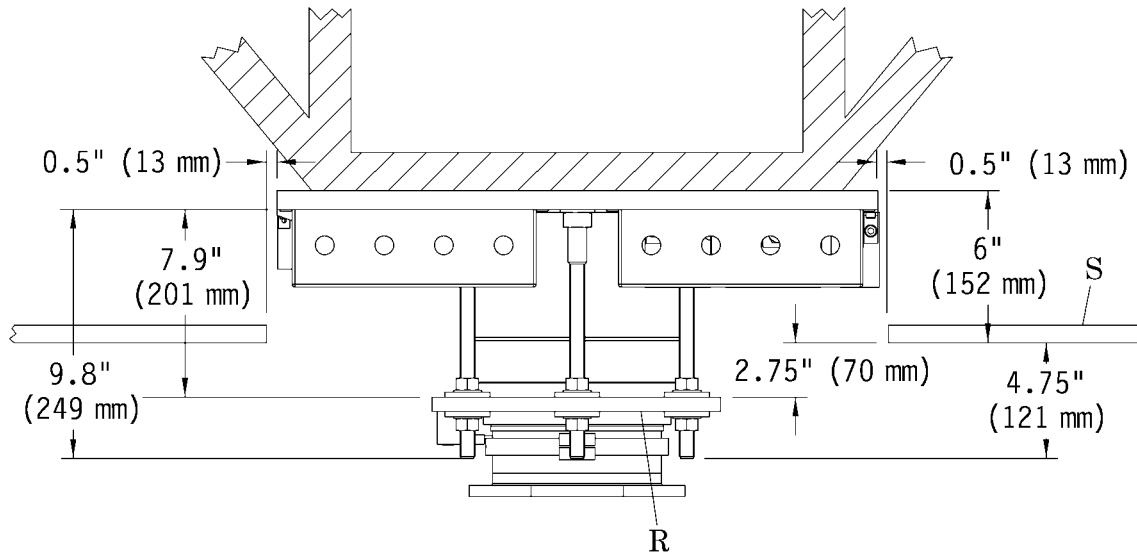
Figure 6. Double Arm Installation



i546b024

7. Make sure the distance from the bottom of the finished ceiling (S) to the top of the mounting flange (R) is 2.75" (70 mm) (see figure 7 on page 10).

Figure 7. Mounting Flange Position



i546b025



WARNING:

Nuts must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

8. Tighten the six nuts (N) to 74 ft-lb (100 N·m) of torque:
 - On a single mount installation, see figure 5 on page 9.
 - On a double mount installation, see figure 6 on page 9.
9. After tightening the six nuts (N), check the upper arm (J) to make sure it is level. Adjust as necessary.

Install the Alignment Spacer (Retractable Arms Only) or Drop Tube

1. Do **one** of these:
 - a. For a ceiling arm that does **not** require a drop tube, go to step 2.
 - b. For a ceiling arm that requires a drop tube, go to step 3.

NOTE:

On some retractable arms, a drop tube is installed between the arm and the service head to make an allowance for different room heights.

2. For a ceiling arm that does **not** require a drop tube, do as follows:
 - a. Insert the alignment spacer (T) into the arm flange (U) (see figure 8 on page 12).
 - b. Align the four holes in the arm flange (U) with the holes in the service head flange (V).
 - c. Install the four screws (W) and lockwashers (X) through the four holes in the service head flange (V) and arm flange (U).
 - d. Install the four lockwashers (Y) and nuts (Z) on the screws (W).



WARNING:

Nuts must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

- e. Tighten the nuts (Z) to 34 ft-lb (46 N·m) of torque.
3. For ceiling arms that require a drop tube (AA), do as follows:
 - a. Insert the drop tube (AA) into the arm flange (U) (see figure 9 on page 12).
 - b. Install the four cap screws (AB) and lockwashers (Y) through the four holes in the arm flange (U) and into the drop tube (AA).
 - c. Align the service head flange (V) with the drop tube (AA).
 - d. Install the four cap screws (AC) and lockwashers (X) through the four holes in the service head flange (V) and into the drop tube (AA).



WARNING:

Cap screws must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

- e. Tighten all eight cap screws (AB) and (AC) to 18 ft-lb (24 N·m) of torque.

Figure 8. Ceiling Arm without Drop Tube

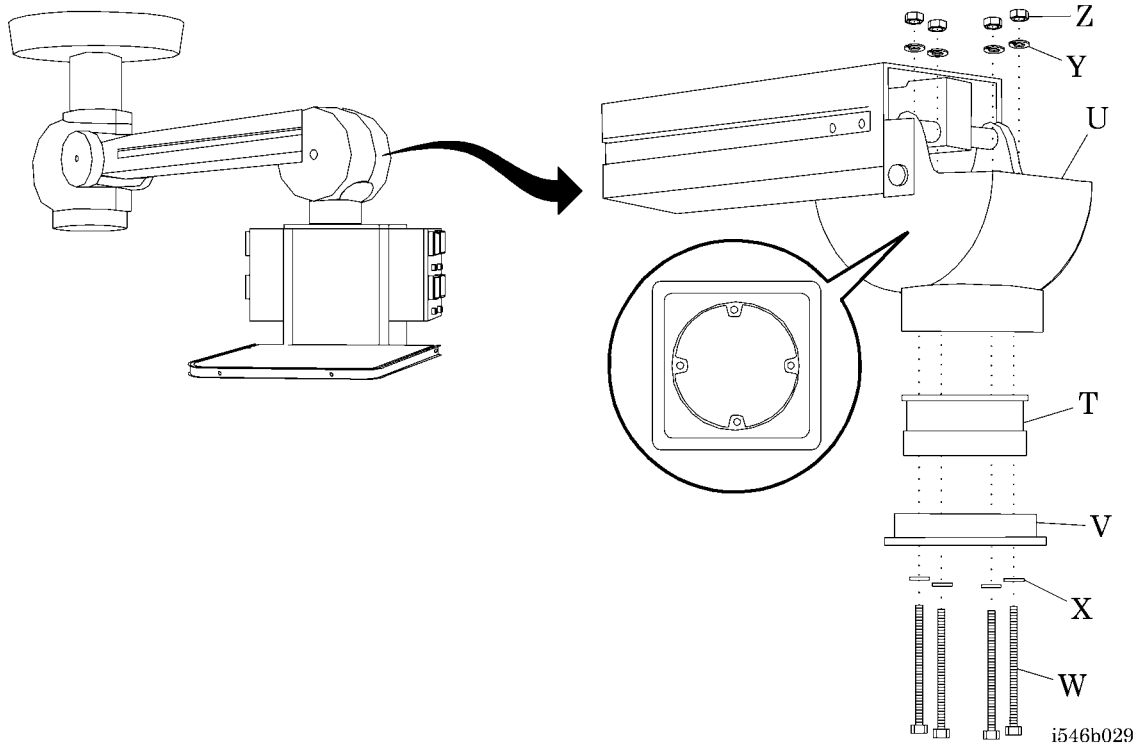
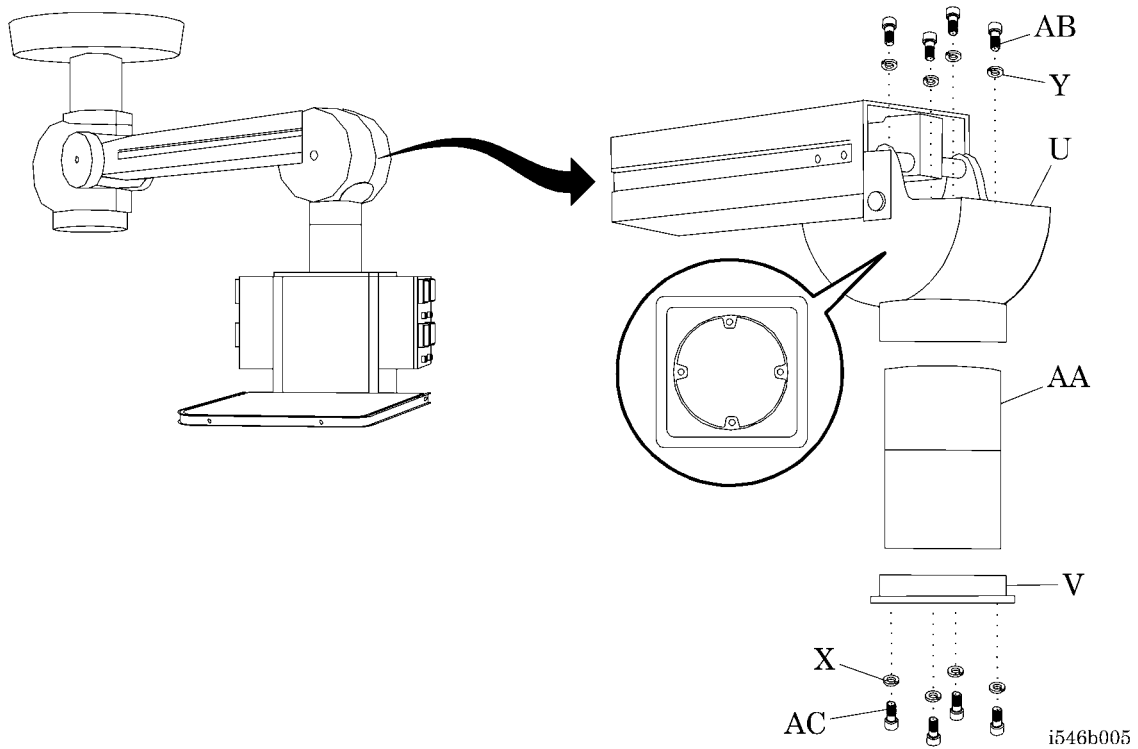


Figure 9. Ceiling Arm with Drop Tube



Install the Service Head

1. Do as follows:
 - For a **retractable** arm, pull the cables (CN) and hoses **under** the first swivel bar (AM), to the long side of the counterbalance shaft, and then **over** the second swivel bar (AN) (see figure 10 on page 14).
 - For a **fixed** arm, pull the cables and hoses from the service head through the lower arm and upper arm to the rough-in assembly.

NOTE:

It is recommended to route the **larger** hoses and/or cables through the arms first.

2. Use a suitable lift to raise the service head (AD) to the service head flange (V).
3. For a **retractable** lower arm, do as follows:
 - a. Install the four screws (AE) and lockwashers (AF) to attach the service head (AD) to the service head flange (V).

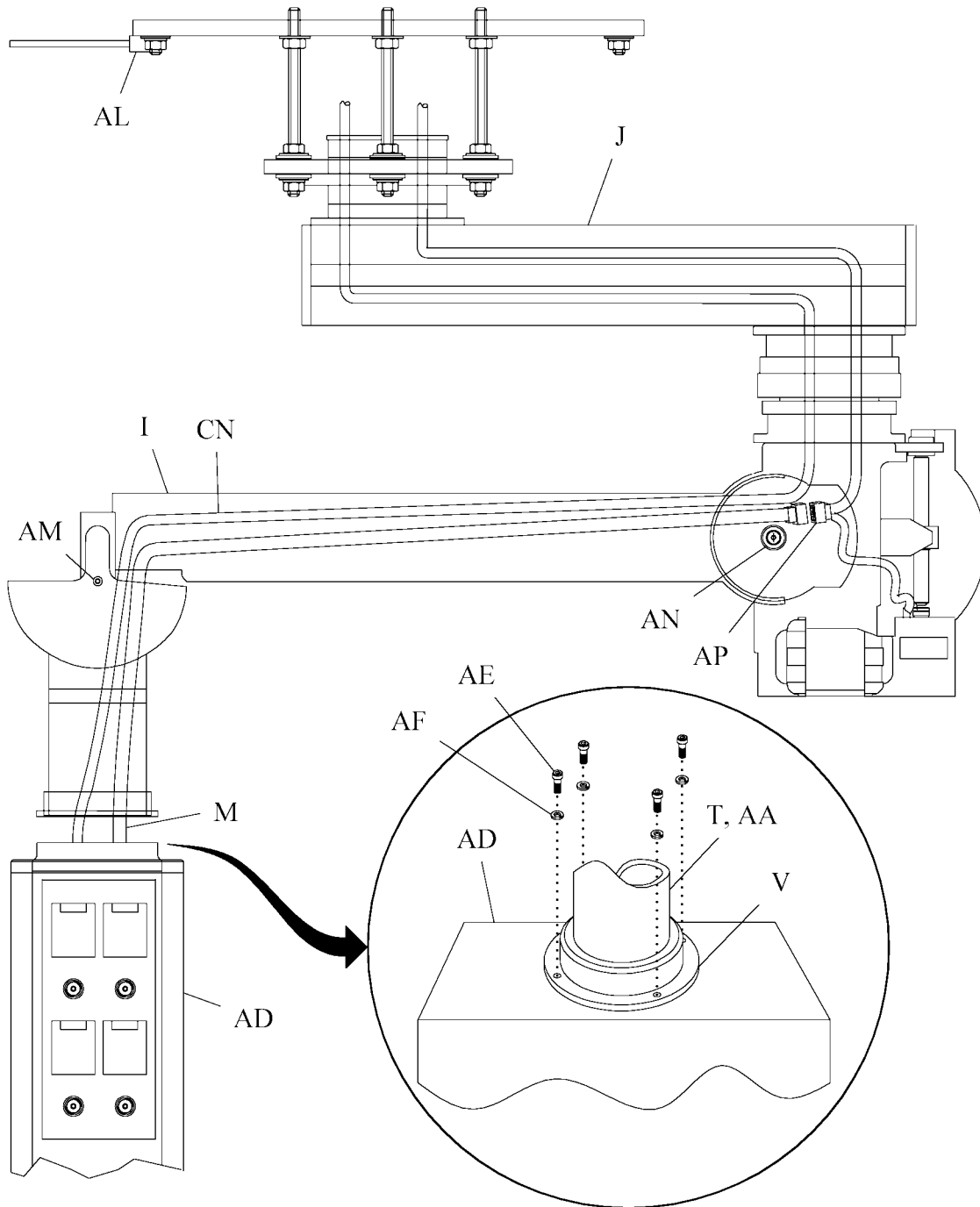


WARNING:

Screws must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

- b. Tighten the screws (AE) to 18 ft-lb (24 N·m) of torque, and make sure the tops of the screws (AE) are flush or lower than the service head flange (V).

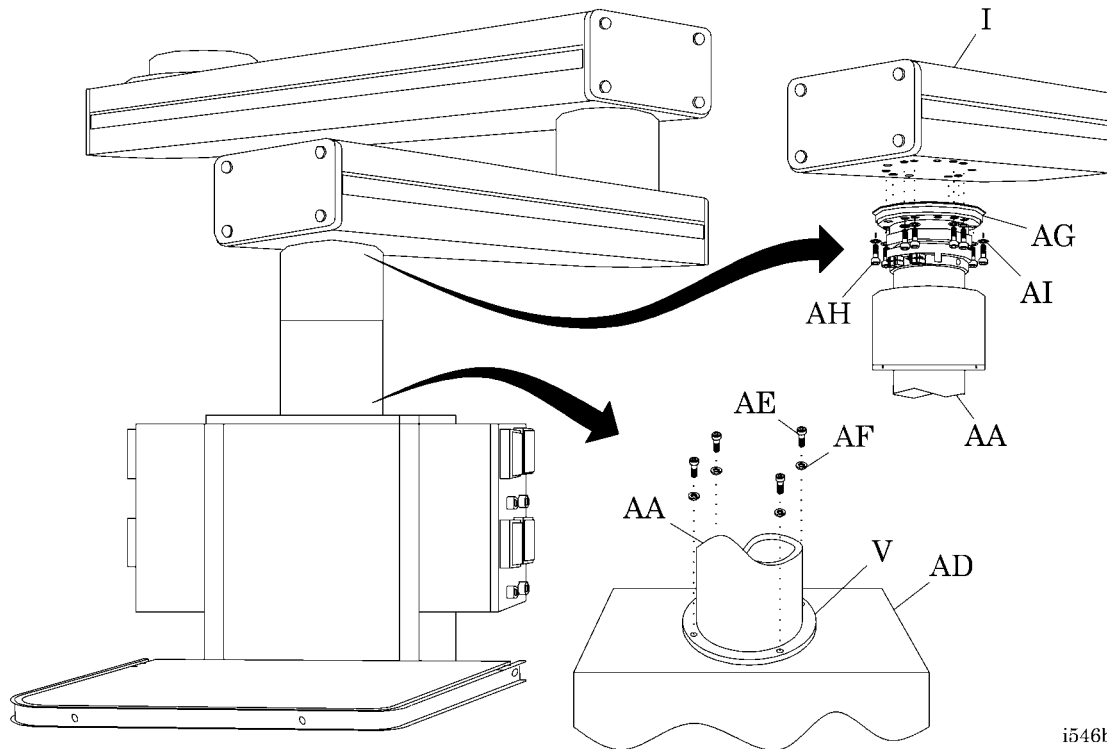
Figure 10. Hose and Cable Routing—Retractable Arm



i546b036

4. For a **fixed** lower arm, do as follows:
 - a. Align the holes in the lower arm (I) with the top of the bearing flange (AG) for the brake bladder connector (see figure 11 on page 15).

Figure 11. Fixed Ceiling Arm Service Head Installation



- b. Install the eight screws (AH) and lockwashers (AI) to attach the drop tube (AA) to the lower arm (I).



WARNING:

Screws must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

- c. Tighten the screws (AH) to 18 ft-lb (24 N·m) of torque.
 - d. Make sure the tops of the screws (AH) are flush or lower than the bearing flange (AG) after tightening.
 - e. Install the four screws (AE) and lockwashers (AF) to attach the service head flange (V) on the drop tube (AA) to the service head (AD).



WARNING:

Screws must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

- f. Tighten the screws (AE) to 18 ft-lb (24 N·m) of torque.

- g. Make sure the tops of the screws (AE) are flush or lower than the service head flange (V) after tightening.
- h. If installing a double fixed arm configuration, repeat step 4 for the ceiling arm.

Connect the Hoses and Wiring

NOTE:

The Prima® Xtend™ Ceiling Arm is provided with DISS capping devices for use on the surgical vacuum and Waste Anesthetic Gas Disposal (WAGD) lines during installation, maintenance, and repair.

1. Connect the hoses to the gas risers (CC) and gas manifold (CO) on the rough-in assembly (AL) (see figure 12 on page 17). Connect facility wiring to the product wiring in accordance with the following:
 - Latest edition of National Fire Protection Association (NFPA®¹) 70, *National Electrical Code* (NEC®²)
 - CAN/CSA C22.1-02, *Canadian Electrical Code, Part I—Safety Standard for Electrical Installations* (Canadian installations only)
 - CAN/CSA C22.2 No. 0-M91, *General Requirements—Canadian Electrical Code, Part II* (Canadian installations only)

NOTE:

Connect the cables to the junction boxes (CD) on the rough-in assembly (AL). For a **retractable** arm, the power supply wires for the drive motor are color coded:

- The **blue** wire is **neutral**.
 - The **brown** wire is **power**.
2. At the grounding bar (CL) on the rough-in assembly (AL) (see figure 12 on page 17), connect the ceiling arm ground wires (AO):
 - For **retractable** arms, refer to figure 13 on page 18.
 - For **fixed** arms, refer to figure 14 on page 18.
 3. Connect the top ground wires (AO) to the terminal block on the mounting plate:
 - For **retractable** arms, refer to figure 13 on page 18.
 - For **fixed** arms, refer to figure 14 on page 18.

1. NFPA® is a registered trademark of National Fire Protection Association, Inc.

2. NEC® is a registered trademark of National Fire Protection Association, Inc.

Figure 12. Rough-In Assembly

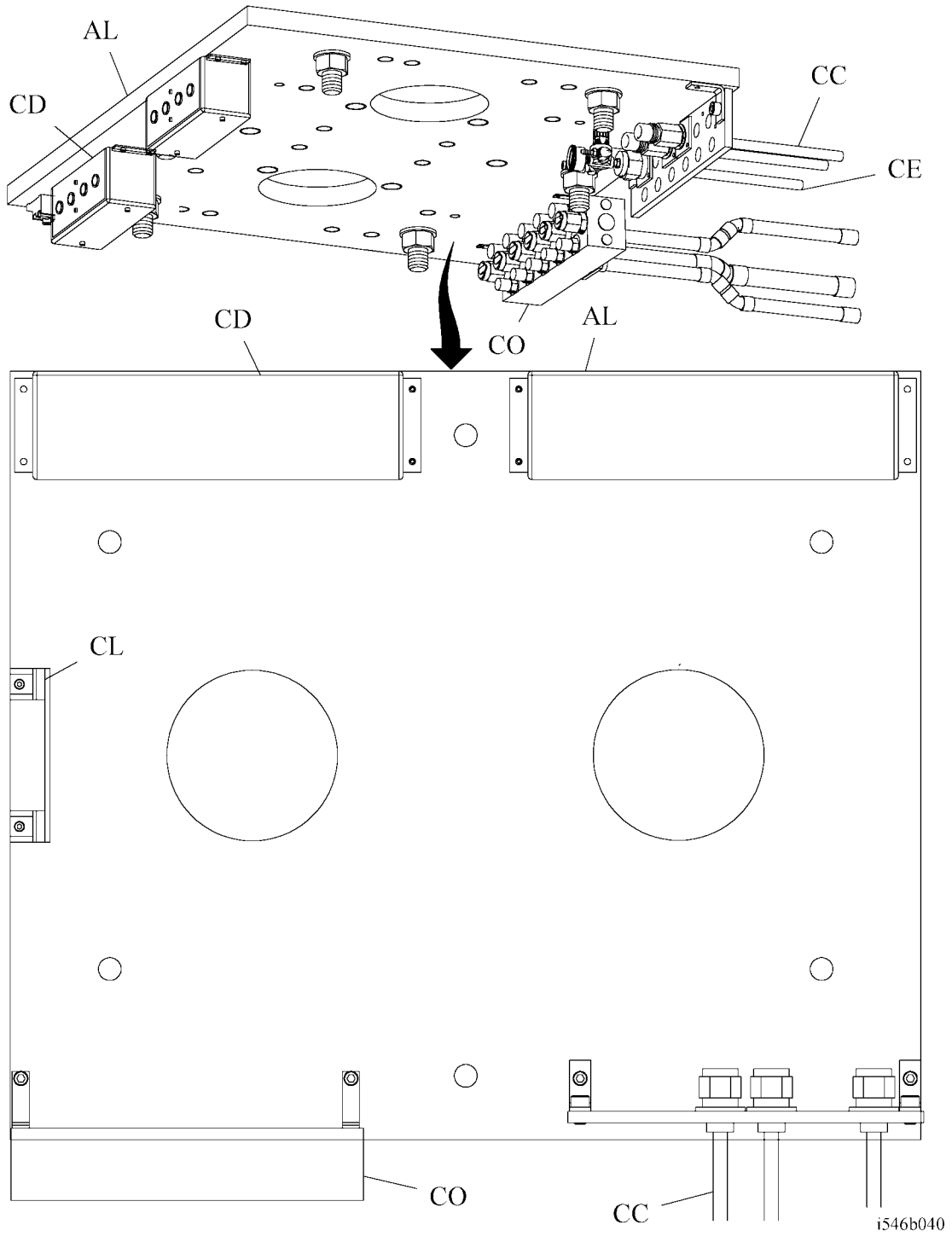
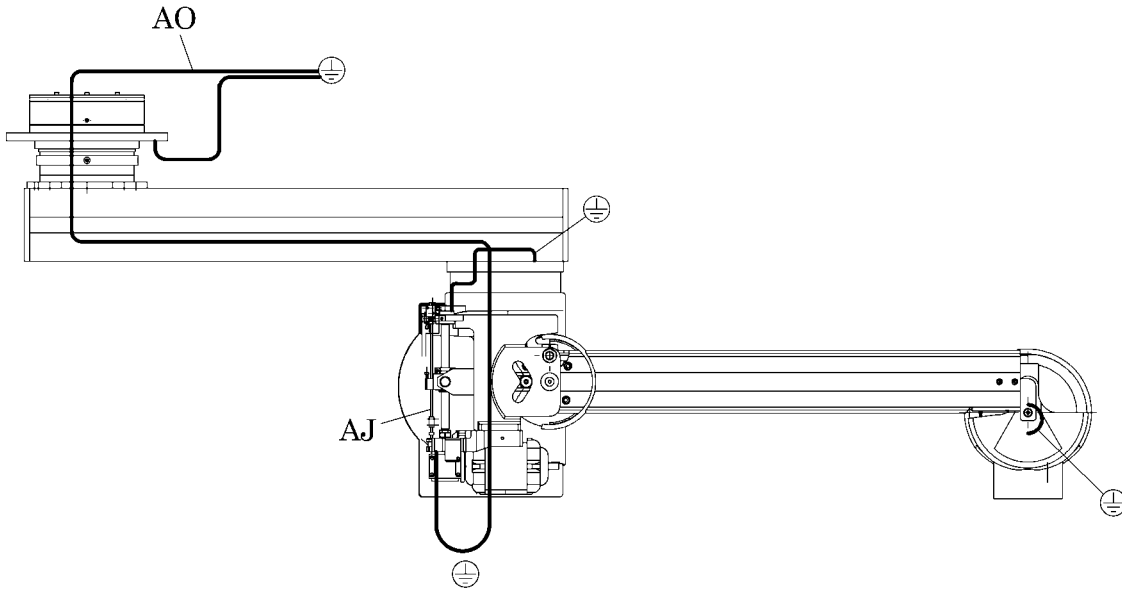
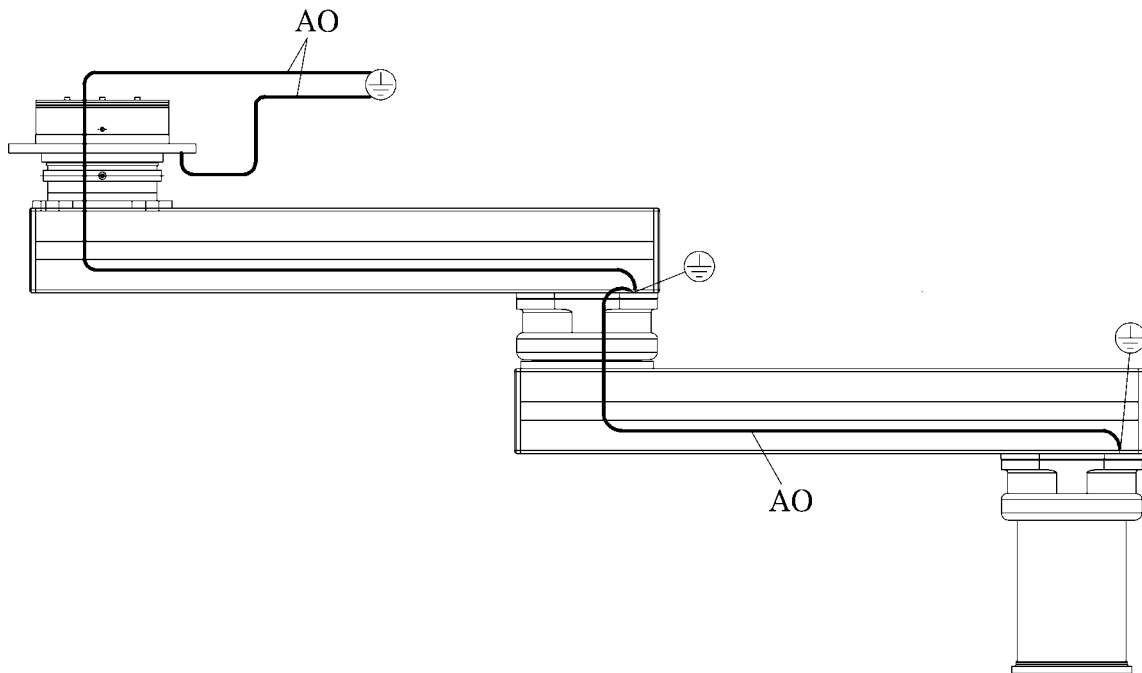


Figure 13. Retractable Arm Ground Wire Routing



i546b031

Figure 14. Fixed Arm Ground Wire Routing



i546b037

4. For a **retractable** arm, do as follows:
 - a. Pull the cable (M) from the rocker switch on the service head (AD) from the inside of the lower arm (I), and connect the cable (M) to the motor connector (AP) (see figure 10 on page 14).

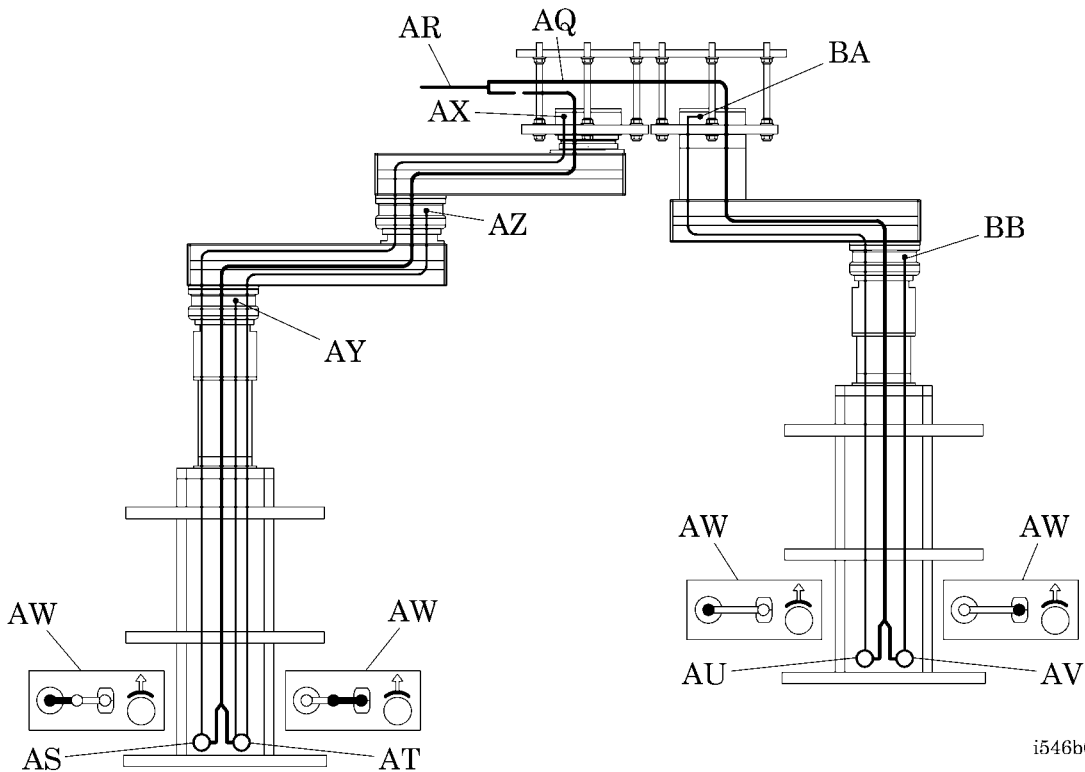


CAUTION:

Make sure the cables are routed away from the motor spindle. Failure to do so could result in equipment damage.

- b. To keep the ground wires (AO) from being pinched when the ceiling arm moves, make sure the ground wires (AO) are routed away from the motor spindle (AJ) (see figure 13 on page 18).
5. Connect the brake hoses to the brakes (AX), (AY), (AZ), (BA), and (BB) in each bearing housing (see figure 15 on page 19).

Figure 15. Pneumatic Brake Connection



i546b026

NOTE:

The brake hoses are marked for each brake on the arm.

NOTE:

The service head on a **retractable** arm does **not** have a pneumatic brake at the service head. The brake at the service head is a **friction** brake.

6. Connect the brake line to the air brake riser (CE) on the rough-in assembly (AL) (see figure 12 on page 17).

Connect the Brake Hose



CAUTION:

Failure to install clean pneumatic hoses and valves could cause leaks.



CAUTION:

Do not bend the pneumatic hoses. If hoses are bent, leaks may occur.

1. Before installing the pneumatic hoses and valves, make sure they are clean. Also, make sure you do not bend the pneumatic hoses.



CAUTION:

Failure to operate the brake hoses between 80 psi and 100 psi (552 kPa and 689 kPa) could result in equipment damage.

2. Make sure the operating pressure of the brakes is between 80 psi and 100 psi (552 kPa and 689 kPa).
3. Connect the 12 mm diameter air supply hose (AQ) to the air supply (AR) (see figure 15 on page 19).
4. Examine the push buttons (AS), (AT), (AU), and (AV) for the symbols (AW) showing which brakes connect to the 4 mm diameter hoses.

NOTE:

Not all versions will have these symbols.

5. Refer to table 1 on page 20, and connect the brake hoses to their applicable brakes.

Table 1. Brake Connections

Push button	Brake Connection
AS	Brake AX
AT	Brake AY and AZ
AU	Brake BA
AV	Brake BB

Do a Test on the Unit

1. Do a pressure test on the medical gas, vacuum system, and pneumatic hoses to check for leaks according to the latest edition of the National Fire Protection Association (NFPA) 99.

NOTE:

All positive pressure gas risers have internal check valves. All negative gas pressure risers do not have internal check valves, but are supplied with test caps attached.

2. If leaks are found, fix the problem, and repeat the test until no leaks are found.
3. Check the medical gas, vacuum, or pneumatic system for flow and cross-connections according to the latest edition of the NFPA®¹ 99.
4. If any problems are found with flow or cross-connections of the hoses, fix the problems, and test the hoses again until all problems are corrected.
5. For **Canadian** installations, do the testing required by the following standards:
 - CAN/CSA Z305.1-92, *Nonflammable Medical Gas Piping Systems*
 - CAN/CSA Z305.2-M88, *Low-Pressure Connecting Assemblies for Medical Gas Systems*
 - CAN/CSA Z9170-1-00, *Terminal Units for Medical Gas Pipeline Systems—Part 1: Terminal Units for Use with Compressed Medical Gases and Vacuum*
 - CAN/CSA Z9170-2-00, *Terminal Units for Medical Gas Pipeline Systems—Part 2: Terminal Units for Anaesthetic Gas Scavenging Systems*
6. For **Canadian** installations, commission the equipment in accordance with the following standards:
 - CSA Z318.5-95, *Commissioning of Electrical Equipment and Systems in Health Care Facilities*
 - CSA Z318.6-95, *Commissioning of Medical Gas Systems in Health Care Facilities*
 - CSA Z318.7-95, *Commissioning of Communication Systems in Health Care Facilities*

1. NFPA® is a registered trademark of National Fire Protection Association, Inc.

Adjust the Stops



CAUTION:

To keep the internal supply hoses from being twisted off, lock at least one stop segment at each pivot. Failure to do so could result in equipment damage.

1. Install at least one stop at each pivot.
2. Make sure to align the service head if it is not positioned vertically after being loaded with an end device such as a monitor.

NOTE:

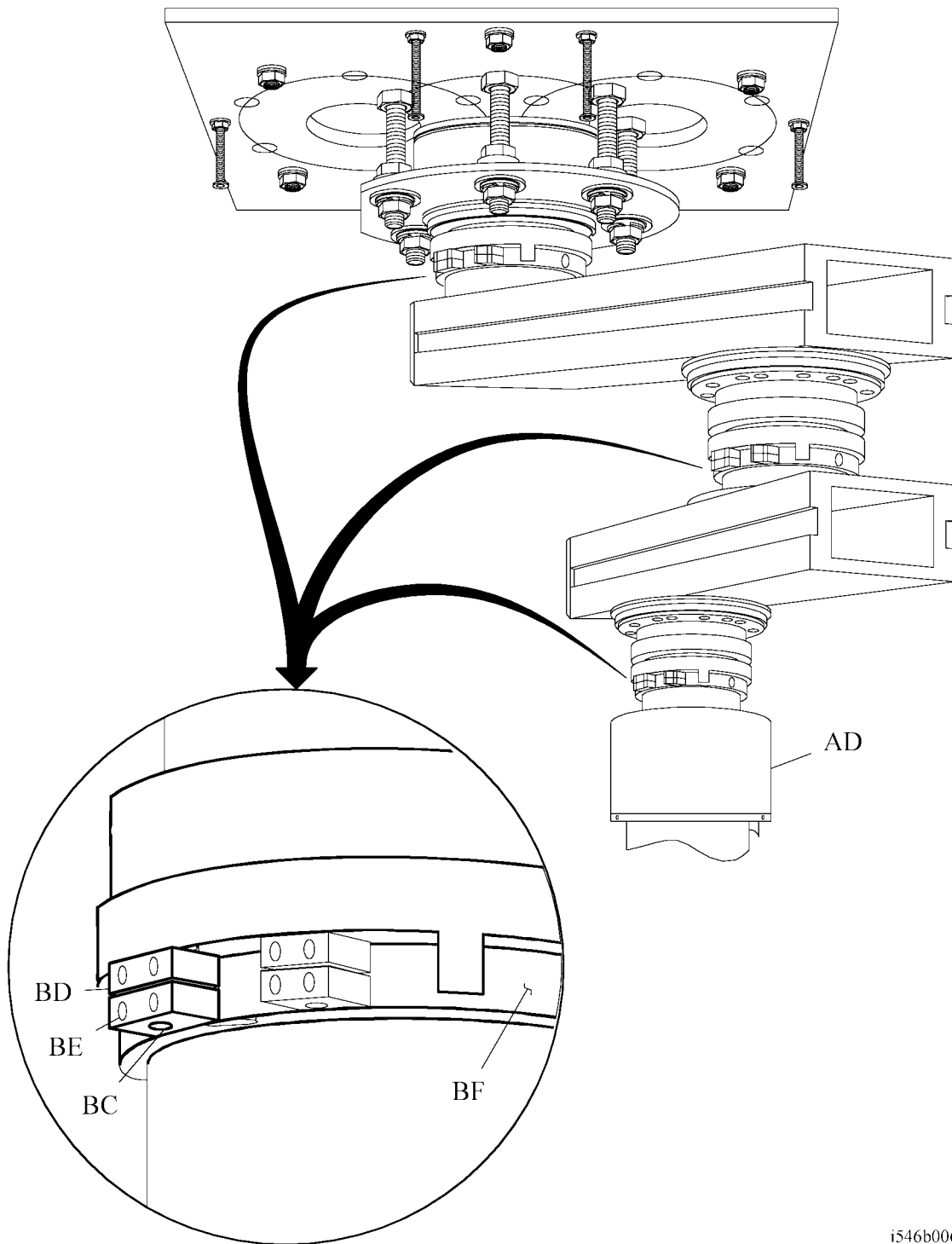
The adjustment of the stops is the same for all positions on the arm.

NOTE:

Depending on the arm installed, there will be stops to adjust at the following locations (see figure 16 on page 23):

- Where the arm comes out of the ceiling
 - The swivel section between the arms (**double** arms only)
 - At the service head (AD)
3. **Loosen** the screw (BC) and four screws (BE) on the stop (BD).
 4. Slide the stop (BD) on the ring (BF) to the applicable position.
 5. Tighten the screw (BC) and four screws (BE) on the stop (BD).

Figure 16. Stop Adjustment



i546b006

Level the Retractable Arm



SHOCK HAZARD:

Disconnect the unit from its power source. Failure to do so could result in personal injury or equipment damage.

1. Disconnect the unit from its power source.
2. Loosen the hex nut (BG) (see figure 17 on page 25).
3. Turn the bolt (BH) until the service head (AD) is level.

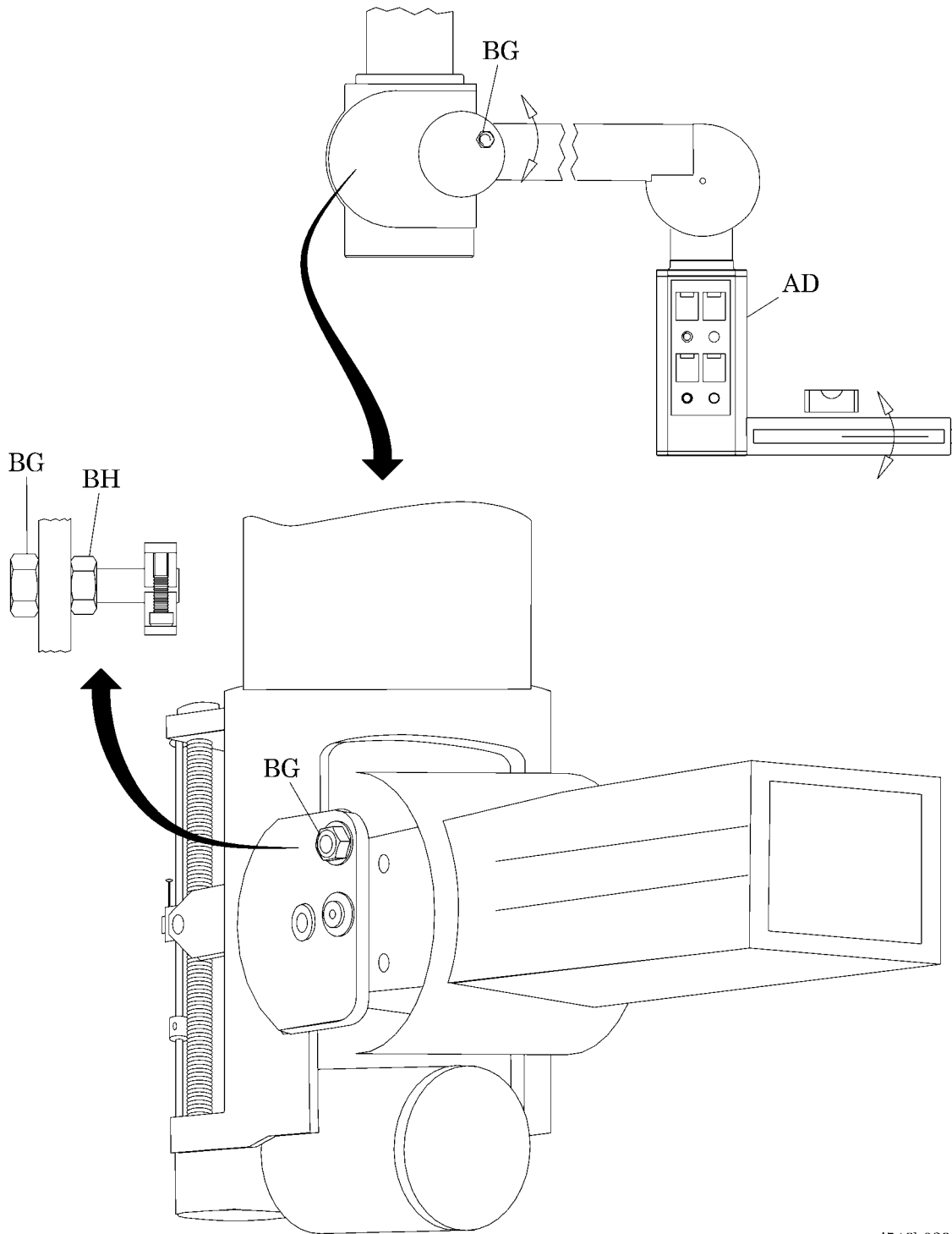


WARNING:

Nuts must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

4. Tighten the hex nut (BG) to 59 ft-lb (80 N·m) of torque.

Figure 17. Leveling the Retractable Arm

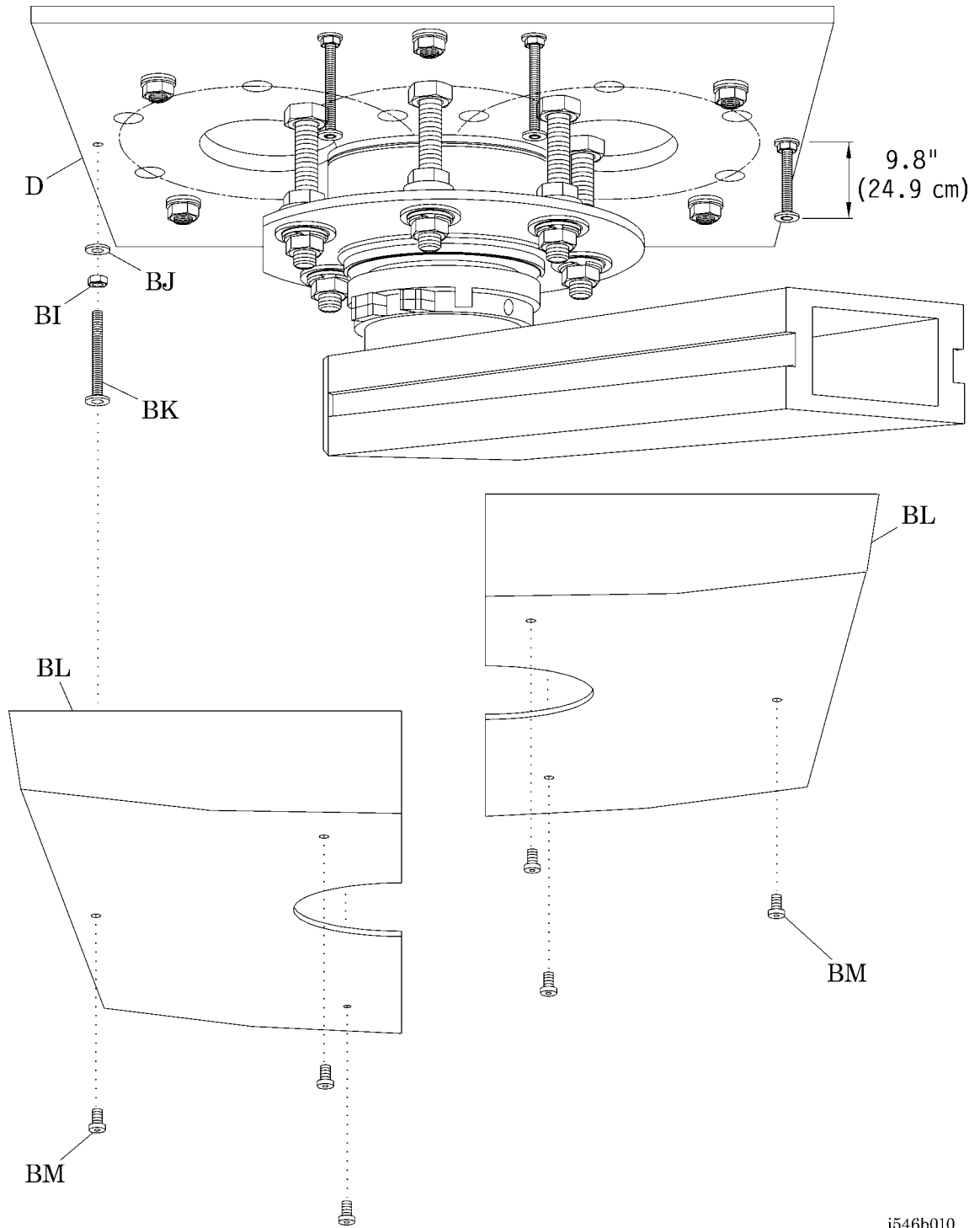


i546b039

Install the Ceiling Cover

1. Install the nuts (BI) and washers (BJ) on the threaded rods (BK) (see figure 18 on page 27).
2. Install the threaded rods (BK) into the mounting plate (D) so approximately 9.8" (249 mm) of length is left from the bottom of the mounting plate (D) to the end of the threaded rod (BK).
3. Tighten the nuts (BI) to 37 ft-lb (50 N·m) of torque.
4. Put the ceiling cover halves (BL) on the threaded rods (BK) so the two ceiling cover halves (BL) join with each other and are flush with the ceiling.
5. Install the six screws (BM) to attach the ceiling cover halves (BL) to the threaded rods (BK). Make sure there are no gaps between the ceiling cover halves (BL) and the ceiling.

Figure 18. Ceiling Cover

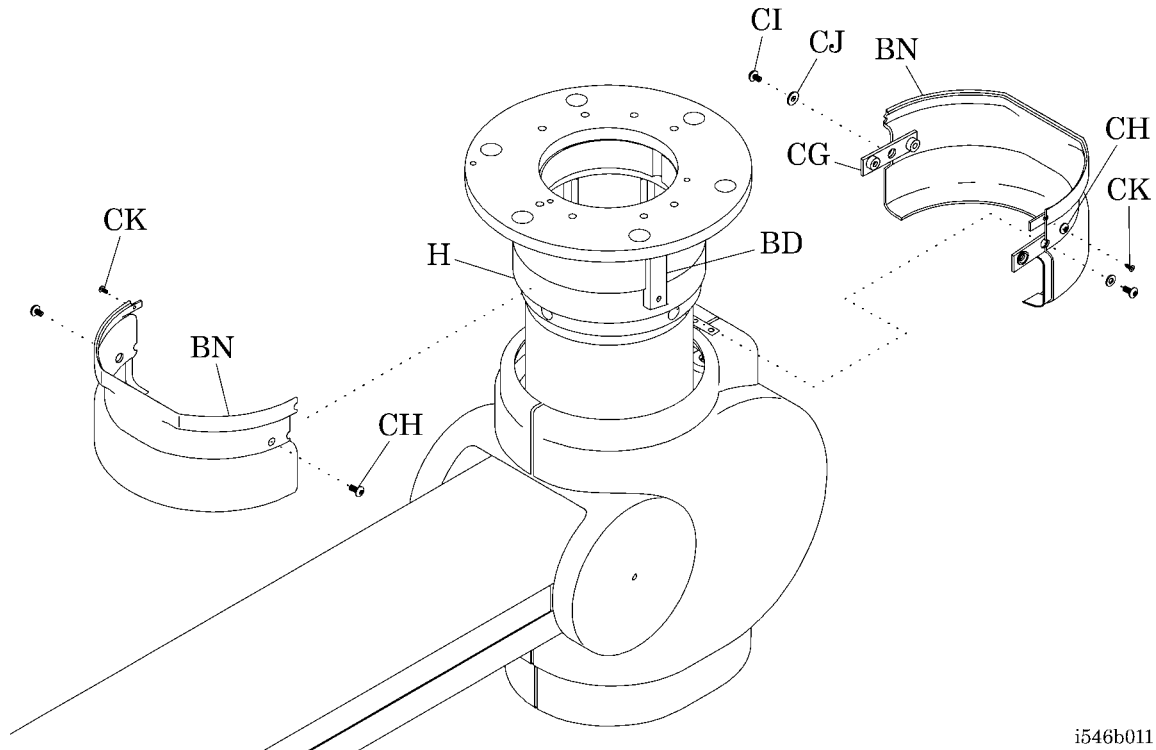


i546b010

Install the Bearing Covers

1. Install two machine screws (CF) to attach the two metal straps (CG) to one bearing cover half (BN) (see figure 19 on page 28).

Figure 19. Bearing Cover Installation



i546b011

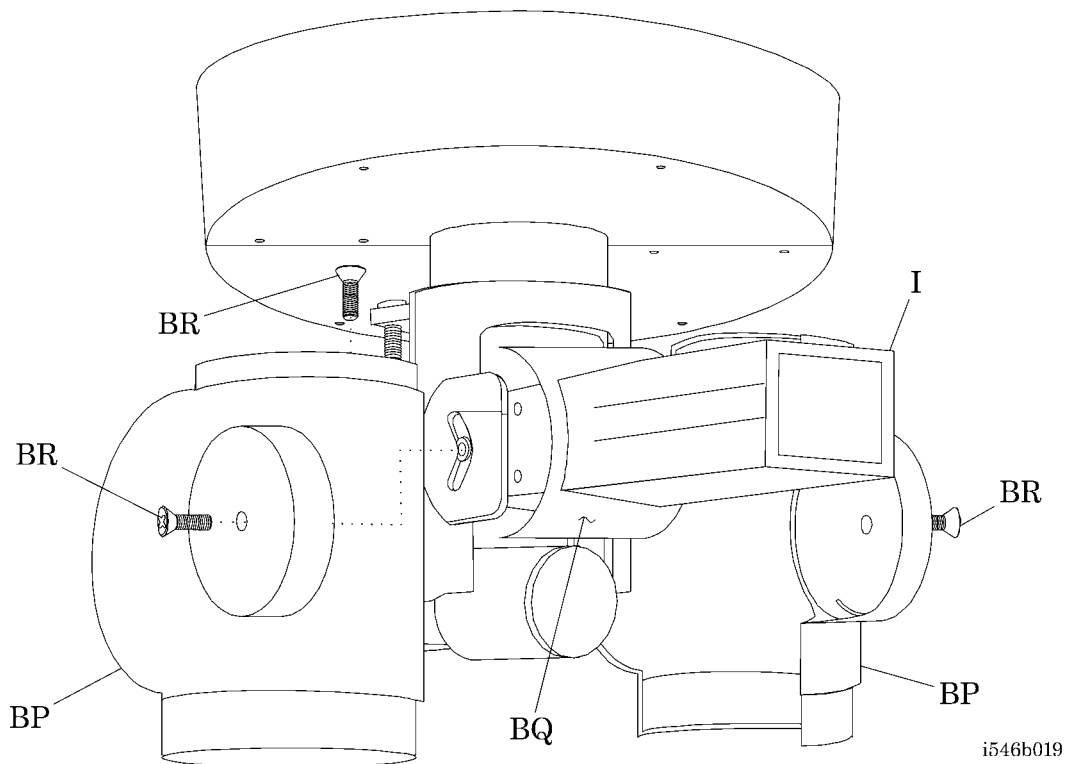
2. Set and hold the bearing cover half (BN) with the metal straps (CG) on the bearing (H). Make sure the center holes of the metal straps (CG) align with the holes in the stops (BD).
3. Set and hold the second bearing cover half (BN) over the metal straps (CG) and bearing (H).
4. **Loosely** install the two machine screws (CH) to attach the second bearing cover half (BN) to the outer holes of the metal straps (CG).
5. Make sure the bearing cover halves (BN) are correctly aligned without gaps. Adjust as necessary.
6. For a unit with bearing cover halves (BN) that form **slotted** holes when aligned, install the two machine screws (CI) and painted washers (CJ) at the slotted holes.
or
For a unit with bearing cover halves (BN) that form **round** holes when aligned, install the two machine screws (CI) at the round holes.

7. Install the two coarse-thread screws (CK) to attach the bearing cover halves (BN) to each other.
8. Tighten the two machine screws (CH).
9. Make sure the bearing cover halves (BN) are correctly aligned without gaps. Adjust as necessary.

Install the Retractable Arm Covers (Retractable Arms Only)

1. Install the motor cover halves (BP) around the lower arm (I) (see figure 20 on page 29).

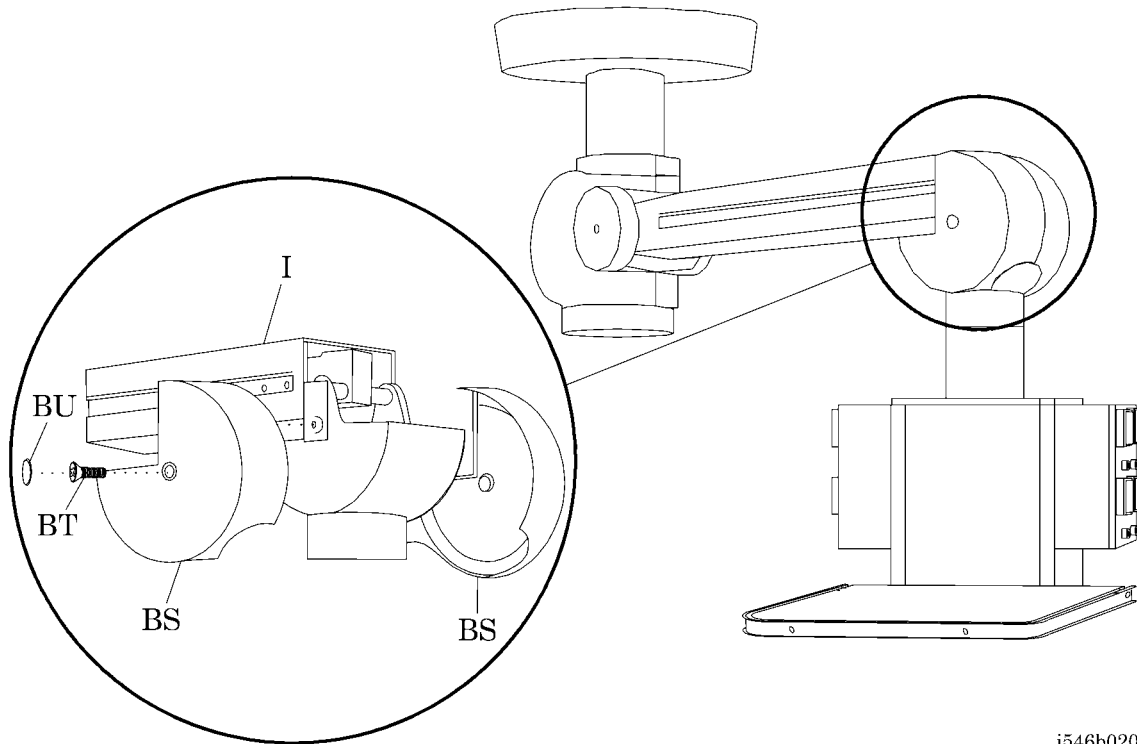
Figure 20. Motor Cover Installation



2. Make sure the sliding cover (BQ) is inside the cover halves (BP).
3. Install the four screws (BR) to attach the motor cover halves (BP) to the lower arm (I).

4. Install the service head joint cover halves (BS) around the lower arm (I) (see figure 21 on page 30).

Figure 21. Service Head Joint Cover Installation

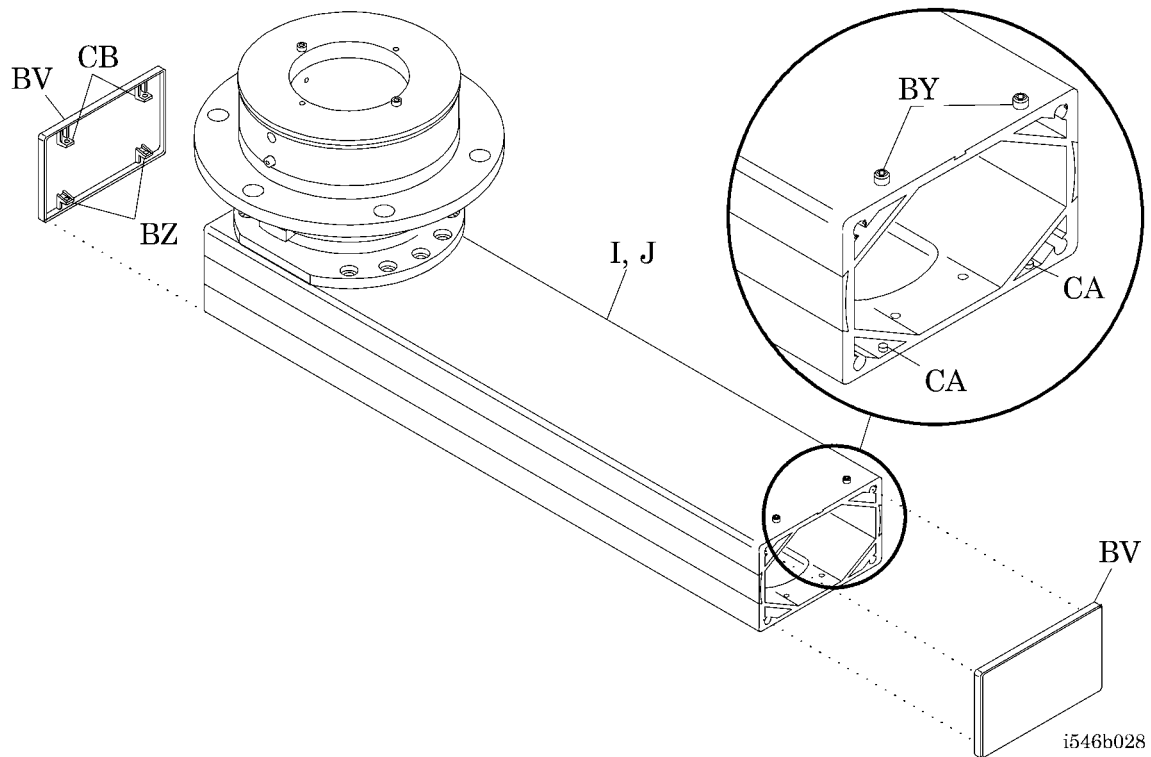


i546b020

5. Install the two screws (BT) to attach the service head joint cover halves (BS) around the lower arm (I).
6. Install the plastic screw covers (BU) over the heads of the two screws (BT).

2. For arms with **plastic** end caps (BV), do as follows on each arm (I) or (J) (see figure 23 on page 32):

Figure 23. Plastic End Cap Installation



- a. Loosen the two screws (BY) on top of the arm (I) or (J). Do **not** remove the two screws (BY).
- b. Turn the end cap (BV) so the top tabs (CB) are on top and the bottom tabs (BZ) are on bottom.

NOTE:

The top tabs have slotted holes, and the bottom tabs have round holes.

- c. Angle the bottom of the end cap (BV) toward the arm (I) or (J). Then install the two bottom tabs (BZ) of the end cap (BV) on the two pins (CA) inside the arm (I) or (J).
- d. Pivot the top of the end cap (BV) up, and install it on the arm (I) or (J).
- e. Tighten the two screws (BY) to attach the two top tabs (CB) of the end cap (BV) to the arm (I) or (J).

Install the Monitor Carrier Arm

1. Remove and **retain** the three screws (H) that attach the retaining ring (I) on the drop tube (J) (see figure 24 on page 34).
2. Remove and **retain** the retaining ring (I) and washer (K) from the drop tube (J).

NOTE:

The washer will be temporarily attached to the shoulder of the drop tube with grease.

3. Remove the screw (L) that attaches the bottom cover (M) to the arm (N).
4. Remove the bottom cover (M) from the arm (N).
5. Turn the drop tube (J) so its pin (O) is at the bottom, and install the arm (N) on the bottom of the drop tube (J) so its pin (O) is in the desired location for the arm (N) to stop its rotation.

NOTE:

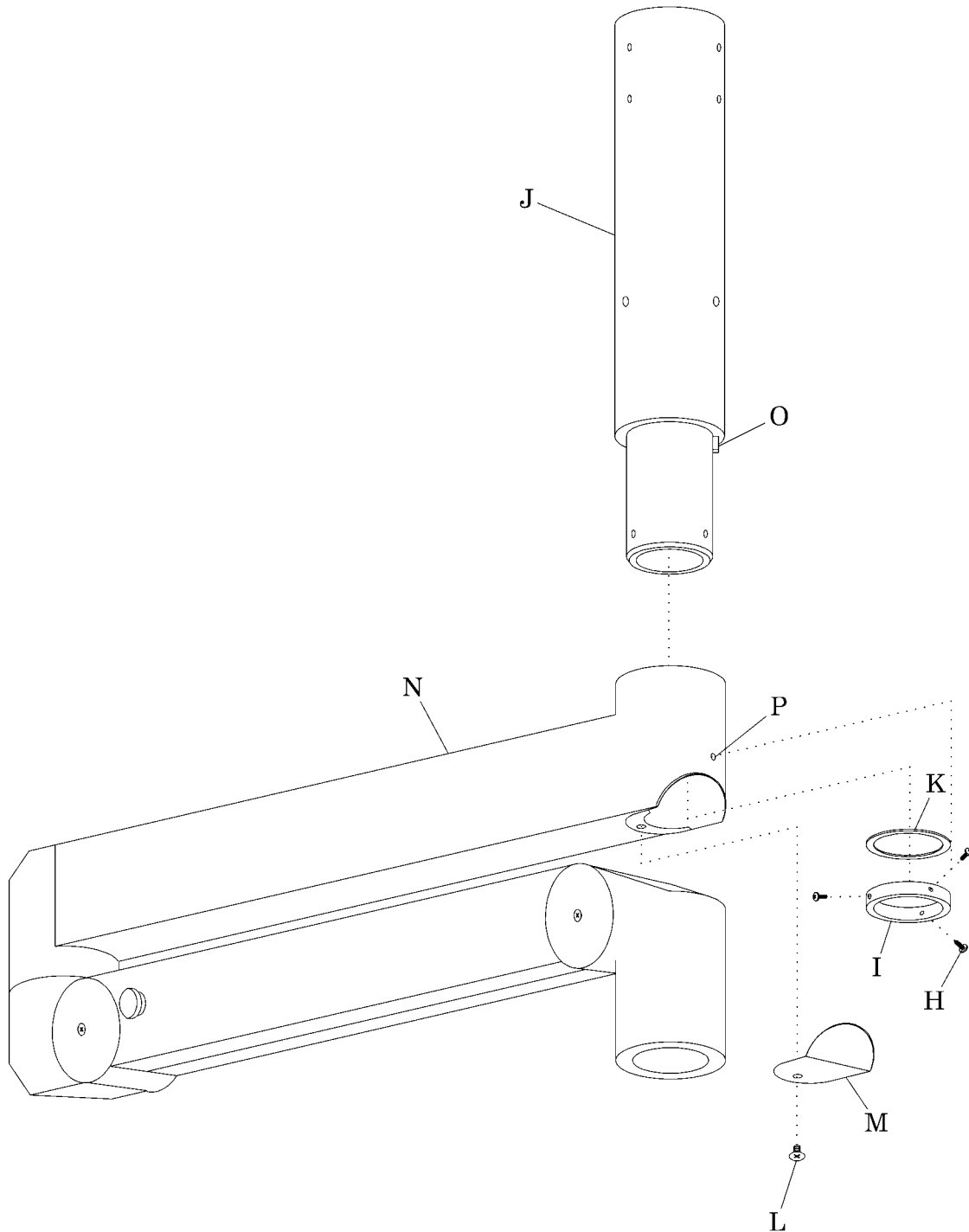
The pin on the drop tube acts as a stop for the arm.

6. From inside the arm (N), install the washer (K) and retaining ring (I) on the drop tube (J).
7. Install the three screws (H) through the small hole (P) in the arm (N) to attach the arm (N) to the drop tube (J).

NOTE:

The drop tube will need to be turned 120° for each screw.

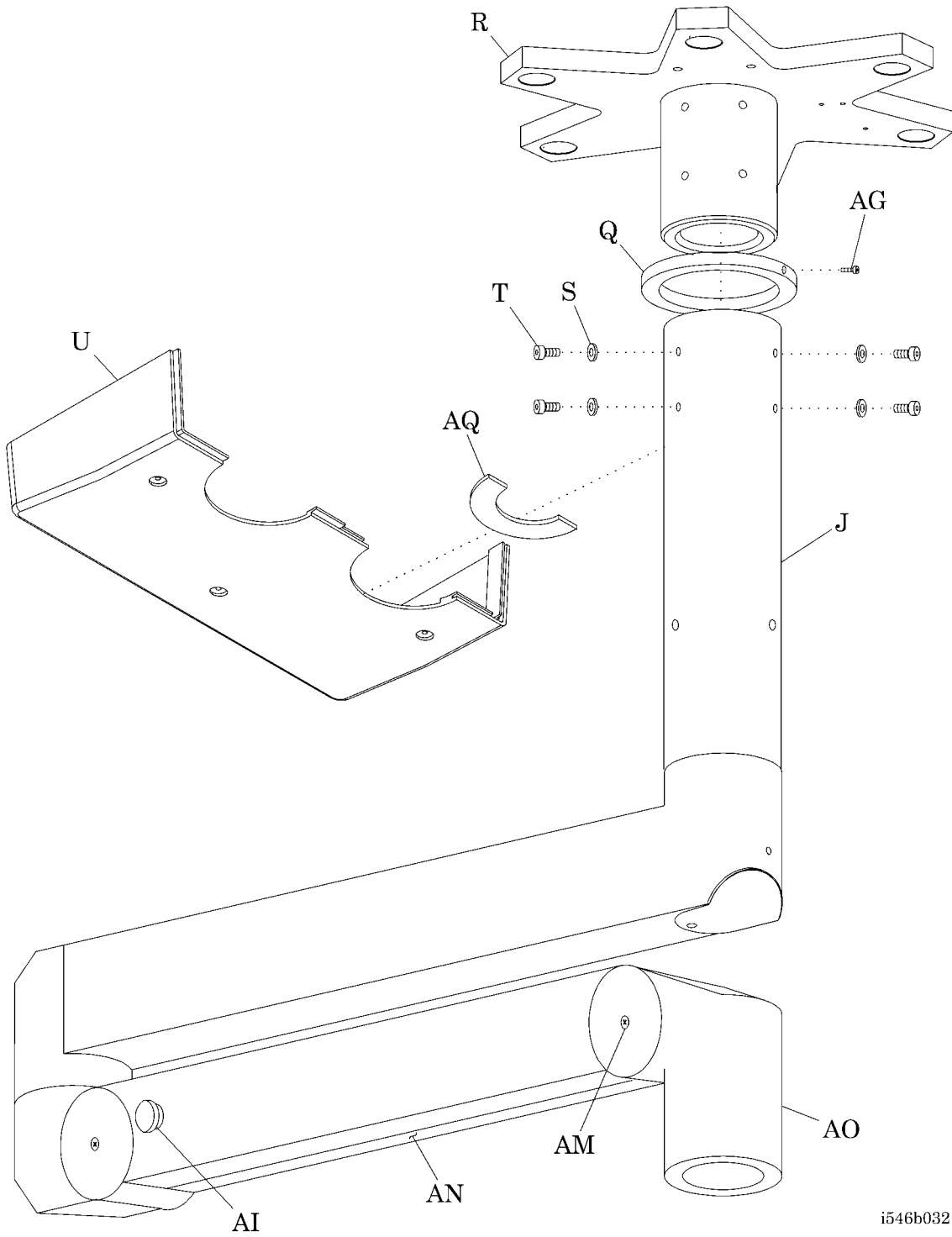
Figure 24. Drop Tube and Arm



i546b033

8. Slide the retaining ring (Q) on the drop tube (J) until it passes the screw holes at the top of the drop tube (J) (see figure 25 on page 36).
9. Install the drop tube (J) on the mounting plate (R).
10. Turn the mounting plate (R) until its holes align with the holes in the drop tube (J).
11. Install the 12 lockwashers (S) and screws (T) to attach the drop tube (J) to the mounting plate (R).
12. Tighten the screws (T) to 7.1 ft-lb (9.6 N·m) of torque.

Figure 25. Mounting Plate and Ceiling Cover



i546b032

13. Install the mounting plate (R) on the threaded rods (B) (see figure 26 on page 38).
14. Install the six plastic disks (V), washers (W), lockwashers (X), and nuts (Y) to attach the mounting plate (R) to the threaded rods (B).
15. Use an electronic level to adjust the mounting plate (R) to 0.0° deflection, $\pm 0.2^\circ$.

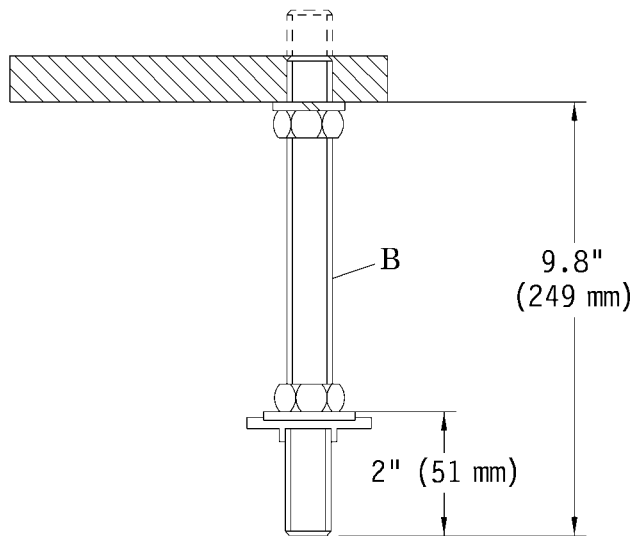
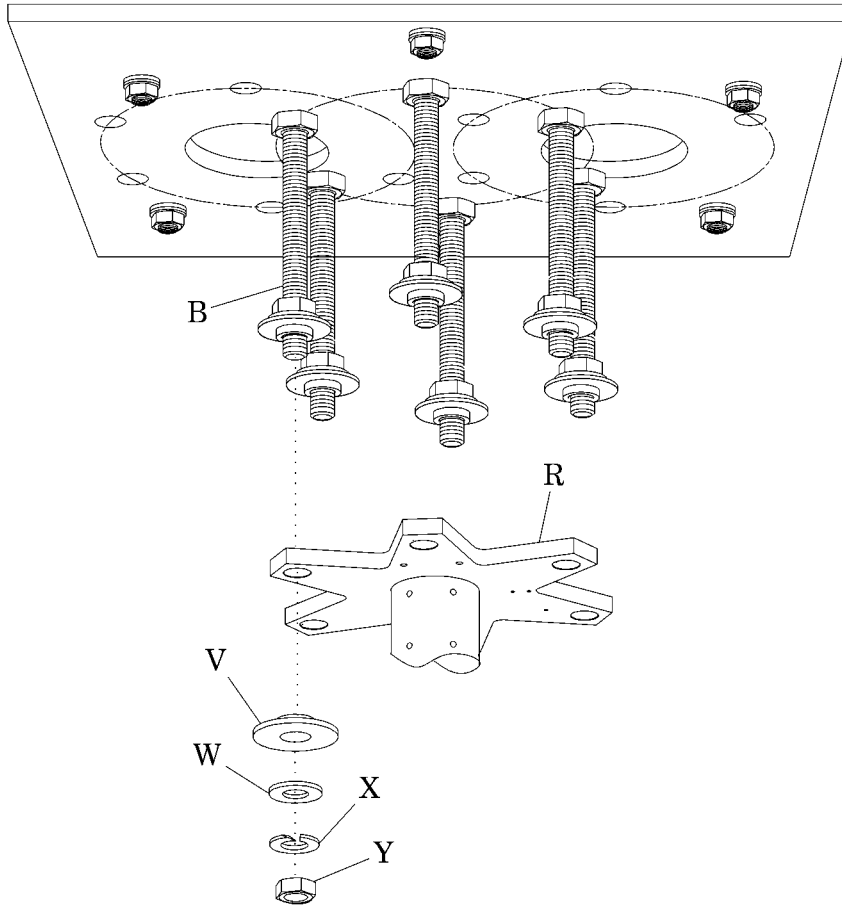


WARNING:

Nuts must be correctly tightened, or the ceiling arm may fall. Patient injury, personal injury, or equipment damage could occur.

16. Tighten the nuts (Y) to 74 ft-lb (100 N·m) of torque.
17. After tightening the nuts (Y), make sure the mounting plate (R) is level. Adjust the leveling as needed.
18. At the same side as the lock (AI), remove the two screws (AM) that attach half of the lower arm cover (AN) to the lower arm (AO) (see figure 25 on page 36).
19. Squeeze the two halves of the lower arm cover (AN) to release them from each other, and remove one half of the lower arm cover (AN) from the lower arm (AO).

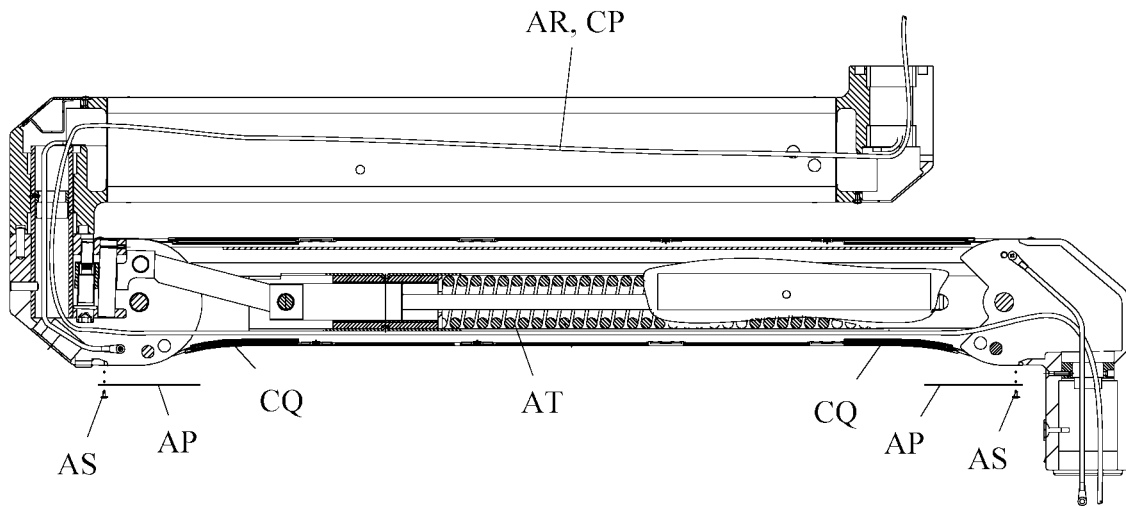
Figure 26. Mounting Plate



i546b003

20. Remove the two screws (AS) that secure each sheet metal wiper (AP) to the bottom of the pivot (see figure 27 on page 39).

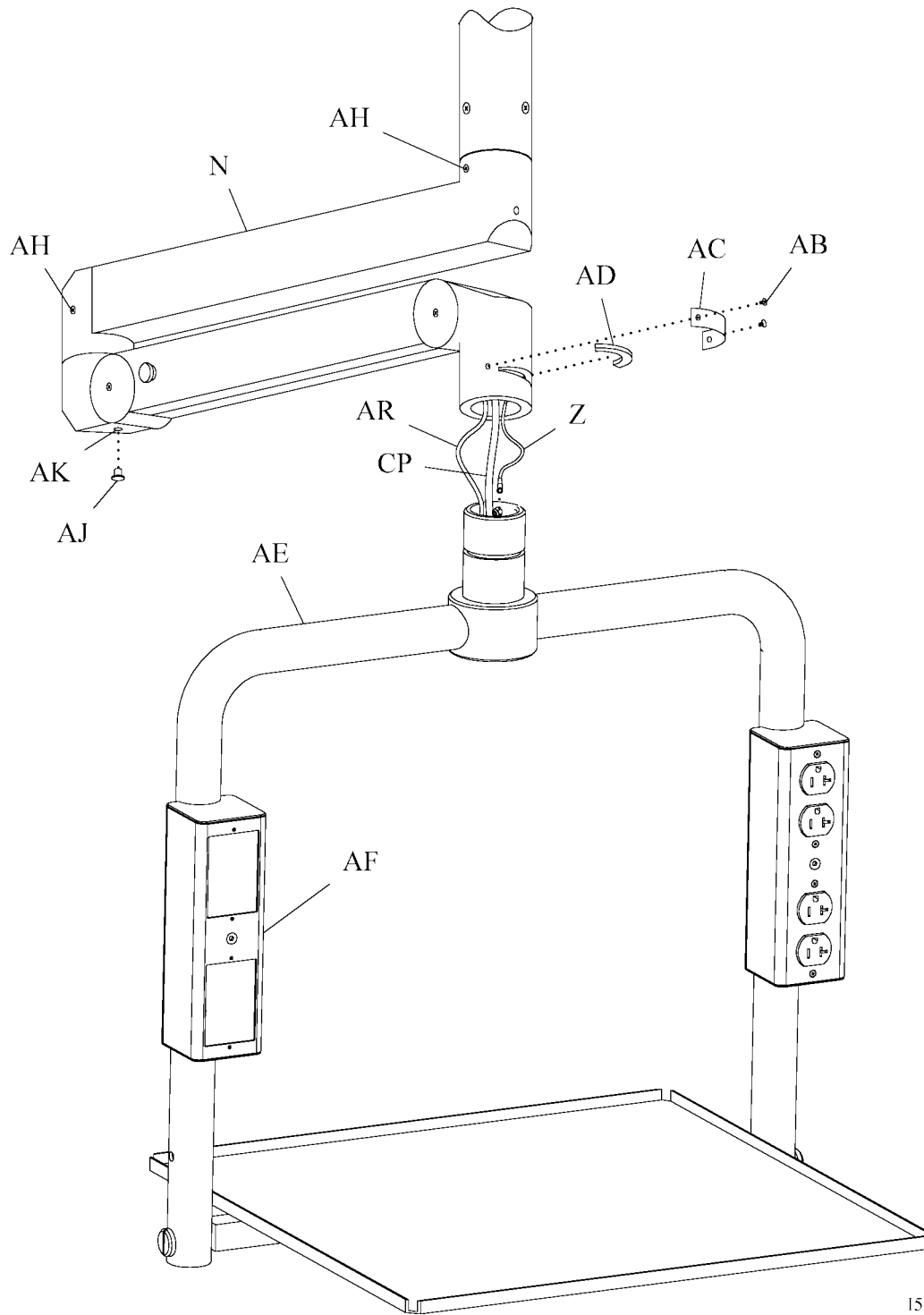
Figure 27. Arm



i546b038

21. Remove the sheet metal wipers (AP).
22. Pull the 12/3 power cord (CP) and ground wire (AR) from the monitor carrier into the arm (N) and under the spring tube (AT) (see figure 27 on page 39).
23. Remove the two screws (AB) that attach the metal strap (AC) to the arm (N) (see figure 28 on page 40).
24. Remove the metal strap (AC) and retaining wedge (AD) from the arm (N).
25. Simultaneously raise the monitor carrier (AE) up to the lower arm (AO) and pull the 12/3 power cord (CP) and ground wire (AR) through the arm (N).
26. Connect the ground wire (Z) from the arm (N) to the top of the monitor carrier (AE).
27. Install the monitor carrier (AE) on the arm (N).
28. Install the retaining wedge (AD) through the arm (N) to attach the monitor carrier (AE).
29. Install the two screws (AB) to attach the metal strap (AC) to the arm (N).

Figure 28. Monitor Carrier



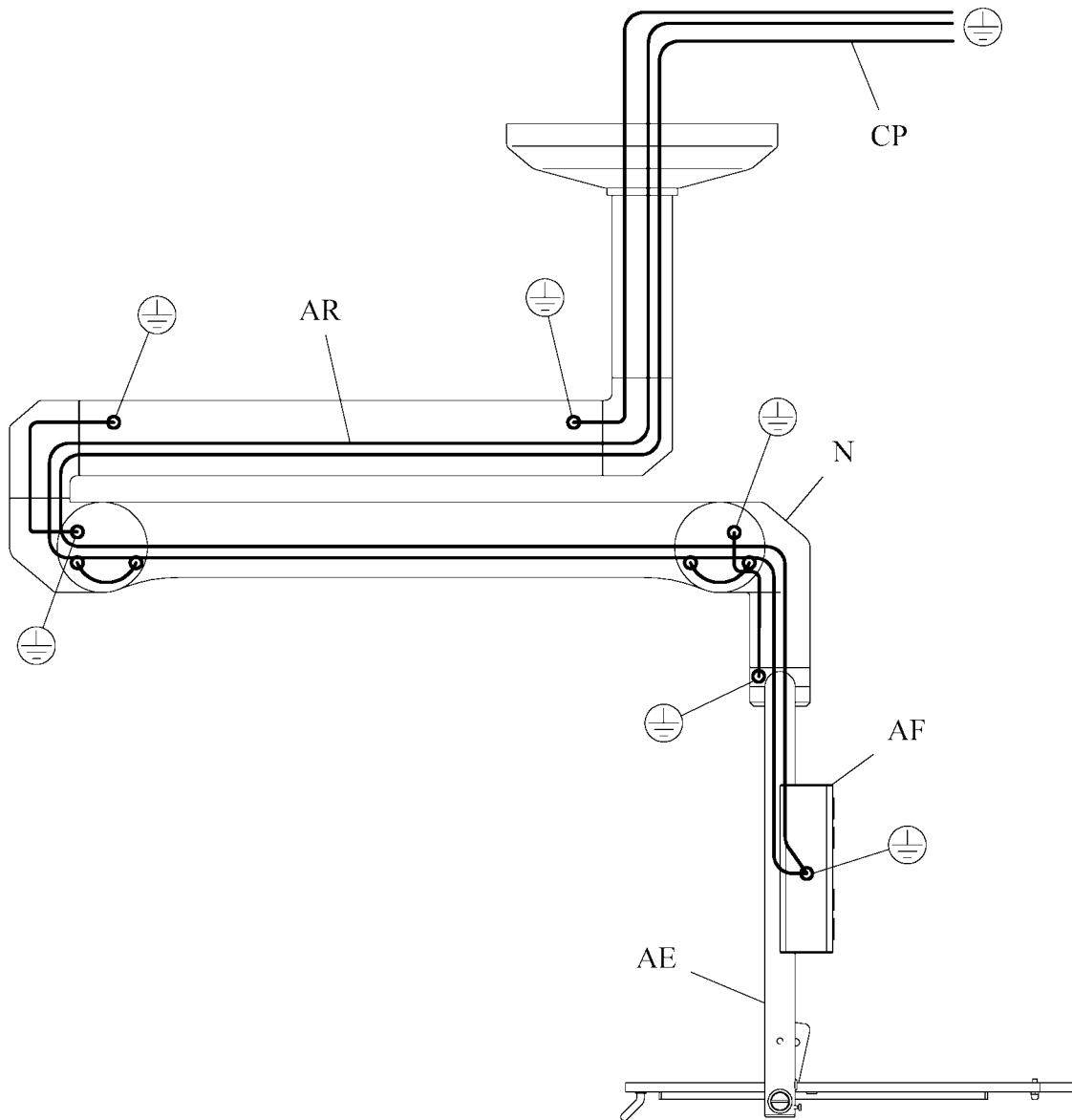
1546B015

30. Finish pulling the 12/3 power cord (CP) and ground wire (AR) through the arm (N) to the rough-in assembly (AF) in the monitor carrier (AE) (see figure 28 on page 40).
31. Connect the 12/3 power cord (CP) and ground wire (AR) (see figure 29 on page 42) to the junction boxes (AU) and grounding bar (AV) in the rough-in assembly (AW) (see figure 30 on page 43). Connect facility wiring to the product wiring in accordance with the following standards:
 - Latest edition of National Fire Protection Association (NFPA®¹) 70, *National Electrical Code* (NEC®²)
 - CAN/CSA C22.1-02, *Canadian Electrical Code, Part I—Safety Standard for Electrical Installations* (Canadian installations only)
 - CAN/CSA C22.2 No. 0-M91, *General Requirements—Canadian Electrical Code, Part II* (Canadian installations only)
32. Push the two ceiling cover halves (U) up to the ceiling (see figure 25 on page 36).
33. Slide the retaining ring (Q) up to the ceiling cover halves (U).
34. Tighten the screw (AG) to hold the retaining ring (Q) in position.
35. Install one half of the lower arm cover (AN) on the lower arm (AO) (see figure 24 on page 34).
36. Slide the sheet metal wipers (AP) into the channels (CQ) of the lower arm cover (AN) (see figure 27 on page 39).
37. Install the two screws (AM) to attach the lower arm cover half (AN) to the lower arm (AO) (see figure 25 on page 36).
38. Install the screws (L) to attach the bottom covers (M) to the arm (N) (see figure 24 on page 34).

1. NFPA® is a registered trademark of National Fire Protection Association, Inc.

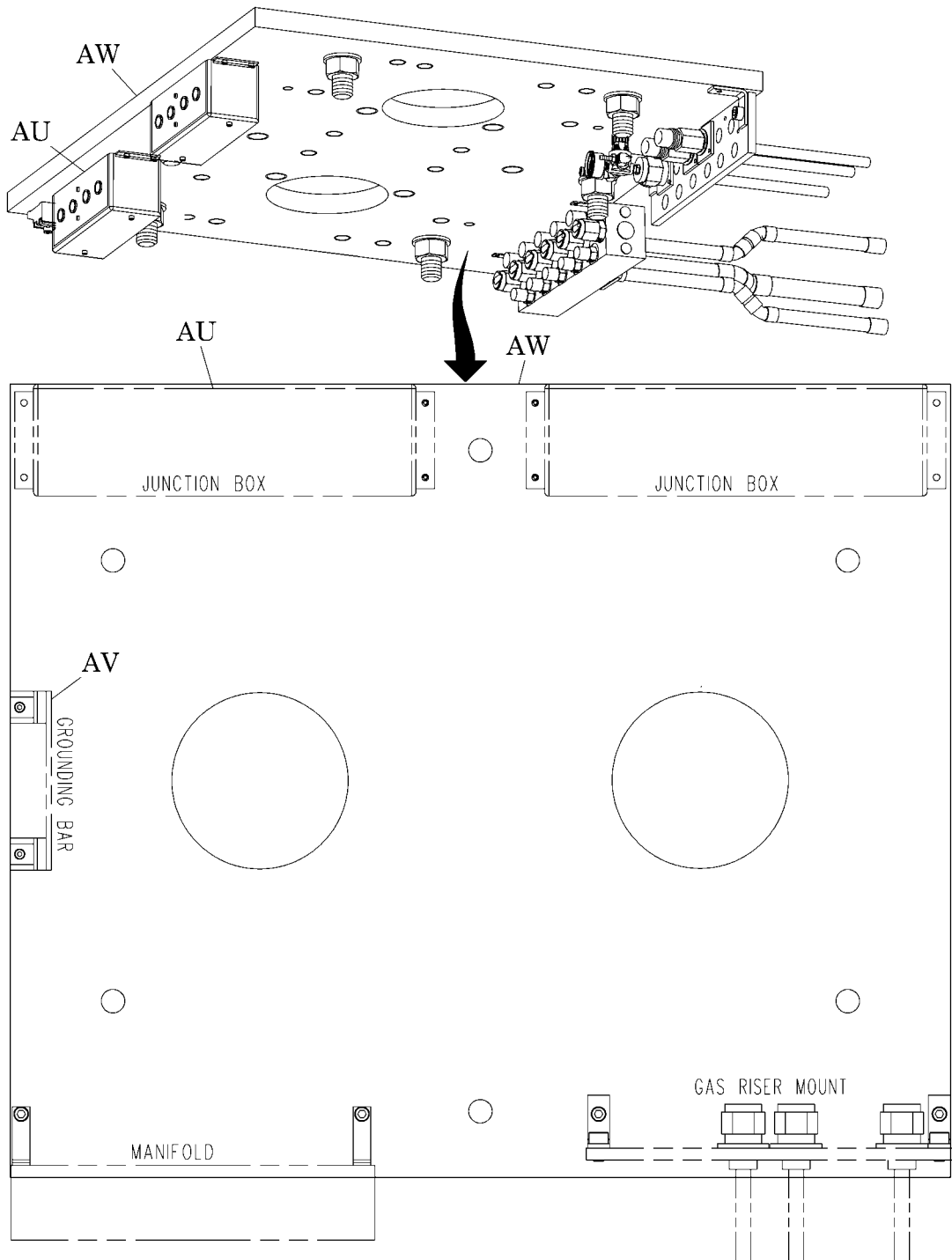
2. NEC® is a registered trademark of National Fire Protection Association, Inc.

Figure 29. Ground Wires



i546b041

Figure 30. Rough-In Assembly



i546b042

Adjust the Horizontal Brakes

1. Find the four brake adjustment screws (AH) (see figure 28 on page 40).
2. Do **one** of the following:
 - To **tighten** the brake, turn the brake adjustment screws (AH) **clockwise**.
 - To **loosen** the brake, turn the brake adjustment screws (AH) **counterclockwise**.
3. After each adjustment, do a check of the horizontal movement to make sure the arm (N) does not move when placed at the applicable location.

Adjust the Spring Force

1. Put sufficient weight on the arm (N) to simulate the equipment that will be attached to the arm (N) (see figure 28 on page 40).



WARNING:

When the lock is released, the lower arm is under spring tension. If the lower arm is not securely supported with either up or down pressure when the lock is released, personal injury or equipment damage could occur.

2. While securely supporting the arm (N) with either up or down pressure, release the lock (AI) on the arm.
3. See if whether the arm (N) rises or lowers:
 - If the arm **rises**, the spring tension should be **decreased**.
 - If the arm **lowers**, the spring tension should be **increased**.
4. Remove the plug (AJ) from the arm (N), and insert a 6 mm hex head wrench into the hole (AK).
5. Do **one** of the following:
 - To **decrease** the spring tension, turn the hex head wrench **clockwise**.
 - To **increase** the spring tension, turn the hex head wrench **counterclockwise**.
6. After adjusting the spring force, make sure the arm (N) stays in the applicable location. Repeat the adjustment as needed.
7. When the arm (N) is correctly adjusted, do as follows:
 - a. Remove the hex head wrench from the hole (AK).
 - b. Install the plug (AJ).