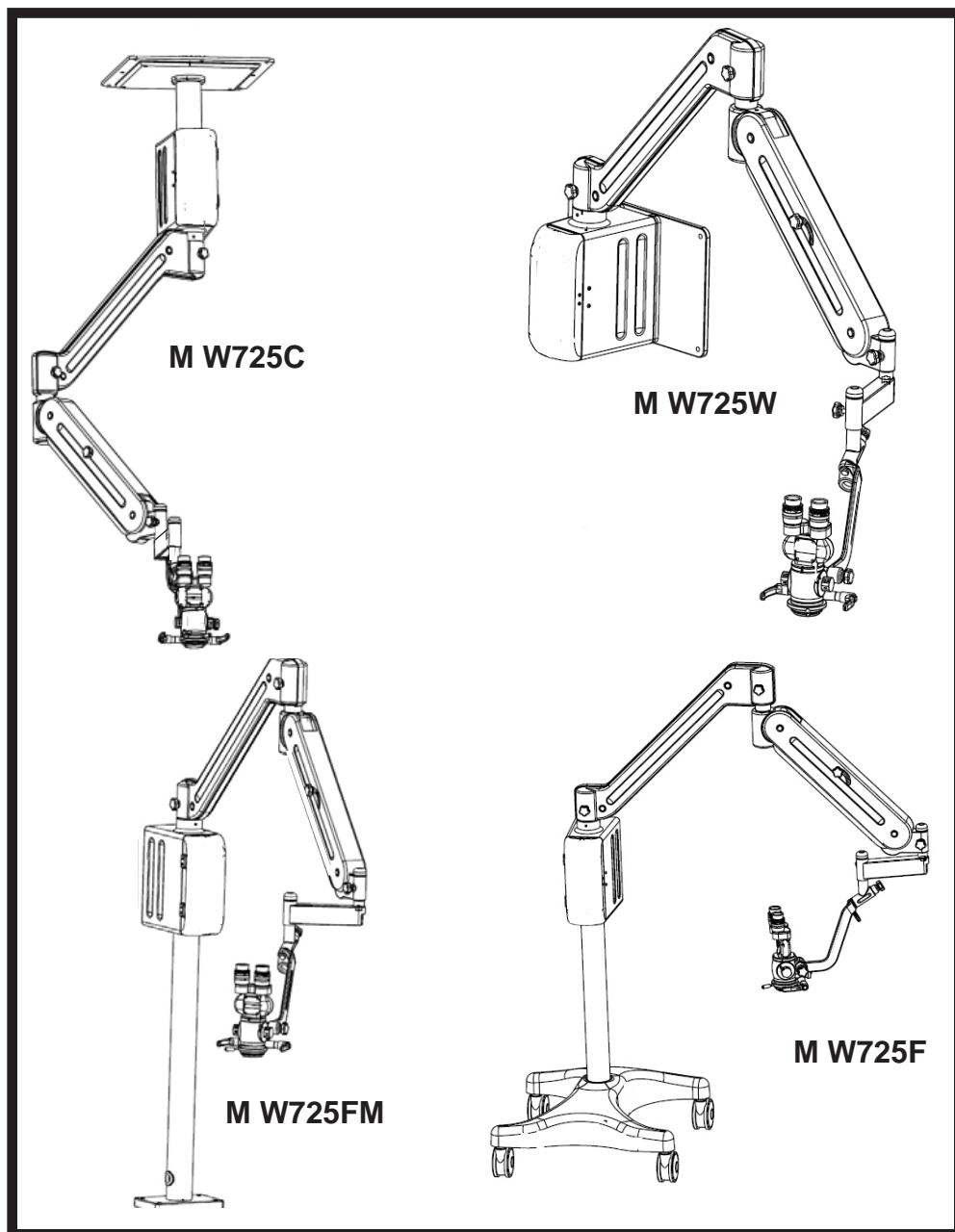


OWNER'S MANUAL

Microscope Systems



M W725 Support Systems
Global Surgical™ G3, G4, & G6 Microscopes



When contacting Global Surgical™ Corporation for either Customer Service or Technical Service, it will be helpful if you have your **Customer Identification Number** and your **Customer Order Number** available. Please take a moment to record these numbers, which are printed on your invoice, in the spaces below.

Customer Identification Number: _____

Customer Order Number: _____



**3610 Tree Court Industrial Blvd.
St. Louis, MO 63122
1-800-861-3585**

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WARNINGS AND CAUTIONS



THE SAFETY AND SATISFACTION OF OUR CUSTOMERS AND THEIR PATIENTS IS THE HIGHEST PRIORITY OF GLOBAL SURGICAL™. THE FOLLOWING SECTION OF THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING THE SAFE AND PROPER USE OF THIS EQUIPMENT, AND SHOULD BE READ THOROUGHLY BY ALL OPERATORS PRIOR TO THEIR FIRST USE OF THE EQUIPMENT. FAILURE TO READ AND UNDERSTAND THIS MATERIAL COULD RESULT IN INJURY TO PATIENTS OR PERSONNEL, OR IN DAMAGE TO THE EQUIPMENT.



THE POWER SUPPLY SHOULD ONLY BE CLEANED WHEN THE POWER CORD IS DISCONNECTED FROM THE AC POWER OUTLET. RISK OF ELECTRIC SHOCK RESULTING IN DEATH OR INJURY IS POSSIBLE IF THE POWER CORD IS NOT DISCONNECTED FROM THE OUTLET PRIOR TO CLEANING THE UNIT.



RISK OF EXPLOSION IF USED IN THE PRESENCE OF FLAMMABLE ANESTHETICS.



SAFETY GLASSES SHOULD BE WORN WHILE INSTALLING COMPONENTS TO PREVENT POSSIBLE EYE INJURY.



DISCONNECT ALL ELECTRICAL POWER PRIOR TO CLEANING AND DISINFECTING.



This unit must be used only with hospital grade earth-grounded AC outlets.

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Section 1. Introduction



THE SAFETY AND SATISFACTION OF OUR CUSTOMERS AND THEIR PATIENTS IS THE HIGHEST PRIORITY OF GLOBAL SURGICAL™. THE FOLLOWING SECTION OF THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING THE SAFE AND PROPER USE OF THIS EQUIPMENT, AND SHOULD BE READ THOROUGHLY BY ALL OPERATORS PRIOR TO THEIR FIRST USE OF THE EQUIPMENT. FAILURE TO READ AND UNDERSTAND THIS MATERIAL COULD RESULT IN INJURY TO PATIENTS OR PERSONNEL, OR IN DAMAGE TO THE EQUIPMENT.

1.1. Global Surgical™ G3, G4, and G6 Microscope Systems

1.1.1. Microscope Systems

This manual covers the Global Surgical™ G3, G4, and G6 Microscope Systems and the M W725 Microscope Support Systems. The Global Surgical™ G3 Microscope provides the user with three steps of magnification, the G4 provides 4 steps of magnification and the Global Surgical™ G6 Microscope provides six magnification steps. Each microscope head can be used with one of three different coupler arms: a straight, an angled, or counter-balanced coupler arm.

The straight arm is specifically designed for use in otolaryngology. The angled coupler arm is ideal for dental applications. The counterbalance coupler arm is designed to compensate for the offset weight of added accessories such as a digital camera or binocular observation system. The unique adjustment provides an ideal balance of the microscope head without locking down joints or inhibiting free movement of the head.

Each of the Global Surgical™ Microscope Heads have built-in illumination modules and dual maneuvering handles attached to the head. The binocular features adjustable eyecups for optimal comfort. Both models accept all Global Surgical™ M 1028G Series Fine Focus Devices and may be used with a variety of light sources, observation systems, video and still cameras, and accessories. The Microscope Heads are also available with an optional dental composite filter.

1.1.2. Microscope Support Systems

The Global Surgical™ G3, G4, and G6 (three-step, four-step and six-step magnification) microscope systems were designed for use with the Global Surgical™ M W725 Microscope Support System. The M W725 Microscope Support System is available in several configurations: Floorstand (M W725F), Wallmount (M W725W), High Wallmount (M W725WH), Ceiling Mount for 8 foot ceilings (M W725C8), 9 foot ceilings (M W725C9), 10 foot ceilings (M W725C10), CeilingTrac™ (M W725CT), and Floormount (M W725FM).

The Microscope Support System features a multi-configurational Lightsource Housing allowing the customer to use a variety of different lightsources and video accessories.

Section 1 Introduction

1.2. Specifications

Table 1-1 below lists the general specifications for the M W725 Microscope Support System. See Section 3 for dimensions and rotational limits.

Table 1-1. Microscope Support System Specifications

| SPECIFICATIONS | M W725 MICROSCOPE SUPPORT SYSTEM |
|--|--|
| Model | Shipping Weight |
| M W725F | 242 lbs. (110kg) |
| M W725C8 | 88 lbs. (40 kg) |
| M W 725C9 | 90 lbs. (41 kg) |
| M W725C10 | 92 lbs. (42 kg) |
| M W725CK (Kit) | 30 lbs. (14 kg) Required for M W725C8, M W725C9, and M W725C10 |
| M W725W | 40 lbs. (18 kg) |
| M W725WH | 40 lbs. (18 kg) |
| M W 725WK (Kit) | 39 lbs. (18 kg) Required for M W725W, M W725WH, and M W725WHSU |
| Weight the supporting structure must hold: | 500 pounds (226.8 kg) |
| Electrical Receptacle Requirements: Recommended, but not required, connection be made to a dedicated circuit breaker, and for Ceiling Mount and High Wallmount use a receptacle controlled with a wall switch. | 115 VAC, 15 A, 50/60 Hz 230 VAC, 15 A 50/60 Hz Standard: Duplex Outlet |
| Ceiling Mounting Surface: | |
| 8' (2.44m) Mounting Surface | 8' (2.44 m) high 2" x 8" (5.1 x 20.3 cm) or larger joists on 16" (40.6 cm) centers: Use Model M W725C8 |
| 9' (2.74 m) Mounting Surface | Use Model M W725C9 (Same as Model M W725C8 except column is 12" (30.5 cm) longer) |
| 10' (3.04 m) Mounting Surface | Use Model M W725C10 (Same as Model M W725C8 except column is 24" (61.0 cm) longer) |
| Custom | Special construction by independent contractor must meet the above specifications. * If mounting to a ceiling that does not have wooden mounting surfaces, mount is considered "custom" and all hardware is to be supplied by contractor. |
| Wall Surfaces: | Standard: 2" x 4" (5.1 cm) x 10.1 cm) wood Studs on 16" (40.6 cm) centers. If metal studs: order special Mounting Board M W557-32. If 24" (61.0 cm) centers: wood or metal order special Mounting Board M 557 Note: Contractor to reinforce metal studded walls or particle walls. OR: Standard Concrete (Cinder) Block 8" x 16" (20.3 cm x 40.6 cm) |

Section 2. System Description

2.1. Global Surgical™ G3, G4, and G6 ENT Microscopes

The Global Surgical™ G3 ENT Microscope, Models M W1003GSC and M W1003GCC have a built-in **three-step** manual magnification factor changer (0.5X, 1.0X, and 2.0X). Magnification levels of 2.5X, 5.0X, and 10.0X are provided when used with a 125 mm straight binocular and a 250 mm objective lens. These microscopes feature built-in coupler arms that are available in two different styles. The M W1003GSC features a **Straight Arm with Coupler** which allows the microscope arm to be tilted to the desired angle and secured with a tension lock knob. The M W1003GCC features a **Counterbalance Coupler Arm** which moves the pivot axis to the center of the microscope for improved balance. This coupler also features an adjustable slide to offset the added weight of accessories such as a digital camera, thus providing optimal balance and maneuverability.

The Global Surgical™ G4 ENT Microscope, Models M W1004GSC and M W1004GCC have a built-in **four-step** manual magnification factor changer (0.5X, 0.8X, 1.25X and 2.0X). Magnification levels of 2.5X, 4.0X, 6.2X and 10.0X are provided when used with a 125 mm straight binocular and a 250 mm objective lens. These microscopes feature built-in coupler arms that are available in two different styles. The Global Surgical™ G4 ENT microscope is available with the same coupler arm options as described above for the Global Surgical™ G3 ENT Microscope.

The Global Surgical™ G6 ENT Microscope, Models M W1006GSC and M W1006GCC have a built-in **six-step** manual magnification factor changer (0.33X, 0.5X, 0.8X, 1.25X, 2.0X, and 3.0X). Magnification levels of 1.7x, 2.5X, 4.0X, 6.3X, 10.0X and 15.0X are provided when used with a 125 mm straight binocular and a 250 mm objective lens. The Global Surgical™ G6 ENT microscope is available with the same coupler arm options as described above for the Global Surgical™ G3 ENT Microscope.

2.2. Global Surgical™ G3, G4 and G6 Dental Microscopes

The Global Surgical™ G3 Dental Microscopes, Models M W1003GAC and M W1003GCC have a built-in **three-step** manual magnification factor changer (0.5X, 1.0X, and 2.0X). Magnification levels of 3.2X, 6.4X, and 12.8X are provided when used with a 160 mm inclined or inclinable binocular and a 250 mm objective lens. These microscopes feature built-in coupler arms that are available in two different styles. The M W1003GAC features an Angled Coupler Arm which allows the microscope arm to be tilted to the desired angle and secured with a tension lock knob. The M W1003GCC features a **Counterbalance Coupler Arm** which moves the pivot axis to the center of the microscope for improved balance. This coupler also features an adjustable slide to offset the added weight of accessories such as a digital camera, thus providing optimal balance and maneuverability. The Global Surgical™ G3 Dental Microscope is available with an optional dental composite filter.

The Global Surgical™ G4 Dental Microscopes, Models M W1004GAC and M W1004GCC have a built-in **four-step** manual magnification factor changer (0.5X, 0.8X, 1.25X, and 2.0X). Magnification levels of 3.2X, 5.12X, 8.0X, 12.8X are provided when used with a 160 mm inclined or inclinable binocular and a 250 mm objective lens. The Global Surgical™ G4 Dental Microscope is available with the same coupler arms and dental composite filter option as described above for the Global Surgical™ G3 Dental Microscope.

The Global Surgical™ G6 Dental Microscopes, Models M W1006GAC and M W1006GCC have a built-in **six-step** manual magnification factor changer (0.33X, 0.5X, 0.8X, 1.25X, 2.0X and 3.0X). Magnification levels of 2.1X, 3.2X, 5.1X, 8.0X, 12.8X and 19.2X are provided when used with a 160 mm inclined or inclinable binocular and a 250 mm objective lens. The Global Surgical™ G6 Dental Microscope is available with the same coupler arms and dental composite filter option as described above for the Global Surgical™ G3 Dental Microscope.

Section 2 System Description

2.3. M W725F Floorstand Model

The Floorstand Model, M W725F, is designed for portability around the office. The Floorstand Model uses a compact H-base with four large casters and occupies minimal floor space. All four casters may be locked to prevent rolling. The Floorstand Model provides a sturdy, stable support for the microscope and arm assemblies.

See Figure 2-1.



Arms should be folded and locked in storage position, as shown in Figure 2-1 below, for safe transport. Failure to do so could result in damage to the system or personal injury.

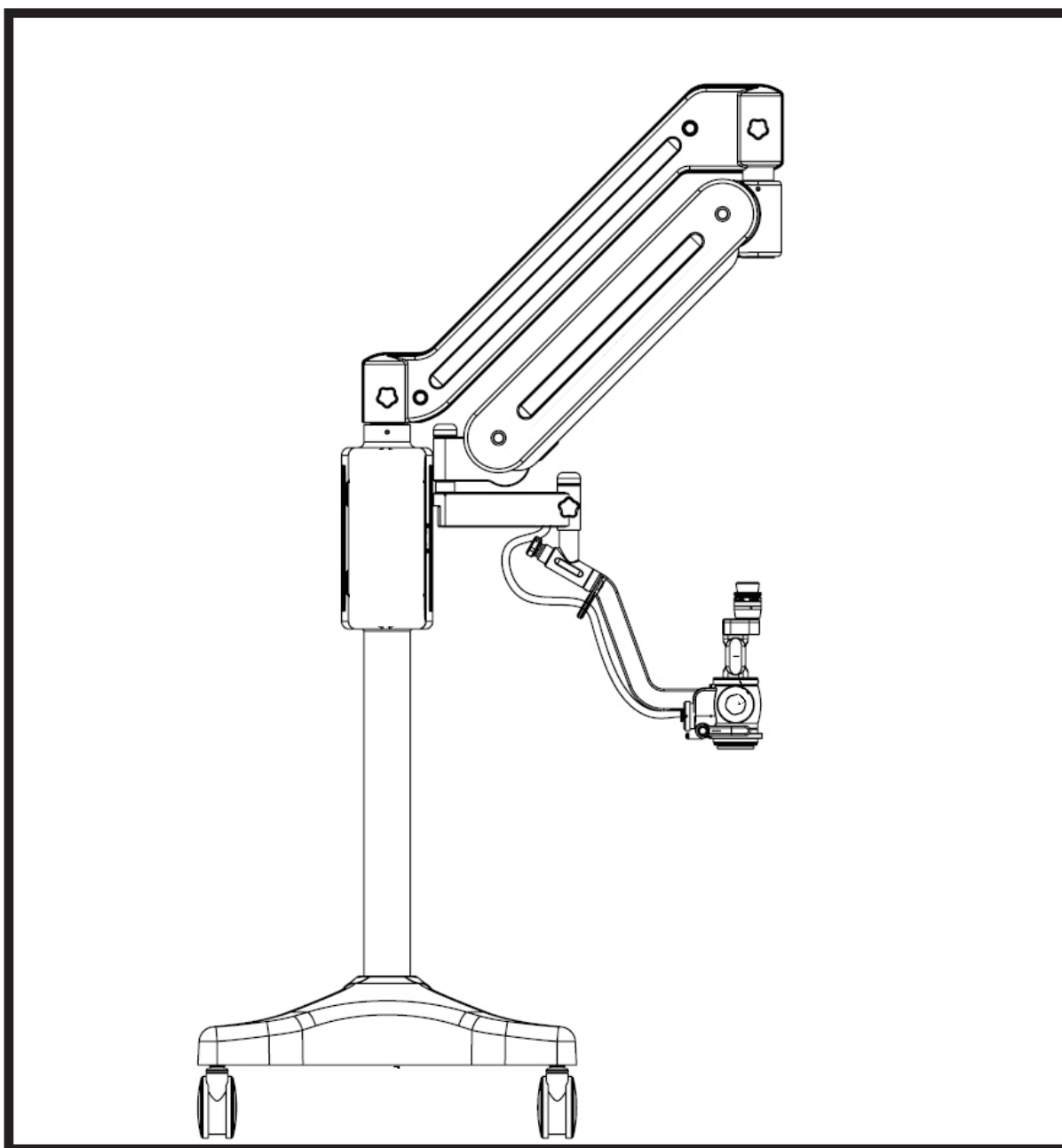


Figure 2-1. M W725F Floorstand Model

Section 2 System Description

2.4. M W725FM Floormount Model

The Floormount Model, M W725FM, The Floormount Model provides a sturdy, stable support for the microscope and arm assemblies.
See Figure 2-2.

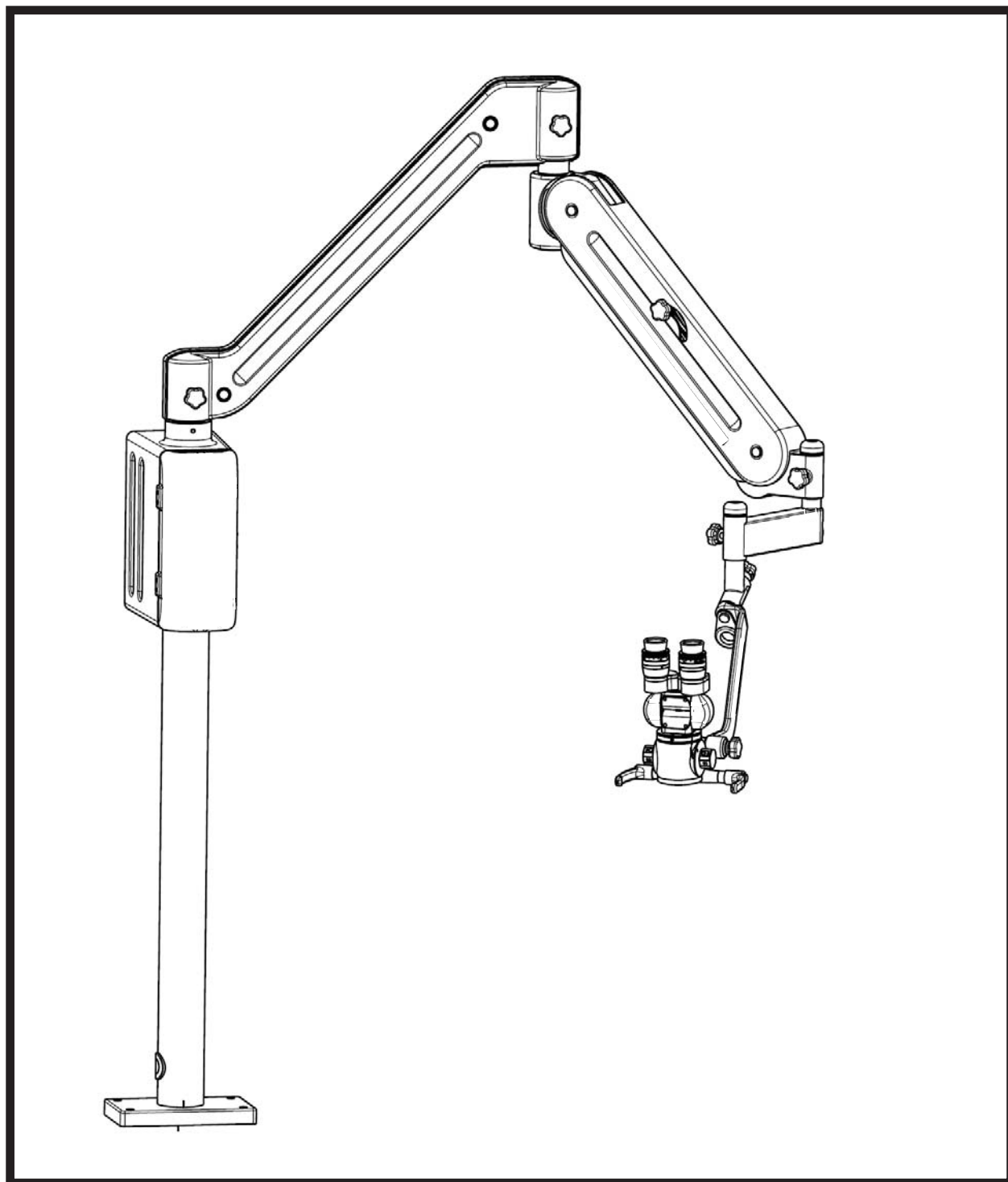


Figure 2-2. M W725FM Floormount Model

2.5. M W725W Wallmount Model

The M W725W Wallmount Microscope Support System is designed for applications with limited floor space. It provides an unobstructed range of working area without using floor space. The Wallmount Model provides a maneuverable, stable support for the microscope and arm assemblies. When used with an extension arm, the Wallmount Model folds flat against the wall for convenient storage. See Figure 2-3 or Fig 3-6 for Folded.

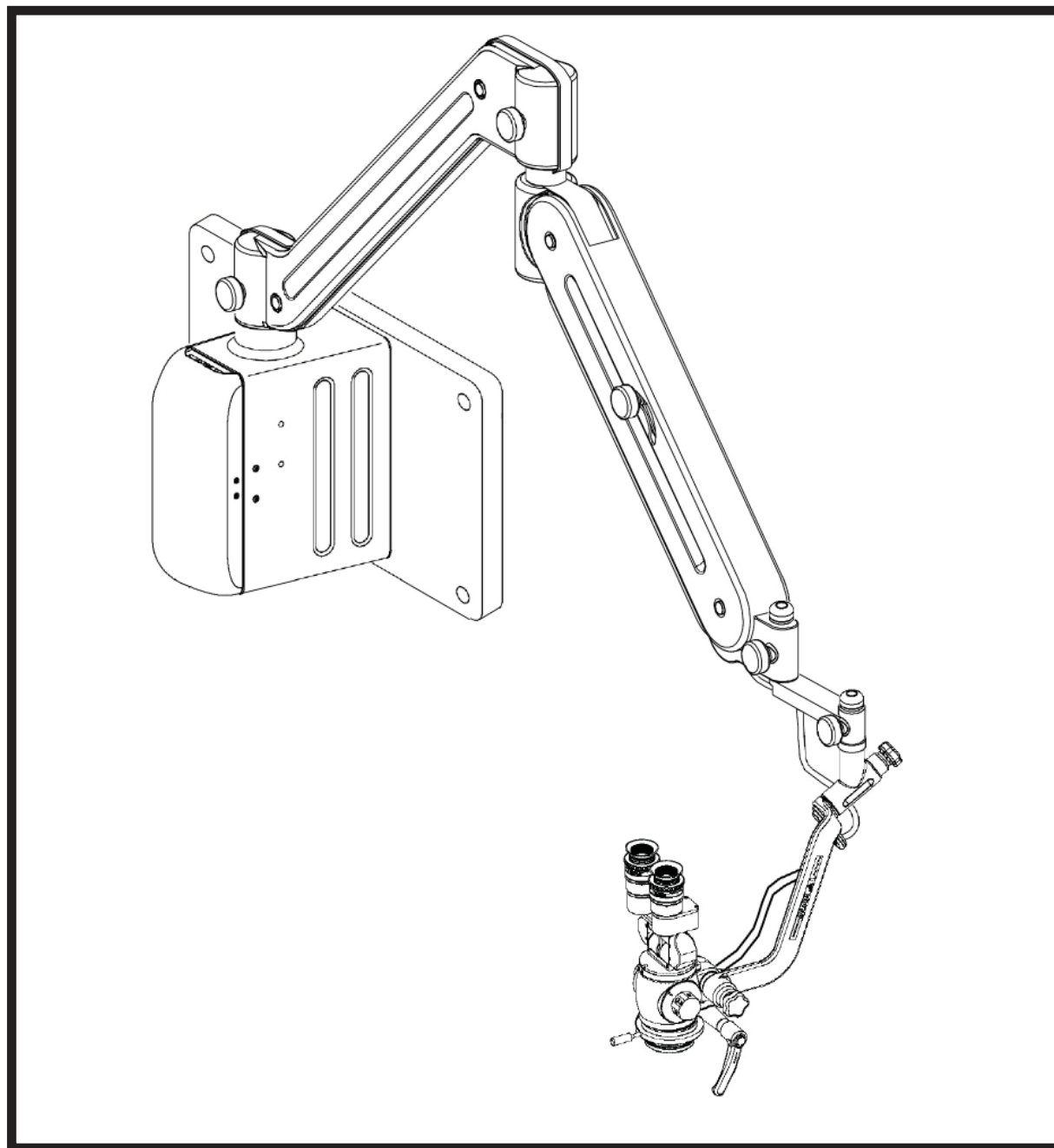


Figure 2-3. M W725W Wallmount Model

2.6. M W725C Ceiling Mount Model

The Ceiling Mount Models, M W725C8, M W725C9, and M W725C10 are designed to permit maximum range of operation while totally eliminating the use of floor space. The Ceiling Mount model plugs into an electrical outlet in the ceiling (provided by the customer) and provides stable support for the microscope and arm assemblies. The unit folds into a convenient storage position when not in use. See Figure 2-4 or Fig 3-12 for Folded.

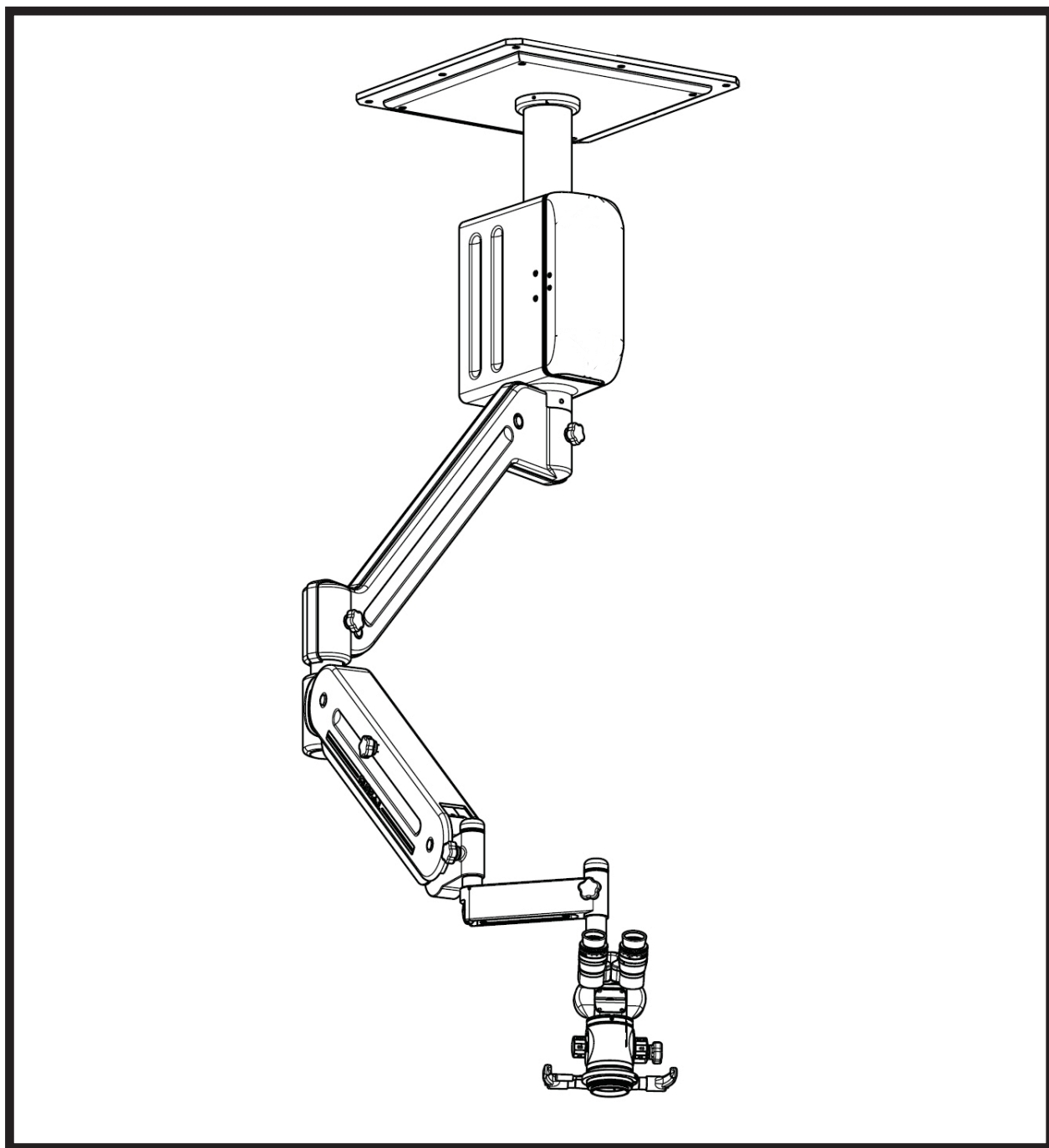


Figure 2-4. M W725C Ceiling Mount Model

3.2. Floorstand Storage Dimensions

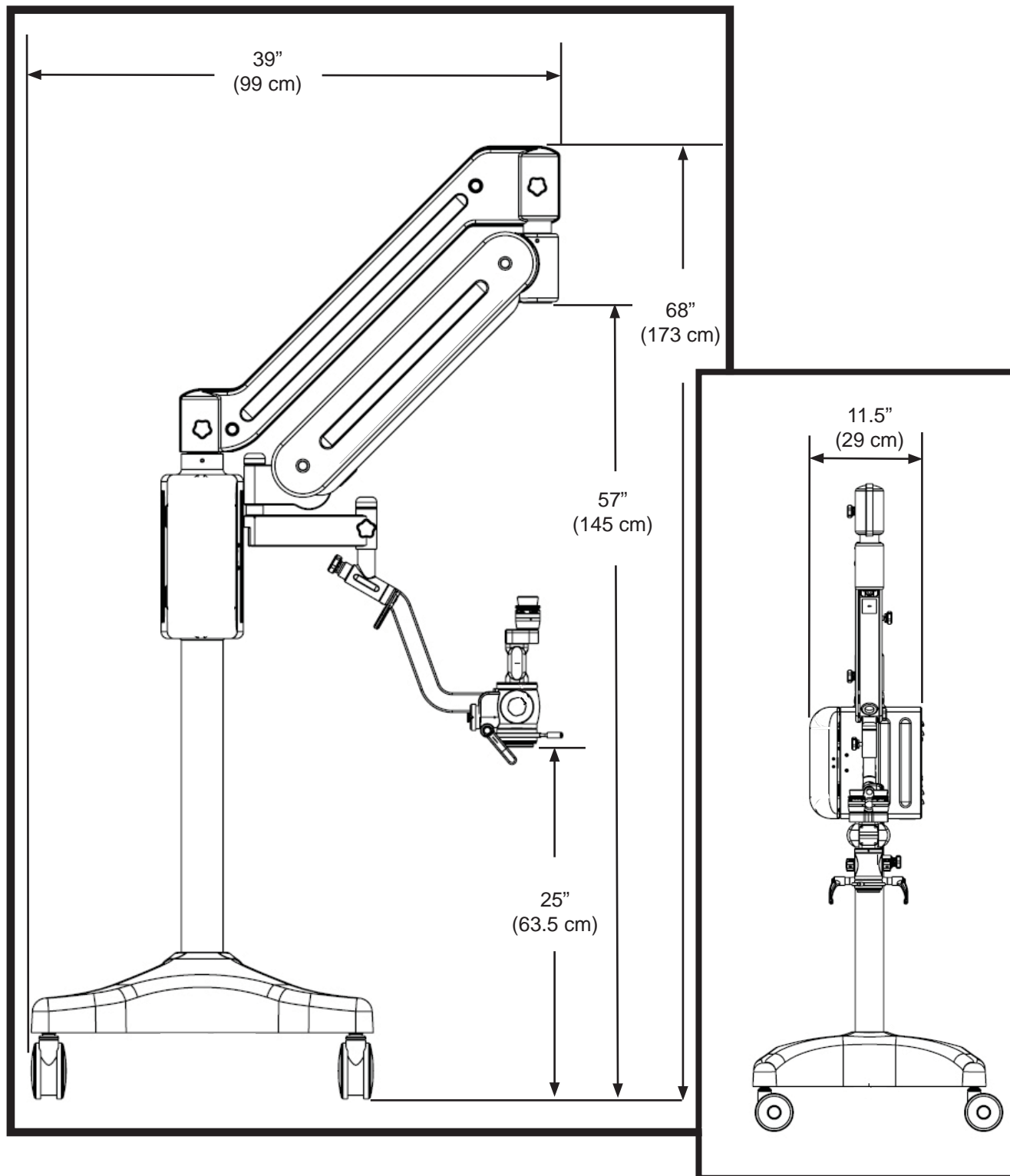


Figure 3-2. Floorstand (Model M W725F) Storage Dimensions

3.3. Floormount

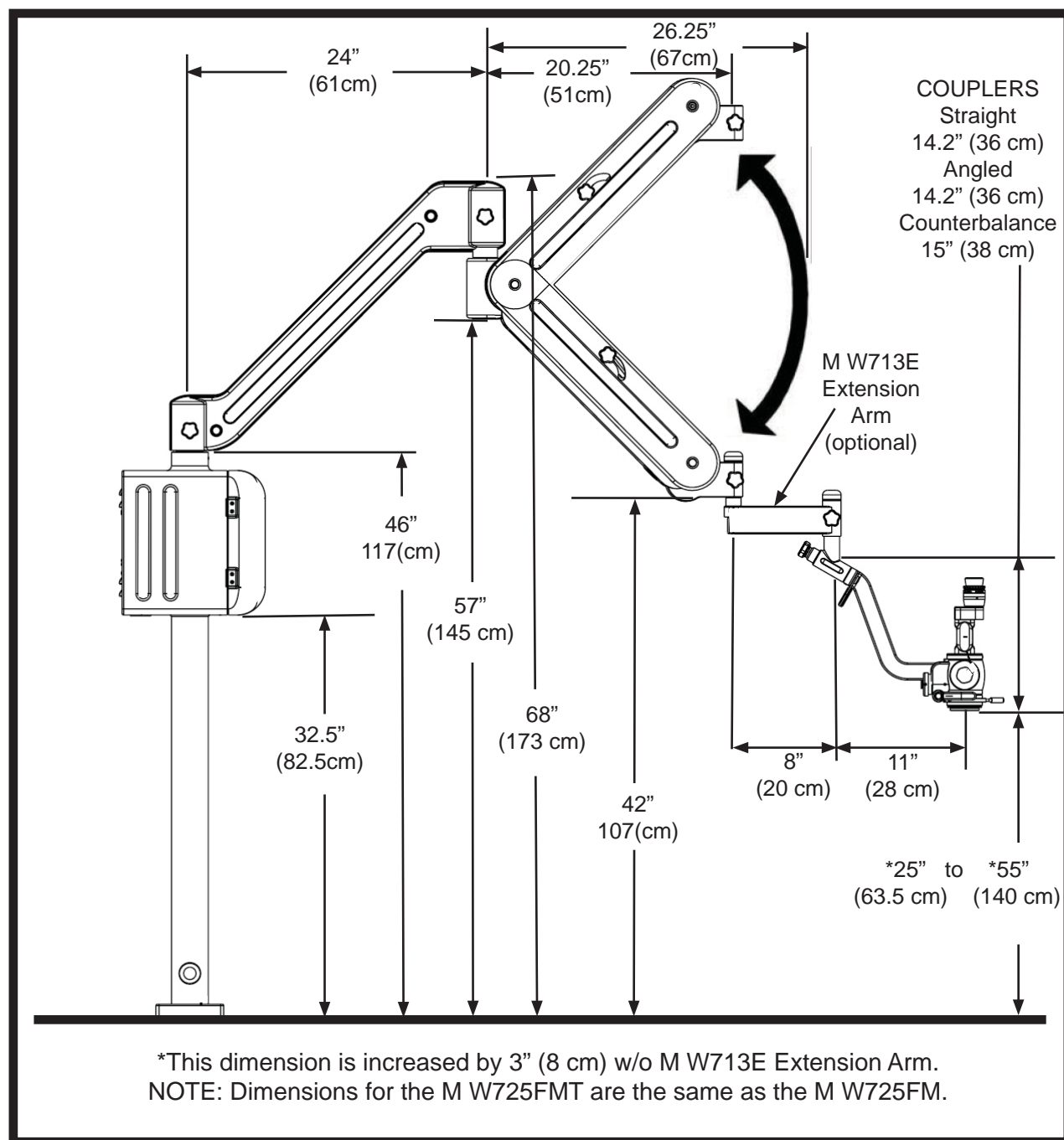


Figure 3-3. Floormount (Model M W725FM) Dimensions

3.4. Floormount Storage Dimensions

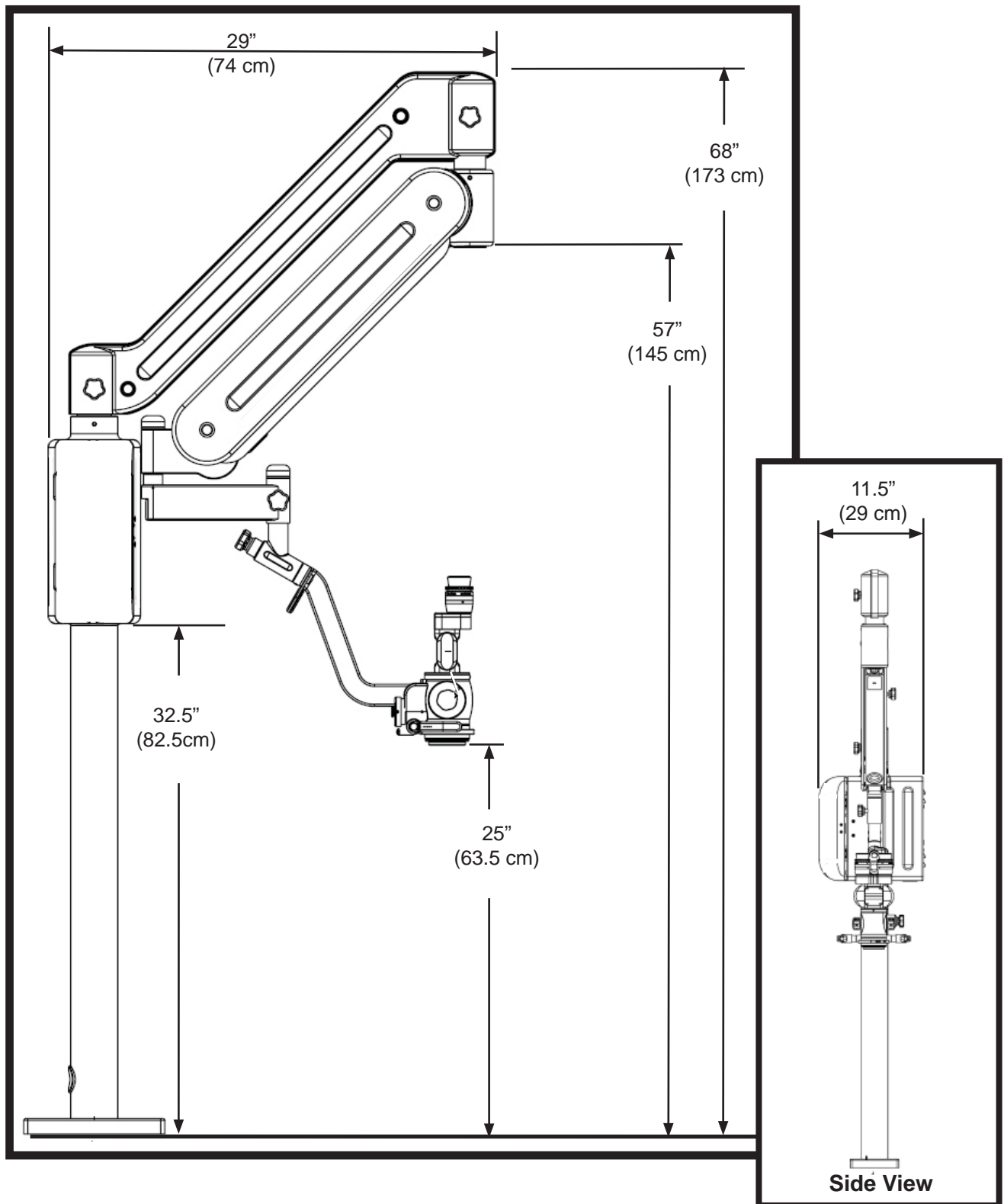


Figure 3-4. Floormount (Models M W725FM or M W725FMT) Storage Dimensions

3.5. Wallmount

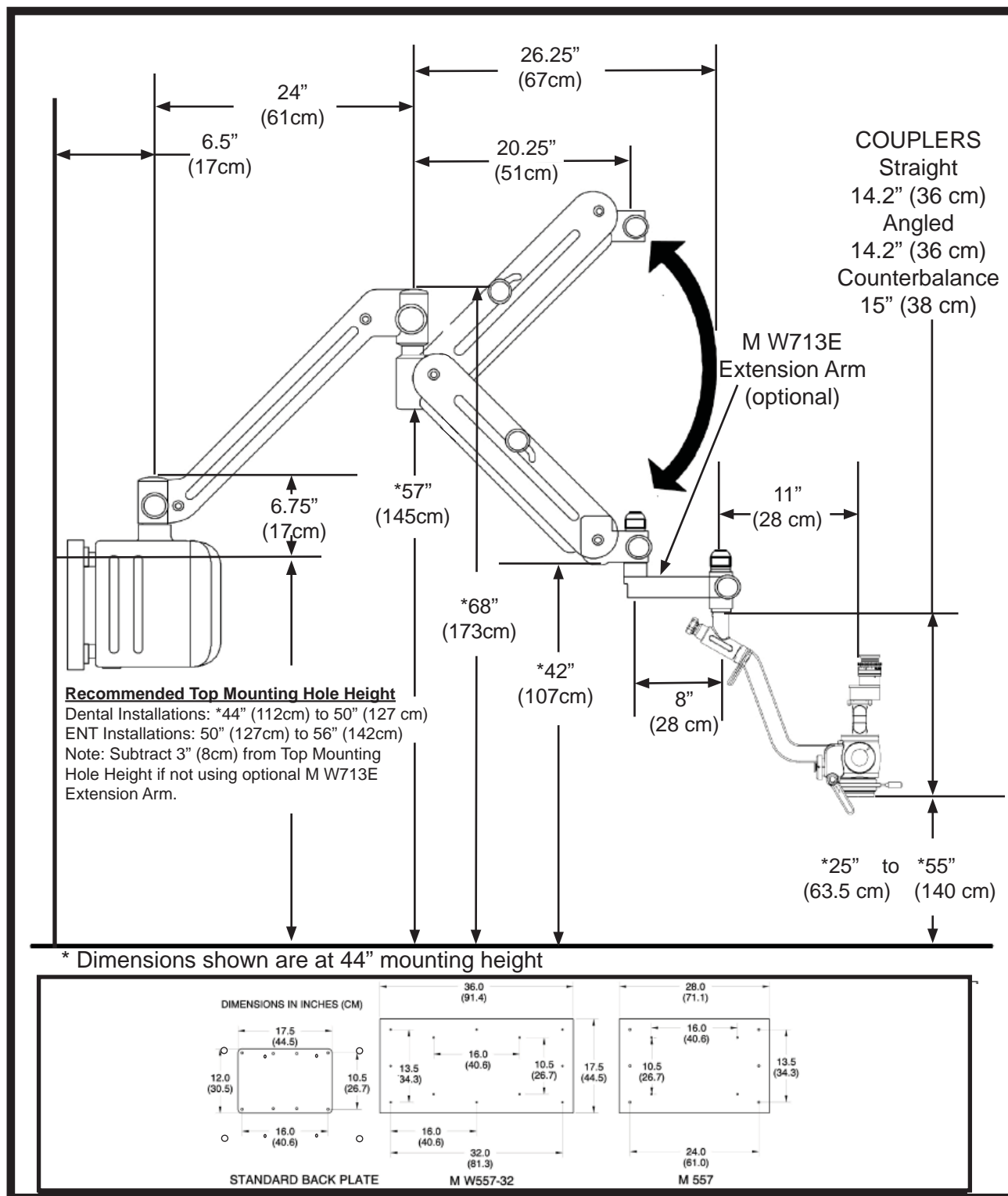


Figure 3-5. Wallmount (Model M W725W) Dimensions

3.6.Wallmount Storage Dimensions

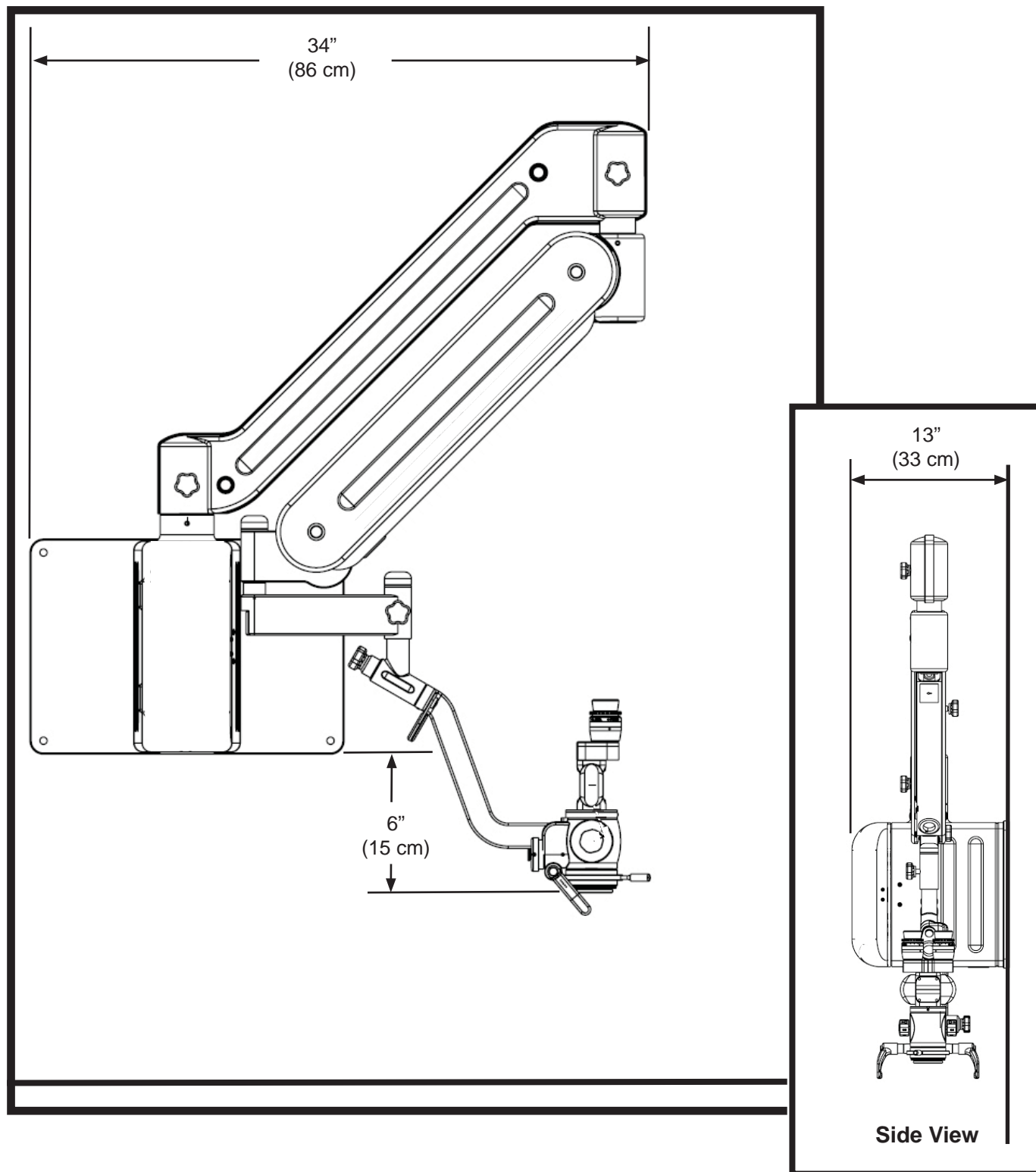


Figure 3-6. Wallmount (Model M W725W) Storage Dimensions

3.7. Wallmount - High Mount

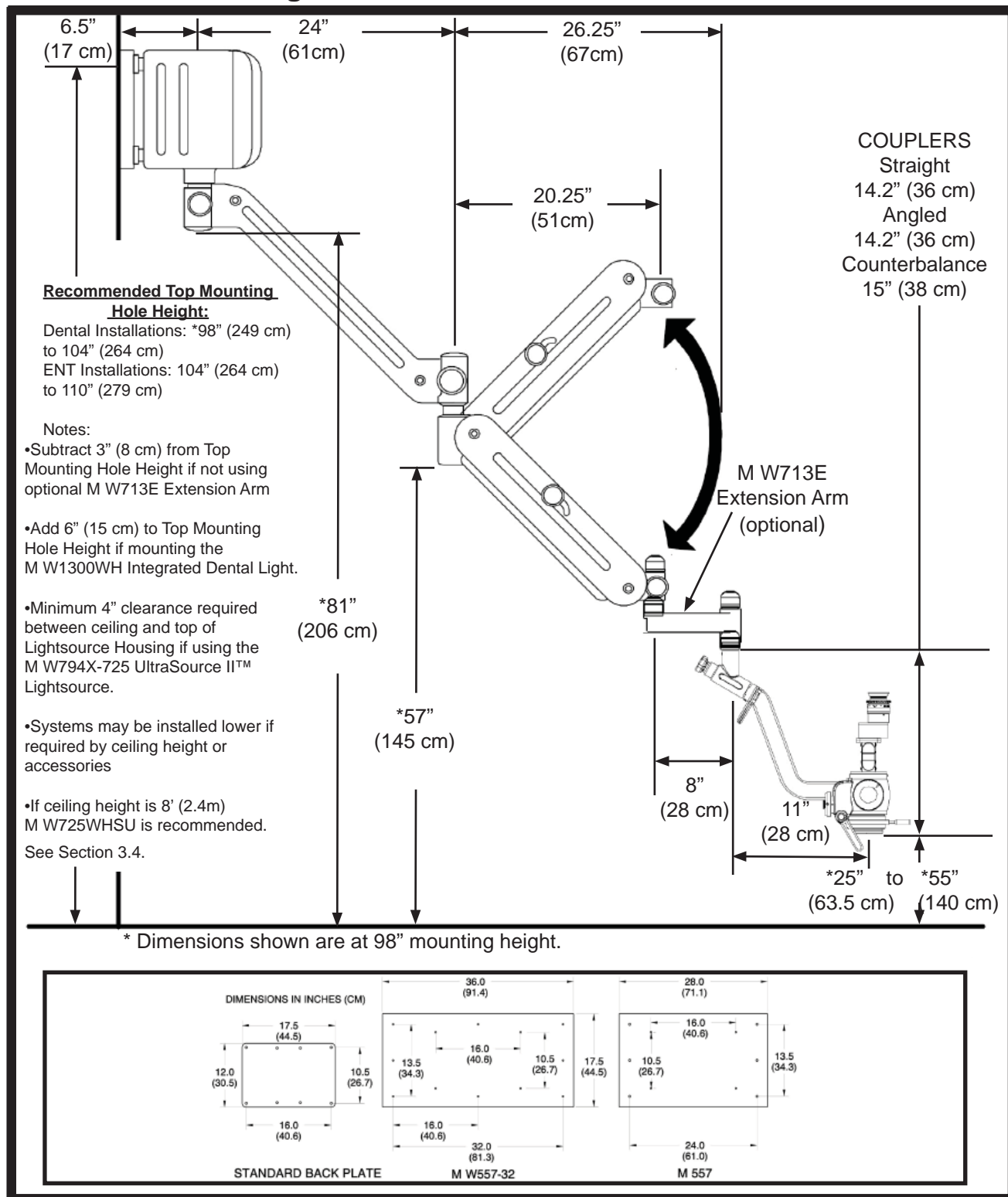


Figure 3-7. Wallmount - High Mount (Model M W725WH) Dimensions

3.8. Wallmount - High Mount Storage Dimensions

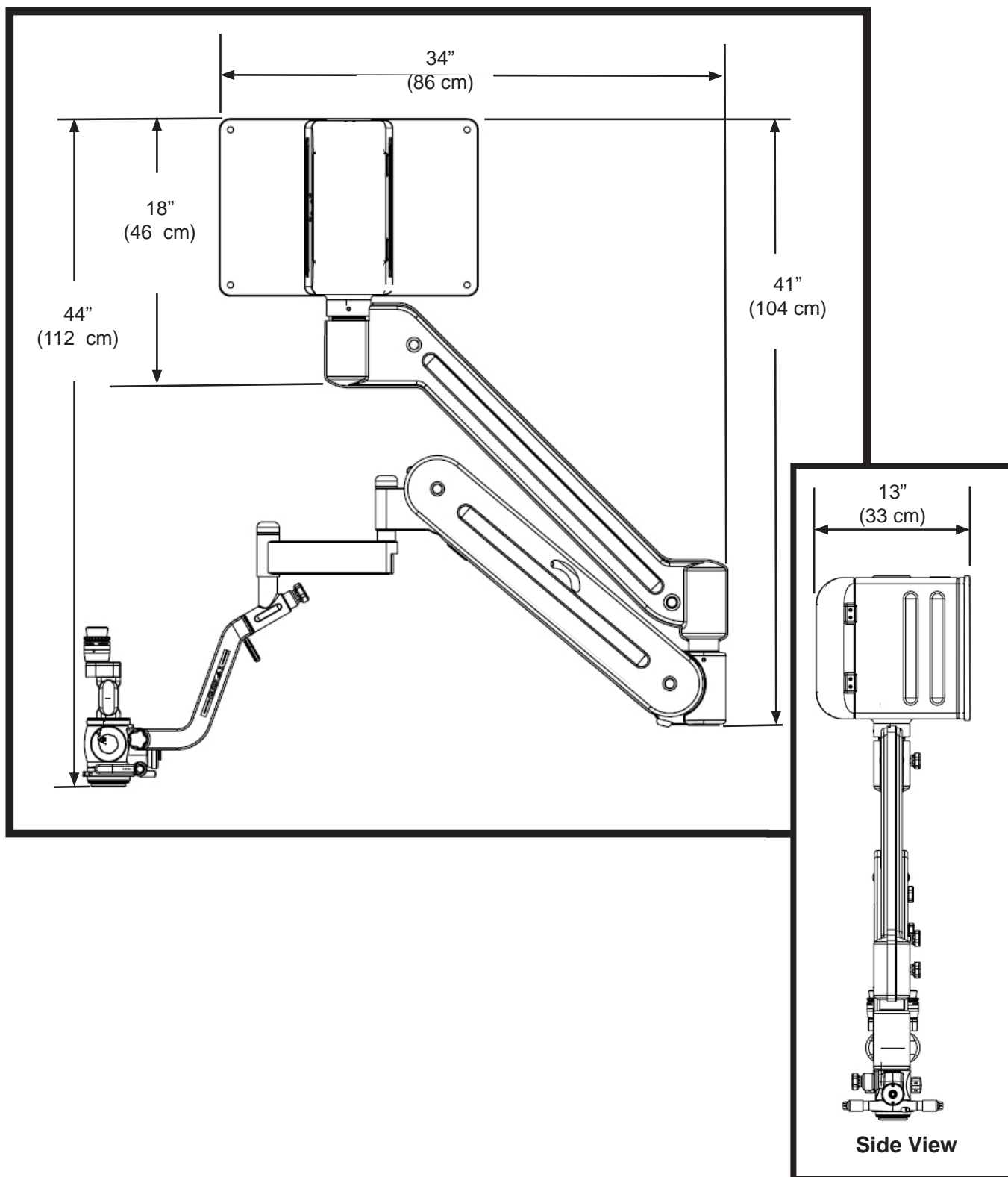


Figure 3-8. Wallmount - High Mount (Model M W725WH) Storage Dimensions

3.9. Wallmount - High Mount Shaft Up

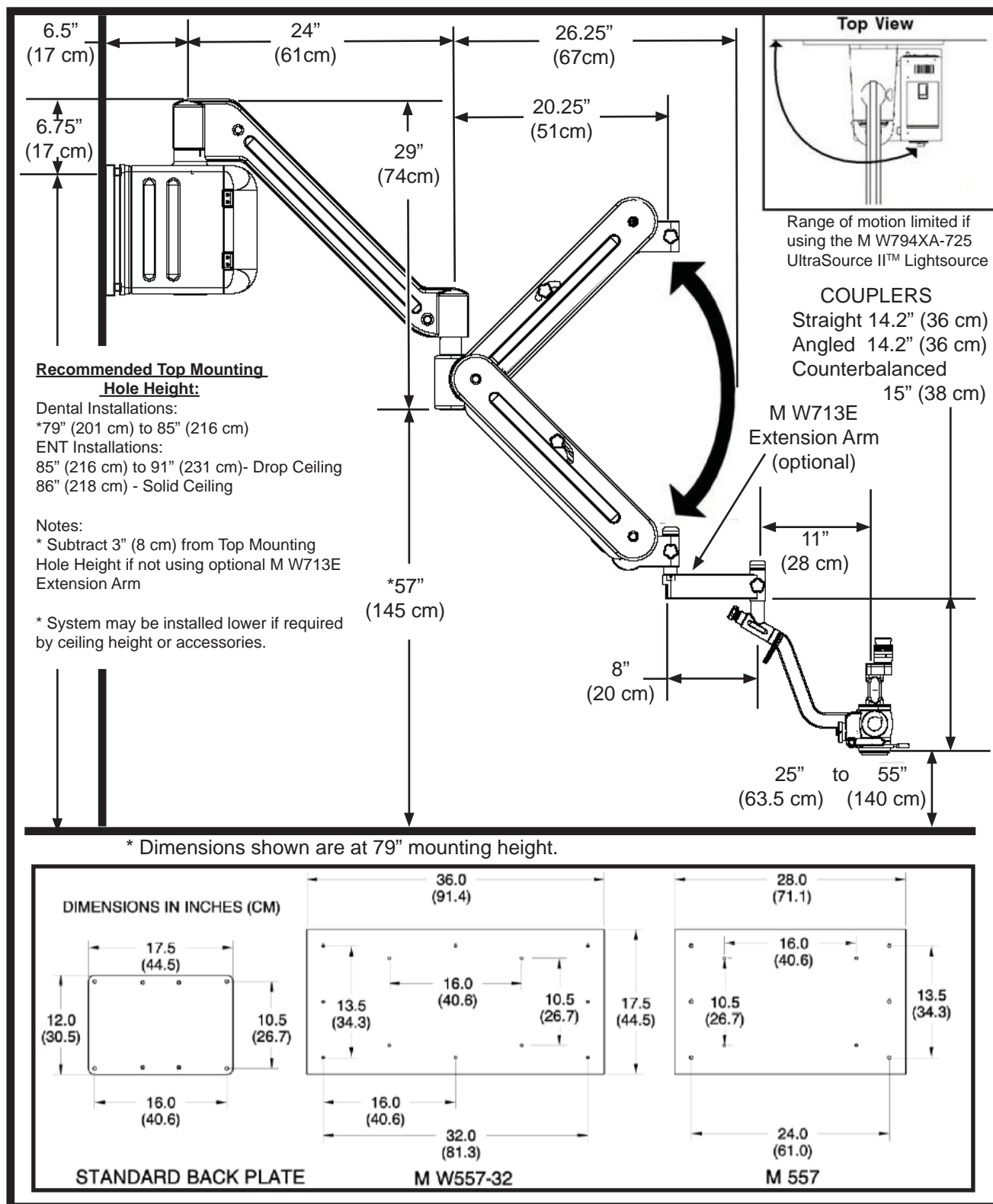


Figure 3-9. Wallmount - High Mount Shaft Up (Model M W725WHSU) Dimensions

3.10. Wallmount - High Mount Shaft Up

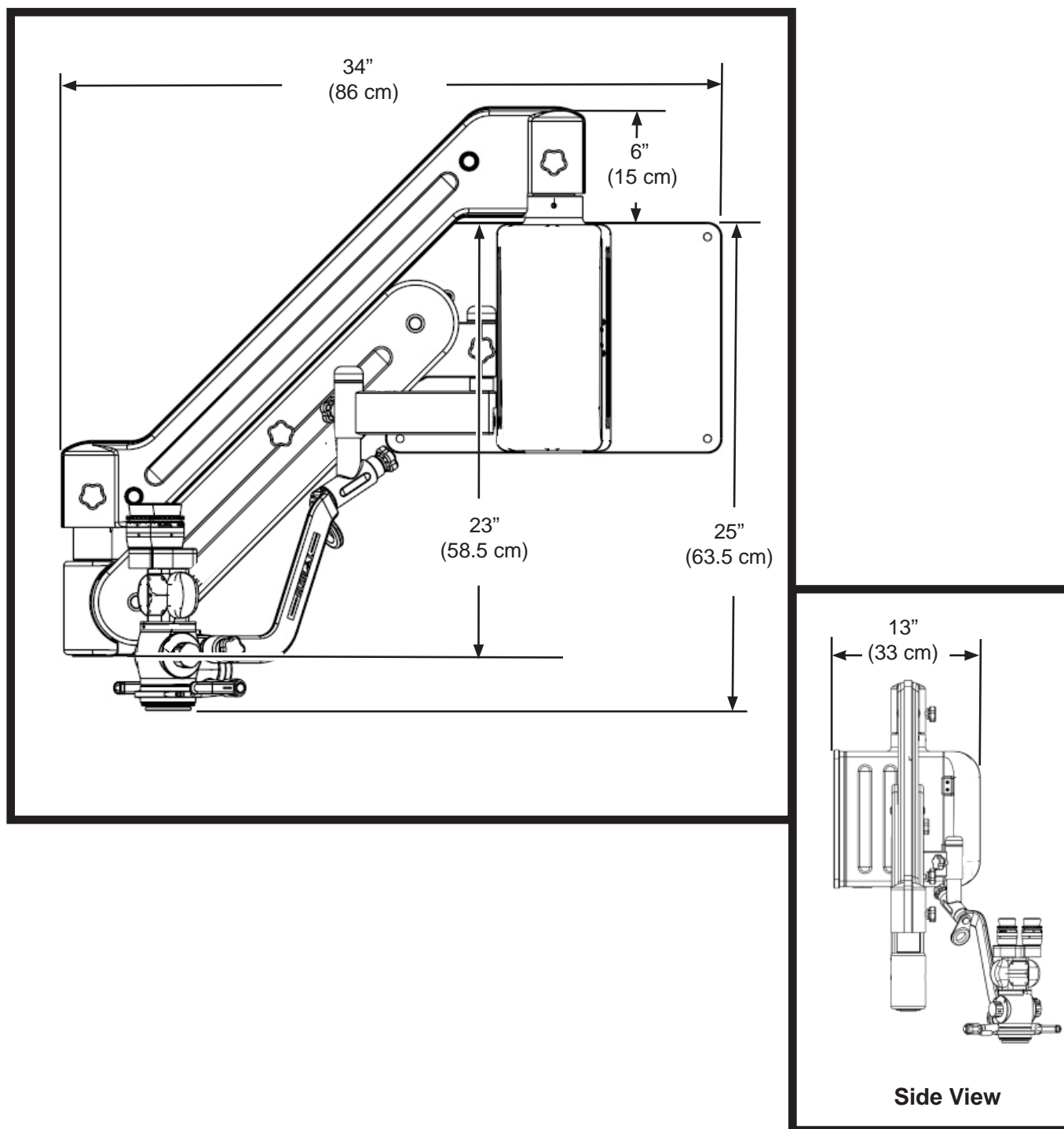


Figure 3-10. Wallmount - High Mount Shaft Up (Model M W725WHSU) Storage Dimensions

3.11. Ceiling Mount - Dimensions

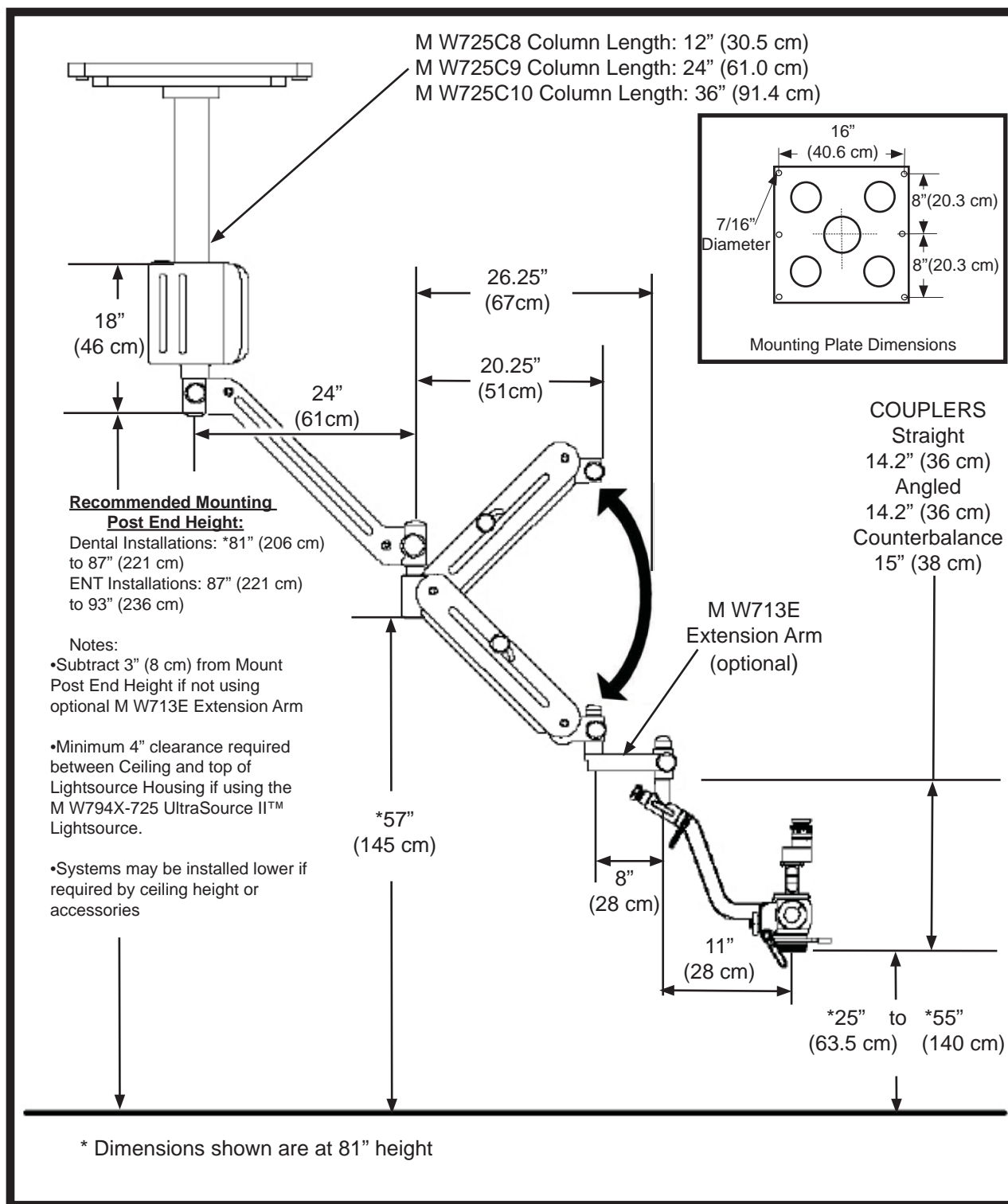


Figure 3-11. Ceiling Mount Dimensions

3.12. Ceiling Mount - Storage Dimensions

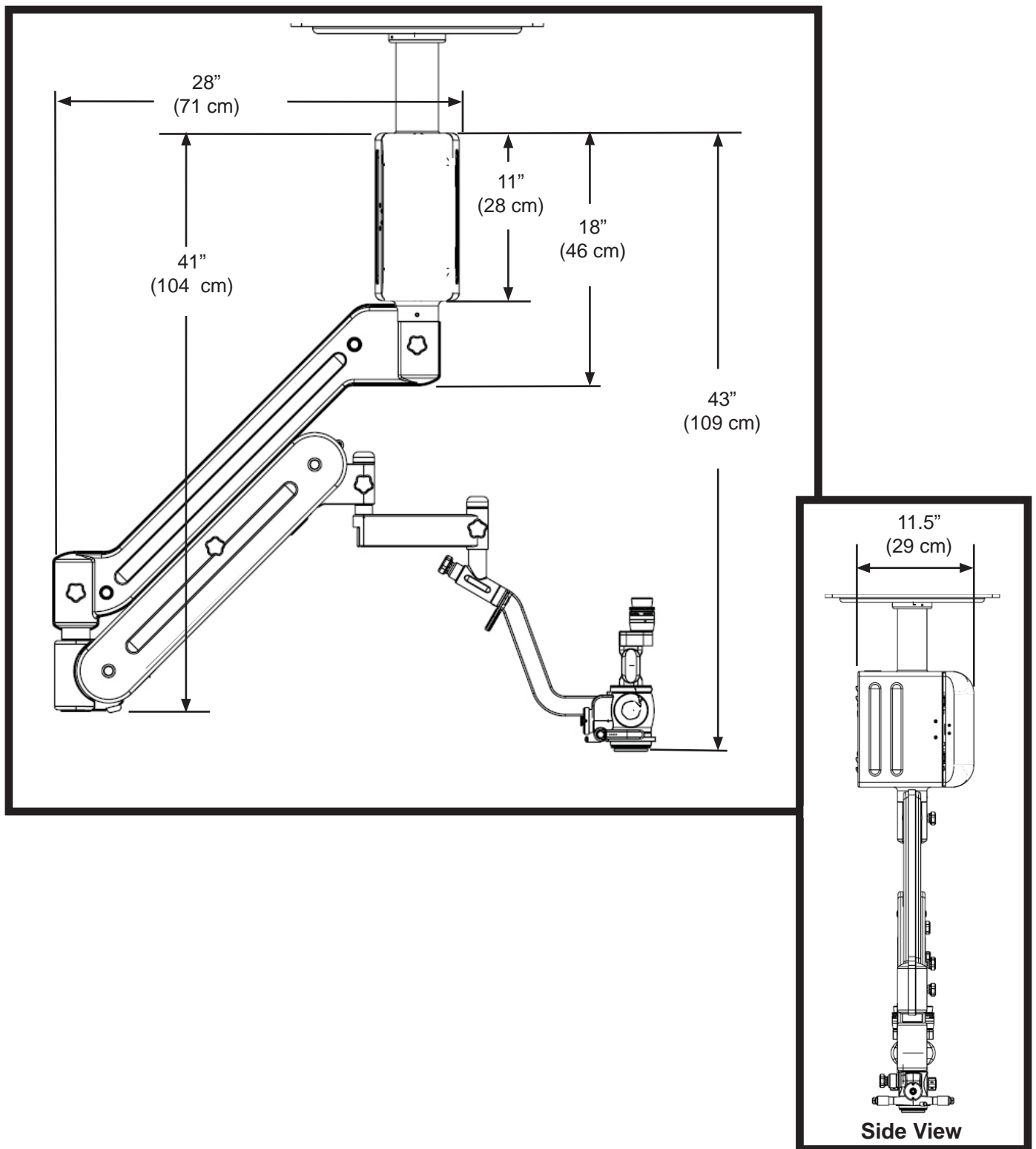


Figure 3-12. Ceiling Mount Storage Dimensions

3.13. M W725 Microscope Support System Rotational Limits

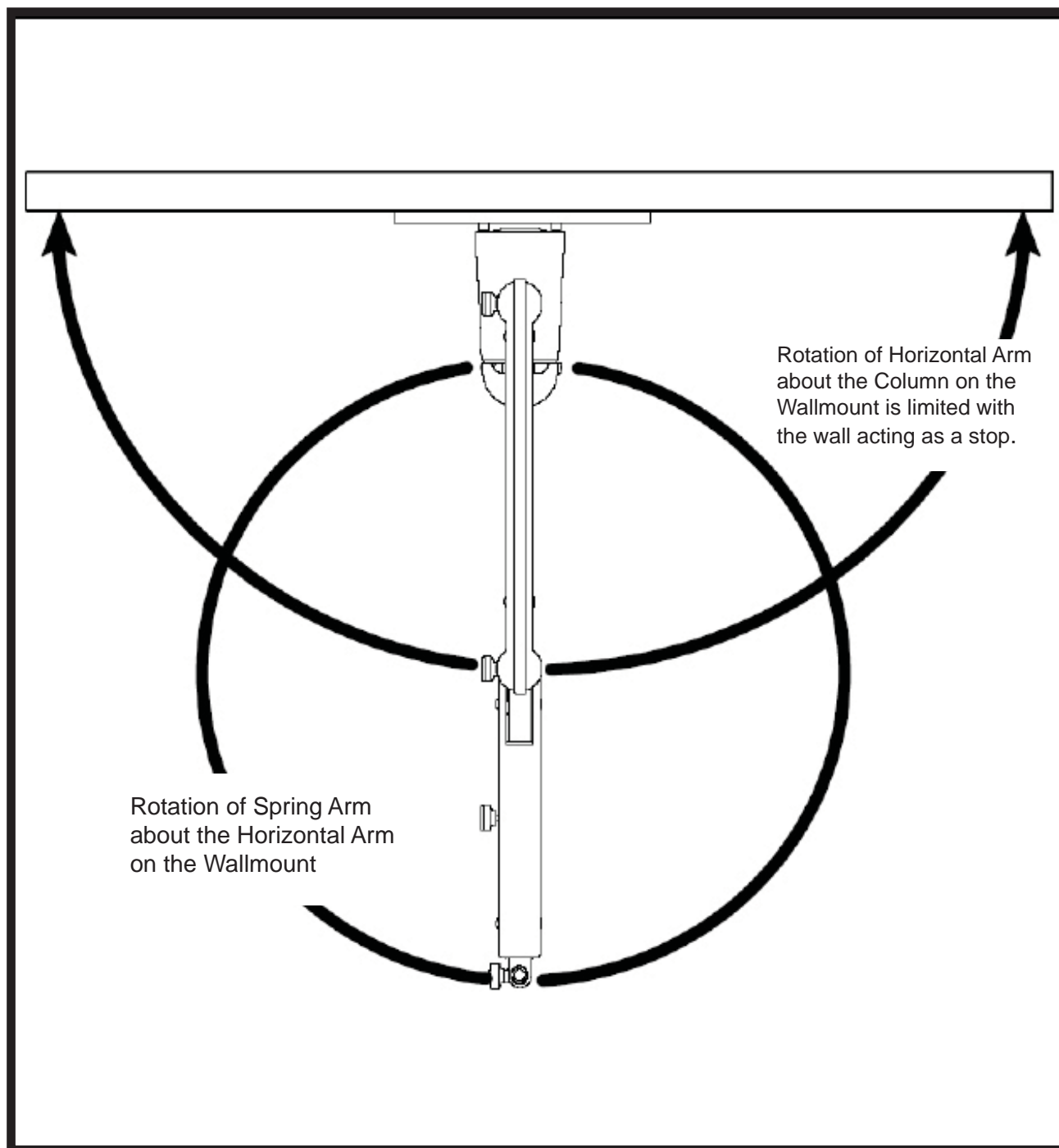


Figure 3-13. Wallmount Rotational Limits

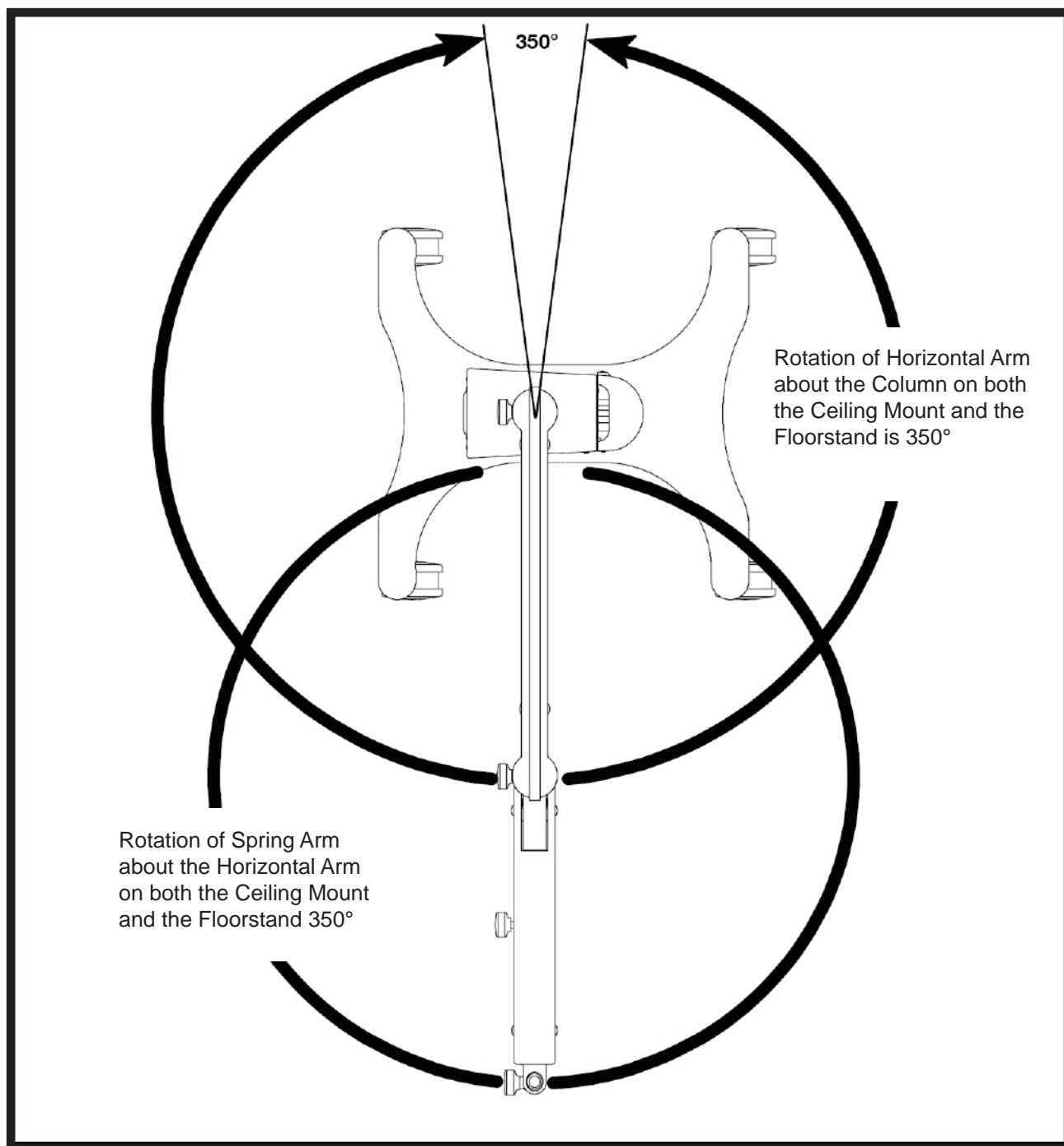


Figure 3-14. Ceiling Mount and Floorstand Rotational Limits

Section 4. Site Preparation/Mounting Kit Installation

4.1. Recommended Mounting Location

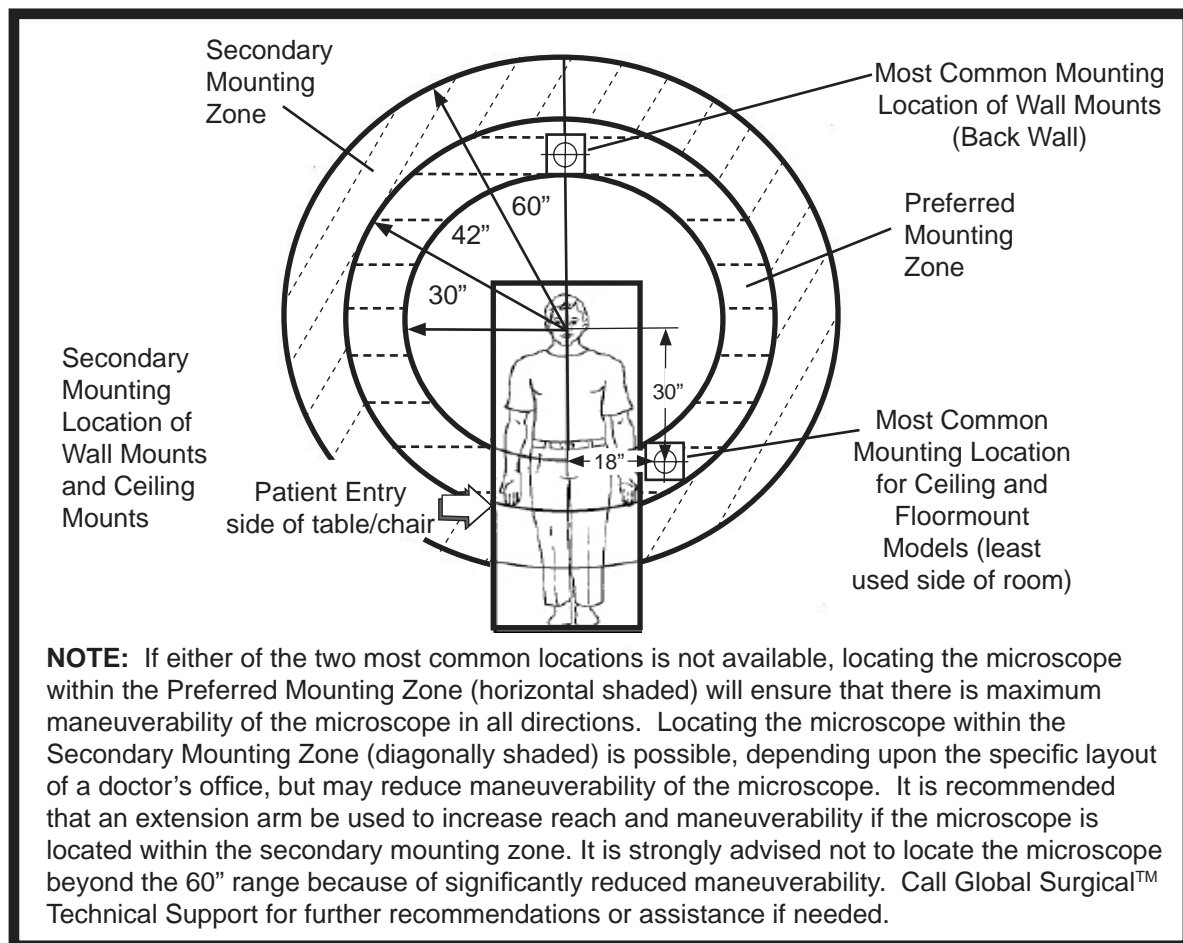


Figure 4-1. Preferred Mounting Locations

4.2. Wallmount Installation

Before installation of the Wallmount Microscope System begins, a survey should be done to ensure there is proper space available. Refer to Figure 4-1 above.

It is recommended that a construction contractor perform the following installation procedures. Measure the distance between the centers of the studs. The Global Wallmount Models are shipped with a standard back plate designed for use with wood studs spaced on standard 16" (40.6 cm) centers. If metal studs are present, and spaced at 16" (40.6 cm), a special mounting board (Global Surgical™ Part Number M W557-32) must be obtained to reinforce the wall. If the distance between the stud centers is 24" (61.0 cm) regardless of stud material, a special mounting board (Global Surgical™ Part Number M 557) must be obtained to reinforce the wall. The standard back plate then mounts to the center of the mounting board. Hardware is provided for mounting the standard back plate directly to wooden studs, and mounting to hollow block wall construction. The hardware for mounting the two special mounting boards (Global Surgical™ Part Numbers M W557-32 and M 557) to wooden and metal studs, is included with these boards.

4.2.1. Standard Sixteen Inch(16"- 40.6cm) Wooden Wall Stud Spacing

For securing the Wallmount Model to construction using wooden wall studs spaced on 16" (40.6 cm) centers, it is recommended that 3/8" x 3" hex head lag screws be used. See Figure 4-2. **For construction using metal wall studs**, use the Wall Mount Board Kit M W557-32, and refer to Section 4.2.2

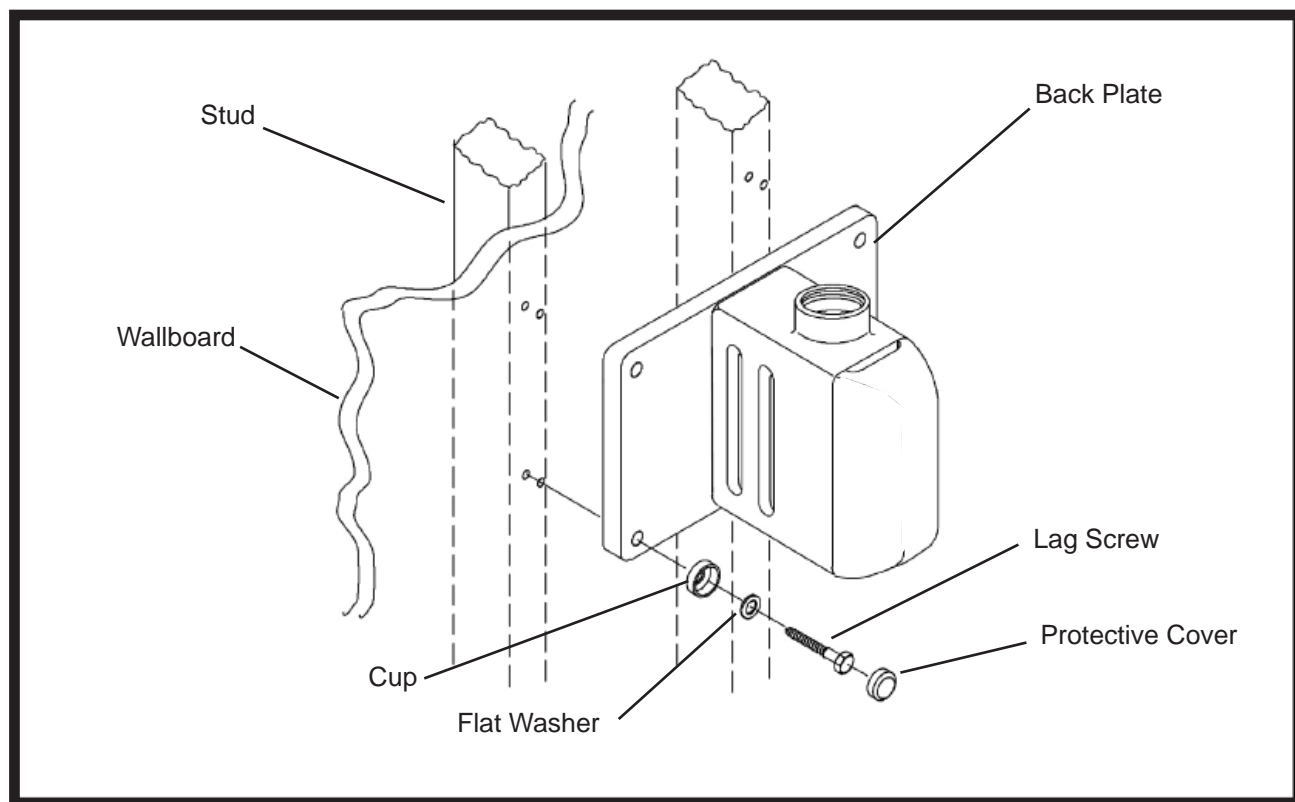


Figure 4-2. Back Plate Installation on Standard 16" Centers

1. Determine the desired location on the wall where the microscope is to be mounted.
2. Locate and mark the position of the wall studs.
3. Using the back plate as a guide, mark the positions of the four (4) mounting holes on the wall, ensuring that the marks are in the center of the stud and the back plate is level.
4. Drill four (4) 1/4" (6 mm) pilot holes into the studs as marked in above.
5. Place a 3/8" flat washer and cup over each hex head lag screw.
6. Position the back plate on the wall while lining up the four mounting holes.
7. Insert the hex head lag screws into the holes and lightly tighten with a 9/16" (14 mm) socket or wrench.
8. Using a level, check to ensure the top edge and front face of the back plate remains level. Refer to Section 4.2.6 and the Wallmount Leveling Instructions (Global Surgical™ Part Number 108-016-034) to correct any leveling concerns.
9. Finish tightening the screws to secure the back plate to the wall.
10. Snap the protective covers over the cups when finished.

4.2.2. Standard Sixteen Inch (16"- 40.6 cm) Metal Wall Stud Spacing

1. Determine the desired location on the wall where the microscope is to be mounted.
2. Locate and mark the position of the wall studs.
3. Using the Wall Mount Board as a guide, mark the position of the top center hole, ensuring that the mark is in the center of the stud. It is recommended that a razor blade or other small, sharp object be used to verify sides of wall stud. This will ensure center is correctly marked. Refer to Figure 4-3.

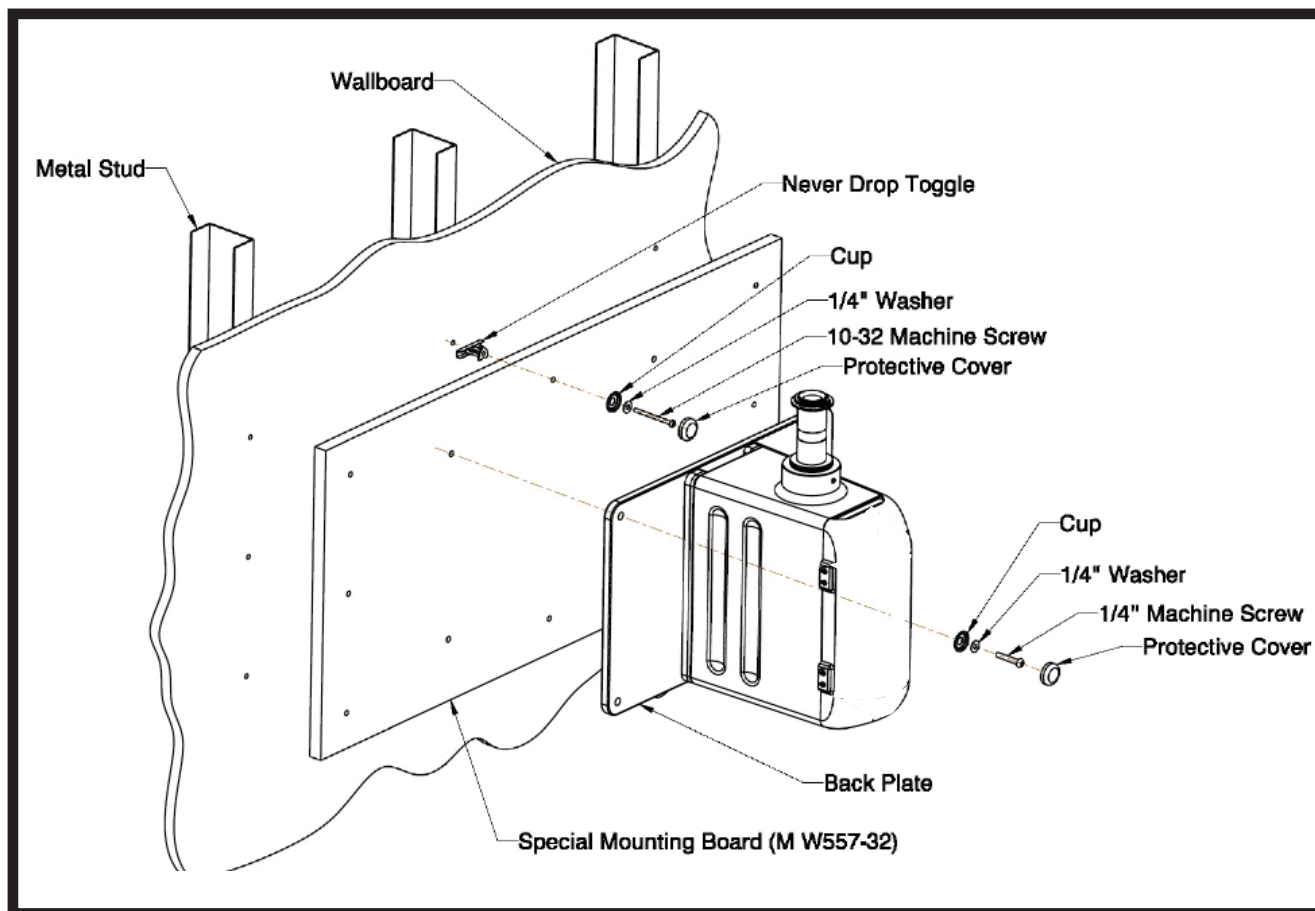


Figure 4-3. Back Plate Installation on Standard Spaced Metal Studs

4. Drill a 1/2" (12.5 mm) hole into the wall and stud as marked. To easily do this, drill a progressively larger hole beginning with one (1) 1/8" (3 mm) pilot hole. Next, use a 1/4" (6 mm) drill bit to make the hole larger and finish with a 1/2" (12.5 mm) drill bit.
5. Hold the wing of the Never Drop Toggle flat against the plastic straps, slide through the drilled hole, and pull the plastic until the wing is firmly against the inside of the stud. Slide the plastic cap along the straps until the wall is clamped between the wing and cap, and snap off the straps. Refer to Figure 4-5.
6. Place a flat washer and cup over the 2-1/2" machine screw (provided) and insert the screw through the Wall Mount Board into the Never Drop Toggle. Tighten until snug to hold the Wall Mount Board in place for leveling and marking the remaining seven (7) holes.

7. Place a level across the top and one side of the Wall Mount Board and adjust until level in both directions. With the Wall Mount Board held in place, mark the positions of the remaining seven (7) holes, ensuring that the marks are in the center of the studs. Refer to Step 3.
8. Remove the Wall Mount Board and repeat steps four (4) and five (5) for drilling the holes and placing the Never Drop Toggles in the studs as marked above.
9. Place flat washers and cups over each machine screw, place screws through Wall Mount Board, and thread screws into Never Drop Toggles.
10. Using a level, check to ensure the top edge and front face of the Wall Mount Board remains level. Refer to Section 4.2.6 and the Wallmount Leveling Instructions (Global Surgical™ Part Number 108-016-034) to correct any leveling concerns.
11. Tighten all screws to secure Wall Mount Board to the wall.
12. Place flat washer and cups over each 1/4" x 1-1/2" screw, place screws through the microscope back plate, and thread screws into the tee nuts inserted in the Wall Mount Board. Tighten the screws to secure the back plate to the Wall Mount Board.
13. Snap the twelve (12) protective covers over all the cups when finished.

4.2.3. Twenty-four Inch (24" - 61.0 cm) Wooden Wall Stud Spacing

If the wall studs are placed on 24" (61.0 cm) centers, it will be necessary to obtain a Special Mounting Board (Global Surgical™ Part Number M 557). The Standard Mounting Plate then mounts to the holes provided on the Special Mounting Board. See Figure 4-4.

1. Determine the desired location on the wall where the microscope is to be mounted.
2. Locate and mark the position of the wall studs.
3. Using the Special Mounting Board as a guide, mark the positions of the six (6) mounting holes on the wall, ensuring the marks are centered on the studs and the Special Mounting Board is level both horizontally and vertically.
4. Drill six (6) 1/4" (6 mm) holes into the wall and studs as marked.
5. Place a 3/8" flat washer and cup over each hex head lag screw.
6. Position the Special Mounting Board on the wall while lining up the six (6) mounting holes.
7. Insert the hex head lag screws into the holes and lightly tighten with a 9/16" (14 mm) socket or wrench.
8. Using a level, ensure the top edge and front face of the Special Mounting Board remains level. Refer to Section 4.2.6 and the Wallmount Leveling Instructions (Global Surgical™ Part Number 108-016-034) to correct any leveling concerns.
9. Finish tightening the bolts to secure the Special Mounting Board to the wall.
10. Snap the protective covers over the cups when finished.

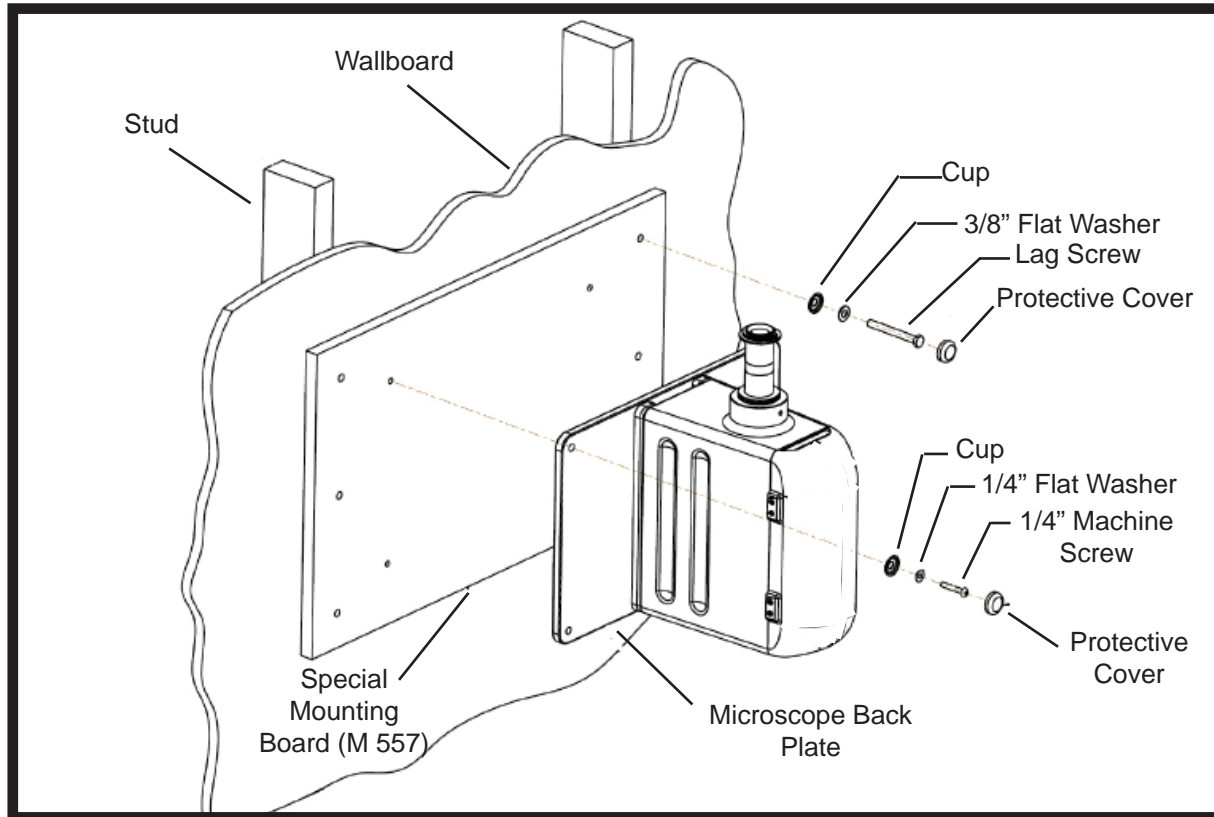


Figure 4-4. Back Plate Spacing on 24" Wooden Studs

4.2.4. Twenty-four Inch (24" - 61.0 cm) Metal Wall Stud Spacing

1. Determine the desired location on the wall where the microscope is to be mounted.
2. Locate and mark the position of the wall studs.
3. Using the Special Mounting Board as a guide, mark the positions of the six (6) mounting holes on the wall, ensuring the marks are centered on the studs (See Section 4.2.2. Step 3) and the Special Mounting Board is level both horizontally and vertically. It is recommended that a razor blade or other small, sharp object be used to verify sides of wall stud. This will ensure center is correctly marked. Refer to Figure 4-4.
4. Drill six (6) 1/2" (12.5 mm) holes into the wall and studs as marked. To easily do this, drill progressively larger holes beginning with one (1) 1/8" (3 mm) pilot hole. Next, use the 1/4" (6 mm) drill bit to make the holes larger and finish with the 1/2" (12.5 mm) drill bit.
5. Hold the wing of the Never Drop Toggle flat against the plastic straps, slide through the drilled hole, and pull the plastic until the wing is firmly against the inside of the stud. Slide the plastic cap along the straps until the wall is clamped between the wing and cap, and snap off the straps. Place a Never Drop Toggle in each of the six holes. Refer to Figure 4-5.
6. Place a flat washer and cup over the 2-1/2" machine screw (provided) and insert the screw through the Wall Mount Board and into the Never Drop Toggle. Tighten until snug to hold the Wall Mount Board in place for leveling and repeat for the remaining five (5) holes.
7. Place flat washers and cups over each 1/4" x 1-1/2" screw, place screws through the microscope back plate, and thread screws into the tee nuts inserted in the Special Mounting Board. Tighten the screws to secure the back plate to the Special Mounting Board.

8. Using a level, ensure the top edge and front face of the Special Mounting Board remains level. Refer to Section 4.2.6. and the Wallmount Leveling Instructions (Global Surgical™ Part Number 108-016-034) to correct any leveling concerns.
9. Finish tightening the bolts to secure the Special Mounting Board to the wall.
10. Snap the protective covers over the cups when finished.

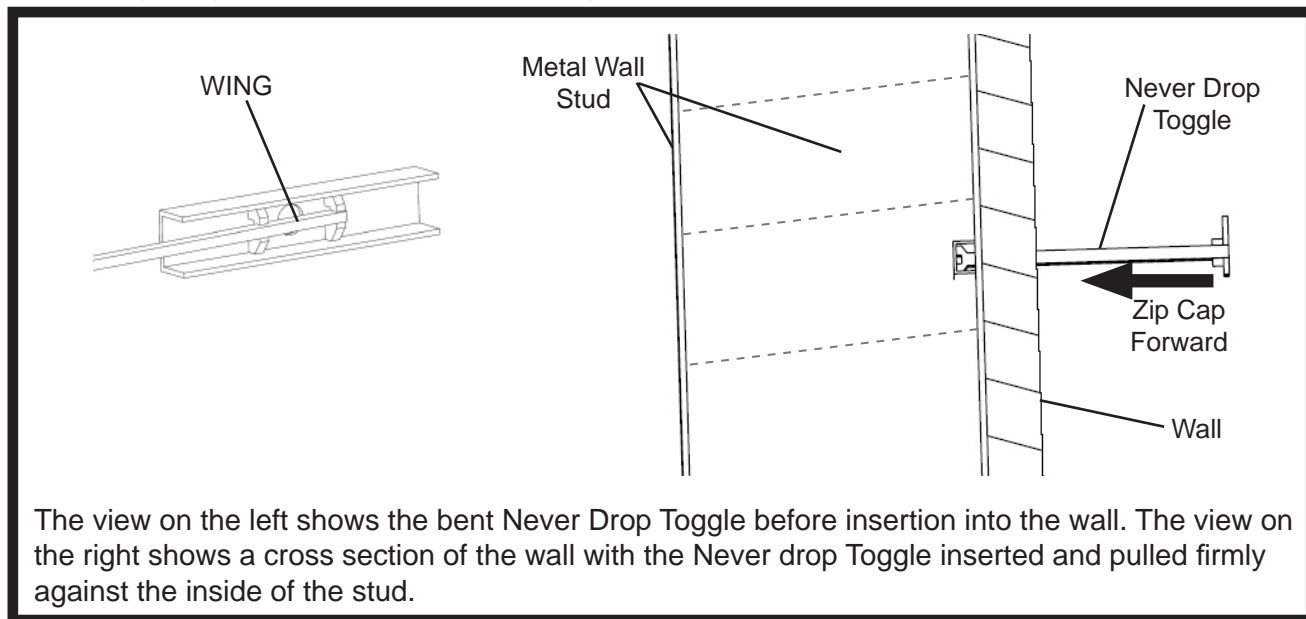


Figure 4-5. Never Drop Toggle Insertion

4.2.5. Wallmount Installation on Hollow Block Walls

For securing the Wallmount Model to construction using a hollow block wall, toggle bolts must be used. Use the four (4) 3/8" X 4" toggle bolts provided. See Figure 4-6.

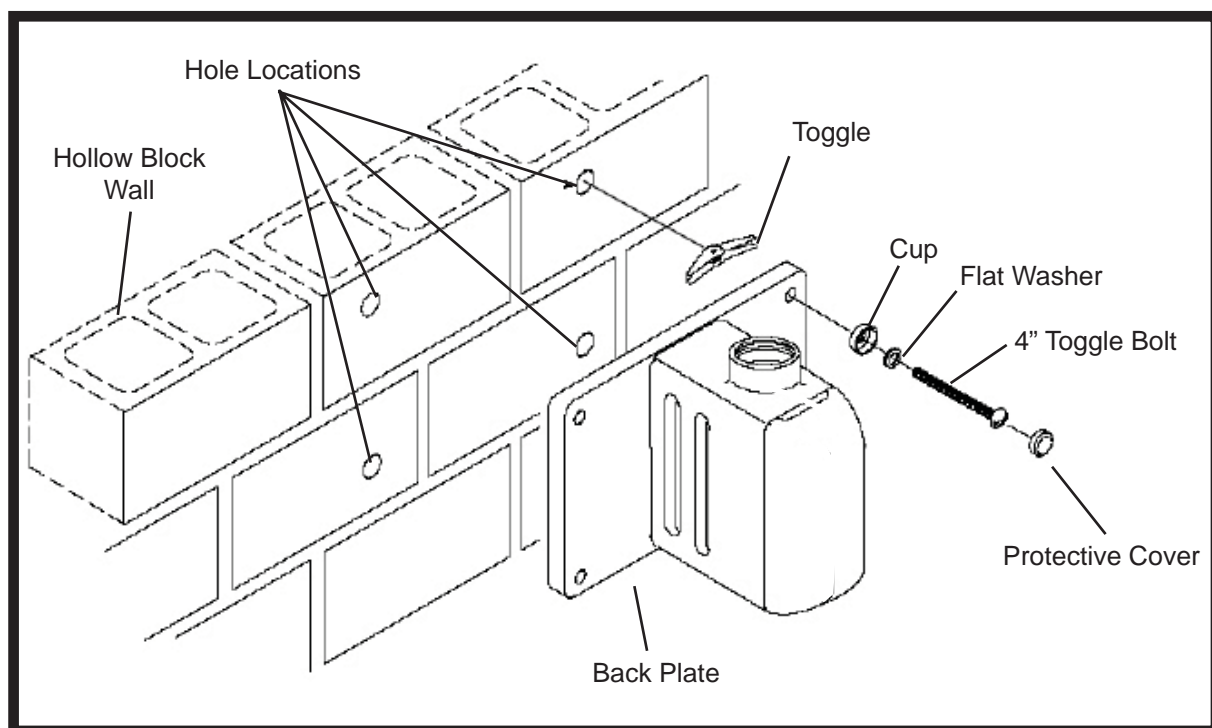


Figure 4-6. Base Plate Installation on Hollow Block Walls

1. Determine the desired location on the wall where the microscope is to be mounted.
2. Place the back plate against the wall and mark the four (4) holes, ensuring the back plate is level. The location of a mounting hole on the hollow block should be at least 4" (10.2 cm) from the end of the block. The hole should be a minimum of 1.6" (3.8 cm) and a maximum of 6.0" (15.2 cm) from the bottom edge of the hollow block. This space is to allow the toggle bolt to properly expand.
3. Using a 1" (25 mm) masonry drill bit, drill four (4) 1" (25 mm) holes in the hollow blocks spaced as outlined above.
4. Place a 3/8" flat washer and cup over each toggle bolt.
5. Place the toggle bolts through the holes in the back plate and thread the toggle portion onto the bolt approximately 1/4" (6 mm).
6. Position the back plate against the wall and push the four (4) toggle bolts through the 1" (25 mm) holes in the hollow blocks.
7. Using a large screwdriver, tighten the four (4) toggle bolts securing the back plate to the hollow block wall while ensuring the back plate (top edge and front face) is level. Refer to Section 4.2.6 and the Wallmount Leveling Instructions (Global Surgical™ Part Number 108-016-034) to correct any leveling concerns.
8. Snap the protective covers over the cups when finished.

4.2.6. Leveling the Wallmount Back Plate

Place a level on the top of the Wallmount back plate to ensure the bracket is level across the top. Place a level vertically across the front of the Wallmount back plate. If the bracket requires leveling, place shims on the upper or lower mounting bolts as needed. Repeat the procedure diagonally across the front and shim as needed. Refer to the Wallmount Leveling Instructions (Global Surgical™ Part Number 108-016-034) for additional leveling assistance.

4.3. Ceiling Mount Installation

It is recommended that construction contractors perform the following installation procedures. The Ceiling Mount Model should be installed on the side of the room with the least amount of traffic. Refer to Figure 4-1 and proceed as follows. It should be determined where the unit will be connected to an electrical power source. If the source is to be inside the ceiling and controlled by a wall switch, a grounded receptacle (115 VAC, 15A; 230 VAC, 15A), provided by the customer, must be installed prior to the installation of the Mounting Plate. Refer to Figure 4-7.

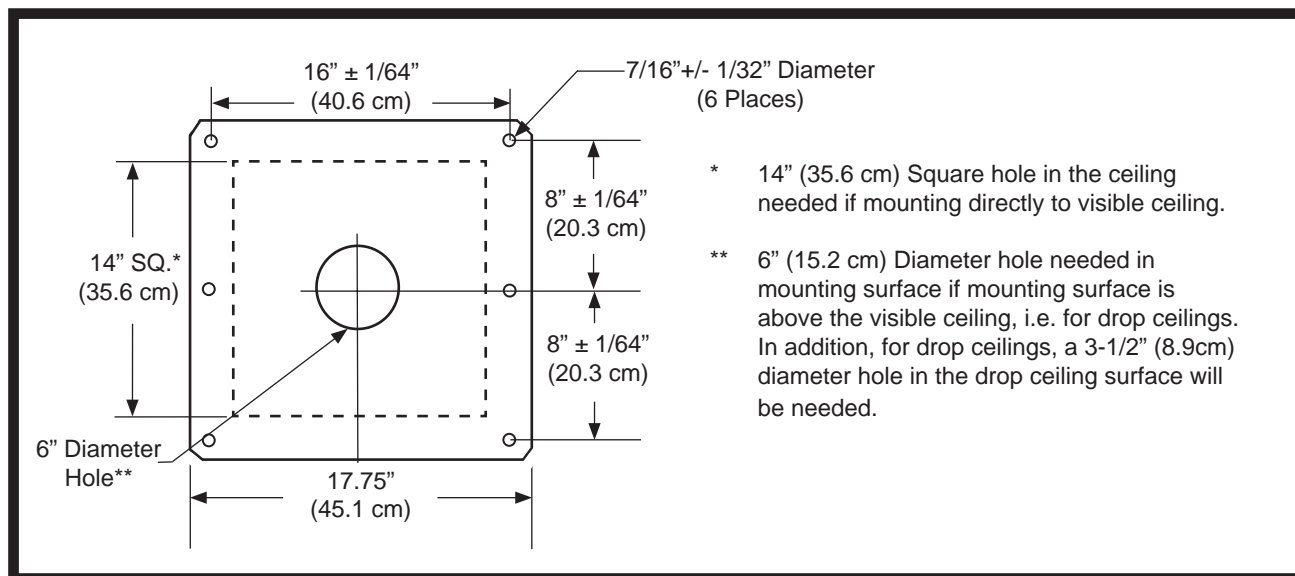


Figure 4-7 . Mounting Surface Template for Ceiling Mount

NOTE: The recommended height for installing models in the M W725C8 series is 8' (2.44 m). A height of more than 8' for these models will diminish the travel of the arm assemblies. Models in the M W725C9 series require a height of 9' (2.75 m) and Models in the M W725C10 series require a height of 10' (3.05m).



TWO (2) People will be required to install the Ceiling Mount Assemblies.



THE SUPPORTING STRUCTURE FOR BOTH THE CEILING MOUNT AND WALL MOUNT INSTALLATION MUST BE CAPABLE OF SUPPORTING A MINIMUM WEIGHT OF 500 LBS. (226.8 KG).

The following items will be the responsibility of the customer (or a construction contractor hired by the customer):

- Provide properly grounded, hospital grade duplex electrical outlet (115 VAC, 15 Amp, 60 Hz; or 230 VAC, 15 Amp, 50/60 Hz) above the mounting surface and within 2 feet of the center of the microscope, recommended to be connected to a separate circuit breaker with the electrical outlet controlled by a wall switch.
- Provide a mounting surface which is at the proper height for the unit purchased and which will support a weight of 500 pounds (226.8 kg). All structural requirements are the customer's responsibility.
- Attach the microscope mounting plate and column assembly to the ceiling, ensuring that it is secure, the column is level, and the lightsource is plugged into the electrical outlet.

The Global Surgical™ Sales Representative will be responsible for completing the rest of the installation.

4.3.1. Conventional Ceiling Applications

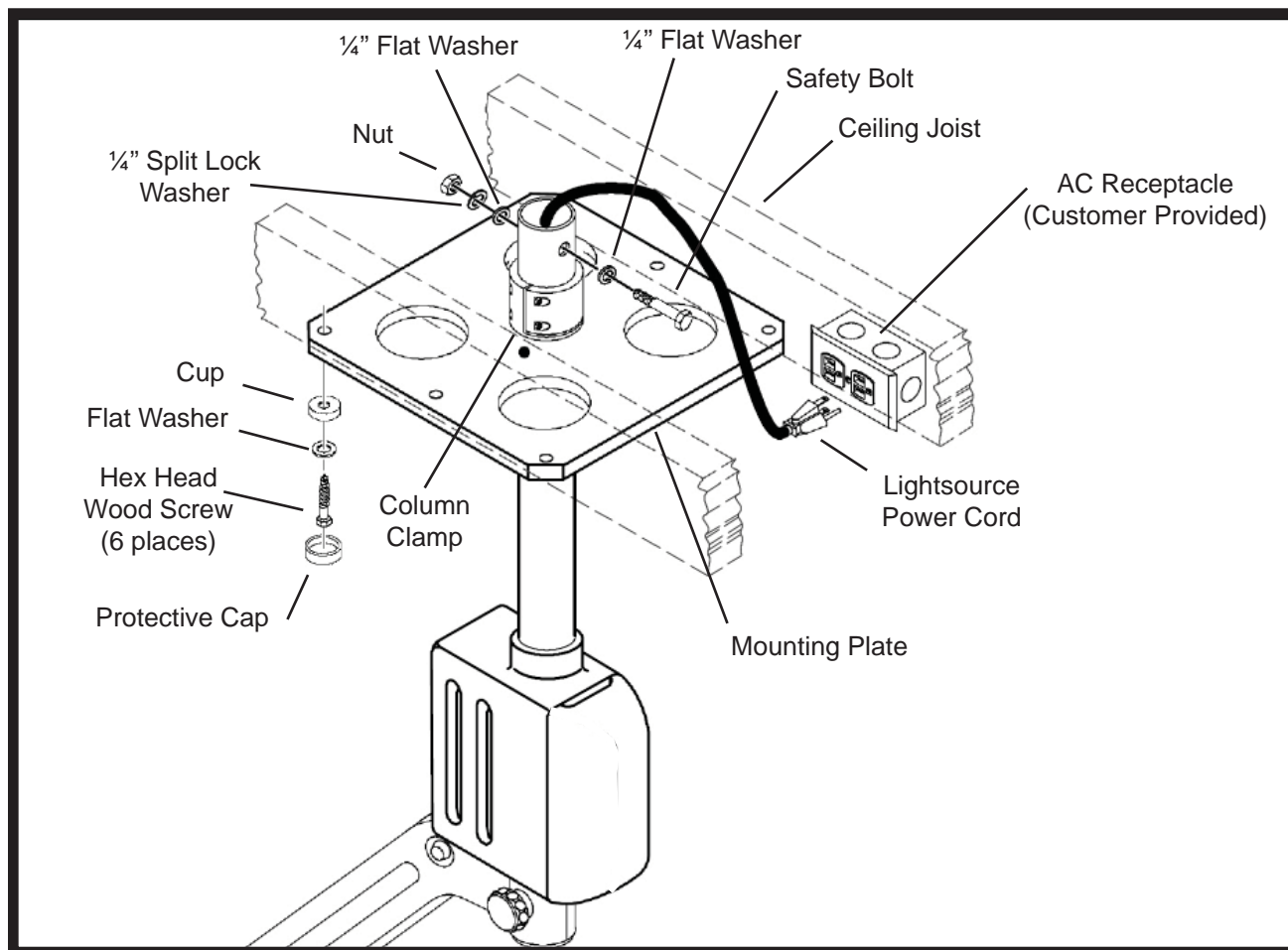


Figure 4-8. Conventional Ceiling Installation

A conventional ceiling would be one that is 8' (2.44 m) from the floor using wooden 2" X 8" (5.1 x 20.3 cm) ceiling joists covered by plaster board or similar material. A hole, approximately 14" (35.6 cm) square, must be cut in the ceiling between the 2" X 8" ceiling joists. This hole will permit access to an electrical receptacle (115 VAC, 15 Amp, 50/60 Hz; 230 VAC, 15 Amp, 50/60 Hz) which must be installed by the customer before the installation can proceed. The hole will also permit access to the leveling screws of the microscope column.

The Ceiling Mount installation can be mounted above the ceiling joist if access is available. Then only a 3 1/2" diameter hole would be needed.



THE SUPPORTING STRUCTURE FOR BOTH THE CEILING MOUNT AND WALL MOUNT INSTALLATION MUST BE CAPABLE OF SUPPORTING A MINIMUM WEIGHT OF 500 LBS (226.8 KG).



- **ENSURE ELECTRICAL CIRCUIT IS OFF! PUSH CIRCUIT BREAKER TO OFF POSITION.**
- **MOUNTING PLATE AND COLUMN ASSEMBLY WEIGHS APPROXIMATELY 35 LBS (15.9 KG).**
- **TO AVOID PERSONAL INJURY TWO (2) PEOPLE ARE REQUIRED FOR PROPER INSTALLATION.**

Refer to Figure 4-8 for steps 1 through 14.

1. Using the template provided, mark the positions of the six (6) mounting screws on the ceiling joists. See Figure 4-7.
2. Drill six (6) 1/4" (6 mm) pilot holes into the joists as marked above.
3. Place a 3/8" flat washer and cup over each of the six (6) 3/8" X 3" hex head wood screws.
4. Position the Mounting Plate onto the ceiling joists and line up the holes in the plate with the pilot holes in the ceiling joists.
5. Insert the hex head screws into the holes and tighten with a 9/16" (14 mm) socket or wrench.
6. Remove the safety bolt and nut from the Ceiling Mount column.
7. Loosen the four (4) hex socket cap screws which hold the Column Clamp together.
8. Slide the column assembly up through the hole in the Mounting Plate, and adjust the height of the column until the mounting post end of the column is 81"- 87" (206 - 221 cm) for Dental, 87"- 93" (221 - 236 cm) for ENT, above the floor.
9. Rotate the column until the Lightsource Housing door is in an accessible position.
10. Secure the column by tightening the four (4) screws in the Column Clamp.
11. Reinstall the safety bolt and nut into the Ceiling Mount column and tighten securely.



THE SAFETY BOLT MUST BE INSTALLED IN THE CEILING MOUNT COLUMN. FAILURE TO INSTALL THE SAFETY BOLT COULD RESULT IN INJURY OR DEATH IN THE EVENT THE PRIMARY CLAMP FAILED.

12. If applicable, slide the Corian® cover up to the ceiling mount plate and attach using the four (4) button head screws provided.
13. Loosen the two (2) set screws in the black Trim Ring (not shown), slide the Trim Ring up until it contacts the Cover Plate, then retighten the set screws.
14. Snap the protective covers over the cups when finished.
15. Use a level to ensure the column assembly is vertically level. Refer to the Ceiling Mount Leveling Instructions (Global Surgical™ Part Number 108-016-033) to correct any leveling concerns.



The screws securing the Cover Plate should not be overtightened. This panel does not support any weight and overtightening may cause the panel to break.

4.3.2. Drop Ceiling Applications

Many newer constructions use drop ceilings. Whenever this type of application is used, **all supporting structure and electrical service (115 VAC, 15A, 50/60 Hz; 230 VAC, 15A, 50/60 Hz) is the customer's responsibility and must be completed before the installation can proceed.** See Figures 4-7 and 4-9 and proceed as follows.

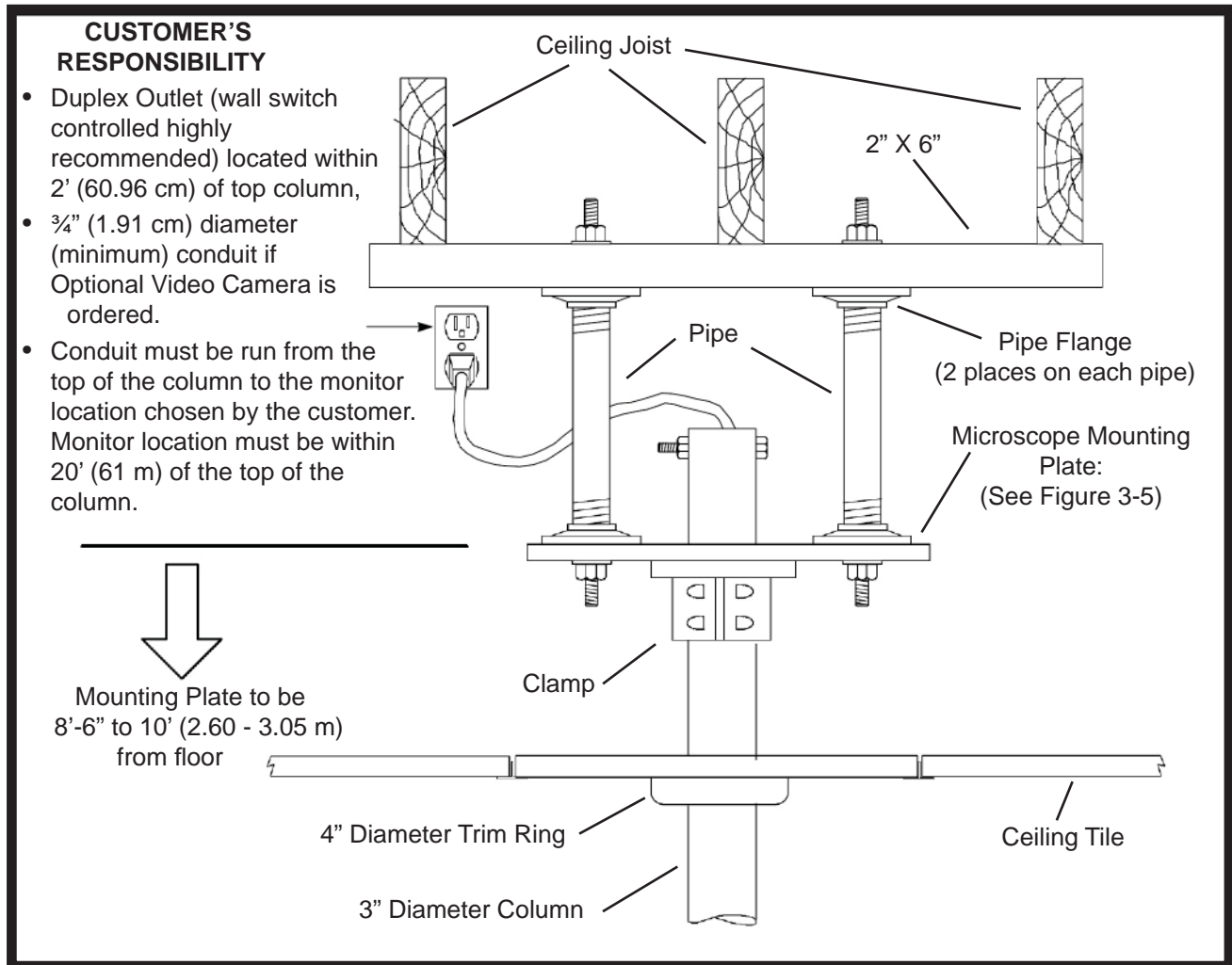


Figure 4-9. Possible Mounting Structure for Ceiling Mount Microscope



WARNING

THE SUPPORTING STRUCTURE FOR BOTH THE CEILING MOUNT AND WALL MOUNT INSTALLATION MUST BE CAPABLE OF SUPPORTING A MINIMUM WEIGHT OF 500 LBS (226.8 KG).



WARNING

- ENSURE ELECTRICAL CIRCUIT IS OFF! PUSH CIRCUIT BREAKER TO OFF POSITION.
- MOUNTING PLATE AND COLUMN ASSEMBLY WEIGHS APPROXIMATELY 35 LBS (15.9 KG).
- TO AVOID PERSONAL INJURY TWO (2) PEOPLE ARE REQUIRED FOR PROPER INSTALLATION.

1. Ensure that there is a 3-1/2" (8.9 cm) diameter hole in the drop ceiling, and that there is a 6" (15.2 cm) diameter hole in the mounting surface before proceeding. The 3-1/2" hole and the 6" hole should be located where the center of the microscope will be.
2. Using the template provided, mark the positions of the six (6) mounting screws on the mounting surface. See Figure 4-7.
3. Drill six (6) 1/4" (6 mm) pilot holes into the joists as marked above.
4. Place a 3/8" flat washer and cup over each of the six 3/8" X 3" hex head lag screws. Refer to Figure 4-9.
5. Position the Mounting Plate onto the mounting surface preferably with the Column Clamp facing up, and line up the holes in the plate with the pilot holes in the mounting surface.
6. Insert the hex head lag screws into the holes and tighten with a 9/16" (14mm) socket or wrench.
7. Snap the protective covers over the cups when finished.
8. Remove the nut and the safety bolt from the top of the column assembly.
9. Loosen the four (4) hex socket cap screws which hold the Column Clamp together.
10. Loosen the two (2) set screws in the black Trim Ring (not shown), slide the ring down close to the Lightsource Housing.
11. Slide the column assembly through the 3-1/2" (8.9 cm) diameter hole in the drop ceiling and through the Mounting Plate, and adjust the height of the column as recommended in Figure 3-5. Rotate the column until the Lightsource Housing door is in an accessible position.
12. Secure the column by tightening the four (4) screws in the Column Clamp.
13. Reinstall the safety bolt and nut into the ceiling mount column and tightly secure.



THE SAFETY BOLT MUST BE INSTALLED IN THE CEILING MOUNT COLUMN. FAILURE TO INSTALL THE SAFETY BOLT COULD RESULT IN INJURY OR DEATH IN THE EVENT THE PRIMARY CLAMP FAILED.

14. Use a level to ensure the column assembly is vertically level. Refer to the Ceiling Mount Leveling Instructions (Global Surgical™ Part Number 108-016-033) to correct any leveling concerns.
15. Plug the lightsource power cord into the outlet, and verify that there is power to the lightsource.
16. If the Video Camera option was ordered, route the cable down through the column at this point.
17. Put the drop ceiling tile back into place.
18. Slide the black Trim Ring upward until it is in contact with the drop ceiling, and secure it by tightening the two set screws.



The screws securing the Cover plate should not be overtightened. This panel does not support any weight and over tightening may cause the panel to break.

Section 5. Installation

5.1. Assembly of Floorstand Base

After all the components have been unpacked and visually inspected for damage, they must be assembled and made ready for use. All shipping materials should be retained until it has been determined that no damage occurred in shipping.

The items ordered will be sent in one or more boxes depending upon the destination, the method of shipment and the options ordered. Check the items delivered with those specified on your packing list.

The Floorstand Base and Floorstand Base Cover are packed in one box. The column and the Lightsource Housing are assembled and are in another box. See Figure 5-1 for assembly. The Floorstand weights are packaged separately. See Section 5-2.

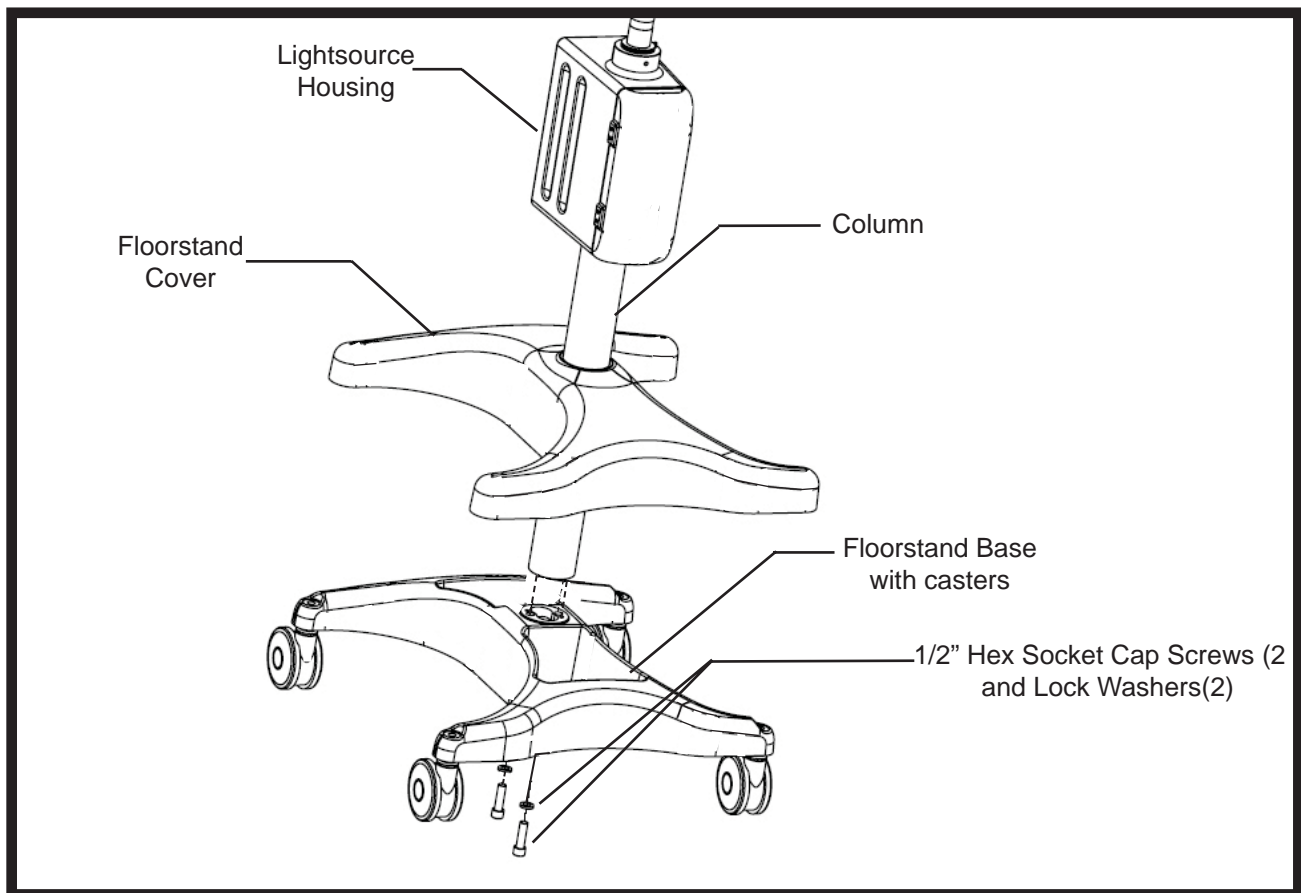


Figure 5-1. Assembling Column to Floorstand Base

1. Slide the plastic Floorstand Base Cover onto the column.
2. Place the column into the top of the Floorstand Base with the column and Floorstand holes aligned. Use the guide pins in the Floorstand Base and the holes in the column for easy alignment.
3. Thread the two (2) 1/2" hex socket cap screws and the two (2) lock washers in the Floorstand Base into the column.
4. Tighten the two (2) 1/2" hex socket cap screws to 40 ft/lbs.

NOTE: The 1/2" hex socket cap screws can be initially threaded into the column by hand. A 3/8" (9.5 mm) square drive hex bit socket and a 3/8" hex bit with 6" (15.2 cm) extension is required to tighten the screws.

5.2. Installation of Removable Floorstand Weights

The M W725F Microscope Support System comes with two (2) 27 pound (12.3 kg) weights. These weights are necessary to prevent the Microscope System from tipping over during use.



THE REMOVABLE WEIGHTS FOR THE FLOORSTAND MUST BE INSTALLED PRIOR TO USE TO PREVENT THE SYSTEM FROM TIPPING OVER AND CAUSING INJURY TO PERSONNEL OR PATIENTS.

1. Slide the plastic Floorstand Cover up the column. See Figure 5-2.
2. Set the two (2) 27 pound (12.3 kg) weights into their appropriate cavities in the Floorstand Base.
3. Lower the plastic Floorstand Cover over the base.

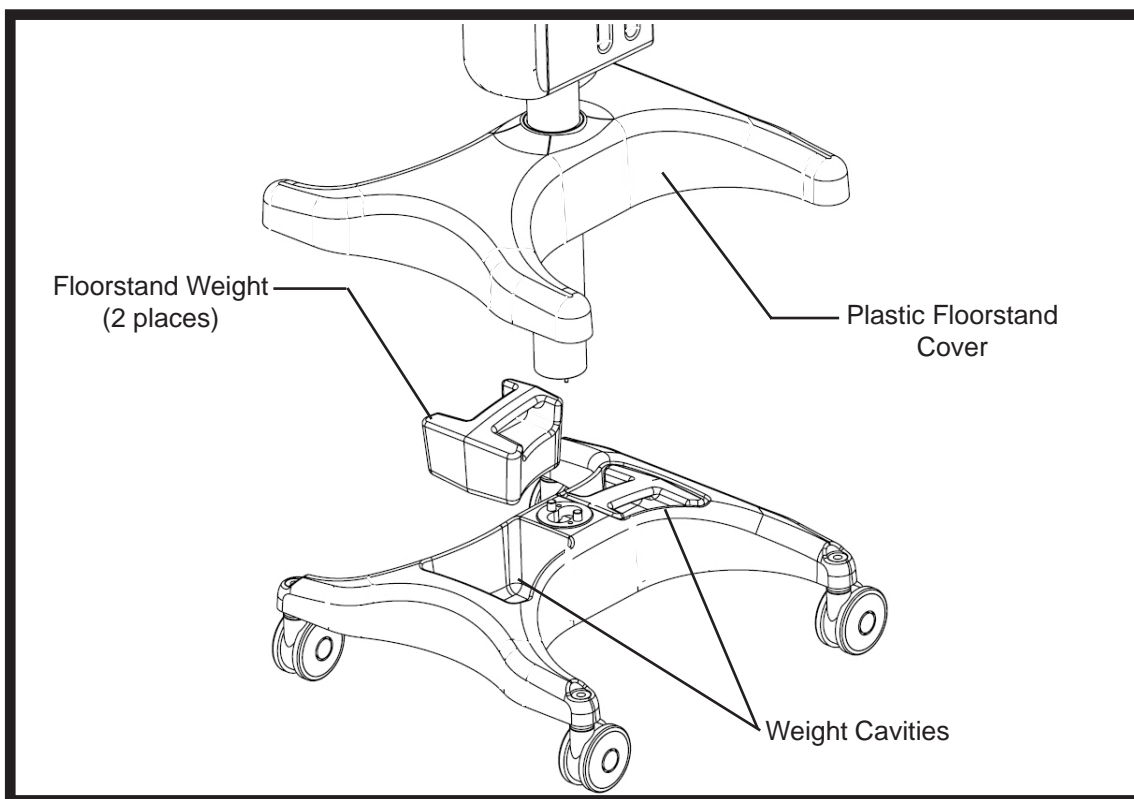


Figure 5-2. Installation of Weights in Floorstand Base

5.3. Installation of Horizontal Arm Assembly

5.3.1. Floorstand, Low Wallmount and High Wallmount Shaft Up

To install the Horizontal and Spring Arm Assembly to the Lightsource Housing, refer to Figure 5-3 and proceed as follows:

1. Remove the two (2) rotation lock knobs from the Horizontal Arm.
2. Remove the two (2) plastic caps on each side of the Horizontal Arm and then use a Phillips screwdriver to remove the two screws on each side and remove the two (2) plastic covers on the Horizontal Arm.
3. Using retaining ring pliers, remove the two (2) external retaining rings from the Mount Post.

4. Install a thrust washer onto the Mount Post on the top of the Lightsource Housing.
5. Install a thrust bearing onto the Mount Post on the top of the Lightsource Housing.



SAFETY GLASSES SHOULD BE WORN WHILE INSTALLING OR REMOVING EXTERNAL RETAINING RINGS TO PREVENT POSSIBLE EYE INJURY.



ENSURE THE EXTERNAL RETAINING RINGS ARE INSTALLED CORRECTLY AND SNAP INSIDE THE GROOVES ON THE MOUNT POST. FAILURE TO DO SO COULD CAUSE THE HORIZONTAL ARM/ SPRING ARM ASSEMBLY TO FALL FROM THE SHAFT CAUSING DAMAGE TO THE UNIT AND POTENTIAL SEVERE INJURY TO PERSONNEL.

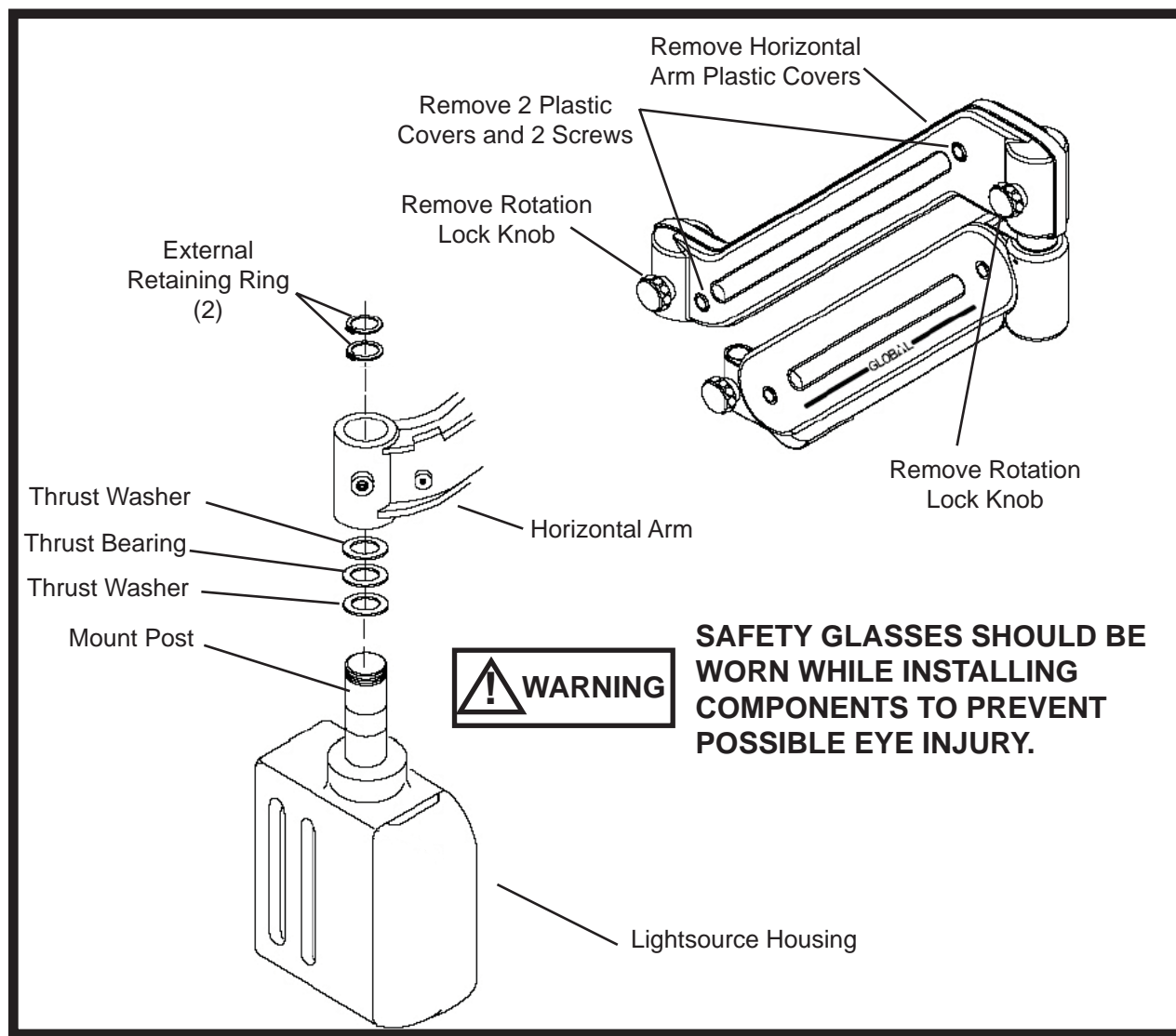


Figure 5-3. Installation of Horizontal Arm/Spring Arm Assembly on Floorstand, Low Wallmount, and High Wallmount Shaft Up

6. Install a thrust washer onto the Mount Post on the top of the Lightsource Housing.
7. Slide the Horizontal Arm/Spring Arm Assembly onto the Mount Post, ensuring all cables pass through the Mount Post
8. Using retaining ring pliers, re-install the two (2) 1-1/2" external retaining rings onto the Mount Post on the top of the Lightsource Housing.



ENSURE THE EXTERNAL RETAINING RINGS ARE INSTALLED CORRECTLY AND SNAP INSIDE THE GROOVES ON THE SHAFT. FAILURE TO DO SO COULD CAUSE THE HORIZONTAL ARM/SPRING ARM ASSEMBLY TO FALL FROM THE SHAFT CAUSING DAMAGE TO THE UNIT AND POTENTIAL SEVERE INJURY TO PERSONNEL.

9. Re-install the two (2) plastic covers on the Horizontal Arm using screws and plastic caps removed in Step 2.
10. Re-install the two (2) rotation lock knobs onto the Horizontal Arm.

5.3.2. Ceiling Mount and High Wallmount

To install the Horizontal and Spring Arm Assembly to the Lightsource Housing, refer to Figure 5-4 and proceed as follows:

1. Turn the Spring Arm Assembly so that it folds beneath the Horizontal Arm and secure by tightening the rotation lock knob.
2. Loosen the rotation lock knob at the opposite end of the Horizontal Arm to allow assembly onto the Mount Post.
3. Remove the Horizontal Arm cover on the side opposite the rotation lock knobs by removing the two (2) plastic caps and two (2) screws.
4. Using the retaining ring pliers, remove the two (2) external retaining rings from the Mount Post.



SAFETY GLASSES SHOULD BE WORN WHILE INSTALLING COMPONENTS TO PREVENT POSSIBLE EYE INJURY.

5. Slide the Horizontal Arm/Spring Arm assembly onto the Mount Post and securely tighten the rotation lock knob to hold the arm assembly on the Mount Post.
6. Install a thrust washer, followed by a thrust bearing, and then another thrust washer onto the Mount Post. See Figure 5-4.

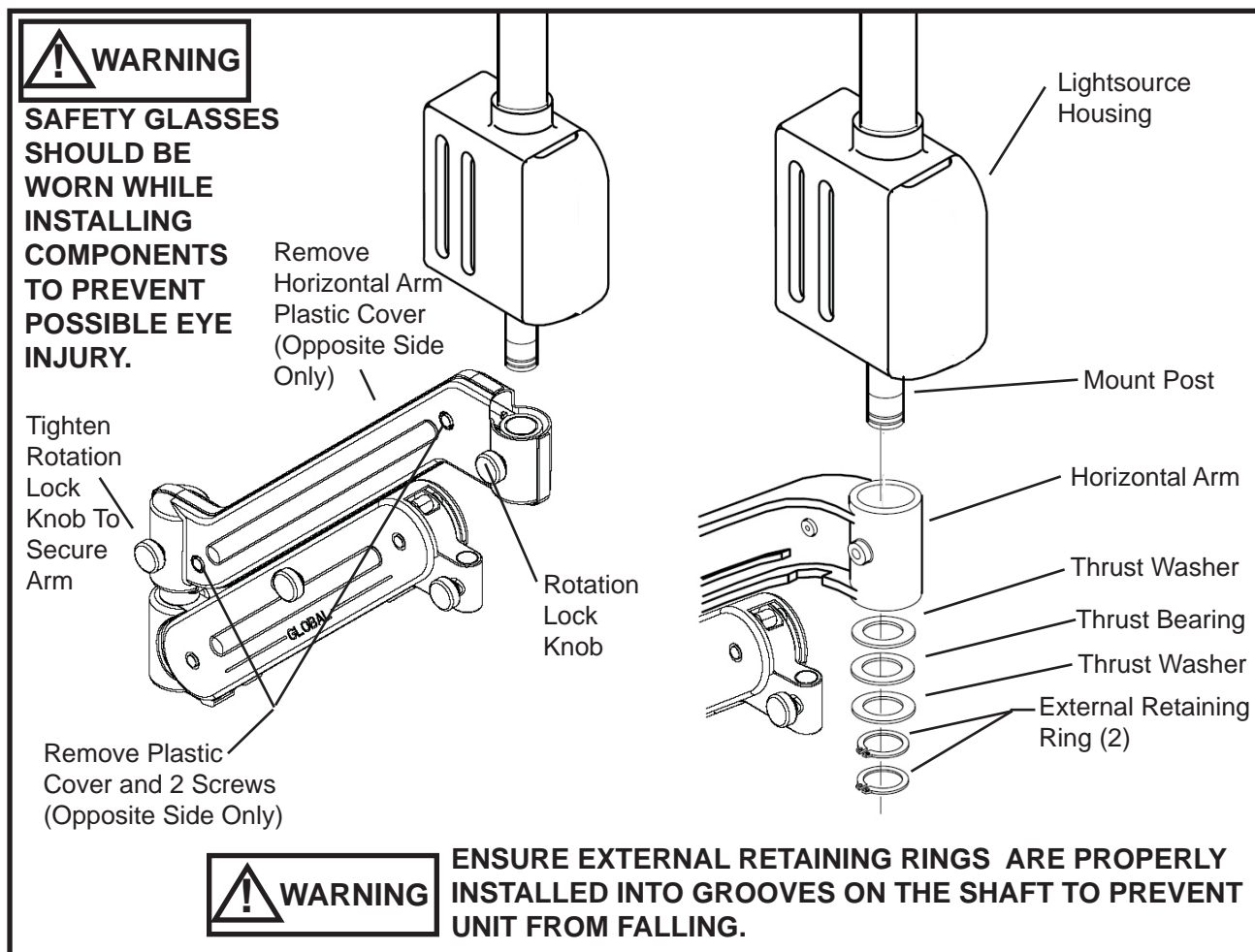


Figure 5-4. Installation of Horizontal Arm/Spring Arm Assembly on Ceiling Mount and High Wallmount

7. Using the retaining ring pliers, re-install the two (2) 1-1/2" external retaining rings on the Mount Post.



WARNING ENSURE THE EXTERNAL RETAINING RINGS ARE INSTALLED CORRECTLY AND SNAP INSIDE THE GROOVES ON THE SHAFT. FAILURE TO DO SO COULD CAUSE THE HORIZONTAL ARM/SPRING ARM ASSEMBLY TO FALL FROM THE SHAFT CAUSING DAMAGE TO THE UNIT AND POTENTIAL SEVERE INJURY TO PERSONNEL.

8. Re-install the Horizontal Arm cover using the screws and plastic caps removed in Step 3.

5.4. Installation of the Global Surgical™ G3, G4, and G6 Optics

See Figure 5-5 on the preceding page and use the following steps to install the G3 and G6 Optics to the M W725 Spring Arm Assembly.

1. Unscrew and remove the brake cap from the coupler assembly shaft.
2. Unscrew and remove the retaining nut from the shaft.
3. Remove the brake disk from the shaft. Slide the Microscope Assembly upwards through the bottom of the end of the Spring Arm assembly while holding it firmly.
4. Slide the brake disk onto the shaft.
5. Ensure the washer goes over the pin and sits flat on the top of the Spring Arm Assembly.
6. Thread the retaining nut back onto the shaft until tight against the slotted brake disk.
7. Thread the brake cap onto the shaft.

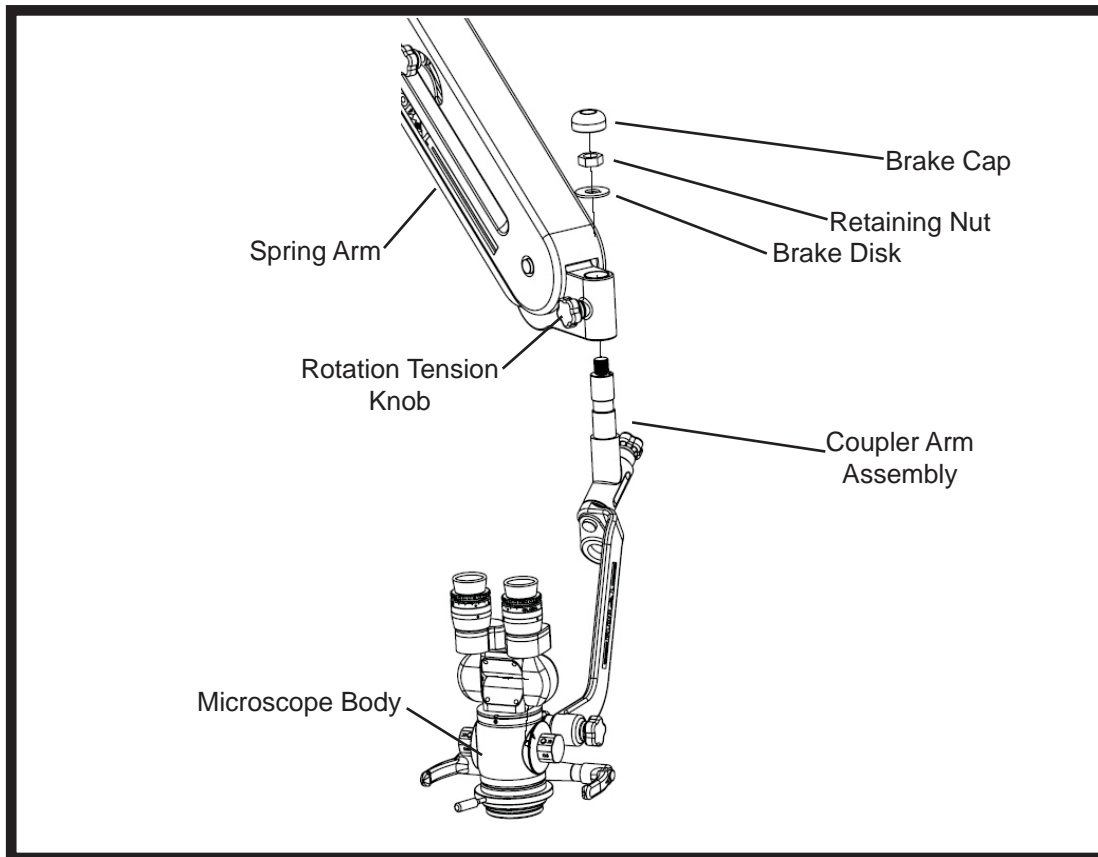


Figure 5-5. Installation of the Global Surgical™ G3, G4, and G6 Microscope

5.4.1. Installation of the Global Surgical™ Fine Focus Objective Lens

To install the Fine Focus Objective Lens to the Microscope Body, refer to Figure 5-6 and proceed as follows:

1. Thread the Objective Lens into the bottom of the Microscope Body.
2. Use the 7/64" (3 mm) hex key (provided) to loosen the clamping screw on the Fine Focus Ring and then thread the Fine Focus Knob into the threaded hole in the Fine Focus Ring.
3. With the Objective Lens in its fully retracted (up) position, rotate the Fine Focus Knob to the 3 o'clock position then tighten the clamping screw. This will place the Fine Focus Knob at the 6 o'clock position at the center of its travel. The positioning of the knob may be varied based on user preference.

5.4.2. Installation of the Global Surgical™ Binoculars

To install the Binocular, refer to Figure 5-6 and proceed as follows:

1. Loosen the Set Screw on the Binocular Retaining Ring with the provided 5/64" (2 mm) Hex Key so it will not interfere with the dovetail-shaped bottom of the binocular head.
2. Slide the binocular head into the retaining ring so the dovetail-shaped bottom slides under the two wedge-shaped tabs at the rear of the retaining ring.
3. To align the binocular, position the binocular head so the U-shaped slot at the rear of the binocular base is installed over the slotted screw in the Binocular Retaining Ring.
4. Tighten the Set Screw. When the Microscope Body and the binocular head are properly aligned, the binocular head will not rotate in the binocular retaining ring.

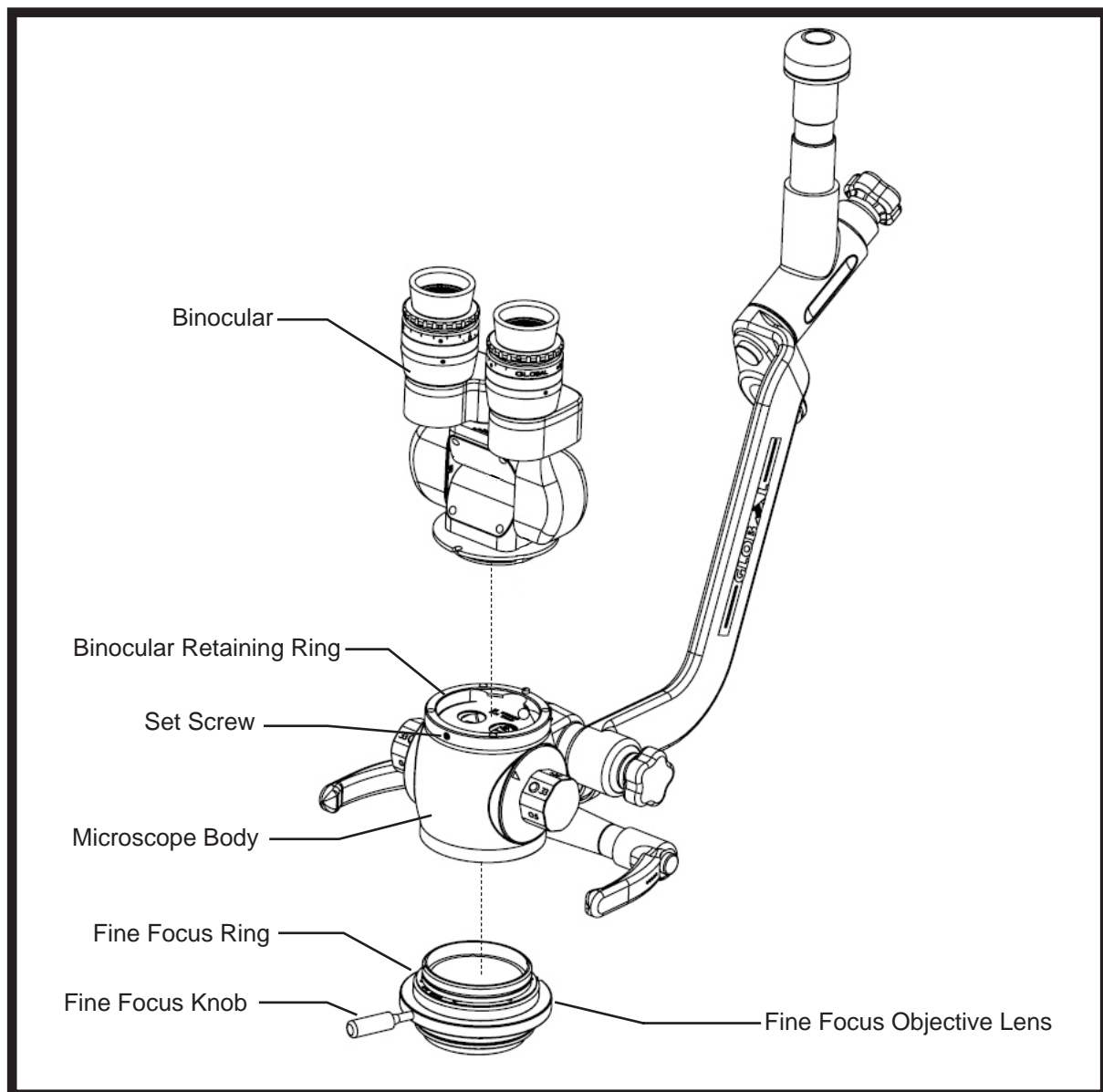


Figure 5-6. Installation of the Global Surgical™ G3, G4, and G6 Optics

5.5. Installation of Optional Extension Arm (M W713E or M W715E)

To install the M W713E or the M W715E Extension Arm, refer to Figure 5-7 and proceed as follows:

1. Unscrew and remove the brake cap from the shaft.
2. Unscrew and remove the retaining nut from the shaft.
3. Remove the brake disk from the shaft.
4. Slide the M W713E or M W715E Extension Arm into the end of the Spring Arm.
5. Slide the brake disk onto the shaft. Ensure the washer goes over the pin and sits flat on the top of the Spring Arm Assembly.
6. Thread the retaining nut back onto the shaft until tight against the brake disk
7. Thread the brake cap onto the shaft.

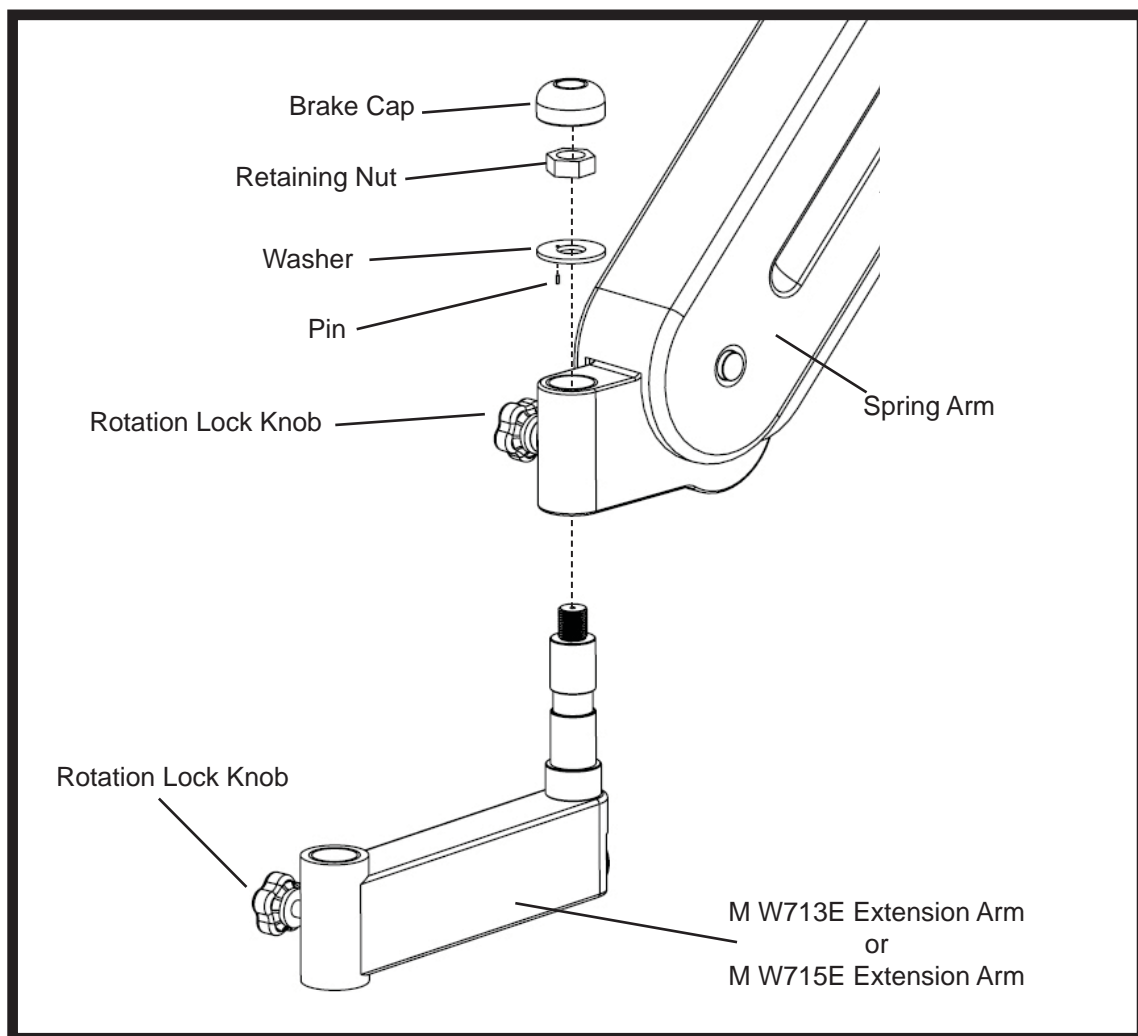


Figure 5-7. Installation of Optional Extension Arm (M W713E or M W715E)

5.6. Installation of the Fiberoptic Cable and Accessory Cables

Tables 5-1 and 5-2 list the recommended Fiberoptic Cables and installed lengths for the various microscope systems.

To connect the Fiberoptic Cable from the lightsource to the Microscope Body, refer to Figures 5-8 and 5-9 and proceed as follows:

Tools Required:

- #1 Phillips screwdriver
- Flat blade screwdriver
- 1/8" (3mm) hex key
- cable ties

5.6.1. Horizontal Arm Cover Removal

1. Remove the two (2) rotation lock knobs on the Horizontal Arm.
2. Using the flat blade screwdriver, pry off the two (2) plastic caps on the side of the Horizontal Arm Assembly.
3. Using the #1 Phillips screwdriver, remove the two (2) #8 Phillips head screws on the side of the Horizontal Arm.
4. Remove the Horizontal Arm Cover. The cover on the opposite side can be left in place during the installation of all cables.

5.6.2. Spring Arm Cover Removal

1. Remove the tension lock knob located near the center of the Spring Arm.
2. Using the flat blade screwdriver, pry off the four (4) plastic caps on both sides of the Spring Arm Assembly.
3. Remove the four (4) socket head screws with a 1/8" (3 mm) hex wrench.
4. Grip the underside of the Spring Arm cover near the microscope end with your thumbs.
5. While prying the two sides apart, "twist" the cover counter-clockwise and guide the slot on the left of the cover over the tension lock knob screw.
6. Grip the underside of the Spring Arm cover in the crescent shaped cutout while spreading sides apart. Lift the cover over the threaded boss and off of Spring Arm.



There is a spacer bushing inside the plastic cover on the tension lock knob. Be aware this bushing could fall off when the plastic covers are removed.

5.6.3. Fiberoptic Cable Installation

The Fiberoptic Cable is routed through the inside of the Horizontal Arm and Spring Arm Assemblies. See Figures 5-8 and 5-9.

1. The Fiberoptic Cable is routed from the Lightsource Housing through the center hole in the Mount Post, through the cable cutout and along the upper channel of the Horizontal Arm.
2. Feed the cable through the hole in the center of the Mount Post.
3. Pull the cable out of the crescent shaped hole in the Spring Arm Assembly.
4. Route the Fiberoptic Cable through the channel located above the Threaded Boss in the proximal end (closest to the horizontal arm) of the Spring Arm. Failure to do so will result in diminished performance of the microscope.
5. Route the Fiberoptic Cable along the side of the Spring Arm with the three (3) cable tie holders. Using cable ties, loosely attach the Fiberoptic Cable to the holders to allow for movement and adjustment of the cable.
6. Feed the Fiberoptic Cable down through the grommet on the distal end of the Spring Arm Assembly next to the microscope. Refer to Table 5-1 for Length to extend Fiber Optic Cable.
7. With the Spring Arm Assembly in its full up position, feed the Fiberoptic Cable through the cable feed-through holes in the Extension Arm and Cable Management Ring to the Microscope Assembly.
8. Pull all excess Fiberoptic Cable back through the cable ties, through the Horizontal Arm and into the Lightsource Housing.
9. Ensure the length of the cable is properly adjusted to provide enough slack in the cable for full rotation of the microscope head with the Spring Arm in full down position.
10. Securely tighten the distal end cable tie nearest the microscope **only**. The remaining two cable ties must be installed loosely to allow for movement of the Fiberoptic Cable through the full range of movement of the Spring Arm.
11. Cut off any excess lengths of the cable ties.



It is important to allow enough slack in the Fiberoptic Cable so that it moves freely through the various positions of the microscope system operation.

Table 5-1. M W725 Fiberoptic Cable Chart with “G Series” Straight Fiberoptic Cable

| Global Surgical™ G3, G4, & G6 Microscope with “G Series” Straight Fiberoptic Cable Ends | | | | | | | | |
|---|---------------------|---------------------|---|---------------------------------------|----------------------|---------------------|--|---------------------------------------|
| | Novalux Lightsource | | Novalux Lightsource with 8" (20.3 cm) Extension Arm | | External Lightsource | | External Lightsource with 8" (20.3 cm) Extension Arm | |
| | Cable | Extended Length "L" | Cable | Extended Length "L" | Cable | Extended Length "L" | Cable | Extended Length "L" |
| All Global Surgical™ G3, G4, & G6 Microscopes | M805GSSV | 25" 63.5cm | M806GSSV | 33" (40")* 83.8 cm (102 CM)* | M806GSSV | 25" 63.5 cm | M803GSSV | 33" (40")* 83.8 cm (102 cm)* |
| All Global Surgical™ G3, G4, & G6 Microscopes w/Dental Light | M806GSSV | 25" 63.5 cm | M803GSSV | 33" 83.8 cm | M803GSSV | 25" 63.5 cm | M803GSSV | 33" 83.8 cm |

* Lengths in () indicate Extended Length, "L", needed if 15" Extension Arm used.

5.6.4. Accessory Cable Installation

All video and accessory cables are routed through the inside of the Horizontal Arm and Spring Arm Assemblies. See Figures 5-8 and 5-9. See section titled “**Optional Equipment**” in this book for various component configurations inside the Lightsource Housing.

1. All video and accessory cables are routed from the Lightsource Housing up through the Mount Post, through the cable cutout and along the lower channel of the Horizontal Arm.
2. The cables are then wrapped around a threaded boss, to allow sufficient clearance for the covers, and secured with cable ties using the two cable tie holders on the bottom side of the Horizontal Arm. See Figures 5-8 and 5-9.
3. Feed the video and accessory cables through the cable cutout on the distal end nearest to the Spring Arm Assembly. Feed the accessory cable down through the hole in the center of the Mount Post.
4. Pull the video and accessory cables out of the crescent shaped hole in the Spring Arm Assembly.
5. Route the accessory and video cables along the side of the Spring Arm with three cable tie holders. Using cable ties, attach the accessory and video cables to the bottom side of the Fiberoptic Cable.
6. Feed the video and accessory cables down through the rubber grommet on the distal end of the Spring Arm Assembly next to the microscope. Refer to Table 5-2 for Length to Extend Accessory Cable
7. With the Spring Arm Assembly in its full up position, feed the video and accessory cables through the rubber grommet in the rear of the Extension Arm and then pull them out the bottom and complete the hookup with the microscope assembly and any applicable video accessory installed on the unit.
8. Pull all excess video and accessory cables back through the cable ties, through the Horizontal Arm and into the Lightsource Housing. Ensure the video and accessory cables are below the fiberoptic cable in the channel in the proximal end of the spring arm. Failure to do so will result in diminished performance of the microscope.
9. Ensure the length of the cable is properly adjusted to provide enough slack in the cable for full rotation of the microscope head with the Spring Arm in the full down position.
10. Securely tighten the cable tie nearest the microscope only. The remaining two (2) cable ties must be installed loosely to allow for movement of the accessory cables through the full range of movement for the Spring Arm.

Table 5-2. M W725 Video and Display Cable Chart*

| | M547PDS Personal Display Video & Power Cable Extended Length “L” | | M 517J-725 , M517N Video & Power Cables Extended Length “L” | |
|---|--|---------------------------|---|---------------------------|
| | w/o 8” (20.3 cm) Extension | w/ 8” (20.3 cm) Extension | w/o 8” (20.3 cm) Extension | w/ 8” (20.3 cm) Extension |
| All Global Surgical™ G3, G4, & G6 Microscopes | 29” (73.7 cm) | 37” (94 cm) | 37” (94 cm) | 45” (114 cm) |

***All dimensions are with the Spring Arm in the horizontal position and are measured from the bottom surface of the Spring Arm to the connector on the cable. See Figure 5-11. Overall lengths of the Fiberoptic Cables are shown below the extended lengths.**

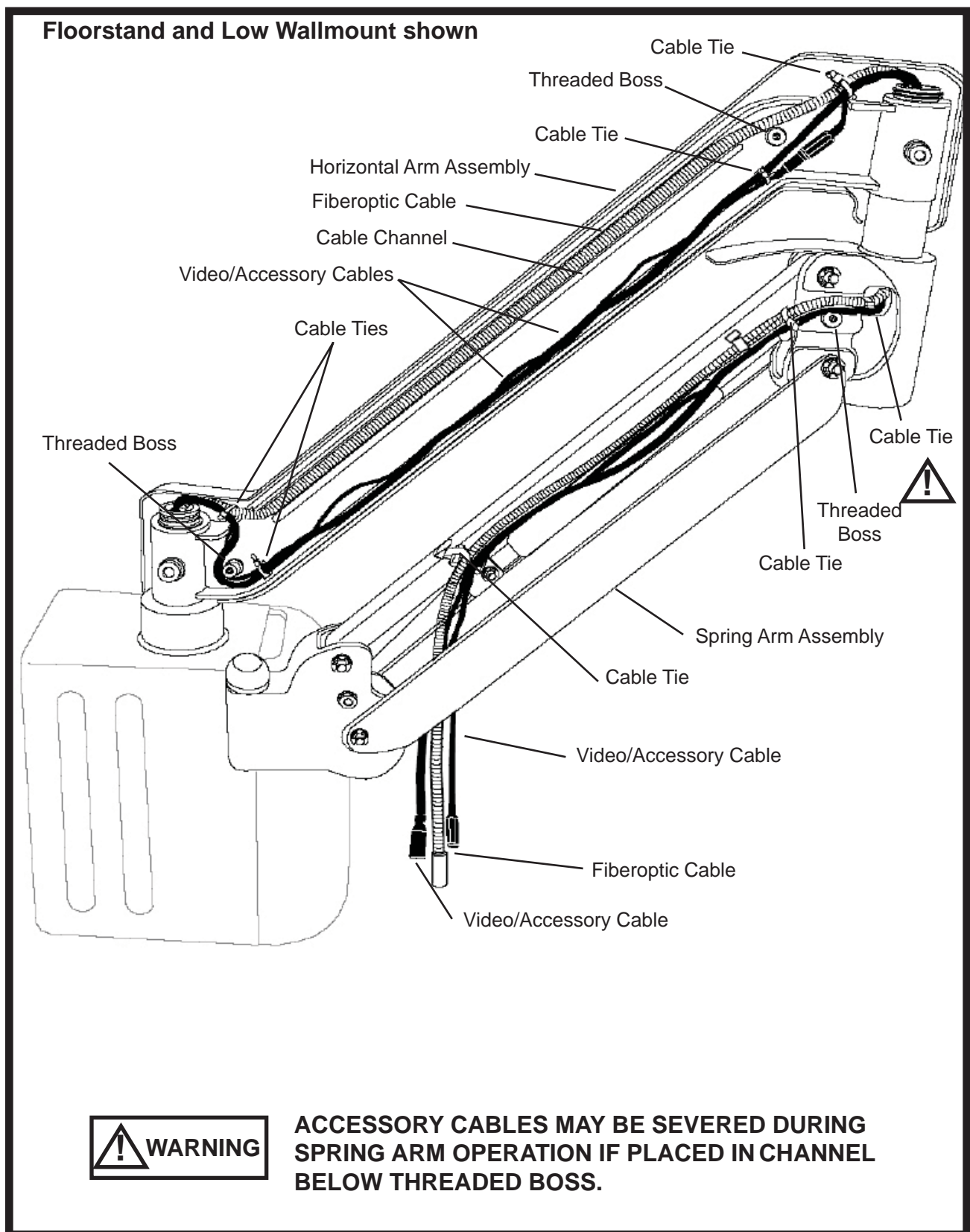


Figure 5-8. Cable Installation in Horizontal and Spring Arm Assemblies

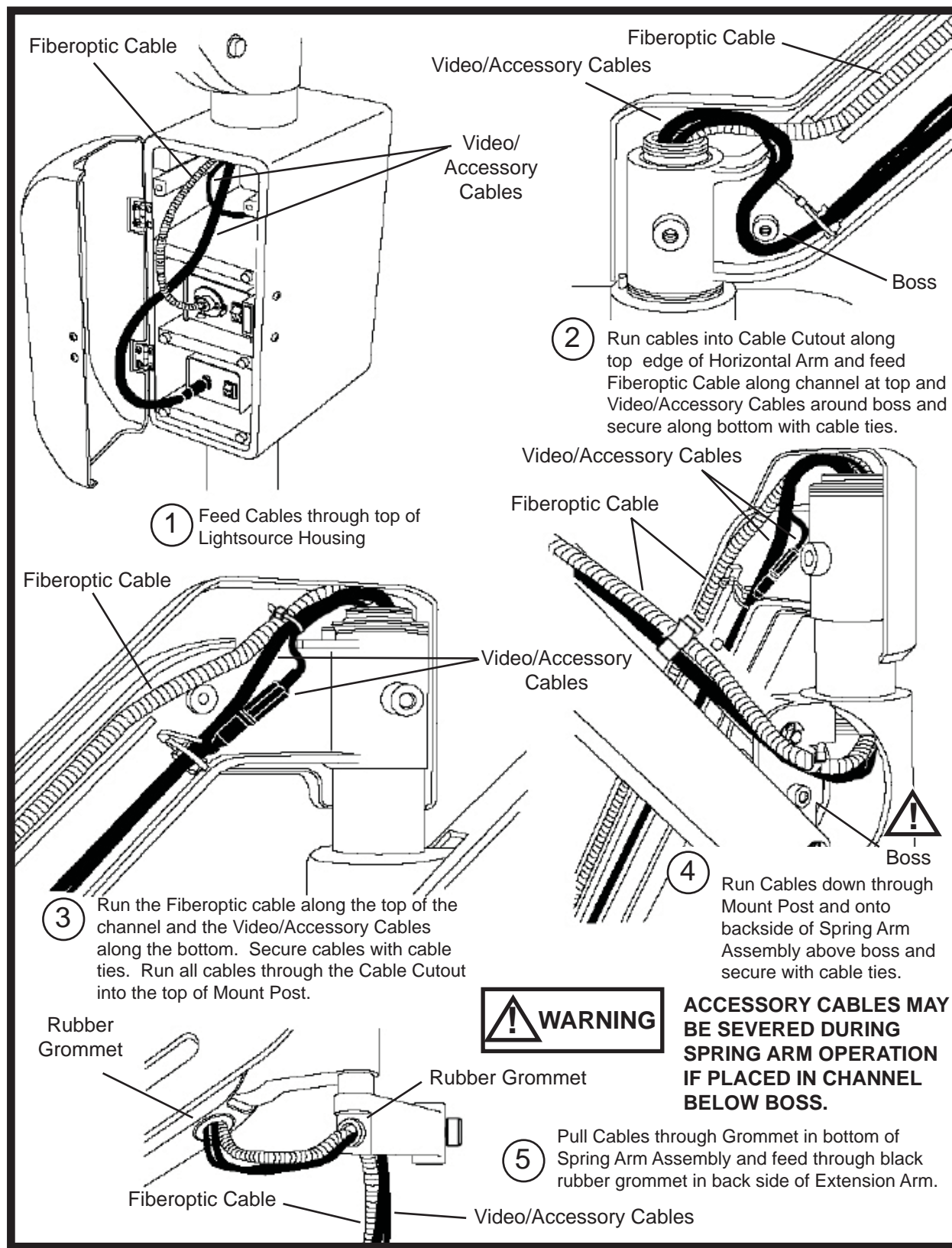


Figure 5-9. Routing the Fiberoptic Cable, Video and Accessory Cables

5.6.5. Reinstalling Plastic Cover on the Spring Arm Assembly

Reinstall the plastic cover on the sides of the Spring Arm Assembly. Unlike the plastic covers for the Horizontal Arm, the cover for the Spring Arm is one piece.

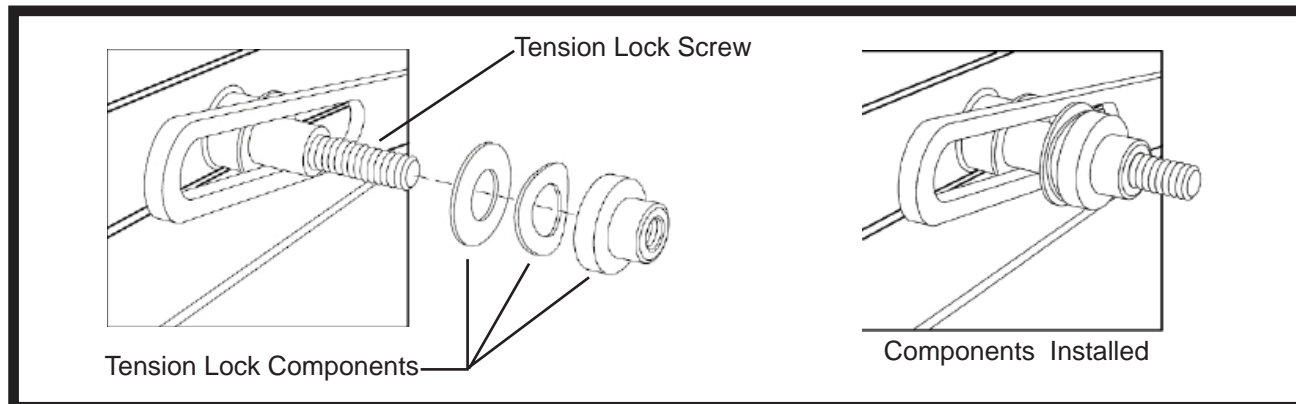


Figure 5-10. Tension Lock Components

1. First make certain that all of the tension lock knob components are installed over the screw on the Spring Arm Assembly. See Figure 5-10.
2. The distal end (closest to the Horizontal Arm) of the cover should be installed first. Spread the sides of the cover and insert the rounded end of the cover into the crescent shaped cutout in the Spring Arm Assembly. See Figure 5-11.
3. The tension lock screw cutout on the side of the cover must now be installed over the tension lock screw.
4. Grasp and spread the cover where shown in Figure 5-11. "Twist" the cover counter-clockwise and guide the tension lock screw cutout over the tension lock screw. Once the screw is in the slot, the cover should float freely on the Spring Arm.
5. Install the four (4) shoulder screws with clear plastic snap washers through the holes in the cover making certain the shoulder of the screw is positioned correctly in each hole. Tighten securely with a 1/8" (3 mm) hex key.
6. Snap the four (4) black plastic caps over the four (4) shoulder screws and press firmly to snap in place. If the cap does not snap firmly into place, it may be necessary to grip the underside of the cover and pull outward on the cover near the shoulder screw while pressing firmly on the cap.
7. Reinstall the tension lock knob.

5.6.6. Reinstalling Plastic Covers on the Horizontal Arm Assembly

Reinstall the plastic covers on the sides of the Horizontal Arm assemblies.

1. Make certain all cables are properly secured and positioned as shown. Install the plastic cover on the Horizontal Arm Assembly.
2. Install the two (2) #8 Phillips head screws with the clear plastic snap washers and securely tighten with the #1 Phillips screwdriver.
3. Snap the two (2) black plastic caps over the two (2) screws and press firmly to snap in place.
4. Install the two (2) rotation lock knobs.

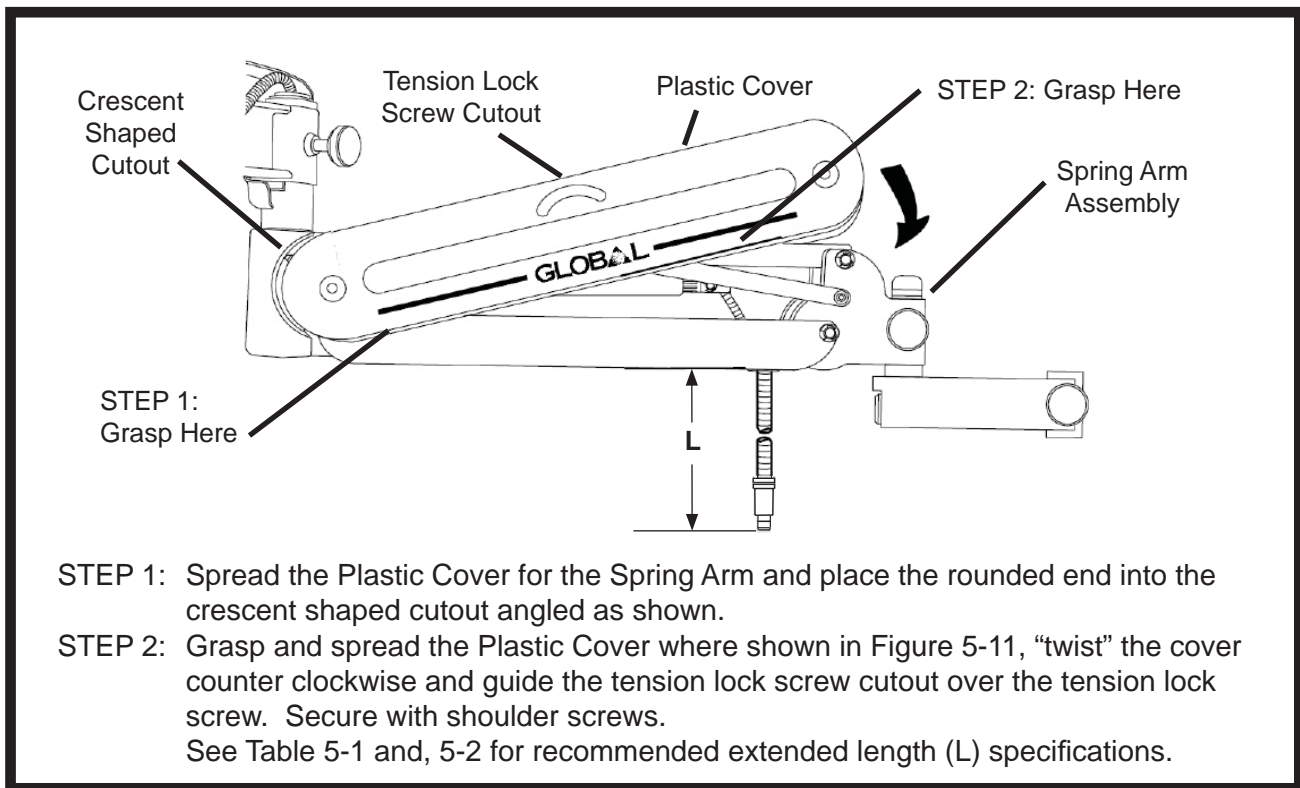


Figure 5-11. Installing Spring Arm Plastic Cover

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Section 6. Operations

6.1. Using the Microscope

The following text describes the use of the various features and components of the microscope. For site preparation and installation instructions, see Sections 4 and 5.

6.1.1. Eyepieces

The eyepieces used on Global Surgical™ microscopes are high eyepoint eyepieces. This means that a full-sized image is formed approximately one inch above the eyepiece to assist users who wear glasses.

Eyecups are used to position the user's head at the correct height without the user becoming fatigued. The eyecups on the Global Surgical™ G3, G4 & G6 Microscopes are adjustable to provide maximum comfort for the user. To lower the eyecup, grasp the rubber eyecup and turn it clockwise. Turning it counterclockwise will raise the eyecup. The eyecups are properly adjusted when the user's head (or glasses) is touching the eyecups with the image through the microscope in full view. Reference lines are provided on the outside surface of the eyecups to verify that both are adjusted to the same height.

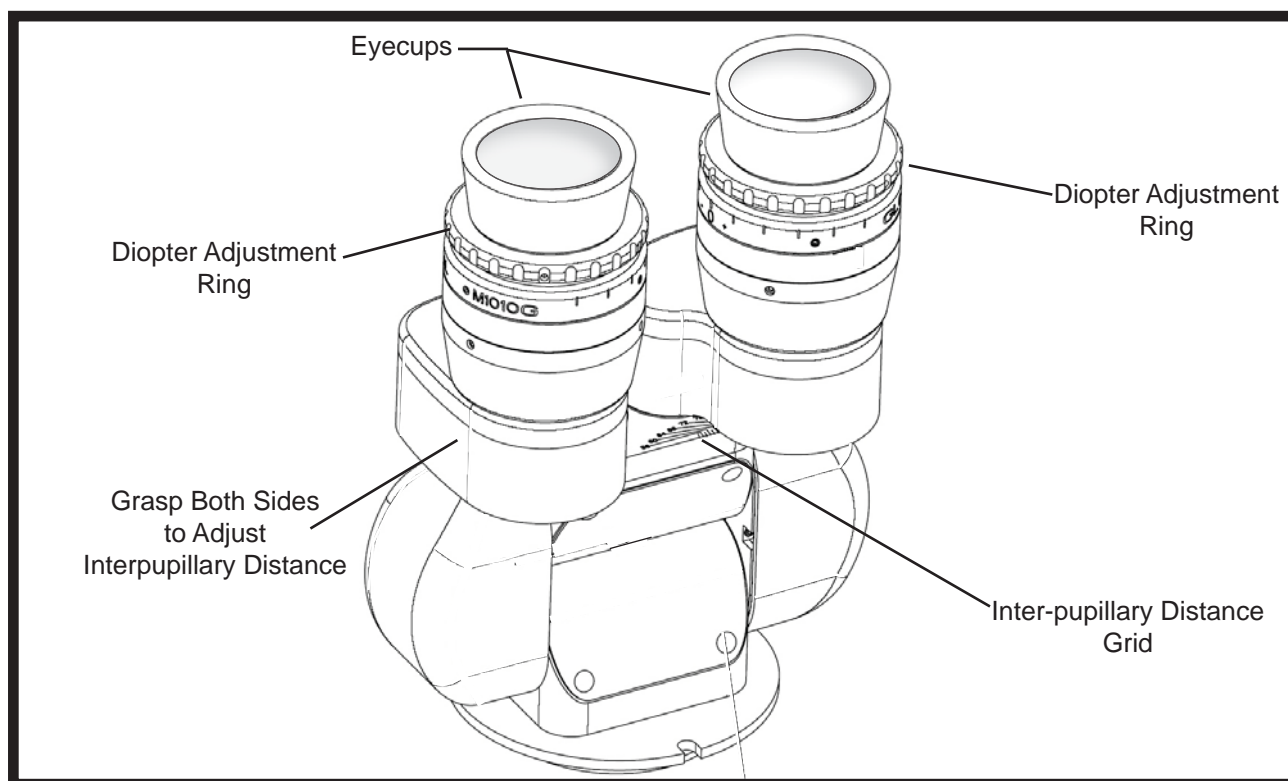


Figure 6-1. Eyepieces and Eyecups

6.1.2. Binocular Adjustment

The distance between the user's eyes is called the **inter-pupillary distance**. The inter-pupillary distance of the binocular **must** be adjusted to match the user's eyes in order to maintain proper stereoscopic vision. To adjust the binocular, the user should look into both eyepieces, grasp the binocular by the side and spread the eyepieces apart or move them closer together until a single image forms. A grid of the inter-pupillary distance in millimeters is engraved on the binocular for reference.

6.1.3. Diopter Adjustment

Each binocular eyepiece is equipped with a Diopter Adjustment Ring which is marked in plus(+) or minus(-) one diopter increments. To adjust the diopter setting, firmly grasp the Diopter Adjustment Ring and adjust the settings as outlined in Section 6.1.5. of this chapter. The Diopter Adjustment Rings must be firmly grasped and rotated to make these adjustments; this is to prevent accidental changes to the settings.

6.1.4. Focusing the Microscope

The course focus on the microscope system is attained by raising or lowering the microscope assembly with the Spring Arm. See Figure 6-2. Fine focus is obtained by moving the Fine Focus Objective Lens. Move the knob either clockwise or counter clockwise to focus the microscope. The focusing knob has a removable plastic cover which can be sterilized.

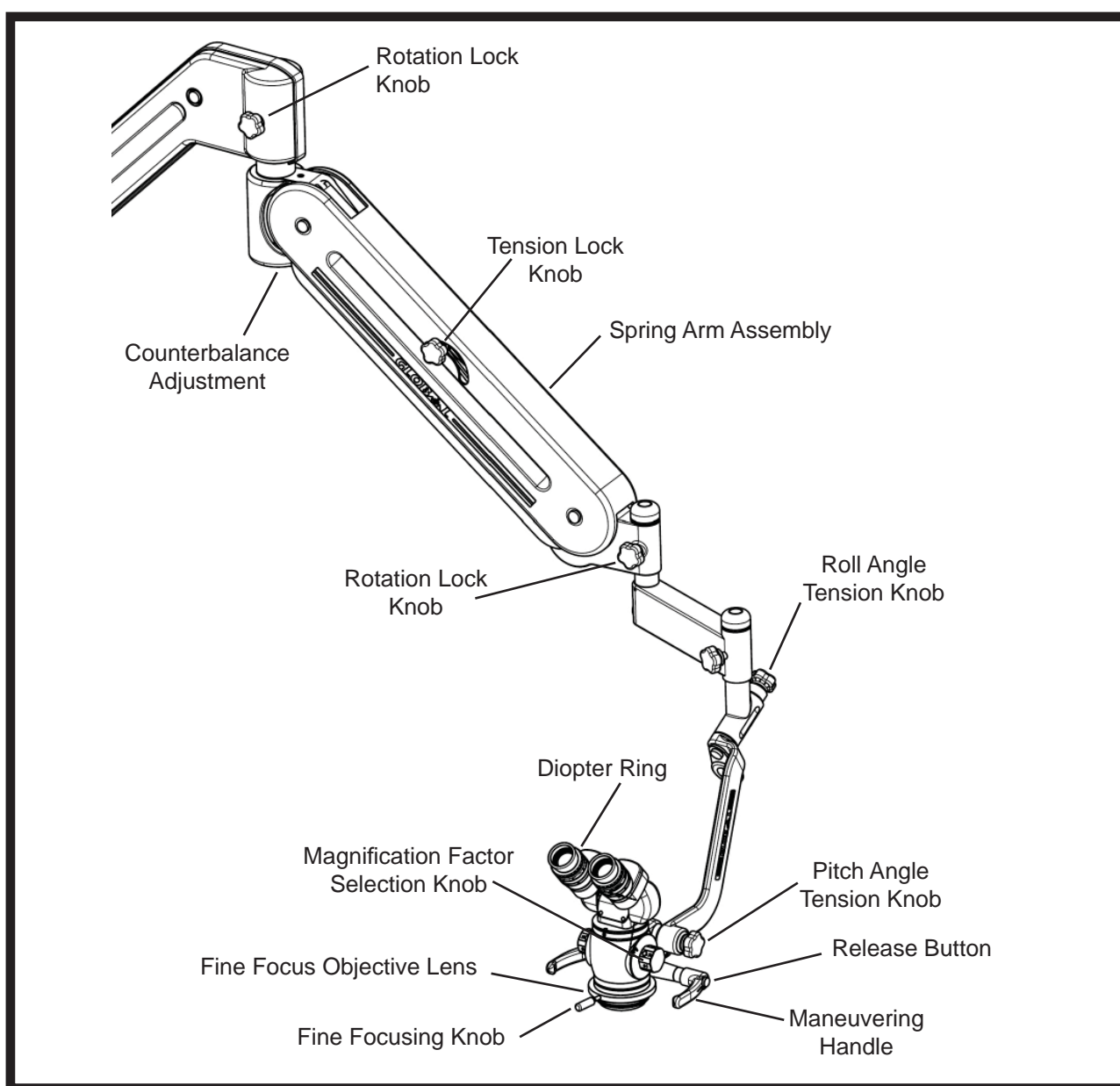


Figure 6-2. Location of Microscope Controls

6.1.5. Par-Focal Adjustment

The Par-Focal Adjustment of the microscope allows the user to adjust the eyepieces to correct for nearsightedness or farsightedness. Once this is accomplished, the microscope will stay in focus regardless of the magnification setting. If the par-focal is not performed, the microscope can still be focused on a selected magnification, but other magnification settings may not be in focus. It is essential to perform the par-focal adjustment prior to using any still or video camera applications.

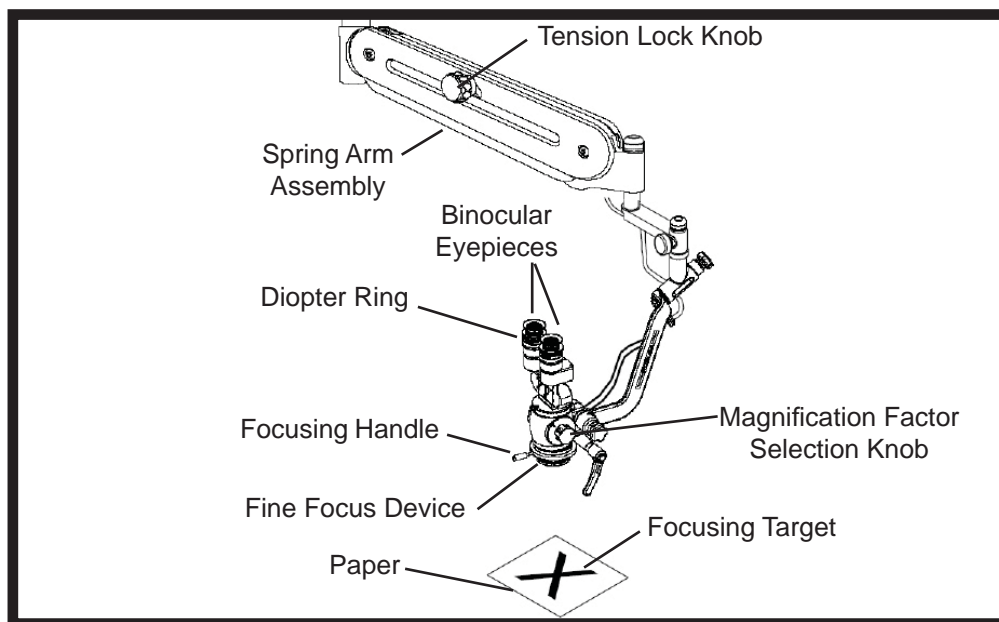


Figure 6-3. Microscope Par-Focal Adjustment

The steps listed below should be followed for making the par-focal adjustments on the microscope. See Figure 6-3.

1. Position the microscope above a flat stationary surface.
2. Using a pen or pencil, mark an "X" on a piece of white paper for a focusing target and place it in the center of the illumination field of the microscope.
3. Set the diopter rings on both eyepieces to "0".
4. Set the magnification to the highest setting. Raise or lower the microscope vertically until the "X" is in optimum focus.
5. Adjust the Fine Focus Device until a sharp focus is acquired.
6. Tighten the tension lock knob on the Spring Arm Assembly to prevent the microscope from moving. Set the magnification to the lowest setting. Focus both eyepieces, one at a time, by turning the Diopter Adjustment Indicator Ring until the image is clear and sharp.
7. Each operator of the microscope will require his or her own par-focal settings which should be set before any procedures are performed. Due to changes in eye correction associated with time, it is recommended that this procedure be performed by each operator a minimum of one time per year.

NOTE: If the image through the microscope is clear but the image through the a video system is not focused or vise-versa, it is especially important to properly adjust the microscope's par-focal setting.

6.1.6. Magnification Selection

All Global Surgical™ G3, G4 and G6 microscopes have two Magnification Factor Selector Knobs, one on each side of the microscope body. Either of these knobs should be turned until the desired magnification factor is facing the indicator arrow on the side of the microscope body. See Table 6-1 for magnification selections for the different microscope systems.

Table 6-1. Global Microscope Total Magnification Chart

| | | | Turret Magnification Factor (X) | | | | | | |
|--------------------------------|-----------------------------|------------------|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | | 0.33 | 0.5 | 0.8 | 1.0 | 1.25 | 2.0 | 3.0 |
| Global Surgical™ G3 Microscope | | | | X | | X | | X | |
| Global Surgical™ G4 Microscope | | | | X | X | | X | X | |
| Global Surgical™ G6 Microscope | | | X | X | X | | X | X | X |
| Binocular Focal Length (MM) | Objective Focal Length (MM) | Eyepiece Mag (X) | Total Mag (X) | Total Mag (X) | Total Mag (X) | Total Mag (X) | Total Mag (X) | Total Mag (X) | Total Mag (X) |
| 125 | 200 | 10 | 2.1 | 3.1 | 5.0 | 6.3 | 7.8 | 12.5 | 18.8 |
| 125 | 225 | 10 | 1.8 | 2.8 | 4.4 | 5.6 | 6.9 | 11.1 | 16.7 |
| 125 | 250 | 10 | 1.7 | 2.5 | 4.0 | 5.0 | 6.3 | 10.0 | 15.0 |
| 125 | 300 | 10 | 1.4 | 2.1 | 3.3 | 4.2 | 5.2 | 8.3 | 12.5 |
| 125 | 400 | 10 | 1.0 | 1.6 | 2.5 | 3.1 | 3.9 | 6.3 | 9.4 |
| 160 | 200 | 10 | 2.6 | 4.0 | 6.4 | 8.0 | 10.0 | 16.0 | 24.0 |
| 160 | 225 | 10 | 2.3 | 3.6 | 5.7 | 7.1 | 8.9 | 14.2 | 21.3 |
| 160 | 250 | 10 | 2.1 | 3.2 | 5.1 | 6.4 | 8.0 | 12.8 | 19.2 |
| 160 | 300 | 10 | 1.8 | 2.7 | 4.3 | 5.3 | 6.7 | 10.7 | 16.0 |

6.1.7. Finding Total Magnification

The following formula is used to calculate the total magnification of the system:

$$\text{Total Magnification} = \left(\frac{\text{Binocular Focal Length}}{\text{Objective Focal Length}} \right) \times \left(\text{Eyepiece Magnification} \right) \times \left(\text{Magnification Factor} \right)$$

for example: Binocular Focal Length = 125 mm
 Objective Lens Focal Length = 250 mm
 Eyepiece Magnification = 10X
 Magnification Factor = .5

$$\text{Total Magnification} = \left(\frac{125\text{mm}}{250\text{mm}} \right) \times (10X) \times (.5)$$

Therefore: Total Magnification = 2.5X

The focal length is printed on each objective lens and the magnification factor is marked on each eyepiece. The Magnification Selector Knob on the microscopes shows the selected magnification factor.

For the binocular, the model number is printed on the bottom of the dovetail mount and the focal length of each model number is shown in Table 6-2.

Table 6-2. Binocular Focal Lengths

| Binocular Model | Focal Length |
|--|--------------|
| M W1020 Series Straight Binocular | 125MM |
| M W1021 Series 45° Inclined Binocular | 160MM |
| M W1022 Series 220° Inclined Binocular | 160MM |

6.1.8. Effects of Changing Components

The following chart lists the effects of changing components to the microscope system. For further information, contact Global Surgical™ Technical Services Department.

Table 6-3. Effects of Changing Microscope Components

| What is the effect of changing | | Magnification | Field of View | Intensity of Illumination | Working Height |
|--------------------------------|--|---------------|---------------|---------------------------|----------------|
| Binocular (Focal Length) | From 125mm to 160mm | Increases | Decreases | No Change | No Change |
| | From 160mm to 125mm | Decreases | Increases | No Change | No Change |
| Objective Lens (Focal Length) | From longer to shorter (i.e. 250mm to 200mm) | Increases | Decreases | Increases | Decreases |
| | From shorter to longer (i.e. 200mm to 250mm) | Decreases | Increases | Decreases | Increases |
| Magnification (Manual Change) | From higher to lower (i.e. 2X to 1X) | Decreases | Increases | No Change | No Change |
| | From lower to higher (i.e. 12.5X to 2X) | Increases | Decreases | No Change | No Change |
| Eyepiece (Power) | From higher to lower (i.e. 12.5X to 10X) | Decreases | Increases | No Change | No Change |
| | From lower to higher (i.e. 10X to 12.5X) | Increases | Decreases | No Change | No Change |

6.1.9. “Roll” Angle Tension Adjustment

The amount of tension required to rotate the microscope right or left can be adjusted by tightening or loosening the roll angle tension knob. This knob is located at the rear of the angled coupler. See Figure 6-4.

6.1.10. “Pitch” Angle Adjustment

The amount of tension required to rotate the microscope forward or backward is adjusted by tightening or loosening the pitch angle tension knob. This knob is located on the right side of the microscope behind the Magnification Factor Selector Knob. See Figure 6-4.

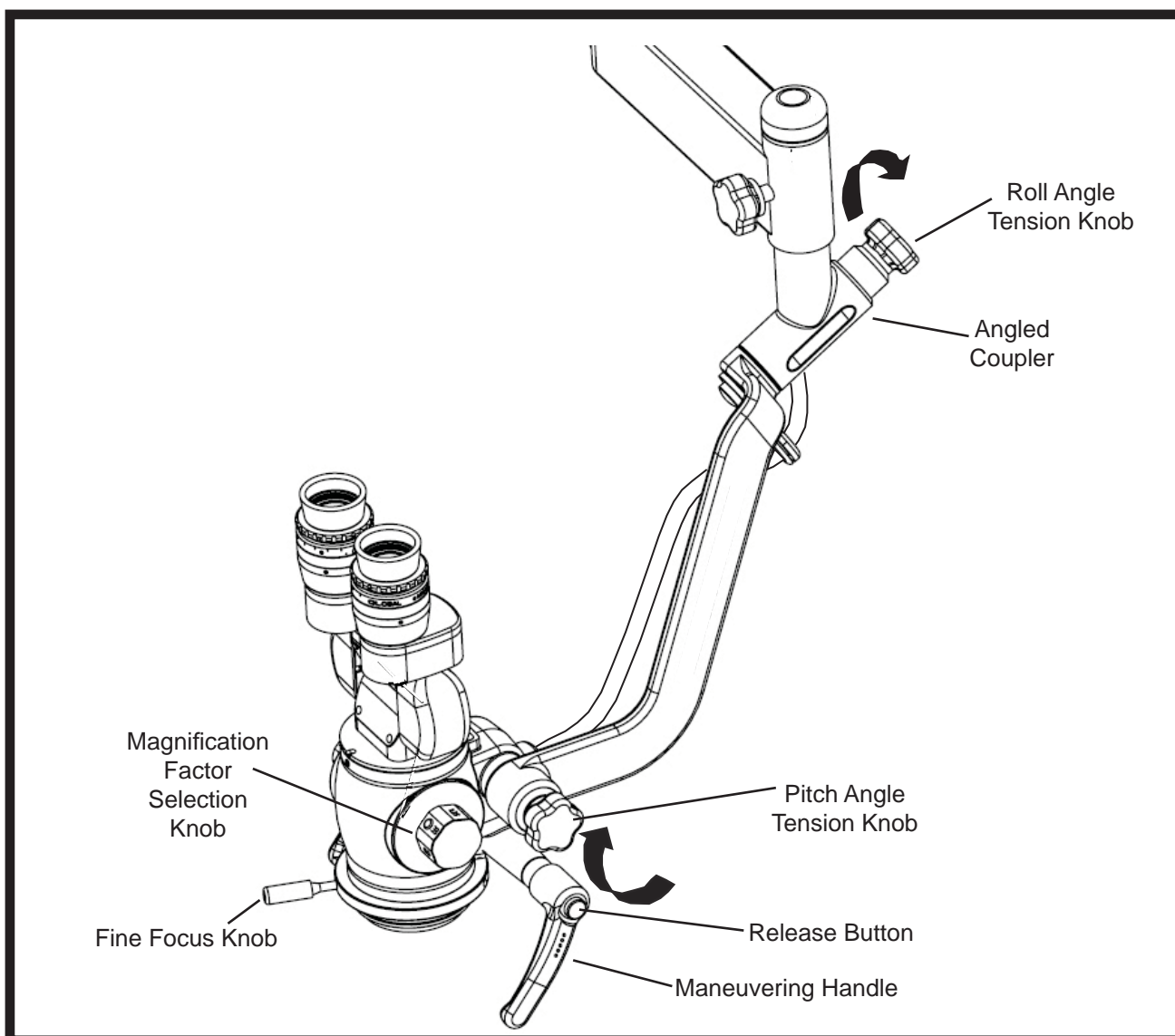


Figure 6-4. G3, G4, and G6 Microscope Adjustments

6.2. Counterbalance Coupler Arm Adjustment

The Counterbalance Coupler Arm is available for the Global Surgical™ G3, G4, and G6 Microscope Heads and provides optimal balance and maneuverability. An adjustable slide is used to offset the added weight of accessories such as digital cameras and observation systems. To adjust the Counterbalance Coupler Arm, refer to Figure 6-5 and proceed as follows:

1. Install all of the desired accessories onto the microscope then loosen the roll angle tension knob.
2. Slightly loosen the Coupler Arm locking knob until it is possible to move the Coupler Arm along the adjustment slide while supporting the weight of the microscope.
3. Move the Coupler Arm to a position along the slide that provides the optimal balance and then tighten the Coupler Arm locking knob.
4. The Roll Angle tension knob may be tightened to increase the amount of tension, if desired.

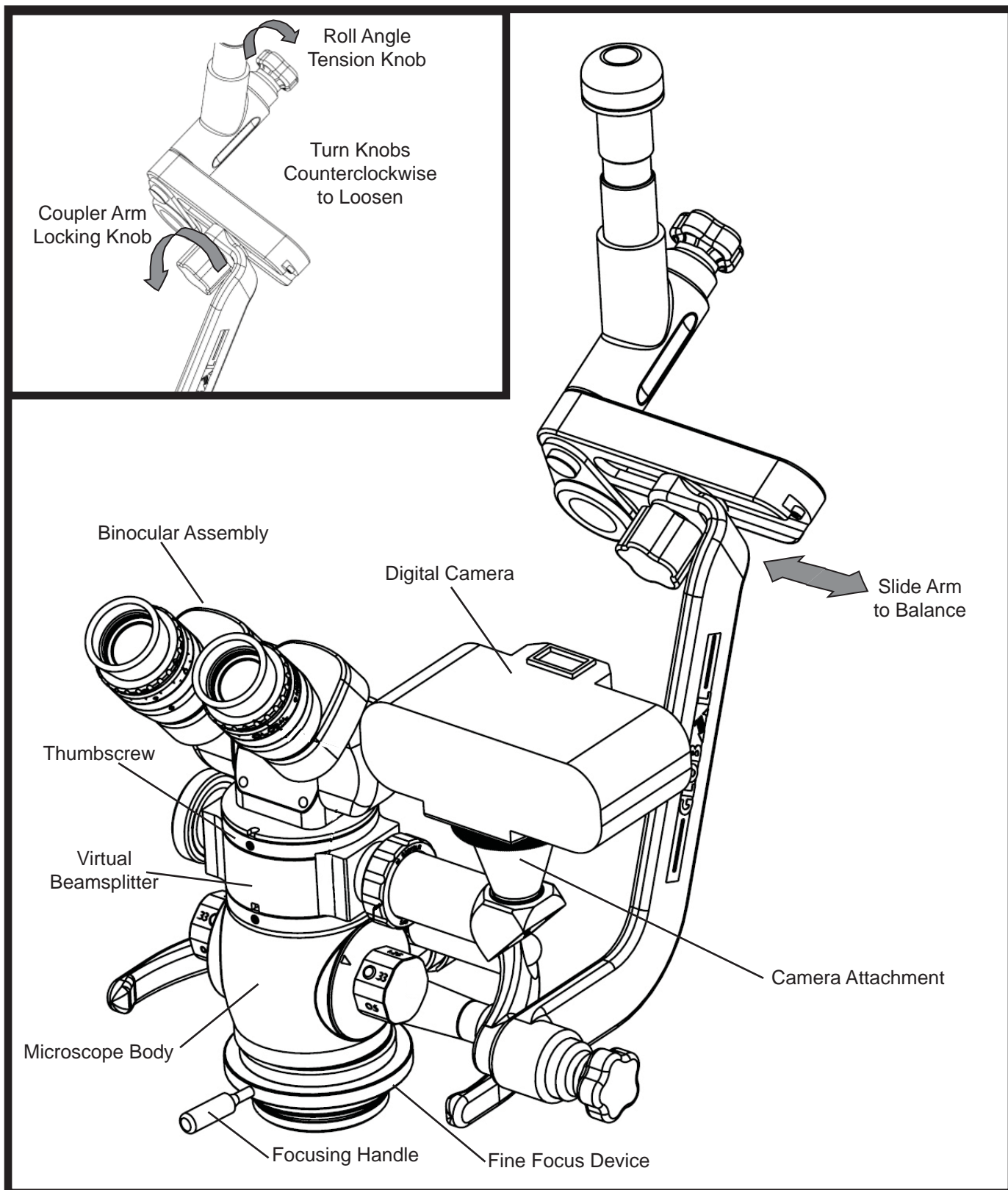


Figure 6-5. Counterbalance Coupler Arm Adjustments

6.3. Maneuvering Handle Adjustment

The position of the maneuvering handles may be adjusted for maximum comfort. This is done by first grasping the maneuvering handle; then with your thumb on the release button pull outward on the handle and rotate the handle into the desired position. Releasing the handle will lock the handle into place. See Figure 6-4.

6.4. Dental Filter Operation (Optional)

The optional dental filter is located at the rear of the microscope body on the Illumination Module. To engage the filter, simply press downward on the filter slide. Push upward on the slide to disengage the filter. See Figure 6-6.



THE DENTAL COMPOSITE FILTER ONLY PREVENTS PREMATURE CURING OF THE DENTAL COMPOSITE MATERIAL AND DOES NOT PROTECT THE MICROSCOPE USER FROM UV LIGHT EMITTED FROM OTHER SOURCES. ALWAYS WEAR UV PROTECTIVE GOGGLES AS RECOMMENDED BY THE MANUFACTURER OF THE UV CURING LIGHT. SEVERE DAMAGE OR BLINDNESS COULD OCCUR IF GOGGLES ARE NOT WORN.

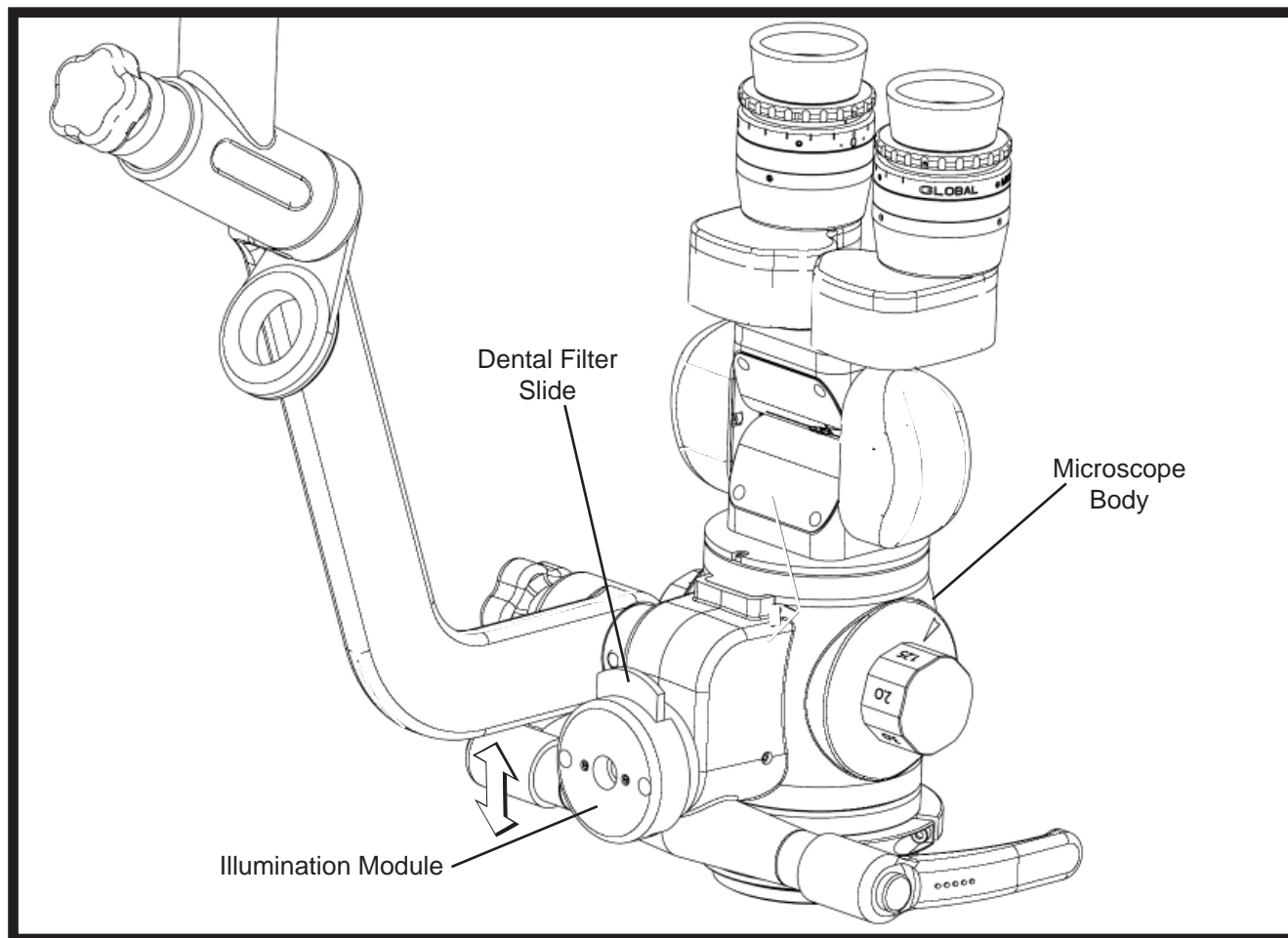


Figure 6-6. Dental Filter Operation

6.5. Spring Arm Controls

The upward and downward movement of the Spring Arm Assembly on the M W725 Microscope Support System is controlled by a gas-filled cylinder which, when properly counterbalanced, allows free movement of the Spring Arm and will stay in any position when released. See Figure 6-7.

The upward lift of the Spring Arm Assembly can be adjusted to match the weight of the microscope and its accessories. This adjustment is called “counterbalancing”. Before adjusting the counterbalance, ensure that all accessories are installed on the microscope, and that the tension lock knob is loose. Insert the 3/16” hex-key (provided in the Lightsource Housing) into the center hex-socket screw (located under the end of the Spring Arm Assembly that attaches to the Horizontal Arm) and turn the tool to the right (clockwise) if the microscope falls when released, or turn the tool to the left (counter clockwise) if the microscope rises when released. See Figure 6-7.

**WARNING**

THE SPRING ARM SHOULD BE IN THE HORIZONTAL POSITION TO ADJUST THE COUNTERBALANCE.

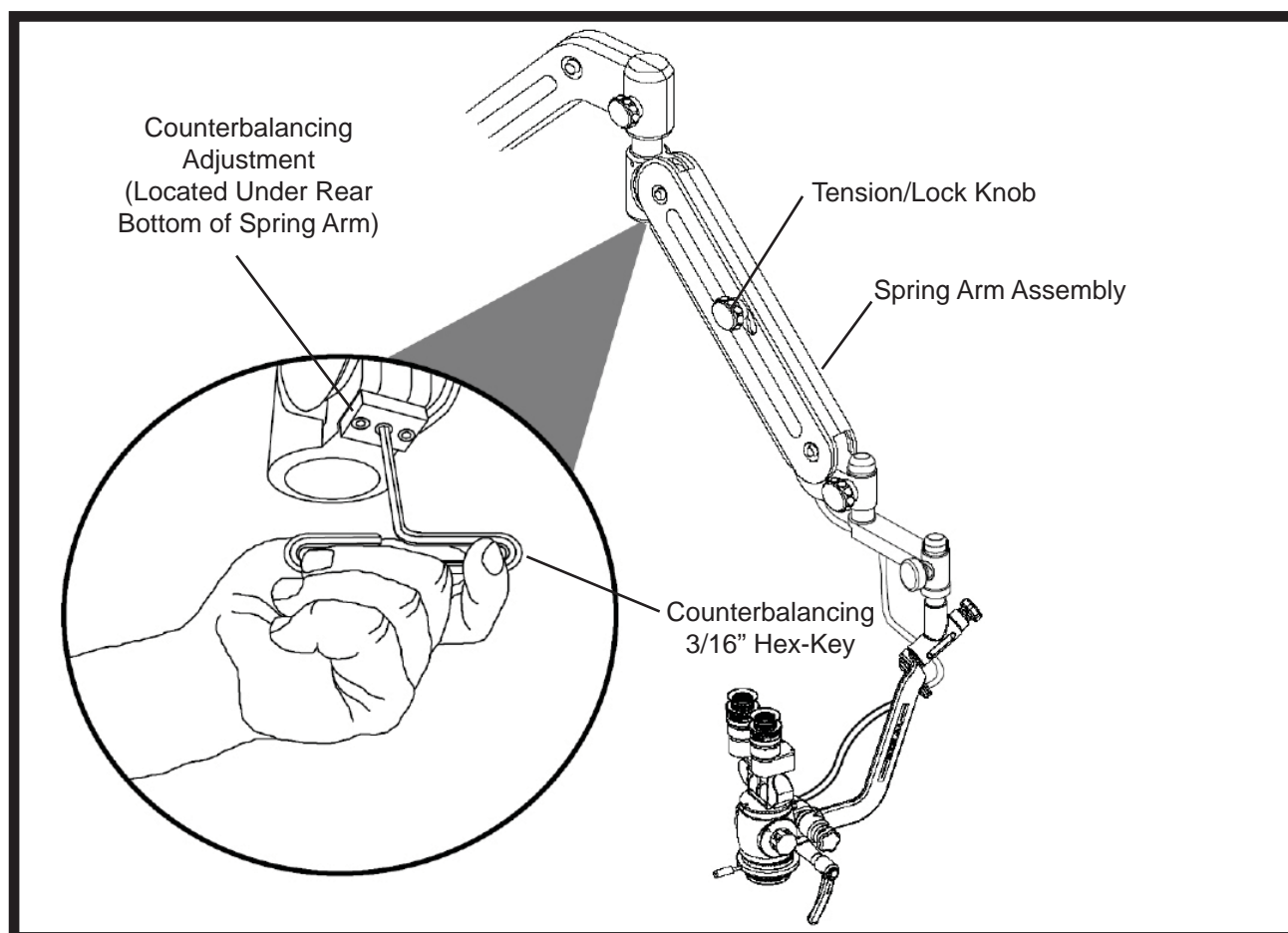


Figure 6-7. Counterbalancing the Spring Arm

6.6. Cleaning and Disinfecting



DISCONNECT ALL ELECTRICAL POWER PRIOR TO CLEANING AND DISINFECTING.

To clean surfaces other than the optics, use a mild soap and warm water on a dampened cloth. ZEP brand wall cleaner also works well on all painted surfaces. For more difficult stains or stains in tight places, use a soft bristled brush. Remove all traces of cleaning materials using a soft cloth dampened with clean warm water. Dry the cleaned surfaces with a clean lint-free soft cloth. To disinfect the surfaces, use a mild anti-microbial soap and warm water on a dampened cloth or use alcohol (isopropyl or similar type) on a soft clean cloth.

6.6.1. Cleaning and Care of the Fiberoptic Cable



Avoid scratching the surface ends of the fiberoptic cable as this may lead to a reduction in transmitted light.



Do not use synthetic detergents or oil-based soaps as these materials may be absorbed by the cable and later leak out, causing an undesired reaction.

The outside of the cable may be cleaned by using a soft bristled brush and warm soapy water. Be sure to use mild soap or a non-oily cleaner. Rinse all surfaces twice with warm water. Complete the procedure with a thorough rinsing using distilled water. **Do not immerse cable.**

6.6.2. Cleaning the Microscope Optics

The exposed lens surfaces of the microscope system (primarily the eyepiece lenses and objective lens) should be cleaned periodically to remove dust, fingerprints and other smudges. Extreme care should be taken to avoid scratching the coated surfaces of the lenses. For best results it is recommended that only the Global Surgical™ Microscope Cleaning Kit (model M CK) be used. Please follow all instructions from the kit thoroughly. If you have any questions regarding proper cleaning procedures or to order additional cleaning kits, call Global Surgical™ Technical Support for assistance.

6.7. Lightsource Lamp Replacement

Operations and replacement of the lightsource lamp is provided in a stand alone manual "NovaLux Lightsource Owner's Manual" part number 110-013-056.

Section 7 Options

7.1. Lightsource Housing Options for Floorstand and Wallmount Units

The Lightsource Housing for the M W725 Microscope System is designed for the addition of multiple optional components. The following illustrations show the various combinations.

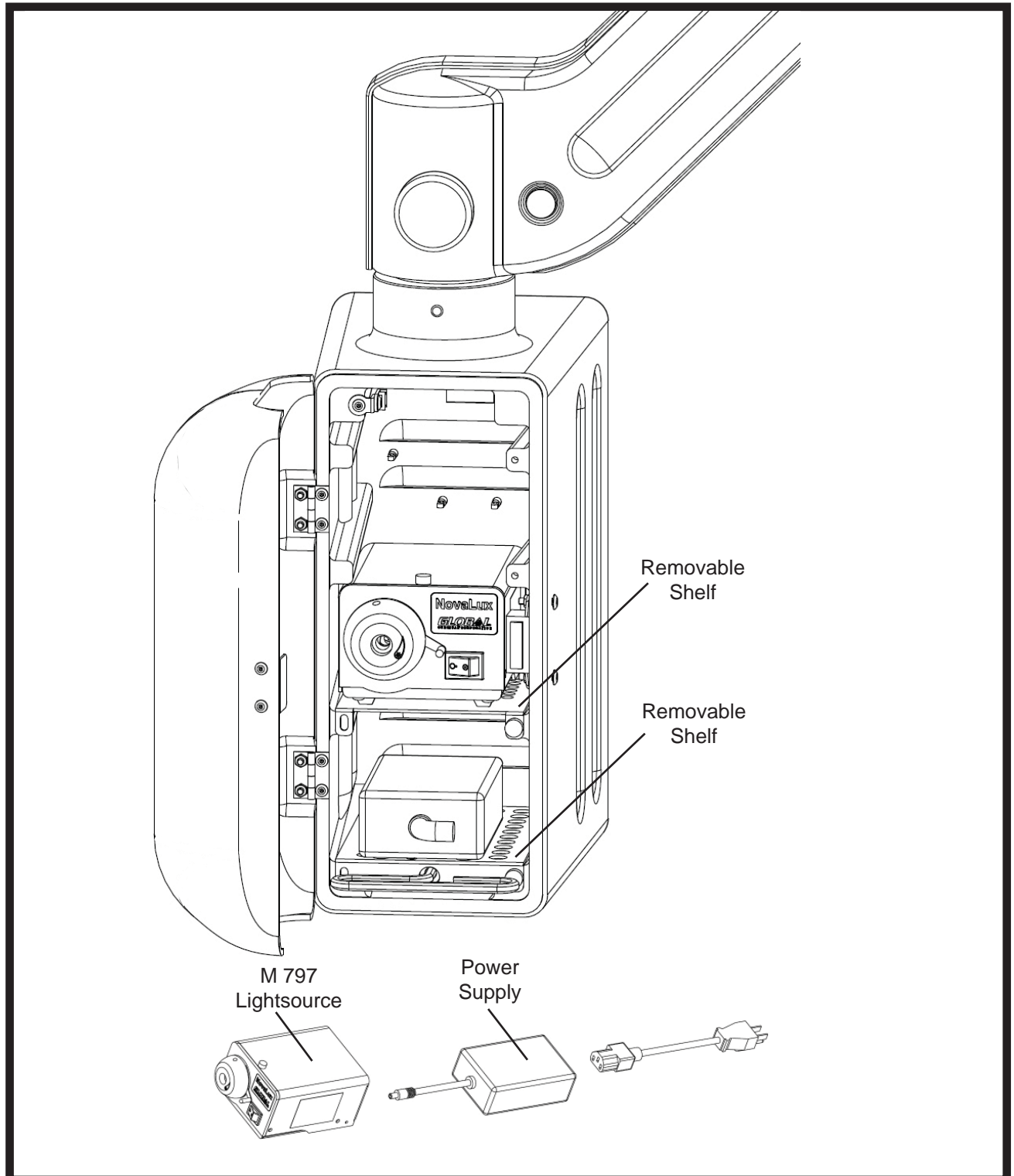


Figure 7-1. Lightsource Housing with One M 797-725 Lightsource

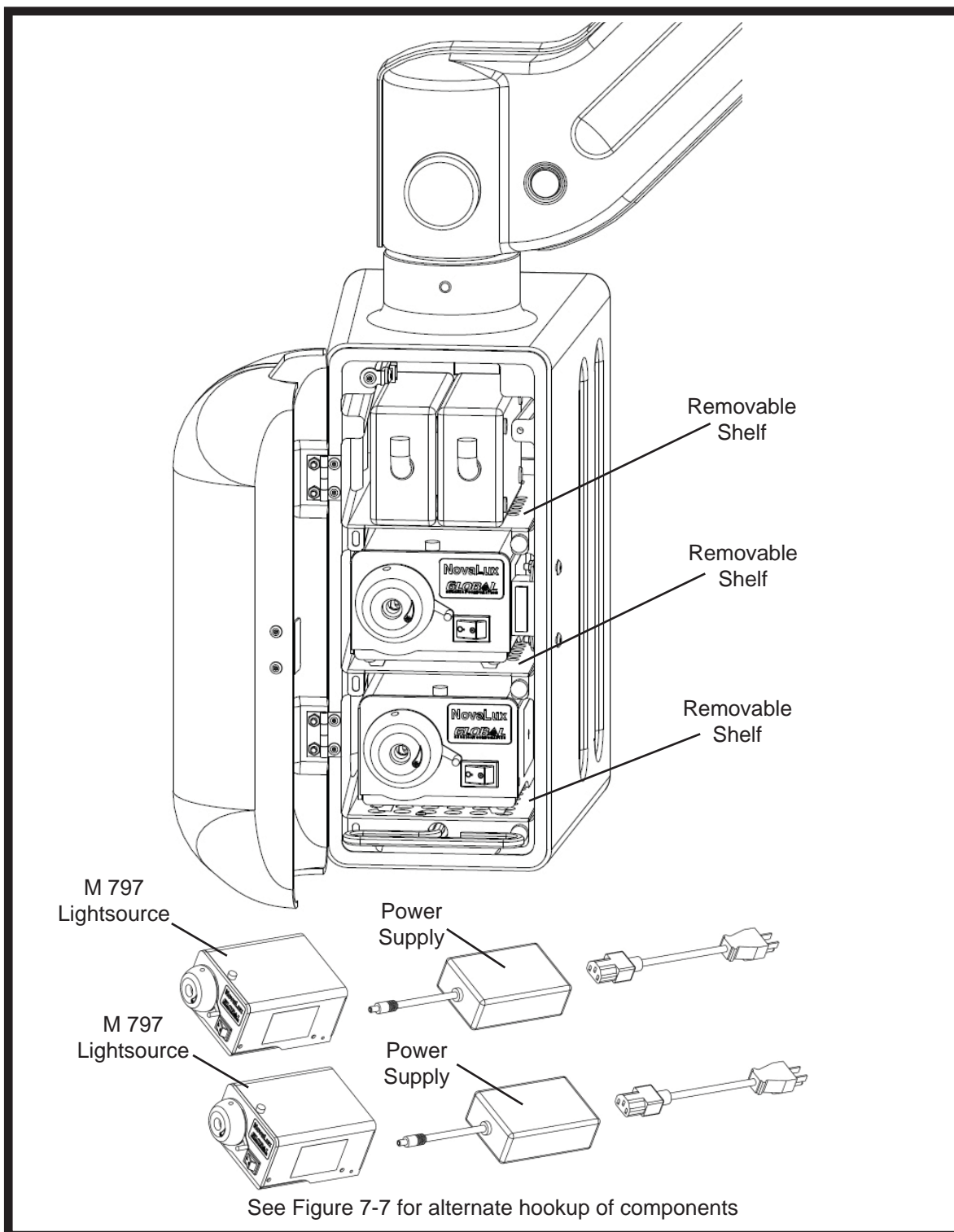


Figure 7-2. Lightsource Housing with Two M W797-725 Lightsources

The configuration used in Figure 7-2 shows the usage of two (2) M W797-725 NovaLux Lightsources and their Power Supply Modules. The schematic at the bottom shows the cable hookup.

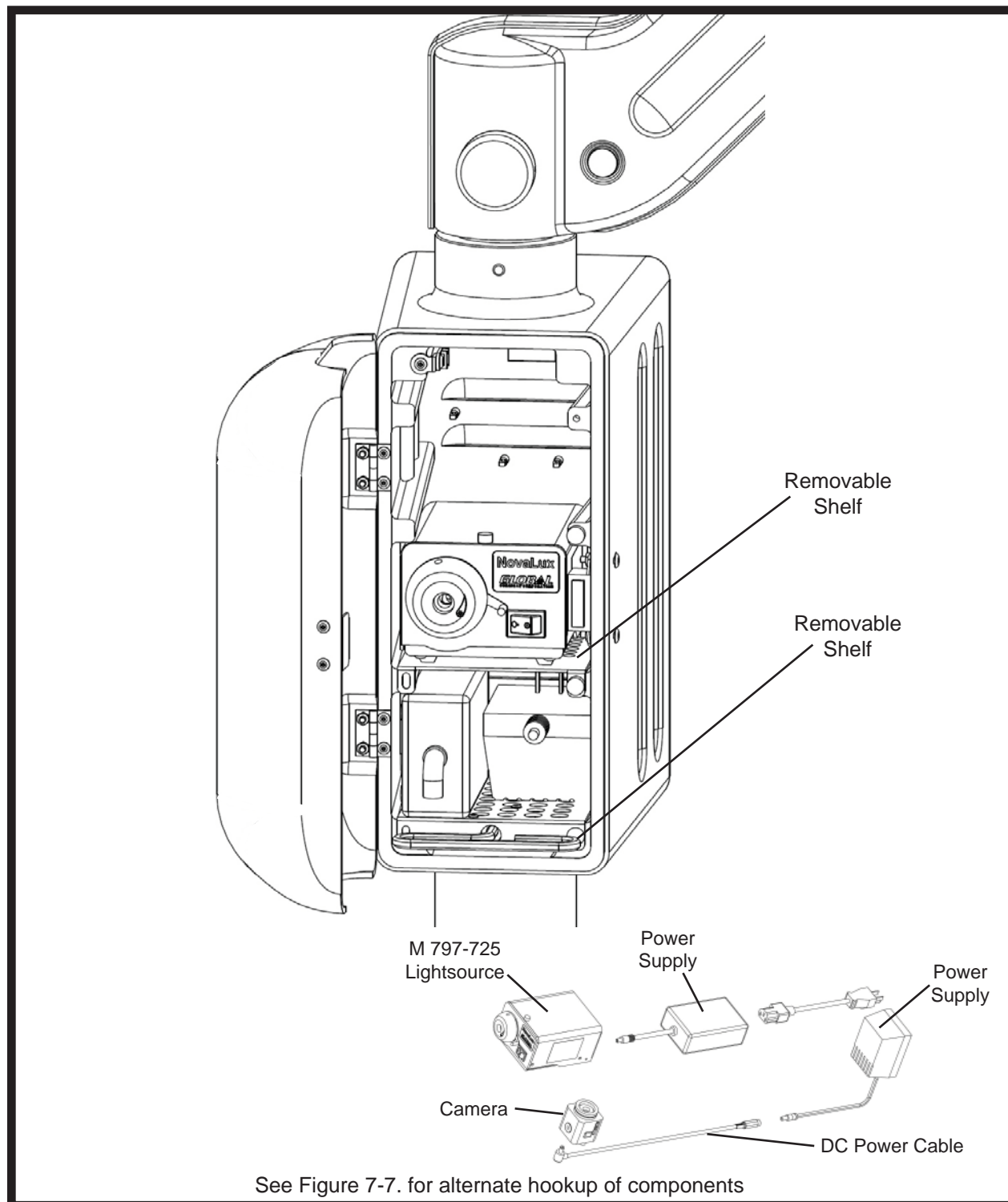


Figure 7-3. Lightsource Housing with One M 797-725 Lightsource, and M 517N Color Video Camera Power Supply

The configuration used in Figure 7-3 shows the usage of one (1) M 797-725 NovaLux Lightsource, and one M 517N Color Video Camera. The schematic at the bottom shows the cable hookup. .

7.2. Lightsource Housing Options for Ceiling Mount and High Wallmount

The Lightsource Housing for the M W725 Microscope System is designed for the addition of multiple optional components. The following Illustrations show the various combinations.

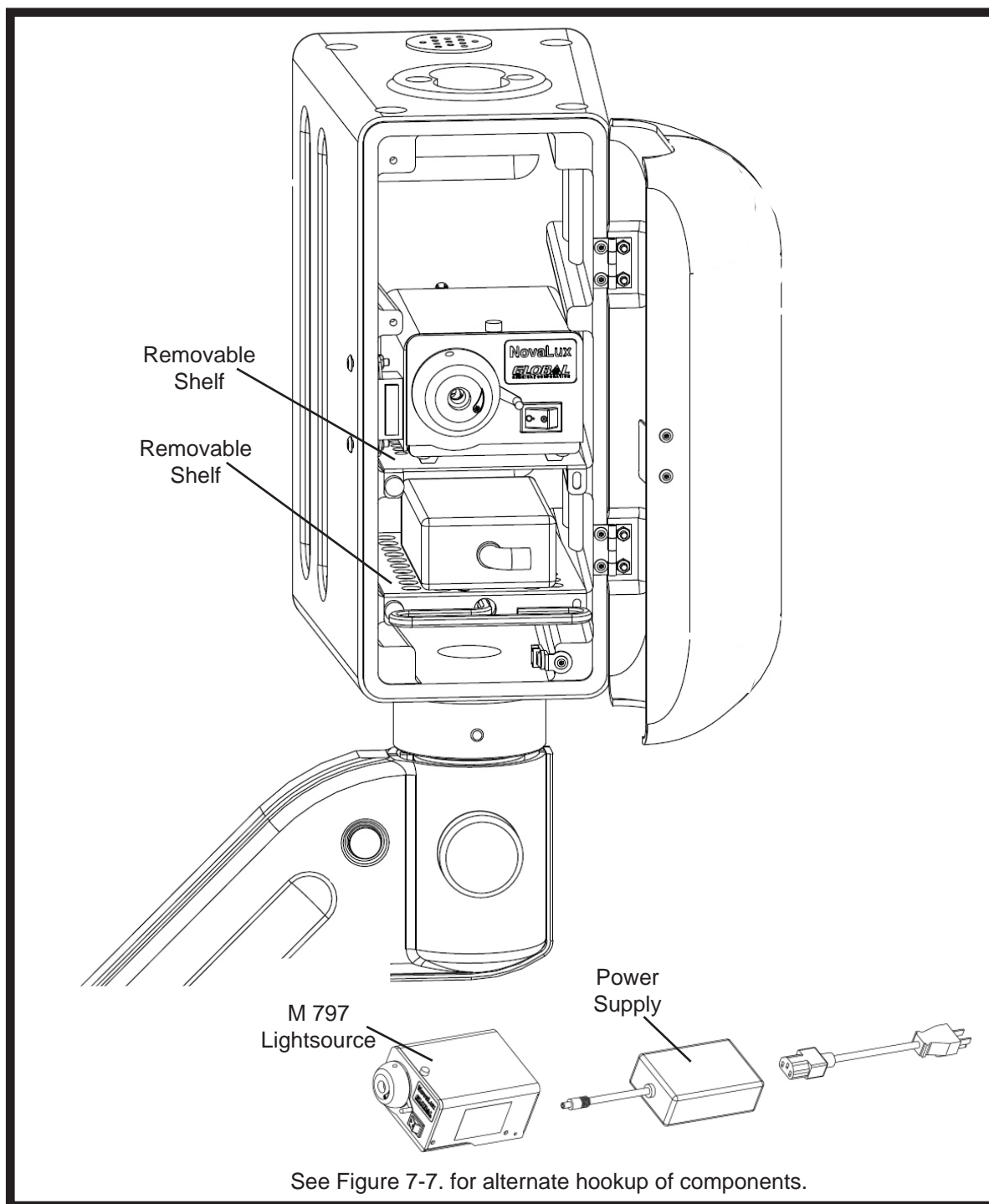


Figure 7-4. Lightsource Housing with one M 797-725 Lightsource for Ceiling Mount and High Wallmount

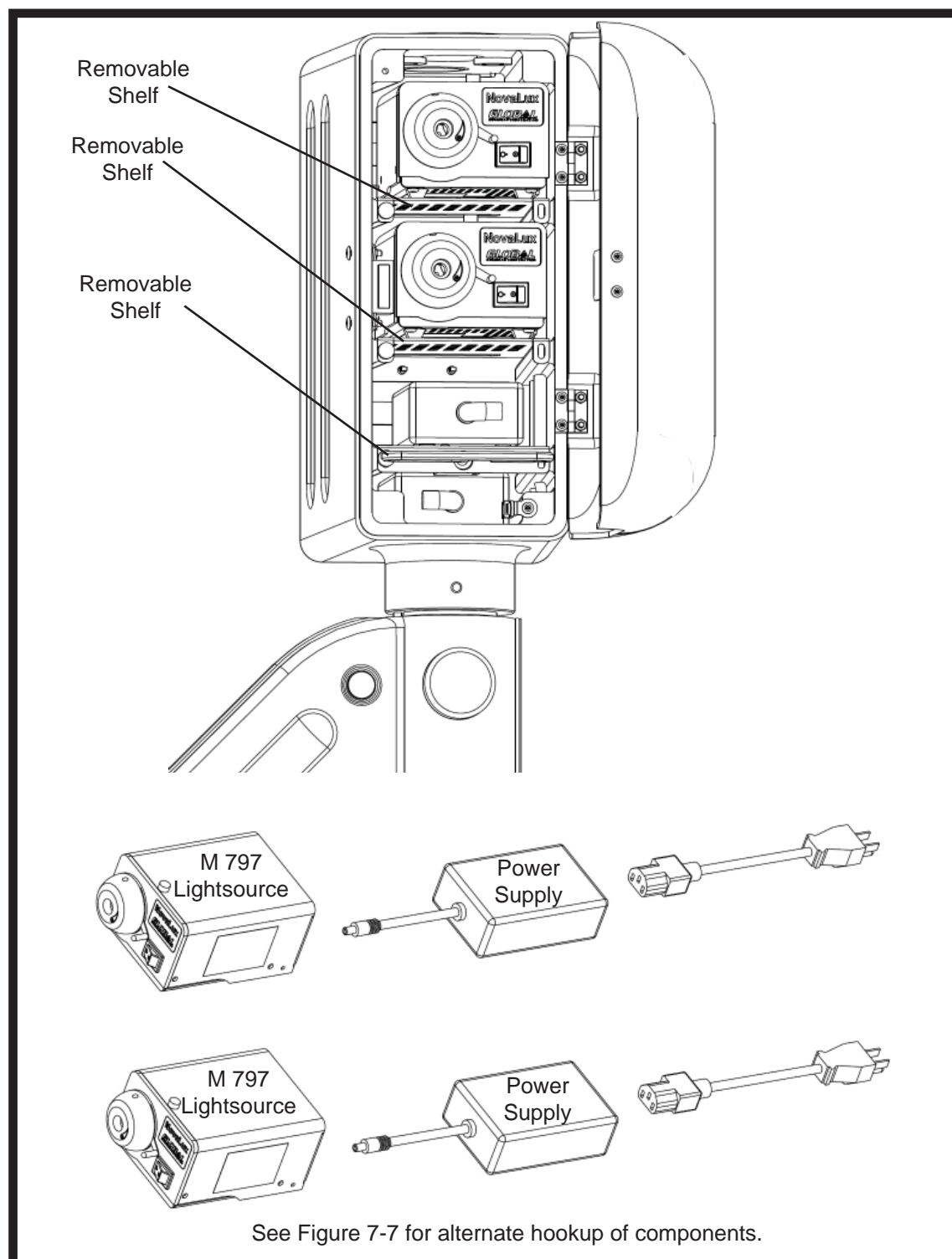


Figure 7-5. Lightsource Housing with Two M 797 Lightsources for Ceiling Mount and High Wallmount

The configuration used in Figure 7-5 shows the usage of two (2) M 797-725 NovaLux Lightsources as installed in the Ceiling Mount and High Wallmount. The schematic at the bottom shows the cable hookup.

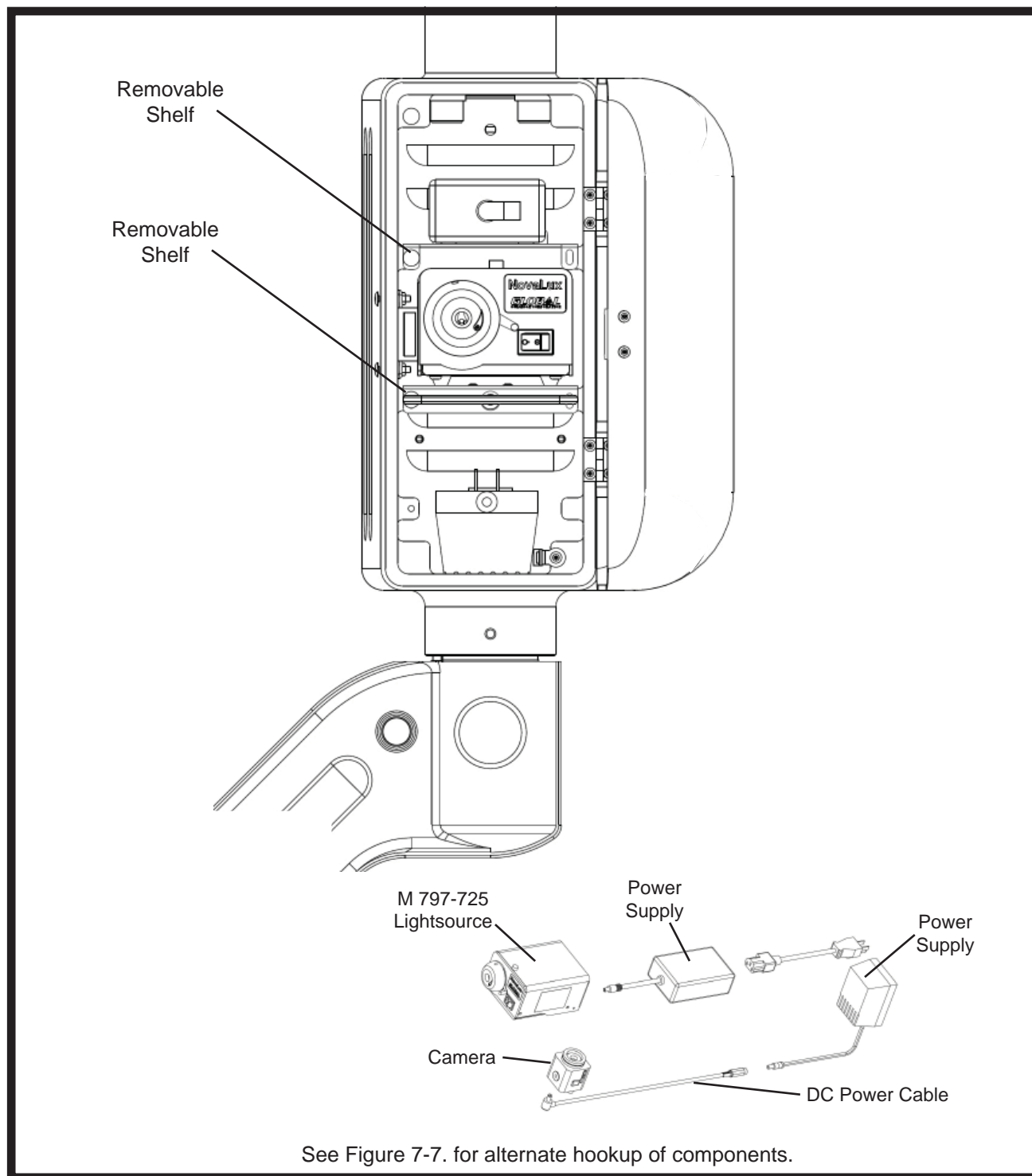


Figure 7-6. Lightsource Housing with One M 797-725 Lightsource, and Basic Video Power Supply.

The configuration used in Figure 7-6 shows the usage of one (1) M W797-725 NovaLux Lightsource, and one (1) M 517N Color Video Camera as installed on the Ceiling Mount and High Wallmount units. The schematic at the bottom shows the cable hookup.

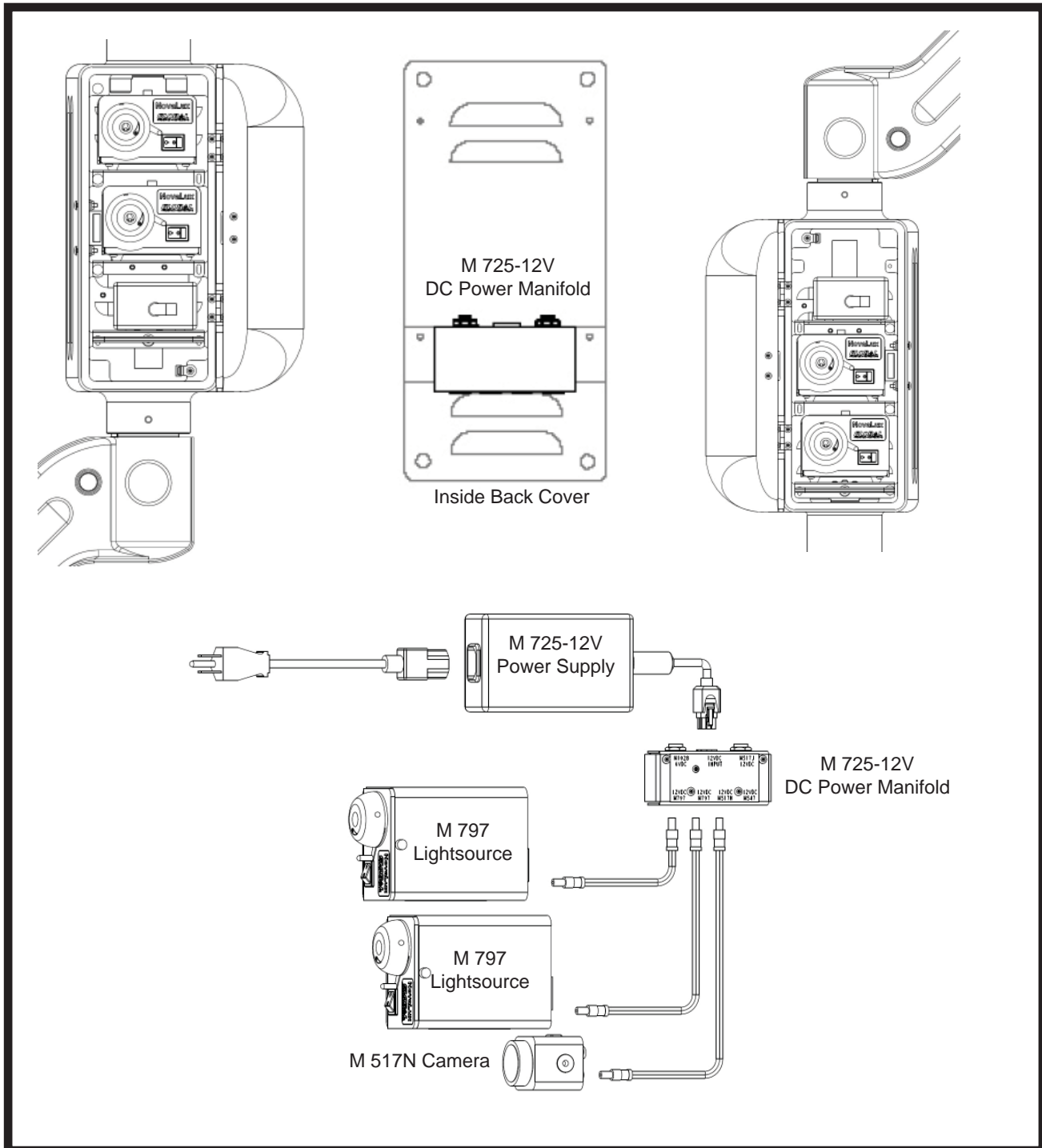


Figure 7-7. Using M 725-12Vto Replace Individual Power Supplies

When the M 725-12V is used on the back cover of the Lighsource Housing, the need for additional individual power supplies is eliminated. The single Power Supply is connected to the 3-way 120V AC Power Adapter (not shown).

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SERVICE AND WARRANTY

8.1. Warranty Information

Global Surgical™ Corporation warranty information is located at:

<http://www.globalsurgical.com/microscopewarranty.htm>

Please refer to it for specific terms and conditions that apply to the particular product you purchased. Should you experience any malfunction, contact the Global Surgical Technical Services Department for assistance.

8.2. Technical Services Department

If you have questions that are not covered in this manual, please call the Global Surgical Technical Services Department as listed below:

Toll Free Number: 1-800-861-3610

Technical Services Representatives: 636-861-5234
636-861-5243
636-861-5245

Fax Number: 636-861-5284

The staffing hours for the Global Surgical Technical Services Department are Monday through Friday from 8:00 am to 5:00 pm Central Time.

8.3. Internet Access

The Global Surgical Technical Services web site has answers to several frequently asked questions (FAQ) about products and services and can be reached by using the World Wide Web at: <http://www.globalsurgical.com>. The Global Surgical Technical Services Department can also be reached by e-mail at:

techservice@globalsurgical.com

8.4. Service Information

In the event of any malfunction, you should immediately contact the Global Surgical Technical Services Department for assistance. A **Customer Identification Number and Customer Order Number** will be needed when contacting the Technical Services Department. These numbers are printed on your invoice. To save time, in the event service is needed, record these numbers in the spaces provided inside the front cover of this manual.

A **Return Material Authorization (RMA) number** must be obtained from the Global Surgical Technical Services Department prior to returning a product for repair. The following information must accompany all returned units:

1. Your name, address, and telephone number
2. The RMA number
3. A description of the problem

Ship or otherwise return the product, with transportation and insurance costs prepaid to:

Global Surgical™ Corporation
3610 Tree Court Industrial Blvd.
St. Louis, Missouri 63122
Attention: Technical Services Department

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Declaration of Conformity

Manufacturer's Name: Global Surgical Corporation
 Address: 3610 Tree Court Industrial Blvd.
 St. Louis, MO 63122 U.S.A.
 Telephone: 636-861-3388
 Fax: 636-225-2036
 Authorized Representative: DP Medical Systems Ltd.
 Merlin House
 46 Oakcroft Road
 Chessington
 Surrey KT9 1RH England
 Telephone: 020 8391 4455
 Fax: 020 8397 1262

Equipment covered by this Declaration:

Equipment Type: Entrée, Protégé, and Global G3, G4, & G6 Microscope
 Systems and Light Sources

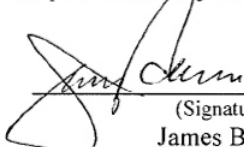
Model Numbers: M725F, MW725F, M725WK, MW725WK, M725W, MW725W, M725WH,
 MW725WH, M725CK, MW725CK, M725C8, MW725C8, M725C9,
 MW725C9, M725C10, MW725C10, M725FM, MW725FM, M725FMT,
 MW725FMT, M725CT8-6, MW725CT8-6, M725CT8-8, MW725CT8-8,
 M725CT9-6, MW725CT9-6, M725CT9-8, MW725CT9-8, M793HD230,
 M793HDC230, M794X, M 794X, M794X-725, MW794X-725, M794XWM,
 M795CM, M795FWM, M797-725 Series, M797L Series, MW1003G Series,
 MW1004G Series, MW1006G Series, M 1036, MW1020AGA Series,
 MW1021GA Series, MW1023C Series, M1028G Series, MW1061 Series,
 MW1017, MW713E Series, MW715 Series, M527 Series, M528 Series,
 M802G Series, M803G Series, M804G Series, M805G Series, M806G Series

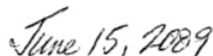
The manufacturer hereby declares that the Class I products(s) stated above conform to the provision
 noted within 93/42/EEC Medical Device Directive, specifically:

EC Type Examination to Test Standards:

| Model Numbers | | EN 60601-1 (SAFETY) | EN 60601-1-2 (EMISSIONS) |
|---|--------------------------|--|-------------------------------------|
| All M725 and MW725 Microscope Support System Model Numbers Listed Above. | M793HD230, M793HDC230 | REPORT #: 97023802.L01 (6/26/98) | REPORT #: 97023802.010 (5/04/98) |
| | M795CM | REPORT #: | REPORT #: |
| | M795FWM M795TTC | 97023802.L02 (9/08/98) | 98022720.011 (8/14/98) |

Reports Issued By: Intertek Testing Services NA, INC


 (Signature)
James Baum
 Vice President – Engineering


 (Date)

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