



SYSTIMAX® M224CPN Low-Profile 24-Port Consolidation Point Box Installation and Cabling Instructions

General

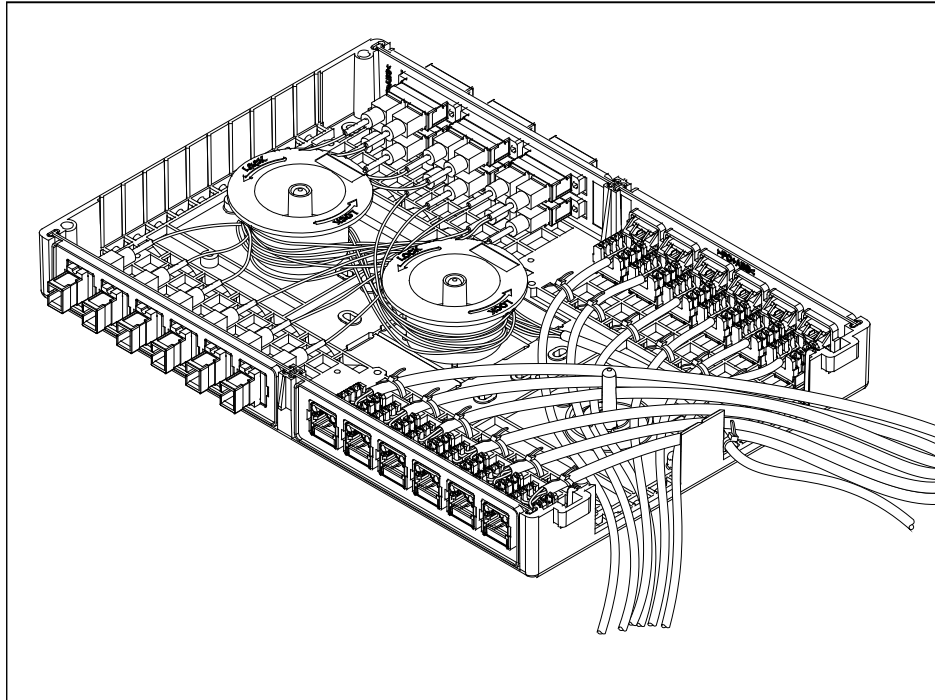
The M224CPN low profile consolidation box provides a distribution point for data and telecommunications signals throughout a work area environment. The low profile of the box permits it to be installed in a variety of places such as under floors, limited space closets, inside paneled furniture, on walls in plain view, and on shelves. The box can be mounted, with additional support, to single- or dual-gang electrical type boxes. For best results, the surface the box rests on or is mounted to should be flat. The box measures approximately 8 inches (203mm) by 12 inches (305mm) by 1-1/2 inch (38mm) and is available in black, ivory, white, and gray.

The box utilizes four removable panels that can accommodate a variety of copper and fiber based connectors. Each panel will hold up to six connectors each. The box has a capacity of 24 dual SC connectors, single SC connectors, dual LC connectors, **ST**™ connectors, M-series type copper connectors, BNC connectors, F-type connectors, or any combination thereof. Connector types can be mixed and matched within the box by using two different panels. The M-series panel has the most variety in connector options; it accommodates all but the dual SC connectors. Three fiber optic splice organizers are available which will accommodate fusion, mechanical, or mass fusion splices. The M224CPN consolidation box is part of the **SYSTIMAX**® SCS family of products.

Ordering information is listed below:

Material ID	Description
700016462	M224CPN low profile 24-port consolidation point box, black
700016470	M224CPN low profile 24-port consolidation point box, ivory
700016488	M224CPN low profile 24-port consolidation point box, white
700016496	M224CPN low profile 24-port consolidation point box, gray

This product is covered by one or more of the following U.S. patents or their foreign equivalents: 5,923,807.



Fully Populated M224CPN Consolidation Point Box

How to Contact Us

- To find out more about **CommScope**[®] products, visit us on the web at <http://www.commscope.com/>
- For technical assistance:
 - Within the United States, contact your local account representative or technical support at 1-800-344-0223. Outside the United States, contact your local account representative or Authorized Business Partner.
 - Within the United States, report any missing/damaged parts or any other issues to **CommScope** Customer Claims at 1-866-539-2795. Outside the United States, contact your local account representative or Authorized Business Partner.

CAUTIONS:

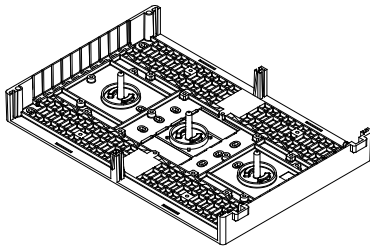
- All cabling that connects to this equipment must meet applicable local and national building codes and network cabling standards for communications cable.
- Install this unit according to the enclosed instructions only using supplied or recommended mounting hardware. Read and understand all warnings.
- Never install this product during a lightning storm. There is a remote risk of electrical shock from lightning.
- Install only approved devices in this unit.
- Never install cable, connectors, or jacks in a wet location unless they are specifically designed for that purpose.
- Never touch uninsulated, live communication wires or terminals. They should be disconnected first.
- This unit cannot support the weight of long cables. Additional cable support is required.
- Do not look directly into the end of a fiber optic cable or connector without it being disconnected from a light source. Serious eye damage can occur.
- Exercise caution in terminating fiber optic cable. Fibers are sharp and can penetrate skin or eyes. Wear proper eye and skin protection and safely dispose of any fiber pieces in a hard-sided, sealed container.

Tools Required

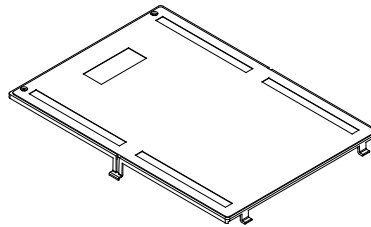
- Screwdrivers—Phillips and flathead
- Level
- Pliers and/or channel locks
- Electric drill w/ 3/16-inch (4.8mm) bit
- Utility cutter or knife
- Wire cutters
- Harris-dracon D impact tool
- Measuring tape
- Pencil and/or pen

Parts List

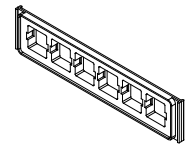
Verify parts against the parts list below:



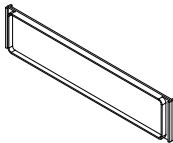
Base (1)



Cover (1)



M-series panel (4)



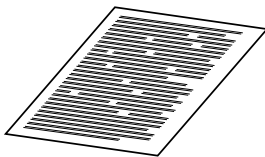
Blank panel (2)



M20A dust cover (12)



Cable ties
30 @ 4 inches (102mm)
12 @ 5-1/2 inches (140mm)



Instruction sheet (1)



Machine screw
4 @ 6-32 x 1-1/4 inch
(32mm) long



Pan-head forming screw (2)

Additional Parts Required

- Four No. 6 screws to secure base to a flat surface.

Optional Kits Available

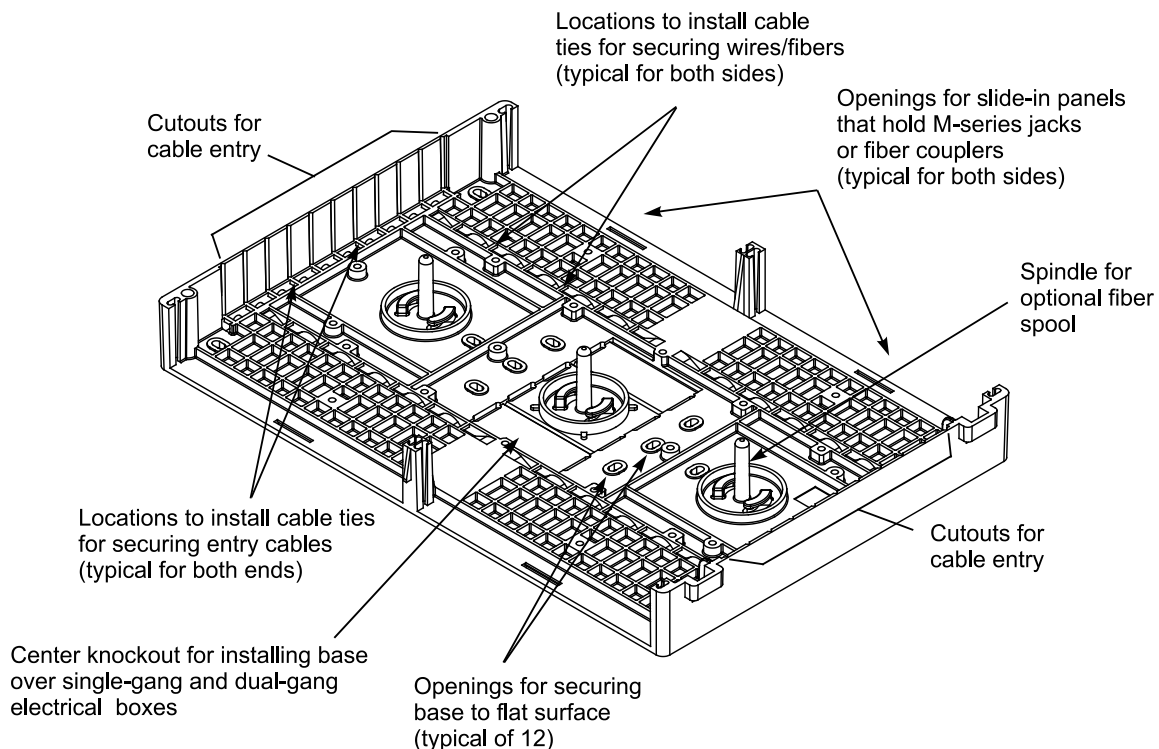
Part No.	Description	Material ID			
		Black	Ivory	White	Gray
M224MSP	M-series panel kit—includes four M-series panels of one color	700016504	700016512	700016520	700016538
M224SCP	Dual SC panel kit—includes four panels	700019482	700019490	700019508	700019516
M224FOS	Fiber optic spool kit—includes two fiber optic spools	—	—	700016553	—

Devices, Other Equipment Compatible with M224CPN Box

Part No.	Description	Color	Material ID
—	M-series modular information outlets	Available in a variety of colors	—
M20AP	Dust covers for unused jack openings (quantity of 100)	White Gray Ivory Black	107067928 107067951 107067860 107065583
M81ST-B	Fiber coupler—single ST	Each equipped w/ four collars—white, gray, ivory, and black	108009408
M81SC-B	Fiber coupler—single SC	Each equipped w/ a clear collar	108009416
M81LC-029	Fiber coupler—dual LC	Each equipped w/ four collars—white, gray, ivory, and black	107782641
M81C-B	Coaxial video coupler—F connector	Each equipped w/ four collars—white, gray, ivory, and black	108009432
M81BNC-B	Bayonet-type connector (BNC) coaxial coupler—BNC connector	Each equipped w/ four collars—white, gray, ivory, and black	108009424
M81	Modular blanks	White Gray Ivory Black	106837230 106837248 106837222 106837206
1AF1-16LG	Fusion splice organizer—stores 16 splices (quantity of 10)	White	105356562
1AM1-12LG	Mechanical splice organizer—stores 12 splices (quantity of 10)	White	105356570
D182842	Mass fusion organizer—stores six splices (quantity of 12)	White	107369985

Description of M224CPN Base

The following drawing shows the M224CPN base and identifies its various features.



Step 1 — Install Base Unit

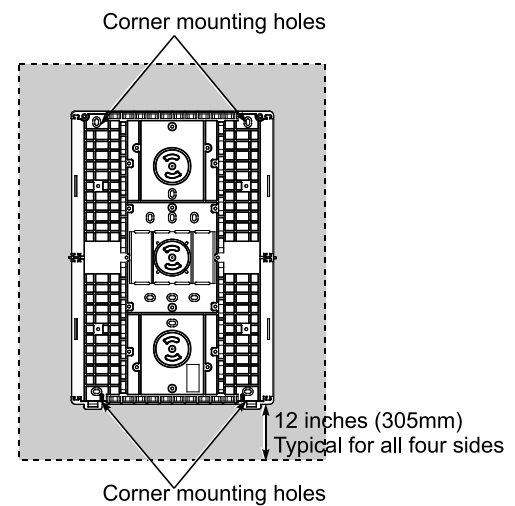
These pages cover three types of installation:

- **Install Base on a Flat Surface (No Electrical Box)**
- **Install Base on a Single-Gang Electrical Box**
- **Install Base on a Dual-Gang Electrical Box.**

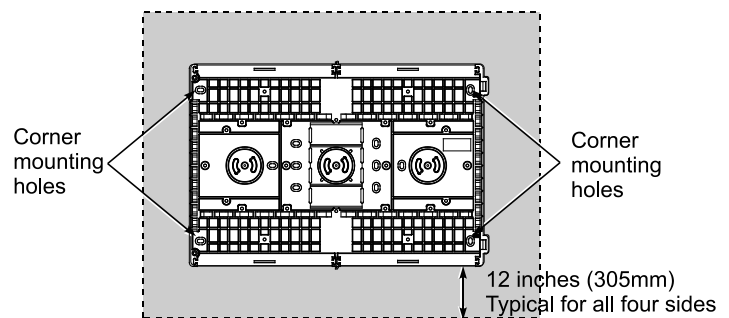
Note: The four No. 6-32 by 1-1/4 inch (32mm) screws furnished with this kit are for mounting the base to a single-gang or dual-gang electrical box. Due to the wide range of surfaces the base may be secured to, no additional mounting hardware is included and will need to be obtained locally.

Install Base on a Flat Surface (No Electrical Box)

1. Determine location for mounting base. Adequate clearances should be allowed for cable, wire, and/or fiber entrance and exit at base. Recommended clearances for cables and wires to enter and exit base are 12 inches (305mm). Locate base so as **not to exceed minimum bend radius for cable used.**
2. Use a level to properly level the base before marking locations for mounting holes.
3. Hold base against surface and use a pencil or pen to mark inside the appropriate holes provided in base. Twelve mounting holes (oval shaped openings) are provided and no less than four should be used to secure the base. As shown, the four outermost holes are recommended.
4. Use an electric drill with an appropriate bit for the size of screw used to drill holes at the marked locations.
5. No. 6 screws are recommended to secure the base. The type and length of screws used will be determined by the surface the base is being mounted on.



Vertical Mounting
(entry cables in bottom)

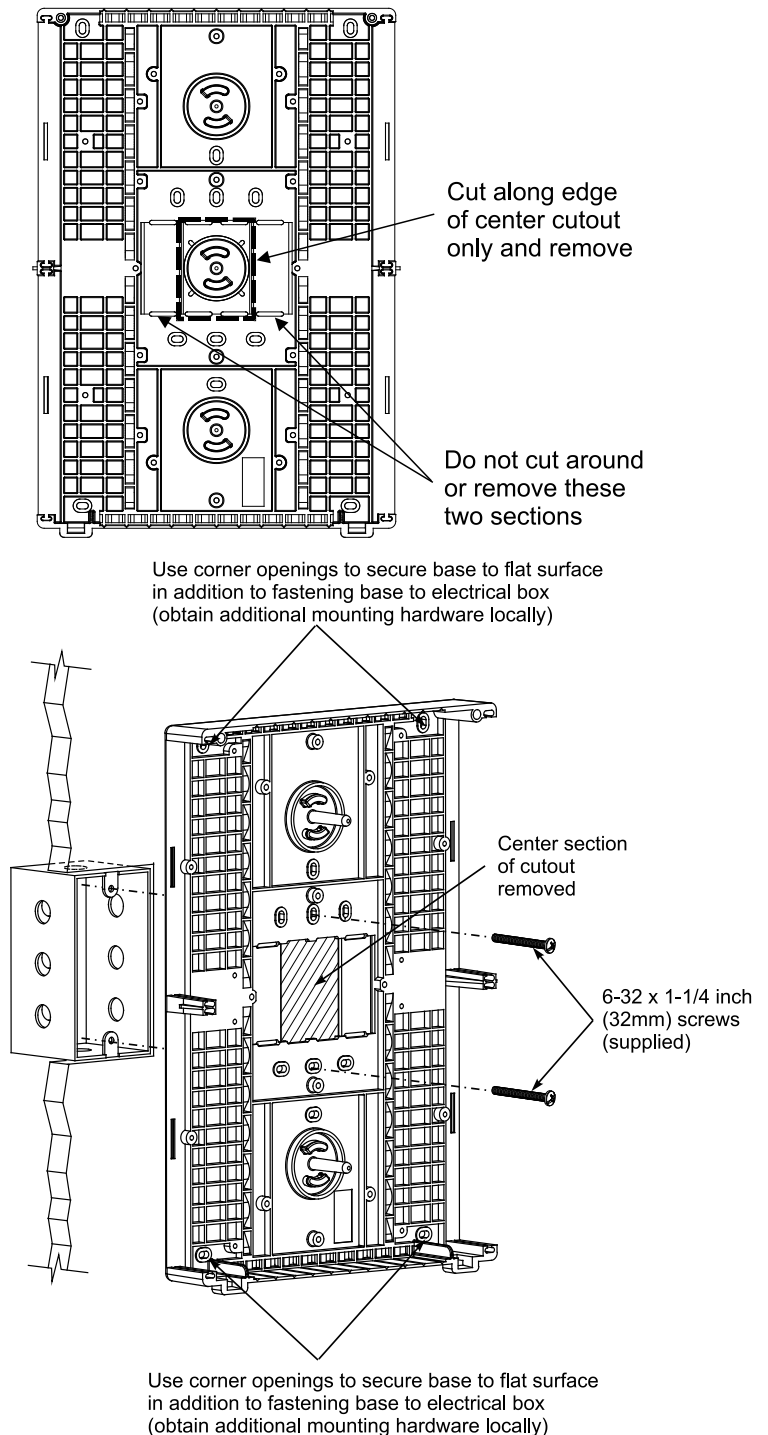


Horizontal Mounting
(entry cables on right)

Install Base on a Single-Gang Electrical Box

Note: Adequate clearances should be allowed for cable, wire, and/or fiber entrance and exit at base. Recommended clearances for cables and wires to enter and exit base are 12 inches (305 mm). **Do not to exceed minimum bend radius for cable used.**

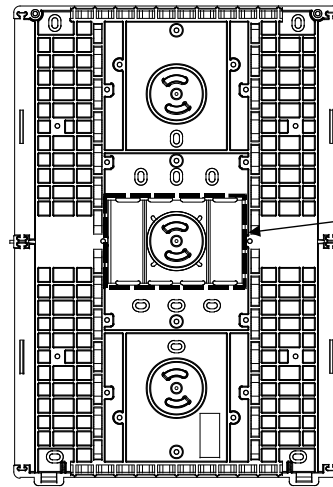
1. Using a utility cutter or knife, cut along edge of **middle section of center cutout only** and remove as shown. **Do not cut and remove** the other two sections of the center cutout.
2. Position the base over the electrical box and using two No. 6-32 by 1-1/4 inch (32mm) screws (provided with base), temporarily secure base to box.
3. Base requires additional support besides being mounting to an electrical box. While holding base against flat surface, use a pencil or pen to mark four additional mounting points. The four corner mounting holes are recommended, although twelve mounting holes (oval shaped openings) are provided.
4. No. 6 screws are recommended to secure the base. The type and length of screws used will be determined by the surface the base is being mounted to. Additional mounting hardware to be obtained locally.
5. If the surface the base is being mounted to requires anchors to be inserted, then the base will need to be removed before drilling mounting holes. If no anchors are required, then holes can be drilled with base still secured to electrical box. Use an electric drill with an appropriate size bit to drill holes at the four marked locations.
6. Clean out any debris left in base from the drilling operation.
7. Secure the base to electrical box and flat surface by tightening the six screws.



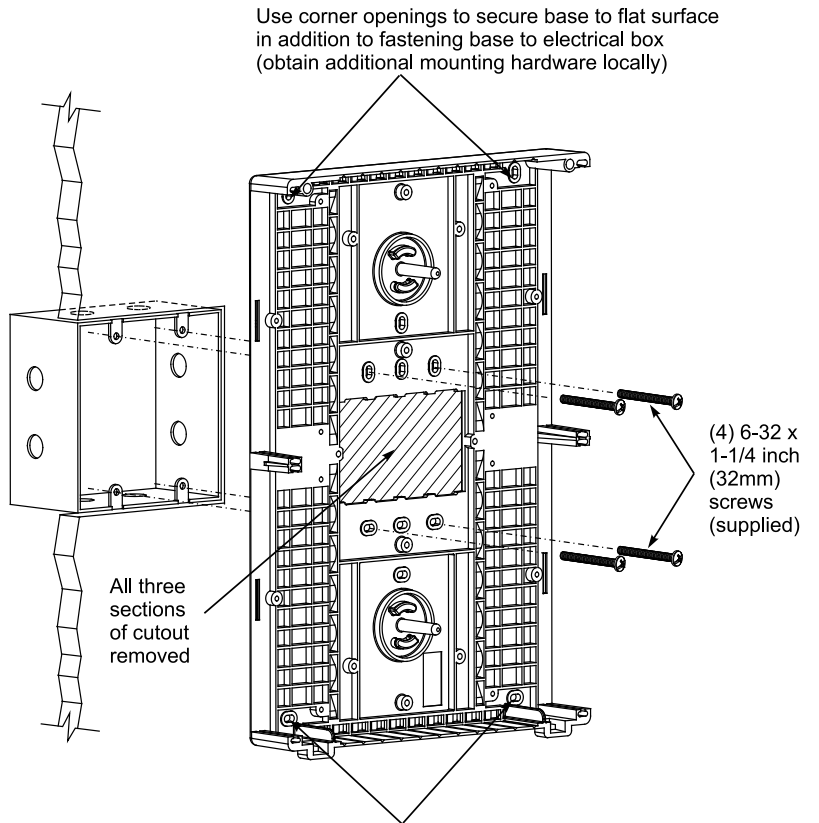
Install Base on a Dual-Gang Electrical Box

Note: Adequate clearances should be allowed for cable, wire, and/or fiber entrance and exit at base. Recommended clearances for cables and wires to enter and exit base are 12 inches (305mm). **Do not to exceed minimum bend radius for cable used.**

1. Using a utility cutter or knife, cut along edge of **all three sections of center cutout** and remove as shown.
2. Position the base over the electrical box and using four No. 6-32 by 1-1/4 inch (32mm) screws (provided with base), temporarily secure base to box.
3. Base requires additional support besides being mounting to an electrical box. While holding base against flat surface, use a pencil or pen to mark four additional mounting points. The four corner mounting holes are recommended, although twelve mounting holes (oval shaped openings) are provided.
4. No. 6 screws are recommended to secure the base. The type and length of screws used will be determined by the surface the base is being mounted to. Additional mounting hardware to be obtained locally.
5. If the surface the base is being mounted to requires anchors to be inserted, then the base will need to be removed before drilling mounting holes. If no anchors are required, then holes can be drilled with base still secured to electrical box. Use an electric drill with an appropriate size bit to drill holes at the four marked locations.
6. Clean out any debris left in base from the drilling operation.
7. Secure base to electrical box and flat surface by tightening the eight screws.



Cut along edge of three section cutout and remove all of it



Use corner openings to secure base to flat surface in addition to fastening base to electrical box (obtain additional mounting hardware locally)

All three sections of cutout removed

(4) 6-32 x 1-1/4 inch (32mm) screws (supplied)

Use corner openings to secure base to flat surface in addition to fastening base to electrical box (obtain additional mounting hardware locally)

Step 2 — Assemble Components

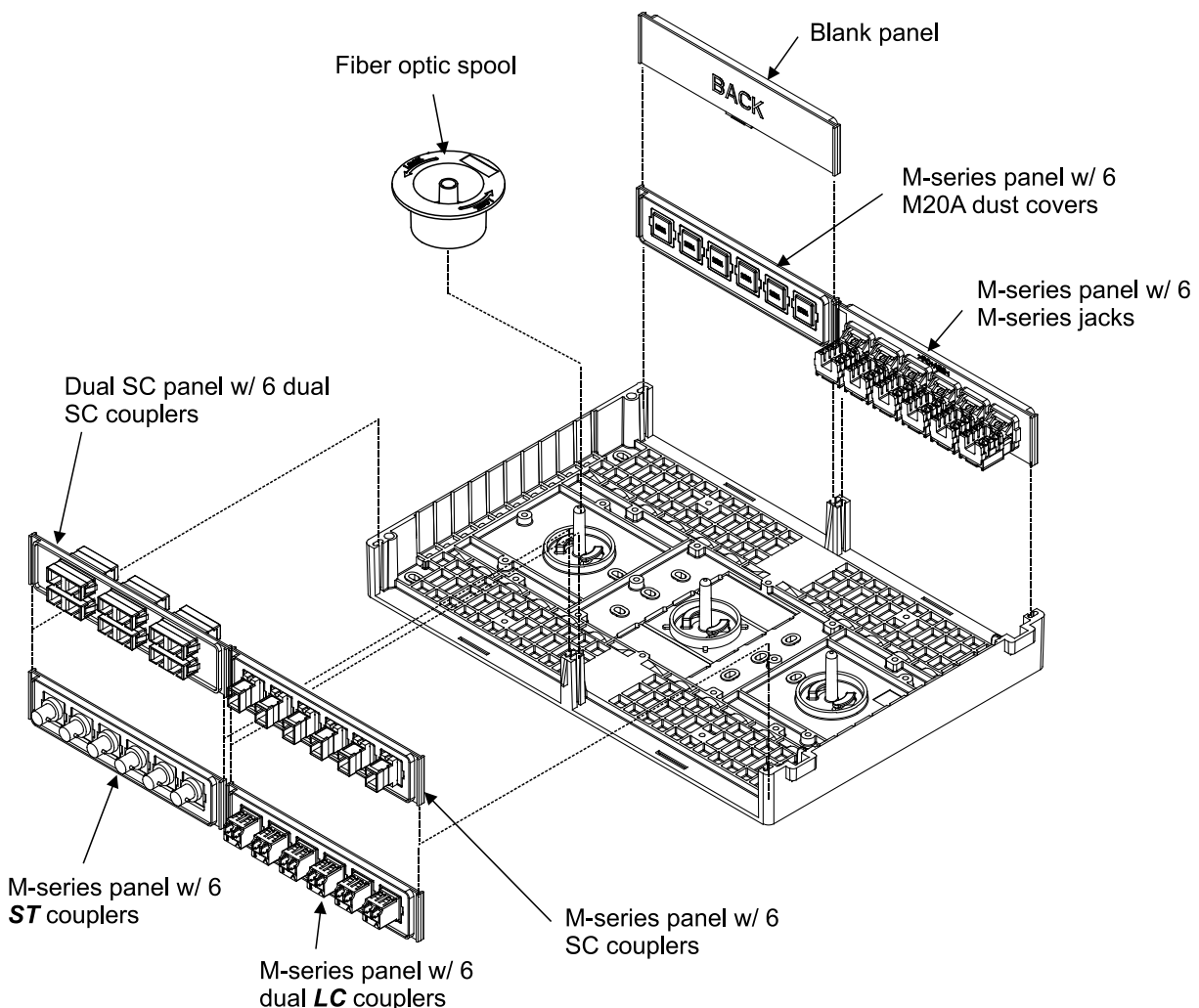
Determine the type and number of connectors to be used in the box. The M-series panel is the most versatile component of the box and is used for holding all connectors except for the dual SC. An optional kit is required if dual SC connectors are used. The M-series panel will accommodate six M-series jacks, SC connectors, **ST** connectors, **LC** connectors, BNC connectors, or F-type connectors. See page 3 for a listing of optional connectors used with the box.

If fiber optic connectors will be utilized in the box, the optional fiber optic spool kit is required.

Two blank panels are included for use in the base if an M-series panel is not required at this time. All panel positions must be utilized to prevent dust and dirt from entering the box.

Twelve M20A dust covers are included for use with the M-series panel. If all the openings in a panel are not utilized, dust covers are inserted into the vacant openings to seal them and prevent dust and dirt from entering the box.

The figure below shows the different panel configurations available.

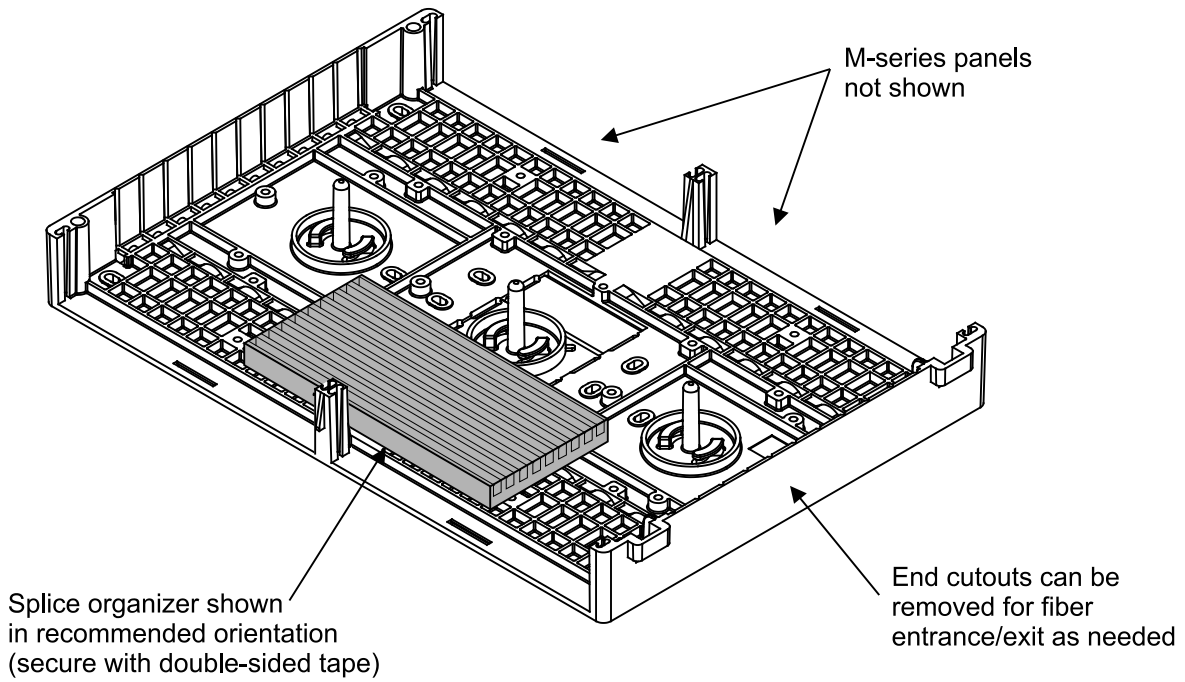


In addition to copper and fiber connectors, the box can accommodate fusion, mechanical, or mass fusion splices. See page 3 for optional kits and information on compatible devices for use with the box.

Each of the splice organizers are mounted in the base using double-sided adhesive tape to secure them. Splice organizers can be mounted on either side or on both sides of the center fiber spool position. See figure below.

When using a splice organizer, excess fiber should be dressed inside the base in an organized, neat configuration. The optional fiber spools are not used when splice organizers are installed.

The figure below shows the recommended configuration for the splice organizer.



Step 3 — Dress Cables in Base

Note: This unit cannot support the weight of long unsupported cables. Additional cable support is required.

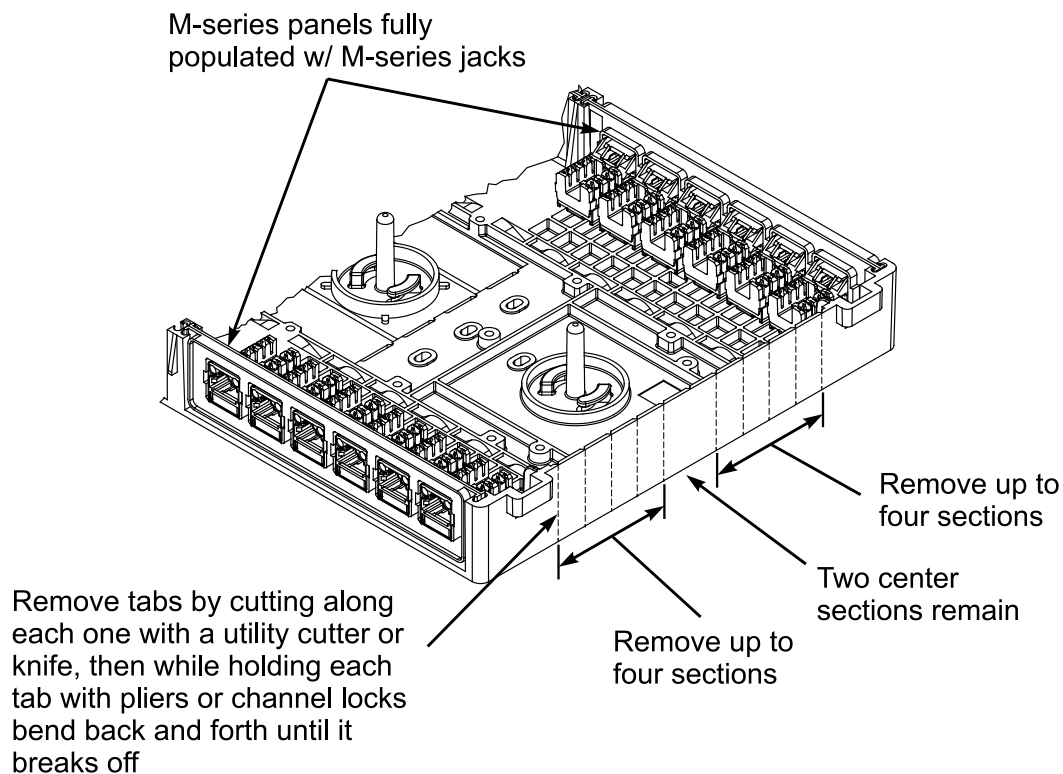
Most types of cable, either copper or fiber, can be used within the box, although large diameter, stiff cable may limit the number of ports available for use due to the cables' sheer volume and reduced bend radius. Cables such as 1074D, 1071, 2071, 3071, 1081, 2081, and 3081 are examples of recommended cable types.

Cables enter the box from either end or through the bottom, if mounted on an electrical box, and exit on each side through the use of connectors.

Cables Entering Through End of Base (Non-Electrical Box Application)

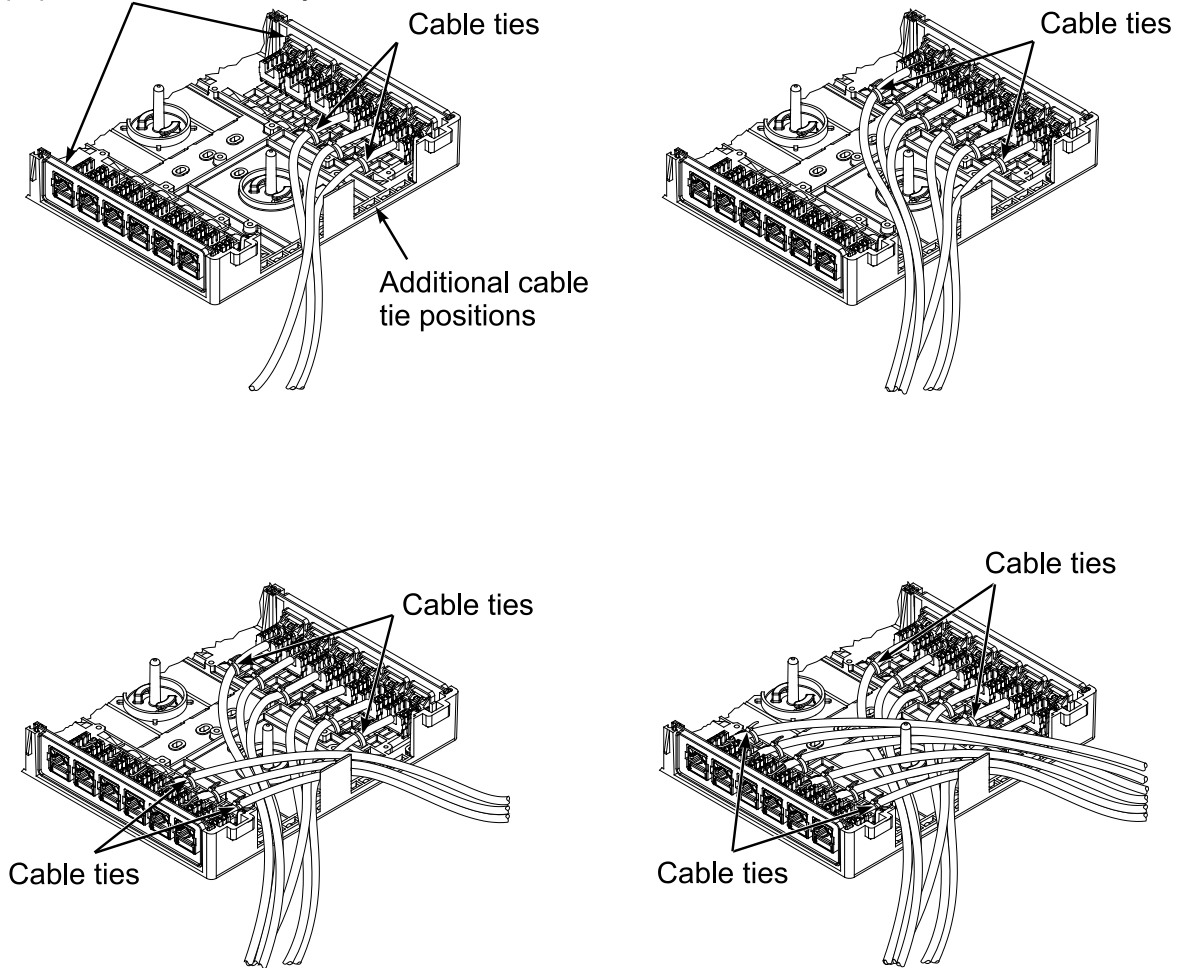
Note: The base is provided with cutouts on each end for cable entrance. **Before removing cutouts, view figure on following page and notice how cables are recommended to enter from the cutout positions on the other side of base from where the cable will be terminated.** This reduces cable bend radius.

1. Determine which cutouts to remove for cable entry. Use a utility cutter or knife to cut along recess, on inside of base, on each side of cutout. Hold cutout with pliers or channel locks and bend back and forth until it breaks off. Repeat this procedure for each cutout to be removed. In an average application, the two center cutouts will stay intact and as many of the other cutouts will be removed as required for cables to enter the base.
2. Four cutouts are available on each side of the two center ones, if they are left intact. No more cutouts should be removed than is required for cable to enter the base. This will reduce dust and dirt from entering the base through unused openings. All cutouts can be removed if required, but the two center ones should be the last to be removed.



3. Dressing cables in the box is a very important step and can be restrictive due to its compactness. The cover **will not seat properly** if cables are dressed into the base more than three deep. Recommended method for dressing cables in the base is shown in the figure below.

M-series panels fully populated w/ M-series jacks



4. Cables entering the box should be secured using the supplied cable ties in one of two locations provided in the base for them to be attached. Cable ties provided with box are two lengths—4 inch (102mm) long for single cables and 5-1/2 inch (140mm) long for bundles of cables. In the previous figure, cables are secured with ties along each side of base, but the other location for ties to be installed are where cables enter the base at each end. See base description on page 4 for cable tie positions. Do not tie more than six cables in a bundle. For best results, use ties that range from about 0.100 inch (2.5mm) in width to a maximum of 0.170 inch (4mm) in width. When working in tight areas it may be necessary to curl the end of cable tie so that it slides under cable tie rib in base.

⚠ CAUTION:

Do not overtighten cable ties around cables and tie rib, this can degrade cable performance. Only pull cable ties snug.

Cables Entering Through Rear of Base (Electrical Box Application)

When the base is mounted on an electrical box and entry cables will be pulled through the bottom, no tabs will be removed from the ends. If cables will enter box from both points, that is, from the rear and from the end, follow directions for removing tabs and dressing cables outlined in the previous section.

1. Dressing cables in the box is a very important step and can be restrictive due to its compactness. The cover **will not seat properly** if cables are dressed into the base more than three deep.
2. Neatness counts in dressing cables into base. For rear cable entry, loop cables around inside of base from center opening in an even organized manner. Leaving 8 inches (203mm) of cable from rear entrance will provide sufficient length to dress cable to any panel position in the box.
3. Cables dressed from the rear opening can be secured in the box using cable ties at any of the cable tie positions.

Step 4 — Dress Optical Fibers In Base

Note: When optical fibers are used in the box, the optional fiber optic spool kit (Material ID 700016553) is required. The kit includes two fiber optic spools, which are used to store excess fiber. Three fiber optic spool installations are presented here. Choose which of the following best describes your installation:

Installation A—base mounted on flat surface with fibers entering **through the end only**. No rear cable entry and no copper or very small amount of copper being installed.

Installation B—base mounted on flat surface with fibers entering **through the end only**. No rear cable entry with one-half of base used for copper and one-half of base used for fiber.

Installation C—base mounted on electrical box with fiber and/or copper entering **through the rear of base**. Any amount of fiber being used.

The following instructions will apply to **Installations A and B**:

1. Determine which cutouts to remove for cable entry. Use a utility cutter or knife to cut along both sides of cutout. Hold cutout with pliers or channel locks and bend back and forth until it breaks off. Repeat this procedure for each cutout to be removed. In an average application, the two center cutouts will stay intact and as many of the other cutouts will be removed as required for cables to enter the base.
2. Four cutouts are available on each side of the two center ones, if they are left intact. No more cutouts should be removed than is required for cable to enter the base. This will reduce dust and dirt from entering the base through unused openings. All cutouts can be removed if required, but the two center ones should be the last to be removed.

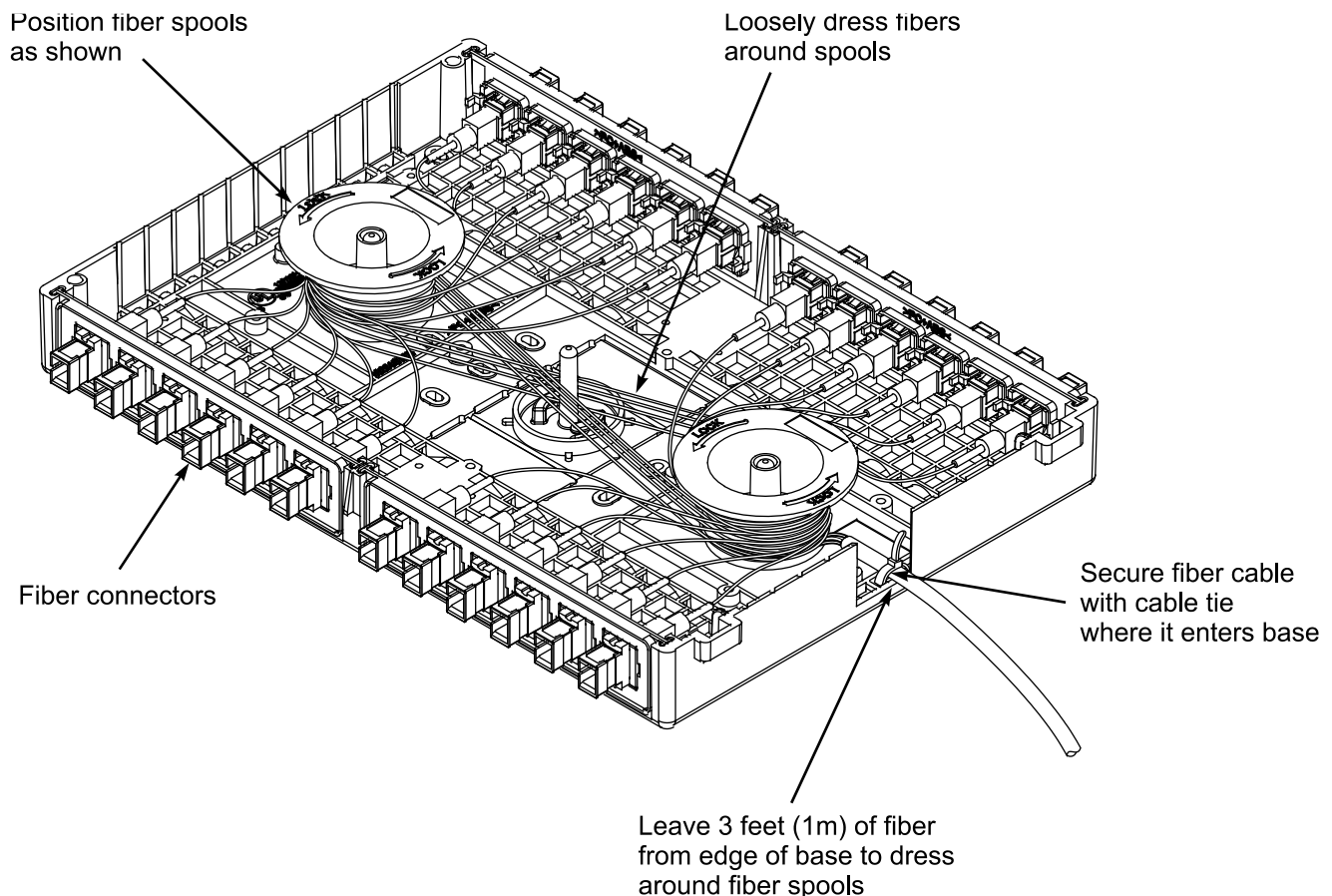
Installation A —

1. In this installation, both fiber optic spools will be used and positioned on the spindles near each end as shown.
2. Place one spool over the spindle (flange side up), push down on it and rotate counter-clockwise. Repeat for other spool.
3. Position fiber cable over base so that 3 feet (1m) of fiber length is left from edge of the base and place a mark on outer sheath. It is recommended that 3 feet (1m) of fiber length be left for dressing fiber into the base. Cut fiber cable and remove outer sheath back to that mark.
4. Place fiber cable over base so that outer sheath extends inside 1 inch (25mm) and secure it with a cable tie as shown in the figure below. Cable tie should be installed over outer sheath of cable.
5. Follow local practices and install appropriate connectors on ends of fiber.

CAUTION:

Exercise caution in terminating fiber optic cable. Fibers are sharp and can penetrate skin or eyes. Wear proper eye and skin protection and safely dispose of any fiber pieces in a hard-sided, sealed container.

6. Dress individual fibers loosely around the fiber spools in an organized, neat figure-8 pattern as shown in the figure below. Wrap fibers around spools clockwise or counter-clock wise, but use the same direction for all fibers.



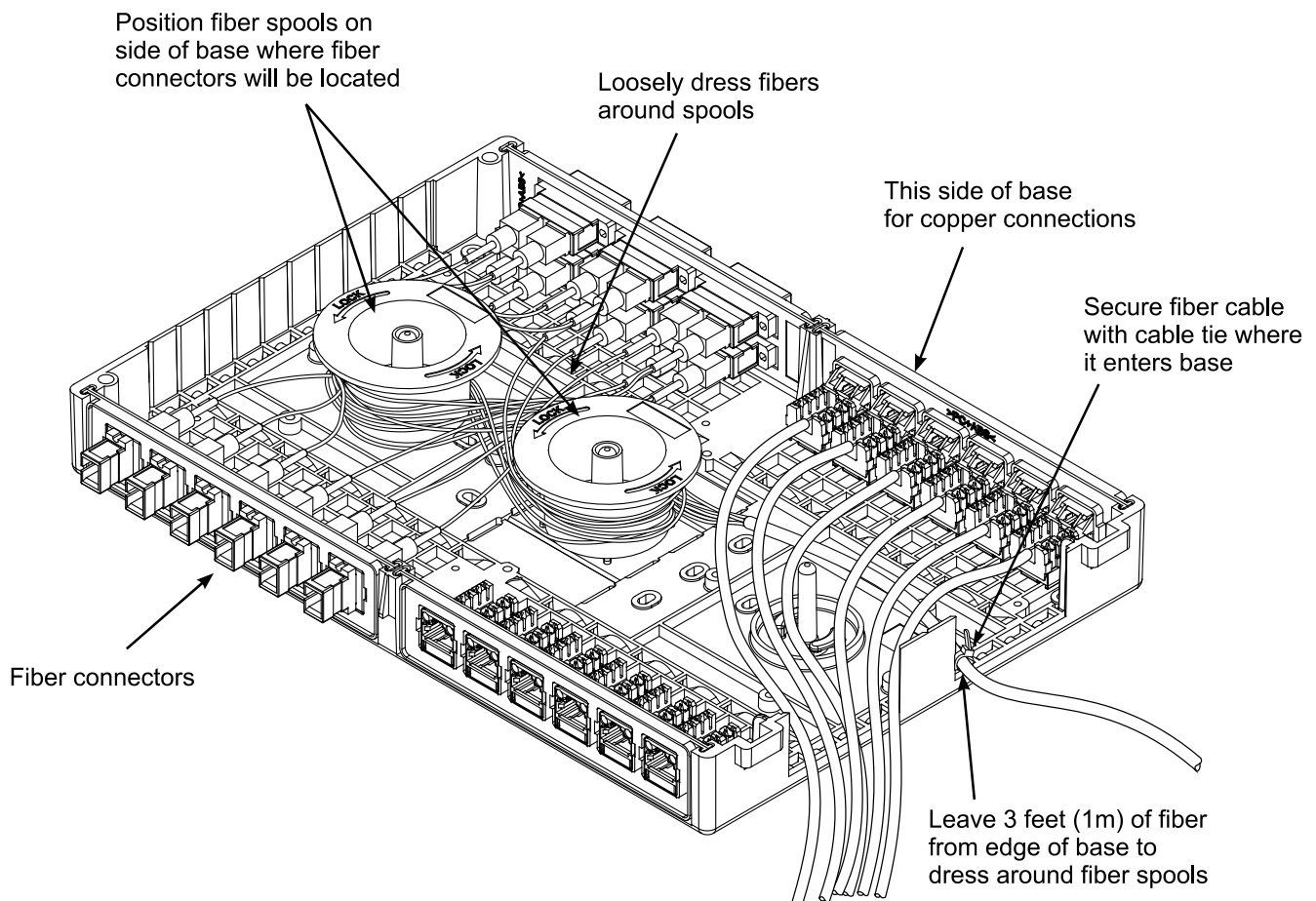
Installation B —

1. In this installation, both fiber optic spools will be used with one positioned on the center spindle and the other on either one of the other spindles as shown.
2. Place one spool over the spindle (flange side up), push down on it and rotate counter-clockwise. Repeat for other spool.
3. Position fiber cable over base so that 3 feet (1m) of fiber length is left from edge of the base and place a mark on outer sheath. It is recommended that 3 feet (1m) of fiber length be left for dressing fiber into the base. Remove outer sheath back to that mark.
4. Place fiber cable over base so that outer sheath extends inside base 1 inch (25mm) or more and secure it with a cable tie as shown in the figure below. Cable tie should be installed over outer sheath of cable.
5. Follow local practices and install appropriate connectors on ends of fiber.

CAUTION:

Exercise caution in terminating fiber optic cable. Fibers are sharp and can penetrate skin or eyes. Wear proper eye and skin protection and safely dispose of any fiber pieces in a hard-sided, sealed container.

6. Dress individual fibers loosely around the fiber spools in an organized, neat figure-8 pattern as shown in the figure below. Wrap fibers around spools clockwise or counter-clock wise, but use the same direction for all fibers.



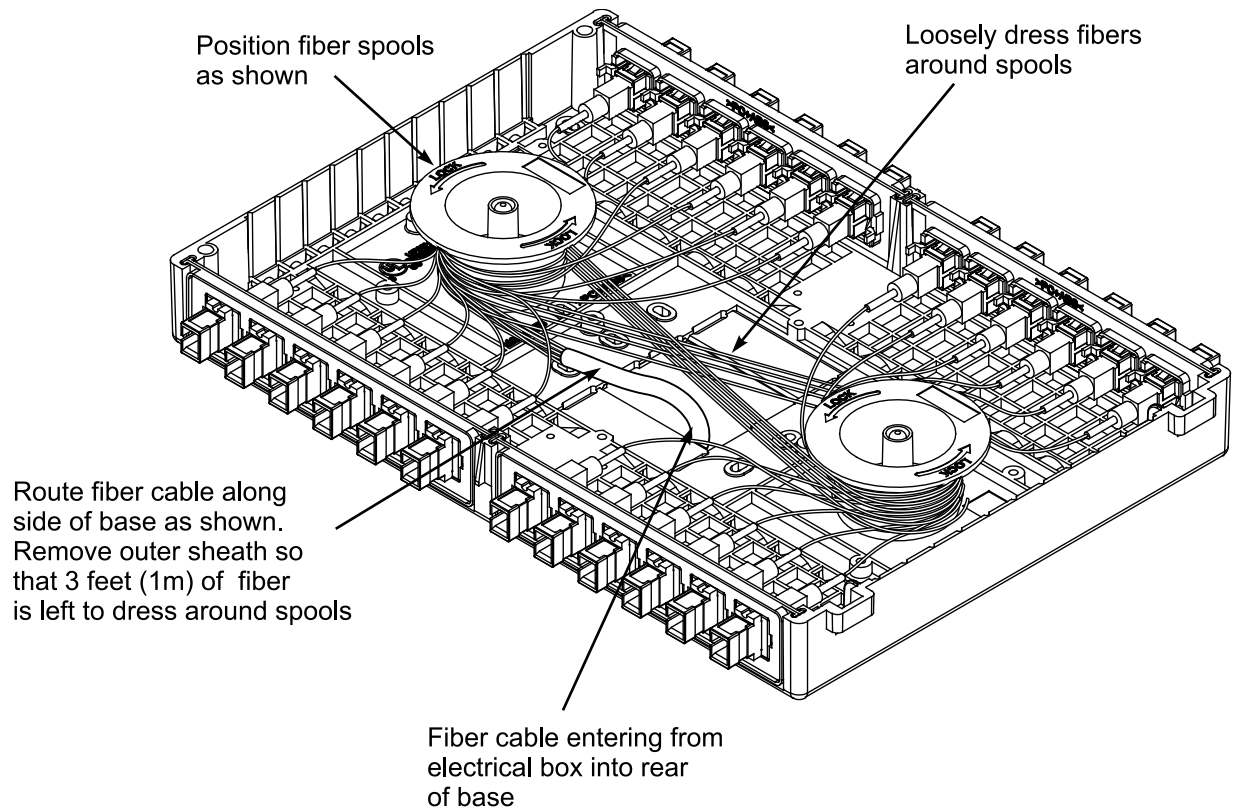
Installation C —

1. In this installation, one or both fiber optic spools can be used with each one positioned on the spindles near each end as shown
2. Place one spool over the spindle (flange side up), push down on it and rotate counter-clockwise. Repeat if other spool is used.
3. Extend fiber cable from rear opening in the base so that 3 feet (1m) of fiber length is left and place a mark on outer sheath. It is recommended that 3 feet (1m) of fiber length be left for dressing fiber into the base. Remove outer sheath back to that mark.
4. Follow local practices and secure fiber cable within the electrical box.
5. Position fiber cable along side of base as shown in preparation to dress fibers around fiber spools.
6. Follow local practices and install appropriate connectors on ends of fiber.

CAUTION:

Exercise caution in terminating fiber optic cable. Fibers are sharp and can penetrate skin or eyes. Wear proper eye and skin protection and safely dispose of any fiber pieces in a hard-sided, sealed container.

7. Dress individual fibers loosely around the fiber spools in an organized, neat manner as shown in the figure below. Wrap fibers around spools clockwise or counter-clock wise, but use the same direction for all fibers.



Step 5 — Install Cover on Base

1. Orient cover over base so that tabs on end of cover match up with openings on base.
2. Push down on top of cover to seat it on base, to engage side latches, and to seat tabs in openings.
3. Secure cover using the two pan-head forming screws supplied with kit.
4. Indentions are provided in the cover for labels to be applied for circuit identification. Labels are not provided.

Secure cover using two
pan-head forming screws

Indention in cover for
label to identify
circuits (typical of 4)

Seat cover tabs into
openings in base

Cover release latch
(typical of 2)

