

# customer manual

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Document Part Number 1518331-1

***PRODUCT INFORMATION***

*CALL TOLL FREE 1-800-722-1111 (CONTINENTAL UNITED STATES AND PUERTO RICO ONLY)*

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## 1. INTRODUCTION

AMPNETCONNECT undercarpet cabling system is an alternative to conventional round cable for the distribution of power and communications virtually anywhere on the floor without the limitations of underfloor ducts, walls, and utility poles. This customer manual includes physical and functional descriptions of the components in the system and suggestions and considerations for system layouts.

The undercarpet power system is a branch circuit wiring method per Article 324 (Type FCC) of the National Electrical Code (NEC) and Rule 12-800 of the Canadian Electrical Code (CEC). The power cable and components are Listed by UL under files E73212 and E73213, respectively. The power cable and components are Certified by CSA under File 7189.

The undercarpet communications system is a communications wiring method per Article 800 of the NEC and Rule 60-322 of the CEC. The communications cable is Listed by UL to US (Type CMUC) and Canadian (Type CMH) safety standards under File E138034.

The system has the capability of providing power and communications in a variety of locations including, but not limited to, retail, gaming, and open office spaces as allowed by code. The system components are designed so that the installation, removal and relocation of cable and individual devices may be accomplished without major modification to walls, floors, or other building structural components. Additionally, the system eliminates the need for unsightly power poles.

As the product description implies, undercarpet cabling is only for use under carpet, specifically modular carpet squares as governed by NEC and CEC requirements. TE Connectivity does not condone or warrant any other use of this product.

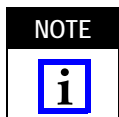
When reading this manual, pay particular attention to **DANGER**, **CAUTION**, and **NOTE** statements.



*Denotes an imminent hazard which may result in moderate or severe injury.*

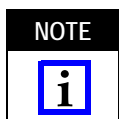


*Denotes a condition which may result in product or equipment damage.*



*Highlights special or important information.*

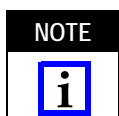
Reasons for reissue of this customer manual are provided in Section 5, REVISION SUMMARY.



*Dimensions in this manual are in metric units [with U.S. customary units in brackets].*

This customer manual is intended to assist professional engineers, contractors, facilities managers, and electrical design personnel in making accurate layouts, working drawings, and material lists for the undercarpet power and communications cabling system. TE cannot assume responsibility for knowledge of local codes and construction practices that may affect installations of this type. Any working drawing or layout must be reviewed and approved by a licensed professional engineer in accordance with appropriate federal and state laws governing such practices.

Any layouts or drawings **MUST** conform to NEC or CEC as appropriate, as well as any state, city, county, or local building code requirements. TE cannot be responsible for any misuse or misapplication of the product or for any code violations resulting from misuse or misapplication of the product.



*TE reserves the right to make product revisions at any time which may affect layout methods as stated herein. If any question exists, contact TE prior to performing any layout work.*

## 2. DESCRIPTION

This undercarpet power and communications cabling system consists of five types of components:

1. Transition fittings are used in walls, floors, or columns to house connectors that make the transition between round and undercarpet (flat) cable. The power transition between round and flat cable is made using unique insulation-piercing transition blocks that require only a screwdriver for termination. The communications transition is made using wiring blocks that require standard punch-down tools.
2. Cable includes flat, flexible power cable with separable conductor legs, a protective vinyl shield bonded to both sides of the cable, and a grounded, protective, steel top shield; and 4-pair, unshielded twisted-pair (UTP) flat communication cable.
3. Outlets include direct-connecting receptacle (DCR) and communications floor fittings, which are floor-mounted enclosures designed to house power or communications receptacles. The DCR provides integral duplex receptacles, and the communications floor fitting allows installation of standard SL series modular jacks or multimedia inserts.
4. Accessories include special cable tapping and splicing connectors, along with insulators that provide increased flexibility in wiring.
5. Comprehensive kits provide everything needed to install or retrofit a single room with service for power and communications (4 ports of any combination of voice or data and 2 duplex power receptacles).

A common configuration of the system that applies to many installations is summarized in Figure 1.

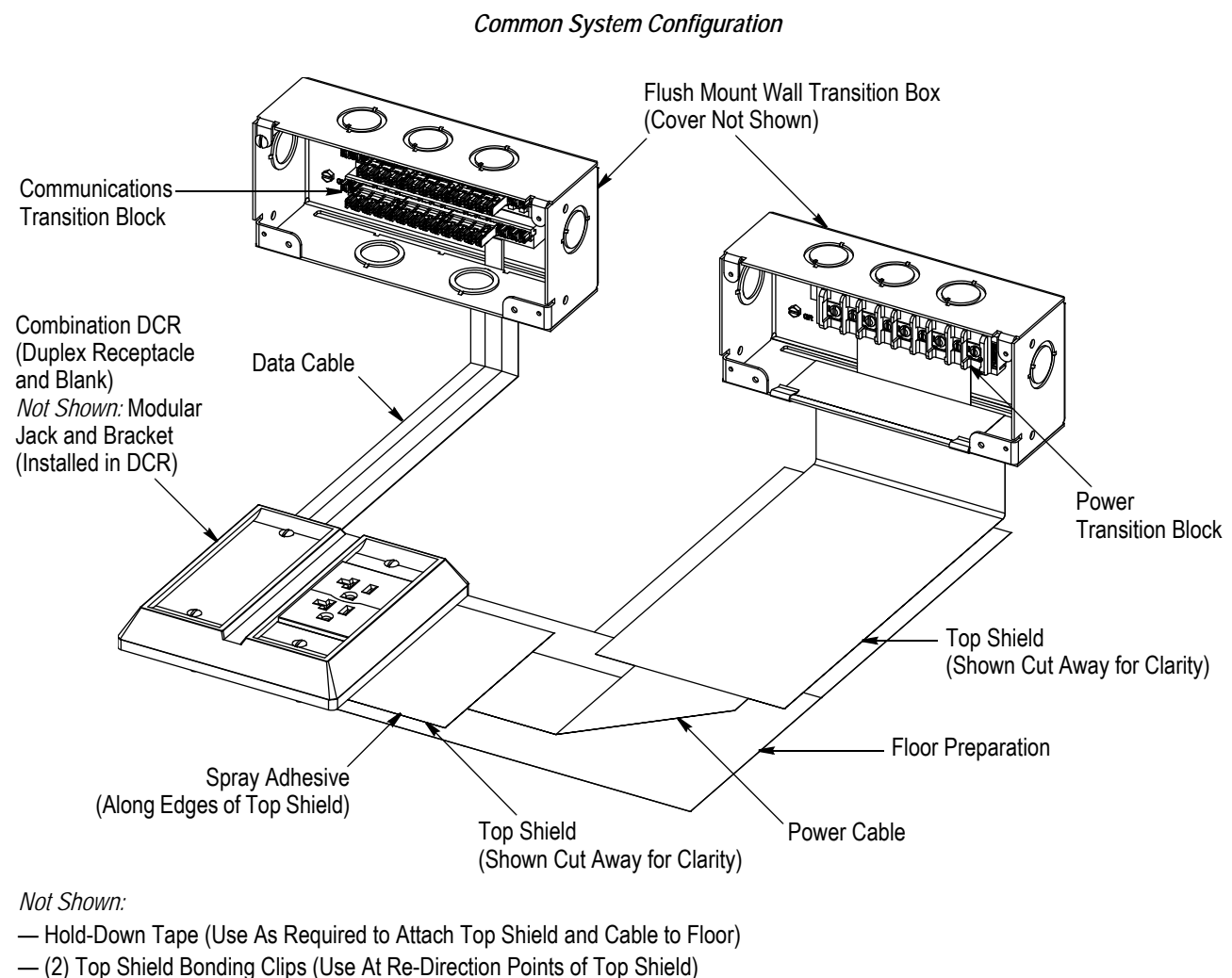


Figure 1

A thorough understanding of the physical and functional description of components is necessary *before* planning the layout. The following information will aid in the identification and selection of components when planning the layout and when using the Material Take-Off List (covered in Section 5).

## 2.1. Power

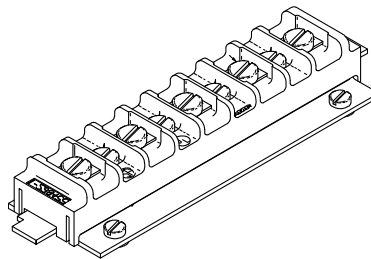
### A. Power Transition Block (Interface with Building Wiring)

The power transition block features a plastic block, copper-alloy terminals, a zinc-plated steel baseplate, and screws. The block is designed to make the transition from round conductors to flat conductors at the transition fitting and from flat conductors to round conductors at the floor fitting. See Figure 2.

A common screwdriver is used to terminate the flat conductors. When the silver pan-head screws are tightened, the baseplate is drawn up, pulling the cable against the insulation-piercing contact points that make the electrical connection. The color-coded pan-head screws on the top of the terminals make standard electrical connections to round conductors.

For installation instruction, refer to 408-3176.

*Power Transition Block 554862-1  
(3- and 5-Conductor)*



*Figure 2*

### B. Power Transition Fittings

Power transition fittings provide an interface point between round and undercarpet flat cable. Fittings are available in flush- or surface-mount configurations for wall or floor transition locations. Stainless steel bonding clips should be used to hold the flat cable in place. See Figure 3.

**NOTE**

*Flush-mount floor fittings require through-floor access, such as by core drilling or trenching at the fitting location.*



Each flush floor outlet box kit includes a base, base cover, disposable concrete cover, and outlet blanking plate(s). Outlet cover plates and carpet plates are available separately.

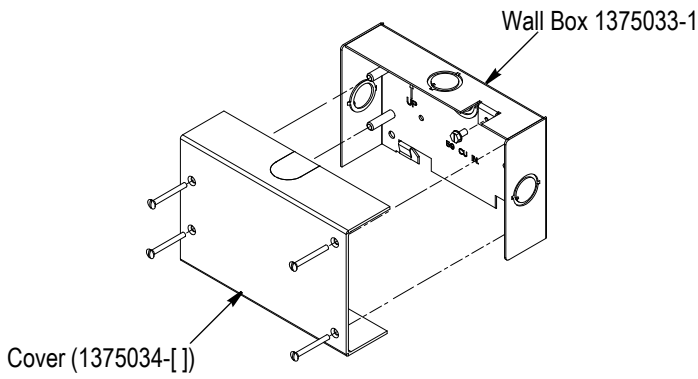
The surface-mount power whip kit includes an integral power transition block; all other transition fittings do not include a power transition block.

Flush Floor Outlet Box Kits 2111353-1 (single-gang) and 2111353-2 (double-gang) each consist of Outlet Box Kit 1375130-1 or 1375130-2, Thomas & Betts outlet cover plate(s), and a carpet plate. These kits require a customer-supplied receptacle.

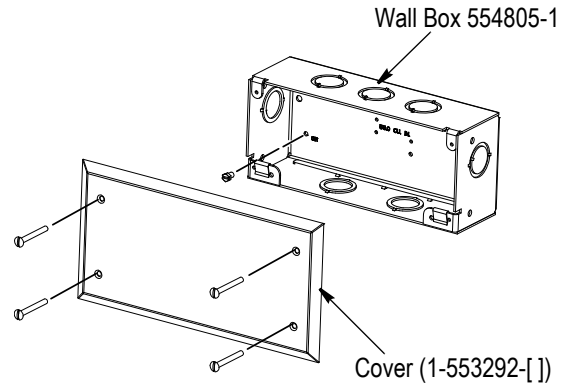
For installation instruction, refer to:

- 408-3144 Power whip kits
- 408-10336 Surface-mount wall box kits
- 408-10412 Flush-mount wall box kits
- 408-10425 Flush floor outlet box kits
- 408-10444 Surface-mount floor cover kits (use with Wall Box 1375033-1)

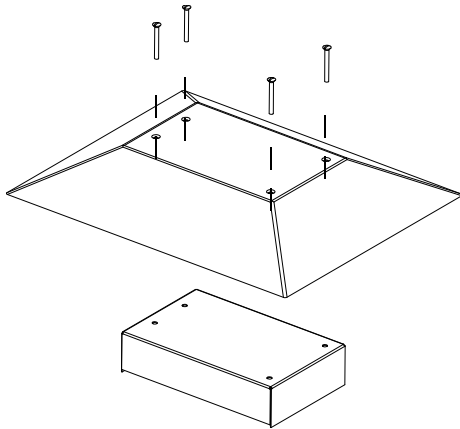
**Surface-Mount Wall Box Kits 1375032-[ ]**



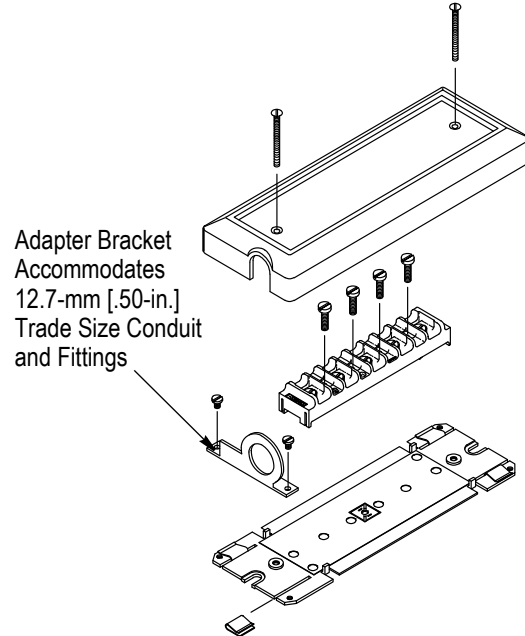
**Flush-Mount Wall Box Kits 1375045-[ ]**



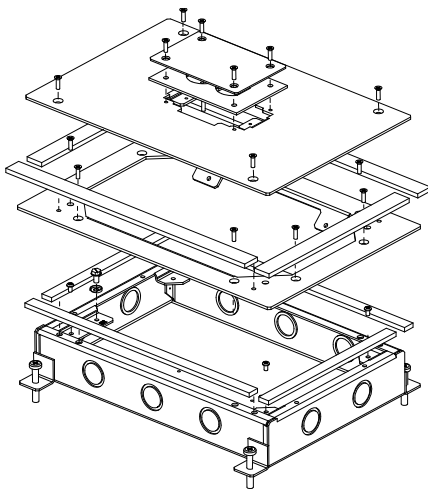
**Surface-Mount Floor Cover Kits 2111420-[ ]  
(Use with Wall Box 1375033-1)**



**Power Whip Kits 554181-[ ]  
(3- and 5-Conductor)**



**Single-Gang (Shown) and Double-Gang  
Flush Floor Outlet Box Kits  
1375130-1 (1-Gang)  
1375130-2 (2-Gang)  
1375130-3 (Blank)**



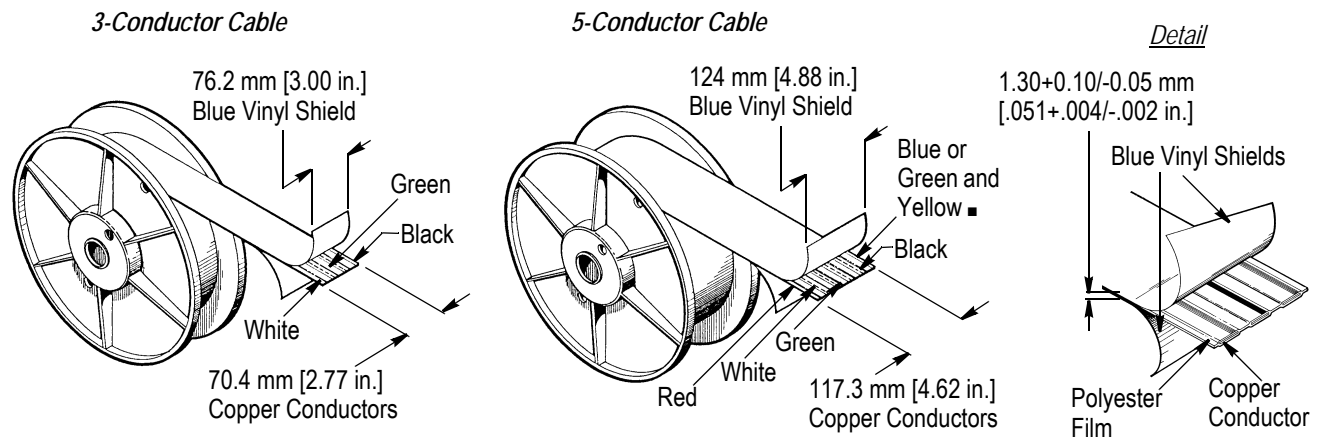
Note: Suffix of part number with brackets indicates color of product.

Figure 3

### C. Undercarpet Power Cable

The undercarpet power cable is available in 3- or 5-conductor, which correspond with round wire size 12 AWG (20 A). The cable consists of flat copper conductors placed side-by-side, laminated plastic strips that separate and insulate the conductors, and polyester jacket. The jacket material is flame-retardant, has excellent dielectric properties, and resists moisture and object penetration. All conductors are marked and color coded for ease of identification and to maintain proper polarity during installation. The insulation between adjacent conductors is perforated so that the conductors can be separated without exposing bare copper conductors. A blue vinyl shield is bonded to both sides of the cable for increased cushioning and abrasion resistance. See Figure 4.

For installation instruction, refer to 408-3154.



| LENGTH<br>m [ft] | UNDERCARPET CABLE |                 |                   |
|------------------|-------------------|-----------------|-------------------|
|                  | 3-CONDUCTOR       | 5-CONDUCTOR     |                   |
|                  |                   | Standard Ground | Isolated Ground ■ |
| 76.2 [250]       | 3-553079-1        | 3-553239-1      | 3-553820-1        |
| 15.24 [50]       | 3-553079-3        | 3-553239-3      | 3-553820-3        |
| 30.48 [100]      | 3-553079-4        | 3-553239-4      | 3-553820-4        |

■ Green and yellow color-coded conductors denote isolated ground.

Figure 4

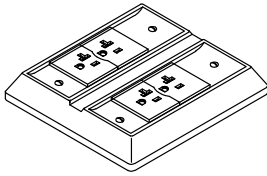
### D. Direct Connecting Receptacle (DCR) Power Outlet

Each DCR includes a galvanized-steel mounting plate, a thermoplastic receptacle assembly, a plastic cover, copper-alloy terminals, stainless steel bonding clips, and attaching hardware. The low-profile receptacle is terminated directly to flat cable. Tightening the screws allows the terminal tines to pierce the cable insulation and engage the conductors. The spring-loaded receptacle covers are closed (to protect the contacts) until a plug is inserted. An adapter housing assembly is available separately to complete termination for the 5-conductor single duplex DCR. See Figure 5.

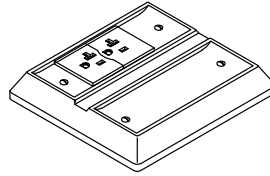
For installation instruction, refer to:

- 408-3129 3-conductor DCR
- 408-3131 5-conductor DCR

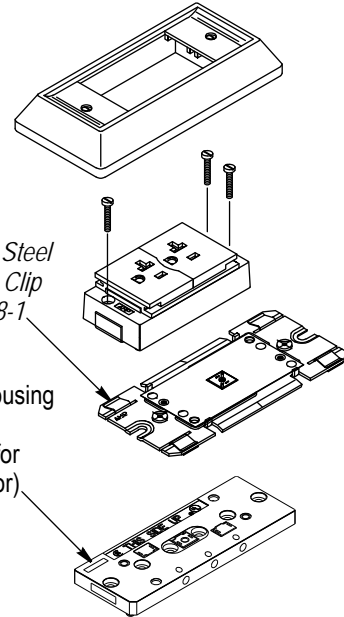
*Dual Duplex DCR Kit*



*Combination DCR Kit  
(Duplex Receptacle and Blank)*



*Single Duplex DCR Kit*



| NUMBER OF CONDUCTORS | DCR KIT    |            | DESCRIPTION            |
|----------------------|------------|------------|------------------------|
|                      | 20 A       | 15 A       |                        |
| 3                    | 553947-[ ] | 554128-[ ] | Single                 |
|                      | 554192-[ ] | 554321-[ ] | Dual                   |
|                      | 554142-[ ] | 554319-[ ] | Combination            |
| 5                    | 554186-[ ] | 554136-[ ] | Single—Standard Ground |
|                      | 558650-[ ] | 554592-[ ] | Single—Isolated Ground |

Note: Suffix of part number with brackets indicates color of product.

Figure 5

## 2.2. Communications

### A. Communications Transition Block

The communication transition block features six 4-pair punch-down 110Connect blocks for input of round cable and output of undercarpet (flat) cable. A standard punch-down tool can be used to terminate the conductors. The kit includes a mounting tray assembly and wiring block. See Figure 6.

For termination instruction, refer to:

408-3368 Universal Communications Transition Block 2111682-1  
(For Use with Category 5e and Category 6 Cable)

*Universal Communications Transition Block Kit 2111682-1  
(For Use with Category 5e and Category 6 Cable)*

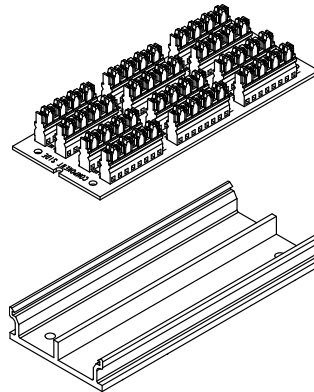


Figure 6



## B. Communications Transition Fittings

Communications transition fittings provide an interface point between round and undercarpet (flat) cable. Fittings are available in flush- or surface-mount configurations for wall or floor transition locations. The communications transition block is available separately. The flush floor outlet box kit includes an outlet cover and carpet ring; the mounting straps and outlets are available separately. See Figure 7.

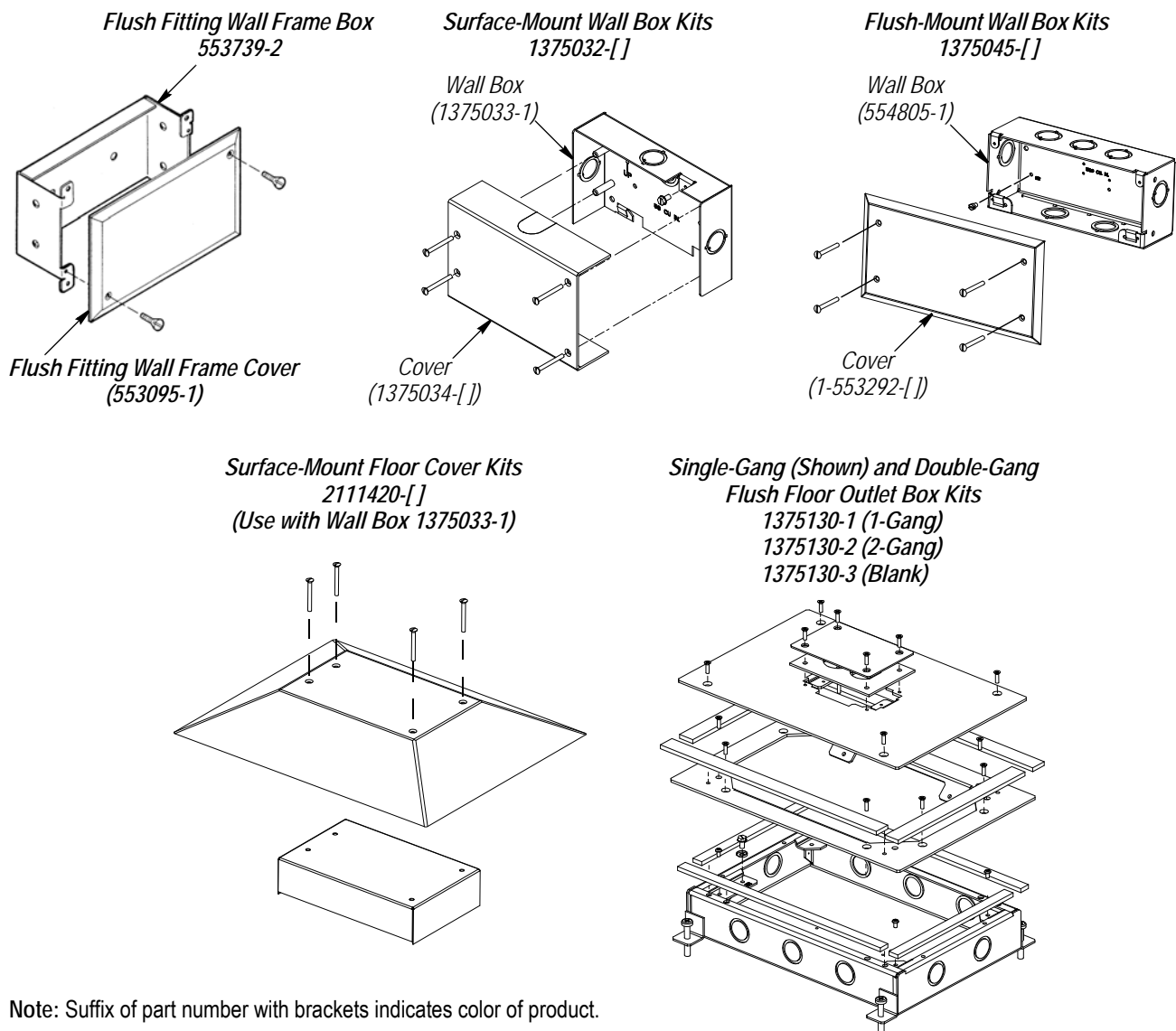
**NOTE**

*Flush mount floor fittings require through-floor access, such as by core drilling or trenching at the fitting location.*



For installation instruction, refer to:

- 408-3107 Flush fitting wall frame and cover
- 408-10336 Surface-mount wall box kits
- 408-10412 Flush-mount wall box kits
- 408-10425 Flush floor outlet box kits
- 408-10444 Surface-mount floor cover kits (use with Wall Box 1375033-1)



Note: Suffix of part number with brackets indicates color of product.

Figure 7

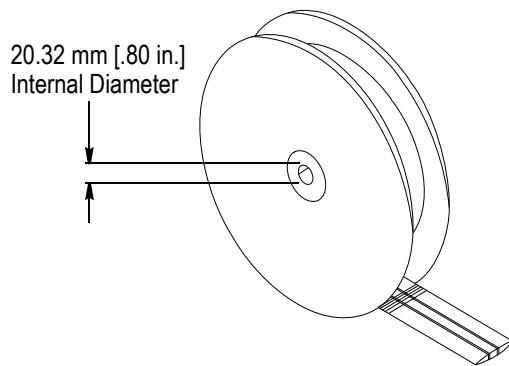
### C. Undercarpet Communications Cable

The 4-pair, unshielded twisted-pair (UTP) undercarpet communications cable features ramped wings, which eliminate the need for top and bottom taping. The cable meets all Telecommunications Industry Association (TIA) transmission for system testing requirements. See Figure 8.

A hold-down tape should be used to attach the cable to the floor surface; optionally, a spray adhesive may be used. Also, a top shield may be used to help protect the cables from external abuse such as high traffic areas. If more than two cable runs exit the distribution point, the inner wing of each cable must be removed using a cable notcher tool (available separately). Refer to Paragraph 2.3, Accessories.

For installation instruction, refer to 408-3194.

*4-Pair UTP Type CMUC/CMH Communications Cable*



| PERFORMANCE LEVEL | LENGTH<br>m [ft] | COMMUNICATIONS CABLE |
|-------------------|------------------|----------------------|
| Category 5e       | 76.2 [250]       | 1499119-1            |
|                   | 30.5 [100]       | 1499119-5            |
| Category 6        | 76.2 [250]       | 1499539-1            |
|                   | 30.5 [100]       | 1499539-5            |

Figure 8

### D. Communications Floor Fitting

The floor fitting includes a galvanized steel mounting plate and a plastic cover. The 2-port and direct connecting receptacle (DCR) combination fittings can each house two 4-pair mated cables, and 2 surface-mount jacks or 2 Category 5e or Category 6 110Connect modular jacks. The 4-port floor fitting can accommodate twice as many cables and jacks as the 2-port floor fitting. See Figure 9.

The low-profile multimedia floor fitting can accommodate up to 4 modular jacks and 2 SVGA connectors. The cover features 4 knockouts, which will accept ACO single-port installation kits.

The multimedia floor fitting includes an integral modular jack bracket (the modular jack is available separately). For all other low-profile floor fittings, the modular jack brackets are available separately. See Paragraph 2.2, E.

For installation instruction, refer to:

- 408-3129 Combination direct-connecting receptacle (DCR) kits (3-conductor, 20A and 15A)
- 408-3179 Low-profile floor fitting kits (2-port and 4-port)
- 408-8843 Low-profile floor fitting kit (multi-media)

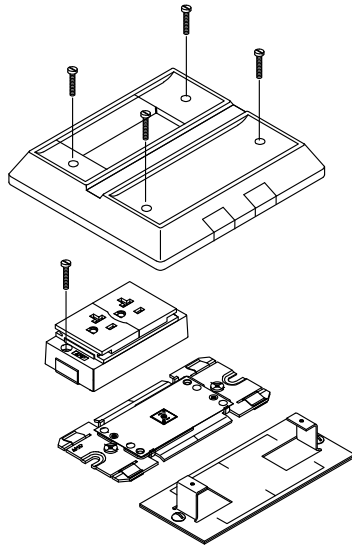
### E. Modular Jack Kits

Category 5e and Category 6 modular jack kits are intended for use with the low-profile communications floor fittings. The SL Series modular jack kit includes a modular jack with strain relief and bracket (for mounting). The bracket is not required for the low-profile multi-media floor fitting. See Figure 9.

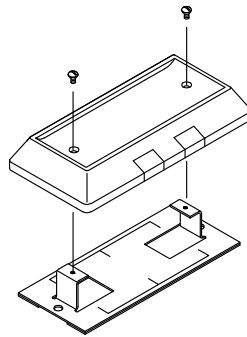
The modular jack is designed to accept the wires following the T568A/B wiring pattern and terminated using the following tooling, which is available separately:

- Impact Tool 1583608-1
- Modular Plug Hand Tool Kit 1-231666-0 (408-9767)
- SL Series Modular Jack Assembly Tool Kit 1725150-1 (408-8858)

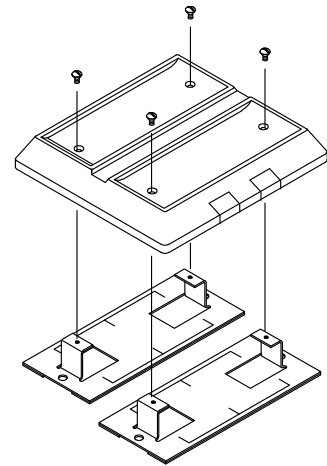
**Combination DCR Kits**  
**(3-Conductor Power/2-Port Data)**  
**554142-[ ] (20A) and 554319-[ ] (15 A)**



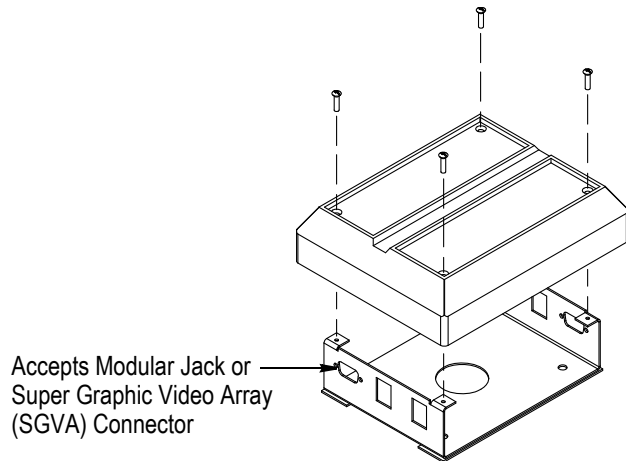
**Low-Profile Floor Fitting Kits (2-Port)**  
**554206-[ ]**  
**(Requires Modular Jack and Bracket)**



**Low-Profile Floor Fitting Kits (4-Port)**  
**555287-[ ]**  
**(Requires Modular Jack and Bracket)**



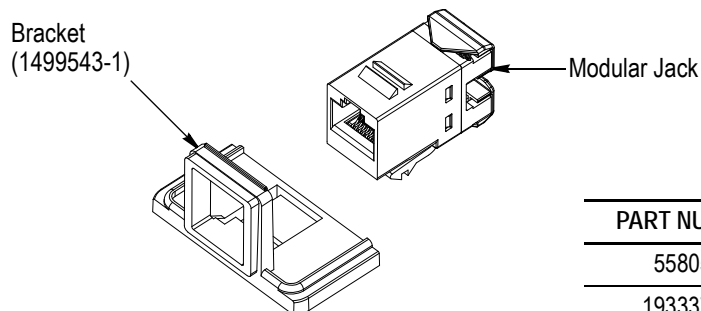
**Low-Profile Multi-Media Floor Fitting Kit**  
**1479542-1**



Note: Suffix of part number with brackets indicates color of product.

Figure 9

**SL Series Modular Jack Kits**



| PART NUMBER | DESCRIPTION                             |
|-------------|---|
| 558054-1    | SL Series Modular Jack Kit, Category 5e |
| 1933377-1   | SL Series Modular Jack Kit, Category 6  |

Figure 10

### 2.3. Accessories

The following paragraphs describe the accessories, which are intended for use, required for use (indicated by required), or are optional for use (indicated by optional) in power and/or communications systems.

#### A. Floor Preparation

The floor preparation is a yellow, vinyl material that is designed to protect the cable from floor moisture, chemical reaction, and abrasion in slab-on-grade or sub-grade level applications. This shield is placed over the circuit path on the concrete surface and under the cable. See Figure 11.

For installation instruction, refer to 408-3154.

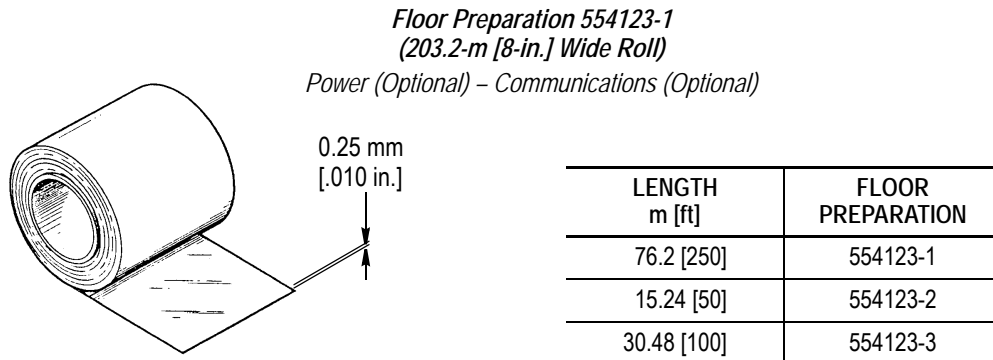


Figure 11

#### B. Top Shield, Spray Adhesive, Hold-Down Tape, and Bonding Clips

The top shield is made of corrosion-resistant steel material. The top shield is a fully-grounded component that covers the entire system and provides physical protection for the cable. It is electrically connected to the ground to provide fault protection and minimize hazards. The penetration-resistant steel is designed to protect the cable against hazards such as thumb tacks and chair legs.

A spray adhesive and hold-down tape should be used to attach the top shield to the floor surface. A top shield bonding clip, which is a copper alloy device, should be used to electrically and mechanically connect the top shields at taps, splices, and re-direction points. See Figure 12.

For installation instruction, refer to 408-3150.

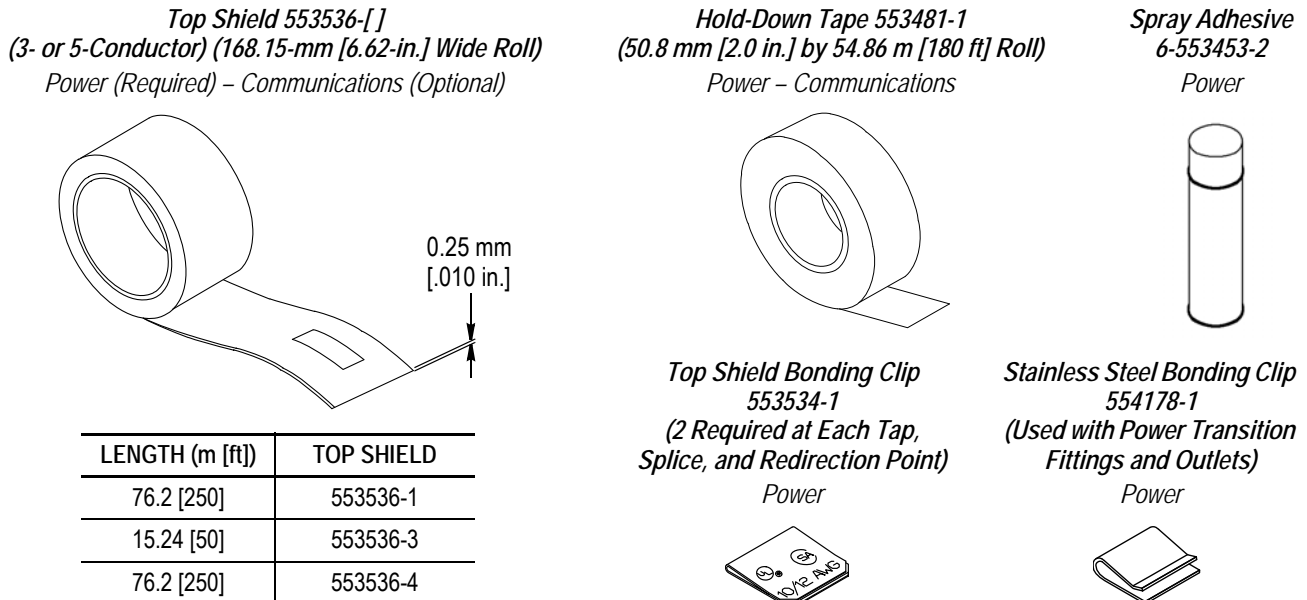


Figure 12

### C. Tap and Splice Connectors, Insulator Kit, Floor Fitting Patch Kit, and Tooling

Tap and splice connectors are copper-alloy devices with insulation-piercing lances. With the use of a hand crimping tool, they are designed to electrically connect two flat conductor cables. Five-conductor to 3-conductor taps allow more efficient cable runs with a minimum of power transition fittings. Splice connectors allow electrical connections between the end of one roll of cable and the beginning of another roll of cable and also permits the extension of existing cable runs. See Figure 13.

An insulator, which includes two identical insulator assemblies, is required when the cable is spliced, tapped, dead-ended, or a fitting was removed. Each insulator assembly has vinyl on one side and adhesive-faced foam (covered by paper backing) on the other side. The two assemblies are placed together around the cable to form the insulator. The insulator is designed to protect and insulate the tap and splice connectors and protect exposed conductor ends or areas.

Floor Fitting Patch Kit 1479151-1 is required for taps, splices, cable ending, cable repair, and DCR abandonment. The kit consists of a pair of insulator assemblies, a piece of top shield, a roll of hold-down tape, and 4 top shield bonding clips.

For installation instruction, refer to:

408-3218 Tap and splice connectors

408-8635 Insulator kit

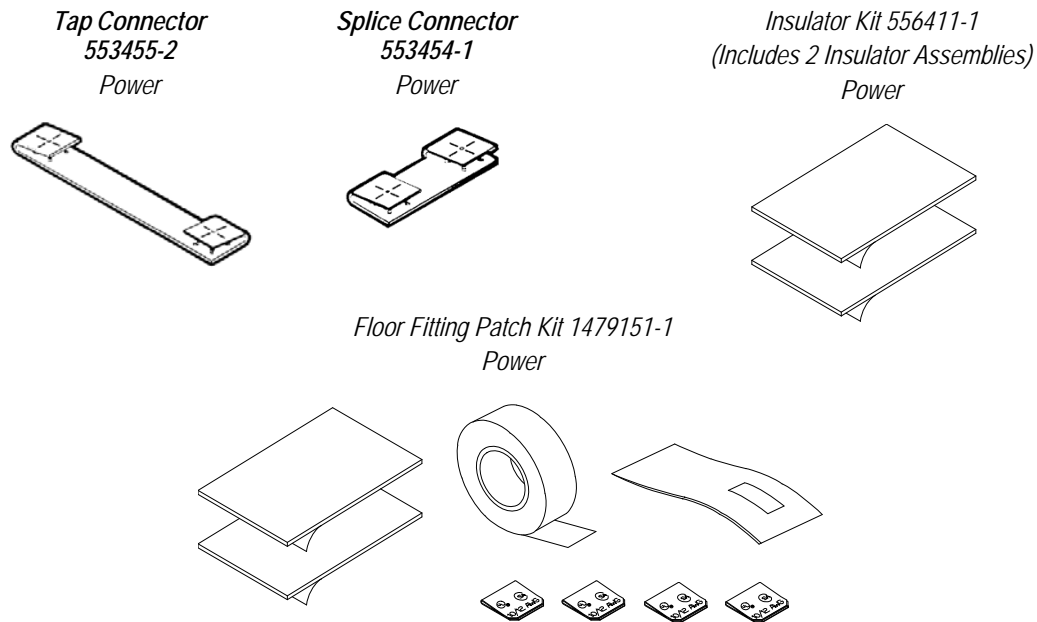


Figure 13

### D. Tooling

A cable notcher tool must be used to cut a notch in the edge of the communications cable at turns to create a smooth radius in the cable. A crimping hand tool assembly must be used to crimp the tap and splice connectors to the power cable. See Figure 14.

For instruction on using the tools, refer to:

Cable notcher tool (instructions included with tool)

408-10267 Hand tool assembly

*Cable Notcher Tool 1725698-1  
(For Communications Cable)  
Communications*



*Undercarpet PRO-CRIMPER® III Hand Tool Assembly 91392-1  
(For Power Tap and Splice Connectors)  
Power*

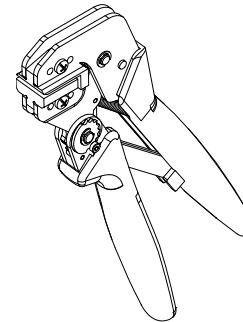


Figure 14

## 2.4. Comprehensive Kits

Conference Room Kits 1479050-1 (Category 5e) and 1933466-1 (Category 6) provide all the components needed to install or retrofit a single room with service for power and communications (4 ports of any combination of voice or data and 2 duplex power receptacles). Figure 15 lists the components for each kit.

| COMPONENT DESCRIPTION                             | COMPONENT PART NUMBER                     |  | AMOUNT PER KIT  | REFER TO  |
|---|---|--|-----------------|-----------|
|   | COMPREHENSIVE KIT 1479050-1 (Category 5e) | COMPREHENSIVE KIT 1933466-1 (Category 6) |                 |           |
| Communications Cable                              | 1499119-1                                 | 1499539-1                                | 30.5 m [100 ft] | Figure 8  |
| Communications Transition Block                   | 2111682-1 (110Connect)                    |  | 1               | Figure 6  |
| SL Series Modular Jack and Bracket                | 558054-1                                  | 1933377-1                                | 4               | Figure 10 |
| Flush Fitting Wall Frame Box                      | 553739-2                                  |  | 1               | Figure 7  |
| Flush Fitting Wall Frame Cover                    | 553095-1                                  |  | 1               |           |
| Power Flush Mount Wall Box                        | 554805-1                                  |  | 1               |           |
| Power Flush Mount Wall Box Cover                  | 1-553292-3                                |  | 1               |           |
| Power Cable (3-Conductor, Standard Ground)        | 3-553079-3                                |  | 15.24 m [50 ft] | Figure 4  |
| Top Shield  | 553536-3                                  |  | 15.24 m [50 ft] | Figure 12 |
| Floor Preparation                                 | 554123-3                                  |  | 15.24 m [50 ft] | Figure 11 |
| Communications Low-Profile Floor Fitting (4-Port) | 555287-1                                  |  | 1               | Figure 9  |
| Dual Duplex DCR (3-Conductor, 20 A)               | 554192-1                                  |  | 1               | Figure 5  |
| Power Transition Block (3- and 5-Conductor)       | 554862-1                                  |  | 1               | Figure 2  |
| Hold-Down Tape                                    | 553481-1                                  |  | 1 Roll          | Figure 12 |
| Spray Adhesive                                    | 6-553453-2                                |  | 1 Can           |           |

Figure 15

### 3. LAYOUT

#### 3.1. Preparation

Before any of the components in the undercarpet cabling system are installed, an accurate and scaled layout plan that shows the location and orientation of all the components should be made. This plan will serve the following purposes:

- to locate the components so as to avoid interference
- to provide working drawings for the actual installation
- to define the number and type of components needed
- to provide a permanent record that can be referenced for maintenance or for future relocations

Figure 2 shows an example of an open office design and gives the identification of symbols referenced in the layout procedure.

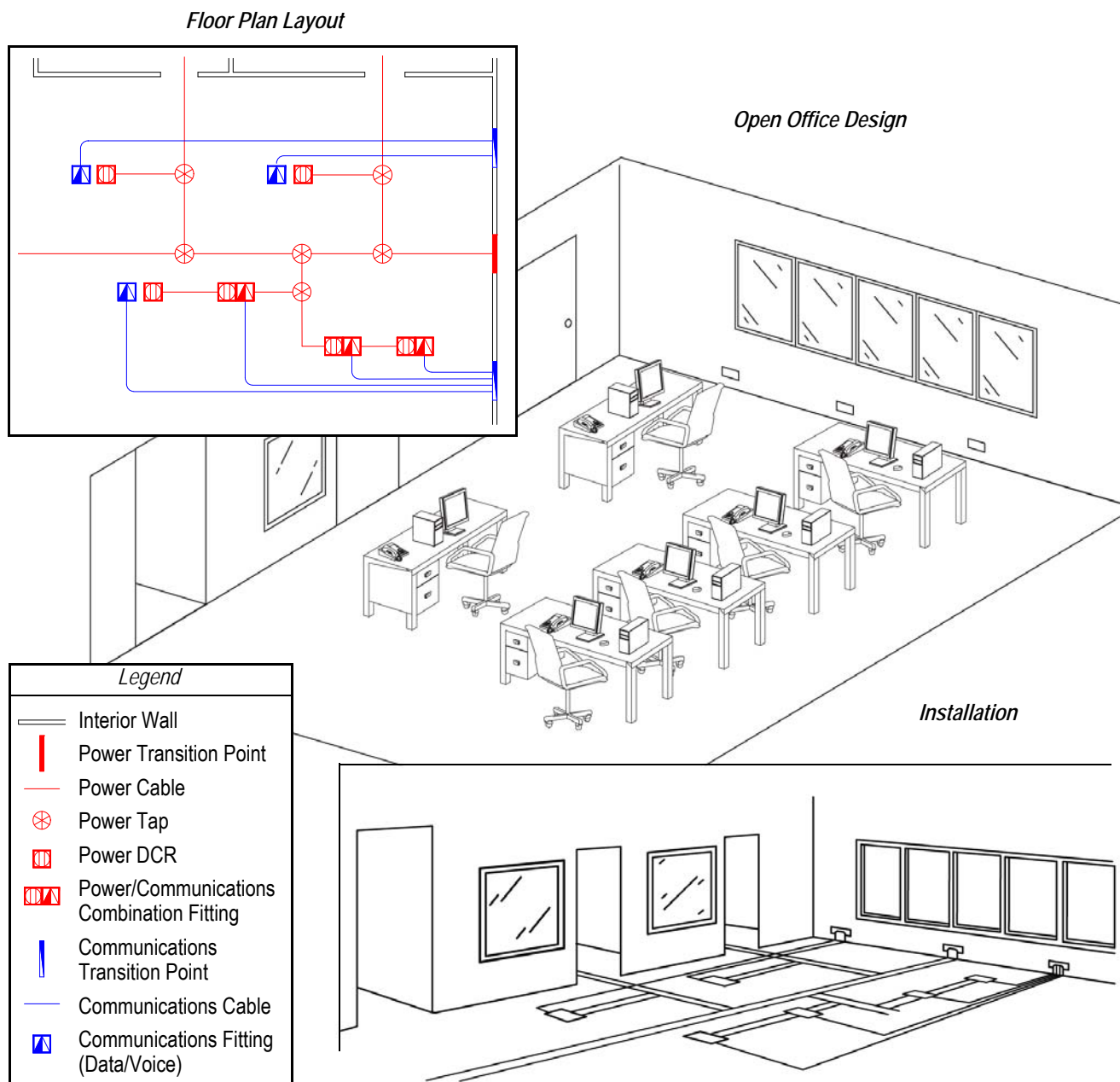


Figure 16

## 3.2. Planning

### A. Power

The undercarpet power cables have the same current-carrying capacity ratings as conventional round wire conductors of the same size (AWG) designation. Use the appropriate articles in the NEC for round wire applications as a guideline for making branch circuit and voltage drop calculations for the flat conductor cable applications. Include all round cable as well as flat cable applications in a system when making calculations. Appropriate code references are as follows:

- for number of outlets required, the total load, and the location of electrical outlets, NEC Article 210 applies
- for number of branch circuits required, NEC Article 220 applies
- for specifics on flat conductor cable Type FCC, NEC Article 324 applies

The following considerations should be kept in mind when planning the power floor layout:

1. The maximum cable run should be calculated using an average DC resistance of 1.64 ohms per 305 m [1,000 ft] for cable size 12 AWG.
2. Conduit and round wire should be used to distribute power through columns, interior walls, and underfloor ducts; then, undercarpet cable should be used for actual service to the work area.
3. Circuits should be loaded with a fewer number of outlets than design capacity; thereby, allowing for reserve capacity for future planning.
4. The 5-conductor cable can be used as a 2- or 3-circuit main run with single-circuit outlets tapped as required, permitting additional circuits to be run from each transition box.
5. Cable taps, although designed to be fast and economical, still involve additional material and labor; therefore, when laying the power system, taps should be minimized by making additional bends with the cable.
6. Planning communication outlet locations can minimize bends and manipulation of the power layout. Use of a combination power and communications fitting can economize both systems on a floor plan. This planning will assure proper cable approach to a combination fitting.

Refer to Figure 17.

### B. Communications

The undercarpet communications cables have the same performance ratings as conventional round twisted-pair cabling of the same category designation. Consider the appropriate category performance required for the application, and refer to appropriate articles in the NEC for communications circuit installations when planning the layout. Appropriate code references are as follows:

- for communications circuits, NEC Article 800 applies
- for specifics on undercarpet communications cable Type CMUC, NEC Article 800.179 applies

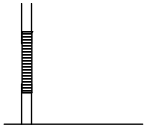


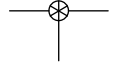
The following considerations should be kept in mind when planning the communications floor layout:

1. Round wire should be used to distribute communications through columns, interior walls, and underfloor ducts; then, undercarpet cable should be used for actual service to the work area.
2. Extra capacity should be left at most transition points to allow for future expansion.
3. Communications cables are typically installed after the power system and may cross over top of the power cable top shield, but should not run on top of the top shield or other communications cables for any distance. Crossings should not occur at a power tap, splice, or cable bend.
4. The preferred method for combined power and communications systems layout is to use the "fingers" approach, where a given area is fed from one direction with power circuits and the other directions are fed with communications circuits. The alternative method is to feed both from the same direction.

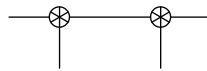
Refer to Figure 18 for additional cable routing recommendations and dimensions.



*Power Floor Plan Layout*

|   |   |  |  |
|---|---|--|--|
| <p>Recommended distance from floor to mounted wall box is approximately height of base board.</p>  | <p>Make turns by folding power cable at any angle up to 90 degrees.</p>  | <p>Minimum distance from a 90-degree power cable bend to another cable bend is 203 mm [8 in.] centerline-to-centerline.</p>  | <p>Power cable taps must be made at a 90-degree angle to the main cable run.</p>  |
|---|---|--|--|

Two taps require a minimum of 0.30 m [1 ft] between junction points.




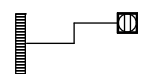
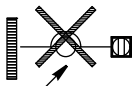
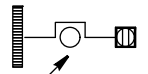
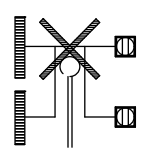
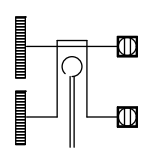
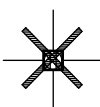
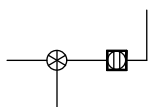
|   |   |   |   |
|---|---|---|---|
| <p>Power cable must not exit transition fitting at any angle other than 90 degrees.</p>                     | <p>Extend power cable a minimum of 0.30 m [1 ft] beyond transition fitting before an angle.</p>       | <p>Do not curve power cable around obstacles.</p>  <p>Column (Ref)</p> | <p>Bend power cable at 90-degree angle around obstacles.</p>  <p>Column (Ref)</p>   |
| <p>Do not run power cable on top of another cable for any distance.</p>  <p>Column/Interior Wall (Ref)</p> | <p>Power cables may cross another cable at a 90-degree angle.</p>  <p>Column/Interior Wall (Ref)</p> | <p>Do not cross power cables at floor fittings.</p>                   | <p>A tap and a power cable with a 90-degree bend will offer a similar layout.</p>  |

Figure 17

## Communications Floor Plan Layout

| Preferred Method ("Fingers" Approach)<br>Power and Communications Fed from Different Directions        |  | Alternative Method<br>Power and Communications Fed from Same Direction |   |
|--|--|--|---|
| Layout using taps<br>  | Same layout without taps<br>   | Layout using taps<br>  | Same layout without taps<br>  |
| Recommended distance from floor to mounted wall box is approximately height of base board.<br>         | Make gradual turns in communications cable at any angle up to 90 degrees.<br>                    | Do not fold communications cable around obstacles.<br><br>Column (Ref) | Gradually bend communications cable around obstacles.<br><br>Column (Ref) |
| Do not run communications cable on top of another cable for any distance.<br><br>Walls/Obstacles (Ref) | Communications cables may cross another cable at a 90-degree angle.<br><br>Walls/Obstacles (Ref) | Do not feed communications cables through to next floor fitting.<br>   | Run separate communications cable to each floor fitting outlet.<br>       |

Figure 18

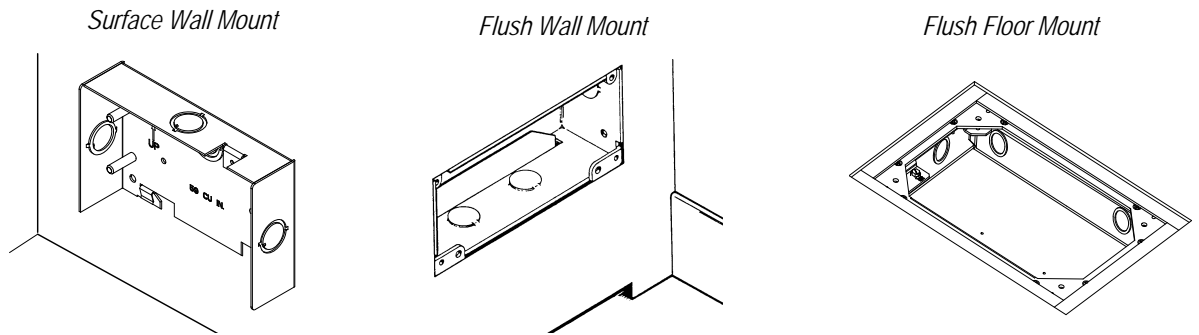
## 4. INSTALLATION

This encapsulated installation procedure serves as an aid in identifying system components, indicating where they are used and showing how they are installed. The outline of the sequence of installation may be helpful for layout planning. For specific instructions, refer to the instruction sheets packaged with the components.

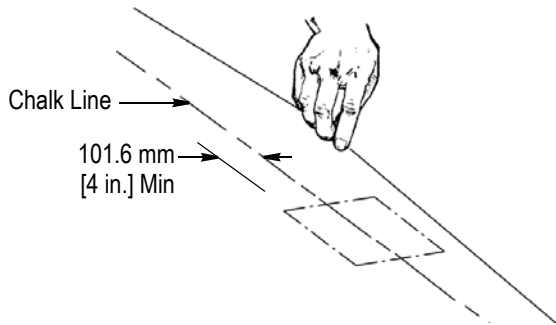
## 4.1. Power System

Refer to Figure 19.

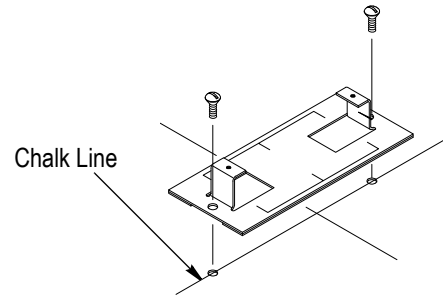
1. Locate and mount power supply transition fittings on walls and floor.



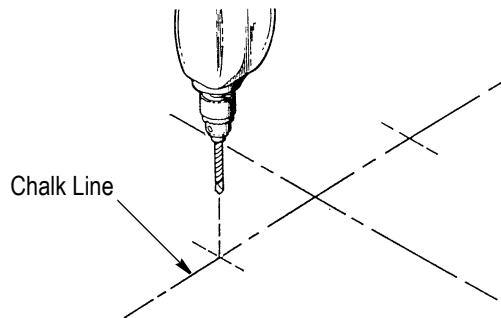
2. Lay out circuit centerlines on floor with chalk line.



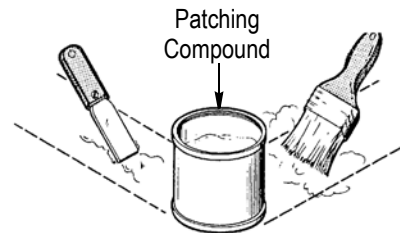
3. Use mounting plates as patterns, mark screw hole locations.



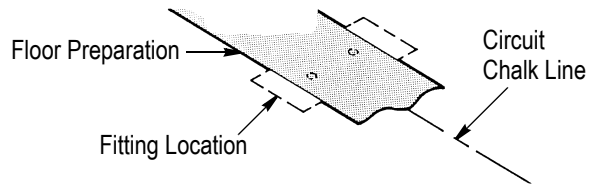
4. Drill holes and install outlet anchors.



5. Scrape, patch, clean, and vacuum floor on cable path. Clean entire floor.



6. Lay floor preparation (for slab-on-grade installation).



7. Connect cable to transition blocks at power supply transition fittings.

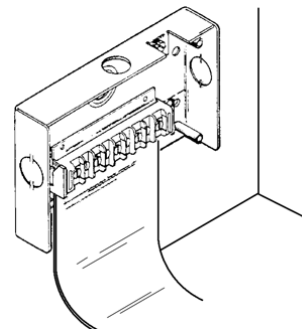
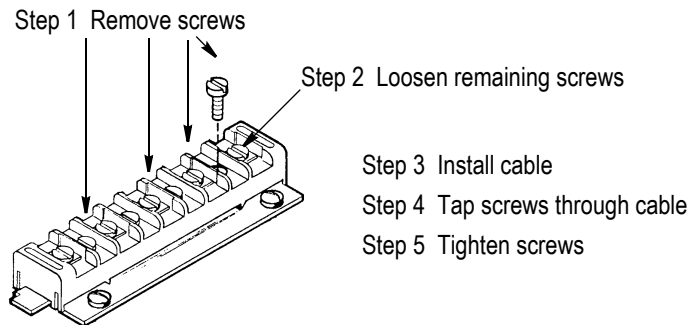
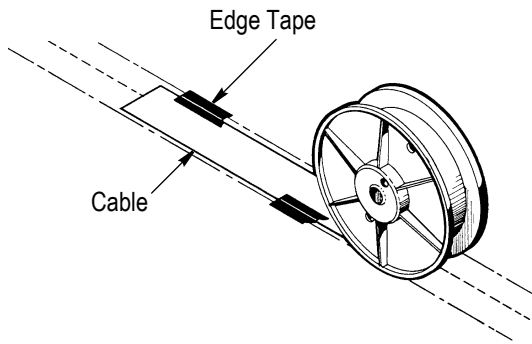
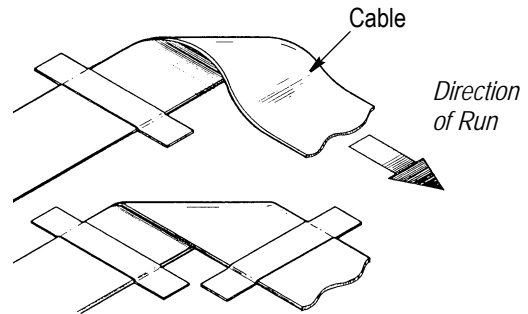


Figure 19 (Cont'd)

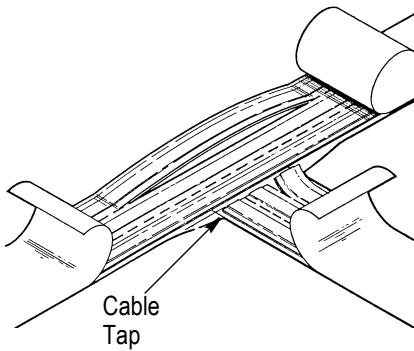
8. Lay cable.



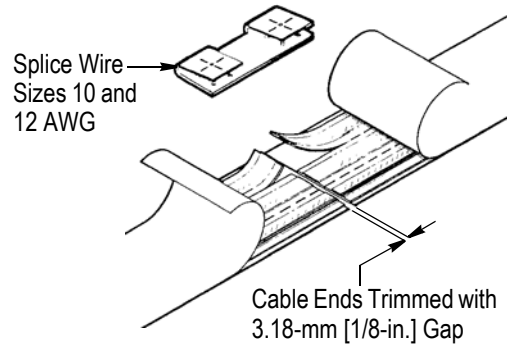
9. Establish direction for 0.91 m [3 ft] or 1.22 m [4 ft] then crease. Fold cable at corners. Tape as required.



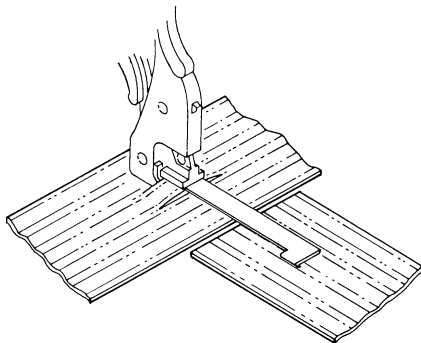
10. a. Install cable to tap at branch circuits.



10. b. Install cable to splice as required.

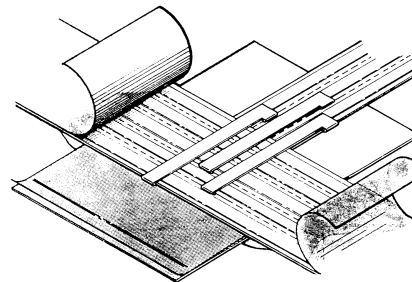


11. Connect cables with tap or splice connectors as required.



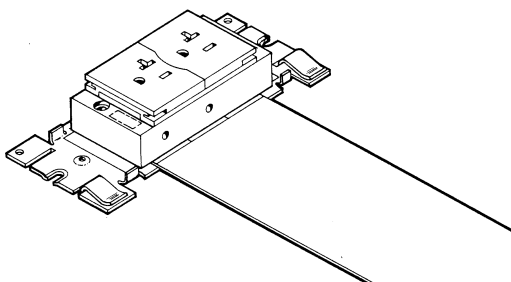
12. Seal splices and taps with insulator kit.

**Note:** See 408-3128 for recommended method to interface with another existing cabling system.



13. Mount floor fitting base plate.

**Note:** Perform a continuity check before installing the top shield.



14. Trim and connect top shield at floor fittings. Use top shield bonding clips to join top shield at splices, taps, and corners.

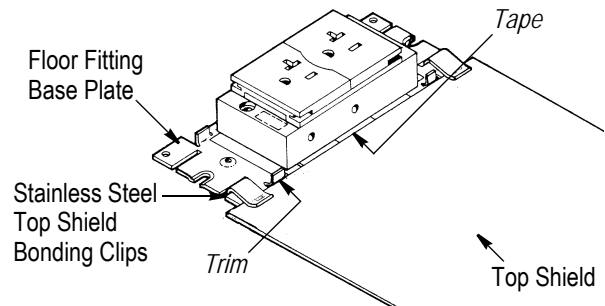
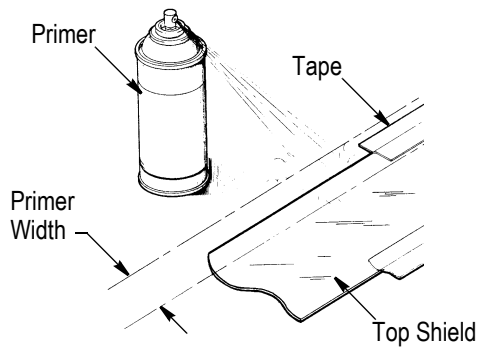
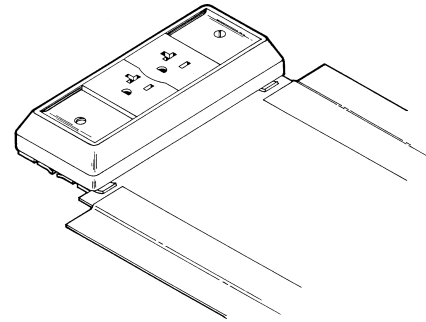


Figure 19 (Cont'd)

15. Spray primer along the edge of the top shield and on floor. Apply tape to both edges of the top shield.



16. Assemble skirt to fitting.



17. Install carpet squares.

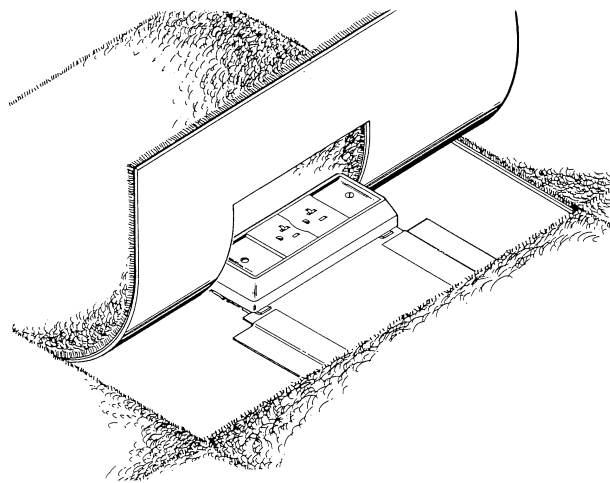
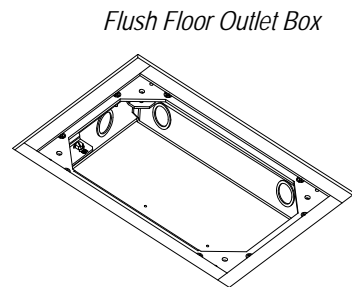
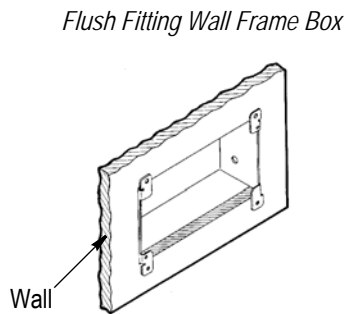


Figure 19 (End)

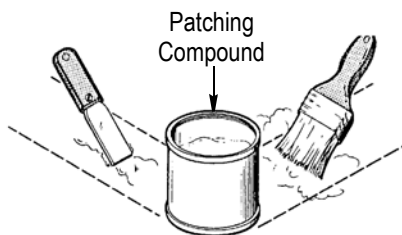
## 4.2. Communications System

Refer to Figure 20.

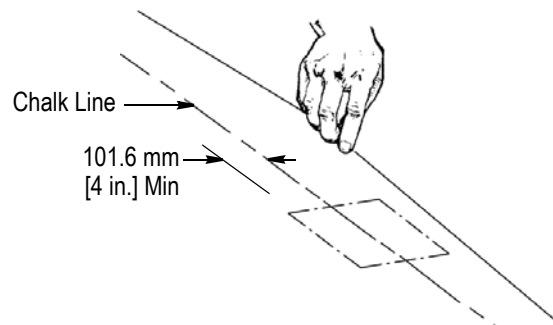
1. Locate and mount transition fittings.



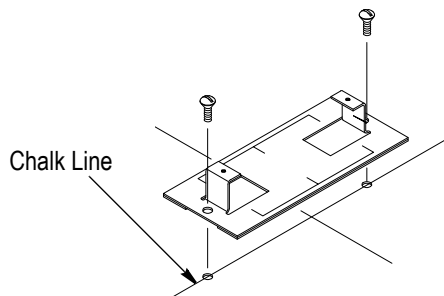
2. Scrape, patch, clean, and vacuum floor on cable path. Clean entire floor.



3. Lay out circuit centerlines on floor with chalk line.



4. Use mounting plates as patterns, mark screw hole locations. The floor fitting may be attached to the floor by adhesive-backed foam tape or by screws into outlet anchors. If outlet anchors are used, drill holes and thoroughly clean floor.

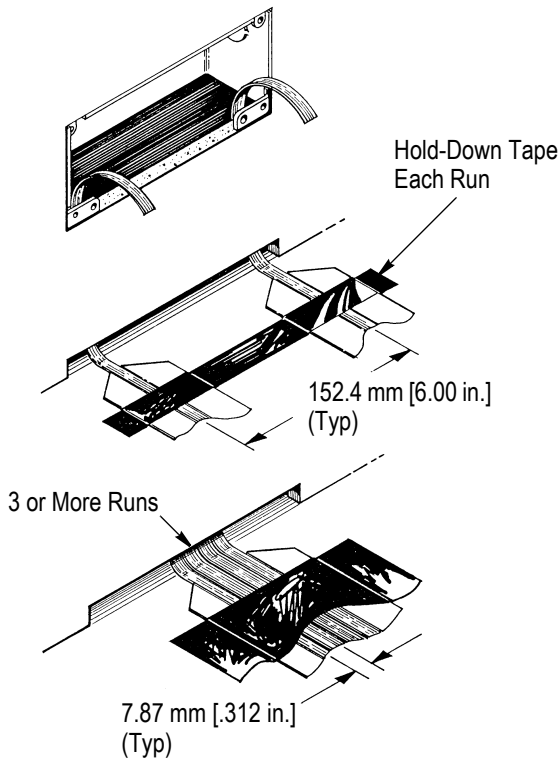


5. The twisted-pair cable does not require a top or bottom shield. Cross-tape as required along the cable run, placing the cable bow pointed up while stretching to remove any slack.

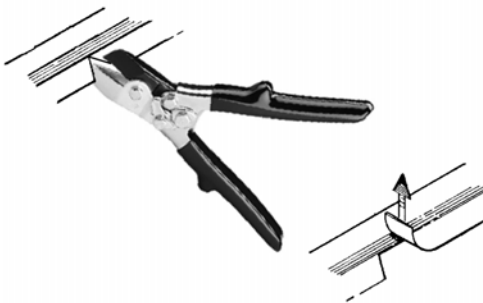


Figure 20 (Cont'd)

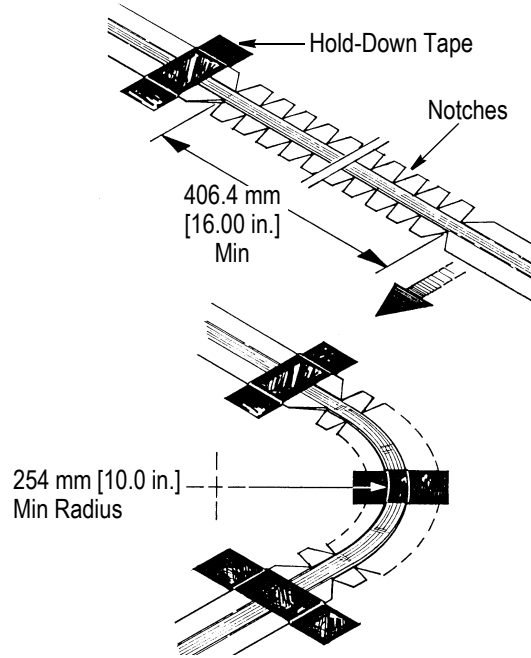
6. Flex the cable wings while removing cable from the reel. Start laying the cable from the distribution point (wall box or floor fitting). Where more than two cable runs must exit the distribution point, remove the inner "wing" and place the cables side by side. Then place tape over the area.



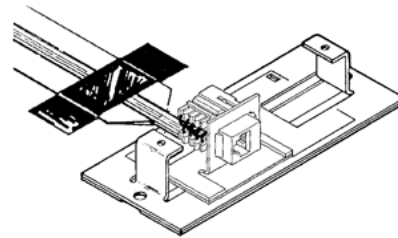
*To Remove Wings, Cut to Groove, Flex, and Tear Wing Back Slowly By Hand*



7. Directional changes are made by notching the wings and bending the cable to form a gradual turn.



8. Mate cable connectors and fasten cable at floor fitting.



9. Mount floor fittings, and install carpet squares.

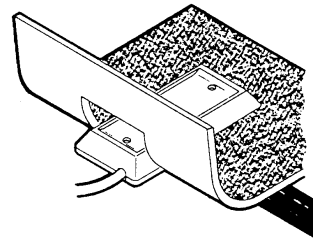


Figure 20 (End)

## 5. MATERIAL TAKE-OFF PROCEDURE

This procedure calculates the materials needed to install the system using the Power System Material Take-off List and the Communications System Material Take-Off List. Proceed as follows:

1. After completing the floor layout, assign identification numbers or letters to each power or communications circuit run exiting from each transition fitting.
2. Starting at the transition fittings, survey each circuit run for the components needed. Use the floor plan scale to determine the approximate length of cable, floor preparation, and top shield. Refer to Figure 21 for the components needed for each application. Then, using the appropriate Material Take-Off List, enter the quantity of each component under the assigned circuit number.

| APPLICATION                         | SPECIFY AND ORDER  |  |
|-------------------------------------|--|--|
|                                     | POWER  | COMMUNICATIONS   |
| Transition from round to flat cable | (1) Power Transition Block <i>and</i><br>(1) Wall or Floor Box with Cover<br><i>or</i><br>(1) Power Whip Kit   | (1) Communications Transition Block Kit <i>and</i><br>(1) Wall or Floor Box with Cover   |
| Install cable                       | Power Cable <i>and</i><br>Floor Preparation<br>(Approx 0.30 m [1 ft] per 0.30 m [1 ft] of Cable) <i>and</i><br>Top Shield<br>(Approx 0.30 m [1 ft] per 0.30 m [1 ft] of Cable) <i>and</i><br>Hold-Down Tape<br>(Approx 1 Roll per 23 m [75 ft] of Cable) <i>and</i><br>Spray Adhesive<br>(Approx 1 Can per 30.5 m [100 ft] of Cable) | Communications Cable <i>and</i><br>Hold-Down Tape<br>(Approx 1 Roll per m [1,800 ft] of Cable)<br><i>Optional:</i> Top Shield<br>(Approx 0.30 m [1 ft] per 0.30 m [1 ft] of Cable)   |
| Install floor outlet                | (1) 3-Conductor DCR<br><i>or</i><br>(1) 5-Conductor DCR <i>and</i><br>(1) 5-Conductor Adapter Housing Assembly   | (1) Low-Profile Floor Fitting <i>and</i><br>(1) Modular Jack Kit (per Cable)<br><i>or</i><br>(1) Multi-Media Kit <i>and</i><br>(1) Modular Jack Kit or SVGA Connector<br>(per Cable) |
| Tap cable                           | (1) Tap Connector (per Conductor) <i>and</i><br>(2) Top Shield Bonding Clips <i>and</i><br>(1) Insulator Kit <i>and</i><br>(1) Crimping Hand Tool  | —  |
| Splice cable                        | (1) Splice Connector (per Conductor) <i>and</i><br>(2) Top Shield Bonding Clips <i>and</i><br>(1) Insulator Kit <i>and</i><br>(1) Crimping Hand Tool   | —  |
| Create directional turn in cable    | (2) Top Shield Bonding Clips   | (1) Cable Notcher Tool   |
| Dead end cable                      | (1) Insulator Kit  | —  |
| Repair cable                        | (1) Floor Fitting Patch Kit  | —  |

Figure 21



3. Reading across the list, combine the totals of each component in each circuit run, and enter the total quantity in the last column.
4. Calculate the necessary scrap factor on components such as cable, floor preparation, top shield, tape, and spray adhesive. Allow for final variations that might occur on site.

Suggested guidelines for power applications are:

- Order equal amounts of cable, floor preparation, and top shield.
- For each roll of cable, order a set of cable splices and 1 insulator kit.
- For every 23 m [75 ft] of power cable, order 1 roll (approximately 54.86 m [180 ft]) of hold-down tape.
- For every 30.5m [100 ft] of power cable, order 1 can of spray adhesive.

Suggested guideline for communications applications is:

- For every 548.6 m [1,800 ft] of communications cable, order 1 roll (approximately 54.86 m [180 ft]) of hold-down tape.

5. Adjust final figures where possible to accommodate standard packaging of product available from the distributor.

## 6. REVISION SUMMARY

Revisions to this customer manual include:

- Removed AMP NETCONNECT logo
- Replaced transition block kits 1479384-1 and 1479985-1 with 2111682-1 in Paragraph 2.2.A, Figure 15, and Communications System Material Take-Off List
- Removed “with foam tape and lacing strip” from, changed name of 408-3368, and changed “multiple 4-pair” to “six 4-pair” in Paragraph 2.2.A, and removed Category 6 transition block from Figure 6

**POWER SYSTEM MATERIAL TAKE-OFF LIST**

| COMPONENT TYPE                                 | DESCRIPTION  | PART NUMBER       | CIRCUIT IDENTIFICATION |   |   | TOTAL QTY |
|--|--|-------------------|------------------------|---|---|-----------|
|  |  |                   | 1                      | 2 | 3 |           |
| Transition Fitting                             | Transition Block                                   | 554862-1          |                        |   |   |           |
|  | Flush-Mount Wall Box                               | 554805-1          |                        |   |   |           |
|  | Flush-Mount Wall Box Cover                         | 1-553292-[ ]♦     |                        |   |   |           |
|  | Flush-Mount Wall Box Kit                           | 1375045-[ ]♦      |                        |   |   |           |
|  | Surface-Mount Wall Box                             | 1375033-1         |                        |   |   |           |
|  | Surface-Mount Wall Box Cover                       | 1375034-[ ]♦      |                        |   |   |           |
|  | Surface-Mount Wall Box Kit                         | 1375032-[ ]♦      |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Single-Gang)           | 1375130-1         |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Double-Gang)           | 1375130-2         |                        |   |   |           |
|  | Surface-Mount Floor Cover Kit (Use with 1375033-1) | 2111420-[ ]♦      |                        |   |   |           |
|  | Power Whip Kit                                     | 554181-[ ]♦       |                        |   |   |           |
| Cable  | 3-Conductor Size 12 AWG                            | 3-553079-[ ]‡     |                        |   |   |           |
|  | 5-Conductor Size 12 AWG (Standard Ground)          | 3-553239-[ ]‡     |                        |   |   |           |
|  | 5-Conductor Size 12 AWG (Isolated Ground)          | 3-553820-[ ]‡     |                        |   |   |           |
| Outlet   | DCR Kit, Single Duplex, 3-Conductor, 20 A          | 553947-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Single Duplex, 3-Conductor, 15 A          | 554128-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Dual Duplex, 3-Conductor, 20 A            | 554192-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Dual Duplex, 3-Conductor, 15 A            | 554321-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Combination, 3-Conductor, 20 A            | 554142-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Combination, 3-Conductor, 15 A            | 554319-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Single Duplex, 5-Conductor, 20 A □        | 554186-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Single Duplex, 5-Conductor, 15 A □        | 554136-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Single Duplex, 5-Conductor, 20 A (IG) □   | 558650-[ ]♦       |                        |   |   |           |
|  | DCR Kit, Single Duplex, 5-Conductor, 15 A (IG) □   | 554592-[ ]♦       |                        |   |   |           |
|  | Adapter Housing Assembly, Black Circuit            | 553910-1          |                        |   |   |           |
|  | Adapter Housing Assembly, Red Circuit              | 554189-1          |                        |   |   |           |
|  | Adapter Housing Assembly, Blue Circuit             | 554188-1          |                        |   |   |           |
|  | Adapter Housing Assembly, Black Circuit (IG)       | 553909-1          |                        |   |   |           |
|  | Adapter Housing Assembly, Red Circuit (IG)         | 553908-1          |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Single-Gang)           | 2111353-1         |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Double-Gang)           | 2111353-2         |                        |   |   |           |
|  | Accessory  | Floor Preparation | 554123-[ ]‡            |   |   |           |
| Top Shield                                     |  | 553536-[ ]‡       |                        |   |   |           |
| Top Shield Bonding Clip                        |  | 553534-1          |                        |   |   |           |
| Spray Adhesive                                 |  | 6-553453-2        |                        |   |   |           |
| Hold-Down Tape                                 |  | 553481-1          |                        |   |   |           |
| Tap Connector                                  |  | 553455-2          |                        |   |   |           |
| Splice Connector                               |  | 553454-1          |                        |   |   |           |
| Insulator Kit                                  |  | 556411-1          |                        |   |   |           |
| Stainless Steel Bonding Clip                   |  | 554178-1          |                        |   |   |           |
| Floor Fitting Patching Kit                     |  | 1479151-1         |                        |   |   |           |
| Undercarpet PRO-CRIMPER III Hand Tool Assembly |  | 191392-1          |                        |   |   |           |
| Comprehensive                                  | Conference Room Kit (Category 5e)                  | 1479050-1         |                        |   |   |           |
|  | Conference Room Kit (Category 6)                   | 1933466-1         |                        |   |   |           |

♦ Suffix of part number indicates color of product.

□ Requires adapter housing assembly

IG is Isolated Ground

‡ Suffix of part number indicates length.

## COMMUNICATIONS SYSTEM MATERIAL TAKE-OFF LIST

| COMPONENT TYPE                           | DESCRIPTION  | PART NUMBER   | CIRCUIT IDENTIFICATION |   |   | TOTAL QTY |
|--|--|---------------|------------------------|---|---|-----------|
|  |  |               | 1                      | 2 | 3 |           |
| Transition Fitting                       | Transition Block Kit (Category 5e and Category 6)  | 2111682-1     |                        |   |   |           |
|  | Flush-Mount Wall Box                               | 554805-1      |                        |   |   |           |
|  | Flush-Mount Wall Box Cover                         | 1-553292-[ ]♦ |                        |   |   |           |
|  | Flush-Mount Wall Box Kit                           | 1375045-[ ]♦  |                        |   |   |           |
|  | Surface-Mount Wall Box                             | 1375033-1     |                        |   |   |           |
|  | Surface-Mount Wall Box Cover                       | 1375034-[ ]♦  |                        |   |   |           |
|  | Surface-Mount Wall Box Kit                         | 1375032-[ ]♦  |                        |   |   |           |
|  | Flush Fitting Wall Frame Box                       | 553739-2      |                        |   |   |           |
|  | Flush Fitting Wall Frame Cover                     | 553095-1      |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Single-Gang)           | 1375130-1     |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Double-Gang)           | 1375130-2     |                        |   |   |           |
|  | Surface-Mount Floor Cover Kit (Use with 1375033-1) | 2111420-[ ]♦  |                        |   |   |           |
| Cable                                    | 4-Pair UTP Type CMUC/CMH, Category 5e              | 1499119-[ ]‡  |                        |   |   |           |
|  | 4-Pair UTP Type CMUC/CMH, Category 6               | 1499539-[ ]‡  |                        |   |   |           |
| Outlet                                   | DCR Kit (3-Conductor, 20A)                         | 554142-[ ]♦   |                        |   |   |           |
|  | DCR Kit (3-Conductor, 15A)                         | 554319-[ ]♦   |                        |   |   |           |
|  | Low-Profile Floor Fitting Kits (2-Port) ●          | 554206-[ ]‡   |                        |   |   |           |
|  | Low-Profile Floor Fitting Kits (4-Port) ●          | 554287-[ ]‡   |                        |   |   |           |
|  | Low-Profile Multi-Media Floor Fitting Kit          | 1479542-1     |                        |   |   |           |
|  | SL Series Modular Jack Kit (Category 5e)           | 554084-1      |                        |   |   |           |
|  | SL Series Modular Jack Kit (Category 6)            | 1933377-1     |                        |   |   |           |
|  | Bracket  | 1499543-1     |                        |   |   |           |
|  | Flush Floor Outlet Box Kit (Single-Gang)           | 2111353-1     |                        |   |   |           |
| Flush Floor Outlet Box Kit (Double-Gang) | 2111353-2  |               |                        |   |   |           |
| Accessory                                | Hold-Down Tape                                     | 553481-1      |                        |   |   |           |
|  | Top Shield (Optional)                              | 553536-[ ]‡   |                        |   |   |           |
|  | Spray Adhesive (Optional)                          | 6-553453-2    |                        |   |   |           |
|  | Cable Notcher Tool                                 | 1725698-1     |                        |   |   |           |
| Comprehensive                            | Conference Room Kit (Category 5e)                  | 1479050-1     |                        |   |   |           |
|  | Conference Room Kit (Category 6)                   | 1933466-1     |                        |   |   |           |

♦ Suffix of part number indicates color of product.

● Requires modular jack and bracket

‡ Suffix of part number indicates length.