

POWER & CABLE MANAGEMENT

● POWER & CABLE Management

Power & Cable Management

Power Management

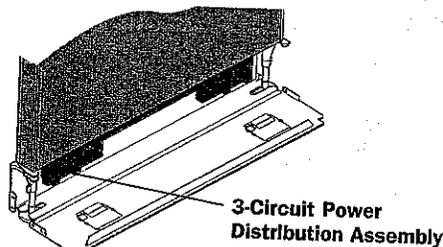
The UniGroup system accommodates all power and cable management needs through the Power Base electrical distribution system and cable pathways.

The Power Base Electrical Distribution System

The Power Base is a pre-wired electrical distribution system available in the panel base raceway. The Power Base is offered in the following options:

3-Circuit Power Base

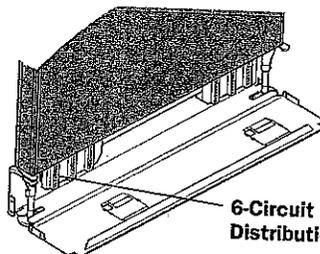
- as many as three separate 20-amp rated circuits from one power feed module
- 8-wire system enclosed in one power distribution assembly
 - 3 hot wires
 - 3 neutral wires
 - 1 common ground wire
 - 1 isolated ground wire
- separate neutrals – one dedicated to each circuit – are capable of carrying computer-quality power
- four receptacle sites (two on each side of the panel), except on 12" (305mm)-wide panels



3-Circuit Power Distribution Assembly

6-Circuit Power Base

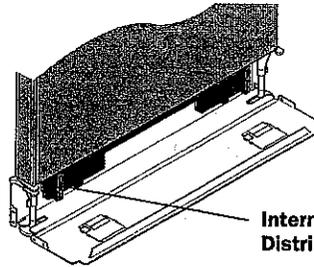
- as many as six separate 20-amp rated circuits from one power feed module
- 14-wire system enclosed in one power distribution assembly
 - 6 hot wires
 - 6 neutral wires
 - 1 common ground wire
 - 1 isolated ground wire
- separate neutrals – one dedicated to each circuit – are capable of carrying computer-quality power
- four receptacle sites (two on each side of the panel), on 24" (610mm) wide panels and wider



6-Circuit Power Distribution Assembly

International Power Base (Powered Panels Only)

- 220/240 Volt
- 3 separate circuits
 - 3 hot wires
 - 3 neutral wires
 - 1 common ground wire
 - 1 isolated ground wire
- four receptacle sites (two on each side of the panel), except on 12" (305mm)-wide panels
- optional steel-constructed raceway covers are available to meet required electrical codes
- separate power receptacles are available for the U.K., French, German, Australian, and Swiss plug types



- Hot wires carry electrical current from the power source to the equipment.
- Neutral wires are always used with hot wires to complete a circuit, carrying electrical current back to the power source.
- An isolated ground wire is electrically separate from the common ground.
- All circuits can access either common or isolated grounds.

Link

For details on additional Power Base solutions for Chicago and New York Electrical Code applications, refer to the Price List section.

Power Distribution Overview

UniGroup Power Base electrical components are designed to address four power distribution functions: building-to-panel (pages 122-123), within the panel (page 124), panel-to-panel (pages 124-128), and panel-to-electrical equipment (page 129).

Power Distribution: Building-to-Panel

There are two ways of distributing power from the building power source to UniGroup panels. Base feed modules supply building power from the floor, wall, or column. Top feed modules supply power from the space above a 10' (3.05m) or lower ceiling.

Minimum panel widths are 18" (457mm) for 3-Circuit Power Base applications, and 24" (610mm) for 6-Circuit.

3-Circuit concealed base feeds can be installed on 36" (914mm)-wide or wider panels.

6-Circuit concealed base feeds can be installed on 42" (1067mm)-wide or wider panels.

For single- and 3-Circuit base feeds, UniGroup panels offer four entry sites: two base raceway receptacle locations on each side of the panel.

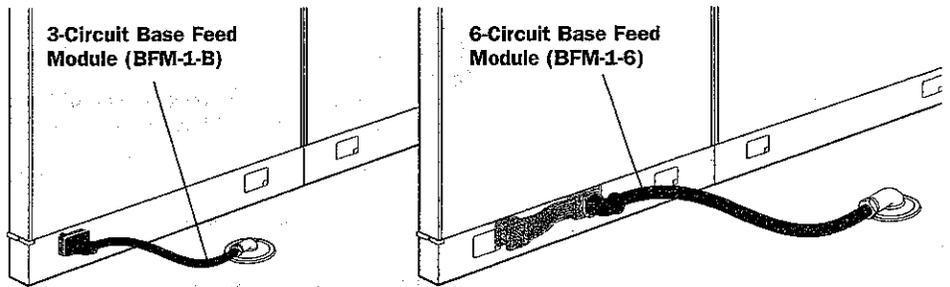
For 6-Circuit base feeds, the entry site must be field-cut into the base raceway cover.

The number of base feed modules needed for a workstation typical will depend on the amperage load.

3-Circuit base feed can be rotated 180° right to left.

Base Feed Modules

- carry power from the building distribution grid into straight, oblique, or gabled panels (power is not available in curved panels or doors)
- UniGroup meets Chicago Electrical Standards with separately specified products
- UniGroup meets California's O.S.H.P.D. electrical requirements with a breakaway version of the hardwire base feed



Base Feed Module Examples

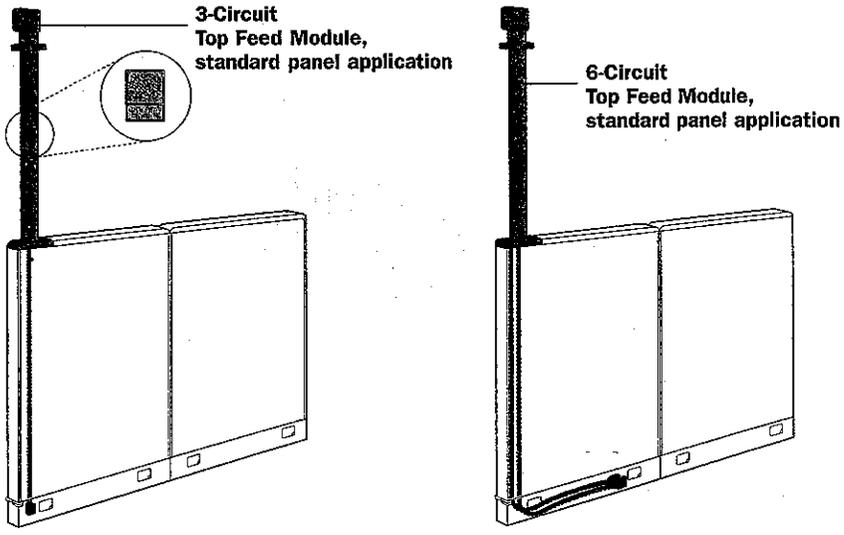
BASE FEED	DESCRIPTION
BFM-2-B	Single-Circuit, 20-amp cord feed (U.S.A. use only)
BFCA-6-B1I	Single-Circuit, international cord feed, available for circuit 1
BFCA-6-B2I	Single-Circuit, international cord feed, available for circuit 2
BFCA-6-B3I	Single-Circuit, international cord feed, available for circuit 3
BFCA-61-B1I	Single-Circuit, international cord feed (isolated ground), available for circuit 1
BFCA-61-B2I	Single-Circuit, international cord feed (isolated ground), available for circuit 2
BFCA-61-B3I	Single-Circuit, international cord feed (isolated ground), available for circuit 3
BFM-1-B	3-Circuit, hardwire connection (liquid-tight conduit)
BFM-10-B	3-Circuit, breakaway hardwire connection (seismic requirement)
BFM-6-B	3-Circuit, concealed hardwire connection
BFCA-6-BI	3-Circuit, international hardwire connection
BFM-1-6	6-Circuit, hardwire connection (liquid-tight conduit)
BFM-6-6	6-Circuit, concealed hardwire connection

Link Refer to the 3-Circuit Power Base and 6-Circuit Power Base Planning Guides for circuit loading and balancing details.

- Note** Minimum panel widths are 18" (457mm) for 3-Circuit Power Base applications, and 24" (610mm) for 6-Circuit.
- Note** Minimum panel height is 44" (1118mm).
- Note** Refer to the price list to specify the appropriate top feed module length for the intended application.
- Note** The number of top feed modules needed for a workstation cluster will depend on the amperage load.
- Note** Top feed modules cannot be used with open-frame, glazed, oblique, or gabled panels.

Top Feed Modules

- carry power from the ceiling into straight powered panels (power access is not available in curved panels or doors)
- feature a pre-wired vertical aluminum raceway with a separate channel for routing communication cable
- designed for use with ceilings 10' (3048mm) or lower
- enters the panel at either end of the panel's top cap



Top Feed Module Examples

TOP FEEDS	DESCRIPTION
TFM-4-B, -6-B, -8-B	3-Circuit, standard and ported panel applications
TFM-14, -16, -18, -20	6-Circuit, standard panel application

Link Refer to the 3-Circuit Power Base and 6-Circuit Power Base Planning Guides for circuit loading and balancing details.

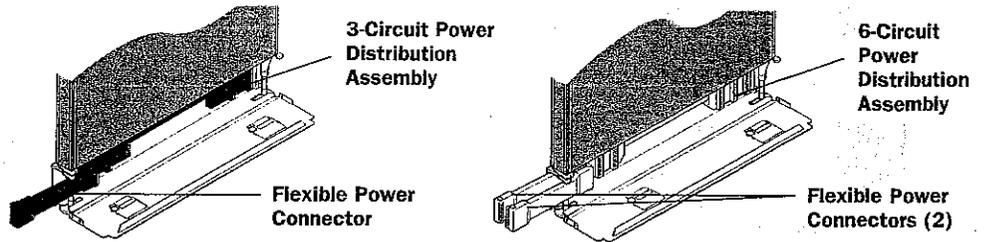
Power Distribution: Within the Panel

Power is distributed within the panel's base raceway.

International-use 3-Circuit retrofit kits are also available.

Base Raceway

- power distribution assemblies (PDAs) installed in the base raceway are included with powered panels; assemblies are shipped separately for New York City applications
- standard panels are available with 3-Circuit or 6-Circuit PDAs
- retrofit kits are available to convert non-powered panels to powered



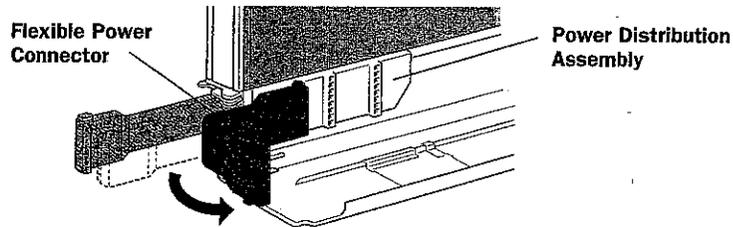
Power Distribution: Panel-to-Panel

Power is distributed between connected panels with three types of power connectors:

International-use flexible power connectors are also available.

Flexible Power Connectors

- included with powered panels; one for 3-circuit power applications, two for 6-circuit power
- completes electrical circuit between adjacent powered panels in straight or angled conditions
- inserts into either end of the power distribution assembly on either side of the raceway

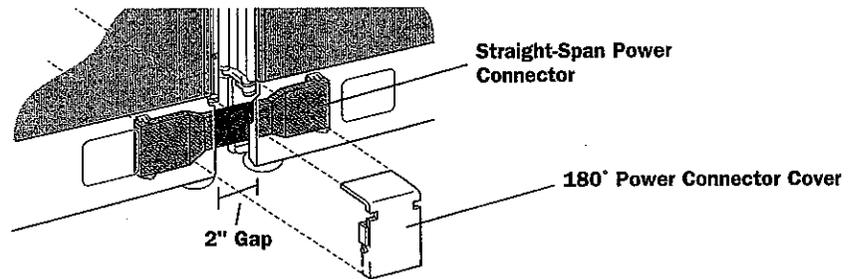


Power Distribution: Panel-to-Panel, continued

Note An International-use straight-span power connector is also available.

Straight-Span Power Connectors

- specified separately
- continues power in a straight panel run, through the 2" (51mm) gap created by the intersection of a non-powered panel(s) in a three-way or four-way panel configuration
- in 6-circuit applications, also continues power for the outside span in 90° panel configurations
- inserts into either end of the power distribution assembly on either side of the raceway

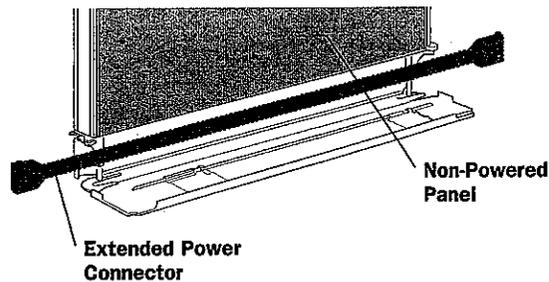


Note Extended power connectors are used to route power through straight or curved panels.

Note Extended power connectors cannot be coupled together.

Extended Power Connectors

- specified separately
- continues power through one or more non-powered panels installed between powered panels
- inserts into either end of the power distribution assembly on either side of the raceway



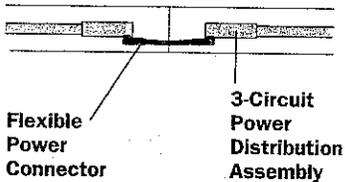
Link Refer to pages 126-128 for power connector application examples.

Flexible and Straight-Span Power Connector Applications:

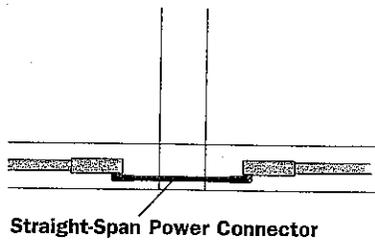
3-Circuit Power Base

These top view illustrations show how flexible and straight-span power connectors are used to continue power between 3-Circuit Power Base power distribution assemblies in adjacent panels:

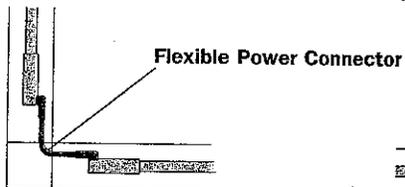
In-Line Condition



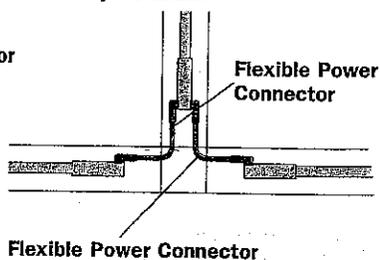
In-Line Condition



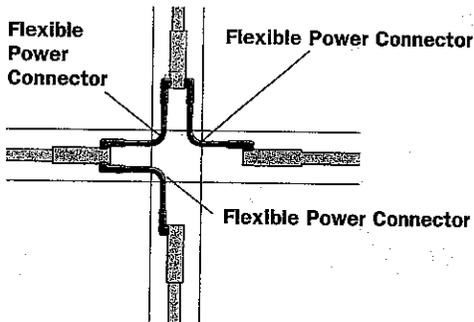
90° Corner Condition



Three-Way Condition



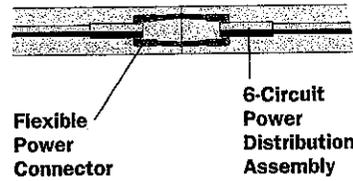
Four-Way Condition



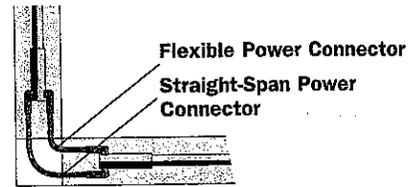
**Flexible and Straight-Span Power Connector Applications:
6-Circuit Power Base**

These illustrations show how flexible and straight-span power connectors are used to continue power between 6-Circuit Power Base power distribution assemblies in adjacent panels:

In-Line Condition



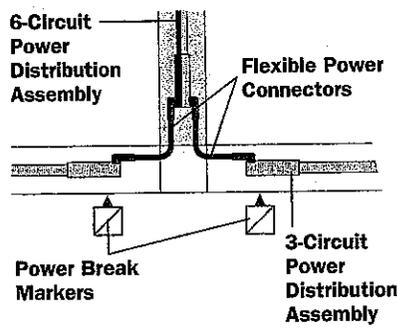
90° Corner Condition



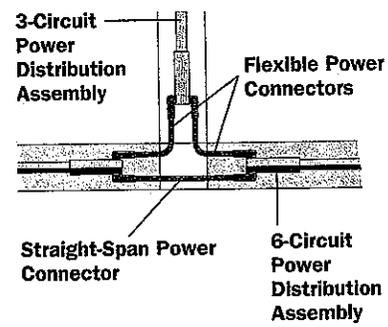
**Flexible and Straight-Span Power Connector Applications:
Interface of 6-Circuit Power Base and 3-Circuit Power Base**

These illustrations show how flexible and straight-span power connectors are used to continue power when 3-Circuit Power Base and 6-Circuit Power Base power distribution assemblies are interfaced in adjacent panels:

Three-Way Condition

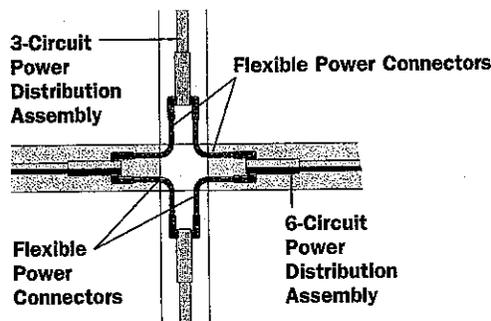


Three-Way Condition



Note Power Break markers are used to prevent installation of unauthorized or unplanned connectors.

Four-Way Condition



Note

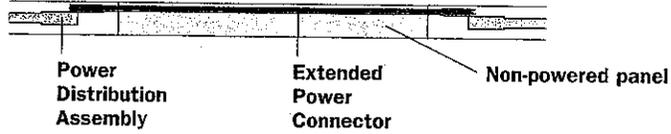
If the panel configuration is complicated, err on the long side when specifying connectors. The extra length can be hidden within the raceway cover.

Extended Power Connector Applications

Extended power connectors cannot be coupled together. Specify short, medium, or long width versions to address specific straight or 90° panel configurations.

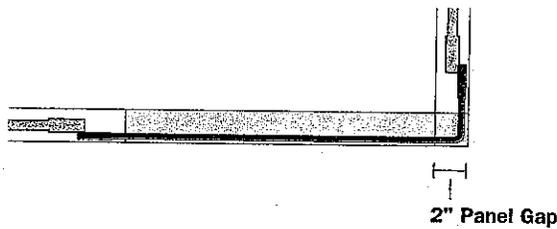
Short Width Version

- used in straight-line conditions only



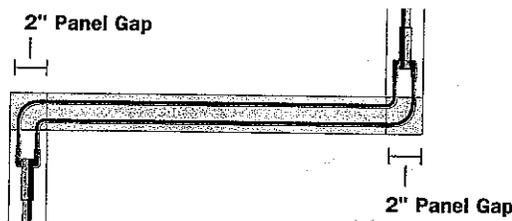
Medium Width Version

- used to continue power through non-powered panel(s) and the 2" (51mm) gap created by *one* 90° or three-way panel junction



Long Width Version

- used to continue power through non-powered panel(s) and the 4" (102mm) gap created by *two* 90° or three-way panel junctions



Power Distribution: Panel-to-Electrical Equipment

Panel-based power is accessed using 15 amp-rated power receptacles. Receptacles easily snap into openings located in the panel's base raceway.

International-use power receptacles are also available for British, French, German, Australian, and Swiss plug types.

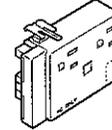
Power Receptacle Types

UniGroup offers three types of receptacles:

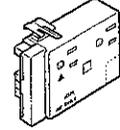
- 15 amp duplex, common or isolated ground: Two outlets with field-programmed access to any one of three circuits; typically specified for general electrical use.
- 20 amp simplex, common or isolated ground: one outlet with field-programmed access to any one of the three circuits; specified for heavy amp draw equipment.
- 15 amp simplex, common or isolated ground: one twist-locking outlet with field-programmed access to any one of three circuits; specified where circuit access is controlled with the special plug and receptacle configuration.
- 15 amp single, isolated ground with four-stage surge suppression (PCR-6-B): One outlet connects to an isolated ground conductor, with field-programmed access to any one of three circuits; typically specified for sensitive electronic equipment requiring protection from line noise and power surges.

**COMMON
GROUND**

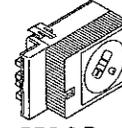
**ISOLATED
GROUND**



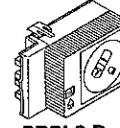
PRD-3-B



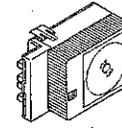
PRDI-5-B



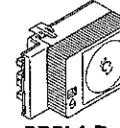
PRS-2-B



PRSI-2-B



PRS-1-B



PRSI-1-B

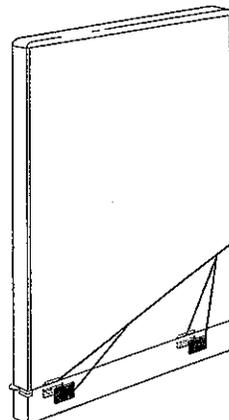


PCR-6-B

Each type of receptacle has a circuit selector switch on the reverse side. An indicator window on the receptacle's front face shows the programmed circuit number (1, 2, or 3). These features make it possible for facilities to easily move a receptacle from one furniture location to another and to change the receptacle circuit from one to another without replacing the receptacle.

Link

Refer to page 62 and 63 for information on worksurface-mounted Docking Modules and Power Modules providing worksurface-height receptacle access.



Power Receptacle Sites – Base Raceway
(4 per powered panel)

Power Planning Overview

Power Base products are listed for use with multiple building power sources. Because each circuit has a separate neutral conductor, the power sources used may be from standard building power or other quality enhanced power systems such as an uninterruptible power supply. Individual power sources must be grounded power sources that must be connected to the same grounding electrode or a single grounding electrode system. Be sure of ground continuity when using uninterruptible power supplies and isolation transformers.

Power Planning Guidelines

Some limitations of the Power Base system are determined by regulatory recommendations and rules:

- The National Electrical Code (NEC) *recommends* that a circuit length be limited so that the voltage drop does not exceed 5% (210-19)
- The NEC limits the amount of continuous load to 80% of the circuit rating (384-16). Therefore, the total amperage drawn on any Power Base circuit should not exceed 16 amps if equipment (computers, lighting fixtures, etc.) is drawing power continuously for three or more hours. Equipment requiring a high initial amperage draw to be activated (paper shredders, laser printers, etc.) should be placed on a circuit limited to a 16-amp capacity. A single circuit may also be dedicated to high-amperage equipment (photocopiers, CAD equipment, etc.).
- The number of receptacles – maximum 13 per circuit – is limited by calculating the current drawn from specific equipment (based on nameplate rating) or – if the load is not known – a minimum of 180 Volt-Amperes (220-3) per receptacle
- The NEC also states that multiple power sources within a building must use the same grounding electrode (250-54) and that the ground path have sufficiently low impedance to facilitate the operation of circuit protective devices (250-51)

Regard local codes carefully, because they may dictate the limit of receptacles allowed on each circuit below the National Code's limit. Within local code guidelines, limit the receptacle installation to the minimum necessary to power the equipment in the current workstation plan. Avoid providing receptacles for projected needs, because surplus receptacle availability may encourage use of unauthorized equipment and lead to electrical overloads.



Refer to the 3-Circuit Power Base and 6-Circuit Power Base Planning Guides for circuit loading and balancing details.

Cable Management

UniGroup addresses the distribution of communication cables with panel-integrated cable pathways and access points. A separately specified horizontal Expanded Top Cap Raceway is also available (see page 133).

Cables can be routed through these pathways:

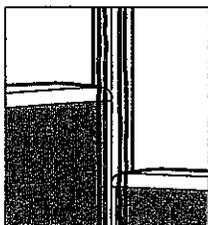
- panel base pathway **A**
- cable management pole channel **B**
- top feed module channel **C**

Cables can be accessed at these locations:

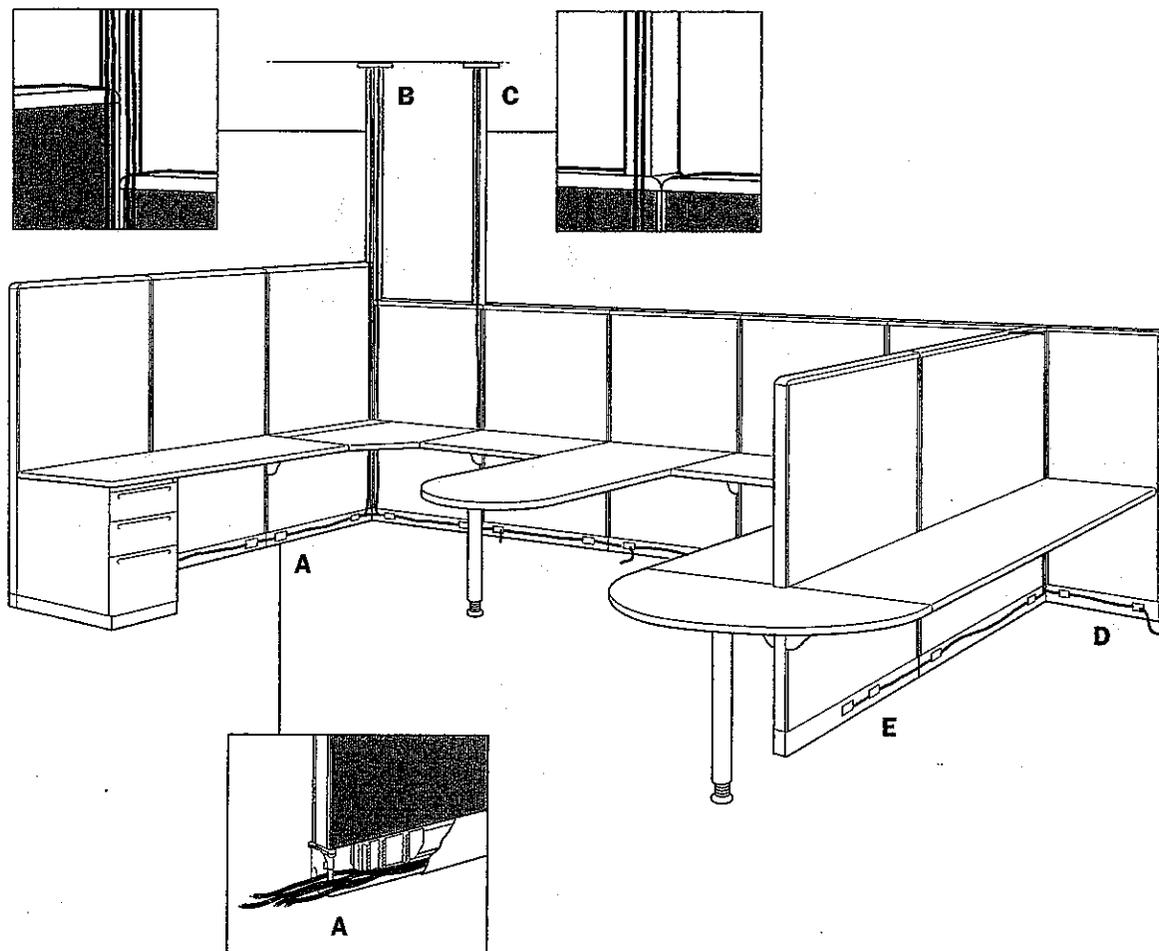
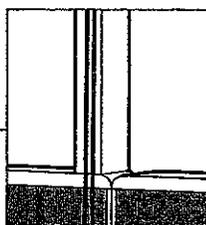
- up to four base raceway receptacle sites per panel (using bottom corner of receptacle) **D**
- up to two communication ports in ported base raceway covers (per side) **E**

Link Refer to Haworth's Guide to Cable Management brochure for more information about communication cable specification and planning.

Cable Management Pole Channel with Panel Vertical Pathway **B**



Top Feed Module Channel with Panel Vertical Pathway **C**



Base Pathway **A**

Communication Cable Routing

UniGroup panels normally accept building cable infeeds from either floor or ceiling locations. Floor infeeds go directly to the base pathway at a variety of locations, and ceiling infeeds offer several options.

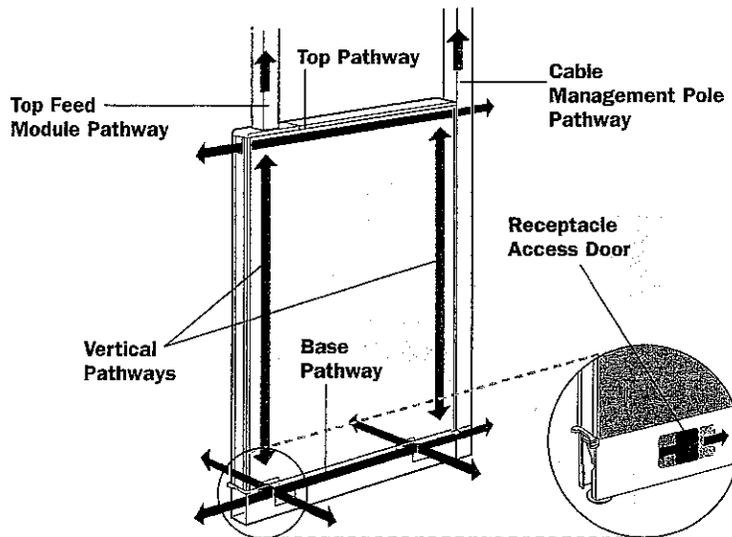
UniGroup panels have three integrated pathways for cable routing throughout the system installation. There are four access points in the base raceway cover, and two more at the open ends of the raceway. From these access points, cables can be routed through the base cable pathway or up through the vertical cable pathways.

Cable management poles and top feed modules integrate with the panel's top, base, and vertical pathways to route cables from ceiling infeeds.

Cable Capacities – 2" (51mm)-thick Standard Panel

The chart below shows the number of Category 5, 4-pair unshielded twisted pair (UTP) cables that can be routed through specific pathways of the 2" (51mm)-thick standard panel. Cable capacities are based on 0.16", 0.20", and 0.25" diameter cables at 60% and 40% fill capacity.

TIA/EIA 569A suggests a cable fill of 40% for planning and up to 60% for unplanned additions.



Pathway Capacities

Pathway Capacities	Cable Pathway Area		60% FILL			40% FILL		
	SQ. IN.	SQ. MM.	0.16"	0.20"	0.25"	0.16"	0.20"	0.25"
			Cable Count			Cable Count		
Example:								
One square inch pathway	1.0	645	30	19	12	20	13	8
2" Standard Panel								
Base raceway, powered	1.1	710	33	21	13	22	14	9
Base raceway, non-powered	5.6	3610	167	107	68	111	71	46
Vertical pathways (2/panel, 0.9 each)	1.8	1160	54	34	22	36	23	15
Top feed module	0.9	580	27	17	11	18	11	7
Cable management pole	2.8	1810	84	54	34	56	36	23
Receptacle tab opening	0.4	260	12	7	4	8	5	3
Expanded top cap (optional)	2.9	1870	87	55	35	58	37	24

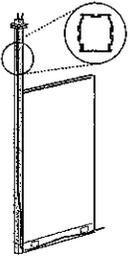
Link

Refer to page 135 for more information about the ported raceway covers.

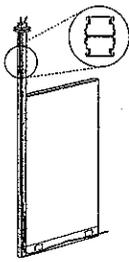
Note A four-way condition can be met with a three-way cable management pole.

Ceiling-height Cable Management Poles — One- and Two-Channel

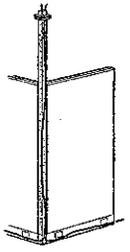
- carry cables from the space above the ceiling to panel pathways
- available in 10' (3048mm) length
- made with two-piece construction
- dedicated to communication and data cabling only; offering more capacity than the top feed module
- two-channel design provides access to cables on both sides of a panel from adjacent workstations — at expanded top cap height and at the base raceway cover



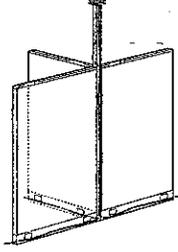
End-of-Run Condition (with One Channel detail)



End-of-Run Condition (with Two Channel detail)



Two-Way 90° Condition

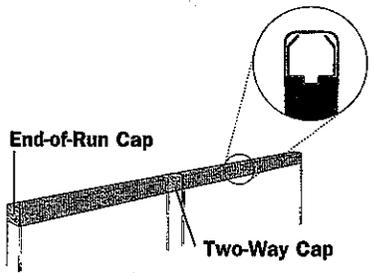


Three-Way Condition

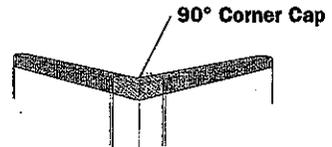
Expanded Top Cap Raceway (Optional)

- provides horizontal cable management at top of panel
- increases the cable storage capacity of a UniGroup panel, accommodating 55 0.20" Category 5, 4-pair unshielded twisted pair (UTP) cables based on 60% fill capacity
- replaces panel's top cap and adds 2" (51mm) to the panel's height
- five (5) separately specified finish caps are used to join expanded top caps in a panel run

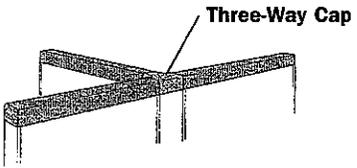
Expanded Top Cap Raceway Applications



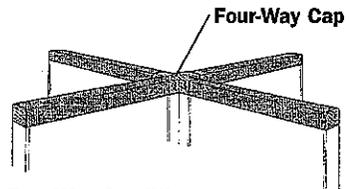
In-line 180° Condition



Two-Way 90° Condition



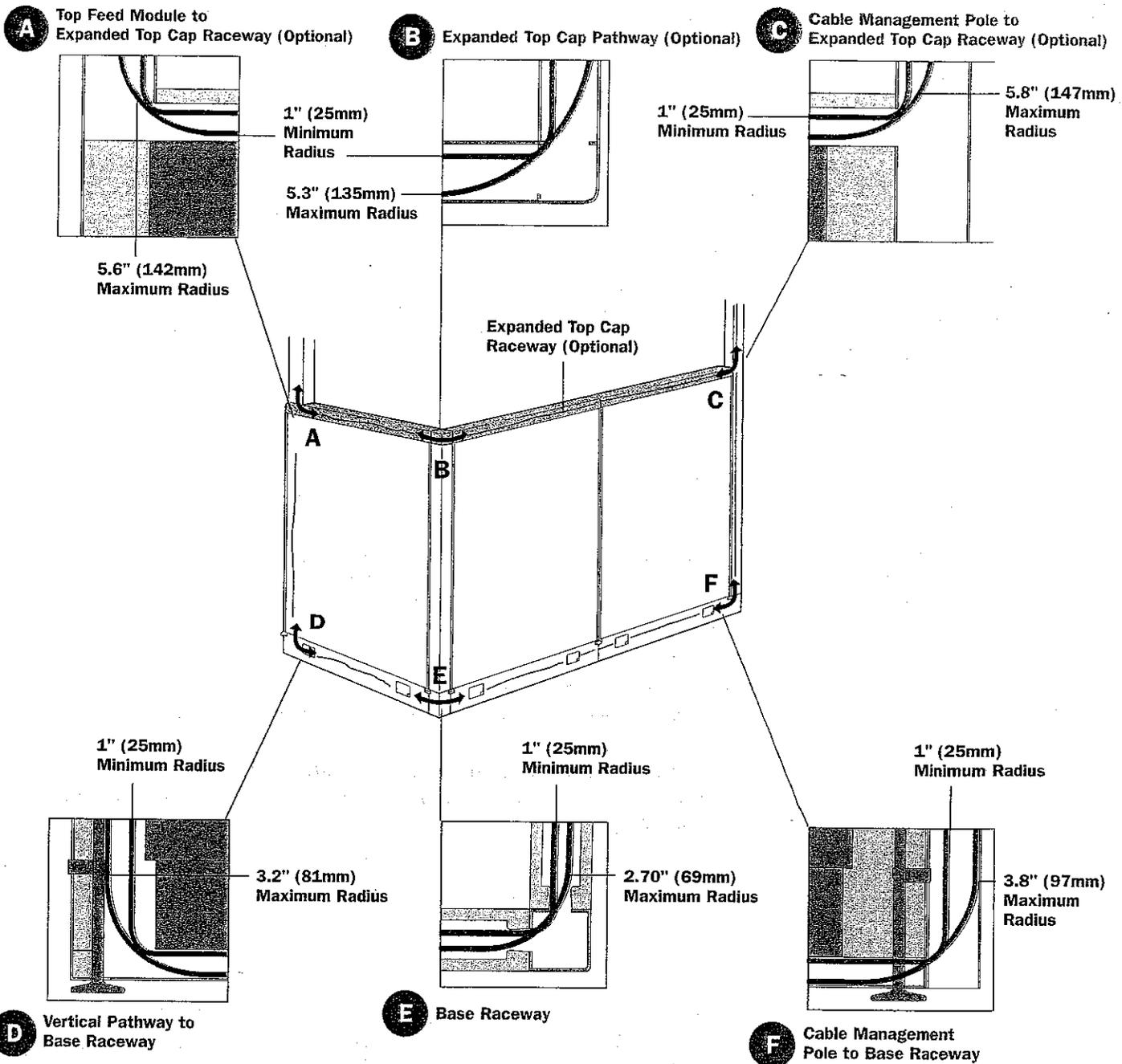
Three-Way Condition



Four-Way Condition

Cable Bend Radius

When planning the routing of communication cables through UniGroup panels, specifiers must consider the bend radius at the panel-to-panel connections and within the panel pathways. These illustrations depict the minimum and maximum bend radii for cables in UniGroup panels:



POWER & CABLE MANAGEMENT CABLE BEND RADIUS

Communication Cable Access

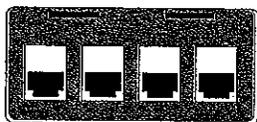
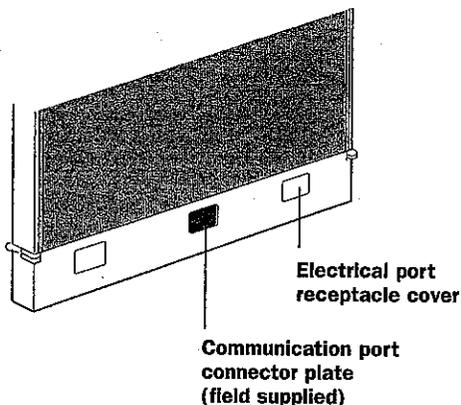
UniGroup panels provide access in ported (base) raceway covers where communication cabling can be terminated to separately specified connector plates.

Order panels with no raceway covers when separately specifying Ported (Base) Raceway Covers.

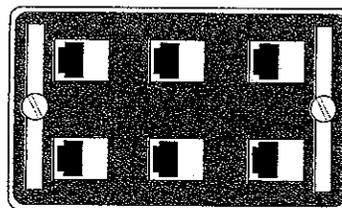
Data plates (i.e., modular furniture and single gang face plates) must be specified separately thru the DataThing price list or field supplied.

Ported (Base) Raceway Covers

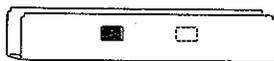
- retrofit to UniGroup powered panels
- available in six variations to accommodate different connector modules (see examples below)
- information plate opening measurements: 1.38" (35mm) high x 2.71" (69mm) wide, with snap-in installation
- wall outlet (single-gang) plate opening measurements: 2.25" (57mm) high x 3.75" (95mm) wide, with screw and backer plate installation



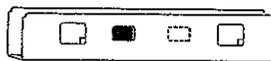
Information Plate Example (snap-mounted)



Wall Outlet (Single-Gang) Plate Example (screw and backer plate installation)



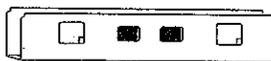
One information plate opening* (non-powered condition)



One information plate opening* (powered condition)



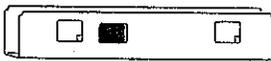
Two information plate openings (non-powered condition)



Two information plate openings (powered condition)



One standard wall outlet (single-gang) opening* (non-powered condition)



One standard wall outlet (single-gang) opening* (powered condition)

* Single side communication port opening shows port offset from center of panel to allow back-to-back connector installation.

IDEA STARTERS

