

Knurr® Miracel™ Rack

User Manual



IMPORTANT SAFETY GUIDELINES

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be closely followed during installation and maintenance of this unit. Read all safety instructions before attempting to assemble and install the Knurr Miracel. Adhere to all warnings on the unit and in this manual. Follow all instructions.

Read all warnings, cautions and instructions in this before attempting to move, lift, remove packaging from or preparing unit for installation.

This product is designed for commercial / industrial use only. This product is not intended for use with life support or other U.S. FDA designated “critical” devices. Maximum load must not exceed that shown on the Knurr Miracel rating label.

Operate this product in an indoor environment at an ambient temperature of 65°F to 105°F (23°C to 40°C). Install in a clean environment, free from moisture, flammable liquids, gases and corrosive substances.

This equipment complies with the requirements of the EMC directive 89/336/EEC and the published technical standards. Continued compliance requires installation in accordance with these instructions and the use of manufacturer-approved accessories with output cables not exceeding 30 ft. (10m) in length. Use a shielded cable for external communications interface.

Ensure that the Knurr Miracel has proper ventilation. Never block or insert objects into the ventilation holes or other openings. Maintain a minimum clearance of 12 inches (305mm) in front, rear and top of the Knurr Miracel for proper air flow and cooling.

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1.0 INTRODUCTION

The highly versatile Knurr Miracel provide an organized, secure, controlled environment in a single system for sensitive electronic equipment.

The Knurr Miracel is available in two heights—42U and 47U. Those cabinet heights are available in these widths and depths:

42U Cabinet

24" Wide x 40" Deep (600mm x 1000mm) outside dimensions

24" Wide x 44" Deep (600mm x 1100mm) outside dimensions

24" Wide x 48" Deep (600mm x 1200mm) outside dimensions

32" Wide x 44" Deep (800mm x 1100mm) outside dimensions

32" Wide x 48" Deep (800mm x 1200mm) outside dimensions

47U Cabinet

24" Wide x 40" Deep (600mm x 1000mm) outside dimensions

24" Wide x 44" Deep (600mm x 1100mm) outside dimensions

24" Wide x 48" Deep (600mm x 1200mm) outside dimensions

32" Wide x 44" Deep (800mm x 1100mm) outside dimensions

32" Wide x 48" Deep (800mm x 1200mm) outside dimensions

Assembly instructions in this manual cover the various configurations of the Knurr Miracel, either a single a rack for simple equipment organization or a suite of Knurr Miracel racks.

2.0 MAJOR COMPONENTS

A Knurr Miracel may have any or all of the components addressed in this section, depending on its configuration.

2.1 Frame

The base of all Knurr Miracel products is the frame. The Knurr Miracel features a fully assembled, extruded aluminum frame with a patented T-slot that permits many of the cabinet's tool-less mounting features.

The Knurr Miracel comes in two heights: 42U and 47U. The racks are available in widths of 24 and 32 inches (600mm and 800mm) and depths of 40, 44 and 48 inches (1000mm, 1118mm and 1200mm).

The racks can accommodate shelf- or rack-mounted equipment on 19-inch (483mm) adjustable rails. See **Knurr Miracel model numbers on page 17** and illustrations for measurements of different models.

Cutouts in the top covers permit customer cable entry. The top of the Knurr Miracel also is drilled for mounting a Liebert XDV top-mount cooling unit.

2.2 Enclosure

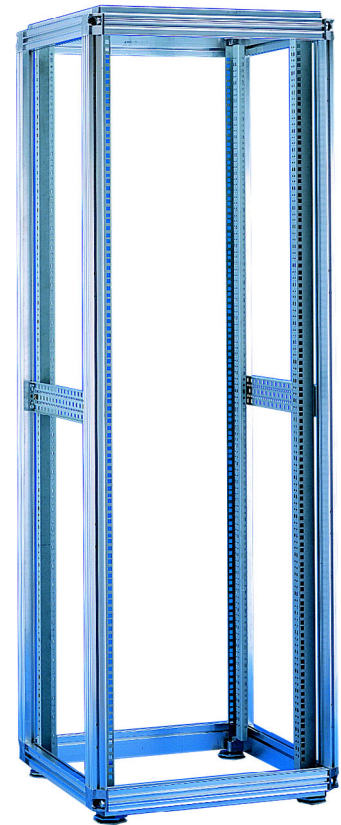
2.2.1 Doors

All doors are framed from sheet metal and have hexagonal perforations. The perforations ensure maximum airflow for efficient cooling. A multi-point latch is standard. An optional key lock is available for added security.

Doors are available in single- or dual-door designs for easier access. All doors are removable and designed for reversible (left/right) hinging (see **3.9.1 - Remove the Door** and **3.9.2 - Reverse the Door**). Each type of door swings 180 degrees.

2.2.2 Side Panels

Side panels are fashioned from sheet metal. Quarter-turn fasteners outside the unit permit removal of all panels for maintenance while preserving internal security during normal operation.



3.0 INSTALLATION

3.1 Inspection

Upon receiving a Knurr Miracel, examine the packaging for any signs of mishandling or damage. If any damage is noted, notify your local Liebert representative and your carrier immediately.

3.2 Required Setup Equipment

The following tools are required to set up a Knurr Miracel:

- pallet jack
- utility knife
- 1/2" (13mm) ratchet or wrench
- 10mm wrench (for adjusting casters)
- spanner (for adjusting leveling feet)
- 4mm hex wrench
- hammer

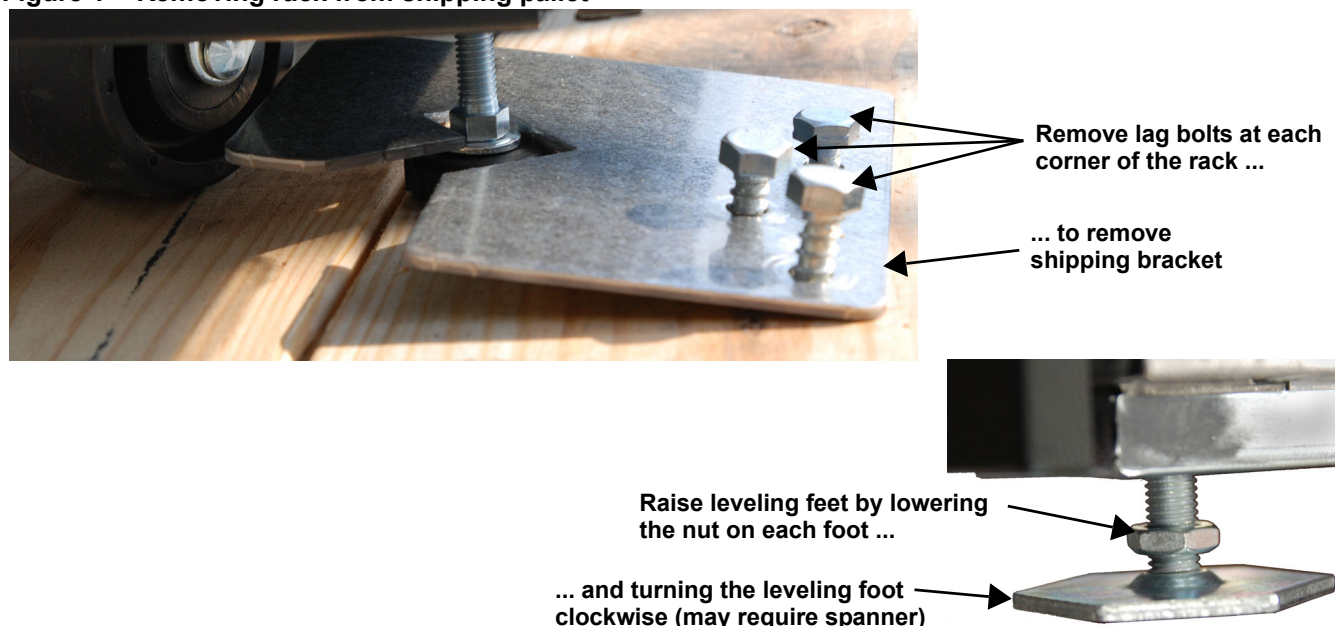
3.3 Unloading the Knurr Miracel

Before unloading a Knurr Miracel, note the weight of the model (see **8.0 - Specifications**). Use at least two people when moving the unit.

3.3.1 Unloading a Knurr Miracel

1. Using a pallet jack, move the Knurr Miracel near the desired installation location.
2. Cut the shipping bands with a utility knife and remove all packaging.
3. Remove the three lag bolts securing shipping brackets each corner of the Knurr Miracel to the shipping pallet (see **Figure 1**).
4. Remove the metal shipping brackets.
5. Use a pallet jack or forklift to raise the Knurr Miracel off the shipping pallet.
6. Slide the shipping pallet out from under the rack.
7. Raise the leveling feet so that the rack will rest on the casters.
8. Roll the rack to the installation area.

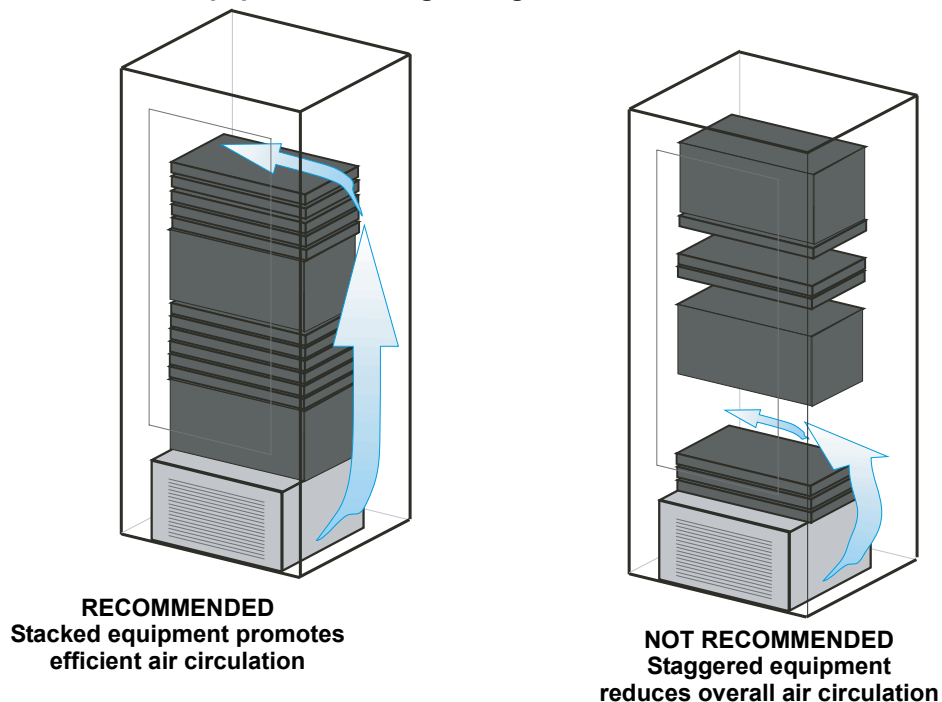
Figure 1 Removing rack from shipping pallet



3.3.2 Equipment Layout

To keep the unit's center of gravity as low as possible, install equipment from the bottom up, starting with the heavier units. Leave any unused space at the top of the enclosure.

Figure 2 Recommended equipment stacking arrangement



CAUTION

After equipment is installed, the Knurr Miracel may have a high center of gravity. Avoid tipping the unit when it is being moved.

3.3.3 Blanking Panels—Optional

Optional blanking panels are available to block off open sections of the rack. Panels are available in heights of 1U, 2U, 3U and 10U. Tools are not required for installation.

3.4 Mounting Hardware

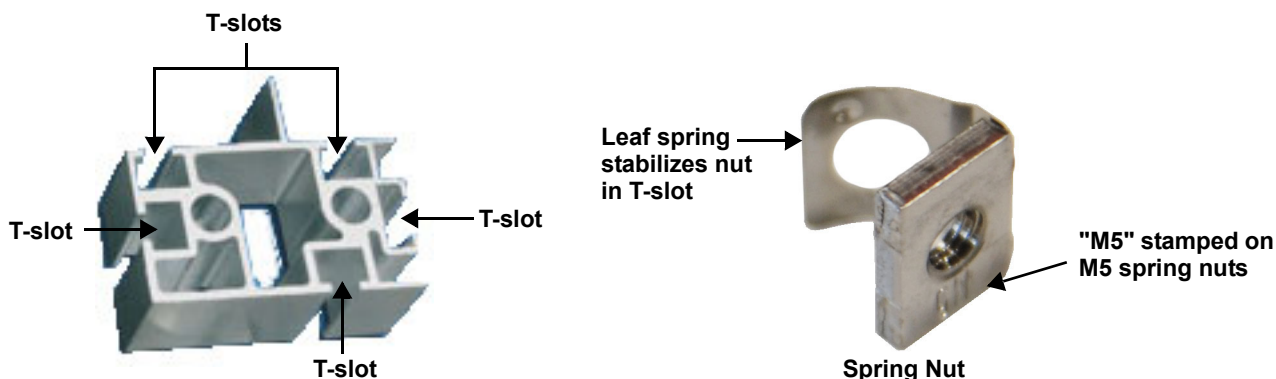
Hardware to install all options is shipped with the Knurr Miracel. Bags of nuts, screws, washers and other mounting hardware is attached to the frame. Some mounting hardware ships inside the box containing the optional equipment.

- 50 each: 10-32 cagenuts, screws and rosette washers
- 20 M5 spring nuts
- 20 M5 screws
- Two power strip mounting brackets and mounting hardware

3.5 Basic Hardware Installation—Spring Nuts

The Knurr Miracel is designed with T-slots on exposed faces of the aluminum rails. These T-slots and Knurr's spring nuts permit mounting equipment at any distance desired (see **Figure 3**). The spring nuts accept wing screws and thumb screws used to attach most equipment and options to the rack's aluminum frame members.

Figure 3 T-slot configuration and spring nut

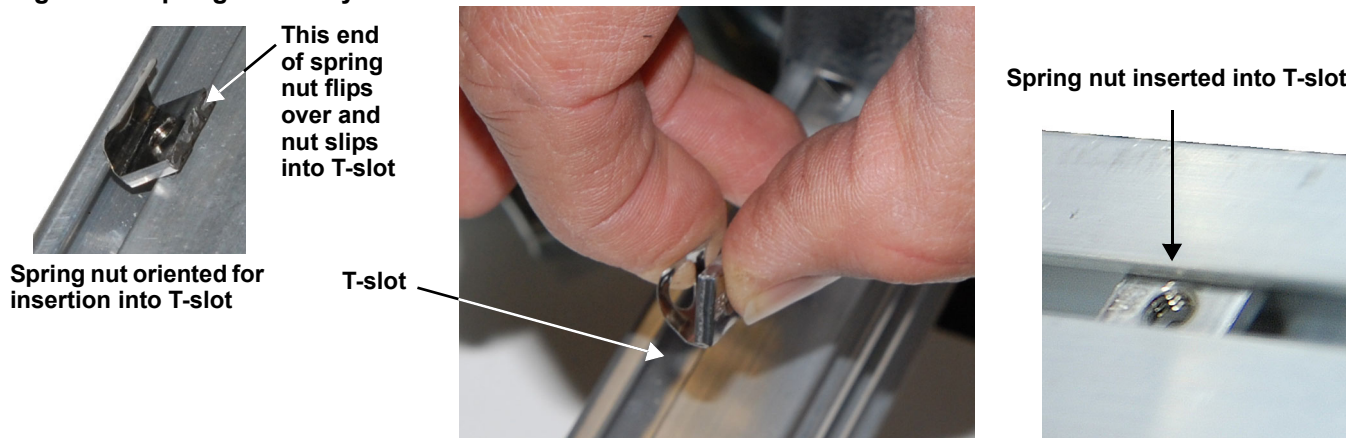


3.5.1 Inserting a Spring Nut

To insert a spring nut into a T-slot, compress the spring on the back of the nut and slip it into the T-slot (see **Figure 4**). If the spring nut does not flatten out into the slot, press down on the edge of the nut that is too high.

Properly installed spring nuts have the nut section on the outer side of the T-slot (see **Figure 4**). The leaf spring holds the nut in place while a screw is threaded and tightened. The spring nut can be pressed down with a small tool and moved for better alignment.

Figure 4 Spring nut ready for insertion



3.6 Frame and Enclosure Configurations

3.6.1 Internal Mounting Rails

The Knurr Miracel can accommodate rack-mounted or free-standing computer and network equipment. The unit features 19-inch (483mm) rack rails. These internal front- and rear-mount rails are designed in accordance with the EIA 310D rack standard. The rails are adjustable for installing equipment of different sizes.

Mounting hardware compatible with the rails includes a fixed shelf, fixed rails, a pullout shelf, and keyboard trays. Each of these optional kits is supplied with installation hardware.

3.6.2 Front- and Rear-Mount Rails—Position and Attach

Front- and rear-mount rails are installed in the Knurr Miracel by hanging the rails in the aluminum frame's T-slot and securing them with thumb screws and spring nuts in the T-slot. The spring nuts can be moved to change the front-to-rear distance between the rails. The rails are installed at the factory at 29.13inches (740mm).



NOTE

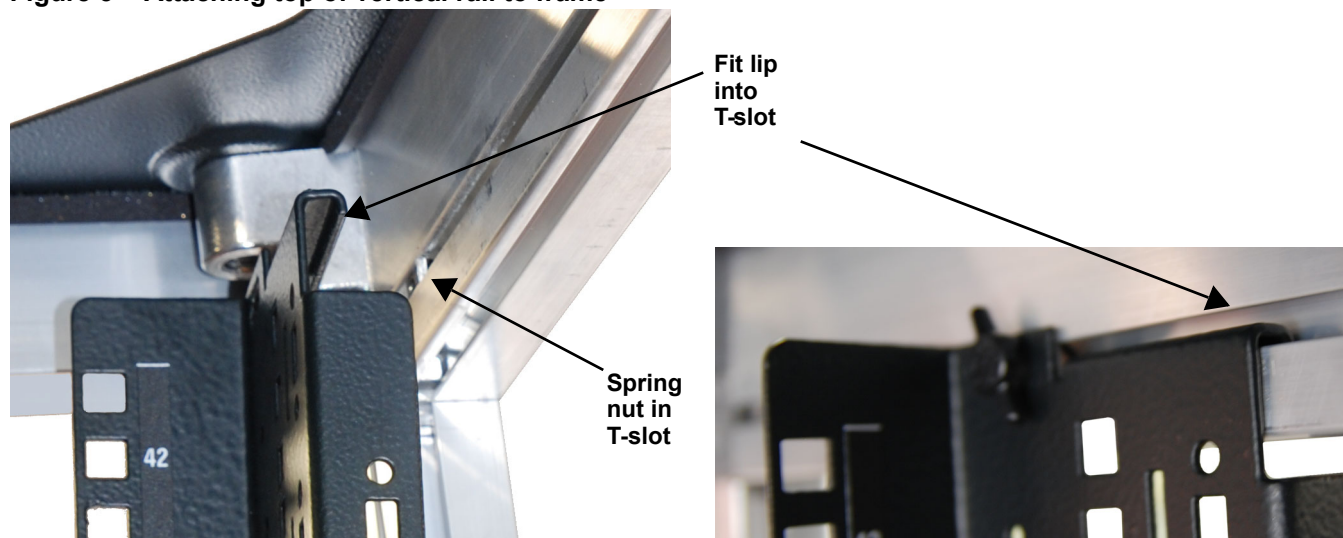
The front and rear rails must be installed at a 90-degree angle to the upper and lower aluminum frame members. The front rails must be the same distance from the front of the rack; the rear rails must be the same distance from the rear of the rack.

If those conditions are not met, equipment and optional features will be difficult to install.

To position the rails:

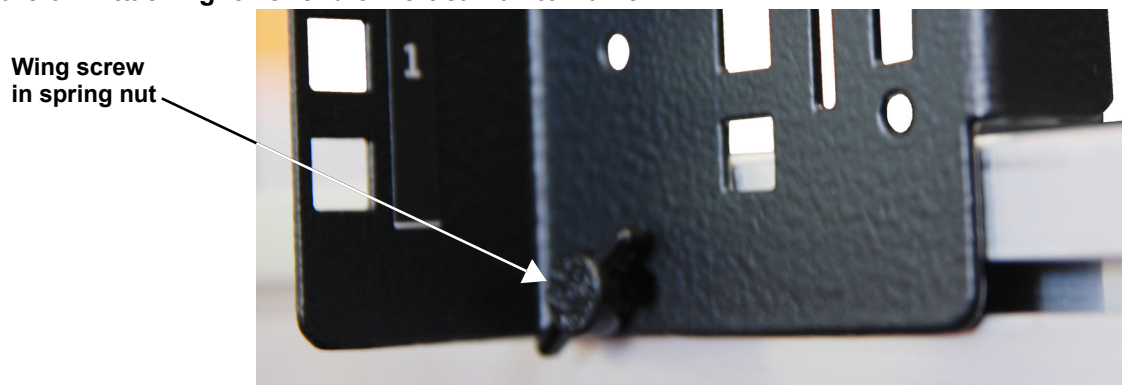
1. Determine the proper location of the rails.
2. Use either the spring nuts from the factory installation of the rails or slip a spring nut into the T-slot on the inner surface the frame at the appropriate location.
One spring nut is needed in the top frame member and one in the bottom frame member.
3. Hold the rail at the desired position, angling it so that the lip on the top of the rail fits into the channel on the top frame member.
4. Secure the rail by inserting wing screws into the spring nuts and tightening them.

Figure 5 Attaching top of vertical rail to frame



5. Insert a wing screw through the hole in the lower end of the rail and screw it tightly into the spring nut (see **Figure 6**).

Figure 6 Attaching lower end of vertical rail to frame



6. Repeat for each of the three remaining rails.

3.7 Options—Installation

Once the rails are installed in the Knurr Miracel, the unit is ready to accept optional equipment.

3.7.1 Fixed, 1U Shelf Installation

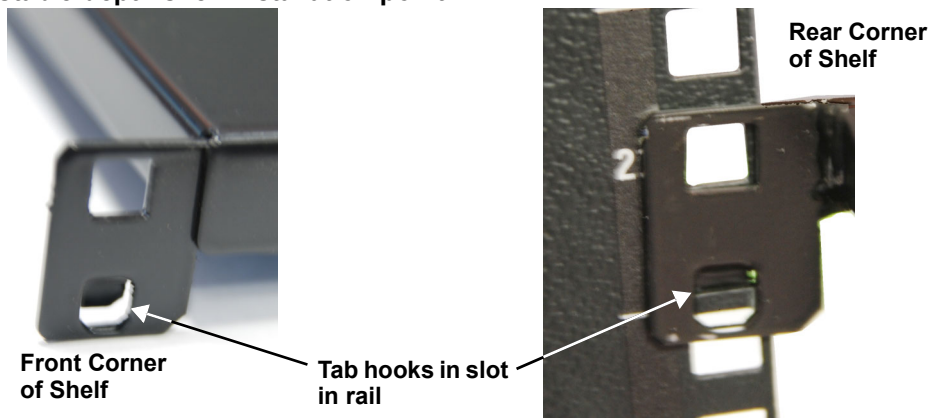
The fixed, 1U shelf has tabs on the front and rear that slip into square holes in the rails.



NOTE

Do not tilt the back of the adjustable-depth shelf down without securing the extensions. The extensions do not have a positive stop fixture to keep the extensions from falling out.

Figure 7 Adjustable-depth shelf installation point



3.7.2 2U Locking Drawer Installation

An optional 2U drawer, P/N 011139278, with a keyed lock to prevent opening by unauthorized personnel is available (see **Figure 8**). The drawer has a static load rating of 30 lb. (13.6kg). The drawer mounts with four bolts on the rack's front rails.



NOTE

This operation may require two people.

To attach the locking drawer:

1. Determine the mounting position for the drawer.
2. Insert two cagenuts at the appropriate height in each of the front vertical rails. The nuts must be at the same height as determined by the numbered mounting holes on the vertical rails.
3. Support the drawer so that the metal flanges on either side of the drawer are in front of the rail.
4. Insert a thumb screw with a lock washer through a slot in a flange on the drawer.
5. Thread it into the cagenut and tighten firmly, using a hex wrench, if necessary.
6. Repeat **Steps 4** and **5** to secure the drawer at all four mounting holes in the flanges.

Figure 8 Locking drawer



3.8 Power Distribution Unit Mounting Hardware

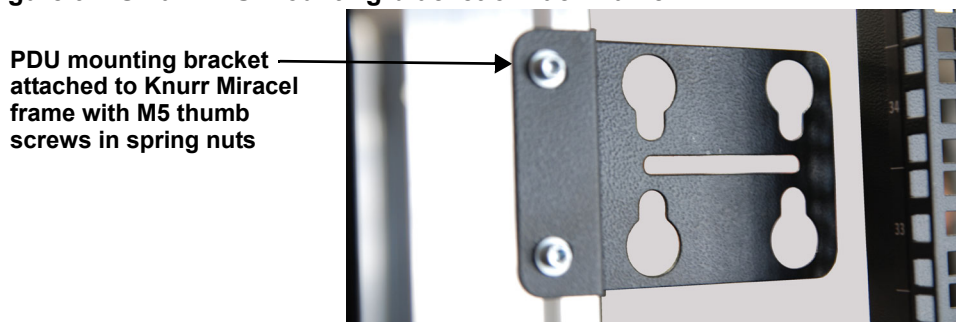
Power distribution modules may be mounted multiple ways in the Knurr Miracel rack. They may be attached to:

- Vertical rails
- Small PDU mounting brackets, two brackets required
- Full-height PDU mounting brackets

3.8.1 Install Small PDU Mounting Brackets

1. Insert spring nuts at the height desired for attaching the PDU mounting brackets to the Knurr Miracel frame; one bracket should be near the top of the PDU mounting placement and one near where the bottom of the PDU will be.
2. Hold a small PDU mounting bracket in place at the top position and attach it with M5 thumb screws (see **Figure 9**).
3. Tighten the screws firmly.
4. Attach the lower PDU mounting bracket to the frame, but do not tighten the screws.
5. Attach the upper end of the PDU to the upper bracket.
6. Adjust the lower PDU mounting bracket until its holes align with those in the PDU.
7. Tighten the screws in the lower PDU bracket.
8. Attach the PDU to the lower bracket.

Figure 9 Small PDU mounting bracket on rack frame

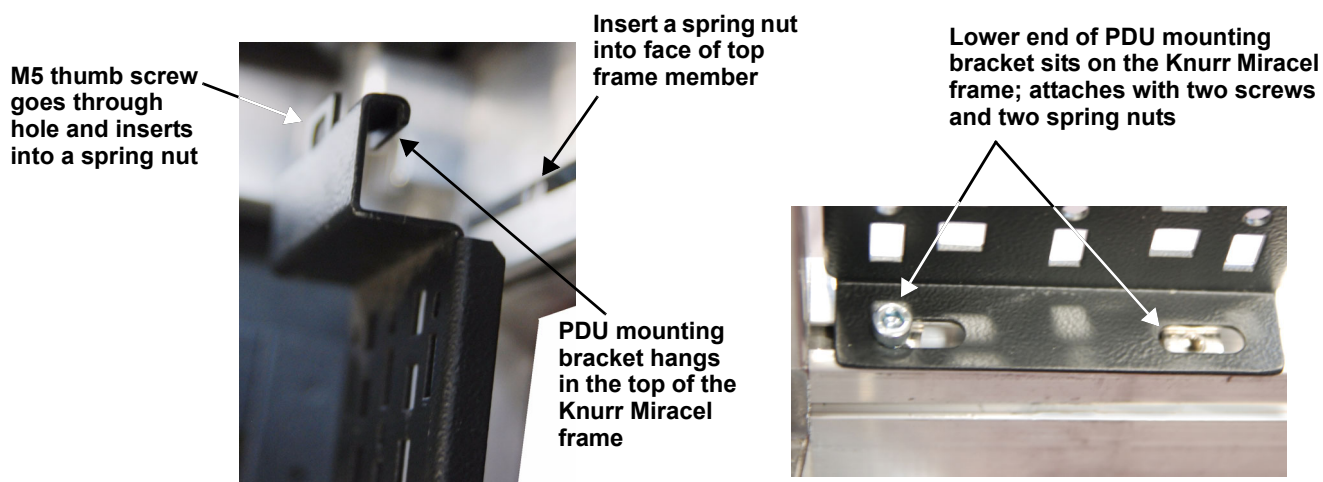


3.8.2 Install Full-Height PDU Mounting Brackets

Full-height PDU mounting brackets may also be installed for a greater range of mounting options. The full-height brackets feature slots and holes along its full height that permit mounting cable management options, as well as PDUs. To attach a full-height PDU bracket:

1. Insert a spring nut in the top of the Knurr Miracel frame where the PDU bracket will be placed.
2. Insert two spring nuts in the upper face of the lower frame member (see **Figure 10**).
3. Hang the PDU bracket in the frame
4. Insert M5 screws into the bracket and tighten them with a hex wrench.

Figure 10 Full-height PDU mounting bracket on rack frame



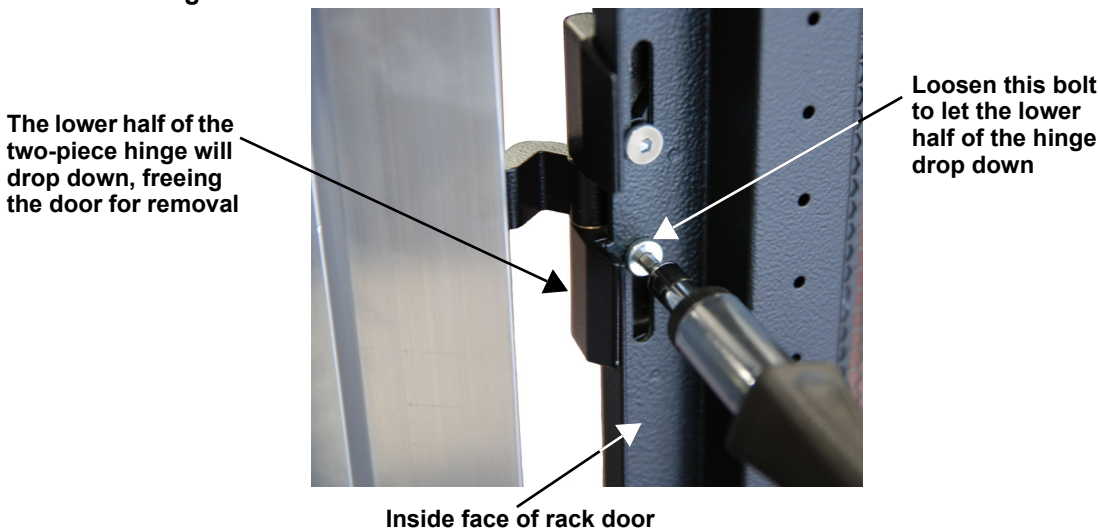
3.9 Door—Remove and Reverse

Knurr Miracel doors are removable for convenience when installing equipment. They also are reversible, so the single-door may be opened in a more convenient direction if the rack is near a wall or other equipment.

3.9.1 Remove the Door

1. Use a hex wrench to loosen the bolt securing the lower half of each two-piece hinge to the door until the lower half of each hinge drops down (see **Figure 11**).
Do not loosen the upper bolt; it should remain tight to hold the upper half of the hinge.
2. Lift the door straight up until the pins clear the hinges.
3. Set the door aside.

Figure 11 Door hinge removal



3.9.2 Reverse the Door

1. After removing the door, take out the remaining bolts and screws to remove the top half of each hinge.
2. Note the position of the latches and hinges, and mark the corresponding new position on the opposite side of the frame.
3. Use a hex wrench to remove the four latches.
4. Attach the latches on the opposite side.
5. Attach the top half of the hinges on the side where the latches had been.
6. Rotate the door 180 degrees from its original position.
7. Hang the door by inserting its pins into the hinges.
8. Reattach the bottom half of the hinges.

3.9.3 Reverse the Door Handle

After the door has been reversed, the door handle of the Knurr Miracel will operate without adjustment, but it will be upside down. To reverse the handle, follow these steps:

1. Open the door and remove all the bolts holding the door handle and lock assembly, including the four brackets. Studs and nuts secure the brackets to the door frame.
2. Flip the door handle and lock assembly 180 degrees and reattach it with the bolts and nuts.
3. Check the handle and lock to ensure they operate properly.

3.9.4 Install the Door Lock

The Knurr Miracel rack is shipped with a spring-type latch. This can be replaced with an optional keyed door lock for increased security. To install the lock:

1. Remove the spring-type latch by removing the screw securing it to the handle (see **Figure 12**) and pulling out the latch.
2. Insert the keyed door lock cylinder into the door handle.
3. Align the hole in the lock with the screw hole in the door handle (see **Figure 12**).
4. Tighten the screw firmly.

Figure 12 Install door lock



3.10 Side Panels—Remove and Replace

Knurr Miracel side panels are simple to remove and replace, making it easier to install equipment. Panel removal also improves access for maintaining or replacing equipment.

3.10.1 Remove a Panel

Side panels are attached to the Knurr Miracel with four quarter-turn plastic retainers. The top of the side panel has a lip that hangs on the top of the cabinet.

To remove a panel, use a large, flat-blade screwdriver to turn each plastic retainers one-fourth of a turn or 90 degrees counterclockwise. Lift the panel up and away from the rack. Set it aside.



NOTE

Spinning the plastic quarter-turn retainers more than 90 degrees could damage the retainers.



Quarter-Turn Panel Retainer

3.10.2 Replace a Panel

1. Hang the panel on the lip at the top of the Knurr Miracel frame.
2. Use a large flat-blade screwdriver to turn each of the four panel retainers clockwise one-fourth of a turn or 90 degrees.

3.11 Cluster Configuration

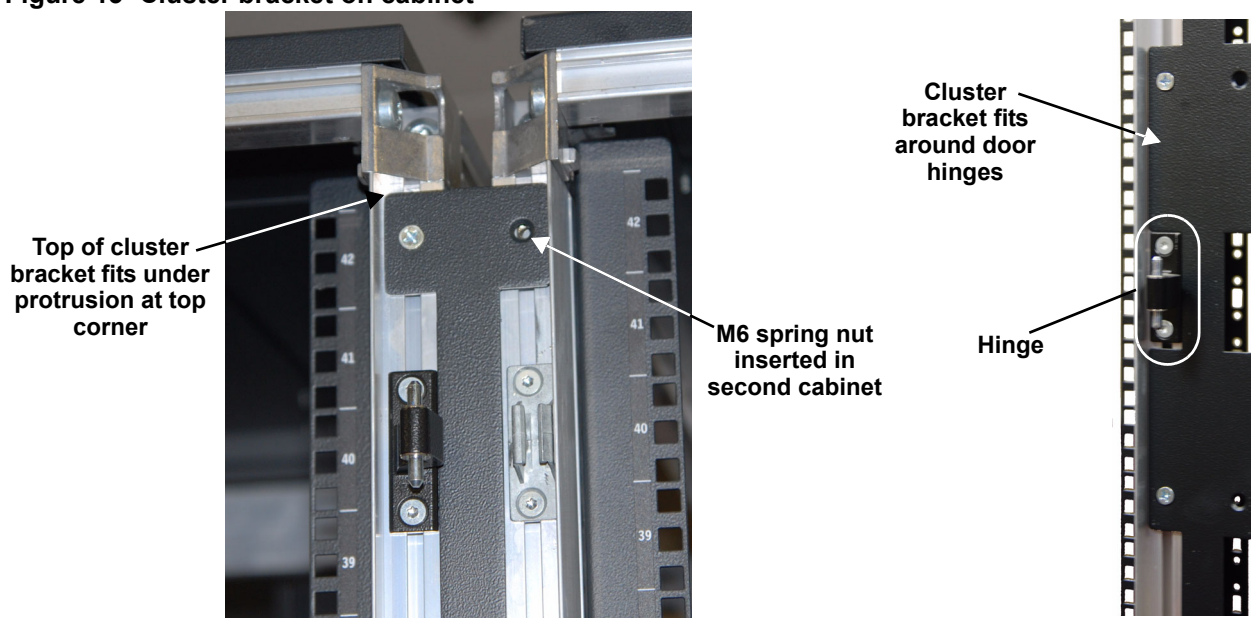
Two or more Knurr Miracel cabinets can be connected in a cluster with the optional suite bracket. The brackets put the cabinets on 24" (609.6mm) centers, which matches the size of U.S. floor tiles, enhancing cooling systems. The bracket serves as a finishing piece and closes the gap between the cabinets.

Connecting Knurr Miracels is easier if the units have been moved to their final installation position. The cabinets, even connected in a suit, can be rolled. Maneuvering multiple cabinets is more difficult than moving a single rack.

To connect two units:

1. Remove the side panels from the sides of the cabinets that will be bolted together (see **3.10.1 - Remove a Panel**).
2. Get the needed number of rack suite fixtures—two fixtures are needed to connect two cabinets, four to connect three cabinets.
3. Remove the front and rear doors (see **3.9 - Door—Remove and Reverse**). The cabinets can be connected in a suite with the doors attached, but removing the doors eases the connection.
4. Hold a cluster bracket against the Knurr Miracel cabinet's aluminum frame, either front or rear, and mark the frame beside each of the six holes in the cluster bracket. The bracket fits on the cabinet as shown in **Figure 13**.
5. Set the cluster bracket aside and insert six M6 spring nuts in the cabinet's aluminum frame at the places marked.

Figure 13 Cluster bracket on cabinet



6. Hold a cluster bracket against the Knurr Miracel cabinet and insert an M6 bolt through the top hole. Do not tighten the bolt until all bolts have been inserted.
7. Insert M6 hex head bolts in each hole and screw them into the spring nuts in the Knurr Miracel's aluminum frame.
8. Verify that the bracket is properly attached and begin tightening bolts with a hex wrench.



NOTE

Attachment and adjustment are eased if the bolts near the center of the cluster bracket are tightened first.

9. After all six bolts are tightened, move the second cabinet into position and mark the location of the spring nuts.
10. Move the cabinets apart, insert the spring nuts, move the cabinets back together and bolt them together.
11. Repeat **Steps 4** through **10** for the rear of the cabinets.

4.0 CABLE MANAGEMENT OPTIONS

4.1 Cable Management

Once equipment has been installed, connect cables for power and communication may be connected. Before making any connections, check the equipment to ensure that all power switches are in the Off position.

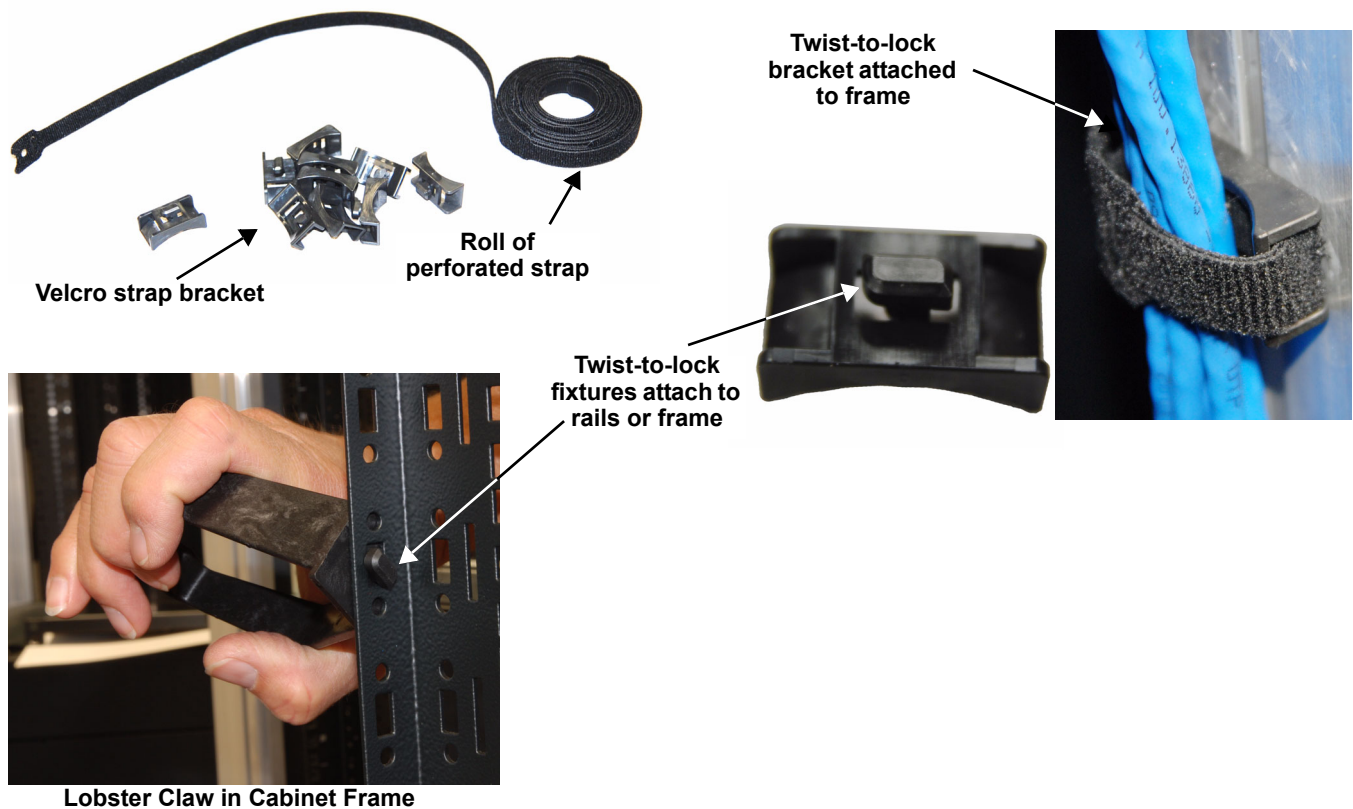
Numerous cable entrances and management provisions are built into the various Knurr Miracel configurations to ease cable installation.

Additionally, these cable management options are available to assist with routing power and control cables to reduce electromagnetic interference and to improve airflow:

- lobster claw
- Velcro straps
- cable routing panels
- cable routing struts
- cable troughs and basket
- radial limits

Velcro straps are field-attached in any number of ways. They can be wrapped through slots in the internal mounting rails and support vertical cable management, attached through small brackets or to other components.

Figure 14 Straps and lobster claw cable management on Knurr Miracel rails



4.2 Cable Management Considerations

When designing the equipment layout in the Knurr Miracel, consider how cables must be run for each configuration and how cable runs affect cooling, access and operational factors, such as separating power and communication cables to reduce electromagnetic interference.

Good cable management contributes to:

- Effective air flow for cooling
- Easier cable identification
- Improved access
- Reduced electromagnetic interference
- Proper bend radii, particularly for fiber optic cables
- Adequate support for large cables and heavy cable bundles



NOTE

When installing cables, leave enough slack for the unit to be rolled forward or sideways for access to components.

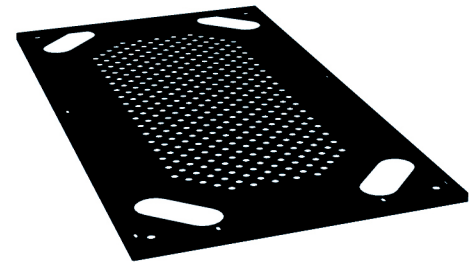
Do not block or restrict cooling system () discharge or return airflow.

Also, do not defeat the ground/earth connections between the utility/mains outlet and the Knurr Miracel.

4.3 Cable Access—Top Cover, Back and Base

Knurr Miracels have cable openings in each corner of the top. Use either of the two rectangular holes for mounting a fan or fans and the other for cabling the unit. Two round 4" (102mm) holes on the top of the Knurr Miracel and four round 1" cable routing (25mm) holes on either side of the rectangular slot in the rear of the Knurr Miracel allow cable entry.

The bottom of the Knurr Miracel is open for cable entry. The low-profile caster plinth has a rectangular slot for cable entry.



Top of Knurr Miracel

5.0 STARTUP

Before plugging in any electronic equipment, make sure that all power switches are in the OFF position. Remove any obstructions, such as wire bundles, manuals or trash, from the Knurr Miracel.

Refer to manuals for any equipment installed in the Knurr Miracel rack for instructions on turning on the computer and network equipment.

6.0 OPTIONAL EQUIPMENT

6.1 Enclosure Systems

6.1.1 Internal Mounting Rails

- Front / Rear Rails

6.1.2 Door/Panel Options

- perforated doors
- single-door or dual-door
- side panels
- perforated side panels

6.1.3 General Enclosure Options

- casters
- external keyboard trays
- sealed entrance cable bundle
- cable tray
- cable rings
- Velcro cable management straps
- enclosure cluster kit
- stabilizing plate

6.2 Mounting Options

- Fixed shelves, vented, 250lb (113kg) capacity
- Pullout shelves, vented, 130lb (59kg) capacity
- Fixed Rails, 150lb (68kg) capacity
- Mounting Cagenuts and Screws 10-32 or M6 Thread (10 sets)
- Mounting Screws for option (qty 24)

7.0 MAINTENANCE

7.1 Periodic Maintenance

Your Knurr Miracel cabinet requires no special maintenance. It should be cleaned periodically, more frequently if the air in the vicinity is not filtered for particulates.

Dust should be cleaned from installed equipment according to the manufacturer's recommendations. Clean the interior of the cabinet with a dry cloth.

8.0 SPECIFICATIONS

Figure 15 Knurr Miracel model numbers

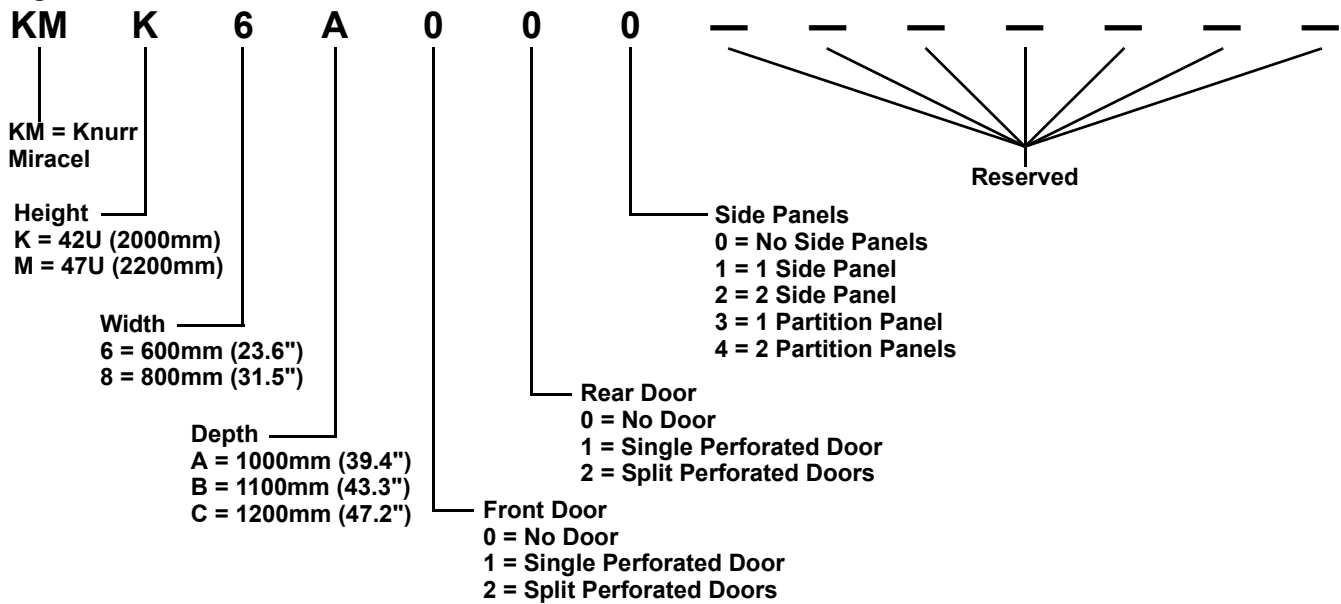


Table 1 Knurr Miracel part numbers

Part Number	Description
002185020	42U x 24" W x 44" D With Side Panels
002185010	42U x 24" W x 44" D No Side Panels
002185100	42U x 32" W x 44" D With Side Panels
002185090	42U x 32" W x 44" D No Side Panels

9.0 ACCESSORIES

Table 2 Knurr Miracel accessories—Part numbers and descriptions

Part #	Description
010200022	Sheet Steel Side Panel, 2000mm H x 1000mm D, ZP 0350
010200023	Sheet Steel Side Panel, 2000mm H x 1100mm D, ZP 0350
010200020	Sheet Steel Side Panel, 2000mm H x 1200mm D, ZP 0350
010200024	Sheet Steel Side Panel, 2200mm H x 1000mm D, ZP 0350
010200025	Sheet Steel Side Panel, 2200mm H x 1100mm D, ZP 0350
002185310	PDU Mounting Bracket, 2 pc, 25mm Piece
002185300	PDU Mounting Bracket, 42U, Full Vertical Height
002185370	PDU Mounting Bracket, 47U, Full Vertical Height
002185190	Tool-less Blanking Panel, 1U, Pack of 10
002185340	Tool-less Blanking Panel, 2U, Pack of 10
002185350	Tool-less blanking Panel, 3U, Pack of 10
002185500	Tool-less Blanking Panel, 10U, Pack of 5
002185320	Vertical Blanking Panel, 42U, 2 Pieces
002185330	Vertical Blanking Panel, 47U, 2 Pieces
002185230	Horizontal Wire Basket, 5'
002185390	External Cluster Kit, 42U, 1 piece ZP0350
002185400	External Cluster Kit, 47U, 1 piece ZP0350
002185210	Door 2000x800, 83% Perforated ZP 0505
002185220	Door 2200x800, 83% Perforated ZP 0505
002185240	Horizontal Caster Bracket Set, 600mm, Set of 2
002185380	Horizontal Caster Bracket Set, 800mm, Set of 2
002185430	Roof Grommets 600W, Set of 4
002185440	Roof Grommets, 800W, Set of 6
002185200	Mounting Adapter for Mounting Knurr Accessory Items on Z-Shaped EIA rails
002185000	Tool-less Shelf
002185210	83% Fully Perforated Door, 2000mm x 800mm, ZP 0350
002185220	83% Fully Perforated Door, 2200mm x 800mm, ZP 0350
010200026	Sheet Steel Partition Panel, 2000mm H x 1000mm D, ZP 0350
010200027	Sheet Steel Partition Panel, 2000mm H x 1100mm D, ZP 0350
010200028	Sheet Steel Partition Panel, 2000mm H x 1200mm D, ZP 0350
010200029	Sheet Steel Partition Panel, 2200mm H x 1000mm D, ZP 0350
010200030	Sheet Steel Partition Panel, 2200mm H x 1100mm D, ZP 0350
010200031	Sheet Steel Partition Panel, 2200mm H x 1200mm D, ZP 0350
002185170	42U Z Shaped EIA Server Rail for 2000mm H cabinets, 2 Pieces
002185180	47U Z Shaped EIA Server Rail for 2200mm H cabinets, 2 Pieces
011312227	Brackets to mount (2) 19" EIA Server Rails in 800mm-wide cabinets, 4 pieces (needed only if ordering third set of rails in 800mm W Cabinet)
050410009	10-32 Mounting Hardware to mount components on EIA rails; 50 Pieces Each of Cagenuts, Screws and Rosette Washers
013504059	Spring Nuts M-6 for Mounting in Frame T-Slot, 50 Pieces
011314748	Fixed 19": Shelf for 1000mm D Cabinet, 136kg (300 lb) Rating
011021628	Telescoping 19" Shelf for 1000mm D Cabinet, 49.8kg (110 lb) Rating

Table 2 Knurr Miracel accessories—Part numbers and descriptions

Part #	Description
011139278	2U Lockable Drawer
01107280	L-shaped Chassis Runner for 1000mm D Cabinet, 1 piece
011305299	Set of 5 Ground Wires and Mounting Hardware
011309367	Spanner Wrench for Knurr Leveling Feet
050412999	One Keyed Insert and Two Keys (need two sets to equip front and rear doors)
011171448	2U 19" Mount Cable Routing Panel
011170208	1U 19" Mount Cable Routing Panel
050400050	855mm (33.7") Cable Routing Strut Mount in 1000mm Cabinet Depths
050400110	19" Cable Routing Strut
011307810	Multifunctional Strut for 900 and 1000mm Deep Cabinets (19" Rail Mount in Preset Depth)
011307810	Multifunctional Strut for 800mm Deep Cabinets (19" Rail Mount in Preset Depth)
050400218	Cable Trough 41U Mounts Vertically in 2000mm H Cabinets
050400950	Cable Cantilever
050400558	19" Cable Trough
050400588	Cable trough to route cables between racks 265mm W x 60mm D (10.4 x 2.4")
050400900	Radial Limit for Cable Routing
050400911	1U radial Limit for Cable Routing on EIA Rails
050400440	Semicircle for Excess Copper Cable Loops
050400478	1U Drawer for Fiber Optic Loops
050400609	Velcro 1m x 16mm (39.4" x 0.63")
050400310	Flexible Jumpering Bracket 82mm L x 60mm W (3.2" x 2.4")
050400228	Cable Trough 46U Mounts Vertically in 2200mm H Cabinets
002185050	Tool-less Cable Management Piece, Lobster Claw, Pack of (10)
002185060	Tool-less Cable Management Piece, Velcro Strap, Pack of (10)
002185070	Tool-less Cable Management Piece, Lobster Claw, Pack of (100)
002185080	Tool-less Cable Management Piece, Velcro Strap, Pack of (100)
04050005119	IEC 60320 Connection Cable, Female IEC 320 Socket and an IEC 320 Male Plug, 1 meter (39.4")

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800-543-2378

powertech@emersonnetworkpower.com

Environmental Systems

800-543-2778

Outside the United States

614-888-0246

Locations

United States

1050 Dearborn Drive

P.O. Box 29186

Columbus, OH 43229

Europe

Via Leonardo Da Vinci 8

Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

+39 049 9719 111

Fax: +39 049 5841 257

Asia

7/F, Dah Sing Financial Centre

108 Gloucester Road, Wanchai

Hong Kong

852 2572220

Fax: 852 28029250

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