

Charles Universal Broadband Enclosure

SH60-503027xNXX Series with Universal Backplane

General Description and Installation

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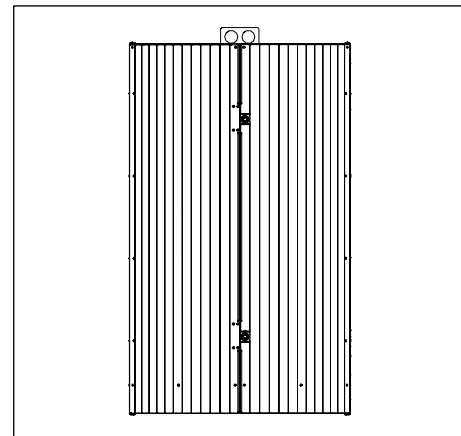


Figure 1 Front View of the SHRD60

1. GENERAL INTRODUCTION

1.1. Document Purpose

This document provides general information for the Charles Industries SH60-503027xNXX series vented concealment shroud. A closed front view of the SH60-503027 is shown in Figure 1.

-NOTE-

Hereafter, the Charles Universal Broadband Enclosure SH60-503027xNXX series will be referred to as the "SHRD60".

1.2. Product Purpose

The SHRD60 is a vented shroud that houses customer supplied remote radio heads (RRH) and ancillary equipment.

1.3. Product Mounting and Location

The SHRD60 is suitable for outside plant-type (OSP) locations and those that may require NEC compliance. The outdoor SHRD60 products are to be mounted on a pole. The installer connects the power, fiber, and copper connections. Detailed mounting and installation information is covered in Section 3.

2. PRODUCT DESCRIPTION

The SH60-503027xNXX is a radio shroud equipped with a universal backplane that supports multiple radio configurations. One configuration is shown in Table 3. Other configurations are possible using the bracket kits shown in Table 4. All radios and ancillary equipment are customer supplied.

Figure 2 shows the dimensions for the SHRD60. Figure 3 shows the components.

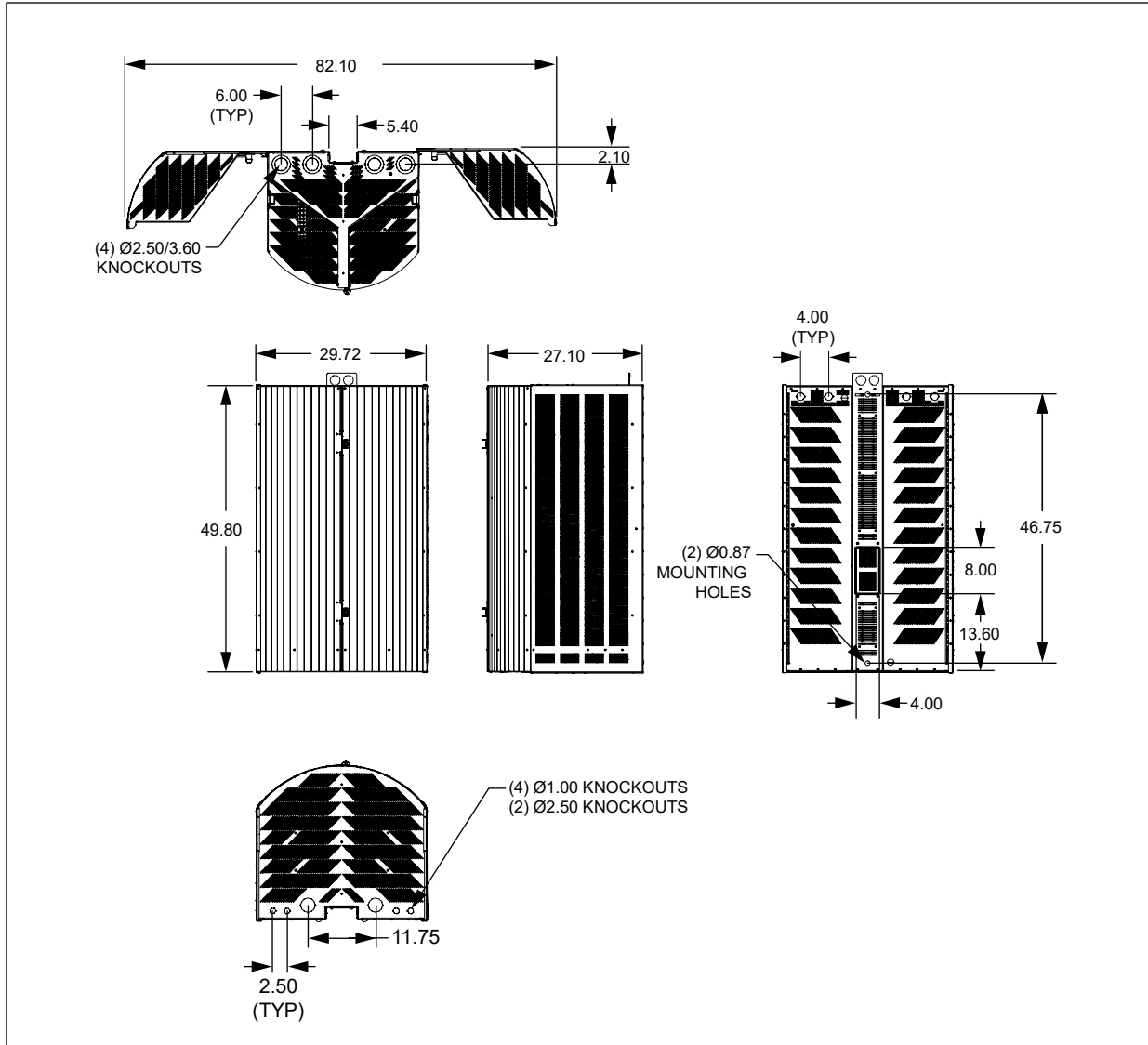


Figure 2 SHRD60 Dimensions (in inches)

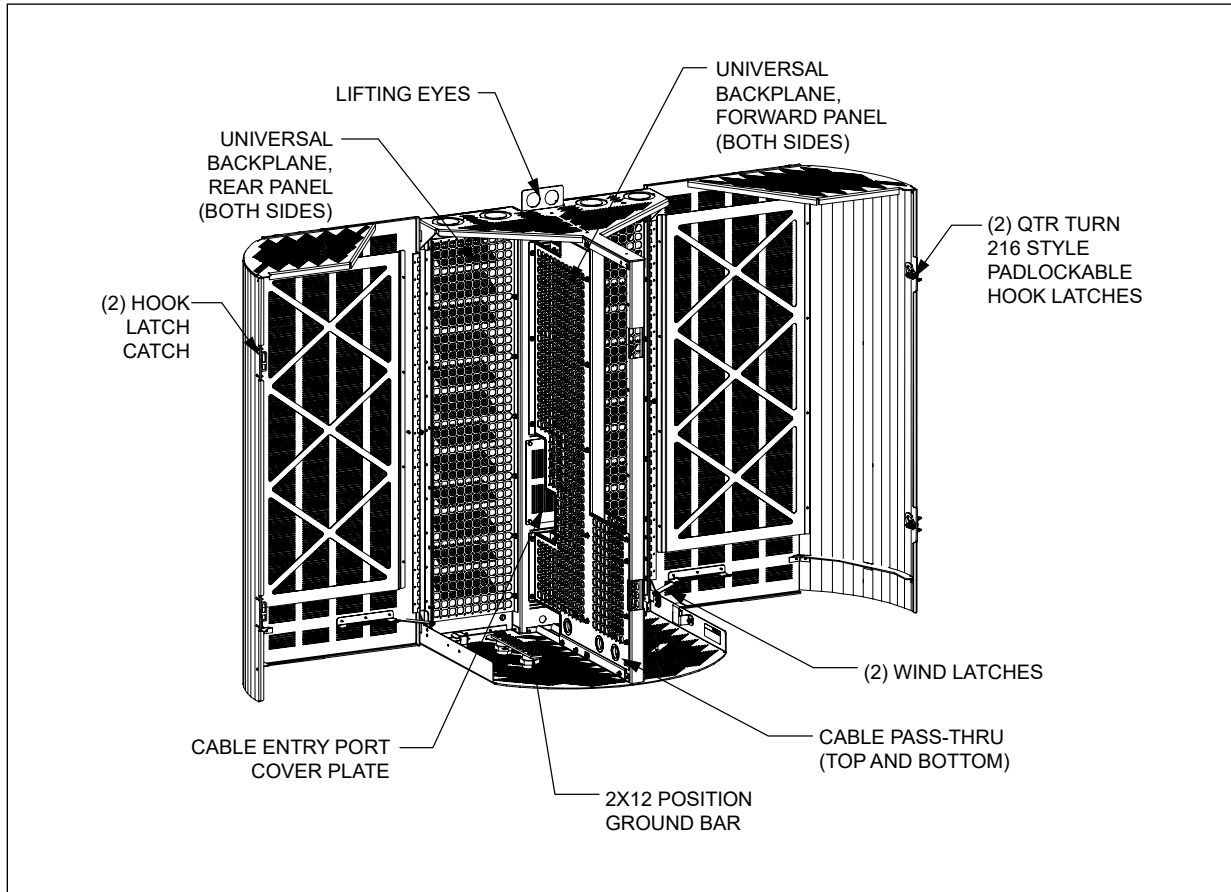


Figure 3 SHRD60 Components

3. INSTALLATION

3.1. Inspecting the Product

The SHRD60 is shipped on a skid. Remove the bolts, unpack the unit, and dispose of the packaging material.

-INSPECTION NOTE-

Visually inspect the unit for damages prior to installation. If the equipment was damaged in transit, immediately report the extent of the damage to the transportation company.

3.2. Following and Using Safety Precautions

Read the following site and safety tips, cautions, and warnings, then proceed with the paragraphs that follow.

- For installation, follow all National Electrical Codes (NEC) ANSI/NFPA 70, local, environmental, workplace, and company codes, safety procedures, and practices.
- Minimum spacing between the accessories and components and the housing for ITE equipment shall be maintained for safe operation of the equipment when installed in accordance with NEC ANSI/NFPA 70.
- Read all instructions, warnings and cautions on the equipment and in the documentation shipped with the product.
- Always connect ground connections first.
- Do not place this product on weak or unstable surfaces which may allow the product to fall, resulting in potentially serious damage(s) to persons or product.
- Only authorized trained personnel shall install the SHRD60.
- In windy conditions, be sure to engage the door latches to secure the door in a stationary position.

3.3. Obtaining Tools and Equipment

Obtain the following recommended or needed items for installing the SHRD60.

- Sufficient length and quantities of fiber cable (or pigtails)
- Cable scoring, opening, and cutting tools for cable sheathing, shields, wrappings, strength members and buffer tubes
- Wire strippers
- Crimpers
- Cable, tube, wire, and fiber cleaning materials
- Protective and/or insulated work gloves
- Safety glasses
- Tape measure
- Marking utensil
- #6 ground wire or rod and earth ground materials
- Bond strap (optional, from cable bond clamp to bond post)
- Any exterior cable strain relief, per company practice
- Slotted, hex, and Phillips screwdrivers
- Torque wrench
- Assorted cable ties, clips, or fasteners (optional)
- Can wrench (216 type tool)
- Derrick for lifting
- Level

3.4. Preparing the Installation Site

Observe the following site preparation recommendations.

- Leave adequate horizontal and vertical space between multiple installations to allow for proper cable access, as well as enough room around the enclosure to open the door(s).
- The site must meet minimal personnel and equipment safety requirements.
- The distance from the cable entry point should be consistent with local installation practices.
- The pole must be able to support the weight of the SHRD60.
- Run all fiber and copper facilities to the site.

3.5. Lifting the SHRD60

See Table 1 for SHRD60 weight. Charles recommends the following procedure for lifting the SHRD60.

3.5.1. Required Equipment

- One derrick (crane) capable of lifting the SHRD60
- Two lifting slings or chains with each having a 2,500 lbs. capacity
- Connecting links to attach slings to the SHRD60's lifting brackets
- 75-ft. long tagline rope

Insert the lifting sling connecting links securely through each of the lifting brackets as shown in Figure 4.

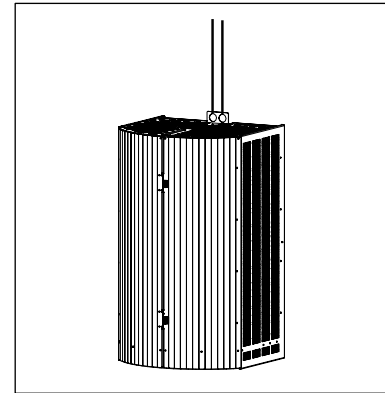



Figure 4 Lifting the SHRD60

3.5.2. Warnings and Specific Safety Precautions

	WARNING	Improper hoisting equipment and unsafe lifting procedures can result in serious injury or death.
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Observe the following local safety procedures when performing the tasks in this section.

- Keep the SHRD60 away from any power lines.
- Keep bystanders away from the work operations at all times.
- Only trained operators shall operate the crane for lifting and setting the SHRD60.
- Do not suspend loads over people or equipment.
- All persons working with hoisting equipment shall wear standard safety gear according to local practices including safety helmets and steel-toed shoes.
- Do not operate the hoisting equipment until all stabilizers are extended and in firm contact with the ground or adequate support structure.
- Do not attempt to retract or extend the stabilizers while a load is suspended.

3.6. Mounting the SHRD60

Charles offers multiple options for pole mounting. Kit 97-002348x-A is a mounting bracket kit that installs the SHRD60 flush against the pole. Kit 97-002309x-A, used in conjunction with 97-002348x-A, allows installation with a 7" offset from the pole. Kit 97-002398x-A, used in conjunction with 97-002348x-A, allows installation with a 5" offset from the pole. Kit 97-002391x-A, used in conjunction with 97-002348x-A, allows installation with a 3" offset from the pole. See the documentation that ships with the kits for more information.

Clearance Note: Vented shrouds require a minimum of 12" of exterior clearance at all vents. Do not install the SHRD60 within 12" of any other equipment or objects.

3.6.1. Torque Requirements

Torque all hardware as shown below (unless otherwise noted). These values apply to SAE Grade 1 & 2 Low Carbon Steel, ASTM A307 Low Carbon Steel, and Stainless Steel Grade 18-8.

Thread Size	In-lbs	Ft-lbs
4-40	4±10%	
6-32	8±10%	
8-32	16±10%	
10-32	26±10%	
12-24	50±10%	
1/4-20/M6	60±5%	5±5%
5/16-18	125±5%	10.4±5%
3/8-16	180±5%	15.0±5%
1/2-13	500±2%	41.7±2%
5/8-11	1000±1%	83.3±1%

4. SHRD60 WIRING AND EQUIPMENT

After the SHRD60 is properly mounted in the desired location, apply No-Ox where bus bar and other 2-hole lug connections will be made. Install ground and power connections. Always ground the equipment first, before making any other connections.

	WARNING	Perform all bonding and grounding connections prior to any electrical and communications connections.
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4.1. Ground Connection

Use the 2x12 position ground bar provided in the equipment compartment for all grounding of internal equipment and for an earth ground. Stack hardware as shown in Figure 5. A 1/4-20x5/8 two-hole lug is required for each connection.

4.2. Optional Squirrel Guard Kit

The SHRD60 can be ordered with the 96-SH60SQLGRDA kit. If ordered, the cable entry cover plate is replaced at the factory with a grommeted plate that prevents squirrel intrusion into the enclosure. This kit is also available as the field kit 97-003005A-A, which is installed by the customer. To route cables into the SHRD60, cut slits in the center of the rubber grommets and pass cables through the slits. Only cut grommets that are needed for cable entry.

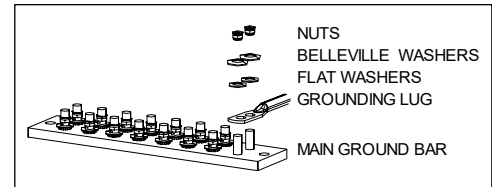


Figure 5
Ground Bar Hardware Stack

5. CUSTOMER EQUIPMENT MOUNTING

The universal backplane consists of a grid of large and small holes. Brackets designed for the SHRD60 are equipped with hooks and slots for mounting screws. See Figure 6 for an example of a bracket installation.

1. Mount the equipment onto the bracket first, using customer supplied hardware.
2. Mount the bracket onto the backplane by inserting the hooks into the large holes on the backplane.
3. Secure into place using a screw (included with bracket) through the small hole on the bottom of the bracket into a small hole on the backplane.

See Table 3 for a list of available brackets for radios and other customer equipment.

	CAUTION	Contact Charles for a thermal analysis for the desired radio configuration.
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For all configurations that include diplexers, the 97-DPLXSHRD521 bracket is required for mounting. This bracket has mounting holes for a CommScope CBC1726T-4310 diplexer, but it can be modified for any other diplexer as needed. Prior to mounting, drill mounting holes into the bracket that are suitable for the diplexer in use.

Figure 7 shows the coordinates used to designate mounting positions on the backplane.

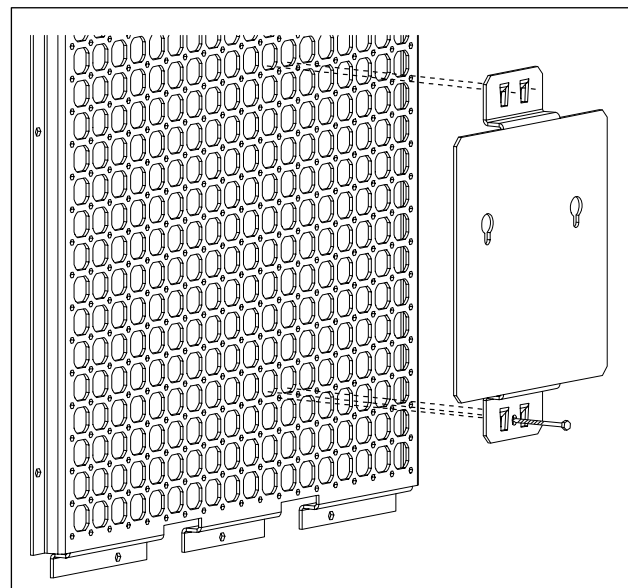


Figure 6
Mounting Brackets onto Backplane

5.1. Bracket Coordinates

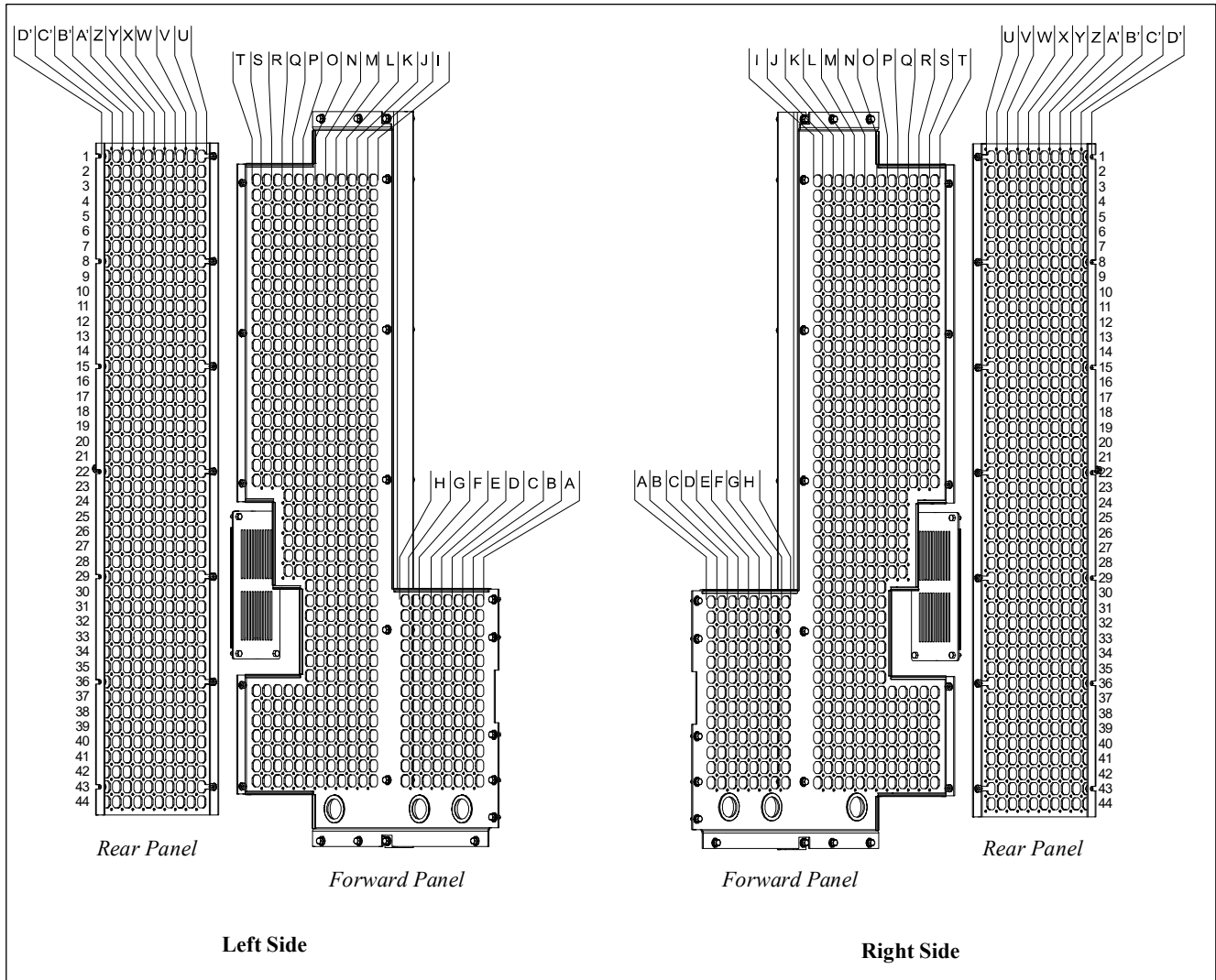


Figure 7
Backplane Coordinates

5.2. SH60-503027xNCD Configuration

This configuration includes the following brackets and equipment. Coordinates for the bracket hooks are shown in the table and figures below.

(1) Nokia AZHL radio	Left Side, Forward Panel: K1, L1, N1, P1, K16, L16, N16, P16
(1) Nokia APAM power supply	Left Side, Forward Panel: F32, G32, F44, G44
(1) Ericsson 8843/4449/4478/4426/4415 radio	Right Side, Forward Panel: K2, N2, K17, N17
(1) Ericsson 6304 power supply	Right Side, Forward Panel: G32, H32, H43, H43

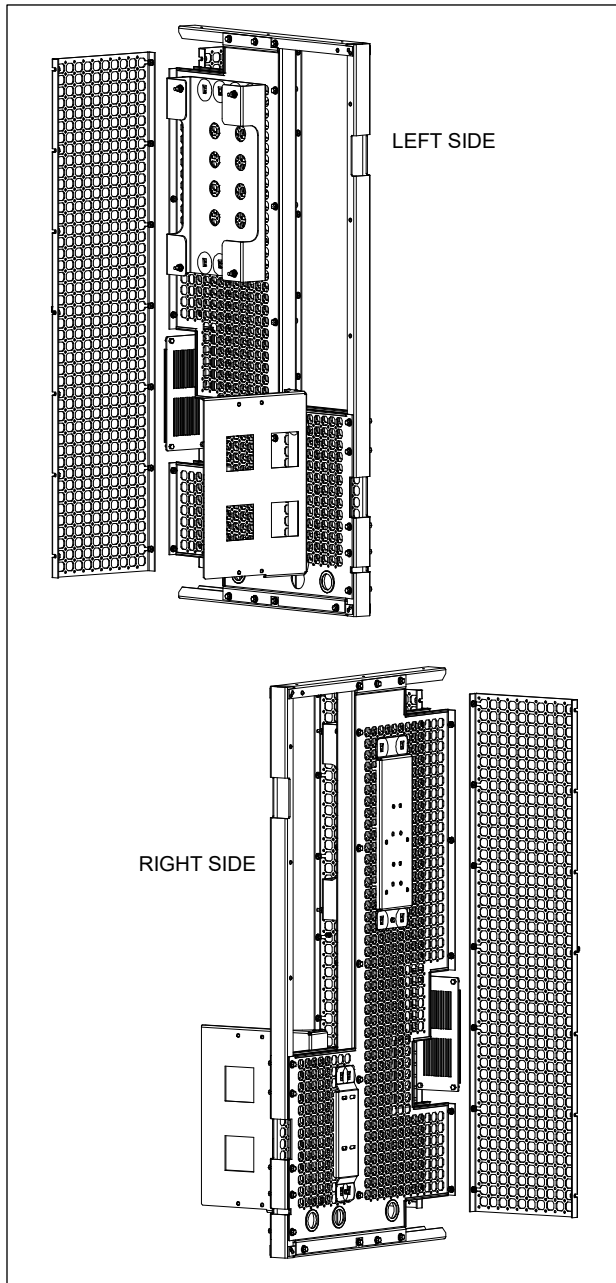


Figure 8
SH60-503027xNCD Backplane with Brackets

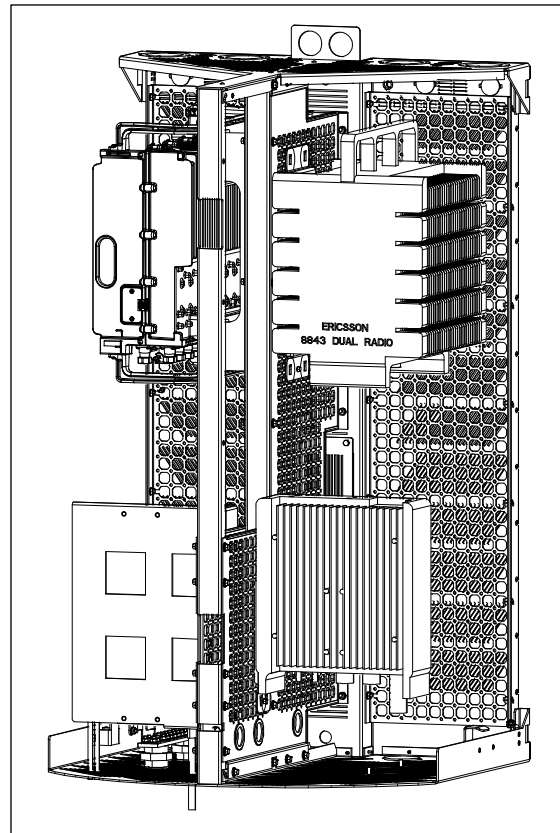


Figure 9
SH60-503027xNCD with Equipment

5.3. SH60-503027xNCE Configuration

This configuration includes the following brackets and equipment. Coordinates for the bracket hooks are shown in the table and figures below.

(1) Nokia AZHL radio	Right Side, Forward Panel: J3, L3, N3, P3, J18, L18, N18, P18
(1) Nokia APAM power supply	Left Side, Forward Panel: F32, G32, F44, G44
(1) Nokia AHxxx dual band radio	Left Side, Rear Panel: V2, Y2, V24, Y24
(2) CommScope CBC1726-4310 diplexers	Left Side, Rear Panel: B'31, D'31, C'39, D'39

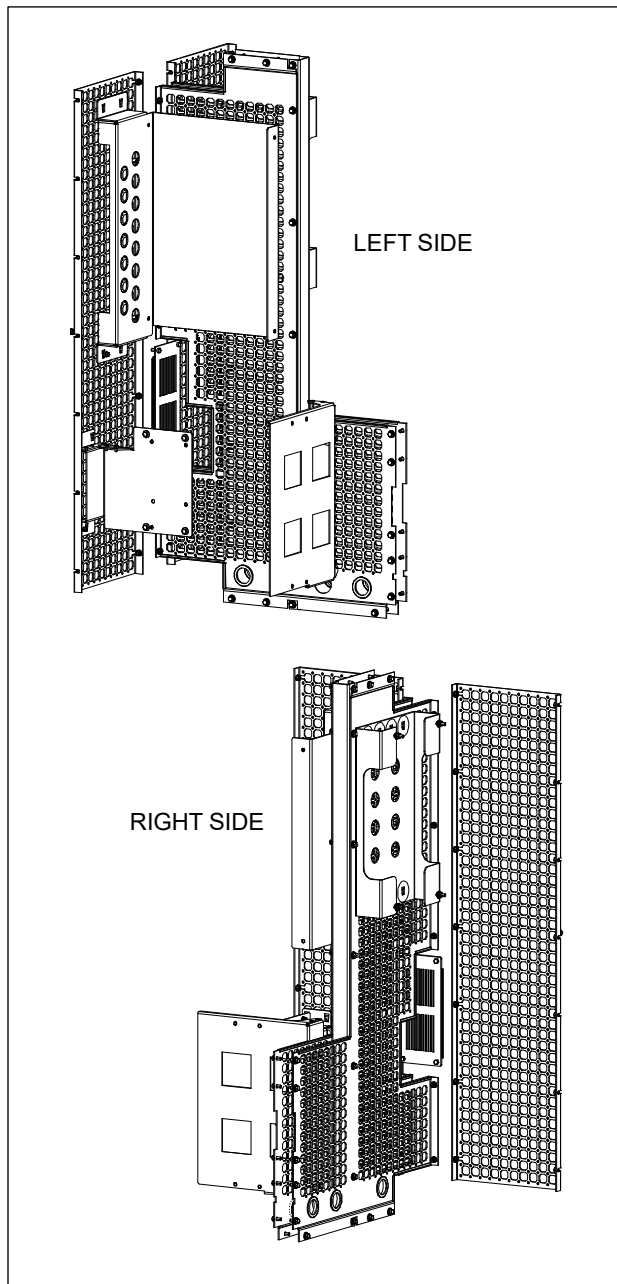


Figure 10
SH60-503027xNCE Backplane with Brackets

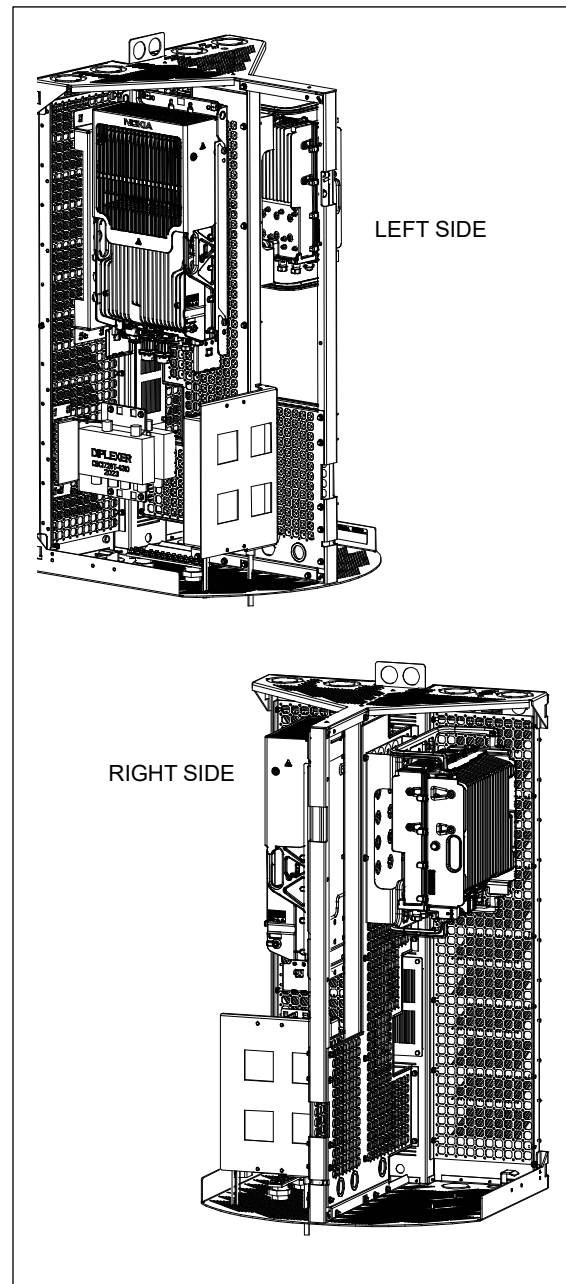


Figure 11
SH60-503027xNCE with Equipment

5.4. SH60-503027xNE1 Configuration

This configuration includes the following brackets and equipment. Coordinates for the bracket hooks are shown in the table and figures below.

(4) Ericsson 220x/440x radios	Left Side: W36, X36, W43, X43 and B'36, C'36, B'43, D'43 Right Side: W36, X36, W43, X43 and B'36, C'36, B'43, D'43
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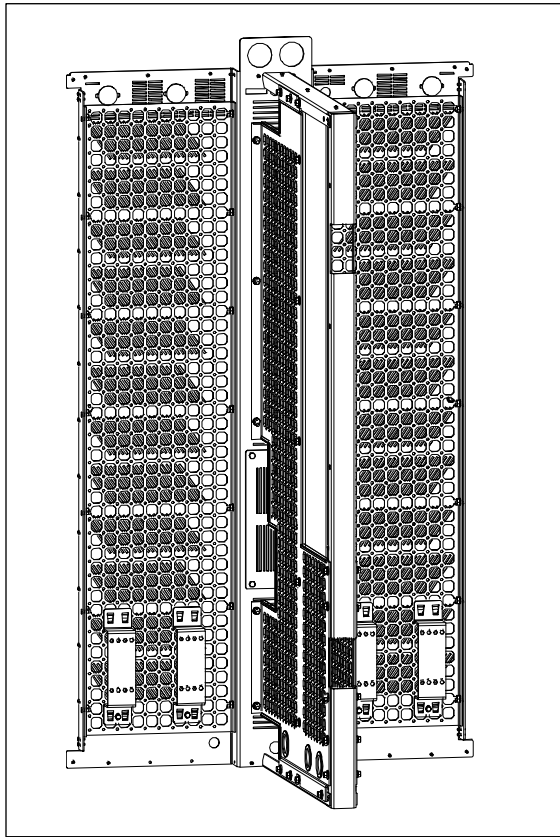


Figure 12
SH60-503027xNE1 Backplane with Brackets

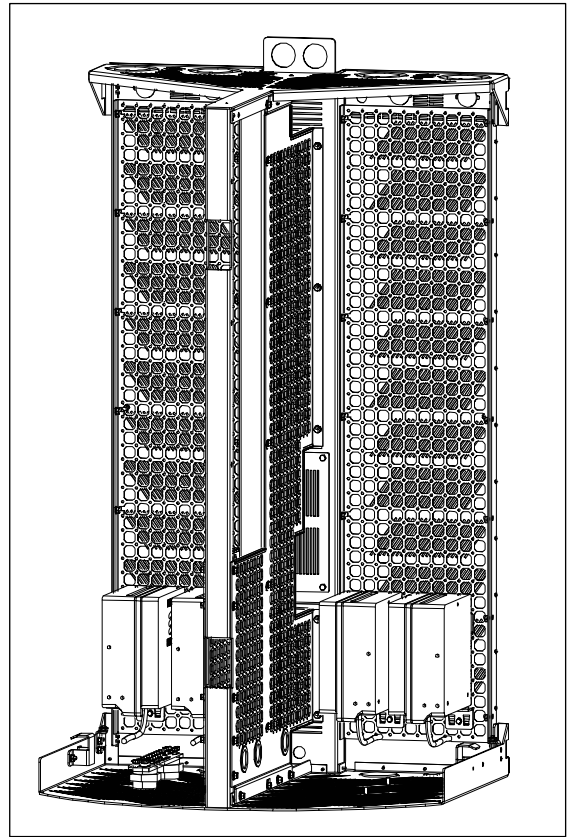


Figure 13
SH60-503027xNE1 with Equipment

5.5. SH60-503027xNED Configuration

This configuration includes the following brackets and equipment. Coordinates for the bracket hooks are shown in the table and figures below.

(1) Ericsson 8863 radio	Right Side, Forward Panel: I15, K15, I21, K21
(1) Ericsson 4455 radio	Left Side, Rear Panel: Y8, B'8, Y21, B'21
(2) Ericsson AC-08 OR (1) Ericsson 630x PSU	Left Side, Forward Panel: F32, G32, F42, G42
(1) Charles CFTT OR Ericsson 6585 DWDM	Left Side, Forward Panel: C33, C41
(2) CommScope CBC1726T-4310 diplexers	Left Side, Rear Panel: V34, X34, V42, X42

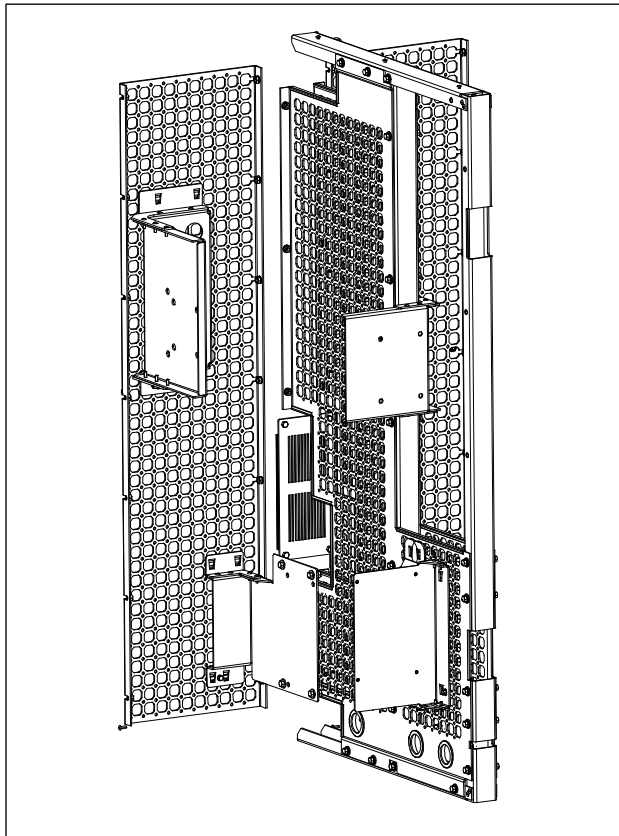


Figure 14
SH60-503027xNED Backplane with Brackets

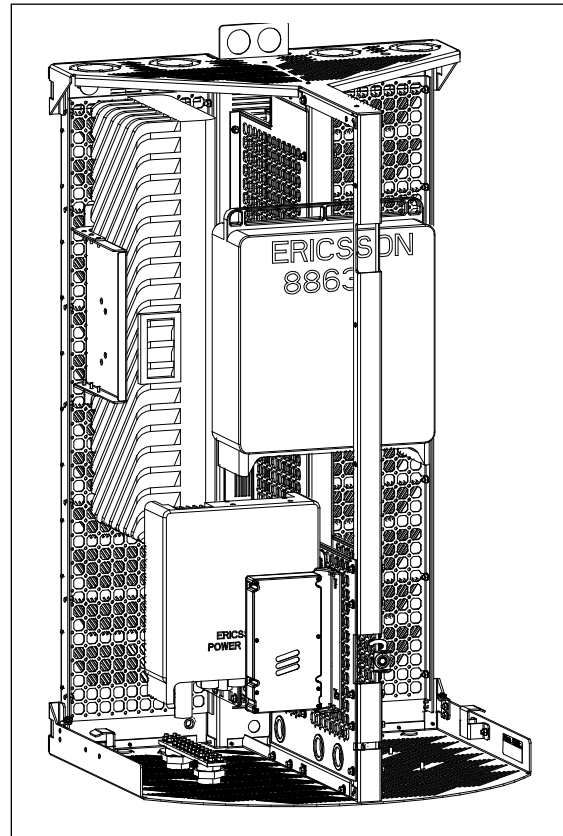


Figure 15
SH60-503027xNED with Equipment

5.6. SH60-503027xNEG Configuration

This configuration includes the following brackets and equipment. Coordinates for the bracket hooks are shown in the table and figures below.

(1) Ericsson 4490 radio	Right Side, Rear Panel: right facing side of supporting bracket
(1) Ericsson 4455 radio	Left Side, Rear Panel: Y8, B'8, Y21, B'21
(1) Ericsson 8863 radio	Mount on front-facing flanges of the brackets that cross the forward backplanes
(2) Ericsson 6304 power supplies	Right Side, Rear Panel: W31, X31, W41, X41 Left Side, Forward Panel: F32, G32, F42, G42
(2) CommScope CBC1726T-4310 diplexers	Left Side, Rear Panel: V34, X34, W42, X42
(1) Ericsson FrontHaul 6585	Left Side, Forward Panel: C33, C41

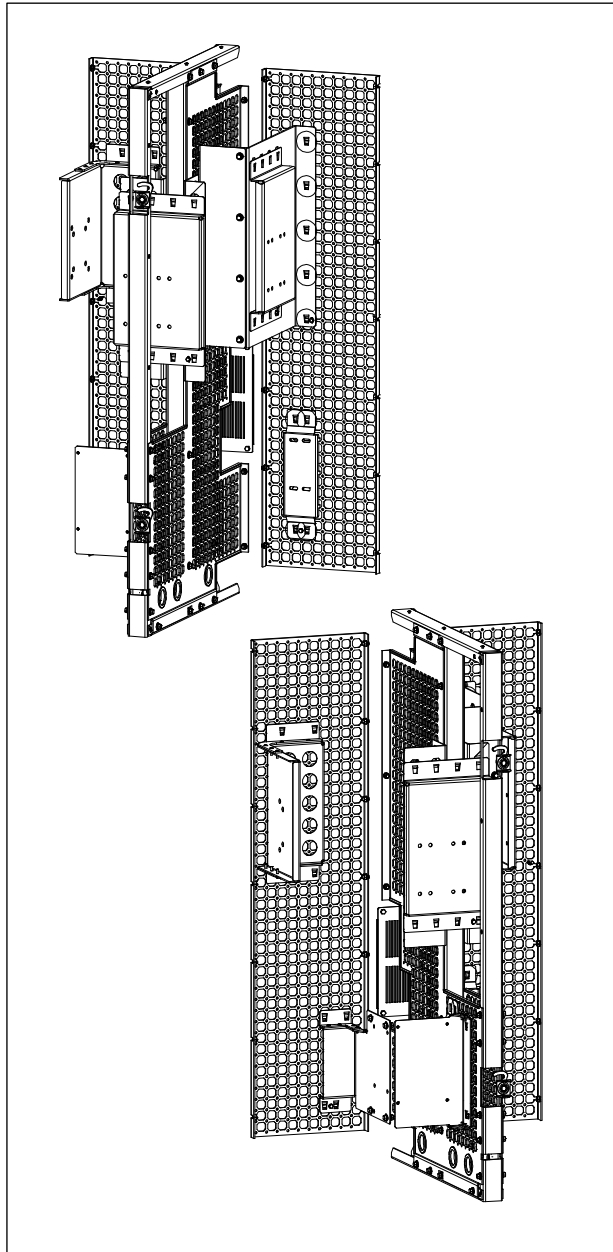


Figure 16
SH60-503027xNEG Backplane with Brackets

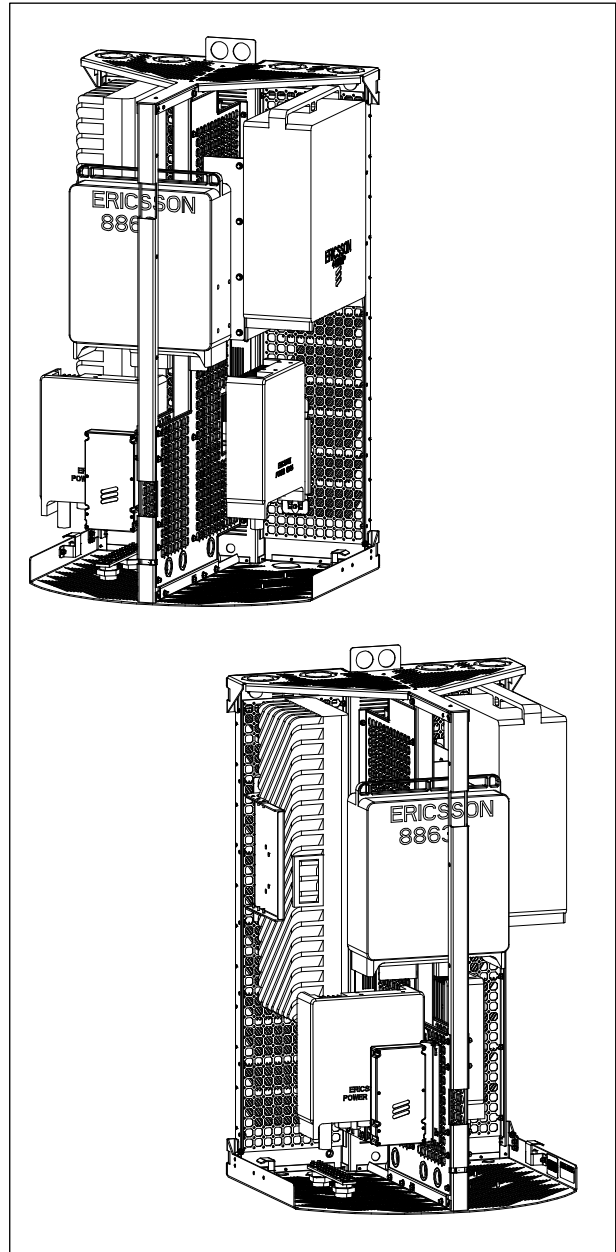


Figure 17
SH60-503027xNEG with Equipment

6. PERIODIC MAINTENANCE

In the event that the enclosure needs to be opened in freezing conditions, a narrow, pointed metallic object such as a screwdriver or chisel, along with a non-metallic device such as a rubber mallet, may be used to remove excessive ice buildup around the door and locking mechanism. A commercial aerosol de-icer spray can be used to free up locks and latches if needed.

7. TECHNICAL ASSISTANCE AND REPAIR SERVICE

For questions on product repair or if technical assistance is required, contact Charles Technical Support.

847-806-8500

techserv@charlesindustries.com (email)

<http://www.charlesindustries.com/techserv.htm>

8. WARRANTY & CUSTOMER SERVICE

Charles Industries LLC offers a one-year warranty on the SHRD60 product. The Charles warranty is limited to the operation of the SHRD60 hardware as described in this documentation and does not cover equipment that may be integrated by a third party. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract. For questions on warranty or other customer service assistance, contact your Charles Customer Service Representative.

847-806-6300

mktserv@charlesindustries.com (email)

http://www.charlesindustries.com/main/telecom_sales_support.htm

9. SPECIFICATIONS

9.1. Product Specifications

Physical	
Dimensions	50"Hx30"Wx27"D
Weight	Empty SHRD60: Approx. 172 lbs, see Table 3 for configured weights
Materials	Spine: 12 gauge steel Door and sides: 0.125" aluminum
Electrical	
Bonding and Grounding	One 2x12 position ground bar inside SHRD60
Environmental	
Operating Temp. Range, Outside Enclosure	-40° to +115°F, -40° to 46°C
Operating Temp Range, Inside Enclosure	-40° to +131°F, -40° to 55°C
Humidity	0 to 95% (non-condensing)
Altitude	Up to 2,000 meters (6560 feet)
Kits and Replacement Parts	
1/4 Turn Latch with Hook and Padlock Hasp	39-200531-0
Hook Latch Catch	21-105993-0
Flush Mounting Bracket Kit	97-002348x-A
7" Offset Mounting Bracket Kit	97-002309x-A
5" Offset Mounting Bracket Kit	97-002398x-A
3" Offset Mounting Bracket Kit	97-002391x-A
Squirrel Guard Kit	Factory Installed: 96-SH60SQRLGRDA Field Installed: 97-003005A-A

Table 1 SHRD60 Specifications

9.2. Available Color Options

Part Number	Color	Touch-up Paint
SH60-503027DNXX	Classic Texture Gray	02-000629-0
SH60-503027FNXX	Onyx Black	02-000611-0
SH60-503027GNXX	National Park Brown	02-000626-0
SH60-503027DNCD	Classic Texture Gray	02-000629-0
SH60-503027FNCD	Onyx Black	02-000611-0
SH60-503027GNCD	National Park Brown	02-000626-0
SH60-503027DNCE	Classic Texture Gray	02-000629-0
SH60-503027FNCE	Onyx Black	02-000611-0
SH60-503027GNCE	National Park Brown	02-000626-0
SH60-503027DNE1	Classic Texture Gray	02-000629-0
SH60-503027FNE1	Onyx Black	02-000611-0
SH60-503027GNE1	National Park Brown	02-000626-0
SH60-503027DNED	Classic Texture Gray	02-000629-0
SH60-503027FNED	Onyx Black	02-000611-0
SH60-503027GNED	National Park Brown	02-000626-0
SH60-503027DNEG	Classic Texture Gray	02-000629-0
SH60-503027FNEG	Onyx Black	02-000611-0
SH60-503027GNEG	National Park Brown	02-000626-0

Table 2 Color Options

9.3. Supported Equipment

Part Number	Supported Equipment	Approx. Weight (lbs.)
SH60-503027xNCD	(1) Ericsson 8843/4449/4478/4426/4415 radio (1) Ericsson 6304 power supply (1) Nokia AZHL radio (1) Nokia APAM power supply	373
SH60-503027xNCE	(1) Nokia AZHL radio (1) Nokia APAM power supply (1) Nokia AHxxx dual band radio (2) CommScope CBC1726-4310 diplexers	358
SH60-503027xNE1	(4) Ericsson 220x/440x radios	225
SH60-503027xNED	(1) Ericsson 8863 radio (1) Ericsson 4455 radio (2) Ericsson AC-08 OR (1) Ericsson 630x PSU (1) Charles CFTT OR Ericsson 6585 DWDM (2) CommScope CBC1726T-4310 diplexers	340
SH60-503027xNEG	(1) Ericsson 4490 radio (1) Ericsson 4455 radio (1) Ericsson 8863 radio (2) Ericsson 6304 power supplies (2) CommScope CBC1726T-4310 diplexers (1) Ericsson FrontHaul 6585	460

Table 3 Available Configuration

9.4. Available Bracket Kits

Supported Equipment	Kit Part Number
Ericsson 6585 DWDM	97-EDWDMSHRD521
Nokia Airscale Micro radio	97-NKASMSHRD521
Samsung CBRS radio	97-SCBRSSHRD521
Nokia FWHR radio	97-NFWHRSHRD521
ION M radio	97-CIONMSHRD521
Diplexers	97-DPLXSHRD521
Ericsson 4455 radio	97-E4455SHRD521
Ericsson 220x radio	97-E220xSHRD521
BTI 40W radio	97-BTI40SHRD521
Ericsson 4415 radio	97-E4415SHRD521
Samsung 160W or 320W dual band radio	97-SAMDBSHRD521
Nokia AHxxx radio	97-NAHDBSHRD521
Delta 2kW power supply	97-DL2KWSHRD521
Ericsson 8843, 4449, 4478, 4426, 4455, or 4415 radio	97-E8844SHRD521
Ericsson AC-08 power supply	97-EAC08SHRD521
Samsung 160W power supply	97-SDBPSSHRD521
Charles CFTT fiber box	97-CFTTSHRD521

Table 4 Available Bracket Kits

Configurations created from any combination of these brackets must be thermally verified by Charles Industries for best performance.