

Westell® Boxer™ 10-RU Outdoor Cabinet

Part # A90-BXM1019-NMT

CONTENTS	PAGE #
1. GENERAL	1
2. FEATURES	2
3. INSTALLATION	5
4. SERVICE & REPAIRS	11
5. CUSTOMER & TECHNICAL SERVICES	11
6. WARRANTY & RETURNS	12
7. SPECIFICATIONS	12

1. GENERAL

1.1 Document Purpose

This document provides general, installation, and specification information for the Westell® Boxer™ BXM1019-NMT Outdoor Cabinet with built-in 10-RU high and 19" wide relay rack channels, shown in Figure 1. This product is designed to provide Network equipment protection in outdoor environments. The intended audience for this document is engineering, operations, and installation personnel of MSO, Telco, and utility companies. See Table 3 for product ordering information and available options, as well as information on the companion but optional battery box or skirt that can be mounted under the Boxer cabinet.

1.2 Document Status

Whenever this practice is updated, the reason will be stated in this paragraph.

1.3 Product Purpose and Description

Boxer is a compact, NEMA 3R outdoor cabinet that can house and protect a wide range of electronic equipment. Up to 10 vertical RUs (17.5") of 19-inch wide internal rack space is available to house Network equipment such as (but not limited to) multiplexers, copper bonding solutions, Ethernet switches and media converters, xDSL boxes, and DS3 hand-offs.

Boxer supports rapid equipment installation and wiring through the use of adjustable and removable 19" rack channels. An access panel is located at the rear of Boxer to allow easy access to the rear of the installed equipment. To ensure easy access for input and out cabling, Boxer includes ample room below the rack space as well as various sized conduit knock-outs.

1.4 Product Mounting

The Boxer cabinet is typically mounted outdoors, above ground, on an H-frame, or wall. Optional mounting kits are available to support a round pole (from 8" to 20" in diameter) or a square pedestal or post (minimum 8" wide). Concrete pad mounting is supported when used with the optional Boxer battery box or skirt. All mounting hardware must be capable of

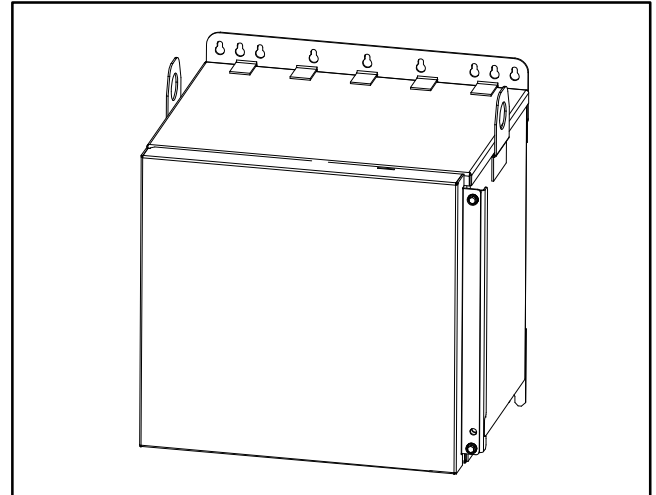


Figure 1. Isometric Closed View of Boxer Cabinet

supporting the weight of the Boxer cabinet (approximately 60 pounds) plus the weight of any equipment mounted in it. The Boxer cabinet is typically located at the customer premises but can be located anywhere a compact, weather-tight, outdoor cabinet is required.

1.5 Product Features

Each Boxer cabinet comes fully assembled, pre-wired, tested, and ready for field-provided customer equipment installation, and includes the following features and capabilities.

- NEMA 3R compliant
- Compact size (25" W x 22.5" H x 21" D)
- Weather-tight cabinet
- Full-size locking front door
- Rear-access panel
- Interior area provides 10 RUs of 19" rack mounting space
- Removable/adjustable rack channels
- Ample space for tie-downs and cable management
- Numerous ground/bond posts on interior ground plate
- Knock-outs at cabinet bottom accept a variety of cable, conduit, and connector sizes and types
- Door security via a locking, hex, cup-washer screw and a hole for a padlock
- Interior sliding wind latch
- Door sensor switch
- AC GFI and AC duplex outlet

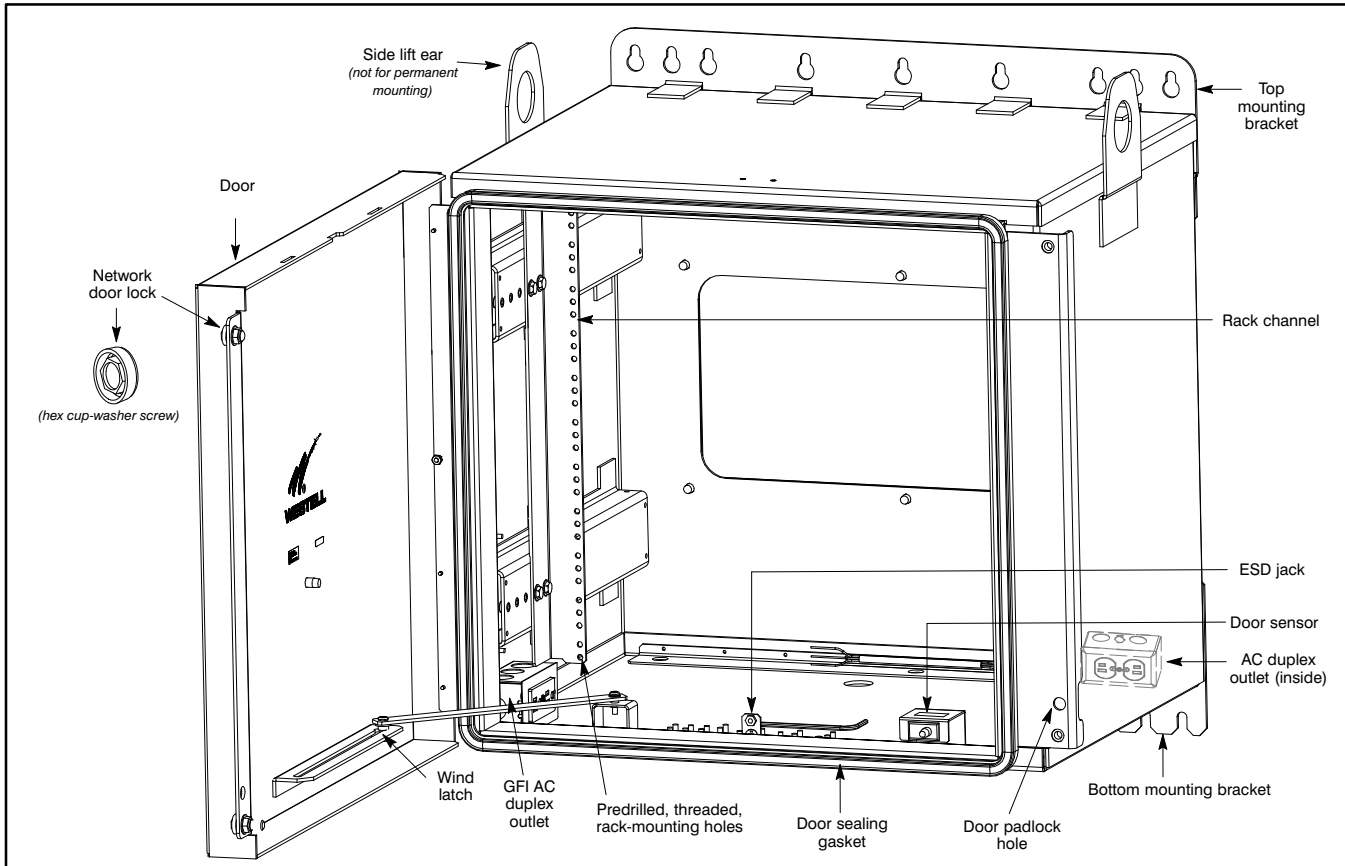


Figure 2. Isometric Open View of Boxer Cabinet

- Built-in mounting brackets allow H-frame or wall mounting
- Pole or pedestal mounting via optional pole-mount kit
- Pad mount using the optional battery box or skirt
- Convenient, heavy-duty, side-mounted, lift brackets
- Optional battery backup box available (knock-out hole patterns match in both units)
- Bagged parts: AC cable, vent cap, pin-in-hex wrench, ties
- Light-weight aluminum construction (0.125" thick wall, 60 pounds) with powder-coat finish

2. FEATURES

This section describes the exterior and interior features of the Westell® Boxer™ outdoor cabinet in more detail. Refer to Figure 2 through Figure 8 as needed while reading this section.

2.1 Exterior Features

The features located outside the large main cabinet are described hereunder. See Paragraph 2.2 for the interior features.

2.1.1 Construction and Materials

The Boxer cabinet is designed to be weather-tight for above-ground applications. As such, the powder-coat painted aluminum cabinet withstands many harsh weather conditions such as rain, snow, and sleet.

2.1.2 Front Door

A full-size locking door provides maximum technician and equipment access to the interior of the cabinet and also helps protect the cabinet from tampering and vandalism. A full-length hinge supports the big door in the open position. When the cabinet is mounted and the door is open, the minimum clearance or distance from the back of the mounting brackets to the outer edge of the door's lock flange is 42" (as shown in Figure 3). At the inside bottom of the door, near the hinge, a wind-latch, shown in Figure 2 and Figure 3, protects the door (and technician) from possible wind damage. The wind latch restricts the door's swing-out angle to a safe but functional opening (105 degrees). In the closed position, the inside perimeter of the door abuts a gasket installed around the outer perimeter of the cabinet's door opening. When both hex cup-washer screws (door locks) are tightened, the door and gasket provide a weather-tight seal to protect all equipment installed inside the cabinet. The door sensor is described in Paragraph 2.2.1.

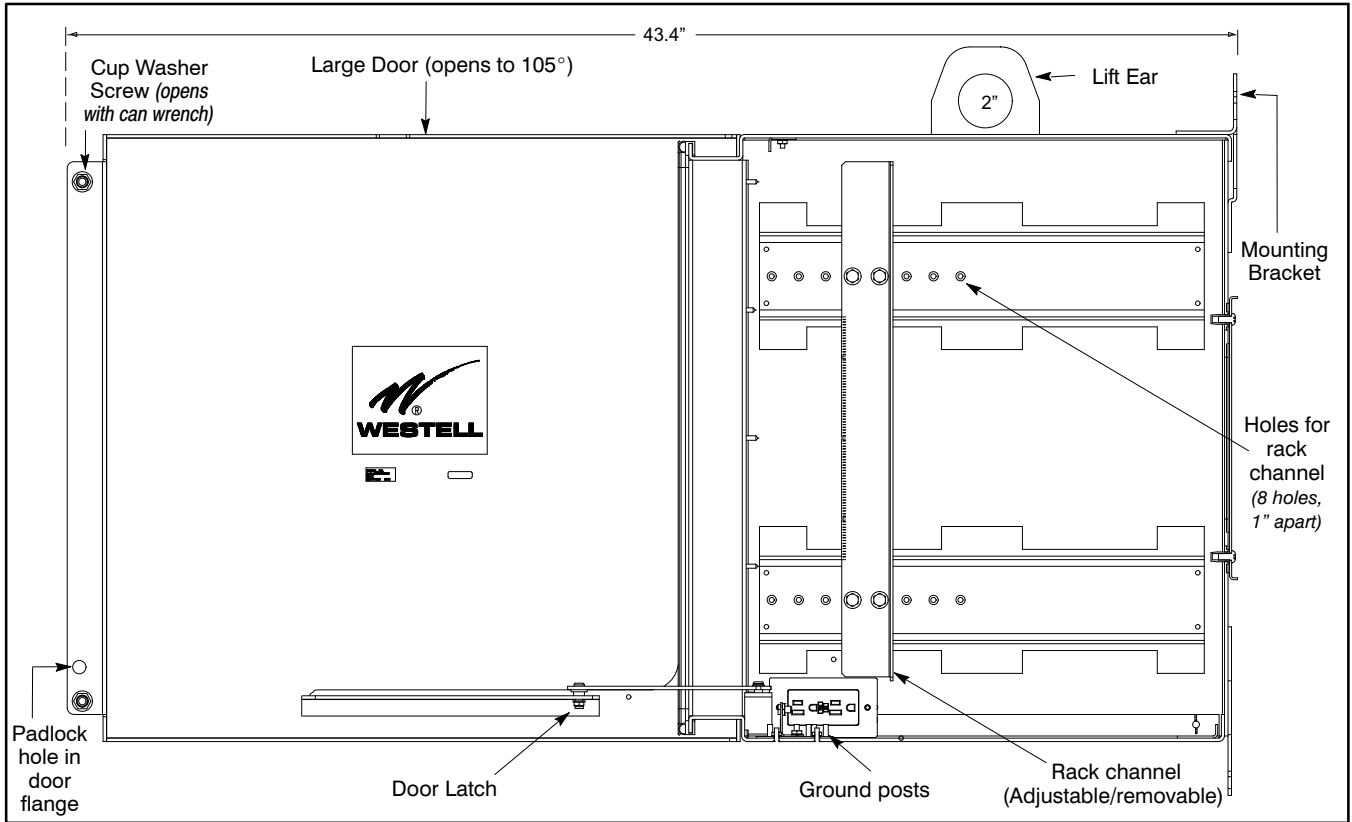


Figure 3. "See-Through" Right-Side View of Cabinet Interior, Door Open

2.1.3 Rear-Access Panel

A 10.5" x 19.5" rear-access panel, shown in Figure 4, is located at the rear of Boxer. The purpose of the access panel is to facilitate equipment access, cabling, and servicing. The panel is secured with six pin-in-hex screws which can be removed with a pin-in-hex wrench (provided).

2.1.4 Door Locks

To lock the door, two tamper-proof hex-nut-in-cup washer-screws are provided in the doors. These cup-washer screws (Figure 2) are loosened and tightened with a standard telco can wrench or 216 tool. In addition to providing security, when fully-tightened, these cup-washer screws help seal the cabinet and protect the interior environment from outside elements or contaminants by compressing the door(s) against their door-opening gasket(s). Additional security is available via holes in the door flanges which accept a field-provided lock or padlock.

2.1.5 Mounting Brackets

Full-width mounting brackets are provided at the back wall of the Boxer cabinet, one at the top and one at the bottom. Each bracket has nine mounting holes (top bracket) or slots (bottom bracket). Use mounting fasteners with a diameter of up to $\frac{3}{8}$ ". The horizontal distance between holes is shown in Figure 5. The vertical distance between the top and bottom mounting bracket holes is 25".

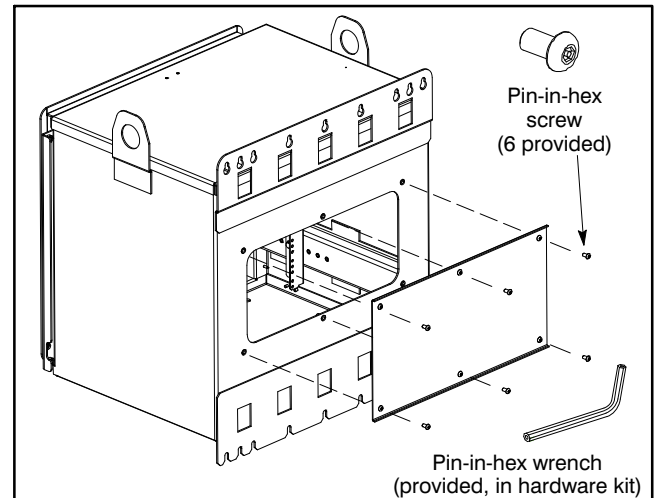


Figure 4. Rear View, Showing Rear Access Panel

2.1.6 Side Lift Ears

The Boxer cabinet is equipped with two external lift ears or brackets, one on each side, attached at the top of the cabinet. These lift ears can be used to lift the cabinet using lift equipment, for mounting purposes. Each ear has a hole with a 2" diameter, to accommodate various cable, strap, or hook sizes.

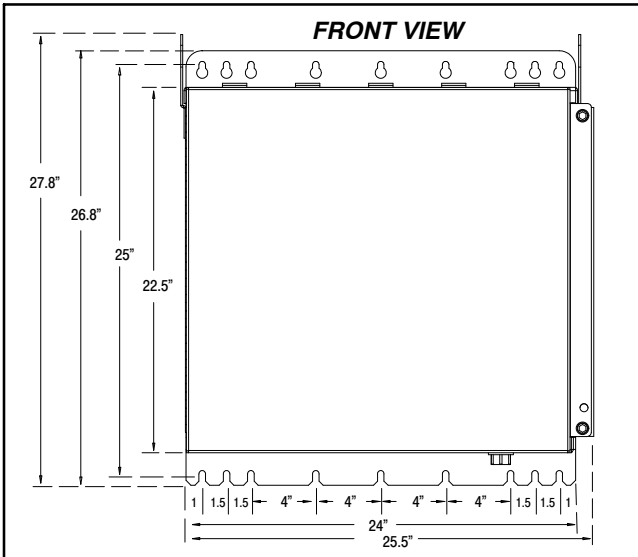


Figure 5. Front View, With Dimensions

Always use two straps of equal lengths, one for each lift ear, when using this method to lift the cabinet.

- KNOCK-OUT REMOVAL NOTE -
 Always remove knock-outs where holes are desired before mounting the cabinet or the optional battery box, regardless of the type of knock-out and the order of the mounting steps.

Quantity	Description
4	2.5" knock-out for 2" conduit
2	1.125" concentric knock-out, for 1/2" or 3/4" conduit.

Table 1. Knock-out Sizes and Quantities

2.1.7 Bottom Floor Knock-outs

Multiple knock-outs are provided on the floor of the cabinet. One near the center rear of the floor is for cable ingress and egress for an optional battery cabinet that can be mounted below the Boxer cabinet. Provided on the right side of the cabinet floor are multiple intact knock-outs, for easy cable access. The knock-out sizes and quantities are shown in Table 1 and Figure 6. Two "concentric" knock-outs are provided: depending upon which direction the knock-out is removed, either a 1/2" or 3/4" hole will be produced. Do not remove a knock-out unless it is absolutely necessary to do so for cable ingress and egress, and use either tight-fitting rubber grommets or liquid-tight fittings, or other proper and approved knock-out hole sealants, to assure the best internal air quality and weather-resistance. Always use proper and company-approved tools to remove knock-outs. There are five, small, 0.575" diameter knock-outs in the floor of the Boxer cabinet where an optional battery box attaches to the cabinet (hole patterns of both units match).

2.2 Interior Features

The features located inside Boxer are described hereunder.

2.2.1 Door Sensor Switch

A door sensor switch for door alarm reporting purposes is located at the bottom right corner of the cabinet door opening

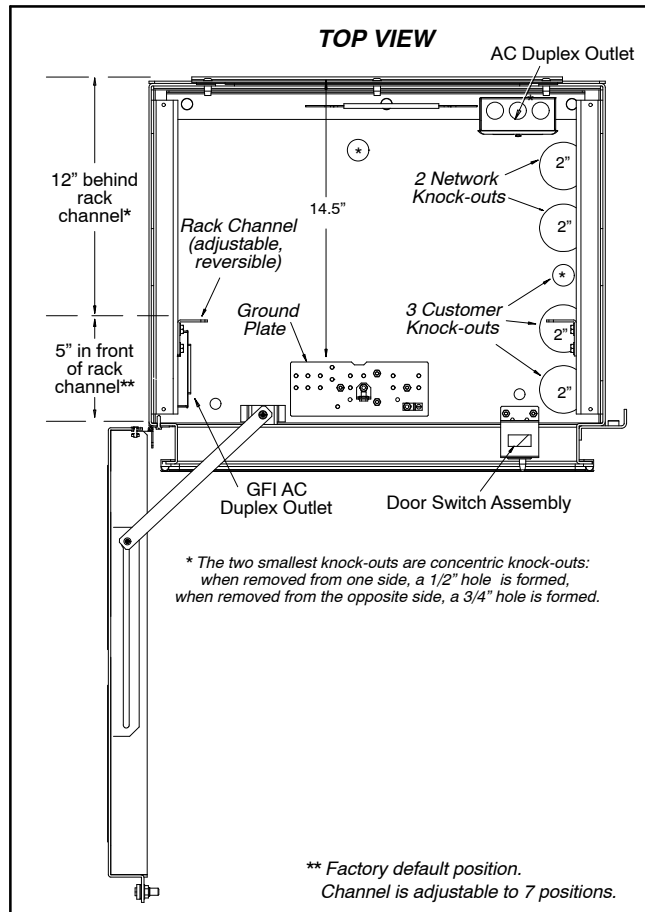


Figure 6. "See-Through" Top View of Cabinet, Door Open

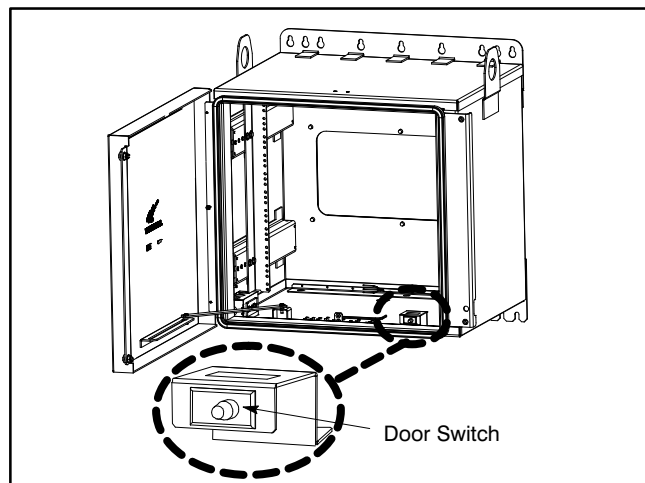


Figure 7. Door Sensor Switch Location

(Figure 7). This switch is factory-prewired to a cable stub; connect the cable stub as needed to the field-installed equipment. To temporarily disable the sensor, pull out the cylindrical door switch actuator until it clicks. To re-activate the sensor, either gently push the actuator back in until a click is heard, or simply close the cabinet door.

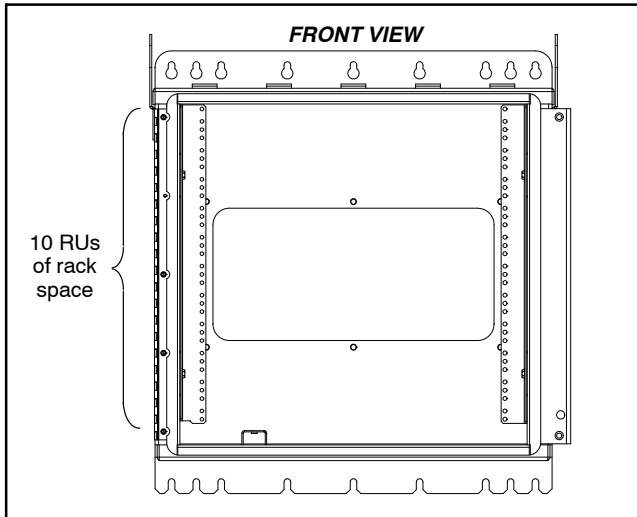


Figure 8. Internal Rack Space for Equipment

2.2.2 Internal 19" Rack Channels

Two removable/adjustable rack channels inside the cabinet provide 19" relay rack mounting for equipment that is to be mounted in the cabinet. Each channel is installed so approximately 5" of equipment space is available from the inside of the closed front door to the channel (for up to a 5" equipment projection), and approximately 12" of equipment space is available behind the channel to the rear cabinet wall. The channels can be moved forward 2" or backward 3", if a few additional inches of equipment depth is needed at either the front or back of the channel. Eight holes are provided for seven channel positions. Each rack channel also contains predrilled holes, with standard hole spacings (either 1", 1.75", or 2" rack hole patterns), to mount customer-supplied equipment in the cabinet. Network equipment up to 10 Rack Units (10 RUs = 17.5") high can be mounted on the internal rack inside the cabinet, either as a single piece or multiple pieces of equipment.

2.2.3 Grounding and Bonding Center

Boxer's grounding and bonding center is located on the bottom interior surface of the cabinet, close to the front door. A ground plate is provided that contains eight sets of ground posts and one copper ground lug, for cable and chassis/earth ground. Bond equipment/cables to the ground posts per company practice, and connect a #6 AWG chassis or earth ground wire to the ground lug. An Electro-Static Discharge (ESD) wrist-strap jack is also located on the ground plate.

2.2.4 AC Duplex & GFI Outlets for Installed Equipment

In the lower-right rear corner of the cabinet is an AC duplex outlet, for powering any customer-supplied AC-powered equipment mounted in the cabinet. When an external AC power source is connected to this outlet, AC power also can be provided to the GFI convenience outlet in the lower-left front corner of the cabinet, by installing the provided AC 3-wire cable.

3. INSTALLATION

Use and follow local codes and company practices to install the Westell® Boxer™ cabinet. If none exist, use the instructions contained herein. Installation consists of:

- inspecting the unit for possible shipping damages ,
- following proper safety precautions,
- reviewing pre-mounting considerations, such as selecting the mounting type and location, and preparing the mounting site,
- gathering all tools, materials, and equipment,
- removing knock-outs where holes are needed,
- mounting the cabinet,
- making ground and any power connections,
- powering up the cabinet (system power-up),
- mounting customer-supplied equipment inside the cabinet,
- making communication cable connections,
- making any needed alarm connections,
- optioning the installed equipment and placing it in service, and
- performing cabinet housekeeping, and closing and locking the cabinet.

The following paragraphs provide detailed instructions for performing these procedures.

3.1 Inspecting the Equipment

- INSPECTION NOTE -

Visually inspect the unit for damages prior to installation. If the equipment has been damaged in transit, immediately report the extent of the damage to the transportation company and to Westell (see Part 5 for telephone number).

- DESICCANT NOTE -

To prevent condensation during shipment and storage, Westell includes a desiccant pack within the Boxer cabinet. Once the electronic equipment is installed and turned-up, the internal power dissipation reduces the likelihood of condensation within the cabinet. However, follow company practices for desiccant maintenance procedures to prevent internal condensation.

3.2 Following Proper Safety Precautions

The cabinet should be installed only by authorized and trained personnel. Always exercise caution and follow all safety precautions.

Important Safety Instructions (Please Save)

When using your telephone/telecommunications equipment, follow basic safety instructions to reduce the risk of fire, electric shock, and injury to person(s), including the following:

- A. Read and understand all instructions.
- B. Follow all warnings and instructions marked on product.
- C. Do not place this product on an unstable cart, stand or table: the product may fall, causing serious damage to product.

- D. Slots and openings in the cabinet are provided for ventilation. To protect it from overheating, these openings must not be blocked or covered. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
- E. This product should be operated only from the type of power source indicated on the marking label.
- F. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in the risk of fire or electrical shock. Never spill liquids of any kind on the product.

- PRECAUTIONARY STATEMENT -

Never install telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

3.3 Selecting and Preparing the Mounting Type and Site (*Pre-Mounting Considerations*)

Mount the cabinet in a location with an adequate earth ground and power access, with unobstructed cabinet access, and which insures the best lighting, ventilation, heat dissipation, and equipment access. Verify sufficient space exists to allow the opening of the left-hinged large door, to access and mount the cabinet, to mount and access the optional battery box if it will be mounted below it, and to adequately access, prepare, and dress all cables. Adequate horizontal and vertical space should be left between any multiple installations to allow for cabinet opening, equipment access, and cable routings and preparations. Follow company practice for the proper distance from the cable entry point or from upstream or downstream equipment.

3.4 Gathering all Tools and Equipment

The following tools and supplies (not provided) are required to mount the Boxer cabinet.

Door Opening/Locking Tools

- 7/16" can wrench or 216 tool
- Padlock (optional)

Knock-Out Removal Tools

- Hammer
- Punch
- Pliers

Cabinet Mounting Tools, Equipment, and Hardware

- Tape measure
- Marking utensil (to mark mounting hole locations)
- Level (optional)
- Power or hand drill with assorted bits, plus long bits or drill bit extensions if pole mounting
- Socket driver and sockets, or wrenches
- Wall- or pole-mounting hardware, such as 3/8" diameter wood-type lag screws or bolts

- H-frame mounting hardware (for H-frame mounting)
- Optional pole-mount kit (for pole mounting)
- Outdoor site preparation tools
- Safety gloves and glasses (optional)
- Power hoist or lifting equipment and cables (optional)
- Assorted screwdrivers
- Appropriate ground wire and equipment

Cable Preparation Tools and Equipment

- Cable opening and preparation tools
- Proper lengths and types of communications cables
- Proper lengths and types of power cables and fittings
- Cable management supplies (ties, clips, markers, etc.)
- Power installation and testing equipment
- ESD protection

- KNOCK-OUT REMOVAL NOTE -

Always remove knock-outs where holes are desired before mounting the battery box or cabinet, regardless of the type of knock-out and regardless of the order of the mounting steps.

3.5 Removing the Knock-outs

Knock-outs should be removed wherever holes for cable access are needed prior to mounting the cabinet. See Figure 6 or Table 1 for knock-out sizes, quantities, and locations, and follow the steps below to remove the knock-outs.

1. **Open the cabinet door.** If knock-outs will need to be removed, using a 216 tool or can wrench, open the large front door of the Boxer cabinet to access the knock-outs.
2. **Remove knock-out(s).** Prior to mounting the cabinet, per company practice, remove as many appropriately-sized knock-outs at the bottom of the cabinet as needed for the specific application (consider ground, power, and communication cable access needs, venting, and whether optionally mounting a battery box with the cabinet).
3. **Install rubber grommets or conduit fittings.** Install either a heavy-duty rubber grommet or the conduit fitting of choice (liquid-tight recommended) in each selected knock-out hole. If an optional vent is desired, the provided vent cap can be installed in one of the smaller knock-outs.
4. **Close the cabinet door.** Once the knock-outs are removed, lock the door using the 216 tool or can wrench, to minimize possible product damage and personal injury.

3.6 Mounting the Cabinet

The Boxer cabinet is typically mounted outdoors, above ground, on an H-frame or wall. Optional mounting kits are available to support a round pole (from 8" to 20" in diameter) or a square pedestal or post (minimum 8" wide). Concrete pad mounting is supported when used with the optional Boxer battery box or skirt. All mounting hardware (not provided) must be capable of supporting the weight of the Boxer cabinet (approximately 58 pounds) plus the weight of any equipment mounted in it. For convenience, lift hooks or ears are provided. Run all cables to the mounting location, perform any trenching, trench cable placements, and backfilling prior to the cabinet mounting, and clear the installation area of any debris, vegetation, and unneeded equipment or obstacles.

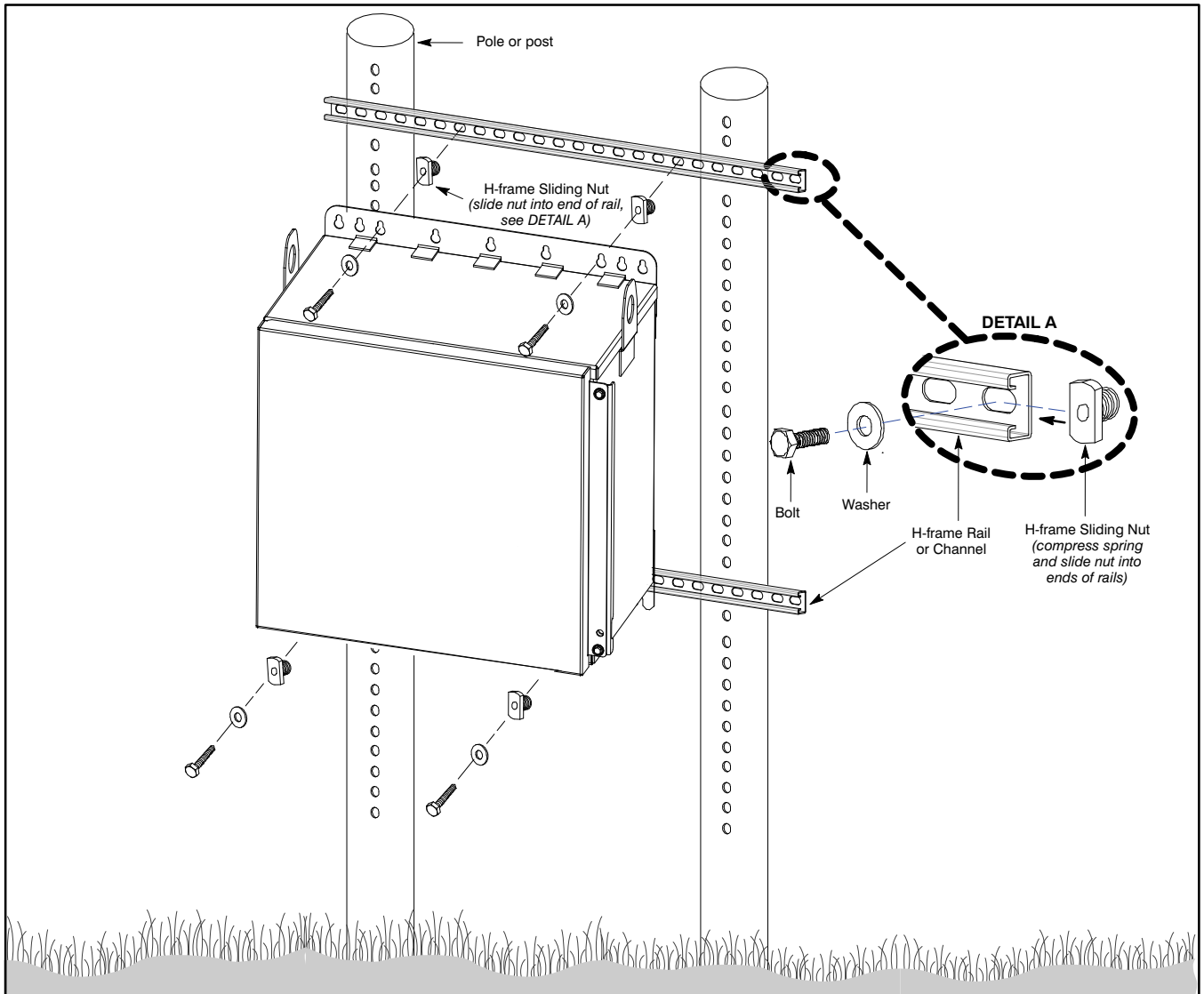


Figure 9. H-Frame Mounting

- WEIGHT NOTE -

The Boxer cabinet weighs 60 pounds. The weight of the internal equipment installed in the Boxer should not exceed 50 pounds. The mounting surface, structure, and hardware must be able to support the combined weight (110 pounds).

3.6.1 Mounting on an H-Frame

Follow the steps below to mount the Boxer cabinet on an H-frame. See Figure 9 for an H-frame mounting drawing. If the installation includes the battery box, attach the battery box to the cabinet prior to mounting to the H-Frame.

1. **Determine exact mounting location in H-frame.** Select and mark the exact horizontal and vertical final mounting location within the H-frame. The spacing between the top and bottom horizontal rail mounting holes should be 25" (on centers, see Figure 5). Westell recommends a height of 30" from the ground. In addition to allowing for a comfortable installer working height, leave adequate space under

Boxer for cable access (or an optional battery box), as stated in Paragraph 3.3, as well as in front of the mounting to allow the door to open (see Figure 3), and at the sides in the event of any multiple installations.

2. **Remove knock-outs.** See the steps in Paragraph 3.5 (*Removing the Knock-outs*) to remove the knock-outs where any cable access holes (or holes for mounting the optional battery box) are desired.
3. **Prepare the mounting hardware.** Bring the appropriate mounting hardware to the installation site. The hardware must be capable of supporting the weight of the cabinet plus the weight of the added internal equipment. Insert all rail nuts into the channel (compress the spring on the nuts as needed) and slide them over to the marked mounting location.
4. **Lift cabinet.** Lift the cabinet to the mounting height. If using lift equipment, use two cables or straps of equal length, one connected to each lift ear, for a balanced symmetrical

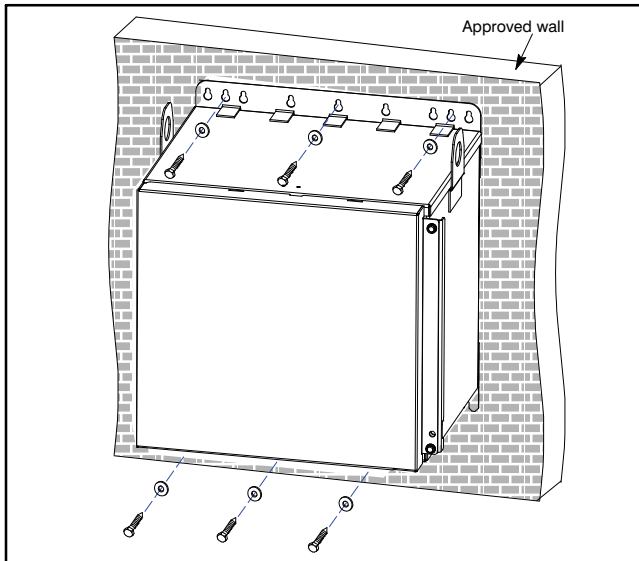


Figure 10. Wall Mounting

lift. The lift ears are provided at the top of the cabinet, one at each side wall, and each lift ear has a 2" hole in it.

5. **Attach cabinet to H-frame rails.** Align the holes in the cabinet's top mounting bracket with the holes in the inserted rail nuts in the H-frame, then insert and install an appropriate bolt through each set of aligned holes. Tighten appropriately. Repeat for the bottom mounting bracket and H-frame rail. Verify the cabinet is in the proper horizontal position, make any needed adjustments, then securely tighten all mounting hardware.
 6. **Test installation firmness.** Test the installation by attempting to move the cabinet. Correct any looseness, if detected.
 7. **Determine next step.** If ground, power, and communications cables and internal equipment will not be connected and mounted at this time, proceed to the next step to finalize the cabinet installation. If ground, power, and communications cables and internal equipment will be connected, mounted, and powered-up at this time, skip the next step and proceed to Paragraphs 3.7 through Paragraph 3.14 for those procedures.
 8. **Close up cabinet and clean the site.** If not already closed, close the Boxer door, and lock it using a can wrench or 216 tool and an optional padlock. Pick up any tools and materials at the installation site, and clean the site of any trash or debris.
- 3.6.2 Mounting on a Pole or Post**
- Order the optional pole/pedestal mounting kit (listed in Table 3) for details on post or pole-mounting the Boxer cabinet.
- 3.6.3 Mounting on a Wall**
- Follow the steps below to mount the Boxer cabinet to an approved wall (Figure 10). The approved wall must be capable of supporting the combined weight of the cabinet, the equipment mounted inside the cabinet, plus the optional battery box (and batteries), if installed. Westell recommends a minimum installation height of 30" from the ground. See Figure 5 for cabinet and mounting hole dimensions.
1. **Remove knock-outs.** See Paragraph 3.5 (*Removing the Knock-outs*) to remove the knock-outs where any cable access holes are desired.
 2. **Find best wall position.** Locate the best mounting position for the cabinet on the wall. Verify this location meets all cabinet spacing requirements.
 3. **Prepare the mounting hardware.** Bring the appropriate mounting hardware to the installation site. The hardware must be capable of supporting the weight of the cabinet plus the weight of the added internal equipment.
 4. **Determine mounting height and mark top hole locations.** Measure and mark the top mounting hole locations on the wall, in a straight level line. This can be done without lifting and using the equipment as a template by consulting the dimensions shown in Figure 5. Westell recommends a height of 30" from the ground. In addition to allowing for a comfortable installer working height, leave adequate space under Boxer for cable access (or an optional battery box), as stated in Paragraph 3.3, as well as in front of the mounting to allow the door to open and at the sides in the event of any multiple installations. With a marking utensil, mark the top mounting holes to be drilled, in a level horizontal line, at the desired wall height.
 5. **Drill top mounting holes.** Drill appropriately-sized pilot holes, slightly smaller than the width and depth of the mounting bolts, screws or fasteners, at the marked location. *Do not drill the holes too large.*
 6. **Partially install bolts.** Partially install the bolts until only 1/2" remains.
 7. **Lift cabinet, and align mounting holes.** Lift the cabinet to the partially installed bolts, align the top bracket keyholes with the bolts, then hang the cabinet from the bolts. If using lift equipment, use two cables or straps of equal length, one connected to each lift ear, for a balanced symmetrical lift. The lift ears are provided at the top of the cabinet, one at each side wall, and each lift ear has a 2" hole in it.
 8. **Fully install the top mounting bolts.** Verify the cabinet is level. Finish driving the top mounting bolts until they are snug and the cabinet is flush and tight against the wall. Manually test the bolt tightness to verify the bolts will support the cabinet weight before the next step. Correct any level or mounting bolt discrepancies.
 9. **Mark and drill bottom mounting holes.** Mark the exact locations for the bottom bracket's mounting bolts through the predrilled slotted holes in the bottom mounting bracket. Drill appropriately-sized pilot holes, slightly smaller than the width and depth of the bolts, at the marked locations. *Do not drill the holes too large.*
 10. **Install bottom mounting bolts.** Insert and drive all bottom bolts completely in to their final seated position. Finish the installation by verifying all bolts are firm and snug.
 11. **Determine next step, or close up cabinet and clean the site.** Repeat Steps 6-8 of Paragraph 3.6.1 to determine the next step or finish the physical cabinet installation.

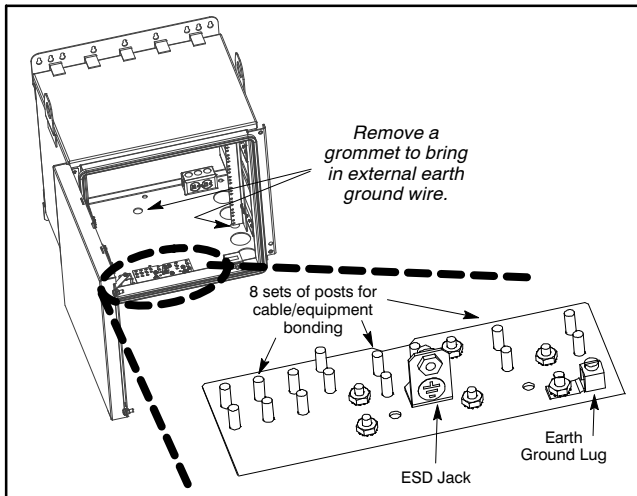


Figure 11. Cabinet, Cable, and Equipment Ground Plate

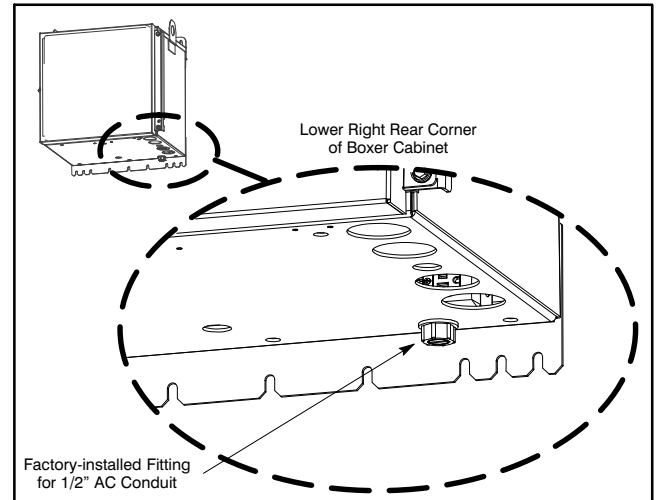


Figure 12. Conduit Fitting for AC Wiring

- NOTE -

Always follow local safety precautions and standard operating procedures for grounding the equipment when installing, upgrading, repairing or maintaining equipment. Any instructions or information contained herein is subordinate to local codes, operating procedures or practices.

- NOTE -

To improve the integrity of the cable entries seal when rubber grommets are used, a water-proof foam or silicone sealant should be used on the interior side of the cabinet, around the exposed grommet and cable entry.

3.7 Making Ground Connections

Eight sets of bond/ground posts are provided on a ground plate on the interior floor of the cabinet (see Figure 11). These posts are provided to bond network and customer equipment or communications cables. An external earth ground rod or wire (#6 AWG) must enter the cabinet and be connected to a ground lug located on the interior ground plate. **Make all ground connections prior to any telecommunications cable connections.**

1. **Locate or establish an external earth ground.** Find or create an external and appropriate earth ground, per company practice and local codes.
2. **Remove a knock-out for the earth ground wire.** Per company practice, determine which cabinet knock-out hole location should be used for earth ground wire entrance (see Figure 11). If not already removed, remove the selected knock-out.
3. **Install a rubber grommet or liquid-tight fitting.** Install either conduit and an appropriate and liquid-tight fitting or a rubber grommet in the knock-out hole.
4. **Route ground wire through knock-out hole.** Run the ground wire through the grommet or conduit, to the ground lug.
5. **Connect earth ground wire.** Connect the earth ground wire to the #6 AWG ground lug, per company practice.
6. **Seal the earth ground entrance hole.** Depending on the type of fitting or grommet used, it may be necessary to seal the ground wire entrance hole, as stated in the note below.

7. **Ground cables and installed equipment.** As each cable and piece of equipment is mounted inside the cabinet (in the following sections), connect it to a ground lug or post provided on the ground plate, per company practice.
8. **Use ESD ground jack.** Whenever installing equipment or performing system testing or maintenance, use the provided ESD ground jack also provided on the cabinet's interior ground plate.

3.8 Optionally Connecting External AC Power

For convenience, an internal AC duplex outlet is factory-installed on the interior floor of the cabinet near the rear right corner (see Figure 13), which is connected to a standard, electrical, 1/2" conduit connector also factory-installed at the exterior bottom of the cabinet (see Figure 12). To use an external 120 VAC power source to power any equipment that will be installed in the Boxer cabinet, connect 120 VAC to Boxer's internal AC duplex outlet via the exterior conduit connector. A co-located pedestal with common access to Boxer shall be used to deliver AC power. The pedestal shall contain a distribution panel, 20 amp circuit breaker, and gapless suppressors. The pedestal shall be capable of accepting 120/240 volts, single phase, and provide hardware for mounting a power meter. However, Boxer must only be supplied with 120 volts.

Follow the steps below to connect an external 120 VAC power source to the Boxer cabinet. **All components in the pedestal must be listed by a Nationally Recognized Testing Laboratory (NRTL), all company practices, local codes, and National Electric Codes must be followed, and only a qualified electrician should perform the AC electrical installation.**

1. **Verify the power source.** Verify the power source is in good working condition.
2. **Remove or disable power.** Disable the power at the power source before proceeding (power is re-applied in Paragraph 3.10).

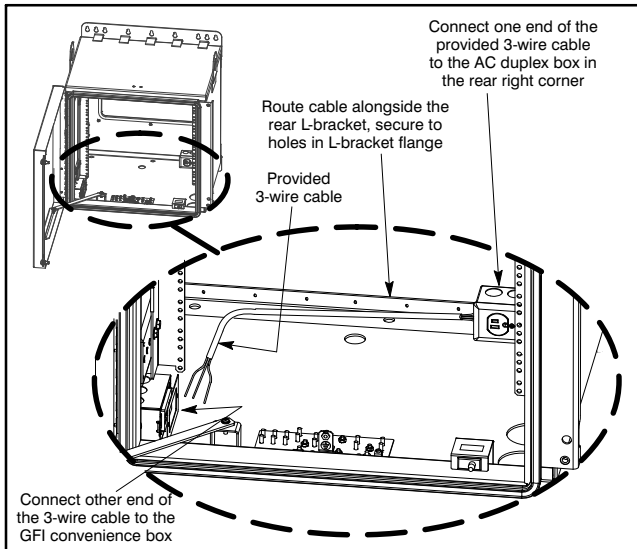


Figure 13. Installing GFI-Box-To-AC-Box Cable

3. **Verify the knock-outs are removed.** Perform the steps in Paragraph 3.5 to remove any appropriate cabinet hole knock-out(s), and to install an appropriate fitting or grommet in the knock-out hole (if needed). Note that Westell has conveniently factory-installed one *external*, electrical, 1/2-conduit connector (and plug), connected directly to the AC outlet box *inside* the cabinet, for AC applications that use 1/2" conduit.
4. **Install conduit.** Install all required conduit from the power source to the conduit connector or fitting installed on the bottom of the cabinet.
5. **Open Boxer's AC outlet box and prepare wires.** Open the AC outlet box and locate and prepare the wires for the external AC electrical connections. *Also see Paragraph 3.9 if it is also desired to wire Boxer's GFI convenience outlet.*
6. **Fish or route wires.** Fish or route the AC wires from the power source through the conduit to the Boxer cabinet, routing the wires up through the cabinet's conduit connector and AC outlet box.
7. **Make the AC electrical wire connections.** Perform the electrical wire connections.
8. **Close the AC outlet box.** Place all wires back inside the AC outlet box, perform any needed wire management, and close up the outlet box.
9. **Proceed to Paragraph 3.10.** Proceed to Paragraph 3.10 for system power-up.

3.9 Optionally Wiring the GFI Outlet

A GFI convenience outlet is factory-installed in the cabinet near the front left corner (see Figure 13) that optionally can be used by technicians as a temporary outlet for test equipment. If the AC duplex outlet in the lower-right rear corner of the cabinet is wired to an external AC source, AC power optionally can be provided to this GFI convenience outlet by installing the provided AC/GFI cable. Locate this standard color-coded 3-wire cable and install it between the GFI and AC duplex outlets, per National Electrical Code (NEC) rules, local codes,

and company practices. Use cable ties and the holes in the flange of the L-bracket located along the bottom rear of the cabinet for routing and securing this cable.

- WARNING -

Any cabinet AC/DC power wiring, cabling, and installation methods, both externally to the cabinet and installation and wiring of internal cabinet equipment, must be performed by a qualified electrician in accordance with the National Electrical Code (NEC) rules and local codes and practices.

3.10 Performing System Power-Up

Before mounting any field-provided communications equipment in the cabinet, verify all internal Boxer equipment and power connections are functional. Follow the steps below to perform a Boxer system power-up procedure.

1. **Verify all power and ground connections are complete.** Examine the earth ground and all power connections inside and outside the Boxer cabinet and verify they are safe, secure, and complete.
2. **Turn on the external power source.** Apply the power from the external power source.
3. **Verify internal equipment is operational.** Verify the internal equipment is working properly, per company practices and manufacturer instructions.

- DESICCANT NOTE -

To prevent condensation during shipment and storage, Westell includes a desiccant pack within the Boxer cabinet. Once the electronic equipment is installed and turned-up, the internal power dissipation reduces the likelihood of condensation within the cabinet. However, follow company practices for desiccant maintenance procedures to prevent internal condensation.

3.11 Mounting Equipment Inside Boxer

Boxer utilizes a 10 RU high and 19" wide rack with adjustable/removable rack channels. Eight threaded holes are provided on the inside walls which allow the channels to be mounted in one of seven different positions (can be adjusted forward or backward as needed to support Network equipment). Boxer's rack-hole pattern accommodates a wide variety of equipment and mounting bracket hole patterns.

Always follow company practices and the guidelines below when mounting equipment inside the cabinet.

1. Verify the combined equipment height does not exceed 10 RUs.
2. Verify the combined weight of all customer-supplied equipment installed inside Boxer does not exceed 50 pounds.
3. Verify any equipment to be installed in the cabinet will not extend into the door of the cabinet.
4. Verify each piece of equipment does not exceed the cabinet's interior width or depth.
5. Determine the best mounting location for each piece of equipment, for maximum capacity.
6. Verify the combined wattage of all equipment installed in the cabinet does not exceed 600 watts.

7. *Determine/adjust* the rack channel depth (optional). The channels are factory installed for 5" of clearance in front of the rack and 12" of clearance behind the rack. If a different clearance is required, remove the bolts from each channel (best shown in Figure 3), position the channels as needed, and re-install the bolts into each rack channel.
8. Use the bond posts provided on the ground plate as needed for bonding or grounding any cables or equipment installed inside the cabinet.

3.12 Connecting Communication Cables

The types of communication cables used and their connector types (if any) vary per the application and the equipment installed inside the cabinet. To accommodate a variety of cable and connector sizes, the Boxer cabinet has six cable-hole knock-outs of various sizes, as shown in Table 1 and Figure 6.

1. Run the communications cables to the Boxer cabinet.
2. Insert and route the cable through the desired grommet.
3. Attach the cable's connector to the appropriate connector of the targeted equipment. The rear access panel can be removed to facilitate this step, if desired (see Figure 4).
4. Repeat for each cable.
5. Make any desired connections between pieces of equipment.
6. Use the bond posts and ground lugs provided on the ground plate as needed for bonding and grounding any communications cables brought into the Boxer cabinet.

3.13 Making Door Alarm Connections

Connect the factory-provided door alarm wire to the Alarm input of the field-installed alarm monitoring device.

- DEACTIVATING THE DOOR ALARM -

The door alarm sensor can be temporarily disabled during equipment installation or maintenance by gently pulling out the cylindrical-shaped switch actuator until it clicks. Closing the door automatically resets and enables the sensor. To manually enable the door alarm sensor, gently push the switch actuator back in until a click is heard.

3.14 Optioning Installed Equipment

Make all option settings on the installed equipment per equipment manufacturer instructions and company practices. If needed, remove the rear access panel (shown in Figure 4) with the provided pin-in-hex wrench to access any rear-facing options, switches, jacks, or connectors, etc.

3.15 Performing Cabinet Housekeeping

Verify all equipment is secure, verify all wires and cables are neatly organized and managed, verify all bonding and grounding connections are made at the ground plate, and verify no equipment, tie-downs, cables, or wires will interfere with the closing of the door. Clean up the installation site per company practice.

3.16 Closing and Locking the Cabinet

Upon completion, the installer should close and lock the cabinet by tightening both cup-washer screws. The customer may optionally lock the door with a padlock (customer supplied) through the holes provided for it at the bottom of the door-lock flanges.

4. SERVICE AND REPAIRS

Replacing parts is the only recommended type of field repair for the Westell® Boxer™ cabinet. The list below contains the only Boxer parts which may be ordered and field-replaced (see Part 5 for a telephone number, Table 3 for part numbers, and Paragraph 6.2 for the return procedure). See Paragraph 4.1 for detailed steps to remove and replace this part.

Field-replaceable parts:

- Door Alarm Sensor Assembly (part # 080-300389)

4.1 Replacing the Door Alarm Sensor

Door alarm sensor switch cannot be field repaired. Should a problem be suspected with the door alarm, remove the entire door alarm switch assembly and return it to Westell for service, then replace it. To remove and replace the door alarm switch assembly, proceed with the following instructions.

1. **Open the cabinet.** Open the large main cabinet door.
2. **Remove door sensor assembly mounting screws.** Remove the nuts that attach the door alarm sensor to the threaded posts in the lower, right, inside corner of the open cabinet, best seen in Figure 6.
3. **Partially pull out door sensor assembly to disconnect cable.** Lift and slightly pull out the door sensor assembly to access the cable wires. Carefully disconnect each wire one at a time, noting which terminal was used and noting or labelling the color or polarity of each connector, for easy re-connection to the new assembly.
4. **Remove the door sensor assembly.** Fully remove the old door sensor assembly.
5. **Install the new door sensor assembly.** Reverse the steps above to install the replacement door alarm sensor assembly. When re-attaching the door alarm cable's two connectors to the new door switch sensor assembly, verify the following:
 - verify the connectors are routed so that they reach the back of the door sensor,
 - verify that the door alarm cable's black wire connects to the door switch terminal lug labelled "COM," and that the cable's red wire connects to the terminal lug labelled "NC", and
 - after re-attaching the entire door sensor assembly to the cabinet via the two hex nuts, verify that the door alarm is not present when installation is complete and power is re-applied.

5. CUSTOMER & TECHNICAL SERVICES

5.1 Customer Service & Technical Assistance

If technical or customer assistance is required, contact Westell by calling or using one of the following options:

Voice: (800) 377-8766
email: global_support@westell.com

For additional information about Westell, visit the Westell World Wide Web site at <http://www.Westell.com>.

5.2 Part Numbers

This equipment is identified by a product number (A90-BXM1019-NMT), which consists of three parts: the issue letter of the equipment (A), the assembly type (90), and the specific model number (BXM1019-NMT). Each time a change is made to the product which changes the form, fit, or function of the product, the issue letter is incremented or advanced by one. Be sure to indicate the issue level as well as the model number when making inquiries about the equipment.

6. WARRANTY & RETURNS

6.1 Warranty

Westell warrants this product to be free of defects at the time of shipment. Westell also warrants this product to be fully functional for the time period specified by the terms and conditions governing the sale of the product. Any attempt to repair or modify the equipment by anyone other than an authorized Westell representative will void the warranty.

6.2 Return and Replacement Policy

Westell will repair or replace any defective Westell equipment without cost during the warranty period if the unit is defective for any reason other than abuse, improper use, or improper installation. Before returning the defective equipment, first request a Return Material Authorization (RMA) number from Westell. Once an RMA number is obtained, return the defective unit, freight prepaid, and a brief problem description to:

Voice: (630) 375-4457
email: rgmdept@westell.com

Replacements will be shipped in the fastest manner consistent with the urgency of the situation. Westell will continue to repair or replace faulty equipment beyond the warranty period for a nominal charge. Contact Westell for details.

7. SPECIFICATIONS

7.1 Physical Specifications

The Boxer™ physical specifications are shown in Table 2.

7.2 Regulatory/Agency Specifications

The Boxer cabinet is designed to meet the following regulatory, safety or environmental specifications or requirements:

- NEMA 3R compliant

7.3 Ordering Specifications

To order units, call the telephone number shown in Paragraph 5.1 and specify a specific model number shown in Table 3.

Physical Feature	U.S.	Metric
Height (<i>bottom bracket to top lift ear</i>)	27.8 in.	70.6 cm
Height (<i>between mounting holes</i>)	25.2 in.	64 cm
Height (<i>cabinet only, exterior</i>)	22.5 in.	57.2 cm
Width (<i>exterior</i>)	25.5 in.	64.8 cm
Width (<i>interior</i>)	21 in.	53.3 cm
Width (<i>interior, between channels</i>)	17.85 in.	45.3 cm
Depth (<i>door closed</i>)	21 in.	53.3 cm
Depth (<i>door open 90°</i>)	43.4 in.	110.2 cm
Depth (<i>internal</i>)	17.5 in.	44.45 cm
Weight (<i>cabinet, approx.</i>)	60 lbs.	27.24 kg
Weight Load (<i>Max.</i>)	50 lbs.	23 kg
Operating Temperature (<i>including solar loading</i>)	-40° to 149°F	-40° to 65°C
Humidity	0 to 95% (non-condensing)	
Mounting*	H-Frame, wall, pole or pad	

* Boxer can be pad-mounted when mounted and mated with an optional battery box, and pole mounted with the pole mount kit (see Table 3).

Table 2. Boxer Cabinet Physical Specifications

Part #	Description
A90-BXM1019-NMT	Boxer™, no active cooling, with single full-size door, built-in 10RU 19" rack, AC & GFI outlets, screw-down rear panel
Additional Boxer Cabinets	
A90-BXM1019-NHE2	Boxer 400W, 24VDC heat exchanger cooling, 10RU 19" rack, AC & GFI outlets, screw-down rear-access panel
A90-BXM1019-HHE2	Same as A90-BXM1019-NHE2 (24VDC) but with a <i>hinged</i> rear-access panel
A90-BXM1019-NHE	Same as A90-BXM1019-NHE2 above but with -48VDC heat exchanger cooling
A90-BXM1019-HHE	Same as A90-BXM1019-NHE but with a <i>hinged</i> rear-access panel
A90-BXM1019-CAF	Boxer 600W, -48VDC fan cooling, 10RU 19" rack, AC & GFI outlets, separate customer door, screw-down rear panel
Boxer Options	
A90-BXB19-A	Boxer 19 Battery Box, mounts under a Boxer cabinet.
A90-BXB19-B	Same as BXB19-A but with heater pad
A90-BXB19-C	Same as BXB19-A but with knockouts
A90-BXS19-14	Boxer 19 14" Skirt, for mounting under a Boxer cabinet.
A90-BXA-HP01	Boxer battery heater pad.
A90-BXA19-PT1	Boxer 19" pad mount template kit.
A90-BXA-PM02	Boxer main pole mount kit for a single Boxer cabinet.
A90-BXA-PM03	Boxer main cabinet plus battery box pole mount kit.
A90-BXA-WH01	Boxer main cabinet plus battery box Wall & H-Frame mount kit.
A90-BXA-CK01	Coupling kit: two 1/2", two 3/4", four 2".
080-300389	Door alarm sensor assembly

Table 3. Ordering and Option Information