Technical Manual

CBS ArcSafe®

RRS-2-BE (Remote Racking System)

Distance Is Safety®

CBS ArcSafe®

A Group CBS Company

P.O. Box 550
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(940) 382-4411
www.CBS ArcSafe.com

About the User's Guide

This user's guide describes the functions and features of the CBS ArcSafe® RRS-2-BE. This technical document is intended to act as a simplified reference for users of the equipment, allowing for safe, quick, and efficient use of the RRS-2-BE features.

Before You Begin

DANGER!

This is a red hazard alert warning box; red hazard alert boxes contain information pointing out potential hazards to personnel and equipment.

ATTENTION

This is a green information box; green information boxes are used to place emphasis on valuable information the user will want to pay particular attention to.

DANGER!

Ensure that personnel using this equipment are adequately trained in the operation of the switchgear they are planning to work with; that they are correctly stationed outside the arc flash boundary; and that they comply with all applicable Federal, State, Local, and In-house safety regulations and procedures. Attention should be given to distance, angle, and personal protective equipment (PPE).

DANGER!

Ensure that switchgear is properly maintained and in good working order before using the RRS-2 on your switchgear. Contact your local group CBS service provider at www.gcbs.com to assist in proper care and maintenance for your switchgear.

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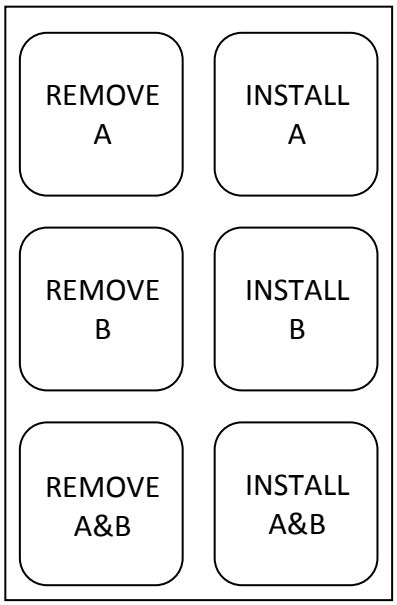
1.0 Description

The *CBS ArcSafe®* RRS-2-BE is a portable, highly configurable remote racking system designed to reposition circuit breakers that are equipped with non-rotary racking mechanisms. The primary goal for the design and operation of the RRS-2-BE remote racking system is to reposition circuit breakers with the operator positioned safely outside of the arc flash boundary.

The RRS-2 is powered from either standard AC power or the internal battery. The RRS-2-BE is operated with the RSO-BE via a radio. The pendant station allows for the operator to manipulate the tooling assembly which repositions the circuit breaker when equipped with the required tooling.

2.0 Pendant Station Operation

With the RRS-2-BE the pendant station has a unique set of controls which are as follows.



3.0 Preparation and Operation

The preparation and operation of the remote rack is described in the following sections and include:

3.1 Set up Training

This section lists the necessary steps to set up training for your RRS-2-BE.

3.2 Unpacking the RRS-2-BE

This section lists the necessary steps to uncrate the remote rack and prepare it for operational readiness.

3.3 Charging the RRS-2-BE

This section describes the procedure for charging the remote racking system to prepare it for future operations.

3.4 Setting the Actuator Limit Switches

This section describes the procedure for charging the remote racking system to prepare it for future operations.

3.5 Setting up the RRS-2-BE for Operation

This section lists the preliminary steps for operation.

3.1 Set up Training

Included with your purchase of the RRS-2-BE is 4 hours of training from either a CBS ArcSafe® equipment representative or an approved CBS ArcSafe® outside representative. Please call CBS ArcSafe® at (940) 382-4411 to set up this FREE training seminar for your service personnel prior to ANY operations.

DANGER!

It is VERY important to have proper training before using this unit as improper use may damage your RRS-2-BE and void all warranties written or implied.

3.2 Unpacking the RRS-2-BE

The RRS-2-BE is placed in a protected condition to allow the unit to be shipped more efficiently and to prevent damage from occurring. Perform the following steps to unpack the RRS-2-BE and prepare it for operation.

DANGER!

Do not unpack the RRS-2-BE until your FREE training seminar has been provided. Unpacking the unit before training may void your warranty. This guide is intended for personnel that have already received the proper training.

1. *Remove the cardboard cover* by cutting the perimeter at the base with a utility knife or removing the nails/screws.

2. Carefully *remove the steel strapping* that secures the remote rack to the pallet and roll the unit onto the floor.

3. Inventory the CBS ArcSafe® RRS-2-BE components to ensure nothing is missing. A CBS ArcSafe® representative will assist with inventory before the FREE training seminar.

4. If pneumatic tires are installed on the unit *(optional),* ensure the tires are inflated to their proper pressure.

5. Properly attach necessary tooling to the RRS-2-BE.

6. The CBS ArcSafe® RRS-2-BE is now ready for charging and setting up for operation.

3.3 Charging the RRS-2-BE

The CBS ArcSafe® remote racking unit is equipped with batteries to enable operation when AC power is unavailable. Perform the following steps to charge and store the unit to prepare for future operation:

1. Rotate the power switch to the OFF position if not using the RRS-2-BE.

ATTENTION

It is perfectly safe to charge the RRS-2-BE during operations; however the unit uses up battery power at a much faster rate than it charges which means for proper operation you must charge the RRS-2-BE fully before starting the remote racking operation. If you leave the unit on while storing it, the unit will pull unnecessary electricity from the outlet.

2. Connect the RRS-2-BE Power Supply into an AC outlet via the included power cable and ensure that the red light on the side of the unit turns on while plugged in and charging.

3. While charging feel free to use the RRS-2-BE in normal operation mode.

4. Whenever possible, leave the CBS ArcSafe® RRS-2-BE plugged in and properly stowed with either the CBS ArcSafe® dust cover or the waterproof cover to ensure the RRS-2-BE is protected until the next operation. Once fully charged the battery charger switches to a 'Standby Voltage Mode' maintaining a fully charged battery.

DANGER!

Storing the RRS-2-BE in freezing temperatures will drastically reduce battery performance, CBS ArcSafe® recommends storing the unit where temperatures are regulated 68˚F to 77˚F. If storage in freezing temperatures is required, contact CBS ArcSafe® for handling proper storage solutions.

ATTENTION

At or below 40°F / 5°C we recommend using the AC power supply over the battery power in order for the unit to operate at max power. At temperatures lower than 40°F / 5°C the current provided by the batteries becomes limited and thus may not provide enough racking power for your breaker.

3.4 Setting the Actuator Limit Switches

On the actuators used for pressing interlocks and for installing/removing breaker there are magnetic limit switches that help to control how far the actuators extend and retract. This allows the actuators to be set so that they only extend and retract to set limits and cannot over extend/retract themselves for operations where specific distances need to be traveled.

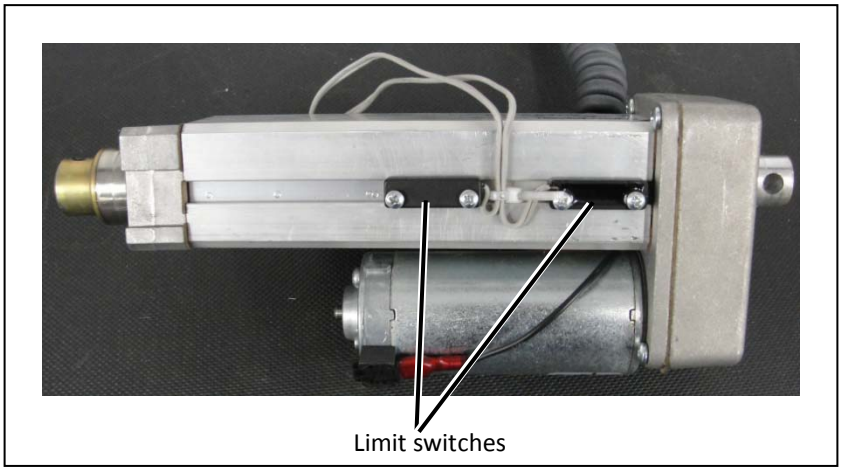


Figure 3.4 – Adjustable by Screw actuator

There are three different types of operational actuators; these three types are non-adjustable, adjustable by Philips head, and adjustable by Allen wrench. The non-adjustable actuators are generally quite small and will never need to be adjusted and there are no limit switches on them to set.

Adjustable by Philips head screwdriver

1. Loosen the two screws with a Philips head screwdriver.
2. Position the limit switches as desired, these switches determine how the actuator extends and retracts.
3. Secure the limit switches by screwing back in the screws – be EXTREMELY careful not to over tighten these screws as they are fragile, very little torque is needed in order to secure those limit switches.

Adjustable by Allen wrench

1. Locate the plastic cover with wires entering.
2. Gently pry the plastic cover off with a flathead screwdriver.
3. Loosen the two set screws with a #2 Allen Wrench.
4. Position the limit switches as desired, these switches determine how the actuator extends and retracts.
5. Secure the limit switches by screwing back in the set screws – be EXTREMELY careful not to over tighten these screws as they are fragile, very little torque is needed in order to secure those limit switches.

3.5 Setting up the RRS-2-BE for Operation

This section explains the steps necessary to prepare the RRS-2-BE for racking operations, however tooling has been tailored to your specific needs and may require a different operational setup then described here.

1. Ensure the RRS-2-BE is charged and/or the unit is plugged in to an AC power source.
2. Ensure the breaker being racked is OPEN according to manufacturer specifications.
3. Position the remote racking system in front of the circuit breaker to be racked, with the cubicle brace aligned with the circuit breaker cubicle.
4. Ensure the safety shut off switch on the pendant station is off.
5. Turn the power switch to the ON position, the green POWER ON light will light up.
6. Position the necessary tooling to the breaker.

ATTENTION
For selected models of circuit breakers, the RRS-2-BE will move slightly. This may include the RRS-2-BE slightly rocking or rolling forwards/backwards, however violent movements should not occur. If any movement seems concerning please contact your CBS ArcSafe® agent.

7. The RRS-2-BE is now ready for operation.

4.0 Operation

This section describes the steps necessary to install and remove the circuit breaker using the RRS-1.

4.1 Circuit Breaker Installation/Removal

These are the following requirements and steps for circuit breaker installation using the RRS-1.

4.1.1 Requirements for Installation/Removal

The following installation procedure assumes that the following prerequisites have been met:

1. *The circuit breaker racking mechanism is in working order.*
2. *The circuit breaker is installed in the cubicle and OPEN* according to *manufacturer specifications.*

DANGER!

For your safety please ensure that all personnel follow the personal protective equipment rules and regulations along with following all of the manufacturer guidelines at ALL times.

DANGER!

If possible remove control power from the control circuit in order to prevent the accidental closing or tripping of the breaker during the racking procedure.

4.1.2 Steps for Installation/Removal

To install the circuit breaker to the OPERATING position, perform the following steps.

1. Ensure the RRS-1 is properly setup using the breaker specific tooling provided.
2. Attach and install the RRS-1 unit from the circuit breaker cubicle as follows:
    a. Ensure that the emergency stop switch on the pendant station is deactivated.
    b. Turn the power switch on.
    c. Align the motor assembly with the racking mechanism rotary system using either the vertical adjustment handle or power slide (optional).
    d. Attach the circuit breaker racking tooling to the RRS-1 and then attach the RRS-1 to the racking mechanism.
    e. Attach the tether system to the breaker or engage the foot brakes (if required).
    f. Turn the motor brake control switch to the ON position.

ATTENTION

The RRS-1 motor brake prevents the motor from over rotating and is necessary during the racking operation.

3. Verify the circuit breaker is OPEN according to manufacturer specifications and company safety policies.

4. Exit the arc flash boundary with the pendant station.

DANGER!

Exiting the arc flash boundary may prevent the operator from observing the circuit breaker during repositioning, if this situation occurs we recommend acquiring the CBS ArcSafe® camera system in order to remotely view the repositioning.

Although the pendant station allows the operator to be away from the immediate arc flash boundary, personal protective equipment requirements must still be met at all times.

5. To install the breaker use the INSTALL control, REMOVAL for removal, ensuring the current control module is properly setup and operating in automatic mode if possible.

6. Detach and uninstall the RRS-1 unit from the circuit breaker cubicle as follows:

   a. Depress the emergency stop button, rewind the pendant station cord and return the remote to the storage hooks provided.

   b. Disengage the foot brakes (optional).

   c. Remove the circuit breaker racking tooling from the breaker and RRS-1.

   d. Turn the motor brake control switch to the OFF position.

ATTENTION

The RRS-1 motor brake will maintain pressure on the circuit breaker racking device after the racking operation is complete. Switching the motor brake to OFF will relax the system and allow the RRS to be removed from the breaker easily.

   e. If applicable, lower the motor assembly, to a suitable position for storage with the vertical adjustment handle or power slide (optional).

   f. Turn the power switch off.

7. Plug in and cover the RRS-1 with the dust cover or the waterproof cover (optional) and store the unit in a clean, dry location.

4.0 Operation

This section describes the steps necessary to install and remove the circuit breaker using the RRS-2-BE.

4.1 Circuit Breaker Installation

These are the following requirements and steps for circuit breaker installation using the RRS-2-BE.

4.1.1 Requirements for Installation

The following installation procedure assumes that the following prerequisites have been met:

1. *The circuit breaker racking mechanism is in working order.*
2. *The circuit breaker has been properly maintained.*
3. *The circuit breaker is removed from the cubicle and OPEN* according to manufacturer specifications.
4. *The tooling is connected properly to both the circuit breaker and the RRS-2-BE.*

DANGER!

For your safety please ensure that all personnel follow the personal protective equipment rules and regulations along with following all of the manufacturer guidelines at ALL times.

DANGER!

Remove control power from the control circuit if applicable in order to prevent the accidental closing or tripping of the breaker during the racking procedure.

4.1.2 Steps for Installation

To install the circuit breaker to the OPERATING position, perform the following steps.

1. Ensure the RRS-2-BE is properly setup and attached to the breaker using the breaker specific tooling provided.

2. Verify the circuit breaker is OPEN according to manufacturer specifications and company safety policies.

3. Exit the arc flash boundary with the pendant station.

4. Ensure the emergency stop push button is deactivated by turning the button clockwise to unlatch.

5. Use the pendant station as is discussed in the given RRS-2-BE tooling guide to install the breaker. If the pendant retractile cord is not long enough for the operator to leave the arc flash boundary additional pendant extension cords are available and the pendant station and pendant retractile cord can be replaced with an optional radio remote system.

6. Detach and uninstall the RRS-2-BE unit from the circuit breaker cubicle.

4.2 Circuit Breaker Removal

These are the following requirements and steps for circuit breaker removal using the RRS-2-BE.

4.2.1 Requirements for Removal

The following removal procedure assumes that the following prerequisites have been met:

1. *The circuit breaker racking mechanism is in working order.*
2. *The circuit breaker has been properly maintained.*
3. *The circuit breaker is installed in the cubicle and OPEN* according to manufacturer specifications.
4. *The tooling is connected properly to both the circuit breaker and the RRS-2-BE.*

DANGER!

For your safety please ensure that all personnel follow the personal protective equipment rules and regulations along with following all of the manufacturer guidelines at ALL times.

4.2.2 Steps for Removal

To remove the circuit breaker to the DISCONNECTED position, perform the following steps.

1. Ensure the RRS-2-BE is properly setup and attached to the breaker using the breaker specific tooling provided.

2. Verify the circuit breaker is OPEN according to manufacturer specifications and company safety policies.

3. Exit the arc flash boundary with the pendant station.

DANGER!

Exiting the arc flash boundary may prevent the operator from observing the circuit breaker during repositioning, if this situation occurs we recommend acquiring the CBS ArcSafe® camera system in order to remotely view the repositioning.

Although the pendant station allows the operator to be away from the immediate arc flash boundary personal protective equipment requirements must still be met at all times.

4. Ensure the emergency stop push button is deactivated by turning the button clockwise to unlatch.

5. Use the pendant station as discussed in the given RRS-2-BE tooling guide. If the pendant retractile cord is not long enough for the operator to leave the arc flash boundary additional pendant extension cords are available and the pendant station and pendant retractile cord can be replaced with an optional radio remote system.

6. Detach and uninstall the RRS-2-BE unit from the circuit breaker cubicle.

5.0 Maintenance

5.1 Introduction

The *CBS ArcSafe®* RRS-2-BE is designed to require little maintenance; however, adopting a regular maintenance program will keep the RRS-2-BE in good condition allowing years of trouble-free service.

5.2 Prior to Use

Before use examine the general condition of the unit.

1. *Inspect the switch and indicators for tightness and damage.*
2. *Inspect the cables for wear or cracking, always replace a damaged cable.*
3. *Check cable core grips for tightness.*
4. *Check for loose fasteners.*
5. *Ensure actuators are free of dirt and grime by wiping down with a dry cloth.*
6. *Run the unit unloaded to verify there is no abnormal noise or vibration. If abnormal condition exists, do not use.*

5.3 After Use

After use, clean the RRS-2-BE ensuring the unit is free of dust and debris. Ensure the unit is free of oil or grease and if necessary, clean with a dry cloth. Store the device covered with either the standard dust cover or the waterproof cover (optional), in a clean, dry location to prevent damage.

5.4 Yearly Maintenance

Every twelve to eighteen months, depending on use, *CBS ArcSafe®* recommends performing the following preventative maintenance.

1. Check that the batteries maintain a charge.

2. Perform an electrical inspection of internal wiring, checking for signs of heat and loose connections.

3. Check all cables for extreme wear or cracks.

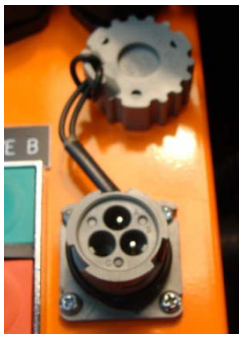
4. Check that the pneumatic tires (optional) are properly pressurized to 24 PSI and sufficiently sealed.

6.0 Ordering Replacement Parts

When ordering replacement parts please specify the serial number and MFD from the RRS-2-BE nameplate.

From the RRS-2 nameplate:	
Nomenclature:	*RRS-2-BE*
Serial number	
MFD:	

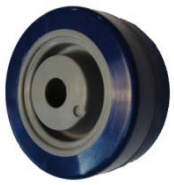
Remote Racking Unit RRS-2-BE Parts List

Item	Description	CBS ArcSafe™ Part Image
1	Battery Charger	
2	Power Cable	
3	Male Power Connector	
4	Mounted Female Power Adapter	

Remote Racking Unit RRS-2-BE Parts List Cont.

Item	Description	CBS ArcSafe™ Part Image
5	Power Switch	
6	PS-R6-C Radio Remote	
7	RSO Case w/ Components	
8	Standard Tires	
9	Pneumatic Tires	

Remote Racking Unit RRS-2-BE Parts List Cont.

Item	Description	CBS ArcSafe™ Part Image
10	Front Wheel	
11	Magnet Brace	

Appendix A: Radio Remote Pendant Station

1.0 Components

Radio Remote – The radio remote allows for the use of a radio remote pendant station in order to control the operation of your RRS.

ATTENTION
The radio remote pendant station is designed specifically for the system that it came with. The radio remote will NOT work with any other CBS ArcSafe® Remote System, therefore please keep the radio remote with the system that it came with. Also to limit interference please ensure that the channel numbers of units purchased at different dates differ.

Radio Remote Receiver – The radio remote receiver receives the radio remote signals needed to control the RRS. The radio remote receiver is attached to the system and although it is quite sturdy, care must be taken to ensure that during movement the remote receiver is not damaged. The radio remote receiver is powered by 2 AA batteries in the internals of the unit.

1. PS-R4
2. PS-R6
3. PS-R6-C

Figure D.1 – Available radio remote pendant station models

2.0 Radio Remote Models

PS-R6-C (Fig. D.1.2)

The PS-R6-C radio remote has 4 control buttons that are designed to wirelessly control the included systems operation. In order to use the PS-R6-C the operator must ensure that the emergency-stop button is raised by rotating the button clockwise and turning the operating switch clockwise from the off position, past the on positions, to the start position and then releasing the switch letting it spring back to the on position.

ATTENTION

The power on the system will appear off until the radio remote is turned on when using your system with the PS-R6-C. Therefore please ensure that the pendant station is turned on before troubleshooting why the power in your system is not turning on.

3.0 Pendant Station Button Configurations

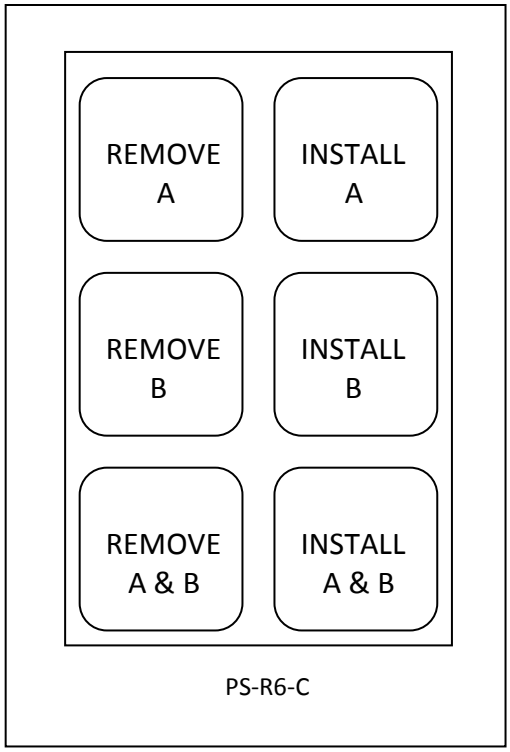


Figure D.2 Pendant Station Button Configurations

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DANGER!

Ensure that personnel using this equipment are adequately trained in the operation of the switchgear they are planning to work with; that they are correctly stationed outside the arc flash boundary; and that they comply with all applicable Federal, State, Local, and In-house safety regulations and procedures. Attention should be given to distance, angle, and personal protective equipment (PPE).

Guarantee: Equipment is guaranteed free of inherent electrical or mechanical defects for one (1) year from date of shipment, and to perform according to ratings, under normal conditions and with competent supervision. Our obligation is limited to repair or replacement of defective parts, FOB our plant, Denton, TX. We're not responsible for consequential damage, for repairs or replacement made by others except when agreed to in writing.

*PLEASE TEAR OUT

WARRANTY REGISTRATION – CBS ArcSafe® Products

Distance Is Safety®

A Group CBS Company

IMPORTANT: Complete and mail this warranty registration form as soon as possible.

Date: _____

CBS ArcSafe® Model (CIRCLE ONE): **RRS-2** **RRS-2-BE**

CBS ArcSafe® Serial Number: _____

Company: _____

Address 1: _____

Address 2: _____

City: _____

State/Province: _____

Zip/Postal Code: _____

Country: _____

Telephone and Fax: _____

Contact Person (please print): _____

Please mail or fax warranty registration to:

FAX: (940) - 382 - 9425
CBS ArcSafe®
P.O. Box 550
Argyle, TX 76226

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