

CBS ArcSafe®

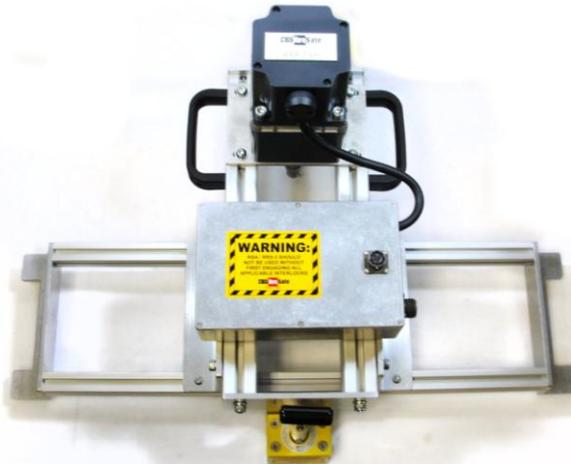
Distance Is Safety®

A Group CBS Company

Installation and Operation

RRS-3 VH

For GE VH



Distance is Safety®

WHAT STANDS
BETWEEN YOU AND
ARC-FLASH DANGER?

**WE
DO.**

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Rev. 9/4/2015

More Products by CBS ArcSafe®

RRS-1 – Universal Remote Racking System (Rotary)

The CBS ArcSafe® RRS-1 is a universal remote racking system capable of remotely installing and removing rotary style draw out circuit breakers without requiring any modification to the existing switchgear. Operation of the simple to use RRS-1 is quite intuitive and requires only minimal setup. When used properly, the RRS-1 allows technicians to remain outside of the arc flash boundary during the potentially dangerous racking operation.

RRS-2 – Universal Remote Racking System (Non-Rotary)

The CBS ArcSafe® RRS-2 is a universal remote racking system capable of remotely installing and removing non-rotary style draw out circuit breakers without requiring any modification to the existing switchgear. Operation of the simple to use RRS-2 is quite intuitive and requires only minimal setup. When used properly, the RRS-2 allows technicians to remain outside of the arc flash boundary during the potentially hazardous racking operation.

RRS-3 – Application Specific Remote Racking System (Rotary And Non-Rotary)

The CBS ArcSafe® RRS-3 product line is made up of various application specific remote breaker racking devices. Each standalone system allows service personnel to remotely install and remove a particular type of circuit breaker safely while stationed safely outside of the arc flash boundary during the potentially dangerous operation. The lightweight and compact design of the RRS-3 systems makes them ideal for hard to access areas where space is at a premium.

RRS-4 – PLC Based Universal Remote Racking System (Rotary)

The CBS ArcSafe® RRS-4 universal remote racking system is an updated PLC based version of the best selling RRS-1. The dual mode, source programmable, PLC based control system offers two different operating modes to choose from based on user preference or the application. The RRS-4 is capable of remotely installing and removing rotary style draw out circuit breakers without requiring any modification to the existing switchgear, allowing users to remain outside of the arc flash boundary during the potentially hazardous racking operation.

RSA – Remote Switch Actuator

The CBS ArcSafe® Remote Switch Actuator (RSA) product line is made up of various application specific remote operating devices. These products allow service personnel to remotely perform all aspects of an operation for a particular type of electrical equipment from outside the arc flash boundary – reducing or eliminating the possibility of serious injury or death resulting from an arc flash.

RSO – Remote Switch Operator

During a remote operation, the CBS ArcSafe® RSO functions as both the power supply and user interface for the device being remotely operated by the user. When paired with an applicable CBS ArcSafe® device, this portable standalone system allows service personnel to remotely perform a racking or switching procedure from outside the arc flash boundary – reducing or eliminating the possibility of injury or death resulting from an arc flash

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About the User's Guide

This user's guide describes the functions and features of the CBS ArcSafe® Single Application Remote Racking System (RRS-3). 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-3 features.

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-3 on your switchgear. Contact your local group CBS service provider at www.gcbs.com to assist in proper care and maintenance for your switchgear.

1 Installation

DANGER!

Ensure that the equipment to be remotely operated matches the equipment shown and described on the cover page. If the equipment does not match, please contact CBS ArcSafe® for more information regarding remote operating applications for the equipment in question.

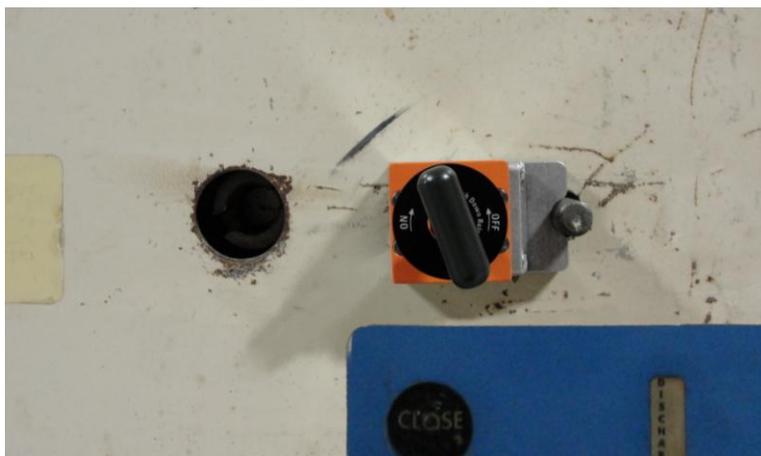
ATTENTION!

The location of certain items such as mimic bus, stickers, and/or placards may interfere with the installation of the remote operating equipment. These items may need to be removed or repositioned for proper installation.

1. Ensure that the breaker is free from any obstruction that may interfere with the proper installation of the RRS-3.



2. Ensure that the torque limiter on the RRS-3 is set correctly to allow proper operation. See section 3.1 Torque Limiter in this manual for more details
3. Check that the circuit breaker is OPEN, according to manufacturer procedures and specifications.
4. Attach the Racking Screw Door Defeat, and use it to hold the racking screw door open.



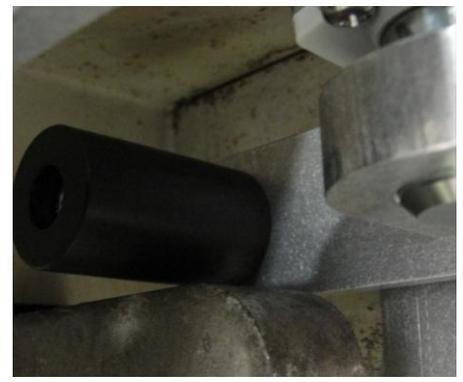
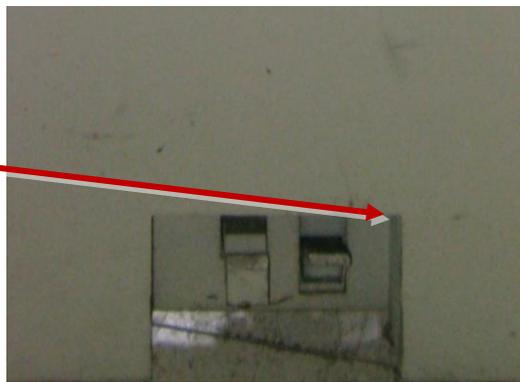
- Place the RRS-3 on the front of the breaker, ensuring that the racking tool is fully seated in the racking tool is fully engaged with the racking mechanism. Ensure that the locators on the RRS-3 are seated around the handles on the breaker, as shown.



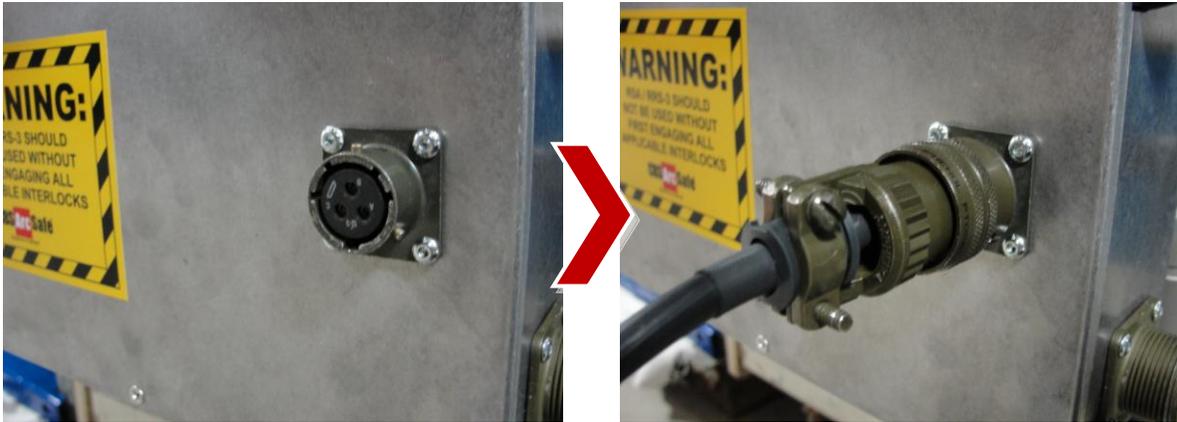
- To align of the racking tool, attach the RRS-3 to the RSO-IV, set the current limits to on the RSO to 0, and use the RSO-IV to jog the motor until the racking tool is properly aligned. See the RSO-IV manual for details on setting current limits.



- Secure the RRS-3 to the breaker by turning the handles of the twist magnets 180 degrees clockwise.
- Next, install the Foot Pedal Actuator onto the breaker. Ensure that the lip on the foot pedal actuator aligns to the top-right corner of the opening around the foot pedal, and the actuator itself is positioned above the pedal.



8. Finally, connect the foot pedal actuator to the control box on the RRS-3.



The RRS-3 is now ready for operation

2 Operation

ATTENTION!

Please ensure that all cables are clear of moving parts. Failure to do so may result in damage to cables and/or actuator.

ATTENTION!

Please ensure that the batteries to the RSO-IV are fully charged or that the unit is plugged into AC power.

For detailed instructions on the operation of the RSO-IV please see the RSO-IV Manual.

DANGER!

Due to the way the travel interlocks on this breaker operate, it is not possible to stop the racking process in TEST position when going from CONNECTED to REMOVED position, or REMOVED to CONNECTED position. Racking from CONNECTED to TEST position, then continuing directly on to REMOVED position (or the opposite operation) will cause binding that may severely damage the breaker interlock mechanisms.

1. Ensure that the RRS-3 is properly installed. See the Installation section of this manual for detailed instructions.
2. Connect the cable from the RSO-IV to the motor control box on the RRS-3
3. Turn the power switch on the RSO-IV to the ON position.
4. Program the settings for the RRS-3 into the RSO-IV. These settings can be found on the placard on the RRS-3. For more information on programming the RSO-IV please refer to the RSO-IV Technical Manual.
5. Exit the arc flash boundary.
6. To rack the breaker from CONNECTED to REMOVED position:
 - a. Press and hold the INTERLOCK button on the RSO-IV control panel or remote pendant.
 - b. Press and release the REMOVE button.
 - c. The breaker will stop automatically in REMOVED position. It is now safe to release the INTERLOCK button on the RSO-IV control panel or remote pendant



7. To rack the breaker from REMOVED to CONNECTED position:
 - a. Press and hold the INTERLOCK button on the RSO-IV control panel or remote pendant.
 - b. Press and release the INSTALL button.
 - c. The breaker will stop automatically in CONNECTED position. It is now safe to release the INTERLOCK button on the RSO-IV control panel or remote pendant

8. To rack the breaker from CONNECTED to TEST position:
 - a. Press and hold the INTERLOCK button on the RSO-IV control panel or remote pendant.
 - b. Press and release the REMOVE button.
 - c. After racking starts, wait a moment and then release the INTERLOCK button on the RSO-IV control panel or remote pendant.
 - d. The breaker will stop automatically in TEST position. It is now safe to release the INTERLOCK button on the RSO-IV control panel or remote pendant

DANGER!

Do NOT continue racking the breaker from TEST to REMOVED position. To fully remove the breaker, first rack the breaker from TEST to CONNECTED position and then rack the breaker from CONNECTED to REMOVED.

9. To rack the breaker from REMOVED to TEST position:
 - a. Press and hold the INTERLOCK button on the RSO-IV control panel or remote pendant.
 - b. Press and release the INSTALL button.
 - c. After racking starts, wait a moment and then release the INTERLOCK button on the RSO-IV control panel or remote pendant.
 - d. The breaker will stop automatically in TEST position.

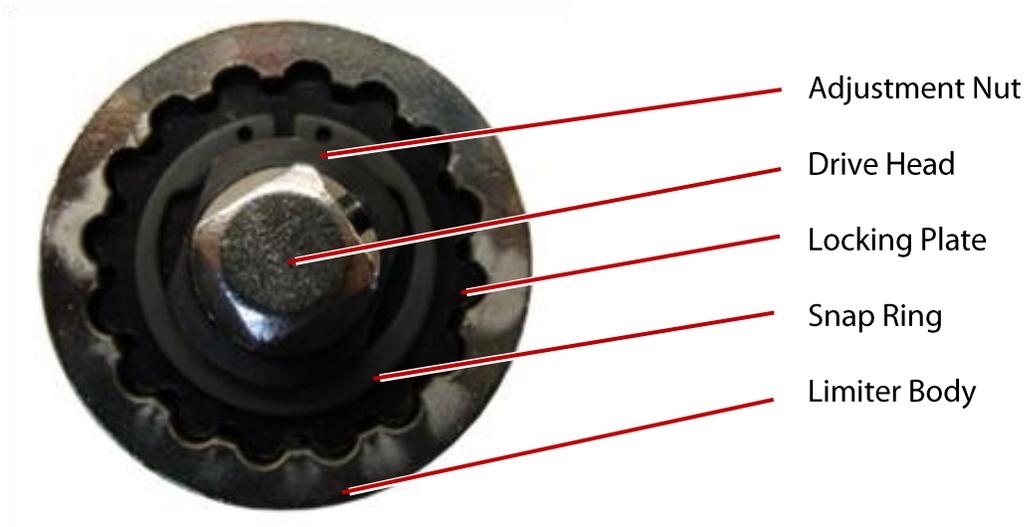
DANGER!

Do NOT continue racking the breaker from TEST to CONNECTED position. To fully install the breaker, first rack the breaker from TEST to REMOVED position and then rack the breaker from REMOVED to CONNECTED.

3 Adjustments

3.1 Torque Limiter

The torque limiter is designed as the primary safety system to reduce the possibility of damaging the circuit breaker racking mechanism with the RRS-3. The torque limiter attaches to the drive coupling and mates with the racking tool. The torque limiter is set from the factory for your particular breaker, so only adjust as needed for your specific situation. *Note: A ½ inch drive torque wrench will be required to perform this adjustment.*



1. First, remove the racking tool adapter from the RRS-3 by pushing in the locking pin at the base of the tooling shown below. The racking adapter can then be fitted to a standard ½ inch drive torque wrench.



2. On the de-energized and OPEN test breaker, extract the breaker's racking handle, and fit the racking adapter to the handle as shown in the Installation section of this manual.
3. To determine the proper torque required to rack the breaker, first rack the breaker out, measuring the maximum amount of torque needed. Record this value.

ATTENTION!

When the breaker reaches either the test or disconnected position the torque will rise as various interlocks and mechanical limits engage. Do NOT apply any torque to the racking mechanism greater than that seen during the racking process.

- Next, reset the torque wrench (if needed) and proceed to rack the breaker in, again measuring the maximum torque applied. Record this value.

ATTENTION!

As you begin racking the breaker onto the stabs the torque should raise, and then almost immediately after the breaker is on the stabs the torque will lower and then spike as you hit the racking limits. This spike is the breaker starting to be racked in too far. DO NOT continue to rack in the breaker at this point. The maximum amount of force the breaker needs to rack will be found as breaker has gone onto the stabs

DANGER!

As breakers age and/or do not see regular maintenance the torque needed to rack a breaker may increase. However, large increases of torque needed to rack a breaker including amounts over 10% of the average torque may indicate breaker problems, which could lead to an arc flash.

If the RRS does not seem to have enough torque, first double check that the breaker is operating properly before racking out by hand.

- Take the the higher of the two recorded values and multiply by 1.1. This adds an additional 10% margin of error for the torque limiter. This new value is the setting for the torque limiter.
- Next, Attach the torque wrench to the spring loaded drive head (Various different socket adapters may be necessary depending on the drive size of the torque wrench) and use the torque wrench to determine the present setting of the torque limiter. The torque limiter body will need to be held still during this operation.
- Remove the snap ring and locking plate from the torque limiter.
- Adjust the nut clockwise to increase torque, and counter-clockwise to decrease torque.
- Obtain a new torque reading with the torque wrench to verify the new torque setting. Repeat steps 8-9 until the torque value determined in step 5 is reached.
- Replace the locking plate and snap ring onto the torque limiter.

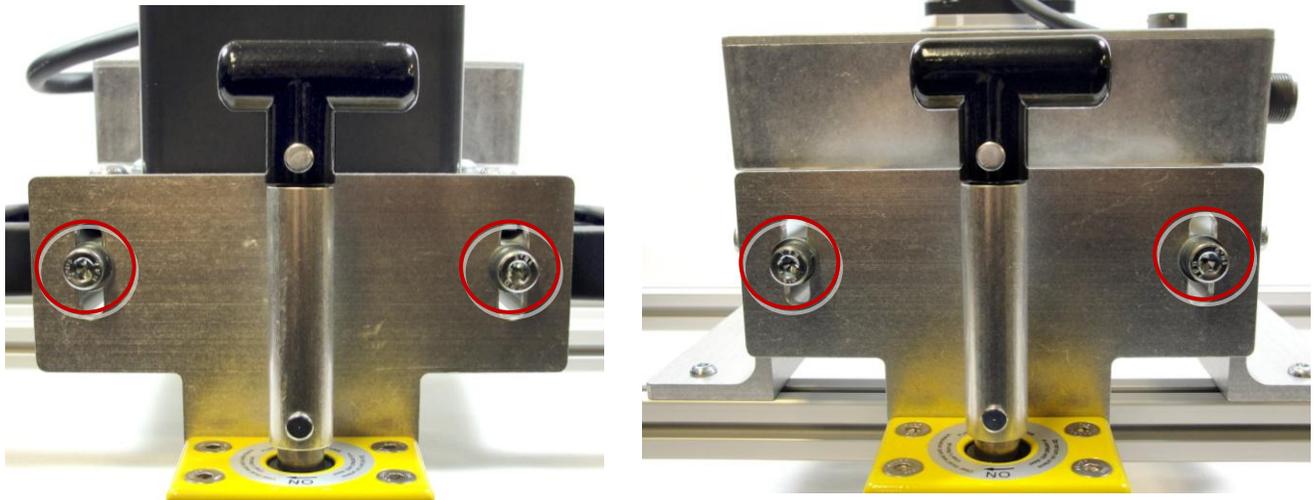
DANGER!

Inaccurate setting of the torque limiter may result in excessive slip during racking operations or, if over-tightened, the remote rack placing excessive torque on the breaker racking mechanism; possibly leading to equipment damage.

3.2 Depth Adjustment

This RRS-3 may require depth adjustment to be sure that the racking tool is in proper alignment with the racking mechanism on the breaker.

1. Loosen the two bolts on each magnet plate, as indicated below.

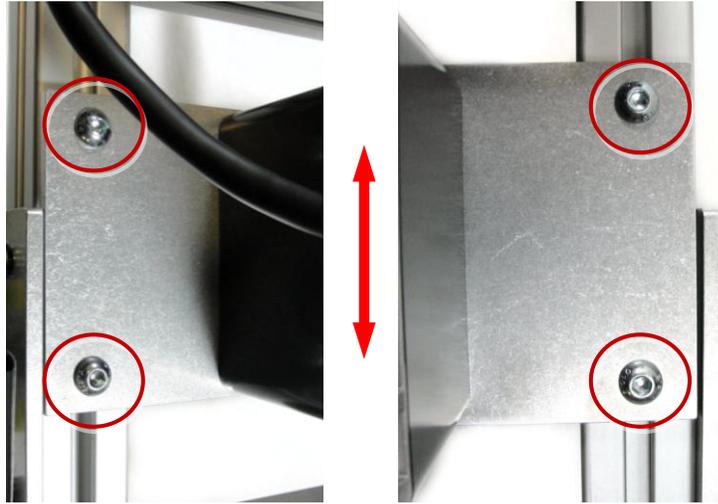


2. Install the RRS-3 as described in the Installation section of this manual.
3. Adjust the depth of the RRS-3 as required so the racking tool is aligned with the racking mechanism and fully engaged. The drive motor and tool should be directly in line with the racking screw.
4. Re-tighten the bolts.

3.3 Motor Height Adjustment

The height of the drive motor on the RRS-3 can be adjusted to achieve proper alignment with the breaker racking mechanism. To adjust the motor:

1. Loosen the four bolts securing the motor in place, as indicated below.



2. Slide the motor up or down to achieve proper alignment with the racking mechanism of the breaker. Ensure that the drive motor and tool on the RRS-3 is fully engaged with the racking mechanism on the breaker, as described in the Installation section.
3. Re-tighten the bolts when adjustment is complete.

3.4 Foot Pedal Actuator Travel Adjustment

The amount of travel for the foot pedal actuator mechanism can be adjusted to accommodate equipment differences.

1. Loosen the two bolts on the actuator, as shown below.



2. Install the RRS-3 on the breaker, as described in the Installation section.
3. Use the RSO-IV to operate the foot pedal actuator. Match the interlock defeat travel to the actual interlock travel by sliding the interlock defeat actuator up to increase the amount of travel, or slide the interlock defeat actuator down to decrease the amount of travel.
4. Re-tighten the bolts on the Re-test the interlock defeat with the RSO-IV, and continue adjusting as necessary until the travel is properly matched.



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RRS-3 VH
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