

# CBS ArcSafe®

*Distance Is Safety®*

A Group CBS Company

Installation and Operation

## RRS-3 AKD-6

For GE Type AKR, 800-2000A

Includes AKR/AKRT/AKRU

4A/4B/5A/5B - 30/30H/50/50H



**Distance is Safety®**

WHAT STANDS  
BETWEEN YOU AND  
ARC-FLASH DANGER?

**WE  
DO.**

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Rev. 9/8/2015

# 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.gcb.com](http://www.gcb.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.

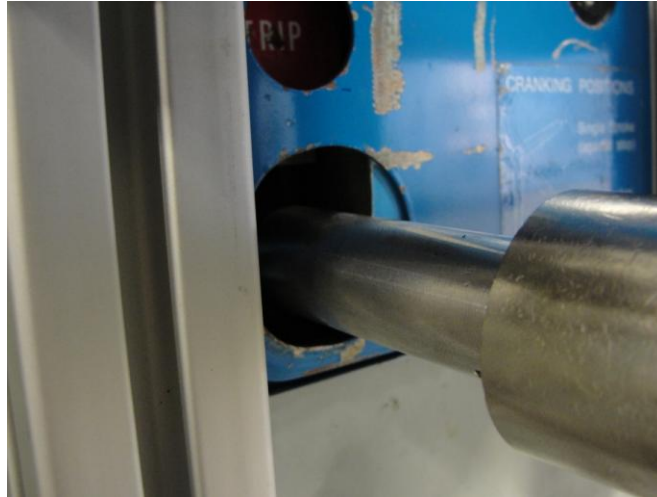
1. Ensure that the breaker is free from any obstruction that may interfere with the proper installation of the RRS-3.



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. Next, manually orient the drive tooling on the RRS-3 to match the orientation of the circuit breaker's racking mechanism.
4. Install the RRS-3 on the breaker faceplate, and ensure that the locator of the RRS-3 fits properly around the handle on the breaker faceplate, and sits flush on the top of the breaker escutcheon.

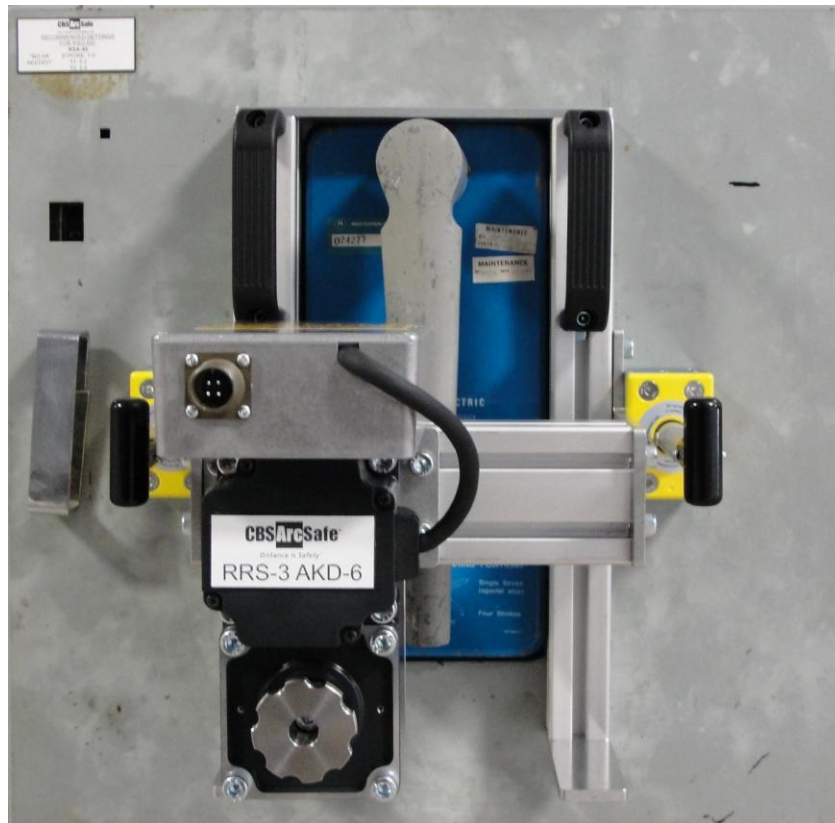


5. Ensure that the RRS-3 is sitting flush against the face of the breaker and that the tooling is properly engaged on the racking mechanism. If the RRS-3 will not seat flush onto the breaker, the tooling adapter may need to be further adjusted to match the orientation of the breaker racking screw. See the Adjustment section of this manual for more details.



6. Secure the RRS-3 to the breaker by turning the handle of the twist-lock magnet 180 degrees clockwise.

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.

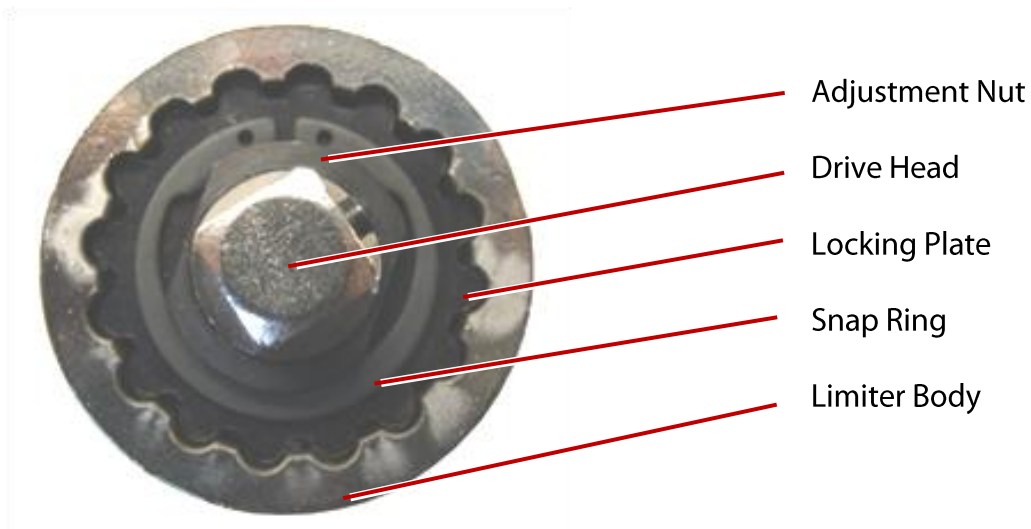
1. Ensure that the RRS-3 is properly installed. See the Installation section of this manual for detailed instructions.
2. Connect the cable from the RSO-IV to the motor control box on the RRS-3
3. Turn the power switch on the RSO-IV to the ON position.
4. Program the settings for the RRS-3 into the RSO-IV. 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. Once the current limits have been properly set, press and release the REMOVE button on the RSO-IV control panel or remote pendant to rack the breaker out.
7. Press and release the INSTALL button on the RSO-IV control panel or remote pendant to rack the breaker in.



## 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 adapter, as shown. The racking adapter can then be fitted to a standard ½ inch drive torque wrench.



2. On the de-energized and OPEN test breaker, fit the racking adapter to the breaker's racking screw 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!

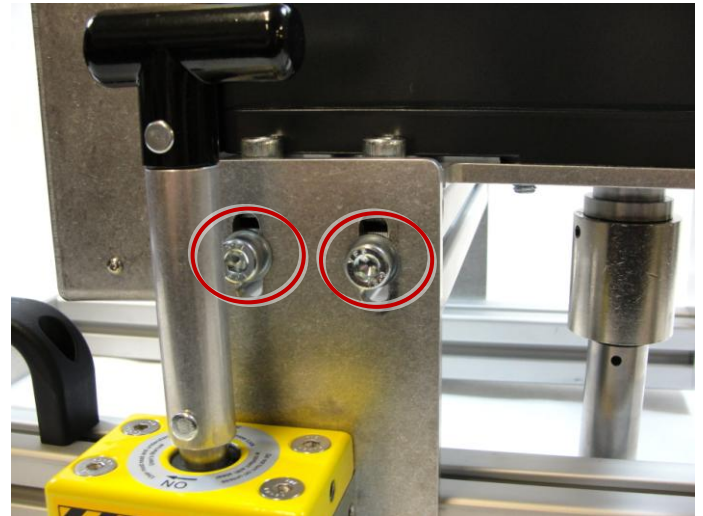
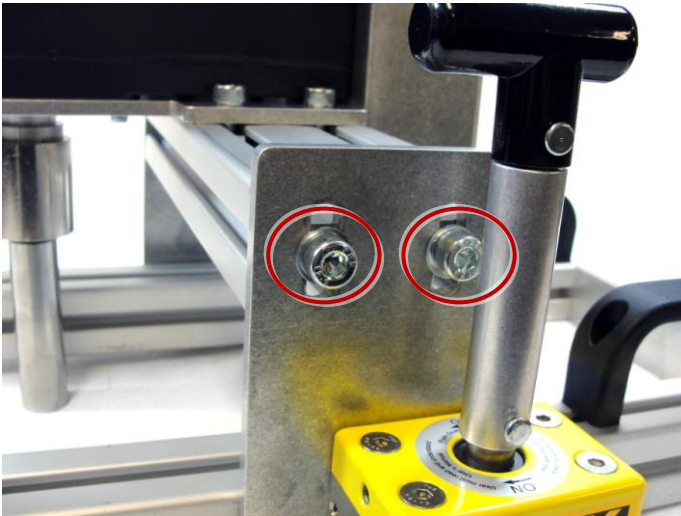
Inaccurate setting of the torque limiter may result in excessive slip during racking operations or, if over-tightened, the remote rack placing excessive torque on the breaker racking mechanism; possibly leading to equipment damage.



## 3.2 Depth Adjustment

The depth of the racking tool adapter can be changed to allow the tool to engage deeper or shallower into the racking mechanism on the circuit breaker. Follow these steps to adjust the tool depth:

1. Loosen the two bolts on each side of the motor mount bracket as indicated below.



2. Install the RRS-3 as described in the installation section.
3. Next, slide the upper assembly in or out as required, aligning the RRS-3 racking adapter with the breaker racking screw.
4. Re-tighten the bolts loosened previously.

### 3.3 Motor Position Adjustment

The RRS-3 comes pre-adjusted from the factory for its designated breaker, so these adjustments should not normally need to be made.

#### 3.3.1 Vertical Adjustment

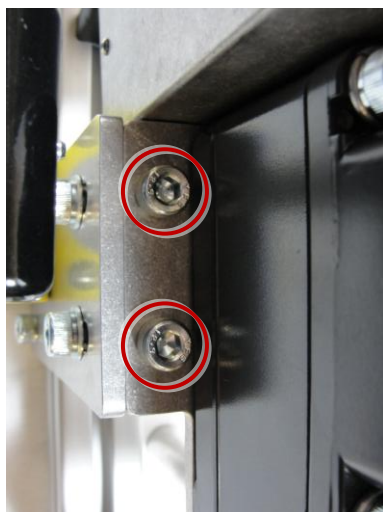
1. Loosen the two bolts on each magnet bracket as indicated below.



2. Install the RRS-3 as described in the Installation section.
3. Next, slide the magnet as required, aligning the RRS-3 properly with the racking mechanism.
4. Re-tighten the bolts loosened previously.

#### 3.3.2 Horizontal Adjustment

1. Loosen the four bolts on the motor mount as indicated below.



2. Install the RRS-3 as described in the Installation section.
3. Next, slide the motor as required, aligning the RRS-3 properly with the racking mechanism.
4. Re-tighten the bolts loosened previously.





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RRS-3 AKD-6  
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**DANGER!**

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