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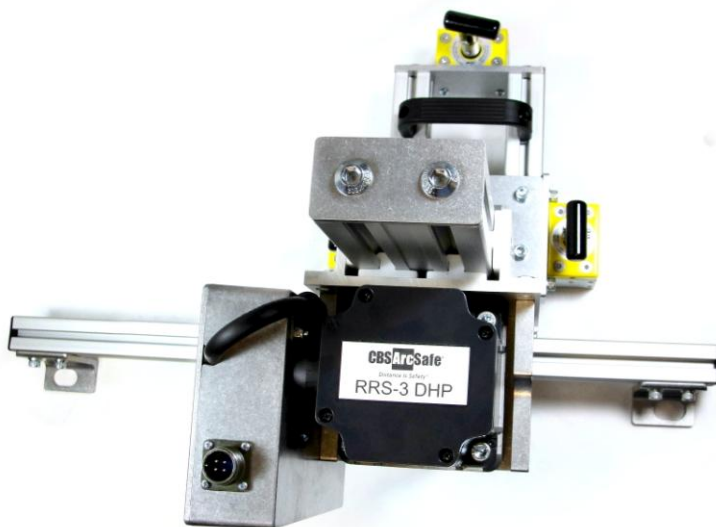
A Group CBS Company

Installation and Operation

# RRS-3 DHP/DVP(L)

**For Westinghouse Type DHP/DVP**

**Type DHP/DVP (Includes 50DHP350, 3000A; 750DHP500, 1200-3000A;  
150DHP500, 1200-3000A; 150DHP750, 1200-3000A; 150DHP1000, 1200-3000A)**



**Distance is Safety**®

WHAT STANDS  
BETWEEN YOU AND  
ARC-FLASH DANGER?

**WE  
DO.**

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Rev. 1/13/2017

# 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](http://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.

## 1.1 Locator Post Installation

### DANGER!

Before installing any locating posts, ensure the breaker has been de-energized to minimize any potential Arc-Flash hazard.

1. Locate and remove the two bolts on the front of the breaker where the locator posts are to be installed (shown with posts already installed).



2. Insert the locating post and bolt into each of the previous bolt holes on the breaker, and tighten.



You are now ready to install the RRS-3.

## 1.2 RSA Installation

### 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.

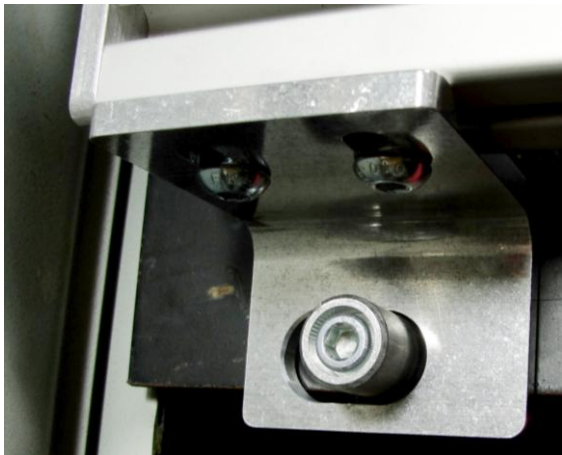
1. Ensure that the racking mechanism and surrounding area is free from any obstruction that may interfere with the proper installation of the RRS-3.



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. Ensure the racking adapter of the RRS-3 is seated into the racking mechanism, as shown. To align the racking adapter, rotate the racking adapter by hand until it aligns with the breaker racking mechanism.



- Slide the RRS-3 onto the locator posts. If locator posts are not installed, see Section 1.1 Locator Post Installation.



- Secure the RRS-3 to the breaker by turning the handle of the twist magnets 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.

### ATTENTION!

The DHP breaker has an internal defeat mechanism to prevent damage to the breaker, therefore current limit settings for this RRS-3 are employed as a backup.

This RRS-3 uses a factory installed timer relay to shut off at 1 minute. Should this factory setting be insufficient, contact CBS ArcSafe for assistance.

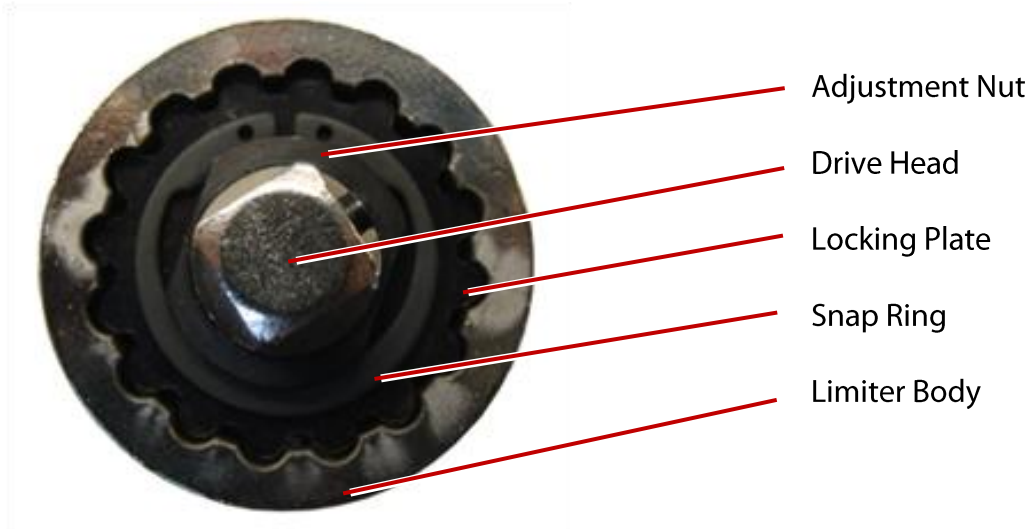
1. Ensure that the RRS-3 is properly installed. See the Installation section of this manual for detailed instructions.
2. Connect the cable from the RSO-IV to the motor control box on the RRS-3
3. Turn the power switch on the RSO-IV to the ON position.
4. Program the settings for the RRS-3 into the RSO-IV. 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!

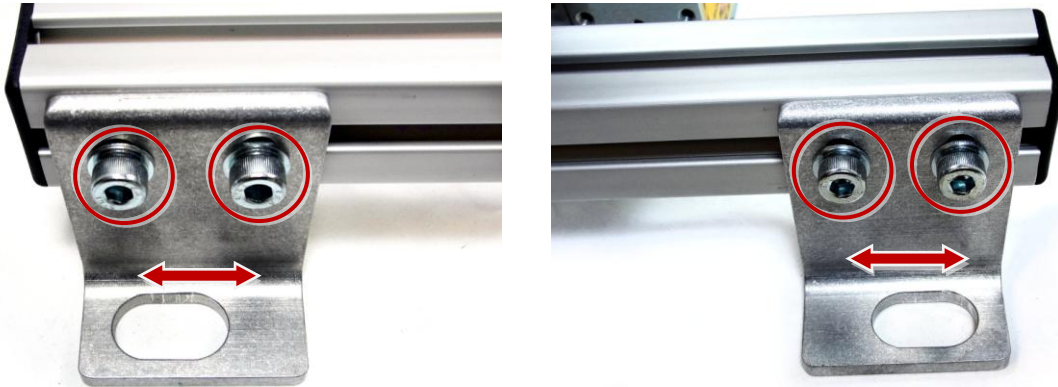
Inaccurate setting of the torque limiter may result in excessive slip during racking operations or, if over-tightened, the remote rack placing excessive torque on the breaker racking mechanism; possibly leading to equipment damage.

## 3.2 Location Adjustment

The locator on the RRS-3 can be adjusted to account for slight variations in breaker dimensions, or other factors. The RRS-3 comes pre-adjusted from the factory for its designated breaker, so these adjustments should not normally need to be made.

### 3.2.1 Horizontal Adjustment

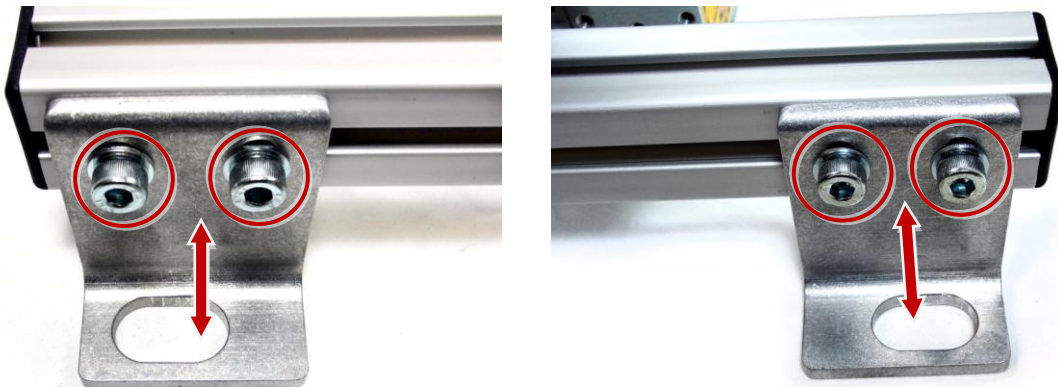
1. Loosen the two bolts on each locator bracket as indicated below.



2. Next, install the RRS-3 as described in section 1.2, and slide each locator along the rail as required to properly align the RRS-3 racking adapter with the breaker racking screw.
3. Re-tighten the bolts loosened previously.

### 3.2.2 Depth Adjustment

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



2. Next, install the RRS-3 as described in section 1.2, and slide each locator as required so both locating posts on the breaker fit inside the locator slot, and the RRS-3 racking adapter aligns with the breaker racking screw.
3. Re-tighten the bolts loosened previously.

### 3.3 Magnet Adjustment

The mounting magnet on the RRS-3 can be adjusted to help adjust for placards or obstructions on the breaker. 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 Horizontal Adjustment

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



2. Next, install the RRS-3 as described in section 1.2, and adjust the magnet position as required to avoid obstructions.
3. Re-tighten the bolts loosened previously.

#### 3.3.2 Depth Adjustment

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

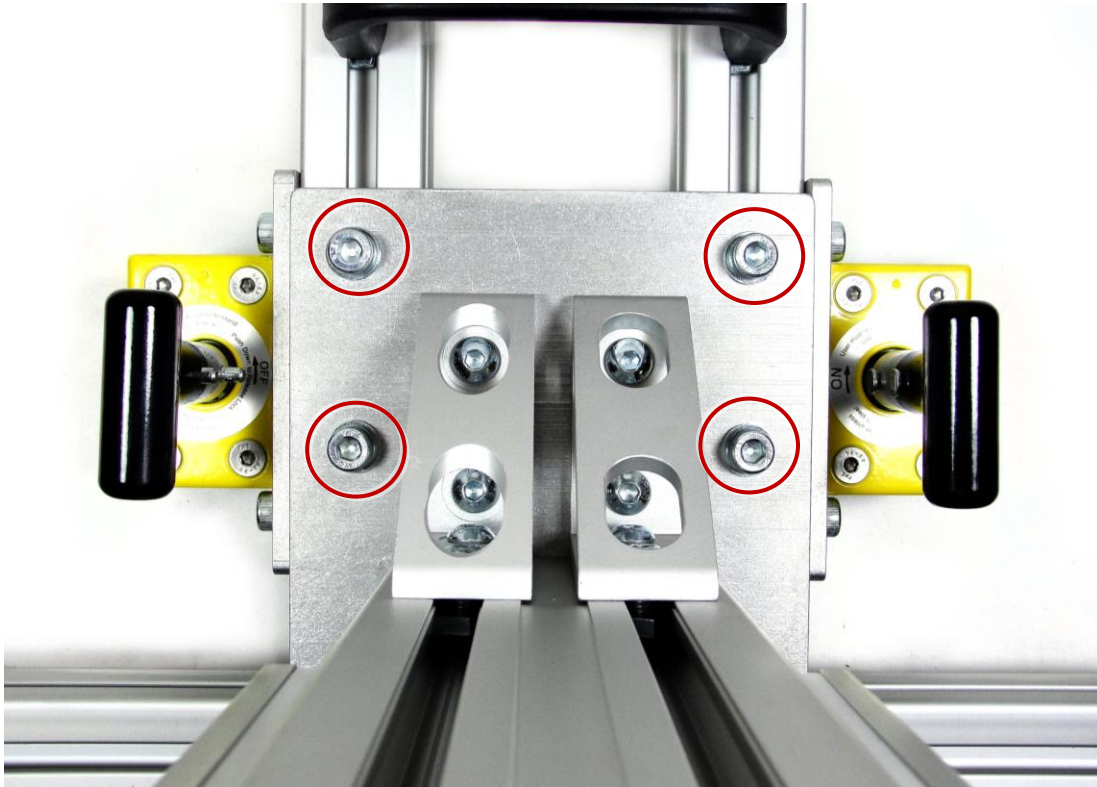


2. Next, install the RRS-3 as described in section 1.2, and adjust the magnet depth as required to fit the breaker mounting depth.
3. Re-tighten the bolts loosened previously.

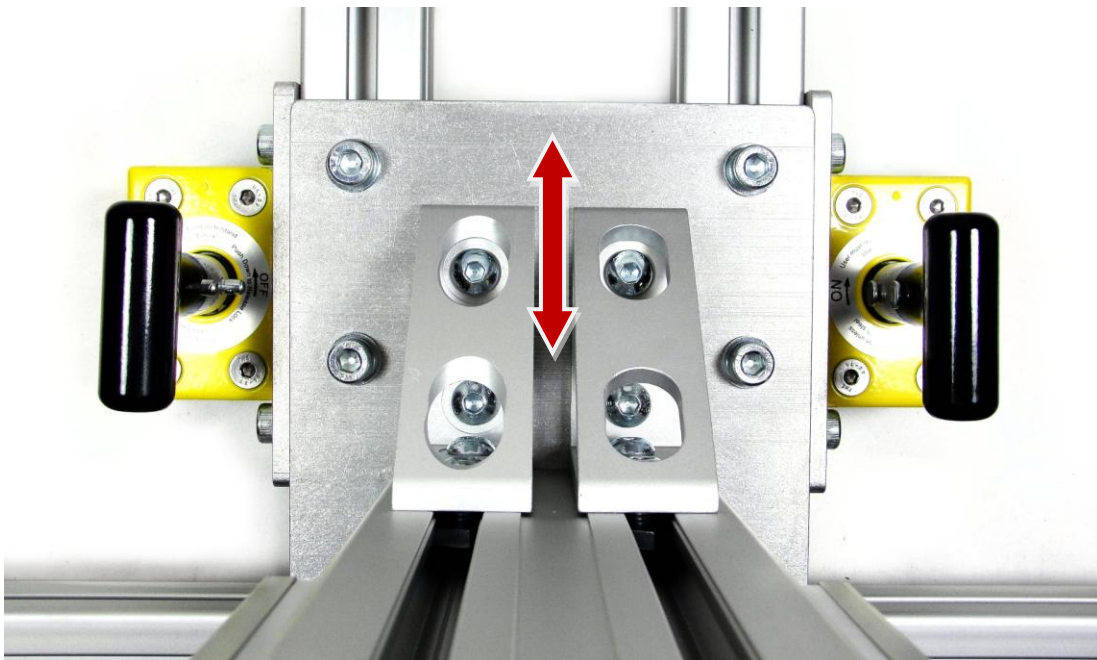
### 3.4 Actuator Position Adjustment

The actuator position can be adjusted to accommodate differences in the breaker mechanism.

1. Loosen the three bolts from each side of the actuator motor mount, as indicated.



2. Install the RRS-3 as described in section 1.2, and slide the motor mount as required to properly align the racking adapter.



3. Re-tighten the bolts loosened previously.









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## Installation and Operation

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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).