

CBS ArcSafe®

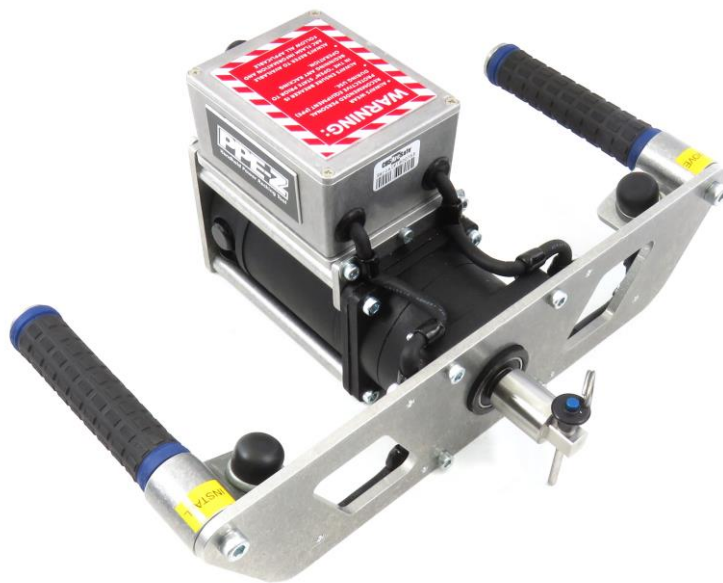
Distance Is Safety®

A Group CBS Company

Technical Manual

PPEZ

Rotary Racking Accessory



Distance is Safety®

WHAT STANDS
BETWEEN YOU AND
ARC-FLASH DANGER?

**WE
DO.**

2616 Sirius Road | Denton, TX 76208 | (877) 4-SAFETY | www.cbsarcsafe.com

Rev. 7/9/2018

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

Published and distributed by:
CBS ArcSafe®
2616 Sirius Road
Denton, Texas 76208

A division of:
GroupCBS, Inc.®
P.O. Box 1557
Gainesville, Texas 76241

Copyright CBS ArcSafe® 2018

Printed in the United States of America
Reproduction, adaptation, or translation without prior written permission is prohibited except as is allowed by law.

About the Technical Manual

This manual describes the functions and features of the CBS ArcSafe® PPEZ hand-held powered racking device. 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 PPEZ 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 to assist in proper care and maintenance for your switchgear.

PPEZ Parts List

PPEZ



RSO



Tooling



Operation Cable



Power Cable



1 Setup

DANGER!

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

ATTENTION!

Use of the PPEZ is intended to reduce operator fatigue from performing racking operations, but does not reduce the need for PPE. Ensure that when racking breakers with the PPEZ, operators are equipped with appropriate PPE for working within the arc flash boundary of the breaker.

1. Open the RSO-PPEZ and connect the 4-pin connector from the RSO to the PPEZ.
2. Connect the RSO-PPEZ to an AC power source (120/240VAC, 50/60Hz), if necessary. The PPEZ can perform most racking operations on battery power only, however it is highly recommended to use an AC power source for the following conditions:
 - a. If a large number of operations are going to be performed in a short period of time, or
 - b. the application is particularly difficult (i.e. high torque required for racking)
3. Ensure that the torque limiter on the PPEZ is set correctly to allow proper operation. See section 3.1 Torque Limiter in this manual for more details.
4. Attach the tooling onto the PPEZ.

The PPEZ 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 are fully charged or that the unit is plugged into AC power.

2.1 Requirements for Remote Racking

This section will describe the requirements that must be met before any racking procedure can begin to install or remove the circuit breaker. Before performing the procedure, please ensure 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 in the appropriate position for the operation to be performed*
4. *The circuit breaker is OPEN according to manufacturer specifications.*
5. *The PPEZ has been setup properly according to the procedures in Section 1: Setup.*

DANGER!

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

2.2 Breaker Installation

This section will instruct users how to operate the PPEZ to rack a breaker to the Installed position.

1. Ensure that all of the requirements outlined in section 2.1 have been met.
2. Turn on the RSO-PPEZ.
3. Enter the arc flash boundary with the PPEZ.

DANGER!

Entering the arc flash boundary places the operator in danger to injury or death in case of an arc flash. Always ensure that anyone entering the arc-flash boundary of the circuit breaker is equipped with properly maintained and rated PPE which is appropriate for the breaker to be operated.

CBS ArcSafe® also has remote racking tools available for all breakers that can be racked with the PPEZ which allow the operator to be positioned outside the arc flash boundary during operation. Please contact CBS ArcSafe to discuss your application

4. Before racking, be sure to defeat any racking interlocks that would prevent operation.
5. Insert the racking tool into the breaker racking mechanism. Rotate the PPEZ if necessary to ensure the tool is seated properly.
6. With the tooling inserted, and applicable interlocks defeated, the user can start the racking operation. Press and hold the "INSTALL" pushbutton to rack the breaker in. Ensure that any additional operation steps that would be performed when operating by hand are also observed when racking with the PPEZ.



7. Once the racking operation is complete, detach the PPEZ unit from the circuit breaker and exit the arc-flash boundary.
8. Turn off the RSO-PPEZ.

2.3 Breaker Removal

This section will instruct users how to operate the PPEZ to rack a breaker to the Installed position.

1. Ensure that all of the requirements outlined in section 2.1 have been met.
2. Turn on the RSO-PPEZ.
3. Enter the arc flash boundary with the PPEZ.

DANGER!

Entering the arc flash boundary places the operator in danger to injury or death in case of an arc flash. Always ensure that anyone entering the arc-flash boundary of the circuit breaker is equipped with properly maintained and rated PPE which is appropriate for the breaker to be operated.

CBS ArcSafe® also has remote racking tools available for all breakers that can be racked with the PPEZ which allow the operator to be positioned outside the arc flash boundary during operation. Please contact CBS ArcSafe to discuss your application

4. Before racking, be sure to defeat any racking interlocks that would prevent operation.

5. Insert the racking tool into the breaker racking mechanism. Rotate the PPEZ if necessary to ensure the tool is seated properly.
6. With the tooling inserted, and applicable interlocks defeated, the user can start the racking operation. Press and hold the "REMOVE" pushbutton to rack the breaker out. Ensure that any additional operation steps that would be performed when operating by hand are also observed when racking with the PPEZ.



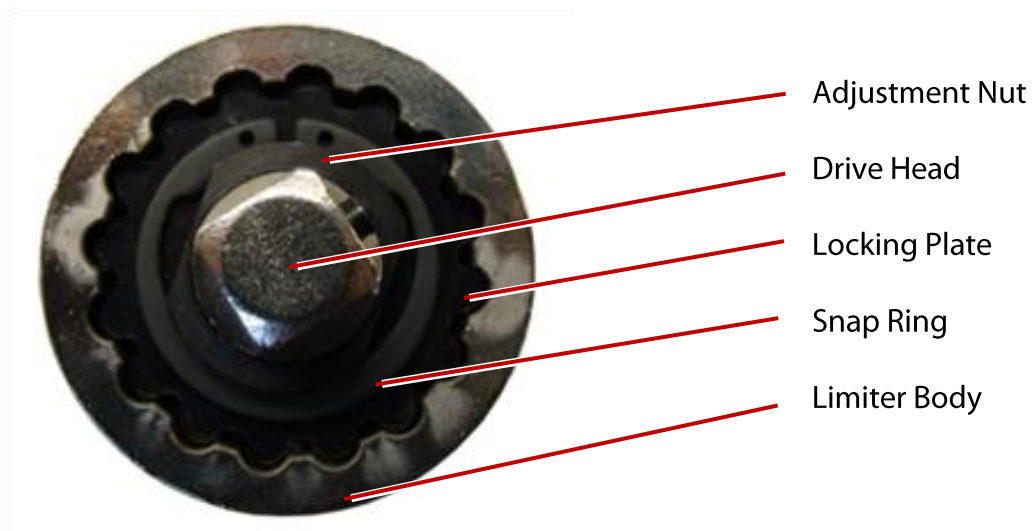
7. Once the racking operation is complete, detach the PPEZ unit from the circuit breaker and exit the arc-flash boundary.
8. Turn off the RSO-PPEZ.

3 Adjustments

The RRS-3 comes adjusted from the factory to fit most common configurations, and should not need to be adjusted in most cases. However, if adjustments do need to be performed, it is recommended that they be done on de-energized and isolated equipment to prevent possible damage or injury.

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 $\frac{3}{8}$ inch drive torque wrench will be required to perform this adjustment.*



1. First, remove the racking tool adapter from the PPEZ by pushing in the locking pin at the base of the adapter, as shown. The racking adapter can then be fitted to a standard $\frac{3}{8}$ 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.

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

5. 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.
6. 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.
7. Remove the snap ring and locking plate from the torque limiter.
8. Adjust the nut clockwise to increase torque, and counter-clockwise to decrease torque.
9. 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.
10. 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 racking operating placing excessive torque on the breaker mechanism; possibly leading to equipment damage.



Distance Is Safety®

A Group CBS Company

PPEZ
Technical Manual

2616 Sirius Road
Denton, TX 76208
Tel: 877-4-SAFETY
Fax: 940-382-9435
Website: www.CBSArcSafe.com
Email: info@CBSArcSafe.com

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).