



Installation, Operation and Maintenance Instructions

# V Series Expulsion Dropout Fuses

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## Qualified Personnel Only

The V Series Expulsion Dropout Fuse covered by this publication must be installed, operated and maintained by qualified personnel who are knowledgeable in installation, operation and maintenance of distribution switch equipment along with associated hazards. A qualified personnel is one who is trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from non-live parts of electrical equipment.
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed.
- The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment.

## Read and keep these instructions

Carefully read and understand this instruction sheet before installing, operating and maintaining your ABB cut out fuse. The primary function of the drop out expulsion type fuse is to protect equipment connected to distribution overhead lines from overloads and fault currents within its rating. For safe operation the appropriate Australian or International Standards should be applied.

This instruction sheet should be available for reference wherever fuse cut-outs are used. Keep this instruction sheet in a location where you can easily retrieve and refer to it.

## Proper Application Only

The operating characteristics of expulsion drop out fuses must be carefully considered when selecting an installation site .

The V Series Expulsion Dropout Fuse when used with ABB fuse links significantly reduces the risk of emission of incandescent particles. However, incandescent particles which have capability of igniting combustible materials, such as dry grass, will be emitted from time to time.

As incandescent particles can ignite combustible materials, such as dry grass, additional protection is available in the form of the ABB Emission Control Device (refer publication AUS 0026 E) wherever such combustible materials are close enough to the expulsion dropout fuse to present a potential fire hazard. Select installation sites to avoid damage to people and the environment.

1. Before the operator attempts to close the fuse holder into the fuse base the operator should position themselves clear from the exhaust path of the expulsion drop out fuse.
2. Do not attempt to open the expulsion drop out fuse under load without a load break device.
3. Always use operating stick compatible with the expulsion drop out fuse.

## Notice

The instructions covered in this publication are intended only for qualified personnel and do not substitute any adequate training and experience in safety procedures.

# Installation

## Inspection

On receipt of the equipment, carefully inspect the shipping packaging and units for any visible signs of damage. Check labels to be sure the desired ratings have been received, and check parts against the packing list. If there is any form of damage please contact your local ABB office.

## Caution

In order to prevent any damage during transport and handling, keep the Fuse Cutout in its carton until you are ready to install it. Failure to do so can result in improper operation, arcing, or electric shock.

1. Attach mounting bracket to pole cross-arm and secure.
2. Mount the fuse cutout on the mounting bracket, as shown in Figure 1, with the carriage bolt nut but loose enough for pivot adjustment.

(Note: Place the external star-lock washer between the fuse cutout support pin and the mounting bracket. See Fig.1.)

3. Pivot the fuse cutout to an orientation that will provide maximum ease of operation and securely tighten the carriage bolt nut. The recommended initial torque value to tighten this bolt is 46 to 52 N.m but the bolt tightening torque value is highly affected by lubrication, thread condition and environmental condition and must be assessed by a qualified person on site.
4. Attach conductors to the top and bottom terminals. (Aluminium conductors to be wire brushed and coated with oxidation inhibitor.)

(Note: When tightening the cable clamp nuts, torque should not exceed 40 N.m.)

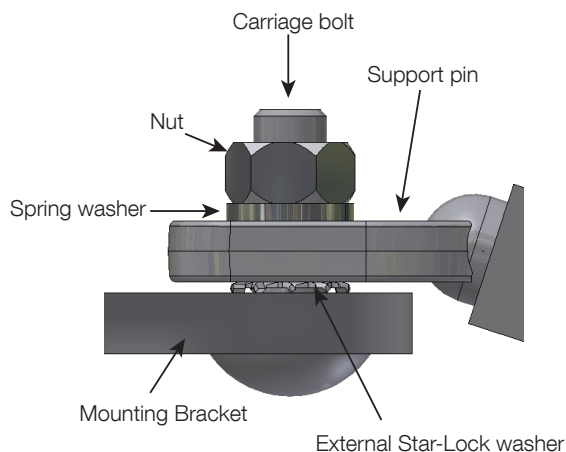


Figure 1- Fuse cut-out attachment to mounting bracket

# Fuse Holder Loading

## Fuse Links with Solid Button Head

1. Remove the fuse cap from the fuse holder assembly.
2. Thread the fuse link through the top of the fuse holder and pull out from the bottom end. (Note: Care should be taken not to damage or remove the small tube over the fuse link).
3. Replace the cap on the fuse holder and tighten.

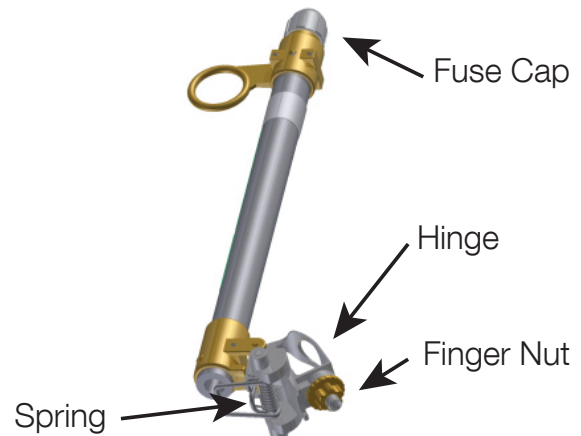


Figure 2- Fuse holder assembly

4. Unscrew the finger nut at the hinge Trunnion, attached to the end of fuse holder. (Note: Never undo the finger nut from hinged trunnion threaded shaft. Doing so will damage the threads on both shaft and nut.)
5. Rotate the flipper spring until it stops and feed the pigtail of the fuse link over the flipper spring.
6. Tension the fuse link sufficiently to hold the flipper spring against the stop and wind the pigtail around the threaded post under the nut and washer in a clockwise direction (Fig 3).

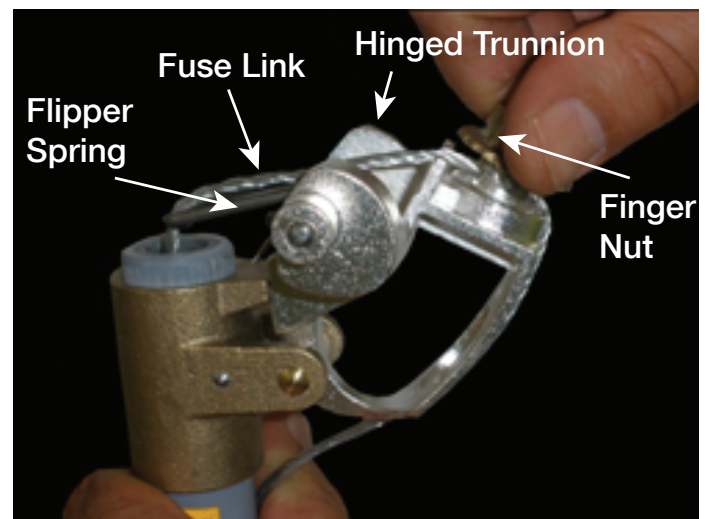


Figure 3- Fuse link loading

# Installation of Optional Accessories

7. Tighten the nut and cut off excess pigtail. (Note: When tightening the nut, torque should not exceed 20 N.m.)

## Fuse Links with a Removable Button Head for Use with Arc Shortening Rods

1. Step 1. Remove the cap arc shortening rod from the fuse holder.
2. Step 2. Remove button head from the fuse link.
3. Step 3. Screw fuse onto the arc shortening rod. (See Fig. 4).

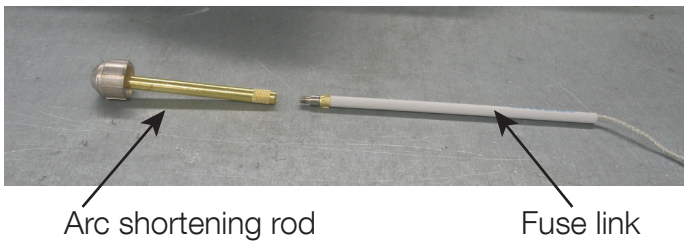


Figure 4 - Arc shortening rod assembly

4. Step 4. Thread the fuse link through the top of the fuse holder and pull from the bottom end.
5. Step 5. Screw the cap in the fuse holder and tighten.
6. Step 6. Continue with steps four (4) to seven (7) of preceding section (Fuse Links with Solid Button Head installation).

## Caution

Do not use a standard cap in place of a cap with an arc-shortening rod. Use of the arc-shortening rod is required to achieve the full interrupting rating.

The full interrupting capacity is only guaranteed with ABB "ProLink" fuse links.

## Installation of Clamp Support

The clamp support kit consists of: one bolt, two nuts and one spring washer. It is installed as shown in Fig. 5. (Note: More than 2mm may jam operation of fuse and causes hang up).

In all cases the clamp support can be installed on either side of the expulsion drop out fuse as required.

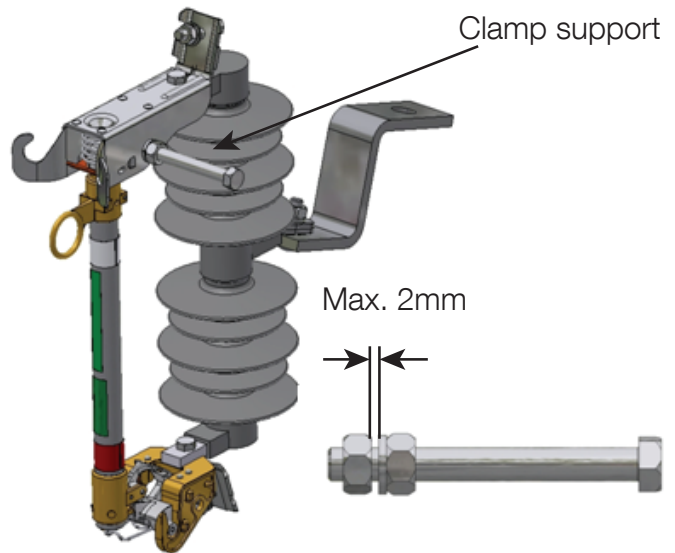


Figure 5- Clamp support

## Installation of Earth Stirrup

The Earth stirrup kit consists of: two bolts, two nuts and two spring washer. It is attached to earth stirrup bracket as shown in Fig. 6.

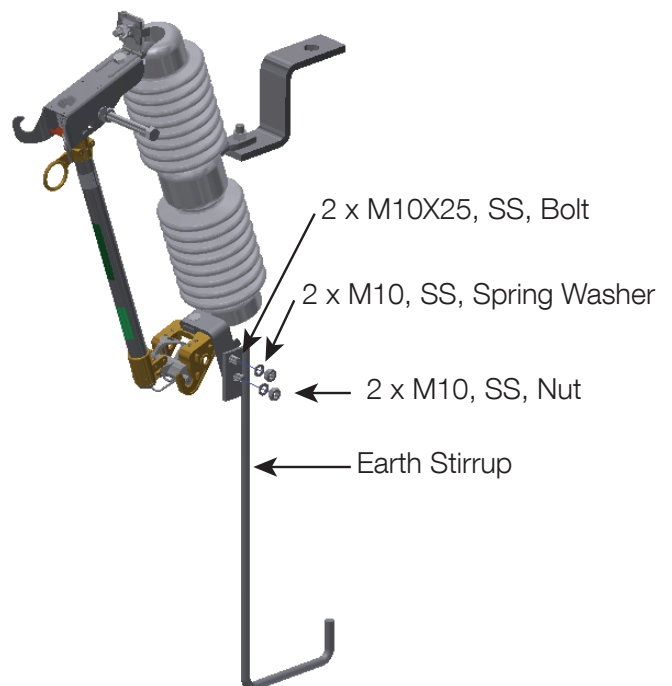


Figure 6- Earth Stirrup attachment

# Operation

Only qualified personnel should operate, inspect, or maintain a fuse cutout. Qualified personnel should wear protective equipment such as rubber gloves, hard hat, safety glasses, flash-clothes, etc., in accordance with established Australian or International safety practices.

## Warning

Hot gases and fuse link particles can be expelled at high velocity during interruption. When closing a fuse cutout, all personnel should be positioned well clear of its exhaust.

1. After installing the fuse link as described in preceding sections, insert the prong of a hookstick into the opening under the Trunnion casting band. Or, as an alternate, insert the prong in the keyhole opening in the Trunnion casting band.
2. Guide the fuse tube into the fuse cutout hinge as shown in Figure 7A and disengage the hookstick (See Fig. 7A).
3. Insert the prong of the hookstick in the pull ring on the upper casting section of the fuse holder and rotate the fuse tube to the fully closed position. Carefully disengage the hookstick taking care to avoid opening the fuse tube (See fig. 7-b).

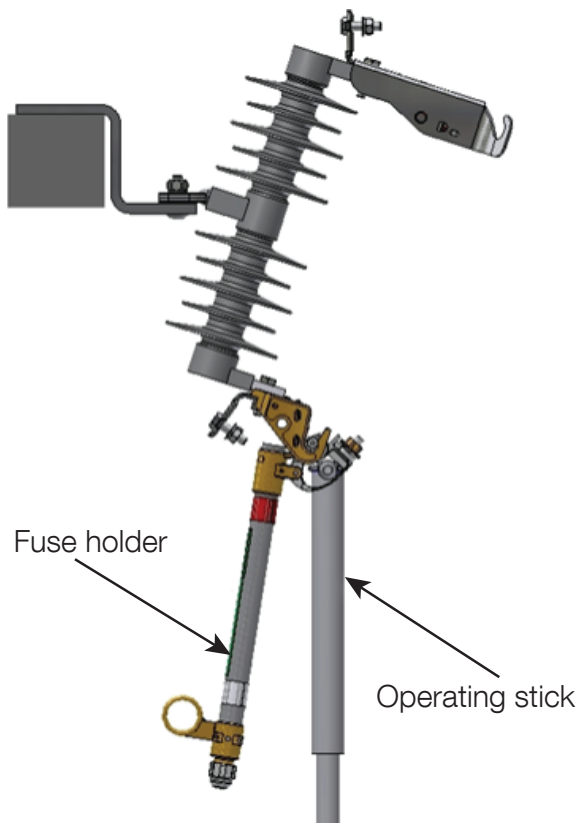


Figure 7A- Installation of fuse tube

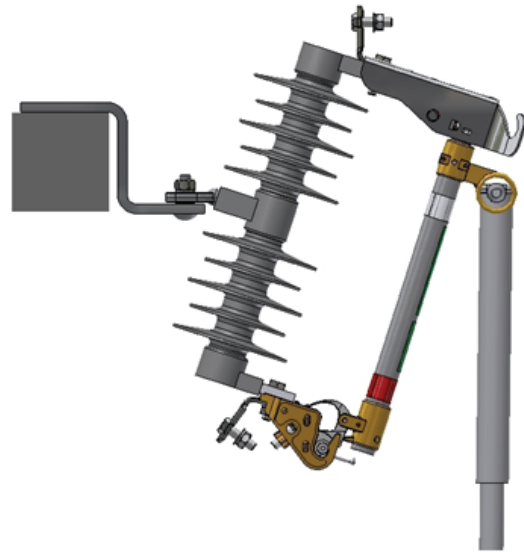


Figure 7B- Installation of fuse tube

## Danger

ABB Fuse Cutouts are designed to protect equipment. A fuse cutout **cannot** protect personnel from injury or electrocution if contact is made with energized circuits or hardware.

## Warning

Do not attempt to open the expulsion drop out fuse under load without a load break device. An arc started by opening a fuse cutout under load without a load-break tool could cause injury or damage to equipment.

# Maintenance

Examination and maintenance of expulsion drop out fuse units that are connected to an energized circuit shall be done at a safe distance from any exposed energized parts of equipment or conductors, or the circuit and equipment should be de-energized. Regular inspection of expulsion drop out fuse and fuselink units shall be performed in accordance with below standards:

1. IEEE Std.C37-48-2005: Guide for the Application, Operation, and Maintenance of High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches; Fuse Disconnecting Switches, and Accessories.
2. IEEE Std 516-2009: Standard Guide for Maintenance Methods on Energized Power Lines
3. IEEE Std 957-1995: Guide for Cleaning Insulators

## Fuse Base

- Inspect insulators for any damage or contamination. To prevent flashover clean or replace if necessary.

- Inspect cable terminations.

-Ensure connections are tight (Do not exceed 40 N.m torque) and check for signs of overheating. Replace if necessary.

- Inspect contact surfaces. If burning or pitting is excessive, replace complete mount.

## Fuse Holder

- To prevent current leakage or flashover on fuse tube surface the fuse tube shall be examined for any sign of arc tracking or excessive pollution accumulation and be replaced if necessary.

- Inspect fuse holder fibreliner. To prevent hang up, the inside of the fuse tube shall be examined for excessive erosion.

## Notice

Do not leave the fuse holder in the open position for an extended period of time, as water can damage the tube lining.

## Fuse Links

Fuse links shall be inspected periodically for any sign of corrosion of the lower terminal of the fuse link (generally a flexible tail) at the lower open-end of the fuse holder. Any corrosion at this point may cause breakage or melting at this point rather than at the fuse element.

The fuse tube itself is rated for 3 to 4 operation at 100% capacity expulsions ( 6-8 kA for 24 kV units and 2-4 kA for 36 kV units). If the cutout operates in its full capacity for 3 to 4 times after that the fuse tube should be replaced.

For your notes

A series of horizontal dotted lines for writing notes.

# Contact

For more information please contact:

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**Phone: +61 2 9753 7111**  
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## Note

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