The "BREAK-SAFE®" PORTABLE LOADBREAK & LOAD PICKUP JUMPER CLAMP

USBS-15-1-PS
USBS-15-2-PS
USBS-27-1-PS
USBS-27-2-PS
USBS-46-1-PS
USBS-46-2-PS

Operation Manual

B-00125 USBS Manual Rev. 2.2 (9-23-19)

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UTILITY SOLUTIONS
Lineman driven. Field proven.

The BREAK-SAFE® tool is a portable switch designed to perform the following three functions: loadbreak, load pickup and continuous current duty. It is intended for temporary connecting and transferring of load and should not be used in a permanent capacity under any circumstance. The BREAK-SAFE® is designed to be installed using appropriate rubber gloves and personal protective equipment. The tool is operated using an insulated hotstick.

DANGER

Contact with high voltage will cause death or grievous personal injury to the operator. Only use this device in conjunction with safe operating practices around energized lines and equipment.

DANGER

Always wear appropriately rated rubber gloves and personnel protective gear when utilizing this product to prevent electrocution.

WARNING

Carefully read and fully understand this manual prior to operating, maintaining or testing this device. Improper operation, handling or maintenance of this device can result in death, grievous personal injury and or equipment damage.

WARNING

Follow safe work procedures and practices when utilizing this product. Failure to use this tool in a safe manner can result in death, grievous personal injury and or equipment damage.

WARNING

These instructions are not intended to replace or be a substitute for proper safety training procedures. Failure to select the proper tool in regards to minimum system requirements can result in death, grievous personal injury and or equipment damage.

WARNING

Only trained and qualified personnel should operate, inspect and maintain this equipment.

BREAK-SAFE®CIRCUIT RESTRICTIONS

BREAK-SAFE® devices should not be used in situations where the maximum voltage and/or amperage rating of the tool can be exceeded. BREAK-SAFE® tools are rated by maximum amperage (A) and voltage (V). TABLE 1 details the specific ratings of the various BREAK-SAFE® models.

Cat. #	Maximum Current Rating	Maximum System Voltage	Minimum Conductor Size	Maximum Conductor Size
USBS-15-1-PS	300 A	15 kV	#6 Copper	954 ACSR
USBS-15-2-PS	300 A	15 kV	#6 Copper	954 ACSR
USBS-27-1-PS	300 A	27 kV	#6 Copper	954 ACSR
USBS-27-2-PS	300 A	27 kV	#6 Copper	954 ACSR
USBS-46-1-PS	200 A	46 kV	#6 Copper	954 ACSR
USBS-46-2-PS	200 A	46 kV	#6 Copper	954 ACSR

TABLE 1: Model Ratings

Outlined below are some circuit restrictions known to exist:

- Do not utilize the BREAK-SAFE® tool in situations where ferroresonance can produce overvoltage situations. An example of this involves switching unloaded transformers that are delta-connected three phase and wye-connected three phase with primary neutral ungrounded.

- Do not utilize the BREAK-SAFE® to switch unloaded transformers.

- Do not utilize the BREAK-SAFE® to switch capacitor banks. Capacitor switching can cause large over voltage situations that are likely to cause flashover of the tool.

WARNING

Do not utilize the BREAK-SAFE® in phase-to-phase or grounding circuits.

WARNING

The BREAK-SAFE® is to be used in a temporary capacity only. Do not utilize the tool in a permanent capacity or for extended periods of time.

WARNING

The BREAK-SAFE® is not waterproof. Do not use the BREAK-SAFE® in wet conditions.

BREAK-SAFE® IN THE OPEN POSITION

Safety Pin Correctly Installed in the Open Position.

BREAK-SAFE® IN THE CLOSED POSITION

Safety Pin Correctly Installed in the Closed Position.

WARNING

Do not use the BREAK-SAFE® if the tool exhibits pitting and or charring around the external brass contacts. Pitting and or charring are the result of a tool that was not properly reset prior to performing a loadbreak operation.

WARNING

Do not use the BREAK-SAFE® if the clear body of the tool exhibits cracking (cracks larger than ¼" length). Cracks larger than ¼" are an indicator that the tool was either dropped or was cleaned / exposed to solvents. The BREAK-SAFE® should only be cleaned with soap and water. Also any thread lock material utilized on the tool must be dry and solventless. Contact Utility Solutions for a list of approved thread lock materials.

WARNING

- Do not use the BREAK-SAFE® if the internal yellow tube exhibits signs of a flashover. Internal flashover can be attributed to the following situations:
- The tool was used in the rain.
- The tool was used to open capacitor banks.
- The tool was not reset properly prior to performing a loadbreak operation.
- The tool had accumulated soot / debris from prior loadbreak operations that deteriorated the overall dielectric strength of the tool.

The yellow tube needs to be cleaned on a routine basis to prevent the buildup of loadbreak deposits.

BREAK-SAFE® LINE AND TOOL PREPARATION

WARNING

When working with the BREAK-SAFE® always assume the tool is energized at all times. Never consider the tool body as rated insulation.

BREAK-SAFE® FIELD INSPECTION PROCEDURE (PRIOR TO OPERATION)

Reference the accompanying laminated BREAK-SAFE® Inspection Procedure.

1. Do not exceed the rated voltage of the tool (TABLE 1).
2. Do not exceed the rated amperage of the tool (TABLE 1).
3. Insulate the pole and conductor as required by the supervising utility safety practices.
4. Clean the conductor at each location where the BREAK-SAFE® jumper clamp system will be attached.
5. If the BREAK-SAFE® is equipped with a duckbill head (USBS-**-2-PS) ensure that all attachment fasteners are tight and secure.

BREAK-SAFE® OPERATIONAL INSTRUCTIONS

The following procedures, as described, are intended to overview a typical circuit bypass application and circuit re-energizing application using the BREAK-SAFE® Portable Switch. Always follow supervising utility installation and use procedures for the BREAK-SAFE® jumper clamp system.

WARNING

When working with the BREAK-SAFE® always assume the tool is energized at all times. Never consider the tool body as rated insulation.

CIRCUIT BREAK APPLICATION

1. Prior to securing the BREAK-SAFE® to the line, pull the Loadbreak Ring on the BREAK-SAFE® Black Pull Strap until the tool locks in the open tool position (the internal yellow tube is visible).

2. Insert the Safety Locking Pin into the hole labeled “LOCK OPEN” and verify the Safety Locking Pin secures the tool in the fully open position.

   The Safety Locking Pin secures the tool in the open position and prevents an accidental load pickup operation.

   If the Safety Locking Pin cannot be inserted into the “LOCK OPEN” hole it alerts the operator the tool has not been fully extended in the open position. If necessary pull down on the Black Pull Strap Assembly with enough force so the Safety Locking Pin fully seats in a smooth and easy manner.

3. Verify the BREAK-SAFE® is in the open position with the Safety Locking Pin securely fastened to prevent accidental tool operation.

4. Securely attach the BREAK-SAFE® jumper head to the “SOURCE SIDE” or “LINE POWER SIDE“ (FIGURE 1) using standard utility safety practices and procedures.

   Attaching the BREAK-SAFE® to the “SOURCE SIDE” or “LINE POWER SIDE” ensures that after the loadbreak operation has been preformed in STEP (12) the jumper cable is entirely de-energized.

5. Securely attach one end of a jumper cable to the “LOAD SIDE” of the circuit (FIGURE 1) using standard utility safety practices and procedures.

6. Securely attach the opposite end of a jumper cable to the Conductor Bar located at the base of the BREAK-SAFE®. Do not allow the jumper cable to pull sideways on the BREAK-SAFE®. The jumper cable should have enough slack to hang straight down.

7. Prior to performing the load pickup operation remove the Safety Locking Pin from the “LOCK OPEN” position.

8. To pickup load, exert a steady downward movement on the Load Pickup Trigger using an insulated hotstick. The Black Pull Strap Assembly should retract forcefully into the Clear Tube Assembly.

   When load pickup has been properly performed the yellow indicator band (either yellow paint or yellow tape on older models) on the Black Pull Strap Assembly should not be visible.

   If the yellow indicator band is visible on the Black Pull Strap Assembly the tool has not properly closed and the operator should push the Loadbreak Ring upward until the yellow indicator band is no longer visible to ensure the tool has fully reset.

9. Insert the Safety Locking Pin into the hole labeled "LOCK CLOSED" and verify the Safety Locking Pin secures the tool in the fully closed position. The Safety Locking Pin secures the tool in the closed position and prevents an accidental loadbreak operation.

10. Following standard safety practices and procedures the permanent circuit can now be cut and both ends isolated and insulated.

11. Prior to performing the loadbreak operation remove the Safety Locking Pin from the "LOCK CLOSED" position.

12. With one steady motion, pull down firmly on the Load Break Ring using an approved insulated hot stick until the tool locks in the open position. Do not stop or hesitate while pulling.

13. Insert the Safety Locking Pin into the hole labeled "LOCK OPEN" and verify the Safety Locking Pin secures the tool in the fully open position.

    The Safety Locking Pin secures the tool in the open position and prevents an accidental load pickup operation.

    If the Safety Locking Pin cannot be inserted into the "LOCK OPEN" hole it alerts the operator the tool has not been fully extended in the open position. If necessary pull down on the Black Pull Strap Assembly with enough force so the Safety Locking Pin fully seats in a smooth and easy manner.

14. Verify there is NO VOLTAGE AND/OR NO AMPERAGE present on the "LOAD SIDE" prior to removing the jumper cable end attached to the "LOAD SIDE" line.

15. Place the unattached "LOAD SIDE" jumper cable end on an insulated Utility Solutions "Jumper-T" (USJT-001) or equivalent device (FIGURE 2). This separation constitutes a visible gap for safety.

WARNING

The BREAK-SAFE® when in the "OPEN POSITION" does not constitute being rated insulation nor does it provide a visible gap. This is why the use of the Utility Solutions "Jumper-T" (USJT-001) or equivalent as a parking stand is suggested.

16. Following standard safety practices and procedures, work can be performed on the de-energized line.

CIRCUIT MAKE APPLICATION

1. Prior to securing the BREAK-SAFE® to the line, pull the Loadbreak Ring on the BREAK-SAFE® Black Pull Strap until the tool locks in the open tool position (the internal yellow tube is visible).

2. Insert the Safety Locking Pin completely through the hole labeled "LOCK OPEN" and verify the safety pin secures the tool in the fully open position.

   The Safety Locking Pin secures the tool in the open position and prevents an accidental load pickup operation.

   If the Safety Locking Pin cannot be inserted into the "LOCK OPEN" hole it alerts the operator the tool has not been fully extended in the open position. If necessary pull down on the Black Pull Strap Assembly with enough force so the Safety Locking Pin fully seats in a smooth and easy manner.

3. Verify the BREAK-SAFE® is in the open position with the Safety Locking Pin securely fastened to prevent accidental tool operation.

4. Securely attach the BREAK-SAFE® jumper head to the "SOURCE SIDE" or "LINE POWER SIDE" (FIGURE 1) using standard utility safety practices and procedures.

   Attaching the BREAK-SAFE® to the "SOURCE SIDE" or "LINE POWER SIDE" ensures that after the loadbreak operation has been preformed in STEP (13) the jumper cable is entirely de-energized.

5. Securely attach the first end of a jumper cable to the non-energized "LOAD SIDE" of the circuit (FIGURE 2) using standard utility safety practices and procedures.

6. Securely attach the opposite end of a jumper cable to the Conductor Bar located at the base of the BREAK-SAFE®. Do not allow the jumper cable to pull sideways on the BREAK-SAFE®. The jumper cable should have enough slack to hang straight down.

7. Prior to performing the load pickup operation remove the Safety Locking Pin from the "LOCK OPEN" position.

8. To pickup load exert a steady downward movement on the Load Pickup Trigger using an insulated hotstick. The Black Pull Strap Assembly should retract forcefully into the Clear Tube Assembly.

When load pickup has been properly performed the yellow indicator band (either yellow paint or yellow tape on older models) on the Black Pull Strap Assembly should not be visible.

If the yellow indicator band is visible on the Black Pull Strap Assembly the tool has not properly closed and the operator should push the Loadbreak Ring upward until the yellow indicator band is no longer visible to ensure the tool has fully reset.

9. Insert the Safety Locking Pin into the hole labeled “LOCK OPEN” and verify the Safety Locking Pin secures the tool in the fully open position.

   The Safety Locking Pin secures the tool in the open position and prevents an accidental load pickup operation.

10. Verify VOLTAGE AND AMPERAGE are present on the “LOAD SIDE”.

11. Following standard safety practices and procedures, uncover the permanent jumpers and reconnect or create permanent connections

12. Prior to performing the loadbreak operation remove the Safety Locking Pin from the “LOCK CLOSED” position.

13. With one steady motion, pull down firmly on the Load Break Ring using an approved insulated hot stick until the tool locks in the open position. Do not stop or hesitate while pulling.

14. Insert the Safety Locking Pin into the hole labeled “LOCK OPEN” and verify the Safety Locking Pin secures the tool in the fully open position.

    The Safety Locking Pin secures the tool in the open position and prevents an accidental load pickup operation.

    If the Safety Locking Pin cannot be inserted into the “LOCK OPEN” hole it alerts the operator the tool has not been fully extended in the open position. If necessary pull down on the Black Pull Strap Assembly with enough force so the Safety Locking Pin fully seats in a smooth and easy manner.

15. Verify there is NO AMPERAGE present along the jumper cable.

16. Remove the jumper cable end attached to the “LOAD SIDE” line.

17. Remove the jumper cable end attached to the BREAK-SAFE®.

18. Remove the BREAK-SAFE®.

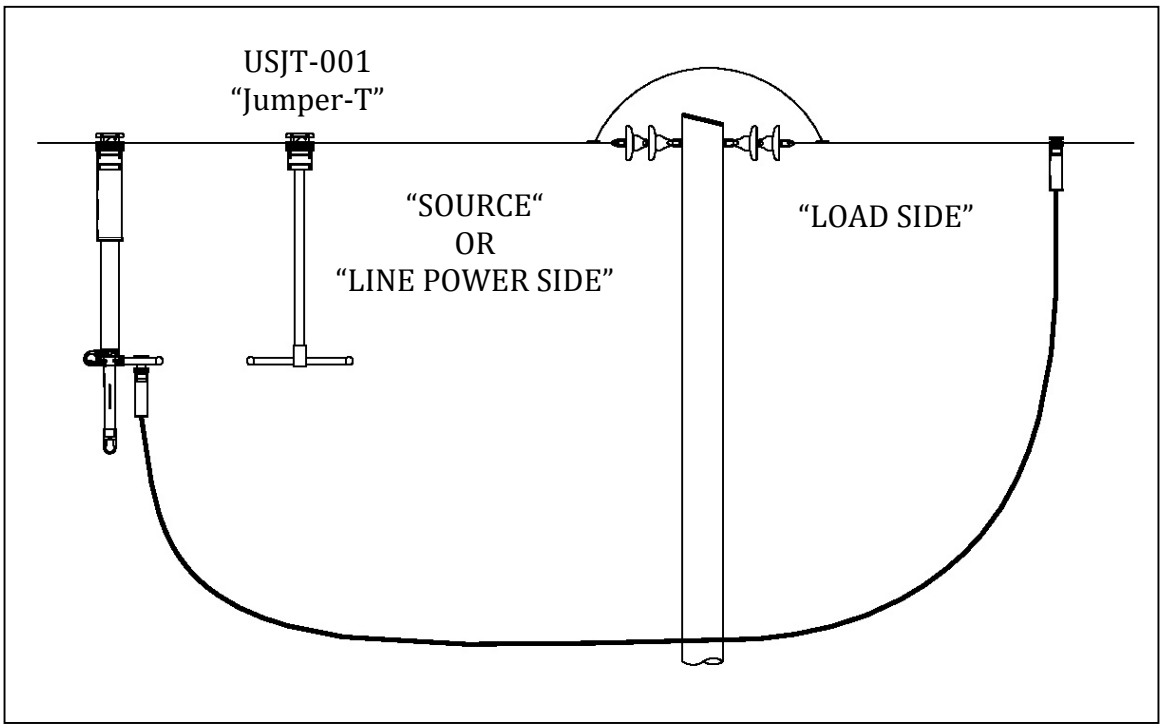

FIGURE 1: BREAK-SAFE® Installation Schematic

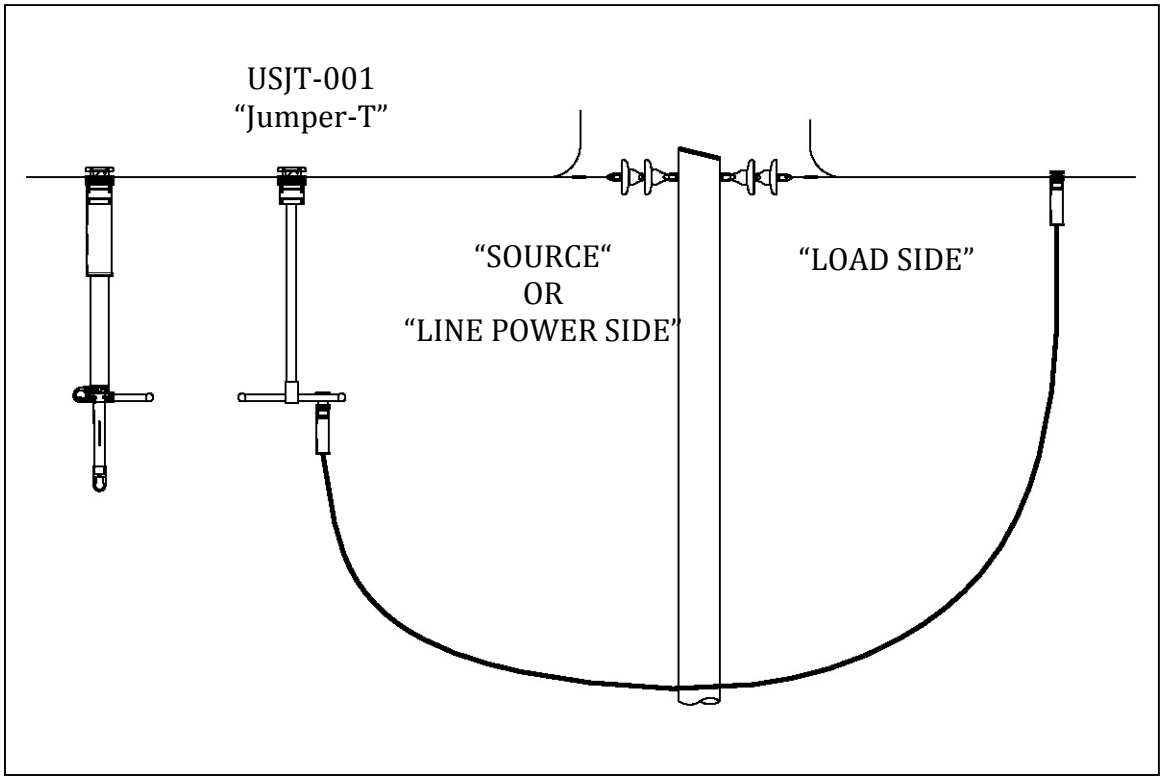

FIGURE 2: USJT-001 Visible Gap / Rated Insulation Configuration for BREAK-SAFE®

Resistance Test

An optional Resistance Test may be performed in between scheduled maintenance. This test DOES NOT replace scheduled maintenance or extend the time between scheduled maintenance.

This test is performed using the Utility Solutions USGT-600 Grounds Tester w/ REACH Technology or equivalent device. Refer to the testers' instruction manual for proper set-up procedures.

1. The BREAK-SAFE® should be in the closed position and RESET with the external brass contacts fully seated.

2. Connect the BREAK-SAFE® Conductor Hook to a Current Output Post on the Grounds Tester. Position and support the BREAK-SAFE® so the weight of the tool does not apply sideways force on the Current Output post (a small block of wood should suffice).

3. Connect a standard Mechanical Jumper (minimum 6 feet, 1/0 AWG, 300 AMP) to the other Current Output Posts of the Grounds Tester and the conductor bar of the BREAK-SAFE®.

4. Put the Grounds Tester in REACH mode.

5. Turn on the Grounds Tester and adjust the Current Control Knob to energize to 300 AMPS.

6. Using the red and black Jumper Leads on the Grounds Tester, measure the voltage on the BREAK-SAFE® between the lower jaw of the Conductor Hook and the Parking Stand.

7. Voltage drop should not exceed 0.220 volts. If the voltage displayed exceeds 0.220 volts the tool should be removed from service. Maintenance should be performed by the factory or by trained and certified personnel.