

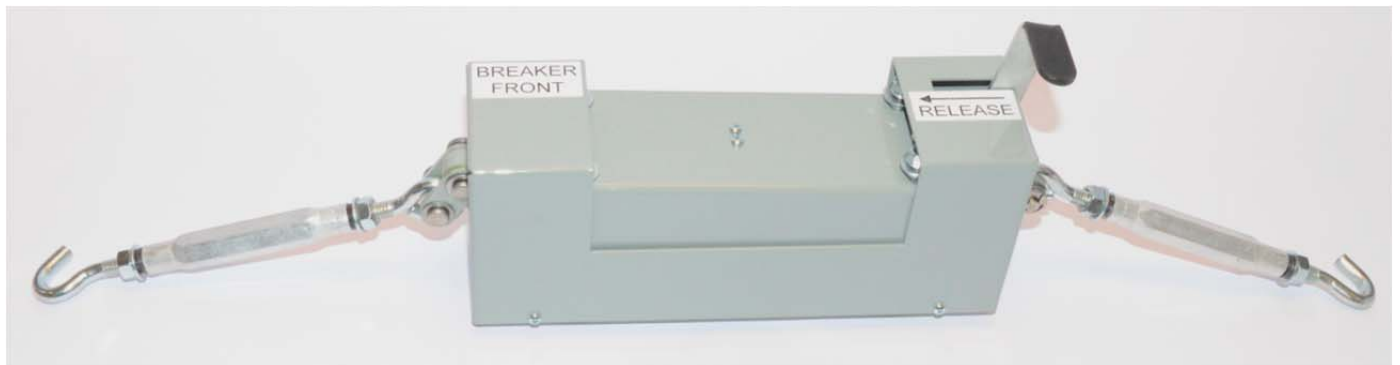


Description
38 kV VCPW-HD Cradle Assist Kit

Style Number
71B2570G01

Instructions for the Use, Operation of Cradle Assist Kit

IL131020EN Effective October 2014



CRADLE ASSIST KIT

Advantages

- Light weight
- Foot operated device
- Easy to operate
- Requires small amount of force to operate
- Fewer moving parts
- Less maintenance
- Equally divides the applied force.

**WARNING**

IMPROPERLY INSTALLING OR MAINTAINING THESE PRODUCTS CAN RESULT IN DEATH, SERIOUS PERSONAL INJURY, OR PROPERTY DAMAGE.

READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE ATTEMPTING ANY UNPACKING, ASSEMBLY, OPERATION OR MAINTENANCE OF THE CRADLE ASSIST KIT.

INSTALLATION OR MAINTENANCE SHOULD BE ATTEMPTED ONLY BY QUALIFIED PERSONNEL. THIS INSTRUCTION BOOK SHOULD NOT BE CONSIDERED ALL INCLUSIVE REGARDING INSTALLATION OR MAINTENANCE PROCEDURES. IF FURTHER INFORMATION IS REQUIRED, YOU SHOULD CONTACT EATON.

**WARNING**

THE CRADLE ASSIST KIT ELEMENTS DESCRIBED IN THIS BOOK ARE DESIGNED AND TESTED TO OPERATE WITHIN THEIR NAMEPLATE RATINGS. OPERATION OUTSIDE OF THESE RATINGS MAY CAUSE THE EQUIPMENT TO FAIL, RESULTING IN DEATH, BODILY INJURY AND PROPERTY DAMAGE.

ALL SAFETY CODES, SAFETY STANDARDS AND/OR REGULATIONS AS THEY MAY BE APPLIED TO THIS TYPE OF EQUIPMENT MUST BE STRICTLY ADHERED TO.

SERIOUS INJURY, INCLUDING DEATH, CAN RESULT FROM FAILURE TO FOLLOW THE PROCEDURES OUTLINED IN THIS MANUAL. THESE CRADLE ASSIST KIT ELEMENTS ARE SOLD PURSUANT TO A NON-STANDARD PURCHASING AGREEMENT WHICH LIMITS THE LIABILITY OF THE MANUFACTURER.

Eaton Corporation
Moon Township, PA. 15108

All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of this equipment do no purport to be covered by these instructions. If further information is desired by purchaser regarding his particular installation, operation or maintenance of particular equipment, contact an Eaton representative.

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SECTION 1: INTRODUCTION

The purpose of this Instruction bulletin is to provide instructions for Use, Operation & Handling of Cradle Assist Kit. It is a portable device designed to apply a pull force equally on either side of the cradle handle locks for racking in or out of the switchgear/cell (Minimod module). This is an optional kit that a customer can order. The kit is made to help with the ergonomics involved in placing a breaker into switchgear. This product works with all ratings of the 38 kV VCPW-HD breakers. The kit interfaces with the levering in of the breaker. It can be activated by the users foot to pull in the handles so the breaker can be pushed in or pulled out by one operator while standing up. A trip handle can also be foot operated to disengage the Cradle Assist Kit. The customer can transfer the Cradle Assist Kit to each breaker in the lineup or purchase a kit for each breaker.

**WARNING**

SATISFACTORY PERFORMANCE OF THESE BREAKERS IS CONTINGENT UPON PROPER APPLICATION, CORRECT INSTALLATION AND ADEQUATE MAINTENANCE. THIS INSTRUCTION BOOK MUST BE CAREFULLY READ AND FOLLOWED IN ORDER TO OBTAIN OPTIMUM PERFORMANCE FOR LONG USEFUL LIFE OF THE CRADLE ASSIST KIT.

VCPW-HD CIRCUIT BREAKERS ARE PROTECTIVE DEVICES, AS SUCH, THEY ARE MAXIMUM RATED DEVICES. THEREFORE, THEY SHOULD NOT UNDER ANY CIRCUMSTANCES BE APPLIED OUTSIDE THEIR NAMEPLATE RATINGS.

SECTION 2: CONSTRUCTION

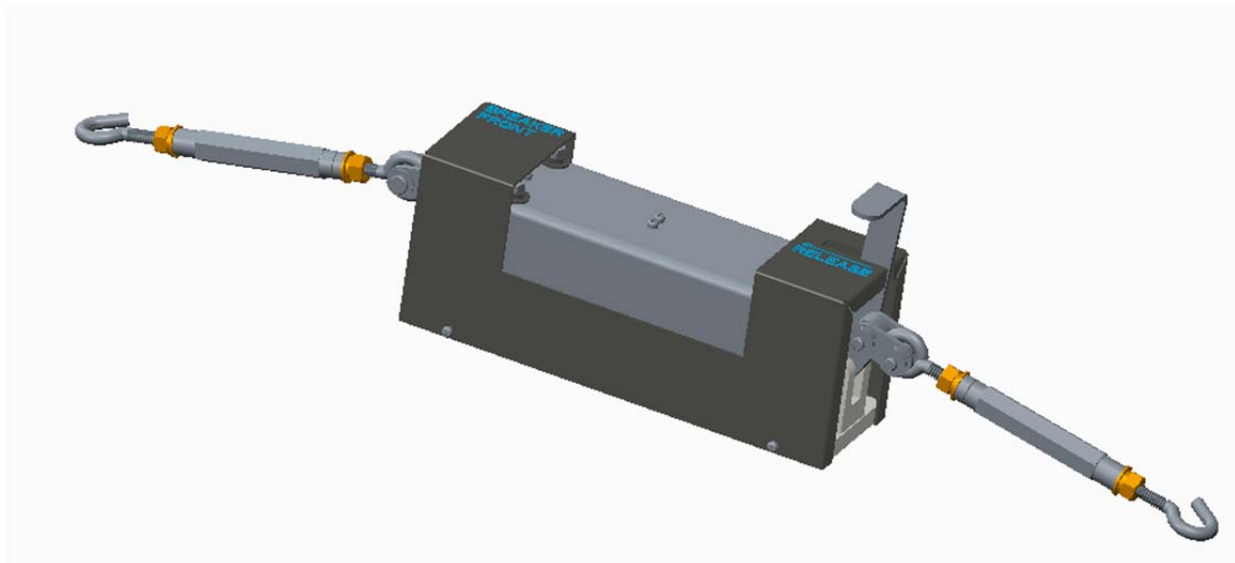


Fig 2-1: Cradle Assist Kit Front-Isometric view

2-1 WORKING PRINCIPLE:

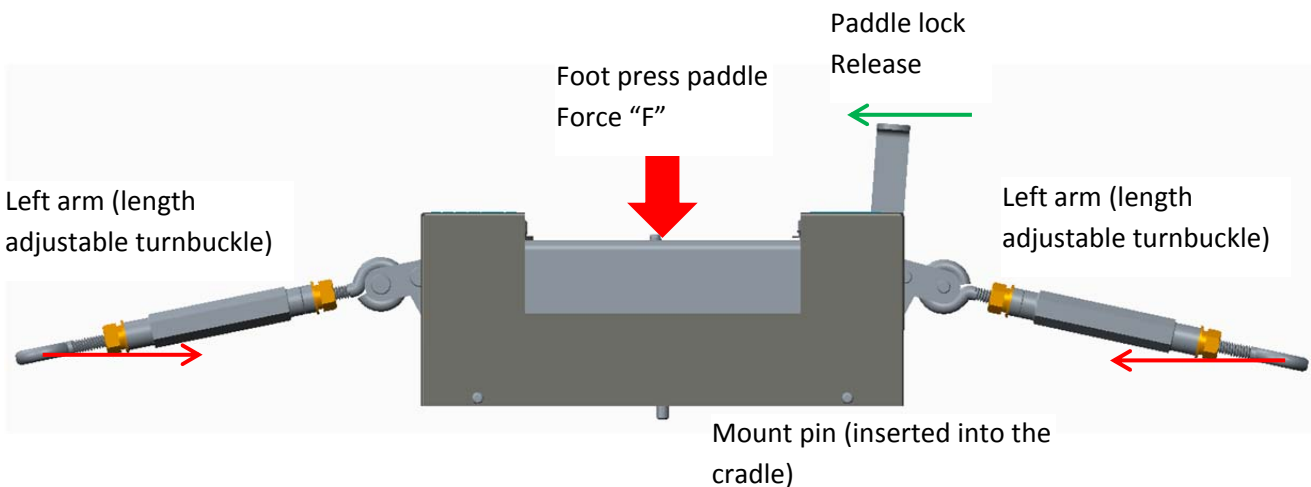


Fig 2-2: Cradle Assist Kit Front view with application of foot forces

The above figure shows a systematic view of a Cradle Assist Kit, it is placed on the cradle of the 38kV VCPW-HD breaker. A mounting pin is provided to locate the Cradle Assist Kit exactly in the middle of the unit. When a force “F” is applied by the users foot, the right and left arms which are attached to the right and left cradle handles respectively, unlatch the handles until the cradle becomes free. This allows breaker to be racked in or out of the switchgear (Minimod module).

The Cradle Assist Kit is designed in such a way that it converts a push force into a pull force. When the foot paddle is pressed completely, it locks in place, maintaining the cradle handles in an unlatched position. After the breaker is racked out of or into the switchgear, the lock can be released by pushing the paddle lock release to the left (from the front view).

2-2 EXPLODED VIEW: CRADLE ASSIST KIT

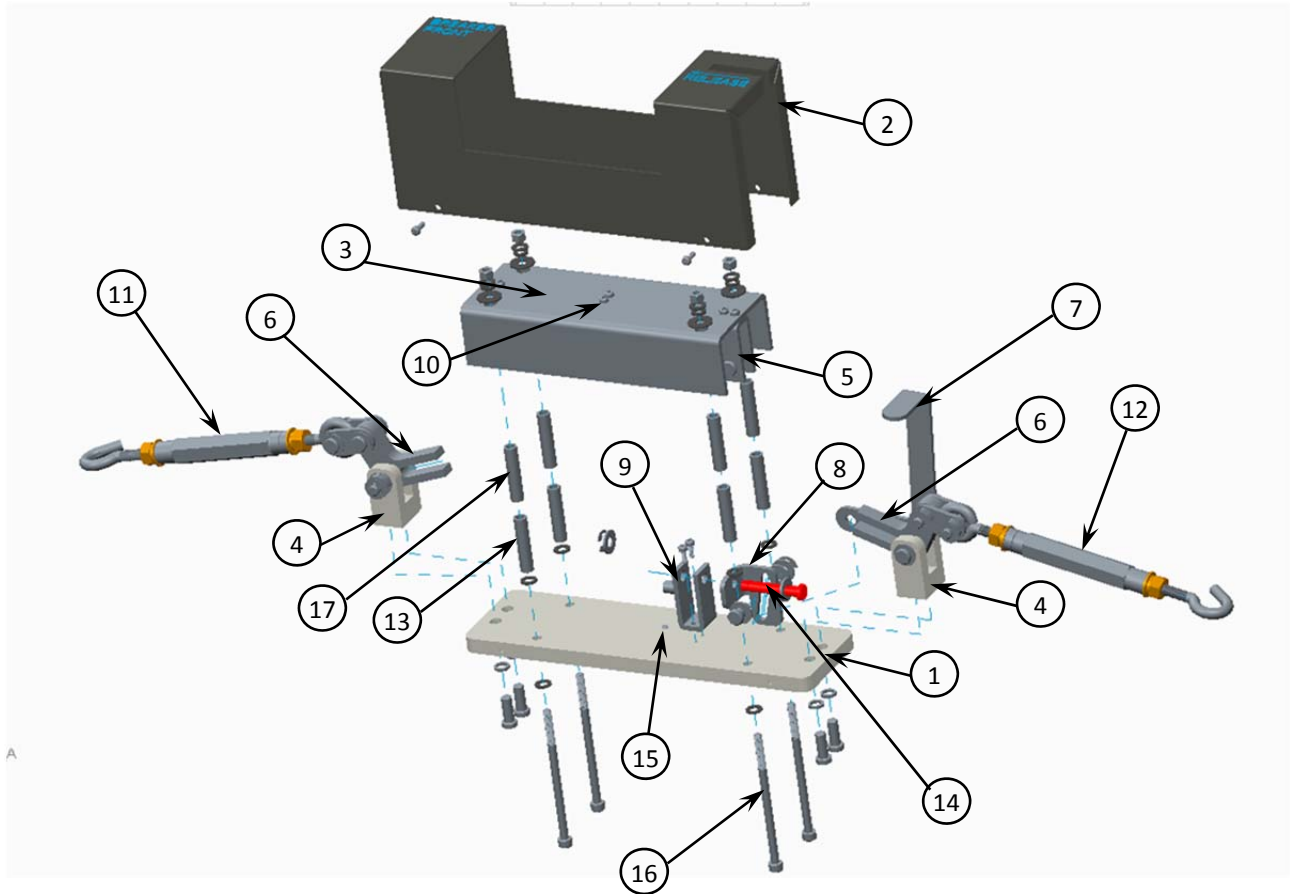


Fig 2-3: Exploded view of Cradle Assist Kit

PARTS LIST

1. Base plate
2. Cover
3. Foot operated paddle
4. Mounting bracket
5. Slide mount
6. Angled pulling lever
7. Push release paddle
8. Push release
9. Lock Mounting plate
10. Lock plate
11. Left Turnbuckle arm
12. Right turnbuckle arm
13. Spring (surrounding the spacer-17) – not shown in the picture.
14. Adjust clevis pin – lock pin
15. Base Mounting Pin
16. Mounting bolts
17. Spacers

2-3 FUNCTION OF EACH PART:

1. Base plate: The Base Plate rests on the cradle in which pin mounts are provided to fit into it. All the other components are mounted on the baseplate.
2. Cover: The cover houses the mechanism and all other parts necessary to operate the mechanism.
3. Foot operated paddle: This paddle is pressed down by foot applied force. This acts as an actuator to pull the cradle handles in.
4. Mounting Bracket: The mounting bracket is installed on the base plate and is designed in such a way that it pivots angled pulling lever. When force "F" is applied to the foot operated paddle, the angled pulling lever gets operated via slide mount, and in turn operates the right and left turnbuckle arms of the Cradle Assist Kit. There are two mounting brackets provided, one each is fitted on right and left side to operate the right and left arms, respectively.
5. Slide Mount: This "U" bent bracket is mounted on the Foot operated paddle and guides the Angled pulling lever.
6. Angled pulling lever: This pivots on the mounting bracket and transfer the vertical motion of the foot operated paddle into horizontal pulling motion.
7. Push release paddle: The main function of this part is to release the lock that holds the foot operated paddle in depressed state. The push release paddle pulls the spring loaded lock pin out of the lock plate.
8. Push Release: This bent plate is actuated by the push release paddle that in turn pulls the lock pin out of the lock plate.
9. Lock mounting plate: This "U" bent bracket supports the lock pin at 2 points.
10. Lock plate: This is a "L" shaped bent plate mounted on the foot operated paddle from the bottom side. The hole on the lock plate holds the lock pin for locking the paddle.
11. Left/Right Turnbuckle arm: This is the arm which connects/hooks to the cradle handle and pulls the handles inside. The turnbuckle is adjustable length and can be adjusted from breaker to breaker, if needed.
13. Spring: The springs are surrounding the spacers and allows the foot operated paddle to be retracted to normal position after the Push release paddle is pushed to the left side and released.
14. Adjust clevis pin / Lock pin: This acts as a locking bolt which locks the foot operated paddle to the depressed state. This pin is spring loaded.
15. Base Mounting pin: This pin is mounted on the base plate from the bottom surface. This pin engages with the hole on the cradle in such a way that it maintains the forces balancing on the left and right turnbuckle arms.
16. Mounting bolts: These bolts are inserted through the base plate and constitutes the framework and guide for the foot operated paddle via spacers.
17. Spacers: The spacers are inserted on the bolts and guides the foot operated paddle.

**WARNING**

DO NOT INSERT THE FINGERS INSIDE THE COVER AS IT MAY CAUSE INJURY TO THE FINGERS BECAUSE OF THE SPRING LOADED RETURN MECHANISM. THE MAINTAINACE OF THE CRADLE ASSIST KIT MUST BE PERFORMED UNDER DISCONNECTED CONDITION. THE LENGTH ADJUSTMENT OF THE TURNBUCKLE ALSO MUST BE PERFORMED UNDER DISCONNECTED CONDITION. COMPLIANCE OF STANDARD OPERATIONAL SAFETY PROCEDURE IS HIGHLY RECOMMENDED, SUCH AS WEARING STEEL TOWED, OIL RESISTANCE SAFETY SHOES, SAFETY HAND GLOVES ETC. WHILE OPERATING THIS DEVICE.

SECTION 3: INSTALLATION

Cradle Assist Kit is subjected to complete factory production tests and inspection before being shipped. They are shipped in packages designed to provide maximum protection to the equipment during shipment and storage and at the same time to provide convenient handling.

3-1 RECEIVING

Upon receipt of the Cradle Assist Kit, inspect the kit for any signs of damage from rough handling and/or external damage incurred during the transportation phase. Record any observed damage for reporting to the transportation carrier and Eaton. All reports should be as specific as possible and include the order number and other applicable nameplate information.

Every effort is made to ensure that the Cradle Assist Kit arrives at the destination undamaged and ready to use. Care should be exercised, however, to protect the cradle assist kit from impact at all times.

3-2 HANDLING

Before beginning to unpack Cradle Assist Kit, read and understand the directions in this operations manual. Proceed by carefully removing all packing material used for protection during shipment.

Make sure that the foot operated paddle can move freely up and down; the spring is freely working; the foot operated paddle locks properly when pressed completely; and the operation of push release paddle. Also, verify the length of the adjustable turnbuckle arms.

The length of the turnbuckle arms is adjustable. Once adjusted, the turnbuckle must be locked with the lock nuts from both sides (i.e. from the hook side and eye side).

Maintain the orientation of the eye and hook per Fig. 2-1 and 2-2 when looking from the front side. Make sure of the free motion of the turnbuckle arms.

3-3 STORAGE

If the Cradle Assist Kit is to be placed in storage, the kit should be covered to protect from dust. The internal moving components are lubricated with grease. Dust and dirt may contaminate the grease and make the internal mechanism inefficient. The maximum protection can be obtained by keeping it packed as shipped.

Outdoor storage is NOT recommended. If unavoidable, the outdoor location must be well drained and a temporary shelter from sun, rain, snow, corrosive fumes, dust, dirt, falling objects, excessive moisture, etc. must be provided.

Indoor storage should be in a building with sufficient heat and circulation to prevent condensation. If the building is not heated, the same general rules for outdoor storage should be applied.

3-4 MOUNTING OF CRADLE ASSIST KIT

The Figure 3-1 shows the systematic arrangement of Cradle Assist Kit with VCPW-HD breaker and the Figure 3-2 shows the arrangement of how to hold the Cradle Assist Kit before assembling it on to the VCPW-HD breaker cradle along with the identifying the engaging points (base mounting pin on the Cradle Assist Kit and the central hole on the breaker cradle).

The fig 3-3 shows the arrangement of mounting the Cradle Assist Kit on the VCPW-HD breaker by matching the central pin inside the central hole on the cradle top surface. Match the "CENTER MARK" on the kit with the hole on the cradle; rotate the kit by 90 degree and move towards the breaker front cover until the pin is inserted in the hole. Please refer to the arrow marking on the Figure 3.3.

In Figures 3-4 shows how the kit is mounted on the VCPW-HD breaker. Figure 3-5 shows the engaging the turnbuckle arms of Cradle Assist Kit with the respective cradle handles. A little pulling of the cradle handle may be necessary to engage the turnbuckle arm and the cradle handle as shown in the Figure 3-5. In the fig 3-6 shows that the front view of Cradle Assist Kit engaged with the VCPW-HD breaker.



Fig 3-1: Cradle Assist Kit with VCPW-HD breaker with “Pull and Push” type cradle

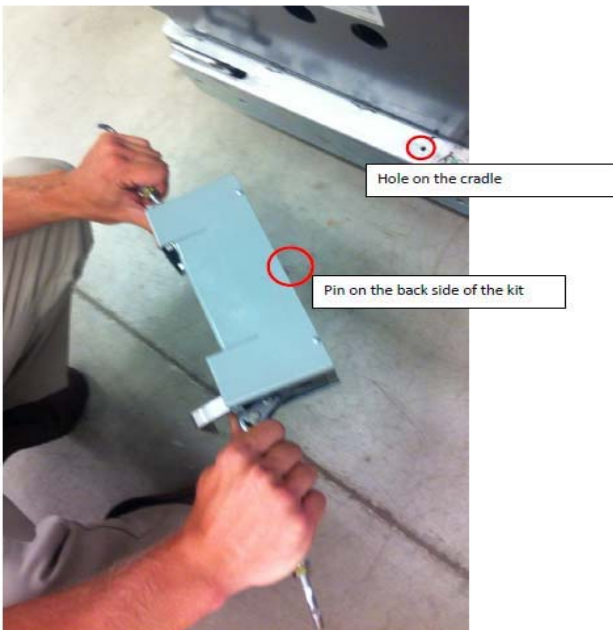


Fig 3-2: Holding the kit before assembling



Fig 3-3: Mounting directions



Fig 3-4: Mounting the Kit



Left arm



Right arm

Fig 3-5: Engage the turnbuckle arms with cradle handles



Fig 3-6: Front view of Cradle Assist Kit engaging the VCPW-HD breaker.

SECTION 4: DESCRIPTION AND OPERATION

4-1 INTRODUCTION

The Cradle Assist Kit is a drawout device while the VCPW-HD circuit breaker is a fixed device. After installation of the Cradle Assist Kit on the VCPW-HD cradle (SECTION 3), the Cradle Assist Kit is ready to operate. The operations can be divided into three steps:

- A. Press the Foot operated paddle completely until it locks to the depressed position. At this point, the breaker cradle handles are completely retracted back and locked at that position.
- B. Rack in or Rack out the breaker out of the switchgear/Minimod device, or position the breaker until CONNECT, TEST or DISCONNECT positions.
- C. Depress the Release paddle towards left to release the foot operated paddle lock.

4-2 OPERATION OF CRADLE KIT

The below Figure 4-1 to 4-3 show the operation of the Cradle Assist Kit, the foot operated paddle is applied with force “F” on the as shown in the Figure 4-1, once the sufficient force is applied the paddle locks in the depressed position (Figure 4-2) during which operator can move the breaker. The Figure 4-3 shows that the paddle lock can be released by de-pressing the “release paddle” towards left to deactivate the circuit. After releasing the lock, the Cradle Assist Kit may be dis-engaged from the cradle handles and taken out of the breaker cradle.



Fig 4-2: STEP – B: Front view of the Cradle Assist Kit pulling the cradle handles and self-locked position.



Fig 4-3: STEP – C: Releasing the cradle arms by depressing the “Push Release paddle” towards left.



Fig 4-1: STEP – A: Operation of the Cradle Assist Kit

4-3 TURNBUCKLE ARM ADJUSTMENTS

Figure 4-4 shows the assembly of turnbuckle arm. The arm consists of left threaded eye and right hand threaded hook. The eye and hook is locked at factory set positions with total length of 7.425 inch using split washer and locknut. The lock nuts can be loosened and the overall length can be adjusted depending upon the actual field requirement for particular breaker, if needed.

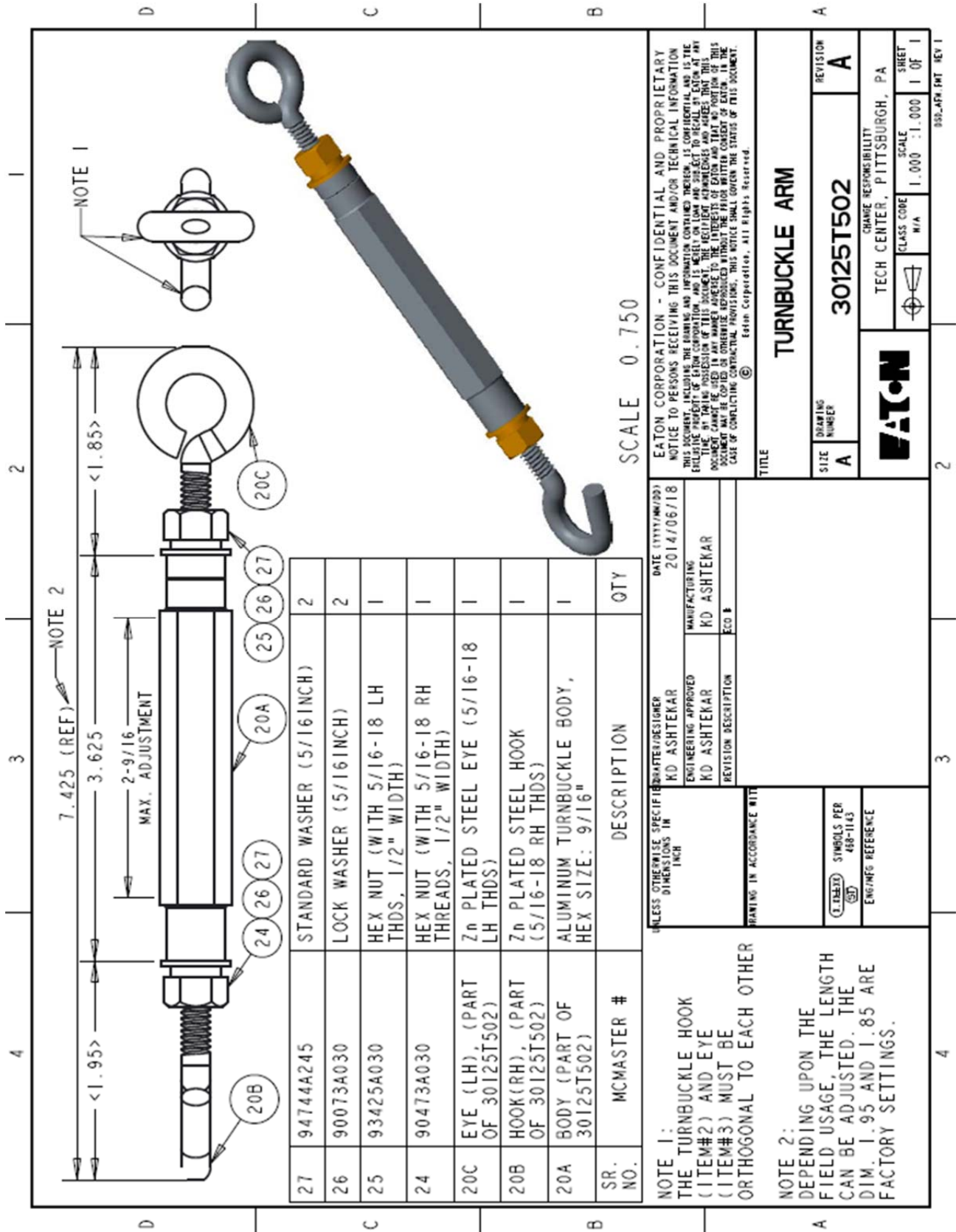


Fig 4-4: Adjustable turnbuckle arm