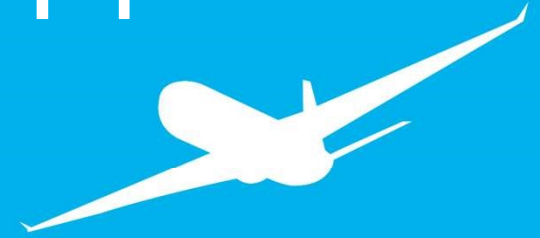


4400 GPU T3/T4



ARU OUTPUT DC CONTACTOR INSTALLATION PROCEDURES

WI-750-070-A Revision Date: 8/2/2021

It's all about connections

Installation Summary / Instructions



2

1. PURPOSE

1.1 The purpose of this Work Instruction is to provide instructions for installing a DC Output Contactor on all 4400 T3/T4 Engine Drive with an ARU

2. SCOPE

2.1 This process applies to all personnel that provide maintenance repair on Engine Drive GPU to include customers, vendors, ITW service technicians and plant personnel

3. RECORDS

3.1 Work Instruction:

Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

4. ASSOCIATED DOCUMENTS

4.1 None

5. DEFINITIONS

5.1 GPU: Ground Power Unit, ARU: Active Rectifier Unit, PPE: Personal Protective Equipment
AUX: Auxiliary, ITW: Illinois Tool Works

6. Responsibility

6.1 Production Cell, Field Service Technicians, Service and Re-Work Cell and customers who install this Contactor Kit

7. TOOLS, GUAGES, FIXTURES

7.1 PPE: Safety Glasses, Safety Shoes. Tools: Rachet and small Extension, (Sockets; 17mm, 14mm, 10mm and 8mm). 17mm Wrench, 14mm Wrench, 10mm Rachet Wrench, Wire cutters and Flat tip Screwdriver.

8. SAFETY REQUIREMENTS

8.1 Ensure all PPE is worn. **TURN BATTERY DISCONNECT OFF**



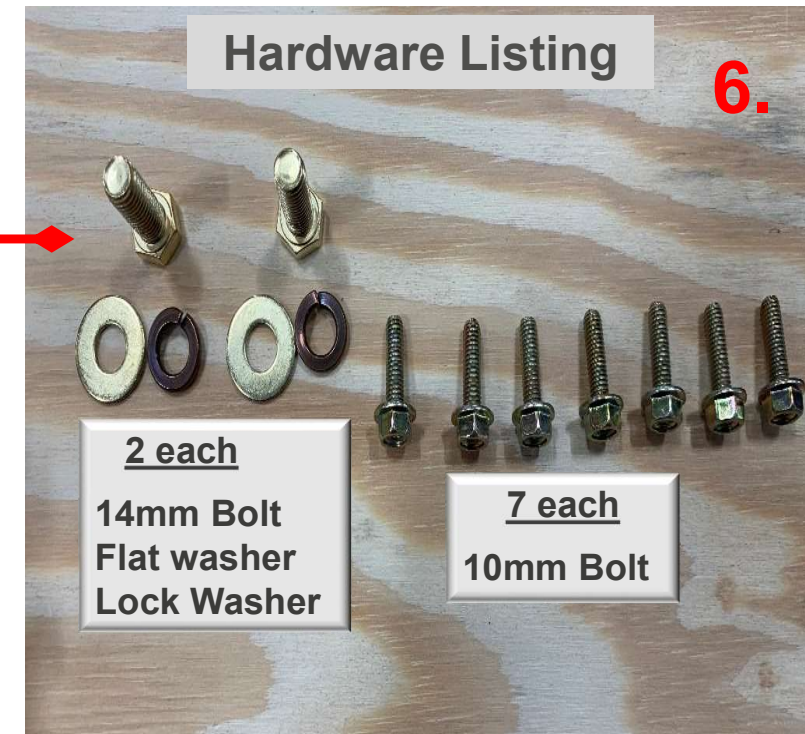
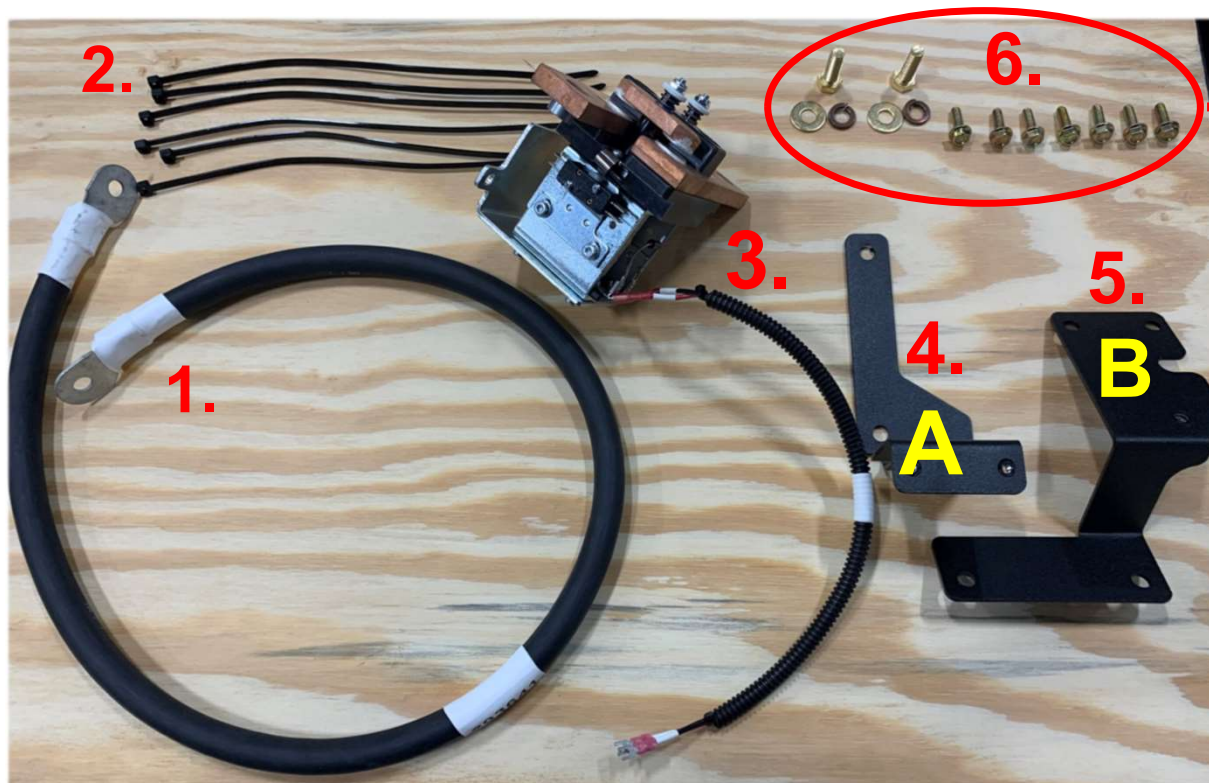
9. Install New DC Output Contactor Kit. Instructions starting on next page



4400 Contactor Kit contents

10. Components

1. Cable - ARU Output to DC Output Contactor
2. Wire ties (6 each)
3. DC Output Contactor with Coil Harness
4. Bracket **A** (mounts under terminal board)
5. Bracket **B** (mounts under rectifier assembly)
6. Hardware Listing

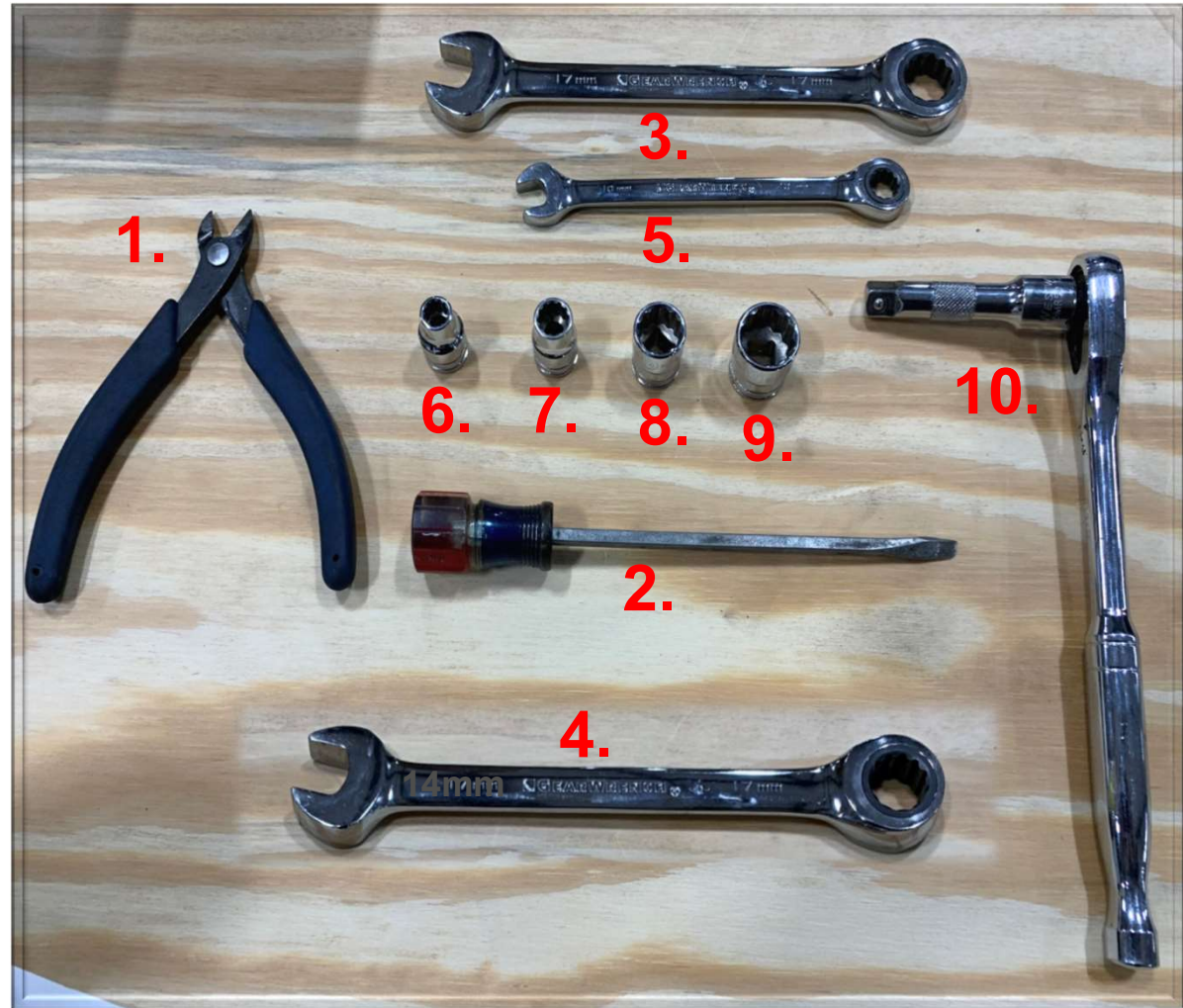


Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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4400 Contactor Kit: Tools required

11. Tools

1. Wire cutters
2. Flat head Screwdriver
3. 17mm Wrench
4. 14mm Wrench
5. 10mm Ratchet Wrench
6. 8mm Socket
7. 10mm Socket
8. 14mm Socket
9. 17mm Socket
10. Ratchet with small extension



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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SAFETY 4400 GPU Battery Disconnect position

12. Switch Battery Disconnect to the OFF position



Shown in Off position



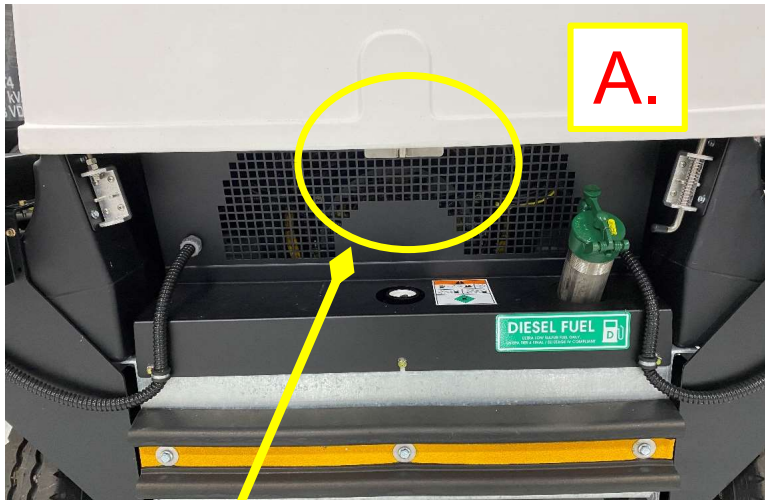
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Canopy Removal

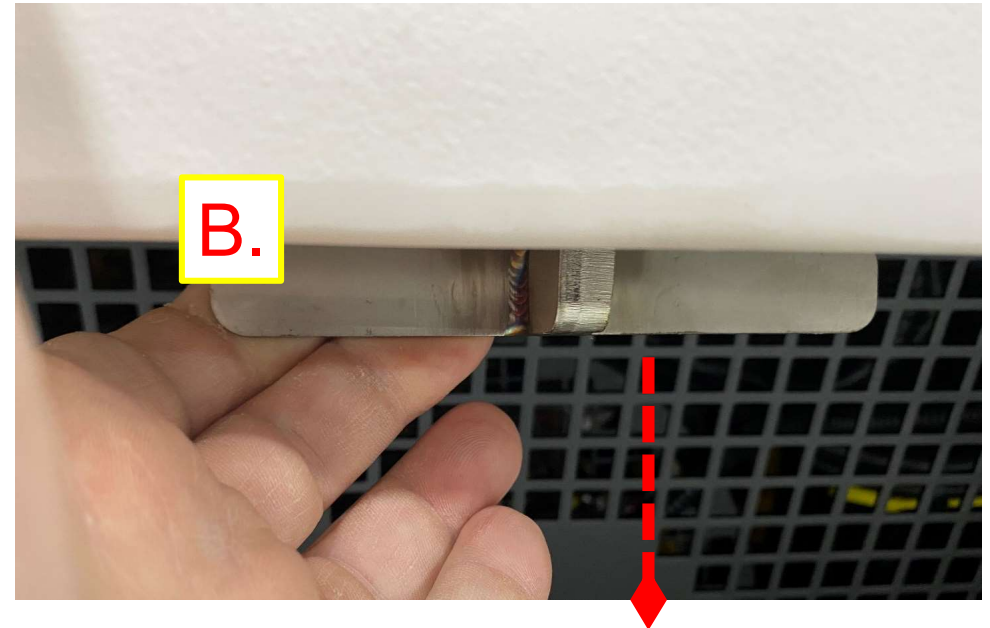
13. Grab lever in the center back of canopy; back Canopy back on railing

6

- A.** Canopy Release Lever shown
- B.** Pull Lever back towards you
- C.** Slide Canopy back until it stops



Canopy Release Lever



Pull Lever backwards
to unlock canopy;
slide canopy back



Canopy will slide back
3 feet before it stops

Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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Canopy Removal

14. Grab lever in the center back of canopy and slide back

A. Bolt Latch Shown

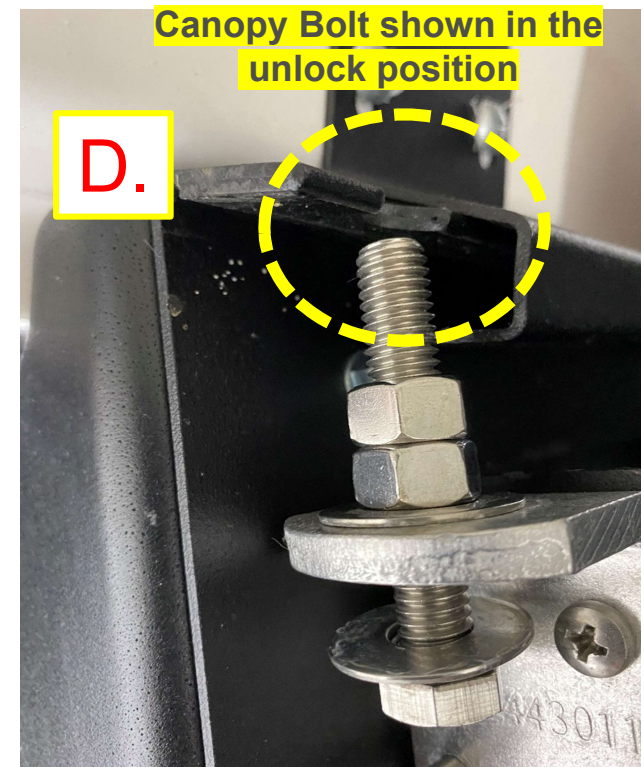
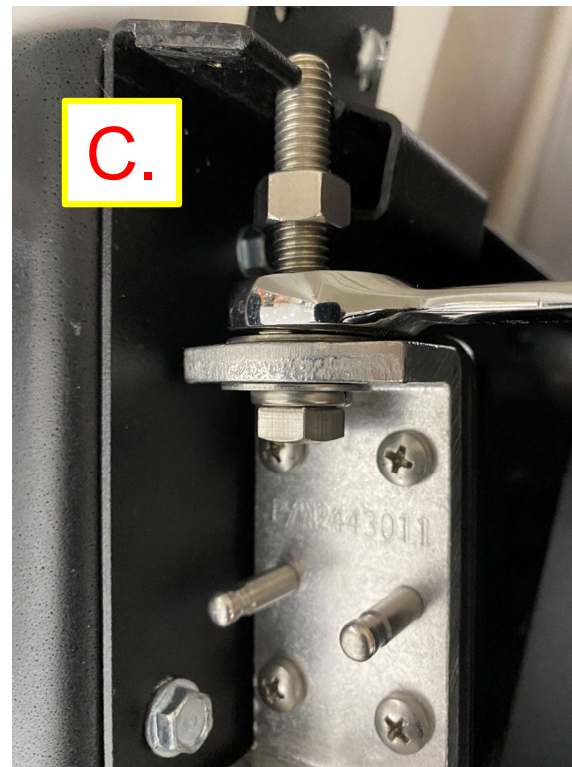
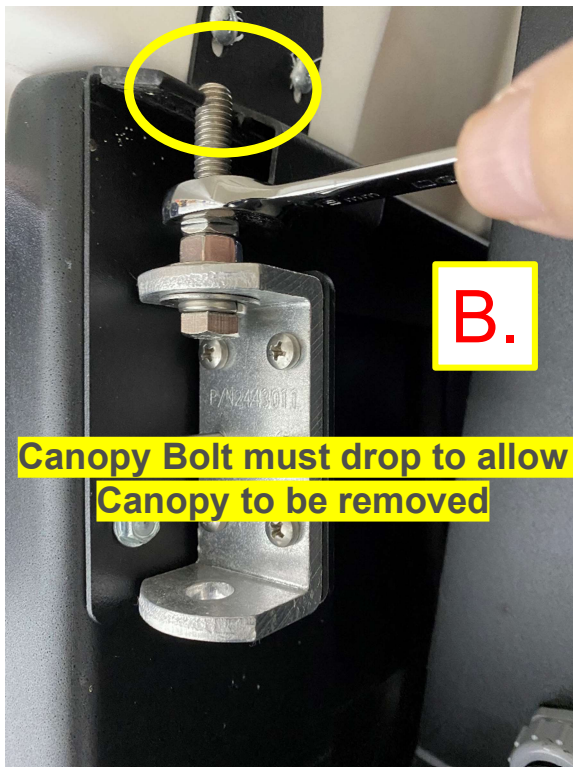
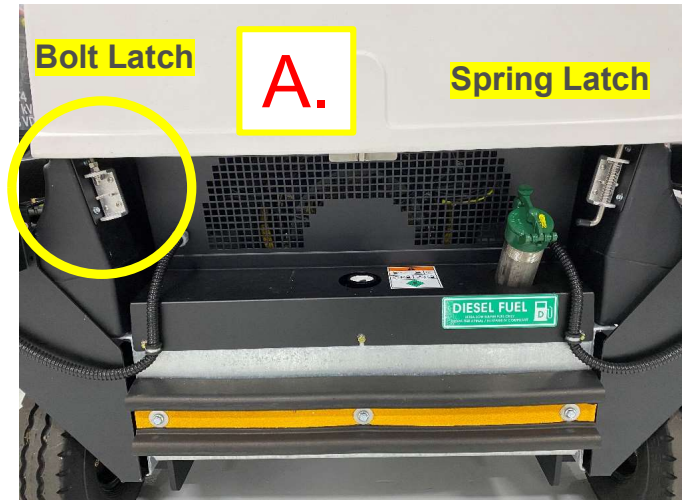
B. Loosen Latch 14mm lock nut with 14mm Wrench

C. Loosen Latch 14mm nut until bolt slides down

D. Bolt shown down releasing Canopy

Canopy latches shown

7



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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Canopy Removal continued....

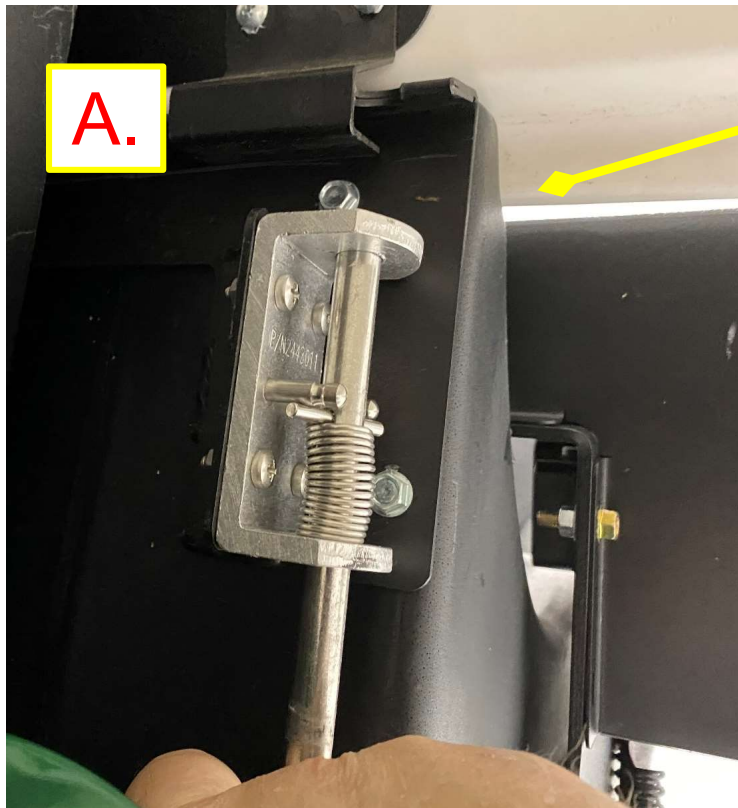
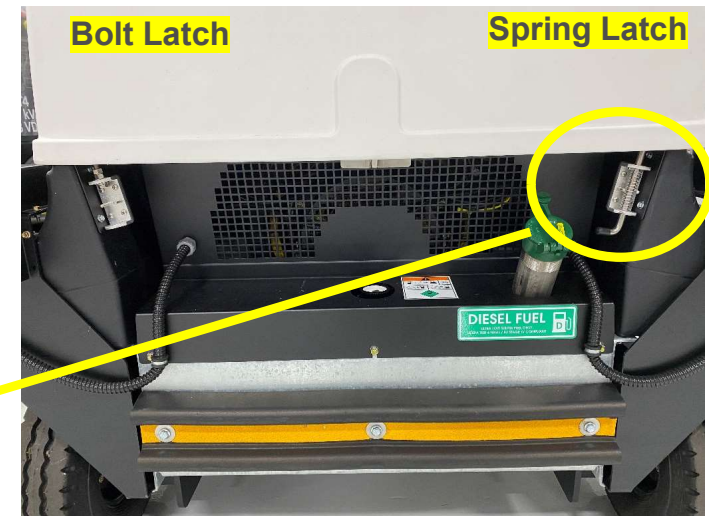
15. Spring Latch placed in Unlock position.

- A.** Pull Spring latch down and twist latch handle until the Spring remains down
- B.** Spring latch shown down and Unlocked:
Canopy can now slide off the GPU

Note: Because the Canopy is very heavy;
It will take two people to safely remove it

Canopy latches shown

8



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Remove ARU Protective Cover

16. Remove Plastic Cover with 8 mm socket and Ratchet

9

1. Remove 2 each; 8 mm bolts on top of cover

2. Remove 2 each; 8 mm bolts from bottom back of cover



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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Position Cover

17. Position cover up as shown to access AC Input Contactor connections

10



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Remove Terminal Strip

18. Remove 2 each 10mm bolts with 10mm Socket and Ratchet; and position to the side to allow Bracket **A** to be placed underneath Terminal Strip (wires do not have to be removed)

11



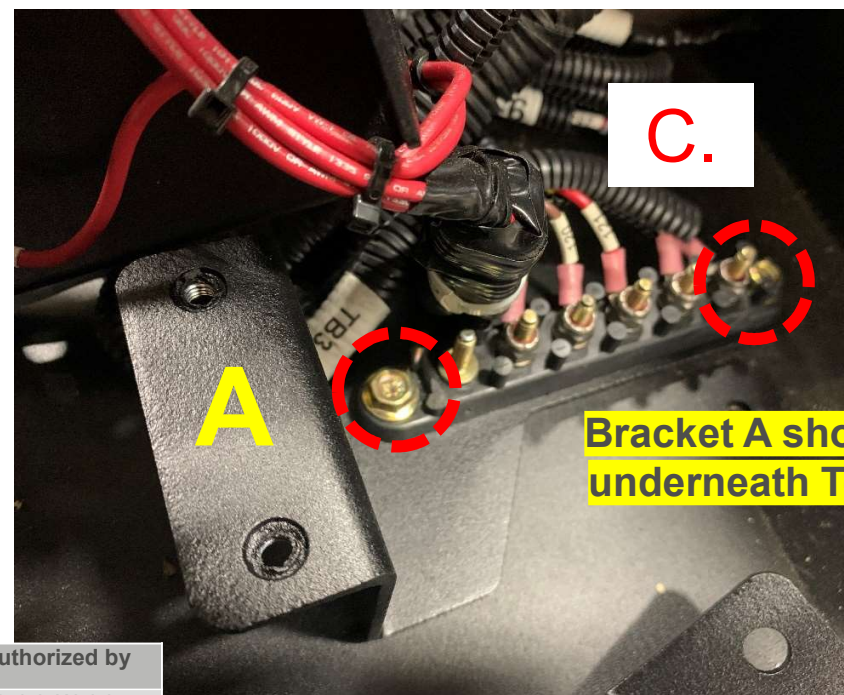
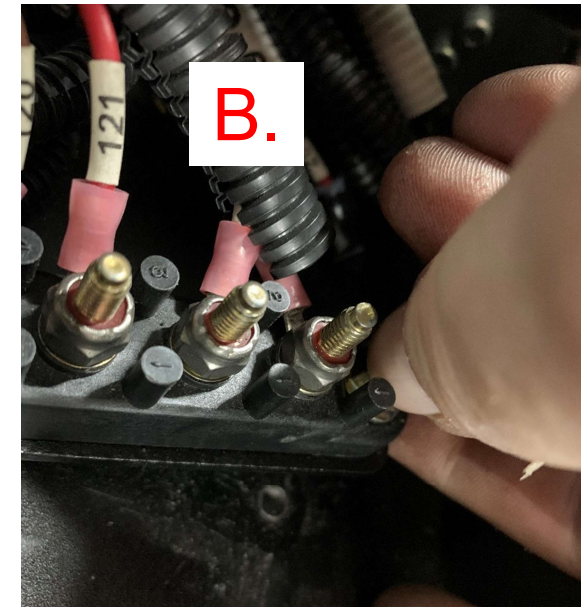
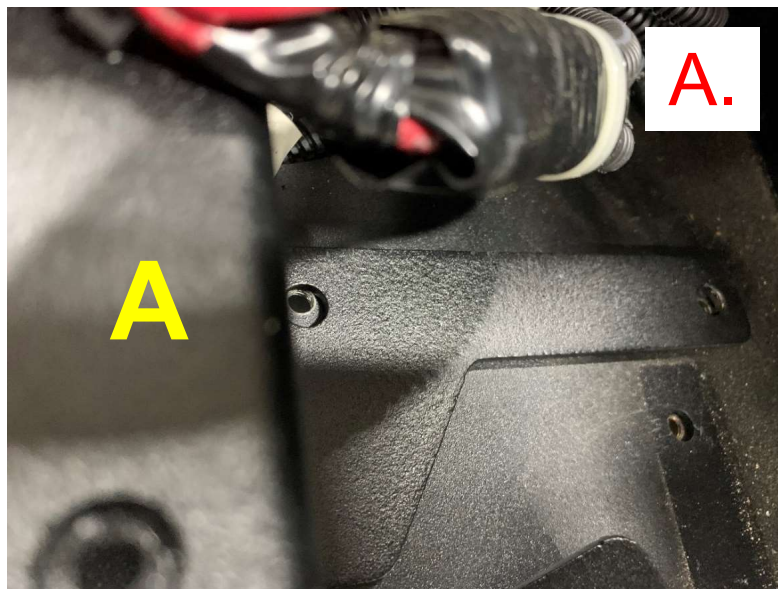
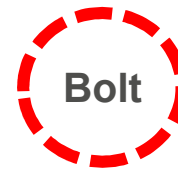
Install Bracket (A)

19. Install Bracket **A** underneath Terminal Strip

A. Align Bracket with Terminal Strip bolt holes

B. Place Terminal Strip on top of bracket

C. Install 2 each 10mm longer bolts provided with Kit

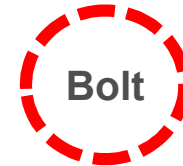


Bracket A shown mounted underneath Terminal Strip

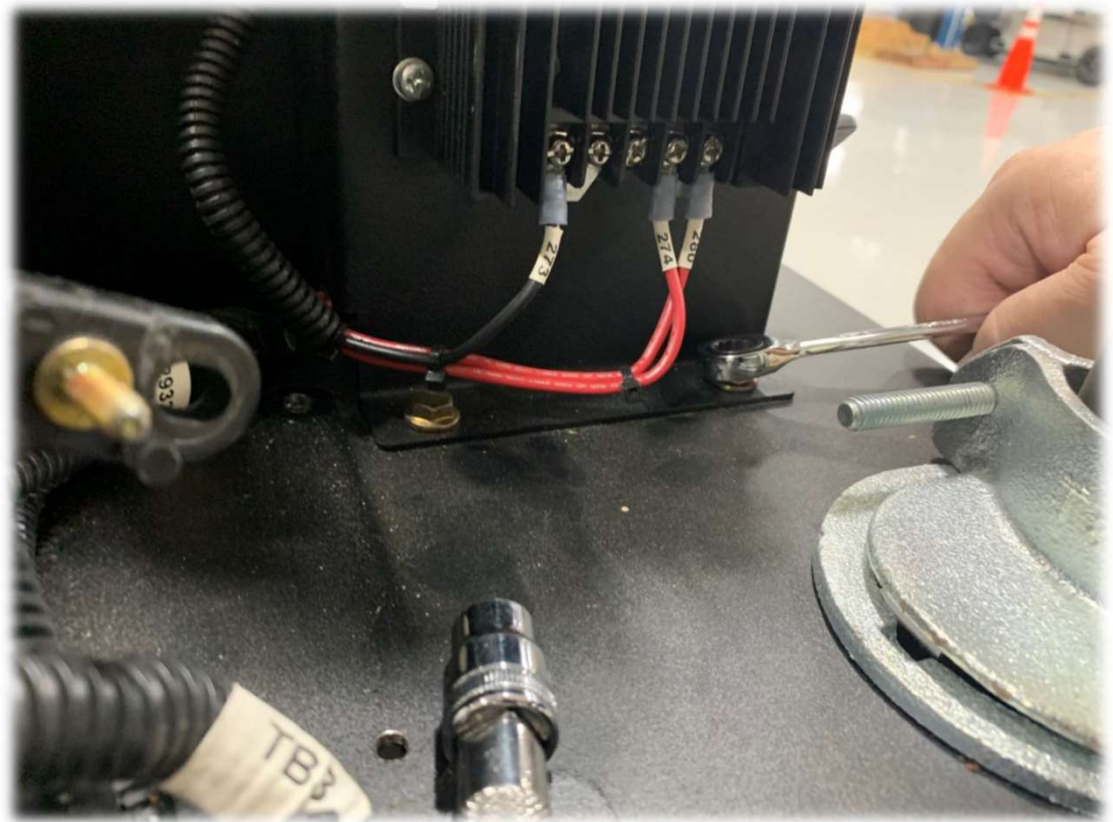
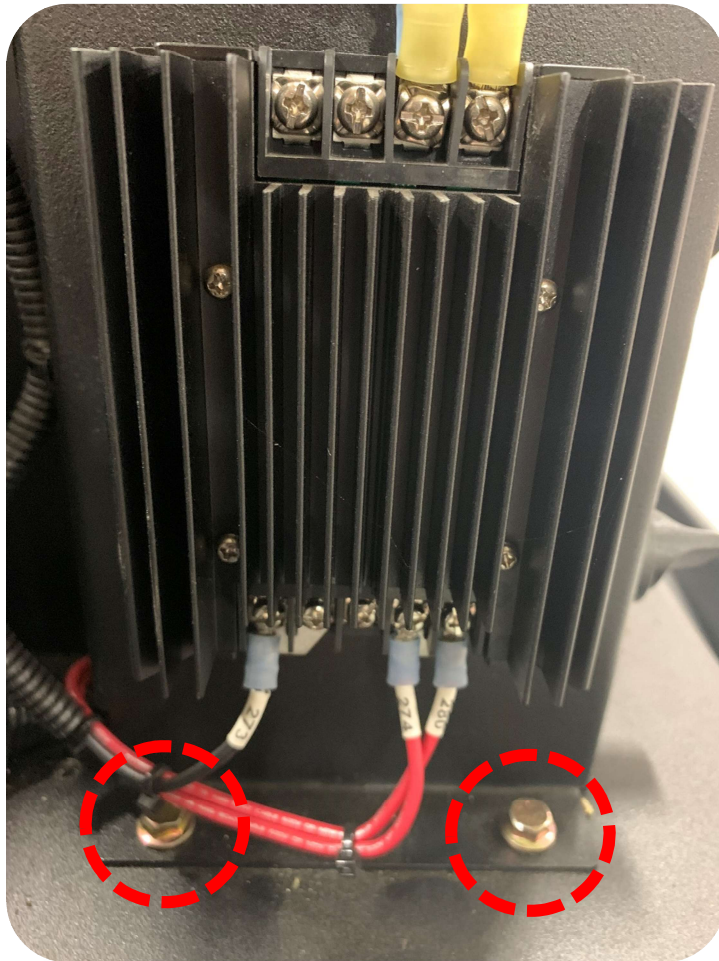
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Remove Rectifier

20. Remove Rectifier 2 each mount bolts with 10mm Ratchet
20.1 position Rectifier to the side to allow Bracket **B** to be placed underneath Rectifier (**wires do not have to be removed**)



13



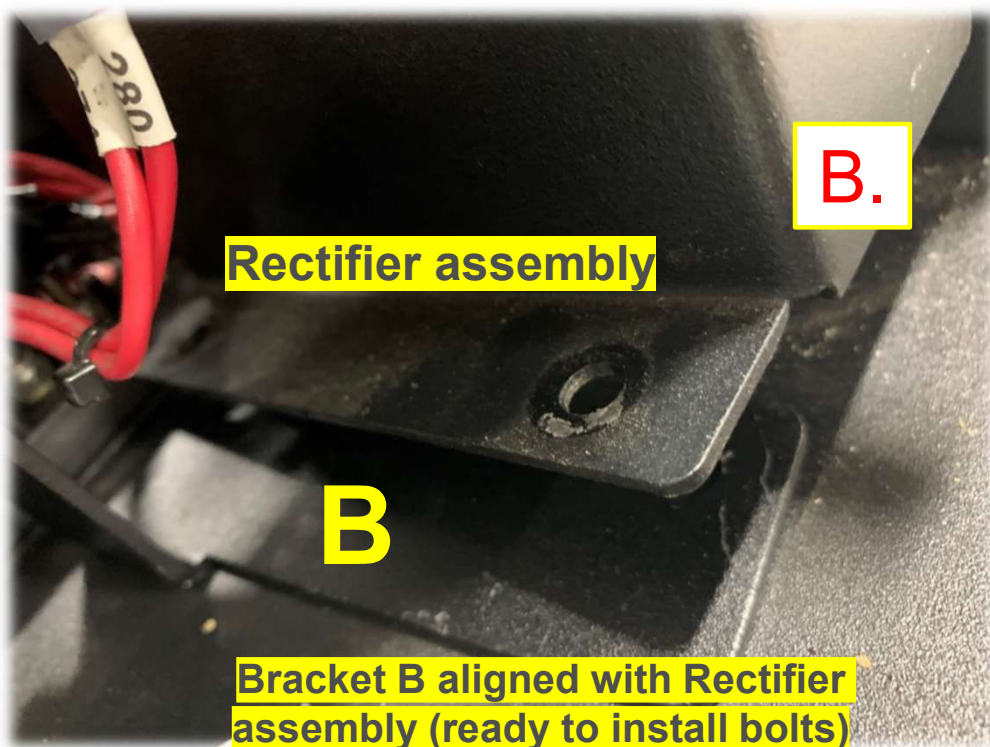
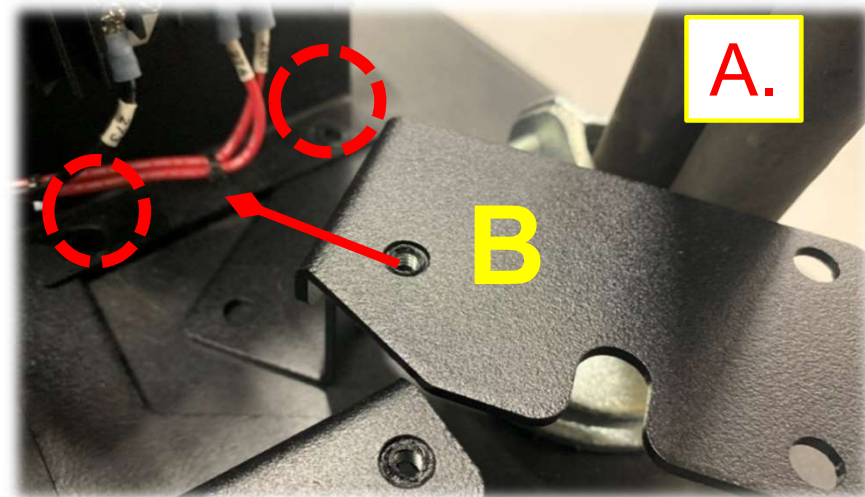
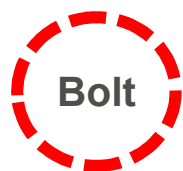
Install Bracket B with Rectifier

21. Install Bracket **B** underneath Rectifier Assembly

A. Slide Bracket **B** under Rectifier

B. Position Rectifier Assembly on top of Bracket while aligning mount holes

C. Install 2 each 10mm longer bolts provided with Kit



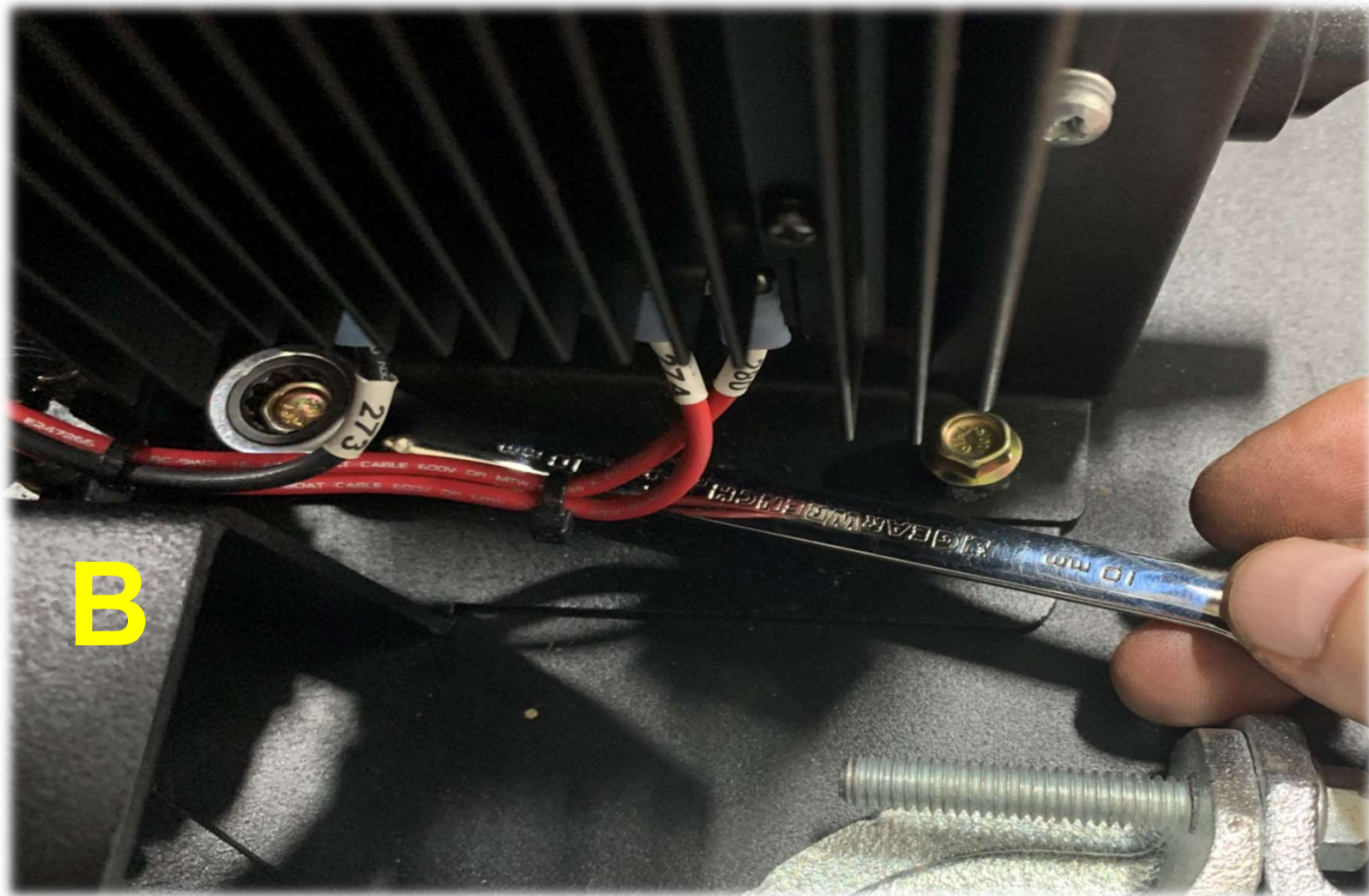
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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Install Bracket with Rectifier continued...

22. Install and tighten both the Rectifier and Bracket **B** together using
2 each 10mm **Longer bolts provided by Kit**

15

22.1 Tighten both bolts with 10mm Ratchet Wrench



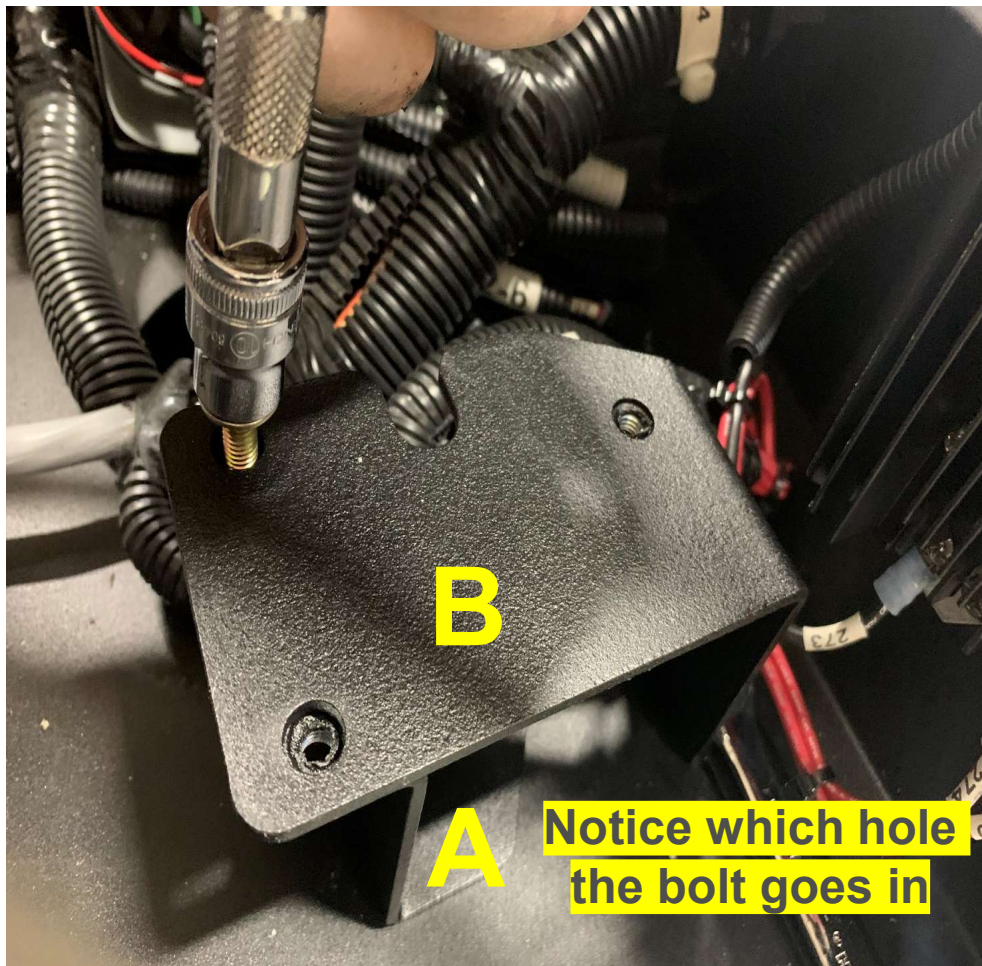
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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Attach Brackets together

23. You Can now connect Brackets **A** and **B** together

16

23.1 Tighten 1 each 10mm bolt from Kit; with 10mm Socket and Ratchet



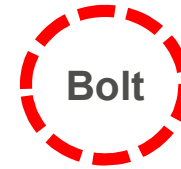
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install Output Contactor

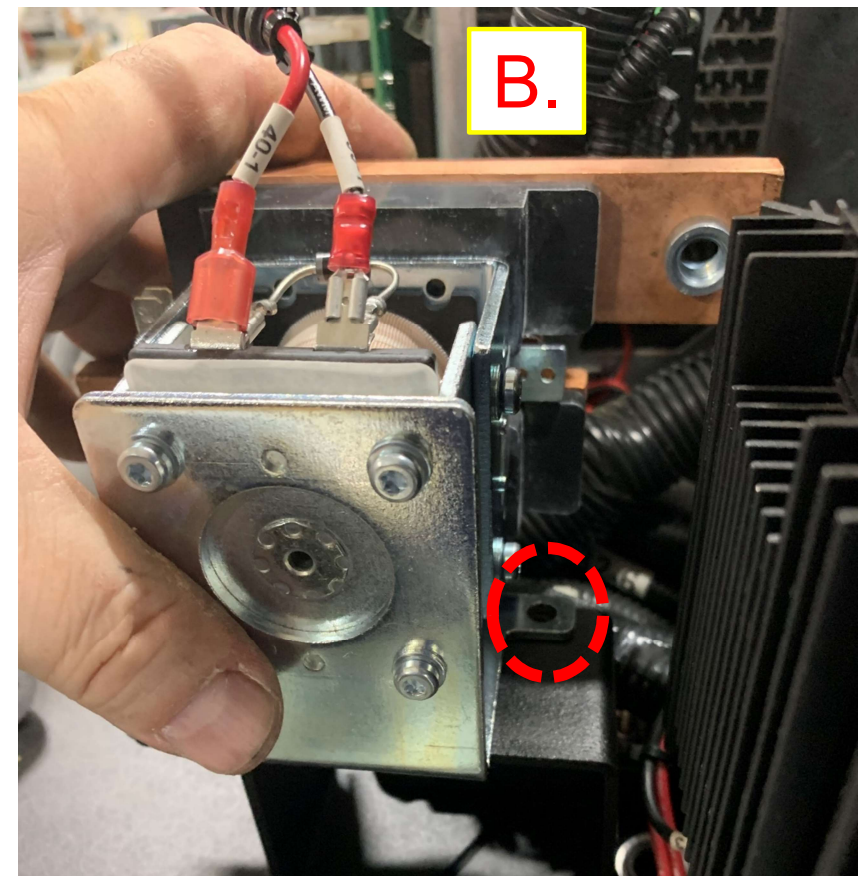
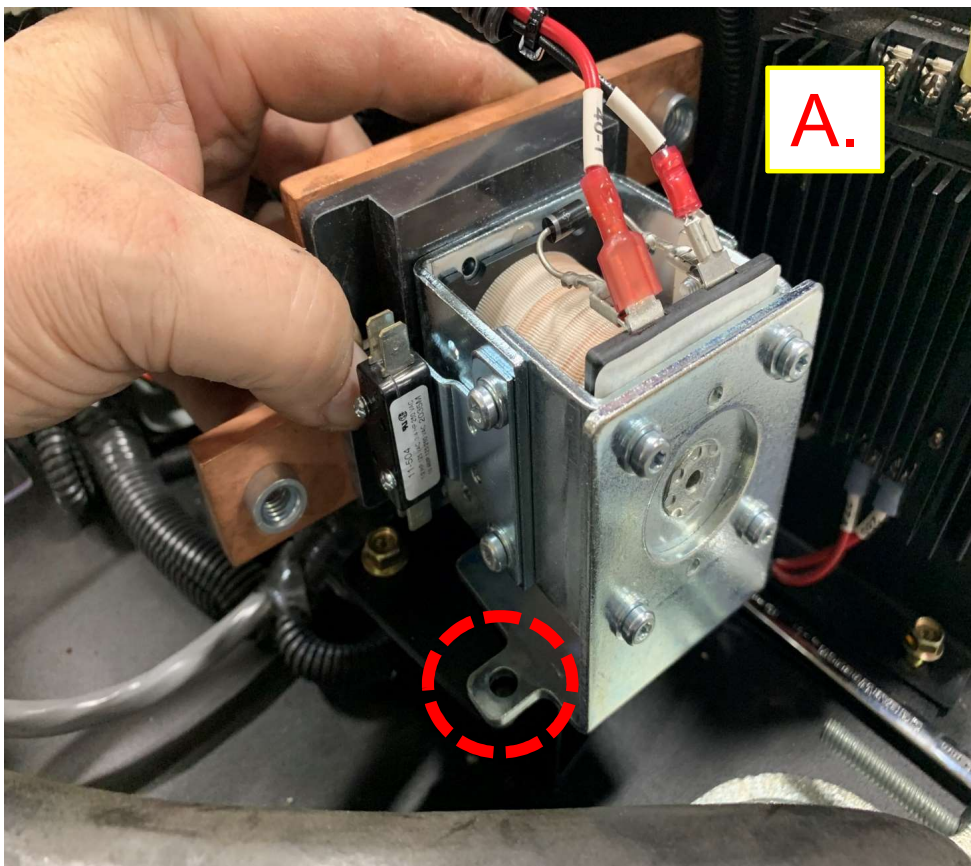
24. Place Contactor from Kit on bracket assembly

A. Align Front mount to Bracket

B. Align Back mount to Bracket



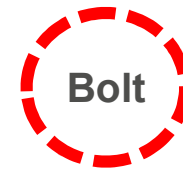
17



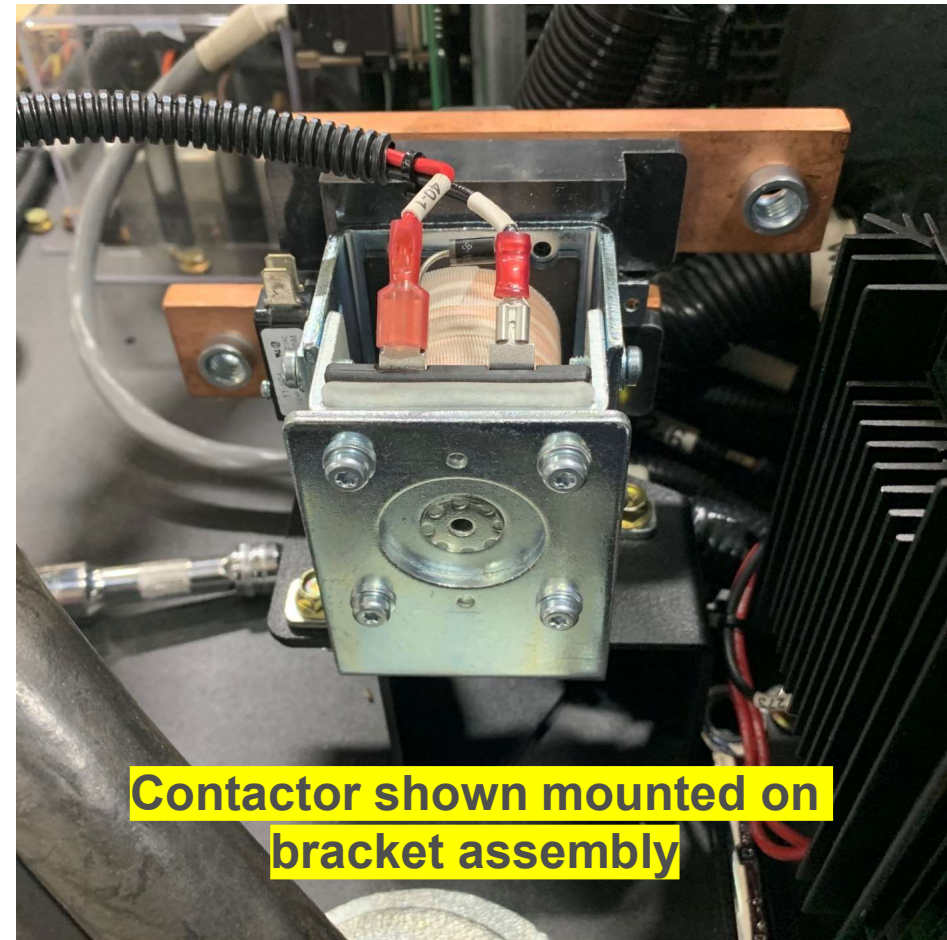
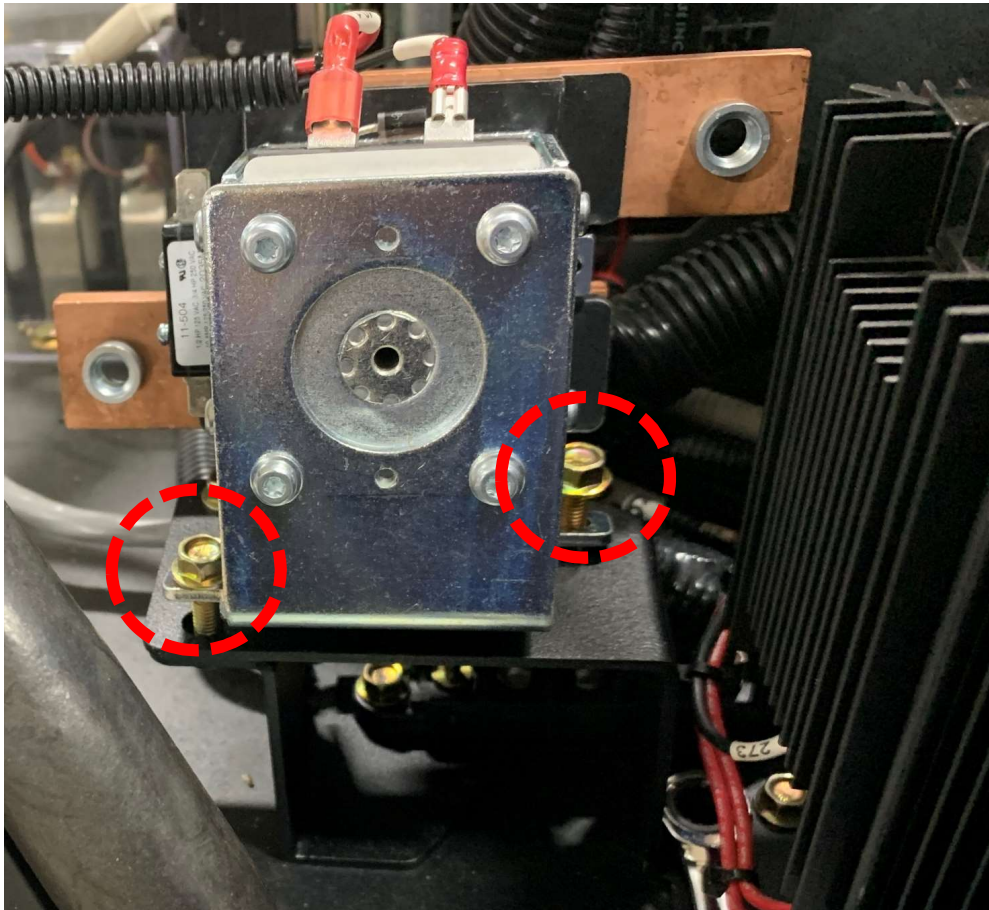
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install Output Contactor continued...

25. Install 2 each 10mm bolts using a 10mm Socket and Ratchet
25.1 Tighten both bolts; one on the front mount and one the rear mount of the Output Contactor



18



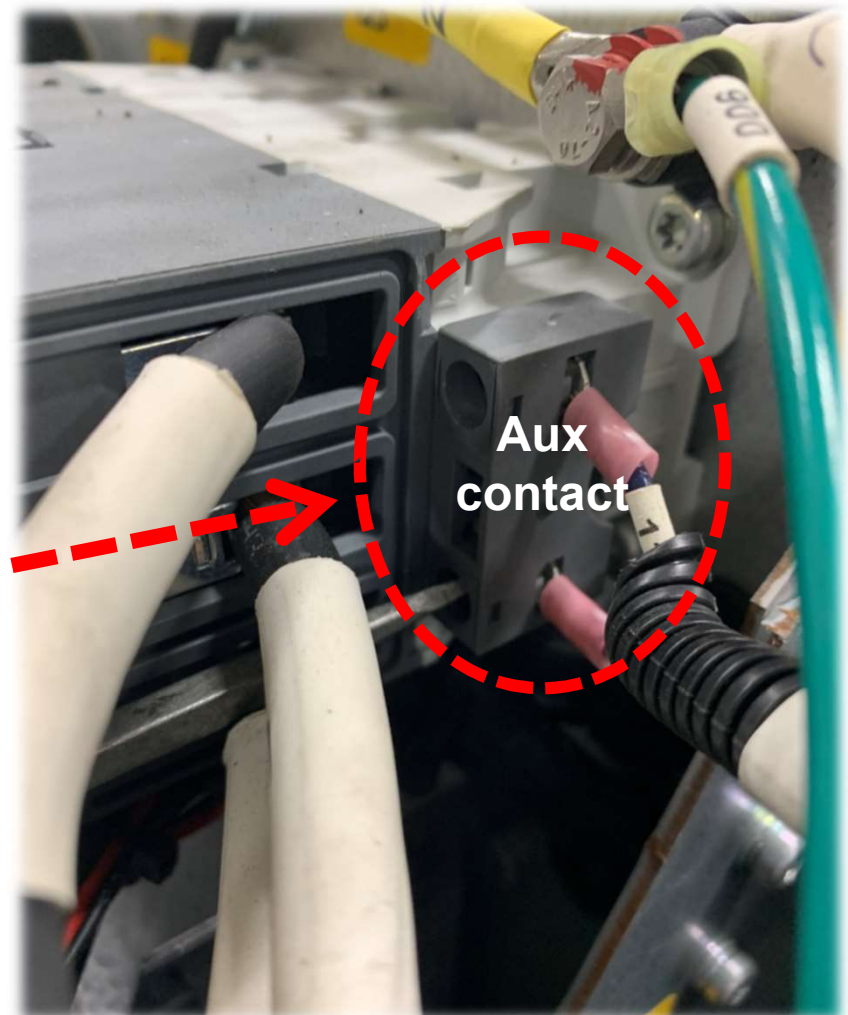
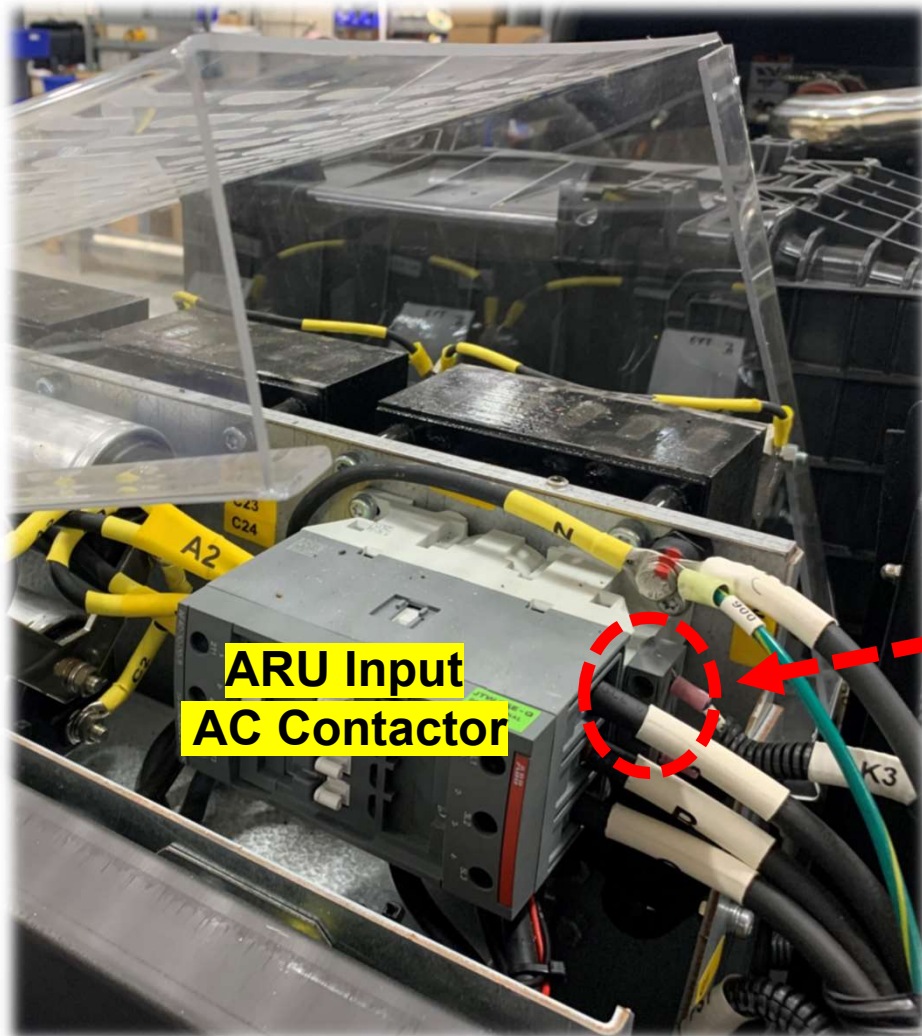
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Remove Auxiliary Contact wires

26 Identify where the ARU Input AC Contactor and the Auxiliary Contact is located

26.1 Auxiliary contact has two wires connected

19



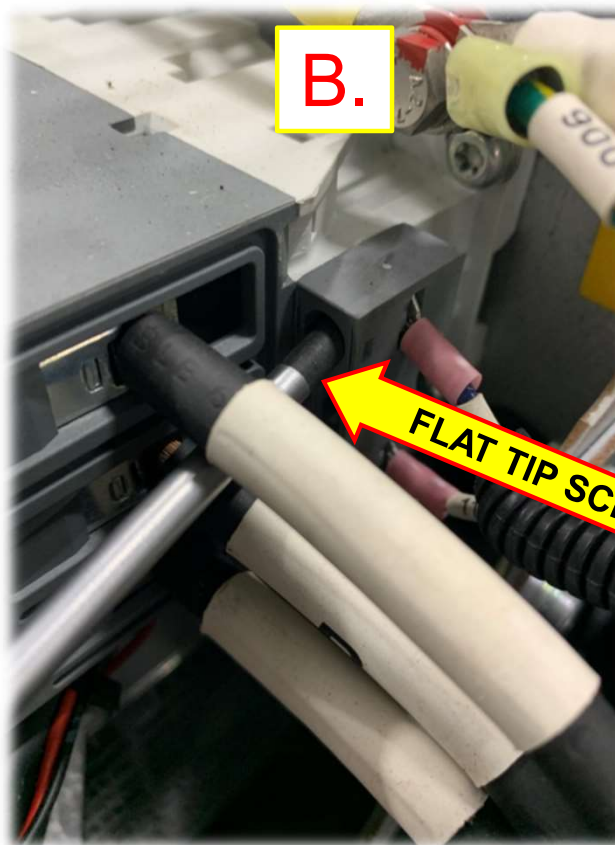
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Remove Aux Contact wires

27. Remove top and bottom wires

20

- A.** Closeup of Auxiliary contact with two wires attached
- B.** Loosen Top Screw with Flat Tip Screw Driver all the way out until it stops;
Firmly pull the wire connector out
- C.** Loosen bottom Screw with Flat Tip Screw Driver all the way out until it stops;
Firmly pull the wire connector out



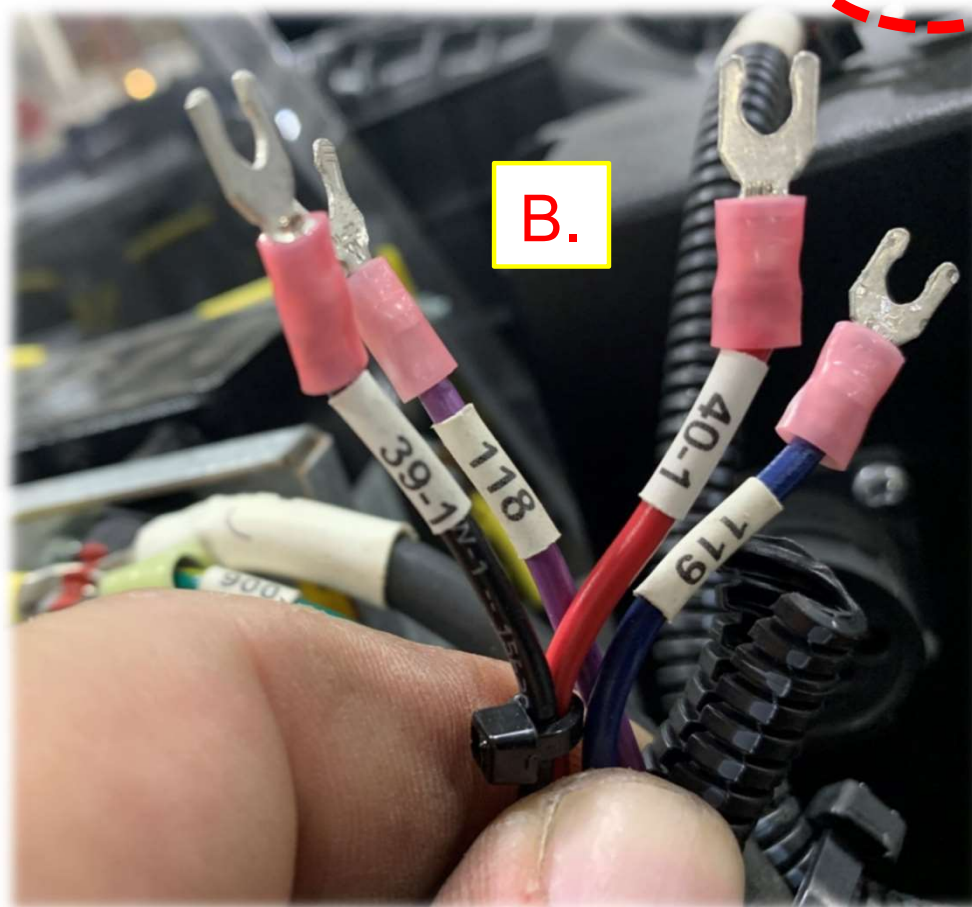
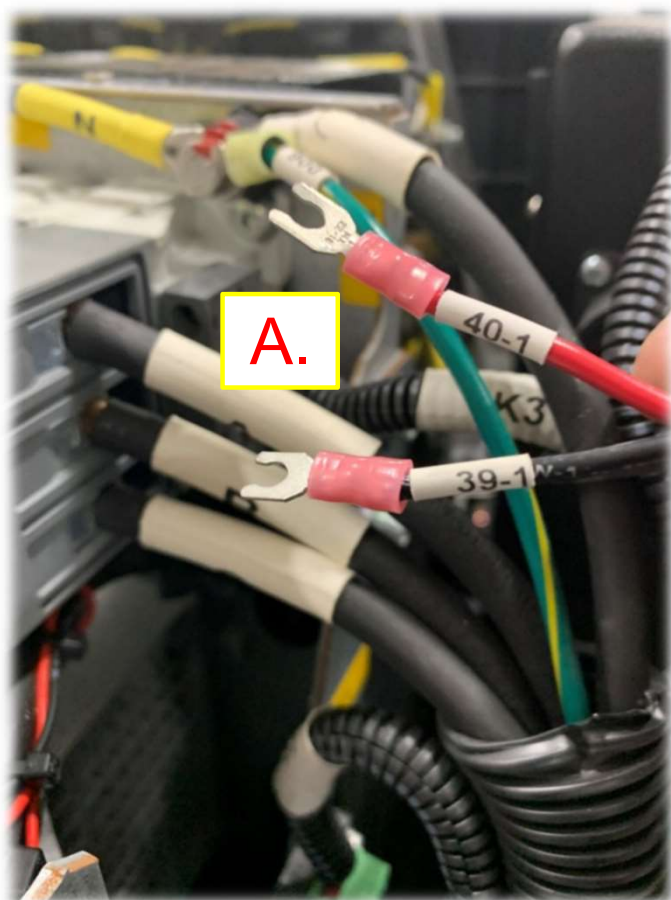
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install DC Contactor terminal wires

28. **A.** Wires **40.1** and 39.1 are the DC Contactor wire harness wires
B. Match **40.1** with wire **119** and wire 39-1 with wire **118** (Tier 4 GPU's)

IMPORTANT
SEE NOTE
BELOW

21



NOTE: **TIER 4 GPU:** wire **40.1** matched with wire **119** and wire 39-1 matched with **118**

TIER 3 GPU: wire **40.1** matched with wire 40 and wire 39.1 matched with wire 39

Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install DC Contactor terminal wires continued...



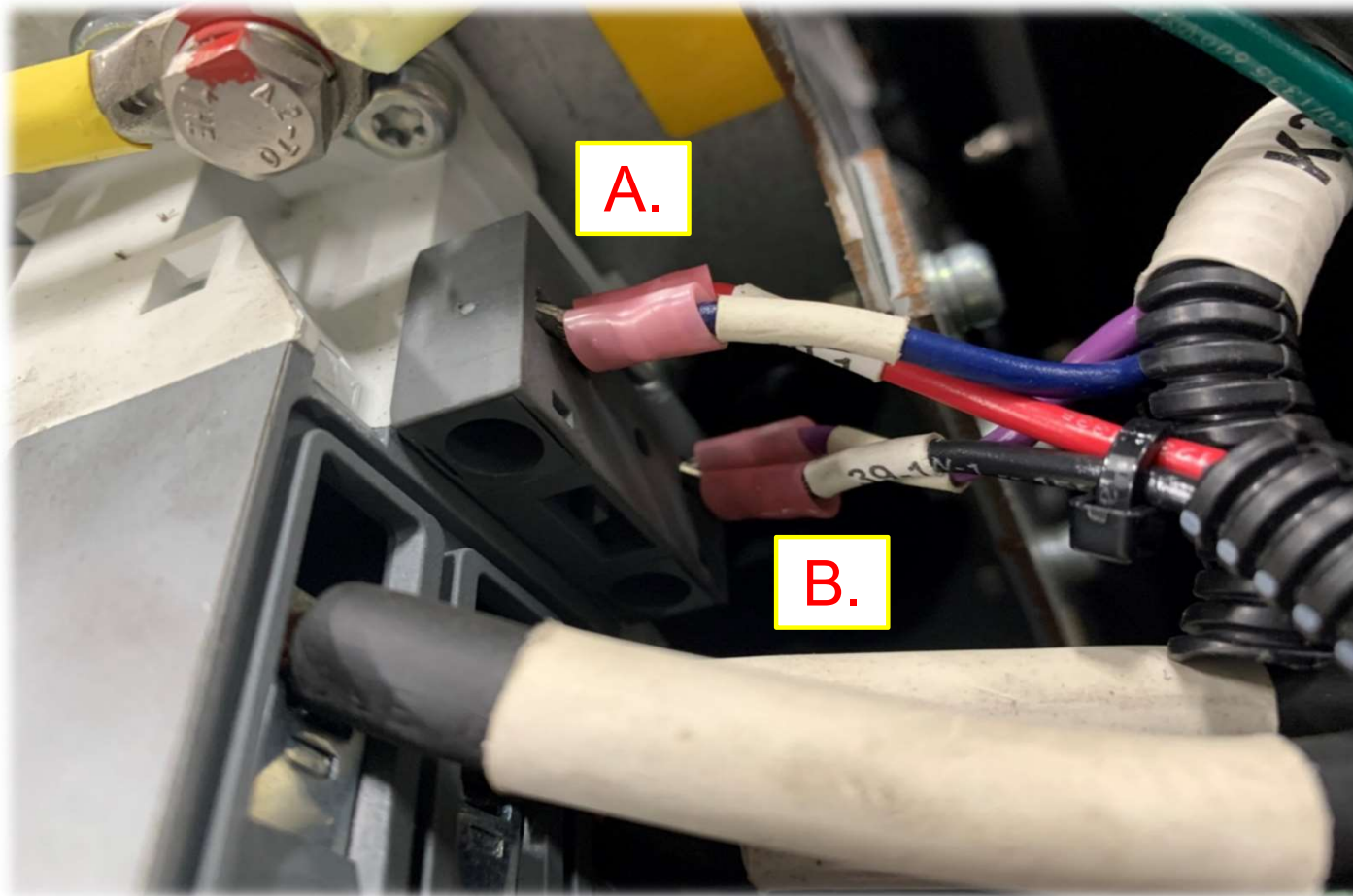
29. Connect both sets of wires to AC Input Contact Aux Contacts; using a Flat Tip Screwdriver

22

A. Place wire 40.1 and wire 119 in the top contact; tighten screw back in until tight

B. Place wire 39.1 and wire 118 in the bottom contact; tighten screw back in until tight

Reminder: wire numbers shown are for a Tier 4 GPU: see **NOTE** on previous page about Tier 3 wires



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
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DC Output Contactor Coil wires Installed



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install DC Output Cable

30. Install DC Output Cable removed from ARU earlier to DC Output Contactor

24

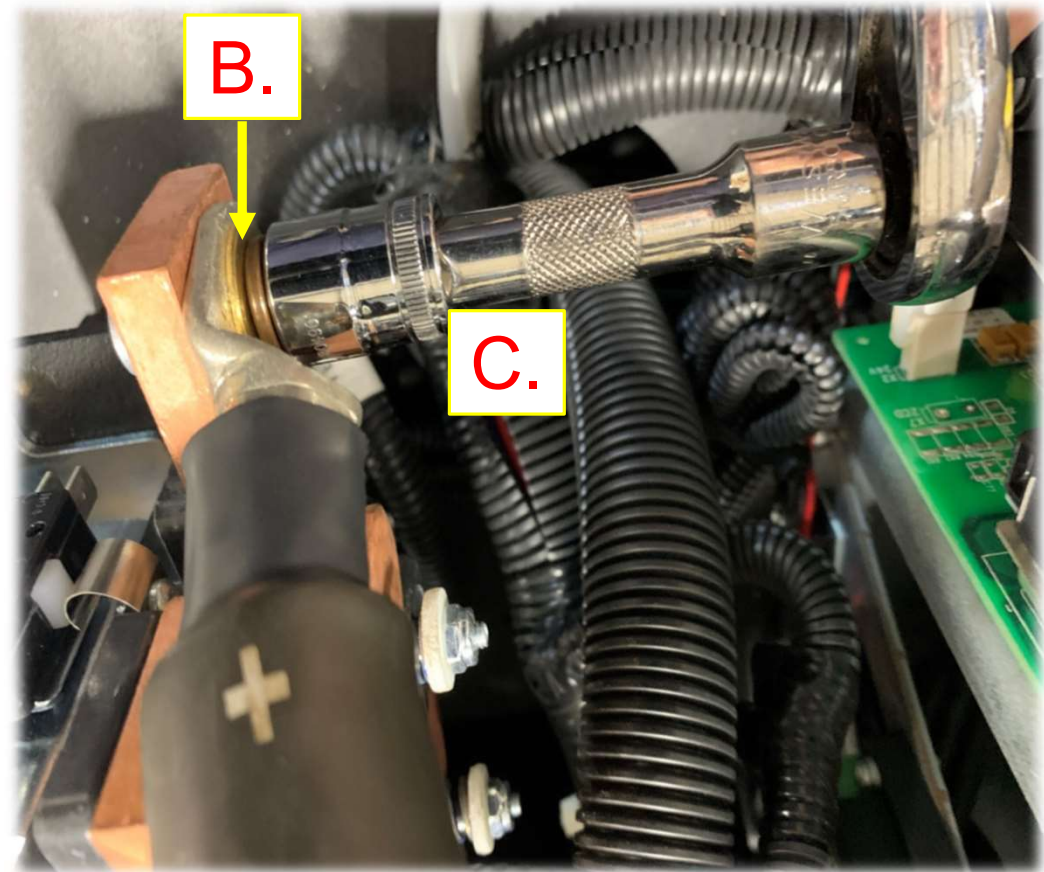
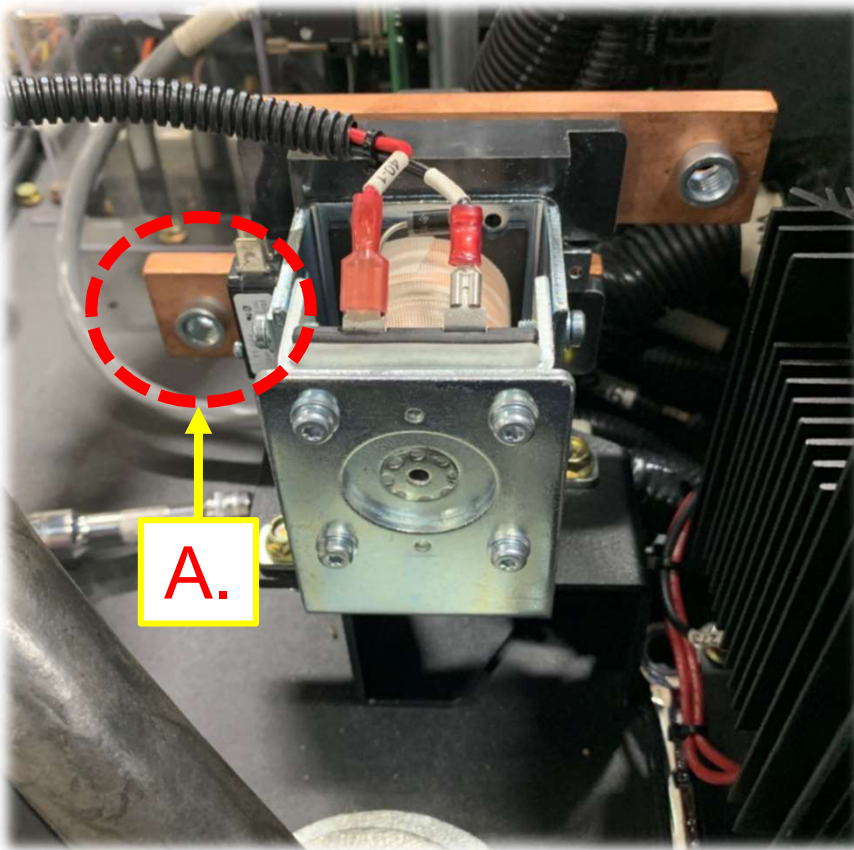
30.1 Cable removed from ARU earlier will mount in the location highlighted

A. Mount on Contactor for Output Cable

B. Use Hardware from Kit; 14mm Bolt, Lock Washer and Flat Washer

C. Tighten Cable mounting bolt to Contactor using a 14mm Socket and Ratchet

DC OUTPUT
CABLE
CONNECTION



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install Cable from Kit: 293641 01 to DC Output Contactor and ARU Output Terminal



25

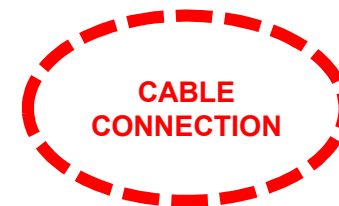


Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

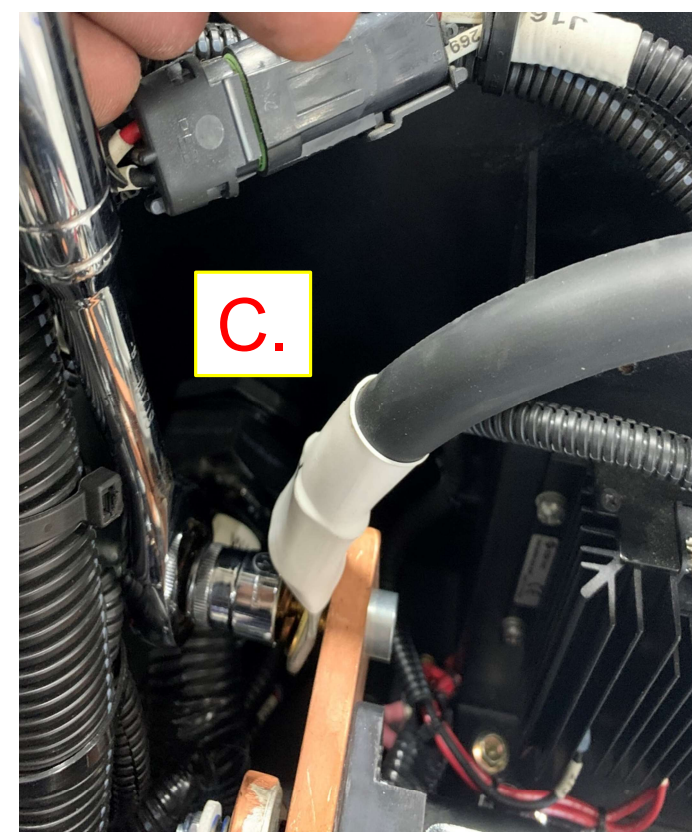
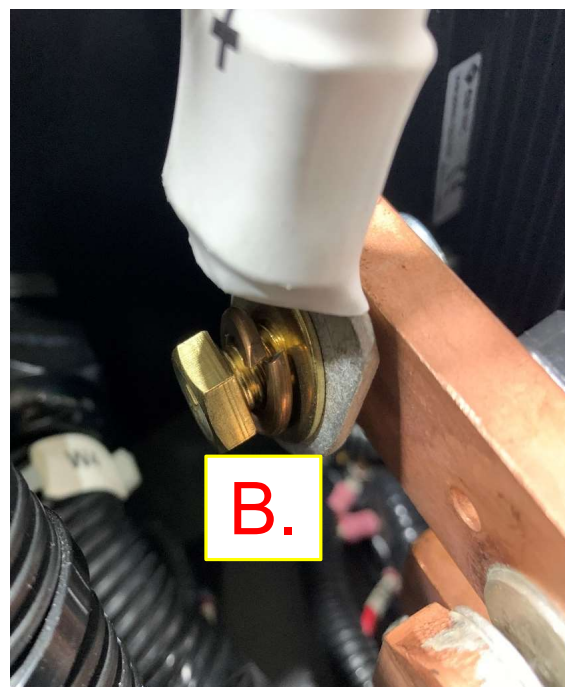
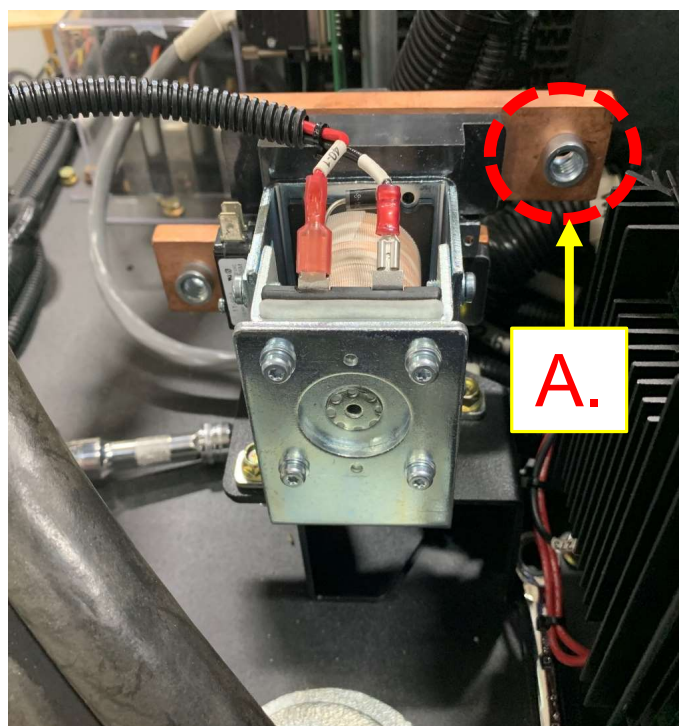
Install Cable from Kit to Output Contactor

31. Install **Cable 293641 01** from Kit

- A.** Location where Cable will mount on DC Output Contactor
- B.** Cable Installed with 14 mm Bolt, Lock Washer and Flat Washer
- C.** Tighten bolt with 14 mm Socket and Ratchet



26



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Install Cable to ARU Terminal

32. Install other end of Cable in Kit to ARU Terminal

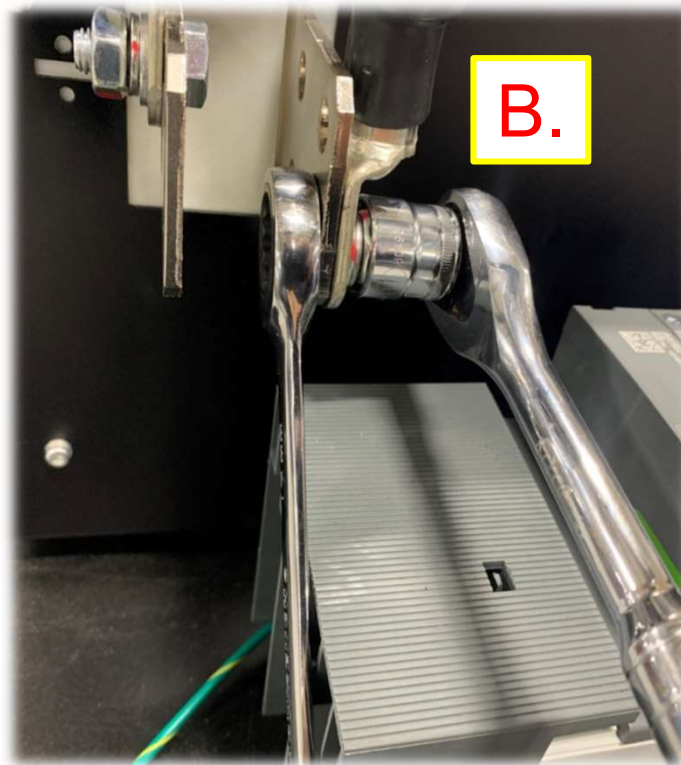
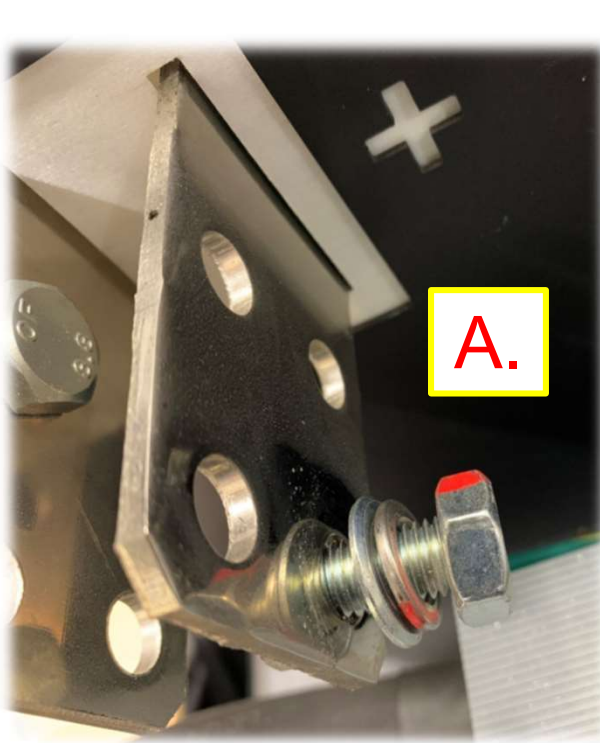
32.1 Mount other end of Cable 26306 01 from Kit to ARU Output Terminal

27

A. Use existing hardware to mount cable

B. Use a 17mm Wrench and 17mm Socket with Ratchet to tighten Cable

C. Cable shown mounted in correct position



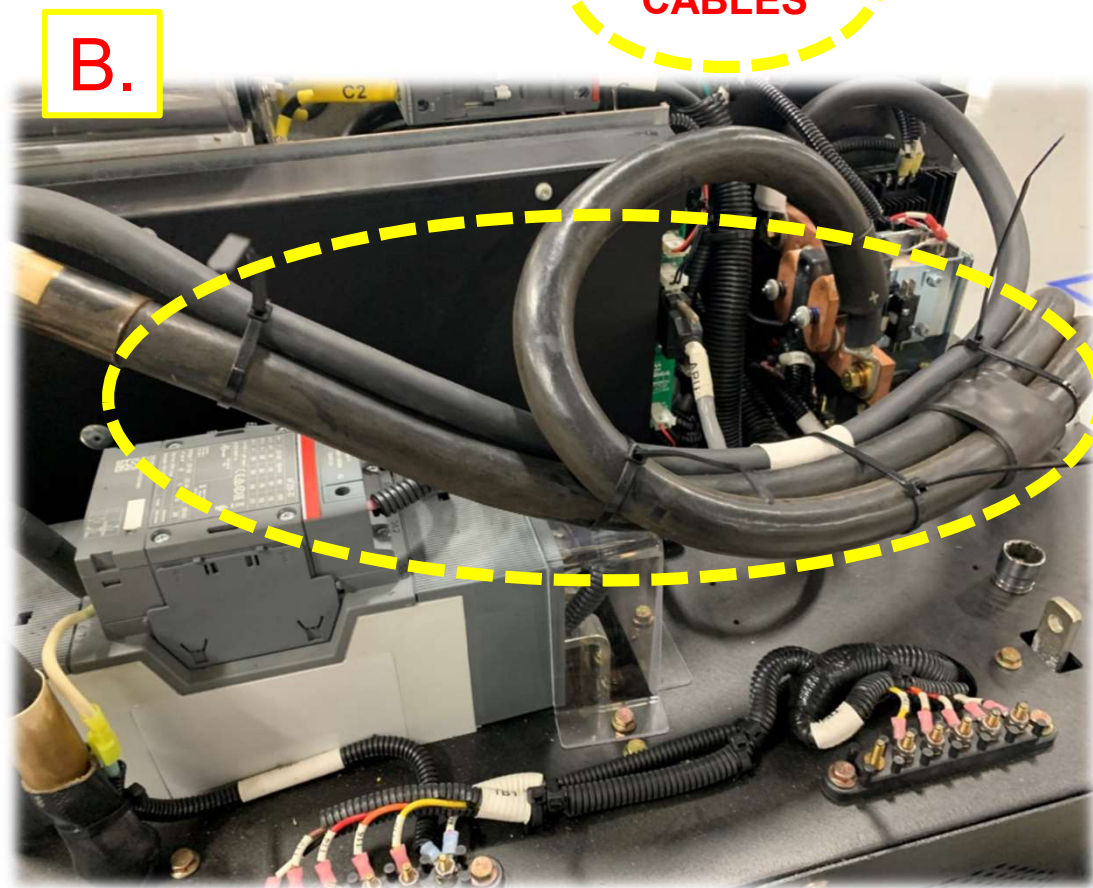
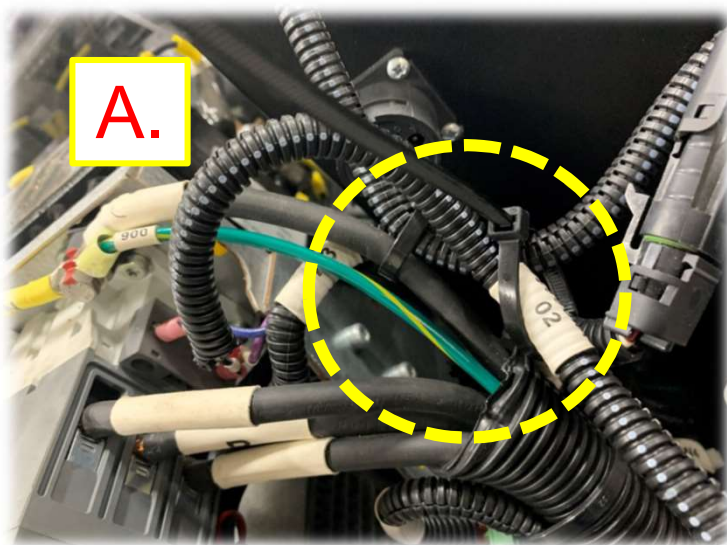
Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Final Installation procedure

33. Install Wire Ties provided with Kit to neatly attach cables together

- A.** Wire tie contactor harness conduit with existing conduit
- B.** Wire tie Large cables together neatly; Ensure no cables are touching GPU
- C.** Trim cable ends off for neat appearance.

28



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

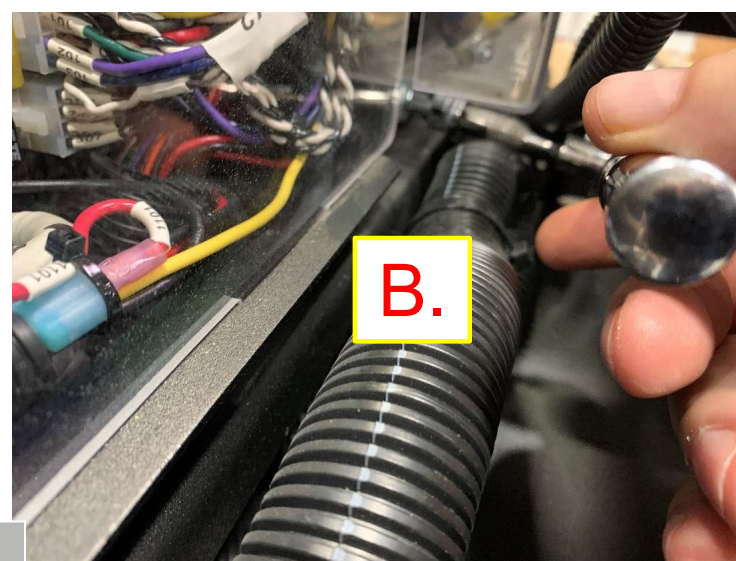
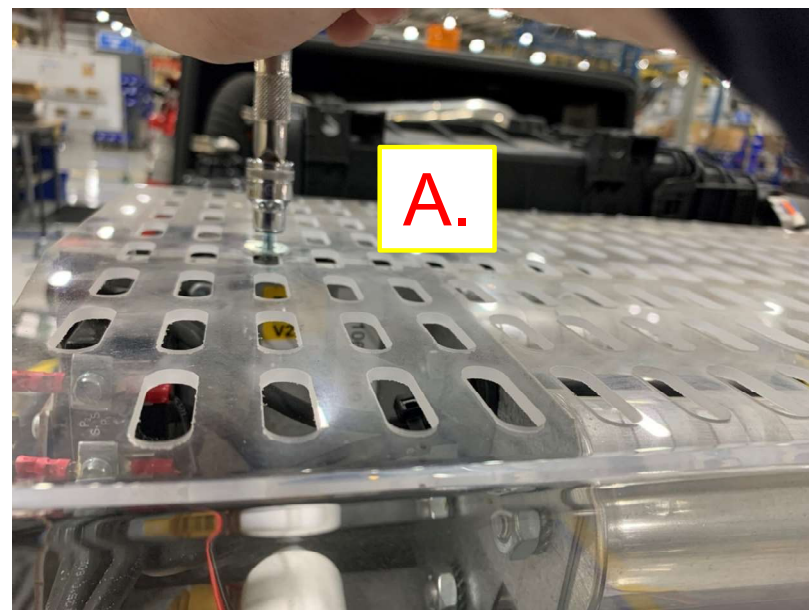
Install ARU Protective Cover

34. Install Plastic Cover back using an 8mm Socket and Ratchet

A. Install 2 each; 8mm bolts on top of cover

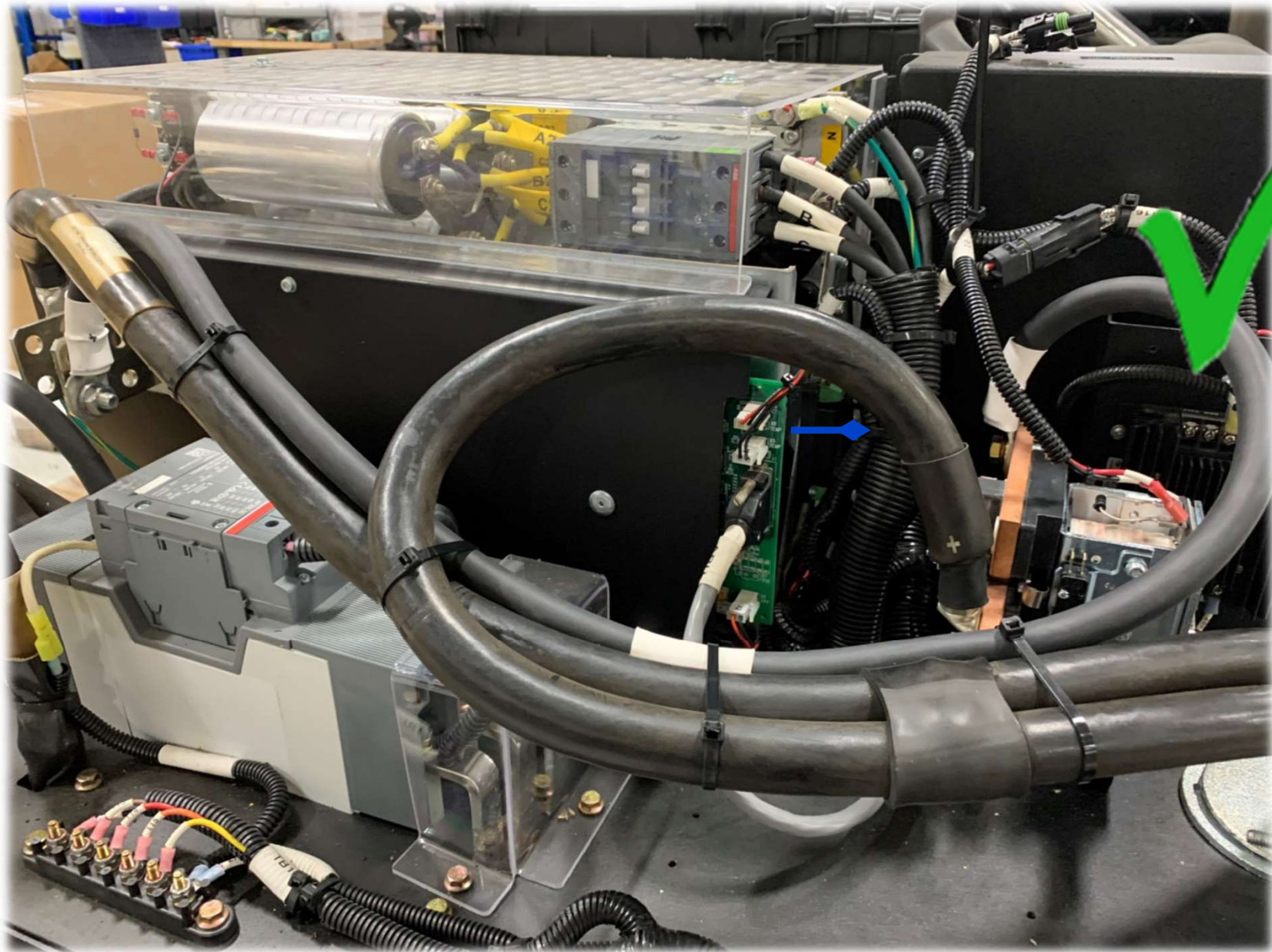
B. Install 2 each; 8mm bolts from bottom back of cover

29



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Completed Installation



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

Canopy Installation



35. Place Canopy back on the GPU in reverse order; reference Step 15 and then Step 14
- 35.1 **Reminder**: it will take two people to lift heavy Canopy
- 35.2 Slide canopy on to rails tighten Bolt latch and Release Spring latch to lock Canopy on railing
- 35.3 Push Canopy in until it latches closed

Page 31



Work Instruction	Description	REVISION DATE	Completed by / Authorized by
WI-750-070-A	4400 ARU Output Kit	7/30/2021	Keith Morgan / Ralph Welch

NEED ADDITIONAL INFORMATION? PLEASE CONTACT

TECHNICAL SUPPORT
941-721-1092
US/CAN 877-874-5322

EMAIL: support@itwgse.us

IMPORTANT: Please have the:
SERIAL NUMBER of the 4400 GPU

SECTION	SUB-SEC.	PARA.	DESCRIPTION	DATE	Completed / Authorized by
WI-750	070	A	New Work Instruction	7/30/2021	Keith Morgan /