Doc. No. 2TSA451030P0000 Rev B

AMC6EB with Spectra E to SRFP6XT with Tmax XT

Retrofitting Spectra Plug-In Module AMC6EB with Tmax XT molded case circuit breakers in Spectra Series Power Panels.

This retrofitting kit is designed to replace Spectra E molded case circuit breakers in Spectra Series Power Panelboards. It allows a Tmax XT molded case circuit breaker of the size indicated in Table A to be attached to the original plug-in module and installed into a Spectra panelboard enclosure.

Table A

Legacy	Legacy Rating	Tmax	New Max Rating
Spectra E	≤ 125A & ≤ 480V	XT1	125A, 480V
Spectra E	> 125A or > 480V	XT4	150A, 600V

Full correspondence of the electrical characteristics are guaranteed (rated voltage and current excluding derating if indicated in the table above, and breaking capacity) so long as the kit is chosen in accordance with the specifications in the ABB technical catalogues dedicated to retrofitting products.

ATTENTION !
The following instructions concern the sole assembly of the retrofitting kit. They do not substitute for the instructions in the operation and maintenance manuals of the Tmax XT molded case circuit breakers. Refer to the ABB website for further information on the Tmax XT molded case circuit breaker line.

IMPORTANT !
Retrofitting allows an obsolete control and protection device to be replaced, but does not allow the ratings of the original panelboard to be altered in any way. The retrofitting kits are dimensioned and validated for the obsolete device performances which may be lower than the Tmax XT ratings. These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with retrofitting, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, please consult with ABB for further information.

WARNING! : Danger of electrical shock or injury.

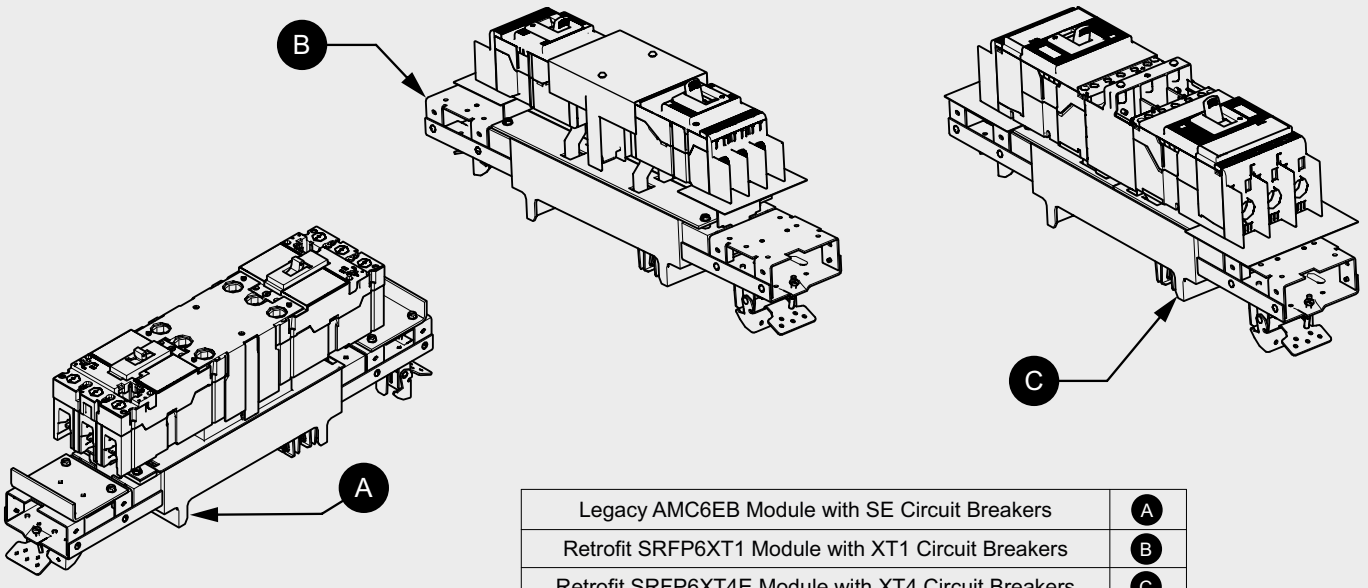
Turn OFF power ahead of the panelboard or switchboard before working inside the equipment or removing any component. Equipment is to be installed and maintained by properly trained and qualified personnel only. **Completely read through and understand these instructions before starting any retrofit activities.**

MAKING THE SYSTEM SAFE FOR PLUG-IN MODULE REMOVAL

The following warnings and precautions must be respected before attempting to retrofit a plug-in module:

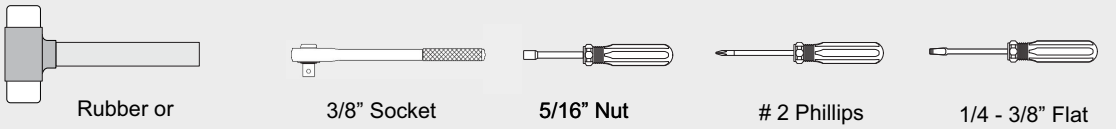
- Place the panelboard and upstream supply out of service.
- Disconnect power from the panelboard (power circuit and auxiliary circuits) and verify it is disconnected from all sources of energy.

Note: The trained personnel in charge of the retrofitting operations must use appropriate safety equipment.



Legacy AMC6EB Module with SE Circuit Breakers	A
Retrofit SRFP6XT1 Module with XT1 Circuit Breakers	B
Retrofit SRFP6XT4E Module with XT4 Circuit Breakers	C

Tools Required:



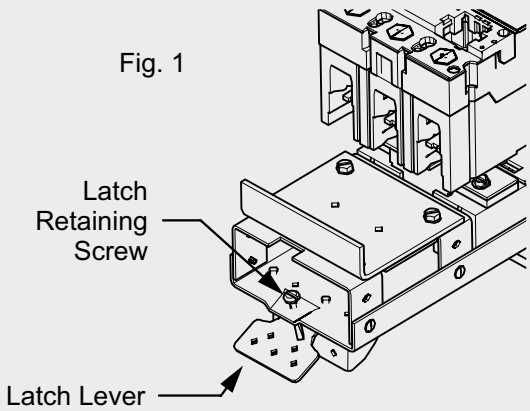
Rubber or Plastic Mallet | 3/8" Socket & Torque Wrench | 5/16" Nut Driver | # 2 Phillips Screwdriver | 1/4 - 3/8" Flat Blade Screwdriver

1

PLUG-IN MODULE REMOVAL FROM PANELBOARD

- Remove the four piece front or door from the panelboard.
- Remove the deadfront panel which covers the module to be retrofit. **Save the plastic center barrier attached to the cover if equipped.**
- Remove all power cables and auxiliary wiring connected to the module.
- Loosen both latch retaining screws on either end of the module shown in Figure 1.
- Pull both latch levers and the module from the panelboard.

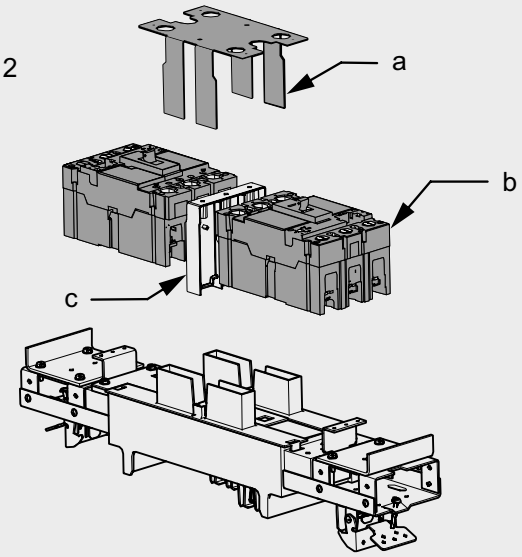
Fig. 1



2

- Remove the center barrier cover (a)(Fig. 2) if equipped which is connected by four pan head screws to the circuit breakers.
- Remove the legacy SE circuit breakers (b)(Fig. 2) by disconnecting the two load end screws and three line terminal screws on each breaker.
- Remove the center barrier (c)(Fig. 2) if attached to the module. **Save the center barrier for later use.**

Fig. 2



3

- Use a flat blade screwdriver to lift the tabs on each end of the module bus covers (d)(Fig. 3) and remove them from the module.
- Remove insulating barriers (e)(Fig. 3) if equipped.
- Remove both circuit breaker mounting “L” brackets (f)(Fig. 3) by depressing the modules retaining clip with a flat blade screw driver. The retaining clip can be accessed from the end of the module above the latch retaining screw.
- Turn the module over to access the finger clusters (g)(Fig. 4). Remove the six hex head screws and three finger clusters from the module. **Save the finger clusters and hardware for later use.**

Fig. 3

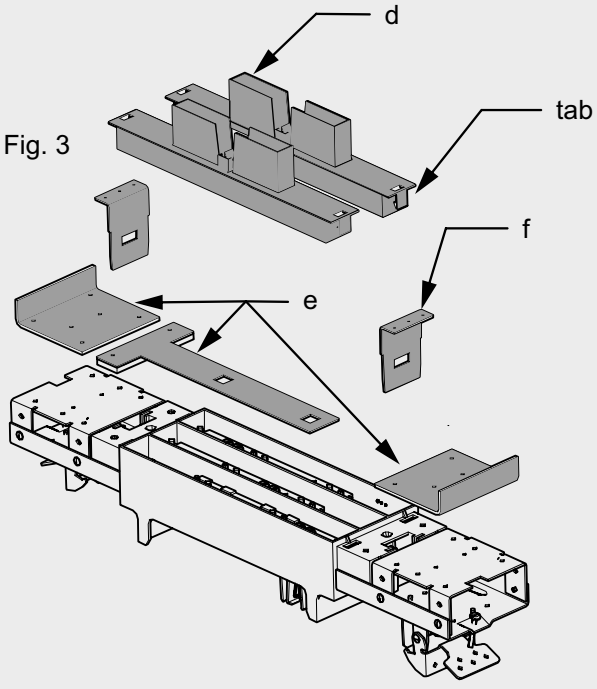
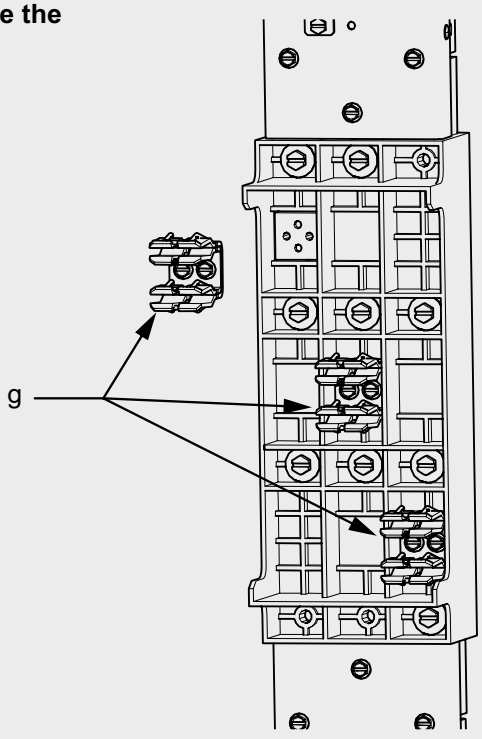


Fig. 4



4

- Remove all nine 1/4-20 bolts and washers to free the module bus assembly from the module base (Fig. 5). **Save the hardware for later use.**
- Remove each bus and terminal post assembly from the module base. Separate the terminal posts (h)(Fig. 6) from the module bus (i)(Fig. 6) on each assembly.
- **Save all three module bus pieces (i) and the hex head hardware for later use.**

Fig. 5

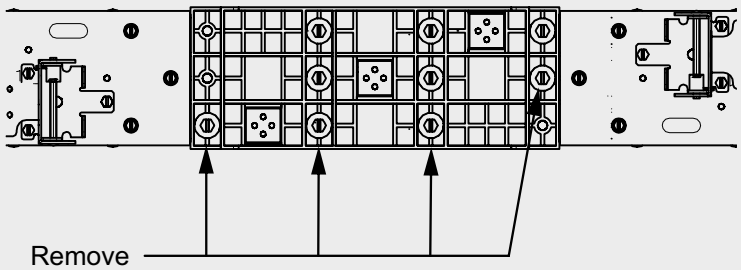
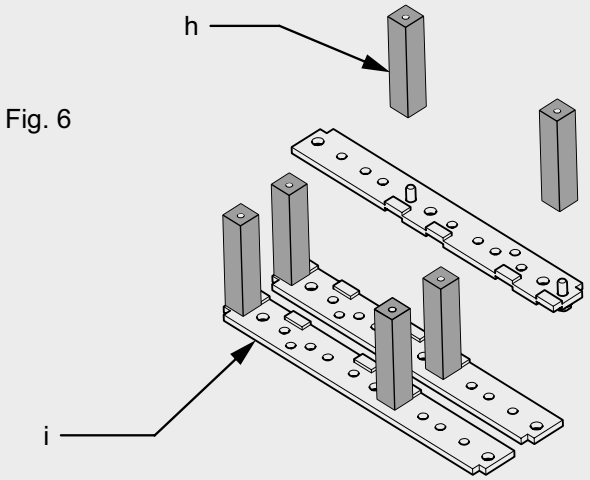


Fig. 6



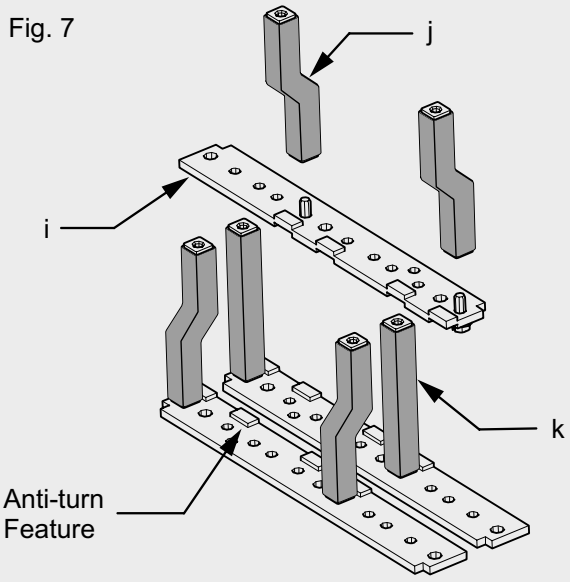
5

Tmax XT1 Installation: ≤ 125A and ≤ 480V

For XT4 installation, skip to step 14

- Attach new terminal posts (j) and (k)(Fig. 7) to the module bus (i)(Fig. 7) using the hardware which was removed in step 4.
- Make sure to connect the four offset terminal posts (j) to the outer bus and the two straight posts (k) to the center bus.
- The anti-turn feature on the bus must face up towards the new terminal post. Ensure the posts are mounted in the hole location shown in Figure 7.
- With the new terminal posts squared up to the anti-turn feature, **torque the mounting screws to 25 lb-in.**

Fig. 7



6

- Install the bus and terminal post assemblies onto the module as shown in Figure 8. Use the 1/4-20 bolts and washers removed in step 4 to secure the bus. **Do not torque the hardware at this step as minor adjustment may be required.**

- Re-install the finger clusters (g)(Fig. 9) removed in step 3 using the 6 hex head screws originally supplied with the module. **Torque the screws to 25 lb-in.**

Fig. 8

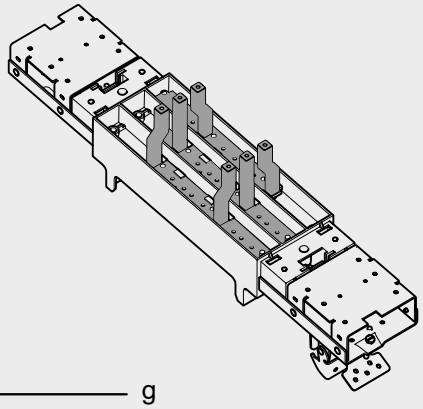
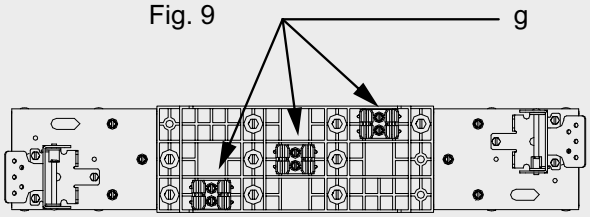


Fig. 9



7

- Attach two module barriers (m)(Fig. 10) to the module base using spacer (l)(Fig. 10) and thread forming screws (n)(Fig. 10). **Torque the thread forming screws to 15 lb-in.**
- Install the circuit breaker mounting brackets (o)(Fig. 10) into the slots in the base. Ensure the brackets snap into the base and the returned flat is facing in towards the center of the module.
- Prepare the XT1 circuit breaker (q)(Fig. 11) by removing the pre-installed phillips head screw from the load end (end with cable lugs installed) of the breaker housing.
- Locate one rear insulation plate (p)(Fig. 11) for each circuit breaker to be installed (supplied with the breaker).

Fig. 10

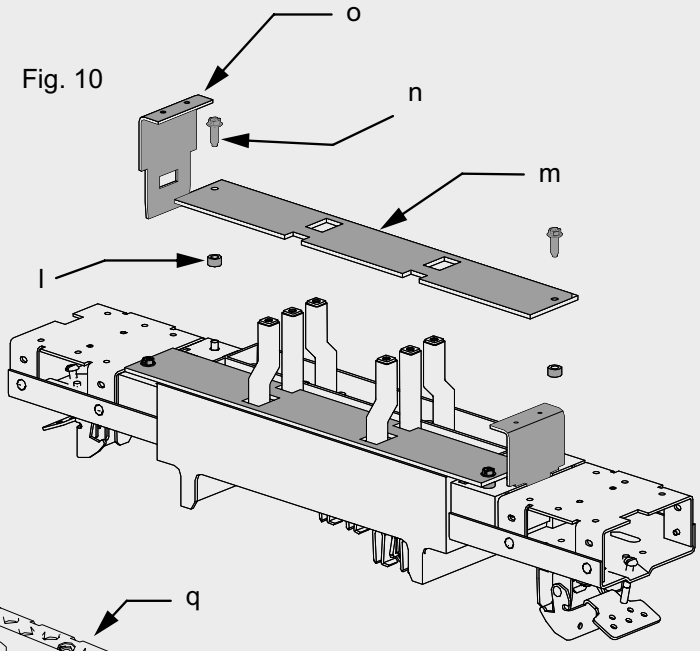
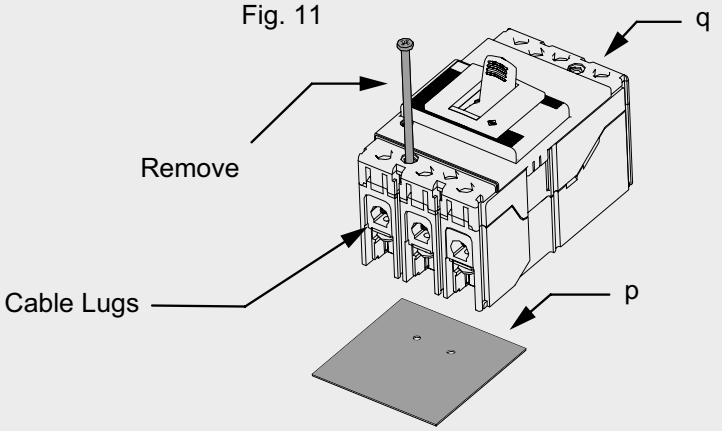


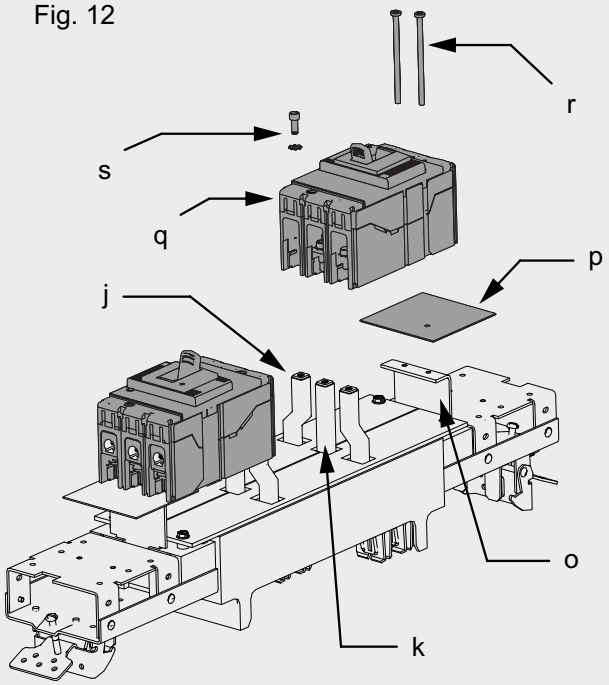
Fig. 11



8

- Mount each XT1 circuit breaker (q)(Fig. 12) and rear insulation plate (p)(Fig. 12) to the mounting bracket (o)(Fig. 12) using two screws (r)(Fig. 12).
- The fully threaded screw supplied with the retrofit kit is to be installed in the hole from step 7 (screw previously removed). The partially threaded screw supplied with the circuit breaker should be installed in the breaker frames through hole.
- Attach the circuit breakers line terminals to the terminal posts (j and k)(Fig. 12) using the three screws and locking washers (s)(Fig. 12) supplied with the kit.
- When all five screws have been hand tightened, **torque the three terminal screws (s) to 25 lb-in and then the two mounting bracket screws ® to 10 lb-in.**
- With the circuit breakers installed, flip the module over and **torque all nine 1/4-20 bolts to 50 lb-in.**

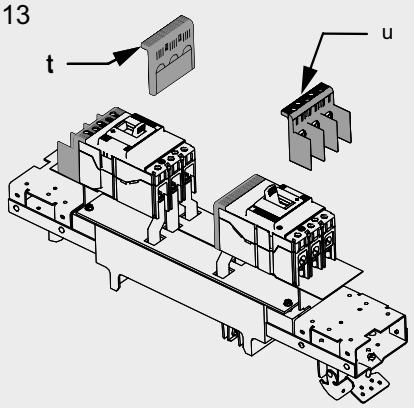
Fig. 12



9

- Install the line side terminal covers (t)(Fig. 13) on each breaker by sliding the cover into the slots on the circuit breaker housing.
- Install the service entry barriers (u)(Fig. 13) on the load end of the circuit breakers by sliding the barriers into the slots on the circuit breaker housing.

Fig. 13



10

INSTALLATIONS WITH ONLY ONE CIRCUIT BREAKER

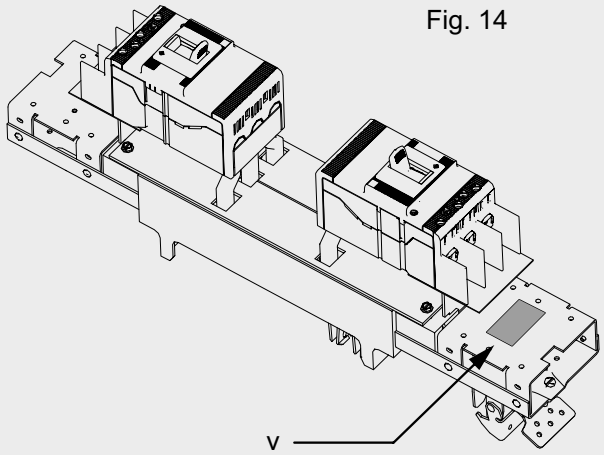
- When retrofitting with only one circuit breaker mounted on the module, apply the previously installed insulation method to the unused terminal posts (j and k)(Fig. 12). The two approved methods are:
  - Mount the Spectra Series plastic barriers onto each terminal post and secure with nylon screws (not provided with the retrofit kit).
  - Insulate the end of the terminal posts with electrical insulation tape. The tape used must have a minimum rating of 600Vac and 105°C.

11

- Apply new circuit breaker listing label (v)(Fig. 14) directly over the Spectra label as shown. The Spectra label will list the legacy SE breakers which could previously be mounted on the module.

  Do not place the label over the interrupting capacity label as those values do not change.

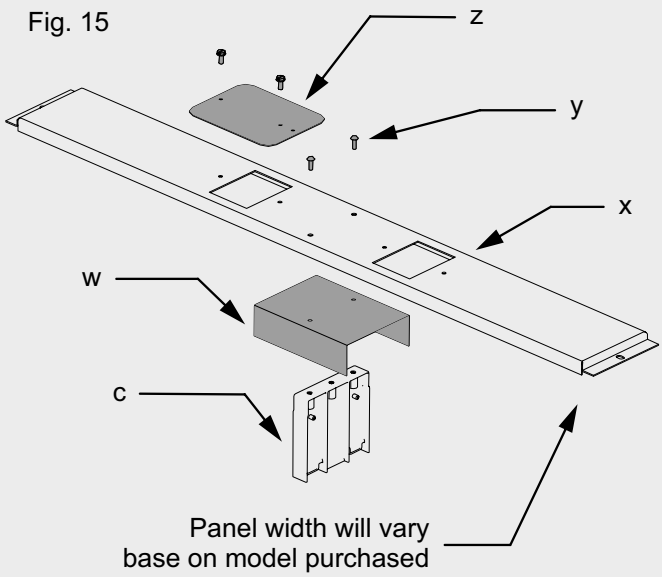
Fig. 14



12

- Prepare the new deadfront panel (x)(Fig. 15) by assembling the panel insulator (w)(Fig. 15) and center barrier (c)(Fig. 15) using two plastic thread forming screws (y)(Fig. 15).
- The center barrier (c) is required to be removed from either the Spectra deadfront panel or the module in step 1 or 2 of these instructions.
- Start each screw (y) by lightly tapping it through the holes in the deadfront panel (x) and insulator (w) with a plastic or rubber mallet. Once both screws have been started, continue tapping them until the heads are flush with the panel front. **Note: A bench vice is helpful to fixture the assembly while installing the screws**
- If only one circuit breaker is being installed on the module, attach blanking plate (z)(Fig. 15) to the deadfront panel (x) using the two screws supplied to cover the unused opening.

Fig. 15



13

PLUG-IN MODULE INSTALLATION INTO A PANELBOARD

- Verify that the upstream supply and panelboard are still out of service and that all sources of energy (primary and auxiliary) are disconnected.
- Install the module back into the panelboard by holding both latch levers in and pressing the module onto the panelboard bus.
- Tighten both latch lever screws (reference Figure 1 in step 1) to lock the module onto the panelboard frame.
- Re-install the power cables and auxiliary wiring if equipped to the circuit breakers. Torque the cable lugs to the value listed on the front of the circuit breaker.
- Install the deadfront panel assembly from step 12. Screw the panel onto the panelboard frame using the screws supplied in the kit. If the door or four piece front has been removed, replace it in the reverse order it was removed.
- Re-energize the panelboard according to accepted procedures for startup of new equipment.

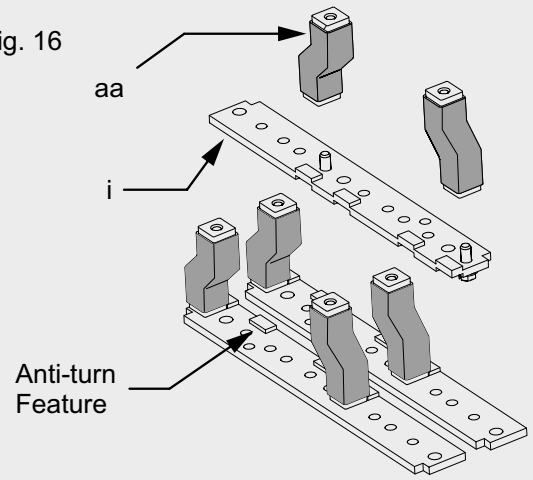
14

Tmax XT4 Installation: >125A or > 480V

For XT1 installation, skip to step 5

- Attach new terminal posts (aa)(Fig. 16) to the module bus (i)(Fig. 16) using the hardware which was removed in step 4.
- The anti-turn feature on the bus must face up towards the new terminal posts. Ensure the posts are mounted in the hole location shown in Figure 16.
- With the new terminal posts squared up to the anti-turn feature, **torque the mounting screws to 25 lb-in.**

Fig. 16



15

- Install the bus and terminal post assemblies onto the module as shown in Figure 17. Use the 1/4-20 bolts and washers removed in step 4 to secure the bus. **Do not torque the hardware at this step as minor adjustments may be required.**
- Re-install the finger clusters (g)(Fig. 18) removed in step 3 using the 6 hex head screws originally supplied with the module. **Torque the screws to 50 lb-in.**

Fig. 17

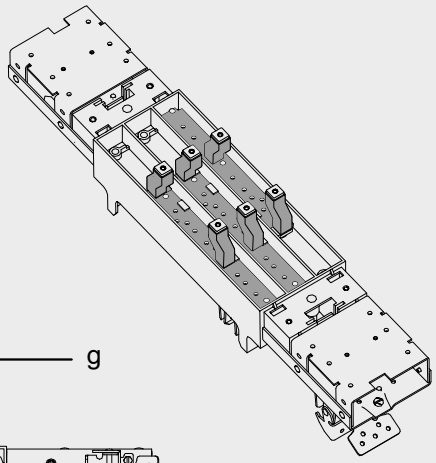
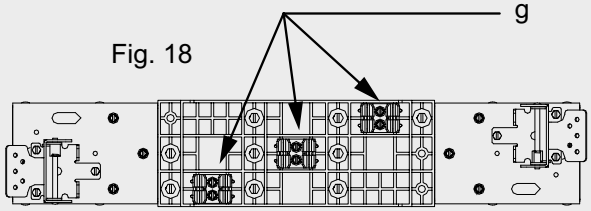


Fig. 18

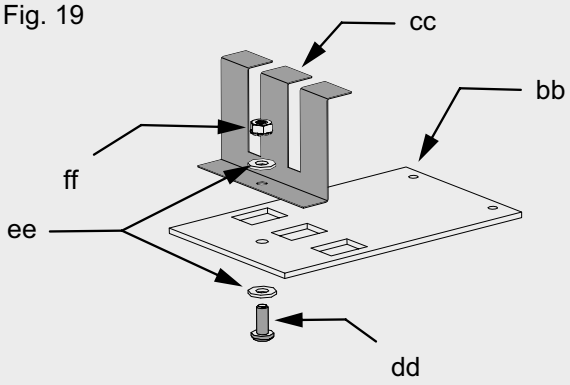


16

- Prepare the module barriers (bb)(Fig. 19) by attaching the terminal post covers (cc)(Fig. 19) using screw (dd)(Fig. 19), two flat washers (ee)(Fig. 19), and serrated nut (ff)(Fig. 19).
- Once assembled, **torque the serrated nut (ff) to 50 lb-in.**

Note: Two assemblies are required per module.

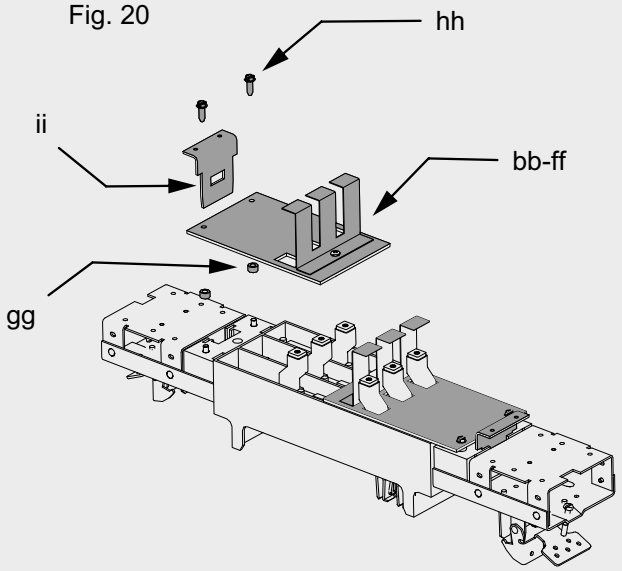
Fig. 19



17

- Attach the two module barrier assemblies (bb through ff)(Fig. 20) to the module base using spacers (gg)(Fig. 20) and thread forming screws (hh)(Fig. 20). **Torque the thread forming screws (hh) to 15 lb-in.**
- Install the circuit breaker mounting brackets (ii)(Fig. 20) into the slots in the base. Ensure the brackets snap into the base and the returned flat is facing away from the center of the module.

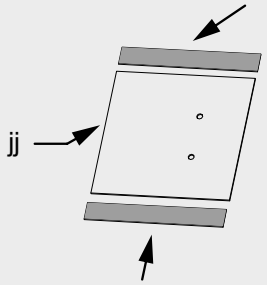
Fig. 20



18

- Supplied with the XT4 circuit breaker is an insulation sheet (jj)(Fig. 21). Remove and discard the perforated side pieces highlighted by the arrows in Figure 21. Modify one barrier for each circuit breaker to be installed.

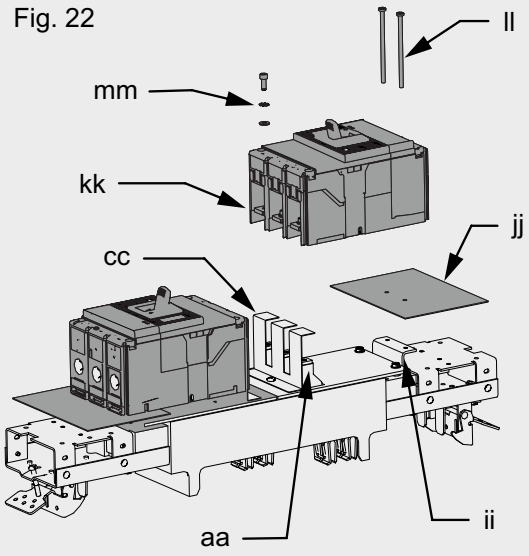
Fig. 21



19

- Mount each XT4 circuit breaker (kk)(Fig. 22) and insulation sheet (jj)(Fig. 22) to the mounting bracket (ii)(Fig. 22) using the two screws (ll)(Fig. 22) supplied with the circuit breaker.
- Attach the circuit breakers line terminals to the terminal posts (aa)(Fig. 22) using the screws, serrated and flat washers (mm)(Fig. 22). **Note: Bend the terminal post cover (cc) out of the way to start the screws.**
- When all five screws have been hand tightened, **torque the three terminal screws (mm) to 25 lb-in and then the two mounting bracket screws (ll) to 10 lb-in.**
- With the circuit breakers installed, flip the module over and **torque all nine 1/4-20 bolts to 50 lb-in.**

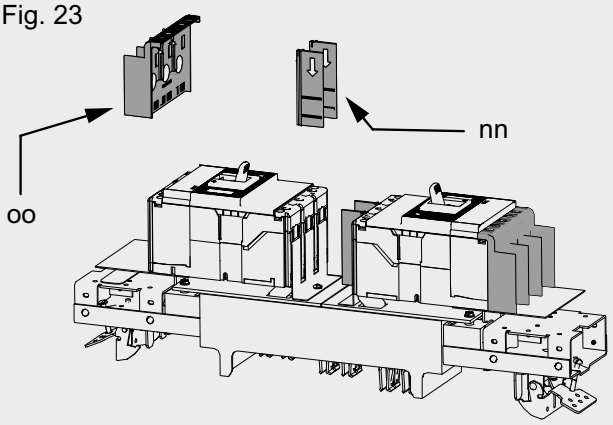
Fig. 22



20

- Attach two line side phase barriers (nn)(Fig. 23) per circuit breaker by sliding them into the slots on the breaker housing. Make sure to install the barriers with the arrow pointing down towards the module.
- Install the service entry barriers (oo)(Fig. 23) on the load end of the circuit breakers by sliding the barriers into the slots on the breaker housing.

Fig. 23



21

INSTALLATIONS WITH ONLY ONE CIRCUIT BREAKER

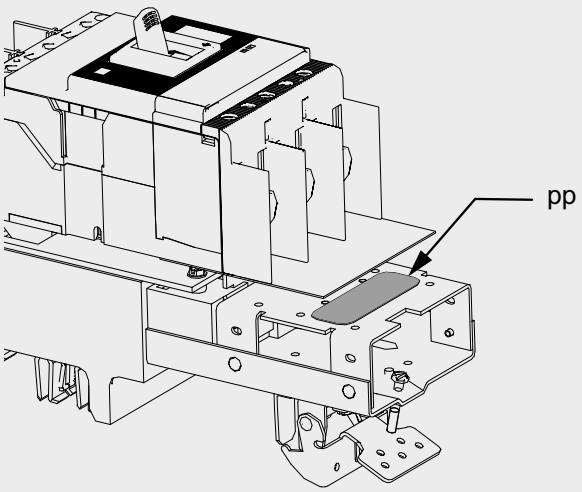
- When retrofitting with only one circuit breaker mounted on the module, apply the previously installed insulation method to the unused terminal posts (aa)(Fig. 22). The two approved methods are:
  - Mount the Spectra Series plastic barriers onto each terminal post and secure with nylon screws (not provided with the retrofit kit).
  - Insulate the end of the terminal posts with electrical insulation tape. The tape used must have a minimum rating of 600Vac and 105°C.

22

- Apply the new circuit breaker listing label (pp)(Fig. 24) directly over the Spectra label as shown. The Spectra label will list the legacy SE breakers which could previously be mounted on the module.

Do not place the label over the interrupting capacity label as those values do not change.

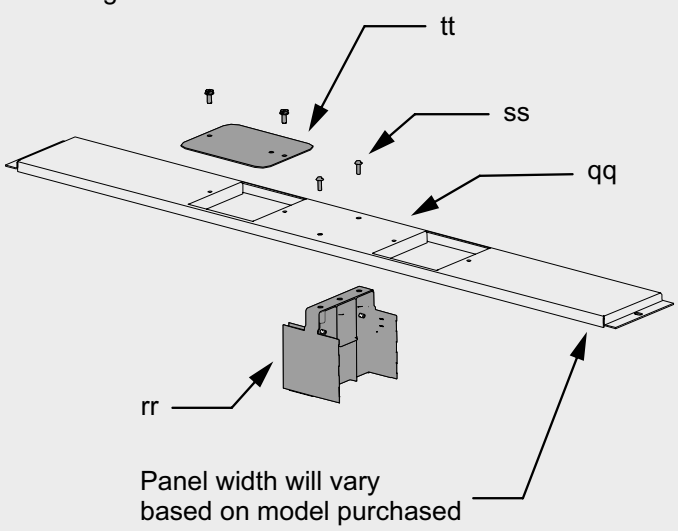
Fig. 24



23

- Prepare the new deadfront panel (qq)(Fig. 25) by attaching the center barrier (rr)(Fig. 25) using two plastic thread forming screws (ss)(Fig. 25).
- Start each screw (ss) by lightly tapping it through the deadfront panel (qq) into the barrier (rr) using a plastic or rubber mallet. Once both screws have been started, continue tapping them in until the heads are flush with the panel front. **Note: A bench vice us helpful to fixture the assembly while installing the screws.**
- If only one circuit breaker is being installed on the module, attach blanking plate (tt)(Fig. 25) to the deadfront panel (qq) using the two screws supplied to cover the unused opening.

Fig. 25



24

PLUG-IN MODULE INSTALLATION INTO A PANELBOARD

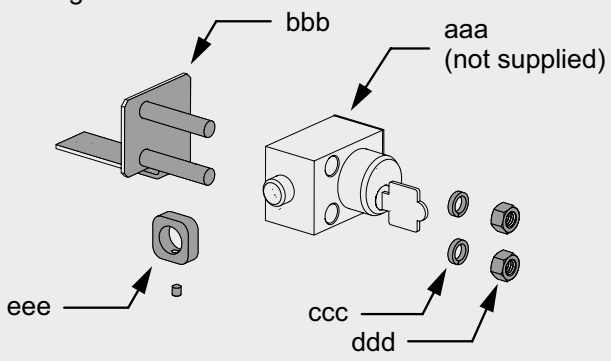
- Verify that the upstream supply and panelboard are still out of service and that all sources of energy (primary and auxiliary) are disconnected.
- Install the module back into the panelboard by holding both latch levers in and pressing the module onto the panelboard bus.
- Tighten both latch lever screws (reference Figure 1 in step 1) to lock the module onto the panelboard frame.
- Re-install the power cables and auxiliary wiring if equipped to the circuit breakers. Torque the cable lugs to the value listed on the front of the circuit breaker.
- Install the deadfront panel assembly from step 23. Align the center barrier (rr) between the circuit breakers and slide the panel assembly in securing the panel using the screws provided. If the door or four piece front was removed replace it in the reverse order it was taken off.
- Re-energize the panelboard according to accepted procedures for startup of new equipment.

25

KIRK KEY INTERLOCK OPTION

- Ensure that the panelboard has been placed out of service before removing any panels. Reference page 2 of these instructions for safety instructions.
- Remove the legacy lock cylinder, brackets, and filler plate from the panelboard.
- Attach the legacy lock cylinder (aaa)(Fig. 26) to the new cylinder bracket (bbb)(Fig. 26) using the 3/8” split lock washers (ccc)(Fig. 26) and nuts (ddd)(Fig. 26).
- Attach the bolt block (eee)(Fig. 26) to the lock cylinders bolt using the supplied set screw. Align the face of the block with the end of the bolt.

Fig. 26

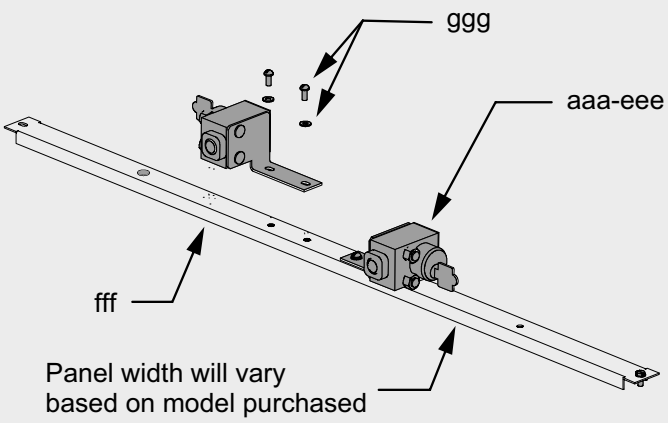


26

- Attach the lock cylinder and bracket assembly (aaa through eee)(Fig. 27) to the new filler plate (fff)(Fig. 27) using the screws and flat washers (ggg)(Fig. 27) included in the kit.

- If two lock cylinders are required (as shown in Figure 27), assemble a second cylinder and bracket assembly following the instructions in step 25. **Note: The second assembly will be a mirror image of the first.**

Fig. 27



27

- Install the complete assembly back into the panelboard directly next to the retrofit module.
- The Kirk Lock Interlock assembly can be mounted above (shown in Figure 28) or below (shown in Figure 29) the retrofit module.
- Secure the assembly to the panel board using the two hex head screws supplied in the kit. If the panelboard is not equipped with additional mounting brackets, plug the filler plate holes with the supplied plugs detailed in Figure 29.
- Adjust the lock cylinder and bracket assembly (aaa through eee)(Fig. 27) to the left or right if needed so that the bolt block (eee) interferes with the circuit breaker handle.
- Verify that when the lock cylinders bolt is fully extended and the key has been removed the circuit breaker is not able to close.
- After verifying each lock and breaker pair, **torque the brackets screws (ggg) to 30 lb-in**.

Fig. 28

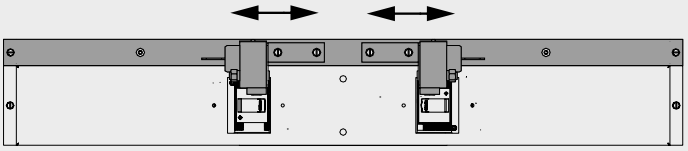
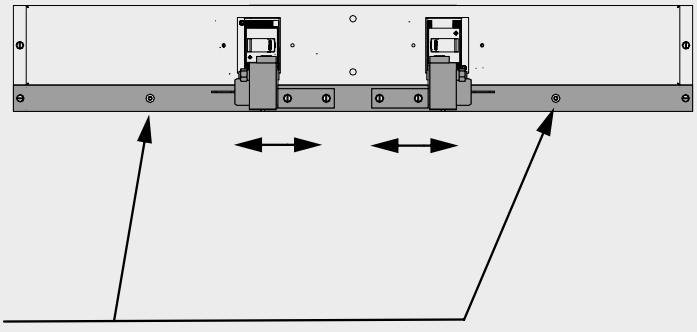


Fig. 29



For more information please contact your local ABB Field Representative or Service Center listed below:

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