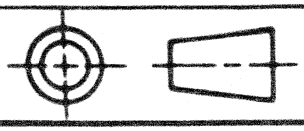
THIRD ANGLE PROJECTION	REVISIONS			
	REV	DESCRIPTION	DATE	APPROVED

REV | SH | DWG NO | SIZE A

ELECTRICAL & MECHANICAL INSPECTION
for
OEM METALCLAD STRUCTURES

PURPOSE
This procedure details the method of mechanically inspecting the breaker compartments on the OEM metalclad structures.

SCOPE
This procedure will apply to OEM metalclad structures, voltage types VB-4.16kv through VB-13.8kv

GENERAL
To provide the inspector with an understanding of the various interlocks and breaker actuated mechanisms within the switchgear structure, the following information describes the operation of the mechanisms and how to verify their correct operation through the use of a POWER/VAC Breaker.

The assembly of two or more vertical equipment sections into a lineup or shipping section must be accomplished on a flat, level surface.

After all assembly operations have been completed, and the correctness of the control wiring verified, the inspector should measure the track width in each compartment (breaker or roll-out) in three (3) locations: front, midpoint and back. Compare the results with the drawing (0144D2520 sheet #6), and adjust with shims as necessary.

Visually check the breaker compartment for the following:

Proper lubrication of moving parts, free of dirt or foreign material and loose hardware in areas which could affect gaging.

Chains not loose fitting and idlers aligned properly.

Push the sliding link of the negative interlock rearward and observe its return to its normal position as it is slowly released.

UNLESS OTHERWISE SPECIFIED	SIGNATURES	DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± ANGLES ± FRACTIONS ± ✓	DRAWN D. MARLETTE	4-15-87
	CHECKED A.E.P.	4-16-87
	ENGRG A.E.P.	4-16-87
	ISSUED L.W.	4-20-87
	M.E. 87B	4-16-87
	QIA. L.F. Hollenbeck	4/16/87

GENERAL ELECTRIC
S.O. DEPT LCTN BURL.

OEM ADJUSTMENT PROCEDURES

SIZE	FSCM NO	DWG NO
A		0282A4607
SCALE		SHEET 1 CONT SH. 2

DISTR TO

Crank the racking mechanism in and out and note:
Shutters operate freely and begin to lift within two and one half turns of the jack screw.

Check the tape indicator noting it displays the correct position of the racking mechanism.

INTERFERENCE INTERLOCK

The function of the mechanical interference interlock is to permit only breakers with the same ratings to be inserted in any specific compartment.

This interlock consists of two comb-like plates, one on the equipment and a mating plate on the breaker. The equipment interference plate is permanently fastened to a cross member located just below the breaker mechanism frame device panel.

CLOSING SPRING GAG INTERLOCK (ML-17 ONLY)

An interlock is provided at the rear left side of the breaker to prevent racking in a breaker which has the spring blocking pin in the gagged position. The spring blocking pin must be removed from the gag position and repositioned to hold this interlock in the ungagged position before the breaker will enter the metalclad unit.

KEY LOCK

ON the left hand breaker racking mechanism track is a provision for a key lock. The Purpose of this lock is to keep the breaker from closing in the "test" and "connect" positions by operating the negative interlock. To operate the key lock in order to remove the key, push slide to the rear and extend the bolt of the lock into slot. This allows the key to be removed and prevents the breaker from closing. The key lock does not prevent motion of the racking mechanism.

PADLOCKS

The second position for padlocks is behind the key lock. A padlock in this slot will not permit the insertion of the racking wrench or motor drive by blocking any movement of the spring loaded cover for the hexagon shaped drive portion of the racking mechanism drive shaft.

Two positions for a possible three (3) padlocks each are provided on the racking mechanism. The front position keeps the breaker from closing in the "test" and "connect" position. To obtain this position push slide to the rear and insert the padlock in the slotted opening just forward of the key lock. This gives the same interlocking function as the keylock and does not block the motion of the racking mechanism.

INTERFACE CHECK

Select a breaker of the correct rating for the compartment to be checked.

Apply a thin film of contact grease to the breaker contact fingers. Apply control voltage to the control bus as specified. Install the breaker into the compartment in the test position, depress and hold the "Close Button" on the breaker while connecting the secondary disconnect device by pulling down on the breaker handle and inserting the now horizontal arm fully into the breaker. Release the close button, this will activate the spring charging motor and "charge" the breaker's closing spring.

Manually close and trip the breaker to verify operation of the breaker counter.

SPRING DISCHARGE INTERLOCK

The spring discharge interlock consists of a notched member in the right side track assembly which activates the spring discharge roller on the right side of the breaker.

The function of the spring discharge interlock is to prevent the breaker closing spring from being charged unless the breaker is in the "connect" or "disconnect/test" position or removed from the cubicle. In addition, it will mechanically discharge the breaker springs when the breaker is moved between any of the above mentioned positions and prevent recharging by opening the close latch monitoring switch in the breaker spring charging circuit.

To test the function of the spring discharge interlock, place the breaker in the "disconnect/test" position. Depress and hold the "close" button on the breaker while connecting the secondary disconnect device by pulling down on the breaker handle and inserting the horizontal arm fully into the breaker. Release the close button, this will activate the spring charging motor and charge the breaker closing springs.

Rack the breaker toward the connected position using the manual racking handle. The spring discharge interlock should discharge the breaker springs in three to five turns. Continue to rack the breaker to the connected position. Just before reaching the connected position, the spring charging motor will be re-energized and charge the closing springs. Rack the breaker toward the disconnected position. The spring discharge interlock should discharge the breaker closing springs in less than three (3) turns. Continue to rack the breaker to the disconnect position. Re-energize the secondary disconnect device as before and this will cause the spring charging motor to charge the breaker closing springs. Raise the racking arms to the release position and roll the breaker forward. The spring discharge interlock should discharge the breaker closing springs before traveling 1/8 inch.

POSITIVE INTERLOCK

The positive interlock functions to prevent racking a breaker between the "connect" and the "disconnect/test" position, except when the primary contacts are open.

The positive interlock consists of a bar which protrudes from the left side of a closed breaker to engage a slot in the left side racking mechanism when the breaker is in either the "disconnect/test" or "connected" position. When the interlock is engaged, the racking mechanism cannot be operated.

UNLESS OTHERWISE SPECIFIED	SIGNATURES	DATE
DIMENSIONS ARE IN INCHES	DRAWN D. MARLETTE	4-15-87
TOLERANCES ON:	CHECKED A E P	4-16-87
2 PL DECIMALS ±	ENGRG A E P	4-16-87
3 PL DECIMALS ±	ISSUED L W	4-20-87
ANGLES ±	M.E. 87B	4-16-87
FRACTIONS ± ✓	Q.A. L. J. Hollenbeck	4/16/87

GENERAL ELECTRIC

S.O. DEPT LCTN BURL

OEM ADJUSTMENT PROCEDURES

SIZE	FSCM NO	DWG NO
A		0282A4607

SCALE | SHEET 4 CONT. SH. 5

DISTR TO

To test the function of the positive interlock, place the breaker in the "disconnect/test" position, depress and hold the "Close" button on the breaker while connecting the secondary disconnect device by pulling down on the breaker handle and horizontally inserting the lever arm full into the breaker to engage the secondary disconnects. Release the close button. This will actuate the spring charging motor and charge the breaker closing springs. Close the breaker with the control switch on the front of the door, then insert the racking handle into the hole in the unit door. When attempting to insert the racking handle, a definite stop should be encountered preventing the socket on the racking handle from engaging the racking mechanism. Trip the breaker and rack it into the "connected" position. Close the breaker and insert the racking handle into the hole in the unit door. When attempting to insert the racking handle, a definite stop should be encountered preventing the socket on the racking handle from engaging the racking mechanism.

STATIONARY AUXILIARY SWITCH

An auxiliary switch can be provided at the bottom of the breaker compartment so that additional contacts can be actuated by the operation of the breaker. The breaker will operate this switch when it is in the "test" or "connect" position.

To test the function of the stationary auxiliary switch connect a continuity tester to the stationary auxiliary switch's wiring at an accessible location. Test a normally open and a normally closed contact of the stationary auxiliary switch in the "test" and "connect" position by closing and tripping the breaker while monitoring the continuity tester.

POSITION SWITCH

A position switch can be provided at the bottom of a breaker compartment so that it will be operated by a bracket on the breaker frame when the breaker is in the "connect" position. When the breaker is withdrawn, a spring will return the switch to its normal position.

To test the function of the position switch, connect a continuity tester to the position switch wiring at an accessible location. Test a normally open and closed contact in the "connect" position while monitoring the continuity tester. Move the breaker to the "Test" position while monitoring the "Position Switch" with a continuity tester.

NEGATIVE INTERLOCK

The negative interlock functions to hold the breaker in a mechanical and electrical trip-free mode when it is being racked between the "disconnect/test" and "connect" positions. As an added precaution, the negative interlock will trip the breaker and hold it trip-free if an attempt is made to operate the racking mechanism when the breaker is closed and in either the "disconnect/test" or "connect" position, and the positive interlock fails to function.

The negative interlock consists of two notched members in the left side track assembly which operate the negative (trip latch) interlock roller on the left side of the breaker. On the metalclad one member is stationary and the other is a spring loaded slide attached to the racking mechanism. A third member, a notched sliding link, provides the key lock functions and is described under KEY LOCKS.

To test the function of the negative interlock, place the breaker in the "disconnect/test" position, depress and hold the "close" button on the breaker while connecting the secondary disconnect device by pulling down on the breaker handle and inserting the level arm fully into the breaker. Release the close button. This will actuate the springcharging motor and charge the breaker closing spring. Close the breaker using either the control switch or the manual close button. Push the sliding link located on the front of the left track rearward. This will cause the negative interlock roller on the breaker to depress and trip the breaker. Leave the sliding link in the rearward position and attempt to close the breaker using the control switch. Nothing should happen. Now attempt to close the breaker by depressing the manual close button. The closing springs will discharge but the breaker should remain open. Return the sliding link to the forward position.

Rack the circuit breaker into the connected position and close it either manually or electrically. Push the sliding link rearward and verify that the breaker trips. With the sliding link in the rearward position attempt to close the breaker using the control switch. Again, nothing should happen. Now attempt to close the breaker by depressing the manual close button. Again, the closing springs will discharge but the breaker should remain open.

Remove the breaker from the equipment. Visually check the stationary primary contacts of the equipment for even distribution of the contact grease from the breaker contact fingers.

INTERCHANGEABILITY VERIFICATION

All breakers, to be shipped with the equipment should be subjected to the foregoing checks.

This completes the Breaker Interface Check.

INTERFACE CHECKLIST

Electrically Close Breaker
- Verify positive interlock
- Verify stationary auxiliary switch
- Verify position switch

Electrically Trip Breaker
- Verify stationary auxiliary switch
- Verify negative interlock

Crank Breaker Toward The Connect Position
- Record number of turns required to discharge springs

Crank Breaker Into Connect Position
- Breaker should charge

Electrically Close Breaker
- Verify Positive Interlock
- Verify Stationary Auxiliary Switch
- Verify Position Switch

Electrically Trip Breaker
Verify Stationary Auxiliary Switch
Verify negative interlock

Crank Breaker Toward The Test Position
Record number of turns required to discharge springs

Crank Breaker Into The Test Position
Engage Secondary Disconnect
Breaker should charge

Electrically Close Breaker
Verify close and charge indication flags

Electrically Trip Breaker
Verify Trip indication flag

Withdraw Breaker From The Test Position
Breaker should discharge
Verify discharge indication flag

Check Grease Distribution On Contacts Of House And Breaker And Primary Alignment

Check Alignment Of Jack Screw With Door Shut Using Cranking Wrench

SHIPPING AND HANDLING INSTRUCTIONS

To facilitate movement of the stack frames with an overhead hoist, tapped holes are provided at each corner of the frame for the installation of lifting lugs.

Never attempt to pull the equipment into position. To slide the equipment into position, use proper support and push.

Shipment of breakers in the equipment should be limited to no more than four (4) vertical stacks of equipment and six (6) breakers. Damage to the alignment may result if greater quantities are attemped.

When shipping breaker in the equipment the breakers should be "Racked In", in the connected position with the contacts closed.