VAD-3 BREAKER
INSPECTION CHECKLIST

Prepared by: B. Hooper Approved by: 3/4/93 MQA 3/2/93 MDE

SQUARE D COMPANY
ENGINEERED PRODUCTS DIVISION
MEDIUM VOLTAGE SWITCHGEAR

I. INSTRUCTIONS

1) Inspection and test requirements are based on ANSI C37.

2) QC personnel shall perform the inspections and tests described in this procedure and initial each item.

3) Record rejected items on QCP 7.2 "REQUEST FOR INSPECTION". Do not approve until all items have been corrected.

4) Use Design Standard drawings and order related documents as inspection guides.

II. GENERAL DATA

FACTORY ORDER NUMBER _____

CATALOG NUMBER _____

SERIAL NUMBER _____

FINAL APPROVAL

INSPECTED BY _____ DATE _____

APPROVED FOR SHIPMENT _____ DATE _____

Iii. Physical Inspection

_____ 1. Verify Connections (Electrical And Mechanical) Are Properly Tightened.

_____ 2. Verify plating and paint appearance is acceptable.

_____ 3. Verify cover and breaker labels are properly located.

_____ 4. Verify rating nameplate is installed and data is correct.

_____ 5. Verify guide pins for the CR plug are installed.

_____ 6. Check glastic bottle supports for cracks (front & back).

_____ 7. Flex connector block is properly mounted and tightened.

_____ 8. Verify push-rod is properly tightened onto interrupter.

_____ 9. Verify racking mechanism interlock.

_____ 10. Shims are installed on racking arm (no side-to-side motion).

_____ 11. Verify racking arm stops are installed correctly.

_____ 12. Verify correct "code-plate" is installed.

_____ 13. Verify ground shoe clearance.

_____ 14. Open and close roller linkages adjusted properly.

_____ 15. Verify proper operation of the "test position" interlock.

_____ 16. Verify control plug assembly operates smoothly.

_____ 17. Verify proper MOC operation.

_____ 18. Verify primary fingers and ground fingers have been greased.

_____ 19. Verify breaker rest squarely on rails.

_____ 20. Verify proper counter operation.

_____ 21. Verify breaker is properly lubricated using Mobil 28 (red) grease: (check-off each)

____Motor eccentric and grove
____Guide cam
____Charge and discharge indicator cam
____Charging gear
____Spring pivot points
____Racking worm gear
____All rollers and wheels

_____ 22. Verify dimensional measures have been performed on the CMM or by fixture. See Dwg. # 44068-442 for detailed requirements. Signoff this point when Page 7 has been **completed** and **accepted .**

IV. ELECTRICAL OPERATION AND TESTS (CONT)

Based on applicable voltages from Table 1 above, perform the following operations:

____ 2. At "rated" supply voltage perform 75 breaker operations.

____ 3. At "rated" supply voltage, verify time required for the spring charging motor to recharge the closing springs.

_____ sec (10 sec max.)

____ 4. At "maximum" supply voltage perform 5 close-open operations. Verify proper operation of the "anti-pump" relay.

____ 5. At "minimum" supply voltage perform 5 close-open operations. Verify proper operation of the "anti-pump" relay.

____ 6. At "rated" supply voltage perform 5 close-open operations with the tripping mechanism being energized by the closing of the auxiliary contacts.

____ 7. At "rated" supply voltage perform 5 open-close operations for breakers intended for rapid auto-reclosing.

____ 8. At "rated" supply voltage perform 5 mechanical trip-free operations.

____ 9. Verify correct coil resistances.

Trip coil _____ ohms

Close coil _____ ohms

____ 10. Verify correct charging motor has been installed.

V. MECHANICAL ADJUSTMENT

____ 1. Erosion gap adjusted: (0.180" - 0.240") TYPE I
(0.160" - 0.220") TYPE II & III

A-phase _____ inches

B-phase _____ inches

C-phase _____ inches

____ 2. Primary contact gap adjusted (0.370" - 0.430") TYPE I & II
(0.438" - 0.563") TYPE III

A-phase _____ inches

B-phase _____ inches

C-phase _____ inches

VI. BREAKER PERFORMANCE TESTS

____ 1. Primary contact speed on opening

Trip _____ msec (7.1 msec max.) @ 0.280" TYPE I
(6.4 msec max.) @ 0.280" TYPE II
(6.9 msec max.) @ 0.375" TYPE III

____ 2. Overtravel on opening _____inches (0.525" max.) TYPE I
(0.490" max.) TYPE II
(0.625" max.) TYPE III

____ 3. Contact rebound does not exceed minimum contact gap requirement. (0.250" min.) TYPE I & II
(0.375" min.) TYPE III

____ 4. Primary contact speed on closing

Close _____ msec (4.7 msec max.) @ 0.130" TYPE I
(4.0 msec max.) @ 0.120" TYPE II
(5.7 msec max.) @ 0.170" TYPE III

____ 5. Any contact bounce occurring after initial contact closing must have an open contact duration of ≤0.002 seconds.

____ 6. Response time from coil energization until contact status change.

Trip _____ msec (29 msec maximum)

Close _____ msec (48 msec maximum)

____ 7. Primary contact resistance (35 micro-ohms maximum)

A-phase _____ micro-ohms

B-phase _____ micro-ohms

C-phase _____ micro-ohms

____ 8. Perform power frequency withstand test on the main circuit (36 kV phase-to-phase/phase-to-ground and across open contacts for 1 minute). * Note: List special testing requirements below.

SYSTEM VOLTAGE	PHASE-TO-PHASE PHASE-TO-GROUND	ACROSS OPEN CONTACTS

VI. FINAL APPROVAL

_____ 1. Attach completed serial number nameplate to breaker.

_____ 2. Verify all items on the checklist have been initialed.

_____ 3. Complete Certificate of Factory Test and include in envelope to be shipped with breaker.

_____ 4. Attach "OK TO SHIP" tag to breaker and deliver to shipping.

Test Equipment Used

Equipment ID #/ Description	Calibration Due Date
Q082 / Control Hi-Pot	____/____/____
Q083 / Test Cart	____/____/____
Q044 / Fluke VOM	____/____/____
Q079 / Oscilloscope	____/____/____
Q009 & Q003 / DLRO	____/____/____
Q072 / Primary Hi-Pot	____/____/____
Q076 / Pin Gauges	____/____/____
ME0011 / Calipers	____/____/____