This standard is designed to verify that an instantaneous voltage relay based on the solid state principal is in a safe and reliable operating condition. In the event that the relay is not in this condition then this standard will establish the reconditioning requirements. The term "reconditioning" is defined as "the process of returning electrical equipment to safe and reliable operating condition based upon the design of the original manufacturer at the time of manufacturing."

REFERENCES

The following references are use in this standard. Each of these references can be found in their respective listed locations.

Table References: Section 6000

Table 2	Insulation resistance and test values for electrical apparatus.
Table 11	Insulation resistance and test temperature conversion to 20°C values.

National Electrical Code – NEC 2002 Edition

Article 310	Conductors for General Wiring
Table 310.17	Allowable Ampacities of Single-Insulated Conductors Rates 0 Through 2000 Volts in Free Air, Based on Ambient Air Temperatures of 30°C (86°F).

I TEST EQUIPMENT

The following test equipment is required to perform the testing requirements of this reconditioning standard:

1. Insulation Resistance Test Set (Megohmeter) 500 Vdc minimum
2. Multimeter
3. AC Current Supply with means of timing

II RECONDITION EVALUATION

These steps are used to determine what will be required to recondition this product under this standard.

1 INSPECTION

1.1 General

1.1.1 Ensure that the nameplate data is legible.
1.1.2 Ensure that the third party listing service label is legible.
1.1.3 Inspect case for cracks
1.1.4 Record results on an approved PEARL Evaluation Form.

1.2 Circuit Boards and Solid State Components

1.2.1 Inspect for signs of overheating.
1.2.2 Inspect for signs of contamination.
1.2.3 Inspect terminals for signs of corrosion.
1.2.4 Record results on an approved PEARL Evaluation Form.

1.3 Wiring

1.3.1 Inspect signs of overheating.
1.3.2 Inspect for signs of contamination.
1.3.3 Record results on an approved PEARL Evaluation Form.

1.4 Relay Terminals

1.4.1 Inspect for missing screws
1.4.2 Check for stripped screws
1.4.3 Inspect for signs of overheating.
1.4.4 Inspect for signs of contamination.
1.4.5 Inspect for signs of corrosion.
1.4.6 Record results on an approved PEARL Evaluation Form.

2 TESTING

2.1 Contact Transfer

2.1.1 Set relay to minimum voltage setting
2.1.2 Using a multimeter verify each contact state (NO or NC)
2.1.3 Apply rated current to operating coil
2.1.4 Using a multimeter verify the transfer of each contact
2.1.5 Remove rated current
2.1.6 Record results on an approved PEARL Evaluation Form.

2.2 Pickup Voltage – Minimum Setting

2.2.1 Increase voltage until relay pickup is achieved.
2.2.2 Record as Pickup Voltage – Minimum Setting.
2.2.3 Remove voltage
2.2.4 Compare test value for Pickup Voltage – Minimum Setting with manufacturers tolerance for relay pickup or + /- 10 % of scale setting.
2.2.5 Record results on an approved PEARL Evaluation Form.

2.3 Pickup Voltage – Maximum Setting

2.3.1 Increase voltage until relay pickup is achieved.

2.3.2 Record as Pickup Voltage – Maximum Setting.

2.3.3 Remove voltage

2.3.4 Compare test value for Pickup Voltage – Maximum Setting with manufacturers tolerance for relay pickup or + /- 10 % of scale setting.

2.3.5 Record results on an approved PEARL Evaluation Form.

2.4 Instantaneous Operation Verification

2.4.1 Set. relay to minimum setting

2.4.2 Set test voltage to 2 times setting

2.4.3 Connect timing circuit to relay

2.4.4 Apply test voltage to relay

2.4.5 Remove voltage if test set failed to deenergized

2.4.6 Compare time of operation with manufacturer specification for relay pickup time or 100 milliseconds or less.

2.4.7 Record results on an approved PEARL Evaluation Form.

2.5 Insulation Resistance

2.5.1 *Consult manufacturer's instructions for any precautions before performing this test*.

2.5.2 Perform an insulation resistance test at test voltage specified by manufacturer or using a 500-volt dc megohmeter.

2.5.2.1 Relay De-energized

2.5.2.1.1 Test across each contact

2.5.2.1.2 Test between contacts on the line side

2.5.2.1.3 Test between contacts on the load side

2.5.2.2 Relay Energized

2.5.2.2.1 Test between contacts

2.5.3 Record results on an approved PEARL Evaluation Form.

2.5.4 Compare test results to manufacturer's recommendations or a minimum of 1 megohm.

III RECONDITIONING PROCEDURES

The following procedures are in a recommended order and are required to recondition this product. PEARL recognizes that, based on actual product design and as found condition, some of these procedures may not be applicable. The testing requirement must be completed before the product can be labeled as a PEARL reconditioned product.

1 RECONDITIONING

1.1 Exterior

1.1.1 Clean all surface to remove any:

1.1.1.1 Contamination

1.1.1.2 Corrosion.

1.1.1.3 Rust

1.1.1.4 Record results on an approved PEARL Reconditioning Test Form.

1.2. Missing or Defective Components, Parts and Hardware

1.2.1 Replace or repair any missing or defective components, parts and hardware found during the inspection phase of this standard.

1.2.2 Replace any defective contact or contact assembly

1.2.3 Clean Cover

1.2.4 Record results on an approved PEARL Reconditioning Test Form.

1.3 Final Assembly

1.3.1 Ensure that the nameplate/label data is complete, correct and legible.

1.3.2 Record results on an approved PEARL Reconditioning Test Form.

2 TESTING

2.1 Contact Transfer

2.1.1 Set relay to minimum voltage setting

2.1.2 Using a multimeter verify each contact state (NO or NC)

2.1.3 Apply rated voltage to operating coil

2.1.4 Using a multimeter verify the transfer of each contact

2.1.5 Remove rated voltage

2.1.6 Record results on an approved PEARL Reconditioning Test Form.

2.2 Pickup Voltage – Minimum Setting

2.2.1 Increase voltage until relay pickup is achieved.

2.2.2 Record as Pickup Voltage – Minimum Setting.

2.2.3 Remove voltage

2.2.4 Compare test value for Pickup Voltage – Minimum Setting with manufacturers tolerance for relay pickup or + /- 10 % of scale setting.

2.2.5 Record results on an approved PEARL Reconditioning Test Form.

2.3 Pickup Voltage – Maximum Setting

2.3.1 Increase voltage until relay pickup is achieved.

2.3.2 Record as Pickup Voltage – Maximum Setting.

2.3.3 Remove voltage

2.3.4 Compare test value for Pickup Voltage – Maximum Setting with manufacturers tolerance for relay pickup or + /- 10 % of scale setting.

2.3.5 Record results on an approved PEARL Reconditioning Test Form.

2.4 Instantaneous Operation Verification

2.4.1 Set. relay to minimum scale setting

2.4.2 Set test voltage to 2 times scale setting

2.4.3 Connect timing circuit to relay

2.4.4 Apply test voltage to relay

2.4.5 Remove voltage if test set failed to deenergized

2.4.6 Compare time of operation with manufacturer specification for relay pickup time or 100 milliseconds or less.

2.4.7 Record results on an approved PEARL Reconditioning Test Report.

2.5 Insulation Resistance

2.5.1 *Consult manufacturer's instructions for any precautions before performing this test*.

2.5.2 Perform an insulation resistance test at test voltage specified by manufacturer or using a 500-volt dc megohmeter.

2.5.2.1 Relay De-energized

2.5.2.1.1 Test across each contact

2.5.2.1.2 Test between contacts on the line side

2.5.2.1.3 Test between contacts on the load side

2.5.2.2 Relay Energized

2.5.2.2.1 Test between contacts

2.5.3 Record results on an approved PEARL Reconditioning Test Form

2.5.4 Compare test results to manufacturer's recommendations or a minimum of 1 megohm.

2.5.5 The test results must be within the guidelines recommended in order for the product to become a PEARL labeled product.

IV PEARL CERTIFICATION

This product has now been reconditioned under the PEARL Reconditioning Standard. The blue PEARL Reconditioning Quality Seal may now be placed on the device.