

<i>PEARL Inspect & Test Standards</i>			
<i>LOW VOLTAGE AC CONTACTOR</i>	<i>PROPOSED STANDARD</i>		
	<i>Standard</i>	<i>Number</i>	<i>Date</i>
	<i>1810-I</i>	<i>3</i>	<i>6-2009</i>

This standard is designed to verify that a low voltage AC contactor is in a safe and reliable operating condition based upon the design of the original manufacturer at the time of manufacturing. PEARL testing does not verify the claims of the original equipment manufacturer as to the validity of its design criteria. In the event that the device is not in this condition then this standard cannot be used and the PEARL Reconditioning Standard needs to be followed.

PEARL does not warrant, guarantee or make any representation regarding the correctness of specifications, use for any particular purpose, quality or extent of testing, accuracy, or reliability as to any equipment, products or documentation referenced herein.

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.

I TEST EQUIPMENT

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

1. Insulation Resistance Test Set (Megohmmeter) 1000 Vdc minimum
2. AC and DC Voltage Supply
3. Multimeter

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II EVALUATION

The following procedures shall be used to determine the condition of a low voltage AC contactor 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 for missing screws
- 1.1.4 Check for stripped screws
- 1.1.5 Inspect case for cracks and missing pieces
- 1.1.6 Inspect for overheating of any wire
- 1.1.7 Inspect exterior for signs of;
 - 1.1.7.1 Contamination
 - 1.1.7.2 Overheating
 - 1.1.7.3 Corrosion
 - 1.1.7.4 Rust
 - 1.1.7.5 Missing Components
 - 1.1.7.6 Damaged Components
- 1.1.8 Record results on an approved PEARL Evaluation Form.

1.2 Contacts

- 1.2.1 Inspect for excessive deterioration.
- 1.2.2 Inspect Arc Quiches for deterioration
- 1.2.3 Inspect for cracks, chips and pitting.
- 1.2.4 Inspect for deteriorated springs
- 1.2.5 Inspect for overheating
- 1.2.6 If required by manufacturer check for;
 - 1.2.6.1 Gap
 - 1.2.6.2 Wipe
 - 1.2.6.3 Pressure
 - 1.2.6.4 Alignment.
- 1.2.7 Record results on an approved PEARL Evaluation Form.

1.3 Current Carrying Components

- 1.3.1 Inspect line and load connections for signs of overheating.
- 1.3.2 Inspect line and load connections for missing and defective parts.
- 1.3.3 Record results on appropriate PEARL Evaluation Report.

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- 1.4 Coil**
 - 1.4.1 Inspect for overheating
 - 1.4.2 Inspect for cracks and damage
 - 1.4.3 Inspect for deterioration
 - 1.4.4 Check terminals for worn, stripped threads, missing hardware or damaged terminals.
 - 1.4.5 Ohm coil and check ohm reading against manufacture recommended or known ohm value.
 - 1.4.6 Record results on an approved PEARL Evaluation Form.
- 1.5 Irons/Core**
 - 1.5.1 Inspect for worn or pitted faces
 - 1.5.2 Inspect for missing or worn shading coils (on AC coils)
 - 1.5.3 Inspect for rust
 - 1.5.4 Inspect for loose laminations (on AC Coils)
 - 1.5.5 Inspect for deterioration
 - 1.5.6 Inspect for missing or damaged components
 - 1.5.7 Record results on an approved PEARL Evaluation Form.
- 1.6 Armature**
 - 1.6.1 Inspect for overheating
 - 1.6.2 Inspect for cracks and damage
 - 1.6.3 Inspect for deterioration
 - 1.6.4 Inspect spring for deterioration
 - 1.6.5 Inspect for missing or damaged components
 - 1.6.6 Record results on an approved PEARL Evaluation Form.

NOTE: If the original equipment manufacturer has designed the coil and the various parts and pieces to be field installed, then the devices may be replaced as necessary. Otherwise, the PEARL Reconditioning Standards need to be followed.

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2 TESTING

2.1 Operation

2.1.1 Primary Contact Transfer

2.1.1.1 Apply rated voltage to operating coil, verify each contact closes.

2.1.1.2 Remove rated voltage, verify each contact opens

2.1.1.3 Record results on an approved PEARL Evaluation Form.

2.1.2 Minimum Operating Voltage

2.1.2.1 Increase voltage to until the contactor operates. Record as minimum operating pick up voltage.

2.1.2.2 Slowly reduce the applied voltage until the contact drops out. Record as minimum drop out voltage.

2.1.2.3 Compare to manufacturers operating voltages.

2.1.2.4 Record results on an approved PEARL Evaluation Form.

2.2 Auxiliary Contacts

2.2.1.1 Apply rated voltage to operating coil, verify each normally open and close contact position.

2.2.1.2 Remove rated voltage, verify each normally open and close contact position

2.2.1.3 Record results on an approved PEARL Evaluation Form.

2.3 Insulation Resistance

2.3.1 Perform an insulation resistance test at test voltage specified by manufacturer or by Table 2 in PEARL section 6000. Correct for temperature, if necessary (Table 11).

2.3.1.1 Contactor De-energized

2.3.1.1.1 Test across open poles from line to load at terminals.

2.3.1.1.2 Test phase to phase at the line side terminals.

2.3.1.1.3 Test phase to phase at the load side terminals.

2.3.1.1.4 Test the load side terminals to ground.

2.3.1.1.5 Test the line side terminals to ground.

2.3.1.1.6 Record results on an approved PEARL Evaluation Form.

2.3.1.1.7 Compare test results to manufacturer's recommendations or Table 2 in PEARL section 6000.

2.3.1.2 Contactor Energized

2.3.1.2.1 Test phase to phase on each pole.

2.3.1.2.2 Test each phase to ground

2.3.1.2.3 Record results on an approved PEARL Evaluation Form.

2.3.1.2.4 Compare test results to manufacturer's recommendations or Table 2 in PEARL section 6000.

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2.4 Checks and Adjustments

2.4.1 Make all checks and adjustments per manufacturer's recommendations. In the absence of a manufacturer's recommendations, any check or adjustment made will be based upon procedures that will ensure the original manufacturer's design.

2.4.2 All checks and adjustments must be within the guidelines recommended in order for the product to become a PEARL labeled product.

2.4.3 Record results on an approved PEARL Evaluation Form.

2.5 Torque

2.5.1 Check all screw and bolt connections for the proper torque per manufacturer's recommendations or Table 1 of Section 6000.

2.5.2 Record results on an approved PEARL Evaluation Form.

2.6 Final Operation

2.6.1 Ensure that all components, structures, devices and assemblies are complete and equipment is ready for service prior to beginning operations.

2.6.2 Manually operate the device a minimum of ten (10) times while checking for proper operation of the quick-make and quick-break feature.

2.6.3 All devices must operate properly in order for the product to become a PEARL labeled product.

2.6.4 Record results on appropriate PEARL Evaluation Form.

3 EVALUATION REVIEW

In order for the device to be eligible for the Inspect & Test Quality Seal, the device needs to have passed all of the preceding Inspection (1) and Testing (2) points. Any failures in the process will require that the device be "Reconditioned" at which time the PEARL Reconditioning Standard needs to be followed.

III PEARL CERTIFICATION

This product has now been inspected and tested and has passed all tests under the PEARL Inspect & Test Standard. The green PEARL Inspect & Test Quality Seal may now be placed on the device.