



DIVISION OF J. B. NOTTINGHAM & CO. INC.
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Test Program - 518jr Series Connector

1. Water immersion

A. Equipment Required

1. Water container approximately 30 inches square with walls for 36 inch immersion depth.
2. Megger insulation tester.

B. Test Procedure

1. Mate connector pair and lock using locking ring.
2. Immerse connectors with blunt ends of cable dry and above surface of water.
3. Measure leakage resistance from cable to surrounding water.
4. After 24 hrs, measure leakage resistance again.

C. Results

1. Minimum acceptable leakage resistance from B-3 or B-4 10 megohms from cable conductor to water.

B-3 100% By L.W.S. III

B-4 100% By L.W.S. III



2. Dielectric Withstand Voltage

A. Equipment required

1. Calibrated high voltage tester with voltage and current meters.
2. Metal foil to form fitting grounding potential electrode.
3. Corona suppressing caps for blunt cable ends.

B. Test procedure

1. Mate and lock connector pair.
2. Cap blunt ends of cable.
3. Wrap foil around connector body and connect to ground lead.
4. Connect high voltage probe to one cable end.
5. Turn on high voltage and raise voltage level to 9500VDC at a rate of approximately 750 volts/Sec.
6. Maintain 9500V for 1 minute.
7. After 1 minute, reduce voltage, at approximately 750 volts/sec, to zero.

C. Results

1. Leakage current of B-6, corrected for losses in connecting cables, must not exceed 0.5 milliamperes.
2. No voltage breakdown in B-7.

B-6 ok By L.W.S. III

B-7 ok By L.W.S. III



3. Ampacity

A. Equipment required

1. Low voltage high current source with meter.
2. Thermocouples and indicator.

B. Test procedure

1. Terminate cable with appropriate lugs.
2. Insert thermocouple in female connector such that it does not enter or interfere with conductive barrel.
3. Mate and lock connectors.
4. Attach lugs to current source.
5. Turn on source and raise current level to rated ampacity of cable.
6. Read and record temperature of connector and room temperature every 30 minutes until connector temperature rise above room temperature remains constant for 60 minutes.

C. Results

1. Temperature difference of B-6 must not exceed 54 deg F.

Amps 300

Millivolt drop across connector	25	mv
Millivolt drop across equivalent length of cable	22.8	mv
Temperature rise of connector	41.6	deg F
Temperature rise of cable	28.9	deg F
Temperature difference	12.7	deg F

B-6 ok By M.L.



4. Retention

A. Equipment required

1. Securely anchored vise.
2. Spring scale (to approx. 500 lbs) with attached hook.
3. Lever.
4. Worm drive clamp.
5. Heavy wire loop.

B. Test Procedure

1. Clamp pigtail lead from one connector half in vise.
2. Attach wire loop to other pigtail with worm drive clamp.
3. Mate connectors - do not lock.
4. Pull with spring scale until disconnected - note scale reading.
5. Mate connectors and lock.
6. Pull with spring scale (using lever) to 150 lb. pull

C. Results

1. Scale reading of B-4 should be within the range 30-60 lb.
2. The connector shall not disconnect with a pull force of less than 150 lbs.
Any motion due to elastic distortion shall reverse with removal of pull force.

Insertion force	30 lbs. (approx)
Withdrawal force (unlocked)	35 lbs.
Retention (locked)	150 lbs.

B-4 35 By T.P.

B-6 150 By T.P.



Test Procedure - Current Tester

All connections, set-up, etc. must be made with all power off, control knob at zero.

1. Select leads for desired current loads (4/0 up to 150A, higher amperage cables up to 300A) and connect test item.
2. Select meter range on toggle switch (150A or 1500A (x20)).
3. Plug tester into receptacle (welder or twist-lock 220V single phase)
4. Turn on main breaker on top panel-control should be at zero.
5. Set test current on meter, record time, current, mv drop across connector, connector temperature and room temperature.
6. Repeat readings every 30 minutes until no change is recorded for 3 successive readings, or to desired time of test.
7. For shut down, turn control to zero then turn off circuit breaker and unplug tester.

After 24 hrs of cycled loading (25 minutes on, 10 minutes off) at 300 ampere AC, the temperature rise of the connector resulted in a temperature difference of 6 deg F.

After 12 hrs of continuous loading at 380 amperes AC the millivolt drop remained constant at 16 mv, and the temperature rise in the connector resulted in a connector temperature of 125 deg F with a connector to cable temperature difference of 11 deg F.

After an overload test at 400 amperes AC continuous for 10 minutes, the connector temperature rise resulted in a temperature of 107.6 deg F at the connector and a connector to cable difference of 2 deg F.

*****NOTE*****

THE TEST INFORMATION, PROCEDURE, AND RESULTS CONTAINED IN THIS REPORT HAVE BEEN APPROVED AND WITNESSED BY:

QC Manager	<u> L.W.S. III </u>	Operations Manager	<u> J.S. </u>
Engineering Manager	<u> M.L. </u>	General Manager	<u> C.S. </u>

Duraline®

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May 9, 1985

SUBJECT: Certification of Series 518SR TM Connectors for use in Nuclear Plants.

To Whom It May Concern:

The connector, as assemblies, are not subjected to certification or qualification test. However, the connector is specifically designed to meet the requirements of IEEE/ANSI 383 Class IE for non-safety related equipment.

Conductive portions of the assemblies are copper base alloys chosen for electrical and mechanical properties. Insulation materials are Hypalon based compounds as formulated by Dupont for use in nuclear power plants.

Mechanical components used for locking, retention and voltage/current keying are fabricated from stainless steel, plated steel, brass and polyphenyl sulfide, all of which are suitable for use in nuclear radiation containment areas.

Certificates of compliance are required of all vendors, and are retained for record purposes.

Very truly yours,

Mel Lindner
Chief Engineer



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Duraline Press Release

DURALINE INTRODUCES UNIQUE "QUICK" CONNECTORS

Islandia, NY, March, 1985 - Duraline, Division of J.B. Nottingham and Co. Inc., has announced the availability of its novel Series 518SR and 518Jr connectors and receptacles. An innovative 360 deg non- oriented positive locking collet design allows the Series 518 connector pair to be mated and locked without regard to specific orientation. There is no cam or keyway to line up in position. Thus, the Series 518 connectors and receptacles are ideal for use by utilities during scheduled outages for maintenance on large residual heat pump motors and wherever else other large motors (250-400 HP and up) may require fast change-outs, DURALINE'S new series offers the direct advantage of quick, efficient and economical connections, as opposed to the current "hard wired" method, which is labor intensive and time consuming.

There are several other benefits inherent in DURALINE'S Series 518 connector. It can optionally feature the use of all nuclear radiation-resistant materials, which enable the connector to be used in nuclear - fueled power plants. Since these crews must work under limited allowable time exposures, the quick connection properties of the Series 518 connector are quite desirable. Also, mated pair is fully watertight, suiting it to areas which are generally hosed down with water under high pressure as part of clean-up procedure. The series 518 maximum rating is 1000 amperes at 5kv for continuous service. It may also be color coded for phase identification.

For further information, write to DURALINE, Division of J.B. Nottingham and Co. Inc., 75 Hoffman Lane, Islandia, NY 11749.