

April 1, 2008

VAR-CEC-18-092, 18-108, 18-158, J18-108, J18-158 [rev-2]

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VARIANCE  
CANADIAN ELECTRICAL CODE

**SUBJECT: Rules 18-092, 18-108, 18-158, J18-108, J18-158 – RE: Secondary Seals**

**Preamble**

Installers and Safety Codes Officers have expressed concerns about when and where secondary seals are required.

Recent changes to the Canadian Electrical Code rules 18-092, 18-108, 18-158, J18-108 and J18-158 state:

- 1) Secondary Seals shall be provided, between devices containing a primary seal and conduit or cable seals, where failure of a single component in the device containing the primary seal could allow passage of process fluids.

The intent of these rules is to eliminate the possibility of flammable process fluids (liquids or gases) from migrating under pressure through the electrical conduit, cable and wire systems in the event of a failure to the primary seal. It should be noted a standard conduit seal does not prevent the migration of process fluids under pressure.

Presently there is a standard (ANSI/ISA 12.27.01 Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids) by which end devices which are exposed to process pressures can be certified to meet the requirements of these rules. Equipment complying with this Standard is eligible to include either the "Single Seal" or "Dual Seal" designation in the nameplate markings. Equipment with these markings are recognized as providing an "equivalent means of protection" and will eliminate the need for the additional sealing requirements for process-connected electrical equipment outlined in Subrule 1 of Rules 18-092, 18-108, 18-158, J18-108 and J18-158.

Currently manufacturers are in the process of certifying their devices to the ANSI/ISA 12.27.01 standard, therefore some devices such as pressure switches and flow devices have nameplate markings in terms of acceptable seals meeting the intent of the new Section 18 and J18 Rules.



Issue of this STANDATA is authorized by  
the Administrator

A handwritten signature in black ink, appearing to read "Pierre McDonald".

Pierre McDonald



SAFETY CODES COUNCIL

It is expected that most manufacturers have been able to certify their devices to ANSI/ISA 12.27.01 by April 1, 2008. For those manufacturers who have opened files with certification bodies prior to April 1, 2008 and are in the process of finalizing certification, a manufacturer's declaration will still be acceptable as certification is pending.

### Variance

An equivalent or greater degree of safety can be achieved without installing secondary seals as per Rules 18-092(1), 18-108(1), 18-158(1), J18-108(1) and J18-158(1) of the Canadian Electrical Code where end devices exposed to process pressures are installed bearing evidence of:

- a. Certification to ANSI/ISA 12.27.01, and are marked either "Single Seal" or "Dual Seal" accordingly; or
- b. A manufacturers declaration declaring that end devices meet the requirements of ANSI/ISA 12.27.01 for "Single seal" or "Dual Seal" if a file has been opened with a Certification Body to obtain certification before April 1, 2008.

Where the requirements above are met, secondary seals as per the Canadian Electrical Code C22.1-06, Rules 18-092, 18-108, 18-158, J18-108, J18-158 need **not** be installed.

End devices **not** meeting the requirements above, shall have secondary seals installed as per the Canadian Electrical Code C22.1-06, Rules 18-092, 18-108, 18-158, J18-108, J18-158.

Thermo-wells installed in pressure piping are designed to meet the same pressure requirements of the original piping system. End devices connected to process fluids via thermo-wells are considered as **not** being exposed to process fluids and secondary seals are **not** required.

**CAUTION:** Thermo-wells used in process piping, pressure vessels and pipelines where abrasive materials are present will deteriorate considerably faster than normal. Consideration should be made to incorporate secondary seals in these situations.

**NOTE:** Devices exposed to Flammable Process fluids under pressure may be installed in Non-Hazardous areas, therefore owners/users should be aware that in these situations, the safety concerns are the same and the requirements listed above should also apply.