



Canadian Standards Association

Etobicoke, Ontario

**To the Part I Committee**

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**Subject No:** 3039      **Chair:** R.E. Edwards

**Date:** July 30, 2002

**Title:** Spacings for Free Air Ratings, Rule 4-004(1)(a) and (2)(a)

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**Submitted by:** R.E. Edwards of Alcan Cable, 2700 Matheson Blvd. E., Mississauga, Ontario, L4W 5H7, Tel: (905) 206-6880, Fax (905) 206-6907 on September 19, 2001

**Proposal:**

1. Reword Subrule 4-004(1)(a) as follows:

(1) The maximum ..... as follows:

- (a) Single conductor and single conductor metal sheathed or armoured cable, in a free air run, **with a cable spacing not less than 100% of the cable diameter**, as specified in Table 1; and

2. Reword Subrule 4-004(2)(a) as follows:

(1) The maximum ..... as follows:

- (a) Single conductor and single conductor metal sheathed or armoured cable, in a free air run, **with a cable spacing not less than 100% of the cable diameter**, as specified in Table 3; and

**Reasons for Request:** The present Section 4 rules do not provide the criteria for the acceptance of the single conductor free air ratings of Tables 1 and 3, even though the spacing criteria for deratings to these ampacities are provided in Subrule (9).

The appropriate spacing criterion of 100% of one cable diameter is provided in Subrule 12-2212(1), and it has been long established practice to recognize free air ratings for single conductor cables with one cable diameter spacing, even in the absence of appropriate requirements in Section 4. However, this oversight should be corrected.

**Supporting Information:** Subrule 12-2212(1)

**Subcommittee Deliberations:** There were 8 members in favour of the proposal, (2 with comments), and one against. There is consensus in favour.

Comments of the affirmative voters were as follows:-

- 1) Changes were suggested to address the minimum length of conductor or cable outside the enclosures to ensure adequate heat dissipation. As this brings another technical point into the discussion outside the scope of the original submission, the author of the changes is encouraged to

make a further proposal to seek the changes desired, as a separate subject.

2) A second member did not want to lose Rule 12-2212(1)(a). This was not part of the proposal, so the member gets his wish.

Comments of the negative voter, who expressed some confusion with the proposal:-

1) The member thought that there was a big difference between conductors in a free air run, and conductors in a cable tray, where the latter would be secured in place.

(Chair's Response- I am interpreting the comment about securing in place to be a reference to maintained spacings. There are rules for cables other than those laid in cable tray for mounting and securing, but there are no existing rules outside of Section 12 for the spacings for mounting and securing cables. This proposal in fact provides that requirement.)

2) The member adds that less than a cable diameter spacing in some places might provide for a "free air" run, and suggests that this is not an oversight in the rules, and that Tables 1 and 3 and their notes are clear enough.

(Chair's Response- It seems to be fairly common practice across Canada to accept free air ratings for single conductors with a minimum one cable diameter spacing, outside of Section 12 rules governing cables in trays, but not with lesser spacings. Manufacturers' catalogue information seems to be consistent with this interpretation. The member seems comfortable with the clarity of the rules; however, his interpretation of the current rules appears different than the members who agree with the proposal.)

**Subcommittee Recommendation:** Send the original proposal to Part I letter ballot without amendment.