

U.S. Department of Labor
Occupational Safety & Health Administration



Standard Interpretations

04/10/2001 - Review of electrical schematic diagrams; OSHA does not approve equipment designs.

April 10, 2001

Mr. Joe Capp

3 Tracy Drive

East Brunswick, NJ 08816

Thank you for your letters dated September 6 and September 13, 2000 to Richard Fairfax, Director, Directorate of Compliance Programs (DCP), Occupational Safety and Health Administration (OSHA). You asked us to respond to several of your questions regarding the referenced "New Revision 10 August 00" schematic diagram that you faxed to us. Currently, we do not have specific standards for schematic diagrams. Please be advised that OSHA does not approve the electrical design of equipment. Likewise, we are prohibited from endorsing private sector products, services, consultants, studies, or test results.

As defined at 29 CFR 1910.399(a)(1) an installation or equipment is acceptable to the Assistant Secretary of Labor, and approved within the meaning of Subpart S:

(i) If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory (NRTL); or

(ii) With respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another Federal agency, or by a State, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code (NEC) and found in compliance with the provisions of National Electrical Code as applied in this subpart.

Therefore equipment must be listed, labeled, or certified by a NRTL. As we understand the conversation of my staff and you, the equipment was not certified by NRTL, it is a violation of OSHA standard 1910.399 (a)(1). The responses to your questions are provided below:

Question 1: Are the grounding symbols correct? Since the two ground wires are connected to the chassis and not the supply ground, isn't it incorrect to display it as an earth ground?

Reply: You need to contact the person who produced the referenced drawing to find out what was intended by using those grounding symbols. Further information on equipment grounding, grounding terminal and graphical symbols can be found in NFPA 79, Electrical Standard for Industrial Machinery, 1997 edition, Section 19. In addition, Articles 250-119 through 250-126 and 250-142 of the NEC may also be helpful.

Question 2: Does the machine require a neutral feed from the electrical control panel?

Reply: Yes, the machine does require a neutral conductor. The equipment grounding conductor is required by the standard 1910.304(f)(3)(i)

Question 3: Is an overload protection device required for the primary input voltage within the machine?

Reply: Yes, an overload protection device is required for the primary input voltage within the machine. 29 CFR 1910.304(e)(1)(i) requires conductors and equipment to be protected from overcurrent in accordance with their ability to safely conduct current.

Question 4: Do items identified in 1 through 3 above make the machine non-compliant with OSHA, NEC or both?

Reply: OSHA enforces the standards where OSHA standards are applied. It appears to us NRTL may have problems with wiring as suggested on the

referenced schematic diagram. Employers utilize unlisted NRTL equipment would be in a violation of the standard 1910.303(a) which states that the conductors and equipment required or permitted by Subpart S - electrical, will be acceptable only if approved. Please see the information about **Acceptable** in the opening paragraph.

Thank you for your interest in occupational safety and health. We hope you find this information helpful. OSHA requirements are set by statute, standards, and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's response to your specific inquiries. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>. If you have any further questions, please feel free to contact the Office of General Industry Compliance Assistance at (202) 693-1850.

Sincerely,

Richard E. Fairfax, Director
Directorate of Compliance Programs

cc: Regional Administrator, Region II