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NEMA STANDARDS PUBLICATION

NEMA 260

SAFETY LABELS FOR PAD-MOUNTED SWITCHGEAR AND TRANSFORMERS SITED IN PUBLIC AREAS

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

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NEMA Standards Publication No. 260-1996

SAFETY LABELS FOR PAD-MOUNTED SWITCHGEAR AND TRANSFORMERS SITED IN PUBLIC AREAS

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Foreword

In early January 1981, several member companies of the NEMA Transformer Section indicated a strong desire to reduce the number of accidents involving children coming into contact with the active elements of pad-mounted transformers located in public areas. These accidents, while statistically low in number per year, are usually disfiguring and can result in death.

In February 1981, the Power Equipment Division Executive Committee established the Task Force on Safety Labels for Pad-mounted Switchgear and Transformers Sited in Public Areas. The Executive Committee charged the Task Force to develop a safety label which would warn small children away from an open pad-mount and simultaneously elicit an adult's attention to contact the owner of the pad-mount to remove the hazard. The Task Force was also instructed to develop a standard to accompany the label which would define its scope, content, appearance, and construction.

Over a period of 14 months, the Task Force pursued a liaison with manufacturers and user groups in order to obtain acceptance of the safety label concept while label development was underway. The resulting pictorial, "Mr. Ouch," was developed from several designs and was psychologically tested in two phases. In the fall of 1981, 16 possible pictorials were tested in Chicago, Illinois and San Antonio, Texas, among an equal number of English and non-English speaking children aged 2-1/2 to 6. Phase I testing indicated no significance in geographical considerations regarding the perceptual attitudes of the children. The best four pictorials of Phase I testing were redesigned and tested again in January 1982 among English and non-English speaking children aged 2-1/2 to 6-1/2 in Chicago, Illinois. In Phase II testing, the "Mr. Ouch" pictorial scored very high in the two major desirable label attributes—the depiction of an immediate hazard and the elicitation of a safe response from the child to avoid the hazard.

The psychological testing was conducted by the George R. Fraich Associates Testing Organization of Chicago, Illinois. Graphic design was provided by Agnew Moyer Smith Inc., Pittsburgh, Pennsylvania.

This revision of the standard was undertaken to make editorial changes to the standard's text and figures.

NEMA has exclusive rights for the management of the "Mr. Ouch" pictorial. Rights may be obtained for the use of the pictorial from the National Electrical Manufacturers Association, Suite 1847, 1300 North 17th Street, Rosslyn, VA 22209.

This Standards Publication was developed by the Switchgear and Transformer sections. Section approval of the standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the Group/Section was composed of the following members:

SWITCHGEAR SECTION

A B Chance Company—Centralia, MO
ABB Power T & D Company, Inc.—Raleigh, NC
AEG Electric Power Systems, Inc.—Charlerio, PA
C. G. I. Systems—Paramount, CA
Controlled Power Ltd. Partnership—Canton, OH
Cooper Power Systems—South Milwaukee, WI
Cutler-Hammer Inc.—Pittsburgh, PA
Electrical Power Systems, Inc.—Tulsa, OK
General Electric—Hickory, NC
G & W Electric Company—Blue Island, IL
Gould Shawmut—Newburyport, MA

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Mitsubishi Electric—Warrendale, PA
PDI—Sandston, VA
Pedersen Power Products—Omaha, NE
Powercon Corporation—Severn, MD
S & C Electric Company—Chicago, IL
Siemens Energy & Automation, Inc.—Raleigh, NC
SPD Technologies—Philadelphia, PA
Square D Company—Smyrna, TN
The Pringle Electrical Mfg. Company—Fort Washington, PA
Toshiba International Corporation—Houston, TX
Trayer Engineering Corporation—San Francisco, CA
USCO Power Equipment Corporation—Birmingham, AL
Waukesha Electrical Systems Inc.—Goldsboro, NC

TRANSFORMERS SECTION

ABB Power T & D Company, Inc.—Raleigh, NC
Acme Electric Corporation—Lumberton, NC
Cooper Power Systems—Waukesha, WI
Eaton Corporation
Cutler-Hammer – Dry Type Distribution Transformers—Pittsburgh, PA
Ferranti-Packard—Pittsburgh, PA
General Electric—Plainville, CT
Hammond Manufacturing, Inc.—Guelph, Ontario, Canada
Kentucky Association of Electric—Louisville, KY
Magnetran, Inc.—Voorhees, NJ
Niagara Transformer Corporation—Buffalo, NY
North American Transformer, Inc.—Milpitas, CA
Olsun Electrics Corporation—Richmond, IL
Pauwels Transformers—Washington, MO
PDI—Sandston, VA
Power Paragon—Gardena, CA
R E Uptegraff Mfg Company—Scottdale, PA
Siemens Energy & Automation, Inc., Power Transmission & Distribution—Raleigh, NC
Southern Transformer Company—East Point, GA
Square D Company—Monroe, NC
Vantran Electric Corporation—Waco, TX
Virginia Transformer Corporation—Roanoke, VA
Waukesha Electrical Systems, Inc.—Goldsboro, NC

Purpose

These labels are intended to identify pad-mounted equipment as potentially hazardous to anyone who comes in contact with its contents. The pictorials are designed to be meaningful to children and the illiterate and to contain supportive wording expected to elicit a safe response from an adult.

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Section 1
GENERAL

1.1 SCOPE

These labels are for use on pad-mounted switchgear and transformers sited in public areas, such as utility easements adjacent to residential properties, shopping centers, schools, etc. They may also be used for such equipment sited in utility or industrial properties which are not normally accessible to the general public.

Section 2
MATERIAL

2.1 The labels shall be durable and made of weather resistant material.

2.2 Adhesive mounted labels shall be such that removal is impossible, except by defacing, covering, or destroying them. These labels shall meet the requirements of UL 969-1982, *Marking and Labeling Systems.*[1]

2.3 Labels mounted by mechanical fasteners shall be used only if the removal of the mechanical fasteners leaves the cabinet with no openings through which foreign objects—such as sticks, rods or wires—might be inserted to contact live components. These labels shall meet the requirements of UL 969-1982[2] listed below:

Requirement	Reference (of UL969)
Legibility test	Table 4.1
Defacement test	Table 4.1
Humidity test	Paragraph 8.3
Temperature test	Paragraph 8.4
Ultraviolet light test	Paragraph 8.5

Section 3
MAINTENANCE

3.1 The safety label should remain legible for the service life of the pad-mounted equipment to which it is attached. Renewal of the safety label may be required during normal maintenance.

[1] This standard is available from Underwriters Laboratory, 333 Pfingsten Road, Northbrook, Illinois 60062

[2] UL969-1982 is written for adhesively mounted labels. However, some requirements are appropriate for labels mounted with mechanical fasteners. These latter requirements have been extracted for incorporation in this standard.

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Section 4
FORMAT

4.1 The color of the warning signal word field shall be orange, and the color of the danger signal word field shall be red. All label colors depicted in Figures 4-1 through 4-4 shall conform to the following Munsell Notations:

Black	N - 2.0 or lower
Orange	5.0 YR 6.0/15
Red	7.5 R 4.0/14
White	N - 9.0 or higher

4.2 The safety labels in Figures 4-1 and 4-2 shall be standard and shall be 4.5 inches, ± 0.25 inches (11.43 cm, ± 0.64 cm) wide and 8.0 inches, ± 0.50 inches (20.32 cm, ± 1.25 cm) long.[3] The warning label (Figure 4-1) shall be affixed to the outside of the pad-mounted equipment. The danger label (Figure 4-2) shall be affixed to the inside of the pad-mounted equipment.

4.3 As an option, bilingual labels, such as Figures 4-3 and 4-4, shall be furnished when specified. These labels shall be 10.6 inches, -0.0 inches + 1.0 inches (26.92 cm. -0.0 cm, + 2.54 cm) wide, with the height being variable to accommodate the bilingual message.

4.4 The owners of the pad-mounted equipment should preferably be identified with more information than "immediately call the electric power and light company." To this end, the owners of the pad-mounted equipment may place their name, company name, and/or telephone number on, or immediately adjacent to, the area which reads "electric power and light company." The preceding standard messages shall not be covered by the substitution, and the material used to convey the ownership of the pad-mounted equipment shall meet the material requirements of this standard (if not printed on the NEMA label).

[3] A 1/2 inch white border is intended to surround the label (signal word panel and black border) on all four sides.

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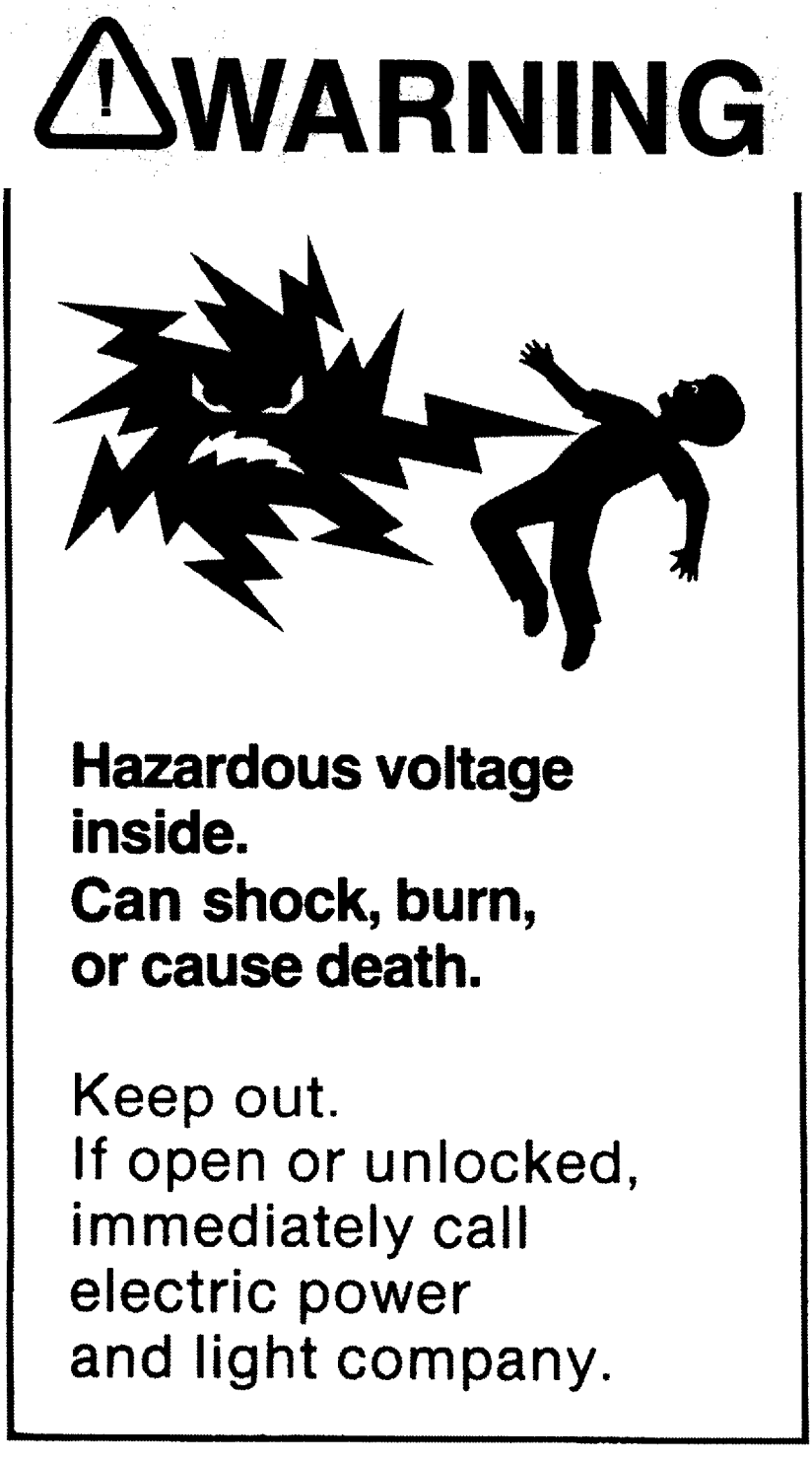

Figure 4-1
WARNING LABEL

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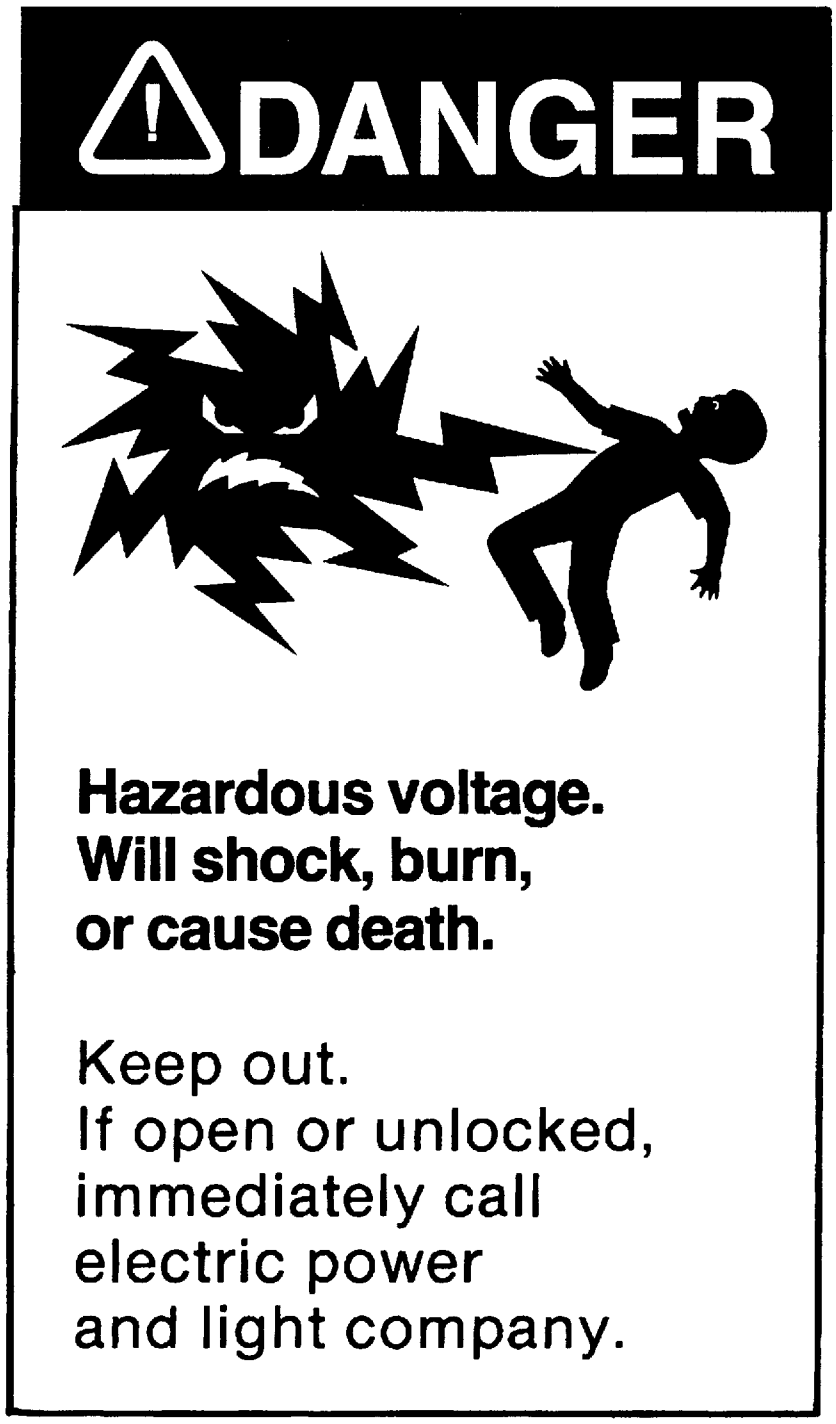

Figure 4-2
DANGER LABEL

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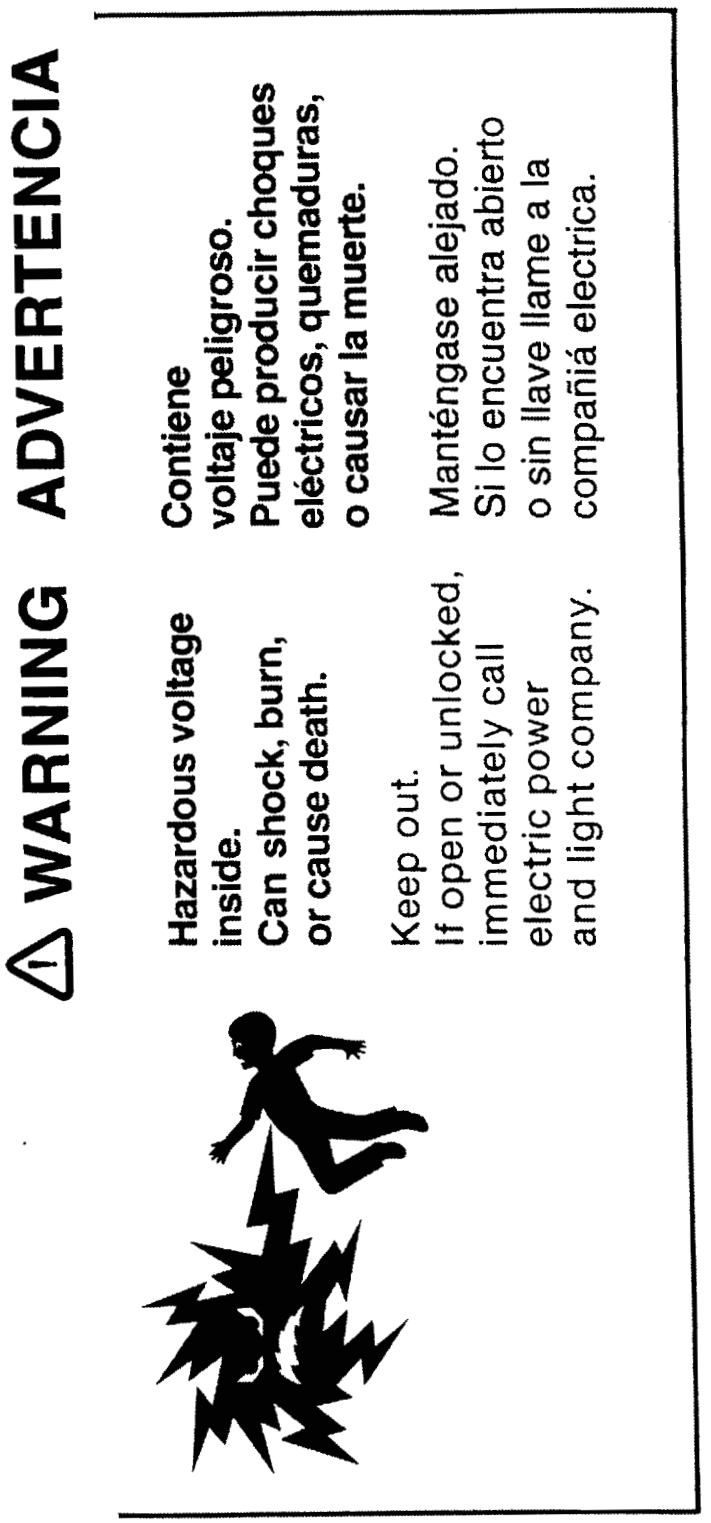

Figure 4-3
BILINGUAL WARNING LABEL

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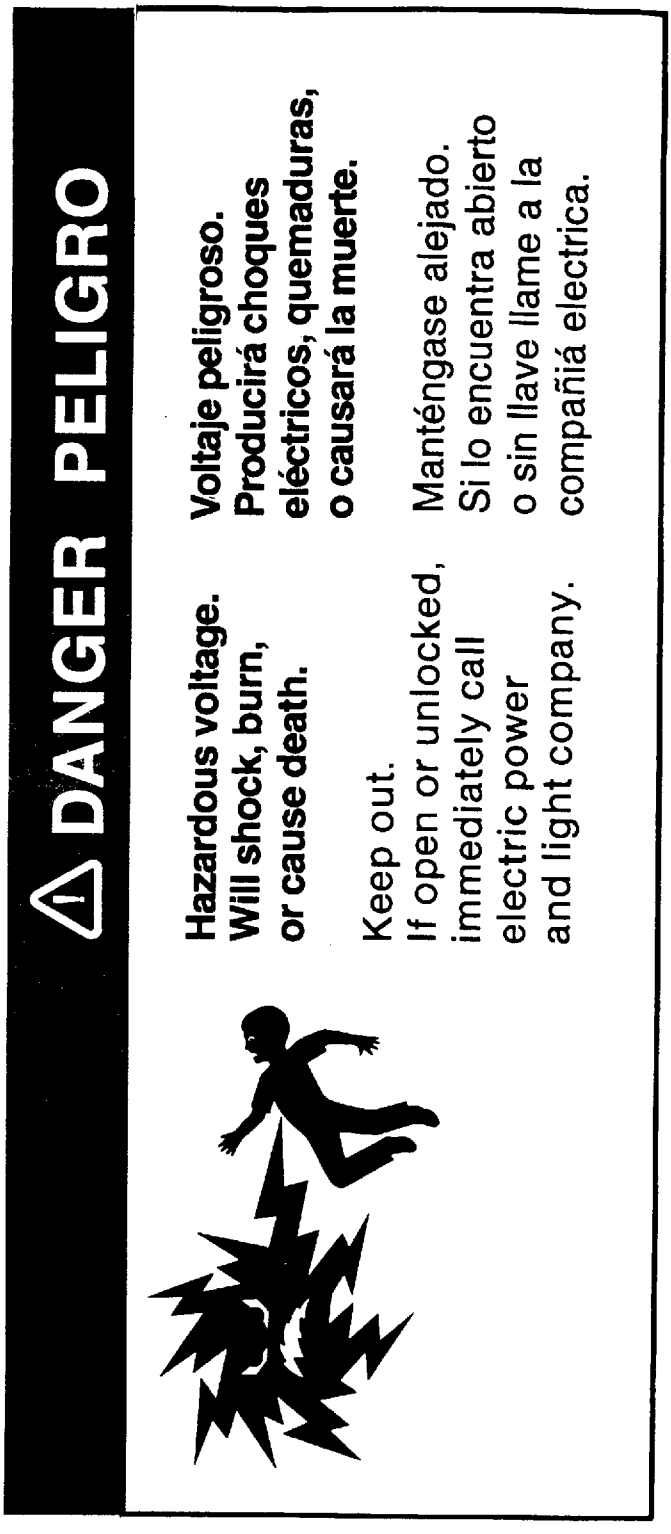

Figure 4-4
BILINGUAL DANGER LABEL

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Section 5
LOCATION

5.1 The outside warning label(s) (Figures 4-1 or 4-3) shall be mounted as close as is practical to the equipment door while providing maximum visibility.

5.2 The inside danger label (Figures 4-2 or 4-4) shall be mounted as to be readily visible whenever the equipment door is open.

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