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NEMA STANDARDS PUBLICATION

NEMA EW 6

PRECAUTIONARY LABELING FOR ARC-WELDING AND CUTTING PRODUCTS

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

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NEMA Standards Publication EW 6-1998

Precautionary Labeling for Arc-Welding and Cutting Products

Published by

National Electrical Manufacturers Association
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CONTENTS

Page

Foreword ii

Clause

Section 1 GENERAL 1

Section 2 GUIDELINES FOR PRECAUTIONARY LABELS 3

Section 3 TEXT-BASED PRECAUTIONARY LABELS 7

Section 4 HAZARD ALERTING SYMBOLS 11

Section 5 WORDLESS LABELS 17

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Foreword

This NEMA Standards Publication is intended to provide a basis of common understanding within the electric welding and cutting industry regarding precautionary labeling of arc welding and cutting products. To this end, this publication provides precautionary labeling guidelines in order to promote uniformity of manufacturers' labeling practices so that the message is more easily recognized and understood by the user. In welding and cutting, as in most jobs, exposure to certain hazards occurs. Users must be alert to these hazards using their experience, training, education, and common sense. Precautionary labeling is not intended for the training of operators, but rather as a means to quickly remind and alert them of the basic product hazards each time the equipment is used.

This publication describes three alternative precautionary labeling methods for arc welding and plasma arc cutting products: (1) text-based precautionary labeling; (2) a list of standardized symbols for optional use on precautionary labels or instructions, together with information regarding the color and size of these symbols; and (3) wordless labels for optional use, along with definitions for each of the symbol blocks.

This version of EW 6 introduces the use of wordless precautionary labels. Wordless labels are an extension of the symbols introduced in the previous version of EW 6. These labels have been developed in recognition of an increasingly diverse international welding audience. It cannot be assumed that this audience can read the language used in a label. Symbols are becoming more commonplace in everyday life, from computers to highway signs to toys for children. Wordless (symbols-only) labels avoid the need to be able to read the words on the label. Language and literacy level become non-factors in communication.

To validate the wordless precautionary labels, a questionnaire was sent to approximately 10,000 experienced and inexperienced welders as well as other individuals and organizations in the U.S. and abroad having an interest in arc welding and cutting products. The questionnaire was designed to comply with ANSI Z535.3 survey methods to test user comprehension. The results were received and tabulated by NEMA. Although a minimum comprehension rate of 85% was established by ANSI Z535.3 for the acceptance of a symbol, nearly all symbols achieved rates in the 95%-100% range. Where comprehension rates were lower, the symbols were appropriately modified and the revised symbols were retested and validated.

User needs were considered throughout the development of this publication. As revisions are made to this document, NEMA intends to continue to involve users in these changes through surveys or other means. Recommendations for any revisions to EW 6 should be submitted to:

Vice President, Engineering
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209

This Standards Publication was approved by the NEMA Arc Welding Section. However, Section approval of this standard does not imply that all Section members voted for its approval or participated in its development. At the time this standard was approved, the Arc Welding Section consisted of the following members:

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Arc Machines, Inc. — Pacoima, CA
Bohler UTP Welding USA, Inc. — Houston, TX
ESAB Welding & Cutting Products — Florence, SC / Hanover, PA
Hypertherm Inc. — Hanover, NH
The Lincoln Electric Company — Cleveland, OH
Miller Electric Manufacturing Company — Appleton, WI
Systematics — West Chester, PA
Thermadyne Industries, Inc. — St. Louis, MO

The art work for the wordless labels (see Section 5) is stored in electronic files at NEMA. Users who wish to obtain this art work can download these files which are accessible from the NEMA Arc Welding Section's web page at forums.nema.org:8080/~1ew.

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Section 1
GENERAL

1.1 SCOPE

This publication specifies the wording, format, and symbols for precautionary labeling used on arc welding and cutting products. This publication also includes factors to be considered in deciding whether precautionary labeling is necessary.

1.2 DEFINITION OF PRECAUTIONARY LABELING

Precautionary labeling, as used in this publication, is an informative marking attached to or marked on a product or its package, intended to be read or viewed at close range, which calls attention to the basic hazards and their consequences to persons or property. Precautionary labeling gives information on how such hazards may be avoided and may also list other sources of information for more complete details.

1.3 REFERENCES

The following standards are available from the organizations shown. It is recommended that the latest edition be requested when ordering these standards.

American National Standards Institute
11 West 42nd Street
New York, NY 10036

ANSI Z129.1	*American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals*
ANSI Z535.1	*Safety Color Code*
ANSI Z535.2	*Environmental and Facility Safety Signs*
ANSI Z535.3	*Criteria for Safety Symbols*
ANSI Z535.4	*Product Safety Signs and Labels*
ANSI Z535.5	*Accident Prevention Tags (for Temporary Hazards)*

American Welding Society
550 N.W. LeJeune Road
Miami, FL 33126

ANSI/ASC Z49.1	*Safety in Welding, Cutting and Allied Processes*

Beuth Verlag, GmbH
Burggrafenstraße 6
Berlin, Germany

DIN 30 600	*Graphic Symbols (Bildzeichen Übersicht)*

Canadian Standards Association
178 Rexdale Boulevard
Etobicoke, Ontario, Canada M9W 1R3

C22.2 No. 60	*Arc Welding Equipment*

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FMC Corporation
Corporate Technology Center
P.O. Box 580
Santa Clara, CA 95052

FMC — *Product Safety Sign and Label System*

International Electrotechnical Commission
3, rue de Varembé
Geneva, Switzerland

IEC 60417 — *Graphic symbols for use on equipment – Index, survey, and compilation of the single sheets*

IEC 60974-1 — *Arc welding equipment – Part 1: Welding power sources*

International Organization for Standardization
1, rue de Varembé
Geneva, Switzerland

ISO 7000 — *Graphical symbols for use on equipment*

National Electrical Manufacturers Association
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209

EW 4 — *Graphic Symbols for Arc Welding Apparatus*

Westinghouse Electric Corporation
Gateway Center
Pittsburgh, PA 15222

MB 3699 — *Product Safety Label Handbook*

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

UL 551 — *Transformer-type Arc Welding Machines*

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Section 2
GUIDELINES FOR PRECAUTIONARY LABELS

2.1 TYPES OF LABELS

Precautionary labels for use in arc welding and cutting may be completely text-based, a combination of text and symbols, or completely composed of symbols (i.e., wordless). When using symbols in conjunction with text, the symbols shall be equivalent to those shown in Table 4-1. When using wordless labels, the labels shall be equivalent to those shown in Section 5.

2.2 GENERAL REQUIREMENTS

2.2.1 Uniformity

The effectiveness of precautionary labeling can be improved by uniformity of wording and symbols. A chief consideration is understandability by the users. Therefore, any wording or symbols used shall be as brief and clear as possible.

2.2.2 Labeling

The labeling shall be highly visible and in a conspicuous place on the product or its package. Label placement shall be chosen considering the available space on a product and visibility by the operator during normal use. If such space is not available, a reference note may appear in a conspicuous place identifying the location of the precautionary labeling.

Where possible, precautionary labeling shall meet existing durability requirements for labels (see CSA 22.2 No. 60, IEC 60974-1, and UL 551).

The size and legibility of the labeling shall be such that it is easily seen, read, and understood by users with normal vision before they are likely to encounter the hazards.

NOTE—If words are used on a label, translation into other languages may be required by some countries.

2.3 LABELING INFORMATION FOR ARC WELDING AND CUTTING PRODUCTS

The elements to be considered in precautionary labeling and their suggested order of listing is as follows:

a. safety alert symbol;
b. color (red, orange, yellow);
c. signal word (i.e., **DANGER**, **WARNING**, **CAUTION**);
d. statements of hazards and their consequences;
e. precautionary measures;
f. additional information.

Precautionary labeling for a given product may not require all of the above elements. The included elements depend upon the product, the process, and the hazards. However, the labeling shall alert and remind the user of the basic hazards.

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2.4 DETAILED DESCRIPTIONS OF LABELING INFORMATION ELEMENTS

2.4.1 Safety Alert Symbol

To call attention to the hazard information, the safety alert symbol (see ANSI Z535.4, Annex A) shall be used in the heading of all precautionary labels in combination with the

a. proper signal word (see 2.4.2);
b. color (see 2.4.2); or
c. proper signal word and color.

2.4.2 Signal Word

A signal word, when used with the safety alert symbol, draws attention to the degree of a hazard or hazards. The signal word shall be printed in capital letters and of a size such that it is the dominant word in the label. Where one or more signal words could be used because of multiple hazards, only the signal word corresponding to the class of greatest hazard shall be used. The signal word shall be preceded by the safety alert symbol.

There are three recognized signal words as defined in ANSI Z535.4: **DANGER, WARNING**, and **CAUTION**. When red, orange, and yellow are associated with **DANGER**, **WARNING**, and **CAUTION** respectively, the colors shall conform to ANSI Z535.1.

NOTE—**DANGER** or **WARNING** should not be considered for property damage accidents unless personal injury risk appropriate to these levels is also involved.

The three signal words are described below in descending order of severity.

2.4.2.1 "DANGER"

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Use of this signal word shall be limited to the most extreme situations.

2.4.2.2 "WARNING"

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

2.4.2.3 "CAUTION"

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

2.4.3 Statement of Hazards and their Consequences

This statement should alert the user, in brief terms, of the specific hazard(s) and their consequences; for example, "ELECTRIC SHOCK can kill," "LOUD NOISE can damage hearing," and "IMPROPER PARALLELING can damage equipment." The statement of hazard should be printed in capital letters and of a size such that it is the second most dominant wording in the label text. Hazard symbols shown in Table 4-1 may augment or replace the statement of hazard in text format. The symbols contained in the wordless labels in Section 5 may replace the statement of hazard entirely.

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2.4.4 Precautionary Measures

In text-based labels, immediately following the statement of hazard and consequence and/or equivalent graphic symbol, understandable statement(s) should be included to describe the precaution(s) to be taken. For example, a signal word, statement of hazard and consequence, and precaution might be: "**WARNING:** ELECTRIC SHOCK can kill. Do not touch live electrical parts."

Some products might qualify for other signal words and statements of hazard and precautions, such as

"**WARNING:**
- LOUD NOISE can damage hearing. Wear ear protection.

CAUTION:
- IMPROPER PARALLELING can damage equipment.
  See operating manual."

In a case where multiple hazards are present, only the signal word for the greatest hazard shall be used. Nevertheless, all statements of hazard and consequence, and statements of precaution for each hazard shall be included. For example,

"**WARNING:**

ELECTRIC SHOCK can kill.
- Do not touch live electrical parts.

LOUD NOISE can damage hearing.
- Wear ear protection.

IMPROPER PARALLELING can damage equipment.
- See operating manual."

Statements, as shown in this example, shall apply to both the product and the process. As an alternative format to this example, all statements of hazard and consequence may be grouped together followed by all statements of precaution. For example,

"**WARNING:**

ELECTRIC SHOCK can kill.
LOUD NOISE can damage hearing.
IMPROPER PARALLELING can damage equipment.
- Do not touch live electrical parts.
- Wear ear protection.
- See operating manual."

The wordless labels shown in Section 5 include symbols which address the precautionary measures. Therefore, they do not require to be augmented by text-based statements of precaution.

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2.4.5 Listing of Additional Information

When complete details cannot be reasonably given on the label, sources of additional information shall either be listed or the information included in the operating manual. For example,

> "Read ANSI/ASC Z49.1, *Safety in Welding, Cutting and Allied Processes*, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126; OSHA Safety and Health Standards, available from the U.S. Government Printing Office, Washington, DC 20402."

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Section 3
TEXT-BASED PRECAUTIONARY LABELING

3.1 CONTENT AND PLACEMENT

As a minimum, the information shown in Figure 3-1, or its equivalent, shall be placed on stock containers of materials such as wires, fluxes, and electrodes and on major equipment such as power sources, wire feeders, and controls used in arc welding, arc cutting, and allied processes. The information should be readily visible and may be on a label, nameplate, or other printed form.

Where noise has been determined to be a hazard, the statement of hazard and consequence, "LOUD NOISE can damage hearing," shall be added to Figure 3-1.

Additional precautionary measures may be added as needed.

First aid information is an optional item. It is recommended only for products that present immediate and major health hazards, and for which meaningful first aid information can be conveyed in a few words. Using the format of Figure 3-1, any first aid information shall follow the last precautionary measure.

The manufacturer's name and address shall appear on the label unless it is readily visible elsewhere on the product.

A label identification number shall appear on the label.

WARNING: ELECTRIC SHOCK can kill. FUMES AND GASES can be hazardous to your health. ARC RAYS can injure eyes and burn skin. WELDING (CUTTING)* SPARKS can cause fire or explosion.

- Do not touch live electrical parts.
- Always wear dry insulating gloves.
- Keep your head out of the fumes.
- Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not weld (cut)* near flammable material.
- Do not weld (cut)* on closed containers.
- Read and follow the manufacturer's instructions, employer's safety practices, and Material Safety Data Sheets (MSDSs).

Read ANSI/ASC Z49.1, *Safety in Welding, Cutting and Allied Processes*, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126; OSHA Safety and Health Standards, available from the U.S. Government Printing Office, Washington, DC 20402.

Do Not Remove This Label.

* Choose the proper term(s) for either welding, cutting, or both applications.

Figure 3-1
GENERAL TEXT-BASED PRECAUTIONARY LABEL

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3.2 TEXT-BASED LABELING FOR PLASMA ARC CUTTING

In addition to the general precautionary label shown in Figure 3-1, the minimum information shown in Figure 3-2, or its equivalent, shall appear on plasma arc cutting equipment.

Plasma arc can injure.

- Keep away from torch tip.
- Keep body and flammables away from cutting path.

Figure 3-2
ADDITIONAL TEXT FOR PLASMA ARC CUTTING EQUIPMENT

3.3 TEXT-BASED LABELING FOR ENGINE-DRIVEN ARC WELDING AND CUTTING POWER SOURCES

In addition to the precautionary labeling information shown in Figures 3-1 and 3-2, the minimum information shown in Figure 3-3, or its equivalent, shall appear on engine-driven arc welding and cutting power sources. When appearing on separate labeling, the appropriate signal word shall be used.

ENGINE FUEL can cause fire or explosion.

- Stop engine before fueling.
- Do not smoke when fueling.
- Avoid sparks and open flame when fueling.
- Do not overfill tank.
- Clean up spilled fuel before starting engine.

ENGINE EXHAUST gases can kill.

- Use in open, well ventilated areas or vent the engine exhaust to the outside.

MOVING PARTS can cause serious injury.

- Keep away from moving parts.
- Do not operate with protective covers, panels, or guards removed.
- Stop engine before servicing.

Only qualified personnel should install, use, or service this equipment.

OPTIONAL: LOUD NOISE can damage hearing.

- Wear ear protection.

Figure 3-3
ADDITIONAL TEXT FOR ENGINE-DRIVEN ARC WELDING AND CUTTING POWER SOURCES

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3.4 TEXT-BASED LABELING FOR ELECTRICALLY SUPPLIED ARC WELDING AND CUTTING EQUIPMENT

In addition to the precautionary label information shown in Figures 3-1 and 3-2, the minimum information shown in Figure 3-4, or its equivalent, shall appear on electrically supplied arc welding and cutting power sources. When appearing on separate labeling, the appropriate signal word shall be used.

ELECTRIC SHOCK can kill.

- Install and ground machine according to all national and local codes and manufacturer's instructions.
- Read operating manual, electrical code, and manufacturer's instructions before installing or operating.
- Do not operate with protective covers, panels, or guards removed.
- Disconnect input power before servicing.

Only qualified personnel should install, use, or service this equipment.

(OPTIONAL:)

- Connect cord to fused input power system with ground.
- Use grounding terminal inside machine.

Figure 3-4
ADDITIONAL TEXT FOR ELECTRICALLY SUPPLIED ARC WELDING AND CUTTING POWER SOURCES

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Section 4
HAZARD ALERTING SYMBOLS

4.1 CONTENT AND APPEARANCE

Hazard alerting symbols may be used in conjunction with a text-based precautionary label described in Section 3, and shall conform to those in Table 4-1. Colors used for these symbols should be black on white, but white on black or other high contrast color combinations may be used. Per ANSI Z535.3, the minimum symbol block size shall be such that the symbol is legible at the intended viewing distance. As required, basic symbol elements may be combined (as is done for the electric shock symbol shown in Figure 4-1 and for the wordless labels appearing in Section 5).

Figure 4-1 shows an example layout for a warning label using various symbols in combination with text statements. Table 4-1 provides the different types of graphic symbols that may be used to identify the specific hazard.

NOTE—For symbols requiring a dot pattern, such as fumes, the use of a 45% gray shade is recommended.

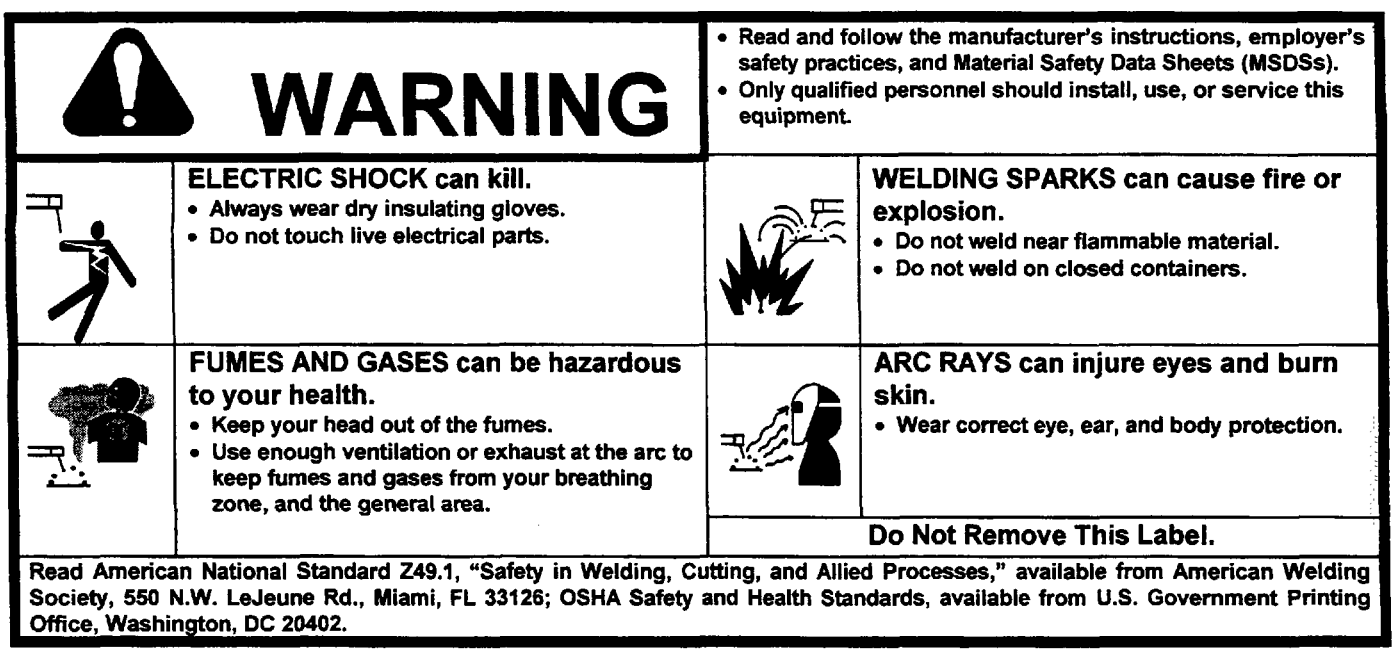

Figure 4-1
EXAMPLE LAYOUT OF WARNING LABEL WITH TEXT AND SYMBOLS

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Table 4-1
HAZARD ALERTING SYMBOLS

NO.	HAZARD	SOURCE OF HAZARD	SYMBOL	SOURCE*
1	ELECTRIC SHOCK	WELDING ELECTRODE		FMC, ISO, NEMA
2	ELECTRIC SHOCK	WIRING		FMC
3	ELECTRIC SHOCK	WELDING ELECTRODE AND WIRING		FMC, ISO, NEMA
4	FUMES AND GASES	ANY SOURCE		FMC, NEMA
5	FUMES AND GASES	WELDING FUMES AND GASES		FMC, ISO, NEMA
6	ARC RAYS	WELDING ARC		FMC, ISO, NEMA
7	FIRE	ENGINE FUEL		FMC
8	FUMES AND GASES	ENGINE EXHAUST		FMC, NEMA
9	FUMES AND GASES	ENGINE EXHAUST AND WELDING		FMC, ISO, NEMA

* Explanation of acronyms: ANSI = American National Standards Institute; FMC = FMC Corporation; IEC = International Electrotechnical Commission; ISO = International Organization for Standardization; NEMA = National Electrical Manufacturers Association; SAE = Society of Automotive Engineers

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Table 4-1 Continued

NO.	HAZARD	SOURCE OF HAZARD	SYMBOL	SOURCE*
10	MOVING PARTS	MOVING PARTS SUCH AS FANS AND ROTORS		FMC, NEMA
11	LOUD NOISE	ENGINE, MACHINERY, AND ARC NOISE		FMC
12	FIRE OR EXPLOSION	WELDING SPARKS		FMC, ISO, NEMA
13	BATTERY EXPLOSION	EXPLOSIVE GASES FROM BATTERIES		FMC, ISO, NEMA, SAE
14	BATTERY ACID	BATTERIES CONTAINING ACID		FMC, ISO, NEMA, SAE
15	HOT ENGINE COOLANT	ENGINE RADIATORS		FMC, NEMA, SAE
16	PACEMAKER MALFUNCTION	ELECTROMAGNETIC FIELDS & HIGH FREQUENCY ENERGY FROM WELDING		FMC, ISO, NEMA
17	PINCH POINTS ON MOVING PARTS	GEARS AND DRIVE ROLLS		FMC, NEMA

* Explanation of acronyms: ANSI = American National Standards Institute; FMC = FMC Corporation; IEC = International Electrotechnical Commission; ISO = International Organization for Standardization; NEMA = National Electrical Manufacturers Association; SAE = Society of Automotive Engineers

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Table 4-1 Continued

NO.	HAZARD	SOURCE OF HAZARD	SYMBOL	SOURCE*
18	FALLING EQUIPMENT	FALLING OBJECTS		FMC
19	EXPLOSION	PRESSURIZED GAS CYLINDERS		FMC, ISO, NEMA
20	ELECTRIC SHOCK	PLASMA CUTTING TORCH		FMC, ISO, NEMA
21	FUMES AND GASES	PLASMA CUTTING ARC		FMC, ISO, NEMA
22	ARC RAYS	PLASMA CUTTING ARC		FMC, ISO, NEMA
23	FIRE OR EXPLOSION	PLASMA CUTTING SPARKS		FMC, ISO, NEMA
24	PACEMAKER MALFUNCTION	ELECTROMAGNETIC FIELDS & HIGH FREQUENCY ENERGY FROM PLASMA CUTTING		NEMA
25	PLASMA ARC	PLASMA CUTTING TORCH		FMC, ISO, NEMA
26	FUMES AND GASES	SHIELDING GAS CYLINDER OR OTHER GAS SOURCE		FMC, NEMA

* Explanation of acronyms: ANSI = American National Standards Institute; FMC = FMC Corporation; IEC = International Electrotechnical Commission; ISO = International Organization for Standardization; NEMA = National Electrical Manufacturers Association; SAE = Society of Automotive Engineers

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Table 4-1 Continued

NO.	HAZARD	SOURCE OF HAZARD	SYMBOL	SOURCE*
27	HOT SURFACES	WORKPIECES FROM WELDING AND CUTTING; MUFFLER AND EXHAUST PIPES		FMC
28	WELDING WIRE	WELDING GUN AND WIRE		FMC, ISO, NEMA
29	FLYING PARTICLES	CHIPPING AND GRINDING		FMC
30	ELECTRIC MOTOR DAMAGE	INCORRECT CONNECTIONS TO AUXILIARY POWER		FMC, ISO
31	PC BOARD DAMAGE	STATIC ELECTRICITY		FMC, ISO, NEMA
32	EQUIPMENT DAMAGE	FILINGS AND TOOL CONTACT FROM DRILLING INTO HIDDEN PARTS		NEMA
33	FUEL SPRAY	PRESSURIZED FUEL IN TANK		FMC, NEMA
34	EXPLODING PARTS	ELECTRICAL COMPONENTS (SUCH AS CAPACITORS)		FMC, NEMA

* Explanation of acronyms: ANSI = American National Standards Institute; FMC = FMC Corporation; IEC = International Electrotechnical Commission; ISO = International Organization for Standardization; NEMA = National Electrical Manufacturers Association; SAE = Society of Automotive Engineers

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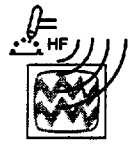
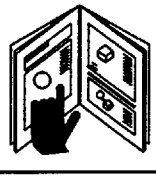
Table 4-1 Continued

NO.	HAZARD	SOURCE OF HAZARD	SYMBOL	SOURCE*
35	ELECTRICAL INTERFERENCE	HIGH FREQUENCY RADIATION FROM WELDING AND WELDING EQUIPMENT		ISO, NEMA
36	FALLING EQUIPMENT	IMPROPER LIFTING OR MOVING (USE NO HOOKS)		ANSI, IEC, ISO, NEMA
37	THIS SYMBOL IS THE INTERNATIONAL SAFETY ALERT SYMBOL. IT IS PLACED BEFORE THE SIGNAL WORD (DANGER, WARNING, CAUTION).			IEC, ISO, SAE
38	READ INSTRUCTION MANUAL			FMC, NEMA

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Section 5
WORDLESS LABELS

5.1 INTENT AND USE OF WORDLESS LABELS

The intent of wordless precautionary labels is to reduce the need to use text in a label, thereby permitting all users, regardless of language or literacy, to readily understand the message being conveyed. The wordless labels use symbols to replace words from the mixed text-symbol labels. These wordless labels are an alternative to text-based labels or mixed text-symbol labels.

5.2 CONTENT AND PLACEMENT OF WORDLESS LABELS

Labeling guidelines for wordless labels shall be as stated in 2.2.2. At a minimum, all wordless labels shall contain the following:

a. a safety alert symbol;
b. a signal word and/or color;
c. symbols appropriate to the type of product and application.

Guidelines for signal words shall be as stated in 2.4.2. The symbols used shall conform to those shown in Figures 5-1, 5-2, 5-3, and 5-4 as appropriate. Guidelines regarding the design of these graphics shall be as stated in Section 4.1.

5.3 THE BASIC WORDLESS LABEL

Figure 5-1 shows wordless labels for electrically powered welding and cutting equipment and all filler metal containers. The symbols contained in these labels represent those hazards encountered and precautions taken for all basic welding and cutting operations. Figure 5-1a also contains a text description, for use only in the instructions, of what each symbol represents.

5.4 THE WORDLESS LABEL FOR PLASMA CUTTING EQUIPMENT

Figure 5-2 shows the wordless label specifically for plasma arc cutting equipment. Figure 5-2 also contains a text description, for use only in the instructions, of what each symbol represents. If using wordless labels, all plasma arc cutting equipment shall carry the symbols shown in Figures 5-1 and 5-2, or their equivalent, as well as the applicable symbols of Figure 5-3 if the equipment is engine-driven.

5.5 THE WORDLESS LABEL FOR ENGINE-DRIVEN WELDING AND CUTTING EQUIPMENT

Figure 5-3 shows the wordless label specifically for engine-driven welding and cutting equipment. Figure 5-3 also contains a text description, for use only in the instructions, of what each symbol represents. If using wordless labels, all engine-driven welding and cutting equipment shall carry the applicable symbols shown in Figures 5-1, 5-2, and 5-3, or their equivalent.

5.6 THE WORDLESS LABEL FOR WIRE FEEDING EQUIPMENT

Figure 5-4 shows the wordless label specifically for wire feeding equipment. Figure 5-4 also contains a text description, for use only in the instructions, of what each symbol represents. If using wordless labels, all wire feeding equipment shall carry the symbols shown in Figure 5-4, or their equivalent.

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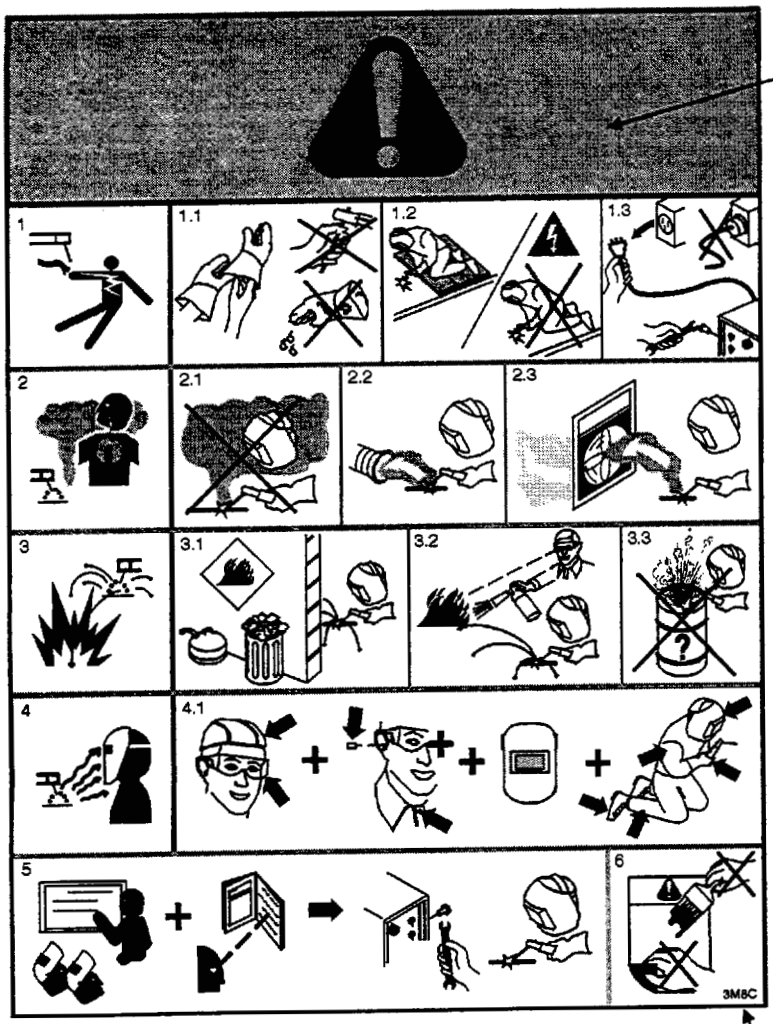

Warning! Watch Out! There are possible hazards as shown by the symbols.

1 Electric shock from welding electrode or wiring can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Don't weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watchperson ready to use it.

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

6 Do not remove or paint over (cover) the label.

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Figure 5-1a
THE BASIC WORDLESS LABEL (VERTICAL FORMAT)

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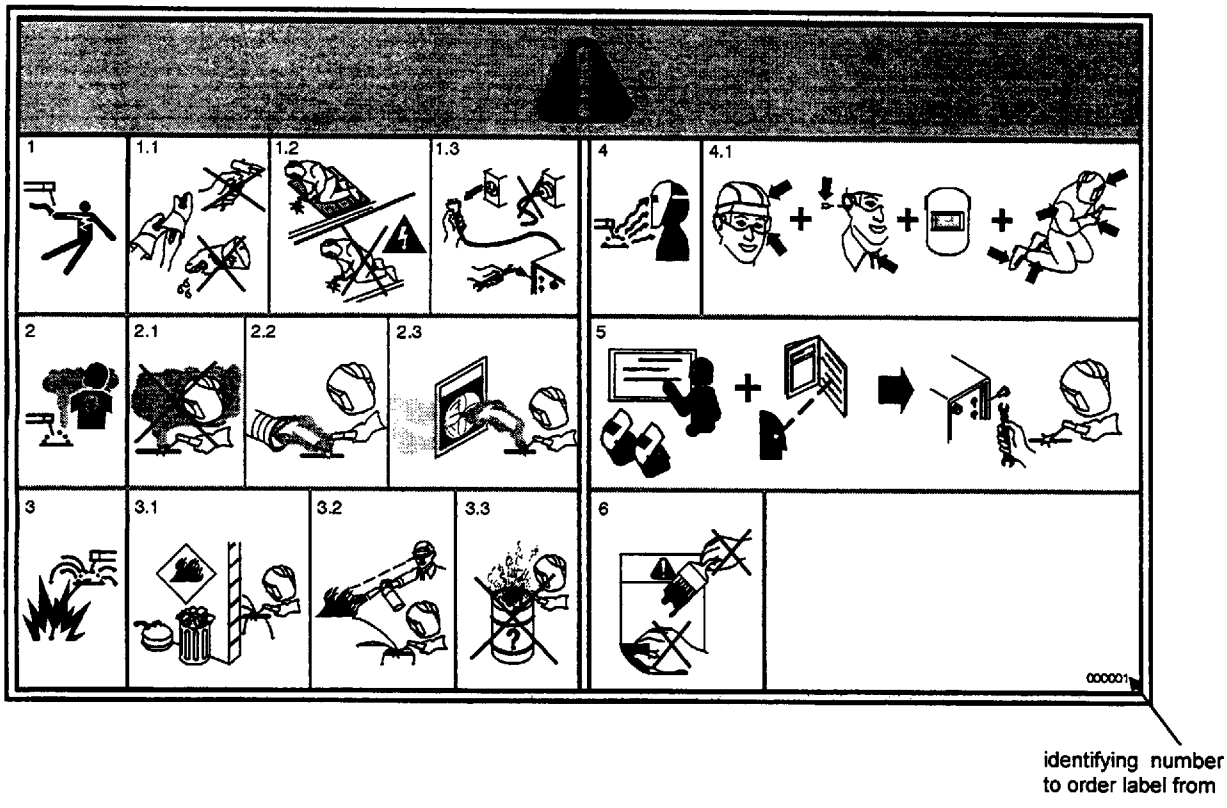

Figure 5-1b
THE BASIC WORDLESS LABEL (HORIZONTAL FORMAT)

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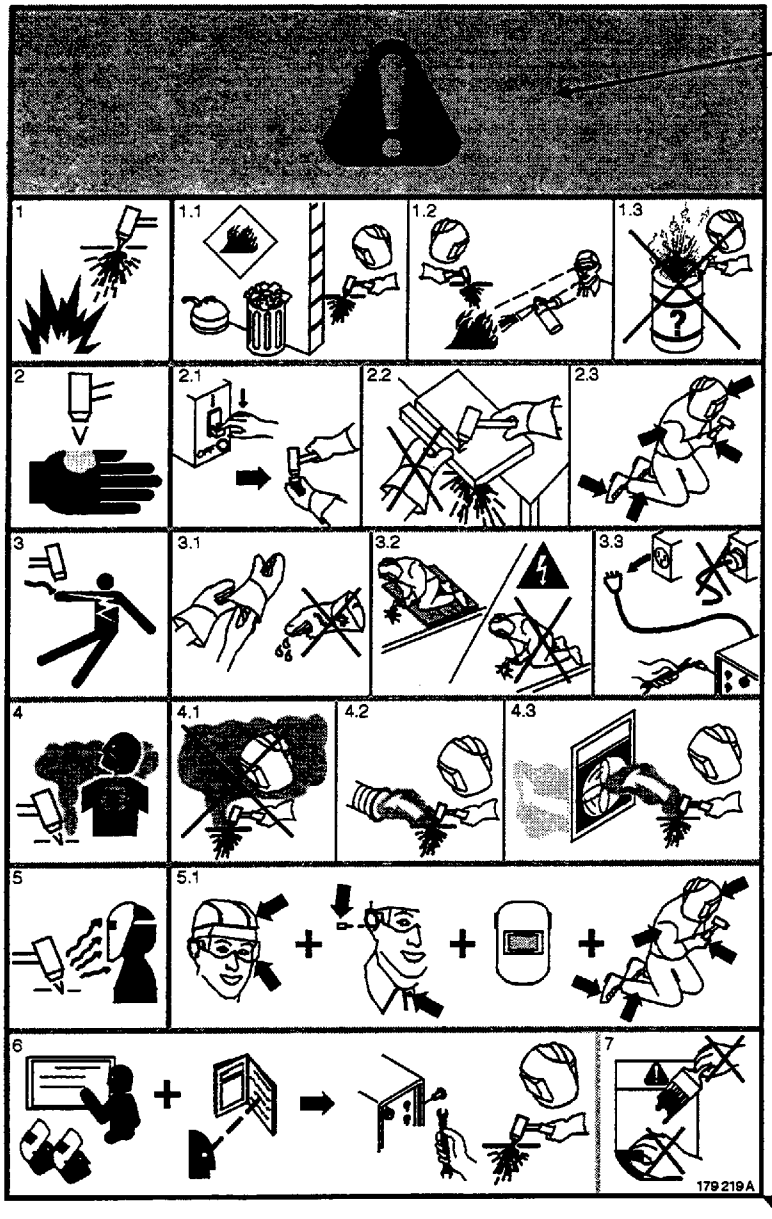

Warning! Watch Out! There are possible hazards as shown by the symbols.

1 Cutting sparks can cause explosion or fire.

1.1 Keep flammables away from cutting. Do not cut near flammables.

1.2 Cutting sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.

1.3 Do not cut on drums or any closed container.

2. The plasma arc can cause injury and burns.

2.1 Turn off power before disassembling torch.

2.2 Do not grip material near cutting path.

2.3 Wear complete body protection.

3. Electric shock from torch or wiring can kill.

3.1 Wear dry insulating gloves. Do not wear wet or damaged gloves.

3.2 Protect yourself from electric shock by insulating yourself from work and ground.

3.3 Disconnect input plug or power before working on machine.

4 Breathing cutting fumes can be hazardous to your health.

4.1 Keep your head out of the fumes.

4.2 Use forced ventilation or local exhaust to remove the fumes.

4.3 Use ventilating fan to remove fumes.

5 Arc rays can burn eyes and injure skin.

5.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

6 Become trained and read the instructions before working on the machine or cutting.

7 Do not remove or paint over (cover) the label.

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Figure 5-2
WORDLESS LABEL FOR PLASMA ARC CUTTING EQUIPMENT

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Warning! Watch Out! There are possible hazards as shown by the symbols.

Become trained and read the instructions before working on the machine or welding.

1 Electric shock from welding electrode or wiring can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Do not work on unit if engine is running. Spot engine first.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Do not weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watchperson ready to use it.

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Do not remove or paint over (cover) the label.

6 Engine fuel plus flames or sparks can cause fire.

6.1 Do not smoke while fueling or if near fuel.

6.2 Stop engine before fueling.

6.3 Do not fuel a hot engine.

7 Engine exhaust gases can kill.

7.1 Vent exhaust outside.

7.2 Use unit outside.

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Figure 5-3
WORDLESS LABEL FOR ENGINE-DRIVEN WELDING AND CUTTING EQUIPMENT

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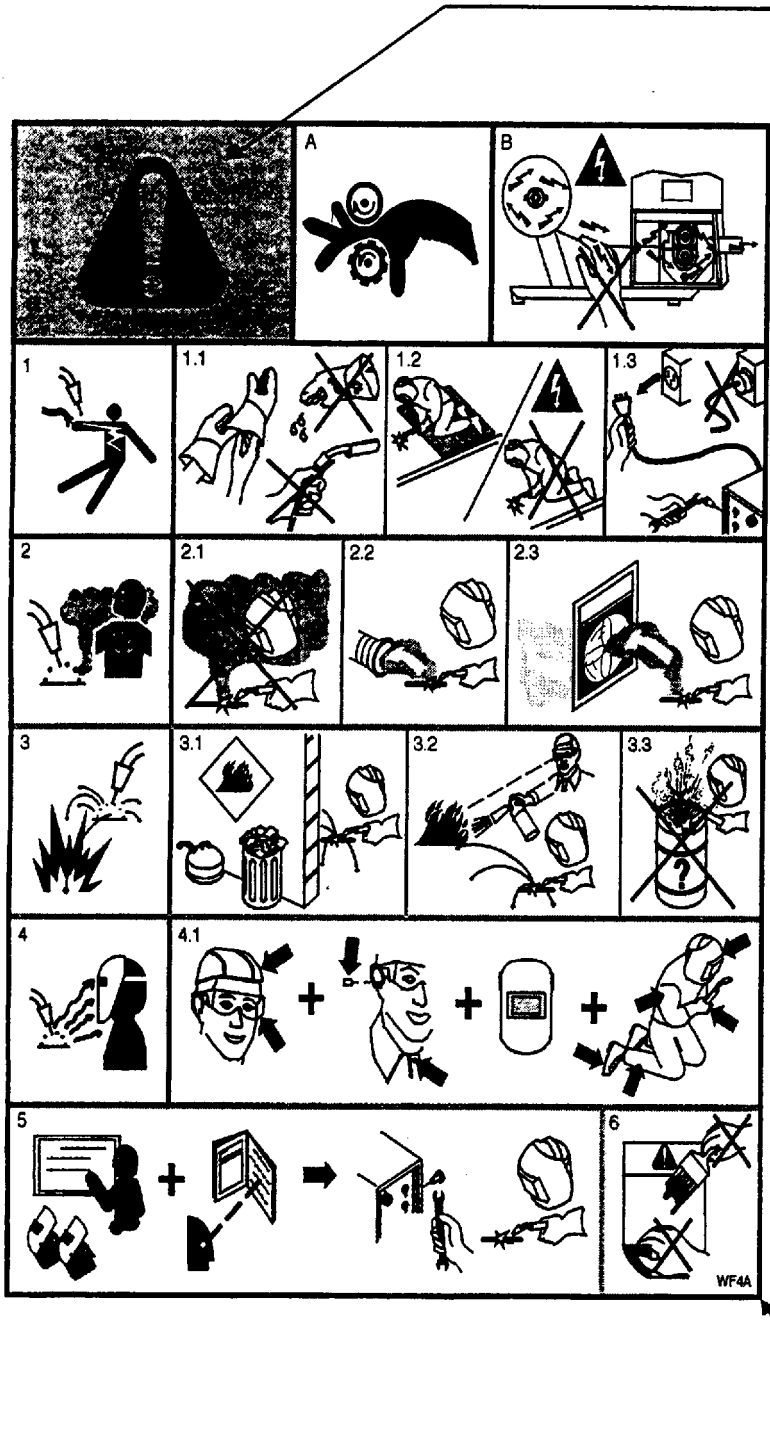

Warning! Watch Out! There are possible hazards as shown by the symbols.

A Drive rolls can injure fingers.

B Welding wire and drive parts are at welding voltage during operation—keep hands and metal objects away.

1 Electric shock can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Don't weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watchperson ready to use it.

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

6 Do not remove or paint over (cover) the label.

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Figure 5-4
WORDLESS LABEL FOR WIRE FEEDING EQUIPMENT

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5.7 WORDLESS LABELS FOR SPECIFIC HAZARDS

When specific hazards are present, the examples shown in Figures 5-5, 5-6, 5-7, and 5-8 shall be followed. These figures also contain a text description, for use only in the instructions, of what each symbol represents. A building block process combining elements from multiple hazard labels shall be used. Wherever possible, the symbol elements from Figures 5-1, 5-2, 5-3, and 5-4 shall be used.

1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Moving parts such as fans, rotors, and belts, can cut fingers and hands and cause injury. Keep away from moving parts

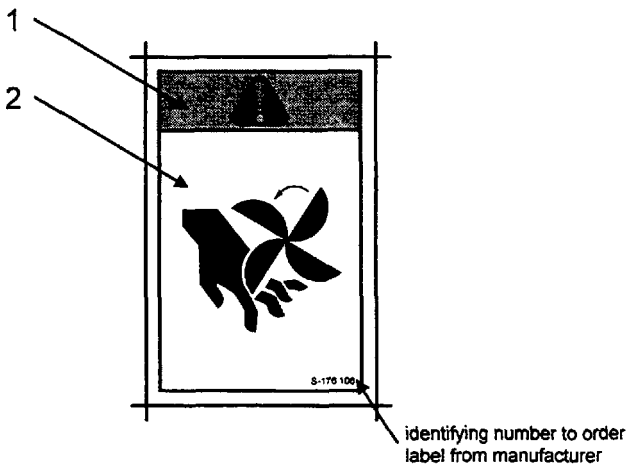

Figure 5-5
EXAMPLE LABEL FOR A FAN AND MOVING PARTS

1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Hot muffler and exhaust pipes can cause severe burns. Do not touch hot muffler of pipes

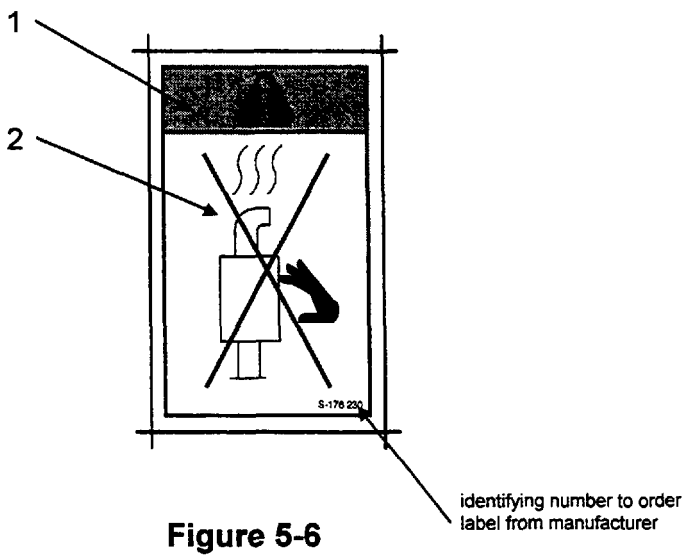

Figure 5-6
EXAMPLE LABEL FOR A HOT MUFFLER

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1 Warning! Watch Out! There are possible hazards as shown by the symbols.
2 Engine fuel plus flames or sparks can cause fire.
3 Do not smoke while fueling or if near fuel.
4 Stop engine before fueling.
5 Do not fuel a hot engine.
6 Use Diesel Fuel only.

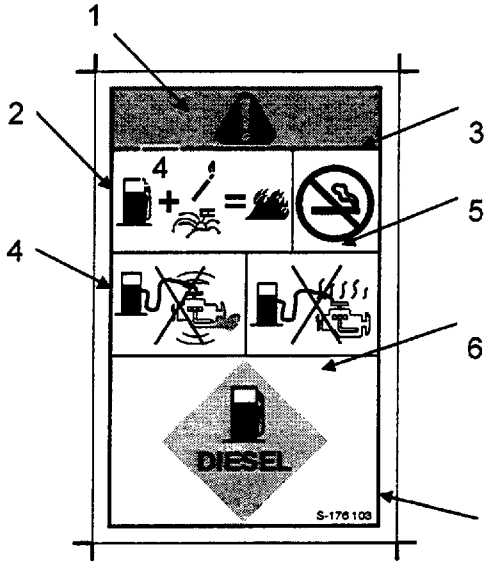

Figure 5-7
EXAMPLE LABEL FOR DIESEL FUEL

1 Warning! Watch Out! There are possible hazards as shown by the symbols.
2 Do not smoke and keep matches and flames away from battery.
3 Sparks can cause battery gases to explode. Battery explosion can blind and injure. Wear a face shield.
4 Battery acid can burn skin. Do not spill acid.
5 Read Owner's Manual.
6 Wear rubber gloves.
7 Dead battery.
8 Engine block.
9 Fully charged battery.
10 Do not connect last negative cable to dead battery—connect instead to engine block.
11 Jumper cables—observe polarity and make connections in numbered sequence shown.
12 Once dead battery is charged, disconnect cables in sequence shown.

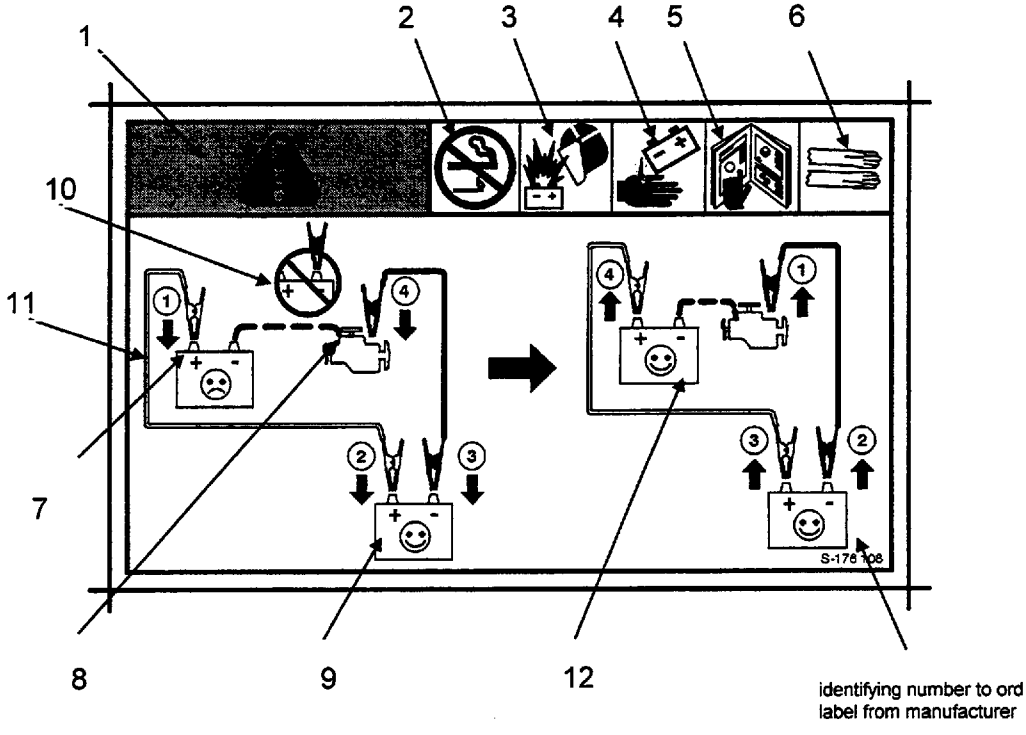

Figure 5-8
EXAMPLE LABEL FOR BATTERY CHARGING

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