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NEMA STANDARDS PUBLICATION NO. DC 20

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Residential Controls— Class 2 Transformers

NEMA

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION ■ 2101 L STREET, N.W., WASHINGTON, D.C. 20037

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NEMA DC 20-1986

DC 20

RESIDENTIAL CONTROLS—CLASS 2 TRANSFORMERS

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Foreword

This Standards Publication represents suggested standards for the construction and performance of Class 2 transformers designed primarily for use with residential controls. It has been developed in the public interest and is designed to promote a better understanding between the manufacturer and the user and to assist the user in selecting and obtaining the proper transformer for a particular application.

If a value for measurement as given in this Standards Publication is followed by an equivalent value in other units, the first stated value is to be regarded as the requirement. The given equivalent value may be only approximate.

This standard is periodically reviewed by the Residential Controls Section of NEMA for any revisions necessary to keep it up-to-date with advancing technology. Proposed or recommended revisions should be submitted to:

Manager, Engineering Department
National Electrical Manufacturers Association
2101 L Street, N.W.
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Scope

This Standards Publication covers Class 2 transformers intended primarily for use in 30 volts rms maximum low-voltage residential control circuits. It includes definitions, electrical ratings, performance, standards, mounting dimensions, and marking requirements.

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History of Standards

In March 1958, the Residential Controls Section of NEMA adopted a standard regulation curve for Class 2 transformers. This standard was issued under the title "Voltage Ratings and Load Characteristics for Primary Control Equipment of 30 Volts and Less," and was a part of Publication No. DC 1, *General Standards for All Automatic Temperature Controls.*

At that time the transformer in general use by the industry was one having a 40-volt-ampere rating. It was, therefore, around this rating that the standard was developed. Subsequently, transformers having other ratings were introduced. These transformers, although they might have had the same electrical ratings, in many cases varied quite radically in performance. This presented problems from an interchangeability standpoint. Recognizing these problems, the Residential Controls Section in 1964 activated a program to write standards for all transformer sizes.

Publication No. ST 2-1973 was the result of the development and revision of several drafts developed by the Residential Controls Section of NEMA and approved by the Dry-Type and Specialty Transformer Section whose scope at that time included the products covered in this Standards Publication. It was reaffirmed and editorially revised in 1979. DC 20-1986 revises and supersedes ST 2-1973 (R 1979).

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RESIDENTIAL CONTROLS—CLASS 2 TRANSFORMERS

Section 1

REFERENCED STANDARDS AND DEFINITIONS

1.1 REFERENCED STANDARDS

The following publications are adopted, in whole or in part as indicated, by reference in this Standards Publication and are available from the organizations and adresses shown below.

National Fire Protection Association
Batterymarch Park
Quincy, Massachusetts 02269

American National Standards Institute
1430 Broadway
New York, N.Y. 10018

ANSI/NFPA 70-1987 *National Electrical Code*

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

American National Standards Institute
1430 Broadway
New York, N.Y. 10018

ANSI/UL 514 A-1984 *Metallic Outlet Boxes*

ANSI/UL 514 B-1983 *Fittings for Conduit Outlet Boxes*

ANSI/UL 514 C-1982 *Nonmetallic Outlet Boxes, Flush-Device Boxes and Covers*

ANSI/UL 1585-1985 *Safety Standard for Class 2 and 3 Transformers*

1.2 DEFINITIONS

1.2.1 Transformer

A transformer is an electric device, without continuously moving parts, which by electromagnetic induction transfers electrical energy from one or more circuits to one or more other circuits at the same frequency, usually with changed values of voltage and current.

NEMA Standard 7-7-1973.

1.2.1.1 CLASS 2 TRANSFORMER

A Class 2 transformer is a step-down transformer of the low-secondary-voltage type, suitable for use in Class 2 remote-control low-energy circuits in accordance with ANSI/NFPA 70. It shall be of the energy-limiting type or of the non-energy-limiting type equipped with overcurrent protection.

NEMA Standard 11-20-1986.

1.2.1.2 ENERGY-LIMITING TRANSFORMER

An energy-limiting transformer is a transformer that is intended for use on an approximately constant-voltage supply circuit and that has sufficient inherent impedance to limit the output current to a thermally safe maximum value.

NEMA Standard 11-20-1986.

1.2.1.3 HIGH-REACTANCE TRANSFORMER

A high-reactance transformer is an energy-limiting transformer which has sufficient inherent reactance to limit the output current to a specified maximum value.

NEMA Standard 11-20-1986.

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1.2.1.4 NON-ENERGY-LIMITING TRANSFORMER

A non-energy-limiting transformer is a constant-potential transformer which does not have sufficient inherent impedance to limit the output current to a thermally safe maximum value.

NEMA Standard 11-20-1986.

1.2.1.5 STEP-DOWN TRANSFORMER

A step-down transformer is a transformer in which the energy transfer is from a high-voltage circuit to a low-voltage circuit.

NEMA Standard 7-17-1973.

1.2.2 Windings

1.2.2.1 HIGH-VOLTAGE AND LOW-VOLTAGE WINDINGS

The terms "high-voltage" and "low-voltage" are used to distinguish the winding having the greater from that having the lesser voltage rating.

NEMA Standard 7-17-1973.

1.2.2.2 PRIMARY WINDING

The primary winding is the winding on the energy-input side.

NEMA Standard 7-17-1973.

1.2.2.3 SECONDARY WINDING

The secondary winding is the winding on the energy-output side.

NEMA Standard 7-17-1973.

1.2.3 Ratings

1.2.3.1 RATING OF TRANSFORMER

The rating of a transformer consists of a voltampere output, together with any other characteristics, such as voltage, current, frequency, and power factor, assigned to it by the manufacturer.

NEMA Standard 7-17-1973.

1.2.3.2 VOLTAMPERE RATING OF A TRANSFORMER

The voltampere rating of a transformer is the output which can be delivered continuously at rated secondary voltage and rated frequency without exceeding the specified temperature rise limitations.

NEMA Standard 11-20-1986.

1.2.3.3 LOAD

The load of a transformer is the product of the secondary terminal voltage and the secondary current, expressed as voltamperes.

NEMA Standard 7-17-1973.

1.2.3.4 PRIMARY VOLTAGE RATING

The primary voltage rating designates the input circuit voltage for which the primary winding is designed.

NEMA Standard 7-17-1973.

1.2.3.5 SECONDARY VOLTAGE RATING

The secondary voltage rating designates the load circuit voltage for which the secondary winding is designed.

NEMA Standard 7-17-1973.

1.2.4 Dielectric Withstand Test

Dielectric withstand tests are tests which consist of the application of a voltage higher than the rated voltage, for a specified time, for the purpose of determining the adequacy against breakdown of insulating materials and spacings under normal conditions.

NEMA Standard 7-17-1973.

1.2.5 Transformer Ambient Temperature

Ambient temperature is the temperature of the surrounding atmosphere into which the heat of the transformer is dissipated.

NEMA Standard 7-17-1973.

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Section 2
RATINGS AND CLASSIFICATION

2.1 ELECTRICAL RATINGS

2.1.1 Primary Voltage Ratings

Primary voltage ratings shall be as follows:

120 volts at 60 hertz
208 volts at 60 hertz
240 volts at 60 hertz
277 volts at 60 hertz
480 volts at 60 hertz

Transformers with multiple rated primaries shall be tested at each primary voltage rating.

Suggested Standard for Future Design 11-20-1986.

2.1.2 Secondary Voltage Ratings

Secondary voltage ratings shall be as follows:

No load: 26.5 ± 0.5 volts
100 percent rated current: 24.0 ± 1.0 volts
200 percent rated current: 21.5 ± 1.5 volts

Secondary voltage ratings shall be applicable to all loads between 0.5 power factor and unity power factor with the primary connected to a source of rated voltage and frequency in accordance with 2.1.1.

Suggested Standard for Future Design 11-20-1986.

2.2 CLASSIFICATION

Class 2 transformers shall be one of the following types:

NEMA Type	Rated Secondary Current (in Amperes) at Nominal 24 Volts
A	0.4
B	0.8
C	1.2
D	1.6
E	2.0

Class 2 transformers shall be further classified as to whether they are of the energy-limiting type or non-energy-limiting type according to 1.2.1.2 and 1.2.1.4.

Suggested Standard for Future Design 11-20-1986.

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Section 3
CONSTRUCTION

3.1 GENERAL

Class 2 tranformers shall conform to ANSI/UL 1585.

NEMA Standard 11-20-1986.

3.2 PROTECTIVE DEVICES

3.2.1 General

All parts of a protective device (other than the reset button or handle of a manually reset device) provided as part of a Class 2 transformer shall be reliably secured inside the transformer enclosure in such a manner that they will be inaccessible to tampering, except that a replaceable overcurrent protective device shall be accessible for replacement purposes. A replacement device shall not be interchangeable with one of a higher current rating.

For transformers intended only for use in other equipment, the protective device shall be permitted to be located inside the enclosure of the end product.

Suggested Standard for Future Design 11-20-1986.

3.2.2 Manually-Reset Temperature-Sensitive Protective Devices

A manually-reset temperature-sensitive protective device shall be trip-free. That is, the automatic tripping shall be independent of the manipulation or position of the reset button or handle.

Suggested Standard for Future Design 11-20-1986.

3.2.3 Overcurrent Protective Devices

An overcurrent protective device shall not be of the automatic reclosing type and shall be trip-free.

A fuse, when used, shall be rated at not more than 5 amperes if the open circuit secondary voltage (V) is 20 volts or less, and shall be ampere-rated at not more than 100/V if such voltage is more than 20 volts but less than 30 volts. The fuse shall be wired in the secondary circuit.

Suggested Standard for Future Design 11-20-1986.

3.3 TERMINALS AND TERMINATIONS

3.3.1 Primary Leads

Wire leads shall be provided as a part of a Class 2 transformer for the permanent connection of the primary circuit conductors unless the transformer is designed to be mounted on an outlet box.

Such leads shall be of Type RF-2 stranded copper conductors and shall not be smaller than 18 AWG (0.82 and, if of No. 18 or 16 AWG (0.82 or 1.3 mm²) not more than 12 inches (305 mm) outside the enclosure.

An insulating bushing or a smooth, well-rounded opening shall be provided where the primary leads pass through the enclosure of a permanently wired transformer.

A transformer intended for installation with open wiring or concealed knob-and-tube wiring, in accordance with Articles 320 and 324 respectively of ANSI/NFPA 70 shall be provided with an insulating bushing where the primary leads pass through the enclosure. A separate hole for each lead shall be provided in the insulating bushing or a separate bushing for each lead shall be provided for maintaining a spacing of not less than ¼ inch (6.4 mm) between the conductors. A spacing of not less than ½ inch (12.7 mm) shall be provided between the conductors and the plane of support of the transformer.

Flexible cord, if provided, shall be not less than 5 feet (1.52 m) nor more than 10 feet (3.05 m) in length, and shall be connected to an attachment plug rated at 15 amperes. The length of the flexible cord is to be measured from the face of the attachment plug to the point where the cord emerges from the transformer enclosure.

The types of flexible cords that shall be permitted to be used with a portable Class 2 transformer are as follows: SE, SV, SVE, SVO, SVT, SVTO, SJ, SJE, SJO, SJT, SJTO, S, SO, ST, STO, SJOO, SJTOO, SOO, or STOO.

Suggested Standard for Future Design 11-20-1986.

3.3.2 Secondary Connections

Binding-screw terminals, quick-connect terminals, flexible cord or insulated wire leads shall be provided for the connection of secondary circuit conductors. Secondary terminal plates and wire-binding screws, studs, and nuts shall be constructed as specified for primary terminals, except that they shall be permitted to be of plated steel; and cupped washers, upturned lugs, or the equivalent are not required.

Suggested Standard for Future Design 11-20-1986.

3.3.3 Connections for Outlet-Box-Mounted Transformers

Primary binding-screw terminals for the connection of circuit conductors shall be permitted to be used for Class 2 transformers designed to be mounted on an outlet box. The terminal lugs in such a case shall be of nonferrous metal, shall be made of stock not less than 0.030 inch (0.76 mm) in thickness, and shall have not less than two full threads in the metal for the binding screws.

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Primary wiring terminals shall be provided with cupped washers, upturned lugs, or equivalent means to retain the wires under the heads of screws or nuts, and shall be No. 6-32 (3.5 mm) or larger machine screws. They shall be so located or protected that they will not be forced against the wiring in the outlet box when the transformer is installed and shall be so designed that a spacing of not less than ½ inch (12.7 mm) for up to 250 volts and not less than 1 inch (25.4 mm) for more than 250 volts will be maintained between live parts of opposite polarity and between live parts and metal that is grounded.

Suggested Standard for Future Design 11-20-1986.

3.4 MECHANICAL CONSTRUCTION

3.4.1 Enclosure

Class 2 transformers shall be provided with enclosures of noncombustible, moisture-resistant material protected against corrosion. The enclosures shall contain all uninsulated live metal parts except secondary terminals. If a transformer is intended to be mounted on an outlet box cover or provided with a nipple for mounting in an outlet box or cabinet knockout, the primary terminals or leads will be inside the box or cabinet when the transformer is installed and need not be additionally enclosed.

The enclosure, if of sheet steel, shall be formed from uncoated stock not less than 0.026 inch (0.66 mm) in thickness, or zinc coated, not less than 0.029 inch (0.74 mm). An enclosure of material other than sheet steel shall provide equivalent mechanical strength and rigidity. The design of the enclosure shall be such that it will not be necessary to have access to the interior in mounting the device or connecting wires. All covers, bases, and the like, shall be securely fastened in place.

Suggested Standard for Future Design 11-20-1986.

3.4.2 Mounting

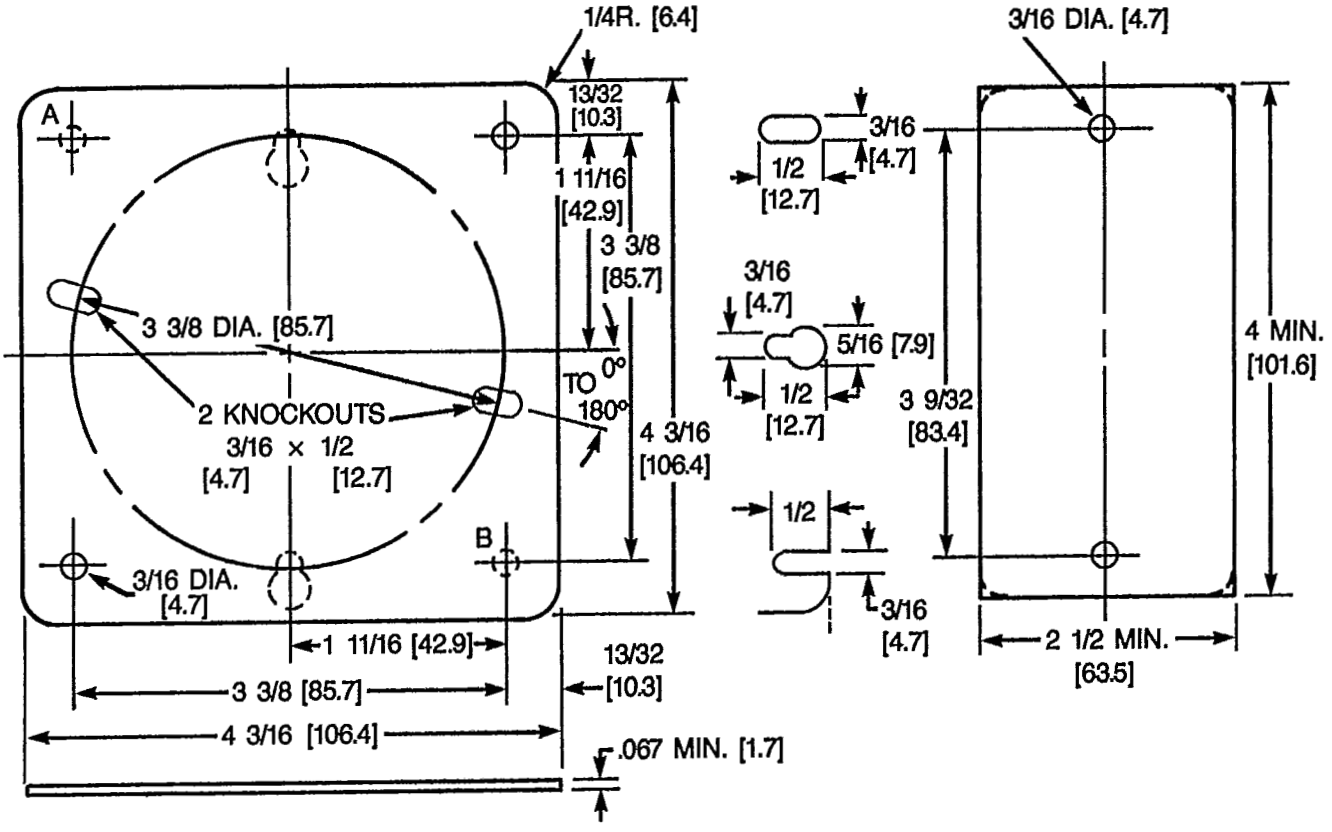
The enclosure of a Class 2 tranformer shall be designed for mounting either on a plane surface or on an outlet box.

For mounting on a plane surface, the enclosure shall be so designed that it will make contact only at the points of support. An air space of not less than ¼ inch (6.4 mm) shall be maintained between the enclosure and the suporting surface.

If a plate is provided for mounting on standard junction boxes, the dimensions and provisions for mounting shall be in accordance with Figure 3-1.

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NOTE I—Holes A and B shall be optional.
NOTE II—3/16 inch (4.7) diameter holes shall be permitted to be any of the slotted shapes shown.
NOTE III—Openings into the box when the transformer is installed shall meet the requirements under "Closure of Openings" in ANSI/UL 514A.
NOTE IV—See 3.4.2, and ANSI/UL 1585, Section 8.

Figure 3-1
DIMENSIONS (IN INCHES (MM)) FOR MOUNTING

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Section 4
PERFORMANCE AND TEST

4.1 DIELECTRIC WITHSTAND

All transformers shall meet the dielectric withstand requirements for Class 2 transformers as described in ANSI/UL 1585.

NEMA Standard 11-20-1986.

4.2 HEATING

All transformers shall meet the heating requirements for Class 2 transformers as described in ANSI/UL 1585.

NEMA Standard 11-20-1986.

4.3 REGULATION

Transformers classified according to 2.2 shall meet the appropriate requirements of this standard when tested at no load, 100 percent rated load, and 200 percent rated load at load power factors between 0.5 and unity. Load tests shall be performed at an ambient temperature between 68 °F (20 °C) and 80 °F (26.6 °C).

NEMA Standard 11-20-1986.

4.3.1 Test Equipment

The test equipment listed in this subclause should be of good quality instrumentation; the accuracy of the meters being within ±1 percent and periodically verified by the user.

To ensure accuracy of test results, it is important to verify that measuring and recording instruments provide true rms readings.

The test equipment should be connected in accordance with Figure 4-1. All resistance measurements should be measured at the load switch with an accurate resistance bridge.

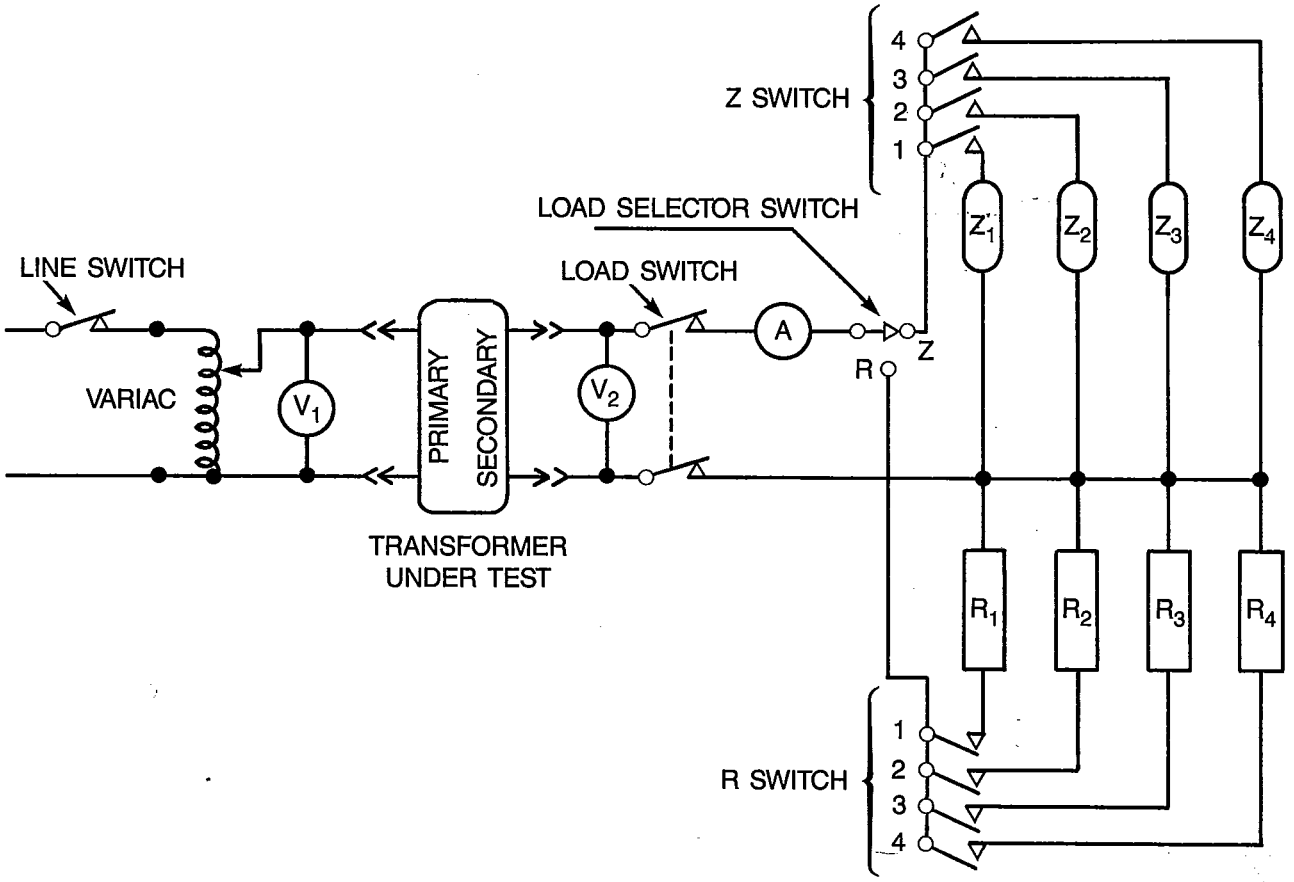


Figure 4-1
TEST CIRCUIT

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1. Power Supply
   a. Should be of the nonregulating type.
   b. Should be capable of producing the rms test voltages of 120, 208, 240, 277, or 480 volts.
   c. Should have a minimum capacity of 500 volt-amperes.
2. Rms Voltmeter (for Primary)
   a. Should be of a proper range to provide accurate readings.
3. Rms Voltmeter (for Secondary)
   a. Should be of a proper range to provide accurate readings.
4. Rms Current Meter
   a. Should be of a proper range to provide accurate readings.
   b. There should be a circuit impedance to meter resistance ratio of at least 50:1.
5. Resistance Bridge
6. Switches
   a. Should have a maximum contact resistance of 0.02 ohms at 5 amperes rms.
7. Resistive Loads

   There should be four resistive loads, as follows:

   a. 60 ohms + 1 percent, 25 watts (R1)
   b. 30 ohms + 1 percent, 50 watts (R2)
   c. 15 ohms + 1 percent, 75 watts (R3)
   d. 7.5 ohms + 1 percent, 100 watts (R4)

The resistors should be arranged so that they can be switched into the circuit, singly or in parallel, to produce the rated current or 200 percent rated current, as follows:

   e. 60 ohms for 0.4 ampere (R1)
   f. 30 ohms for 0.8 ampere (R2)
   g. 60 plus 30 ohms for 1.2 amperes (R1 + R2)
   h. 15 ohms for 1.6 amperes (R3)
   i. 60 plus 15 ohms for 2.0 amperes (R1 + R3)
   j. 30 plus 15 ohms for 2.4 amperes (R2 + R3)
   k. 7.5 ohms for 3.2 amperes (R4)
   l. 30 plus 7.5 ohms for 4.0 amperes (R2 + R4)

8. Inductive Loads

   There should be four inductive loads constructed as follows:

   a. Reactor for 60-ohm load (Z1).
      (1) Iron: A 7/8-inch square stack of 7/8-inch (22.22 mm) E-1 laminations. Gage 24 (.64 mm). Type M-27.
      (2) Coil: Random wound on a 7/8-inch (22.22 mm) square bobbin, with #24 gage (.205 mm²) insulated copper wire. The total turns should be 520.
      (3) Gap: An 0.040 ± 0.001-inch (1.016 ± .0254 mm) gap should be maintained between the lamination E's (inserted from one side of the bobbin) and the laminations I's. A piece of 0.040-inch (1.016 mm) hard fiber board may be used for the gap. The reactor should be clamped with aluminum brackets and varnish dipped and baked so that the gap will not change.
      (4) Resistor should be 12 watts and 30 ohms adjustable and should be connected in series with the reactor coil. The resistor should be adjusted until the total direct-current resistance of the resistor plus the coil is 25 ohms.
   b. Reactor for 30-ohm load (Z2) should be the same as for the 60-ohm load except:
      (1) Coil should be 375 turns of #22 gage (.324 mm²) insulated wire.
      (2) Resistor should be 25 watts and 15 ohms adjustable. The resistor should be adjusted until the total direct-current resistance of the resistor plus the coil is 12.5 ohms.
   c. Reactor for 15-ohm load (Z3) should be the same as for 60-ohm load except:
      (1) Coil should be 265 turns of #20 gage (.519 mm²) insulated wire.
      (2) The resistor should be 50 watts and 10 ohms adjustable. The resistor should be adjusted until the total direct-current resistance of the resistor plus the coil is 6.25 ohms.
   d. Reactor for 7.5-ohm load (Z4) should be the same as for 60-ohm load except:
      (1) Coil should be 188 turns of #19 gage (.653 mm²) insulated wire.
      (2) The resistor should be 75 watts and 5 ohms adjustable. The resistor should be adjusted until the total direct-current resistance of the resistor plus the coil is 3.10 ohms.

The reactors should be arranged so they can be switched into the circuit, singly or in parallel, to produce the rated current or twice rated current, as follows:

   e. 60 ohms for 0.4 ampere (Z1)
   f. 30 ohms for 0.8 ampere (Z2)
   g. 60 plus 30 ohms for 1.2 amperes (Z1 + Z2)
   h. 15 ohms for 1.6 amperes (Z3)
   i. 60 plus 15 ohms for 2.0 amperes (Z1 + Z3)
   j. 30 plus 15 ohms for 2.4 amperes (Z2 + Z3)
   k. 7.5 ohms for 3.2 amperes (Z4)
   l. 30 plus 7.5 ohms for 4.0 amperes (Z2 + Z4)

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4.3.2 Test Procedure

Transformers should be tested for each primary rating as follows:

1. Place the transformer under test into the test circuit as shown in Figure 4-1.
2. Open the load switch and close the line switch. Allow the transformer to acclimate for 1 hour with rated voltage supplied to the primary (V_1).
3. After 1 hour acclimation, read and record the open-circuit secondary voltage (V_2).
4. Close the R Switch (or switches) for test point 1 as shown in Table 4-1.
5. Close the load switch, and read and record the secondary voltage (V_2) and current (A) for test point 1. Open the load switch.
6. Repeat steps 4 and 5 for test points 2, 3, and 4.

Authorized Engineering Information 11-20-1986.

CAUTION—If this test is done, the load shall not be connected to the transformer for more than 15 seconds total time for all four test points. If the test is not completed within this time, the load switch shall be opened to allow the transformer to acclimate for 30 minutes, as in step 2, before proceeding.

NEMA Standard 11-20-1986.

4.3.3 Curves

The data secured in accordance with 4.3.2 may not exactly coincide with the 100 and 200 percent secondary current rating of the transformer (see 2.2). Therefore, this data may be graphed on the regulation curve as shown, for example, in Figure 4-2.

Test points 1 and 2 are representative of unity power factor regulation. Test points 3 and 4 are representative of 50 percent power factor regulation. Both regulation curves should lie between the maximum and minimum of the NEMA Standard Regulation Curve in Figure 4-2.

Authorized Engineering Information 11-20-1986.

4.3.4 Data Sheet

The data secured in accordance with 4.3.2 should be recorded on a data sheet. The form of this sheet should have, as a minimum, the information shown in Table 4-2.

Authorized Engineering Information 11-20-1986.

Table 4-1

NEMA Type	Unity Power Factor		0.5 Power Factor	
	Test Point 1	Test Point 2	Test Point 3	Test Point 4
A	R1	R2	Z1	Z2
B	R2	R3	Z2	Z3
C	R1 + R2	R2 + R3	Z1 + Z2	Z2 + Z3
D	R3	R4	Z3	Z4
E	R1 + R3	R2 + R4	Z1 + Z3	Z2 + Z4

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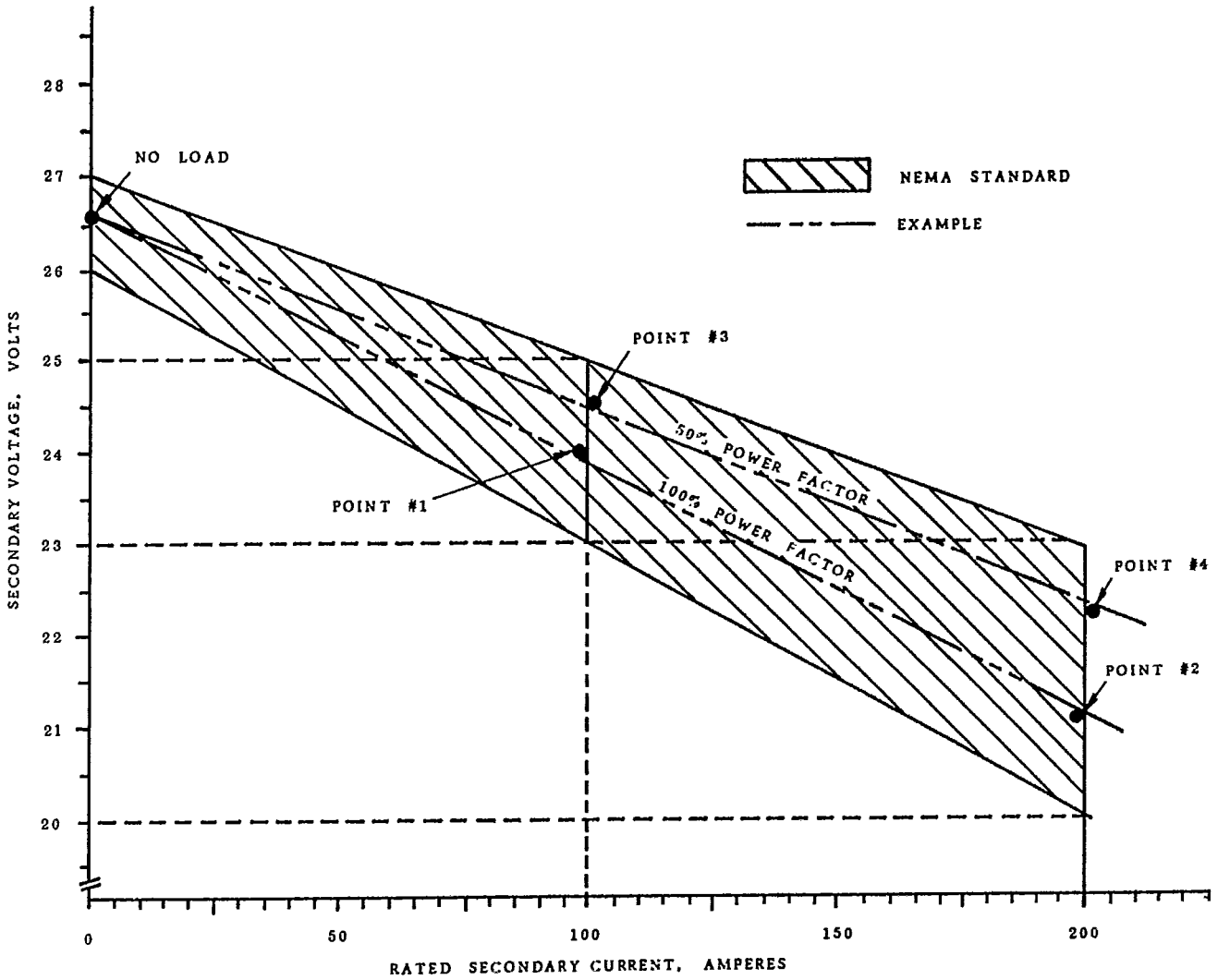


Figure 4-2
EXAMPLE OF NEMA STANDARD REGULATION CURVE

Table 4-2
EXAMPLE DATA SHEET

Date:
Tested By: J. Doe Sheet: 1 of 1

Mfg.	Part No.	NEMA Type	Amb. Temp.	No Load V2	Point 1 V2	Point 1 A	Point 2 V2	Point 2 A	Point 3 V2	Point 3 A	Point 4 V2	Point 4 A
XYZ	123-456	B	78	26.6	24.2	.78	21.2	1.57	24.7	.81	22.4	1.62

4.4 ENDURANCE AND OVERLOAD

A transformer shall be capable of delivering its rated full load secondary current continuously. Under such condition, a protective device shall not open.

Transformers shall meet the overload and endurance requirements as described in ANSI/UL 1585.

NEMA Standard 11-20-1986.

4.5 CALIBRATION

Transformers with protective devices shall meet the calibration requirements as described in ANSI/UL 1585.

NEMA Standard 11-20-1986.

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Section 5
MARKING

5.1 MARKING

Class 2 transformers shall be plainly marked with the following minimum information:

1. Manufacturer's name or trademark.
2. Catalog number or equivalent.
3. Primary voltage and frequency.
4. 24 volts.
5. Voltampere rating, if used, (the product of 24 volts and the rated current of the transformer):

   NEMA A—10 VA
   NEMA B—19 VA
   NEMA C—29 VA
   NEMA D—39 VA
   NEMA E—48 VA

6. The words "Class 2."
7. Primary shall be marked "Line."
8. Secondary shall be marked "Load."
9. NEMA type letter (A, B, C, D, or E) if transformer meets the requirements of this publication.

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September 1984

NEMA STANDARDIZATION

The purpose of NEMA Standards, their classification and status are set forth in certain clauses of the NEMA Bylaws, which are quoted below:

Purpose of Standards

National Electrical Manufacturers Association Standards are adopted in the public interest and are designed to eliminate misunderstandings between the manufacturer and the purchaser and to assist the purchaser in selecting and obtaining the proper product for its particular need. Existence of a National Electrical Manufacturers Association Standard does not in any respect preclude any member or nonmember from manufacturing or selling products not conforming to the standard.

(Bylaw—Art. V, Sec. 1)

Definition of a Standard

A standard of the National Electrical Manufacturers Association defines a product, process or procedure with reference to one or more of the following: nomenclature, composition, construction, dimensions, tolerances, safety, operating characteristics, performance, rating, testing, and the service for which they are designed.

(Bylaw—Art. V, Sec. 2, Subsection A)

Dimensions

Where dimensions are given for interchangeability purposes, alternate dimensions satisfying the other provisions of the standards publication may be capable of otherwise equivalent performance.

(NEMA Policy Memorandum 84-2, dated June 7, 1984)

Classes of Standards

National Electrical Manufacturers Association Standards are of two classes:

1. NEMA Standard, which relates to a product commercially standardized and subject to repetitive manufacture, which standard has been approved by at least 90 percent of the members of the Subdivision eligible to vote thereon;
2. Suggested Standard for Future Design, which may not have been regularly applied to a commercial product, but which suggests a sound engineering approach to future development, which standard has been approved by at least two-thirds of the members of the Subdivision eligible to vote thereon.

(Bylaw—Art. V, Sec. 2, Subsection B)

Authorized Engineering Information

Authorized Engineering Information consists of explanatory data and other engineering information of an informative character not falling within the classification of NEMA Standard or Suggested Standard for Future Design.

(Bylaw—Art. V, Sec. 6, 1st Sentence)

Official Standards Proposal

An Official Standards Proposal is an official draft of a proposed standard which is formally recommended to an outside organization(s) for consideration, comment and/or approval.

(Bylaw—Art. V, Sec. 4, Subsection A)

Identification of Status

Standards in NEMA Standards Publications are identified in the foreword or following each standard as "NEMA Standard" or "Suggested Standard for Future Design." These indicate the status of the standard. These words are followed by a date which indicates when the standard was adopted in its present form by the Association.

The material identified as "Authorized Engineering Information" and "Official Standards Proposal" is designated similarly.

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