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STANDARDS PUBLICATION/NO. MW 765

nema

Reclaiming Magnet Wire Plastic Spools/Reels

NEMA

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

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STANDARDS PUBLICATION MW 765-1992

RECLAIMING MAGNET WIRE PLASTIC SPOOLS/REELS

Published by:

National Electrical Manufacturers Association
2101 L Street, N.W., Suite 300
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Foreword

This Standard provides guidelines and criteria for reclaiming magnet wire plastic spools and reels.

The information has been thoroughly reviewed by all suppliers of refurbished plastic spools/reels known to be marketing these products at the time of publication. The issuance or existence of this Standards Publication does not, in any respect, prevent or restrict any member or non-member of NEMA from supplying customers with refurbished magnet wire spools/reels not in conformance with its contents.

This Standards Publication was developed by the NEMA Magnet Wire Section, which periodically reviews it for any revisions necessary to keep it up to date with changes in technology. Comments or proposed revisions are welcomed and should be submitted to:

Vice President, Engineering
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Scope

This Standard covers the physical and visual characteristics of reclaimed plastic spools/reels for packaging of magnet wire.

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Section 1
REFERENCED STANDARDS

1.1 REFERENCED STANDARDS

The following publications are referenced. Copies are available from the sources indicated.

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NEMA MW 755-1991	*Magnet Wire Plastic Spools/Reels - Straight Flange*
NEMA MW 760-1991	*Magnet Wire Plastic Spools/Reels - Tapered Flange*

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Section 2
DEFINITIONS

2.1 SPOOL

A spool is defined as having a flange diameter of less than 8 inches.

2.2 REEL

A reel is defined as having a flange diameter of 8 inches or larger.

NEMA Standard 8-28-1991

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Section 3
STRAIGHT BARREL FINE WIRE SPOOLS

3.1 GENERAL

This section shall apply to the following:

Standard Nomenclature

2½"*
3"*
5" WF*
6" IF*
6" WF*
6" TF*
6 ' 6*
DIN-160/45**
DIN-160**
DIN-200**
DIN-250**

*NEMA MW 755-1991, Table 5-1

**NEMA MW 755-1991, Table 5-2

NOTE: For spools not listed above, contact the wire manufacturer.

3.2 APPEARANCE AND CLEANLINESS

All spools shall be free of grease, dirt, and grime. All labels and adhesive residue must be removed.

There shall be no cracks, knife marks, or nicks on the barrel or flange. Knife marks or nicks are permissible if sanded smooth.

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Section 4
MEDIUM SIZE REELS

4.1 GENERAL

This section shall apply to the following:

Standard Nomenclature

8 ' 6*
8 ' 6-1*
12"*
12" WF*
50 pounds**
100 pounds**

*NEMA MW 755-1991, Table 5-1

**NEMA MW 755-1991, Table 5-3

NOTE: For reels not listed above, contact the wire manufacturer.

4.2 APPEARANCE AND CLEANLINESS

The reel must be free of all grease, dirt, grime, etc. that could contaminate or damage the wire.

All labels and adhesive residue must be removed from the reel.

All surfaces of the barrel and inside faces of the flanges must be free of dents, gouges, raised areas, and be smooth to the touch. Small gouges or raised areas on the barrel or inside flange may be sanded smooth.

4.3 PHYSICAL CONDITION

The reel must be free of cracks or severe stress lines. A stress line can be recognized by the appearance of a lighter color or whitened line that is lighter in color than the basic color of the reel. Special attention should be given at the following locations:

a. The junction of the barrel and flange.
b. The outside junction of the hub and flange.
c. Across the flanges. Check flanges for broken ribs. Two ribs may be broken on either side of the reel, but no more than one-half of the rib depth.
d. On the surface of the barrel.

4.4 INSPECTION PROCEDURE

CAUTION: All reels shall be at room temperature before placing any pressure on the flange to check for cracks. Low temperatures reduce the flexibility of the reel. Applying pressure while the reel is in a brittle condition can result in damage to the reel and possible personal injury.

From a standing position, press down on either side of the reel. Then turn the reel 90 degrees (¼ revolution) and again press down on either side. When pressing down, check for cracks in the bottom and top flange and for loose inserts. If cracks are detected, the reel cannot be reclaimed and shall be discarded.

Inspect the friction areas on the reel barrel for deformities that may cause wire snags. Remove with a knife or scraper.

Examine finger, wire and arbor holes to assure they are smooth.

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Section 5
LARGE SIZE REELS - BOLTED CONSTRUCTION

5.1 GENERAL

This section shall apply to the following:

Standard Nomenclature

250 pound — Includes 15/16 x 12 and 24 x 6
500 pound
550 pound
650 pound
750 pound
1000 pounds — Includes 16.5/19.5 x 30, 18.81/19.36 x 18.19, with or without base

Refer to NEMA MW 755-1991, Table 5-3 and NEMA MW 760-1991, Table 5-2.

NOTE: For reels not listed above, contact the wire manufacturer.

5.2 APPEARANCE AND CLEANLINESS

(See Figure 5-1.)

The reel must be free of all grease, dirt, grime, etc. that could contaminate or damage the wire.

All labels and adhesive residue must be removed from the reel.

All surfaces of the barrel and inside faces of the flanges must be free of dents, gouges, raised areas, and be smooth to the touch. This also includes the radius on the inside and outside edges of the top flange. Small gouges or raised areas on the barrel or inside flange shall be sanded smooth.

5.3 PHYSICAL CONDITION

Cracks or severe stress lines in the following locations are not acceptable:

a. At the outside junction of the hub and flange.
b. Across the flange (a radial crack) especially where visible cracks in the ribbing are found.
c. On the surface of the barrel.
d. Around bolt heads.
e. Around features used to handle the reel, i.e., around the eyebolt or washer, lifting holes and top arbor hole.

5.4 INSPECTION PROCEDURES

CAUTION: All reels shall be at room temperature before placing any pressure on the flange to check for cracks. Low temperatures reduce the flexibility of the reel. Applying pressure while the reel is in a brittle condition can result in damage to the reel and possible personal injury.

From a standing position, press down on the top flange on either side. Then turn the reel 90 degrees (¼ revolution) and again press down on either side. When pressing down, check for broken ribs or cracks in the flange and chipped out portions. See Figure 5-1.

Turn the reel upside down. From a standing position, press down on the bottom flange. Use the same procedure as that employed for the top flange.

5.5 PHYSICAL CRITERIA

5.5.1 Flanges

Flanges must meet the following criteria:

a. No broken or cracked flanges.
b. No stress lines (see 5.3).
c. Ribbing may have cracks up to the limit of no more than two adjacent ribs.
d. Ribbing may have chipped out portions up to the limits (each flange) of no more than one-half of the rib depth and/or 2 inches in length, and no more than two adjacent ribs.
e. Chips larger than ½ inch by ½ inch are not allowed around the bottom flange arbor hole.
f. Top flange edges must be smooth. On tapered top reels, it is especially important that the full radius of the edge is smooth.
g. On straight flange reels, the top flange may not have any chipped areas. The bottom flange may be chipped out no greater than ½ inch in length and one-half the thickness of the flange, but only on the bottom.
h. For 1000 pound reels, the bottom flange may not be chipped.
i. 24 x 6 reels shall have no chipped areas on the flange edge; that is, the inside or outside edge.

5.5.2 Barrel

The barrel shall be smooth and free of cracks, chips and stress marks. Friction surfaces on the barrel (used to keep the wire from slipping) shall not have protruding pieces. These shall be scraped or nipped off.

5.5.3 Bolts

All bolts must be secure and seated in the square bolt head recess of the bottom flange. The bolt head must not rotate in the recess when inspected. Bolts must be tightened in a star rotation, not in a circular rotation where consecutive bolts next to each other are tightened in progression.

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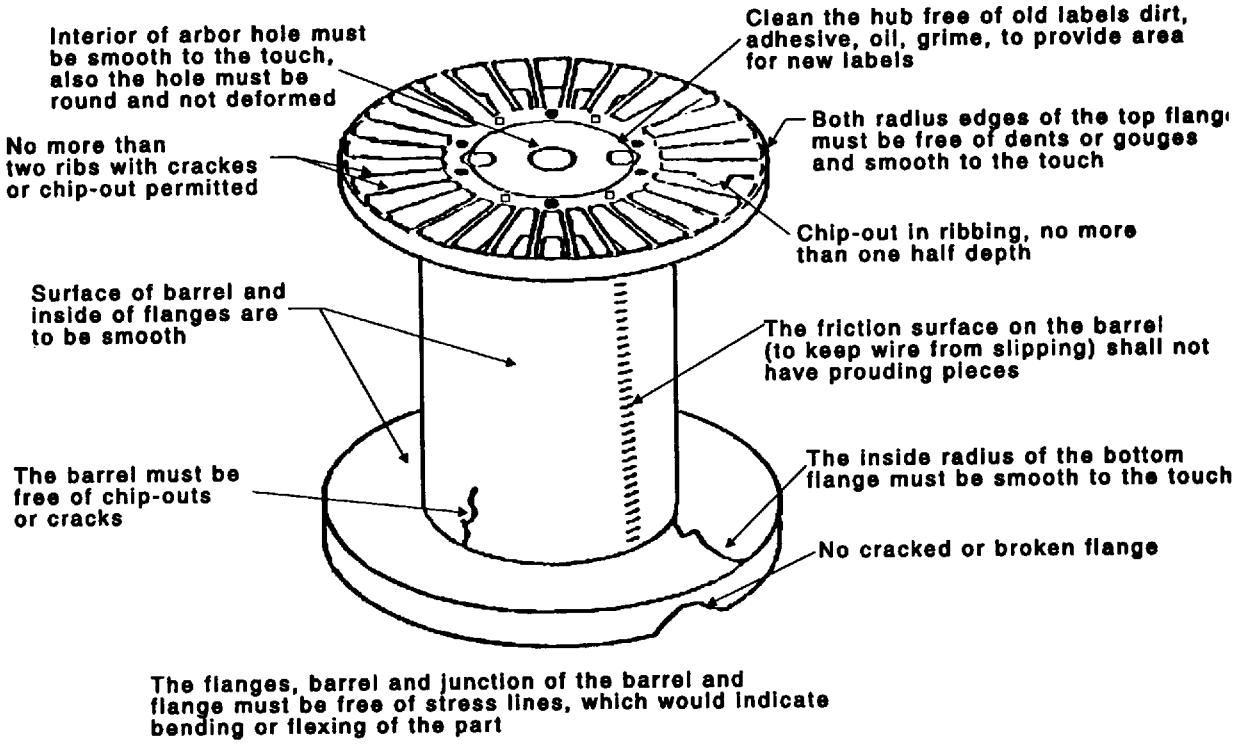


Figure 5-1
Large Size Reels–Bolted Construction

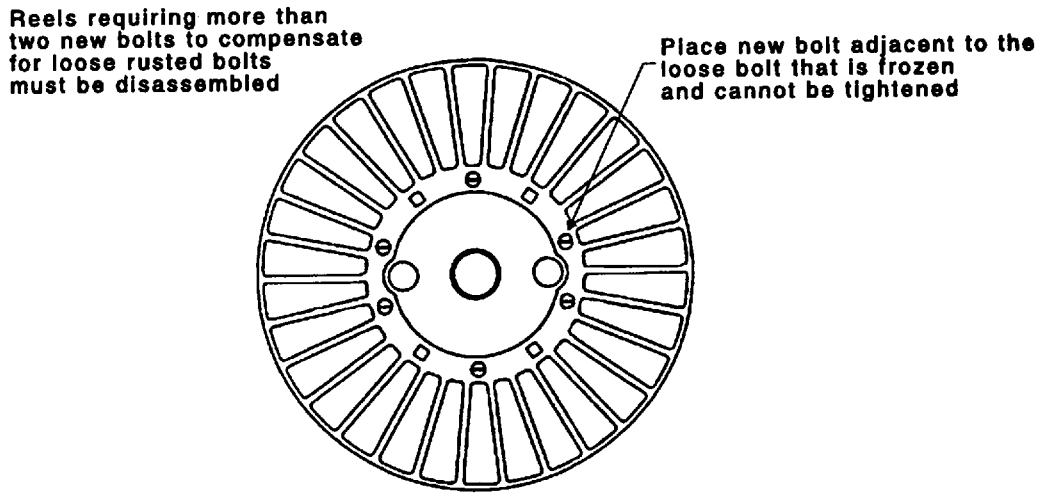


Figure 5-2
250 Pound Reel–Six Bolt Assembly

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5.5.4 Reels

Reels must meet the following criteria:

a. 250 pound reels (15/16 x 12) have six bolts. If one of the six bolts is loose and cannot be tightened or removed, install an additional bolt next to the defective bolt. See Figure 5-2.
b. 250 pound reels shall be torqued to 25 inch-pounds.
c. 500 pound reels have ten bolts. A minimum of nine of the bolts must be tight. See Figure 5-3.
d. 1000 pound reels have ten bolts. All ten bolts shall be tight.
e. 1000 pound and larger reels shall be torqued to 50 inch-pounds. If any bolt head or nut protrudes 1/16 inch or more above the surface of the flange, the assembly shall be removed.

5.6 REPLACEMENT PARTS

CAUTION: Do not try to mix replacement parts from different reel manufacturers. Due to differing construction methods, correct bolt torquing is not possible and may result in failure of the reel and possible personal injury.

Replace damaged parts of the reel. Only one part shall be replaced as a new part, with a limit of one flange or a barrel. A used part in good condition may be added with a new part to make a complete reel.

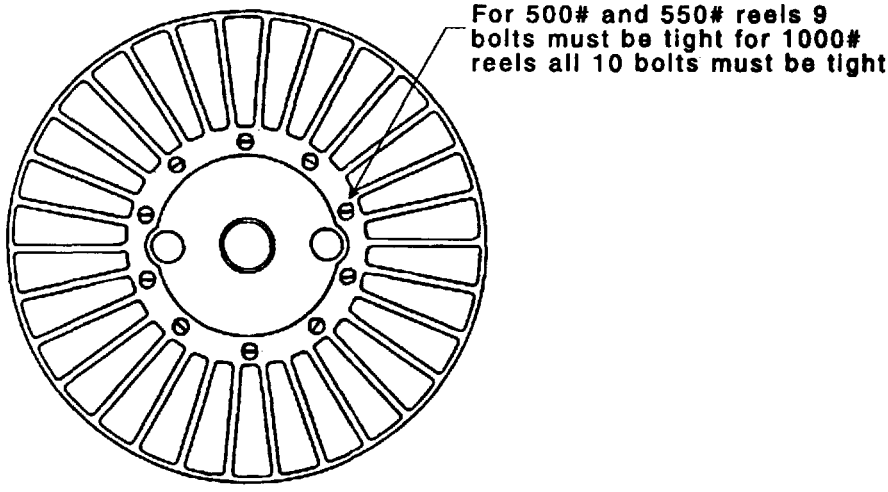


Figure 5-3
500 Pound Reel–Ten Bolt Assembly

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Section 6
LARGE SIZE REELS — NON-BOLTED CONSTRUCTION

6.1 GENERAL

(See Figure 6-1.)

This section shall apply to the following:

Standard Nomenclature

250 pound*
325 pound**
650 pound**
1000 pound**
24 x 6•

*NEMA MW 755-1991, Table 5-3
**NEMA MW 760-1991, Table 5-3
•NEMA MW 755-1991, Table 5-4

6.2 APPEARANCE AND CLEANLINESS

The reel must be free of all grease, dirt, grime, etc. that could contaminate or damage the wire.

All labels and adhesive residue must be removed from the reel.

All surfaces of the barrel and inside face of the flanges must be free of dents, gouges, raised areas, and be smooth to the touch. This also includes the radius on the inside and outside edges of the top flange. Small gouges or raised areas on the barrel or inside flange may be sanded smooth.

6.3 PHYSICAL CONDITION

Cracks or severe stress lines in the following locations are not acceptable:

a. At the outside junction of the hub and flange.
b. Across the flange (a radial crack) especially where visible cracks in the ribbing are found.
c. On the surface of the barrel.
d. Around features used to handle the reel, i.e., around the eyebolt or washer, lifting holes and top arbor hole.

6.4 INSPECTION PROCEDURES

CAUTION: All reels shall be at room temperature before placing any pressure on the flange to check for cracks. Low temperatures reduce the flexibility of the reel. Applying pressure while the reel is in a brittle condition can result in damage to the reel and possible personal injury.

From a standing position, press down on the top flange on either side. Then turn the reel 90 degree (¼ revolution) and again press down on either side. When pressing down, check for broken ribs, cracks in the flange, and chipped-out portions. See Figure 6-1.

Turn the reel upside down. From a standing position, press down on the bottom flange. Use the same procedure as that employed for the top flange.

6.5 PHYSICAL CRITERIA

6.5.1 Flanges

Flanges must meet the following criteria:

a. No broken or cracked flanges.
b. No stress lines (see 6.3).
c. No more than two cracked ribs should be permitted.
d. Ribbing may have chipped out portions up to the limits (each flange) of no more than one-half of the rib depth and/or 2 inches in length, and no more than two ribs.
e. Chips larger than ½ inch by ½ inch are not allowed around the arbor hole.
f. Top flange edges must be smooth. On tapered top reels, it is especially important that the full radius of the edge is smooth.
g. On straight flange reels, the top flange may not have any chipped areas. The bottom flange may be chipped out no greater than ½ inch in length and one-half the thickness of the flange, but only on the bottom.
h. For 1000 pound reels, the bottom flange only may be chipped out on the bottom edge but no larger than 2 inches in length and ½ inch deep from the outside edge.
i. 24 x 6 reels shall have no chipped areas on the flange edge; that is, the inside or outside edge.

6.5.2 Barrel

The barrel shall be smooth and free of cracks, chips and stress marks. Friction surfaces on the barrel (used to keep the wire from slipping) shall not have protruding pieces. These shall be scraped or nipped off. See Figures 6-2 and 6-3.

6.5.3 Reels

On 1000 pound capacity reels, inspect the metal washer (if applicable in later design reels) for rust. If rust is present, remove it with a wire brush and spray the washer with flat black rust resistant paint.

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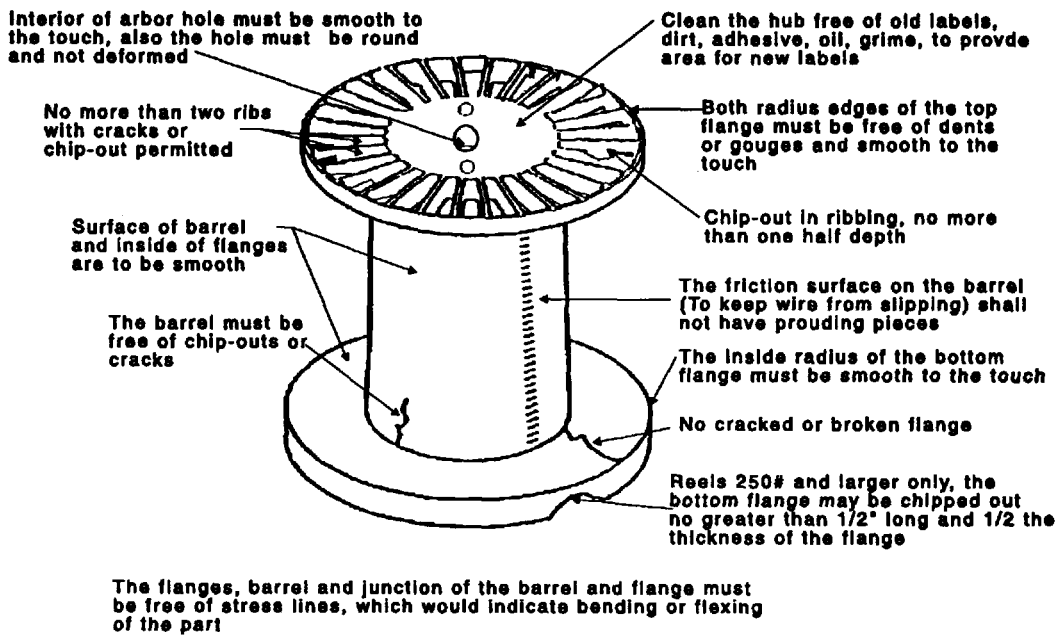


Figure 6-1
Large Size Reels–Non-Bolted Construction

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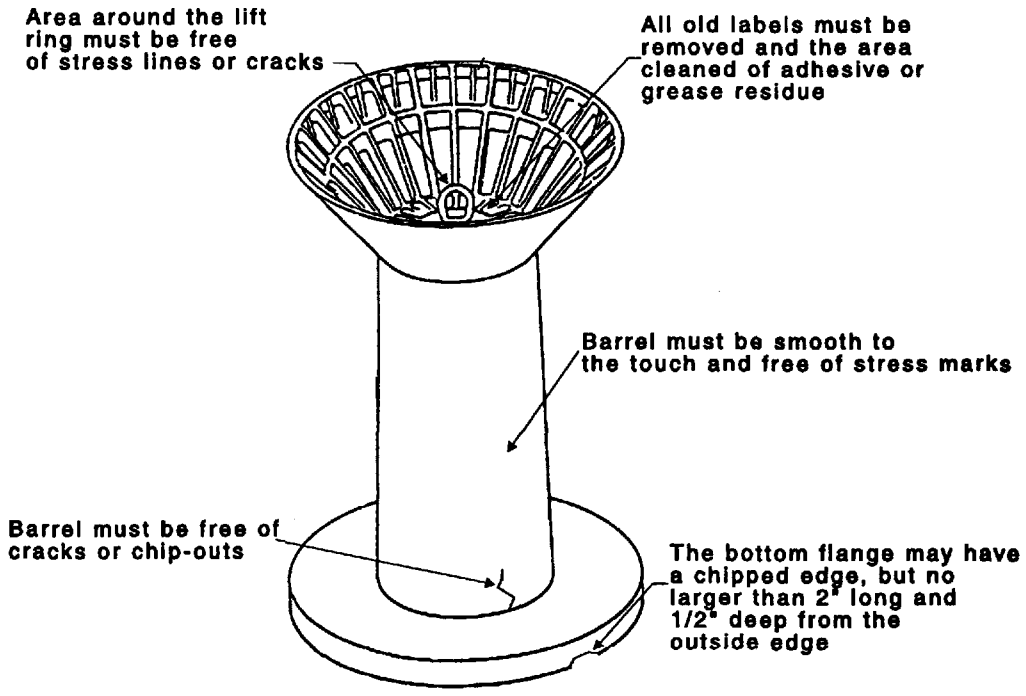


Figure 6-2
Tapered Flange Reels

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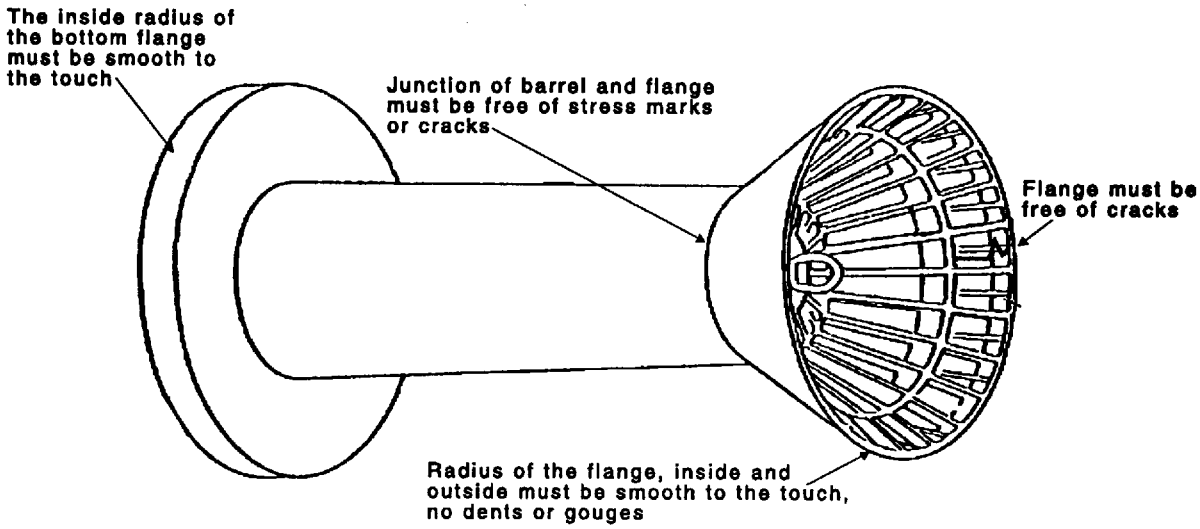


Figure 6-3
Tapered Flange Reels

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Section 7
MARKING OF REELS

7.1 GENERAL

This section applies to all reels covered in Sections 4, 5 and 6, medium and large reels.

Following each cleaning or reclaiming cycle, each reel shall be marked with a reclaimer's code, location, and date.

7.2 MARKINGS

Markings shall be ink or paint of a contrasting color to the reel. They shall not rub off or affect the plastic reel or the wire placed on the reel.

7.3 MARKING POSITION

Markings shall appear on the inside area of the bottom flange. Date stamps from previous reclaiming cycles shall not be removed. The stamp shall not be placed over previous stamps.

7.4 DATE

The date shall be either six digits (xx xx xx)—month, day, and year—or four digits (xx xx)—month and year—at least 1/4 inch high.

7.5 OWNERSHIP

If the name of the reel owner does not appear on the reel, stamp the barrel "Property of" and the owner's name.

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Section 8
PACKAGING OF RECLAIMED REELS

8.1 PALLETIZING

All reels shall be palletized as specified by the reel owner. Any corner or leveling supports must be of wood, plastic foam, or solid fiber material and must not crush under double stacking of the pallets. Pallet load quantities shall be defined by the individual owners.

Pressure-sensitive tape shall not be used to secure the reels on the pallet. Plastic or steel banding shall not be used.

The use of shrink film bag is recommended. The film must extend down to cover at least three-fourths of the pallet thickness. Only reels contained in black shrink film may be stored outside or in direct sunlight.

All reels must be carefully packed so flanges interlock and touch the barrels of adjacent reels in both horizontal and vertical planes. Nest reels by interleaving reel flanges and alternating reel position-top and bottom reversed.

Reels shall not be mixed. All reels on a single pallet must be of the same code number and the same manufacturer.

8.2 MARKING

Each pallet must be identified with the following data:

a. Reel code number, if applicable, part number, quantity, reel dimensions, purchase order number (where applicable), 'reclaimed,' vendor identification, and shipping date.

b. Marking information shall be on the front (entry) side of the pallet in large bold print. A pressure sensitive label may be used.

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NEMA STANDARDIZATION

The purpose of NEMA Standards, their classification and status are set forth in certain clauses of the NEMA *Standardization Policies and Procedures* manual and are referenced 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 their particular needs. 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.

(Standardization Policies and Procedures, p. 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.

(Standardization Policies and Procedures, p. 2)

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.

(Standardization Policies and Procedures, p. 8)

Categories of Standards

National Electrical Manufacturers Association Standards are of three classes:

1. NEMA Standard, which relates to a product, process or procedure 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.
3. Adoptive Standard, which is adopted in whole or in part from the standards of another organization, either domestic, regional, or international.

(Standardization Policies and Procedures, pp 7 & 16)

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, which standard has been approved by at least two-thirds of the members of the Subdivision eligible to vote on the standard.

(Standardization Policies and Procedures, pp. 7 & 16)

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, and which has been approved by at least 90 percent of the members of the Subdivision eligible to vote thereon. *(Standardization Policies and Procedures, pp 7 & 16)*

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.

July 17, 1990

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