Setting Standards for Excellence

To: Current Holders of NEMA WC 26-2000/EEMAC 201-2000

From: NEMA Communications Department

Date: January 27, 2003

Subject: Errata to NEMA WC 26-2000/EEMAC 201-2000

The present publication of NEMA WC 26-2000/EEMAC 201-2000, *Binational Wire and Cable Packaging Standard,* has incorrect information on the following:

- Page 17, Table 3-1, Minimum Drum Diameters of Reels for Cables

Please insert the attached new page which has the error corrected. The shaded area indicates the change.

Thank you for your assistance in this matter.

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January 2003 Errata to

NEMA Standards Publication No. WC 26-2000
EEMAC Standards Publication 201-2000

Binational Wire and Cable Packaging Standard

Published by

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

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Section 3
MINIMUM DRUM DIAMETERS

Excessive or extreme bending can be detrimental to cable. Limitations on cable bending can best be expressed by identifying cable type and expressing the bending limit in terms of a multiplier of cable diameter.

Table 3-1
MINIMUM DRUM DIAMETERS OF REELS FOR CABLES
These Diameters are Not To Be Used for Installation

	Type of Cable	Minimum Drum Diameter as a Multiple of Outside Diameter of Cable			
		Type of Insulation			
		Paper Solid and Gas	Paper Oil Filled	Varnish Cloth	Extruded
A.	Single and multiple conductor nonmetallic covered cable				
	1. Non-shielded and wire shielded, including cables with concentric wires:				
	a) 0–2000 volts	14	...	14*	10
	b) Over 2000 volts				
	1) Non-jacketed with concentric wires	...	...	...	14
	2) All others	14	...	14*	12
	2. Tape shielded	14	...	14*	14
	a) Helically applied	14	...	14*	14
	b) Longitudinally applied flat tape	...	...	...	20
	c) Longitudinally applied corrugated tape	...	...	...	14
B.	Single and multiple-conductor metallic-covered cable:				
	1. Tubular metallic sheathed;				
	a) Lead	14	14**	14*	14
	b) Aluminum				
	1) Outside diameter—1.75" and less	25	25	25	25
	2) Outside diameter—1.751" and larger	30	30	30	30
	2. Wire armored	15	18	16*	16
	3. Flat tape armored	16	18	16*	16
	4. Corrugated metallic sheathed	16	18	14*	14
	5. Interlocked armor	14	18	14*	14
C.	Multiple single conductors cabled together without common covering, including self-supporting-cables The circumscribing overall diameter shall be multiplied by the factor given in item A or B and then by the reduction factor:	0.85	...	0.85	0.75
D.	For combinations of the types described in items A, B, C, the highest factor for any component types shall be used.	...	...	...	...
E.	Single and multiple-conductor cable in coilable nonmetallic duct. Outside diameter of duct, inches.				
	0.0–0.50	...	...	...	26
	0.51–1.00	...	...	...	24
	1.01–1.25	...	...	...	22
	1.26–1.50	...	...	...	21
	Over 1.50	...	...	...	19
F.	Fiber Optic	20 x Fiber Optic Cable OD but in no case less than 12 inches.			
G	Bare Conductor	20 x Conductor OD			

* For 1000 kcmil and larger, no less than 25 x bare conductor OD

** For single conductor cables with more than 500 mils of insulation, this factor is 18

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NOTES

1 When metallic-sheathed cables are covered only by a thermosetting or thermoplastic jacket, the “outside diameter” is the diameter over the metallic sheath itself. In all other cases, the outside diameter is the diameter outside of all the material on the cable in the state in which it is to be wound upon the reel.

2 For “flat-twin” cables (where the cable is placed upon the reel with its flat side against the drum), the minor outside diameter shall be multiplied by the appropriate factor to determine the minimum drum diameter.

3 The multiplying factors given for item E refer to the outside diameter of the duct.

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To: Holders of WC 26-2000
From: NEMA Communications Department
Date: November 17, 2000
Subject: Errata for pages 17-18 of WC 26-2000

Attached is an errata sheet for NEMA Standards Publication WC 26-2000/EEMAC 201-2000. An error was reported in Table 3-1. That section which was previously in error is highlighted and corrected in the attached errata sheet.

Please insert the errata into your existing document or cross out the incorrect information and replace that information with the highlighted information in the attached errata sheet.

We apologize for any inconvenience this error may have caused you.

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	1) Non-jacketed with concentric wires	...	...	...	12
	2) All others	14	...	14*	14
	2. Tape shielded	14	...	14*	14
	a) Helically applied	14	...	14*	14
	b) Longitudinally applied flat tape	...	...	...	20
	c) Longitudinally applied corrugated tape	...	...	...	14
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D.	For combinations of the types described in items A, B, C, the highest factor for any component types shall be used.	...	...	...	...
E.	Single and multiple-conductor cable in coilable nonmetallic duct. Outside diameter of duct, inches.				
	0.0–0.50	...	...	...	26
	0.51–1.00	...	...	...	24
	1.01–1.25	...	...	...	22
	1.26–1.50	...	...	...	21
	Over 1.50	...	...	...	19
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NEMA STANDARDS PUBLICATION

WC 26/ EEMAC 201

BINATIONAL WIRE AND CABLE PACKAGING STANDARD

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

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NEMA Standards Publication No. WC 26-2000
EEMAC Standards Publication 201-2000

Binational Wire and Cable Packaging Standard

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Foreword

The purpose of this Standards Publication is to provide practical information concerning the packaging of wire and cable for the North American wire and cable industry. There are, however, scores of different sizes and types of wire and cable products; and the determination of the most desirable standard packages for each, from both the manufacturer's and users' points of view, requires careful consideration of the many variables.

The issuance or existence of these standards does not in any respect prevent or restrict any member or nonmember of NEMA or EFC from supplying customers with reels or packages not in conformance with these standards.

User input has been considered throughout the development of this Standards Publication.

This Standards Publication was developed by the Technical Harmonization Committee (THC) on Wire and Cable Packaging which consists of representatives from the Electrical Equipment Manufacturers Advisory Council (EEMAC), an affiliate of Electro-Federation Canada, and the National Electrical Manufacturers Association (NEMA). This standards publication will be reviewed periodically by THC and revised as necessary to keep it current with advancing technology. Comments or proposed revisions are welcomed and should be submitted to:

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National Electrical Manufacturers Association
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Rosslyn, Virginia 22209
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Vice President, EEMAC
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5800 Explorer Drive
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This Standards Publication was developed by the Building Wire and Cable Section and the Power and Control Cable Section of NEMA. 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 sections were composed of the following members:

AFC Cable Systems—New Bedford, MA
Alcan Cable—Atlanta, GA
Amercable—El Dorado, AR
American Insulated Wire Corporation—Pawtucket, RI
AXA Cables-San Nicolas De Los Garza NL
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Cable USA—Dekoron Division, Houston, TX
Colonial Wire & Cable Co., Inc.—Hauppauge, NY
Encore Wire Corporation—McKinney, TX
Furon Company—Aurora, OH
Hendrix Wire & Cable Co.—Milford, NH
Rome Cable Corporation—Rome, NY
Service Wire Company—Culloden, WV
Superior Essex Industrial Group, Ft. Wayne, Indiana
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The Kerite Company—Seymour, CT
The Okonite Company—Ramsey, NJ
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Alcatel Canada Wire, Inc.—Markham, ON
Belden (Canada) Inc.—Cobourg, ON
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BIW Cable Systems, Ltd.—Burlington, ON
Cable Tech., a Division of Noma, Inc.—Stouffville, ON
Domtech Holdings, Inc.—Trenton, ON
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Noma Consumer Electrical—Scarborough, ON
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Section 1
GENERAL

1.1 SCOPE

This standard covers uniform requirements for packaging electrical wire and cable and replaces the following NEMA/EEMAC standards:

PC 1-1973	*Gas Tight Returnable Steel Shipping Reels for Pipe-type Cable*
WC 6-1980	*Minimum Drum Diameters of Reels for Cables*
WC 20-1976	*Dimensions and Capacities of Returnable Reels for Wires and Cables*
WC 21-1978	*Nonreturnable Reels for Wires and Cables*
WC 22-1979	*Construction of Steel Fluted Returnable Reels for Wires and Cables*
WC 25-1975	*Protective Coverings for Wire and Cable Reels*
WC 26-1990	*Wire and Cable Packaging (Rev 1-8-93)*
EEMAC 200-1-1995	*Returnable And Non-Returnable Reels*

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Section 2
CONSTRUCTION OF PACKAGE TYPES

2.1 RETURNABLE REELS

Generally speaking, returnable reels are defined as steel, plastic, or extra heavy duty wood reels (class 3), intended to provide a package for the delivery, storage, and dispensing of the product. The reels are intended to be returned to the cable manufacturer or his designated agent and used for multiple shipments of product.

2.1.1 Gas-Tight Returnable Steel Shipping Reels

A suggested standard for future design of gas-tight returnable steel shipping reels for pipe-type cable is given in Table 2-1.

2.1. 2 Steel Fluted Reels

Steel fluted reels utilize a fluted or corrugated flange design to develop a strong and durable package. Reels designated RM are constructed with flatbar tires (see Figure 2-1). Reels designated RMT utilize I-beam tires (see Figure 2-2). RM and RMT steel fluted reels are classified, as follows:

a. Class 1 reels shall be for general-purpose applications. Construction details and load limitations shall be in accordance with Table 2-2.

b. Class 2 reels shall be for heavy-duty applications. Construction details and load limitations shall be in accordance with Table 2-3.

2.1.3 Engineered Plastic Reels

Construction of engineered plastic reels shall be specified by the wire and cable manufacturer. General dimensions and capacities shall be in accordance with Table 2-6.

A more detailed table of specific construction will be added as these reels are developed in the marketplace.

2.1.4 Extra Heavy Duty Wood Reels

Class 3 reels are designated for multiple use or extra heavy duty applications where cable is of greater weight than listed for Class 2 wood reels. Construction details of the standard size of Class 3 wood reels shall be in accordance with Table 2-6.

2.2 REUSABLE WOOD REELS

Generally speaking, reusable wood reels are intended to provide a package for the delivery, storage and dispensing of the product and are not intended to be returned to the cable manufacturer. However depending on its condition, a reusable wood reel may be returned to a reel manufacturer or refurbisher for reconditioning and reuse.

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2.2.1 Wood Reels

Reels varying from standard sizes may be designed for particular applications by applying the requirement for the same or next larger flange diameter.

a. Class 1 reels shall be for general purpose applications. Construction details of the standard sizes of Class 1 wood reels shall be in accordance with Table 2-4.

b. Class 2 reels shall be for heavy duty applications. Construction details of the standard sizes of Class 2 wood reels shall be in accordance with Table 2-5.

2.3 NONRETURNABLE REELS

Any of the reels in this standard can be designated by the cable manufacturer as nonreturnable.

Small nonreturnable packages are generally referred to as spools (Table 2-7) and are constructed of a variety of materials.

2.3.1 Steel Reels

Although steel reels are not generally used in nonreturnable application, some may be used to suit special circumstances and for export.

Construction of metal nonreturnable reels shall be specified by the wire and cable manufacturer.

2.3.2 Wood Reels

Construction of wood nonreturnable reels used to suit special circumstances and for export shall be specified by the wire and cable manufacturer.

2.3.3 Engineered Plastic Reels

Construction of Engineered Plastic nonreturnable reels used to suit special circumstances and for export shall be specified by the wire and cable manufacturer.

2.3.4 Plywood Reels and Spools

Plywood reels and spools are generally constructed in accordance with Table 2-7 and are considered to be nonreturnable in all cases. Due to the many possible variations the final design shall be specified by the wire and cable manufacturer.

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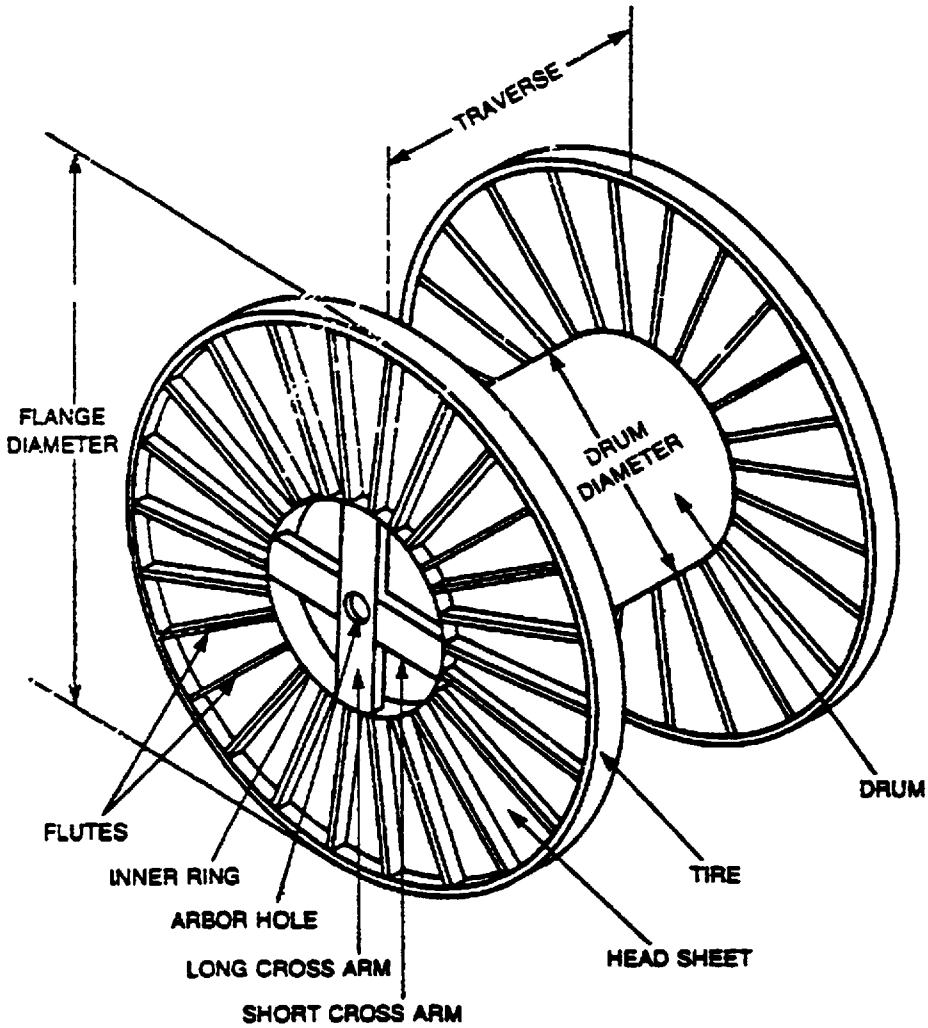

Figure 2-1
FLAT BAR TIRE FLUTED STEEL REEL—TYPE RM

NOTE—When required, cable test hole in the flange shall not have more than 3 flutes removed to provide this opening. The cable test hole shall be reinforced along the cutout with a metal equal to or greater than that required for use in the drum of the reel. Height of cable test hole to be no greater than one-half the length.

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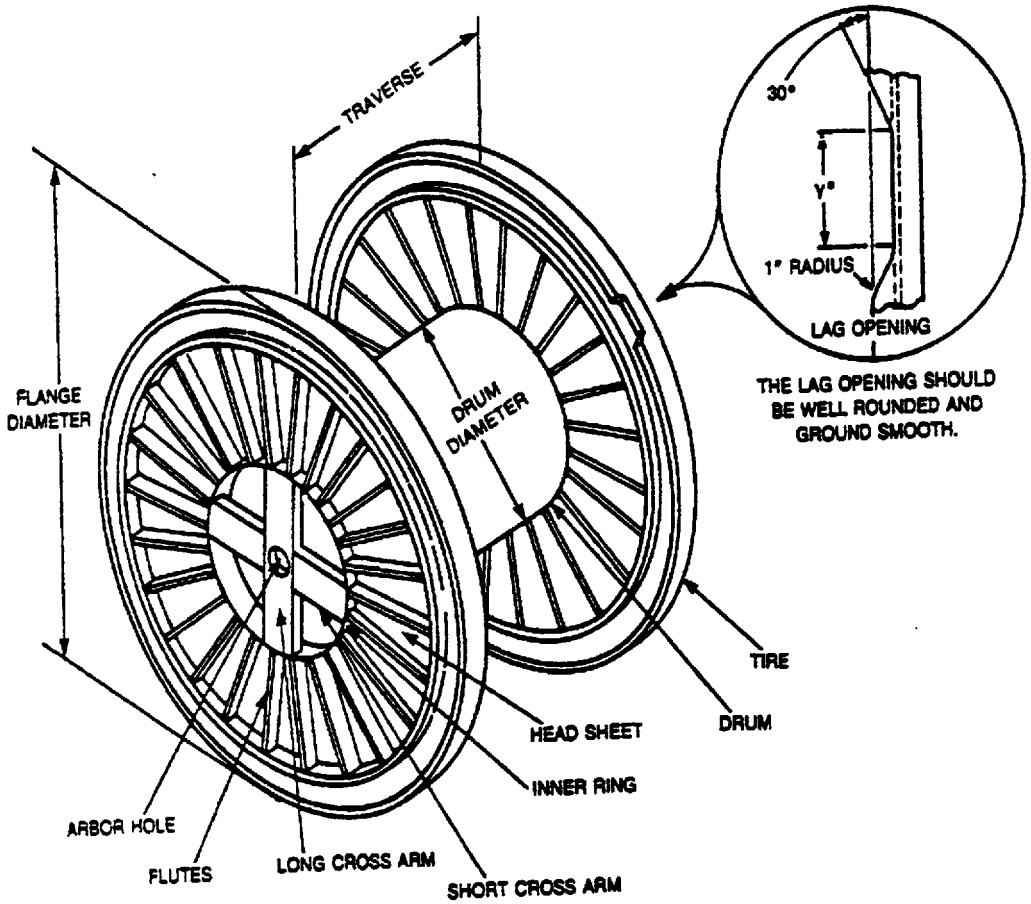

Figure 2-2
I-BEAM TIRE FLUTED STEEL REEL—TYPE RMT

NOTE—When required, cable test hole in the flange shall not have more than 3 flutes removed to provide this opening. The cable test hole shall be reinforced along the cutout with a metal equal to or greater than that required for use in the drum of the reel. Height of cable test hole to be no greater than one-half the length.

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Table 2-1
GAS TIGHT RETURNABLE STEEL SHIPPING REELS FOR PIPE-TYPE CABLE

Flange Diameter, Inches	Inside Traverse, Inches	Drum Diameter, Inches	Maximum Overall Width, Inches	Arbor, Inches
90	48	56	63	5-1/4
96	66	60	81	5-1/4
112	72	72	87	5-1/4
120	78	80	93	5-1/4
128	92	90	107	6-1/4
142	82	96	98	6-1/4

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Table 2-2
GENERAL PURPOSE STEEL FLUTED RETURNABLE REELS FOR WIRE AND CABLES—CLASS 1
(See Figures 2-1 and 2-2)

TYPE*	REEL DIMENSIONS FL	TRAV	DRUM	MAX O'ALL WIDTH INCHES	ARBOR HOLE DIA INCHES	MAX NUMBER FLUTES PER HD	TIRE SIZE INCHES	CROSS ARMS U.S.S. GAUGE	LONG INCHES	SHORT INCHES	DRUM U.S.S. GAUGE	INNER RING DIMENSIONS INCHES	(FLANGE) HEAD-SHEET U.S.S. GAUGE	MAXIMUM CAPACITY LBS	KGS
RM	42	24	24	33	3.25	24	2X5/16	8	5X2	4X2	12	3-3/4 x 3/16	16	1,956	887
RM	48	24	24	33	3.25	24	2X5/16	8	5X2	4X2	12	3-3/4 x 3/16	16	3,072	1,393
RM	54	32	32	41	3.25	30	2X5/16	8	5X2	4X2	12	3-3/4 x 3/16	16	4,464	2,024
RM	60	32	32	41	3.25	30	2X5/16	8	5X2	4X2	12	3-3/4 x 3/16	16	6,360	2,884
RM	66	32	36	41	3.25	32	2-1/2X1/2	8	6X2	5X2	12	3-3/4 x 3/16	16	7,680	3,482
RM	72	36	40	45	3.25	40	2-1/2X1/2	8	6X2	5X2	12	3-3/4 x 1/4	16	10,260	4,654
RM	72	36	48	45	3.25	40	2-1/2X1/2	8	6X2	5X2	12	3-3/4 x 1/4	16	7,872	3,570
RM	78	36	48	45	3.25	40	2-1/2X5/8 †	8	6X2	5X2	12	3-3/4 x 1/4	16	10,752	4,876
RMT	84	36	42	45	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x2	6X2	10	4 x 1/4	16	13,608	6,171
RMT	84	45	42	55	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x2	6X2	10	4 x 1/4	16	17,004	7,711
RMT	84	45	56	55	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x2	6X2	10	4 x 1/4	16	11,196	5,050
RMT	90	45	42	55	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x2	6X2	10	4-1/4 x 1/4	16	21,036	9,540
RMT	90	45	56	55	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x2	6X2	10	4-1/4 x 1/4	16	15,216	6,900
RMT	90	54	56	64	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x2	6X2	8	4-1/4 x 1/4	16	18,252	8,277
RMT	96	60	42	71	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x3	6X3	8	4-1/2 x 5/16	14	26,000	11,719
RMT	96	60	56	71	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x3	6X3	8	4-1/2 x 5/16	14	26,000	11,719
RMT**	108	74	56	85	5.25	40	7.5LB/FT, 3" I-BEAM	8	7-7/8x3	6X3	8	4-1/2 x 5/16	14	30,000	13,605

* RM—Flat bar tire

** Generally used for aluminum wire and cable

†Alternate size is 3 x 1/2 inches

RMT—I Beam Tire

NOTE—Tie holes, if necessary, shall be in the flat portion of the head sheet. There will be no holes in the flute itself.

NOTE—A range of 3 to 3.25 and 5 to 5.25 inch arbor hole diameter shall be permitted for existing reels until the year 2005.

WELDING REQUIREMENTS FOR CLASS 1 REELS

Head Sheet to tire-at all radii of flute-intermittent weld

Head sheet to inner ring-at all radii of flute-intermittent weld

Drum to inner ring-intermittent weld

Cross arm to cross arm-continuous weld

Cross arm to inner ring-continuous weld

Cross arm to hub -continuous weld

Back-up plate to hub and cross arm--continuous weld

Port frame-continuous weld

All welds shall reflect good welding practice with proper penetration.

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Table 2-3
HEAVY DUTY STEEL FLUTED RETURNABLE REELS FOR WIRE AND CABLES—CLASS 2
(See Figures 2-1 and 2-2)

	REEL DIMENSIONS			MAX O'ALL WIDTH	ARBOR HOLE DIA	MAX NUMBER FLUTES		CROSS ARMS			DRUM	INNER RING	(FLANGE) HEADSHEET	MAXIMUM CAPACITY	
								U.S.S.	LONG	SHORT	U.S.S.	DIMENSIONS	U.S.S.		
TYPE*	FL	TRAV	DRUM	INCHES	INCHES	PER HD	TIRE SIZE	GAUGE	INCHES	INCHES	GAUGE	INCHES	GAUGE	LBS	KGS
RM	42	24	24	33	3.25	24	2 x 1/2	8	5X2	4X2	12	3-3/4 x 3/16	16	3,260	1,478
RM	48	24	24	33	3.25	24	2 x 1/2	8	5X2	4X2	12	3-3/4 x 3/16	16	5,120	2,321
RM	50	32	23	38	3.25	24	2x 1/2	8	5x2	5x2	10	3-3/4x3/16	16	8,000	3,630
RM	54	32	32	41	3.25	30	2 x 1/2	8	5X2	4X2	12	3-3/4 x 3/16	16	7,440	3,374
RM	60	32	32	41	3.25	30	2 x 1/2	8	5X2	4X2	12	3-3/4 x 3/16	16	10,600	4,807
RM	66	32	36	41	3.25	32	2-1/2 x 1/2	8	6X2	5X2	10	3-3/4 x 3/16	16	12,800	5,804
RM	68	38	28	46	3,25	28	21/2 x1/2	8	6x2	6x2	11	3-3/4x3/16	16	7,000	3,630
RM	72	36	40	45	3.25	40	2-1/2 x 5/8 †	8	6X2	5X2	10	3-3/4 x 1/4	16	17,100	7,755
RM	72	36	48	45	3.25	40	2-1/2 x 5/8 †	8	6X2	5X2	10	3-3/4 x 1/4	16	13,120	5,950
RM	78	36	48	45	3.25	40	2-1/2 x 3/4 ††	8	6X2	5X2	10	3-3/4 x 1/4	14	17,920	8,126
RM	78	48	35	56	5.25	40	2-1/2 x 1/2	8	8x2	4x2	11	4-1/4X1/4	14	20,000	9,072
RMT	84	36	42	45	5.25	40	7.5LB/FT, 3" I BEAM	8	7-7/8X3	6X3	10	4X1/4	14	22,680	10,285
RMT	84	45	42	55	5.25	40	7.5LB/FT, 3" I BEAM	8	7-7/8X3	6X3	8	4X1/4	14	28,340	12,852
RMT	84	45	56	55	5.25	40	7.5LB/FT, 3" I BEAM	8	7-7/8X3	6X3	8	4X1/4	14	18,660	8,462
RMT	90	45	42	55	5.25	40	7.5LB/FT, 3 " I BEAM	8	7-7/8X3	6X3	8	4-1/4X1/4	14	30,000	13,605
RMT	90	45	56	55	5.25	40	7.5LB/FT, 3" I BEAM	8	7-7/8X3	6X3	8	4-1/4X1/4	14	30,000	13,605
RMT	90	54	56	64	5.25	40	7.5LB/FT, 3" I BEAM	8	7-7/8X3	6X3	7	4-1/4X1/4	14	30,000	13,605
RMT	96	60	42	71	5.25	40	7.5LB/FT, 3" I BEAM	7	7-7/8 x 3	7-7/8 x 3**	7	4-1/2 x 5/16	12	40,000	18,014
RMT	96	60	56	71	5.25	40	7.5LB/FT, 3 " I BEAM	7	7-7/8 x 3	7-7/8 x 3**	7	4-1/2 x 5/16	12	40,000	18,014
RMT	108	74	56	85	5.25	40	7.5LB/FT, 3" I BEAM	7	7-7/8 x 3	7-7/8 x 3**	7	4-1/2 x 5/16	12	40,000	18,014

* RM - Flat bar tire

** For added stability, two reinforcing angles, each 2" x 3" x 1/4", may be welded 180 degrees apart at the junction of the short and long cross arms and spanning the traverse of the reel.

† Alternate size is 3 x 1/2 inches

†† Alternate size is 3 x 5/8 inches

RMT-I Beam tire

NOTE—Tie holes, if necessary, shall be in the flat portion of the head sheet. There will be no holes in the flute itself

NOTE—A range of 3 to 3.25 and 5 to 5.25 inch arbor hole diameter shall be permitted for existing reels until the year 2005.

WELDING REQUIREMENTS FOR CLASS 2 REELS

Head sheet to tire—continuous weld

Head sheet to inner ring--continuous weld

Drum to inner ring—continuous weld

Cross arm to cross arm-continuous weld

Cross arm to inner ring-continuous weld

Cross arm to hub—continuous weld

Back-up plate to hub and cross arm—continuous weld

Port frame-continuous weld

All welds shall reflect good welding practice with proper penetration.

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Table 2-4
GENERAL PURPOSE REUSABLE WOOD REELS—CLASS 1

REEL DIMENSIONS			MIN FL	MAX O'ALL	ARBOR HOLE	MIN. STAVE	DRIVE PIN			TEST	BUSH OR	TIE RODS No. &	ASSEMBLY	MIN. # OF NAIL	APPROX. TARE WT.		CAPACITY	
FL	TRAV	DRUM	THICK	WIDTH	DIA	THICK	QTY	DIA	RADIUS	HOLE	PLATE	Size	WASHERS	RINGS	LBS	KGS	LBS	KGS
20	12	10	1.250	15.0	3.06	0.625	1	1.00	3.5	1.5		3 x 5/16	2.0	2	22	10	550	250
24	12	10	1.250	15.0	3.06	0.625	1	1.00	3.5	1.5		3 x 5/16	2.0	2	28	13	550	250
24	18	10	1.250	21.0	3.06	0.625	1	1.00	3.5	1.5		3 x 5/16	2.0	2	31	14	550	250
27	18	12	1.250	21.5	3.06	0.750	1	1.00	4.5	1.5		3 x 5/16	2.0	2	38	17	550	250
30	18	12	1.250	21.5	3.06	0.750	1	1.00	4.5	1.5		4 x 3/8	2.0	3	45	21	750	340
32	24	14	1.500	28.5	3.06	0.750	1	1.00	4.5	2.0		4 x 3/8	2.0	3	66	29	950	430
36	24	17	1.500	28.5	3.06	0.750	1	1.25	6.0	2.0		4 x 3/8	2.5	3	68	30	1500	680
40	24	17	1.500	28.5	3.06	0.875	1	1.25	6.0	2.0		4 x 3/8	2.5	4	80	36	1500	680
42	26	18	1.500	30.5	3.06	0.875	1	1.25	6.0	2.0		4 x 3/8	2.5	4	90	41	1500	680
45	28	21	1.500	32.5	3.06	0.875	1	1.50	8.5	2.5		4 x 3/8	2.5	4	106	48	1500	680
50	32	24	1.750	37.0	3.06	1.062	2	1.50	10.0	2.5	*	6 x 3/8	2.5	4	143	65	3000	1360
54	32	26	1.750	37.0	3.06	1.062	2	1.50	10.0	3.0	*	6 x 3/8	2.5	5	164	74	3000	1360
58	32	28	1.750	37.0	3.06	1.062	2	1.50	10.0	3.0	*	6 x 3/8	2.5	5	187	85	3000	1360
66	32	36	2.250	38.0	3.06	1.125	2	3.00	11.5	4.0	YES	6 x 3/8	3.0	5	285	129	4500	2040
66	36	36	2.250	42.0	3.06	1.125	2	3.00	11.5	4.0	YES	6 x 3/8	3.0	5	292	132	4500	2040
72	36	36	2.250	42.0	3.06	1.125	2	3.00	11.5	4.0	YES	6 x 1/2	3.0	5	335	152	4500	2040
72	48	36	2.250	54.0	3.06	1.312	2	3.00	11.5	4.0	YES	6 x 1/2	3.0	5	397	180	4500	2040
78	48	42	2.250	54.0	3.06	1.312	2	3.00	11.5	4.5	YES	6 x 1/2	3.0	6	471	214	4500	2040
84	54	48	2.750	61.0	3.06	1.312	2	3.00	11.5	4.5	YES	8 x 1/2	3.0	6	639	290	6000	2720
90	54	48	2.750	61.0	3.06	1.312	2	3.00	11.5	4.5	YES	8 x 1/2	3.0	6	704	319	6000	2720
96	54	56	2.750	61.0	3.06	1.312	2	3.00	11.5	5.0	YES	8 x 1/2	3.0	6	816	370	6000	2720

*See Note 6.

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NOTES

1 Washers are required on all bolts. Cup washers are permitted where gross weight is not in excess of 6000 pounds and overall width is at a premium. Use of cup washers will reduce overall width by approximately 1 inch. Flat washers to be a minimum diameter of 3" with a minimum thickness of .125".

2 Tapered cable test holes are required. Elongated test holes can be provided upon request.

3 Center supports required on all reels with an inside traverse greater than 40" when 80% of the maximum reel capacity listed in Table 2-4 is exceeded.

4 Construction dimensions may be varied for cable weight and/or the volumetric capacity of the reel.

5 Headed nails are to be used, spaced 3 inches apart with a minimum countersink of 1/16" on the cable side and a 1/8" cinch on the opposite side.

6 Metal bushings are required when gross weight is in excess of 2500 lbs.

7 The tare weight is an approximation. The weight of wood reels can vary significantly based on wood species, moisture content, age, etc.

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Table 2-5
HEAVY DUTY REUSEABLE WOOD REELS—CLASS 2

REEL DIMENSIONS			MIN FL THICK	MAX O'ALL WIDTH	ARBOR HOLE DIA	MIN STAVE THICK	DRIVE PIN			TEST	BUSH OR	TIE RODS No. &	ASSEMBLY WASHERS	MIN. # OF NAIL	APPROX. TARE WT.		MAXIMUM CAPACITY	
	TRAV	DRUM	INCHES	INCHES	INCHES	INCHES	QTY	DIA	RADIUS	HOLE	PLATE	Size	INCHES	RINGS	LBS	KGS	LBS	KGS
30	22	16	1.500	26.25	3.06	0.750	1	1.00	4.5	1.5		4 x3/8	2.0	3	80	36	1000	455
36	24	17	1.750	28.50	3.06	1.062	1	1.25	6.0	2.0		4 x 3/8	2.5	3	81	37	2500	680
36	22	18	1.750	26.50	3.06	1.062	1	1.25	6.0	2.0		4 x 3/8	2.5	3	85	39	2500	1135
38	22	20	1.750	26.50	3.06	1.062	1	1.25	6.0	2.0		4 x 3/8	2.5	4	90	41	2500	1135
40	24	17	1.750	28.50	3.06	1.062	1	1.25	6.0	2.0		4 x 3/8	2.5	4	94	43	2500	1135
42	26	18	1.750	30.50	3.06	1.062	1	1.25	6.0	2.0	*	4 x 3/8	2.5	4	110	50	3000	1360
42	28	21	1.750	32.50	3.06	1.062	1	1.25	6.0	2.0	*	4 x 3/8	2.5	4	120	55	3000	1360
45	28	21	1.750	32.50	3.06	1.062	1	1.50	8.5	2.5	*	5 x 3/8	2.5	4	125	57	3500	1590
48	28	24	2.125	34.25	3.06	1.250	2	1.50	10.0	2.5	*	6 x 3/8	2.5	4	160	73	3500	1590
50	32	24	2.125	38.00	3.06	1.250	2	1.50	10.0	2.5	*	6 x 3/8	2.5	4	180	82	4800	2180
54	32	26	2.125	39.50	3.06	1.250	2	1.50	10.0	3.0	*	6 x 3/8	2.5	5	235	107	6500	2950
58	32	28	2.125	39.50	3.06	1.250	2	1.50	10.0	3.0	*	6 x 3/8	2.5	5	265	120	6500	2950
60	28	28	2.750	35.50	3.06	1.375	2	3.00	11.5	3.0	YES	6 x 1/2	3.0	5	300	136	6500	2950
66	28	30	2.750	35.50	3.06	1.375	2	3.00	11.5	4.0	YES	6 x 1/2	3.0	5	325	148	7000	3175
66	32	36	2.750	39.50	3.06	1.375	2	3.00	11.5	4.0	YES	6 x 1/2	3.0	5	375	170	7000	3175
66	36	36	2.750	43.50	3.06	1.375	2	3.00	11.5	4.0	YES	6 x 1/2	3.0	5	431	196	8000	3630
72	36	36	3.000	43.50	3.06	1.375	2	3.00	11.5	4.0	YES	8 x 1/2	3.0	5	540	245	8000	3630
72	48	36	3.000	56.00	3.06	1.375	2	3.00	11.5	4.0	YES	8 x 1/2	3.0	5	565	255	8000	3630
78	48	42	3.000	56.00	3.06	1.375	2	3.00	11.5	4.5	YES	8 x 5/8	3.0	6	660	300	9000	4080
84	54	48	3.250	62.00	3.06	1.500	2	3.00	11.5	4.5	YES	8 x 5/8	3.0	6	940	425	10000	4535
90	54	48	3.250	62.00	3.06	1.500	2	3.00	11.5	4.5	YES	8 x 5/8	3.0	6	990	450	12000	5445
96	54	56	3.250	62.00	3.06	1.500	2	3.00	11.5	4.5	YES	8 x 5/8	3.0	6	1150	525	12000	5445

*See Note 6.

NOTES

1 Washers are required on all bolts. Cup washers are permitted where gross weight is not in excess of 6000 pounds and overall width is at a premium. Use of cup washers will reduce overall width by approximately 1 inch. Flat washers to be a minimum diameter of 3" with a minimum thickness of .125".
2 Tapered cable test holes are required. Elongated test holes can be provided upon request.
3 Center supports required on all reels with an inside traverse greater than 40" when 80% of the maximum reel capacity listed in Table 2-5 is exceeded.
4 Construction dimensions may be varied for cable weight and/or the volumetric capacity of the reel.
5 Headed nails are to be used, spaced 3 inches apart with a minimum countersink of 1/16" on the cable side and a 1/8" clinch on the opposite side.
6 Metal bushings are required when gross weight is in excess of 2500 lbs.
7 The tare weight is an approximation. The weight of wood reels can vary significantly based on wood species, moisture content, age, etc.

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Table 2-6
EXTRA HEAVY DUTY RETURNABLE WOOD REELS—CLASS 3

REEL DIMENSIONS			MIN FLANGE	MAX O'ALL WIDTH	ARBOR HOLE DIA	MIN STAVE THICK	DRIVE PIN			TEST	HUB PLATE		TIE RODS No. &	MIN. DIA. ASSEMBLY WASHERS	MIN. # OF NAIL	APPROX TARE WT.		CAPACITY	
FL	TRAV	DRUM	PLY	INCHES	INCHES	INCHES	QTY	DIA	RADIUS	HOLE	SIZE	BOLTS	Size	INCHES	RINGS	LBS	KGS	LBS	KGS
36	18	16	2 x 1.125	22.5	3.06	1.250	2	1.25	6.0	1.5 x 4	8 x 8 x 1/8	4 x 3/8	4 x 3/8	2.5	3	110	50	2500	1135
40	18	18	2 x 1.375	24.0	3.06	1.250	2	2.00	7.0	2.0 x 6	8 x 8 x 1/8	4 x 3/8	5 x 1/2	2.5	4	145	65	3500	1600
40	24	17	2 x 1.375	30.0	3.06	1.250	2	2.00	7.0	2.0 x 6	8 x 8 x 1/8	4 x 3/8	5 x 1/2	2.5	4	150	68	3500	1600
42	24	24	2 x 1.375	30.0	3.06	1.250	2	2.00	7.0	2.0 x 6	8 x 8 x 1/8	4 x 3/8	5 x 1/2	2.5	4	165	75	4000	1800
45	28	21	2 x 1.375	34.0	3.06	1.250	2	2.00	7.0	2.0 x 6	8 x 8 x 1/8	4 x 3/8	5 x 1/2	2.5	4	200	90	4000	1800
48	24	24	2 x 1.375	30.0	3.06	1.250	2	2.00	7.0	2.0 x 6	8 x 8 x 1/8	4 x 3/8	5 x 1/2	2.5	4	210	95	4000	1800
50	32	23	2 x 1.375	38.0	3.06	1.625	2	2.00	7.0	2.0 x 6	8 x 8 x 1/8	4 x 3/8	5 x 1/2	2.5	4	230	105	5000	2270
54	32	26	2 x 1.375	38.0	3.06	1.625	2	2.00	7.0	2.0 x 8	8 x 8 x 1/8	4 x 3/8	6 x 1/2	2.5	5	310	140	5000	2270
58	32	28	2 x 1.375	38.0	3.06	1.625	2	2.00	7.0	2.0 x 8	8 x 8 x 1/8	4 x 3/8	6 x 1/2	2.5	5	330	150	5000	2270
60	32	32	2 x 1.375	38.0	3.06	1.625	2	2.00	7.0	2.0 x 8	8 x 8 x 1/8	4 x 3/8	6 x 1/2	2.5	5	375	170	5000	2720
66	36	36	2 x 1.500	42.0	3.06	1.625	2	2.00	7.0	2.0 x 8	8 x 8 x 1/8	4 x 1/2	6 x 5/8	3.5	5	540	245	8000	3630
68	38	28	2 x 1.500	44.0	3.06	1.625	2	2.00	7.0	3.5x12	8 x 8 x 1/8	4 x 1/2	6 x 5/8	3.5	5	550	250	8000	3630
72	36	48	2 x 1.500	43.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 5/8	3.5	5	750	340	10000	4535
72	36	36	2 x 1.500	43.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 5/8	3.5	5	705	320	10000	4535
72	48	36	2 x 1.500	55.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 5/8	3.5	5	750	340	9000	4080
78	36	48	2 x 1.500	43.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 5/8	3.5	6	850	385	10000	4535
78	36	40	2 x 1.500	43.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 5/8	3.5	6	805	365	10000	4535
78	48	42	2 x 1.500	55.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 5/8	3.5	6	880	400	10000	4535
84	42	48	2 x 1.500	49.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 3/4	5.0	6	990	450	12000	5445
84	54	48	2 x 1.500	61.0	4.12	1.625	2	2.50	10.0	4.0 x 12	7 x 24 x 1/4	4 x 1/2	8 x 3/4	5.0	6	1080	490	12000	5445
90	46	56	3 x 1.375	55.0	5.25	1.625	2	2.50	10.0	4.0 x 18	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1410	640	15000	6800
90	54	48	3 x 1.375	63.0	5.25	1.625	2	2.50	10.0	4.0 x 18	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1455	660	15000	6800
96	46	56	3 x 1.375	55.0	5.25	1.625	2	2.50	10.0	4.0 x 18	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1545	700	15000	6800
96	46	44	3 x 1.375	55.0	5.25	1.625	2	2.50	10.0	4.0 x 18	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1500	680	15000	6800
96	54	56	3 x 1.375	63.0	5.25	1.625	2	2.50	10.0	4.0 x 18	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1610	730	15000	6800
102	45	50	3 x 1.375	54.0	5.25	1.625	2	2.50	10.0	5.5 x 20	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1640	745	15000	6800
108	46	60	3 x 1.375	55.0	5.25	1.625	2	2.50	10.0	5.5 x 20	12 x 28 x 1/4	6 x 1/2	10 x 3/4	5.0	6	1895	860	15000	6800

See Notes, next page

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NOTES

1 1.50" drum head support plus groove in flange for reels 72" and larger are required.

2 1.50" wide center support for reels 72" and larger are required.

3 Steel pipe through the reel from hub plate to hub plate on reel sizes 90" through 108" are required.

4 Cup washers required.

5 Washers are required on all bolts.

6 Tapered cable test holes are required. Elongated test holes can be provided upon request.

7 Construction dimensions may be varied for cable weight and/or the volumetric capacity of the reel.

8 Headed nails are to be used, spaced 3" apart with a minimum countersink of 1/16" on the cable side and a 1/8" on the opposite side.

9. The tare weight is an approximation. The weight of wood reels can vary significantly based on wood species, moisture content, age, etc.

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Table 2-7
PLYWOOD REELS AND SPOOLS

REEL DIMENSIONS			MIN	MAX	ARBOR HOLE	DRIVE PIN			TEST	TIE RODS NO @	MAXIMUM CAPACITY		APPROX. TARE WT.	
FL	TRAV	DRUM	FL THICK	O'ALL WIDTH	INCHES (NOTE 2)	QTY	DIA	RADIUS	HOLE	SIZE	LBS	KGS	LBS	KGS
6.5	Note 3	1.87	–	–	0.75	1	.370	0.810	3/8	Note 4	–	–	–	–
10.5	Note 3	3.50	–	–	1.43	1	.500	1.370	1-1/2	Note 4	–	–	–	–
14.0	10	6	0.37	10.7	3.06	1	1.00	2.370	3/4	Note 4	100	45	–	–
18.0	10	6	0.50	11.0	3.06	1	1.00	2.370	3/4	Note 4	185	84	–	–
24.0	12	10	0.75	14.0	3.06	1	1.00	3.500	1-1/2	3x5/16	350	159	22	10
24.0	18	10	0.75	20.0	3.06	1	1.00	3.500	1-1/2	3x5/16	525	238	29	13
27.0	18	12	0.87	20.0	3.06	1	1.00	4.500	1-1/2	3x5/16	700	317	39	18
30.0	18	12	0.87	20.0	3.06	1	1.00	4.500	1-1/2	4x3/8	950	431	45	20
32.0	24	14	1.0	26.5	3.06	1	1.00	4.500	2	4x3/8	1500	680	67	30
36.0	24	17	1.0	26.5	3.06	1	1.00	6.000	2	4x3/8	2000	907	70	32
40.0	24	17	1.12	27.0	3.06	1	1.00	6.000	2	4x3/8	2500	1134	–	–
42.0	26	18	1.25	29.0	3.06	1	1.00	6.000	2	4x3/8	3000	1360	–	–
45.0	28	21	1.25	31.0	3.06	1	1.50	8.500	2-1/2	5x3/8	3500	1587	–	–

NOTES

1 Metal bushings are recommended where gross weight is in excess of 2500 pounds or 1133 kgs.

2 The 2.75" arbor hole will be allowed until the year 2000 and 2005 for flanges 14 inches and larger.

3 These items may be supplied in metal plastic or fiber, traverse width may range from 4 to 10 inches.

4 Bolts, steel strap, and other fasteners may be used for spool assembly.

5 Manufacturer's choice of drum material and thickness shall be suited to the maximum capacity listed above.

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Section 3
MINIMUM DRUM DIAMETERS

Excessive or extreme bending can be detrimental to cable. Limitations on cable bending can best be expressed by identifying cable type and expressing the bending limit in terms of a multiplier of cable diameter.

Table 3-1
MINIMUM DRUM DIAMETERS OF REELS FOR CABLES
These Diameters are Not To Be Used for Installation

	Type of Cable	Minimum Drum Diameter as a Multiple of Outside Diameter of Cable			
		Type of Insulation			
		Paper Solid and Gas	Paper Oil Filled	Varnish Cloth	Extruded
A.	Single and multiple conductor nonmetallic covered cable				
	1. Non-shielded and wire shielded, including cables with concentric wires:				
	a) 0–2000 volts	14	...	14*	10
	b) Over 2000 volts				
	1) Non-jacketed with concentric wires	...	...	...	14
	2) All others	14	...	14*	14
	2. Tape shielded	14	...	14*	14
	a) Helically applied	14	...	14*	14
	b) Longitudinally applied flat tape	...	...	...	20
	c) Longitudinally applied corrugated tape	...	...	...	14
B.	Single and multiple-conductor metallic-covered cable:				
	1. Tubular metallic sheathed;				
	a) Lead	14	14**	14*	14
	b) Aluminum				
	1) Outside diameter—1.75" and less	25	25	25	25
	2) Outside diameter—1.751" and larger	30	30	30	30
	2. Wire armored	15	18	16*	16
	3. Flat tape armored	16	18	16*	16
	4. Corrugated metallic sheathed	16	18	14*	14
	5. Interlocked armor	14	18	14*	14
C.	Multiple single conductors cabled together without common covering, including self-supporting-cables The circumscribing overall diameter shall be multiplied by the factor given in item A or B and then by the reduction factor:	0.85	...	0.85	0.75
D.	For combinations of the types described in items A, B, C, the highest factor for any component types shall be used.	...	...	...	...
E.	Single and multiple-conductor cable in coilable nonmetallic duct. Outside diameter of duct, inches.				
	0.0–0.50	...	...	...	26
	0.51–1.00	...	...	...	24
	1.01–1.25	...	...	...	22
	1.26–1.50	...	...	...	21
	Over 1.50	...	...	...	19
F.	Fiber Optic	20 x Fiber Optic Cable OD but in no case less than 12 inches.			
G	Bare Conductor	20 x Conductor OD			

* For 1000 kcmil and larger, no less than 25 x bare conductor OD

** For single conductor cables with more than 500 mils of insulation, this factor is 18

See Notes, next page

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NOTES

1 When metallic-sheathed cables are covered only by a thermosetting or thermoplastic jacket, the "outside diameter" is the diameter over the metallic sheath itself. In all other cases, the outside diameter is the diameter outside of all the material on the cable in the state in which it is to be wound upon the reel.

2 For "flat-twin" cables (where the cable is placed upon the reel with its flat side against the drum), the minor outside diameter shall be multiplied by the appropriate factor to determine the minimum drum diameter.

3 The multiplying factors given for item E refer to the outside diameter of the duct.

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Section 4
REEL COVERINGS

4.1 REEL COVERINGS

Outlined below are suggestions for protective coverings on reels containing electrical cable, cord, and wire for shipment under normal conditions and proper handling. Improved methods of handling, storage, and transportation would permit lesser degrees of protective covering. Six levels of protection are defined for product type and reel size as listed in Table 4-1.

Level 1: No Covering Normally Required

Level 2: Weather Protector

Purpose—To provide protection against weathering during storage
Materials—Weather resistant solid fiberboards greater than 0.020" in thickness
Weather resistant corrugated fiberboards greater than 0.030" in thickness
Flexible films greater than 0.006" in thickness
Laminates of film and fiberboard greater than 0.010" in thickness
Laminates of film and foam greater than 0.010" in thickness

Level 3: Heavy Duty Physical Protector

Purpose—To provide increased physical protection
Materials—Weather resistant solid fiberboard, greater than 0.070" in thickness
Weather resistant corrugated fiberboard, greater than 0.100" in thickness
Plywood
Wood veneers
Wire bound lagging
Double wrap of Level 2 materials

Level 4: Extra Heavy Duty Physical Protector

Purpose—To provide a substantial amount of physical protection
Materials—Weather resistant solid fiberboard, greater than 0.100" in thickness
Wood lags
A double wrap of Level 3 materials
A double wrap of Level 2 materials combined with a wrap of Level 3 material

Level 5: Export

Purpose—To provide substantial amount of physical protection during prolonged transit
Materials—Wood lagging of a 2.0" nominal lumber thickness for reels 40" and larger and 1" nominal lumber thickness for reels less than 40"
If containerized, Level 2 materials

Level 6: Special Packaging

Reel wrap may be reduced to any lesser level in the standard including no covering. In order to help avoid weathering or damage to the cable or reel during shipment, it is suggested that cable shipped with no covering be shipped in full truck load shipments either in closed vans or in tarpaulin covered trucks.

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Table 4-1
RECOMMENDED PRODUCT LEVEL PROTECTION

	Reel Diameter Inches		
	Under 54	**54–72**	**Over 72**
Power and control cable 600 volts and less	1	1	2
Power cable: non-shielded over 600 volts	2	2	2
shielded through 39 kV	2	3	3
shielded 40 kV and up	3	4	4
Metal clad cable (All voltages)	2	2	2
Varnished cloth insulated or paper insulated power cable with lead sheath	3	4	4
Preassembled plastic duct	1	1	1
Bare aluminum and ACSR under 230 kV	2	2	3
ACSR and EHV over 230 kV	4	4	4
Bare copper	2	2	2
Communications cable	1	1	1

	Reel Diameter Inches	
	Under 37"	**37" and larger**
Fiber Optic		
A. Full truckload shipment to designation	2	3
B. LTL shipment palletized	2	3
C. LTL shipment—not palletized— Double wrap of level protection listed for full truckload shipment or wood lagging		

National Motor Freight Classification Item 61175, Class 85—Cable, Electric—Cut To Specified Lengths.

This freight classification is only used when a customer has put the wording "Cut to Specified Length NMFC 61175" on the order. This classification involves additional packaging and shipping charges. Cable cut to an exact length is NOT cut to specified length for shipping purposes unless designated "Cut to Specified Length" on the order.
"Cut to Specified Length" cable is cable which has been prepared for a specified installation. When "Cut to Specified Length" cable is damaged, the claim results in charge for the entire length of cable.

"Cut to Specified Length" cable requires: Wood lagging or 1/2 inch thick foam covered by 0.090 inch solid fiberboard (V3s).
Reel, Packing List, and Bill of Lading must include: "Cut To Specified Length - Any damage will result in a claim for the entire length of cable on this reel."

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Table 4-2
RECOMMENDED PACKAGING MATERIALS

Materials with properties similar to those listed below are acceptable.

NOTE—This table documents the packaging material requirements formerly referenced in Federal Standard PPP-F-320D.

NEMA Level	Material Description	Type	Grade	Thickness Inches, Min.	Bursting PSI, Min. Dry	Strength Avg. Wet*
2	Weather Resistant Solid Fiberboard			0.020		
2	Weather Resistant Corrugated Fiberboard-SW	CF	W5c**	0.042	275	100
2	Weather Resistant Corrugated Fiberboard-DW	CF	V15c**	0.030	300	100
3	Weather Resistant Solid Fiberboard	SF	V3s**	0.090	400	150
3	Weather Resistant Solid Fiberboard	SF	V4s**	0.080	400	150
3	Weather Resistant Corrugated Fiberboard-SW	CF	V3c**	0.100	400	150
3	Weather Resistant Corrugated Fiberboard-DW	CF	V13c**	0.100	400	200
4	Weather Resistant Solid Fiberboard	SF	V2s**	0.100	550	500

Bursting Strength determined in accordance with Federal Test Standard 101.
*after 24 hours immersion conditioned per ASTM D641 or TAPPI T402.
**Reference values from Federal Standard PPP-F-320D.
SW = Single facing wall.
DW = Double facing wall.

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Section 5
MARKING AND IDENTIFICATION

All reels shall be marked and labeled with the following information on the outside of both flanges:

These markings shall be **optional** for reels and spools specified in Table 2-7 and for reels with flanges 40" or less.

a. NEMA/EEMAC Class X.

   where X = 1, 2, or 3 for the applicable reel class

b. Identification of Flange, Traverse, and Drum Dimension. This identification is to identify the volumetric capacity of the reel and determine if it is a standard reel for reuse or recycling by other than the initial user.

c. Additional reel marking should be at the customer's request or at the cable manufacturer's option.

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Section 6
HANDLING AND STORING OF CABLE REELS

This section lists general recommendations for handling and storing of cable reels.

6.1 HANDLING RECOMMENDATIONS

Reels should not be handled in any way that would result in damage to the cable or the reel.

Hooks or forks are not to be applied to the cable to lift the reel.

Reels should not be dropped from any height.

Roll reel in a direction to tighten cable wind. Surfaces on which reels are to be rolled should be flat and clear of debris and protrusions which could damage cable if straddled by the reel flange.

Reels shall be stored in a manner to prevent damage to the reel or cable.

Reels should not be stored near or come in contact with chemical spills, oils, or other harmful materials injurious to the cable or reels.

Factory applied reel coverings should remain in place until removal is necessary for cable installation.

Loose bolts should be tightened.

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Section 7
CAPACITIES OF PACKAGE TYPES

7.1 CALCULATION OF REEL CAPACITY FOR ROUND CABLES

The formulas for calculating the capacities of reels for round cable are shown in 7.1.1 and 7.1.2 and the parameters are defined in 7.1.3. A 5 percent nesting factor and a 95 percent traverse utilization have been built into the formula. Therefore, cables must be wound evenly to obtain uniformity, compactness, and the nesting of successive turns and layers.

7.1.1 Reel Capacity in Feet

$$F = .2617\left[\left[B + \left(\frac{A-2X-B}{1.9D}\right)^{*} 0.95D\right]\left[\frac{A-2X-B}{1.9D}\right]^{*}\left[\frac{0.95C}{D}\right]^{*}\right]$$

*Round off the resultant to the nearest lower whole number.

7.1.2 Reel Capacities in Meters

$$M = .3048 \times F$$

7.1.3 Reel Capacity Parameters

The following parameters are used in the formula in 7.1.1 and 7.1.2 above.

F = Feet of cable on reel
M = Meters of cable on reel
A = Flange diameter, in inches
B = Drum diameter, in inches
C = Inside traverse, in inches
D = Diameter of cable, in inches
X = Defined as the clearance distance between the cable and the outer edge of the reel flange and is equal to 1" or one cable diameter, which ever is larger. On RMT reels, the clearance is based on 1" or one cable diameter, whichever is larger, plus the tire consideration of 3".

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