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NEMA STANDARDS PUBLICATION

NEMA MW 755

STRAIGHT FLANGE MAGNET WIRE PLASTIC SPOOLS/REELS

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NEMA Standards Publication MW 755-1996

STRAIGHT FLANGE MAGNET WIRE PLASTIC SPOOLS/REELS

Published by

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Rosslyn, VA 22209

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Foreword

This standards publication provides guidelines to magnet wire manufacturers and plastic spool/reel suppliers in the design and construction characteristics of commonly used plastic spools and reels; and to provide technical information and data on plastic spools/reels design to users wishing to select appropriate plastic spools/reels for a particular purpose.

The information contained in this publication has been thoroughly reviewed by all suppliers of plastic spools/reels known to be manufacturing 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 magnet wire spools/reels not in conformance with its contents.

This Standards Publication has been 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
National Electrical Manufacturers Association
1300 N. 17th Street, Suite 1847
Rosslyn, VA 22209

This Standards Publication was developed by the Magnet Wire Section of the National Electrical Manufacturers Association. At the time it was approved, the Magnet Wire Section had the following members:

Alcatel Magnet Wire, Inc.—La Grange, KY
American Wire Corporation—Sandy Hook, CT
Bridgeport Insulated Wire Company—Bridgeport, CT
Elektrisola, Inc.—Boscawen, NH
Essex Group, Inc., Magnet Wire Products Group—Fort Wayne, IN
MagneTek, Inc.—Gallman, MS
Optec D D USA, Inc.—Mexico, MO
Phelps Dodge Magnet Wire Company—Fort Wayne, IN
Rea Magnet Wire Company, Inc.—Fort Wayne, IN

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Section 1
GENERAL

1.1 SCOPE

This Publication covers the dimensional, physical, and visual characteristics of newly-molded, straight flange plastic spools/reels for packaging of magnet wire.

1.2 NORMATIVE REFERENCES

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Standards Publication. By reference herein, these publications are adopted in whole or in part as indicated in this Standards Publication, and are available from the organizations listed below.

Deutsche Elektrotechnische
Kommission im DIN und VDE (DKE)
Stresemannallee 15
D - 6000 Frankfurt AM Main 70

DIN 46399-1 — *Delivery Spools for Bare and Insulated Wires: Dimensions*

DIN 46399-2 — *Delivery Spools for Bare and Insulated Wires: Technical Terms of Delivery for Spools of Plastic*

International Electrotechnical Commission
3, rue de Varembé
Case postale 131
CH-1211 Geneva 20

IEC 264-2-1 — *Packaging of Winding Wires - Part 2 - Cylindrical Barreled Delivery Spools Section 1 - Basic Dimensions*

IEC 264-4-1 — *Packaging of Winding Wires - Part 4 - Methods of Test Section 1 - Delivery spools made from thermoplastic material*

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1.3 DEFINITIONS

Parts or features of a magnet wire spool/reel defined in this section, are also illustrated in Figure 1-1.

Arbor Hole: The hole in a flange through which the arbor shaft passes.

Drive Slot: The hole or slot in either or both flanges, which serves as the means for driving the reel on the machine take-up.

Finger Holes: Holes in top flanges which serve as a means for lifting reels by using fingers.

Flange: The parts of spools/reels that are perpendicular to the barrel, which define the traverse distance.

Flashing: Excessive material projections that protrude at mold parting lines.

Inspection Slots: Slots in the flange which leave a portion of the winding exposed, in order to provide a means for visual inspection of the winding.

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

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

Start Ribs: Indentations or molded ridges in the barrel of a spool/reel, which serve as a gripping surface for the wire on the initial layer of the winding.

Straight Flange Straight Barrel Spool/Reel: A spool/reel that contains two straight flanges, and a straight barrel within the winding area, as shown in Figure 4-1.

Straight Flange Tapered Barrel Reel: A spool/reel that contains two straight flanges, and a tapered barrel within the winding area, as shown in Figure 4-2.

Tare Weight: The weight of the empty spool/reel, with no wire applied.

Tie Off Holes: Holes at the junction of the barrel and flange, or on the outside edge of the flange, which serve as a means to tie off the start or end of a reel of wire.

Traverse Distance: The distance between the flanges parallel to the barrel.

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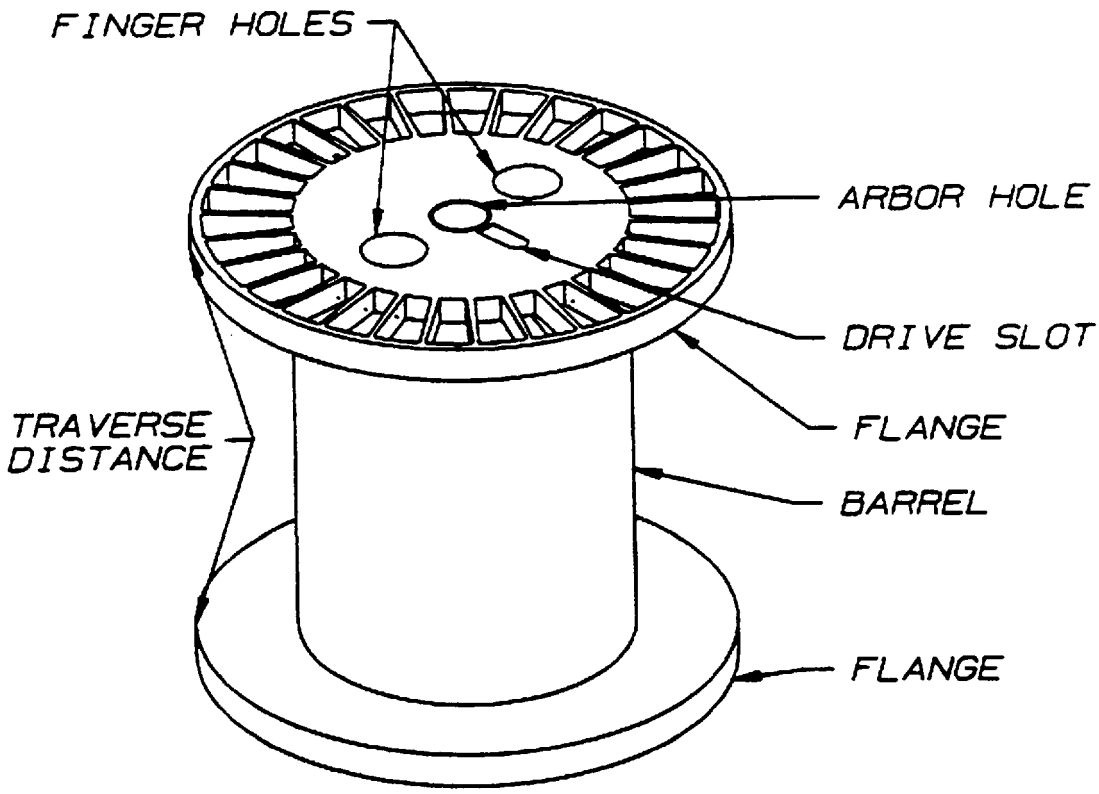


Figure 1-1
PARTS AND FEATURES OF TYPICAL MAGNET WIRE SPOOLS/REELS

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Section 2
RAW MATERIALS

2.1 MATERIALS

All spools/reels shall be fabricated from materials specified by the wire producer.

2.2 MARKINGS

Spools/reels shall be permanently marked in a visible location. The spool/reel shall also carry a marking denoting the country of origin.

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Section 3
PHYSICAL APPEARANCE

3.1 FLANGES

Flanges shall be smooth and free from all material flash which could interfere with over-the-flange de-reeling or cause wire damage.

3.2 FLASHING

Flashing shall be kept to a minimum in the arbor hole in order to prevent spool/reel removal problems on oven and rewind take-ups.

3.3 FLANGE DIAMETER AND INNER FLANGE SURFACES

Flange diameter and inner flange surfaces, and the related radius between these two surfaces shall be free of nicks, scratches, burrs, solvent splash, or solvent runs which will interfere with wire de-reeling and automatic winding.

3.4 BARREL

3.4.1 Surface Condition

The barrel of the spool within its winding area shall be smooth in order to prevent damage to the product. For tapered barrel reels, the barrel of the reel within its winding area may contain a surface and/or ribs to prevent pulldown.

3.4.2 Solvent/Adhesive Runs

Solvent/adhesive runs along the barrel shall not raise or depress the as-molded surface of the barrel in excess of 0.002 inch.

3.5 SOLVENT/ADHESIVE WELD LENGTH

The solvent/adhesive weld length shall be such that it shows signs that at least 90 percent of the bond area has been covered and solvent applied.

3.6 BUTT SURFACES AND BOND LINE

There shall be no gap between the butt surfaces and the bond line. The line at this butt area shall not exceed an outward extension of 0.002 inch or recess of 0.002 inch for spools, or 0.005 inch and 0.002 inch respectively for reels.

3.7 SINKS

Sinks in the winding area shall be kept to a minimum and shall not be greater than 0.010 inch deep for 3-inch and larger spools, except that 3-inch and smaller spools used for 44½ AWG and finer wire applications shall be 0.005 inch maximum. Sinks in the 60-degree cone area, which affect barrel concentricity or flange run-out, shall not be acceptable. Sinks in the non-winding area shall be acceptable as long as other properties of the spool are within specified limits.

3.8 APPEARANCE AND COLOR

Appearance and color of spools/reels shall be as specified by the wire producer.

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Section 4
DIMENSIONS

4.1 DIMENSIONS AND TOLERANCES

4.1.1 Dimensions—Non-Tapered Barrel

Typical dimensions for standard non-tapered barrel spools/reels are in accordance with Figure 4-1, Figure 4-3, Tables 4-1, 4-2, and 4-6. Information contained in Figure 4-3 and Table 4-6 is adopted from IEC Publication 264-2-1, and represents Authorized Engineering Information.

4.1.2 Dimensions—Tapered Barrel

Typical dimensions for tapered barrel reels are in accordance with Figure 4-2 and Table 4-3.

4.1.3 Recommended Dimensions and Tolerances

Dimensions and tolerances contained in Tables 4-4, 4-5, and 4-6 are those recommended by magnet wire manufacturers to assist in interchangeability of spools/reels on reeling and de-reeling equipment.

4.1.4 Reel Sizes

Reel sizes are defined nominally in Tables 4-3 and 4-5 as:

Top Flange / Bottom Flange X Traverse Length

4.2 MEASUREMENT METHODS

Measurement methods used by spool/reel manufacturers shall be such that they ensure adequate reproducibility.

4.2.1 Flange Thickness

For measuring flange thickness, the spool/reel shall be placed on a surface plate in a vertical position. The flange thickness measurement shall be taken 0.25 inch from the barrel, by suitable equipment capable of measurements to within 0.001 inch.

4.2.2 Barrel Concentricity

Barrel concentricity shall be measured by engaging the 60 degree countersink of the bore with 60 degree conical centers. The pick-up point of a calibrated measuring device shall rest on the barrel, approximately 0.125 inch away from the flange. The spool/reel shall be rotated using "live" conical centers.

4.2.2.1 Spools 6 Inches and Less

Barrel concentricity for spools 6 inches and smaller shall not exceed a total indicator reading (TIR) of 0.010 inch.

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4.2.2.2 Spools 6 to 8 Inches

Barrel concentricity for spools greater then 6 inches but less than 8 inches shall not exceed a TIR of 0.015 inch.

4.2.2.3 Reels 8 to 12 Inches

Barrel concentricity for straight and tapered barrel reels, sizes 8 through 12 inches, shall not exceed a TIR of 0.020 inch.

4.2.2.4 Reels 12 Inches and Greater

Barrel concentricity for reel sizes greater than 12 inches shall not exceed a TIR of 0.025 inch.

4.2.3 Flange Wobble

Flange wobble shall be measured using the holding fixtures described in 4.2.2. The pick-up point of the calibrated measuring device shall track on the traverse side of the flange 0.25 inch down from the flange outer diameter.

4.2.3.1 Spools 3 Inches and Greater

Flange wobble for spools greater than 3 inches shall meet a requirement of 0.010 inch TIR. For 3-inch spools, the TIR shall not exceed 0.005 inch.

4.2.3.2 Reels 8 Inches and Greater

Flange wobble for reels with flange diameters 8 inches through 11 inches shall not exceed a TIR of 0.015 inch. Flange wobble for 12-inch reels shall not have a TIR reading exceeding 0.020 inch. Flange wobble for reels with a flange diameter greater than 12 inches shall be determined by agreement between the wire producer and reel supplier.

4.2.4 Flange Angle

Flange angle shall be as shown in Figure 4-1 and shall not exceed 90 degrees, nor be less than 89 degrees 30 minutes for all spools. The total accumulation in traverse reduction (flange toe-in) at the outer edge of the flange (measured 0.125 inch inward from maximum flange diameter) shall not exceed 0.020 inch for spools.

4.2.5 Traverse Distance

Traverse distance shall be measured, flange to flange, 0.125 inch out from the maximum barrel dimension, parallel to the center line of the arbor holes.

4.2.6 Barrel Diameter

Barrel diameter on all 2-piece spools shall be measured 0.0625 inch from either side of the bond line, allowing for 0.004 inch bond built to be added to the diameter of the barrel.

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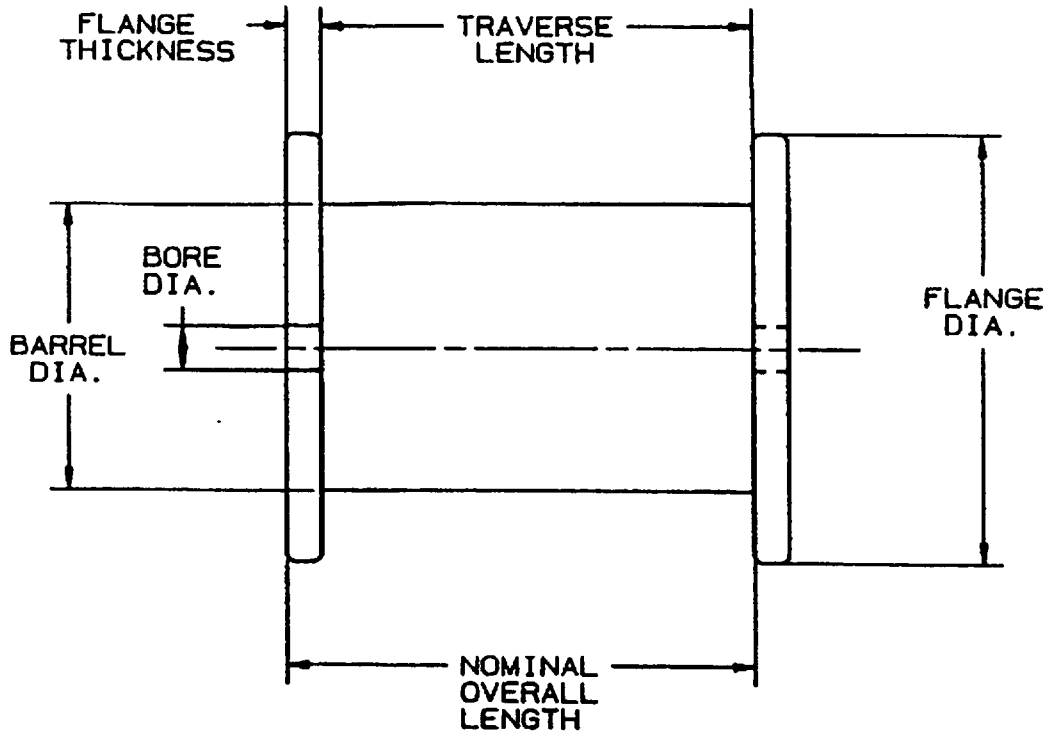


Figure 4-1
STRAIGHT BARREL SPOOL/REEL

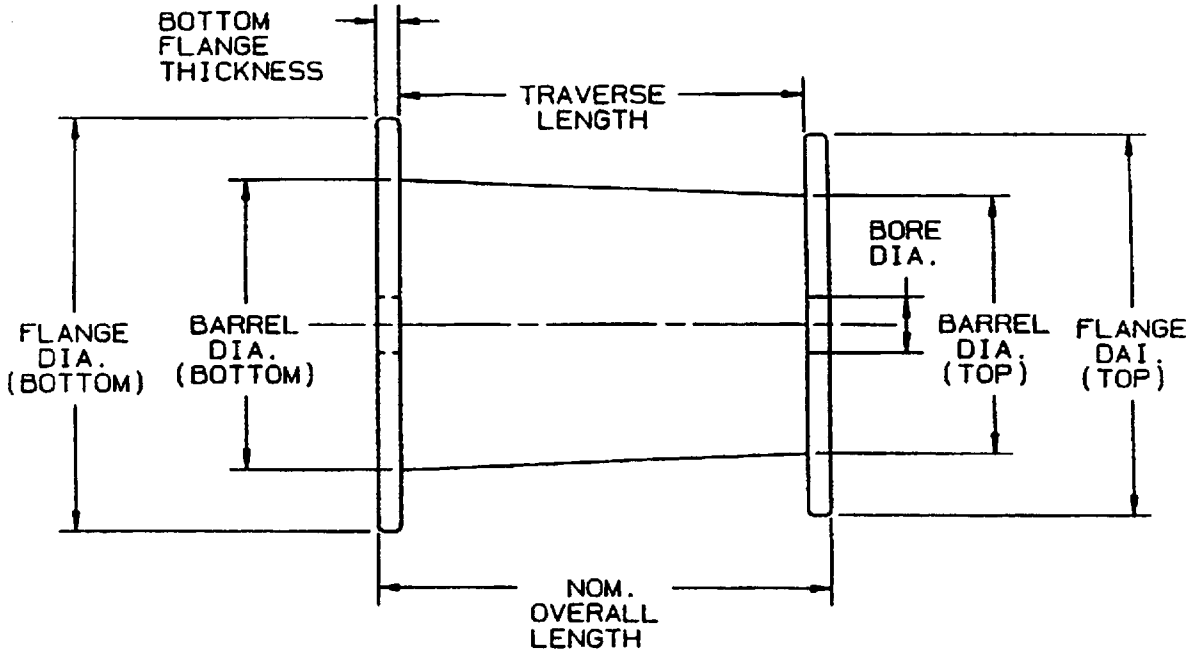


Figure 4-2
TAPER BARREL SPOOL/REEL

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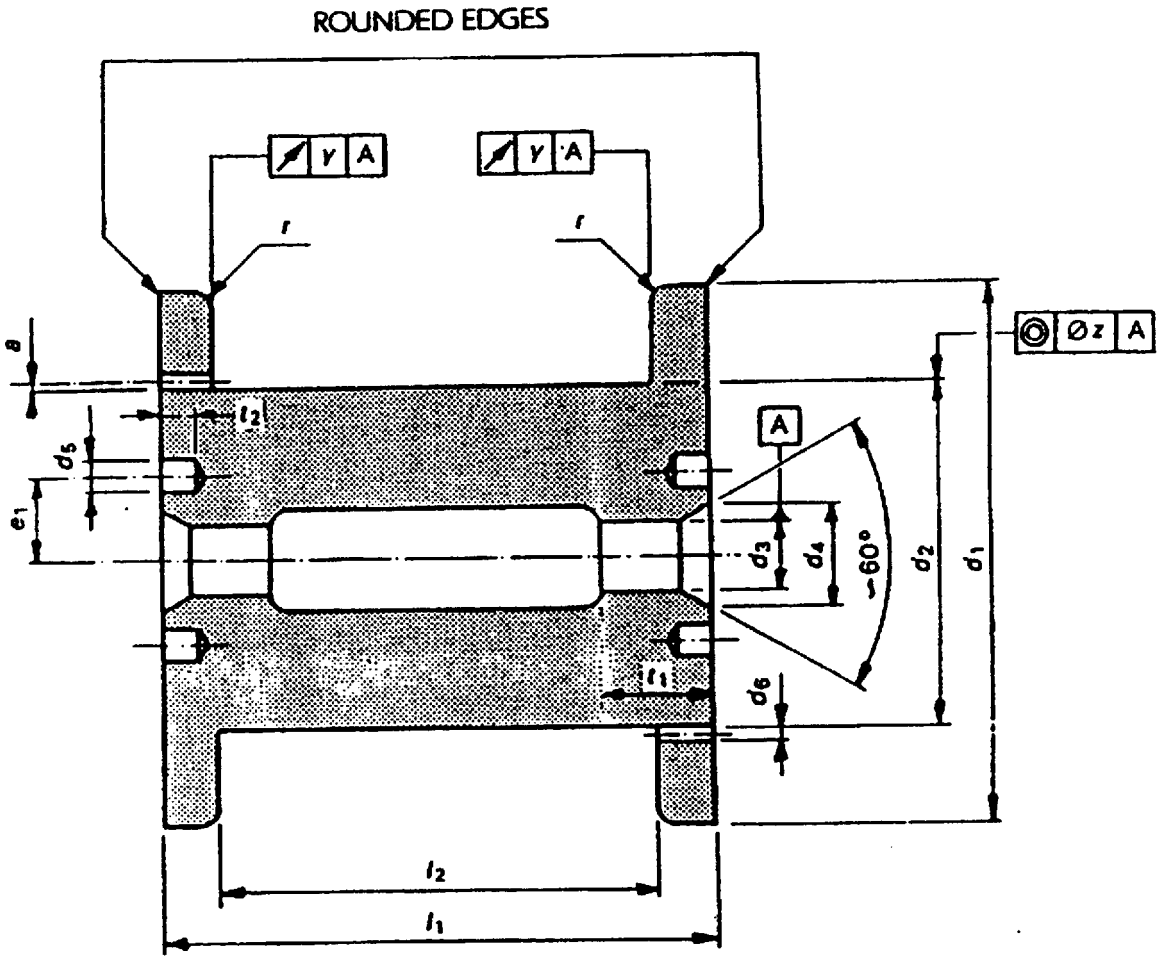


Figure 4-3
IEC CYLINDRICAL BARRELED DELIVERY SPOOLS

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Table 4-1
COMMERCIALLY AVAILABLE STRAIGHT BARREL SPOOL/REEL DIMENSIONS AND TOLERANCES*

Standard Nomenclature (inches)	Supplier	Nom. Wt. Cu† Wt. (lbs.)	Nom. Tare Wt. (lbs.)	Flange Diameter (inches)	Flange Thickness (inches)	Traverse Length (inches)	Nom. Overall Length (in.)	Barrel Diameter (inches)	Bore Diameter (inches)
2 or 2½	A	0.75	0.15	2.500 ±0.010	0..184±0.005	3.000±0.005	3.375	1.760±0.010	0.629±0.010, -0.000
	B								
	C								
3	A	2	0.17	3.000±0.010	0.250±0.005	3.483±0.005	4	1.750±0.010	0.629±0.010, -0.000
	B								
	C								
5	A	6	0.38	4.875±0.015	0.250±0.005	3.500±0.005	4	3.000±0.010	0.629±0.010, -0.000
	B								
	C								
5 WF	A	6	0.46	5.000±0.015	0.312±0.005	3.500±0.005	4.125	3.000±0.020	0.629±0.010, -0.000
	B								
	C								
6 IF	A	9	0.60	6.000±0.020	0.312±0.005	3.500±0.005	4.125	3.500±0.020	0.629±0.010, -0.000
	B								
	C								
6 WF	A	9	0.67	6.000±0.028	0.408±0.008	3.500±0.005	4.316	3.500±0.020	0.629±0.010, -0.000
	B								
	C								
6 TF	A	9	0.48	6.000±0.020	0.250±0.005	3.500±0.005	4	3.500±0.020	0.629±0.010, -0.000
	B								
	C								
6 x 6	A	14	1.02	6.000±0.020	0.500±0.005	6.000±0.010	7	3.750±0.020	0.629±0.010, -0.000
	B								
	C	14	1.01	6.000±0.030	0.500±0.008	6.000±0.000	7	3.750±0.020	0.629±0.010, -0.000
8 x 6	A	25	1.43	8.000±0.025	0.682±0.005	5.995±0.010	7.375	4.625±0.020	**
	B								
	C								
8 x 6-1(d)	A	25	1.47	8.000±0.025	0.682±0.005	5.995±0.010	7.375	4.625±0.020	**
	B								
	C								
12	A	75	2.92	11.750±0.030	0.625±0.010	7.000±0.010	8.250	6.560±0.030	**
	B								
	C	75	2.70	11.750±0.030	0.645±0.015	7.000±0.010	8.250	6.560±0.030	**
12 WF (d)	A	75	3.70	12.000±0.030	0.680±0.010	7.002±0.010 - 0.030	8.4375	6.560±0.030	**
	B								
	C								
24	A	250	16.9	24.000±0.040	1.375±0.010	6.000±0.020	8.750	14.00±0.030	**
	B	250	16.3	24.116±0.056	1.385±0.020	6.023±0.023	8.787±0.010	14.02±0.025	**
	C								

* This table does not in any way indicate an endorsement of any individual supplier products, rather it reflects known products at the time of printing.
† For aluminum, divide by 3.3
** As specified by the wire producer
IF = Intermediate Flange, WF = Wide Flange, TF = Thin Flange
d = one piece design

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Table 4-2
STRAIGHT BARREL SPOOL/REEL DIMENSIONS AND TOLERANCES
U.S. MANUFACTURED DIN*-TYPE SPOOLS**

Standard Nomenclature (inches)	Supplier	Nom. Wt. Cu† Wt. (lbs.)	Nom. Tare Wt. (lbs.)	Flange Diameter (inches)	Flange Thickness (inches)	Traverse Length (inches)	Nom. Overall Length (in.)	Barrel Diameter (inches)	Bore Diameter (inches)
DIN 80	A B C	1.625	0.15	3.150±0.010	0.315±0.005	2.520±0.006	3.150	1.969±0.010	0.630±0.010 -0.000
DIN 100	A B C	3	0.30	3.937±0.010	0.394±0.005	3.150±0.008	3.937	2.480±0.010	0.630±0.010, -0.000
DIN 125	A B C	6	0.40	4.921±0.015	0.492±0.005	3.937±0.008	4.921	3.150±0.020	0.630±0.010, -0.000
DIN 160	A B C	13	0.80	6.299±0.020	0.630±0.010	5.039±0.008	6.299	3.939±0.020 and and	0.866±0.010, -0.000 0.630±0.000, -0.000 0.875±0.008, -0.000
DIN 200	A B C	26	1.30	7.874±0.010	0.788±0.010	6.299±0.012	7.874	4.921±0.020	0.875±0.008, -0.000
DIN 250	A B C	39	2.40	9.843±0.025	9.843±0.025	6.299±0.016	7.874	6.299±0.020	0.866±0.010, -0.000

* Deutsche Industrie Norme (DIN)
** For information on DIN spools not currently manufactured in the U.S., see DIN Specification 46399.
† For aluminum, divide by 3.3.
See Table 4-6 for recommended DIN dimensions specified by international standards.

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Table 4-3
COMMERCIALLY AVAILABLE TAPERED BARREL/STRAIGHT FLANGE DIMENSIONS AND TOLERANCES*

Standard Nomenclature	Supplier	Nom. Wt. Cu† Wt. (lbs.)	Nom. Tare Wt. (lbs.)	Reel Size	Flange Diameter-Top (inches)	Flange Diameter-Bottom (inches)	Traverse Length (inches)	Bottom Flange Thickness (inches)	Nom. Overall Length (inches)	Barrel Diameter-Top (inches)	Barrel Diameter-Bottom (inches)	Bore Diameter
50	A	40	1.8	8.5/9.25 x 9	8.5 ±0.015	9.25 ±0.015	9.00 ±0.010	0.531 ±0.010	10.062	5.750 ±0.015	6.500 ±0.015	**
	B											
	C											
100	A	85	2.9	10/11 x 12	10.00 ±0.020	11.00±0.020	12.00 ±0.010	0.625 ±0.010	13.375	6.046 ±0.015	7.00 ±0.015	**
	B	85	3.6	10/11 x 12	10.00 ±0.020	11.00±0.020	12.01 ±0.010	0.690 ±0.010	13.375	6.050 ±0.020	7.00 ±0.010	**
	C	85	2.9	10/11 x 12	10.00 ±0.020	11.00±0.020	11.96 ±0.010	0.655 ±0.010	13.375	6.062 ±0.030	7.00 ±0.010	**
250	A	275	8.9	15/16 x 12	15.00 ±0.035	16.00 ±0.035	11.96 ±0.015	1.187 ±0.010	14.375	7.960 ±0.021	9.00 ±0.020	**
	B	275	8.9	15/16 x 12	15.00 ±0.010	16.00 ±0.010	11.96 ±0.015	1.260 ±0.010	14.500	8.025 ±0.020	8.965 ±0.020	**
	C	275	8.0	15/16 x 12	15.00 ±0.035	16.00 ±0.035	11.96 ±0.015	1.210 ±0.010	14.375	8.000 (X)	9.000 (X)	**
500	A	550	12.5	15/16 x 24	15.00 ±0.035	16.00 ±0.035	23.86 ±0.020	1.187 ±0.010	26.375	7.960 ±0.020	9.000 ±0.020	**
	B											
	C	550	12.5	15/16 x 24	15.00 ±0.035	16.00 ±0.035	23.86 ±0.020	1.210 ±0.010	26.375	7.960 ±0.020	9.000 ±0.020	**
550	A	525	13.4	16.5/19.5x18	16.50 ±0.035	19.50 ±0.035	17.96 ±0.020	1.187 ±0.010	20.250	7.960 ±0.020	9.260 ±0.020	**
	B											
	C											
650	A	650	13.7	16.5/19.5x18.5	16.50 ±0.035	19.50 ±0.035	18.388 ±0.020	1.187 ±0.010	20.750	7.960 ±0.020	9.000 ±0.020	**
	B											
	C											
750	A	750	15.3	16.50/19.50x24	16.50 ±0.035	19.50 ±0.035	23.86 ±0.020	1.187 ±0.010	26.1875	7.960 ±0.020	9.000 ±0.020	**
	B											
	C											
1000	A	925	17.5	16.50/19.50x30	16.50 ±0.035	19.50 ±0.035	29.86 ±0.020	1.187 ±0.010	32.1875	7.960 ±0.020	9.260 ±0.020	**
	B											
	C											

* This table does not in any way indicate an endorsement of any individual supplier products, rather it reflects known products at the time of printing.
† For aluminum, divide by 3.3
** As specified by the wire producer
(x) Octagonal

Table 4-4
STRAIGHT BARREL SPOOL/REEL RECOMMENDED DIMENSIONS AND TOLERANCES

Standard Nomenclature	Nom. Net Wt.† Cu (lbs.)	Flange Diameter (inches)	Flange Thickness (inches)	Traverse Length (inches)	Overall Length (inches)	Barrel Diameter (inches)	Bore Diameter (inches)
2.50	0.75	2.500 ±0.010	0.184 ±0.002	3.000 ±0.003	3.375	1.760 ±0.010	0.629 (+0.003, -0.000)
3	2	3.000 ±0.010	0.250 ±0.005	3.500 ±0.005	4	1.750 ±0.010	0.630 (+0.005, -0.000)
5	6	4.875 ±0.015	0.250 ±0.005	3.500 ±0.005	4	3.000 ±0.010	0.630 (+0.005, -0.000)
5 WF	6	5.000 ±0.015	.0310 ±0.005	3.500 ±0.005	4.125	3.000 ±0.010	0.630 (+0.005, -0.000)
6 IF	9	6.000 ±0.020	0.312 ±0.005	3.500 ±0.005	4.125	3.500 ±0.010	0.630 (+0.005, -0.000)
6 WF	9	6.000 ±0.020	0.405 ±0.005	3.500 ±0.005	4.375	3.500 ±0.010	0.630 (+0.005, -0.000)
6 TF	9	6.000 ±0.020	0.250 ±0.005	3.500 ±0.005	4	3.500 ±0.010	0.630 (+0.005, -0.000)
6 x 6	14	6.000 ±0.020	0.500 ±0.005	6.000 ±0.005	7	3.750 ±0.010	0.630 (+0.005, -0.000)
8 x 6	25	8.000 ±0.020	0.500 ±0.005	6.000 ±0.010	7.375	4.600 ±0.020	0.630 (+0.005, -0.000)
12	75	11.750±0.020	0.625 ±0.010	7.000 ±0.015	8.250	6.560 ±0.020	1.28125 (+0.005, -0.000) 1.53125 (+0.005, -0.000)
24	250	24.000±0.040	1.375 ±0.020	6.000 ±0.020	8.750	14.000±0.020	1.53125 (+0.005, -0.000)

† For aluminum, divide by 3.3
IF = Intermediate Flange, WF = Wide Flange, TF = Thin Flange
See Table 4-1 for actual dimensions currently available from suppliers. This table shows dimensions and tolerances recommended by wire producers for future spool/reel designs only, and is not intended to include all spools/reels currently available from suppliers.

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Table 4-5
TAPERED BARREL/STRAIGHT FLANGE RECOMMENDED DIMENSIONS AND TOLERANCES

Standard Nomenclature	Nom. Wt. Cu† Wt. (lbs.)	Spool/Reel Size	Flange Diameter-Top (inches)	Flange Diameter-Bottom (inches)	Traverse Length (inches)	Bottom Flange Thickness (inches)	Nom. Overall Length (inches)	Barrel Diameter-Top (inches)	Barrel Diameter-Bottom (inches)	Bore Diameter
50	40	8.5/9.25 x 9	8.500 ±0.015	9.250 ±0.015	9.000 ±0.010	0.531 ±0.010	10.0625	5.500 ±0.015	6.500 ±0.015	**
100	85	10/11 x 12	10.000 ±0.020	11.000 ±0.020	12.000 ±0.010	0.625 ±0.010	13.375	6.050 ±0.020	7.000 ±0.010	**
250	275	15/16 x 12	15.000 ±0.035	16.000 ±0.035	12.000 ±0.015	1.218 ±0.010	14.375	7.960 ±0.020	9.000 ±0.020	**
500	550	15/16 x 24	15.000 ±0.035	16.000 ±0.035	23.060 ±0.020	1.187 ±0.010	26.375	7.960 ±0.020	9.000 ±0.020	**
550	525	16.50/19.50x18	16.500 ±0.035	19.500 ±0.035	17.960 ±0.020	1.187 ±0.010	20.250	7.960 ±0.020	9.260 ±0.020	**
750	750	16.50/19.50x24	16.500 ±0.035	19.500 ±0.035	23.860 ±0.020	1.187 ±0.010	26.1875	7.960 ±0.020	9.000 ±0.020	**
1000	925	16.50/19.50x30	16.500 ±0.035	19.500 ±0.035	29.860 ±0.020	1.187 ±0.010	32.1875	7.960 ±0.020	9.260 ±0.020	**

† For aluminum, divide by 3.3
** As specified by the wire producer.
This table shows dimensions and tolerances recommended by wire producers for future spool/reel designs only, and is not intended to include all spools/reels currently available from suppliers.

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Table 4-6
STRAIGHT BARREL SPOOL/REEL RECOMMENDED DIMENSIONS AND TOLERANCES FOR IEC CYLINDRICAL BARRELED DELIVERY SPOOLS
(all figures in mm)

Spool			d_3*						l_2								
Type	d_1	d_2	Nom.	Tol.	d_4	d_5	d_6**	l_1	Nom.	Tol.	a**	t_1	t_2	z	y	e_1	r
40	40	25	11	+0.1, 0	15	---	1.5	50	38	±0.10	0.75	14	---	0.4	0.08	---	1
50	50	32	11	+0.1, 0	15	---	1.5	50	38	±0.15	0.75	16	---	0.4	0.10	---	1
63	63	40	11	+0.1, 0	15	---	2	63	49	±0.15	1.00	18	---	0.4	0.15	---	1.6
80	80	50	16	+0.2, 0	24	7	2	80	64	±0.15	1.00	20	8	0.6	0.15	20	2
100	100	63	16	+0.2, 0	24	7	2	100	80	±0.20	1.00	22	8	0.6	0.20	20	3
125	125	80	16	+0.2, 0	24	7	3	125	100	±0.20	1.50	25	8	0.6	0.20	20	3
160	160	100	22	+0.2, 0	34	13	3	160	128	±0.20	1.50	28	12	0.6	0.30	32	3
200	200	125	22	+0.2, 0	34	13	3	200	160	±0.30	1.50	32	12	0.6	0.30	32	4
250	250	160	22	+0.2, 0	34	13	4	200	160	±0.40	2.00	36	12	1.0	0.40	32	5
355	355	224	36	+0.5, 0	60	26	5	200	160	±0.40	2.50	40	30	1.2	0.50	80	5
500	500	315	36	+0.5, 0	60	26	10	250	180	±0.50	5.00	40	30	1.6	0.70	80	5
710	710	500	51	+0.5, 0	80	26	15	250	180	±0.80	7.50	45	30	2.0	1.00	140	
1000	1000	800	51	+0.5, 0	80	26	26	250	180	±1.00	13.00	50	30	3.0	1.50	140	6

See Section 1-Referenced Standards

* For spool types 250 and 710, a center bore diameter d_3 of 36 (+0.5, -0) mm may be used if agreed between supplier and purchaser.

** Spools without holes can be ordered if agreed between supplier and purchaser.

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Section 5
STRENGTH OF SPOOLS/REELS

5.1 STRENGTH OF SPOOLS/REELS

Barrel strength, flange impact, and flange deflection are the three most critical factors since poor performance in any of these three areas can lead to spool/reel failure. The following are factors that spool/reel users and suppliers should address to ensure required strengths:

a. Users will recommend spool/reel size ranges needed for various wire sizes and types.
b. Users will require survival of spools/reels under normal shipping and storage conditions.
c. Flange deflection must be minimized to prevent wire entrapment during spooling, which eventually inhibits the de-reeling process.
d. Users will work with suppliers to establish minimum performance requirements of spools/reels used for various purposes.
e. Any certification of mechanical performance of spools/reels is left to the discretion of the user and supplier.
f. Users shall specify strength requirements and tests to be performed as required.
g. Spools/reels shall be constructed in a manner that ensures safety during normal in-plant handling operations.

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Section 6
GENERAL FEATURES

6.1 LIFTING OF SPOOLS/REELS

All spools/reels constructed in conformance with this specification shall provide a means for lifting.

6.2 DRIVING OF SPOOLS/REELS

All spools/reels shall have a method for driving by means of a pin through the spool/reel flange, or by another suitable means as agreed upon between the magnet wire producer and the spool/reel supplier.

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