MISCELLANEOUS PUBLICATION M176
CHART 2B

# OOD POLES

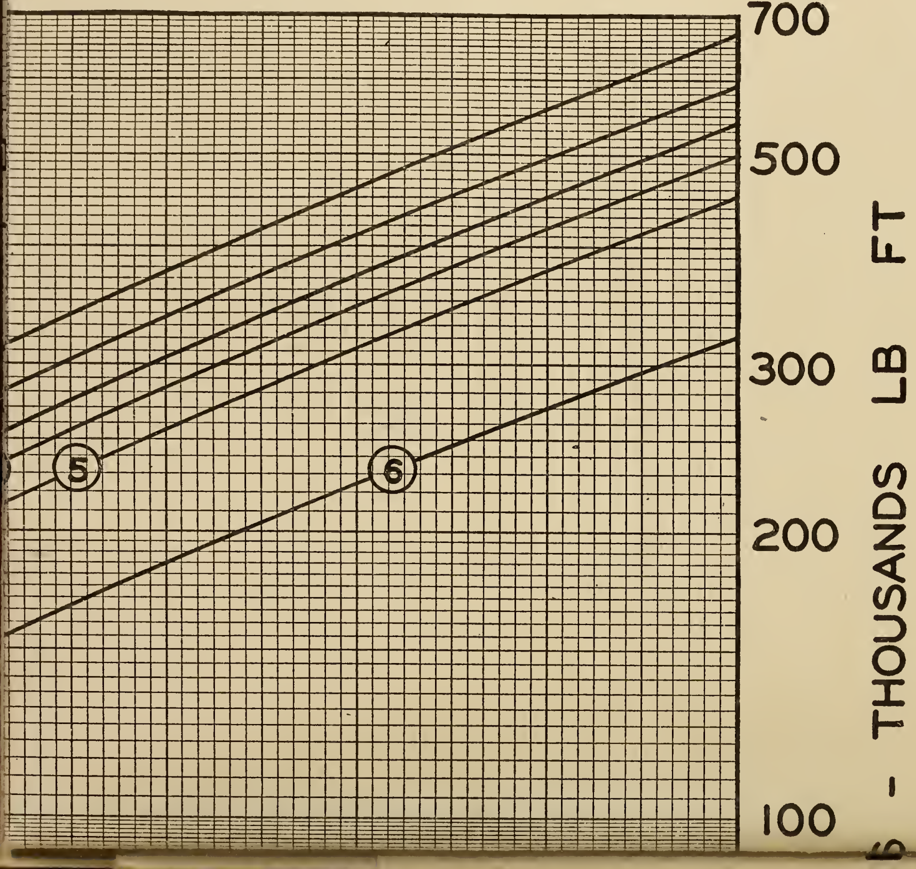

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CHART 1A
Issued August 7, 1944
Price 25 cents (5 charts)

# CONDUCTOR LOADING NOMOGRAPH

## VERTICAL, TRANSVERSE AND CONDUCTOR LOADS - LB PER LINEAR FT OF CONDUCTOR

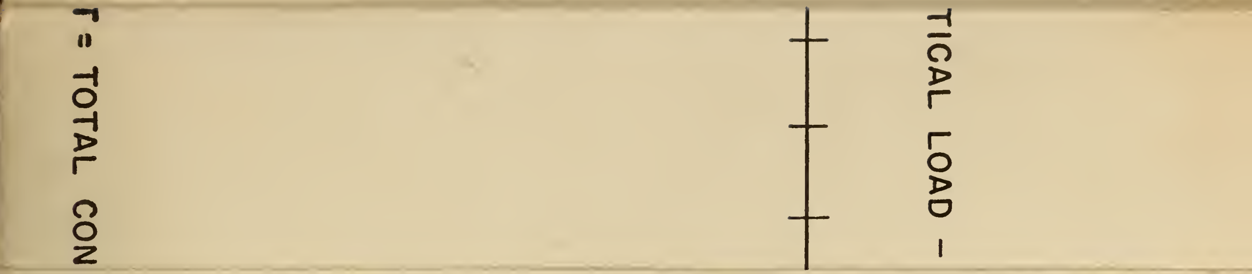
CONNECT V AND W WITH STRAIGHT EDGE AND READ T

Chart 1A.—*Conductor loading nomograph, vertical, transverse, and conductor loads—pounds per linear foot of conductor*
(Enlarged from fig. 16 of Discussion Handbook H39, NESC, part 2)

*Note.*—This device provides a sufficiently precise graphic method of determining "conductor loading" values, except for certain conductors when used in the light-loading district. However, in determining permissible sags and tensions in such a district, the variations found between the values obtained by this chart and values computed in accordance with rule 251, part 2, NESC (H32) are of little importance, since one of the unloaded tension limits of rule 261,F,4 will control, except for unusually long spans.

16—40093-1

For sale by Superintendent of Documents, Washington 25, D. C. Price 25 cents



MISCELLANEOUS PUBLICATION M176
CHART 1B

# ING NOMOGRAPH

## OADS - LB PER LINEAR FT OF CONDUCTOR

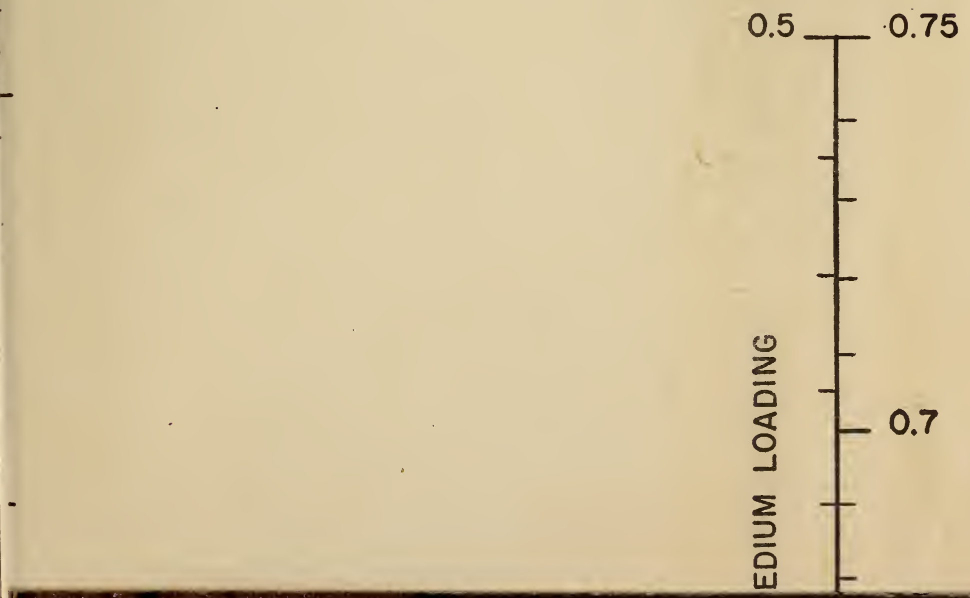


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CHART 1B

# CONDUCTOR LOADING NOMOGRAPH

## VERTICAL, TRANSVERSE AND CONDUCTOR LOADS - LB PER LINEAR FT OF CONDUCTOR

CONNECT V AND W WITH STRAIGHT EDGE AND READ T

[See note on opposite side.]

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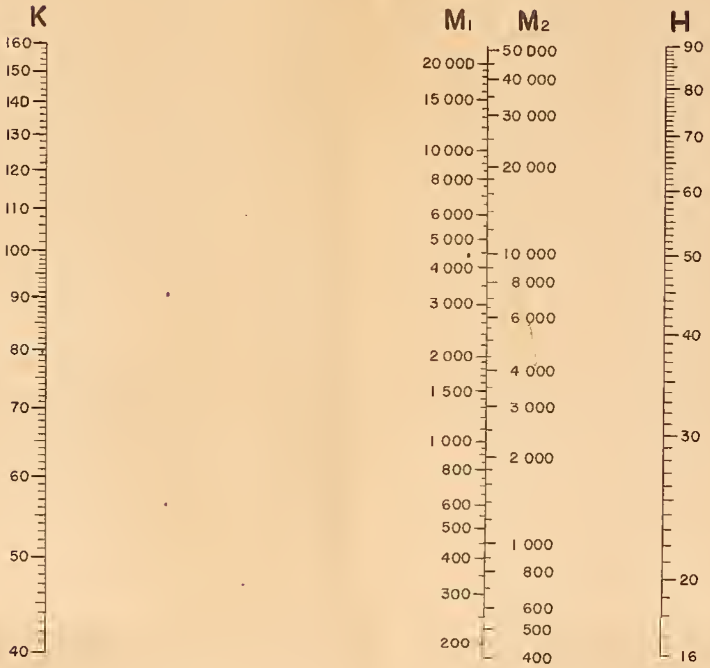
CHART 2A

# BENDING MOMENT DUE TO WIND PRESSURE ON POLE



$K = 2T + G$ WHERE $T$ = CIRCUMFERENCE AT POLE TOP, IN INCHES
AND $G$ = CIRCUMFERENCE AT GROUND LINE, IN INCHES.

$H$ = HEIGHT OF POLE ABOVE GROUND LINE, IN FEET.

$M_1$ = MOMENT AT GROUND LINE FOR HEAVY AND MEDIUM LOADING, IN POUND-FEET.

$M_2$ = MOMENT AT GROUND LINE FOR LIGHT LOADING, IN POUND-FEET.

LAY STRAIGHTEDGE ACROSS CHART FROM K TO H AND READ BENDING MOMENT AT $M_1$ OR $M_2$

Chart 2A.—*Bending moment due to wind pressure on pole*
(Enlarged from fig. 19 of Discussion Handbook H39, NESC, part 2)

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CHART 2B

# ULTIMATE RESISTING MOMENTS OF WOOD POLES

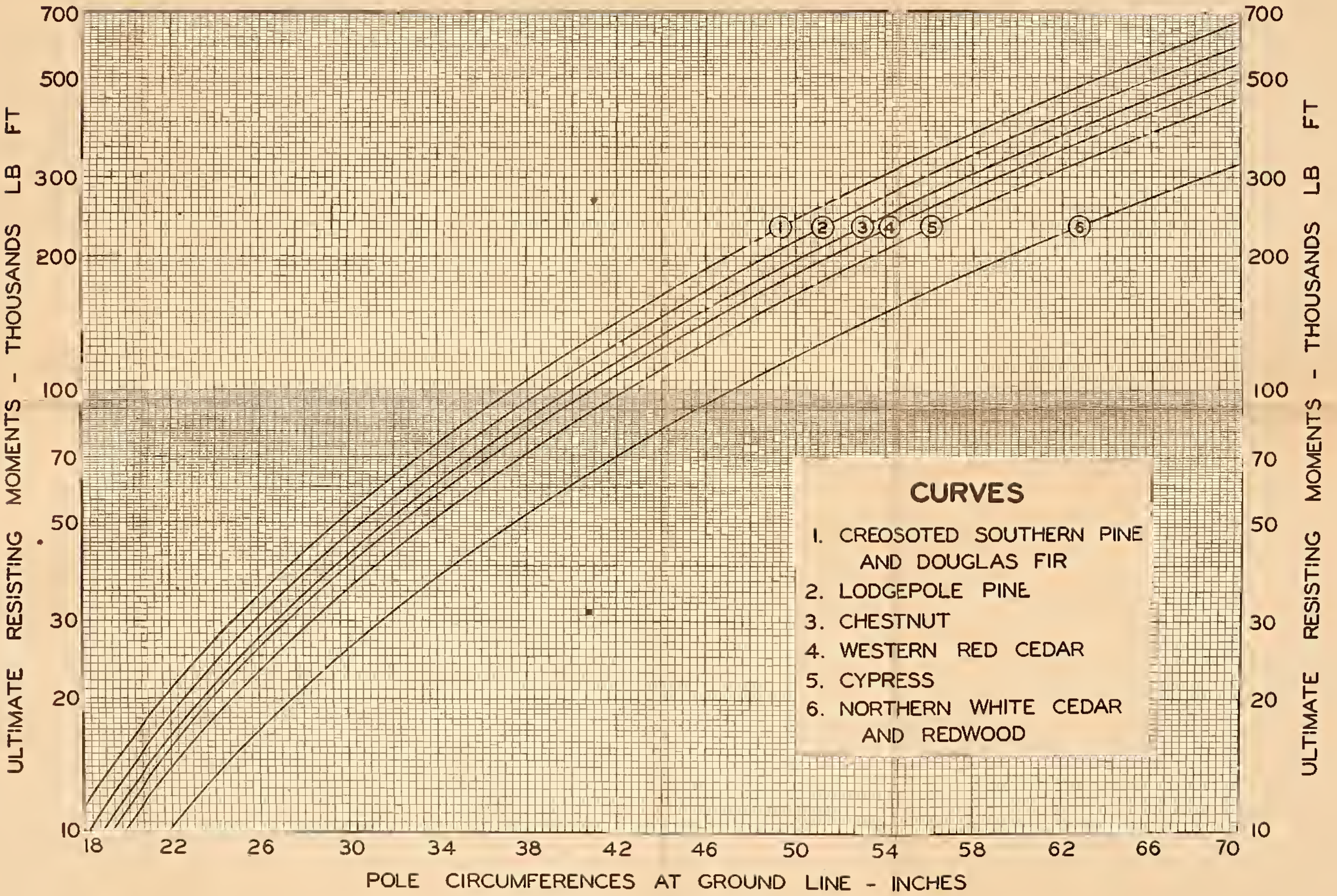

Chart 2B.—*Ultimate resisting moments of wood poles*
(Enlarged from fig. 20 of Discussion Handbook H39, NESC, part 2)

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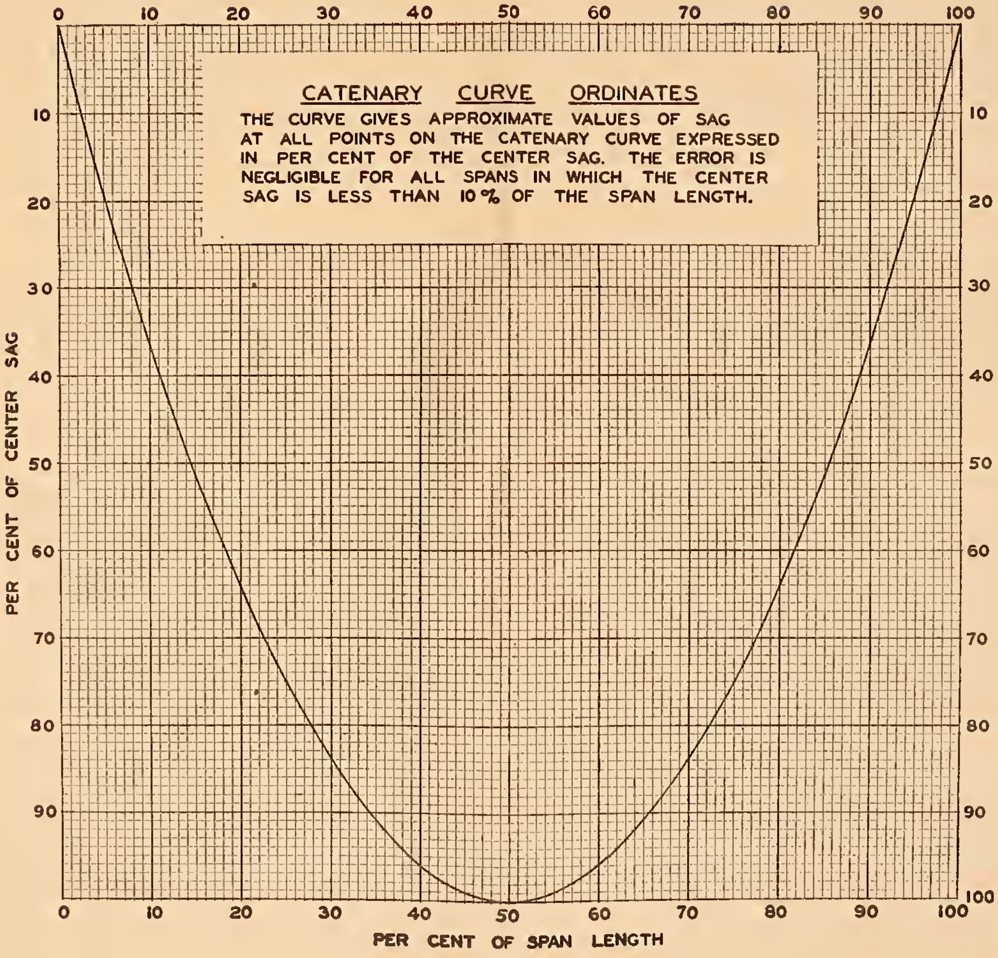
CHART 3

# CATENARY CURVE



CATENARY CURVE ORDINATES

THE CURVE GIVES APPROXIMATE VALUES OF SAG AT ALL POINTS ON THE CATENARY CURVE EXPRESSED IN PER CENT OF THE CENTER SAG. THE ERROR IS NEGLIGIBLE FOR ALL SPANS IN WHICH THE CENTER SAG IS LESS THAN 10 % OF THE SPAN LENGTH.

Chart 3.—*Catenary curve*
(Enlarged from fig. 18 of Discussion Handbook H39, NESC, part 2)

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MISCELLANEOUS PUBLICATION M180
Issued June 1, 1945

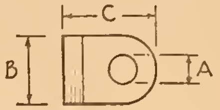
# GUIDE-CHART FOR CARBON-BRUSH TERMINALS (ELECTRIC)

ALL DIMENSIONS IN INCHES

## INTEGRAL HORSEPOWER OR INDUSTRIAL BRUSH SHUNT TERMINALS

### GENERAL PURPOSE

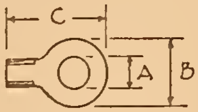
#### FLAG TYPE



| NO. | A | B | C |
|---|---|---|---|
| 1.1 | 5/32 | 3/8 | 7/16 |
| 1.2 | 7/32 | 3/8 | 7/16 |
| 1.3 | 7/32 | 1/2 | 1/2 |
| 1.4 | 9/32 | 5/8 | 13/16 |

OPTIONAL HOLE OR SLOT

#### STRAIGHT COLLAR

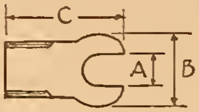


| NO. | A | B | C |
|---|---|---|---|
| 2.1 | 5/32 | 3/8 | 5/8 |
| 2.2 | 7/32 | 1/2 | 13/16 |
| 2.3 | 9/32 | 9/16 | 15/16 |

OPTIONAL HOLE OR SLOT

### HEAVY CURRENT

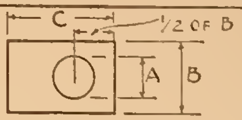
#### CUT TYPE



| NO. | A | B | C |
|---|---|---|---|
| 3.1 | 7/32 | 9/16 | 1 1/8 |
| 3.2 | 9/32 | 9/16 | 1 1/8 |
| 3.3 | 11/32 | 11/16 | 1 1/8 |
| 3.4 | 13/32 | 13/16 | 1 1/8 |

SLOT ONLY

#### PRESSED TUBE TYPE

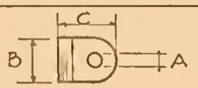


| NO. | A | B | C |
|---|---|---|---|
| 4.1 | 9/32 | 9/16 | 1 |
| 4.2 | 11/32 | 5/8 | 1 |
| 4.3 | 13/32 | 3/4 | 1 |

OPTIONAL HOLE OR SLOT

## FRACTIONAL HORSEPOWER BRUSH SHUNT TERMINALS BOX TYPE HOLDER

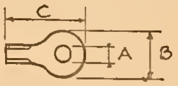
### FLAG TYPE



| NO. | A | B | C |
|---|---|---|---|
| 5.1 | 1/8 | 1/4 | 1/4 |
| 5.2 | 5/32 | 9/32 | 5/16 |

OPTIONAL HOLE OR SLOT

### STRAIGHT COLLAR



| NO. | A | B | C |
|---|---|---|---|
| 6.1 | 1/8 | 1/4 | 1/2 |
| 6.2 | 5/32 | 9/32 | 1/2 |

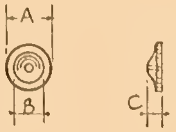
OPTIONAL HOLE OR SLOT

TOLERANCES: FOR SHUNT TERMINALS LENGTH AND WIDTH PLUS OR MINUS 1/32
HOLE OR SLOT — PLUS 0.000 MINUS 0.010

## FRACTIONAL HORSEPOWER BRUSH TERMINALS — CARTRIDGE TYPE HOLDERS

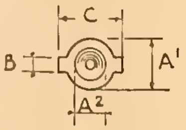
### STAMPED ROUND DISCS

#### NO EARS



| NO. | A | B | C |
|---|---|---|---|
| 7.1 | 3/16 | 1/8 | 1/16 |
| 7.2 | 1/4 | 3/16 | 1/16 |
| 7.3 | 5/16 | 7/32 | 1/16 |
| 7.4 | 3/8 | 9/32 | 1/16 |
| 7.5 | 7/16 | 5/16 | 3/32 |
| 7.6 | 9/16 | 7/16 | 1/8 |
| 7.7 | 3/4 | 1/2 | 1/8 |

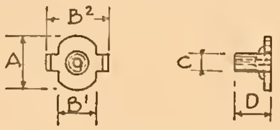
#### FLAT EARS



| NO. | $A^1$ | $A^2$ | B | C |
|---|---|---|---|---|
| 8.1 | 5/16 | 7/32 | 5/32 | 23/64 |
| 8 2 | 3/8 | 9/32 | 5/32 | 31/64 |
| 8.3 | 7/16 | 5/16 | 7/32 | 19/32 |
| 8.4 | 5/8 | 1/2 | 9/32 | 13/16 |

### ROUND CAPS

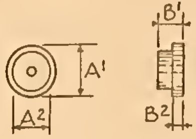
#### STAMPED BENT EARS



| NO. | A | $B^1$ | $B^2$ | C | D |
|---|---|---|---|---|---|
| 9.1 | 1/4 | 3/16 | 7/32 | .175 | 3/16 |
| 9.2 | 1/4 | 3/16 | 7/32 | .085 | 3/16 |
| 9.3 | 5/16 | 3/16 | 9/32 | .175 | 1/4 |
| 9.4 | 5/16 | 3/16 | 9/32 | .085 | 1/4 |
| 9.5 | 3/8 | 3/16 | 9/32 | .175 | 1/4 |
| 9.6 | 3/8 | 3/16 | 9/32 | .085 | 1/4 |
| 9.7 | 1/2 | 11/32 | 7/16 | .240 | 5/16 |
| 9.8 | 9/16 | 11/32 | 7/16 | .240 | 5/16 |
| 9.9. | 11/16 | 7/16 | 1/2 | .350 | 5/16 |
| 9.10 | 1 1/8 | 13/16 | 31/32 | .350 | 7/16 |

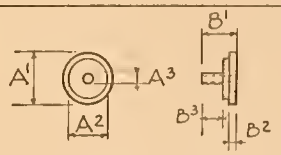
### TURNED BRASS ROUND BUTTONS

#### WITH NECK



| NO. | $A^1$ | $A^2$ | $B^1$ | $B^2$ |
|---|---|---|---|---|
| 10.1 | 7/32 | 5/32 | 3/32 | 3/64 |
| 10.2 | 1/4 | 3/16 | 3/32 | 3/64 |
| 10.3 | 9/32 | 7/32 | 1/8 | 1/16 |
| 10.4 | 11/32 | 9/32 | 1/8 | 1/16 |
| 10.5 | 1/2 | 11/32 | 1/8 | 1/16 |
| 10.6 | 9/16 | 13/32 | 1/8 | 1/16 |

#### WITH NECK & NIPPLE



| NO. | $A^1$ | $A^2$ | $A^3$ | $B^1$ | $B^2$ | $B^3$ |
|---|---|---|---|---|---|---|
| 11.1 | 5/16 | 7/32 | 3/32 | 3/16 | 3/64 | 3/32 |
| 11.2 | 11/32 | 1/4 | 3/32 | 3/16 | 3/64 | 3/32 |
| 11.3 | 3/8 | 9/32 | 3/32 | 3/16 | 3/64 | 3/32 |

TOLERANCES: FOR DISCS, CAPS AND BUTTONS ALL DIMENSIONS PLUS 0.000 MINUS 0.008

Enlargement of chart printed in Simplified Practice Recommendation R210 45, Carbon Brush Terminals (Electric), Effective July 15, 1945, and available also from the Superintendent of Documents at 5 cents a copy.

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