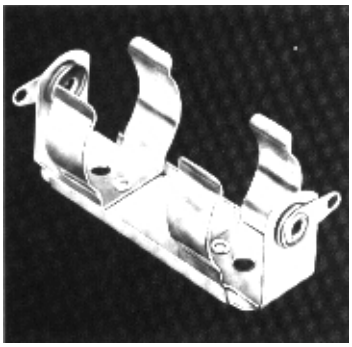
## RUGGED STEEL BATTERY HOLDERS

An established design that has gained wide acceptance for commercial and military applications. Batteries are held under constant spring tension assuring low contact resistance. Retainer clips are available to lock batteries in place and prevent shifting or loosening of the batteries. Recommended for use where shock or severe vibration is encountered. Special fabrication for more than four batteries or variations from standard stock parts can be assembled to meet your requirements.



- Ideal for NiCd, Alkaline, NiMH, Carbon, Zinc and Lithium Cells
- Corrosion Resistant, Nickel Plate
- Brass Contacts, Nickel Plate
- Moisture Proof Resin Impregnated, Fibre Insultating Washers

**INSULATOR TUBES SUPPLIED FOR 2-3-4 CELLS END TO END**

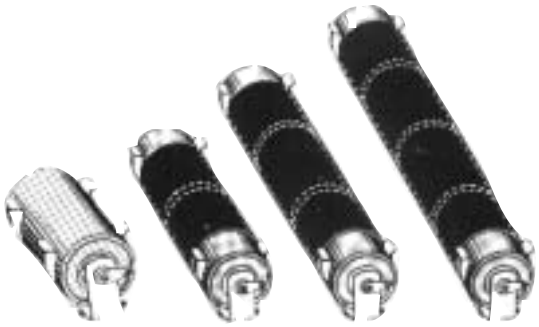


FIG. 19 FIG. 20 FIG. 21 FIG. 22

**PHENOLIC BASE**

FIG. 23 FIG. 24

**PHENOLIC BASE**

FIG. 25

### 1100 SERIES
(GROUNDED ONE SIDE)

DIMPLE CONTACT — INSULATED CONTACT

### 2100 SERIES
(FULLY INSULATED)

INSULATED CONTACTS

**BATTERY CROSS REFERENCE**

**All Batteries listed within boxes are in the same size group**

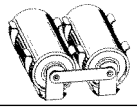
| 1100 SERIES ONE CONTACT INSULATED CAT. NO. | 2100 SERIES ALL CONTACTS INSULATED CAT. NO. | FIG. NO. | HOLDS NO. OF CELLS | EVEREADY | DURACELL | RAY-O-VAC | NEDA |
|---|---|---|---|---|---|---|---|
| **"AA" CELL HOLDERS** | | | | (BATTERY SIZE .531/.565 O.D. × 1.906/1.988 H) | | | |
| 1139 | 2139 | 19 | 1 | E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015,1215 | ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500 | 5AA, 615, 815, 7AA | 15,15A,15C, 15D,15F, 15M,15NC, 221,1101M, 1113M, 1306AP, 1306M, 1314M,1606M |
| — | 2140* | 23 | 2 | | | | |
| — | 2171* | 24 | 3 | | | | |
| — | 2182* | 25 | 4 | | | | |
| 1189 | 2189 | 20 | 2 | | | | |
| 1191 | 2191 | 21 | 3 | | | | |
| 1194 | 2194 | 22 | 4 | | | | |
| **"C" CELL HOLDERS** | | | | (BATTERY SIZE .875/1.125 O.D. × 1.875/1.969 H) | | | |
| 1173 | 2173 | 19 | 1 | CH35, E93, 935, 1235, EV35, EN93 | M14F, M14HD, NC14C, TR286, MN1400, PC1400 | 1C, 614, 814 | 14A, 14C, 14D,14F, 14NC, 1600M |
| — | 2174* | 23 | 2 | | | | |
| — | 2187* | 24 | 3 | | | | |
| — | 2188* | 25 | 4 | | | | |
| 1185 | 2185 | 20 | 2 | | | | |
| 1195 | 2195 | 21 | 3 | | | | |
| 1198 | 2198 | 22 | 4 | | | | |
| **"D" CELL HOLDERS** | | | | (BATTERY SIZE 1.187/1.375 O.D. × 2.312/2.412 H) | | | |
| 1175 | 2175 | 19 | 1 | CH50, E95, 950, 1250, EV50, EN95 | M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300 | 2D, 6D, 613, 813 | 13A, 13C, 13D, 13F, 13NC, 1115M, 1810M |
| — | 2176* | 23 | 2 | | | | |
| — | 2190* | 24 | 3 | | | | |
| — | 2192* | 25 | 4 | | | | |
| 1186 | 2186 | 20 | 2 | | | | |
| 1199 | 2199 | 21 | 3 | | | | |
| 1162 | 2162 | 22 | 4 | | | | |

*Clips mounted on Phenolic 1/16" thick

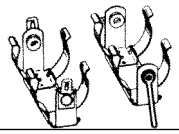
**MODIFICATIONS AVAILABLE**

**Use our engineering services for your custom battery holders or modifications to our standard products.**

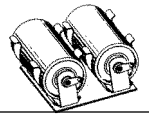
**JUMPERS**
Jumpers permit cost saving and eliminates wiring.



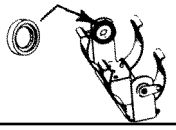
**SPECIAL LUGS**
Printed Circuit, Solderless or Quick-Fit Lugs available for your special connection requirements.



**MULTIPLE UNITS**
Jumpers, special lugs and polarized contacts available for custom applications.

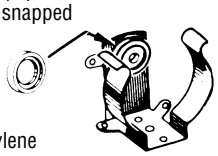


**POLARIZED CONTACTS**
Assure proper battery insertion and correct polarity.



## INSULATED POLARIZING WASHERS

Prevents improper connection of battery which may cause damage to electronic equipment. Washers hold securely when snapped over eyelets. Used on our standardized battery holders. For AA, C & D cells.



**MATERIAL:** Molded Polyethylene

**CAT. NO. 59** (RED) **CAT. NO. 60** (BLACK)



31-07 20th Road • Astoria, New York 11105-2017 • (718) 956-8900 • FAX (718) 956-9040
e-mail: kec@keyelco.com • WebSite: keyelco.com

# STEEL BATTERY HOLDERS

Designers' Choice

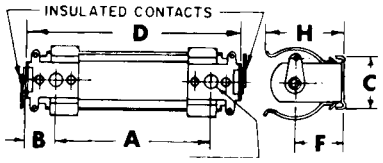
keyelco.com

## MATERIAL SPECIFICATIONS

**Clips:** Spring Steel, Nickel Plate
**Contact Eyelets:** Brass, Nickel Plate
**Insulating Washers:** Moisture Proof, Resin Impregnated Fibre
**Terminal Lugs:** Brass, Tin Plate
**Phenolic Base:** Type PBE, Per MIL-P-3115C
**Base:** Ribbed Stainless Steel, For Added Support

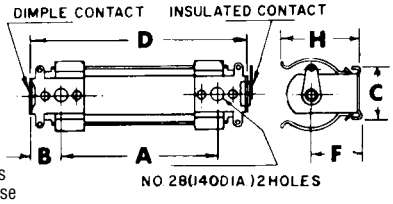
## DIMENSIONAL DRAWINGS FOR STEEL BATTERY HOLDERS

**FIG. 1**



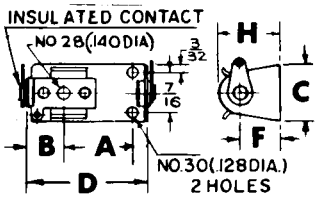

Stainless Steel Base

**FIG. 2**



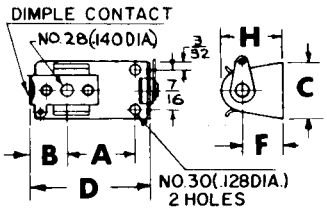

Stainless Steel Base

**FIG. 3**



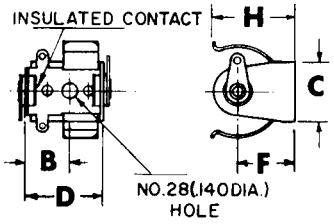

Steel Base, Nickel Plate

**FIG. 4**



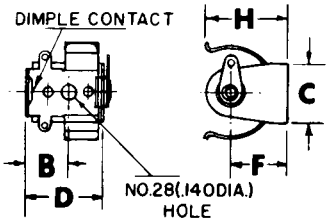

Steel Base, Nickel Plate

**FIG. 5**




Steel Base, NIckel Plate

**FIG. 6**




Steel Base, Nickel Plate

**FIG. 7**

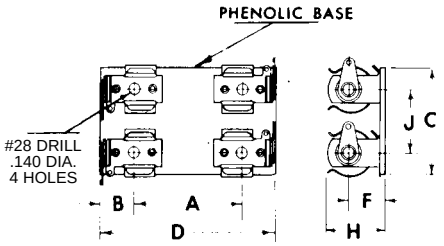



**FIG. 8**

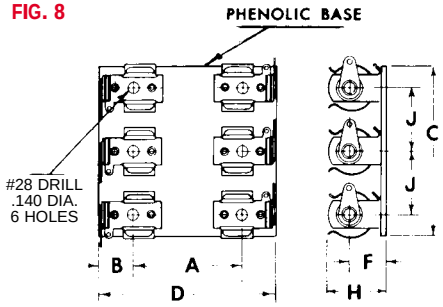
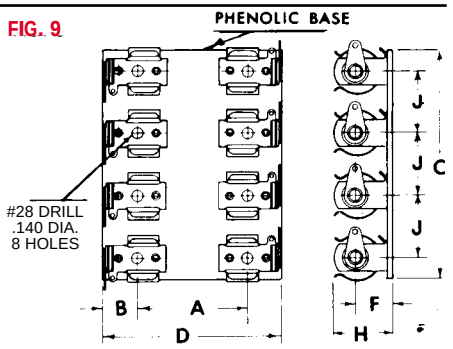



**FIG. 9**




| CAT. NO. | FIG. | ± .005 A | ±.015 B | ±.010 C | ±.015 D | ±.010 F | ±.020 H |
|---|---|---|---|---|---|---|---|
| *1101 | 4 | .281 | .391 | .625 | .812 | .437 | .656 |
| *1104 | 6 | — | .468 | .625 | .890 | .750 | 1.281 |
| *1109 | 2 | 1.156 | .391 | .687 | 1.937 | .437 | .656 |
| *1110 | 2 | 1.562 | .391 | .687 | 2.343 | .437 | .656 |
| *1113 | 4 | .484 | .391 | .625 | 1.031 | .437 | .656 |
| *1114 | 4 | .671 | .391 | .625 | 1.218 | .437 | .656 |
| *1116 | 4 | .734 | .391 | .625 | 1.281 | .437 | .656 |
| *1125 | 2 | 3.906 | .391 | .687 | 4.687 | .437 | .656 |
| *1132 | 4 | .937 | .391 | .625 | 1.484 | .437 | .656 |
| *1134 | 2 | 2.000 | .391 | .687 | 2.781 | .437 | .656 |
| *1135 | 2 | 2.625 | .391 | .687 | 3.406 | .437 | .656 |
| 1139 | 2 | 1.343 | .391 | .687 | 2.125 | .437 | .656 |
| *1142 | 2 | 1.265 | .391 | .687 | 2.047 | .437 | .656 |
| *1144 | 2 | 2.000 | .391 | .687 | 2.781 | .625 | 1.000 |
| *1145 | 4 | .828 | .391 | .625 | 1.312 | .437 | .656 |
| 1162 | 2 | 8.687 | .468 | .687 | 9.625 | .796 | 1.281 |
| 1173 | 2 | 1.343 | .391 | .687 | 2.125 | .625 | 1.000 |
| 1175 | 2 | 1.625 | .468 | .687 | 2.562 | .796 | 1.281 |
| 1185 | 2 | 3.312 | .391 | .687 | 4.093 | .625 | 1.032 |
| 1186 | 2 | 4.000 | .468 | .687 | 4.937 | .796 | 1.281 |
| 1189 | 2 | 3.312 | .391 | .687 | 4.093 | .437 | .656 |
| 1191 | 2 | 5.218 | .391 | .687 | 6.000 | .437 | .656 |
| 1194 | 2 | 7.205 | .391 | .687 | 7.985 | .437 | .656 |
| 1195 | 2 | 5.156 | .391 | .687 | 5.937 | .625 | 1.000 |
| 1198 | 2 | 7.125 | .391 | .687 | 7.906 | .625 | 1.000 |
| 1199 | 2 | 6.343 | .468 | .687 | 7.281 | .796 | 1.281 |
| *2101 | 3 | .281 | .391 | .625 | .812 | .437 | .656 |
| *2104 | 5 | — | .468 | .625 | .890 | .750 | 1.281 |
| *2109 | 1 | 1.156 | .391 | .687 | 1.937 | .437 | .656 |
| *2110 | 1 | 1.562 | .391 | .687 | 2.343 | .437 | .656 |
| *2113 | 3 | .484 | .391 | .625 | 1.031 | .437 | .656 |
| *2114 | 3 | .671 | .391 | .625 | 1.218 | .437 | .656 |

| CAT. NO. | FIG. | ±.005 A | ±.015 B | ±.010 C | ±.015 D | ±.010 F | ±.020 H | ±.005 J |
|---|---|---|---|---|---|---|---|---|
| *2116 | 3 | .718 | .391 | .625 | 1.281 | .437 | .656 | — |
| *2125 | 1 | 3.906 | .391 | .687 | 4.687 | .437 | .656 | — |
| *2132 | 3 | .937 | .391 | .625 | 1.484 | .437 | .656 | — |
| *2134 | 1 | 2.000 | .391 | .687 | 2.781 | .437 | .656 | — |
| *2135 | 1 | 2.625 | .391 | .687 | 3.406 | .437 | .656 | — |
| 2139 | 1 | 1.343 | .391 | .687 | 2.125 | .437 | .656 | — |
| 2140 | 7 | 1.343 | .406 | 1.250 | 2.125 | .437 | .656 | .750 |
| *2142 | 1 | 1.265 | .391 | .687 | 2.047 | .437 | .656 | — |
| *2144 | 1 | 2.000 | .391 | .687 | 2.781 | .625 | 1.000 | — |
| *2145 | 3 | .828 | .391 | .625 | 1.312 | .437 | .656 | — |
| 2162 | 1 | 8.687 | .468 | .687 | 9.625 | .796 | 1.281 | — |
| 2171 | 8 | 1.343 | .406 | 2.000 | 2.125 | .437 | .656 | .750 |
| 2173 | 1 | 1.343 | .391 | .687 | 2.125 | .625 | 1.000 | — |
| 2174 | 7 | 1.343 | .356 | 1.750 | 2.062 | .625 | 1.000 | 1.187 |
| 2175 | 1 | 1.625 | .468 | .687 | 2.562 | .796 | 1.281 | — |
| 2176 | 7 | 1.625 | .468 | 2.125 | 2.562 | .796 | 1.281 | 1.562 |
| 2182 | 9 | 1.343 | .406 | 2.750 | 2.125 | .437 | .656 | .750 |
| 2185 | 1 | 3.312 | .391 | .687 | 4.093 | .625 | 1.000 | — |
| 2186 | 1 | 4.000 | .468 | .687 | 4.937 | .796 | 1.281 | — |
| 2187 | 8 | 1.343 | .356 | 2.937 | 2.062 | .625 | 1.000 | 1.187 |
| 2188 | 9 | 1.343 | .356 | 4.125 | 2.062 | .625 | 1.000 | 1.187 |
| 2189 | 1 | 3.312 | .391 | .687 | 4.093 | .437 | .656 | — |
| 2190 | 8 | 1.625 | .468 | 3.687 | 2.562 | .796 | 1.281 | 1.562 |
| 2191 | 1 | 5.250 | .391 | .687 | 6.030 | .437 | .656 | — |
| 2192 | 9 | 1.625 | .468 | 5.250 | 2.562 | .796 | 1.281 | 1.562 |
| 2194 | 1 | 7.230 | .391 | .687 | 8.010 | .437 | .656 | — |
| 2195 | 1 | 5.156 | .391 | .687 | 5.937 | .625 | 1.000 | — |
| 2198 | 1 | 7.125 | .391 | .687 | 7.906 | .625 | 1.000 | — |
| 2199 | 1 | 6.343 | .468 | .687 | 7.281 | .796 | 1.281 | — |

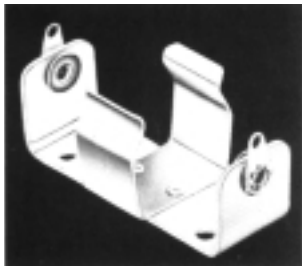
***Special order only.**
**Dimensions B, D, F, H should be used for reference**

# ALUMINUM BATTERY HOLDERS

Designers' Choice

A standard line of battery holders available for immediate shipment from stock. Low cost, lightweight and sturdily constructed of quality materials. Good electrical contact, low leakage current and snap-fit clips are the outstanding features.

**MODIFICATIONS:** We welcome the opportunity to quote on variations of standard items. Use our engineering service for your special custom-built holders. Holders with PC and Quick-Fit terminals available on special order.



- Brass Eyelets, Nickel Plate
- Brass Lugs, Nickel Plate
- Moisture Proof, Resin Impregnated, Fibre Insulating Washers
- Aluminum 2024-T3, Frame & Clip

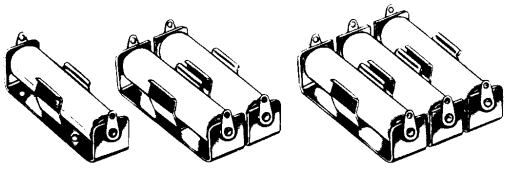


FIG. 1 FIG. 2 FIG. 3

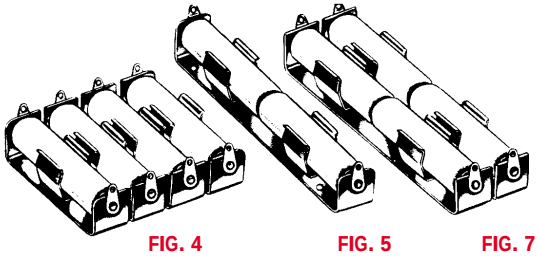


FIG. 4 FIG. 5 FIG. 7

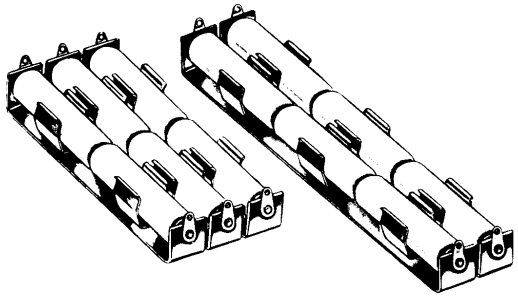


FIG. 8 FIG. 12

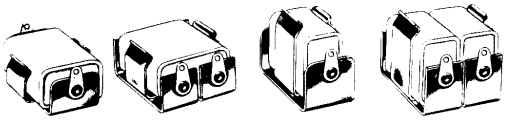
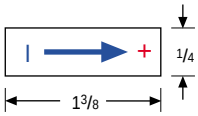


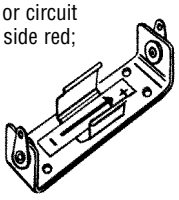
FIG. 9 FIG. 10 FIG. 11 FIG. 14

## POLARTIY INDICATING LABEL

**• No Gluing or Wetting Needed • Pressure Sensitive Adhesive Back • Economical • Adheres To All Surfaces**

Recommended where proper polarity of battery insertion or circuit polarity is to be shown. Labels are two color, (+) positive side red; arrow, (-) negative side blue.



CAT. NO. 58

Ideal for Alkaline, Carbon, Zinc, NiMH NiCd and Lithium Cells.

DIMENSIONAL DRAWINGS ON THE FOLLOWING PAGE

| CAT. NO. | HOLDS NO.OF CELLS | FIG. NO. | BATTERY CROSS REFERENCE (All Batteries listed within boxes are in the same size group) EVEREADY | DURACELL | RAY-O-VAC | NEDA |
|---|---|---|---|---|---|---|
| **"AAA" CELL HOLDER** (BATTERY SIZE .375/.468 O.D. × 1.673/1.752 H) | | | | | | |
| 137 | 1 | 1 | E92, 912, CH12 | M24F, MN2400 | 824 | 24A, 24F, 24P |
| 138 | 2 | 2 | | | | |
| 169 | 3 | 3 | | | | |
| 170 | 4 | 4 | | | | |
| **"AA" CELL HOLDERS** (BATTERY SIZE .531/.565 O.D. × 1.906/1.988 H) | | | | | | |
| 139 | 1 | 1 | E9, EV15 , EN91, CH15, E91, E133, E133N, E177, 505, 523, 1015, 1215 | ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC 1500 | 5AA, 615, 815, 7AA | 15, 15A,15C, 15D,15F, 15M, 15NC, 221, 1101M,1113M, 1306AP, 1306M, 1314M,1606M |
| 140 | 2 | 2 | | | | |
| 171 | 3 | 3 | | | | |
| 182 | 4 | 4 | | | | |
| 189 | 2 | 5 | | | | |
| 192 | 4 | 7 | | | | |
| 193 | 6 | 8 | | | | |
| **"C" CELL HOLDERS** (BATTERY SIZE .875/1.125 O.D. × 1.875/1.969 H) | | | | | | |
| 173 | 1 | 1 | CH35, E93, 935, 1235, EV35, EN93 | M14F, M14HD, NC14C, TR286, MN1400, PC1400 | 1C, 614, 814 | 14A,14C, 14D,14F, 14NC, 1600M |
| 174 | 2 | 2* | | | | |
| 187 | 3 | 3 | | | | |
| 185 | 2 | 5 | | | | |
| 196 | 4 | 7* | | | | |
| 197 | 6 | 8 | | | | |
| **"D" CELL HOLDERS** (BATTERY SIZE 1.187/1.375 O.D. × 2.312/2.412 H) | | | | | | |
| 175 | 1 | 1 | CH50, E95, 950, 1250, EV50, EN95 | M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300 | 2D, 6D, 613, 813 | 13A,13C, 13D,13F, 13NC, 1115M, 1810M |
| 176 | 2 | 2* | | | | |
| 190 | 3 | 3 | | | | |
| 186 | 2 | 5 | | | | |
| 200 | 4 | 7* | | | | |
| 201 | 6 | 8 | | | | |
| 205 | 6 | 12* | | | | |
| **"N" CELL HOLDERS** (BATTERY SIZE .375/.468 O.D. × 1.110/1.189 H) | | | | | | |
| 154 | 1 | 1 | E90, E340E, E401E, EP401E | MP401H | R401, RP401, 810 | 910A, 910F, 910M,1117M, 1118M MN9100 |
| 155 | 2 | 2 | | | | |
| 156 | 3 | 3 | | | | |
| **"9 VOLT" BATTERY HOLDERS** | | | | | | |
| 139B | 1 | 1 | 206 | M1611 | — | 1611 |
| 173P | 1 | 1 | 226 | — | — | 1600 |
| 203P | 1 | 10 | CH22,EN22, E146X,216, 522,1222, E303396 | TR146X, M1604, M1604HD, MN1604, PC146X, PC1604 | A1604, D1604, 1604 | 1604,1604A, 1604C,1604D, 1604M, 1604NC, 1619M |
| 1290 | REF. PAGE 21 | | | | | |
| 1291 | | | | | | |
| **"15 VOLT" BATTERY HOLDERS** | | | | | | |
| 163 | 1 | 9 | — | — | — | 224 |
| 161 | 1 | 9 | 411 | — | — | 208 |
| 166 | 1 | 11 | | | | |
| 167 | 2 | 14 | | | | |
| 225 | 1 | 1 | 504 | — | — | 220 |
| 226 | 2 | 2 | | | | |
| **"22 1/2 VOLT" BATTERY HOLDERS** | | | | | | |
| 139 | 1 | 1 | 505 | — | — | 221 |
| 168 | 1 | 9 | 420 | — | — | 225 |
| 177 | 1 | 11 | 412 | M215 | — | 215 |
| 178 | 2 | 14 | | | | |
| **"30 VOLT" BATTERY HOLDERS** | | | | | | |
| 183 | 1 | 11 | 413 | — | — | 210 |
| 184 | 2 | 14 | | | | |

*"C" Cell Holders-Dual Cat. No. 97 clips used
"D" Cell Holders-Dual Cat. No. 98 clips used



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# ALUMINUM BATTERY HOLDERS

Designers' Choice

keyelco.com

## MATERIAL SPECIFICATIONS

**Insulating Washers:** Moisture proof, resin impregnated fibre
**Terminal Lugs:** Brass, Tin Plate
**Frame and Clips:** Aluminum 2024-T3
**Contact Eyelet:** Brass, Nickel Plate

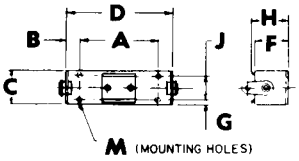

FIG. 1

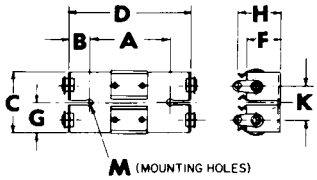

FIG. 2

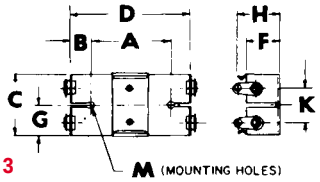

FIG. 3

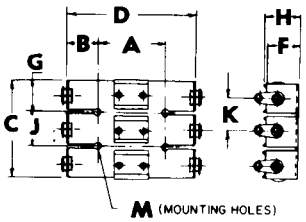

FIG. 4

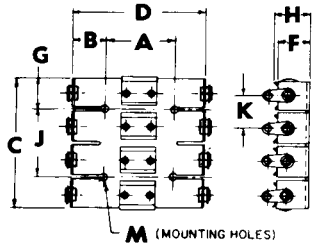

FIG. 5

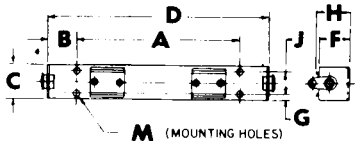

FIG. 6

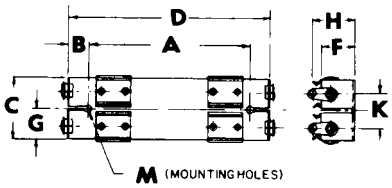

FIG. 7

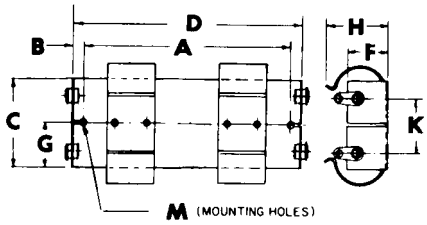

FIG. 8

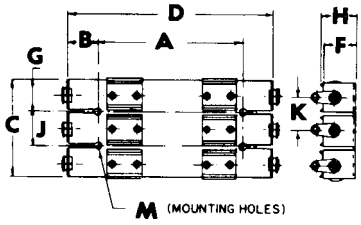

FIG. 9

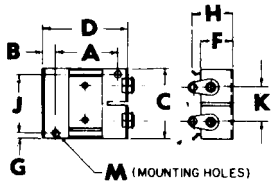

FIG. 10

| CAT. NO. | FIG. NO. | ±.010 A | ±.015 B | ±.010 C | ±.015 D | ±.010 F | ±.010 G | ±.015 H | ±.005 J | ±.010 K | MTG HOLES M ±.003 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *109 | 1 | 1.500 | .218 | .625 | 1.937 | .609 | .109 | .625 | .406 | — | 4#30(.128 Dia) |
| *110 | 1 | 1.500 | .437 | .625 | 2.374 | .625 | .109 | .625 | .406 | — | 4#30(.128 Dia) |
| 132 | 1 | 1.125 | .171 | .625 | 1.468 | .640 | .093 | .625 | .437 | — | 4#34(.111 Dia) |
| *134 | 1 | 1.812 | .484 | .625 | 2.781 | .609 | .093 | .625 | .437 | — | 4#34(.111 Dia) |
| *135 | 6 | 2.500 | .464 | .625 | 3.430 | .610 | .093 | .625 | .437 | — | 4#30(.128 Dia) |
| 137 | 1 | 1.500 | .218 | .437 | 1.915 | .468 | .093 | .484 | .250 | — | 2#34(.111 Dia) |
| 138 | 2 | .875 | .531 | .812 | 1.915 | .468 | .406 | .484 | — | .437 | 2#28(.140 Dia) |
| 139 | 1 | 1.500 | .312 | .625 | 2.140 | .625 | .109 | .580 | .406 | — | 4#34(.111 Dia) |
| 140 | 2 | 1.218 | .461 | 1.125 | 2.140 | .625 | .562 | .625 | — | .625 | 2#28(.140 Dia) |
| 154 | 1 | .906 | .242 | .437 | 1.343 | .468 | .093 | .531 | .250 | — | 2#34(.111 Dia) |
| 155 | 2 | .875 | .245 | .937 | 1.343 | .484 | .468 | .531 | — | .500 | 2#30(.128 Dia) |
| 156 | 4 | .875 | .257 | 1.500 | 1.343 | .475 | .468 | .531 | .562 | .531 | 4#34(.111 Dia) |
| *157 | 10 | 1.125 | .218 | 1.250 | 1.562 | .578 | .109 | .718 | 1.032 | .593 | 2#34(.111 Dia) |
| *160 | 1 | 3.500 | .406 | 1.000 | 4.312 | .960 | .141 | 1.218 | .718 | — | 2#28(.140 Dia) |
| *163 | 1 | 1.125 | .312 | 1.000 | 1.750 | .687 | .141 | 1.218 | .718 | — | 2#28(.140 Dia) |
| *164 | 1 | 1.625 | .402 | 1.000 | 2.430 | .687 | .125 | 1.218 | .750 | — | 2#28(.140 Dia) |
| *165 | 1 | 2.187 | .390 | 1.000 | 2.968 | .687 | .141 | 1.218 | .718 | — | 2#28(.140 Dia) |
| 166 | 1 | 1.000 | .312 | .750 | 1.625 | .768 | .093 | 1.156 | .562 | — | 4#28(.140 Dia) |
| 167 | 3 | 1.000 | .312 | 1.125 | 1.593 | .750 | .562 | 1.264 | — | .593 | 2#28(.140 Dia) |
| *168 | 1 | 1.500 | .377 | .750 | 2.275 | .718 | .125 | .937 | .500 | — | 4#28(.140 Dia) |
| 170 | 5 | .875 | .531 | 1.687 | 1.915 | .468 | .406 | .484 | .875 | .437 | 4#28(.140 Dia) |
| 171 | 4 | 1.218 | .461 | 1.750 | 2.140 | .625 | .562 | .625 | .625 | .625 | 4#28(.140 Dia) |
| 173 | 1 | 1.500 | .296 | .750 | 2.093 | .781 | .156 | .953 | .437 | — | 4#28(.140 Dia) |
| 174 | 3 | 1.750 | .172 | 1.625 | 2.093 | .781 | .812 | 1.105 | — | 1.000 | 2#28(.140 Dia) |
| 175 | 1 | 1.750 | .406 | 1.000 | 2.562 | .937 | .125 | 1.218 | .750 | — | 4#30(.128 Dia) |
| 176 | 3 | 2.093 | .248 | 2.062 | 2.578 | .937 | 1.030 | 1.437 | — | 1.312 | 2#28(.140 Dia) |
| 177 | 1 | 1.500 | .312 | .750 | 2.125 | .781 | .156 | 1.156 | .437 | — | 4#28(.140 Dia) |
| 178 | 3 | 1.218 | .453 | 1.125 | 2.215 | .781 | .562 | 1.218 | — | .625 | 2#28(.140 Dia) |
| *179 | 1 | .937 | .250 | 1.000 | 1.425 | .930 | .125 | 1.218 | .750 | — | 4#30(.128 Dia) |
| 182 | 5 | 1.218 | .461 | 2.656 | 2.140 | .625 | .609 | .625 | 1.437 | .718 | 4#28(.140 Dia) |
| 183 | 1 | 1.750 | .445 | .750 | 2.687 | .812 | .093 | 1.156 | .562 | — | 4#34(.111 Dia) |
| 184 | 3 | 1.812 | .414 | 1.125 | 2.640 | .812 | .562 | 1.218 | — | .625 | 2#28(.140 Dia) |
| 185 | 6 | 3.187 | .419 | .750 | 4.025 | .812 | .125 | .953 | .500 | — | 4#28(.140 Dia) |
| 186 | 6 | 4.125 | .370 | 1.000 | 4.865 | .968 | .156 | 1.218 | .687 | — | 4#30(.128 Dia) |
| 187 | 4 | 1.250 | .435 | 2.840 | 2.093 | .781 | .812 | .953 | 1.125 | 1.125 | 4#28(.140 Dia) |
| 189 | 6 | 3.000 | .538 | .625 | 4.075 | .625 | .093 | .625 | .437 | — | 4#30(.128 Dia) |
| 190 | 4 | 1.937 | .321 | 3.375 | 2.578 | .968 | 1.125 | 1.218 | 1.125 | 1.343 | 4#28(.140 Dia) |
| 192 | 7 | 3.093 | .542 | 1.125 | 4.093 | .625 | .593 | .625 | — | .625 | 2#28(.140 Dia) |
| 193 | 9 | 3.125 | .484 | 1.750 | 4.075 | .625 | .562 | .625 | .625 | .625 | 4#28(.140 Dia) |
| 196 | 8 | 3.187 | .419 | 1.625 | 4.025 | .781 | .812 | 1.125 | — | 1.000 | 2#28(.140 Dia) |
| 197 | 9 | 3.187 | .419 | 2.875 | 4.025 | .812 | .937 | .968 | 1.000 | 1.171 | 4#28(.140 Dia) |
| 200 | 8 | 4.375 | .245 | 2.062 | 4.865 | .968 | 1.032 | 1.468 | — | 1.312 | 2#28(.140 Dia) |
| 201 | 9 | 4.275 | .245 | 3.375 | 4.865 | .968 | 1.125 | 1.218 | 1.125 | 1.343 | 4#28(.140 Dia) |
| 203P | 10 | 1.375 | .312 | 1.125 | 2.000 | .547 | .125 | .793 | .875 | .500 | 4#30(.128 Dia) |
| 205 | 8 | 6.812 | .250 | 2.062 | 7.230 | .937 | 1.030 | 1.437 | — | 1.312 | 4#28(.140 Dia) |
| *225 | 1 | 1.125 | .226 | .625 | 1.578 | .609 | .093 | .625 | .437 | — | 4#34(.111 Dia) |
| *226 | 2 | .875 | .351 | 1.125 | 1.578 | .609 | .562 | .625 | — | .625 | 2#28(.140 Dia) |
| 1290 | 10 | 1.375 | .218 | 1.185 | 1.890 | .562 | .125 | .718 | .875 | .500 | 4#30(.128 Dia) |
| 1291 | 10 | 1.375 | .218 | 1.185 | 1.890 | .562 | .125 | .718 | .875 | .500 | 4#30(.128 Dia) |

*Special order only

Dimensions are for reference only

# INTERCONNECT BATTERY HOLDERS

## ALUMINUM HOLDERS CONNECTED IN SERIES

**ELIMINATES WIRING • LABOR SAVING**

Features pre-connected jumper strap insulated from the Aluminum base. Batteries held in series circuit without need of additional wiring.

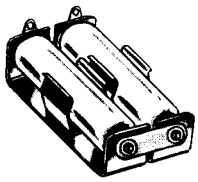

FIG. 2

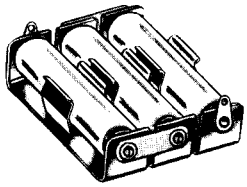

FIG. 3

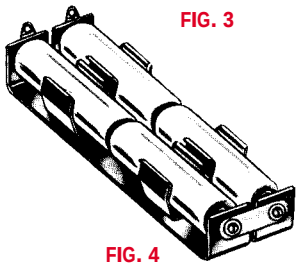

FIG. 4

| CAT. NO. | HOLDS NO.OF CELLS | FIG. NO. | BATTERY CROSS REFERENCE (All Batteries listed within boxes are in the same size group) EVEREADY | DURACELL | RAY-O-VAC | NEDA |
|---|---|---|---|---|---|---|
| **"AA" CELL HOLDERS** (BATTERY SIZE .531/.565 O.D.× 1.906/1.988 H) | | | | | | |
| 146 | 2 | 2 | E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215 | ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500 | 5AA, 615, 815, 7AA | 15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M |
| 147 | 3 | 3 | | | | |
| 148 | 4 | 4 | | | | |
| **"C" CELL HOLDERS** (BATTERY SIZE .875/1.125 O.D. × 1.875/1.969 H) | | | | | | |
| 149 | 2 | 2 | CH35, E93, 935, 1235, EV35, EN93 | M14F, M14HD, NC14C, TR286, MN1400, PC1400 | 1C, 614, 814 | 14A, 14C, 14D, 14F, 14NC, 1600M |
| 150 | 3 | 3 | | | | |
| 151 | 4 | 4 | | | | |
| **"D" CELL HOLDERS** (BATTERY SIZE 1.187/1.375 O.D. × 2.312/2.412 H) | | | | | | |
| 152 | 2 | 2 | CH50, E95,950, 1250, EV50, EN95 | M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300 | 2D, 6D, 613, 813 | 13A, 13C, 13D, 13F, 13NC, 1115M, 1810M |
| 153 | 3 | 3 | | | | |
| 158 | 4 | 4 | | | | |

## ALUMINUM HOLDERS WITH PC LUGS

**ELIMINATES WIRING • LABOR SAVING**

For printed circuitry we have standardized our most popular holders with PC Lugs. Choice of single or multiple holders "AA" and "C" assembled with Cat. No. 4002 lug. "D" assembled with Cat. No. 4003 lug.

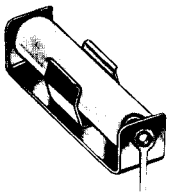

FIG. 1

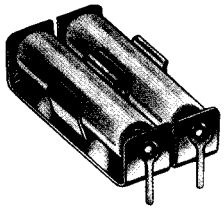

FIG. 2

| CAT. NO. | HOLDS NO. OF CELLS | FIG. NO. | BATTERY CROSS REFERENCE (All Batteries listed within boxes are in the same size group) EVEREADY | DURACELL | RAY-O-VAC | NEDA |
|---|---|---|---|---|---|---|
| **"AA" CELL HOLDERS** (BATTERY SIZE .531/.565 O.D.× 1.906/1.988 H) | | | | | | |
| 2222 | 1 | 1 | E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215 | ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500 | 5AA, 615, 815, 7AA | 15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M |
| 2223 | 2 | 2 | | | | |
| **"C" CELL HOLDERS** (BATTERY SIZE .875/1.125 O.D. × 1.875/1.969 H) | | | | | | |
| 2224 | 1 | 1 | CH35, E93, 935, 1235, EV35, EN93 | M14F, M14HD, NC14C, TR286, MN1400, PC1400 | 1C, 614, 814 | 14A, 14C, 14D, 14F, 14NC, 1600M |
| 2225 | 2 | 2 | | | | |
| **"D" CELL HOLDERS** (BATTERY SIZE 1.187/1.375 O.D. × 2.312/2.412 H) | | | | | | |
| 2226 | 1 | 1 | CH50, E95,950, 1250, EV50, EN95 | M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300 | 2D, 6D, 613, 813 | 13A, 13C, 13D, 13F, 13NC, 1115M, 1810M |
| 2227 | 2 | 2 | | | | |

## STEEL HOLDERS WITH PC LUGS

**ELIMINATES WIRING • LABOR SAVING**

For printed circuitry we have standardized our most popular holders with PC Lugs. Choice of single or multiple holders "AA" and "C" assembled with Cat. No. 4002 lug. "D" assembled with Cat. No. 4003 lug .

FIG.3

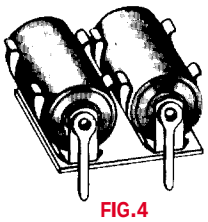

FIG.4

| CAT. NO. | HOLDS NO.OF CELLS | FIG. NO. | BATTERY CROSS REFERENCE (All Batteries listed within boxes are in the same size group) EVEREADY | DURACELL | RAY-O-VAC | NEDA |
|---|---|---|---|---|---|---|
| **"AA" CELL HOLDERS** (BATTERY SIZE .531/.565 O.D.× 1.906/1.988 H) | | | | | | |
| 2228 | 1 | 3 | E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215 | ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500 | 5AA, 615, 815, 7AA | 15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M |
| 2229 | 2 | 4 | | | | |
| **"C" CELL HOLDERS** (BATTERY SIZE .875/1.125 O.D. × 1.875/1.969 H) | | | | | | |
| 2230 | 1 | 3 | CH35, E93, 935, 1235, EV35, EN93 | M14F, M14HD, NC14C, TR286, MN1400, PC1400 | 1C, 614, 814 | 14A, 14C, 14D, 14F, 14NC, 1600M |
| 2231 | 2 | 4 | | | | |
| **"D" CELL HOLDERS** (BATTERY SIZE 1.187/1.375 O.D. × 2.312/2.412 H) | | | | | | |
| 2232 | 1 | 3 | CH50, E95,950, 1250, EV50, EN95 | M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300 | 2D, 6D, 613, 813 | 13A, 13C, 13D, 13F, 13NC, 1115M, 1810M |
| 2233 | 2 | 4 | | | | |



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# LITHIUM BATTERY HOLDERS

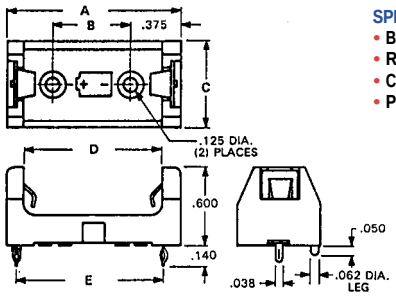
Designers' Choice

keyelco.com

## PLASTIC PC BATTERY HOLDERS FOR "1/2 AA" • "AA" • "2/3 A" SIZES

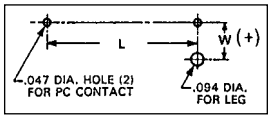
*1029C*
RETAINER
COVER

FOR *108C, 1028C or 1029LC*
RETAINER
COVER




**SPECIFICATIONS**
- **Base:** Glass Filled Nylon, UL Rated 94V-0
- **Retainer Cover:** PBT, UL Rated 94V-0
- **Contacts:** .012 Spring Steel
- **Plating:** Bright Tin over Nickel over Copper

Mounting Detail




**FEATURES**
- Snap-In PC contact holds in position for wave solderability
- Tin over Nickel Plated contacts for excellent soldering
- Polarity clearly marked for orientation
- Low Profile, space-saving
- Snap-on retainer cover (optional) retains battery securely to withstand shock and vibration. Helps protect against shorting. Tamper-proof.

**APPLICATIONS**
- Computer memory, power transfer and back-up systems
- Video and telecommunications power back-up requirements
- Preprogrammed video and electronic games
- Microprocessor, microcomputers, minicomputers, notebook, laptop and handheld computer memory hold applications
- Emergency power systems
- Residential, industrial and commercial security and fire alarm systems

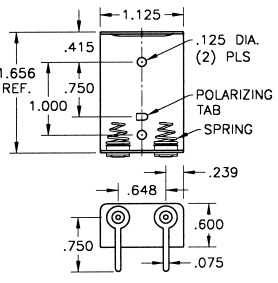
| | | | DIMENSIONS | | | | | MTG. HOLES | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HOLDER CAT. NO. | COVER CAT. NO. | SIZE & TYPE | A (MAX) | B | C | D | E | L | W | BATTERY CROSS REFERENCE |
| **108** | **108C** | 1/2 AA | 1.360 | .610 | .640 | 1.030 | 1.160 | 1.160 | .279 | **Eveready** 544, **Duracell** PX28L, **Kodak** K28A & KS28, **Panasonic** CR14250, **Saft** LCP3, **Electrochem** 3B955, **Maxell** 4LR44, **Sanyo** CR14250SE. |
| **1028** | **1028C** | AA | 2.360 | 1.610 | .640 | 2.030 | 2.160 | 2.160 | .279 | **Eveready** E9, EV15, E91, E177, 505, 1015. **Duracell** ZM9, NC15, M15F, TR177, M505, MN1500, PC1500. **Panasonic** UM-3 & P-45AA. **Sanyo** N-600AA & N-700AA. **Rayovac** 5AA, 7AA, 615, 815. |
| **1029** | **1029C 1029LC** | 2/3 A | 1.700 | .950 | .720 | 1.375 | 1.500 | 1.500 | .320 | **Duracell** DL2/3A, **Electrochem** 3B793 & 3B950, **Panasonic** CR123A, **Saft** 450SC & VR0450, **Sanyo** CR17335SE, **Kodak** K123L. |

## 6 VOLT LITHIUM BATTERY HOLDERS

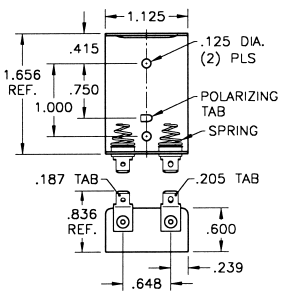
FOR DURACELL DL223A OR EQUIVALENT BATTERIES

- Quick Fit/Solder Lug Terminals
- PC Board Terminals
- Lightweight, ideal for rugged applications

**SPECIFICATIONS**
**Frame:** Aluminum 2024-T3
**Spring Contacts:** .025 Dia. Spring Steel, Nickel Plate
**Terminals:** Brass, Tin Plate




**CAT. NO. 224**
PC Terminals




**CAT. NO. 223**
Quick-Fit/Solder Lug

## LITHIUM BATTERY HOLDERS

**PC PLASTIC HOLDER**

FIG.

**STANDARD LUGS**

FIG. 2 - ALL STEEL HOLDER

FIG. 4 - ALUMINUM HOLDER

**PC LUGS**

FIG. 3 - ALL STEEL HOLDER

FIG. 5 - ALUMINUM HOLDER

| CAT. NO STD LUGS | FIG. NO. | CAT. NO. PC LUGS | FIG. NO. | BATTERY SIZE | BATTERY DIA. | DURA-CELL | PANA-SONIC | SANYO G.E. |
|---|---|---|---|---|---|---|---|---|
| — | — | **108** | 1 | 1/2AA | .51 × .99 | P×28L | CR14250 | CR14250SE |
| **1103** | 2 | **2103** | 3 | 1/2AA | .51 × .99 | P×28L | CR14250 | CR14250SE |
| **1105** | 2 | **2105** | 3 | 1/2A | .611 × .886 | — | BR-1/2A | — |
| — | — | **1029** | 1 | 2/3A | .661 × 1.315 | DL-2/3A | BR-2/3A | CR17335SE |
| **132** | 4 | **131** | 5 | 2/3A | .661 × 1.315 | DL-2/3A | BR-2/3A | CR17335SE |

# ENGINEERING DATA

Designers' Choice

keyelco.com

## DRILL SIZE DIAMETER TABLE

| Diameter | Drill Size | Diameter | Drill Size | Diameter | Drill Size | Diameter | Drill Size |
|---|---|---|---|---|---|---|---|
| .0135 | 80 | .0935 | 42 | .2031 | 13/64 | .4040 | Y |
| .0145 | 79 | .0938 | 3/32 | .2040 | 6 | .4062 | 13/32 |
| .0156 | 1/64 | .0960 | 41 | .2055 | 5 | .4130 | Z |
| .0160 | 78 | .0980 | 40 | .2090 | 4 | .4219 | 27/64 |
| .0180 | 77 | .0995 | 39 | .2130 | 3 | .4375 | 7/16 |
| .0200 | 76 | .1015 | 38 | .2188 | 7/32 | .4531 | 29/64 |
| .0210 | 75 | .1040 | 37 | .2210 | 2 | .4688 | 15/32 |
| .0225 | 74 | .1065 | 36 | .2280 | 1 | .4844 | 31/64 |
| .0240 | 73 | .1094 | 7/64 | .2340 | A | .5000 | 1/2 |
| .0250 | 72 | .1100 | 35 | .2344 | 15/64 | .5156 | 33/64 |
| .0260 | 71 | .1110 | 34 | .2380 | B | .5312 | 17/32 |
| .0280 | 70 | .1130 | 33 | .2420 | C | .5469 | 35/64 |
| .0292 | 69 | .1160 | 32 | .2460 | D | .5625 | 9/16 |
| .0310 | 68 | .1200 | 31 | .2500 | 1/4 | .5781 | 37/64 |
| .0312 | 1/32 | .1250 | 1/8 | .2500 | E | .5938 | 19/32 |
| .0320 | 67 | .1285 | 30 | .2570 | F | .6094 | 39/64 |
| .0330 | 66 | .1360 | 29 | .2610 | G | .6250 | 5/8 |
| .0350 | 65 | .1405 | 28 | .2656 | 17/64 | .6406 | 41/64 |
| .0360 | 64 | .1406 | 9/64 | .2660 | H | .6562 | 21/32 |
| .0370 | 63 | .1440 | 27 | .2720 | I | .6719 | 43/64 |
| .0380 | 62 | .1470 | 26 | .2770 | J | .6875 | 11/16 |
| .0390 | 61 | .1495 | 25 | .2810 | K | .7031 | 45/64 |
| .0400 | 60 | .1520 | 24 | .2812 | 9/32 | .7188 | 23/32 |
| .0410 | 59 | .1540 | 23 | .2900 | L | .7344 | 47/64 |
| .0420 | 58 | .1562 | 5/32 | .2950 | M | .7500 | 3/4 |
| .0430 | 57 | .1570 | 22 | .2969 | 19/64 | .7656 | 49/64 |
| .0465 | 56 | .1590 | 21 | .3020 | N | .7812 | 25/32 |
| .0469 | 3/64 | .1610 | 20 | .3125 | 5/16 | .7969 | 51/64 |
| .0520 | 55 | .1660 | 19 | .3160 | O | .8120 | 13/16 |
| .0550 | 54 | .1695 | 18 | .3230 | P | .8281 | 53/64 |
| .0595 | 53 | .1719 | 11/64 | .3281 | 21/64 | .8438 | 27/32 |
| .0625 | 1/16 | .1730 | 17 | .3320 | Q | .8594 | 55/64 |
| .0635 | 52 | .1770 | 16 | .3390 | R | .8750 | 7/8 |
| .0670 | 51 | .1800 | 15 | .3438 | 11/32 | .8906 | 57/64 |
| .0700 | 50 | .1820 | 14 | .3480 | S | .9062 | 29/32 |
| .0730 | 49 | .1850 | 13 | .3580 | T | .9219 | 59/64 |
| .0760 | 48 | .1875 | 3/16 | .3594 | 23/64 | .9375 | 15/16 |
| .0781 | 5/64 | .1890 | 12 | .3680 | U | .9531 | 61/64 |
| .0785 | 47 | .1910 | 11 | .3750 | 3/8 | .9688 | 31/32 |
| .0810 | 46 | .1935 | 10 | .3770 | V | .9844 | 63/64 |
| .0820 | 45 | .1960 | 9 | .3860 | W | 1.0000 | 1/1 |
| .0860 | 44 | .1990 | 8 | .3906 | 25/64 | | |
| .0890 | 43 | .2010 | 7 | .3970 | X | | |

## SCREW/STUD CLEARANCE HOLE TABLE

| Screw/Stud Size | Screw/Stud Dia. Max. | Recommended Clearance Hole Dia. |
|---|---|---|
| 0 | .060 | .067 |
| 1 | .073 | .078 |
| 2 | .086 | .093 |
| 3 | .099 | .105 |
| 4 | .112 | .120 |
| 5 | .125 | .130 |
| 6 | .138 | .144 |
| 8 | .164 | .169 |
| 10 | .190 | .196 |
| 12 | .216 | .220 |
| 14 | .242 | .250 |
| 1/4 | .250 | .257 |

## MILLIMETER CONVERSION TABLE

| MM | Decimal Inches | Fraction Inches | MM | Decimal Inches | Fraction Inches | MM | Decimal Inches | Fraction Inches | MM | Decimal Inches | Fraction Inches |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1 | .0039 | | 6.5 | .2559 | | 12.8 | .5039 | | 19.2 | .7559 | |
| 0.2 | .0079 | | 6.6 | .2598 | | 12.9 | .5079 | | 19.3 | .7598 | |
| 0.3 | .0118 | | 6.7 | .2638 | | 13.0 | .5118 | | 19.4 | .7638 | |
| **0.397** | **.0156** | **1/64** | **6.747** | **.2656** | **17/64** | **13.097** | **.5156** | **33/64** | **19.447** | **.7656** | **49/64** |
| 0.4 | .0157 | | 6.8 | .2677 | | 13.1 | .5157 | | 19.5 | .7677 | |
| 0.5 | .0197 | | 6.9 | .2717 | | 13.2 | .5197 | | 19.6 | .7717 | |
| 0.6 | .0236 | | 7.0 | .2756 | | 13.3 | .5236 | | 19.7 | .7756 | |
| 0.7 | .0276 | | 7.1 | .2795 | | 13.4 | .5276 | | 19.8 | .7795 | |
| **0.794** | **.0313** | **1/32** | **7.144** | **.2813** | **9/32** | **13.494** | **.5313** | **17/32** | **19.844** | **.7813** | **25/32** |
| 0.8 | .0315 | | 7.2 | .2835 | | 13.5 | .5315 | | 19.9 | .7835 | |
| 0.9 | .0354 | | 7.3 | .2874 | | 13.6 | .5354 | | 20.0 | .7874 | |
| 1.0 | .0394 | | 7.4 | .2913 | | 13.7 | .5394 | | 20.1 | .7913 | |
| 1.1 | .0433 | | 7.5 | .2953 | | 13.8 | .5433 | | 20.2 | .7953 | |
| **1.191** | **.0469** | **3/64** | **7.541** | **.2969** | **19/64** | **13.891** | **.5469** | **35/64** | **20.241** | **.7969** | **51/64** |
| 1.2 | .0472 | | 7.6 | .2992 | | 13.9 | .5472 | | 20.3 | .7992 | |
| 1.3 | .0512 | | 7.7 | .3031 | | 14.0 | .5512 | | 20.4 | .8031 | |
| 1.4 | .0551 | | 7.8 | .3071 | | 14.1 | .5551 | | 20.5 | .8071 | |
| 1.5 | .0591 | | 7.9 | .3110 | | 14.2 | .5591 | | 20.6 | .8110 | |
| **1.588** | **.0625** | **1/16** | **7.938** | **.3125** | **5/16** | **14.288** | **.5625** | **9/16** | **20.638** | **.8125** | **13/16** |
| 1.6 | .0630 | | 8.0 | .3150 | | 14.3 | .5630 | | 20.7 | .8150 | |
| 1.7 | .0669 | | 8.1 | .3189 | | 14.4 | .5669 | | 20.8 | .8189 | |
| 1.8 | .0709 | | 8.2 | .3228 | | 14.5 | .5709 | | 20.9 | .8228 | |
| 1.9 | .0748 | | 8.3 | .3268 | | 14.6 | .5748 | | 21.0 | .8268 | |
| **1.984** | **.0781** | **5/64** | **8.334** | **.3281** | **21/64** | **14.684** | **.5781** | **37/64** | **21.034** | **.8281** | **53/64** |
| 2.0 | .0787 | | 8.4 | .3307 | | 14.7 | .5787 | | 21.1 | .8307 | |
| 2.1 | .0827 | | 8.5 | .3346 | | 14.8 | .5827 | | 21.2 | .8346 | |
| 2.2 | .0866 | | 8.6 | .3386 | | 14.9 | .5866 | | 21.3 | .8386 | |
| 2.3 | .0906 | | 8.7 | .3425 | | 15.0 | .5906 | | 21.4 | .8425 | |
| **2.381** | **.0938** | **3/32** | **8.731** | **.3438** | **11/32** | **15.081** | **.5938** | **19/32** | **21.431** | **.8438** | **27/32** |
| 2.4 | .0945 | | 8.8 | .3465 | | 15.1 | .5945 | | 21.5 | .8465 | |
| 2.5 | .0984 | | 8.9 | .3504 | | 15.2 | .5984 | | 21.6 | .8504 | |
| 2.6 | .1024 | | 9.0 | .3543 | | 15.3 | .6024 | | 21.7 | .8543 | |
| 2.7 | .1063 | | 9.1 | .3583 | | 15.4 | .6063 | | 21.8 | .8583 | |
| **2.778** | **.1094** | **7/64** | **9.128** | **.3594** | **23/64** | **15.478** | **.6094** | **39/64** | **21.828** | **.8594** | **55/64** |
| 2.8 | .1102 | | 9.2 | .3622 | | 15.5 | .6102 | | 21.9 | .8622 | |
| 2.9 | .1142 | | 9.3 | .3661 | | 15.6 | .6142 | | 22.0 | .8661 | |
| 3.0 | .1181 | | 9.4 | .3701 | | 15.7 | .6181 | | 22.1 | .8701 | |
| 3.1 | .1220 | | 9.5 | .3740 | | 15.8 | .6220 | | 22.2 | .8740 | |
| **3.175** | **.1250** | **1/8** | **9.525** | **.3750** | **3/8** | **15.875** | **.6250** | **5/8** | **22.225** | **.8750** | **7/8** |
| 3.2 | .1260 | | 9.6 | .3780 | | 15.9 | .6260 | | 22.3 | .8780 | |
| 3.3 | .1299 | | 9.7 | .3819 | | 16.0 | .6299 | | 22.4 | .8819 | |
| 3.4 | .1339 | | 9.8 | .3858 | | 16.1 | .6339 | | 22.5 | .8858 | |
| 3.5 | .1378 | | 9.9 | .3898 | | 16.2 | .6378 | | 22.6 | .8898 | |
| **3.572** | **.1406** | **9/64** | **9.922** | **.3906** | **25/64** | **16.272** | **.6406** | **41/64** | **22.622** | **.8906** | **57/64** |
| 3.6 | .1417 | | 10.0 | .3937 | | 16.3 | .6417 | | 22.7 | .8937 | |
| 3.7 | .1457 | | 10.1 | .3976 | | 16.4 | .6457 | | 22.8 | .8976 | |
| 3.8 | .1496 | | 10.2 | .4016 | | 16.5 | .6496 | | 22.9 | .9016 | |
| 3.9 | .1535 | | 10.3 | .4055 | | 16.6 | .6535 | | 23.0 | .9055 | |
| **3.969** | **.1563** | **5/32** | **10.319** | **.4063** | **13/32** | **16.669** | **.6563** | **21/32** | **23.019** | **.9063** | **29/32** |
| 4.0 | .1575 | | 10.4 | .4094 | | 16.7 | .6575 | | 23.1 | .9094 | |
| 4.1 | .1614 | | 10.5 | .4134 | | 16.8 | .6614 | | 23.2 | .9134 | |
| 4.2 | .1654 | | 10.6 | .4173 | | 16.9 | .6654 | | 23.3 | .9173 | |
| 4.3 | .1693 | | 10.7 | .4213 | | 17.0 | .6693 | | 23.4 | .9213 | |
| **4.366** | **.1719** | **11/64** | **10.716** | **.4219** | **27/64** | **17.066** | **.6719** | **43/64** | **23.416** | **.9219** | **59/64** |
| 4.4 | .1732 | | 10.8 | .4252 | | 17.1 | .6732 | | 23.5 | .9252 | |
| 4.5 | .1772 | | 10.9 | .4291 | | 17.2 | .6772 | | 23.6 | .9291 | |
| 4.6 | .1811 | | 11.0 | .4331 | | 17.3 | .6811 | | 23.7 | .9331 | |
| 4.7 | .1850 | | 11.1 | .4370 | | 17.4 | .6850 | | 23.8 | .9370 | |
| **4.763** | **.1875** | **3/16** | **11.113** | **.4375** | **7/16** | **17.463** | **.6875** | **11/16** | **23.813** | **.9375** | **15/16** |
| 4.8 | .1890 | | 11.2 | .4409 | | 17.5 | .6890 | | 23.9 | .9409 | |
| 4.9 | .1929 | | 11.3 | .4449 | | 17.6 | .6929 | | 24.0 | .9449 | |
| 5.0 | .1969 | | 11.4 | .4488 | | 17.7 | .6968 | | 24.1 | .9488 | |
| 5.1 | .2008 | | 11.5 | .4528 | | 17.8 | .7008 | | 24.2 | .9528 | |
| **5.159** | **.2031** | **13/64** | **11.509** | **.4531** | **29/64** | **17.859** | **.7031** | **45/64** | **24.209** | **.9531** | **61/64** |
| 5.2 | .2047 | | 11.6 | .4567 | | 17.9 | .7047 | | 24.3 | .9567 | |
| 5.3 | .2087 | | 11.7 | .4606 | | 18.0 | .7087 | | 24.4 | .9606 | |
| 5.4 | .2126 | | 11.8 | .4646 | | 18.1 | .7126 | | 24.5 | .9646 | |
| 5.5 | .2165 | | 11.9 | .4685 | | 18.2 | .7165 | | 24.6 | .9685 | |
| **5.556** | **.2188** | **7/32** | **11.906** | **.4688** | **15/32** | **18.256** | **.7188** | **23/32** | **24.606** | **.9688** | **31/32** |
| 5.6 | .2205 | | 12.0 | .4724 | | 18.3 | .7205 | | 24.7 | .9724 | |
| 5.7 | .2244 | | 12.1 | .4764 | | 18.4 | .7244 | | 24.8 | .9764 | |
| 5.8 | .2283 | | 12.2 | .4803 | | 18.5 | .7283 | | 24.9 | .9803 | |
| 5.9 | .2323 | | 12.3 | .4843 | | 18.6 | .7323 | | 25.0 | .9843 | |
| **5.953** | **.2344** | **15/64** | **12.303** | **.4844** | **31/64** | **18.653** | **.7344** | **47/64** | **25.003** | **.9844** | **63/64** |
| 6.0 | .2362 | | 12.4 | .4882 | | 18.7 | .7362 | | 25.1 | .9882 | |
| 6.1 | .2402 | | 12.5 | .4921 | | 18.8 | .7402 | | 25.2 | .9921 | |
| 6.2 | .2441 | | 12.6 | .4961 | | 18.9 | .7441 | | 25.3 | .9961 | |
| 6.3 | .2480 | | 12.7 | .5000 | | 19.0 | .7480 | | **25.400** | **1.0000** | **1** |
| **6.350** | **.2500** | **1/4** | **12.700** | **.5000** | **1/2** | **19.050** | **.7500** | **3/4** | | | |
| 6.4 | .2520 | | | | | 19.1 | .7520 | | | | |