Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JEDEC Group 2, No. GB11-2) having thickness of 1/4" and eleven holes with diameters of 0.1030" ± 0.0005" so located on a 0.7500" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.213" ± 0.0005".

Pin fit in gauge is such that gauge together with supplementary weight totaling 3 pounds will not be lifted when pins are withdrawn.

* Add 0.030" for solder on finished tube.
"SUBMAGNAL"
PIN DIMENSIONS AND ORIENTATION
AND INDEX GUIDE

<table>
<thead>
<tr>
<th></th>
<th>Min.</th>
<th>Center</th>
<th>Max.</th>
<th></th>
<th>Min.</th>
<th>Center</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.550&quot;</td>
<td>.560&quot;</td>
<td>.570&quot;</td>
<td>L</td>
<td>-</td>
<td>32-8/11&quot;</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>.490&quot;</td>
<td>.500&quot;</td>
<td>.510&quot;</td>
<td>M</td>
<td>.305&quot;</td>
<td>.312&quot;</td>
<td>.317&quot;</td>
</tr>
<tr>
<td>C</td>
<td>.300&quot;</td>
<td>.308&quot;</td>
<td>.315&quot;</td>
<td>N</td>
<td>.075&quot;</td>
<td>.080&quot;</td>
<td>.085&quot;</td>
</tr>
<tr>
<td>D</td>
<td>.427&quot;</td>
<td>.437&quot;</td>
<td>.447&quot;</td>
<td>P</td>
<td>.343&quot;</td>
<td>.353&quot;</td>
<td>.363&quot;</td>
</tr>
<tr>
<td>E</td>
<td>-</td>
<td>-.050&quot;</td>
<td>-.060&quot;</td>
<td>Q</td>
<td>.040&quot;</td>
<td>.047&quot;</td>
<td>.055&quot;</td>
</tr>
<tr>
<td>F</td>
<td>.085&quot;</td>
<td>.090&quot;</td>
<td>.095&quot;</td>
<td>R1</td>
<td>-</td>
<td>.031&quot;</td>
<td>-</td>
</tr>
<tr>
<td>G</td>
<td>.352&quot;</td>
<td>.362&quot;</td>
<td>.372&quot;</td>
<td>R2</td>
<td>-</td>
<td>-</td>
<td>.050&quot;</td>
</tr>
<tr>
<td>H</td>
<td>-.750&quot;</td>
<td>-</td>
<td>-.900&quot;</td>
<td>R3</td>
<td>-</td>
<td>.040&quot;</td>
<td>-</td>
</tr>
<tr>
<td>J</td>
<td>.090&quot;</td>
<td>.093&quot;</td>
<td>.096&quot;</td>
<td>T</td>
<td>.340&quot;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>K</td>
<td>16-4/11&quot;</td>
<td>-</td>
<td>-</td>
<td>U</td>
<td>-</td>
<td>-</td>
<td>.135&quot;</td>
</tr>
</tbody>
</table>

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JETEC No. GBII-2) having thickness of 1/4" and eleven holes with diameters of 0.1030" ± 0.0005" so located on a 0.7500" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.2113" ± 0.0005".

Pin fit in gauge is such that gauge together with supplementary weight totaling 3 pounds will not be lifted when pins are withdrawn.

* Add 0.030" for solder on finished tube.

JULY 1, 1955
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
### SMALL-SHELL SUBMAGNAL

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11</td>
<td>811-88</td>
<td>11344</td>
</tr>
</tbody>
</table>

For other dimensions, see first page of the "Submagnal" series.
BASES
11-PIN TYPES

SMALL-BUTTON UNIDEKAR 11-PIN

Unidekar Base Pin Contour

Base-pin positions are held to tolerances such that entire length of pins will without undue force pass into and disengage from flat-plate gauge having thickness of 1/4" and twelve holes with diameters of 0.0520" ± 0.0005" so located on a 0.6870" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.1778" ± 0.0005". Gauge is also provided with a hole 0.3750" ± 0.0100" concentric with the pin circle.

* This dimension around the periphery of any individual pin may vary within the limits shown.
SMALL-BUTTON UNIDEKAR II-PIN (CONT'D)

The design of the socket should be such that circuit wiring cannot impress lateral strains through the socket contacts on the base pins. The point of bearing of the contacts on the base pins should not be closer than 1/8" from the bottom of the seated tube.
Bases

11-Pin Types

LARGE-WAFER ELEVENAR 11-PIN WITH RING

Pin Dimensions and Orientation

Base-pin positions are held to tolerances such that entire length of pins will, without undue force, pass into and disengage from flat-plate gauge (JEDEC No. GE11-11) having a thickness of 0.250" and twelve holes with diameters of 0.0520" ± 0.0005" so located on a 0.6870" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.1778" ± 0.0005". Gauge is also provided with a hole 0.3750" ± 0.0005" diameter concentric with the pin circle.

This dimension around the periphery of any individual pin may vary within the limits shown. The surface of the pin is convex or conical in shape and not brought to a sharp point.
"MAGNAL"
PIN DIMENSIONS AND ORIENTATION
AND INDEX GUIDE

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JETEC No. GB11-1) having thickness of 1/4" and eleven holes with diameters of 0.1030" ± 0.0005" so located on a 1.0630" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.2995" ± 0.0005".

Pin fit in gauge is such that gauge together with supplementary weight totaling 3 pounds will not be lifted when pins are withdrawn.

* Add 0.030" for solder on finished tube.
BASSES
11-PIN TYPES

SMALL-SHELL MAGNAL

No. of Pins  Pins  JETEC No.  RCA No.
11-Pin  1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11  B11-53  11247

MEDIUM-SHELL MAGNAL

No. of Pins  Pins  JETEC No.  RCA No.
11-Pin  1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11  B11-66  11248

For other dimensions of above bases, see first page of the "Magnal" series
"DUODECAL"
PIN DIMENSIONS AND ORIENTATION
AND INDEX GUIDE

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JETEC No.GB12-11)
having thickness of $1/4''$ and twelve holes with diameters
of $0.1030'' \pm 0.0005''$ so located on a $1.0630'' \pm 0.0005''$
diameter circle that the distance along the chord between
any two adjacent hole centers is $0.2751'' \pm 0.0005''$.

Pin fit in gauge is such that gauge together with supplemenary weight totaling 3 pounds will not be lifted
when pins are withdrawn.

* Add $0.030''$ for solder on finished tube.
### BASSES
#### 12-PIN TYPES

**DWARF-SHELL DUODECAL**

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
<td>812-157</td>
<td>12263</td>
</tr>
<tr>
<td>6-Pin</td>
<td>1, 2, 3, 10, 11, 12</td>
<td>86-158</td>
<td>6263</td>
</tr>
</tbody>
</table>

**ULTRASHORT SMALL-SHELL DUODECAL**

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
<td>812-186</td>
<td>12261</td>
</tr>
</tbody>
</table>

*For other dimensions of above bases, see first page of the "Duodecal" series*
**Bases**

**12-Pin Types**

**MEDIUM CERAMIC-WAFER TWELVEYAR BASE**

*Pin Dimensions and Orientation and Index Guide*

---

**NOTE:** Maximum Outside Diameter of 0.440" is permitted along the 0.190" lug length.

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Dimension &quot;A&quot; Max.</th>
<th>JEDEC RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 - Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
<td>0.040&quot;</td>
</tr>
<tr>
<td>7 - Pin</td>
<td>1, 2, 3, 4, 5, 6, 7</td>
<td>0.040&quot;</td>
</tr>
<tr>
<td>7 - Pin</td>
<td>1, 2, 3, 4, 5, 6, 7</td>
<td>0.040&quot;</td>
</tr>
<tr>
<td>5 - Pin</td>
<td>1, 2, 3, 4, 5, 6, 7</td>
<td>0.040&quot;</td>
</tr>
<tr>
<td>5 - Pin</td>
<td>1, 2, 3, 4, 5, 6, 7</td>
<td>0.040&quot;</td>
</tr>
</tbody>
</table>

a) Pins 3, 5, 8, 9 are of a length such that their ends do not touch the socket insertion plane. Pin 11 is omitted.

b) Pins 2, 4, 8, 9 are of a length such that their ends do not touch the socket insertion plane. Pin 11 is omitted.

c) Pin 7 is of a length such that its end does not touch the socket insertion plane. Pins 1, 3, 5, 6, 9 are omitted.

d) Pins 1, 3, 5, 6, 7, 9 are of a length such that their ends do not touch the socket insertion plane. Pin 11 is omitted.

---

Radio Corporation of America

Electron Tube Division

Harrison, N. J.

Bases 20pA

1-63
Base-pin positions and lug positions shall be held to tolerances such that entire length of pins and lugs will without undue force pass into and disengage from flat-plate gauge (JEDEC No.GE12-5) having thickness of 0.250" and twelve holes of 0.0350" ± 0.0005" diameter located on four concentric circles as follows: Three holes located on 0.2800" ± 0.0005", three holes located on 0.2100" ± 0.0005", three holes located on 0.1400" ± 0.0005", three holes located on 0.0700" ± 0.0005" diameter circles at specified angles with a tolerance of ± 0.08° for each angle. In addition, gauge provides for two curved slots with chordal lengths of 0.2270" ± 0.0005" and 0.1450" ± 0.0005" located on 0.4200" ± 0.0005" diameter circle concentric with pin circles at 180° ± 0.08° and having a width of 0.0230" ± 0.0005".
Base-pin positions are held to tolerances such that entire length of pins will, without undue force, pass into and disengage from flat-plate gauge having a thickness of 0.250" and thirteen holes with diameters of 0.0520" ± 0.0005" so located on a 0.7500" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.1795" ± 0.0005". Gauge is also provided with a hole 0.375" + 0.005" - 0.000" diameter concentric with the pin circle.

▲ This dimension around the periphery of any individual pin may vary within the limits shown. The surface of the pin is convex or conical in shape and not brought to a sharp point.
Bases
12-Pin Types

SMALL-BUTTON DUODECAR 12-PIN  LARGE-BUTTON DUODECAR 12-PIN

1.086" MAX. DIA.  1.562" MAX. DIA.

JEDEC No. E12-70  JEDEC No. E12-74

Fits Gauge JEDEC No. GE12-3  Fits Gauge JEDEC No. GE12-4
SHORT SMALL-SHELL DUODECAL

No. of Pins | Pins          | JETEC No. | RCA No.
---|---------------|-----------|------
12-Pin     | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 | B12-207   | 12267
6-Pin      | 1, 2, 6, 10, 11, 12                | 86-203    | 6267

For other dimensions, see first page of the "Duodecal" series
### SMALL-SHELL DUODECAL

![Small-SHELL DUODECAL Diagram]

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
<td>812-43</td>
<td>12253</td>
</tr>
<tr>
<td>10-Pin</td>
<td>1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12</td>
<td>810-75</td>
<td>10253</td>
</tr>
<tr>
<td>7-Pin</td>
<td>1, 2, 6, 7, 10, 11, 12</td>
<td>87-51</td>
<td>7253</td>
</tr>
<tr>
<td>7-Pin</td>
<td>1, 2, 3, 6, 10, 11, 12</td>
<td>87-179</td>
<td>-</td>
</tr>
<tr>
<td>6-Pin</td>
<td>1, 2, 6, 10, 11, 12</td>
<td>86-63</td>
<td>6253</td>
</tr>
<tr>
<td>6-Pin</td>
<td>1, 2, 4, 5, 6, 7, 8, 10, 11, 12</td>
<td>86-180</td>
<td>-</td>
</tr>
<tr>
<td>5-Pin</td>
<td>1, 2, 10, 11, 12</td>
<td>85-57</td>
<td>5253</td>
</tr>
</tbody>
</table>

*For other dimensions, see first page of the "Duodecal" series*
**Bases**

**13-Lead Types**

**Small-Button Thirteenar**

---

**NOTE:** Lead is cut off within 0.04 inch from the glass button.

<table>
<thead>
<tr>
<th>No. of Leads</th>
<th>Leads</th>
<th>JEDEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Lead A</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13</td>
<td>E13-71</td>
<td>–</td>
</tr>
<tr>
<td>12-Lead A</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
<td>E12-72</td>
<td>–</td>
</tr>
</tbody>
</table>

*A Lead 13 is cut off within 0.04 inch from the glass button.*

---

**RADIO CORPORATION OF AMERICA**

Electron Tube Division

Harrison, N. J.

Bases 21PA

10-60
SMALL-SHELL NEODIHEPTAL

No. of Pins JETEC RCA
Pins 14-Pin 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 B14-130 14560
      12-Pin 1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14 B12-131 12560

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JETEC No. GB14-2) having thickness of 1/4" and fourteen holes with diameters of 0.1030" ± 0.0005" so located on a 1.5500" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.3449" ± 0.0005".

Pin fit in gauge is such that gauge together with supplementary weight totaling 3 pounds will not be lifted when pins are withdrawn.

* Add 0.030" for solder on finished tube.
"DIHEPTAL"
PIN DIMENSIONS AND ORIENTATION
AND INDEX GUIDE

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JETEC No.GB14-I)
having thickness of 1/4" and fourteen holes with diameters of 0.1030" ± 0.0005" so located on a 1.750" ± 0.0005"
diameter circle that the distance along the chord between any two hole centers is 0.3895" ± 0.0005".

Pin fit in gauge is such that gauge together with supplementary weight totaling 3 pounds will not be lifted when pins are withdrawn.

* Add 0.030" for solder on finished tube.

JULY 1, 1955
# Small-SHELL DIHEPTAL

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14</td>
<td>B14-45</td>
<td>14151</td>
</tr>
<tr>
<td>12-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14</td>
<td>B12-105</td>
<td>12151</td>
</tr>
</tbody>
</table>

# Medium-SHELL DIHEPTAL

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-Pin</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14</td>
<td>B14-38</td>
<td>14146</td>
</tr>
<tr>
<td>12-Pin</td>
<td>1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 14</td>
<td>B12-37</td>
<td>12146</td>
</tr>
</tbody>
</table>

For other dimensions of above bases, see first page of the "Diheptal" series

July 1, 1955
Tube Division
Radio Corporation of America, Harrison, New Jersey
SMALL-SHELL BIDECAL

No. of Pins | JETEC No. | RCA No.
---|---|---
20-Pin 1 through 20 | B20-102 | 20158

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge (JETEC No. GB20-1) having thickness of 1/4" and twenty holes with diameters of 0.1030" ± 0.0005" so located on a 1.7500" ± 0.0005" diameter circle that the distance along the chord between any two adjacent hole centers is 0.2738" ± 0.0005". Pin fit in gauge is such that gauge together with supplementary weight totaling 3 pounds will not be lifted when pins are withdrawn.

* Add 0.030" for solder on finished tube.
Bases
25-Pin Types

JEDEC No. B25-216

Dimensions in inches

* Add 0.030 inch for solder.
BASES
29-PIN TYPES

SMALL-BUTTON TWENTYNINAR

Twentyninar Base Pin Contour

No. of Pins | Pins | JESENo. | RCA No.
--- | --- | --- | ---
29-Pin | 1 through 29 | E29-17 | –
22-Pin | 1 through 19, 21, 25, 28 | E22-16 | FS8693
8-Pin | 2, 6, 10, 14, 18, 21, 25, 28 | EB-19 | FS8693A
SMALL-BUTTON TWENTYNINAR (CONT'D)

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge having thickness of 3/8" and twenty-nine holes with diameters of 0.0700" ± 0.0005", nineteen of which are located with hole centers corresponding to the specified location of pin centers on a 1.8750" ± 0.0005" diameter circle, and ten of which are located with hole centers corresponding to the specified location of pin centers on a 0.8750" ± 0.0005" diameter circle concentric with the 1.8750" circle.

Pin fit in gauge is such that entire length of pins will, without undue force, enter into and disengage from the gauge.
"THIRTYFIVAR"
PIN DIMENSIONS AND ORIENTATION

Short index pin .050 ± .003" dia.

35 pins .050 ± .003" dia.

.230" dia. max.

Base-pin positions are held to tolerances such that entire length of pins will enter flat-plate gauge having thickness of 3/8" and thirty-six holes with diameters of 0.0700" ± 0.0005", twenty-two of which are located with hole centers corresponding to the specified location of
Thirtyfivar (Cont'd)

Pin centers on a 2.1250 ± 0.0005" diameter circle, and fourteen of which are located with hole centers corresponding to the specified location of pin centers on a 1.3750 ± 0.0005" diameter circle concentric with the 2.1250" circle.

Pin fit in gauge is such that entire length of pins will, without undue force, enter into and disengage from the gauge. Gauge is also provided with a hole 1.000" diameter minimum concentric with pin circles.

Small-Button Thirtyfivar

![Diagram of small-button thirtyfivar]

<table>
<thead>
<tr>
<th>No. of Pins</th>
<th>Pins</th>
<th>JETEC No.</th>
<th>RCA No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-Pin</td>
<td>1 through 35</td>
<td>E35-28</td>
<td>-</td>
</tr>
<tr>
<td>33-Pin</td>
<td>Omit pins 24 and 30</td>
<td>E33-29</td>
<td>-</td>
</tr>
<tr>
<td>31-Pin</td>
<td>Omit pins 24 and 30; pins 23 and 31 are trimmed to same dimension as index pin.</td>
<td>E31-36</td>
<td>-</td>
</tr>
<tr>
<td>21-Pin</td>
<td>1 through 21</td>
<td>E21-40</td>
<td>-</td>
</tr>
</tbody>
</table>

For other dimensions of above base, see first page of the "Thirtyfivar" series.