

DEEP DRAW

GENERAL INFORMATION AND TOLERANCES



Standards

Every box and cover listed are standard items. In ordering, all that is necessary is the ZERO part number, your required trim height and the quantity. There is never a tooling charge on a standard ZERO box.

Be sure to include trim heights

Any standard box or CF cover is available, without tooling charges, in any increment of height between the maximum and minimum dimensions shown. If closer tolerance than standard is required contact the Zero Manufacturing sales department.

Specials

Alloys

Alloys other than those listed as standard may be ordered by adding one of the following suffixes to the part number:

- AL11 = 1100-0 Soft
- AL60 = 6061-0 Hard
- AL30 = 3003-0 Medium

Example: Z48-48A-3.00-T6 or H0180184-AL60 changes the material of this part number from 1100-0 aluminum to 6061-0 aluminum.

There is no tooling charge when you utilize standard dies.

Materials and Specifications

Every standard box and cover listed in this catalog may, on request, be delivered to you with certification of its alloy and related materials specifications. ZERO maintains a strict program of materials inspection and quality control, beginning with receipt of raw stock through final production and shipping.

Material

Aluminum Association alloys and gauge designations are used throughout this catalog. Alloys shown below are listed with Aluminum Association and Government Designations.

Aluminum Association	Federal Spec.
1100-0	QQ-A-250/1
3003-0	QQ-A-250/2
6061-0	QQ-A-250/11
3003-H14	QQ-A-250/2

Material Thickness

Thickness shown is the nominal dimension of the blank before drawing. Actual wall thickness of an average box is normally 75% or more of the nominal blank thickness.

This is dependent on depth of draw, number of draws and net blank thickness (a variable within mill tolerances).

Alternate Alloys and Heat Treating

Most boxes and covers can be drawn on stock tooling using any drawable aluminum alloy. When 6061-0 alloy is drawn it can be heat treated, on order, to T-4 or T-6 hardness.

Example: Z48-48A-3.00-T6

Determined weight of container

Thickness	lbs./sq. ft.
.020	= .29
.025	= .35
.030	= .43
.032	= .46
.040	= .58
.050	= .71
.063	= .89
.080	= 1.12
.090	= 1.28
.100	= 1.41



Standard Enclosure Tolerances

Length, width and trim height:

Dimensions up to

6" ± .02"

6" to 24", ± .03"

over 24", ± .06"

Radius Tolerances ± .030

Closer tolerances, on trim heights can be provided on special order at additional cost.

Nutplate locations, vertical and horizontal, ± .03"

NOTE: Width and length are measured at point of tangency between bottom radius (R₁) and side (R₂).

Draw marks, small scratches and minor scuffing is inherent in drawn boxes. For a scratch free finish on exterior of boxes, secondary operations must be specified.

Bow Tolerances

Bowing, or "oil canning", may occur in the base or any side of a deep drawn box, particularly when multiple drawing operations are performed. The following tolerances for this bow condition are additive to basic dimensional tolerances:

Basic Size ^②	Maximum Bow ^①
Up to 6" Over	0.03"
6" to 12"	0.06"
Over 12"	0.12"

NOTE ① – The bow condition will be checked by placing a straight edge across the tangent points of the corner radii of the side or bottom of the box, and measuring the maximum deviation from the straight edge to the surface of the metal. This applies to either a concave or convex condition.

NOTE ② – The basic size refers to the box width or length. The maximum allowable bow will be determined by the larger of the two dimensions for any given side, and by the smaller of the two dimensions for the bottom.

Modified or Custom Deep Drawn Parts and Housings

ZERO has a completely equipped design and manufacturing facility to perform any secondary operation or modification to standard boxes and covers. We also have an experienced staff of tool and die makers to satisfy your custom or special deep drawn requirements. Contact ZERO direct.

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