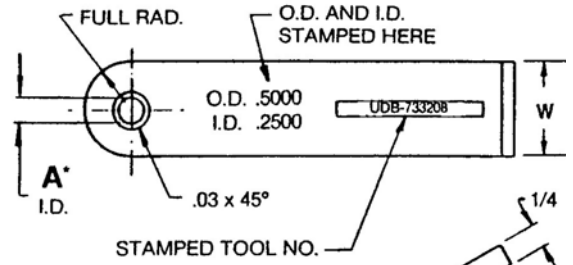


# Handle Bushings

# UNITED Handle Bushings for Quick Fixturing

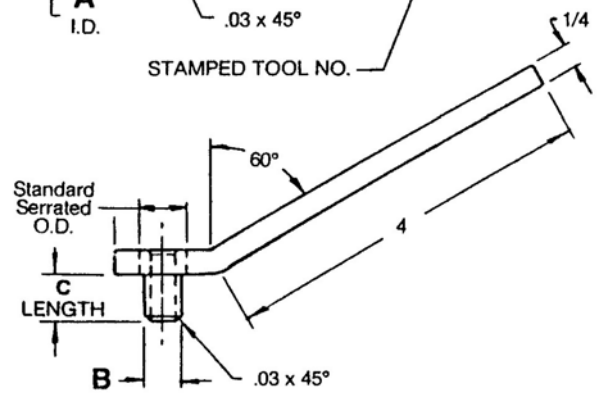
## DRILL BUSHINGS — HANDLE TYPE



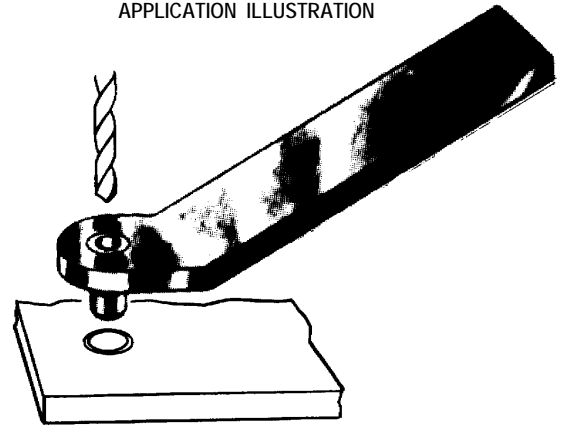
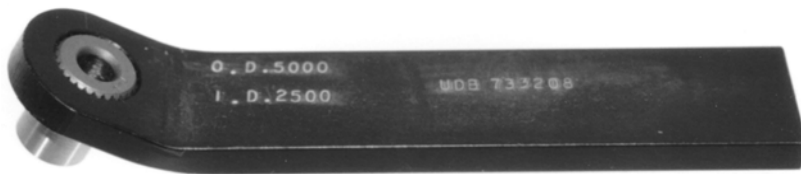
These Handle Bushings are instant reactions to fixturing.

'Fix-Up' costs and down-time are reduced.

UNITED has extensive inventories so call today.



HANDLE BUSHING APPLICATION ILLUSTRATION



To order, specify P/N plus I.D.  
Example: UDB-733208 .2500

| A I.D. RANGE |               | B O.D. +.000 / -.001 |         | ANSI SYMBOL | C STANDARD LENGTHS |            |            |            |            |            | W   |
|--------------|---------------|----------------------|---------|-------------|--------------------|------------|------------|------------|------------|------------|-----|
| NOMINAL      | DECIMAL       | NOMINAL              | DECIMAL |             | 5/16 -05           | 3/8 -06    | 1/2 -08    | 5/8 -10    | 3/4 -12    | 1 -16      |     |
| #55 - 1/16   | .0520 - .0625 | 5/32                 | .1552   | 10          | UDB-731005         | UDB-731006 |            |            |            |            | 3/4 |
| #55 - #39    | .0635 - .0995 | 3/16                 | .1865   | 12          | UDB-731205         | UDB-731206 | UDB-731208 |            |            |            | 3/4 |
| #40 - 9/64   | .0980 - .1406 | 1/4                  | .2490   | 16          | UDB-731605         | UDB-731606 | UDB-731608 | UDB-731610 | UDB-731612 | UDB-731616 | 3/4 |
| 1/8 - #10    | .1250 - .1935 | 5/16                 | .3115   | 20          |                    | UDB-732006 | UDB-732008 | UDB-732010 | UDB-732012 | UDB-732016 | 3/4 |
| #10 - #1     | .1935 - .2280 | 3/8                  | .3740   | 24          |                    | UDB-732406 | UDB-732408 | UDB-732410 | UDB-732412 | UDB-732416 | 3/4 |
| 3/16 - F     | .1875 - .2570 | 13/32                | .4052   | 26          |                    | UDB-732606 | UDB-732608 | UDB-732610 | UDB-732612 | UDB-732616 | 3/4 |
| A - L        | .2340 - .2900 | 7/16                 | .4365   | 28          |                    | UDB-732806 | UDB-732808 | UDB-732810 | UDB-732812 | UDB-732816 | 3/4 |
| 3/16 - O     | .1875 - .3160 | 1/2                  | .4990   | 32          |                    | UDB-733206 | UDB-733208 | UDB-733210 | UDB-733212 | UDB-733216 | 1   |
| M - 11/32    | .2950 - .3437 | 9/16                 | .5615   | 36          |                    |            | UDB-733608 | UDB-733610 | UDB-733612 | UDB-733616 | 1   |
| 5/16 - 7/16  | .3125 - .4375 | 5/8                  | .6240   | 40          |                    |            | UDB-734008 | UDB-734010 | UDB-734012 | UDB-734016 | 1   |
| 5/16 - 17/32 | .3125 - .5312 | 3/4                  | .7490   | 48          |                    |            | UDB-734808 | UDB-734810 | UDB-734812 | UDB-734816 | 1   |

# UNITED Anchor® Knurled Template Bushings for Plastic Laminate Templates

United Anchor Template  
Bushings for Plastic

SER-CAST UABSC

United Anchor Bushing SER-CAST (UABSC)



Relieved Knurled UNITED Anchor Bushings are quickly installed with simple hole preparation. Five body sizes. Small body allows use in close hole patterns. Drill range: #55 (.0520) thru 7/16 (.4375).

Add I.D. size to P/N. Order Example: 1/4" I.D. x 13/32 O.D. x 1/2 Long = UABSC-26-8 1/4

| I.D. RANGE  |               | O.D. SIZE Symbol by 64ths |         |          | LENGTH ANSI by 1/16 |            |           |           |
|-------------|---------------|---------------------------|---------|----------|---------------------|------------|-----------|-----------|
| NOMINAL     | DECIMAL       | NOMINAL                   | DECIMAL | SYMBOL   | -4 or 1/4           | -5 or 5/16 | -6 or 3/8 | -8 or 1/2 |
| #55 - 9/64  | .0980 - .1406 | 1/4                       | .265    | UABSC-16 |                     |            |           |           |
| 1/8 - #10   | .1250 - .1935 | 5/16                      | .327    | UABSC-20 |                     |            |           |           |
| 5/32 - F    | .1562 - .2570 | 13/32                     | .421    | UABSC-26 |                     |            |           |           |
| 5/32 - O    | .1562 - .3160 | 1/2                       | .515    | UABSC-32 |                     |            |           |           |
| 5/16 - 7/16 | .3125 - .4375 | 5/8                       | .640    | UABSC-40 |                     |            |           |           |

## To Laminate Plastic UNITED Anchor Type Bushing Templates:

1. Drill a slightly undersize hole into template for a slight press fit.

2. Coat sides of Knurled Anchor Bushing with resin and press into hole.

3. When Template Hole locations are critical, drill hole about 1/16" size larger than diameter of Anchor Bushing.

4. Place Template over plastic shell or matrix. Insert locating pin into hole.

5. Apply resin to hole, slip UNITED Anchor Bushing into place and fill remainder of hole with resin. Bushing may be color-coated.

6. Allow resin to cure (about 2 hours).

### To Use Piloted Anchor Bushing:

1. Drill hole.
2. Locate pin plaster matrix.
3. Place laminate template over plaster matrix and insert pin.
4. Position Anchor Bushing onto locating pin to drill rivet holes and install rivets.

**UNITED**  
Anchor Bushings

# **UNITED Anchors® are Back!**

**POPULAR DEMAND BRINGS BACK UNITED  
TEMPLATE AND LAMINATE BUSHINGS.**

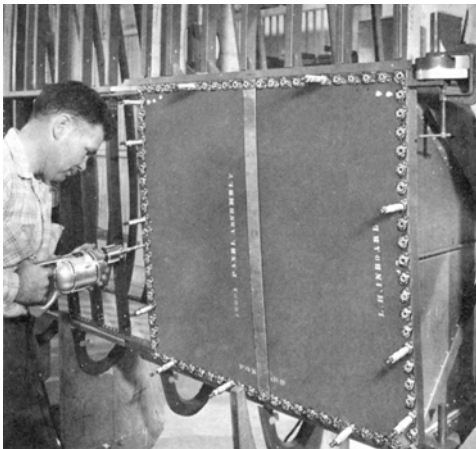


**NORTH AMERICAN  
COLUMBUS F-14**

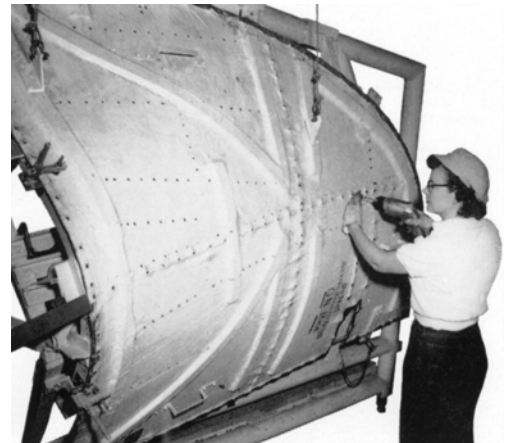
**Rosie the Riveter is Back!**

***ALOHA...The popular, practical  
cost-effective Anchor Template  
and Laminate Bushings are back!***

**“Anchors have been away since 1986 when  
the *UNITED Drill Bushing Corporation* of  
Downey, California purchased tooling,  
inventories and all rights to the Anchor  
Bushing Products and Trade Marks from  
the Hi-Shear Corporation of Torrance, Cali-  
fornia. Over 800,000 Anchors are available  
from inventory.”**

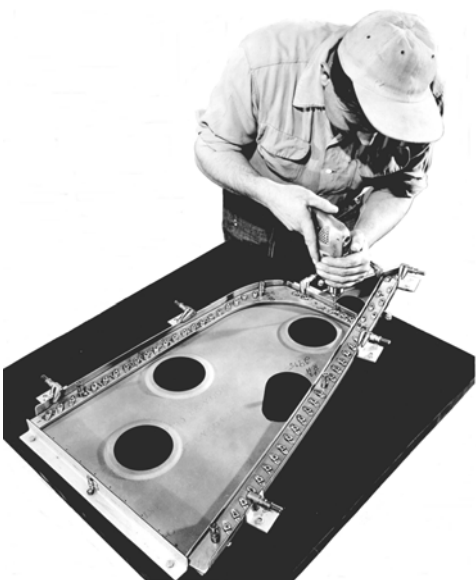


**TRANSLAND AVIATION TORRANCE**



**GLOBE MASTER**

**All photos  
on the Anchor Bushing  
pages were made  
in 1942 and 1943  
during World War II.**



**NORTHROP**



**SOLAR**

# Fab Sheet Metal Thin Templates & Edges to Laminate with Anchors

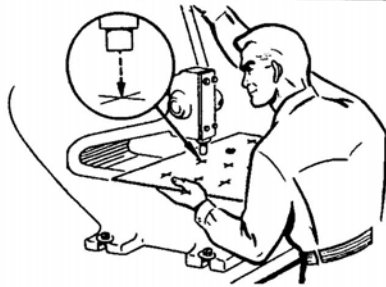
Fabricate with  
Anchors®

Typical Inexpensive Sheet  
Metal Templates

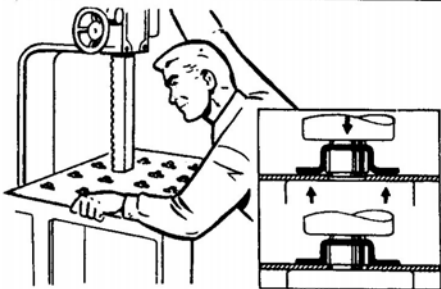
How to Make Sheet Metal Templates  
with UNITED Anchor Bushings



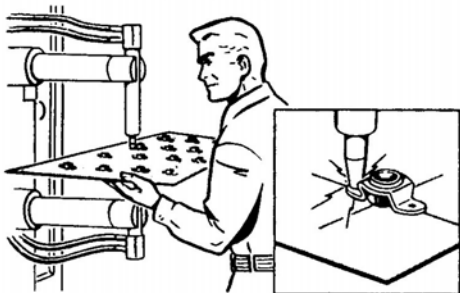
1. Layout and center punch.



2. Punch holes using piloted type punch — 1/4" (.250) diameter for small, 3/8" (.375) diameter for medium, or 9/16" (.5625) diameter for large Anchor Bushings.

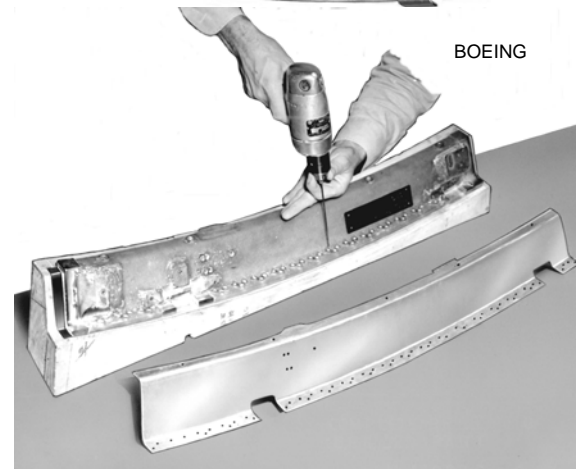
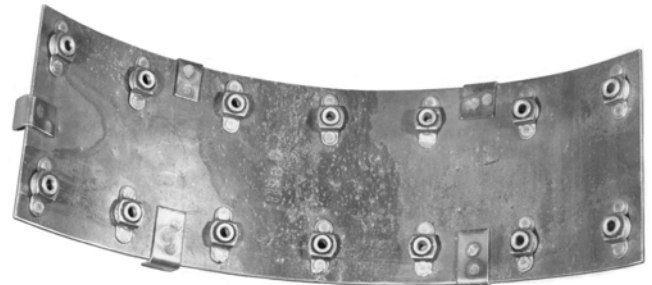
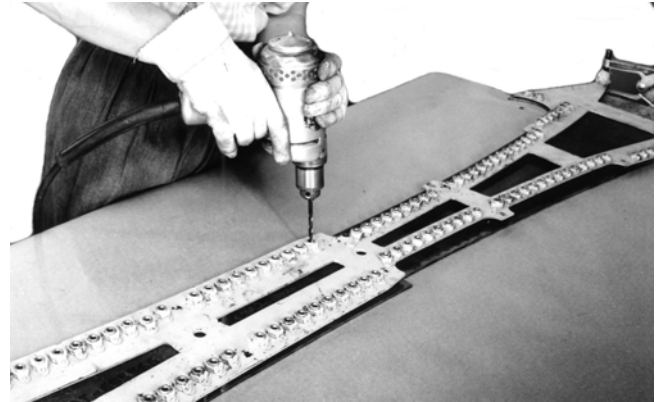


3. Press tapered pilot of Anchor Bushing into punched hole.



4. Spotweld or rivet Anchor Bushing to template. Note: Anchor straps have holes for rivets. These holes will not interfere with the spotwelding process. Rivets are soft steel or aluminum, flush head, 3/32" diameter, 1/4" long.

Use Riveted Anchors or Spotweld Anchors



To Rework is as Simple as A - B - C!

**A**  
Remove Anchor Strap by breaking spotwelds or drilling out rivets.



**B**  
Spotweld slug (punching) in obsolete hole position.



**C**  
Relocate new hole position and proceed with installation of new Anchor Bushing.

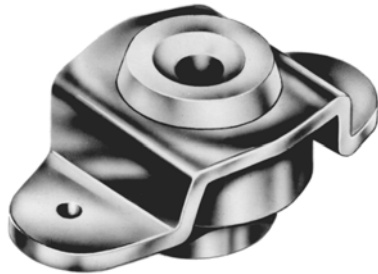


# Standard Anchors

# Standard Anchor® Bushings

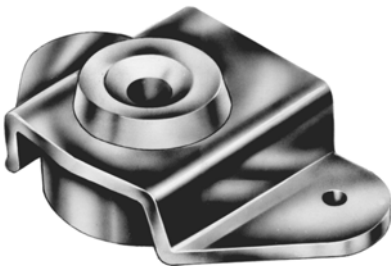
## STANDARD ANCHOR® BUSHINGS

### REGULAR CROSS STRAP



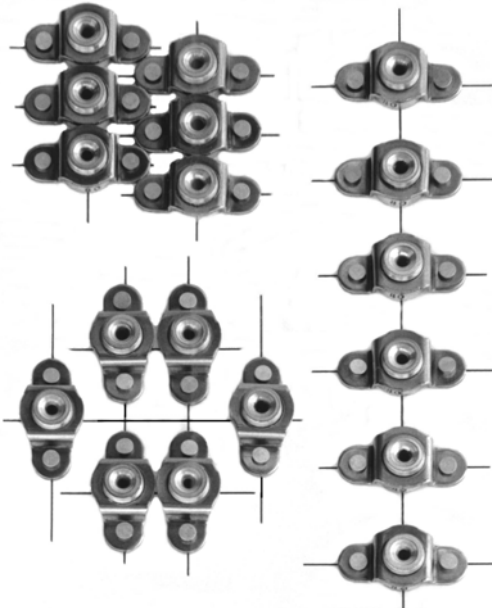
UAB-2  
UAB-4  
UAB-6

### CORNER STRAP

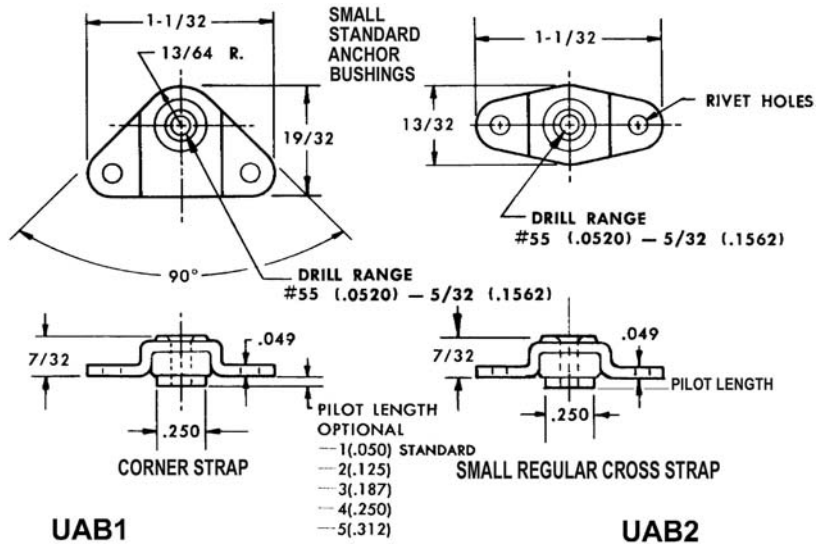


UAB-1  
UAB-3  
UAB-5

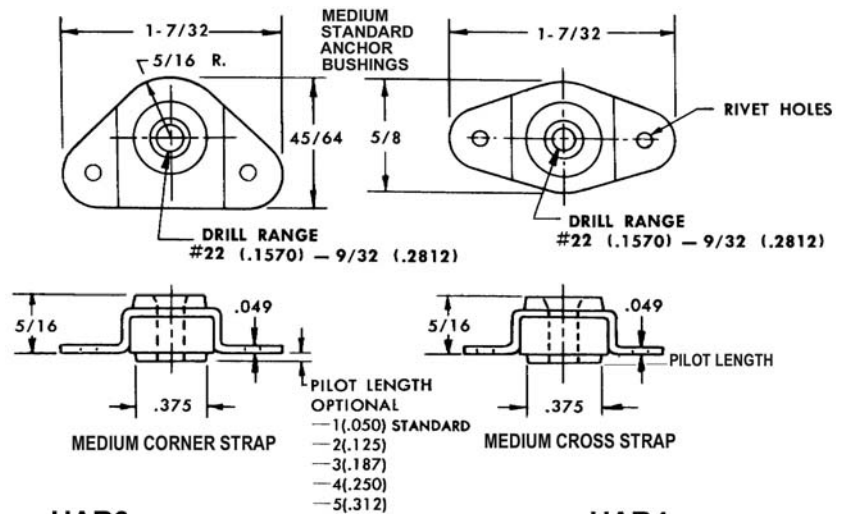
### Layout Dimensions Minimum Patterns



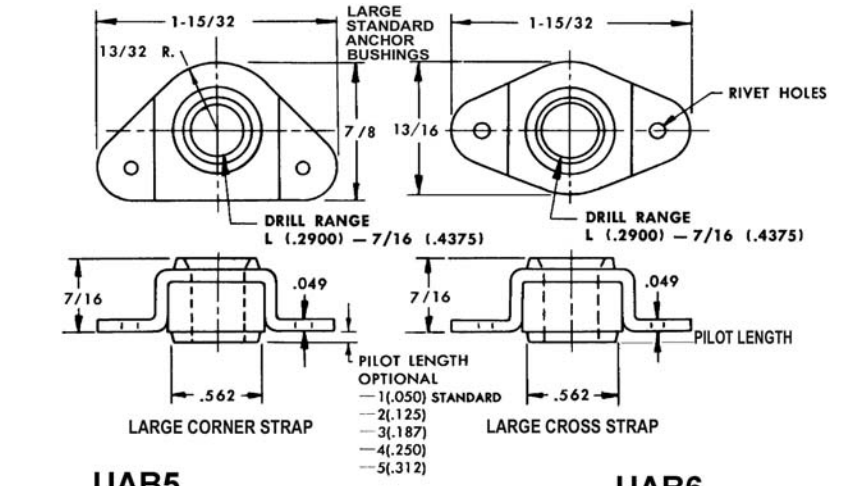
Standard UNITED Anchor Bushings on Drill Template . . . Ryan Aeronautical Co.



## SMALL STANDARD ANCHOR BUSHINGS



## MEDIUM STANDARD ANCHOR BUSHINGS

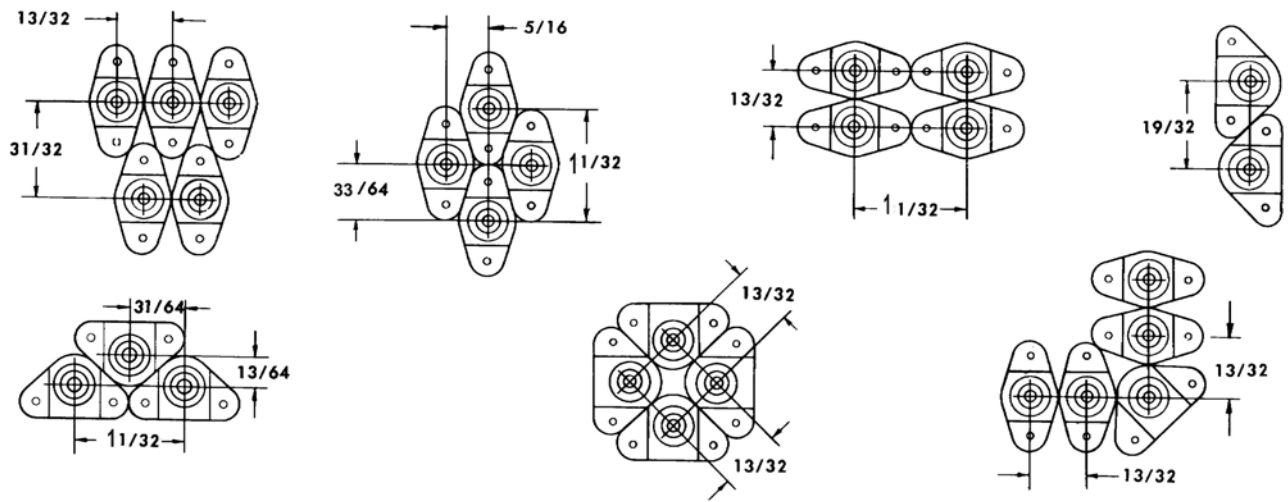


## LARGE STANDARD ANCHOR BUSHINGS

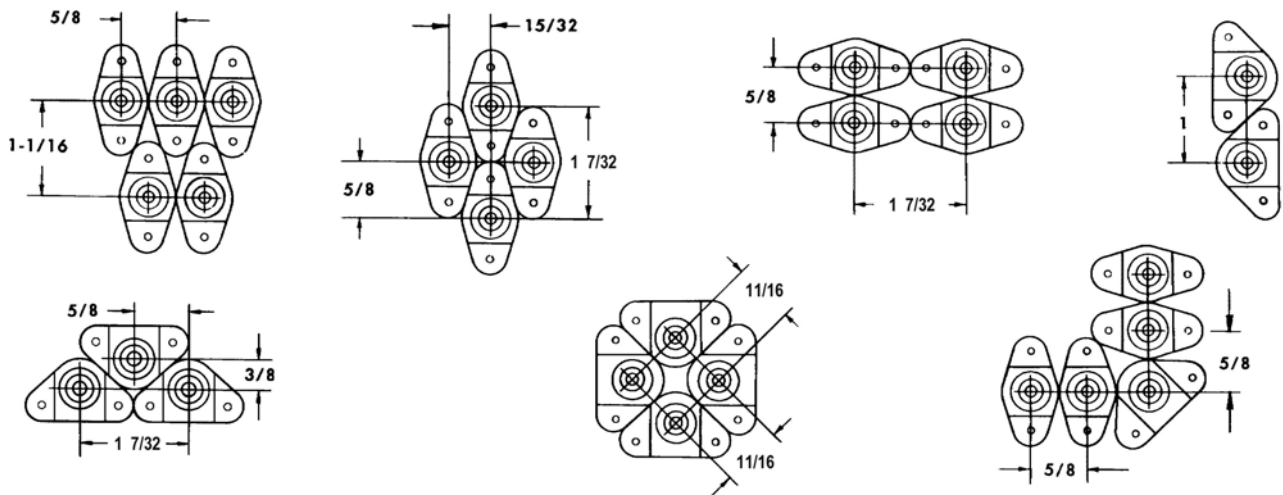
# Minimum Anchor® Layout Dimensions

Standard Anchors

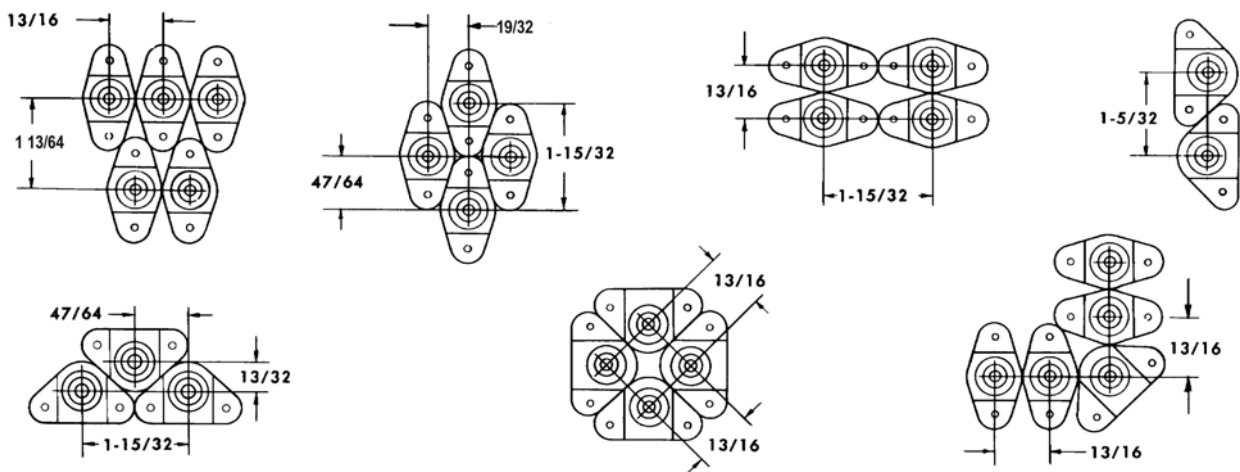
## MINIMUM LAYOUT DIMENSIONS—STANDARD ANCHORS



**UAB1**      **MINIMUM LAYOUT DIMENSIONS**      **UAB2**



**UAB3**      **MINIMUM LAYOUT DIMENSIONS**      **UAB4**



**UAB5**      **MINIMUM LAYOUT DIMENSIONS**      **UAB6**



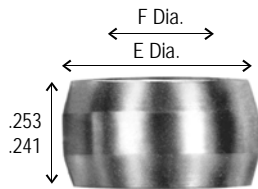
## Multi-Groove Pins For Sheet Metal

# Multi-Groove Pin Anchor® Bushings

### MULTI-GROOVE PIN ANCHOR® BUSHINGS — For Sheet Metal Drill Templates

SEE NEXT PAGE for driving tools, ordering and usage.

REFERENCE UT-7009A

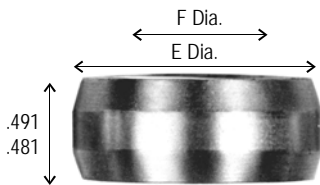


**UAB83 Retainer for  
SMALL 1/4 O.D.  
Multi-Groove Pin**

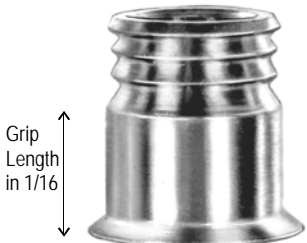


**UAB80 SMALL  
Multi-Groove Pin  
1/4 O.D.  
For Drill Range:  
#55 (.052) thru #40 (.098)**

**Reduce cost in preparation  
of complex drill templates.**

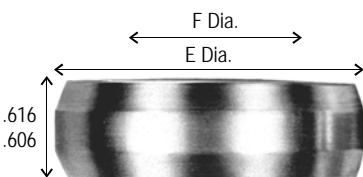


**UAB84 Retainer for  
MEDIUM 3/8 O.D.  
Multi-Groove Pin**



**UAB81 MEDIUM  
Multi-Groove Pin  
3/8 O.D.  
For Drill Range:  
#39 (.099) thru #10 (.193)**

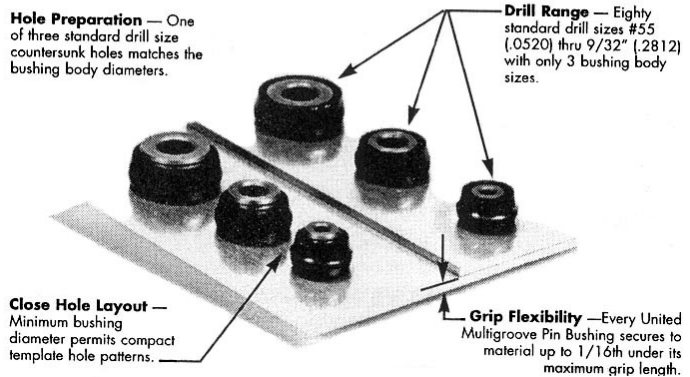
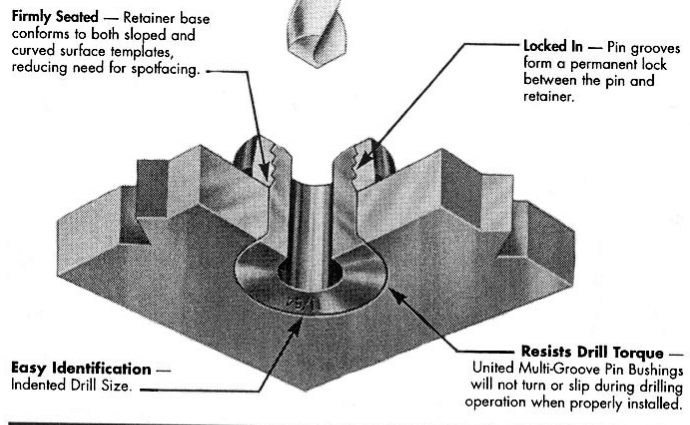
**One style drill bushing for metal  
and laminate plastic drill templates.**



**UAB85 Retainer for  
LARGE 1/2 O.D.  
Multi-Groove Pin**



**UAB82 LARGE  
Multi-Groove Pin  
1/2 O.D.  
For Drill Range:  
#9 (.196) thru 9/32 (.2812)**

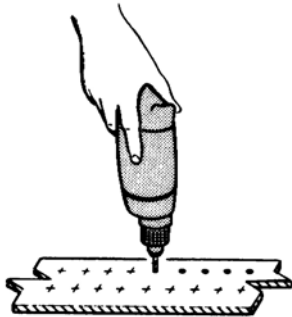


- The compact two-piece *UNITED* MULTI-GROOVE PIN ANCHOR BUSHING can be installed in close layout patterns.
- A single rivet type *UNITED* Multi-Groove set, UAB200 Series, inserted in a standard rivet gun or a hand set used with a hammer, UAB201 Series, installs *UNITED* Multi-Groove Pins and Retainers at a fraction of the cost and time of conventional drill guide fixtures.
- Eighty drill sizes are accommodated by only three bushing pin diameters.
- *UNITED* Multi-Groove Pin Anchor Bushing's flush head assures a secure flush fit to the template surface.
- Primarily intended for thin template materials, the *UNITED* Multi-Groove Pin can be ordered in a variety of grip lengths. *UNITED* Multi-Groove Pin lengths are graduated in 1/16" increments (maximum grip). Template material can vary 1/16" without changing pin lengths.
- Manufactured from wear-resistant case-hardened steels, *UNITED* Multi-Groove Pin Anchor Bushings retain their accuracy during long production runs.
- The pins are also re-usable after being removed from a template. The Retainer is used only once and replaced when the Pin is re-used.

# Multi-Groove Pin Sheet Metal Drill Template Construction

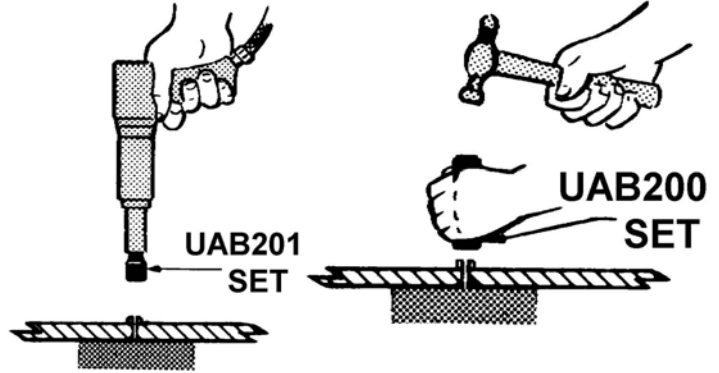
**Multi-Groove Pins  
For Sheet Metal**

Select Dash Number based on Pin Diameter.

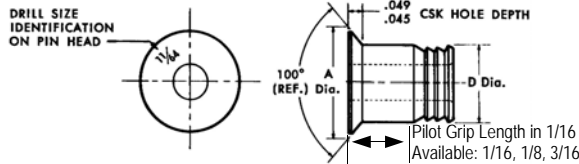


### TWO EASY STEPS:

1. After layout and center punch, drill and countersink a hole in the template to match bushing diameters specified.
2. With template firmly supported on a work bench, swage the retainer to the bushing with an air-gun set (style UAB201) or hand tool and hammer (style UAB200). See below.

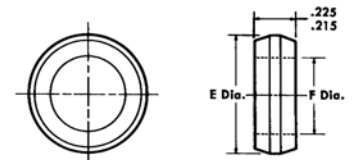


### MULTI-GROOVE PINS



| MULTI-GROOVE PIN PART NO. | PIN NOM. DIA. | DRILL SIZE                  | A DIA       | D DIA       |
|---------------------------|---------------|-----------------------------|-------------|-------------|
| UAB80                     | 1/4           | #55 (.052) thru #40 (.098)  | .366 / .356 | .249 / .246 |
| UAB81                     | 3/8           | #39 (.099) thru #10 (.193)  | .491 / .481 | .374 / .371 |
| UAB82                     | 1/2           | #9 (.196) thru 9/32 (.2812) | .616 / .606 | .499 / .496 |

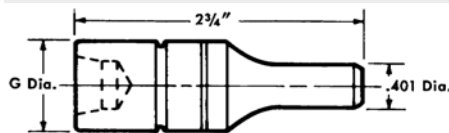
### MULTI-GROOVE RETAINERS



SEE PAGE B20.

| RETAINER PART NO. | PIN NOMINAL DIA. | E DIA       | F DIA         |
|-------------------|------------------|-------------|---------------|
| UAB83             | 1/4              | .410 / .400 | .253 / .249   |
| UAB84             | 3/8              | .535 / .525 | .378 / .374   |
| UAB85             | 1/2              | .662 / .652 | .505 / .500   |
| UAB-40-14R        | 5/8              | .780        | .6275 / .6255 |

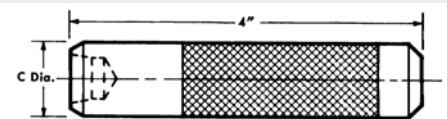
### DRIVING TOOLS — GUN TYPE



| GUN TYPE  | PIN NOMINAL | C     |
|-----------|-------------|-------|
| UAB201-4  | 1/4         | 3/4   |
| UAB201-6  | 3/8         | 7/8   |
| UAB201-8  | 1/2         | 1     |
| UAB201-10 | 5/8         | 1-1/4 |

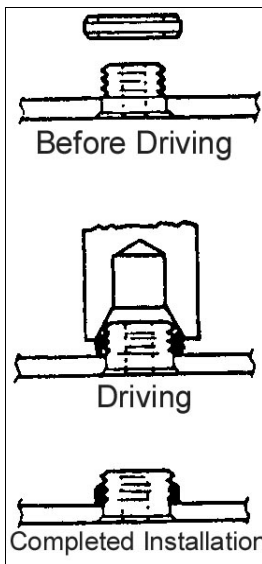
### DRIVING TOOLS — HAMMER TYPE

SEE PAGE B20.



| HAMMER TYPE PART NO. | PIN NOMINAL DIA. | C DIA |
|----------------------|------------------|-------|
| UAB200-4             | 1/4              | 3/4   |
| UAB200-6             | 3/8              | 7/8   |
| UAB200-8             | 1/2              | 1     |
| UAB200-10            | 5/8              | 1-1/4 |

Select Dash Number based on Pin Diameter.



### EASY ORDERING STEPS:

1. MULTI-GROOVE PIN ANCHOR BUSHINGS  
Specify Bushing by its P/N, maximum grip in 1/16" and drill size.
2. MULTI-GROOVE RETAINERS  
Specify companion Retainers by P/N.
3. MULTI-GROOVE DRIVING TOOL  
Indicate appropriate Driving Tool by UAB number.

EXAMPLE: **UAB80 - 3 - 47**

Multi-Groove Pin Anchor Bushing with 1/4" nominal diameter.  
3/16" Maximum Plate thickness  
Drill Size in drill number, fraction or letter

**UAB83**  
Pin Retainer with 1/4" nominal diameter

**UAB201 - 4**  
Rivet Gun 1/4" nominal diameter Driving Tool



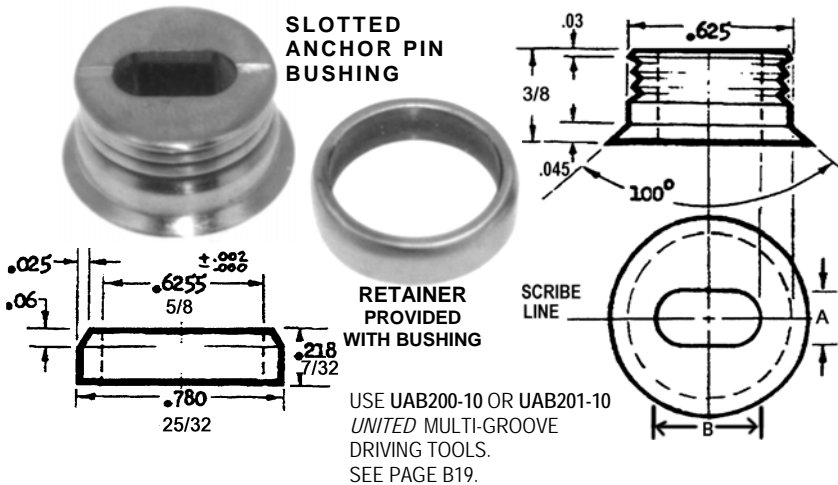
# Slotted Anchor Pin Type Bushing

# UNITED Multi-Grooved Anchor Pin Type Slotted Locator Bushings

UNITED Multi-Grooved Anchor Pin Type Slotted Locators provide part location and maintain  $\pm .050$  tooling tolerances.

- Use "L" and "T" Pins, Dowel Pins or Locating Pins for master locations.
- Install by scribing lines on the fixture and align with the site lines on the UNITED Slotted Anchor Pin Bushing.

## SLOTTED ANCHOR PIN BUSHINGS — ALL PURPOSE PART LOCATING BUSHINGS



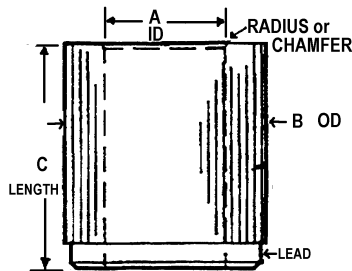
| PART NO. SLOTTED BUSHING | A ID SLOT WIDTH | B ID SLOT LEN | C O.D. BUSH | L LEN BUSH | USE RETAINER | PRICE |
|--------------------------|-----------------|---------------|-------------|------------|--------------|-------|
| UABSL-40- 1/8            | 1/8 .1250       | 1/4 .250      | 5/8         | 3/8        | UAB-40-14R   | 17.86 |
| UABSL-40- #30            | #30 .1285       | 1/4 .250      |             |            |              |       |
| UABSL-40- #20            | #20 .1610       | 1/4 .250      |             |            |              |       |
| UABSL-40- 3/16           | 3/16 .1875      | 3/8 .375      |             |            |              |       |
| UABSL-40- #10            | #10 .1935       | 3/8 .375      |             |            |              |       |
| UABSL-40- 1/4            | 1/4 .2500       | 3/8 .375      |             |            |              |       |
| UABSL-40- 5/16           | 5/16 .3125      | 7/16 .437     |             |            |              |       |

SLOTTED HOLE to O.D. = .002 T.I.R.  
REFERENCE UT-7009B

## SERRATED PRESS — ALL PURPOSE NON-CRITICAL BUSHINGS



SERRATED PRESS



KNURLED EXTERNAL O.D.  
• AIDS IN PRESSING  
• PREVENTS SPIN-OUT  
• SERRATIONS ARE NOMINAL  $\pm .004$   $\pm .008$ .



A Serrated hardened Bushing used for non-critical applications such as:

- Drilling holes for conventional rivets
- Pilots for high shear rivets
- Templates
- Hinge Bushings
- Sash, Door, Window, Trailer, Appliances
- Manufacturing and Woodworking fixtures

Used in Aluminum, Magnesium and Wood.  
Concentricity within .005 T.I.R. maximum.

Conforms to UT-7000  
QUANTITY DISCOUNT PRICING BELOW

| SERRATED PRESS I.D. |              |
|---------------------|--------------|
| UP TO 1/4           | + .001 +.003 |
| 1/4 TO 3/4          | + .001 +.004 |
| 3/4 AND UP          | + .002 +.005 |

'SER'

| A I.D. RANGE | B O.D. SIZE - ANSI BY 64ths |         |               | C LENGTH (OVERALL) -- ANSI BY 16ths |         |        |        |         |       |           |           |           |           |           |       |  |
|--------------|-----------------------------|---------|---------------|-------------------------------------|---------|--------|--------|---------|-------|-----------|-----------|-----------|-----------|-----------|-------|--|
|              | NOMINAL                     | DECIMAL | ANSI          | 1/4 -4                              | 5/16 -5 | 3/8 -6 | 1/2 -8 | 3/4 -12 | 1 -16 | 1-3/8 -22 | 1-1/2 -24 | 1-3/4 -28 | 2-1/8 -34 | 2-1/2 -40 | 3 -48 |  |
| #55 - #16    | .0520 - .0625               | 13/64   | .207 - .211   | SER-13                              | 7.92    | 8.43   | 8.90   | 9.12    |       |           |           |           |           |           |       |  |
| #52 - #39    | .0635 - .0995               | 13/64   | .207 - .211   | SER-13                              | 7.92    | 8.43   | 8.90   | 9.12    |       |           |           |           |           |           |       |  |
| #40 - 9/64   | .0980 - .1406               | 1/4     | .254 - .258   | SER-16                              | 5.68    | 5.98   | 6.26   | 6.55    | 8.13  |           |           |           |           |           |       |  |
| 1/8 - #10    | .1250 - .1935               | 5/16    | .316 - .320   | SER-20                              | 4.23    | 4.23   | 4.41   | 5.39    | 6.26  | 7.52      |           |           |           |           |       |  |
| 5/32 - F     | .1562 - .2570               | 13/32   | .410 - .414   | SER-26                              | 4.23    | 4.23   | 4.41   | 4.90    | 5.39  | 6.26      |           |           |           |           |       |  |
| 5/32 - O     | .1562 - .3160               | 1/2     | .504 - .508   | SER-32                              |         | 4.23   | 4.41   | 4.90    | 5.39  | 6.26      |           |           |           |           |       |  |
| 5/16 - 7/16  | .3125 - .4375               | 5/8     | .629 - .633   | SER-40                              |         |        | 4.23   | 4.23    | 4.90  | 5.20      |           |           |           |           |       |  |
| 5/16 - 17/32 | .3125 - .5312               | 3/4     | .754 - .758   | SER-48                              |         |        | 4.23   | 4.23    | 4.90  | 5.20      | 7.16      |           |           |           |       |  |
| 1/2 - 21/32  | .5000 - .6532               | 7/8     | .879 - .883   | SER-56                              |         |        | 6.57   | 6.07    | 6.26  | 6.55      | 7.16      |           |           |           |       |  |
| 1/2 - 49/64  | .5000 - .7656               | 1       | 1.04 - 1.08   | SER-64                              |         |        |        | 6.26    | 6.26  | 6.87      | 7.16      |           |           |           |       |  |
| 1/2 - 1-1/32 | .5000 - 1.0312              | 1-3/8   | 1.379 - 1.383 | SER-88                              |         |        |        | 8.43    | 8.71  | 9.01      | 9.42      | 9.89      |           |           |       |  |
| 1" - 1-25/64 | 1.000 - 1.3906              | 1-3/4   | 1.754 - 1.758 | SER-112                             |         |        |        | 9.11    | 9.69  | 10.10     | 10.38     | 10.88     | 11.39     |           |       |  |

Specify SER for Serrated Press.  
Example: 1/4 x 13/32 x 1/2 = SER - 26 - 8 - 1/4

| QTY DISCOUNT | 1-2 LIST | 3-5 -6% | 6-11 -23% | 12-23 -30% | 24-49 -35% | 50-99 -42% | 100-199 -47% | 200-499 -51% | 500-999 -53% | 1000 & UP -56% |
|--------------|----------|---------|-----------|------------|------------|------------|--------------|--------------|--------------|----------------|
|--------------|----------|---------|-----------|------------|------------|------------|--------------|--------------|--------------|----------------|