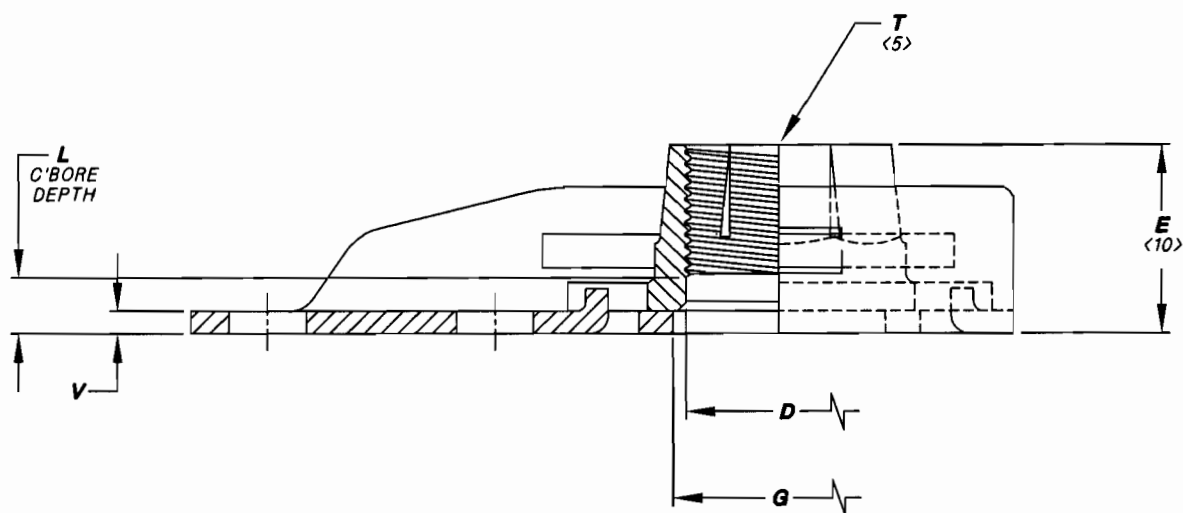
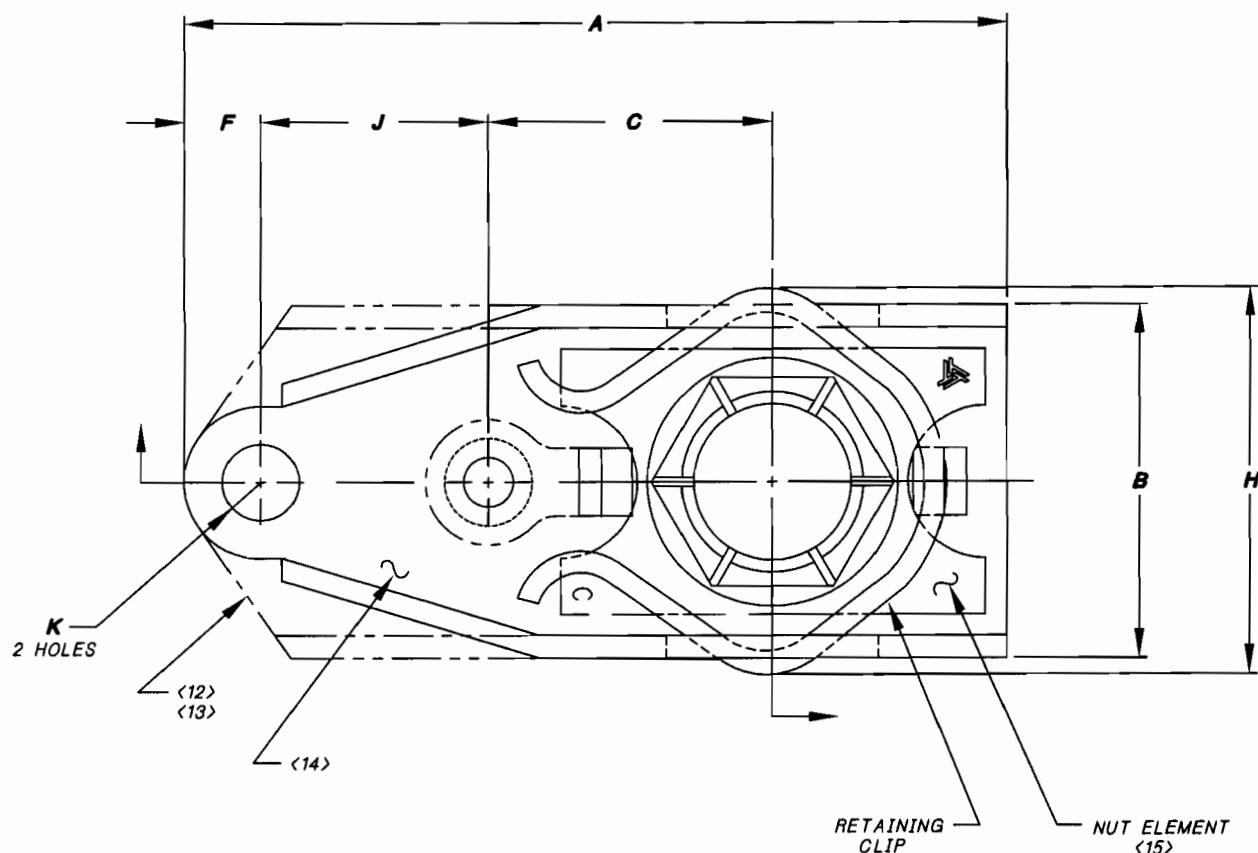


Camloc . Delron . Deutsch . Huck . K-Fast . Kaynar . Microdot . RAM . Rosan . Screwcorp . Tridair . Voi-Shan



OPTIONAL CONFIGURATION

<12>  
<13>

| INTERIM DOCUMENT REVISION |          |       |
|---------------------------|----------|-------|
| Rev.                      | Date     | DAF # |
| D1                        | 10/21/14 | 94321 |

APPROVED DATE  
26 JUL 89REV. LETTER AND DATE  
D 2 MAR 09

DAF NUMBER

DAF 87222

CURRENT DESIGN ACTIVITY:

**Alcoa  
Fastening  
Systems**VOI-SHAN PRODUCTS  
3000 W. LOMITA BLVD.  
TORRANCE, CA 90505

TITLE:

**NUT PLATE  
FLAT BEAM LOCK, CLIP-IN,  
50 CYCLE, CRES STEEL,  
ONE LUG**UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES &  
ASME Y14.5M TOLERANCES:ANGLES = 3°  
DECIMALS .XX = .02  
.XXX = .010

CURRENT DESIGN ACTIVITY:

CAGE CODE:

SALES DRAWING NO.

FBL10089-()-()

SHEET 1 OF 3

MANUFACTURE OF THE PROPRIETARY PARTS SHOWN HERE WITHOUT WRITTEN  
CONSENT OF ALCOA FASTENING SYSTEMS IS ABSOLUTELY PROHIBITED.THIS DRAWING EMBODIES A CONFIDENTIAL, PROPRIETARY DESIGN & ALL DESIGN, MANUFACTURING  
PRODUCTION, USE & SALE RIGHTS REGARDING SAME ARE EXPRESSLY RESERVED.

342059

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Camloc . Delron . Deutsch . Huck . K-Fast . Kaynar . Microdot . RAM . Rosan . Screwcorp . Tridair . Voi-Shan

TABLE 1

| DASH NUMBER | THREAD<br>(5)    | A<br>MAX | B<br>MAX | C<br>±.005 | D<br>DIA<br>REF | E<br>MAX<br>REF<br>(10) | F<br>MIN | G<br>DIA<br>MIN<br>REF |
|-------------|------------------|----------|----------|------------|-----------------|-------------------------|----------|------------------------|
| -3-1        | .1900-32 UNJF-3B | 1.051    | .454     | .344       | .194            | .250                    | .100     | .250                   |
| -3-2        |                  |          |          |            |                 | .312                    |          |                        |
| -3-3        |                  |          |          |            |                 | .375                    |          |                        |
| -3-4        |                  |          |          |            |                 | .438                    |          |                        |
| -3-5        |                  |          |          |            |                 | .500                    |          |                        |
| -3-6        |                  |          |          |            |                 | .562                    |          |                        |
| -4-1        | .2500-28 UNJF-3B | 1.306    | .554     | .500       | .254            | .295                    | .100     | .310                   |
| -4-2        |                  |          |          |            |                 | .357                    |          |                        |
| -4-3        |                  |          |          |            |                 | .419                    |          |                        |
| -4-4        |                  |          |          |            |                 | .481                    |          |                        |
| -4-5        |                  |          |          |            |                 | .543                    |          |                        |
| -4-6        |                  |          |          |            |                 | .605                    |          |                        |
| -5-1        | .3125-24 UNJF-3B | 1.396    | .650     | .500       | .317            | .344                    | .125     | .373                   |
| -5-2        |                  |          |          |            |                 | .400                    |          |                        |
| -5-3        |                  |          |          |            |                 | .461                    |          |                        |
| -5-4        |                  |          |          |            |                 | .524                    |          |                        |
| -5-5        |                  |          |          |            |                 | .586                    |          |                        |
| -5-6        |                  |          |          |            |                 | .649                    |          |                        |

TABLE 1 CON'T

| DASH NUMBER | THREAD<br>(5)    | H<br>MAX | J<br>±.002 | K<br>DIA<br>±.005<br>-.000 | L<br>C'BORE<br>MIN<br>REF | V<br>±.005 | MAX<br>WEIGHT<br>LBS/100 |
|-------------|------------------|----------|------------|----------------------------|---------------------------|------------|--------------------------|
| -3-1        | .1900-32 UNJF-3B | .484     | .312       | .098                       | .070                      | .032       | .80                      |
| -3-2        |                  |          |            |                            | .125                      |            | .87                      |
| -3-3        |                  |          |            |                            | .188                      |            | .92                      |
| -3-4        |                  |          |            |                            | .250                      |            | .97                      |
| -3-5        |                  |          |            |                            | .313                      |            | 1.02                     |
| -3-6        |                  |          |            |                            | .375                      |            | 1.07                     |
| -4-1        | .2500-28 UNJF-3B | .584     | .312       | .098                       | .070                      | .032       | 1.33                     |
| -4-2        |                  |          |            |                            | .125                      |            | 1.43                     |
| -4-3        |                  |          |            |                            | .188                      |            | 1.52                     |
| -4-4        |                  |          |            |                            | .250                      |            | 1.60                     |
| -4-5        |                  |          |            |                            | .313                      |            | 1.70                     |
| -4-6        |                  |          |            |                            | .375                      |            | 1.78                     |
| -5-1        | .3125-24 UNJF-3B | .720     | .312       | .130                       | .070                      | .040       | 2.18                     |
| -5-2        |                  |          |            |                            | .125                      |            | 2.24                     |
| -5-3        |                  |          |            |                            | .188                      |            | 2.35                     |
| -5-4        |                  |          |            |                            | .250                      |            | 2.47                     |
| -5-5        |                  |          |            |                            | .313                      |            | 2.58                     |
| -5-6        |                  |          |            |                            | .375                      |            | 2.69                     |

| INTERIM DOCUMENT REVISION |          |       |
|---------------------------|----------|-------|
| Rev.                      | Date     | DAF # |
| D1                        | 10/21/10 | 94301 |

|                                    |                                                                                                                               |                                                                                               |                                                                                                    |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| APPROVED DATE<br>26 JUL 89         | CURRENT DESIGN ACTIVITY:<br><b>Alcoa Fastening Systems</b><br>VOI-SHAN PRODUCTS<br>3000 W. LOMITA BLVD.<br>TORRANCE, CA 90506 | TITLE:<br><b>NUT PLATE<br/>FLAT BEAM LOCK, CLIP-IN,<br/>50 CYCLE, CRES STEEL,<br/>ONE LUG</b> | CURRENT DESIGN ACTIVITY:<br><b>CAGE CODE:</b><br><b>SALES DRAWING NO.</b><br><b>FBL10089-()-()</b> |
| REV. LETTER AND DATE<br>D 2 MAR 09 | DAF NUMBER<br>DAF 87222                                                                                                       | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES &<br>ASME Y14.5M TOLERANCES:           | ANGLES<br>DECIMALS<br>° ± .3°<br>.XX ± .02<br>.XXX ± .010                                          |
| SHEET 2 OF 3                       |                                                                                                                               |                                                                                               | SCANNED                                                                                            |

Camloc . Delron . Deutsch . Huck . K-Fast . Kaynar . Microdot . RAM . Rosan . Screwcorp . Tridair . Voi-Shan

TABLE 2

| PART NUMBER     | SEATING TORQUE (MAX) | INSTALLATION OR REMOVAL TORQUE (MAXIMUM) | BREAKAWAY TORQUE (MINIMUM) | AXIAL TENSILE STRENGTH (POUNDS MIN) | PUSHOUT STRENGTH (LBS.MINIMUM) | TORQUE-OUT STRENGTH (IN/LBS MINIMUM) |
|-----------------|----------------------|------------------------------------------|----------------------------|-------------------------------------|--------------------------------|--------------------------------------|
| FBL10089-3-() ) | 36.0 IN/LBS          | 18.0 IN/LBS                              | 2.0 IN/LBS                 | 2,825                               | 100                            | 60                                   |
| FBL10089-4-() ) | 60.0 IN/LBS          | 30.0 IN/LBS                              | 3.5 IN/LBS                 | 5,060                               | 125                            | 100                                  |
| FBL10089-5-() ) | 120.0 IN/LBS         | 60.0 IN/LBS                              | 6.5 IN/LBS                 | 7,000                               | 125                            | 160                                  |

NOTES; UNLESS OTHERWISE SPECIFIED:

2. MATERIAL:  
2.1 NUT: A286 CRES STEEL, COMPOSITION PER AMS5731 AND/OR AMS5737.  
2.2 CAGE: A286 CRES STEEL PER AMS5525.  
2.3 CLIP: 302 CRES STEEL PER AMS568B OR 1B-2MN CRES, OR XM-2B PER CHEMISTRY OF ASTM A313.
3. HEAT TREAT:  
3.1 NUT: 140 KSI MINIMUM ULTIMATE TENSILE STRENGTH PER AMS-H-6875, AMS2759.  
3.2 CAGE: 140 KSI MINIMUM ULTIMATE TENSILE STRENGTH PER AMS-H-6875, AMS2759.
4. FINISH:  
4.1 NUT: NO CODE = SILVER PLATE PER AMS2410 AND DRY FILM LUBE PER AS5272.  
"C" CODE = CADMIUM PLATED PER AMS-QQ-P-416, TYPE II, CLASS 2 AND DRY FILM LUBE PER AS5272.  
4.2 CAGE: NO CODE = PASSIVATE PER AMS-QQ-P-35.  
"C" CODE = CADMIUM PLATED PER AMS-QQ-P-416, TYPE II, CLASS 2.  
4.3 CLIP: PASSIVATE PER AMS2700.
- <5> THREADS PER ASB879 EXCEPT IN LOCKING AREA AND PRIOR TO LUBRICATION.
6. ANTI-SEIZE COMPOUND PER MIL-PRF-907 APPLIED TO INTERNAL THREADS.
7. FLOAT OF NUT PORTION OF ASSEMBLY SHALL BE .030 MINIMUM RADIALY FROM CENTERED POSITION. NUT BODY SHALL BE CAPABLE OF ENGAGEMENT WITH A BOLT IN THE MAXIMUM MISALIGNED POSITION.
8. PUSHOUT, TORQUE-OUT AND AXIAL TENSILE STRENGTH OF NUT PLATE SHALL BE AS SPECIFIED IN TABLE 2.
9. LOCKING TORQUE:  
9.1 THE SELF LOCKING FEATURE SHALL BE A FLAT BEAM TYPE CAPABLE OF 50 SEATED USABLE CYCLES WHEN TESTED WITH A 140 KSI MINIMUM ULTIMATE TENSILE STRENGTH A286 CRES STEEL BOLT. LOCKING TORQUE LIMITS SHALL BE AS SPECIFIED IN TABLE 2.
- <10> MINIMUM "E" NOT SPECIFIED, LIMITED ONLY BY STRENGTH REQUIREMENTS.
11. THE ASSEMBLY SHALL PROVIDE A BEARING SURFACE FOR THE NUT WITHIN THE CAGE.
- <12> SHAPE WITHIN ENVELOPE SHOWN OPTIONAL AND AT MANUFACTURERS OPTION.
- <13> NUT PLATES ARE SIMILAR TO THE DIMENSIONAL ENVELOPE SPECIFIED IN NAS1792.
- <14> CAGE SHALL BE IDENTIFIED WITH MANUFACTURER'S IDENTIFICATION AND SECOND DASH NUMBER OF ASSEMBLY TO INDICATE COUNTERBORE DEPTH. MARKING SHALL BE RAISED OR DEPRESSED .010 MAXIMUM. LOCATION OPTIONAL.
- <15> TOP OF NUT FLANGE SHALL BE IDENTIFIED WITH MANUFACTURERS IDENTIFICATION, THE LETTER "C" TO DESIGNATE CRES MATERIAL AND SECOND DASH NUMBER OF ASSEMBLY TO INDICATE "L" COUNTERBORE DEPTH. MARKING SHALL BE RAISED OR DEPRESSED .010 MAXIMUM, LOCATION OPTIONAL.
16. NUT ELEMENT IS REMOVABLE AND REPLACEABLE, SEE BELOW FOR PART NUMBERS:  
16.1 ASSEMBLY PART NUMBER NUT ELEMENT PART NUMBER RETAINING CLIP PART NUMBER  
FBL10089-3-() ) FBL10044-3-() ) FBL10059-3R  
FBL10089-4-() ) FBL10044-4-() ) FBL10059-4R  
FBL10089-5-() ) FBL10044-5-() ) FBL10059-5R

17. PART CALLOUT EXAMPLE:  
17.1 FBL10089-4-2

SECOND DASH NUMBER INDICATES  
"L" COUNTERBORE DEPTH (.125 SHOWN)

FIRST DASH NUMBER INDICATES BASIC  
SIZE IN SIXTEENTHS OF AN INCH  
(.2500-28UNJF SHOWN)

FINISH VARIATION - ADD "C" FOR CADMIUM PLATE PARTS

BASIC PART NUMBER

| INTERIM DOCUMENT REVISION |          |       |
|---------------------------|----------|-------|
| Rev.                      | Date     | DAF # |
| 01                        | 10/21/10 | 94301 |

APPROVED DATE

26 JUL 89

REV. LETTER AND DATE

D 2 MAR 09

DAF NUMBER

DAF 07222 WDP

CURRENT DESIGN ACTIVITY:

Alcoa  
Fastening  
Systems



VOI-SHAN PRODUCTS  
3000 W. LOMITA BLVD.  
TORRANCE, CA 90505

TITLE:

NUT PLATE  
FLAT BEAM LOCK, CLIP-IN,  
50 CYCLE, CRES STEEL,  
ONE LUG

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES &  
ASME Y14.5M TOLERANCES:

ANGLES = ± 3°  
DECIMALS .XX = ± .02  
.XXX = ± .010

CURRENT DESIGN ACTIVITY:

CAGE CODE:

SALES DRAWING NO.

FBL10089-()-()-()

SHEET 3 OF 3

MANUFACTURE OF THE PROPRIETARY PARTS SHOWN HERE WITHOUT WRITTEN  
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