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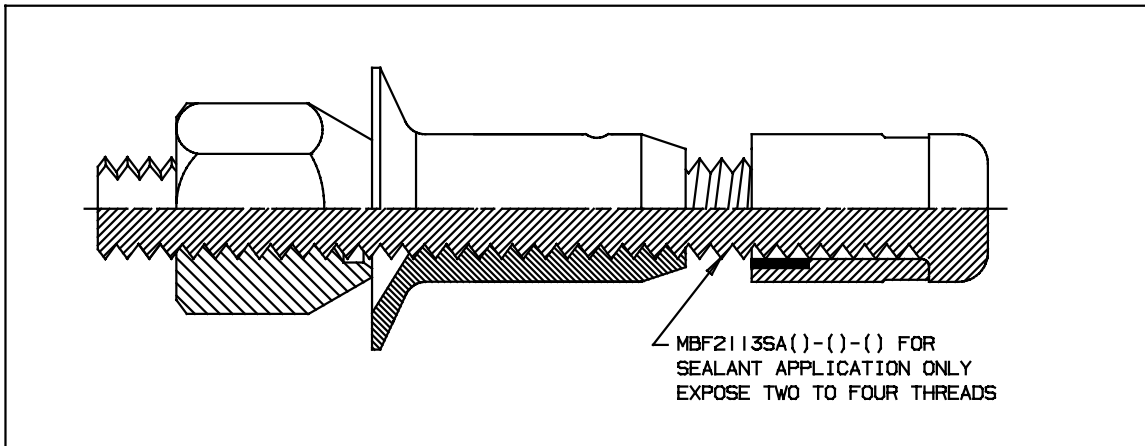
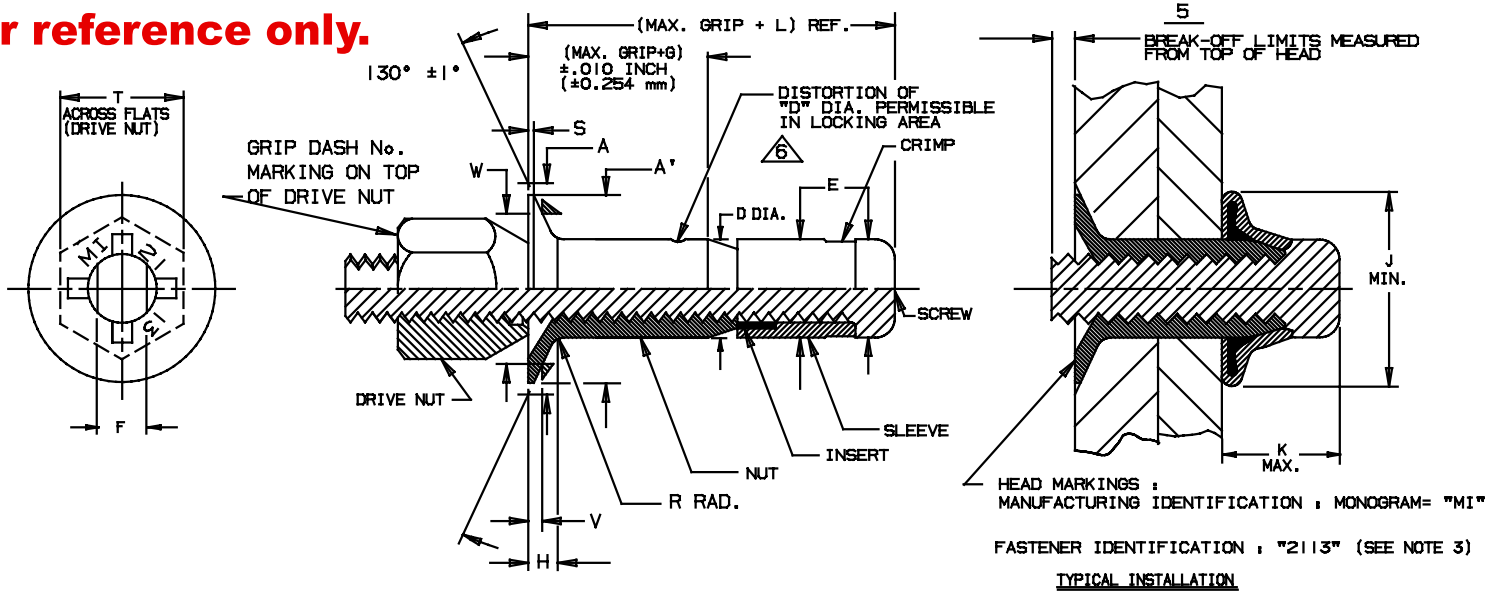


TABLE I

| PART NUMBER | A DIA. REF. | | A* DIA. MIN. | | D DIA. | | E DIA. MAX. | | F WRENCH FLATS | | G REF. | | H REF. | | L REF. | | R RAD. MAX. | | S MAX. | | T ACROSS HEX. REF. | |
|---------------|--------------|----------------|--------------|-------|----------------|----------------|-------------|-------|----------------|--------------|--------|------|--------|------|--------|-------|-------------|------|--------|-------|--------------------|-------|
| | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm | INCH | mm |
| MBF2113-5-() | .332 .325 | 8.43 8.25 | .296 | 7.52 | .1645 .1625 | 4.178 4.128 | .1640 | 4.166 | .085 .080 | 2.16 2.03 | .017 | 0.43 | .039 | 0.99 | .512 | 13.00 | .030 | 0.76 | .009 | 0.229 | .375 | 9.52 |
| MBF2113-6-() | .385 .378 | 9.78 9.60 | .342 | 8.69 | .1985 .1965 | 5.042 4.991 | .1985 | 5.042 | .113 .108 | 2.87 2.74 | .027 | 0.68 | .043 | 1.09 | .575 | 14.61 | .030 | 0.76 | .011 | 0.279 | .375 | 9.52 |
| MBF2113-7-() | .416 .409 | 10.57 10.39 | .373 | 9.47 | .2275 .2255 | 5.778 5.728 | .2275 | 5.778 | .121 .116 | 3.07 2.95 | .035 | 0.89 | .043 | 1.09 | .635 | 16.13 | .030 | 0.76 | .011 | 0.279 | .375 | 9.52 |
| MBF2113-8-() | .507 .499 | 12.88 12.67 | .463 | 11.76 | .2595 .2575 | 6.591 6.541 | .2595 | 6.591 | .135 .130 | 3.43 3.30 | .055 | 1.40 | .057 | 1.45 | .700 | 17.78 | .030 | 0.76 | .011 | 0.279 | .375 | 9.52 |
| MBF2113-9-() | .538 .530 | 13.66 13.46 | .494 | 12.55 | .2895 .2875 | 7.353 7.303 | .2895 | 7.353 | .152 .147 | 3.86 3.73 | .065 | 1.65 | .057 | 1.45 | .815 | 20.70 | .030 | 0.76 | .011 | 0.279 | .500 | 12.70 |
| MBF2113-10-() | .635 .626 | 16.13 15.90 | .577 | 14.66 | .3115 .3095 | 7.912 7.861 | .3110 | 7.899 | .152 .147 | 3.86 3.73 | .070 | 1.78 | .075 | 1.90 | .892 | 22.66 | .040 | 1.02 | .014 | 0.356 | .500 | 12.70 |
| MBF2113-11-() | .666 .657 | 16.92 16.69 | .608 | 15.44 | .3435 .3415 | 8.725 8.674 | .3433 | 8.720 | .185 .180 | 4.70 4.57 | .075 | 1.90 | .074 | 1.88 | .941 | 23.90 | .040 | 1.02 | .015 | 0.381 | .500 | 12.70 |
| MBF2113-12-() | .762 .752 | 19.35 19.10 | .696 | 17.68 | .3745 .3725 | 9.512 9.462 | .3740 | 9.500 | .185 .180 | 4.70 4.57 | .080 | 2.03 | .089 | 2.26 | 1.090 | 27.69 | .040 | 1.02 | .016 | 0.406 | .500 | 12.70 |

U.S. PATENT NO. 4747202, 4772167 AND 4967463
 EUROPEAN PATENT NO. 0152531 & 0244783

MONOGRAM
 CODE IDENT. NO.
 98524

APPROVED DATE
 ECN #3923
 08-07-84

REV. LETTER & DATE
 ECN # 1320
 "X" 04-19-02

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TITLE
 BLIND FASTENER 130° FLUSH HEAD
 FOR ADVANCED COMPOSITE MATERIAL
 TITANIUM

STANDARD
 MBF 2113
 SHEET 1 OF 2

MONOGRAM AEROSPACE FASTENERS
3423 SOUTH GARFIELD AVENUE
LOS ANGELES, CALIFORNIA 90040



APPLICABLE SPECIFICATIONS: PROCUREMENT SPECIFICATION: MBF 2000.
INSTALLATION & INSPECTION SPECIFICATION MBF 2001.
SPECIAL LUBE AND FINISH: MBF 2002.
PART NUMBER ASSIGNMENT: MBF 2004.

TABLE I (CONT)

| PART NUMBER | MINIMUM AVAILABLE GRIP DASH NO. | INSTALLED DIMENSIONS | | | | | | | | MECHANICAL PROPERTIES | | | | | | | | | |
|---------------|---------------------------------|-----------------------|--------------|-------------|-------|--------|-------|---------------------------|----------------|-----------------------------------|-------|-------------------|-------|---------------------|-------|----------------|----------------|----------------|------------------|
| | | RECOMMENDED HOLE SIZE | | J DIA. MIN. | | K MAX. | | BREAK-OFF LIMITS Δ | | TENSILE STRUCTURAL FAILURE (MIN.) | | DOUBLE SHEAR MIN. | | LOCKING TORQUE MIN. | | V GAGE PROT. | | W GAGE DIA. | |
| | | INCH | mm | INCH | mm | INCH | mm | INCH | mm | LBS. | N | LBS. | N | IN-LBS | Nm | INCH | mm | INCH | mm |
| MBF2113-5(-) | -100 | .169 .165 | 4.27 4.19 | .250 | 6.35 | .300 | 7.62 | +.103 -.000 | +2.62 +0.00 | 900 | 4000 | 3150 | 14010 | 1.0 | 0.113 | .0115 .0095 | 0.292 0.241 | .2932 .2630 | 7.193 7.188 |
| MBF2113-6(-) | -150 | .202 .199 | 5.13 5.05 | .300 | 7.62 | .350 | 8.89 | +.103 -.000 | +2.62 +0.00 | 1400 | 6230 | 4600 | 20460 | 1.5 | 0.170 | .0140 .0114 | 0.356 0.289 | .3272 .3270 | 8.311 8.306 |
| MBF2113-7(-) | -150 | .231 .228 | 5.88 5.79 | .350 | 8.89 | .400 | 10.16 | +.103 -.000 | +2.62 +0.00 | 1600 | 7120 | 6050 | 26910 | 2.0 | 0.226 | .0202 .0176 | 0.513 0.447 | .3315 .3313 | 8.420 8.415 |
| MBF2113-8(-) | -150 | .263 .260 | 6.68 6.60 | .400 | 10.16 | .450 | 11.43 | +.103 -.000 | +2.62 +0.00 | 2100 | 9340 | 7900 | 35140 | 2.5 | 0.282 | .0180 .0151 | 0.457 0.384 | .4320 .4318 | 10.973 10.968 |
| MBF2113-9(-) | -150 | .293 .290 | 7.44 7.37 | .450 | 11.43 | .500 | 12.70 | +.103 -.000 | +2.62 +0.00 | 2600 | 11565 | 9800 | 43590 | 3.0 | 0.339 | .0247 .0224 | 0.627 0.569 | .4320 .4318 | 10.973 10.968 |
| MBF2113-10(-) | -200 | .315 .312 | 8.00 7.92 | .475 | 12.06 | .550 | 13.97 | +.103 -.000 | +2.62 +0.00 | 3600 | 16010 | 11350 | 50480 | 3.5 | 0.400 | .0227 .0201 | 0.577 0.511 | .5389 .5385 | 13.688 13.678 |
| MBF2113-11(-) | -200 | .347 .344 | 8.81 8.74 | .525 | 13.33 | .575 | 14.60 | +.103 -.000 | +2.62 +0.00 | 4400 | 19570 | 13850 | 61600 | 4.0 | 0.452 | .0302 .0276 | 0.767 0.701 | .5389 .5385 | 13.688 13.678 |
| MBF2113-12(-) | -250 | .378 .375 | 9.60 9.52 | .575 | 14.60 | .625 | 15.87 | +.103 -.000 | +2.62 +0.00 | 5000 | 22240 | 16450 | 73170 | 4.0 | 0.452 | .0255 .0228 | 0.648 0.579 | .6532 .6528 | 16.591 16.581 |

MATERIAL AND HEAT TREAT:

NUT: 6A1-4V TITANIUM PER MIL-T-9047 STA OR AMS4928 OR AMS4967 HEAT TREATED PER MIL-H-81200 TO 95 KSI SHEAR STRENGTH MINIMUM. MAXIMUM HYDROGEN CONTENT 125 PPM.
SCREW: A-286 PER AMS 5731, AMS 5732 OR AMS 5737 HEAT TREATED TO 175 KSI TENSILE MINIMUM.
SLEEVE: 304 STAINLESS STEEL PER AMS 5639, FULLY ANNEALED.
INSERT: ACETAL PER ASTM D4181.
DRIVE NUT: MILD STEEL.

FINISH: (-) NUT: KAL-GARD ANN-RO #1012 CONVERSION COATING OR PHOSPHATE FLOURIDE PER MONOGRAM SPECIFICATION PS741, MAY BE USED AT MANUFACTURER'S OPTION.

SLEEVE & SCREW: PASSIVATE PER AMS-QQ-P-35, KAL GARD ANN-RO #1013 CONVERSION COATING OPTIONAL.

INSERT: NONE.

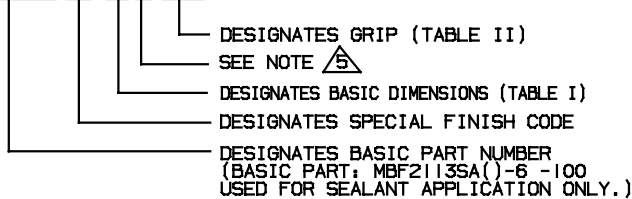
DRIVE NUT: COLOR GRAY.

LUBRICANTS: GRAPHITE FREE SOLID FILM LUBRICANT PER AS5272 OR MIL-PRF-81329 PARAFFIN WAX, OR CETYL ALCOHOL PER MIL-L-87132. (AS REQUIRED FOR PERFORMANCE.)

GENERAL NOTES:

1.) EXAMPLE OF PART NUMBER:

MBF 2113 (-) - 6 - 100



2.) LOCKING FEATURE CONSISTS OF THREE (3) INDENTATIONS LOCATED 120° APART ON THE PERIPHERY OF THE NUT COMPONENT AND APPROXIMATELY .040" ABOVE INTERSECTION OF THE NUT NOSE ANGLE AND O.D.

3.) ALTERNATE HEAD MARKING: "MI" AND "2013".

4.) COMPOSI-LOK FASTENERS WITH SELECTED COMBINATIONS OF THE ABOVE LUBRICANTS AND FINISHES ARE SPECIALLY CODED AND MAY BE SUBSTITUTED FOR EQUIVALENT NON-CODED PARTS AT MANUFACTURER'S OPTION. SEE INTERCHANGEABILITY SPECIFICATION MBF2007.

Δ AN "L" IN PLACE OF THE DASH (-) BETWEEN THE DIAMETER DASH NUMBER AND THE GRIP DASH NUMBER DESIGNATES MODIFIED BREAK-OFF LIMITS OF +.053/-0.050. "e.g. MBF 2113(-)6L200".

Δ DISTORTION SHALL NOT PREVENT INSERTION OF THE FASTENER INTO A RING GAUGE OF LENGTH EQUAL TO ONE DIAMETER AND HOLE DIAMETER EQUAL TO A MINIMUM RECOMMENDED HOLE. FORCE FOR INSERTION SHALL NOT EXCEED 5.0 POUNDS.

U.S. PATENT NO. 4747202, 4772167 AND 4967463
EUROPEAN PATENT NO. 0152531 & 0244783

MONOGRAM

CODE IDENT. NO.
98524

TABLE II

| 2ND DASH NO. (GRIP) | GRIP RANGE | | | |
|---------------------|------------|-------|-----------|-------|
| | MIN. GRIP | | MAX. GRIP | |
| | INCH | mm | INCH | mm |
| 100 | .050 | 1.27 | .100 | 2.54 |
| 150 | .100 | 2.54 | .150 | 3.81 |
| 200 | .150 | 3.81 | .200 | 5.08 |
| 250 | .200 | 5.08 | .250 | 6.35 |
| 300 | .250 | 6.35 | .300 | 7.62 |
| 350 | .300 | 7.62 | .350 | 8.89 |
| 400 | .350 | 8.89 | .400 | 10.16 |
| 450 | .400 | 10.16 | .450 | 11.43 |
| 500 | .450 | 11.43 | .500 | 12.70 |
| 550 | .500 | 12.70 | .550 | 13.97 |
| 600 | .550 | 13.97 | .600 | 15.24 |
| 650 | .600 | 15.24 | .650 | 16.51 |
| 700 | .650 | 16.51 | .700 | 17.78 |
| 750 | .700 | 17.78 | .750 | 19.05 |
| 800 | .750 | 19.05 | .800 | 20.32 |
| 850 | .800 | 20.32 | .850 | 21.59 |
| 900 | .850 | 21.59 | .900 | 22.86 |
| 950 | .900 | 22.86 | .950 | 24.13 |
| 1000 | .950 | 24.13 | 1.000 | 25.40 |
| 1050 | 1.000 | 25.40 | 1.050 | 26.67 |
| 1100 | 1.050 | 26.67 | 1.100 | 27.94 |
| 1150 | 1.100 | 27.94 | 1.150 | 29.21 |
| 1200 | 1.150 | 29.21 | 1.200 | 30.48 |
| 1250 | 1.200 | 30.48 | 1.250 | 31.75 |
| 1300 | 1.250 | 31.75 | 1.300 | 33.02 |
| 1350 | 1.300 | 33.02 | 1.350 | 34.29 |
| 1400 | 1.350 | 34.29 | 1.400 | 35.56 |
| 1450 | 1.400 | 35.56 | 1.450 | 36.83 |
| 1500 | 1.450 | 36.83 | 1.500 | 38.10 |
| 1550 | 1.500 | 38.10 | 1.550 | 39.37 |
| 1600 | 1.550 | 39.37 | 1.600 | 40.64 |
| 1650 | 1.600 | 40.64 | 1.650 | 41.91 |
| 1700 | 1.650 | 41.91 | 1.700 | 43.18 |

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TITLE

BLIND FASTENER 130° FLUSH HEAD
FOR ADVANCED COMPOSITE MATERIAL
TITANIUM

STANDARD

MBF 2113
SHEET 2 OF 2