

TABLE I

| PART NUMBER    | (ØA) |       | (ØD) |      | ØE MAX |      | F WRENCH FLATS |              | H            |              | (L)   |       | R RAD MAX |      | (S)  |       | (T HEX ACROSS FLATS) |       | ØY           |              |
|----------------|------|-------|------|------|--------|------|----------------|--------------|--------------|--------------|-------|-------|-----------|------|------|-------|----------------------|-------|--------------|--------------|
|                | INCH | mm    | INCH | mm   | INCH   | mm   | INCH           | mm           | INCH         | mm           | INCH  | mm    | INCH      | mm   | INCH | mm    | INCH                 | mm    | INCH         | mm           |
| MRL3210-6-( )  | .406 | 10.31 | .197 | 5.00 | .1985  | 5.04 | .113<br>.108   | 2.87<br>2.74 | .070<br>.063 | 1.78<br>1.60 | .770  | 19.56 | .040      | 1.02 | .011 | 0.279 | .375                 | 9.52  | .186<br>.181 | 4.72<br>4.60 |
| MRL3210-7-( )  | .406 | 10.31 | .226 | 5.74 | .2275  | 5.78 | .121<br>.116   | 3.07<br>2.95 | .070<br>.063 | 1.78<br>1.60 | .770  | 19.56 | .040      | 1.02 | .011 | 0.279 | .375                 | 9.52  | .210<br>.215 | 5.46<br>5.33 |
| MRL3210-8-( )  | .531 | 13.49 | .258 | 6.55 | .2595  | 6.59 | .135<br>.130   | 3.43<br>3.30 | .085<br>.078 | 2.16<br>1.98 | .770  | 19.56 | .045      | 1.14 | .014 | 0.356 | .375                 | 9.52  | .241<br>.236 | 6.12<br>5.99 |
| MRL3210-9-( )  | .531 | 13.49 | .288 | 7.32 | .2895  | 7.35 | .152<br>.147   | 3.86<br>3.73 | .085<br>.078 | 2.16<br>1.98 | .870  | 22.10 | .045      | 1.14 | .014 | 0.356 | .500                 | 12.70 | .271<br>.266 | 6.88<br>6.76 |
| MRL3210-10-( ) | .625 | 15.86 | .310 | 7.87 | .3110  | 7.90 | .152<br>.147   | 3.86<br>3.73 | .105<br>.098 | 2.67<br>2.49 | .870  | 22.10 | .050      | 1.27 | .017 | 0.432 | .500                 | 12.70 | .287<br>.282 | 7.29<br>7.16 |
| MRL3210-11-( ) | .625 | 15.86 | .342 | 8.69 | .3433  | 8.72 | .185<br>.180   | 4.70<br>4.57 | .105<br>.098 | 2.67<br>2.49 | .870  | 22.10 | .050      | 1.27 | .017 | 0.432 | .500                 | 12.70 | .319<br>.314 | 8.10<br>7.98 |
| MRL3210-12-( ) | .750 | 19.05 | .373 | 9.47 | .3740  | 9.50 | .185<br>.180   | 4.70<br>4.57 | .125<br>.118 | 3.17<br>3.00 | 1.000 | 25.40 | .050      | 1.27 | .017 | 0.432 | .500                 | 12.70 | .350<br>.345 | 8.89<br>8.76 |

TABLE I (CONTINUED)

| PART NUMBER    | MIN AVAILABLE GRIP LENGTH | MAX AVAILABLE GRIP LENGTH | INSTALLED DIMENSIONS |              |              |                |        |       |       |        |                  |                | MECHANICAL PROPERTIES          |       |                  |       |                    |       |
|----------------|---------------------------|---------------------------|----------------------|--------------|--------------|----------------|--------|-------|-------|--------|------------------|----------------|--------------------------------|-------|------------------|-------|--------------------|-------|
|                |                           |                           | RECOM. HOLE SIZE     |              | ØD'          |                | ØJ MIN |       | K MAX |        | BREAK-OFF LIMITS |                | TENSILE STRUCTURAL FAILURE MIN |       | DOUBLE SHEAR MIN |       | LOCKING TORQUE MIN |       |
|                |                           |                           | INCH                 | mm           | INCH         | mm             | INCH   | mm    | INCH  | mm     | INCH             | mm             | LBS                            | N     | LBS              | N     | IN-LBS             | N-m   |
| MRL3210-6-( )  | -100                      | -600                      | .202<br>.199         | 5.13<br>5.05 | .205<br>.203 | 5.207<br>5.156 | .290   | 7.37  | .500  | 12.700 | +0.275<br>+0.075 | +6.98<br>+1.91 | 1600                           | 7120  | 4800             | 21350 | 1.5                | 0.170 |
| MRL3210-7-( )  | -100                      | -600                      | .231<br>.228         | 5.88<br>5.79 | .234<br>.232 | 5.944<br>5.893 | .330   | 8.38  | .500  | 12.700 | +0.275<br>+0.075 | +6.98<br>+1.91 | 1700                           | 7560  | 6000             | 26700 | 2.0                | 0.226 |
| MRL3210-8-( )  | -100                      | -1000                     | .263<br>.260         | 6.68<br>6.60 | .266<br>.264 | 6.756<br>6.706 | .390   | 9.91  | .500  | 12.700 | +0.295<br>+0.095 | +7.49<br>+2.41 | 2300                           | 10230 | 8000             | 35600 | 2.5                | 0.282 |
| MRL3210-9-( )  | -100                      | -1000                     | .293<br>.290         | 7.44<br>7.37 | .296<br>.294 | 7.518<br>7.468 | .430   | 10.92 | .500  | 12.700 | +0.295<br>+0.095 | +7.49<br>+2.41 | 2400                           | 10675 | 10000            | 44480 | 3.0                | 0.339 |
| MRL3210-10-( ) | -100                      | -1000                     | .315<br>.312         | 8.00<br>7.92 | .318<br>.316 | 8.077<br>8.026 | .460   | 11.68 | .550  | 13.970 | +0.315<br>+0.115 | +8.00<br>+2.92 | 3600                           | 16010 | 12000            | 53400 | 3.5                | 0.400 |
| MRL3210-11-( ) | -100                      | -1000                     | .347<br>.344         | 8.81<br>8.74 | .350<br>.348 | 8.890<br>8.839 | .490   | 12.45 | .625  | 15.875 | +0.325<br>+0.115 | +8.26<br>+2.92 | 3700                           | 16460 | 14000            | 62300 | 4.0                | 0.452 |
| MRL3210-12-( ) | -100                      | -1000                     | .378<br>.375         | 9.60<br>9.52 | .381<br>.379 | 9.677<br>9.627 | .560   | 14.22 | .625  | 15.875 | +0.335<br>+0.135 | +8.51<br>+3.43 | 5000                           | 22240 | 17000            | 75600 | 4.0                | 0.452 |

**APPLICABLE SPECIFICATIONS:**  
**PROCUREMENT SPECIFICATION:** MRL1000  
**INSTALLATION AND INSPECTION SPECIFICATION:** MRL1003

**MATERIAL AND HEAT TREAT:**

**NUT:** 6Al-4V TITANIUM ALLOY PER AMS-T-9047 STA OR AMS4928 OR AMS4967 HEAT TREATED PER AMS-H-81200 TO 95 KSI SHEAR STRENGTH MINIMUM. MAXIMUM HYDROGEN CONTENT 125 PPM.  
**SCREW:** INCONEL 718 PER AMS5662. HEAT TREATED TO 125 KSI TENSILE MINIMUM.  
**SLEEVE:** 304 STAINLESS STEEL PER AMS5639, FULLY ANNEALED.  
**EXPANSION SLEEVE:** A286 PER AMS5731, AMS5732, AMS5737 OR AMS5525.  
 HEAT TREAT AS REQUIRED FOR PERFORMANCE.  
**INSERT:** ACETAL PER ASTM D4181  
**DRIVE NUT:** MILD STEEL

**FINISH:**

**NUT:** NONE.  
**SLEEVE, SCREW & EXPANSION SLEEVE:** PASSIVATE PER AMS2700, KAL-GARD ANN-RO #1013 CONVERSION COATING OPTIONAL.  
**INSERT:** NONE  
**DRIVE NUT:** COLOR GRAY


**LUBRICANT:**

DRY FILM LUBE PER THE CHEMICAL REQUIREMENTS OF MIL-L-46010 TYPE I.  
 PARAFFIN WAX, OR CETYL ALCOHOL PER AS87132 (AS REQUIRED FOR PERFORMANCE).

**TABLE II**

| 4<br>2ND DASH<br>NO. (GRIP) | GRIP RANGE |       |          |       |
|-----------------------------|------------|-------|----------|-------|
|                             | MIN GRIP   |       | MAX GRIP |       |
|                             | INCH       | mm    | INCH     | mm    |
| -100                        | .025       | 0,63  | .125     | 3,17  |
| -150                        | .075       | 1,90  | .175     | 4,45  |
| -200                        | .125       | 3,17  | .225     | 5,71  |
| -250                        | .175       | 4,45  | .275     | 6,98  |
| -300                        | .225       | 5,71  | .325     | 8,25  |
| -350                        | .275       | 6,98  | .375     | 9,52  |
| -400                        | .325       | 8,25  | .425     | 10,80 |
| -450                        | .375       | 9,52  | .475     | 12,07 |
| -500                        | .425       | 10,80 | .525     | 13,33 |
| -550                        | .475       | 12,07 | .575     | 14,60 |
| -600                        | .525       | 13,33 | .625     | 15,88 |
| -650                        | .575       | 14,60 | .675     | 17,15 |
| -700                        | .625       | 15,88 | .725     | 18,41 |
| -750                        | .675       | 17,15 | .775     | 19,68 |
| -800                        | .725       | 18,41 | .825     | 21,00 |
| -850                        | .775       | 19,68 | .875     | 22,23 |
| -900                        | .825       | 21,00 | .925     | 23,50 |
| -950                        | .875       | 22,23 | .975     | 24,76 |
| -1000                       | .925       | 23,50 | 1,025    | 26,03 |
| -1050                       | .975       | 24,76 | 1,075    | 27,31 |
| -1100                       | 1,025      | 26,03 | 1,125    | 28,58 |
| -1150                       | 1,075      | 27,31 | 1,175    | 29,85 |
| -1200                       | 1,125      | 28,58 | 1,225    | 31,12 |
| -1250                       | 1,175      | 29,85 | 1,275    | 32,39 |
| -1300                       | 1,225      | 31,12 | 1,325    | 33,66 |

**GENERAL NOTES:**

- EXAMPLE OF PART NUMBER:  
 MRL3210 ( ) - 06 - 100  

- LOCKING FEATURE CONSISTS OF THREE (3) INDENTATIONS LOCATED 120 ° APART ON THE PERIPHERY OF THE NUT COMPONENT. DISTORTION OF SHANK DIAMETER PERMISSIBLE IN LOCKING AREA OUT-OF-ROUNDNESS SHALL NOT EXCEED .002" OVER "Y" MAX DIAMETER.
- SEE MRL1003 FOR INSTALLATION AND REMOVAL INFORMATION.
- GRIP LENGTH NOT LISTED ARE AVAILABLE UPON REQUEST.  
 FOR EXAMPLE: GRIP -350 SHALL HAVE GRIP RANGE: .275" (6,98) MIN. TO .375" (9,52) MAX. AND GRIP -450 SHALL HAVE THE GRIP RANGE: .375" (9,52) MIN. TO .475" (12,06) MAX.
- IT IS RECOMMENDED THAT WHEN INSTALLING RADIAL-LOKS IN HIGHLY STRESSED THIN STRUCTURE, THE USE OF MRLW SERIES WASHERS BE INCORPORATED TO ELIMINATE COUNTER-SINKING AND TO CLEAR THE UNDERHEAD RADIUS. MRLW WASHERS MAY ALSO BE USED TO ACCOMMODATE OUT THE GRIP CONDITIONS.
- INSTALLATION HOLE SHALL BE CHAMFERED AT (R + .010") MIN. X 45°.
- EXPANSION SLEEVE DIMENSIONS ARE FOR ENGINEERING REFERENCE ONLY.
- HEAD MARKINGS: MANUFACTURER'S IDENTIFICATION: MONOGRAM = "MI"  
 FASTENER IDENTIFICATION = "3210"

TITLE:

**RADIAL-LOK™ FASTENER, BLIND  
 LOW PROFILE PROTRUDING HEAD  
 TITANIUM**

DRAWING NO:

**MRL3210( )-( )-( )**

DRAWN BY:

**M. DOMINGUEZ**

DRAWN DATE:

**08/19/13**

APPROVED BY:

CHECKED DATE:

**MONOGRAM**  
CAGE CODE:

**98524**

ECN NO:

**17-0058**

ECN DATE:

**02/24/17**

REV:

**AP**

**SHEET 2 OF 2**