

MONOGRAM AEROSPACE FASTENERS

3423 SOUTH GARFIELD AVENUE
LOS ANGELES, CALIFORNIA 90040

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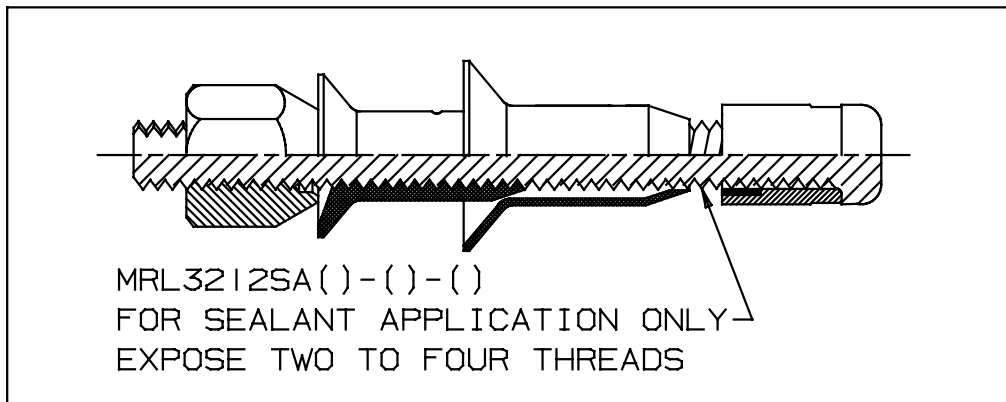
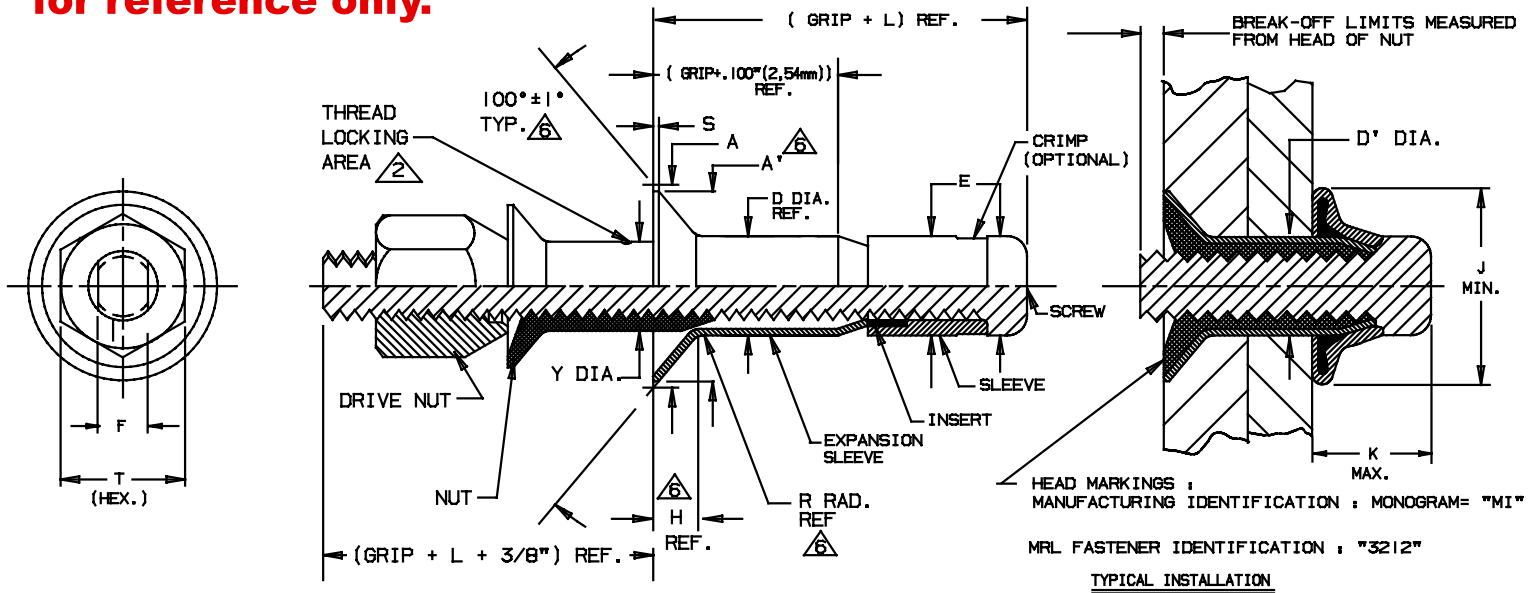


TABLE I

PART NUMBER	A DIA. Δ		A' DIA. Δ		D DIA. Δ		E DIA. Δ		F WRENCH FLATS		H Δ		L REF.		R RAD. Δ		S MAX. Δ		T ACROSS HEX. REF.		Y DIA. Δ			
	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm		
MRL 3212-6-()	.385	9,78	.342	8,69	.197	5,00	.1985	5,042	.113	2,87	.108	2,74	.077	1,96	.770	19,558	.030	0,76	.010	0,25	.375	9,52	.186	4,72
	.378	9,60							.108	2,74						19,558	.030	0,76	.015	0,38	.375	9,52	.181	4,60
MRL 3212-7-()	.416	10,57	.373	9,47	.226	5,74	.2275	5,778	.121	3,07	.116	2,79	.077	1,96	.770	19,558	.030	0,76	.015	0,38	.375	9,52	.215	5,46
	.409	10,39							.116	2,79						19,558	.030	0,76	.015	0,38	.375	9,52	.210	5,33
MRL 3212-8-()	.507	12,88	.463	11,76	.258	6,55	.2595	6,591	.135	3,43	.130	3,30	.104	2,64	.770	19,558	.030	0,76	.015	0,38	.375	9,52	.241	6,12
	.499	12,67							.130	3,30						19,558	.030	0,76	.015	0,38	.375	9,52	.236	5,99
MRL 3212-9-()	.538	13,67	.494	12,55	.288	7,32	.2895	7,353	.152	3,86	.147	3,73	.104	2,64	.870	22,098	.030	0,76	.015	0,38	.500	12,70	.271	6,88
	.530	13,46							.147	3,73						22,098	.030	0,76	.015	0,38	.500	12,70	.266	6,76
MRL 3212-10-()	.635	16,13	.577	14,66	.310	7,87	.3110	7,899	.152	3,86	.147	3,73	.136	3,45	.870	22,098	.040	1,02	.015	0,38	.500	12,70	.287	7,29
	.626	15,90							.147	3,73						22,098	.040	1,02	.015	0,38	.500	12,70	.282	7,16
MRL 3212-11-()	.666	16,92	.608	15,44	.342	8,69	.3433	8,720	.185	4,70	.180	4,57	.136	3,45	.870	22,098	.040	1,02	.015	0,38	.500	12,70	.319	8,10
	.657	16,69							.180	4,57						22,098	.040	1,02	.015	0,38	.500	12,70	.314	7,98
MRL 3212-12-()	.762	19,35	.696	17,68	.373	9,47	.3740	9,500	.185	4,70	.180	4,57	.162	4,11	1.000	25,400	.040	1,02	.015	0,38	.500	12,70	.350	8,89
	.752	19,10							.180	4,57						25,400	.040	1,02	.015	0,38	.500	12,70	.345	8,76
MRL 3212-14-()	.890	22,61	.837	21,26	.436	11,07	.437	11,10	.220	5,59	.215	5,46	.190	4,83	1.000	25,40	.050	1,27	.017	0,43	.500	12,70	.414	10,51
	.880	22,35							.215	5,46						25,40	.050	1,27	.017	0,43	.500	12,70	.409	10,39

Monogram

CODE IDENT. NO.
9 8 5 2 4

U.S. PATENT NO. 4457652 AND 4747202 OTHER PATENTS PENDING

APPROVED DATE
ECN #5532 6-28-88
REV. LETTER AND DATE

AA ECN #5732 04-13-08

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TITLE
RADIAL-LOK™ FASTENER, BLIND
100° FLUSH TENSION HEAD
TITANIUM

STANDARD
MRL 3212
SHEET 1 OF 2

MONOGRAM AEROSPACE FASTENERS

3423 SOUTH GARFIELD AVENUE
LOS ANGELES, CALIFORNIA 90040

INSTALLATION SPECIFICATION: MRL 1003

PROCUREMENT SPECIFICATION: MRL 1000

TABLE I (CONT)

PART NUMBER	AVAILABLE GRIP DASH NO.		INSTALLED DIMENSIONS										MECHANICAL PROPERTIES									
			RECOMMENDED HOLE SIZE		D' DIA.		J DIA. MIN.		K MAX.		BREAK-OFF LIMITS		TENSILE STRUCTURAL FAILURE (MIN)		DOUBLE SHEAR MIN.		LOCKING TORQUE MIN.					
			MIN.	MAX.	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	LBS.	N	LBS.	N	IN-LBS	Nm		
MRL 3212-6-()	-200	-600	.202	5,13	.205	5,207	.290	7,37	.500	12,700	+.185 -.015	+.4,70 -.0,38	1600	7120	4800	21350	1.5	0,170				
MRL 3212-7-()			.199	5,05	.203	5,156	.231	5,88	.234	5,944			1700	7560	6000	26700	2.0	0,226				
MRL 3212-8-()			.228	5,79	.232	5,893	.263	6,68	.266	6,756			.330	8,38	.500	12,700	2300	10230	8000	35600	2.5	0,282
MRL 3212-9-()			.260	6,60	.264	6,706	.293	7,44	.296	7,518			.390	9,91	.500	12,700	2400	10675	10000	44480	3.0	0,339
MRL 3212-10-()	-300	-1000	.290	7,37	.294	7,468	.430	10,92	.500	12,700	+.185 -.015	+.4,70 -.0,38	3600	16010	12000	53400	3.5	0,400				
MRL 3212-11-()			.315	8,00	.318	8,077	.344	8,74	.348	8,839			3700	16460	14000	62300	4.0	0,452				
MRL 3212-12-()			.347	8,81	.350	8,890	.378	9,60	.381	9,677			.490	12,45	.625	15,875	5000	22240	17000	75600	4.0	0,452
MRL 3212-14-()			.375	9,52	.379	9,627	.441	11,20	.444	11,278			.560	14,22	.625	15,875	8000	35600	23000	102300	4.0	0,452
	-400	-1250	.438	11,12	.442	11,227	.660	16,76	.675	17,145												

MATERIAL AND HEAT TREAT:

NUT: 6AL-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: INCONEL 718 PER AMS5662. HEAT TREATED TO 125 KSI FSU.

SLEEVE: 304 STAINLESS STEEL PER AMS 5639, FULLY ANNEALED.

EXPANSION SLEEVE: A-286 PER AMS 5731, AMS 5732, AMS 5737 OR AMS 5525 HEAT TREATED AS REQUIRED FOR PERFORMANCE.

INSERT: ACETAL PER ASTM D4181.

DRIVE NUT: MILD STEEL.

TABLE II

2ND DASH NO. (GRIP)	GRIP RANGE			
	MIN. GRIP		MAX. GRIP	
	INCH	mm	INCH	mm
-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

FINISH: NUT: NONE

SLEEVE, SCREW & EXPANSION SLEEVE: PASSIVATE PER QQ-P-35, KAL-GARD ANN-R0 #1013 CONVERSION COATING OPTIONAL.

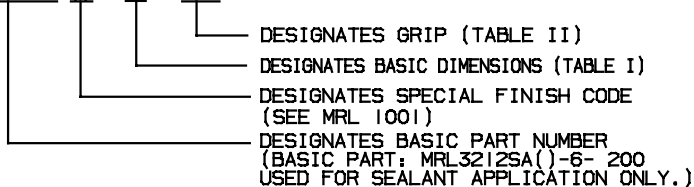
INSERT: NONE

DRIVE NUT: COLOR GRAY.

LUBRICANT: DRY FILM LUBE PER THE CHEMICAL REQUIREMENTS OF MIL-L-46010 TYPE I. PARAFIN WAX OR CETYL ALCOHOL USED AS REQUIRED FOR PERFORMANCE.

GENERAL NOTES: 1.) EXAMPLE OF PART NUMBER:

MRL 3212 () - 6 - 200



2. LOCKING FEATURE CONSISTS OF THREE (3) INDENTATIONS LOCATED 120° APART ON THE PERIPHERY OF THE NUT COMPONENT. DISTORTION OF SHANK DIA. PERMISSIBLE IN LOCKING AREA OUT- OF- ROUNDNESS SHALL NOT EXCEED .002" OVER "Y" MAX. DIA.

3.) SEE MRL 1003 FOR INSTALLATION AND REMOVAL INFORMATION.

4. GRIP LENGTH NOT LISTED ARE AVAILABLE UPON REQUEST.

5. CONCENTRICITY OF NUT HEAD CONICAL SURFACE TO "D" DIA SHALL BE WITHIN .005" T.I.R.

6. DIMENSIONS NOTED ARE FOR ENGINEERING DESIGN AND FOR DETERMINING PRE-INSTALLATION COUNTERSINKING CRITERIA ONLY.

U.S. PATENT NO. 4457652 AND 4747202 OTHER PATENTS PENDING

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100° FLUSH TENSION HEAD
TITANIUM

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MRL 3212
SHEET 2 OF 2