

TABLE I

PART NUMBER	A HEX ACROSS FLATS		ØB MIN		ØD		ØE MAX		F WRENCH FLATS		G		H		(L)		R RAD		(T HEX ACROSS FLATS)	
	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm
MBF2111-05-()	.250 .244	6.35 6.20	.272	6.91	.1645 .1625	4.178 4.128	.1640	4.166	.085 .080	2.16 2.03	.017	0.43	.076 .069	1.93 1.75	.51	13.0	.030 .010	0.76 0.25	.375	9.52
MBF2111-06-()	.312 .305	7.92 7.75	.340	8.64	.1985 .1965	5.042 4.991	.1985	5.042	.113 .108	2.87 2.74	.027	0.68	.080 .073	2.03 1.85	.57	14.5	.030 .010	0.76 0.25	.375	9.52
MBF2111-07-()	.343 .336	8.71 8.53	.375	9.52	.2275 .2255	5.778 5.728	.2275	5.778	.121 .116	3.07 2.95	.035	0.89	.080 .073	2.03 1.85	.63	16.0	.030 .010	0.76 0.25	.375	9.52
MBF2111-08-()	.375 .367	9.52 9.32	.409	10.39	.2595 .2575	6.591 6.541	.2595	6.591	.135 .130	3.43 3.30	.055	1.40	.090 .083	2.29 2.11	.70	17.8	.030 .010	0.76 0.25	.375	9.52
MBF2111-09-()	.406 .398	10.31 10.11	.444	11.28	.2895 .2875	7.353 7.303	.2895	7.353	.152 .147	3.86 3.73	.065	1.65	.090 .083	2.29 2.11	.81	20.6	.030 .010	0.76 0.25	.500	12.70
MBF2111-10-()	.437 .429	11.10 10.90	.479	12.17	.3115 .3095	7.912 7.861	.3110	7.899	.152 .147	3.86 3.73	.070	1.78	.112 .105	2.85 2.67	.89	22.6	.040 .015	1.02 0.38	.500	12.70
MBF2111-11-()	.468 .460	11.89 11.68	.513	13.03	.3435 .3415	8.725 8.674	.3433	8.720	.185 .180	4.70 4.57	.075	1.90	.112 .105	2.85 2.67	.94	23.9	.040 .015	1.02 0.38	.500	12.70
MBF2111-12-()	.500 .491	12.70 12.47	.548	13.92	.3745 .3725	9.512 9.462	.3740	9.500	.185 .180	4.70 4.57	.080	2.03	.133 .126	3.38 3.20	1.09	27.7	.040 .015	1.02 0.38	.500	12.70

TABLE I (CONTINUED)

PART NUMBER	MIN AVAILABLE GRIP DASH NO.	INSTALLED DIMENSIONS								MECHANICAL PROPERTIES					
		RECOM. HOLE SIZE		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	LBS	N	LBS	N	IN-LBS	N-m
MBF2111-05-()	-100	.168 .165	4.27 4.19	.250	6.35	.300	7.62	+1.03 -0.00	+2.62 -0.00	900	4000	3150	14010	1.0	0.113
MBF2111-06-()	-100	.202 .199	5.13 5.05	.300	7.62	.350	8.89	+1.03 -0.00	+2.62 -0.00	1400	6230	4600	20460	1.5	0.170
MBF2111-07-()	-100	.231 .228	5.88 5.79	.350	8.89	.400	10.16	+1.03 -0.00	+2.62 -0.00	1600	7120	6050	26910	2.0	0.226
MBF2111-08-()	-100	.263 .260	6.68 6.60	.400	10.16	.450	11.43	+1.03 -0.00	+2.62 -0.00	2100	9340	7900	35140	2.5	0.282
MBF2111-09-()	-100	.293 .290	7.44 7.37	.450	11.43	.500	12.70	+1.03 -0.00	+2.62 -0.00	2600	11565	9800	43590	3.0	0.339
MBF2111-10-()	-150	.315 .312	8.00 7.92	.475	12.06	.550	13.97	+1.03 -0.00	+2.62 -0.00	3600	16010	11350	50480	3.5	0.400
MBF2111-11-()	-150	.347 .344	8.81 8.74	.525	13.33	.575	14.60	+1.03 -0.00	+2.62 -0.00	4400	19570	13850	61600	4.0	0.452
MBF2111-12-()	-150	.378 .375	9.60 9.52	.575	14.60	.625	15.87	+1.03 -0.00	+2.62 -0.00	5000	22240	16450	73170	4.5	0.508

APPLICABLE SPECIFICATIONS:
PROCUREMENT SPECIFICATION:
INSTALLATION AND INSPECTION SPECIFICATION:
SPECIAL LUBE AND FINISH:
PART NUMBER ASSIGNMENT:

MBF2000
MBF2003
MBF2002
MBF2004

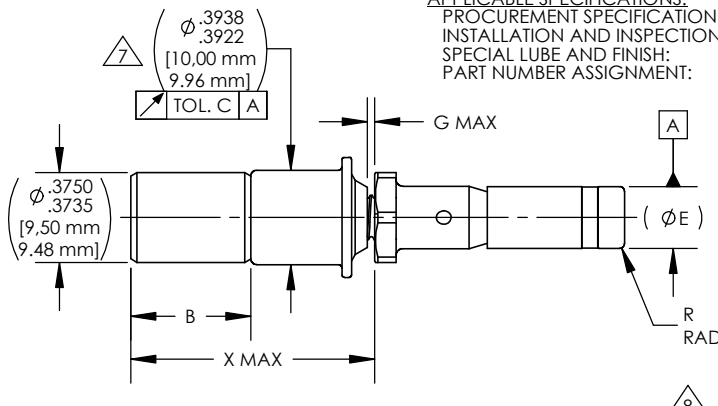


TABLE II

ROBOTIC PART NUMBER	R RAD		G MAX (GAP)		B		X MAX		"TOL. C" $\triangle 7$			
									GRIP < -500		GRIP > -500	
	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm
MBF2111()-05-()A	.025 .010	0.635 0.254	.042	1.067	.510 .470	12.954 11.938	1.033	26.238	.030	0.762	.030	0.762
MBF2111()-06-()A	.030 .015	0.762 0.381	.050	1.270	.510 .470	12.954 11.938	1.043	26.492	.027	0.686	.030	0.762
MBF2111()-08-()A	.035 .020	0.889 0.508	.062	1.575	.510 .470	12.954 11.938	1.078	27.381	.022	0.559	.030	0.762
MBF2111()-09-()A	.040 .020	1.016 0.508	.071 .008	1.803 0.203	.510 .470	12.954 11.938	1.082	27.483	.022	0.559	.030	0.762

TABLE III

OVERSIZE PART NUMBER	A HEX ACROSS FLATS		φ B MIN		φ D		φ E MAX		F WRENCH FLATS		(G)		H		(L)		RECOM. HOLE SIZE		φ J MIN		K MAX	
	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm
MBF2111()-5.5-()	.250 .244	6.35 6.20	.272	6.91	.1800 .1780	4.574 4.523	.1796	4.561	.085 .080	2.16 2.03	.017	0.43	.076 .069	1.93 1.75	.544	13.81	.183 .181	4.65 4.57	.270	6.86	.325	8.26
MBF2111()-6.5-()	.312 .305	7.92 7.75	.340	8.64	.2140 .2120	5.436 5.385	.2141	5.438	.113 .108	2.87 2.74	.027	0.68	.080 .073	2.03 1.85	.605	15.37	.218 .215	5.54 5.46	.330	8.38	.375	9.53
MBF2111()-8.5-()	.375 .367	9.52 9.32	.409	10.39	.2750 .2730	6.985 6.936	.2751	6.987	.135 .130	3.43 3.30	.055	1.40	.090 .083	2.29 2.11	.758	19.25	.279 .276	7.08 7.01	.420	10.67	.475	12.07

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: A286 CRES PER AMS5731, AMS5732 OR AMS5737 HEAT TREATED TO 175 KSI TENSILE MINIMUM.
SLEEVE: 304 CRES PER AMS5639, FULLY ANNEALED.
INSERT: ACETAL PER ASTM-D6778
DRIVE NUT: MILD STEEL

FINISH:

(-) NUT: CONVERSION COATING OR PHOSPHATE FLOURIDE PER MONOGRAM SPECIFICATION PS741, MAY BE USED AT MANUFACTURER'S OPTION.
SLEEVE AND SCREW: PASSIVATE PER AMS2700, CONVERSION COATING OPTIONAL.
INSERT: NONE
DRIVE NUT: COLOR GRAY

LUBRICANT:

SOLID FILM LUBRICANT PER AS5272 TYPE I OR TYPE II, PARAFFIN WAX, OR CETYL ALCOHOL PER AS87132 (AS REQUIRED FOR PERFORMANCE). (SEE FINISH CODE FOR RESTRICTIONS).

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TABLE IV

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

GENERAL NOTES:

- EXAMPLE OF PART NUMBER:
MBF2111 () - 06 - 100 ()
"A" DESIGNATES DUAL DRIVE NUT SYSTEM FOR ROBOTIC INSTALLATION DESIGNATES GRIP (TABLE IV)
 $\triangle 7$ DESIGNATES BASIC DIMENSIONS (TABLE I)
 $\triangle 8$ DESIGNATES SPECIAL FINISH CODE
 $\triangle 9$ DESIGNATES BASIC PART NUMBER (BASIC PART: MBF2111SA()-6-100 USE FOR SEALANT APPLICATION)
- 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.
- HEAD MARKINGS: MANUFACTURER'S IDENTIFICATION: MONOGRAM = "MI"
FASTENER IDENTIFICATION = "2111"
POSITION OPTIONAL
ALTERNATE HEAD MARKING: "MI" AND "2011".
- 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.
- AN "H" IN PLACE OF THE DASH (-) BETWEEN THE DIAMETER DASH NUMBER AND THE GRIP DASH NUMBER DESIGNATES MODIFIED BREAK OFF LIMITS OF +.153/+-.050 (E.G. MBF2111()-6H200).
- 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.
- MAXIMUM CONCENTRICITY (T.I.R.) FROM DRIVE NUT TO SCREW HEAD WHEN DRIVE NUT IS FULLY SEATED (G=0) FOR GRIPS UNDER/EQUAL -1000. FOR GRIPS LONGER THAN -1000 "TOL C" TBD.
- ALL OTHER DIMENSIONS ARE THE SAME AS IN TABLE I.
- HALF GRIP SIZES MAY BE ORDERED BY ADDING (.025) TO THE GRIP DASH NUMBERS. EXAMPLE: MBF2111-08-525 INDICATES A NOMINAL GRIP LENGTH OF .500. THE GRIP RANGE FOR THESE HALF-GRIP SIZES WILL BE NOMINAL GRIP +.025/-.025.

MONOGRAM AEROSPACE FASTENERS
a TriMas company
3423 SOUTH GARFIELD AVENUE
COMMERCE, CALIFORNIA 90040
(323) 722-4760 FAX (323) 727-1029

TITLE:
BLIND FASTENER, REDUCED PROTRUDING HEX HEAD
FOR ADVANCED COMPOSITE MATERIALS
TITANIUM

DRAWING NO:
MBF2111()-()-()

DRAWN BY: A PEREZ	DRAWN DATE: 6/29/2013
APPROVED BY:	CHECKED DATE:

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