MONOGRAM AEROSPACE FASTENERS
3423 South Garfield Avenue
Los Angeles, California 90040
Ph (323) 722-4760 * Fax (323) 721-1851
www.monogramaerospace.com

MAF3000

PROCUREMENT SPECIFICATION
FOR
THE MAF FASTENING SYSTEM
AND
DMF FASTENING SYSTEM

REVISION:	DATE:	ECN#	APPROVED BY:	DATE:
"NR"	10-20-1987	ECN#5149		
"F"	10-31-1990			
"G"	09-10-1993		_____	_____
"H"	11-15-1996		BEHROUZ KHODNEGAH	
"I"	04-23-1997		VICE PRESIDENT ENGINEERING	
"J"	04-01-1998			
"K"	10-02-2000			
"L"	12-08-2000		_____	_____
"M"	08-16-2001	ECN#1113	DARON HABOIAN	
"N"	06-03-2003	ECN#1622	DIRECTOR OF QUALITY ASSURANCE	
"P"	07-18-2003	ECN#1677		
"R"	09-08-2003	ECN#1732	_____	_____
"S"	12-05-2003	ECN#1677	JOE LEE	
"T"	09-26-2006	ECN#3875	DIRECTOR OF ENGINEERING	
"U"	03-04-2010	ECN#5388		
"V"	08-27-2010	ECN#5507	_____	_____
"W"	08-08-2012	ECN#6142	PAULA MARTIN	
"Y"	09-04-2012	ECN#6162	METHODS MANAGER	
			_____	_____
			STEVE MIRANDA	
			PRODUCT/MANUFACTURING ENGINEER	

Original Signed Copies on File

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1.0 SCOPE AND APPLICATION:

1.1 SCOPE:

This specification defines the engineering and inspection requirement for the MAF and DMF fastening system procured under part numbers listed on applicable standards which refer to this specification.

1.2 APPLICATION:

The Maf pin must be used with the proper mating Maf sleeve or equivalent components to maintain the integrity of the fastening system and to obtain the mechanical properties specified in this specification and on applicable drawings.
This product has been manufactured, tested, and certified utilizing components within the complete assembly system specified on Monogram Aerospace Fastener drawings; also manufactured, tested, and certified by Monogram.

1.3 DESCRIPTION:

The Maf fasteners covered by this specification shall be of the types, sizes, configuration and materials designated by the specification and further described as follows:

TYPE	DESCRIPTION	MATERIAL DESIGNATION
Maf & DMF	PIN - FULL LENGTH SHANK	"DT" --- ALLOY STEEL (8740) "EU"--- CRES (A-286) "V"--- TITANIUM (6Al-4V) "NB"--- INCONEL 718 "MU"---PH13-8 CRES
2Maf 3Maf	PIN - REDUCED LENGTH SHANK	
MafF-S	SLEEVE - 100° FLUSH TENSION HEAD	
3MafF-S	SLEEVE - 130° FLUSH SHEAR HEAD	
3MafP-S	SLEEVE - LARGE PROTRUDING HEAD	
2MafP-S	SLEEVE - PROTRUDING HEAD	
Maf-LC	LOCK COLLAR	"AC" --- ALUMINUM ALLOY (2215-T62) "MV" --- CP TITANIUM

Note: Single "O" in front of a part number designates the first oversize and double "OO" designates the second oversize.

1.4 IDENTIFICATION:

The fasteners defined in this specification shall be identified as shown:

LOCK COLLAR

Maf - LC - 2AC - 06

- 06 — SHANK DIAMETER DESIGNATION
- 2AC — 2219-T6 ALUMINUM ALLOY, MV = CP TITANIUM
- Maf - LC — BASIC PART NUMBER

PINS

( ) Maf F F — DT 06 — 09 ( ) ( )

- ( ) — PLATING OR COATING DESIGNATOR (SEE STANDARDS PAGE)
- ( ) — BLANK = STANDARD LENGTH SLEEVE
  N7 = WHEN ORDERING 7/16" LONG SLEEVE
  N8 = WHEN ORDERING 1/2" LONG SLEEVE
  N9 = WHEN ORDERING 9/16" LONG SLEEVE
  "K" = WHEN ORDERING DEFINED SLEEVE LENGTH
  (i.e. MafFF-DT06-09233 HAS K = .233")
- 09 — GRIP NUMBERS RESIGNATION IN 1/16" INCREMENTS
- 06 — SHANK DIAMETER DESIGNATION 1/32" INCREMENTS (1/64" OVER SIZED)
- DT — V = 6Al-4V TITANIUM
  DT = AISI 8740 ALLOY STEEL
  EU = A-286 CRES
  NB = INCONEL 718
- F — F = DESIGNATION FOR USE WITH 100° FLUSH HEAD SLEEVE ONLY (TENSION TYPE)
  P = DESIGNATION FOR USE WITH PROTRUDING HEAD SLEEVE ONLY (SHEAR TYPE)
- F — F and 509 (for Maf or 2Maf)= DESIGNATION FOR MS24694 100° FLUSH TENSION HEAD PIN
  F (for 3Maf)= DESIGNATION FOR 130° FLUSH SHEAR HEAD PIN
  P = DESIGNATION FOR PROTRUDING HEAD PIN
  100 = DESINGATION FOR 100° FLUSH SHEAR HEAD PIN
- Maf — Maf = FULL SHANK LENGTH
  2Maf and 3Maf = REDUCED SHANK LENGTH
- ( ) — BLANK = STANDARD SIZE SHANK
  0 = 1/32" OVERSIZE SHANK
  00 = 3/64" OVERSIZE SHANK

SLEEVES

( ) MafF — S — DT 06 ( ) ( )

- ( ) — PLATING/COATING DESIGNATOR (SEE STANDARDS PAGE)
- ( ) — BLANK= STANDARD LENGTH SLEEVE
  N7 = 7/16" LONG SLEEVE
  N8 = ½" LONG SLEEVE
  N9 = 9/16" LONG SLEEVE
  "K" = DEFINED LENGTH SLEEVE
  (i.e. MafF-S-DT06233 HAS K = .233")
- 06 — SHANK DIAMETER DESIGNATION IN 1/32" INCREMENTS
  (1/64" OVER SIZED)
- DT — DT = AISI8740 ALLOY STEEL
  V = 6Al-4V TITANIUM
  EU = A-286 CRES
  NB = INCONEL 718
- S — SP = 4 SLOTTED SLEEVE
  S = 2 SLOTTED SLEEVE
- MafF — MafF = MS24694 100° TENSION FLUSH HEAD SLEEVE
  3MafF = 130° TENSION SHEAR HEAD SLEEVE
  2MafP and 3MafP= SHEAR PROTRUDING HEAD SLEEVE
- ( ) — BLANK = STANDARD SIZE SHANK
  0 = 1/32" OVERSIZE SHANK
  00 = 3/64" OVERSIZE SHANK

NOTE: DESIGNATION WITHOUT PREFIX "O" TO DIAMETER & GRIP NUMBERS IS ALSO ACCEPTABLE (eg. MafFF-DT6-9 or MafF-S-DT6)

FOR DMFFF-()-()-() FASTENER DESIGNATION SEE STANDARD PAGE.

2.0 APPLICABLE DOCUMENTS:

Documents listed herein of the issue in effect on date of price inquiry are a part of this specification to the extent indicated. In the event of conflict between the requirements of this specification and referenced documents, the requirements herein shall govern.

2.1 SPECIFICATIONS:

FEDERAL SPECIFICATIONS:

FED-STD-H-28	SCREW-THREAD STANDARD FOR FEDERAL SERVICES
GGG-K-275	WRENCHES (HEX)
MIL-DTL-5541	CHEMICAL FILMS AND CHEMICAL FILM MATERIALS FOR ALUMINUM AND ALUMINUM ALLOYS
MIL-STD-129	MARKING FOR SHIPMENT AND STORAGE
PPP-B-566	BOX – FOLDING, PAPERBOARD
PPP-B-676	PACKAGING AND PACKING FOR OVERSEAS SHIPMENT

INDUSTRY STANDARDS:

ANSI/ASQCZ1.4	SAMPLING PROCEDURES AND TABLES FOR INSPECTION BY ATTRIBUTES.
AS 87132	LUBRICANT, CETYL ALCOHOL 11 HEXADECANOL,
AS 8879	SCREW THREADS, GENERAL SPECIFICATION FOR
ASME B46.1	SURFACE FINISH
ASTM B22	ALUMINUM ALLOYS BARS AND FORGINGS
ASTM B348	TITANIUM, COMMERCIALLY PURE.
ASTM-D1974	STANDARD PRACTION FOR CLOSING FIBERBOARD BOXES
ASTM-D5118	BOXES, FIBERBOARD, SHIPPING, FABRICATION OF
ASTM D5486	PRESSURE SENSITIVE TAPE, PACKING, BOX COLSURE AND SEALING
ASTM E1417	INSPECTION, PENETRANT METHOD OF
ASTM E1444	INSPECTION PROCESS, MAGNETIC PARTICLE
NAS527	INSPECTION PROCEDURE FOR FLUSH FASTENERS
NAS4006	ALUMINUM COATING
NASM1312	FASTENER, TEST METHODS

SOCIETY OF AUTOMOTIVE ENGINEERS:

AMS2759	HEAT TREATMENT OF STEEL
AMS4143	ALUMINUM ALLOY EXTRUSIONS (2219-T6)
AMS4162	ALUMINUM ALLOY EXTRUSIONS (2219-T8511)
AMS4928	TITANIUM BARS & FORGINGS, 6Al-4V ANNEALED, HEAT TREATABLE
AMS4967	TITANIUM BARS & FORGINGS, 6Al-4V ANNEALED, HEAT TREATABLE
AMS5662	NICKEL ALLOY, CORROSION AND HEAT RESISTANT, BARS, FORGING, AND RINGS
AMS5731	STEEL BARS, FORGINGS, AND TUBING, CORROSION AND HEAT RESISTANT (A-286)
AMS5732	STEEL BARS, FORGINGS, AND RINGS, (A-286)
AMS5737	STEEL BARS, FORGINGS, AND TUBING, CORROSION AND HEAT RESISTANT (A-286)
AMS6322	STEEL BARS, FORGINGS, AND RINGS, (SAE8740)
AMS6325	STEEL BARS & FORGINGS (8740)
AMS6327	STEEL BARS & FORGINGS (8740)
AMS-H-6088	HEAT TREATMENT OF ALUMINUM ALLOYS
AMS-H-6875	HEAT TREATMENT OF STEELS (AIRCRAFT PRACTICE) PROCESS
AMS-H-81200	HEAT TREATMENT OF TITANIUM
AMS-QQ-N-290	PLATING NICKEL (ELECTRODEPOSITED)
AMS-QQ-P-35	(AMS2700) PASSIVATION TREATMENT FOR AUSTENITIC, FERRITIC AND MARTENSITIC CORROSION RESISTING STEEL
AMS-QQ-P-416	PLATING, CADMIUM (ELECTRODEPOSITED)
AMS-T-9046/7	CP TITANIUM

3.0 GENERAL REQUIREMENTS

The general requirements for the manufacture and inspection of the "MAF" and “DMF” fastening system are listed in Table I, Table IA, Table IB and Table II.

TABLE I
GENERAL REQUIREMENTS

CHARACTERISTICS	ENGINEERING REQUIREMENTS	TEST PROCEDURE	PRODUCTION LOT SAMPLING	QUALIFICATION SAMPLING
MATERIAL	THE PINS, SLEEVES, LOCK COLLARS & DMF COMPONENTS SHALL BE MANUFACTURED TO THE STRENGTH REQUIREMENTS & ALLOY COMPOSITIONS SPECIFIED IN TABLE IV & THE APPLICABLE STANDARD DRAWING	CHEMICAL ANALYSIS (ALLOY VERIFICATION)	FOR COMPONENT LOTS WITH A DATE OF MANUFACTURE: A) BEFORE JANUARY 1,2001, THE FASTENER MANUFACTURER SHALL TEST TO VERIFY THE COMPOSITION OF EVERY 10TH HEAT OF RAW MATERIAL RECEIVED FROM EACH MILL. B) AFTER JANUARY 1,2001, THE FASTENER MANUFACTURER SHALL TEST PER MONOGRAM QUALITY DEPARTMENT PROCEDURE QL-10.	
CONFIGURATION	CONFIGURATION & GEOMETRY SHALL CONFORM TO STANDARD PART DRAWINGS THAT REFERENCE THIS SPECIFICATION	CONVENTIONAL MEASUREMENTS METHODS	TABLE V	ALL QUALIFICATION SAMPLES SHALL BE DIMENSIONALLY INSPECTED
HEAD OF PINS, SLEEVES and DMF COMPONENTS	HEAD OF PINS & SCREWS SHALL BE FORMED BY UPSET FORGING METHOD & MEET THE REQUIREMENTS OF THE APPLICABLE STANDARD DRAWING. HEAD OF SLEEVES, NUTS AND BODY CAN BE FORGED OR MACHINED.			
HEAD TO SHANK FILLET: PINS, SCREWS and NUTS. (TITANIUM and INCONEL only)	FILLET SHALL BE COLD WORKED AFTER ALL MACHINING, GRINDING & THERMAL TREATMENT. FILLET SHALL CONFORM TO APPLICABLE STANDARD DRAWING & FIGURE 5	COMPARATOR MEASUREMENT		
SURFACE ROUGHNESS	PER STANDARD DRAWING	ASME-B46.1		
THREADS	THREADS SHALL CONFORM TO THE APPLICABLE STANDARD DRAWINGS THAT REFERENCE THIS SPECIFICATION	CONVENTIONAL MEASUREMENT METHODS		
	PINS & SCREWS THREADS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: 1. THREADS SHALL BE THREAD ROLLED 2. TITANIUM PARTS SHALL BE THREAD ROLLED AFTER ALL THERMAL TREATMENTS. 3. INCOMPLETE & RUNOUT THREADS PER FIGURE 1	COMPARATOR MEASUREMENT GAGING & MICRO-EXAMINATION		
HEAT TREATMENT	HEAT TREATMENT SHALL DEVELOP THE MECHANICAL PROPERTIES AS DEFINED IN TABLE IV, WITHOUT ADVERSE EFFECT ON METALLURGICAL PROPERTIES AS DEFINED HEREIN	TESTING OF MECHANICAL PROPERTIES & METALLURGICAL EXAMINATION VERIFIES HEAT TREATMENT	N/A	
HYDROGEN EMBRITTLEMENT (CAD PLATED ALLOY STEEL ONLY)	PARTS SHALL PASS A 48 HOURS STRESS DURABILITY TEST PER NASM1312 TEST #5. LOAD AT 80% OF THE RATED TENSILE STRENGTH (TABLE II). DURABILITY TEST SHALL BE CONDUCTED WITH SLEEVE AND LOCK COLLAR PER TABLE II.	SUSTAINED LOAD TEST AT 80% TENSILE STRENGTH AT ROOM TEMP. FOR 48 HOURS. MAGNETIC PARTICLE INSPECT FOR CRACKS	QUALIFICATION ONLY	5

TABLE I
GENERAL REQUIREMENTS (CONT'D)

CHARACTERISTICS	ENGINEERING REQUIREMENTS	TEST PROCEDURE	PRODUCTION LOT SAMPLING	QUALIFICATION SAMPLING
METALLURGICAL	PIN, SLEEVES & LOCK COLLARS AND DMF COMPONENTS SHALL BE EXAMINED & MEET THE REQUIREMENTS BELOW:			
MICROSTRUCTURE	COMPONENTS SHALL BE FREE FROM BURSTS, VOIDS, OVERHEATING OR GROSS ALLOY SEGREGATION TITANIUM SHALL BE FREE FROM INDICATIONS THAT MATERIAL HAS BEEN HEATED TO A TEMPERATURE ABOVE BETA TRANSUS WITHOUT SUBSEQUENTLY RECEIVING SIGNIFICANT MECHANICAL REDUCTION IN THE ALPHA-BETA TEMPERATURE RANGE. SLIGHT OVER-HEATING ADJACENT TO THE TOP OF THE HEAD IS PERMISSIBLE, PROVIDING MEASUREMENT NORMAL TO THE TOP SURFACE OF THE GREATEST DEPTH OF OVERHEATING DOES EXCEED THE LIMITS ON TABLE III. STRUCTURE OF 6Al-4V ALLOYS WHICH HAS OUTLINES OF EQUIAXIAL PRIOR ALL BETA GRAINS & NO PRIMARY ALPHA IS CONSIDERED OVERHEATED.	METALLURGICAL EXAMINATION	TABLE VI	2
GRINDING BURNS	NO GRINDING BURNS ALLOWED ON SHANK OR HEAD TO SHANK FILLET. PARTIAL PLUS FULL MICROSTRUCTURE CHANGE TO.003" MAXIMUM DEPTH ON THE HEAD BEARING SURFACE EXCLUSIVE OF THE FILLET RADIUS IS PERMISSIBLE.			
DISCONTINUITIES PINS AND SLEEVES	DISCONTINUITIES PERMITTED ONLY AS DESCRIBED IN FIGURE 3 & LIMITS AS SPECIFIED IN TABLE III EXCEPT THAT DISCONTINUITIES (OTHER THAN A CRACK) .0005" OR UNDER IN DEPTH ARE PERMISSIBLE IN ANY LOCATION.	TITANIUM, A-286, INCONEL 718 & ALUMINUM FLUORESCENT PENETRANT INSPECTION PER ASTM E1417 EXCEPT MARKING OF INDIVIDUAL PARTS IS NOT REQUIRED. ALLOY STEEL MAGNETIC PARTICLE INSPECT PER ASTM E 1444 EXCEPT MARKING OF INDIVIDUAL PARTS IS NOT REQUIRED.	ANSI/ASQCZ1.4 INSPECTION LEVEL II .04% AQL	ALL QUALIFICATIONS SAMPLES
		MICRO EXAMINATION OF ALL MATERIALS AT 50X OR 100X. MAGNIFICATION METALLURGICAL SPECIMENS PER FIGURE 2	TABLE VI	2

TABLE I
GENERAL REQUIREMENTS (CONT'D)

CHARACTERISTICS	ENGINEERING REQUIREMENTS	TEST PROCEDURE	PRODUCTION LOT SAMPLING	QUALIFICATION SAMPLING
HYDROGEN (TITANIUM ONLY)	DETERMINATION MADE ON SAMPLE FROM MATERIAL REMOVED FROM HEAD-TO-SHANK FILLET SECTION OF PIN, SLEEVE & DMF CONPONENTS. NOT TO EXCEED 125 PPM	HOT EXTRACTION METHOD CAPABLE OF MEASURING HYDROGEN TO AN ACCURACY OF .0010%: (10 PPM)	CHECK ONE RANDOM PART PER LOT, IF FIRST SAMPLE FAILS, SECOND SAMPLE MUST BE ACCEPTABLE OR ENTIRE LOT IS UNACCEPTABLE. IN THE EVENT THAT A SECOND SAMPLE IS REQUIRED, TWO ADDITIONAL PARTS SHALL BE USED.	
CARBURIZATION & DECARBURIZATION	COMPLETE DECARBURIZATION IS NOT ALLOWED. PARTIAL DECARBURIZATION SHALL NOT EXCEED .003" ON ANY SURFACE. CARBURIZATION IS NOT PERMITTED	METALLURGICAL EXAMINATION MICRO EXAMINATION AT 100X OR GREATER	TABLE VI	2
GRAIN FLOW PIN, NUT & SCREW HEADS (SLEEVE & BODY HEAD OPTIONAL)	HEADS: FLOW LINES MAY BE SLIGHTLY BROKEN BY MACHINING OR GRINDING AS SHOWN IN FIGURE 4. THREADS: FLOW LINES SHALL BE CONTINUOUS & SHALL FOLLOW THE GENERAL THREAD CONTOUR WITH MAXIMUM DENSITY AT THE BOTTOM OF THE ROOT RADIUS AS SHOWN IN FIGURE 4	MICRO-EXAMINATION OF GRAIN FLOW AT 10X OR GREATER. METALLURGICAL SPECIMENS PER FIGURE 2.		
FINISH	FINISH SHALL BE PER APPLICABLE STANDARD DRAWING THAT REFERENCES THIS SPECIFICATION. PARTS PLATED PER AMS-QQ-P-416 AND OF Rc40 OR HIGHER SHALL BE BAKED FOR A MINIMUM OF 23 HOURS. HEX SOCKET OF PIN & THREADS OF SLEEVE ARE EXEMPT FROM COATING THICKNESS REQUIREMENTS. ALL CORNERS & SHARP EDGES ARE EXEMPT FROM COATING THICKNESS REQUIREMENTS	PER APPLICABLE SPECIFICATION AND VISUAL EXAMINATION	TABLE V	5
LUBRICATION	PER STANDARD DRAWING	N/A		
PREPARATION FOR DELIVERY	SECTION 5.0	VISUAL EXAMINATION MIL-STD-129	N/A	

TABLE IA
GENERAL REQUIREMENTS FOR MAF (MECHANICAL PROPERTIES)

CHARACTERISTICS	ENGINEERING REQUIREMENTS	TEST PROCEDURE	PRODUCTION LOT SAMPLING	QUALIFI--CATION SAMPLING
MECHANICAL PROPERTIES	PINS OF MAF FASTENER SHALL MEET THE MECHANICAL REQUIREMENTS OF THE APPLICABLE STANDARD DRAWING & REQUIREMENTS BELOW			
SHEAR STRENGTH	REQUIREMENTS & LIMITATIONS PER TABLE II. SHEAR TEST SHALL BE CONDUCTED ON FULL SHANK DIAMETER ONLY. STATED SHEAR VALUES ARE BASED ON MAXIMUM SHANK DIAMETER. WHEN QUESTIONABLE, SHEAR STRENGTH SHALL BE RECALCULATED BASED ON ACTUAL SHANK DIAMETER.UNLESS OTHERWISE STATED,SINGLE SHEAR TEST APPLIES TO FLUSH HEAD PIN OF "X" DIM. 1.5 TIMES AND PROTRUDING HEAD PIN 1.0 TIME THE NOMINAL DIAMETER. DOUBLE SHEAR TEST APPLIES TO FLUSH HEAD PIN OF "X" DIM. 2.5 TIMES AND PROTRUDING HEAD PIN 2.0 TIMES THE NOMINAL DIAMETER.	NASM1312 TEST NO. 20 (SINGLE SHEAR) OR NASM1312, TEST NO. 13 DOUBLE SHEAR)	TABLE VI	
TENSILE STRENGTH	REQUIREMENTS & LIMITATIONS PER TABLE II. TENSILE TEST APPLLIES TO ALL SLEEVE COMPONENTS AND PINS WHEN MAX GRIP LENGTH EXCEEDS 2 TIMES THE NOMINAL SHANK DIAMETER. TENSILE TEST SHALL BE CONDUCTED WITH TEST SLEEVE & LOCK COLLAR PER TABLE II. SUBSTITUTE TEST COMPONENTS ARE ACCEPTABLE WHEN MINIMUM STRENGTH REQUIREMENTS ARE SATISFIED.	NASM1312 TEST NO. 8 THE ASSEMBLY SHALL BE INSTALLED INTO TEST PLATES IN MAXIMUM GRIP +.000/-.005 & INSTALLED PER TABLE II TO COMPLETE INSTALLATION SET LOCK COLLAR		7
TENSION-TENSION FATIGUE	THE INSTALLED FASTENER SHALL BE CAPABLE OF MEETING OR EXCEEDING THE FATIGUE REQUIREMENTS OF TABLE VII	NASM1312 TEST NO. 11 PIN & SLEEVE SHALL BE INSTALLED IN NOMINAL GRIP WITH MINIMUM INSTALLATION TORQUE PER TABLE VIII. TO COMPLETE INSTALLATION SET LOCK COLLAR.	QUALIFICATION ONLY	
VIBRATION	THE INSTALLED FASTENER SHALL BE CAPABLE OF WITHSTANDING 30,000 CYCLES MINIMUM WITHOUT LOCK COLLAR ROTATION RELATIVE TO THE PIN OR SLEEVE IN EXCESS OF 30E OF ARC & WITHOUT SLEEVE ROTATION RELATIVE TO THE PIN IN EXCESS OF 30E OF ARC. ROTATION OF THE ENTIRE FASTENER RELATIVE TO THE WASHERS OR SPOOL SHALL NOT BE CAUSE FOR REJECTION	NASM1312 TEST NO. 7 PIN & SLEEVE SHALL BE INSTALLED IN NOMINAL GRIP TO THE REQUIREMENT TORQUE PER TABLE VIII TO COMPLETE INSTALLATION SET LOCK COLLAR		5
TORQUE-OUT	TORQUE-OUT TORQUE IS THE INITIAL TORQUE REQUIRED TO START ROTATION OF THE SLEEVE RELATIVE TO THE PIN IN A COUNTER-CLOCKWISE DIRECTION WITH NO PRE-LOAD PRESENT. TORQUE OUT SHALL BE EQUAL TO OR GREATER THAN THE VALUES IN TABLE IX	INSTALL THE SLEEVE ON THE PIN TO A POSITION THAT REPRESENTS MAXIMUM GRIP, THEN INSTALL LOCK COLLAR		
PIN & COLLAR PROTRUSION (INSTALLATION)	INSTALLED FASTENERS SHALL MEET THE REQUIREMENTS OF TABLE X & FIGURES 7-9 WHEN INSTALLED TO THE GRIP TOLERANCE LIMITS	CONVENTIONAL MEASUREMENT METHODS. INSTALL 5 IN MINIMUM AND MAXIMUM GRIP CONDITIONS		10

TABLE IB
GENERAL REQUIREMENTS FOR DMF (MECHANICAL PROPERTIES)

CHARACTERISTICS	ENGINEERING REQUIREMENTS	TEST PROCEDURE	PRODUCTION LOT SAMPLING	QUALIFI--CATION SAMPLING
MECHANICAL PROPERTIES	DMF FASTENER SHALL MEET THE MECHANICAL REQUIREMENTS OF THE APPLICABLE STANDARD DRAWING & REQUIREMENTS BELOW			
SHEAR STRENGTH	REQUIREMENTS & LIMITATIONS PER TABLE II ARE THE SAME AS FOR MAF PINS. SHEAR TEST SHALL BE CONDUCTED ON THE NUT SHANK DIAMETER WITH FULLY ENGAGED SCREW THREADS. STATED SHEAR VALUES ARE BASED ON MAXIMUM SHANK DIAMETER. UNLESS OTHERWISE STATED, SINGLE SHEAR TEST APPLIES TO FLUSH HEAD NUT OF "X" DIM. 1.5 TIMES AND PROTRUDING HEAD NUT 1.0 TIME THE NOMINAL DIAMETER. DOUBLE SHEAR TEST APPLIES TO FLUSH HEAD NUT OF "X" DIM. 2.5 TIMES AND PROTRUDING HEAD NUT 2.0 TIMES THE NOMINAL DIAMETER.	NASM1312 TEST NO. 20 (SINGLE SHEAR) OR NASM1312, TEST NO. 13 DOUBLE SHEAR)	TABLE VI	7
TENSILE STRENGTH	REQUIREMENTS & LIMITATIONS PER TABLE II ARE THE SAME AS FOR MAF PINS. TENSILE TEST APPLIES TO FLUSH HEAD NUT/BODY OF "X+Y" DIM. 2.5 TIMES AND PROTRUDING HEAD 2.0 TIMES THE NOMINAL DIAMETER.	NASM1312 TEST NO. 8 THE FASTENER SHALL BE TESTED IN MAXIMUM GRIP		
PRELOAD/CLAMPING FORCE	PRELOAD/CLAMPING FORCE TEST SHALL BE CONDUCTED USING A LOAD CELL. PRELOAD SHALL BE WITHIN THE RANGE AS STATED ON THE STANDARD DRAWING AND SHALL BE USED TO FINALIZE THE SCREW TORQUE/ SCREW BREAK GROOVE DIAMETER.	NASM1312 TEST NO. 16 THE FASTENER SHALL BE INSTALLED INTO A LOAD CELL IN MAXIMUM GRIP & MINIMUM GRIP		
INSTALLATION	THE INSTALLED FASTENER SHALL BE CAPABLE OF MEETING OR EXCEEDING THE SEATING TORQUE REQUIREMENTS OF 6 IN-LBS FOR -06 DIA. AND 4 IN-LBS FOR -05 DIA.	ASSEMBLIES SHALL BE INSTALLED IN MINIMUM GRIP. TORQUE SHALL BE APPLIED THRU THE NUT HEX RECESS		25
LOCKING FEATURE/ PREVAILING TORQUE	PREVAILING TORQUE IS THE LOWEST TORQUE RECORDED, ON THE TORQUE INDICATION DEVICE, DURING DISASSEMBLY ROTATION OF 270˚ - 360˚ BETWEEN THE NUT AND SCREW COMPONENTS. THE MINIMUM PREVAILING TORQUE REQUIREMENT IS 1.5 IN-LBS FOR -06 DIA. AND 1.0 IN-LBS FOR -05 DIA.	THE FASTENER SHALL BE DRIVEN IN AIR TO SIMULATE MAXIMUM GRIP. HOWEVER, CARE MUST BE TAKEN TO INSURE THAT THE BREAK-OFF NIB PORTION OF THE SCREW IS NOT SHEARED OFF DURING THIS OPERATION, SINCE IT WILL BE USED AS ONE SEGMENT OF THE WRENCHING FACES TO DETERMINE PREVAILING TORQUE. THE NUT COMPONENT SHALL BE RESTRAIN FROM ROTATION BY USING A 5/64 HEX WRENCH DURING THE TEST.		5
TENSION-TENSION FATIGUE	THE INSTALLED FASTENER SHALL BE CAPABLE OF MEETING OR EXCEEDING THE FATIGUE REQUIREMENTS OF TABLE VII	NASM1312 TEST NO. 11 THE FASTENER SHALL BE TESTED IN NOMINAL GRIP ±.005.	QUALIFICATION ONLY	7
VIBRATION	THE INSTALLED FASTENER SHALL BE CAPABLE OF WITHSTANDING 30,000 CYCLES MINIMUM WITHOUT NUT ROTATION RELATIVE TO THE SCREW IN EXCESS OF 30E OF ARC. ROTATION OF THE ENTIRE FASTENER RELATIVE TO THE WASHERS OR SPOOL SHALL NOT BE CAUSE FOR REJECTION	NASM1312 TEST NO. 7 THE FASTENER SHALL BE TESTED IN NOMINAL GRIP		5

TABLE II

-DT05 (ALLOY STEEL)

NOM. SIZE	PIN	SLEEVE	108 KSI SHEAR STR. MIN. [LBS] (1)		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC5 OR Maf-LC-MV5		SINGLE	DOUBLE	
11/64 (.171")	MafFF-DT5; MafPF-DT5	MafF-S-DT5	2490	4970	1100
	MafFP-DT5; MafPP-DT5	2MafP-S-DT5			900

(1) HARDNESS TEST ONLY AS PER TABLE IV. FOR 2Maf509F-DT5 AND 2Maf509P-DT5
(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

-DT06 (ALLOY STEEL)

NOM. SIZE	PIN	SLEEVE	108 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC6 OR Maf-LC-MV6		SINGLE	DOUBLE	
13/64 (.203")	MafFF-DT6; MafPF-DT6	MafF-S-DT6	3480	6960	2210
	MafFF-DT6-()N7	MafF-S-DT6N7			
	MafFP-DT6; MafPP-DT6	2MafP-S-DT6			1800
	2MafFF-DT6; 2MafPF-DT6; 2Maf509F-DT6	MafF-S-DT6	(1)		1400
	Maf100F-DT6		3480	6960	
	2MafFP-DT6; 2MafPP-DT6; 2Maf509P-DT6	2MafP-S-DT6	(1)		
	Maf100P-DT6		3480	6960	
7/32 (.219")	OMafFF-DT6; OMafPF-DT6	OMafF-S-DT6	4050	8100	2210
	OMafFF-DT6-()N7	OMafF-S-DT6N7			
	OMafFP-DT6; OMafPP-DT6	O2MafP-S-DT6			1800
	O2MafFF-DT6; O2MafPF-DT6; O2Maf509F-DT6	OMafF-S-DT6	(1)		1400
	O2MafFP-DT6; O2MafPP-DT6; O2Maf509P-DT6	O2MafP-S-DT6			
15/64 (.234")	OOMafFF-DT6; OOMafPF-DT6	OOMafF-S-DT6	4670	9340	2210
	OOMafFP-DT6; OOMafPP-DT6	OO2MafP-S-DT6			1800

(1) HARDNESS TEST ONLY AS PER TABLE IV.
(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II -DT08 (ALLOY STEEL)

NOM. SIZE	PIN	SLEEVE	108 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC8 OR Maf-LC-MV8		SINGLE	DOUBLE	
17/64 (.265")	MafFF-DT8; MafPF-DT8	MafF-S-DT8	5960	11920	4080
	MafFF-DT8-()N7	MafF-S-DT8N7			
	MafFP-DT8; MafPP-DT8	2MafP-S-DT8			
	2MafFF-DT8; 2MafPF-DT8; 2Maf509F-DT8	MafF-S-DT8	(1)		2550
	Maf100F-DT8		5960	11920	
	2MafFP-DT6; 2MafPP-DT8; 2Maf509P-DT8	2MafP-S-DT8	(1)		
	2Maf200P-DT08-( )N7	2MafP-S-DT8N7			
	Maf100P-DT8	2MafP-S-DT8	5960	11920	
9/32 (.281")	OMafFF-DT8; OMafPF-DT8	OMafF-S-DT8	6700	13400	4080
	OMafFF-DT8-()N7	OMafF-S-DT8N7			
	OMafFP-DT8; OMafPP-DT8	O2MafP-S-DT8			
	O2MafFF-DT8; O2MafPF-DT8; O2Maf509F-DT8	OMafF-S-DT8	(1)		2550
	O2MafFP-DT8; O2MafPP-DT8; O2Maf509P-DT8	O2MafP-S-DT8			
19/64 (.297")	OOMafFF-DT8; OOMafPF-DT8	OOMafF-S-DT8	7480	14970	4080
	OOMafFF-DT8-()N7	OOMafF-S-DT8N7			
	OOMafFP-DT8; OOMafPP-DT8	OO2MafP-S-DT6			

(1) HARDNESS TEST ONLY AS PER TABLE IV.
(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II -DT10 (ALLOY STEEL)

NOM. SIZE	PIN	SLEEVE	108 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC10 OR Maf-LC-MV10		SINGLE	DOUBLE	
21/64 (.328")	MafFF-DT10; MafPF-DT10	MafF-S-DT10	9100	18200	5350
	MafFF-DT10-()N7	MafF-S-DT10N7			
	MafFP-DT10; MafPP-DT10	2MafP-S-DT10			
	2MafFF-DT10; 2MafPF-DT10; 2Maf509F-DT10	MafF-S-DT10	(1)		4000
	Maf100F-DT10		9100	18200	
	2MafFP-DT10; 2MafPP-DT10; 2Maf509P-DT10	2MafP-S-DT10	(1)		
	Maf100P-DT10		9100	18200	
11/32 (.344")	OMafFF-DT10; OMafPF-DT10	OMafF-S-DT10	10000	20000	5350
	OMafFF-DT10-()N7	OMafF-S-DT10N7			
	OMafFP-DT10; OMafPP-DT10	O2MafP-S-DT10			
	O2MafFF-DT10; O2MafPF-DT10; O2Maf509F-DT10	OMafF-S-DT10	(1)		4000
	O2MafFP-DT10; O2MafPP-DT10; O2Maf509P-DT10	O2MafP-S-DT10			
23/64 (.360")	OOMafFF-DT10; OOMafPF-DT10	OOMafF-S-DT10	10950	21900	5350
	OOMafFF-DT10-()N7	OOMafF-S-DT10N7			
	OOMafFP-DT10; OOMafPP-DT10	OO2MafP-S-DT10			

(1) HARDNESS TEST ONLY AS PER TABLE IV.
(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II -EU05 (A-286)

NOM. SIZE	PIN	SLEEVE	95 KSI SHEAR STR. MIN. [LBS] (1)		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC5 OR Maf-LC-MV5		SINGLE	DOUBLE	
11/64 (.171")	MafFF-EU5; MafPF-EU5 Maf100F-EU05, Maf100P-EU05	MafF-S-EU5	2190	4370	1000
	MafFP-EU5; MafPP-EU5	2MafP-S-EU5			820

(1) (N/A) -- TENSILE TEST &/OR HARDNESS PER TALBE IV VERIFIES HEAT TREATMENT FOR 2Maf509F-EU5 AND 2Maf509P-EU5

(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

-EU06 (A-286)

NOM. SIZE	PIN	SLEEVE	95KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC6 OR Maf-LC-MV6		SINGLE	DOUBLE	
13/64 (.203")	MafFF-EU6; MafPF-EU6	MafF-S-EU6	3060	6120	1950
	MafFF-EU6-()N7	MafF-S-EU6N7			
	MafFP-EU6; MafPP-EU6	2MafP-S-EU6			1590
	2MafFF-EU6; 2MafPF-EU6; 2Maf509F-EU6	MafF-S-EU6	(1)		1230
	Maf100F-EU6		3060	6120	
	2MafFP-EU6; 2MafPP-EU6; 2Maf509P-EU6	2MafP-S-EU6	(1)		
	Maf100P-EU6		3060	6120	
7/32 (.219")	OMafFF-EU6; OMafPF-EU6	OMafF-S-EU6	3560	7120	2210
	OMafFF-EU6-()N7	OMafF-S-EU6N7			
	OMafFP-EU6; OMafPP-EU6	O2MafP-S-EU6			1800
	O2MafFF-EU6; O2MafPF-EU6; O2Maf509F-EU6	OMafF-S-EU6	(1)		1400
	O2MafFP-EU6; O2MafPP-EU6; O2Maf509P-EU6	O2MafP-S-EU6			
15/64 (.235")	OOMafFF-EU6; OOMafPF-EU6	OOMafF-S-EU6	4100	8200	2210
	OOMafFP-EU6; OOMafPP-EU6	OO2MafP-S-EU6			1800

(1) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT

(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II -EU08 (A-286)

NOM. SIZE	PIN	SLEEVE	95 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC8 OR Maf-LC-MV8		SINGLE	DOUBLE	
17/64 (.265")	MafFF-EU8; MafPF-EU8; 2Maf509F-EU8	MafF-S-EU8	5240	10480	3590
	MafFF-EU8-()N7	MafF-S-EU8N7			
	MafFP-EU8; MafPP-EU8	2MafP-S-EU8			
	2MafFF-EU8; 2MafPF-EU8; 2Maf509F-EU8	MafF-S-EU8	(1)		2240
	Maf100F-EU8		5240	10480	
	2MafFP-EU6; 2MafPP-EU8; 2Maf509P-EU8	2MafP-S-EU8	(1)		
	Maf100P-EU8		5240	10480	
9/32 (.281")	OMafFF-EU8; OMafPF-EU8	OMafF-S-EU8	5890	11780	3590
	OMafFF-EU8-()N7	OMafF-S-EU8N7			
	OMafFP-EU8; OMafPP-EU8	O2MafP-S-EU8			
	O2MafFF-EU8; O2MafPF-EU8; O2Maf509F-EU8	OMafF-S-EU8	(1)		2240
	O2MafFP-EU8; O2MafPP-EU8; O2Maf509P-EU8	O2MafP-S-EU8			
19/64 (.297")	OOMafFF-EU8; OOMafPF-EU8	OOMafF-S-EU8	6580	13160	3590
	OOMafFF-EU8-()N7	OOMafF-S-EU8N7			
	OOMafFP-EU8; OOMafPP-EU8	OO2MafP-S-EU6			

(1) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT
(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II -EU10 (A-286)

NOM. SIZE	PIN	SLEEVE	95 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (2)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC10 OR Maf-LC-MV10		SINGLE	DOUBLE	
21/64 (.328")	MafFF-EU10; MafPF-EU10	MafF-S-EU10	8000	16000	4700
	MafFF-EU10-()N7	MafF-S-EU10N7			
	MafFP-EU10; MafPP-EU10	2MafP-S-EU10			
	2MafFF-EU10; 2MafPF-EU10; 2Maf509F-EU10	MafF-S-EU10	(1)		3520
	Maf100F-EU10		8000	16000	
	2MafFP-EU10; 2MafPP-EU10; 2Maf509P-EU10	2MafP-S-EU10	(1)		
	Maf100P-EU10		8000	16000	
11/32 (.344")	OMafFF-EU10; OMafPF-EU10	OMafF-S-EU10	8800	17600	4700
	OMafFF-EU10-()N7	OMafF-S-EU10N7			
	OMafFP-EU10; OMafPP-EU10	O2MafP-S-EU10			
	O2MafFF-EU10; O2MafPF-EU10; O2Maf509F-EU10	OMafF-S-EU10	(1)		3520
	O2MafFP-EU10; O2MafPP-EU10; O2Maf509P-EU10	O2MafP-S-EU10			
23/64 (.360")	OOMafFF-EU10; OOMafPF-EU10	OOMafF-S-EU10	9640	19290	4700
	OOMafFF-EU10-()N7	OOMafF-S-EU10N7			
	OOMafFP-EU10; OOMafPP-EU10	OO2MafP-S-EU10			

(1) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT
(2) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II -V05 (TITANIUM)

NOM. SIZE	PIN	SLEEVE	95 KSI SHEAR STR. MIN. [LBS] (1)		TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC5 OR Maf-LC-MV5		SINGLE	DOUBLE	
11/64 (.171")	MafFF-V5; MafPF-V5; 2Maf509F-V5	MafF-S-V5	2190	4370	1000
	MafFP-V5; MafPP-V5; 2Maf509P-V5	2MafP-S-V5			820
	3MafFF-V5; 3MafPF-V5	3MafF-S-V5	(1)		800
	3MafFP-V5; 3MafPP-V5	3MafP-S-V5			

(1) (N/A) -- TENSILE TEST AND/OR MICROSTRUCTURE PER TABLE I VERIFIES HEAT TREATMENT FOR 2Maf509() AND 3Maf()()
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY MICROSTRUCTURE.

-V06 (TITANIUM)

NOM. SIZE	PIN	SLEEVE	95KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC6 OR Maf-LC-MV6		SINGLE	DOUBLE	
13/64 (.203")	MafFF-V6; MafPF-V6	MafF-S-V6	3060	6120	1950
	MafFF-V6-()(K); MafPF-V6-()(K)	MafF-S-V6(K)			
	MafFF-V6-()N7; MafPF-V6-()N7	MafF-S-V6N7			
	MafFF-V6-()N8; MafPF-V6-()N8	MafF-S-V6N8			
	MafFF-V6-()N9; MafPF-V6-()N9	MafF-S-V6N9			
	MafFP-V6; MafPP-V6; 2Maf509P-V6	2MafP-S-V6			
	MafFP-V6-()N7; MafPP-V6-()N7	2MafP-S-V6N7 (2)			
	2MafFF-V6-()N7; 2MafPF-V6-()N7	MafF-S-V6N7	(1)		1400
	2MafFF-V6; 2MafPF-V6; 2Maf509F-V6	MafF-S-V6			
	3MafFF-V6; 3MafPF-V6	3MafF-S-V6			
	Maf100F-V6	MafF-S-V6	3060	6120	
	2MafFP-V6; 2MafPP-V6; 2Maf509P-V6	2MafP-S-V6	(1)		
	3MafFP-V6; 3MafPP-V6	3MafP-S-V6			
	Maf100P-V6	2MafP-S-V6	3060	6120	
7/32 (.219")	OMafFF-V6; OMafPF-V6	OMafF-S-V6	3560	7120	1950
	OMafFP-V6; OMafPP-V6	O2MafP-S-V6			
	O2MafFF-V6; O2MafPF-V6; O2Maf509F-V6	OMafF-S-V6	(1)		1400
	O2MafFP-V6; O2MafPP-V6; O2Maf509P-V6	O2MafP-S-V6			
15/64 (.235")	OOMafFF-V6; OOMafPF-V6	OOMafF-S-V6	4100	8200	1950
	OOMafFP-V6; OOMafPP-V6	OO2MafP-S-V6			

(1) (N/A)-- TENSILE TEST AND/OR MICROSTRUCTURE PER TABLE I VERIFIES HEAT TREATMENT
(2) SLEEVES: 2MafP-S-V6N7 AND MafP-S-V6N7 ARE EQUIVALENT.
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY MICROSTRUCTURE.

TABLE II -V08 (TITANIUM)

NOM. SIZE	PIN	SLEEVE	95 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC8 OR Maf-LC-MV8		SINGLE	DOUBLE	
17/64 (.265")	MafFF-V8; MafPF-V8	MafF-S-V8	5240	10480	3590
	MafFF-V8-()(K); MafPF-V8-()(K)	MafF-S-V8(K)			
	MafFF-V8-()N7; MafPF-V8-()N7	MafF-S-V8N7			
	MafFF-V8-()N8; MafPF-V8-()N8	MafF-S-V8N8			
	MafFF-V8-()N9; MafPF-V8-()N9	MafF-S-V8N9			
	MafFP-V8; MafPP-V8	2MafP-S-V8			
	MafFP-V8-()N7; MafPP-V8-()N7	2MafP-S-V8N7 (2)			
	2MafFF-V8-()N7; 2MafPF-V8-()N7	MafF-S-V8N7	(1)		2550
	2MafFF-V8; 2MafPF-V8; 2Maf509F-V8	MafF-S-V8			
	3MafFF-V8; 3MafPF-V8	3MafF-S-V8			
	Maf100F-V8	MafF-S-V8	5240	10480	
	2MafFP-V6; 2MafPP-V8; 2Maf509P-V8	2MafP-S-V8	(1)		
	3MafFP-V8; 3MafPP-V8	3MafP-S-V8			
	Maf100P-V8	2MafP-S-V8	5240	10480	
9/32 (.281")	OMafFF-V8; OMafPF-V8	OMafF-S-V8	5890	11780	3590
	OMafFP-V8; OMafPP-V8	O2MafP-S-V8			
	O2MafFF-V8; O2MafPF-V8; O2Maf509F-V8	OMafF-S-V8	(1)		2240
	O2MafFP-V8; O2MafPP-V8; O2Maf509P-V8	O2MafP-S-V8			
19/64 (.297")	OOMafFF-V8; OOMafPF-V8	OOMafF-S-V8	6580	13160	3590
	OOMafFP-V8; OOMafPP-V8	OO2MafP-S-V6			

(1) (N/A) -- TENSILE TEST AND/OR MICROSTRUCTURE PER TABLE I VERIFIES HEAT TREATMENT.
(2) SLEEVES: 2MafP-S-V8N7 AND MafP-S-V8N7 ARE EQUIVALENT.
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY MICROSTRUCTURE

TABLE II -V10 (TITANIUM)

NOM. SIZE	PIN	SLEEVE	95 KSI SHEAR STR. MIN. [LBS]		TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC10 OR Maf-LC-MV10		SINGLE	DOUBLE	
21/64 (.328")	MafFF-V10; MafPF-V10	MafF-S-V10	8000	16000	4700
	MafFF-V10-()(K); MafPF-V8-()(K)	MafF-S-V10(K)			
	MafFF-V10-()N7; MafPF-V8-()N7	MafF-S-V10N7			
	MafFF-V10-()N8; MafPF-V8-()N8	MafF-S-V10N8			
	MafFF-V10-()N9; MafPF-V8-()N9	MafF-S-V10N9			
	MafFP-V10; MafPP-V10	2MafP-S-V10			
	MafFP-V10-()N7; MafPP-V8-()N7	2MafP-S-V10N7 (2)			
	2MafFF-V10-()N7; 2MafPF-V10-()N7	MafF-S-V10N7	(1)		3520
	2MafFF-V10; 2MafPF-V10; 2Maf509F-V10	MafF-S-V10			
	3MafFF-V10; 3MafPF-V10	3MafF-S-V10			
	Maf100F-V10	MafF-S-V10	8000	16000	
	2MafFP-V10; 2MafPP-V10; 2Maf509P-V10	2MafP-S-V10	(1)		
	3MafFP-V10; 3MafPP-V10	3MafP-S-V10			
	Maf100P-V10	2MafP-S-V10	8000	16000	
11/32 (.344")	OMafFF-V10; OMafPF-V10	OMafF-S-V10	8800	17600	4700
	OMafFP-V10; OMafPP-V10	O2MafP-S-V10			
	O2MafFF-V10; O2MafPF-V10; O2Maf509F-V10	OMafF-S-V10	(1)		3520
	O2MafFP-V10; O2MafPP-V10; O2Maf509P-V10	O2MafP-S-V10			
23/64 (.360")	OOMafFF-V10; OOMafPF-V10	OOMafF-S-V10	9640	19290	4700
	OOMafFP-V10; OOMafPP-V10	OO2MafP-S-V10			

(1) (N/A) -- TENSILE TEST AND/OR MICROSTRUCTURE PER TABLE I VERIFIES HEAT TREATMENT
(2) SLEEVES: 2MafP-S-V10N7 AND MafP-S-V10N7 ARE EQUIVALENT.
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY MICROSTRUCTURE

TABLE II -NB05 (INCONEL 718)

NOM. SIZE	PIN	SLEEVE	125 KSI SHEAR STR. (ACROSS SOLID SHANK) MIN. [LBS] (2)		DOUBLE SHEAR ACROSS A GAP [LBS] MIN (1)	TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC5 OR Maf-LC-MV5		SINGLE	DOUBLE		
11/64 (.171")	MafFF-NB5; MafPF-NB5	MafF-S-NB5	2875	5750	2800	1320
	MafFP-NB5; MafPP-NB5	2MafP-S-NB5				1100

(1) SEE FIGURE 'A" ON THE FOLLOWING PAGE.
(2) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT FOR 2Maf509FNB5 AND 2Maf509P-NB5
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

-NB06 (INCONEL 718)

NOM. SIZE	PIN	SLEEVE	125 KSI SHEAR STR. (ACROSS SOLID SHANK) MIN. [LBS] (2)		DOUBLE SHEAR ACROSS A GAP [LBS] MIN (1)	TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC6 OR Maf-LC-MV6		SINGLE	DOUBLE		
13/64 (.203")	MafFF-NB6; MafPF-NB6	MafF-S-NB6	4025	8050	4500	2570
	MafFF-NB6-()N7; MafPF-NB6-()N7	MafF-S-NB6N7				
	MafFP-NB6; MafPP-NB6	2MafP-S-NB6				2100

(1) SEE FIGURE 'A' ON THE FOLLOWING PAGE
(2) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT FOR 2Maf509FNB6 AND 2Maf509P-NB6
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

-NB08 (INCONEL 718)

NOM. SIZE	PIN	SLEEVE	125 KSI SHEAR STR. (ACROSS SOLID SHANK) MIN. [LBS] (2)		DOUBLE SHEAR ACROSS A GAP [LBS] MIN (1)	TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC8 OR Maf-LC-MV8		SINGLE	DOUBLE		
17/64 (.265")	MafFF-NB8; MafPF-NB8	MafF-S-NB8	6900	13800	8500	4720
	MafFF-NB8-()N7; MafPF-NB8-()N7	MafF-S-NB8N7				
	MafFP-NB8; MafPP-NB8	2MafP-S-NB				3900

(1) QUALIFICATION ONLY - SEE FIGURE 'A'ON THE FOLLOWING PAGE.
(2) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT FOR 2Maf509FNB8 AND 2Maf509P-NB8
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

TABLE II NB10 (INCONEL 718)

NOM. SIZE	PIN	SLEEVE	125 KSI SHEAR STR. (ACROSS SOLID SHANK) MIN. [LBS] (2)		DOUBLE SHEAR ACROSS A GAP [LBS] MIN (1)	TENSILE STRENGTH MIN [LBS.] (3)
	NOTE: PINS AND SLEEVES SHALL BE INSTALLED WITH LOCK COLLAR Maf-LC-2AC10 OR Maf-LC-MV10		SINGLE	DOUBLE		
21/64 (.328")	MafFF-NB10; MafPF-NB10; 2Maf509F-NB10	MafF-S-NB10	10530	21060	12000	6180
	MafFF-NB10-()N7; MafPF-NB10-()N7	MafF-S-NB10N7				
	MafFP-NB10; MafPP-NB10; 2Maf509P-NB10	2MafP-S-NB10				5100

(1) SEE FIGURE 'A' .
(2) (N/A) -- TENSILE TEST &/OR HARDNESS PER TABLE IV VERIFIES HEAT TREATMENT FOR 2Maf509FNB10 AND 2Maf509P-NB10
(3) IF TOO SHORT FOR TESTING, STRENGTH REQUIREMENTS ARE VERIFIED BY HARDNESS TEST.

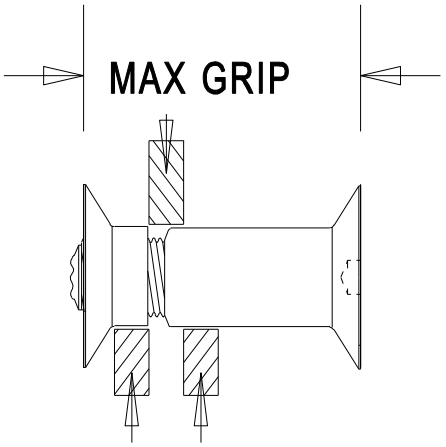


FIGURE A
DOUBLE SHEAR SET-UP ACROSS A GAP - QUAL. ONLY

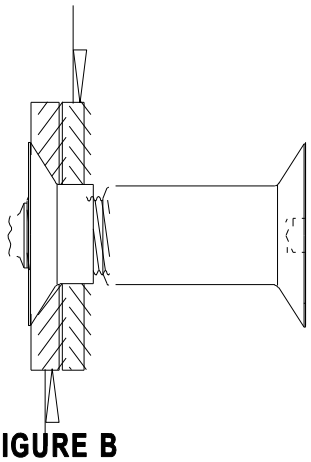


FIGURE B
SINGLE SHEAR SET-UP ACROSS THREADED SECTION OF INSTALLED FASTENER - QUAL. ONLY. NOTE: SLEEVE SHALL BE OF SUFFICIENT LENGTH TO PERFORM THIS TEST.
(SEE STANDARD PAGE FOR SHEAR VALUES)

4.0 QUALITY ASSURANCE REQUIREMENTS

4.1 Qualification Requirements:

4.1.1 Qualification of parts procured under this specification shall be to the requirements in Table I and Table II and as described herein.

4.1.2 Qualification Test Parts:

Test parts utilized for qualification shall meet the following requirements:

4.1.2.1 Parts will be manufactured in the same manner as normal production.

4.1.2.2 Parts will be inspected and tested in quantities specified in qualification sampling in Table I and Table II.

4.2 Production Lot Inspection Requirements:

4.2.1 Quality Conformance Requirements:

Quality conformance shall be established for each production lot of fasteners. Quality conformance requirements consist of those inspection and test requirements listed in Table I and Table II.

4.2.2 Responsibility for Inspection:

Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein. Quality control records pertaining to the specific purchase order, work order, lot number shall be maintained for a minimum of three years from shipment date.

4.2.3 Lot Definition:

A production lot is a defined quantity of finished parts which are the same part number, fabricated from the same heat or melt of material, processed as one continuous run or order.

4.2.4 Production Lot Inspection Report:

Each production lot of fasteners shall have an authorized inspection report on file. This report shall state that the fasteners are from a production lot which were manufactured, inspected and accepted in accordance with requirements of this specification, the report shall contain the part number, production lot number, material certification and shall include all actual test results of certification of conformance.

4.2.5 Test Methods: Test methods for quality conformance shall be as specified in Table I.

4.2.6 Screening:

Any lot which fails acceptance criteria based on lot sampling may be salvaged by a screening operation to remove defective parts. The screening method may be applied where separation of defective parts can be accomplished by a nondestructive method.

4.3 Discontinuities:

4.3.1 See Table III for allowable discontinuities.

4.3.2 Incomplete Thread and Lock Knurls:

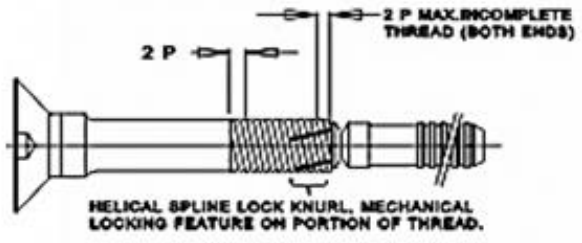
a) Mechanical lock knurls may not extend into root of threads.

b) Laps and Minor Inclusions found in the area of mechanical locking of the thread, shall not be cause for rejection.

c) Mechanical locking feature shall not be considered a discontinuity.

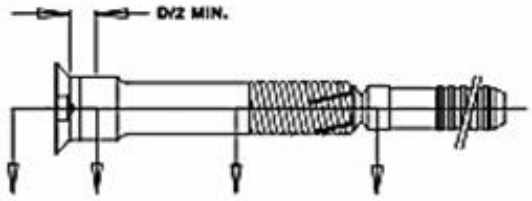
d) Mechanical locking feature shall not be considered as portion of threads.

FIGURE 1
INCOMPLETE THREAD & LOCK KNURLS



RUNOUT AND INCOMPLETE THREADS SHALL NOT BE CONSIDERED AS PORTION OF THREADED SECTION SUBJECTED TO "COMPLETE THREAD" EXAMINATION.

FIGURE 2



CUT METALLURGICAL SPECIMENS AS INDICATED BY ARROWS
METALLURGICAL SPECIMENS

FIGURE 3 – LAPS & SURFACE IRREGULARITIES IN THREADS

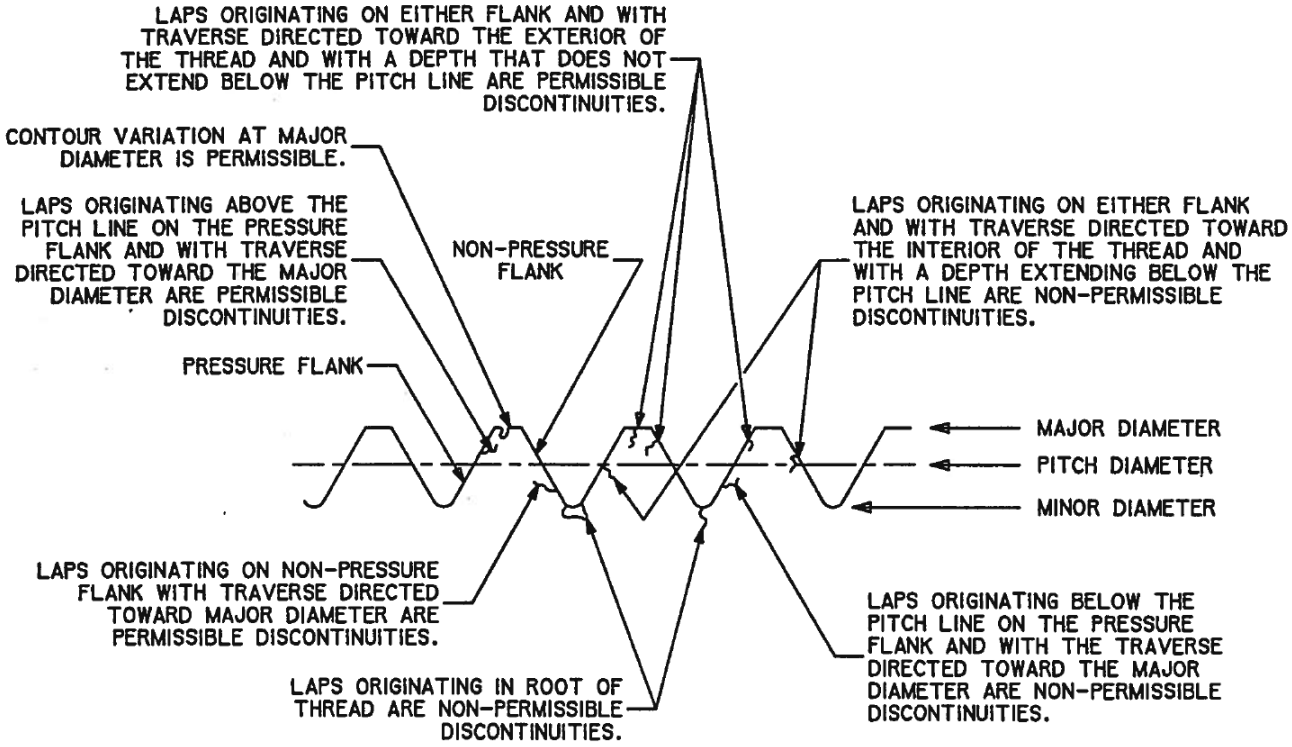


FIGURE 4 – GRAIN FLOW IN HEAD & THREAD

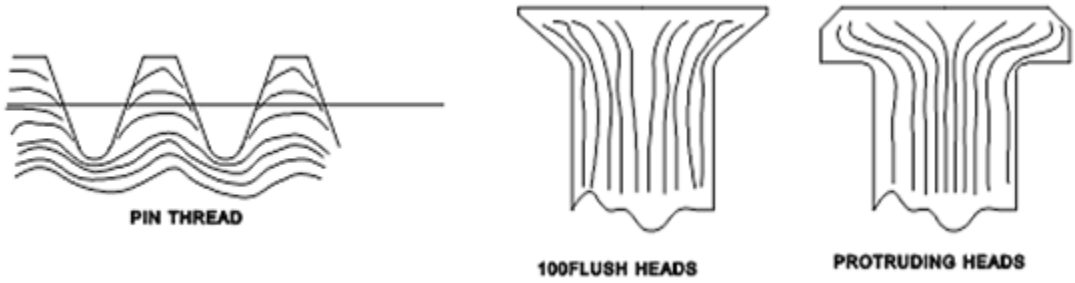


TABLE III
PIN, SLEEVE & DMF COMPONENTS DISCONTINUITIES

LOCATION	PERMISSIBLE CONDITIONS (a), (c)	MAX. DEPTH NORMAL TO SURFACE [INCHES]		
		NOMINAL FASTENER DIAMETER		
		11/64;13/64 & 7/32	17/64 & 9/32	21/64 & 11/32
HEAD TO SHANK RADIUS	LONGITUDINAL LAPS ONLY	.005		
	TOOL MARKS AND UNDERCUTS, PROVIDED THEY FAIR INTO SHANK WITHOUT SHARP SCRATCHES, GOUGES OR CORNERS	.003		
BEARING SURFACE OF HEAD	LAPS, TOOL MARKS, UNDERCUTS AND SEAMS NOT EXTENDING INTO HEAD TO SHANK RADIUS	.005		
NON-BEARING SURFACE OF HEAD	LAPS, SEAMS, NICKS OR GOUGES	.010		
THREADS (d)	LAPS AND SURFACE IRREGULARITIES WITHIN THE LIMITS OF FIGURE 3 AND NOT ASSOCIATED WITH THE MECHANICAL LOCKING FEATURE.	.004	.005	.005
	MECHANICAL LOCK FEATURE NOT CONSIDERED A DISCONTINUITY. SEE NOTE TO FIG. 1.	N/A		
OTHER LOCATIONS (b)	DISCONTINUITIES NOT AFFECTING INSTALLATION OR PROPER SEATING NOR INDICATIVE OF UNSATISFACTORY QUALITY	N/A		

(a) "A surface imperfection on worked metal caused by folding over a fin overfill or similar surface condition, then impressing this into the surface by subsequent working without welding it" (American Society for Metals Handbook - 9th Edition)
(b) Discontinuities in the breakneck or pull grooves resulting from the rolling process which do not affect installation are acceptable.
(c) Discontinuities .0005" max depth is permitted in all locations except cracks.
(d) See Figure 1 and Figure 3.

TABLE IV
MATERIAL REQUIREMENTS

MATERIAL		FINISH REQUIREMENTS MATERIAL PROPERTIES		
ALLOY	SPECIFICATION	TENSILE	DOUBLE SHEAR	ROCKWELL 'C' (1)
8740 STEEL	AMS6322, AMS6325 AMS6327	180-200 KSI	108 KSI MIN.	40-44
6Al-4V TITANIUM	AMS4967, AMS4928	160 KSI MIN.	95 KSI MIN.	N/A
A-286 HIGH TEMPERATURE ALLOY	AMS5737, AMS5732 OR AMS5731	160 KSI MIN.	95 KSI MIN.	30-45
INCONEL 718	AMS5662	200-220 KSI	125 KSI MIN.	45 MIN.
2219-T6	AMS-QQ-A-430	N/A		N/A
CP TITANIUM	ASTM B348, Gr.1			

(1) PRODUCT SHALL NOT BE REJECTED ON THE BASIS OF HARDNESS IF THE PRODUCTION LOT HAS PASSED ALL REQUIRED MECHANICAL TESTS.

TABLE V
CLASSIFICATION OF DIMENSIONAL CHARACTERISTICS

CLASSIFICATION		DIMENSIONAL CHARACTERISTICS
MAJOR 1.5% AQL SAMPLES LEVEL S-3 (1) TABLE VA	PINS, SLEEVES & DMF COMPONENTS	SHANK DIAMETER GRIP LENGTH LENGTH TO END OF THREADS R RADIUS (HEAD TO SHANK FILLET) THREAD PITCH AND MAJOR DIAMETER
MINOR A 2.5% AQL SAMPLE LEVEL S-2 (1) TABLE VB		IDENTIFICATION SQUARENESS OF HEAD BEARING SURFACE TO SHANK HEAD COCKING FOR FLUSH HEAD FOR PROTRUDING OR FLUSH HEAD CONCENTRICITY OF HEAD TO SHANK PROTRUDING HEAD DIAMETER AND THICKNESS. HEAD ANGLE FOR FLUSH HEAD SURFACE TEXTURE & FINISH.
MINOR B 4.0% AQL SAMPLE LEVEL S-2 (1) TABLE VC	PINS	FLUSH HEAD LAND WIDTH PINTAIL LENGTH DISCONTINUITIES
	SLEEVES	CHAMFER, DISCONTINUITIES, TOOL MARKS COLOR CODING
MINOR A 6.5% AQL SAMPLE LEVEL S-2 (1) TABLE VD	LOCK COLLAR	HEIGHT, I.D. AND O.D.

(1) ZERO DEFECTIVES ALLOWED.

TABLE VA

S-3 1.5% AQL (1)	
LOT SIZE	**SAMPLE SIZE PIECES**
UP TO 3,200	8
3,201 TO 500,000	32
500,001 AND UP	50

TABLE VB

S-2 2.5% AQL (1)	
LOT SIZE	**SAMPLE SIZE PIECES**
UP TO 35,000	5
35,001 AND UP	20

TABLE VC

S-2 4.0% AQL (1)	
LOT SIZE	**SAMPLE SIZE PIECES**
UP TO 1,200	3
1,201 AND UP	13

TABLE VD

S-2 6.5% AQL (1)	
LOT SIZE	**SAMPLE SIZE PIECES**
2-150	2
151-35,000	8
35,001 AND UP	13

(1) ZERO DEFECTIVES ALLOWED.

TABLE VI
SAMPLING FOR MECHANICAL & METALLURGICAL PROPERTIES

LOT SIZE	SAMPLE SIZE		ACCEPTANCE NO.	REJECTION NO.
	MAF & DMF	DMF (INSTALLATION)		
5OO & UNDER	4	8	0	1
501 THRU 1300	5	10		
1301 THRU 3200	6	12		
3201 THRU 8000	7	14		
8001 & OVER	10	20		

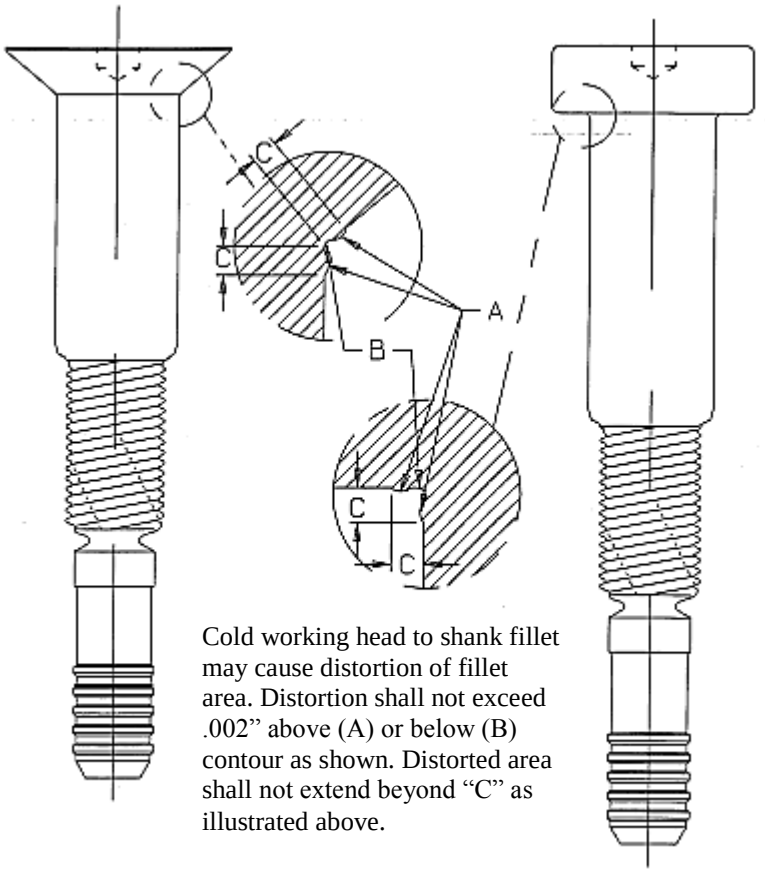
TABLE VII
TENSION-TENSION FATIGUE LOADING

DIAMETER	Maf (1)		2Maf & DMF (1)	
	MIN. LOAD	MAX. LOAD	MIN. LOAD	MAX. LOAD
11/64"; 3/16"	40	400	___	___
13/64"; 7/32"; 15/64"	(2) 88	(2) 885	56	560
17/64"; 9/32"; 19/64"	163	1630	102	1020
21/64"; 11/32"; 23/64"	214	2140	160	1600

NOTE: A sample of 7 pieces will be used for Fatigue Test. Average fatigue life shall be 30,000 cycles and minimum individual life shall be over 15,000 cycles. Fatigue test shall cease at 60,000 cycles and 60,000 cycles shall be the maximum cycle count used in calculating average.

(1) Except Maf100 shall be tested to 2Maf values, and 2Maf509 shall be tested to Maf values.
(2) 72 minimum load and 720 maximum load when installed with 2MafP-S-DT6 sleeve.

FIGURE 5
DISTORTION DUE TO FILLET ROLLING
TYPICAL FOR Maf & DMF FASTENERS



Cold working head to shank fillet may cause distortion of fillet area. Distortion shall not exceed .002" above (A) or below (B) contour as shown. Distorted area shall not extend beyond "C" as illustrated above.

NOMINAL SIZE	11/64 3/16	13/64 7/32 15/64	17/64 9/32 19/64	21/64 11/32 23/64 3/8
"C" MAXIMUM	.060"			.094

5.0 PREPARATION FOR DELIVERY:

5.1 Packaging:

5.1.1 Applicability (Applicable to all fastener types)

5.1.2 Engineering Requirements:
Prevent nicking or scratching of ground surfaces or threads or other damage during handling, transportation or storate. Package fasteners of one part number and one lot of material in unit packages. Assortment of unit packages may be in larger packages. Packaging must allow economical transportation and conform to consolidated freight classification rules.

5.1.3 Test Methods (Visual Examination).

5.2 Package Marking

5.2.1 Applicability (Applicable to all fastener types)

5.2.2 Engineering Requirements:
Durable and legible marking on each package and container, located so it will not be damaged when the package is opened. Marking shall include at least the following: name of part, customer part number, purchase order number, and fastener manufacturer's inspection lot number, and all applicable foreign and domestic patent numbers.

5.2.3 Test Methods (Visual Examination)

6.0 INTENDED USE:

The Maf and DMF fastening systems are intended for use as permanent fasteners joining metallic and honeycomb type structures, without crushing the sandwich core of the honeycomb, by use of the Maf adjustable clamping force feature of the system and of the DMF pre-established clamping force.

7.0 INSTALLATION PROCEDURE

7.1 FOR "MAF" FASTENER

7.1.1 Select the proper grip and diameter fastener from the appropriate grip chart.

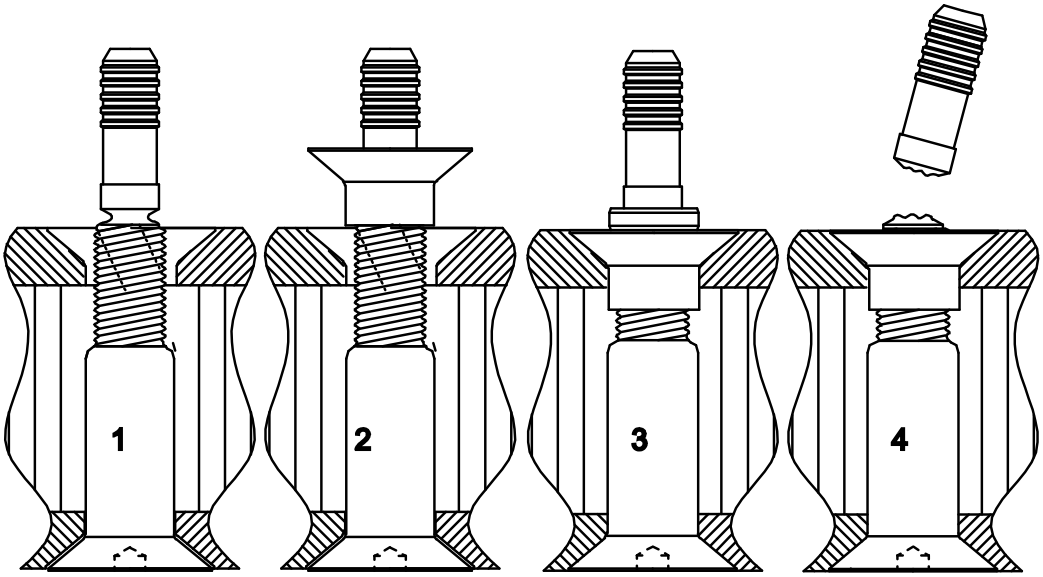
7.1.2 Insert the pin into the prepared hole in the structure, then thread the sleeve onto the pin. Tighten the sleeve to the specified torque range using proper Hex Wrench and Socket Driver. See Table VIII. Minimum installation torque can be adjusted to determine the controlled clamping force required for the soft-core structure of the joint design specification.

7.1.3 Place the lock collar over the pintail and position it into the conical recess on the sleeve.

7.1.4 Place the installation tool nose assembly completely over the pin protrusion, engaging the pin's pulling grooves.

7.1.5 By activating the installation tool, the lock collar is first forced into conical sleeve recess, followed by the fracturing of the pintail at the break-groove.
Remaining pin protrusion may be shaved to meet flushness requirements.

FIGURE 6
FASTENER INSTALLATION SEQUENCE



7.2 FOR "DMF" FASTENER

7.2.1 Select the proper grip and diameter fastener from the appropriate grip chart.

7.2.2 Insert the NUT into the prepared hole in the structure, then thread the SCREW with the BODY into the NUT until it meets the Locking Feature. A proper Hex Wrench should restrain the NUT from rotation.

7.2.3 Place the installation tool (see Standard Drawing) over the Screw Pintail.

7.1.4 By activating the installation tool the pintail will fracture at the break-groove.

7.2.5 Shaving is not necessary to meet flushness requirements.

TABLE VIII
INSTALLATION TORQUE & INSTALLATION TOOLS FOR "MAF" FASTENER

DIAMETER	RECOMMENDED INSTALLATION TORQUE [IN-LBS]	SLEEVE INSTALLATION SOCKET DRIVER	LOCK COLLAR SETTING TOOL (NOSE PIECE)	HEX WRENCH SIZE [IN]	PNEUMATIC INSTALLATION GUN
11/64"; 3/16"	5 - 15	MAFSS-05 (1)	MAFNP-05 (1)	5/64"	RV51G (3)
13/64"; 7/32"; 15/64"	10 - 20	106524 (2)	99-2642 (2)		352 (2)
17/64"; 9/32"; 19/64"	20 - 30	106525 (2)	99-2645 (2)	3/32"	
21/64"; 11/32"; 23/64"	30 - 40	107735 (2)	99-2648 (2)	1/8"	245 (2)

(1) "MONOGRAM" PART NUMBER; (2) "HUCK" PART NUMBER; (3) "OLYMPIC" PART NUMBER

8.0 INSPECTION:

8.1. Torque-Out Inspection (Qual. Only) for Maf fastener

Minimum Break-Loose Torque is the initial torque required to start rotation of the Sleeve relative to the Pin in a counter-clockwise direction with no preload present.
Fastener shall be installed in free air at a position representing maximum grip. Torque-out shall be equal or greater than the values in Table IX.

TABLE IX
TORQUE-OUT

NOMINAL DIAMETER (IN.)	MINIMUM BREAK-LOOSE TORQUE (IN-LBS.)
11/64"; 3/16"	5
13/64"; 7/32"; 15/64"	10
17/64"; 9/32"; 19/64"	15
21/64"; 11/32"; 23/64"	20

8.2. See Table I for Seating Torque and Prevailing Torque requirements for DMF fastener.

8.3 Pin & Collar Protrusion Inspection:
Pin protrusion after installation and break-off should be within limits of Table X. Pin protrusion is measured from the sleeve to the outside diameter of the break-off groove as shown in Figure 7.

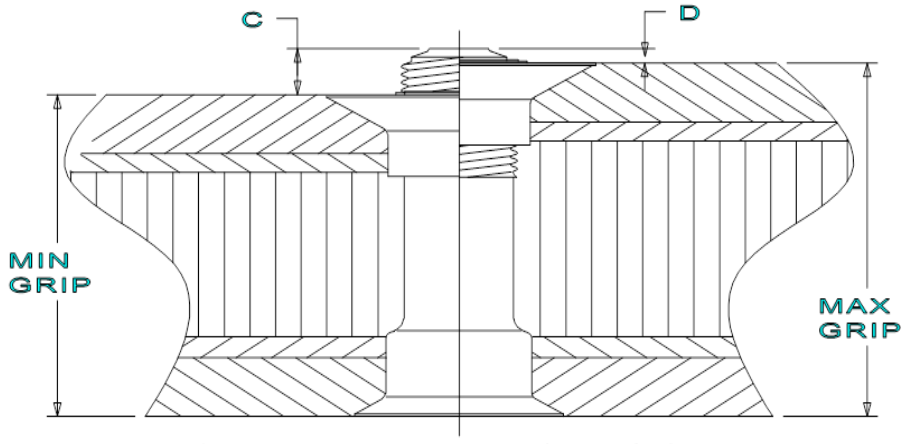


FIGURE 7 PIN PROTRUSION

It is permissible for the driven Lock Collar to have a thin concentric ring of flash adjacent to the thread as shown in Figure 8, or eccentric ring of flash thicker on one side than other as shown in Figure 9. Flash should be within the limits stated in Table X, when measured from the top of the Sleeve at the widest area of the flash.

The heights of the driven Lock Collar away from the flash should be within the limits stated in Table X, when measured from the top surface of sleeve as shown in Figure 8.

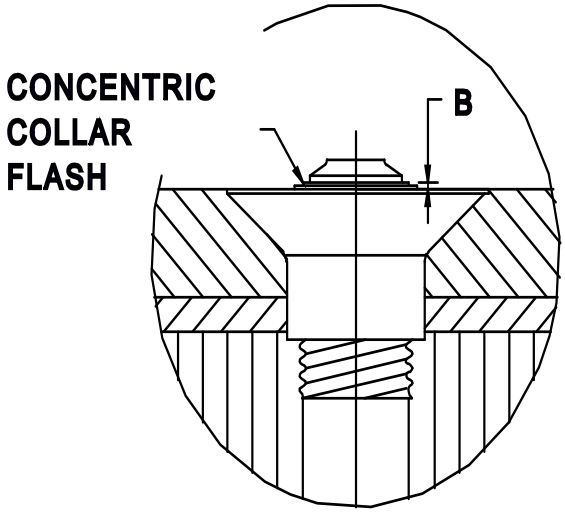


FIGURE 8
CONCENTRIC COLLAR FLASH

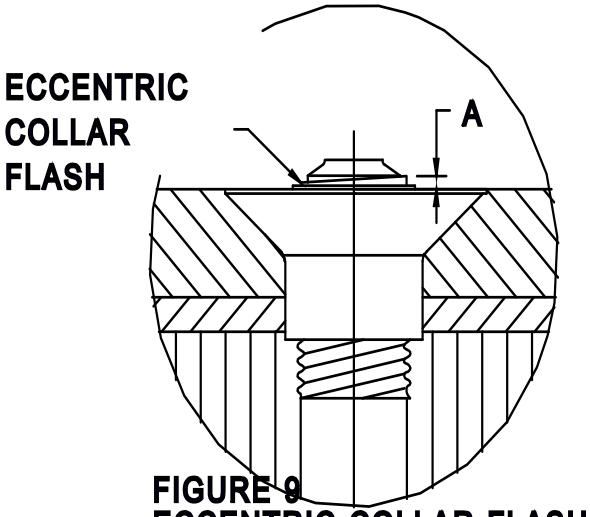


FIGURE 9
ECCENTRIC COLLAR FLASH

TABLE X

NOMINAL DIAMETER (IN)	PIN PROTRUSION (IN)		COLLAR HEIGHT (IN)	
	"D" MIN.	"C" MAX.	"B" MAX.	"A" MAX.
11/64"; 3/16"	.020	.110	.010	.020
13/64"; 7/32"; 15/64"		.107		
17/64"; 9/32"; 19/64"	.030	.119	.013	.030
21/64"; 11/32"; 23/64"	.035	.129	.026	.040

SHAVING (OPTIONAL):

Maf fastener: the broken pin and collar protrusion may be shaved flush with the sleeve top surface to meet requirements. DMF fastener: shaving is not required.

9.0 FASTENER REMOVAL:

Maf fastener: Select the applicable drill size and bushing as stated in Table XI. Position a drill with the bushing over the fastener as shown in Figure 9 and drill to depth as stated in Table XI. The Lock Collar then can be picked out from the sleeve lock pocket, unthread the sleeve for disassembly. DMF fastener: a) center drill screw head until fastener get loose.

TABLE XI

NOMINAL DIAMETER (IN)	DRILL BUSHING		DRILL DIAMETER MIN [IN]	DRILL DEPTH REF. (IN)
11/64"; 3/16"	MAFDB-05 (1)		.120	3/64
13/64"; 7/32"; 15/64"	103617	(2)	.156	
17/64"; 9/32"; 19/64"	103618		.187	1/16
21/64"; 11/32"; 23/64"	103619		.228	5/64

(1) 'MONOGRAM' PART NUMBER; (2) 'HUCK' PART NUMBER

FIGURE 10
LOCK COLLAR REMOVAL