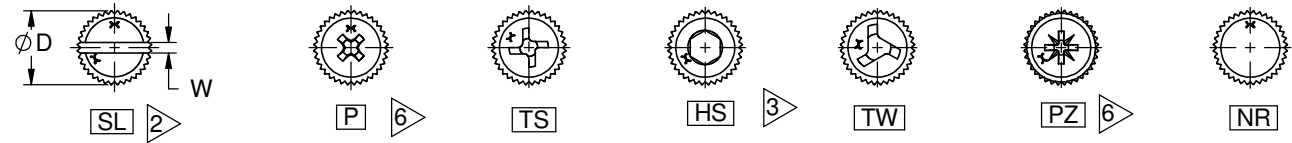
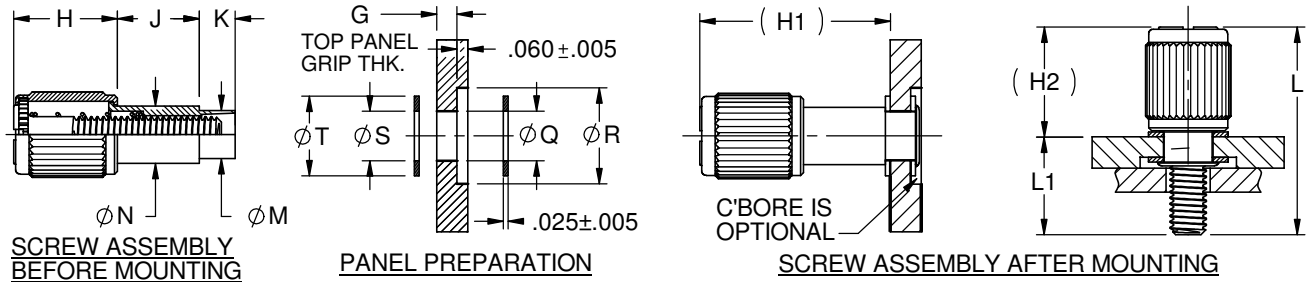


# Alcoa Fastening Systems & Rings



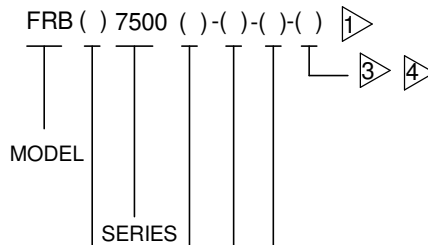
CURRENT DESIGN ACTIVITY  
 CAGE CODE 0HWD7  
 AFSR TUCSON OPERATIONS  
 3724 EAST COLUMBIA STREET  
 TUCSON, ARIZONA 85714  
 PHONE (520) 519-7400  
 FAX (520) 519-7454

# TURN-LOC® ENGINEERING STANDARD



THREAD SIZE CODE	Ø D	H		(H1)		(H2)		J	Ø M ±.005	Ø N ±.005	Ø Q +.004 -0.001	Ø R	Ø S +.004 -0.001	Ø T ±.010	W	RECESS SIZE			
		HS	P, PZ, SL, TS, TW, NR	HS	P, PZ, SL, TS, TW, NR	HS	P, PZ, SL, TS, TW, NR									P, PZ	TW	TS	HS
4, 4F, M3	.325	.444	.374	.734	.664	.481	.411	.265	.177	.206	.250	.390	.185	.309	.040	4	2	2	3/32
6, 6F, M3.5	.356	.449	.379	.754	.684	.494	.424	.280	.202	.241	.272	.406	.209	.333	.044	4	3	4	7/64
8, 8F, M4	.420	.559	.489	.969	.899	.606	.536	.385	.215	.258	.281	.468	.223	.385	.049	6	4	6	9/64
10, 10C, 10F, M5	.451	.599	.529	1.051	.981	.641	.571	.427	.250	.297	.316	.500	.257	.415	.055	8	5	8	5/32
12, 12C, 12F, M6	.531	.604	.534	1.057	.987	.641	.571	.428	.313	.371	.386	.578	.323	.495	.062	10	6	10	3/16

### PART NUMBER CALLOUT



LENGTH CODE	4, 4F, M3		6, 6F, M3.5		8, 8F, M4		10, 10C, 10F, M5		12, 12C, 12F, M6	
	L +.025 -0.015	L1	L +.025 -0.015	L1	L +.025 -0.015	L1	L +.025 -0.015	L1	L +.025 -0.015	L1
1	.639	.228	.650	.226	.685	.149	.832	.261	.745	.174
2	.764	.353	.775	.351	.810	.274	.957	.386	.870	.299
3	.889	.478	.900	.476	.935	.399	1.082	.511	.995	.424
4	1.014	.603	1.025	.601	1.060	.524	1.207	.636	1.120	.549
5	1.139	.728	1.150	.726	1.185	.649	1.332	.761	1.245	.674

CODE	FINISH
NONE	CLEAR
B	BLACK

THREAD SIZE CODE	THREAD SIZE	LEAD	THREAD SIZE CODE	THREAD SIZE	LEAD
4	.112-40 UNC-3A	SINGLE	8F	.164-32 UNC-3A	QUAD
6	.138-32 UNC-3A		10F	.190-32 UNF-3A	
8	.164-32 UNC-3A		12F	.250-28 UNF-3A	
10	.190-32 UNC-3A		M3	M3 x 0.5-4h6h	
12	.250-28 UNF-3A	SINGLE (COARSE)	M3.5	M3.5 x 0.6-4h6h	METRIC
10C	.190-24 UNC-3A		M4	M4 x 0.7-4h6h	
12C	.250-20 UNC-3A		M5	M5 x 0.8-4h6h	
4F	.112-40 UNC-3A	DOUBLE	M6	M6 x 1.0-4h6h	
6F	.138-32 UNC-3A				

GRIP CODE	G (TOP PANEL GRIP THICKNESS)	K ±.005
A	.020-.031	.125
B	.032-.093	.187
C	.094-.155	.250
D	.156-.217	.312
E	.218-.279	.375
F	.280-.341	.437

RECESS CODE	DRIVING RECESS AND SPECIFICATION	RECESS CODE	DRIVING RECESS AND SPECIFICATION
2	SLOT RECESS PER ANSI B18.6.3	PZ	RECESS PER TYPE 1A ANSI B18.6.3
HS	HEX SOCKET RECESS PER ANSI B18.3	TS	RECESS PER NASM 33781
NR	NO RECESS	TW	RECESS PER NAS 4000
6	CROSS RECESS PER NASM 9006		

AC	PER DCN 12953, CHANGED FROM Alcoa Fastening Systems AND AFS TO Alcoa Fastening Systems & Rings AND AFSR		TOLERANCE UNLESS OTHERWISE NOTED: .X = ±.05 .XX = ±.02 .XXX = ±.015 ANGLES ±0.5°	DRAWN BY	J. SCHLOBOHM
	ISSUED	12/17/2003		CHECKED BY	SIGNATURE ON FILE
	REVISID	3/31/2015		FRB( )7500 S-0433	
PAGE	1 OF 2	TURN-LOC®, HIGH PROFILE, OPTIONAL RECESS, ALUM KNOB & SLEEVE, .031 RADIAL FLOAT			
			DIMENSIONS IN INCHES		

THIS DRAWING, THE STRUCTURAL DESIGN DISCLOSED THEREIN AND THE TECHNICAL DATA AND ENGINEERING SERVICE REPRESENTED THEREBY ARE THE EXCLUSIVE PROPERTY OF HUCK INTERNATIONAL, INC.

This drawing/documentation is controlled by either the Department of State, International Traffic In Arms Regulations or the Department of Commerce, Export Administration Regulations and may require an export license/exception prior to being transferred to a foreign national, inside or outside of the United States. EAR/ECCN EAR99. These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law prohibited.

**Alcoa**  
**Fastening**  
**Systems & Rings**



CURRENT DESIGN ACTIVITY  
CAGE CODE 0HWD7  
AFSR TUCSON OPERATIONS  
3724 EAST COLUMBIA STREET  
TUCSON, ARIZONA 85714  
PHONE (520) 519-7400  
FAX (520) 519-7454

**TURN-LOC<sup>®</sup>**  
**ENGINEERING**  
**STANDARD**

AVAILABILITY TABLE

GRIP CODE	4, 4F, M3					6, 6F, M3.5					8, 8F, M4					10, 10C, 10F, M5					12, 12C, 12F, M6				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
A											O										O				
B											O										O				
C	O					O					O	O				O					O	O			
D	O					O					O	O				O					O	O			
E	O	O				O	O				O	O	O			O	O				O	O	O		
F	O	O	O			O	O				O	O	O			O	O				O	O	O		

- ASSEMBLIES NOT AVAILABLE
- FULLY RETRACTABLE ASSEMBLIES
- ASSEMBLIES NOT FULLY RETRACTABLE (STUD WILL PROTRUDE BELOW MINIMUM TOP PANEL THICKNESS)

MATERIAL

STUD: HS, NR, P, PZ, & SLOT RECESSES  
ALL SIZES - CRES PER ASTM-A-493 OR AMS 5636 (302)

STUD: TS AND TW RECESSES  
ALL SIZES - CRES PER AMS 5737 (A-286), HEAT TREAT  
TO 160 KSI MIN. ULTIMATE TENSILE STRENGTH

KNOB : ALUMINUM ALLOY PER QQ-A-225/8, OR AMS 4117 (6061), OR EQ.

SLEEVE: ALUMINUM ALLOY PER QQ-A-225/8, OR AMS 4117 (6061),

SPRING: CRES PER ASTM-A313 OR AMS 5688 (302)

WASHERS: CRES PER AMS 5901 OR AMS 5519 (301) OR EQUIVALENT

FINISH

NONE: STUD, SPRING, & WASHERS: PASSIVATE PER AMS2700  
KNOB & SLEEVE: ANODIZE PER MIL-A-8625, TYPE II, CLASS I

B: STUD & WASHERS:  
BLACK OXIDE PER MIL-DTL-13924, CLASS 4 (300 SERIES)  
BLACK OXIDE PER MIL-DTL-13924, CLASS 3 (A-286)  
KNOB: BLACK ANODIZE PER MIL-A-8625, TYPE II, CLASS 2

NOTES:

- 1 ▶ LETTERS AT THE END OF PART NUMBER DESIGNATE SPECIAL ASSEMBLIES:  
DL - ASSEMBLIES WITH DRI LUBE THREADS PER AS5272  
PL - ASSEMBLIES WITH PATCH LOCK PER MIL-DTL-18240
- 2 ▶ NO CODE REQUIRED FOR SLOTTED HEADS
- 3 ▶ WHEN USING THE HEX SOCKET CONFIGURATION, ADD .070 TO "L" LENGTH.
- 4 ▶ FOR LONGER LENGTHS, ADD .125 INCREMENTS PER LENGTH CODE
- 5 ▶ -3A THREADS PER ASME B1.1. "M" THREADS PER ASME B1.13M.
- 6 ▶ RECESS IS ONE SIZE SMALLER THAN NOMINAL SIZE REQUIRED FOR 100° FLAT HEAD.
- 7 ▶ COMPONENTS ARE FINISHED PRIOR TO THE ASSEMBLY PROCESS. DISCOLORATION OF THE BLACK ANODIZE MAY OCCUR ON THE CRIMPED PORTION OF THE KNOB DURING ASSEMBLY. A HIGH-ADHESION BLACK PAINT IS PERMITTED FOR TOUCH-UP AFTER ASSEMBLY.

INSTALLATION TOOLS: ( ) INDICATES THREAD SIZE CODE  
ARBOR PRESS TOOL HW7600-( ), REMOVAL ADAPTER TOOL FNR7505-( ), NOSE PIECE HN7513-( ),  
PULLER HP7523-( ), HANDLE ASSEMBLY TA7533;  
COMPLETE HAND TOOL ASS'Y: H8603-( ) (INCLUDES NOSE PIECE, PULLER & HANDLE)

<b>AC</b>	PER DCN 12953, CHANGED FROM Alcoa Fastening Systems AND AFS TO Alcoa Fastening Systems & Rings AND AFSR			TOLERANCE UNLESS OTHERWISE NOTED: .X = ±.05 .XX = ±.02 .XXX = ±.015 ANGLES ±0.5°	DRAWN BY	J. SCHLOBOHM
	ISSUED	12/17/2003	TURN-LOC <sup>®</sup> , HIGH PROFILE, OPTIONAL RECESS, ALUM KNOB & SLEEVE, .031 RADIAL FLOAT		CHECKED BY	SIGNATURE ON FILE
REVISED	3/31/2015	FRB( )7500				
PAGE	2 OF 2			S-0433		

This drawing/documentation is controlled by either the Department of State, International Traffic In Arms Regulations or the Department of Commerce, Export Administration Regulations and may require an export license/exception prior to being transferred to a foreign national, inside or outside of the United States. EAR/ECCN EAR99. These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law prohibited.