

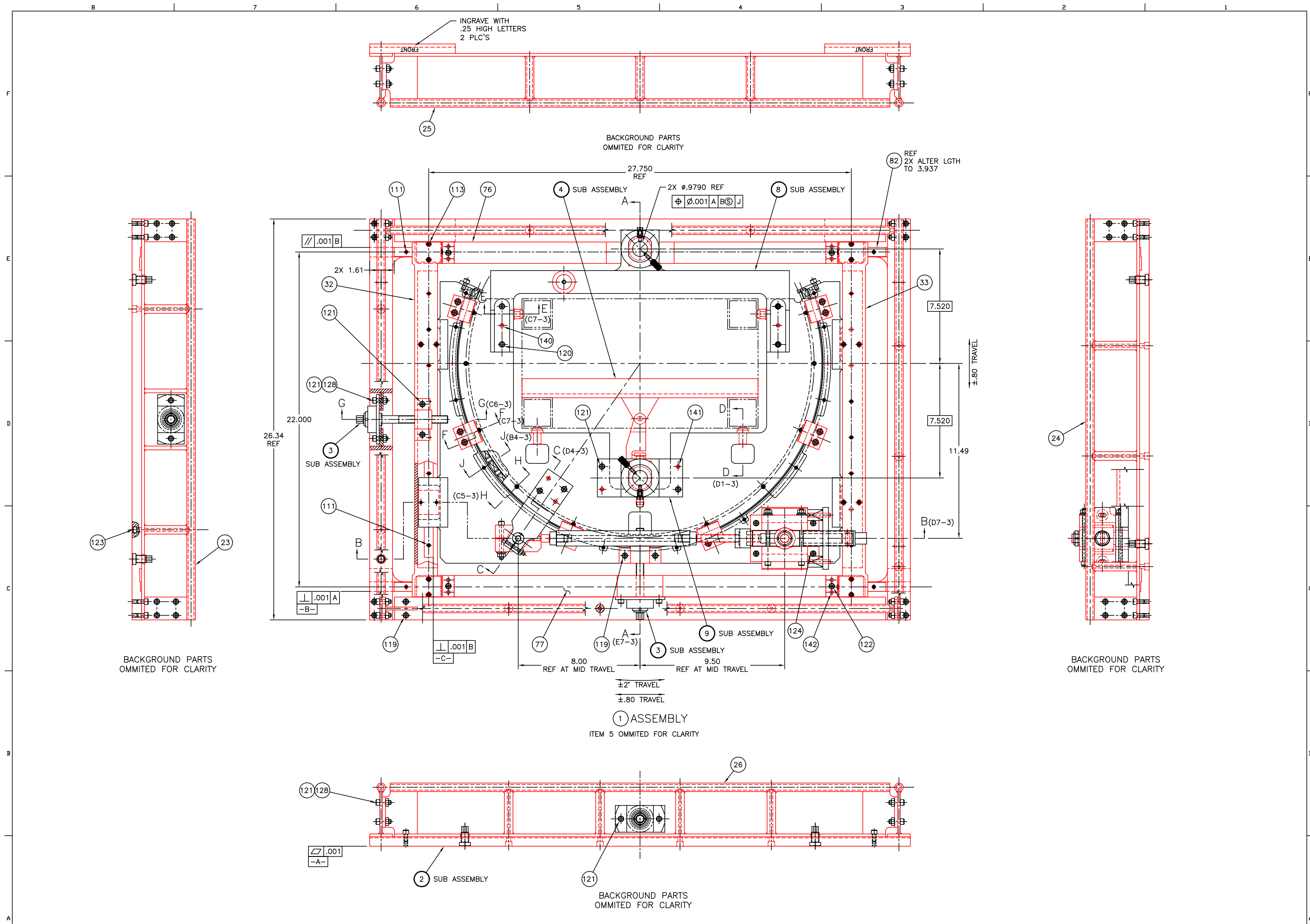
NOTE:  
 1 SHIM WHERE NECESSARY TO ACHIEVE  
 ASSY DIM AND CLEARANCES BETWEEN  
 MOVING PARTS

GROUP & QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO
1		DOWEL Ø.250 X .88 LG	SST	146
1		DOWEL Ø.312 X 1.00 LG	SST	145
2		DOWEL Ø.250 X 2.50 LG	SST	144
		DOWEL Ø.250 X 1.00 LG	SST	143
10		DOWEL Ø.250 X .75 LG	SST	142
2		DOWEL Ø.250 X .63 LG	SST	141
		DOWEL Ø.250 X .50 LG	SST	140
2 2 2		DOWEL Ø.188 X .50 LG	SST	139
		DOWEL Ø.125 X .50 LG	SST	138
		DOWEL Ø.125 X .38 LG	SST	137
		DOWEL Ø.125 X .25 LG	SST	136
3		SHOULDER SCR Ø.375 X 2.75 LG	SST	135
		SHOULDER SCR Ø.250 X .250 LG	SST	134
1 1 1 1		SET SCR, OVAL POINT #10-24 UNC-2A X .75 LG	SST	133
		LOCK WASHER, MED Ø.250, ALLMETAL	SST	132
5		WASHER, SERIES N Ø.250	SST	131
		WASHER, TYPE A Ø.188	SST	130
2		NUT .500-13 UNC-2A	SST	129
5		NUT .250-20 UNC-2B	SST	128
2		NUT #10-24 UNC-2B	SST	127
4		SOC HD CAP SCR .250-20 UNC-2A X 3.50 LG	SST	126
1		SOC HD CAP SCR .250-20 UNC-2A X 2.25 LG	SST	125
		SOC HD CAP SCR .250-20 UNC-2A X 1.25 LG	SST	124
		SOC HD CAP SCR .250-20 UNC-2A X 1.00 LG	SST	123
10		SOC HD CAP SCR .250-20 UNC-2A X .88 LG	SST	122
		SOC HD CAP SCR .250-20 UNC-2A X .75 LG	SST	121
		SOC HD CAP SCR .250-20 UNC-2A X .63 LG	SST	120
		SOC HD CAP SCR .250-20 UNC-2A X .50 LG	SST	119
1		SOC HD CAP SCR #10-24 UNC-2A X 1.50 LG	SST	118
		SOC HD CAP SCR #10-24 UNC-2A X .63 LG	SST	117
		SOC HD CAP SCR #10-24 UNC-2A X .50 LG	SST	116
		SOC HD CAP SCR #6-32 UNC-2A X .63 LG	SST	115
		SOC HD CAP SCR #6-32 UNC-2A X .38 LG	SST	114
		SOC HD CAP SCR M4 X 12mm LG	SST	113
		SOC HD CAP SCR M4 X 10mm LG	SST	112
		SOC HD CAP SCR M3 X 12mm LG	SST	111
1		CUP PT SOC SET SCR .375-16 X .250	SST	110
				109
				108
				107
				106
				105
				104
				103
				102
				101
3		1185-5CN469 S	HELICOIL	100
2 2 2		1185-3CN285 S	HELICOIL	99
		1185-8CN1000 S	HELICOIL	98
		1185-6CN562 S	HELICOIL	97
		1185-06CN207 S	HELICOIL	96
		1185-4CN250 S	HELICOIL	95
2		1185-4CN375 S	HELICOIL	94
1		CL-60-SBP-2	BALL PLUNGER, CARRLANE	93
1		CL-44-PFK	KNOB, CARRLANE	92
1		CL-11515	STUD, CARRLANE	91
		9529K19	BALL, MASTER-CARR	90
		LC-085J-10 SST	SPRING, LEE SPRINGS	89
		LC-080K-0 SST	SPRING, LEE SPRINGS	88
		LC-026E-9 SST	SPRING, LEE SPRINGS	87
		LC-067K-4 SST	SPRING, LEE SPRINGS	86
		BH-02	WHITTET-HIGGINS	85
		A5202K	BEARING, FAFNIR	84
		2 SR15V2UU+460LH-II	LINEAR MOTION SYSTEM, THK	83
		1 SR15V2UU+220LH-II	LINEAR MOTION SYSTEM, THK	82
		1 SR15V2UU+820LH-II	LINEAR MOTION SYSTEM, THK	81

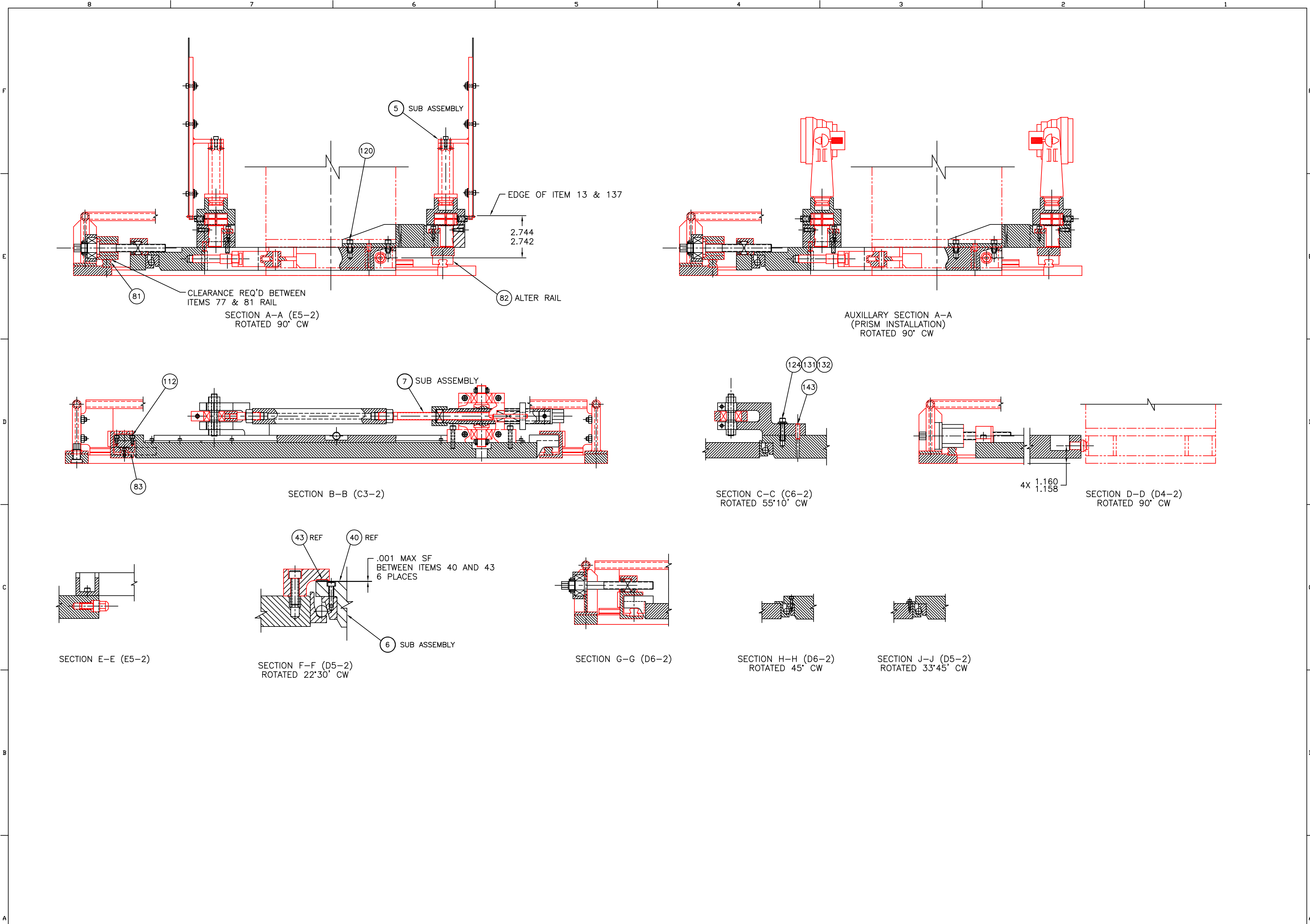
GROUP & QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO
		LINK, REAR	ALUM 7075-T6	77
		LINK, FRONT	ALUM 7075-T6	76
		PAD	DELTRIN	75
3		CLAMP	304 SST	74
1		ANGLE, CLAMP	304 SST	73
3		PIN, LOCATOR	17-4PH SST	72
4		ANGLE, LOCATOR	410 SST	71
1		PLATE	WELDMNT	70
		SCREW, KNURLED	304 SST	69
		SLEEVE	304 SST	68
		SHAFT	17-4PH SST	67
1		BLOCK	ALUM 6061-T6	66
1		BLOCK	ALUM 6061-T6	65
		BLOCK	ALUM 6061-T6	64
		SPACER	410 SST	63
1 1 1		PLATE, KEY	410 SST	62
		BEAM	AL 7075-T6	61
		INSERT, HEX	304 SST	60
		PILLOW BLOCK , R.H.	ALUM 7075-T6	59
		PILLOW BLOCK, L.H.	ALUM 7075-T6	58
		TRUNNION	17-4PH SST	57
		NUT-PLATE, ANTIBACKLASH	304 SST	56
		NUT, ANTIBACKLASH	304 SST	55
		STUD, OUTER	304 SST	54
		STUD, INNER	304 SST	53
		TUBE, EXTENSION	304 SST	52
		STUD, EXTENSION	304 SST	51
		YOKE	AL 7075-T6	50
		PILOW BLOCK, EYE	304 SST	49
		NUT, CONICAL	17-4PH SST	48
		SCREW, CLAMP	304 SST	47
		END CAP	ALUM 6061-T6	46
		PIN RETRACTABLE	17-4PH SST	45
		PIN, STATIONARY	17-4PH SST	44
		PAD	DELTRIN	43
		CLAMP	ALUM 6061-T6	42
		PLATE, OUTER	ALUM 7075-T6	41
		PLATE, INNER	ALUM 7075-T6	40
		RACE, OUTER	17-4PH SST	39
		RACE ,INNER	17-4PH SST	38
		STAND	410 SST	37
		FRAME	WELDMNT	36
		HOOK	304 SST	35
		BAR	304 SST	34
		CHANNEL, RIGHT	410 SST	33
		CHANNEL, LEFT	410 SST	32
		NUT, ANTIBACKLASH	304 SST	31
		NUT, HOUSING	304 SST	30
		PILOW BLOCK	304 SST	29
		SHAFT	17-4PH SST	28
		PAD, ANTI-FRICTION	304 SST	27
		TRUSS, REAR	WELDMNT	26
		TRUSS, FRONT	WELDMNT	25
		TRUSS, RIGHT	WELDMNT	24
		TRUSS, LEFT	WELDMNT	23
		PLATE	410 SST	22
				21
				20
				19
				18
				17
				16
				15
				14
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				12
				11
				10
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				4
				3
				2
				1

UNLESS OTHERWISE SPECIFIED		INITIAL RELEASE		D980084		KABOT 4-22-98	
DIMENSIONS ARE IN INCHES		PRE-RELEASE		-		CBI-AMS 01-27-98	
TOLERANCES		DESCRIPTION		DCN NUMBER		DRVN DATE	
ANGLES ± .05°		REV		-		-	
DIE PLACES DECIMAL ± .050		NEXT ASS'Y		-		-	
TWO PLACES DECIMAL ± .010				-		-	
THREE PLACES DECIMAL ± .005				-		-	
FINISHED SURFACE RND .125				-		-	
EDGE BREAKS AND FILET RHD .030				-		-	
REMOVE ALL BURRS				-		-	
DO NOT SCALE THIS DRAWING				-		-	
USED DN				-		-	
SCALE				-		-	

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY  
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
 ALIGNMENT FIXTURE  
 CAB FILE 9801-01-Adjng  
 SHEET E D980001-A  
 SCALE NONE SHEET 1 OF 14



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± .05° DIE PLACES DECIMAL ± .005 TWO PLACES DECIMAL ± .010 THREE PLACES DECIMAL ± .005 FINISHED SURFACE RND .125 DIE BEAMS AND FILLET RAD .030 REMOVE ALL BURRS DO NOT SCALE THIS DRAWING USED ON NEXT ASS'Y				INITIAL RELEASE 1980084 KABOT 4-22-98				CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	
REV				PRE-RELEASE -				ALIGNMENT FIXTURE	
DESCRIPTION				DESCRIPTION				CAB FILE 9801-02-A.dwg	
ISSUE DESCRIPTION				DCN NUMBER				SIZE E	
SCALE 1/2				SHEET 2				DWG NO. D980001-A	

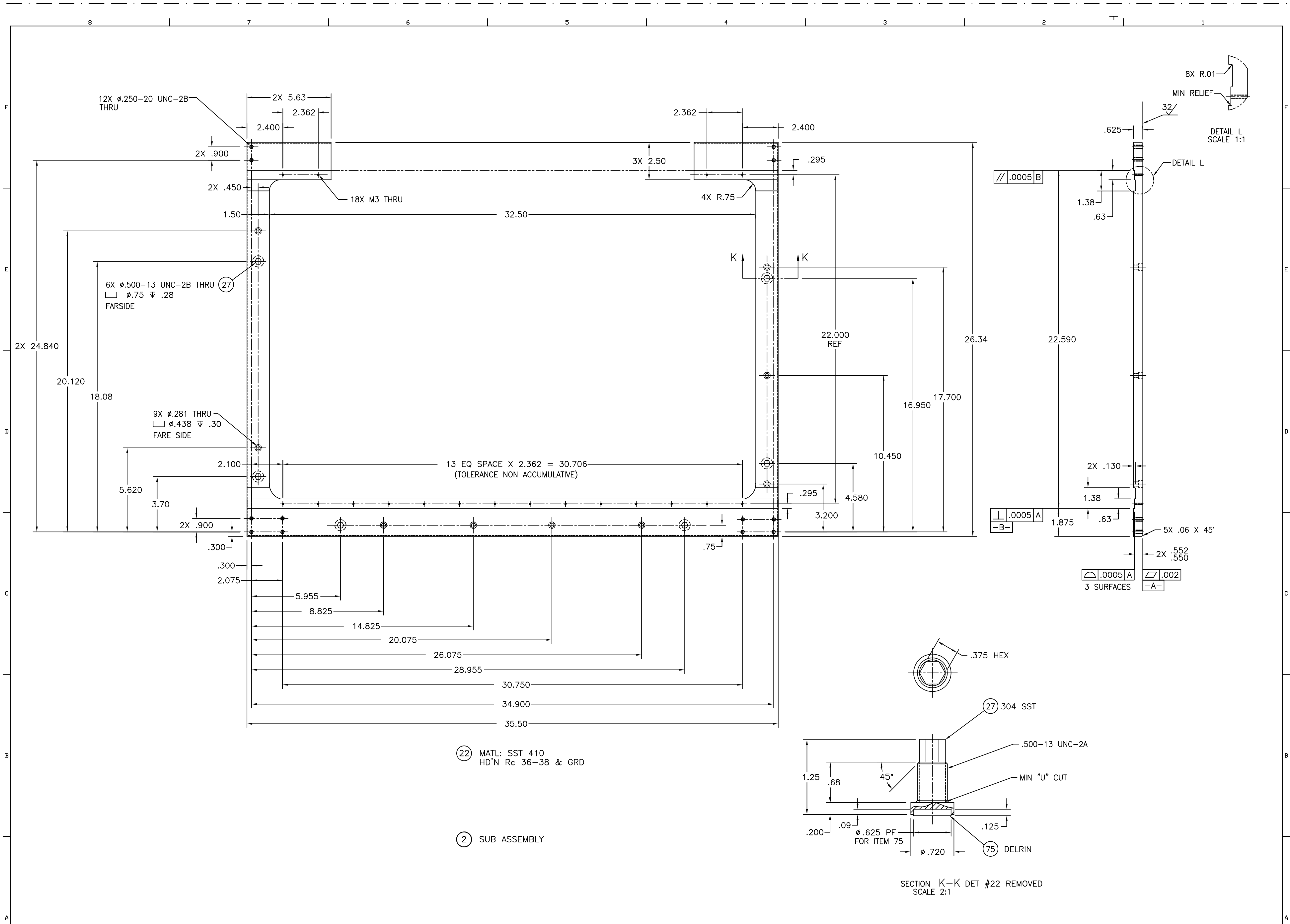


UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES:  
 ANGLES ± 0.01°  
 ONE PLACE DECIMAL ± .010  
 TWO PLACE DECIMAL ± .005  
 THREE PLACE DECIMAL ± .002  
 FINISHED SURFACE DIMS LES  
 EDGE BREAKS AND FILLET R40 ±.005  
 REMOVE ALL BURRS

REV	DESCRIPTION	DCN NUMBER	ISSUE DESCRIPTION
A	INITIAL RELEASE	D980084	
00	PRE-RELEASE	-	
USED ON	DESCRIPTION	DCN NUMBER	ISSUE DESCRIPTION
NEXT ASS'Y			

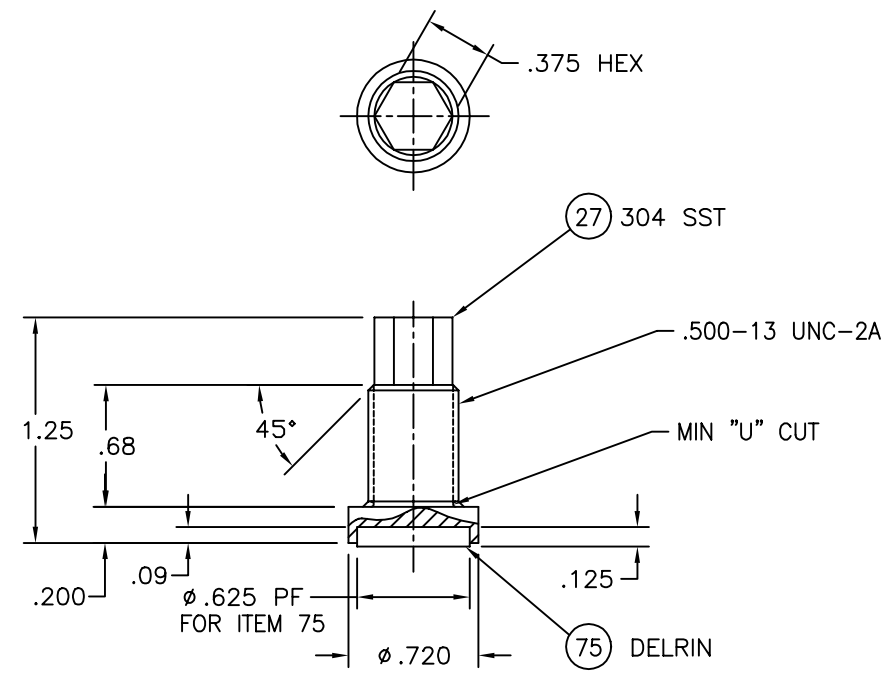
LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
ALIGNMENT FIXTURE			
DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
9801-03-A.dwg	E	D980001-A	3
SCALE	1/2	SHEET	3





(22) MATL: SST 410  
HD'N Rc 36-38 & GRD

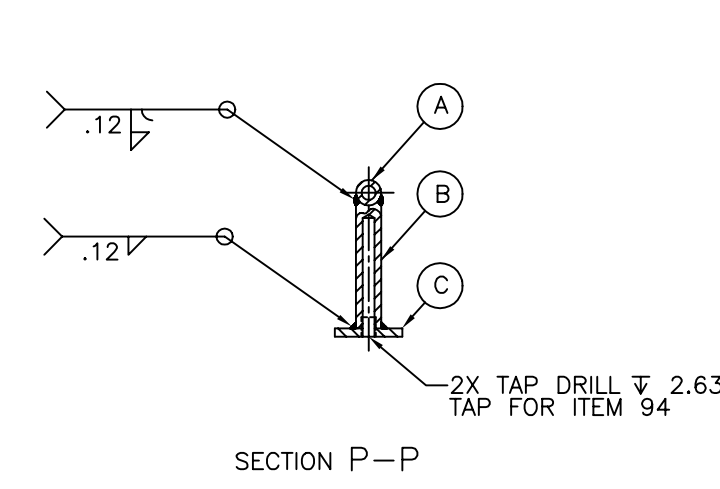
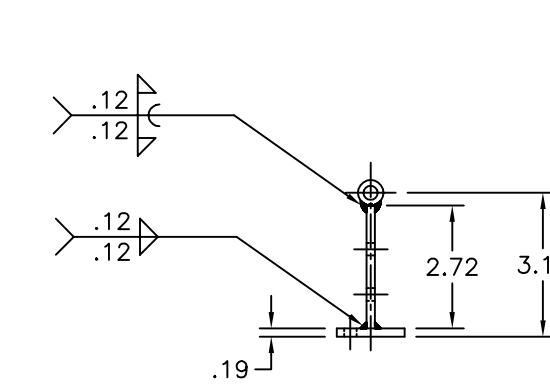
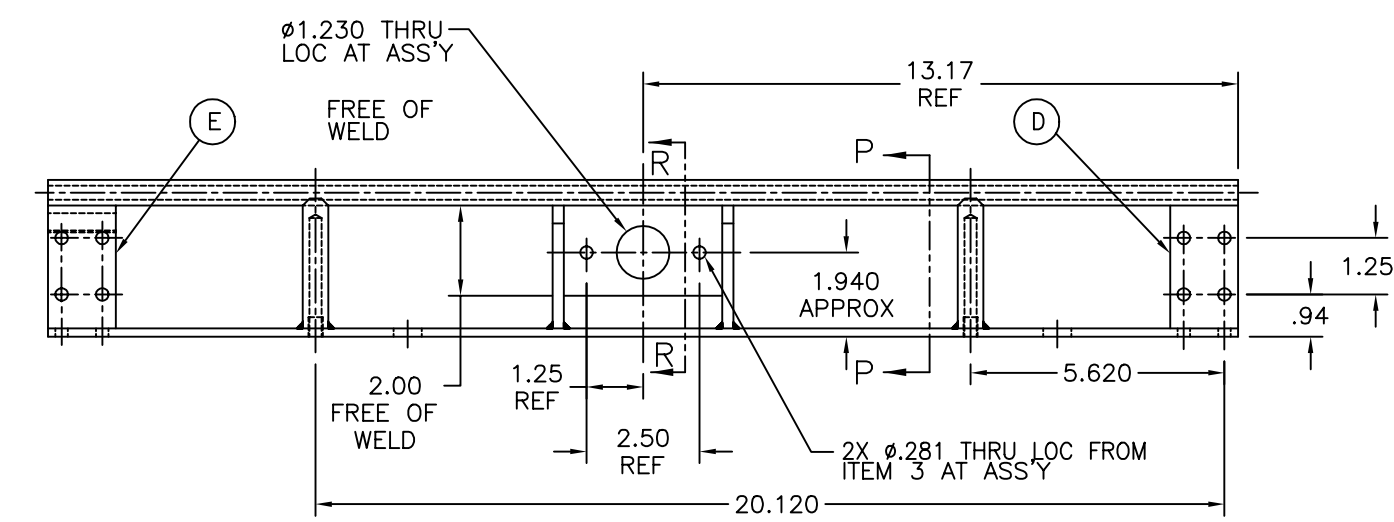
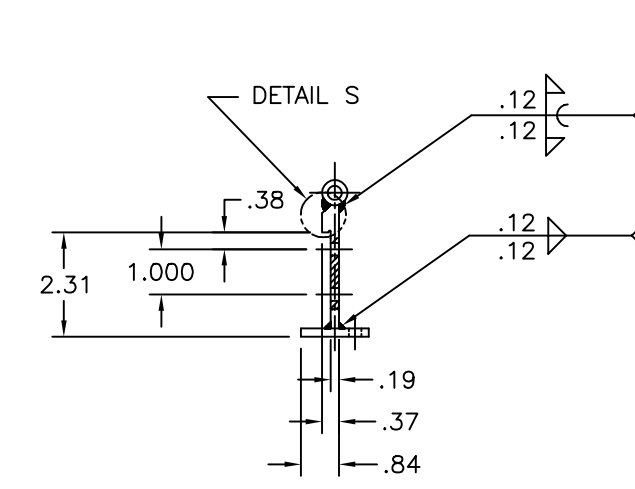
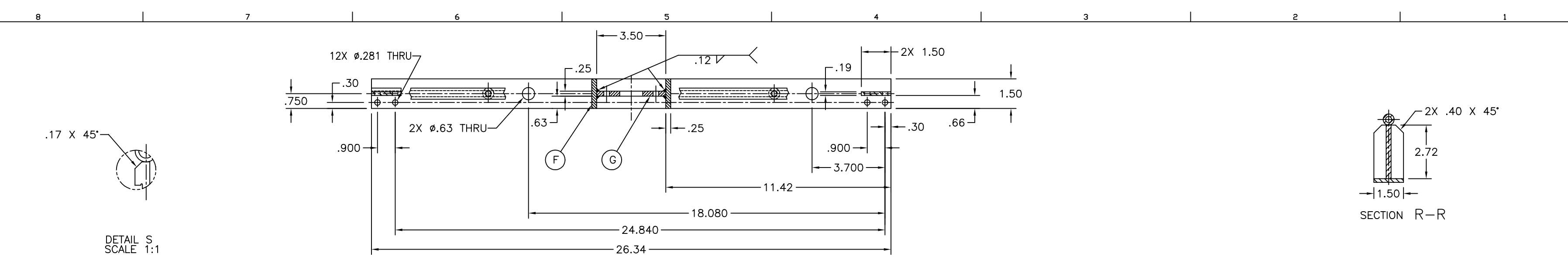
(2) SUB ASSEMBLY



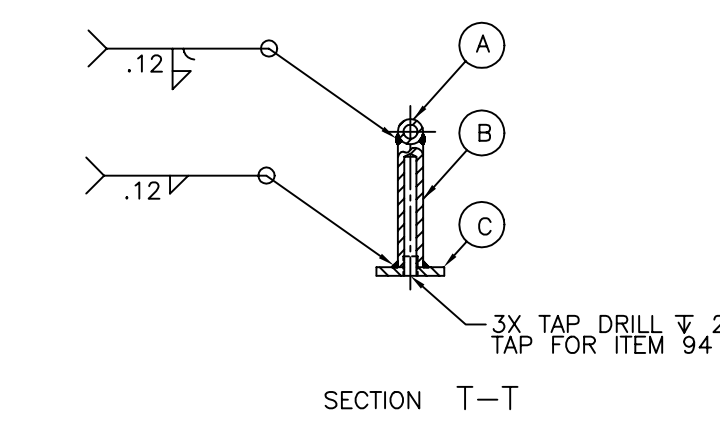
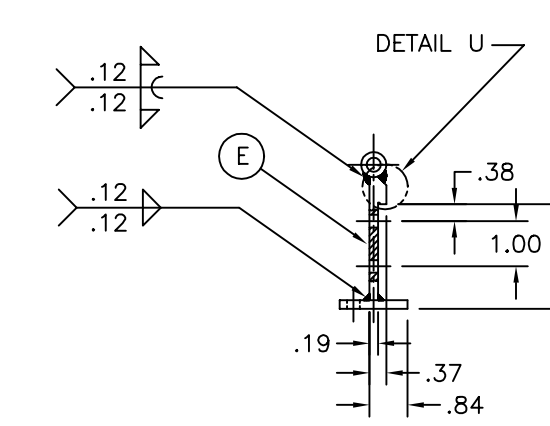
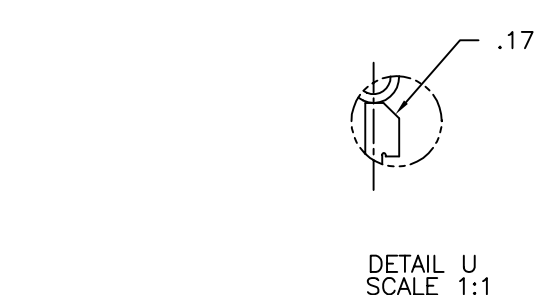
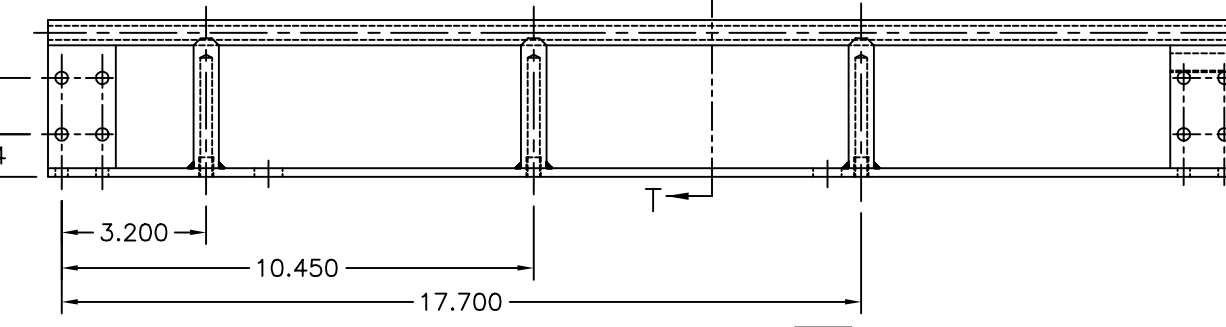
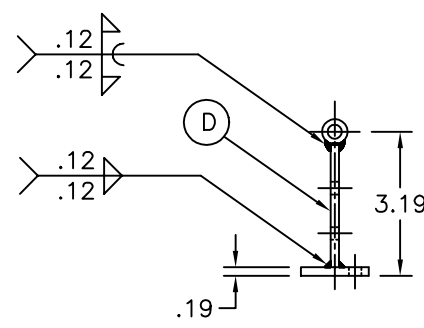
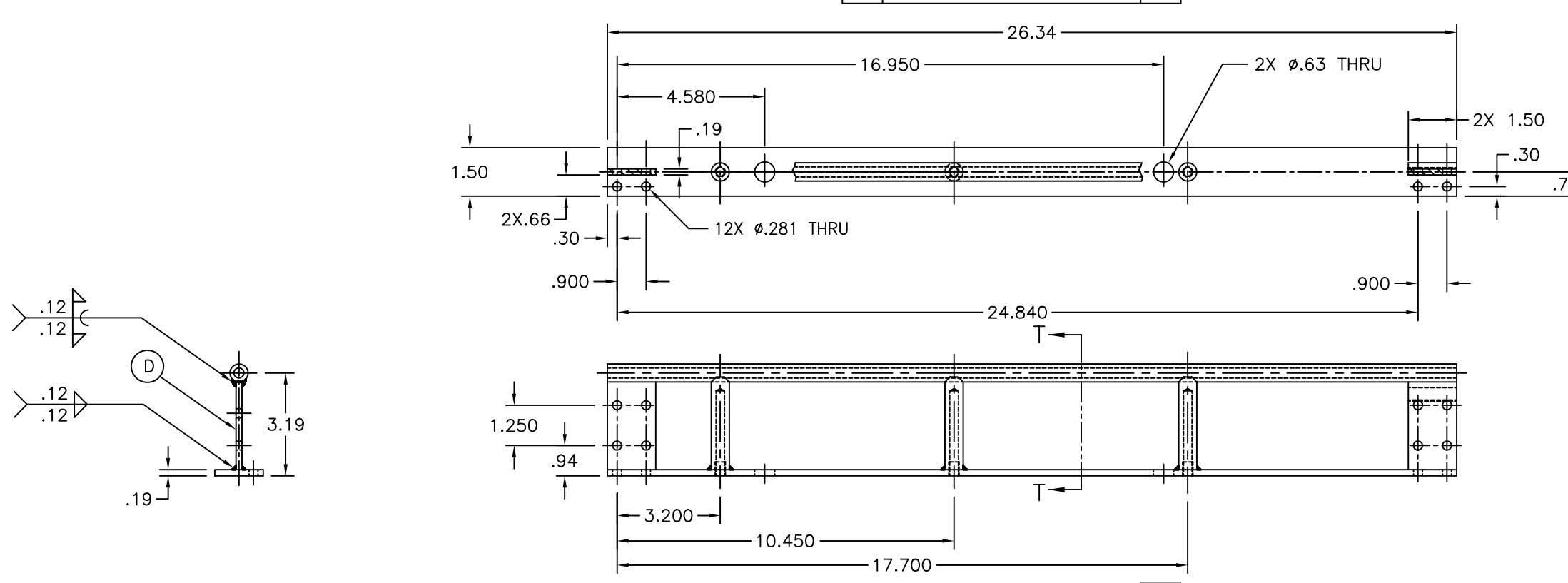
SECTION K-K DET #22 REMOVED  
SCALE 2:1

UNLESS OTHERWISE SPECIFIED				DIMENSIONS ARE IN INCHES				TOLERANCES:				LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
DO NOT SCALE THIS DRAWING				00				INITIAL RELEASE				D980084			
USED ON				REV				PRE-RELEASE				CDI-LS 02-17-98			
NEXT ASS'Y				DESCRIPTION				ISSUE DESCRIPTION				SCALE 1:2			
8	7	6	5	4	3	2	1	ALIGNMENT FIXTURE				CAP FILE 9801-05-A.dwg			
DESCRIPTION				DESCRIPTION				DESCRIPTION				D980001-A			
REFERENCE DRAWINGS				NEXT ASS'Y				ISSUE DESCRIPTION				SHEET 5			





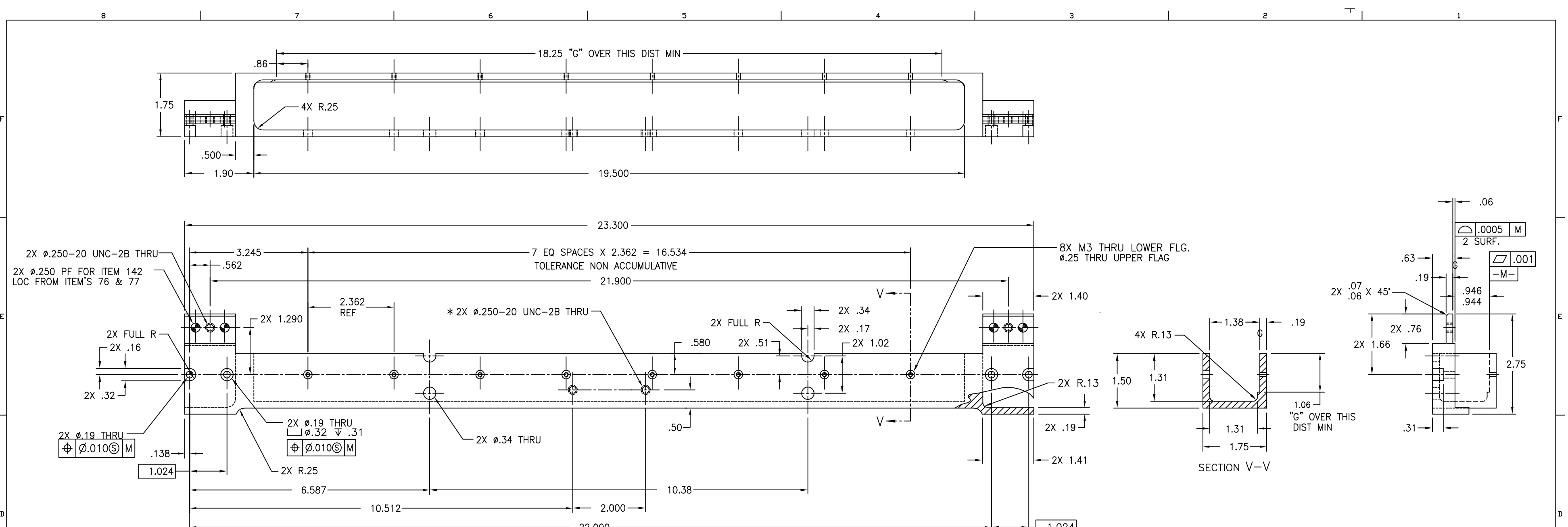
LTR	INSEPARABLE ASSY	23	REQD
A	TUBE $\phi$ .56 X .13 W MATERIAL: ALUM 2024-T3	1	1
B	ROUND $\phi$ .56 MATERIAL: ALUM 2024-T3	2	2
C	PLATE MATERIAL: ALUM 6061-T6	1	1
D	PLATE MATERIAL: ALUM 6061-T6	1	1
E	PLATE MATERIAL: ALUM 6061-T6	1	1
F	PLATE MATERIAL: ALUM 6061-T6	2	2
G	PLATE MATERIAL: ALUM 6061-T6	1	1



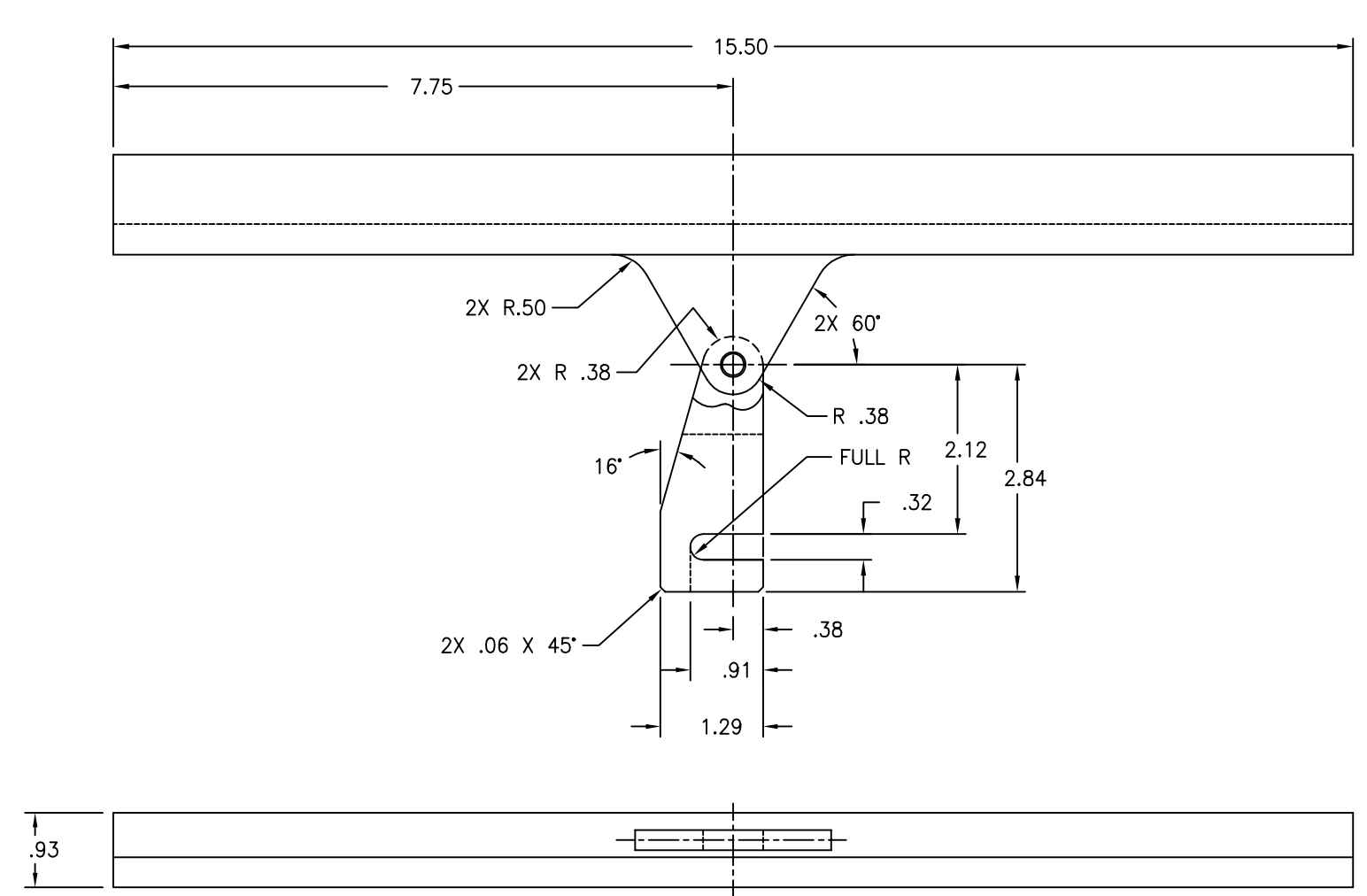
LTR	INSEPARABLE ASSY	24	REQD
A	TUBE $\phi$ .56 X .13 W MATERIAL: ALUM 2024-T3	1	1
B	ROUND $\phi$ .56 MATERIAL: ALUM 2024-T3	3	3
C	PLATE MATERIAL: ALUM 6061-T6	1	1
D	PLATE MATERIAL: ALUM 6061-T6	1	1
F	PLATE MATERIAL: ALUM 6061-T6	1	1

UNLESS OTHERWISE SPECIFIED				DIMENSIONS ARE IN INCHES				TOLERANCES				SURFACE FINISHES			
				ANGLES 8 0/32				ONE PLACE DECIMAL & .00				TWO PLACE DECIMAL & .00			
				THREE PLACE DECIMAL & .00				FOUR PLACE DECIMAL & .00				FURNISHED SURFACE FINISH			
				EDGE BREAKS AND FILED AND .030				REMOVE ALL BURRS							
				DO NOT SCALE THIS DRAWING				REV				DESCRIPTION			
				USED ON				NEXT ASSY				ISSUE DESCRIPTION			
				INITIAL RELEASE				D980084				KABDT 4-22-98			
				PRE-RELEASE								CDI-LS 02-17-98			
				REV				DCN NUMBER				SCALE 1/2 SHEET 7			
				REV				ISSUE DESCRIPTION				SCALE 1/2 SHEET 7			

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
ALIGNMENT FIXTURE			
CAD FILE 9801-07-Adwg		SIZE E	
DWG NO. D980001-A		SHEET 7	

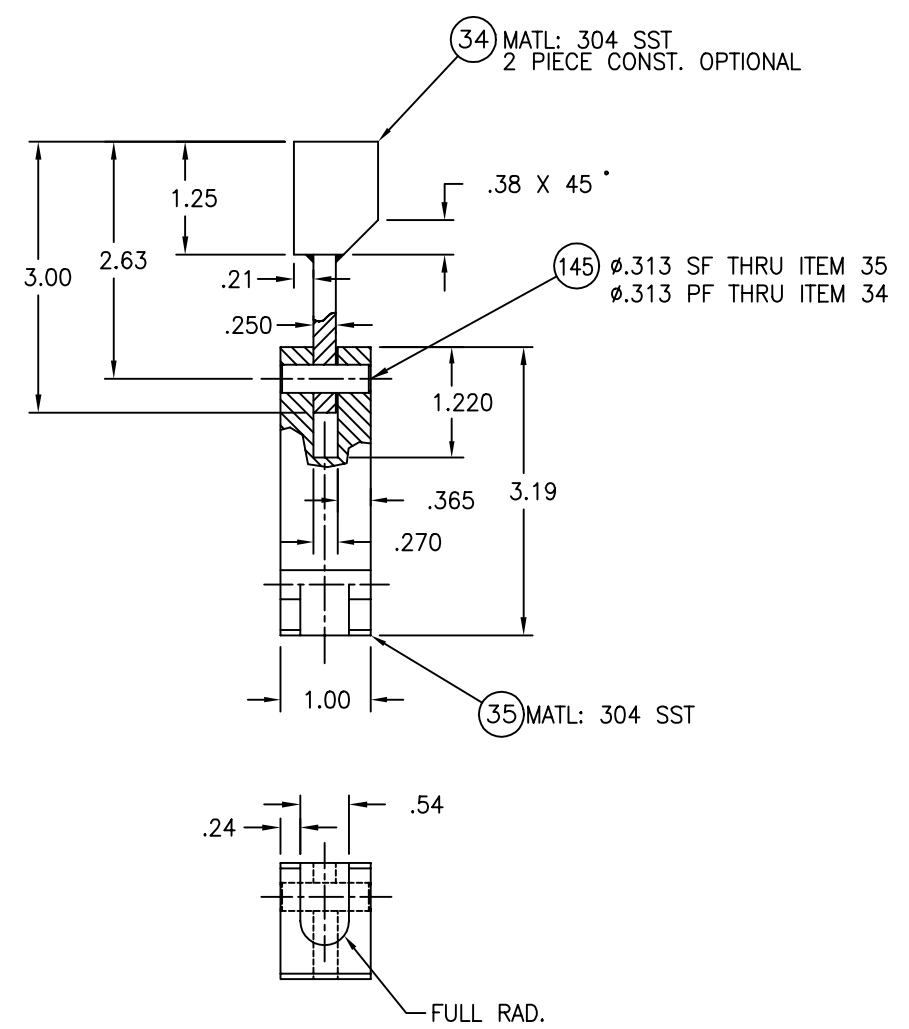


- ③ SHOWN MATL: 304 SST
- ③ SAME AS 32 EXCEPT OPP HAND AND NO HOLES MKD \*



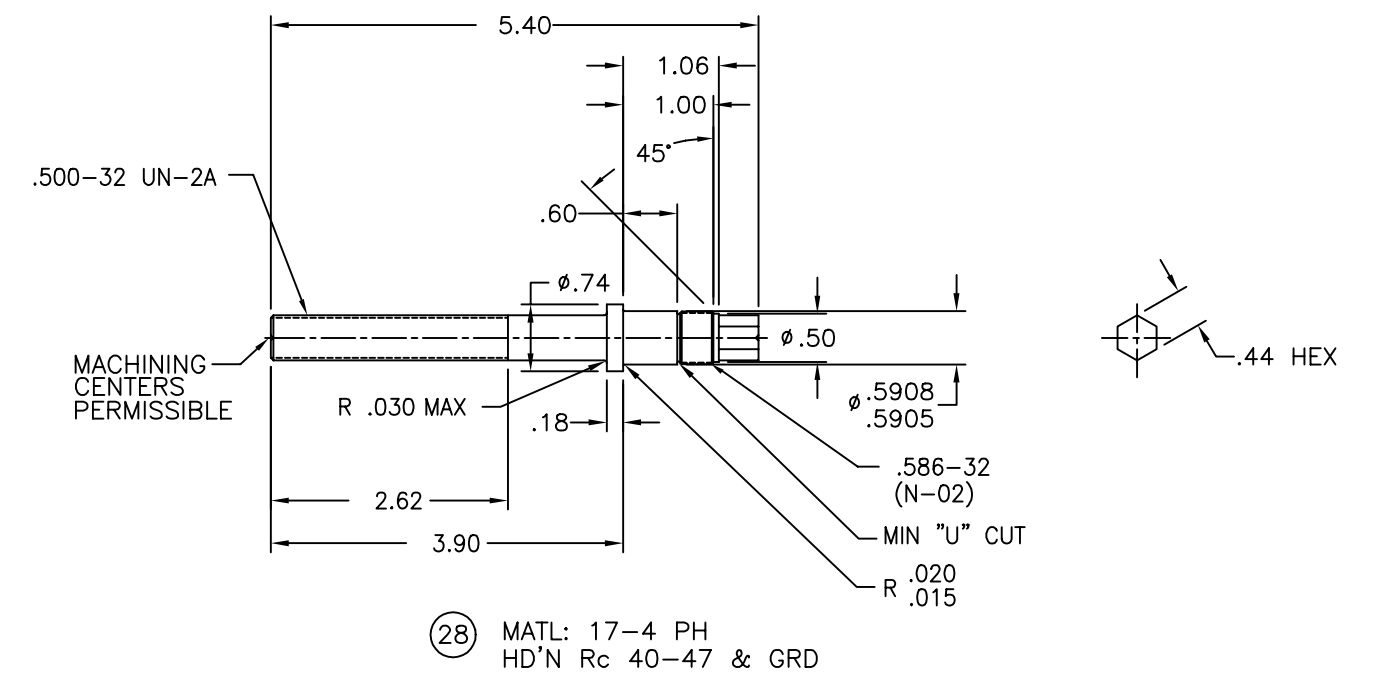
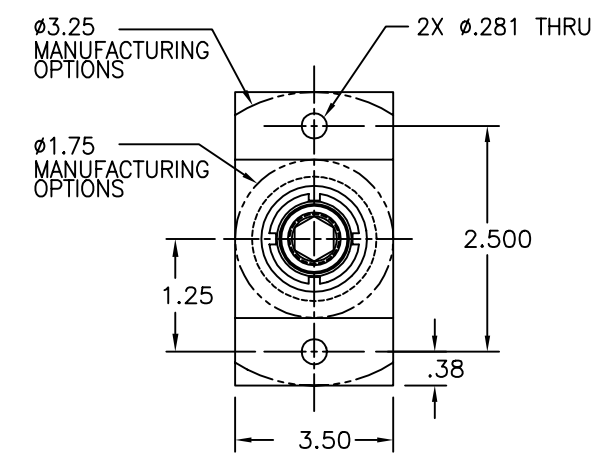
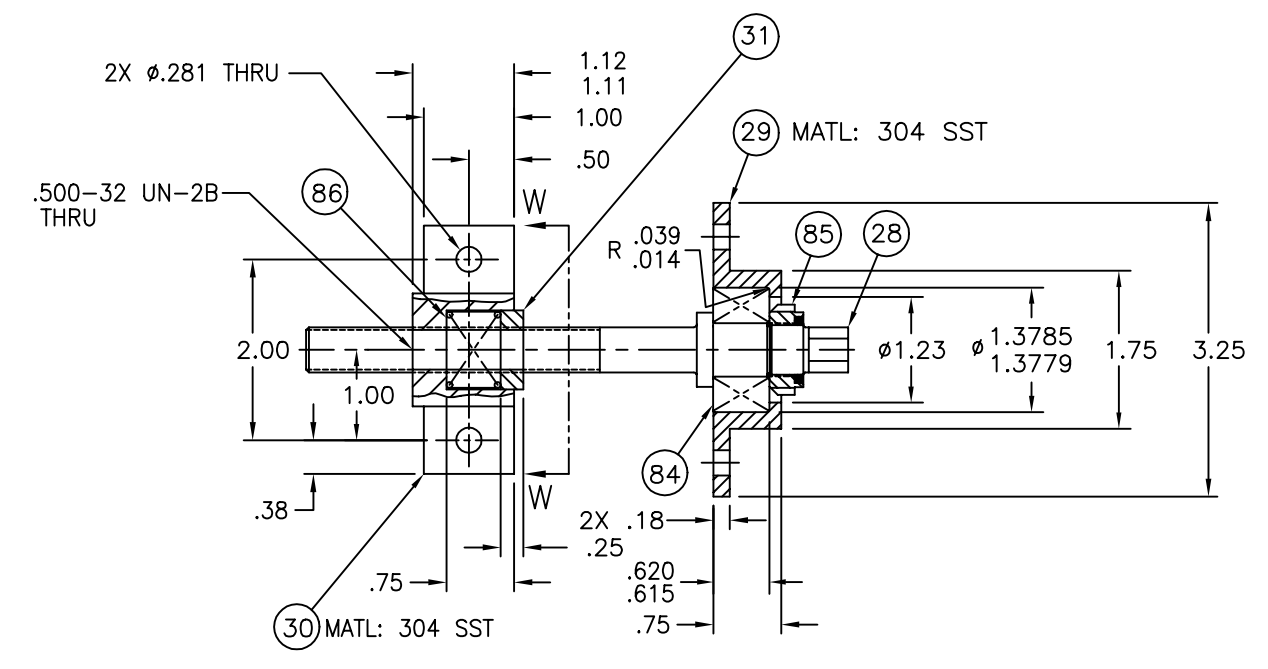
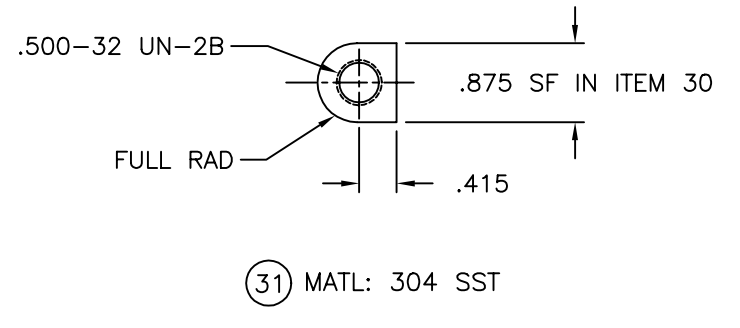
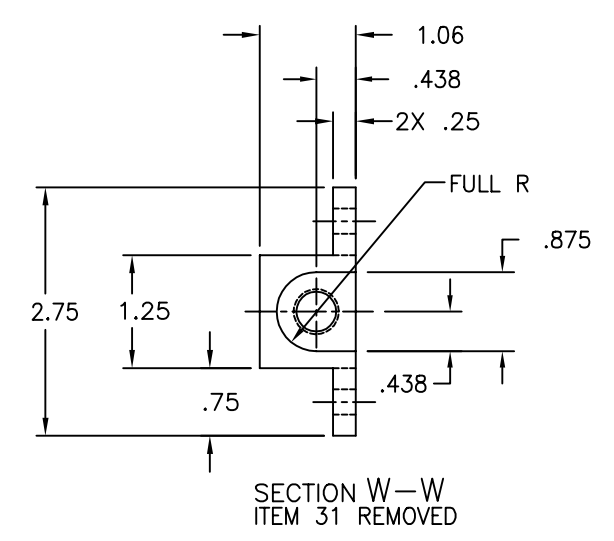
VIEW WITH ITEMS 35 & 145 REMOVED

④ SUB ASSEMBLY

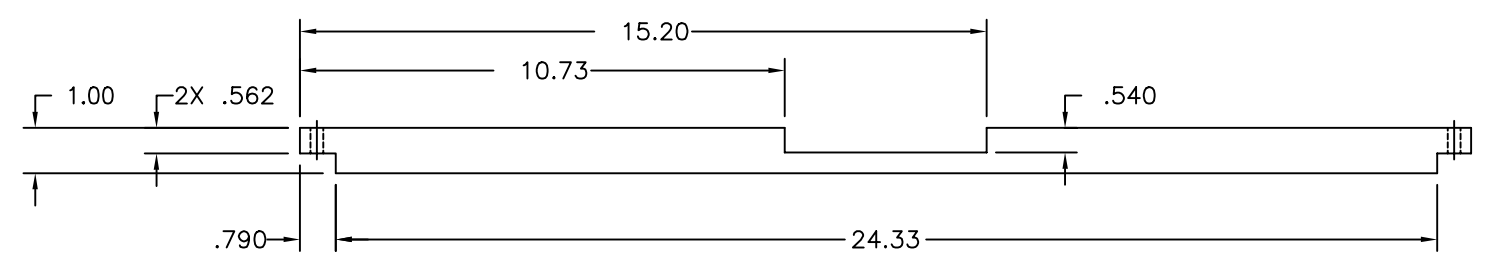
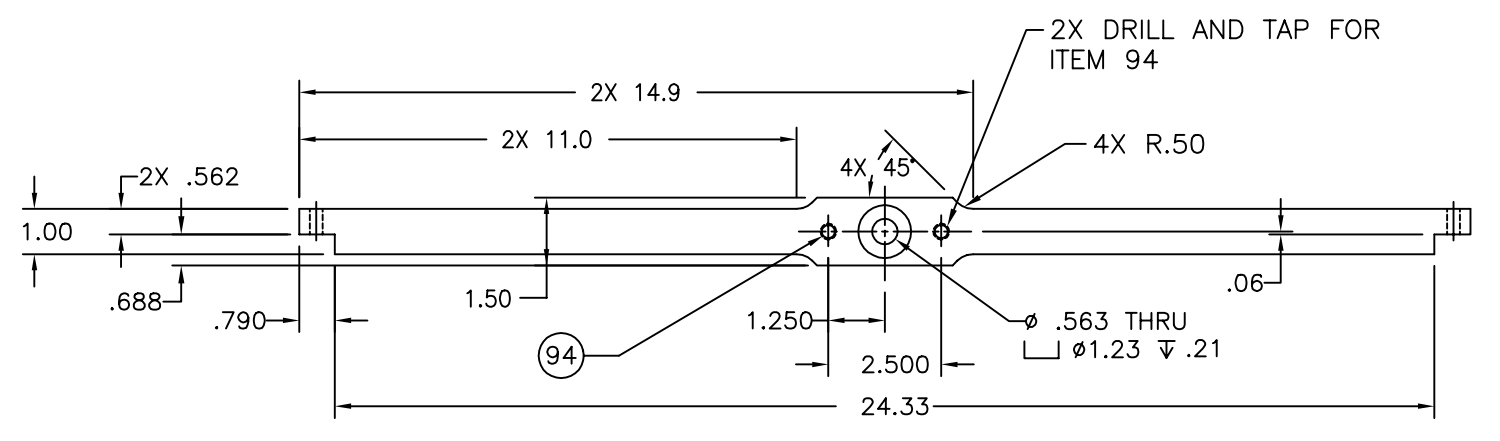
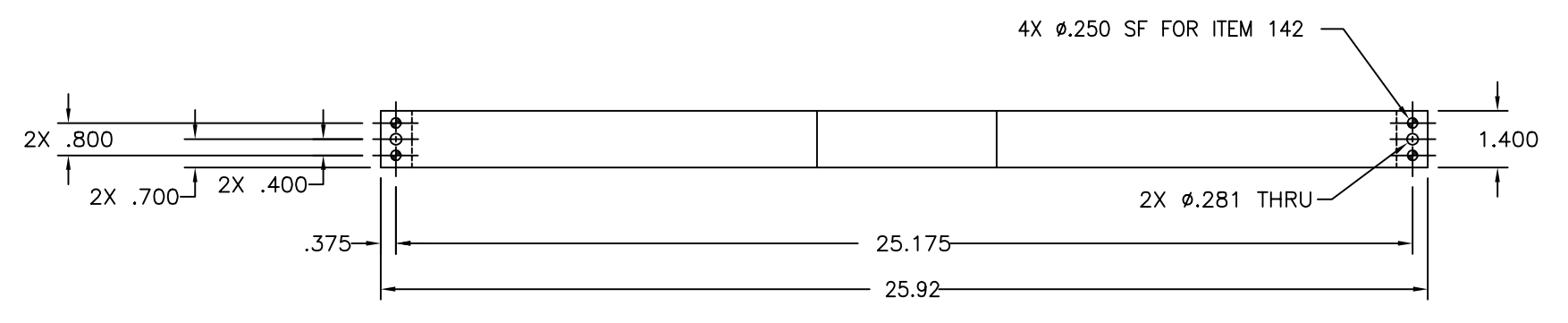
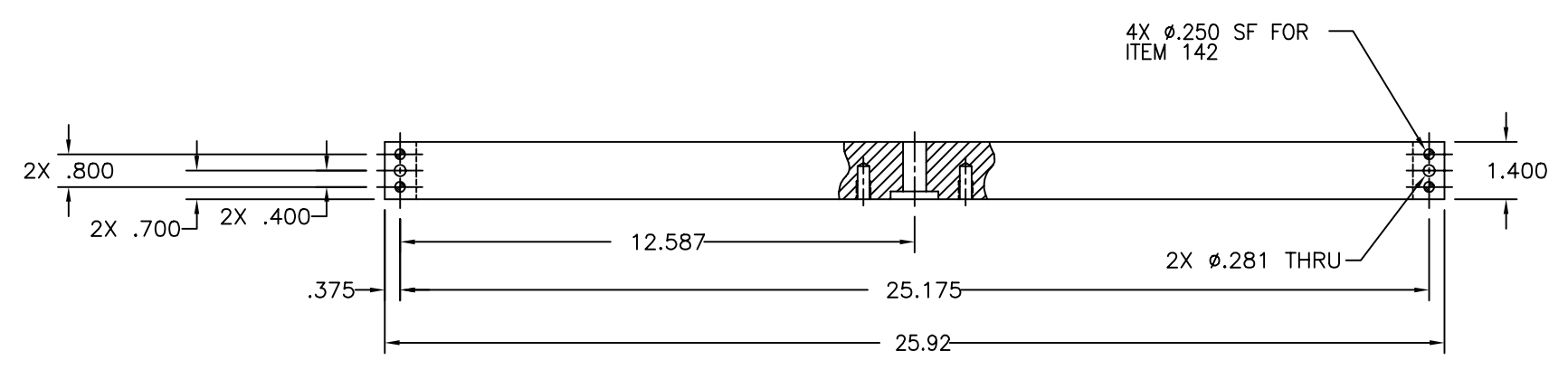


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± .05° DIE PLACES DECIMAL ± .005 TWO PLACES DECIMAL ± .010 THREE PLACES DECIMAL ± .005 FINISHED SURFACE RND .125 EDGE BREAKS AND FILLET RND .030 REMOVE ALL BURRS				INITIAL RELEASE				D980084				KABDT 4-22-98																			
DO NOT SCALE THIS DRAWING				PRE-RELEASE				-				CDI-LS 02-17-98																			
USED ON				DESCRIPTION				DCN NUMBER				DRVN DATE																			
NEXT ASS'Y				ISSUE DESCRIPTION				SCALE				SHEET																			
REFERENCE DRAWINGS				9801-08-A.dwg				E				D980001-A																			
8				7				6				5				4				3				2				1			





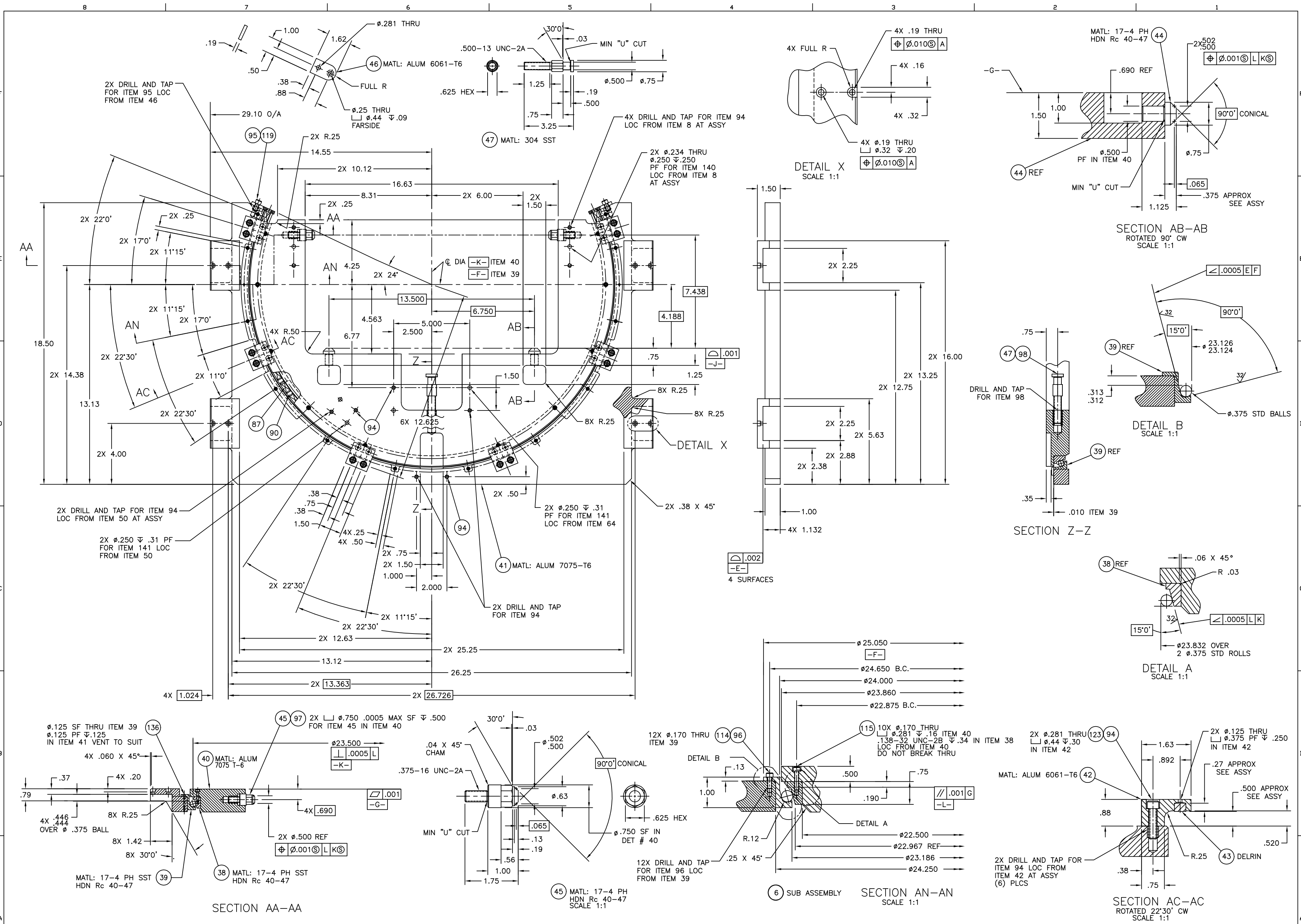
(3) SUB ASSEMBLY



(77) MATL: ALUM 7075-T6 SCALE 1:2

(76) MATL: ALUM 7075-T6 SCALE 1:2

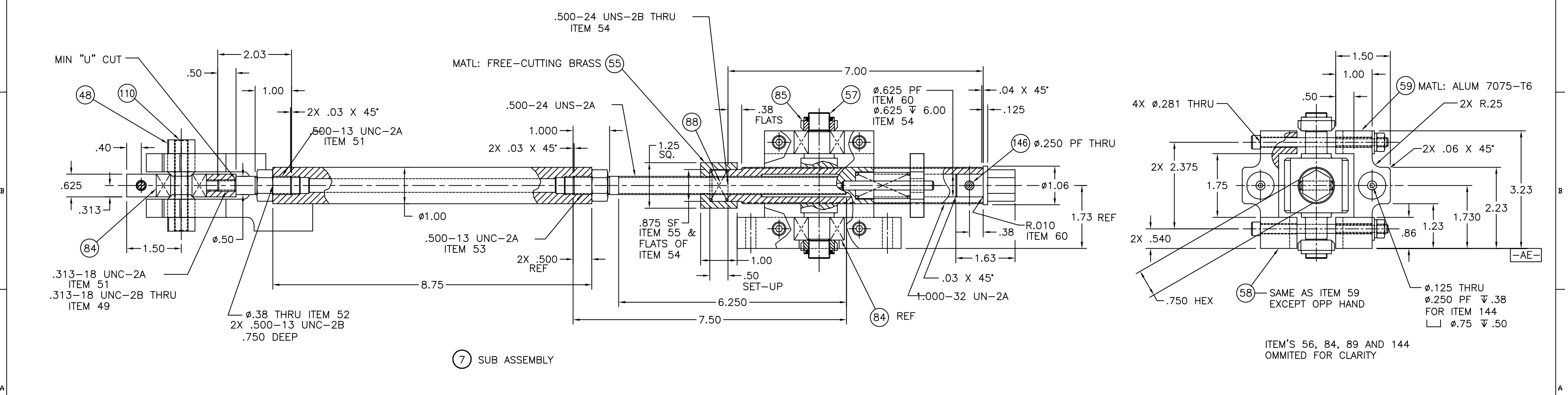
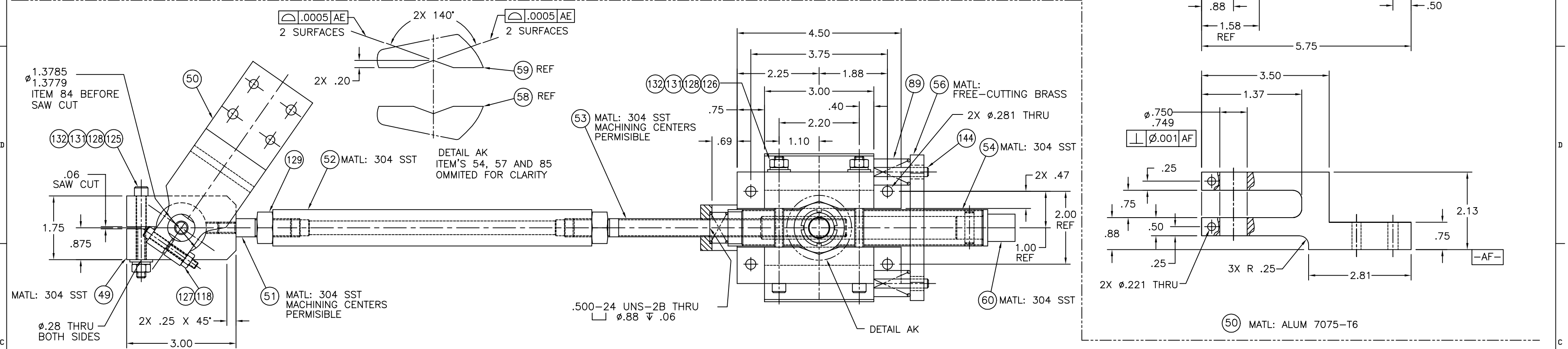
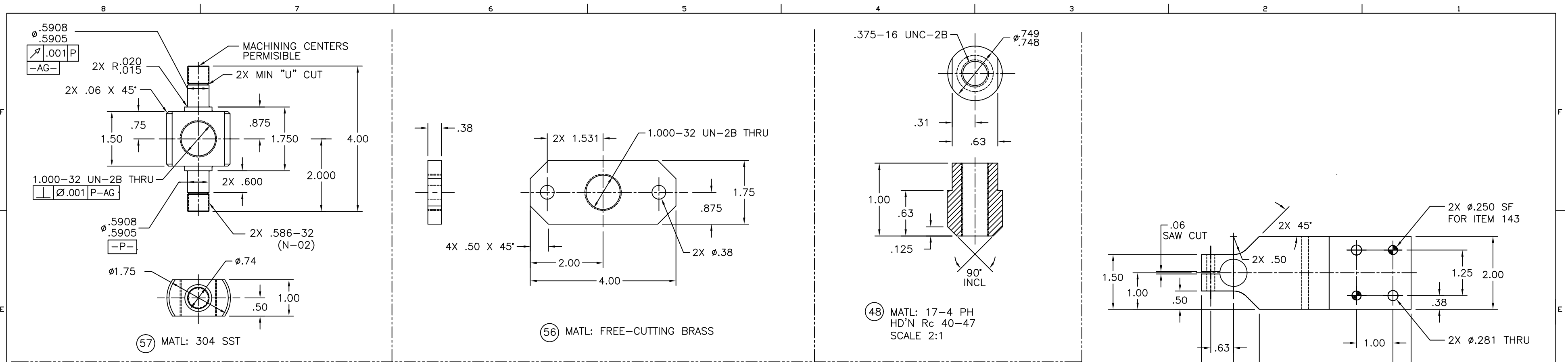
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± .5° DIE PLACES DECIMAL & .050 TWO PLACES DECIMAL & .020 THREE PLACES DECIMAL & .010 FINISHED SURFACE RING .015 EDGE BROAD AND FILET R40 .030 REMOVE ALL BURRS				LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
DO NOT SCALE THIS DRAWING				ALIGNMENT FIXTURE			
USED ON				INITIAL RELEASE			
NEXT ASS'Y				D980084			
REV				PRE-RELEASE			
DESCRIPTION				CDI-LS 02-17-98			
ISSUE DESCRIPTION				DRVN DATE			
SCALE				J1			
SHEET				9			
DWG. NO.				9801-09-A.dwg			
DESCRIPTION				E			
DWG. NO.				D980001-A			
REFERENCE DRAWINGS				SHEET			



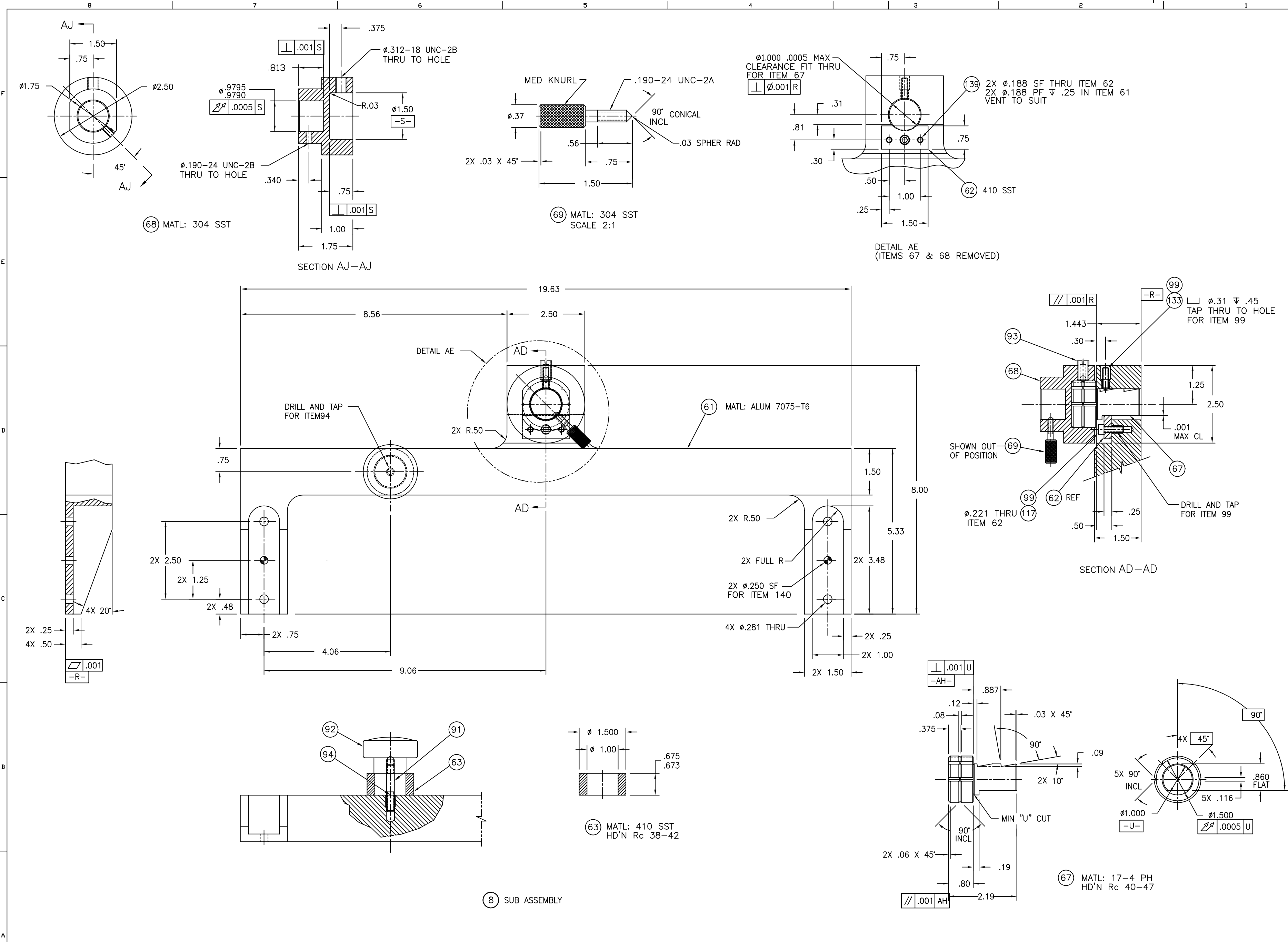
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCH  
TOLERANCES:  
ANGULAR DIMENSIONS TO SURFACE ± .01  
DIMENSIONS TO SURFACE ± .005  
DIMENSIONS TO HOLE ± .005  
DIMENSIONS TO HOLE ± .002  
DIMENSIONS TO HOLE ± .001  
DIMENSIONS TO HOLE ± .0005  
DIMENSIONS TO HOLE ± .0002  
FINISHED SURFACE AND  
BREAK SURFACE SHALL BE  
REMOVE ALL BURRS

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	REV.	DESCRIPTION	DCN NUMBER	DATE	SCALE	SHEET
					INITIAL RELEASE	D980084	KABOT 4-22-98		10
					PRE-RELEASE		CDI-AMS 01-27-98		
					ISSUE DESCRIPTION				

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
ALIGNMENT FIXTURE  
CAB FILE 9801-10-A.dwg  
SIZE E  
D980001-A  
SCALE 1/2  
SHEET 10



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ANGLES & SP DIE PLACES DECIMAL & .005 TWO PLACES DECIMAL & .010 THREE PLACES DECIMAL & .005 FINISHED SURFACE RND .125 EDGE BREAKS AND FILLET RND .030 REMOVE ALL BURRS				INITIAL RELEASE D980084 KABOT 4-22-98				LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
DO NOT SCALE THIS DRAWING				PRE-RELEASE -				ALIGNMENT FIXTURE			
USED ON				DESCRIPTION				CAB FILE 9801-11-A.dwg			
NEXT ASS'Y				ISSUE DESCRIPTION				SIZE DWG NO. E D980001-A			
REV				DCN NUMBER				SCALE 1:1			
REV				DATE				SHEET 11			



68 MATL: 304 SST

69 MATL: 304 SST  
SCALE 2:1

DETAIL AE  
(ITEMS 67 & 68 REMOVED)

61 MATL: ALUM 7075-T6

SECTION AD-AD

63 MATL: 410 SST  
HD'N Rc 38-42

67 MATL: 17-4 PH  
HD'N Rc 40-47

8 SUB ASSEMBLY

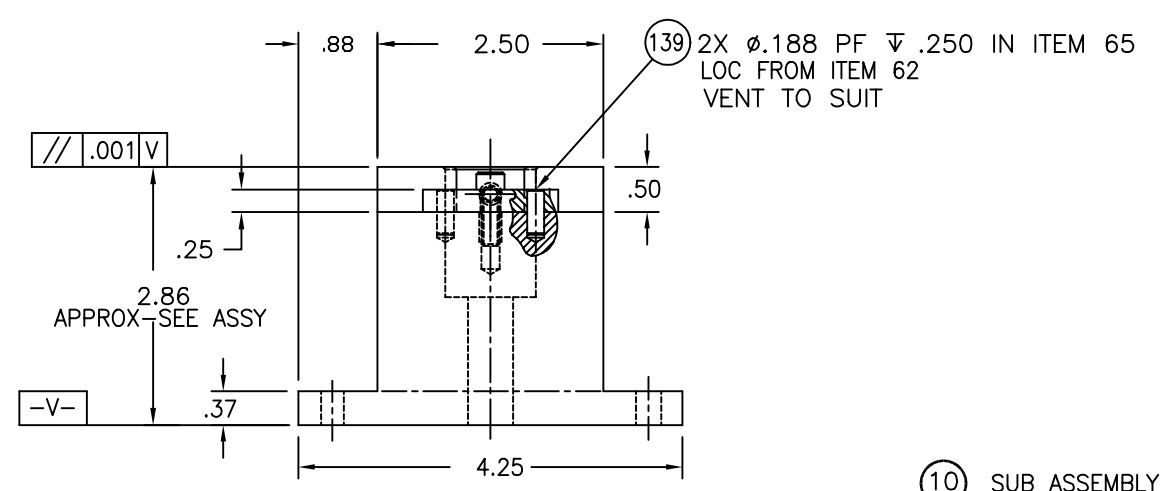
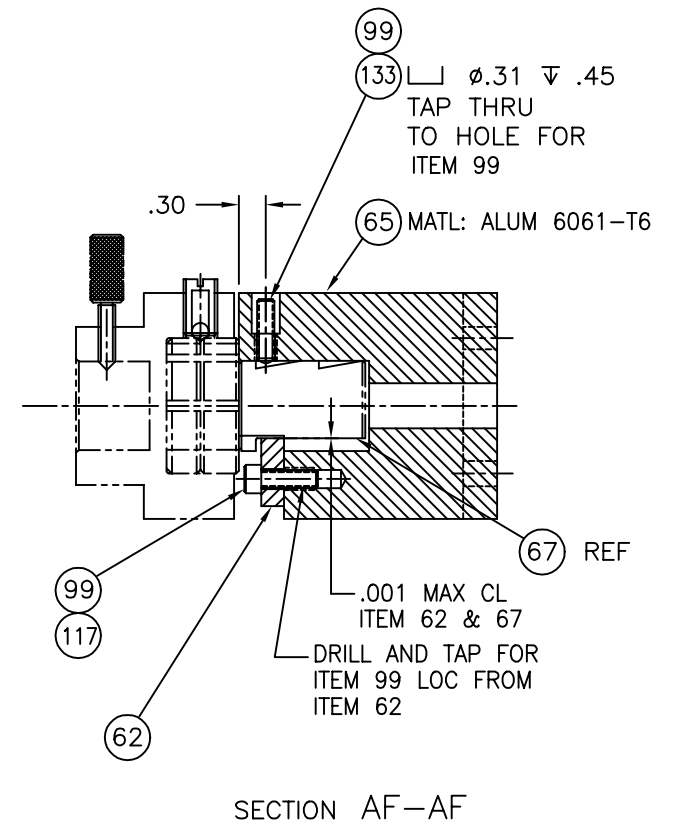
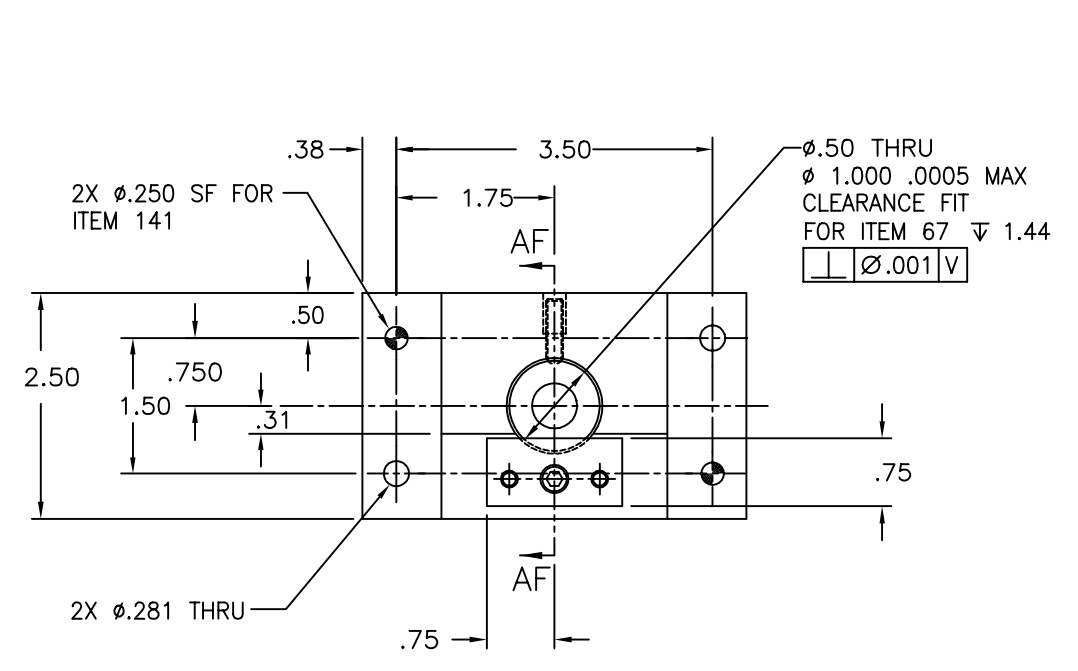
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES:  
ANGLES ± 0.5°  
ONE PLACE DECIMAL ± .050  
TWO PLACE DECIMAL ± .010  
THREE PLACE DECIMAL ± .005  
FINISHED SURFACE ARE 125  
EDGE BRIMS AND FILLET RAG .250  
REMOVE ALL BURRS

DD NOT SCALE THIS DRAWING	00	INITIAL RELEASE	D980084	-	KABOT	4-22-98
USED ON:	REV	PRE-RELEASE	-	-	CDI-LS	02-17-98
NEXT ASS'Y:		DESCRIPTION	DCN NUMBER	-	DRWN	DATE
		ISSUE DESCRIPTION			SCALE	1:1

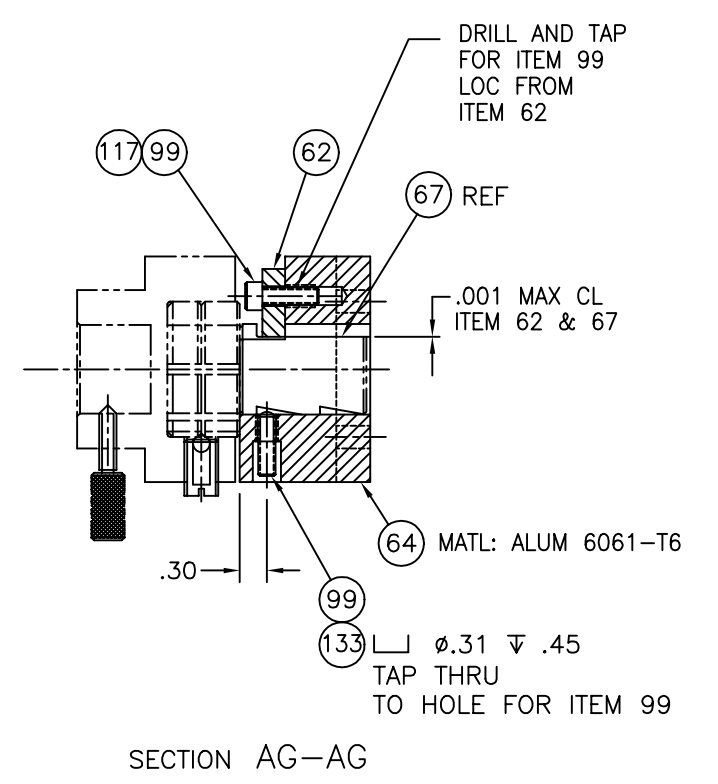
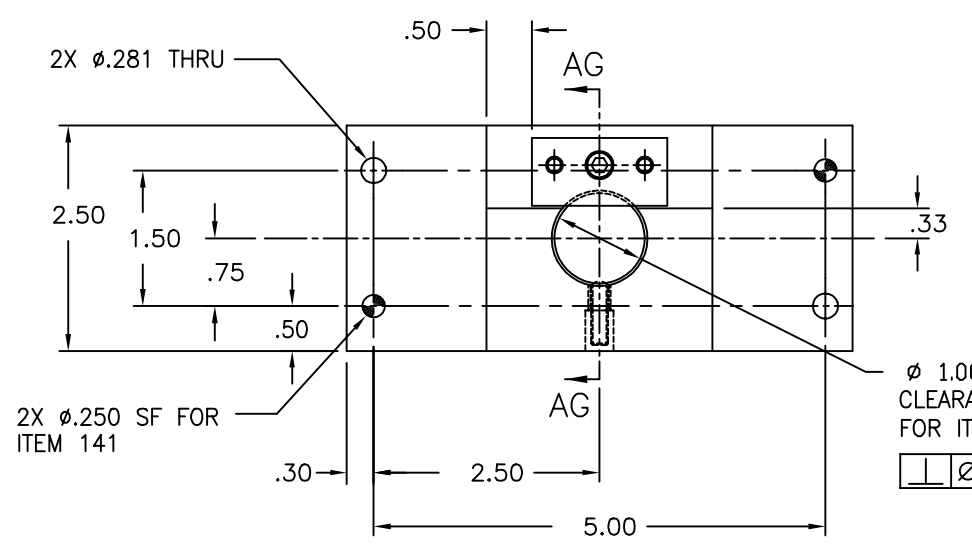
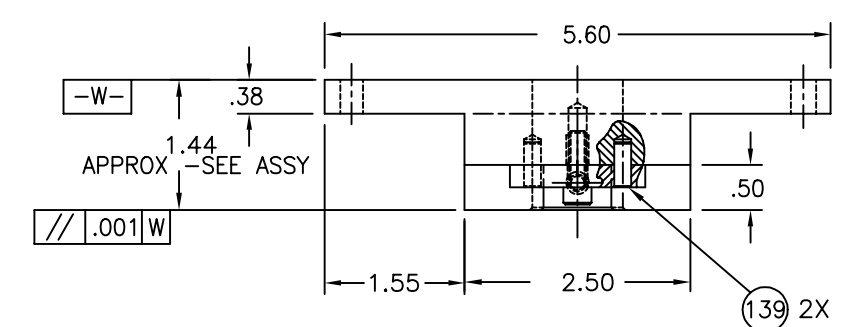
LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	
ALIGNMENT FIXTURE	
CAD FILE 9801-12-Adj.dwg	DWG NO. D980001-A
SIZE E	SHEET 12

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION

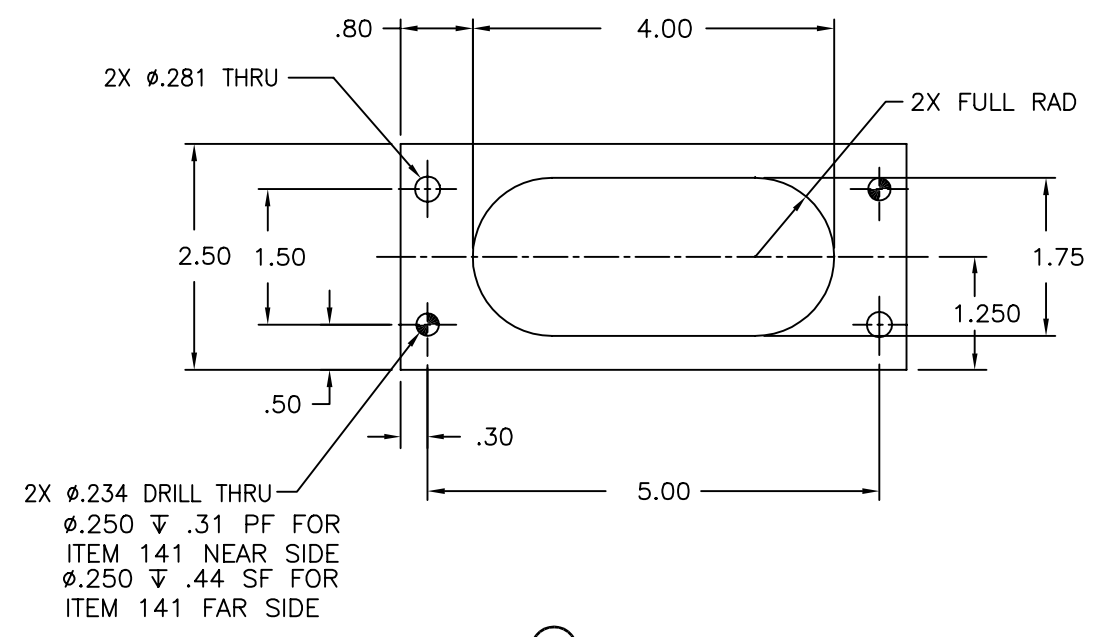
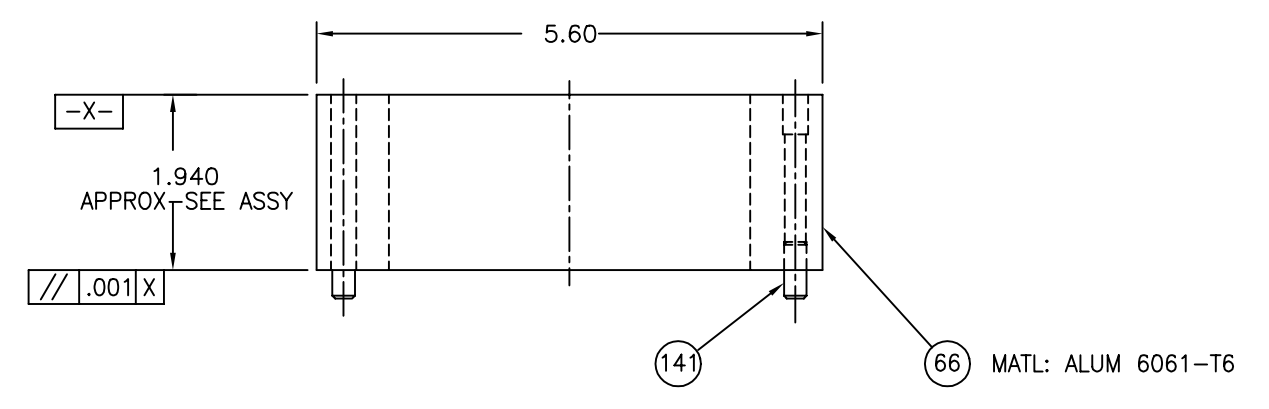
REFERENCE DRAWINGS



10 SUB ASSEMBLY



9 SUB ASSEMBLY



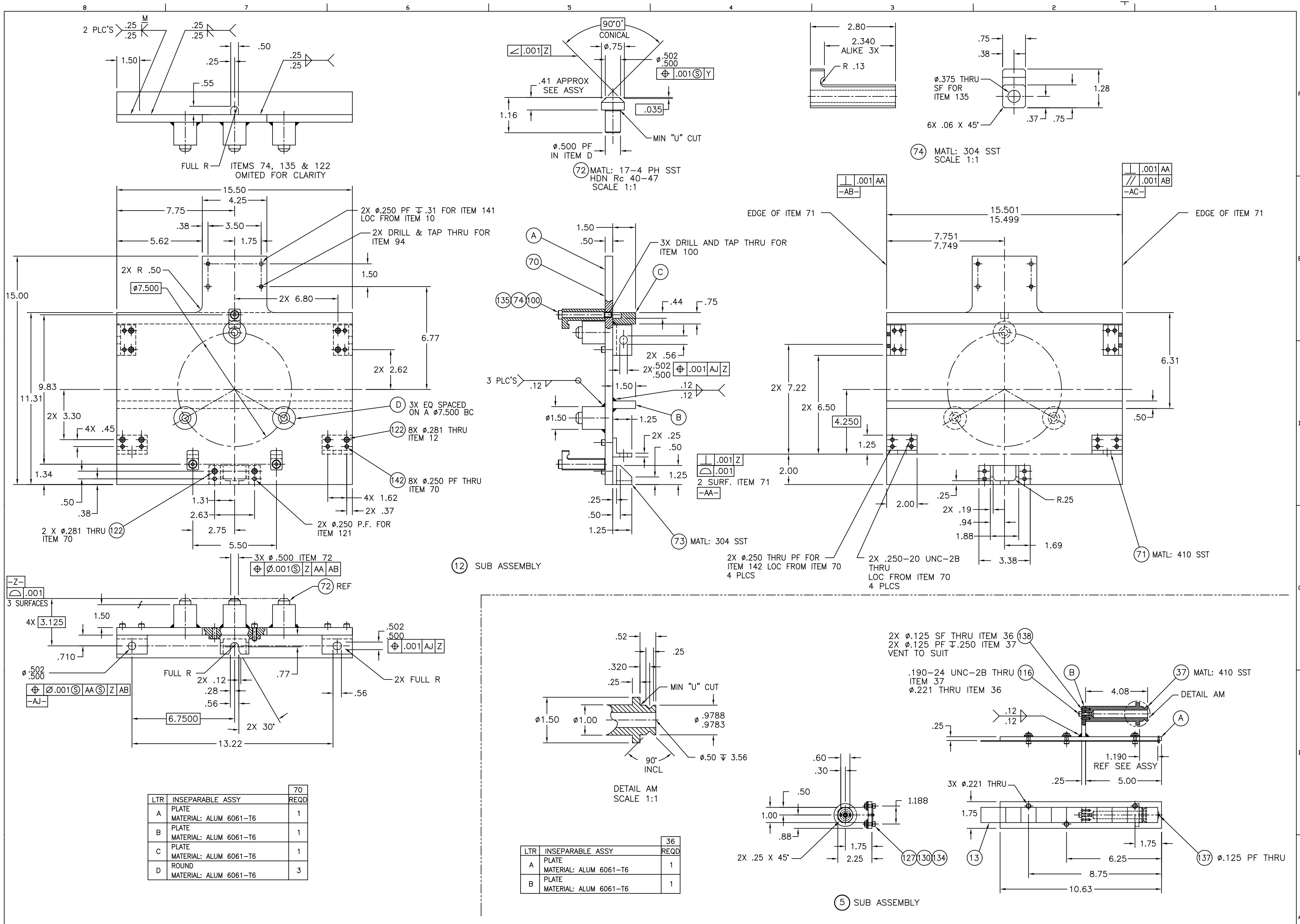
11 SUB ASSEMBLY

UNLESS OTHERWISE SPECIFIED				INITIAL RELEASE				ALIGNMENT FIXTURE			
DIMENSIONS ARE IN INCHES				D980084				KABDT 4-22-98			
TOLERANCES				PRE-RELEASE				CDI-LS 02-17-98			
ANGLES & RSD				ISSUE DESCRIPTION				SCALE J1 SHEET 13			
ONE PLACE DECIMAL & .050				CON NUMBER				CAB FILE 9801-13-A.dwg			
TWO PLACE DECIMAL & .005				REV				SIZE DWG NO. E D980001-A			
THREE PLACE DECIMAL & .001				NEXT ASS'Y							
FINISHED SURFACE RING .005											
EDGE BREAKS AND FILLET RAD .030											
REMOVE ALL BURRS											
DO NOT SCALE THIS DRAWING											
USED ON											
NEXT ASS'Y											

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

ALIGNMENT FIXTURE

CAB FILE 9801-13-A.dwg  
SIZE DWG NO. E D980001-A  
SCALE J1 SHEET 13



LTR	INSEPARABLE ASSY	70	REQD
A	PLATE MATERIAL: ALUM 6061-T6	1	1
B	PLATE MATERIAL: ALUM 6061-T6	1	1
C	PLATE MATERIAL: ALUM 6061-T6	1	1
D	ROUND MATERIAL: ALUM 6061-T6	3	3

LTR	INSEPARABLE ASSY	36	REQD
A	PLATE MATERIAL: ALUM 6061-T6	1	1
B	PLATE MATERIAL: ALUM 6061-T6	1	1

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES:  
DIMENSIONS < .100  
ONE PLACE DECIMAL & .060  
TWO PLACE DECIMAL & .005  
THREE PLACE DECIMAL & .005  
FINISHED SURFACE RING IPS  
EDGE BRIM AND FILET R&F .005  
REMOVE ALL BURRS