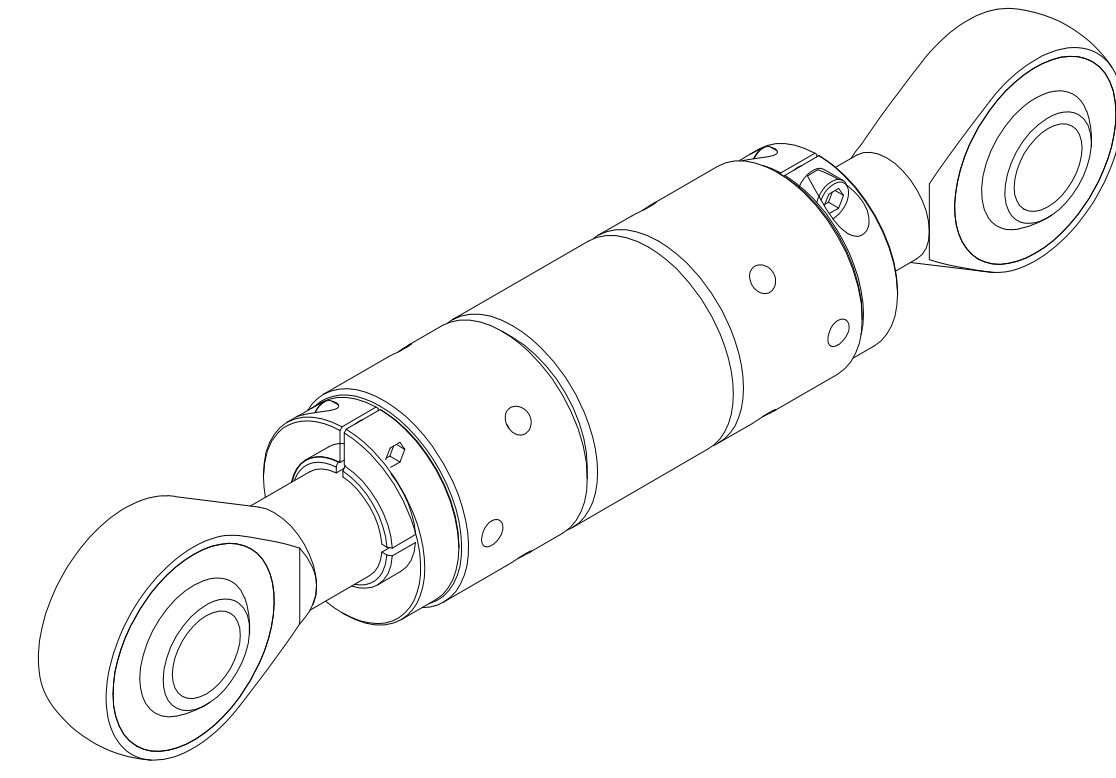


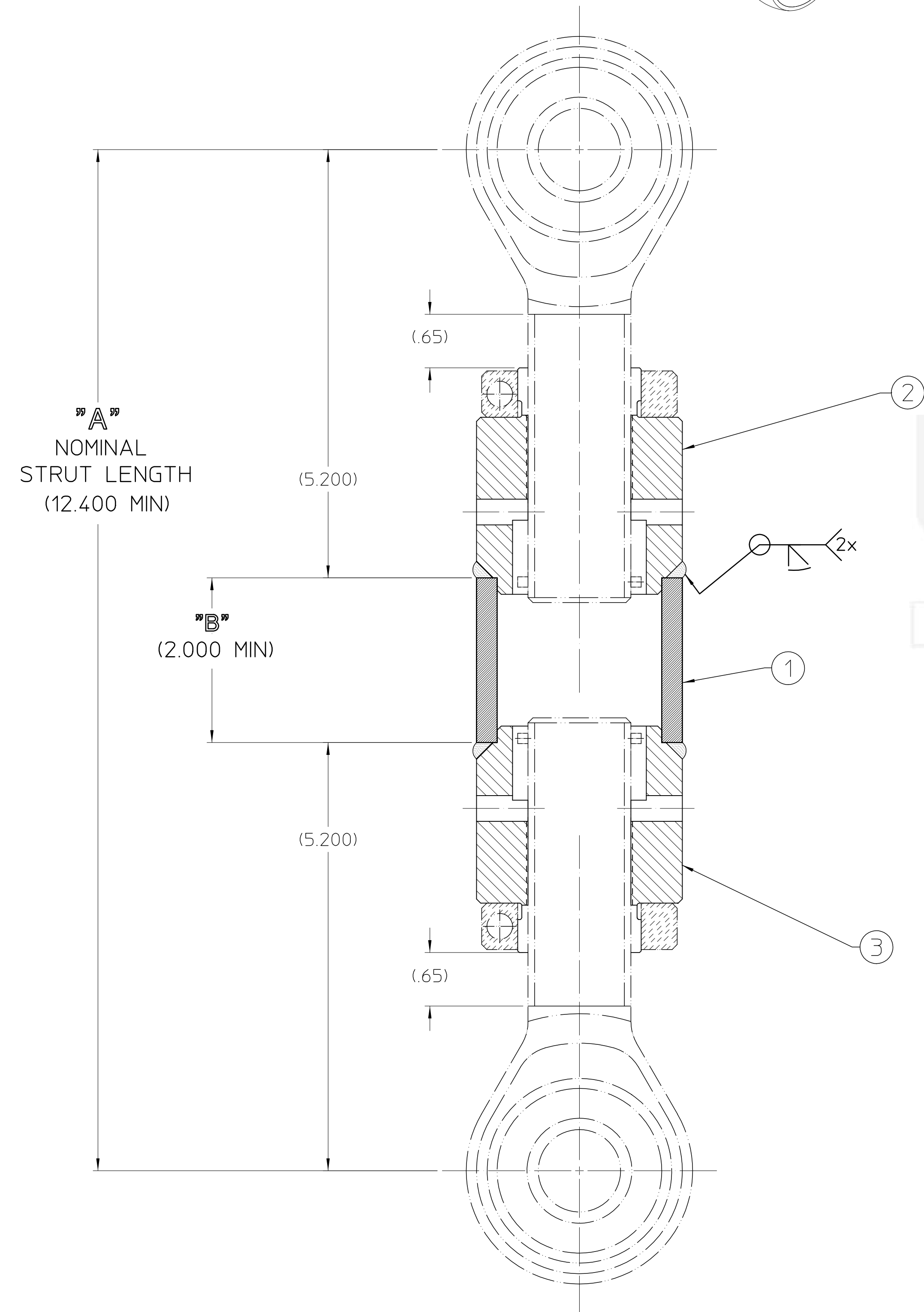
**STEP 1**

STRUT BODY ASSEMBLY NOTES:

1. DESIRED NOMINAL STRUT LENGTH "A" TO BE SPECIFIED ON JOB ORDER.  
 SUBTRACT 10.400 FROM "A". THE RESULT "B", IS THE LENGTH OF THE TUBE (ITEM 1).
2. CUT THE TUBE (ITEM 1) TO LENGTH "B" AS DETERMINED IN STEP 1, NOTE 1.
3. WELD STRUT TUBE ENDS (ITEMS 2 & 3) TO TUBE (ITEM 1).
4. FINISHING:
  - a. DEGREASE AND SANDBLAST.
  - b. APPLY 'TIGAR DRYLAC SERIES 49' OR EQUIVALENT PER MFG. INSTRUCTIONS.
  - c. COLOR IS RAL-9005, SATIN BLACK.
5. ALTERNATE PAINT SPECIFICATION: LBL ENG. SPEC. #767.



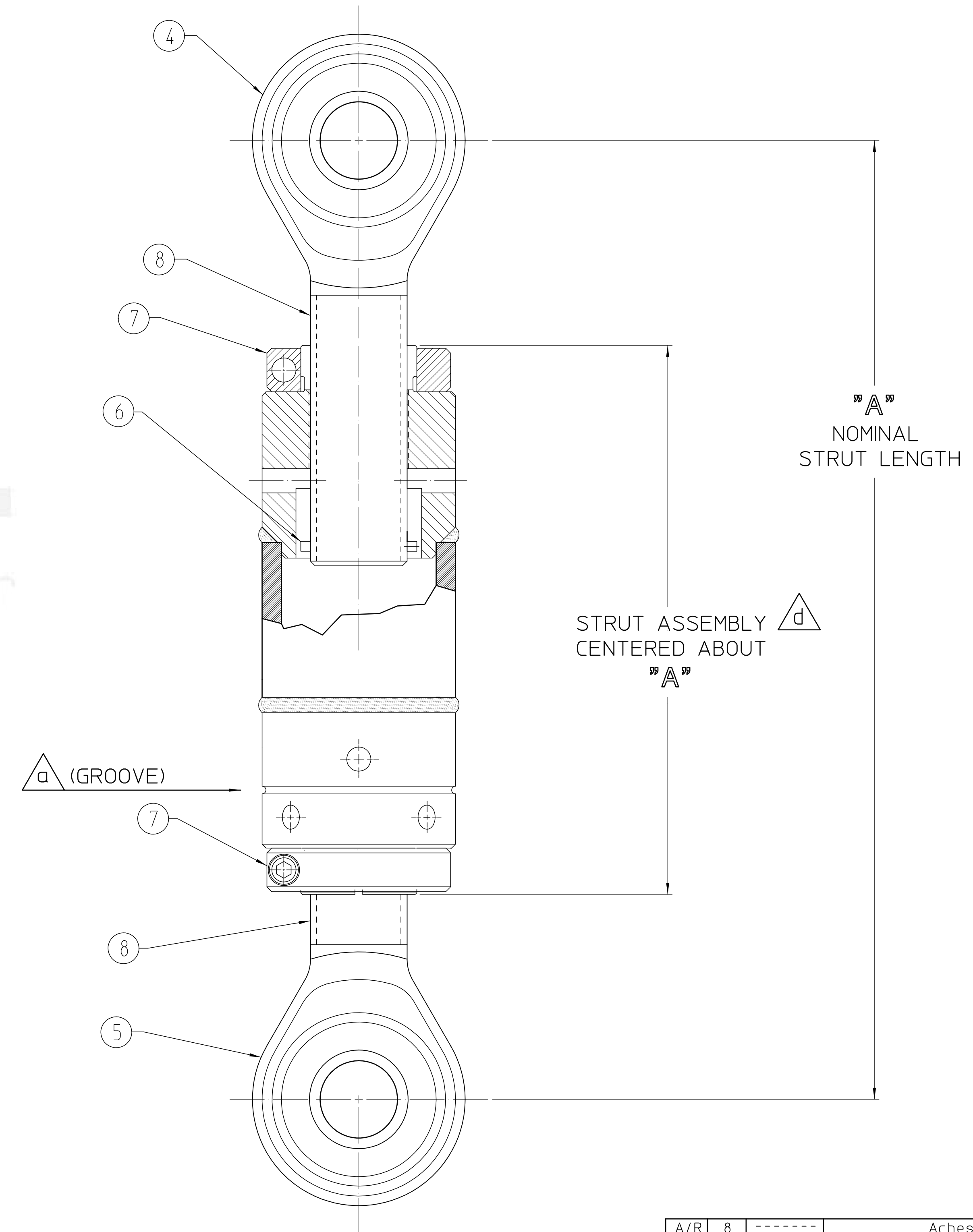
ISO1  
SCALE 1:2



**STEP 2**

ASSEMBLY GUIDELINES

1. ADJUSTMENT RATE = .167" CHANGE IN LENGTH PER FULL REVOLUTION OF STRUT TUBE.
  - a) OVERALL ADJUSTMENT RANGE = ±1.30"
2. SPRAY COAT THREADS OF STRUT ROD ENDS (ITEMS 4 & 5) WITH ACHESON AERODAG-G LUBRICANT (ITEM 8).
3. STRUT ASSEMBLY AND TORQUE INSTRUCTIONS:
  - a) THREAD ROD END - LEFT HAND THREAD (ITEM 5) INTO GROOVED END OF STRUT WELDMENT.
  - b) THREAD ROD END - RIGHT HAND THREAD (ITEM 3) INTO OPPOSITE END OF STRUT WELDMENT.
  - c) INSTALL SPRING PIN (ITEM 6) THROUGH STRUT STUB END HOLES INTO ROD END HOLES. CENTER SPRING PIN IN ROD END.
  - d) SET STRUT ASSEMBLY TO NOMINAL STRUT LENGTH "A" WITH STRUT BODY CENTERED IN SPAN.
  - e) RESTRAIN ONE ROD END FROM ROTATING WITH RESPECT TO THE STRUT TUBE.
  - f) TIGHTEN CLAMP COLLAR (ITEM 7) UNTIL A TORQUE OF 8-10 ft/lbs IS REQUIRED TO ROTATE THE STRUT TUBE ABOUT THE ROD END.
  - g) REPEAT e) AND f) FOR OPPOSITE ROD END.
  - h) RECHECK STRUT ASSEMBLY FOR NOMINAL STRUT LENGTH "A" AND CORRECT AS NECESSARY.



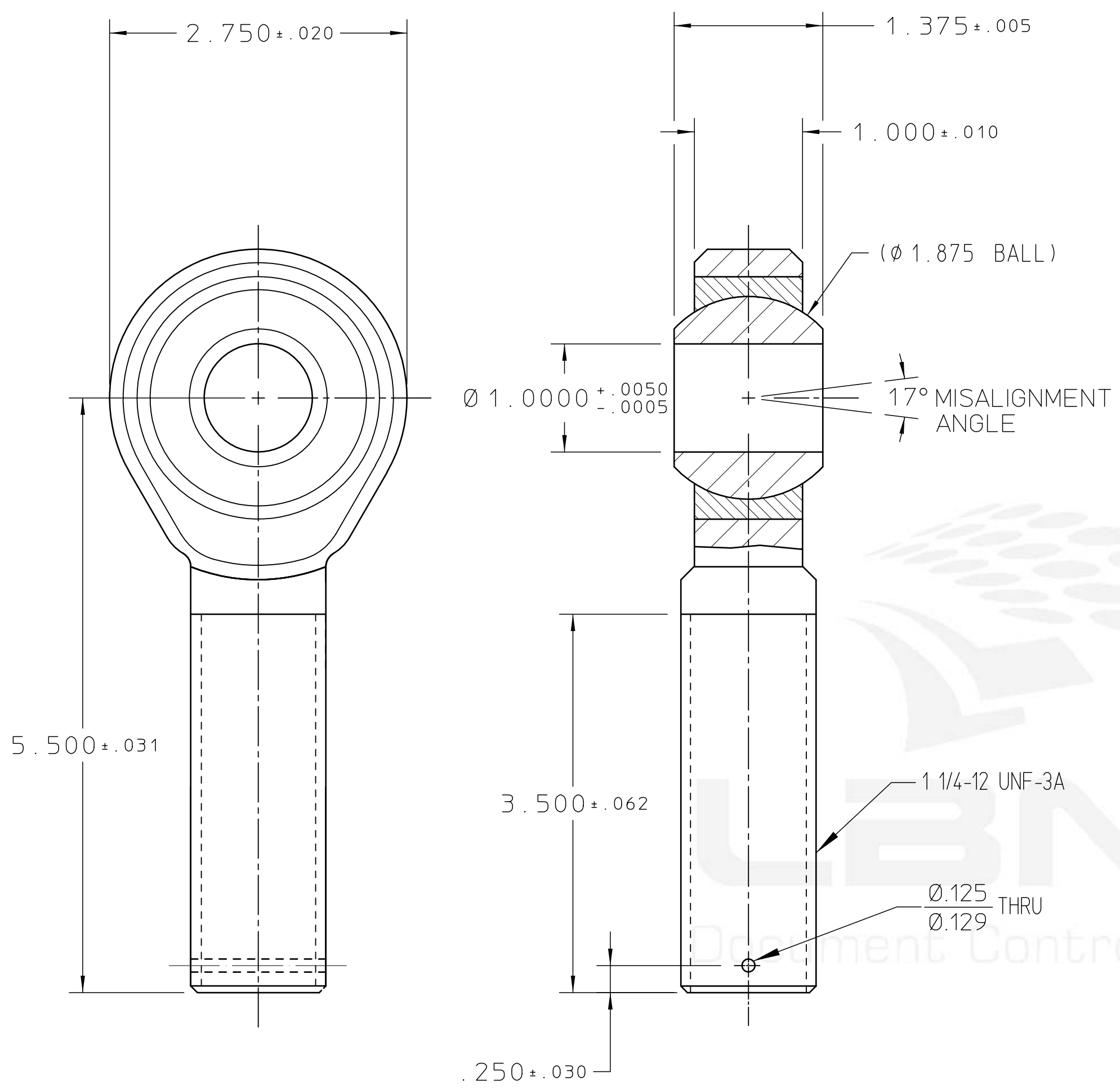
A/R	ITEM	PART NO.	DESCRIPTION
8	-----	-----	Acheson Aerodag-G Lubricant
2	7	7L108	Clamp Collar - Low Profile, One Piece, 1 1/2" Bore x 2 3/8" OD .563 Wide STL Stafford
2	6	-----	Spring Pin - Ø1/8 x 1.5 lg McMaster Carr
1	5	25D6833	1" Bore Strut Rod End - LH Fine Thread
1	4	25D6823	1" Bore Strut Rod End - RH Fine Thread
1	3	25D6854	1" Bore Strut Stub End - LH Thread
1	2	25D6844	1" Bore Strut Stub End - RH Thread
1	1	-----	Tube, Round - 2.50" O.D. x .25 thk Wall DOM STL

REV	AUTHOR	APPROVER	DATE	CHANGE DESCRIPTION
G	mckean	mckean	09-15-05	NOMINAL STRUT LENGTH TO BE SPECIFIED ON JOB ORDER
A	mckean	mckean	09-15-05	INITIAL REVISION

UNLESS OTHERWISE SPECIFIED	PROJECT NAME	ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA
FRACTIONS: XX/XX XXX/XXX	UNIQUE NUMBER: AL-0001-5519	ALS - BEND MAGNET BEAMLINES
ANGLES: ° - ' / INCH	SCALE: 1:1   AL 6 192	BL 12.3.2 BRANCHLINE
MACH. SURFS: 125 ✓	THIRD ANGLE PROJECTION	1 IN BASIC TURNBUCKLE STRUT
REF ASME Y14.5M-1994, THREADS ARE CLASS 2	SHEET 1 OF 1	SIZE E DWG NO: 25F000
BREAK EDGES: 016 MAX. ON MACHINED WORK		REV G
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		

Officially Released to the LBNL Document Control Center  
Released: September 15th, 2005 DCC Auth Key: s3jMYW5XZ

REQ	PART NUMBER	DESCRIPTION
	MM-16D-20	Male Rod End, 1.00" Bore, 1 1/4-12UNF-3A Steel, Aurora Bearing Company



**SPECIFICATIONS:**

**BODY:** CARBON STEEL  
PROTECTIVE COATED FOR CORROSION RESISTANCE.  
SOLID SHANK, NO LUBRICATION FITTING.

**RACE:** CARBON STEEL, PROTECTIVE COATED FOR CORROSION RESISTANCE. SOLID OR DRY FILM LUBRICANT ON INSIDE DIAMETER.

**BALL:** ALLOY STEEL, HEAT TREATED  
HARD CHROME PLATED

**PRELOAD:** THIS ROD END BEARING MUST BE MANUFACTURED WITH A PRELOAD IN ORDER TO ELIMINATE ALL CLEARANCE AND TO INSURE A TIGHT FIT BETWEEN THE BEARING BALL AND ITS OUTER RACE. NORMALLY THE ROD END BEARING WILL BE USED IN A STATIC CONDITION. THE BALL WILL ONLY OCCASIONALLY MOVE WITH RESPECT TO ITS OUTER RACE. DUE TO THE NORMAL STATIC CONDITION OF THE BEARING, THE TORQUE REQUIRED TO MOVE THE BALL IS REFERRED TO AS "BREAKAWAY TORQUE".

THE SPECIFIED BREAKAWAY TORQUE CRITERIA SHALL BE MET AFTER OSCILLATING THE BALL THROUGH ITS TOTAL MISALIGNMENT CONE A MINIMUM OF 10 FULL CYCLES.

ROD END BEARINGS FALLING OUTSIDE THE SPECIFIED BREAKAWAY TORQUE RANGE WILL NOT BE ACCEPTED.

25D6823A

△ RADIAL STATIC LOAD CAPACITY: 35,000 LBS.

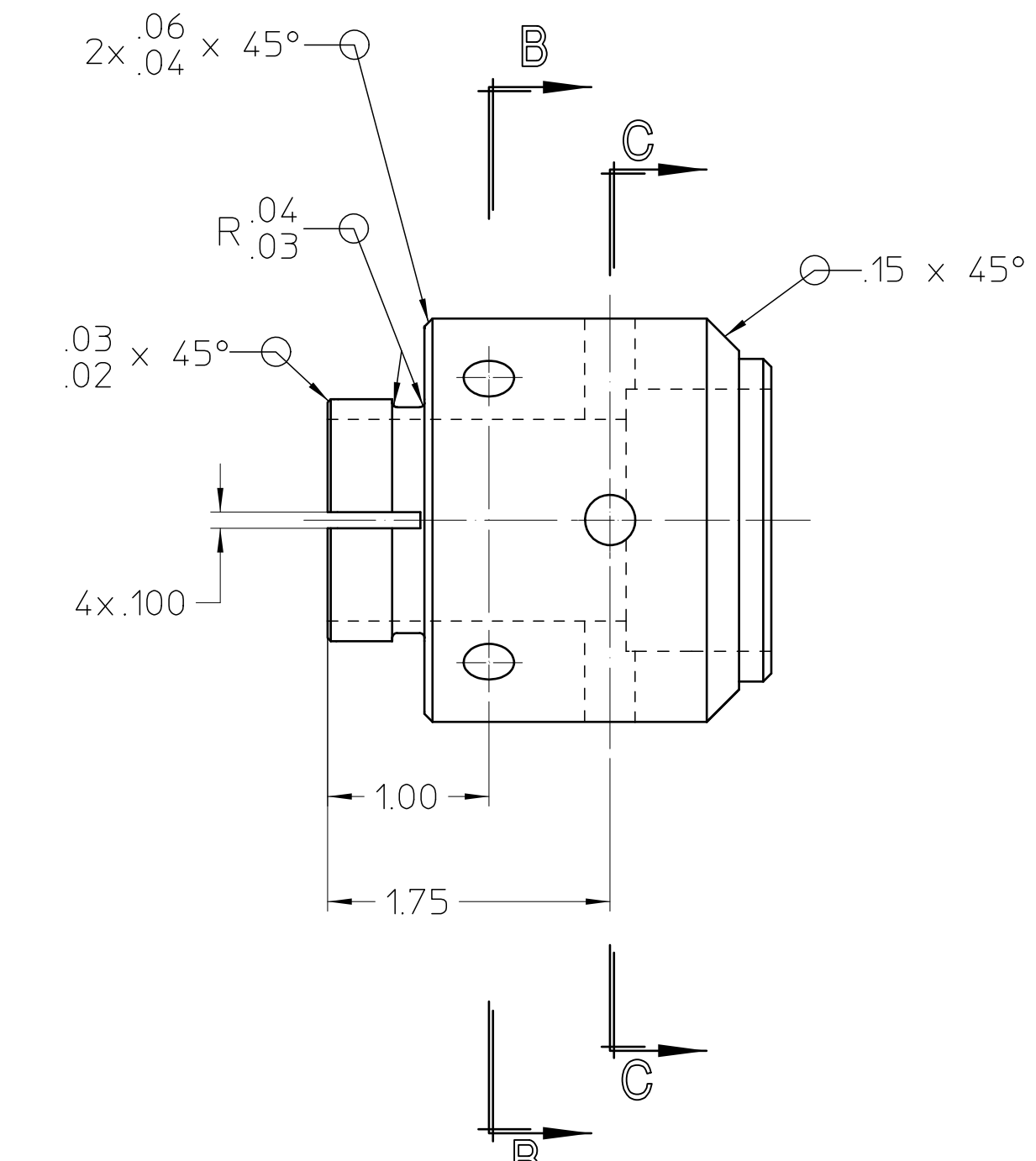
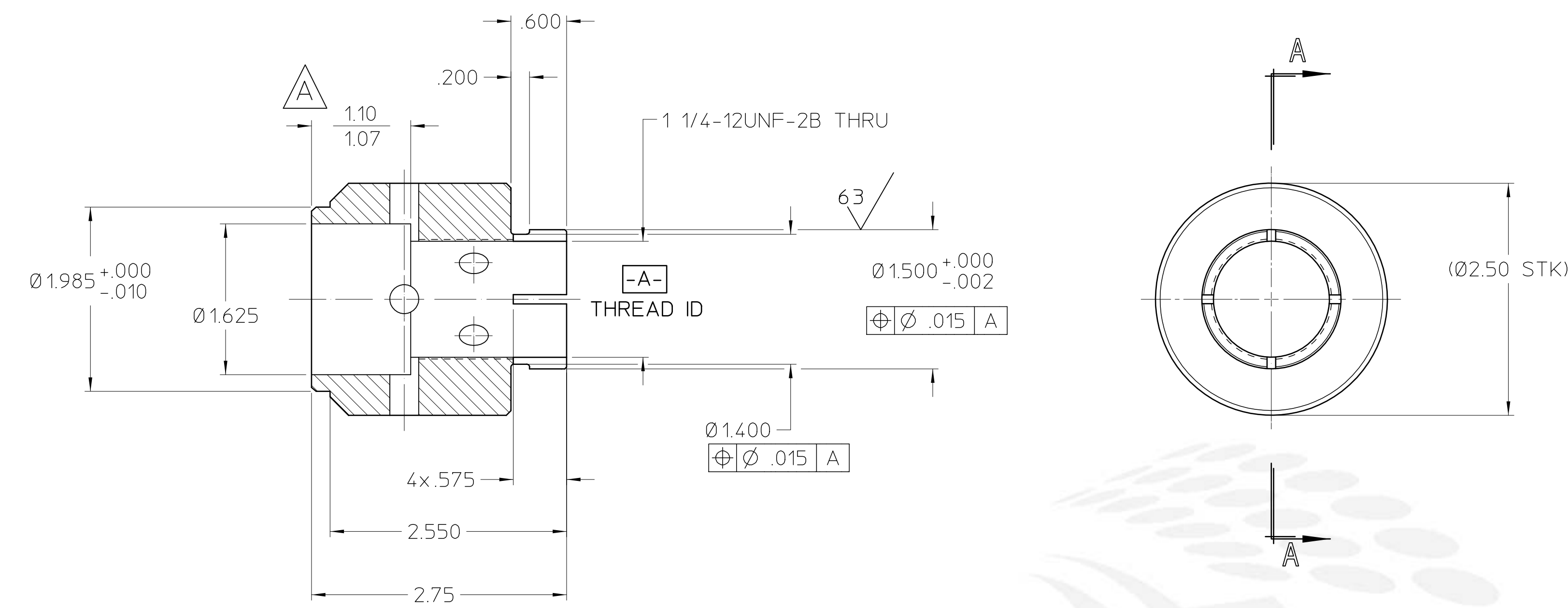
SPECIFIED BREAKAWAY TORQUE RANGE: 50 TO 200 INCH/POUNDS

Note: Rod end to be higher-strength version. Paper copy of vendor proprietary drawing available for review

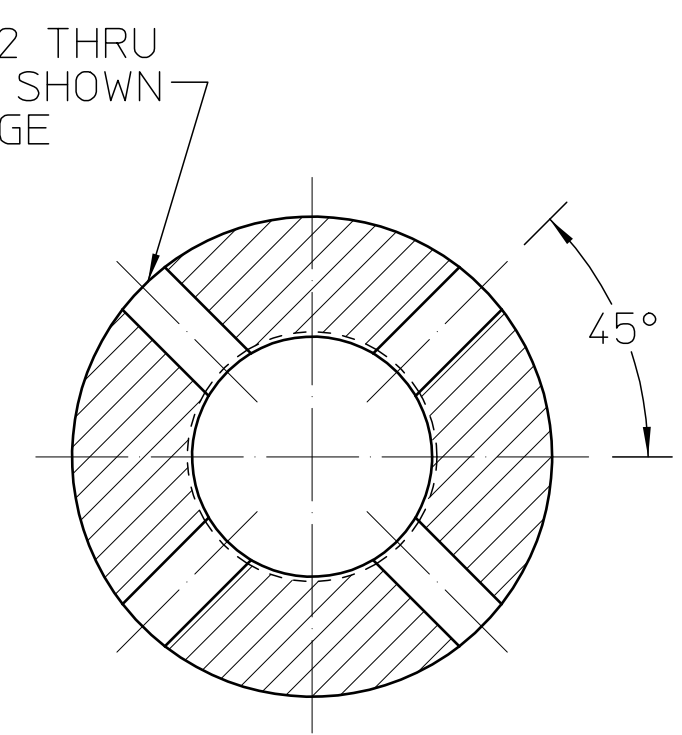
				UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		LAWRENCE BERKELEY LABORATORY							
				.X ±		FRAC. ±		ACCT. NO.		SERIAL NO.		UNIVERSITY OF CALIFORNIA-BERKELEY			
				.XX ±		ANGLES ±		DATE ISSD		DATE RECD.		NO. REQD.			
				.XXX ±		FINISH		DELIVER TO		ALS-BEAMLINES					
				THREADS ARE CLASS 2		CHAMFER ENDS OF ALL SCREW THREADS 30°		SURFACE TREATMENT		MOUNTING & SUPPORT EQUIPMENT					
				CUT 1.5 PITCH THRU RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.		BREAK EDGES .016 MAX. ON MACHINED WORK		IDENT. METH.		PATENT CLEAR		DWG. TYPE		SHOWN ON	
				REMOVE BURRS WELD SPLATTER & LOOSE SCALE		REFERENCES: ASME Y14.5M - 1994		DWG. BY: lim		DATE: 06/01/99		CD		25F0006	
				REV		DWG		CHK		ZONE		DATE		SCALE 1/1	
				A		2/B		9/1/99		WAS: ULTIMATE RADIAL STATIC LOAD CAPACITY: 35,000 lbs MIN		MICROFILMED		DESIGN ACCT. NO.	
				CHANGES				CHK. BY: T LAURITZEN		DATE: 06/01/99		CATEGORY CODE		AL 2012	
												DWG. NO.		25D6823	
												SIZE		REV. A	



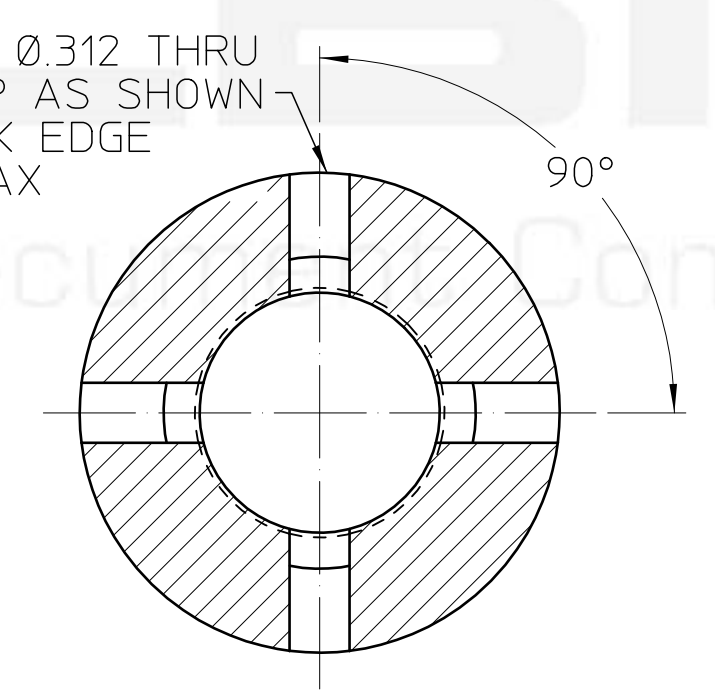
REQ	ITEM	PART NUMBER	DESCRIPTION
			BAR - ROUND Ø2.50 1018 CRS



SECTION A-A



SECTION B-B

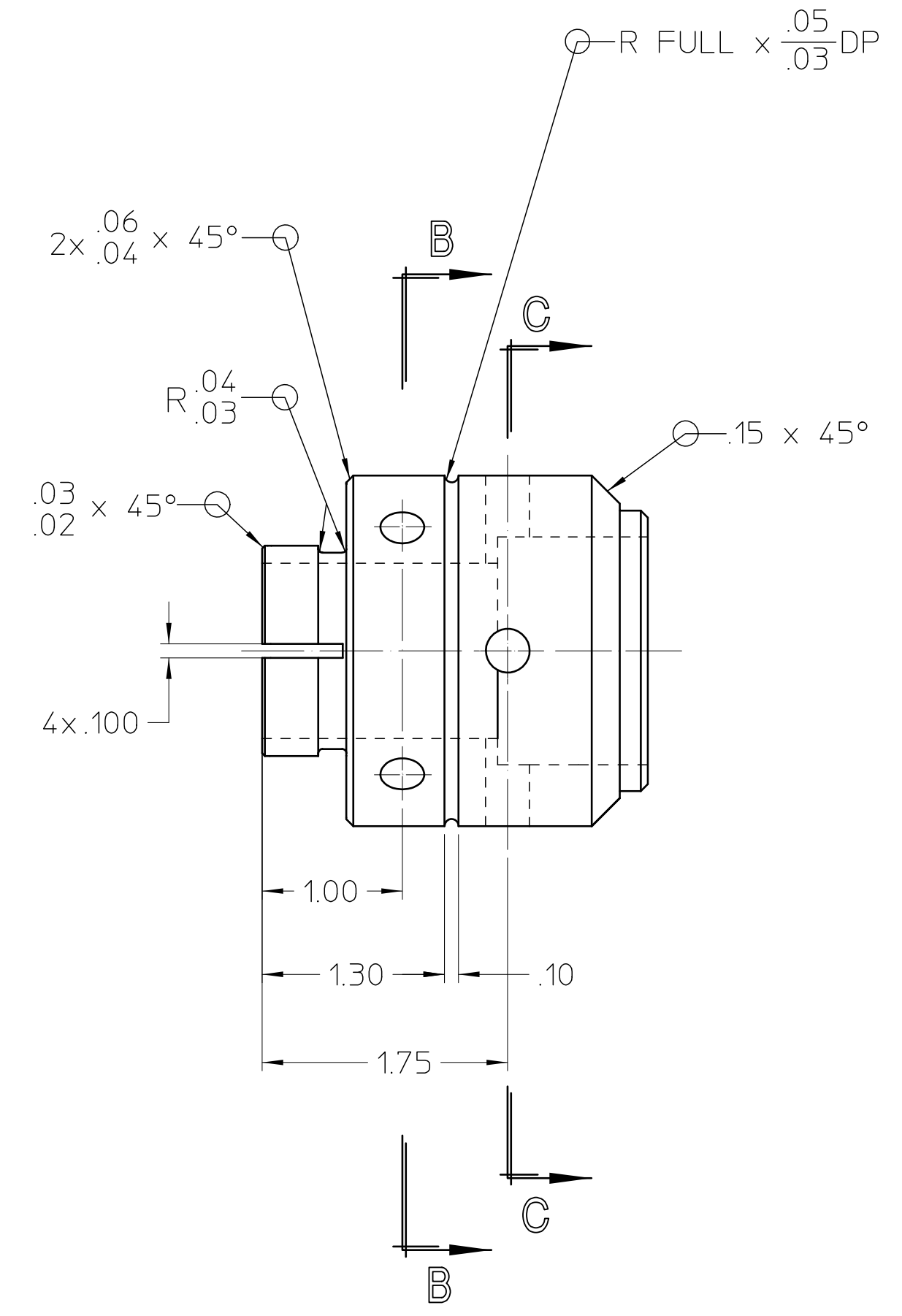
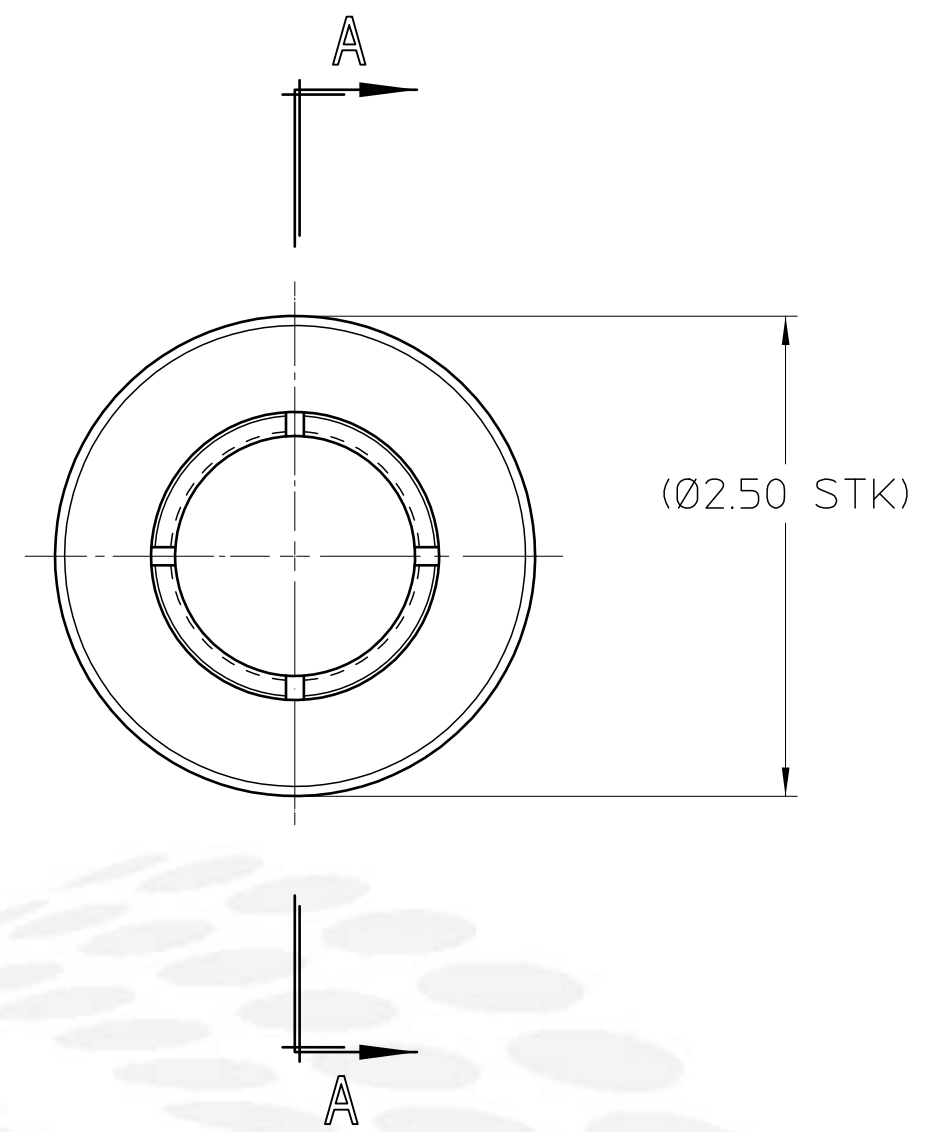
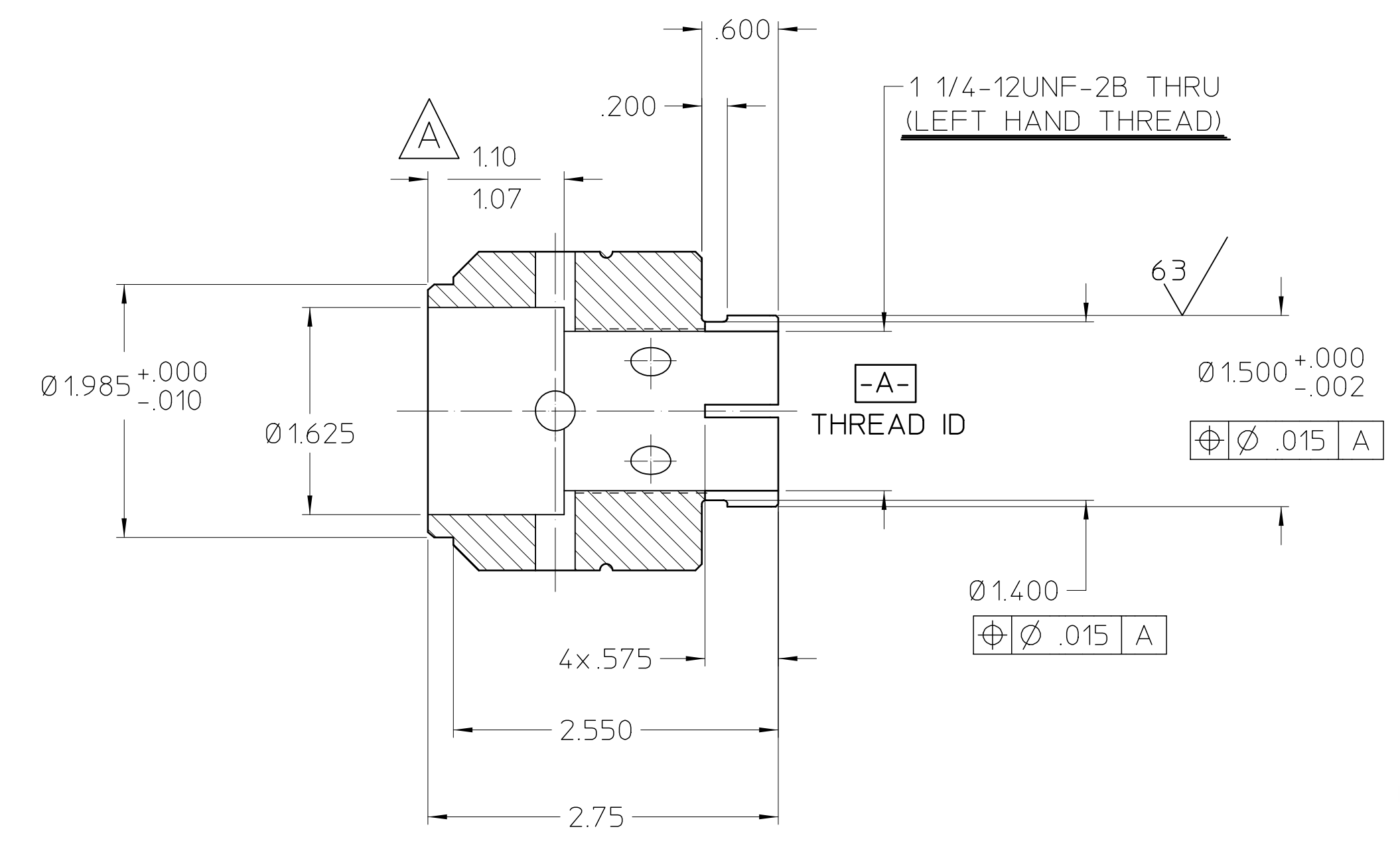


SECTION C-C

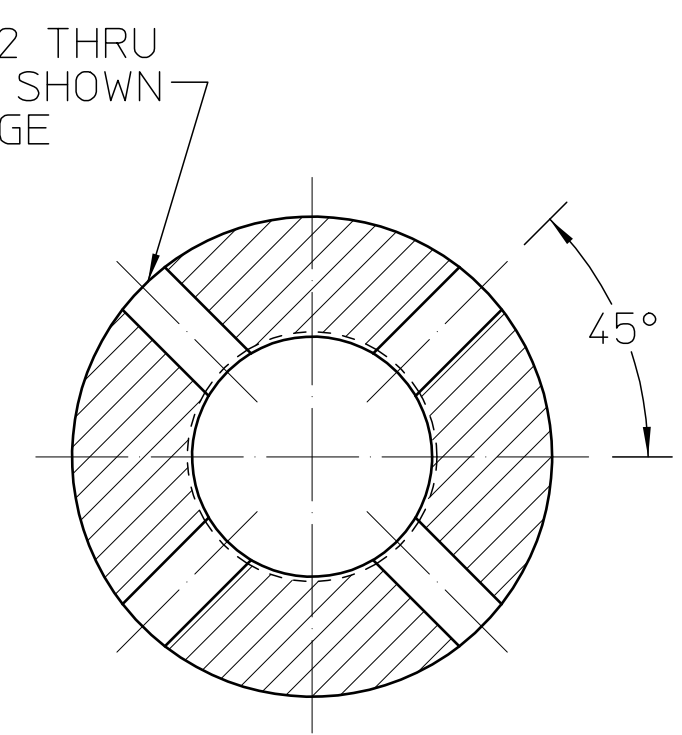
25D6844A

UNLESS OTHERWISE SPECIFIED				SHOP ORDERS			LAWRENCE BERKELEY LABORATORY					
TOLERANCES		.X ± .1		FRAC. ±	ACCT. NO.	SERIAL NO.		UNIVERSITY OF CALIFORNIA-BERKELEY				
.XX ± .03		ANGLES ± 1/2°			DATE ISSD	DATE RECD.	NO. RECD.	ALS - BEAMLINES				
.XXX ± .010		FINISH 125/7			DELIVER TO		MOUNTING & SUPPORT EQUIPMENT					
THREADS ARE CLASS 2				SURFACE TREATMENT		DEGREASE		STRUT STUB END - RH THREAD (1 1/4-12 UNF)				
CHAMFER ENDS OF ALL SCREW THREADS 30°				IDENT. METH.		PATENT CLEAR		DWG. TYPE	SHOWN ON	SCALE	DO NOT SCALE PRINTS	
CUT 1.5 PITCH THRO RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.				BY: lim		DATE: 07/29/99		CDET	25F0006	1/1		
BREAK EDGES .016 MAX. ON MACHINED WORK				CHK: T LAURITZEN		DATE: 07/29/99		DESIGN ACCT. NO.	CATEGORY CODE	DWG. NO.	SIZE	REV.
REMOVE BURRS WELD SPLATTER & LOOSE SCALE								AL2012		25D6844	A	
REFERENCES: ASME Y14.5M - 1994												
REV	DWG	CHK	ZONE	DATE	CHANGES							

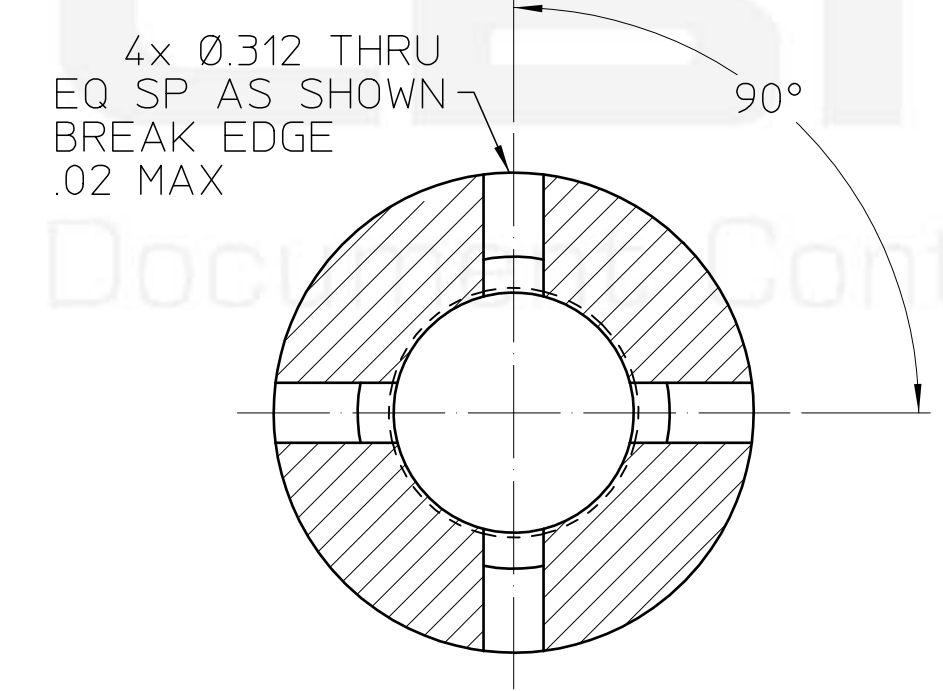
REQ	ITEM	PART NUMBER	DESCRIPTION
			BAR - ROUND Ø2.50 1018 CRS



SECTION A-A



SECTION B-B



SECTION C-C

25D6854A

UNLESS OTHERWISE SPECIFIED				SHOP ORDERS			LAWRENCE BERKELEY LABORATORY				
TOLERANCES		.X ± .1		FRAC. ±		ACCT. NO.	SERIAL NO.		UNIVERSITY OF CALIFORNIA-BERKELEY		
.XX ± .03		ANGLES ± 1/2°		DATE ISSD	DATE RECD.	NO. REQD.	ALS - BEAMLINES				
.XXX ± .010		FINISH 125/7		DELIVER TO		DEGREASE		MOUNTING & SUPPORT EQUIPMENT			
THREADS ARE CLASS 2				SURFACE TREATMENT		DEGREASE		STRUT STUB END - LH THREAD (1 1/4-12 UNF)			
CHAMFER ENDS OF ALL SCREW THREADS 30°				IDENT. METH.		PATENT CLEAR		DWG. TYPE	SCALE	1/1	DO NOT SCALE PRINTS
CUT 1.5 PITCH THRO RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.				BY: lim		DATE: 07/29/99	CDET	25F0006	DWG. NO.	25D6854	REV. A
BREAK EDGES .016 MAX. ON MACHINED WORK				DATE: 07/29/99		MICROFILMED		DESIGN ACCT. NO.	CATEGORY CODE	AL2012	
REMOVE BURRS WELD SPLATTER & LOOSE SCALE				CHK: T LAURITZEN				25D6854 A			
REFERENCES: ASME Y14.5M - 1994				CHANGES							