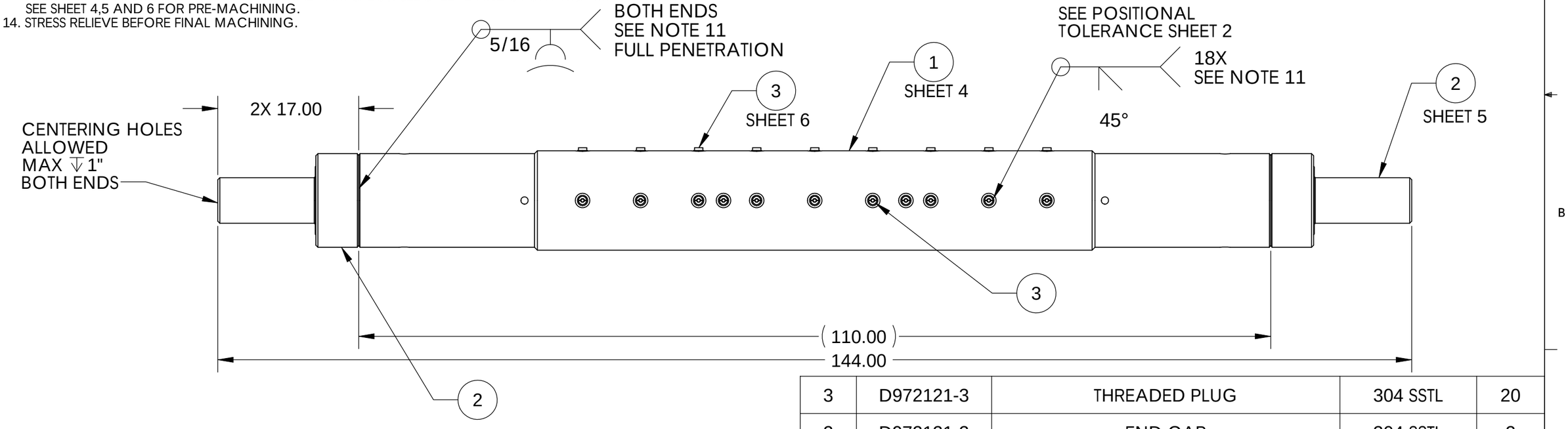
REV.	DATE	DCN #	DRAWING TREE #
v2	11 Apr. 2011	E1100015	E1100016

NOTES CONTINUED:

4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE AND CHLORINE.
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 466.979 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES (INCLUDING SANDING OR SCOURING FOR MATTE FINISH) IS NOT ALLOWED. USE OF SCOTCH-BRITE OR SIMILAR PRODUCTS IS FORBIDDEN.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL MATERIAL IS TO BE VIRGIN MATERIAL (I.E. NOT WELD REPAIRS OR PLUGS) UNLESS APPROVED IN ADVANCE AND IN WRITTING BY LIGO, REFER TO LIGO-E0900364.
10. NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. IN GENERAL WELD REPAIRS AND PRESS FIT INSERT REPAIRS ARE NEVER ACCEPTABLE. THE MATERIAL USED MUST BE VIRGIN MATERIAL. SPECIAL CIRCUMSTANCES CAN BE REVIEWED IF AND WHEN BROUGHT TO THE ATTENTION OF LIGO CONTRACTING OFFICER'S REPRESENTATIVE (COTR) THROUGH THE MATERIAL REVIEW BOARD (MRB) PROCESS, REFER TO LIGO-E09000364.
11. ALL STAINLESS STEEL WELDING DONE BY GTAW PROCESS USING TUNGSTEN WELDING ELECTRODES AND 308L WELDING ROD, SPEC. PER AWS A5.9-93.
12. ALL TAPPED HOLES TO BE .005 OVERSIZED.
13. ALL FINISH MACHINING AND TAPPED HOLES TO BE APPLIED AFTER WELDING IS COMPLETE ALLOW EXTRA MATERIAL TO PRODUCE FINAL PART SPECS. SEE SHEET 2 AND 3 FOR FINISH MACHINING. SEE SHEET 4,5 AND 6 FOR PRE-MACHINING.
14. STRESS RELIEVE BEFORE FINAL MACHINING.



ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	REQ
3	D972121-3	THREADED PLUG	304 SSTL	20
2	D972121-2	END CAP	304 SSTL	2
1	D972121-1	12.00 OD X .75 WALL CUT TO LENGTH	304 SSTL	1

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .030
.XXX ± .010

ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. REMOVE ALL SHARP EDGES, .03 x 45°.
3. DO NOT SCALE FROM DRAWING.

MATERIAL: N/A

FINISH: N/A µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO

SUB-SYSTEM: SEI

NEXT ASSY: D1000513

PART NAME: BSC SUPPORT TUBE

DESIGNER	R.SMITH	28 May 1997	
DRAFTER	M.HILLARD	11 Apr. 2011	
CHECKER	T.THOMPSON	16 June 1997	
APPROVAL	K.MASON	11 Apr. 2011	

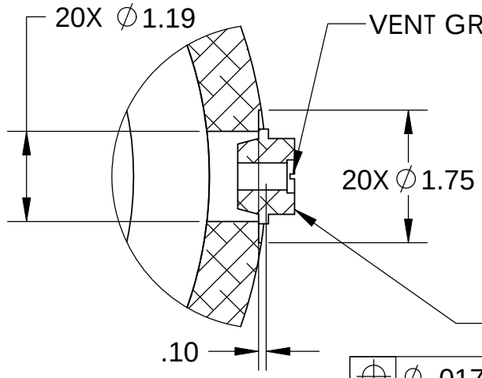
SIZE: B

DWG. NO.: D972121

REV.: v2

SCALE: 1:12 PROJECTION:

DETAIL L
SCALE 1 : 2

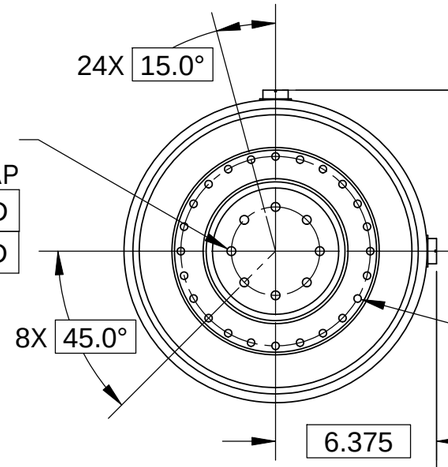


⌖	∅ .017 Ⓜ	A-B Ⓜ	C	D

20X

8X ∅ .348 ↧ 1.06
3/8-16 UNC ↧ .75
USE .005 OVERSIZE TAP

⌖	∅ .017	A Ⓜ	C	D
	∅ .017 Ⓜ	B Ⓜ	E	D



⏠	.005	A-B Ⓜ	D

9X

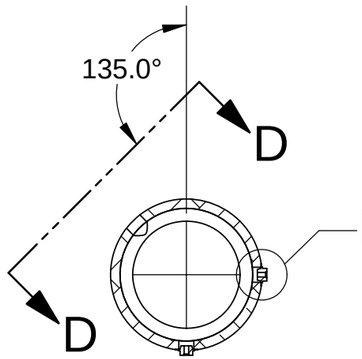
⏠	.005	A-B Ⓜ

11X

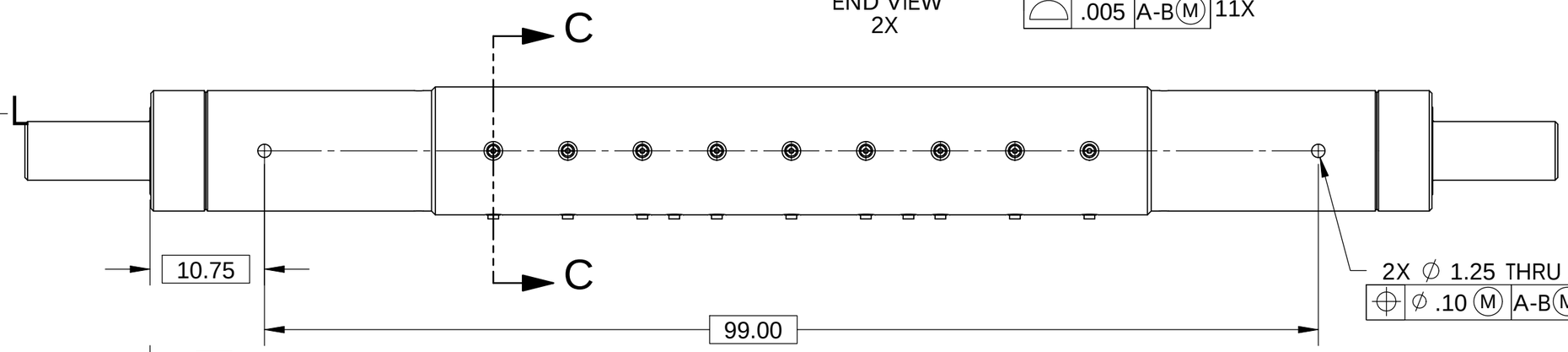
24X ∅ .295 ↧ .96
5/16-24 UNF ↧ .75
USE .005 OVERSIZE TAP

⌖	∅ .017 Ⓜ	A Ⓜ	C	D
	∅ .017 Ⓜ	B	E	D

SCALE 1:6
END VIEW
2X

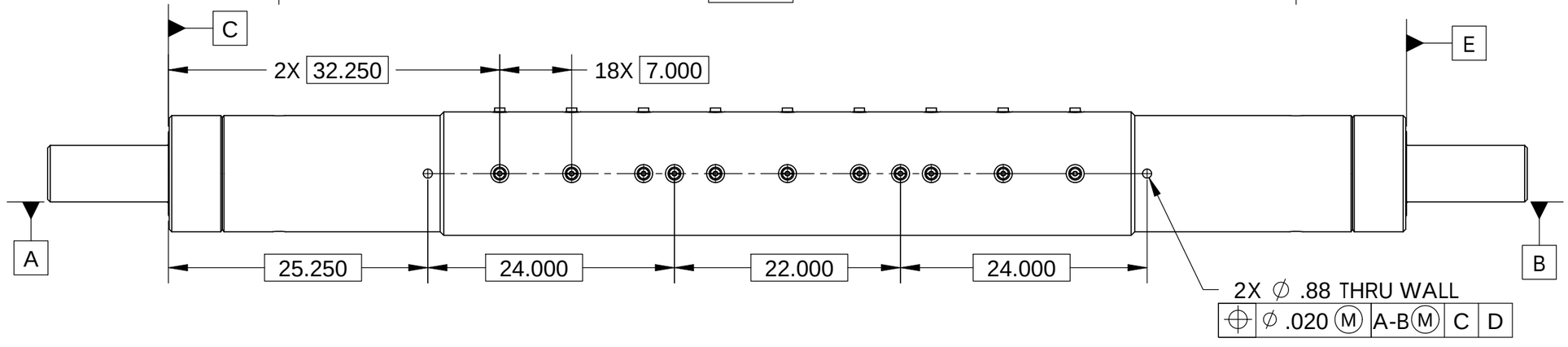


SECTION C-C



2X ∅ 1.25 THRU ALL

⌖	∅ .10 Ⓜ	A-B Ⓜ	C	D



2X ∅ .88 THRU WALL

⌖	∅ .020 Ⓜ	A-B Ⓜ	C	D

D972121, PART PDM REV: X-002, DRAWING PDM REV: X-001

LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D972121		REV. v2
SCALE: 1:12	PROJECTION:	SHEET 2 OF 6	

DETAIL R
SCALE 1 : 4
DETAIL SAME
BOTH ENDS

⊥	.030 Ⓜ	A	C

R.12

⌖	∅ .003 Ⓜ	A Ⓜ	C
	∅ .003 Ⓜ	A Ⓜ	E

∅8.00±.002

⌖	∅ .003 Ⓜ	A Ⓜ	C
	∅ .003 Ⓜ	A Ⓜ	E

∅8.210

T

DETAIL T
SCALE 2 : 1

DO NOT BREAK SHARP CORNER

20.0°

$.026^{+.002}_{-.000}$

$.080^{+.005}_{-.000}$

DETAIL P
SCALE 1 : 6

E	⊥	.030 Ⓜ	B

2X .25 X 45.0°

∅5.500		
↗	.020	A-B
⌭	.020	

2X .25 X 45.0°

SECTION M-M

∅5.500		
↗	.020	A-B
⌭	.020	

18.25

∅11.300			
⌖	∅ .020 Ⓜ	A-B Ⓜ	C

3.80

9X ∅ 1.50 THRU WALL

⌖	∅ .10 Ⓜ	A-B Ⓜ	C	D

4X 14.00

32.25

∅12.000			
⌖	∅ .060 Ⓜ	A-B Ⓜ	C

M

M

120.50

3.80

18.25

2X 5.25

2X 11.75

SECTION D-D

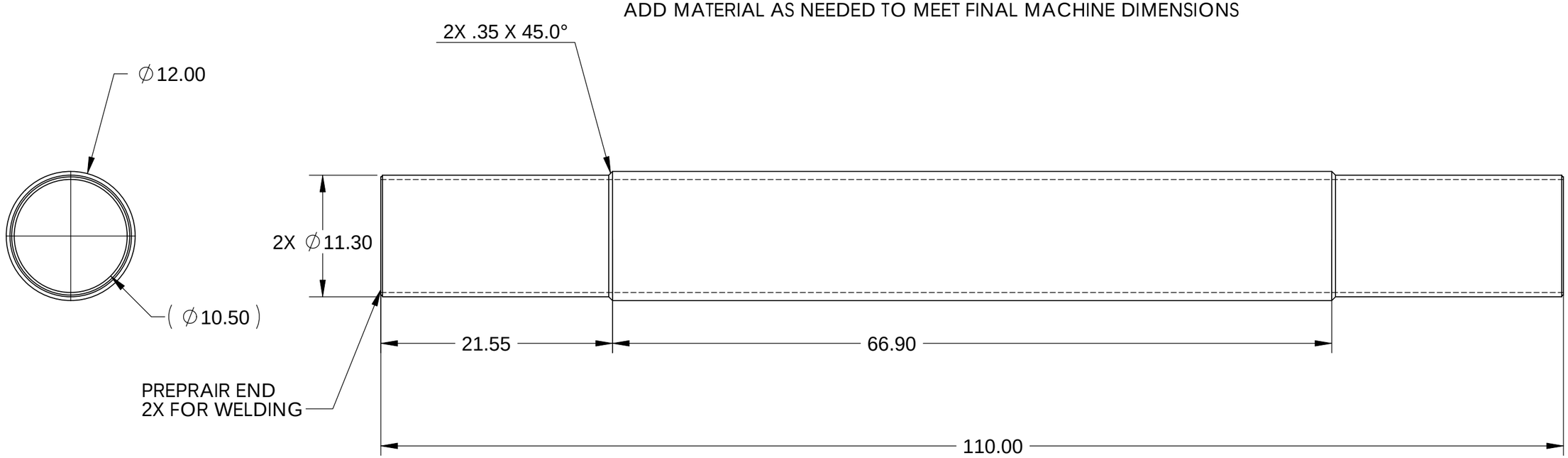
LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SIZE	DWG. NO.	REV.
B	D972121	v2

SCALE: 1:12 | PROJECTION: | SHEET 3 OF 6

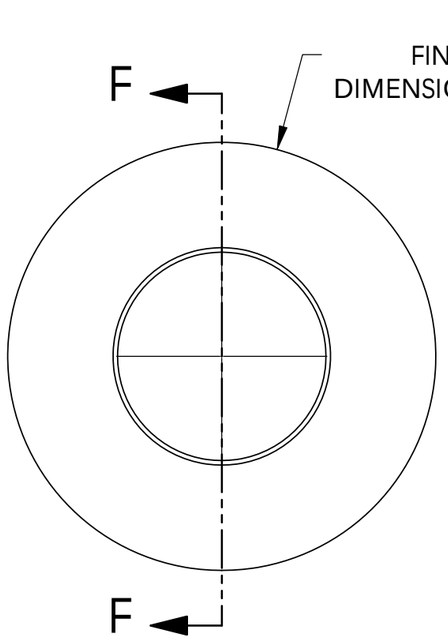
D972121, PART PDM REV: X-002, DRAWING PDM REV: X-001

ADD MATERIAL AS NEEDED TO MEET FINAL MACHINE DIMENSIONS

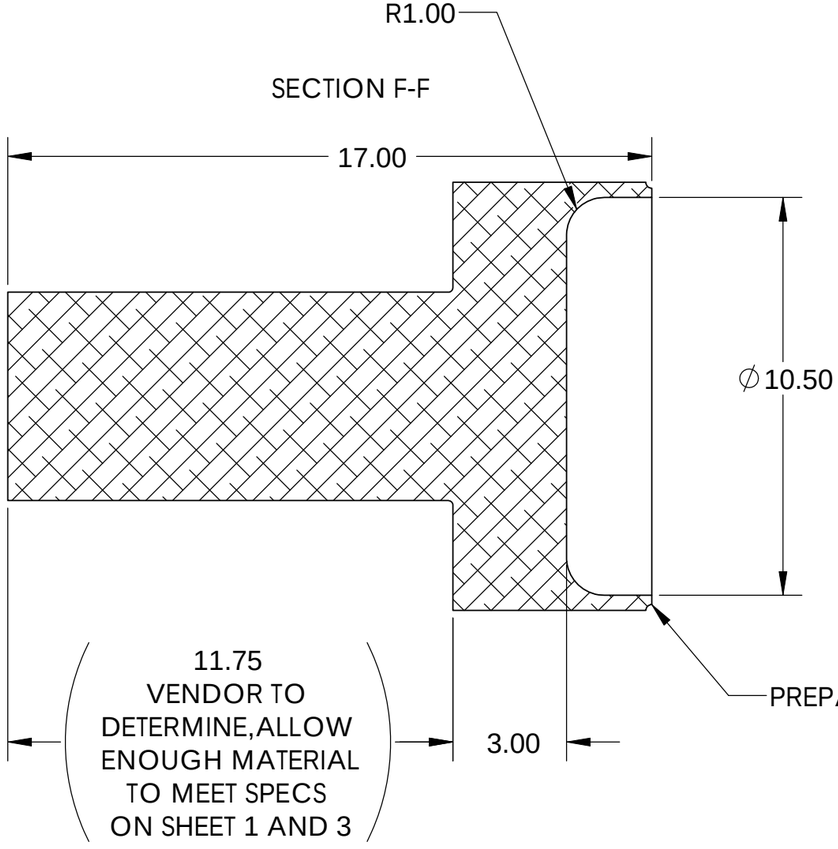


D972121, PART PDM REV: X-001, DRAWING PDM REV: X-001

LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D972121-1	REV. v2	
SCALE: 1:10	PROJECTION:	SHEET 4 OF 6	

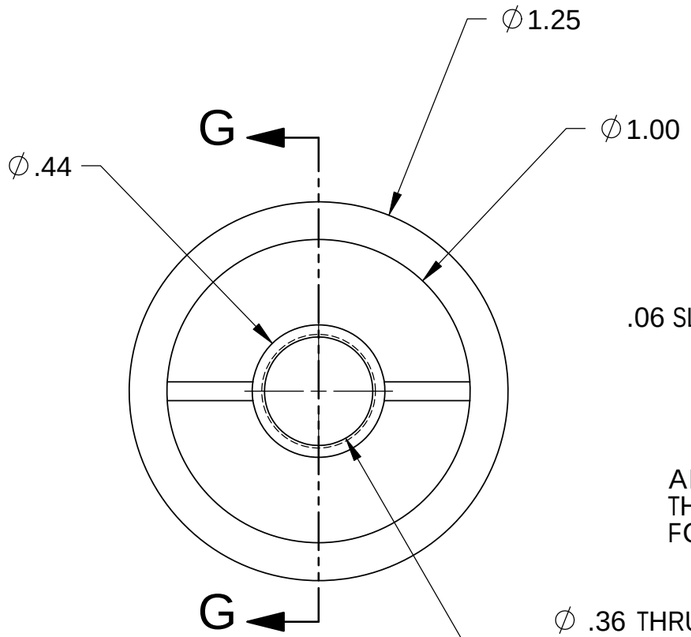


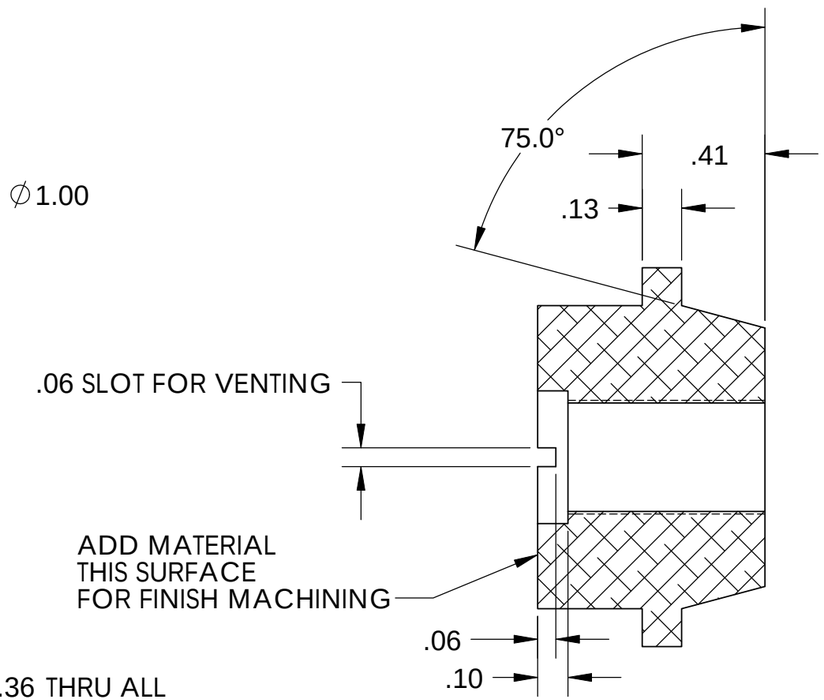
SECTION F-F



D972121, PART PDM REV: X-002, DRAWING PDM REV: X-001

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
SIZE B	DWG. NO. D972121-2		REV. v2
SCALE: 1:4	PROJECTION:	SHEET 5 OF 6	





SECTION G-G

D972121, PART PDM REV: X-000, DRAWING PDM REV: X-001

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D972121-3	REV. v2
SCALE: 2:1	PROJECTION:	SHEET 6 OF 6