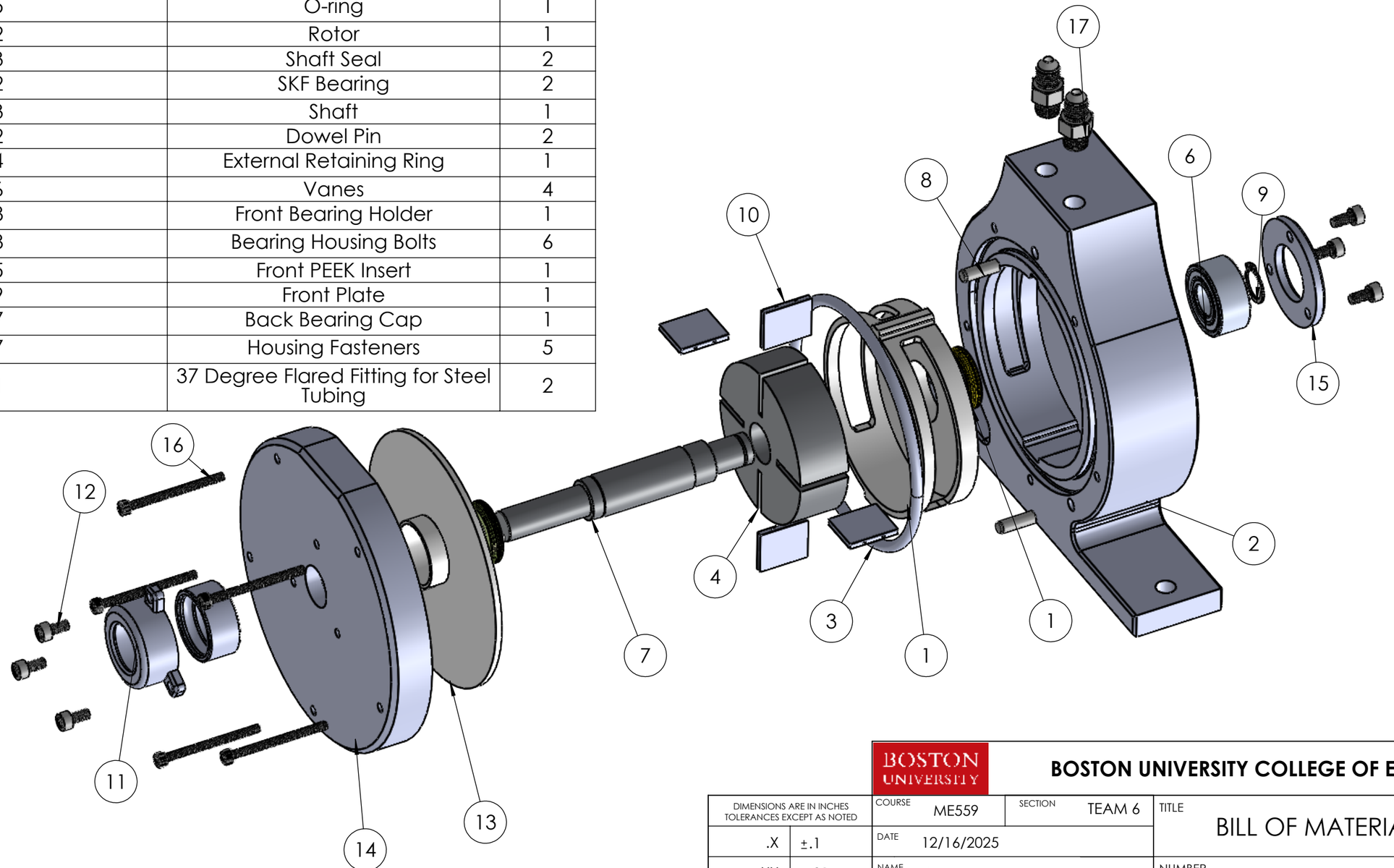
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1-004	PEEK Insert	1
2	1-001	Pump Housing	1
3	3-005	O-ring	1
4	1-002	Rotor	1
5	3-003	Shaft Seal	2
6	3-002	SKF Bearing	2
7	1-003	Shaft	1
8	3-002	Dowel Pin	2
9	3-004	External Retaining Ring	1
10	1-006	Vanes	4
11	1-008	Front Bearing Holder	1
12	3-008	Bearing Housing Bolts	6
13	1-005	Front PEEK Insert	1
14	1-009	Front Plate	1
15	1-007	Back Bearing Cap	1
16	3-007	Housing Fasteners	5
17	3-001	37 Degree Flared Fitting for Steel Tubing	2



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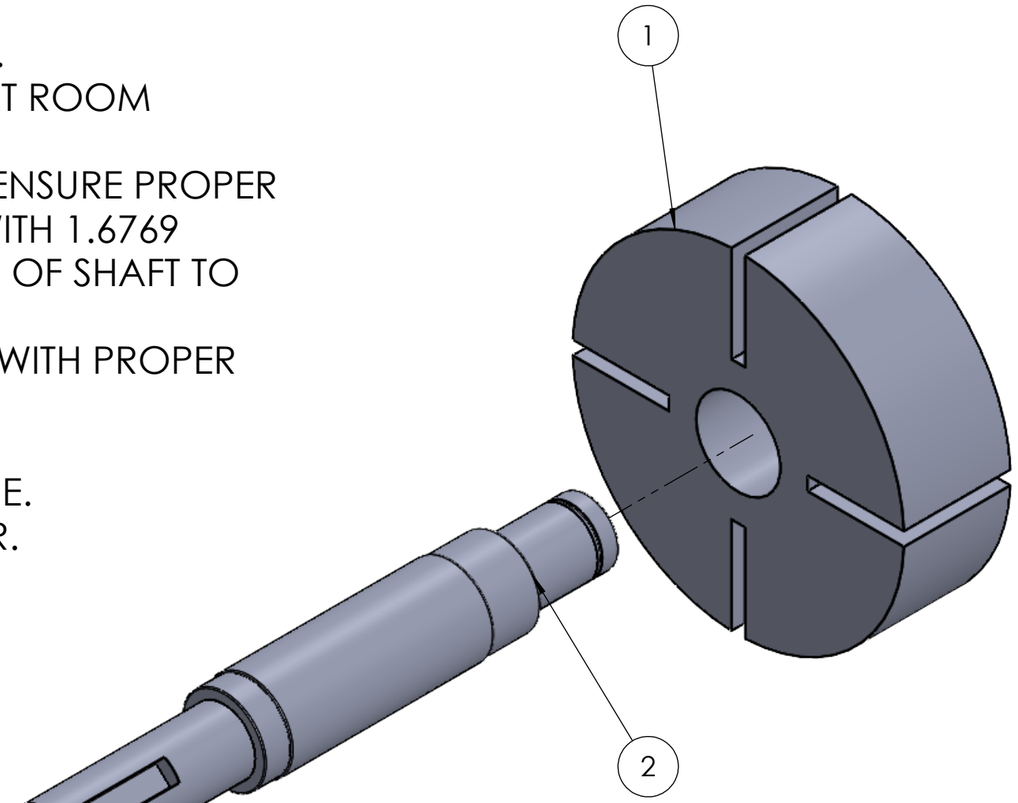
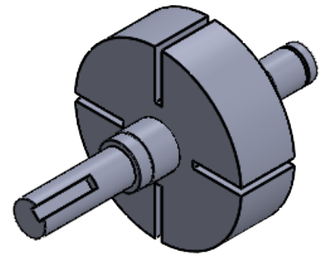
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE BILL OF MATERIALS ASSEMBLY	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 5-001	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME BILL OF MATERIALS ASSEMBLY	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:8 / SHEET 1 OF 1

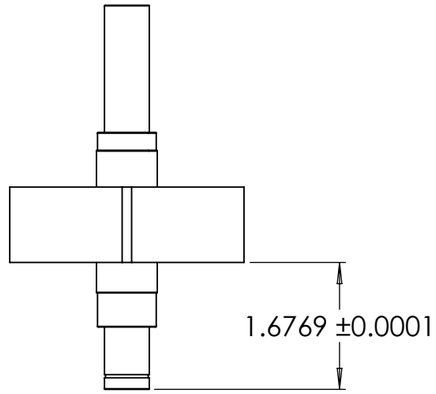
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1-002	Rotor	1
2	1-003	Shaft	1

ASSEMBLY STEPS:

1. HEAT THE ROTOR (1-002) TO 147.49F.
2. DO NOT HEAT SHAFT (1-003), KEEP AT ROOM TEMPERATURE.
3. PREPARE AN ASSEMBLY FIXTURE TO ENSURE PROPER ALIGNMENT OF ROTOR TO SHAFT, WITH 1.6769 ±0.0001IN DISTANCE FROM BOTTOM OF SHAFT TO BOTTOM OF ROTOR.
4. HANDLE ALL HOT PARTS AND TOOL WITH PROPER PRECAUTIONS.
5. TAKE THE ROTOR OUT OF THE OVEN.
6. PLACE THE ROTOR ONTO THE FIXTURE.
7. LOWER THE SHAFT INSIDE THE ROTOR.
8. LEAVE UNTIL COOL.







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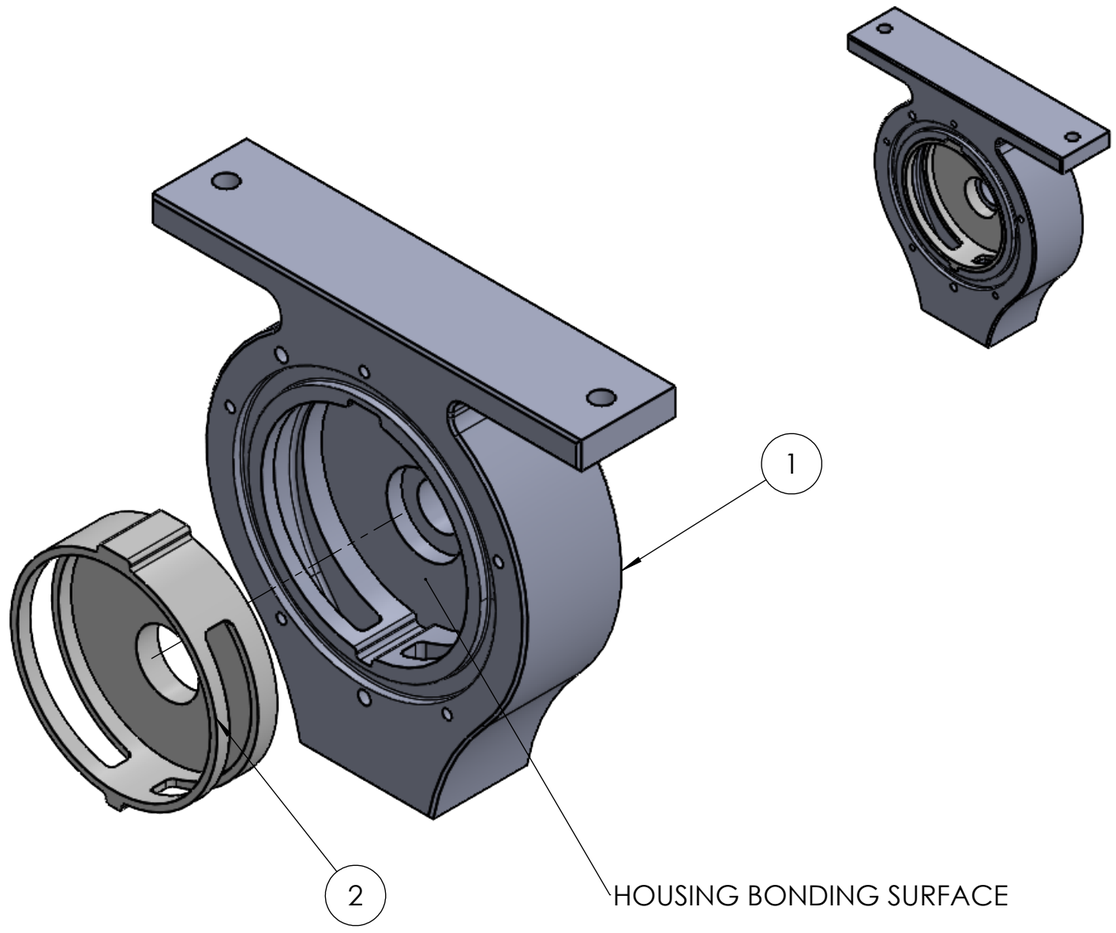
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSEMBLY 1	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-001	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 1 (ROTOR AND SHAFT)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1-001	Pump Housing	1
2	1-004	PEEK Insert	1
3	6-001	Araldite AV 138/Hardener HV988	1

ASSEMBLY INSTRUCTIONS:

1. PREPARE SURFACES OF THE PEEK AND HOUSING TO BE BONDED AS SEEN IN NOTE 1.
2. PREPARE ARALDITE AV 138/HARDENER HV 988 ACCORDING TO MANUFACTURER INSTRUCTIONS.
3. APPLY ARALDITE AV 138/HARDENER HV 998RETAINING COMPOUND TO THE BONDING SURFACES.
4. PRESS FIT THE PEEK INSERT (1-004) INTO THE HOUSING (1-001) MAKING SURE TO ALIGN THE NOTCHES UNTIL FLUSH.

Note: Due to the smooth surface on molded and extruded PEEK™ polymer components, we recommend either a chromic acid etch or mechanical abrasion to leave surface features for the adhesive to bond to. Plasma or corona treatments also significantly improve bond strength. The surfaces to be bonded should be cleaned and degreased.



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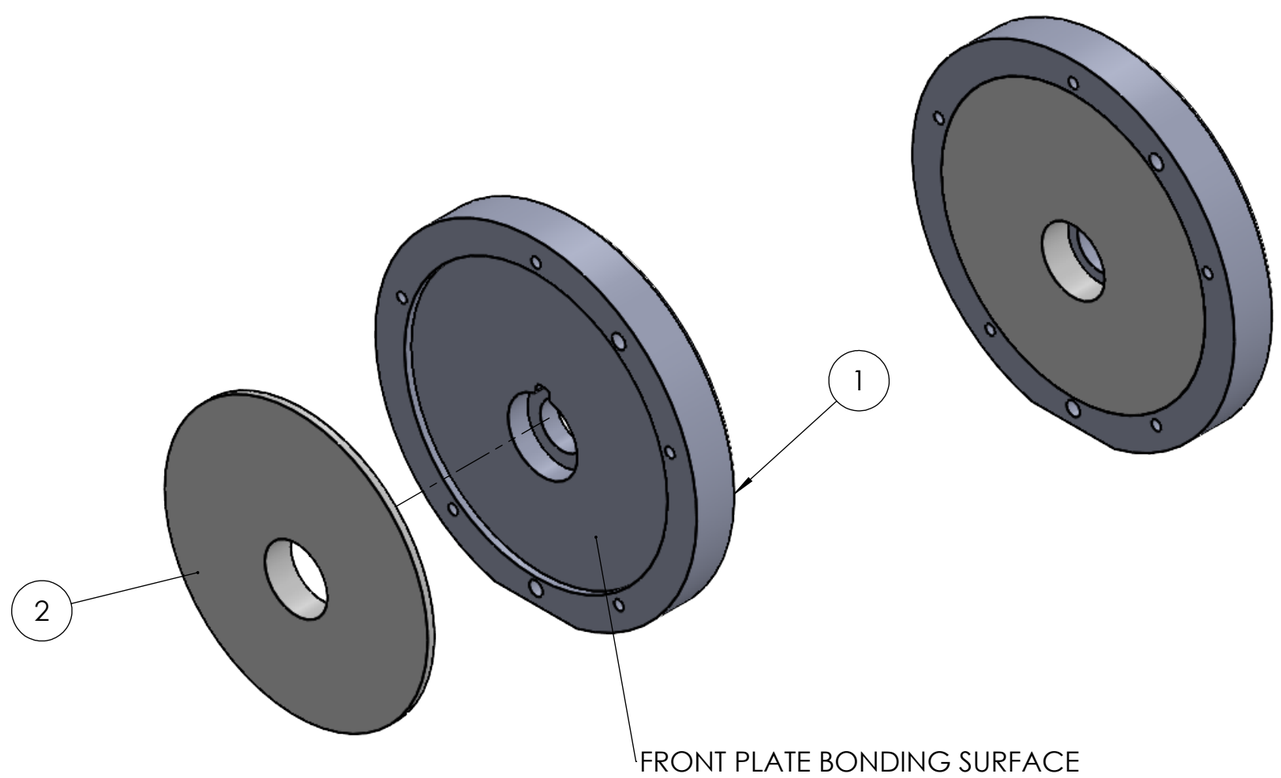
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSEMBLY 2	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-002	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 2 (HOUSING AND INSERT)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:4 / SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1-009	Front Plate	1
2	1-005	Front PEEK Insert	1
3	6-001	ADALDITE AV 138/HARDENER HV 988	1

ASSEMBLY INSTRUCTIONS:

1. PREPARE THE SURFACES TO BE BONDED AS SPECIFIED IN NOTE 1.
2. PREPARE ARALDITE AV 138/HARDENER HV 988 ACCORDING TO MANUFACTURER INSTRUCTIONS.
3. APPLY ARALDITE AV 138/HARDENER HV 988 TO THE BONDING SURFACES.
4. PRESS FIT THE FRONT PEEK INSERT (1-005) TO THE FRONT PLATE (1-009) MAKING SURE TO ALIGN THE NOTCH UNTIL FLUSH.



Note: Due to the smooth surface on molded and extruded PEEK™ polymer components, we recommend either a chromic acid etch or mechanical abrasion to leave surface features for the adhesive to bond to. Plasma or corona treatments also significantly improve bond strength. The surfaces to be bonded should be cleaned and degreased.

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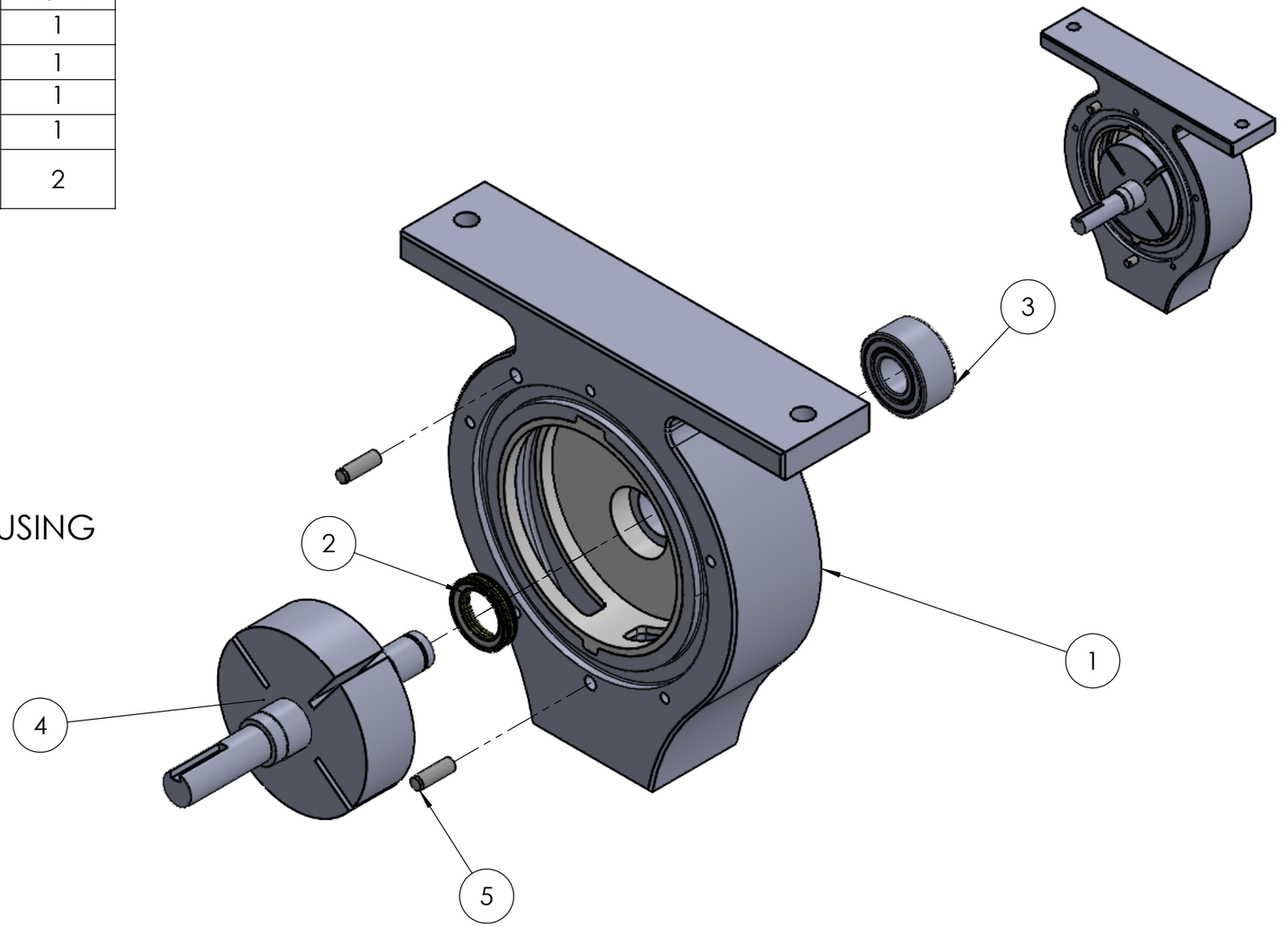
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSEMBLY 3	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-003	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 3 (FRONT PLATE AND INSERT)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4-002	Sub Assembly 2	1
2	3-003	Shaft Seal	1
3	3-002	SKF Bearing	1
4	4-001	Sub Assembly 1	1
5	3-006	Dowel Pin	2

ASSEMBLY INSTRUCTIONS:

1. PRESS FIT THE SHAFT SEAL (3-002) INTO THE HOUSING (1-001) UNTIL FLUSH.
2. PRESS FIT SUBASSEMBLY 2 (4-002) INTO THE HOUSING UNTIL FLUSH.
3. PRESS FIT THE BEARING (3-002) INTO THE HOUSING UNTIL FLUSH.
4. PRESS FIT 2X DOWEL PINS (3-006) INTO THE HOUSING AS PICTURED UNTIL FLUSH.



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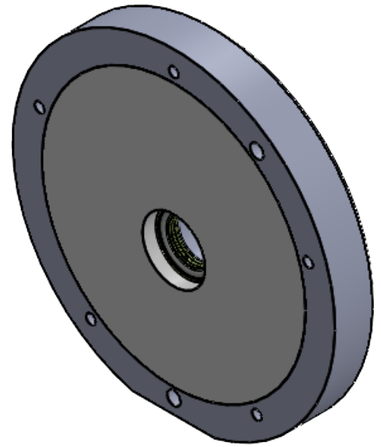
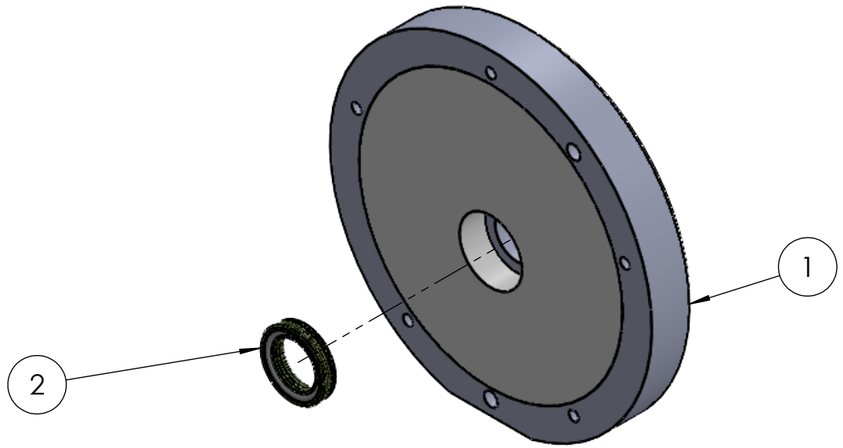
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSEMBLY 4	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-004	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 4 (HOUSING PRESS FIT)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:4 / SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4-003	Sub Assembly 3	1
2	3-003	Shaft Seal	1

ASSEMBLY INSTRUCTIONS:
1. PRESS FIT THE SHAFT SEAL (3-003) INTO THE FONT PLATE ASSEMBLY (4-003) UNTIL IT FULLY SEATS.





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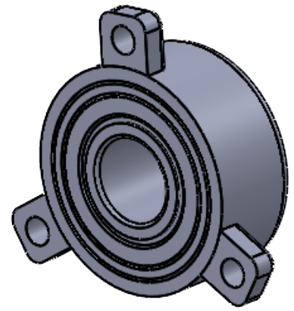
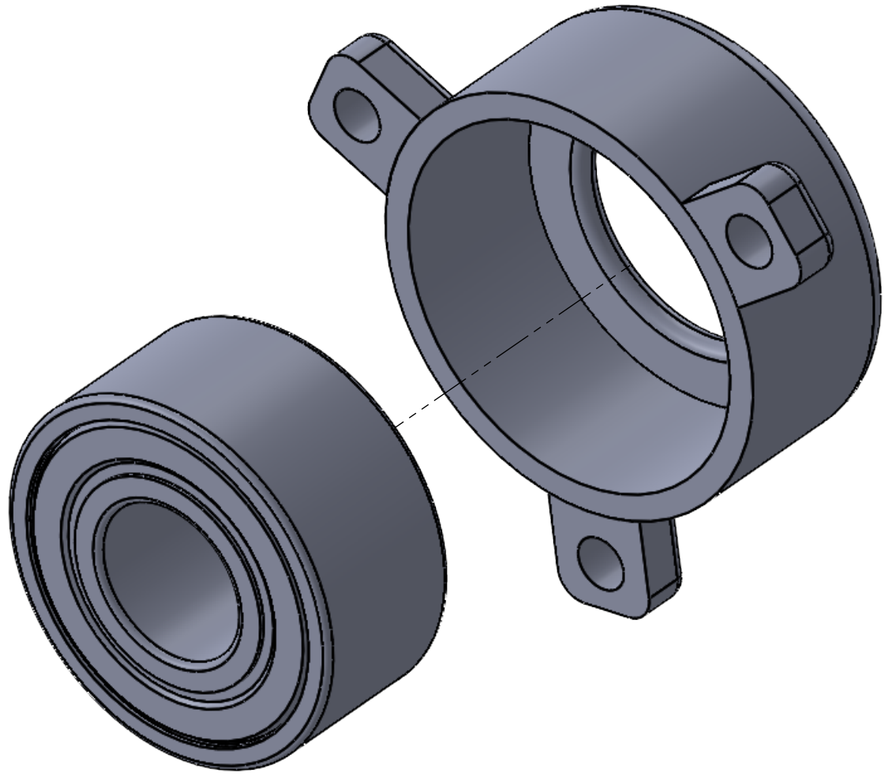
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSSEMBLY 5	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-005	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 5 (FRONT PLATE PRESS FIT)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH / REVISION A	SCALE 1:2	SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	3-002	SKF Bearing	1
2	1-008	Front Bearing Holder	1

ASSEMBLY INSTRUCTIONS:
1. PRESS FIT THE BEARING (3-002) INTO THE FRONT BEARING HOSUING (1-008) UNTIL IT SITS FLUSH WITH THE BOTTOM SURFACE.





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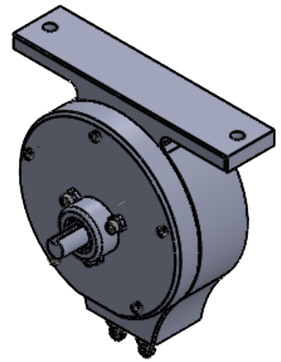
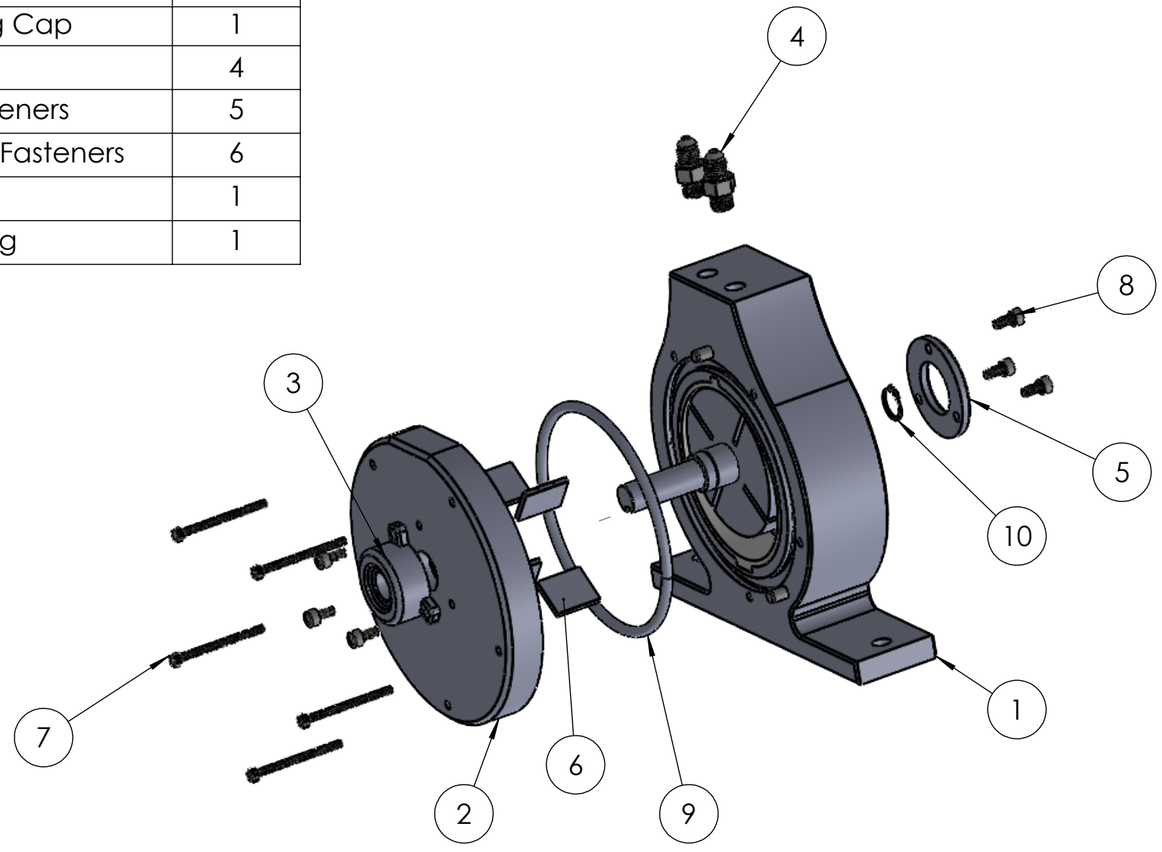
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSEMBLY 6	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-006	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 6 (BEARING HOLDER PRESS FIT)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH / REVISION A	SCALE 1:1	SHEET 1 OF 1

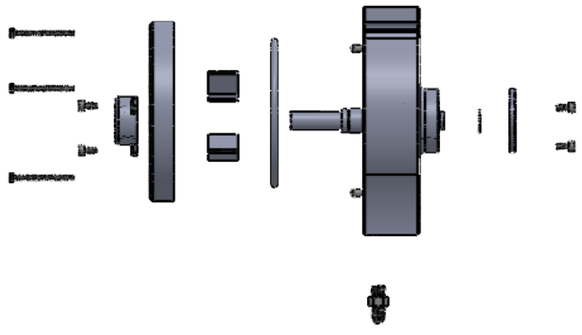
BOM Table			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	4-004	Sub Assembly 4	1
2	4-005	Sub Assembly 5	1
3	4-006	Sub Assembly 6	1
4	3-001	37 Degree Flared Fitting for Steel Tubing	2
5	1-007	Back Bearing Cap	1
6	1-006	Vane	4
7	3-007	Housing Fasteners	5
8	3-008	Bearing Housing Fasteners	6
9	3-005	O-ring	1
10	3-004	Snap Ring	1

ASSEMBLY INSTRUCTIONS:

1. SLIDE EACH VANE (1-006) INTO THE SLOTS ON THE ROTAR ORIENTNG THE THROUGH HOLES SO THAT THEY ARE FACING THE INNER SURFACE OF THE HOUSING
2. INSERT THE O-RING (3-005) INTO THE GLAND ON THE HOUSING.
3. SLIDE THE FRONT PLATE ONTO THE SHAFT USING THE PINS TO ALIGN IT WITH THE HOUSING.
4. SLIDE THE FRONT BEARING ONTO THE SHAFT AND SECURE WITH 3X M5 SCREWS TORQUING TO 12.8 FT-LB
5. SECURE THE FRONT PLATE TO THE HOUSING USING 5X M4 SCREWS TORQUING TO 6.5 FT-LB.
6. PLACE THE SNAP RING INTO THE GROOVE ON THE BACK OF THE SHAFT.
7. SECURE THE BACK BEARING CAP USING 3X M5 SCREWS TORQUING TO 12.8 FT-LB.
8. SCREW THE PIPE FITTINGS INTO THE TOP OF THE HOUSING UNTIL FULLY SEATED.







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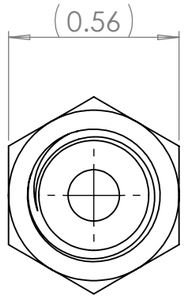
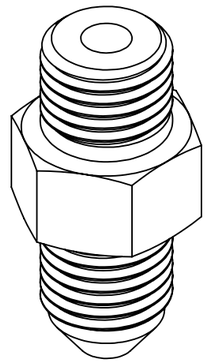
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SUB ASSEMBLY 7	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 4-007	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL N/A		FILENAME PUMP SUB ASSEMBLY 7 (FASTENERS)	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH N/A			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:8 / SHEET 1 OF 1

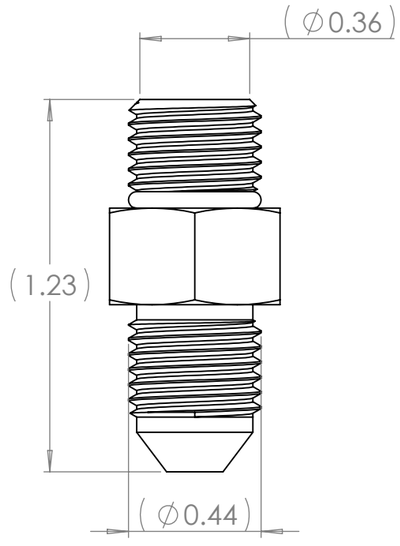
Note 1:

Purchased Part:
Vendor: McMaster-Carr
Vendor Part Number: 50695K61

Or equivalent approved by Engineering







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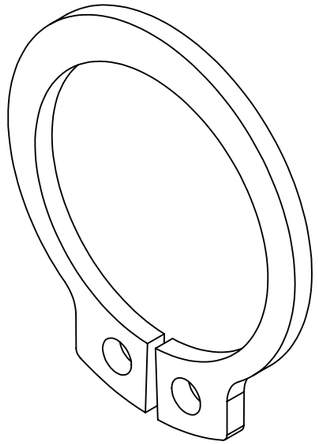
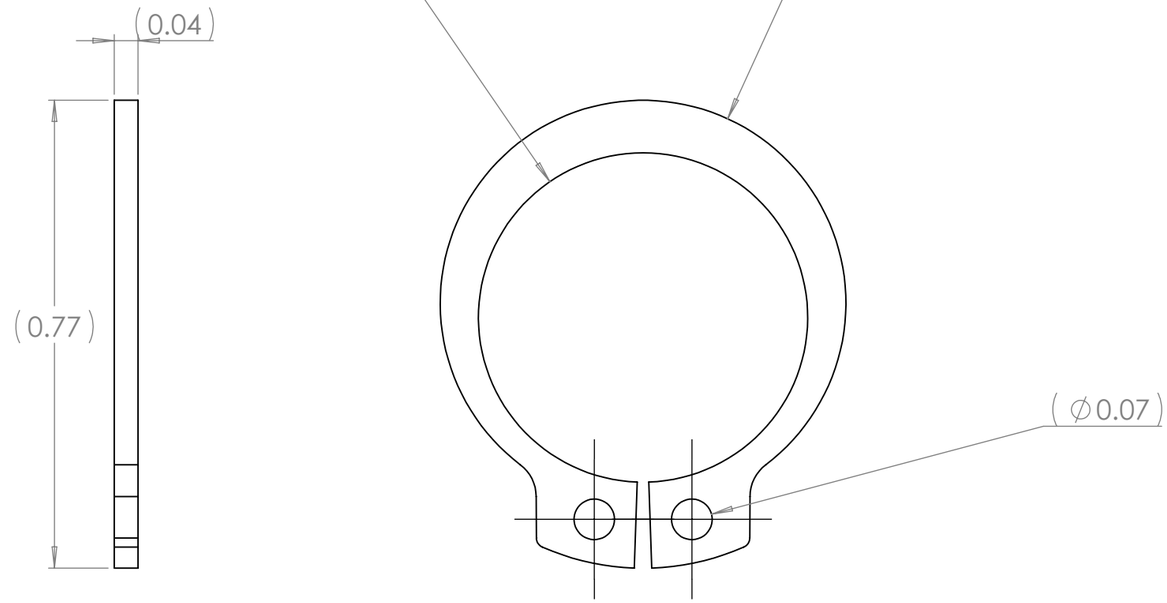
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE 37 DEGREE FLARED FITTING FOR STEEL TUBING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 3-001	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL ZINC-PLATED STEEL		FILENAME 50695K61_37 DEGREE FLARED FITTING FOR STEEL TUBING	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED BY MANUFACTURER			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 2:1 / SHEET 1 OF 1

Note 1:

Purchased part:
Vendor: McMaster-Carr
Vendor part number: 98541A410

Or equivalent approved by Engineering.





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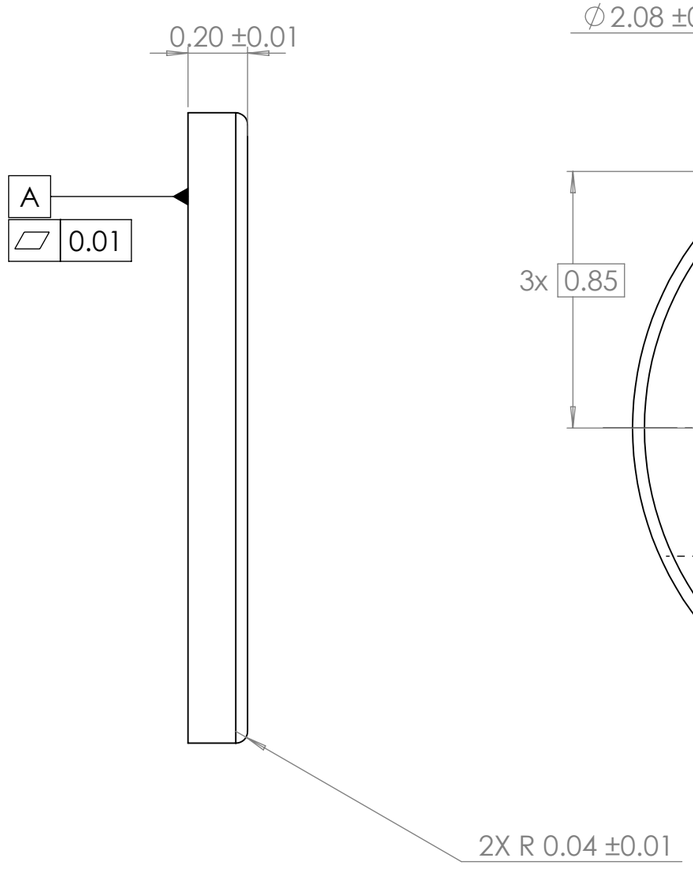
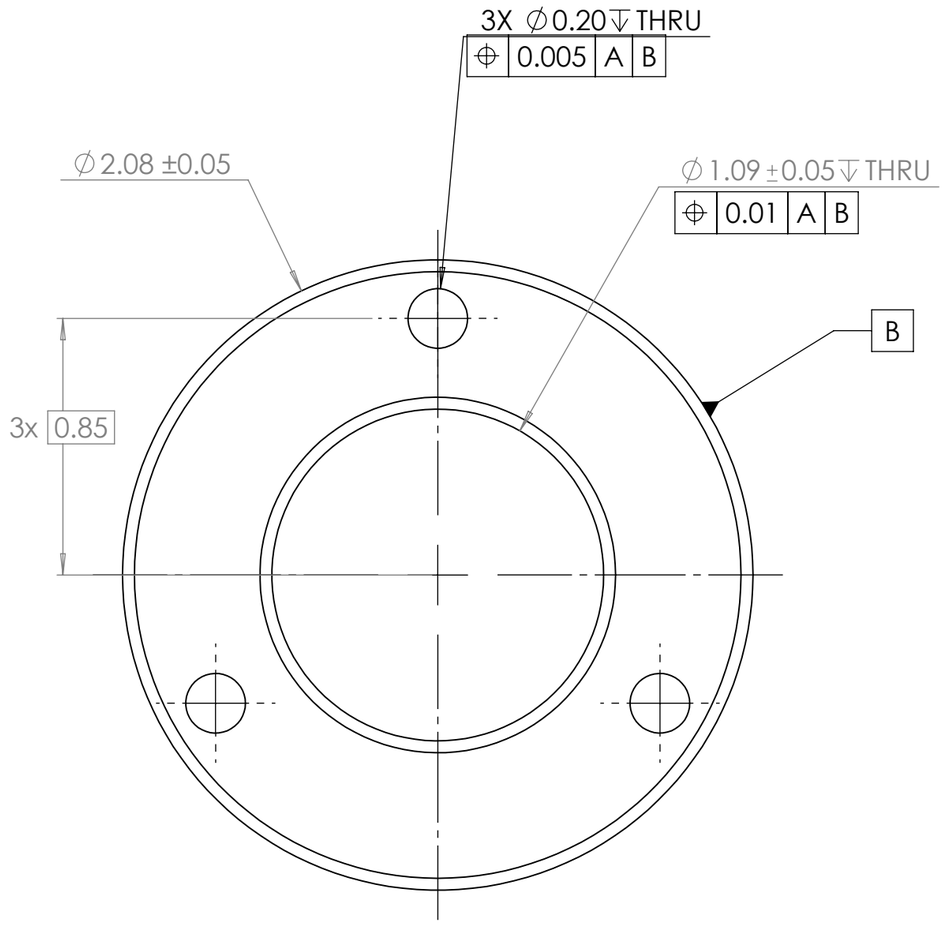
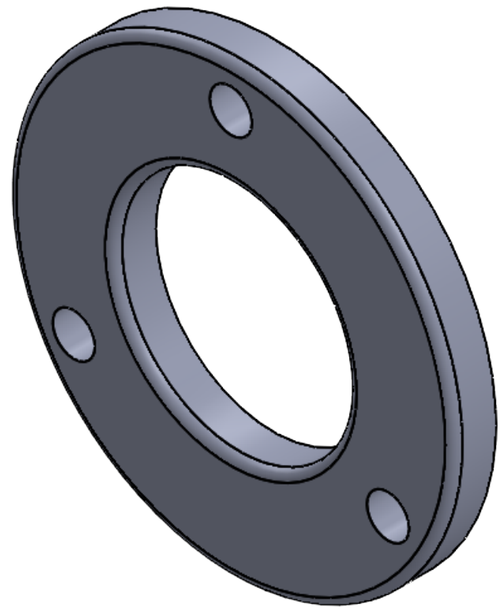
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SNAP RING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 3-004	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL 1060-1090 SPRING STEEL		FILENAME 98541A410_EXTERNAL RETAINING RING	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED BY MANUFACTURER			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 4:1 / SHEET 1 OF 1







Note 1:
FINISH: POWDER COAT (EPOXY–POLYESTER).
COLOR: RAL 7016
SURFACE PREP: CLEAN, DEGREASE, AND ABRASIVE-BLAST TO SSPC-SP10 .
TARGET DRY FILM THICKNESS: 60–80 µm (2.4–3.2 mil).
MASK ALL THREADED HOLES AND CRITICAL INTERFACES.

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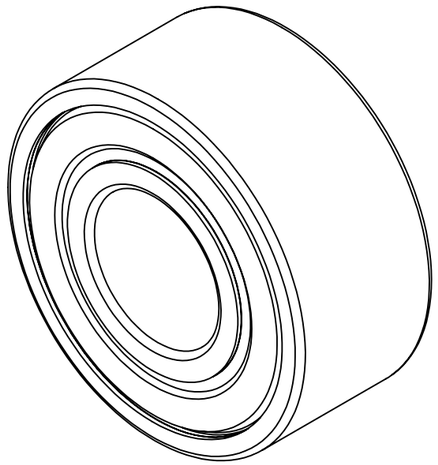
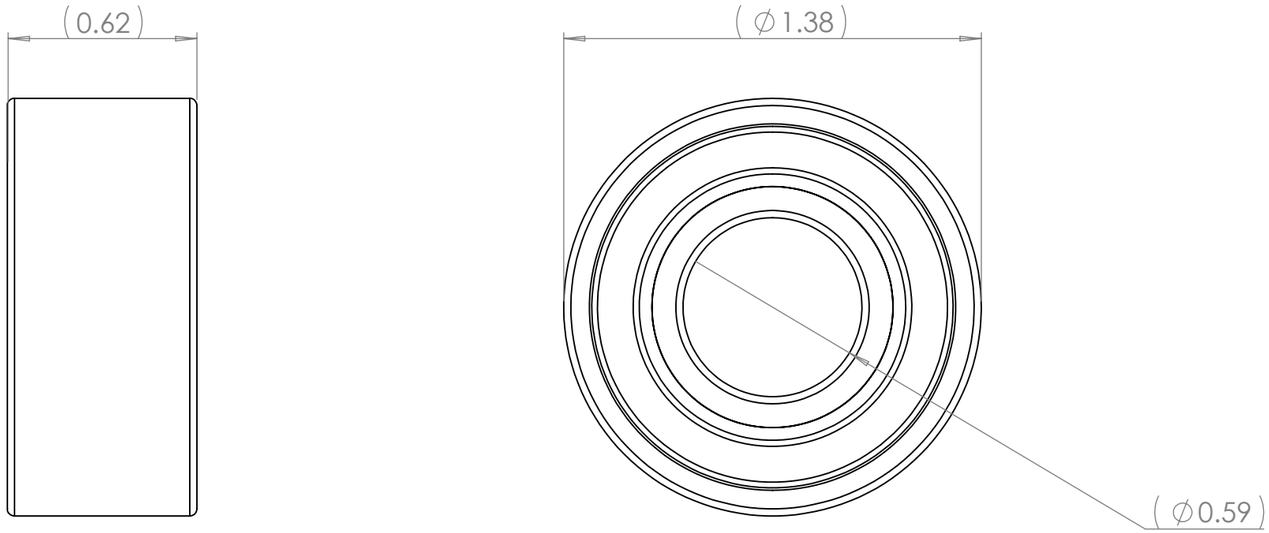
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE BACK BEARING HOUSING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 1-007	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL ALUMINUM 6061-T6		FILENAME BACK_BEARING_HOLDER	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH SEE NOTE 1			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 2:1 / SHEET 1 OF 1

Note 1:

Purchased Part:
Vendor: SKF
Vendor part number: 3202 A-2RS1TN9/MT33

Or equivalent approved by Engineering.





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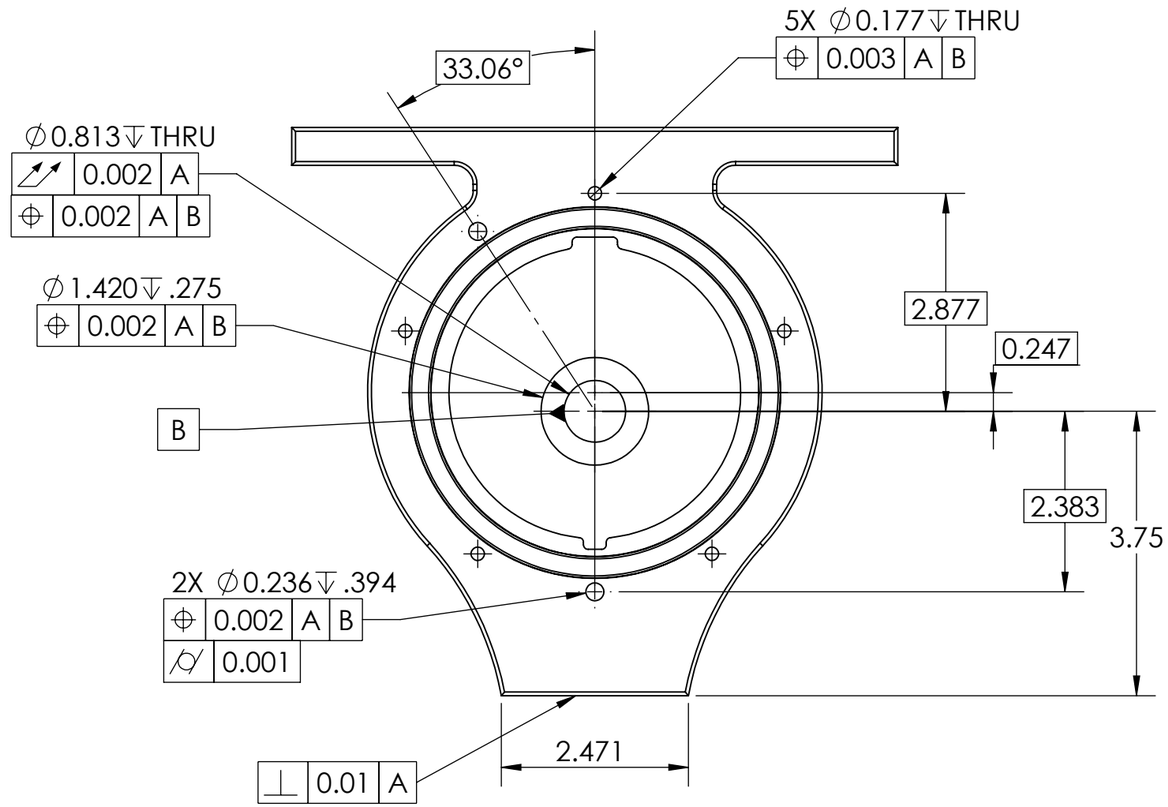
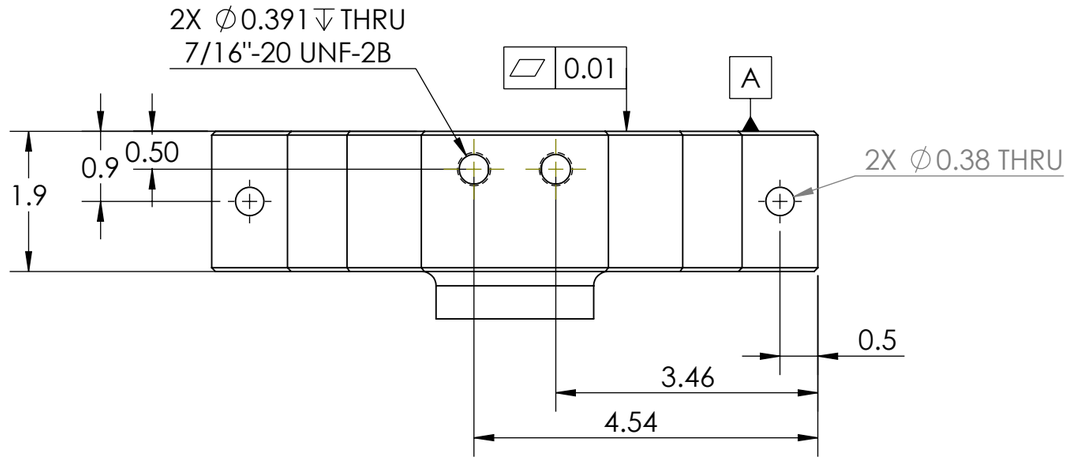
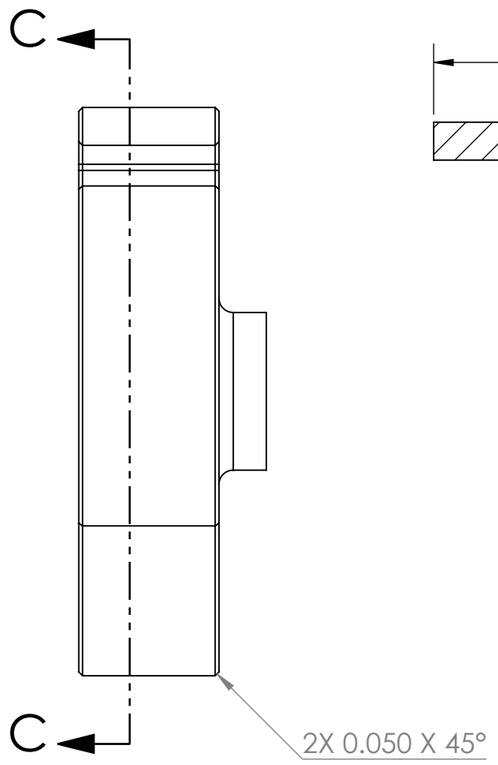
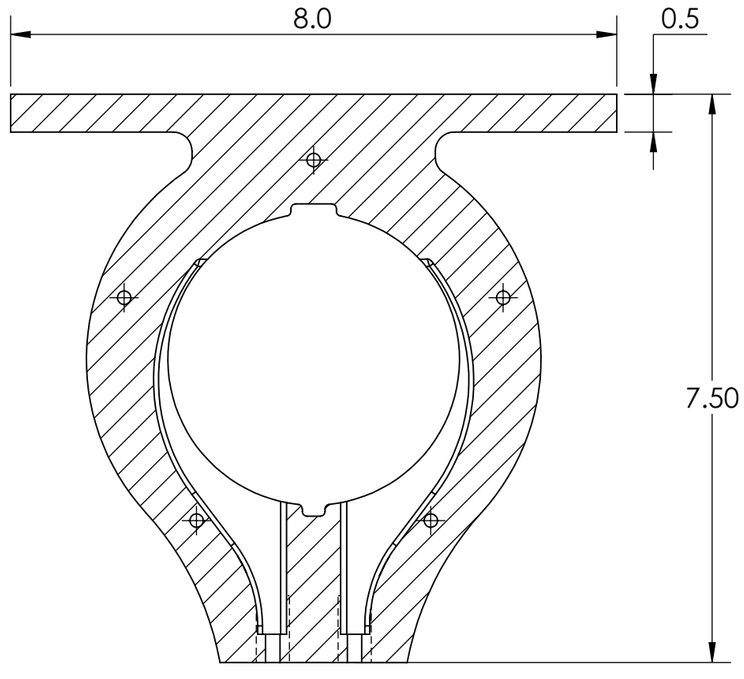
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE SKF BEARING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 3-002	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL BEARING STEEL		FILENAME BEARING	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 2:1 / SHEET 1 OF 1









SECTION C-C

NOTES:
1. MAKE FROM PART 2-001
2. MACHINED SURFACE FINISH: 125 µIN RA UNLESS OTHERWISE SPECIFIED
3. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS

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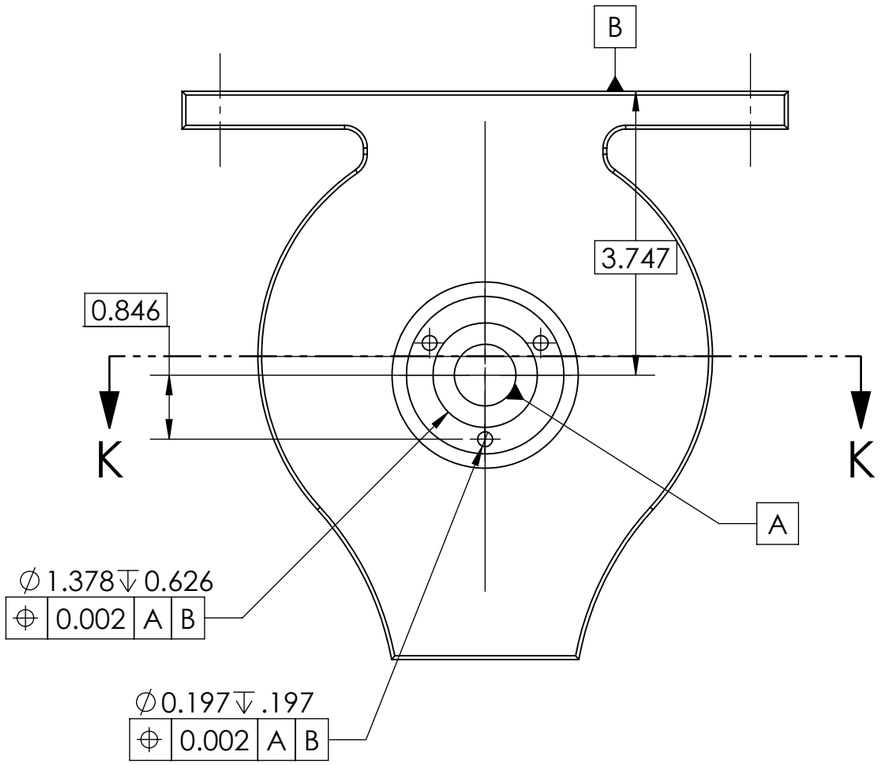
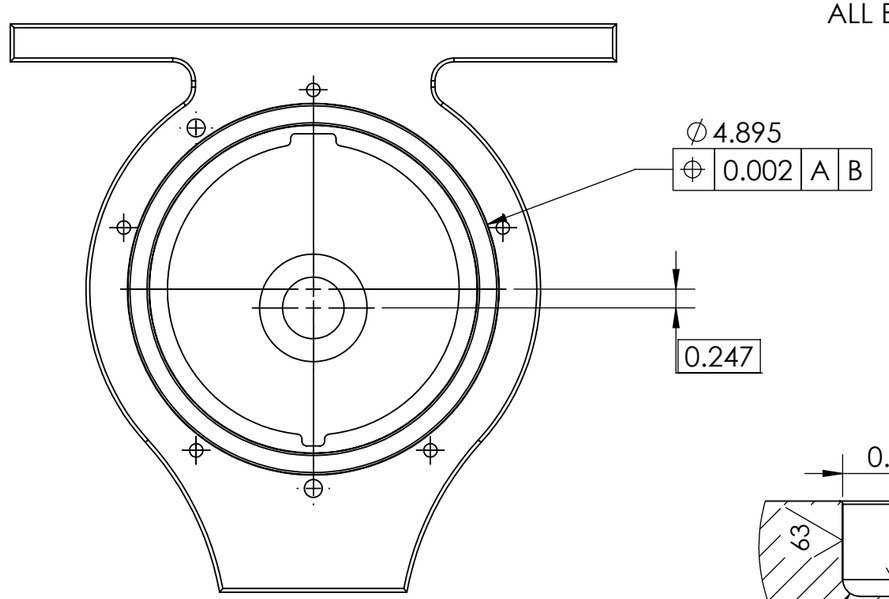
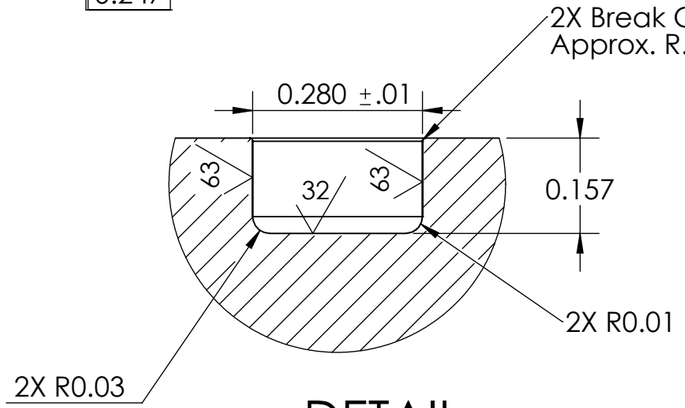
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE PUMP HOUSING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 1-001	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL DUCTILE CAST IRON (65-45-12)		FILENAME D1-001_PUMPHOUSINGB	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH SEE NOTE 2			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 1 OF 2

NOTES:
1. MAKE FROM PART 2-001
2. MACHINED SURFACE FINISH: 125 µIN RA UNLESS OTHERWISE SPECIFIED
3. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS

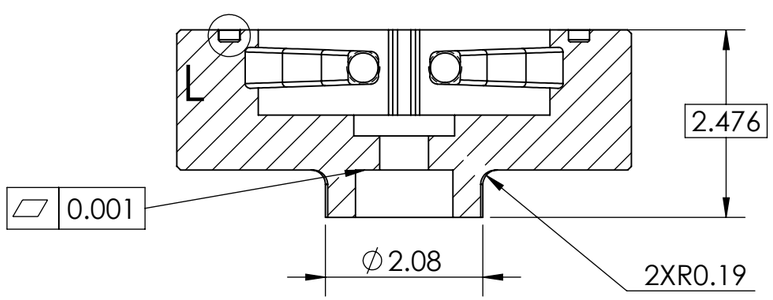






DETAIL L

SCALE 4 : 1



SECTION K-K

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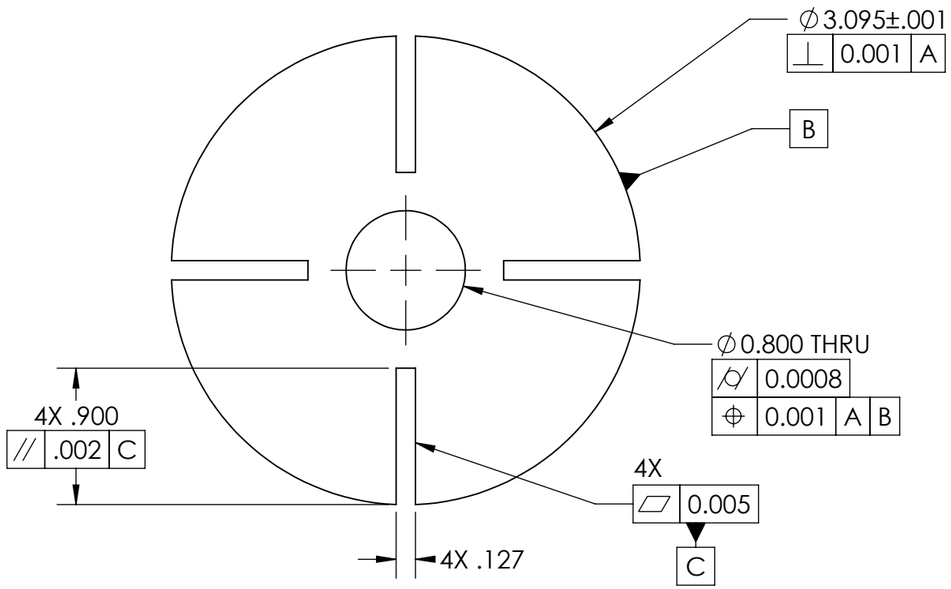
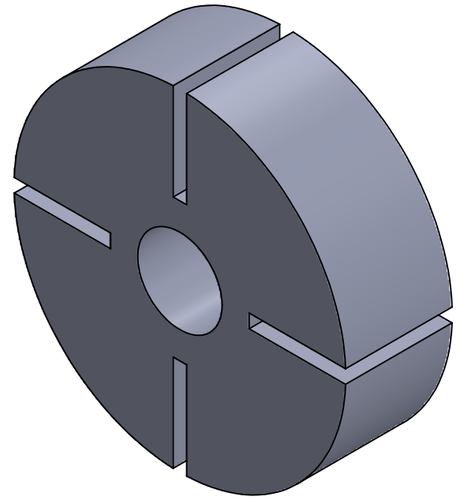
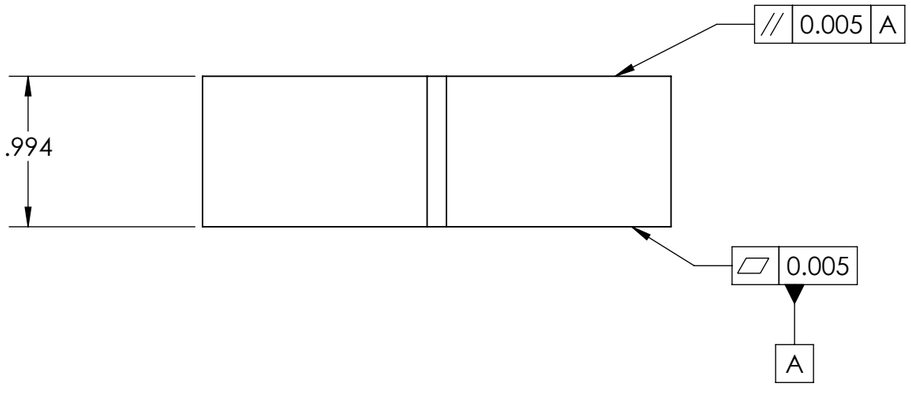
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE PUMP HOUSING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 1-001	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL DUCTILE CAST IRON (65-45-12)		FILENAME D1-001_PUMPHOUSINGB	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH SEE NOTE 2			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 2 OF 2







NOTES:
1. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS

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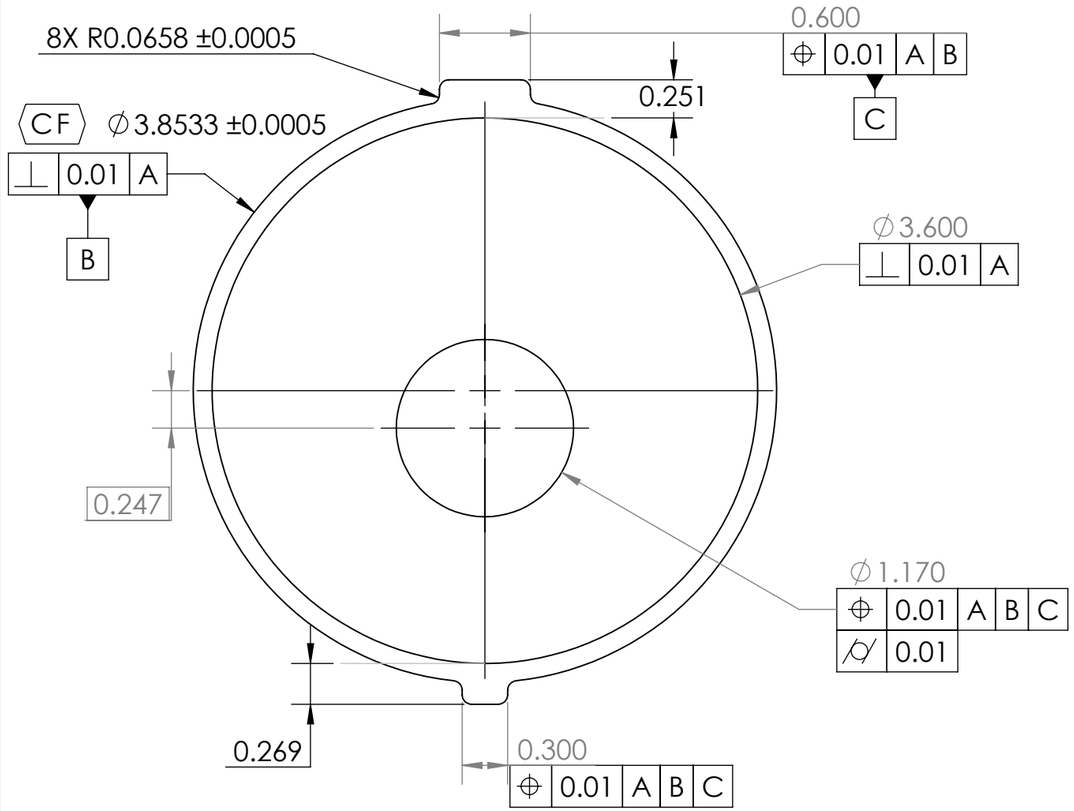
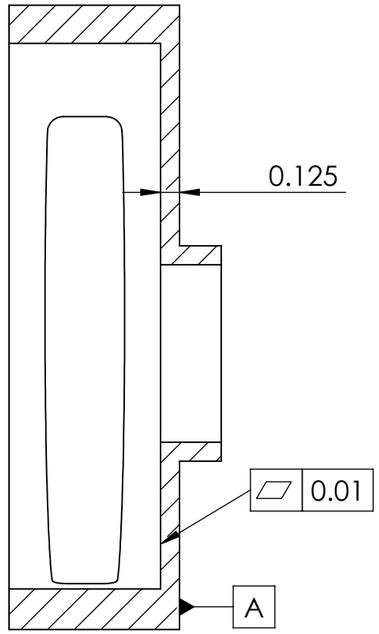
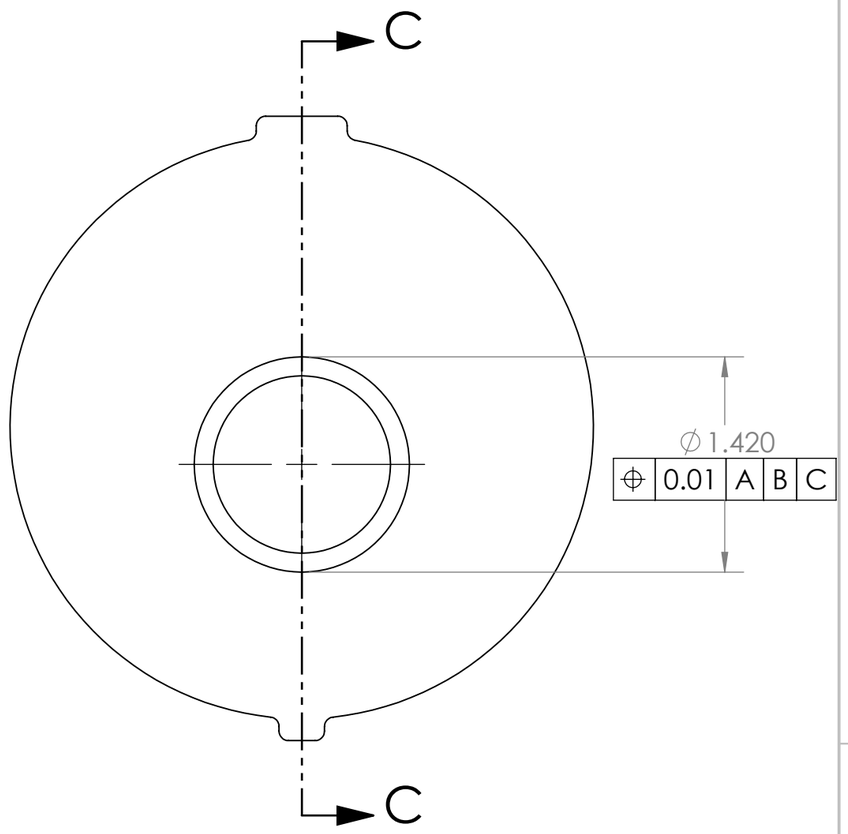
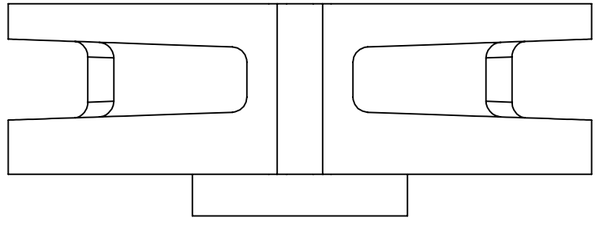
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE ROTOR	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 1-002	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL ALLOY STEEL (AISI 4140)		FILENAME D1-002_ROTOR	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS MILLED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 1 OF 1





SECTION C-C





Note: slots to be left as cast.

NOTE:
1. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS

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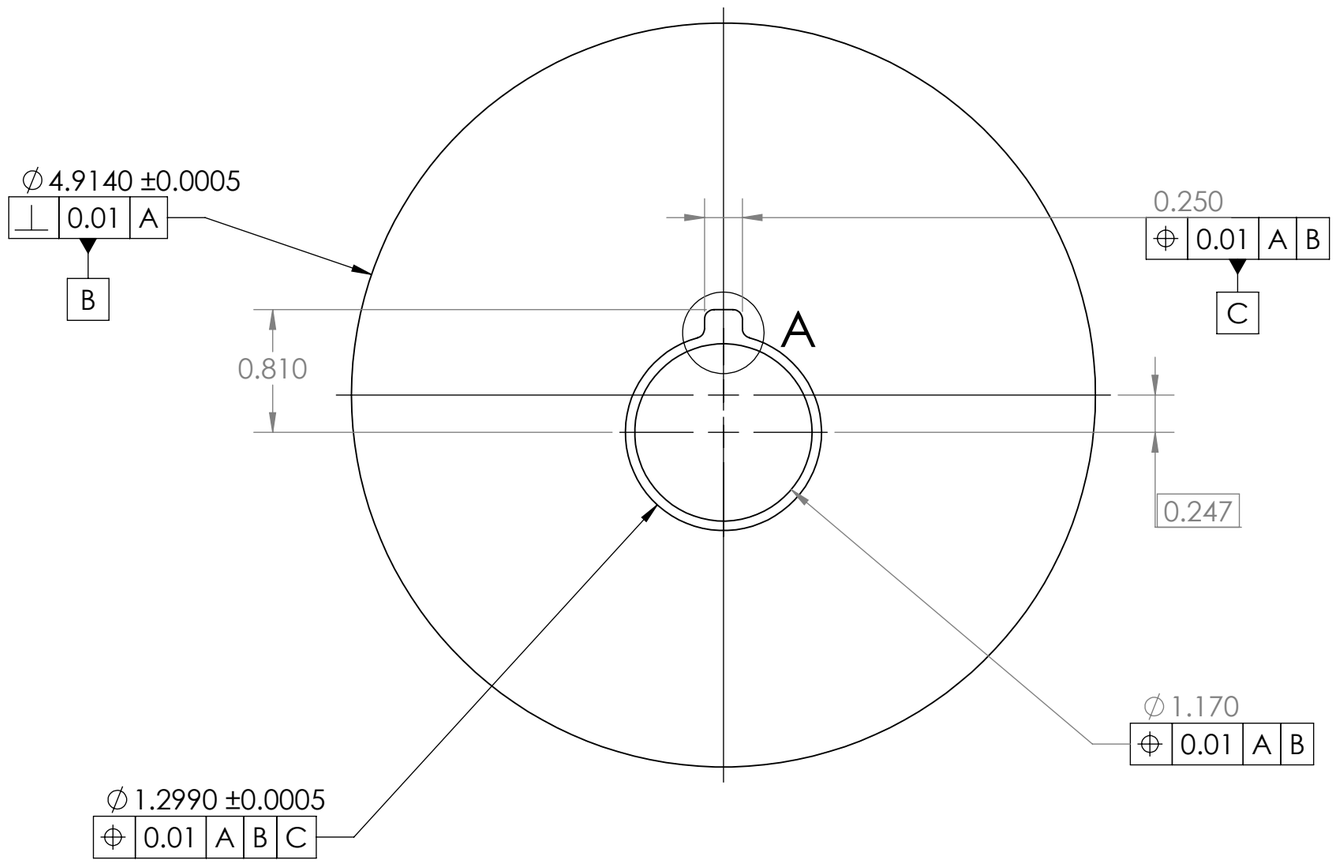
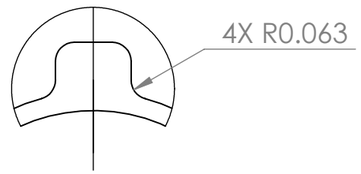
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 1-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D1-004_HOUSINGINSERT_REVB	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS MILLED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 1 OF 1

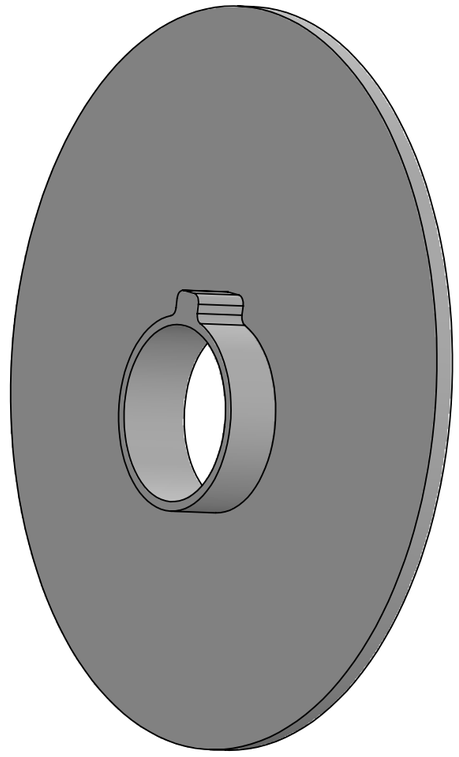
NOTES:
1. MAKE FROM PART 2-005
2. UNLESS SPECIFIED, MACHINED FINISH: 125 µIN RA
3. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS

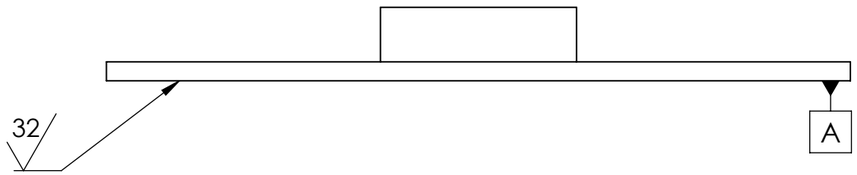




DETAIL A

SCALE 2 : 1





REFERENCE FINISH: FINISH DEFINED BY PART 2-005 MOLDING DOCUMENT

DO NOT MACHINE FURTHER

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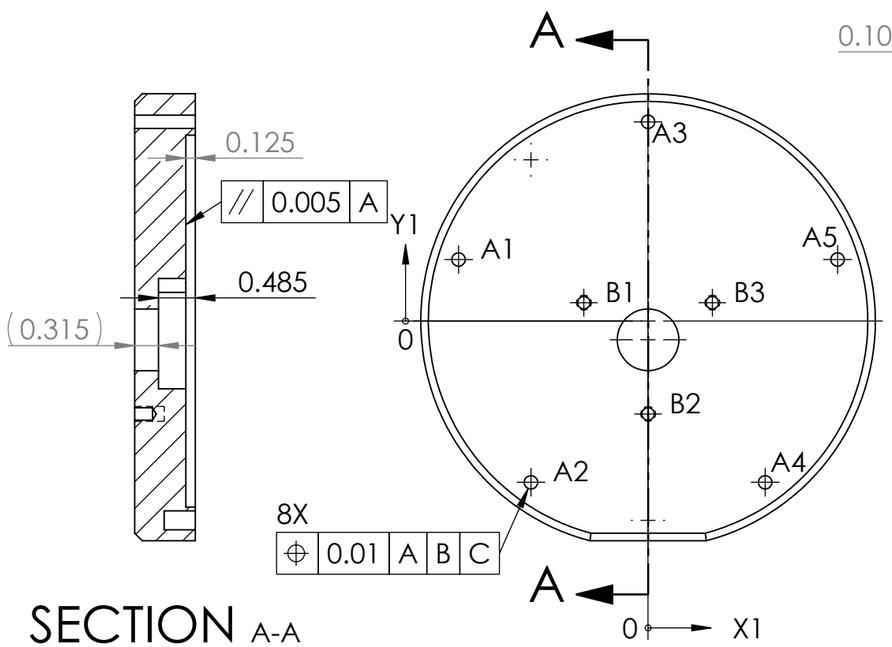
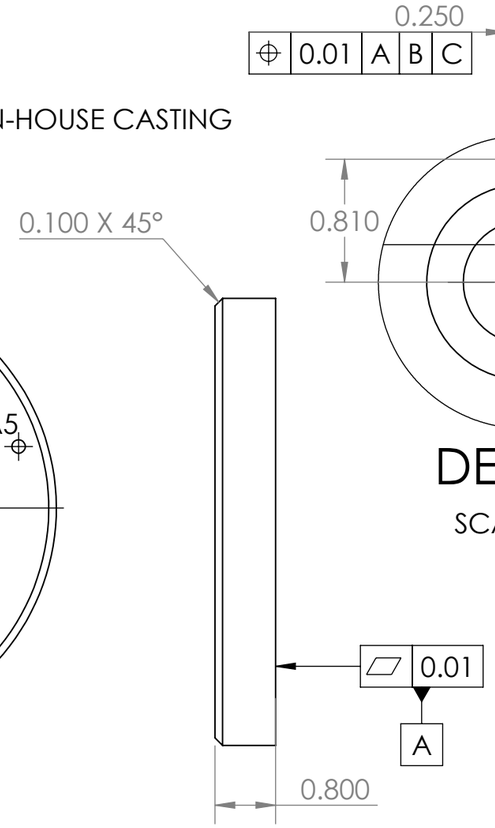
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE FRONT PLATE INSERT	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 1-005	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D1-005_FRONTPLATEINSERT	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH SEE NOTE 2			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 1 OF 1

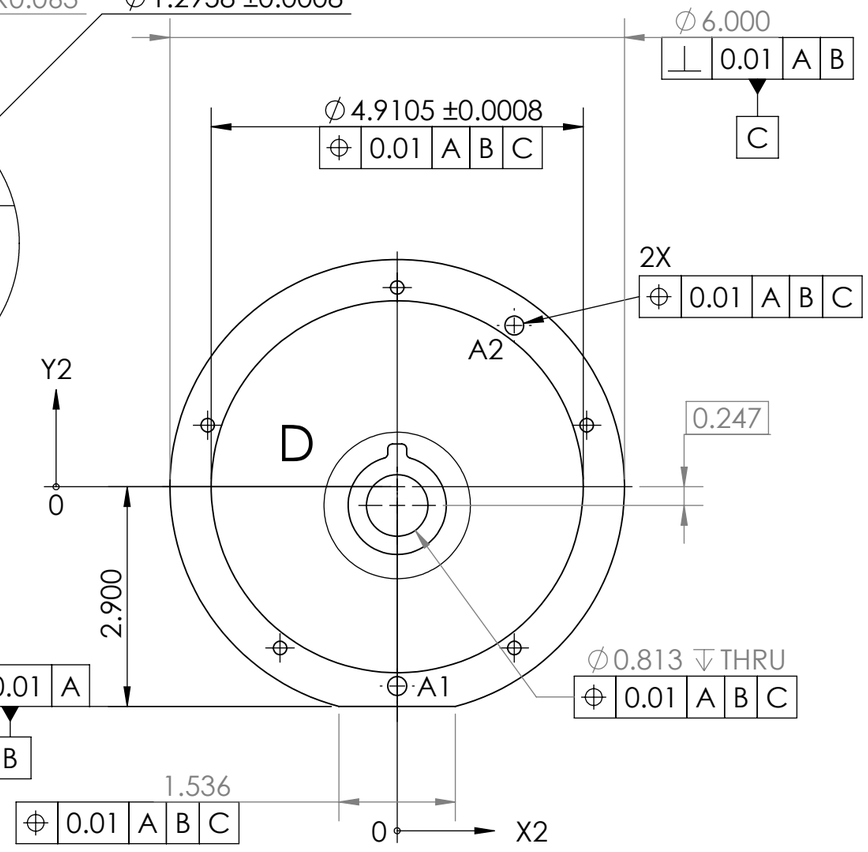
NOTE:
1. PART EXPECTED TO BE MADE FROM CAST IRON STOCK, NOT IN-HOUSE CASTING
2. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS



SECTION A-A



DETAIL D
SCALE 1 : 1



TAG	X1 LOC	Y1 LOC	SIZE
A1	-2.50	0.81	∅0.177 THRU
A2	-1.55	-2.13	∅0.177 THRU
A3	-0.00	2.63	∅0.177 THRU
A4	1.55	-2.13	∅0.177 THRU
A5	2.50	0.81	∅0.177 THRU
B1	-0.85	0.24	∅0.165↧.24 M5 x 0.8 mm - H6
B2	0.00	-1.23	∅0.165↧.24 M5 x 0.8 mm - H6
B3	0.85	0.24	∅0.165↧.24 M5 x 0.8 mm - H6

TAG	X2 LOC	Y2 LOC	SIZE
A1	0.00	-2.63	∅0.250↧.410
A2	1.55	2.13	∅0.250↧.410

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DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE	FRONT PLATE
.X	±.1	DATE 12/17/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER	1-009
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL CAST IRON, DUCTILE (65-45-12)		FILENAME	D1-009_FRONTPLATE
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH 125 µIN RA			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED

1. PART DIMENSIONS, DETAILS, AND FORM ARE TO BE DETERMINED DIRECTLY FROM THE 3D CAD MODEL. THIS DRAWING PROVIDES ADDITIONAL INFORMATION FOR TOOL BUILD AND THE PRODUCTION AND CHECKING OF THIS PART. THE MODEL FILE DIMENSIONS ARE TO BE CONSIDERED NOMINAL FOR TOLERANCING PURPOSES.

2. USE PUMPCO. DOC-8675309 TRACEABILITY LEVEL .

3. MOLDED PART TO BE FREE OF MOLD RELEASE OR OTHER SURFACE CONTAMINANTS.

4. PARTS SHALL BE PACKED SO AS TO PREVENT DAMAGE DURING TRANSIT. PARTS SHALL BE PLACED IN TRAYS, INDIVIDUAL BAGS, OR OTHER SUITABLE ARRANGEMENT SO AS TO PREVENT CONTAMINATION BY DUST OR DAMAGE BY ABRASION.

5. TOOLING REQUIRED TO MAKE THIS PART TO BE PROPERTY OF PUMPCO. AND SHALL BE PERMANENTLY MARKED WITH PUMPCO. NAME AND APPROPRIATE PART CODE, LOCATED IN THE TITLE BLOCK

6. TOOL DESIGN TO BE SUBMITTED AND APPROVED BY PUMPCO. ENGINEERING PRIOR TO CONSTRUCTION OF TOOLS.

7. TO BE COMPLIANT WITH THE REQUIREMENTS OF THE EC DIRECTIVE 2002/95/EC OF JANUARY 27, 2003, A SO CALLED RoHS DIRECTIVE.

8. DIMENSIONS MARKED (X.X) OR (CTQ) ARE CRITICAL TO QUALITY AND MUST MEET THE INSPECTION REQUIREMENTS OF THE QUALITY CATEGORY SPECIFIED BY PUMPCO. AND DETAILED IN DOC-940114.

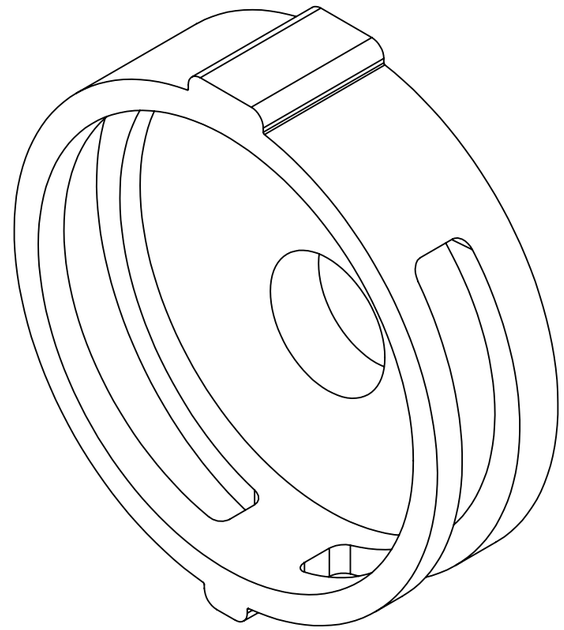
9. PROCESS TOLERANCES UNLESS OTEHRWISE SPECIFIED:
   TOLERANCES PER ISO 2768 AND 2768 COMMERCIAL STANDARDS

PERMISSIBLE DEVIATION IN INCHES — TOLERANCE CLASS DESIGNATION
FOR RANGES IN NOMINAL LENGTH — M(MEDIUM)
.020 UP TO .118 = ± .004
OVER .118 UP TO .236 = ± .004
OVER .236 UP TO 1.181 = ± .008
OVER 1.181 UP TO 4.724 = ± .012
OVER 4.724 UP TO 15.748 = ± .020
OVER 15.748 UP TO 39.370 = ± .031
OVER 39.370 UP TO 78.740 = ± .047
OVER 78.740 UP TO 157.480 = ± .047

EXTERNAL RADII AND CHAMFER HEIGHTS: PERMISSIBLE DEVIATION IN INCHES — TOLERANCE CLASS DESIGNATION
FOR RANGES IN NOMINAL LENGTH — M(MEDIUM)
.020 UP TO .118 = ± .008
OVER .118 UP TO .236 = ± .020
OVER .236 UP TO 1.181 = ± .039

ANGULAR DIM: PERMISSIBLE DEVIATION IN DEGREE AND MINUTES — TOLERANCES CLASS DESIGNATION
FOR RANGES IN NOMINAL LENGTH — M (MEDIUM)
UP TO .394 = ±1°
OVER .394 UP TO 1.969 = ±0° 30'
OVER 1.969 UP TO 4.724 = ±0° 20'
OVER 4.724 UP TO 15.748 = ±0° 10'
OVER 15.748 = ±0° 5'

TOLERANCES FOR STRAIGHTNESS AND FLATNESS FOR RANGE IN NOMINAL LENGTHS IN INCHES — TOLERANCE CLASS DESIGNATION H
UP TO .394 = ± .0008
OVER .394 UP TO 1.181 = ± .0020
OVER 1.181 UP TO 3.937 = ± .0039
OVER 3.937 UP TO 11.811 = ± .0079
OVER 11.811 UP TO 39.370 = ± .0118
OVER 39.370 UP TO 118.110 = ± .0157



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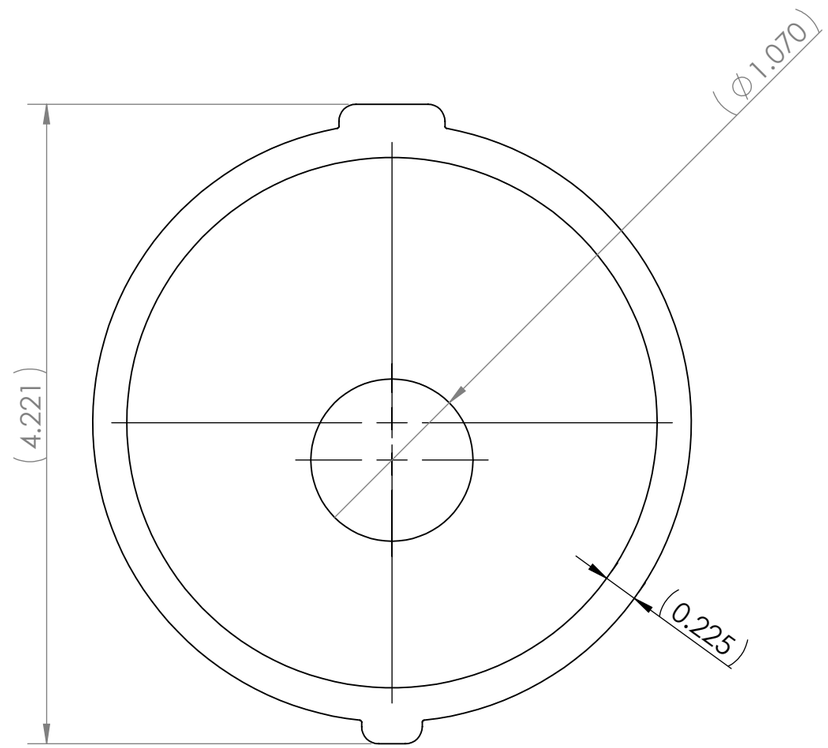
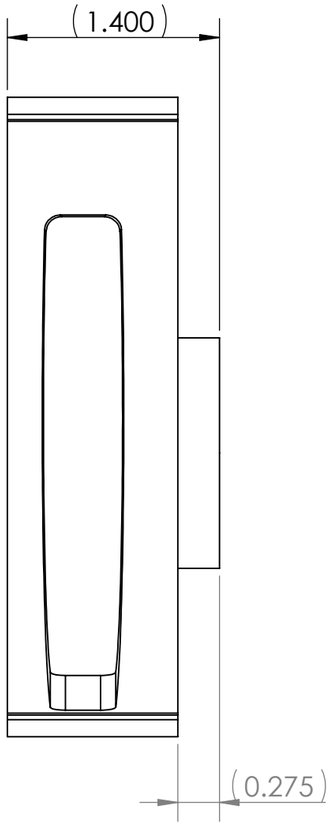
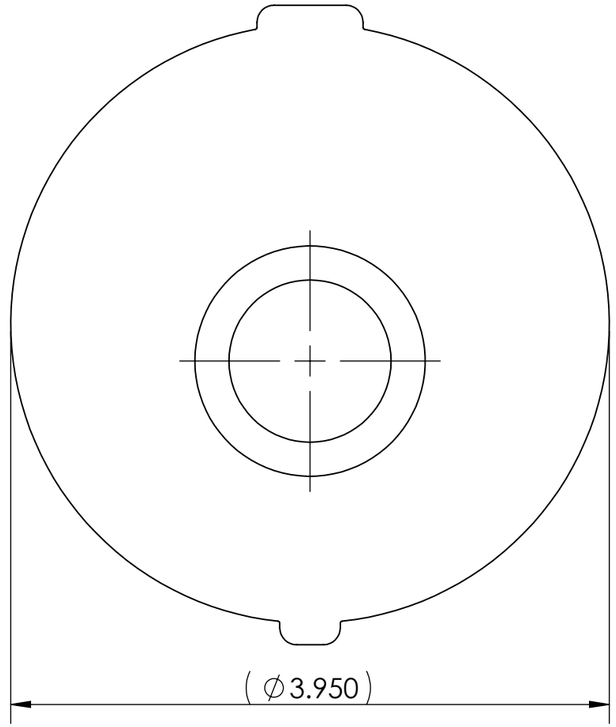
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 1 OF 7

DIMENSION & FEATURE OVERVIEW







BOSTON UNIVERSITY

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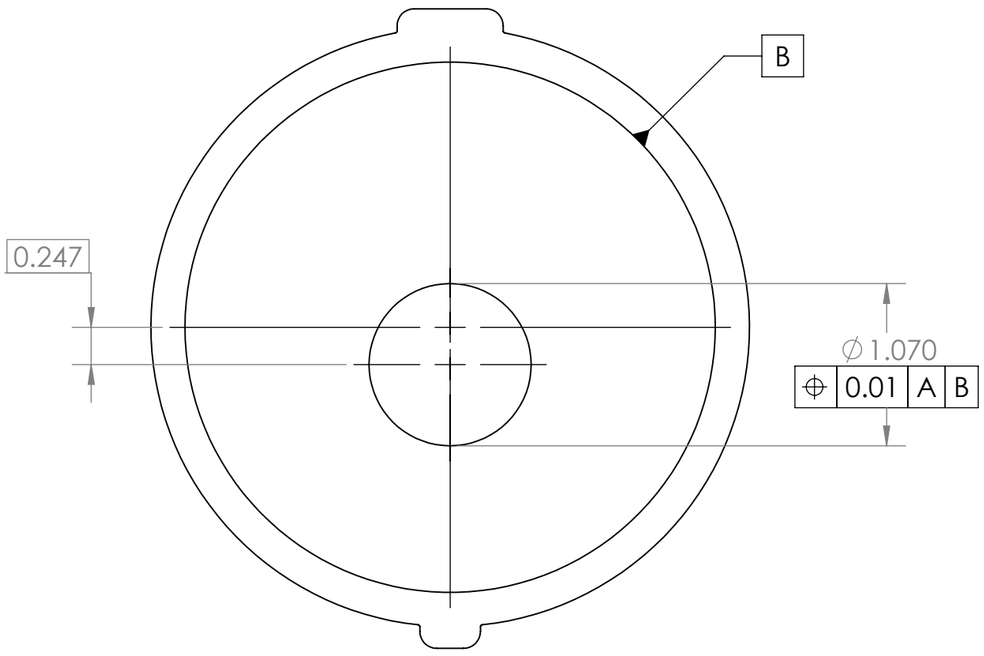
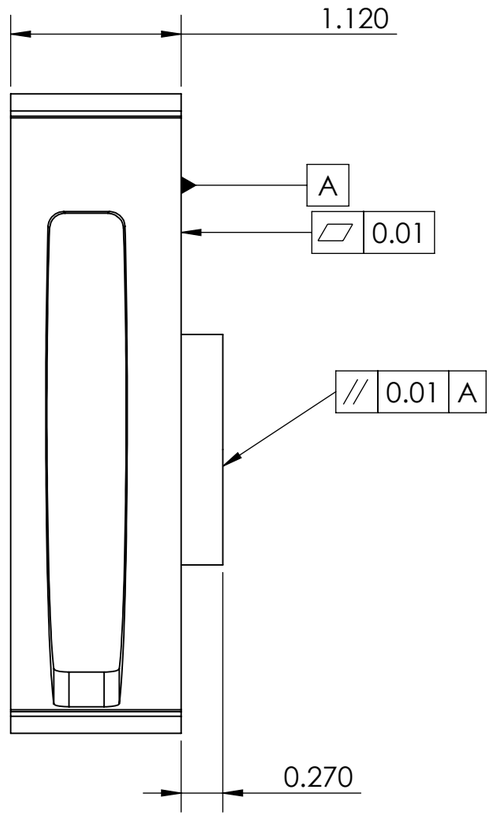
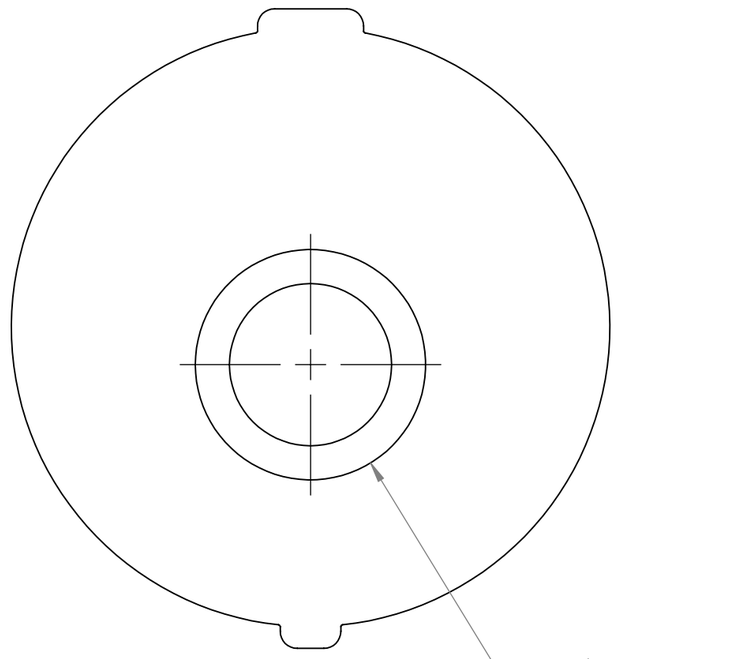
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 2 OF 7

DIMENSIONS



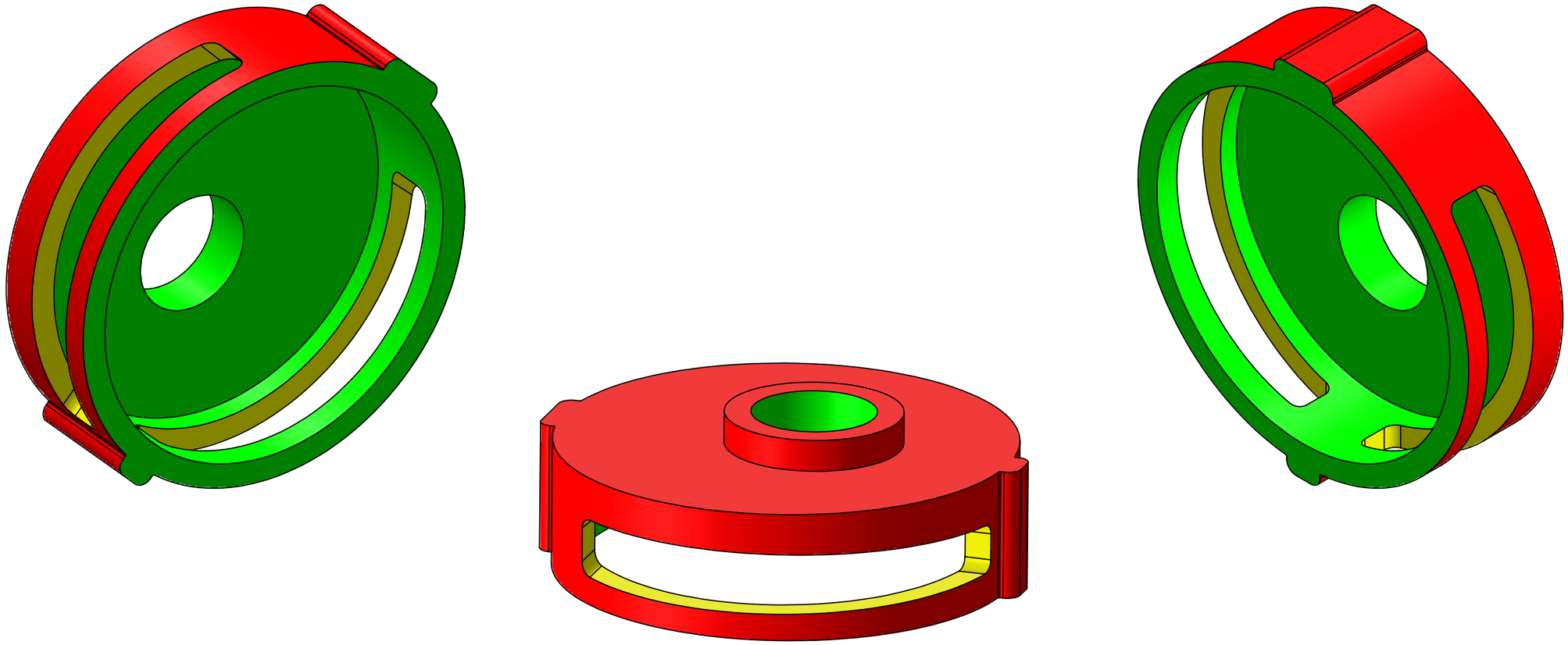




		BOSTON UNIVERSITY	**BOSTON UNIVERSITY COLLEGE OF ENGINEERING**		
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 3 OF 7

NOTE:
1. GATE REMNANT TO BE FLUSH TO SURROUNDING AREA (+0/-.005") UNLESS OTHERWISE APPROVED

PARTING LINE



MOLD SPLIT KEY	COLOR CODE
CAVITY	
CORE	
SIDE-ACTION	

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DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 4 OF 7

COSMETIC SURFACE

NOTES:

1. COSMETIC INSPECTION PROCESS AND SURFACE CLASSIFICATIONS ARE DEFINED IN PUMPCO. COSMETIC REQUIREMENTS DOCUMENT (DOC-000001).

2. SURFACES MUST FOLLOW THE INSPECTION CRITERIA THAT CORRESPONDS TO THEIR ASSIGNED CLASS.

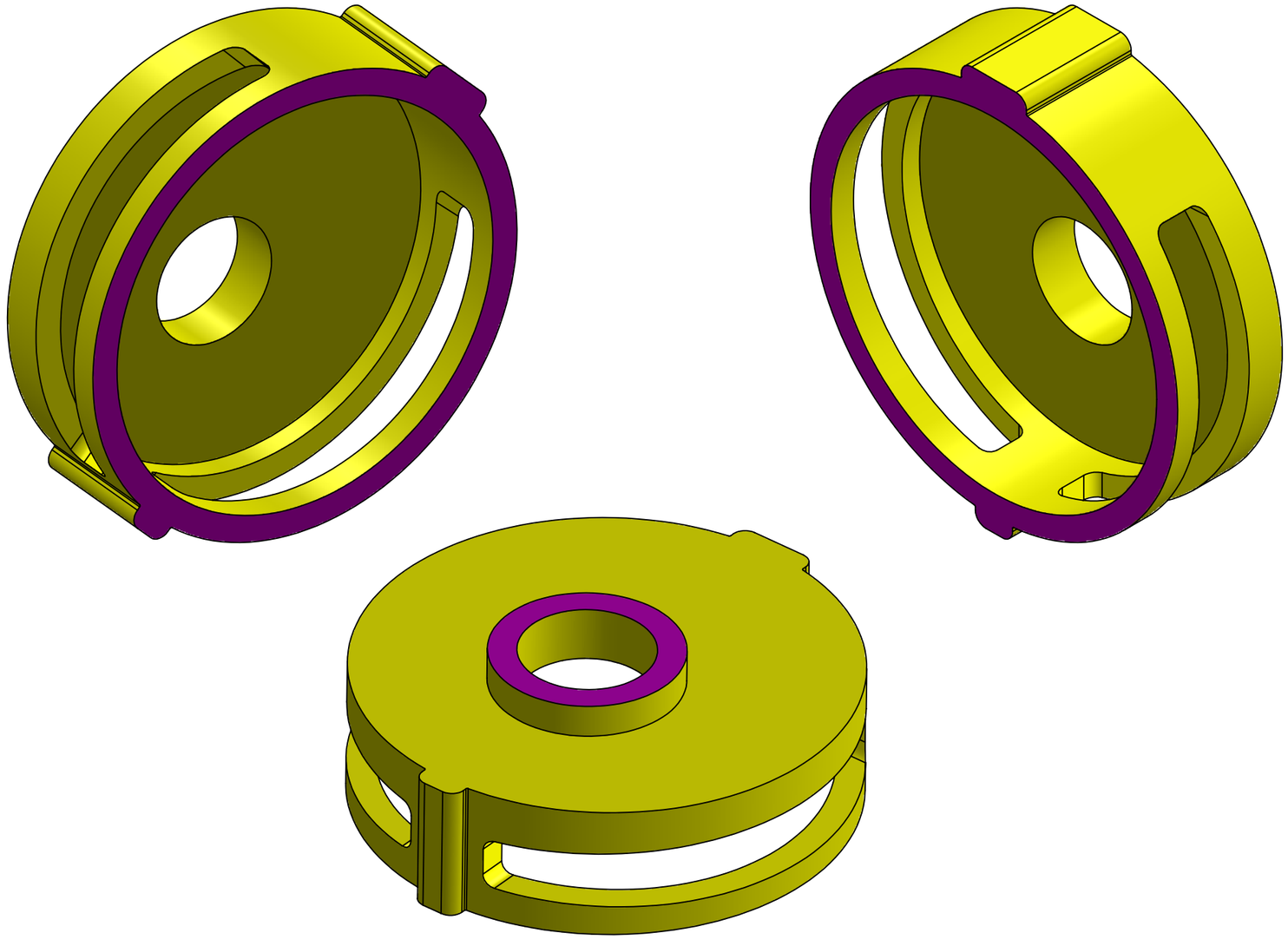
3. ANY UN-CLASSIFIED SURFACE WILL BE INSPECTED AS CLASS C.

4. FILLETS, CHAMFERS, AND OTHER SURFACE MERGING FEATURES WILL ASSUME THE STRICTER INSPECTION CRITERIA OF THE ABUTTING FACES.

5. COSMETIC SURFACE: EJECTOR PIN MARKS, GATES, AND TOOL MARKS NOT PERMITTED ON INDICATED SURFACES. MOLD IS TO BE DESIGNED TO MINIMIZE GATE BLUSH, FLOW LINES, AND OTHER UNSIGHTLY FEATURES AT THE COSMETIC SURFACE. MOLD CONSTRUCTION IS TO CONFORM TO GOOD MOLD BUILDING PRACTICES INDICATED IN THE CURRENT EDITION OF THE SPI "STANDARDS AND PRACTICES OF PLASTIC CUSTOM MOLDERS".

6. EJECTOR PIN MARKS TO BE SUBFLUSH (+0/- .005 IN) UNLESS LOCATION AND DEPTH OTHERWISE APPROVED.

7. SEALING SURFACE: EJECTOR PIN MARKS, GATES, AND TOOL MARKS NOT PERMITTED ON INDICATED SURFACES.



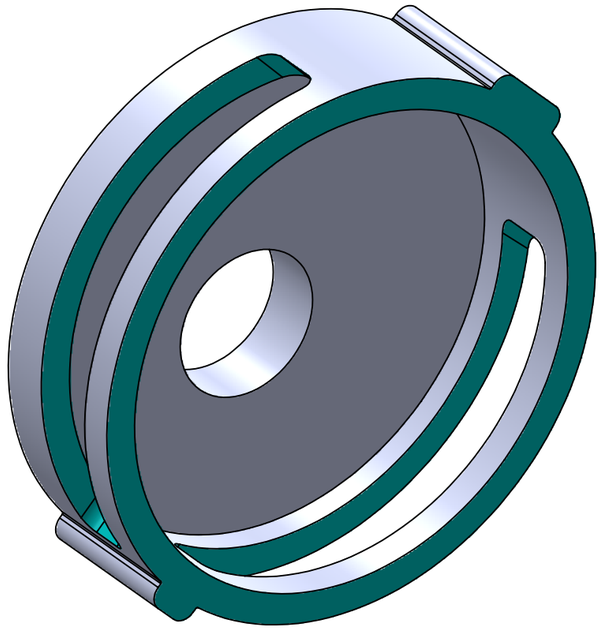
COSMETIC CLASS	COLOR CODE
CLASS S	
CLASS B	

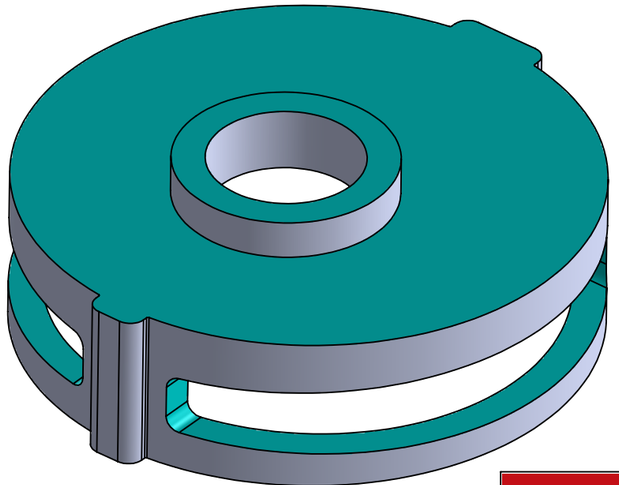
BOSTON UNIVERSITY

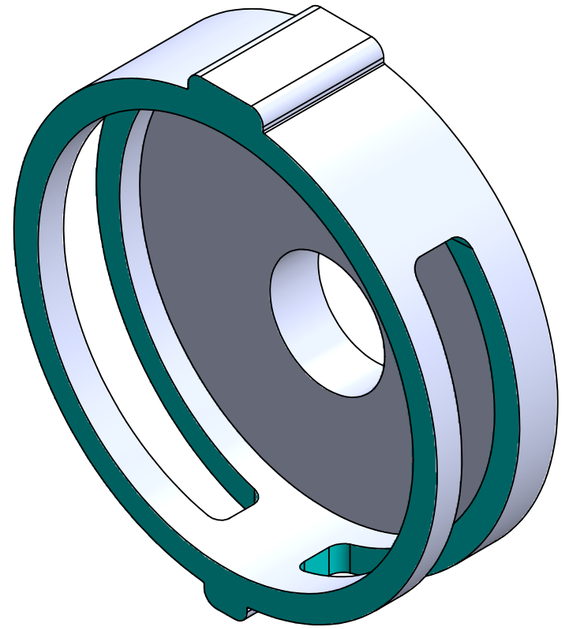
BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 5 OF 7

TEXTURE



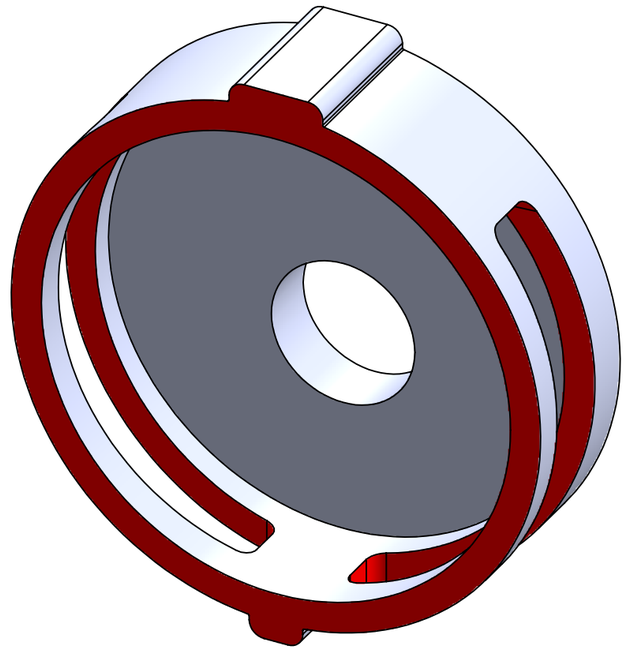


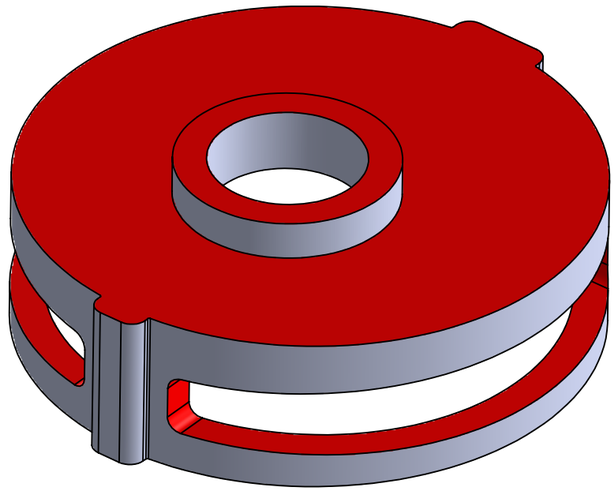


Texture	Color Code
SPI A3	
As Machined	

BOSTON UNIVERSITY	BOSTON UNIVERSITY COLLEGE OF ENGINEERING				
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 6 OF 7

GATE & EJECTORS





	Color Code
NO GATES OR EJECTORS PERMITTED	
GATES AND EJECTORS PERMITTED	All others

BOSTON UNIVERSITY

BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-004	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-004_HOUSINGINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 7 OF 7

NOTES: UNLESS OTHERWISE SPECIFIED

1. PART DIMENSIONS, DETAILS, AND FORM ARE TO BE DETERMINED DIRECTLY FROM THE 3D CAD MODEL. THIS DRAWING PROVIDES ADDITIONAL INFORMATION FOR TOOL BUILD AND THE PRODUCTION AND CHECKING OF THIS PART. THE MODEL FILE DIMENSIONS ARE TO BE CONSIDERED NOMINAL FOR TOLERANCING PURPOSES.

2. USE PUMPCO. DOC-8675309 TRACEABILITY LEVEL .

3. MOLDED PART TO BE FREE OF MOLD RELEASE OR OTHER SURFACE CONTAMINANTS.

4. PARTS SHALL BE PACKED SO AS TO PREVENT DAMAGE DURING TRANSIT. PARTS SHALL BE PLACED IN TRAYS, INDIVIDUAL BAGS, OR OTHER SUITABLE ARRANGEMENT SO AS TO PREVENT CONTAMINATION BY DUST OR DAMAGE BY ABRASION.

5. TOOLING REQUIRED TO MAKE THIS PART TO BE PROPERTY OF PUMPCO. AND SHALL BE PERMANENTLY MARKED WITH PUMPCO. NAME AND APPROPRIATE PART CODE, LOCATED IN THE TITLE BLOCK

6. TOOL DESIGN TO BE SUBMITTED AND APPROVED BY PUMPCO. ENGINEERING PRIOR TO CONSTRUCTION OF TOOLS.

7. TO BE COMPLIANT WITH THE REQUIREMENTS OF THE EC DIRECTIVE 2002/95/EC OF JANUARY 27, 2003, A SO CALLED RoHS DIRECTIVE.

8. DIMENSIONS MARKED (X.X) OR (CTQ) ARE CRITICAL TO QUALITY AND MUST MEET THE INSPECTION REQUIREMENTS OF THE QUALITY CATEGORY SPECIFIED BY PUMPCO. AND DETAILED IN DOC-940114.

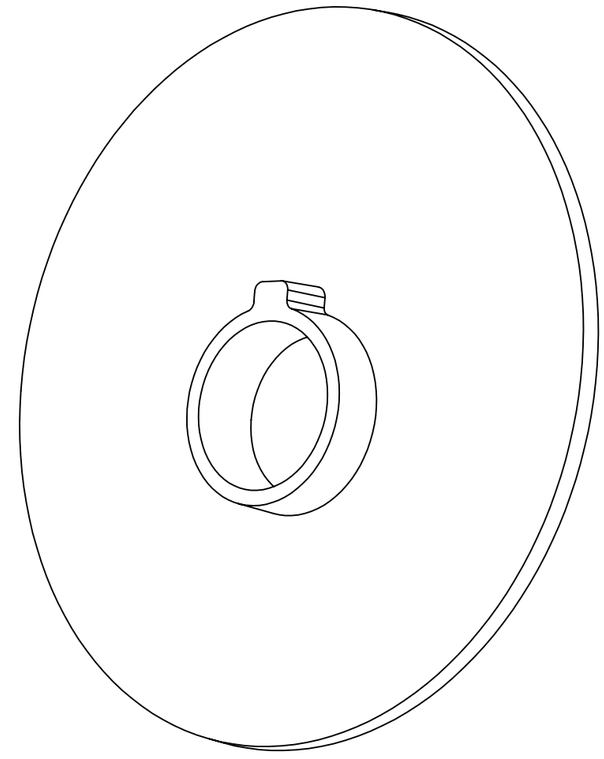
9. PROCESS TOLERANCES UNLESS OTEHRWISE SPECIFIED:
   TOLERANCES PER ISO 2768 AND 2768 COMMERCIAL STANDARDS

PERMISSIBLE DEVIATION IN INCHES TOLERANCE CLASS DESIGNATION
FOR RANGES IN NOMINAL LENGTH M(MEDIUM)
.020 UP TO .118 = ± .004
OVER .118 UP TO .236 = ± .004
OVER .236 UP TO 1.181 = ± .008
OVER 1.181 UP TO 4.724 = ± .012
OVER 4.724 UP TO 15.748 = ± .020
OVER 15.748 UP TO 39.370 = ± .031
OVER 39.370 UP TO 78.740 = ± .047
OVER 78.740 UP TO 157.480 = ± .047

EXTERNAL RADII AND CHAMFER HEIGHTS: PERMISSIBLE DEVIATION IN INCHES TOLERANCE CLASS DESIGNATION
FOR RANGES IN NOMINAL LENGTH M(MEDIUM)
.020 UP TO .118 = ± .008
OVER .118 UP TO .236 = ± .020
OVER .236 UP TO 1.181 = ± .039

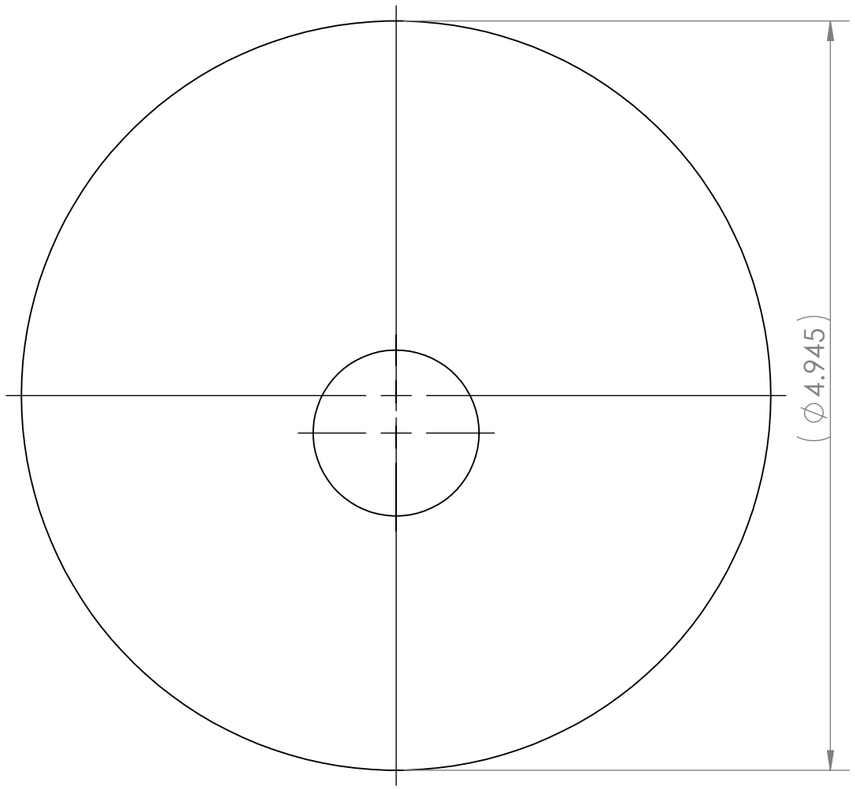
ANGULAR DIM: PERMISSIBLE DEVIATION IN DEGREE AND MINUTES TOLERANCES CLASS DESIGNATION
FOR RANGES IN NOMINAL LENGTH M (MEDIUM)
UP TO .394 = ±1°
OVER .394 UP TO 1.969 = ±0° 30'
OVER 1.969 UP TO 4.724 = ±0° 20'
OVER 4.724 UP TO 15.748 = ±0° 10'
OVER 15.748 = ±0° 5'

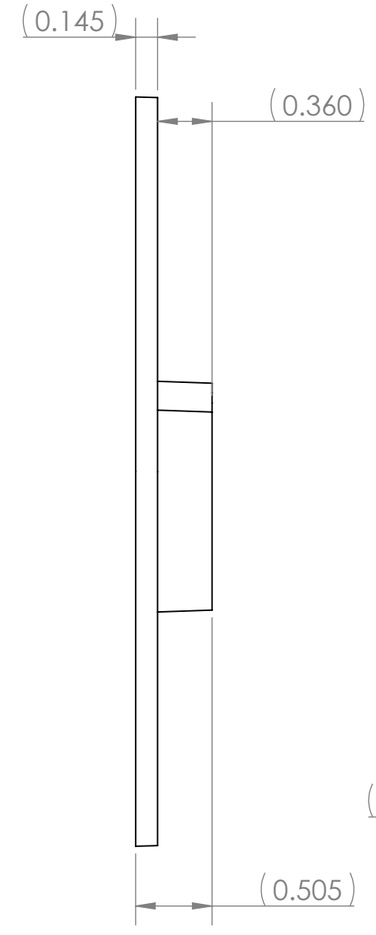
TOLERANCES FOR STRAIGHTNESS AND FLATNESS FOR RANGE IN NOMINAL LENGTHS IN INCHES TOLERANCE CLASS DESIGNATION H
UP TO .394 = ± .0008
OVER .394 UP TO 1.181 = ± .0020
OVER 1.181 UP TO 3.937 = ± .0039
OVER 3.937 UP TO 11.811 = ± .0079
OVER 11.811 UP TO 39.370 = ± .0118
OVER 39.370 UP TO 118.110 = ± .0157

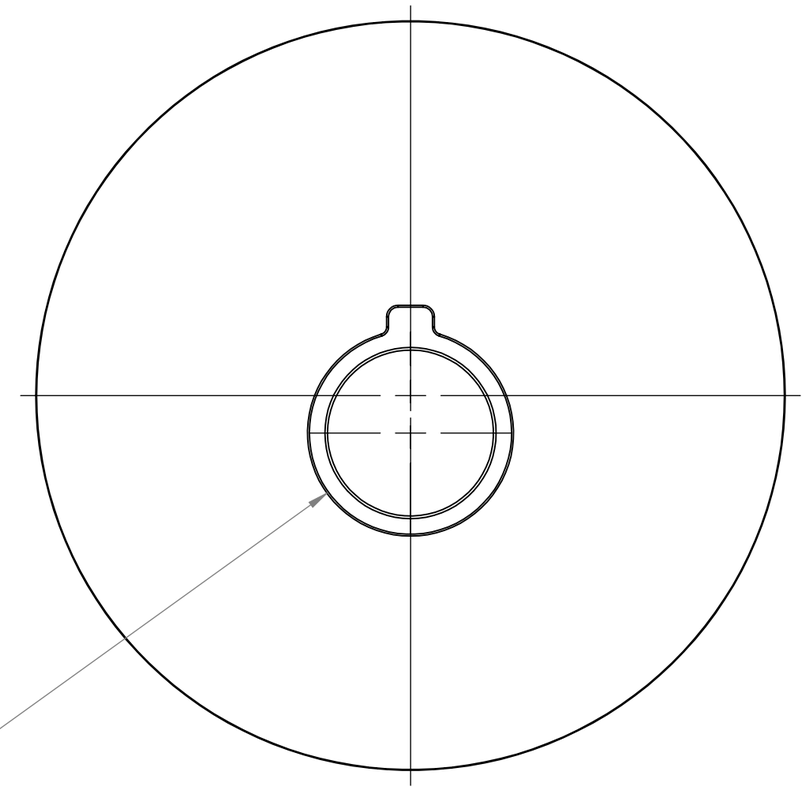


DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		BOSTON UNIVERSITY	BOSTON UNIVERSITY COLLEGE OF ENGINEERING	
.X	±.1	COURSE ME559	SECTION TEAM 6	TITLE FRONT INSERT BLANK
.XX	±.01	DATE 12/16/2025		
.XXX	±.005	NAME MATT STAFFORD		NUMBER 2-005
ANGLE	±1°	EMAIL MSTAFF@BU.EDU		
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		MATERIAL VICTREX 450G PEEK		FILENAME D2-005_FRONTINSERTBLANK
THIRD ANGLE PROJECTION		FINISH AS SPECIFIED		
		SIZE B	UNITS INCH	REVISION A
				SCALE 1:1
				SHEET 1 OF 7

DIMENSION OVERVIEW



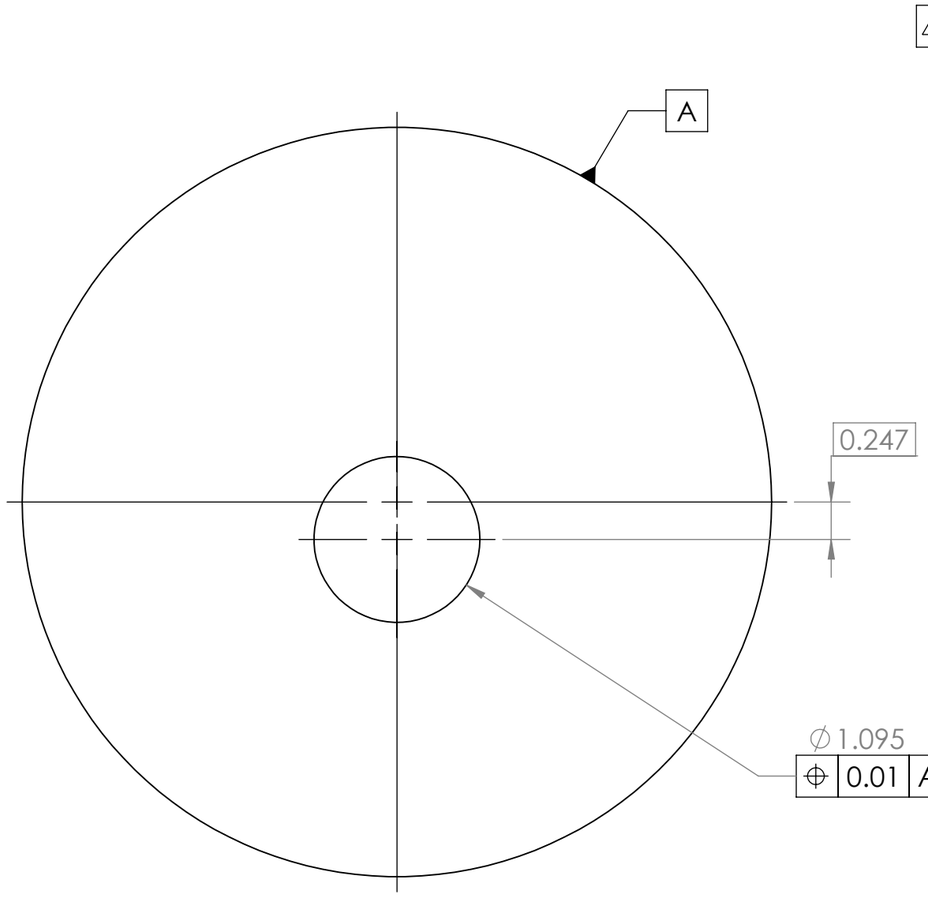


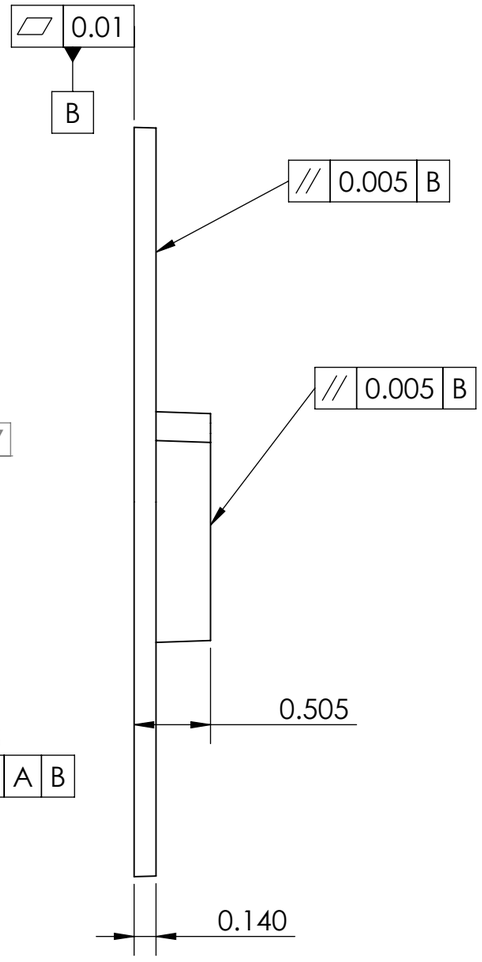


BOSTON UNIVERSITY

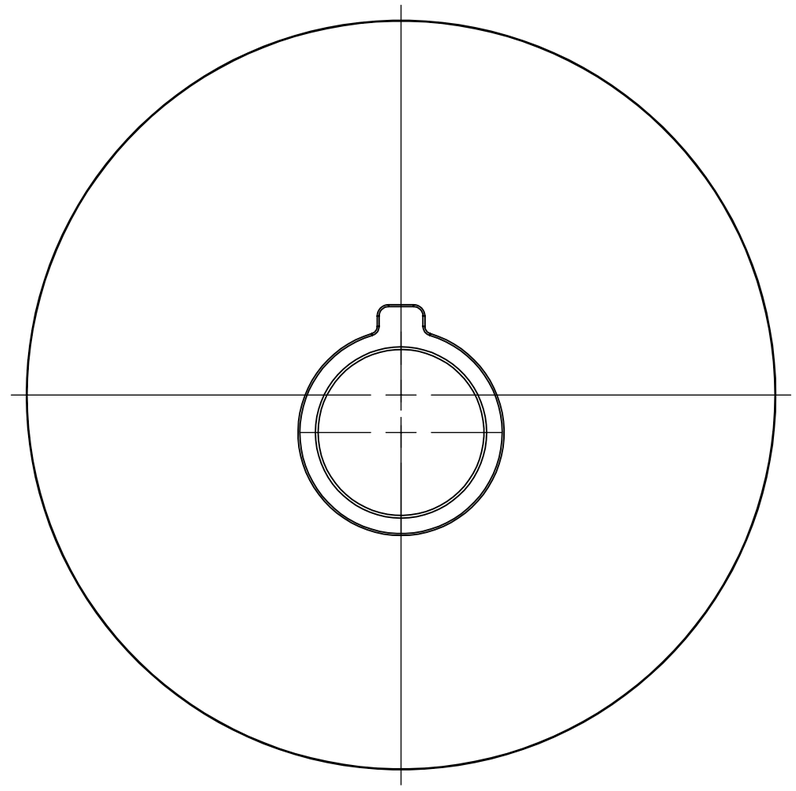
BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE FRONT INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-005	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-005_FRONTINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 2 OF 7





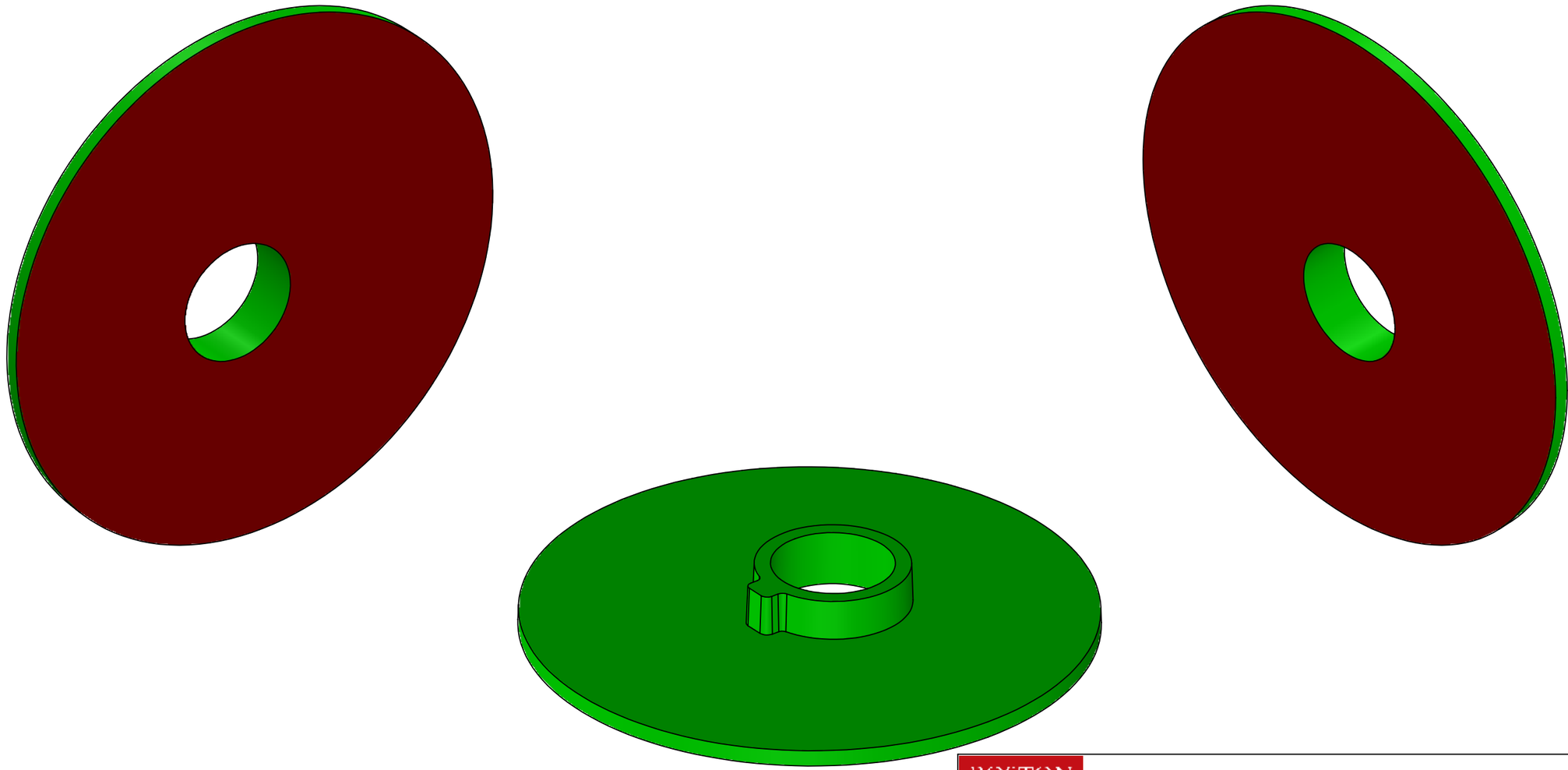
DIMENSIONS



DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		BOSTON UNIVERSITY	BOSTON UNIVERSITY COLLEGE OF ENGINEERING		
.X	±.1	COURSE ME559	SECTION TEAM 6	TITLE FRONT INSERT BLANK	
.XX	±.01	DATE 12/16/2025		NUMBER 2-005	
.XXX	±.005	NAME MATT STAFFORD			
ANGLE	±1°	EMAIL MSTAFF@BU.EDU		FILENAME D2-005_FRONTINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		MATERIAL VICTREX 450G PEEK			
THIRD ANGLE PROJECTION		FINISH AS SPECIFIED			
		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 3 OF 7

NOTE:
1. GATE REMNANT TO BE FLUSH TO SURROUNDING AREA (+0/-.005") UNLESS OTHERWISE APPROVED

PARTING LINE



MOLD SPLIT KEY	COLOR CODE
CAVITY	
CORE	

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DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 2	TITLE FRONT INSERT BLANK	
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.XX	±.01	NAME MATT STAFFORD		NUMBER 2-005	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-005_FRONTINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH / REVISION A	SCALE 1:1	SHEET 4 OF 7

COSMETIC SURFACE

NOTES:

1. COSMETIC INSPECTION PROCESS AND SURFACE CLASSIFICATIONS ARE DEFINED IN PUMPCO. COSMETIC REQUIREMENTS DOCUMENT (DOC-000001).

2. SURFACES MUST FOLLOW THE INSPECTION CRITERIA THAT CORRESPONDS TO THEIR ASSIGNED CLASS.

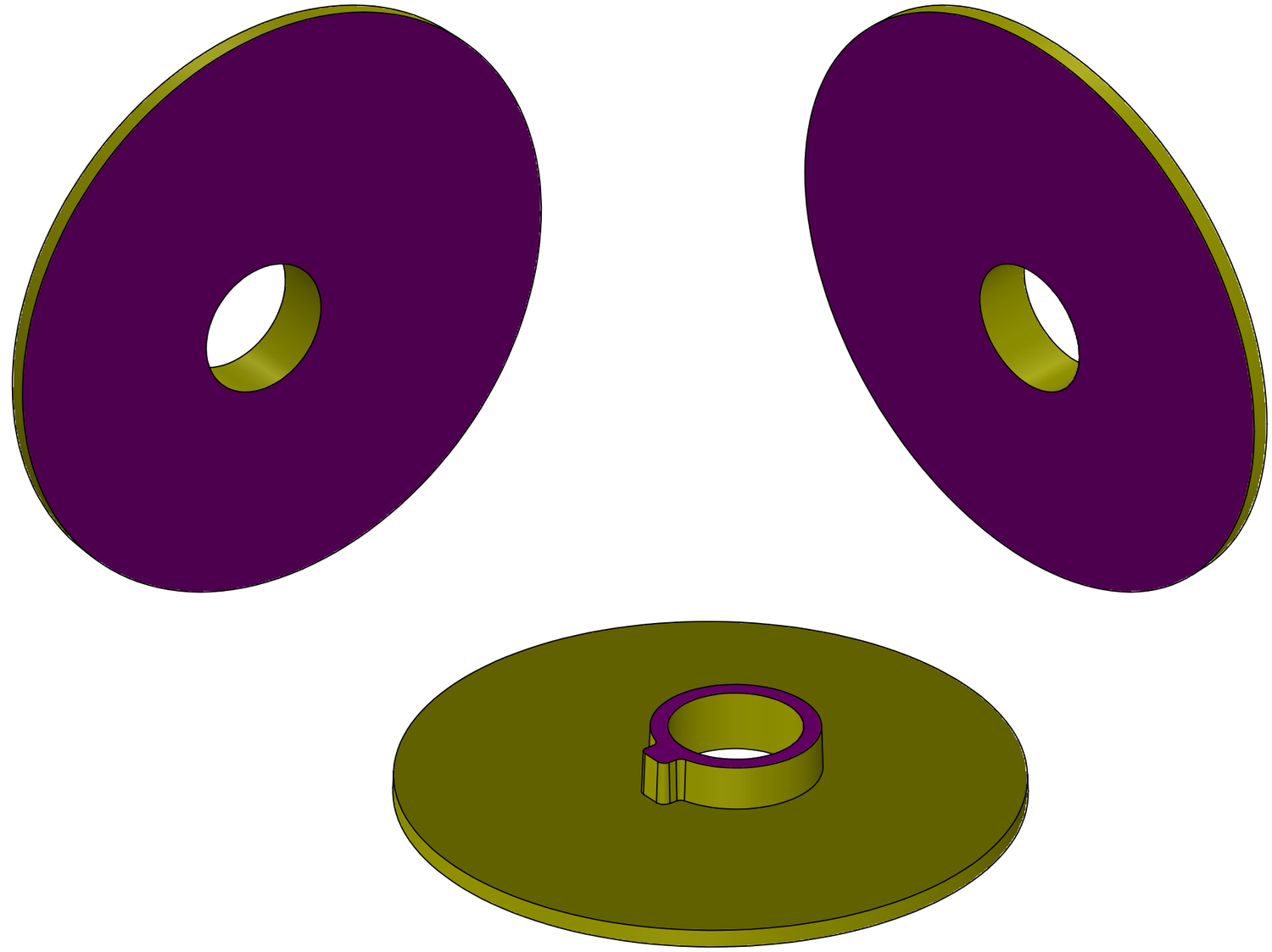
3. ANY UN-CLASSIFIED SURFACE WILL BE INSPECTED AS CLASS C.

4. FILLETS, CHAMFERS, AND OTHER SURFACE MERGING FEATURES WILL ASSUME THE STRICTER INSPECTION CRITERIA OF THE ABUTTING FACES.

5. COSMETIC SURFACE: EJECTOR PIN MARKS, GATES, AND TOOL MARKS NOT PERMITTED ON INDICATED SURFACES. MOLD IS TO BE DESIGNED TO MINIMIZE GATE BLUSH, FLOW LINES, AND OTHER UNSIGHTLY FEATURES AT THE COSMETIC SURFACE. MOLD CONSTRUCTION IS TO CONFORM TO GOOD MOLD BUILDING PRACTICES INDICATED IN THE CURRENT EDITION OF THE SPI "STANDARDS AND PRACTICES OF PLASTIC CUSTOM MOLDERS".

6. EJECTOR PIN MARKS TO BE SUBFLUSH (+0/- .005 IN) UNLESS LOCATION AND DEPTH OTHERWISE APPROVED.

7. SEALING SURFACE: EJECTOR PIN MARKS, GATES, AND TOOL MARKS NOT PERMITTED ON INDICATED SURFACES.



COSMETIC CLASS	COLOR CODE
CLASS S	
CLASS B	

BOSTON UNIVERSITY

BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE FRONT INSERT BLANK	
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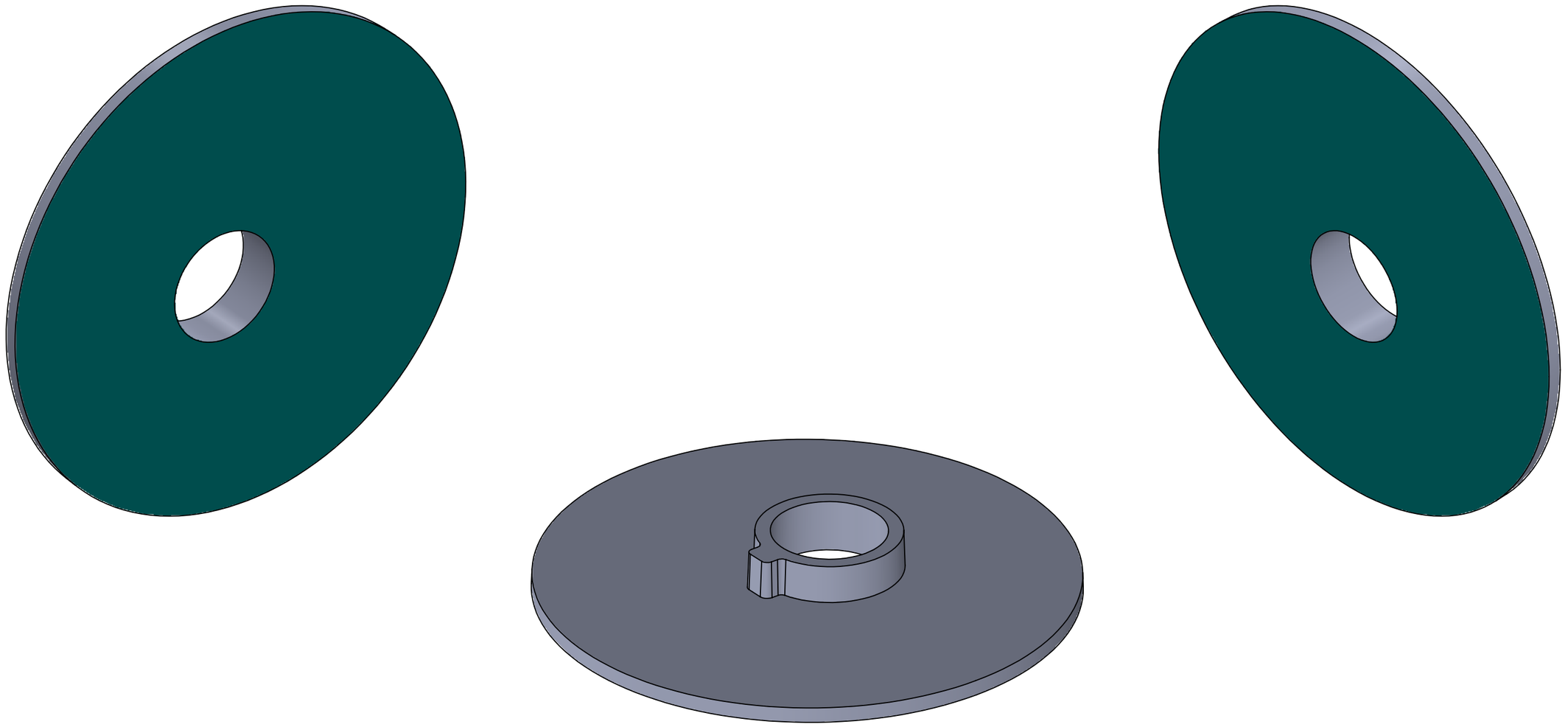
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-005	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-005_FRONTINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 5 OF 7

TEXTURE



Texture	Color Code
32 µIN RA	
As Machined	

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BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE FRONT INSERT BLANK	
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.XX	±.01	NAME MATT STAFFORD		NUMBER 2-005	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
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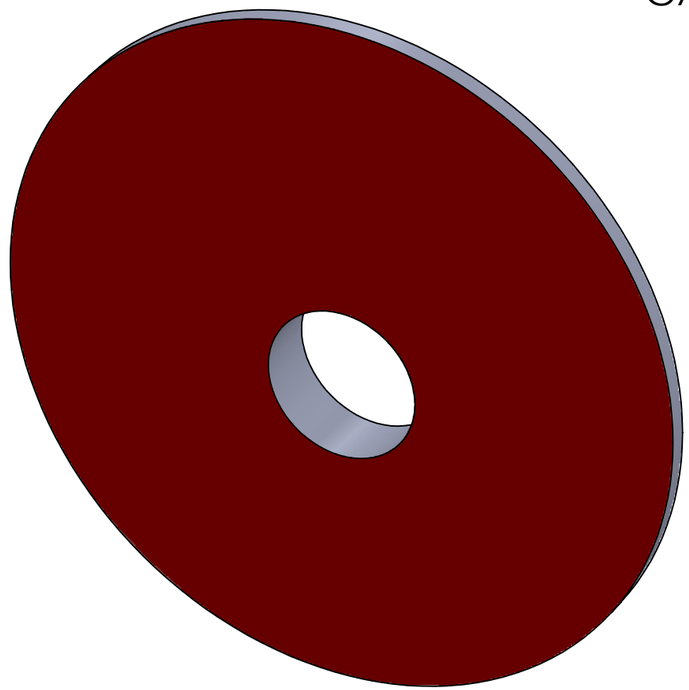
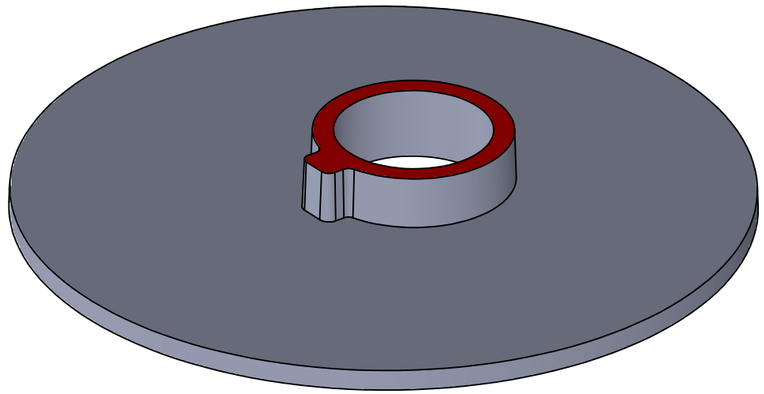
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH / REVISION A	SCALE 1:1	SHEET 6 OF 7

GATES & EJECTORS





	Color Code
NO GATES OR EJECTORS PERMITTED	
GATES AND EJECTORS PERMITTED	All others

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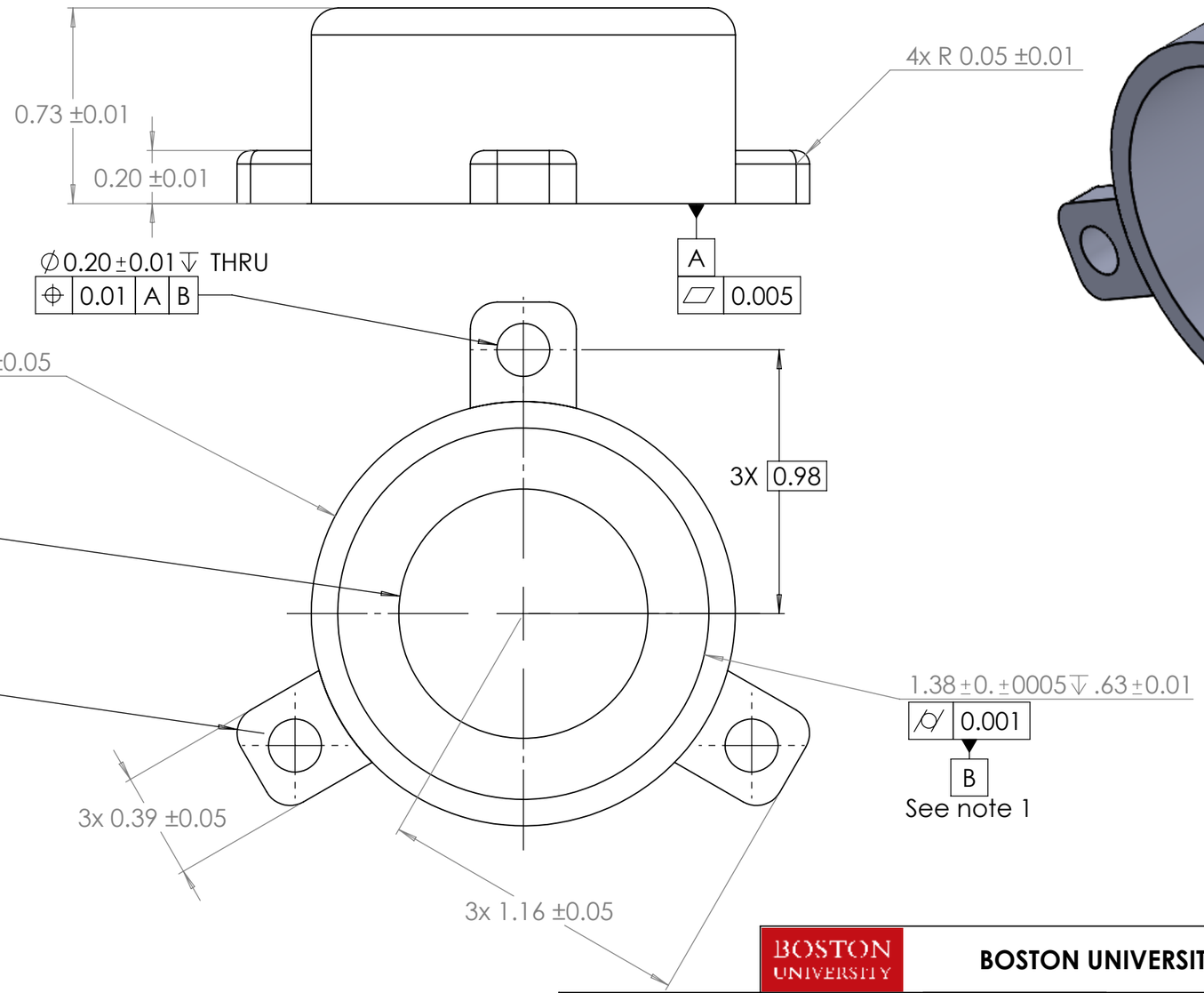
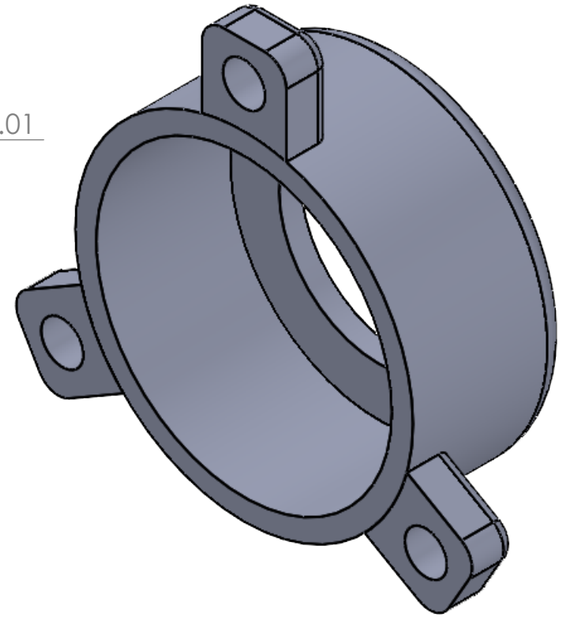
BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE FRONT INSERT BLANK	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME MATT STAFFORD		NUMBER 2-005	
.XXX	±.005	EMAIL MSTAFF@BU.EDU			
ANGLE	±1°	MATERIAL VICTREX 450G PEEK		FILENAME D2-005_FRONTINSERTBLANK	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 7 OF 7

Note 1:

Tolerances are in accordance with the bearing manufacturer recomendation.





Note 2:
FINISH: POWDER COAT (EPOXY–POLYESTER).
COLOR: RAL 7016
SURFACE PREP: CLEAN, DEGREASE, AND ABRASIVE-BLAST TO SSPC-SP10 .
TARGET DRY FILM THICKNESS: 60–80 µm (2.4–3.2 mil).
MASK ALL THREADED HOLES AND CRITICAL INTERFACES.

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE FRONT BEARING HOLDER	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 1-008	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL ALUMINUM 6061-T6		FILENAME FRONT BEARING HOLDER	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH SEE NOTE 2			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 2:1 / SHEET 1 OF 1

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NOTES: UNLESS OTHERWISE SPECIFIED

1. PART DIMENSIONS, DETAILS, AND FORM ARE TO BE DETERMINED DIRECTLY FROM THE 3D CAD MODEL. THIS DRAWING PROVIDES ADDITIONAL INFORMATION FOR TOOL BUILD AND THE PRODUCTION AND CHECKING OF THIS PART. THE MODEL FILE DIMENSIONS ARE TO BE CONSIDERED NOMINAL FOR TOLERANCING PURPOSES.

2. USE PUMPCO. DOC-8675309 TRACEABILITY LEVEL.

3. MOLDED PART TO BE FREE OF SURFACE CONTAMINANTS.

4. PARTS SHALL BE PACKED SO AS TO PREVENT DAMAGE DURING TRANSIT. PARTS SHALL BE PLACED IN TRAYS, INDIVIDUAL BAGS, OR OTHER SUITABLE ARRANGEMENT SO AS TO PREVENT CONTAMINATION BY DUST OR DAMAGE BY ABRASION.

5. TOOLING REQUIRED TO MAKE THIS PART TO BE PROPERTY OF PUMPCO. AND SHALL BE PERMANENTLY MARKED WITH PUMPCO. NAME AND APPROPRIATE PART CODE, LOCATED IN THE TITLE BLOCK.

6. TOOL DESIGN TO BE SUBMITTED AND APPROVED BY PUMPCO. ENGINEERING PRIOR TO CONSTRUCTION OF TOOLS.

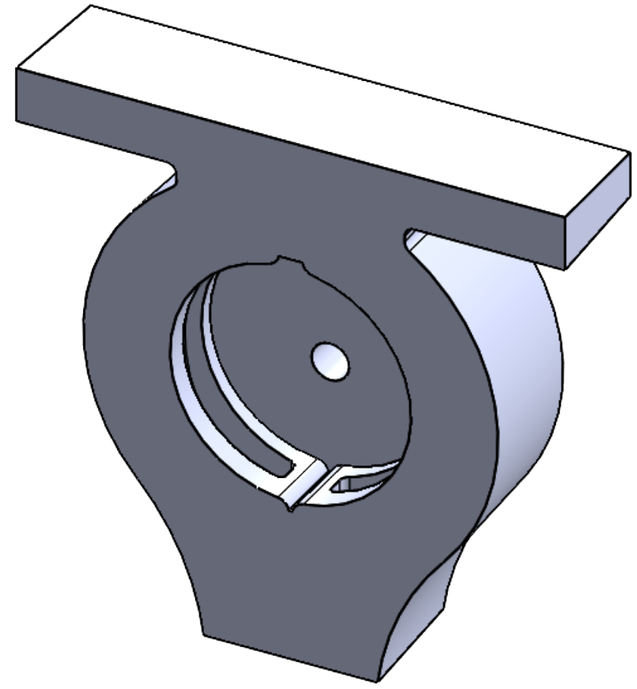
7. TO BE COMPLIANT WITH THE REQUIREMENTS OF THE EC DIRECTIVE 2002/95/EC OF JANUARY 27, 2003, A SO CALLED ROHS DIRECTIVE.

8. DIMENSIONS MARKED (X.X) OR (CTQ) ARE CRITICAL TO QUALITY AND MUST MEET THE INSPECTION REQUIREMENTS OF THE QUALITY CATEGORY SPECIFIED BY PUMPCO. AND DETAILED IN DOC-940114.

9. PROCESS TOLERANCES UNLESS OTEHRWISE SPECIFIED: TOLERANCES PER ISO 2768 AND 2768 COMMERCIAL STANDARDS.

10. BREAK ALL SHARP EDGES AND REMOVE ALL BURRS.

UNLESS OTHERWISE SPECIFIED ALL TOLERANCES TO:
± 0.02
UNLESS OTHERWISE SPECIFIED ALL TOLERANCES TO:
2° ± 0.5



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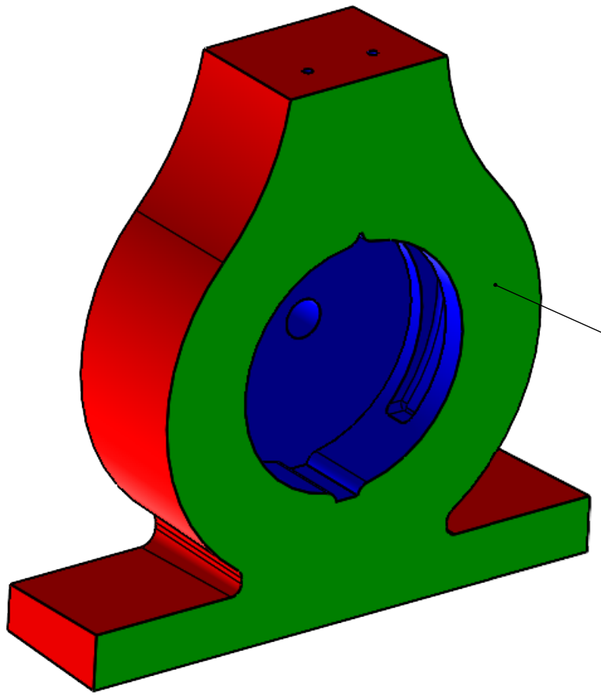
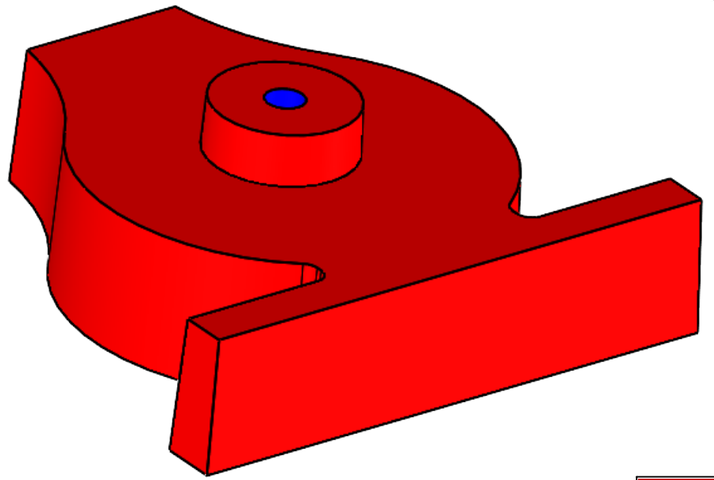
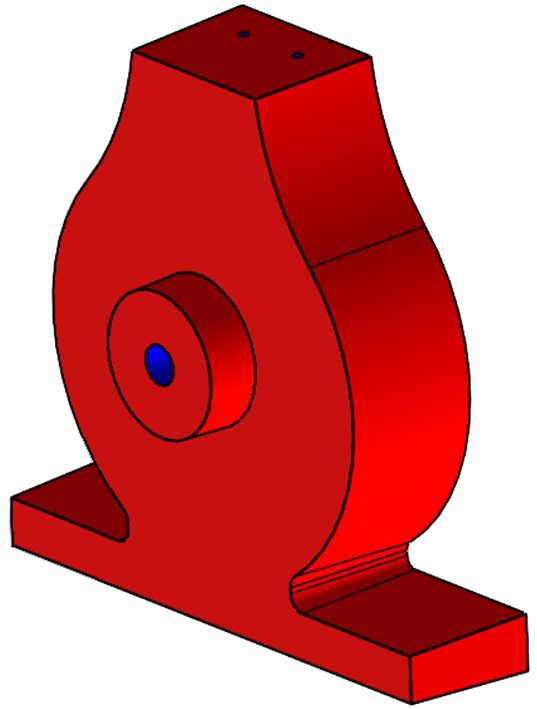
BOSTON UNIVERSITY COLLEGE OF ENGINEERING

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING CASTING	
.X	±.03	DATE 12/16/2025			
.XX	±.015	NAME DANA BULAKH		NUMBER 2-001	
.XXX	±.005	EMAIL DBULAKH@BU.EDU			
ANGLE	±1°	MATERIAL CAST IRON (65-45-12)		FILENAME HOUSING CASTING	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH 250-500 µIN RA			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 1 OF 3



GATE PERMISSIBLE ON ANY COPE SURFACE





MOLD SPLIT KEY	
COPE	
DRAG	
CORE	

DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING CASTING	
.X	±.03	DATE 12/16/2025			
.XX	±.015	NAME DANA BULAKH		NUMBER 2-001	
.XXX	±.005	EMAIL DBULAKH@BU.EDU			
ANGLE	±1°	MATERIAL CAST IRON 65-45-12		FILENAME HOUSING CASTING	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH 250-500 µIN RA			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 2 OF 3

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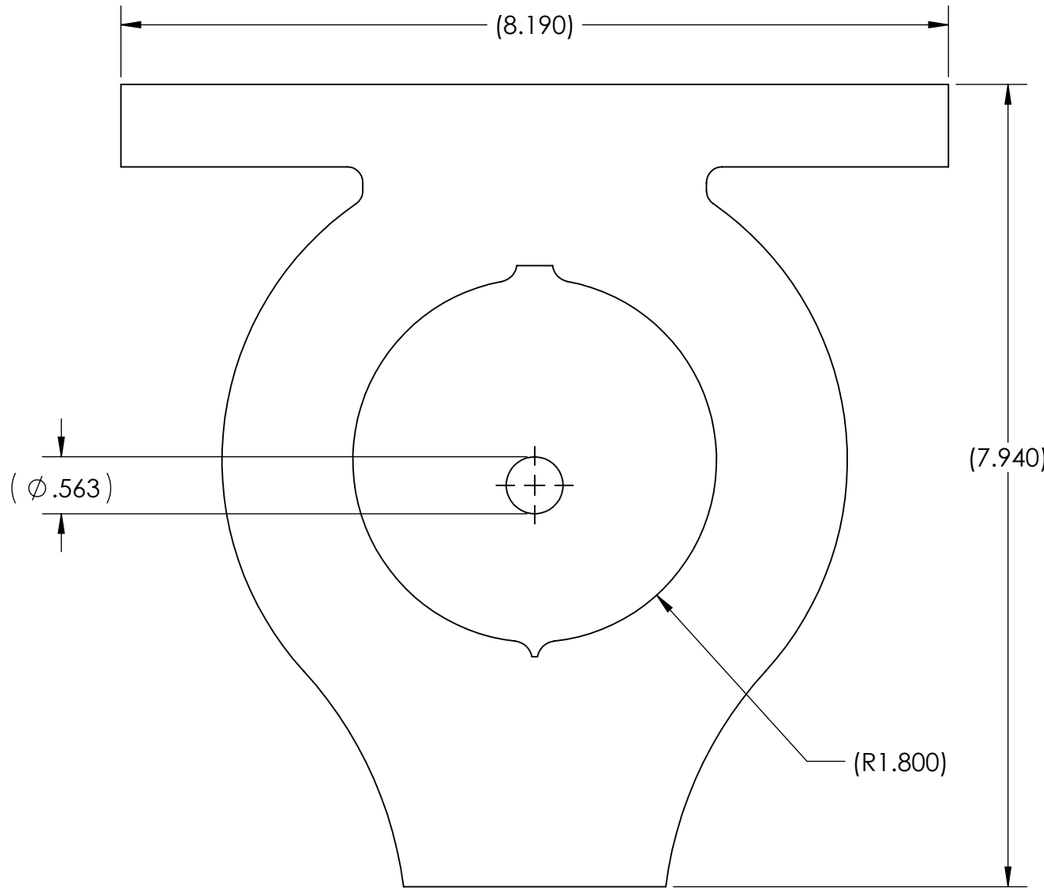
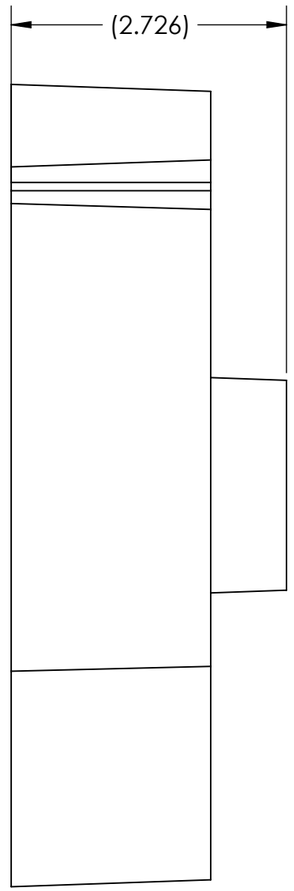


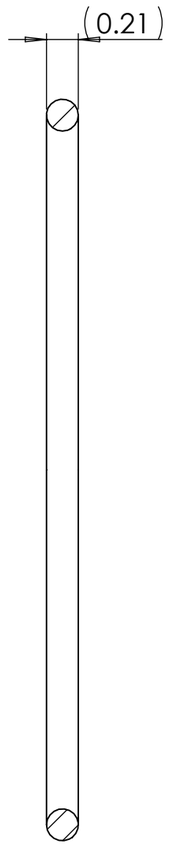


BOSTON UNIVERSITY	**BOSTON UNIVERSITY COLLEGE OF ENGINEERING**				
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE HOUSING CASTING	
.X	±.03	DATE 12/16/2025			
.XX	±.015	NAME DANA BULAKH		NUMBER 2-001	
.XXX	±.005	EMAIL DBULAKH@BU.EDU			
ANGLE	±1°	MATERIAL CAST IRON 65-45-12		FILENAME HOUSING CASTING	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH 250-500 µIN RA			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:2 / SHEET 3 OF 3

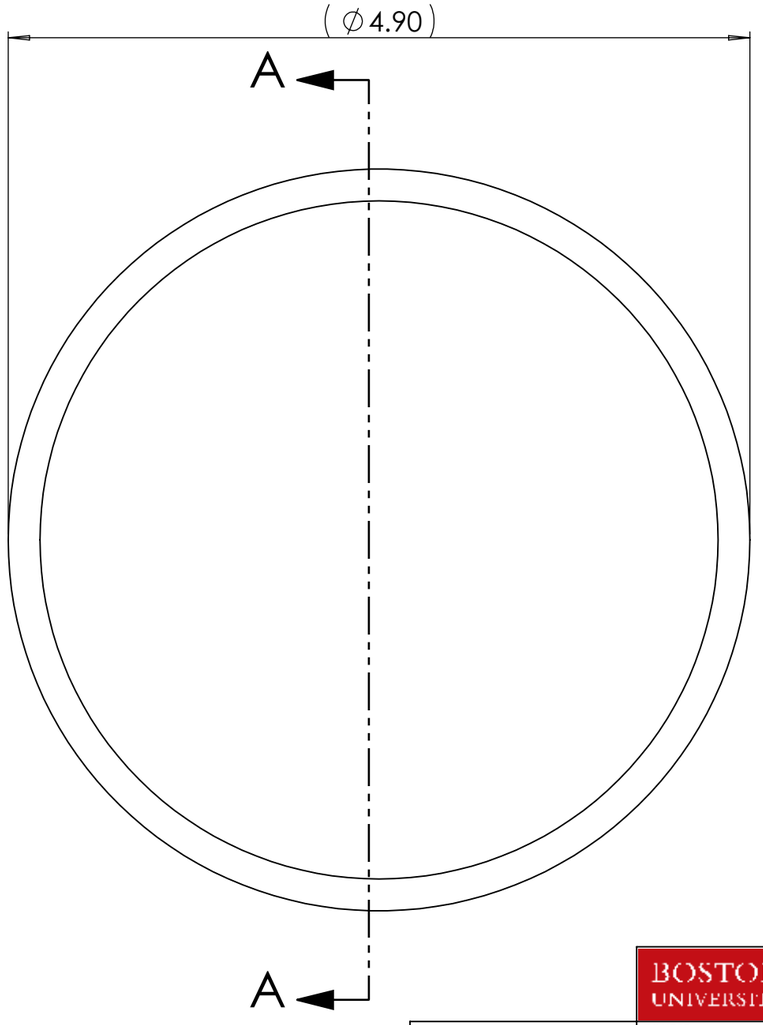
Note 1:

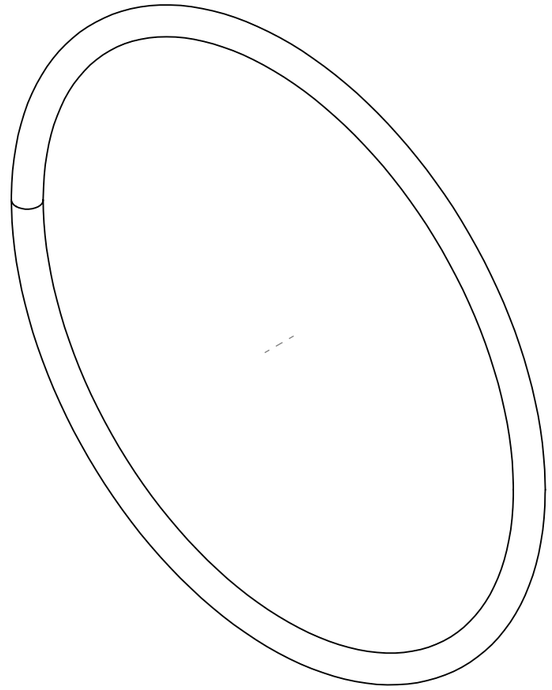
Purchased Part:
Vendor: Parker Hannifin
Vendor Part Number: 1500 Series Custom Part

Or equivalent approved by Engineering



SECTION A-A





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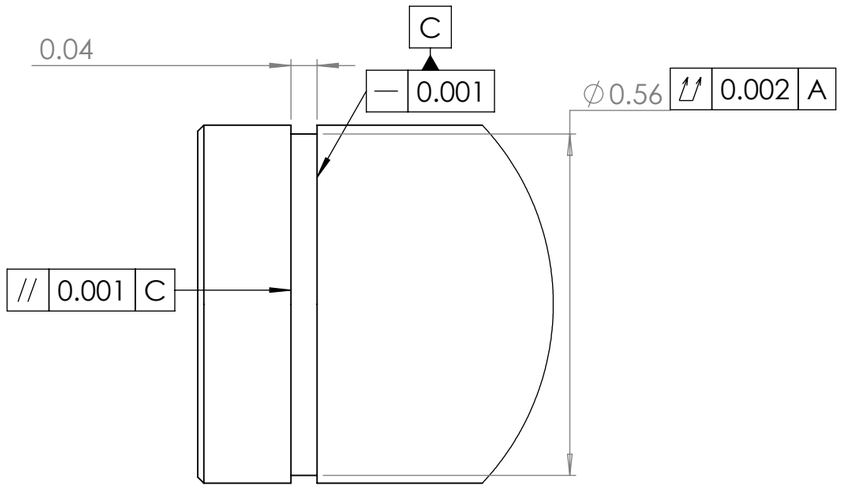
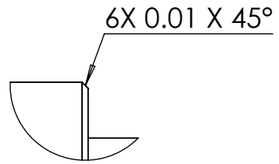
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE O-RING	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 3-005	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL NITRILE		FILENAME ORING_V15	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SPECIFIED BY MANUFACTURER			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 / SHEET 1 OF 1



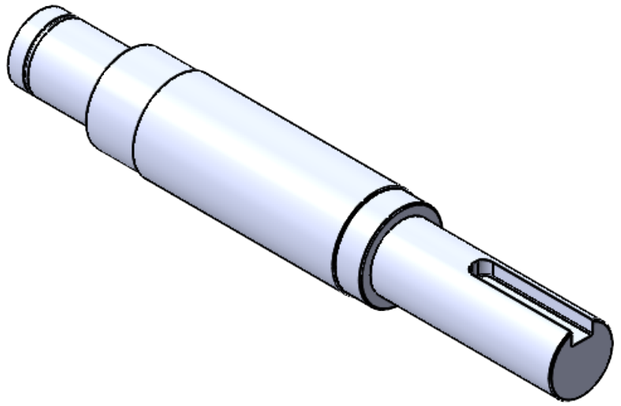
DETAIL A

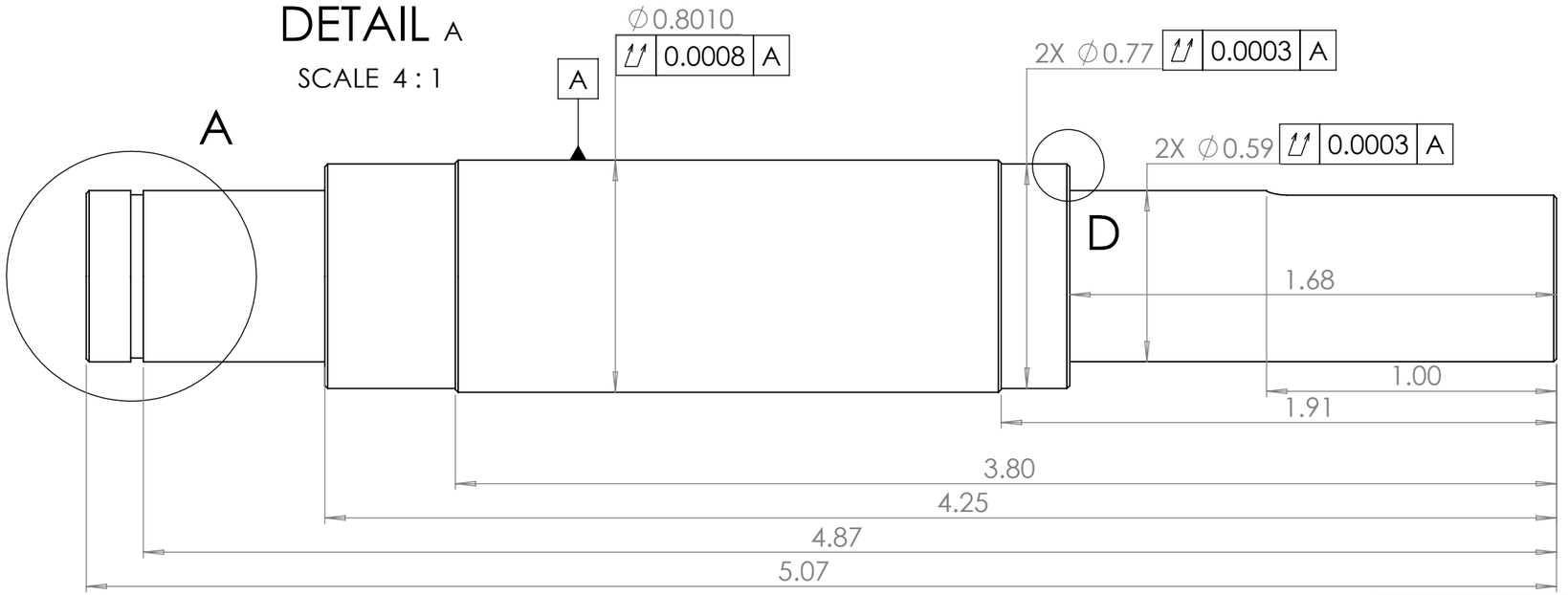
SCALE 4 : 1

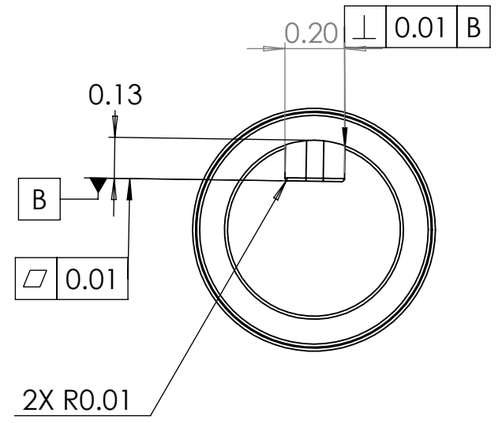


DETAIL D

SCALE 4 : 1







NOTES: UNLESS OTHERWISE SPECIFIED

1. PARTS SHALL BE PACKED SO AS TO PREVENT DAMAGE DURING TRANSIT. PARTS SHALL BE PLACED IN SUITABLE ARRANGEMENT SO AS TO PREVENT CONTAMINATION BY DUST OR DAMAGE BY ABRASION.
2. DIMENSIONS MARKED X.X OR CTQ ARE CRITICAL TO QUALITY AND MUST MEET THE INSPECTION REQUIREMENTS OF TEAM 2.

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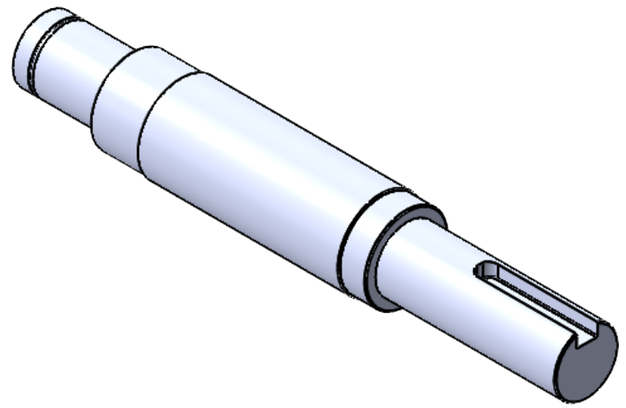
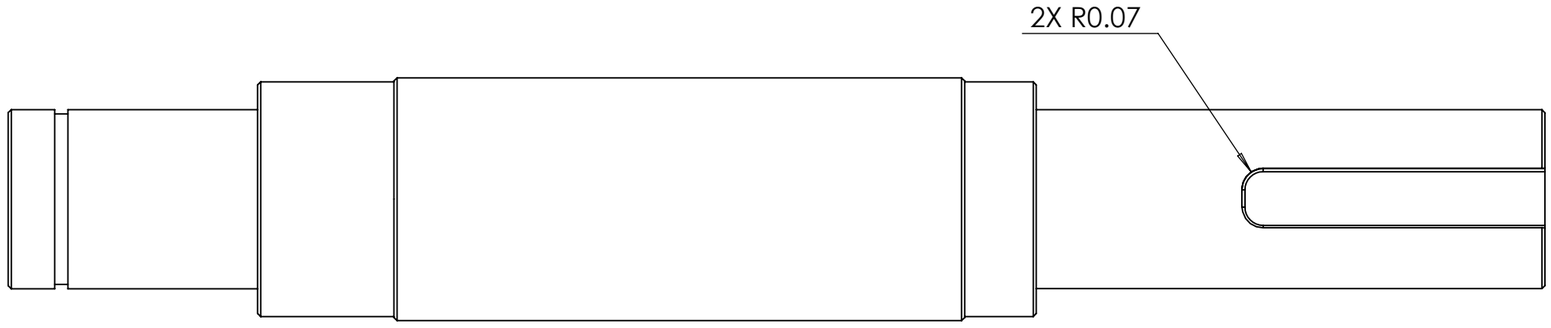
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION A1	TITLE SHAFT	
.X	±.05	DATE 12/16/2025			
.XX	±.01	NAME DANA BULAKH		NUMBER 1-003	
.XXX	±.005	EMAIL DBULAKH@BU.EDU			
ANGLE	±1°	MATERIAL AISI4140		FILENAME SHAFT DRAWING 2	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH 16 µIN RA			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 1 OF 2





NOTES: UNLESS OTHERWISE SPECIFIED

1. PARTS SHALL BE PACKED SO AS TO PREVENT DAMAGE DURING TRANSIT. PARTS SHALL BE PLACED IN SUITABLE ARRANGEMENT SO AS TO PREVENT CONTAMINATION BY DUST OR DAMAGE BY ABRASION.
2. DIMENSIONS MARKED X.X OR CTQ ARE CRITICAL TO QUALITY AND MUST MEET THE INSPECTION REQUIREMENTS OF TEAM 2.

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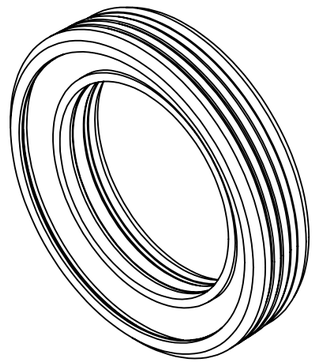
BOSTON UNIVERSITY COLLEGE OF ENGINEERING

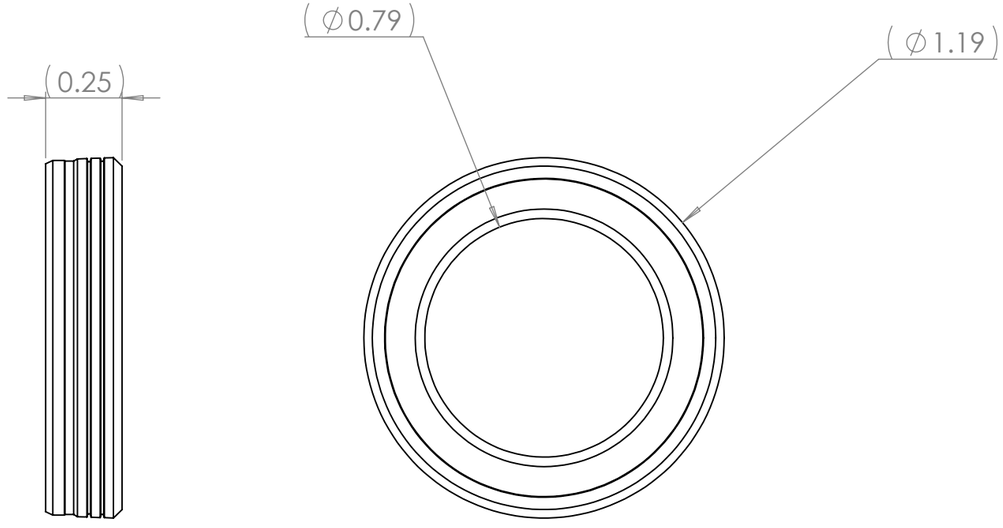
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION A1	TITLE SHAFT	
.X	±.05	DATE 12/16/2025			
.XX	±.01	NAME DANA BULAKH		NUMBER 1-003	
.XXX	±.005	EMAIL DBULAKH@BU.EDU			
ANGLE	±1°	MATERIAL AISI4140		FILENAME SHAFT DRAWING 2	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH 16 µIN RA			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 1:1 SHEET 2 OF 2

Note 1:

Purchased Part
Vendor: Bal Engineering
Vendor part number: 1306.708713

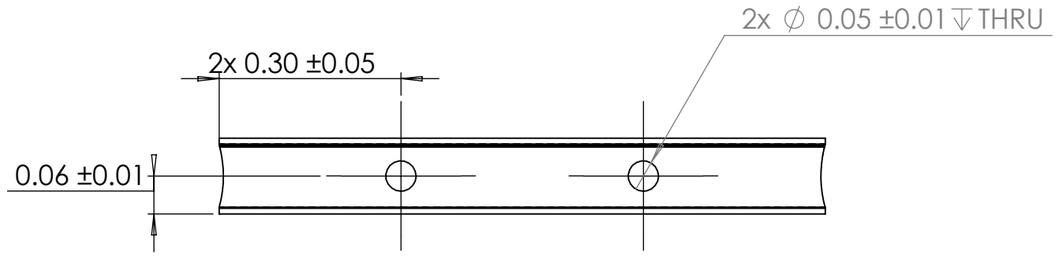
Or equivalent approved by Engineering

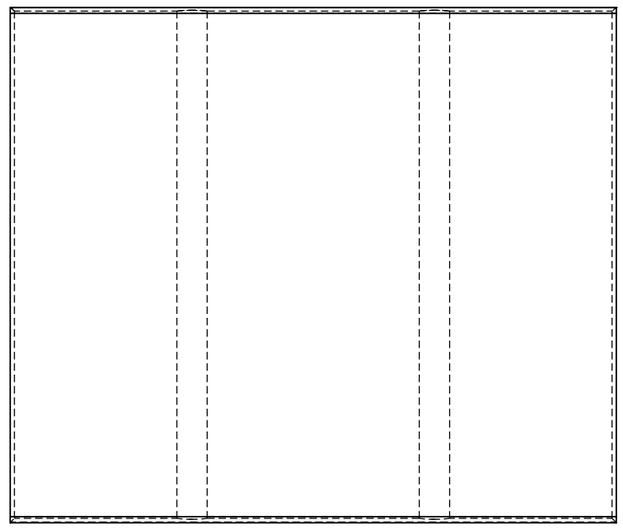


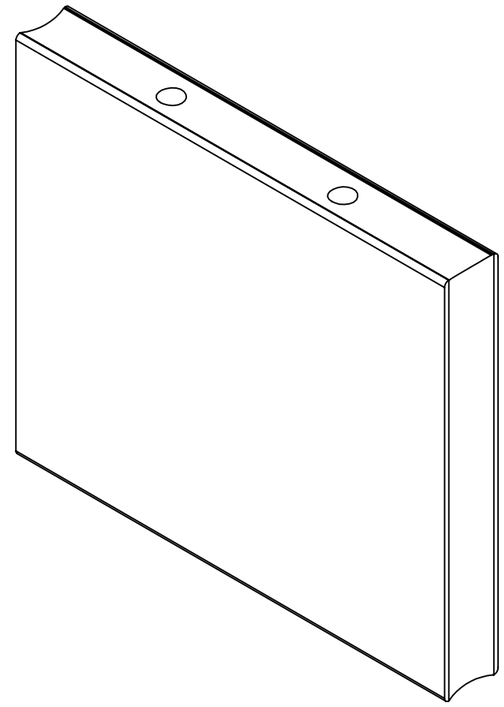


DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		BOSTON UNIVERSITY	BOSTON UNIVERSITY COLLEGE OF ENGINEERING		
		COURSE ME559	SECTION TEAM 6	TITLE SHAFT SEAL	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 3-003	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL TA- PTFE (TA)		FILENAME SHAFT SEAL	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SEPCIFIED BY MANUFACTURER			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 2:1	SHEET 1 OF 1

Note 1:
Make from vane part 2-006







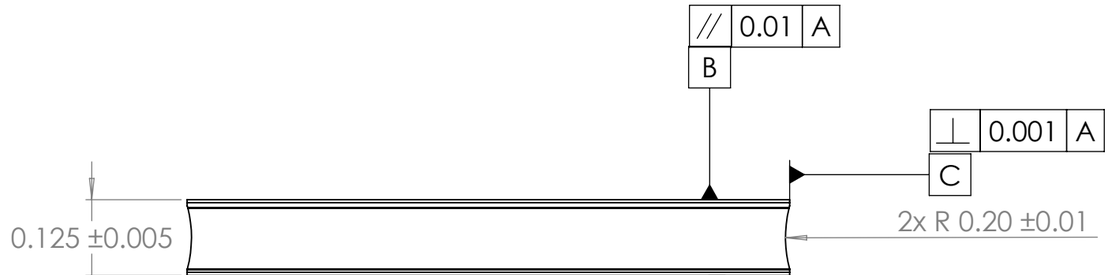
DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE VANE
.X	±.03	DATE 12/16/2025		
.XX	±.015	NAME JAL		NUMBER 1-006
.XXX	±.005	EMAIL LETTENEY@BU.EDU		
ANGLE	±1°	MATERIAL HARDEND TOOL STEEL (AISI D3)		FILENAME VANE_V2
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SINTERED		
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A

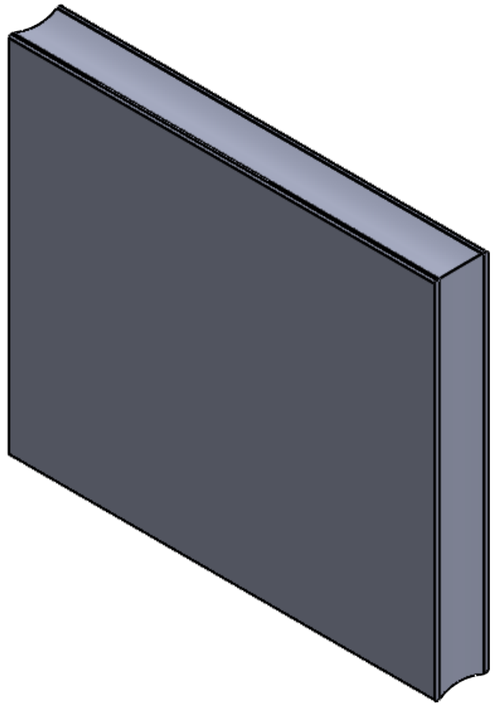
BOSTON UNIVERSITY COLLEGE OF ENGINEERING

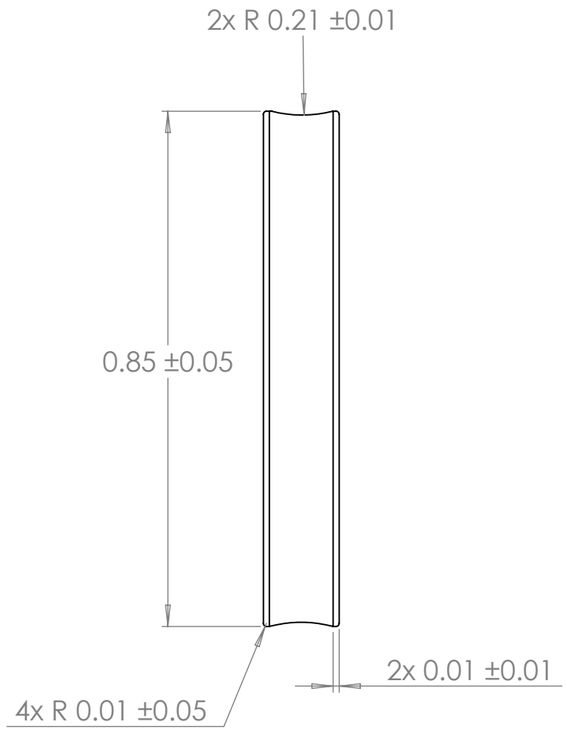
SCALE 4:1 | SHEET 1 OF 1

Note1:

Harden to 50 HRC







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DIMENSIONS ARE IN INCHES TOLERANCES EXCEPT AS NOTED		COURSE ME559	SECTION TEAM 6	TITLE VANE PART A	
.X	±.1	DATE 12/16/2025			
.XX	±.01	NAME JAL		NUMBER 1-006-1	
.XXX	±.005	EMAIL LETTENEY@BU.EDU			
ANGLE	±1°	MATERIAL HARDENED TOOL STEEL (AISI D3)		FILENAME VANE_V2_PART_A	
INTERPRET GEOMETRIC TOLERINCING PER: ASME Y14.5-2018		FINISH AS SINTERED			
THIRD ANGLE PROJECTION		SIZE B	UNITS INCH	REVISION A	SCALE 4:1 / SHEET 1 OF 1