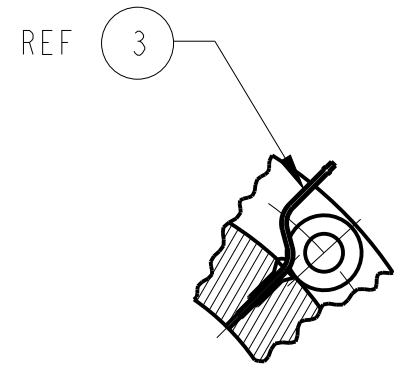


1	-	9	MER02967-009	FLANGE, MODIFIED, RAISED FACE, WELD NECK, CLASS 150, 6" SCHEDULE 40	SEE NOTE 3
1	-	8	MER02968-001	ELBOW, PUMP INLET, WATER FLOW	316L CRES
1	-	7	MER02967-007	INSTRUMENTED PIPE SECTION, PRE-ELBOW, WATER FLOW	SEE NOTE 2
1	-	6	MER02967-005	ADAPTER FLANGE, ELBOW TO PUMP INLET, WATER FLOW	SEE NOTE 2
-	AR	5	ACCELERATOR 17	CURE ACCELERATOR	
-	AR	4	VERSILOK 201	LIQUID STRUCTURAL ADHESIVE	
-	4	3	TUBN-063-2.0	TUBULATION, Ø.063 X 2.00 LONG	CRES
-	12	2	TUBN-063-1.0	TUBULATION, Ø.063 X 1.00 LONG	CRES
-	1	1	MER02967-003	DUCT ASSEMBLY, PUMP INLET, WATER FLOW	316L CRES
-003	-001	FIND			
QTY	REQ'D	NO.	PART NUMBER	DESCRIPTION	MATERIAL (REF)
ENGINEERING PARTS LIST					

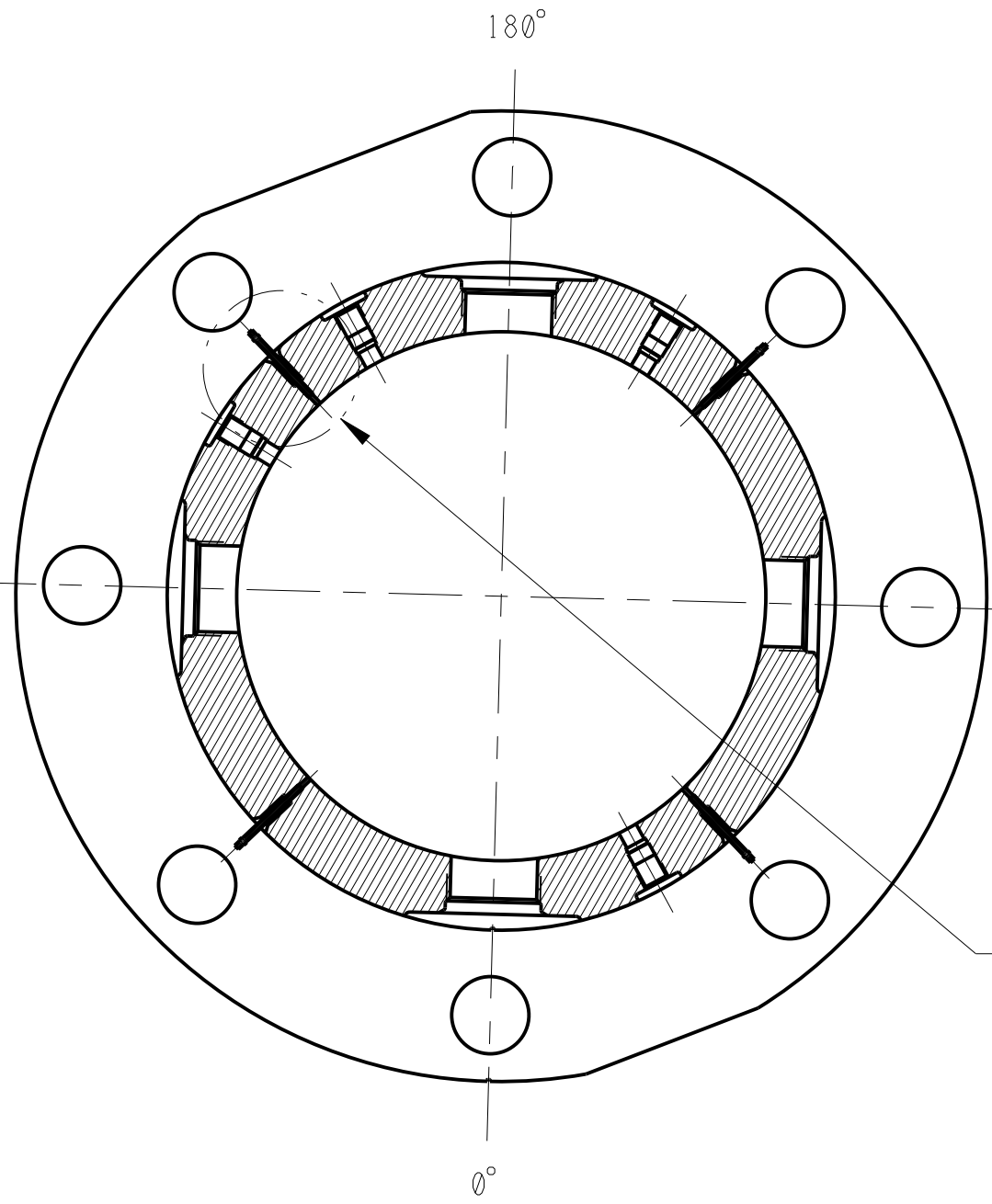
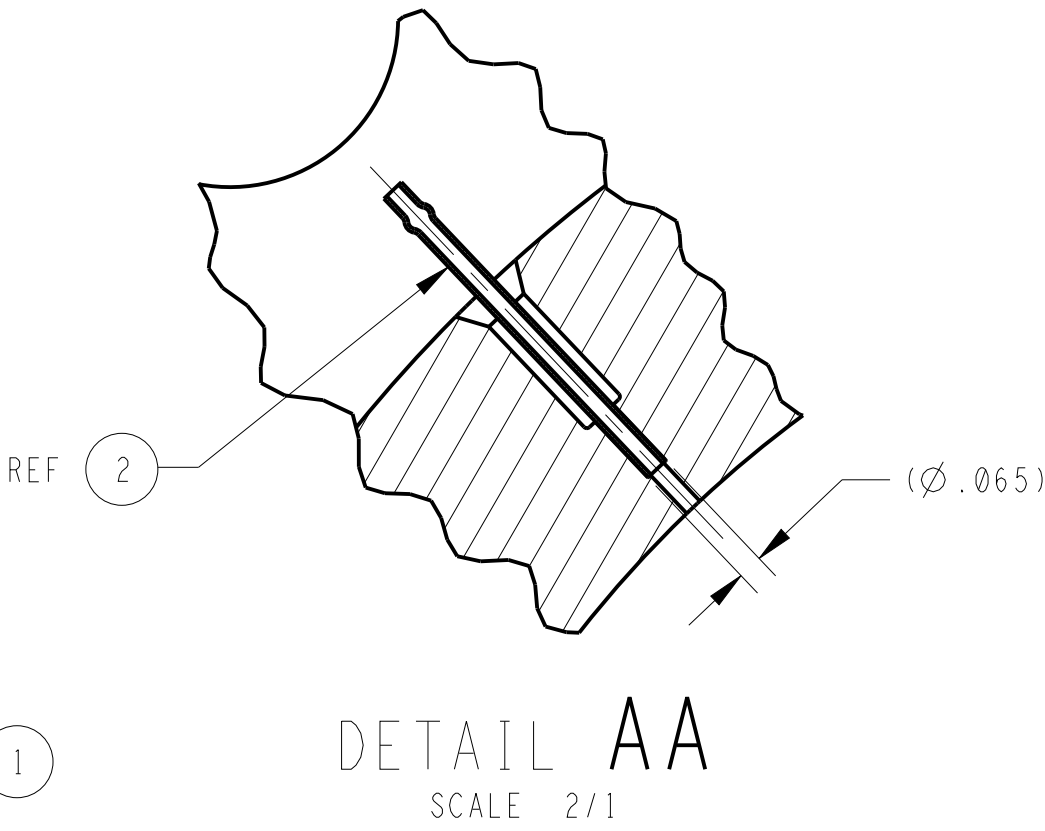
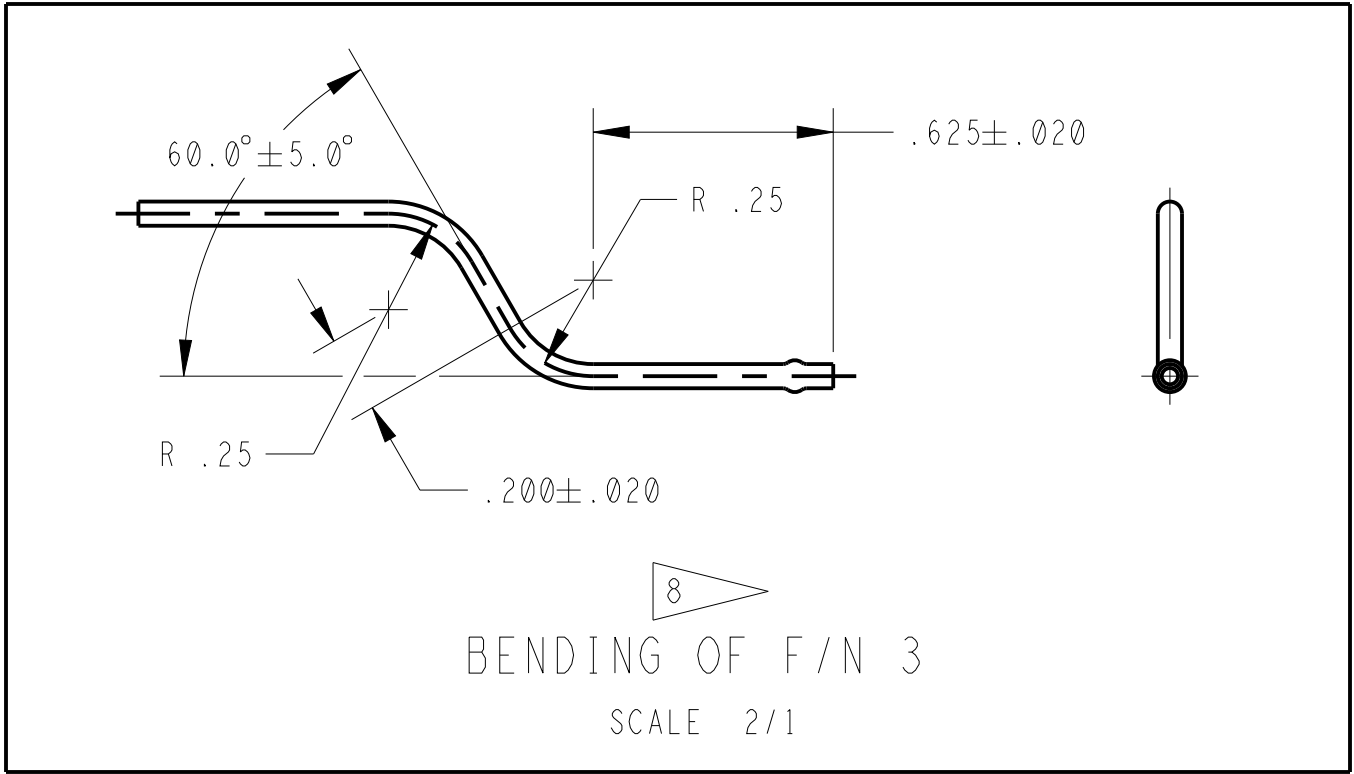
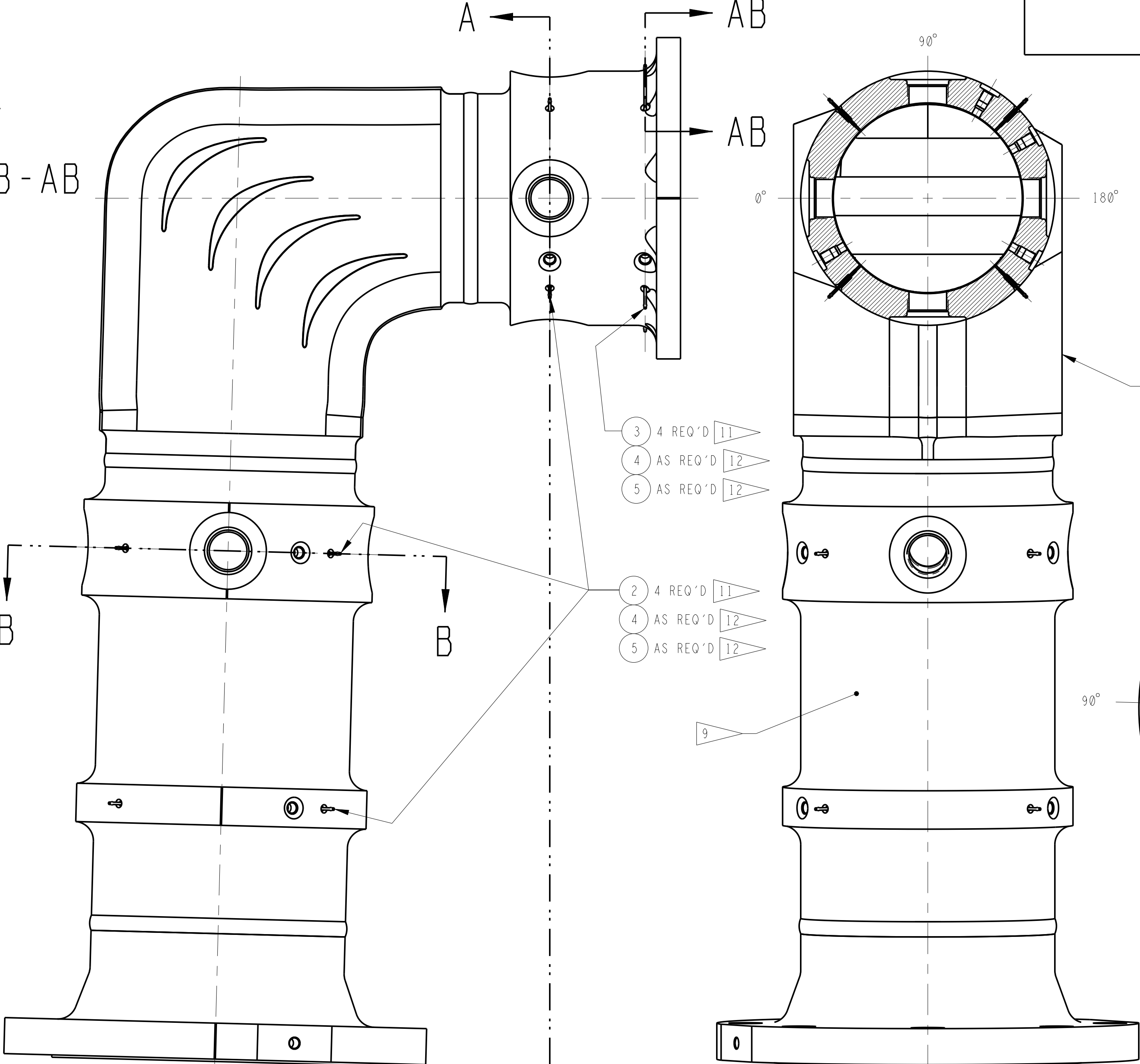
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
-				2019-04-10 10:54:00 CDT

- NOTES: UNLESS OTHERWISE SPECIFIED
- GEOMETRIC DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 - UNLESS SEPARATE TOLERANCES ARE SHOWN, PERFECT ORIENTATION AT MMC FOR RELATED FEATURES IS REQUIRED.
 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90-DEGREE ANGLES.
 - ALL RADII (R) ARE TO BE INTERPRETED AS CONTROLLED RADII (CR).
 - MATERIAL FOR MER02967-005 & -007: 316L CRES (UNS S31603) PER ASTM A240 (ANNEALED) OR ASTM A276, CONDITION A.
 - MAKE MER02967-009 FROM McMASTER-CARR P/N 44695K211 OR EQUIVALENT (FLANGE, RAISED FACE, WELD NECK, CLASS 150, 6" SCHEDULE 40, 316L CRES).
 - SOURCE: McMASTER-CARR SUPPLY COMPANY
1901 RIVERSIDE PARKWAY
DOUGLASVILLE, GA 30135
CAGE CODE: 0KVE6
PHONE: 404-346-7000
 - REMOVE ALL BURRS AND BREAK SHARP EDGES.
 - ALL MACHINED SURFACES.
 - IF DESIRED, MACHINING OF DETAILED FEATURES FOR MER02967-005, MER02967-007 AND MER02967-009 MAY BE PERFORMED AFTER WELDING.
 - FOR MER02967-003:
 - WELD PER MSFC-SPEC-3679, CLASS B. BOTH SURFACE AND VOLUMETRIC NDE ARE REQUIRED FOR THESE WELDS.
 - COMPLETE MACHINING IF REQUIRED (SEE NOTE 6).
 - PASSIVATE MER02967-003 PER SAE AMS 2700, TYPE 6.
 - FOR MER02967-001, INSTALL TUBULATIONS (F/N 2 AND F/N 3) AS FOLLOWS:
 - BEND EACH F/N 3 APPROXIMATELY AS SHOWN.
 - INSERT TUBULATION AS SHOWN UNTIL IT BOTTOMS IN Ø.065-.070 COUNTERBORED HOLE.
 - USING F/N 4 AND F/N 5, FILL CAVITY AROUND TUBULATION AND CURE PER MANUFACTURER'S INSTRUCTIONS.
 - IDENTIFY ASSEMBLY WITH THE INFORMATION SHOWN BELOW PER SAE AS478-15B, USING .125 HIGH CHARACTERS, IN APPROXIMATE LOCATION SHOWN, ORIENTATION OPTIONAL.

MER02967-001
REV -
MFR-XXXXX (WHERE XXXXX IS MANUFACTURER'S CAGE CODE)
 - CLEANLINESS: FINAL PART SHALL BE FREE FROM MANUFACTURING RESIDUE, DIRT, OIL, GREASE, PROCESSING DEBRIS, OR OTHER EXTRANEOUS CONTAMINATION.
 - SOURCE OF F/N'S 2 & 3: SCANIVALVE CORPORATION
1722 NORTH MADSON STREET
LIBERTY LAKE, WA 99019
CAGE CODE: 22422
PHONE: 1-800-935-5151
 - SOURCE OF F/N'S 4 & 5: LORD CORPORATION
2455 ROBISON ROAD WEST
ERIE, PA 16509
CAGE CODE: 30676
PHONE: 814-217-6994
 - APPLY SPECIFIED CHARACTERS ADJACENT TO SPECIFIED "PORTS" PER SAE AS478-15B, USING .085 MIN HIGH CHARACTERS.



SECTION AB-AB



SECTION B-B

SECTION A-A

CONFIGURATION	MODEL INFORMATION			UNIT WEIGHT (LBM)
	NUMBER	VERSION	STATE	
MER02967-001	MER02967-001	- .2	Released	129.6
MER02967-003	MER02967-003	- .2	Released	129.6
MER02967-005	MER02967-005	- .3	Released	22.5
MER02967-007	MER02967-007	- .3	Released	31.6
MER02967-009	MER02967-009	- .2	Released	22.6
BENDING OF F/N 3	SCANIVALVE-TUBN-063-2-MOD01	1.3	Design	.0010

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
		TOLERANCES			
		DECIMALS	ANGLES	DESIGN ORG.	ER34
		.XX±.03 .XXX±.010	±.5°	DRAWN BY	IDK
				ENGINEER	J. FORBES
		MATERIAL	2 3	CHECKER	
		HEAT TREATMENT		MATERIALS	
		FINISH	7	STRESS	
				S & MA	
DRAWING STATE	Released	MODEL STATE	SEE TAB	PRODUC-MANUF	
DRAWING VERSION	- .3	MODEL VERSION	SEE TAB	PRODUC-CONTR	DAF ER34-0541
DRAWING NUMBER	MER02967	MODEL NUMBER	SEE TAB	NEXT ASSEMBLY	Stephen Skelley 2019-04-02
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	John Cowan 2019-04-10
				RELEASE DATE	2019-04-01
				SCALE	1/2
				MASS (UNIT WEIGHT)	SEE TAB
				SHEET	1 OF 5
				DATE	AUGUST, 2009

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

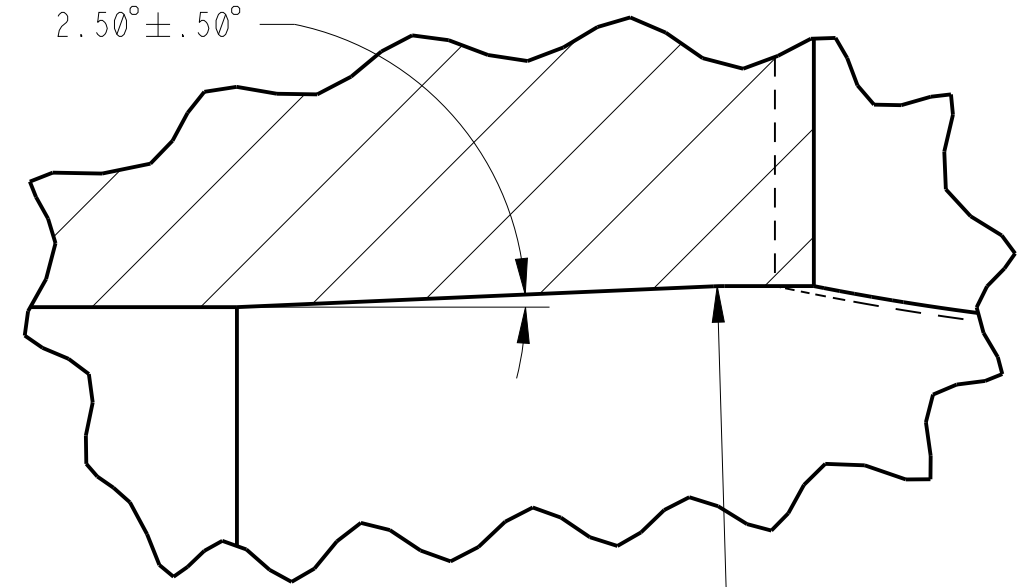
DUCT ASSEMBLY, PUMP
INLET, WATER FLOW

SIZE CODE
D 339B2

DRAWING NUMBER
MER02967

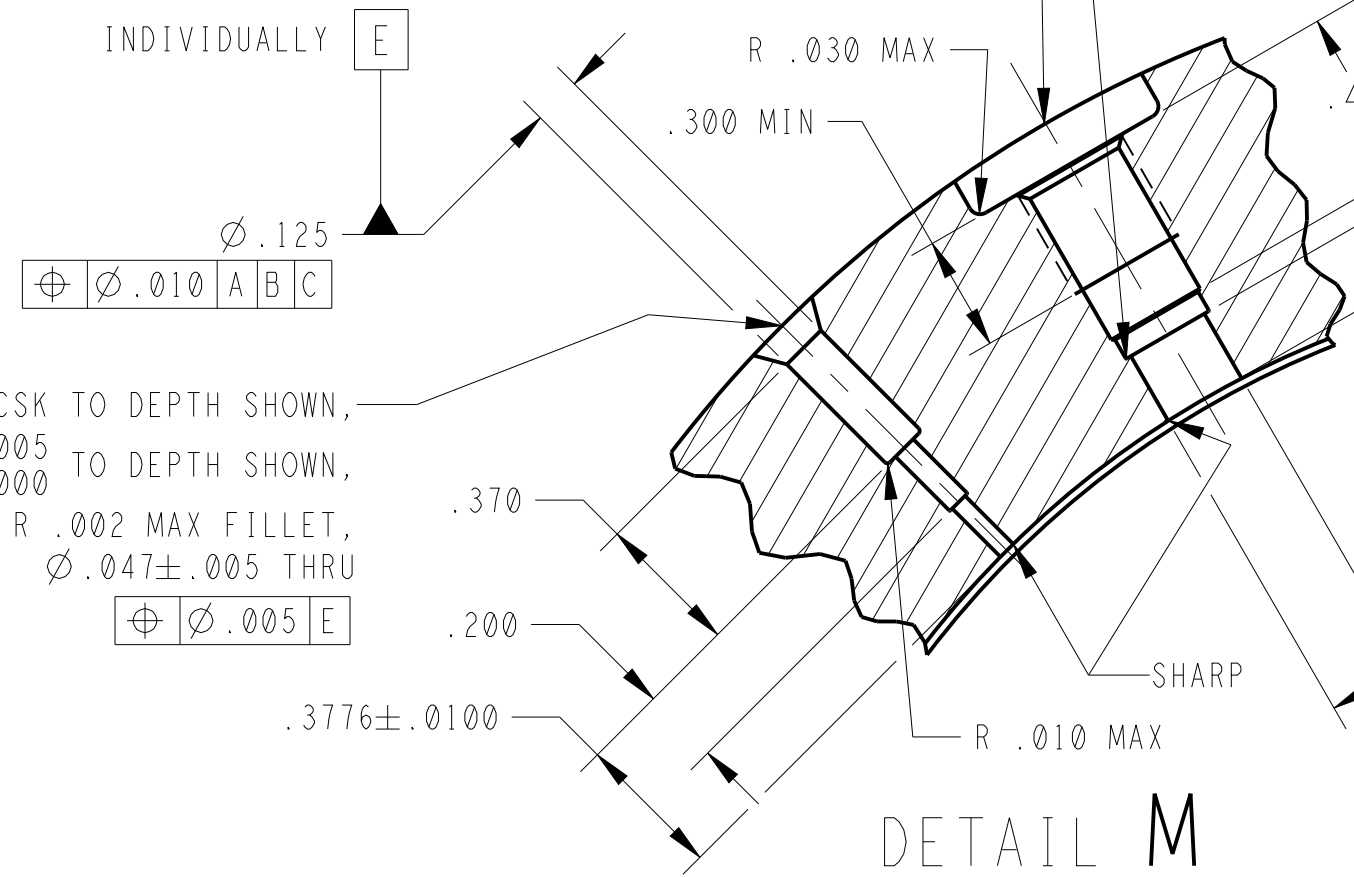
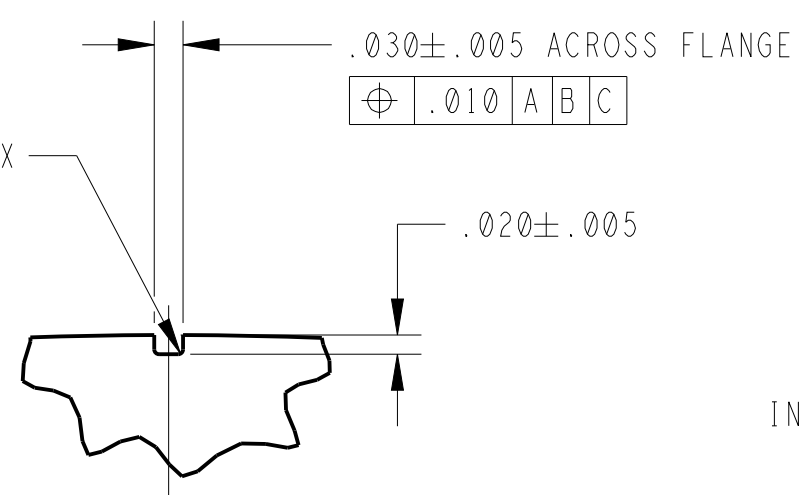
REV
-

MER02967-009 SHOWN
MER02967-007 SHOWN
MER02967-005 SHOWN
MER02967-003 ASSY SHOWN
MER02967-001 ASSY SHOWN



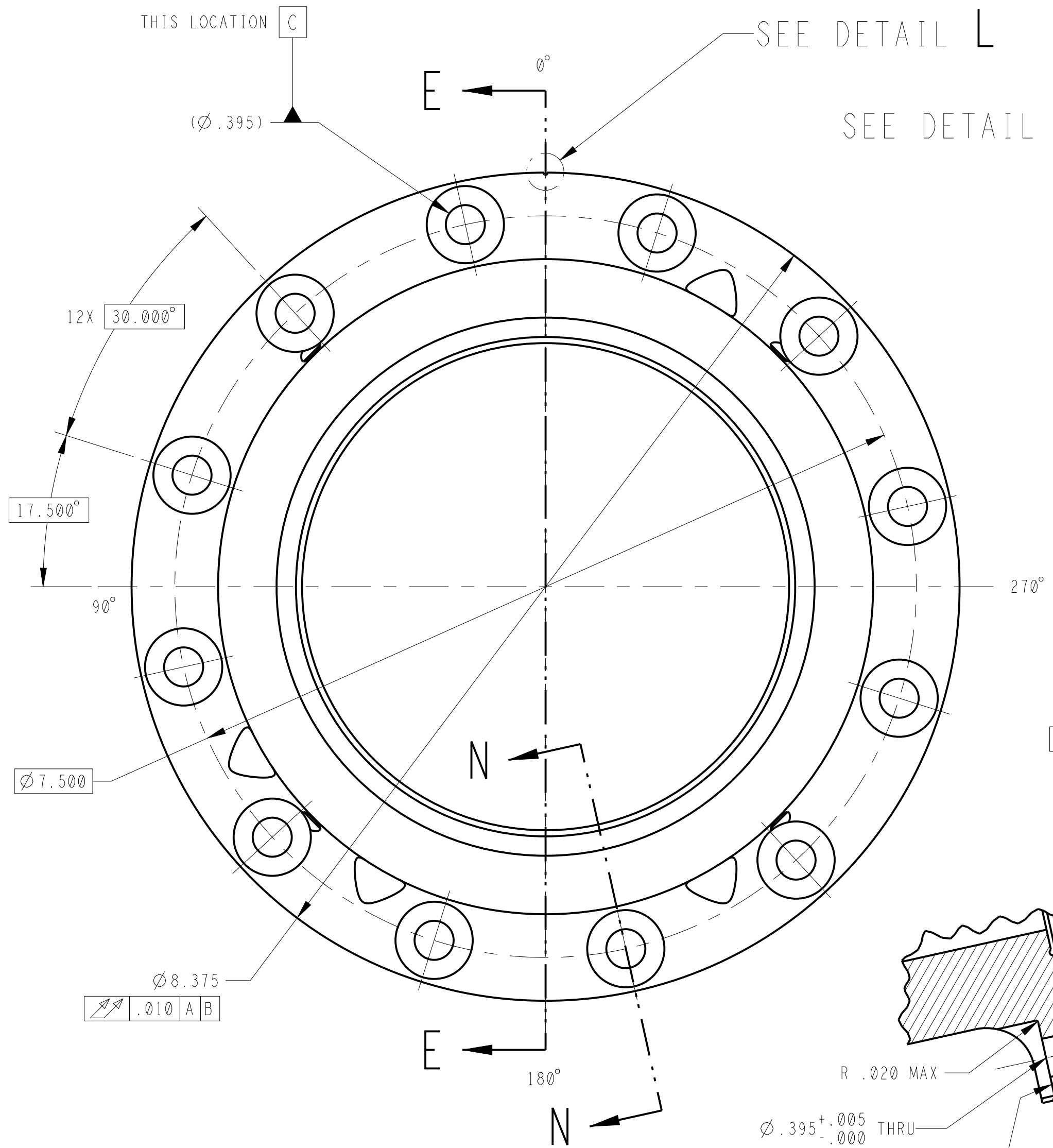
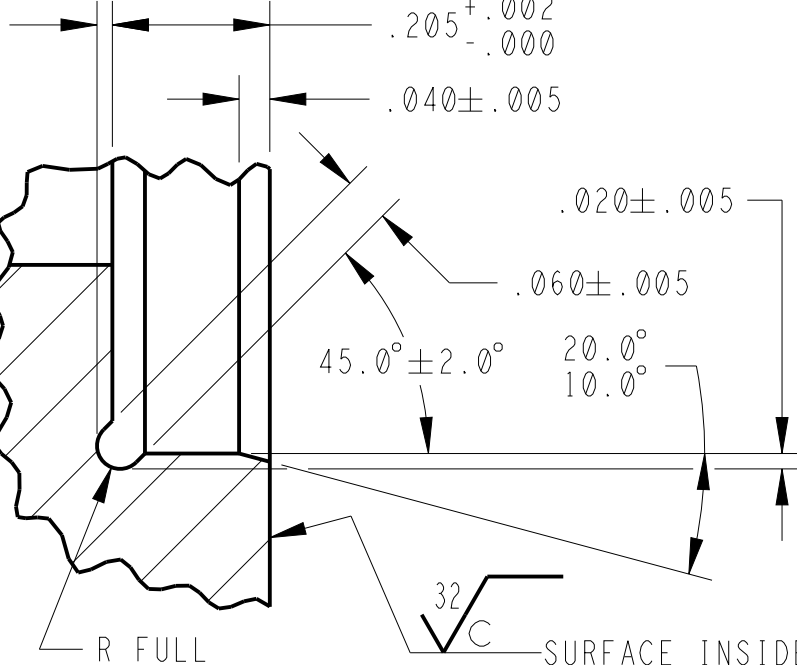
DETAIL K
SCALE 5/1

DETAIL L
SCALE 5/1



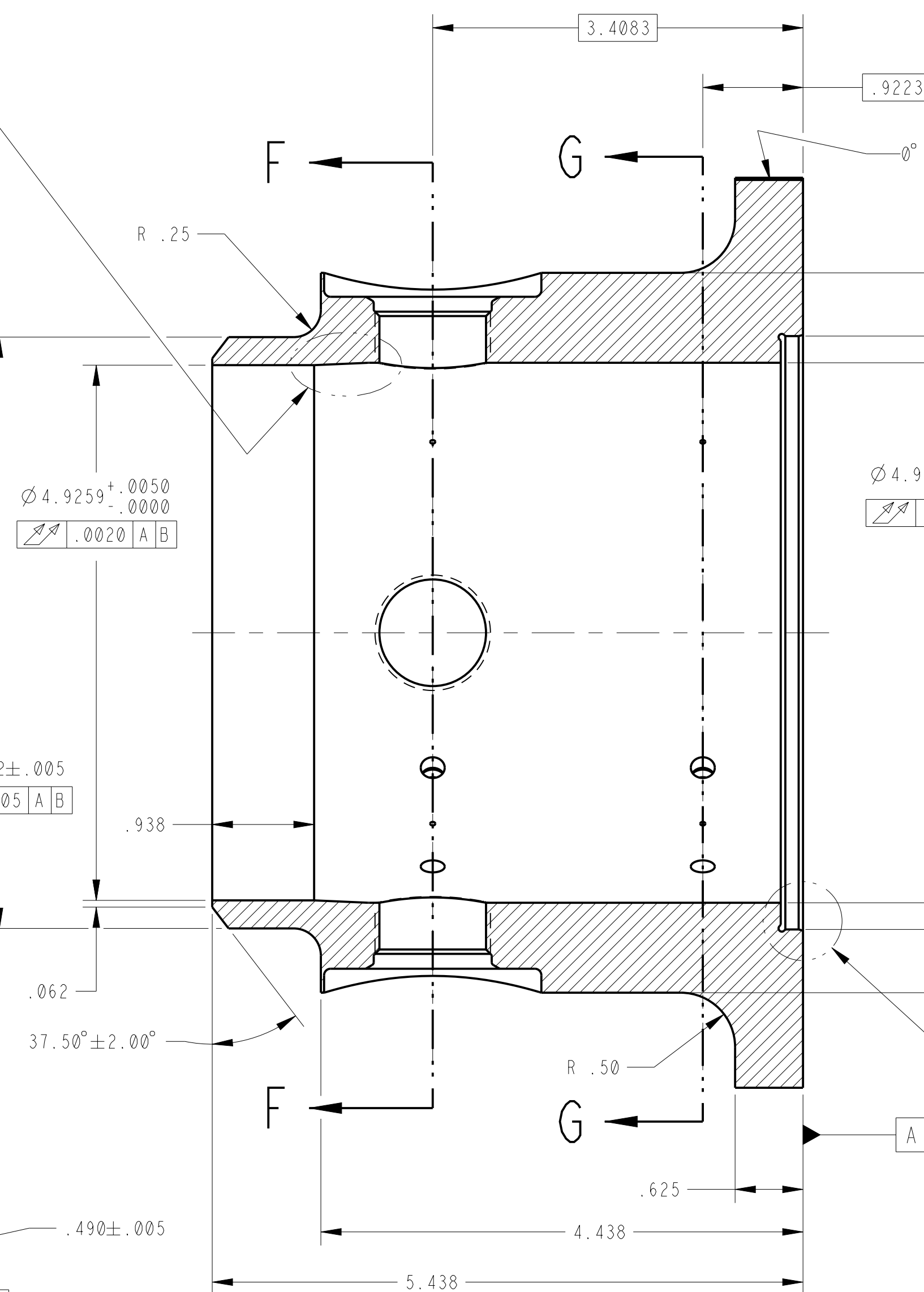
DETAIL M
SCALE 2/1
8X INDIVIDUALLY

DETAIL U
SCALE 4/1

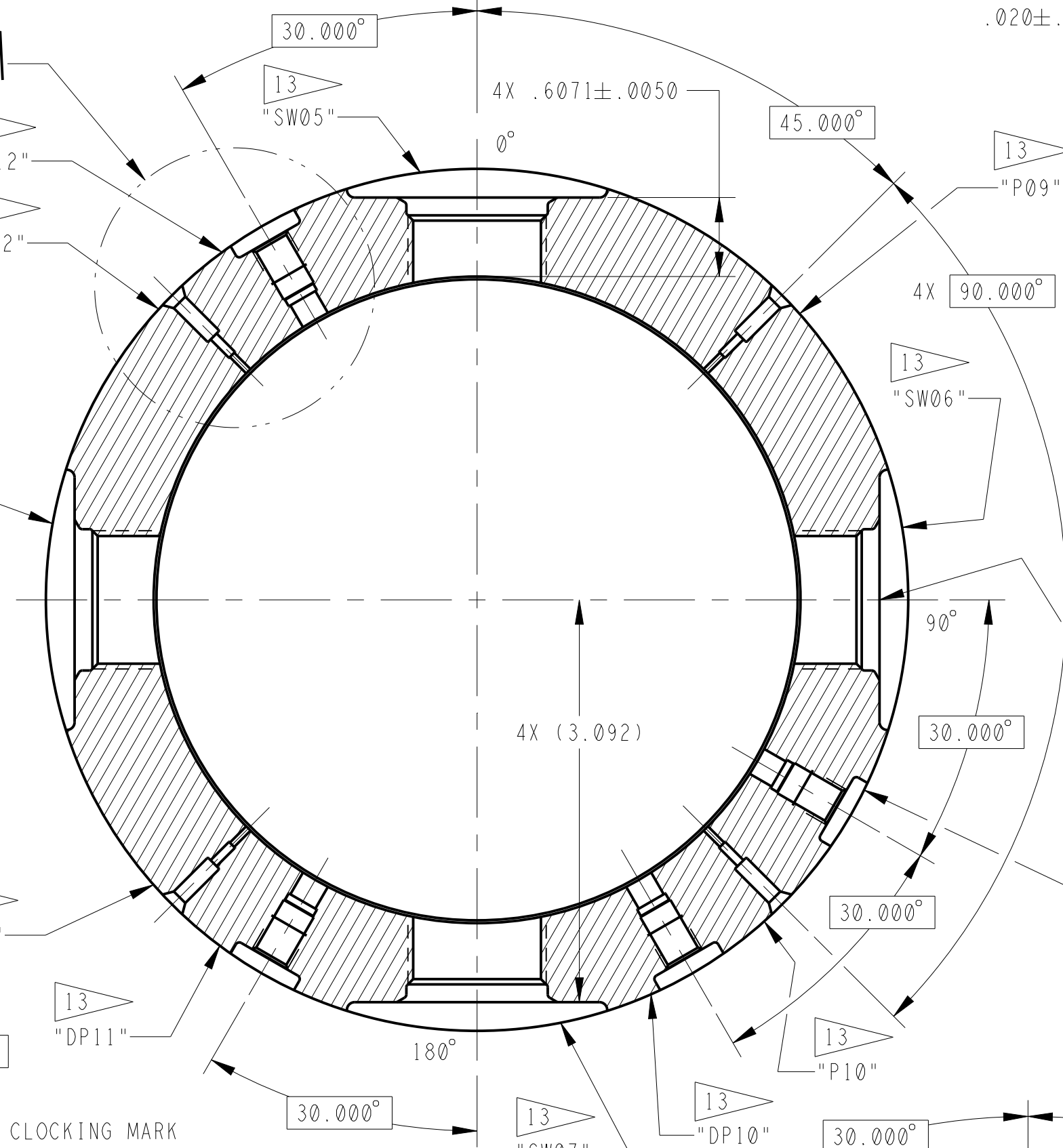


MER02967-005
SCALE 1/1

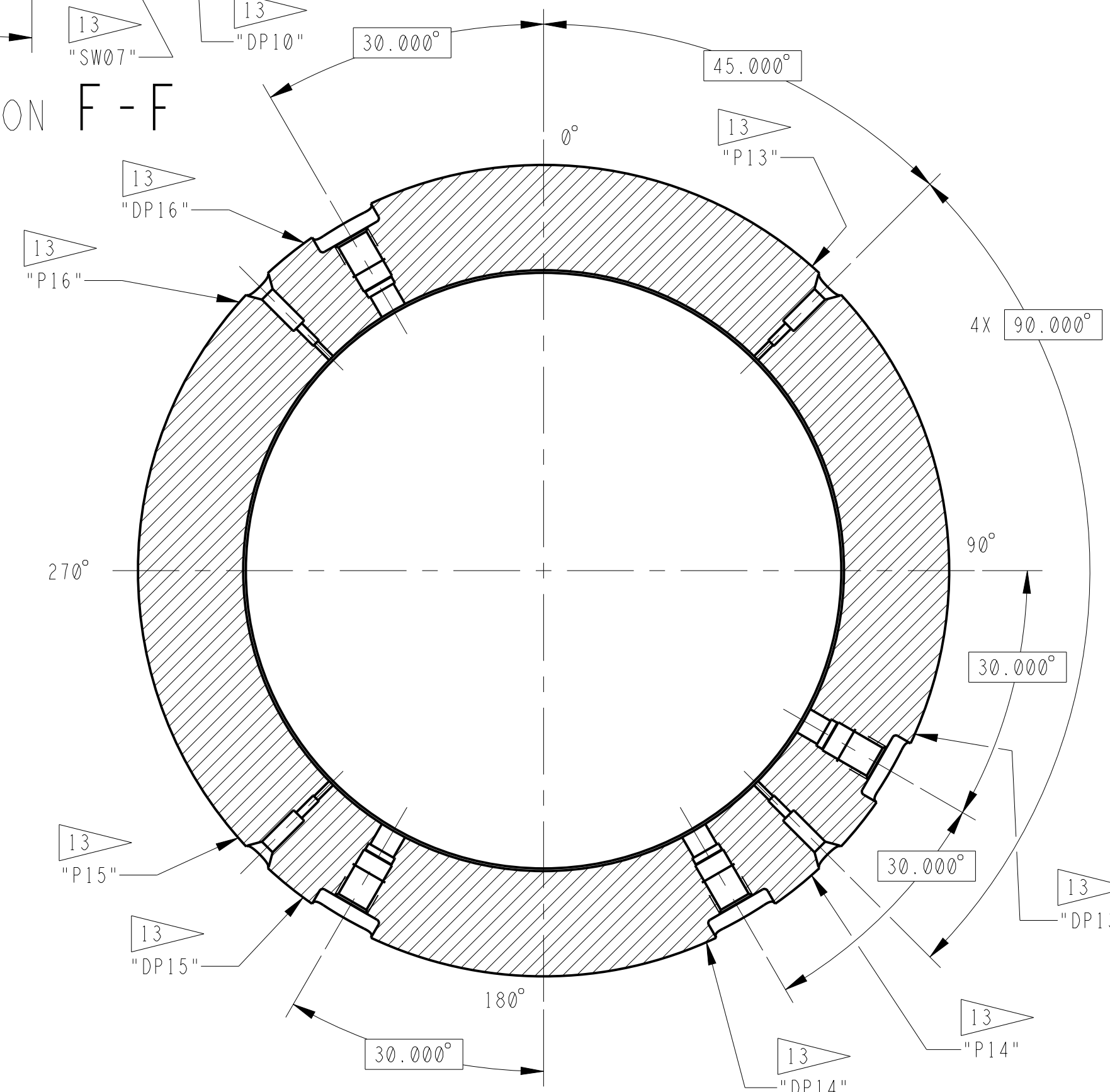
SECTION N-N



SECTION E-E

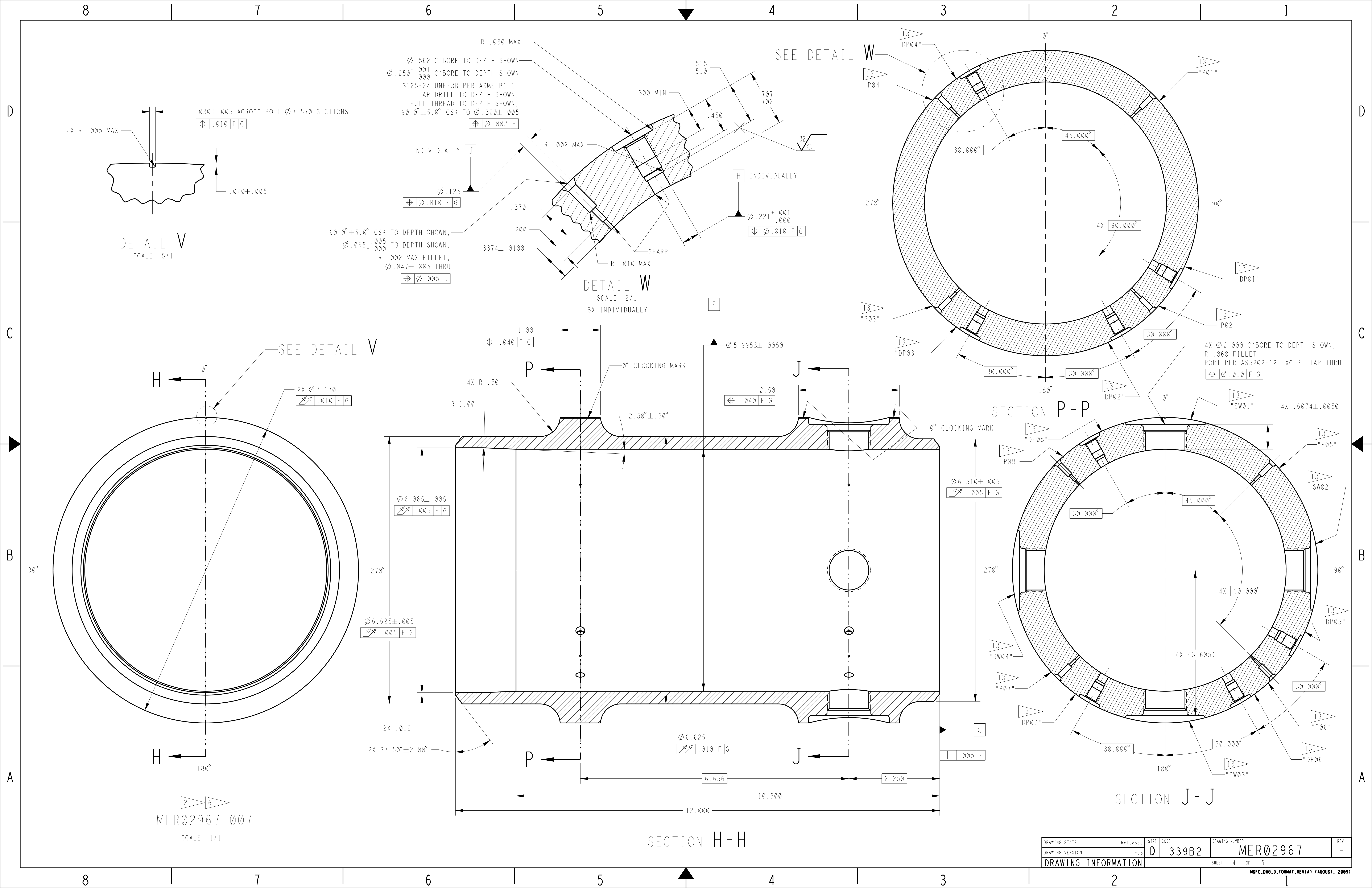


SECTION F-F



SECTION G-G

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	3	D	339B2	MER02967	-
DRAWING INFORMATION	SHEET 3 OF 5				



DETAIL V
SCALE 5/1

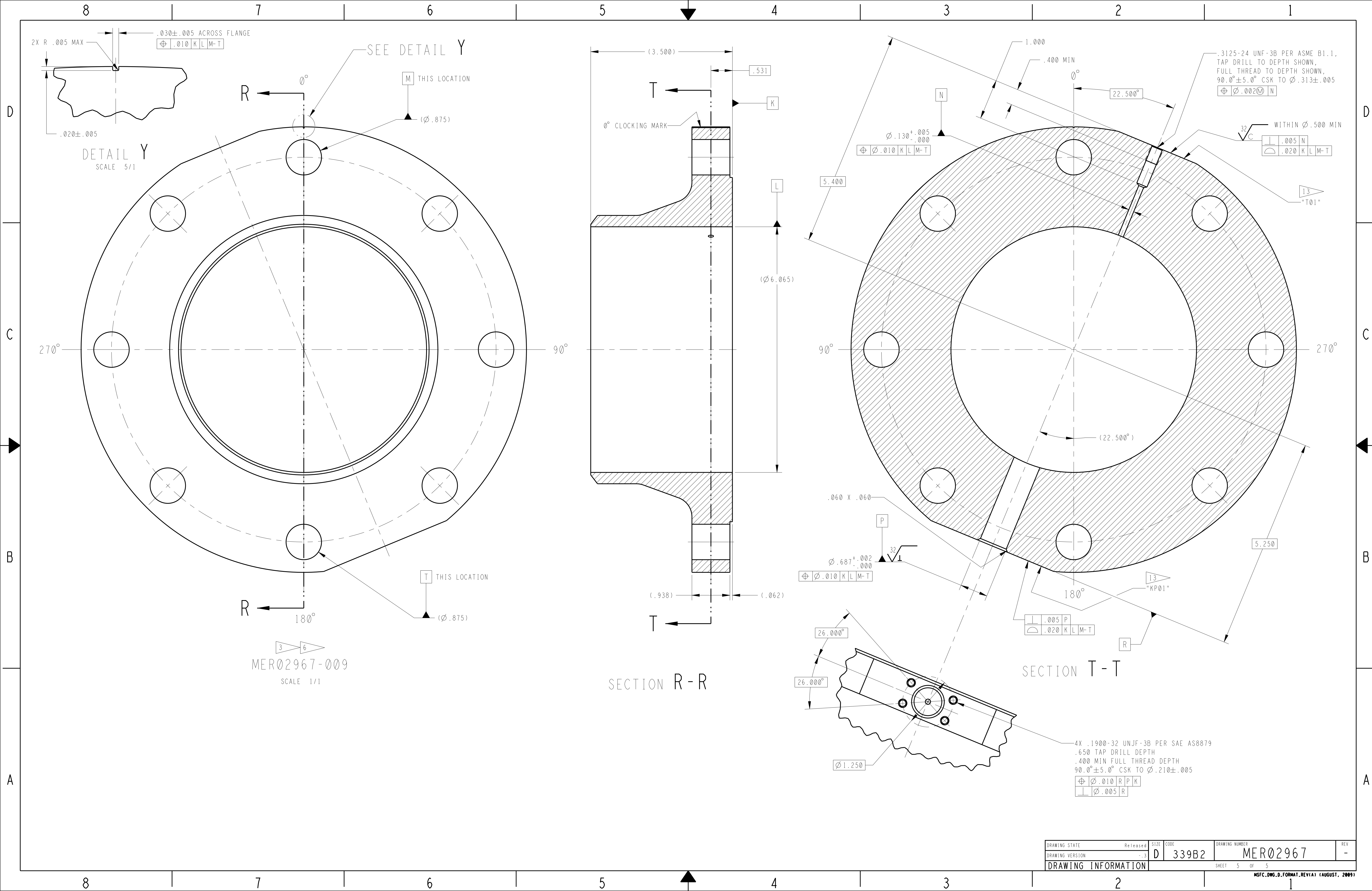
DETAIL W
SCALE 2/1
8X INDIVIDUALLY

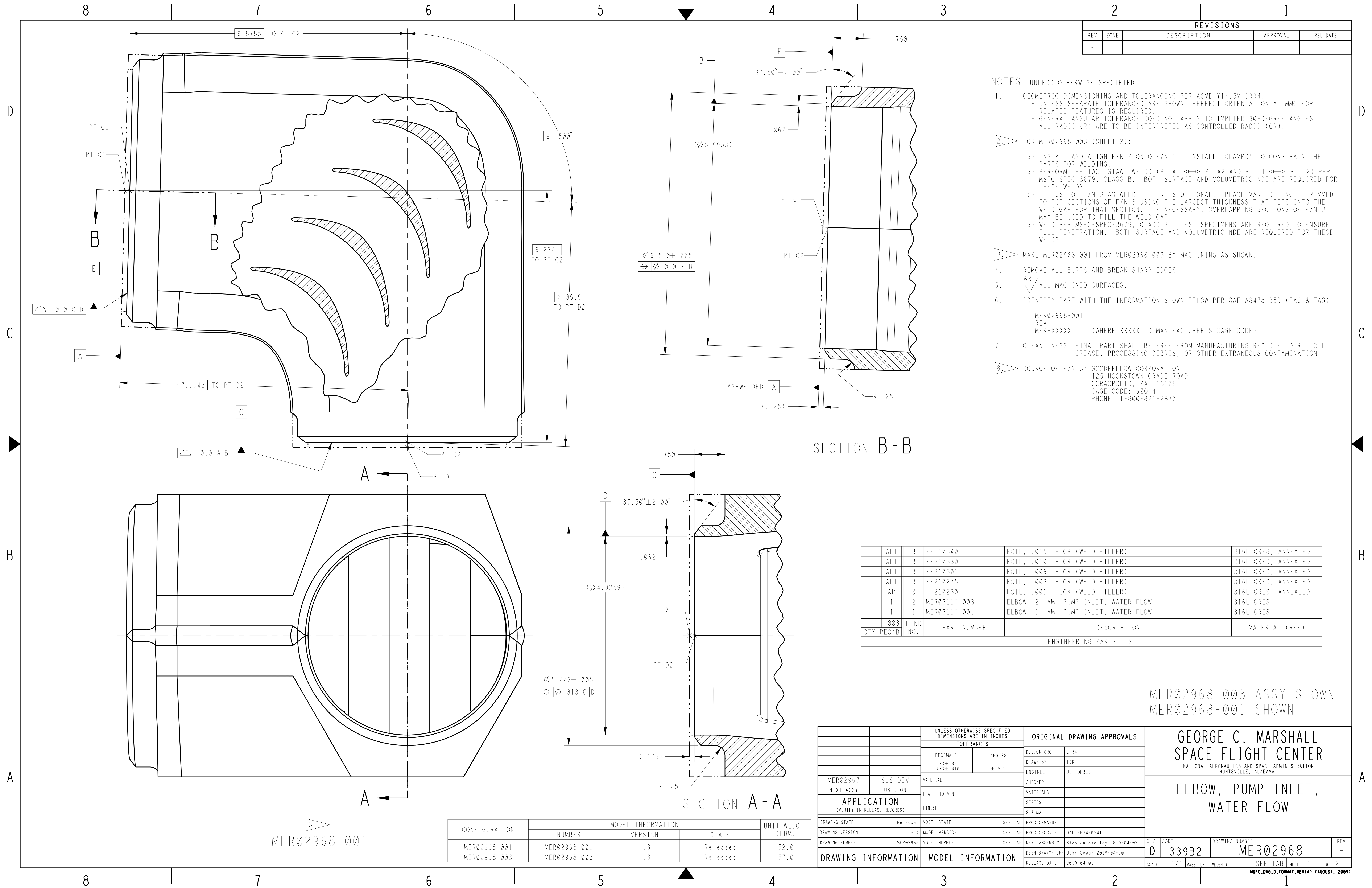
SECTION P-P

SECTION J-J

SECTION H-H

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	3	D	339B2	MER02967	-
DRAWING INFORMATION		SHEET 4 OF 5		NSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)	





REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
-				

- NOTES: UNLESS OTHERWISE SPECIFIED
- GEOMETRIC DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 - UNLESS SEPARATE TOLERANCES ARE SHOWN, PERFECT ORIENTATION AT MMC FOR RELATED FEATURES IS REQUIRED.
 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90-DEGREE ANGLES.
 - ALL RADII (R) ARE TO BE INTERPRETED AS CONTROLLED RADII (CR).
 - FOR MER02968-003 (SHEET 2):
 - INSTALL AND ALIGN F/N 2 ONTO F/N 1. INSTALL "CLAMPS" TO CONSTRAIN THE PARTS FOR WELDING.
 - PERFORM THE TWO "GTAW" WELDS (PT A1 ↔ PT A2 AND PT B1 ↔ PT B2) PER MSFC-SPEC-3679, CLASS B. BOTH SURFACE AND VOLUMETRIC NDE ARE REQUIRED FOR THESE WELDS.
 - THE USE OF F/N 3 AS WELD FILLER IS OPTIONAL. PLACE VARIED LENGTH TRIMMED TO FIT SECTIONS OF F/N 3 USING THE LARGEST THICKNESS THAT FITS INTO THE WELD GAP FOR THAT SECTION. IF NECESSARY, OVERLAPPING SECTIONS OF F/N 3 MAY BE USED TO FILL THE WELD GAP.
 - WELD PER MSFC-SPEC-3679, CLASS B. TEST SPECIMENS ARE REQUIRED TO ENSURE FULL PENETRATION. BOTH SURFACE AND VOLUMETRIC NDE ARE REQUIRED FOR THESE WELDS.
 - MAKE MER02968-001 FROM MER02968-003 BY MACHINING AS SHOWN.
 - REMOVE ALL BURRS AND BREAK SHARP EDGES.
 - 63 ALL MACHINED SURFACES.
 - IDENTIFY PART WITH THE INFORMATION SHOWN BELOW PER SAE AS478-35D (BAG & TAG).

MER02968-001
REV -
MFR-XXXXX (WHERE XXXXX IS MANUFACTURER'S CAGE CODE)
 - CLEANLINESS: FINAL PART SHALL BE FREE FROM MANUFACTURING RESIDUE, DIRT, OIL, GREASE, PROCESSING DEBRIS, OR OTHER EXTRANEOUS CONTAMINATION.
 - SOURCE OF F/N 3: GOODFELLOW CORPORATION
125 HOOKSTOWN GRADE ROAD
CORAOPOLIS, PA 15108
CAGE CODE: 6ZQH4
PHONE: 1-800-821-2870

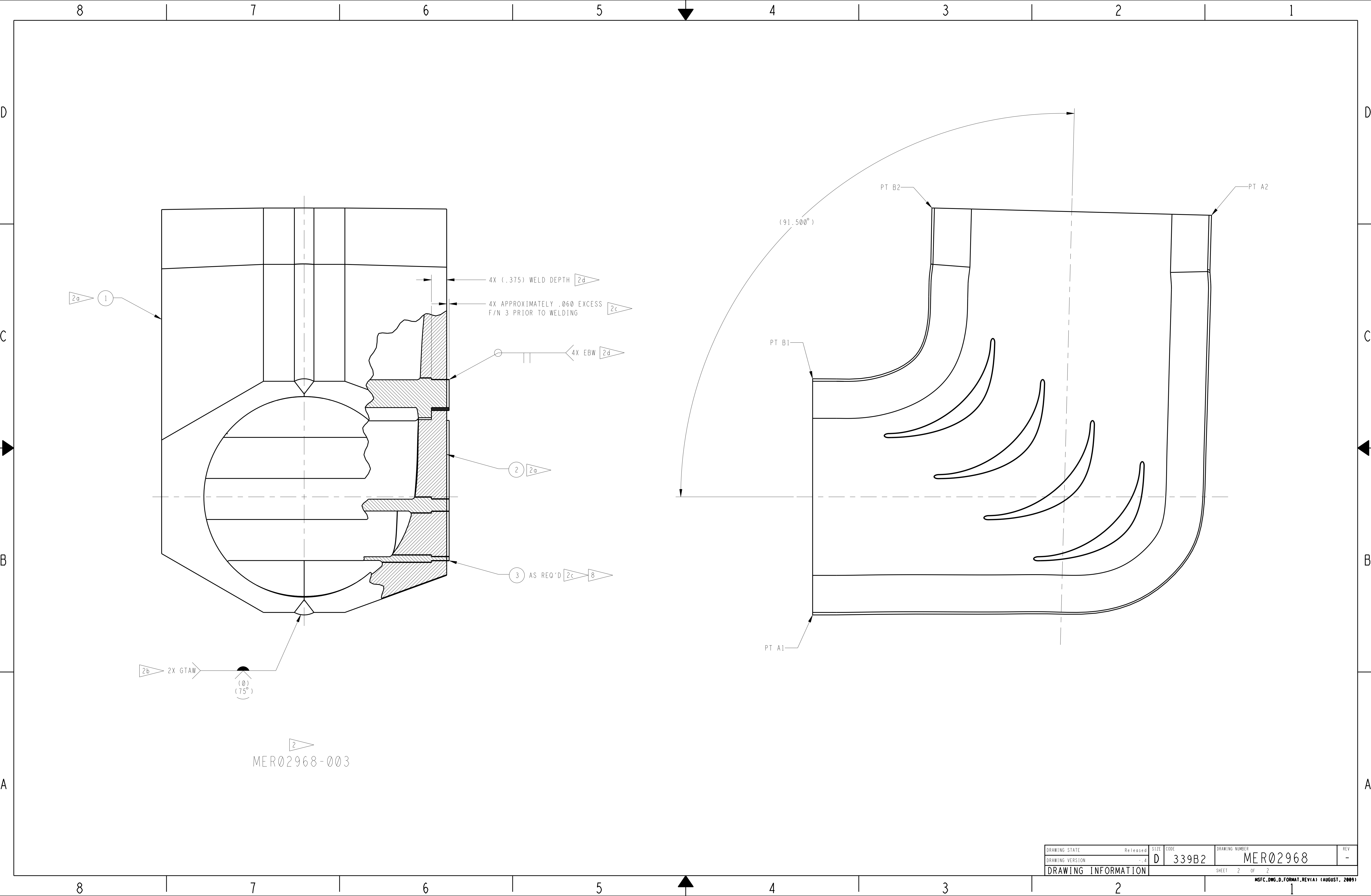
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	ALT	3	FF210330	FOIL, .010 THICK (WELD FILLER)	316L CRES, ANNEALED
	ALT	3	FF210301	FOIL, .006 THICK (WELD FILLER)	316L CRES, ANNEALED
	ALT	3	FF210275	FOIL, .003 THICK (WELD FILLER)	316L CRES, ANNEALED
	AR	3	FF210230	FOIL, .001 THICK (WELD FILLER)	316L CRES, ANNEALED
	1	2	MER03119-003	ELBOW #2, AM, PUMP INLET, WATER FLOW	316L CRES
	1	1	MER03119-001	ELBOW #1, AM, PUMP INLET, WATER FLOW	316L CRES
	-003	FIND	PART NUMBER	DESCRIPTION	MATERIAL (REF)
QTY REQ'D	NO.				
ENGINEERING PARTS LIST					

MER02968-003 ASSY SHOWN
MER02968-001 SHOWN

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HUNTSVILLE, ALABAMA

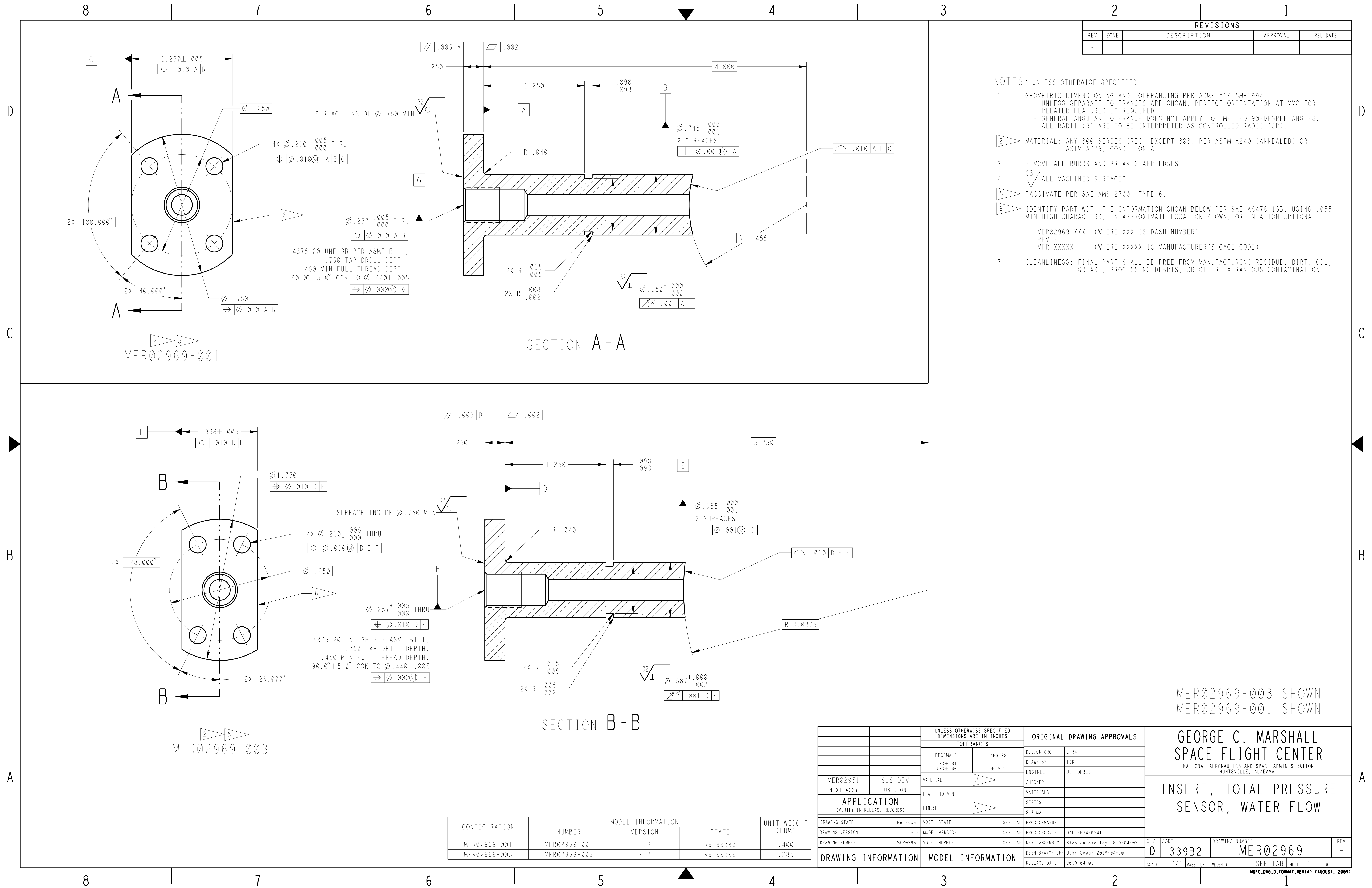
ELBOW, PUMP INLET,
WATER FLOW

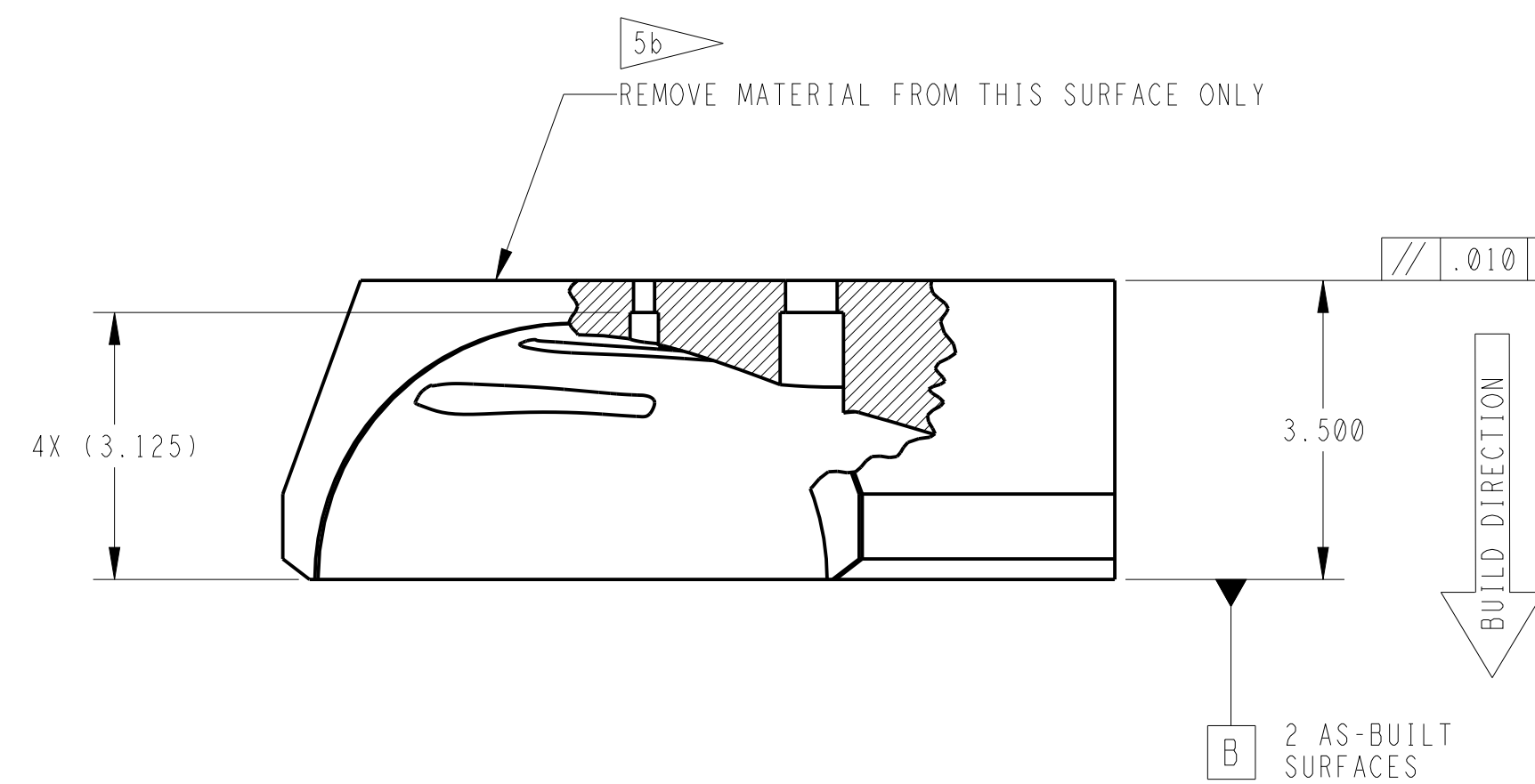
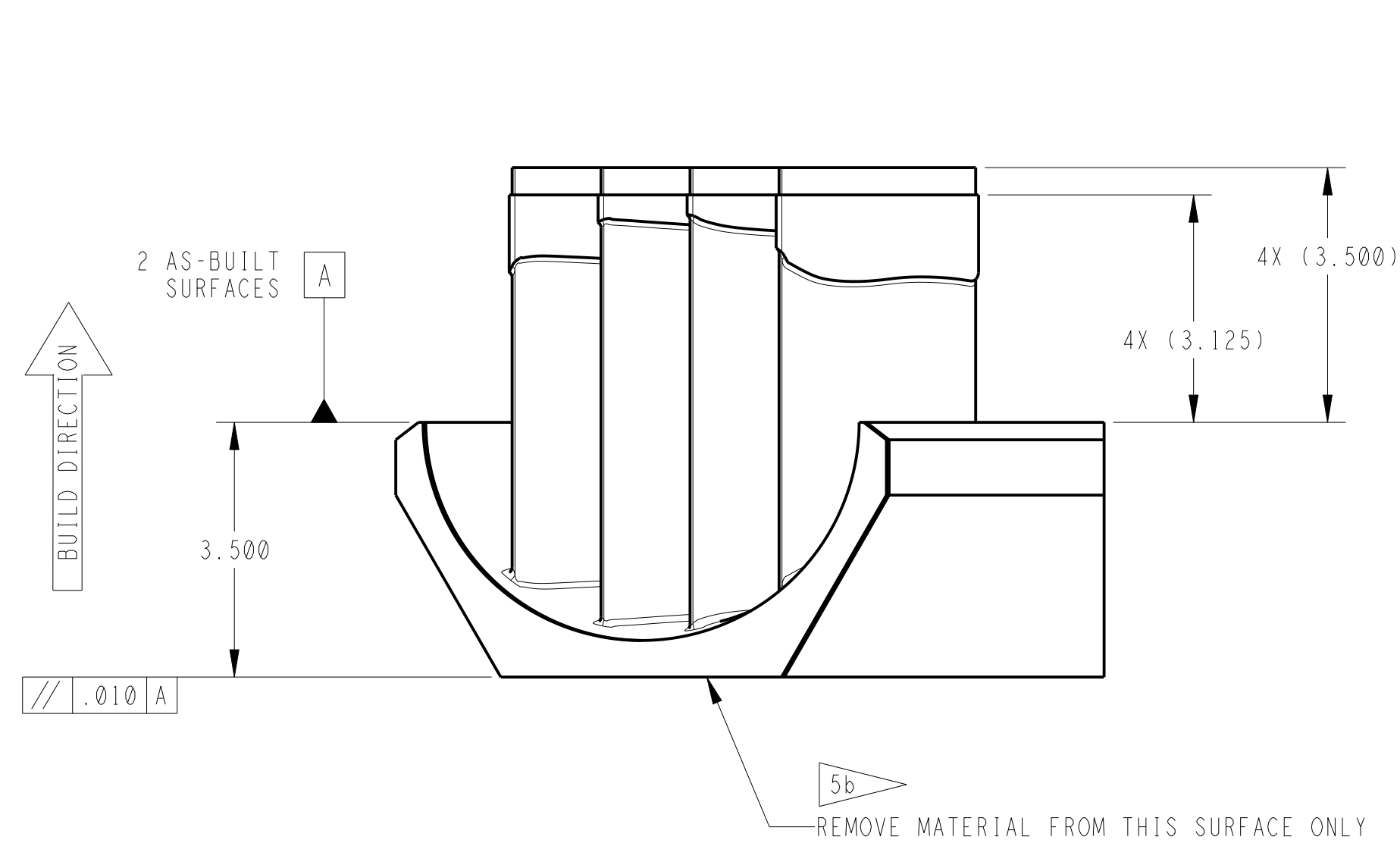
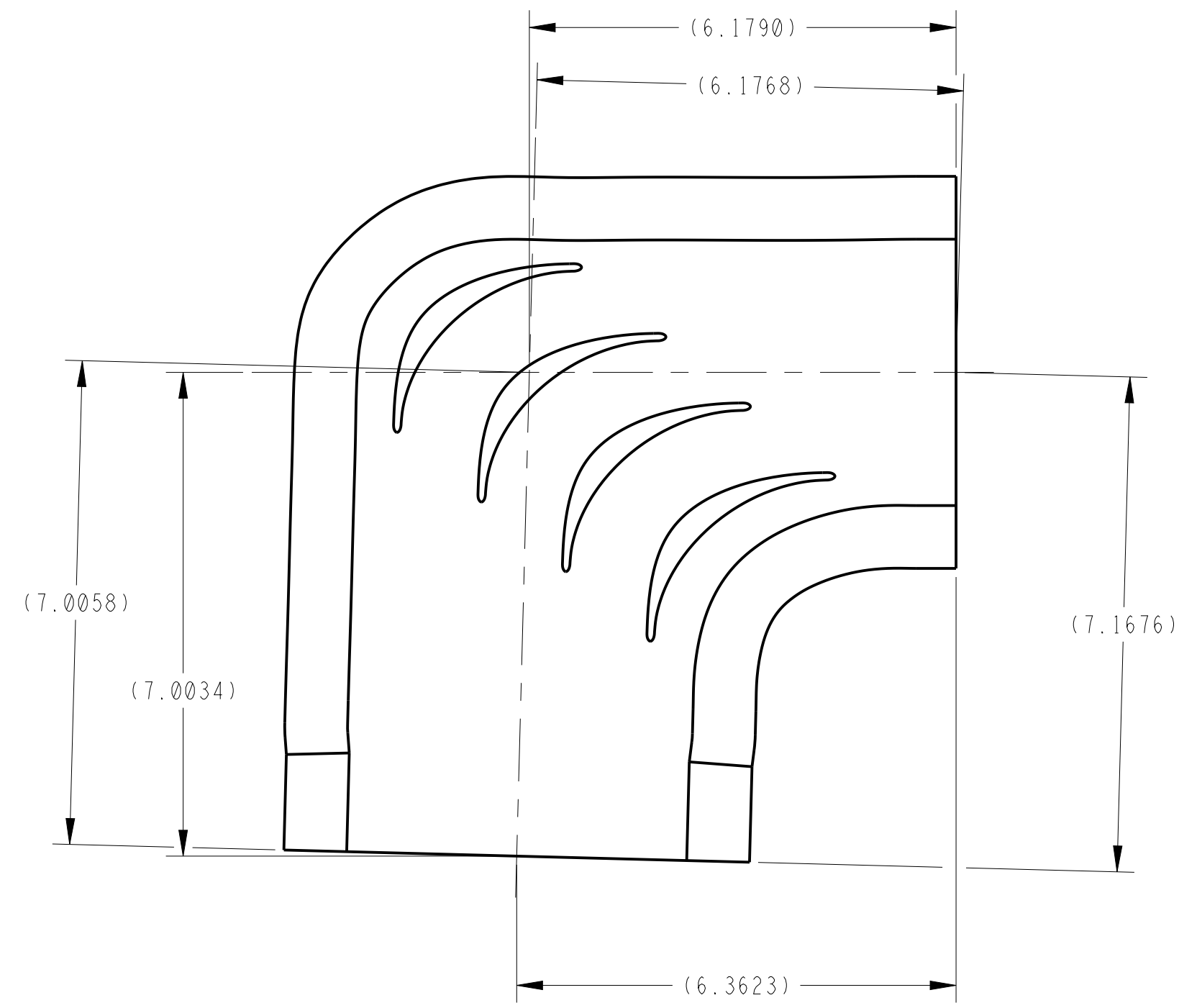
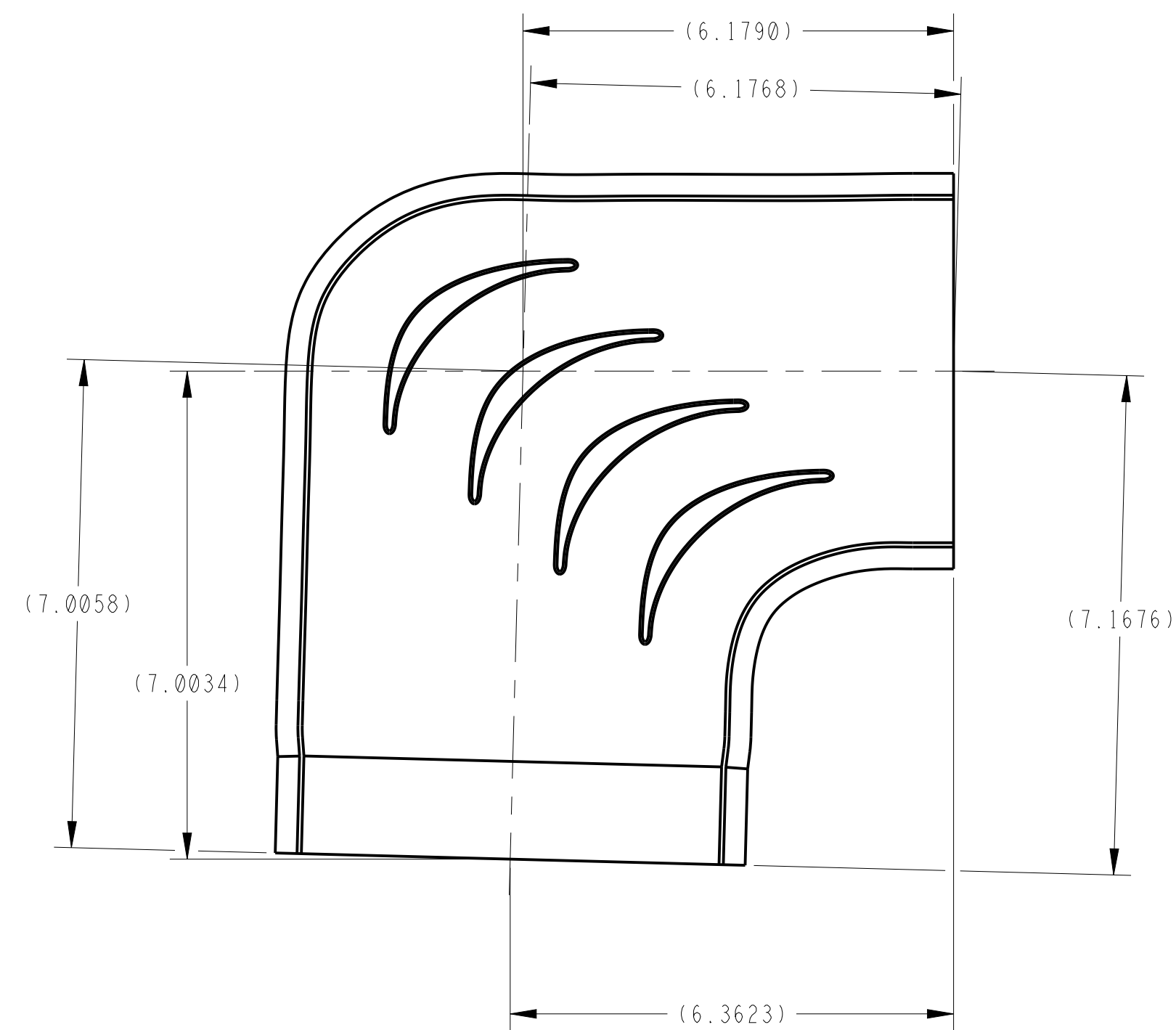
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS					
		TOLERANCES		DESIGN ORG.	ER34				
		DECIMALS	ANGLES	DRAWN BY	IDK				
		.XX±.03	±.5 °	ENGINEER	J. FORBES				
MER02967	SLS DEV	MATERIAL		CHECKER					
NEXT ASSY	USED ON	HEAT TREATMENT		MATERIALS					
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		STRESS					
				S & MA					
DRAWING STATE	Released	MODEL STATE	SEE TAB	PRODUC-MANUF					
DRAWING VERSION	1.4	MODEL VERSION	SEE TAB	PRODUC-CONTR	DAF ER34-0541				
DRAWING NUMBER	MER02968	MODEL NUMBER	SEE TAB	NEXT ASSEMBLY	Stephen Skelley 2019-04-02	SIZE	CODE	DRAWING NUMBER	REV
DRAWING INFORMATION		MODEL INFORMATION		DESIGN BRANCH CHG	John Cowan 2019-04-10	D	339B2	MER02968	-
				RELEASE DATE	2019-04-01	SCALE	1/1	MASS (UNIT WEIGHT)	SEE TAB
								SHEET 1	OF 2
								MSFC.DWG.D.FORMAT.REV1A) (AUGUST, 2009)	



MER02968-003

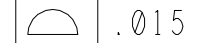
DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	4	D	339B2	MER02968	-
DRAWING INFORMATION		SHEET 2 OF 2		MSFC.DWG.D.FORMAT.REV(A) (AUGUST, 2009)	





REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
-				

NOTES: UNLESS OTHERWISE SPECIFIED

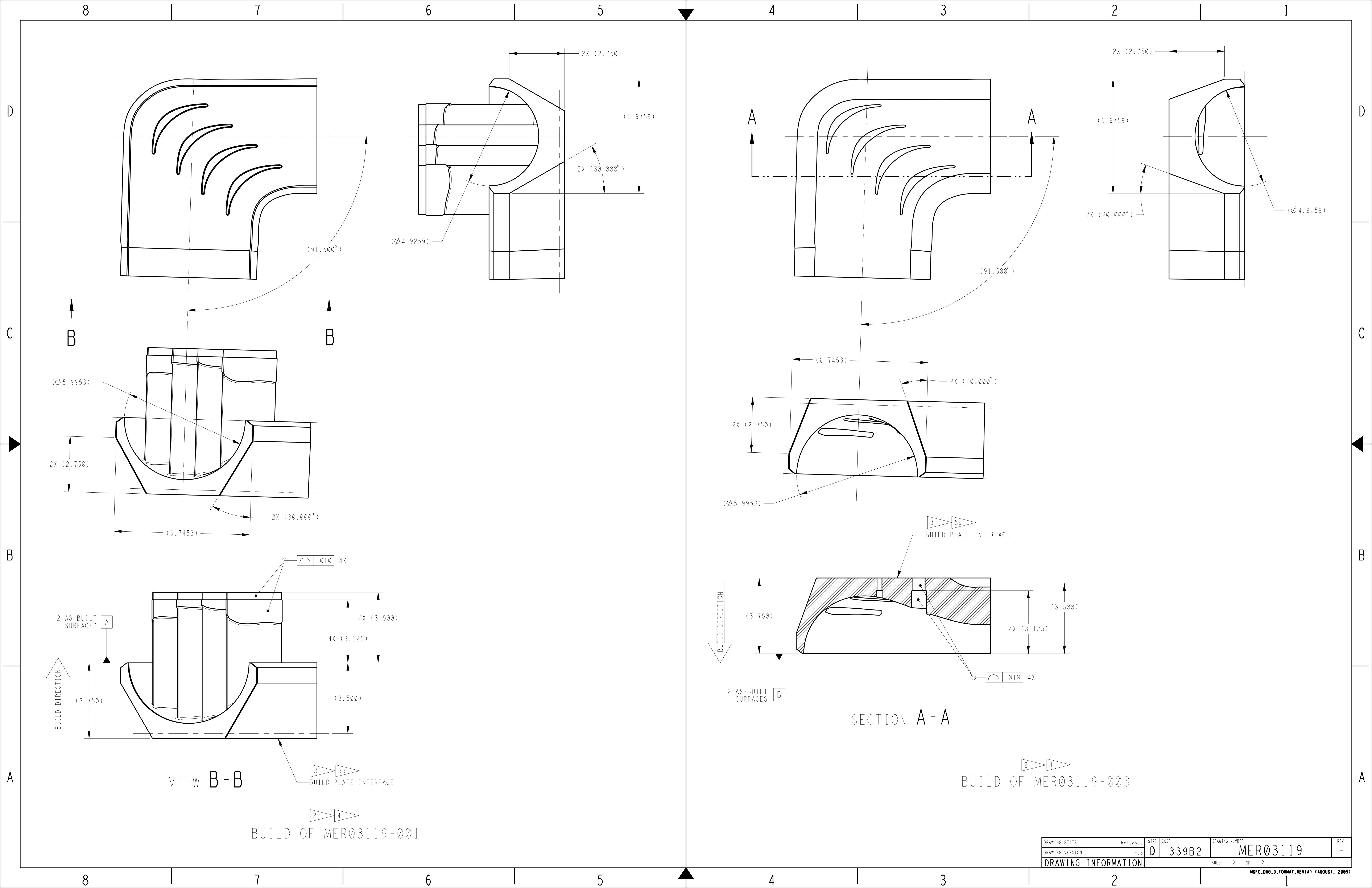
1. REDUCED DIMENSION DRAWING. INTERPRET PER ASME Y14.41-2003 EXCEPT AS FOLLOWS:
- ALL UNDIMENSIONED FEATURES ARE MODELED AT MEAN VALUE, ARE BASIC, AND ARE CONTROLLED WITH THE BILATERAL PROFILE TOLERANCE OF  .015].
 - THESE UNDIMENSIONED FEATURES ARE CONTROLLED BY THE PRODUCT DEFINITION DATA SET. REFERENCE TABULATED CREO MODELS IN MSFC ICE WINDCHILL.
 - IGNORE ANY MODEL ANNOTATIONS.
2. MATERIAL: 316L CRES (UNS S31603), ADDITIVELY MANUFACTURED.
3. PRINTING SHALL BE PARALLEL TO BUILD PLATE AND BEGIN AT SPECIFIED SURFACE.
4. WHILE PRINTED PART (MER03119-001 OR MER03119-003) IS STILL ATTACHED TO THE BUILD PLATE, STRESS RELIEVE AND ANNEAL PER MANUFACTURER'S SPECIFICATIONS.
5. FOR BOTH MER03119-001 AND MER03119-003:
- a) USE SUBMERGED WIRE EDM TO REMOVE PART FROM BUILD PLATE.
 - b) REMOVE MATERIAL FROM SPECIFIED SURFACE ONLY.
6. REMOVE ALL BURRS AND BREAK SHARP EDGES.
7.  ALL SURFACES.
8. IDENTIFY PART WITH THE INFORMATION SHOWN BELOW PER SAE AS478-35D (BAG & TAG).
- MER03119-XXX (WHERE XXX IS DASH NUMBER)
REV -
MFR-XXXXX (WHERE XXXXX IS MANUFACTURER'S CAGE CODE)
9. CLEANLINESS: FINAL PART SHALL BE FREE FROM MANUFACTURING RESIDUE, DIRT, OIL, GREASE, PROCESSING DEBRIS, OR OTHER EXTRANEOUS CONTAMINATION.

CONFIGURATION	MODEL INFORMATION			UNIT WEIGHT (LBM)
	NUMBER	VERSION	STATE	
MER03119-001	MER03119-001	- 2	Released	29.6
MER03119-001 (FOR BUILD)	MER03119-001-BUILT	- 2	Released	32.8
MER03119-003	MER03119-003	- 2	Released	26.7
MER03119-003 (FOR BUILD)	MER03119-003-BUILT	- 2	Released	30.7

REDUCED DIMENSION DRAWING

MER03119-003 SHOWN
MER03119-001 SHOWN

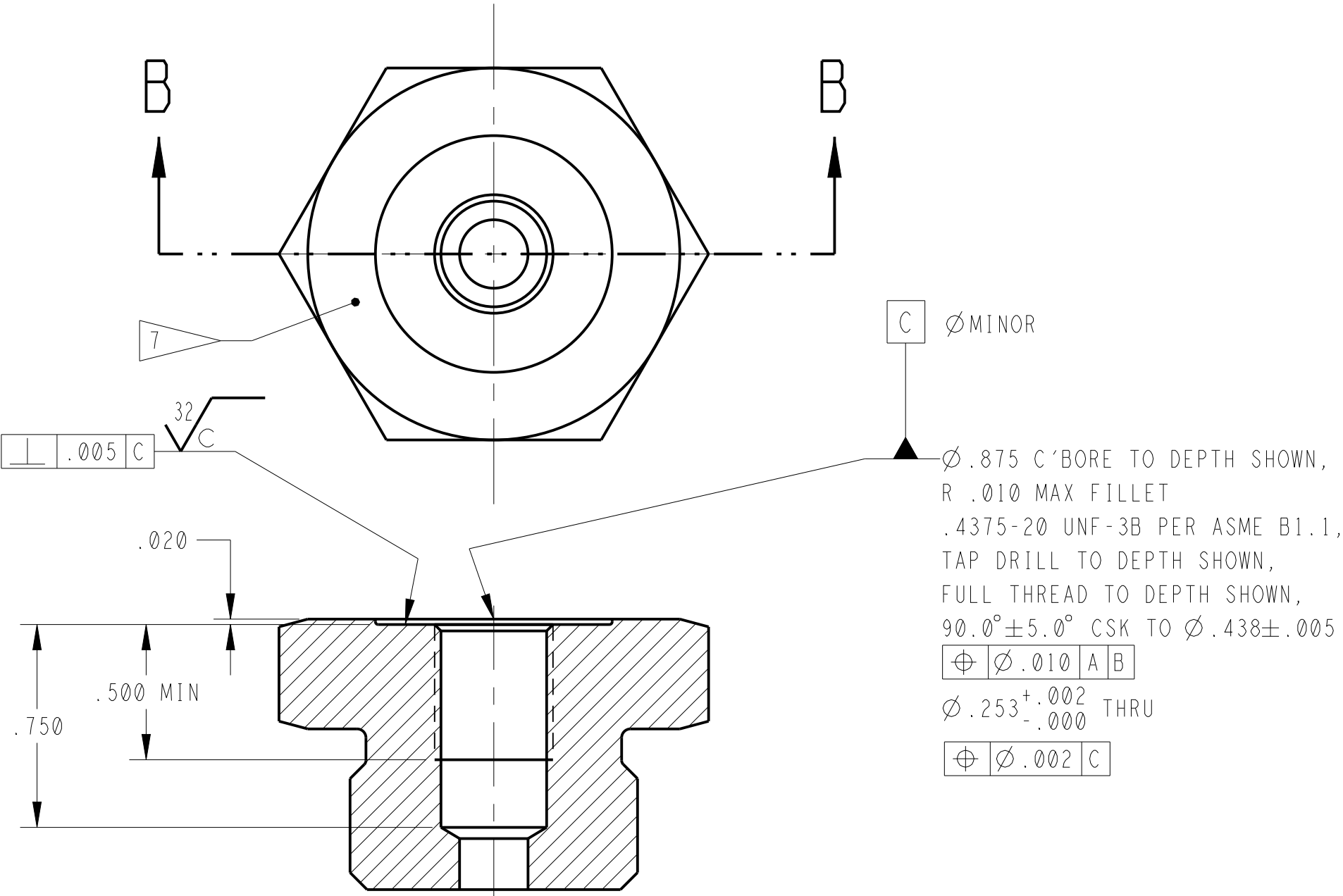
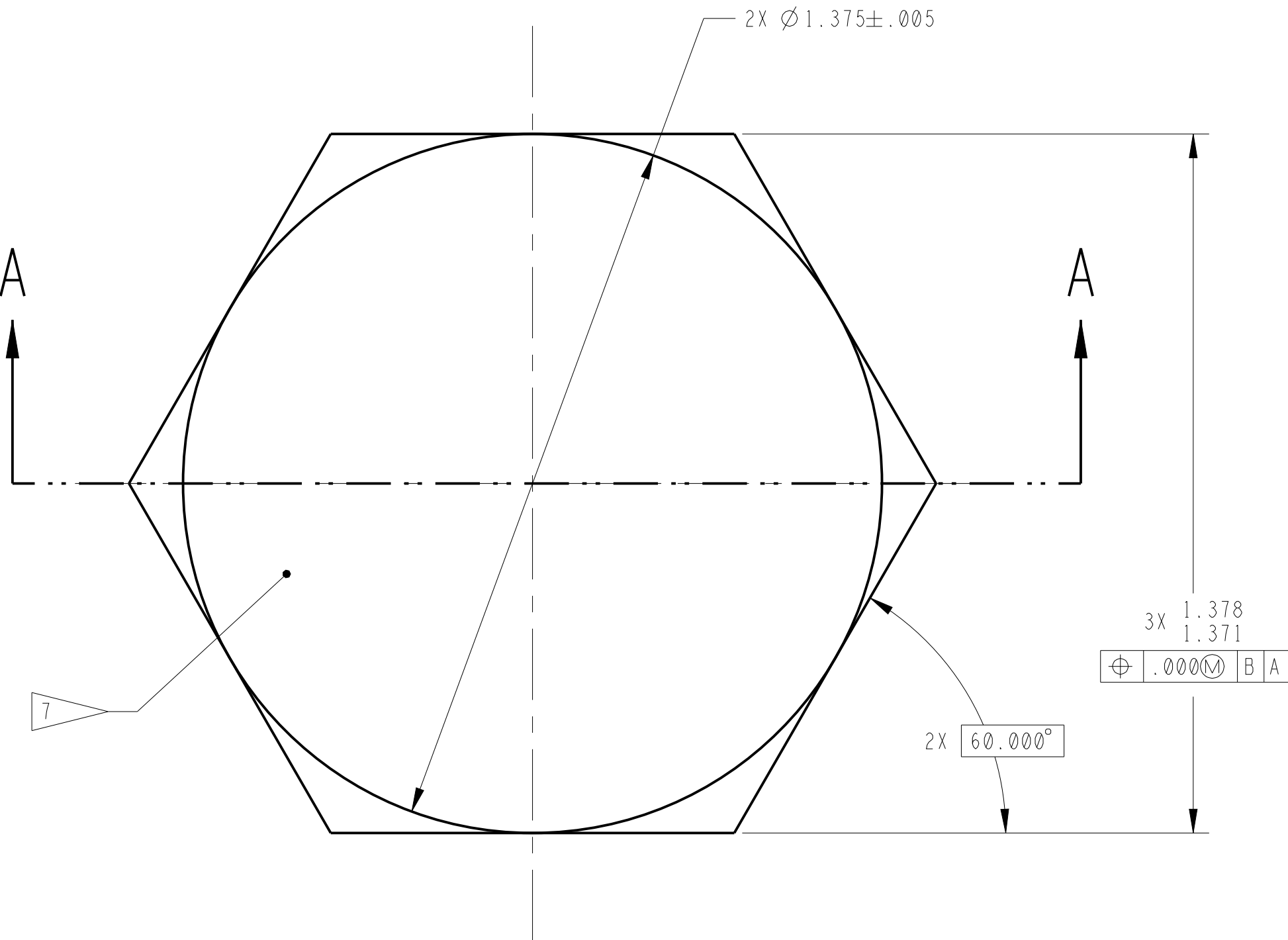
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA			
		TOLERANCES							
		DECIMALS .XX± .03 .XXX±.010	ANGLES ±.5 °	DESIGN ORG.	ER34				
		MATERIAL		DRAWN BY	IDK				
MER02968	SLS DEV	HEAT TREATMENT		ENGINEER	J. FORBES				
NEXT ASSY	USED ON	FINISH		CHECKER					
APPLICATION (VERIFY IN RELEASE RECORDS)				MATERIALS					
				STRESS					
				S & MA					
DRAWING STATE	Released	MODEL STATE	SEE TAB	PRODUC-MANUF		SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	.3	MODEL VERSION	SEE TAB	PRODUC-CONTR	DAF ER34-Q541				
DRAWING NUMBER	MER03119	MODEL NUMBER	SEE TAB	NEXT ASSEMBLY	Stephen Skelley 2019-04-02	D	339B2	MER03119	-
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	John Cowan 2019-04-10				
				RELEASE DATE	2019-04-01				
				SCALE	1/2	MASS (UNIT WEIGHT)	SEE TAB	SHEET	1 OF 2



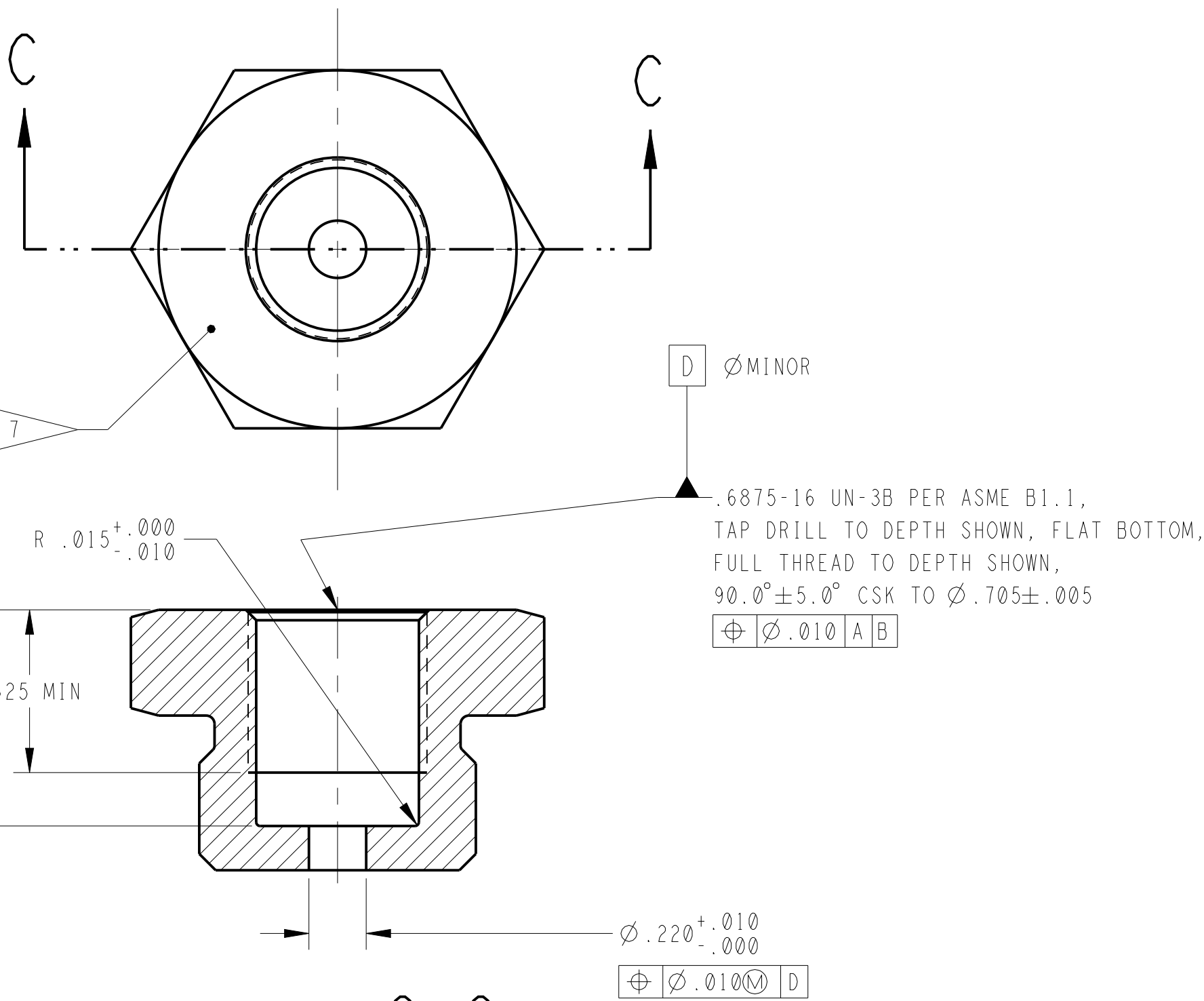
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
-				

- NOTES: UNLESS OTHERWISE SPECIFIED
- GEOMETRIC DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 - UNLESS SEPARATE TOLERANCES ARE SHOWN, PERFECT ORIENTATION AT MMC FOR RELATED FEATURES IS REQUIRED.
 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90-DEGREE ANGLES.
 - ALL RADII (R) ARE TO BE INTERPRETED AS CONTROLLED RADII (CR).
 - MATERIAL: ANY 300 SERIES CRES, EXCEPT 303, CONDITION A (ANNEALED), PER ASTM A276 OR ASTM A240.
 - REMOVE ALL BURRS AND BREAK SHARP EDGES.
 - $\sqrt[63]{}$ ALL MACHINED SURFACES.
 - FOR MER03120-001 AND MER03120-003, MACHINE PER MER03120-005 AND THE ADDITIONAL FEATURES AS SHOWN.
 - PASSIVATE PER SAE AMS 2700, TYPE 6.
 - IDENTIFY PART WITH THE INFORMATION SHOWN BELOW PER SAE AS478-15B, USING .055 MIN HIGH CHARACTERS, IN APPROXIMATE LOCATION SHOWN, ORIENTATION OPTIONAL.

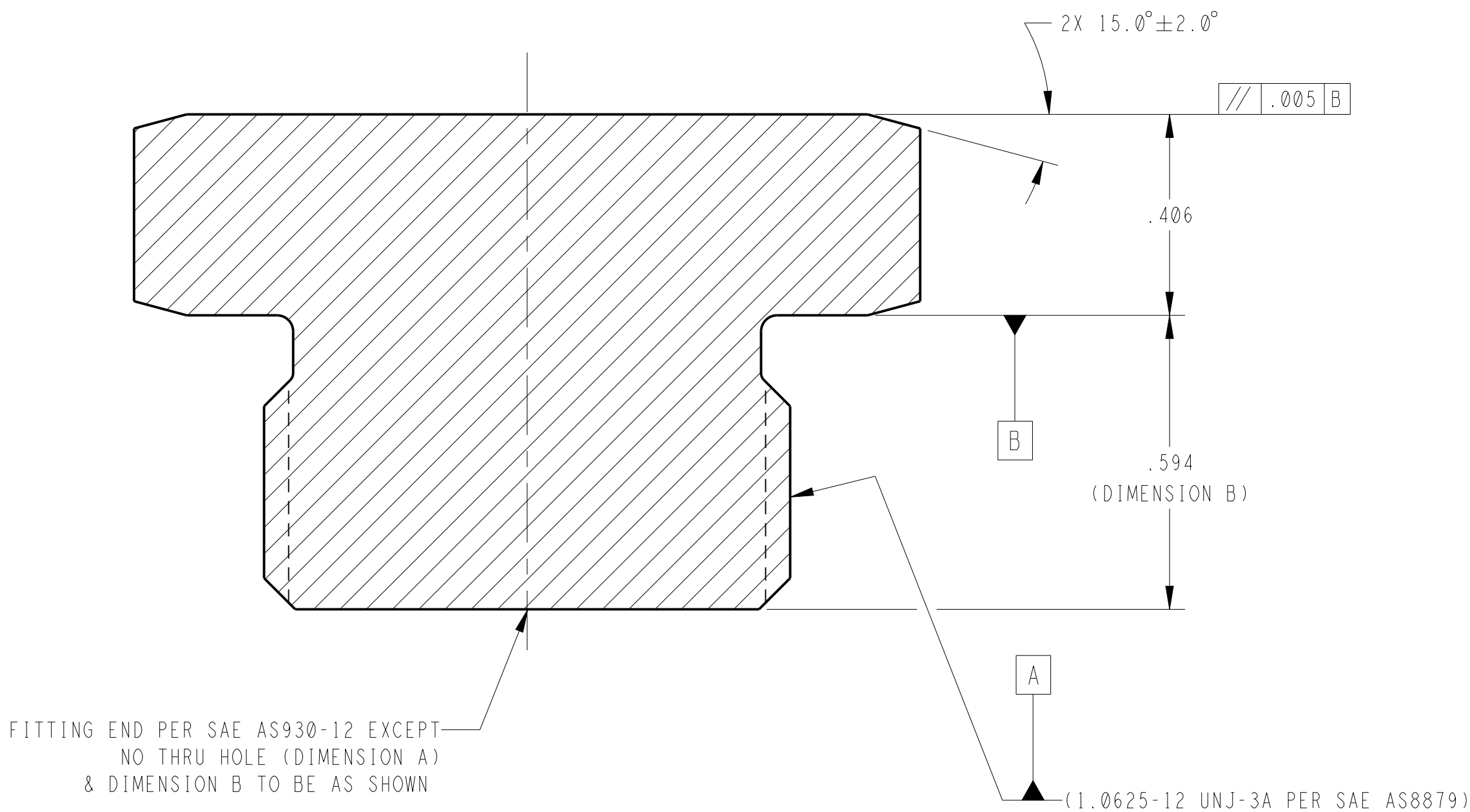
MER03120-XXX (WHERE XXX IS DASH NUMBER)
REV -
MFR-XXXXX (WHERE XXXXX IS MANUFACTURER'S CAGE CODE)
 - CLEANLINESS: FINAL PART SHALL BE FREE FROM MANUFACTURING RESIDUE, DIRT, OIL, GREASE, PROCESSING DEBRIS, OR OTHER EXTRANEOUS CONTAMINATION.



SECTION B-B
MER03120-001
SCALE 2/1



SECTION C-C
MER03120-003
SCALE 2/1



SECTION A-A
MER03120-005

MER03120-005 SHOWN
MER03120-003 SHOWN
MER03120-001 SHOWN

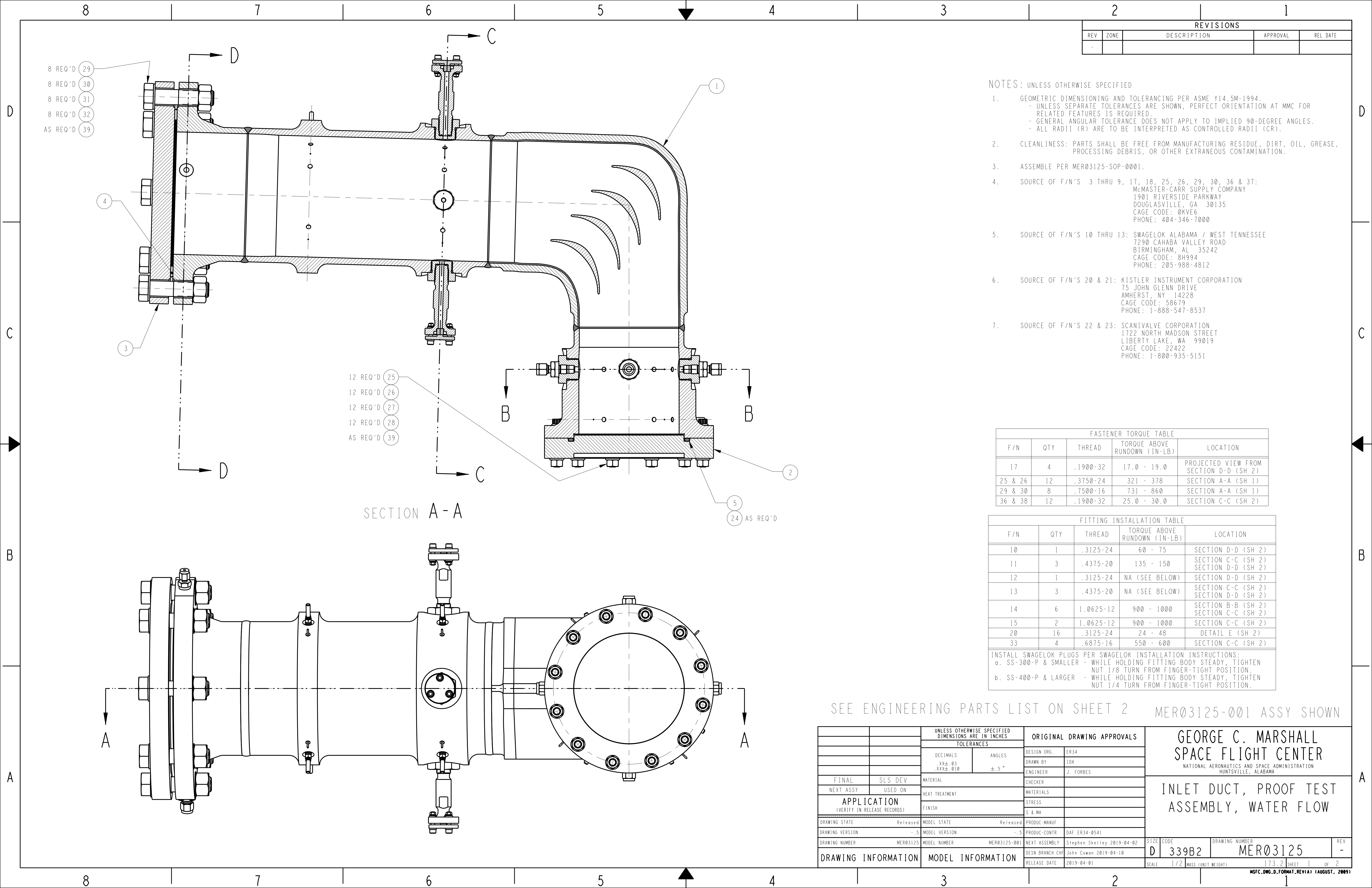
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	NUMBER	VERSION	STATE	
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MER03120-003	MER03120-003	- .3	Released	.258
MER03120-005	MER03120-005	- .3	Released	.334

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
		TOLERANCES		DESIGN ORG.	ER34
		DECIMALS	ANGLES	DRAWN BY	IDK
		.XX±.03	±.5 °	ENGINEER	J. FORBES
		.XXX±.010		CHECKER	
MER02951	SLS DEV	MATERIAL	2	MATERIALS	
NEXT ASSY	USED ON	HEAT TREATMENT		STRESS	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH	6	S & MA	
DRAWING STATE	Released	MODEL STATE	SEE TAB	PRODUC-MANUF	
DRAWING VERSION	- .3	MODEL VERSION	SEE TAB	PRODUC-CONTR	DAF ER34-0541
DRAWING NUMBER	MER03120	MODEL NUMBER	SEE TAB	NEXT ASSEMBLY	Stephen Skelley 2019-04-02
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	John Cowan 2019-04-10
				RELEASE DATE	2019-04-01
				SCALE	4/1
				MASS (UNIT WEIGHT)	SEE TAB
				SHEET	1
				OF	1
				NSFC.DWG.D.FORMAT.REV1A) (AUGUST, 2009)	

GEORGE C. MARSHALL
SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

PLUG, SIGHT WINDOW
LOCATION, WATER FLOW

SIZE	CODE	DRAWING NUMBER	REV
D	339B2	MER03120	-



REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
-				

- NOTES: UNLESS OTHERWISE SPECIFIED
- GEOMETRIC DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 - UNLESS SEPARATE TOLERANCES ARE SHOWN, PERFECT ORIENTATION AT MMC FOR RELATED FEATURES IS REQUIRED.
 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90-DEGREE ANGLES.
 - ALL RADII (R) ARE TO BE INTERPRETED AS CONTROLLED RADII (CR).
 - CLEANLINESS: PARTS SHALL BE FREE FROM MANUFACTURING RESIDUE, DIRT, OIL, GREASE, PROCESSING DEBRIS, OR OTHER EXTRANEIOUS CONTAMINATION.
 - ASSEMBLE PER MER03125-SOP-0001.
 - SOURCE OF F/N'S 3 THRU 9, 17, 18, 25, 26, 29, 30, 36 & 37:
McMASTER-CARR SUPPLY COMPANY
1901 RIVERSIDE PARKWAY
DOUGLASVILLE, GA 30135
CAGE CODE: 0KVE6
PHONE: 404-346-7000
 - SOURCE OF F/N'S 10 THRU 13: SWAGELOK ALABAMA / WEST TENNESSEE
7290 CAHABA VALLEY ROAD
BIRMINGHAM, AL 35242
CAGE CODE: 8H994
PHONE: 205-988-4812
 - SOURCE OF F/N'S 20 & 21: KISTLER INSTRUMENT CORPORATION
75 JOHN GLENN DRIVE
AMHERST, NY 14228
CAGE CODE: 58679
PHONE: 1-888-547-8537
 - SOURCE OF F/N'S 22 & 23: SCANIVALVE CORPORATION
1722 NORTH MADSON STREET
LIBERTY LAKE, WA 99019
CAGE CODE: 22422
PHONE: 1-800-935-5151

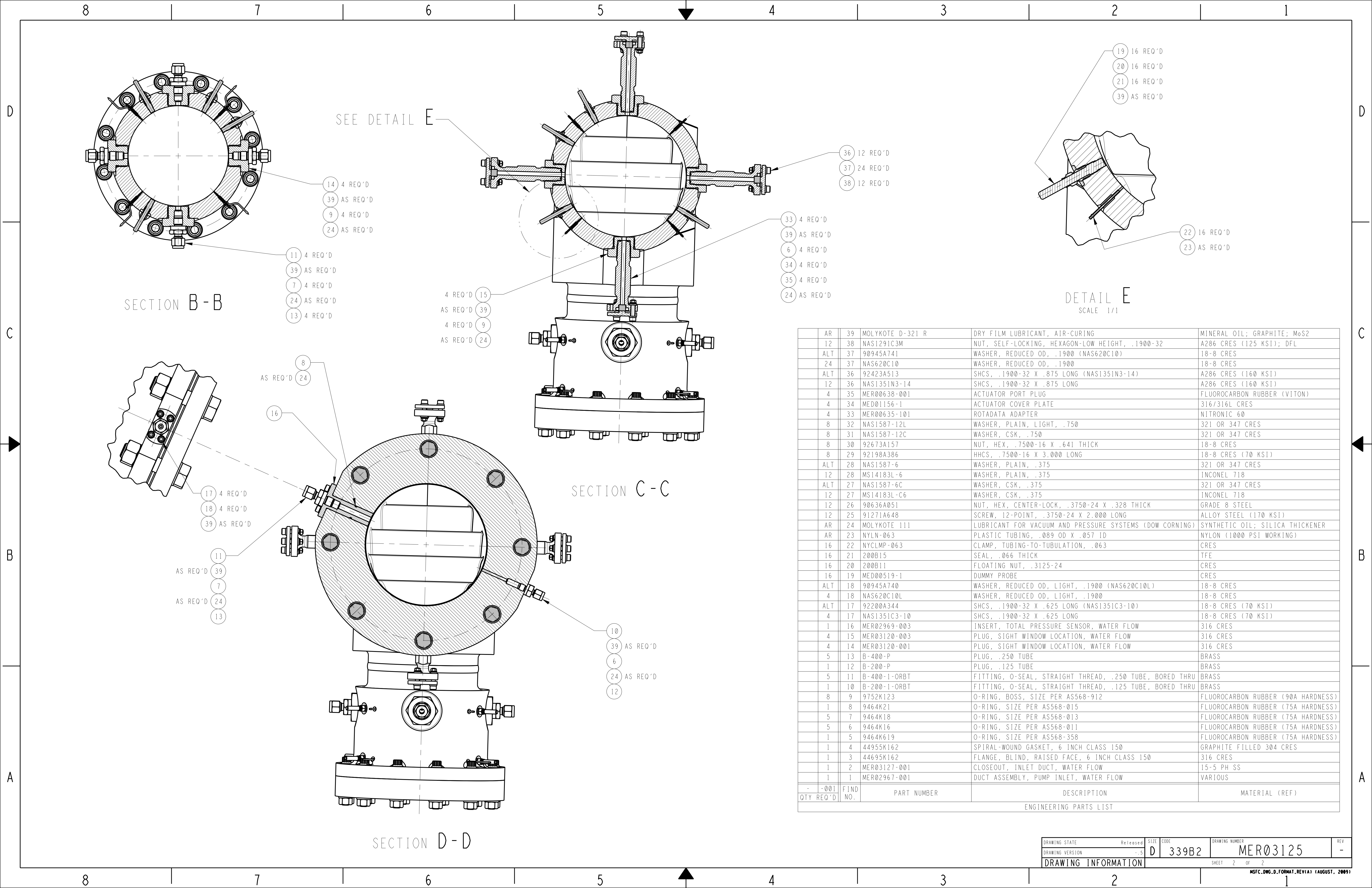
FASTENER TORQUE TABLE				
F/N	QTY	THREAD	TORQUE ABOVE RUNDOWN (IN-LB)	LOCATION
17	4	.1900-32	17.0 - 19.0	PROJECTED VIEW FROM SECTION D-D (SH 2)
25 & 26	12	.3750-24	321 - 378	SECTION A-A (SH 1)
29 & 30	8	.7500-16	731 - 860	SECTION A-A (SH 1)
36 & 38	12	.1900-32	25.0 - 30.0	SECTION C-C (SH 2)

FITTING INSTALLATION TABLE				
F/N	QTY	THREAD	TORQUE ABOVE RUNDOWN (IN-LB)	LOCATION
10	1	.3125-24	60 - 75	SECTION D-D (SH 2)
11	3	.4375-20	135 - 150	SECTION C-C (SH 2) SECTION D-D (SH 2)
12	1	.3125-24	NA (SEE BELOW)	SECTION D-D (SH 2)
13	3	.4375-20	NA (SEE BELOW)	SECTION C-C (SH 2) SECTION D-D (SH 2)
14	6	1.0625-12	900 - 1000	SECTION B-B (SH 2) SECTION C-C (SH 2)
15	2	1.0625-12	900 - 1000	SECTION C-C (SH 2)
20	16	.3125-24	24 - 48	DETAIL E (SH 2)
33	4	.6875-16	550 - 600	SECTION C-C (SH 2)

INSTALL SWAGELOK PLUGS PER SWAGELOK INSTALLATION INSTRUCTIONS:
a. SS-300-P & SMALLER - WHILE HOLDING FITTING BODY STEADY, TIGHTEN NUT 1/8 TURN FROM FINGER-TIGHT POSITION.
b. SS-400-P & LARGER - WHILE HOLDING FITTING BODY STEADY, TIGHTEN NUT 1/4 TURN FROM FINGER-TIGHT POSITION.

SEE ENGINEERING PARTS LIST ON SHEET 2 MER03125-001 ASSY SHOWN

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA			
		TOLERANCES		DESIGN ORG.	ER34				
		DECIMALS	ANGLES	DRAWN BY	IDK	INLET DUCT, PROOF TEST ASSEMBLY, WATER FLOW			
		.XX±.03	±.5 °	ENGINEER	J. FORBES				
FINAL		MATERIAL		CHECKER		SIZE CODE DRAWING NUMBER			
NEXT ASSY		HEAT TREATMENT		MATERIALS					
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		STRESS		D 339B2 MER03125			
				S & MA					
DRAWING STATE		MODEL STATE		PRODUC-MANUF		SCALE 1/2 MASS (UNIT WEIGHT) 173.2 SHEET 1 OF 2			
DRAWING VERSION		MODEL VERSION		PRODUC-CONTR	DAF ER34-0541				
DRAWING NUMBER		MODEL NUMBER		NEXT ASSEMBLY	Stephen Skelley 2019-04-02	NSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)			
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	John Cowan 2019-04-10				
				RELEASE DATE	2019-04-01				



	AR	39	MOLYKOTE D-321 R	DRY FILM LUBRICANT, AIR-CURING	MINERAL OIL; GRAPHITE; MoS2
	12	38	NAS1291C3M	NUT, SELF-LOCKING, HEXAGON-LOW HEIGHT, .1900-32	A286 CRES (125 KSI); DFL
	ALT	37	90945A741	WASHER, REDUCED OD, .1900 (NAS620C10)	18-8 CRES
	24	37	NAS620C10	WASHER, REDUCED OD, .1900	18-8 CRES
	ALT	36	92423A513	SHCS, .1900-32 X .875 LONG (NAS1351N3-14)	A286 CRES (160 KSI)
	12	36	NAS1351N3-14	SHCS, .1900-32 X .875 LONG	A286 CRES (160 KSI)
	4	35	MER00638-001	ACTUATOR PORT PLUG	FLUOROCARBON RUBBER (VITON)
	4	34	MED01156-1	ACTUATOR COVER PLATE	316/316L CRES
	4	33	MER00635-101	ROTADATA ADAPTER	NITRONIC 60
	8	32	NAS1587-12L	WASHER, PLAIN, LIGHT, .750	321 OR 347 CRES
	8	31	NAS1587-12C	WASHER, CSK, .750	321 OR 347 CRES
	8	30	92673A157	NUT, HEX, .7500-16 X .641 THICK	18-8 CRES
	8	29	92198A386	HHCS, .7500-16 X 3.000 LONG	18-8 CRES (70 KSI)
	ALT	28	NAS1587-6	WASHER, PLAIN, .375	321 OR 347 CRES
	12	28	MS14183L-6	WASHER, PLAIN, .375	INCONEL 718
	ALT	27	NAS1587-6C	WASHER, CSK, .375	321 OR 347 CRES
	12	27	MS14183L-C6	WASHER, CSK, .375	INCONEL 718
	12	26	90636A051	NUT, HEX, CENTER-LOCK, .3750-24 X .328 THICK	GRADE 8 STEEL
	12	25	91271A648	SCREW, 12-POINT, .3750-24 X 2.000 LONG	ALLOY STEEL (170 KSI)
	AR	24	MOLYKOTE 111	LUBRICANT FOR VACUUM AND PRESSURE SYSTEMS (DOW CORNING)	SYNTHETIC OIL; SILICA THICKENER
	AR	23	NYLN-063	PLASTIC TUBING, .089 OD X .057 ID	NYLON (1000 PSI WORKING)
	16	22	NYCLMP-063	CLAMP, TUBING-TO-TUBULATION, .063	CRES
	16	21	200B15	SEAL, .066 THICK	TFE
	16	20	200B11	FLOATING NUT, .3125-24	CRES
	16	19	MED00519-1	DUMMY PROBE	CRES
	ALT	18	90945A740	WASHER, REDUCED OD, LIGHT, .1900 (NAS620C10L)	18-8 CRES
	4	18	NAS620C10L	WASHER, REDUCED OD, LIGHT, .1900	18-8 CRES
	ALT	17	92200A344	SHCS, .1900-32 X .625 LONG (NAS1351C3-10)	18-8 CRES (70 KSI)
	4	17	NAS1351C3-10	SHCS, .1900-32 X .625 LONG	18-8 CRES (70 KSI)
	1	16	MER02969-003	INSERT, TOTAL PRESSURE SENSOR, WATER FLOW	316 CRES
	4	15	MER03120-003	PLUG, SIGHT WINDOW LOCATION, WATER FLOW	316 CRES
	4	14	MER03120-001	PLUG, SIGHT WINDOW LOCATION, WATER FLOW	316 CRES
	5	13	B-400-P	PLUG, .250 TUBE	BRASS
	1	12	B-200-P	PLUG, .125 TUBE	BRASS
	5	11	B-400-1-ORBT	FITTING, O-SEAL, STRAIGHT THREAD, .250 TUBE, BORED THRU	BRASS
	1	10	B-200-1-ORBT	FITTING, O-SEAL, STRAIGHT THREAD, .125 TUBE, BORED THRU	BRASS
	8	9	9752K123	O-RING, BOSS, SIZE PER AS568-912	FLUOROCARBON RUBBER (90A HARDNESS)
	1	8	9464K21	O-RING, SIZE PER AS568-015	FLUOROCARBON RUBBER (75A HARDNESS)
	5	7	9464K18	O-RING, SIZE PER AS568-013	FLUOROCARBON RUBBER (75A HARDNESS)
	5	6	9464K16	O-RING, SIZE PER AS568-011	FLUOROCARBON RUBBER (75A HARDNESS)
	1	5	9464K619	O-RING, SIZE PER AS568-358	FLUOROCARBON RUBBER (75A HARDNESS)
	1	4	44955K162	SPIRAL-WOUND GASKET, 6 INCH CLASS 150	GRAPHITE FILLED 304 CRES
	1	3	44695K162	FLANGE, BLIND, RAISED FACE, 6 INCH CLASS 150	316 CRES
	1	2	MER03127-001	CLOSEOUT, INLET DUCT, WATER FLOW	15-5 PH SS
	1	1	MER02967-001	DUCT ASSEMBLY, PUMP INLET, WATER FLOW	VARIOUS
	-	-	001	FIND NO.	
	QTY REQ'D		PART NUMBER	DESCRIPTION	MATERIAL (REF)

ENGINEERING PARTS LIST

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	-5	D	339B2	MER03125	-
DRAWING INFORMATION					
SHEET	2	OF	2		

MSFC.DWG.D.FORMAT.REV1A) (AUGUST, 2009)

