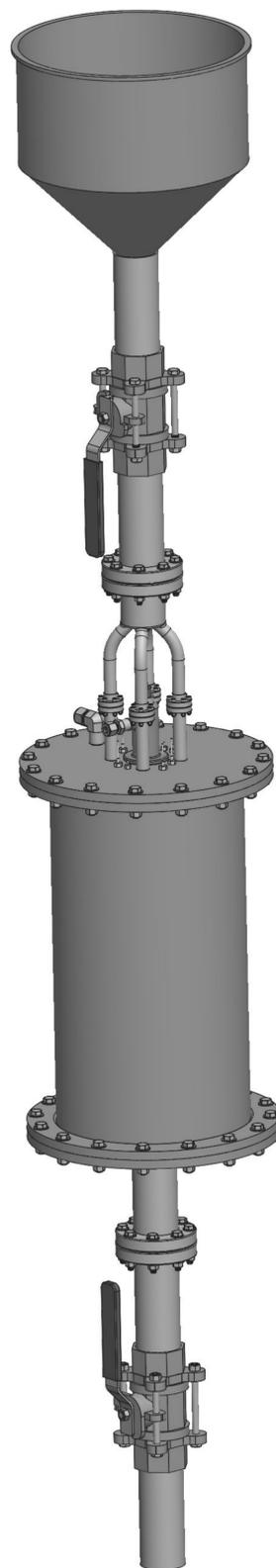


REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE MRS.CFR.SEMIBATCH IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- DELETED.
- KEEP VISIBLY CLEAN.
- TORQUE TO 65 - 70 IN LBS.
- INSTALL PER MANUFACTURERS INSTRUCTIONS
- APPLY F/N 12 AS REQUIRED PER MANUFACTURERS INSTRUCTIONS.
- WELD PER MSFC-SPEC-3679, CLASS B.
- TORQUE TO 40 TO 45 IN LBS.
- TORQUE TO 15 TO 20 IN LBS.
- WELDING TO BE DONE AFTER ALIGNMENT OF ALL PARTS IN CATALYST FLOW PATH FROM MANIFOLD TO LID IS ACHIEVED.
- ALIGN F/N 24, F/N 17, F/N 16 AND F/N 25 TO ACHIEVE UNOBSTRUCTED CATALYST FLOW PATH AND TO ALIGN FLANGES TO EACH OTHER FOR PROPER GASKET SEALING, CONNECTION AND DISCONNECTION.



SCALE 1/5

ISSUED DRAWING
SEE SEPARATE PARTS LIST

MES00100-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>	
DECIMALS .XX±.03 .XXX±.010	ANGLES ±.5°	DESIGN ORG. ES21	DRAWN BY BOBBY ATKINS		
MATERIAL		ENGINEER BOBBY ATKINS	CHECKER		
HEAT TREATMENT		MATERIALS			
TOP	MRS CFR	FINISH		REACTOR ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR	
NEXT ASSY	USED ON	STRESS			
APPLICATION (VERIFY IN RELEASE RECORDS)		S & MA			
DRAWING STATE Released		PRODUC-MANUF			
DRAWING VERSION 1.1	MODEL VERSION .4	PRODUC-CONTR		SIZE CODE D 339B2 DRAWING NUMBER MES00100-001 REV 1	
DRAWING NUMBER MES00100-001	MODEL NUMBER MRS.CFR.SEMIBATCH	NEXT ASSEMBLY M. ABNEY			
DRAWING INFORMATION		DESIGN BRANCH CHG			
MODEL INFORMATION		RELEASE DATE 08/11/2014			
SCALE 1/1 MASS (UNIT WEIGHT) 780.1 SHEET 1 OF 3				MSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)	

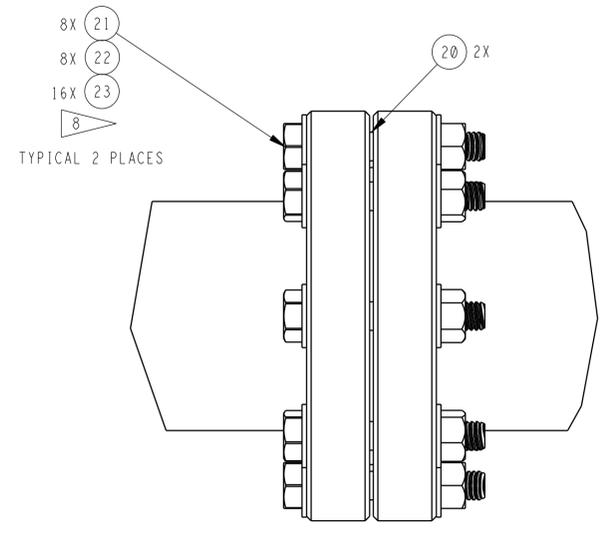
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D

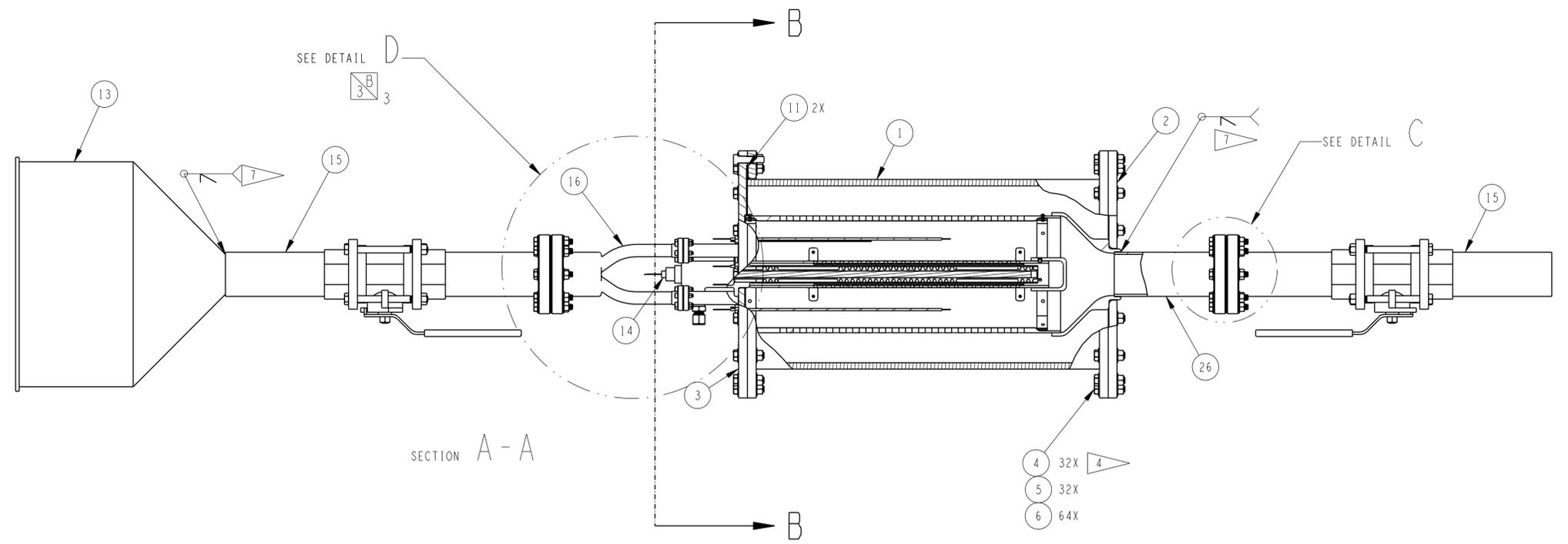
C

B

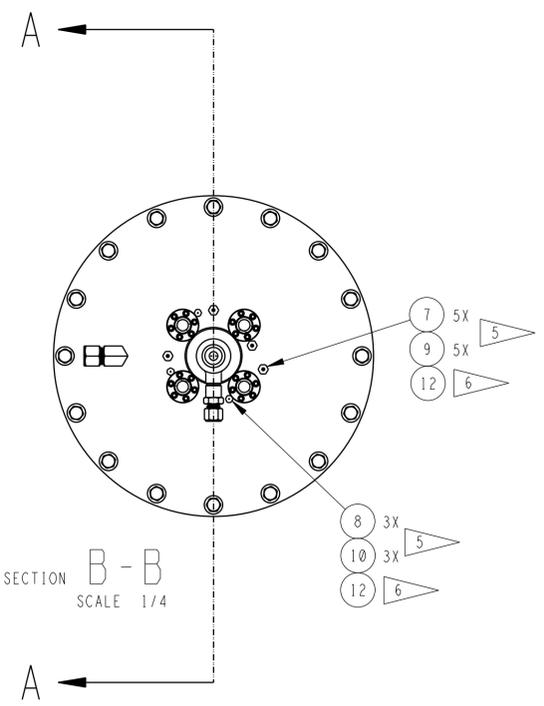
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DETAIL C
SCALE 1/1
TYPICAL 2 PLACES



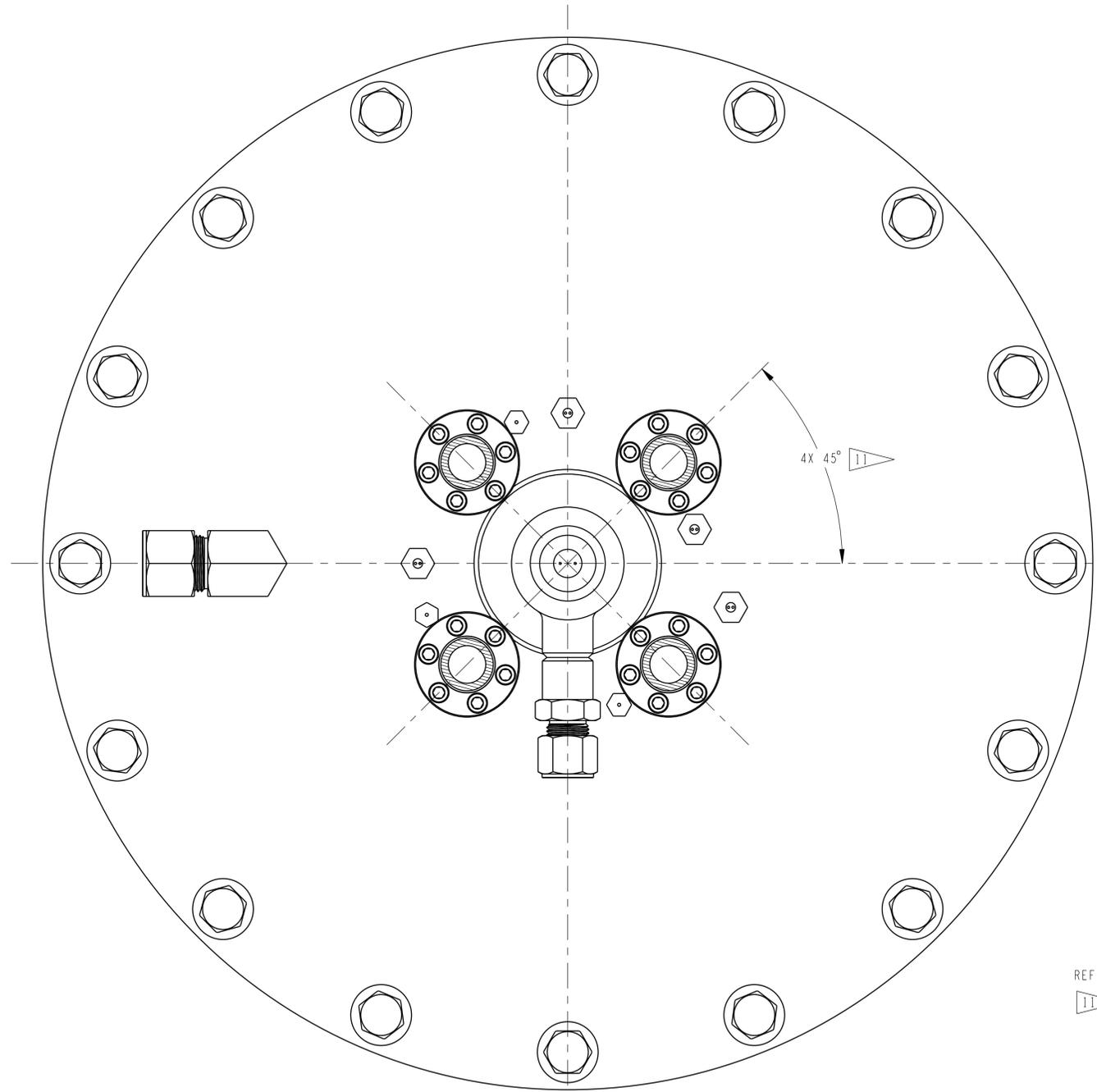
SECTION A-A



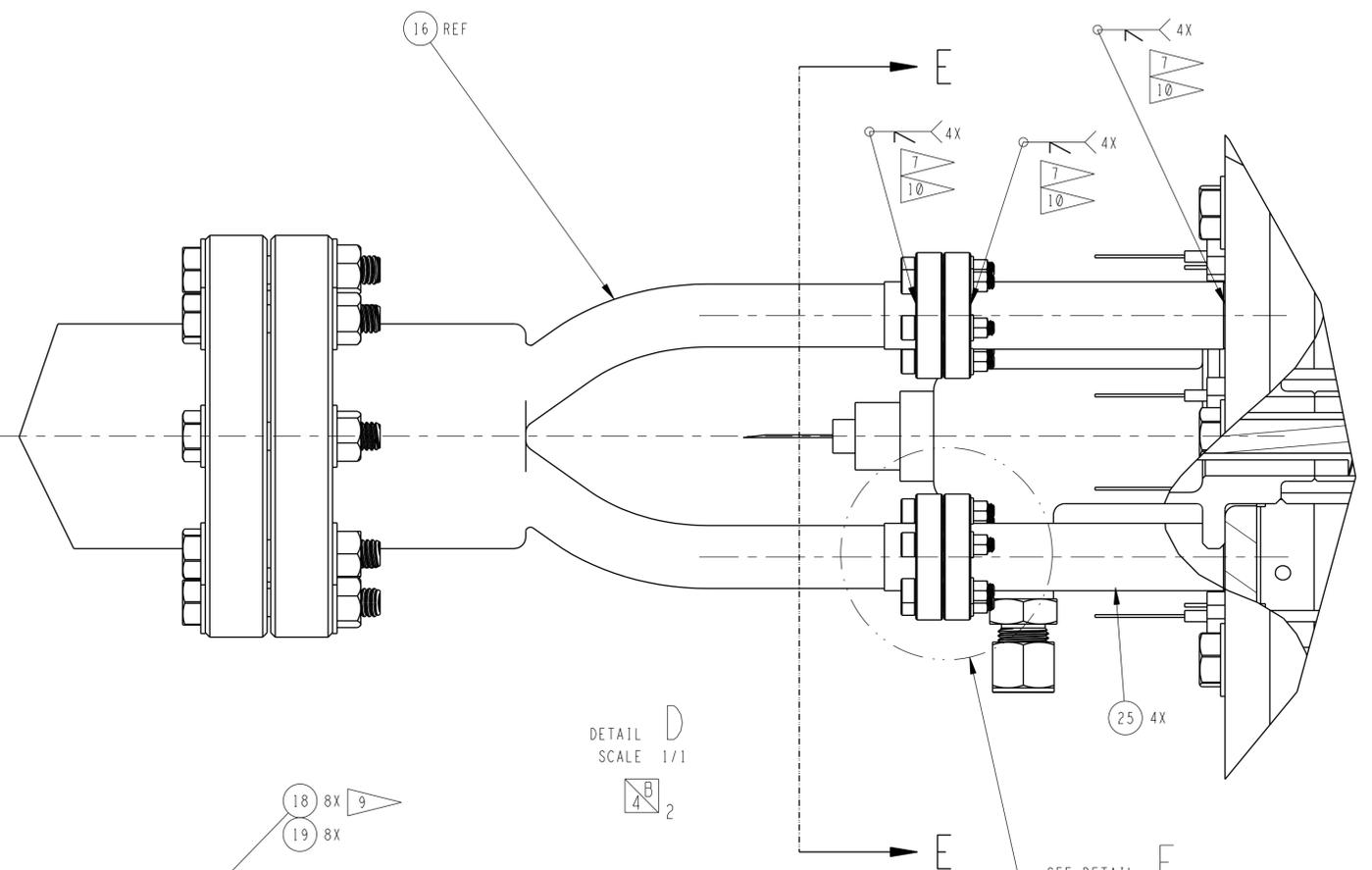
SECTION B-B
SCALE 1/4

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
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DRAWING INFORMATION				SHEET 2 OF 3	

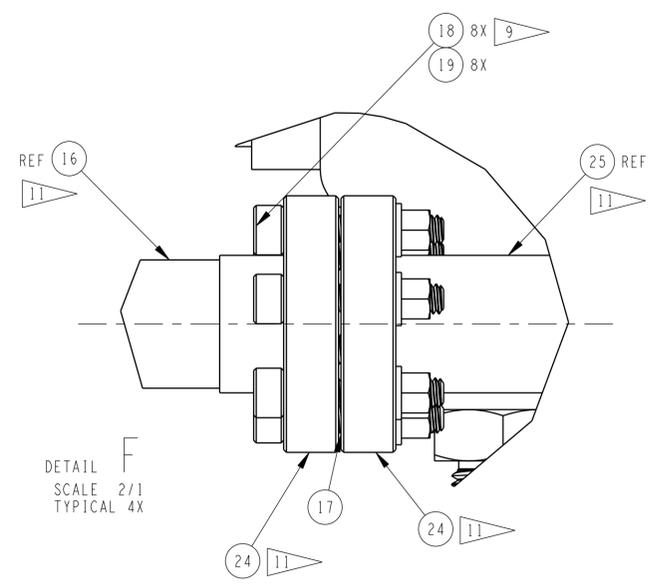
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SECTION E-E



DETAIL D
SCALE 1/1



DETAIL F
SCALE 2/1
TYPICAL 4X

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	1.1	D	339B2	MES00100-001	1
DRAWING INFORMATION				SHEET 3 OF 3	
MSFC.DWG.D.FORMAT.REV(A) (AUGUST, 2009)					

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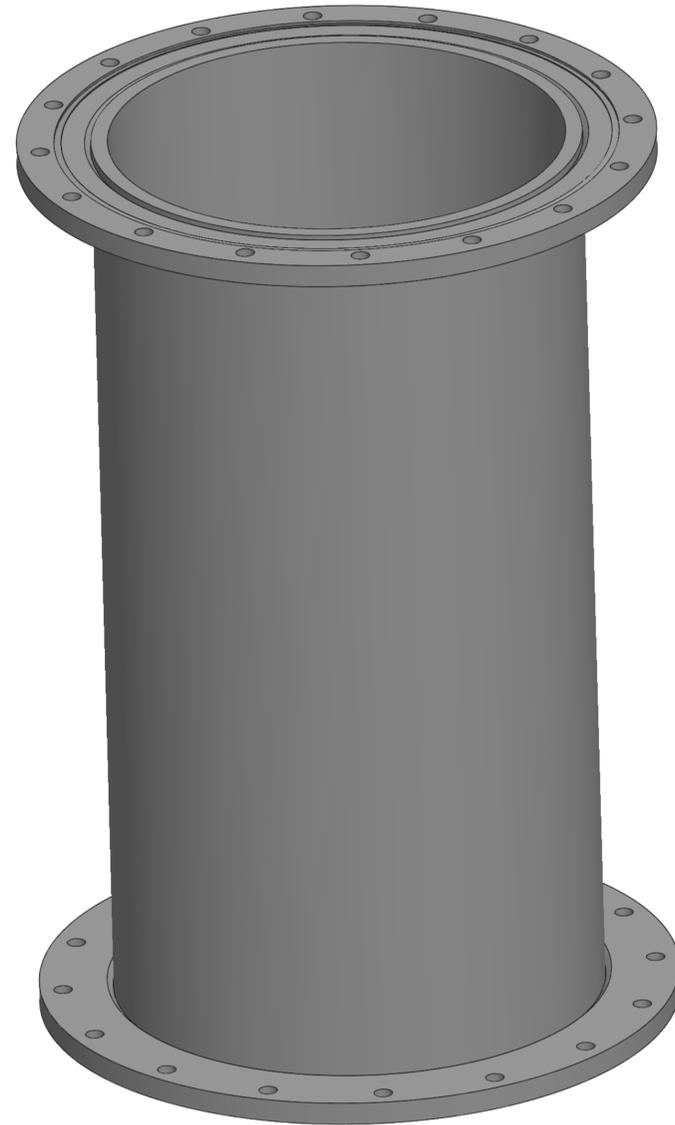
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1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE REACTOR CYLINDER IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- RESERVED.
- KEEP VISIBLY CLEAN.
- WELD PER MSFC-SPEC-3679, CLASS B.
- IF WELD BEAD PROTRUDES BEYOND ALIGNED PLANE OF F/N 1 AND F/N 2, IT MUST BE GROUND DOWN FLUSH TO ALLOW PROPER FIT AT NEXT HIGHER ASSEMBLY.



SEE SEPARATE PARTS LIST

MES00102-001 SHOWN

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>	
		TOLERANCES		DESIGN ORG.	ES21		
		DECIMALS .XX±.03 .XXX±.010	ANGLES ±.5°	DRAWN BY	BOBBY ATKINS		
MES00101	MRS CFR			ENGINEER	BOBBY ATKINS		
MES00100	MRS CFR	MATERIAL		CHECKER		REACTOR CYLINDER, ASSEMBLY, MRS CFR	
	USED ON	HEAT TREATMENT		MATERIALS			
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		STRESS			
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF			
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR			
DRAWING NUMBER	MES00102-001	MODEL NUMBER	MRS.CFR.SEMIBATCH	NEXT ASSEMBLY		SIZE	CODE
DRAWING INFORMATION		MODEL INFORMATION		DESIGN BRANCH	CHF	D	339B2
				RELEASE DATE		DRAWING NUMBER	REV
						MES00102-001	1
						SCALE	1/2
						580.8	SHEET 1 OF 2
						MSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)	

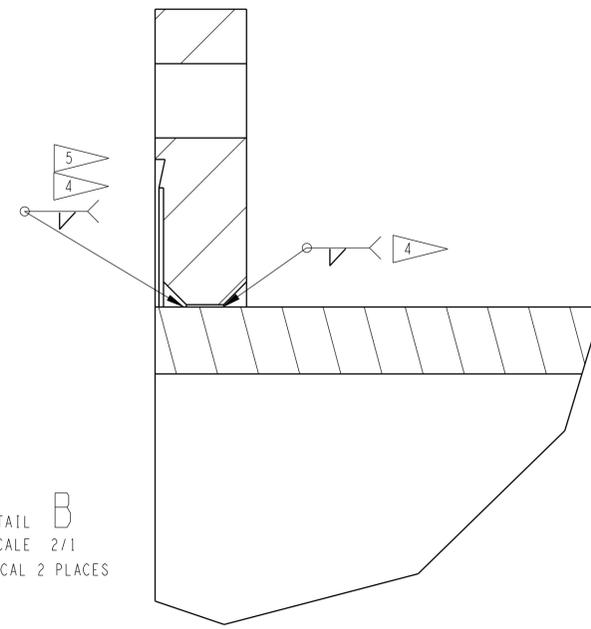
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D

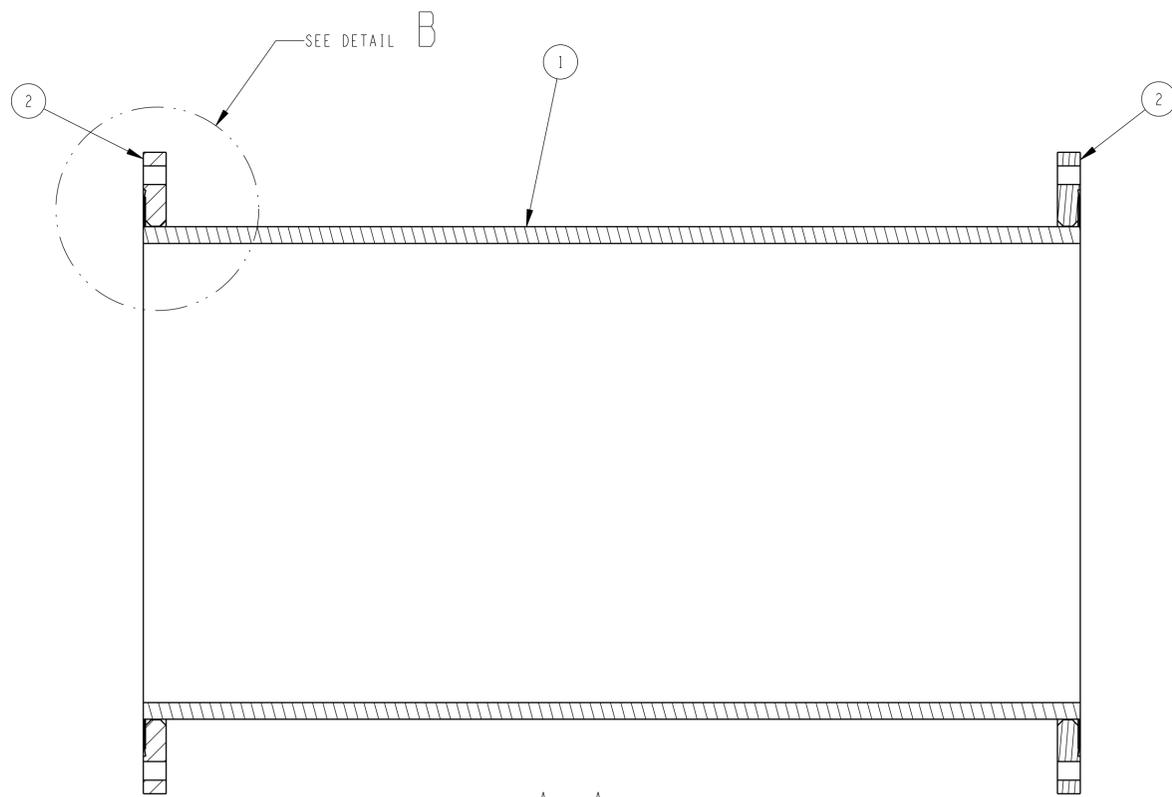
C

B

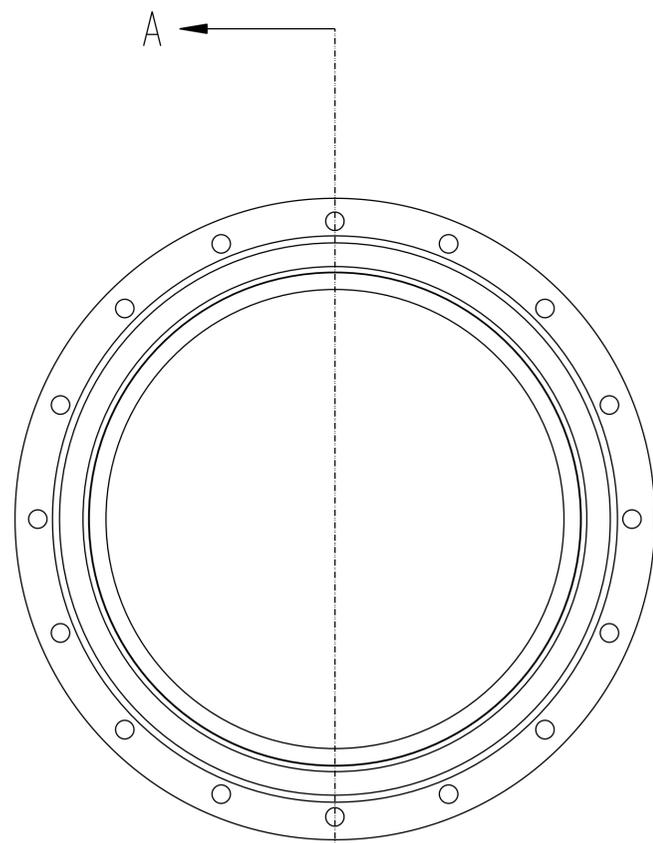
A



DETAIL B
SCALE 2/1
TYPICAL 2 PLACES



SECTION A-A



SCALE 1/2

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	1.1	D	339B2	MES00102-001	1
DRAWING INFORMATION				SHEET 2 OF 2	

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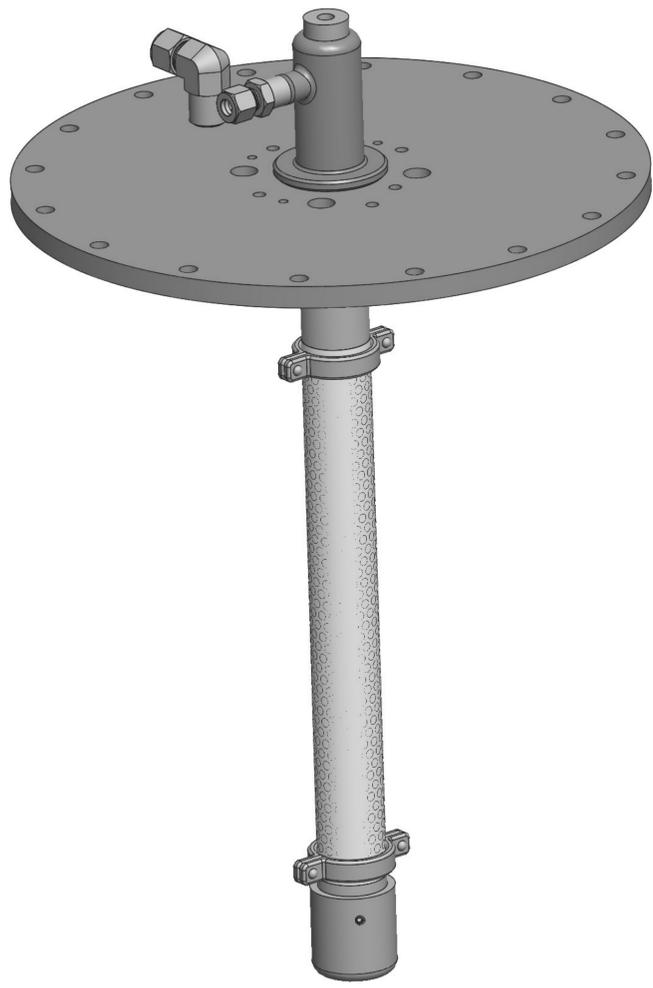
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1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

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 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE TOP CAP ASSEMBLY IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- DELETED.
- KEEP VISIBLY CLEAN.
- WELD PER MSFC-SPEC-3679, CLASS B.
- ORIENT F/N 2 WITH F/N 1 AS SHOWN BEFORE WELDING.
- CUT F/N 3 TO FIT AS REQUIRED.
- LOCATE FN/6 APPROXIMATELY AS SHOWN TO CLAMP FN/3 IN PLACE AROUND FN/2.
- INSTALL RIVETS PER MSFC-SPEC-156.



ISSUED DRAWING
SEE SEPARATE PARTS LIST

MES00104-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>	
DECIMALS	ANGLES	DESIGN ORG.	ES21	DRAWN BY	BOBBY ATKINS		
.XX± .03 .XXX± .010	±.5 °	ENGINEER	BOBBY ATKINS	CHECKER			
MATERIAL		HEAT TREATMENT		MATERIALS			
MES00100	MRS CFR	FINISH		STRESS		TOP CAP ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR	
NEXT ASSY	USED ON	APPLICATION (VERIFY IN RELEASE RECORDS)		S & MA			
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF			
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR			
DRAWING NUMBER	MES00104-001	MODEL NUMBER	MRS.CFR.SEMIBATCH	NEXT ASSEMBLY	M. ABNEY	SIZE	CODE
DRAWING INFORMATION		MODEL INFORMATION		DESIGN BRANCH	CHF	D	339B2
RELEASE DATE		8/11/2014		DRAWING NUMBER		MES00104-001	
SCALE		1/2		REVISION		1	
MASS (UNIT WEIGHT)		580.8		SHEET		1	
				OF		2	

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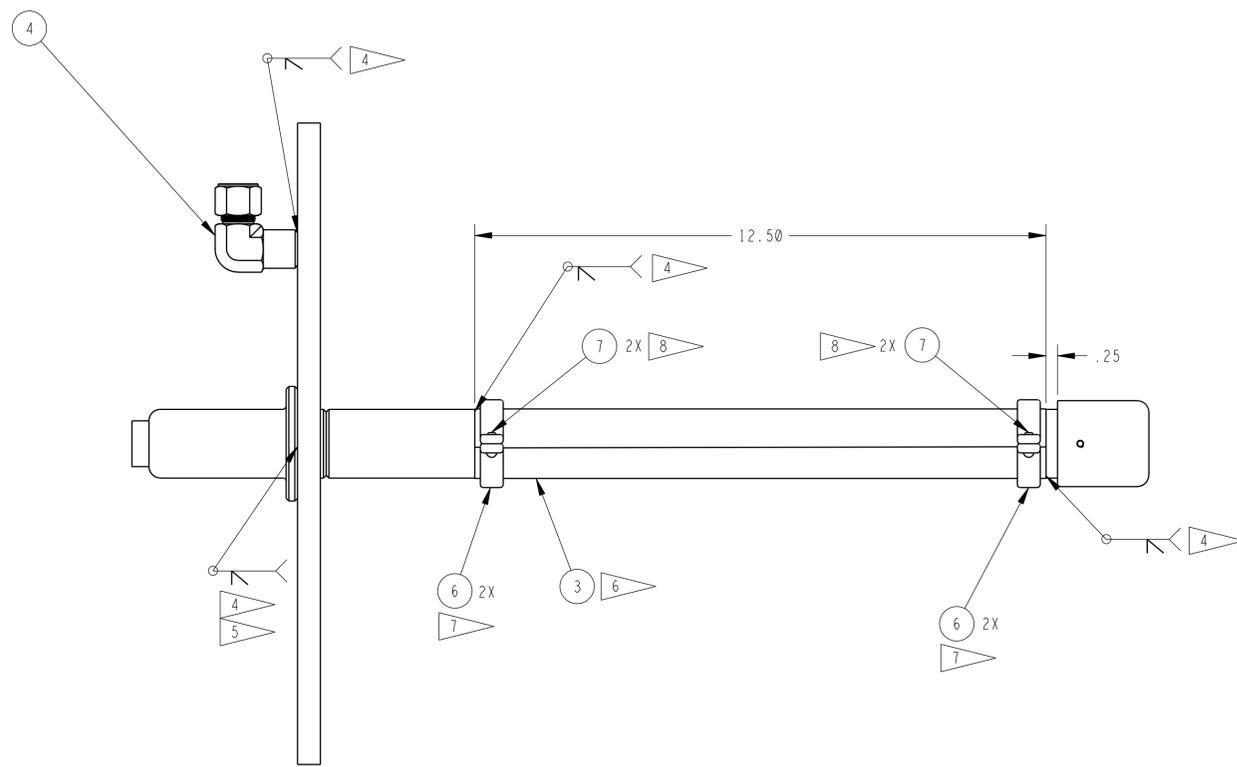
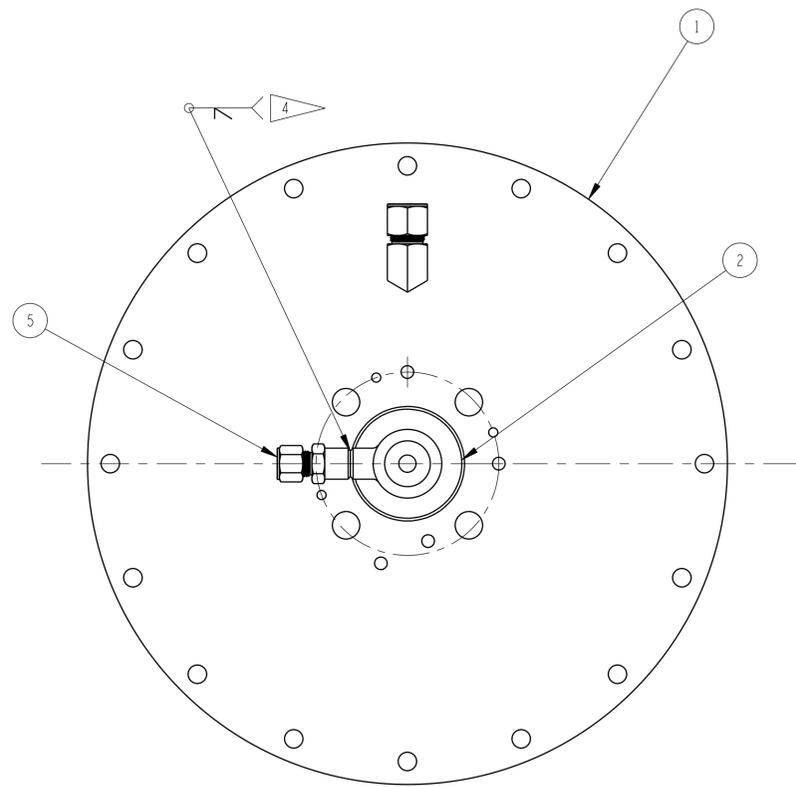
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D

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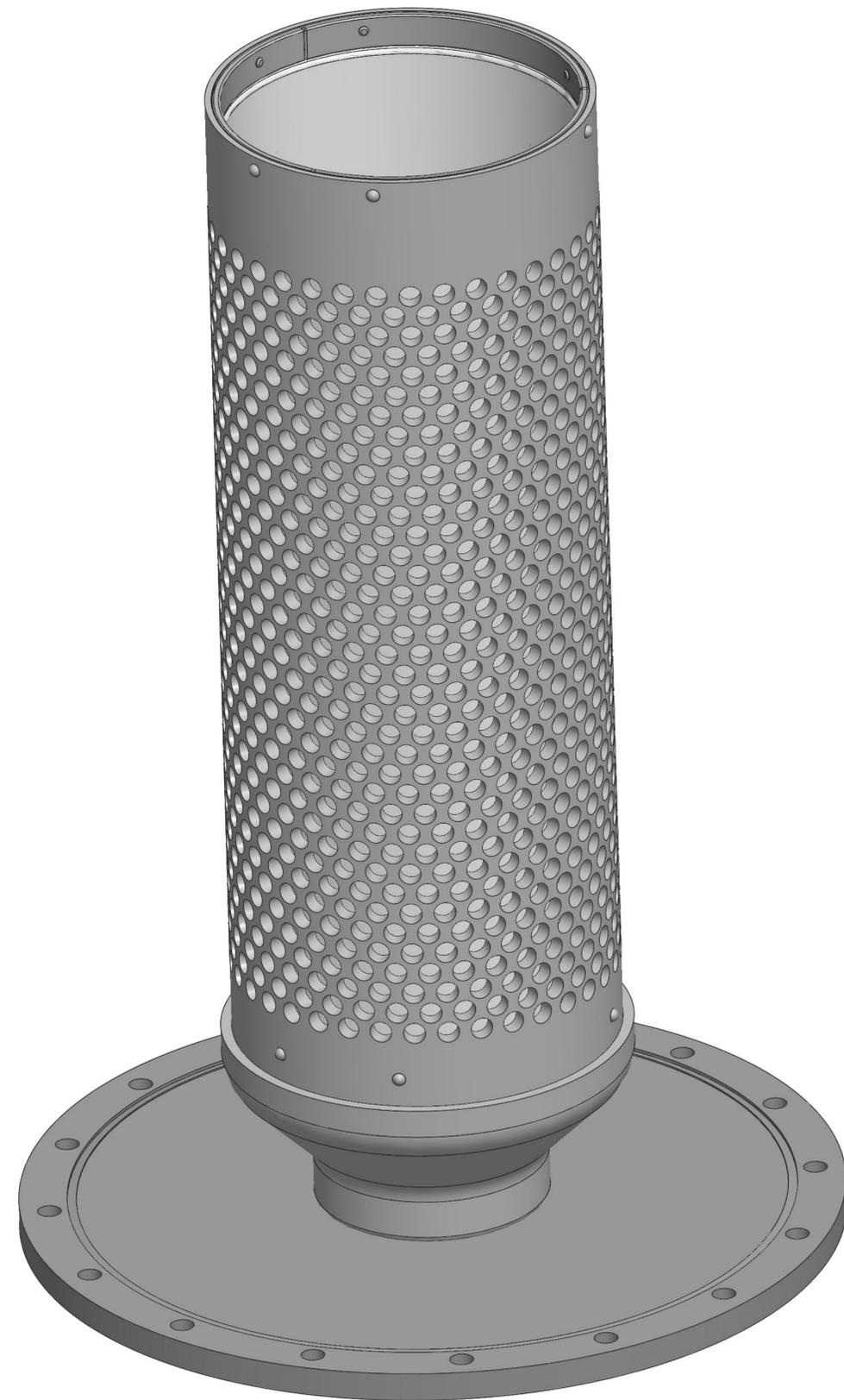
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A



DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	1.1	D	339B2	MES00104-001	1
DRAWING INFORMATION				SHEET 2 OF 2	

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				



SCALE 3/4

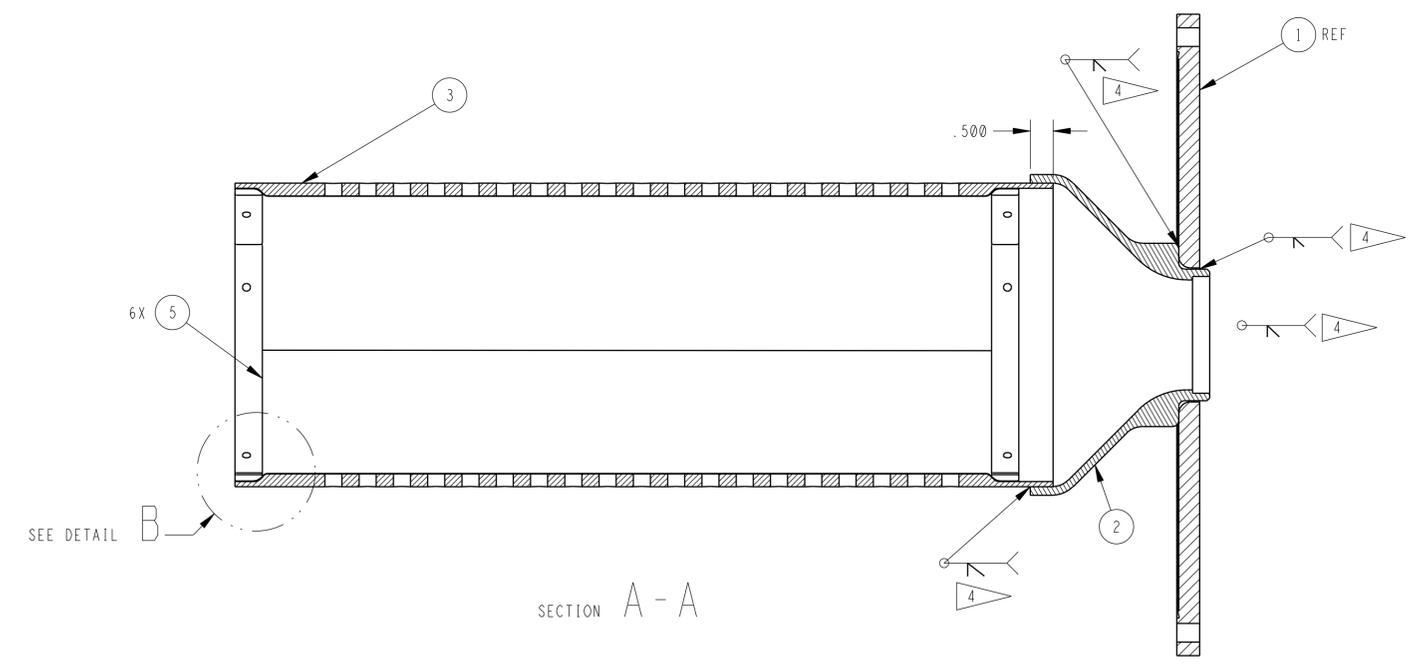
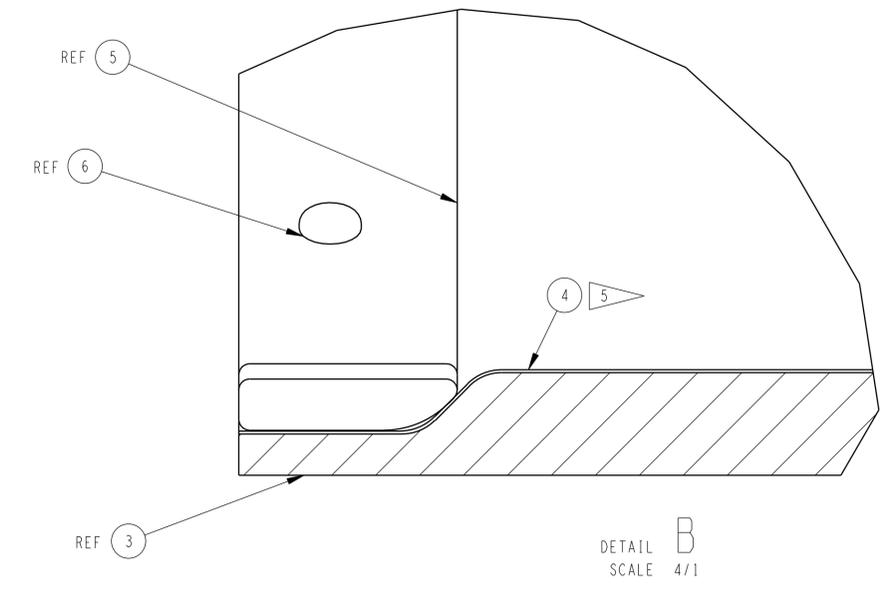
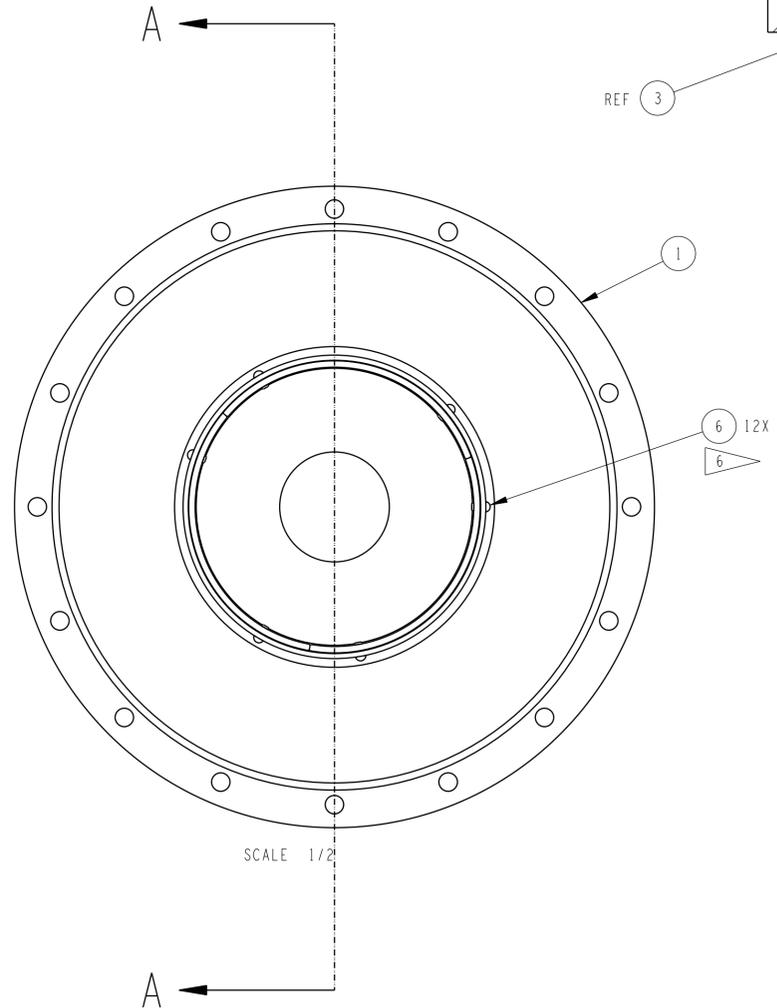
NOTES:

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 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REF BOTTOM ASSEMBLY SEMI BATCH IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- RESERVED.
- KEEP VISIBLY CLEAN.
- WELD PER MSFC-SPEC 3679, CLASS B.
- CUT F/N 4 TO FIT AS REQUIRED.
- INSTALL RIVETS PER MSFC-SPEC-156.

ISSUED DRAWING
SEE SEPARATE PARTS LIST

MES00106-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>
TOLERANCES		DESIGN ORG.	ES21	
DECIMALS .XX±.03 .XXX±.010	ANGLES ±.5°	DRAWN BY	BOBBY ATKINS	
MES00100	MRS CFR	ENGINEER	BOBBY ATKINS	BOTTOM CAP ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR
NEXT ASSY	USED ON	CHECKER		
APPLICATION (VERIFY IN RELEASE RECORDS)		MATERIALS		
DRAWING STATE	Released	HEAT TREATMENT		
DRAWING VERSION	1.1	FINISH		
DRAWING NUMBER	MES00106-001	MODEL STATE	In Work	PRODC-MANUF
DRAWING INFORMATION		MODEL VERSION	.4	PRODC-CONTR
MODEL INFORMATION		MODEL NUMBER	MRS.CFR.SEMIBATCH	NEXT ASSEMBLY
		DESIGN BRANCH	CHF	M. ABNEY
		RELEASE DATE	8/11/2014	SIZE
		SCALE	1/1	CODE
		MASS (UNIT WEIGHT)	580.8	DRAWING NUMBER
		SHEET	1	MES00106-001
		OF	2	REV
				1



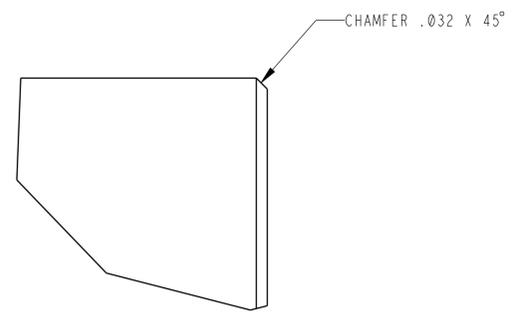
DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	1.1	D	339B2	MES00106-001	1
DRAWING INFORMATION				SHEET 2 OF 2	
<small>MSFC-DWG-D-FORMAT-REV(A) (AUGUST, 2009)</small>					

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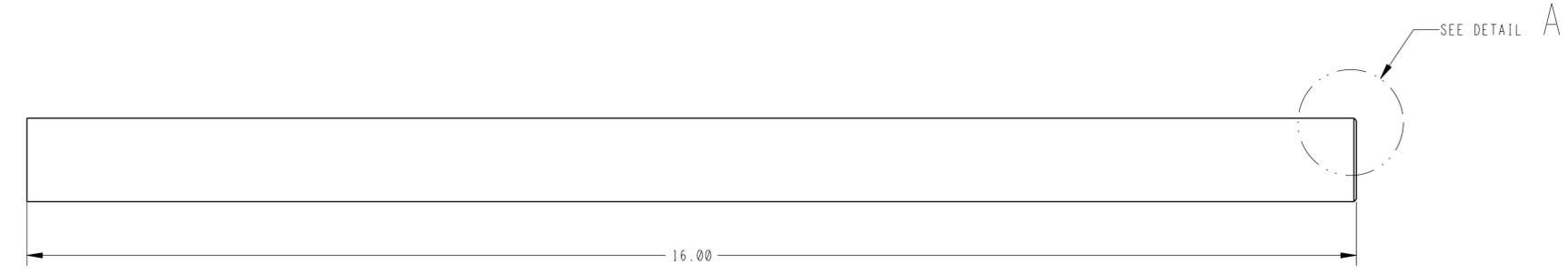
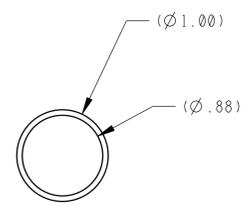
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

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 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE INLET INNER IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
-  MATERIAL: INCONEL TUBE, ALLOY 600.
 SUGGESTED VENDOR:
 PACIFIC ALLOYS CORP.
 17800 SOUTH MAIN STREET, SUITE 204
 GARDENA, CALIFORNIA, 90248
-  ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.
 SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.



DETAIL A
SCALE 4/1



MES00107-001 SHOWN

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

INNER TUBE,
INLET,
MRS CFR

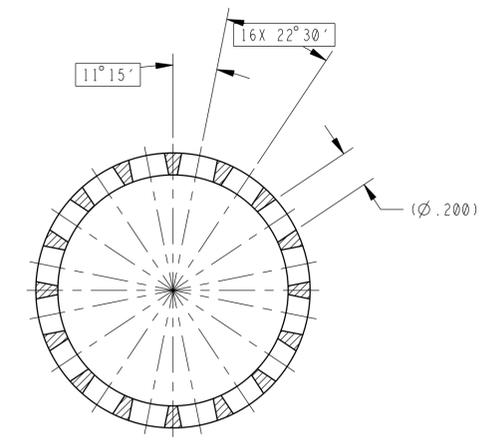
DRAWING INFORMATION		MODEL INFORMATION		ORIGINAL DRAWING APPROVALS		DRAWING NUMBER		REV	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES		DESIGN ORG.	ES21	D		339B2	
DECIMALS .XX±.03 .XXX±.010		ANGLES ±.5°		DRAWN BY	BOBBY ATKINS	MES00107-001		1	
MES00126	MRS CFR	MATERIAL		CHECKER	BOBBY ATKINS	D		339B2	
NEXT ASSY	USED ON	HEAT TREATMENT		MATERIALS		MES00107-001		1	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		STRESS		MES00107-001		1	
DRAWING STATE	Released	MODEL STATE	In Work	S & MA		MES00107-001		1	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-MANUF		MES00107-001		1	
DRAWING NUMBER	MES00107-001	MODEL NUMBER	MES00107	PRODUC-CONTR		MES00107-001		1	
DRAWING INFORMATION		MODEL INFORMATION		DESIGN BRANCH CHG		MES00107-001		1	
				RELEASE DATE		MES00107-001		1	
				SCALE	1/1	MES00107-001		1	
				MASS (UNIT WEIGHT)		MES00107-001		1	
						MES00107-001		1	

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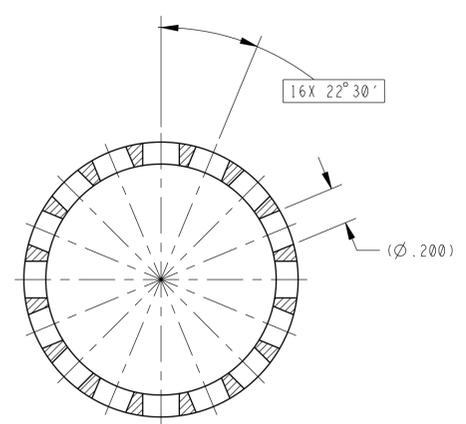
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

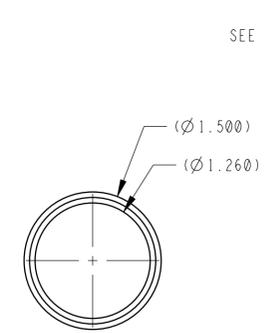
- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - UNLESS SEPARATE TOLERANCES ARE SHOWN, PERFECT ORIENTATION AT MMC FOR RELATED FEATURES IS REQUIRED.
 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE INLET OUTER IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL TUBE, ALLOY 600.
SUGGESTED VENDOR:
PACIFIC ALLOYS CORP.
17800 SOUTH MAIN STREET, SUITE 204
GARDENA, CALIFORNIA, 90248
- 125
✓ ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE
- KEEP VISIBLY CLEAN..



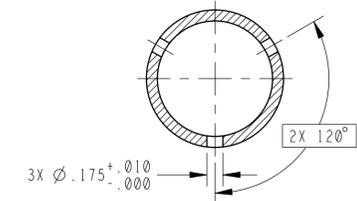
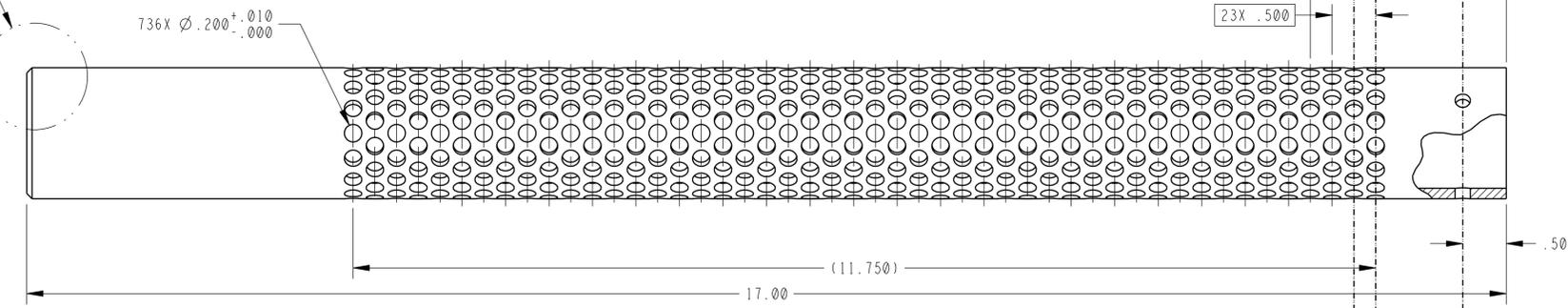
SECTION A-A
SCALE 2/1



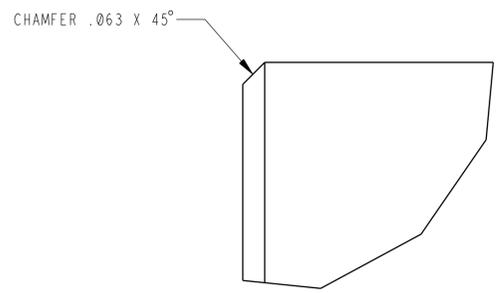
SECTION B-B
SCALE 2/1



SEE DETAIL D



SECTION C-C



DETAIL D
SCALE 4/1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
TOLERANCES		DESIGN ORG.	ES21
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS
.XX±.03	±.5°	ENGINEER	BOBBY ATKINS
.XXX±.010		CHECKER	
MATERIAL	3	MATERIALS	
HEAT TREATMENT		STRESS	
FINISH		S & MA	
DRAWING STATE	Released	MODEL STATE	In Work
DRAWING VERSION	1.1	MODEL VERSION	.4
DRAWING NUMBER	MES00108-001	MODEL NUMBER	MES00107
APPLICATION (VERIFY IN RELEASE RECORDS)		PRODUC-MANUF	
		PRODUC-CONTR	
		NEXT ASSEMBLY	
		DESIGN BRANCH CHG	
		RELEASE DATE	

MES00108-001 SHOWN

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

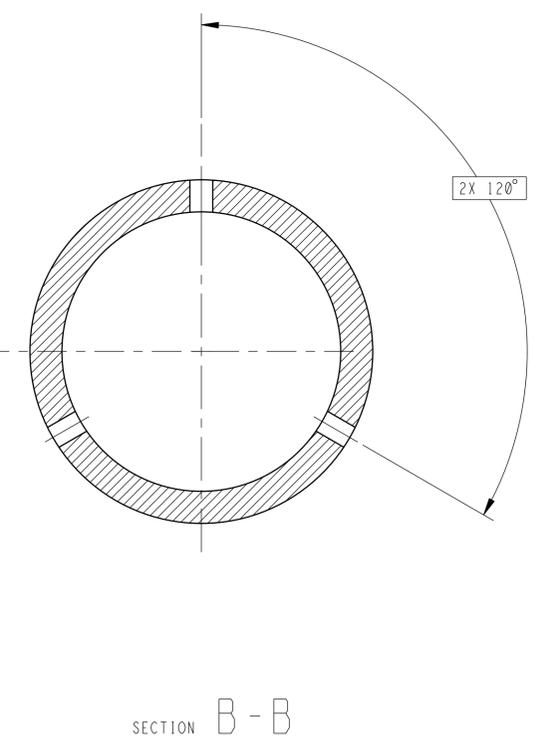
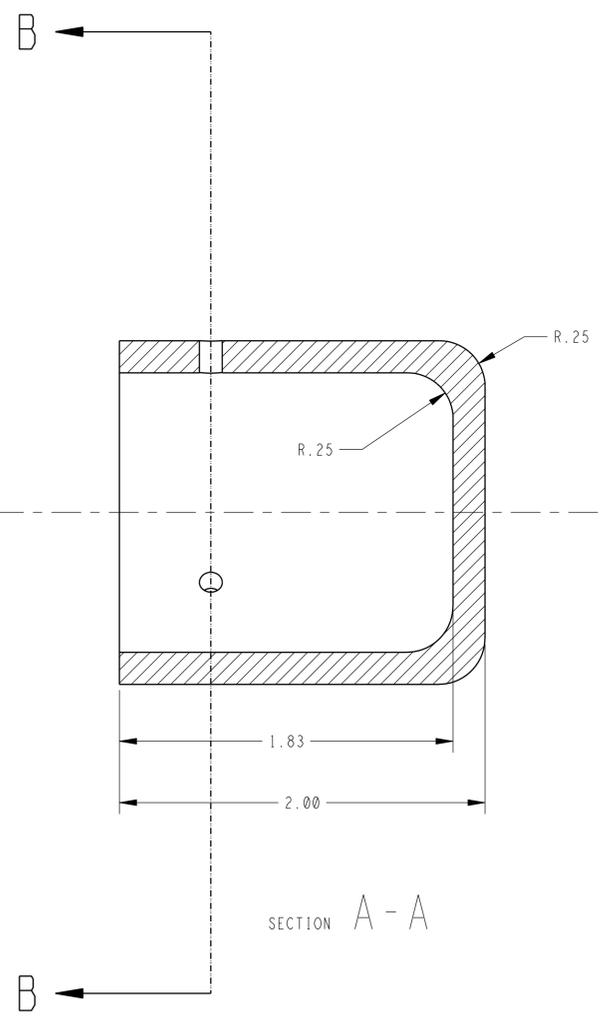
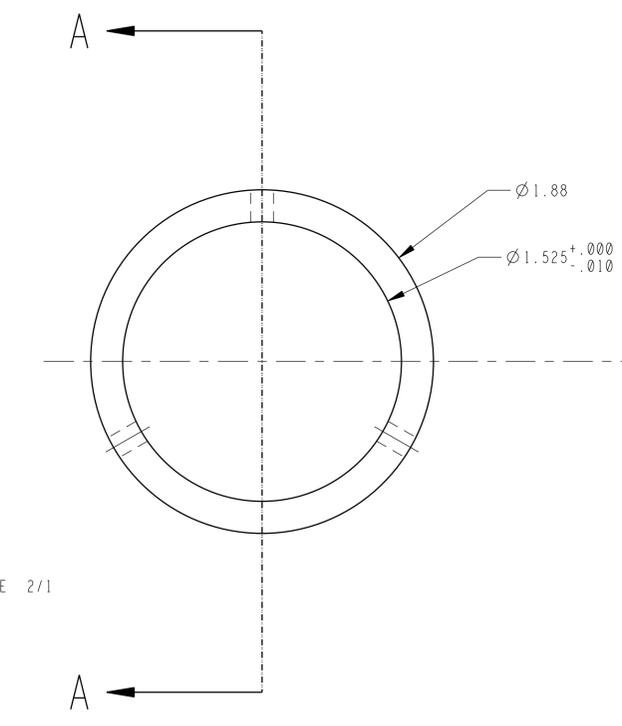
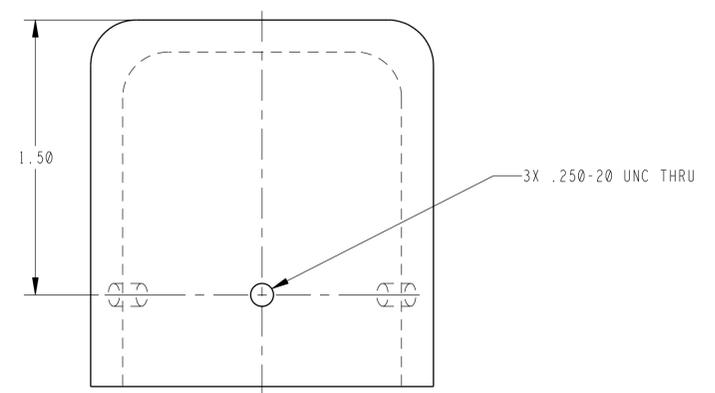
OUTER TUBE,
INLET,
MRS CFR

SIZE CODE	D 339B2	DRAWING NUMBER	MES00108-001	REV	1
SCALE	1/1	MASS (UNIT WEIGHT)		SHEET	1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE INLET CAP IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL ALLOY 625.
- ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.



ISSUED DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
TOLERANCES		DESIGN ORG.	ES21
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS
.XX±.03	±.5°	ENGINEER	BOBBY ATKINS
.XXX±.010		CHECKER	
MES00126	MRS CFR	MATERIAL	3.0
NEXT ASSY	USED ON	HEAT TREATMENT	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH	
DRAWING STATE	Released	MODEL STATE	In Work
DRAWING VERSION	1.1	MODEL VERSION	.4
DRAWING NUMBER	MES00109-001	MODEL NUMBER	MES00107
DRAWING INFORMATION		MODEL INFORMATION	
NEXT ASSEMBLY		M. ABNEY	
DESIGN BRANCH CHG			
RELEASE DATE		8/11/2014	

MES00109-001 SHOWN

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

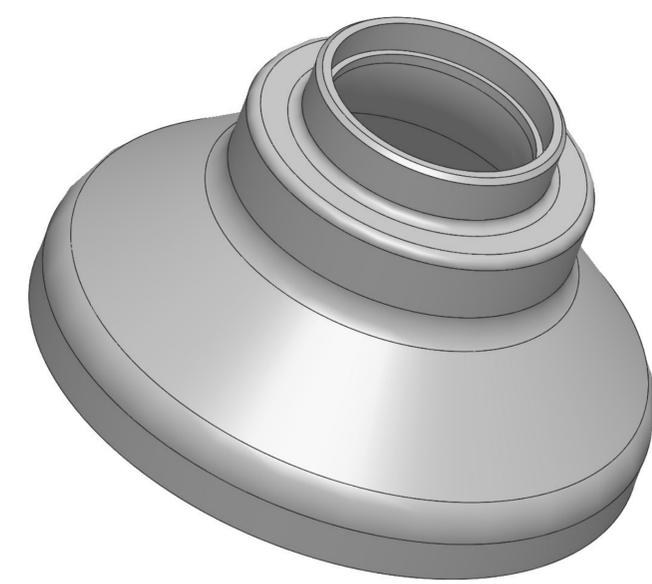
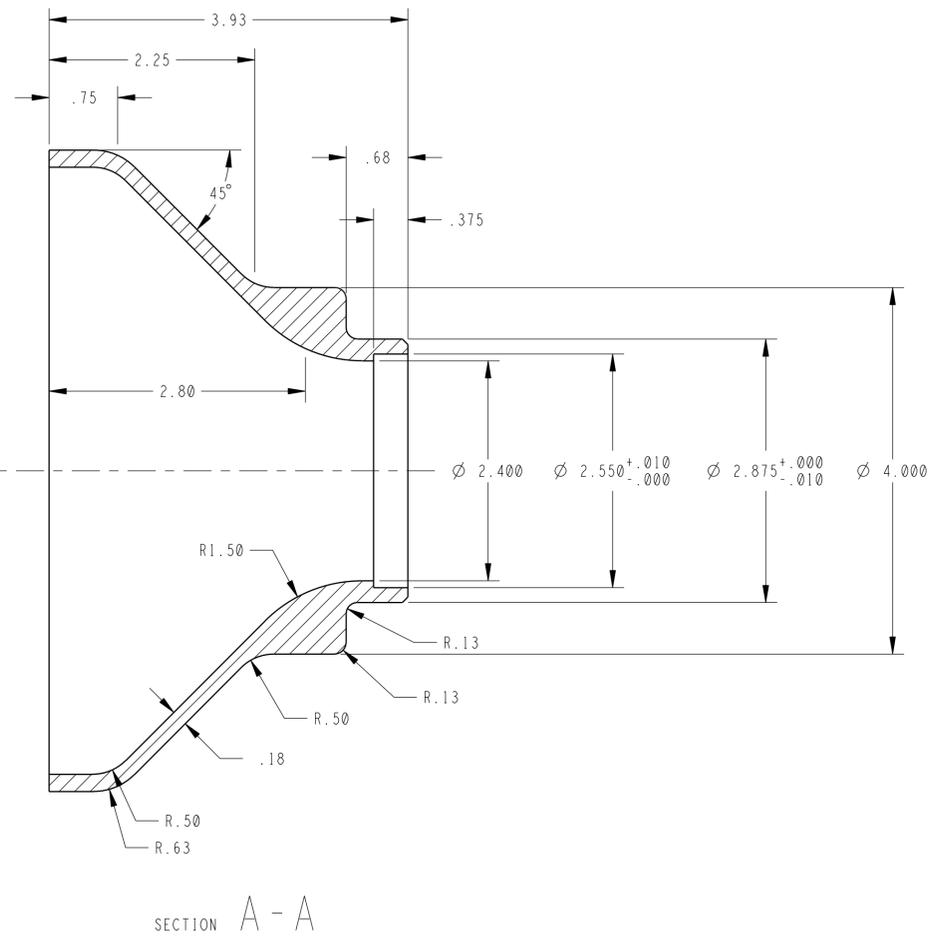
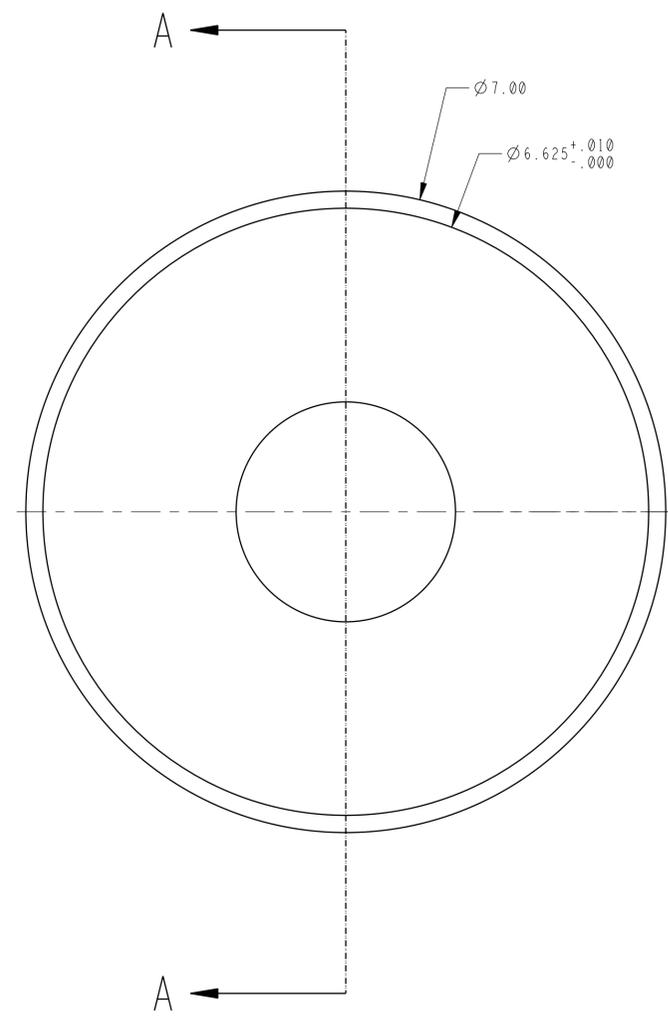
CAP,
OUTER INLET TUBE,
MRS CFR

SIZE	CODE	DRAWING NUMBER	REV
D	339B2	MES00109-001	1
SCALE	2/1	MASS (UNIT WEIGHT)	0 SHEET 1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE BOTTOM FUNNEL IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL PLATE, ALLOY 718.
SUGGESTED VENDOR:
PACIFIC ALLOYS CORP.
17800 SOUTH MAIN STREET, SUITE 204
GARDENA, CALIFORNIA, 90248
- 125/ ✓ ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.



ISSUED DRAWING

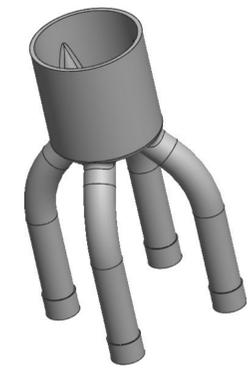
MES00113-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	BOTTOM FUNNEL, SEMI-BATCH PROCESS, MRS CFR	
.XX±.03 .XXX±.010	±.5°	ENGINEER	BOBBY ATKINS		
MES00106	MRS CFR	CHECKER		SIZE CODE D 339B2	
NEXT ASSY	USED ON	MATERIALS			
APPLICATION (VERIFY IN RELEASE RECORDS)		HEAT TREATMENT		DRAWING NUMBER MES00113-001	
FINISH		STRESS			
DRAWING STATE	Released	MODEL STATE	In Work	REV 1	
DRAWING VERSION	1.1	MODEL VERSION	.4		
DRAWING NUMBER	MES00113-001	MODEL NUMBER	MES00107	SCALE 1/1 MASS (UNIT WEIGHT)	
DRAWING INFORMATION		MODEL INFORMATION			
		DESIGN BRANCH CHG		SHEET 1 OF 1 MSFC-DWG.D-FORMAT-REV1A (AUGUST, 2009)	
		RELEASE DATE	8/11/2014		

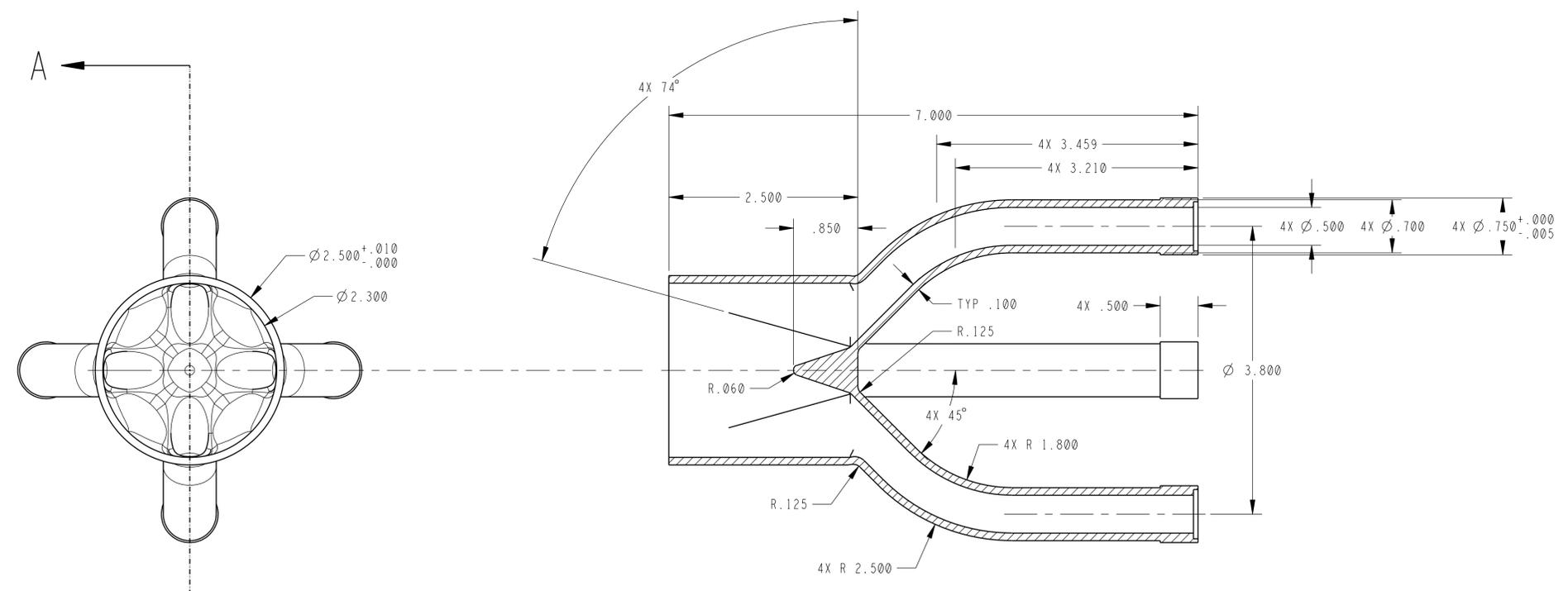
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE MANIFOLD QUAD IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL PLATE, ALLOY 625, 3D PRINT.
- ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.



SCALE 1/2



SECTION A - A

ISSUED DRAWING

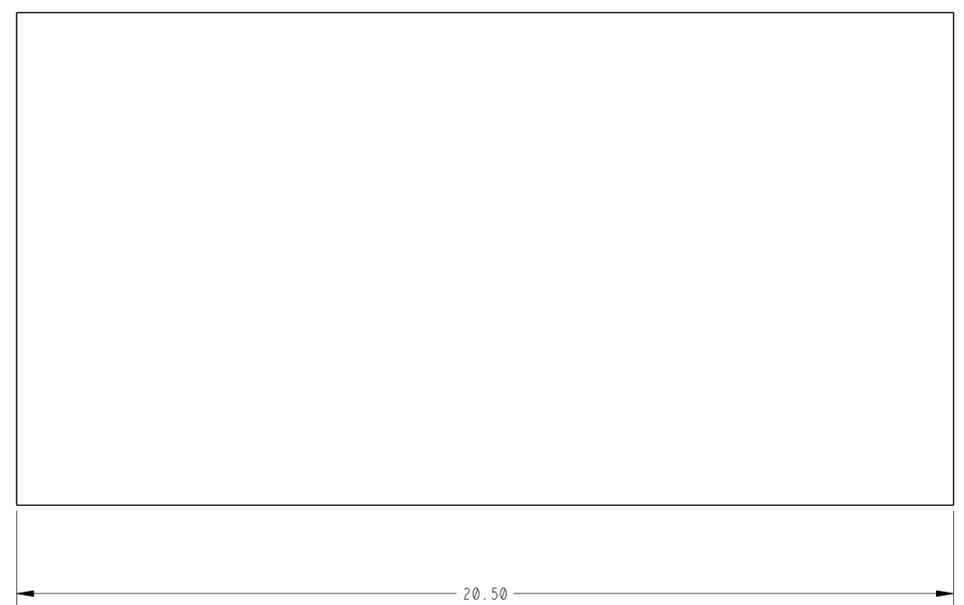
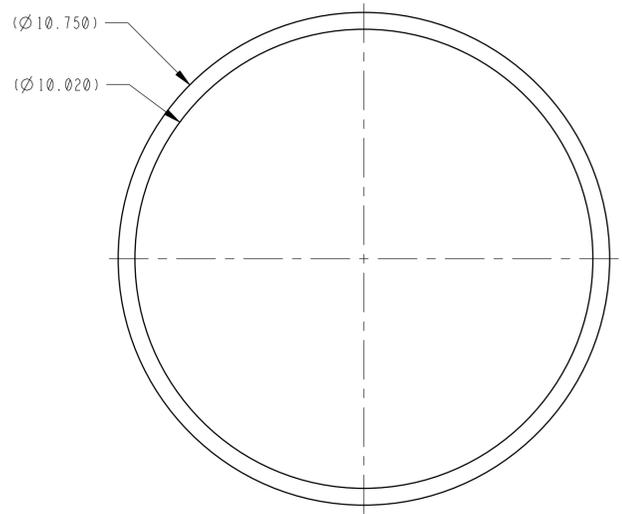
MES00115-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	INLET MANIFOLD, SEMI-BATCH PROCESS, MRS CFR	
.XX±.03 .XXX±.010	±.5°	ENGINEER	BOBBY ATKINS		
MES00123	MRS CFR	CHECKER		SIZE CODE D 339B2	
NEXT ASSY	USED ON	MATERIALS			
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		DRAWING NUMBER MES00115-001	
DRAWING STATE	Released	HEAT TREATMENT			
DRAWING VERSION	1.1	STRESS		REV 1	
DRAWING NUMBER	MES00115-001	S & MA			
DRAWING INFORMATION		MODEL STATE	In Work	DESN BRANCH CHG M. ABNEY	
MODEL INFORMATION		MODEL VERSION	.4		
RELEASE DATE		PRODC-CONTR		SCALE 1/1 MASS (UNIT WEIGHT)	
8/11/2014		NEXT ASSEMBLY			

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE REACTOR CYLINDER IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
-  MATERIAL: INCONEL PIPE, ALLOY 600, SCHEDULE 40.
 SUGGESTED VENDOR:
 PACIFIC ALLOYS CORP.
 17800 SOUTH MAIN STREET, SUITE 204
 GARDENA, CALIFORNIA, 90248
-  ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.
 SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.



MES00116-001 SHOWN

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

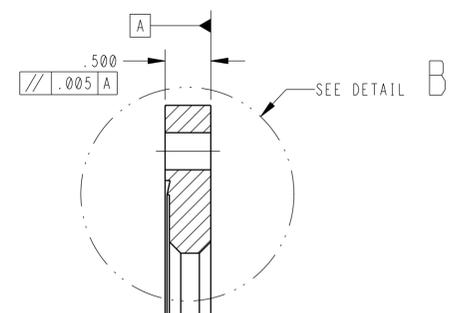
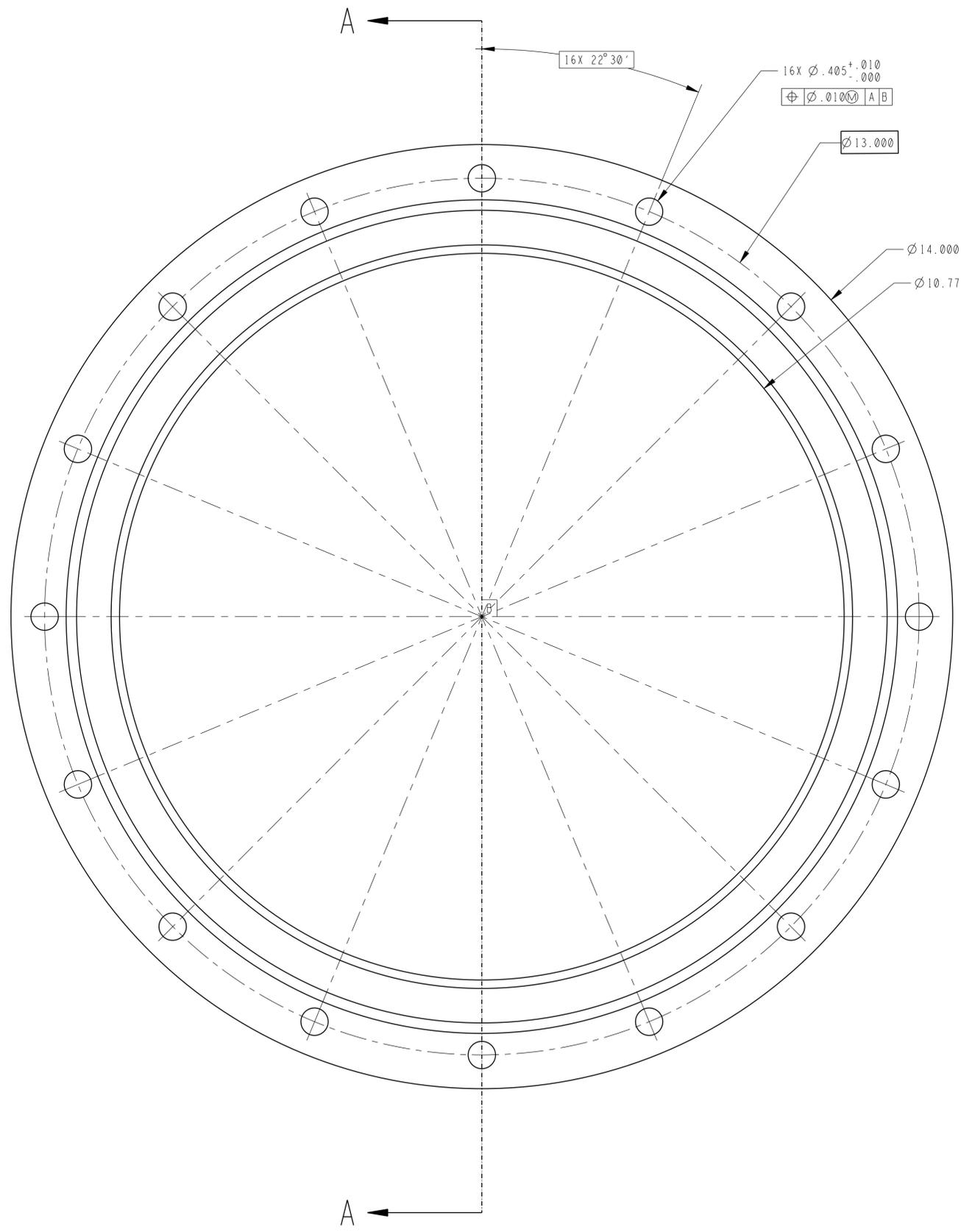
REACTOR CYLINDER,

MRS CFR

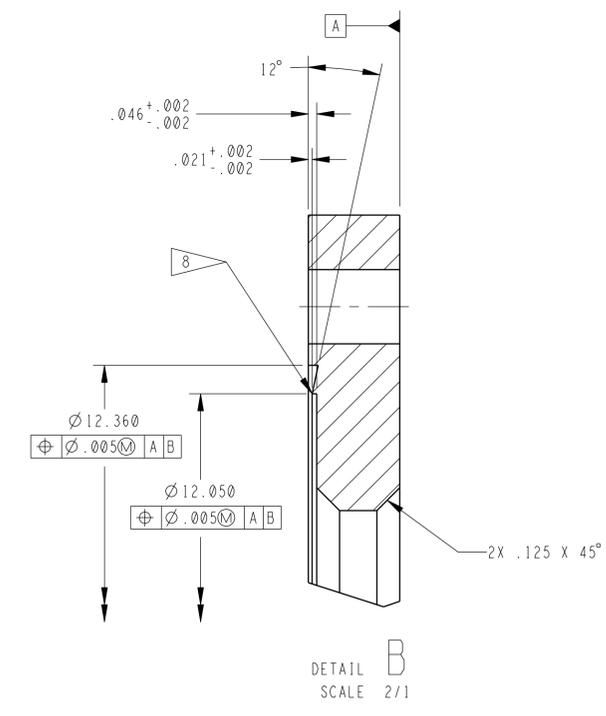
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
TOLERANCES		DESIGN ORG.	ES21
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS
.XX±.03	±.5°	ENGINEER	BOBBY ATKINS
.XXX±.010		CHECKER	
MATERIAL		MATERIALS	
HEAT TREATMENT		STRESS	
FINISH		S & MA	
DRAWING STATE	Released	MODEL STATE	In Work
DRAWING VERSION	1.1	MODEL VERSION	.4
DRAWING NUMBER	MES00116-001	MODEL NUMBER	MES00107
DRAWING INFORMATION		DESIGN BRANCH CHG	
MODEL INFORMATION		RELEASE DATE	

SIZE CODE	D 339B2	DRAWING NUMBER	MES00116-001	REV	1
SCALE	1/2	MASS (UNIT WEIGHT)	.0	SHEET	1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				



- NOTES:
- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE REACTOR FLANGE IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
 - REMOVE ALL BURRS AND SHARP EDGES.
 - MATERIAL: INCONEL PLATE, ALLOY 718.
SUGGESTED VENDOR:
PACIFIC ALLOYS CORP.
17800 SOUTH MAIN STREET, SUITE 204
GARDENA, CALIFORNIA, 90248
 - 125/ ✓ ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
 - RESERVED.
 - IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
 - KEEP VISIBLY CLEAN.
 - EDGE IS INTENDED TO REMAIN SHARP. DO NOT BREAK.



SECTION A - A

DETAIL B
SCALE 2/1

MES00117-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				ORIGINAL DRAWING APPROVALS	
TOLERANCES				DESIGN ORG.	ES21
DECIMALS	ANGLES			DRAWN BY	BOBBY ATKINS
.XX±.03	±.5°			ENGINEER	BOBBY ATKINS
.XXX±.010				CHECKER	
MES00102	MRS CFR	MATERIAL	3	MATERIALS	
NEXT ASSY	USED ON	HEAT TREATMENT		STRESS	
APPLICATION (VERIFY IN RELEASE RECORDS)				S & MA	
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR	
DRAWING NUMBER	MES00117-001	MODEL NUMBER	MES00107	NEXT ASSEMBLY	
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	
				RELEASE DATE	

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

REACTOR FLANGE,

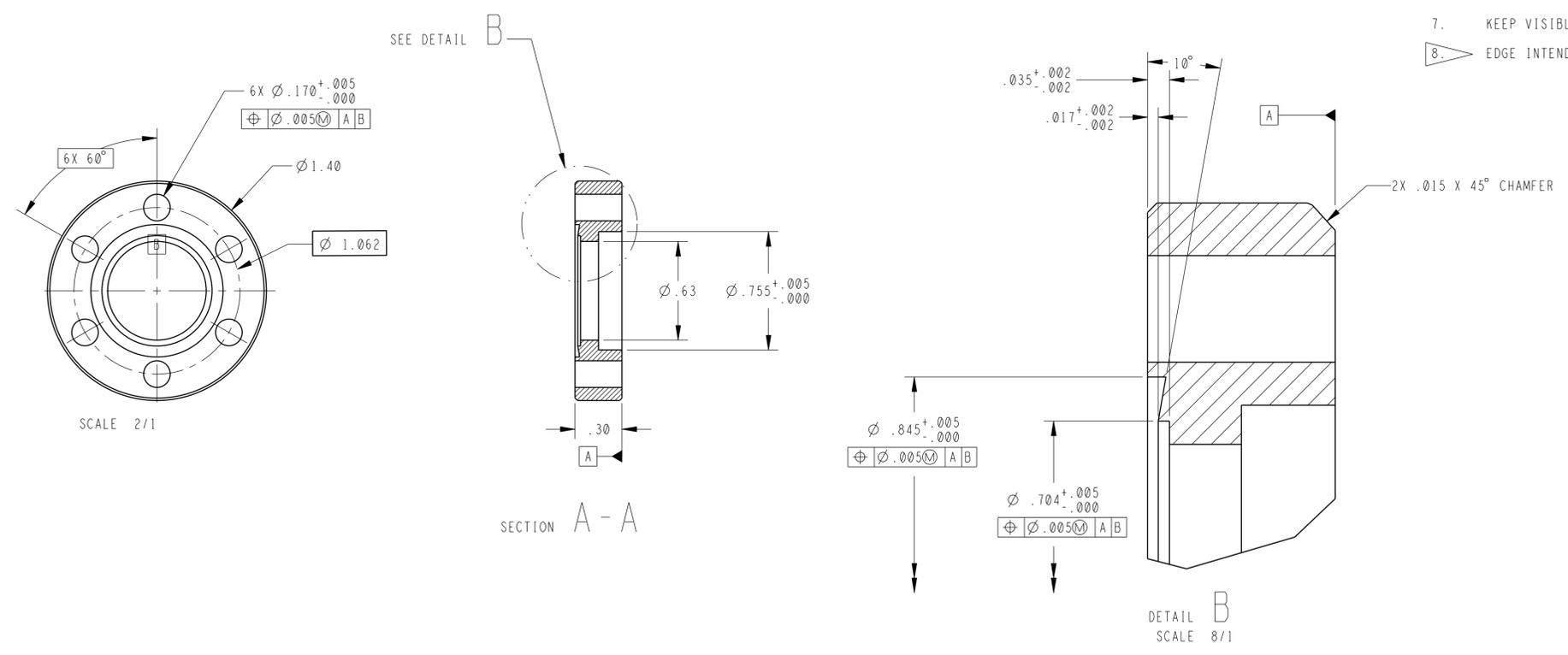
MRS CFR

SIZE CODE	D 339B2	DRAWING NUMBER	MES00117-001	REV	1
SCALE	1/1	MASS (UNIT WEIGHT)		SHEET	1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
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 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE FLANGE 75 IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL PLATE, ALLOY 718.
SUGGESTED VENDOR:
PACIFIC ALLOYS CORP.
17800 SOUTH MAIN STREET, SUITE 204
GARDENA, CALIFORNIA, 90248
- ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.
- EDGE INTENDED TO REMAIN SHARP. DO NOT BREAK.



MES00118-001 SHOWN

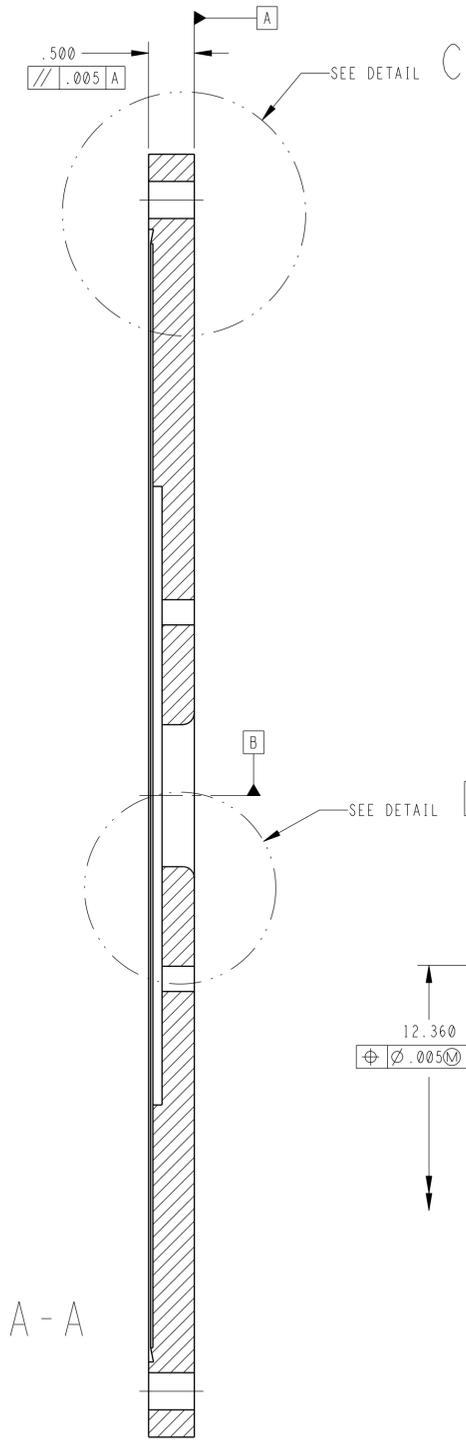
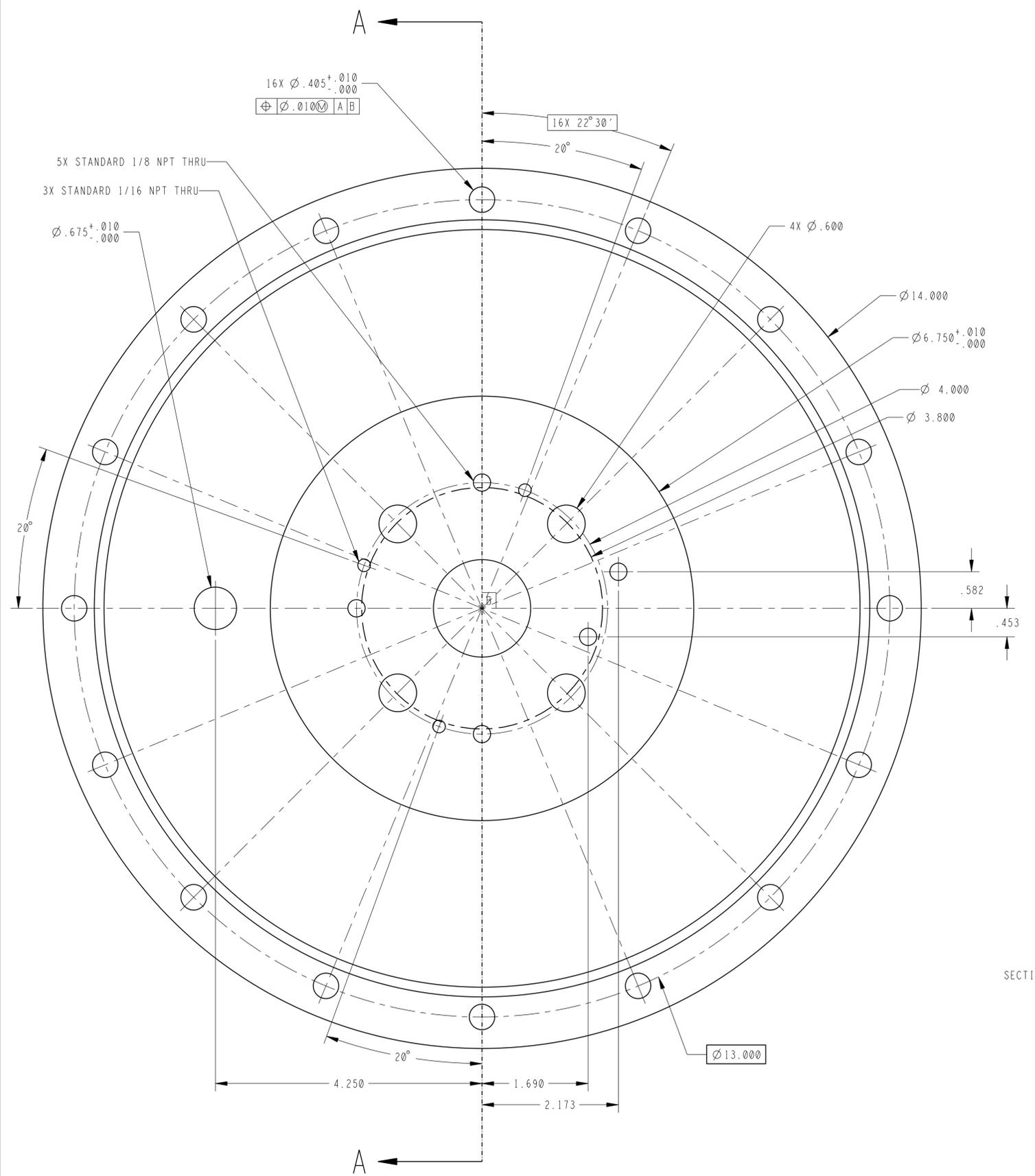
GEORGE C. MARSHALL
SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

.75 INCH FLANGE
SEMI-BATCH PROCESS,
MRS CFR

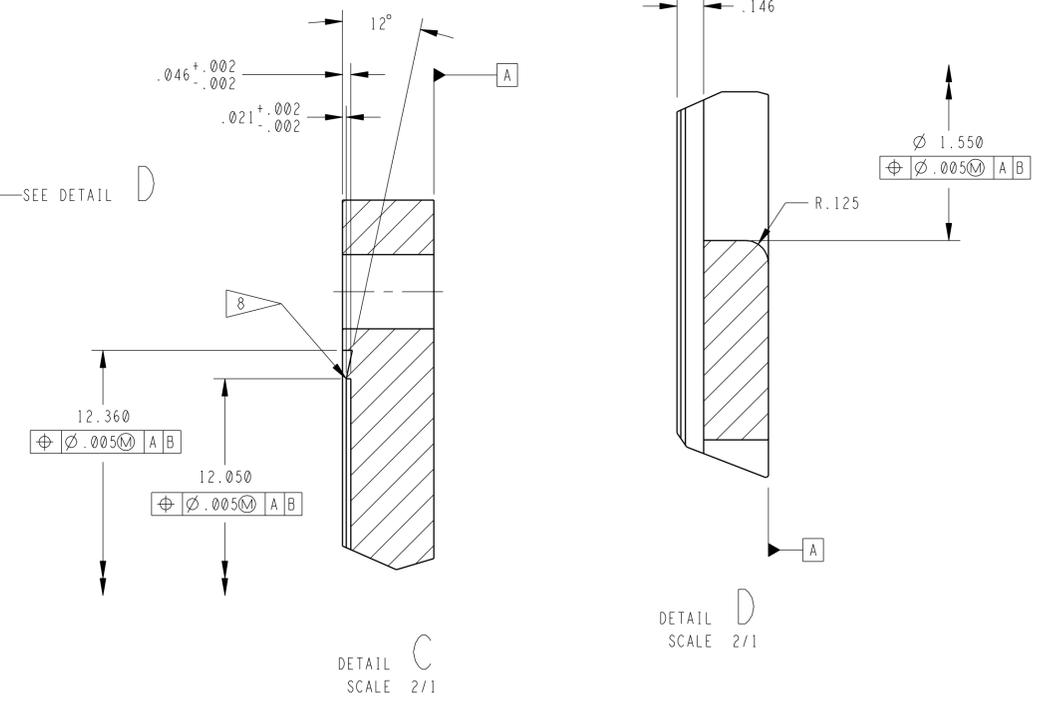
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
		TOLERANCES			
		DECIMALS	ANGLES	DESIGN ORG.	ES21
		.XX±.03	±.5°	DRAWN BY	BOBBY ATKINS
		.XXX±.010		ENGINEER	BOBBY ATKINS
MES000	MRS CFR	MATERIAL		CHECKER	
NEXT ASSY	USED ON	HEAT TREATMENT		MATERIALS	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		STRESS	
				S & MR	
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR	
DRAWING NUMBER	MES00118-001	MODEL NUMBER	MRS.CFR.SEMIBATCH	NEXT ASSEMBLY	
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	
				RELEASE DATE	

SIZE CODE	D 339B2	DRAWING NUMBER	MES00118-001	REV	1
SCALE	2/1	MASS (UNIT WEIGHT)	580.8	SHEET	1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				



- NOTES:
- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE LID SEMI-BATCH IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
 - REMOVE ALL BURRS AND SHARP EDGES.
 - MATERIAL: INCONEL PLATE, ALLOY 718. SUGGESTED VENDOR: PACIFIC ALLOYS CORP. 17800 SOUTH MAIN STREET, SUITE 204 GARDENA, CALIFORNIA, 90248
 - ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
 - RESERVED.
 - IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
 - KEEP VISIBLY CLEAN.
 - EDGE INTENDED TO REMAIN SHARP. DO NOT BREAK.



SECTION A-A

DETAIL C SCALE 2/1

DETAIL D SCALE 2/1

MES00120-001 SHOWN

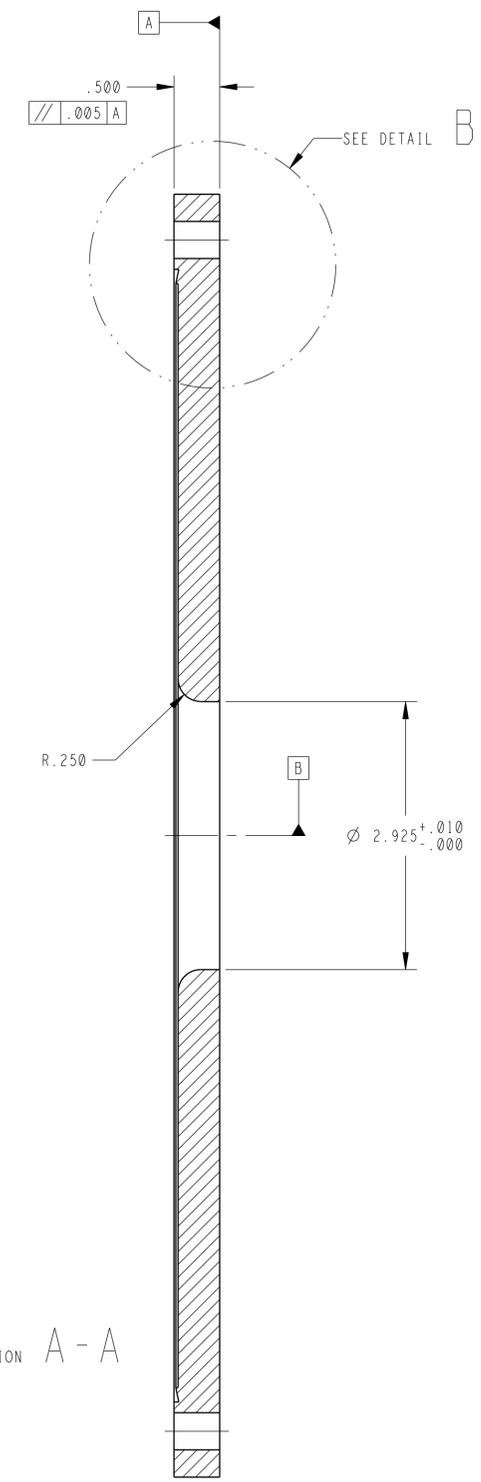
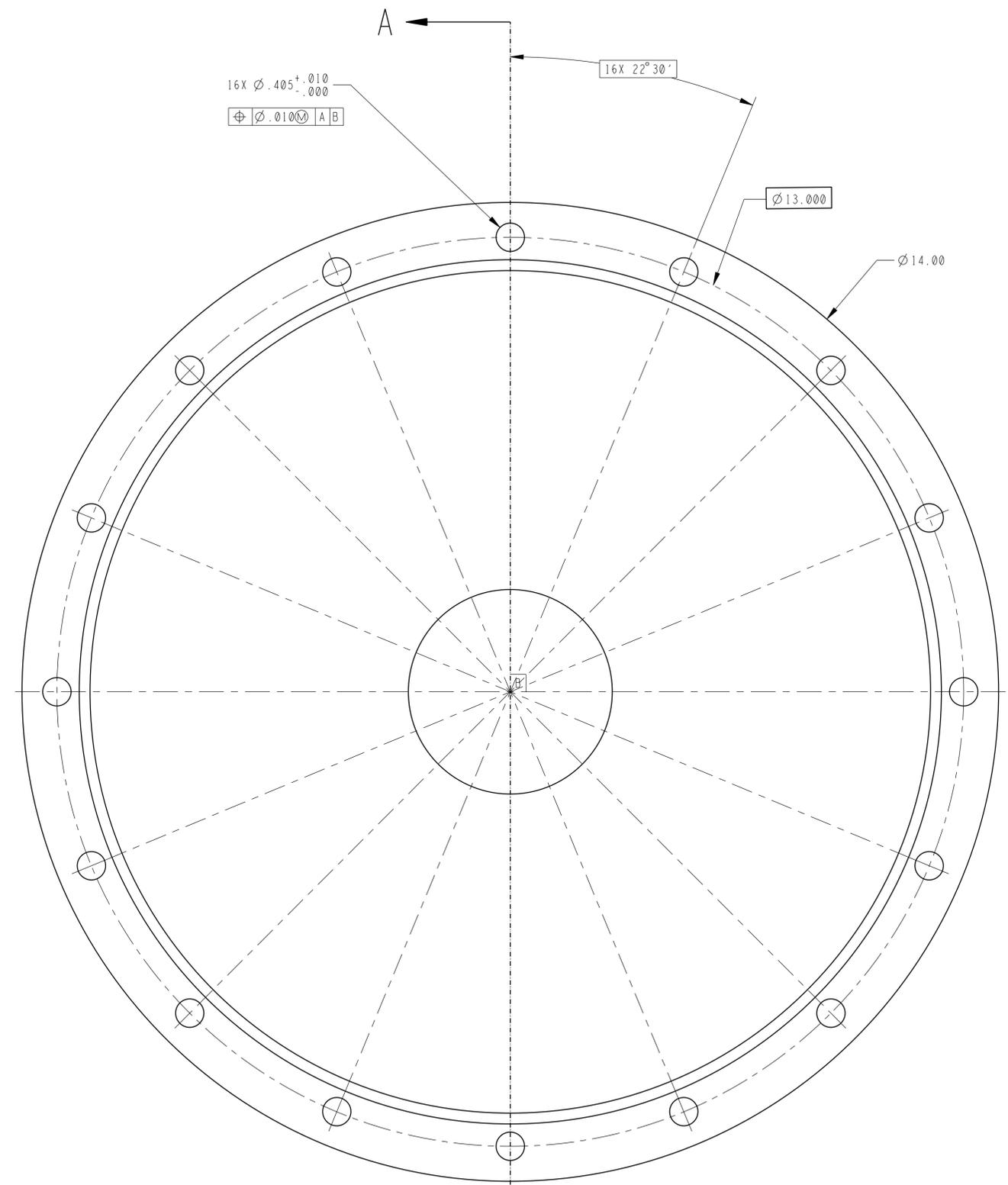
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				ORIGINAL DRAWING APPROVALS	
TOLERANCES				DESIGN ORG.	ES21
DECIMALS	ANGLES			DRAWN BY	BOBBY ATKINS
.XX±.03	±.5°			ENGINEER	BOBBY ATKINS
.XXX±.010				CHECKER	
MATERIAL	3			MATERIALS	
HEAT TREATMENT				STRESS	
FINISH				S & MA	
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR	
DRAWING NUMBER	MES00120-001	MODEL NUMBER	MES00107	NEXT ASSEMBLY	
DRAWING INFORMATION	MODEL INFORMATION			DESN BRANCH CHG	
				RELEASE DATE	

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

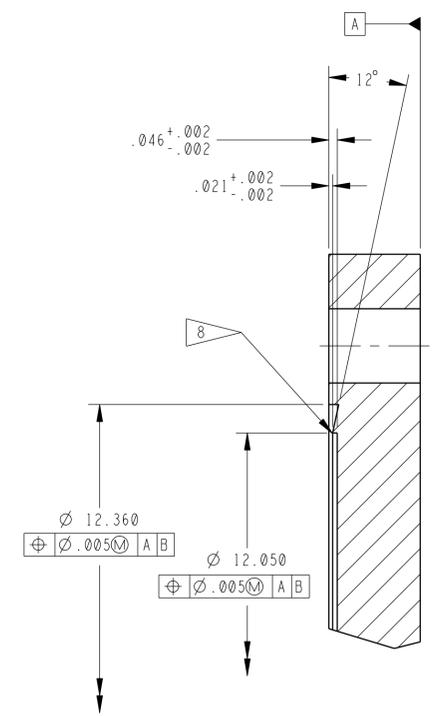
TOP CAP,
SEMI-BATCH PROCESS,
MRS CFR

SIZE CODE	D 339B2	DRAWING NUMBER	MES00120-001	REV	1
SCALE	1/1	MASS (UNIT WEIGHT)		SHEET	1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				



- NOTES:
- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE BOTTOM SEMI-BATCH IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
 - REMOVE ALL BURRS AND SHARP EDGES.
 - MATERIAL: INCONEL PLATE, ALLOY 718. SUGGESTED VENDOR: PACIFIC ALLOYS CORP. 17800 SOUTH MAIN STREET, SUITE 204 GARDENA, CALIFORNIA, 90248
 - ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
 - RESERVED.
 - IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
 - KEEP VISIBLY CLEAN.
 - EDGE IS INTENDED TO REMAIN SHARP. DO NOT BREAK.



DETAIL B
SCALE 2/1

SECTION A - A

MES00121-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				ORIGINAL DRAWING APPROVALS	
TOLERANCES				DESIGN ORG.	ES21
DECIMALS	ANGLES			DRAWN BY	BOBBY ATKINS
.XX±.03 .XXX±.010	±.5°			ENGINEER	BOBBY ATKINS
MES00106	MRS CFR	MATERIAL	3	CHECKER	
NEXT ASSY	USED ON	HEAT TREATMENT		MATERIALS	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		STRESS	
				S & MA	
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR	
DRAWING NUMBER	MES00121-001	MODEL NUMBER	MES00107	NEXT ASSEMBLY	
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	
				RELEASE DATE	

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

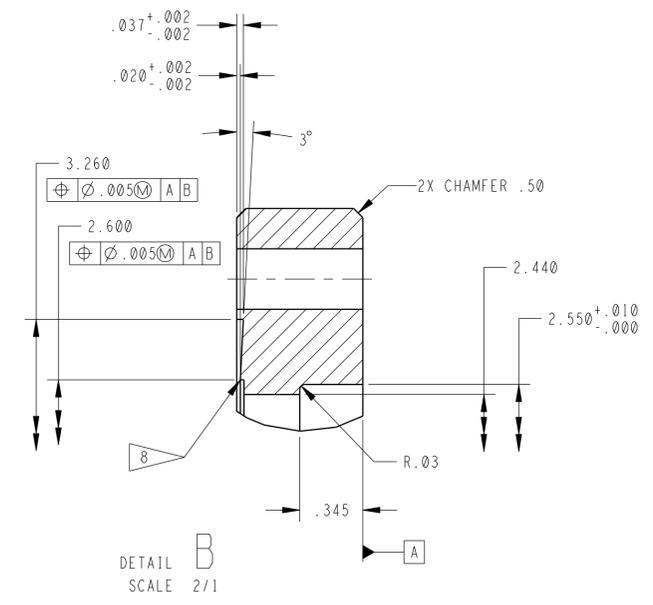
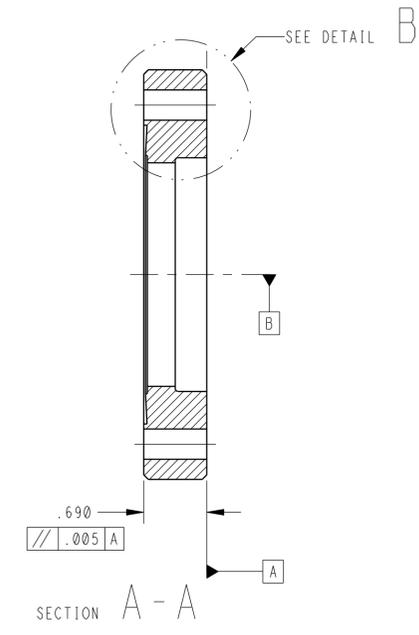
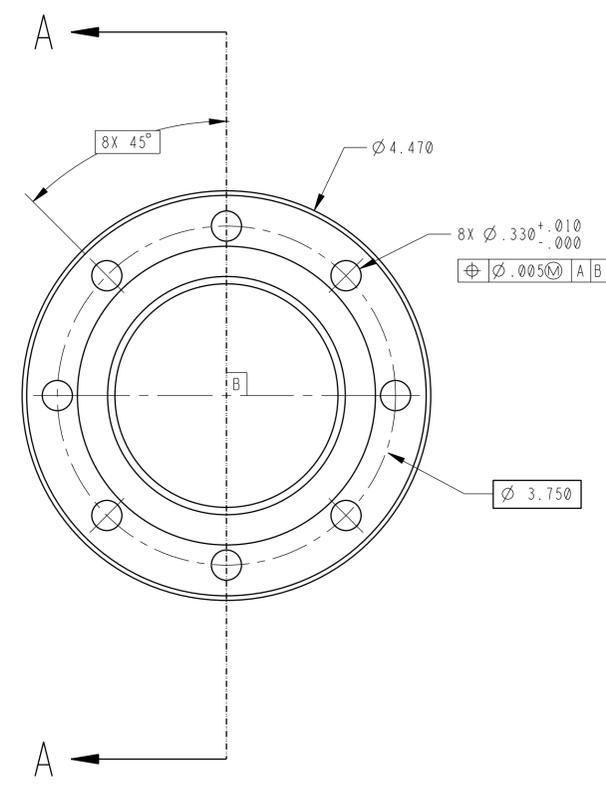
BOTTOM CAP,
SEMI-BATCH PROCESS,
MRS CFR

SIZE	CODE	DRAWING NUMBER	REV
D	339B2	MES00121-001	1
SCALE	1/1	MASS (UNIT WEIGHT)	.0 SHEET 1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REF FLANGE SEMI-BATCH 2.5 IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
-  MATERIAL: INCONEL PLATE, ALLOY 718.
 SUGGESTED VENDOR:
 PACIFIC ALLOYS CORP.
 17800 SOUTH MAIN STREET, SUITE 204
 GARDENA, CALIFORNIA, 90248
-  ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.
 SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.
-  EDGE IS INTENDED TO REMAIN SHARP. DO NOT BREAK.



MES00122-001 SHOWN

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

FLANGE - 2.5 DIA.,
SEMI-BATCH PROCESS,
MRS CFR

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				ORIGINAL DRAWING APPROVALS	
TOLERANCES				DESIGN ORG.	ES21
DECIMALS		ANGLES		DRAWN BY	BOBBY ATKINS
.XX±.03		±.5°		ENGINEER	BOBBY ATKINS
.XXX±.010				CHECKER	
MES000	MRS CFR	MATERIAL	3	MATERIALS	
NEXT ASSY	USED ON	HEAT TREATMENT		STRESS	
APPLICATION (VERIFY IN RELEASE RECORDS)				S & MA	
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR	
DRAWING NUMBER	MES00122-001	MODEL NUMBER	MES00107	NEXT ASSEMBLY	
DRAWING INFORMATION		MODEL INFORMATION		DESN BRANCH CHG	
				RELEASE DATE	
SIZE	CODE	DRAWING NUMBER	REV		
D	339B2	MES00122-001	1		
SCALE	1/1	MASS (UNIT WEIGHT)	SHEET	1	OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

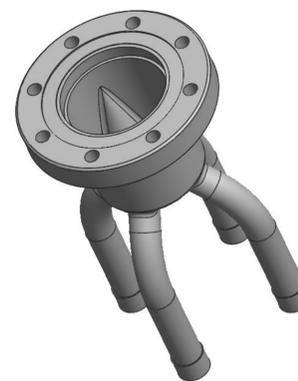
NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE MANIFOLD ASSEMBLY IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.

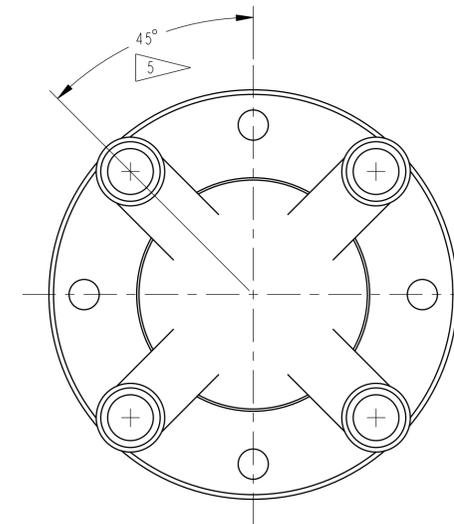
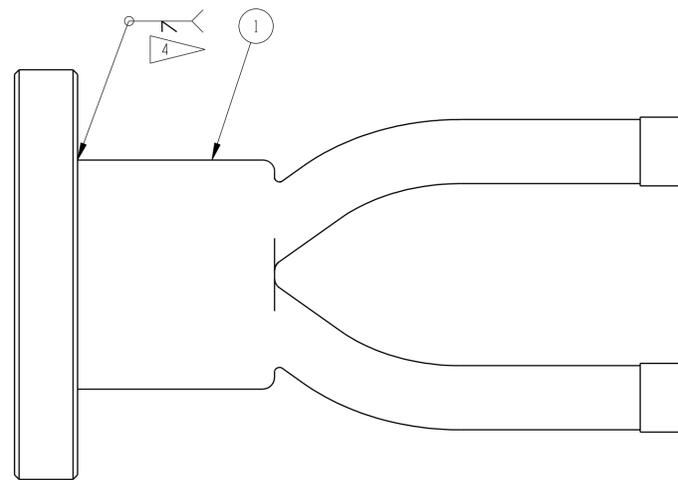
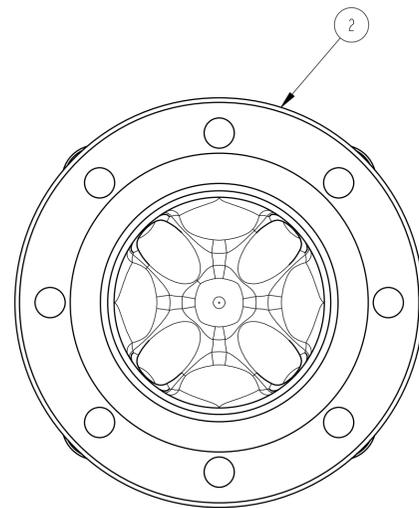
- RESERVED.
- KEEP VISIBLY CLEAN.

4. WELD PER MSFC-SPEC-3679, CLASS B.

5. ALIGN F/N 2 TO F/N 1 AS SHOWN.



SCALE 1/2



ISSUED DRAWING
SEE SEPARATE PARTS LIST

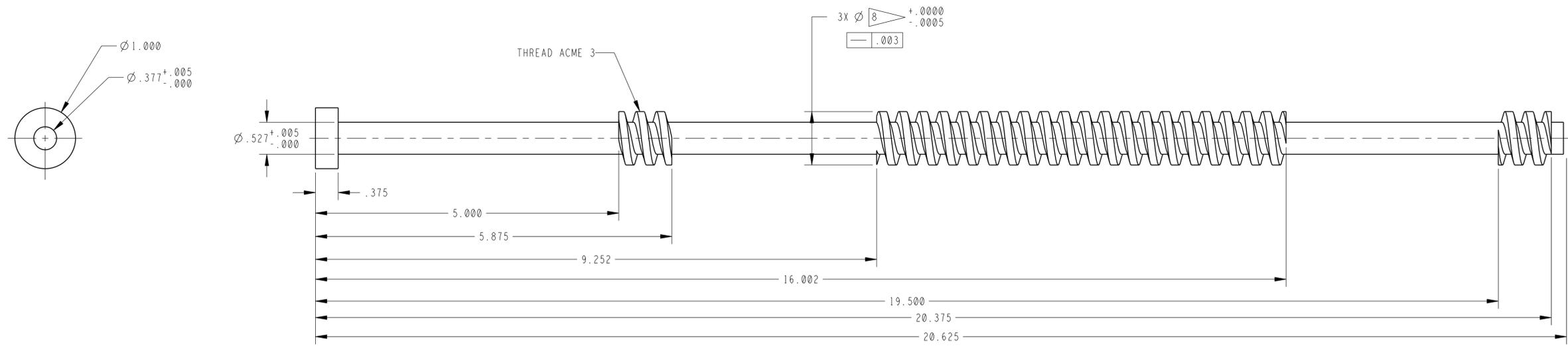
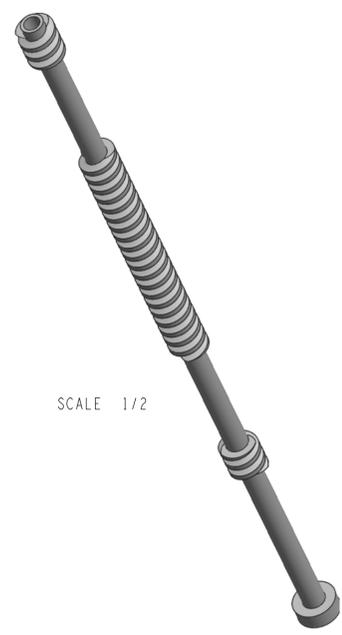
MES00123-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>
TOLERANCES		DESIGN ORG.	ES21	
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	MANIFOLD ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR
.XX± .03 .XXX± .010	±.5 °	ENGINEER	BOBBY ATKINS	
MES00100	MRS CFR	CHECKER		
NEXT ASSY	USED ON	MATERIALS		
APPLICATION (VERIFY IN RELEASE RECORDS)		HEAT TREATMENT	STRESS	
		FINISH	S & MA	
DRAWING STATE	Released	MODEL STATE	In Work	PRODC-MANUF
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODC-CONTR
DRAWING NUMBER	MES00123-001	MODEL NUMBER	MRS.CFR.SEMIBATCH	NEXT ASSEMBLY
DRAWING INFORMATION		MODEL INFORMATION		M. ABNEY
		DESIGN BRANCH CHG		
		RELEASE DATE	8/11/2014	
SIZE	CODE	DRAWING NUMBER	REV	
D	339B2	MES00123-001	1	
SCALE 1/1		MASS (UNIT WEIGHT)	580.8	SHEET 1 OF 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE HELICAL HEATER WELL IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: COPPER 110.
125/
- ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.
- OUTER DIAMETER OF THREADS TO BE DETERMINED AS EQUAL TO INNER DIAMETER OF MES00107-001 TO ACHIEVE INTERFERENCE FIT AT ASSEMBLY.



ISSUED DRAWING

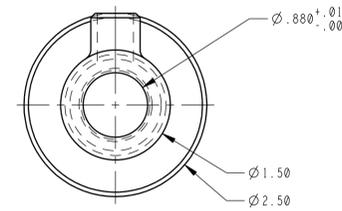
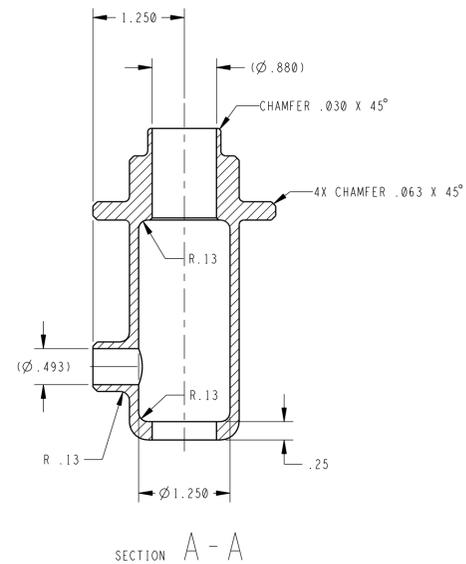
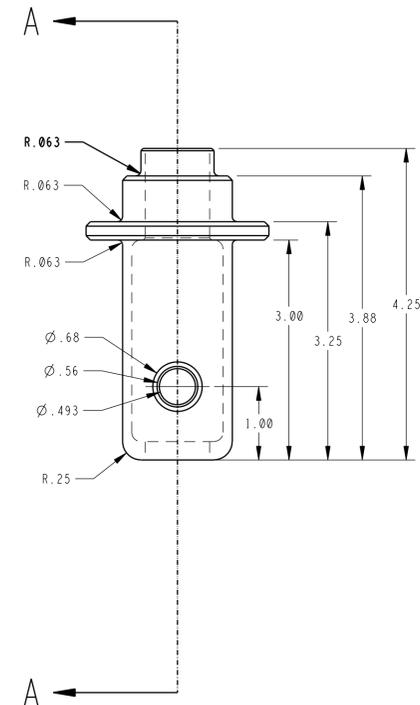
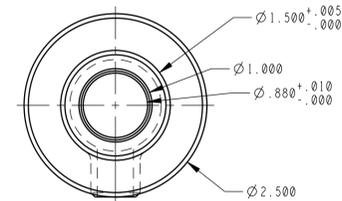
MES00124-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>
TOLERANCES		DESIGN ORG.	ES21	
DECIMALS .XX±.03 .XXX±.010	ANGLES ±.5°	DRAWN BY	BOBBY ATKINS	
MES00126	MRS CFR	ENGINEER	BOBBY ATKINS	HEATER WELL, SEMI-BATCH PROCESS, MRS CFR
NEXT ASSY	USED ON	CHECKER		
APPLICATION (VERIFY IN RELEASE RECORDS)		MATERIALS		
DRAWING STATE	Released	HEAT TREATMENT		STRESS S & MA
DRAWING VERSION	1.1	FINISH		
DRAWING NUMBER	MES00124-001	MODEL STATE	In Work	PRODUC-MANUF
DRAWING INFORMATION		MODEL VERSION	.4	PRODUC-CONTR
MODEL INFORMATION		MODEL NUMBER	MES00107	NEXT ASSEMBLY
		DESIGN BRANCH CHG		M. ABNEY
		RELEASE DATE	8/11/2014	SIZE
				CODE
				D
				339B2
				DRAWING NUMBER
				MES00124-001
				REV
				1
				SCALE
				1/1
				MASS (UNIT WEIGHT)
				0
				SHEET
				1
				OF
				1
<small>MSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)</small>				

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE INLET ADAPTER SEMI BATCH IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL ALLOY 625. 3D PRINT.
- ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.



ISSUED DRAWING

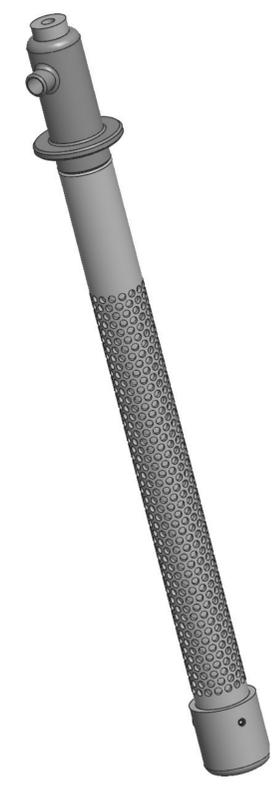
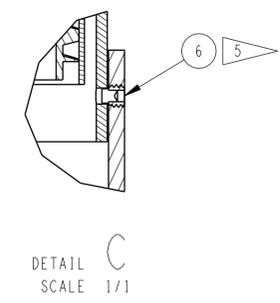
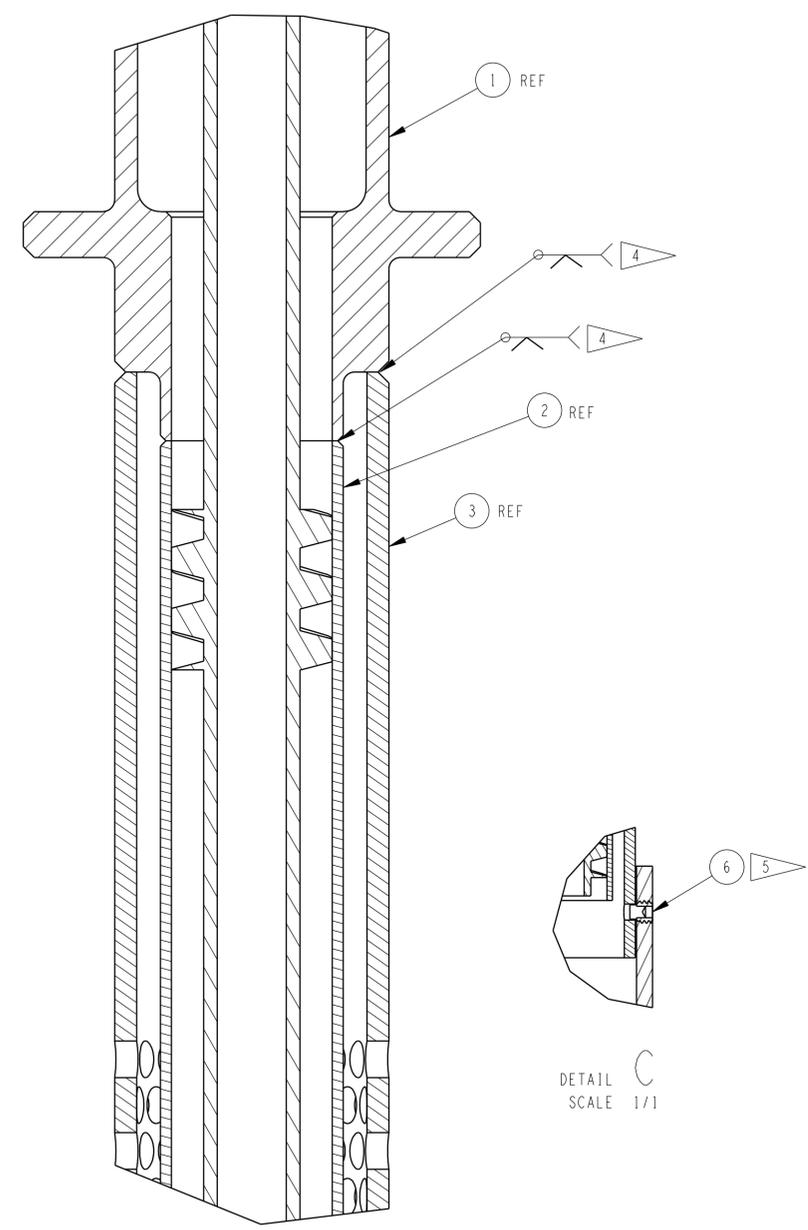
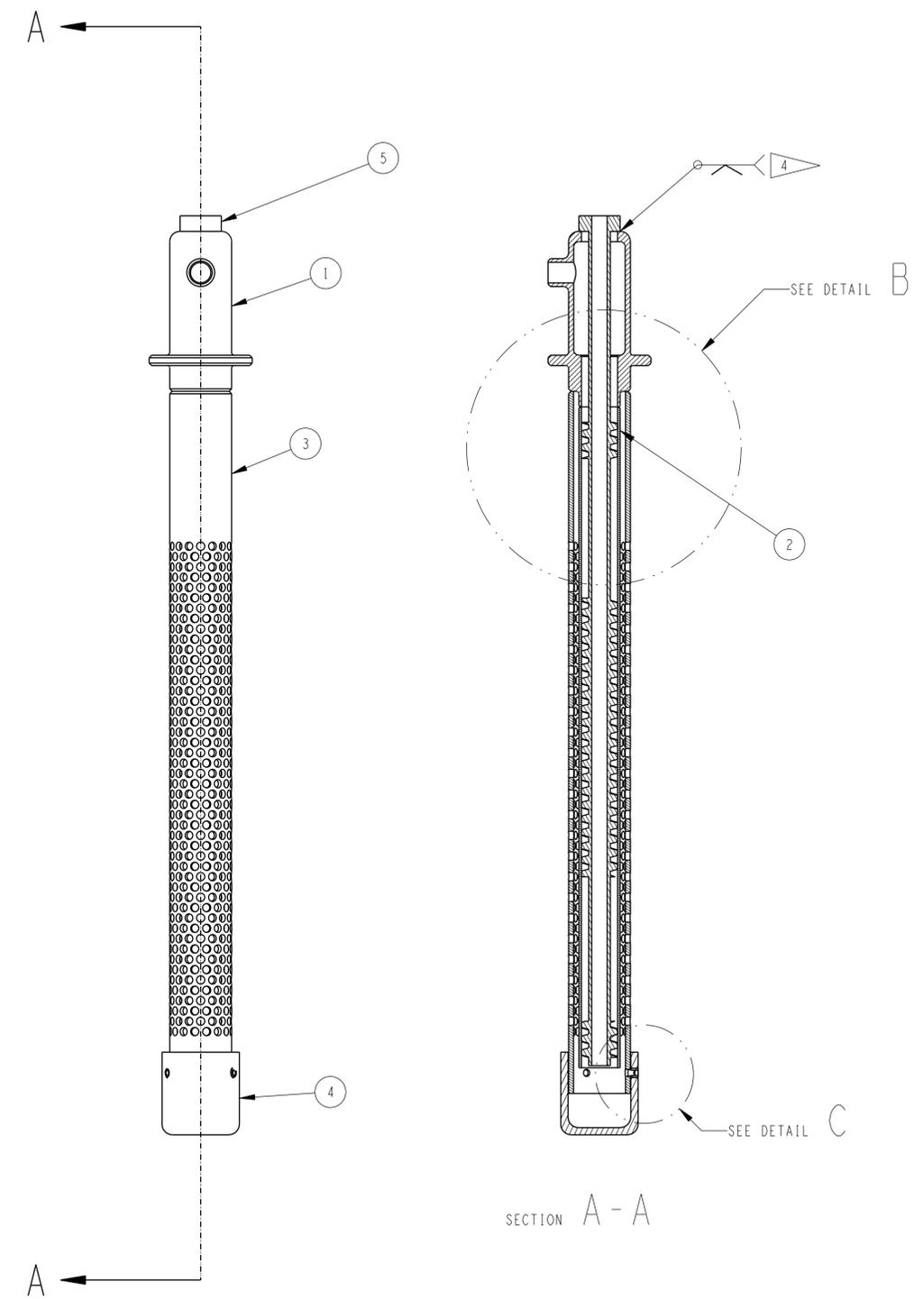
MES00125-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	INLET ADAPTER, SEMI-BATCH PROCESS, MRS CFR	
.XX±.03 .XXX±.010	±.5°	ENGINEER	BOBBY ATKINS		
MES00126	MRS CFR	CHECKER		SIZE CODE D 339B2	
NEXT ASSY	USED ON	MATERIALS			
APPLICATION (VERIFY IN RELEASE RECORDS)		HEAT TREATMENT		DRAWING NUMBER MES00125-001	
FINISH		STRESS			
DRAWING STATE	Released	MODEL STATE	In Work	SCALE 1/1 (UNLESS OTHERWISE SPECIFIED)	
DRAWING VERSION	1.1	MODEL VERSION	.4		
DRAWING NUMBER	MES00125-001	MODEL NUMBER	MES00107	DRAWING NUMBER MES00125-001	
DRAWING INFORMATION		MODEL INFORMATION			
		DESIGN BRANCH	CHT	SHEET 1 OF 1	
		RELEASE DATE	8/11/2014		

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REF. INLET SEMI BATCH ASSEMBLY IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
 - RESERVED.
 - KEEP VISIBLY CLEAN.
4. WELD PER MSFC-SPEC 3679, CLASS B.
5. INSERT F/N 6 INTO THREADED HOLE IN F/N 4 AFTER ALIGNING THREADED HOLES WITH MATING HOLES IN F/N 3. TORQUE FINGER TIGHT.



SECTION A-A

DETAIL B
SCALE 2/1

ISSUED DRAWING
SEE SEPARATE PARTS LIST

MES00126-001 SHOWN

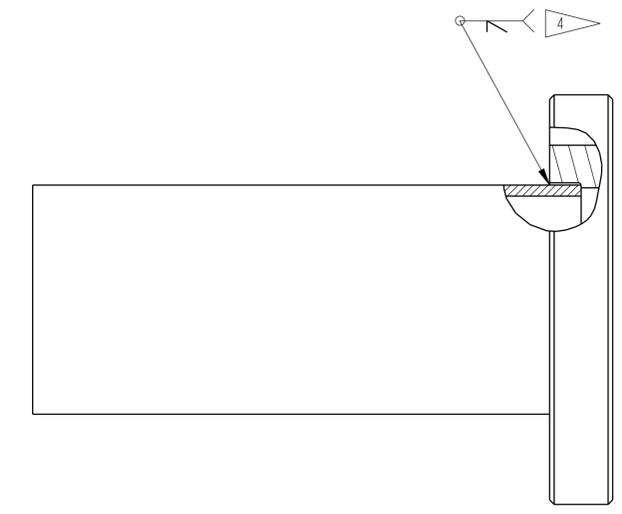
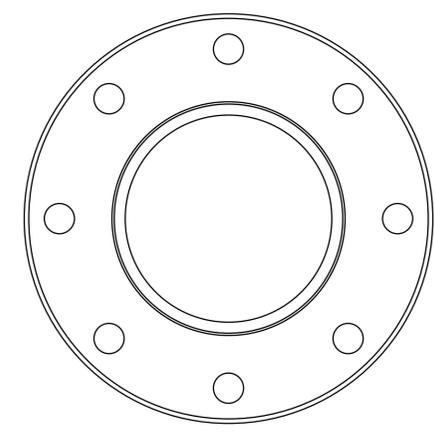
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	INLET ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR	
.XX± .03 .XXX± .010	±.5°	ENGINEER	BOBBY ATKINS		
MES00101	MRS CFR	CHECKER		SIZE CODE D 339B2 DRAWING NUMBER MES00126-001 REV 1	
NEXT ASSY	USED ON	MATERIALS			
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		SCALE 1/1 MASS (UNIT WEIGHT) 580.8 SHEET 1 OF 1 MSFC-DWG-D-FORMAT-REV1A (AUGUST, 2009)	
DRAWING STATE	Released	MODEL STATE	In Work		
DRAWING VERSION	1.1	MODEL VERSION	.4	DESN BRANCH CHG RELEASE DATE 8/11/2014	
DRAWING NUMBER	MES00126-001	MODEL NUMBER	MRS.CFR.SEMIBATCH		
DRAWING INFORMATION		MODEL INFORMATION		NEXT ASSEMBLY M. ABNEY	

8 7 6 5 4 3 2 1

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE FLANGE 2.5 ASSEMBLY IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- RESERVED.
- KEEP VISIBLY CLEAN.
-  WELD PER MSFC-SPEC 3679, CLASS B.



SEE SEPARATE PARTS LIST

MES00127-001 SHOWN

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				ORIGINAL DRAWING APPROVALS	
TOLERANCES				DESIGN ORG.	ES21
DECIMALS	ANGLES			DRAWN BY	BOBBY ATKINS
.XX±.03	±.5°			ENGINEER	BOBBY ATKINS
.XXX±.010				CHECKER	
MES00100	MRS CFR	MATERIAL		MATERIALS	
NEXT ASSY	USED ON	HEAT TREATMENT		STRESS	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		S & MA	
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	1.4	PRODUC-CONTR	
DRAWING NUMBER	MES00127-001	MODEL NUMBER	MRS.CFR.SEMIBATCH	DESN BRANCH CHG	
DRAWING INFORMATION		MODEL INFORMATION		RELEASE DATE	

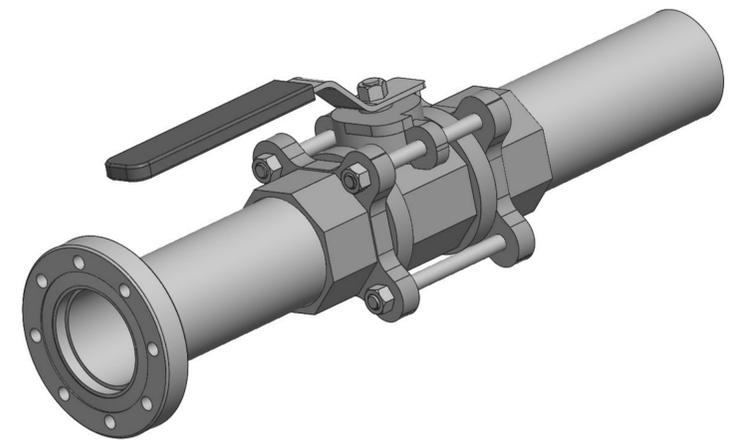
GEORGE C. MARSHALL
SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

FLANGE ASSEMBLY,
SEMI-BATCH PROCESS,
MRS CFR

SIZE CODE	D 339B2	DRAWING NUMBER	MES00127-001	REV	1
SCALE	1/1	MASS (UNIT WEIGHT)	580.8	SHEET	1 OF 1

8 7 6 5 4 3 2 1

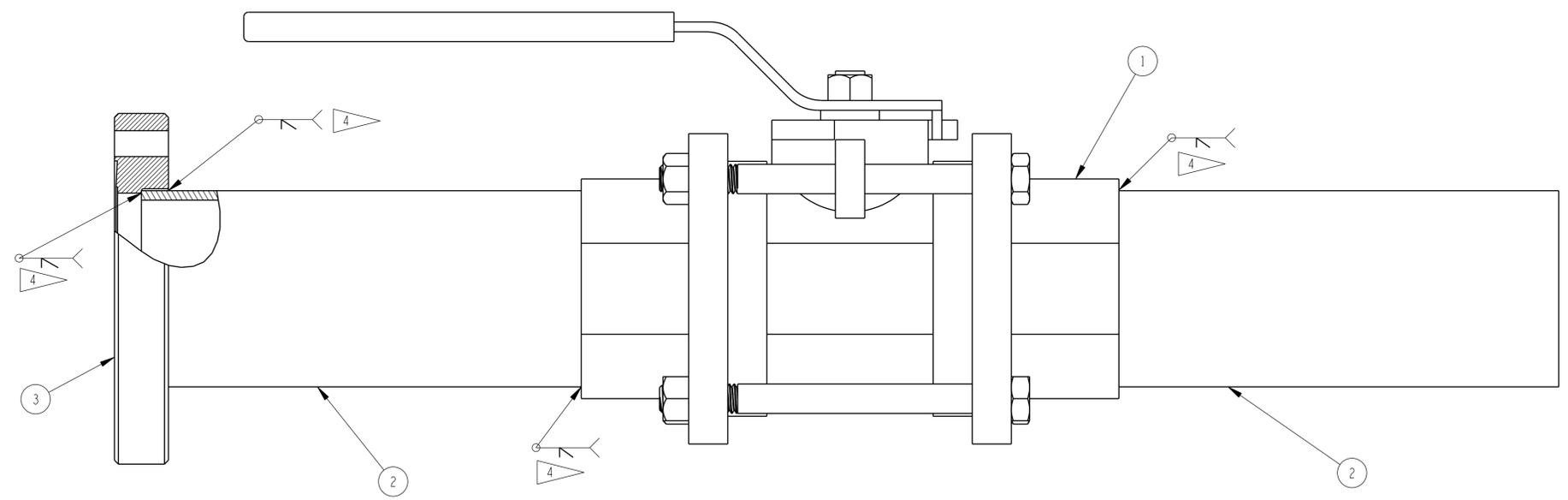
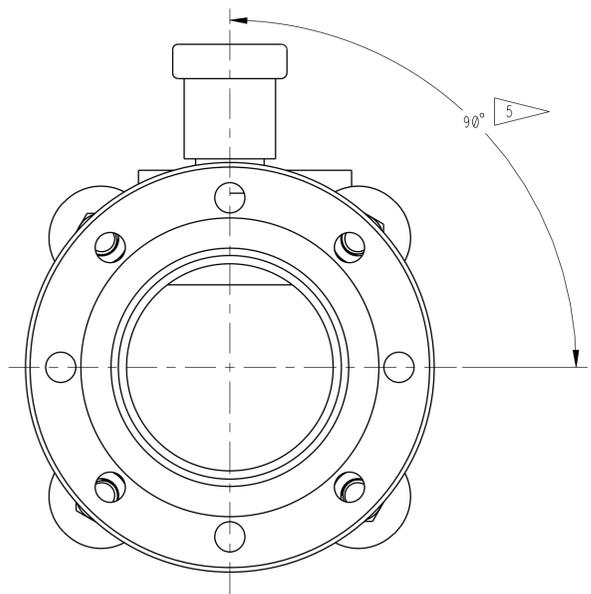
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				



SCALE 1/2

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
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 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE VALVE ASSEMBLY IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- RESERVED.
- KEEP VISIBLY CLEAN.
- WELD PER MSFC-SPEC 3679, CLASS B.
- ALIGN F/N 1 AND F/N 3 AS SHOWN.



ISSUED DRAWING
SEE SEPARATE PARTS LIST

MES00128-001 SHOWN

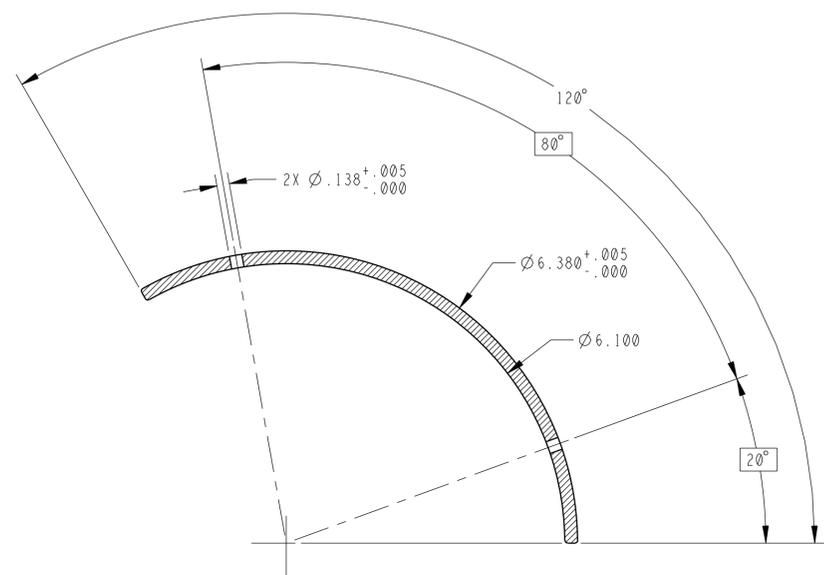
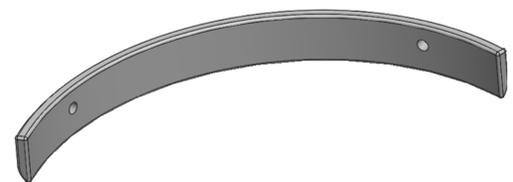
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS	
TOLERANCES		DESIGN ORG.	ES21
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS
.XX± .03	±.5 °	ENGINEER	BOBBY ATKINS
.XXX± .010		CHECKER	
MES00100	MRS CFR	MATERIALS	
NEXT ASSY	USED ON	HEAT TREATMENT	
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH	
DRAWING STATE	Released	MODEL STATE	In Work
DRAWING VERSION	1.1	MODEL VERSION	.4
DRAWING NUMBER	MES00128-001	MODEL NUMBER	MRS.CFR.SEMIBATCH
DRAWING INFORMATION		MODEL INFORMATION	
DRAWN BY		NEXT ASSEMBLY	
DESIGN BRANCH		M. ABNEY	
RELEASE DATE		8/11/2014	

GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA			
VALVE ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR			
SIZE	CODE	DRAWING NUMBER	REV
D	339B2	MES00128-001	1
SCALE 1/1		580.8 SHEET 1 OF 1	

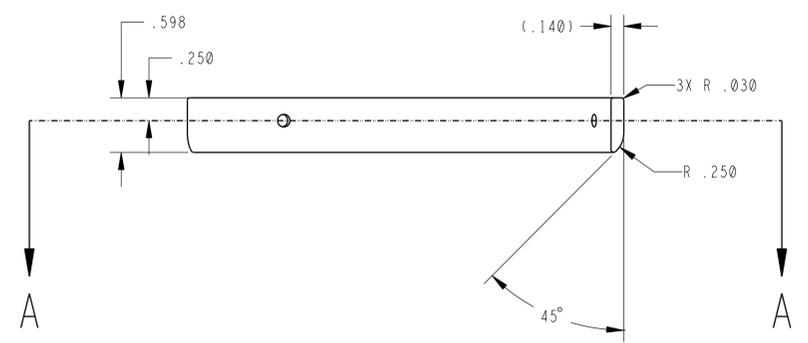
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
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 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE MES01400 IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- | | |
|----|--|
| 3. | MATERIAL: INCONEL PLATE, ALLOY 718.
SUGGESTED VENDOR:
PACIFIC ALLOYS CORP.
17800 SOUTH MAIN STREET, SUITE 204
GARDENA, CALIFORNIA, 90248 |
|----|--|
- | | |
|----|--|
| 4. | $\sqrt{125}$ ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.
SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1. |
|----|--|
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.



SECTION A - A

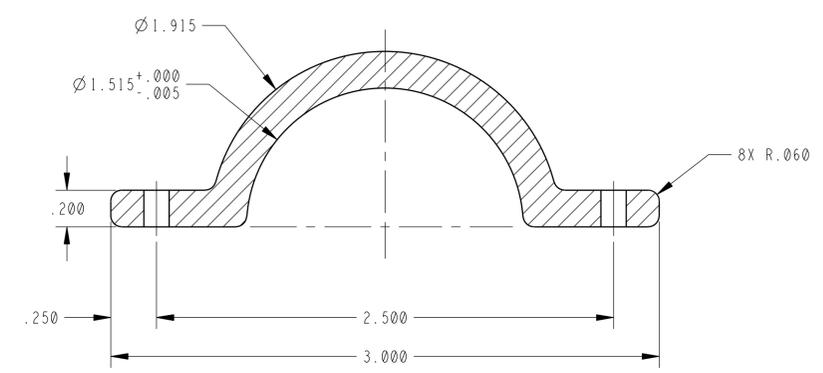
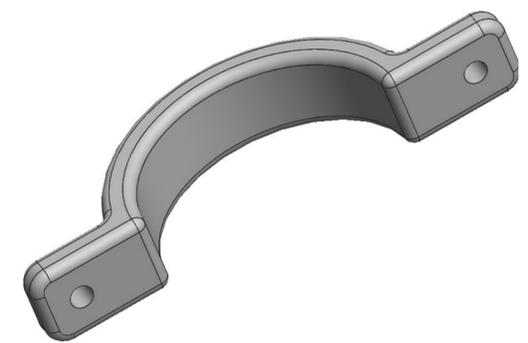


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		MES01400-001 SHOWN GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	MESH RETAINER, CATALYST CONTAINER, MRS CFR	
.XX ± .03 .XXX ± .010	± .5 °	ENGINEER	BOBBY ATKINS		
MATERIAL	3.	CHECKER		SIZE CODE D 339B2 DRAWING NUMBER MES01400-001 REV 1	
HEAT TREATMENT		MATERIALS			
FINISH		STRESS		SCALE 1/1 MASS (UNIT WEIGHT) .5 SHEET 1 OF 1 MSFC-DWG.D-FORMAT-REV1A (AUGUST, 2009)	
DRAWING STATE Released	MODEL STATE In Work	PRODUC-MANUF			
DRAWING VERSION 1.1	MODEL VERSION .4	PRODUC-CONTR		DRAWING INFORMATION MODEL INFORMATION	
DRAWING NUMBER MES01400-001	MODEL NUMBER	RING			
DRAWING INFORMATION		DESIGN BRANCH CHG			
		RELEASE DATE			

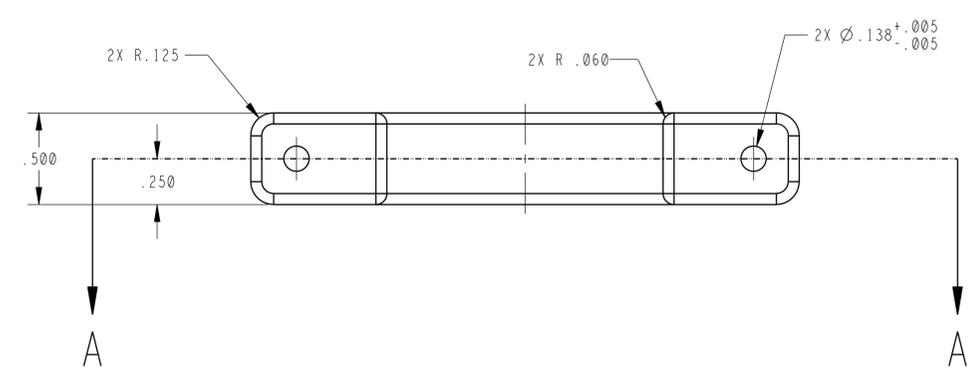
REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				

NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE MES01401 IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
-  MATERIAL: INCONEL PLATE, ALLOY 718.
 SUGGESTED VENDOR:
 PACIFIC ALLOYS CORP.
 17800 SOUTH MAIN STREET, SUITE 204
 GARDENA, CALIFORNIA, 90248
-  ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.



SECTION A - A

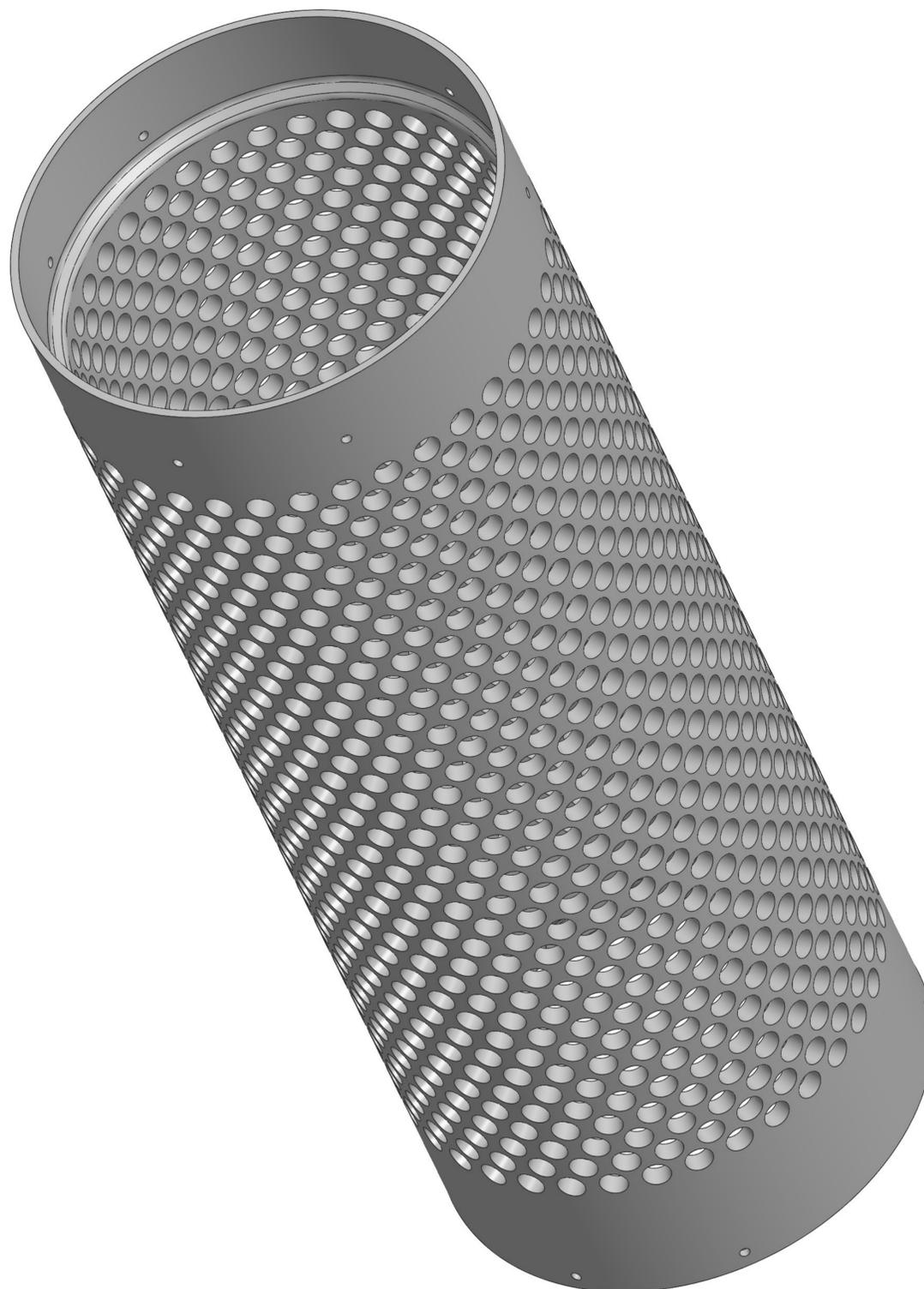


A

A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		MES01401-001 SHOWN GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA MESH RETAINER, OUTER INLET TUBE, MRS CFR	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS .XX±.03 .XXX±.010	ANGLES ±.5°	DRAWN BY	BOBBY ATKINS		
		ENGINEER	BOBBY ATKINS		
MRS CFR	MATERIAL	3.	CHECKER		
NEXT ASSY	USED ON	HEAT TREATMENT	MATERIALS		
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH	STRESS		
DRAWING STATE	Released	MODEL STATE	In Work	PRODUC-MANUF	
DRAWING VERSION	1.1	MODEL VERSION	.4	PRODUC-CONTR	
DRAWING NUMBER	MES01401-001	MODEL NUMBER	RING	NEXT ASSEMBLY	
DRAWING INFORMATION		MODEL INFORMATION		DESIGN BRANCH	CHP
				RELEASE DATE	
				SIZE	CODE
				D	339B2
				DRAWING NUMBER	REV
				MES01401-001	1
				SCALE	2/1
				MASS (UNIT WEIGHT)	
				5	SHEET 1 OF 1
MSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)					

REVISIONS				
REV	ZONE	DESCRIPTION	APPROVAL	REL DATE
1				



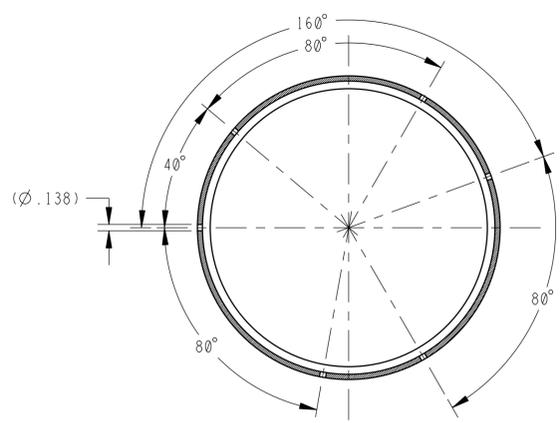
NOTES:

- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.41-2003 EXCEPT AS NOTED BELOW:
 - 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.
 - FOR PRODUCT DEFINITION DATA SET, REFERENCE CATALYST CONTAINER BATCH IN ICE WINDCHILL.
 - ALL DIMENSIONS ARE MODELED AT MEAN VALUE, EXCEPT FOR DRILLED/REAMED HOLES.
 - IGNORE ALL MODEL ANNOTATIONS.
- REMOVE ALL BURRS AND SHARP EDGES.
- MATERIAL: INCONEL PIPE, ALLOY 600, SCHEDULE 40.
 SUGGESTED VENDOR:
 PACIFIC ALLOYS CORP.
 17800 SOUTH MAIN STREET, SUITE 204
 GARDENA, CALIFORNIA, 90248
- ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.
 SURFACE ROUGHNESS IN ACCORDANCE WITH ASME B46.1.
- RESERVED.
- IDENTIFY PART WITH PART NUMBER USING BLACK INK. HANDWRITTEN IS ACCEPTABLE.
- KEEP VISIBLY CLEAN.

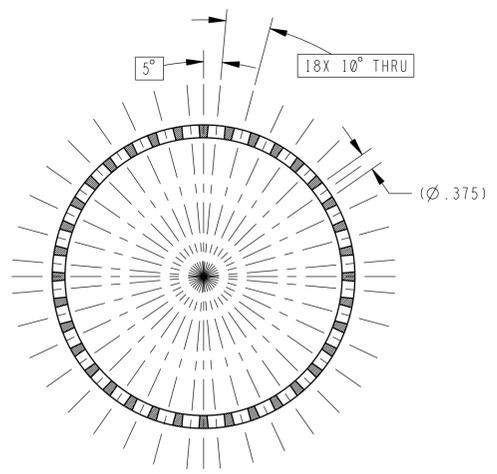
ISSUED DRAWING

MES01402-001 SHOWN

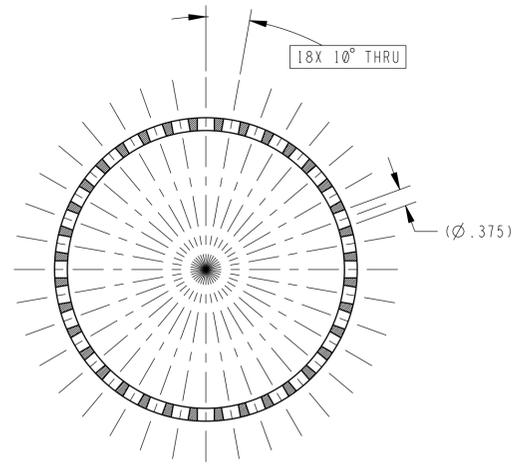
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ORIGINAL DRAWING APPROVALS		GEORGE C. MARSHALL SPACE FLIGHT CENTER <small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA</small>	
TOLERANCES		DESIGN ORG.	ES21		
DECIMALS	ANGLES	DRAWN BY	BOBBY ATKINS	CATALYST CONTAINER,	
.XX± .03 .XXX± .010	±.5°	ENGINEER	BOBBY ATKINS		
MES00106	MRS CFR	CHECKER		MRS CFR	
NEXT ASSY	USED ON	MATERIALS			
APPLICATION (VERIFY IN RELEASE RECORDS)		FINISH		SIZE CODE D 339B2 DRAWING NUMBER MES01402-001 REV 1	
DRAWING STATE	Released	MODEL STATE	In Work		
DRAWING VERSION	1.1	MODEL VERSION	.4	SCALE 1/2 MASS (UNIT WEIGHT) .0 SHEET 1 OF 2 <small>MSFC.DWG.D.FORMAT.REV1A (AUGUST, 2009)</small>	
DRAWING NUMBER	MES01402-001	MODEL NUMBER	MES00107		
DRAWING INFORMATION		MODEL INFORMATION		NEXT ASSEMBLY M. ABNEY DESN BRANCH CHG RELEASE DATE 8/11/2014	



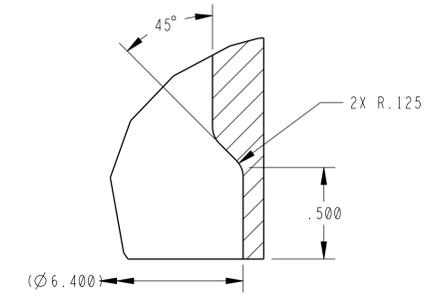
SECTION B-B
SECTION F-F



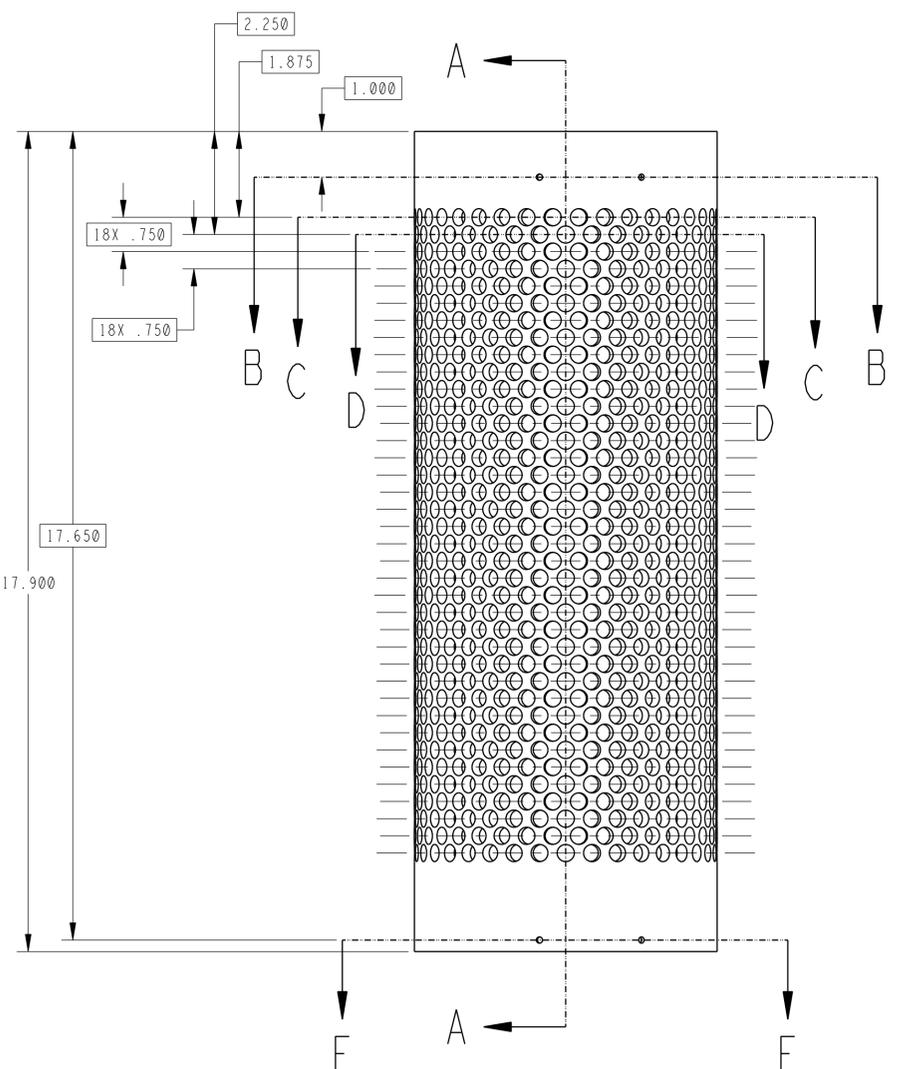
SECTION C-C
SCALE 1/2



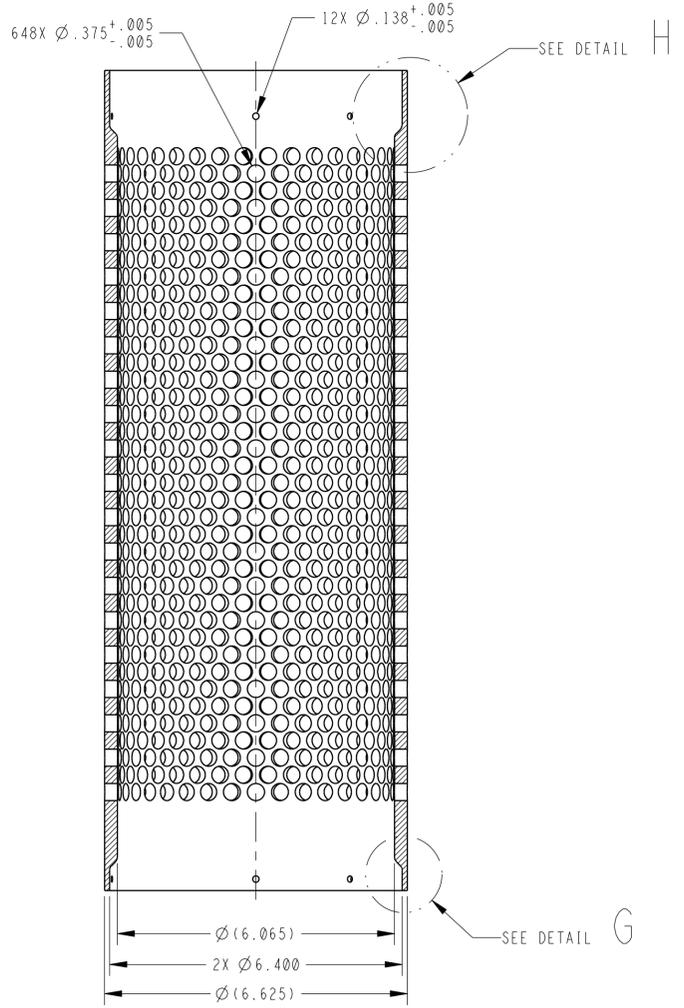
SECTION D-D
SCALE 1/2



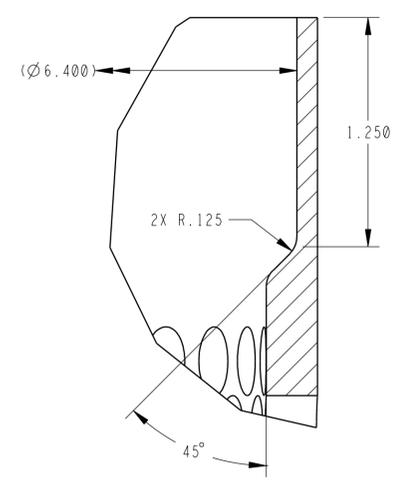
DETAIL G
SCALE 2/1



SCALE 1/2



SECTION A-A



DETAIL H
SCALE 2/1

DRAWING STATE	Released	SIZE	CODE	DRAWING NUMBER	REV
DRAWING VERSION	1.1	D	339B2	MES01402-001	1
DRAWING INFORMATION				SHEET 2 OF 2	

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 2 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION									
	S			DASH	REV										
	D	MES00100-001	-	101	-	REACTOR ASSEMBLY, SEMI- BATCH PROCESS, MRS CFR									
MAKE FROM	D	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ	
	S			DASH	REV										
										1	FINAL				
DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER			CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION		
			DWG REV	DA	SPL										
	1	D	MES00102-001						1				REACTOR CYLINDER ASSEMBLY		
	2	D	MES00106-001						1				BOTTOM CAP ASSEMBLY		
	3	D	MES00104-001						1				TOP CAP ASSEMBLY		
	4		92186A367			OKV	E6		32				BOLT 3/8 - 24		
	5		90762A132			OKV	E6		32				NUT 3/8 - 24		
	6		98019A399			OKV	E6		64				WASHER - 3/8		
	7		MPG-125-A-L						5				CONAX THERMOCOUPLE FITTING		
	8		MPG-040-A-L						3				CONAX THERMOCOUPLE FITTING		
	9		TJ36-CAIN-18U-20-CC						5				OMEGA / THERMOCOUPLE 125		
	10		TJ36-CAIN-040U-24						3				OMEGA / THERMOCOUPLE 040		
	11		P105530						2				COPPER GASKET / IDEAL VACUUM PRODUCT		
	12		MS-TL-SGC						AR				SWAGELOK SILVER GOOP		
	13		945/UPC 085995-002277						1				14 QUART FUNNEL / BEHRENS		
	14		HEATER TBD						1				HEATER 3/8 DIA. / SE HEATERS & CONTROLS		
	15	D	MES00128-001						2				VALVE ASSEMBLY		

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION					
	ES21						
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS					
DATE		03/31/2014					

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 2 OF 2 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION									
	S			DASH	REV										
	D	MES00100-001	-	101	-	REACTOR ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR									

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ
										FINAL			

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	16	D	MES00123-001				1				MANIFOLD ASSEMBLY
	17		9088K510	OKV	E6		4				CONFLAT GASKET
	18		92185A198	OKV	E6		24				SCREW / NO. 8
	19		95307A300	OKV	E6		24				NUT / NO. 8
	20		9088K530	OKV	E6		2				CONFLAT GASKET
	21		92186A591	OKV	E6		16				BOLT / 5/16
	22		93827A219	OKV	E6		16				NUT / 5/16
	23		98019A385	OKV	E6		32				WASHER / 5/16
	24		MES00118-001				8				FLANGE / .75 INCH
	25		TUBE / INCONEL 600				4				TUBE / .75 DIA. X 3" LENGTH / PACIFIC ALLOY
	26	D	MES00127-001				1				FLANGE ASSEMBLY / 2.5" DIA.

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION									
	ES21										
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED				
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS									
DATE		03/31/2014									

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION						
	S			DASH	REV							
	D	MES00102-001	-	101	-	REACTOR CYLINDER, ASSEMBLY, MRS CFR						

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ
									1	MES00100			

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1	D	MES00116-001				1				REACTOR CYLINDER
	2	D	MES00117-001				2				REACTOR FLANGE

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION									
	ES21										
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED				
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS									
DATE		03/31/2014									

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION									
	S			DASH	REV										
	D	MES00104-001	-	101	-	TOP CAP ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR									

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1	D	MES00120-001				1				TOP CAP
	2	D	MES00126-001				1				INLET ASSEMBLY, SEMI-BATCH PROCESS
	3		100X100C0022W48T				AR				COPPER MESH, 100 / TWP
	4		5182K840				1				YOR-LOK FITTING, 1/2/INCH
	5		5182K960				1				YOR LOK FITTING, 90 DEG., 3/8 INCH
	6	D	MES01401-001				4				MESH RETAINING RING
	7		AN123341				4				RIVET - .125 DIA X .625 LONG

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION										
	ES21											
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED					
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS										
DATE		06/30/2014										

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION						
	S			DASH	REV							
	D	MES00106-001	-	101	-	BOTTOM CAP ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR						

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1	D	MES00121-001				1				BOTTOM CAP
	2	D	MES00113-001				1				BOTTOM FUNNEL, SEMI-BATCH
	3	D	MES01402-001				1				CATALYST CONTAINER
	4		100X100C0022W48T				AR				COPPER MESH, 100 / TWP
	5	D	MES01400-001				6				MESH RETAINING RING
	6		AN123339				12				RIVET .125 DIA X .500 LONG

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION									
	ES21										
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED				
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS									
DATE		06/30/2014									

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D S	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION						
	D	MES00123-001	-	101	-							

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1	D	MES00115-001				1				MANIFOLD
	2	D	MES00122-001				1				FLANGE / 2.5" DIA.

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION									
	ES21										
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED				
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS									
DATE		07/01/2014									

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION						
	S			DASH	REV							
	D	MES00126-001	-	101	-	INLET ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR						

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1	D	MES00125-001				1				INLET ADAPTER, SEMI-BATCH
	2	D	MES00107-001				1				INNER TUBE, INLET
	3	D	MES00108-001				1				OUTER TUBE, INLET
	4	D	MES00109-001				1				CAP, OUTER INLET TUBE
	5		MES00124-001				1				HEATER WELL
	6		92845A123	OKV	E6		3				SET SCREW / 1/4 - 20

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION										
	ES21											
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED					
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS										
DATE		07/01/2014										

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION						
	S			DASH	REV							
	D	MES00127-001	-	101	-	FLANGE ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR						

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1		MES00122-001				1				FLANGE / 2.5" DIA.
	2		TUBE / INCONEL 600				1				TUBE / 2.5 DIA./ 6 IN. LENGTH / PACIFIC ALLOY

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION									
	ES21										
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED				
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS									
DATE		07/01/2014									

INPUT FORM FOR ENGINEERING PARTS LIST

INITIAL/TIME/DATE RELEASE DESK:

SHEET A 1 OF 1 SHEETS

X	D	DRAWING/PART NO.	DWG REV	EPL		DESCRIPTION						
	S	MES00128-001	-	DASH	REV							
D				101	-	VALVE ASSEMBLY, SEMI-BATCH PROCESS, MRS CFR						

MAKE FROM	DRAWING/PART NO.	DWG REV	EPL		TRC CODE	CBD NO.	PCN NO.	UNIT WEIGHT	QTY	TOP ASSEMBLY	PROJ CODE	EFFECTIVITY	EFF ADJ

DWG ZONE	FIND OR ITEM NUMBER	D S	DRAWING / PART NUMBER	CODE IDENT.			QTY	UNIT WEIGHT	NOTES	TRC	DESCRIPTION
				DWG REV	DA	SPL					
	1		4866K79				1				VALVE / 2.5"
	2		TUBE, INCONEL 600				2				TUBE 2.5"OD X 6" LENGTH / PACIFIC ALLOYS
	3	D	MES00122-001				1				VALVE FLANGE

PKG NO.	RESP ORGANIZATION	REV DESCRIPTION									
	ES21										
	DESIGNER	ENGINEER (PRINT)	CHECKER	MATERIAL	STRESS	APPROVED	APPROVED				
SIGNATURE	BOBBY ATKINS	BOBBY ATKINS									
DATE		07/01/2014									