

EML2322L

Submitted Paperwork

Air Engine, manufactured parts

Every drawing, inspection record and change notice raised against the four parts machined in lab, kept in the order the work happened in.

Within each part the revisions run in sequence. Within each revision the drawing comes first, then the inspection record written from it, then the change notice raised when a measured feature fell outside the callout.

Machinist Matthew Sabag

Group 1D, with Jacob Kaercher and Om Patel

Inspector Pablo Coral

Course EML2322L Design and Manufacturing Laboratory, University of Florida

Contents

◆	Base		
	Revision A	Drawing, MIR	4
	Revision B	Drawing, MIR, ECN	7
	Revision C	Drawing, MIR, ECN	11
◆	Flywheel		
	Revision A	Drawing, MIR	16
	Revision B	Drawing, MIR, ECN	19
	Revision C	Drawing, MIR, ECN	23
	Revision D	Drawing, MIR, ECN	27
◆	Piston		
	Revision A	Drawing, MIR	32
	Revision B	Drawing, MIR, ECN	35
	Revision C	Drawing, MIR, ECN	39
◆	Piston Block		
	Revision A	Drawing, MIR	44
	Revision B	Drawing, MIR, ECN	48
	Revision C	Drawing, MIR, ECN	53
	Revision D	Drawing, MIR, ECN	58

PART

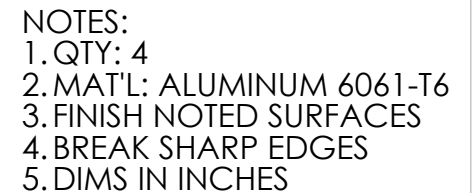
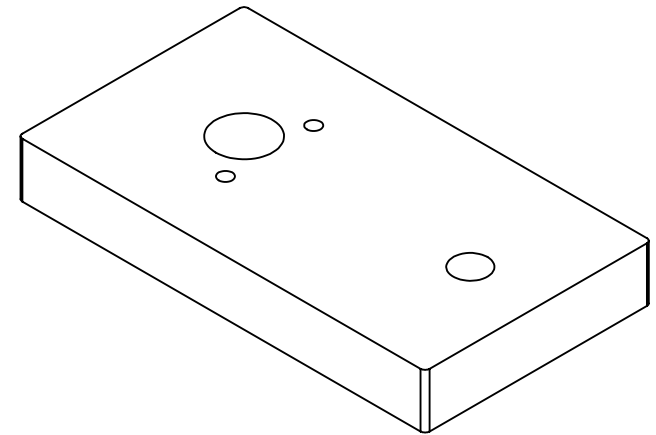
Base

3 revisions

BASE · REVISION A

Revision A

Drawing · MIR



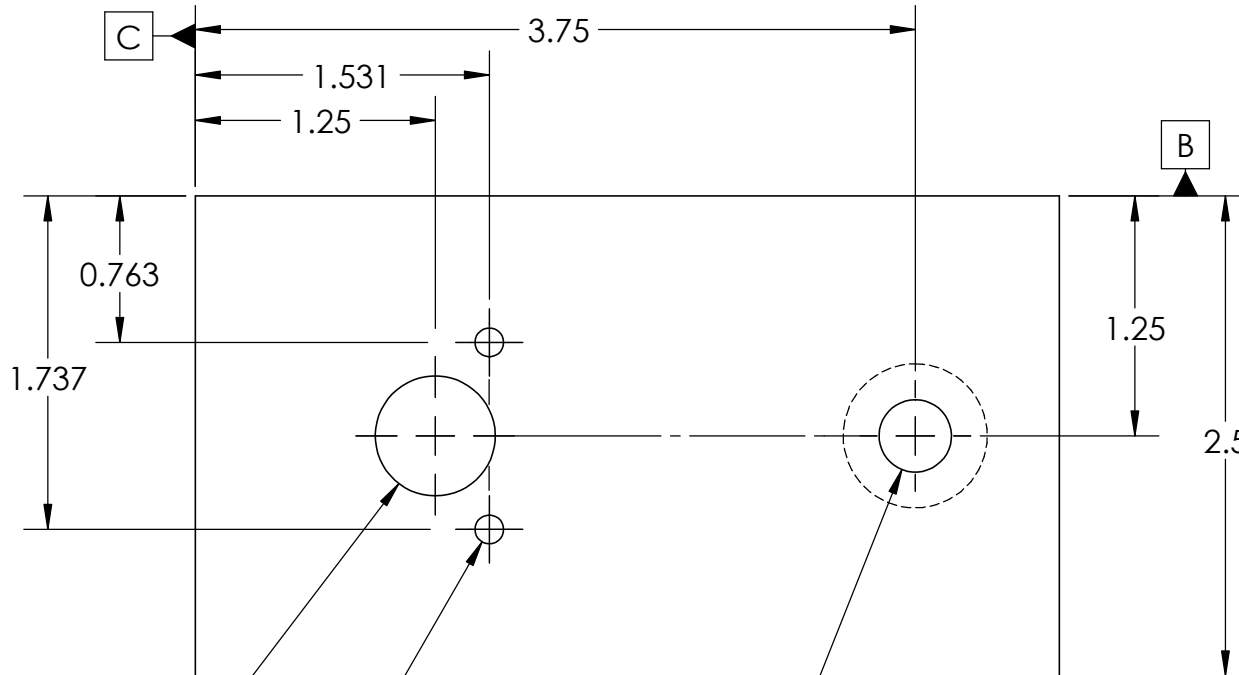
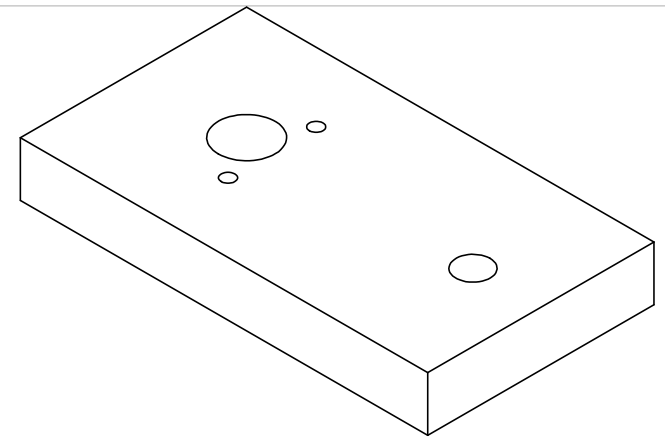
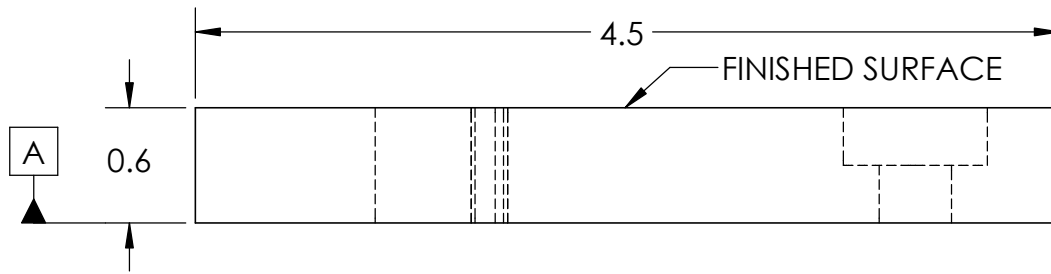
TOLERANCE UNLESS NOTED				TITLE:			
OPERATION	PLACES IN DIMENSION			AIR ENGINE BASE			
	0.0	0.00	0.000	DRAWN Matthew Sabag			
MACHINING	±0.050	±0.020	±0.005	CHECKED Pablo Coral			
CUT OFF (SAW, BURN, SHEAR)	±0.1	±0.060		SIZE	DWG. NO.		REV
WELDING	±0.1	±0.060		A	EML2322L - P1		A
ANGULAR DIMS	±5	±2	±0.5	SCALE: 1:1		SHEET 1 OF 1	

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P1		A	AIR ENGINE BASE		1D		Matthew Sabag		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Calipers	0.6	0.55	0.65	Inches		
2	B	Length	Calipers	2.5	2.45	2.55	Inches		
3	C	Length	Calipers	4.5	4.45	4.55	Inches		
5	D	Diameter	Calipers	0.625	0.62	0.63	Inches		
4	E	Diameter	Calipers	0.157	0.152	0.162	Inches		
6	F	Diameter	Calipers	0.377	0.372	0.382	Inches		
7	F	Diameter	Calipers	0.75	0.73	0.77	Inches		
8	F	Depth	Calipers	0.30	0.28	0.32	Inches		
9	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
10	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
11	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
12									
13									
14									
15									
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:		Jacob Kaercher						☐ Rework	
Group Member 2:		Matthew Sabag						☐ Engineering Change	
Group Member 3:		Om Patel		TA Signature					
Group Member 4:									

BASE · REVISION B

Revision B

Drawing · MIR · ECN



Ø0.625 THRU

D

Ø0.157 THRU
10-24 UNC ▽0.3
2X

E

Ø0.377^{+0.005}_{-0.000} THRU
C-BORE OPP SIDE
Ø0.75 ▽0.350 ±0.062

F

- NOTES:
1. QTY: 4
2. MAT'L: ALUMINUM 6061-T6
3. FINISH NOTED SURFACES
4. BREAK SHARP EDGES
5. DIMS IN INCHES

TOLERANCE UNLESS NOTED				TITLE:		
OPERATION	PLACES IN DIMENSION			AIR ENGINE BASE		
	0.0	0.00	0.000	DRAWN	Matthew Sabag	
MACHINING	±0.050	±0.020	±0.005	CHECKED	Pablo Coral	
CUT OFF (SAW, BURN, SHEAR)	±0.1	±0.060		SIZE	DWG. NO.	REV
WELDING	±0.1	±0.060		B	EML2322L - P1	B
ANGULAR DIMS	±5	±2	±0.5	SCALE: 1:1	SHEET 1 OF 1	

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P1		B	AIR ENGINE BASE		1D		Matthew Sabag		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Calipers	0.6	0.55	0.65	Inches		
2	B	Length	Calipers	2.5	2.45	2.55	Inches		
3	C	Length	Calipers	4.5	4.45	4.55	Inches		
5	D	Diameter	Calipers	0.625	0.62	0.63	Inches		
4	E	Diameter	Calipers	0.157	0.152	0.162	Inches		
6	F	Diameter	Calipers	0.377	0.372	0.382	Inches		
7	F	Diameter	Calipers	0.75	0.73	0.77	Inches		
8	F	Depth	Calipers	0.350	0.288	0.412	Inches		
9	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
10	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
11	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
12									
13									
14									
15									
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:		Jacob Kaercher						☐ Rework	
Group Member 2:		Matthew Sabag						☐ Engineering Change	
Group Member 3:		Om Patel		TA Signature					
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

SIGNATURE:

DATE: / /

BASE · REVISION C

Revision C

Drawing · MIR · ECN

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P1		C	AIR ENGINE BASE			1D		Matthew Sabag	
								Inspector:	
								Pablo Coral	
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Calipers	0.6	0.55	0.65	Inches		
2	B	Length	Calipers	2.5	2.45	2.55	Inches		
3	C	Length	Calipers	4.5	4.45	4.55	Inches		
5	D	Diameter	Calipers	0.625	0.62	0.63	Inches		
4	E	Diameter	Calipers	0.157	0.152	0.162	Inches		
6	F	Diameter	Calipers	0.377	0.372	0.382	Inches		
7	F	Diameter	Calipers	0.75	0.73	0.77	Inches		
8	F	Depth	Calipers	0.350	0.288	0.412	Inches		
9	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
10	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
11	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
12									
13									
14									
15									
RESULT:								PASS	
Inspector Signature:								FAIL	☐ Remanufacture
Group Member 1:		Jacob Kaercher							☐ Rework
Group Member 2:		Matthew Sabag							☐ Engineering Change
Group Member 3:		Om Patel		TA Signature					
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

SIGNATURE:

DATE: / /

PART

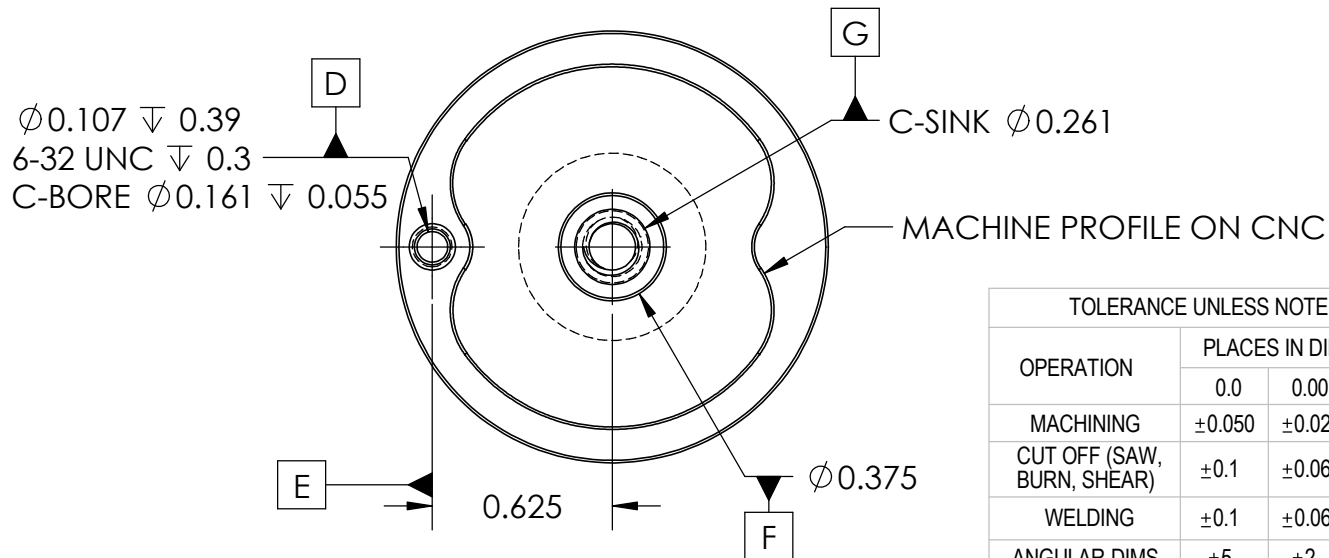
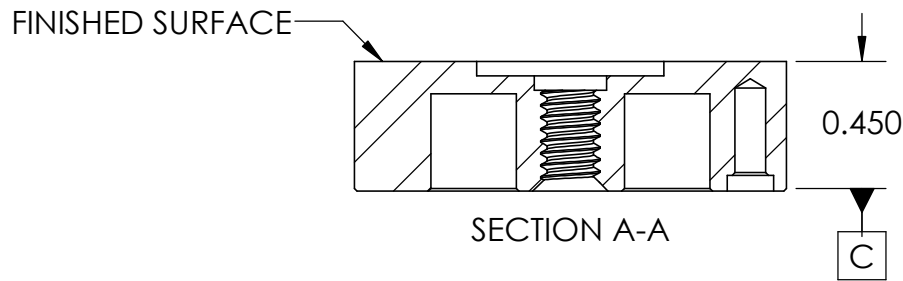
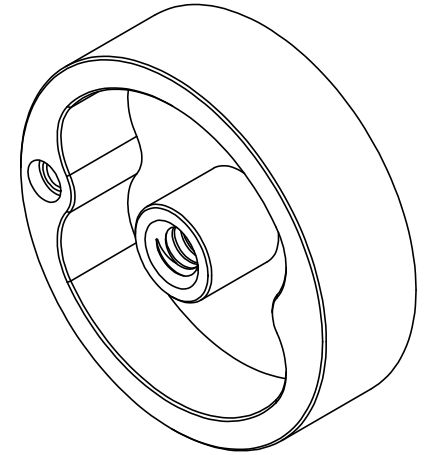
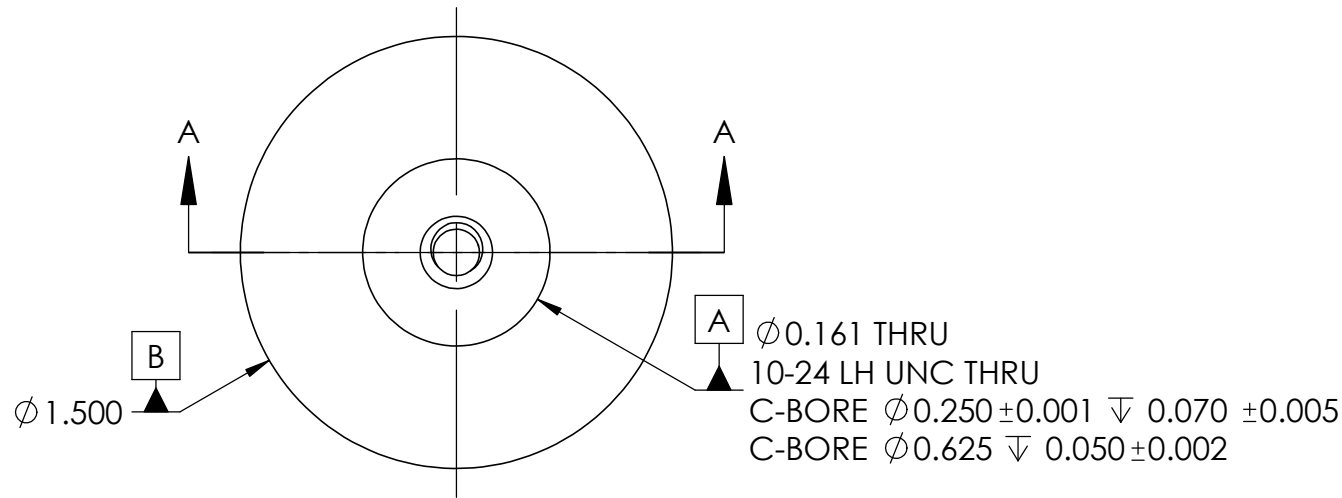
Flywheel

4 revisions

FLYWHEEL · REVISION A

Revision A

Drawing · MIR



- NOTES:
1. QTY: 4
 2. MAT'L: PLAIN CARBON STEEL
 3. FINISH NOTED SURFACES
 4. BREAK SHARP EDGES
 5. DIMS IN INCHES

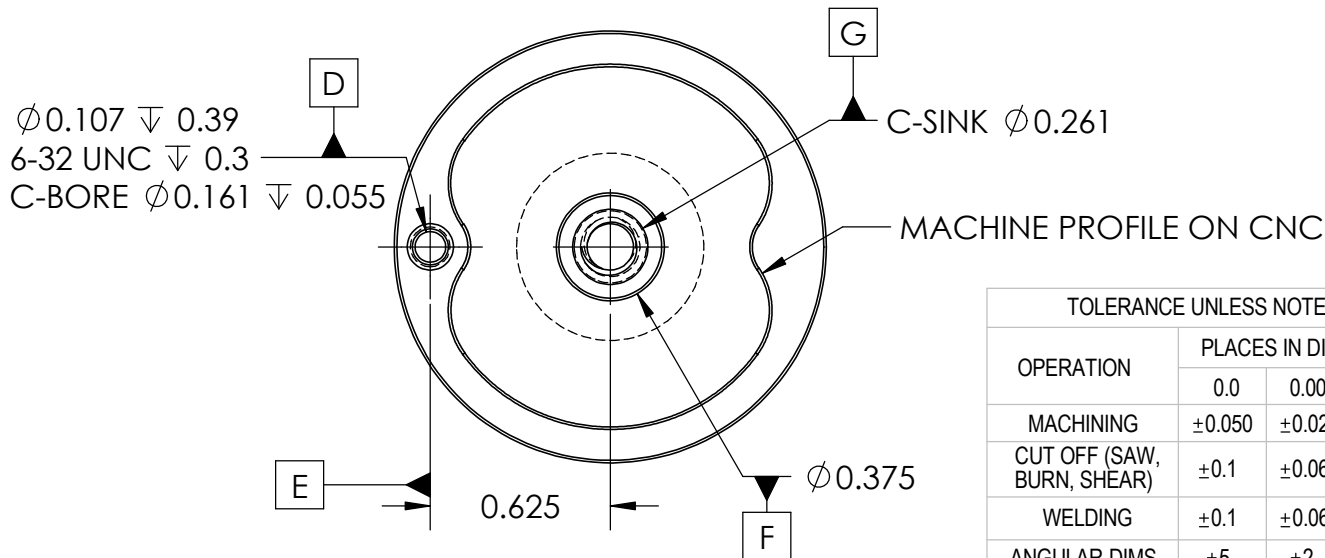
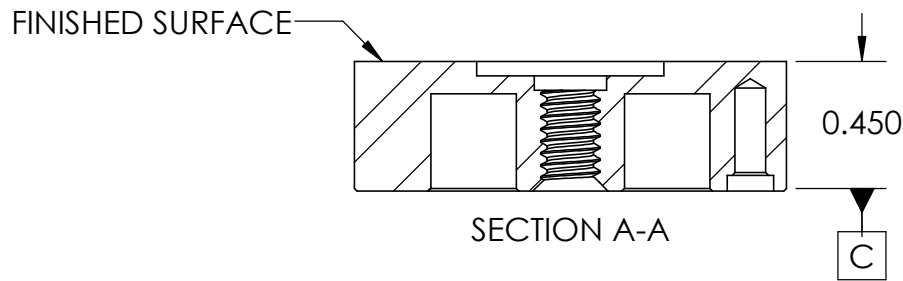
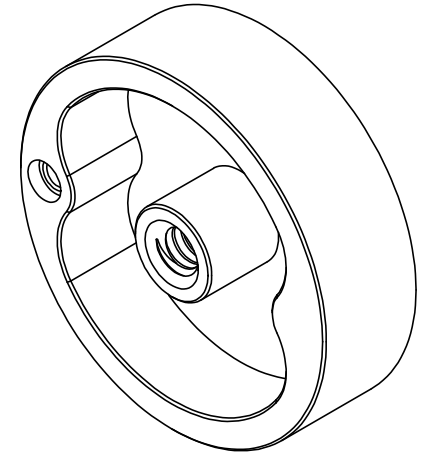
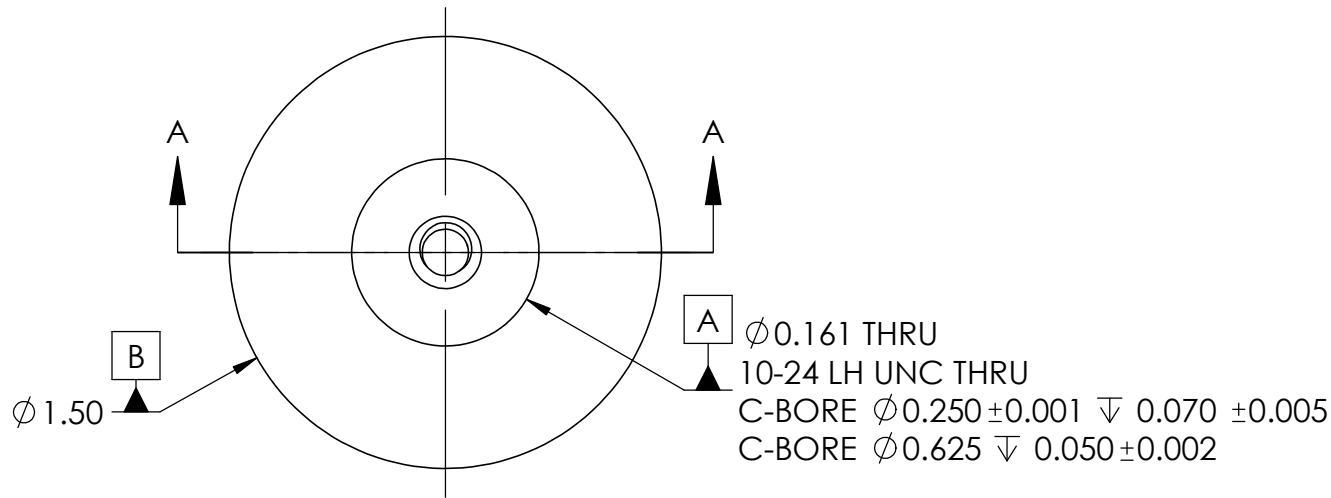
TOLERANCE UNLESS NOTED				TITLE:		
OPERATION	PLACES IN DIMENSION			EML2322L - P5 (Wheel)		
	0.0	0.00	0.000	DRAWN	JACOB KAERCHER	
MACHINING	± 0.050	± 0.020	± 0.005	CHECKED	PABLO CORAL	
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		SIZE	DWG. NO.	REV
WELDING	± 0.1	± 0.060		A	EML2322L-P5	A
ANGULAR DIMS	± 5	± 2	± 0.5	SCALE: 3:2	SHEET 1 OF 1	

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P5		A	AIR ENGINE WHEEL		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Thread	Fastener	10-24 LH UNC THRU	N/A	N/A	N/A		
2	A	Diameter	Caliper	0.250	0.249	0.251	Inches		
3	A	Depth	Caliper	0.070	0.065	0.075	Inches		
4	A	Diameter	Caliper	0.625	0.620	0.630	Inches		
5	A	Depth	Caliper	0.050	0.048	0.052	Inches		
6	B	Diameter	Caliper	1.500	1.495	1.505	Inches		
7	C	Length	Caliper	0.450	0.445	0.455	Inches		
8	D	Thread	Fastener	6-32 UNC	N/A	N/A	N/A		
9	D	Diameter	Caliper	0.161	0.156	0.166	Inches		
10	D	Depth	Caliper	0.055	0.050	0.060	Inches		
11	E	Length	Caliper	0.625	0.620	0.630	Inches		
12	F	Diameter	Caliper	0.375	0.370	0.380	Inches		
13	G	Diameter	Caliper	0.261	0.256	0.266	Inches		
14	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
15	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:								☐ Rework	
Group Member 2:								☐ Engineering Change	
Group Member 3:		Om Patel			TA Signature				
Group Member 4:									

FLYWHEEL · REVISION B

Revision B

Drawing · MIR · ECN



- NOTES:
 1. QTY: 4
 2. MAT'L: PLAIN CARBON STEEL
 3. FINISH NOTED SURFACES
 4. BREAK SHARP EDGES
 5. DIMS IN INCHES

TOLERANCE UNLESS NOTED				TITLE:		
OPERATION	PLACES IN DIMENSION			EML2322L - P5 (Wheel)		
	0.0	0.00	0.000	DRAWN	JACOB KAERCHER	
MACHINING	±0.050	±0.020	±0.005	CHECKED	PABLO CORAL	
CUT OFF (SAW, BURN, SHEAR)	±0.1	±0.060		SIZE	DWG. NO.	REV
WELDING	±0.1	±0.060		B	EML2322L-P5	B
ANGULAR DIMS	±5	±2	±0.5	SCALE: 3:2	SHEET 1 OF 1	

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P5		B	AIR ENGINE WHEEL		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Thread	Fastener	10-24 LH UNC THRU	N/A	N/A	N/A		
2	A	Diameter	Caliper	0.250	0.249	0.251	Inches		
3	A	Depth	Caliper	0.070	0.065	0.075	Inches		
4	A	Diameter	Caliper	0.625	0.620	0.630	Inches		
5	A	Depth	Caliper	0.050	0.048	0.052	Inches		
6	B	Diameter	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.450	0.445	0.455	Inches		
8	D	Thread	Fastener	6-32 UNC	N/A	N/A	N/A		
9	D	Diameter	Caliper	0.161	0.156	0.166	Inches		
10	D	Depth	Caliper	0.055	0.050	0.060	Inches		
11	E	Length	Caliper	0.625	0.620	0.630	Inches		
12	F	Diameter	Caliper	0.375	0.370	0.380	Inches		
13	G	Diameter	Caliper	0.261	0.256	0.266	Inches		
14	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
15	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:		Jacob Kaercher						☐ Rework	
Group Member 2:		Matthew Sabag						☐ Engineering Change	
Group Member 3		Om Patel		TA Signature					
Group Member 4									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

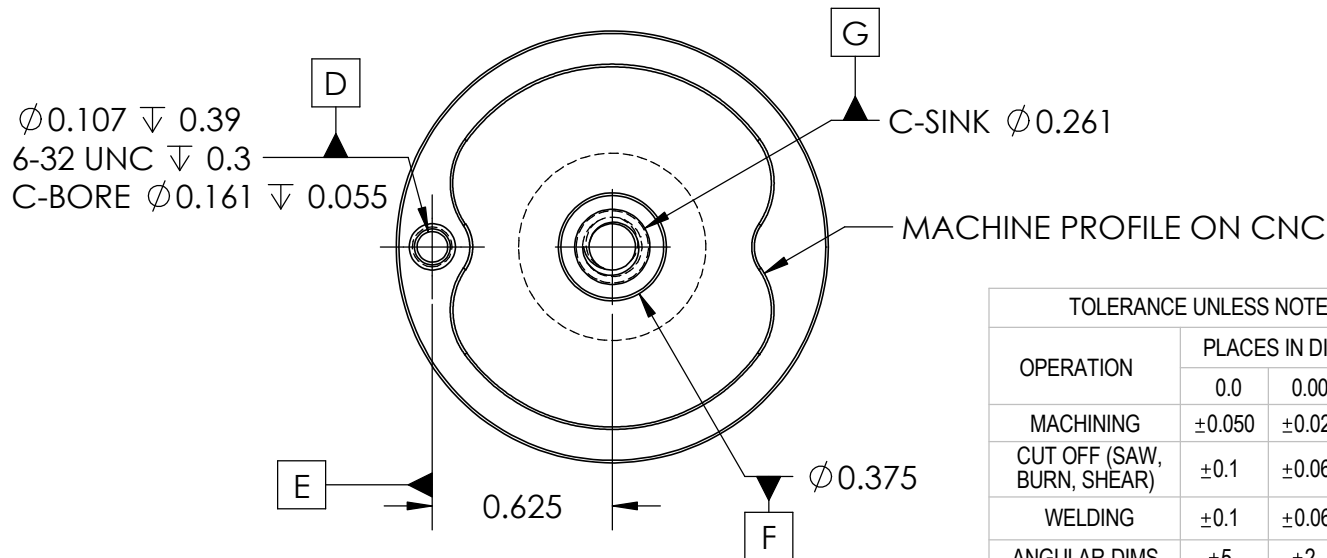
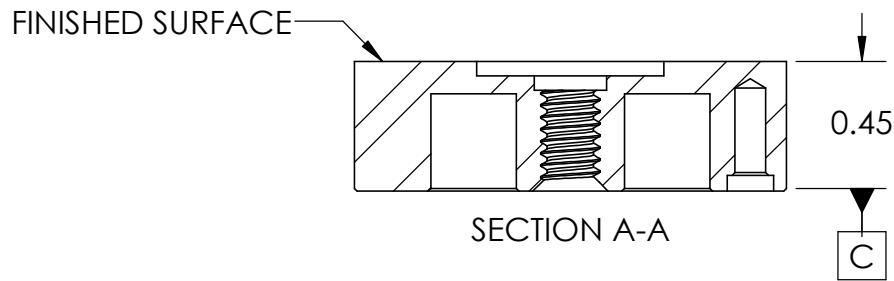
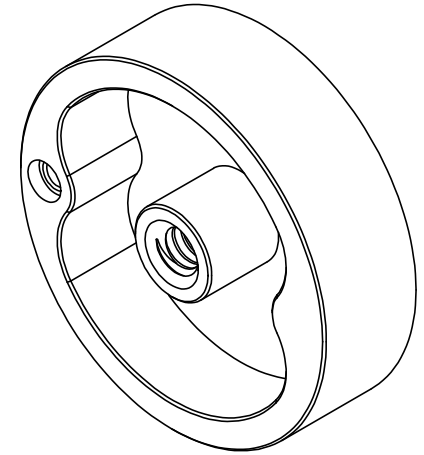
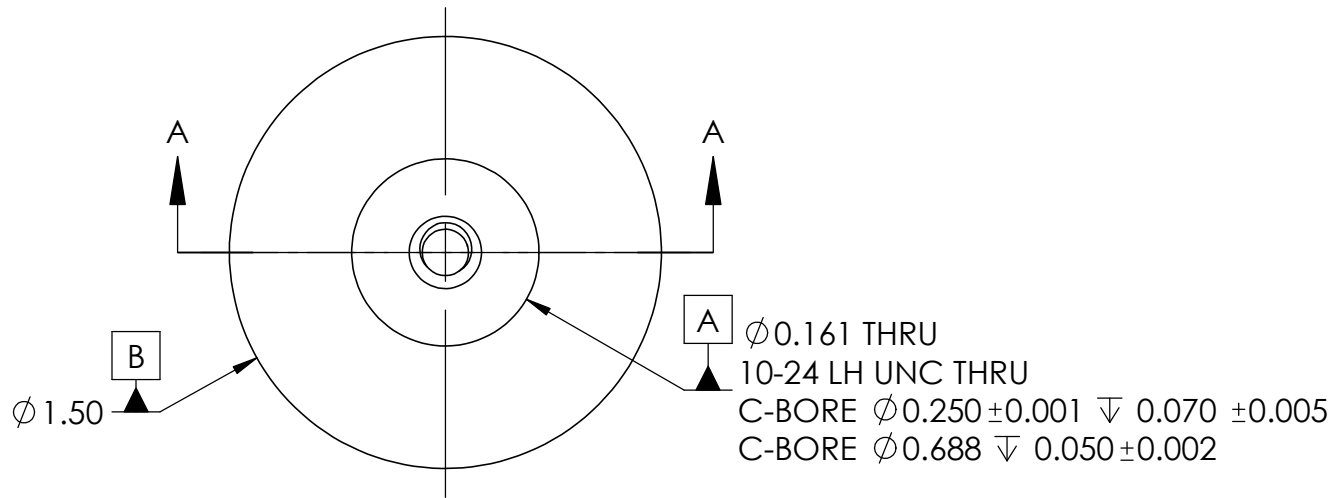
SIGNATURE:

DATE: / /

FLYWHEEL · REVISION C

Revision C

Drawing · MIR · ECN



- NOTES:
1. QTY: 4
 2. MAT'L: PLAIN CARBON STEEL
 3. FINISH NOTED SURFACES
 4. BREAK SHARP EDGES
 5. DIMS IN INCHES

TOLERANCE UNLESS NOTED				TITLE:		
OPERATION	PLACES IN DIMENSION			EML2322L - P5 (Wheel)		
	0.0	0.00	0.000	DRAWN	JACOB KAERCHER	
MACHINING	± 0.050	± 0.020	± 0.005	CHECKED	PABLO CORAL	
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		SIZE	DWG. NO.	REV
WELDING	± 0.1	± 0.060		C	EML2322L-P5	C
ANGULAR DIMS	± 5	± 2	± 0.5	SCALE: 3:2	SHEET 1 OF 1	

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P5		C	AIR ENGINE WHEEL		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Thread	Fastener	10-24 LH UNC THRU	N/A	N/A	N/A		
2	A	Diameter	Caliper	0.250	0.249	0.251	Inches		
3	A	Depth	Caliper	0.070	0.065	0.075	Inches		
4	A	Diameter	Caliper	0.688	0.683	0.693	Inches		
5	A	Depth	Caliper	0.050	0.048	0.052	Inches		
6	B	Diameter	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.45	0.43	0.47	Inches		
8	D	Thread	Fastener	6-32 UNC	N/A	N/A	N/A		
9	D	Diameter	Caliper	0.161	0.156	0.166	Inches		
10	D	Depth	Caliper	0.055	0.050	0.060	Inches		
11	E	Length	Caliper	0.625	0.620	0.630	Inches		
12	F	Diameter	Caliper	0.375	0.370	0.380	Inches		
13	G	Diameter	Caliper	0.261	0.256	0.266	Inches		
14	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
15	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1: Jacob Kaercher							☐ Rework		
Group Member 2: Matthew Sabag							☐ Engineering Change		
Group Member 3: Om Patel		TA Signature							
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

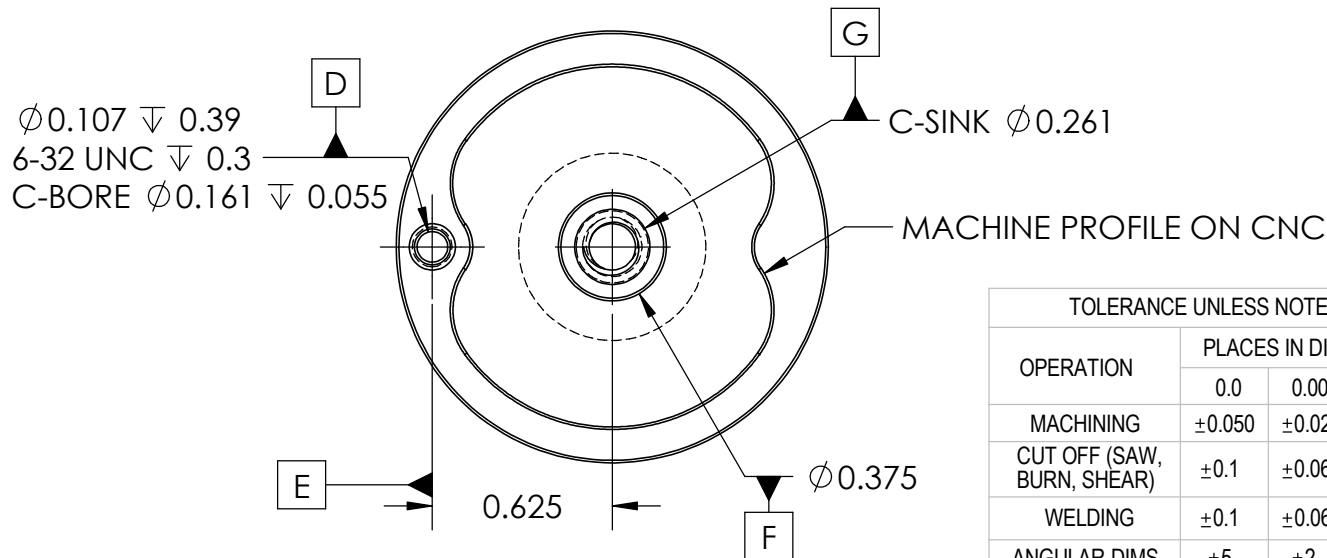
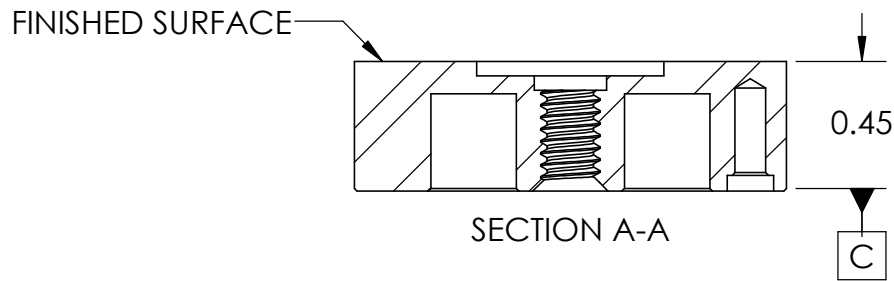
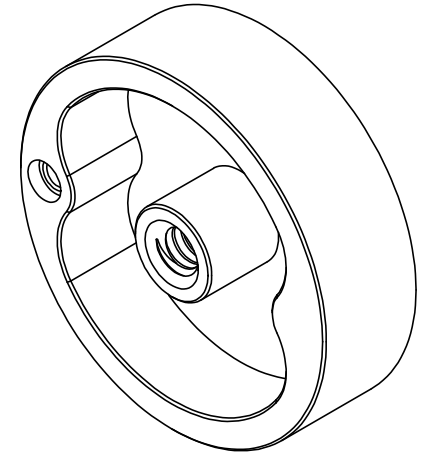
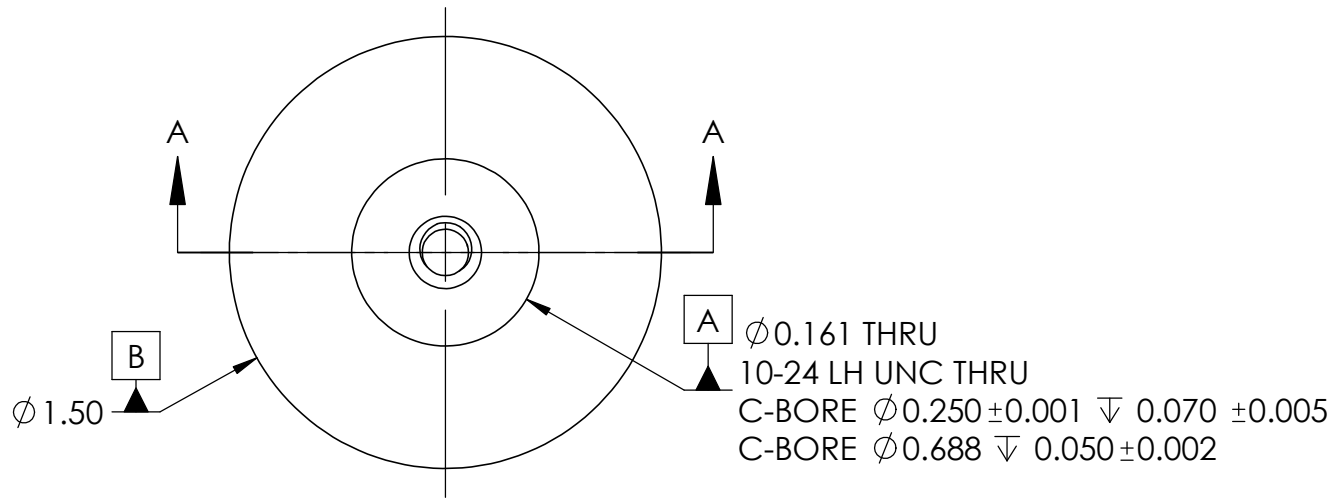
SIGNATURE:

DATE: / /

FLYWHEEL · REVISION D

Revision D

Drawing · MIR · ECN



- NOTES:
1. QTY: 3
 2. MAT'L: PLAIN CARBON STEEL
 3. FINISH NOTED SURFACES
 4. BREAK SHARP EDGES
 5. DIMS IN INCHES

TOLERANCE UNLESS NOTED				TITLE:		
OPERATION	PLACES IN DIMENSION			EML2322L - P5 (Wheel)		
	0.0	0.00	0.000	DRAWN	JACOB KAERCHER	
MACHINING	± 0.050	± 0.020	± 0.005	CHECKED	PABLO CORAL	
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		SIZE	DWG. NO.	REV
WELDING	± 0.1	± 0.060		D	EML2322L-P5	D
ANGULAR DIMS	± 5	± 2	± 0.5	SCALE: 3:2	SHEET 1 OF 1	

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P5		D	AIR ENGINE WHEEL		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Thread	Fastener	10-24 LH UNC THRU	N/A	N/A	N/A		
2	A	Diameter	Caliper	0.250	0.249	0.251	Inches		
3	A	Depth	Caliper	0.070	0.065	0.075	Inches		
4	A	Diameter	Caliper	0.688	0.683	0.693	Inches		
5	A	Depth	Caliper	0.050	0.048	0.052	Inches		
6	B	Diameter	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.45	0.43	0.47	Inches		
8	D	Thread	Fastener	6-32 UNC	N/A	N/A	N/A		
9	D	Diameter	Caliper	0.161	0.156	0.166	Inches		
10	D	Depth	Caliper	0.055	0.050	0.060	Inches		
11	E	Length	Caliper	0.625	0.620	0.630	Inches		
12	F	Diameter	Caliper	0.375	0.370	0.380	Inches		
13	G	Diameter	Caliper	0.261	0.256	0.266	Inches		
14	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
15	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1: Jacob Kaercher							☐ Rework		
Group Member 2: Matthew Sabag							☐ Engineering Change		
Group Member 3: Om Patel		TA Signature							
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

SIGNATURE:

DATE: / /

PART

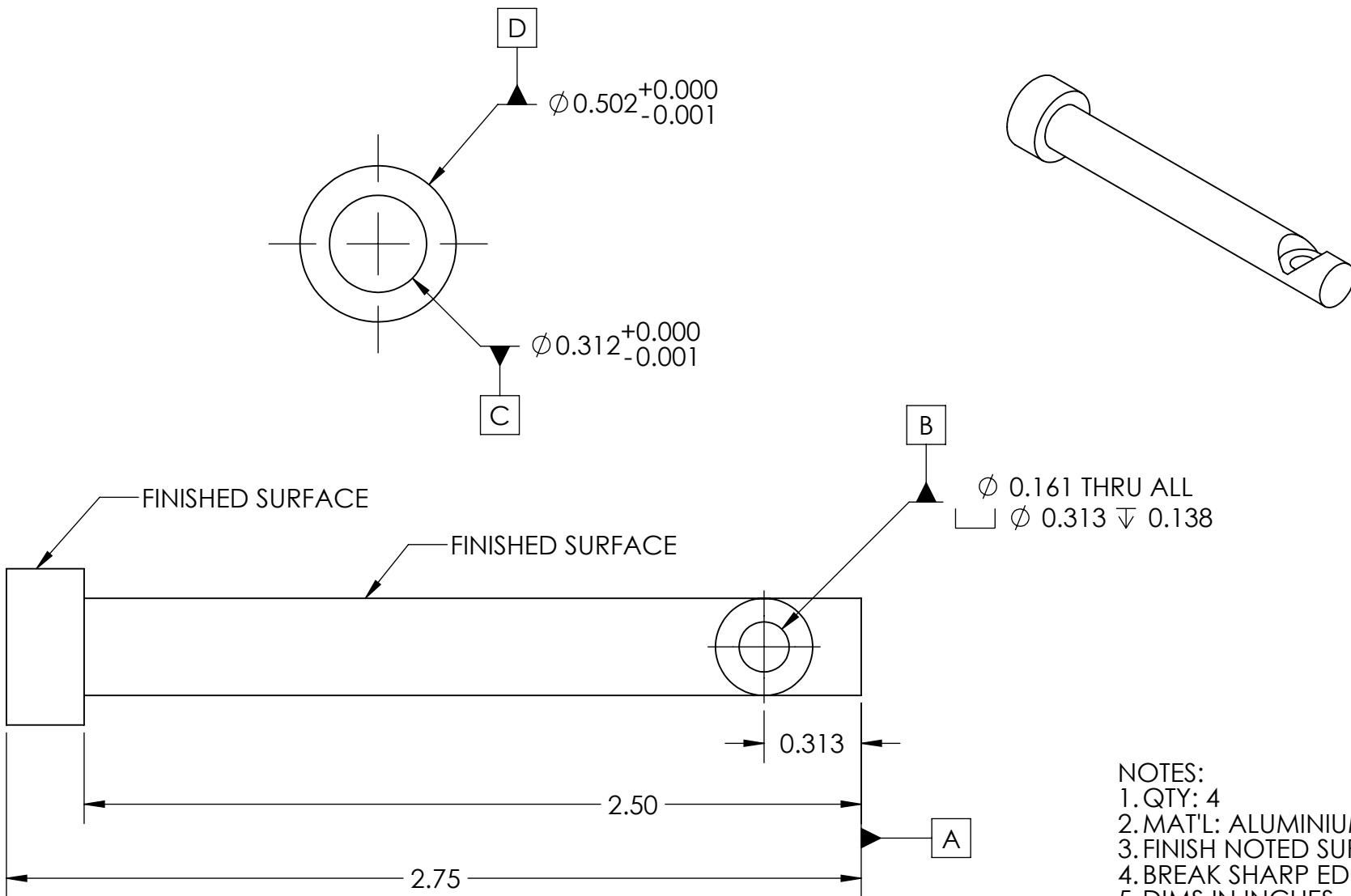
Piston

3 revisions

PISTON · REVISION A

Revision A

Drawing · MIR



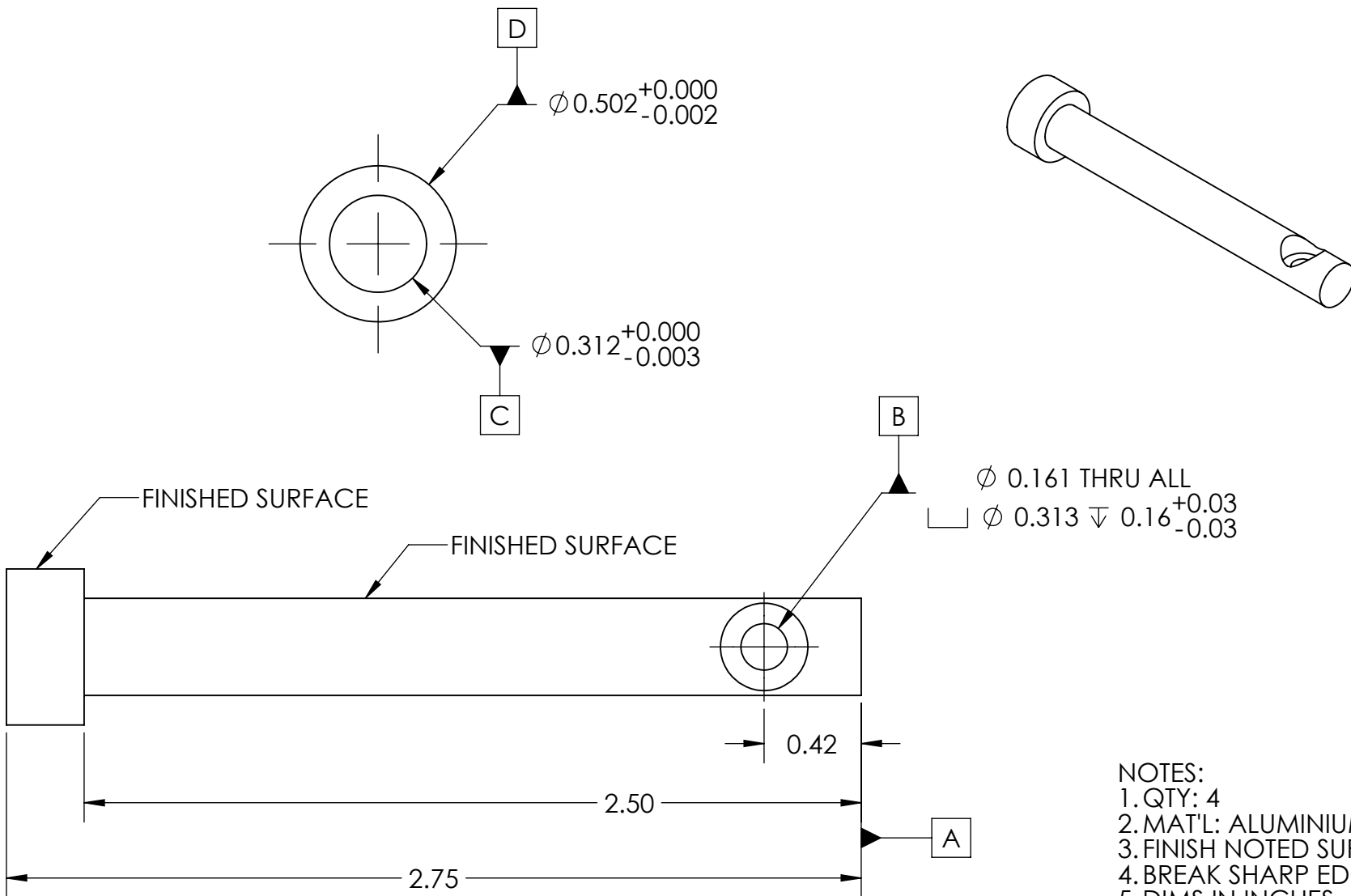
TOLERANCE UNLESS NOTED				TITLE: EML2322L - P4 (Piston)		
OPERATION	PLACES IN DIMENSION			DRAWN	OM PATEL	
	0.0	0.00	0.000	CHECKED	PABLO CORAL	
MACHINING	± 0.050	± 0.020	± 0.005	SIZE	DWG. NO.	REV
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		A	EML2322L-P4	A
WELDING	± 0.1	± 0.060		SCALE: 2:1		
ANGULAR DIMS	± 5	± 2	± 0.5			SHEET 1 OF 1

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P4		A	AIR ENGINE PISTON		1D		Om Patel		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	0.313	0.308	0.318	Inches		
2	A	Length	Caliper	2.50	2.48	2.52	Inches		
3	A	Length	Caliper	2.75	2.73	2.77	Inches		
4	B	Diameter	Caliper	0.161	0.156	0.166	Inches		
5	B	Diameter	Caliper	0.313	0.308	0.318	Inches		
6	B	Depth	Caliper	0.138	0.133	0.143	Inches		
7	C	Diameter	Caliper	0.312	0.311	0.312	Inches		
8	D	Diameter	Caliper	0.502	0.501	0.502	Inches		
9	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
10	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
11									
12									
13									
14									
15									
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:		Jacob Kaercher						☐ Rework	
Group Member 2:		Matthew Sabag						☐ Engineering Change	
Group Member 3		Om Patel		TA Signature					
Group Member 4									

PISTON · REVISION B

Revision B

Drawing · MIR · ECN



- NOTES:
1. QTY: 4
 2. MAT'L: ALUMINIUM 6061-T6
 3. FINISH NOTED SURFACES
 4. BREAK SHARP EDGES
 5. DIMS IN INCHES

TOLERANCE UNLESS NOTED				TITLE: EML2322L - P4 (Piston)		
OPERATION	PLACES IN DIMENSION			DRAWN	OM PATEL	
	0.0	0.00	0.000	CHECKED	PABLO CORAL	
MACHINING	± 0.050	± 0.020	± 0.005	SIZE	DWG. NO.	REV
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		B	EML2322L-P4	B
WELDING	± 0.1	± 0.060		SCALE: 2:1		
ANGULAR DIMS	± 5	± 2	± 0.5			SHEET 1 OF 1

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P4		B	AIR ENGINE PISTON		1D		Om Patel		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	0.42	0.40	0.44	Inches		
2	A	Length	Caliper	2.50	2.48	2.52	Inches		
3	A	Length	Caliper	2.75	2.73	2.77	Inches		
4	B	Diameter	Caliper	0.161	0.156	0.166	Inches		
5	B	Depth	Visual	THRU ALL	N/A	N/A	N/A		
6	B	Diameter	Caliper	0.313	0.308	0.318	Inches		
7	B	Depth	Caliper	0.16	0.13	0.19	Inches		
8	C	Diameter	Caliper	0.312	0.309	0.312	Inches		
9	D	Diameter	Caliper	0.502	0.500	0.502	Inches		
10	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
11	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
12									
13									
14									
15									
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1:							☐ Rework		
Group Member 2:							☐ Engineering Change		
Group Member 3		Om Patel			TA Signature				
Group Member 4									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

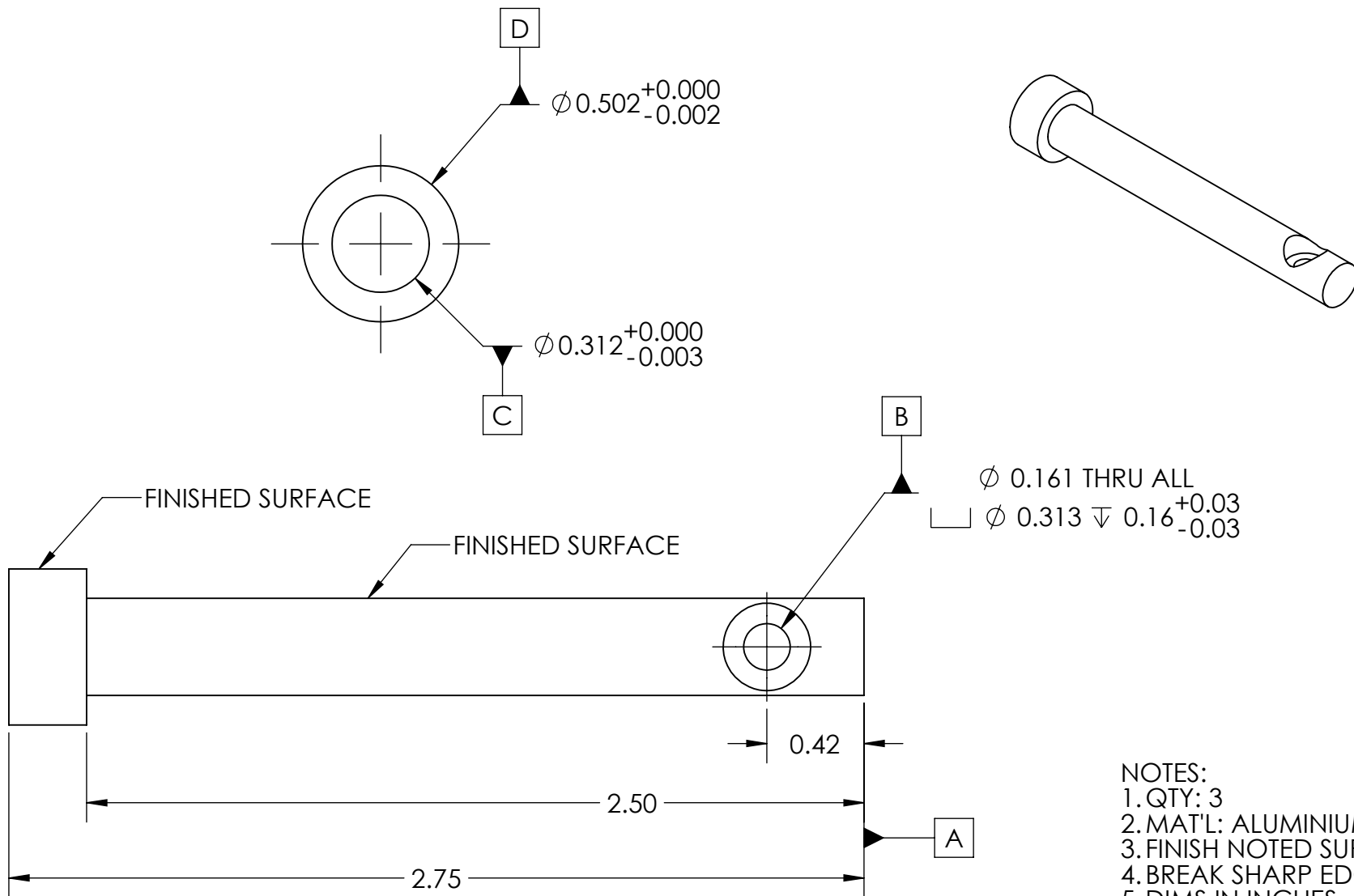
SIGNATURE:

DATE: / /

PISTON · REVISION C

Revision C

Drawing · MIR · ECN



- NOTES:
1. QTY: 3
 2. MAT'L: ALUMINIUM 6061-T6
 3. FINISH NOTED SURFACES
 4. BREAK SHARP EDGES
 5. DIMS IN INCHES

TOLERANCE UNLESS NOTED				TITLE: EML2322L - P4 (Piston)		
OPERATION	PLACES IN DIMENSION			DRAWN	OM PATEL	
	0.0	0.00	0.000	CHECKED	PABLO CORAL	
MACHINING	± 0.050	± 0.020	± 0.005	SIZE	DWG. NO.	REV
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		C	EML2322L-P4	C
WELDING	± 0.1	± 0.060		SCALE: 2:1		
ANGULAR DIMS	± 5	± 2	± 0.5			SHEET 1 OF 1

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L - P4		C	AIR ENGINE PISTON		1D		Om Patel		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	0.42	0.40	0.44	Inches		
2	A	Length	Caliper	2.50	2.48	2.52	Inches		
3	A	Length	Caliper	2.75	2.73	2.77	Inches		
4	B	Diameter	Caliper	0.161	0.156	0.166	Inches		
5	B	Depth	Visual	THRU ALL	N/A	N/A	N/A		
6	B	Diameter	Caliper	0.313	0.308	0.318	Inches		
7	B	Depth	Caliper	0.16	0.13	0.19	Inches		
8	C	Diameter	Caliper	0.312	0.309	0.312	Inches		
9	D	Diameter	Caliper	0.502	0.500	0.502	Inches		
10	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
11	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
12									
13									
14									
15									
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:		Jacob Kaercher						☐ Rework	
Group Member 2:		Matthew Sabag						☐ Engineering Change	
Group Member 3		Om Patel			TA Signature				
Group Member 4									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO. Piston	REVISION NO. B	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO. Piston	REVISION NO. C		GROUP NO.

REASON FOR CHANGE

A team member has left the group, reducing our team size. As a result, the required build quantity is being reduced from 4 to 3 to match the team's production capacity.

DESCRIPTION OF CHANGE

Changed the required quantity from 4 to 3 on the drawing.

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☒ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

ORIGINATOR NAME (#1)

OM PATEL

SIGNATURE:

DATE:

/ /

APPROVAL

REQUIREMENTS	RESPONSE	
Is the ECN filled out completely?	☐ Yes ☐ No	
Is the original drawing attached?	☐ Yes ☐ No	
Is the updated drawing attached?	☐ Yes ☐ No	
Is the due date understood by the team?	☐ Yes ☐ No	

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2) JACOB KAERCHER	SIGNATURE:	DATE: / /
GROUP MEMBER NAME (#3) MATTHEW SABAG	SIGNATURE:	DATE: / /
GROUP MEMBER NAME (#4)	SIGNATURE:	DATE: / /
GROUP MEMBER NAME (#5)	SIGNATURE:	DATE: / /
TA NAME PABLO CORAL	SIGNATURE:	DATE: / /

PART

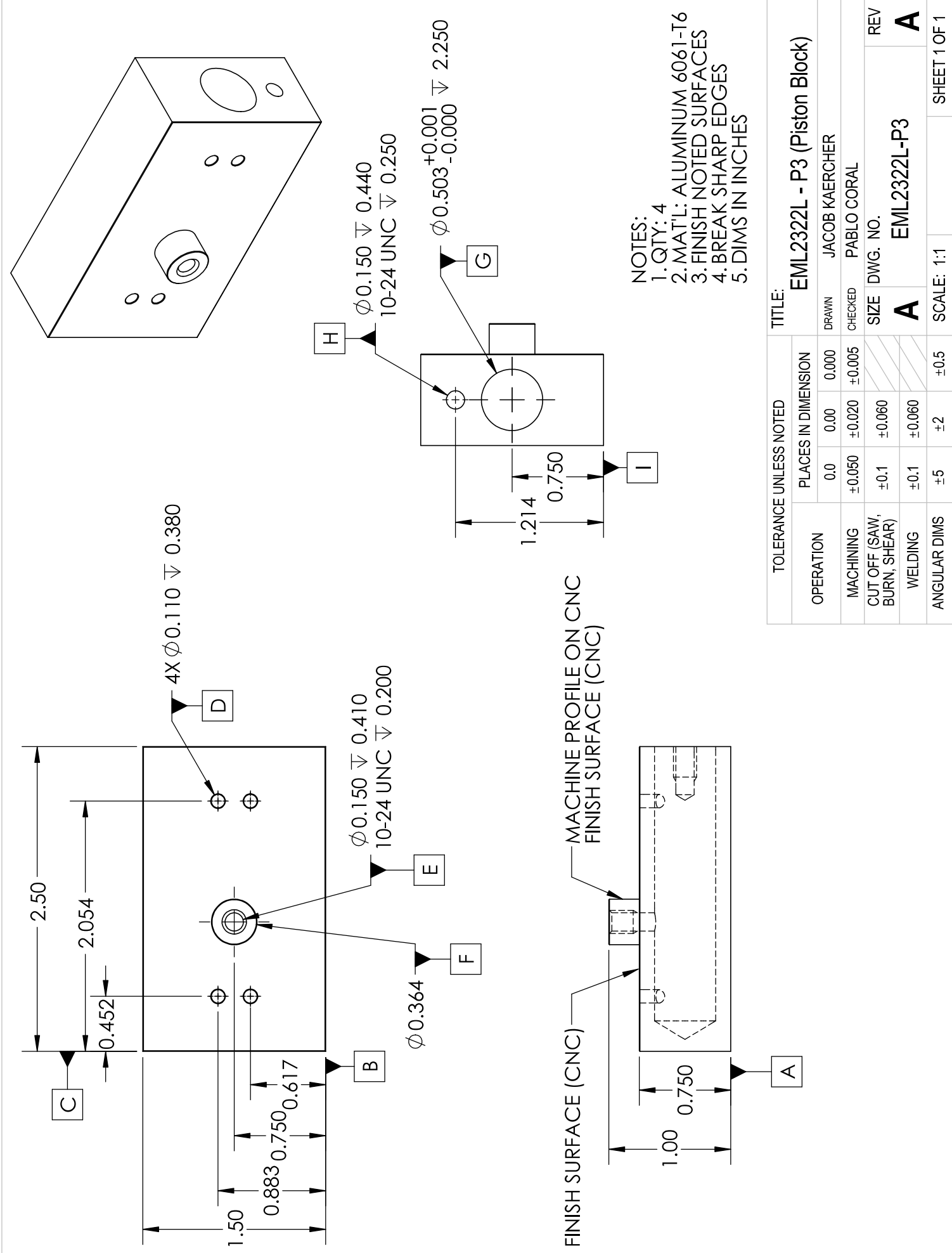
Piston Block

4 revisions

PISTON BLOCK · REVISION A

Revision A

Drawing · MIR



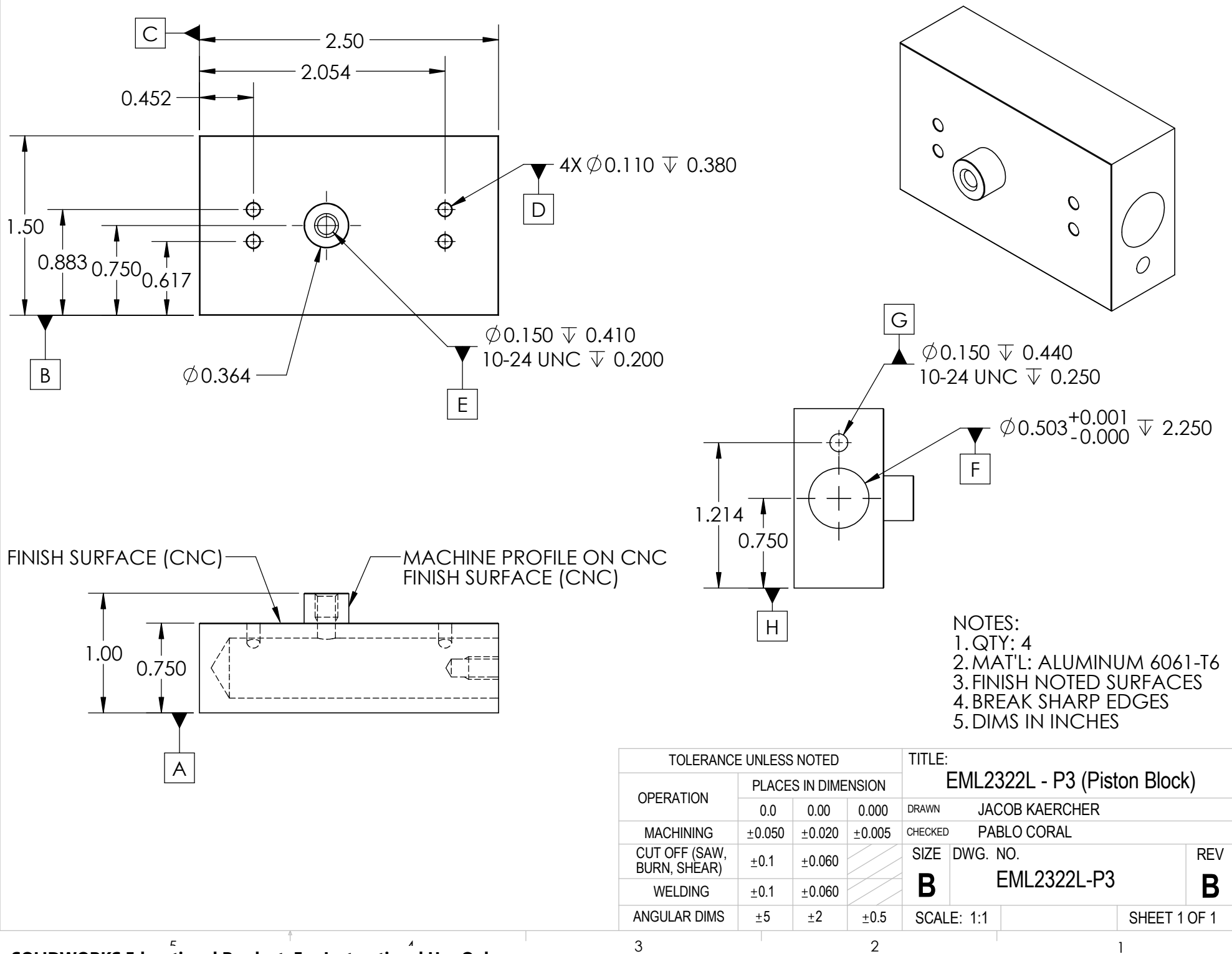
EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		A	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	1.00	0.98	1.02	Inches		
2	A	Length	Caliper	0.750	0.745	0.755	Inches		
3	B	Length	Caliper	0.617	0.612	0.622	Inches		
4	B	Length	Caliper	0.750	0.745	0.755	Inches		
5	B	Length	Caliper	0.883	0.878	0.888	Inches		
6	B	Length	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.452	0.447	0.477	Inches		
8	C	Length	Caliper	2.054	2.049	2.059	Inches		
9	C	Length	Caliper	2.50	2.48	2.52	Inches		
10	D	Diameter	Caliper	0.110	0.105	0.115	Inches		
11	D	Depth	Caliper	0.380	0.375	0.385	Inches		
12	E	Diameter	Caliper	0.150	0.145	0.155	Inches		
13	E	Depth	Caliper	0.410	0.405	0.415	Inches		
14	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
15	F	Diameter	Caliper	0.364	0.359	0.369	Inches		
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:								☐ Rework	
Group Member 2:								☐ Engineering Change	
Group Member 3		TA Signature							
Group Member 4									

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		A	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
16	G	Diameter	Caliper	0.503	0.503	0.504	Inches		
17	G	Depth	Caliper	2.250	2.245	2.255	Inches		
18	H	Diameter	Caliper	0.150	0.145	0.155	Inches		
19	H	Depth	Caliper	0.440	0.435	0.445	Inches		
20	H	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
21	I	Length	Caliper	0.750	0.745	0.755	Inches		
22	I	Length	Caliper	1.214	1.209	1.219	Inches		
23	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
24	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
25									
26									
27									
28									
29									
30									
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1: Jacob Kaercher							☐ Rework		
Group Member 2: Matthew Sabag							☐ Engineering Change		
Group Member 3: Nicholas Trim		TA Signature							
Group Member 4: Om Patel									

PISTON BLOCK · REVISION B

Revision B

Drawing · MIR · ECN



EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		B	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	1.00	0.98	1.02	Inches		
2	A	Length	Caliper	0.750	0.745	0.755	Inches		
3	B	Length	Caliper	0.617	0.612	0.622	Inches		
4	B	Length	Caliper	0.750	0.745	0.755	Inches		
5	B	Length	Caliper	0.883	0.878	0.888	Inches		
6	B	Length	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.452	0.447	0.457	Inches		
8	C	Length	Caliper	2.054	2.049	2.059	Inches		
9	C	Length	Caliper	2.50	2.48	2.52	Inches		
10	D	Diameter	Caliper	0.110	0.105	0.115	Inches		
11	D	Depth	Caliper	0.380	0.375	0.385	Inches		
12	E	Diameter	Caliper	0.150	0.145	0.155	Inches		
13	E	Depth	Caliper	0.410	0.405	0.415	Inches		
14	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
15	E	Diameter	Caliper	0.364	0.359	0.369	Inches		
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:								☐ Rework	
Group Member 2:								☐ Engineering Change	
Group Member 3		Om Patel			TA Signature				
Group Member 4									

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		B	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
16	F	Diameter	Caliper	0.503	0.503	0.504	Inches		
17	F	Depth	Caliper	2.250	2.245	2.255	Inches		
18	G	Diameter	Caliper	0.150	0.145	0.155	Inches		
19	G	Depth	Caliper	0.440	0.435	0.445	Inches		
20	G	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
21	H	Length	Caliper	0.750	0.745	0.755	Inches		
22	H	Length	Caliper	1.214	1.209	1.219	Inches		
23	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
24	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
25									
26									
27									
28									
29									
30									
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1: Jacob Kaercher							☐ Rework		
Group Member 2: Matthew Sabag							☐ Engineering Change		
Group Member 3: Om Patel		TA Signature							
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

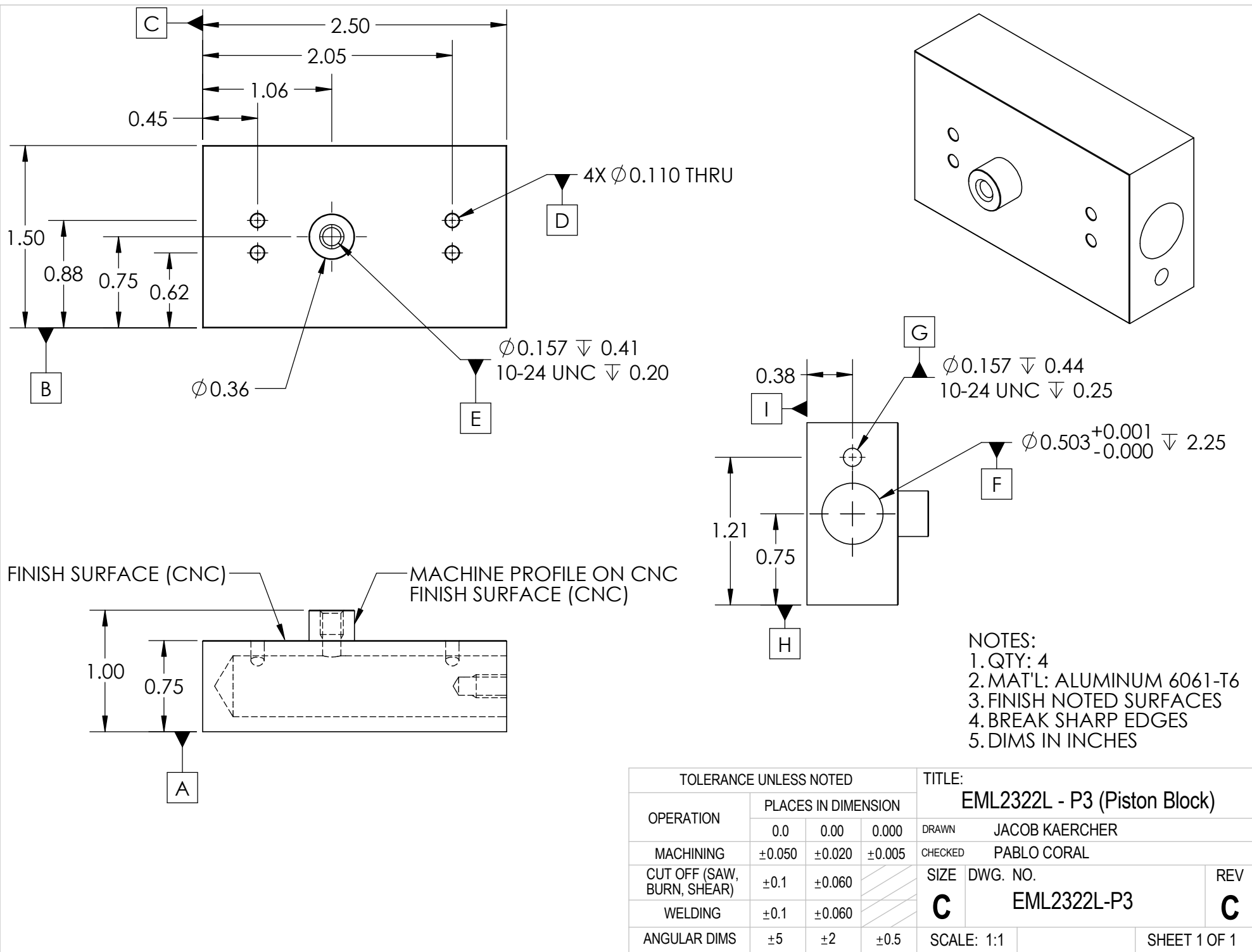
SIGNATURE:

DATE: / /

PISTON BLOCK · REVISION C

Revision C

Drawing · MIR · ECN



TOLERANCE UNLESS NOTED				TITLE:		
OPERATION	PLACES IN DIMENSION			EML2322L - P3 (Piston Block)		
	0.0	0.00	0.000	DRAWN	JACOB KAERCHER	
MACHINING	± 0.050	± 0.020	± 0.005	CHECKED	PABLO CORAL	
CUT OFF (SAW, BURN, SHEAR)	± 0.1	± 0.060		SIZE	DWG. NO.	REV
WELDING	± 0.1	± 0.060		C	EML2322L-P3	C
ANGULAR DIMS	± 5	± 2	± 0.5	SCALE: 1:1		SHEET 1 OF 1

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		C	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	1.00	0.98	1.02	Inches		
2	A	Length	Caliper	0.75	0.73	0.77	Inches		
3	B	Length	Caliper	0.62	0.60	0.64	Inches		
4	B	Length	Caliper	0.75	0.73	0.77	Inches		
5	B	Length	Caliper	0.88	0.86	0.90	Inches		
6	B	Length	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.45	0.43	0.47	Inches		
8	C	Length	Caliper	2.05	2.03	2.07	Inches		
9	C	Length	Caliper	2.50	2.48	2.52	Inches		
10	C	Length	Caliper	1.06	1.04	1.08	Inches		
11	D	Diameter	Caliper	0.110	0.105	0.115	Inches		
12	D	Depth	Visual	THRU	N/A	N/A	N/A		
13	E	Diameter	Caliper	0.157	0.152	0.162	Inches		
14	E	Depth	Caliper	0.41	0.39	0.43	Inches		
15	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:								☐ Rework	
Group Member 2:								☐ Engineering Change	
Group Member 3:		Om Patel			TA Signature				
Group Member 4:									

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		C	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
16	E	Diameter	Caliper	0.36	0.34	0.38	Inches		
17	F	Diameter	Caliper	0.503	0.503	0.504	Inches		
18	F	Depth	Caliper	2.25	2.05	2.45	Inches		
19	G	Diameter	Caliper	0.157	0.152	0.163	Inches		
20	G	Depth	Caliper	0.44	0.42	0.46	Inches		
21	G	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
22	H	Length	Caliper	0.75	0.73	0.77	Inches		
23	H	Length	Caliper	1.21	1.19	1.23	Inches		
24	I	Length	Caliper	0.38	0.36	0.40	Inches		
25	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
26	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
27									
28									
29									
30									
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1: Jacob Kaercher							☐ Rework		
Group Member 2: Matthew Sabag							☐ Engineering Change		
Group Member 3: Om Patel		TA Signature							
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

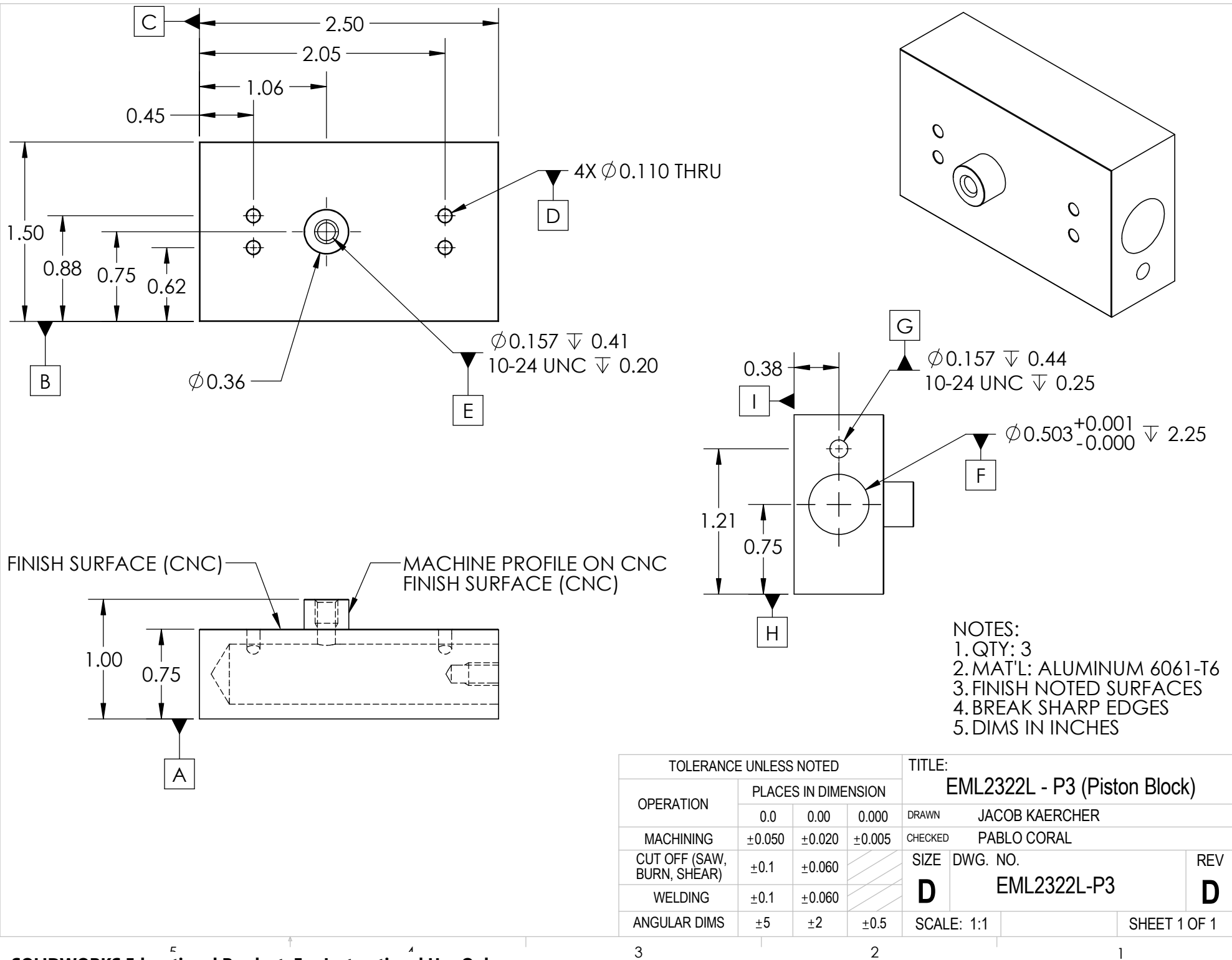
SIGNATURE:

DATE: / /

PISTON BLOCK · REVISION D

Revision D

Drawing · MIR · ECN



EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		D	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
1	A	Length	Caliper	1.00	0.98	1.02	Inches		
2	A	Length	Caliper	0.75	0.73	0.77	Inches		
3	B	Length	Caliper	0.62	0.60	0.64	Inches		
4	B	Length	Caliper	0.75	0.73	0.77	Inches		
5	B	Length	Caliper	0.88	0.86	0.90	Inches		
6	B	Length	Caliper	1.50	1.48	1.52	Inches		
7	C	Length	Caliper	0.45	0.43	0.47	Inches		
8	C	Length	Caliper	2.05	2.03	2.07	Inches		
9	C	Length	Caliper	2.50	2.48	2.52	Inches		
10	C	Length	Caliper	1.06	1.04	1.08	Inches		
11	D	Diameter	Caliper	0.110	0.105	0.115	Inches		
12	D	Depth	Visual	THRU	N/A	N/A	N/A		
13	E	Diameter	Caliper	0.157	0.152	0.162	Inches		
14	E	Depth	Caliper	0.41	0.39	0.43	Inches		
15	E	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
RESULT:								PASS	
Inspector Signature:							FAIL	☐ Remanufacture	
Group Member 1:								☐ Rework	
Group Member 2:								☐ Engineering Change	
Group Member 3:		Om Patel			TA Signature				
Group Member 4:									

EML 2322L MANUFACTURING INSPECTION RECORD									
Part Number		Revision	Part Name		Team Number		Machinist:		
EML2322L-P3		D	AIR ENGINE PISTON BLOCK		1D		Jacob Kaercher		
							Inspector:		
							Pablo Coral		
No.	Ref. Location	Feature Type	Measurement Tool/Type	Requirement	Lower Bound	Upper Bound	Units	Results	Comments
16	E	Diameter	Caliper	0.36	0.34	0.38	Inches		
17	F	Diameter	Caliper	0.503	0.503	0.504	Inches		
18	F	Depth	Caliper	2.25	2.05	2.45	Inches		
19	G	Diameter	Caliper	0.157	0.152	0.163	Inches		
20	G	Depth	Caliper	0.44	0.42	0.46	Inches		
21	G	Thread	Fastener	10-24 UNC	N/A	N/A	N/A		
22	H	Length	Caliper	0.75	0.73	0.77	Inches		
23	H	Length	Caliper	1.21	1.19	1.23	Inches		
24	I	Length	Caliper	0.38	0.36	0.40	Inches		
25	Notes	Break Sharp Edges	Visual	Break Sharp Edges	N/A	N/A	N/A		
26	Notes	Finish Noted Surfaces	Visual	Finish Noted Surfaces	N/A	N/A	N/A		
27									
28									
29									
30									
RESULT:								PASS	
Inspector Signature:					FAIL		☐ Remanufacture		
Group Member 1: Jacob Kaercher							☐ Rework		
Group Member 2: Matthew Sabag							☐ Engineering Change		
Group Member 3: Om Patel		TA Signature							
Group Member 4:									

ENGINEERING CHANGE NOTICE

ORIGINAL PART/DRAWING NAME/NO.	REVISION NO.	PART DESCRIPTION	ECN NO.
CHANGED PART/DRAWING NAME/NO.	REVISION NO.		GROUP NO.

REASON FOR CHANGE

--

DESCRIPTION OF CHANGE

--

AFFECTED DOCUMENTS & PARTS

- ☐ Purchase Order(s)
☐ Assembly Drawing(s)
☐ Bill of Materials (BOM)

OTHER PARTS (LIST NAMES):

--

ORIGINATOR NAME (#1)

SIGNATURE:

DATE: / /

APPROVAL

REQUIREMENTS

RESPONSE

Is the ECN filled out completely?

☐ Yes ☐ No

Is the original drawing attached?

☐ Yes ☐ No

Is the updated drawing attached?

☐ Yes ☐ No

Is the due date understood by the team?

☐ Yes ☐ No

EXECUTION

- ☐ A - Modify Existing Part ☐ C - Scrap Existing Part (if manufacturing already commenced)
☐ B - Create New Part ☐ D - Delete Existing Part (if manufacturing hasn't commenced)

GROUP MEMBER NAME (#2)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#3)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#4)

SIGNATURE:

DATE: / /

GROUP MEMBER NAME (#5)

SIGNATURE:

DATE: / /

TA NAME

SIGNATURE:

DATE: / /