

4

3

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D

D

C

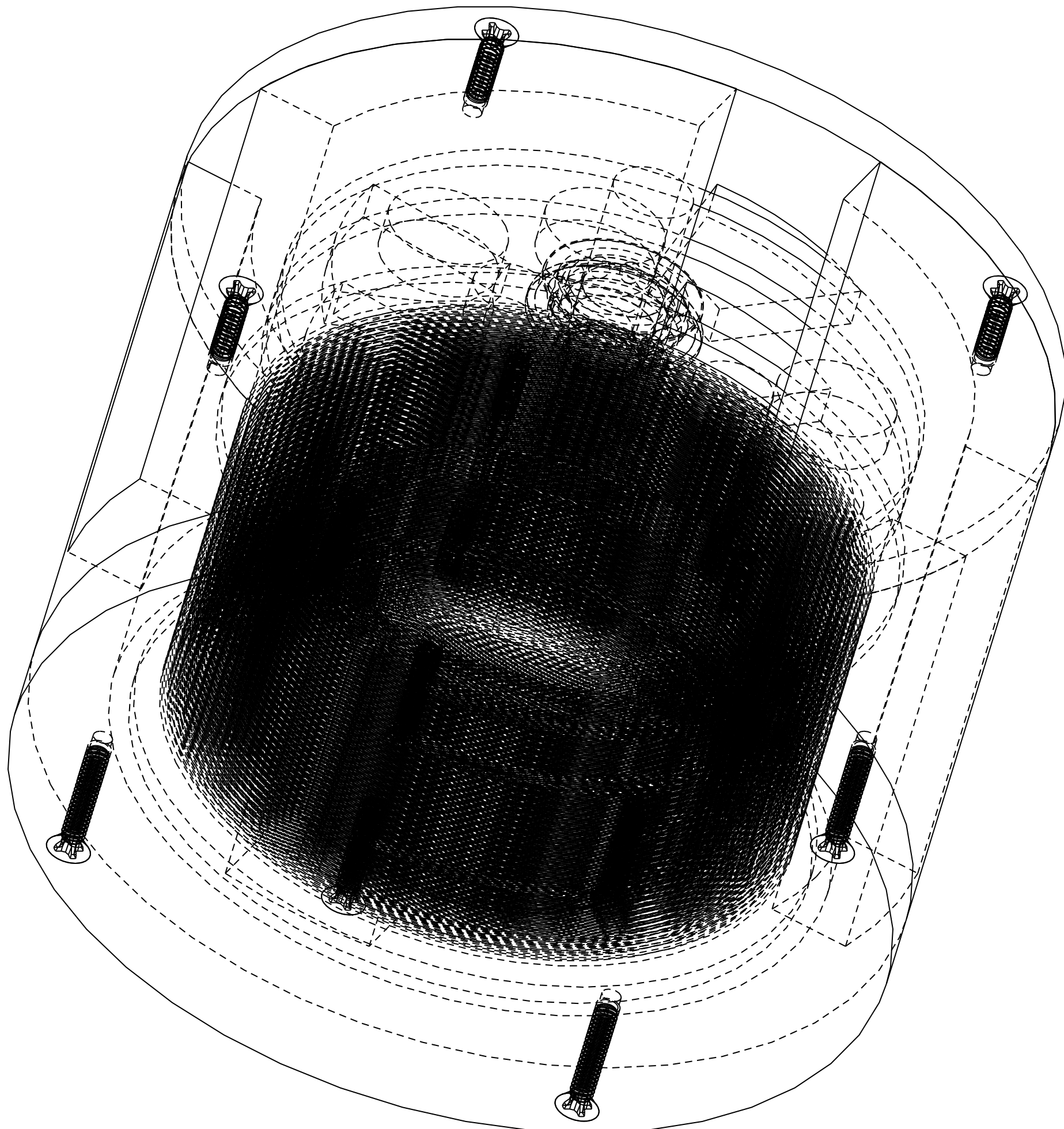
C

B

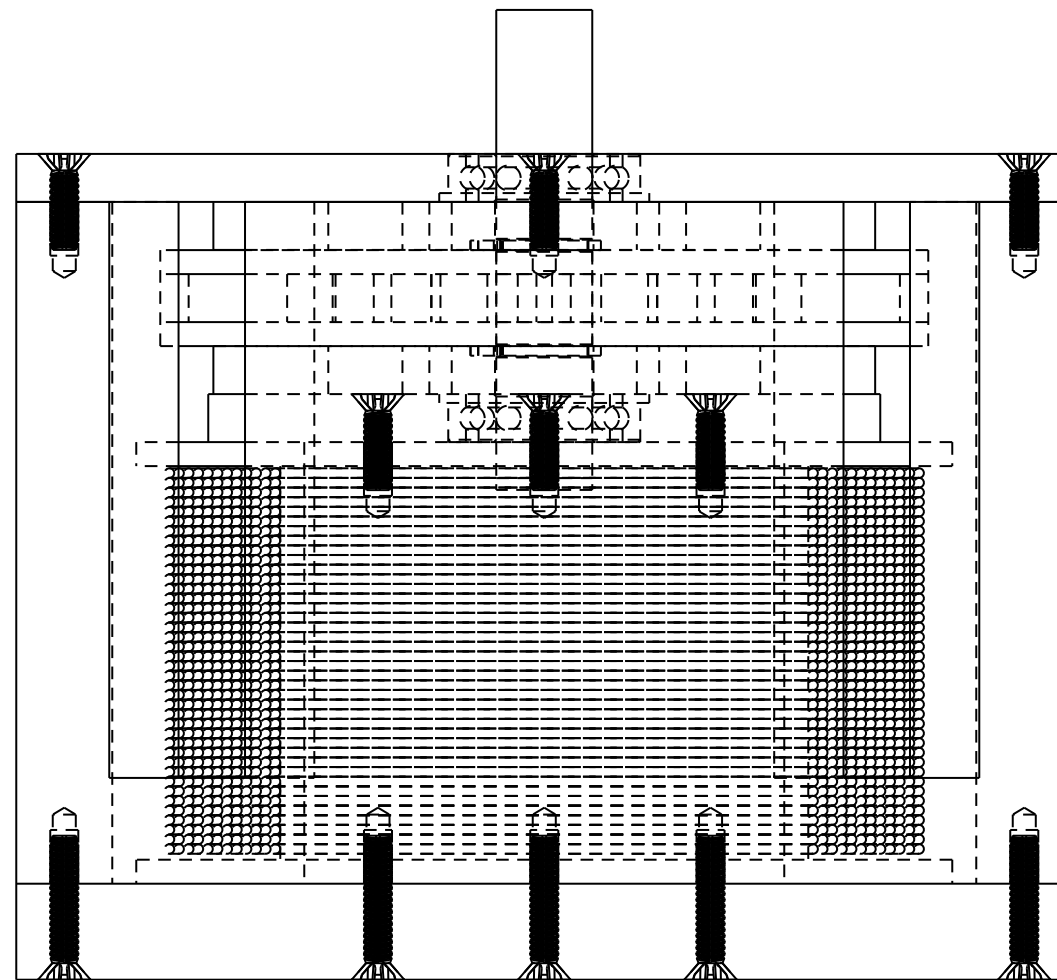
B

A

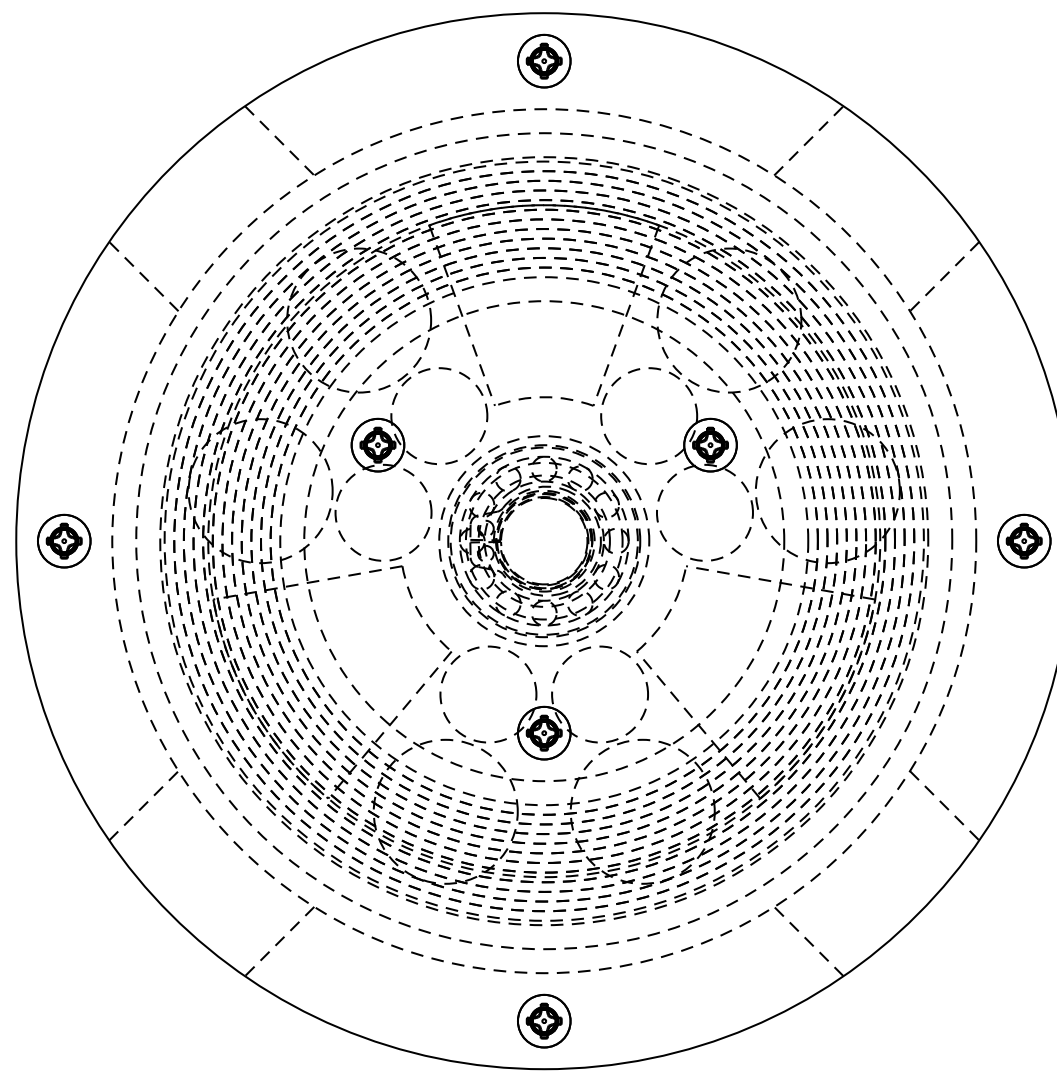
A



SCALE 3.000



SCALE 2.000



Part:	Rotary Actuator
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	1 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

4

3

2

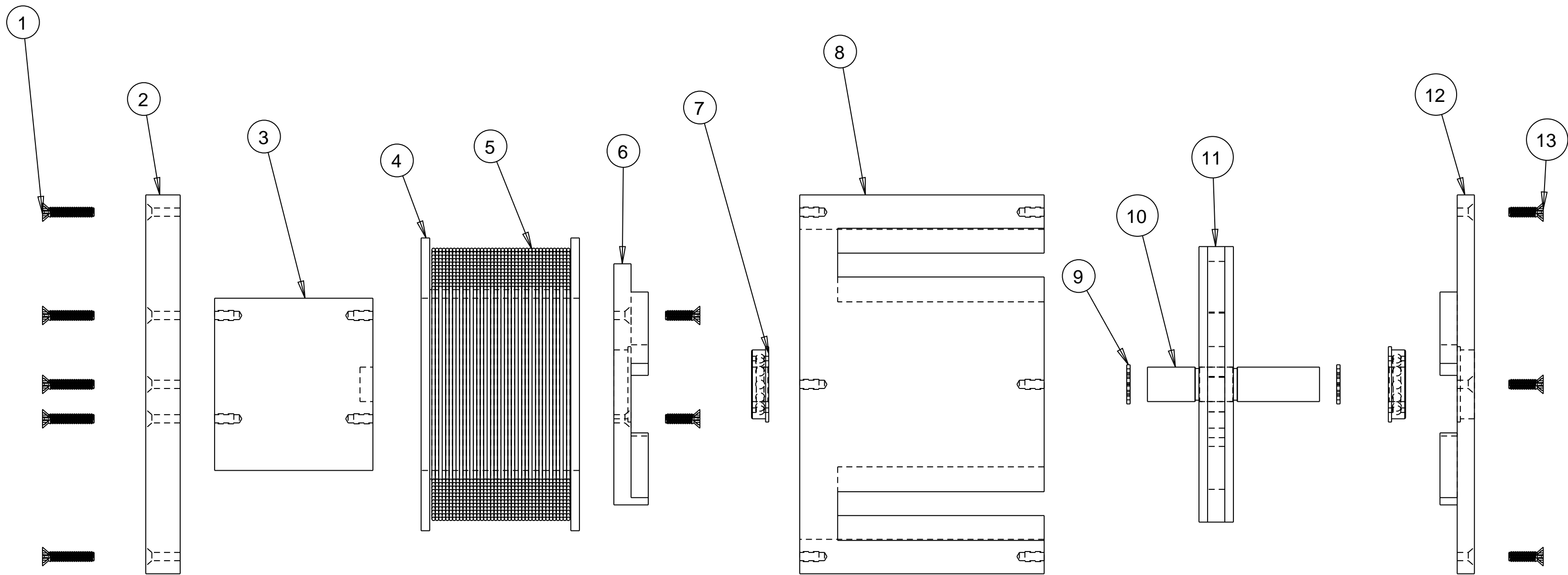
1

4

3

2

1



Part:	Exploded View
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	2 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 1.500

4

3

2

1

D

D

C

C

B

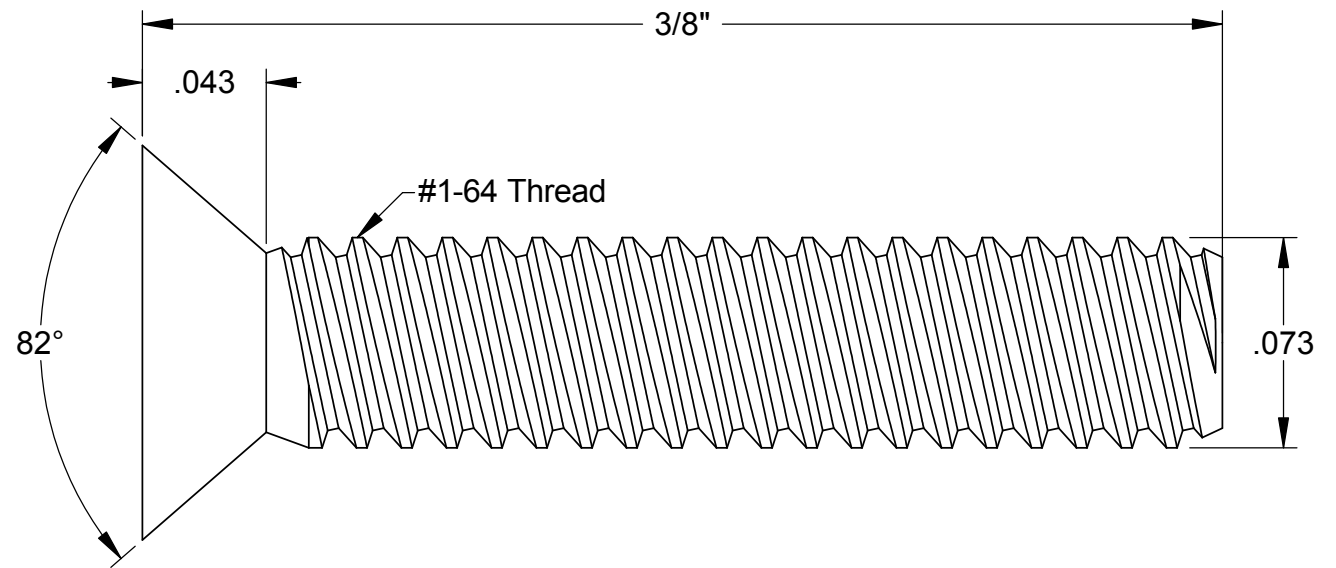
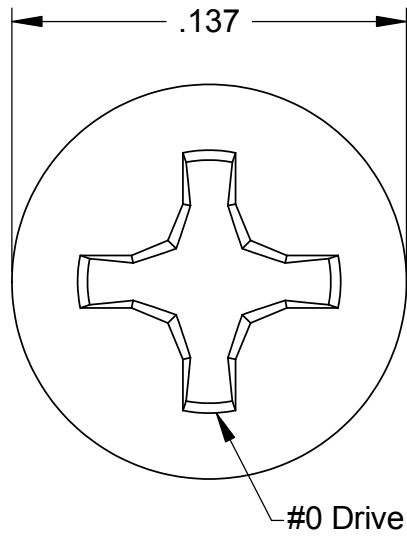
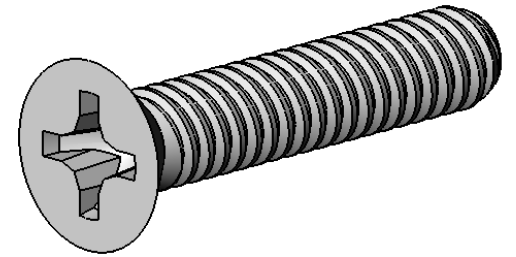
A

A

Bill of Materials:

Quantity	Part #	Name
7	1	1-64 FLAT HEAD SCREW .375
1	2	BOTTOM HOUSING
1	3	STEEL ROD
1	4	COIL SPOOL
1	5	COPPER COIL
1	6	LOWER STATOR
2	7	SHOULDER BEARING
1	8	OUTER STRUCTURE
2	9	SNAP RING
1	10	SHAFT
1	11	ROTOR ASSEMBLY
1	12	UPPER STATOR
7	13	1-64 FLAT HEAD SCREW .250

Part:	Bill of Materials
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	3 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	



McMASTER-CARR CAD

PART NUMBER **91771A068**

<http://www.mcmaster.com>
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18-8 Stainless Steel Phillips
Flat Head Machine Screw

Unless otherwise specified, dimensions are in inches. Information in this drawing is provided for reference only.

4

3

2

1

1-64 UNC THRU
 ϕ .137 x 82.0
 3 PLACES ON 120° TYP
 ON ϕ 1.00 BOLT CIRCLE

ϕ 2.750

.250

1-64 UNC THRU
 ϕ .137 x 82.0
 4 PLACES ON 90° TYP
 ON ϕ 2.50 BOLT CIRCLE

Part:	Bottom Housing
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	5 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 4.000

4

3

2

1

D

D

C

C

B

A

A

4

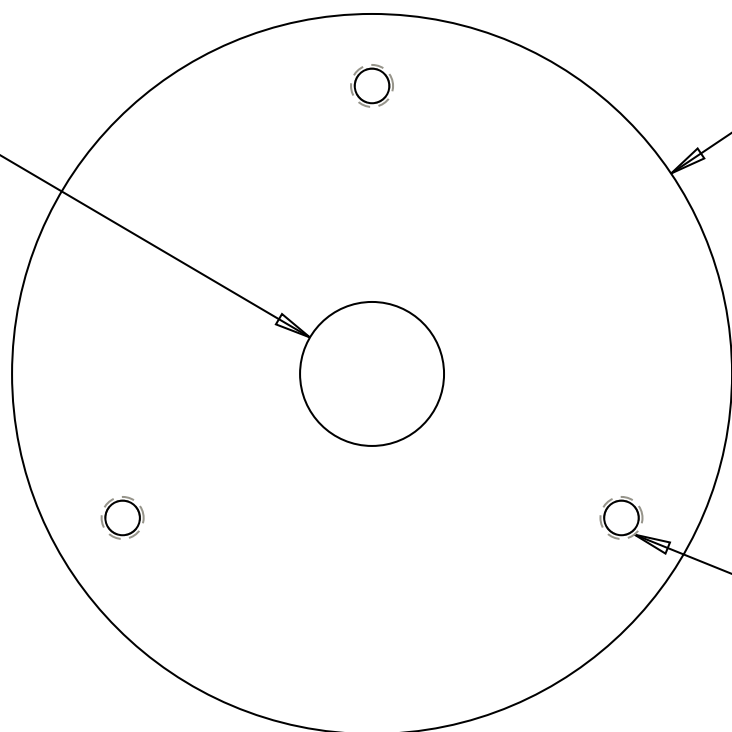
3

2

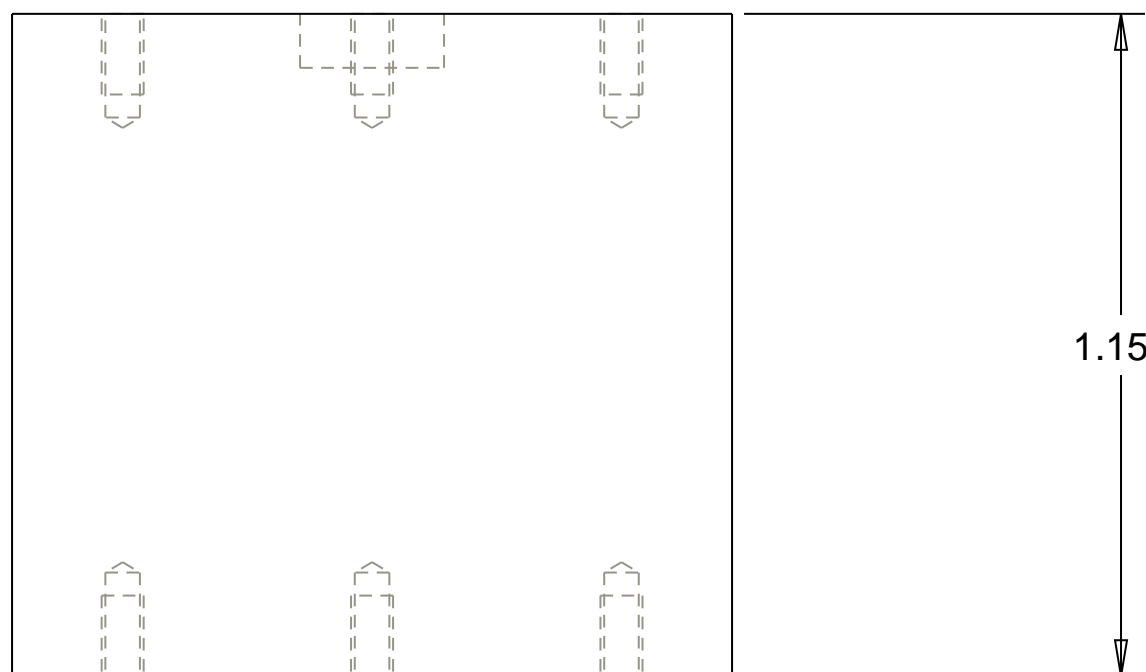
1

Ø .250 ∇ .09375

Ø 1.250

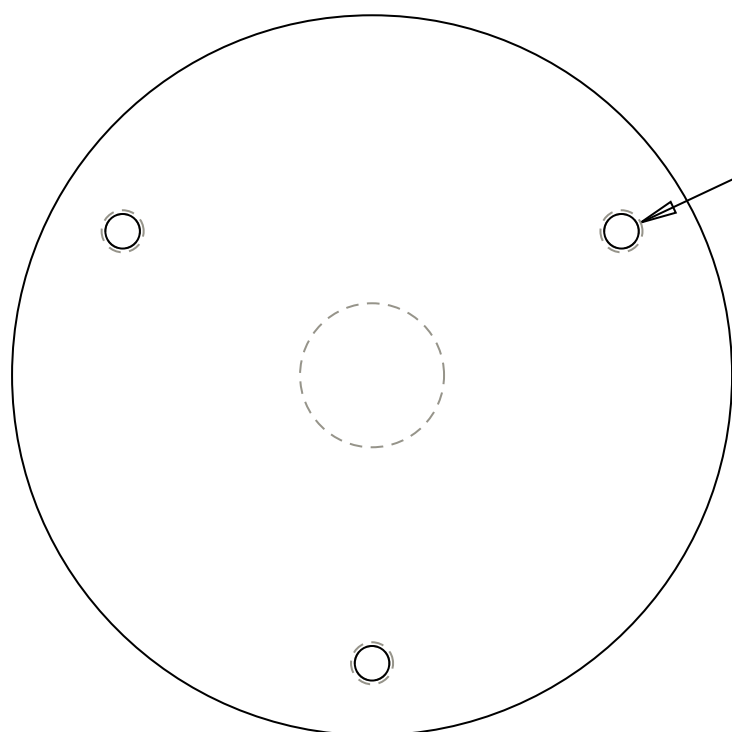


1-64 UNC-2B TAP ∇ .140
 #53 DRILL ∇ .180
 3 PLACES ON 120° TYP
 ON Ø 1.00 BOLT CIRCLE



1.15

1-64 UNC-2B TAP ∇ .140
 #53 DRILL ∇ .180
 3 PLACES ON 120° TYP
 ON Ø 1.00 BOLT CIRCLE



Part:	Steel Rod
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	6 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 3.000

4

3

2

1

D

D

C

C

B

A

A

4

3

2

1

D

D

Ø 2.125

Ø 1.375

Ø 1.250 THRU

C

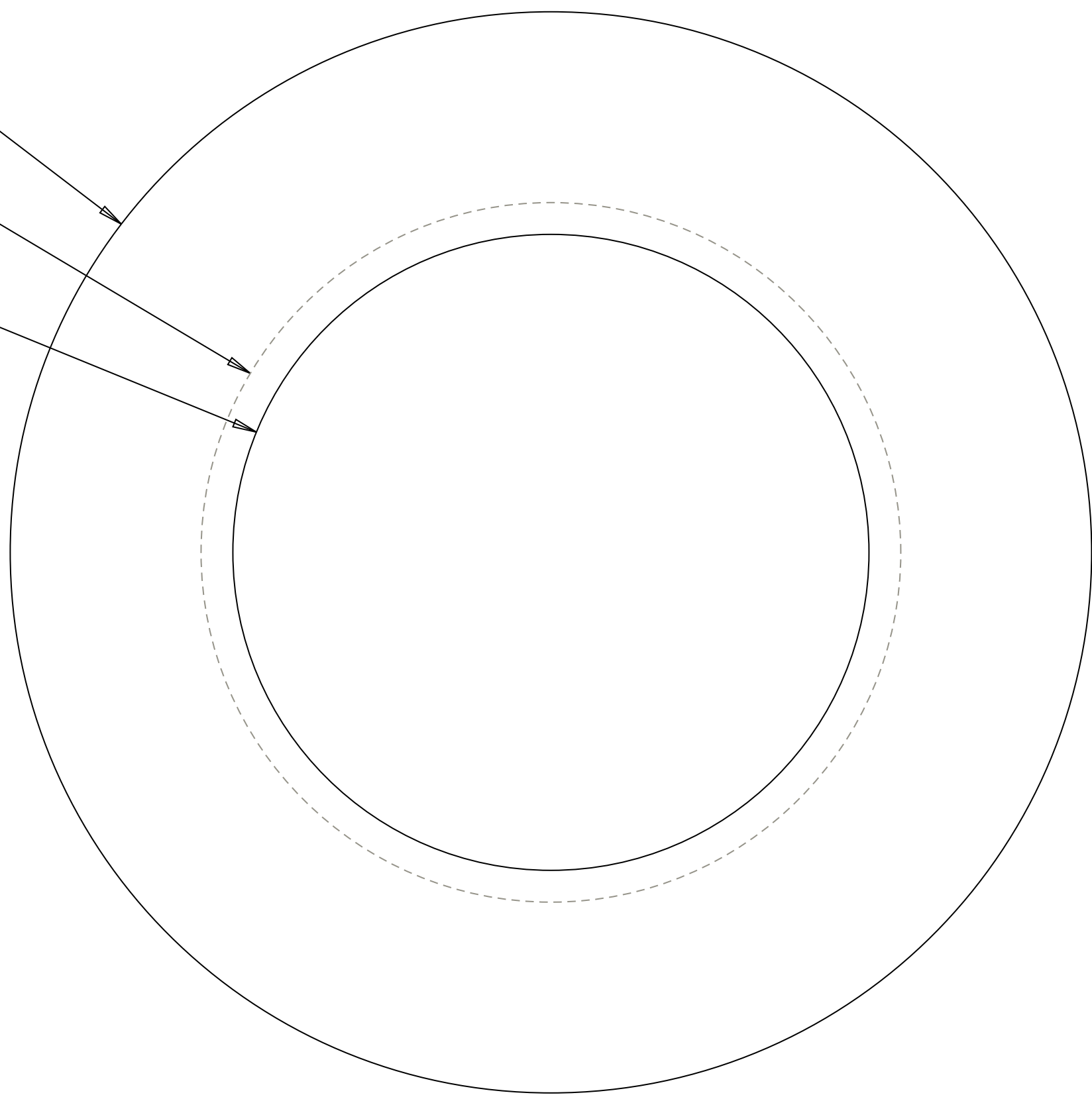
C

B

B

A

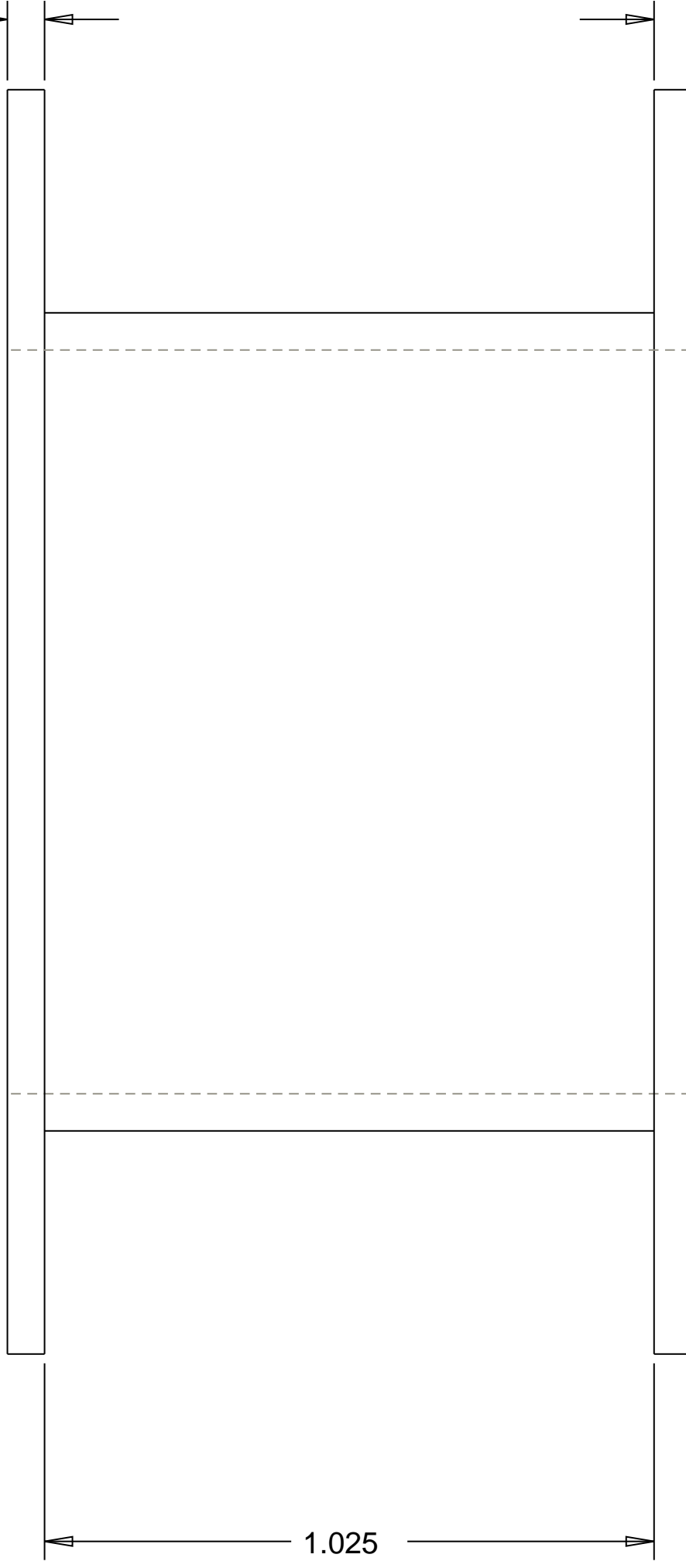
A



.063

.063

1.025



Part:	Coil Spool
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	7 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 4.000

4

3

2

1

4

3

2

1

D

D

C

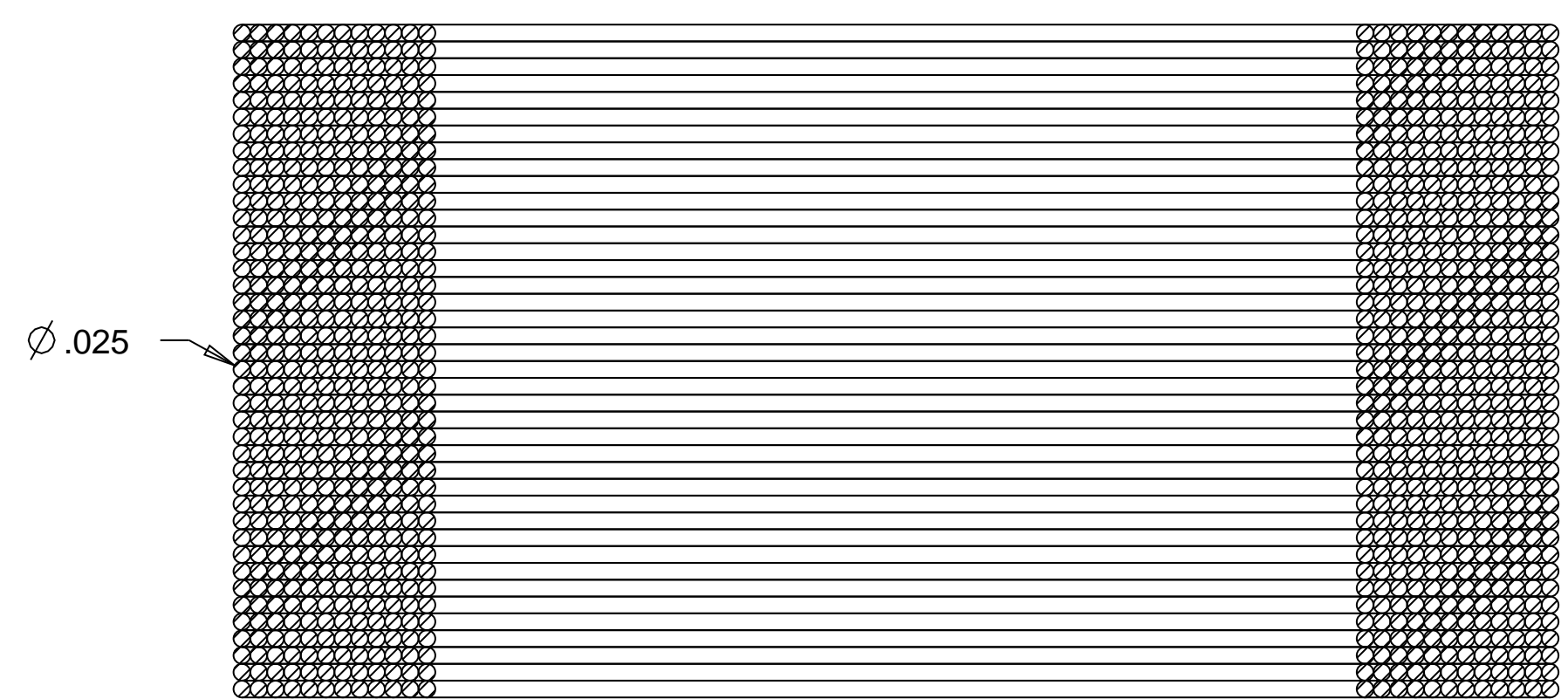
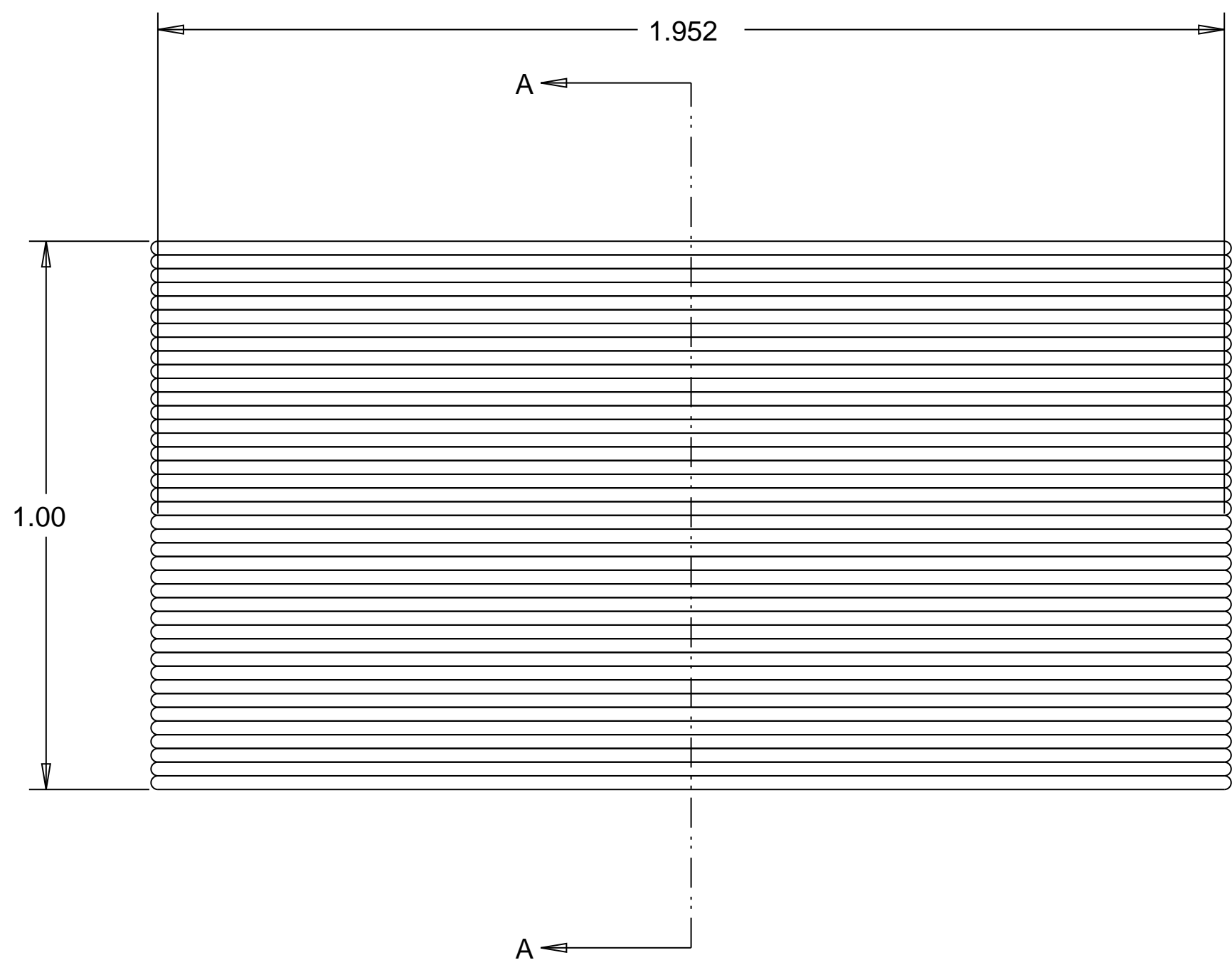
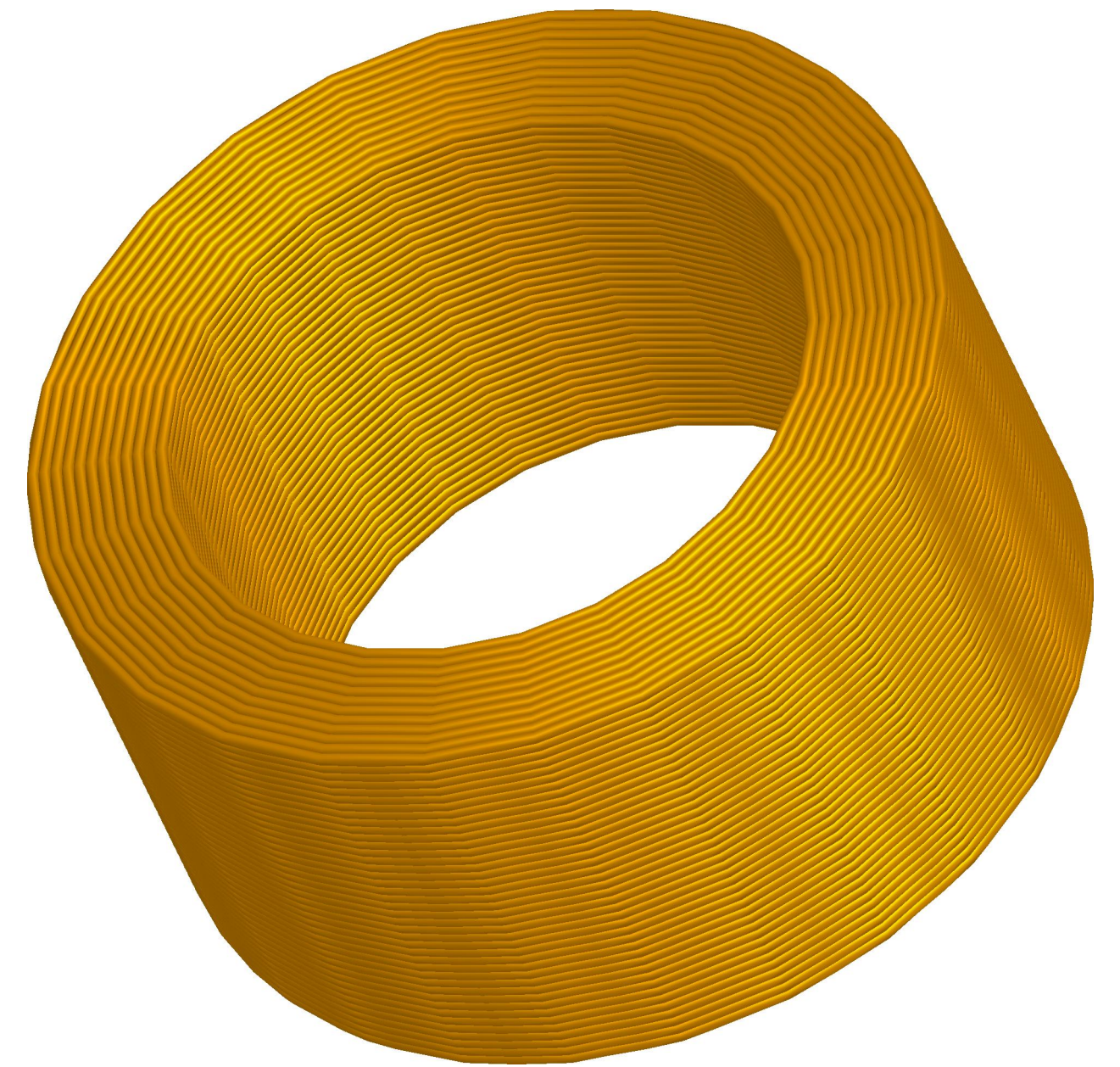
C

B

B

A

A



SECTION A-A

Part:	Coil
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	8 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 4.000

4

3

2

1

4

3

2

1

1-64 UNC THRU
 ϕ .137 x 82.0
 3 PLACES ON 120° TYP
 ON ϕ 1.00 BOLT CIRCLE

ϕ 1.750

ϕ .750

ϕ .500 THRU

ϕ .547 ∇ .023

80.000°

40.000°

.125

.125

Part:	Lower Stator
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	9 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 5.000

4

3

2

1

D

D

C

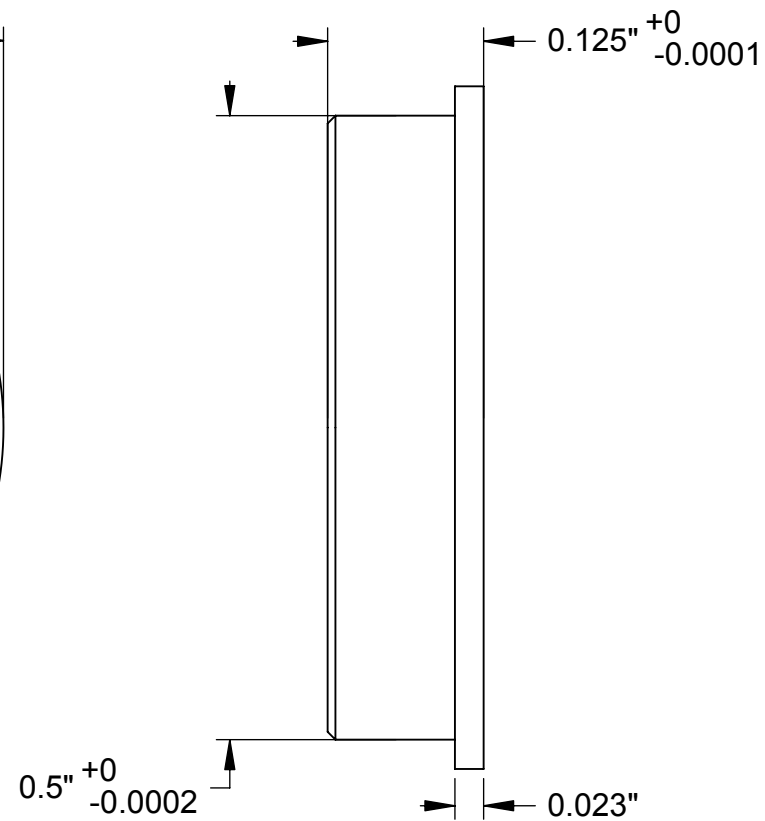
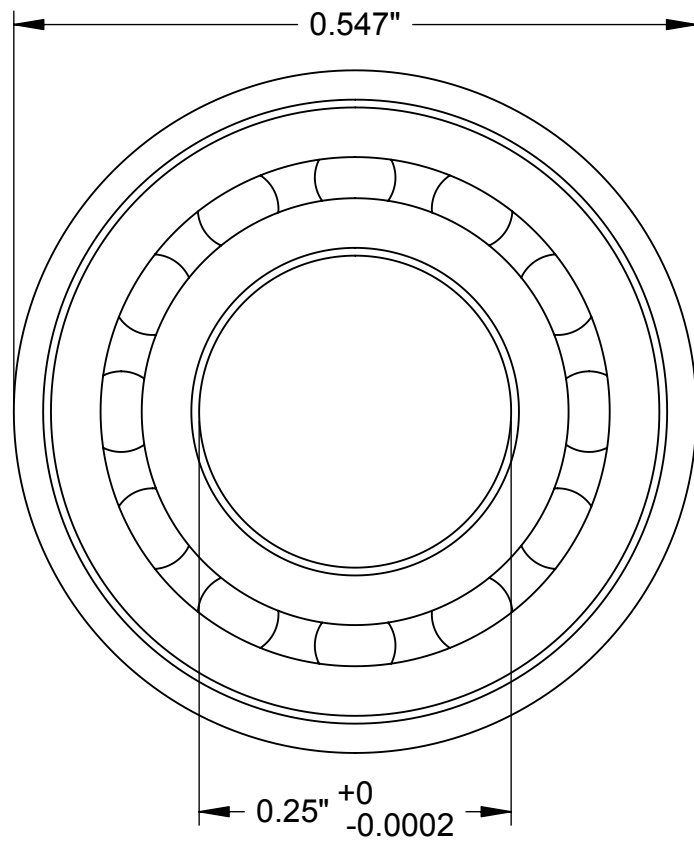
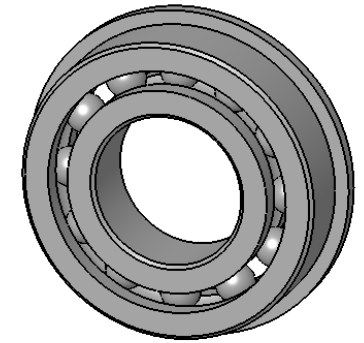
C

B

B

A

A



McMASTER-CARR 

PART
NUMBER

4259T15

<http://www.mcmaster.com>
© 2007 McMaster-Carr Supply Company

Type 440C Stainless Steel
Flanged Open Ball Bearing

Unless otherwise specified, dimensions are in inches. Information in this drawing is provided for reference only.

4

3

2

1

D

D

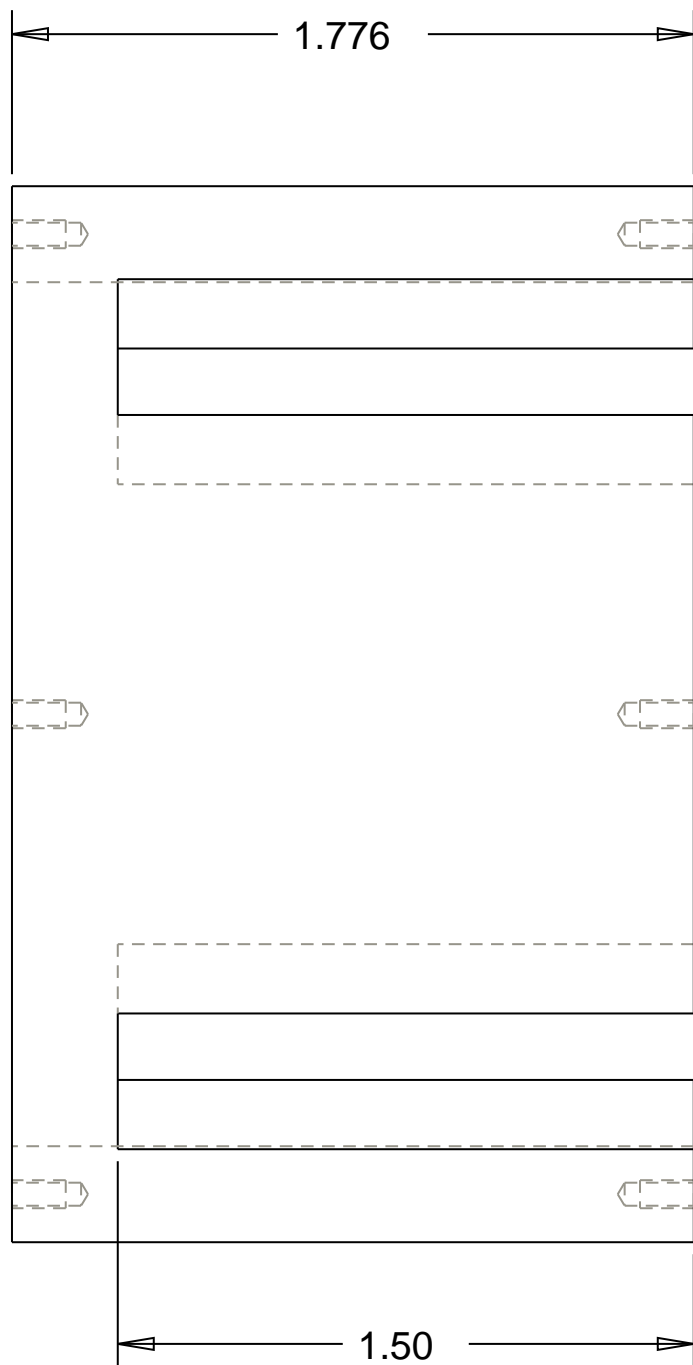
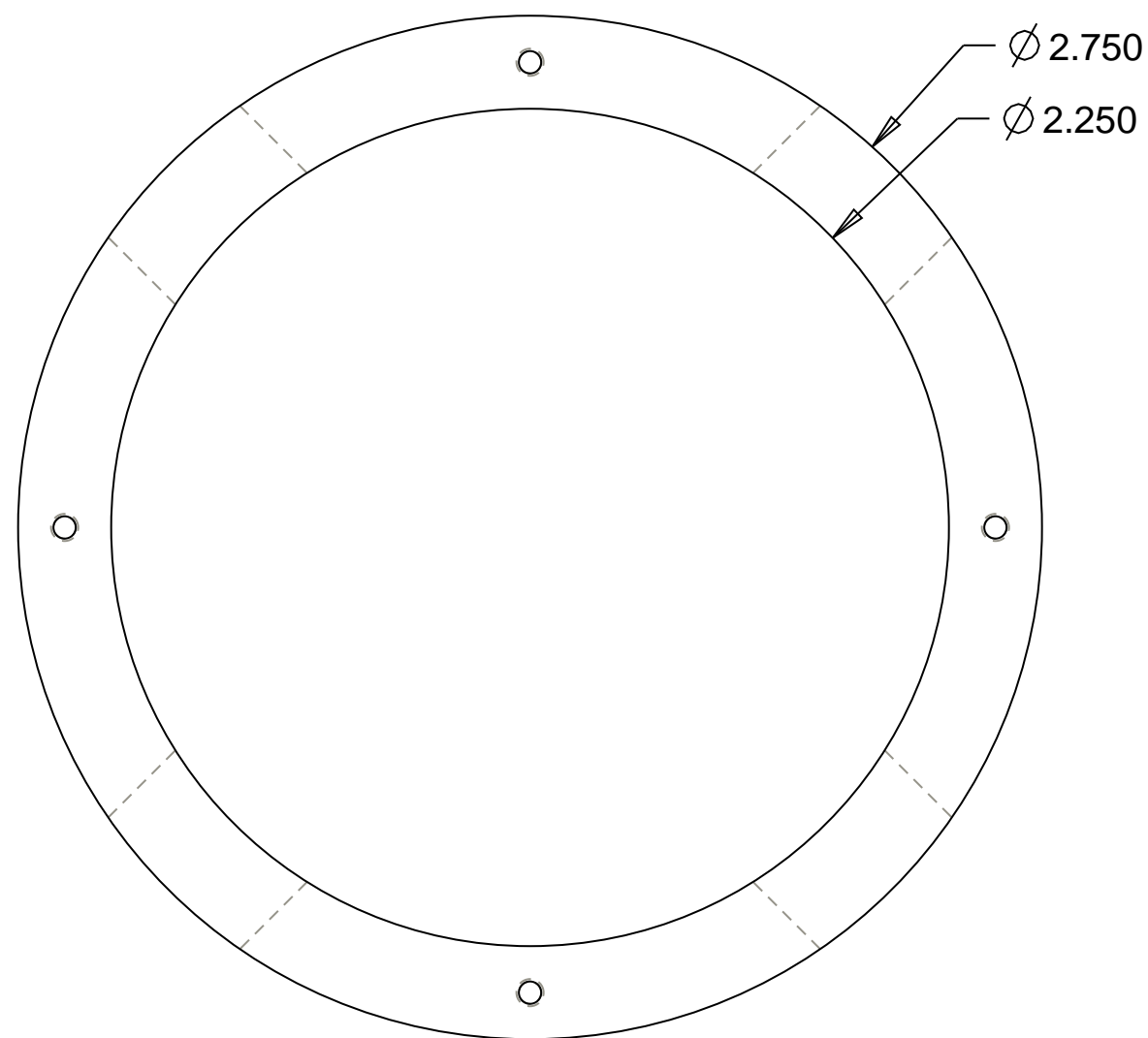
C

C

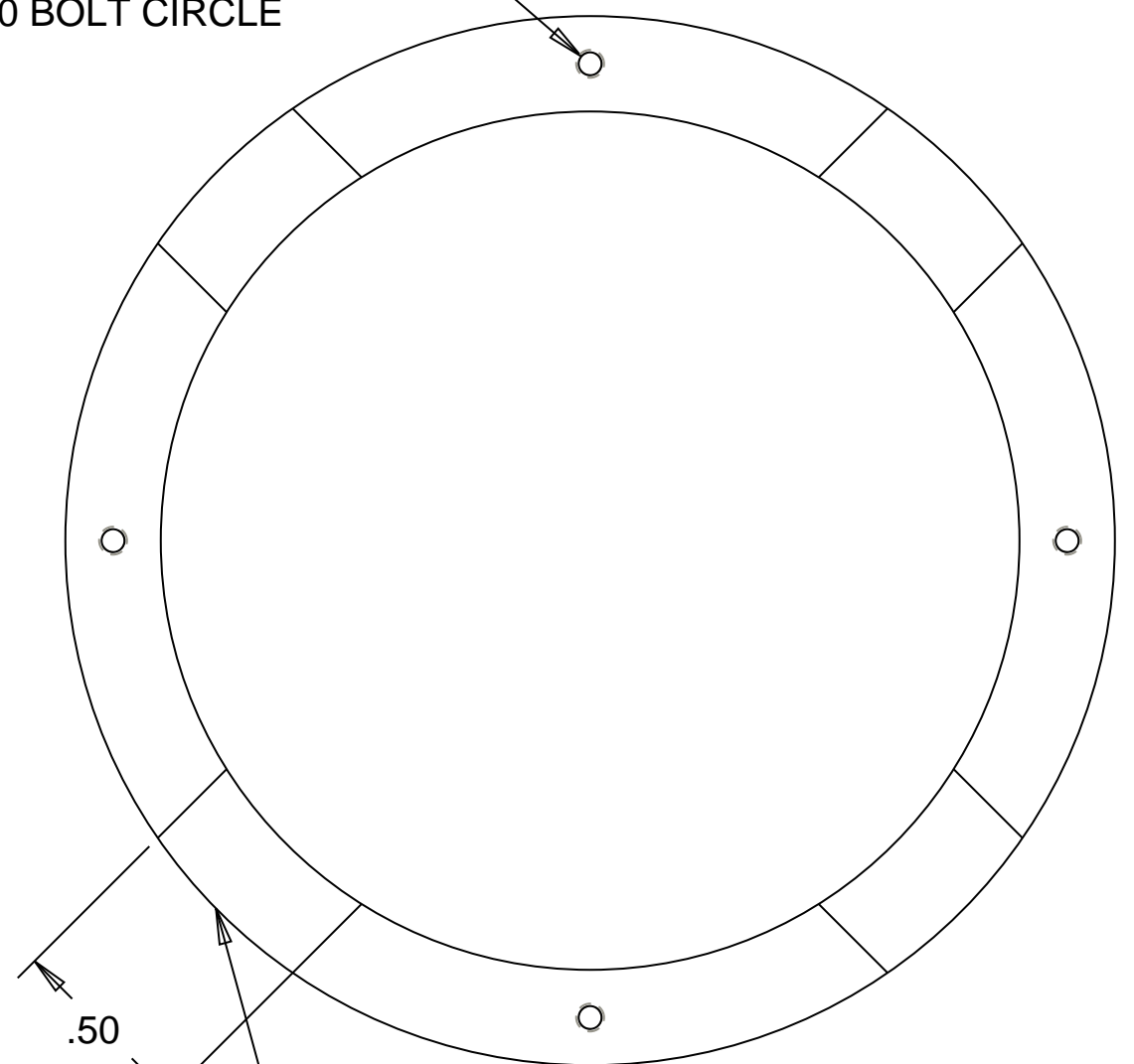
B

A

A



1-64 UNC-2B TAP $\downarrow .140$
 #53 DRILL $\downarrow .180$
 8 PLACES ON 90° TYP
 ON $\varnothing 2.50$ BOLT CIRCLE



Part:	Outer Structure
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	11 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

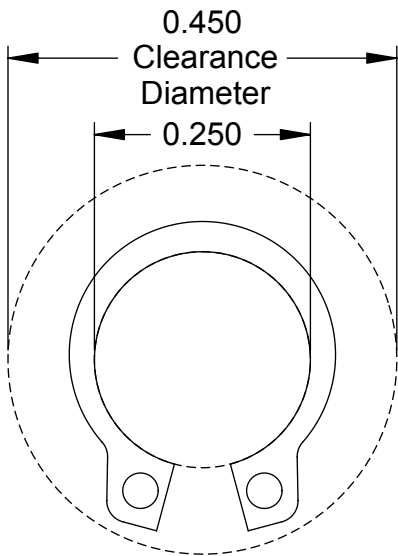
SCALE 2.000

4

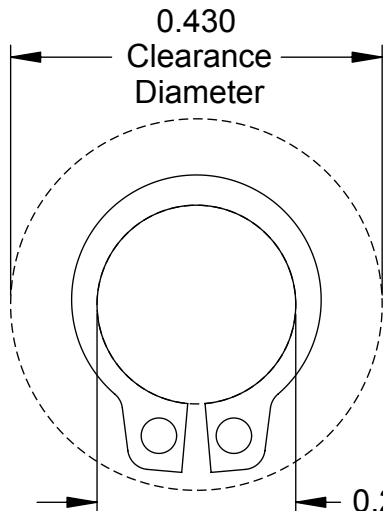
3

2

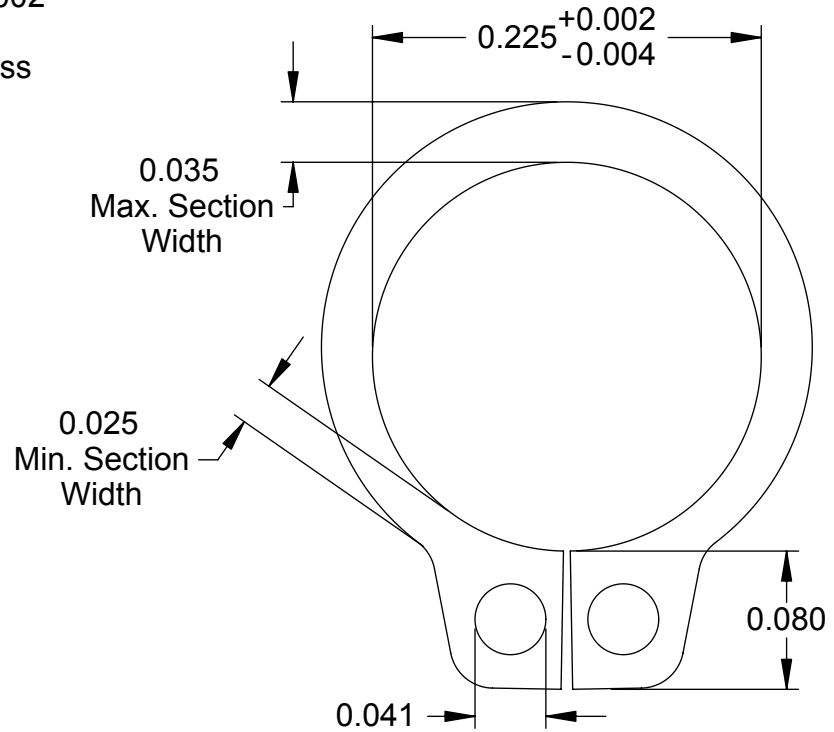
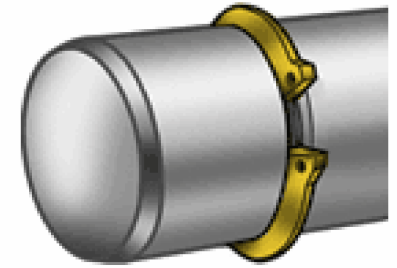
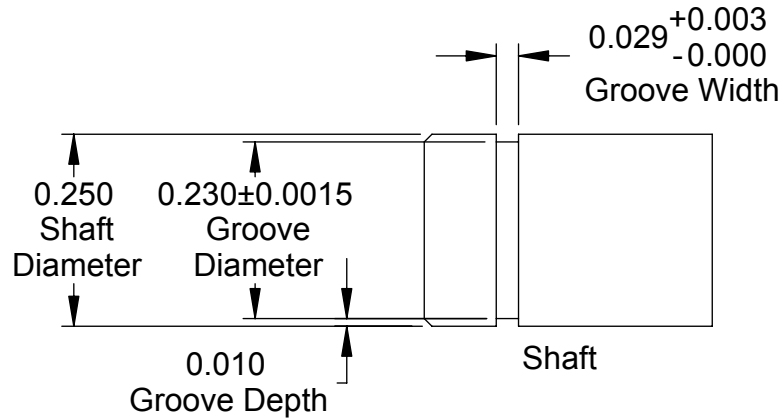
1



Expanded over Shaft



Released in Groove



Note: Clearance diameter is the diameter of a housing that can pass freely over the ring.

McMASTER-CARR <small>CAD</small> http://www.mcmaster.com © 2006 McMaster-Carr Supply Company	PART NUMBER 91590A113
	Stainless Steel External Retaining Ring
	<small>Unless otherwise specified, dimensions are in inches. Information in this drawing is provided for reference only.</small>

4

3

2

1

D

D

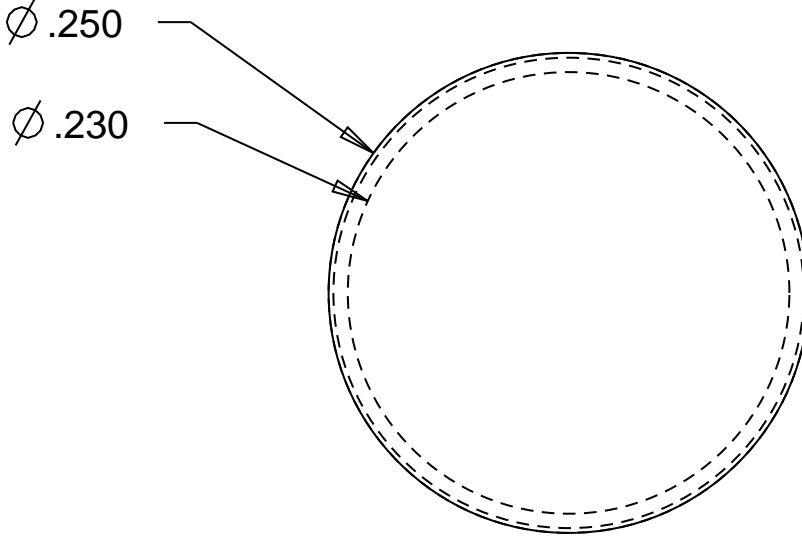
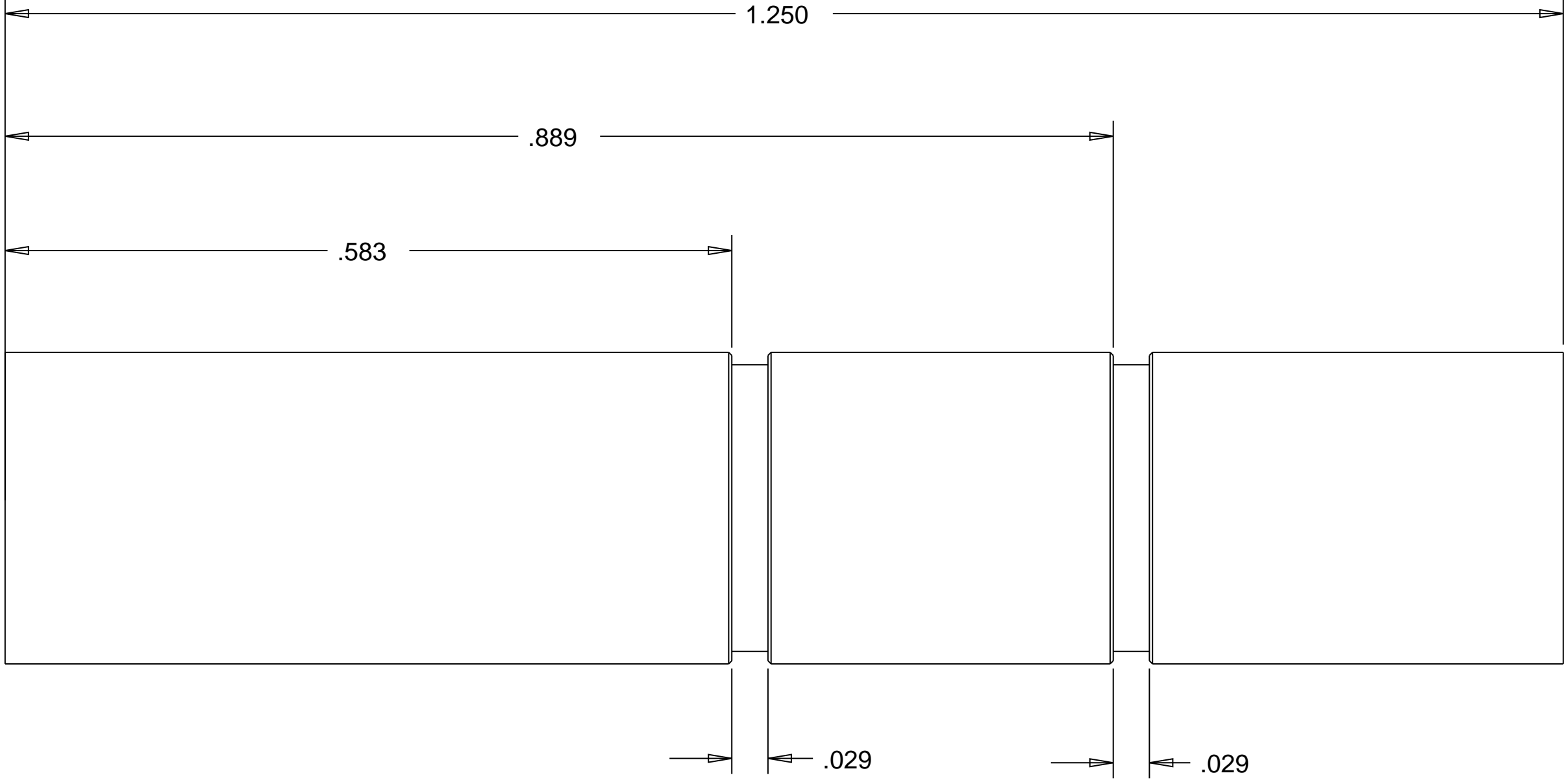
C

C

B

A

A



Part:	Shaft
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	13 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 10.000

4

3

2

1

4

3

2

1

D

D

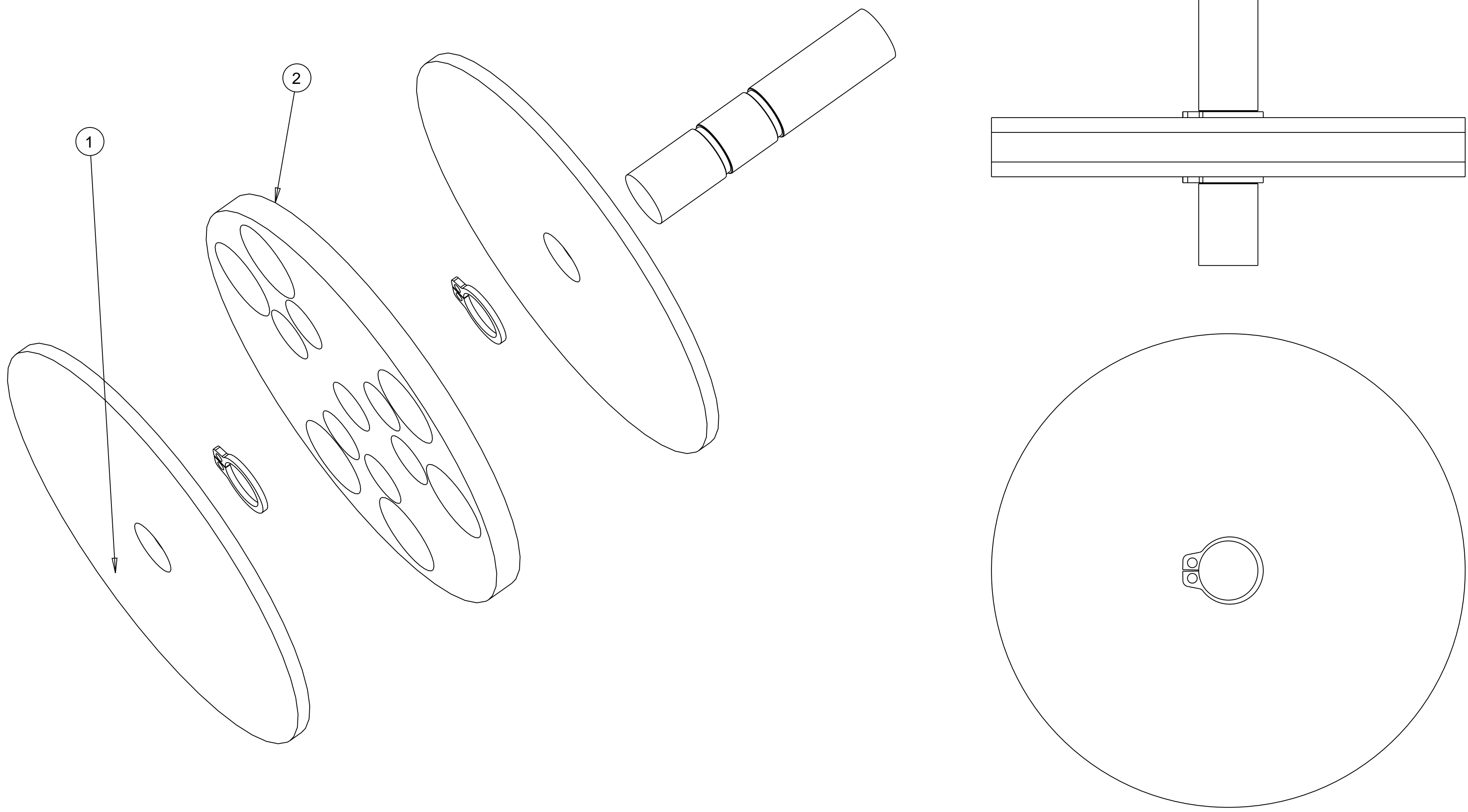
C

C

B

A

A



SCALE 3.000

Part:	Rotor Assembly
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	14a of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

4

3

2

1

D

D

Bill of Materials:

Quantity	Part #	Name
2	1	ROTOR CAP
1	2	ROTOR CORE

C

C

B

A

A

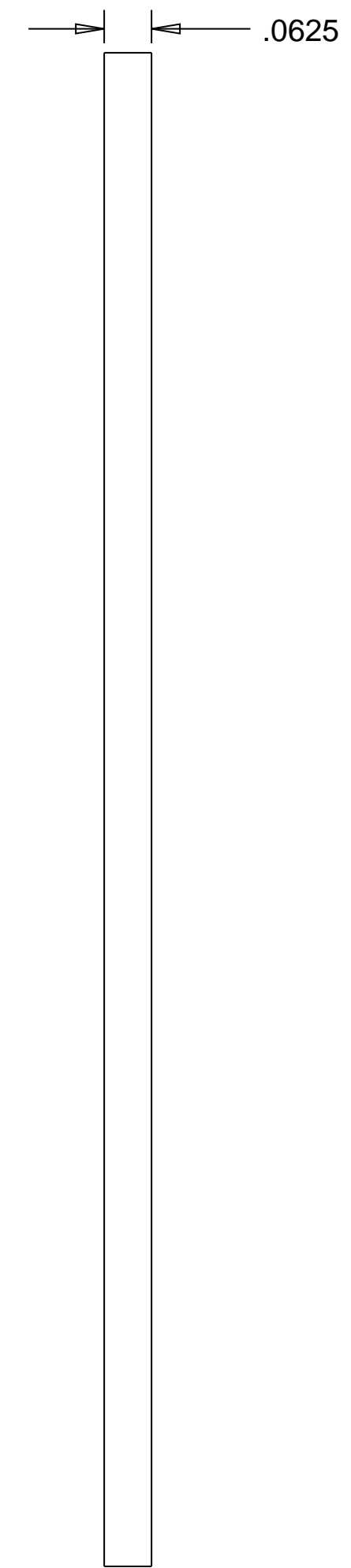
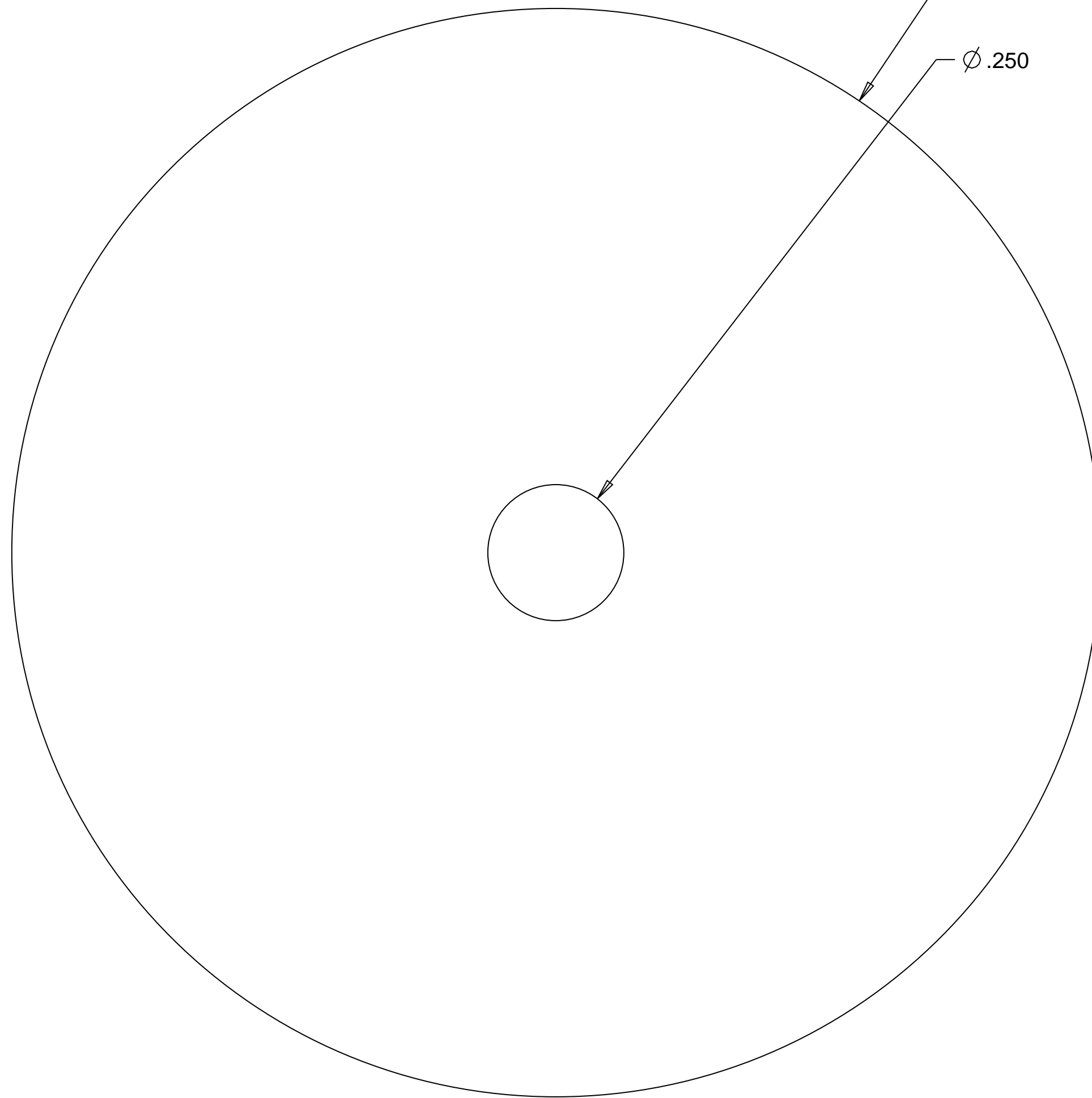
Part:	Bill of Materials
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	14b of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

4

3

2

1



Part:	Rotor Cap
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	14c of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

D

D

C

C

B

A

A

SCALE 5.000

4

3

2

1

4

3

2

1

D

D

C

C

B

A

A

Ø.250 THRU

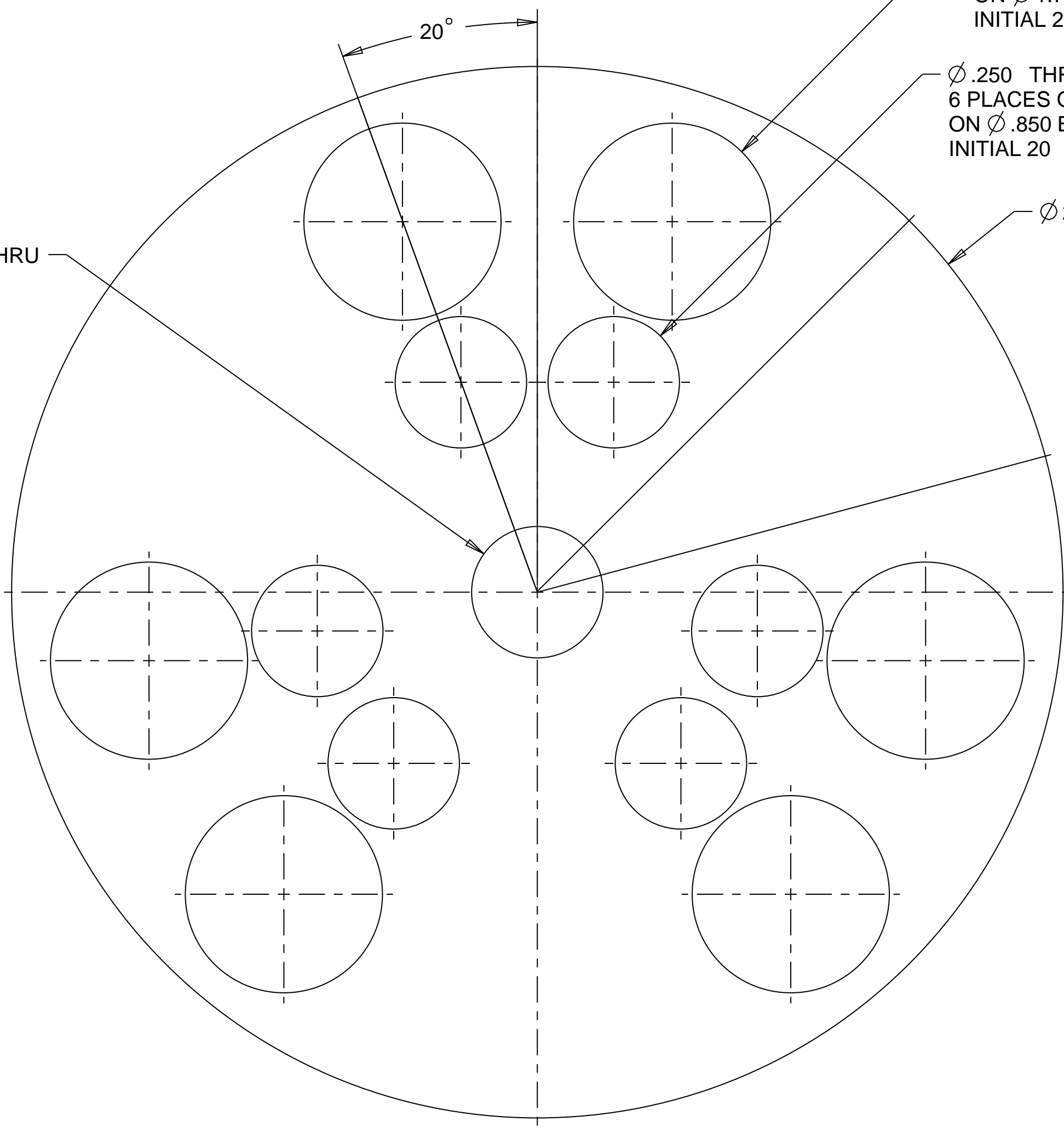
Ø.375 THRU
6 PLACES ON 120 ° TYP
ON Ø 1.75 BOLT CIRCLE
INITIAL 20 ° OFF VERTICAL

Ø.250 THRU
6 PLACES ON 120 ° TYP
ON Ø .850 BOLT CIRCLE
INITIAL 20 ° OFF VERTICAL

Ø 2.000

20°

.125



Part:	Rotor Core
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	14d of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 5.000

4

3

2

1

4

3

2

1

1-64 UNC THRU
 √ ∅ .137 x 82.0 °
 4 PLACES ON 90 ° TYP
 ON ∅ 2.50 BOLT CIRCLE

∅ .500 THRU

∅ 2.750

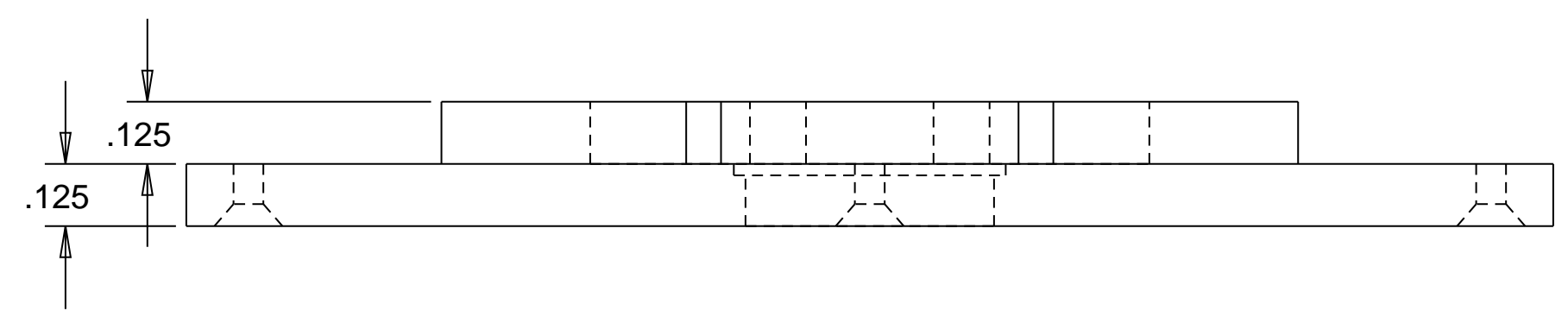
∅ 1.750

∅ .750

40.0 °

∅ .547 ∇ .023

80.0 °



Part:	Upper Stator
Project:	Rotary Actuator
Drawn by:	Group 9
Date:	11/30/2007
Sheet:	15 of 16
Sandia National Laboratory	
FAMU-FSU College of Engineering	

SCALE 3.000

4

3

2

1

D

C

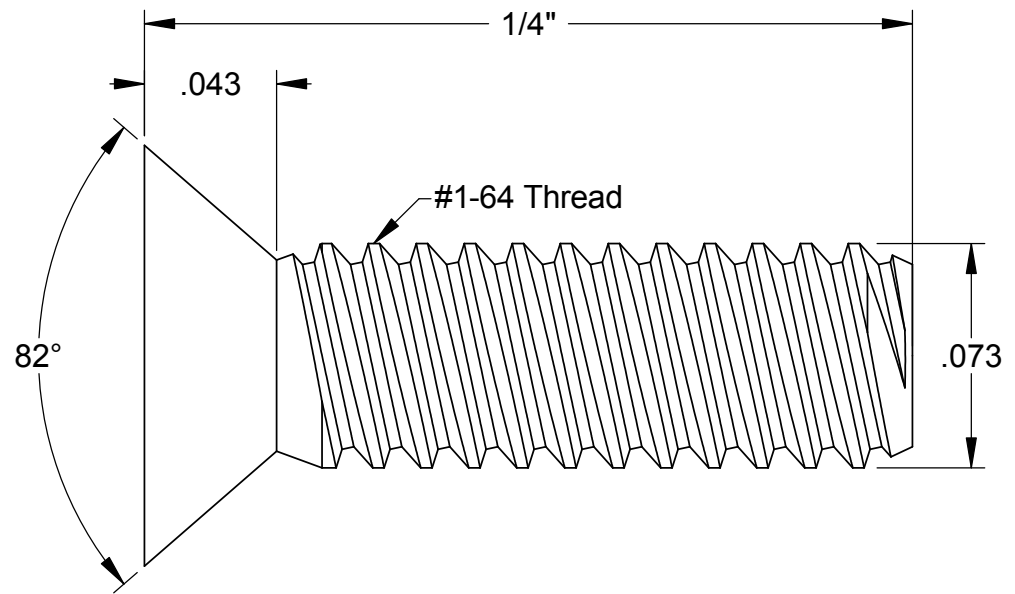
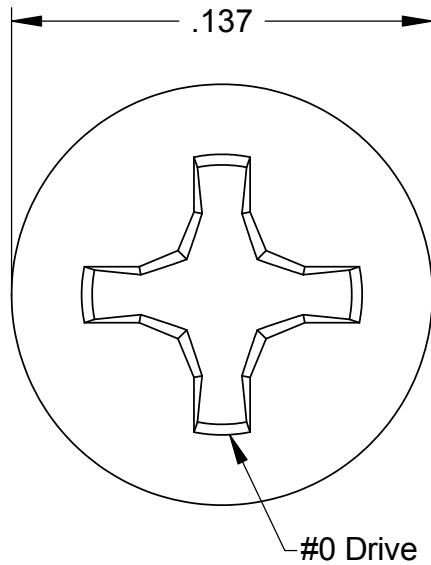
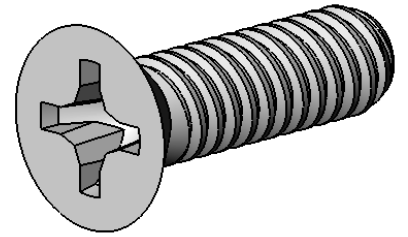
B

A

D

C

A



McMASTER-CARR CAD

PART NUMBER **91771A066**

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18-8 Stainless Steel Phillips
Flat Head Machine Screw

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