This PDF contains 24 detailed drawings of miscellaneous parts, to be used for practice with Autodesk Inventor (or any 3D CAD package for that matter). Some of the parts are a bit more challenging than others, but none of them are meant to be difficult. However, some are intended for specific modeling tools, and hints have been provided in those cases.

In the event that you find a missing dimension or two, please accept my apologies in advance, but don't let it stop you from modeling the part. Instead, you can consider this an opportunity to exercise "designer's choice" and provide a dimension according to your liking, as there are no right or wrong answers for these practice files.

As you work your way through these, keep in mind the best practice of creating simple sketches, to build well constructed features, which add up to a more complex part.

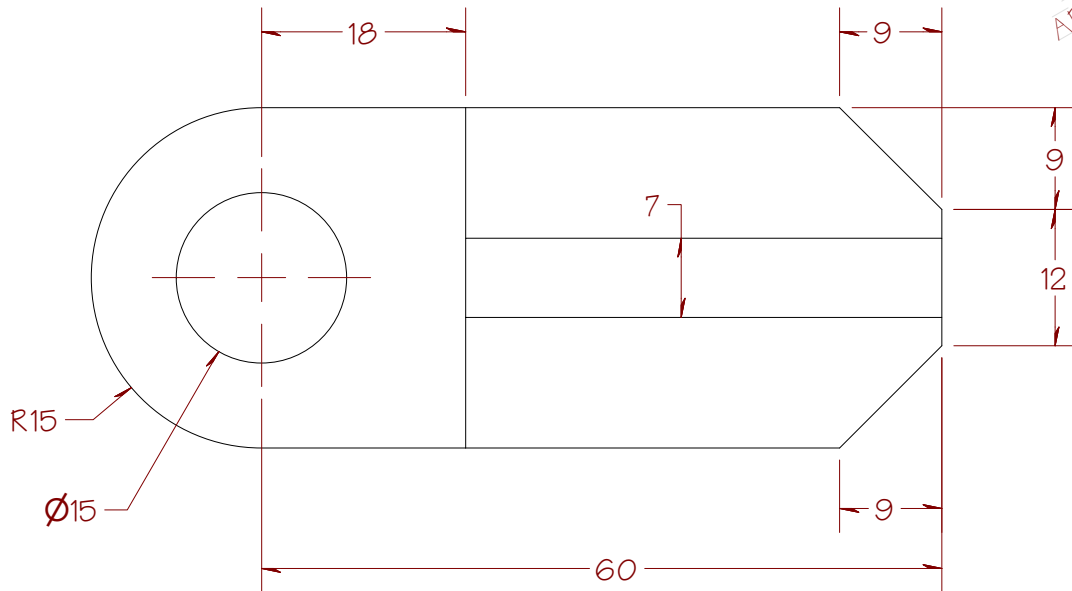Best of luck to you in all of your Inventor and design pursuits,

AUTODESK

KKMSoft

30

9

75
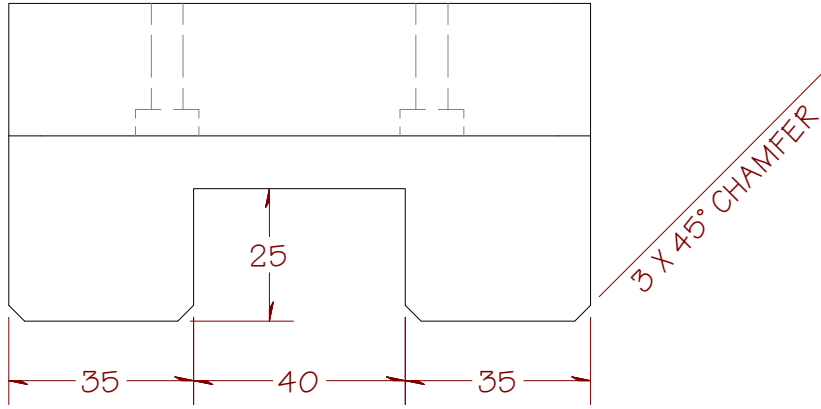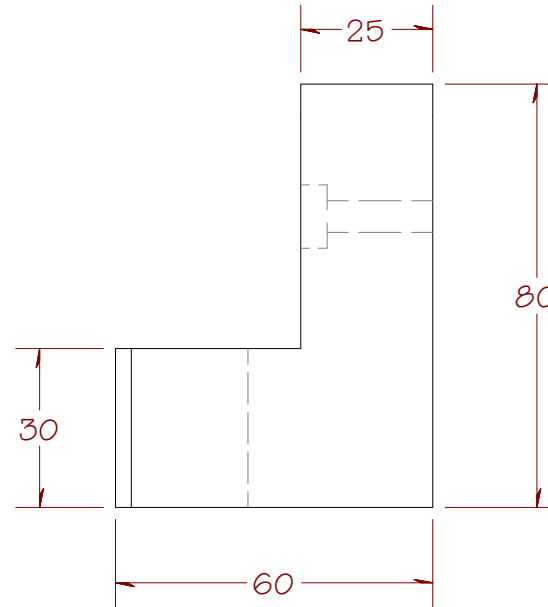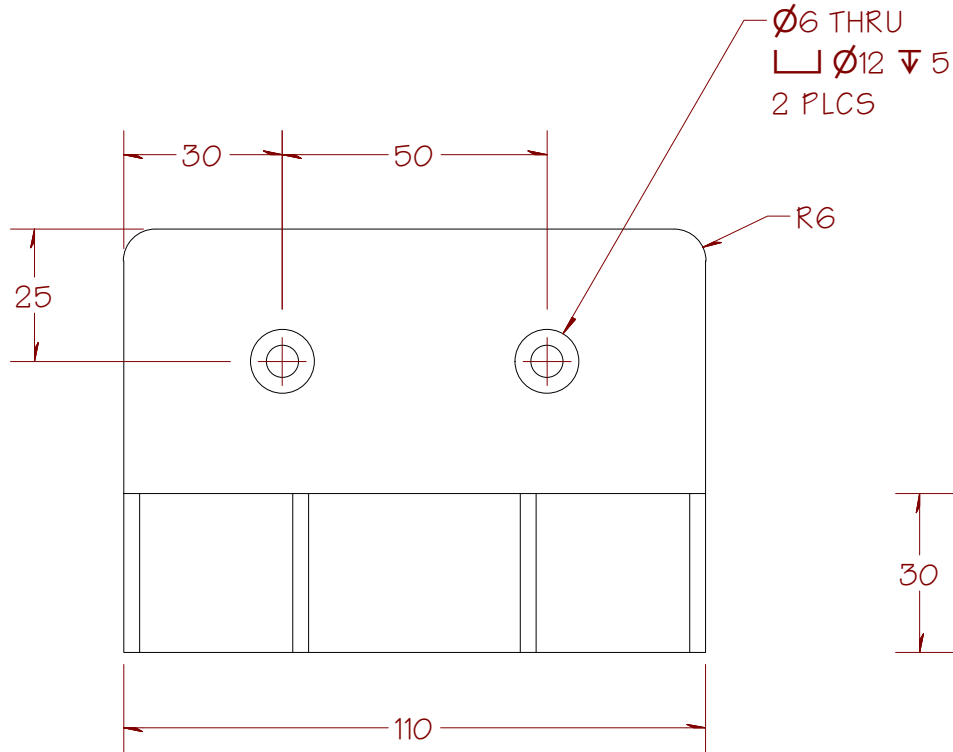
ALL DIMENSIONS
ARE IN MILLIMETERS

18

9

9

7

12

R15

Ø15

9

60

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
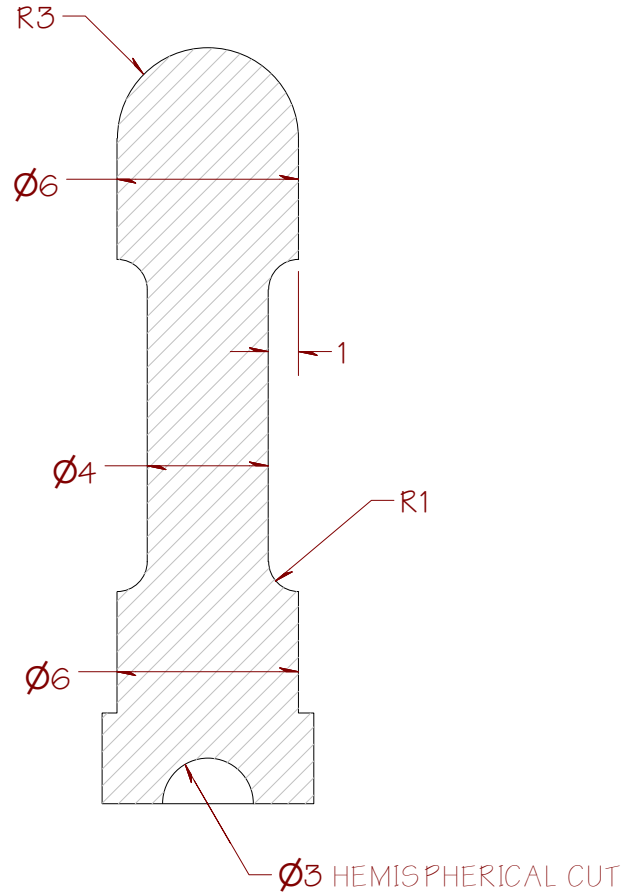Fixture Block.ipt

DESCRIPTION
Hardware, Fixture Block
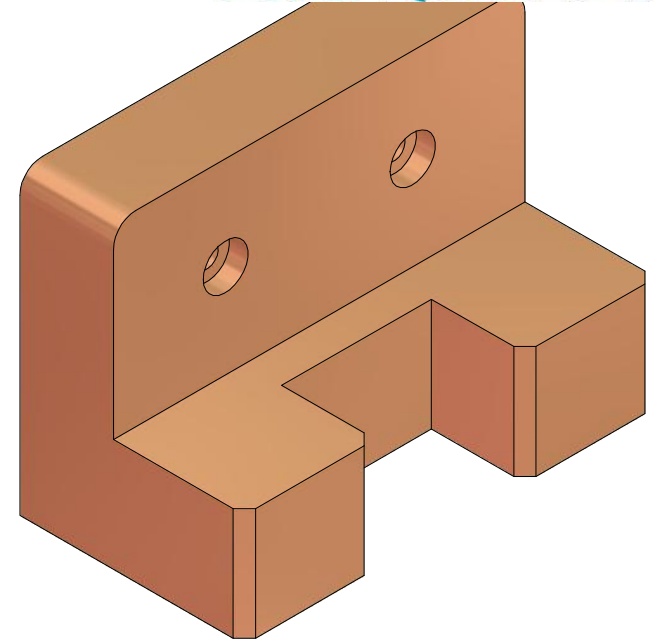
3 X 45° CHAMFER

25

35 40 35

ALL DIMENSIONS
ARE IN MILLIMETERS
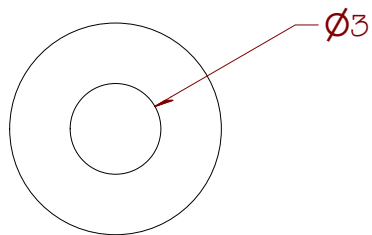
Ø6 THRU
⌴ Ø12 ▼ 5
2 PLCS

30 50

R6

25

25

80

30

60

110

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Mount Bracket.ipt

DESCRIPTION
Hardware, Bracket

KKMSoft

A

A

25

7

11

4

3

Ø7

A

A

Ø3

R3

Ø6

1

Ø4

R1

Ø6

Ø3 HEMISPHERICAL CUT
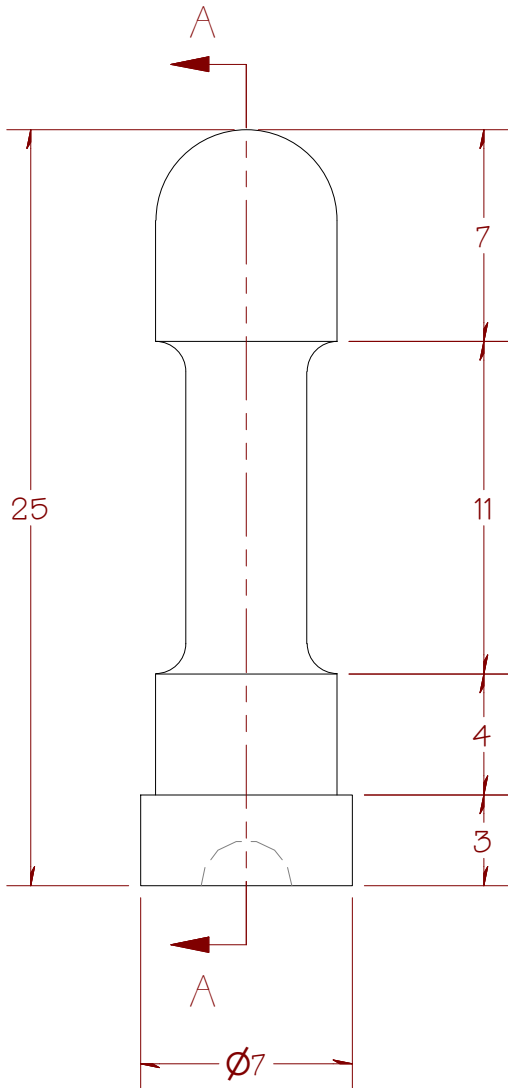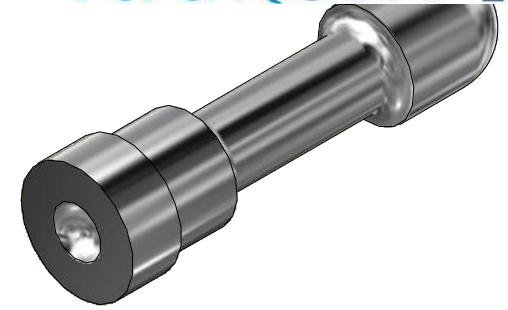
SECTION A-A

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Valve Lifter.ipt

DESCRIPTION
Component, Lifter End

KKMSoft

A

M3x0.5 - 6H
3 PLCS

Ø50

Ø40

Ø12

12

12

A

40

3

12

25

ALL DIMENSIONS
ARE IN MILLIMETERS

Ø25

1 X 45° CHAMFER

1 X 45° CHAMFER
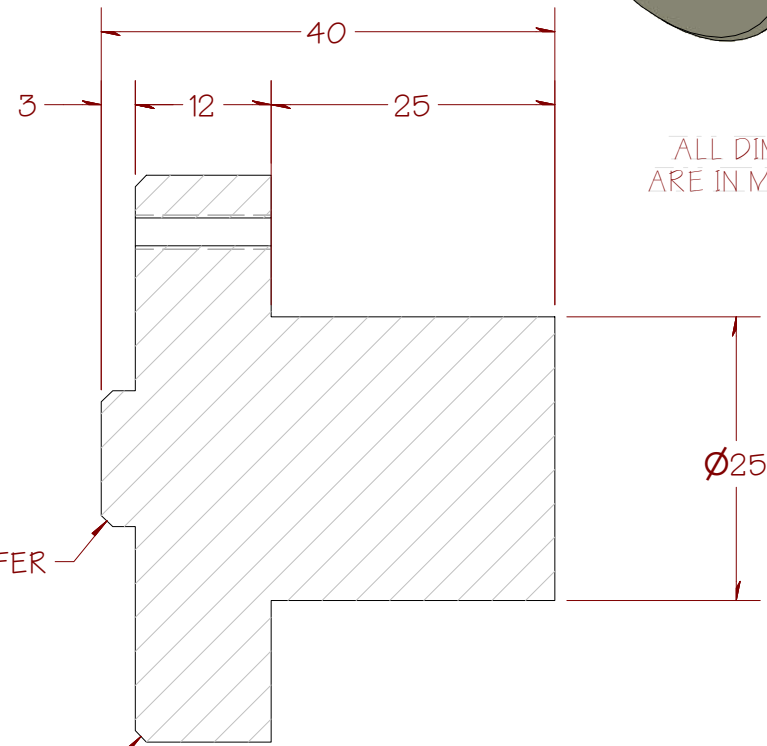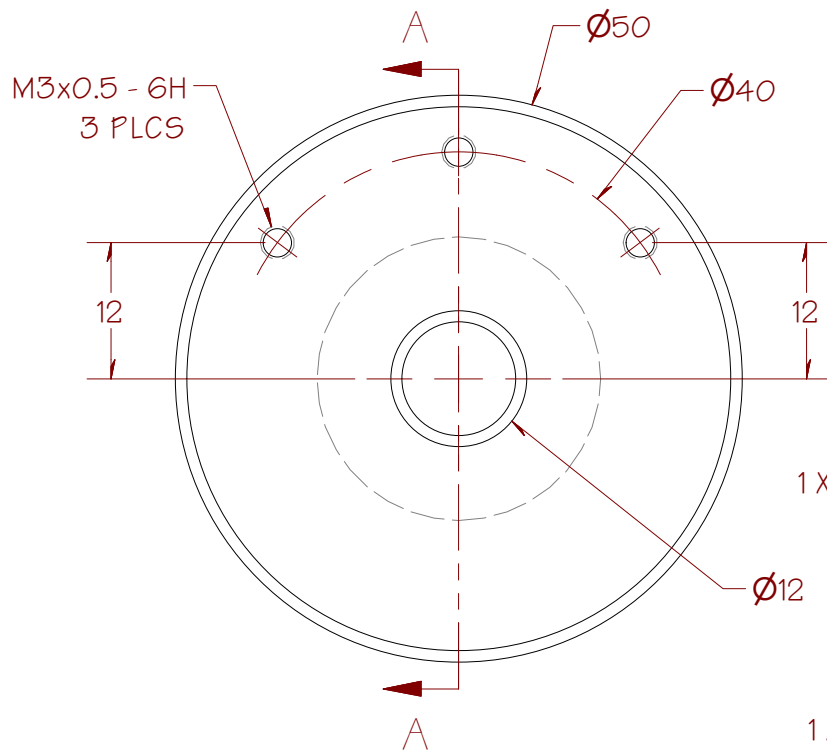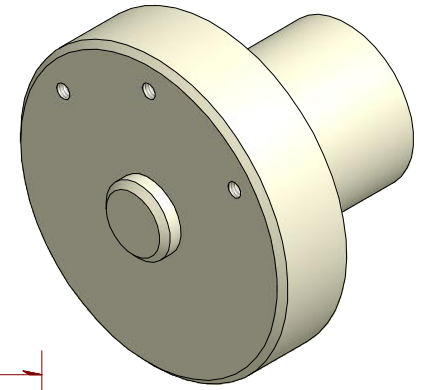
SECTION A-A

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Housing Fixture.ipt

DESCRIPTION
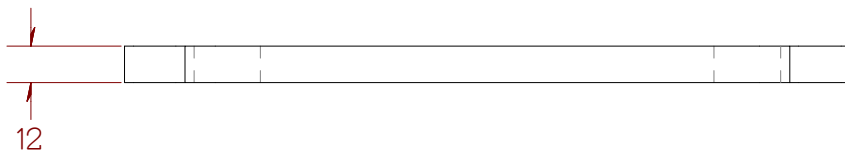Machined, Housing Fixture
Guide

KKMSoft

240

100

R10

54

R3

330

25

A
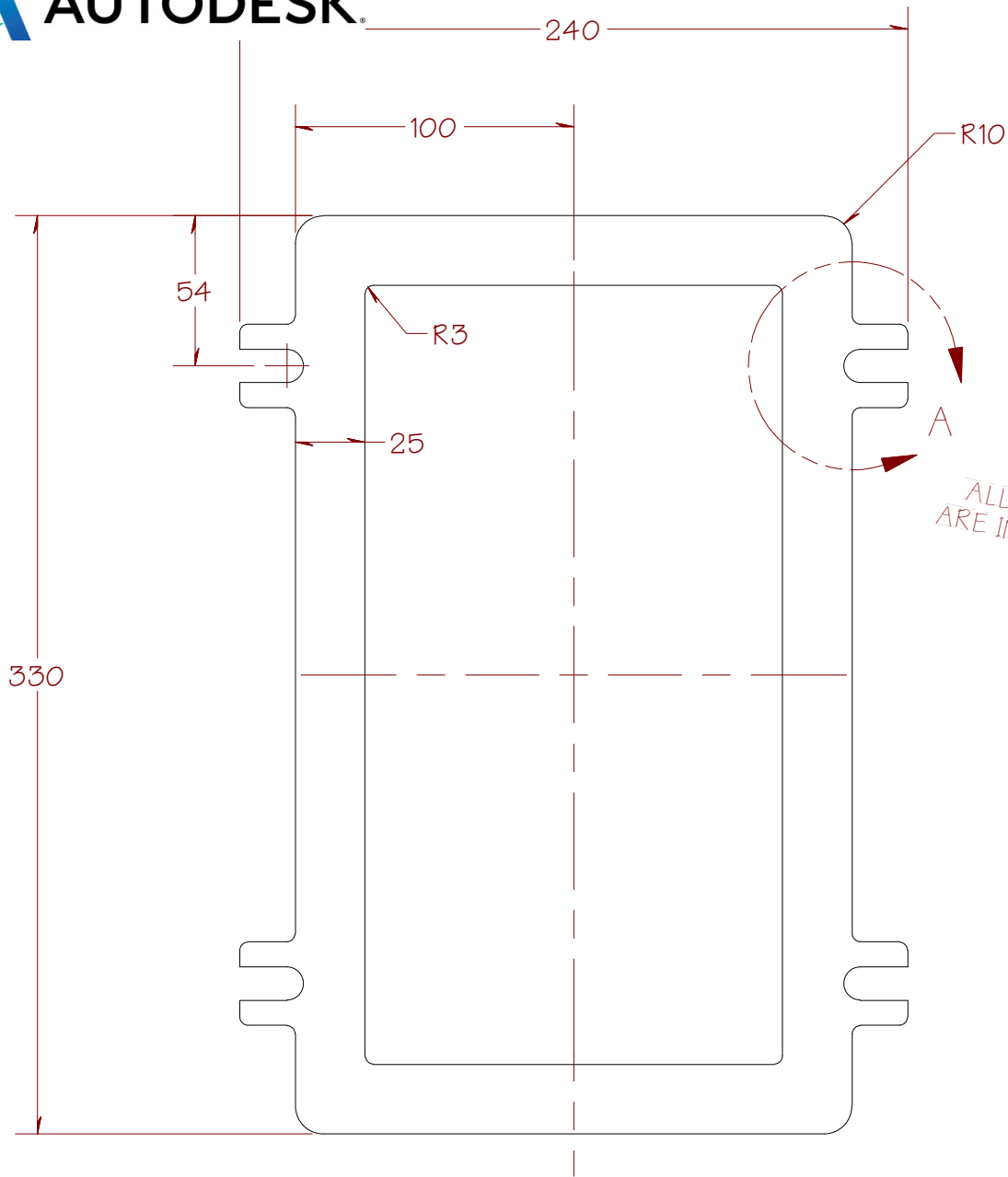
ALL DIMENSIONS
ARE IN MILLIMETERS
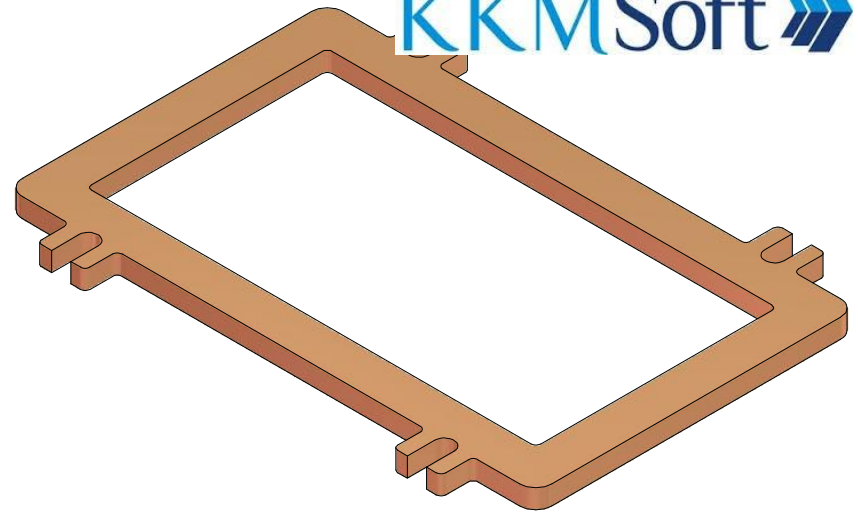
NOTCH DETAIL TYPICAL
4 PLCS

R3

3

R3

12

30

R6

20
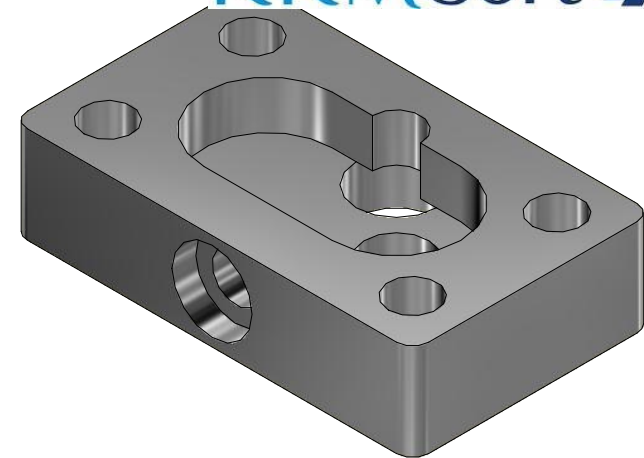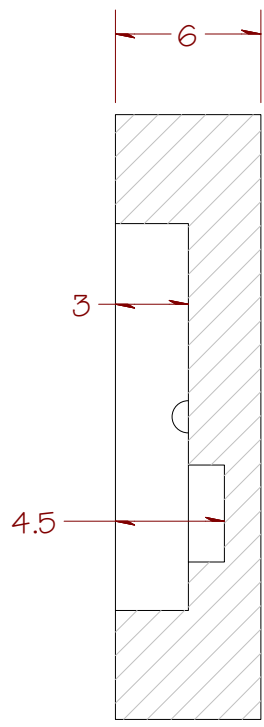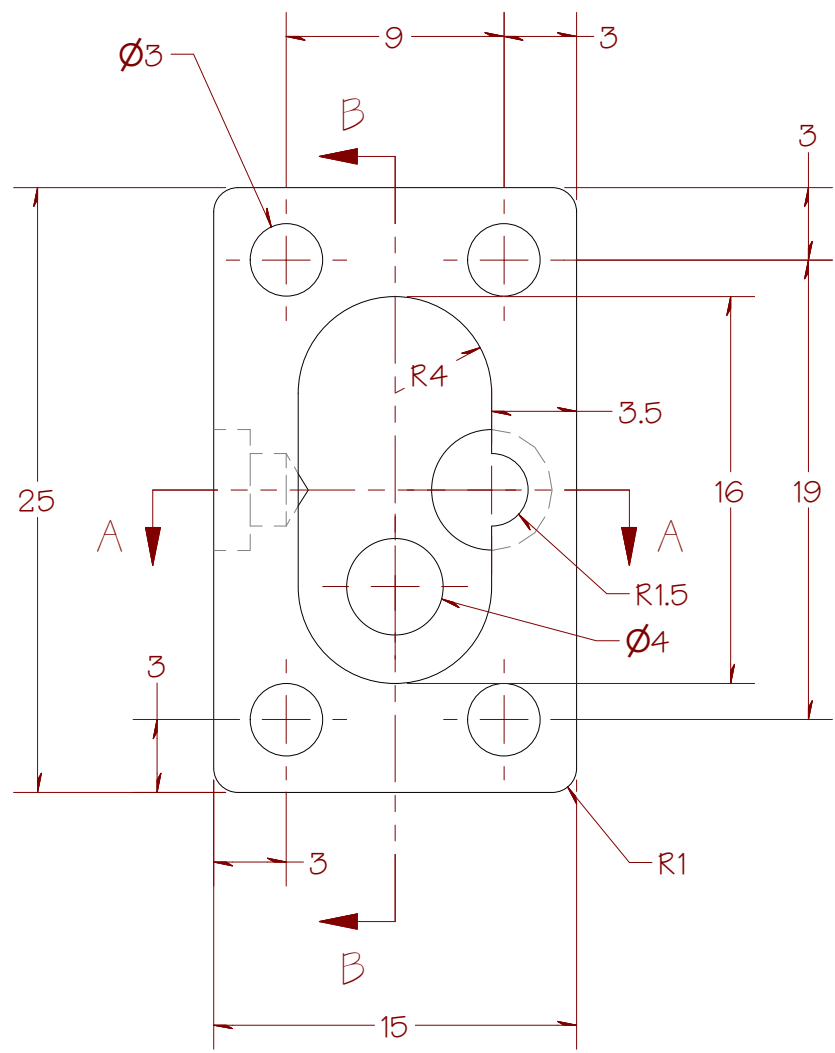
DETAIL A

12
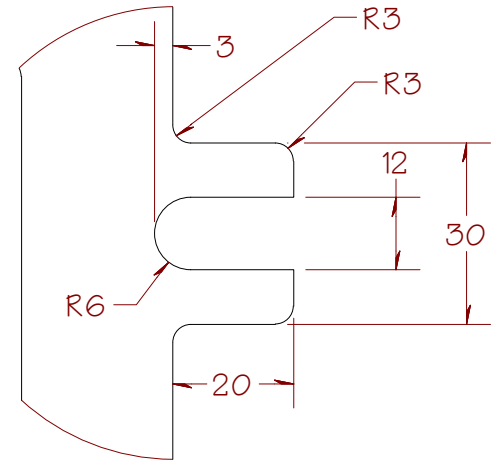
FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
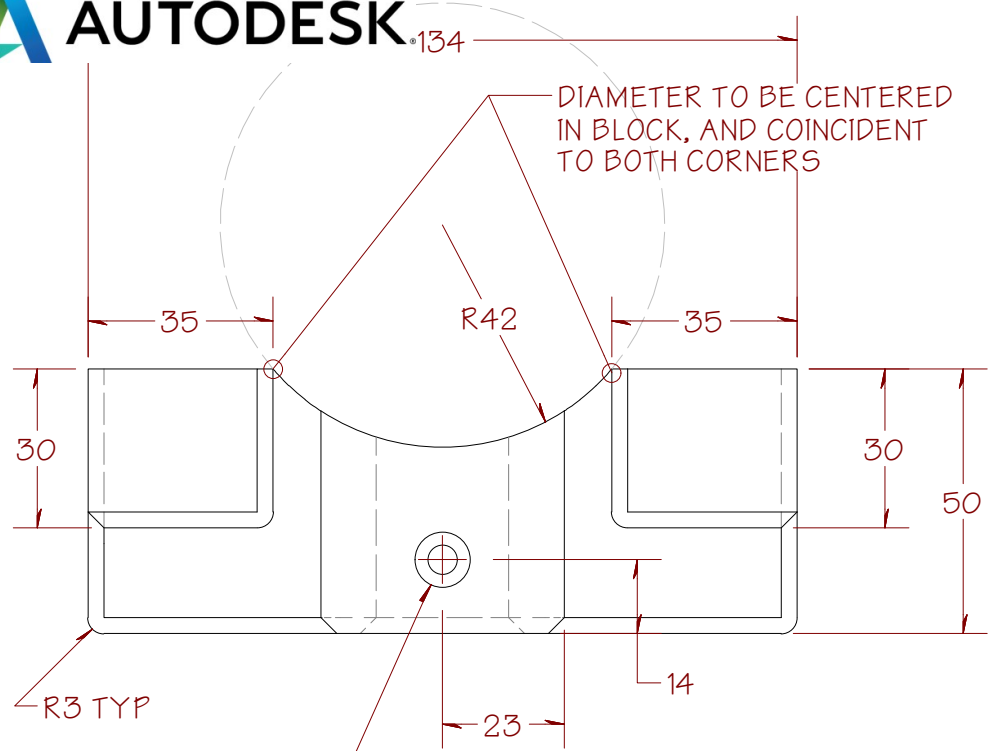Hopper Flange.ipt

DESCRIPTION
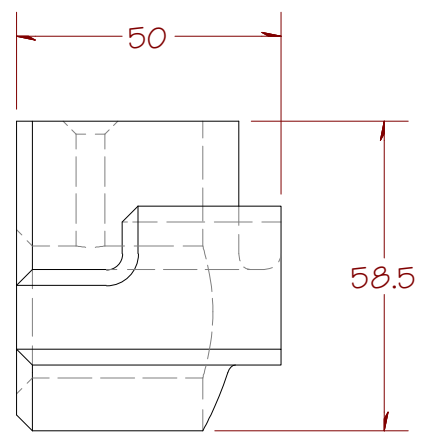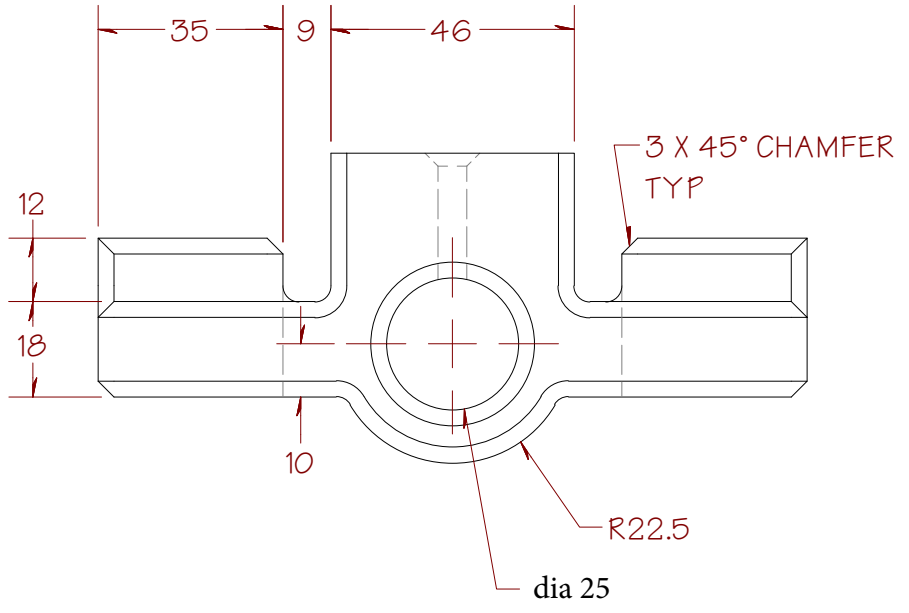Laser Cut, Hopper Flange,
Copper

KKMSoft

SECTION A-A

Ø5

3

3

Ø5

Ø3

1.5

Ø3

9

3

B

3

25

R4

3.5

16

19

A

A

R1.5

Ø4

3

3

R1

B

15

SECTION B-B

6

3

4.5

ALL DIMENSIONS
ARE IN MILLIMETERS

FROM THE DESK OF
CURTIS WAGUESPACK
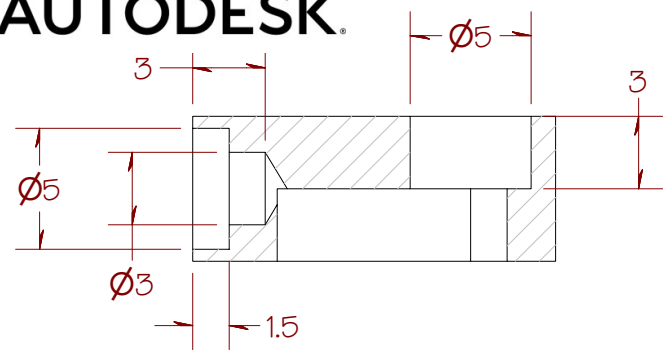
FILE NAME
Gear Pump Body.ipt

DESCRIPTION
Machined, Pump Base, K-02

134

DIAMETER TO BE CENTERED
IN BLOCK, AND COINCIDENT
TO BOTH CORNERS

35   R42   35

30   30   50

R3 TYP

14

23

Ø5.5 ↧ 23.81
⌵ Ø 10.4 X 90°

ALL DIMENSIONS
ARE IN MILLIMETERS

BACK VIEW

FRONT VIEW

35   9   46

3 X 45° CHAMFER
TYP

12

18

10

R22.5

dia 25

50

58.5

FROM THE DESK OF
CURTIS WAGUESPACK
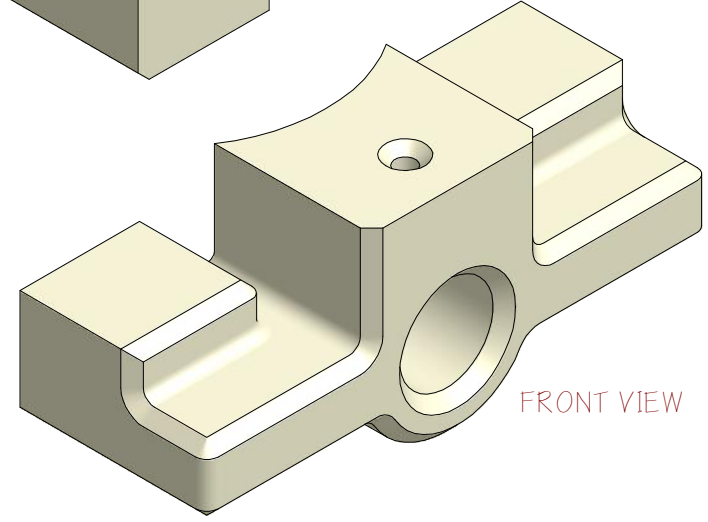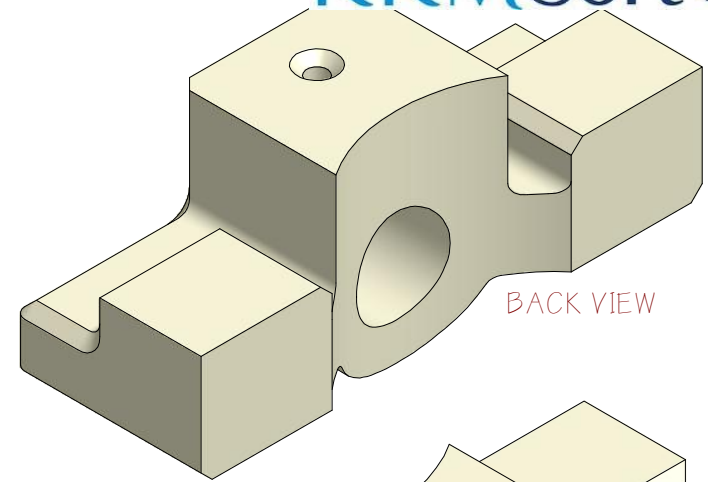
FILE NAME
Alignment Bracket.ipt

DESCRIPTION
Hardware, Bracket, RIO

AUTODESK.

KKMSoft

ALL DIMENSIONS
ARE IN MILLIMETERS

32
9
78°
7.5
15
25
(44.34)

M2.3x0.45 - 6H ▼ 4
6 PLCS

R2
25

Ø8 THRU
Ø12 ▼ 2

25

15

M4x0.7 - 6H

72

45°

R4

35

17.5

22

50

50

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Dovetail Stop Guide.ipt

DESCRIPTION
Hardware, Guide Stop,
Anodized

KKMSoft

65

12.5

R2

10

55

ALL DIMENSIONS
ARE IN MILLIMETERS

Ø20 THRU

R2

R20

Ø20 ↧ 65

KEYWAY IS
8 DEEP

5

4

35°

40

35

55

54   60

40

24

7

72°

40

65

FROM THE DESK OF
CURTIS WAGUESPACK
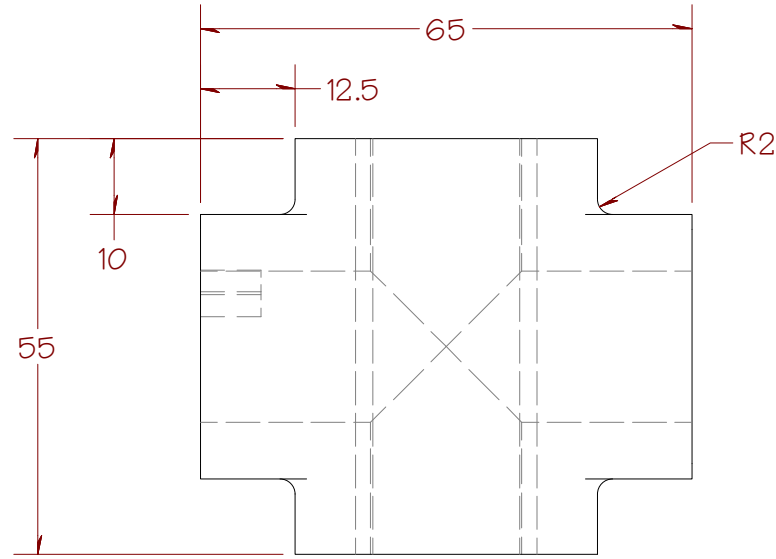
FILE NAME
Anchor Slide.ipt

DESCRIPTION
Hardware, Anchor Slide,
HM-T

10

1

R1

Ø6

R2

18

R2

80

60
HEIGHT

25
PITCH

45°

2.5

2.5

0.5

Ø2

Ø2

Ø6

0.5
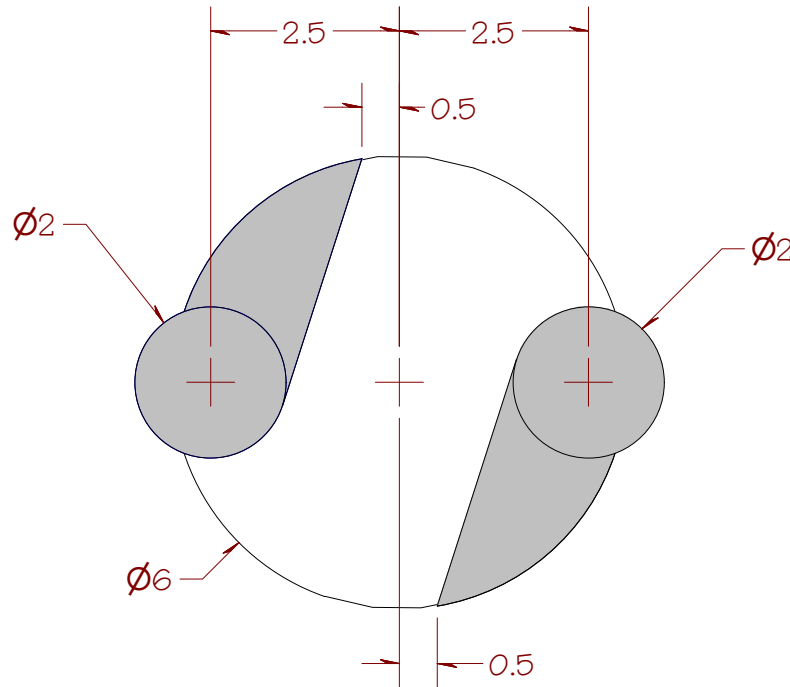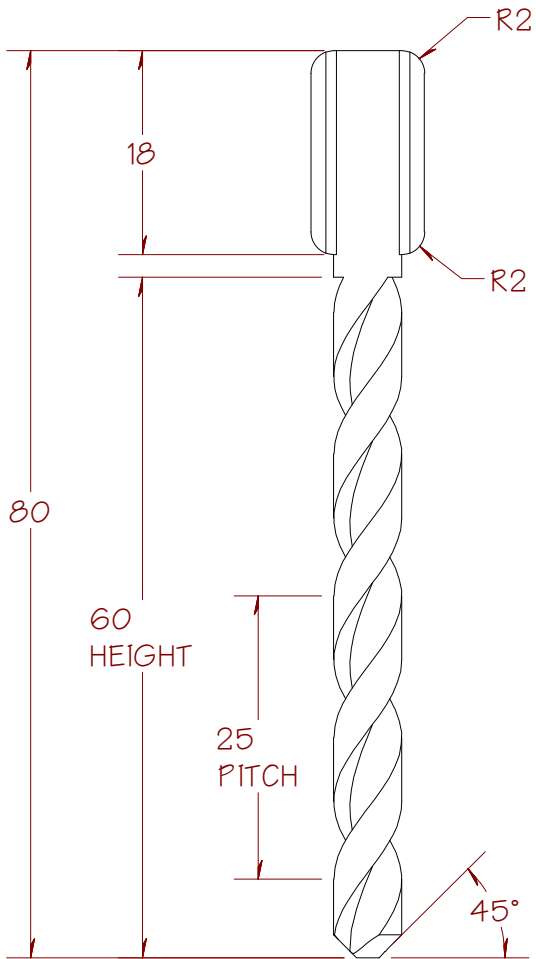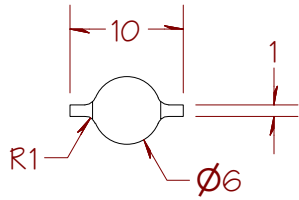
END VIEW WITH
CUT PROFILES
(SHOWN SHADED)

ALL DIMENSIONS
ARE IN MILLIMETERS

HINT:
CREATE A COIL CUT AND
THEN PATTERN THE CUT
AROUND THE AXIS

FROM
THE
DESK OF
CURTIS
WAGUESPACK

FILE NAME
Drill Bit.ipt

DESCRIPTION
Hardware, Splined Drill Bit

KKMSoft

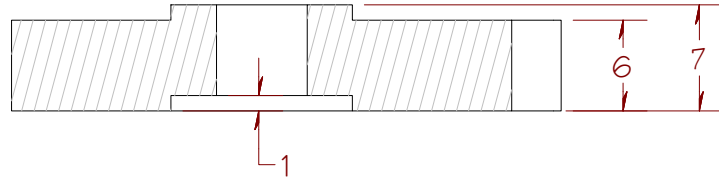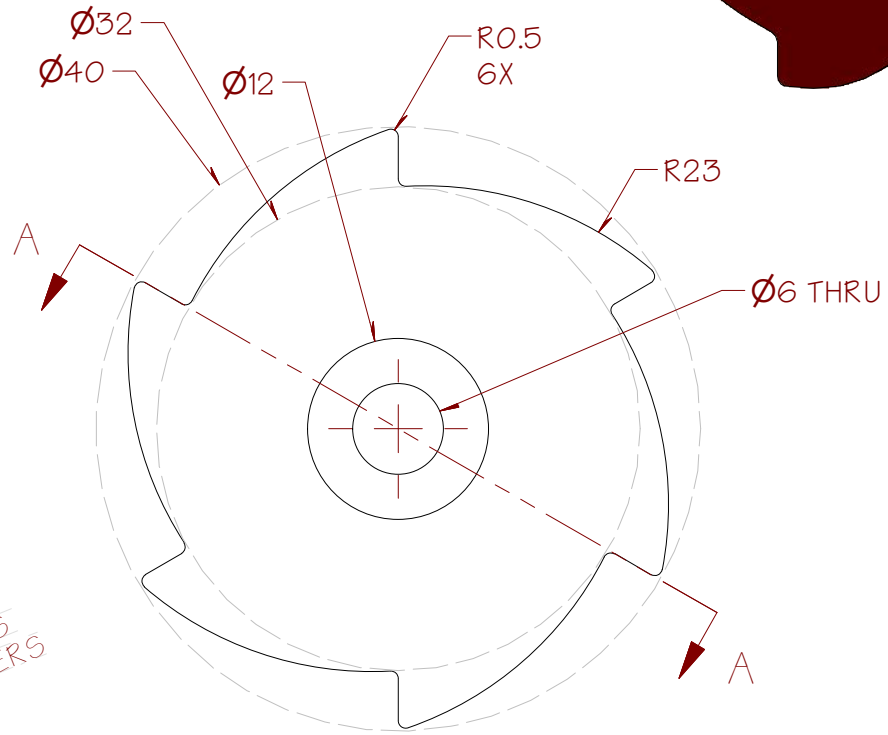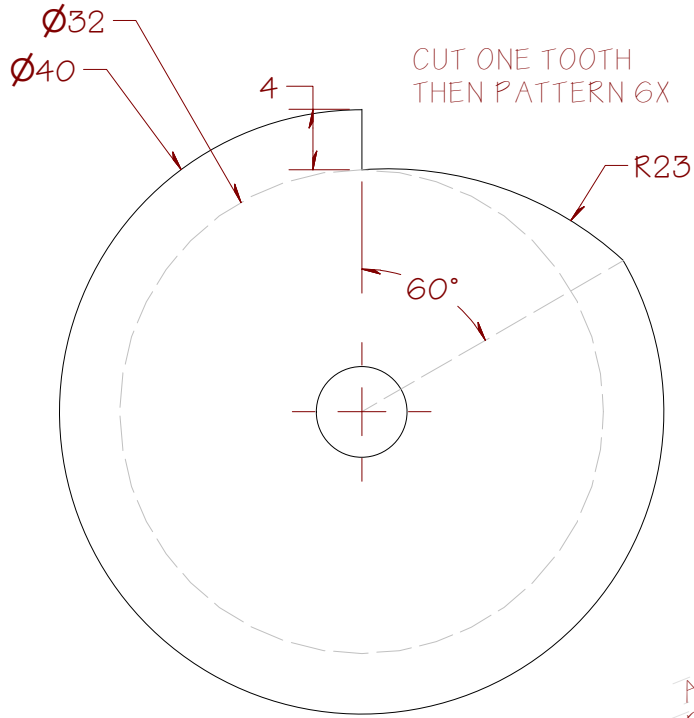ALL DIMENSIONS
ARE IN MILLIMETERS

6

4

6

A ← → A

Ø30 Ø42

100

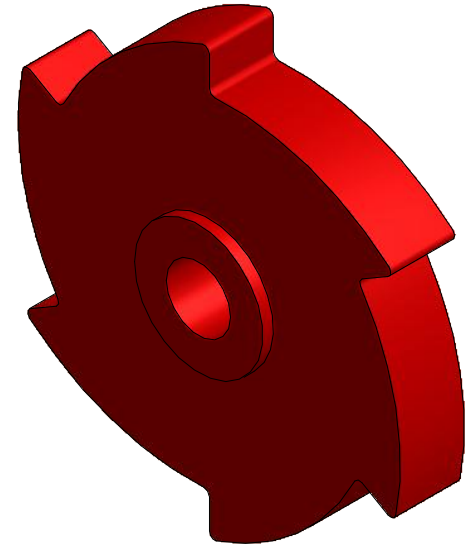R3

R3

2 X 45° CHAMFER
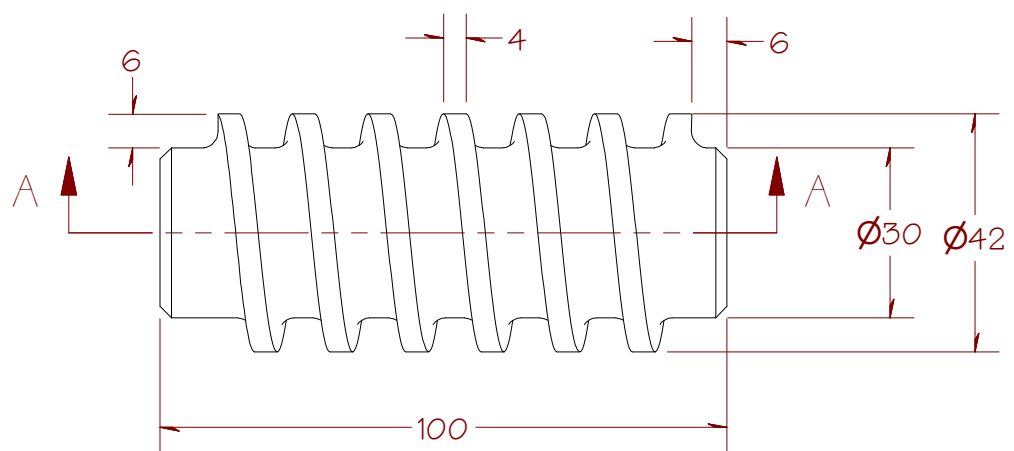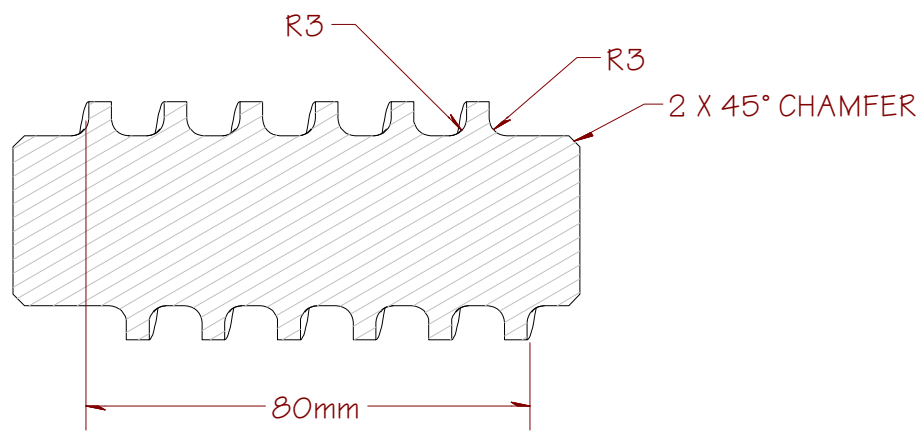
80mm

COIL 6 REVOLUTIONS AT 80 mm

SECTION A-A

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Drive Insert.ipt

DESCRIPTION
Hardware, Drive Insert,
GH-076

AUTODESK.

KKMSoft

SECTION A-A

6
7
1

Ø32
Ø40
4
CUT ONE TOOTH
THEN PATTERN 6X
R23
60°

Ø32
Ø40
Ø12
R0.5
6X
R23
A
Ø6 THRU
A

ALL DIMENSIONS
ARE IN MILLIMETERS

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Rachet Wheel.ipt

DESCRIPTION
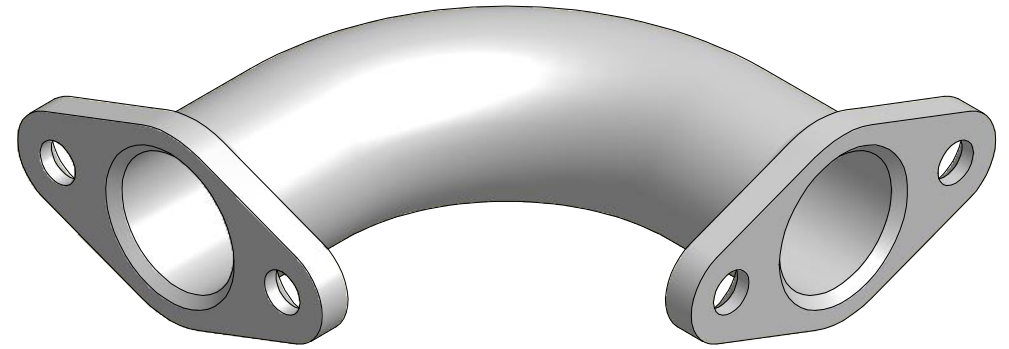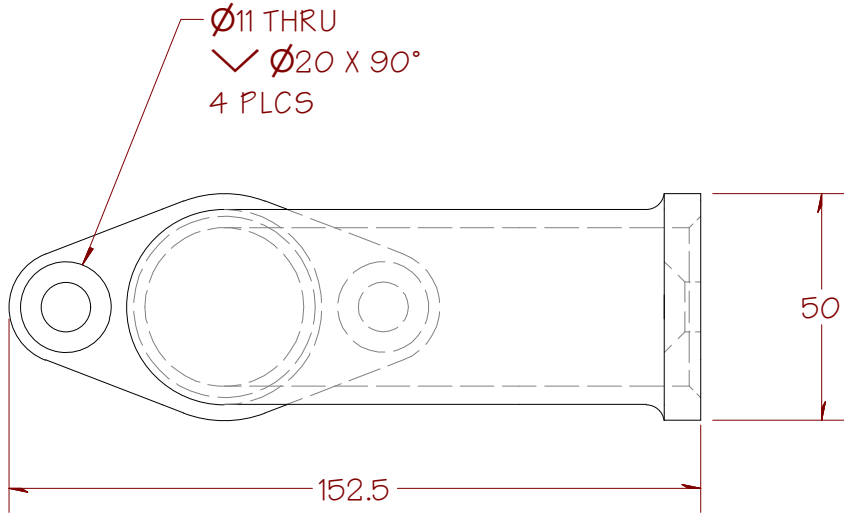Hardware, Rachet Wheel, 6
Tooth

ALL DIMENSIONS
ARE IN MILLIMETERS

6

5

R2

5

50

5

5

45

45°

5

50

275
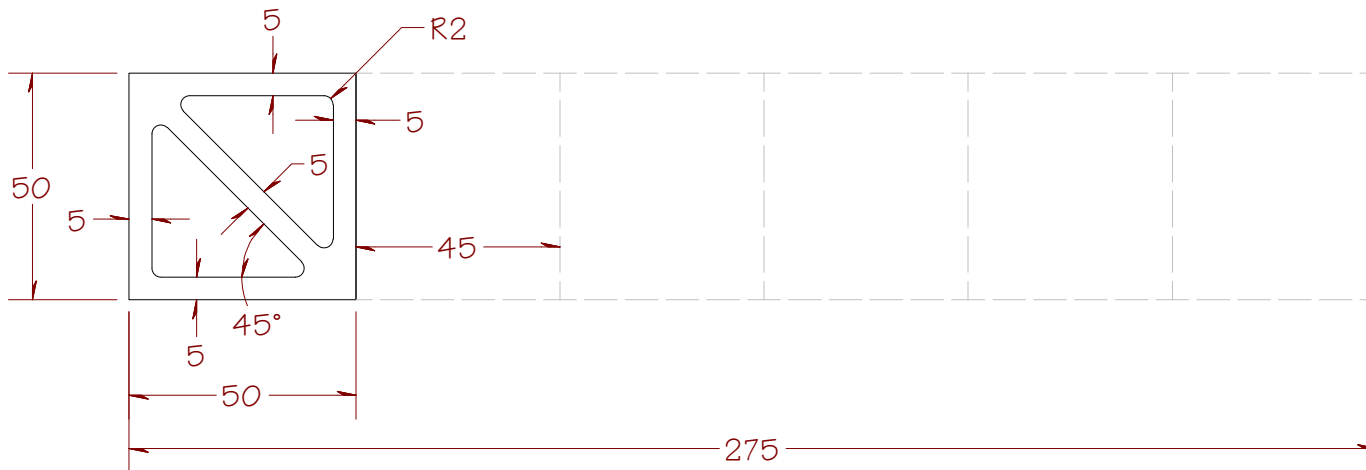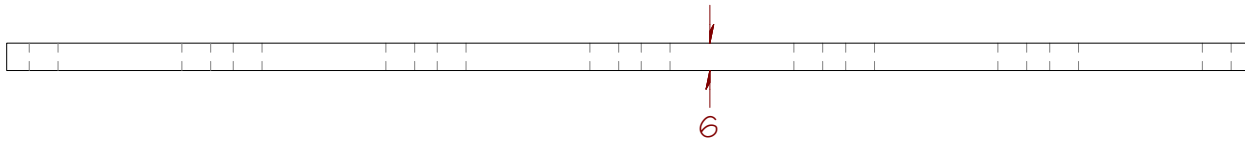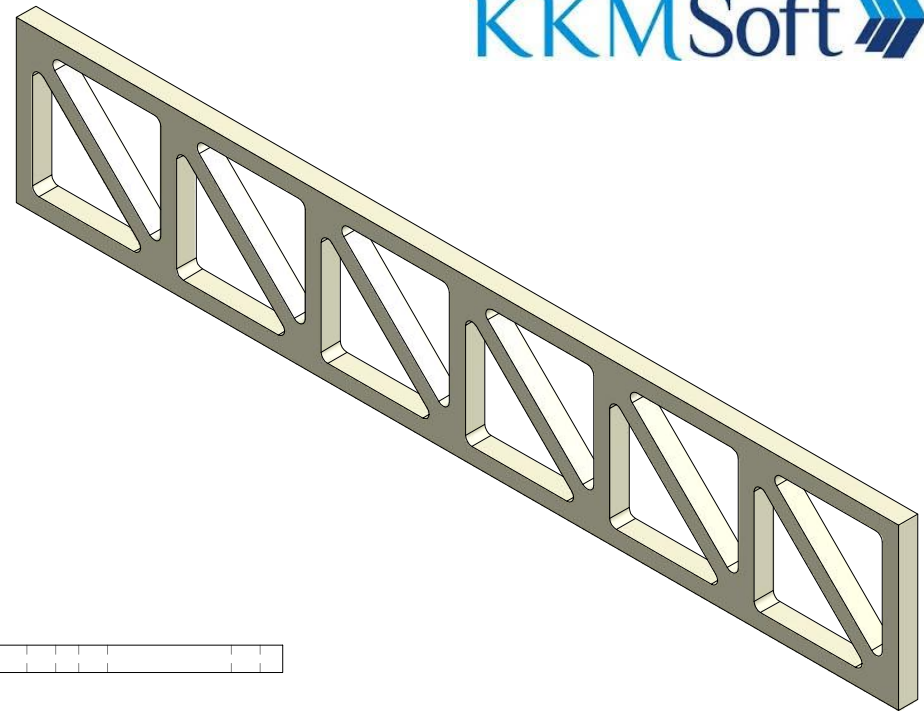
CREATE ONE UNIT AS SHOWN
THEN PATTERN 6X

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
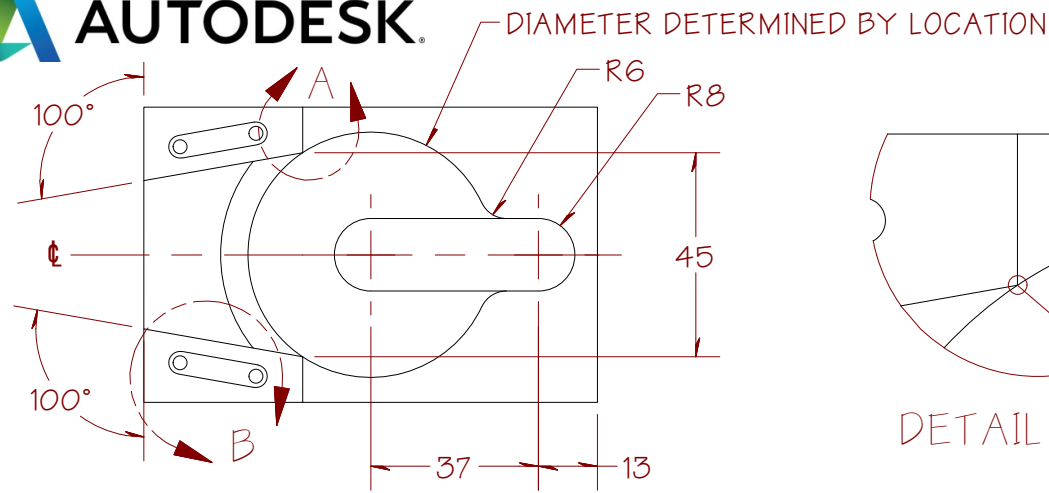Truss Flange.ipt

DESCRIPTION
Component, Truss Flange, ABS

Ø11 THRU
Ø20 X 90°
4 PLCS

50

152.5

HINT: CREATE ONE HALF AND THEN MIRROR IT

ALL DIMENSIONS ARE IN MILLIMETERS

8

R4

90°

Ø43

152.5
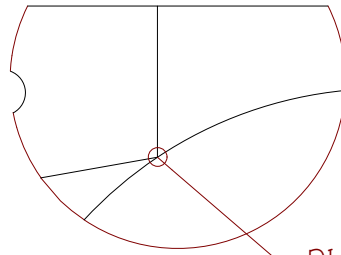
R43.5

R86.5

R4

8

Ø25

Ø35 THRU
Ø40 X 90°
2 PLCS

Ø50

70

95

105
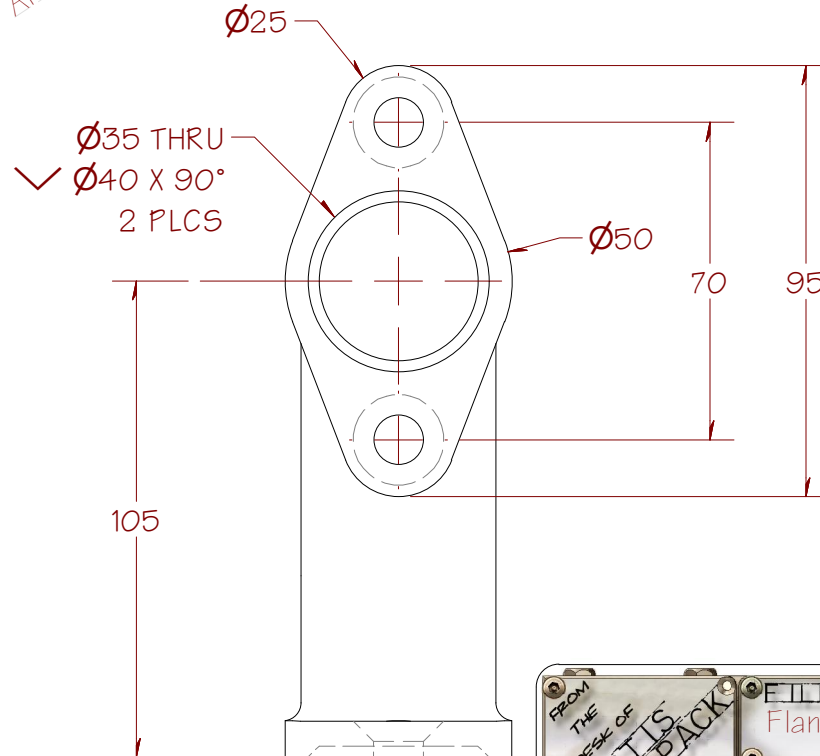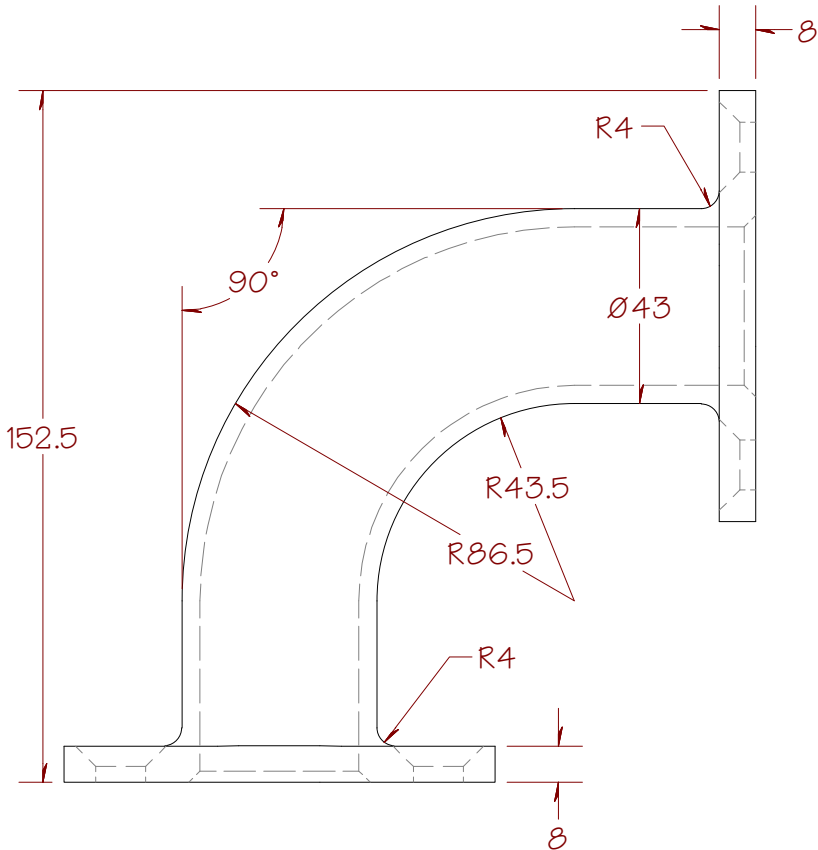
FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Flanged 90 Elbow.ipt

DESCRIPTION
Hardware, Flanged Elbow,
90 degrees

AUTODESK.

KKMSoft

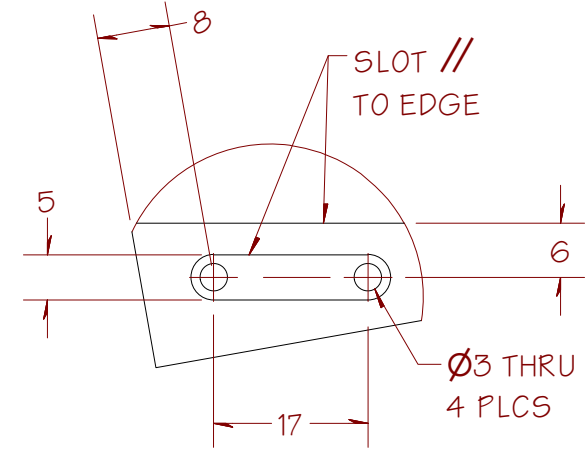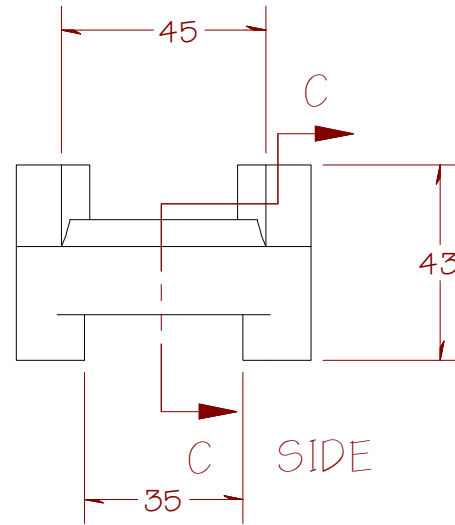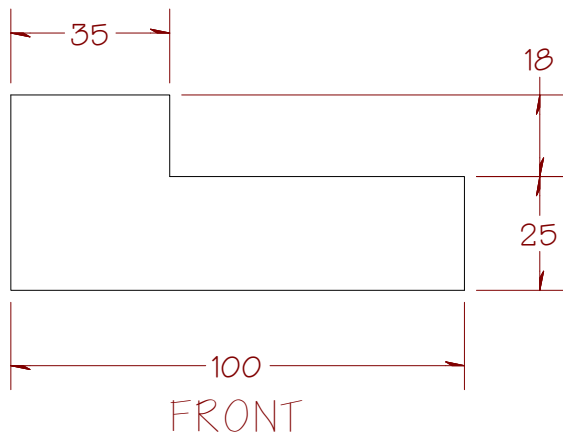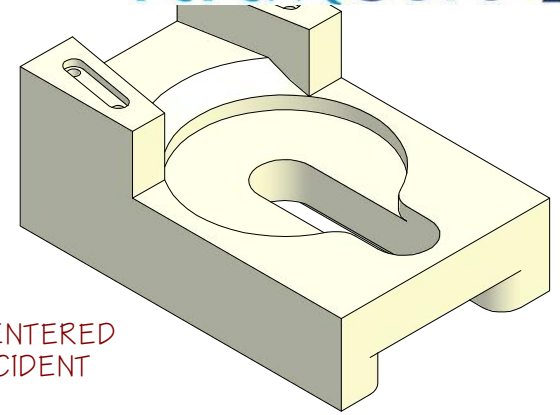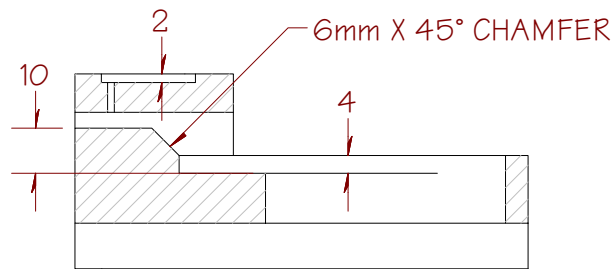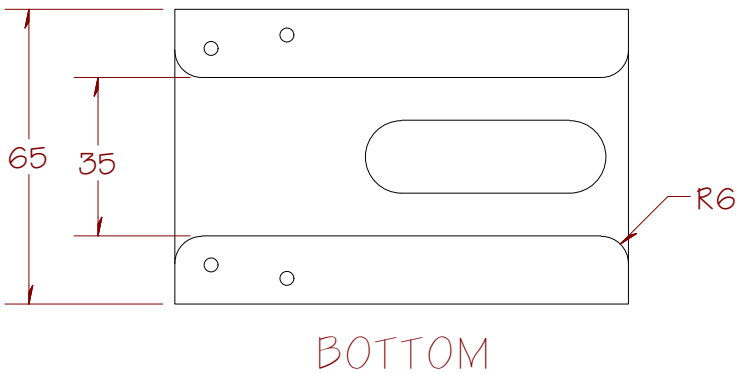DIAMETER DETERMINED BY LOCATION

A

R6

R8

100°

100°

45

37

13

TOP

DETAIL A

DIAMETER TO BE CENTERED
IN BLOCK, AND COINCIDENT
TO BOTH CORNERS

B

35

18

25

100

FRONT

45

C

43

C   SIDE

35

8

SLOT //
TO EDGE

5

6

Ø3 THRU
4 PLCS

17

DETAIL B

65

35

R6

BOTTOM

2

6mm X 45° CHAMFER

10

4
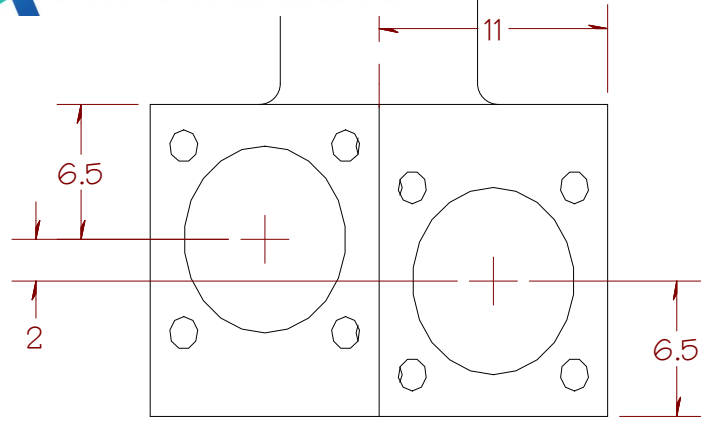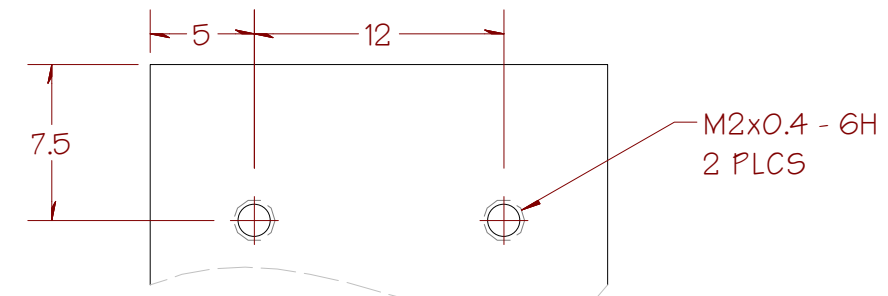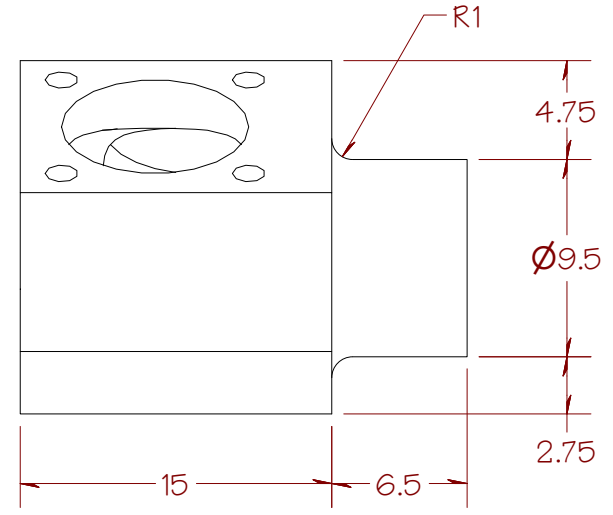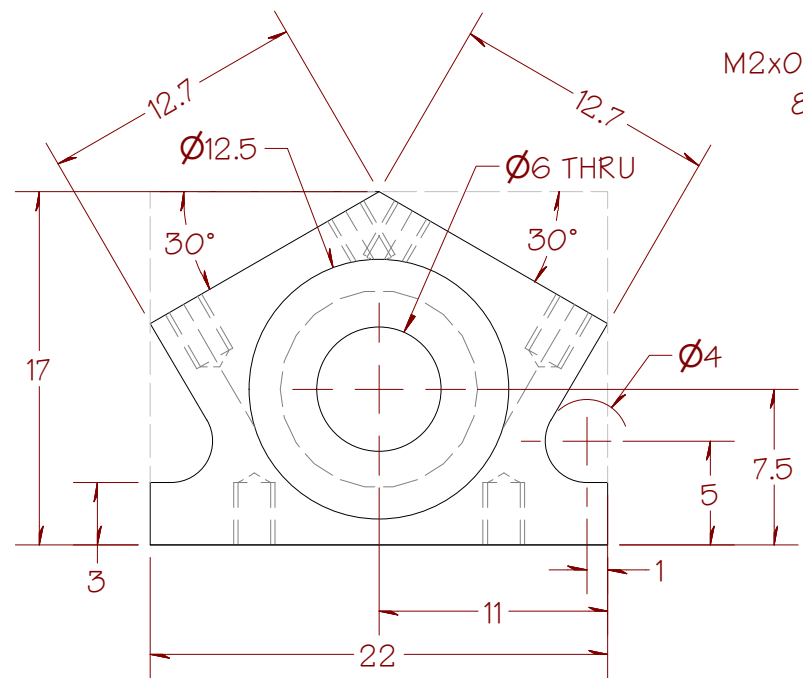
SECTION C-C

ALL DIMENSIONS
ARE IN MILLIMETERS

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Alignment Catch.ipt

DESCRIPTION
Fixture, Alignment Catch
Block Slide

KKMSoft

12.7
11
9

6.5
2
6.5

Ø9
9
6.35

M2x0.4 - 6H
8 PLCS

12.7
12.7
Ø12.5
Ø6 THRU
30°
30°
17
Ø4
7.5
5
3
1
11
22

R1
4.75
Ø9.5
2.75
15
6.5
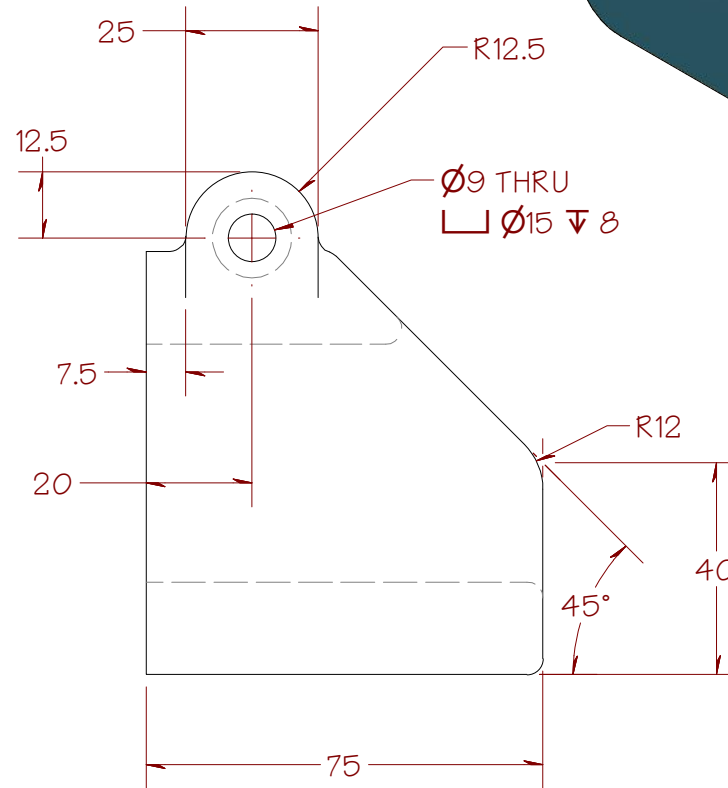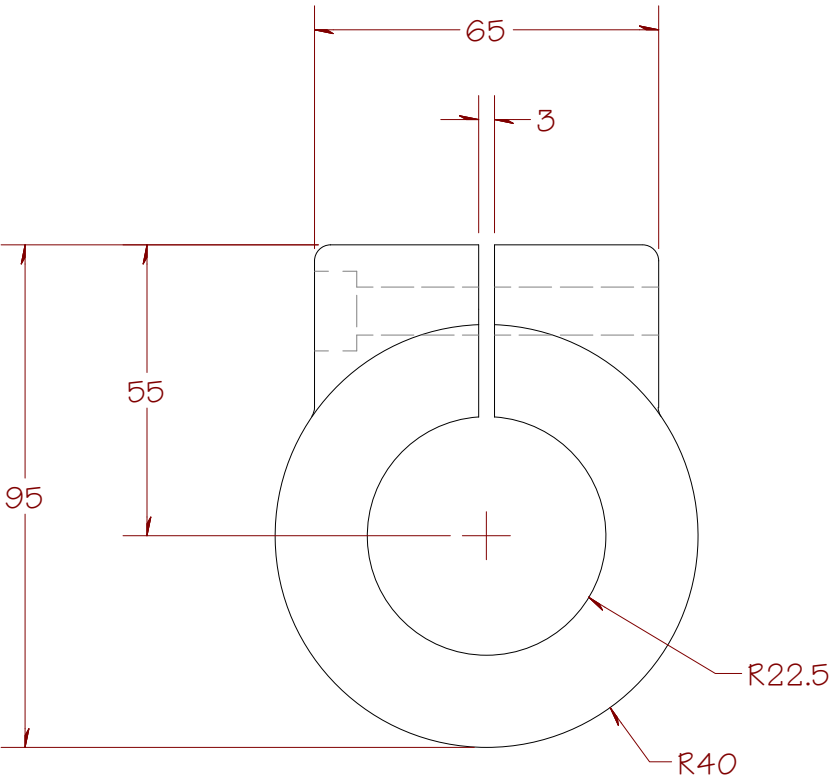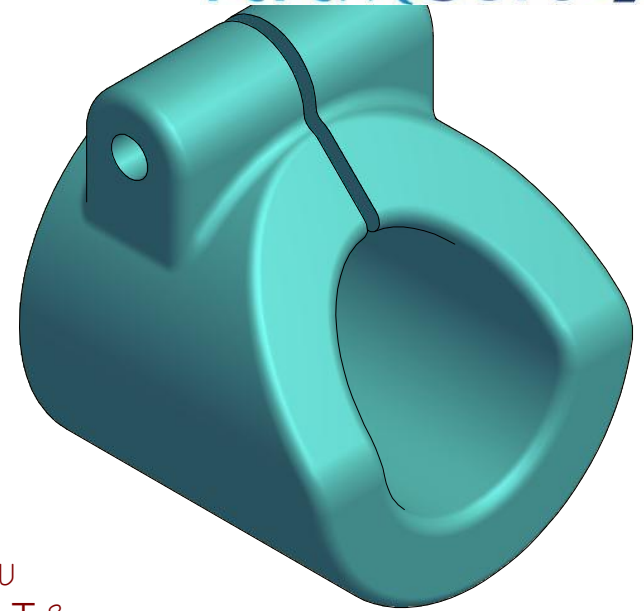
5
12
7.5
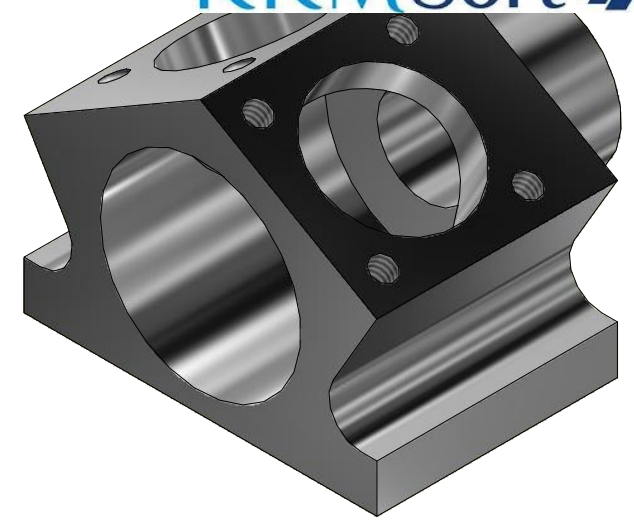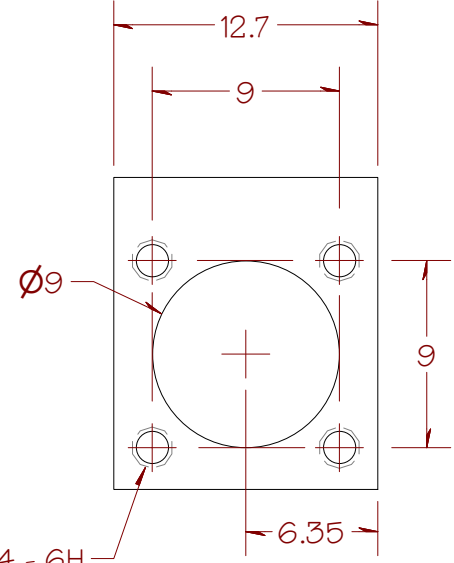
M2x0.4 - 6H
2 PLCS

BOTTOM VIEW

HINT: START WITH A 17x22x15 BLOCK
THEN CUT FEATURES AS
IF MACHINING IN THE REAL WORLD

ALL DIMENSIONS
ARE IN MILLIMETERS

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Mini Crank Case.ipt

DESCRIPTION
Concept Model, Miniature
V-Twin, Crank Case

65

3

55

95

R22.5
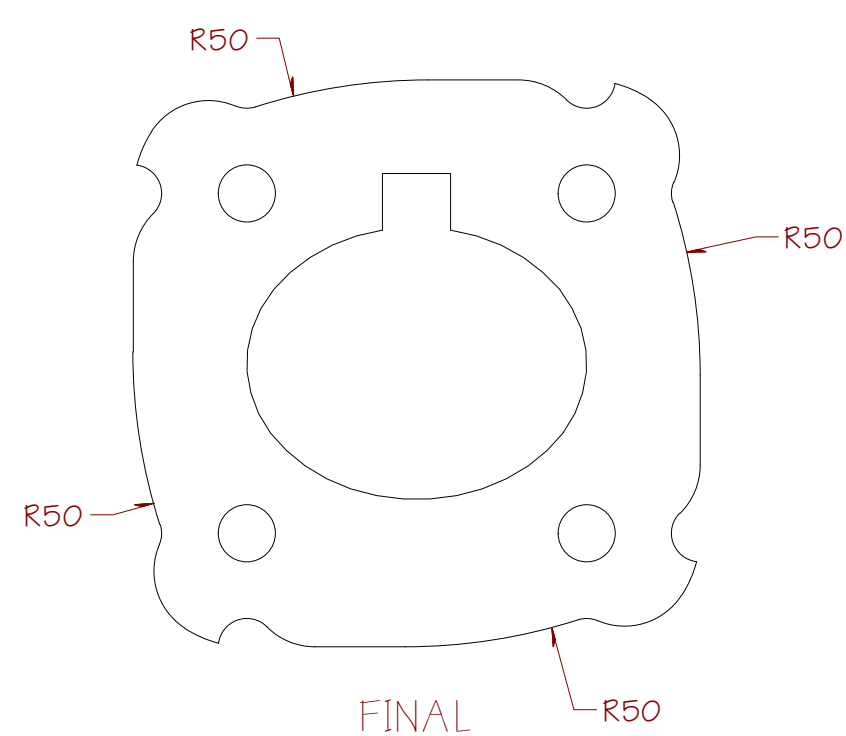
R40
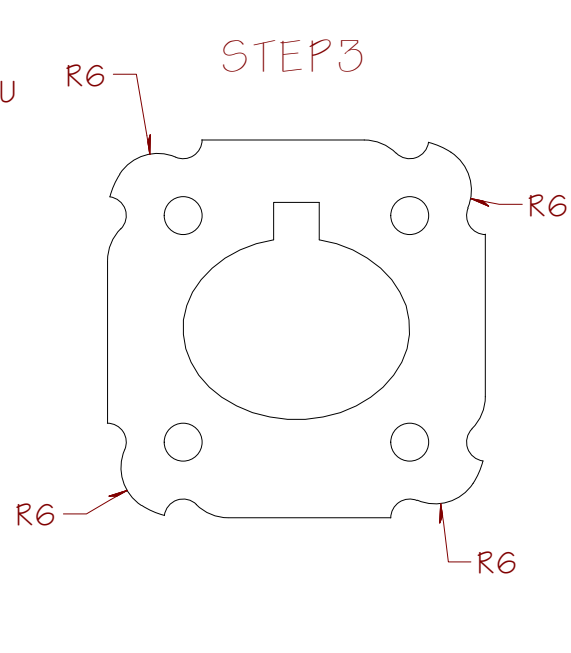
25

12.5

R12.5

Ø9 THRU
⌴ Ø15 ▼ 8

7.5

R12

20

40

45°

75
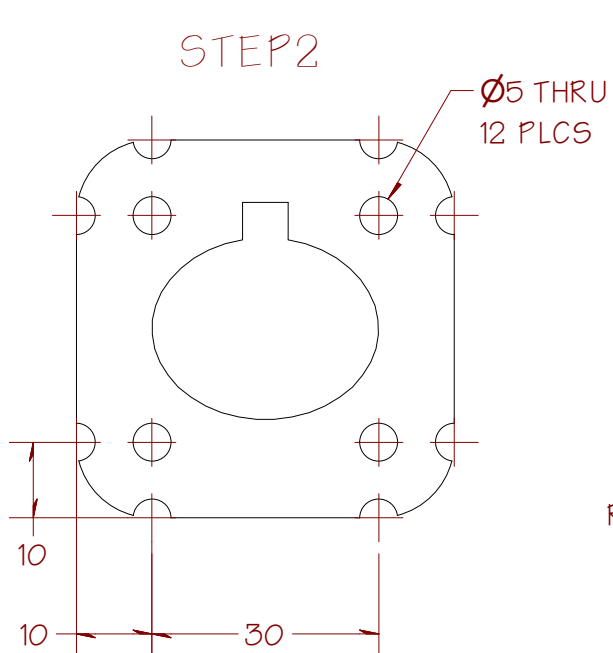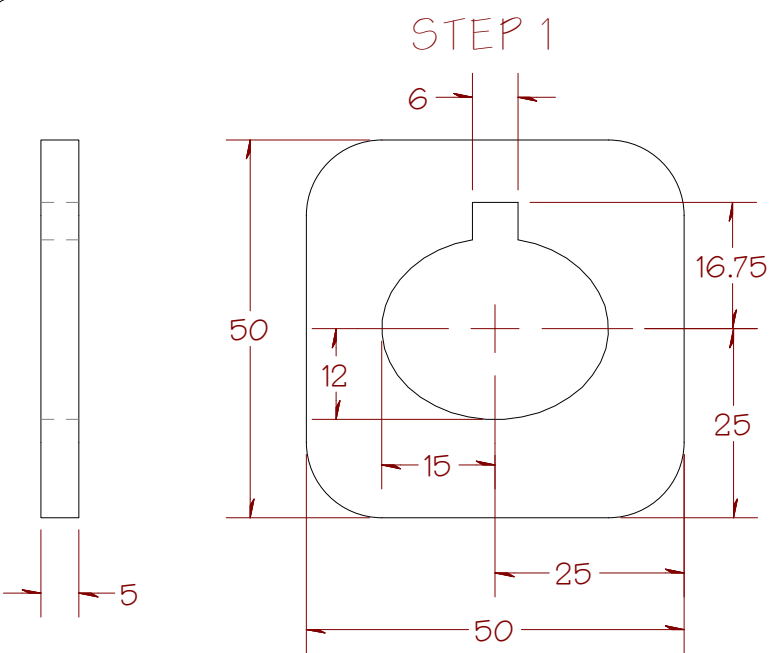
ALL DIMENSIONS
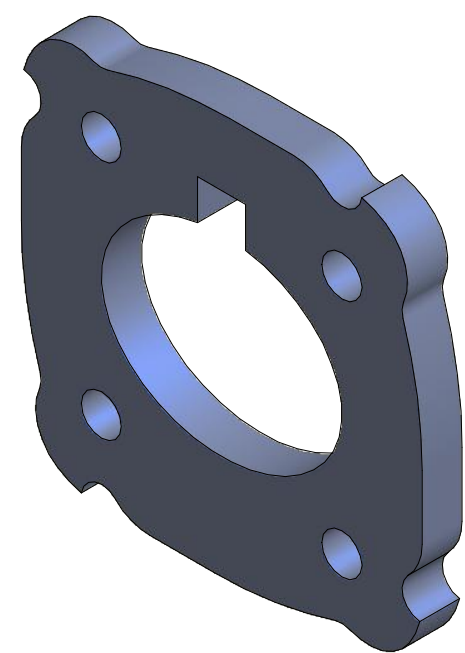ARE IN MILLIMETERS

ALL FILLETS 3mm
UNLESS OTHERWISE
NOTED

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Pinch Fit Cap.ipt

DESCRIPTION
Hardware, Pinch Fit
Sleeve/Cap

STEP 1

6

50

16.75

12

15

25

25

5

50

STEP2

Ø5 THRU
12 PLCS

10

10

30

STEP3

R6

R6

R6

R6

R6

FINAL

R50

R50

R50

R50

HINT: START SIMPLE
AND ADD FEATURES
IN MULTIPLE STEPS.

STEP 1, WOULD
ACTUALLY BE STEP
3 OR 4 IF YOU
STARTED WITH A
RECTANGLE, THEN
ADDED THE ELLIPSE,
THEN ADDED THE KEY
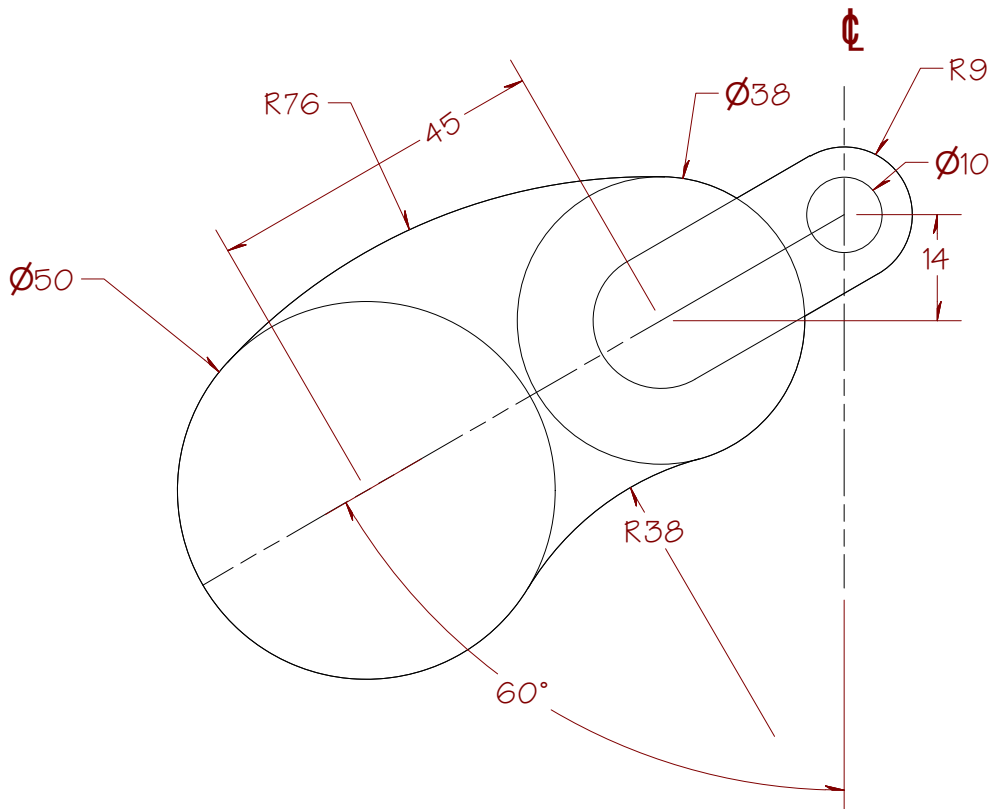CUT, AND THEN
ADDED THE FILLETS
TO THE CORNERS.

AUTODESK.

KKMSoft

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Slip Nut Insert-03.ipt

DESCRIPTION
Hardware, Insert, Slip Nut,
DI-5

Ø32

6

BASE SKETCH PLANE

50

35

50 57

20

25

76

6

Ø60

6° TAPERED
EXTRUSION
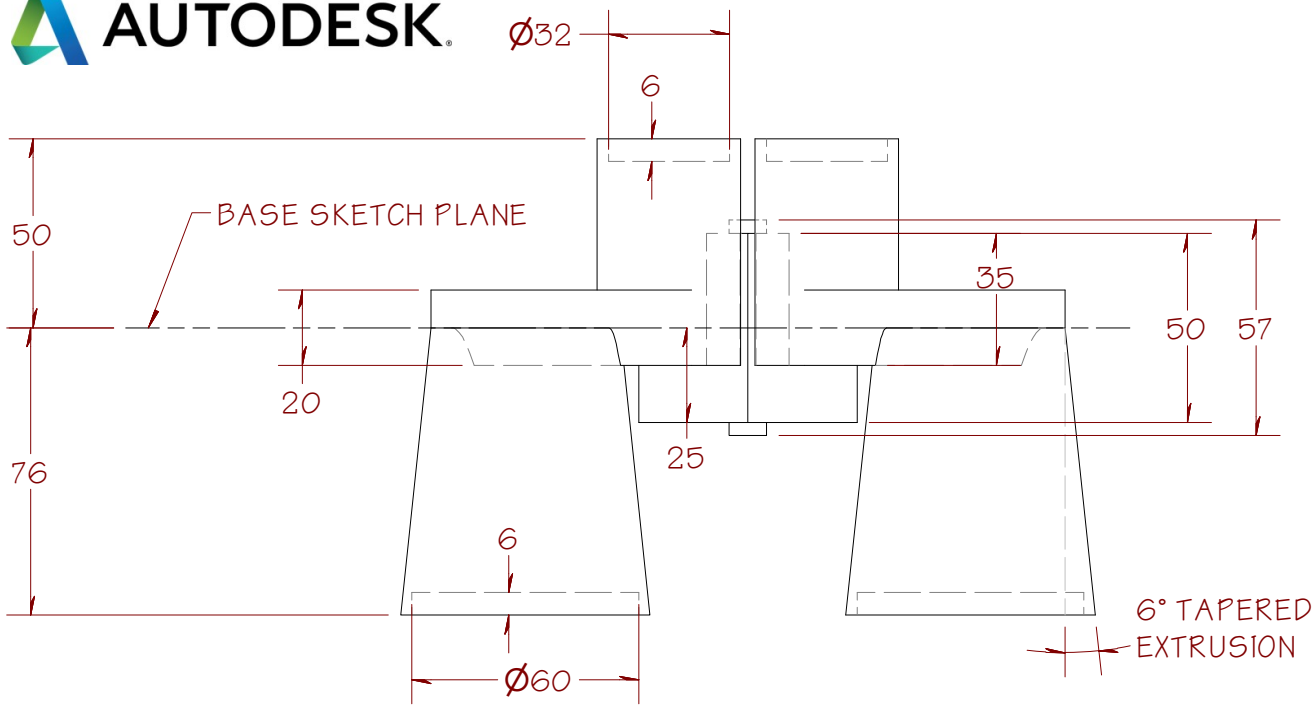
ALL DIMENSIONS
ARE IN MILLIMETERS

C

R76

45

Ø38

R9

Ø10

Ø50

14

R38

60°

CREATE THIS BASE SKETCH
AND THEN CREATE THE
BINOCULARS BY SHARING THE
SKETCH AND EXTRUDING THE
VARIOUS PARTS OF THE
BINOCULARS AS SEPERATE
FEATURES. THEN MIRROR TO
COMPLETE.

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
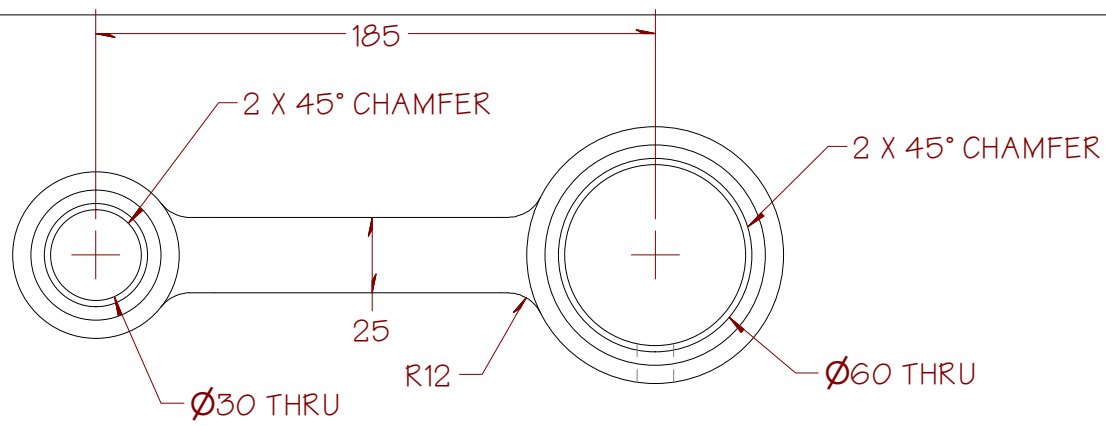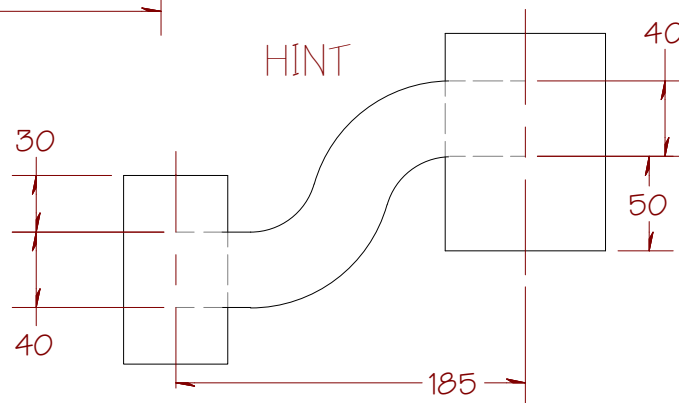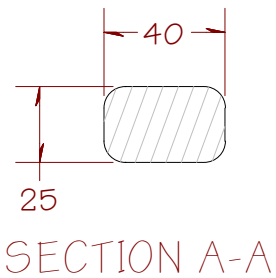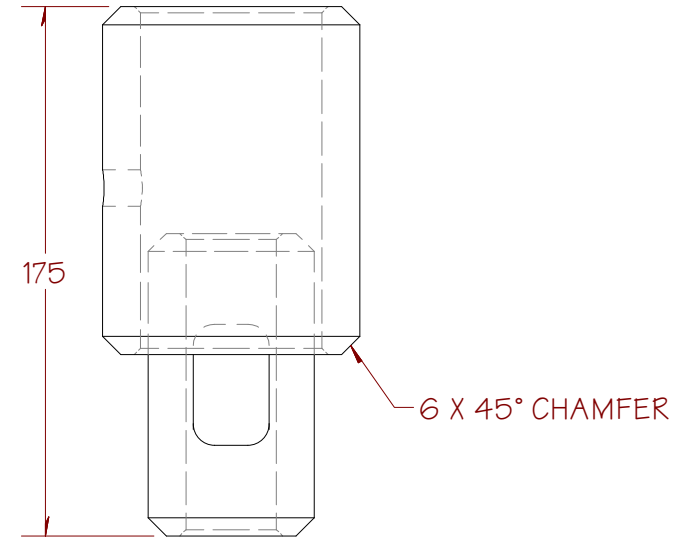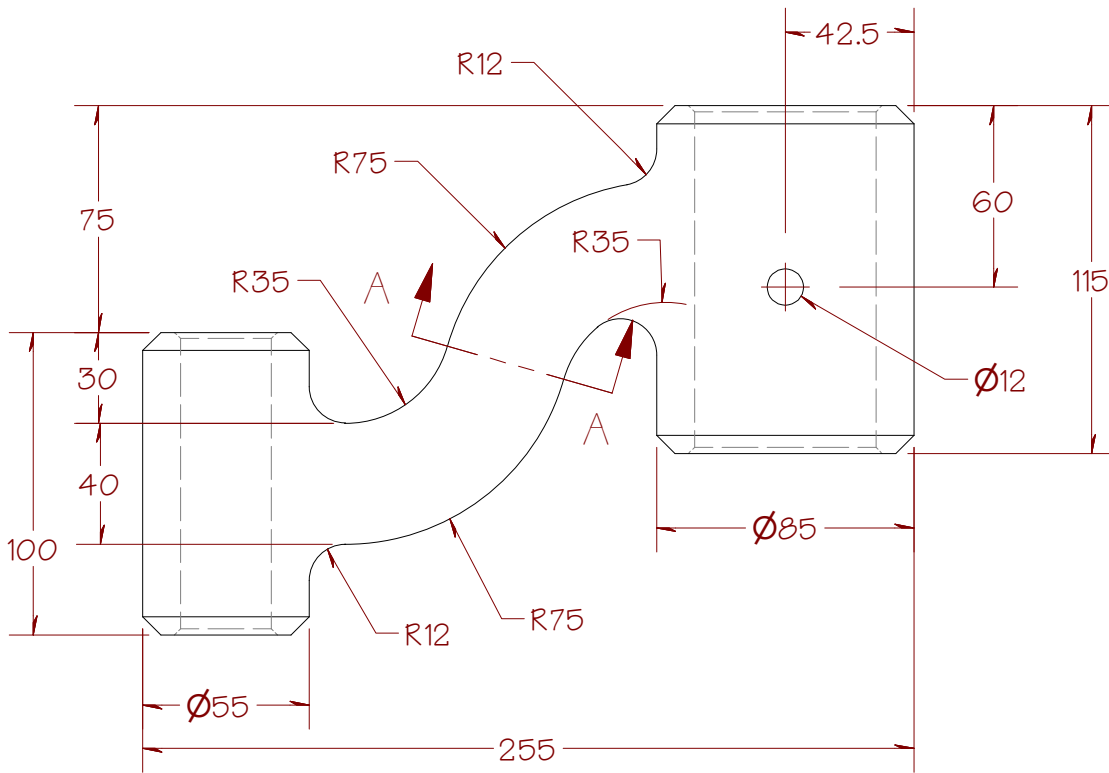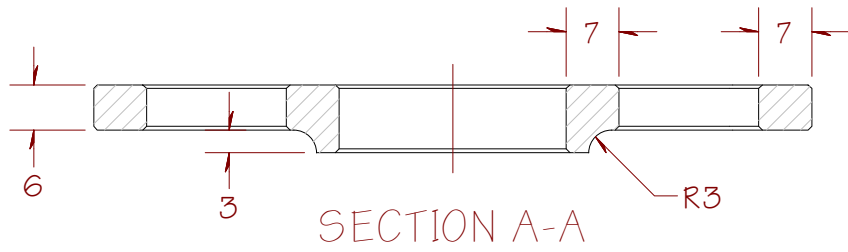Field Glass Fun.ipt

DESCRIPTION
Bino Challenge

185

2 X 45° CHAMFER

2 X 45° CHAMFER

ALL DIMENSIONS
ARE IN MILLIMETERS

25

R12

Ø30 THRU

Ø60 THRU

42.5

R12

R75

60

R35

75

R35

A

115

30

A

Ø12

40

100

R12

R75

Ø85

175

6 X 45° CHAMFER

Ø55

255

40

25

SECTION A-A

HINT

30

40

40

50

185

FILE NAME
Pivot Arm.ipt

DESCRIPTION
Hardware, Pivot Arm,
Mount

KKMSoft

SECTION A-A

7
7
6
3
R3

ALL DIMENSIONS ARE IN MILLIMETERS

90°

R12
R12
R7
R7

Ø30
Ø95

A
A
B
B

10

SECTION B-B
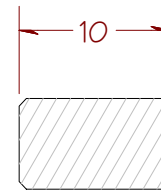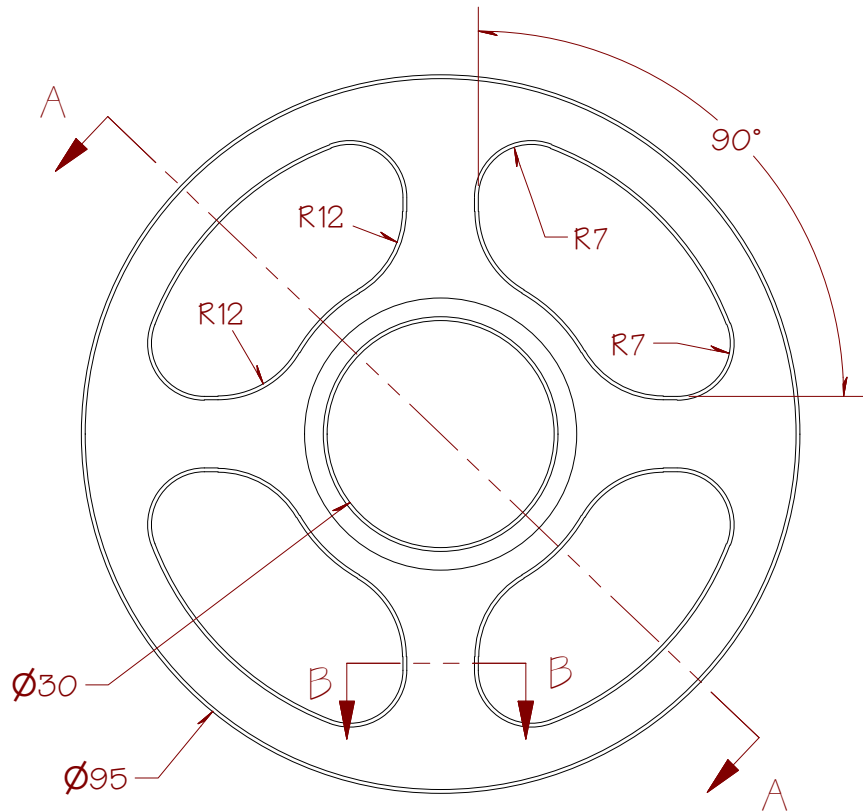
ALL CHAMFERS = 0.5 X 45°

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Fly Wheel.ipt

DESCRIPTION
Machined, Aluminum Fly Wheel
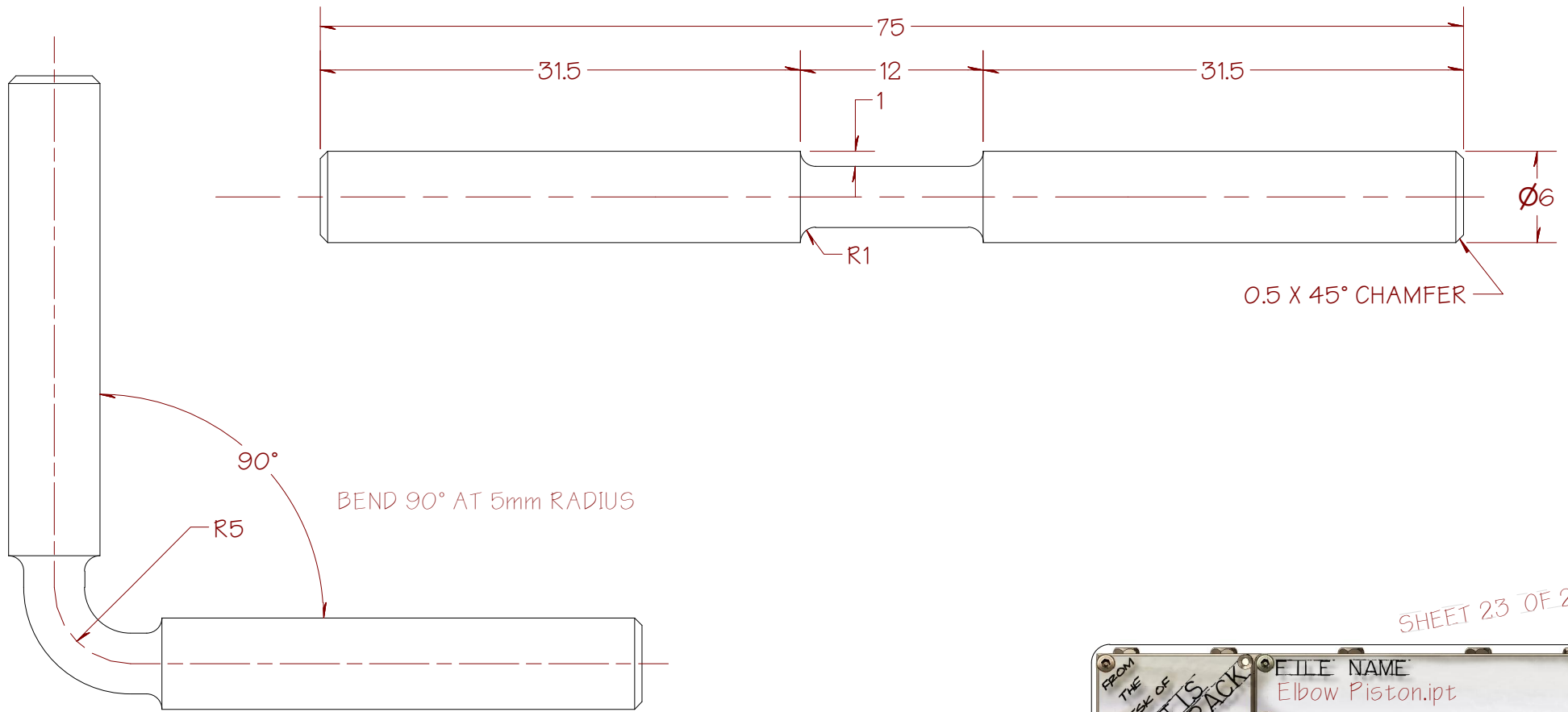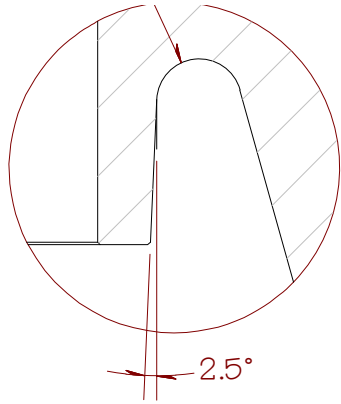
ALL DIMENSIONS
ARE IN MILLIMETERS

75

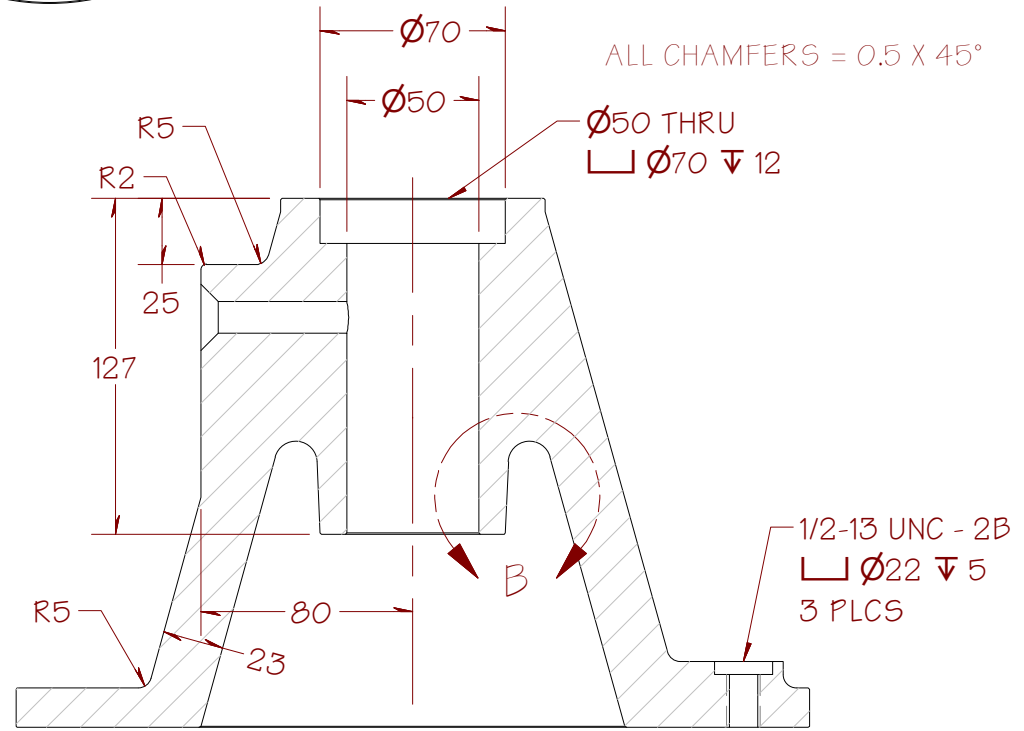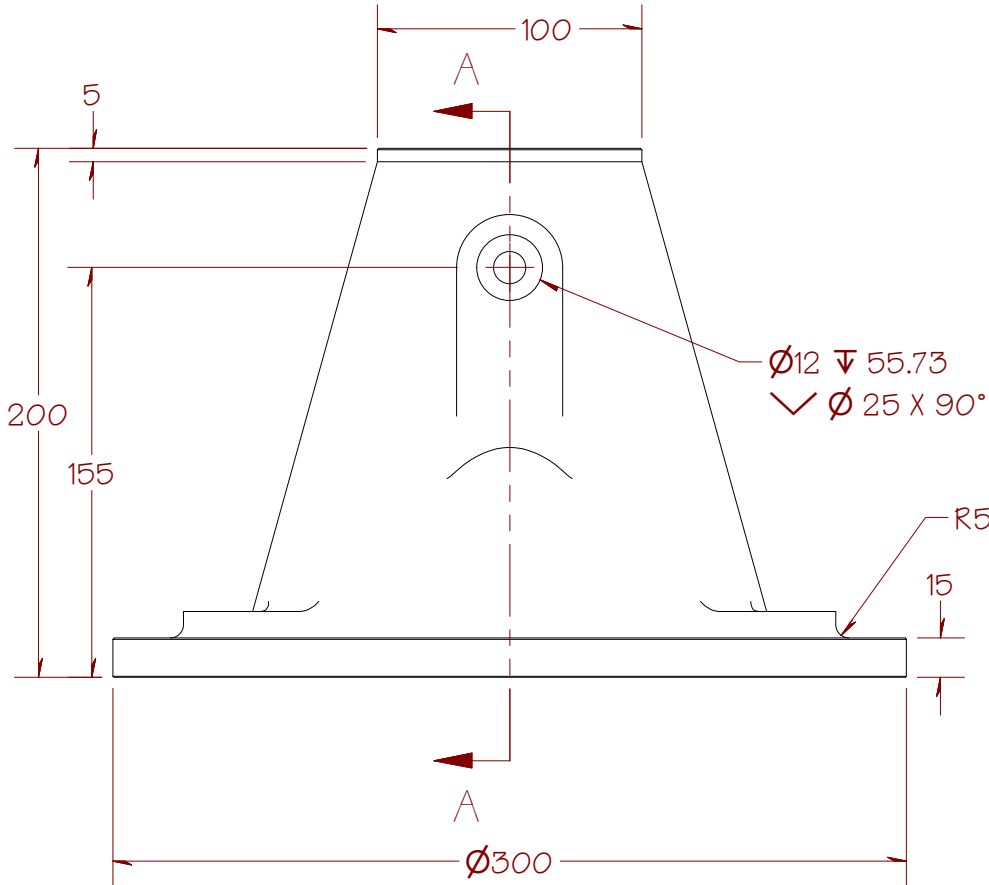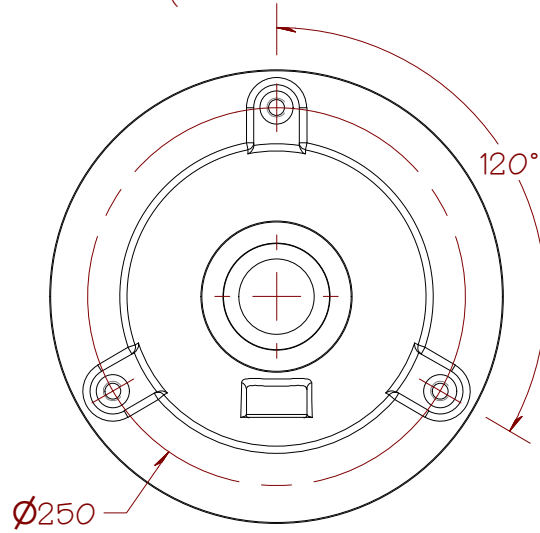31.5 12 31.5

1

Ø6

R1

0.5 X 45° CHAMFER

90°

R5

BEND 90° AT 5mm RADIUS

FROM THE DESK OF CURTIS WAGUESPACK

FILE NAME
Elbow Piston.ipt

DESCRIPTION
Machined, Elbow Piston,
Bend 90 Degrees

AUTODESK.

TOP VIEW (shown scaled down)

120°

Ø250

DETAIL B

2.5°

ALL CHAMFERS = 0.5 X 45°

Ø70

Ø50

Ø50 THRU
⌴ Ø70 ▽ 12

R5

R2

25

127

100

A

5

Ø12 ▽ 55.73
⌵ Ø 25 X 90°

200

155

R5

15

R5

23

80

B

1/2-13 UNC - 2B
⌴ Ø22 ▽ 5
3 PLCS

A

Ø300

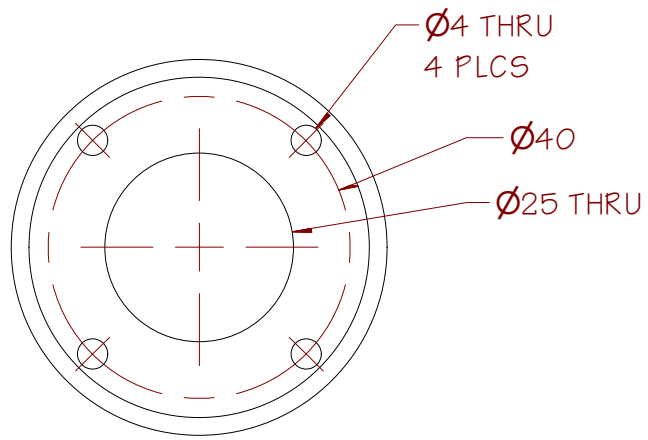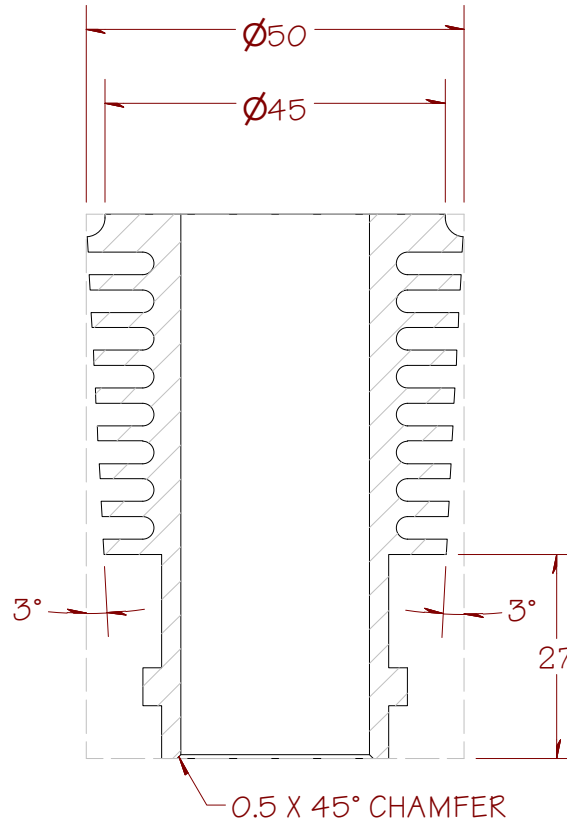SECTION A-A

ALL DIMENSIONS
ARE IN MILLIMETERS

FROM THE DESK OF
CURTIS WAGUESPACK

FILE NAME
Support Base.ipt

DESCRIPTION

Ø4 THRU
4 PLCS

Ø40

Ø25 THRU

ALL DIMENSIONS
ARE IN MILLIMETERS

A

3

R2.5

R1.5
TYP

Ø50

Ø45

42

2
TYP

72

3
TYP

15

3°   3°

27

5

7

0.5 X 45° CHAMFER

A

A

SECTION A-A

AUTODESK

KKMSoft
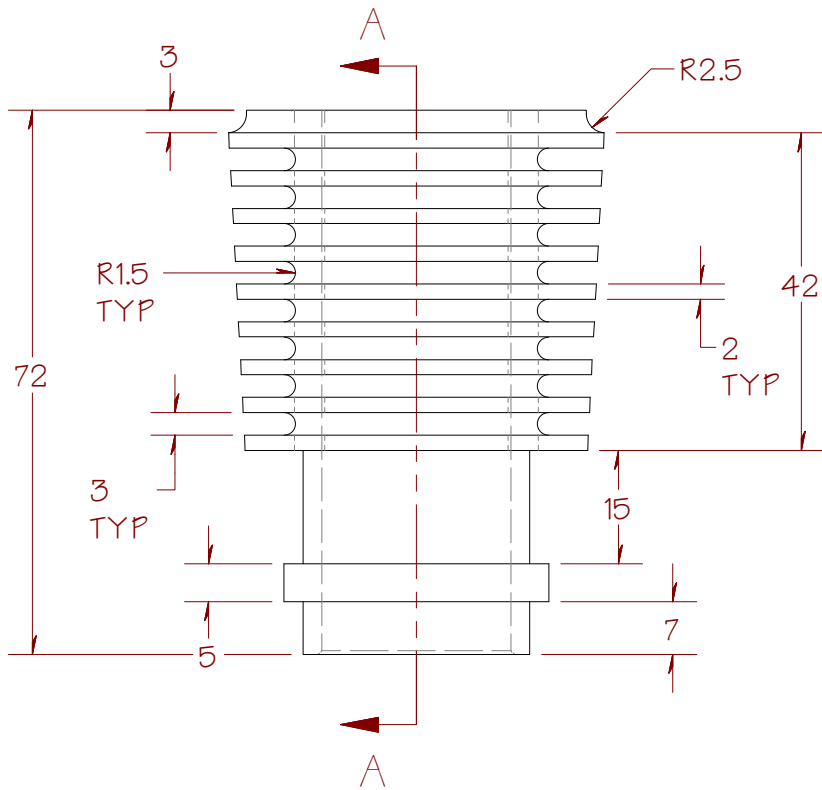
FILE NAME
Clylinder.ipt

DESCRIPTION
Machined, Miniature
Cylinder