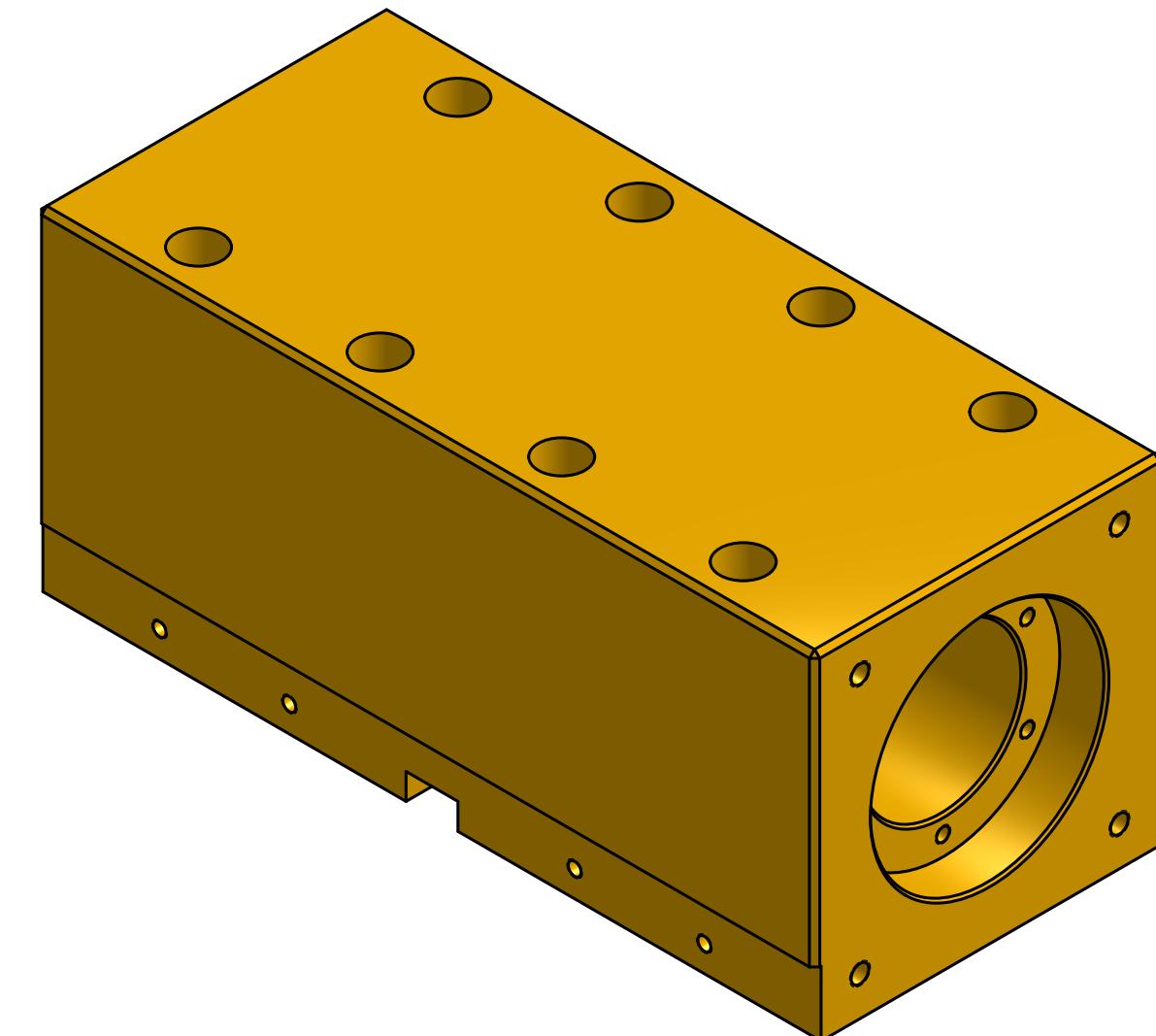
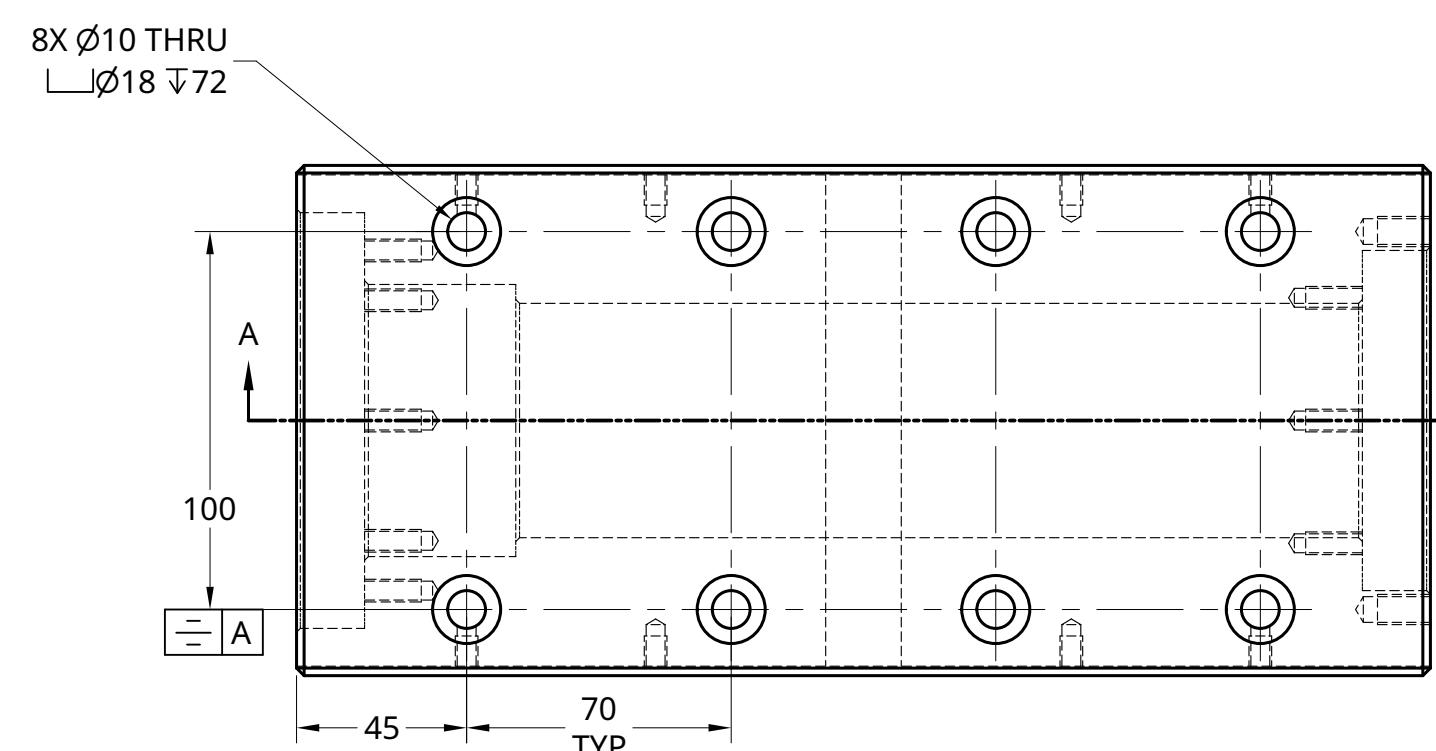
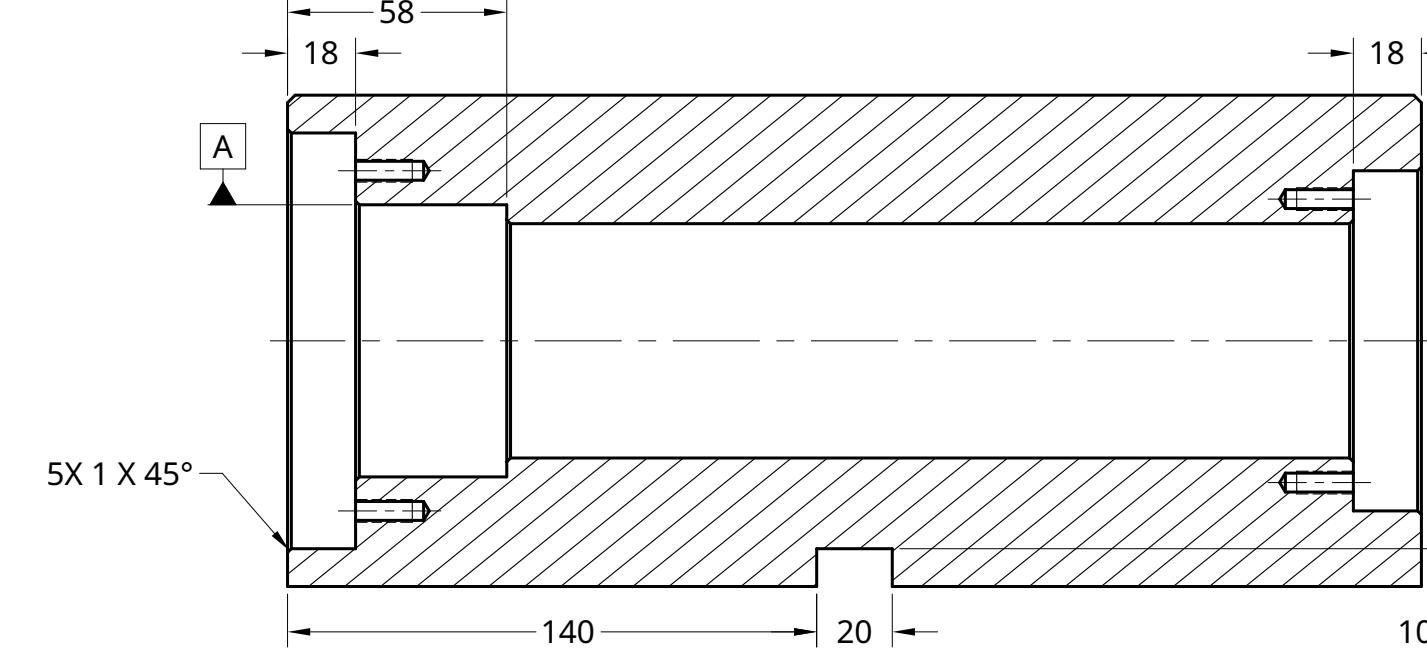
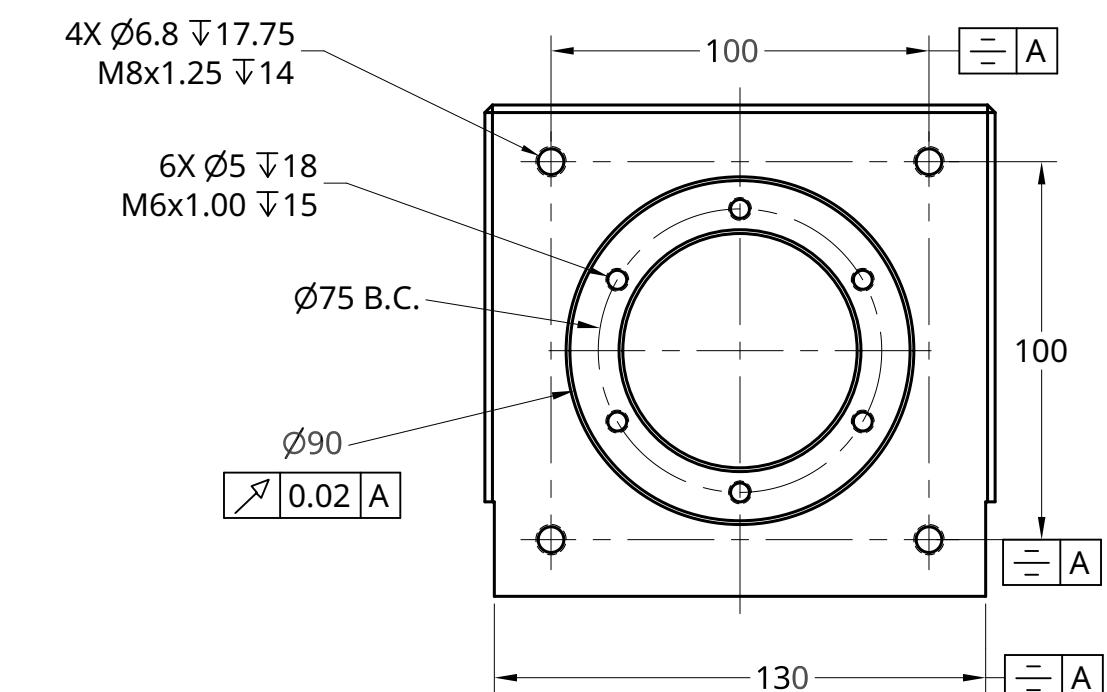
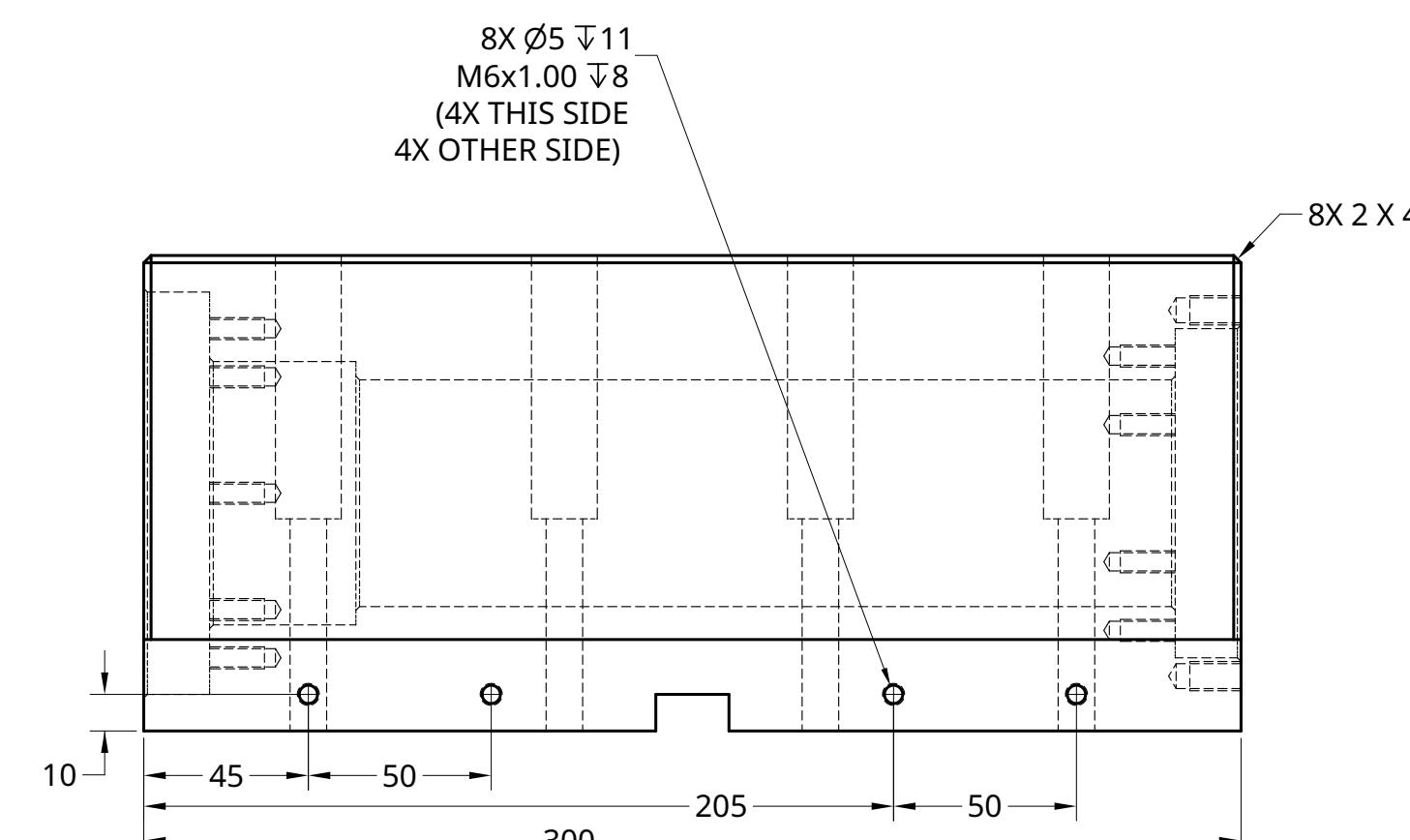
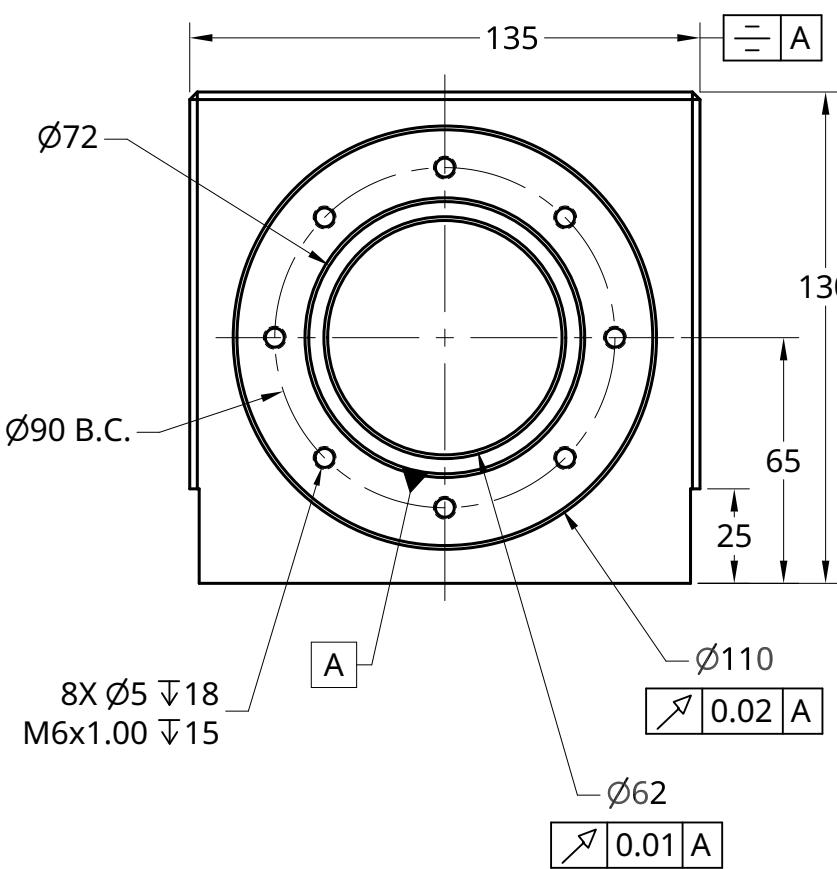


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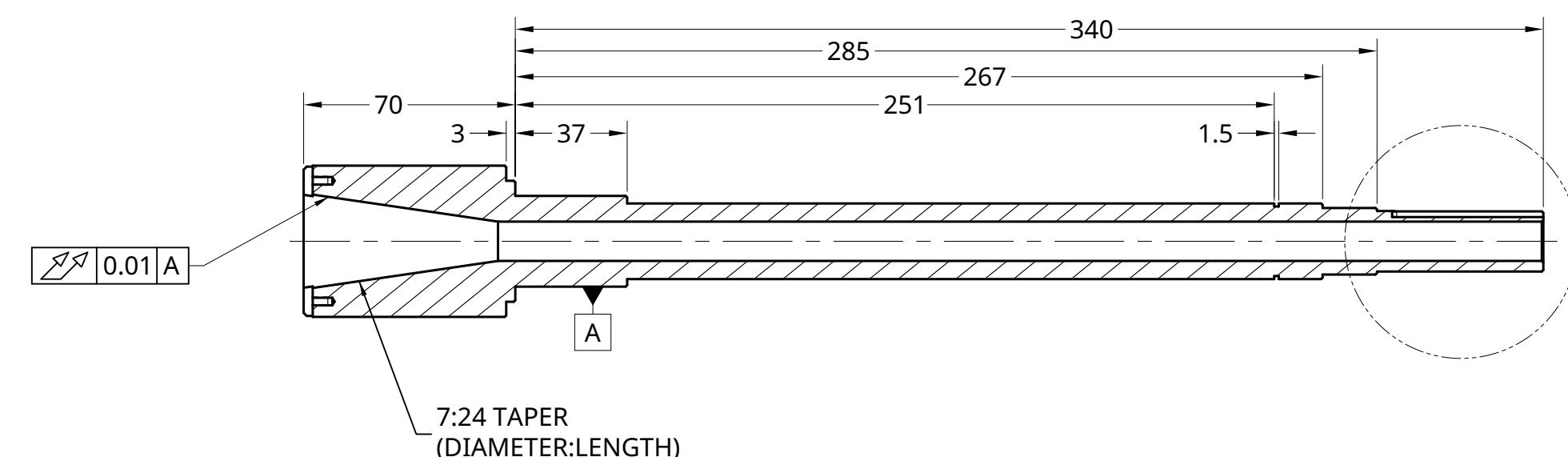
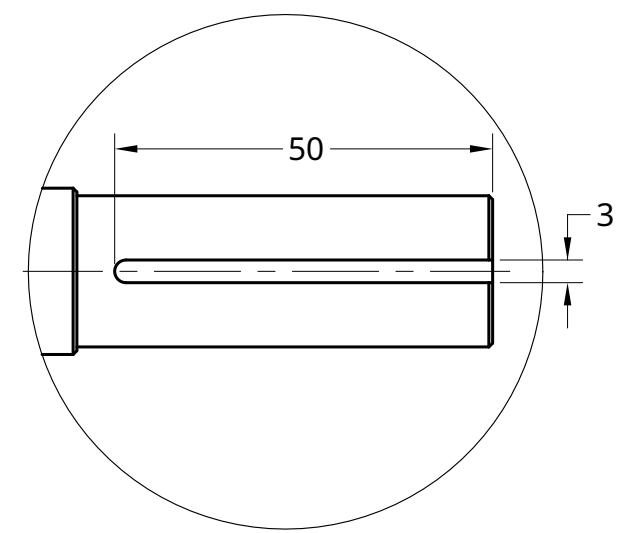
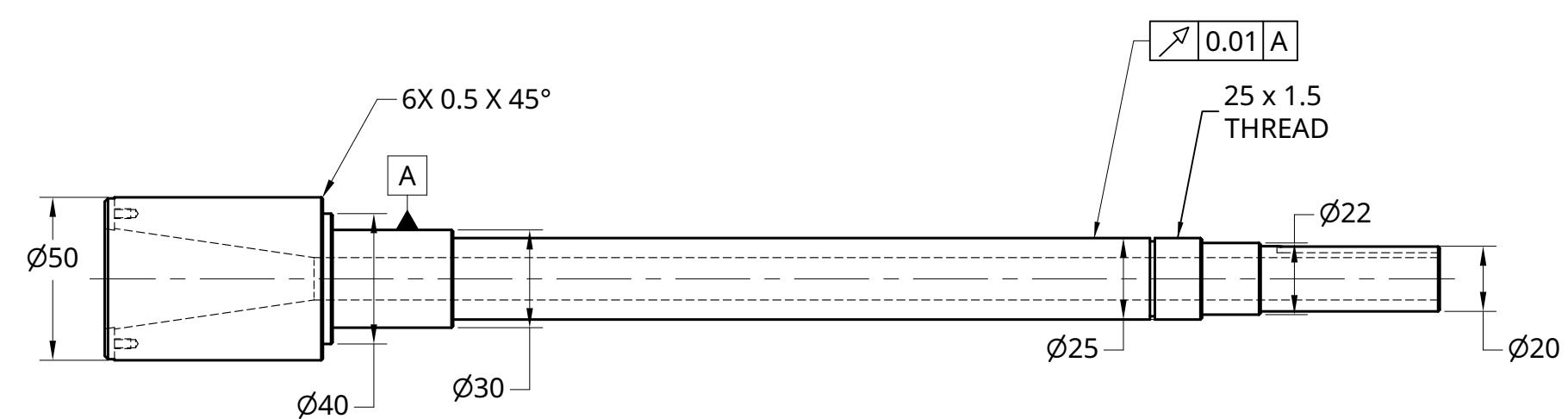
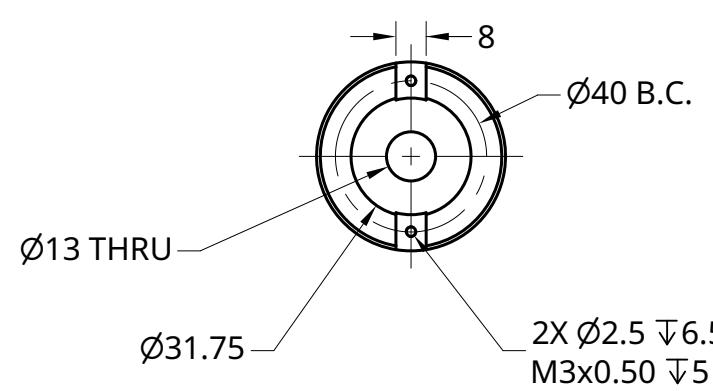
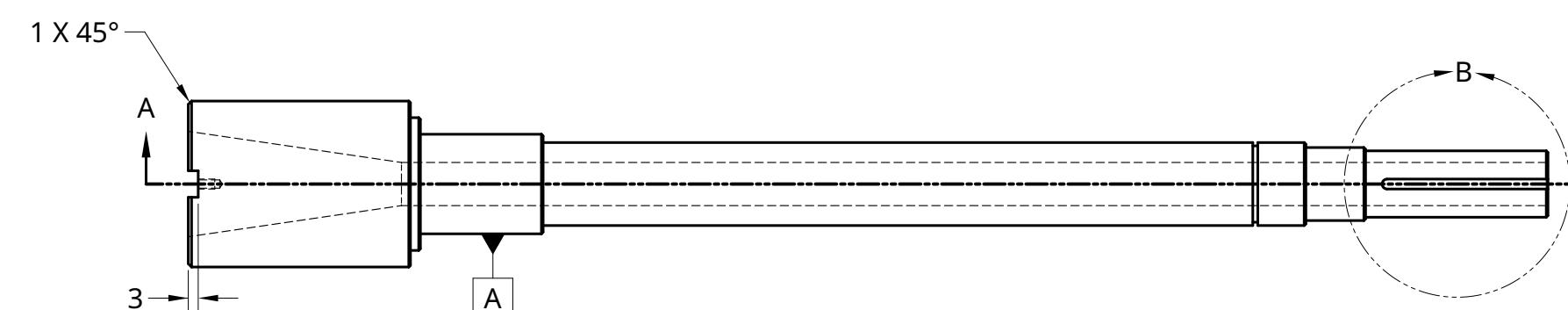
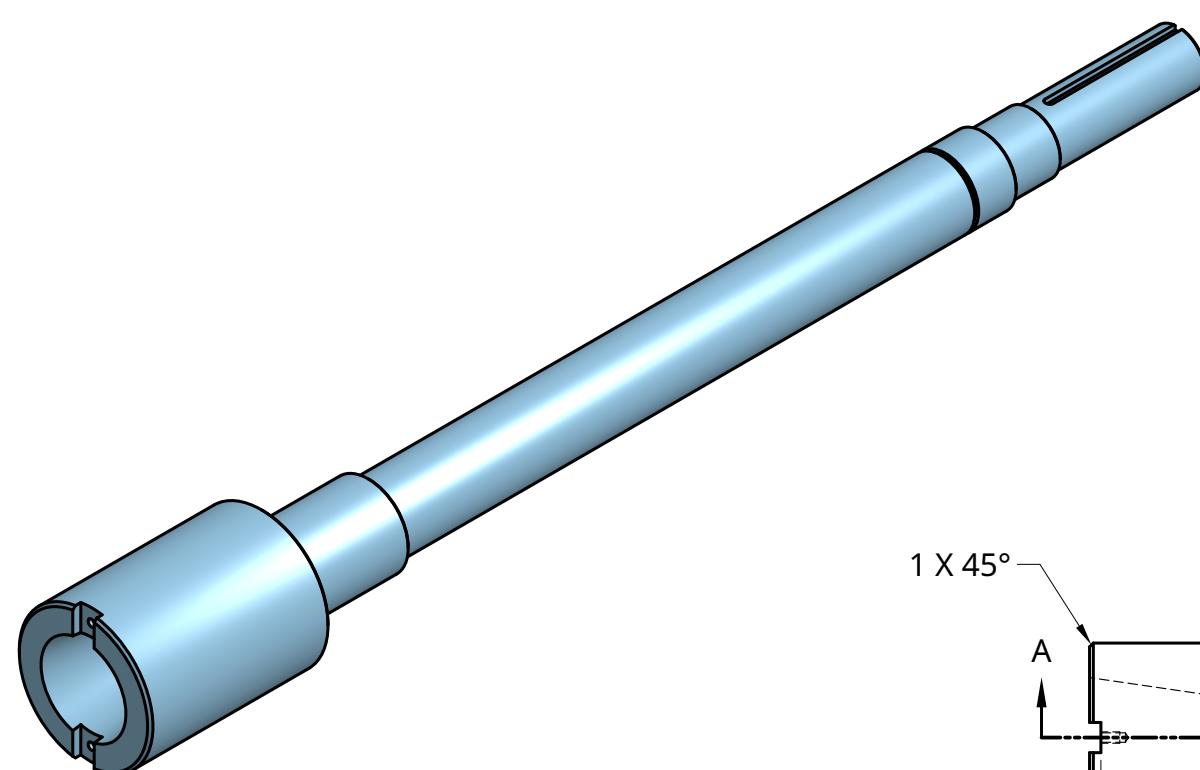
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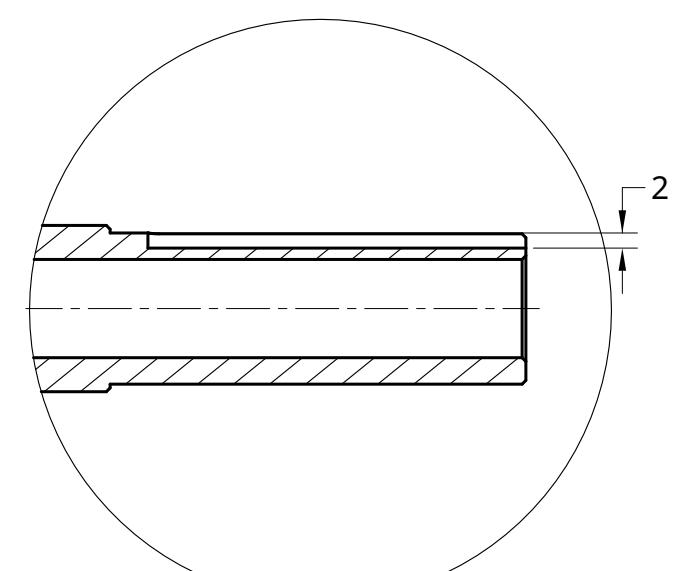
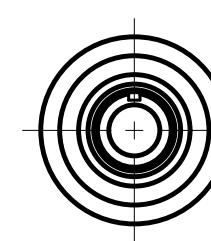
SECTION A - A

UNLESS OTHERWISE SPECIFIED, .XX = ±.0-. .XXX = ±.00-. .XXXX = ±.000-. ANGULAR = ± * FRACTIONAL = #			NAME	DATE
DRAWN	BRIAN BRADY		10/16/2019	
CHECKED				
APPROVED				
DO NOT SCALE DRAWING				
BREAK ALL SHARP EDGES AND REMOVE BURRS				
THIRD ANGLE PROJECTION	MATERIAL	VOLUME		
	CAST IRON	3881130 mm ³		
	REV.			
	DWG NO.			
	BR-549-A-001			
SCALE	1:4	WEIGHT	27.071 kg	1 of 8

D



SECTION A - A



DETAIL A

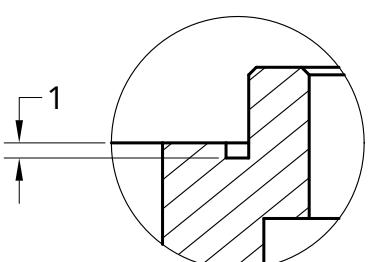
UNLESS OTHERWISE SPECIFIED, .XX ± .XX .XXX ± .XXX .XXXX ± .XXXX			NAME DRAWN CHECKED APPROVED	DATE 10/16/2019
ANGULAR ± ° FRACTIONAL ± # SURFACE FINISH ✓				
DO NOT SCALE DRAWING BREAK ALL SHARP EDGES AND REMOVE BURRS				
THIRD ANGLE PROJECTION	MATERIAL STEEL 8620	VOLUME 224786 mm³		
	REV.		SIZE C DWG NO. BR-549-A-002	SCALE 1:2 WEIGHT 1.765 kg SHEET 2 of 8

4

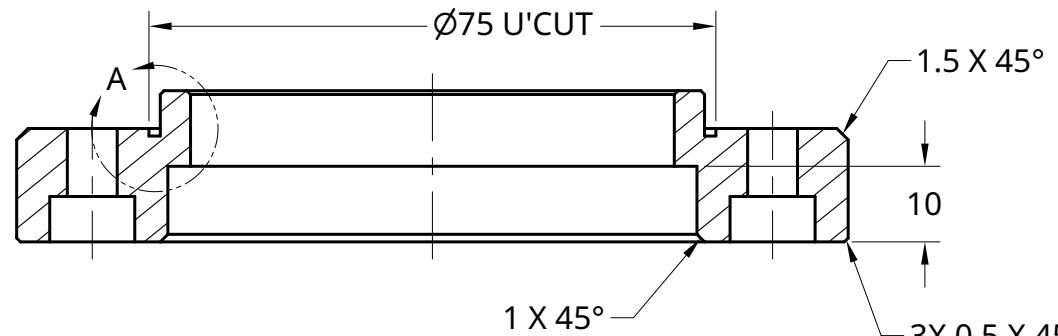
3

2

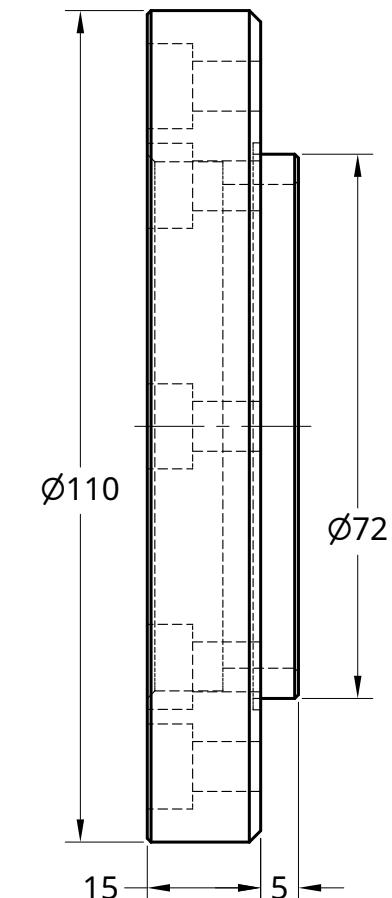
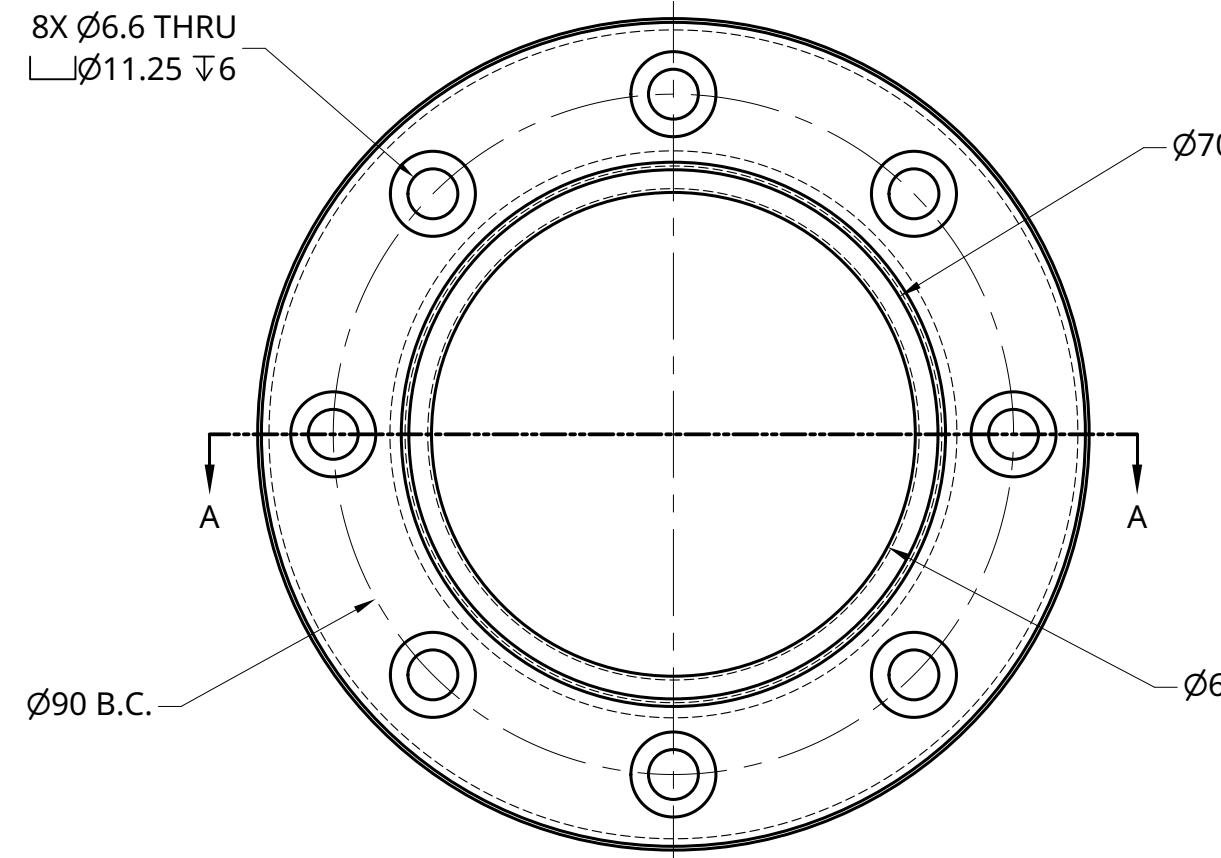
1



DETAIL A
SCALE 2:1



SECTION A - A



UNLESS OTHERWISE SPECIFIED,
DIMENSIONS ARE IN INCHES
.XX = ±.0-
.XXX = ±.00-
.XXXX = ±.000- ANGULAR = ± °
FRACTIONAL = ±

SURFACE FINISH ✓

DO NOT SCALE DRAWING

BREAK ALL SHARP EDGES AND
REMOVE BURRS

THIRD ANGLE PROJECTION



DRAWN BRIAN BRADY DATE 10/16/2019
CHECKED _____
APPROVED _____

TITLE DRILL UNIT
SPINDLE ASSEMBLY DETAILS
FRONT BEARING CAP

SIZE B DWG NO. BR-549-A-003 REV.

MATERIAL STEEL 4130 VOLUME 84079 mm³

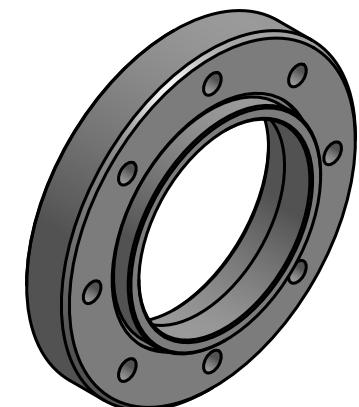
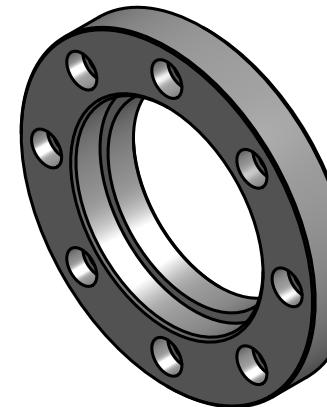
SCALE 1:1 WEIGHT 0.660 kg SHEET 3 of 8

4

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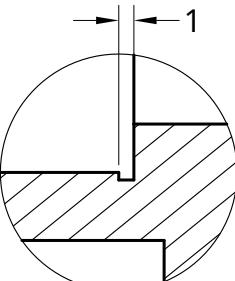
A

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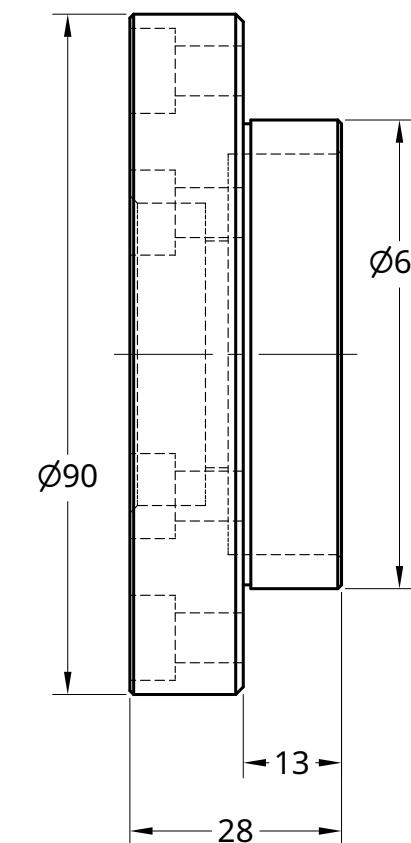
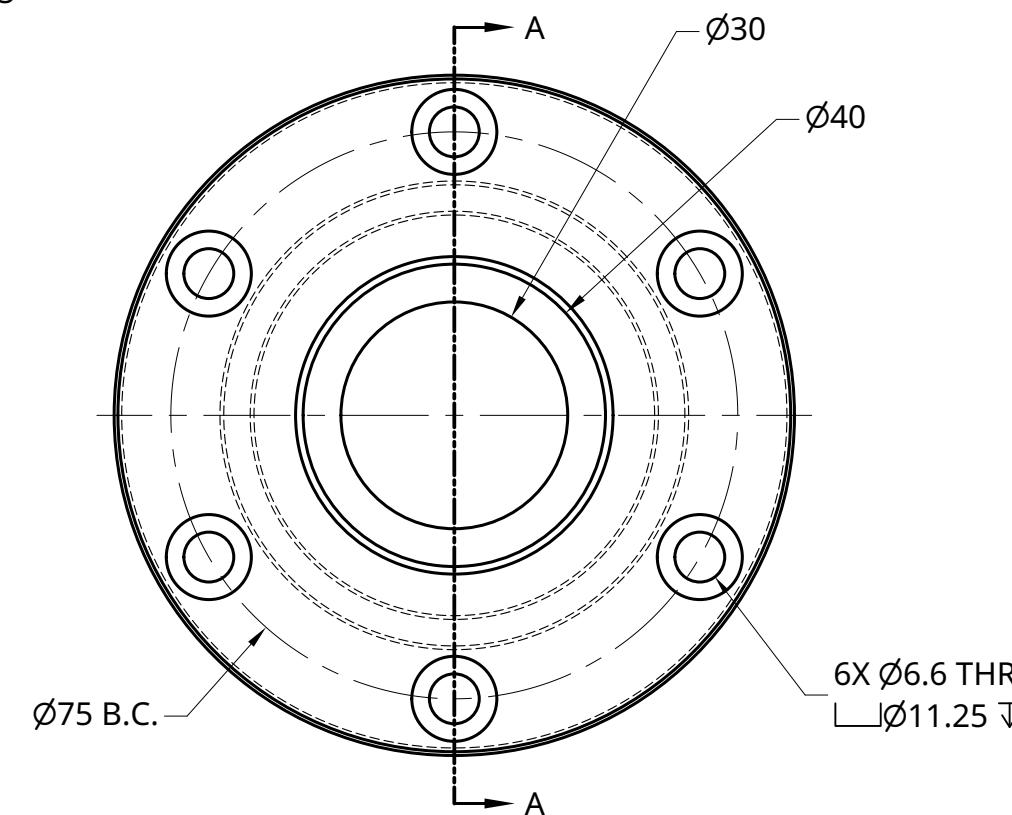
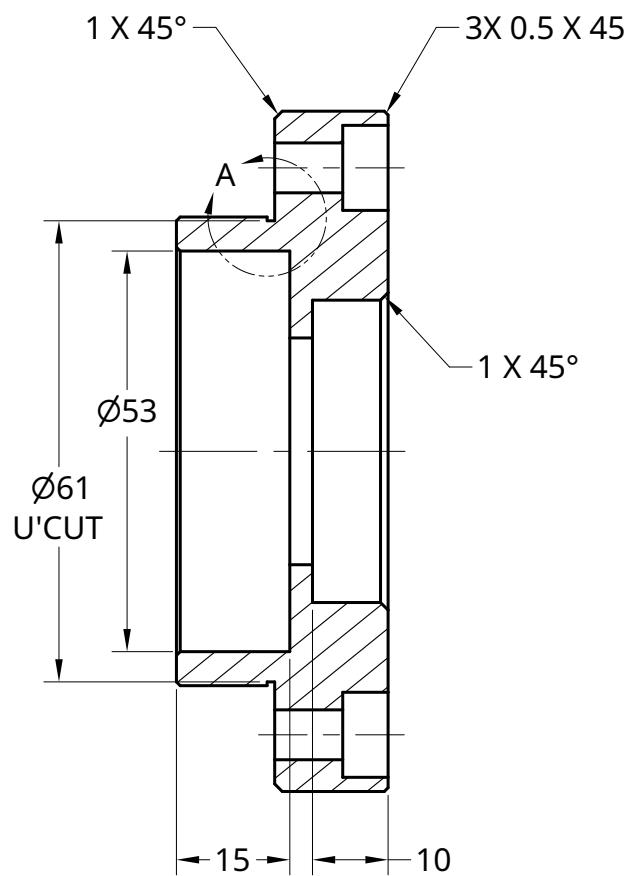
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DETAIL A
SCALE 2:1



SECTION A - A

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES .XX = ±.0- .XXX = ±.00- .XXXX = ±.000- ANGULAR = ± ° FRACTIONAL = ±		NAME	DATE
DRAWN	BRIAN BRADY	10/16/2019	
CHECKED			TITLE
APPROVED			DRILL UNIT
DO NOT SCALE DRAWING			SPINDLE ASSEMBLY DETAILS
BREAK ALL SHARP EDGES AND REMOVE BURRS			REAR BEARING SLEEVE
THIRD ANGLE PROJECTION	MATERIAL	VOLUME	SIZE
	STEEL 4130	81087 mm³	B DWG NO.
			BR-549-A-004 REV.
SCALE	1:1	WEIGHT	0.637 kg
		SHEET	4 of 8

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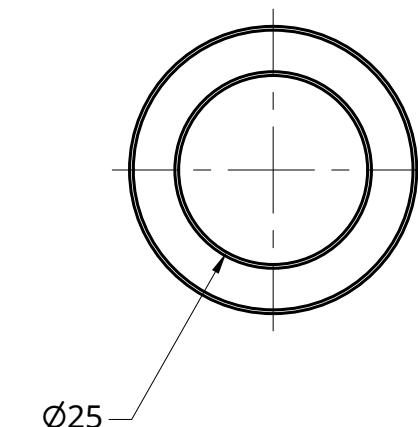
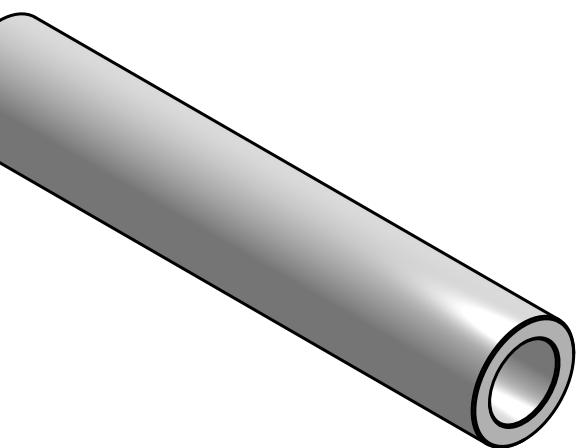
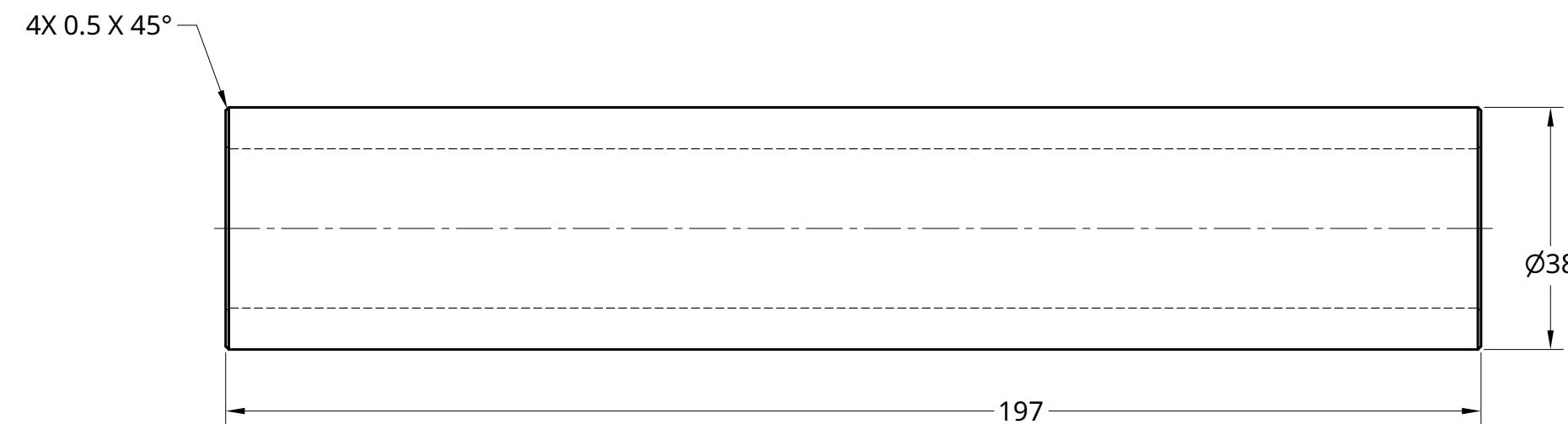
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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES .XX = ±.0- .XXX = ±.00- .XXXX = ±.000- ANGULAR = ± ° FRACTIONAL = ±		DRAWN	NAME	DATE	Ferris State University	
		CHECKED		10/16/2019		
		APPROVED				
		DO NOT SCALE DRAWING				
		BREAK ALL SHARP EDGES AND REMOVE BURRS			DRILL UNIT SPINDLE ASSEMBLY DETAILS INNER BEARING SPACER	
		THIRD ANGLE PROJECTION	MATERIAL	VOLUME	SIZE	DWG NO.
			STEEL 1020	126669 mm³	B	BR-549-A-005
			SCALE	1:1	WEIGHT	0.997 kg
					SHEET	5 of 8

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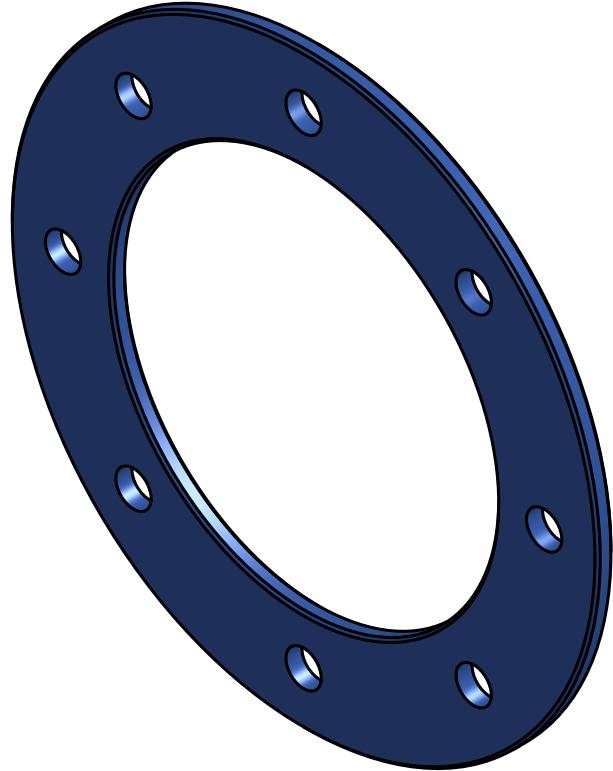
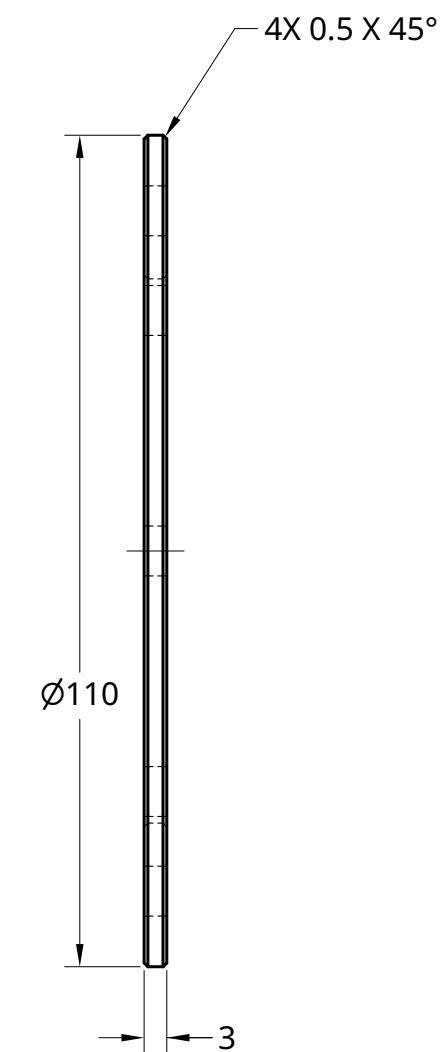
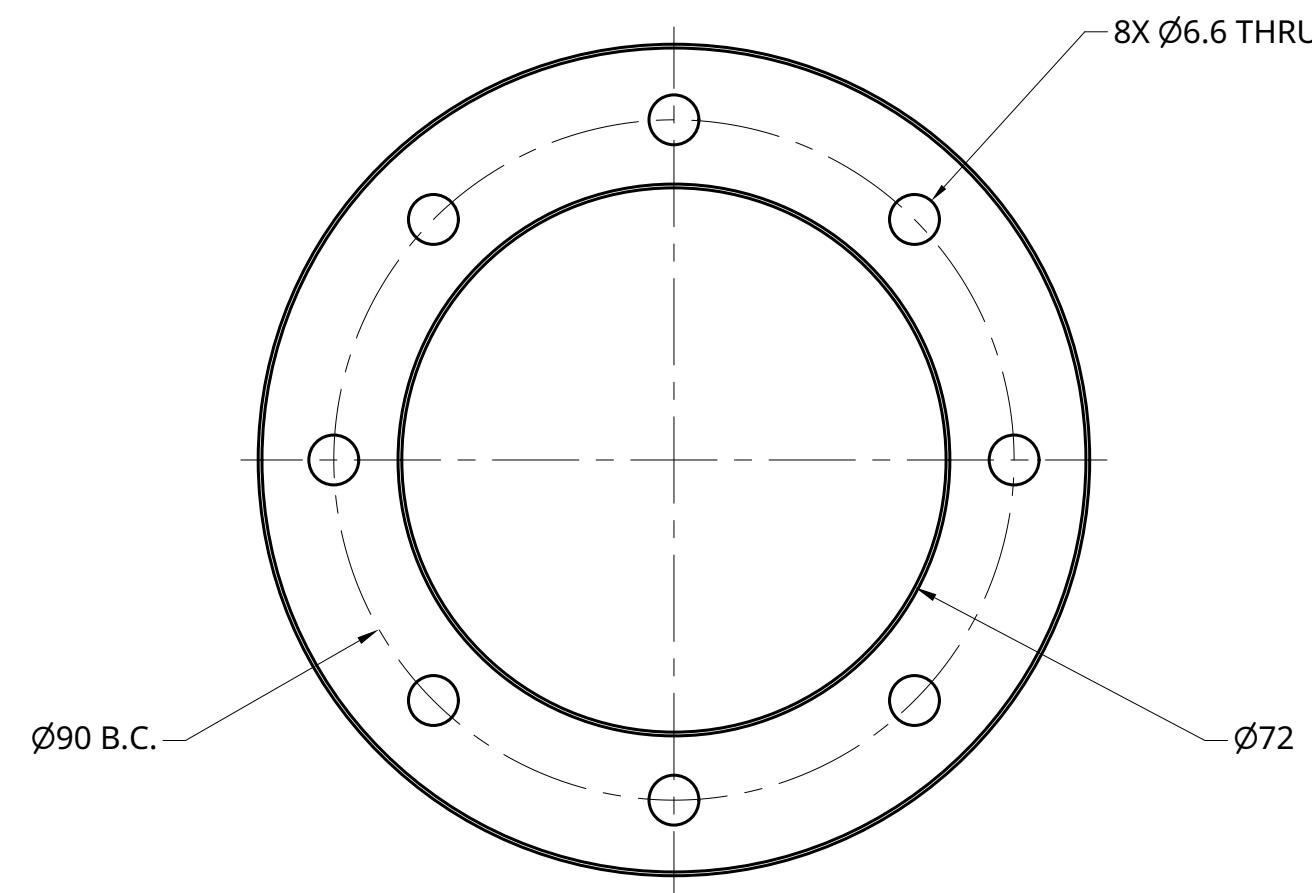
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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES .XX = ±.0-. .XXX = ±.00-. ANGULAR = ± ° .XXXX = ±.000-. FRACTIONAL = ±				DRAWN	NAME	DATE	Ferris State University	
				CHECKED				
				APPROVED				
				DO NOT SCALE DRAWING			DRILL UNIT	
				BREAK ALL SHARP EDGES AND REMOVE BURRS			SPINDLE ASSEMBLY DETAILS	
				THIRD ANGLE PROJECTION	MATERIAL	VOLUME	FRONT FITTING SPACER	
					STEEL 1020	15331 mm ³	SIZE	DWG NO.
					B	BR-549-A-006	REV.	
				SCALE	1:1	WEIGHT	0.121 kg	Sheet
								6 of 8

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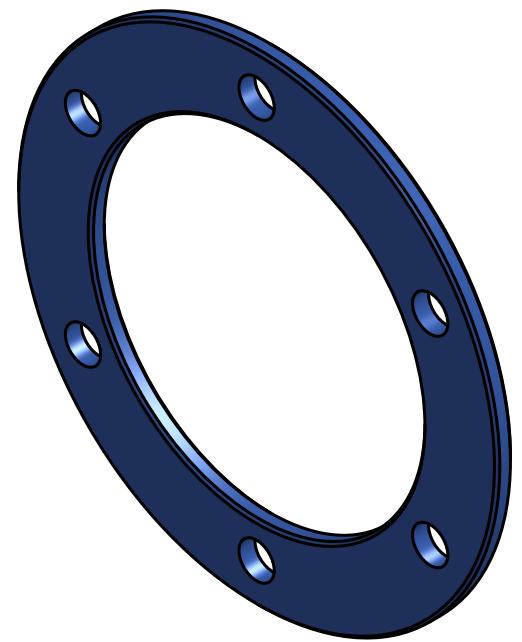
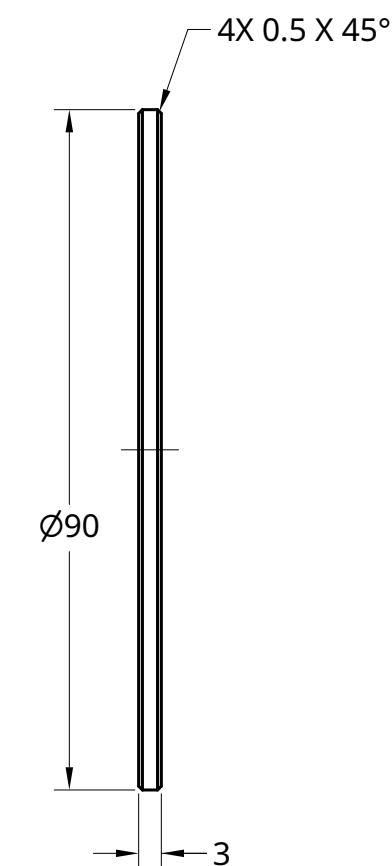
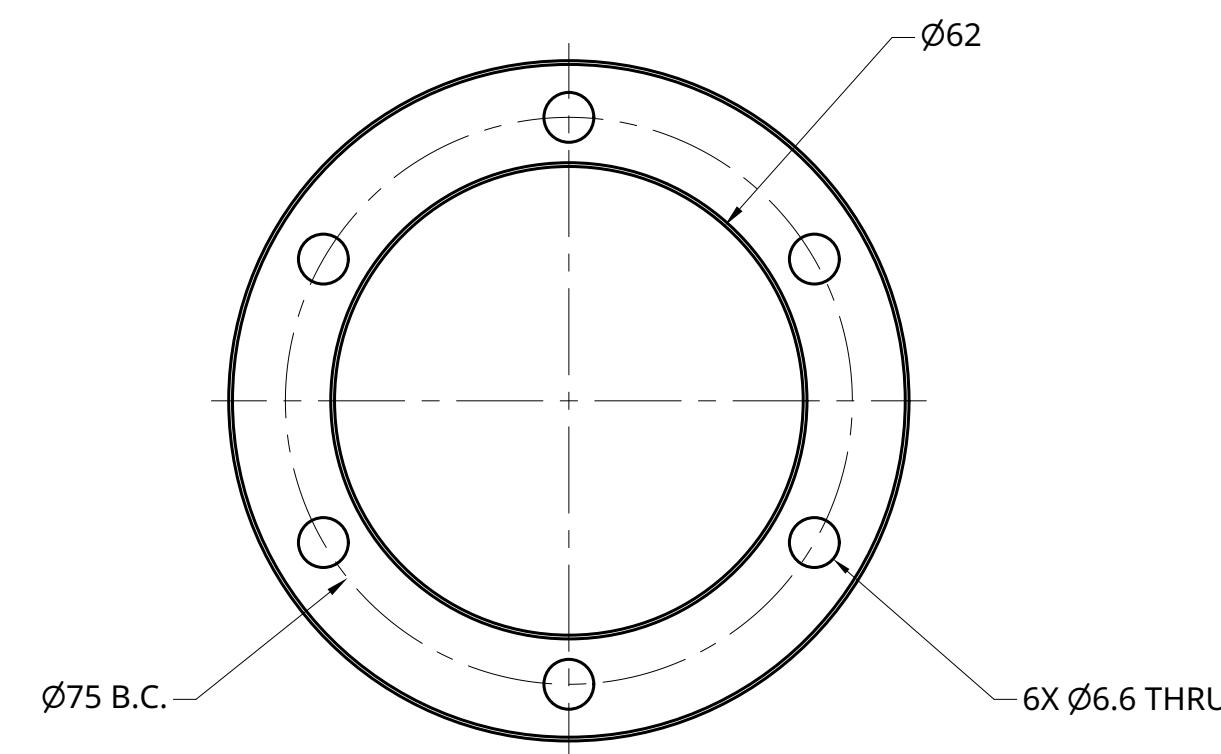
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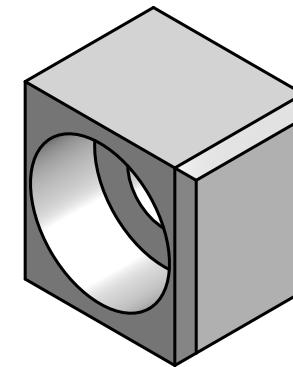
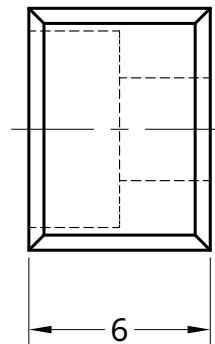
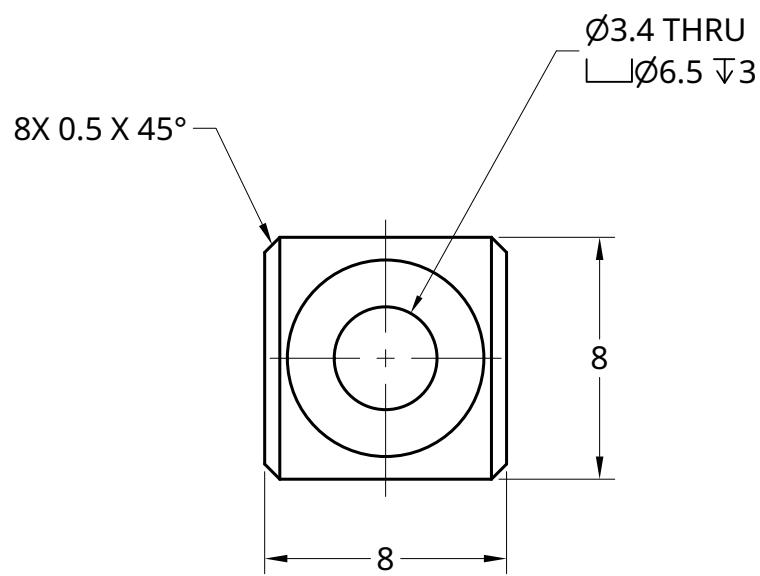


UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES .XX = ±.0-. .XXX = ±.00-. .XXXX = ±.000-		NAME DRAWN BRIAN BRADY	DATE 10/16/2019
SURFACE FINISH ✓		ANGULAR = ± ° FRACTIONAL = ±	
DO NOT SCALE DRAWING		APPROVED	
BREAK ALL SHARP EDGES AND REMOVE BURRS			
THIRD ANGLE PROJECTION		MATERIAL STEEL 1020	VOLUME 9293 mm³
		SIZE B	DWG NO. BR-549-A-007
SCALE 1:1		WEIGHT 0.073 kg	REV.
SHEET 7 of 8			

Ferris State University

DRILL UNIT
SPINDLE ASSEMBLY DETAILS
REAR FITTING SPACER

BR-549-A-007



B

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<small>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES</small> <small>.XX = ±.0- XXX = ±.00- XXXX = ±.000- SURFACE FINISH ✓</small>		DRAWN	NAME		DATE
			BRIAN BRADY		10/16/2019
CHECKED					TITLE
APPROVED					
DO NOT SCALE DRAWING					
BREAK ALL SHARP EDGES AND REMOVE BURRS					
THIRD ANGLE PROJECTION	MATERIAL	VOLUME			SIZE A DWG NO. BR-549-A-008 REV.
	STEEL 4130	251 mm ³	SCALE 4:1	WEIGHT 0.002 kg	SHEET 8 of 8