

Automated iButton Placement Device Drawings and Parts Document

Team 19026



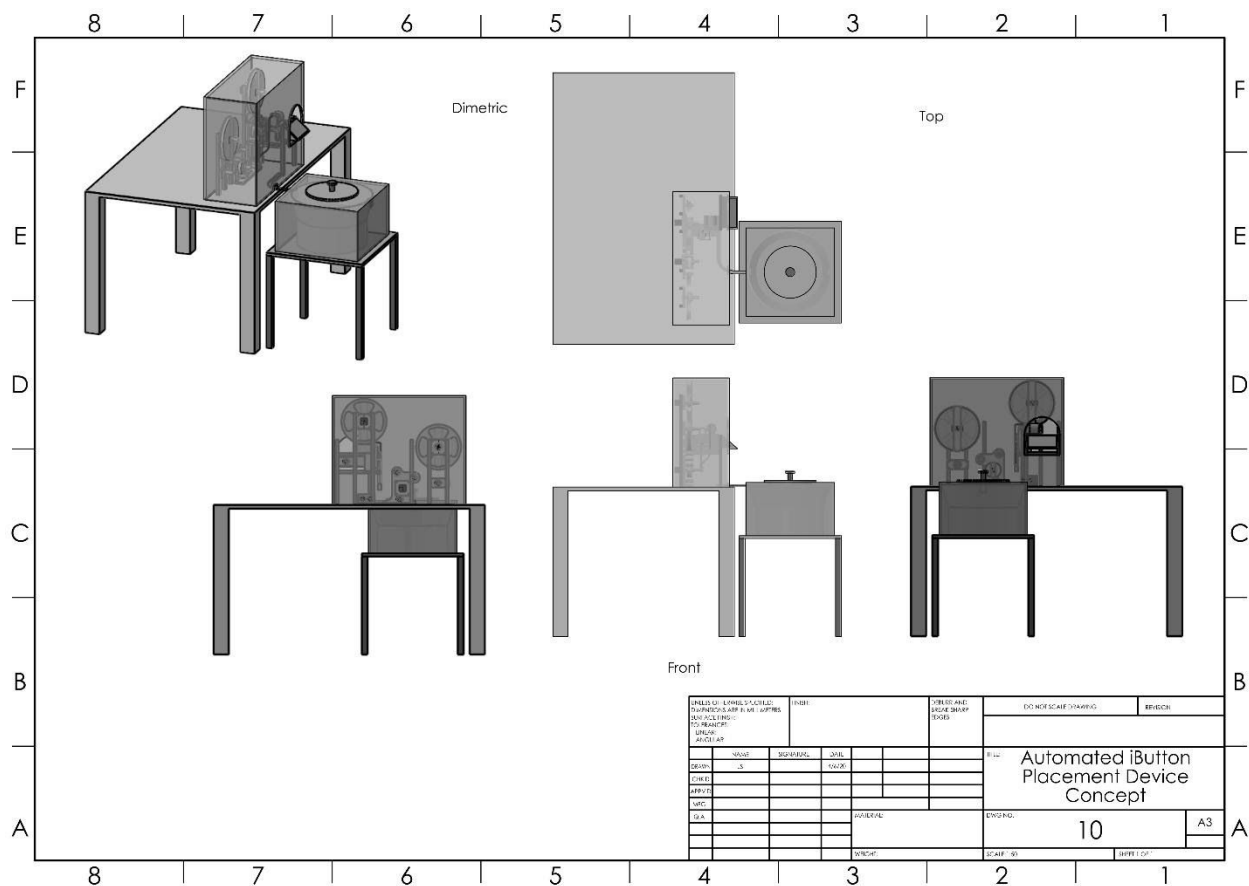
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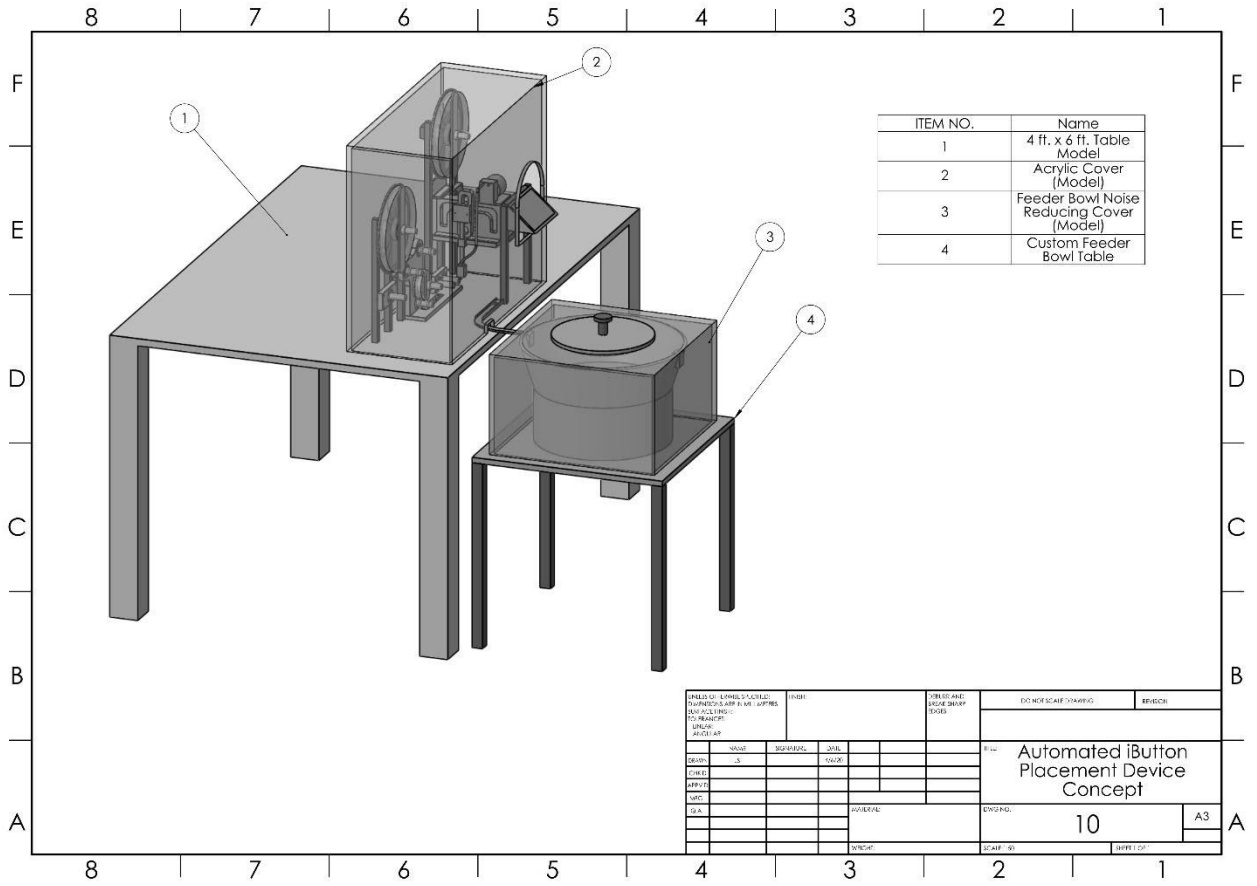
Jacob Sindorf
Alexander Lim
Marek Perez
Sahachel Flores
Jorge Gracia
Ce Jiang

Part Numbers and Reference

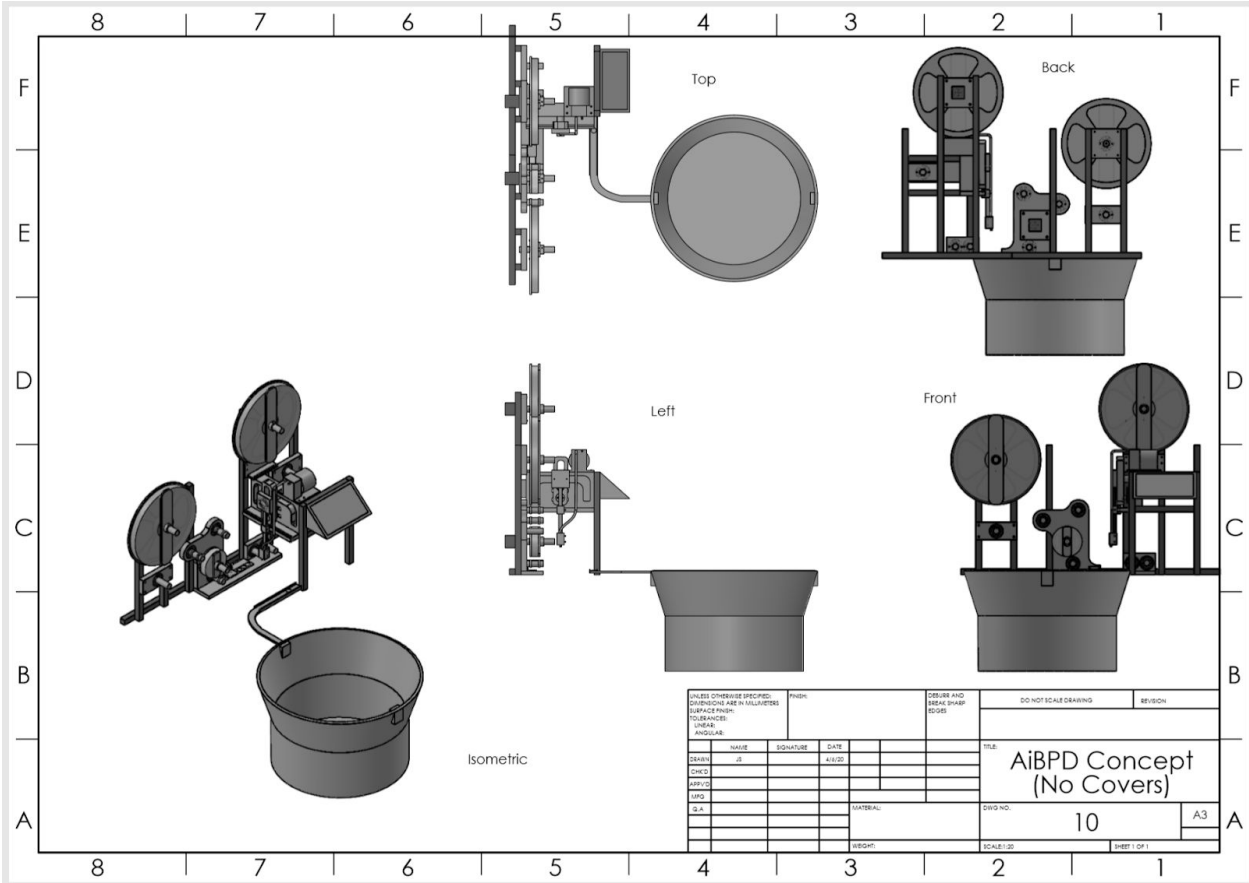
Part Number	Document		Part Number	Document			
11	User Interface Assy	Material	14-1, 14-2	Stick Pad-1/ Clear Cover -2 Feeder	Material	Screws	#
111-20953-RPI32	Raspberry Pi		141-VL6180X	Time of Flight Distance Ranging Sensor		M3 i6 tap	92750A656
112-7TOUCH	Raspberry Pi Touch Screen Display		142-17HS15-1504S-X1	Nema 17 Stepper Motor		M3 i10 flat	92010A120
113-B01MQ2MZDV	Motor Shield		143	Bearing Plate	86825K861	M3 i18 flat	92010A788
114-LRS-200-24	24 volt power supply		144	Motor Plate	7315T16	M3 L6 set	91390A100
115-K241205	24VDC to 12VDC transformer		145	Locking Collar	8974K16 X1/2 ft.	M3 L15 set	91390A105
116-EA15-5V	24VDC to 5VDC transformer		146	Motor Axle	4634T42 X1 ft 4334T42 X3 ft		
12	iButton Placement Assy	Material	147	Roller Axle	4634T42 X1 ft 4334T42 X3 ft		
121-DS3218	20kg 270 Degree Servo Motor		148	Axle Collar Stopper	8974K13 X1/2 ft.		
122	PandP Arm	8975K237	149	Clear Cover Guard Plate	8574K281		
123	PandP Bottom	8975K226	1410	Clear Cover Bearing Plate	86825K17		
124	PandP guide	8975K631	1411	Clear Cover Guard Plate Outer	8574K28		
125	PandP Rail Adapter		1412	Sticky Pad Guard Plate	8574K28		
126	Bearing Housing	8975K622	1413	Sticky Pad Guard Plate Outer			
127- 5972K105	Ball Bearing		1414	iButton Plate			
128	PandP Bearing Arm	8984k18 X1/2 ft	1415	Bottom Plate	7315T29		
129	PandP Suction Arm	88915K22 X1 ft	1416	Free Roller Assembly			
1210-HS-422	Hitec Servo		1417 (14-2)	Clear Cover Removal			
1211	SuctionAdapter		1418	Clear Cover Guard Plate Axle	8974K71		
1212-10.01.06.00384	Suction Cup		1419	Sticky Pad Guard Plate Axle	1610T19		
1213- HTSVH3TW	Vacuum Hose		1420	Roller Free Plate			
1214- NMP830DC	diaphragm motor		127- 5972K105	Ball Bearing			
1215	PandP Dowel 1 (d12 L45)		15	Re-Roller Assy	Material		
1216	PandP Dowel 2 (d3.18 L15)		151	Double Roller	86825K861		
13	iButton Feeder	Material	152	Double Roller Assembly			
131-101-3428	Vibrating Feeder Bowl*		142-17HS15-1504S-X1	Nema 17 Stepper Motor			
132-B00WV7GMA2	AC/DC Control Relay Power Strip		127- 5972K105	Ball Bearing			
			16	Casing Assy	Material		
			161-20s-L Shape	T Slot L Shape Joining Plate			
			162-2020ISH-AP-20	Connector Set			
			163-EXT-2020-REG-10 00-10X	2020 T Slot Aluminum			

(10) Automated iButton Placement Device Top Level Drawing





Device Model Without Tables and Covers



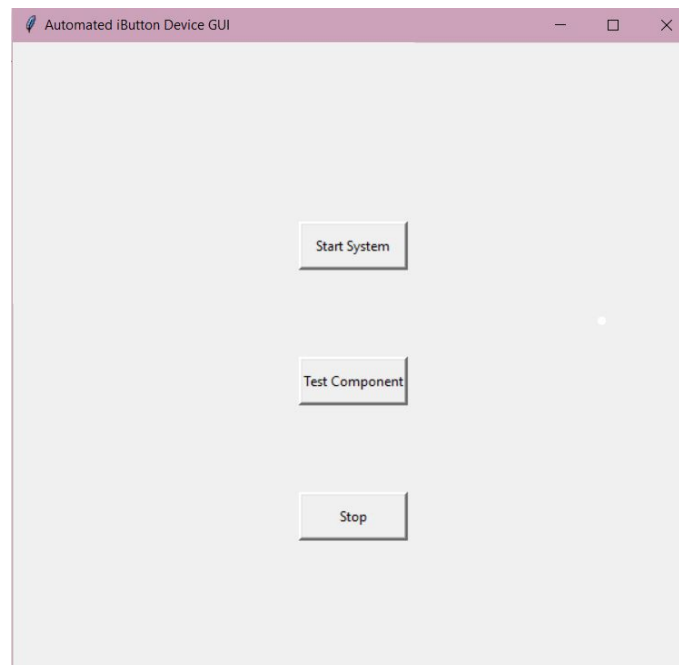
Recommended Placement and Measurements

These 3 measurements are the recommended space between the iButton guide rail from feeder bowl to edge of bottom plate

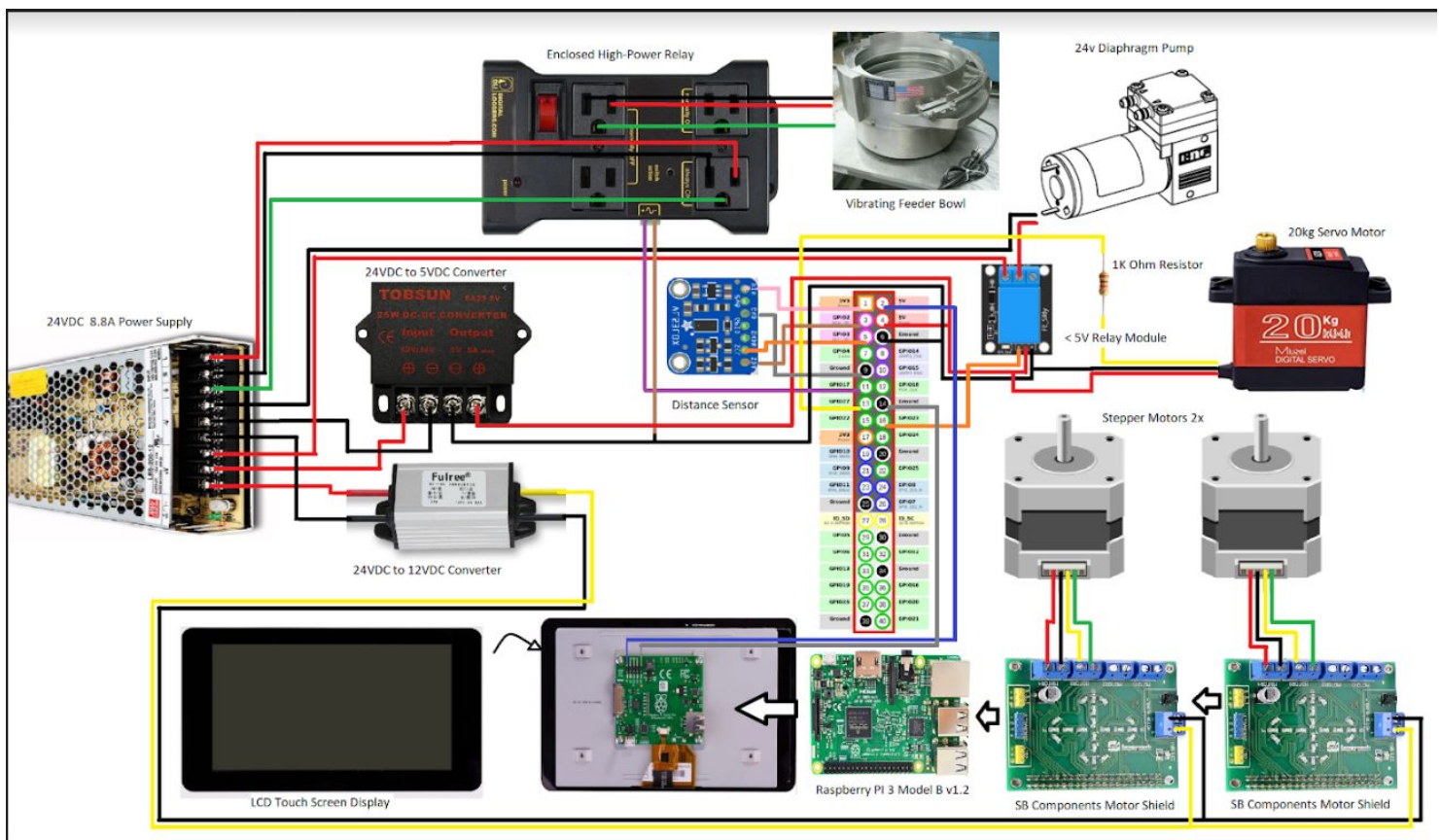
The center of the iButton on the iButton rail should be 180 mm from the center of the sticky pad being held down by the iButton plate on top of the Bottom Plate.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	PROJ.		DESIGN AND BENCH MARK EDGES		DO NOT SCALE DRAWING	REVISION
DESIGN	NAME	SIGNATURE	DATE		FILE: AiBPD Concept (No Covers)	A3
CHECKED			4/1/18			
APPROVED						
DATE						
			INTERNAL:		DWG NO. 10	
			REVISION:		SCALE: 1:1	SHEET 1 OF 1

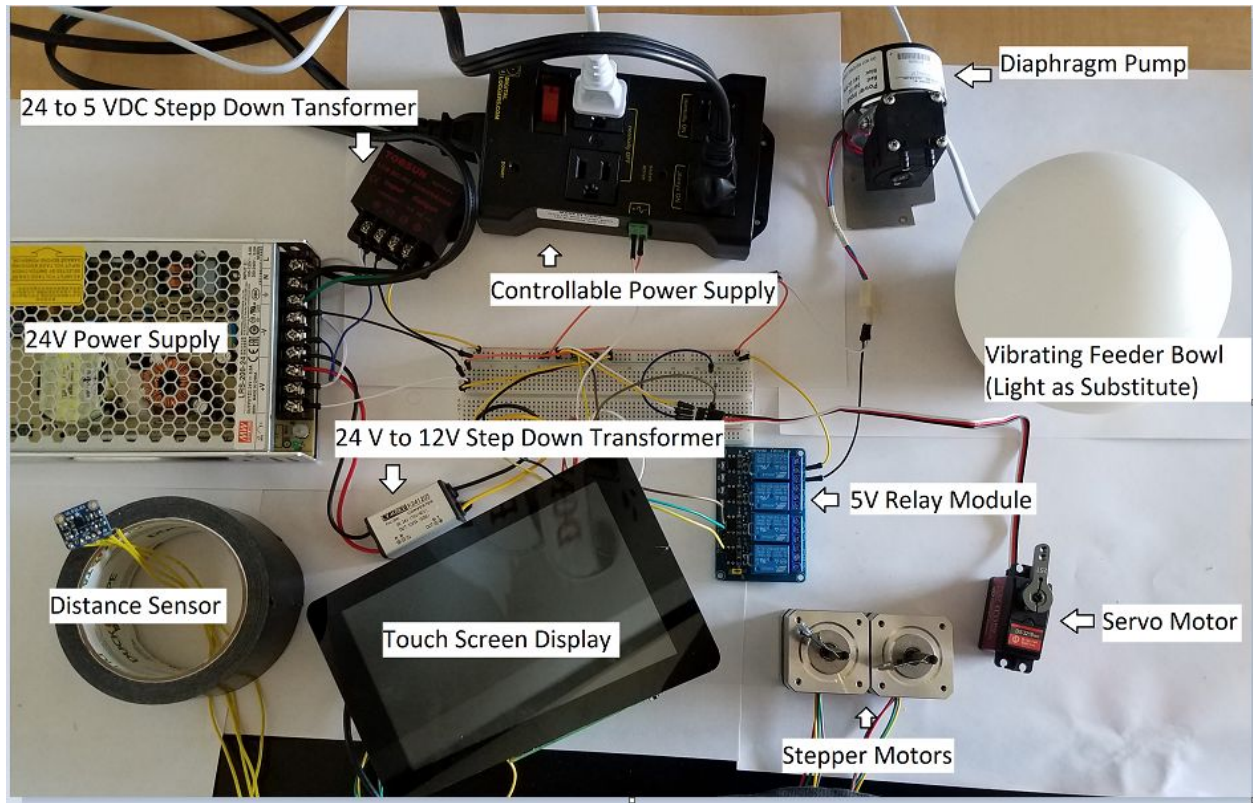
(11) User Interface



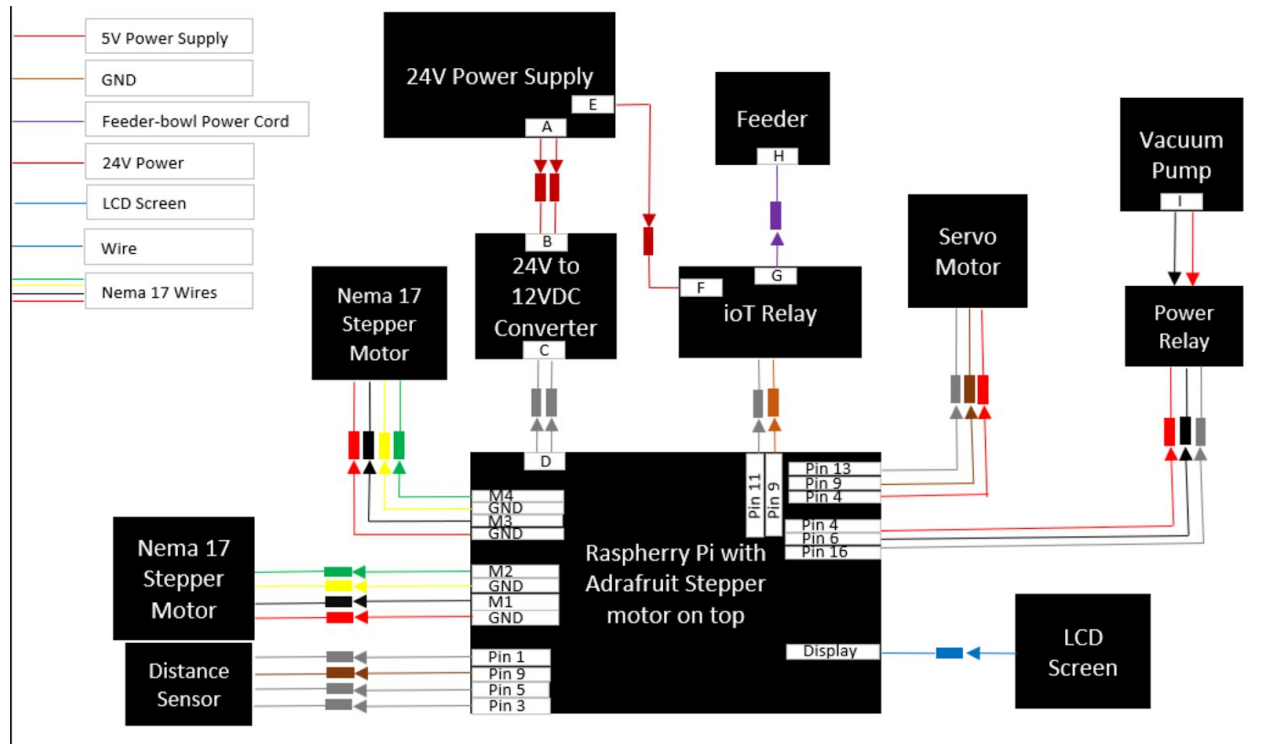
More info on the GUI in document: f.ii- Operation Manual GUI



Wiring Diagram Using Images of Real Parts



Real Picture of Wiring Set Up

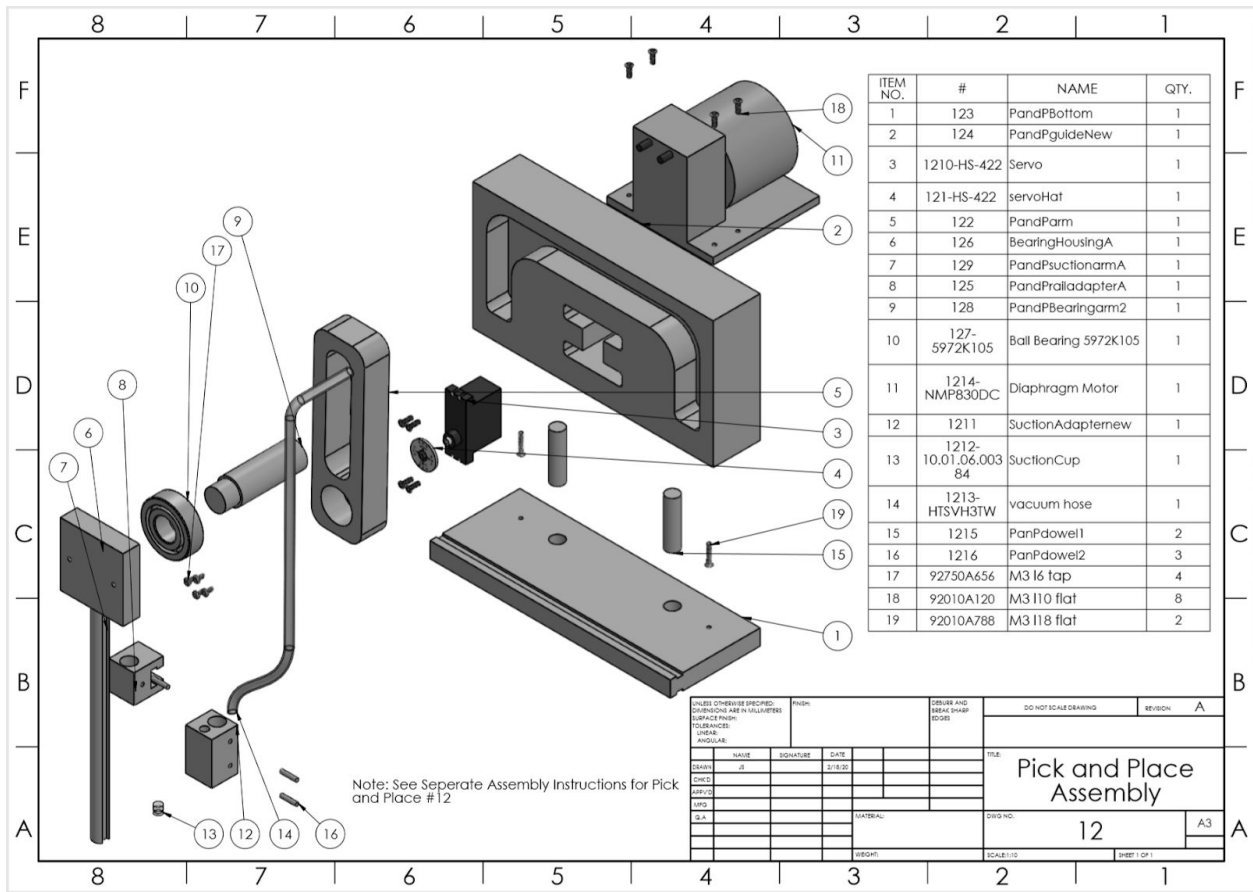


Simplistic View of Wiring Diagram

Letter	Description
A	Power Supply 24V power output
B	Converter 24V power output
C	Converter 12V output
D	12 V Motor Power
E	Power Supply 24V power output
F	Smart Relay: Normally On Outlet
G	Smart Relay: Normally Off Outlet
H	Feeder-bowl Power Cord
I	Vacuum Pump Power Cord

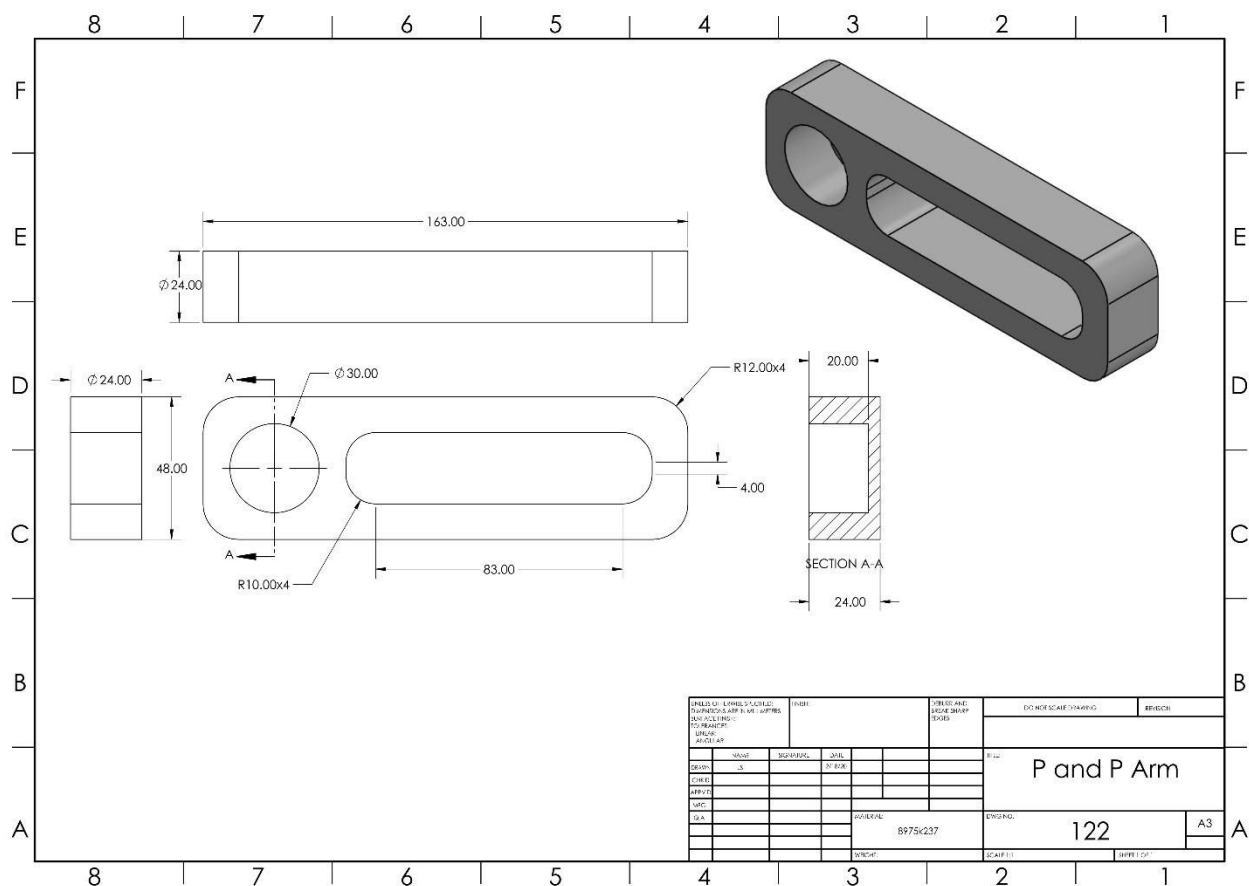
Wiring Diagram Key

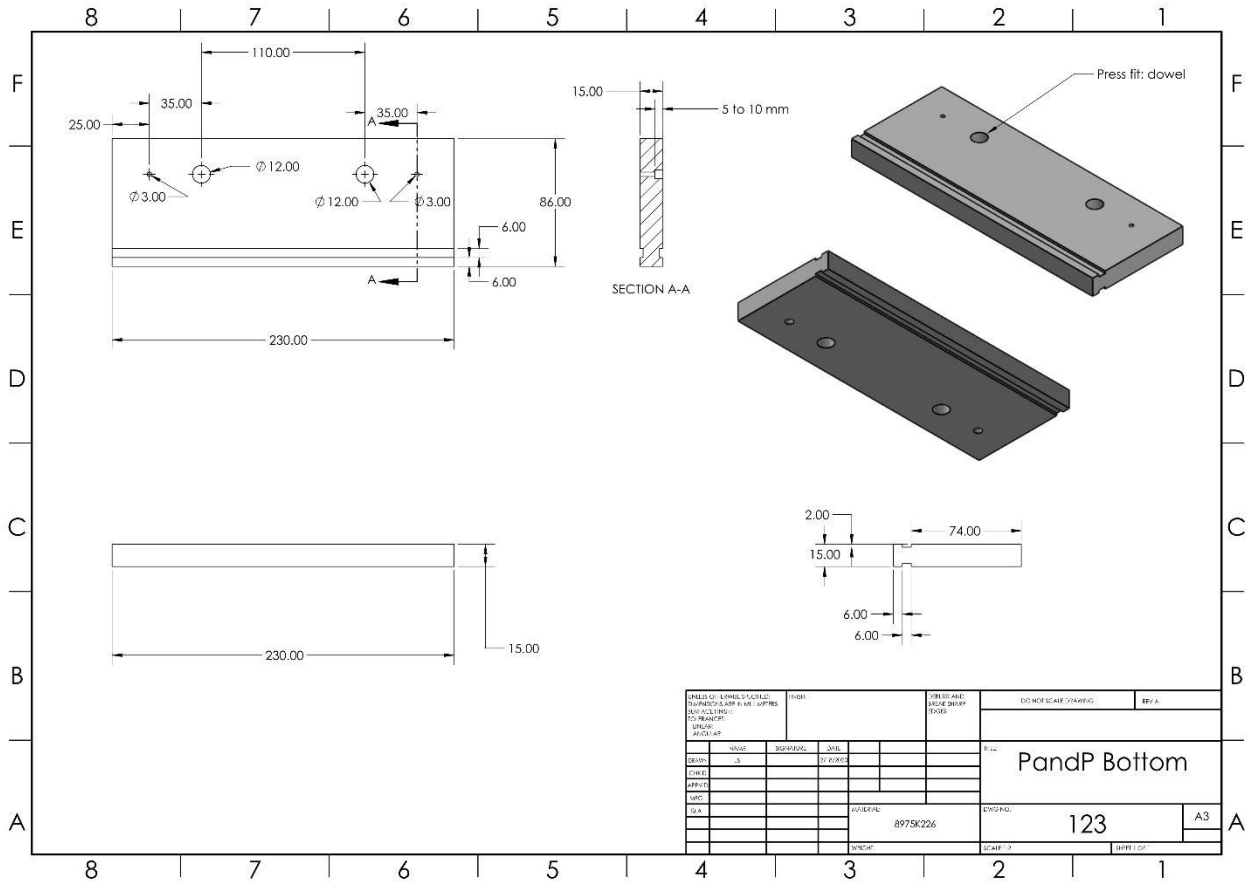
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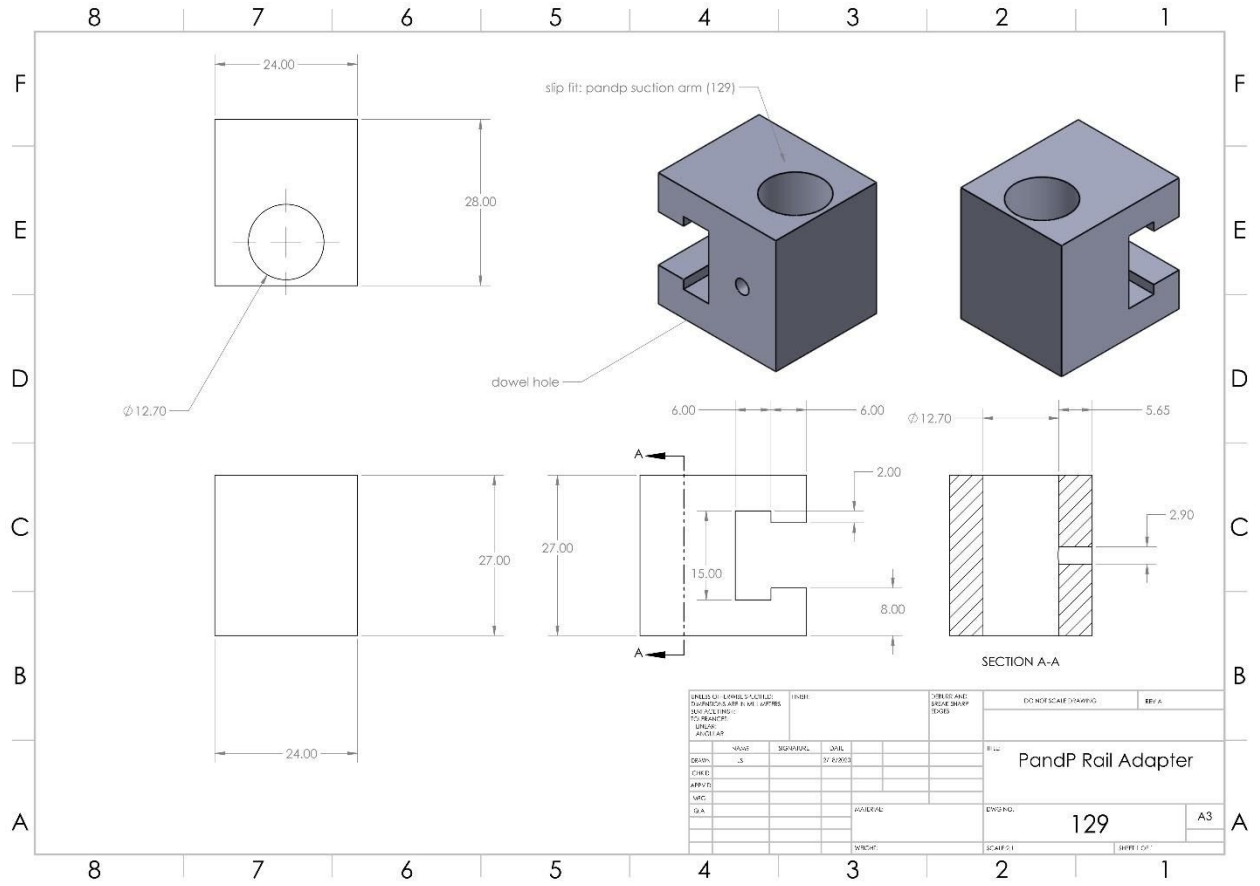


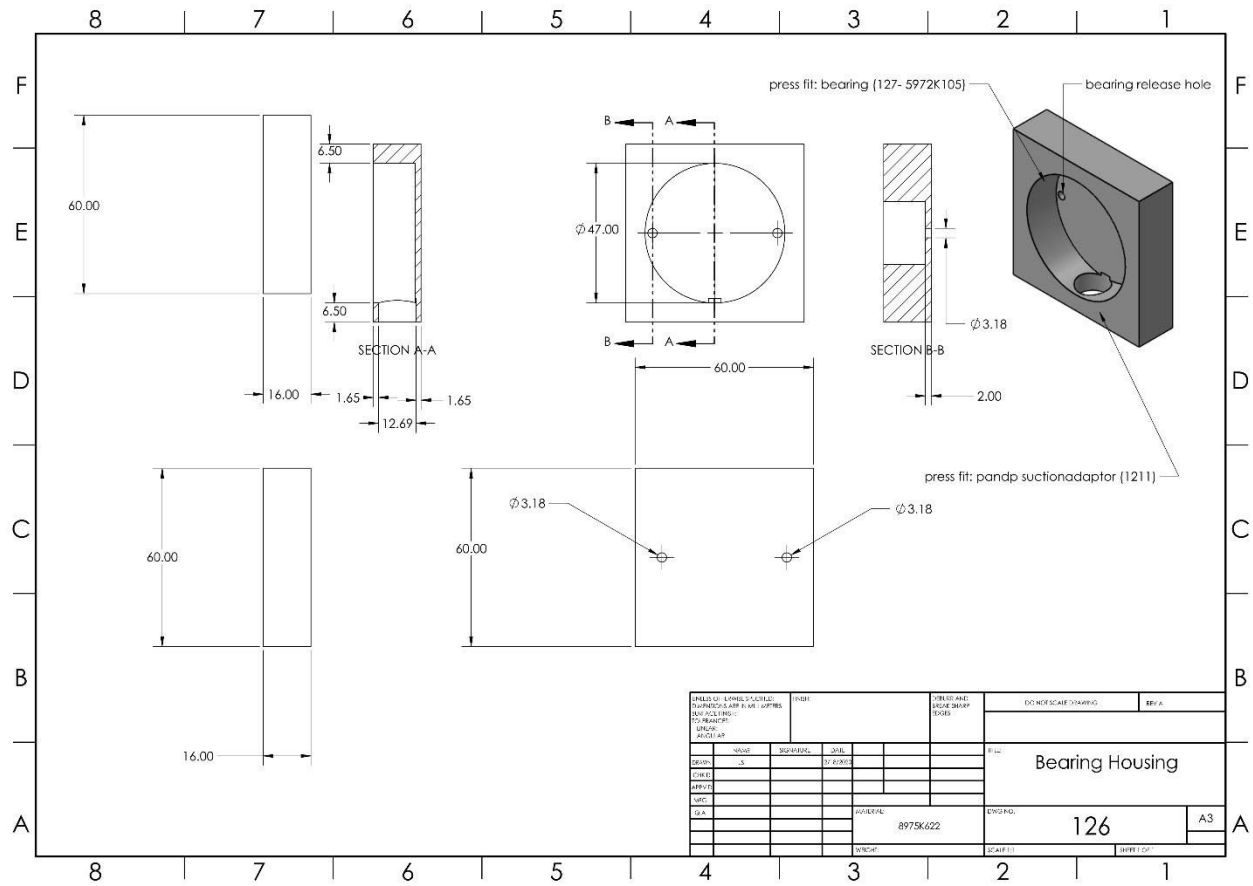
Note: See separate assembly video for instructions on assembling.

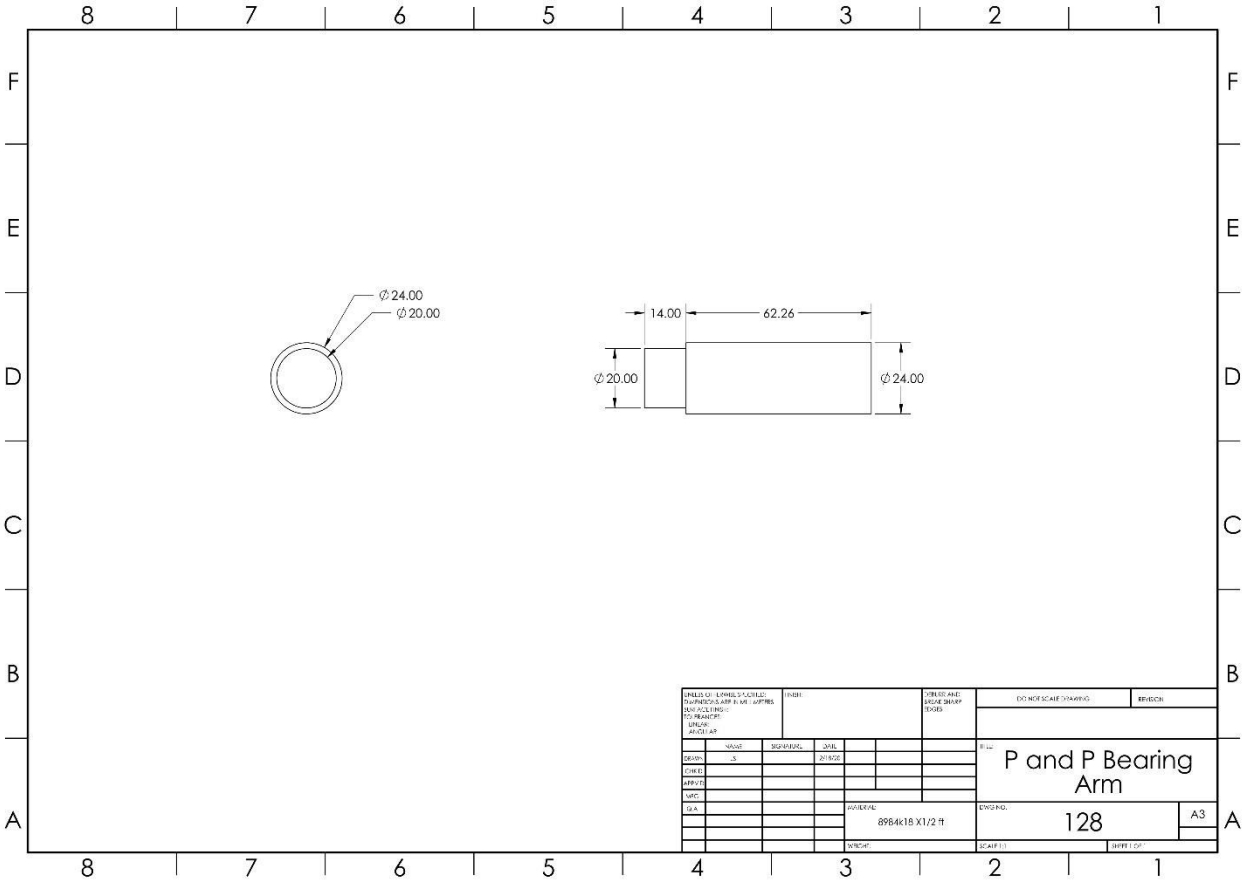
(12) Pick and Place Parts



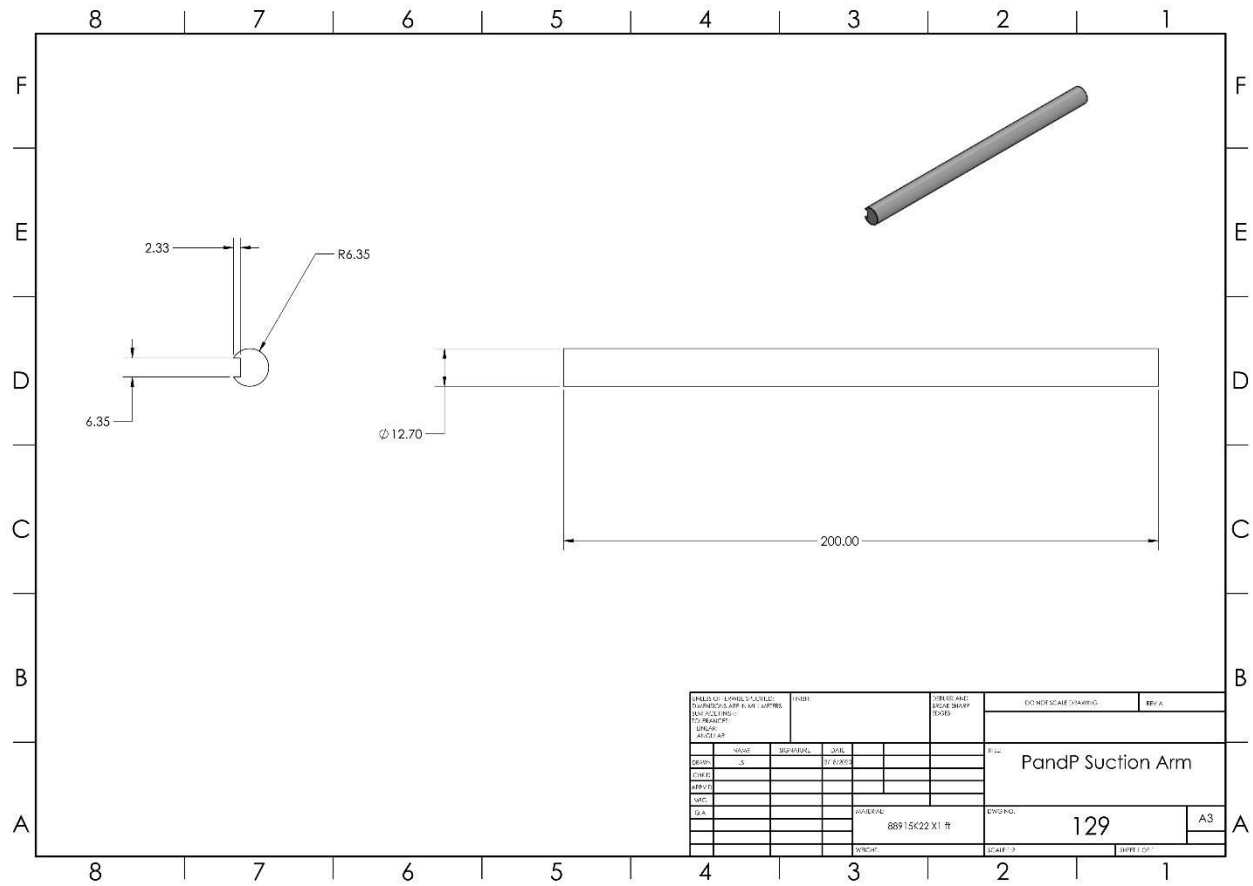


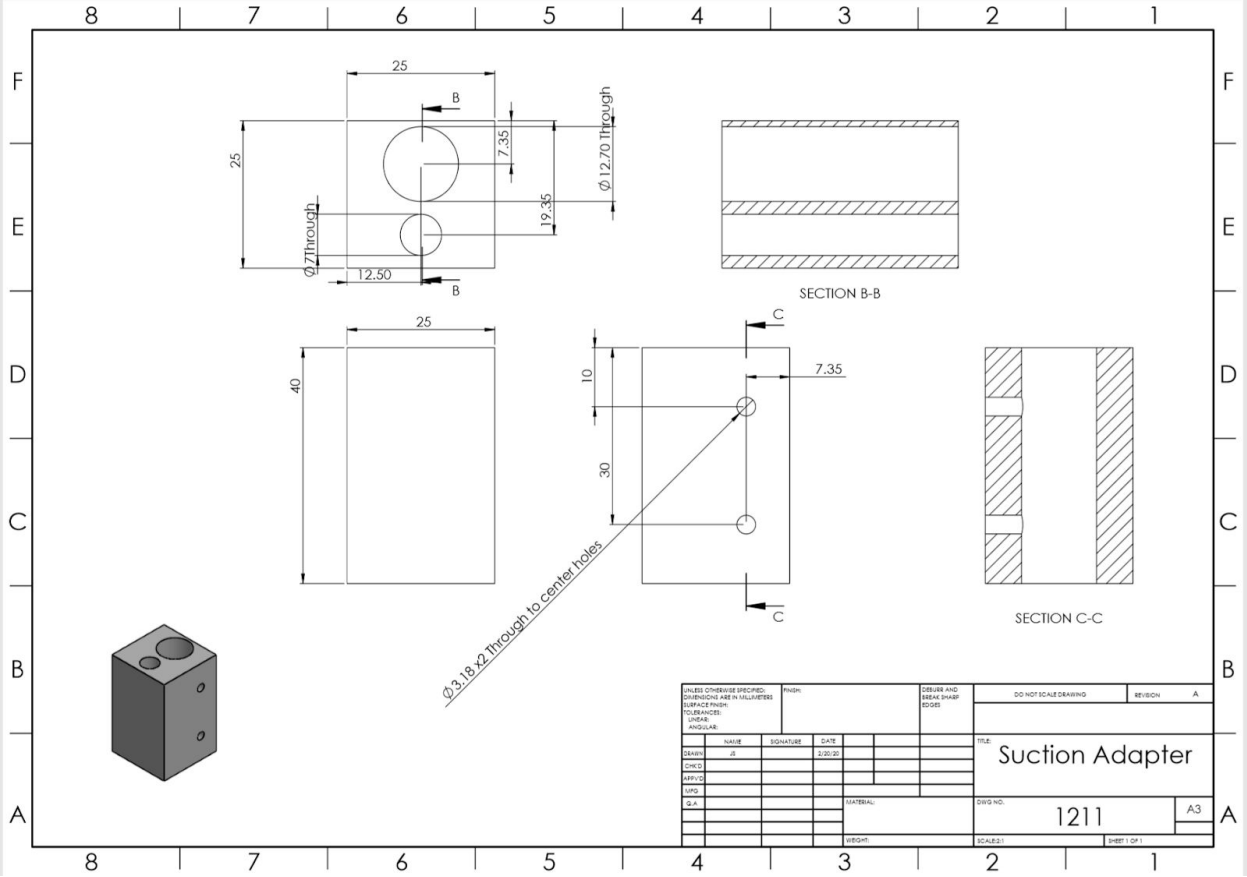


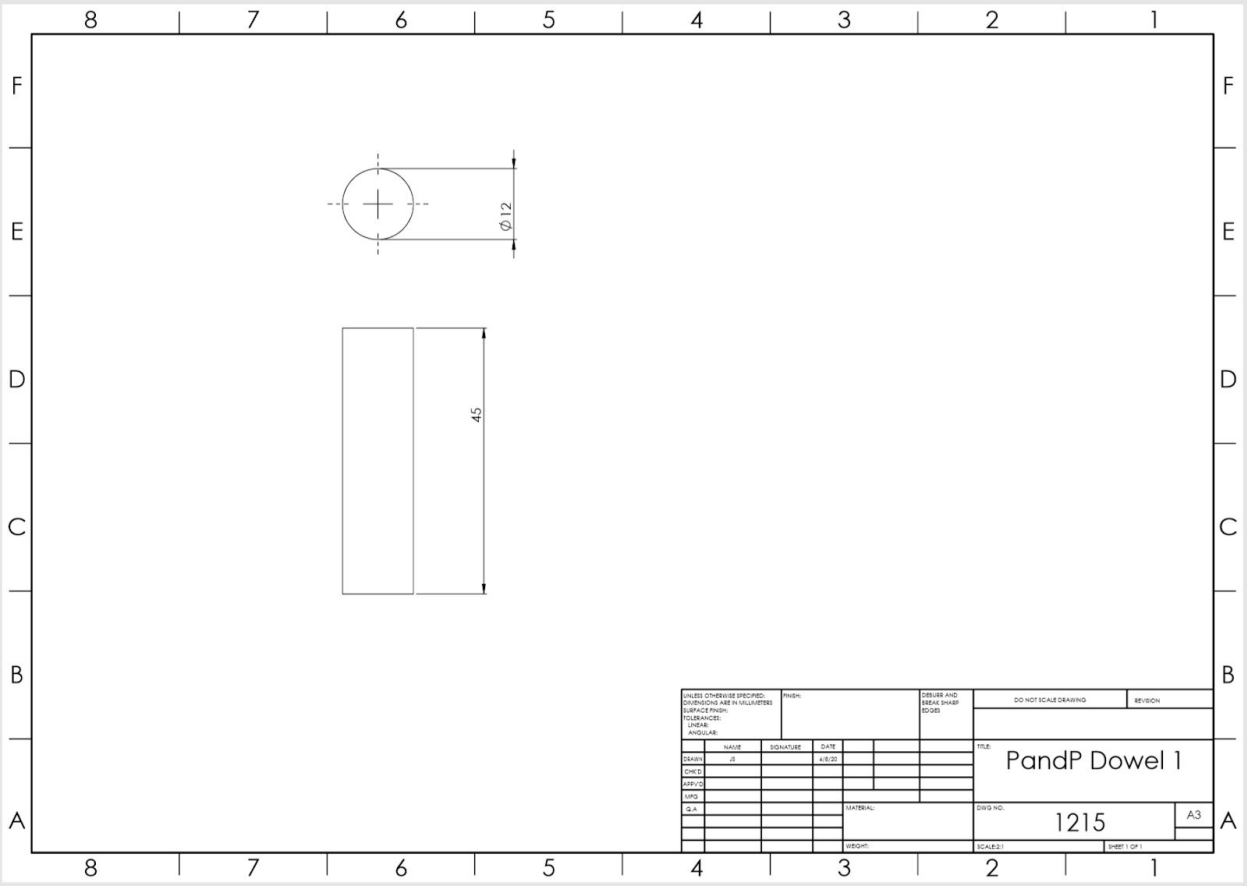


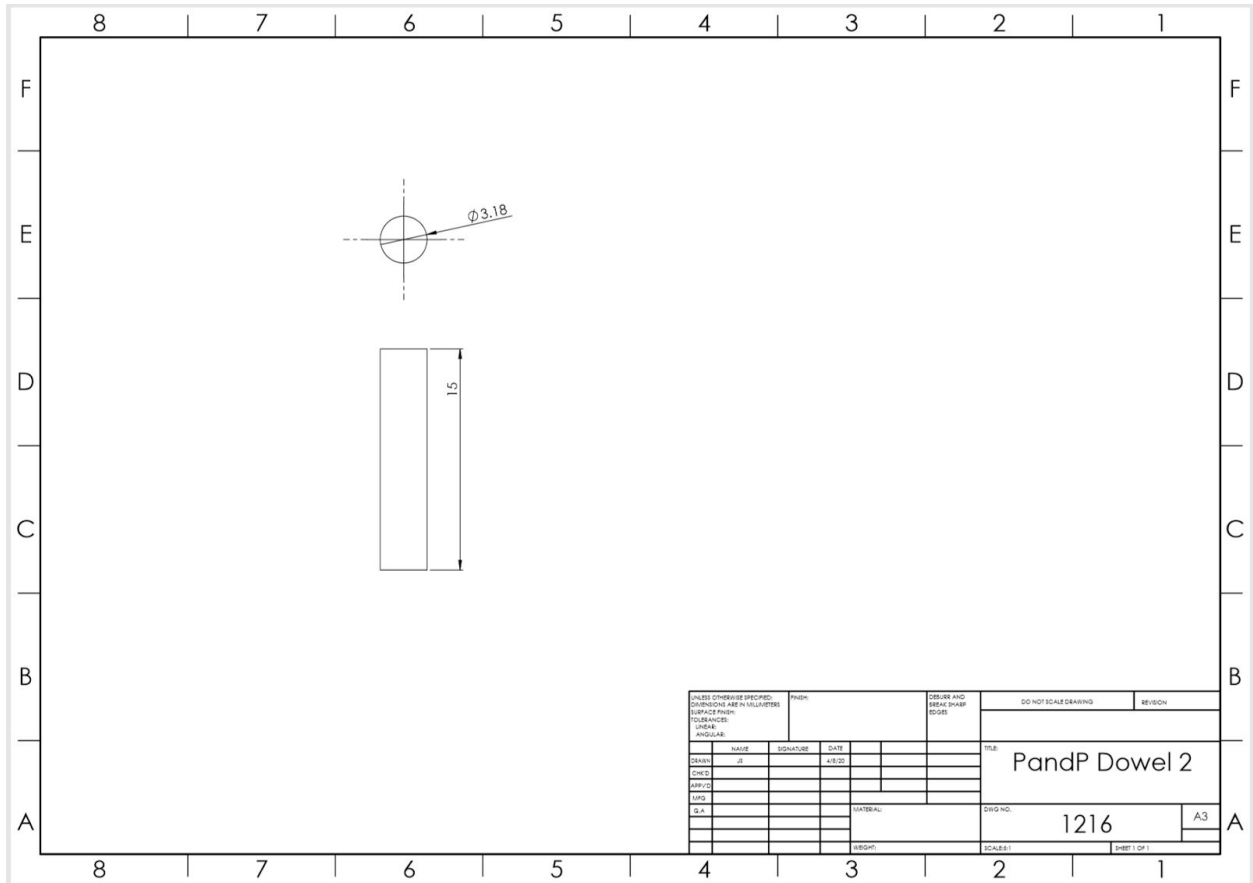


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DESIGN	3	3/16	3/16	3/16	3/16	3/16	3/16	P and P Bearing Arm		128	
ENGINEER											
APPROVE											
DATE											
MATERIAL: 8964K15 X1/2 ft				DRAWING NO.		SCALE: 1:1		SHEET NO.		A3	
REVISIONS				DATE		BY		CHECKED BY		APPROVED BY	









(13) Feeder Bowl



Feeder Bowl bought as-is.

Dimensions: 23" x 20" x 15"



Modified Stack Check.

Dimensions: 0.2" from bottom of stack check to rail.

Taapers from 1" to 0.1" x 0.5" tall.



Modified Rail for iButtons to feed to the Orientation Check.

Dimensions:

Rail: 14" x 1.25" x 0.1"

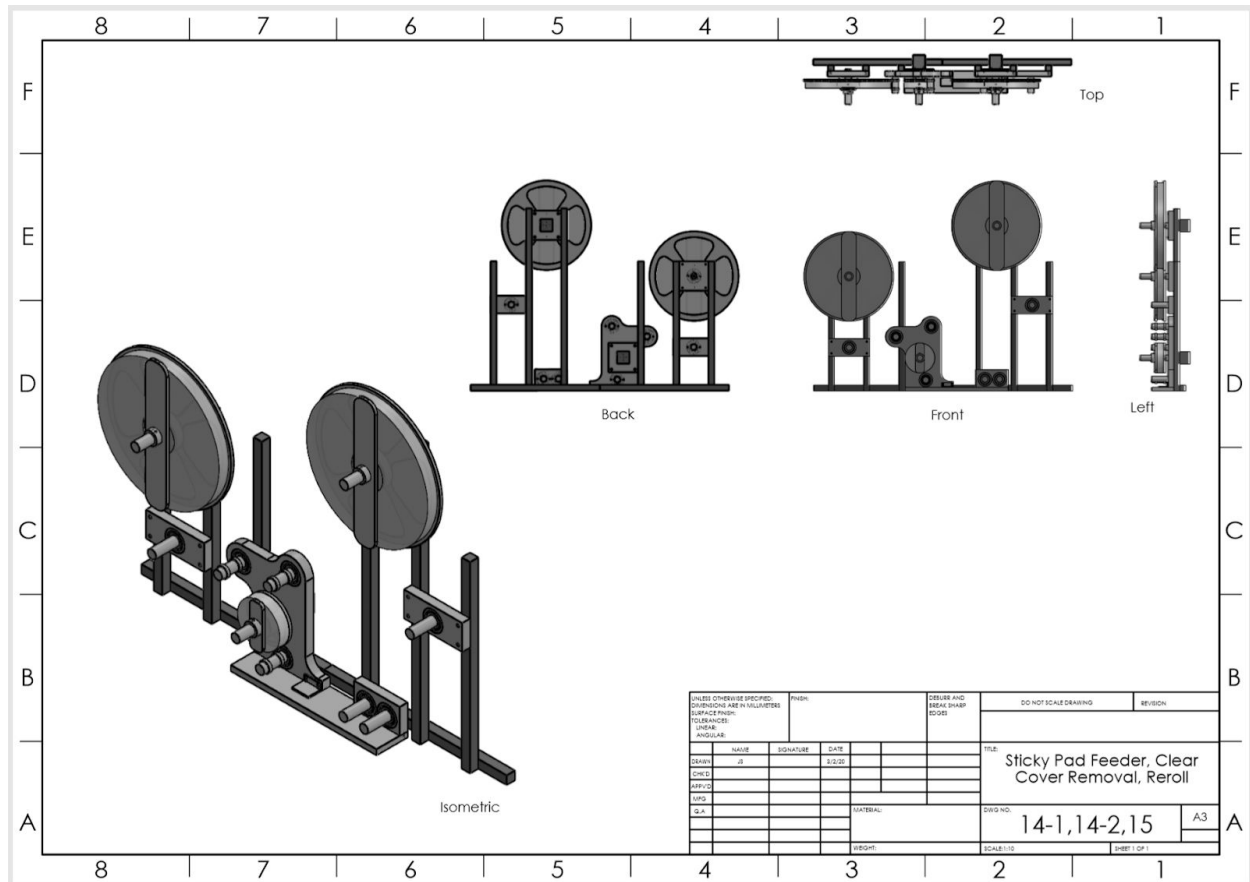
Rail guide: 14" x 0.3" x 0.1"

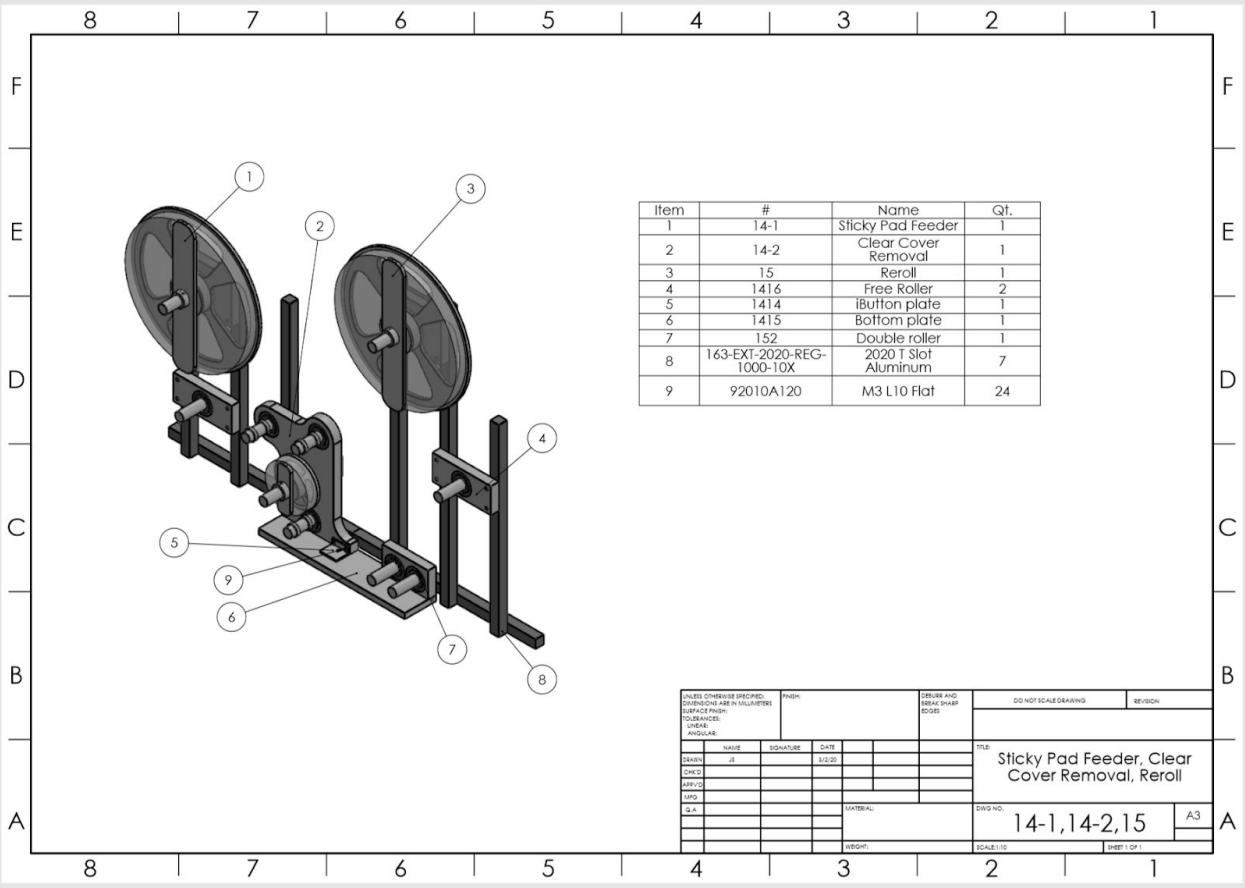


Mechanical Orientation Check. Replicated from one already in RTD Factory.

Dimensions: 3" x 1.25" x 0.25"

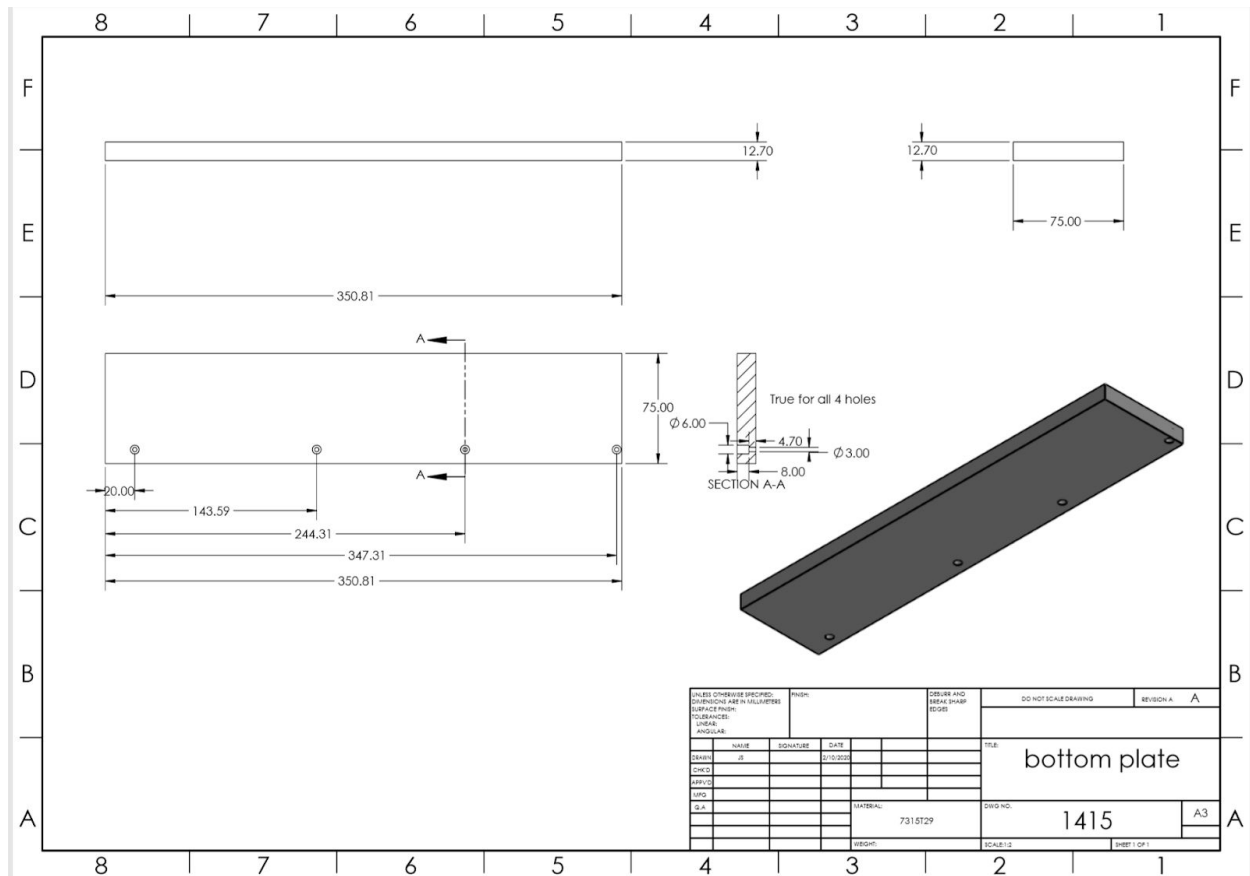
(14-1) Sticky Pad Feeder, (14-2) Clear Cover Removal, (15) Reroll Assembly

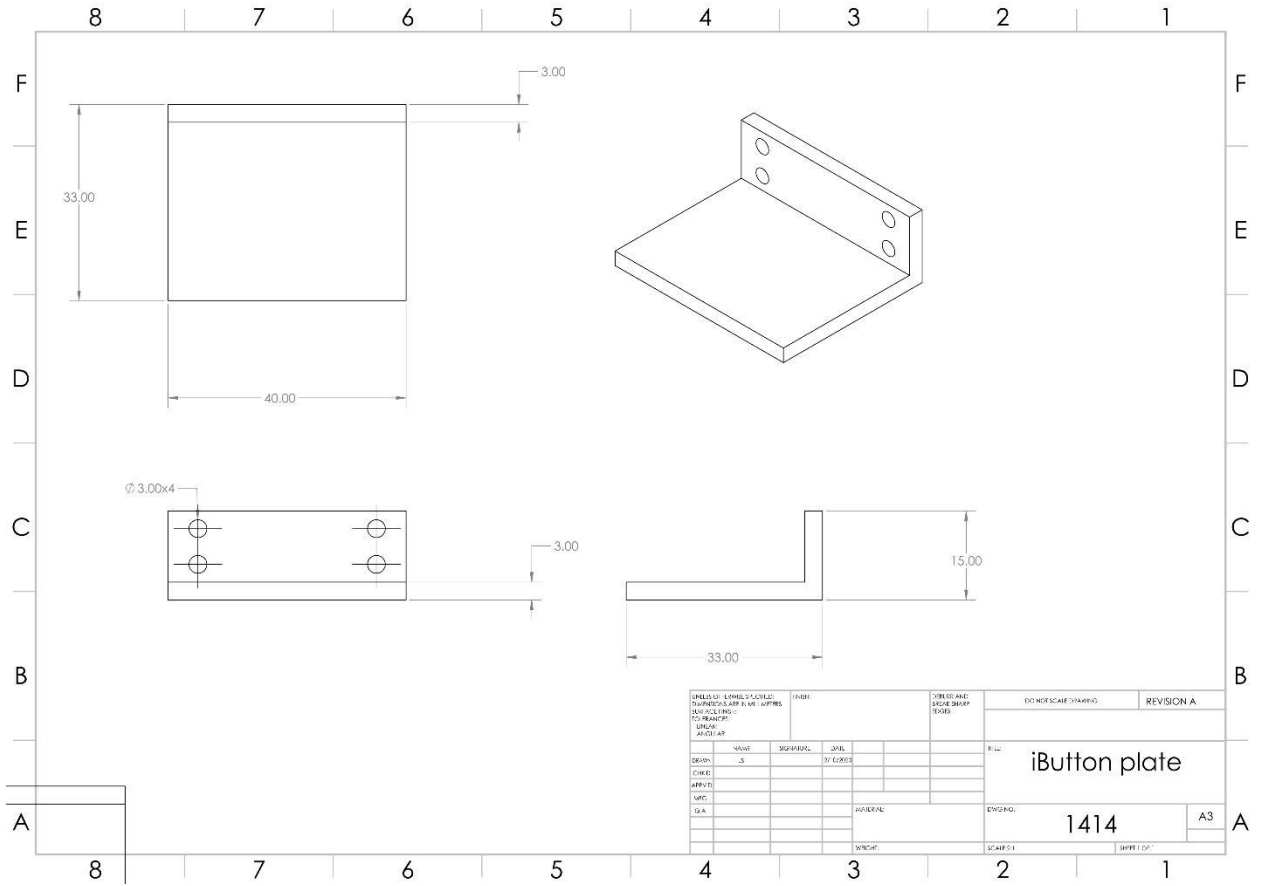




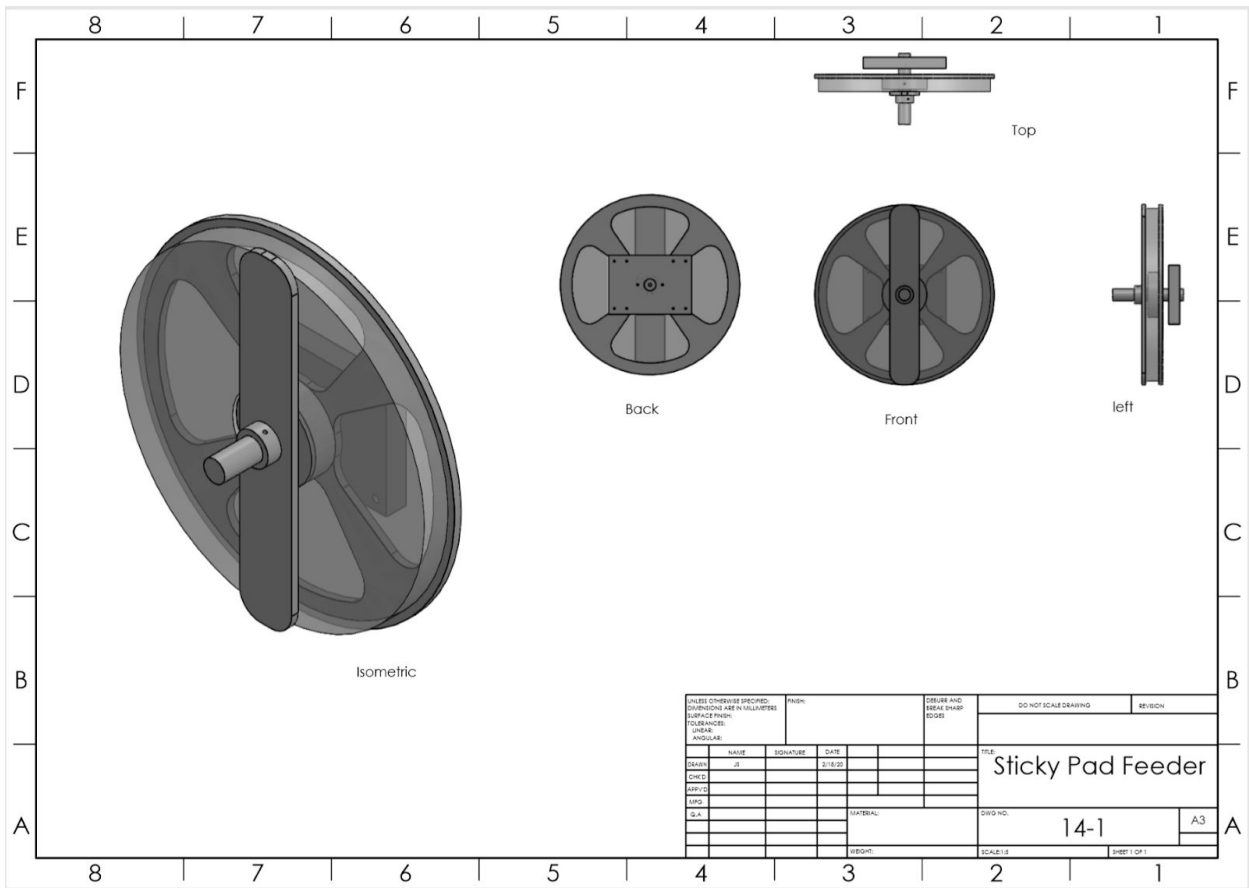
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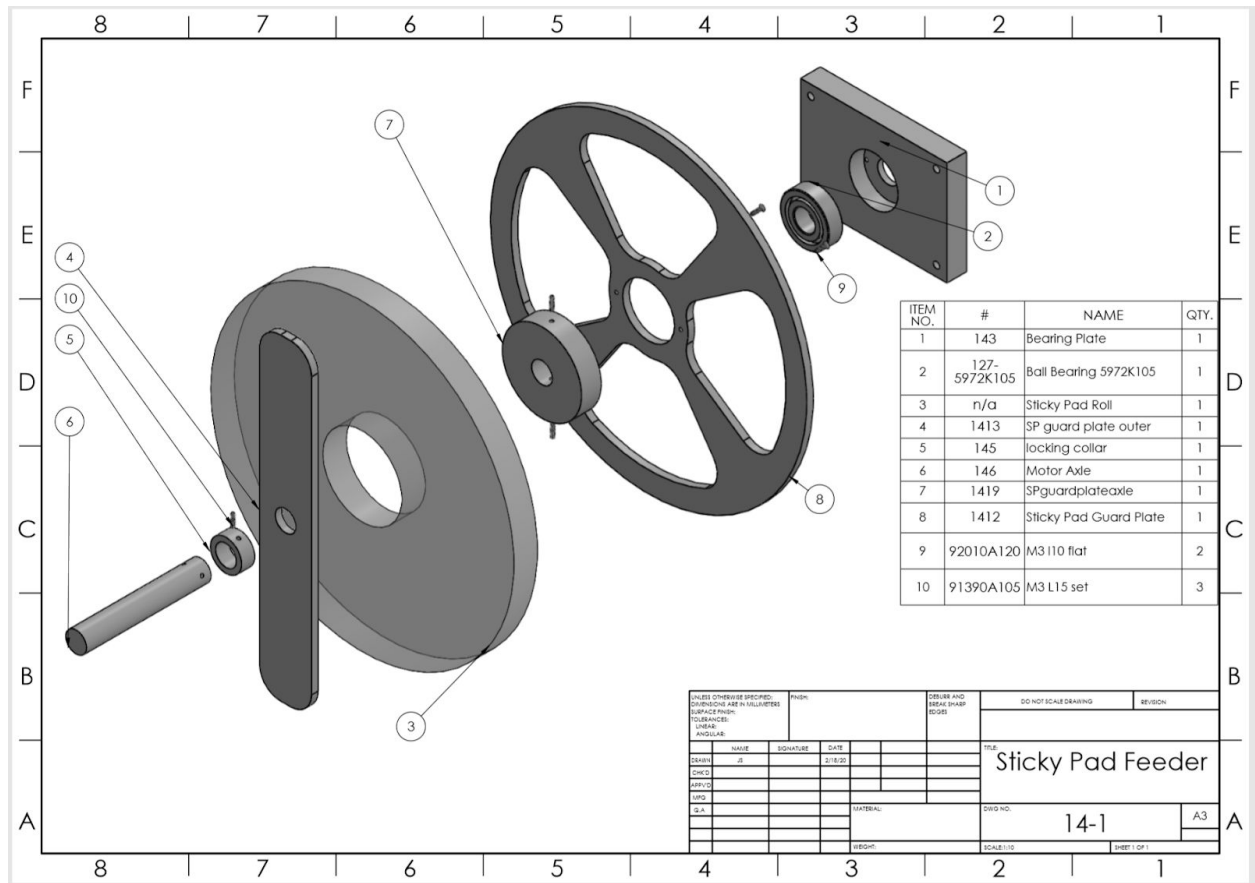
(14-1,14-2,15) Assembly Parts





(14-1) Sticky Pad Feeder Assembly

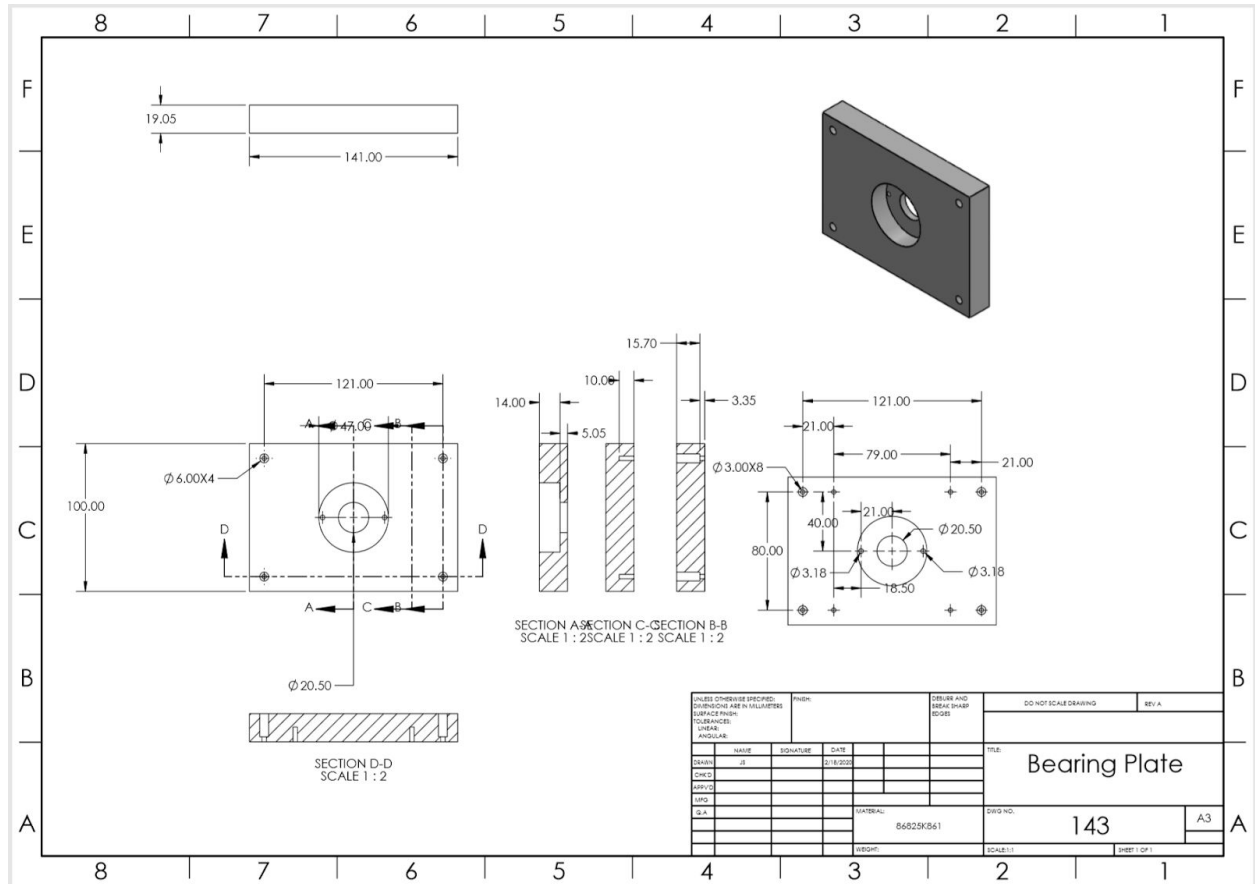


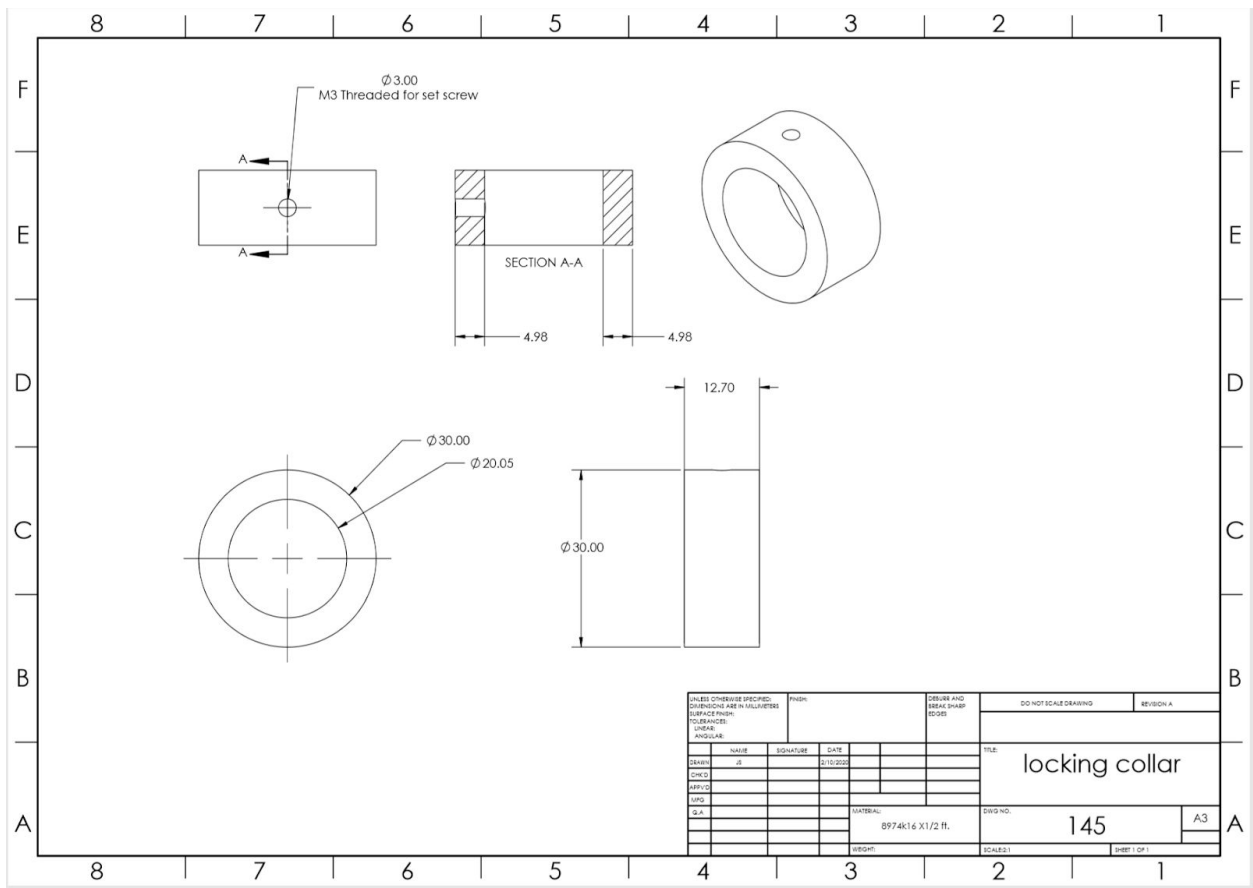


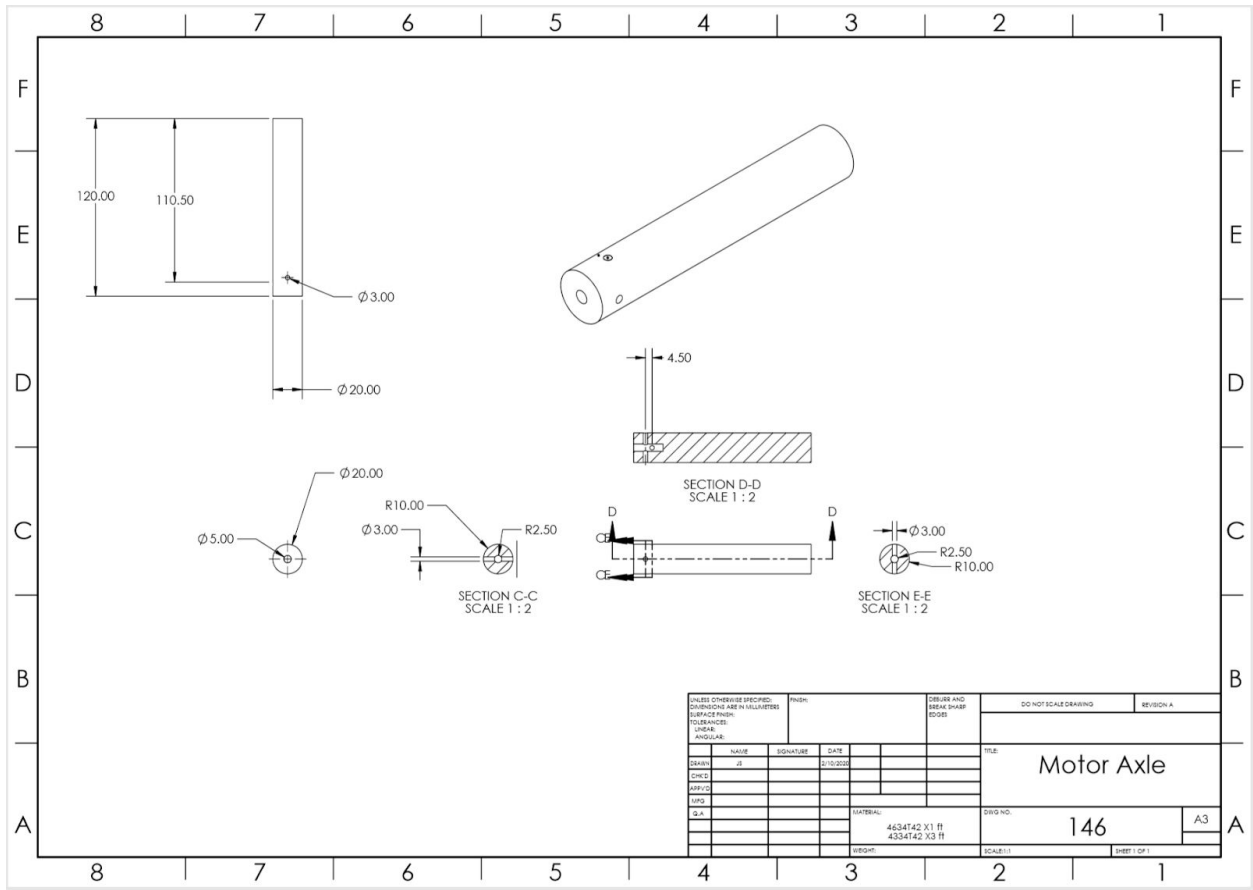
Note: See separate assembly video for instructions on assembling.

(14-1) Sticky Pad Feeder

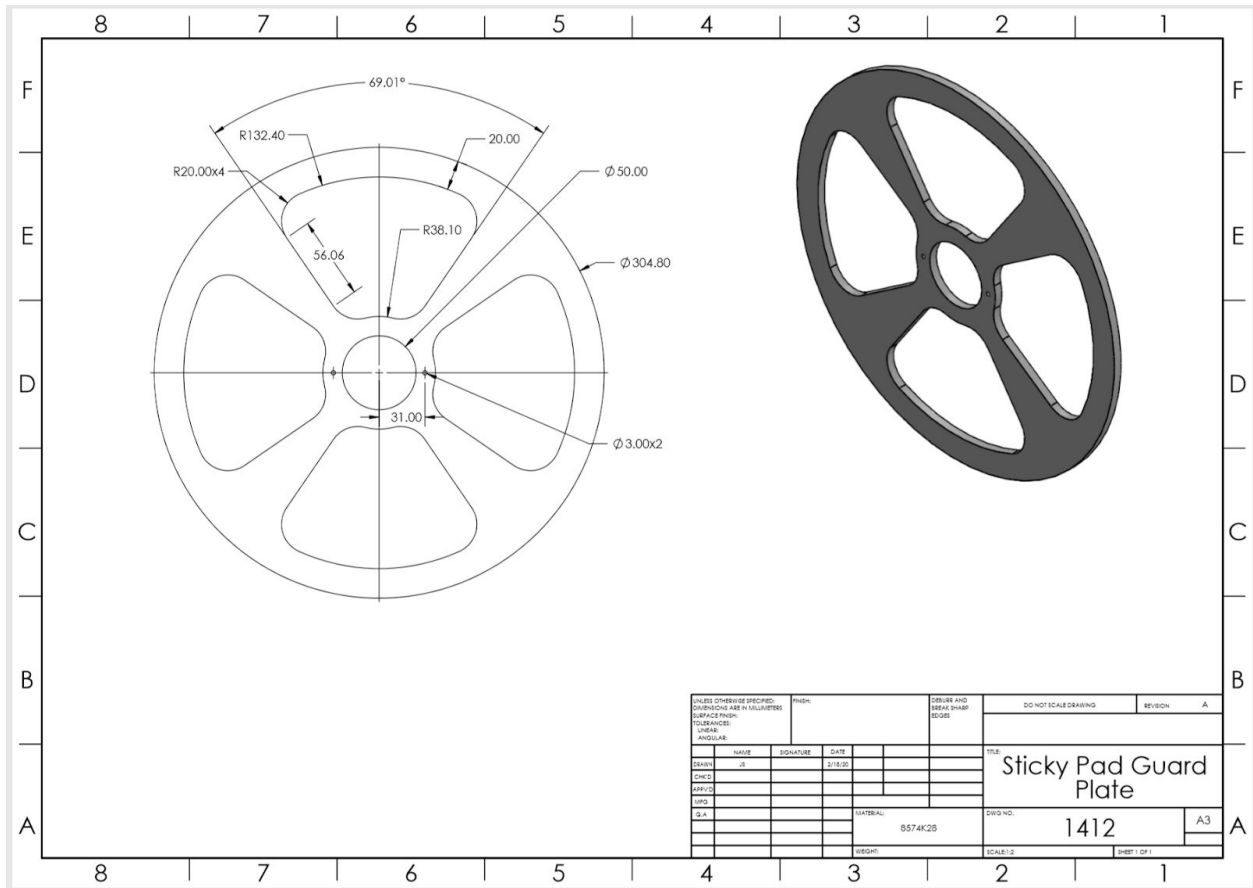
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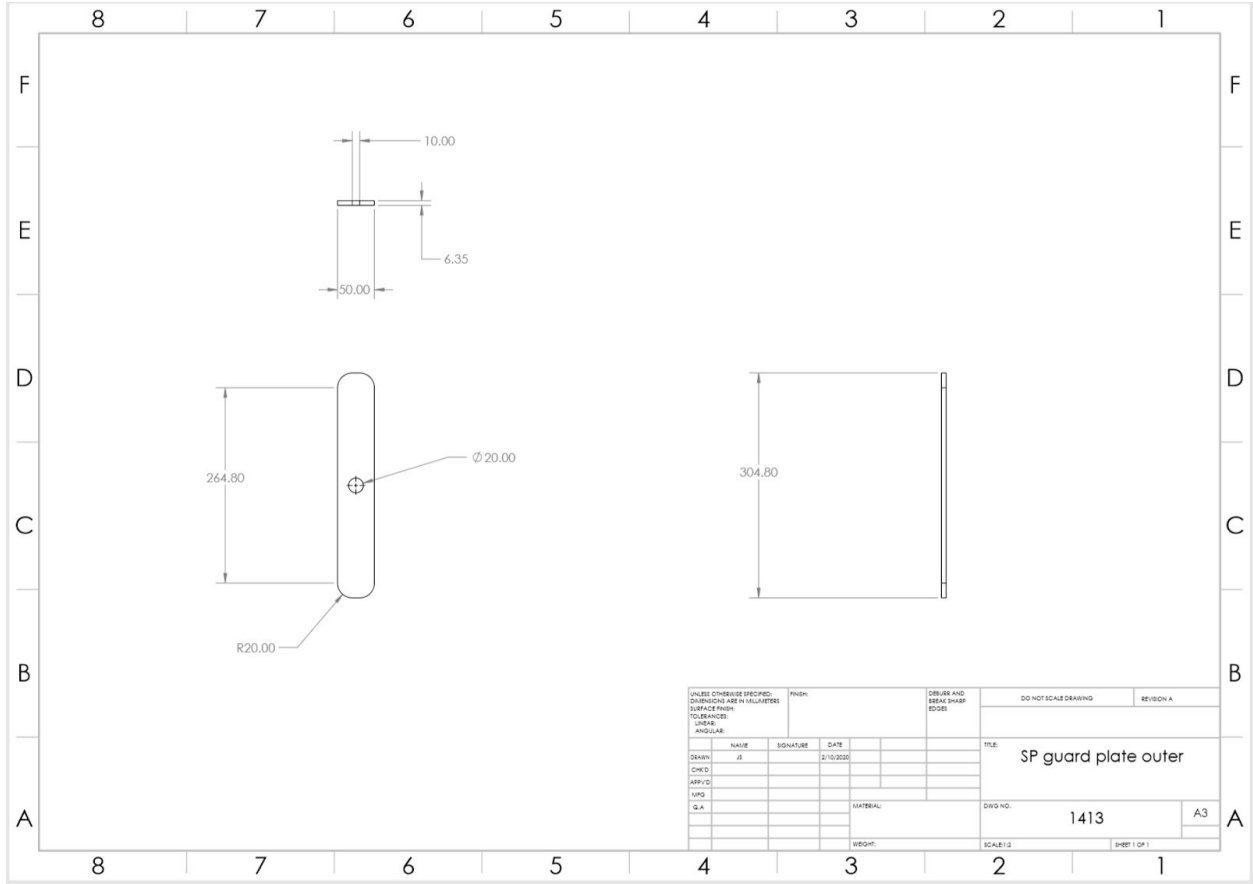


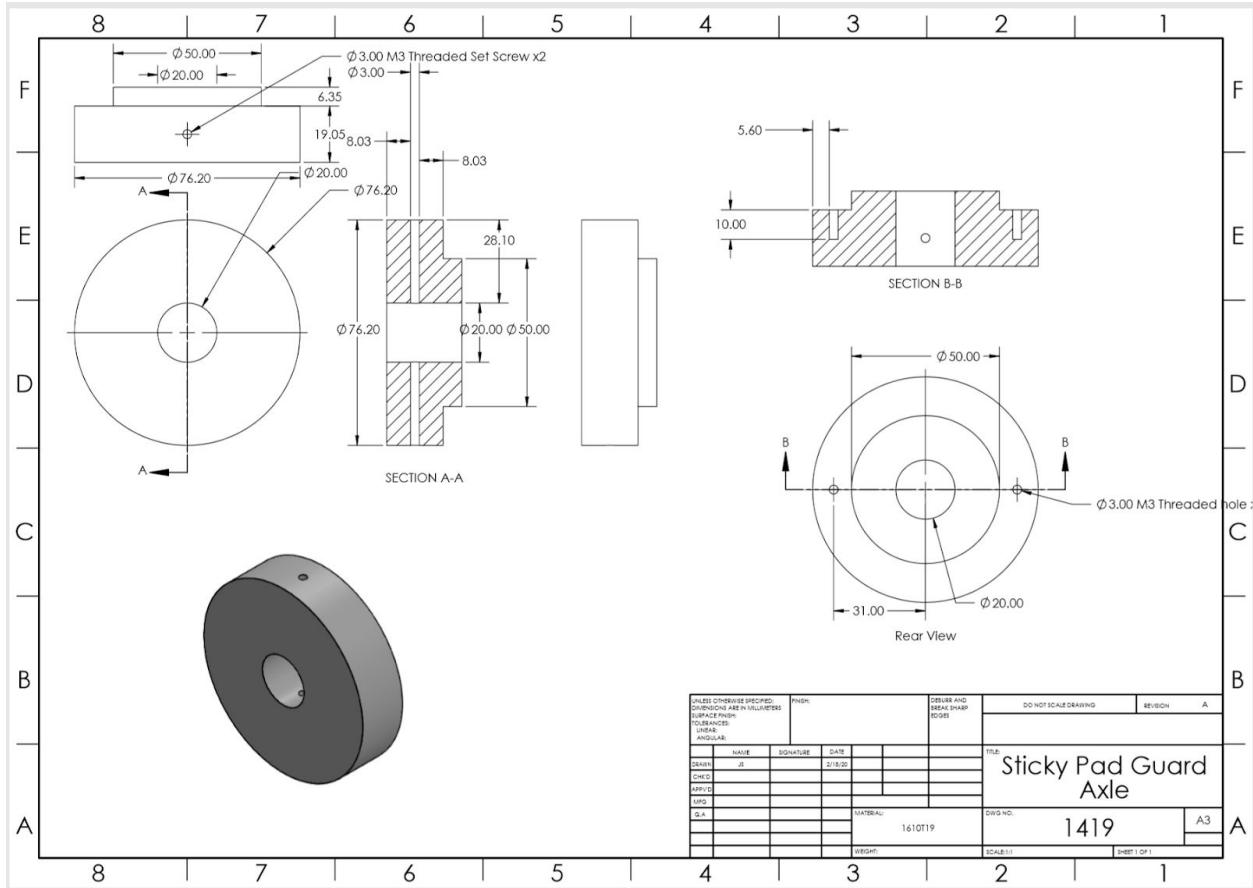




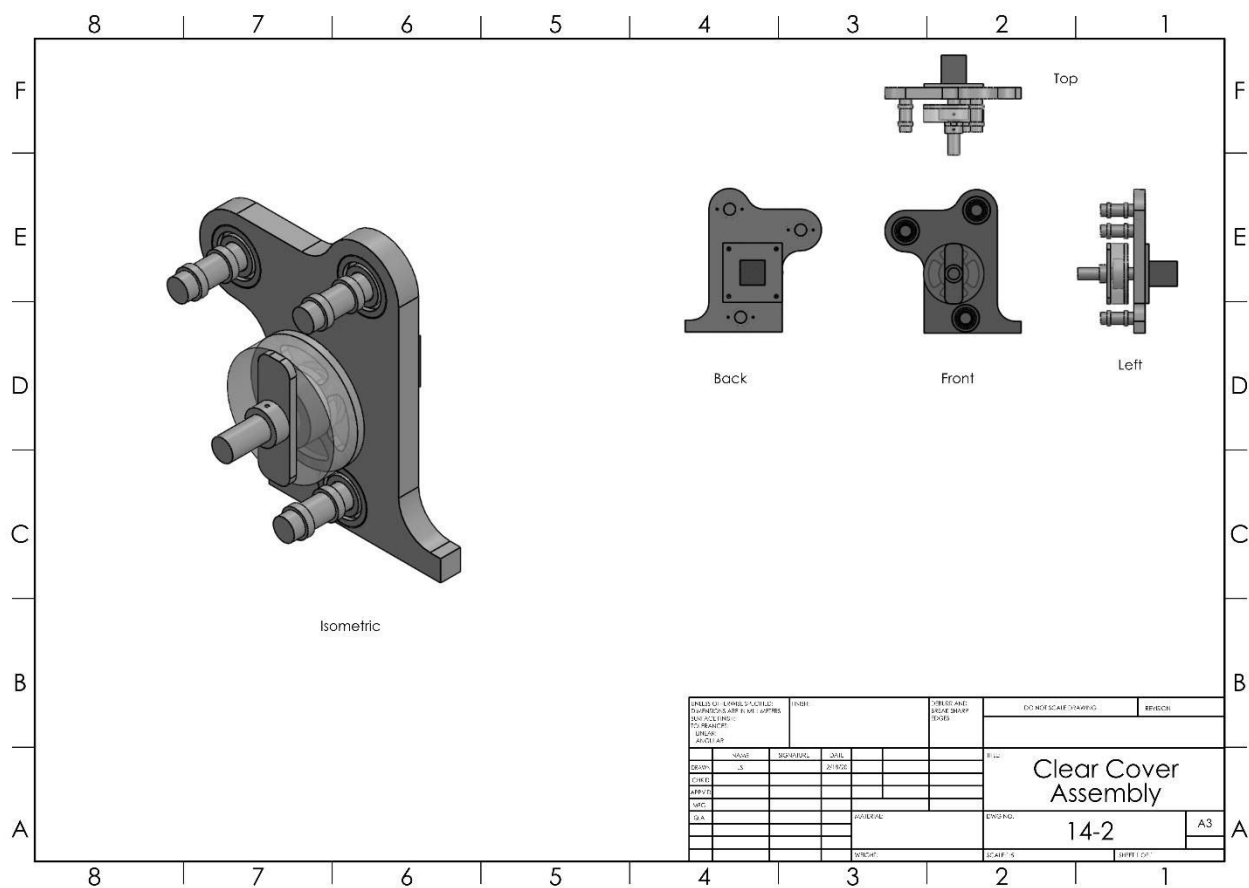
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NAME	DATE	SIGNATURE	DATE				TITLE:		
DESIGN	01/10/2020						Motor Axle		
CHKD									
APP'D									
Q.A.									
				MATERIAL:		4634T42 X1 ft 4334T42 X3 ft	DWG NO. 146		A3
				WEIGHT:			SCALE: 1:1		SHEET 1 OF 1

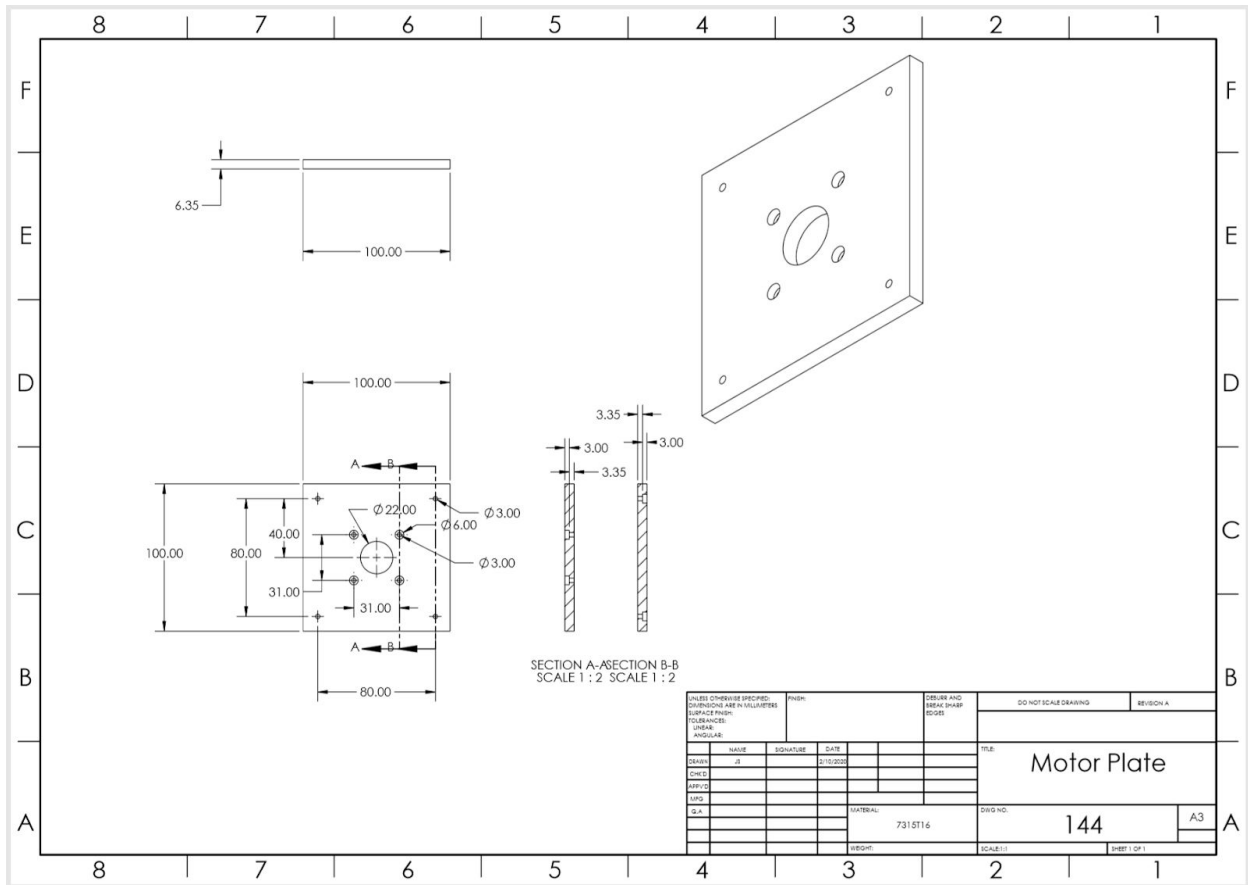


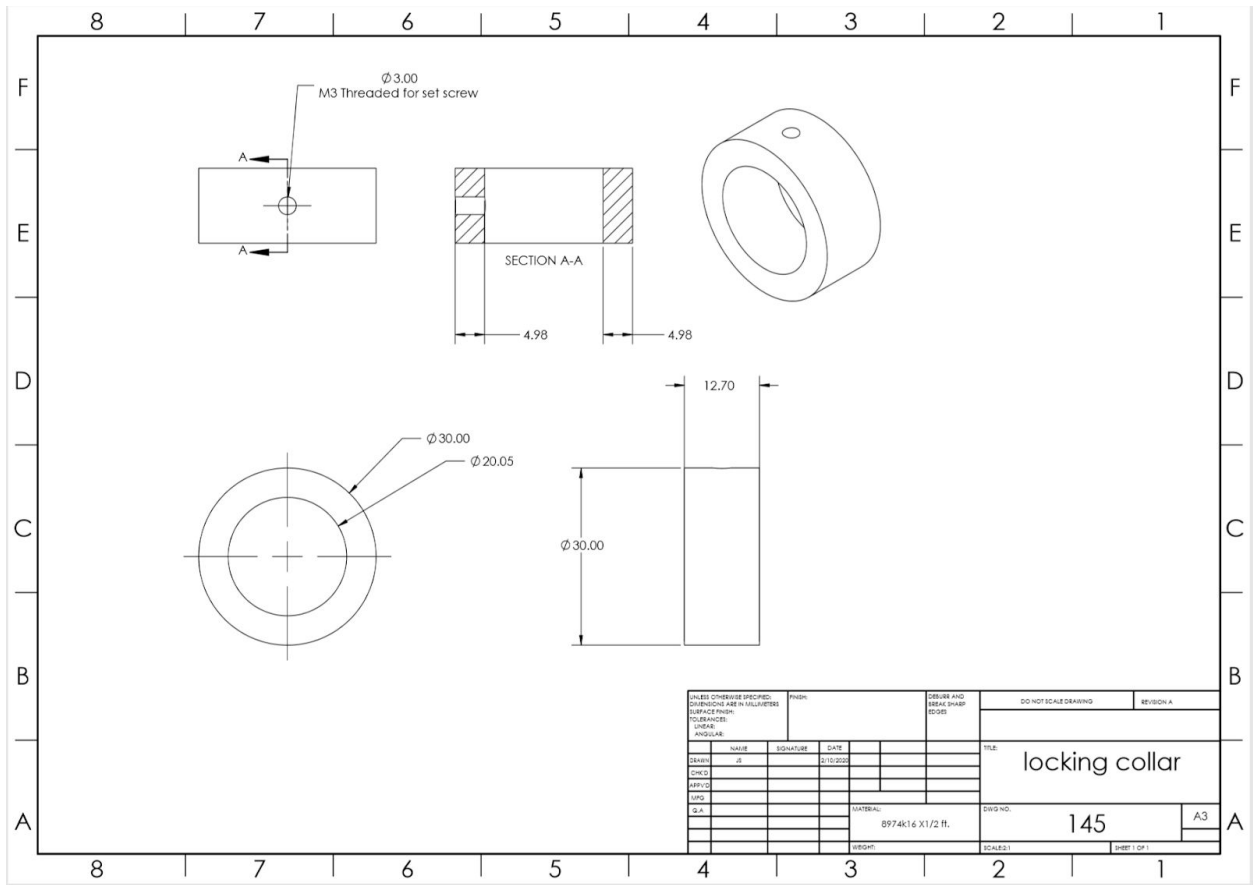


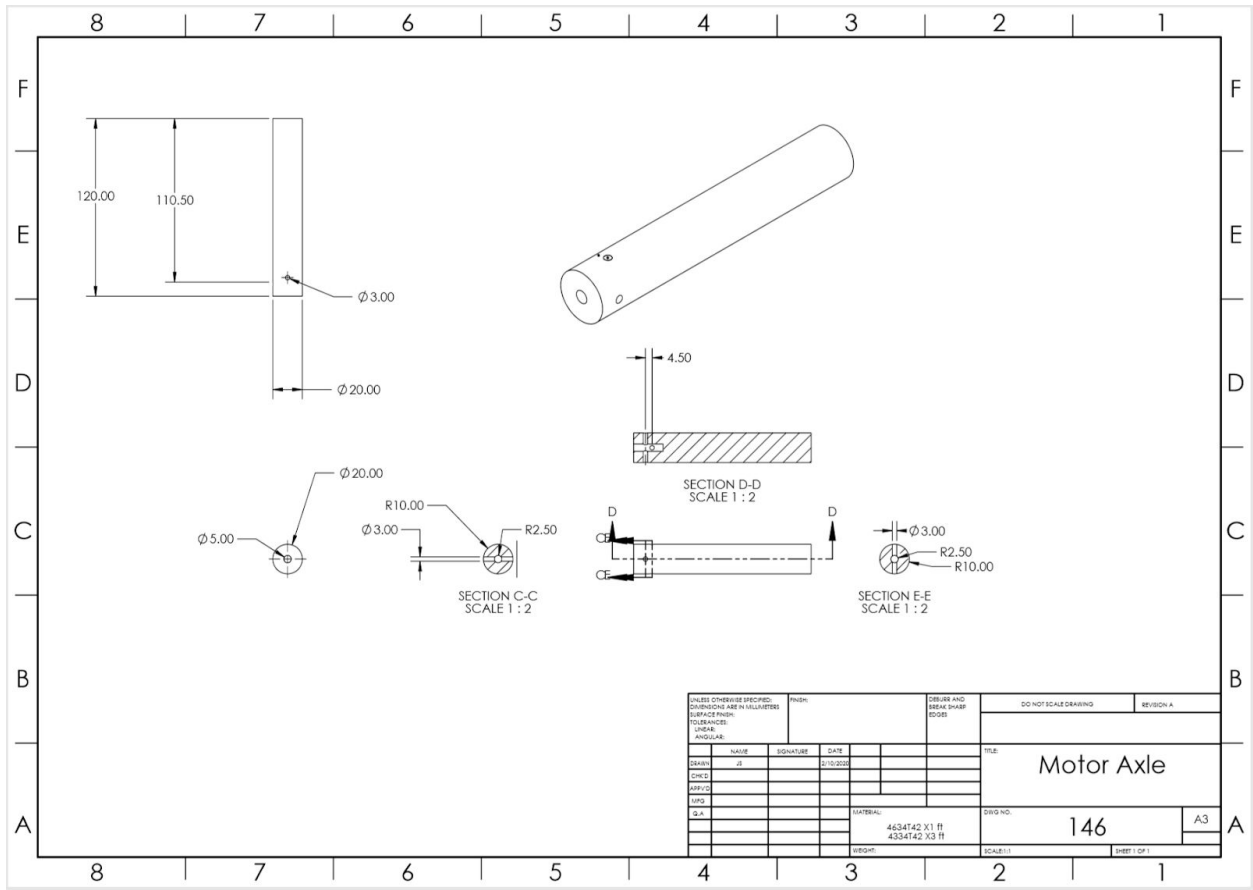


(14-2) Clear Cover Assembly

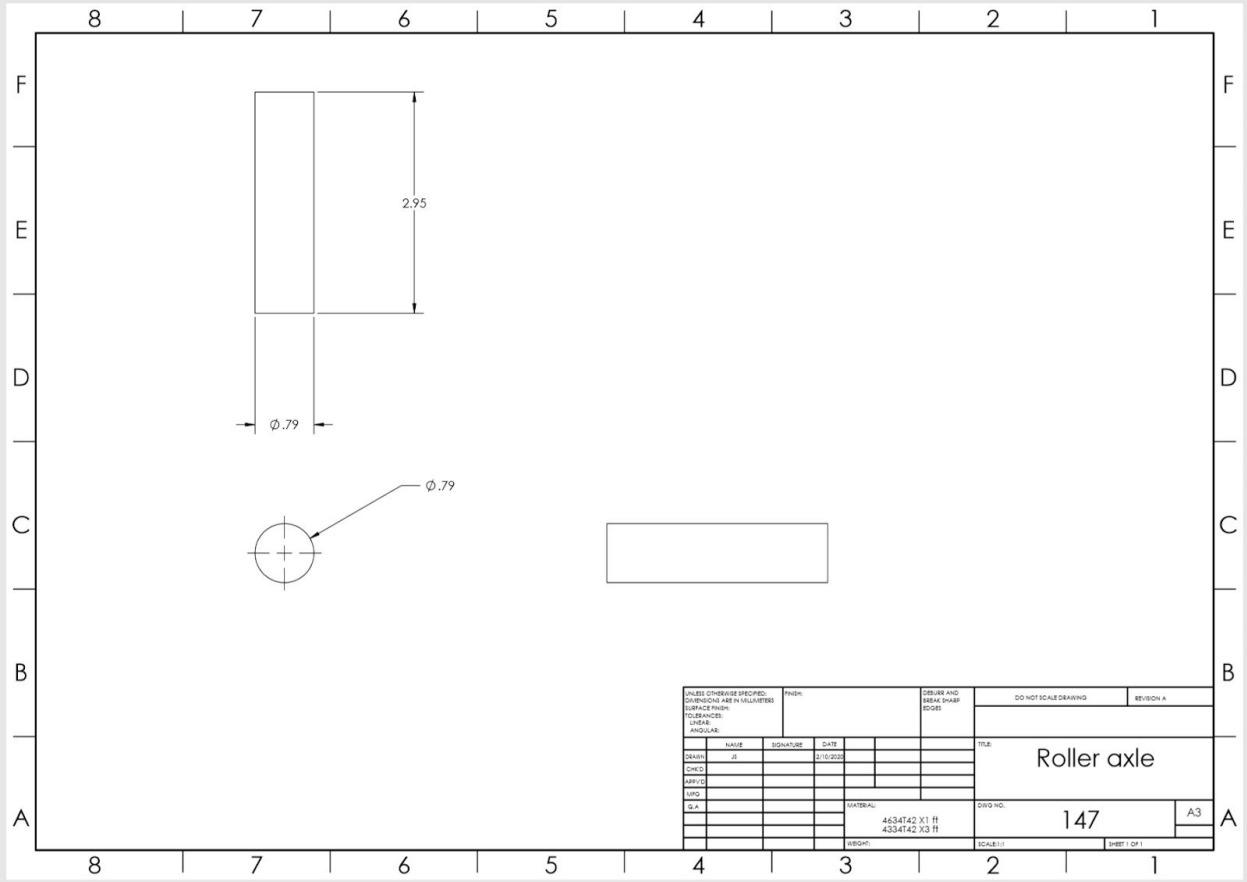




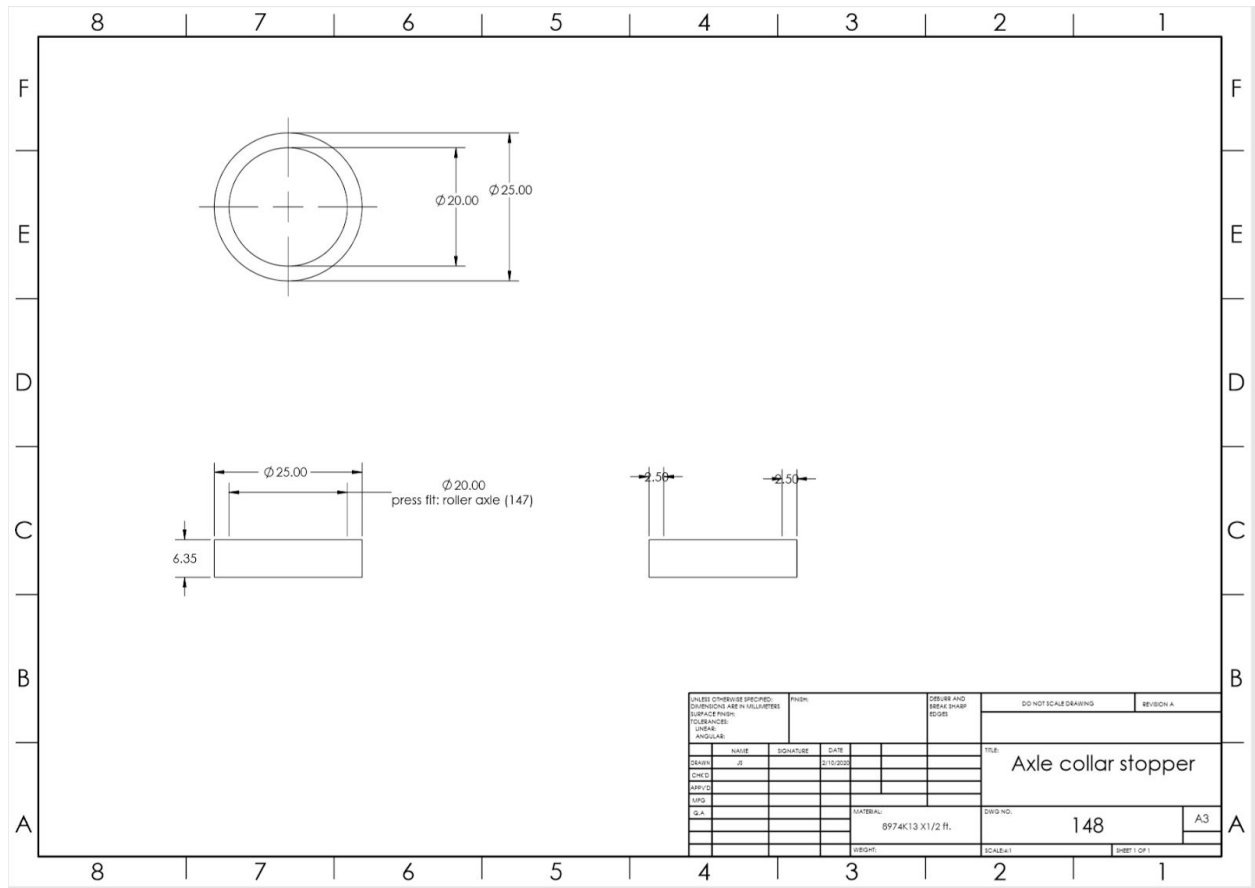


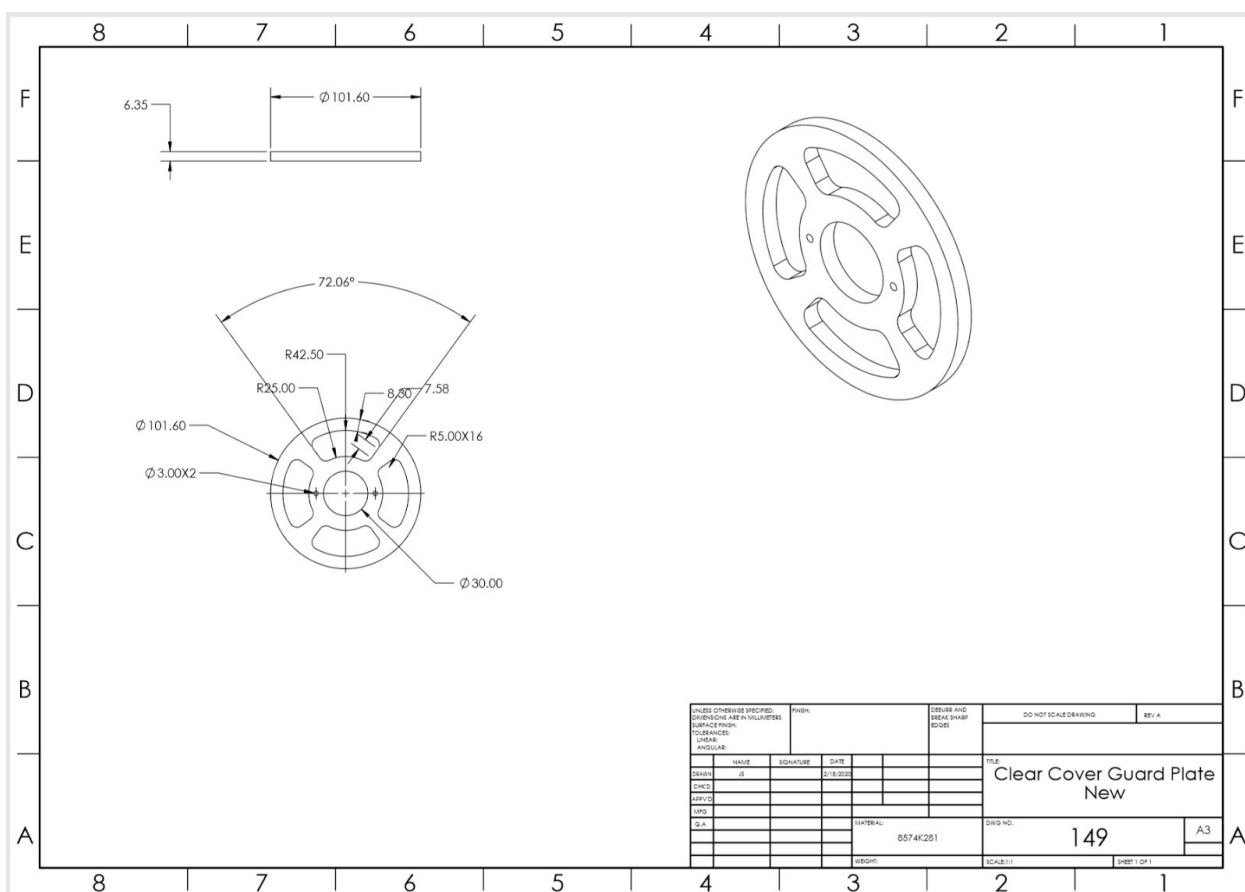


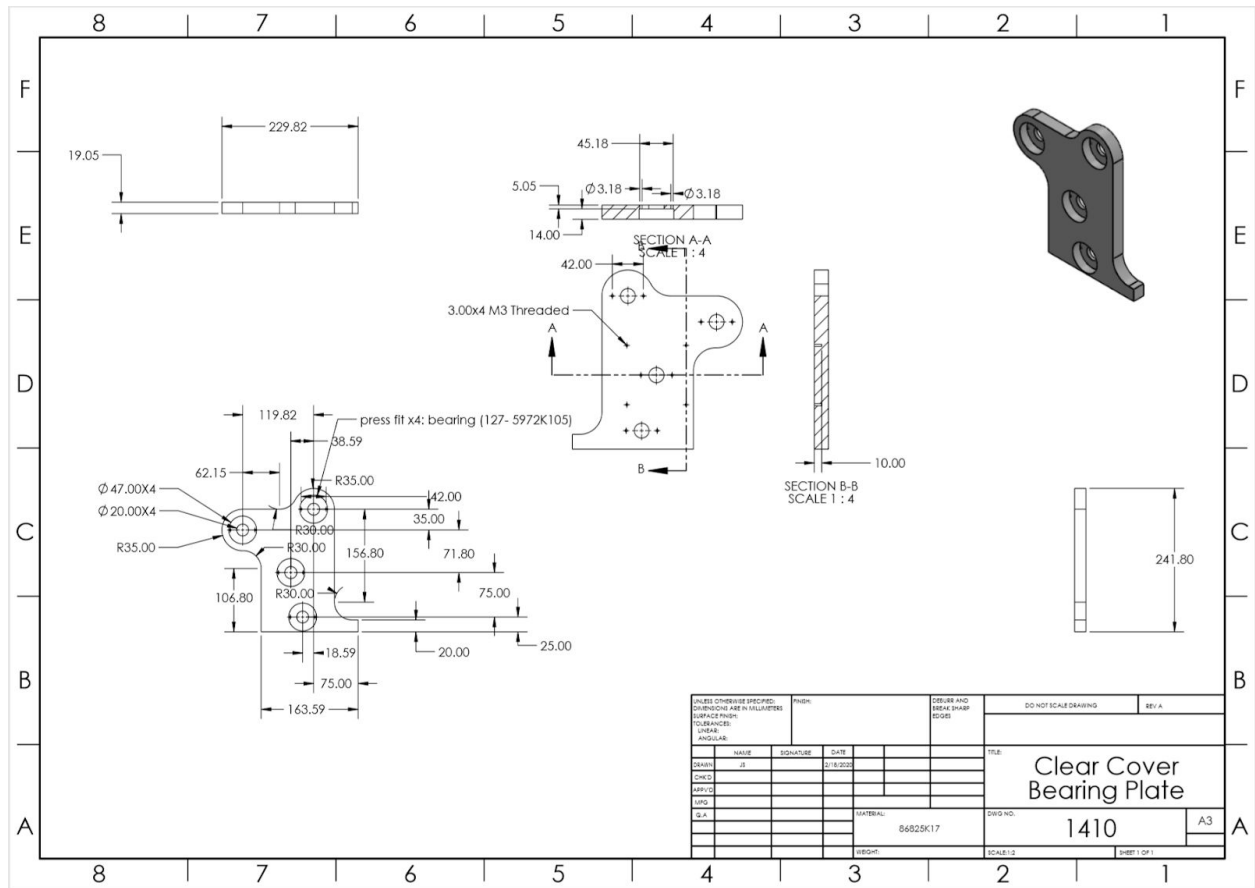
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CHIEF									
APP'G									
UNIT									
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WEIGHT:						SCALE: 1:1		SHEET 1 OF 1	

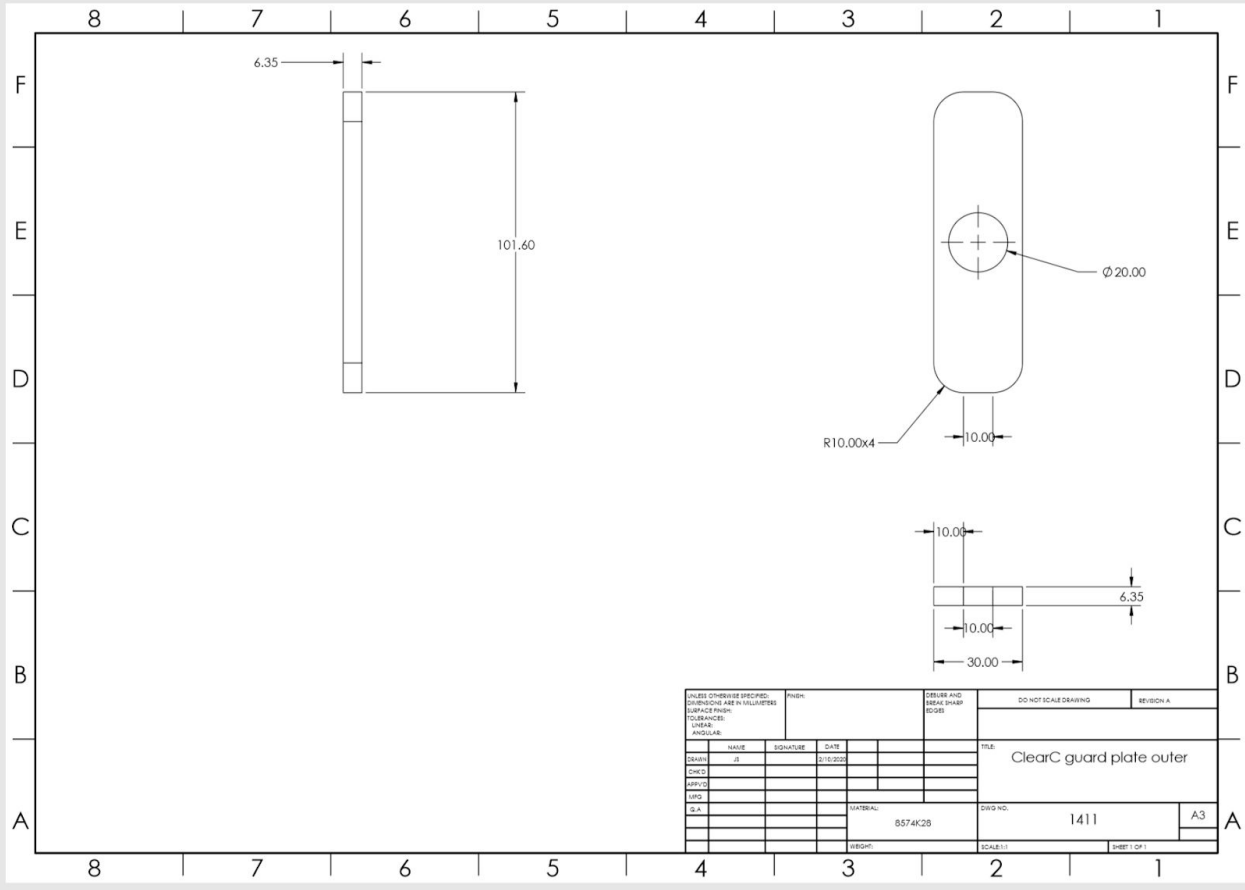


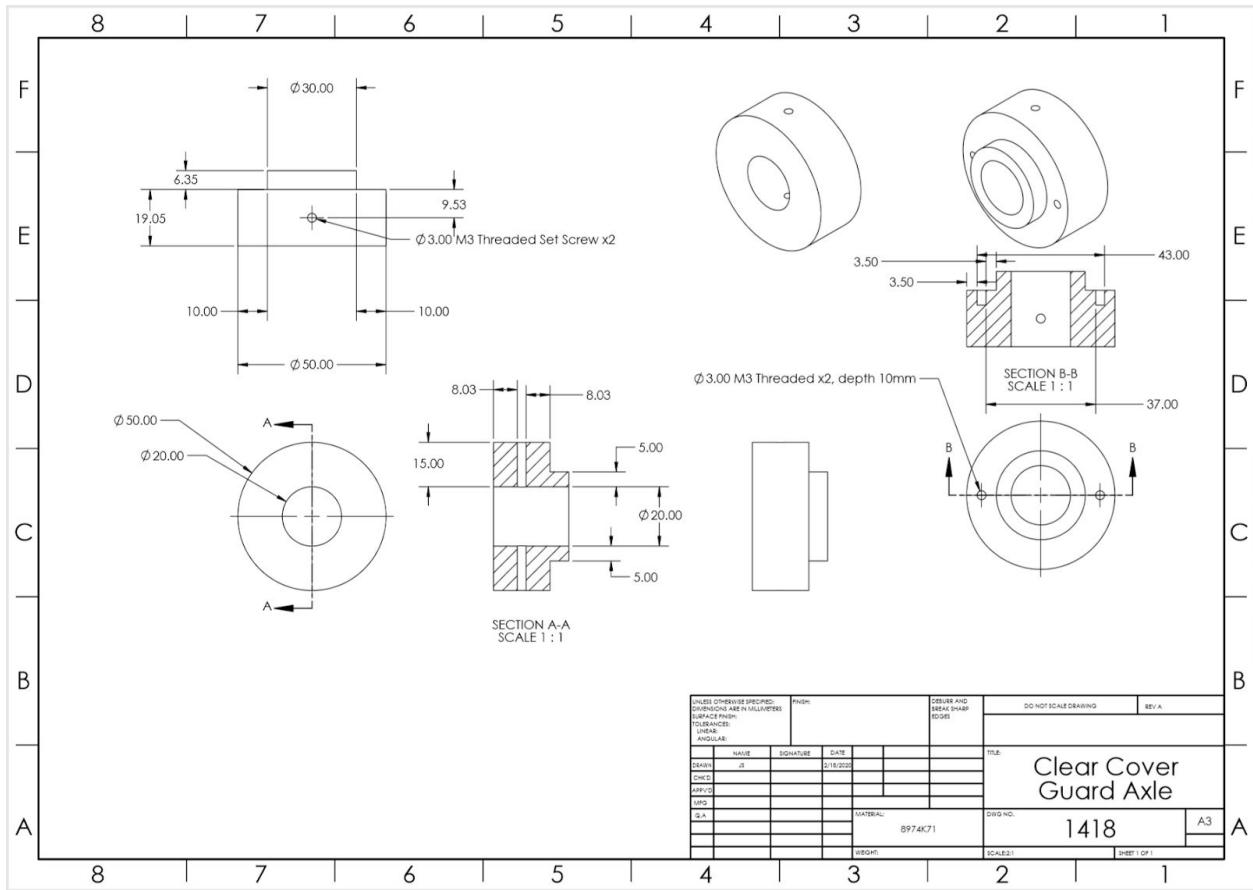
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NAME	SIGNATURE	DATE					TITLE:		
DESIGN	JE	01/02/2020					Roller axle		
CHECK									
APPROV									
UNDO									
SLA							CITY NO.		A3
							147		
							SCALE: 1:1		SHEET 1 OF 1











The drawing shows a mechanical part, a Sticky Pad Reroll, in five views: Isometric, Top, Front, Back, and Left. The part is a circular disc with a central hub and a vertical rectangular pad attached to the front. The isometric view shows the part from an isometric perspective. The top view shows the part from above. The front view shows the part from the front. The back view shows the part from the back. The left view shows the part from the left. The drawing is labeled 'Sticky Pad Reroll' and 'Isometric'.

Isometric

Top

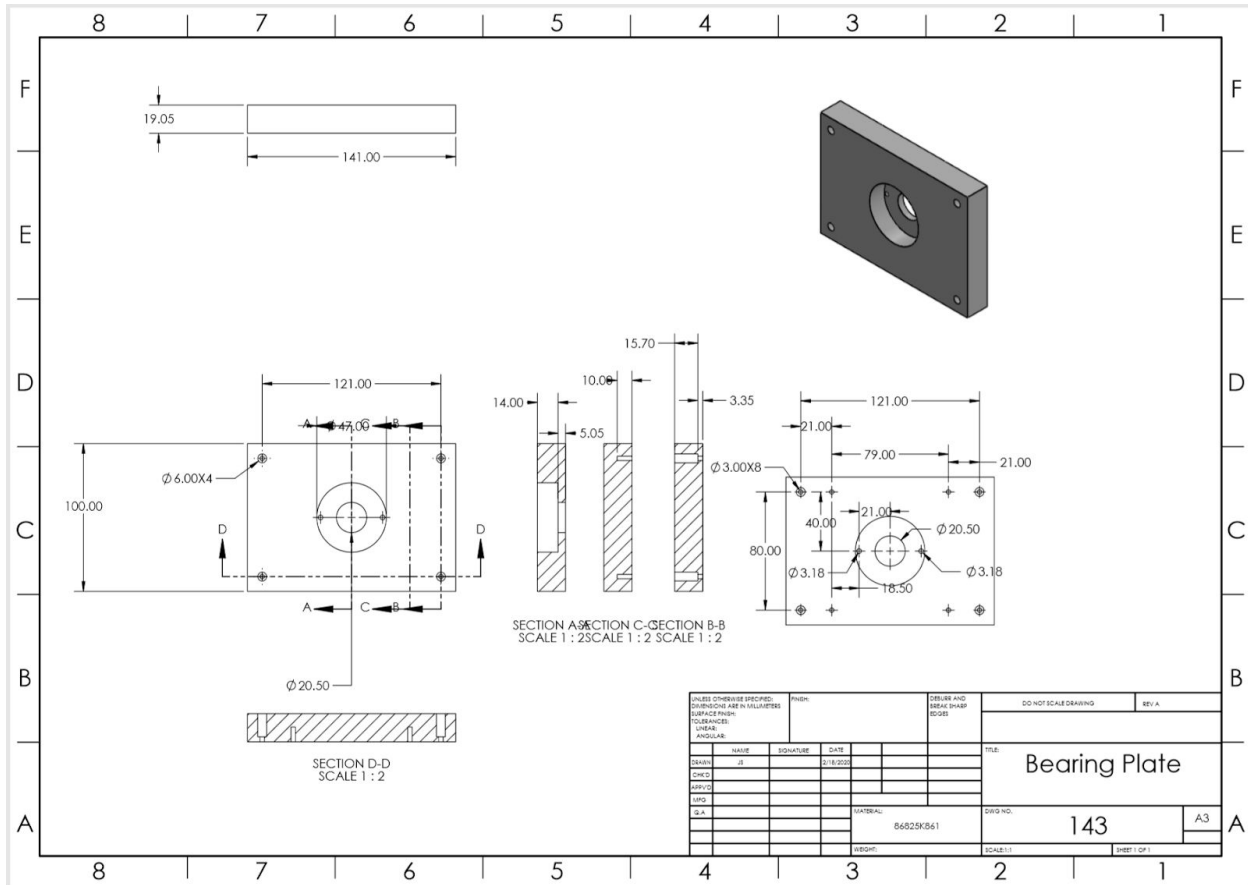
Front

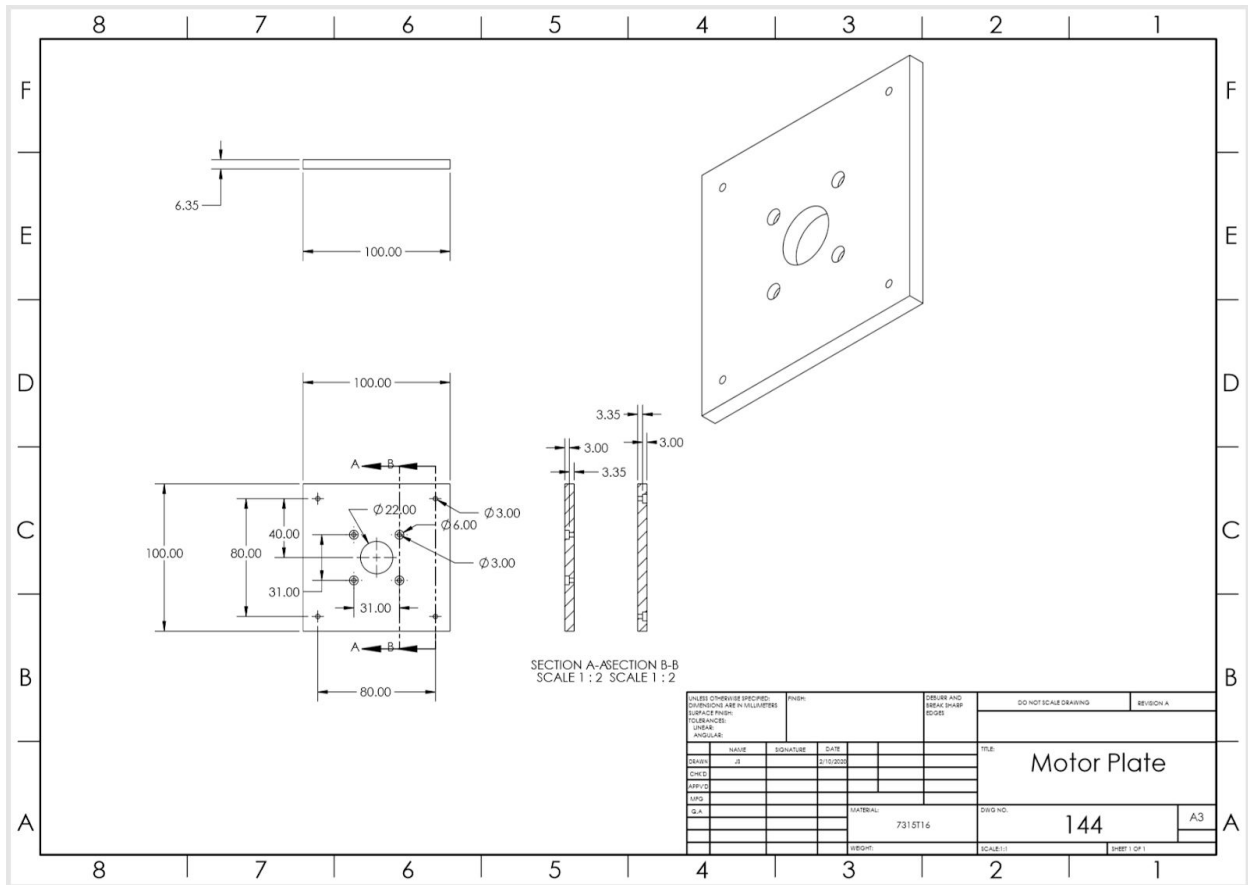
Back

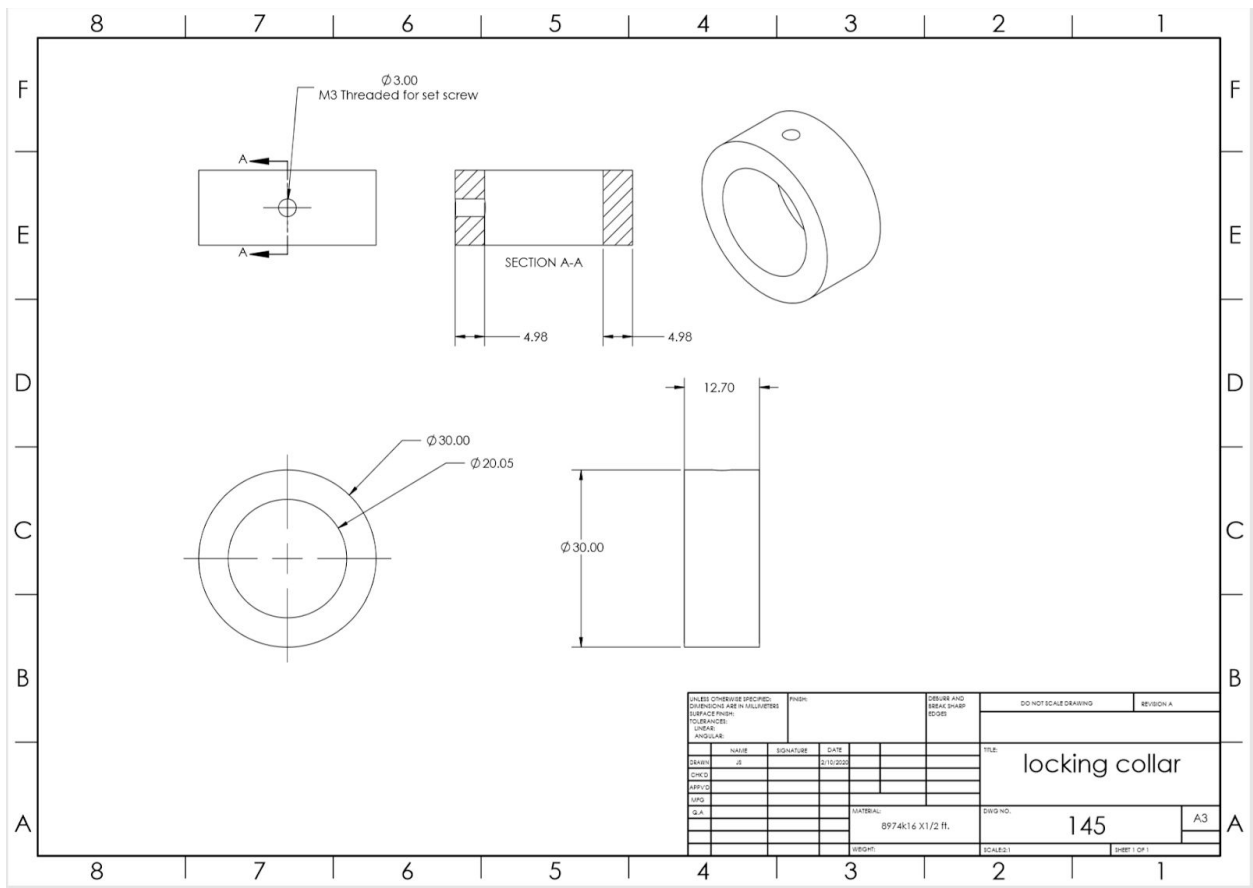
Left

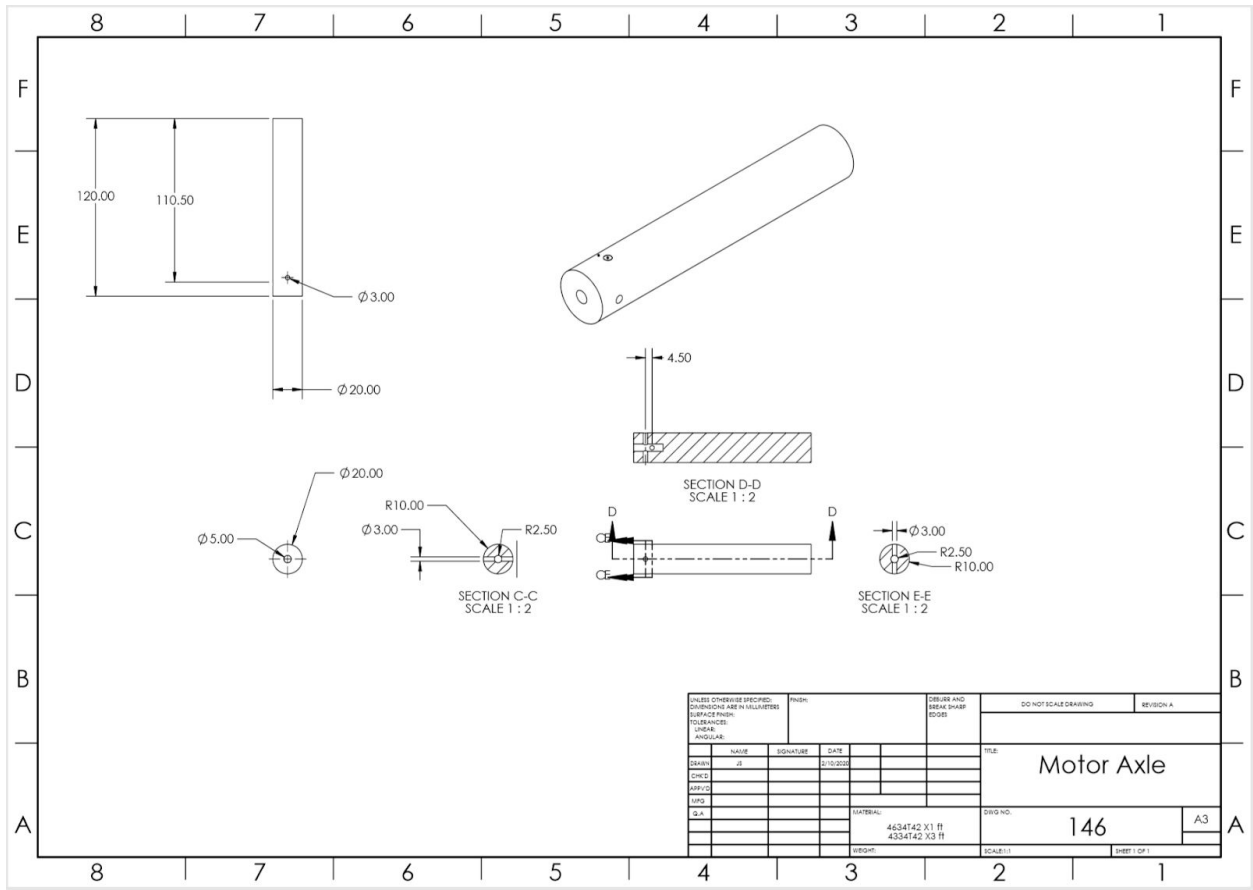
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DATE	NAME	SIGNATURE	DATE	DESIGN	DATE	TITLE					
2/10/00	JL					Sticky Pad Reroll					
CHECK											
APP'D											
ENG											
DRAWN											
				MATERIAL:		DWG NO:		15		A3	
				WEIGHT:		SCALE: 1:1				SHEET 1 OF 1	

(15) Reroll Parts

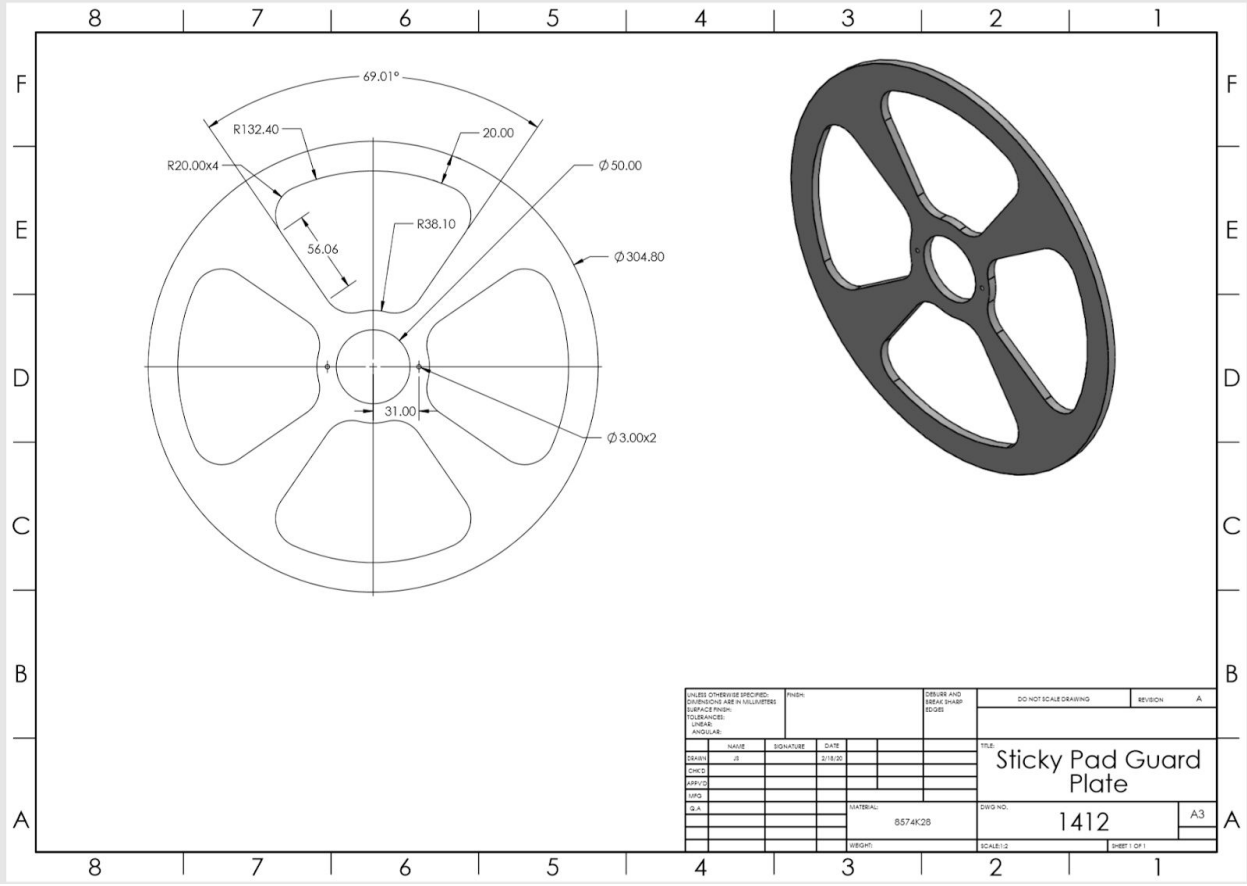








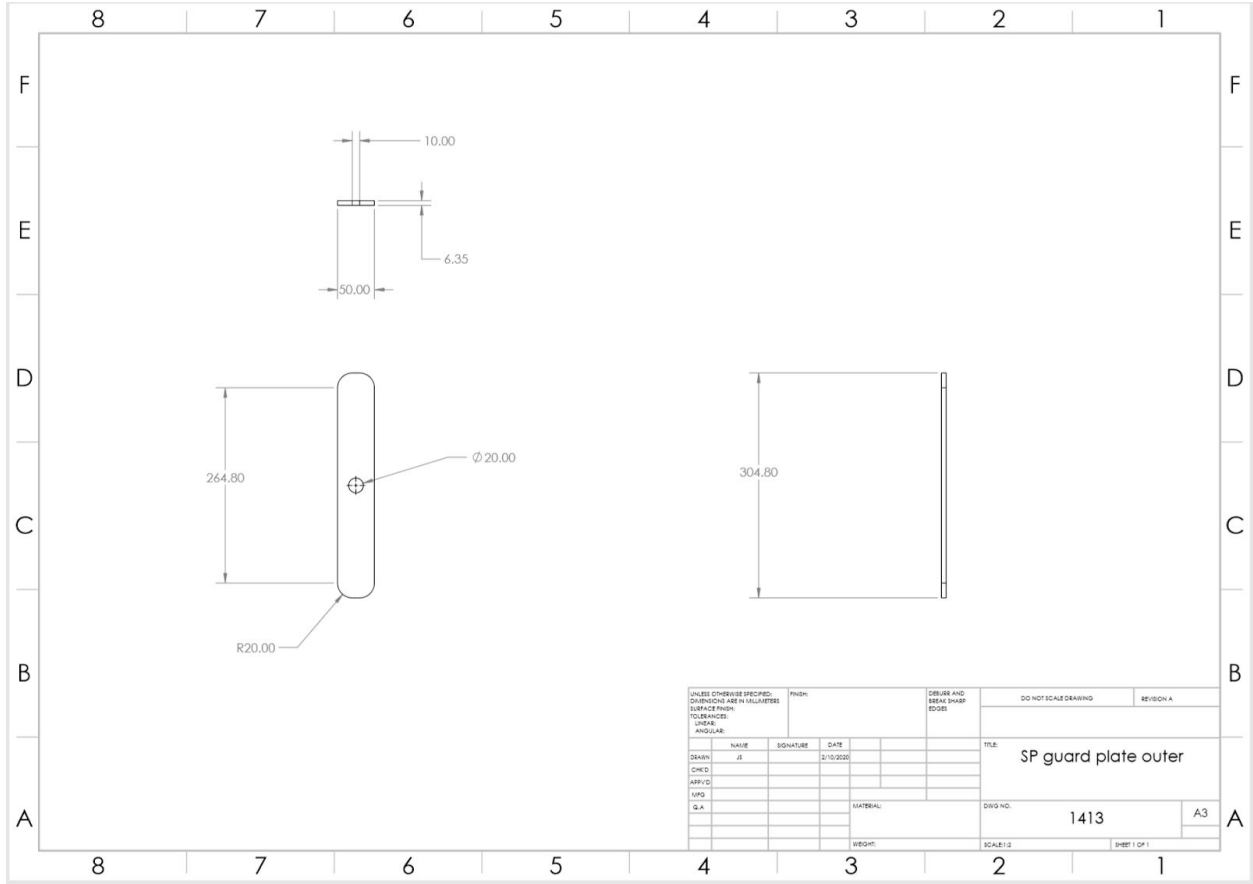
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NAME	DATE	SIGNATURE	DATE				TITLE:		
DESIGN	01/10/2020						Motor Axle		
CHKD									
APP'D									
Q.A.									
				MATERIAL:		4634T42 X1 ft 4334T42 X3 ft	DWG NO.		146
				WEIGHT:			SCALE:		1:1
							SHEET 1 OF 1		A3

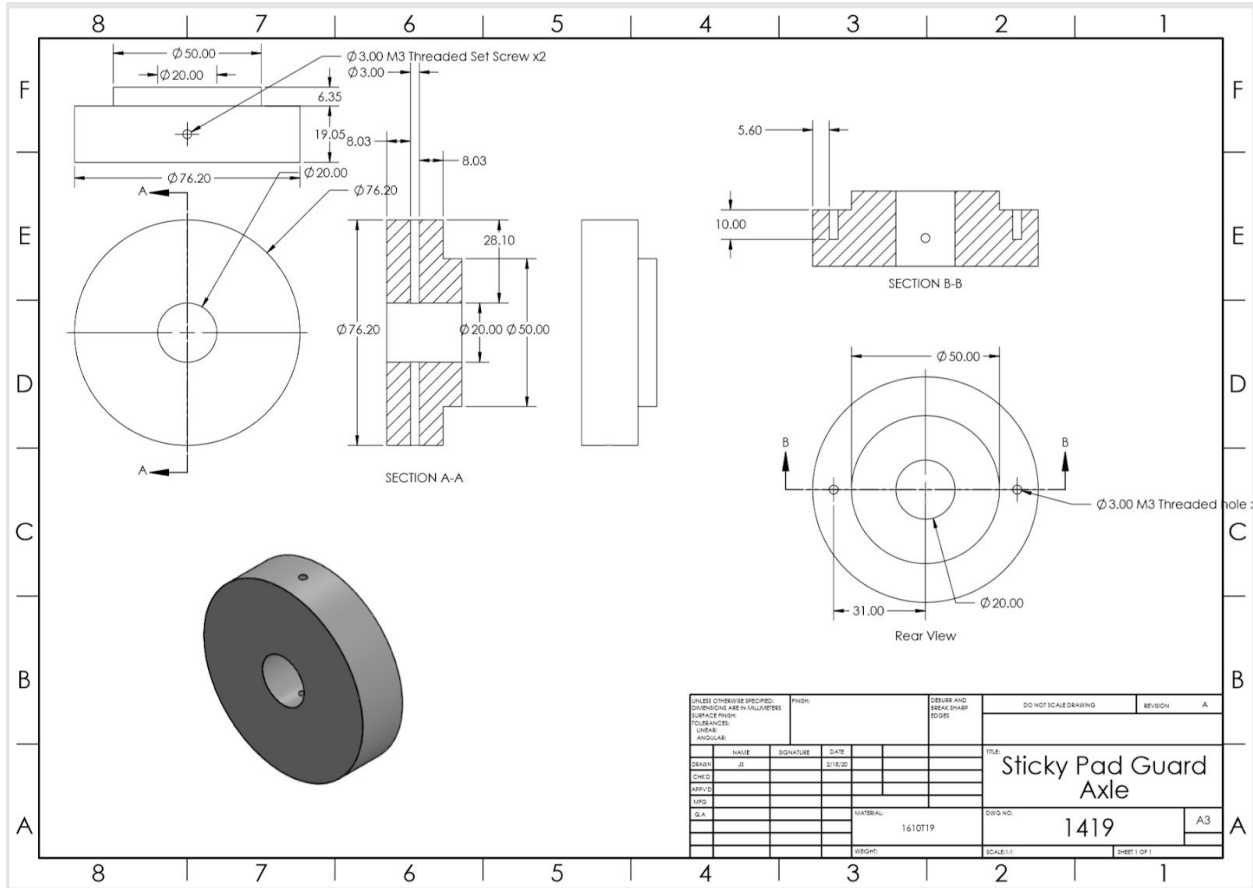


Sticky Pad Guard Plate

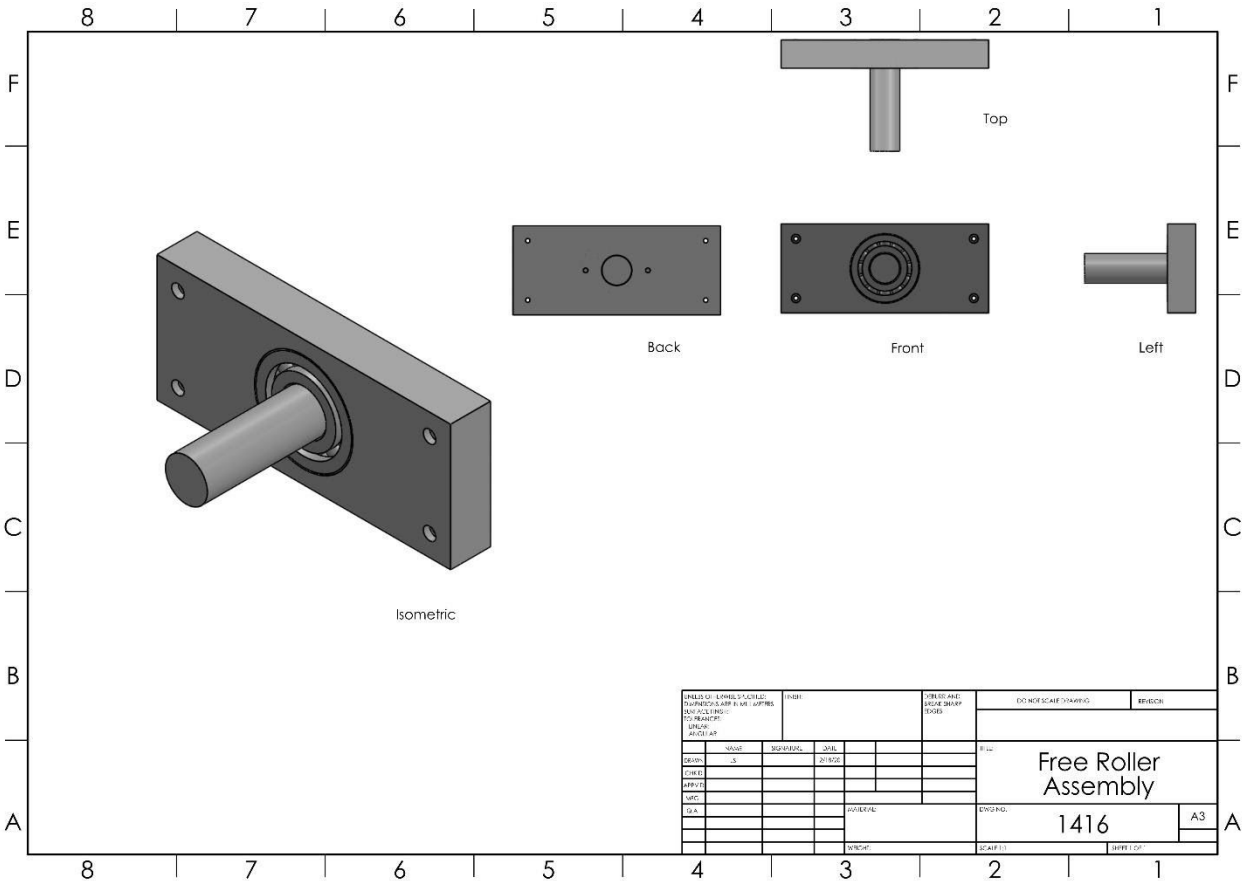
1412

A3

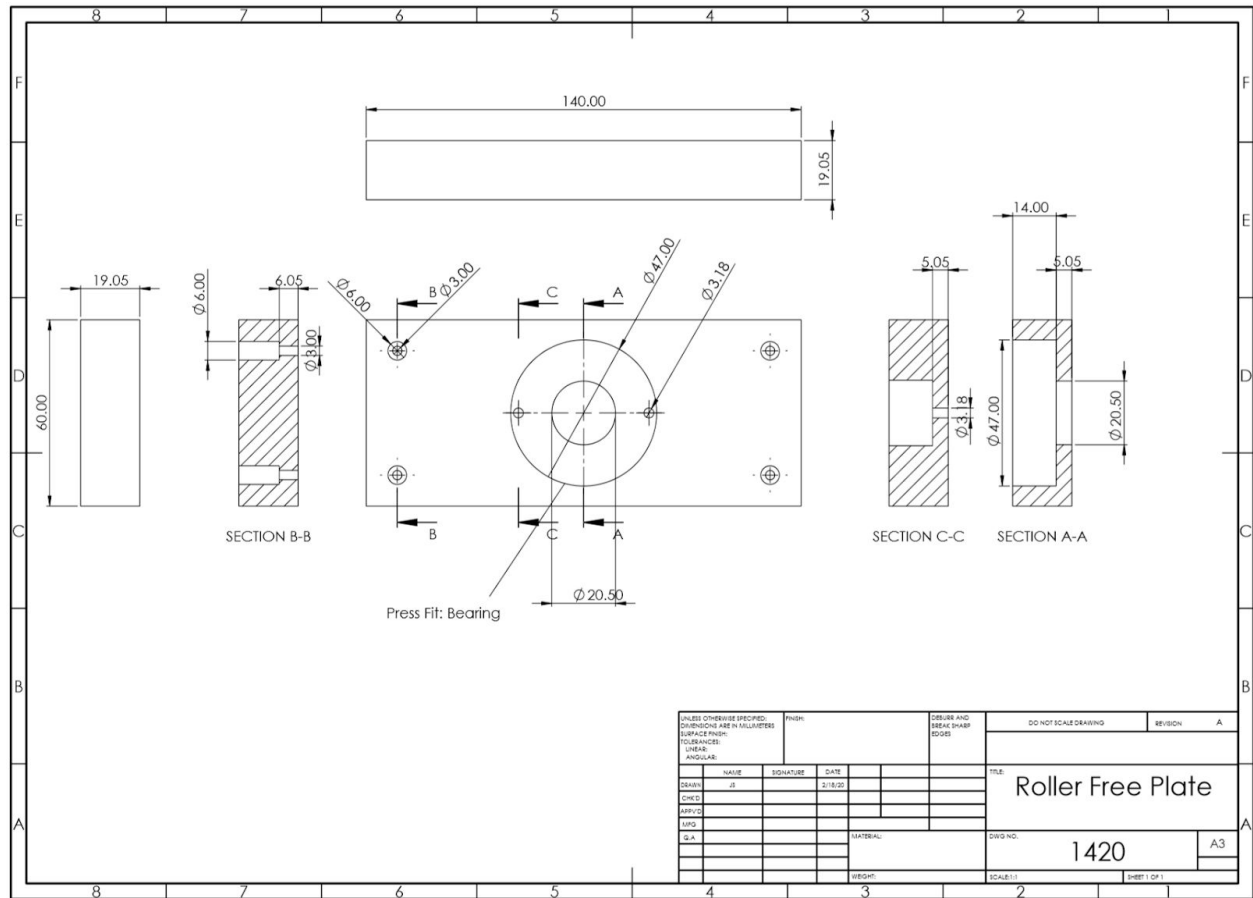




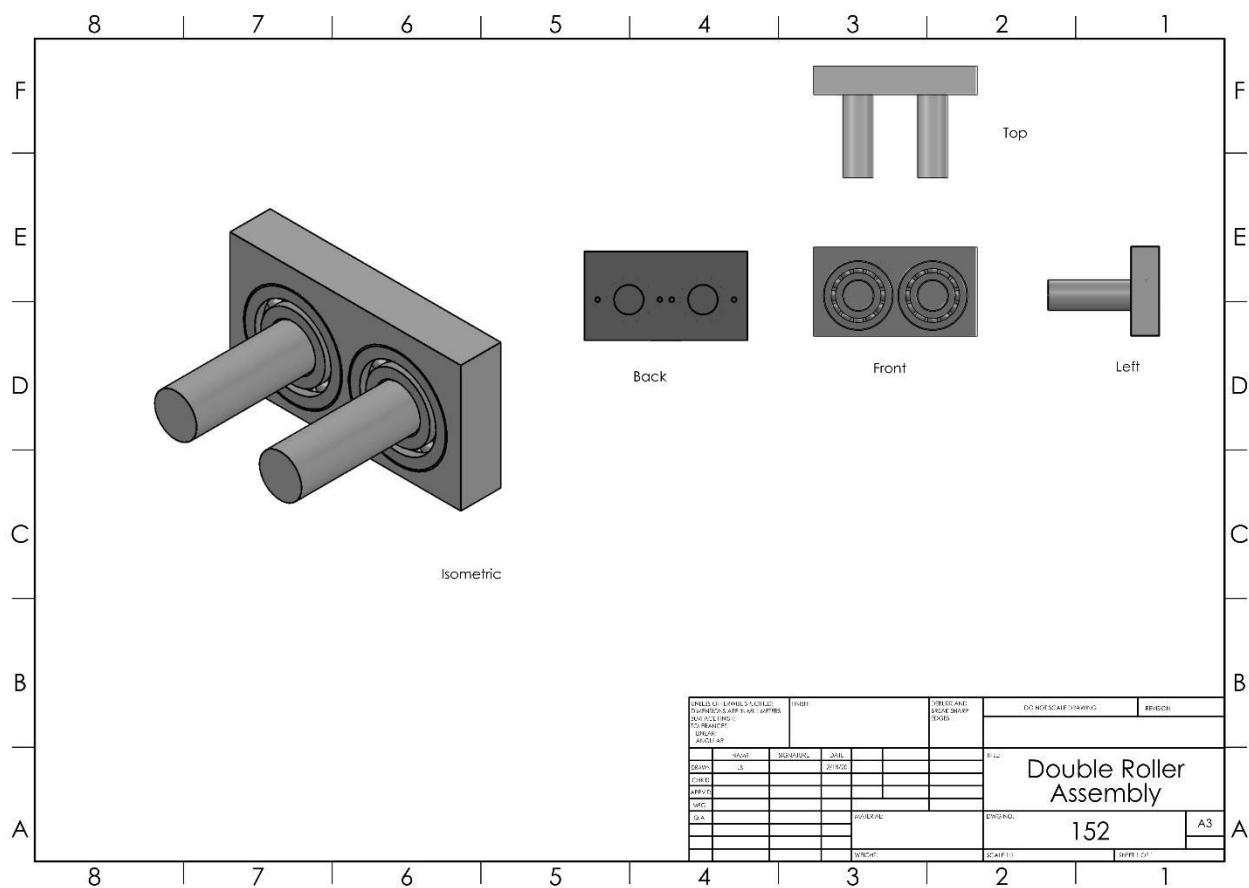
(1416) Free Roller Assembly



[illegible]



(152) Double Roller Assembly



(152) Double Roller Parts

