

MECHANICAL DRAWINGS - TABLE OF CONTENTS

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HUMBER

Faculty of Applied Sciences & Technology

PART NUMBER:

MATERIAL: N/A

HARDNESS: N/A

DATE : 11/4/2024

DRAWN : PREMANSHU BHAGAT

APPROVED:

JOB No : N/A

SCALE: 1:1

ITEM No : N/A

REV : 3

QUANTITY: 1

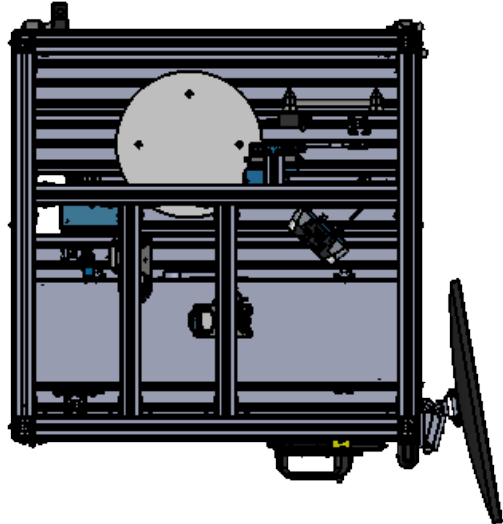
SHEET: 1 OF: 1

B

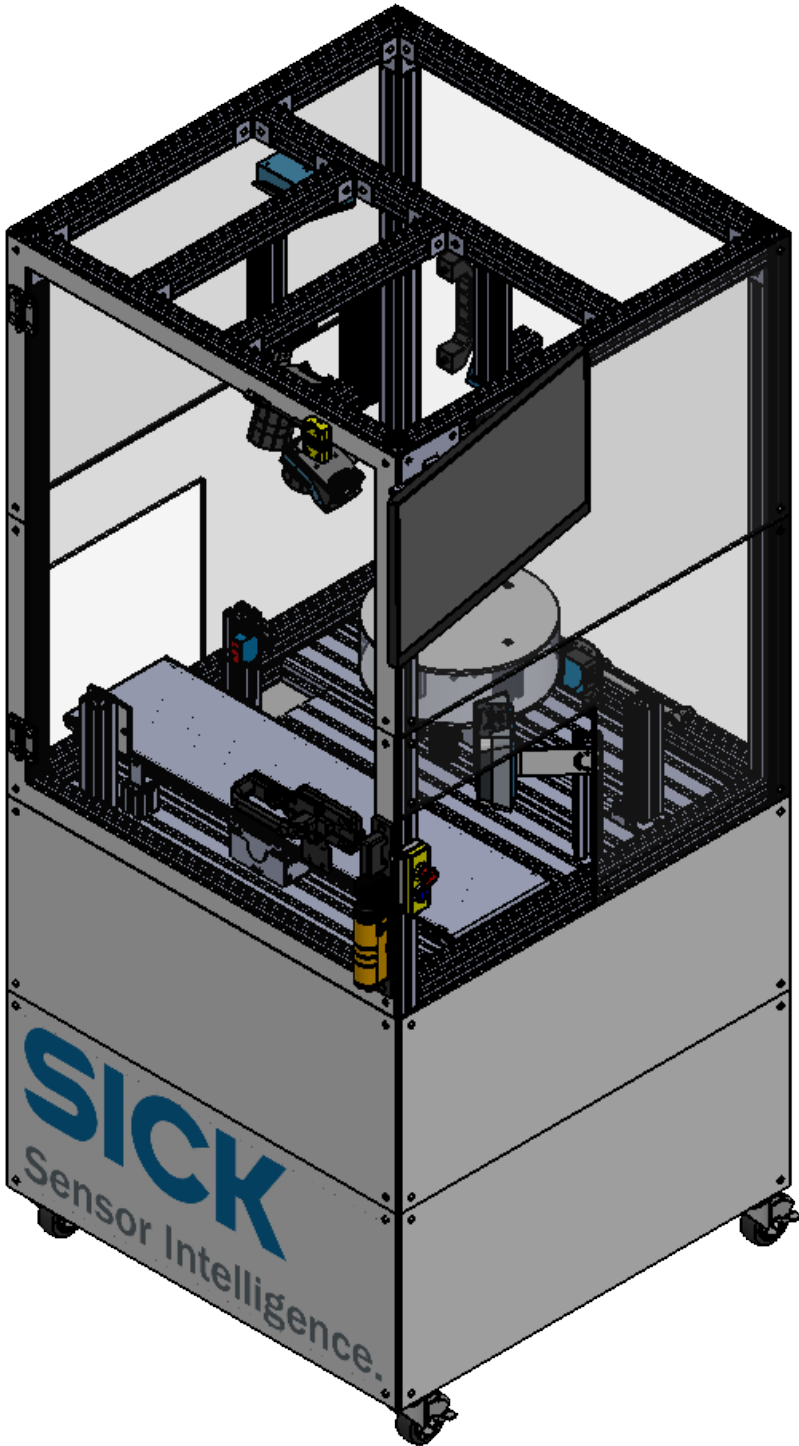
MACHINE VISION  
AND AUTO ID

TABLE OF CONTENTS

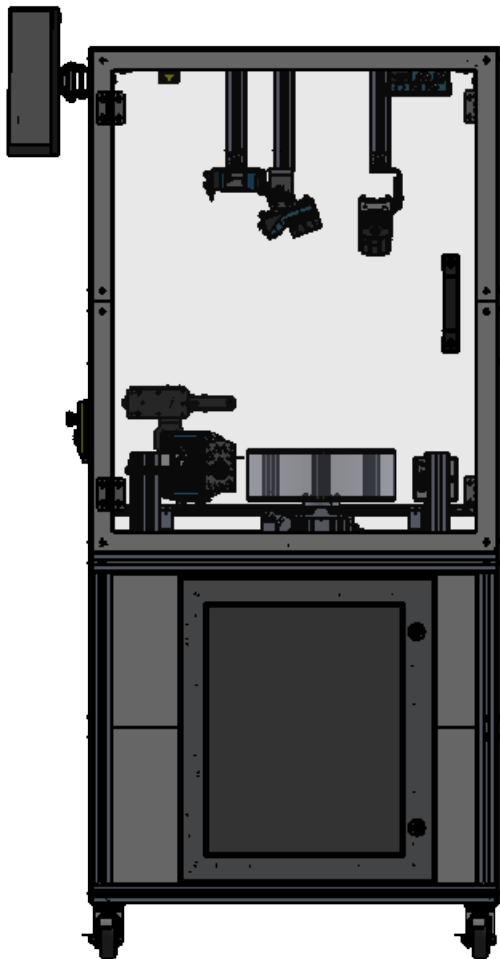
TOP VIEW



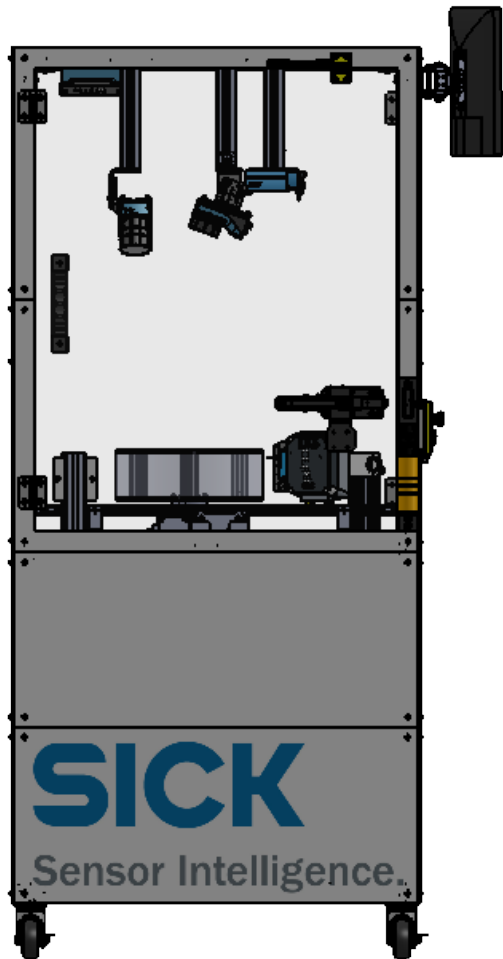
ISOMETRIC VIEW



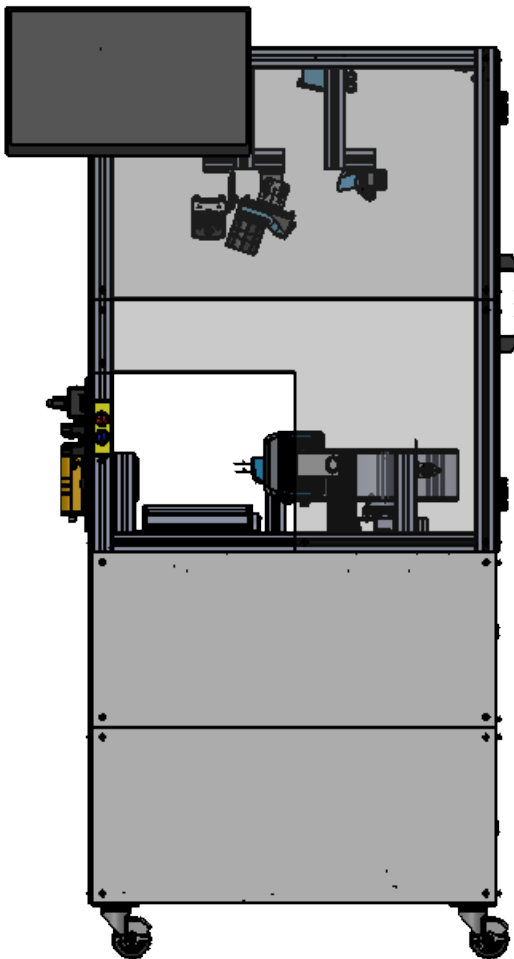
BACK VIEW



FRONT VIEW



SIDE VIEW



**TOLERANCE INFORMATION**

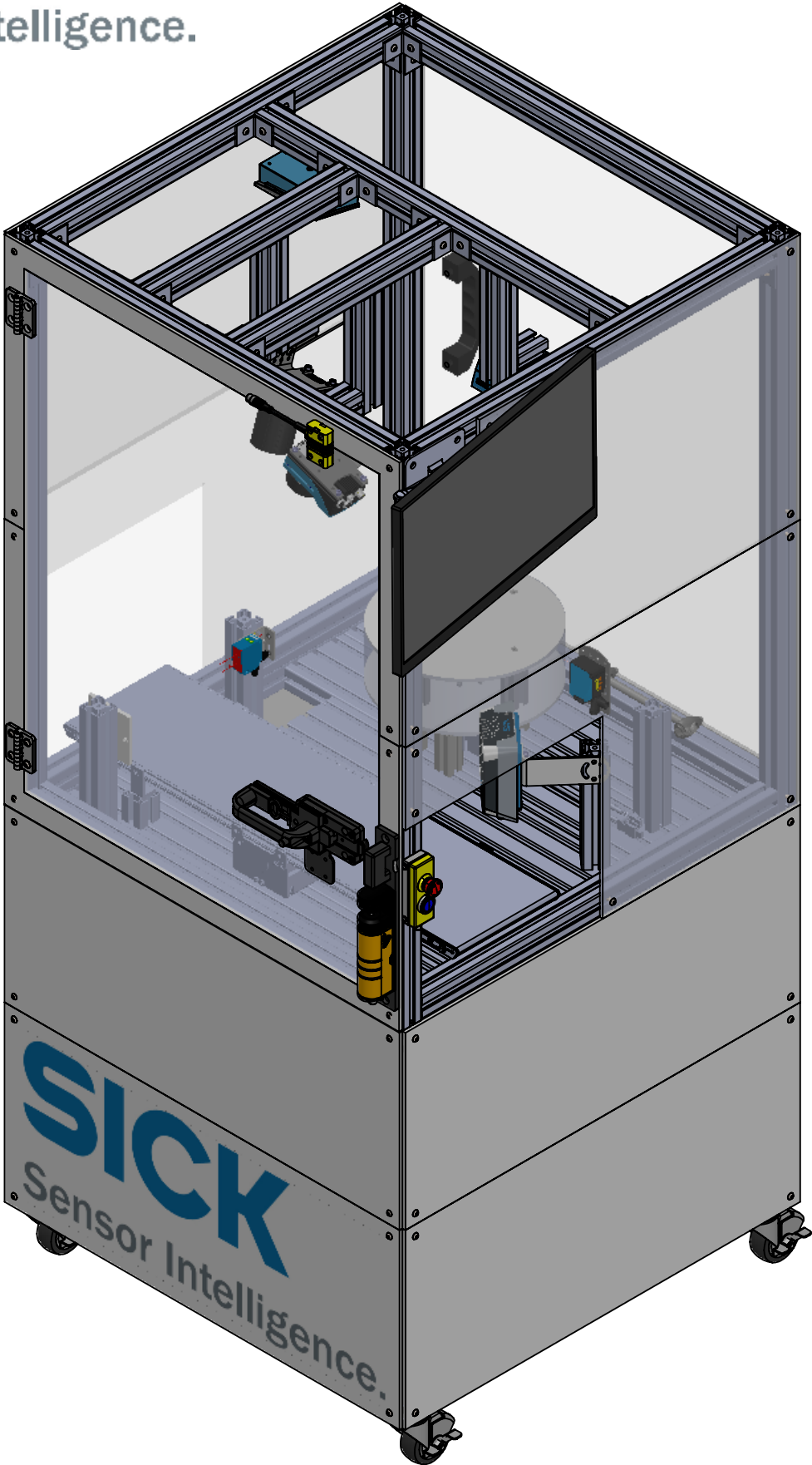
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PART NUMBER: N/A	
MATERIAL: N/A	
HARDNESS: N/A	
DATE : 29/3/2024	
DRAWN : PREMANSHU BHAGAT	
APPROVED: JOSHUA GALTON	
JOB No : N/A	SCALE: 1:11
ITEM No : N/A	REV : 7
QUANTITY: 1	SHEET: 1 OF: 20

**B**

**MACHINE VISION  
AND AUTO ID**

COMPLETE CELL LAYOUT



OBJECT DETECTION:

- OPERATOR RESETS THE CELL AND UNTOGGLES THE PHYSICAL E STOP IF REQUIRED AND MASTER START NEEDS TO BE PRESSED ON THE HMI TO ENERGIZE THE WHOLE CELL
- THE CELL STARTS UP, THE CONVEYOR AND THE ROTARY ACTUATOR START RUNNING.
- THE OPERATOR CAN THEN USE THE HMI TO SELECT A PASTA TYPE TO LOAD ON THE CONVEYOR BELT, AS SOON AS THE ITEM IS SELECTED THE STE LOGIC IS ACTIVATED AND WAITING FOR THE PASTA TO BREAK THE PHOTOBEAM.
- ONCE THE PHOTOBEAM IS BROKEN, INSPECTOR TAKES A PICTURE OF THE ITEM AND THE DEEP LEARNING MODEL ONBOARD COMPARES IT TO THE INPUT JOB ID AND GIVES A RESULT.
- IF THE ITEM FAILS EVALUATION, LECTOR TRIGGERS BUT DOES NOT STORE BARCODE DATA AND GOES AHEAD TO RFU WHICH READS THE RFID DATA AND THEN REVERSES THE CONVEYOR DIRECTION BACK TO THE PHOTOEYE AND STOPS THE CONVEYOR AS SOON AS THE PHOTOEYE IS BROKEN AGAIN.
- IF THE ITEM PASSES EVALUATION TEHN LECTOR COLLECTS AND STORES THE BARCODE DATA FOR THE DATABASE AND THEN THE CONVEYOR IS ENABLED TO GO FORWARD TILL THE RFID DATA IS COLLECTED, WHICH THEN STOPS THE CONVEYOR.

ROTARY OPERATION:

- OPERATOR RESETS THE CELL AND UNTOGGLES THE PHYSICAL E STOP IF REQUIRED AND MASTER START NEEDS TO BE PRESSED ON THE HMI TO ENERGIZE THE WHOLE CELL
- THE CELL STARTS UP, THE CONVEYOR AND THE ROTARY ACTUATOR START RUNNING.
- THE CONTRAST SENSOR KEEPS TRIGGERING AT THE SET COLOR EVERY REVOLUTION.
- THE OPERATOR CAN THEN TOGGLE A 'START READ' BUTTON ON THE HMI WHICH TRIGGERS CLV TO READ THE BARCODE DATA ON THE TOP PLATE OF THE ROTARY TABLE.
- ONCE THE BARCODE DATA IS COLLECTED, IT IS THEN STORED INSIDE A VARIABLE THAT CAN BE DISPLAYED ON THE HMI.

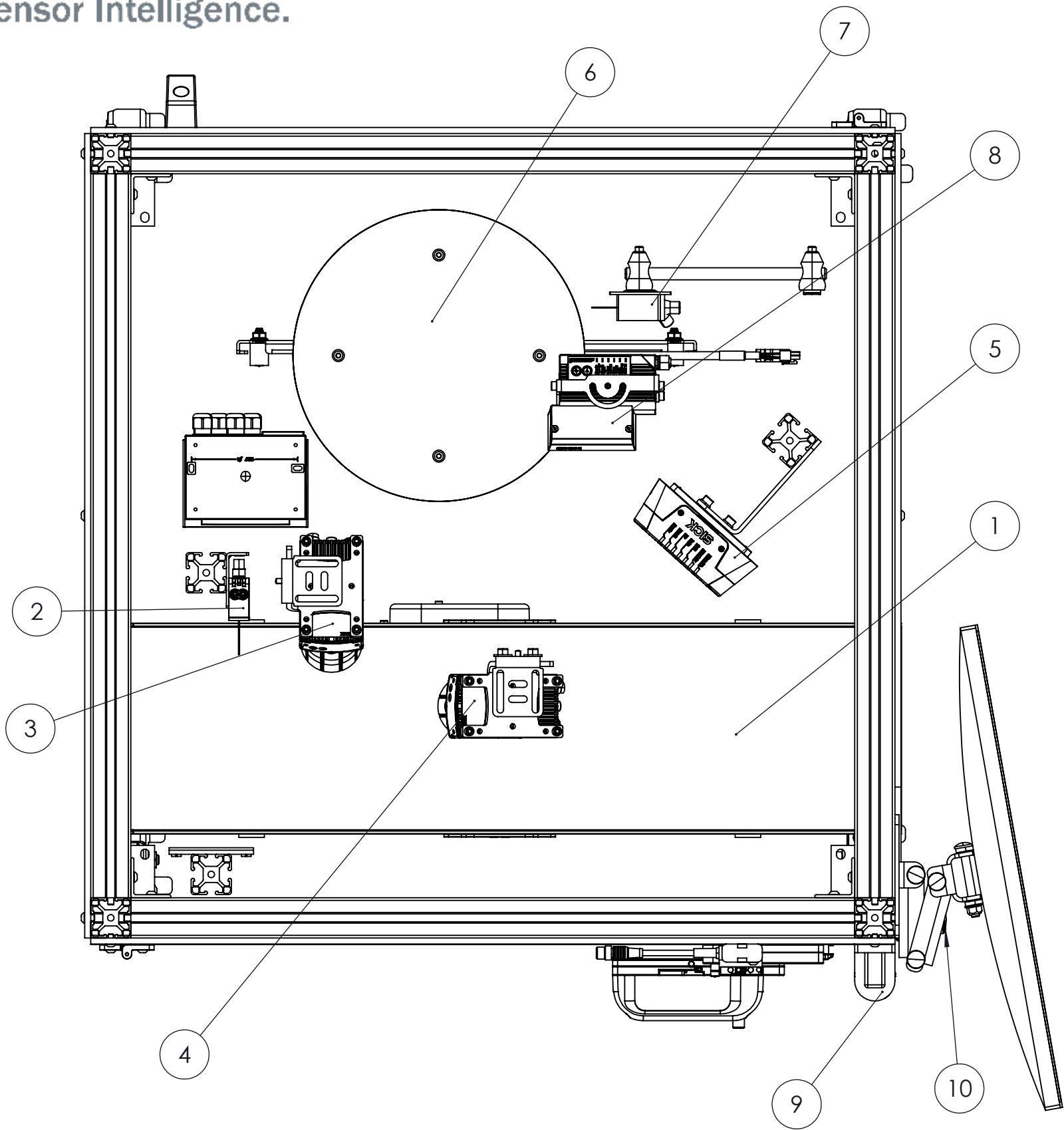
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HARDNESS:	N/A	
DATE :	18/3/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:9
ITEM No :	N/A	REV : 3
QUANTITY:	1	SHEET: 2 OF: 20

MACHINE VISION  
AND AUTO ID

**B** SEQUENCE OF OPERATION



COMPONENT NUMBER	COMPONENT NAME	DESCRIPTION
1	DORNER CONVEYOR BELT	MID DRIVE CONVEYOR BELT
2	PHOTOEYE	DISTANCE SENSOR
3	INSPECTOR P63X	2D MACHINE VISION CAMERA - WITH DEEP LEARNING ABILITIES
4	LECTOR P63	2D BARCODE SCANNER
5	RFU 620	RFID READ/WRITE DEVICE(UHF)
6	ROTARY TABLE	EQUIPPED WITH A ORIENTAL MOTOR HOLLOW ROTARY ACTUATOR
7	KTS PRIME	CONTRAST SENSOR
8	CLV 650	HIGH SPEED BARCODE SCANNER
9	FLEXI LOCK	ELECTROMECHANICAL INTERLOCK
10	ESTOP - RESET BLOCK	PHYSICAL ESTOP AND RESET BUTTONS

TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MM

PART NUMBER:			
MATERIAL:	N/A		
HARDNESS:	N/A		
DATE :	9/3/2024		
DRAWN :	PREMANSHU BHAGAT		
APPROVED:	JOSHUA GALTON		
JOB No :	N/A	SCALE:	1:5
ITEM No :	N/A	REV :	3
QUANTITY:	1	SHEET:	3 OF 20

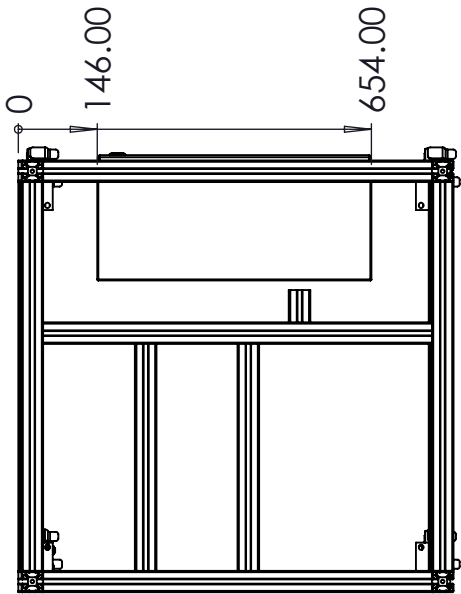
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MACHINE VISION  
AND AUTO ID

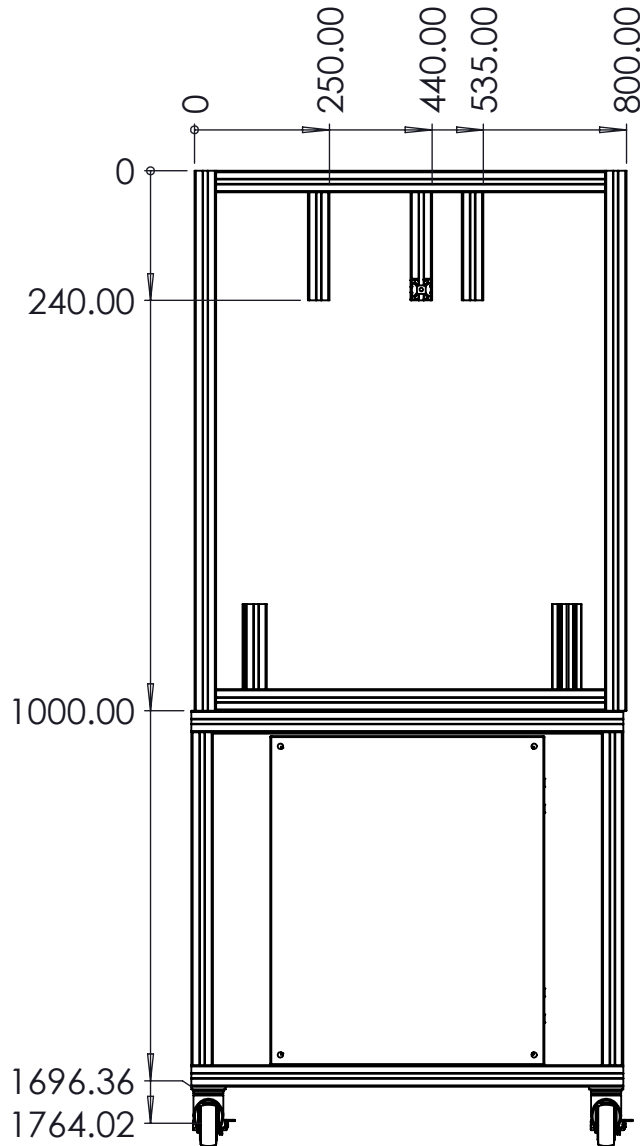
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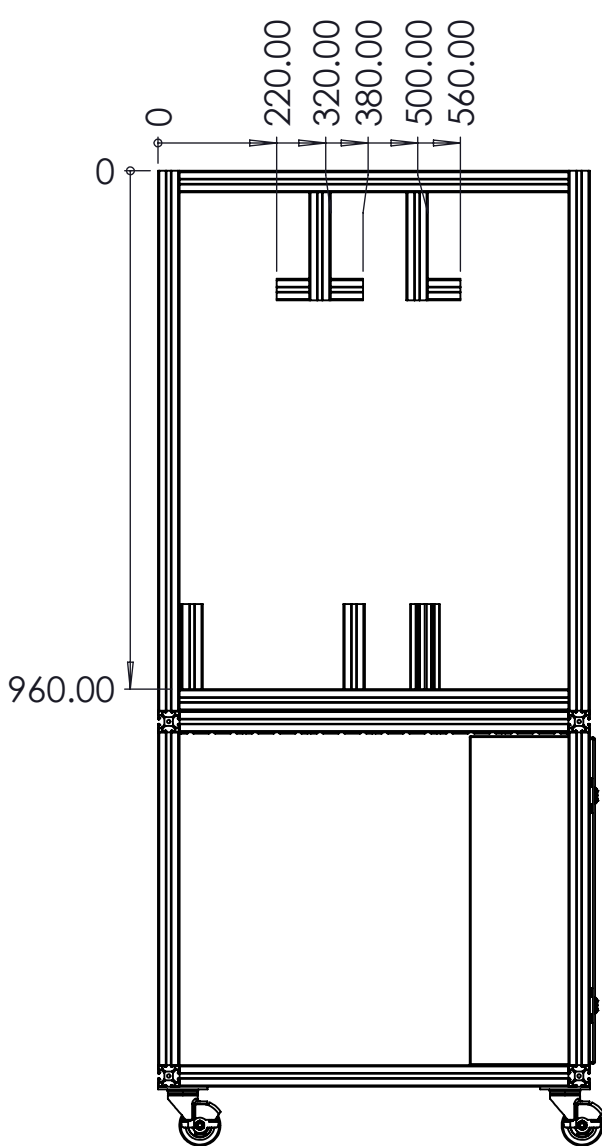
TOP VIEW



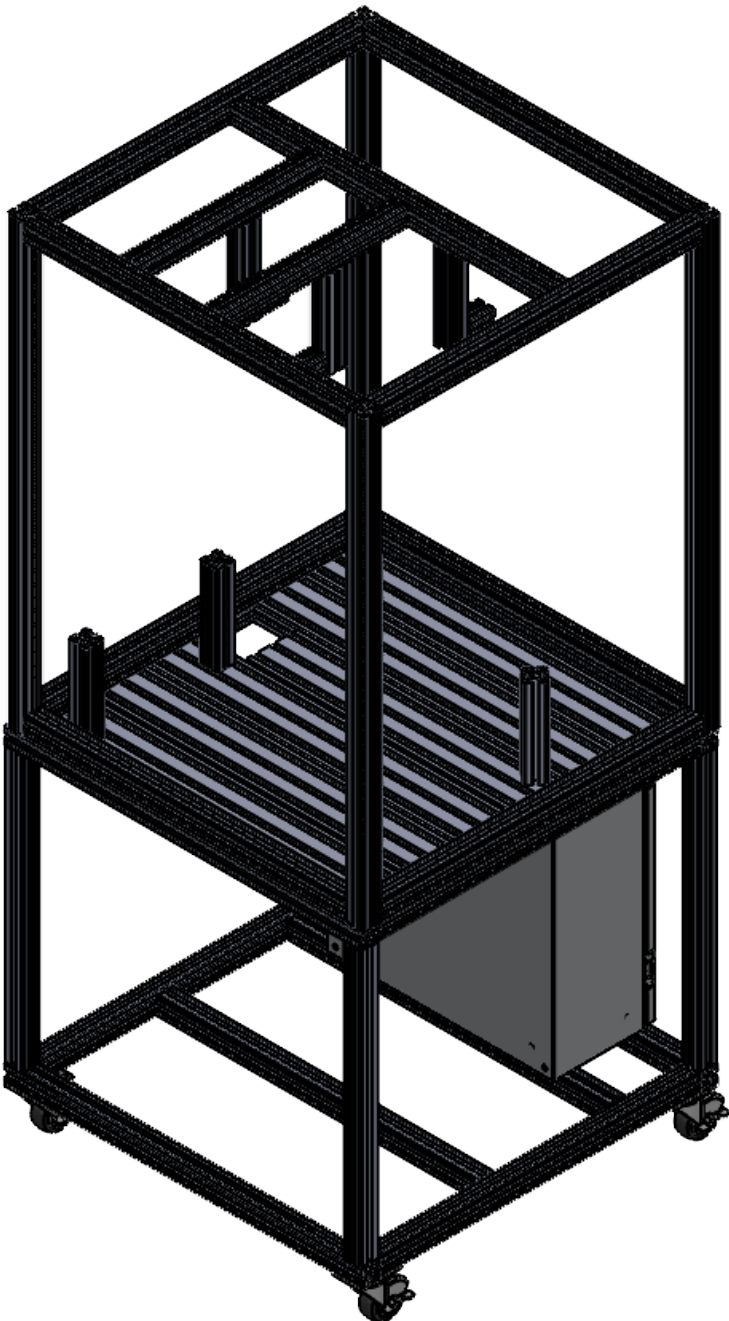
FRONT VIEW



RIGHT VIEW



ISOMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

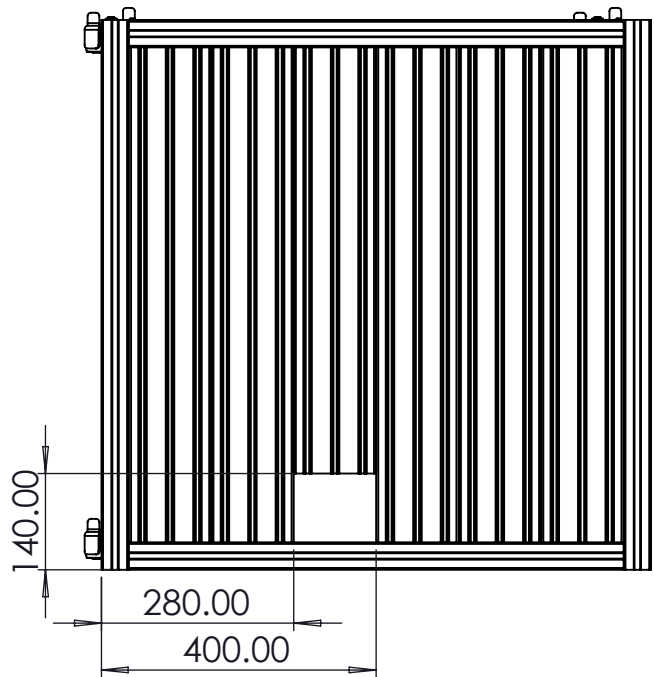
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DATE :	9/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON
JOB No :	N/A
ITEM No :	N/A
QUANTITY:	1
SCALE:	1:12
REV :	2
SHEET:	4 OF: 20

**B**

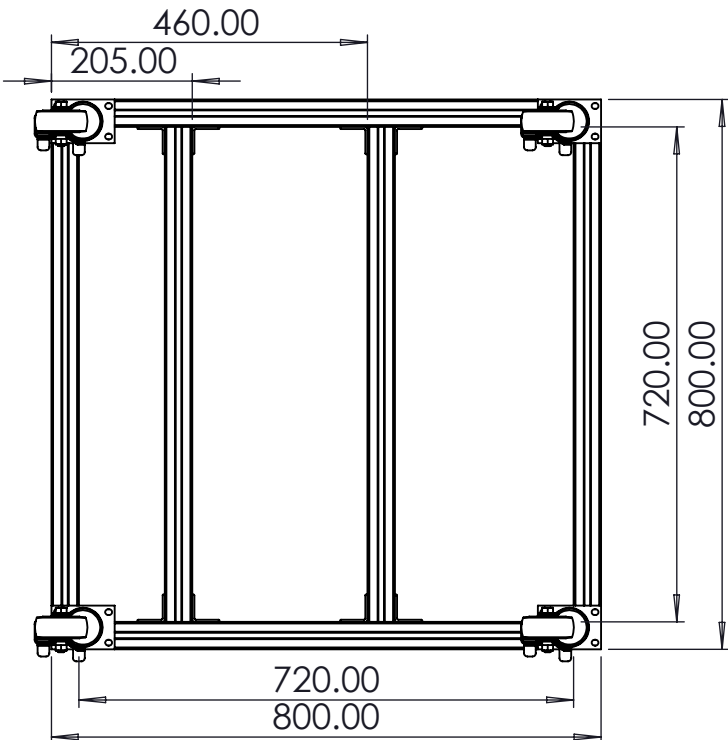
**MACHINE VISION  
AND AUTO ID**

CELL FRAME  
WITH ELECTRIC PANEL

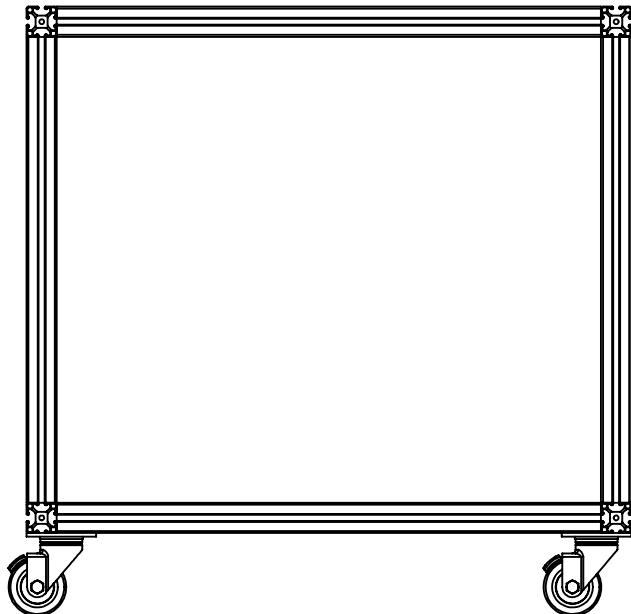
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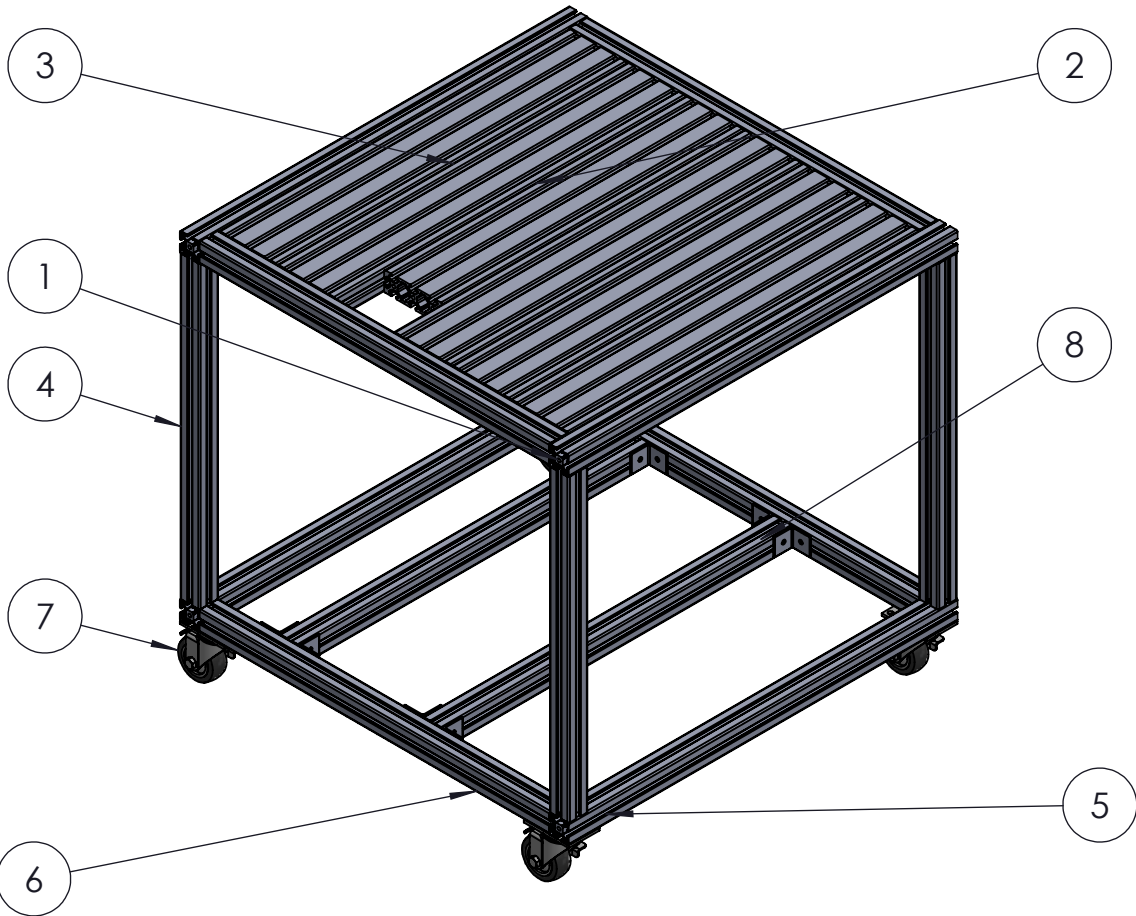
BOTTOM VIEW



RIGHT VIEW



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800x800MM BASE	BASE MADE OF ALUMINUM EXTRUSIONS	1
2	40-4012-620-CL	620mm - 40x120 Aluminum Base Extrusion	1
3	40-4012-720-CL	720mm - 40x120 Aluminum Base Extrusion	5
4	616.36MM ALUMINUM EXTRUSION	40X40 ALUMINUM EXTRUSION LEGS FOR CELL BASE	4
5	800MM ALUMINUM EXTRUSION	40x40 ALUMINUM EXTRUSION	2
6	720MM ALUMINUM EXTRUSION	40x40 ALUMINUM EXTRUSION	4
7	8359T231	CORROSION-RESISTANT CASTER	4
8	35x39.8MM BRACKET	L BRACKET	8



TOLERANCE INFORMATION

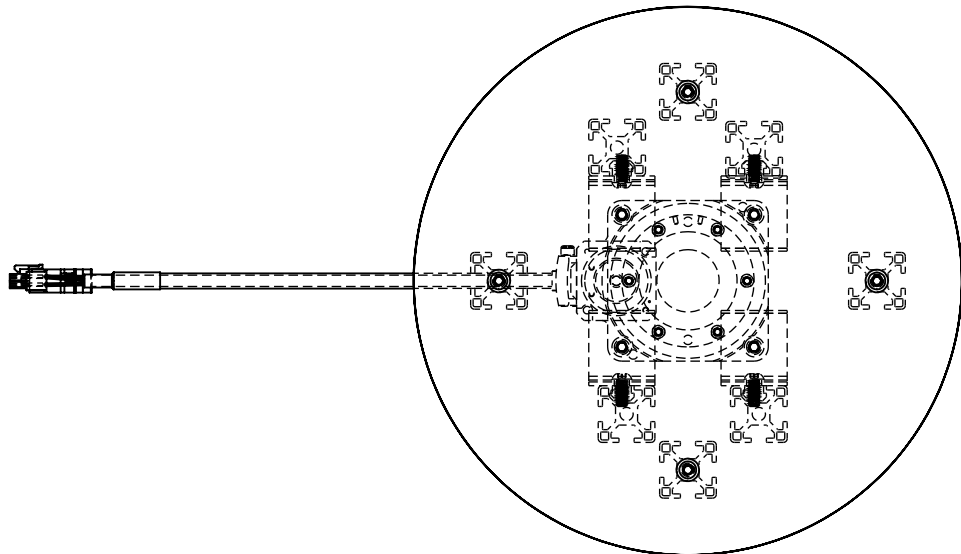
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MATERIAL:		ALUMINUM EXTRUSION	
HARDNESS:		N/A	
DATE :		9/3/2024	
DRAWN :		PREMANSHU BHAGAT	
APPROVED:		JOSHUA GALTON	
JOB No :	N/A	SCALE:	1:11
ITEM No :	N/A	REV :	2
QUANTITY:	1	SHEET:	5 OF: 20

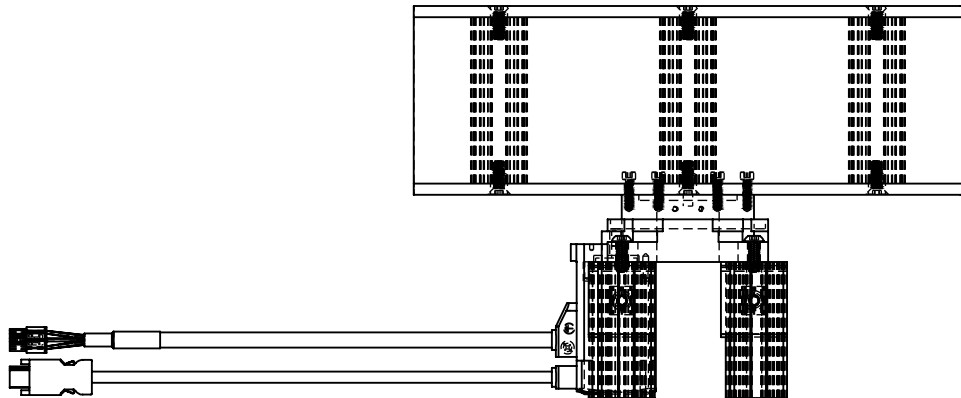
**B**

**MACHINE VISION  
AND AUTO ID**  
CELL BASE STRUCTURE

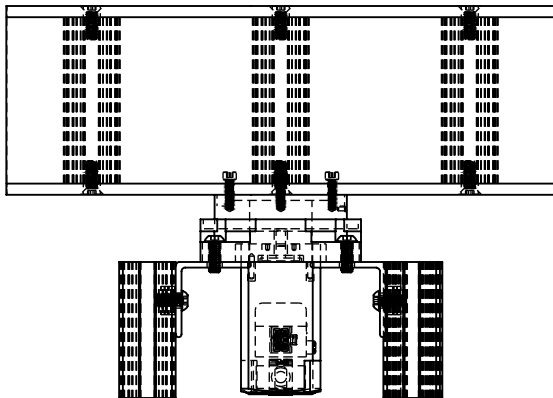
TOP VIEW



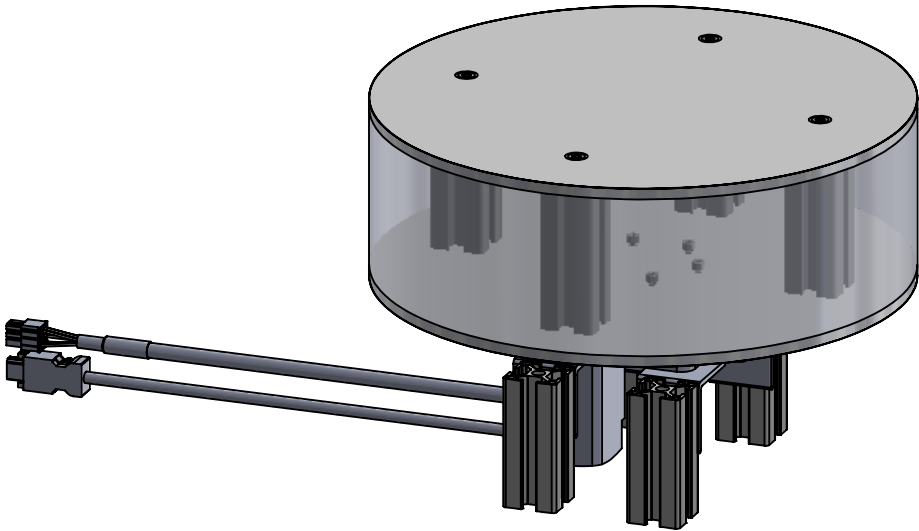
FRONT VIEW



SIDE VIEW



DIMETRIC VIEW



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Rotary Table Top Plate	Rotary Table Top Plate	1
2	Rotary Table Plate - Bottom Plate	Rotary Table Plate - Bottom Plate	1
3	91294A239	Black-Oxide Alloy Steel Hex Drive Flat Head Screw	8
4	dgm85r-azac	Hollow Rotary Actuator	1
5	Color Strip Rotory	Color Strip for KTS Prime Training	1
6	91290A154	Alloy Steel Socket Head Screw	6
7	L Bracket 35x39.8mm	L Bracket for Actuator Mounting	4
8	92095A238	Button Head Hex Drive Screw	4
9	92095A227	Button Head Hex Drive Screw	4
10	6000N204	T-Slotted Framing Fasteners	4
11	5537T738	T-Slotted Framing	4
12	5537T738	T-Slotted Framing	4

TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

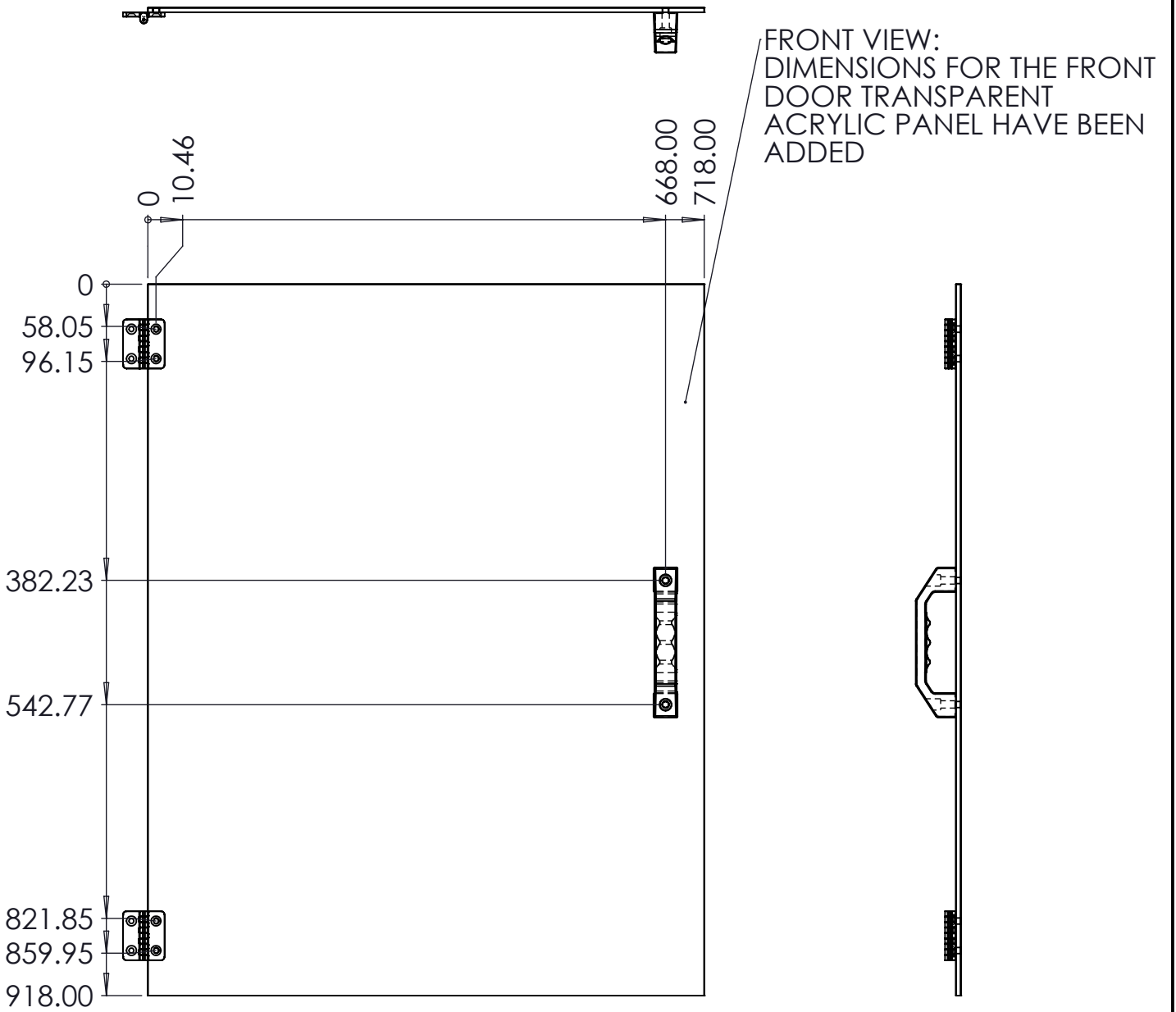
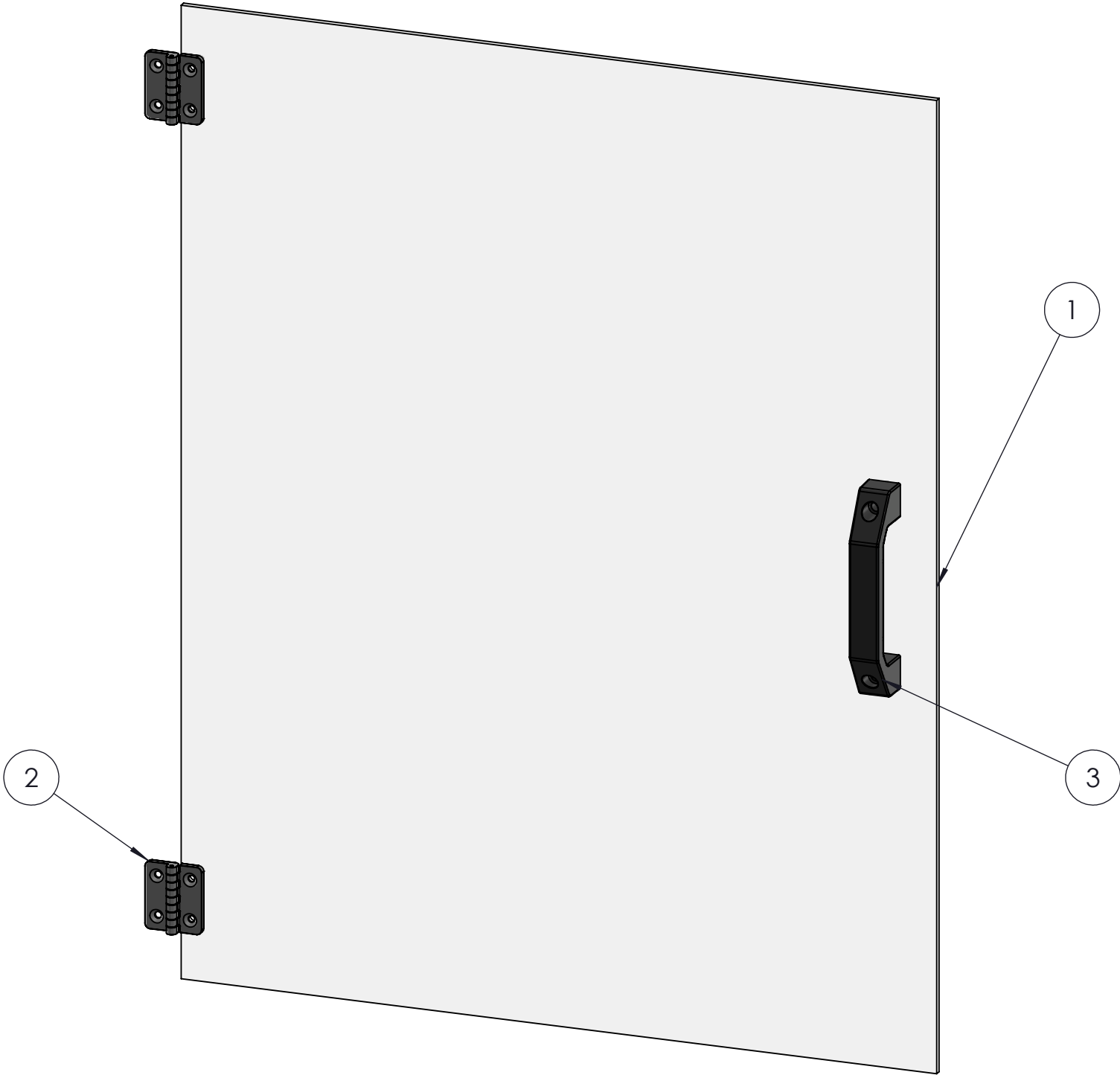
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DATE :	10/3/2024		
DRAWN :	PREMANSHU BHAGAT		
APPROVED:	JOSHUA GALTON		
JOB No :	N/A	SCALE:	1:4
ITEM No :	N/A	REV :	5
QUANTITY:	1	SHEET:	6 OF 20


**B**

**MACHINE VISION  
AND AUTO ID**

Rotary Table Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Back Door Panel	Transparent Acrylic Panel	1
2	1635A501	Plastic Hinge with Holes	2
3	2471N4	Static-Control Unthreaded-Hole Pull Handle	1



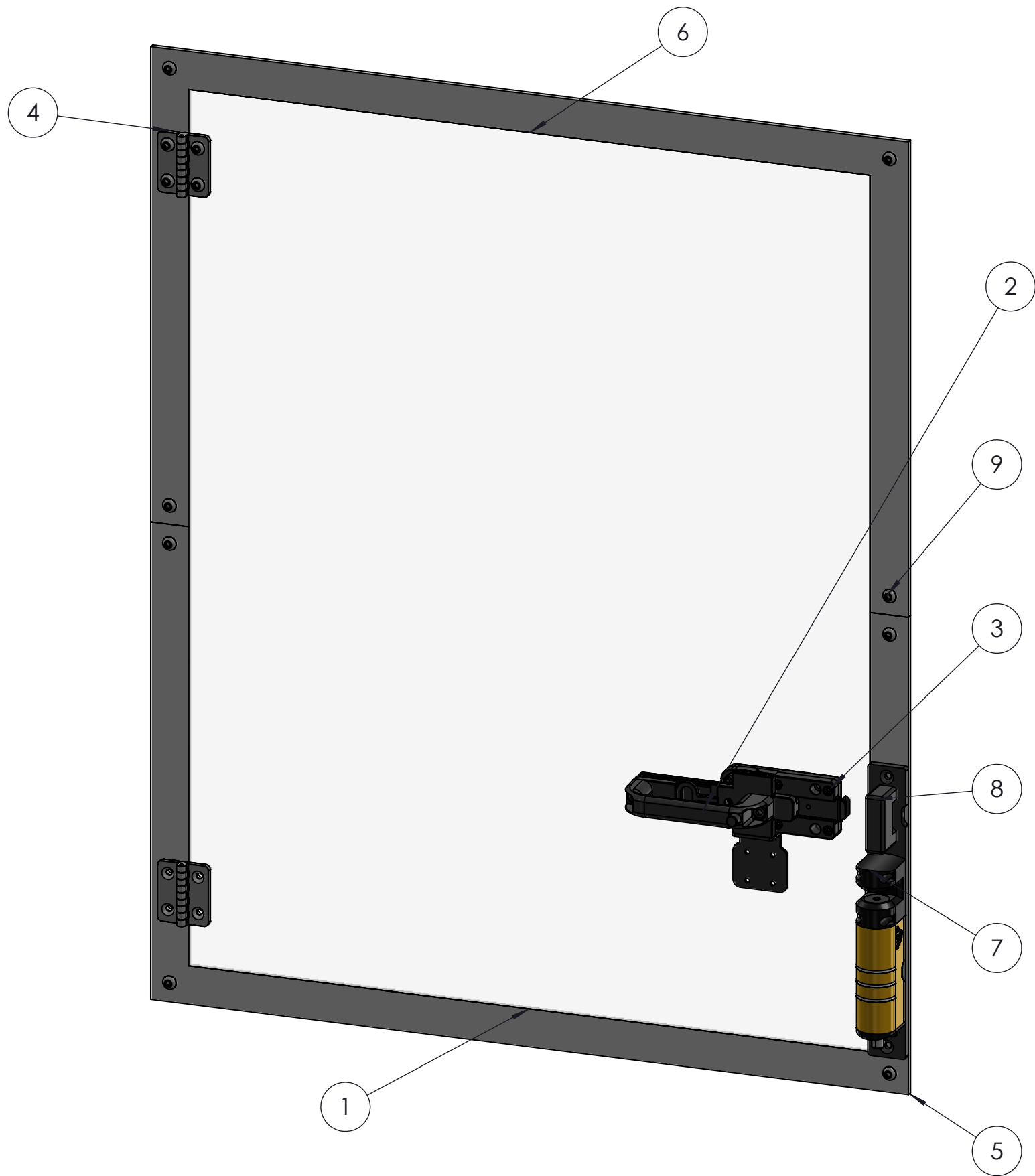
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		FINISH :	10/3/2024
		DRAWN :	PREMANSHU BHAGAT
		APPROVED:	JOSHUA GALTON
 Faculty of Applied Sciences & Technology	JOB No :	N/A	SCALE: 1:5
	ITEM No :	N/A	REV : 2
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MACHINE VISION  
AND AUTO ID

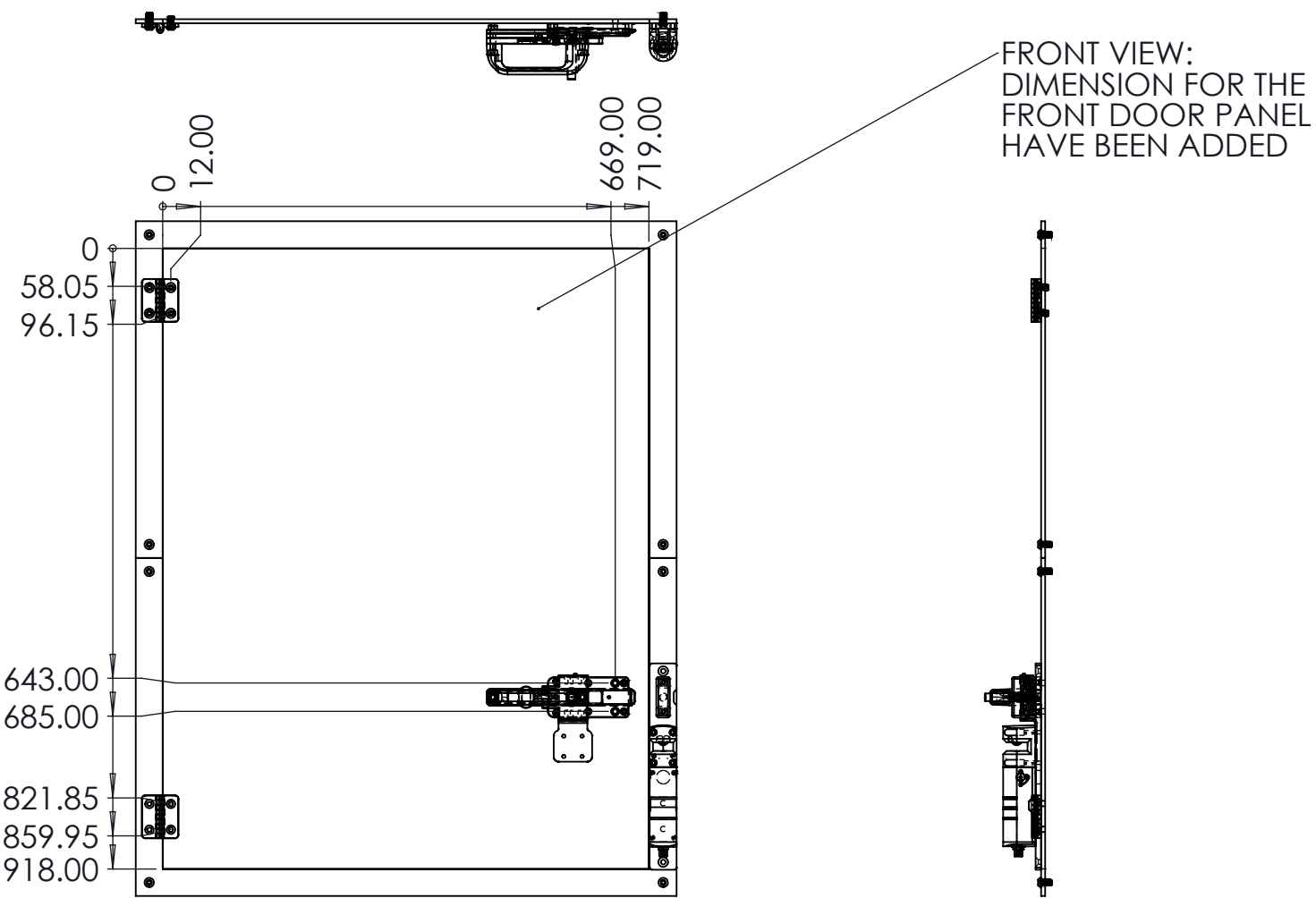
Back Door Assembly

B





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FRONT PANEL	TRANSPARENT ACRYLIC PANEL	1
3	Key Part of Lock - Part 1	HANDLE PORTION OF THE DOOR	1
3	Key Part of Lock - Part2	ACTUAL KEY FOR THE INTERLOCK	1
4	1635A501	Plastic Hinge with Holes	2
5	Front Acrylic Frame	WHITE ACRYLIC FRAME 6MM	1
6	Front Acrylic Frame	WHITE ACRYLIC FRAME 6MM	1
7	SICK flexLock - Door Lock	ELECTROMECHANICAL INTERLOCK	1
8	Base of Lock - Split2	KEY FIT	1
9	92095A260	Button Head Hex Drive Screw	12



**TOLERANCE INFORMATION**

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

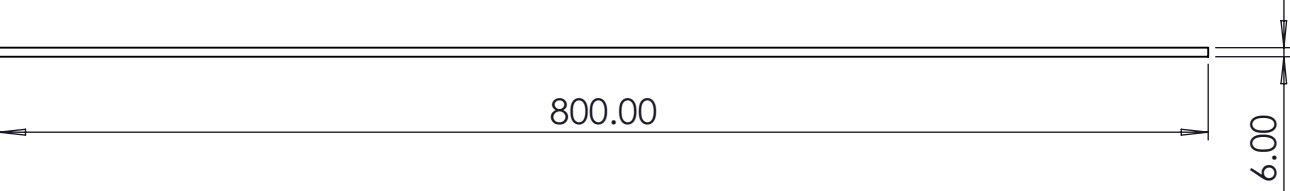
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DATE :	10/3/2024
DRAWN :	PREMANSHU BHAGAT
APPROVED:	JOSHUA GALTON
JOB No :	N/A
SCALE:	1:5
ITEM No :	N/A
REV :	2
QUANTITY:	1
SHEET:	8
OF:	20

**MACHINE VISION  
AND AUTO ID**

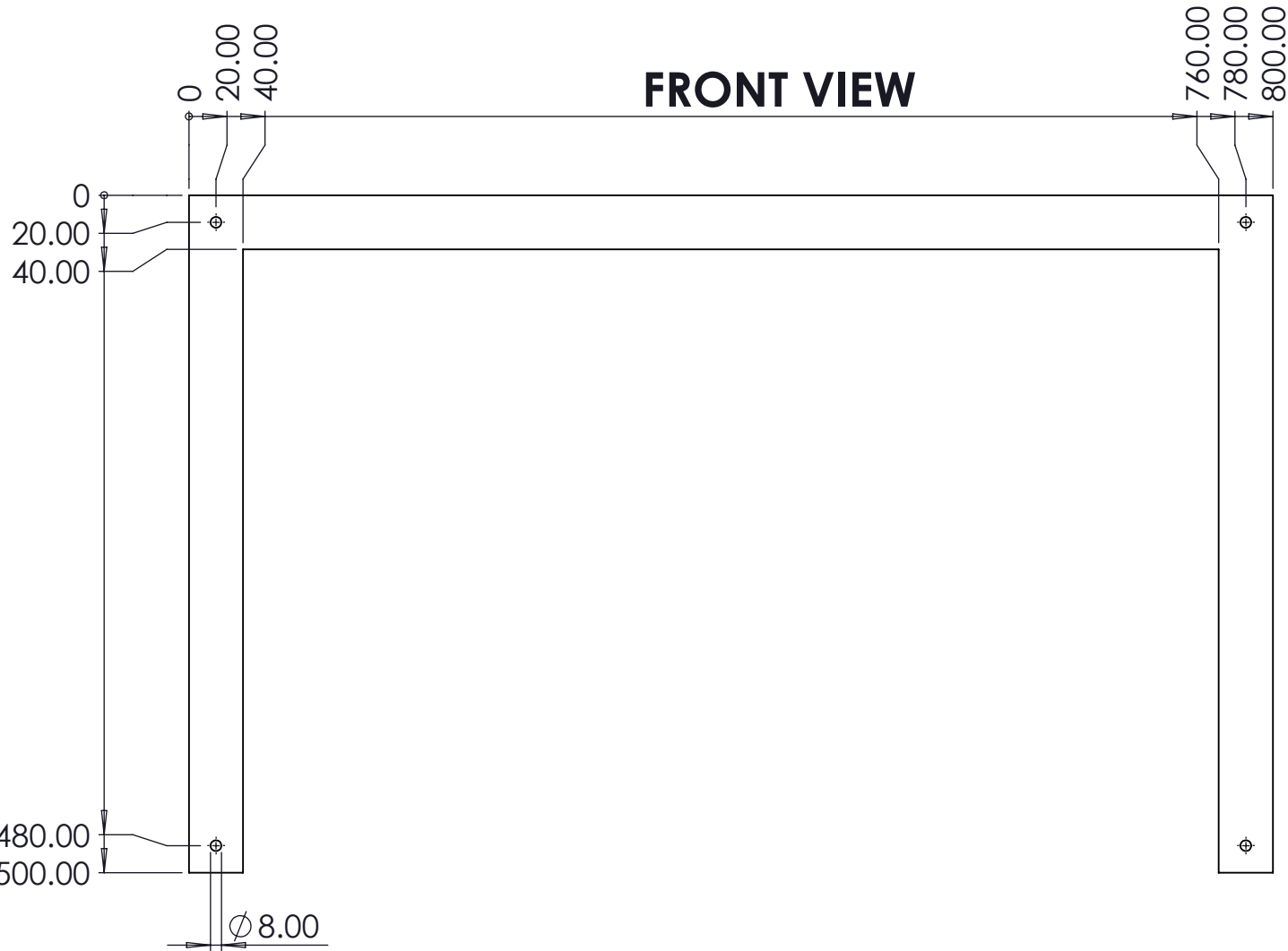
**FRONT DOOR ASSEMBLY**

**B**

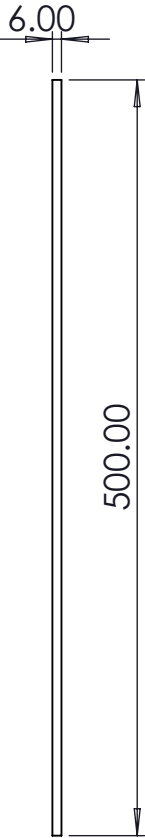
TOP VIEW



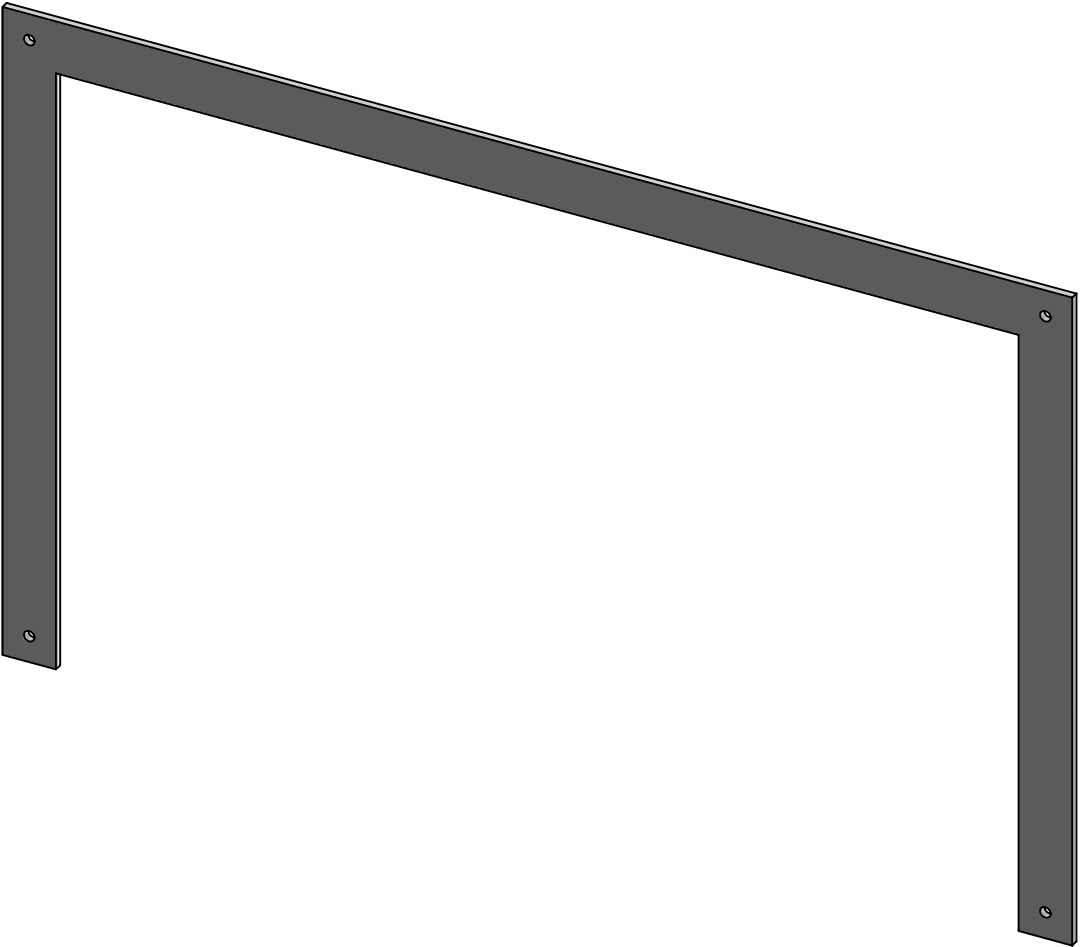
FRONT VIEW



SIDE VIEW



TRIMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

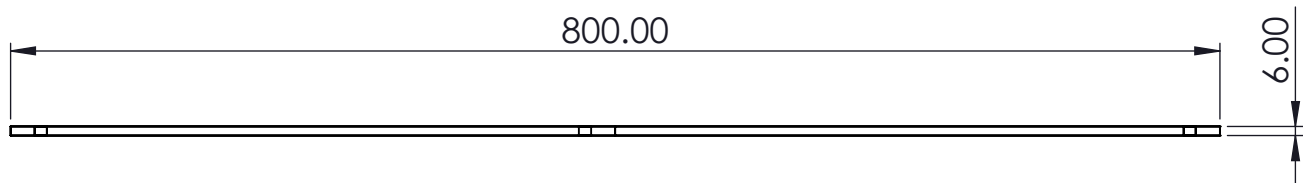
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HARDNESS:	N/A	
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APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:5
ITEM No :	N/A	REV : 2
QUANTITY:	2	SHEET: 9 OF: 20

**MACHINE VISION  
AND AUTO ID**

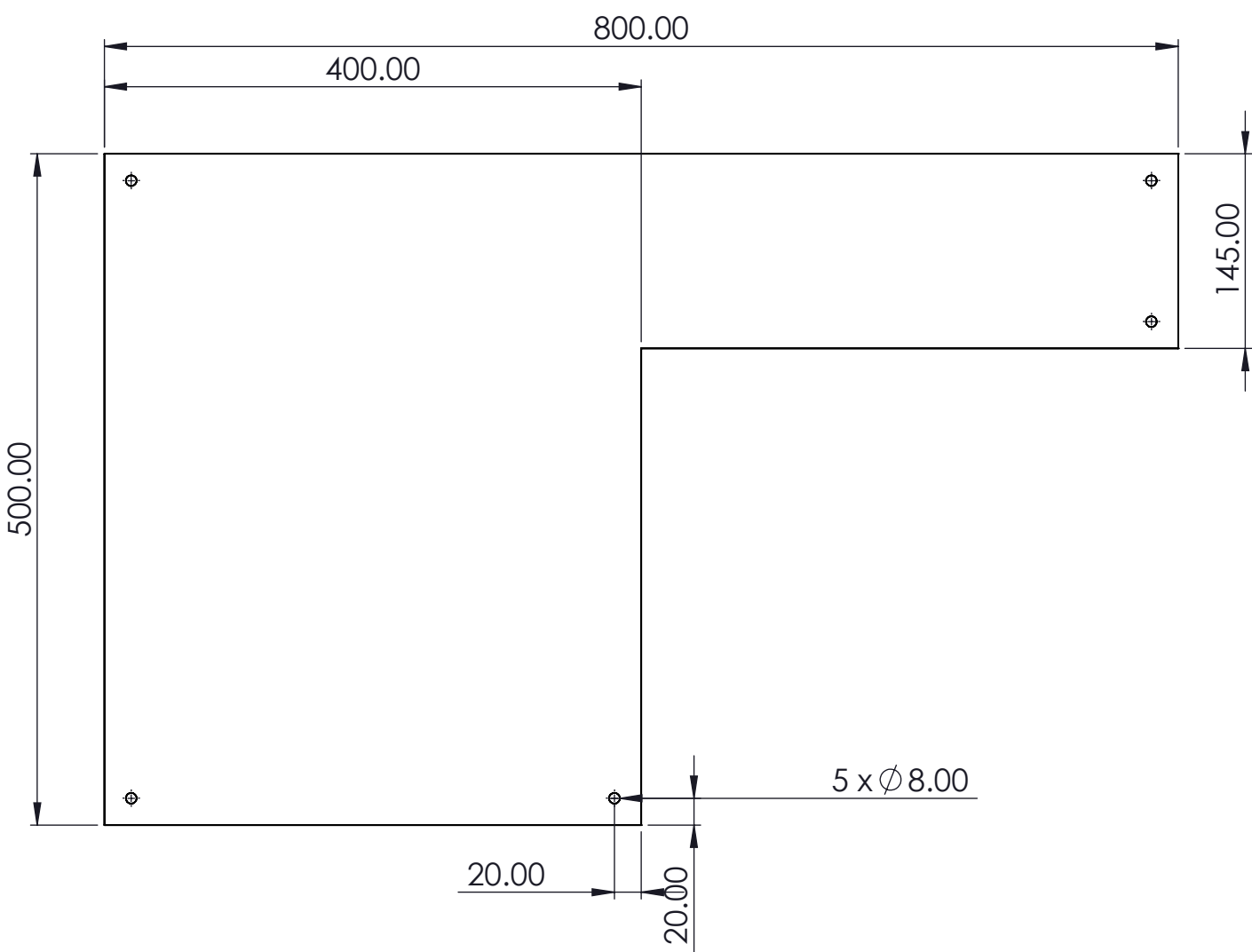
ACRYLIC FRAME  
TOP SIDE

**B**

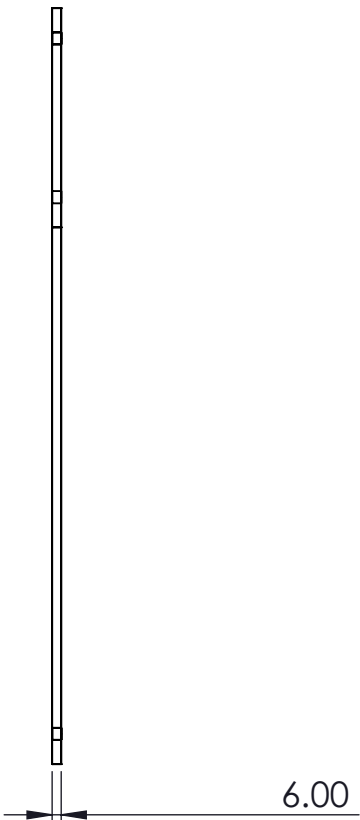
TOP VIEW



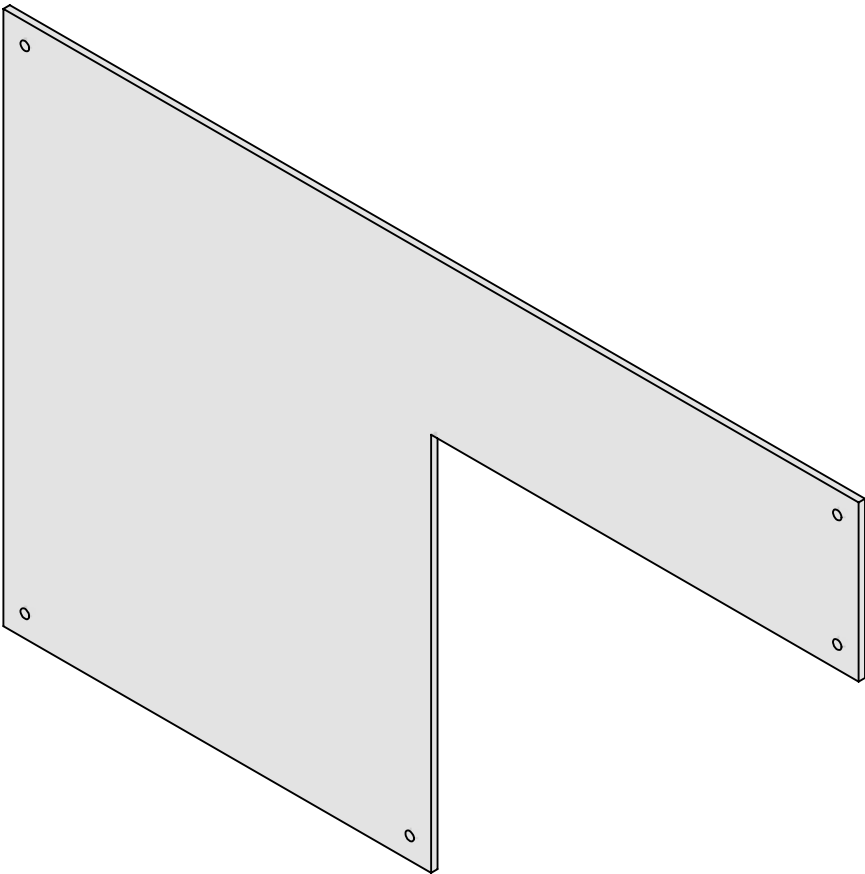
FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW



TOLERANCE INFORMATION

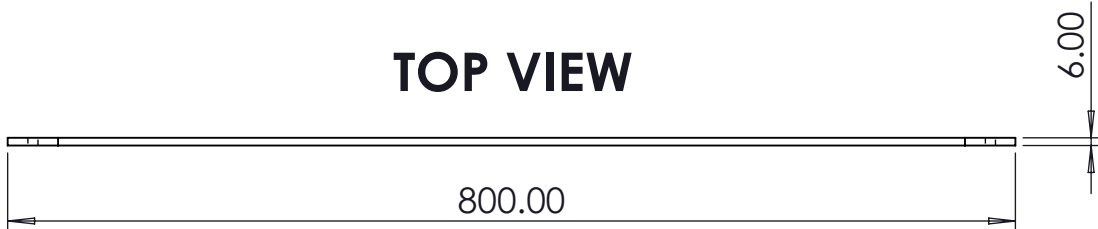
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

PART NUMBER:			
MATERIAL: TRANSPARENT ACRYLIC			
HARDNESS: N/A			
DATE : 12/2/2024			
DRAWN : PREMANSHU BHAGAT			
APPROVED: JOSHUA GALTON			
JOB No : N/A		SCALE: 1:5	B
ITEM No : N/A		REV : 3	
QUANTITY: 2		SHEET: 10 OF: 20	

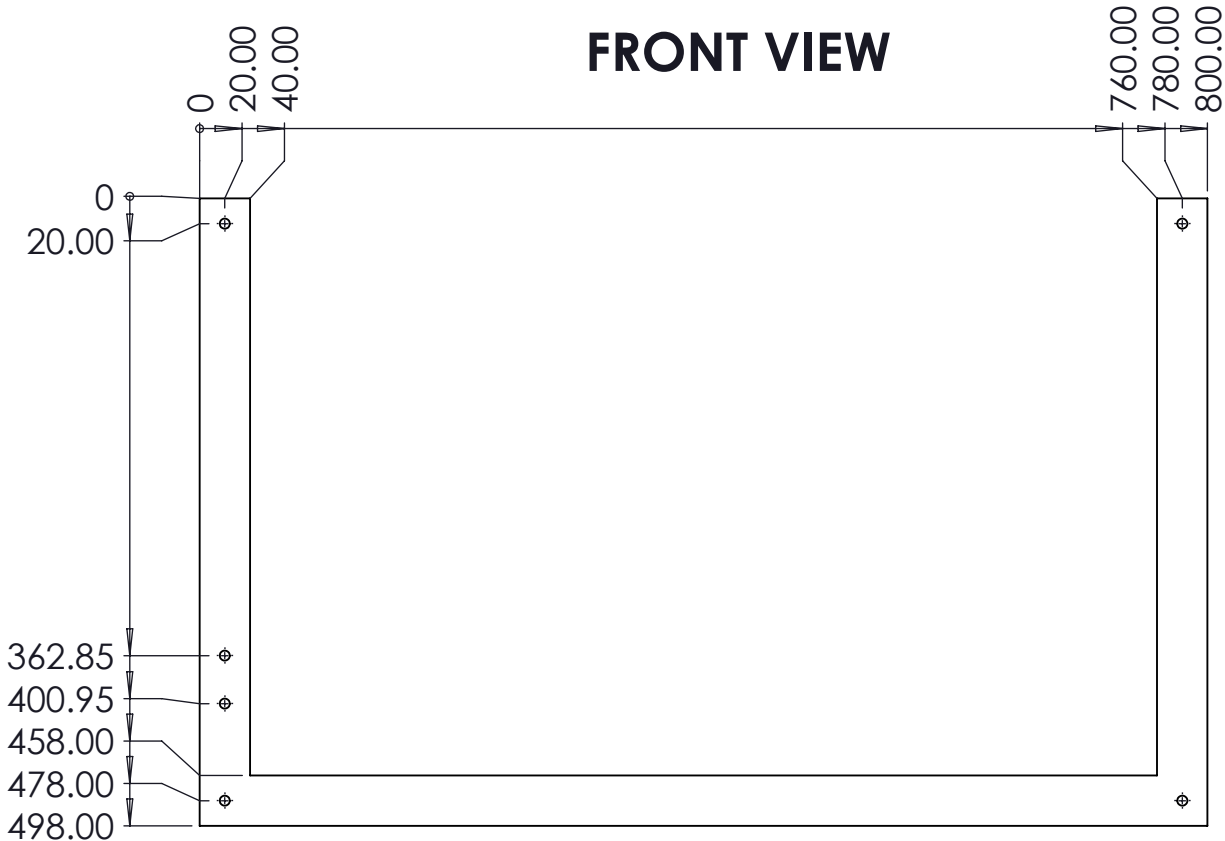
**MACHINE VISION  
AND AUTO ID**

**ACRYLIC PANEL  
CONVEYOR PASS THROUGH**

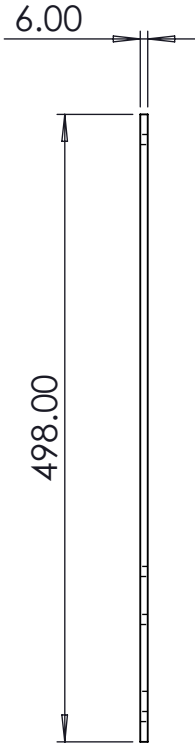
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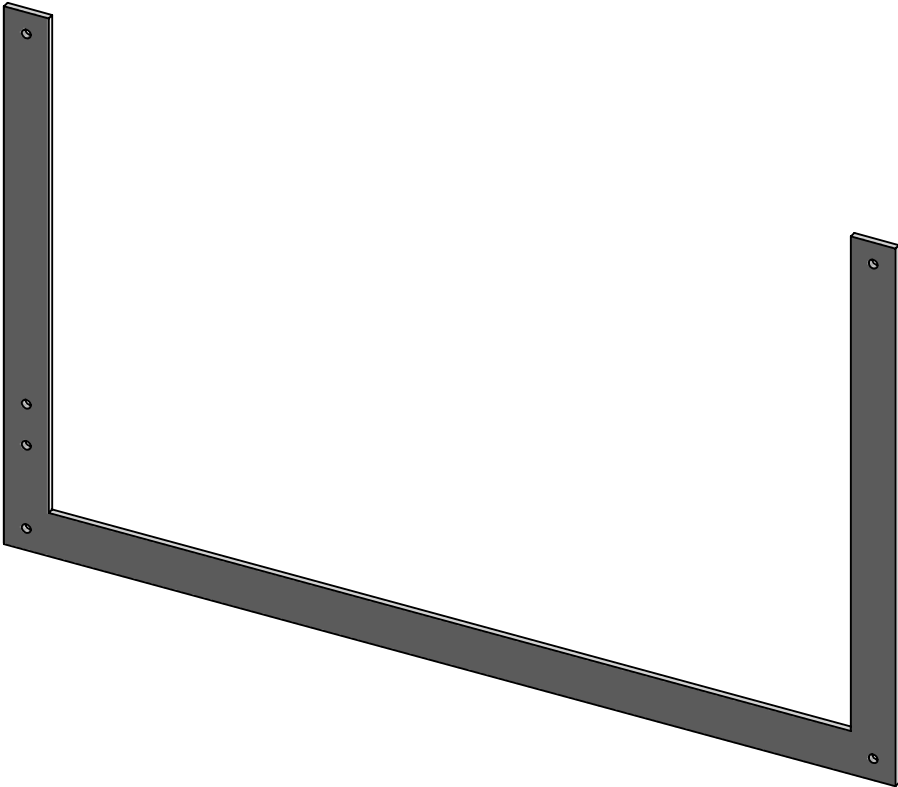
FRONT VIEW



SIDE VIEW



TRIMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

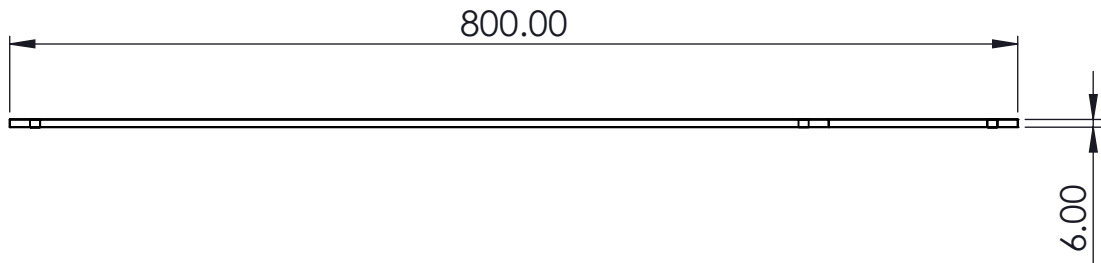
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MATERIAL:	WHITE ACRYLIC	
HARDNESS:	N/A	
DATE :	11/2/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:6
ITEM No :	N/A	REV : 2
QUANTITY:	3	SHEET: 11 OF: 20

**MACHINE VISION  
AND AUTO ID**

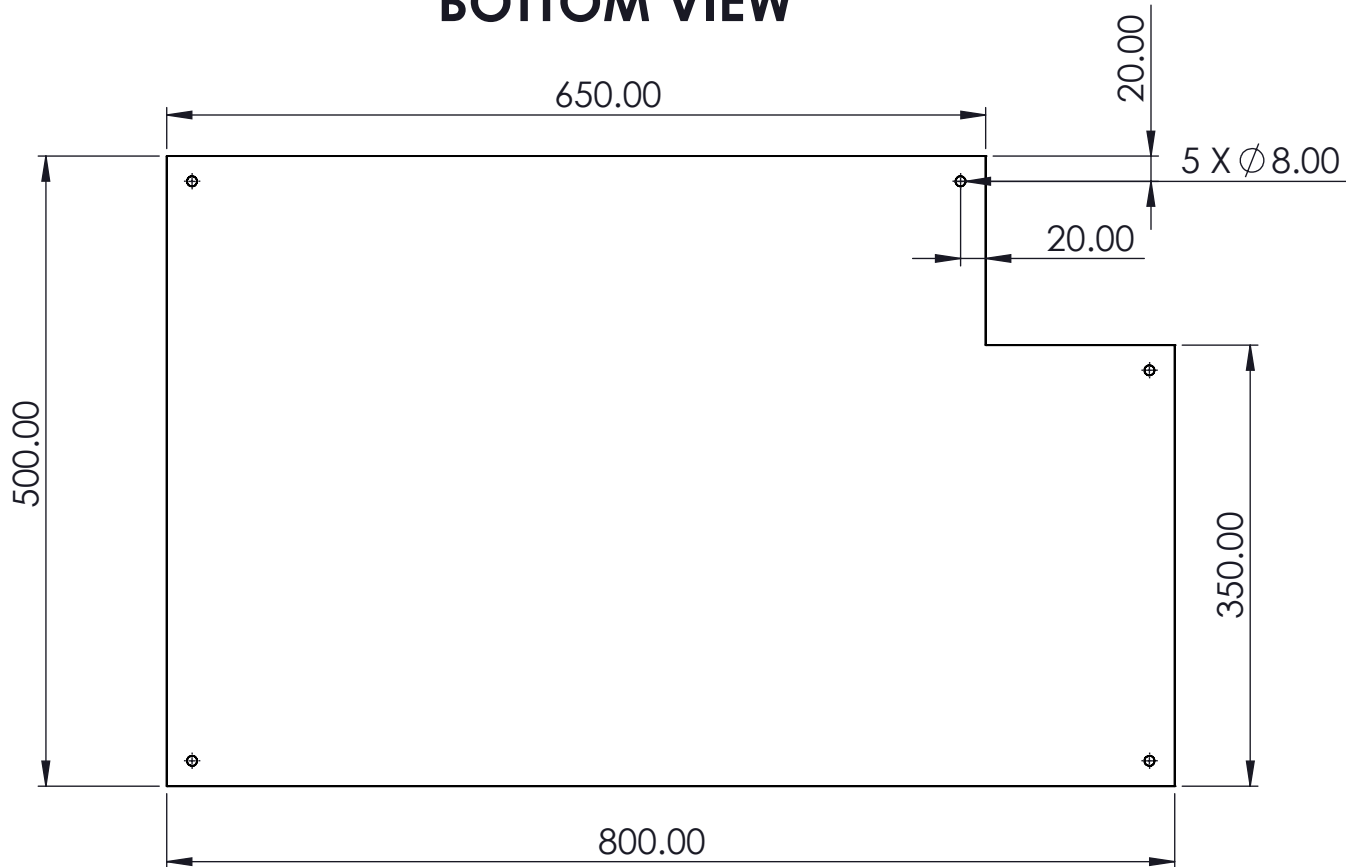
ACRYLIC FRAME  
FOR HINGES

**B**

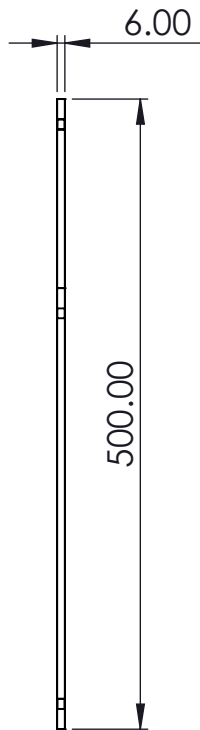
TOP VIEW



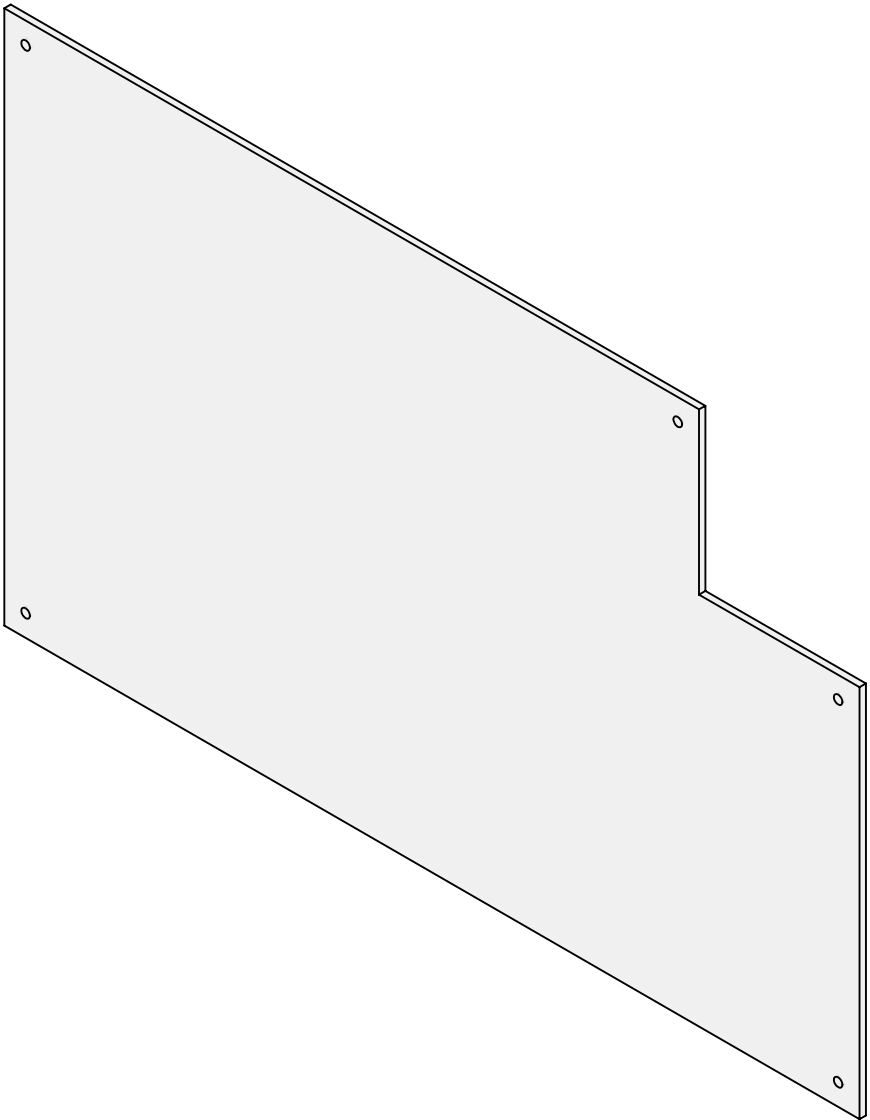
BOTTOM VIEW




SIDE VIEW



ISOMETRIC VIEW



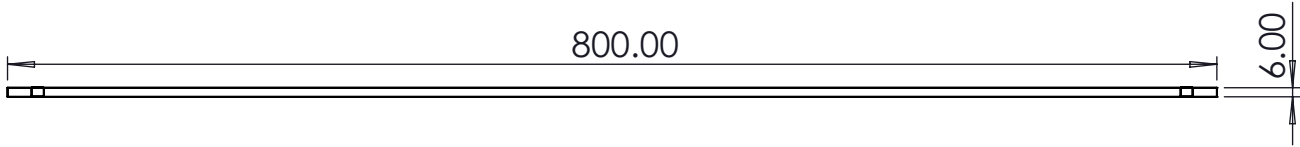
TOLERANCE INFORMATION			PART NUMBER:		
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FRACTIONS 1/64			HARDNESS: N/A		
DECIMALS .XXXX = ±.0005 .XXX = ±.005 .XX = ±.01			DATE : 11/2/2024		
ANGLES X° = ±0°15' X.X° = ±0°05'			DRAWN : PREMANSHU		
THIRD ANGLE PROJECTION			APPROVED: JOSHUA		
 Faculty of Applied Sciences & Technology			JOB No : N/A	SCALE: 1:5	<b>B</b>
			ITEM No : N/A	REV : 1	
			QUANTITY: 1	SHEET: 12 OF: 20	

**MACHINE VISION  
AND AUTO ID**

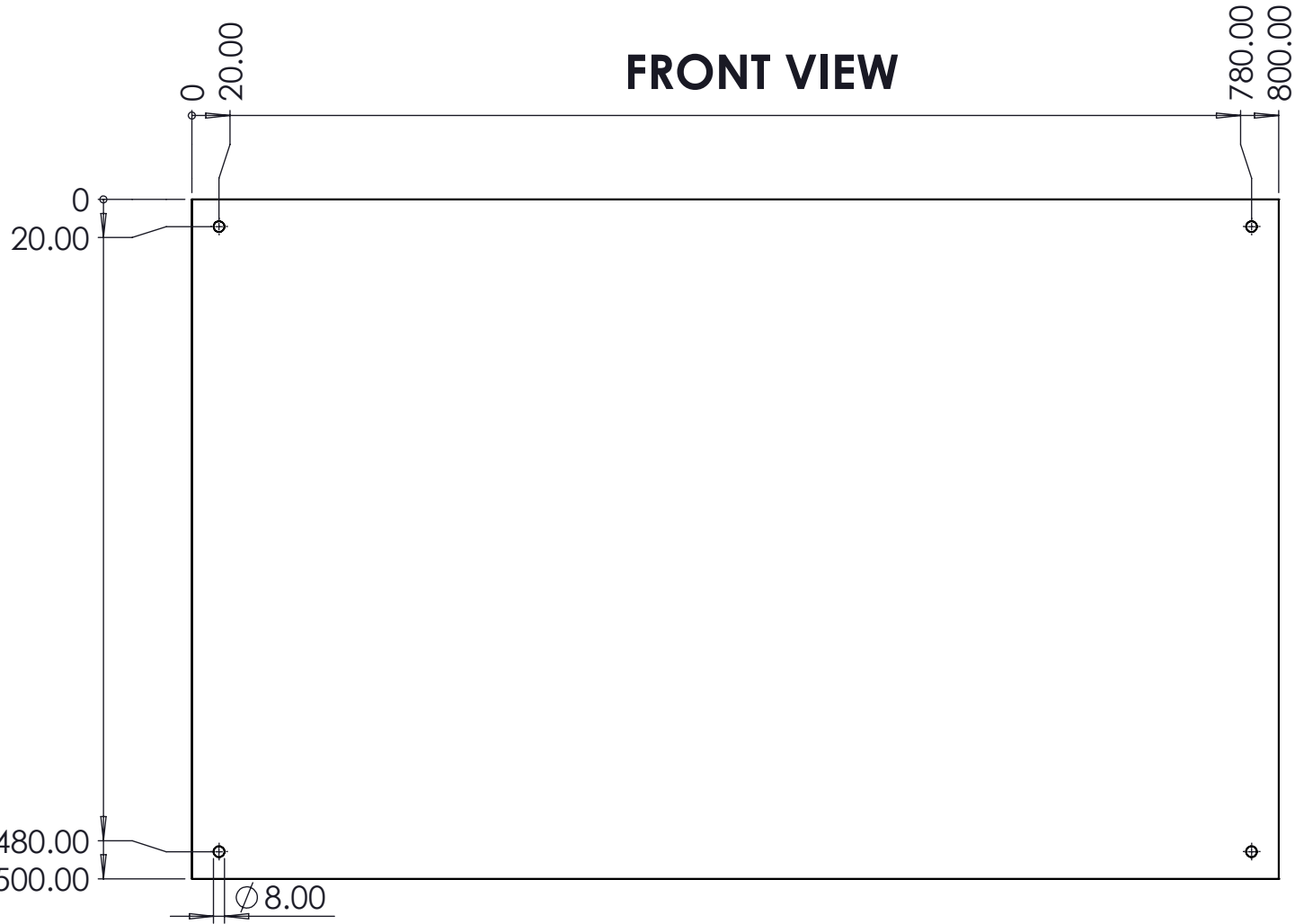
**ACRYLIC PANEL  
BELOW MONITOR**



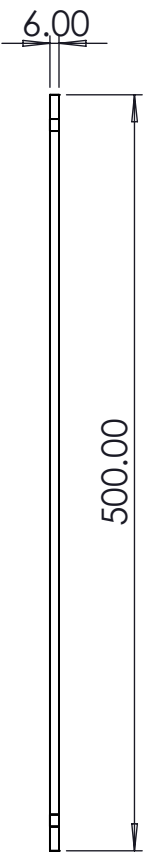
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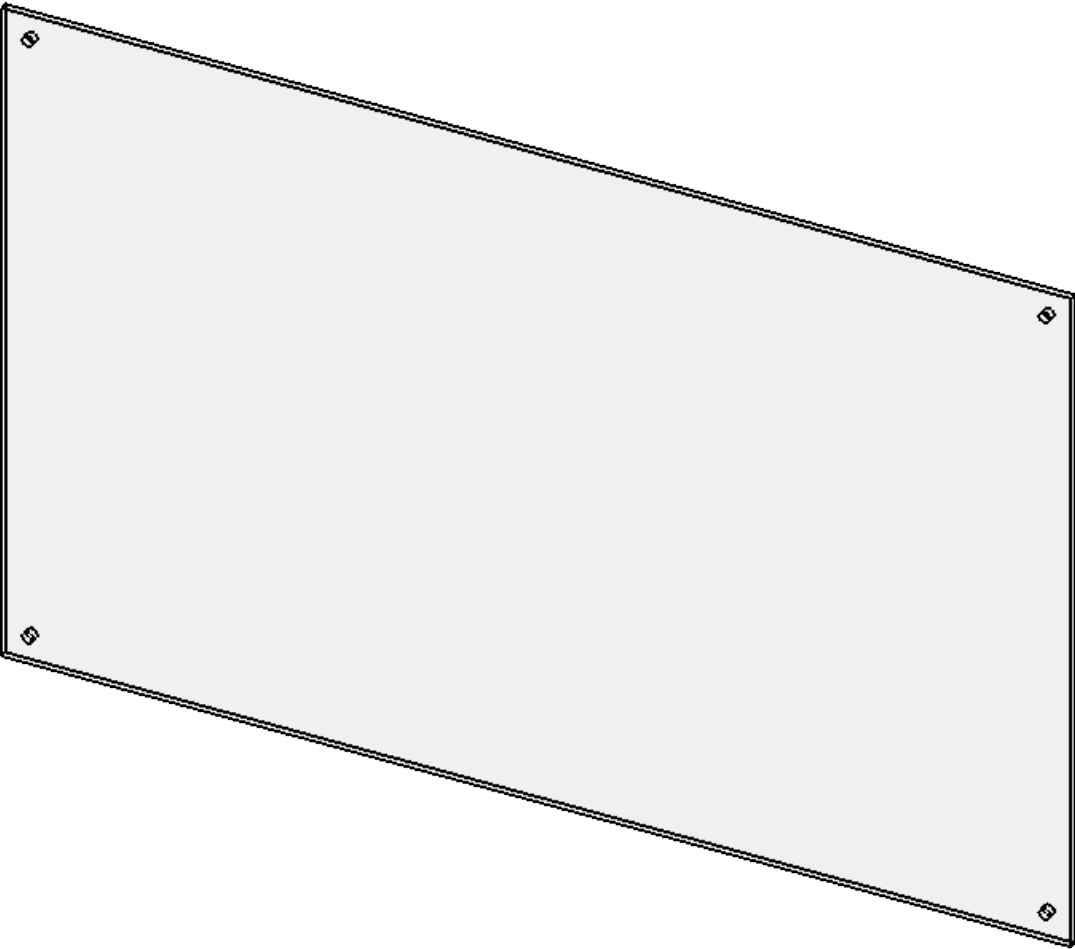
FRONT VIEW



SIDE VIEW



TRIMETRIC VIEW



**TOLERANCE INFORMATION**

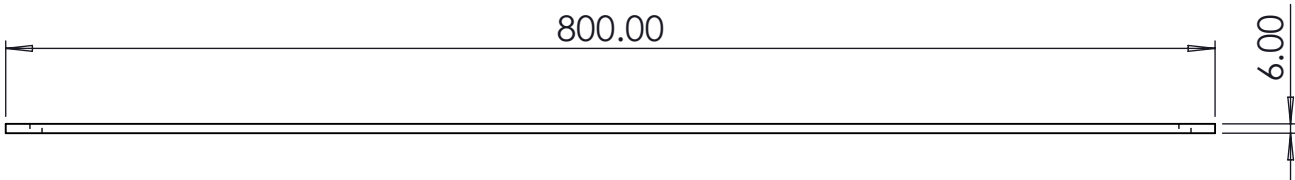
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

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HARDNESS:		N/A	
DATE :		11/2/2024	
DRAWN : PREMANSHU BHAGAT			
APPROVED: JOSHUA GALTON			
JOB No :	N/A	SCALE:	1:5
ITEM No :	N/A	REV :	2
QUANTITY:	2	SHEET:	13 OF: 20

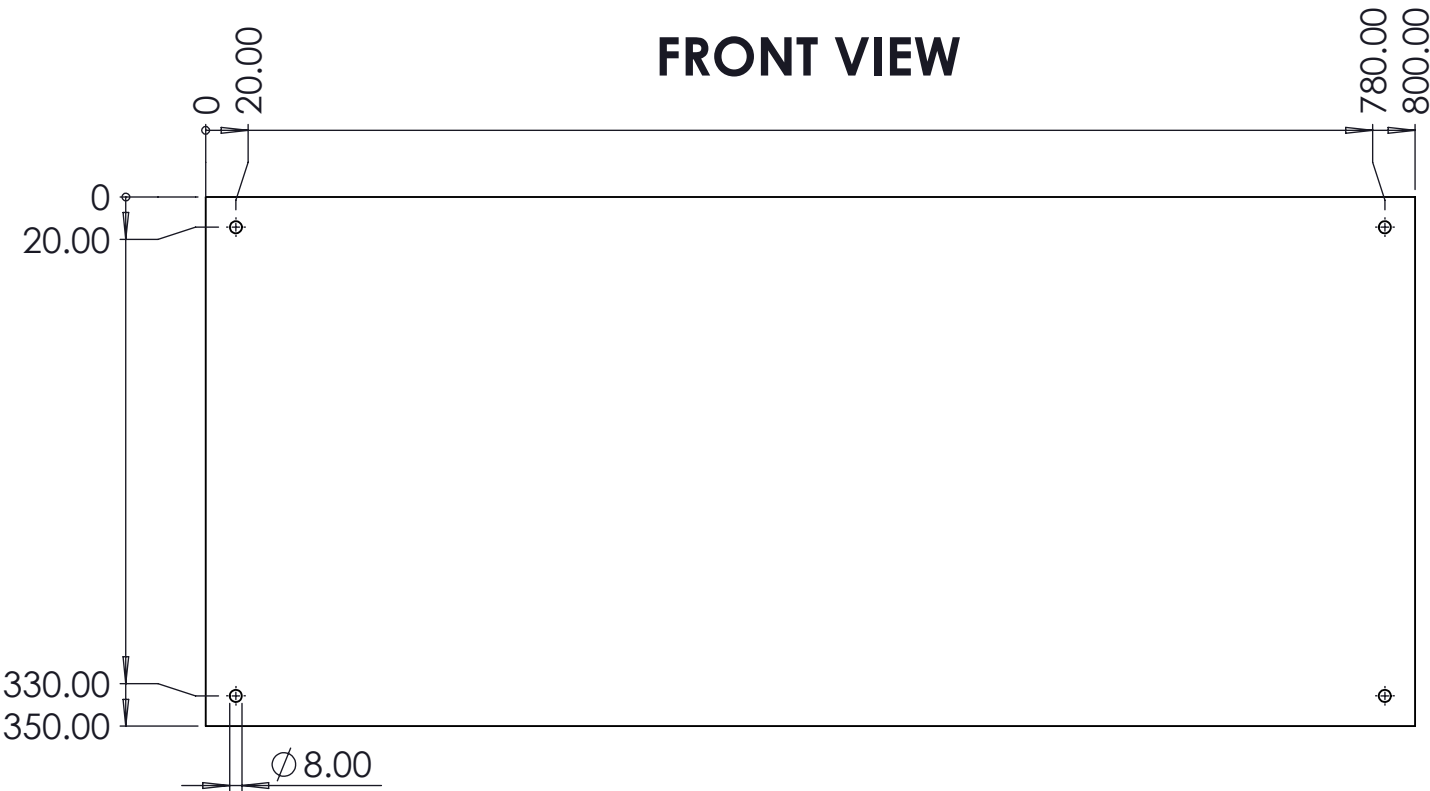
**MACHINE VISION  
AND AUTO ID**

ACRYLIC PANEL  
800X500MM

TOP VIEW



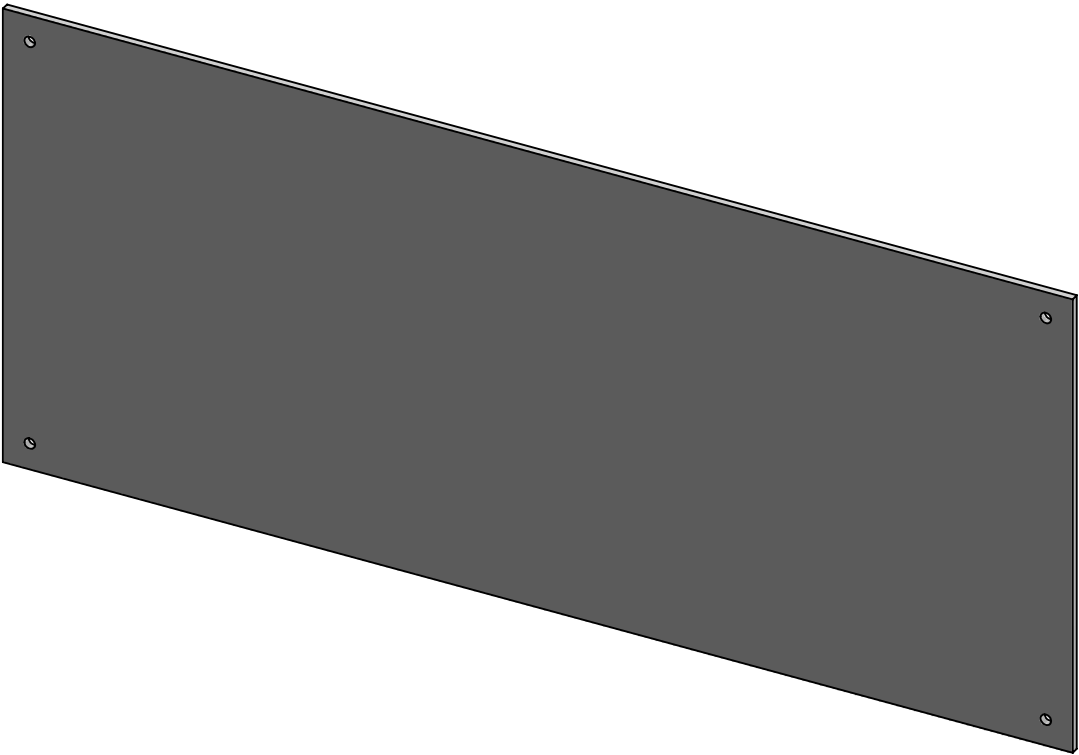
FRONT VIEW



SIDE VIEW



TRIMETRIC VIEW



TOLERANCE INFORMATION

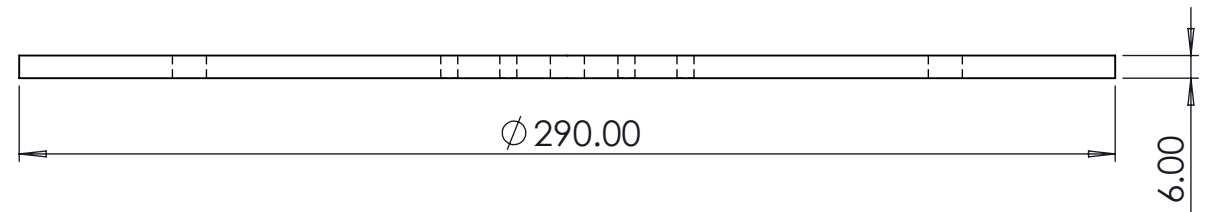
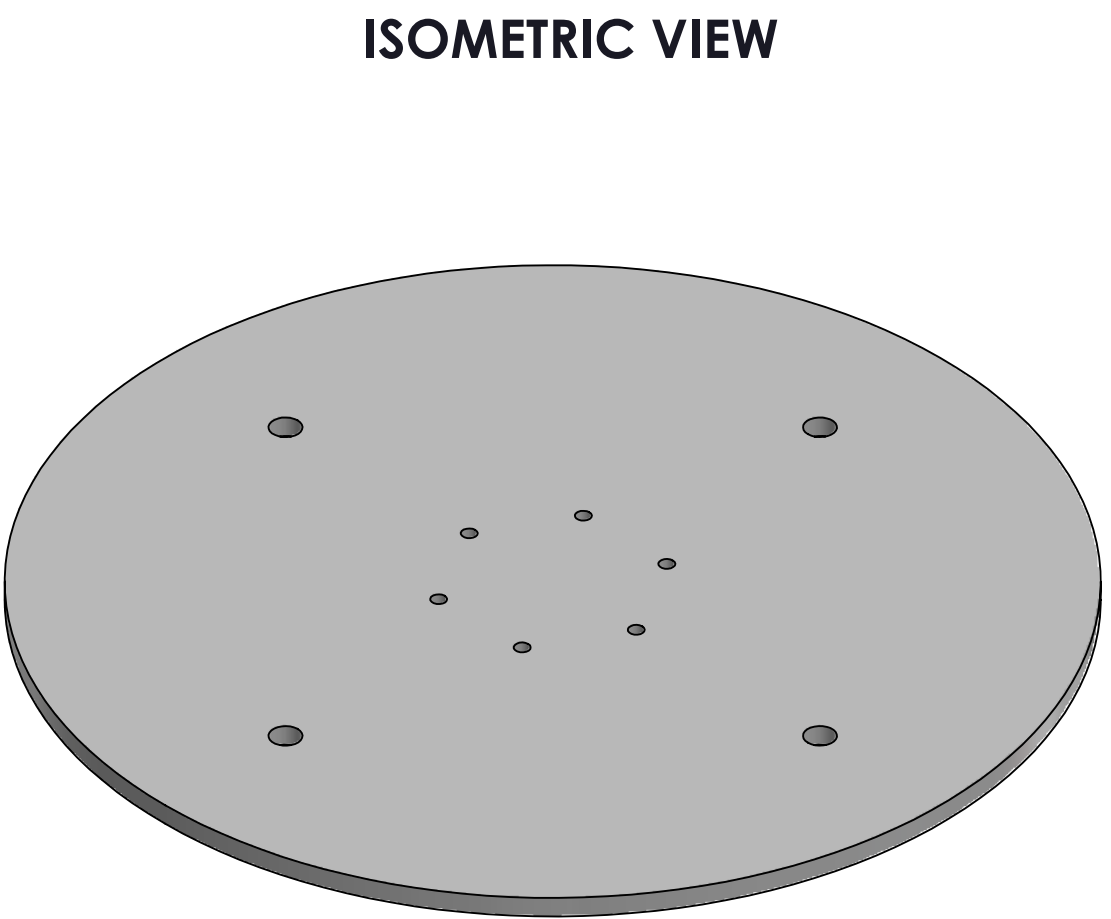
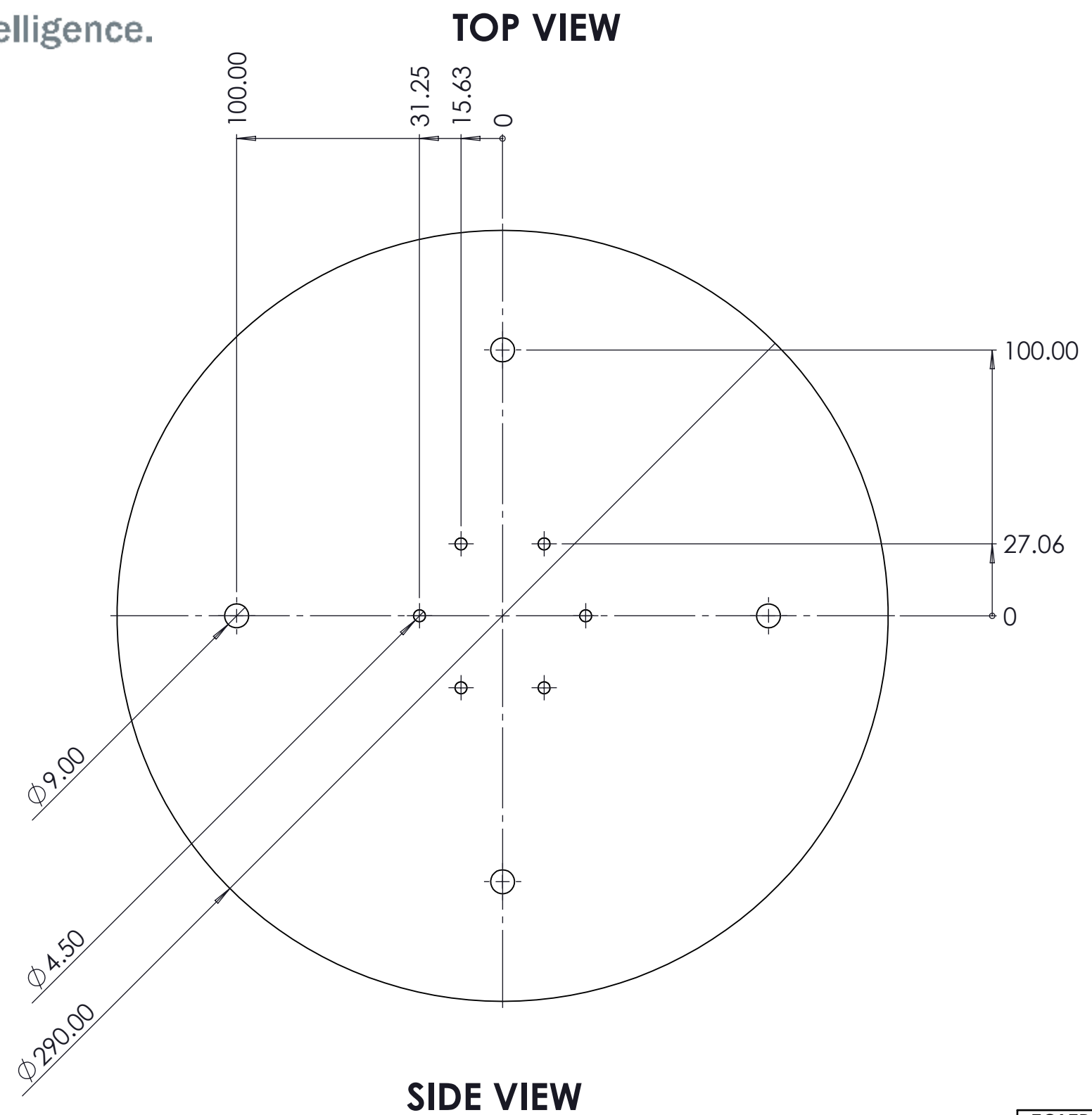
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**


PART NUMBER:		
MATERIAL:	WHITE ACRYLIC	
HARDNESS:	N/A	
DATE :	10/2/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:5
ITEM No :	N/A	REV : 2
QUANTITY:	3	SHEET: 14 OF: 20

**MACHINE VISION  
AND AUTO ID**

**ACRYLIC PANEL  
BASE COVER**

**B**

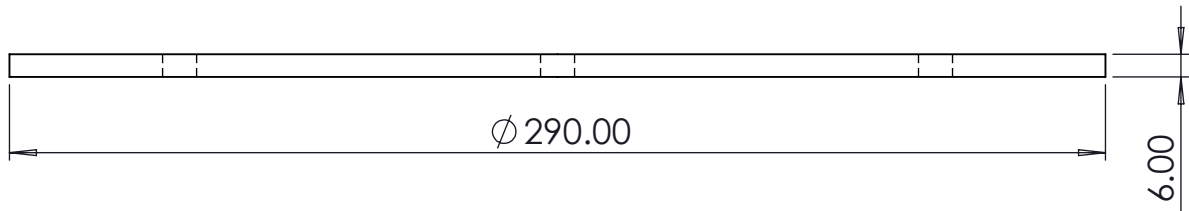
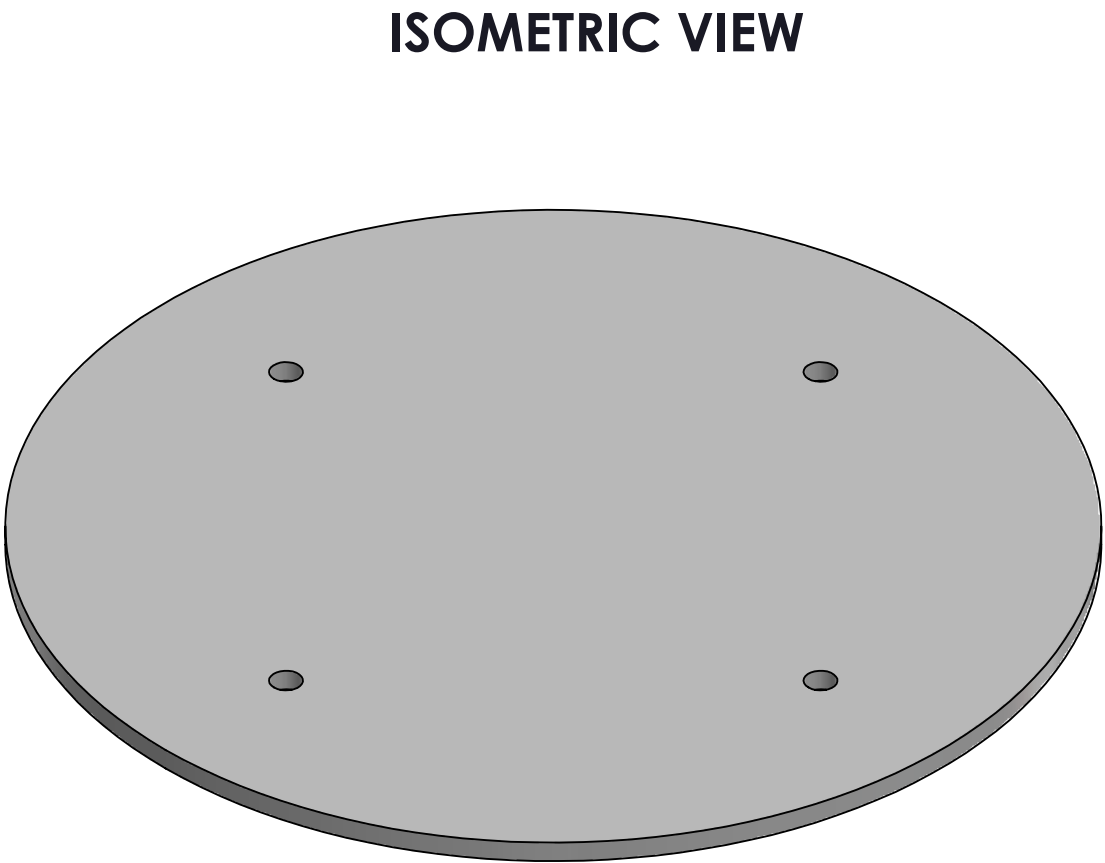
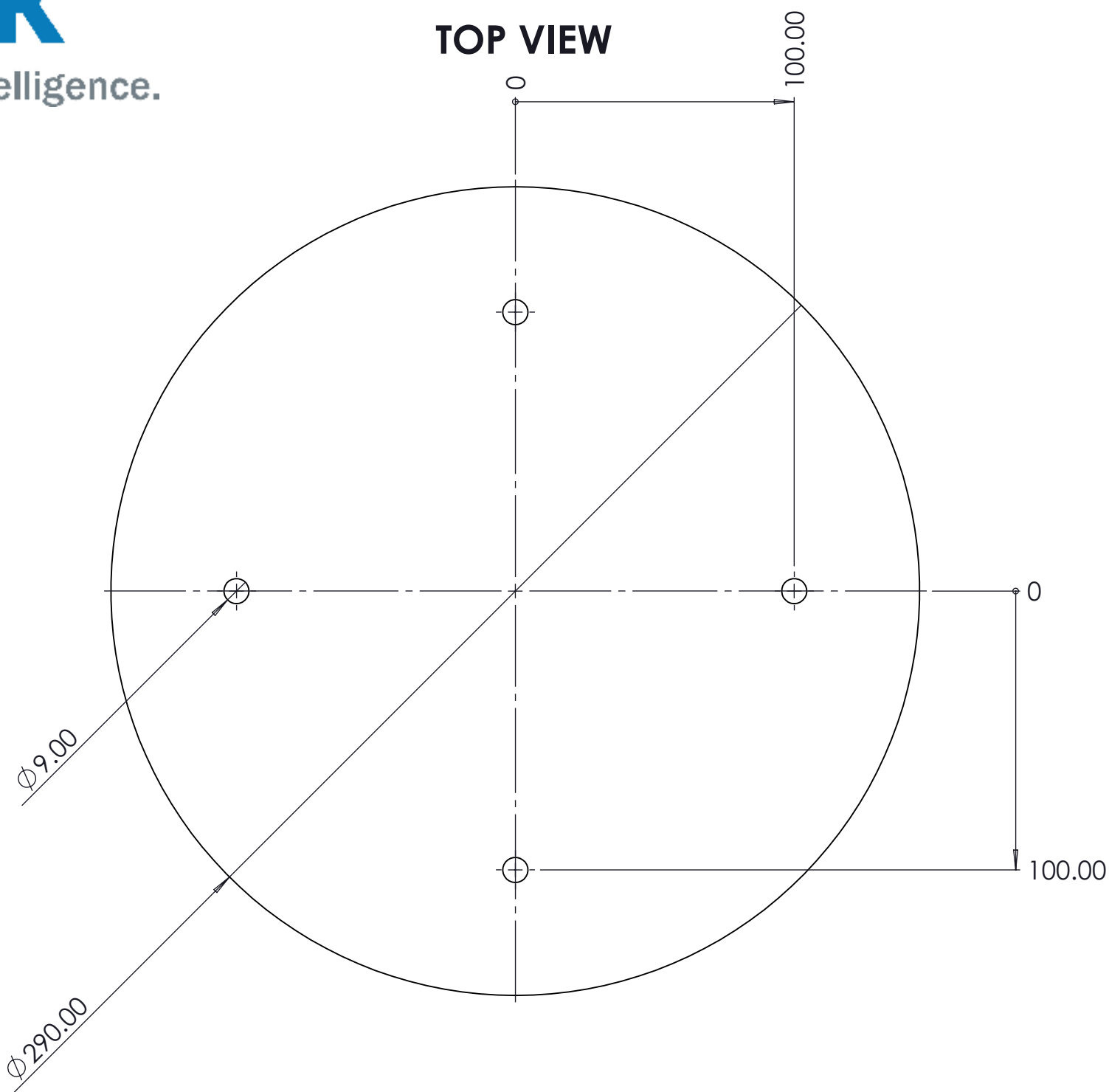


TOLERANCE INFORMATION		PART NUMBER:	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN <b>MM</b>		MATERIAL:	WHITE ACRYLIC
		HARDNESS:	N/A
		DATE :	27/3/2024
		DRAWN :	PREMANSHU BHAGAT
		APPROVED:	JOSHUA GALTON
 Faculty of Applied Sciences & Technology	JOB No :	N/A	SCALE: 1:2
	ITEM No :	N/A	REV : 4
	QUANTITY:	1	SHEET: 15 OF: 20

**MACHINE VISION  
AND AUTO ID**

ROTARY TABLE  
BOTTOM PLATE

**B**



**TOLERANCE INFORMATION**

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

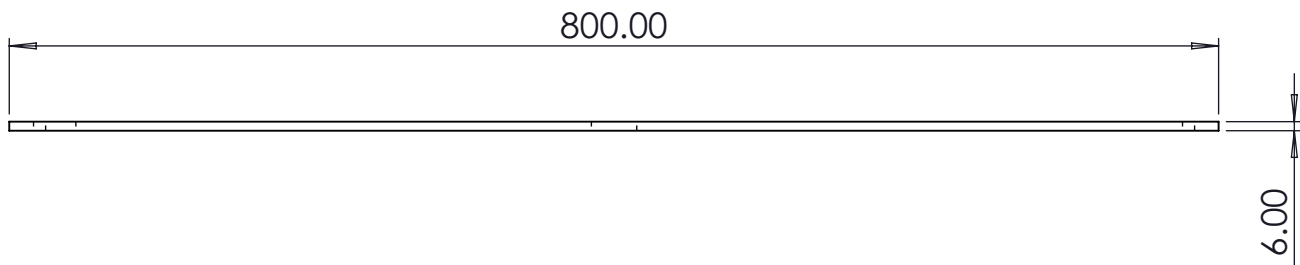
PART NUMBER:			
MATERIAL:		WHITE ACRYLIC	
HARDNESS:		N/A	
DATE :		27/3/2024	
DRAWN : PREMANSHU BHAGAT			
APPROVED: JOSHUA GALTON			
JOB No :		SCALE:	B
ITEM No :		REV :	
QUANTITY:		SHEET:	OF:
1		16	20

**B**

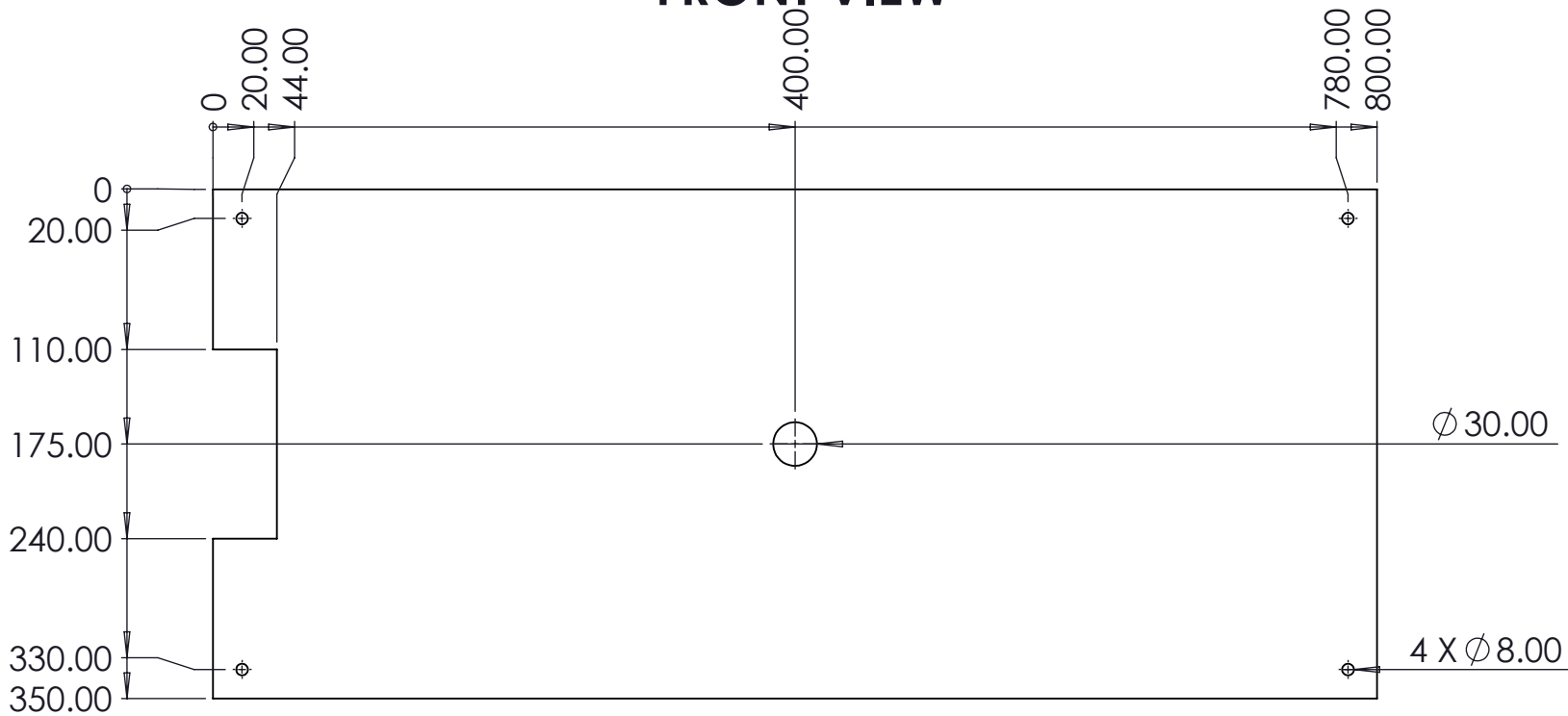
**MACHINE VISION  
AND AUTO ID**

ROTARY TABLE  
TOP PLATE

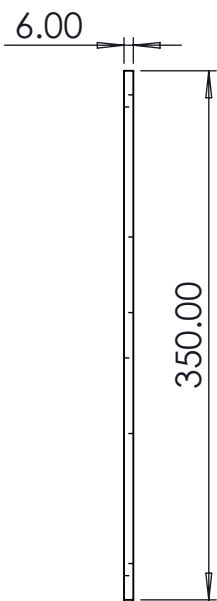
TOP VIEW



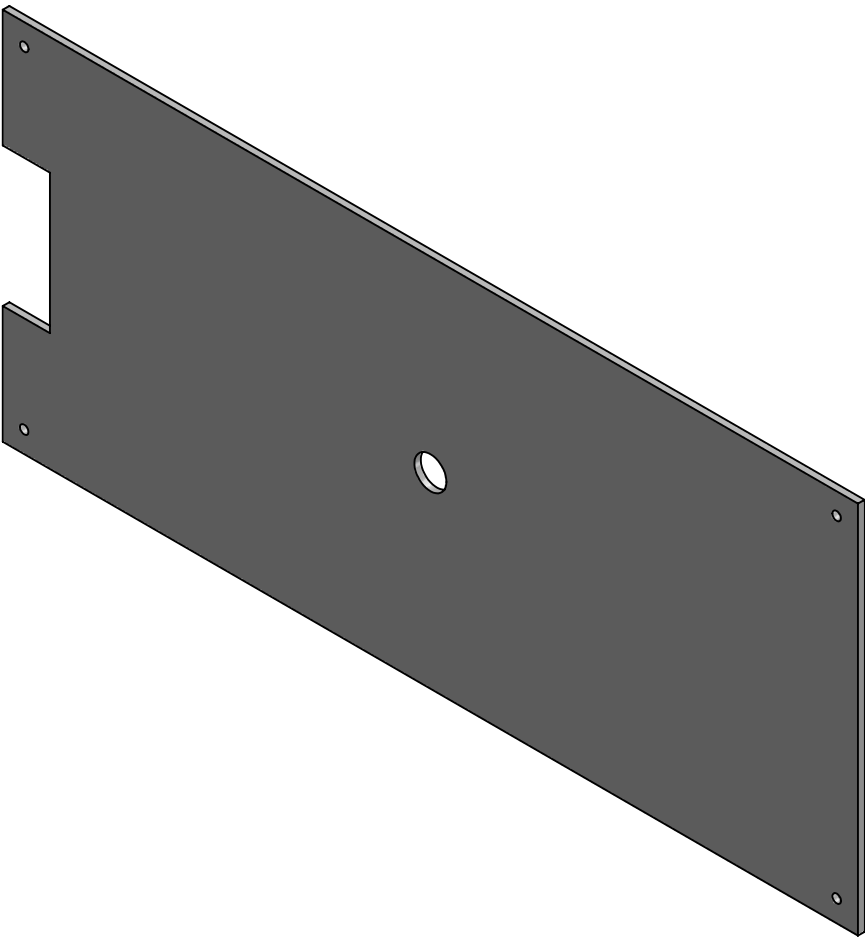
FRONT VIEW





SIDE VIEW



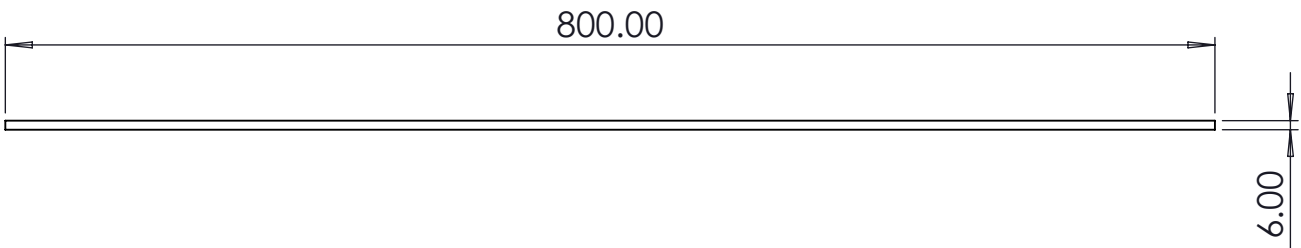
ISOMETRIC VIEW



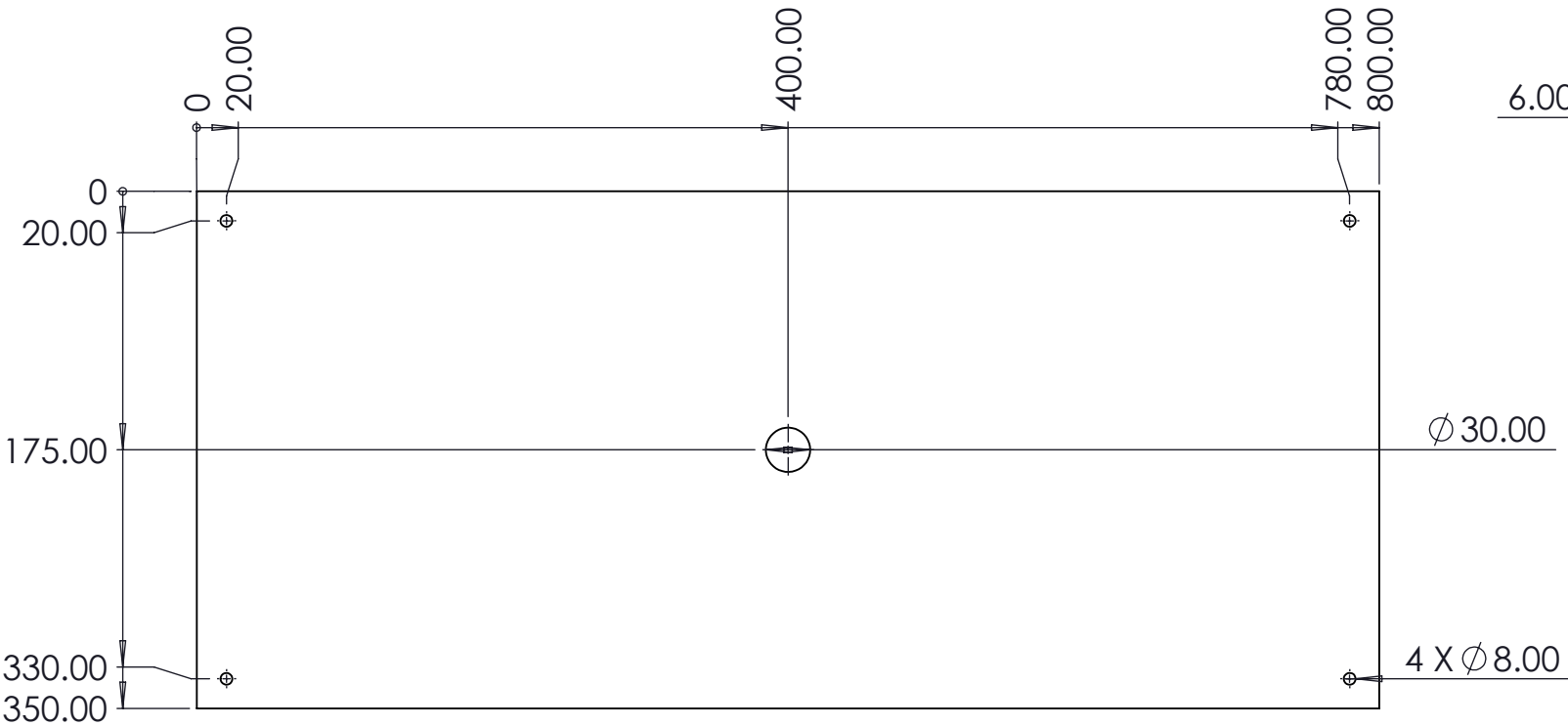
<b>TOLERANCE INFORMATION</b>  UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN <b>MM</b>   <b>HUMBER</b> Faculty of Applied Sciences & Technology	PART NUMBER:		<b>MACHINE VISION AND AUTO ID</b>  ACRYLIC PANEL - ETHERNET ADAPTER & PC MOUNT	
	MATERIAL:	WHITE ACRYLIC		
	HARDNESS:	N/A		
	DATE :	20/3/2024		
	DRAWN : APPROVED:	PREMANSHU BHAGAT JOSHUA GALTON		
 <b>HUMBER</b> Faculty of Applied Sciences & Technology	JOB No :	N/A	SCALE: 1:5	<b>B</b>
	ITEM No :	N/A	REV : 2	
	QUANTITY:	1	SHEET: 17 OF: 20	



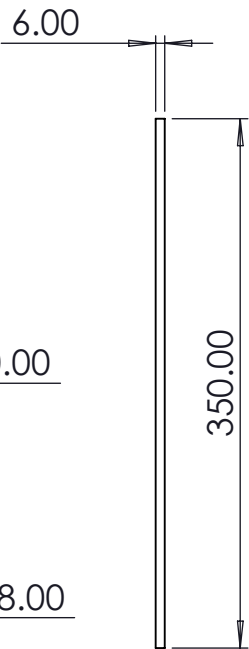
TOP VIEW



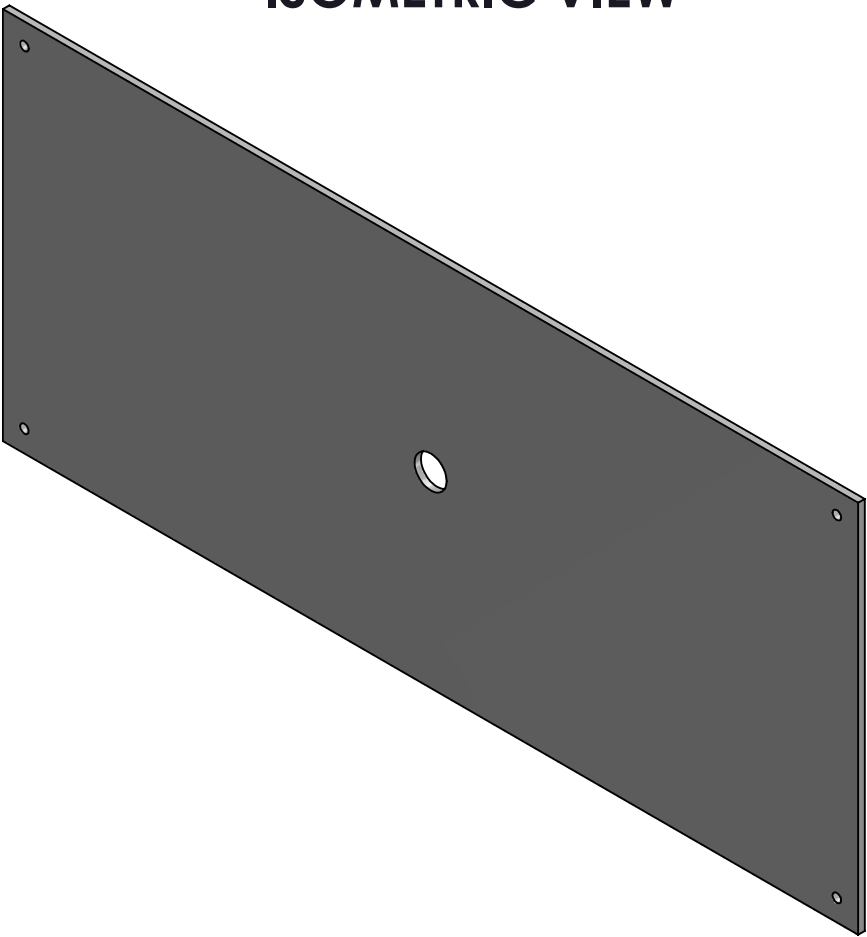
FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW



**TOLERANCE INFORMATION**

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

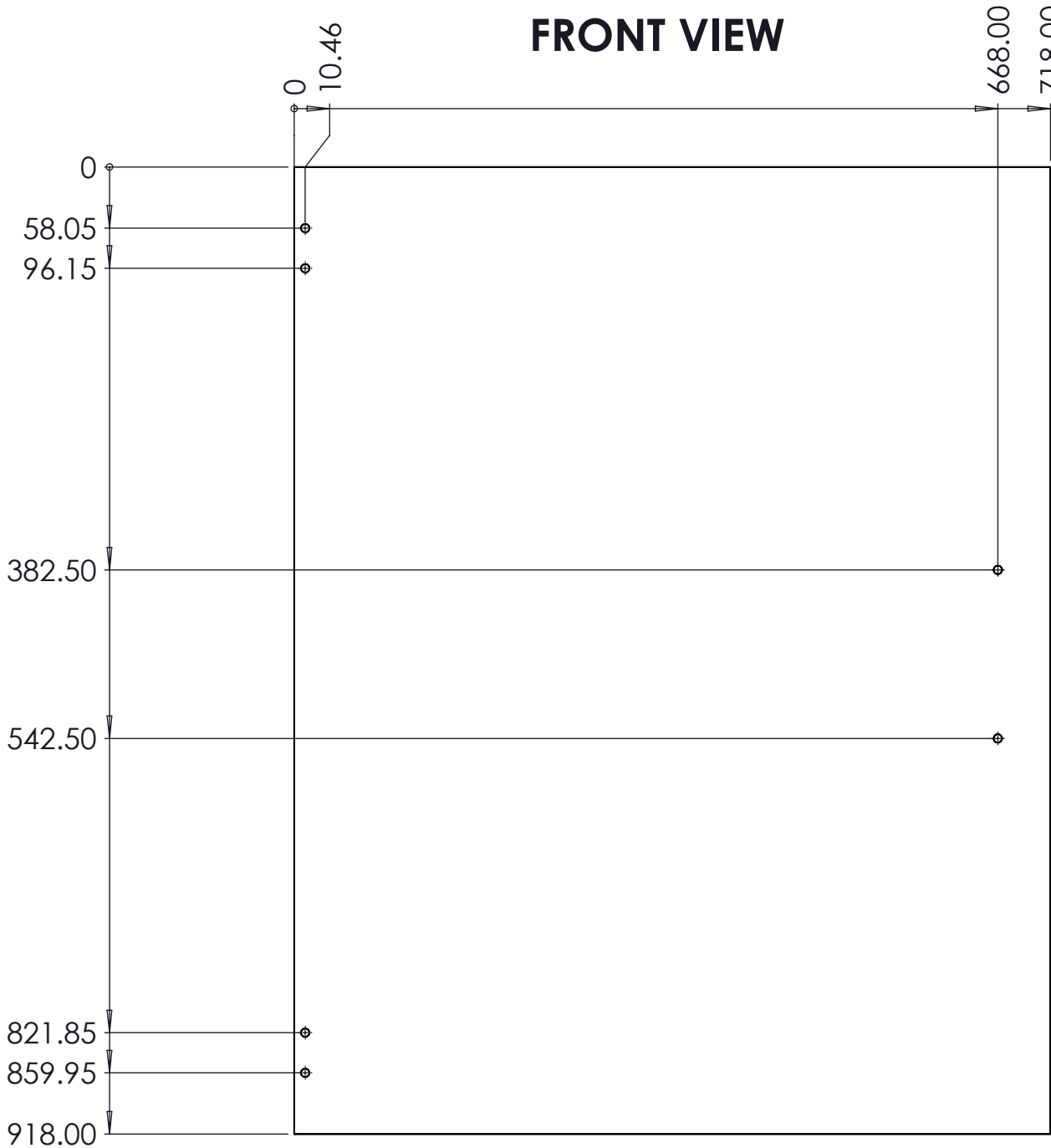
PART NUMBER:		
MATERIAL:	WHITE ACRYLIC	
HARDNESS:	N/A	
DATE :	20/3/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:5
ITEM No :	N/A	REV : 1
QUANTITY:	1	SHEET: 18 OF: 20

<b>MACHINE VISION AND AUTO ID</b>	
<b>LOWER ACRYLIC PANEL ETHERNET ADAPTER MOUNT</b>	

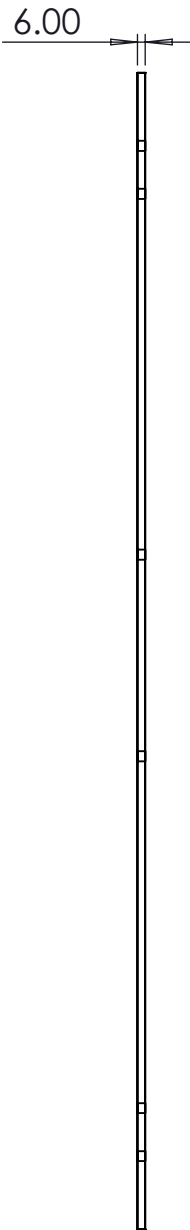
TOP VIEW



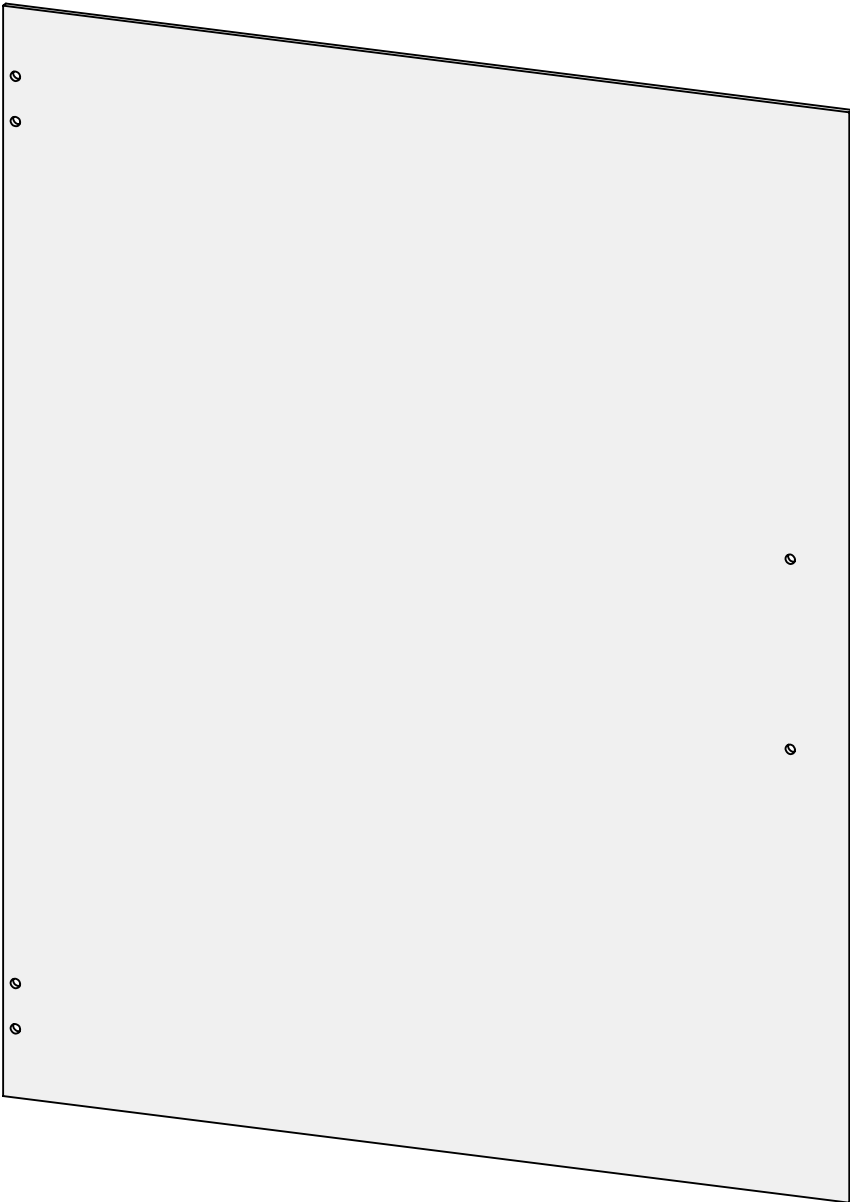
FRONT VIEW



SIDE VIEW



DIMETRIC VIEW



**TOLERANCE INFORMATION**

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

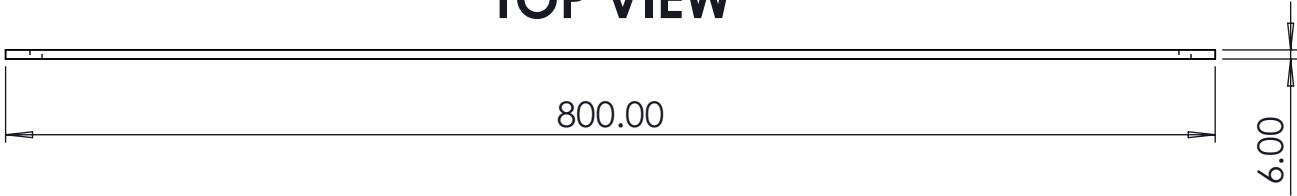
PART NUMBER:		
MATERIAL:	CLEAR ACRYLIC	
HARDNESS:	N/A	
DATE :	20/3/2024	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:6
ITEM No :	N/A	REV : 2
QUANTITY:	1	SHEET: 19 OF: 20

**MACHINE VISION  
AND AUTO ID**

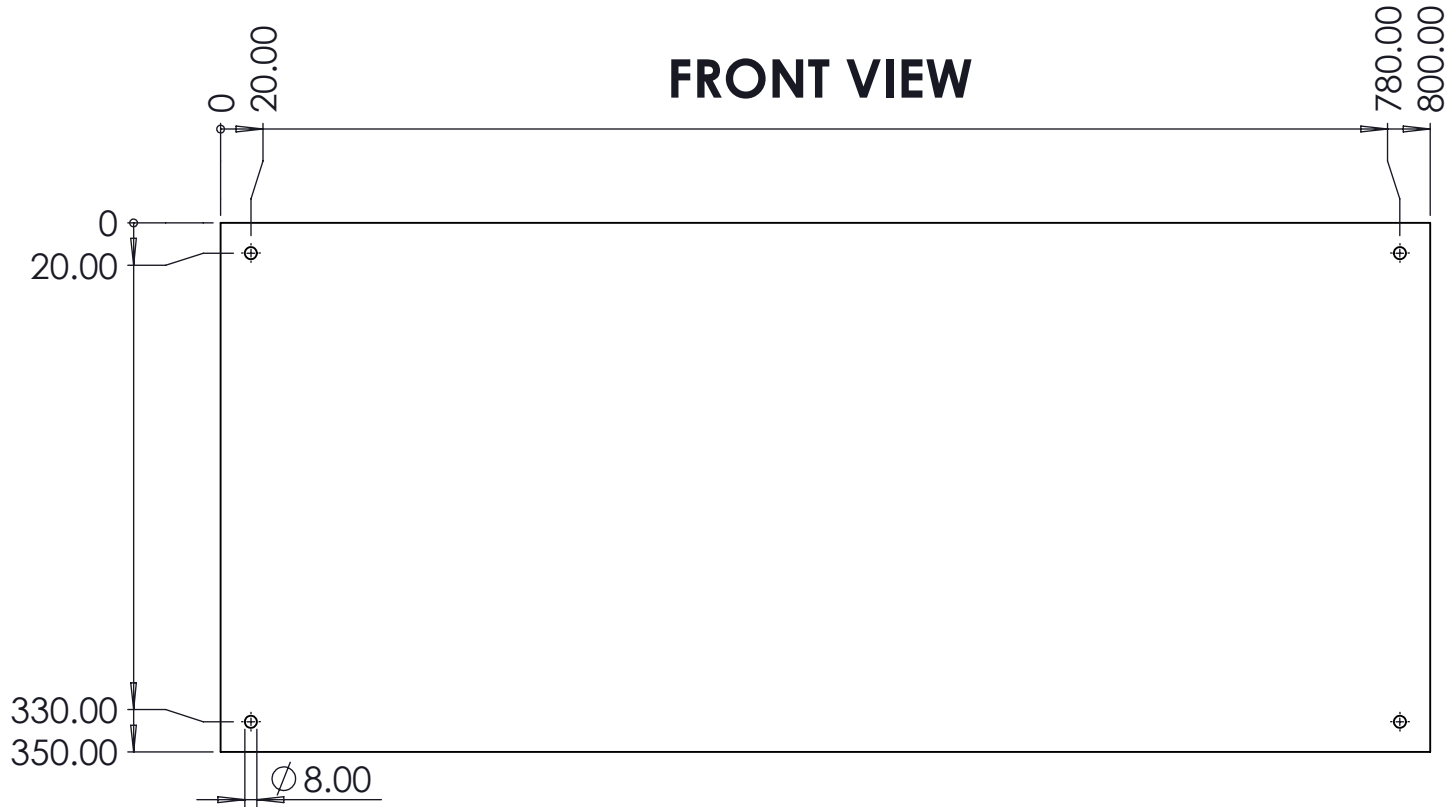
BACK DOOR PANEL

**B**

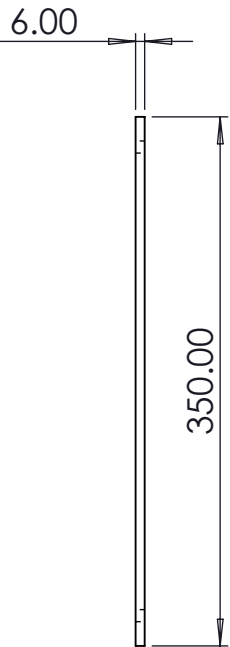
TOP VIEW



FRONT VIEW



SIDE VIEW



TRIMETRIC VIEW



TOLERANCE INFORMATION

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN **MM**

PART NUMBER:		
MATERIAL:	WHITE ACRYLIC	
HARDNESS:	N/A	
FINISH :	N/A	
DRAWN :	PREMANSHU BHAGAT	
APPROVED:	JOSHUA GALTON	
JOB No :	N/A	SCALE: 1:5
ITEM No :	N/A	REV : 2
QUANTITY:	1	SHEET: 20 OF: 20

**B**

**MACHINE VISION  
AND AUTO ID**

SICK LOGO BASE PANEL