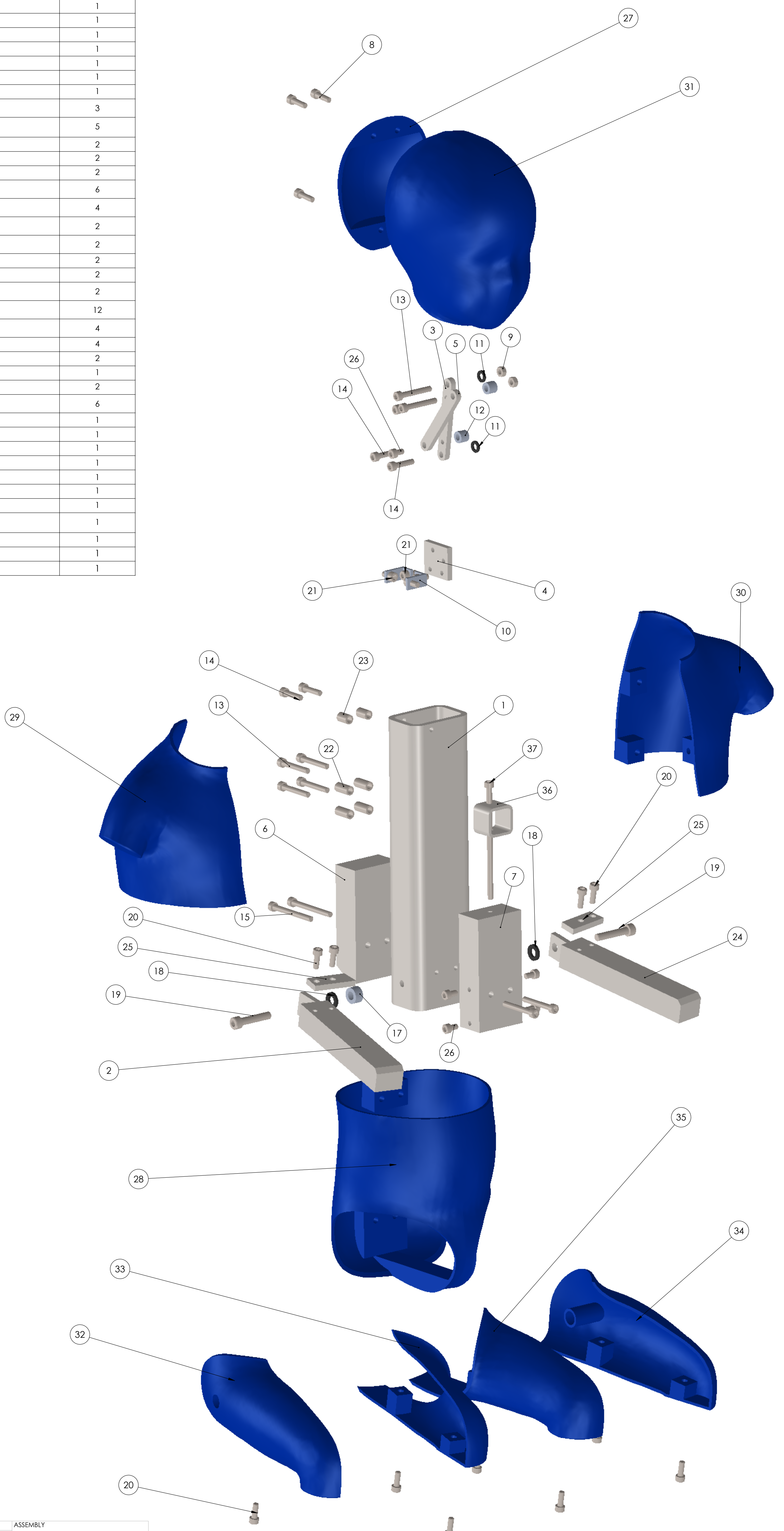



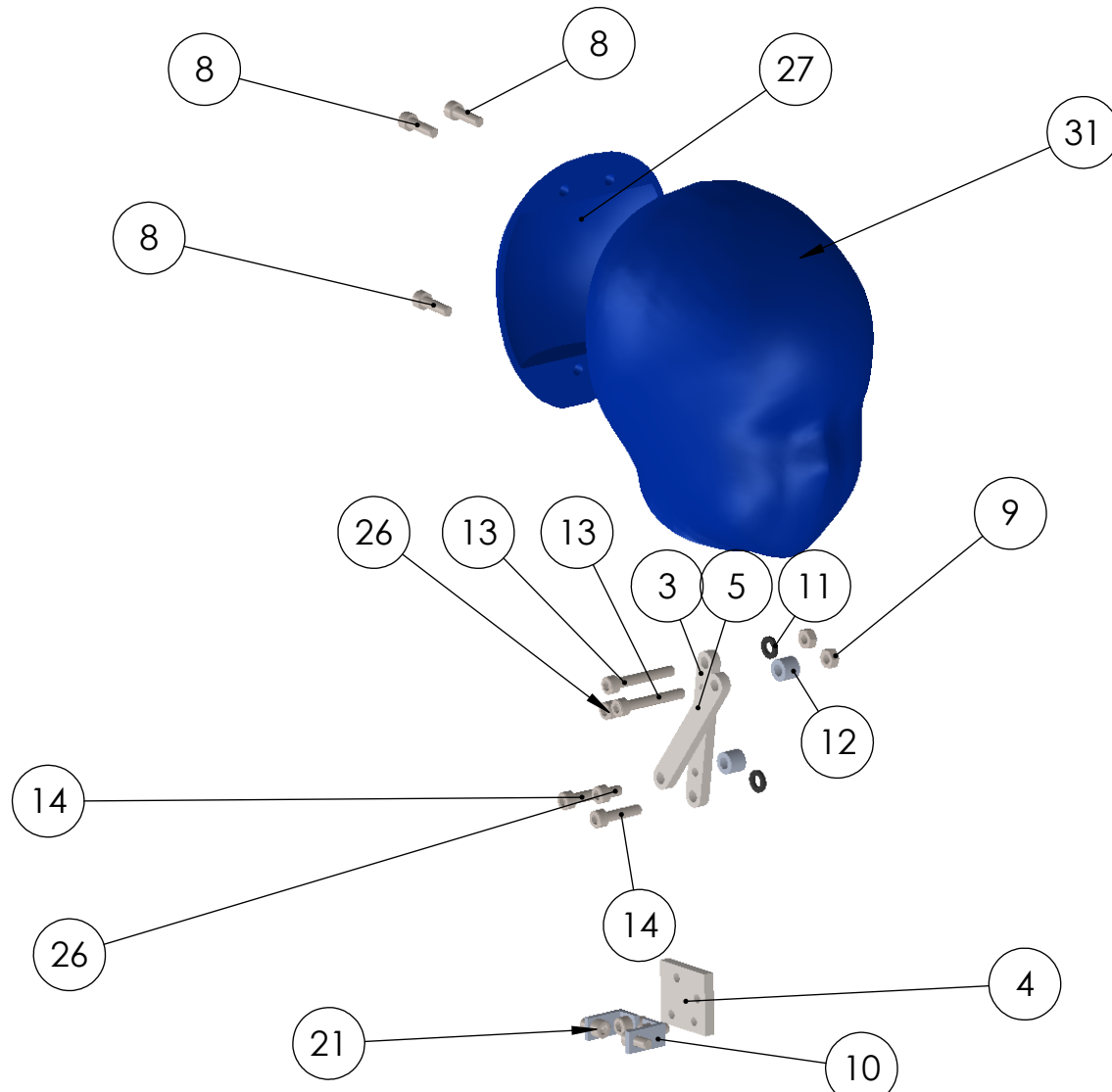
ITEM NO.	PART	QTY.
1	torso_rect_tube	1
2	leg_square	1
3	4bar2	1
4	4bar_attach	1
5	4bar1	1
6	add_weight	1
7	add_weight2	1
8	B18.3.1M - 6 x 1.0 x 20 Hex SHCS -- 20NHX	3
9	B18.2.4.1M - Hex nut, Style 1, M6 x 1 --D-N	5
10	neck_attch_brkt	2
11	m6_fiber_washer (95225A325 or equivalent)	2
12	m6_neck_spacer (92871A253 or equivalent)	2
13	B18.3.1M - 6 x 1.0 x 40 Hex SHCS -- 24CHX	6
14	B18.3.1M - 6 x 1.0 x 25 Hex SHCS -- 25CHX	4
15	B18.3.1M - 6 x 1.0 x 60 Hex SHCS -- 24CHX	2
16	B18.3.1M - 6 x 1.0 x 45 Hex SHCS -- 24CHX	2
17	m8_hip_spacer	2
18	m8_fiber_washer (95225A330 or equivalent)	2
19	B18.3.1M - 8 x 1.25 x 40 Hex SHCS -- 28CHX	2
20	B18.3.1M - 6 x 1.0 x 16 Hex SHCS -- 16CHX	12
21	B18.3.1M - 6 x 1.0 x 12 Hex SHCS -- 12CHX	4
22	m6spacer_20mm (92871A268 or equivalent)	4
23	m6spacer_15mm (92871A348 or equivalent)	2
24	Mirrorleg_square (left leg)	1
25	hipstop_extend	2
26	B18.3.1M - 6 x 1.0 x 10 Hex SHCS -- 10CHX	6
27	2YO_head_rear	1
28	2YO_torso_bottom	1
29	2YO_torso_right	1
30	2YO_torso_left	1
31	2YO_head_front	1
32	2YO_rightleg_right	1
33	2YO_rightleg_left	1
34	Mirror2YO_rightleg_right (leftleg_left)	1
35	Mirror2YO_rightleg_left (leftleg_right)	1
36	upper_torso_sq_tube_connect	1
37	B18.3.1M - 6 x 1.0 x 130 Hex SHCS -- 24CHX	1




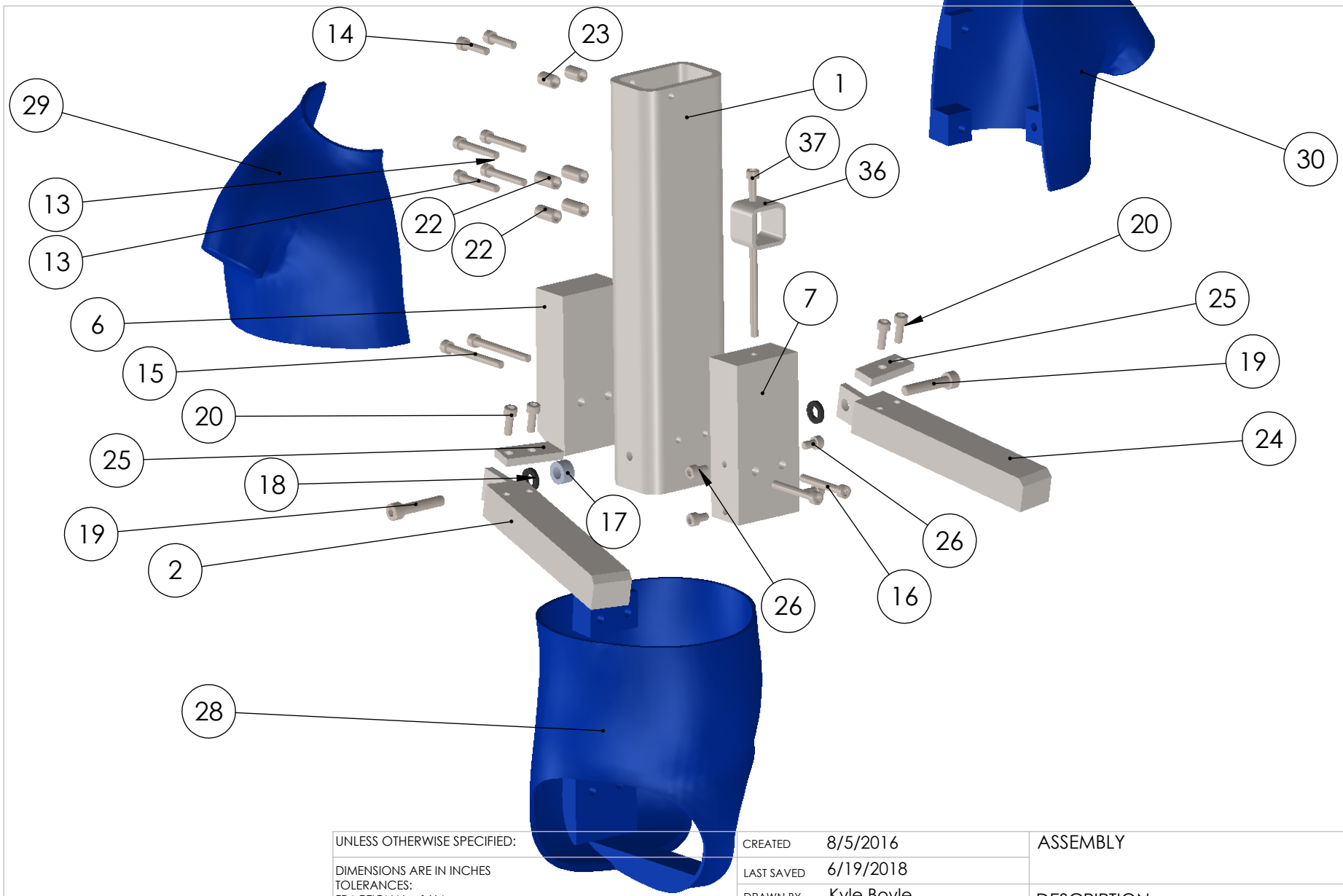
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR ±1° BEND ±2° TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.005	CREATED 8/5/2016 LAST SAVED 6/19/2018 DRAWN BY Kyle Boyle PHONE +1 (734) 936-0960	ASSEMBLY DESCRIPTION FILENAME 2YO_manikin_assem2 SIZE DWG. NO. REV D 1 SCALE: 1:2 WEIGHT: SHEET 1 OF 6
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994	MATERIAL	2901 Baxter Rd Ann Arbor, MI 48109

ITEM NO.	PART	QTY.
1	torso_rect_tube	1
2	leg_square	1
3	4bar2	1
4	4bar_attach	1
5	4bar1	1
6	add_weight	1
7	add_weight2	1
8	B18.3.1M - 6 x 1.0 x 20 Hex SHCS -- 20NHX	3
9	B18.2.4.1M - Hex nut, Style 1, M6 x 1 --D-N	5
10	neck_attch_brkt	2
11	m6_fiber_washer (95225A325 or equivalent)	2
12	m6_neck_spacer (92871A253 or equivalent)	2
13	B18.3.1M - 6 x 1.0 x 40 Hex SHCS -- 24CHX	6
14	B18.3.1M - 6 x 1.0 x 25 Hex SHCS -- 25CHX	4
15	B18.3.1M - 6 x 1.0 x 60 Hex SHCS -- 24CHX	2
16	B18.3.1M - 6 x 1.0 x 45 Hex SHCS -- 24CHX	2
17	m8_hip_spacer	2
18	m8_fiber_washer (95225A330 or equivalent)	2
19	B18.3.1M - 8 x 1.25 x 40 Hex SHCS -- 28CHX	2
20	B18.3.1M - 6 x 1.0 x 16 Hex SHCS -- 16CHX	12
21	B18.3.1M - 6 x 1.0 x 12 Hex SHCS -- 12CHX	4
22	m6spacer_20mm (92871A268 or equivalent)	4
23	m6spacer_15mm (92871A348 or equivalent)	2
24	Mirrorleg_square (left leg)	1
25	hipstop_extend	2
26	B18.3.1M - 6 x 1.0 x 10 Hex SHCS -- 10CHX	6
27	2YO_head_rear	1
28	2YO_torso_bottom	1
29	2YO_torso_right	1
30	2YO_torso_left	1
31	2YO_head_front	1
32	2YO_rightleg_right	1
33	2YO_rightleg_left	1
34	Mirror2YO_rightleg_right (leftleg_left)	1
35	Mirror2YO_rightleg_left (leftleg_right)	1
36	upper_torso_sq_tube_connect	1
37	B18.3.1M - 6 x 1.0 x 130 Hex SHCS -- 24CHX	1

UNLESS OTHERWISE SPECIFIED:		CREATED	8/5/2016	ASSEMBLY		
DIMENSIONS ARE IN INCHES		LAST SAVED	6/19/2018	DESCRIPTION		
TOLERANCES:		DRAWN BY	Kyle Boyle			
FRACTIONAL ±1/64		PHONE	+1 (734) 936-0960	FILENAME		
ANGULAR: MACH ±1° BEND ±2°		 2901 Baxter Rd Ann Arbor, MI 48109		2YO_manikin_assem2		
TWO PLACE DECIMAL ±0.01				SIZE	DWG. NO.	REV
THREE PLACE DECIMAL ±0.005				A		1
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994				SCALE: 1:2	WEIGHT: lb	SHEET 2 OF 6
MATERIAL						
FINISH						



UNLESS OTHERWISE SPECIFIED:		CREATED	8/5/2016	ASSEMBLY	
DIMENSIONS ARE IN INCHES		LAST SAVED	6/19/2018	DESCRIPTION	
TOLERANCES:		DRAWN BY	Kyle Boyle	FILENAME	
FRACTIONAL ±1/64		PHONE	+1 (734) 936-0960	2YO_manikin_assem2	
ANGULAR: MACH ±1° BEND ±2°		 <p>2901 Baxter Rd Ann Arbor, MI 48109</p>			
TWO PLACE DECIMAL ±0.01					
THREE PLACE DECIMAL ±0.005					
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994					
MATERIAL		SIZE	DWG. NO.	REV	
FINISH		A		1	
		SCALE: 1:4	WEIGHT: lb	SHEET 3 OF 6	



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ±1/64
 ANGULAR: MACH ±1° BEND ±2°
 TWO PLACE DECIMAL ±0.01
 THREE PLACE DECIMAL ±0.005

INTERPRET GEOMETRIC
 TOLERANCING PER: ASME Y14.5-1994

MATERIAL

FINISH

CREATED 8/5/2016
 LAST SAVED 6/19/2018
 DRAWN BY Kyle Boyle
 PHONE +1 (734) 936-0960

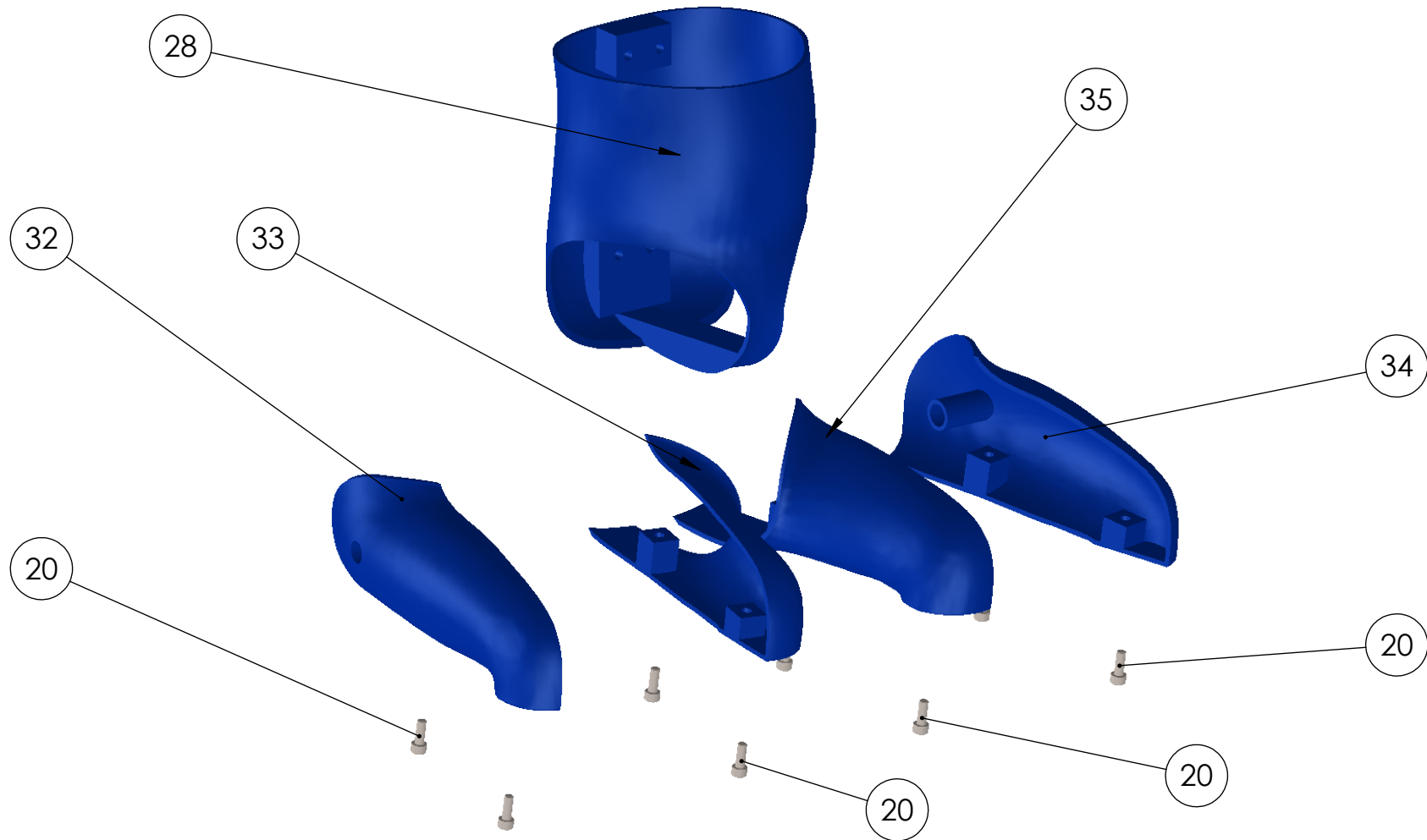



ASSEMBLY

DESCRIPTION

FILENAME
 2YO_manikin_assem2

SIZE A	DWG. NO.	REV 1
SCALE: 1:4	WEIGHT: lb	SHEET 4 OF 6



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005 INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994 MATERIAL FINISH	CREATED 8/5/2016	ASSEMBLY		
	LAST SAVED 6/19/2018	DESCRIPTION		
	DRAWN BY Kyle Boyle	FILENAME 2YO_manikin_assem2		
	PHONE +1 (734) 936-0960	SIZE A	DWG. NO.	REV 1
		SCALE: 1:4	WEIGHT: lb	SHEET 5 OF 6

3D Print Processing Procedure:


All 3D printed parts were printed using ABS plastic and a layer height of less than 0.3 mm

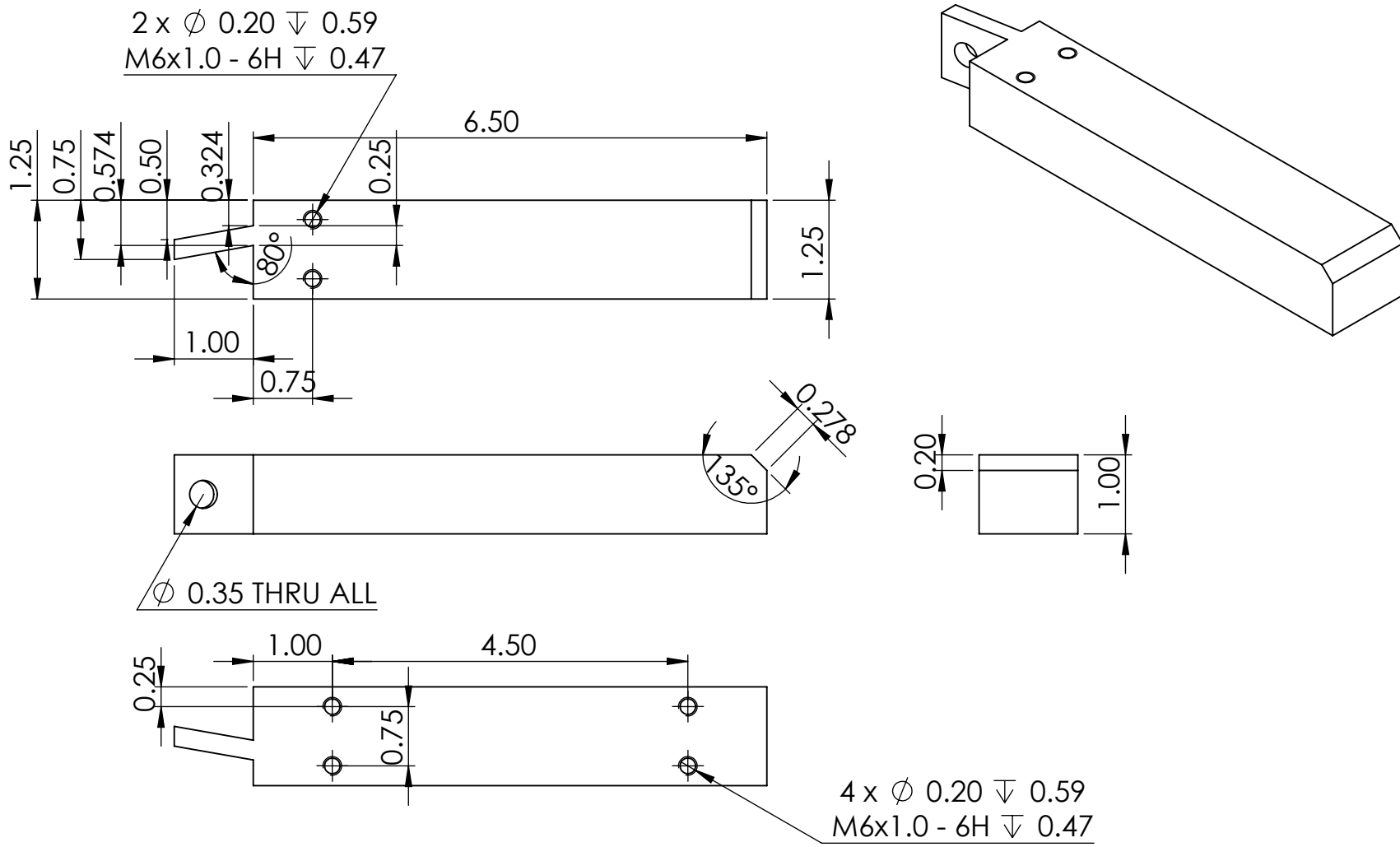
Parts were smoothed using a process of sanding and vapor smoothing


Sanding was lightly done first using 100 grit sandpaper and then again using 320 grit sandpaper

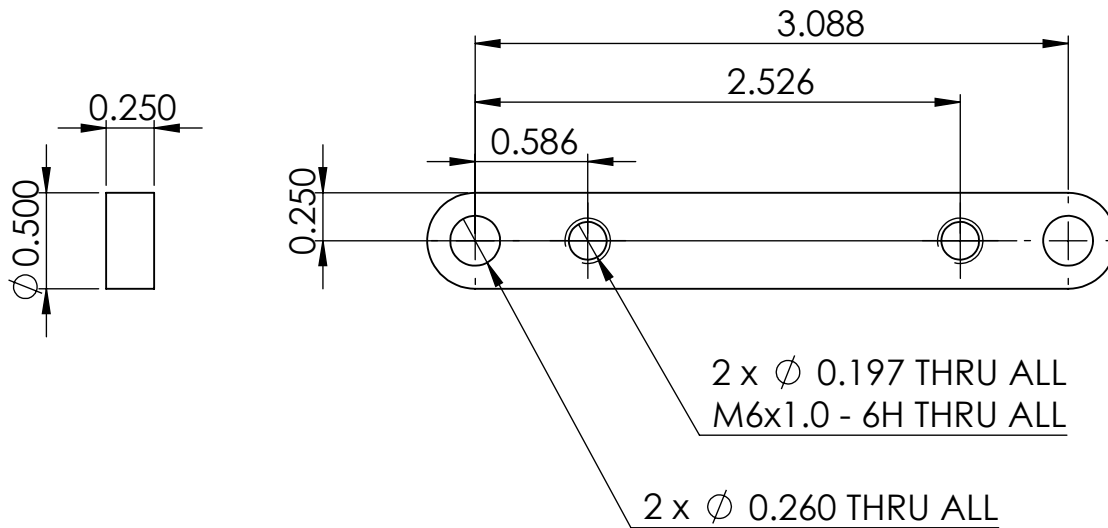
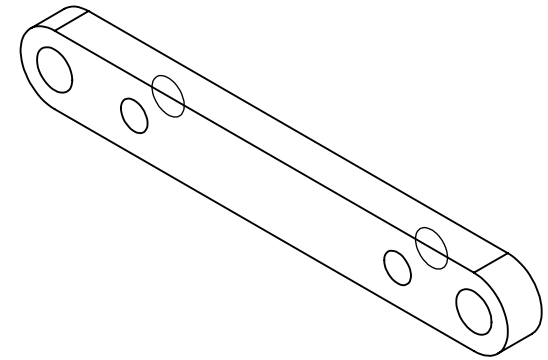
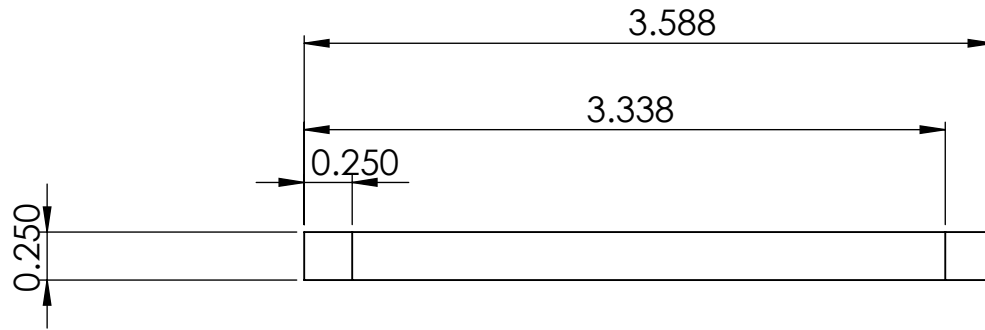
Vapor smoothing was completed using an electric cooker enclosure to heat acetone into vapor that surrounds the part. Once the acetone evaporated, the parts were left in the vapor until layer melting occurs (happens rapidly, seconds after acetone starts to evaporate).


Parts were painted after smoothing process using spray paint specified for plastic.

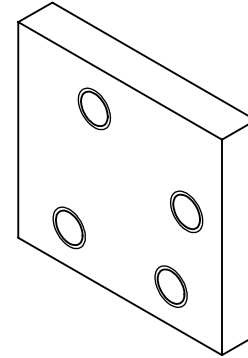
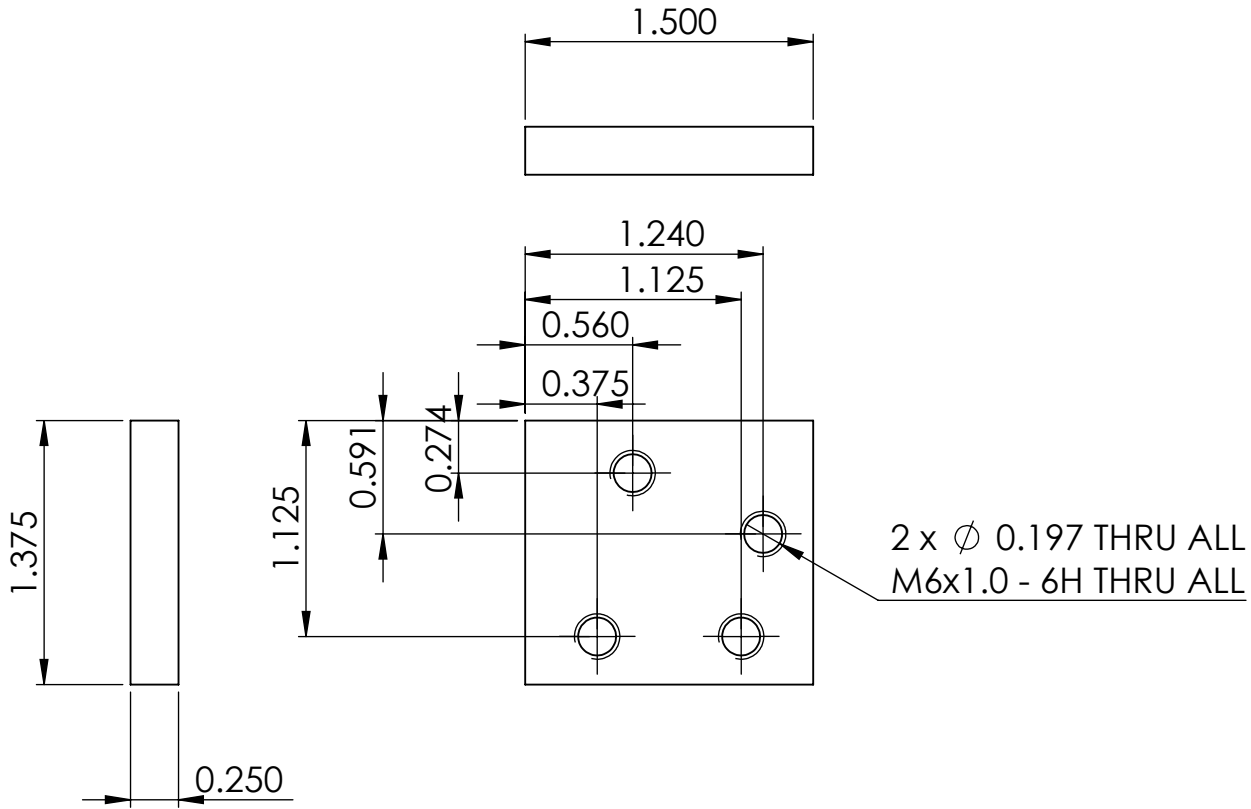
UNLESS OTHERWISE SPECIFIED:		CREATED	8/5/2016	ASSEMBLY		
DIMENSIONS ARE IN INCHES		LAST SAVED	6/19/2018	DESCRIPTION		
TOLERANCES:		DRAWN BY	Kyle Boyle			
FRACTIONAL $\pm 1/64$		PHONE	+1 (734) 936-0960			
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$		 2901 Baxter Rd Ann Arbor, MI 48109		FILENAME		
TWO PLACE DECIMAL ± 0.01				2YO_manikin_assem2		
THREE PLACE DECIMAL ± 0.005				SIZE	DWG. NO.	REV
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994				A		1
MATERIAL		SCALE: 1:4		WEIGHT: lb	SHEET 6 OF 6	
FINISH						



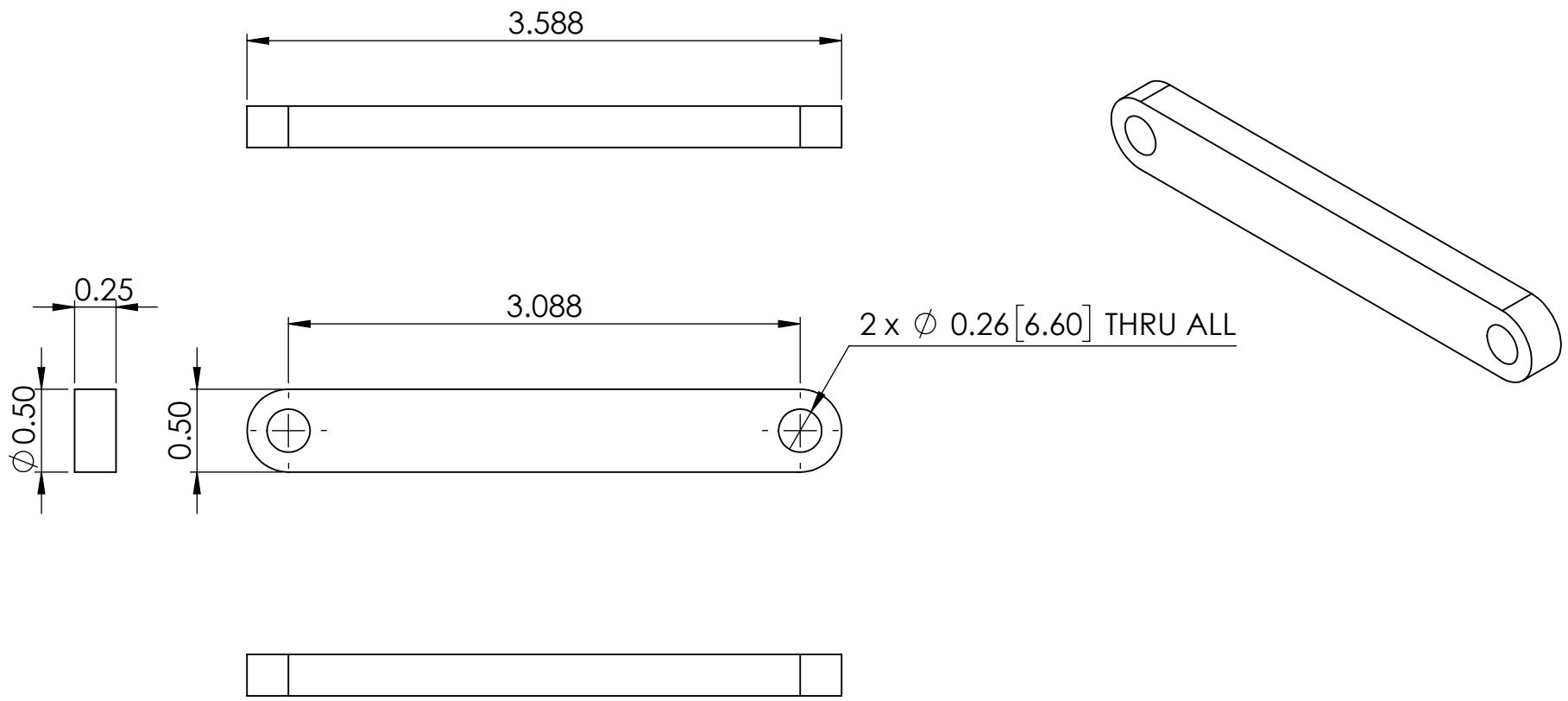
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED	8/2/2016	ASSEMBLY		
	LAST SAVED	6/18/2018	DESCRIPTION		
	DRAWN BY	Kyle Boyle	FILENAME		
	PHONE	+1 (734) 936-0960	leg_square		
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994	 2901 Baxter Rd Ann Arbor, MI 48109		SIZE	DWG. NO.	REV
MATERIAL			A	2	1
FINISH			SCALE: 1:2	WEIGHT: 2.31 lb	SHEET 1 OF 1




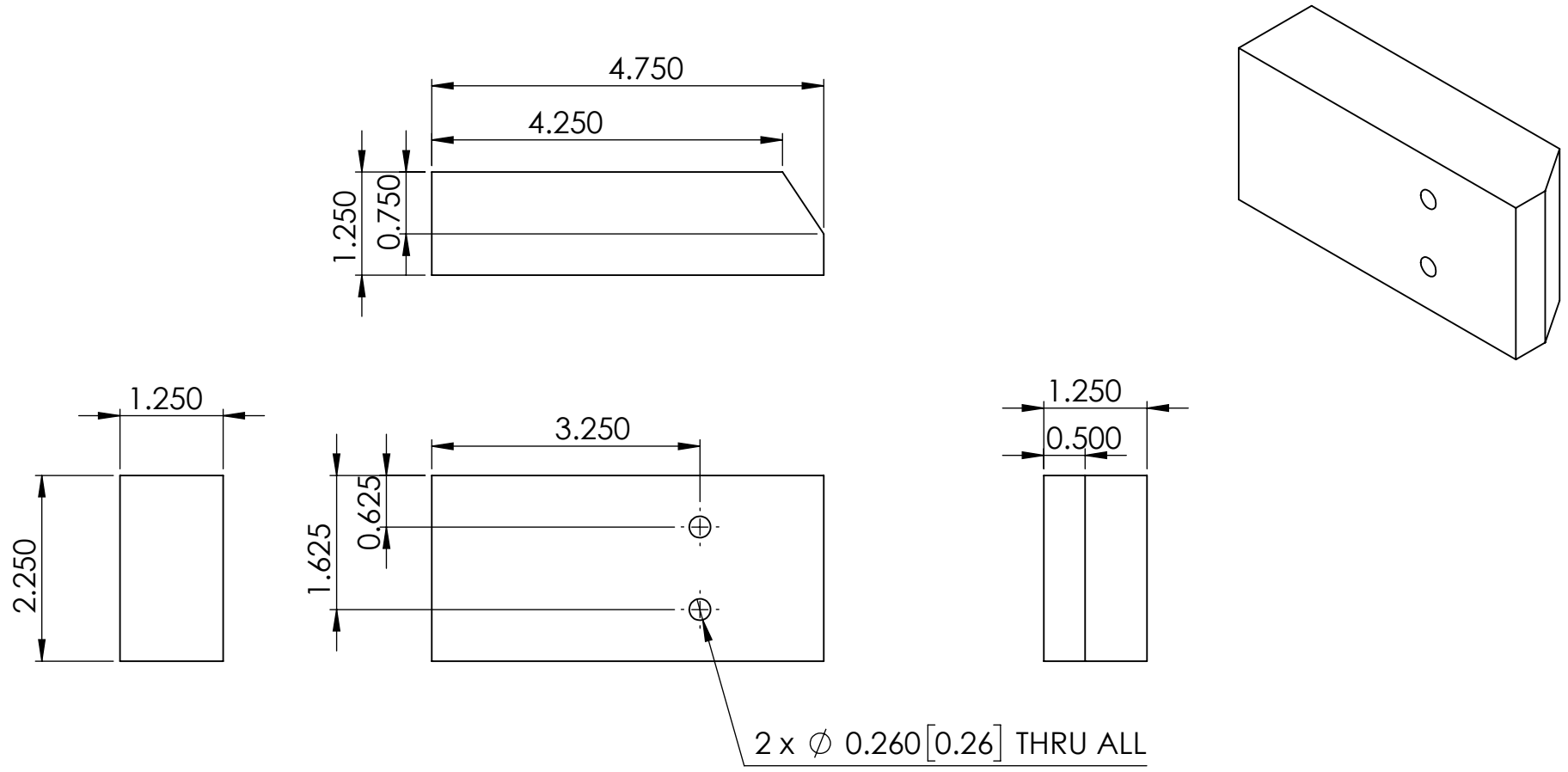
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED	6/18/2018	ASSEMBLY		
	LAST SAVED	6/18/2018	DESCRIPTION		
	DRAWN BY	Kyle Boyle			
	PHONE	+1 (734) 936-0960			
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994 MATERIAL Steel	 2901 Baxter Rd Ann Arbor, MI 48109		FILENAME 4bar2		
FINISH			SIZE A	DWG. NO. 3	REV 1
			SCALE: 1:1	WEIGHT: 0.11 lb	SHEET 1 OF 1




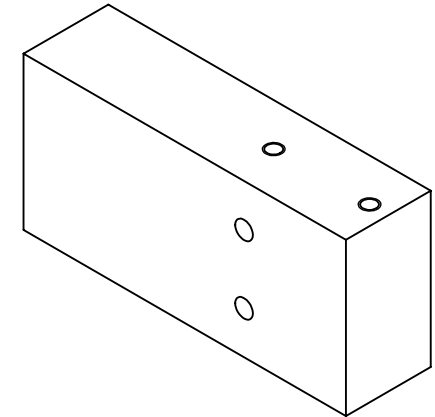
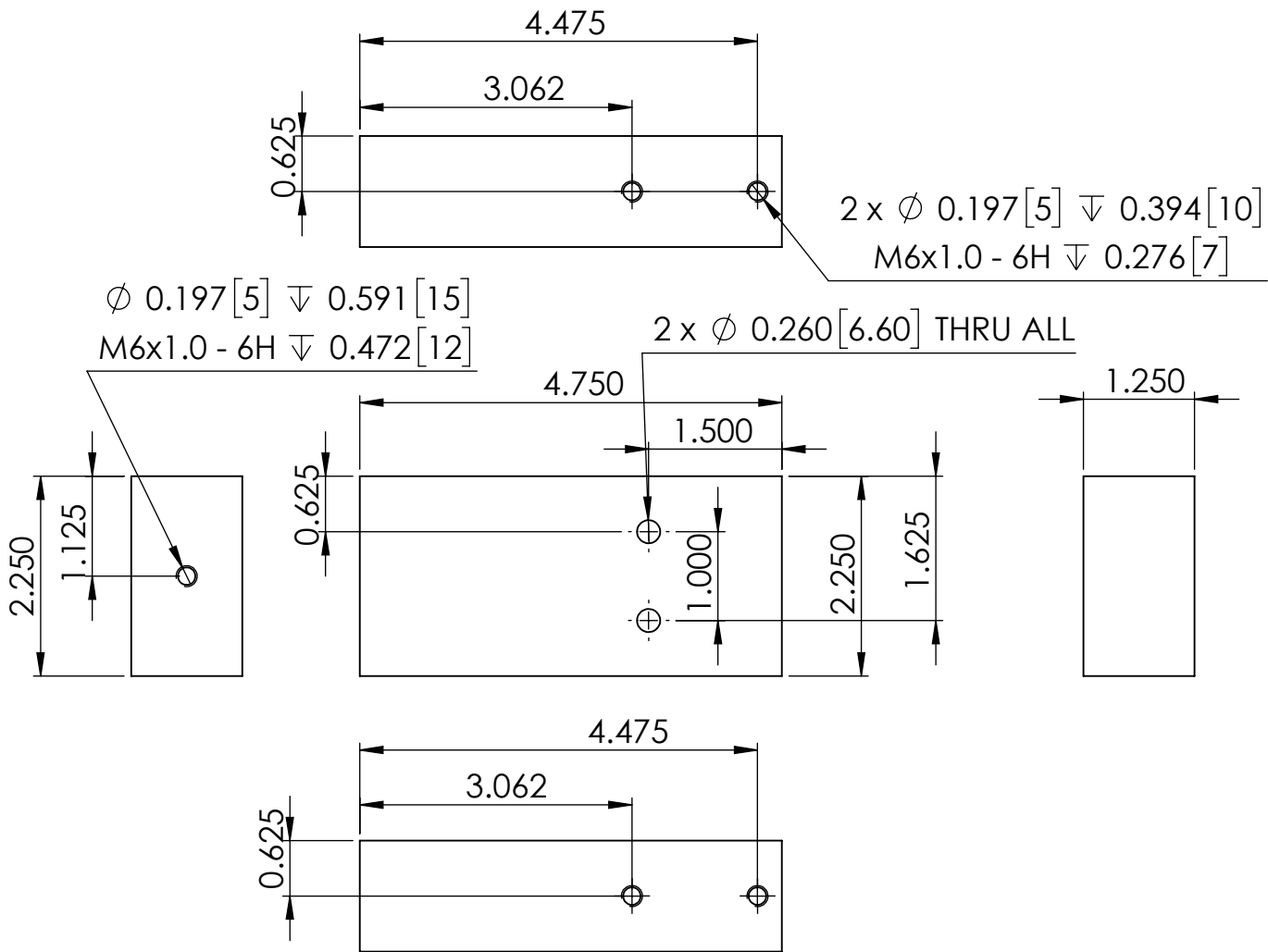
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED	8/2/2016	ASSEMBLY	
	LAST SAVED	6/18/2018	DESCRIPTION	
	DRAWN BY	Kyle Boyle		
	PHONE	+1 (734) 936-0960		
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994			FILENAME	
MATERIAL			4bar_attach	
Steel			SIZE	DWG. NO.
FINISH		A	4	1
	SCALE: 1:1	WEIGHT: 0.14 lb	SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED	8/2/2016	ASSEMBLY		
	LAST SAVED	6/18/2018	DESCRIPTION		
	DRAWN BY	Kyle Boyle	FILENAME		
	PHONE	+1 (734) 936-0960	4bar1		
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994	 2901 Baxter Rd Ann Arbor, MI 48109		SIZE	DWG. NO.	REV
MATERIAL			A	5	1
Steel			SCALE: 1:1	WEIGHT: 0.12 lb	SHEET 1 OF 1
FINISH					

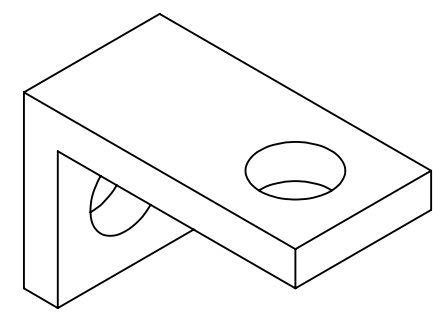
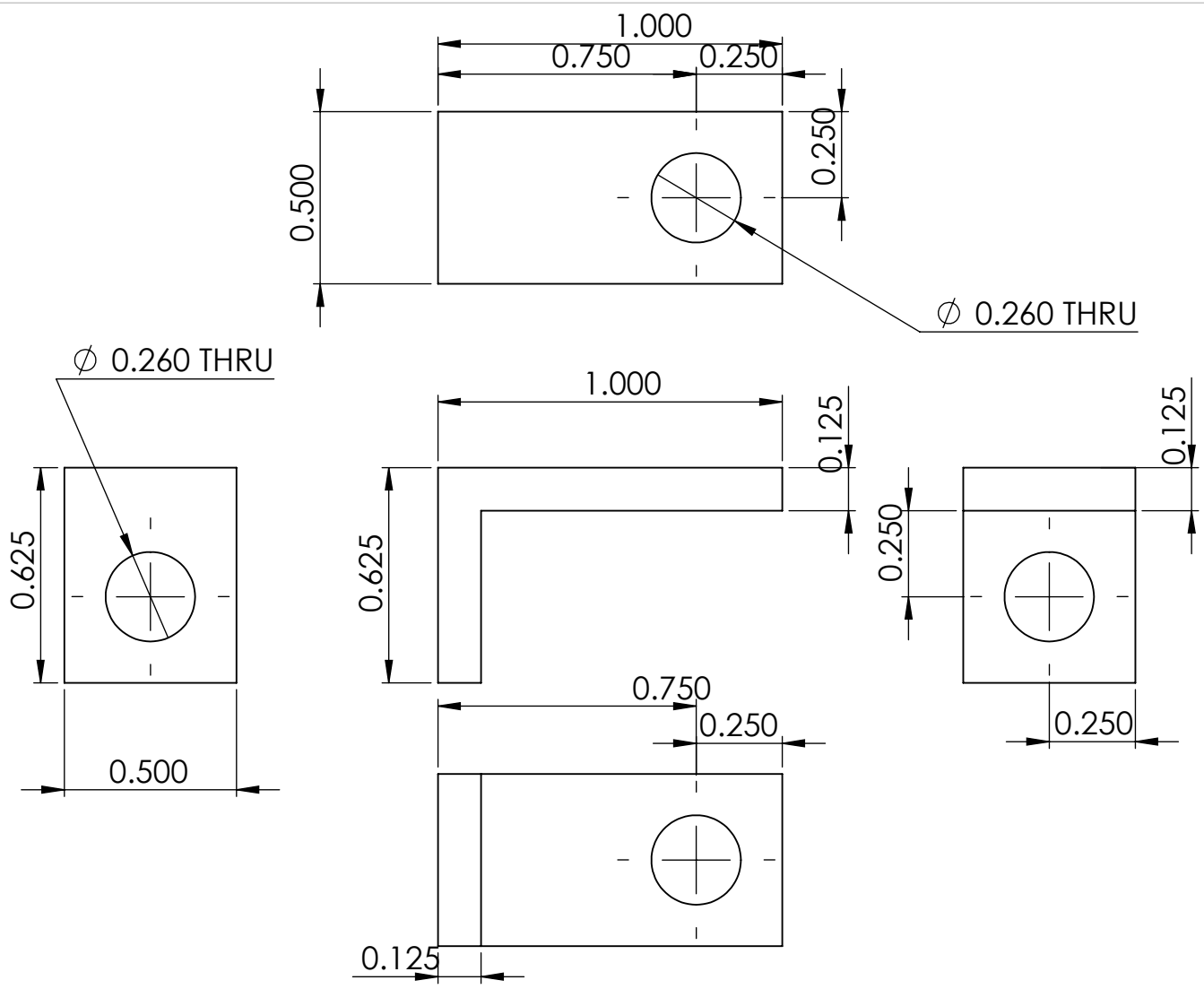


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED 6/19/2018	ASSEMBLY	
	LAST SAVED 6/19/2018	DESCRIPTION	
	DRAWN BY Kyle Boyle	FILENAME add_weight	
	PHONE +1 (734) 936-0960	SIZE A	DWG. NO. 6
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994	 2901 Baxter Rd Ann Arbor, MI 48109		SCALE: 1:2
MATERIAL Steel			WEIGHT: 3.61 lb
FINISH			

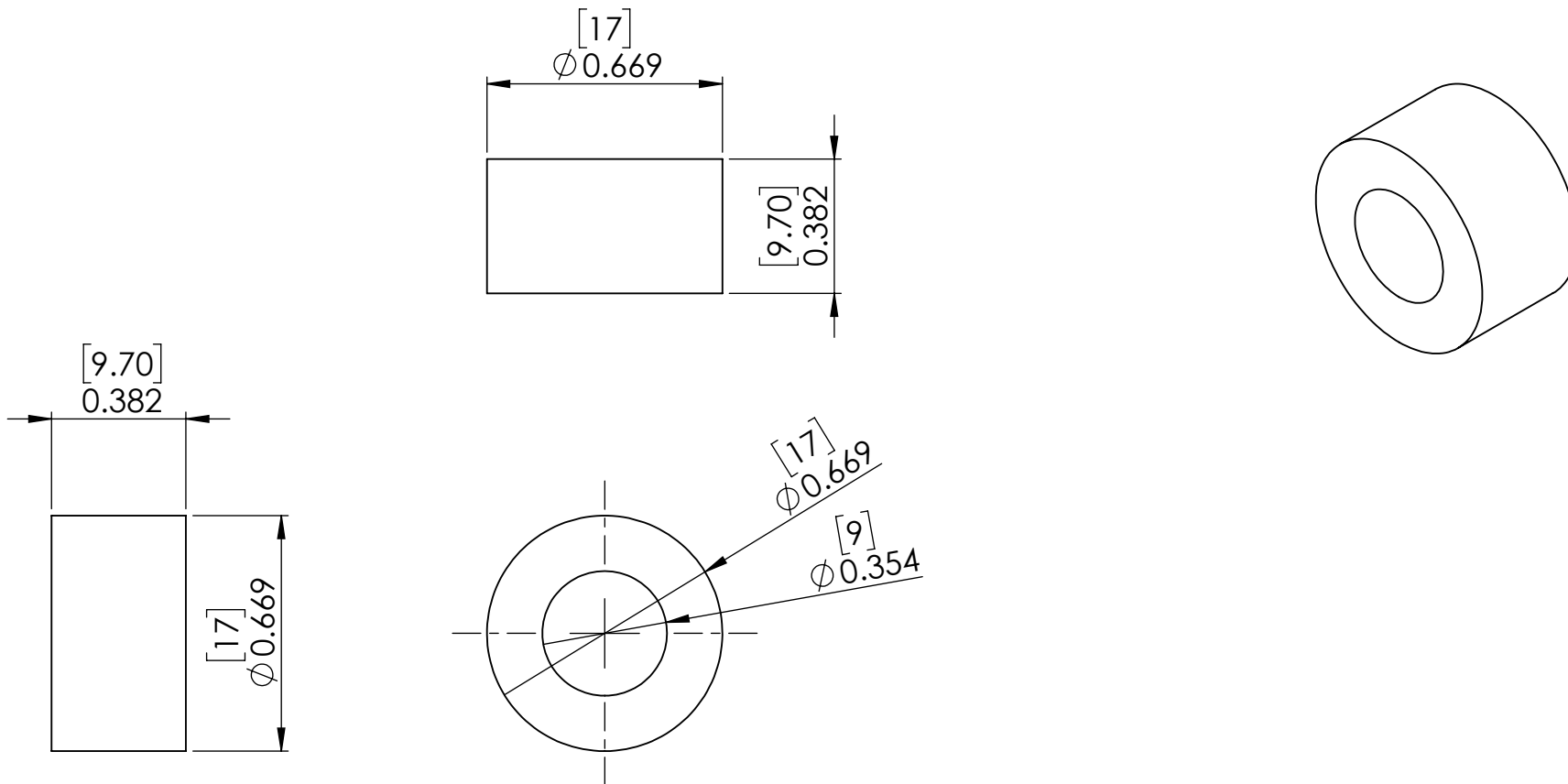



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1° BEND ±2° TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.005 INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994 MATERIAL Steel FINISH	CREATED 8/2/2016	ASSEMBLY		
	LAST SAVED 6/19/2018	DESCRIPTION		
	DRAWN BY Kyle Boyle	FILENAME add_weight2		
	PHONE +1 (734) 936-0960	SIZE A	DWG. NO. 7	REV 1
		SCALE: 1:2	WEIGHT: 3.71 lb	SHEET 1 OF 1

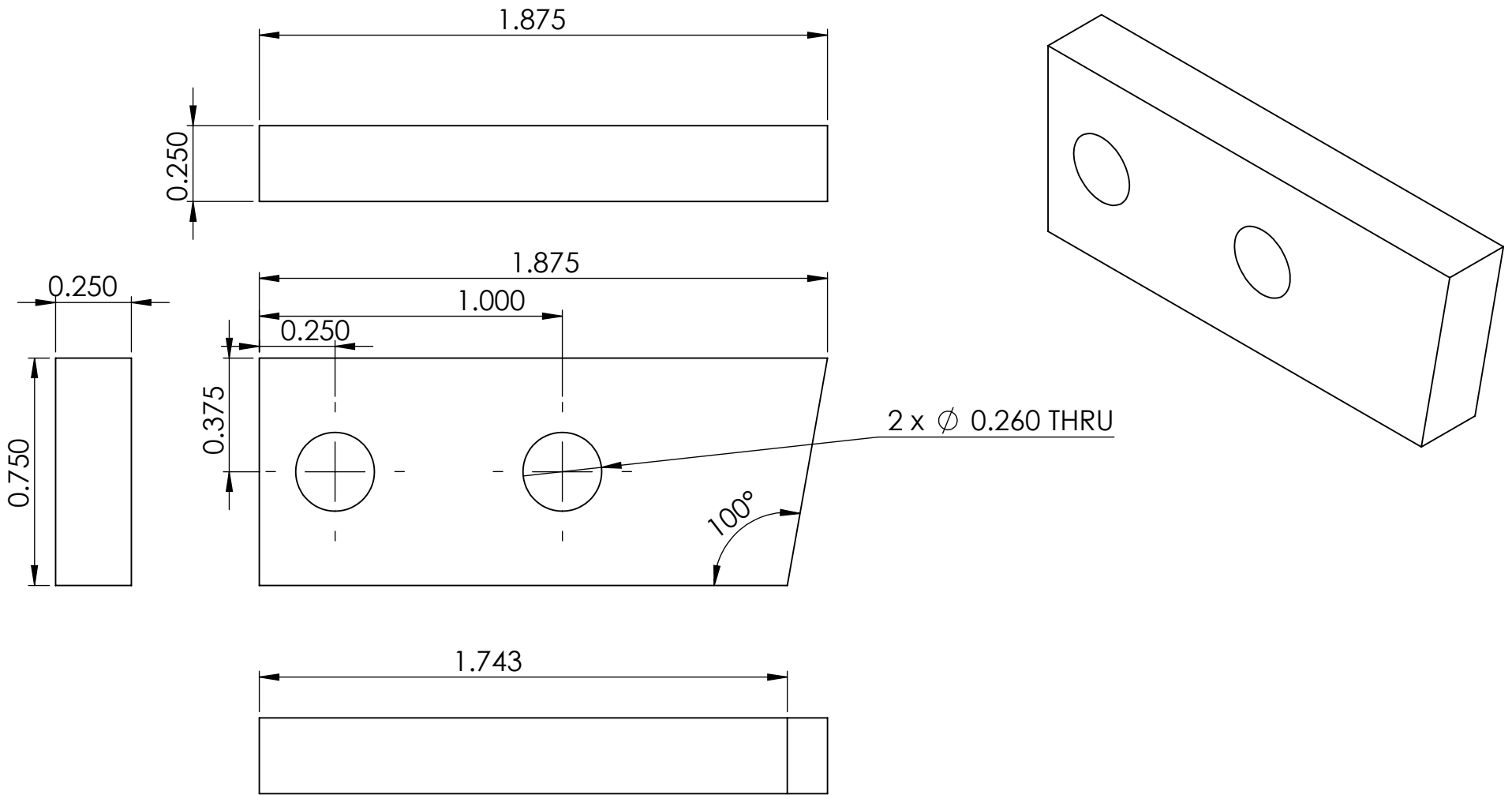




UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ±1° BEND ±2° TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.005 INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994 MATERIAL: Steel FINISH:	CREATED 8/3/2016 LAST SAVED 6/19/2018 DRAWN BY Kyle Boyle PHONE +1 (734) 936-0960	ASSEMBLY		
			DESCRIPTION	
			FILENAME neck_attch_brkt SIZE A DWG. NO. 10 REV 1	
			SCALE: 2:1	WEIGHT: 0.02 lb



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED	8/9/2016	ASSEMBLY		
	LAST SAVED	6/19/2018	DESCRIPTION		
	DRAWN BY	Kyle Boyle			
	PHONE	+1 (734) 936-0960			
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994 MATERIAL Aluminum	 2901 Baxter Rd Ann Arbor, MI 48109		FILENAME		
FINISH			SIZE	DWG. NO.	REV
			A	17	1
	SCALE: 2:1	WEIGHT: 0.01 lb	SHEET 1 OF 1		



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 2^\circ$ TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	CREATED 8/2/2016	ASSEMBLY		
	LAST SAVED 6/19/2018	DESCRIPTION		
	DRAWN BY Kyle Boyle	FILENAME hipstop_extend		
	PHONE +1 (734) 936-0960	SIZE A	DWG. NO. 25	REV 1
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-1994			SCALE: 2:1	
MATERIAL Steel			WEIGHT: 0.09 lb	SHEET 1 OF 1
FINISH				

