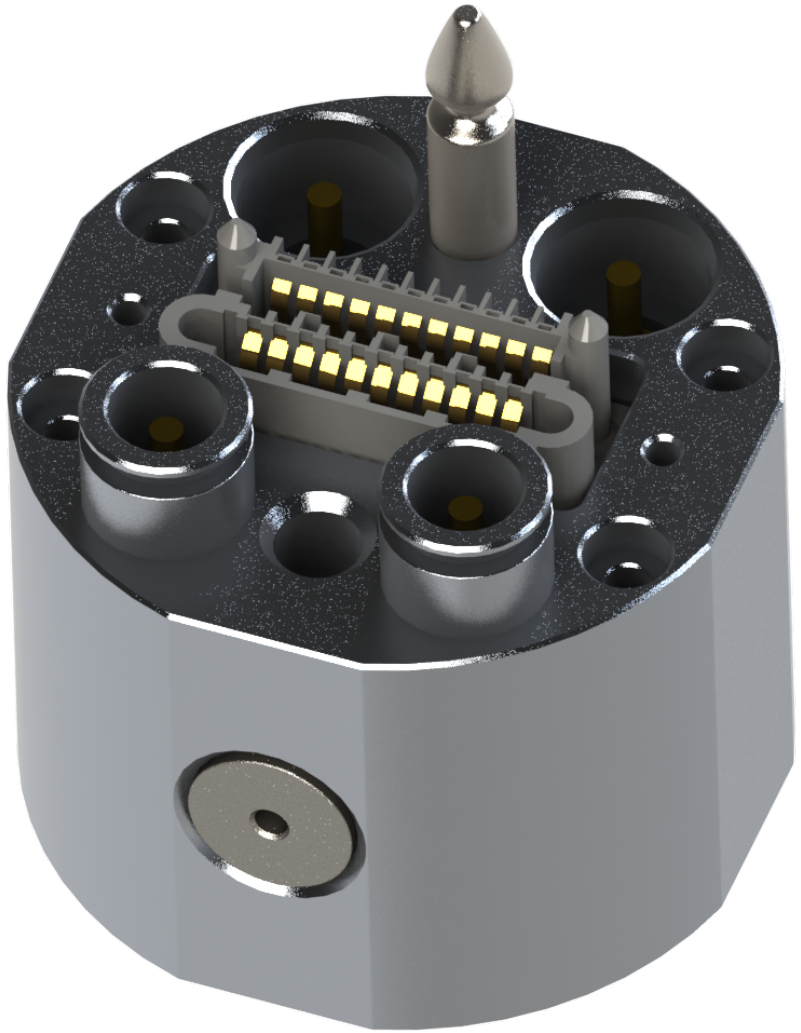
Advanced Modular Manikin Leg/Arm Connector



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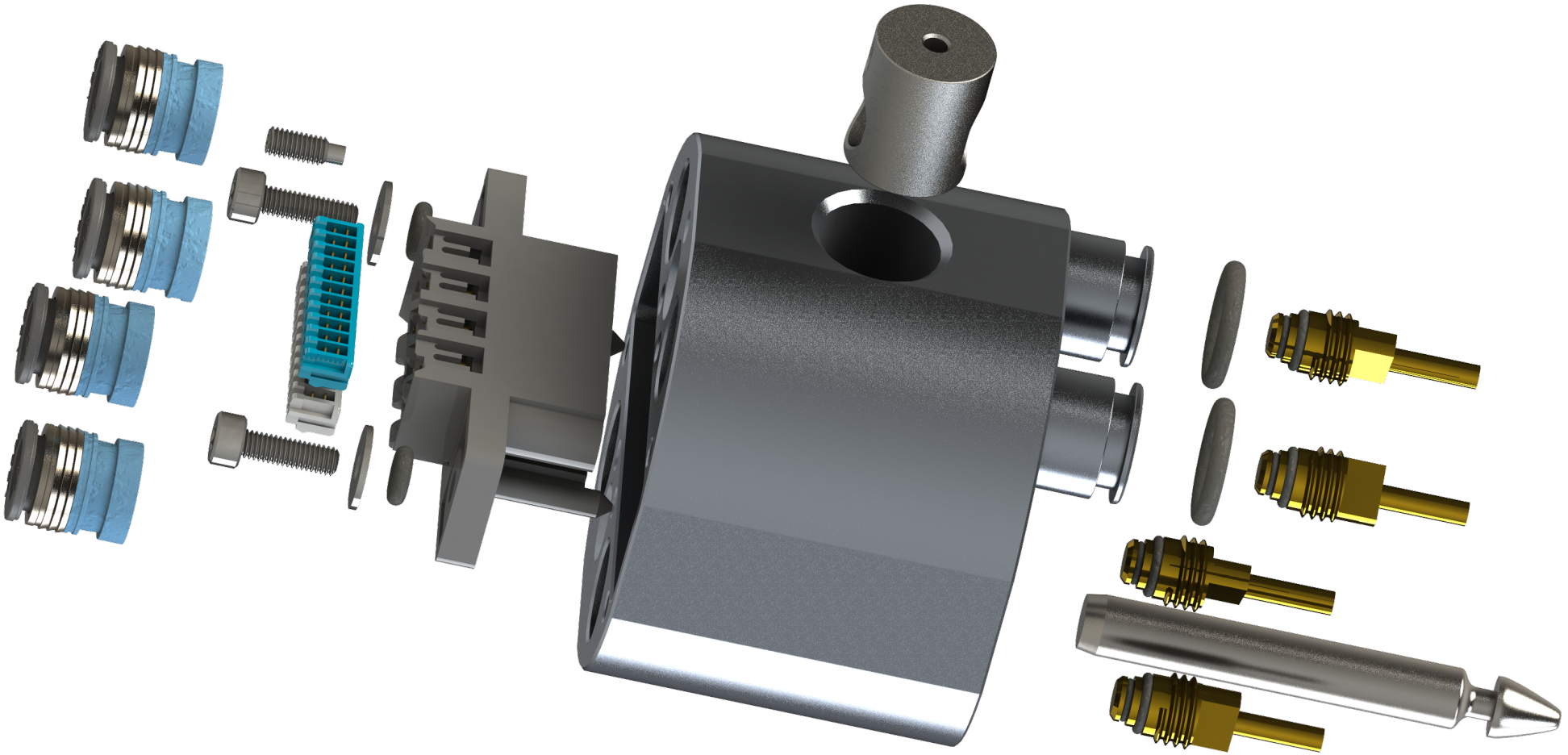
Advanced Modular Manikin Connector Bill of Materials

This document lists the parts necessary to assemble one complete connector pair.

	Item	For	Note	Manufacturer	Manufacturer Part Number	Distributor	Distributor Part Number	Unit Price	Quantity	Extended Price
Custom Manufactured Parts	Connector Housing	Housing	Machined from aluminium	Entropic Engineering		Entropic Engineering		TBD	2	TBD
	Latch Pin	Latch	Machined from stainless steel	Entropic Engineering		Entropic Engineering		TBD	2	TBD
	Release Button	Latch	Machined from stainless steel	Entropic Engineering		Entropic Engineering		TBD	1	TBD
	Silicone Interface	Interfacing connector housing to silicone	Machined or 3D printed					TBD	2	TBD
COTS Hardware	Electrical Connector	Power and data	Non-gendered	TE Connectivity	292178-1	Digikey	A113388-ND	$5.8900	2	$11.78
	Electrical Connector Insert (White)	Power and data	Different colours available	TE Connectivity	1-173977-1	Digikey	A98806-ND	$0.8385	2	$1.68
	Electrical Connector Insert (Blue)	Power and data	Different colours available	TE Connectivity	3-173977-1	Digikey	3-173977-1-ND	$0.4129	2	$0.83
	Fluid Tubing Connector	Fluids	Different hose sizes available	Parker	3100 56 00 99	Amazon	https://www.ama	$1.0200	8	$8.16
	005 O-Ring	Electrical interface	Buna-N (Nitrile)			McMaster	9452K13	$0.0351	4	$0.14
	012 O-Ring	Fluids	Buna-N (Nitrile)			McMaster	9452K21	$0.0267	4	$0.11
	M8 Schrader Valve Core	Fluids	1.13 - 2.26 Nm installation torque	Schrader	8081100047	Amazon	https://www.ama	$0.8990	8	$7.19
	Conical Compression Spring	Latch	302 Stainless steel			McMaster	1692K51	$2.6500	1	$2.65
	M3 * 8mm Extended Tip Set Screw	Latch	18-8 Stainless steel			McMaster	92775A110	$0.3752	1	$0.38
	M3 * 40mm Socket Head Cap Screw	Silicone interface	18-8 Stainless steel			McMaster	91292A024	$0.1196	8	$0.96
	M3 Threaded Insert	Silicone interface	Only needed if silicone interface is plastic			McMaster	94510A240	$0.1440	8	$1.15
	M3 * 10mm Socket Head Cap Screw	Electrical interface	18-8 Stainless steel			McMaster	93705A815	$0.2540	4	$1.02
	M3 Washer	Electrical interface	18-8 Stainless steel			McMaster	91116A120	$0.0277	4	$0.11
Tooling	Manual Crimp Handle	Crimping electrical insert		TE Connectivity	58074-1	Digikey	A2031-ND	$105.77	1	$105.77
	Pneumatic Crimp Handle	Crimping electrical insert		TE Connectivity	58075-1	Digikey	58075-1-ND	$288.53	1	$288.53
	Crimp Die	Crimping electrical insert		TE Connectivity	58372-1	Digikey	A99129-ND	$1,191.20	1	$1,191.20
	1.5mm Hex Wrench	Driving M3 set screw				McMaster	7996A82	$3.50	1	$3.50
	2.5mm Hex Wrench	Driving M3 socket head cap screws				McMaster	7996A84	$3.97	1	$3.97
	O-Ring Lubricant (150 g)	Lubricating 012 O-rings	Food grade	Dow Corning	Molykote 111	McMaster	1204K32	$17.61	1	$17.61

Connector Exploded View



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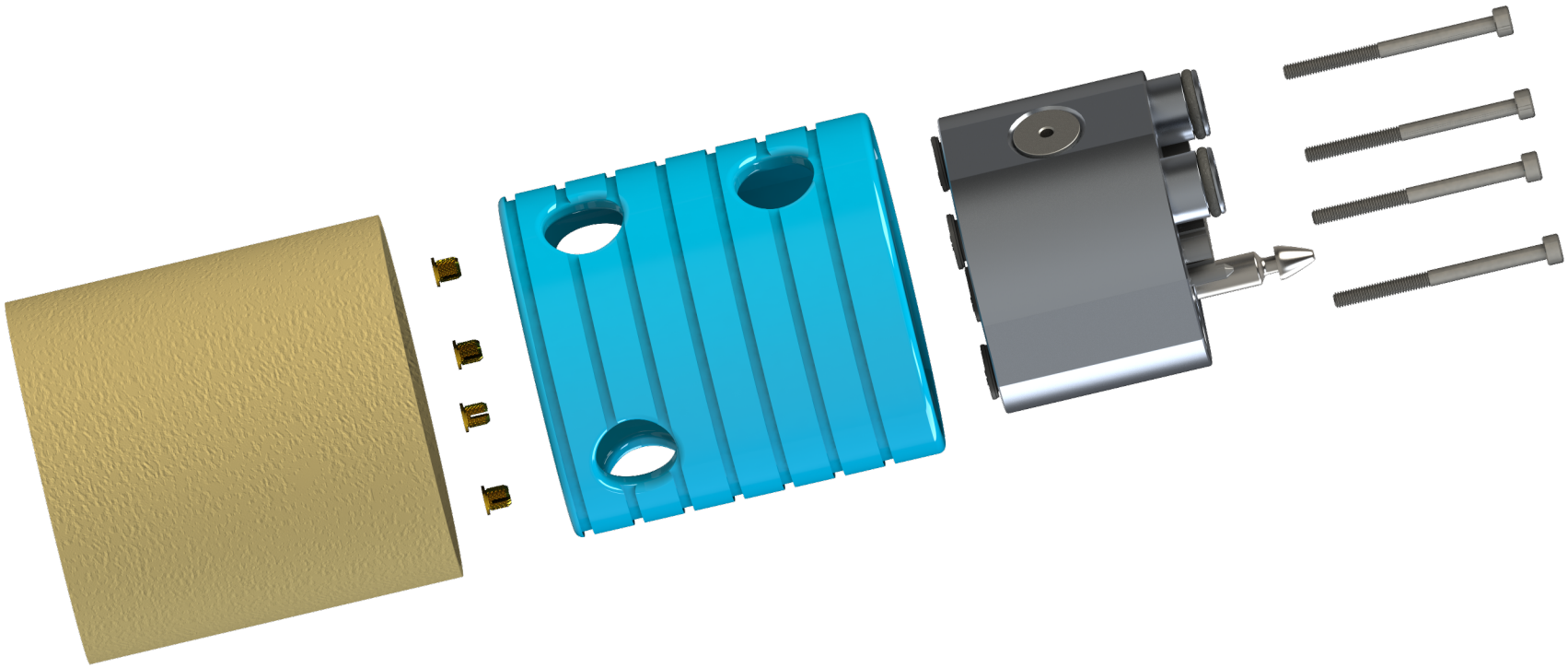
Connector Interface Exploded View



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Advanced Modular Manikin Connector Electrical Pinout

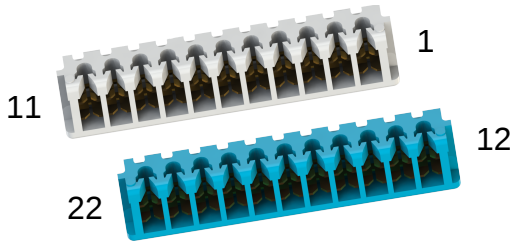
Connector Pin	Function	RJ-45 Ethernet Pin
1	+50V	
2	+50V	
3	+50V	
4	N/C	
5	GND	
6	GND	
7	GND	
8	BI_DA+	1
9	BI_DB+	3
10	BI_DC+	4
11	BI_DD+	7

Connector Pin	Function	RJ-45 Ethernet Pin
12	+50V	
13	+50V	
14	+50V	
15	N/C	
16	GND	
17	GND	
18	GND	
19	BI_DA-	2
20	BI_DB-	6
21	BI_DC-	5
22	BI_DD-	8

Mates
Pin 1 mates with 12
Pin 2 mates with 13
Pin 3 mates with 14
Pin 4 mates with 15
Pin 5 mates with 16
Pin 6 mates with 17
Pin 7 mates with 18
Pin 8 mates with 19
Pin 9 mates with 20
Pin 10 mates with 21
Pin 11 mates with 22

Note

This electrical connector is designed to be fully non-gendered. The polarity of ethernet twisted pairs can be reversed during normal operation; the ethernet controller compensates for this.



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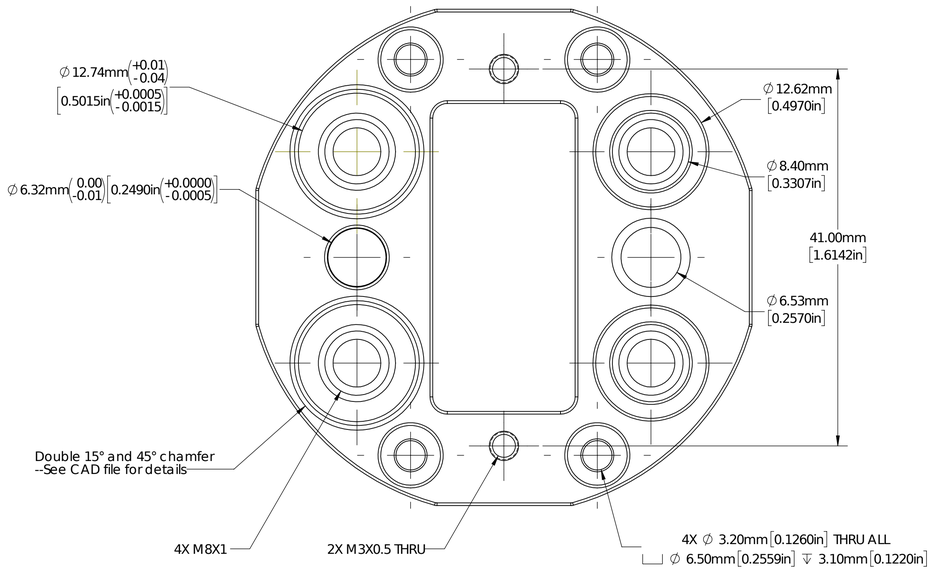
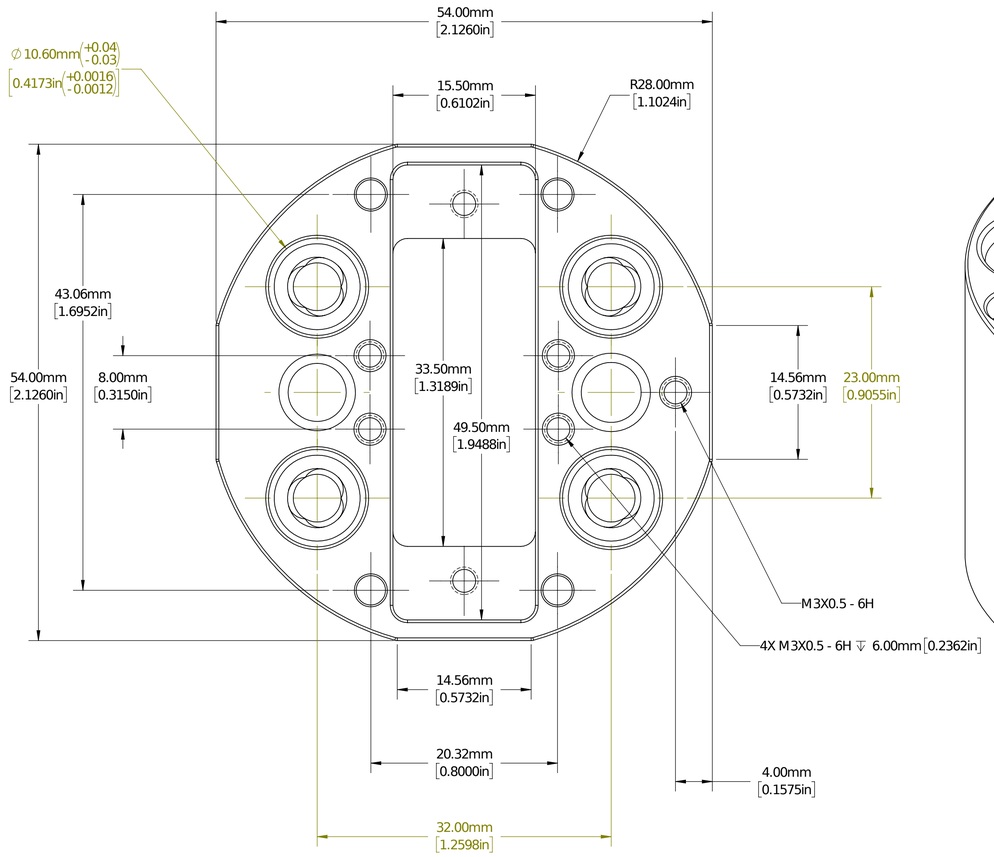
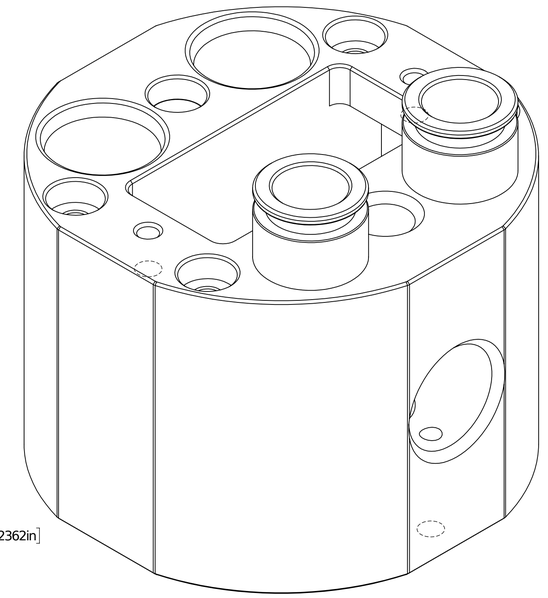
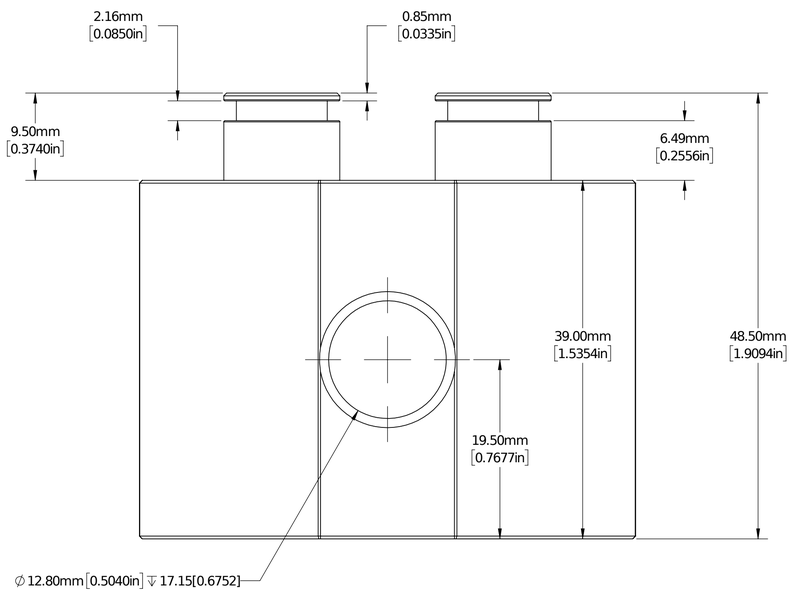
Advanced Modular Manikin Connector
Dimensional Overview









Machined from 6061-T6 Aluminium. All dimensions are toleranced at ±0.127mm [±0.005"] unless otherwise noted.

See CAD file for further dimensional details.

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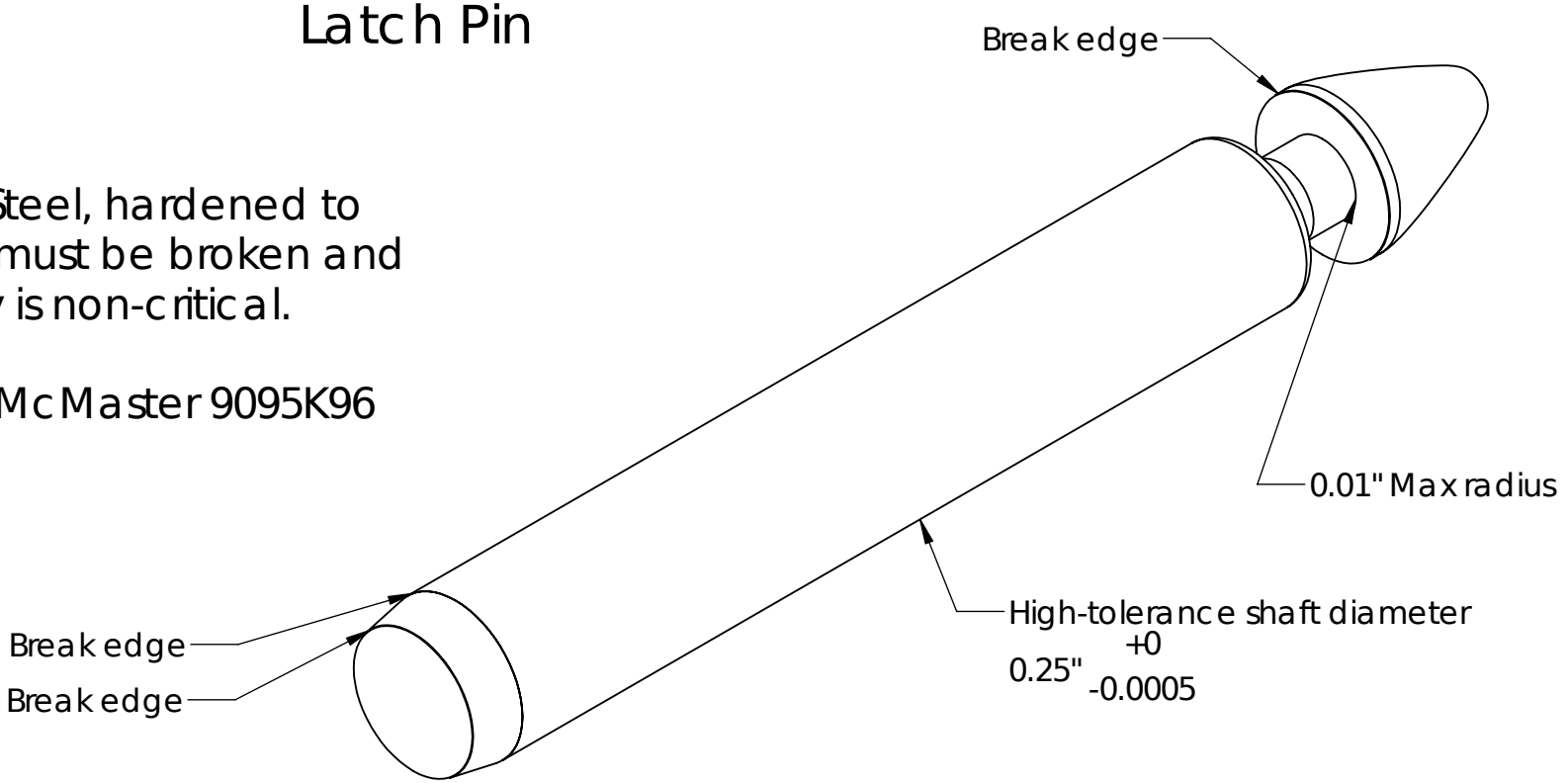
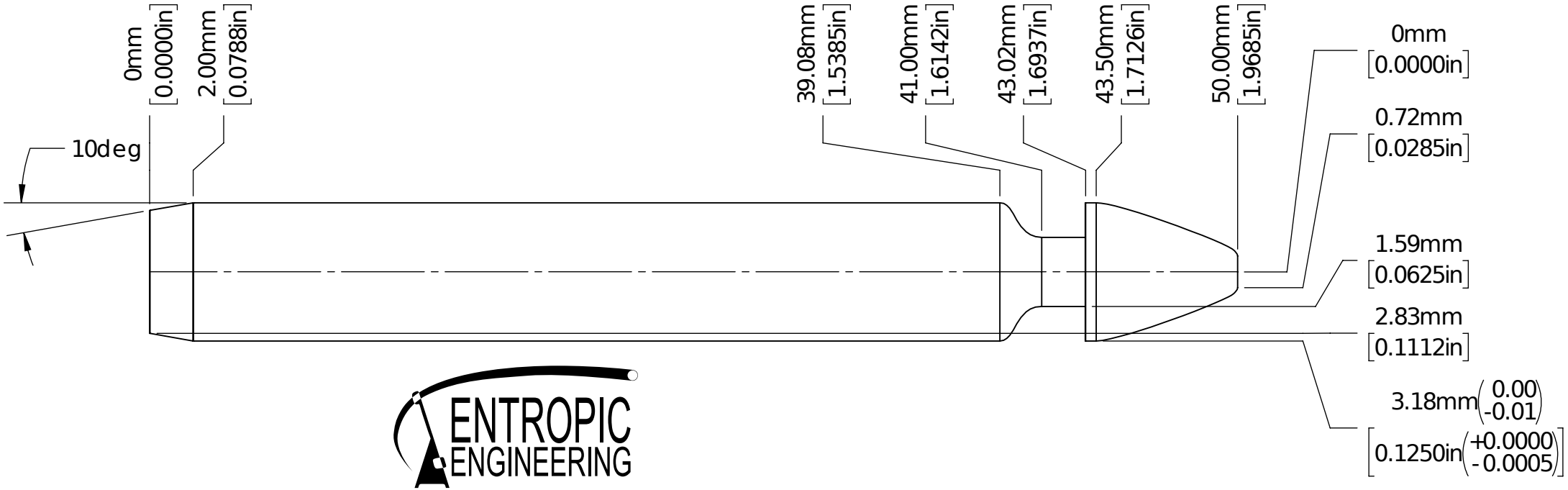
Latch Pin

Turned from 17-4 Stainless Steel, hardened to condition H900. All edges must be broken and smooth. Curved geometry is non-critical.

Suggested stock material: McMaster 9095K96





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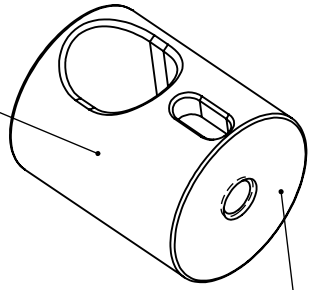
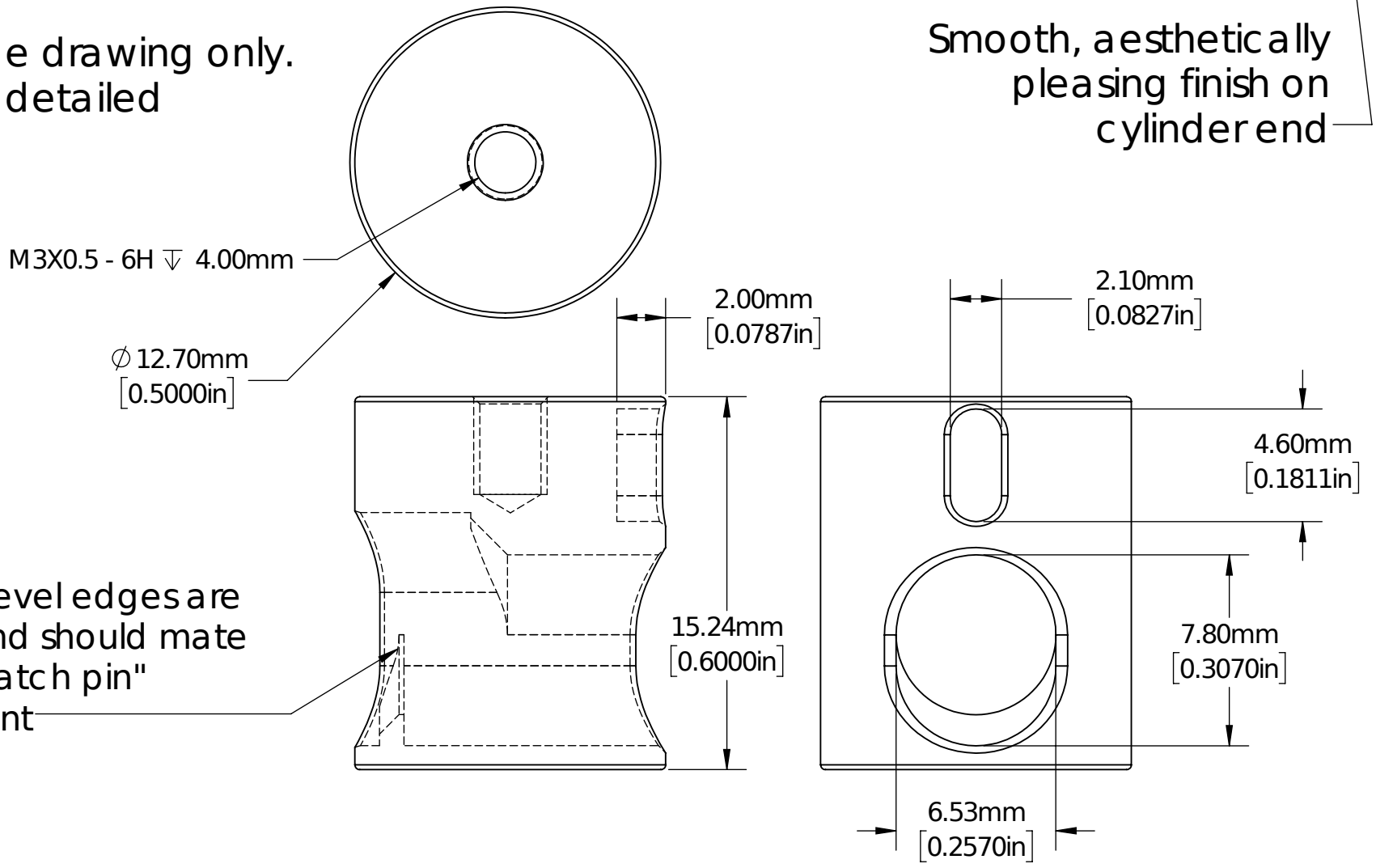
Release Button

Machined from 17-4 Stainless Steel, hardened to condition H900. All edges must be broken and smooth.

This is a reference drawing only. See CAD file for detailed dimensions.



Smooth, aesthetically pleasing finish on cylinder end



Internal bevel edges are critical, and should mate with the "latch pin" component

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