

## Endline Tensiometer Bill of Materials

**TOTAL \$ 3,281.87**

Purpose/Assembly	Vendor	Item description or part number	Qty	unit cost	total cost	stock #
Load Cell	Load Cell Central	Load Cell Central UMLS-51-4.75t on shackle	1	\$ 2,795.00	\$ 2,795.00	
Load Cell - spare	McMaster	316 Stainless Steel Cotter Pin 1/8" Diameter, 2" Long, pack of 25	1	18.18	\$ 18.18	98355A170
Logger	Adafruit	Adafruit Feather M0 Basic Proto	1	\$ 19.95	\$ 19.95	2772
Logger alternative	Adafruit	Adafruit Feather M0 Express - ATSAMD21 Cortex M0, Product ID: 3403		\$ 19.95	\$ -	3403
possible logger alternative	Adafruit	Adafruit Feather M4 Express - Featuring ATSAMD51 - ATSAMD51 Cortex M4, Product ID: 3857		\$ 22.95	\$ -	3857
Logger	Adafruit	Adalogger FeatherWing: SD + RTC	1	\$ 8.95	\$ 8.95	2922
Logger	Digikey	NAU7802 Weight Scale Sensor Qwiic Platform Evaluation Expansion Board, Sparkfun SEN-15242, Stacking Headers for Feather - 12-pin and 16-pin	1	\$ 16.50	\$ 16.50	1568-SEN-15242-ND
Logger	Adafruit	female headers, Product ID: 2830	3	\$ 1.25	\$ 3.75	2830
Logger	Sparkfun	SparkFun Qwiic Shield for Thing Plus	1	\$ 2.97	\$ 2.97	DEV-16790
Logger	Sparkfun	Sparkfun Qwiic Cable				
Logger	Western Digital	Micro SD Card, 32GB	2	\$ 10.29	\$ 20.58	SDSQXAF-032G-GN6MA
Logger	Digikey	Coin, 12.5mm Lithium Manganese Dioxide 3 V Battery Non-Rechargeable (Primary), CR1220	2	\$ 1.13	\$ 2.26	P033-ND
Logger	Adafruit	Diffused RGB 5mm LED (25 pack), Product ID: 302 (common anode)	1	\$ 12.50	\$ 12.50	302
Logger	Adafruit	Through-Hole Resistors - 22K ohm 5% 1/4W - Pack of 25, Product ID: 2785	1	\$ 0.75	\$ 0.75	2785
Logger	Adafruit	Lithium Battery, 2500 mAh LiPo, 3.7v, Product ID 328	2	\$ 14.95	\$ 29.90	
Logger - Spare	Digikey	Pushbutton Switch SPST-NO Standard Panel Mount, Rear, Grayhill P/N 30-3UL, GH1358-ND		\$ 6.26	\$ -	GH1358-ND
Logger	Digikey	0.110" (2.79mm), 0.125" (3.18mm) Quick Connect Female 18-22 AWG Crimp Connector Fully Insulated, TE Faston 2-520084-2, A27797-ND	2	\$ 0.45	\$ 0.90	A27797-ND

Logger - development	Digikey	Qwiic Cable - Breadboard Jumper (4-pin), Sparkfun PRT-14425,	1	\$	1.50	\$	1.50	1568-1709-ND	
Logger	Digikey	Flexible Qwiic Cable - 200mm, Sparkfun PRT-17258 ROHS	1	\$	1.60	\$	1.60	1568-PRT-17258-ND	
Logger	Adafruit	FeatherWing Proto - Prototyping Add-on For All Feather Boards	1	\$	4.95	\$	4.95	2884	
Logger	Digikey	Hex Standoff Threaded M2.5x0.45 Nylon 0.394" (10.00mm), M2105-2545-N, 1772-2274-ND	4	\$	3.15	\$	12.60	1772-2274-ND	
Logger	Digikey	Hex Standoff Threaded M2.5x0.45 Nylon 0.394" (10.00mm), RAF M1257-2545-N, 1772-2050-ND	4	\$	1.73	\$	6.92	1772-2050-ND	
Logger	Digikey	M2.5x0.45 Pan Head Machine Screw Phillips Drive Nylon, Essentra 50M025045P012, 145-50M025045P012-ND	8	\$	0.15	\$	1.20	145-50M025045P012-ND	
Logger	Digikey	M2.5x0.45 Hex Nut 0.190" (4.83mm) Nylon, Essentra 04M025045HN, RPC7085-ND	8	\$	0.12	\$	0.96	RPC7085-ND	
Logger	Digikey	USB 2.0 Cable A Male to Micro B Male 3.28' (1.00m) Shielded, CNC 102-1492-BL-F0100, 1175-1809-ND	2	\$	6.16	\$	12.32	1175-1809-ND	
Logger	Adafruit	battery charger	1	\$	6.95	\$	6.95		1904
Logger	Adafruit	JST PH 2-Pin Cable - Female Connector 100mm Product ID: 261	1	\$	0.75	\$	0.75		261
Logger	Adafruit	JST PH 2-Pin Cable – Male Header 200mm Product ID: 3814	1	\$	0.75	\$	0.75		3814
Logger	Adafruit	JST-PH Battery Extension Cable - 500mm Product ID: 1131	1		1.95	\$	1.95		1131
Logger	Adafruit	JST 2-pin Extension Cable with On/Off Switch - JST PH2 Product ID: 3064	1		2.95	\$	2.95		3064
Enclosure	Blue Robotics	Blue Robotics 2"x6" acrylic enclosure				\$	-	next 4 lines	
Enclosure	Blue Robotics	Acrylic tube, 150 mm x 50 mm ID, Blue Robotics WTE2-M-LOCKING-TUBE-150	1	\$	52.00	\$	52.00	WTE2-M-LOCKING-TUBE-150	
Enclosure	Blue Robotics	End cap, Al, 50 mm, Blue Robotics WTE2-M-LOCKING-FLANGE-CAP-BLANK, 950 m	1	\$	30.00	\$	30.00	WTE2-M-LOCKING-FLANGE-CAP-BLANK	
Enclosure	Blue Robotics	End cap, Al, 50 mm, 2x M10 holes, Blue Robotics, WTE2-M-LOCKING-FLANGE-CAP-2-HOLE, 950 m	1	\$	32.00	\$	32.00	WTE2-M-LOCKING-FLANGE-CAP-2-HOLE	
Enclosure	Blue Robotics	Pressure releif valve	1	\$	28.00	\$	28.00	PRV-M10-ASM-R1-RP	
Enclosure	Blue Robotics	Blue Robotics On/Off switch	1	\$	20.00	\$	20.00	SWITCH-M10-5A-R1-RP	
Enclosure	Blue Robotics	Blue Robotics M10 8mm Cable Penetrator	2	\$	6.00	\$	12.00		

Enclosure	3D print	Logger internal mount, load cell end			\$	-	
Enclosure	3D print	Logger internal mount, blank end			\$	-	
Enclosure	McMaster	316 Stainless Steel Pan Head Phillips Screws M3 x 0.50 mm Thread, 8mm Long, pack of 100	1	\$	13.24	\$	13.24 90116A153
Enclosure	Blue Robotics	Bulkhead wrench	1	\$	16.00	\$	16.00 WL-M10-BULKHEAD-
Sealing	Blue Robotics	Loctite Marine Epoxy	1	\$	10.00	\$	10.00 WRENCH-R1-RP
Sealing	Blue Robotics	Potting kit (10 pack)	1	\$	10.00	\$	10.00 LOCTITE-MARINE-EPOXY
					\$	-	
Sealing - consider	Blue Robotics	Mityvac Hand Operated Vacuum Pump		\$	98.00	\$	- VACUUM-PUMP-KIT-R4-RP
Sealing	Blue Robotics	Molykote 111	1	\$	32.00	\$	32.00 MOLYKOTE-VP
Sealing	Blue Robotics	Acetone Cable Preparation Wipes (10 pcs)	1	\$	4.00	\$	4.00 POTTING-ACETONE-WIPES-Q
Sealing	Blue Robotics	Vacuum Plug	1	\$	8.00	\$	8.00 VENT-M10-VACUUM-PLUG-F
Sealing - consider	Blue Robotics	Cable Repair Kit		\$	20.00	\$	- TOOL-KIT-CABLE-REPAIR-R1-RP
Sealing - spares	Blue Robotics	Spare Locking Cord and Handles, set of 4	1	\$	10.00	\$	10.00 WTE-LOCKING-CORD-SPARE-
Sealing - spares	McMaster	Oil-Resistant Buna-N O-Ring, 1/16 Fractional Width, Dash Number 013, pack of 100	1	\$	5.14	\$	5.14 9452K57
Sealing - spares	McMaster	Oil-Resistant Buna-N O-Ring, 1/16 Fractional Width, Dash Number 030, pack of 100	1	\$	11.67	\$	11.67 9452K117
Sealing	McMaster	Hex L-Key with Standard Tip, 1.5 mm Size, 1-13/16" Overall Length	1	\$	0.23	\$	0.23 7289A11