

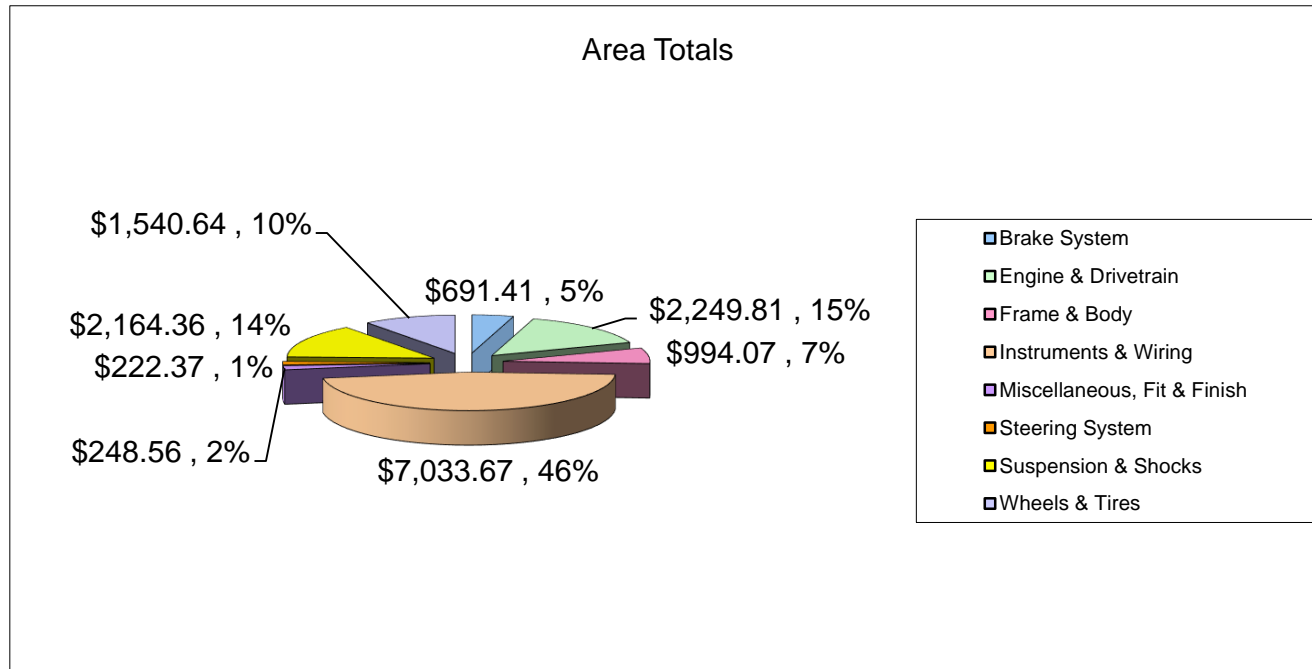
# Cost Summary Basics



for: **University of the Akron**  
Car # E217

Area Totals	Materials	Processes	Fasteners	Tooling	Total
Brake System	\$ 441.65	\$ 246.82	\$ 2.94	\$ -	\$ 691.41
Engine & Drivetrain	\$ 2,153.61	\$ 1.30	\$ 24.00	\$ -	\$ 2,249.81
Frame & Body	\$ 639.12	\$ 330.81	\$ 7.44	\$ 16.70	\$ 994.07
Instruments & Wiring	\$ 6,957.10	\$ 76.57	\$ -	\$ -	\$ 7,033.67
Miscellaneous, Fit & Finish	\$ 214.03	\$ 31.69	\$ 2.84	\$ -	\$ 248.56
Steering System	\$ 113.72	\$ 105.92	\$ 2.54	\$ 0.19	\$ 222.37
Suspension & Shocks	\$ 1,690.31	\$ 458.18	\$ 14.76	\$ 1.11	\$ 2,164.36
Wheels & Tires	\$ 1,130.16	\$ 376.56	\$ 33.92	\$ -	\$ 1,540.64
<b>Total Vehicle</b>	<b>\$ 13,339.70</b>	<b>\$ 1,627.85</b>	<b>\$ 88.44</b>	<b>\$ 18.00</b>	<b>\$ 15,144.89</b>

Composition for total vehicle:



University	University of the Akron
Competition Code	FSAE
Year	15
Car #	E217

Total Vehicle Cost

Line Num.	Area of Commodity	Asm/Prt #	Rev. Lvl.	Asm	Component	Description	Unit Cost	Quantity	Material Cost	Process Cost	Fastener Cost	Tooling Cost	Total Cost
1	Brake System	A0001	AA		Front Rotor Assembly	Complete Front Brake Assembly	2.50	1	\$ -	\$ 2.50	\$ -	\$ -	\$ 2.50
2	Brake System	00004	AA	Front Rotor Assembly	Brake Disk	Brake Disk Part	50.20	2	\$ 1.70	\$ 48.50	\$ -	\$ -	\$ 100.40
3	Brake System	00002	AA	Front Rotor Assembly	Brake Pad	Brake Pad Part	0.27	4	\$ 0.01	\$ 0.26	\$ -	\$ -	\$ 1.08
4	Brake System	A0002	AA	Front Rotor Assembly	Brake Caliper	Brake Caliper Part	51.74	2	\$ 50.00	\$ 1.50	\$ 0.24	\$ -	\$ 103.48
5	Brake System	00003	AA		Rear Rotor Assembly	Complete Rear Brake Assembly	2.50	1	\$ -	\$ 2.50	\$ -	\$ -	\$ 2.50
6	Brake System	A0003	AA	Rear Rotor Assembly	Brake Disk	Brake Disk Part	50.20	2	\$ 1.70	\$ 48.50	\$ -	\$ -	\$ 100.40
7	Brake System	00004	AA	Rear Rotor Assembly	Brake Pad	Brake Pad Part	0.27	4	\$ 0.01	\$ 0.26	\$ -	\$ -	\$ 1.08
8	Brake System	00005	AA	Rear Rotor Assembly	Brake Caliper	Brake Caliper Part	51.74	2	\$ 50.00	\$ 1.50	\$ 0.24	\$ -	\$ 103.48
9	Brake System	A0004	AA		Brake Line Assembly	Complete Brake Line Assembly	3.25	1	\$ 0.75	\$ 2.50	\$ -	\$ -	\$ 3.25
10	Brake System	00006	AA	Brake Line Assembly	Brake Line	Brake Lines	23.58	1	\$ 21.71	\$ 1.35	\$ 0.52	\$ -	\$ 23.58
11	Brake System	A0005	AA	Brake Line Assembly	Balance Bar	Balance Bar Part	31.63	1	\$ 30.00	\$ 1.63	\$ -	\$ -	\$ 31.63
12	Brake System	00007	AA	Brake Line Assembly	Front Master Cylinder	Front Master Cylinder	44.12	1	\$ 43.00	\$ 0.63	\$ 0.49	\$ -	\$ 44.12
13	Brake System	A0006	AA	Brake Line Assembly	Rear Master Cylinder	Rear Master Cylinder	27.12	1	\$ 26.00	\$ 0.63	\$ 0.49	\$ -	\$ 27.12
14	Brake System	00008	AA	Brake Line Assembly	T-Junction	T-Junction Part	4.24	2	\$ 2.50	\$ 1.50	\$ 0.24	\$ -	\$ 8.48
15	Brake System	A0007	AA	Brake Line Assembly	Fittings	All Brake Fittings	138.31	1	\$ 108.31	\$ 30.00	\$ -	\$ -	\$ 138.31
	Brake System				Area Total				\$ 441.65	\$ 246.82	\$ 2.94	\$ -	\$ 691.41
16	Engine & Drivetrain	A0001	AA		Sprocket Hub	Student Built Sprocket Hub	11.05	2	\$ 8.40	\$ 0.65	\$ 2.00	\$ -	\$ 22.10
17	Engine & Drivetrain	A0002	AA		Motor Mounting Plate	Student Built Motor Mounting Plate	18.01	4	\$ 12.60	\$ 0.65	\$ 4.76	\$ -	\$ 72.04
18	Engine & Drivetrain	A0003	AA		Bearing Housing	Bearing Housing	21.75	4	\$ 17.64	\$ 3.87	\$ 0.24	\$ -	\$ 87.00
19	Engine & Drivetrain	A0004	AA		Rear Sprocket	Student Built Rear Sprocket	4.43	2	\$ 4.20	\$ 0.23	\$ -	\$ -	\$ 8.86
20	Engine & Drivetrain	A0005	AA		Chain	Chain	96.20	1	\$ 96.00	\$ 0.20	\$ -	\$ -	\$ 96.20
21	Engine & Drivetrain	A0006	AA		Front Sprocket	Student Built Front Sprocket	2.44	1	\$ 2.25	\$ 0.19	\$ -	\$ -	\$ 2.44
22	Engine & Drivetrain	A0007	AA		Chain Guard	Student Built Chain Guard	47.79	2	\$ 28.10	\$ 19.69	\$ -	\$ -	\$ 95.58
23	Engine & Drivetrain	A0008	AA		Rear Half Shaft	Student Built Rear Half Shaft	53.55	2	\$ 51.53	\$ 2.02	\$ -	\$ -	\$ 107.10
24	Engine & Drivetrain	A0009	AA		Motor	Motor, Tractive DC	797.54	2	\$ 794.50	\$ 3.04	\$ -	\$ -	\$ 1,595.08
25	Engine & Drivetrain	A0010	AA		Tripod	Tripod	45.57	1	\$ 45.00	\$ 0.57	\$ -	\$ -	\$ 45.57
26	Engine & Drivetrain	A0011	AA		Tripod Housing	Student Built Tripod Housing	53.60	1	\$ 52.92	\$ 0.68	\$ -	\$ -	\$ 53.60
27	Engine & Drivetrain	A0012	AA		Tripod Cover	Student Built Tripod Cover	53.57	1	\$ 52.92	\$ 0.65	\$ -	\$ -	\$ 53.57
28	Engine & Drivetrain	A0013	AA		Boots	Boots	5.19	2	\$ 5.00	\$ 0.19	\$ -	\$ -	\$ 10.38
29	Engine & Drivetrain	A0014	AA		Motor Shaft Key	Motor Shaft key	0.29	1	\$ 0.10	\$ 0.19	\$ -	\$ -	\$ 0.29
	Engine & Drivetrain				Area Total				\$ 2,153.61	\$ 1.30	\$ 24.00	\$ -	\$ 2,249.81
	Frame & Body	A0001	AA		Frame	Steel Alloy Tube Frame	478.73	1	\$ 271.82	\$ 202.91	\$ -	\$ 4.00	\$ 478.73
	Frame & Body	A0002	AA		Battery Box	Battery Box	55.64	1	\$ 8.40	\$ 46.80	\$ -	\$ 0.44	\$ 55.64
	Frame & Body	A0003	AA		Pedal Assembly	Complete Pedal Assembly	3.76	1	\$ -	\$ -	\$ 3.76	\$ -	\$ 3.76
	Frame & Body	A0004	AA		Accelerator	Accelerator	15.28	1	\$ 3.89	\$ 9.83	\$ 1.56	\$ -	\$ 15.28
	Frame & Body	A0007	AA		Brake Pedal	Brake Pedal	26.43	1	\$ 6.46	\$ 18.33	\$ 1.64	\$ -	\$ 26.43
	Frame & Body	A0011	AA		Body Assembly	Complete Body Assembly	0.48	1	\$ -	\$ -	\$ 0.48	\$ -	\$ 0.48
	Frame & Body	A0012	AA		Front Right Side Panel	Front Right Side Panel	51.24	1	\$ 41.20	\$ 7.65	\$ -	\$ 2.39	\$ 51.24
	Frame & Body	A0013	AA		Front Left Side Panel	Front Left Side Panel	51.24	1	\$ 41.20	\$ 7.65	\$ -	\$ 2.39	\$ 51.24
	Frame & Body	A0014	AA		Middle Right Side Panel	Middle Right Side Panel	61.97	1	\$ 50.40	\$ 9.18	\$ -	\$ 2.39	\$ 61.97
	Frame & Body	A0015	AA		Middle Left Side Panel	Middle Left Side Panel	61.97	1	\$ 50.40	\$ 9.18	\$ -	\$ 2.39	\$ 61.97
	Frame & Body	A0016	AA		Nose Cone	Nose Cone	111.41	1	\$ 102.95	\$ 7.14	\$ -	\$ 1.32	\$ 111.41
	Frame & Body	A0017	AA		Bonnett	Bonnett	54.12	1	\$ 45.60	\$ 7.14	\$ -	\$ 1.38	\$ 54.12
	Frame & Body	A0018	AA		Floor Panels	Floor Panels	21.80	1	\$ 16.80	\$ 5.00	\$ -	\$ -	\$ 21.80
	Frame & Body				Area Total				\$ 639.12	\$ 330.81	\$ 7.44	\$ 16.70	\$ 994.07
	Electrical	A0001	AA		Engine Control Unit		640.00	1	\$ 640.00	\$ -	\$ -	\$ -	\$ 640.00
	Electrical	A0002	AA		Motor Control System		812.80	1	\$ 812.80	\$ -	\$ -	\$ -	\$ 812.80
	Electrical	A0003	AA		Battery Management System		565.00	1	\$ 565.00	\$ -	\$ -	\$ -	\$ 565.00
	Electrical	A0004	AA		Safety System		1,095.00	1	\$ 1,095.00	\$ -	\$ -	\$ -	\$ 1,095.00
	Electrical	A0005	AA		Dash		34.69	1	\$ 13.30	\$ 21.39	\$ -	\$ -	\$ 34.69
	Electrical	A0006	AA		Brake Light		80.78	1	\$ 64.00	\$ 16.78	\$ -	\$ -	\$ 80.78
	Electrical	A0007	AA		GLV Harness		72.40	1	\$ 34.00	\$ 38.40	\$ -	\$ -	\$ 72.40
	Electrical	A0008	AA		Tractive System Harness		385.00	1	\$ 385.00	\$ -	\$ -	\$ -	\$ 385.00
	Electrical	A0009	AA		GLV Battery		260.00	1	\$ 260.00	\$ -	\$ -	\$ -	\$ 260.00
	Electrical	A0010	AA		Accumulator		3,088.00	1	\$ 3,088.00	\$ -	\$ -	\$ -	\$ 3,088.00

Line Num.	Area of Commodity	Asm/Prt #	Rev. Lvl.	Asm	Component	Description	Unit Cost	Quantity	Material Cost	Process Cost	Fastener Cost	Tooling Cost	Total Cost
	Instruments & Wiring				Area Total				\$ 6,957.10	\$ 76.57	\$ -	\$ -	\$ 7,033.67
	Miscellaneous, Fit & Finish	A0001	AA		Frame Paint		50.60	1	\$ 50.60	\$ -	\$ -	\$ -	\$ 50.60
	Miscellaneous, Fit & Finish	A0002	AA		Body Paint		37.00	1	\$ 37.00	\$ -	\$ -	\$ -	\$ 37.00
	Miscellaneous, Fit & Finish	A0003	AA		Firewall		75.91	1	\$ 55.20	\$ 18.49	\$ 2.22	\$ -	\$ 75.91
	Miscellaneous, Fit & Finish	A0004	AA		Seating Assembly		0.62	1	\$ -	\$ -	\$ 0.62	\$ -	\$ 0.62
	Miscellaneous, Fit & Finish		AA	Seating Assembly	Seat		22.40	1	\$ 18.00	\$ 4.40	\$ -	\$ -	\$ 22.40
	Miscellaneous, Fit & Finish		AA	Seating Assembly	Headrest		17.03	1	\$ 8.23	\$ 8.80	\$ -	\$ -	\$ 17.03
	Miscellaneous, Fit & Finish		AA	Seating Assembly	Safety Harness		45.00	1	\$ 45.00	\$ -	\$ -	\$ -	\$ 45.00
	Miscellaneous, Fit & Finish				Area Total				\$ 214.03	\$ 31.69	\$ 2.84	\$ -	\$ 248.56
	Steering System	A0001	AA		Steering Wheel Assembly		12.62	1	\$ 2.56	\$ 9.51	\$ 0.55	\$ -	\$ 12.62
	Steering System	A0002	AA		Steering Wheel Quick Release		33.43	1	\$ 4.43	\$ 29.00	\$ -	\$ -	\$ 33.43
					Tie Rod Assembly		2.97	1	\$ 0.01	\$ 2.12	\$ 0.84	\$ -	\$ 2.97
					Tie Rod		15.17	2	\$ 4.70	\$ 10.46	\$ -	\$ 0.01	\$ 30.34
					Steering Shaft Assembly		63.54	1	\$ 56.24	\$ 7.30	\$ -	\$ -	\$ 63.54
					Steering Shaft Adaptor		2.41	1	\$ 0.12	\$ 2.29	\$ -	\$ -	\$ 2.41
					Frame Mount		9.53	1	\$ 0.76	\$ 8.60	\$ -	\$ 0.17	\$ 9.53
					Steering Rack Assembly		11.44	1	\$ 7.84	\$ 2.45	\$ 1.15	\$ -	\$ 11.44
	Steering System	A0003	AA		Rack		4.63	1	\$ 0.87	\$ 3.76	\$ -	\$ -	\$ 4.63
	Steering System	A0004	AA		Rack Housing		39.22	1	\$ 30.20	\$ 9.02	\$ -	\$ -	\$ 39.22
	Steering System	A0005	AA		Steering Rack End		3.68	2	\$ 0.51	\$ 3.17	\$ -	\$ -	\$ 7.36
	Steering System	A0006	AA		Pinion		4.88	1	\$ 0.27	\$ 4.61	\$ -	\$ -	\$ 4.88
	Steering System				Area Total				\$ 113.72	\$ 105.92	\$ 2.54	\$ 0.19	\$ 222.37
	Suspension	A0001	AA		Front Suspension	Complete Front Suspension Assembly	23.41	1	\$ 0.05	\$ 16.98	\$ 6.38	\$ -	\$ 23.41
				Front Suspension	Front Upper A-Arm		29.84	2	\$ 12.98	\$ 16.58	\$ 0.25	\$ 0.03	\$ 59.68
				Front Suspension	Front Lower A-Arm		33.66	2	\$ 13.33	\$ 20.05	\$ 0.25	\$ 0.03	\$ 67.32
				Front Suspension	Front Pushrod		15.35	2	\$ 4.76	\$ 10.46	\$ 0.12	\$ 0.01	\$ 30.70
				Front Suspension	Front Upright		26.84	2	\$ 7.80	\$ 19.04	\$ -	\$ -	\$ 53.68
				Front Suspension	Front Toelink		3.47	2	\$ 0.54	\$ 2.93	\$ -	\$ -	\$ 6.94
				Front Suspension	Front Upright Top		10.14	2	\$ 2.43	\$ 7.71	\$ -	\$ -	\$ 20.28
				Front Suspension	Front Rocker		15.56	2	\$ 8.96	\$ 6.60	\$ -	\$ -	\$ 31.12
				Front Suspension	Springs		25.00	2	\$ 25.00	\$ -	\$ -	\$ -	\$ 50.00
				Front Suspension	Dampers		337.50	2	\$ 337.50	\$ -	\$ -	\$ -	\$ 675.00
	Suspension	A0002	AA		Rear Suspension		27.45	1	\$ 0.06	\$ 21.32	\$ 5.90	\$ 0.17	\$ 27.45
	Suspension		AA	Rear Suspension	Rear Upper A-Arm		33.63	2	\$ 13.15	\$ 20.20	\$ 0.25	\$ 0.03	\$ 67.26
	Suspension		AA	Rear Suspension	Rear Lower A-Arm		31.52	2	\$ 13.09	\$ 18.15	\$ 0.25	\$ 0.03	\$ 63.04
	Suspension		AA	Rear Suspension	Rear Pullrod		15.39	2	\$ 4.80	\$ 10.46	\$ 0.12	\$ 0.01	\$ 30.78
	Suspension		AA	Rear Suspension	Rear Upright		86.24	2	\$ 23.66	\$ 62.58	\$ -	\$ -	\$ 172.48
	Suspension		AA	Rear Suspension	Rear Rocker		20.16	2	\$ 13.37	\$ 6.79	\$ -	\$ -	\$ 40.32
	Suspension		AA	Rear Suspension	Rocker Holder		9.95	2	\$ 1.23	\$ 8.39	\$ -	\$ 0.33	\$ 19.90
	Suspension		AA	Rear Suspension	Springs		25.00	2	\$ 25.00	\$ -	\$ -	\$ -	\$ 50.00
	Suspension		AA	Rear Suspension	Dampers		337.50	2	\$ 337.50	\$ -	\$ -	\$ -	\$ 675.00
	Suspension & Shocks				Area Total				\$ 1,690.31	\$ 458.18	\$ 14.76	\$ 1.11	\$ 2,164.36
	Wheels & Tires	A0001	AA		Wheels	Wheel, 13", 3 Piece, Aluminum	123.39	4	\$ 115.00	\$ 1.99	\$ 6.40	\$ -	\$ 493.56
	Wheels & Tires	A0002	AA		Tires	Tire, Hooser, R25B	85.00	4	\$ 85.00	\$ -	\$ -	\$ -	\$ 340.00
	Wheels & Tires	A0003	AA		Valve Stems		1.00	4	\$ 1.00	\$ -	\$ -	\$ -	\$ 4.00
	Wheels & Tires	A0004	AA		Wheel Bearings		147.12	2	\$ 146.88	\$ 0.24	\$ -	\$ -	\$ 294.24
	Wheels & Tires	A0005	AA		Hub		102.21	4	\$ 8.10	\$ 92.03	\$ 2.08	\$ -	\$ 408.84
	Wheels & Tires				Area Total				\$ 1,130.16	\$ 376.56	\$ 33.92	\$ -	\$ 1,540.64
	Vehicle Total				Total				13,339.70	1,627.85	88.44	18.00	15,144.89

The University of Akron



Zips Racing EV

2015 Cost Report

FSAE Lincoln - Electric











**University** The University of Akron  
**System** Brake System (BR)  
**Assembly** Brake Line Assembly  
**Part** Rear Master Cylinder  
**P/N Base** 10  
**Suffix** AA  
**Details** Rear Master Cylinder

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** 11  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 27.12  
**Qty** 2  
**Extended Cost** \$ 54.24

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Master Cylinder, Wilwood, 260-6087	Rear Master Cylinder	\$ 26.00		1	Unit						1.00	\$ 26.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>												<b>\$ 26.000</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Ratchet <= 6.35 mm	Tighten Bolts	\$ 0.50	Unit	1	1	1	\$ 0.50
20	Assemble, 1 Kg, Line-on-Line	Line up Master Cylinder	\$ 0.13	Unit	1	1	1	\$ 0.13
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 0.63</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
10	Bolt, Grade AN	Secure Master Cylinder	0.2	6.35	mm	16	mm	1	\$ 0.20
20	Nut, Grade AN	Secure Master Cylinder	0.21	6.35	mm			1	\$ 0.21
30	Washer, Grade AN	Secure Master Cylinder	0.08	6.35	mm			1	\$ 0.08
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ 0.49</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInCl	Sub Total
<b>Sub Total</b>								<b>0</b>

University	The University of Akron
System	Brake System (BR)
Assembly	Brake Line Assembly
Part	T-junction
P/N Base	11
Suffix	AA
Details	T-junction

FileLink1
FileLink2
FileLink3

Car #	11
FileLink1	
FileLink2	
FileLink3	

Part Cost	\$	4.24
Qty		2
Extended Cost	\$	8.48

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	T-junction	T-junction	\$ 2.50		1 Unit							1.00	\$ 2.50
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>													<b>\$ 2.500</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Ratchet <= 25.4 mm	Tighten T-junction Bolts	\$ 0.75	Unit	2	1	1	\$ 1.50
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 1.50</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
10	Bolt, Grade 8.8 (SAE)	T-junction bolt	0.12		8 mm		30 mm	2	\$ 0.24
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ 0.24</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
<b>Sub Total</b>								<b>0</b>

**University** The University of Akron  
**System** Brake System (BR)  
**Assembly** Brake Line Assembly  
**Part** Fittings  
**P/N Base** 12  
**Suffix** AA  
**Details** All Brake Fittings

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** 11  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 130.79  
**Qty** 2  
**Extended Cost** \$ 261.58

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Fitting/L.P./Elbow/90 deg./Al./Anod.	Fittings	\$ 15.21	6.35	mm							2.00	\$ 30.42
20	Asapter/L.P./Barb to Male Pipe/Straigt/Al./Anod.	Fittings	\$ 2.62	6.35	mm	6.35	mm					2.00	\$ 5.24
30	Adapter/L.P./Bulkhead Tee/Al./Anod.	Fittings	\$ 10.86	4.76	mm	4.76	mm					4.00	\$ 43.44
40	Fitting/L.P./Elbow/90 deg./Al./Anod.	Fittings	\$ 12.80	4.76	mm							1.00	\$ 4.76
50	Crush washer	Fittings	\$ 0.25	4.76	mm							9.00	\$ 2.25
60	Adapter/L.P./Bulkhead Union/Al./Anod.	Fittings	\$ 3.54	6.35	mm	4.76	mm					2.00	\$ 7.08
70	Adapter/L.P./Bulkhead/Al./Anod.	Fittings	\$ 3.54	4.76	mm	6.35	mm					2.00	\$ 7.08
													\$ -
												<b>Sub Total</b>	<b>\$ 100.270</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Wrench <= 25.4 mm	Tighten Fittings	\$ 1.50	Unit	20	1	1	\$ 30.00	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 30.00</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
10	Galvanized Steel Loop Straps	Secure Hard Line	0.09					3	\$ 0.27	
20	Rivet, Pop	Secure Hard Line	0.03					3	\$ 0.09	
30	Tie Wrap	Secure Soft Line	0.04					4	\$ 0.16	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ 0.52</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>





University	The University of Akron
System	Brake System (BR)
Assembly	Front Rotor Assembly
Part	Brake Pad
P/N Base	2
Suffix	AA
Details	Brake Pad

FileLink1
FileLink2
FileLink3

Car #	11
FileLink1	
FileLink2	
FileLink3	

Part Cost	\$	0.27
Qty		4
Extended Cost	\$	1.08

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Brake Pad, Iron or Steel Rotor	Brake Pad	\$ 0.01	18.1	mm^3							2.00	\$ 0.01
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 0.010</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Assemble, 1 Kg, Line-on-Line	Line up Pads	\$ 0.13	Unit	2	1	1	\$ 0.26	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 0.26</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>







**University** The University of Akron  
**System** Brake System (BR)  
**Assembly** Rear Rotor Assembly  
**Part** Brake Disk  
**P/N Base** 4  
**Suffix** AA  
**Details** Brake Disk

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** 11  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 21.18  
**Qty** 2  
**Extended Cost** \$ 42.36

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Cast Iron (Per Kg)	Disk	\$ 1.00	1.7	kg							1.00	\$ 1.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>												<b>\$ 1.000</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machine Setup, Install & Remove	Setting up Mill for Rotor	\$ 1.30	Rotor	1	1	1	\$ 1.30
20	Machining	Remove Material	\$ 0.04	cm^3	472	2.5	1	\$ 18.88
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 20.18</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
<b>Sub Total</b>								<b>0</b>











**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Bearing Housing  
**P/N Base** 3  
**Suffix** AA  
**Details** Bearing Housing

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 4.67  
**Qty** 4  
**Extended Cost** \$ 18.67

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminum	Bearing Housing Material	\$ 4.20	4.2	kg							1.00	\$ 4.20
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>													<b>\$ 4.200</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining	Removal of material	\$ 0.04	cm^3	0.94	1	1	\$ 0.04
20	Assemble, 1 Kg, interference	Assemble	\$ 0.19	kg	1	1	1	\$ 0.19
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 0.23</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
10	External retaining ring	Seal Bearings	0.02	80	mm			4	\$ 0.08
20	internal retaining ring	Seal Bearings	0.02	80	mm			8	\$ 0.16
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ 0.24</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInCl	Sub Total
<b>Sub Total</b>								<b>0</b>





**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Front Sprocket  
**P/N Base** 5  
**Suffix** AA  
**Details** Front Sprocket

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 3.79  
**Qty** 1  
**Extended Cost** \$ 3.79

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel	Material for Front Sprocket	\$ 2.25		1 Unit							1.00	\$ 2.25
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>												<b>\$ 2.250</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining	Remove Material	\$ 0.67	cm^3	0.67	1	3	\$ 1.35
20	Assemble, 1 kg, interference	assemble	\$ 0.19	kg	1	1	1	\$ 0.19
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 1.54</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
<b>Sub Total</b>								<b>0</b>

University	The University of Akron
System	Engine & Drivetrain (EN)
Assembly	Drivetrain
Part	Chain
P/N Base	6
Suffix	AA
Details	Chain

FileLink1
FileLink2
FileLink3

Car #	E217
FileLink1	
FileLink2	
FileLink3	

Part Cost	\$	96.19
Qty		1
Extended Cost	\$	96.19

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	R3-2 Chain	Chain	\$ 96.00		1 unit							1.00	\$ 96.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 96.000</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Assemble, 1kg, interference	assembly	\$ 0.19	cm^3	1	1	1	\$ 0.19	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 0.19</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Sub Total	
								<b>Sub Total</b>	<b>0</b>

**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Chain Guard  
**P/N Base** 7  
**Suffix** AA  
**Details** Chain Guard

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 4.89  
**Qty** 2  
**Extended Cost** \$ 9.78

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminum	Chain Guard Material	\$ 4.20	6.69	kg							1.00	\$ 4.20
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 4.200</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Machining	Removal of Material	\$ 0.04	cm^3	2.98	1	1	\$ 0.12	
20	Assemble, 1 kg, interference	Assembly	\$ 0.19	kg	3	1	1	\$ 0.57	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 0.69</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>

**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Rear Half Shaft  
**P/N Base** 8  
**Suffix** AA  
**Details** Rear Half Shaft

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 4.19  
**Qty** 2  
**Extended Cost** \$ 8.38

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel	Shaft Material	\$ 2.25	22.9	kg							1.00	\$ 2.25
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>												<b>\$ 2.250</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining	Removal of Material	\$ 0.04	cm^3	1	3	1	\$ 0.04
20	Assemble, 1 kg, interference	Assembly	\$ 0.19	kg	10	1	1	\$ 1.90
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 1.94</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
<b>Sub Total</b>								<b>0</b>

**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Motor  
**P/N Base** 9  
**Suffix** AA  
**Details** Motor, AC

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217

**Part Cost** \$ 52.34  
**Qty** 1  
**Extended Cost** \$ 52.34

**FileLink1**  
**FileLink2**  
**FileLink3**

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Motor, Tractive AC	Motor	\$ 50.00	100	kw							1.00	\$ 50.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>												<b>\$ 50.000</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Assemble, 1kg, interference	assembly	\$ 0.19	kg	12.3	1	1	\$ 2.34
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 2.34</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
<b>Sub Total</b>								<b>0</b>

University	The University of Akron
System	Engine & Drivetrain (EN)
Assembly	Drivetrain Assembly
Part	Tripod
P/N Base	10
Suffix	AA
Details	Tripod

FileLink1
FileLink2
FileLink3

Car #	E217
FileLink1	
FileLink2	
FileLink3	

Part Cost	\$	45.57
Qty		1
Extended Cost	\$	45.57

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Tripod	Tripod	\$ 45.00		1 unit							1.00	\$ 45.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 45.00</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Assemble, 1 kg, interference	Assembly	\$ 0.19	kg	3	1	1	\$ 0.57	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 0.57</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FraIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>

**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Tripod Housing  
**P/N Base** 11  
**Suffix** AA  
**Details** Tripod Housing

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 4.88  
**Qty** 1  
**Extended Cost** \$ 4.88

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminum	Tripod Housing Material	\$ 4.20	12.6	kg							1.00	\$ 4.20
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b> \$ <b>4.200</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining	Removal of Material	\$ 0.04	cm^3	2.68	1	1	\$ 0.11
20	Assemble, 1 kg, interference	Assembly	\$ 0.19	kg	3	1	1	\$ 0.57
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								<b>Sub Total</b> \$ <b>0.68</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									<b>Sub Total</b> \$ <b>-</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
								<b>Sub Total</b> <b>0</b>

**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Tripod Cover  
**P/N Base** 12  
**Suffix** AA  
**Details** Tripod Cover

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 4.85  
**Qty** 1  
**Extended Cost** \$ 4.85

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminum	Tripod Cover material	\$ 4.20	12.6	kg							1.00	\$ 4.20
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 4.200</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Machining	Removal of Material	\$ 0.04	cm^3	2.09	1	1	\$ 0.08	
20	Assemble, 1 kg, interference	Assembly	\$ 0.19	kg	3	1	1	\$ 0.57	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 0.65</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>



**University** The University of Akron  
**System** Engine & Drivetrain (EN)  
**Assembly** Drivetrain Assembly  
**Part** Boots  
**P/N Base** 13  
**Suffix** AA  
**Details** Boots

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 5.19  
**Qty** 2  
**Extended Cost** \$ 10.38

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Boots	Boots	\$ 5.00	1	Unit							1.00	\$ 5.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 5.000</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Assemble, 1 kg, interference	Assembly	\$ 0.19	kg	1	1	1	\$ 0.19	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 0.19</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>





**University** The University of Akron  
**System** Electrical (EL)  
**Assembly** Engine Electronics  
**Part** Engine Control Unit  
**P/N Base** 1  
**Suffix** AA  
**Details** Sprocket Hub

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217

**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 640.00  
**Qty** 1  
**Extended Cost** \$ 640.00

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	ECU, Student Built	Engine Control Unit	\$ 500.00		1 unit							1.00	\$ 500.00
20	Chassis Control module, +TSAL	Engine Control Unit	\$ 10.00		1 unit							1.00	\$ 10.00
30	Chassis Control module, + TSAS, buzzer	Engine Control Unit	\$ 5.00		1 unit							1.00	\$ 5.00
40	Chassis control module, + HC-HV Fuse incl. box	Protect ecu	\$ 100.00		1 unit							1.00	\$ 100.00
50	Chassis control module, baseline enclosure	Protect ecu	\$ 25.00		1 unit							1.00	\$ 25.00
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 640.000</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
								<b>Sub Total</b>	<b>0</b>





**University** The University of Akron  
**System** Electrical (EL)  
**Assembly** Engine Electronics  
**Part** Safety System  
**P/N Base** 4  
**Suffix** AA  
**Details** Safety System

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217

**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 1,095.00  
**Qty** 1  
**Extended Cost** \$ 1,095.00

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Chassis Control module, + isolation monitoring device	safety system	\$ 300.00	1	Unit							1.00	\$ 300.00
20	Chassis control module, + HV insulation relay	safety system	\$ 120.00	1	unit							6.00	\$ 720.00
30	chassis control module, + hv precharge	safety system	\$ 50.00	1	Unit							1.00	\$ 50.00
40	chassis control module, baseline enclosure	protect safety system	\$ 25.00	1	Unit							1.00	\$ 25.00
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b> \$ 1,095.000	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								<b>Sub Total</b> \$ -

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									<b>Sub Total</b> \$ -

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
								<b>Sub Total</b> 0





<b>University</b>	The University of Akron
<b>System</b>	Electrical (EL)
<b>Assembly</b>	Engine Electronics
<b>Part</b>	Ground Low voltage system harness
<b>P/N Base</b>	6
<b>Suffix</b>	AA
<b>Details</b>	GLV Harness

<b>FileLink1</b>
<b>FileLink2</b>
<b>FileLink3</b>

<b>Car #</b>	E217
<b>FileLink1</b>	
<b>FileLink2</b>	
<b>FileLink3</b>	

<b>Part Cost</b>	\$	75.40
<b>Qty</b>		1
<b>Extended Cost</b>	\$	75.40

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Sensor, hall effect	sensor	\$ 4.00		1 unit							2.00	\$ 8.00
20	heat shrink tubing	protect wiring	\$ 0.50		1 m							20.00	\$ 10.00
30	wire, signal	wiring	\$ 1.00		1 m							20.00	\$ 20.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b> \$ <b>38.000</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	lay wire - signal	lay wiring	\$ 0.02	m	20	1	1	\$ 0.40
20	shrink tube	protect wiring	\$ 0.15	cm	200	1	1	\$ 30.00
30	cut wire	trim length	\$ 0.07	unit	100	1	1	\$ 7.00
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								<b>Sub Total</b> \$ <b>37.40</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									<b>Sub Total</b> \$ <b>-</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Sub Total
								<b>Sub Total</b> <b>0</b>

**University** The University of Akron  
**System** Frame & Body (FR)  
**Assembly** Frame & Body  
**P/N Base** A0001  
**Suffix** AA  
**Details** Complete Frame Assy.

**Car #** E217

**Asm Cost** \$ -  
**Qty** 1

**FileLink1**  
**FileLink2**  
**FileLink3**

**Extended C** \$ -

ItemOrder	Part	Part Cost	Quantity	Sub Total
10			1.00	\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
			<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>0</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
			0					0	\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionIncluded	Sub Total	
								\$ -	
								0	
								<b>Sub Total</b>	<b>0</b>

**University** The University of Akron  
**System** Frame & Body (FR)  
**Assembly** Frame & Body  
**Part** Frame  
**P/N Base** 1  
**Suffix** AA  
**Details** Steel Alloy Tube Frame

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217  
**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 386.91  
**Qty** 1  
**Extended Cost** \$ 386.91

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Round 1" x 0.065"	Frame Material	\$ 2.25	37.1	kg							1.00	\$ 2.25
20	Round 1" x 0.095"	Frame Material	\$ 2.25	5.9	kg							1.00	\$ 2.25
30	Round 0.625" x 0.050"	Frame Material	\$ 2.25	0.3	kg							1.00	\$ 2.25
40	8" Plate	Frame Material	\$ 2.25	1.51	kg							1.00	\$ 2.25
50	0.75" Thick Tabs	Frame Material	\$ 2.25	0.009	kg							26.00	\$ 58.50
60	0.125" Thick tabs	Frame Material	\$ 2.25	0.016	kg							50.00	\$ 112.50
													\$ -
													\$ -
												<b>Sub Total</b>	<b>\$ 180.000</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Tube Bends	Shape Tubing	\$ 0.75	unit	19	1	1	\$ 14.25	
20	Tube Cuts	Cut tubing to length	\$ 0.15	cm	228.6	1	1	\$ 34.29	
30	Tube End preparation for welding	Welding prep	\$ 0.75	unit	90	1	1	\$ 67.50	
40	Weld - Round tubing	Weld Tubing	\$ 0.38	cm	228.6	1	1	\$ 86.87	
								\$ -	
								\$ -	
								\$ -	
								\$ -	
								<b>Sub Total</b>	<b>\$ 202.91</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									\$ -	
									<b>Sub Total</b>	<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total	
10	Welds - Welding Fixture	Weld frame tubes	\$ 500.00	Point	12	3000	2	\$ 4.00	
								<b>Sub Total</b>	<b>4</b>

**University** The University of Akron  
**System** Frame & Body (FR)  
**Assembly** Frame & Body  
**Part** Battery Box  
**P/N Base** 2  
**Suffix** AA  
**Details** Battery Box

**FileLink1**  
**FileLink2**  
**FileLink3**

**Car #** E217

**FileLink1**  
**FileLink2**  
**FileLink3**

**Part Cost** \$ 49.50  
**Qty** 2  
**Extended Cost** \$ 98.99

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, Mild	Battery Box material	\$ 2.25	3	kg							1.00	\$ 2.25
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>													<b>\$ 2.250</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Sheet Metal Shearing	Form Box Frame	\$ 0.25	unit	48	Steel	3	\$ 36.00
20	Weld	Join Box frame	\$ 0.15	cm	24	steel	3	\$ 10.80
							1	\$ -
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>\$ 46.80</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
10	Welds - Welding Fixture	Weld Box Frame	\$ 500.00	Point	4	3000	0.67	\$ 0.45
<b>Sub Total</b>								<b>0.44666667</b>

**University** The University of Akron  
**System** Frame & Body (FR)  
**Assembly** Pedal Assembly  
**P/N Base** A0001  
**Suffix** AA  
**Details** Complete Pedal Assembly

**Car #** E217

**Asm Cost** \$ 46.12  
**Qty** 1

**FileLink1**  
**FileLink2**  
**FileLink3**

**Extended C** \$ 46.12

ItemOrder	Part	Part Cost	Quantity	Sub Total
10	Accelerator	\$ 17.19	1.00	\$ 17.190
20	Brake Pedal	\$ 25.17	1.00	\$ 25.170
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
<b>Sub Total</b>				<b>\$ 42.360</b>

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>												<b>\$ -</b>	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Assembly, 1kg, line-on-line	line-up pedals	\$ 0.13	unit	2	1	1	\$ 0.26
20	Ratchet <= 25.4 mm	Tighten pedal bolts	\$ 0.75	unit	2	1	1	\$ 1.50
30	Ratchet <= 6.35 mm	Tighten pedal face bolts	\$ 0.50	unit	4	1	1	\$ 2.00
								\$ -
								\$ -
								\$ -
								\$ -
								\$ -
<b>Sub Total</b>								<b>3.76</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
			0					0	\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ -</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionIncluded	Sub Total
								\$ -
<b>Sub Total</b>								<b>0</b>



University	The University of Akron
System	Frame & Body (FR)
Assembly	Pedal Assembly
Part	Brake Pedal
P/N Base	2
Suffix	AA
Details	Brake Pedal

FileLink1  
FileLink2  
FileLink3

Car # E217  
FileLink1  
FileLink2  
FileLink3

Part Cost \$ 25.17  
Qty 1  
Extended Cost \$ 25.17

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminum, Premium	Pedal Material	\$ 4.20	1.3	kg							1.00	\$ 4.20
20	Bearing, Thrust Needle Roller, Washers	Thrust washer	\$ 0.50	1	unit							2.00	\$ 1.00
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
													\$ -
<b>Sub Total</b>													<b>\$ 5.200</b>

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	machining setup, install and remove	set up for machining	\$ 1.30	unit	1	1	1	\$ 1.30
20	machining	material removal	\$ 0.04	cm^3	295	1	1	\$ 11.80
30	Drilled holes <25.4 mm diameter	Pedal face	\$ 0.35	unit	2	1	1	\$ 0.70
40	Drilled holes <25.4 mm diameter	balance bar	\$ 0.35	unit	4	1	1	\$ 1.40
50	assemble, 1kg, line-on-line	place pedal in frame	\$ 0.13	unit	1	1	1	\$ 0.13
60	ratchet <= 6.35mm	pedal face	\$ 0.50	unit	2	1	1	\$ 1.00
70	ratchet <= 6.35mm	balance bar	\$ 0.50	unit	4	1	1	\$ 2.00
								\$ -
<b>Sub Total</b>								<b>\$ 18.33</b>

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
10	bolt, grand AN	pedal mount	0.53	7.94	mm	38.1	mm	1	\$ 0.53
20	nut, grade AN	pedal mount	0.29	7.94	mm			1	\$ 0.29
30	bolt, Grade AN	pedal face	0.2	4.83	mm	38.1	mm	2	\$ 0.40
40	nut, grade AN	pedal face	0.16	4.83	mm			2	\$ 0.32
50	washer, grade AN	pedal face	0.01	4.83	mm			2	\$ 0.02
60	washer, grade AN	pedal mount	0.02	7.94	mm			4	\$ 0.08
									\$ -
									\$ -
<b>Sub Total</b>									<b>\$ 1.64</b>

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Sub Total
<b>Sub Total</b>								<b>0</b>