

Spring 2018

2018 Formula SAE Michigan Cost Report: Abbreviated Version

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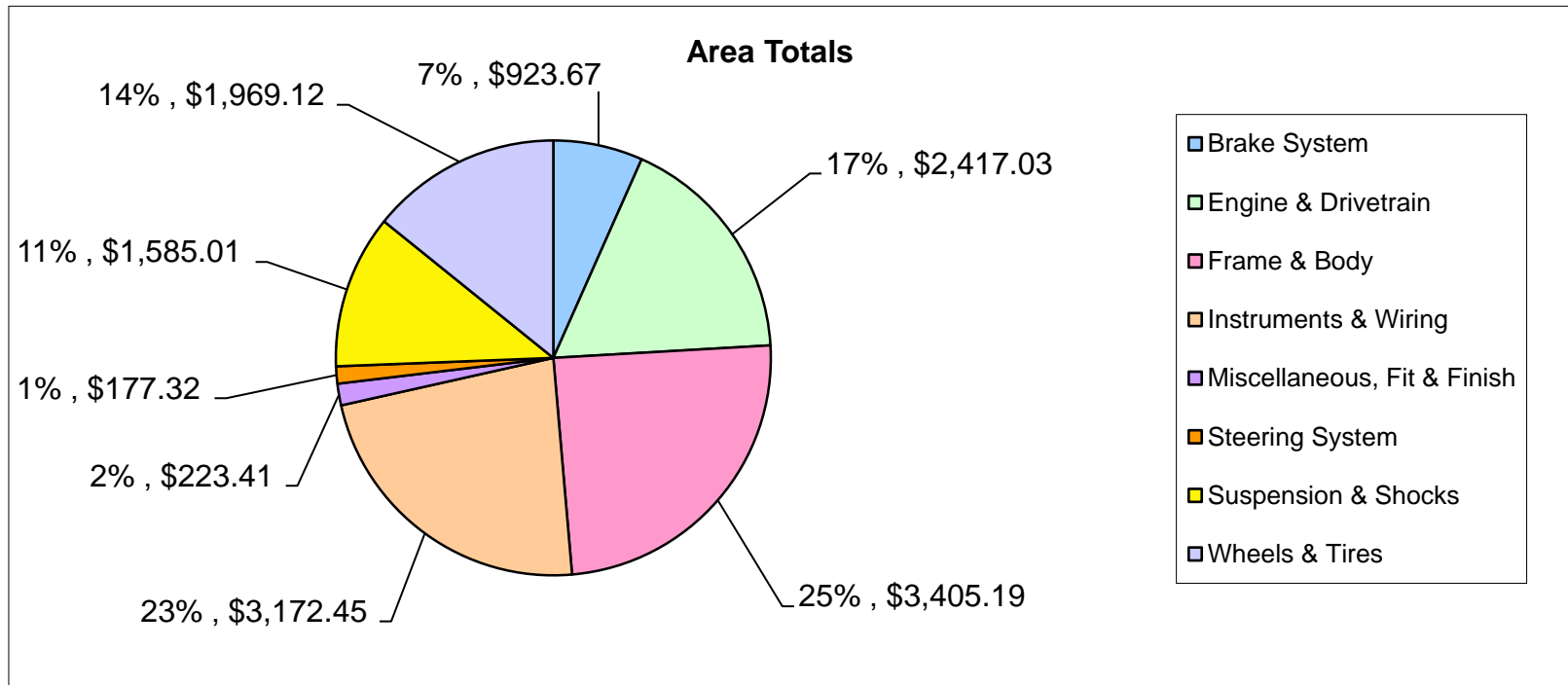
Cost Summary Basics

for: **The University of Akron**
Car # 029



Area Totals	Materials	Processes	Fasteners	Tooling	Total
Brake System	\$ 763.30	\$ 153.98	\$ 6.25	\$ 0.14	\$ 923.67
Engine & Drivetrain	\$ 1,789.39	\$ 598.74	\$ 27.58	\$ 1.32	\$ 2,417.03
Frame & Body	\$ 2,357.51	\$ 981.97	\$ 5.97	\$ 59.74	\$ 3,405.19
Instruments & Wiring	\$ 2,874.33	\$ 294.53	\$ 3.57	\$ 0.02	\$ 3,172.45
Miscellaneous, Fit & Finish	\$ 184.51	\$ 37.80	\$ 0.80	\$ 0.30	\$ 223.41
Steering System	\$ 86.99	\$ 81.12	\$ 8.76	\$ 0.45	\$ 177.32
Suspension & Shocks	\$ 1,141.50	\$ 412.63	\$ 29.52	\$ 1.36	\$ 1,585.01
Wheels & Tires	\$ 1,575.40	\$ 370.98	\$ 22.74	\$ -	\$ 1,969.12
Total Vehicle	\$ 10,772.93	\$ 2,931.75	\$ 105.19	\$ 63.33	\$ 13,873.20

Composition for total vehicle:



University	The Univeristy of Akron
Competition Code	FSAEM
Year	2018
Car #	029

Total Vehicle Cost \$13,873.20

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	A1000	AA	Adjustable	Pedal Box Assembly		\$4.60	1	\$2.00	\$2.35	\$0.25	\$0.00	\$4.60
2	Brake System	10000	AA		Brake Side Carbon Panel Insert		\$1.89	1	\$0.21	\$1.68	\$0.00	\$0.00	\$1.89
3	Brake System	10001	AA		Throttle Side Carbon Panel Insert		\$0.26	3	\$0.04	\$0.22	\$0.00	\$0.00	\$0.78
4	Brake System	10002	AA		Pedal Mounting Brake Slide		\$6.11	1	\$0.34	\$5.13	\$0.64	\$0.00	\$6.11
5	Brake System	10003	AA		Pedal Mounting Throttle Slide		\$5.95	1	\$0.21	\$5.35	\$0.39	\$0.00	\$5.95
6	Brake System	10004	AA		Pedal Tray		\$26.30	1	\$0.68	\$25.46	\$0.16	\$0.00	\$26.30
7	Brake System	10005	AA		Throttle Hard Stop		\$0.83	1	\$0.03	\$0.68	\$0.12	\$0.00	\$0.83
8	Brake System	10006	AA		Throttle Hard Stop Adjuster		\$0.69	2	\$0.01	\$0.68	\$0.00	\$0.00	\$1.38
9	Brake System	10007	AA		Overtravel Switch		\$1.29	1	\$1.01	\$0.28	\$0.00	\$0.00	\$1.29
10	Brake System	10008	AA		Lock Knob		\$1.39	1	\$0.02	\$1.37	\$0.00	\$0.00	\$1.39
11	Brake System	10009	AA		Balance Bar		\$16.19	1	\$10.65	\$5.51	\$0.03	\$0.00	\$16.19
12	Brake System	10010	AA		Balance Bar Guide		\$1.99	1	\$0.04	\$1.86	\$0.09	\$0.00	\$1.99
13	Brake System	10011	AA		Heel Rest		\$36.22	1	\$34.80	\$1.23	\$0.05	\$0.14	\$36.22
14	Brake System	A1100	AA	Brake Line	Brake Line Assembly		\$21.34	1	\$8.19	\$12.64	\$0.51	\$0.00	\$21.34
15	Brake System	11000	AA		Brake Lines		\$43.09	1	\$17.46	\$24.50	\$1.13	\$0.00	\$43.09
16	Brake System	11001	AA		Fluid Reservoir		\$1.71	2	\$0.27	\$1.44	\$0.00	\$0.00	\$3.42
17	Brake System	11002	AA		Master Cylinder		\$119.00	2	\$117.50	\$1.50	\$0.00	\$0.00	\$238.00
18	Brake System	11003	AA		Fittings		\$82.62	1	\$57.12	\$25.50	\$0.00	\$0.00	\$82.62
19	Brake System	A1200	AA	Front Disc	Front Disc Assembly		\$0.12	1	\$0.00	\$0.12	\$0.00	\$0.00	\$0.12
20	Brake System	12000	AA		Front Brake Disc		\$7.32	2.00	\$0.45	\$6.87	\$0.00	\$0.00	\$14.64
21	Brake System	12001	AA		Front Brake Bobbin		\$0.24	16.00	\$0.01	\$0.18	\$0.05	\$0.00	\$3.84
22	Brake System	12002	AA		Front Brake Caliper	Purchased, Positive Lock Pins Provided with Caliper	\$100.17	2.00	\$98.40	\$1.40	\$0.37	\$0.00	\$200.34
23	Brake System	A1300	AA	Rear Disc	Rear Disc Assembly		\$0.12	1.00	\$0.00	\$0.12	\$0.00	\$0.00	\$0.12
24	Brake System	13000	AA		Rear Brake Disc		\$4.08	2.00	\$0.30	\$3.78	\$0.00	\$0.00	\$8.16
25	Brake System	13001	AA		Rear Brake Bobbin		\$0.26	12.00	\$0.00	\$0.21	\$0.05	\$0.00	\$3.12
26	Brake System	13002	AA		Rear Brake Caliper	Purchased, Positive Lock Pins Provided with Calipers	\$99.97	2.00	\$98.20	\$1.40	\$0.37	\$0.00	\$199.94
27	Brake System				Area Total				\$763.30	\$153.98	\$6.25	\$0.14	\$923.67
28	Engine & Drivetrain	A2000	AA	Air Intake	Air Intake Assembly	Restrictor Diameter Met in Intake Manifold	\$21.81	1.00	\$13.39	\$6.19	\$2.23	\$0.00	\$21.81
29	Engine & Drivetrain	20000	AA		Intake Manifold		\$39.44	1.00	\$2.85	\$35.93	\$0.66	\$0.00	\$39.44
30	Engine & Drivetrain	20001	AA		Throttle Body		\$30.54	1.00	\$18.17	\$12.23	\$0.14	\$0.00	\$30.54
31	Engine & Drivetrain	A2100	AA	Bearing Carrier	Bearing Carrier Assembly		\$46.12	1.00	\$41.56	\$2.50	\$2.06	\$0.00	\$46.12
32	Engine & Drivetrain	21000	AA		Bearing Carriers		\$17.72	1.00	\$0.91	\$16.81	\$0.00	\$0.00	\$17.72
33	Engine & Drivetrain	21001	AA		Engine Mount		\$8.08	1.00	\$0.41	\$7.67	\$0.00	\$0.00	\$8.08
34	Engine & Drivetrain	21002	AA		Bearing Carrier Support		\$1.18	1.00	\$0.01	\$1.17	\$0.00	\$0.00	\$1.18
35	Engine & Drivetrain	A2200	AA	Cooling	Cooling Assembly		\$33.29	1.00	\$30.20	\$2.75	\$0.34	\$0.00	\$33.29
36	Engine & Drivetrain	22000	AA		Radiator	Purchased	\$1.76	2.00	\$1.76	\$0.00	\$0.00	\$0.00	\$3.52
37	Engine & Drivetrain	22001	AA		Radiator Shroud		\$1.17	1.00	\$0.11	\$1.06	\$0.00	\$0.00	\$1.17
38	Engine & Drivetrain	22002	AA		Coolant Lines		\$91.21	1.00	\$36.98	\$51.93	\$2.13	\$0.17	\$91.21
39	Engine & Drivetrain	22003	AA		Catch Can		\$26.38	2.00	\$1.13	\$24.75	\$0.21	\$0.29	\$52.76
40	Engine & Drivetrain	22004	AA		Expansion Tank		\$13.20	1.00	\$3.42	\$9.44	\$0.00	\$0.34	\$13.20
41	Engine & Drivetrain	A2300	AA	Differential	Differential Assembly		\$8.04	1.00	\$0.00	\$6.06	\$1.98	\$0.00	\$8.04
42	Engine & Drivetrain	23000	AA		Differential Housing		\$61.70	1.00	\$15.80	\$44.98	\$0.92	\$0.00	\$61.70
43	Engine & Drivetrain	23001	AA		Differential Internals		\$110.00	1.00	\$110.00	\$0.00	\$0.00	\$0.00	\$110.00
44	Engine & Drivetrain	A2400	AA	Drivetrain	Drivetrain Assembly		\$54.12	1.00	\$42.86	\$10.71	\$0.55	\$0.00	\$54.12
45	Engine & Drivetrain	24000	AA		Front Sprocket	10 tooth sprocket	\$4.63	1.00	\$0.22	\$4.41	\$0.00	\$0.00	\$4.63
46	Engine & Drivetrain	24001	AA		Rear Sprocket	41 tooth sprocket	\$26.37	1.00	\$1.51	\$24.86	\$0.00	\$0.00	\$26.37
47	Engine & Drivetrain	24002	AA		Chain Guard		\$5.81	1.00	\$0.35	\$5.27	\$0.13	\$0.06	\$5.81
48	Engine & Drivetrain	24003	AA		Axle		\$10.14	2.00	\$1.70	\$8.10	\$0.34	\$0.00	\$20.28
49	Engine & Drivetrain	24004	AA		Axle Snubbers		\$1.39	4.00	\$0.02	\$1.37	\$0.00	\$0.00	\$5.56
50	Engine & Drivetrain	24005	AA		Constant Velocity Joint Boot	CV Joint (Tripod) and Boot	\$10.21	2.00	\$5.72	\$4.49	\$0.00	\$0.00	\$20.42
51	Engine & Drivetrain	24006	AA		Constant Velocity Joint Housing	Tulips	\$70.14	1.00	\$11.52	\$58.62	\$0.00	\$0.00	\$70.14
52	Engine & Drivetrain	24007	AA		Tensioning Spacer		\$0.39	1.00	\$0.02	\$0.36	\$0.00	\$0.00	\$13.73
53	Engine & Drivetrain	A2500	AA	Engine	Engine Assembly		\$13.73	1.00	\$0.00	\$7.53	\$6.20	\$0.00	\$13.73
54	Engine & Drivetrain	25000	AA		Engine	2009 Yamaha WR450F	\$1,129.00	1.00	\$1,127.31	\$1.69	\$0.00	\$0.00	\$1,129.00
55	Engine & Drivetrain	A2600	AA	Exhaust	Exhaust Assembly		\$1.07	1.00	\$0.00	\$0.89	\$0.18	\$0.00	\$1.07
56	Engine & Drivetrain	26000	AA		Exhaust Flange		\$1.54	1.00	\$0.09	\$1.45	\$0.00	\$0.00	\$1.54
57	Engine & Drivetrain	26001	AA		Exhaust Header		\$55.38	1.00	\$2.94	\$52.27	\$0.00	\$0.17	\$55.38

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
58	Engine & Drivetrain	26002	AA		Exhaust Muffler		\$82.88	1.00	\$29.96	\$52.20	\$0.72	\$0.00	\$82.88
59	Engine & Drivetrain	26003	AA		Muffler Connector		\$38.39	1.00	\$0.79	\$37.60	\$0.00	\$0.00	\$38.39
60	Engine & Drivetrain	A2700	AA		Fuel Assembly		\$38.48	1.00	\$34.29	\$2.75	\$1.44	\$0.00	\$38.48
61	Engine & Drivetrain	27000	AA		Fuel Pump	Purchased	\$47.76	1.00	\$45.60	\$2.16	\$0.00	\$0.00	\$47.76
62	Engine & Drivetrain	27001	AA		Fuel Tank		\$30.39	1.00	\$2.58	\$23.61	\$4.20	\$0.00	\$30.39
63	Engine & Drivetrain	27002	AA		Fuel Lines		\$60.15	1.00	\$49.75	\$10.40	\$0.00	\$0.00	\$60.15
64	Engine & Drivetrain	27003	AA		Filler Neck		\$8.47	1.00	\$3.61	\$3.49	\$1.37	\$0.00	\$8.47
65	Engine & Drivetrain	27004	AA		Fuel Port		\$4.12	2.00	\$0.42	\$3.60	\$0.10	\$0.00	\$8.24
66	Engine & Drivetrain	27005	AA		Check Valve	Purchased	\$15.24	1.00	\$15.03	\$0.13	\$0.08	\$0.00	\$15.24
67	Engine & Drivetrain	A2800	AA		Shifting Assembly		\$29.21	1.00	\$27.54	\$1.61	\$0.06	\$0.00	\$29.21
68	Engine & Drivetrain	28000	AA		Cylinder Mount		\$2.27	1.00	\$0.22	\$1.96	\$0.09	\$0.00	\$2.27
69	Engine & Drivetrain	28001	AA		Shifter Arm		\$1.06	1.00	\$0.17	\$0.89	\$0.00	\$0.00	\$1.06
70	Engine & Drivetrain	28002	AA		CO2 Assembly		\$100.86	1.00	\$93.43	\$6.63	\$0.80	\$0.00	\$100.86
71	Engine & Drivetrain	28003	AA		Potentiometer		\$5.80	1.00	\$4.27	\$1.53	\$0.00	\$0.00	\$5.80
72	Engine & Drivetrain				Area Total				\$1,789.39	\$598.74	\$27.58	\$1.32	\$2,417.03
73	Frame & Body	A3000	AA		Body Assembly		\$4.83	1.00	\$0.00	\$4.58	\$0.25	\$0.00	\$4.83
74	Frame & Body	30000	AA		Body		\$214.62	1.00	\$164.22	\$46.00	\$0.00	\$4.40	\$214.62
75	Frame & Body	30001	AA		Hood		\$30.65	1.00	\$25.60	\$4.29	\$0.07	\$0.69	\$30.65
76	Frame & Body	30002	AA		Impact Attenuator		\$16.45	1.00	\$9.41	\$4.92	\$2.12	\$0.00	\$16.45
77	Frame & Body	30004	AA		Electronics Cover		\$4.97	1.00	\$0.38	\$4.47	\$0.12	\$0.00	\$4.97
78	Frame & Body	30005	AA		Data Panel		\$3.22	2.00	\$1.84	\$1.31	\$0.00	\$0.07	\$6.44
79	Frame & Body	A3100	AA		Frame Assembly		\$31.76	1.00	\$18.72	\$13.04	\$0.00	\$0.00	\$31.76
80	Frame & Body	31000	AA		Tube Frame		\$342.11	1.00	\$35.57	\$306.54	\$0.00	\$0.00	\$342.11
81	Frame & Body	31001	AA		Frame Tabs		\$182.84	1.00	\$3.56	\$156.37	\$0.08	\$22.83	\$182.84
82	Frame & Body	31002	AA		Stress Panel Side Impact Structure	SPSIS	\$222.49	2.00	\$202.46	\$16.07	\$0.00	\$3.96	\$444.98
83	Frame & Body	31003	AA		Bent Floor		\$109.38	1.00	\$92.20	\$17.07	\$0.00	\$0.11	\$109.38
84	Frame & Body	31004	AA		Flat Floor		\$65.12	1.00	\$52.29	\$12.78	\$0.00	\$0.05	\$65.12
85	Frame & Body	31005	AA		Front Tube Frame Support		\$20.95	2.00	\$18.70	\$2.24	\$0.00	\$0.01	\$41.90
86	Frame & Body	A3200	AA		Front Aero Assembly		\$1.41	1.00	\$0.00	\$1.00	\$0.41	\$0.00	\$1.41
87	Frame & Body	32000	AA		Front Foot Plates		\$29.81	2.00	\$23.17	\$6.28	\$0.00	\$0.36	\$59.62
88	Frame & Body	32001	AA		Front Main Plane		\$131.14	1.00	\$115.60	\$12.43	\$0.00	\$3.11	\$131.14
89	Frame & Body	32002	AA		Front Secondaries	Secondaries Mounted to Front Main Plane and Front Wing Mount with Strake	\$19.62	2.00	\$15.62	\$3.85	\$0.00	\$0.15	\$39.24
90	Frame & Body	32003	AA		Front Wing Mount		\$15.89	2.00	\$11.71	\$4.16	\$0.00	\$0.02	\$31.78
91	Frame & Body	A3300	AA		Pedal and Controls Assembly		\$0.52	1.00	\$0.00	\$0.52	\$0.00	\$0.00	\$0.52
92	Frame & Body	33000	AA		Brake Pedal		\$30.32	1.00	\$6.53	\$23.79	\$0.00	\$0.00	\$30.32
93	Frame & Body	33001	AA		Throttle Pedal		\$79.73	1.00	\$53.68	\$25.95	\$0.10	\$0.00	\$79.73
94	Frame & Body	33002	AA		Throttle Cable Mount		\$2.15	1.00	\$0.02	\$2.13	\$0.00	\$0.00	\$2.15
95	Frame & Body	33003	AA		Clutch Lever		\$49.60	1.00	\$42.17	\$7.43	\$0.00	\$0.00	\$49.60
96	Frame & Body	A3500	AA		Rear Aero Assembly		\$4.32	1.00	\$0.00	\$4.00	\$0.32	\$0.00	\$4.32
97	Frame & Body	35000	AA		Rear End Plates		\$154.12	2.00	\$124.47	\$29.43	\$0.00	\$0.22	\$308.24
98	Frame & Body	35001	AA		Rear Main Plane		\$169.13	1.00	\$140.12	\$25.34	\$0.00	\$3.67	\$169.13
99	Frame & Body	35002	AA		Rear Secondary		\$66.09	1.00	\$54.79	\$9.84	\$0.00	\$1.46	\$66.09
100	Frame & Body	35003	AA		Rear Tertiary		\$53.04	1.00	\$41.47	\$9.37	\$0.00	\$2.20	\$53.04
101	Frame & Body	35004	AA		Driving Element		\$114.99	1.00	\$100.14	\$12.21	\$0.00	\$2.64	\$114.99
102	Frame & Body	A3600	AA		Rear Mounting Assembly		\$3.12	1.00	\$0.00	\$2.50	\$0.62	\$0.00	\$3.12
103	Frame & Body	36000	AA		Swan Neck		\$46.92	1.00	\$37.54	\$9.36	\$0.00	\$0.02	\$46.92
104	Frame & Body	36001	AA		Center Bracket		\$13.02	2.00	\$0.25	\$12.77	\$0.00	\$0.00	\$26.04
105	Frame & Body	36002	AA		Rear Bracket		\$6.31	2.00	\$0.13	\$6.18	\$0.00	\$0.00	\$12.62
106	Frame & Body	A3700	AA		DRS Assembly		\$33.44	1.00	\$29.52	\$3.90	\$0.02	\$0.00	\$33.44
107	Frame & Body	37000	AA		Linkage		\$7.68	1.00	\$5.77	\$1.86	\$0.05	\$0.00	\$7.68
108	Frame & Body	37001	AA		Cylinder Mount		\$1.58	1.00	\$0.43	\$1.09	\$0.00	\$0.06	\$1.58
109	Frame & Body	37002	AA		Bump Stop		\$32.26	1.00	\$3.83	\$28.11	\$0.00	\$0.32	\$32.26
110	Frame & Body	37003	AA		CO2 Assembly		\$100.86	1.00	\$93.43	\$6.63	\$0.80	\$0.00	\$100.86
111	Frame & Body	A3800	AA		Sidepod Assembly		\$3.25	1.00	\$0.00	\$3.00	\$0.25	\$0.00	\$3.25
112	Frame & Body	38000	AA		Sidepod		\$73.94	2.00	\$59.96	\$12.43	\$0.00	\$1.55	\$147.88
113	Frame & Body	A3900	AA		Undertray Assembly		\$2.76	1.00	\$0.00	\$2.00	\$0.76	\$0.00	\$2.76
114	Frame & Body	39000	AA		Undertray		\$349.41	1.00	\$313.90	\$30.01	\$0.00	\$5.50	\$349.41
115	Frame & Body				Area Total				\$2,357.51	\$981.97	\$5.97	\$59.74	\$3,405.19
116	Instruments, Wiring & Accessories	A4000	AA		Battery Assembly		\$0.85	1.00	\$0.00	\$0.25	\$0.60	\$0.00	\$0.85
117	Instruments, Wiring & Accessories	40000	AA		Battery		\$92.59	1.00	\$89.54	\$3.05	\$0.00	\$0.00	\$92.59
118	Instruments, Wiring & Accessories	A4100	AA		Dashboard Assembly		\$2.38	1.00	\$0.06	\$2.30	\$0.02	\$0.00	\$2.38
119	Instruments, Wiring & Accessories	41000	AA		Dashboard		\$23.92	1.00	\$17.23	\$6.68	\$0.00	\$0.01	\$23.92

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
120	Instruments, Wiring & Accessories	41001	AA		Shift Light		\$8.68	1.00	\$7.10	\$1.53	\$0.05	\$0.00	\$8.68
121	Instruments, Wiring & Accessories	41002	AA		Brake Light		\$16.10	1.00	\$13.78	\$2.31	\$0.00	\$0.01	\$16.10
122	Instruments, Wiring & Accessories	A4200	AA	Data Acquisition	Assembly	No Oil Pressure Light or Tachometer	\$50.01	1.00	\$0.00	\$50.01	\$0.00	\$0.00	\$50.01
123	Instruments, Wiring & Accessories	42000	AA		Data Acquisition		\$302.67	1.00	\$222.52	\$78.64	\$1.51	\$0.00	\$302.67
124	Instruments, Wiring & Accessories	A4300	AA		Kill Switch Assembly		\$5.60	1.00	\$4.00	\$1.50	\$0.10	\$0.00	\$5.60
125	Instruments, Wiring & Accessories	43000	AA		Kill Switch		\$12.18	1.00	\$8.20	\$3.98	\$0.00	\$0.00	\$12.18
126	Instruments, Wiring & Accessories	A4400	AA	Steering Wheel Electronics	Assembly		\$0.30	1.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.30
127	Instruments, Wiring & Accessories	44000	AA		Steering Wheel Electronics		\$48.45	1.00	\$35.01	\$13.44	\$0.00	\$0.00	\$48.45
128	Instruments, Wiring & Accessories	A4500	AA		Wiring Harness Assembly		\$11.33	1.00	\$0.00	\$10.04	\$1.29	\$0.00	\$11.33
129	Instruments, Wiring & Accessories	45000	AA		Wiring Harness		\$2,597.39	1.00	\$2,476.89	\$120.50	\$0.00	\$0.00	\$2,597.39
130	Instruments, Wiring & Accessories				Area Total				\$2,874.33	\$294.53	\$3.57	\$0.02	\$3,172.45
131	Miscellaneous, Safety, Finish and Assembly	A5000	AA		Cockpit Assembly		\$48.10	1.00	\$47.25	\$0.50	\$0.35	\$0.00	\$48.10
132	Miscellaneous, Safety, Finish and Assembly	50000	AA		Seat	Driver and Car Used as Mold	\$20.09	1.00	\$13.89	\$6.20	\$0.00	\$0.00	\$20.09
133	Miscellaneous, Safety, Finish and Assembly	50001	AA		Firewall Flange		\$38.52	1.00	\$36.54	\$1.92	\$0.00	\$0.06	\$38.52
134	Miscellaneous, Safety, Finish and Assembly	50002	AA		Seat Back		\$35.29	1.00	\$33.09	\$2.13	\$0.00	\$0.07	\$35.29
135	Miscellaneous, Safety, Finish and Assembly	50003	AA		Firewall		\$21.75	1.00	\$18.48	\$3.18	\$0.00	\$0.09	\$21.75
136	Miscellaneous, Safety, Finish and Assembly	50004	AA		Head Rest		\$39.19	1.00	\$28.76	\$10.17	\$0.18	\$0.08	\$39.19
137	Miscellaneous, Safety, Finish and Assembly	A5100	AA		Jacking Bar Assembly		\$3.94	1.00	\$0.00	\$3.75	\$0.19	\$0.00	\$3.94
138	Miscellaneous, Safety, Finish and Assembly	51000	AA		Jacking Bar		\$1.94	1.00	\$0.17	\$1.77	\$0.00	\$0.00	\$1.94
139	Miscellaneous, Safety, Finish and Assembly	51001	AA		Jacking Bar Mount		\$5.35	2.00	\$2.52	\$2.79	\$0.04	\$0.00	\$10.70
140	Miscellaneous, Safety, Finish and Assembly	51002	AA		Jacking Bar Brace		\$2.10	1.00	\$1.24	\$0.86	\$0.00	\$0.00	\$2.10
141	Miscellaneous, Safety, Finish and Assembly	51003	AA		Chain Guard Insert		\$1.79	1.00	\$0.05	\$1.74	\$0.00	\$0.00	\$1.79
142	Miscellaneous, Safety, Finish and Assembly	A5200	AA	Miscellaneous Assembly		Unbudgeted Assembly and Repair Costs Added During Manufacturing or Testing	\$0.00	1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
143	Miscellaneous, Safety, Finish and Assembly	52000	AA		Tape		\$0.00	1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
144	Miscellaneous, Safety, Finish and Assembly	52001	AA		Safety Wire		\$0.00	1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
145	Miscellaneous, Safety, Finish and Assembly	52002	AA		Heat Barrier		\$0.00	1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
146	Miscellaneous, Safety, Finish and Assembly	52003	AA		Zip Ties		\$0.00	1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
147	Miscellaneous, Safety, Finish and Assembly	52004	AA		Adhesive		\$0.00	1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
148	Miscellaneous, Safety, Finish and Assembly				Area Total				\$184.51	\$37.80	\$0.80	\$0.30	\$223.41
149	Steering System	A6000	AA	Steering Column	Assembly		\$17.65	1.00	\$10.17	\$4.75	\$2.73	\$0.00	\$17.65
150	Steering System	60000	AA		Column Joints		\$57.74	1.00	\$45.00	\$12.74	\$0.00	\$0.00	\$57.74
151	Steering System	60001	AA		Steering Shaft		\$10.19	1.00	\$0.61	\$9.22	\$0.36	\$0.00	\$10.19
152	Steering System	60002	AA		Female Spline		\$3.34	1.00	\$0.21	\$2.68	\$0.45	\$0.00	\$3.34
153	Steering System	A6100	AA		Steering Rack Assembly		\$10.13	1.00	\$4.89	\$2.88	\$2.36	\$0.00	\$10.13
154	Steering System	61000	AA		Pinion Gear		\$2.64	1.00	\$0.04	\$2.60	\$0.00	\$0.00	\$2.64
155	Steering System	61002	AA		Rack Gear		\$1.84	1.00	\$0.04	\$1.80	\$0.00	\$0.00	\$1.84
156	Steering System	61003	AA		Steering Rack		\$5.88	1.00	\$0.50	\$5.38	\$0.00	\$0.00	\$5.88
157	Steering System	61004	AA		Steering Rack Housing		\$14.80	1.00	\$5.04	\$9.76	\$0.00	\$0.00	\$14.80
158	Steering System	A6200	AA		Steering Wheel Assembly		\$0.97	1.00	\$0.00	\$0.80	\$0.17	\$0.00	\$0.97
159	Steering System	62000	AA		Steering Wheel		\$17.23	1.00	\$7.98	\$8.33	\$0.47	\$0.45	\$17.23
160	Steering System	62001	AA		Quick Disconnect		\$9.14	1.00	\$2.63	\$6.30	\$0.21	\$0.00	\$9.14
161	Steering System	62002	AA		Aluminum Insert		\$1.52	1.00	\$0.08	\$1.44	\$0.00	\$0.00	\$1.52
162	Steering System	62003	AA		Shifting Paddles		\$0.35	2.00	\$0.03	\$0.27	\$0.05	\$0.00	\$0.70
163	Steering System	62004	AA		Rotary Knobs		\$0.30	2.00	\$0.03	\$0.27	\$0.00	\$0.00	\$0.60
164	Steering System	A6300	AA		Tie Rod Assembly		\$11.53	1.00	\$8.28	\$1.34	\$1.91	\$0.00	\$11.53
165	Steering System	63000	AA		Tie Rod		\$5.71	2.00	\$0.70	\$5.01	\$0.00	\$0.00	\$11.42
166	Steering System				Area Total				\$86.99	\$81.12	\$8.76	\$0.45	\$177.32
167	Suspension & Shocks	A7000	AA		Bell Crank Assembly		\$4.24	1.00	\$0.00	\$2.00	\$2.24	\$0.00	\$4.24
168	Suspension & Shocks	70000	AA		Front Bell Crank		\$19.61	2.00	\$13.21	\$6.40	\$0.00	\$0.00	\$39.22
169	Suspension & Shocks	70001	AA		Rear Bell Crank		\$9.33	2.00	\$3.04	\$6.29	\$0.00	\$0.00	\$18.66
170	Suspension & Shocks	A7100	AA		Damper Assembly		\$7.84	1.00	\$0.00	\$4.00	\$3.84	\$0.00	\$7.84
171	Suspension & Shocks	71000	AA		Damper		\$970.00	1.00	\$970.00	\$0.00	\$0.00	\$0.00	\$970.00
172	Suspension & Shocks	A7200	AA		Front A-Arm Assembly		\$28.43	1.00	\$2.76	\$21.19	\$4.48	\$0.00	\$28.43
173	Suspension & Shocks	72000	AA		Front Lower A-Arm		\$19.81	2.00	\$10.73	\$8.81	\$0.10	\$0.17	\$39.62
174	Suspension & Shocks	72001	AA		Front Upper A-Arm		\$19.81	2.00	\$11.07	\$8.47	\$0.10	\$0.17	\$39.62
175	Suspension & Shocks	A7300	AA		Front Anti-Roll Bar Assembly		\$4.81	1.00	\$0.00	\$3.64	\$1.17	\$0.00	\$4.81
176	Suspension & Shocks	73000	AA		Front Blade		\$2.97	2.00	\$0.14	\$2.56	\$0.27	\$0.00	\$5.94
177	Suspension & Shocks	73001	AA		Front Bar Mounts		\$1.58	2.00	\$0.03	\$1.55	\$0.00	\$0.00	\$3.16
178	Suspension & Shocks	73002	AA		Front Bar		\$4.10	1.00	\$0.22	\$3.88	\$0.00	\$0.00	\$4.10
179	Suspension & Shocks	73003	AA		Front Link		\$5.44	2.00	\$4.06	\$1.38	\$0.00	\$0.00	\$10.88
180	Suspension & Shocks	A7400	AA		Front Upright Assembly		\$3.91	1.00	\$0.00	\$2.26	\$1.65	\$0.00	\$3.91
181	Suspension & Shocks	74000	AA		Front Upright		\$44.27	2.00	\$2.23	\$42.04	\$0.00	\$0.00	\$88.54

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
182	Suspension & Shocks	74001	AA		Front Camber Knuckle		\$7.60	2.00	\$0.13	\$6.87	\$0.60	\$0.00	\$15.20
183	Suspension & Shocks	74002	AA		Steering Knuckle		\$3.00	2.00	\$0.01	\$2.93	\$0.06	\$0.00	\$6.00
184	Suspension & Shocks	A7500	AA		Pull Rod Assembly		\$6.55	1.00	\$0.48	\$2.25	\$3.82	\$0.00	\$6.55
185	Suspension & Shocks	75000	AA		Front Pull Rod		\$12.28	2.00	\$4.38	\$7.72	\$0.18	\$0.00	\$24.56
186	Suspension & Shocks	75001	AA		Rear Pull Rod		\$12.28	2.00	\$4.38	\$7.72	\$0.18	\$0.00	\$24.56
187	Suspension & Shocks	A7600	AA		Rear A-Arm Assembly		\$28.33	1.00	\$2.86	\$21.24	\$4.23	\$0.00	\$28.33
188	Suspension & Shocks	76000	AA		Rear Lower A-Arm		\$19.57	2.00	\$11.06	\$8.24	\$0.10	\$0.17	\$39.14
189	Suspension & Shocks	76001	AA		Rear Upper A-Arm		\$19.25	2.00	\$10.80	\$8.18	\$0.10	\$0.17	\$38.50
190	Suspension & Shocks	A7700	AA		Rear Anti-Roll Bar Assembly		\$5.34	1.00	\$0.00	\$3.38	\$1.96	\$0.00	\$5.34
191	Suspension & Shocks	77000	AA		Rear Blade		\$2.77	2.00	\$0.13	\$2.64	\$0.00	\$0.00	\$5.54
192	Suspension & Shocks	77001	AA		Rear Bar Mounts		\$1.63	2.00	\$0.11	\$1.52	\$0.00	\$0.00	\$3.26
193	Suspension & Shocks	77002	AA		Rear Bar		\$4.05	1.00	\$0.36	\$3.69	\$0.00	\$0.00	\$4.05
194	Suspension & Shocks	77003	AA		Rear Link		\$8.32	2.00	\$4.44	\$3.83	\$0.05	\$0.00	\$16.64
195	Suspension & Shocks	A7800	AA		Rear Upright Assembly		\$6.85	1.00	\$0.00	\$4.20	\$2.65	\$0.00	\$6.85
196	Suspension & Shocks	78000	AA		Rear Upright		\$40.50	2.00	\$2.19	\$38.31	\$0.00	\$0.00	\$81.00
197	Suspension & Shocks	78001	AA		Rear Camber Knuckle		\$5.26	2.00	\$0.27	\$4.99	\$0.00	\$0.00	\$10.52
198	Suspension & Shocks				Area Total				\$1,141.50	\$412.63	\$29.52	\$1.36	\$1,585.01
199	Wheels, Wheel Bearings & Tires	A8000	AA		Hub Assembly		\$3.60	1.00	\$0.00	\$3.40	\$0.20	\$0.00	\$3.60
200	Wheels, Wheel Bearings & Tires	80000	AA		Front Hub Nut		\$2.74	2.00	\$0.24	\$2.50	\$0.00	\$0.00	\$5.48
201	Wheels, Wheel Bearings & Tires	80001	AA		Rear Hub Nut		\$3.62	2.00	\$0.28	\$3.34	\$0.00	\$0.00	\$7.24
202	Wheels, Wheel Bearings & Tires	80002	AA		Front Hub		\$45.63	2.00	\$1.63	\$42.31	\$1.69	\$0.00	\$91.26
203	Wheels, Wheel Bearings & Tires	80003	AA		Rear Hub		\$27.48	2.00	\$1.95	\$23.84	\$1.69	\$0.00	\$54.96
204	Wheels, Wheel Bearings & Tires	A8100	AA		Wheel Assembly	No Wheel Weights	\$42.78	1.00	\$0.00	\$27.00	\$15.78	\$0.00	\$42.78
205	Wheels, Wheel Bearings & Tires	81000	AA		Wheel Center		\$20.05	4.00	\$1.81	\$18.24	\$0.00	\$0.00	\$80.20
206	Wheels, Wheel Bearings & Tires	81001	AA		Wheel Shell		\$143.38	4.00	\$116.00	\$27.38	\$0.00	\$0.00	\$573.52
207	Wheels, Wheel Bearings & Tires	81002	AA		Tire		\$112.70	4.00	\$112.00	\$0.70	\$0.00	\$0.00	\$450.80
208	Wheels, Wheel Bearings & Tires	A8200	AA		Wheel Bearing Assembly		\$1.76	1.00	\$0.00	\$1.76	\$0.00	\$0.00	\$1.76
209	Wheels, Wheel Bearings & Tires	82000	AA		Wheel Bearing		\$80.95	8.00	\$80.95	\$0.00	\$0.00	\$0.00	\$647.60
210	Wheels, Wheel Bearings & Tires	82001	AA		Wheel Bearing Spacer		\$2.48	4.00	\$0.09	\$2.39	\$0.00	\$0.00	\$9.92
211	Wheels, Wheel Bearings & Tires				Area Total				\$1,575.40	\$370.98	\$22.74	\$0.00	\$1,969.12
					Vehicle Total				\$10,772.93	\$2,931.75	\$105.19	\$63.33	\$13,873.20

University	University of Akron
System	Brakes
Assembly	Adjustable Pedal Box Assembly
P/N Base	A1000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$ 102.91
Quantity	1
Extended Cost	\$ 102.91

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Brake Side Carbon Panel Insert	\$ 1.89	1	\$ 1.89
20	Throttle Side Carbon Panel Insert	\$ 0.26	3	\$ 0.79
30	Pedal Mounting Brake Slide	\$ 6.11	1	\$ 6.11
40	Pedal Mounting Throttle Slide	\$ 5.95	1	\$ 5.95
50	Pedal Tray	\$ 24.31	1	\$ 24.31
60	Throttle Hard Stop	\$ 0.83	1	\$ 0.83
70	Throttle Hard Stop Adjuster	\$ 0.69	2	\$ 1.38
80	Overtravel Switch	\$ 1.29	1	\$ 1.29
90	Lock Knob	\$ 1.38	1	\$ 1.38
100	Balance Bar	\$ 16.20	1	\$ 16.20
110	Balance Bar Guide	\$ 1.99	1	\$ 1.99
120	Heel Rest	\$ 36.20	1	\$ 36.20
Subtotal				\$ 98.32

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Spring, Compression (General)	Miniature Gas Springs	\$ 1.00		unit						2	\$ 2.00
Subtotal \$ 2.00												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Loose	Assemble Adjustable Pedal Box	\$ 0.06	unit	10	1	1	\$ 0.60
20	Power Tool <= 25.4 mm	Hard Stop to Throttle Pedal	\$ 0.25	unit	1	1	1	\$ 0.25
30	Power Tool <= 6.35 mm	Spring to Throttle Pedal and Tray	\$ 0.25	unit	2	1	1	\$ 0.50
40	Hand, Tight <= 6.35 mm	Heel Rest to Pedal Tray	\$ 0.50	unit	2	1	1	\$ 1.00
Subtotal								\$ 2.35

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Gas Springs to Throttle Pedal and Tray (M4-0.7 x 40mm Socket Cap Screw)	\$ 0.07	0.8636 mm		19.05 mm		2	\$ 0.14
20	Nut, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Gas Springs to Throttle Pedal and Tray (M4-0.7 Plain Finish Steel Hex Nut)	\$ 0.01	0.8636 mm				2	\$ 0.02
30	Washer, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Gas Springs to Throttle Pedal and Tray (M4 x 9mm OD Yellow Zinc Finish Steel Flat Washer)	\$ 0.04	1.7272 mm				2	\$ 0.08
Subtotal									\$ 0.24

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
Subtotal								

University	University of Akron
System	Brakes
Assembly	Brake Line Assembly
P/N Base	A1100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	388.44
Quantity		1
Extended Cost	\$	388.44

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Brake Lines	\$ 43.07	1	\$ 43.07
20	Fluid Reservoir	\$ 1.71	2	\$ 3.42
30	Master Cylinder	\$ 119.00	2	\$ 238.00
40	Fittings	\$ 82.62	1	\$ 82.62
Subtotal				\$ 367.11

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Fluid, Oil	Brake Fluid	\$ 0.18		0.25 liter						1	\$ 0.18
20	Sensor, Fluid Pressure	Brake Pressure Sensor	\$ 4.00								2	\$ 8.00
Subtotal												\$ 8.18

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal	
10	Assemble, 1 kg, Loose	Assemble Brake Line and Fittings	\$ 0.06	unit	20	1	1	\$ 1.20	
20	Brake Bleed - Per Bleeder Valve	Bleed Brakes	\$ 2.50	unit	4	1	1	\$ 10.00	
30	Power Tool <= 6.35 mm	Fluid Reservoir to Brake Pedal	\$ 0.25	unit	1	1	1	\$ 0.25	
40	Power Tool <= 6.35 mm	Master Cylinder to Brake Pedal	\$ 0.25	unit	1	1	1	\$ 0.25	
50	Install Tie Wrap	Clamp Hose to Reservoir and Fitting	\$ 0.09	unit	2	1	1	\$ 0.18	
60	Assemble, 1 kg, Interference	Brake Reservoir to Master Cylinder	\$ 0.19	unit	4	1	1	\$ 0.76	
Subtotal									\$ 12.64

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Nut, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Reservoir to Brake Pedal (M4-0.7 Plain Finish Steel Hex Nut)	\$ 0.02		4 mm			1	\$ 0.02
20	Tie Wrap	Clamp Hose to Reservoir and Fitting	\$ 0.04		unit			2	\$ 0.08
30	Bolt, Grade 8.8 (SAE 5)	Master Cylinder to Brake Pedal (5/16"-18 x 3" Yellow Zinc Finish Hex Cap Screw)	\$ 0.36	7.93 mm		76.2 mm		1	\$ 0.36
40	Nut, Grade 8.8 (SAE 5)	Master Cylinder to Brake Pedal (5/16"-18 Yellow Zinc Finish Finished Hex Nut)	\$ 0.04	7.93 mm				1	\$ 0.04
50	Washer, Grade 8.8 (SAE 5)	Master Cylinder to Brake Pedal (5/16" x 0.688" OD Yellow Zinc Finish Steel SAE Flat Washer)	\$ 0.01	7.93 mm				1	\$ 0.01
Subtotal									\$ 0.51

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal	
Subtotal									

University	University of Akron
System	Brakes
Assembly	Front Brake Disc Assembly
P/N Base	A1200
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	218.97
Quantity		1
Extended Cost	\$	218.97

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Brake Disc	\$ 7.33	2	\$ 14.65
20	Front Brake Bobbin	\$ 0.24	16	\$ 3.84
30	Front Brake Caliper	\$ 100.18	2	\$ 200.36
			Subtotal	\$ 218.85

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
											Subtotal	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal	
10	Assemble, 1 kg, Loose	Assemble Brake Disc to Front Hub	\$ 0.06	unit	2	1	1	\$ 0.12	
								Subtotal	\$ 0.12

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
									Subtotal

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
								Subtotal

University	University of Akron
System	Brakes
Assembly	Rear Brake Disc Assembly
P/N Base	A1300
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	211.36
Quantity		1
Extended Cost	\$	211.36

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Rear Brake Disc	\$ 4.08	2	\$ 8.16
20	Rear Brake Bobbin	\$ 0.26	12	\$ 3.12
30	Rear Brake Caliper	\$ 99.98	2	\$ 199.96
			Subtotal	\$ 211.24

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
											Subtotal	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal	
10	Assemble, 1 kg, Loose	Assemble Brake Disc to Rear Hub	\$ 0.06	unit	2	1	1	\$ 0.12	
								Subtotal	\$ 0.12

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal	
									Subtotal	

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal	
								Subtotal	

University	University of Akron
System	Engine & Drivetrain
Assembly	Air Intake Assembly
P/N Base	A2000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	91.51
Quantity		1
Extended Cost	\$	91.51

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Intake Manifold	\$ 39.45	1	\$ 39.45
20	Throttle Body	\$ 30.27	1	\$ 30.27
Subtotal				\$ 69.72

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Seal, O-Ring, Elastomer	Throttle Body to Intake Manifold and Thermal Spacer to Intake Manifold	\$ 0.05		1 unit						2	\$ 0.10
20	Steel, Stainless	Intake Mounting Tube	\$ 2.25		0.015 kg						1	\$ 0.03
30	Grommet, Elastomer	Intake Mounting Tube to Intake Manifold	\$ 0.05		unit						2	\$ 0.10
40	Air Filter	Filter Air to Engine	\$ 0.15		33.68 cm^2						1	\$ 5.05
50	Plastic, ABS (per kg)	Air Filter Mount	\$ 3.30		0.0341 kg						1	\$ 0.11
	Sensor, Manifold Absolute Pressure											
60	(MAP)	Intake Manifold Air Pressure Sensor	\$ 4.00		unit						1	\$ 4.00
70	Sensor, Air Temperature	Air Intake Temperature Sensor	\$ 4.00		unit						1	\$ 4.00
Subtotal											\$ 13.40	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Machining Setup, Install and Remove	Air Filter Mount	\$ 1.30	unit	1	1	1	\$ 1.30
20	Machining	Air Filter Mount	\$ 0.04	cm^3	21.144	0.5	1	\$ 0.42
30	Assemble, 1 kg, Line-on-Line	Assemble Intake Manifold to Engine	\$ 0.13	kg	1	1.25	1	\$ 0.16
40	Power Tool <= 6.35 mm	Tighten Intake Boot Clamp	\$ 0.25	unit	1	1	1	\$ 0.25
		Attach MAP and Air Temperature Sensors to Intake	\$ 0.25	unit	2	1	1	\$ 0.50
60	Power Tool <= 6.35 mm	Fasten Thermal Spacer to Intake	\$ 0.25	unit	6	1	1	\$ 1.50
70	Reaction Tool <= 6.35 mm	Fasten Thermal Spacer to Intake	\$ 0.25	unit	6	1	1	\$ 1.50
80	Assemble, 1 kg, Loose	Attach Air Filter to Air Filter Mount	\$ 0.06	unit	1	1	1	\$ 0.06
90	Power Tool <= 6.35 mm	Fasten Throttle Body to Intake Manifold	\$ 0.25	unit	2	1	1	\$ 0.50
Subtotal								\$ 6.20

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Hose Clamp, Miniature Bolt	Intake Boot Clamp	\$ 0.68	44.45 mm				1	\$ 0.68
		Attach MAP Sensor to Intake Manifold (M6-1.0 x 15 mm Black Oxide Finish Aluminum Socket Cap Screw)	\$ 0.05	6 mm		15 mm		2	\$ 0.10
20	Bolt, Aluminum	Attach Air Temperature Sensor to Intake Manifold (M6-1.0 Plain Finish Hex Nut)	\$ 0.02	6 mm				1	\$ 0.02
30	Nut, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Attach Intake Manifold to Tube Frame (#10-32 x 1/2" Black Oxide Socket Cap Screw)	\$ 0.02	4.826 mm		19.05 mm		2	\$ 0.04
40	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Attach Intake Manifold to Tube Frame (#10-32 Aluminum Solid Insert)	\$ 0.48	4.826 mm				2	\$ 0.96
50	Thread Insert	Attach Engine Thermal Spacer to Intake Manifold (#10-32 x 3/4" Aluminum Socket Cap Screw)	\$ 0.04	4.826 mm		19.05 mm		6	\$ 0.24
60	Bolt, Aluminum	Attach Engine Thermal Spacer to Intake Manifold (#10-32 Aluminum Machine Screw Nut)	\$ 0.02	4.826 mm				6	\$ 0.12
70	Nut, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Attach Throttle Body to Intake Manifold (#10-32 x 7/8" Black Oxide Finish Socket Cap Screw)	\$ 0.02	4.826 mm		22.225 mm		2	\$ 0.04
80	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8								
Subtotal									\$ 2.20

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University	University of Akron
System	Engine & Drivetrain
Assembly	Bearing Carrier Assembly
P/N Base	A2100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	73.07
Quantity		1
Extended Cost	\$	73.07

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Bearing Carriers	\$ 17.72	1	\$ 17.72
20	Engine Mount	\$ 8.08	1	\$ 8.08
30	Bearing Carrier Support	\$ 1.17	1	\$ 1.17
Subtotal				\$ 26.97

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Bearing, Ball, Deep Groove	Left Differential Bearing	\$ 25.27		76.2 mm		11 mm				1	\$ 25.27
20	Bearing, Ball, Deep Groove	Right Differential Bearing	\$ 16.29		64.4 mm		6.4 mm				1	\$ 16.29
Subtotal												\$ 41.56

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Interference	Press Differential Bearings into Bearing Carriers	\$ 0.19	unit	2	1	1	\$ 0.38
20	Power Tool <= 6.35 mm	Fasten Bearing Carriers to Engine	\$ 0.25	unit	2	1	1	\$ 0.50
30	Reaction Tool <= 6.35 mm	Fasten Bearing Carriers to Engine	\$ 0.25	unit	2	1	1	\$ 0.50
40	Power Tool <= 6.35 mm	Fasten Bearing Carriers to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
50	Reaction Tool <= 6.35 mm	Fasten Bearing Carriers to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
60	Assemble, 1 kg, Loose	Assemble Bearing Carriers to Bearing Carrier Mount	\$ 0.06	unit	2	1	1	\$ 0.12
Subtotal								\$ 2.50

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Bearing Carriers to Engine (AN4-16A)	\$ 0.29	6.35 mm		31.75 mm		2	\$ 0.58
20	Nut, Grade AN	Fasten Bearing Carriers to Engine (AN365-440A)	\$ 0.21	6.35 mm				2	\$ 0.42
30	Washer, Grade 8.8 (SAE 5)	Fasten Bearing Carriers to Engine (1/4" x 0.625" OD Plain Finish Steel SAE Flat Washer)	\$ 0.01	6.35 mm				2	\$ 0.02
40	Bolt, Grade AN	Fasten Bearing Carriers to Tube Frame (AN4-16A)	\$ 0.29	6.35 mm		31.75 mm		2	\$ 0.58
50	Nut, Grade AN	Fasten Bearing Carriers to Tube Frame (AN365-440A)	\$ 0.21	6.35 mm				2	\$ 0.43
60	Washer, Grade 8.8 (SAE 5)	Fasten Bearing Carriers to Tube Frame (1/4" x 0.625" OD Plain Finish Steel SAE Flat Washer)	\$ 0.01	6.35 mm				2	\$ 0.02
Subtotal									\$ 2.04

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Engine & Drivetrain
Assembly	Cooling Assembly
P/N Base	A2200
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	195.06
Quantity		1
Extended Cost	\$	195.06

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Radiator	\$ 1.76	2	\$ 3.52
20	Radiator Shroud	\$ 1.17	1	\$ 1.17
30	Coolant Lines	\$ 91.17	1	\$ 91.17
40	Catch Can	\$ 26.34	2	\$ 52.69
50	Expansion Tank	\$ 13.21	1	\$ 13.21
Subtotal				\$ 161.76

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Fluid, Coolant	Engine Coolant	\$ -		1 liter						1	\$ -
20	Grommet, Elastomer	Vibration Isolation	\$ 0.05		1 unit						4	\$ 0.20
30	Heat Exchanger Fan	Air Flowrate	\$ 30.00		1 unit						1	\$ 30.00
Subtotal												\$ 30.20

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Fasten Heat Exchanger Fan to Radiator Shroud	\$ 0.25	unit	4	1	1	\$ 1.00
20	Power Tool <= 6.35 mm	Fasten Heat Exchanger to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
30	Power Tool <= 6.35 mm	Fasten Expansion Tank to Tube Frame	\$ 0.25	unit	1	1	1	\$ 0.25
40	Power Tool <= 6.35 mm	Attach Radiator Shroud to Radiator	\$ 0.25	unit	4	1	1	\$ 1.00
Subtotal								\$ 2.75

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 10.9 (SAE 8)	Fasten Heat Exchanger Fan to Radiator Shroud (#10-24 x 1/4" Black Oxide Finish Socket Cap Screw)	\$ 0.02	4.83 mm		6.35 mm		4	\$ 0.09
20	Nut, Grade 10.9 (SAE 8)	Fasten Heat Exchanger Fan to Radiator Shroud (#10-24 Plain Finish Machine Screw Nut)	\$ 0.03	4.83 mm				4	\$ 0.13
30	Bolt, Grade 10.9 (SAE 8)	Fasten Heat Exchanger to Tube Frame (#10-24 x 1/2" Black Oxide Finish Socket Cap Screw)	\$ 0.03	4.83 mm		12.7 mm		2	\$ 0.06
40	Bolt, Grade 10.9 (SAE 8)	Fasten Expansion Tank to Tube Frame (#10-24 x 5/8" Black Oxide Finish Socket Cap Screw)	\$ 0.04	4.83 mm		15.875 mm		1	\$ 0.04
50	Nut, Grade 10.9 (SAE 8)	Fasten Expansion Tank to Tube Frame (#10-24 Plain Finish Machine Screw Nut)	\$ 0.03	4.83 mm				1	\$ 0.03
Subtotal									\$ 0.35

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University University of Akron
System Engine & Drivetrain
Assembly Differential Assembly
P/N Base A2300
Suffix AA
Details

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 179.72
Quantity 1
Extended Cost \$ 179.72

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Differential Housing	\$ 61.70	1	\$ 61.70
20	Differential Internals	\$ 110.00	1	\$ 110.00
Subtotal				\$ 171.70

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Loose	Assemble Differential Internals into Housing Center	\$ 0.06	unit	1	1	1	\$ 0.06
20	Power Tool <= 6.35 mm	Fasten Left and Right Differential Housings to Housing Center	\$ 0.25	unit	24	1	1	\$ 6.00
Subtotal								\$ 6.06

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 10.9 (SAE 8)	Fasten Left and Right Differential Housings to Housing Center (1/4"-20 x 3/4" Socket Cap Screw)	\$ 0.06	6.35 mm		19.07 mm		24	\$ 1.49
20	Washer, Grade 10.9 (SAE 8)	Fasten Left and Right Differential Housings to Housing Center (1/4" x 0.625" OD Zinc Finish Steel SAE Flat Washer)	\$ 0.02	6.35 mm				24	\$ 0.48
Subtotal									\$ 1.97

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Engine & Drivetrain
Assembly	Drivetrain Assembly
P/N Base	A2400
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	207.34
Quantity		1
Extended Cost	\$	207.34

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Sprocket	\$ 4.64	1	\$ 4.64
20	Rear Sprocket	\$ 26.37	1	\$ 26.37
30	Chain Guard	\$ 5.80	1	\$ 5.80
40	Axle	\$ 10.14	2	\$ 20.28
50	Axle Snubbers	\$ 1.40	4	\$ 5.59
60	Constant Velocity Joint Boot	\$ 10.21	2	\$ 20.42
70	Constant Velocity Joint Housing	\$ 70.13	1	\$ 70.13
Subtotal				\$ 153.23

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Chain	Connect Front Sprocket to Rear Sprocket	\$ 42.86	857.25	mm						1	\$ 42.86
Subtotal \$ 42.86												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 3 kg, Loose	Assemble Differential to Bearing Carriers	\$ 0.19	unit	1	1	1	\$ 0.19
20	Power Tool <= 25.4 mm	Front Sprocket to Motor Mount	\$ 0.25	unit	1	1	1	\$ 0.25
30	Power Tool <= 25.4 mm	Rear Sprocket to Motor Mount	\$ 0.25	unit	5	1	1	\$ 1.25
40	Reaction Tool <= 25.4 mm	Rear Sprocket to Motor Mount	\$ 0.25	unit	5	1	1	\$ 1.25
50	Assemble, 1 kg, Loose	Route Chain over Front and Rear Sprocket	\$ 0.06	unit	1	1.25	1	\$ 0.08
60	Adjustment - Misc.	Adjust Chain Tension	\$ 5.00	unit	1	1	1	\$ 5.00
70	Assemble, 1 kg, Line-on-Line	Retaining Rings on to Axles	\$ 0.13	unit	4	1	1	\$ 0.52
80	Assemble, 1 kg, Line-on-Line	Retaining Ring on to Differential	\$ 0.13	unit	1	1	1	\$ 0.13
90	Assemble, 3 kg, Loose	Assemble Axles to Engine	\$ 0.19	unit	2	1.25	1	\$ 0.48
100	Assemble, 1 kg, Loose	Assemble Tripod	\$ 0.06	unit	1	1	1	\$ 0.06
110	Power Tool <= 25.4 mm	Fasten Engine Mount to Bearing Carrier Mount	\$ 0.25	unit	3	1	1	\$ 0.75
120	Reaction Tool <= 25.4 mm	Fasten Engine Mount to Bearing Carrier Mount	\$ 0.25	unit	3	1	1	\$ 0.75
Subtotal								\$ 10.70

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 8.8 (SAE 5)	Engine Mount to Bearing Carrier Mount (1/4"-20 x 1/2" Plain Finish Hex Cap Screw)	\$ 0.04	6.35	mm	12.7	mm	3	\$ 0.12
20	Washer, Grade 8.8 (SAE 5)	Engine Mount to Bearing Carrier Mount (1/4" x 0.625" OD Zinc Finish Steel SAE Flat Washer)	\$ 0.01	6.35	mm			3	\$ 0.03
30	Nut, Grade 8.8 (SAE 5)	Front Sprocket to Motor Mount (3/4"-10 Zinc Finish Hex Nut)	\$ 0.40	19.05	mm			1	\$ 0.40
Subtotal								\$ 0.55	

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInCld	Subtotal
Subtotal								

University	University of Akron
System	Engine & Drivetrain
Assembly	Engine Assembly
P/N Base	A2500
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	1,142.73
Quantity		1
Extended Cost	\$	1,142.73

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Engine	\$ 1,129.00	1	\$ 1,129.00
				Subtotal \$ 1,129.00

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
												Subtotal \$ -

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 3 kg, Line-on-Line	Disassemble Engine Cover to Change Engine Internals	\$ 0.38	unit	1	0.8	1	\$ 0.30
20	Assemble, 3 kg, Line-on-Line	Reassemble Engine Cover to Change Engine Internals	\$ 0.38	unit	1	1	1	\$ 0.38
30	Assemble, 20 kg, Interference	Mount Engine in Tube Frame	\$ 3.75	unit	1	1.25	1	\$ 4.69
40	Power Tool <= 25.4 mm	Tighten Spark Plug and Ignition Coil	\$ 0.25	unit	2	1	1	\$ 0.50
50	Assemble, 1 kg, Line-on-Line	Connect Engine Wire Harness to Engine	\$ 0.13	unit	1	1.25	1	\$ 0.16
60	Power Tool <= 25.4 mm	Mount Engine in Tube Frame	\$ 0.25	unit	3	1	1	\$ 0.75
70	Reaction Tool <= 25.4 mm	Mount Engine in Tube Frame	\$ 0.25	unit	3	1	1	\$ 0.75
								Subtotal \$ 7.53

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 10.9 (SAE 8)	Mount Front Engine (M10-1.25 x 170 mm Titanium Hex Flange Bolt)	\$ 2.20		10 mm		170 mm	1	\$ 2.20
20	Bolt, Grade 10.9 (SAE 8)	Mount Lower Engine (M8-1.25 x 150 mm Titanium Hex Flange Bolt)	\$ 1.17		8 mm		150 mm	1	\$ 1.17
30	Bolt, Grade 10.9 (SAE 8)	Mount Rear Engine (M10-1.25 x 190 mm Titanium Hex Flange Bolt)	\$ 2.59		10 mm		190 mm	1	\$ 2.59
40	Nut, Grade 10.9 (SAE 8)	Mount Front and Rear Engine (M10-1.25 Titanium Hex Flange Nut)	\$ 0.09		10 mm			2	\$ 0.18
50	Nut, Grade 10.9 (SAE 8)	Mount Lower Engine (M8-1.25 Titanium Hex Flange Nut)	\$ 0.06		8 mm			1	\$ 0.06
								Subtotal \$ 6.20	

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
								Subtotal

University	University of Akron
System	Engine & Drivetrain
Assembly	Exhaust Assembly
P/N Base	A2600
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	179.23
Quantity		1
Extended Cost	\$	179.23

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Exhaust Flange	\$ 1.54	1	\$ 1.54
20	Exhaust Header	\$ 55.36	1	\$ 55.36
30	Exhaust Muffler	\$ 82.87	1	\$ 82.87
40	Muffler Connector	\$ 38.39	1	\$ 38.39
Subtotal				\$ 178.17

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Line-on-Line	Assemble Exhaust Header to Engine	\$ 0.13	unit	1	1.25	1	\$ 0.16
20	Power Tool <= 25.4 mm	Fasten Exhaust Flange to Engine	\$ 0.25	unit	2	1	1	\$ 0.50
30	Assemble, 1 kg, Loose	Assemble Resonator to Exhaust Header and Muffler Connector	\$ 0.06	unit	2	1.25	1	\$ 0.15
40	Assemble, 1 kg, Loose	Assemble Muffler to Muffler Connector	\$ 0.06	unit	1	1.25	1	\$ 0.08
Subtotal								\$ 0.89

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Exhaust Flange to Engine (M8-1.25 x 12 mm Black Oxide Finish Steel Socket Cap Screw)	\$ 0.05	8 mm		12 mm		2	\$ 0.09
20	Nut, Grade 8.8 (SAE 5)	Fasten Exhaust Flange to Engine (M8-1.25 Plain Finish Steel Industrial Lock Nut)	\$ 0.04	8 mm				2	\$ 0.08
Subtotal									\$ 0.17

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Engine & Drivetrain
Assembly	Fuel Assembly
P/N Base	A2700
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	208.76
Quantity		1
Extended Cost	\$	208.76

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Fuel Pump	\$ 47.77	1	\$ 47.77
20	Fuel Tank	\$ 30.40	1	\$ 30.40
30	Fuel Lines	\$ 60.17	1	\$ 60.17
40	Filler Neck	\$ 8.48	1	\$ 8.48
50	Fuel Port	\$ 4.12	2	\$ 8.24
60	Check Valve	\$ 15.24	1	\$ 15.24
Subtotal				\$ 170.30

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Hose, Rubber	Attach Fuel Pump to Fuel Filter	\$ 2.29		12.7 mm		0.125 m				1	\$ 0.29
20	Fuel Filter	Filter Fuel	\$ 8.00		1 unit						1	\$ 8.00
30	Fuel Injector, E85	Fuel Injector	\$ 13.00								2	\$ 26.00
40	Sensor,											\$ -
Subtotal												\$ 34.29

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Attach Fuel Tank to Bent Floor	\$ 0.25	unit	3	1	1	\$ 0.75
20	Power Tool <= 6.35 mm	Attach Fuel Pump to Fuel Tank	\$ 0.25	unit	6	1	1	\$ 1.50
30	Assemble, 1 kg, Loose	Attach Fuel Filter and Hose to Fuel Pump	\$ 0.06	unit	2	1	1	\$ 0.12
40	Assemble, 1 kg, Loose	Assemble Filler Neck and Fuel Port to Fuel Tank	\$ 0.06	unit	2	1	1	\$ 0.12
50	Assemble, 1 kg, Line-on-Line	Assemble Fuel Injectors to Intake Manifold and Engine	\$ 0.13	unit	2	1	1	\$ 0.26
Subtotal								\$ 2.75

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Attach Fuel Tank to Bent Floor (#10-24 x 7/8" Plain Finish Hex Bolt)	\$ 0.02		4.83 mm		20 mm	2	\$ 0.04
20	Washer, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Attach Fuel Tank to Bent Floor (#10 x 0.500" OD Plain Finish Steel SAE Flat Washer)	\$ 0.01		4.83 mm			2	\$ 0.02
30	Bolt, Grade 8.8 (SAE 5)	Fasten Fuel Pump to Fuel Tank (M6-1.0 x 20 mm Black Oxide Finish Socket Cap Screw)	\$ 0.04		6 mm		20 mm	6	\$ 0.26
40	Hose Clamp, Miniature Bolt	Attach Fuel Pump to Fuel Filter	\$ 0.55		12.7 mm			2	\$ 1.10
Subtotal									\$ 1.42

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal	
Subtotal									

University	University of Akron
System	Engine & Drivetrain
Assembly	Shifting Assembly
P/N Base	A2800
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	139.23
Quantity		1
Extended Cost	\$	139.23

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Cylinder Mount	\$ 2.27	1	\$ 2.27
20	Shifter Arm	\$ 1.07	1	\$ 1.07
30	CO2 Assembly	\$ 100.88	1	\$ 100.88
40	Potentiometer	\$ 5.80	1	\$ 5.80
Subtotal				\$ 110.02

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Pneumatic Cylinder, Double Acting	Hold CO2	\$ 25.00		unit						1	\$ 25.00
20	Sensor, Strain Gauge	Shifting Sensor	\$ 2.50		unit						1	\$ 2.50
30	Heat Shrink Tubing	Protect Shifting Sensor	\$ 0.50	0.075	m						1	\$ 0.04
Subtotal												\$ 27.54

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Loose	Assemble Potentiometer, Shifting Sensor, and Shifter Arm to Pneumatic Cylinder	\$ 0.06	unit	3	1	1	\$ 0.18
20	Assemble, 1 kg, Loose	Attach Pneumatic Cylinder to Cylinder Mount	\$ 0.06	unit	1	1	1	\$ 0.06
30	Power Tool <= 6.35 mm	Fasten Shifter Arm to Pneumatic Cylinder	\$ 0.25	unit	1	1	1	\$ 0.25
40	Shrink Tube	Protect Shifting Sensor	\$ 0.15	cm	7.5	1	1	\$ 1.13
Subtotal								\$ 1.62

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Shifter Arm to Pneumatic Cylinder	\$ 0.06	6.35 mm		31.75 mm		1	\$ 0.06
Subtotal									\$ 0.06

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Body
P/N Base	A3000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	277.94
Quantity		1
Extended Cost	\$	277.94

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Body	\$ 214.64	1	\$ 214.64
20	Hood	\$ 30.66	1	\$ 30.66
30	Impact Attenuator	\$ 16.42	1	\$ 16.42
40	Electronics Cover	\$ 4.96	1	\$ 4.96
50	Data Panel	\$ 3.22	2	\$ 6.45
Subtotal				\$ 273.12

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Adhesive	Bond Data Panel to Tube Frame	\$ -								2	\$ -
20	Adhesive	Bond Side Corner Cover to Tube Frame	\$ -								2	\$ -
Subtotal												\$ -

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Mount Body to Tube Frame	\$ 0.25	unit	12	1	1	\$ 3.00
20	Liquid Applicator Gun	Bond Data Panel to Tube Frame	\$ 0.01	cm	79.12	1	2	\$ 1.58
Subtotal								\$ 4.58

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Mount Body to Tube Frame (#8-32 x 1" Grade 18-8 Stainless Steel Button Socket Cap Screw)	\$ 0.02		4.06 mm		25.4 mm	12	\$ 0.24
Subtotal									\$ 0.24

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Frame
P/N Base	A3100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	1,218.04
Quantity		1
Extended Cost	\$	1,218.04

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Tube Frame	\$ 342.12	1	\$ 342.12
20	Frame Tabs	\$ 182.85	1	\$ 182.85
Stress Panel Side Impact Structure				
30	(SPSIS)	\$ 222.49	2	\$ 444.98
40	Bent Floor	\$ 109.37	1	\$ 109.37
50	Flat Floor	\$ 65.13	1	\$ 65.13
60	Front Tube Frame Support	\$ 20.92	2	\$ 41.84
Subtotal				\$ 1,186.29

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Paint	Paint Frame - Rust Prevention	\$ 10.00		1.872	m^2						\$ 18.72
Subtotal											\$ 18.72	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Aerosol Apply	Paint Frame - Rust Prevention	\$ 5.25	m^2	1.872	1	1	\$ 9.83
20	Liquid Applicator Gun	Attach Frame Support to Tube Frame	\$ 0.02	cm	160.496	1	1	\$ 3.21
Subtotal								\$ 13.04

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
Subtotal									

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
Subtotal								

University System	University of Akron
Assembly	Frame & Body (FR)
P/N Base	Front Aerodynamics
Suffix	A3200
Details	AA

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	263.12
Quantity		1
Extended Cost	\$	263.12

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Foot Plates	\$ 29.82	2	\$ 59.64
20	Front Main Plane	\$ 131.13	1	\$ 131.13
30	Front Secondaries	\$ 19.58	2	\$ 39.16
40	Front Wing Mount	\$ 15.89	2	\$ 31.77
Subtotal				\$ 261.70

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Fasten Front Wing Mount to Tube Frame	\$ 0.25	unit	4	1	1 \$	1.00
Subtotal								\$ 1.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 10.9 (SAE 8)	Fasten Front Wing Mount to Tube Frame (#12-24 x 1" Black Oxide Finish Alloy Steel Socket Cap Screw)	\$ 0.06	5.334 mm		25.4 mm		4	\$ 0.24
20	Nut, Grade 10.9 (SAE 8)	Fasten Front Wing Mount to Tube Frame (#12-24 Zinc Finish Nylon Insert Lock Nut)	\$ 0.03	5.334 mm				4	\$ 0.14
30	Washer, Grade 8.8 (SAE 5)	Fasten Front Wing Mount to Tube Frame (#12 x 0.562" OD Plain Finish SAE Flat Washer)	\$ 0.01	5.334 mm				4	\$ 0.04
Subtotal									\$ 0.42

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Pedal and Controls
P/N Base	A3300
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	162.32
Quantity		1
Extended Cost	\$	162.32

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Brake Pedal	\$ 30.32	1	\$ 30.32
20	Throttle Pedal	\$ 79.72	1	\$ 79.72
30	Throttle Cable Mount	\$ 2.15	1	\$ 2.15
40	Clutch Lever	\$ 49.61	1	\$ 49.61
Subtotal				\$ 161.80

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Line-on-Line	Assemble Brake Pedal and Throttle Pedal to Pedal Tray	\$ 0.13	unit	2	1	1 \$	0.26
20	Assemble, 1 kg, Line-on-Line	Assemble Clutch Cable to Clutch Lever	\$ 0.13	unit	2	1	1 \$	0.26
Subtotal								\$ 0.52

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
Subtotal									

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Rear Aerodynamics
P/N Base	A3500
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	696.33
Quantity		1
Extended Cost	\$	696.33

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Rear End Plates	\$ 154.17	2	\$ 308.34
20	Rear Main Plane	\$ 169.14	1	\$ 169.14
30	Rear Secondary	\$ 66.10	1	\$ 66.10
50	Driving Element	\$ 115.00	1	\$ 115.00
40	Rear Tertiary	\$ 53.02	1	\$ 53.02
Subtotal				\$ 692.01

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Fasten Rear Main Plane to Rear End Plates	\$ 0.25	unit	4	1	1 \$	1.00
20	Power Tool <= 6.35 mm	Fasten Rear Secondary to Rear End Plates	\$ 0.25	unit	4	1	1 \$	1.00
30	Power Tool <= 6.35 mm	Fasten Driving Element to Rear End Plates	\$ 0.25	unit	4	1	1 \$	1.00
40	Power Tool <= 6.35 mm	Fasten Rear Tertiary to Rear End Plates	\$ 0.25	unit	4	1	1 \$	1.00
Subtotal								\$ 4.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Rear Main Plane to Rear End Plates (#8-32 x 1" Grade 18-8 Stainless Steel Button Head Socket Cap Screw)	\$ 0.02	4.06 mm		25.4 mm		4	\$ 0.08
20	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Rear Secondary to Rear End Plates (#8-32 x 1" Grade 18-8 Stainless Steel Button Head Socket Cap Screw)	\$ 0.02	4.06 mm		25.4 mm		4	\$ 0.08
30	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Driving Element to Rear End Plates (#8-32 x 1" Grade 18-8 Stainless Steel Button Head Socket Cap Screw)	\$ 0.02	4.06 mm		25.4 mm		4	\$ 0.08
40	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Rear Tertiary to Rear End Plates (#8-32 x 1" Grade 18-8 Stainless Steel Button Head Socket Cap Screw)	\$ 0.02	4.06 mm		25.4 mm		4	\$ 0.08
Subtotal									\$ 0.32

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Rear Mounting
P/N Base	A3600
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	88.67
Quantity		1
Extended Cost	\$	88.67

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Swan Neck	\$ 46.91	1	\$ 46.91
20	Center Bracket	\$ 13.02	2	\$ 26.04
30	Rear Bracket	\$ 6.31	2	\$ 12.61
Subtotal				\$ 85.56

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Fasten Swan Neck to Tube Frame	\$ 0.25	unit	6	1	1	\$ 1.50
20	Power Tool <= 6.35 mm	Fasten Swan Neck to Rear Main Plane	\$ 0.25	unit	4	1	1	\$ 1.00
Subtotal								\$ 2.50

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 8.8 (SAE 5)	Fasten Swan Neck to Tube Frame (1/4"-20 x 1" Zinc Finish Hex Cap Screw)	\$ 0.06	6.35 mm		25.4 mm		2	\$ 0.12
20	Nut, Grade 8.8 (SAE 5)	Fasten Swan Neck to Tube Frame (1/4"-20 Zinc Finish Nylon Insert Lock Nut)	\$ 0.03	6.35 mm				2	\$ 0.06
30	Washer, Grade 8.8 (SAE 5)	Fasten Swan Neck to Tube Frame (1/4" x 0.625" OD Plain Finish SAE Flat Washer)	\$ 0.01	6.35 mm				2	\$ 0.02
40	Bolt, Grade 8.8 (SAE 5)	Fasten Swan Neck to Rear Main Plane (1/4"-20 x 1" Zinc Finish Hex Cap Screw)	\$ 0.06	6.35 mm		25.4 mm		4	\$ 0.25
50	Nut, Grade 8.8 (SAE 5)	Fasten Swan Neck to Rear Main Plane (1/4"-20 Zinc Finish Nylon Insert Lock Nut)	\$ 0.03	6.35 mm				4	\$ 0.12
60	Washer, Grade 8.8 (SAE 5)	Fasten Swan Neck to Rear Main Plane (1/4" x 0.625" OD Plain Finish SAE Flat Washer)	\$ 0.01	6.35 mm				4	\$ 0.04
Subtotal									\$ 0.61

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University System University of Akron
Assembly Frame & Body (FR)
P/N Base Drag Reduction System Assembly
Suffix A3700
Details AA

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Part Cost \$ 33.44
Quantity 1
Extended Cost \$ 33.44

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Linkage	\$ 7.68	1	\$ 7.68
20	Cylinder Mount	\$ 1.58	1	\$ 1.58
30	Bump Stop	\$ 32.26	1	\$ 32.26
40	CO2 Assembly	\$ 100.88	1	\$ 102.59
Subtotal				\$ 144.11

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Thickness (mm)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Pneumatic Cylinder, Double Acting	Hold CO2	\$ 25.00		unit							1	\$ 25.00
20	Sensor, Strain Gauge	Shifting Sensor	\$ 2.50		unit							1	\$ 2.50
30	Adhesive	Fasten Cylinder Mount to Rear Main Plane	\$ -									1	\$ -
40	Adhesive	Bump Stop Skins to Rear Endplates and Bump Stop Skeletons	\$ -									4	\$ -
50	Rod End, Industrial	Attach Pneumatic Cylinder to Cylinder Mount	\$ 2.02		unit	6.35 mm						1	\$ 2.02
Subtotal												\$ 29.52	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Interference	Press DRS Radial Bearings into Elements	\$ 0.19	unit	2	1	1	\$ 0.38
20	Assemble, 1 kg, Line-on-Line	Assemble Rear Secondary Bump Stop to Rear Endplate	\$ 0.13	unit	2	1	1	\$ 0.26
30	Assemble, 1 kg, Line-on-Line	Assemble Rear Tertiary Bump Stop to Rear Endplate	\$ 0.13	unit	2	1	1	\$ 0.26
40	Power Tool <= 6.35 mm	Fasten Cylinder Mount to Rear Main Plane	\$ 0.25	unit	2	1	1	\$ 0.50
50	Reaction Tool <= 6.35 mm	Fasten Cylinder Mount to Rear Main Plane	\$ 0.25	unit	2	1	1	\$ 0.50
60	Power Tool <= 6.35 mm	Fasten Linkage Mount to Rear Secondary	\$ 0.25	unit	2	1	1	\$ 0.50
70	Reaction Tool <= 6.35 mm	Fasten Linkage Mount to Rear Secondary	\$ 0.25	unit	2	1	1	\$ 0.50
80	Power Tool <= 6.35 mm	Fasten Linkage Mount to Rear Tertiary	\$ 0.25	unit	2	1	1	\$ 0.50
90	Reaction Tool <= 6.35 mm	Fasten Linkage Mount to Rear Tertiary	\$ 0.25	unit	2	1	1	\$ 0.50
Subtotal								\$ 3.90

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Linkage Mount to Rear Secondary (#2-54 x 1/8" Black Oxide Finish Socket Cap Screw)	\$ 0.005	2.032 mm		3.175 mm		2	\$ 0.01
20	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Linkage Mount to Rear Tertiary (#2-54 x 1/8" Black Oxide Finish Socket Cap Screw)	\$ 0.005	2.032 mm		3.175 mm		2	\$ 0.01
Subtotal									\$ 0.02

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Sidepod Assembly
P/N Base	A3800
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	151.12
Quantity		1
Extended Cost	\$	151.12

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Sidepod	\$	73.94	2 \$ 147.88
Subtotal				\$ 147.88

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Mount Sidepod to SPSIS	\$	0.25 unit	12	1	1 \$	3.00
Subtotal								\$ 3.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Mount Sidepod to SPSIS (#8-32 x 1" Grade 18-8 Stainless Steel Button Head Socket Cap Screw)	\$	0.02	4.06 mm	25.4 mm		12 \$	0.24
Subtotal									\$ 0.24

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Frame & Body (FR)
Assembly	Undertray
P/N Base	A3900
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	352.09
Quantity		1
Extended Cost	\$	352.09

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Undertray	\$ 349.34	1	\$ 349.34
				Subtotal \$ 349.34

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
												Subtotal

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Attach Undertray to Tube Frame	\$ 0.25	unit	8	1	1	\$ 2.00
								Subtotal \$ 2.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 8.8 (SAE 5)	Attach Undertray to Tube Frame (1/4"-20 x 1" Black Oxide Socket Cap Screw)	\$ 0.06		6.35 mm		25.4 mm	8	\$ 0.50
20	Nut, Grade 8.8 (SAE 5)	Attach Undertray to Tube Frame (1/4"-20 Plain Finish Nylon Insert Lock Nut)	\$ 0.03		6.35 mm			8	\$ 0.26
									Subtotal \$ 0.75

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
								Subtotal

University	University of Akron
System	Instruments and Wiring
Assembly	Battery Assembly
P/N Base	A4000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	93.44
Quantity		1
Extended Cost	\$	93.44

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Battery	\$	92.59	1 \$ 92.59
Subtotal				\$ 92.59

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Fasten Battery to Frame	\$	0.25 unit	1	1	1 \$	0.25
Subtotal								\$ 0.25

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Hose Clamp, Worm Drive	Fasten Battery to Frame	\$	0.60	25.4 mm			1 \$	0.60
Subtotal									\$ 0.60

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University University of Akron
System Instruments and Wiring
Assembly Dashboard Assembly
P/N Base A4100
Suffix AA
Details

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 51.07
Quantity 1
Extended Cost \$ 51.07

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Dashboard	\$ 23.90	1	\$ 23.90
20	Shift Light	\$ 8.68	1	\$ 8.68
30	Brake Light	\$ 16.11	1	\$ 16.11
Subtotal				\$ 48.69

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Heat Shrink Tubing	Protect Dashboard Wiring	\$ 0.50		0.12 m						1	\$ 0.06
Subtotal												\$ 0.06

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Shrink Tube	Protect Dashboard Wiring	\$ 0.15	cm	12	1	1	\$ 1.80
20	Power Tool <=6.35 mm	Fasten Dashboard to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
Subtotal								\$ 2.30

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Dashboard to Car (#8-32 x 1/4" Grade 18-8 Stainless Steel Button Socket Cap Screw)	\$ 0.01		4.165 mm		6.35 mm	2	\$ 0.02
Subtotal									\$ 0.02

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
Subtotal								

University University of Akron
System Instruments and Wiring
Assembly Data Acquisition Assembly
P/N Base A4200
Suffix AA
Details No Oil Pressure Light or Tachometer

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 352.69
Quantity 1
Extended Cost \$ 352.69

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Data Acquisition	\$ 302.68	1	\$ 302.68

Subtotal \$ 302.68

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
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Subtotal

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Crimp Wire	Data Acquisition Only	\$ 0.17	unit	200	1	1 \$	34.00
20	Connector Assembly, Crimp	Data Acquisition Only	\$ 0.36	contact	36	1	1 \$	12.96
30	Lay Wire - Signal	Data Acquisition Only	\$ 0.02	m	17.6	1	1 \$	0.35
40	Assemble, 1 kg, Loose	Assemble Sensors to Data Harness, Data Acquisition Only	\$ 0.06	unit	45	1	1 \$	2.70
Subtotal								\$ 50.01

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
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Subtotal

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
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Subtotal

University System University of Akron
Assembly Instruments and Wiring
P/N Base Kill Switch Assembly
Suffix A4300
Details AA

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 17.79
Quantity 1
Extended Cost \$ 17.79

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Kill Switch	\$	12.18	1 \$ 12.18
Subtotal				\$ 12.18

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Connector, High Power, > 2 Amps	Jumper Connector	\$	2.00	2 pins						1	\$ 4.00
Subtotal											\$ 4.00	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool, <= 6.35 mm	Mount Kill Switch to Right Side Corner Cover	\$	0.25 unit	2	1	1 \$	0.50
20	Reaction Tool <= 6.35 mm	Mount Kill Switch to Right Side Corner Cover	\$	0.25 unit	2	1	1 \$	0.50
30	Power Tool, <= 6.35 mm	Jumper Bolt to Jumper Connector	\$	0.25 unit	1	1	1 \$	0.25
40	Reaction Tool <= 6.35 mm	Jumper Bolt to Jumper Connector	\$	0.25 unit	1	1	1 \$	0.25
Subtotal								\$ 1.50

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3), and All Grades less than Metric 8.8	Mount Kill Switch to Data Panel (#10-32 x 1/2" Zinc Finish Steel Machine Screw)	\$	0.02	4.826 mm	12.7 mm		2	\$ 0.04
20	Nut, Grade 6.8 (SAE 3), and All Grades less than Metric 8.8	Mount Kill Switch to Data Panel (#10-32 Zinc Plated Machine Screw Nut)	\$	0.02	4.826 mm			2	\$ 0.04
30	Bolt, Grade 6.8 (SAE 3), and All Grades less than Metric 8.8	Jumper Bolt (#5-40 x 1-1/2" Zinc Finish Steel Machine Screw)	\$	0.02	3.3 mm	38.1 mm		1	\$ 0.02
40	Nut, Grade 6.8 (SAE 3), and All Grades less than Metric 8.8	Jumper Connector (#5-40 Zinc Plated Machine Screw Nut)	\$	0.01	3.3 mm			1	\$ 0.01
Subtotal									\$ 0.11

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
Subtotal								

University University of Akron
System Instruments and Wiring
Assembly Steering Wheel Electronics Assembly
P/N Base A4400
Suffix AA
Details

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 48.76
Quantity 1
Extended Cost \$ 48.76

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Steering Wheel Electronics	\$ 48.46	1	\$ 48.46
Subtotal				\$ 48.46

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Loose	Assemble DRS Activation, Data Flag Button, Launch Control, and Traction Control to Steering Wheel Display	\$ 0.06	unit	4	1	1	\$ 0.24
20	Assemble, 1 kg, Loose	Assemble Steering Wheel Display to Steering Wheel	\$ 0.06	unit	1	1	1	\$ 0.06
Subtotal								\$ 0.30

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
Subtotal									

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University University of Akron
System Instruments and Wiring
Assembly Wiring Harness Assembly
P/N Base A4500
Suffix AA
Details

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 2,608.72
Quantity 1
Extended Cost \$ 2,608.72

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Wiring Harness	\$ 2,597.39	1	\$ 2,597.39
Subtotal				\$ 2,597.39

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Connector Install, Circular, Bayonet	Connect Wires to Components	\$ 0.11	unit	52	1	1 \$	5.72
20	Install, Tie Wrap	Attach Wire Harness to Tube Frame	\$ 0.09	unit	27	1	1 \$	2.43
30	Connector Install, Circular, Friction	Connect Engine Coil	\$ 0.14	unit	1	1	1 \$	0.14
40	Riveting	Attach Wire Harness to Cockpit and Seat	\$ 0.25	unit	7	1	1 \$	1.75
Subtotal								\$ 10.04

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Tie Wrap	Attach Wire Harness to Tube Frame	\$ 0.04		unit			27 \$	1.08
20	Rivet, Pop	Attach Wire Harness to Cockpit and Seat	\$ 0.03		unit			7 \$	0.21
Subtotal									\$ 1.29

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInCld	Subtotal
Subtotal								

University	University of Akron
System	Miscellaneous Fit & Finish
Assembly	Cockpit Seating & Safety
P/N Base	A5000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	202.90
Quantity		1
Extended Cost	\$	202.90

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Seat	\$ 20.08	1	\$ 20.08
20	Firewall Flange	\$ 38.52	1	\$ 38.52
30	Seat Back	\$ 35.27	1	\$ 35.27
40	Firewall	\$ 21.75	1	\$ 21.75
50	Head Rest	\$ 39.18	1	\$ 39.18
			Subtotal	\$ 154.80

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Harness, Driver	Driver Restraint	\$ 45.00		1 unit						1	\$ 45.00
20	Roll Hoop Padding		\$ 0.05		22.5 cm						2	\$ 2.25
											Subtotal	\$ 47.25

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal	
10	Assemble, 1 kg, Loose	Assemble Driver Harness to Tube Frame	\$ 0.06	unit	1	1.25	1	\$ 0.08	
20	Install Tie Wrap	Fasten Roll Hoop Padding to Main Roll Hoop	\$ 0.09	unit	4	1	1	\$ 0.36	
30	Assemble, 1 kg, Loose	Fasten Firewall Flange to Firewall Seat Back	\$ 0.06	unit	1	1	1	\$ 0.06	
								Subtotal	\$ 0.50

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal	
10	Tie Wrap	Fasten Roll Hoop Padding to Main Roll Hoop	\$ 0.04		unit			4	\$ 0.16	
20	Hook and Loop, Hook Side (Velcro)	Fasten Firewall Flange to Firewall Seat Back	\$ 0.003		38.1 cm^2			1	\$ 0.11	
30	Hook and Loop, Loop Side (Velcro)	Fasten Firewall Flange to Firewall Seat Back	\$ 0.002		38.1 cm^2			1	\$ 0.08	
									Subtotal	\$ 0.35

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal	
								Subtotal	

University	University of Akron
System	Miscellaneous Fit & Finish
Assembly	Jacking Bar Assembly
P/N Base	A5100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	20.48
Quantity		1
Extended Cost	\$	20.48

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Jacking Bar	\$ 1.94	1	\$ 1.94
20	Jacking Bar Mount	\$ 5.35	2	\$ 10.70
30	Jacking Bar Brace	\$ 2.09	1	\$ 2.09
40	Chain Guard Insert	\$ 1.79	1	\$ 1.79
Subtotal				\$ 16.53

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Tube cut	Cut Jacking Bar Brace for Chain Guard Insert	\$ 0.15	cm	1.27	1	1	\$ 0.19
20	Resin application, Manual	Attach Chain Guard Insert to Jacking Bar Brace	\$ 5.00	m^2	0.0006	1	1	\$ 0.003
30	Power Tool <= 6.35 mm	Fasten Jacking Bar Brace to Jacking Bar Mount	\$ 0.25	unit	3	1	1	\$ 0.75
40	Reaction Tool <= 6.35 mm	Fasten Jacking Bar Brace to Jacking Bar Mount	\$ 0.25	unit	3	1	1	\$ 0.75
50	Power Tool <= 6.35 mm	Fasten Jacking Bar Mount to Tube Frame	\$ 0.25	unit	4	1	1	\$ 1.00
60	Reaction Tool <= 6.35 mm	Fasten Jacking Bar Mount to Tube Frame	\$ 0.25	unit	4	1	1	\$ 1.00
70	Assemble, 1 kg, Loose	Assemble Jacking Bar to Jacking Bar Mount	\$ 0.06	unit	1	1	1	\$ 0.06
Subtotal								\$ 3.75

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.9	Fasten Jacking Bar Mount to Tube Frame (#10-32 x 5/8" Yellow Zinc Hex Bolt)	\$ 0.02	4.83 mm		15.87 mm		4	\$ 0.08
20	Nut, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Jacking Bar Mount to Tube Frame (#10-32 Yellow Zinc Finish Nylon Insert Lock Nut)	\$ 0.02	4.83 mm				4	\$ 0.07
30	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Jacking Bar Brace to Jacking Bar Mount (#10-32 x 5/8" Black Oxide Finish Alloy Steel Socket Cap Screw)	\$ 0.02	4.83 mm		15.87 mm		2	\$ 0.04
Subtotal								\$ 0.19	

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University University of Akron
System Miscellaneous Fit & Finish
Assembly Miscellaneous Assembly
P/N Base A5200
Suffix AA
Details Unbudgeted Assembly Costs Added
 During Manufacturing or Testing

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ -
Quantity 1
Extended Cost \$ -

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Tape	\$ -	1	\$ -
20	Safety Wire	\$ -	1	\$ -
30	Heat Barrier	\$ -	1	\$ -
40	Zip Ties	\$ -	1	\$ -
50	Adhesive	\$ -	1	\$ -
Subtotal				\$ -

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
Subtotal								

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
Subtotal									

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Steering
Assembly	Steering Column Assembly
P/N Base	A6000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	88.92
Quantity		1
Extended Cost	\$	88.92

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Column Joints	\$ 57.75	1	\$ 57.75
20	Steering Shafts	\$ 10.18	1	\$ 10.18
30	Female Spline	\$ 3.34	1	\$ 3.34
			Subtotal	\$ 71.27

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Bearing Ball, Deep Groove	Steering Joint Bearings	\$ 5.06	25.4 mm		3.968 mm					2	\$ 10.12
20	Grommet, Elastometer	Retain Steering Joint Bearings	\$ 0.05		unit						1	\$ 0.05
											Subtotal	\$ 10.17

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal	
10	Assemble, 1 kg, Interference	Press Steering Joint Bearings in Column Joints	\$ 0.19	unit	2	1	1	\$ 0.38	
20	Assemble, 1 kg, Line-on-Line	Assemble Steering Shaft to Frame	\$ 0.13	unit	1	1	1	\$ 0.13	
30	Power Tool <= 6.35 mm	Fasten Column Shaft to Steering Rack	\$ 0.25	unit	1	1	1	\$ 0.25	
40	Reaction Tool <= 6.35 mm	Fasten Column Shaft to Steering Rack	\$ 0.25	unit	1	1	1	\$ 0.25	
50	Tube end preparation for welding	Prepare Column Shaft for Welding	\$ 0.75	end	1	1	1	\$ 0.75	
60	Weld - Round Tubing	TIG Weld Female Spline to Column Shaft	\$ 0.50	cm	5.98	1	1	\$ 2.99	
								Subtotal	\$ 4.75

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal	
10	Tapered Pin, Threaded (AN386)	Fasten Column Shaft to Steering Rack (AN386-1-6A)	\$ 2.50	6.35 mm		25.4 mm		1	\$ 2.50	
20	Nut, Grade AN	Fasten Column Shaft to Steering Rack (AN365-428A)	\$ 0.21	6.35 mm				1	\$ 0.21	
30	Washer, Grade AN	Fasten Column Shaft to Steering Rack (AN960-416)	\$ 0.02	6.35 mm				1	\$ 0.02	
									Subtotal	\$ 2.73

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal	
								Subtotal	

University	University of Akron
System	Steering
Assembly	Steering Rack Assembly
P/N Base	A6100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	35.31
Quantity		1
Extended Cost	\$	35.31

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Pinion Gear	\$ 2.64	1	\$ 2.64
20	Rack Gear	\$ 1.84	1	\$ 1.84
30	Steering Rack	\$ 5.88	1	\$ 5.88
40	Steering Rack Housing	\$ 14.81	1	\$ 14.81
Subtotal				\$ 25.18

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Bearing, Ball, Deep Groove	Align Pinion Gear	\$ 4.84		21.66 mm		5 mm				1	\$ 4.84
20	Seal, O-Ring, Elastomer	Retain Pinion Gear	\$ 0.05								1	\$ 0.05
Subtotal												\$ 4.89

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Interference	Press Pinion Gear Bearing	\$ 0.19	unit	1	1	1	\$ 0.19
20	Assemble, 1 kg, Line on Line	Pinion Gear to Steering Rack	\$ 0.13	unit	1	1	1	\$ 0.13
30	Power Tool <= 25.4 mm	Fasten Rack Gear to Steering Rack	\$ 0.25	unit	2	1	1	\$ 0.50
40	Assemble, 1 kg, Loose	Assemble Steering Rack to Frame	\$ 0.06	unit	1	1	1	\$ 0.06
50	Power Tool, <= 6.35 mm	Fasten Steering Rack Housing to Frame	\$ 0.25	unit	4	1	1	\$ 1.00
60	Reaction Tool, <= 6.35 mm	Fasten Steering Rack Housing to Frame	\$ 0.25	unit	4	1	1	\$ 1.00
Subtotal								\$ 2.88

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Rack Gear to Steering Rack (AN6-10A)	\$ 0.50		9.525 mm		12.7 mm	2	\$ 1.00
20	Bolt, Grade AN	Fasten Steering Rack Housing to Frame (AN3-15A)	\$ 0.17		4.826 mm		31.75 mm	4	\$ 0.68
30	Nut, Grade AN	Fasten Steering Rack Housing to Frame (AN365-1032A)	\$ 0.16		4.826 mm			4	\$ 0.64
40	Washer, Grade AN	Fasten Steering Rack Housing to Frame (AN960-10)	\$ 0.01		4.826 mm			4	\$ 0.04
Subtotal									\$ 2.36

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal	
Subtotal									

University	University of Akron
System	Steering
Assembly	Steering Wheel Assembly
P/N Base	A6200
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	30.20
Quantity		1
Extended Cost	\$	30.20

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Steering Wheel	\$ 17.26	1	\$ 17.26
20	Quick Disconnect	\$ 9.13	1	\$ 9.13
30	Aluminum Insert	\$ 1.52	1	\$ 1.52
40	Shifting Paddles	\$ 0.37	2	\$ 0.74
50	Rotary Knobs	\$ 0.30	2	\$ 0.60
Subtotal				\$ 29.24

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Loose	Assemble Steering Wheel Components	\$ 0.06	unit	5	1	1	\$ 0.30
20	Power Tool <= 6.35 mm	Quick Disconnect to Steering Wheel	\$ 0.25	unit	2	1	1	\$ 0.50
Subtotal								\$ 0.80

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal	
		Quick Disconnect to Steering Wheel (#5-40 x 1/4" Black Oxide Finish Alloy Steel Socket Cap Screw)								
10	Bolt, Grade 8.8 (SAE 5)		\$ 0.01	3.175 mm		6.35 mm		2	\$ 0.02	
20	Pin, Cotter, Straight	Rotary Knobs to Steering Wheel	\$ 0.05						2	\$ 0.10
		Nut, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8								
30		Rotary Knobs to Steering Wheel (1/4"-20 Zinc Finish Finished Hex Nut)	\$ 0.02	6.35 mm				2	\$ 0.04	
Subtotal								\$ 0.16		

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInCld	Subtotal
Subtotal								

University	University of Akron
System	Steering
Assembly	Tie Rod Assembly
P/N Base	A6300
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	22.94
Quantity		1
Extended Cost	\$	22.94

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Tie Rod	\$	5.71	2 \$ 11.42
				Subtotal \$ 11.42

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Rod End, Industrial	Steering Knuckle to Tie Rod Mount	\$ 2.02		6.35 mm						4	\$ 8.08
20	Paint	Paint Tie Rods - Rust Prevention	\$ 10.00		0.019 m^2						1	\$ 0.19
											Subtotal \$ 8.27	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Aerosol Apply	Paint Tie Rods - Rust Prevention	\$ 5.25	m^2	0.019	1	1	\$ 0.10
20	Assemble, 1 kg, Loose	Assemble Rod End to Tie Rod	\$ 0.06	unit	4	1	1	\$ 0.24
30	Power Tool <= 6.35 mm	Fasten Tie Rod to Front Upright and Steering Rack	\$ 0.25	unit	2	1	1	\$ 0.50
40	Reaction Tool <= 6.35 mm	Fasten Tie Rod to Front Upright and Steering Rack	\$ 0.25	unit	2	1	1	\$ 0.50
								Subtotal \$ 1.34

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Tie Rod to Front Upright and Steering Rack (AN4-13A)	\$ 0.25		6.35 mm		25.4 mm	4	\$ 1.00
20	Nut, Grade AN	Fasten Tie Rod to Front Upright and Steering Rack (AN365-428A)	\$ 0.21		6.35 mm			4	\$ 0.85
30	Washer, Grade AN	Fasten Tie Rod to Front Upright and Steering Rack (AN960-416)	\$ 0.02		6.35 mm			4	\$ 0.06
									Subtotal \$ 1.91

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclcd	Subtotal
								Subtotal

University	University of Akron
System	Suspension
Assembly	Bell Crank Assembly
P/N Base	A7000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	62.09
Quantity		1
Extended Cost	\$	62.09

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Bell Crank	\$ 19.61	2	\$ 39.22
20	Rear Bell Crank	\$ 9.33	2	\$ 18.65
Subtotal				\$ 57.87

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 25.4 mm	Fasten Front Bell Crank to Front Pull Rod and Damper	\$ 0.25	unit	2	1	1 \$	0.50
20	Reaction Tool <= 25.4 mm	Fasten Front Bell Crank to Front Pull Rod and Damper	\$ 0.25	unit	2	1	1 \$	0.50
30	Power Tool <= 25.4 mm	Fasten Rear Bell Crank to Rear Pull Rod and Damper	\$ 0.25	unit	2	1	1 \$	0.50
40	Reaction Tool <= 25.4 mm	Fasten Rear Bell Crank to Rear Pull Rod and Damper	\$ 0.25	unit	2	1	1 \$	0.50
Subtotal								\$ 2.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Front Bell Crank to Front Pull Rod and Damper (AN4-20A)	\$ 0.33	6.35 mm		38.1 mm		2	\$ 0.66
20	Nut, Grade AN	Fasten Front Bell Crank to Front Pull Rod and Damper (AN365-428A)	\$ 0.21	6.35 mm				2	\$ 0.42
30	Washer, Grade AN	Fasten Front Bell Crank to Front Pull Rod and Damper (AN960-416)	\$ 0.02	6.35 mm				2	\$ 0.03
40	Bolt, Grade AN	Fasten Rear Bell Crank to Rear Pull Rod and Damper (AN4-20A)	\$ 0.33	6.35 mm		38.1 mm		2	\$ 0.66
50	Nut, Grade AN	Fasten Rear Bell Crank to Rear Pull Rod and Damper (AN365-428A)	\$ 0.21	6.35 mm				2	\$ 0.42
60	Washer, Grade AN	Fasten Rear Bell Crank to Rear Pull Rod and Damper (AN960-416)	\$ 0.02	6.35 mm				2	\$ 0.03
Subtotal									\$ 2.22

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University	University of Akron
System	Suspension
Assembly	Damper Assembly
P/N Base	A7100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	977.83
Quantity		1
Extended Cost	\$	977.83

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Damper	\$ 970.00	1	\$ 970.00
				Subtotal \$ 970.00

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
												Subtotal

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 25.4 mm	Fasten Damper to Tube Frame and Bell Cranks	\$ 0.25	unit	8	1	1	\$ 2.00
20	Reaction Tool <= 25.4 mm	Fasten Damper to Tube Frame and Bell Cranks	\$ 0.25	unit	2	1	4	\$ 2.00
								Subtotal \$ 4.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Damper to Tube Frame and Bell Cranks (AN4-16A)	\$ 0.25	6.35 mm		25.4 mm		8	\$ 2.00
20	Nut, Grade AN	Fasten Damper to Tube Frame and Bell Cranks (AN365-428A)	\$ 0.21	6.35 mm				8	\$ 1.71
30	Washer, Grade AN	Fasten Damper to Tube Frame and Bell Cranks (AN960-416)	\$ 0.02	6.35 mm				8	\$ 0.13
									Subtotal \$ 3.83

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
								Subtotal

University	University of Akron
System	Suspension
Assembly	Front A-Arm Assembly
P/N Base	A7200
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	107.67
Quantity		1
Extended Cost	\$	107.67

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Lower A-Arm	\$ 19.81	2	\$ 39.62
20	Front Upper A-Arm	\$ 19.81	2	\$ 39.62
Subtotal				\$ 79.24

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Paint	Paint A-Arms - Rust Prevention	\$ 10.00					0.2756 m^2			1	\$ 2.76
Subtotal												\$ 2.76

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Aerosol Apply	Paint A-Arms - Rust Prevention	\$ 5.25	m^2	0.2756	1	1	\$ 1.45
20	Power Tool <= 6.35 mm	Attach Front Lower A-Arms to Tube Frame	\$ 0.25	unit	2	1.25	1	\$ 0.63
30	Reaction Tool <= 6.35 mm	Attach Front Lower A-Arms to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
40	Power Tool <= 6.35 mm	Attach Front Upper A-Arms to Tube Frame	\$ 0.25	unit	2	1.25	1	\$ 0.63
50	Reaction Tool <= 6.35 mm	Attach Front Upper A-Arms to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
60	Suspension Setup - Independent	Tune Front Suspension	\$ 8.75	corner	2	1	1	\$ 17.50
Subtotal								\$ 21.20

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Attach Front Lower A-Arms to Tube Frame (AN4-14A)	\$ 0.33	6.35 mm		38.1 mm		4	\$ 1.33
20	Nut, Grade AN	Attach Front Lower A-Arms to Tube Frame (AN365-428A)	\$ 0.21	6.35 mm				4	\$ 0.85
30	Washer, Grade AN	Attach Front Lower A-Arms to Tube Frame (AN960-416)	\$ 0.02	6.35 mm				4	\$ 0.06
40	Bolt, Grade AN	Attach Front Upper A-Arms to Tube Frame (AN4-14A)	\$ 0.33	6.35 mm		38.1 mm		4	\$ 1.33
50	Nut, Grade AN	Attach Front Upper A-Arms to Tube Frame (AN365-428A)	\$ 0.21	6.35 mm				4	\$ 0.84
60	Washer, Grade AN	Attach Front Upper A-Arms to Tube Frame (AN960-416)	\$ 0.02	6.35 mm				4	\$ 0.06
Subtotal									\$ 4.48

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University University of Akron
System Suspension
Assembly Front Anti-Roll Bar Assembly
P/N Base A7300
Suffix AA
Details

FSAE Car # 73
FN Car # 29
FSA Car # 5
FSG Car # 330

Assembly Cost \$ 28.89
Quantity 1
Extended Cost \$ 28.89

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Blade	\$ 2.97	2	\$ 5.94
20	Front Bar Mounts	\$ 1.58	2	\$ 3.16
30	Front Bar	\$ 4.10	1	\$ 4.10
40	Front Link	\$ 5.44	2	\$ 10.88
Subtotal				\$ 24.09

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Line-on-Line	Assemble Front Blade to Front Bar	\$ 0.13	unit	2	1	1 \$	0.26
20	Power Tool <= 6.35 mm	Fasten Front Bar Mounts to Front Blade	\$ 0.25	unit	2	1	1 \$	0.50
30	Reaction Tool <= 6.35 mm	Fasten Front Bar Mounts to Front Blade	\$ 0.25	unit	2	1	1 \$	0.50
40	Assemble, 1 kg, Loose	Assemble Front Bar Mounts to Tube Frame	\$ 0.06	unit	2	1	1 \$	0.12
50	Power Tool <= 6.35 mm	Tighten Front Bar to Tube Frame	\$ 0.25	unit	4	1	1 \$	1.00
60	Reaction Tool <= 6.35 mm	Tighten Front Bar to Tube Frame	\$ 0.25	unit	4	1	1 \$	1.00
70	Assemble, 1 kg, Line-on-Line	Assemble Rod Ends to Front Bar	\$ 0.13	unit	2	1	1 \$	0.26
Subtotal								\$ 3.64

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Front Bar Mounts to Front Blade (AN5-8A)	\$ 0.11	4.826 mm		12.7 mm		2	\$ 0.22
20	Nut, Grade AN	Fasten Front Bar Mounts to Front Blade (AN5-524A)	\$ 0.16	4.826 mm				2	\$ 0.32
30	Washer, Grade AN	Fasten Front Bar Mounts to Front Blade (AN960-524)	\$ 0.01	4.826 mm				2	\$ 0.02
40	Bolt, Grade AN	Tighten Front Bar to Tube Frame (AN5-13A)	\$ 0.15	4.826 mm		25.4 mm		4	\$ 0.60
Subtotal									\$ 1.16

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Suspension
Assembly	Front Upright Assembly
P/N Base	A7400
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	113.66
Quantity		1
Extended Cost	\$	113.66

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Upright	\$ 44.28	2	\$ 88.56
20	Front Camber Knuckle	\$ 7.60	2	\$ 15.19
30	Steering Knuckle	\$ 3.01	2	\$ 6.01
			Subtotal	\$ 109.76

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal	
10	Power Tool <= 6.35 mm	Fasten Front Camber Knuckles to A-Arms	\$ 0.25	unit	4	1	1	\$ 1.00	
20	Reaction Tool <=6.35 mm	Fasten Front Camber Knuckles to A-Arms	\$ 0.25	unit	4	1	1	\$ 1.00	
30	Assemble, 1 kg, Line-on-Line	Assemble Front Upright to Front Camber Knuckles	\$ 0.13	unit	2	1	1	\$ 0.26	
								Subtotal	\$ 2.26

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal	
10	Bolt, Grade AN	Fasten Front Camber Knuckles to A-Arms (AN4-14A)	\$ 0.20	6.35 mm		28.575 mm		4	\$ 0.80	
20	Nut, Grade AN	Fasten Front Camber Knuckles to A-Arms (AN365-428A)	\$ 0.21	6.35 mm				4	\$ 0.84	
									Subtotal	\$ 1.64

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal	
								Subtotal	

University	University of Akron
System	Suspension
Assembly	Pull Rod Assembly
P/N Base	A7500
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	55.63
Quantity		1
Extended Cost	\$	55.63

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Pull Rod	\$ 12.26	2	\$ 24.53
20	Rear Pull Rod	\$ 12.26	2	\$ 24.53
Subtotal				\$ 49.05

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Paint	Paint Pull Rods - Rust Prevention	\$ 10.00		0.0484	m^2					1	\$ 0.48
Subtotal												\$ 0.48

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Aerosol Apply	Paint Pull Rods - Rust Prevention	\$ 5.25	m^2	0.0484		1	\$ 0.25
20	Power Tool <= 6.35 mm	Attach Front Pull Rod to Front Upright and Front Bell Crank	\$ 0.25	unit		4	1	\$ 1.00
30	Power Tool <= 6.35 mm	Attach Rear Pull Rod to Rear Upright and Rear Bell Crank	\$ 0.25	unit		4	1	\$ 1.00
Subtotal								\$ 2.25

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Attach Front Pull Rod to Front Upright and Front Bell Crank (AN4-14A)	\$ 0.25		6.35 mm		25.4 mm	4	\$ 1.00
20	Nut, Grade AN	Attach Front Pull Rod to Front Upright and Front Bell Crank (AN365-428A)	\$ 0.21		6.35 mm			4	\$ 0.84
30	Washer, Grade AN	Attach Front Pull Rod to Front Upright and Front Bell Crank (AN960-416)	\$ 0.02		6.35 mm			4	\$ 0.08
40	Bolt, Grade AN	Attach Rear Pull Rod to Rear Upright and Rear Bell Crank (AN4-14A)	\$ 0.25		6.35 mm		25.4 mm	4	\$ 1.00
50	Nut, Grade AN	Attach Rear Pull Rod to Rear Upright and Rear Bell Crank (AN365-428A)	\$ 0.21		6.35 mm			4	\$ 0.84
60	Washer, Grade AN	Attach Rear Pull Rod to Rear Upright and Rear Bell Crank (AN960-416)	\$ 0.02		6.35 mm			4	\$ 0.08
Subtotal									\$ 3.84

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInclId	Subtotal
Subtotal								

University	University of Akron
System	Suspension
Assembly	Rear A-Arm Assembly
P/N Base	A7600
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	105.90
Quantity		1
Extended Cost	\$	105.90

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Rear Lower A-Arm	\$ 19.55	2	\$ 39.10
20	Rear Upper A-Arm	\$ 19.24	2	\$ 38.48
Subtotal				\$ 77.58

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
10	Paint	Paint A-Arms - Rust Prevention	\$ 10.00		0.2864	m^2					1	\$ 2.86
Subtotal											\$ 2.86	

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Aerosol Apply	Paint A-Arms - Rust Prevention	\$ 5.25	m^2	0.2864	1	1	\$ 1.50
20	Power Tool <= 6.35 mm	Attach Rear Lower A-Arms to Tube Frame	\$ 0.25	unit	2	1.25	1	\$ 0.63
30	Reaction Tool <= 6.35 mm	Attach Rear Lower A-Arms to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
40	Power Tool <= 6.35 mm	Attach Rear Upper A-Arms to Tube Frame	\$ 0.25	unit	2	1.25	1	\$ 0.63
50	Reaction Tool <= 6.35 mm	Attach Rear Upper A-Arms to Tube Frame	\$ 0.25	unit	2	1	1	\$ 0.50
60	Suspension Setup - Independent	Tune Suspension	\$ 8.75	corner	2	1	1	\$ 17.50
Subtotal								\$ 21.25

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Attach Rear Lower A-Arms to Tube Frame (AN4-14A)	\$ 0.27	6.35 mm		28.6 mm		4	\$ 1.08
20	Nut, Grade AN	Attach Rear Lower A-Arms to Tube Frame (AN365-428A)	\$ 0.21	6.35 mm				4	\$ 0.84
30	Washer, Grade AN	Attach Rear Lower A-Arms to Tube Frame (AN960-416)	\$ 0.02	6.35 mm				4	\$ 0.06
40	Bolt, Grade AN	Attach Rear Upper A-Arms to Tube Frame (AN4-14A)	\$ 0.33	6.35 mm		28.6 mm		4	\$ 1.32
50	Nut, Grade AN	Attach Rear Upper A-Arms to Tube Frame (AN365-428A)	\$ 0.21	6.35 mm				4	\$ 0.84
60	Washer, Grade AN	Attach Rear Upper A-Arms to Tube Frame (AN960-416)	\$ 0.02	6.35 mm				4	\$ 0.06
Subtotal									\$ 4.21

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								

University	University of Akron
System	Suspension
Assembly	Rear Anti-Roll Bar Assembly
P/N Base	A7700
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	34.80
Quantity		1
Extended Cost	\$	34.80

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Rear Blade	\$ 2.77	2	\$ 5.55
20	Rear Bar Mounts	\$ 1.63	2	\$ 3.26
30	Rear Bar	\$ 4.05	1	\$ 4.05
40	Rear Link	\$ 8.31	2	\$ 16.63
Subtotal				\$ 29.48

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Loose	Assemble Rear Blade to Tube Frame	\$ 0.06	unit	1	1.25	1	\$ 0.08
20	Assemble, 1 kg, Loose	Assemble Rear Bar Mounts to Tube Frame	\$ 0.06	unit	4	1	1	\$ 0.24
30	Power Tool <= 6.35 mm	Attach Rear Link to Rear Bell Crank	\$ 0.25	unit	6	1	1	\$ 1.50
40	Reaction Tool <= 6.35 mm	Attach Rear Link to Rear Bell Crank	\$ 0.25	unit	6	1	1	\$ 1.50
50	Assemble, 1 kg, Loose	Assemble Rear Blade to Rear Bar	\$ 0.06	unit	1	1	1	\$ 0.06
Subtotal								\$ 3.38

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Rear Bar Mounts and Rear Link to Car (AN3-7A)	\$ 0.11	4.826 mm		12.7 mm		6	\$ 0.66
20	Nut, Grade AN	Fasten Rear Bar Mounts and Rear Link to Car (AN365-1032A)	\$ 0.16	4.826 mm				6	\$ 0.96
30	Washer, Grade AN	Fasten Rear Bar Mounts and Rear Link to Car (AN960-10)	\$ 0.01	4.826 mm				6	\$ 0.06
40	Bolt, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Rear Blade to Rear Bar (#1/4-20 x 1" Black Oxide Finish Socket Cap Screw)	\$ 0.05	6.35 mm		25.4 mm		1	\$ 0.05
50	Nut, Grade AN	Fasten Rear Blade to Rear Bar (AN365-428A)	\$ 0.21	6.35 mm				1	\$ 0.21
60	Washer, Grade 6.8 (SAE 3) and All Grades less than Metric 8.8	Fasten Rear Blade to Rear Bar (1/4" x 0.625" OD Thru-Hardened Plain Finish SAE Flat Washer)	\$ 0.01	6.35 mm				1	\$ 0.01
Subtotal									\$ 1.95

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University System	University of Akron Suspension
Assembly	Rear Upright Assembly
P/N Base	A7800
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	91.78
Quantity		1
Extended Cost	\$	91.78

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Rear Upright	\$ 40.49	2	\$ 80.99
20	Rear Camber Knuckle	\$ 3.96	1	\$ 3.96
Subtotal				\$ 84.94

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 6.35 mm	Fasten Rear Camber Knuckles to A-Arms	\$ 0.25	unit	4	1	1 \$	1.00
20	Reaction Tool <=6.35 mm	Fasten Rear Camber Knuckles to A-Arms	\$ 0.25	unit	4	1	1 \$	1.00
30	Safety Wire, Install	Fasten Rear Camber Knuckles to A-Arms	\$ 0.60	unit	2	1	1 \$	1.20
40	Power Tool <= 6.35 mm	Fasten Rear Upright to Rear Camber Knuckle	\$ 0.25	unit	4	1	1 \$	1.00
Subtotal								\$ 4.20

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Bolt, Grade AN	Fasten Rear Upright to A-Arms (AN4-11A)	\$ 0.20	6.35 mm		15.875 mm		4	\$ 0.80
20	Nut, Grade AN	Fasten Rear Upright to A-Arms (AN365-428A)	\$ 0.21	6.35 mm				4	\$ 0.84
30	Bolt, Grade AN	Fasten Rear Camber Knuckle to Rear Upright (AN4-13A)	\$ 0.25	6.35 mm		25.4 mm		4	\$ 1.00
40	Safety Wire	Fasten Rear Camber Knuckle to Rear Upright	\$ -		4 unit		150 mm	1	\$ -
Subtotal									\$ 2.64

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Wheels and Tires
Assembly	Hub Assembly
P/N Base	A8000
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	162.55
Quantity		1
Extended Cost	\$	162.55

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Front Hub Nut	\$ 2.75	2	\$ 5.49
20	Rear Hub Nut	\$ 3.62	2	\$ 7.24
30	Front Hub	\$ 45.62	2	\$ 91.25
40	Rear Hub	\$ 27.48	2	\$ 54.97
Subtotal				\$ 158.95

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Drilled Holes < 25.4 mm	Positive Locking for Front and Rear Hubs	\$ 0.35	hole	4	1	1	\$ 1.40
20	Power Tool < 25.4 mm	Assemble Front Hub Nut to Front Hub	\$ 0.25	unit	1	1	4	\$ 1.00
30	Power Tool < 25.4 mm	Assemble Rear Hub Nut to Rear Hub	\$ 0.25	unit	1	1	4	\$ 1.00
Subtotal								\$ 3.40

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Pin, Cotter, Hairpin	Positive Locking for Front and Rear Hubs	\$ 0.05		unit			4	\$ 0.20
Subtotal									\$ 0.20

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncl	Subtotal
Subtotal								

University	University of Akron
System	Wheels and Tires
Assembly	Wheel Assembly
P/N Base	A8100
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	1,147.25
Quantity		1
Extended Cost	\$	1,147.25

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Wheel Center	\$ 20.05	4	\$ 80.19
20	Wheel Shell	\$ 143.37	4	\$ 573.48
30	Tire	\$ 112.70	4	\$ 450.80
Subtotal				\$ 1,104.47

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Power Tool <= 25.4 mm	Fasten Wheels to Hubs	\$ 0.25	unit	12	1	1	\$ 3.00
20	Power Tool <= 25.4 mm	Fasten Wheel Center to Outer Wheel Shell and Inner Wheel Shell	\$ 0.25	unit	48	1	1	\$ 12.00
30	Reaction Tool <= 25.4 mm	Fasten Wheel Center to Outer Wheel Shell and Inner Wheel Shell	\$ 0.25	unit	48	1	1	\$ 12.00
Subtotal								\$ 27.00

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
10	Nut, Grade 10.9 (SAE 8)	Nuts for Wheel Mounting, No Lug Nuts (7/16"-14 Plain Finish Hex Nut)	\$ 0.11	11.11 mm				12	\$ 1.32
20	Washer, Grade 10.9 (SAE 8)	Washers for Wheel Mounting (#10 x 0.375" OD Thru-Hardened Plain Finish Steel SAE Flat Washer)	\$ 0.02	11.11 mm				12	\$ 0.24
30	Bolt, Grade AN	Fasten Wheel Center to Outer Wheel Shell (AN3-4A)	\$ 0.13	4.83 mm		17.8 mm		48	\$ 6.08
40	Nut, Grade AN	Fasten Wheel Center to Outer Wheel Shell (AN365-1032A)	\$ 0.16	4.83 mm				48	\$ 7.56
50	Washer, Grade AN	Fasten Wheel Center to Outer Wheel Shell (AN960-10)	\$ 0.01	4.83 mm				48	\$ 0.57
Subtotal								\$ 15.77	

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracInClid	Subtotal
Subtotal								

University	University of Akron
System	Wheels and Tires
Assembly	Wheel Bearing Assembly
P/N Base	A8200
Suffix	AA
Details	

FSAE Car #	73
FN Car #	29
FSA Car #	5
FSG Car #	330

Assembly Cost	\$	659.28
Quantity		1
Extended Cost	\$	659.28

ItemOrder	Part	Part Cost	Quantity	Subtotal
10	Wheel Bearing	\$ 80.95	8	\$ 647.60
20	Wheel Bearing Spacer	\$ 2.48	4	\$ 9.92
Subtotal				\$ 657.52

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Quantity	Subtotal
Subtotal												

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	MultVal	Subtotal
10	Assemble, 1 kg, Interference	Press Wheel Bearings into Uprights	\$ 0.19	unit	1	1	8	\$ 1.52
20	Assemble, 1 kg, Loose	Assemble Wheel Bearing Spacers to Uprights	\$ 0.06	unit	1	1	4	\$ 0.24
Subtotal								\$ 1.76

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Subtotal
Subtotal									

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncid	Subtotal
Subtotal								