University of Delaware
Formula SAE Lincoln, Car #67
2017 Cost Report

University of Delaware
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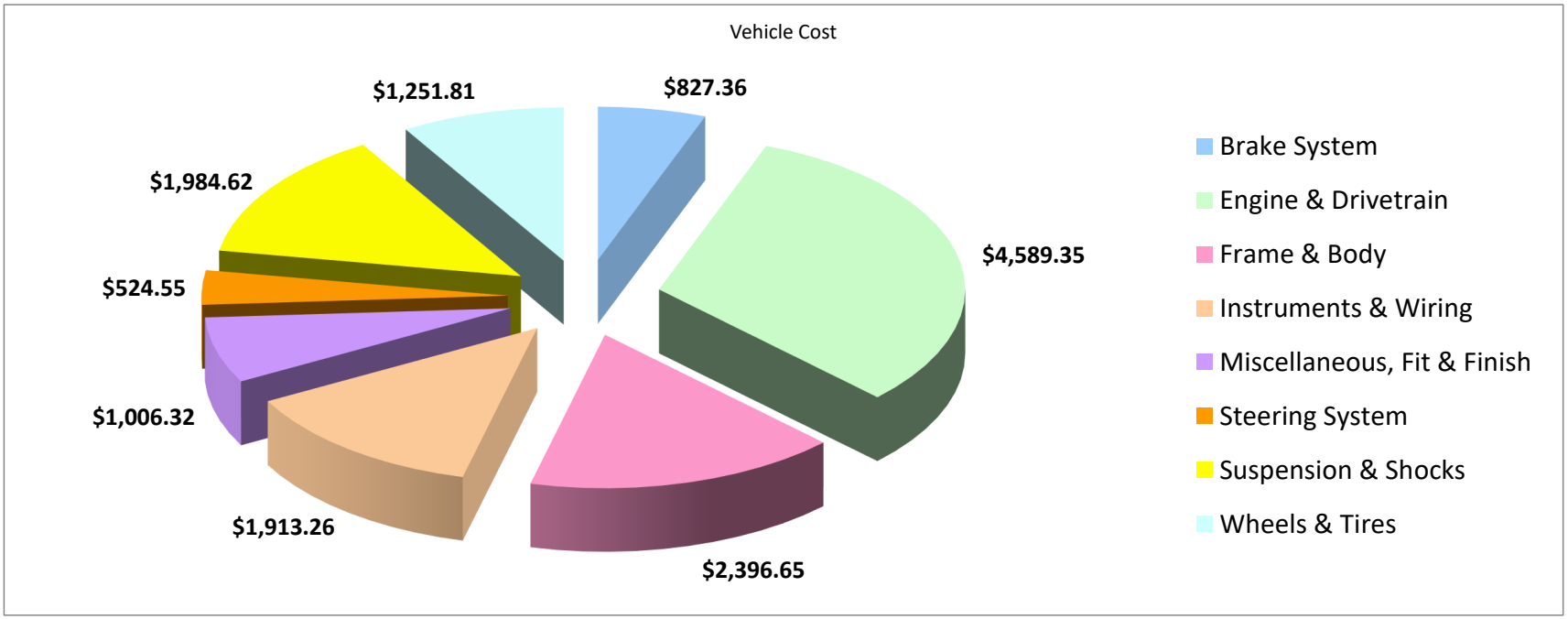
Cost Summary Basics
University of Delaware
FSAEL-2017-067

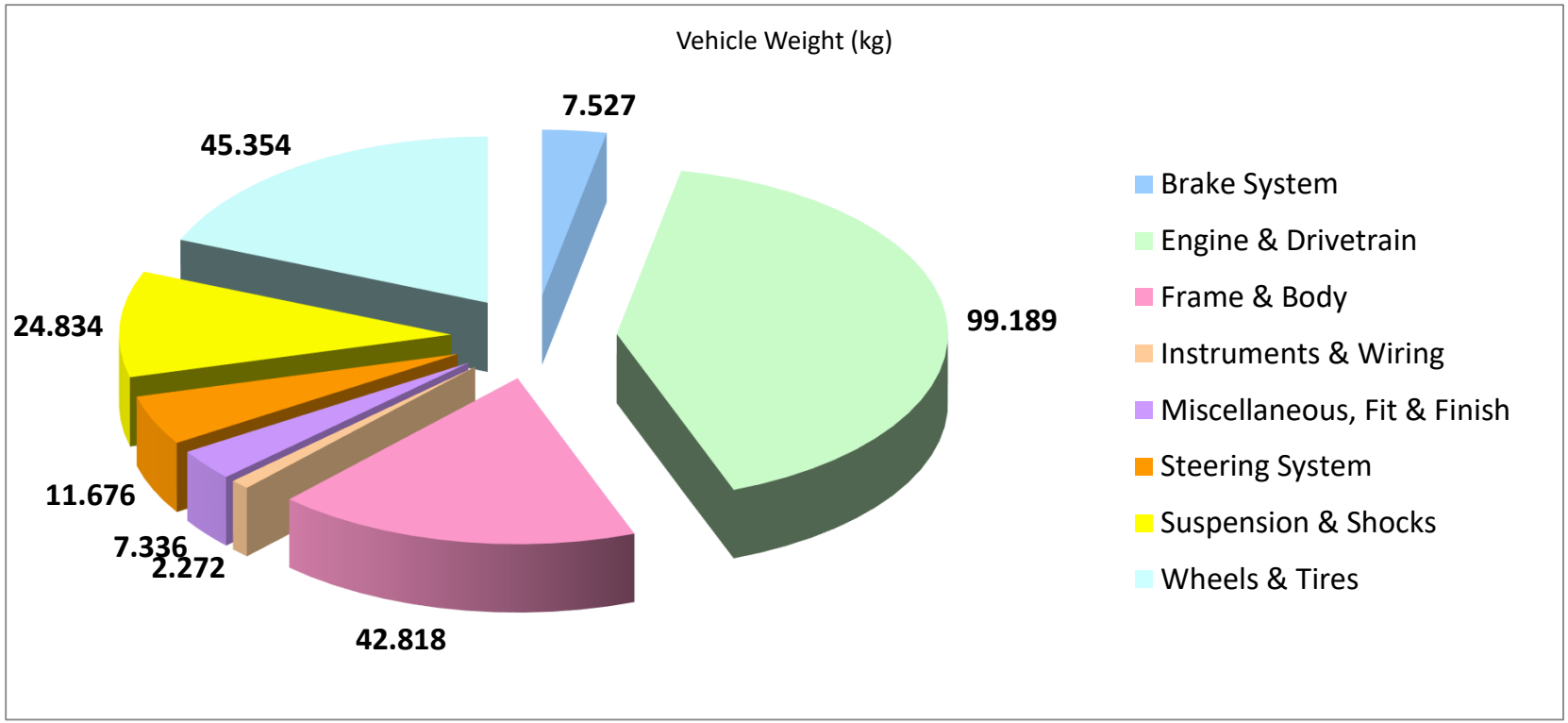
	System	Materials	Processes	Fasteners	Tooling	Total
BR	Brake System	$ 435.94	$ 383.00	$ 8.42	$ -	$ 827.36
EN	Engine & Drivetrain	$ 3,437.71	$ 1,012.60	$ 139.04	$ -	$ 4,589.35
FR	Frame & Body	$ 1,433.13	$ 832.39	$ 32.90	$ 98.22	$ 2,396.65
EL	Instruments & Wiring	$ 1,815.09	$ 97.89	$ 0.28	$ -	$ 1,913.26
MS	Miscellaneous, Fit & Finish	$ 739.34	$ 248.77	$ 7.10	$ 11.11	$ 1,006.32
ST	Steering System	$ 264.95	$ 247.14	$ 12.46	$ -	$ 524.55
SU	Suspension & Shocks	$ 989.53	$ 961.60	$ 33.32	$ 0.17	$ 1,984.62
WT	Wheels & Tires	$ 827.33	$ 412.08	$ 12.40	$ -	$ 1,251.81
	Total Vehicle	**$ 9,943.03**	**$ 4,195.48**	**$ 245.92**	**$ 109.50**	**$ 14,493.93**



Weight Summary Basics
University of Delaware
FSAEL-2017-067

	System	Weight (kg)
BR	Brake System	7.527
EN	Engine & Drivetrain	99.189
FR	Frame & Body	42.818
EL	Instruments & Wiring	2.272
MS	Miscellaneous, Fit & Finish	7.336
ST	Steering System	11.676
SU	Suspension & Shocks	24.834
WT	Wheels & Tires	45.354

Total Vehicle	**241.006**	**kg**



University	University of Delaware
Competition Code	FSAEL
Year	2017
Car #	067

Total Cost	$ 14,493.93
Total Weight (kg)	241.01

#	System	Part #	Rev. Lvl.	Part Name	Description	Unit Cost	Unit Weight (kg)	QTY	Material Cost	Process Cost	Fastener Cost	Tooling Cost	Total Cost	Total Weight (kg)	Page Number
1	BR	A1000	AA	Brake Discs		$ 7.50	0.000	1	$ -	$ 7.50	$ -	$ -	$ 7.50	0.000	1
2	BR	10000	AA	Front Discs		$ 86.59	0.610	2	$ 1.37	$ 84.14	$ 1.08	$ -	$ 173.18	1.220	2
3	BR	10001	AA	Rear Discs		$ 86.59	0.610	2	$ 1.37	$ 84.14	$ 1.08	$ -	$ 173.18	1.220	3
4	BR	A1001	AA	Breakline Assembly	Complete Brake Line Assembly	$ -	0.000	1	$ -	$ -	$ -	$ -	$ -	0.000	4
5	BR	10100	AA	Master Cylinders	Master Brake Cylinder	$ 54.34	0.250	2	$ 49.50	$ 4.50	$ 0.34	$ -	$ 108.68	0.500	5
6	BR	10101	AA	Balance Bar		$ 31.00	0.250	1	$ 30.00	$ 1.00	$ -	$ -	$ 31.00	0.250	6
7	BR	10102	AA	Braided Breakline Hose		$ 110.33	1.750	1	$ 108.64	$ 1.69	$ -	$ -	$ 110.33	1.750	7
8	BR	10103	AA	Brake Fluid Reservoir		$ 5.94	0.500	1	$ 5.47	$ 0.13	$ 0.34	$ -	$ 5.94	0.500	8
9	BR	A1002	AA	Brake Pads		$ -	0.000	1	$ -	$ -	$ -	$ -	$ -	0.000	9
10	BR	10200	AA	Front Brake Pads		$ 0.97	0.100	2	$ 0.78	$ 0.06	$ 0.13	$ -	$ 1.94	0.200	10
11	BR	10201	AA	Rear Brake Pads		$ 0.91	0.100	2	$ 0.78	$ -	$ 0.13	$ -	$ 1.81	0.200	11
12	BR	A1003	AA	Brake Calipers		$ 5.00	0.000	1	$ -	$ 5.00	$ -	$ -	$ 5.00	0.000	12
13	BR	10300	AA	Front Brake Caliper		$ 52.20	0.422	2	$ 46.06	$ 5.50	$ 0.64	$ -	$ 104.41	0.844	13
14	BR	10301	AA	Rear Brake Caliper		$ 52.20	0.422	2	$ 46.06	$ 5.50	$ 0.64	$ -	$ 104.41	0.844	14
									$ 435.94	$ 383.00	$ 8.42	$ -	$ 827.36	7.527	
15	EN	A2000	AA	Engine	Engine to Chassis attachment	$ 56.88	0.000	1	$ -	$ 54.24	$ 2.64	$ -	$ 56.88	0.000	15
16	EN	20000	AA	Engine	Suzuki GSXR600	$ 1,553.75	62.590	1	$ 1,500.00	$ 53.75	$ -	$ -	$ 1,553.75	62.590	16
17	EN	20001	AA	Rear Motor Mount	Rigid attachment to chassis (rear)	$ 26.88	0.780	1	$ 3.53	$ 23.34	$ -	$ -	$ 26.88	0.780	17
18	EN	20002	AA	Front Motor Mount	Rigid attachment to chassis (front)	$ 16.98	0.700	1	$ 3.13	$ 13.85	$ -	$ -	$ 16.98	0.700	18
19	EN	A2001	AA	Exhaust Manifold	Assembly of the exhaust manifold	$ 33.00	0.000	1	$ -	$ 33.00	$ -	$ -	$ 33.00	0.000	19
20	EN	20100	AA	Headers	Exhaust Headers	$ 58.57	0.750	4	$ 1.70	$ 56.87	$ -	$ -	$ 234.26	3.000	20
21	EN	20101	AA	Engine Connections	Connectors to attach the headers to the engine	$ 1.75	0.050	4	$ 0.03	$ 1.54	$ 0.18	$ -	$ 6.99	0.200	21
22	EN	20102	AA	Collector	Exhaust Collector	$ 73.38	0.100	1	$ 3.77	$ 69.61	$ -	$ -	$ 73.38	0.100	22
23	EN	20103	AA	Muffler	FMF ALUMINUM FACTORY 4.1 RCT SL	$ 56.29	2.313	1	$ 39.54	$ 16.75	$ -	$ -	$ 56.29	2.313	23
24	EN	20104	AA	Muffler Tab	Tab for connecting muffler to chassis	$ 1.96	0.010	1	$ 0.03	$ 1.72	$ 0.20	$ -	$ 1.96	0.010	24
25	EN	A2002	AA	Intake	Assembly of the Intake system	$ 4.88	0.000	1	$ -	$ 3.44	$ 1.44	$ -	$ 4.88	0.000	25
26	EN	20200	AA	Air filter	Air filter attached to throttle body	$ 29.63	0.224	1	$ 29.38	$ 0.25	$ -	$ -	$ 29.63	0.224	26
27	EN	20201	AA	Throttle Body	Throttle body between filter and restrictor	$ 48.82	0.257	1	$ 32.39	$ 15.87	$ 0.56	$ -	$ 48.82	0.257	27
28	EN	20202	AA	Restrictor		$ 51.95	0.250	1	$ 2.86	$ 49.09	$ -	$ -	$ 51.95	0.250	28
29	EN	20203	AA	Intake Manifold	3D printed manifold	$ 35.19	0.997	1	$ 3.29	$ 31.90	$ -	$ -	$ 35.19	0.997	29
30	EN	A2003	AA	Axles		$ 5.50	0.000	1	$ -	$ 5.50	$ -	$ -	$ 5.50	0.000	30
31	EN	20300	AA	Tripods		$ 50.00	0.204	4	$ 50.00	$ -	$ -	$ -	$ 200.00	0.816	31
32	EN	20301	AA	Halfshafts		$ 14.96	0.932	2	$ 2.95	$ 12.01	$ -	$ -	$ 29.92	1.864	32
33	EN	A2004	AA	Differential	Taylor TRE MK2 differential	$ 191.46	0.000	1	$ 156.30	$ 34.69	$ 0.48	$ -	$ 191.46	0.000	33
34	EN	20400	AA	Differential Housing	Outer aluminum housing	$ 295.37	3.000	1	$ 202.32	$ 91.08	$ 1.97	$ -	$ 295.37	3.000	35
35	EN	20401	AA	Differential Mounts	Diff's chassis mounts	$ 86.02	3.000	1	$ 22.94	$ 60.22	$ 2.86	$ -	$ 86.02	3.000	36
36	EN	20402	AA	Differential Internals	Taylor MK2 internals	$ 165.00	0.000	1	$ 165.00	$ -	$ -	$ -	$ 165.00	0.000	38
37	EN	20403	AA	Sprockets	Motor and diff sprockets	$ 15.35	1.802	1	$ 7.67	$ 7.68	$ -	$ -	$ 15.35	1.802	39
38	EN	20404	AA	Chain & Guard		$ 52.15	1.912	1	$ 50.65	$ 1.50	$ -	$ -	$ 52.15	1.912	41
39	EN	A2006	AA	Fuel System		$ 28.75	0.000	1	$ 14.13	$ 11.62	$ 3.00	$ -	$ 28.75	0.000	42
40	EN	20600	AA	Fuel Injectors	Fuel injectors for gixxer 600	$ 240.00	0.030	1	$ 240.00	$ -	$ -	$ -	$ 240.00	0.030	43
41	EN	20601	AA	Fuel Tank	Fuel tank for engine	$ 93.59	3.260	1	$ 14.25	$ 77.97	$ 1.36	$ -	$ 93.59	3.260	44
42	EN	20602	AA	Fuel Pump and Pressure Regulator and Filter	Fuel Pump, Pressure Regulator, and Filter for Fuel S	$ 58.00	1.106	1	$ 58.00	$ -	$ -	$ -	$ 58.00	1.106	45
43	EN	20603	AA	Fuel Lines and Fittings	Fuel Lines and Fuel Fittings	$ 229.06	0.304	1	$ 226.81	$ 2.25	$ -	$ -	$ 229.06	0.304	46
44	EN	20604	AA	Fuel Rail	Fuel Rail from Gixxer 600	$ 28.76	0.160	2	$ 1.16	$ 27.60	$ -	$ -	$ 57.51	0.320	47
45	EN	A2007	AA	Cooling System		$ 43.49	0.000	1	$ 34.34	$ 7.10	$ 2.05	$ -	$ 43.49	0.000	48
46	EN	20700	AA	Coolant Inlet Flange	Fiber glass inlet	$ 256.05	1.000	1	$ 253.45	$ 2.60	$ -	$ -	$ 256.05	1.000	49
47	EN	20701	AA	Coolant Outlet Flange	Fiber glass outlet flange	$ 107.95	1.000	1	$ 106.74	$ 1.21	$ -	$ -	$ 107.95	1.000	50
48	EN	20702	AA	Radiator		$ 2.50	2.344	1	$ 0.21	$ 2.29	$ -	$ -	$ 2.50	2.344	51
49	EN	20703	AA	Coolant Lines		$ 168.96	1.656	1	$ 43.00	$ 4.20	$ 121.76	$ -	$ 168.96	1.656	52
50	EN	20704	AA	Coolant Reservior	Aluminum stirpot with overflow	$ 29.50	0.224	1	$ 7.11	$ 22.39	$ -	$ -	$ 29.50	0.224	53
51	EN	A2008	AA	Fluids	Extraneuos Fluids	$ 0.63	0.000	1	$ -	$ 0.63	$ -	$ -	$ 0.63	0.000	54
52	EN	20800	AA	Coolant		$ 0.00	2.000	1	$ 0.00	$ -	$ -	$ -	$ 0.00	2.000	55
53	EN	20801	AA	Engine Oil	Oil for GSXR600	$ 1.77	2.130	1	$ 1.77	$ -	$ -	$ -	$ 1.77	2.130	56
									$ 3,437.71	$ 1,012.60	$ 139.04	$ -	$ 4,589.35	99.189	

#	System	Part #	Rev. Lvl.	Part Name	Description	Unit Cost	Unit Weight (kg)	QTY	Material Cost	Process Cost	Fastener Cost	Tooling Cost	Total Cost	Total Weight (kg)	Page Number
54	FR	A3000	AA	Frame	Chromolly Space Frame Assembly	$ 33.95	0.000	1	$ -	$ 33.61	$ -	$ 0.33	$ 33.95	0.000	57
55	FR	30001	AA	Space Frame	Chromolly Space Frame	$ 422.58	31.752	1	$ 70.69	$ 342.89	$ -	$ 9.00	$ 422.58	31.752	58
56	FR	30002	AA	Anti-Intrusion Plate	Anti-Intrusion Plate	$ 23.88	1.000	1	$ 3.06	$ 20.81	$ -	$ -	$ 23.88	1.000	59
57	FR	30004	AA	Tabs		$ 27.83	0.440	1	$ 3.36	$ 23.30	$ 1.17	$ -	$ 27.83	0.440	60
58	FR	A3001	AA	Body	Aluminum outer skin	$ 42.63	0.000	1	$ 17.50	$ 7.13	$ 18.00	$ -	$ 42.63	0.000	61
59	FR	A3002	AA	Pedals		$ 2.66	0.000	1	$ -	$ 1.88	$ 0.78	$ -	$ 2.66	0.000	62
60	FR	30200	AA	Throttle Pedal		$ 4.22	0.100	1	$ 0.75	$ 2.98	$ 0.49	$ -	$ 4.22	0.100	63
61	FR	30201	AA	Brake Pedal		$ 7.52	0.500	1	$ 1.90	$ 5.56	$ 0.06	$ -	$ 7.52	0.500	64
62	FR	30202	AA	Pedal Base	Aluminum pedal box base	$ 91.43	1.806	1	$ 8.87	$ 81.79	$ 0.78	$ -	$ 91.43	1.806	65
63	FR	A3003	AA	Floor Pan		$ 12.12	0.000	1	$ 9.62	$ 2.50	$ -	$ -	$ 12.12	0.000	66
64	FR	A3004	AA	Impact Attenuator		$ 3.28	0.000	1	$ -	$ -	$ 3.28	$ -	$ 3.28	0.000	67
65	FR	A3005	AA	Aerodynamics	Complete Aero-Dynamic Assembly	$ 307.45	0.000	1	$ 247.50	$ 55.76	$ 4.20	$ -	$ 307.45	0.000	68
66	FR	30500	AA	Front Wing	Front Carbon Fiber Wing	$ 617.15	3.100	1	$ 407.21	$ 162.74	$ 2.76	$ 44.44	$ 617.15	3.100	69
67	FR	30501	AA	Front Mounting	Mounting To Attach Airfoil to cars	$ 274.57	0.660	1	$ 257.77	$ 16.80	$ -	$ -	$ 274.57	0.660	70
68	FR	30502	AA	Rear Wing	Rear Air Foil Wings	$ 252.11	2.800	1	$ 140.04	$ 66.25	$ 1.38	$ 44.44	$ 252.11	2.800	71
69	FR	30503	AA	Rear Mounting	Mounting To Attach Airfoil to cars	$ 273.27	0.660	1	$ 264.87	$ 8.40	$ -	$ -	$ 273.27	0.660	72
									$ 1,433.13	$ 832.39	$ 32.90	$ 98.22	$ 2,396.65	42.818	
70	EL	A4000	AA	ECM Engine Electronics		$ 202.50	0.000	1	$ 202.50	$ -	$ -	$ -	$ 202.50	0.000	73
71	EL	40000	AA	ECU	Denso ECU	$ 500.00	0.636	1	$ 500.00	$ -	$ -	$ -	$ 500.00	0.636	74
72	EL	A4001	AA	Wiring Harness		$ -	0.000	1	$ -	$ -	$ -	$ -	$ -	0.000	75
73	EL	A4002	AA	Dash Panel		$ 5.25	0.000	1	$ -	$ 5.25	$ -	$ -	$ 5.25	0.000	76
74	EL	40200	AA	Driver Kill Switch		$ 2.46	0.000	1	$ 1.00	$ 1.46	$ -	$ -	$ 2.46	0.000	77
75	EL	40201	AA	Starter button		$ 2.46	0.000	1	$ 1.00	$ 1.46	$ -	$ -	$ 2.46	0.000	78
76	EL	40202	AA	Dash panel		$ 57.06	0.336	1	$ 25.00	$ 32.06	$ -	$ -	$ 57.06	0.336	79
77	EL	A4003	AA	Main Kill Switch		$ 11.32	0.000	1	$ 5.89	$ 5.14	$ 0.28	$ -	$ 11.32	0.000	80
78	EL	A4004	AA	Fuse-Relay Assembly		$ -	0.000	1	$ -	$ -	$ -	$ -	$ -	0.000	81
79	EL	40400	AA	Fuse box		$ 17.56	0.000	1	$ 6.00	$ 11.56	$ -	$ -	$ 17.56	0.000	82
80	EL	40401	AA	Mounting panel		$ 47.06	0.000	1	$ 15.00	$ 32.06	$ -	$ -	$ 47.06	0.000	83
81	EL	40402	AA	Relays		$ 5.46	0.000	1	$ 4.00	$ 1.46	$ -	$ -	$ 5.46	0.000	84
82	EL	A4005	AA	Brake Light Assembly		$ 5.21	0.000	1	$ 4.00	$ 1.21	$ -	$ -	$ 5.21	0.000	85
83	EL	A4006	AA	Battery Assembly		$ 1.13	0.000	1	$ -	$ 1.13	$ -	$ -	$ 1.13	0.000	86
84	EL	40600	AA	Battery	Battery Tender Lithium Battery	$ 50.70	0.780	1	$ 50.70	$ -	$ -	$ -	$ 50.70	0.780	87
85	EL	A4007	AA	Display Assembly		$ 5.10	0.000	1	$ -	$ 5.10	$ -	$ -	$ 5.10	0.000	88
86	EL	40700	AA	Display	Aim MXL Pista	$ 1,000.00	0.520	1	$ 1,000.00	$ -	$ -	$ -	$ 1,000.00	0.520	89
									$ 1,815.09	$ 97.89	$ 0.28	$ -	$ 1,913.26	2.272	
87	MS	A5000	AA	Seat	Full Seat Assembly	$ 14.75	0.000	1	$ -	$ 9.37	$ 5.38	$ -	$ 14.75	0.000	90
88	MS	50000	AA	Carbon Fiber Seat		$ 591.60	2.726	1	$ 545.20	$ 35.28	$ -	$ 11.11	$ 591.60	2.726	91
89	MS	50001	AA	Seat Spacers	Spacers to distribute forces on CF	$ 1.88	0.050	6	$ 0.34	$ 1.54	$ -	$ -	$ 11.27	0.300	92
88	MS	50002	AA	Seat Bracket Side	Side seat supports	$ 40.13	0.572	2	$ 2.82	$ 37.31	$ -	$ -	$ 80.26	1.144	93
89	MS	50003	AA	Seat Bracket Rear	Rear seat support	$ 3.56	0.106	1	$ 0.48	$ 3.08	$ -	$ -	$ 3.56	0.106	94
90	MS	A5001	AA	Safety Harness		$ 2.25	0.000	1	$ -	$ 1.13	$ 1.12	$ -	$ 2.25	0.000	95
89	MS	50101	AA	Harness	G-Force Pro Series Harness	$ 45.00	1.040	1	$ 45.00	$ -	$ -	$ -	$ 45.00	1.040	96
90	MS	A5002	AA	Paint - Frame	Coloring the frame	$ 170.65	0.000	1	$ 111.90	$ 58.75	$ -	$ -	$ 170.65	0.000	97
91	MS	A5003	AA	Paint - Body	Painting the body panels	$ 31.42	0.000	1	$ 20.61	$ 10.82	$ -	$ -	$ 31.42	0.000	98
92	MS	A5004	AA	Fire Wall		$ 7.26	0.000	1	$ -	$ 6.66	$ 0.60	$ -	$ 7.26	0.000	99
93	MS	50400	AA	Right Wall	Right side of the firewall	$ 18.76	0.380	1	$ 1.59	$ 17.17	$ -	$ -	$ 18.76	0.380	100
94	MS	50401	AA	Middle Wall	Middle part of firewall	$ 10.74	1.250	1	$ 5.24	$ 5.50	$ -	$ -	$ 10.74	1.250	101
95	MS	50402	AA	Left Wall	Left side of the firewall	$ 18.81	0.390	1	$ 1.64	$ 17.17	$ -	$ -	$ 18.81	0.390	102
									$ 739.34	$ 248.77	$ 7.10	$ 11.11	$ 1,006.32	7.336	

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96	ST	A6000	AA	Steering Wheel	Full steering wheel assembly	$ 6.90	0.000	1	$ -	$ 4.50	$ 2.40	$ -	$ 6.90	0.000	103
97	ST	60000	AA	Grip	Steering Wheel Grip	$ 16.24	0.072	1	$ 0.24	$ 16.00	$ -	$ -	$ 16.24	0.072	104
98	ST	60001	AA	Plate	Steering Wheel Outline	$ 103.53	1.750	1	$ 90.00	$ 13.53	$ -	$ -	$ 103.53	1.750	105
99	ST	60002	AA	Center Disk	Steering Wheel Center Disk	$ 3.74	0.150	1	$ 0.63	$ 3.11	$ -	$ -	$ 3.74	0.150	106
100	ST	A6001	AA	Steering Wheel Quick Release	Fast removal of wheel for driver ingress/egress	$ 6.90	0.000	1	$ -	$ 4.50	$ 2.40	$ -	$ 6.90	0.000	107
101	ST	60100	AA	Quick Release Top	Top part of quick release	$ 34.71	0.493	1	$ 3.07	$ 31.64	$ -	$ -	$ 34.71	0.493	108
102	ST	60101	AA	Quick Release Bottom	Bottom part of quick release	$ 24.56	0.493	1	$ 2.07	$ 22.49	$ -	$ -	$ 24.56	0.493	109
103	ST	A6002	AA	Steering Column & Shaft	Upper Portion of steering shaft	$ 6.45	0.000	1	$ -	$ 5.43	$ 1.02	$ -	$ 6.45	0.000	110
104	ST	60200	AA	Upper Column	Upper portion of steering shaft	$ 90.60	2.210	1	$ 49.47	$ 41.13	$ -	$ -	$ 90.60	2.210	111
105	ST	60201	AA	Lower Column		$ 34.40	0.824	1	$ 2.88	$ 31.07	$ 0.46	$ -	$ 34.40	0.824	112
106	ST	60202	AA	U-Joint	Connects and allows for rotation of upper and lower	$ 40.00	0.950	1	$ 40.00	$ -	$ -	$ -	$ 40.00	0.950	113
107	ST	60203	AA	Steering Column Bushings	Aligns lower shaft to steering rack	$ 24.98	1.090	1	$ 23.70	$ 1.28	$ -	$ -	$ 24.98	1.090	114
108	ST	A6003	AA	Steering Rack & Pinion	Complete Steering Rack	$ 4.27	0.000	1	$ -	$ 3.33	$ 0.94	$ -	$ 4.27	0.000	115
109	ST	60300	AA	Pinion Gear	Links steering column to rack gear	$ 3.29	0.304	1	$ 0.68	$ 2.61	$ -	$ -	$ 3.29	0.304	116
110	ST	60301	AA	Rack Gear	Used with the pinion gear	$ 6.05	1.020	1	$ 2.30	$ 3.75	$ -	$ -	$ 6.05	1.020	117
111	ST	60302	AA	Steering Rack boots	Cover and protect rack connections	$ 5.41	0.490	1	$ 5.00	$ 0.41	$ -	$ -	$ 5.41	0.490	118
112	ST	60303	AA	Steering Rack Housing	Aluminum housing for rack	$ 9.79	1.330	1	$ 5.57	$ 4.22	$ -	$ -	$ 9.79	1.330	119
113	ST	A6004	AA	Front Tie Rod	Attachment rack to tie rod	$ 41.18	0.000	1	$ 4.78	$ 34.96	$ 1.44	$ -	$ 41.18	0.000	120
114	ST	A6005	AA	Rear Tie Rod	Toe links for rear	$ 22.29	0.000	1	$ 3.89	$ 16.74	$ 1.66	$ -	$ 22.29	0.000	121
115	ST	A6006	AA	Manual Shifting	Left shifter assembly	$ 21.54	0.000	1	$ 20.00	$ 0.06	$ 1.48	$ -	$ 21.54	0.000	122
116	ST	60600	AA	Shifter Cable Connector	Machined Aluminum Block	$ 4.27	0.000	1	$ 1.18	$ 2.43	$ 0.66	$ -	$ 4.27	0.000	123
117	ST	60601	AA	Shifter Handle	Shifter Handle	$ 3.41	0.250	1	$ 1.12	$ 2.29	$ -	$ -	$ 3.41	0.250	124
118	ST	60602	AA	Shifter Linkage	Shifter Linkage	$ 10.06	0.250	1	$ 8.36	$ 1.70	$ -	$ -	$ 10.06	0.250	125
									$ 264.95	$ 247.14	$ 12.46	$ -	$ 524.55	11.676	
118	SU	A7000	AA	Front Upper A-Arm		$ 2.88	0.000	2	$ -	$ 2.88	$ -	$ -	$ 5.75	0.000	126
119	SU	70000	AA	Front Upper A-Arm		$ 36.12	0.458	2	$ 20.84	$ 15.25	$ -	$ 0.03	$ 72.24	0.916	127
120	SU	70001	AA	Front Upper Mount		$ 7.12	0.050	4	$ 0.15	$ 6.97	$ -	$ -	$ 28.48	0.200	128
121	SU	70002	AA	Front Upper Spacers	Aluminum A-arm spacers with bolt	$ 1.85	0.000	6	$ 0.04	$ 1.70	$ 0.11	$ -	$ 11.09	0.001	129
122	SU	A7001	AA	Front Lower A-Arm		$ 2.88	0.000	2	$ -	$ 2.88	$ -	$ -	$ 5.75	0.000	130
123	SU	70100	AA	Front Lower A-Arm		$ 36.68	0.678	2	$ 21.41	$ 15.25	$ -	$ 0.03	$ 73.37	1.356	131
124	SU	70101	AA	Front Lower Mount		$ 9.44	0.120	4	$ 0.37	$ 9.07	$ -	$ -	$ 37.76	0.480	132
125	SU	70102	AA	Front Lower Spacers	Aluminum A-arm spacers with bolt	$ 1.85	0.000	6	$ 0.04	$ 1.70	$ 0.11	$ -	$ 11.09	0.001	133
126	SU	A7002	AA	Rear Upper A-Arm		$ 2.88	0.000	2	$ -	$ 2.88	$ -	$ -	$ 5.75	0.000	134
127	SU	70200	AA	Rear Upper A-Arm		$ 36.28	0.376	2	$ 21.03	$ 15.25	$ -	$ -	$ 72.56	0.752	135
128	SU	70201	AA	Rear Upper Mount		$ 7.12	0.050	4	$ 0.15	$ 6.97	$ -	$ -	$ 28.48	0.200	136
129	SU	70202	AA	Rear Upper Spacers	Aluminum A-arm spacers with bolt	$ 1.85	0.000	6	$ 0.04	$ 1.70	$ 0.11	$ -	$ 11.09	0.000	137

#	System	Part #	Rev. Lvl.	Part Name	Description	Unit Cost	Unit Weight (kg)	QTY	Material Cost	Process Cost	Fastener Cost	Tooling Cost	Total Cost	Total Weight (kg)	Page Number
130	SU	A7003	AA	Rear Lower A-Arm		$ 2.88	0.000	2	$ -	$ 2.88	$ -	$ -	$ 5.75	0.000	138
131	SU	70300	AA	Rear Lower A-Arm		$ 36.14	0.640	2	$ 20.86	$ 15.25	$ -	$ 0.03	$ 72.27	1.280	139
132	SU	70301	AA	Rear Lower Mount		$ 9.43	0.120	4	$ 0.36	$ 9.07	$ -	$ -	$ 37.72	0.480	140
133	SU	70302	AA	Rear Lower Spacers	Aluminum A-arm spacers with bolt	$ 1.85	0.000	6	$ 0.04	$ 1.70	$ 0.11	$ -	$ 11.09	0.001	141
134	SU	A7004	AA	Front Uprights	Full Front upright assembly	$ 9.25	0.000	2	$ -	$ 7.81	$ 1.44	$ -	$ 18.51	0.000	142
135	SU	70400	AA	Front Upright	Attachment for axle, brakes, & suspension	$ 37.13	0.000	2	$ 6.30	$ 30.83	$ -	$ -	$ 74.25	0.000	144
136	SU	70401	AA	Front Upright Mounts (a-arms)	A-arm mounts for upright	$ 19.37	0.464	4	$ 0.26	$ 19.11	$ -	$ -	$ 77.48	1.856	145
137	SU	70402	AA	Front Upright Mounts (pushrods, tie rods)	Attach push rod & tie rod to upright	$ 21.75	0.460	2	$ 0.67	$ 21.07	$ -	$ -	$ 43.49	0.920	146
138	SU	70403	AA	Front Upright Spacers	Adjust for camber	$ 8.22	0.040	4	$ 0.04	$ 8.18	$ -	$ -	$ 32.88	0.160	147
139	SU	A7005	AA	Rear Uprights	Full Rear upright assembly	$ 12.67	0.000	2	$ -	$ 10.75	$ 1.92	$ -	$ 25.34	0.000	148
140	SU	70500	AA	Rear Upright	Attachment for axle, brakes, & suspension	$ 40.19	3.240	2	$ 6.80	$ 33.39	$ -	$ -	$ 80.38	6.480	150
141	SU	70501	AA	Rear Upright Mounts (a-arms)	A-arm mounts for upright	$ 19.37	0.232	2	$ 0.26	$ 19.11	$ -	$ -	$ 38.74	0.464	151
142	SU	70502	AA	Rear Upright Mounts (pushrods, tie rods)	Attach push rod & tie rod to upright	$ 23.14	0.592	2	$ 1.02	$ 22.12	$ -	$ -	$ 46.29	1.184	152
143	SU	70503	AA	Rear Upright Spacers	Adjust for camber	$ 8.22	0.040	4	$ 0.04	$ 8.18	$ -	$ -	$ 32.88	0.160	153
144	SU	A7006	AA	Damper Assembly		$ -	0.000	1	$ -	$ -	$ -	$ -	$ -	0.000	154
145	SU	70600	AA	Pushrods		$ 124.20	1.580	1	$ 68.07	$ 50.50	$ 5.63	$ -	$ 124.20	1.580	155
146	SU	70601	AA	Rockers		$ 81.80	1.496	1	$ 47.92	$ 27.78	$ 6.10	$ -	$ 81.80	1.496	156
147	SU	70602	AA	Front Rocker Mounts	Gussett Plates and Tubes	$ 36.93	0.200	1	$ 3.33	$ 33.60	$ -	$ -	$ 36.93	0.200	157
148	SU	70603	AA	Rear Rocker Mounts		$ 17.18	0.100	1	$ 1.07	$ 16.12	$ -	$ -	$ 17.18	0.100	158
149	SU	70604	AA	Shocks		$ 609.46	3.600	1	$ 600.00	$ 6.50	$ 2.96	$ -	$ 609.46	3.600	159
150	SU	70605	AA	Shock Mounts		$ 28.03	0.250	1	$ 4.35	$ 23.69	$ -	$ -	$ 28.03	0.250	160
151	SU	A7007	AA	Swaybars		$ -	0.000	1	$ -	$ -	$ -	$ -	$ -	0.000	161
152	SU	70700	AA	Swaybar Levers		$ 25.80	0.150	1	$ 1.76	$ 21.07	$ 2.98	$ -	$ 25.80	0.150	162
153	SU	70701	AA	Swaybar Linkages	Linkage connecting rocker to swaybar	$ 78.60	0.316	1	$ 56.66	$ 15.65	$ 6.29	$ -	$ 78.60	0.316	163
154	SU	70702	AA	Swaybar Mount		$ 2.22	0.050	4	$ 0.13	$ 2.09	$ -	$ -	$ 8.88	0.200	164
155	SU	70703	AA	Swaybars	Steel Tube	$ 13.26	0.050	1	$ 1.11	$ 12.15	$ -	$ -	$ 13.26	0.050	165
									$ 989.53	$ 961.60	$ 33.32	$ 0.17	$ 1,984.62	24.834	
156	WT	A8001	AA	Wheel Assembly		$ 7.75	0.000	1	$ -	$ 7.75	$ -	$ -	$ 7.75	0.000	166
157	WT	80100	AA	Tire	Hoosier R25B tire	$ 85.00	4.490	4	$ 85.00	$ -	$ -	$ -	$ 340.00	17.960	167
158	WT	80101	AA	Valve Stem		$ 1.00	0.010	4	$ 1.00	$ -	$ -	$ -	$ 4.00	0.040	168
159	WT	80102	AA	Wheel	13 inch Keizer Wheels shells	$ 82.50	3.326	4	$ 82.50	$ -	$ -	$ -	$ 330.00	13.304	169
160	WT	80103	AA	Wheel Weights	Wheel balance weights	$ 4.00	0.050	1	$ 4.00	$ -	$ -	$ -	$ 4.00	0.050	170
161	WT	A8003	AA	Front Hubs Assembly		$ 5.20	0.000	2	$ -	$ 2.00	$ 3.20	$ -	$ 10.40	0.000	171
162	WT	80300	AA	Front Hubs	Machined Front Hubs	$ 46.60	1.200	2	$ 5.04	$ 38.56	$ 3.00	$ -	$ 93.21	2.400	172
163	WT	80301	AA	Front Wheel Bearings	Front Wheel Bearings	$ 34.38	0.300	2	$ 34.00	$ 0.38	$ -	$ -	$ 68.75	0.600	173
164	WT	A8004	AA	Rear Hubs Assembly	Full Rear Hub Assembly	$ 4.00	0.000	2	$ -	$ 4.00	$ -	$ -	$ 8.00	0.000	174
165	WT	80400	AA	Rear Hubs	Rear Hub & Rear Hub adapter	$ 163.86	5.200	2	$ 6.83	$ 157.04	$ -	$ -	$ 327.73	10.400	176
166	WT	80401	AA	Rear Wheel Bearings	Rear Wheel Bearings	$ 28.99	0.300	2	$ 28.80	$ 0.19	$ -	$ -	$ 57.98	0.600	178
									$ 827.33	$ 412.08	$ 12.40	$ -	$ 1,251.81	45.354	
									$ 9,943.03	$ 4,195.48	$ 245.92	$ 109.50	$ 14,493.93	$ 241.01	

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	BR
Assembly	Brake Discs
Assembly #	A1000
Description	

Assm Cost	$ 7.50
Qty	1

Total Cost	$ 7.50

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Discs	$ 86.59	2	$ 173.177
2	Rear Discs	$ 86.59	2	$ 173.177
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 346.35**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
71	Wrench <= 25.4 mm	Connect Disc to Upright	$ 1.50	unit	5			$ 7.50
							Sub Total	**$ 7.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	BR
Assembly	Brake Discs
Part	Front Discs
Part #	10000
Description	

Weight (kg)	0.610

Part Cost	$ 86.59
Qty	2
Total Cost	$ 173.18

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	Brake rotor	$ 2.25	0.61	kg		-					1	$ 1.37
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.37**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
120	Drilled hole < 50.8 mm dia.		$ 0.70	hole	27	Material - Ste	3.00	$ 56.70
120	Drilled hole < 50.8 mm dia.		$ 0.70	hole	4	Material - Ste	3.00	$ 8.40
132	Machining		$ 0.04	cm^3	122.8	Material - Ste	3.00	$ 14.74
59	Hand, Tight <= 6.35 mm		$ 0.50	unit	4			$ 2.00
60	Power Tool <= 25.4 mm		$ 0.25	unit	4			$ 1.00
							Sub Total	**$ 84.14**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)		0.19		mm		mm	4	$ 0.76
34	Nut, Grade 10.9 (SAE 8)		0.08		mm		mm	4	$ 0.32
								Sub Total	**$ 1.08**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	BR
Assembly	Brake Discs
Part	Rear Discs
Part #	10001
Description	

Weight (kg)	0.610

Part Cost	$ 86.59
Qty	2
Total Cost	$ 173.18

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild		$ 2.25	0.61	kg		-					1	$ 1.37
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.37**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
120	Drilled hole < 50.8 mm dia.		$ 0.70	hole	27	Material - Ste	3.00	$ 56.70
120	Drilled hole < 50.8 mm dia.		$ 0.70	hole	4	Material - Ste	3.00	$ 8.40
132	Machining		$ 0.04	cm^3	122.8	Material - Ste	3.00	$ 14.74
59	Hand, Tight <= 6.35 mm		$ 0.50	unit	4			$ 2.00
60	Power Tool <= 25.4 mm		$ 0.25	unit	4			$ 1.00
							Sub Total	**$ 84.14**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)		0.19		mm		mm	4	$ 0.76
34	Nut, Grade 10.9 (SAE 8)		0.08		mm		mm	4	$ 0.32
								Sub Total	**$ 1.08**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ -
Qty	1

Total Cost	$ -

System	BR
Assembly	Breakline Assembly
Assembly #	A1001
Description	Complete Brake Line Assembly

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Master Cylinders	$ 54.34	2	$ 108.680
2	Balance Bar	$ 31.00	1	$ 31.000
3	Braided Breakline Hose	$ 110.33	1	$ 110.327
4	Brake Fluid Reservoir	$ 5.94	1	$ 5.935
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 255.94**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.250

Part Cost	$ 54.34
Qty	2
Total Cost	$ 108.68

System	BR
Assembly	Breakline Assembly
Part	Master Cylinders
Part #	10100
Description	Master Brake Cylinder

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
156	Master Cylinder, Tilton, Model 75		$ 49.50	-	unit		-					1	$ 49.50
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 49.50**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
71	Wrench <= 25.4 mm	Install Master Cylinder to Bracket	$ 1.50	unit	2			$ 3.00
71	Wrench <= 25.4 mm	Tighten brake fittings	$ 1.50	unit	1			$ 1.50
							Sub Total	**$ 4.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Installing Master Cylinder to Brack	0.17	9	mm	25	mm	2	$ 0.34
								Sub Total	**$ 0.34**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	BR
Assembly	Breakline Assembly
Part	Balance Bar
Part #	10101
Description	

Weight (kg)	0.250

Part Cost	$ 31.00
Qty	1
Total Cost	$ 31.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
45	Balance Bar, Tilton, 72-260	Balance Bar	$ 30.00	-	unit		-					1	$ 30.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 30.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
59	Hand, Tight <= 6.35 mm	Tighten bias bolts	$ 0.50	unit	2			$ 1.00
							Sub Total	**$ 1.00**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.750

Part Cost	$ 110.33
Qty	1
Total Cost	$ 110.33

System	BR
Assembly	Breakline Assembly
Part	Braided Breakline Hose
Part #	10102
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
728	Hose, High Pressure, Stainless Steel Braided Outer	Break Lines	$ 13.42	0.4572	m		-					1	$ 6.14
728	Hose, High Pressure, Stainless Steel Braided Outer	Break Lines	$ 13.42	0.864	m		-					1	$ 11.59
728	Hose, High Pressure, Stainless Steel Braided Outer	Break Lines	$ 13.42	0.9144	m		-					2	$ 24.54
728	Hose, High Pressure, Stainless Steel Braided Outer	Break Lines	$ 13.42	0.8128	m		-					1	$ 10.91
728	Hose, High Pressure, Stainless Steel Braided Outer	Break Lines	$ 13.42	0.5588	m		-					1	$ 7.50
715	Fitting/L.P./Straight/Aluminum/Anodized	A/N Fittings	$ 2.30	6.53	mm		-					12	$ 27.62
719	Fitting/L.P./Tee/Flare-Flare-Pipe/Steel/	A/N Fittings	$ 10.17	6.53	mm		-					2	$ 20.34
				-									
												Sub Total	**$ 108.64**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
31	Install Tie Wrap (Zip Tie, Cable Clamp)	Tie Line to frame	$ 0.09	unit	2			$ 0.19
71	Wrench <= 25.4 mm	Tighten brake fittings	$ 1.50	unit	1			$ 1.50
							Sub Total	**$ 1.69**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	0.500

Part Cost	$ 5.94
Qty	1
Total Cost	$ 5.94

System	BR
Assembly	Breakline Assembly
Part	Brake Fluid Reservoir
Part #	10103
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
122	Hydraulic Fluid Reservoir, Remote (Plastic)	Holds excess brake fluid	$ 5.00	-	unit		-					1	$ 5.00
735	Hose, Silicone	Feeds master cylinder	$ 0.47	5.00	mm	0.2	m					1	$ 0.47
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 5.47**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Connecting hose to master cylinder	$ 0.13	unit	1			$ 0.13
							Sub Total	**$ 0.13**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)		0.17	9	mm	25	mm	2	$ 0.34
								Sub Total	**$ 0.34**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
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Assm Cost	$ -
Qty	1

Total Cost	$ -

System	BR
Assembly	Brake Pads
Assembly #	A1002
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Brake Pads	$ 0.97	2	$ 1.937
2	Rear Brake Pads	$ 0.91	2	$ 1.812
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 3.75**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	0.100

Part Cost	$ 0.97
Qty	2
Total Cost	$ 1.94

System	BR
Assembly	Brake Pads
Part	Front Brake Pads
Part #	10200
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
120	Brake Pad, Iron or Steel Rotor	Wilwod PS-1 Brake Pad	$ 0.00020	3,879.60	mm^3		-					1	$ 0.78
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.78**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose	Install Pad & Retaining Pin	$ 0.06	unit	1			$ 0.06
							Sub Total	**$ 0.06**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
44	Pin, Cotter, Straight		0.05		0		0	1	$ 0.05
45	Pin, Cotter, Hairpin		0.08		0		0	1	$ 0.08
								Sub Total	**$ 0.13**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.100

Part Cost	$ 0.91
Qty	2
Total Cost	$ 1.81

System	BR
Assembly	Brake Pads
Part	Rear Brake Pads
Part #	10201
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
120	Brake Pad, Iron or Steel Rotor	Wilwod PS-1 Brake Pad	$ 0.0002	3,879.60	mm^3		-					1	$ 0.78
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.78**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose	Install Pad & Retaining Pin	$ 0.06	unit				$ -
							Sub Total	**$ -**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
44	Pin, Cotter, Straight		0.05		0		0	1	$ 0.05
45	Pin, Cotter, Hairpin		0.08		0		0	1	$ 0.08
								Sub Total	**$ 0.13**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	BR
Assembly	Brake Calipers
Assembly #	A1003
Description	

Assm Cost	$ 5.00
Qty	1

Total Cost	$ 5.00

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Brake Caliper	$ 52.20	2	$ 104.406
2	Rear Brake Caliper	$ 52.20	2	$ 104.406
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 208.81**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
101	Brake Bleed - Per Bleeder Valve		$ 2.50	unit	2			$ 5.00
							Sub Total	**$ 5.00**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.422

Part Cost	$ 52.20
Qty	2
Total Cost	$ 104.41

System	BR
Assembly	Brake Calipers
Part	Front Brake Caliper
Part #	10300
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
114	Brake Caliper, Wilwood, PS-1	Brake Caliper	$ 46.00	-	unit		-					1	$ 46.00
744	Aluminum, Normal		$ 4.20	0.014	kg		-				2712.0000	1	$ 0.06
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 46.06**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set-up	$ 1.30	unit	1			$ 1.30
132	Machining	Material Removal	$ 0.04	cm^3	0.1			$ 0.00
63	Ratchet <= 25.4 mm	Tightening Bolts	$ 0.75	unit	2			$ 1.50
114	Safety Wire, Install	Mechanical Locking	$ 0.60	unit	2			$ 1.20
71	Wrench <= 25.4 mm	Install Brake Lines	$ 1.50	unit	1			$ 1.50
							Sub Total	**$ 5.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Caliper Bolt	0.24		mm		mm	2	$ 0.48
43	Nutsert (J-Nut)		0.08		unit		mm	2	$ 0.16
								Sub Total	**$ 0.64**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.422

Part Cost	$ 52.20
Qty	2
Total Cost	$ 104.41

System	BR
Assembly	Brake Calipers
Part	Rear Brake Caliper
Part #	10301
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
114	Brake Caliper, Wilwood, PS-1	Brake Caliper	$ 46.00	-	unit		-					1	$ 46.00
744	Aluminum, Normal		$ 4.20	0.01	kg		-					1	$ 0.06
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 46.06**

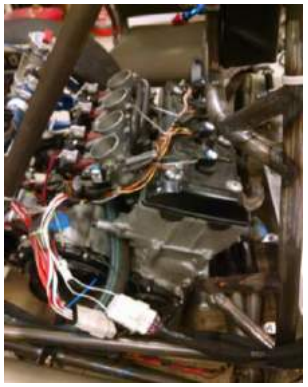
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set-up	$ 1.30	unit	1			$ 1.30
132	Machining	Material Removal	$ 0.04	cm^3	0.1			$ 0.00
63	Ratchet <= 25.4 mm	Tightening Bolts	$ 0.75	unit	2			$ 1.50
114	Safety Wire, Install	Mechanical Locking	$ 0.60	unit	2			$ 1.20
71	Wrench <= 25.4 mm	Install Brake Lines	$ 1.50	unit	1			$ 1.50
							Sub Total	**$ 5.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Caliper Bolt	0.24		mm		mm	2	$ 0.48
43	Nutsert (J-Nut)		0.08		unit		mm	2	$ 0.16
								Sub Total	**$ 0.64**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	
Assembly #	A2000
Description	Engine to Chassis attachment



Assm Cost	$ 56.88
Qty	1

Total Cost	$ 56.88

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Engine	$ 1,503.75	1	$ 1,503.750
2	Rear Motor Mount	$ 26.88	1	$ 26.875
3	Front Motor Mount	$ 16.98	1	$ 16.979
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 1,547.60**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
153	Tube end preperation for welding	Clean all tubes on chassis	$ 0.75	end	12			$ 9.00
155	Weld - Round Tubing	Attach all mounts to chassis	$ 0.38	cm	84	Assemble - Length > 0.5m	1.25	$ 39.90
63	Ratchet <= 25.4 mm	Bolt engine to chassis	$ 0.75	unit	4			$ 3.00
82	Assemble, >20 kg, Loose	Mount motor	$ 1.88	unit	1	Assemble - Length > 0.5m	1.25	$ 2.34
							Sub Total	**$ 54.24**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Bolts for motor mounts	0.4	19	mm	76.2	mm	2	$ 0.80
22	Bolt, Grade 8.8 (SAE 5)	Bolts for motor mounts	0.72	19	mm	203.2	mm	2	$ 1.44
37	Nut, Grade 8.8 (SAE 5)	Nuts for motor mounts	0.2	12.7	mm		mm	2	$ 0.40
								Sub Total	**$ 2.64**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	62.590

Part Cost	$ 1,553.75
Qty	1
Total Cost	$ 1,553.75

System	EN
Assembly	Engine
Part	Engine
Part #	20000
Description	Suzuki GSXR600

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
493	Engine and Transmission, Ultra High Performance (>10 HP/100 cc)	Motor	$ 2.50	600.00	cc		-					1	$ 1,500.00
529	Spark Plug Coil		$ -	-	unit		-					4	$ -
530	Spark Plug Wire		$ -	-	unit		-					4	$ -
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1,500.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
63	Ratchet <= 25.4 mm	Tighten Spark plugs	$ 0.75	unit	4	ble - Length	1.25	$ 3.75
105	Engine first start, includes fuel	First starting the engine	$ 50.00	unit	1			$ 50.00
							Sub Total	**$ 53.75**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Engine
Part	Rear Motor Mount
Part #	20001
Description	Rigid attachment to chassis (rear)

Weight (kg)	0.780

Part Cost	$ 26.88
Qty	1
Total Cost	$ 26.88

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	upper rear motor mount (square)	$ 2.25	0.48	kg		-	Mild steel	15.52	0.04	7800.0000	2	$ 2.18
772	Steel, Mild	lower rear motor mount (round)	$ 2.25	0.30	kg		-	Mild steel	5.42	0.07	7800.0000	2	$ 1.35
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.53**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup up mill	$ 1.30	unit	2			$ 2.60
121	Drilled holes < 25.4 mm dia.	Hole for bolt to pass through	$ 0.35	hole	4	e - Hole Leng	1.50	$ 2.10
132	Machining	Remove material via mill (top)	$ 0.04	cm^3	101.96	Material - Ste	3.00	$ 12.24
132	Machining	Remove material via mill (bottom)	$ 0.04	cm^3	53.4	Material - Ste	3.00	$ 6.41
							Sub Total	**$ 23.34**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.700

Part Cost	$ 16.98
Qty	1
Total Cost	$ 16.98

System	EN
Assembly	Engine
Part	Front Motor Mount
Part #	20002
Description	Rigid attachment to chassis (front)

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	motor mount (tube)	$ 2.25	0.50	kg		-	4130 tubing	1.74	0.37	7850.0000	2	$ 2.25
772	Steel, Mild	motor mount (solid)	$ 2.25	0.20	kg		-	mild steel rod	4.32	0.06	7800.0000	2	$ 0.88
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.13**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	lathe, drill press tube notching	$ 1.30	unit	2			$ 2.60
121	Drilled holes < 25.4 mm dia.	profiles for tubes and bolts	$ 0.35	hole	10	e - Hole Leng	1.50	$ 5.25
132	Machining	remove material via lathe	$ 0.04	cm^3	50	Material - Ste	3.00	$ 6.00
							Sub Total	**$ 13.85**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Exhaust Manifold
Assembly #	A2001
Description	Assembly of the exhaust manifold

Assm Cost	$ 33.00
Qty	1

Total Cost	$ 33.00

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Headers	$ 58.57	4	$ 234.260
2	Engine Connections	$ 1.75	4	$ 6.991
3	Collector	$ 73.38	1	$ 73.384
4	Muffler	$ 375.00	1	$ 375.000
5	Muffler Tab	$ 1.96	1	$ 1.959
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 691.59**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
86	Assemble, 10 kg, Interference		$ 1.88	unit	14			$ 26.25
63	Ratchet <= 25.4 mm		$ 0.75	unit	9			$ 6.75
							Sub Total	**$ 33.00**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Exhaust Manifold
Part	Headers
Part #	20100
Description	Exhaust Headers

Weight (kg)	0.750

Part Cost	$ 58.57
Qty	4
Total Cost	$ 234.26

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
773	Steel, Stainless	Exhaust Headers	$ 2.25	0.75	kg		-		1.89	0.51	7850.0000	1	$ 1.70
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.70**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
151	Tube bends	Stainless-Steel 2" J Bends	$ 0.75	bend	6			$ 4.50
152	Tube cut	Cutting of header tubes	$ 0.15	cm	26.67			$ 4.00
153	Tube end preperation for welding		$ 0.75	end	16			$ 12.00
155	Weld - Round Tubing		$ 0.38	cm	95.7072			$ 36.37
							Sub Total	**$ 56.87**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	0.050

Part Cost	$ 1.75
Qty	4
Total Cost	$ 6.99

System	EN
Assembly	Exhaust Manifold
Part	Engine Connections
Part #	20101
Description	Connectors to attach the headers to the engine

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
773	Steel, Stainless		$ 2.25	0.01	kg		-		48.39	0.00	7850.0000	1	$ 0.03
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.03**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change		$ 0.65	unit	1			$ 0.65
147	Sheet metal punching	Pressing the shape	$ 0.03	cm^2	5.08	rial - Stainless	3.75	$ 0.57
132	Machining		$ 0.04	cm^3	7.9756			$ 0.32
							Sub Total	**$ 1.54**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Bolts into the Engine	0.09	8.9	mm	15	mm	2	$ 0.18
								Sub Total	**$ 0.18**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
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Weight (kg)	0.100

Part Cost	$ 73.38
Qty	1
Total Cost	$ 73.38

System	EN
Assembly	Exhaust Manifold
Part	Collector
Part #	20102
Description	Exhaust Collector

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
773	Steel, Stainless	Smaller tubes for 4-1 collector	$ 2.25	0.19	kg		-		1.89	0.13	7850.0000	4	$ 1.70
773	Steel, Stainless	4-1 to muffler	$ 2.25	0.92	kg		-		4.63	0.25	7850.0000	1	$ 2.08
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.77**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change		$ 0.65	unit	2			$ 1.30
152	Tube cut	Cut smaller tube for 4-1	$ 0.15	cm	66.04			$ 9.91
153	Tube end preperation for welding	Welding 4-1	$ 0.75	end	8			$ 6.00
155	Weld - Round Tubing	Welding 4-1	$ 0.38	cm	66.04			$ 25.10
152	Tube cut	Cut smaller tube for muffler connecto	$ 0.15	cm	66.04			$ 9.91
153	Tube end preperation for welding	Welding 4-1 to muffler tube	$ 0.75	end	2			$ 1.50
155	Weld - Round Tubing	Welding 4-1 to muffler tube	$ 0.38	cm	39.878			$ 15.15
151	Tube bends	Stainless-Steel 2" J Bends	$ 0.75	bend	1			$ 0.75
							Sub Total	**$ 69.61**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	2.313

Part Cost	$ 56.29
Qty	1
Total Cost	$ 56.29

System	EN
Assembly	
Part	Muffler
Part #	20103
Description	FMF ALUMINUM FACTORY 4.1 RCT SL

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
803	Steel, Stainless (per kg)	Muffler Outer Shell	$ 2.25	1.81	kg		-		1264.51	0.0032	4500.0000	1	$ 4.07
803	Steel, Stainless (per kg)	Muffler Flanges	$ 2.25	0.90	kg		-		361.29	0.0032	7850.0000	2	$ 4.05
774	Titanium	Muffler Inner Structure	$ 22.00	0.90	kg		-		632.36	0.0032	4500.0000	1	$ 19.88
518	Muffler Batting	Packing in Muffler	$ 0.003	3,693.60	cm^3		-		102.60	0.36		1	$ 11.1
744	Aluminum, Normal	Muffler support tab	$ 4.20	0.11	kg		-		40.32	0.01	2712.0000	1	$ 0.47
				-									
				-									
				-									
												Sub Total	**$ 39.54**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
146	Sheet metal bends	Bend muffler outer and inner tubes	$ 0.25	bend	2			$ 0.50
146	Sheet metal bends	Bend Flanges	$ 0.25	bend	2			$ 0.50
111	Machining Setup, Change		$ 0.65	unit	1			$ 0.65
132	Machining	Machine support tab	$ 0.04	cm^3	302.4			$ 12.10
113	Riveting	Rivet together shells and tab	$ 0.25	unit	12			$ 3.00
							Sub Total	**$ 16.75**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.010

Part Cost	$ 1.96
Qty	1
Total Cost	$ 1.96

System	EN
Assembly	Exhaust Manifold
Part	Muffler Tab
Part #	20104
Description	Tab for connecting muffler to chassis

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	Tab	$ 2.25	0.02	kg		-		8.06	0.002	7850.0000	1	$ 0.03
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.03**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change		$ 0.65	unit	1			$ 0.65
147	Sheet metal punching	Punch Tab Shape	$ 0.03	cm^2	6.45			$ 0.19
146	Sheet metal bends	Bend tab	$ 0.25	bend	2			$ 0.50
76	Weld	Weld tab to chassis	$ 0.15	cm	2.54			$ 0.38
							Sub Total	**$ 1.72**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Bolting Tab to Muffler	0.15	8.9	mm	30	mm	1	$ 0.15
37	Nut, Grade 8.8 (SAE 5)		0.05	8.9	mm		mm	1	$ 0.05
								Sub Total	**$ 0.20**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 4.88
Qty	1

Total Cost	$ 4.88

System	EN
Assembly	Intake
Assembly #	A2002
Description	Assembly of the Intake system

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Air filter	$ 29.63	1	$ 29.625
2	Throttle Body	$ 48.82	1	$ 48.817
3	Restrictor	$ 51.95	1	$ 51.954
4	Intake Manifold	$ 35.19	1	$ 35.187
5	Throttle Cable	$ 30.00	1	$ 30.000
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 195.58**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assembly filter and throttle	$ 0.13	unit	1			$ 0.13
83	Assemble, 1 kg, Interference	Connect restrictor and throttle	$ 0.19	unit	1			$ 0.19
59	Hand, Tight <= 6.35 mm	Tighten bolts between restrictor and ir	$ 0.50	unit	6			$ 3.00
84	Assemble, 1 kg, Line-on-Line	Restrictor to intake	$ 0.13	unit	1			$ 0.13
							Sub Total	**$ 3.44**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.17	8.5	mm	12.7	mm	6	$ 1.02
37	Nut, Grade 8.8 (SAE 5)		0.07	8.5	mm		mm	6	$ 0.42
								Sub Total	**$ 1.44**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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System	EN
Assembly	Intake
Part	Air filter
Part #	20200
Description	Air filter attached to throttle body

Weight (kg)	0.224

Part Cost	$ 29.63
Qty	1
Total Cost	$ 29.63

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
472	Air Filter	Filter	$ 0.15	193.55	cm^2		-		193.55			1	$ 29.03
769	Rubber	Bottom End Cap	$ 3.30	0.06	kg		-		81.07	0.01	1100.0000	1	$ 0.19
765	Plastic, Polyethelene	Top End Cap	$ 3.30	0.05	kg		-		62.07	0.01	1200.0000	1	$ 0.16
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 29.38**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line		$ 0.13	unit	2			$ 0.25
							Sub Total	**$ 0.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
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System	EN
Assembly	Intake
Part	Throttle Body
Part #	20201
Description	Throttle body between filter and restrictor

Weight (kg)	0.257

Part Cost	$ 48.82
Qty	1
Total Cost	$ 48.82

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
779	Aluminum, Normal (per kg)	Reduction cone from filter to throttle	$ 4.20	0.11	kg		-		6.02	0.08	2500.0000	1	$ 0.48
779	Aluminum, Normal (per kg)	Material for throttle end stop	$ 4.20	0.16	kg		-		25.81	0.03	2500.0000	1	$ 0.69
779	Aluminum, Normal (per kg)	Material for throttle lever	$ 4.20	0.04	kg		-		25.81	0.01	2500.0000	1	$ 0.17
806	Seal, O-Ring, Elastomer	Filter connection O-Ring	$ 0.05	-	unit		-					1	$ 0.05
854	Spring, Tension (General)	Throttle spring	$ 1.00	-	unit		-					1	$ 1.00
336	Cable, Push/Pull	Throttle cable	$ 30.00	0.50	m		-					1	$ 30.00
				-									
				-									
												Sub Total	**$ 32.39**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change		$ 0.65	unit	1			$ 0.65
132	Machining	Machining Throttle components	$ 0.04	cm^3	72.26			$ 2.89
146	Sheet metal bends	Bend cone of throttle body	$ 0.25	bend	1			$ 0.25
141	Tapping holes		$ 0.35	hole	7			$ 2.45
86	Assemble, 10 kg, Interference	Assemble cone and throttle lever	$ 1.88	unit	3			$ 5.63
59	Hand, Tight <= 6.35 mm		$ 0.50	unit	8			$ 4.00
							Sub Total	**$ 15.87**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.07	8.5	mm	12.7	mm	8	$ 0.56
				8.5					
								Sub Total	**$ 0.56**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	0.250

Part Cost	$ 51.95
Qty	1
Total Cost	$ 51.95

System	EN
Assembly	Intake
Part	Restrictor
Part #	20202
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
779	Aluminum, Normal (per kg)	Restrictor	$ 4.20	0.35	kg		-		11.40	0.11	2712.0000	1	$ 1.48
779	Aluminum, Normal (per kg)	Restrictor to plenum flange	$ 4.20	0.33	kg		-		126.68	0.01	2712.0000	1	$ 1.37
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 2.86**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change		$ 0.65	unit	1			$ 0.65
132	Machining	Restrictor machining	$ 0.04	cm^3	1128.6			$ 45.14
132	Machining	Flange	$ 0.04	cm^3	25.336			$ 1.01
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	6			$ 2.10
83	Assemble, 1 kg, Interference	Connect restrictor to flange	$ 0.19	unit	1			$ 0.19
							Sub Total	**$ 49.09**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	0.997

Part Cost	$ 35.19
Qty	1
Total Cost	$ 35.19

System	EN
Assembly	Intake
Part	Intake Manifold
Part #	20203
Description	3D printed manifold

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
788	Plastic, ABS (per kg)		$ 3.30	0.997	kg		-					1	$ 3.29
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.29**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
8	Rapid Prototype - Plastic		$ 32.00	kg	0.997			$ 31.90
							Sub Total	**$ 31.90**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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System	EN
Assembly	Axles
Assembly #	A2003
Description	

Assm Cost	$ 5.50
Qty	1

Total Cost	$ 5.50

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Tripods	$ 50.00	4	$ 200.000
2	Halfshafts	$ 14.96	2	$ 29.918
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 229.92**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Place on CV joint boots	$ 0.13	unit	4			$ 0.50
99	Assemble, 5 kg, Line-on-Line	Assemble spiders and half shafts	$ 0.63	unit	4			$ 2.50
99	Assemble, 5 kg, Line-on-Line	Place spiders in tulips	$ 0.63	unit	4			$ 2.50
							Sub Total	**$ 5.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	0.204

Part Cost	$ 50.00
Qty	4
Total Cost	$ 200.00

System	EN
Assembly	Axles
Part	Tripods
Part #	20300
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
389	Constant Velocity Joint, Boot		$ 5.00	-	unit		-					1	$ 5.00
395	Constant Velocity Joint, Tripod		$ 45.00	-	unit		-					1	$ 45.00
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 50.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
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System	EN
Assembly	Axles
Part	Halfshafts
Part #	20301
Description	

Weight (kg)	0.932

Part Cost	$ 14.96
Qty	2
Total Cost	$ 29.92

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Half shaft (thick tube)	$ 2.25	1.31	kg		-		2.74	0.61	7850.0000	1	$ 2.95
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 2.95**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change	Setup hobbing for one end	$ 0.65	unit	2			$ 1.30
124	Gear Shaping (hobbing)	Spline one end	$ 0.50	cm	9.1			$ 4.55
124	Gear Shaping (hobbing)	Spline other end	$ 0.50	cm	9.1			$ 4.55
132	Machining	Machine down center of shaft	$ 0.04	cm^3	40.32			$ 1.61
							Sub Total	**$ 12.01**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
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Assm Cost	$ 191.46
Qty	1

Total Cost	$ 191.46

System	EN
Assembly	Differential
Assembly #	A2004
Description	Taylor TRE MK2 differential

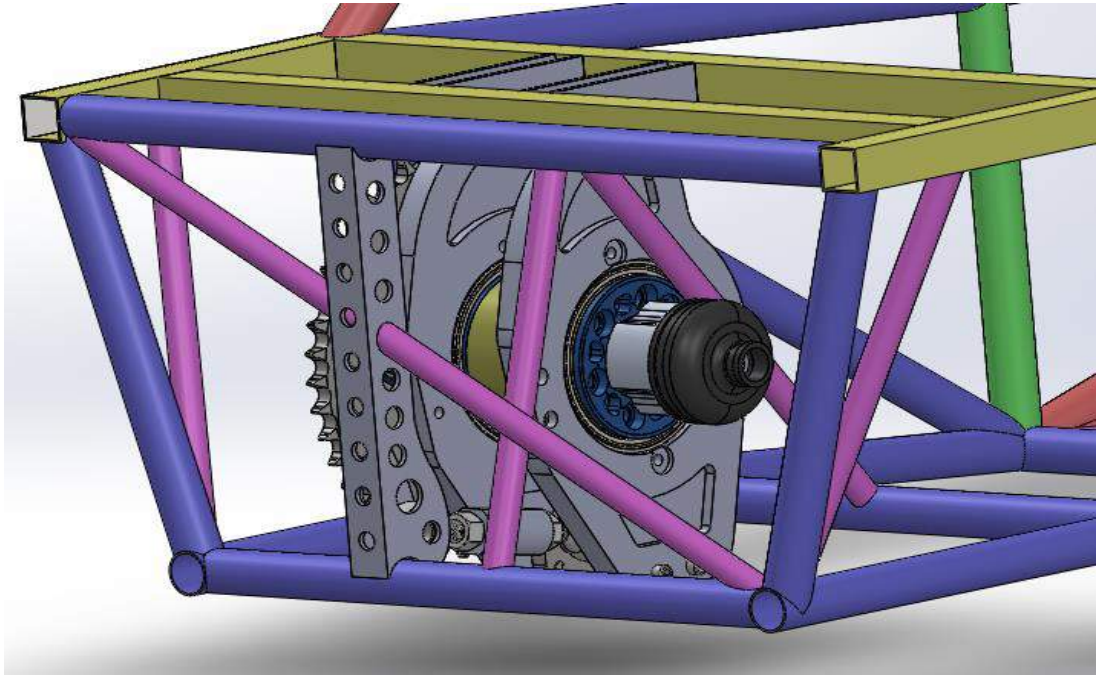
ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Differential Housing	$ 67.91	1	$ 67.909
2	Differential Mounts	$ 86.02	1	$ 86.021
3	Differential Internals	$ 165.00	1	$ 165.000
4	Sprockets	$ 15.35	1	$ 15.352
5	Chain & Guard	$ 52.15	1	$ 52.148
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 386.43**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	Constant Velocity Joint, Housing (All C	$ 2.25	34.73	kg		-		58.06	0.08	7850.0000	2	$ 156.30
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 156.30**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
76	Weld	Top mount to chassis	$ 0.15	cm	20.32			$ 3.05
155	Weld - Round Tubing	Back mount	$ 0.38	cm	10.16			$ 3.86
76	Weld	Chain guard to chassis	$ 0.15	cm	30.48			$ 4.57
98	Assemble, 5 kg, Interference	Mounts to housing	$ 0.94	unit	2			$ 1.88
100	Assemble, 5 kg, Loose	Internals to housing	$ 0.31	unit	1			$ 0.31
71	Wrench <= 25.4 mm	Sprocket to housing	$ 1.50	unit	6			$ 9.00
112	Machining Setup, Install and remove	CV joint housing	$ 1.30	unit	1			$ 1.30
132	Machining	CV joint housing	$ 0.04	cm^3	221.2254			$ 8.85
98	Assemble, 5 kg, Interference	CV joint to internals	$ 0.94	unit	2			$ 1.88
							Sub Total	**$ 34.69**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Sprocket to internals	0.0794118		mm		mm	6	$ 0.48
								Sub Total	**$ 0.48**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**



School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	3.000

Part Cost	$ 295.37
Qty	1
Total Cost	$ 295.37

System	EN
Assembly	Differential
Part	Differential Housing
Part #	20400
Description	Outer aluminum housing

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Central Housing	$ 4.20	3.56	kg		-		103.23	0.13	2712.0000	1	$ 14.93
744	Aluminum, Normal	End caps	$ 4.20	1.42	kg		-		103.23	0.05	2712.0000	1	$ 5.97
744	Aluminum, Normal	Sprocket attachment	$ 4.20	0.43	kg		-		248.29	0.01	2712.0000	1	$ 1.80
4	Bearing, Ball, Radial		$ 89.81	-	mm		mm					2	$ 179.62
				-									
				-									
				-									
				-									
												Sub Total	**$ 202.32**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
114	Safety Wire, Install		$ 0.60	unit	1			$ 0.60
132	Machining	Housing to size	$ 0.04	cm^3	535.09	terial - Alumi	1.00	$ 21.40
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	12			$ 4.20
132	Machining	End caps to size	$ 0.04	cm^3	205	terial - Alumi	1.00	$ 8.20
121	Drilled holes < 25.4 mm dia.	Normal endcap holes	$ 0.35	hole	12			$ 4.20
120	Drilled hole < 50.8 mm dia.	Counterbore	$ 0.70	hole	12			$ 8.40
132	Machining	Sprocket attachment	$ 0.04	cm^3	97.75	terial - Alumi	1.00	$ 3.91
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	6			$ 2.10
95	Assemble, 3 kg, Interference	Bearings to housing and sprocket	$ 0.56	unit	3			$ 1.69
97	Assemble, 3 kg, Loose	End caps	$ 0.19	unit	2			$ 0.38
71	Wrench <= 25.4 mm	End caps	$ 1.50	unit	24			$ 36.00
							Sub Total	**$ 91.08**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	For end caps	0.07887705		mm		mm	25	$ 1.97
								Sub Total	**$ 1.97**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	3.000

Part Cost	$ 86.02
Qty	1
Total Cost	$ 86.02

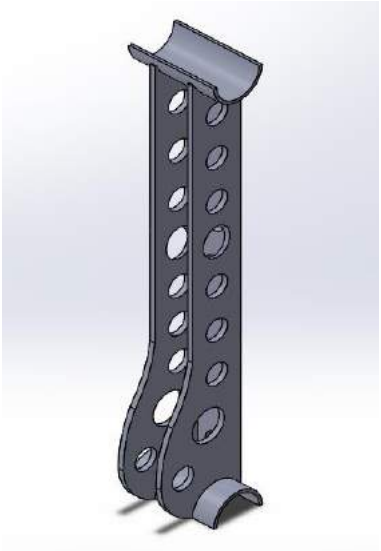
System	EN
Assembly	Differential
Part	Differential Mounts
Part #	20401
Description	Diff's chassis mounts

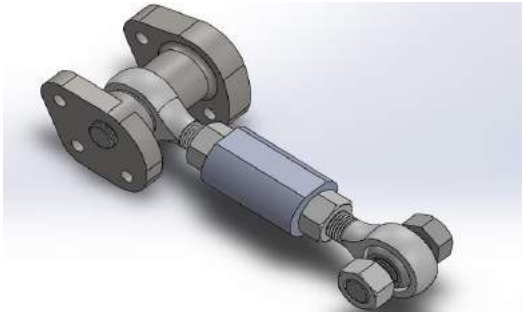
Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Vertical diff mounts	$ 4.20	1.85	kg		-		425.81	0.02	2712.0000	2	$ 15.52
744	Aluminum, Normal	Vertical to turnbuckle	$ 4.20	0.05	kg		-		19.35	0.01	2712.0000	2	$ 0.43
744	Aluminum, Normal	Turnbuckle	$ 4.20	0.11	kg		-		6.45	0.06	2712.0000	1	$ 0.47
19	Rod End, Industrial	Turnbuckle rod ends	$ 2.02	-	mm		-					2	$ 4.04
771	Steel, Alloy	Back chassis mount	$ 2.25	0.88	kg		-	Tubing Square / Rectangle (in)	4.44	0.25	7850.0000	1	$ 1.99
771	Steel, Alloy	Back chassis tube connections	$ 2.25	0.06	kg		-	Tubing Round(Unit) Value x 1.	1.52	0.05	7850.0000	2	$ 0.27
771	Steel, Alloy	Top chassis mount	$ 2.25	0.02	kg		-	Solid Square / Rectangle (in) 1	9.68	0.003	7850.0000	4	$ 0.22
				-									
												Sub Total	**$ 22.94**

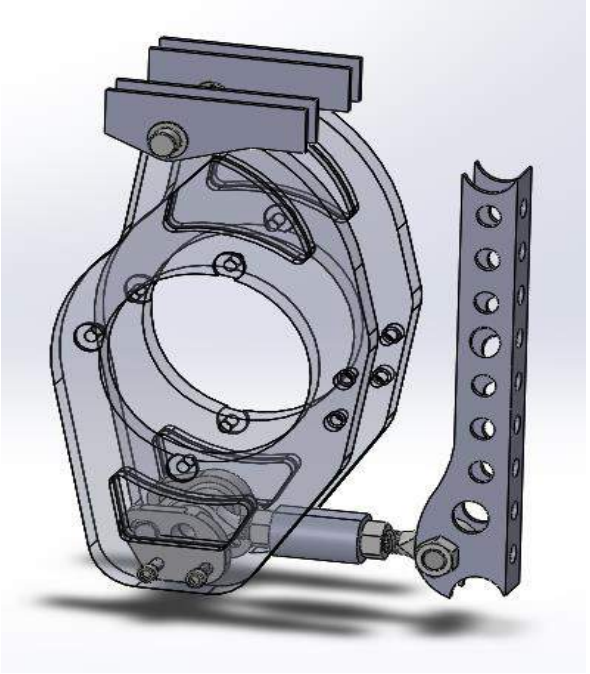
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Vertical diff mounts	$ 0.04	cm^3	1126.848	erial - Alumi	1.00	$ 45.07
132	Machining	Vertical to turnbuckle	$ 0.04	cm^3	6.625	erial - Alumi	1.00	$ 0.26
132	Machining	Turnbuckle	$ 0.04	cm^3	7.728	erial - Alumi	1.00	$ 0.31
132	Machining	Back chassis mount	$ 0.04	cm^3	30.093	Material - Ste	3.00	$ 3.61
132	Machining	Top chassis mount	$ 0.04	cm^3	0.553	Material - Ste	3.00	$ 0.07
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	14			$ 4.90
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	6			$ 2.10
120	Drilled hole < 50.8 mm dia.	Turnbuckle	$ 0.70	hole	2			$ 1.40
143	Threading, Internal (machining)	Turnbuckle	$ 0.10	cm	2.54			$ 0.25
97	Assemble, 3 kg, Loose		$ 0.19	unit	5			$ 0.94
							Sub Total	**$ 60.22**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	1inch 1/4-28 (verticle to turn)	0.06201323		mm		mm	6	$ 0.37
22	Bolt, Grade 8.8 (SAE 5)	4inch 1/4-28 (verticles)	0.33690406		mm		mm	2	$ 0.67
22	Bolt, Grade 8.8 (SAE 5)	2inch 1/4-28 (turnbuckle)	0.13381578		mm		mm	10	$ 1.34
37	Nut, Grade 8.8 (SAE 5)	1/4/2-28	0.03204767		mm		mm	15	$ 0.48
								Sub Total	**$ 2.86**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -







School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	0.000

Part Cost	$ 165.00
Qty	1
Total Cost	$ 165.00

System	EN
Assembly	Differential
Part	Differential Internals
Part #	20402
Description	Taylor MK2 internals

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
400	Differential Internals, Limited Slip, Torsen T1		$ 165.00	-	unit		-					1	$ 165.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 165.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.802

Part Cost	$ 15.35
Qty	1
Total Cost	$ 15.35

System	EN
Assembly	Differential
Part	Sprockets
Part #	20403
Description	Motor and diff sprockets

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	Diff sprocket	$ 2.25	3.07	kg		-		410.43	0.01	7850.0000	1	$ 6.90
772	Steel, Mild	Motor sprocket	$ 2.25	0.34	kg		-		45.60	0.01	7850.0000	1	$ 0.77
				965.20									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 7.67**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Diff sprocket	$ 0.04	cm^3	46.9125	Material - Ste	3.00	$ 5.63
132	Machining	Motor sprocket	$ 0.04	cm^3	5.2125	Material - Ste	3.00	$ 0.63
84	Assemble, 1 kg, Line-on-Line		$ 0.13	unit	1			$ 0.13
							Sub Total	**$ 7.68**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.912

Part Cost	$ 52.15
Qty	1
Total Cost	$ 52.15

System	EN
Assembly	Differential
Part	Chain & Guard
Part #	20404
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
387	Chain	The chain	$ 0.05	965.20	mm		-						$ 48.26
772	Steel, Mild	Chain guard	$ 2.25	1.06	kg		-	Solid Square / Rectangle (in) 3	2.42	0.56	7850.0000	1	$ 2.39
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 50.65**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing	Cut sheet in half	$ 0.25	cut	1	Material - Ste	3.00	$ 0.75
146	Sheet metal bends	Bend end of second sheet	$ 0.25	bend	1	Material - Ste	3.00	$ 0.75
							Sub Total	**$ 1.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 28.75
Qty	1

Total Cost	$ 28.75

System	EN
Assembly	Fuel System
Assembly #	A2006
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Fuel Injectors	$ 240.00	1	$ 240.000
2	Fuel Tank	$ 93.59	1	$ 93.586
3	Fuel Pump and Pressure Regulator and Filter	$ 58.00	1	$ 58.000
4	Fuel Lines and Fittings	$ 229.06	1	$ 229.063
5	Fuel Rail	$ 28.76	1	$ 28.757
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 649.41**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
772	Steel, Mild	Stock to Create Mounting Tabs	$ 2.25	1.57	kg		-		1.00	0.20	7850.0000	4	$ 14.13
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 14.13**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Machine Tank Mounting Tabs	$ 1.30	unit	4			$ 5.20
132	Machining	Machine Tank Mounting Tabs	$ 0.04	cm^3	4			$ 0.16
76	Weld	Weld Mounting Tabs to Chassis	$ 0.15	cm	12			$ 1.80
121	Drilled holes < 25.4 mm dia.	Holes for Bolts to Hold the Tank In	$ 0.35	hole	4			$ 1.40
85	Assemble, 1 kg, Loose	Assemble Tank into Car	$ 0.06	unit	1			$ 0.06
63	Ratchet <= 25.4 mm	Tighten Tank into Car	$ 0.75	unit	4			$ 3.00
							Sub Total	**$ 11.62**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)		0.42		mm		mm	4	$ 1.68
34	Nut, Grade 10.9 (SAE 8)		0.29		mm		mm	4	$ 1.16
59	Washer, Grade 10.9 (SAE 8)		0.02		unit		0	8	$ 0.16
								Sub Total	**$ 3.00**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.030

Part Cost	$ 240.00
Qty	1
Total Cost	$ 240.00

System	EN
Assembly	Fuel System
Part	Fuel Injectors
Part #	20600
Description	Fuel injectors for gixxer 600

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
498	Fuel Injector, Direct Injection		$ 30.00	-	unit		-					8	$ 240.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 240.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	install injectors in rail	$ 0.13	unit				$ -
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	3.260

Part Cost	$ 93.59
Qty	1
Total Cost	$ 93.59

System	EN
Assembly	Fuel System
Part	Fuel Tank
Part #	20601
Description	Fuel tank for engine

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Fuel Tank Perimeter	$ 4.20	1.57	kg		-		2890.32	0.002	2712.0000	1	$ 6.58
744	Aluminum, Normal	Fuel Tank Sides	$ 4.20	0.19	kg		-		348.39	0.002	2712.0000	1	$ 0.79
744	Aluminum, Normal	Tank Supports	$ 4.20	0.28	kg		-		203.20	0.005	2712.0000	1	$ 1.16
744	Aluminum, Normal	Baffles in Tank	$ 4.20	0.39	kg		-		726.98	0.002	2712.0000	1	$ 1.66
744	Aluminum, Normal	Filler Neck Tube	$ 4.20	0.11	kg		-	Tubing Round(Unit) Value x 2	1.94	0.200	2712.0000	1	$ 0.44
732	Hose, Polyurethane	Filler Neck Hose	$ 4.00	57.15	mm	0.1524	m						$ 0.61
581	Filler Cap	Fuel Filler Cap	$ 3.00	-	unit		-					1	$ 3.00
722	Fitting/L.P./Tube Sleeve//Aluminum/Anodized	Fittings on Fuel Tank	$ 0.01	0.03	mm		-		5.06	0.02	2712.0000	2	$ 0.01
				-									
												Sub Total	**$ 14.25**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
148	Sheet Metal Saw Cut	Cut Aluminum for Tank	$ 0.20	cm	190.5			$ 38.10
146	Sheet metal bends	Bend Aluminum for Tank	$ 0.25	bend	4			$ 1.00
152	Tube cut	Cut Filler Neck Tube	$ 0.15	cm	2			$ 0.30
121	Drilled holes < 25.4 mm dia.	Hole for Bungs	$ 0.35	hole	2			$ 0.70
121	Drilled holes < 25.4 mm dia.	Hole for Mounts	$ 0.35	hole	4			$ 1.40
120	Drilled hole < 50.8 mm dia.	Hole for Filler Neck	$ 0.70	hole	1			$ 0.70
143	Threading, Internal (machining)	Threading for Gas Cap	$ 0.10	cm	2.6			$ 0.26
155	Weld - Round Tubing	Welinding Filler Neck to Tank	$ 0.38	cm	12.6			$ 4.79
76	Weld	Weld Tank Together	$ 0.15	cm	196.5			$ 29.48
84	Assemble, 1 kg, Line-on-Line	Add Fuel Filler Neck Hose	$ 0.13	unit	2			$ 0.25
70	Screwdriver > 1 Turn	Tighten Hose Clamps	$ 0.50	unit	2			$ 1.00
							Sub Total	**$ 77.97**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
10	Hose Clamp, Worm Drive	Attatching Filler Neck Hose and Tube	0.68		mm		0	2	$ 1.36
								Sub Total	**$ 1.36**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.106

Part Cost	$ 58.00
Qty	1
Total Cost	$ 58.00

System	EN
Assembly	Fuel System
Part	Fuel Pump and Pressure Regulator and Filter
Part #	20602
Description	Fuel Pump, Pressure Regulator, and Filter for Fuel System

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
506	Fuel Pump, Fuel Injected, Gasoline		$ 35.00	-	unit		-					1	$ 35.00
502	Fuel Pressure Regulator, Gasoline		$ 15.00	-	unit		-					1	$ 15.00
497	Fuel Filter		$ 8.00	-	unit		-					1	$ 8.00
				-									
				-									
				-									
												Sub Total	**$ 58.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.304

Part Cost	$ 229.06
Qty	1
Total Cost	$ 229.06

System	EN
Assembly	Fuel System
Part	Fuel Lines and Fittings
Part #	20603
Description	Fuel Lines and Fuel Fittings

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
731	Hose, Low Presure, Fabric Outer, Socketless		$ 18.86	-	mm		-					1.50	$ 28.28
707	Fitting/L.P./Elbow/90 deg./Aluminum/Anodized		$ 27.12		mm		-					1	$ 27.12
697	Fitting/L.P./Elbow/180 deg./Aluminum/Anodized		$ 46.25	-	mm		-					2	$ 92.49
715	Fitting/L.P./Straight/Aluminum/Anodized		$ 13.15	-	mm		-					6	$ 78.91
				-									
				-									
				-									
				-									
												Sub Total	**$ 226.81**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Attatching All Hoses	$ 0.13	unit	18			$ 2.25
							Sub Total	**$ 2.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.160

Part Cost	$ 28.76
Qty	2
Total Cost	$ 57.51

System	EN
Assembly	Fuel System
Part	Fuel Rail
Part #	20604
Description	Fuel Rail from Gixxer 600

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Fuel Rail Material	$ 4.20	0.28	kg		-		4.00	0.254	2712.0000	1	$ 1.16
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.16**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine Rail	$ 0.04	cm^3	25			$ 1.00
121	Drilled holes < 25.4 mm dia.	Drill Holes for Injectors	$ 0.35	hole	8			$ 2.80
87	Assemble, 10 kg, Line-on-Line		$ 1.25	unit	18			$ 22.50
							Sub Total	**$ 27.60**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Cooling System
Assembly #	A2007
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Coolant Inlet Flange	$ 256.05	1	$ 256.05
2	Coolant Outlet Flange	$ 107.95	1	$ 107.95
3	Radiator	$ 2.50	1	$ 2.50
4	Coolant Lines	$ 168.96	1	$ 168.96
5	Coolant Reservior	$ 29.50	1	$ 29.50
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 564.95**

Assm Cost	$ 43.49
Qty	1

Total Cost	$ 43.49

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
510	Heat Exchanger Fan		$ 30.00	-	unit		-					1	$ 30.00
771	Steel, Alloy	Chassis to rad tabs	$ 2.25	0.64	kg		-		12.90	0.01	7850	3	$ 4.34
				-									
				-									
				-									
				-									
				-									
				-									
				-								**Sub Total**	**$ 34.34**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Chassis to rad tabs	$ 1.30	unit	1			$ 1.30
132	Machining	Chassis to rad tabs	$ 0.04	cm^3	0.1521			$ 0.006
155	Weld - Round Tubing	Tabs to chassis	$ 0.38	cm	5.08	Material - Stee	3.00	$ 5.79
							Sub Total	**$ 7.10**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	1 inch 1/4-20	0.06201323		mm		mm	8	$ 0.50
22	Bolt, Grade 8.8 (SAE 5)	0.5 inch 1/4-20	0.03662719		mm		mm	4	$ 0.15
38	Nut, Grade AN		0.21365115		mm		mm	6	$ 1.28
22	Bolt, Grade 8.8 (SAE 5)	Chassis to rad tabs	0.06201323		mm		mm	2	$ 0.12
								Sub Total	**$ 2.05**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Cooling System
Part	Coolant Inlet Flange
Part #	20700
Description	Fiber glass inlet

Weight (kg)	1.000

Part Cost	$ 256.05
Qty	1
Total Cost	$ 256.05

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
195	Glass Fiber, 1 Ply		$ 100.00	1.82	kg		-		2599.47	0.003	2200.0000	1	$ 181.57
784	Foam, Expanding, Non-Structural (per kg)	Foam for between rad and intak	$ 15.00	0.050	kg		-					1	$ 0.75
201	Structural Foam	Foam for mold	$ 125.00	0.569	kg		-					1	$ 71.13
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 253.45**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
19	Resin application, Manual		$ 5.00	m^2	0.259947	erial - Comp	2.00	$ 2.60
							Sub Total	**$ 2.60**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.000

Part Cost	$ 107.95
Qty	1
Total Cost	$ 107.95

System	EN
Assembly	Cooling System
Part	Coolant Outlet Flange
Part #	20701
Description	Fiber glass outlet flange

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
195	Glass Fiber, 1 Ply		$ 100.00	0.85	kg		-		1211.87	0.003	2200.0000	1	$ 84.65
784	Foam, Expanding, Non-Structural (per kg)	Foam for between rad and intak	$ 15.00	0.050	kg		-					1	$ 0.75
201	Structural Foam	Foam for mold	$ 125.00	0.171	kg		-					1	$ 21.34
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 106.74**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
19	Resin application, Manual		$ 5.00	m^2	0.121187	erial - Comp	2.00	$ 1.21
							Sub Total	**$ 1.21**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	2.344

Part Cost	$ 2.50
Qty	1
Total Cost	$ 2.50

System	EN
Assembly	Cooling System
Part	Radiator
Part #	20702
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
514	Heat Exchanger, Air-to-Liquid	Main unit	$ 0.004	-	cm^3		-		870.97	0.05		1	$ 0.004
744	Aluminum, Normal	Tabs	$ 4.20	0.02	kg		-		19.35	0.003	2712.0000	3	$ 0.21
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.21**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
76	Weld		$ 0.15	cm	15.24	erial - Alumi	1.00	$ 2.29
							Sub Total	**$ 2.29**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.656

Part Cost	$ 168.96
Qty	1
Total Cost	$ 168.96

System	EN
Assembly	Cooling System
Part	Coolant Lines
Part #	20703
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
734	Hose, Rubber	1" cooling pipe	$ 0.18	-						1.118		1	$ 0.20
734	Hose, Rubber	3/4 cooling pipe	$ 0.14	-						0.813		1	$ 0.11
734	Hose, Rubber	1/2 cooling pipe	$ 0.09	-						0.457		1	$ 0.04
734	Hose, Rubber	1/4 cooling pipe	$ 0.05	-						0.254		1	$ 0.01
672	Fitting, Push-to-Connect, Plastic, Elbow 90°	3/4 pipe	$ 5.16	-								2	$ 10.33
673	Fitting, Push-to-Connect, Plastic, Straight		$ 6.75	-								3	$ 20.25
674	Fitting, Push-to-Connect, Plastic, Tee		$ 6.03	-								2	$ 12.06
				-								1	
				-								1	
				-								1	
												Sub Total	**$ 43.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
134	Non-metallic cutting <= 25.4 mm	Pipes to length	$ 0.35	cut	12			$ 4.20
							Sub Total	**$ 4.20**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
6	Hose Clamp, Constant Tension	1" clamp	$ 5.72				0	10	$ 57.24
6	Hose Clamp, Constant Tension	3/4 clamp	$ 4.94				0	10	$ 49.43
6	Hose Clamp, Constant Tension	1/2 clamp	$ 4.16				0	2	$ 8.32
6	Hose Clamp, Constant Tension	1/4 clamp	$ 3.38				0	2	$ 6.76
								Sub Total	**$ 121.76**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.224

Part Cost	$ 29.50
Qty	1
Total Cost	$ 29.50

System	EN
Assembly	Cooling System
Part	Coolant Reservior
Part #	20704
Description	Aluminum stirpot with overflow

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
581	Filler Cap		$ 3.00	-	unit		-					1	$ 3.00
744	Aluminum, Normal	Body of reservoir	$ 4.20	0.89	kg		-		25.81	0.13	2712.0000	1	$ 3.73
744	Aluminum, Normal	Hose connection tubing	$ 4.20	0.04	kg		-		6.45	0.03	2712.0000	1	$ 0.19
744	Aluminum, Normal	Tab mounts	$ 4.20	0.04	kg		-		6.45	0.03	2712.0000	1	$ 0.19
				-									
				-									
				-									
				-									
												Sub Total	**$ 7.11**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1	erial - Alumi	1.00	$ 1.30
132	Machining	Main body	$ 0.04	cm^3	315.43			$ 12.62
132	Machining	Tabs	$ 0.04	cm^3	52.43			$ 2.10
121	Drilled holes < 25.4 mm dia.	Tab connection points	$ 0.35	hole	2			$ 0.70
141	Tapping holes	Tab holes	$ 0.35	hole	2			$ 0.70
155	Weld - Round Tubing	Filler cap to main body	$ 0.38	cm	5.08	erial - Alumi	1.00	$ 1.93
76	Weld	Tabs to main body	$ 0.15	cm	20.32	erial - Alumi	1.00	$ 3.05
							Sub Total	**$ 22.39**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 0.63
Qty	1

Total Cost	$ 0.63

System	EN
Assembly	Fluids
Assembly #	A2008
Description	Extraneuos Fluids

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Coolant	$ 0.00	1	$ 0.00
2	Engine Oil	$ 1.77	1	$ 1.77
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 1.77**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
100	Assemble, 5 kg, Loose	Installation of collant	$ 0.31	unit	1			$ 0.31
100	Assemble, 5 kg, Loose	Installation of engine oil	$ 0.31	unit	1			$ 0.31
							Sub Total	**$ 0.63**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Fluids
Part	Coolant
Part #	20800
Description	

Weight (kg)	2.000

Part Cost	$ 0.00
Qty	1
Total Cost	$ 0.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
560	Fluid, Coolant	Engine coolant	$ 0.00	2.00	liter		-				1000.0000	1	$ 0.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EN
Assembly	Fluids
Part	Engine Oil
Part #	20801
Description	Oil for GSXR600

Weight (kg)	2.130

Part Cost	$ 1.77
Qty	1
Total Cost	$ 1.77

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
561	Fluid, Oil	Engine Oil	$ 0.75	2.37	liter		-				899.0000	1	$ 1.77
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.77**

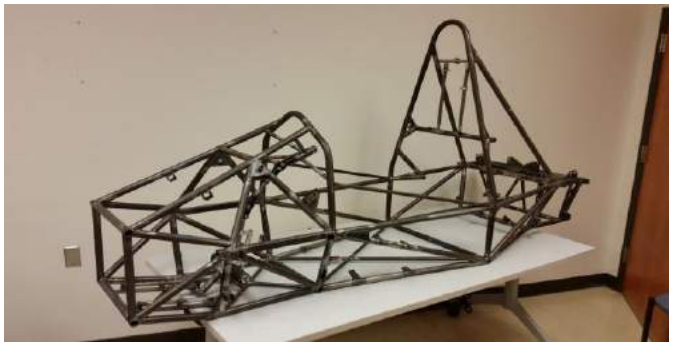
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	FR
Assembly	Frame
Assembly #	A3000
Description	Chromolly Space Frame Assembly



Assm Cost	$ 33.95
Qty	1

Total Cost	$ 33.95

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Space Frame	$ 422.58	1	$ 422.579
2	Anti-Intrusion Plate	$ 23.88	1	$ 23.875
3	Tabs	$ 27.83	1	$ 27.828
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 474.28**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
76	Weld	Welding tabs to chassis	$ 0.15	cm	92			$ 13.80
76	Weld	Welding anti to chassis	$ 0.15	cm	132.08			$ 19.81
							Sub Total	**$ 33.61**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
11	Welds	12 Jigging points	$ 500.00	point	2	3000	$ 1.00	$ 0.33
							Sub Total	**$ 0.33**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	31.752

Part Cost	$ 422.58
Qty	1
Total Cost	$ 422.58

System	FR
Assembly	Frame
Part	Space Frame
Part #	30001
Description	Chromolly Space Frame

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	1" x 0.095 Tubing	$ 2.25	6.80	kg		-		1.74	4.97	7850.0000	1	$ 15.30
771	Steel, Alloy	1" x 0.065 Tubing	$ 2.25	8.10	kg		-		1.23	8.38	7850.0000	1	$ 18.23
771	Steel, Alloy	1" x 0.049 Tubing	$ 2.25	10.57	kg		-		0.94	14.25	7850.0000	1	$ 23.77
771	Steel, Alloy	1" x 0.049 Square	$ 2.25	1.73	kg		-		1.20	1.83	7850.0000	1	$ 3.88
771	Steel, Alloy	1" x 0.065 Square	$ 2.25	0.71	kg		-		1.57	0.58	7850.0000	1	$ 1.61
771	Steel, Alloy	0.625" x 0.049 Tubing	$ 2.25	3.51	kg		-		0.57	7.81	7850.0000	1	$ 7.90
				-									
				-									
												Sub Total	**$ 70.69**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
151	Tube bends		$ 0.75	bend	10			$ 7.50
152	Tube cut		$ 0.15	cm	406.4			$ 60.96
153	Tube end preperation for welding		$ 0.75	end	160			$ 120.00
155	Weld - Round Tubing		$ 0.38	cm	406.4			$ 154.43
							Sub Total	**$ 342.89**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
11	Welds		$ 500.00	point	27	3000	$ 2.00	$ 9.00
							Sub Total	**$ 9.00**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.000

Part Cost	$ 23.88
Qty	1
Total Cost	$ 23.88

System	FR
Assembly	Frame
Part	Anti-Intrusion Plate
Part #	30002
Description	Anti-Intrusion Plate

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy		$ 2.25	1.36	kg		-		1083.86	0.00	7850.0000	1	$ 3.06
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.06**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing		$ 0.25	cut	4			$ 1.00
76	Weld		$ 0.15	cm	132.08			$ 19.81
							Sub Total	**$ 20.81**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	FR
Assembly	Frame
Part	Tabs
Part #	30004
Description	

Weight (kg)	0.440

Part Cost	$ 27.83
Qty	1
Total Cost	$ 27.83

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy		$ 2.25	0.06	kg		-		51.61	0.00	7850.0000	23	$ 3.36
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.36**

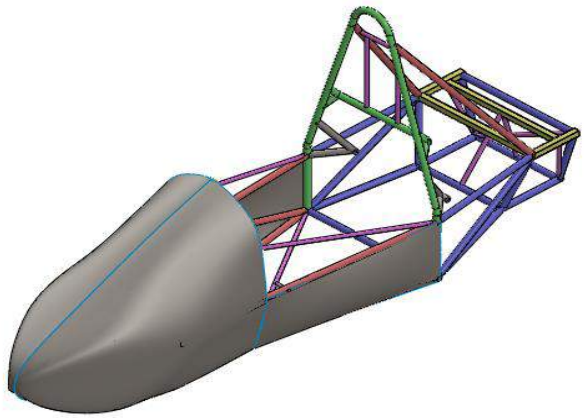
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing		$ 0.25	cut	23			$ 5.75
148	Sheet Metal Saw Cut		$ 0.20	cm	45			$ 9.00
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	3			$ 1.05
76	Weld		$ 0.15	cm	50			$ 7.50
							Sub Total	**$ 23.30**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
43	Nutsert (J-Nut)		0.051		unit		mm	23	$ 1.17
								Sub Total	**$ 1.17**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	FR
Assembly	Body
Assembly #	A3001
Description	Aluminum outer skin



Assm Cost	$ 42.63
Qty	1
Total Cost	$ 42.63

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	4.17	kg		-		3184.13	0.00	2712.0000	1	$ 17.50
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 17.50**

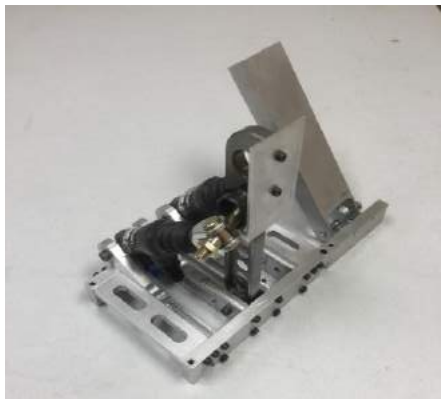
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing	Cutting to shape	$ 0.25	cut	28			$ 7.00
85	Assemble, 1 kg, Loose		$ 0.06	unit	2			$ 0.13
							Sub Total	**$ 7.13**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
44	Pin, Cotter, Straight	Skin to frame	0.05		0		0	100	$ 5.00
2	Galvanized Steel Loop Straps		0.13		mm		0	100	$ 13.00
								Sub Total	**$ 18.00**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	FR
Assembly	Pedals
Assembly #	A3002
Description	



Assm Cost	$ 2.66
Qty	1

Total Cost	$ 2.66

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Throttle Pedal	$ 4.22	1	$ 4.218
2	Brake Pedal	$ 7.25	1	$ 7.248
3	Pedal Base	$ 91.43	1	$ 91.434
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 102.90**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
98	Assemble, 5 kg, Interference		$ 0.94	unit	2			$ 1.88
							Sub Total	**$ 1.88**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Pedals to base	0.26		mm		mm	3	$ 0.78
								Sub Total	**$ 0.78**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	FR
Assembly	Pedals
Part	Throttle Pedal
Part #	30200
Description	

Weight (kg)	0.100

Part Cost	$ 4.22
Qty	1
Total Cost	$ 4.22

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Pedal	$ 4.20	0.18	kg		-		206.45	0.00	2712.0000	1	$ 0.75
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.75**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	7.032			$ 0.28
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	4			$ 1.40
							Sub Total	**$ 2.98**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
23	Bolt, Grade AN		0.49		mm		mm	1	$ 0.49
								Sub Total	**$ 0.49**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.500

Part Cost	$ 7.52
Qty	1
Total Cost	$ 7.52

System	FR
Assembly	Pedals
Part	Brake Pedal
Part #	30201
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Front brake plate	$ 4.20	0.04	kg		-		45.16	0.00	2712.0000	1	$ 0.16
772	Steel, Mild	Break	$ 2.25	0.77	kg		-		77.42	0.01	7850.0000	1	$ 1.74
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.90**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1	terial - Alumi	1.00	$ 1.30
132	Machining		$ 0.04	cm^3	3.45	Material - Ste	3.00	$ 0.41
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	11	terial - Alumi	1.00	$ 3.85
							Sub Total	**$ 5.56**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.03		mm		mm	2	$ 0.06
								Sub Total	**$ 0.06**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.806

Part Cost	$ 91.43
Qty	1
Total Cost	$ 91.43

System	FR
Assembly	Pedals
Part	Pedal Base
Part #	30202
Description	Aluminum pedal box base

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Front back bars	$ 4.20	0.33	kg		-		4.03	0.30	2712.0000	2	$ 2.80
744	Aluminum, Normal	Middle cross supports	$ 4.20	0.17	kg		-		4.03	0.15	2712.0000	6	$ 4.20
744	Aluminum, Normal	Throddle stop	$ 4.20	0.44	kg		-		129.03	0.01	2712.0000	1	$ 1.87
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 8.87**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Throddle stop	$ 0.04	cm^3	1138.706			$ 45.55
132	Machining	Middle cross supports	$ 0.04	cm^3	16			$ 0.64
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	72			$ 25.20
141	Tapping holes		$ 0.35	hole	26			$ 9.10
							Sub Total	**$ 81.79**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Connection of alum, runners	0.03		mm		mm	26	$ 0.78
								Sub Total	**$ 0.78**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 12.12
Qty	1

Total Cost	$ 12.12

System	FR
Assembly	Floor Pan
Assembly #	A3003
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (gm/cm^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	2.29	kg		-		5322.57	0.00	2712.0000	1	$ 9.62
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 9.62**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing		$ 0.25	cut	10			$ 2.50
							Sub Total	**$ 2.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 3.28
Qty	1

Total Cost	$ 3.28

System	FR
Assembly	Impact Attenuator
Assembly #	A3004
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	BSCI Standard Attenuator	$ 160.00	1	$ 160.000
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 160.00**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

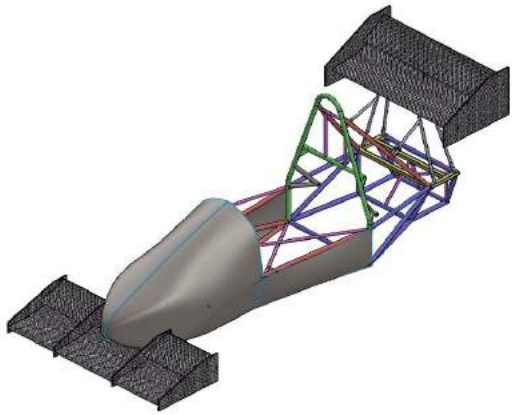
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	**$ -**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.36		mm		mm	8	$ 2.88
37	Nut, Grade 8.8 (SAE 5)		0.04		mm		mm	8	$ 0.32
62	Washer, Grade 8.8 (SAE 5)		0.01		unit		0	8	$ 0.08
								Sub Total	**$ 3.28**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	FR
Assembly	Aerodynamics
Assembly #	A3005
Description	Complete Aero-Dynamic Assembly



Assm Cost	$ 307.45
Qty	1
Total Cost	$ 307.45

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Wing	$ 617.15	1	$ 617.149
2	Front Mounting	$ 274.57	1	$ 274.574
3	Rear Wing	$ 252.11	1	$ 252.110
4	Rear Mounting	$ 273.27	1	$ 273.269
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 1,417.10**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (gm/cm^3)	Qty	Sub Total
744	Aluminum, Normal	Rods for rigid attachment	$ 4.20	8.92	kg		-		7.81	0.46	2500.0000	2	$ 74.95
744	Aluminum, Normal	Rods for rigid attachment	$ 4.20	9.42	kg		-		7.81	0.48	2500.0000	2	$ 79.12
744	Aluminum, Normal	Rods for rigid attachment	$ 4.20	4.46	kg		-		7.81	0.23	2500.0000	2	$ 37.48
771	Steel, Alloy	Rod chassis connections (round)	$ 2.25	0.56	kg		-		0.94	0.08	7850.0000	4	$ 5.06
771	Steel, Alloy	Rod chassis connections (square)	$ 2.25	0.48	kg		-		0.81	0.08	7850.0000	2	$ 2.17
744	Aluminum, Normal	Aluminum airfoil connections	$ 4.20	0.11	kg		-		0.60	0.08	2500.0000	4	$ 1.92
744	Aluminum, Normal	Aluminum front airfoil connections	$ 4.20	468.26	kg		-		232.26	0.81	2500.0000	4	$ 16.80
20	Rod End, Suspension	Rod to airfoil attachment	$ 5.00	-	mm		0.05					6	$ 30.00
												Sub Total	**$ 247.50**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
152	Tube cut	Cut Support Rods	$ 0.15	cm	106.68	terial - Alumir	1.00	$ 16.00
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	24	terial - Alumir	1.00	$ 8.40
141	Tapping holes		$ 0.35	hole	6	terial - Alumir	1.00	$ 2.10
155	Weld - Round Tubing	Welding mounts to chassis	$ 0.38	cm	69.7484			$ 26.50
132	Machining		$ 0.04	cm^3	5			$ 0.20
87	Assemble, 10 kg, Line-on-Line		$ 1.25	unit	1			$ 1.25
							Sub Total	**$ 55.76**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
23	Bolt, Grade AN		$ 0.15		mm		mm	20	$ 3.00
38	Nut, Grade AN		$ 0.06		mm		mm	20	$ 1.20
								Sub Total	**$ 4.20**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	3.100

Part Cost	$ 617.15
Qty	1
Total Cost	$ 617.15

System	FR
Assembly	Aerodynamics
Part	Front Wing
Part #	30500
Description	Front Carbon Fiber Wing

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
192	Carbon Fiber, 1 Ply	Carbon Fiber Air Foil	$ 200.00	0.94	kg		-		12438.68	0.000279	1580	2	$ 377.01
744	Aluminum, Normal	Aluminum End Plates and support tub	$ 4.20	0.04	kg		-		87.68	0.13	2712	4	$ 0.59
201	Structural Foam	Airfoil fill	$ 125.00	0.24	kg		-		63.29	1.17	32.0369	1	$ 29.61
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 407.21**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
152	Tube cut	Cut support tubes	$ 0.15	cm	5	terial - Alumi	1.00	$ 0.75
10	Vacuum Form	Laying and forming carbon fiber	$ 10.00	m^2	1.24	erial - Comp	2.00	$ 24.80
12	Cure, Autoclave	Curing Pre-preg carbon fiber	$ 50.00	m^2	1.24	erial - Comp	2.00	$ 124.00
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	16	terial - Alumi	1.00	$ 5.60
141	Tapping holes		$ 0.35	hole	16	terial - Alumi	1.00	$ 5.60
99	Assemble, 5 kg, Line-on-Line		$ 0.63	unit	1			$ 0.63
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	1.5			$ 0.06
							Sub Total	**$ 162.74**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Fastening foils to side plates	$0.17	6.35	mm	25.4	mm	16	$ 2.76
								Sub Total	**$ 2.76**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
5	Lamination	Airfoil Molds	$ 20,000.00	m^2	1.24	3000	$ 5.38	$ 44.44
							Sub Total	**$ 44.44**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.660

Part Cost	$ 274.57
Qty	1
Total Cost	$ 274.57

System	FR
Assembly	Aerodynamics
Part	Front Mounting
Part #	30501
Description	Mounting To Attach Airfoil to cars

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
192	Carbon Fiber, 1 Ply	Support End Plates	$ 200.00	0.32	kg		-		703.22	0.003	1580	4	$ 257.77
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 257.77**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
121	Drilled holes < 25.4 mm dia.	Attachment Holes for Airfoils	$ 0.35	hole	16	erial - Comp	2.00	$ 11.20
134	Non-metallic cutting <= 25.4 mm	Cut carbon fiber plates	$ 0.35	cut	8	erial - Comp	2.00	$ 5.60
							Sub Total	**$ 16.80**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	2.800

Part Cost	$ 252.11
Qty	1
Total Cost	$ 252.11

System	FR
Assembly	Aerodynamics
Part	Rear Wing
Part #	30502
Description	Rear Air Foil Wings

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
192	Carbon Fiber, 1 Ply	Carbon Fiber Air Foils	$ 200.00	0.43	kg		-		9677.40	0.000279	1580	1	$ 85.44
744	Aluminum, Normal	Aluminum End Plates and support tub	$ 4.20	2.84	kg		-		83.87	0.13	2712	2	$ 23.88
201	Structural Foam	Airfoil fill	$ 125.00	0.25	kg		-		83.87	0.91	32.0369	1	$ 30.71
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 140.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
152	Tube cut	Cut support tubes	$ 0.15	cm	4			$ 0.60
10	Vacuum Form	Laying and forming CF	$ 10.00	m^2	0.97			$ 9.68
12	Cure, Autoclave	Curing Pre-preg carbon fiber	$ 50.00	m^2	0.97			$ 48.39
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	8			$ 2.80
141	Tapping holes		$ 0.35	hole	8			$ 2.80
99	Assemble, 5 kg, Line-on-Line		$ 0.63	unit	1			$ 0.63
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	1.5			$ 0.06
							Sub Total	**$ 66.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Fastening foils to side plates	$0.17		mm		mm	8	$ 1.38
								Sub Total	**$ 1.38**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
5	Lamination		$ 20,000.00	m^2	0.97	3000	$ 6.89	$ 44.44
							Sub Total	**$ 44.44**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.660

Part Cost	$ 273.27
Qty	1
Total Cost	$ 273.27

System	FR
Assembly	Aerodynamics
Part	Rear Mounting
Part #	30503
Description	Mounting To Attach Airfoil to cars

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
192	Carbon Fiber, 1 Ply	Support End Plates	$ 200.00	0.66	kg		-		1445.16	0.003	1580	2	$ 264.87
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 264.87**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
121	Drilled holes < 25.4 mm dia.	Attachment Holes for Airfoils	$ 0.35	hole	8	erial - Comp	2.00	$ 5.60
134	Non-metallic cutting <= 25.4 mm	Cut carbon fiber plates	$ 0.35	cut	4	erial - Comp	2.00	$ 2.80
							Sub Total	**$ 8.40**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 202.50
Qty	1

Total Cost	$ 202.50

System	EL
Assembly	ECM Engine Electronics
Assembly #	A4000
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	ECM	$ 500.00	1	$ 500.000
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 500.00**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
467	Wire, Control		$ 1.00	1.00	m		-					20	$ 20.00
469	Wire, Power		$ 3.00	1.00	m		-					5	$ 15.00
470	Wire, Signal		$ 1.00	1.00	m		-					5	$ 5.00
422	Battery, Advanced Chemistry (NiMH, Li-Ion, etc.)		$ 65.00	2.00	kg		-					1	$ 130.00
428	Connector, OEM Quality		$ 0.50	3.00	pin(s)		-					10	$ 5.00
466	Wire Sleeving, Split		$ 0.50	1.00	m		-					15	$ 7.50
224	Chassis Control Module, +Dashboard		$ 20.00	-	unit		-					1	$ 20.00
				-									
												Sub Total	**$ 202.50**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	ECM Engine Electronics
Part	ECU
Part #	40000
Description	Denso ECU

Weight (kg)	0.636

Part Cost	$ 500.00
Qty	1
Total Cost	$ 500.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
310	ECU, OEM Spark & Fuel		$ 500.00	-	unit		-					1	$ 500.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 500.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	

Assm Cost	$ -
Qty	1

Total Cost	$ -

System	EL
Assembly	Wiring Harness
Assembly #	A4001
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	

System	EL
Assembly	Dash Panel
Assembly #	A4002
Description	

Assm Cost	$ 5.25
Qty	1

Total Cost	$ 5.25

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Driver Kill Switch	$ 2.46	1	$ 2.458
2	Starter button	$ 2.46	1	$ 2.458
3	Dash panel	$ 57.06	1	$ 57.063
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 61.98**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Mount large components to dash	$ 0.13	unit	2			$ 0.25
59	Hand, Tight <= 6.35 mm	Attach switches to dash	$ 0.50	unit	10			$ 5.00
							Sub Total	**$ 5.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	Dash Panel
Part	Driver Kill Switch
Part #	40200
Description	

Weight (kg)	0.000

Part Cost	$ 2.46
Qty	1
Total Cost	$ 2.46

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
463	Switch, Toggle		$ 1.00	-	unit		-					1	$ 1.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
48	Crimp Wire		$ 0.17	unit	2			$ 0.33
49	Cut wire		$ 0.08	unit	2			$ 0.17
27	Attach Wire, Wire to screw		$ 0.48	unit	2			$ 0.96
							Sub Total	**$ 1.46**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	Dash Panel
Part	Starter button
Part #	40201
Description	

Weight (kg)	0.000

Part Cost	$ 2.46
Qty	1
Total Cost	$ 2.46

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
461	Switch, Pushbutton		$ 1.00	-	unit		-					1	$ 1.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
27	Attach Wire, Wire to screw		$ 0.48	unit	2			$ 0.96
48	Crimp Wire		$ 0.17	unit	2			$ 0.33
49	Cut wire		$ 0.08	unit	2			$ 0.17
							Sub Total	**$ 1.46**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	Dash Panel
Part	Dash panel
Part #	40202
Description	

Weight (kg)	0.336

Part Cost	$ 57.06
Qty	1
Total Cost	$ 57.06

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
228	Chassis Control Module, Baseline Enclosure		$ 25.00	-	unit		-					1	$ 25.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 25.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose		$ 0.06	unit	1			$ 0.06
8	Rapid Prototype - Plastic		$ 32.00	kg	1			$ 32.00
							Sub Total	**$ 32.06**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	

System	EL
Assembly	Main Kill Switch
Assembly #	A4003
Description	

Assm Cost	$ 11.32
Qty	1

Total Cost	$ 11.32

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
460	Switch, Kill		$ 3.00	-	unit		-					1	$ 3.00
771	Steel, Alloy	Kill switch mounting panel	$ 2.25	1.29	kg		-		103.23	0.00	7850.0000	1	$ 2.89
				-									
				-									
				-									
				-									
				-									
				-									
				-								**Sub Total**	**$ 5.89**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
25	Attach Wire, Terminated wire with screw		$ 0.35	unit	2			$ 0.71
48	Crimp Wire		$ 0.17	unit	2			$ 0.33
49	Cut wire		$ 0.08	unit	2			$ 0.17
112	Machining Setup, Install and remove		$ 1.30	unit				$ -
149	Sheet metal shearing	Shear shape of mounting panel	$ 0.25	cut	1			$ 0.25
76	Weld		$ 0.15	cm	15.24			$ 2.29
120	Drilled hole < 50.8 mm dia.		$ 0.70	hole	2			$ 1.40
							Sub Total	**$ 5.14**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Bolts to connect switch to chassis	0.07	8.5	mm	12.7	mm	2	$ 0.14
37	Nut, Grade 8.8 (SAE 5)		0.07	8.5	mm		mm	2	$ 0.14
								Sub Total	**$ 0.28**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	

Assm Cost	$ -
Qty	1

Total Cost	$ -

System	EL
Assembly	Fuse-Relay Assembly
Assembly #	A4004
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	$ -

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	Fuse-Relay Assembly
Part	Fuse box
Part #	40400
Description	

Weight (kg)	0.000

Part Cost	$ 17.56
Qty	1
Total Cost	$ 17.56

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
437	Fuse Box		$ 0.25	-	pin(s)		-					24	$ 6.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 6.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
27	Attach Wire, Wire to screw		$ 0.48	unit	24			$ 11.50
85	Assemble, 1 kg, Loose		$ 0.06	unit	1			$ 0.06
							Sub Total	**$ 11.56**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	Fuse-Relay Assembly
Part	Mounting panel
Part #	40401
Description	

Weight (kg)	0.000

Part Cost	$ 47.06
Qty	1
Total Cost	$ 47.06

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
199	Honeycomb, Plastic		$ 20.00	0.75	kg		-		10000.00	0.15	5.0000	1	$ 15.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 15.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose		$ 0.06	unit	1			$ 0.06
8	Rapid Prototype - Plastic		$ 32.00	kg	1			$ 32.00
							Sub Total	**$ 32.06**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.000

Part Cost	$ 5.46
Qty	1
Total Cost	$ 5.46

System	EL
Assembly	Fuse-Relay Assembly
Part	Relays
Part #	40402
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
454	Relay, Power		$ 4.00	-	unit		-					1	$ 4.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 4.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
27	Attach Wire, Wire to screw		$ 0.48	unit	2			$ 0.96
48	Crimp Wire		$ 0.17	unit	2			$ 0.33
49	Cut wire		$ 0.08	unit	2			$ 0.17
							Sub Total	**$ 1.46**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	

System	EL
Assembly	Brake Light Assembly
Assembly #	A4005
Description	

Assm Cost	$ 5.21
Qty	1

Total Cost	$ 5.21

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
446	Lamp, Brake with Housing		$ 4.00	-	unit		-					1	$ 4.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 4.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
25	Attach Wire, Terminated wire with screw		$ 0.35	unit	2			$ 0.71
48	Crimp Wire		$ 0.17	unit	2			$ 0.33
49	Cut wire		$ 0.08	unit	2			$ 0.17
							Sub Total	**$ 1.21**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 1.13
Qty	1

Total Cost	$ 1.13

System	EL
Assembly	Battery Assembly
Assembly #	A4006
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Battery	$ 50.70	1	$ 50.700
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 50.70**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assemble battery and wires	$ 0.13	unit	1			$ 0.13
64	Ratchet <= 6.35 mm	Tighten battery connections	$ 0.50	unit	2			$ 1.00
							Sub Total	**$ 1.13**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	EL
Assembly	Battery Assembly
Part	Battery
Part #	40600
Description	Battery Tender Lithium Battery

Weight (kg)	0.780

Part Cost	$ 50.70
Qty	1
Total Cost	$ 50.70

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
422	Battery, Advanced Chemistry (NiMH, Li-Ion, etc.)		$ 65.00	0.78	kg		-					1	$ 50.70
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 50.70**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 5.10
Qty	1

Total Cost	$ 5.10

System	EL
Assembly	Display Assembly
Assembly #	A4007
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Display	$ 1,000.00	1	$ 1,000.000
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 1,000.00**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
50	Strip Multi-Conductor		$ 0.13	wire(s)	36			$ 4.68
21	Attach Wire, Quick connect terminal		$ 0.10	unit	4			$ 0.42
							Sub Total	**$ 5.10**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.520

Part Cost	$ 1,000.00
Qty	1
Total Cost	$ 1,000.00

System	EL
Assembly	Display Assembly
Part	Display
Part #	40700
Description	Aim MXL Pista

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
234	Datalogger, Aim MXL Pista		$ 1,000.00	-	unt		-					1	$ 1,000.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1,000.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	MS
Assembly	Seat
Assembly #	A5000
Description	Full Seat Assembly

Assm Cost	$ 14.75
Qty	1

Total Cost	$ 14.75

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Carbon Fiber Seat	$ 591.60	1	$ 591.596
2	Seat Spacers	$ 1.88	6	$ 11.266
3	Seat Bracket Side	$ 40.13	2	$ 80.264
4	Seat Bracket Rear	$ 3.56	1	$ 3.560
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 686.69**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
574	Adhesive		$ -	-	unit		-						$ -
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assemble spacers on seat	$ 0.13	unit	6			$ 0.75
108	Liquid Applicator Gun	Apply adhesive between spacer and se	$ 0.02	cm	12			$ 0.24
84	Assemble, 1 kg, Line-on-Line	Assemble seat and supports	$ 0.13	unit	3			$ 0.38
64	Ratchet <= 6.35 mm	Connect Seat to supports	$ 0.50	unit	6			$ 3.00
64	Ratchet <= 6.35 mm	Connect supports the chassis	$ 0.50	unit	10			$ 5.00
							Sub Total	**$ 9.37**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Bolts for assembly	0.27	12.7	mm	19.05	mm	16	$ 4.32
37	Nut, Grade 8.8 (SAE 5)		0.11	12.7	mm			6	$ 0.66
43	Nutsert (J-Nut)		0.04	1	unit	12.7	mm	10	$ 0.40
								Sub Total	**$ 5.38**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	MS
Assembly	Seat
Part	Carbon Fiber Seat
Part #	50000
Description	

Weight (kg)	2.726

Part Cost	$ 591.60
Qty	1
Total Cost	$ 591.60

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
192	Carbon Fiber, 1 Ply	Carbon Fiber Seat	$ 200.00	0.68	kg		-				1580.0000	4	$ 545.20
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 545.20**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
19	Resin application, Manual	Laying and forming CF	$ 5.00	m^2	1.411			$ 7.06
10	Vacuum Form		$ 10.00	m^2	1.411			$ 14.11
14	Cure, Room Temperature		$ 10.00	m^2	1.411			$ 14.11
							Sub Total	**$ 35.28**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
13	Liquid Apply - Pour Expanding Foam		$ 10,000.00	m^2	1.441	3000	$ 2.31	$ 11.11
							Sub Total	**$ 11.11**

School	University of Delaware
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Car #	067

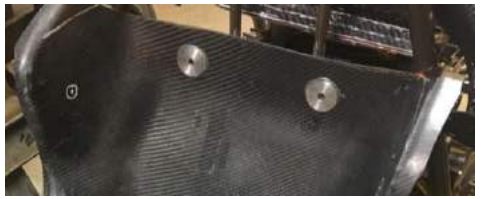
Weight (kg)	0.050

Part Cost	$ 1.88
Qty	6
Total Cost	$ 11.27

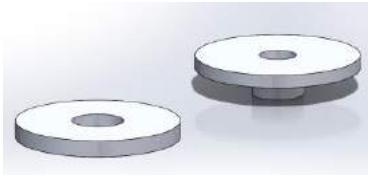
System	MS
Assembly	Seat
Part	Seat Spacers
Part #	50001
Description	Spacers to distribute forces on CF

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Round stock for inner part	$ 4.20	0.05	kg		-	Solid Round (in) 1.75 OD x 0.5	15.52	0.013	2712.0000	1	$ 0.22
744	Aluminum, Normal	Round stock for outer part	$ 4.20	0.03	kg		-	Solid Round (in) 1.75 OD x 0.6	15.52	0.007	2712.0000	1	$ 0.11
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.34**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine inner spacer part	$ 0.04	cm^3	3.94			$ 0.16
132	Machining	Machine outer spacer part	$ 0.04	cm^3	2.02			$ 0.08
							Sub Total	**$ 1.54**



Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**



Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

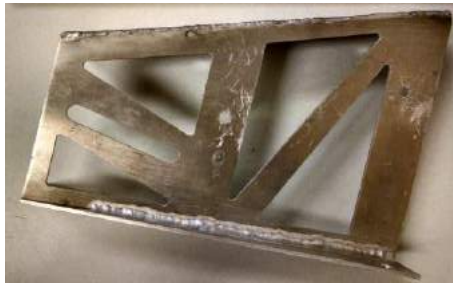
Weight (kg)	0.572

Part Cost	$ 40.13
Qty	2
Total Cost	$ 80.26

System	MS
Assembly	Seat
Part	Seat Bracket Side
Part #	50002
Description	Side seat supports

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.67	kg		-	Solid Square / Rectangle (in) 1	780.64	0.00	2712.0	1	$ 2.82
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 2.82**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	2			$ 2.60
148	Sheet Metal Saw Cut	Cut support pieces	$ 0.20	cm	27.94			$ 5.59
132	Machining	Machine structure	$ 0.04	cm^3	99.14			$ 3.97
120	Drilled hole < 50.8 mm dia.		$ 0.70	hole	6			$ 4.20
76	Weld		$ 0.15	cm	139.7			$ 20.96
							Sub Total	**$ 37.31**



Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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System	MS
Assembly	Seat
Part	Seat Bracket Rear
Part #	50003
Description	Rear seat support

Weight (kg)	0.106

Part Cost	$ 3.56
Qty	1
Total Cost	$ 3.56

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.11	kg		-	Solid Square / Rectangle (in) 8	164.52	0.0025	2712.0	1	$ 0.48
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.48**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
146	Sheet metal bends	Bend to 90 degree angle	$ 0.25	bend	1			$ 0.25
132	Machining	Machine spaces for head rest	$ 0.04	cm^3	3.34			$ 0.13
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	4			$ 1.40
							Sub Total	**$ 3.08**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	MS
Assembly	Safety Harness
Assembly #	A5001
Description	

Assm Cost	$ 2.25
Qty	1

Total Cost	$ 2.25

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Harness	$ 45.00	1	$ 45.000
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 45.00**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assemble Harness	$ 0.13	unit	1			$ 0.13
64	Ratchet <= 6.35 mm	Ratchet bolts connecting harness to ch	$ 0.50	unit	2			$ 1.00
							Sub Total	**$ 1.13**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
20	Bolt, Grade 12.9	Connect harness to chassis mount	0.37	12.7	mm	12.7	mm	2	$ 0.74
35	Nut, Grade 12.9		0.19	12.7	mm		mm	2	$ 0.38
								Sub Total	**$ 1.12**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	1.040

Part Cost	$ 45.00
Qty	1
Total Cost	$ 45.00

System	MS
Assembly	Safety Harness
Part	Harness
Part #	50101
Description	G-Force Pro Series Harness

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
805	Harness, Driver		$ 45.00	-	unit		-					1	$ 45.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 45.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
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Assm Cost	$ 170.65
Qty	1

Total Cost	$ 170.65

System	MS
Assembly	Paint - Frame
Assembly #	A5002
Description	Coloring the frame

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
587	Paint	Painting the frame (Primer)	$ 10.00	5.60	m^2		-	Surface Area of chassis				1	$ 55.95
587	Paint	Painting the frame (Color)	$ 10.00	5.60	m^2		-	Surface Area of chassis				1	$ 55.95
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 111.90**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
78	Aerosol Apply	Painting the frame (Primer)	$ 5.25	m^2	5.60			$ 29.37
78	Aerosol Apply	Painting the frame (Color)	$ 5.25	m^2	5.60			$ 29.37
							Sub Total	**$ 58.75**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 31.42
Qty	1

Total Cost	$ 31.42

System	MS
Assembly	Paint - Body
Assembly #	A5003
Description	Painting the body panels

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
587	Paint	Painting the frame (Color)	$ 10.00	2.06	m^2		-	Surface Area of bodywork				1	$ 20.61
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 20.61**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
78	Aerosol Apply	Painting the frame (Color)	$ 5.25	m^2	2.06			$ 10.82
							Sub Total	**$ 10.82**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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System	MS
Assembly	Fire Wall
Assembly #	A5004
Description	

Assm Cost	$ 7.26
Qty	1

Total Cost	$ 7.26

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Right Wall	$ 18.76	1	$ 18.759
2	Middle Wall	$ 10.74	1	$ 10.742
3	Left Wall	$ 18.81	1	$ 18.807
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 48.31**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
590	Tape	Extra layer of adhesive	$ -	-	unit		-						$ -
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
113	Riveting	Join all firewall pieces	$ 0.25	unit	20			$ 5.00
85	Assemble, 1 kg, Loose	Put firewall in chassis	$ 0.06	unit	1			$ 0.06
117	Tape	Apply tape to firewall	$ 0.80	m	2			$ 1.60
							Sub Total	**$ 6.66**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
50	Rivet, Pop	Fasteners	$0.03		unit		0	20	$ 0.60
								Sub Total	**$ 0.60**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.380

Part Cost	$ 18.76
Qty	1
Total Cost	$ 18.76

System	MS
Assembly	Fire Wall
Part	Right Wall
Part #	50400
Description	Right side of the firewall

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Right side of firewall	$ 4.20	0.38	kg		-		850.00	0.0017	2700.0000	1	$ 1.59
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.59**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing	Shear sides to approx size	$ 0.25	cut	8			$ 2.00
146	Sheet metal bends	Bend sides to proper angle	$ 0.25	bend	1			$ 0.25
148	Sheet Metal Saw Cut	Cut sides to precise size	$ 0.20	cm	50.8			$ 10.16
121	Drilled holes < 25.4 mm dia.	Drill holes for zip ties	$ 0.35	hole	10			$ 3.50
126	Grind, Flat	Smooth sides to cleaner edge	$ 0.15	cm^2	8.38708			$ 1.26
							Sub Total	**$ 17.17**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	MS
Assembly	Fire Wall
Part	Middle Wall
Part #	50401
Description	Middle part of firewall

Weight (kg)	1.250

Part Cost	$ 10.74
Qty	1
Total Cost	$ 10.74

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Middle part of firewall	$ 4.20	1.25	kg		-		2800.00	0.0017	2700.0000	1	$ 5.24
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 5.24**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing	Shear sides to approx size	$ 0.25	cut	4			$ 1.00
146	Sheet metal bends	Bend sides to proper angle	$ 0.25	bend	4			$ 1.00
121	Drilled holes < 25.4 mm dia.	Drill holes for zip ties	$ 0.35	hole	10			$ 3.50
							Sub Total	**$ 5.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.390

Part Cost	$ 18.81
Qty	1
Total Cost	$ 18.81

System	MS
Assembly	Fire Wall
Part	Left Wall
Part #	50402
Description	Left side of the firewall

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Left side of firewall	$ 4.20	0.39	kg		-		850.00	0.00	2700.0000	1	$ 1.64
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.64**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
149	Sheet metal shearing	Shear sides to approx size	$ 0.25	cut	8			$ 2.00
146	Sheet metal bends	Bend sides to proper angle	$ 0.25	bend	1			$ 0.25
148	Sheet Metal Saw Cut	Cut sides to precise size	$ 0.20	cm	50.8			$ 10.16
121	Drilled holes < 25.4 mm dia.	Drill holes for zip ties	$ 0.35	hole	10			$ 3.50
126	Grind, Flat	Smooth sides to cleaner edge	$ 0.15	cm^2	8.38708			$ 1.26
							Sub Total	**$ 17.17**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Wheel
Assembly #	A6000
Description	Full steering wheel assembly

Assm Cost	$ 6.90
Qty	1

Total Cost	$ 6.90

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Grip	$ 16.24	1	$ 16.238
2	Plate	$ 363.53	1	$ 363.534
3	Center Disk	$ 3.74	1	$ 3.743
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 383.51**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
71	Wrench <= 25.4 mm	tighten bolts	$ 1.50	unit	3			$ 4.50
							Sub Total	**$ 4.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	hold plate to quick release	0.8		mm		mm	3	$ 2.40
								Sub Total	**$ 2.40**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Wheel
Part	Grip
Part #	60000
Description	Steering Wheel Grip

Weight (kg)	0.072

Part Cost	$ 16.24
Qty	1
Total Cost	$ 16.24

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
757	Plastic, ABS	3D Print Hand Grips	$ 3.30	0.04	kg		-					2	$ 0.24
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.24**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
8	Rapid Prototype - Plastic		$ 32.00	kg	1	laterial - Plas	0.50	$ 16.00
							Sub Total	**$ 16.00**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.750

Part Cost	$ 103.53
Qty	1
Total Cost	$ 103.53

System	ST
Assembly	Steering Wheel
Part	Plate
Part #	60001
Description	Steering Wheel Outline

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
192	Carbon Fiber, 1 Ply	steering wheel	$ 200.00	0.45	kg		-					1	$ 90.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 90.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	machining wheel	$ 1.30	unit	1			$ 1.30
132	Machining	machining wheel	$ 0.04	cm^3	279.6			$ 11.18
121	Drilled holes < 25.4 mm dia.	8mm bolt holes	$ 0.35	hole	3			$ 1.05
							Sub Total	**$ 13.53**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Wheel
Part	Center Disk
Part #	60002
Description	Steering Wheel Center Disk

Weight (kg)	0.150

Part Cost	$ 3.74
Qty	1
Total Cost	$ 3.74

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Connecting wheel plate to shaft	$ 4.20	0.15	kg		-					1	$ 0.63
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.63**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	setup mill	$ 1.30	unit	1			$ 1.30
132	Machining	material removal	$ 0.04	cm^3	19.07	terial - Alumi	1.00	$ 0.76
121	Drilled holes < 25.4 mm dia.	8 mm bolt holes	$ 0.35	hole	3			$ 1.05
							Sub Total	**$ 3.11**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Wheel Quick Release
Assembly #	A6001
Description	Fast removal of wheel for driver ingress/egress

Assm Cost	$ 6.90
Qty	1

Total Cost	$ 6.90

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Quick Release Top	$ 34.71	1	$ 34.708
2	Quick Release Bottom	$ 24.56	1	$ 24.556
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 59.26**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
71	Wrench <= 25.4 mm		$ 1.50	unit	3			$ 4.50
							Sub Total	**$ 4.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.8		mm		mm	3	$ 2.40
								Sub Total	**$ 2.40**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.493

Part Cost	$ 34.71
Qty	1
Total Cost	$ 34.71

System	ST
Assembly	Steering Wheel Quick Release
Part	Quick Release Top
Part #	60100
Description	Top part of quick release

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	quick release top	$ 4.20	0.49	kg		-					1	$ 2.07
853	Spring, Compression (General)	compression force	$ 1.00	-	unit		-					1	$ 1.00
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.07**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill and jig	$ 1.30	unit	15			$ 19.50
132	Machining	Material remove	$ 0.04	cm^3	155			$ 6.20
121	Drilled holes < 25.4 mm dia.	8mm bolt holes	$ 0.35	hole	3			$ 1.05
121	Drilled holes < 25.4 mm dia.	5mm holes	$ 0.35	hole	2			$ 0.70
119	Broach, Internal	Keyed Spline pattern	$ 0.50	cm	2			$ 1.00
85	Assemble, 1 kg, Loose	Put washer on bolt	$ 0.06	unit	3			$ 0.19
63	Ratchet <= 25.4 mm	assemble shifter	$ 0.75	unit	3			$ 2.25
66	Reaction Tool <= 25.4 mm	assemble shifter	$ 0.25	unit	3			$ 0.75
							Sub Total	**$ 31.64**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.493

Part Cost	$ 24.56
Qty	1
Total Cost	$ 24.56

System	ST
Assembly	Steering Wheel Quick Release
Part	Quick Release Bottom
Part #	60101
Description	Bottom part of quick release

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.49	kg		-					1	$ 2.07
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 2.07**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup Mill and jig	$ 1.30	unit	15			$ 19.50
132	Machining	Material Removal	$ 0.04	cm^3	59			$ 2.36
99	Assemble, 5 kg, Line-on-Line	Put Quick Release together	$ 0.63	unit	1			$ 0.63
							Sub Total	**$ 22.49**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Column & Shaft
Assembly #	A6002
Description	Upper Portion of steering shaft

Assm Cost	$ 6.45
Qty	1

Total Cost	$ 6.45

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Upper Column	$ 90.60	1	$ 90.60
2	Lower Column	$ 34.40	1	$ 34.40
3	U-Joint	$ 40.00	1	$ 40.00
4	Steering Column Bushings	$ 24.98	1	$ 24.98
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 189.98**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose	Assemble steering shaft to chassis	$ 0.06	unit	10			$ 0.63
69	Screwdriver < 1 Turn	Screw bolts into sub-components	$ 0.12	unit	40			$ 4.80
							Sub Total	**$ 5.43**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
23	Bolt, Grade AN	Connects U-joints to splines	0.17	6	mm	12.7	mm	6	$ 1.02
								Sub Total	**$ 1.02**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	2.210

Part Cost	$ 90.60
Qty	1
Total Cost	$ 90.60

System	ST
Assembly	Steering Column & Shaft
Part	Upper Column
Part #	60200
Description	Upper portion of steering shaft

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	U-joint spline	$ 2.25	21.99	kg		-		2.00	13.97	7870.00	1	$ 49.47
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 49.47**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup Lathe	$ 1.30	unit	15			$ 19.50
132	Machining	Material Removal	$ 0.04	cm^3	94	Material - Steel	3.00	$ 11.28
118	Broach, External	5/8" 36 Spline Pattern	$ 0.50	cm	2	Material - Steel	3.00	$ 3.00
155	Weld - Round Tubing	Attack Quick Release Spline to column	$ 0.38	cm	4			$ 1.52
140	Saw or tubing cuts	Cut to length	$ 0.40	cm	3			$ 1.20
84	Assemble, 1 kg, Line-on-Line	Assemble upper shaft into chassis	$ 0.13	unit	1			$ 0.13
118	Broach, External	9 Spline Keyed Pattern	$ 0.50	cm	3	Material - Steel	3.00	$ 4.50
							Sub Total	**$ 41.13**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncId	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.824

Part Cost	$ 34.40
Qty	1
Total Cost	$ 34.40

System	ST
Assembly	Steering Column & Shaft
Part	Lower Column
Part #	60201
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	material for lower column	$ 2.25	0.30	kg		-	Round	2.01	0.19	7870.00	1	$ 0.68
779	Aluminum, Normal (per kg)	aluminum support rod	$ 4.20	0.13	kg		-	Round	3.58	0.13	2700.00	1	$ 0.53
779	Aluminum, Normal (per kg)	aluminum bracket	$ 4.20	0.40	kg		-	Solid Square	19.35	0.08	2700.00	1	$ 1.67
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 2.88**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change	Lathe Setup	$ 0.65	unit	10			$ 6.50
140	Saw or tubing cuts	Cut tube to length	$ 0.40	cm	12			$ 4.80
111	Machining Setup, Change	mill setup	$ 0.65	unit	10			$ 6.50
121	Drilled holes < 25.4 mm dia.	drill hole for welding	$ 0.35	hole	2	Material - Ste	3.00	$ 2.10
132	Machining	Material Removal	$ 0.04	cm^3	32	Material - Ste	3.00	$ 3.84
119	Broach, Internal	5/8" 36 spline pattern	$ 0.50	cm	2	Material - Ste	3.00	$ 3.00
118	Broach, External	5/8" 36 spline pattern	$ 0.50	cm	2	Material - Ste	3.00	$ 3.00
84	Assemble, 1 kg, Line-on-Line	Assemble lower shaft to chassis	$ 0.13	unit	1			$ 0.13
76	Weld	U-joint spline to shaft	$ 0.15	cm	8			$ 1.20
							Sub Total	**$ 31.07**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.46	12.7	mm	38.1	mm	1	$ 0.46
								Sub Total	**$ 0.46**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
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System	ST
Assembly	Steering Column & Shaft
Part	U-Joint
Part #	60202
Description	Connects and allows for rotation of upper and lower shafts

Weight (kg)	0.950

Part Cost	$ 40.00
Qty	1
Total Cost	$ 40.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
858	Steering Column Universal Joint	connect shafts	$ 20.00	-	unit		-					2	$ 40.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 40.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Column & Shaft
Part	Steering Column Bushings
Part #	60203
Description	Aligns lower shaft to steering rack

Weight (kg)	1.090

Part Cost	$ 24.98
Qty	1
Total Cost	$ 24.98

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
781	Brass (per kg)		$ 2.20	10.77	kg		-		5.00	2.52	8550.00	1	$ 23.70
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 23.70**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
111	Machining Setup, Change	Labor	$ 0.65	unit	1			$ 0.65
140	Saw or tubing cuts	Cut tubes	$ 0.40	cm	1			$ 0.40
132	Machining	Material Removal	$ 0.04	cm^3	1			$ 0.04
83	Assemble, 1 kg, Interference	Assembly	$ 0.19	unit	1			$ 0.19
							Sub Total	**$ 1.28**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 4.27
Qty	1

Total Cost	$ 4.27

System	ST
Assembly	Steering Rack & Pinion
Assembly #	A6003
Description	Complete Steering Rack

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Pinion Gear	$ 3.29	1	$ 3.29
2	Rack Gear	$ 6.05	1	$ 6.05
3	Steering Rack boots	$ 5.41	1	$ 5.41
4	Steering Rack Housing	$ 9.79	1	$ 9.79
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 24.53**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
114	Safety Wire, Install	Secure rack boots	$ 0.60	unit	2			$ 1.20
85	Assemble, 1 kg, Loose	Spacer on bolts	$ 0.06	unit	2			$ 0.13
63	Ratchet <= 25.4 mm	Bolt assembly to frame	$ 0.75	unit	2			$ 1.50
66	Reaction Tool <= 25.4 mm	Hold nut	$ 0.25	unit	2			$ 0.50
							Sub Total	**$ 3.33**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.37	12.7	mm	30	mm	2	$ 0.74
37	Nut, Grade 8.8 (SAE 5)		0.1	12	mm		mm	2	$ 0.20
								Sub Total	**$ 0.94**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	0.304

Part Cost	$ 3.29
Qty	1
Total Cost	$ 3.29

System	ST
Assembly	Steering Rack & Pinion
Part	Pinion Gear
Part #	60300
Description	Links steering column to rack gear

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	Pinion	$ 2.25	0.30	kg		-		5.07	0.0762	7870.00	1	$ 0.68
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.68**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	labor	$ 1.30	unit	1			$ 1.30
132	Machining	machining	$ 0.04	cm^3	1	Material - Steel	3.00	$ 0.12
118	Broach, External	material removal	$ 0.50	cm	1			$ 0.50
124	Gear Shaping (hobbing)	material removal	$ 0.50	cm	1			$ 0.50
83	Assemble, 1 kg, Interference	labor	$ 0.19	unit	1			$ 0.19
							Sub Total	**$ 2.61**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Rack & Pinion
Part	Rack Gear
Part #	60301
Description	Used with the pinion gear

Weight (kg)	1.020

Part Cost	$ 6.05
Qty	1
Total Cost	$ 6.05

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
801	Steel, Alloy (per kg)	Rack Gear	$ 2.25	1.02	kg		-		5.07	0.26	7850.0000	1	$ 2.30
				-									
				-									
				-									
				-									
				-									
				-									
				-								**Sub Total**	**$ 2.30**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Labor	$ 1.30	unit	1			$ 1.30
132	Machining	Machining	$ 0.04	cm^3	1	Material - Steel	3.00	$ 0.12
121	Drilled holes < 25.4 mm dia.	Material Removal	$ 0.35	hole	2			$ 0.70
124	Gear Shaping (hobbing)	Material Removal	$ 0.50	cm	1	Material - Steel	3.00	$ 1.50
84	Assemble, 1 kg, Line-on-Line	Labor	$ 0.13	unit	1			$ 0.13
							Sub Total	**$ 3.75**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	ST
Assembly	Steering Rack & Pinion
Part	Steering Rack boots
Part #	60302
Description	Cover and protect rack connections

Weight (kg)	0.490

Part Cost	$ 5.41
Qty	1
Total Cost	$ 5.41

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
828	Fabric	fabricate boot	$ 2.50	0.05	m^2		-					2	$ 5.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 5.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose	Labor	$ 0.06	unit	2			$ 0.13
104	Cut (scissors, knife)	Joining	$ 0.06	cm	2			$ 0.12
75	Sewing	Assembly	$ 0.08	cm	2			$ 0.16
							Sub Total	**$ 0.41**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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System	ST
Assembly	Steering Rack & Pinion
Part	Steering Rack Housing
Part #	60303
Description	Aluminum housing for rack

Weight (kg)	1.330

Part Cost	$ 9.79
Qty	1
Total Cost	$ 9.79

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
779	Aluminum, Normal (per kg)	rack housing stock material	$ 4.20	1.33	kg		-		38.71	0.127	2700.00	1	$ 5.57
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 5.57**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Labor	$ 1.30	unit	1			$ 1.30
112	Machining Setup, Install and remove	Labor	$ 1.30	unit	1			$ 1.30
132	Machining	Machining	$ 0.04	cm^3	1	Material - Aluminum	1.00	$ 0.04
121	Drilled holes < 25.4 mm dia.	Material Removal	$ 0.35	hole	2	Fastener Engagement Length > 4D	1.50	$ 1.05
121	Drilled holes < 25.4 mm dia.	Material Removal	$ 0.35	hole	1	Fastener Engagement Length > 4D	1.50	$ 0.53
							Sub Total	**$ 4.22**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 41.18
Qty	1

Total Cost	$ 41.18

System	ST
Assembly	Front Tie Rod
Assembly #	A6004
Description	Attachment rack to tie rod

ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
771	Steel, Alloy	Tubing for tie rod	$ 2.25	0.30	kg		-					2	$ 1.35
771	Steel, Alloy	Left hand threaded insert	$ 2.25	0.08	kg		-					2	$ 0.36
771	Steel, Alloy	Right hand threaded insert	$ 2.25	0.08	kg		-					2	$ 0.36
771	Steel, Alloy	Clevis Joint	$ 2.25	0.06	kg		-					2	$ 0.27
19	Rod End, Industrial	Tie rod adjustment	$ 1.22	9.53	mm							2	$ 2.44
				-									
				-									
				-									
												Sub Total	**$ 4.78**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup Lathe	$ 1.30	unit	4			$ 5.20
140	Saw or tubing cuts	Cut tie rod tube to length	$ 0.40	cm	18	Material - Stee	3.00	$ 21.60
153	Tube end preperation for welding	Tube preparation	$ 0.75	end	4			$ 3.00
132	Machining	Material removal	$ 0.04	cm^3	8.22	Material - Stee	3.00	$ 0.99
155	Weld - Round Tubing	Weld insert to tie rod	$ 0.38	cm	3.2			$ 1.22
143	Threading, Internal (machining)	Cut threads	$ 0.10	cm	8.2	Material - Stee	3.00	$ 2.46
84	Assemble, 1 kg, Line-on-Line	Install rod ends	$ 0.13	unit	4			$ 0.50
							Sub Total	**$ 34.96**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Fasteners for connecting components	0.28	9.4	mm	38.1	mm	4	$ 1.12
34	Nut, Grade 10.9 (SAE 8)	Fasteners for connecting components	0.08	9.4	mm		mm	4	$ 0.32
								Sub Total	**$ 1.44**

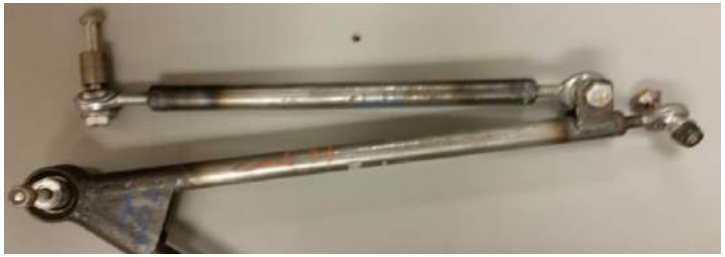
Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 22.29
Qty	1

Total Cost	$ 22.29

System	ST
Assembly	Rear Tie Rod
Assembly #	A6005
Description	Toe links for rear



ItemOrder	Part	Part Cost	Quantity	Sub Total
1				$ -
2				$ -
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
771	Steel, Alloy	Tubing for tie rod	$ 2.25	0.16	kg		-					2	$ 0.72
771	Steel, Alloy	left hand thread insert	$ 2.25	0.08	kg		-					2	$ 0.36
771	Steel, Alloy	right hand thread insert	$ 2.25	0.08	kg		-					2	$ 0.36
19	Rod End, Industrial	tie rod adjustment	$ 1.22	9.53	mm							2	$ 2.44
771	Steel, Alloy	Attachment to a-arms	$ 2.25	0.00	kg		-		1.61	0.16	7.8500	4	$ 0.02
				-									
				-									
				-									
												Sub Total	**$ 3.89**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup Lathe	$ 1.30	unit	2			$ 2.60
140	Saw or tubing cuts	Cut tie rod tube to length	$ 0.40	cm	4	Material - Stee	3.00	$ 4.80
153	Tube end preperation for welding	Tube preparation	$ 0.75	end	4			$ 3.00
132	Machining	Material removal	$ 0.04	cm^3	5.34	Material - Stee	3.00	$ 0.64
155	Weld - Round Tubing	Weld insert to tie rod	$ 0.38	cm	7.2			$ 2.74
143	Threading, Internal (machining)	Cut threads	$ 0.10	cm	8.2	Material - Stee	3.00	$ 2.46
84	Assemble, 1 kg, Line-on-Line	Install rod ends	$ 0.13	unit	4			$ 0.50
							Sub Total	**$ 16.74**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Fastener for upright	0.38	9.4	mm	50.2	mm	2	$ 0.76
19	Bolt, Grade 10.9 (SAE 8)	Fastener to a-arm	0.29	9.4	mm	25.7	mm	2	$ 0.58
34	Nut, Grade 10.9 (SAE 8)	Fastener for bolts	0.08	9.4	mm		mm	4	$ 0.32
								Sub Total	**$ 1.66**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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System	ST
Assembly	Manual Shifting
Assembly #	A6006
Description	Left shifter assembly

Assm Cost	$ 21.54
Qty	1

Total Cost	$ 21.54

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Shifter Cable Connector	$ 4.27	1	$ 4.267
2	Shifter Handle	$ 4.89	1	$ 4.890
3	Shifter Linkage	$ 10.06	1	$ 10.058
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 19.22**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
843	Shift Lever, Bicycle OEM		$ 20.00	-	unit		-					1	$ 20.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 20.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
85	Assemble, 1 kg, Loose		$ 0.06	unit	1			$ 0.06
							Sub Total	**$ 0.06**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
23	Bolt, Grade AN	Shifter handle to linkage	1.48		mm		mm	1	$ 1.48
								Sub Total	**$ 1.48**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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System	ST
Assembly	
Part	Shifter Cable Connector
Part #	60600
Description	Machined Aluminum Block

Weight (kg)	0.000

Part Cost	$ 4.27
Qty	1
Total Cost	$ 4.27

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.28	kg		-		25.80	0.04	2712.0000	1	$ 1.18
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.18**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup for machining	$ 1.30	unit	1			$ 1.30
132	Machining	Material removal	$ 0.04	cm^3	2.05			$ 0.08
121	Drilled holes < 25.4 mm dia.	Drill holes	$ 0.35	hole	2			$ 0.70
141	Tapping holes	Attaching to shifter base	$ 0.35	hole	1			$ 0.35
							Sub Total	**$ 2.43**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Cable attachment	0.33	12	mm	25	mm	2	$ 0.66
								Sub Total	**$ 0.66**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	0.250

Part Cost	$ 3.41
Qty	1
Total Cost	$ 3.41

System	ST
Assembly	
Part	Shifter Handle
Part #	60601
Description	Shifter Handle

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.27	kg		-		6.45	0.15	2712.0000	1	$ 1.12
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.12**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	16			$ 0.64
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	1			$ 0.35
							Sub Total	**$ 2.29**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
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Weight (kg)	0.250

Part Cost	$ 10.06
Qty	1
Total Cost	$ 10.06

System	ST
Assembly	
Part	Shifter Linkage
Part #	60602
Description	Shifter Linkage

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Alumninum stock	$ 4.20	0.14	kg		-		25.00	0.02	2712.0000	1	$ 0.58
1	Bearing Ball, Steel	Linkage bearings	$ 3.89	-			-					2	$ 7.78
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 8.36**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	10			$ 0.40
							Sub Total	**$ 1.70**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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System	SU
Assembly	Front Upper A-Arm
Assembly #	A7000
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Upper A-Arm	$ 36.12	2	$ 72.237
2	Front Upper Mount	$ 6.41	4	$ 25.651
3	Front Upper Spacers	$ 1.85	6	$ 11.089
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 108.98**

Assm Cost	$ 2.88
Qty	2

Total Cost	$ 5.75

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assemble spacers and bolts on A-arm	$ 0.13	unit	3			$ 0.38
59	Hand, Tight <= 6.35 mm	Rod ends into A-arm wlednuts	$ 0.50	unit	2			$ 1.00
64	Ratchet <= 6.35 mm	Tighten A-arm bolts	$ 0.50	unit	3			$ 1.50
							Sub Total	**$ 2.88**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
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Weight (kg)	0.458

Part Cost	$ 36.12
Qty	2
Total Cost	$ 72.24

System	SU
Assembly	Front Upper A-Arm
Part	Front Upper A-Arm
Part #	70000
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	A-arm tubes	$ 2.25	0.08	kg		-	0.5" (049) Steel Tube	0.45	0.22	7850.0000	2	$ 0.35
771	Steel, Alloy	Weldnuts	$ 2.25	0.04	kg		-	0.5" Steel Bar	1.27	0.04	7850.0000	1	$ 0.09
771	Steel, Alloy	A-arm gussets	$ 2.25	0.04	kg		-	Solid Square / Rectangle (in) 1	14.52	0.0032	7850.0000	2	$ 0.16
20	Rod End, Suspension		$ 7.02	6.35	mm		-					2	$ 14.04
12	Bearing, Spherical	Upright bearing	$ 6.20	6.35	mm		-					1	$ 6.20
				-									
				-									
				-									
												Sub Total	**$ 20.84**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
152	Tube cut	Cut A-Arm Rods	$ 0.15	cm	5.08			$ 0.76
153	Tube end preperation for welding	Prep A-arm rods	$ 0.75	end	4			$ 3.00
148	Sheet Metal Saw Cut	Cut A-Arm Gussets	$ 0.20	cm	10.16			$ 2.03
121	Drilled holes < 25.4 mm dia.	Tube to Weldnut Welding	$ 0.35	hole	2			$ 0.70
141	Tapping holes	Drill weld nut hole	$ 0.35	hole	2			$ 0.70
155	Weld - Round Tubing	Weld A-Arms	$ 0.38	cm	17.78			$ 6.76
							Sub Total	**$ 15.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
11	Welds		$ 500.00	point	4	3000	$ 0.04	$ 0.03
							Sub Total	**$ 0.03**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Front Upper A-Arm
Part	Front Upper Mount
Part #	70001
Description	

Weight (kg)	0.050

Part Cost	$ 7.12
Qty	4
Total Cost	$ 28.48

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy		$ 2.25	0.07	kg		-	Tubing Square / Rectangle (in)	1.66	0.05	7850.0000	1	$ 0.15
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.15**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine mounts	$ 0.04	cm^3	0.08	Material - Ste	3.00	$ 0.01
121	Drilled holes < 25.4 mm dia.	Drill hole for bolt	$ 0.35	hole	1	Material - Ste	3.00	$ 1.05
153	Tube end preperation for welding		$ 0.75	end	1			$ 0.75
155	Weld - Round Tubing	Weld mount onto chassis	$ 0.38	cm	10.16			$ 3.86
							Sub Total	**$ 6.97**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.0002

Part Cost	$ 1.85
Qty	6
Total Cost	$ 11.09

System	SU
Assembly	Front Upper A-Arm
Part	Front Upper Spacers
Part #	70002
Description	Aluminum A-arm spacers with bolt

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Material to make 2 spacers	$ 4.20	0.01	kg		-	Solid Round (in) 0.5 OD x 1	1.27	0.03	2712.0000	1	$ 0.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine Spacers on lathe	$ 0.04	cm^3	1.29			$ 0.05
121	Drilled holes < 25.4 mm dia.	Drill hole in cylinder stock	$ 0.35	hole	1			$ 0.35
							Sub Total	**$ 1.70**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.08	6.3	mm	31.75	mm	1	$ 0.08
37	Nut, Grade 8.8 (SAE 5)		0.03	6.3	mm		mm	1	$ 0.03
								Sub Total	**$ 0.11**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Front Lower A-Arm
Assembly #	A7001
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Lower A-Arm	$ 36.68	2	$ 73.370
2	Front Lower Mount	$ 9.44	4	$ 37.757
3	Front Lower Spacers	$ 1.85	6	$ 11.089
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 122.22**

Assm Cost	$ 2.88
Qty	2

Total Cost	$ 5.75

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assemble spacers and bolts on A-arm	$ 0.13	unit	3			$ 0.38
59	Hand, Tight <= 6.35 mm	Rod ends into A-arm wlednuts	$ 0.50	unit	2			$ 1.00
64	Ratchet <= 6.35 mm	Tighten A-arm bolts	$ 0.50	unit	3			$ 1.50
							Sub Total	**$ 2.88**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.678

Part Cost	$ 36.68
Qty	2
Total Cost	$ 73.37

System	SU
Assembly	Front Lower A-Arm
Part	Front Lower A-Arm
Part #	70100
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	A-arm tubes	$ 2.25	0.20	kg		-	0.5" (049) Steel Tube	0.74	0.35	7850.0000	2	$ 0.91
771	Steel, Alloy	Weldnuts	$ 2.25	0.04	kg		-	0.5" Steel Bar	1.35	0.04	7850.0000	1	$ 0.10
771	Steel, Alloy	A-arm gussets	$ 2.25	0.04	kg		-	Solid Square / Rectangle (in) 1	14.52	0.00	7850.0000	2	$ 0.16
20	Rod End, Suspension		$ 7.02	6.35	mm		-					2	$ 14.04
12	Bearing, Spherical	Upright bearing	$ 6.20	6.35	mm		-					1	$ 6.20
				-									
				-									
				-									
												Sub Total	**$ 21.41**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
152	Tube cut	Cut A-Arm Rods	$ 0.15	cm	5.08			$ 0.76
153	Tube end preperation for welding	Prep A-arm rods	$ 0.75	end	4			$ 3.00
148	Sheet Metal Saw Cut	Cut A-Arm Gussets	$ 0.20	cm	10.16			$ 2.03
121	Drilled holes < 25.4 mm dia.	Tube to Weldnut Welding	$ 0.35	hole	2			$ 0.70
141	Tapping holes	Drill weld nut hole	$ 0.35	hole	2			$ 0.70
155	Weld - Round Tubing	Weld A-Arms	$ 0.38	cm	17.78			$ 6.76
							Sub Total	**$ 15.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
11	Welds		$ 500.00	point	4	3000	$ 0.04	$ 0.03
							Sub Total	**$ 0.03**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Front Lower A-Arm
Part	Front Lower Mount
Part #	70101
Description	

Weight (kg)	0.120

Part Cost	$ 9.44
Qty	4
Total Cost	$ 37.76

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy		$ 2.25	0.16	kg		-	Tubing Square / Rectangle (in)	4.11	0.05	7850.0000	1	$ 0.37
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.37**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine mounts	$ 0.04	cm^3	0.08	Material - Steel	3.00	$ 0.01
121	Drilled holes < 25.4 mm dia.	Drill hole for bolt	$ 0.35	hole	3	Material - Steel	3.00	$ 3.15
153	Tube end preperation for welding		$ 0.75	end	1			$ 0.75
155	Weld - Round Tubing	Weld mount onto chassis	$ 0.38	cm	10.16			$ 3.86
							Sub Total	**$ 9.07**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.0002

Part Cost	$ 1.85
Qty	6
Total Cost	$ 11.09

System	SU
Assembly	Front Lower A-Arm
Part	Front Lower Spacers
Part #	70102
Description	Aluminum A-arm spacers with bolt

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.01	kg		-	Solid Round (in) 0.5 OD x 1	1.27	0.03	2712.0000	1	$ 0.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.04**

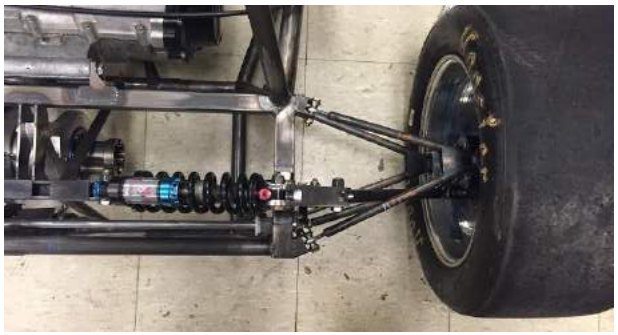
Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	1.29			$ 0.05
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	1			$ 0.35
							Sub Total	**$ 1.70**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.08	6.3	mm	31.75	mm	1	$ 0.08
37	Nut, Grade 8.8 (SAE 5)		0.03	6.3	mm		mm	1	$ 0.03
								Sub Total	**$ 0.11**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Rear Upper A-Arm
Assembly #	A7002
Description	



Assm Cost	$ 2.88
Qty	2

Total Cost	$ 5.75

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Rear Upper A-Arm	$ 36.28	2	$ 72.563
2	Rear Upper Mount	$ 6.41	4	$ 25.651
3	Rear Upper Spacers	$ 1.85	6	$ 11.089
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 109.30**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Assemble spacers and bolts on A-arm	$ 0.13	unit	3			$ 0.38
59	Hand, Tight <= 6.35 mm	Rod ends into A-arm wlednuts	$ 0.50	unit	2			$ 1.00
64	Ratchet <= 6.35 mm	Tighten A-arm bolts	$ 0.50	unit	3			$ 1.50
							Sub Total	**$ 2.88**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.376

Part Cost	$ 36.28
Qty	2
Total Cost	$ 72.56

System	SU
Assembly	Rear Upper A-Arm
Part	Rear Upper A-Arm
Part #	70200
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	A-arm tubes	$ 2.25	0.12	kg		-	0.5" (049) Steel Tube	0.45	0.34	7850.0000	2	$ 0.54
771	Steel, Alloy	Weldnuts	$ 2.25	0.04	kg		-	0.5" Steel Bar	1.27	0.04	7850.0000	1	$ 0.09
771	Steel, Alloy	A-arm gussets	$ 2.25	0.04	kg		-	Solid Square / Rectangle (in) 1	14.52	0.0032	7850.0000	2	$ 0.16
20	Rod End, Suspension		$ 7.02	-	mm		-					2	$ 14.04
12	Bearing, Spherical	Upright bearing	$ 6.20	-	mm		-					1	$ 6.20
				-									
				-									
				-									
												Sub Total	**$ 21.03**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
152	Tube cut	Cut A-Arm Rods	$ 0.15	cm	5.08			$ 0.76
153	Tube end preperation for welding	Prep A-arm rods	$ 0.75	end	4			$ 3.00
148	Sheet Metal Saw Cut	Cut A-Arm Gussets	$ 0.20	cm	10.16			$ 2.03
121	Drilled holes < 25.4 mm dia.	Tube to Weldnut Welding	$ 0.35	hole	2			$ 0.70
141	Tapping holes	Drill weld nut hole	$ 0.35	hole	2			$ 0.70
155	Weld - Round Tubing	Weld A-Arms	$ 0.38	cm	17.78			$ 6.76
							Sub Total	**$ 15.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Rear Upper A-Arm
Part	Rear Upper Mount
Part #	70201
Description	

Weight (kg)	0.050

Part Cost	$ 7.12
Qty	4
Total Cost	$ 28.48

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy		$ 2.25	0.07	kg		-	Tubing Square / Rectangle (in)	1.66	0.05	7850.0000	1	$ 0.15
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.15**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine mounts	$ 0.04	cm^3	0.08	Material - Ste	3.00	$ 0.01
121	Drilled holes < 25.4 mm dia.	Drill hole for bolt	$ 0.35	hole	1	Material - Ste	3.00	$ 1.05
153	Tube end preperation for welding		$ 0.75	end	1			$ 0.75
155	Weld - Round Tubing	Weld mount onto chassis	$ 0.38	cm	10.16			$ 3.86
							Sub Total	**$ 6.97**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Rear Upper A-Arm
Part	Rear Upper Spacers
Part #	70202
Description	Aluminum A-arm spacers with bolt

Weight (kg)	0.000

Part Cost	$ 1.85
Qty	6
Total Cost	$ 11.09

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Material to make 2 spacers	$ 4.20	0.01	kg		-	Solid Round (in) 0.5 OD x 1	1.27	0.03	2712.0000	1	$ 0.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining	Machine Spacers on lathe	$ 0.04	cm^3	1.29			$ 0.05
121	Drilled holes < 25.4 mm dia.	Drill hole in cylinder stock	$ 0.35	hole	1			$ 0.35
							Sub Total	**$ 1.70**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.08	6.3	mm	31.75	mm	1	$ 0.08
37	Nut, Grade 8.8 (SAE 5)		0.03	6.3	mm		mm	1	$ 0.03
								Sub Total	**$ 0.11**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Rear Lower A-Arm
Assembly #	A7003
Description	

Assm Cost	$ 2.88
Qty	2

Total Cost	$ 5.75

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Rear Lower A-Arm	$ 36.14	2	$ 72.270
2	Rear Lower Mount	$ 9.43	4	$ 37.722
3	Rear Lower Spacers	$ 1.85	6	$ 11.089
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 121.08**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line		$ 0.13	unit	3			$ 0.38
59	Hand, Tight <= 6.35 mm		$ 0.50	unit	2			$ 1.00
64	Ratchet <= 6.35 mm		$ 0.50	unit	3			$ 1.50
							Sub Total	**$ 2.88**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.640

Part Cost	$ 36.14
Qty	2
Total Cost	$ 72.27

System	SU
Assembly	Rear Lower A-Arm
Part	Rear Lower A-Arm
Part #	70300
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	A-arm tubes	$ 2.25	0.08	kg		-	0.5" (049) Steel Tube	0.29	0.35	7850.0000	2	$ 0.36
771	Steel, Alloy	Weldnuts	$ 2.25	0.04	kg		-	0.5" Steel Bar	1.35	0.04	7850.0000	1	$ 0.10
771	Steel, Alloy	A-arm gussets	$ 2.25	0.04	kg		-	Solid Square / Rectangle (in) 1	14.52	0.00	7850.0000	2	$ 0.16
20	Rod End, Suspension		$ 7.02	-	mm		-					2	$ 14.04
12	Bearing, Spherical	Upright bearing	$ 6.20	-	mm		-					1	$ 6.20
				-									
				-									
				-									
												Sub Total	**$ 20.86**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
152	Tube cut	Cut A-Arm Rods	$ 0.15	cm	5.08			$ 0.76
153	Tube end preperation for welding	Prep A-arm rods	$ 0.75	end	4			$ 3.00
148	Sheet Metal Saw Cut	Cut A-Arm Gussets	$ 0.20	cm	10.16			$ 2.03
121	Drilled holes < 25.4 mm dia.	Tube to Weldnut Welding	$ 0.35	hole	2			$ 0.70
141	Tapping holes	Drill weld nut hole	$ 0.35	hole	2			$ 0.70
155	Weld - Round Tubing	Weld A-Arms	$ 0.38	cm	17.78			$ 6.76
							Sub Total	**$ 15.25**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
11	Welds		$ 500.00	point	4	3000	$ 0.04	$ 0.03
							Sub Total	**$ 0.03**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Rear Lower A-Arm
Part	Rear Lower Mount
Part #	70301
Description	

Weight (kg)	0.120

Part Cost	$ 9.43
Qty	4
Total Cost	$ 37.72

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy		$ 2.25	0.16	kg		-	Tubing Square / Rectangle (in)	4.11	0.05	7850.0000	1	$ 0.36
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.36**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	0.08	Material - Ste	3.00	$ 0.01
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	3	Material - Ste	3.00	$ 3.15
153	Tube end preperation for welding		$ 0.75	end	1			$ 0.75
155	Weld - Round Tubing		$ 0.38	cm	10.16			$ 3.86
							Sub Total	**$ 9.07**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.0002

Part Cost	$ 1.85
Qty	6
Total Cost	$ 11.09

System	SU
Assembly	Rear Lower A-Arm
Part	Rear Lower Spacers
Part #	70302
Description	Aluminum A-arm spacers with bolt

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal		$ 4.20	0.01	kg		-	Solid Round (in) 0.5 OD x 1	1.27	0.03	2712.0000	1	$ 0.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove		$ 1.30	unit	1			$ 1.30
132	Machining		$ 0.04	cm^3	1.29			$ 0.05
121	Drilled holes < 25.4 mm dia.		$ 0.35	hole	1			$ 0.35
							Sub Total	**$ 1.70**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)		0.08	6.3	mm	31.75	mm	1	$ 0.08
37	Nut, Grade 8.8 (SAE 5)		0.03	6.3	mm		mm	1	$ 0.03
								Sub Total	**$ 0.11**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 9.25
Qty	2

Total Cost	$ 18.51

System	SU
Assembly	Front Uprights
Assembly #	A7004
Description	Full Front upright assembly

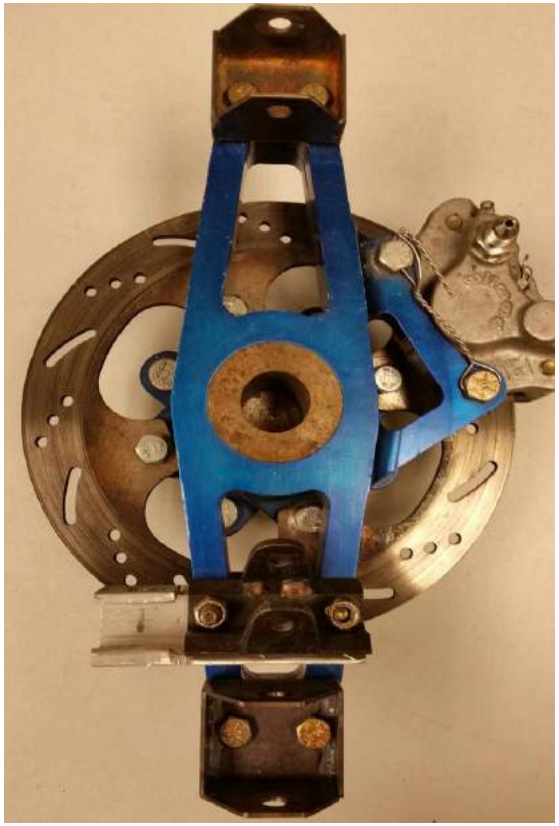
ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Upright	$ 37.13	2	$ 74.254
2	Front Upright Mounts (a-arms	$ 19.37	4	$ 77.476
3	Front Upright Mounts (pushrods, tie rods	$ 21.75	2	$ 43.493
4	Front Upright Spacers	$ 8.22	4	$ 32.880
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 228.10**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
63	Ratchet <= 25.4 mm	Fasten bolts	$ 0.75	unit	6			$ 4.50
71	Wrench <= 25.4 mm	Fasten bolts	$ 1.50	unit	2			$ 3.00
85	Assemble, 1 kg, Loose	Assemble components	$ 0.06	unit	5			$ 0.31
							Sub Total	**$ 7.81**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Fasten components	$ 0.09	6.35	mm	38.1	mm	6	$ 0.54
22	Bolt, Grade 8.8 (SAE 5)	Fasten components	$ 0.25	12.7	mm	16	mm	2	$ 0.50
37	Nut, Grade 8.8 (SAE 5)	Fasten components	$ 0.03	6.35	mm		mm	6	$ 0.18
37	Nut, Grade 8.8 (SAE 5)	Fasten components	$ 0.11	12.7	mm		mm	2	$ 0.22
								Sub Total	**$ 1.44**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**



School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.000

Part Cost	$ 37.13
Qty	2
Total Cost	$ 74.25

System	SU
Assembly	Front Uprights
Part	Front Upright
Part #	70400
Description	Attachment for axle, brakes, & suspension

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Upright	$ 4.20	1.50	kg		-				2700.0000	1	$ 6.30
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 6.30**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Prepare mill	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material	$ 0.04	cm^3	668.18			$ 26.73
121	Drilled holes < 25.4 mm dia.	6.35mm holes	$ 0.35	hole	6			$ 2.10
121	Drilled holes < 25.4 mm dia.	8mm holes	$ 0.35	hole	2			$ 0.70
							Sub Total	**$ 30.83**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Front Uprights
Part	Front Upright Mounts (a-arms
Part #	70401
Description	A-arm mounts for upright

Weight (kg)	0.464

Part Cost	$ 19.37
Qty	4
Total Cost	$ 77.48

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Attach a-arms to upright	$ 2.25	0.12	kg		-					1	$ 0.26
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.26**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill and jig	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material	$ 0.04	cm^3	7.8	Material - Ste	3.00	$ 0.94
121	Drilled holes < 25.4 mm dia.	6.35mm hole	$ 0.35	hole	4	Material - Ste	3.00	$ 4.20
148	Sheet Metal Saw Cut	Cut metal to shape	$ 0.20	cm	6	Material - Ste	3.00	$ 3.60
126	Grind, Flat	Prep metal for welding	$ 0.15	cm^2	10	Material - Ste	3.00	$ 4.50
76	Weld	Join separate pieces	$ 0.15	cm	10.16	Material - Ste	3.00	$ 4.57
							Sub Total	**$ 19.11**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.460

Part Cost	$ 21.75
Qty	2
Total Cost	$ 43.49

System	SU
Assembly	Front Uprights
Part	Front Upright Mounts (pushrods, tie rods
Part #	70402
Description	Attach push rod & tie rod to upright

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Attach push rod to upright	$ 2.25	0.15	kg		-					1	$ 0.34
744	Aluminum, Normal	Attach tie rod to upright	$ 4.20	0.08	kg		-					1	$ 0.34
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.67**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill and jig (steel)	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material (steel)	$ 0.04	cm^3	50.3	Material - Ste	3.00	$ 6.04
121	Drilled holes < 25.4 mm dia.	6.35mm holes (steel)	$ 0.35	hole	4	Material - Ste	3.00	$ 4.20
112	Machining Setup, Install and remove	Setup mill and jig (alum)	$ 1.30	unit	1			$ 1.30
121	Drilled holes < 25.4 mm dia.	6.35mm holes (alum)	$ 0.35	hole	4			$ 1.40
132	Machining	Remove material (alum)	$ 0.04	cm^3	10.2			$ 0.41
126	Grind, Flat	Prep metal for welds/clean	$ 0.15	cm^2	20			$ 3.00
76	Weld	Join steel components	$ 0.15	cm	7.62	Material - Ste	3.00	$ 3.43
							Sub Total	**$ 21.07**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Front Uprights
Part	Front Upright Spacers
Part #	70403
Description	Adjust for camber

Weight (kg)	0.040

Part Cost	$ 8.22
Qty	4
Total Cost	$ 32.88

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Add's camber to vehicle	$ 4.20	0.01	kg		-					1	$ 0.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material	$ 0.04	cm^3	2			$ 0.08
140	Saw or tubing cuts	Cut to shape	$ 0.40	cm	11.33			$ 4.53
128	Hand Finish - Material Removal	Debur	$ 0.20	cm^3	11.33			$ 2.27
							Sub Total	**$ 8.18**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ 12.67
Qty	2

Total Cost	$ 25.34

System	SU
Assembly	Rear Uprights
Assembly #	A7005
Description	Full Rear upright assembly

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Rear Upright	$ 40.19	2	$ 80.384
2	Rear Upright Mounts (a-arms	$ 19.37	2	$ 38.738
3	Rear Upright Mounts (pushrods, tie rods	$ 22.84	2	$ 45.685
4	Rear Upright Spacers	$ 8.22	4	$ 32.880
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 197.69**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
63	Ratchet <= 25.4 mm	Fasten bolts	$ 0.75	unit	10			$ 7.50
71	Wrench <= 25.4 mm	Fasten bolts	$ 1.50	unit	2			$ 3.00
85	Assemble, 1 kg, Loose	Assemble components	$ 0.06	unit	4			$ 0.25
							Sub Total	**$ 10.75**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
22	Bolt, Grade 8.8 (SAE 5)	Fasten components	$ 0.09	6.35	mm	38.1	mm	10	$ 0.90
22	Bolt, Grade 8.8 (SAE 5)	Fasten components	$ 0.25	12.7	mm	16	mm	2	$ 0.50
37	Nut, Grade 8.8 (SAE 5)	Fasten components	$ 0.03	6.35	mm		mm	10	$ 0.30
37	Nut, Grade 8.8 (SAE 5)	Fasten components	$ 0.11	12.7	mm		mm	2	$ 0.22
								Sub Total	**$ 1.92**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	3.240

Part Cost	$ 40.19
Qty	2
Total Cost	$ 80.38

System	SU
Assembly	Rear Uprights
Part	Rear Upright
Part #	70500
Description	Attachment for axle, brakes, & suspension

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Upright	$ 4.20	1.62	kg		-					1	$ 6.80
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 6.80**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Prepare mill	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material	$ 0.04	cm^3	697.2			$ 27.89
121	Drilled holes < 25.4 mm dia.	6.35mm holes	$ 0.35	hole	10			$ 3.50
121	Drilled holes < 25.4 mm dia.	8mm holes	$ 0.35	hole	2			$ 0.70
							Sub Total	**$ 33.39**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Rear Uprights
Part	Rear Upright Mounts (a-arms
Part #	70501
Description	A-arm mounts for upright

Weight (kg)	0.232

Part Cost	$ 19.37
Qty	2
Total Cost	$ 38.74

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Attach a-arms to upright	$ 2.25	0.12	kg		-					1	$ 0.26
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.26**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill and jig	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material	$ 0.04	cm^3	7.8	Material - Ste	3.00	$ 0.94
121	Drilled holes < 25.4 mm dia.	6.35mm hole	$ 0.35	hole	4	Material - Ste	3.00	$ 4.20
148	Sheet Metal Saw Cut	Cut metal to shape	$ 0.20	cm	6	Material - Ste	3.00	$ 3.60
126	Grind, Flat	Prep metal for welding	$ 0.15	cm^2	10	Material - Ste	3.00	$ 4.50
76	Weld	Join separate pieces	$ 0.15	cm	10.16	Material - Ste	3.00	$ 4.57
							Sub Total	**$ 19.11**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.592

Part Cost	$ 23.14
Qty	2
Total Cost	$ 46.29

System	SU
Assembly	Rear Uprights
Part	Rear Upright Mounts (pushrods, tie rods
Part #	70502
Description	Attach push rod & tie rod to upright

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Attach push rod to upright	$ 2.25	0.112	kg		-					1	$ 0.25
744	Aluminum, Normal	Attach a-arm and toe link	$ 4.20	0.184	kg		-					1	$ 0.77
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.02**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill and jig (steel)	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material (steel)	$ 0.04	cm^3	87.6	Material - Steel	3.00	$ 10.51
121	Drilled holes < 25.4 mm dia.	6.35mm holes (steel)	$ 0.35	hole	3	Material - Steel	3.00	$ 3.15
112	Machining Setup, Install and remove	Setup mill and jig (alum)	$ 1.30	unit	1			$ 1.30
121	Drilled holes < 25.4 mm dia.	6.35mm holes (alum)	$ 0.35	hole	4			$ 1.40
132	Machining	Remove material (alum)	$ 0.04	cm^3	40.2			$ 1.61
126	Grind, Flat	Prep metal for welds/clean	$ 0.15	cm^2	10			$ 1.50
76	Weld	Join steel components	$ 0.15	cm	3	Material - Steel	3.00	$ 1.35
							Sub Total	**$ 22.12**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.040

Part Cost	$ 8.22
Qty	4
Total Cost	$ 32.88

System	SU
Assembly	Rear Uprights
Part	Rear Upright Spacers
Part #	70503
Description	Adjust for camber

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Add's camber to vehickle	$ 4.20	0.01	kg		-					1	$ 0.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	**Use**	$ 1.30	unit	1			$ 1.30
132	Machining	Setup mill	$ 0.04	cm^3	2			$ 0.08
140	Saw or tubing cuts	Remove material	$ 0.40	cm	11.33			$ 4.53
128	Hand Finish - Material Removal	Cut to shape	$ 0.20	cm^3	11.33			$ 2.27
		Debur						
							Sub Total	**$ 8.18**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Assm Cost	$ -
Qty	1

Total Cost	$ -

System	SU
Assembly	Damper Assembly
Assembly #	A7006
Description	

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Pushrods	$ -	1	$ -
2	Rockers	$ -	1	$ -
3	Front Rocker Mounts	$ -	1	$ -
4	Rear Rocker Mounts	$ -	1	$ -
5	Shocks	$ -	1	$ -
6	Front Shock Mounts	$ -	1	$ -
7	Rear Shock Mount	$ -	1	$ -
8				$ -
			Sub Total	**$ -**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.580

Part Cost	$ 124.20
Qty	1
Total Cost	$ 124.20

System	SU
Assembly	Damper Assembly
Part	Pushrods
Part #	70600
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Pushrod Tube	$ 2.25	1.05	kg		-	0.75" (065) Steel Tube	0.90	1.49	7850.0000	1	$ 2.37
771	Steel, Alloy	Pushrod Weldnuts	$ 2.25	0.22	kg		-	0.75" Round Bar	2.85	0.10	7850.0000	1	$ 0.50
20	Rod End, Suspension	Pushrod Rod Ends	$ 8.15	7.94	mm		-	5/16" Rod Ends				8	$ 65.20
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 68.07**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set Up to Machine Weldnuts	$ 1.30	unit	0.125			$ 0.16
132	Machining	Machine Weldnuts	$ 0.04	cm^3	4.58			$ 0.18
141	Tapping holes	Drilling/Tapping Weldnuts	$ 0.35	hole	8			$ 2.80
143	Threading, Internal (machining)	Threading Weldnuts	$ 0.10	cm	10.16			$ 1.02
152	Tube cut	Cut Tube to Length	$ 0.15	cm	7.62			$ 1.14
153	Tube end preperation for welding	Prepare for Welding	$ 0.75	end	8			$ 6.00
86	Assemble, 10 kg, Line-on-Line	Assemble Push Rods	$ 1.25	unit	4			$ 5.00
155	Weld - Round Tubing	Weld Weldnuts to Tube	$ 0.38	cm	47.88			$ 18.19
87	Assemble, 10 kg, Line-on-Line	Align Bolts/Nuts	$ 1.25	unit	8			$ 10.00
63	Ratchet <= 25.4 mm	Tighten Bolts/Nuts	$ 0.75	unit	8			$ 6.00
							Sub Total	**$ 50.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
63	Washer, Grade AN	.75" OD Spacers	0.154	19.04	mm		mm	8	$ 1.23
23	Bolt, Grade AN	5/16 Bolts	0.25	7.94	mm		mm	8	$ 2.00
38	Nut, Grade AN	5/16 Locknuts	0.3	7.94	mm		mm	8	$ 2.40
								Sub Total	**$ 5.63**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.496

Part Cost	$ 81.80
Qty	1
Total Cost	$ 81.80

System	SU
Assembly	Damper Assembly
Part	Rockers
Part #	70601
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
779	Aluminum, Normal (per kg)	Front and Rear Rockers	$ 4.20	2.55	kg		-	6061 Aluminum Block	20.03	0.47	2712.0000	1	$ 10.72
3	Bearing, Ball, Deep Groove	Rocker Ball Bearing	$ 9.30	31.00	mm	9	mm					4	$ 37.20
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 47.92**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Front and Rear Set Up	$ 1.30	unit	4			$ 5.20
132	Machining	Material Removal	$ 0.04	cm^3	470.71			$ 18.83
83	Assemble, 1 kg, Interference	Insert Bearings	$ 0.19	unit	4			$ 0.75
63	Ratchet <= 25.4 mm	Tighten Bolts	$ 0.75	unit	4			$ 3.00
							Sub Total	**$ 27.78**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)	Rear Rocker Bolts (M12)	0.67	12	mm	50	mm	2	$ 1.34
34	Nut, Grade 10.9 (SAE 8)	Rear Rocker Nuts (M12)	0.13	12	mm		mm	2	$ 0.26
19	Bolt, Grade 10.9 (SAE 8)	Front Rocker Bolts (1/2-13)	2.1	12.7	mm	114.3	mm	2	$ 4.20
34	Nut, Grade 10.9 (SAE 8)	Front Rocker Nuts (1/2-13)	0.15	12.7	mm		mm	2	$ 0.30
								Sub Total	**$ 6.10**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.200

Part Cost	$ 36.93
Qty	1
Total Cost	$ 36.93

System	SU
Assembly	Damper Assembly
Part	Front Rocker Mounts
Part #	70602
Description	Gussett Plates and Tubes

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Gussett Plate	$ 2.25	0.25	kg		-	1/8" Steel Sheet Metal	3.23	0.10	7850.0000	4	$ 2.28
771	Steel, Alloy	Gussett Tubes	$ 2.25	0.20	kg		-	3/4" Steel Round Bar	2.85	0.09	7850.0000	2	$ 0.91
771	Steel, Alloy	Gussett Insert	$ 2.25	0.03	kg		-	5/8: Steel Round Bar	1.98	0.02	7850.0000	2	$ 0.14
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 3.33**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set Up for Gussett Plate	$ 1.30	unit	4			$ 5.20
132	Machining	Material Removal of Plates	$ 0.04	cm^3	43.52			$ 1.74
121	Drilled holes < 25.4 mm dia.	Hole for Gussett Plates	$ 0.35	hole	4			$ 1.40
112	Machining Setup, Install and remove	Set Up for Gussett Tubes	$ 1.30	unit	6			$ 7.80
132	Machining	Material Removal of Bar	$ 0.04	cm^3	11.8			$ 0.47
121	Drilled holes < 25.4 mm dia.	Hole for Gussett Tubes	$ 0.35	hole	6			$ 2.10
153	Tube end preperation for welding	Prepare for Welding Gussetts	$ 0.75	end	4			$ 3.00
76	Weld	Weld Plates to Chassis	$ 0.15	cm	59.94			$ 8.99
155	Weld - Round Tubing	Weld Tubes to Plates	$ 0.38	cm	7.62			$ 2.90
							Sub Total	**$ 33.60**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Damper Assembly
Part	Rear Rocker Mounts
Part #	70603
Description	

Weight (kg)	0.100

Part Cost	$ 17.18
Qty	1
Total Cost	$ 17.18

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Rear Rocker Mounts	$ 2.25	0.11	kg		-	1/8" Steel Plate	1.71	0.08	7850.0000	4	$ 0.97
771	Steel, Alloy	Mount Brace	$ 2.25	0.02	kg		-	1/8" Steel Plate	0.71	0.04	7850.0000	2	$ 0.10
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.07**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set Up For Material Removal	$ 1.30	unit	6			$ 7.80
132	Machining	Material Removal	$ 0.04	cm^3	20.48			$ 0.82
121	Drilled holes < 25.4 mm dia.	Holes in Mounts	$ 0.35	hole	4			$ 1.40
76	Weld	Weld to Chassis	$ 0.15	cm	40.64			$ 6.10
							Sub Total	**$ 16.12**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	3.600

Part Cost	$ 609.46
Qty	1
Total Cost	$ 609.46

System	SU
Assembly	Damper Assembly
Part	Shocks
Part #	70604
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
349	Damper, Fox Van R	Shocks	$ 125.00	-	unit		-					4	$ 500.00
856	Suspension Springs, Coil Spring, Steel	Springs	$ 25.00	-	unit		-					4	$ 100.00
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 600.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
84	Assemble, 1 kg, Line-on-Line	Put Spring on Damper	$ 0.13	unit	4			$ 0.50
63	Ratchet <= 25.4 mm	Tighten Bolts	$ 0.75	unit	8			$ 6.00
							Sub Total	**$ 6.50**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
19	Bolt, Grade 10.9 (SAE 8)		0.29	9.53	mm	38.1	mm	8	$ 2.32
34	Nut, Grade 10.9 (SAE 8)		0.08	9.53	mm		mm	8	$ 0.64
								Sub Total	**$ 2.96**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Damper Assembly
Part	Shock Mounts
Part #	70605
Description	

Weight (kg)	0.250

Part Cost	$ 28.03
Qty	1
Total Cost	$ 28.03

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Mounts	$ 2.25	0.07	kg		-	1/16" Steel Plate	1.11	0.08	7850.0000	4	$ 0.63
771	Steel, Alloy	Mounts	$ 2.25	0.83	kg		-	1/8" Steel Plate	5.85	0.18	7850.0000	2	$ 3.72
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 4.35**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set Up Mill	$ 1.30	unit	2			$ 2.60
132	Machining	Material Removal	$ 0.04	cm^3	28.55			$ 1.14
121	Drilled holes < 25.4 mm dia.	Drill Holes in Mounts	$ 0.35	hole	8			$ 2.80
76	Weld	Weld Mounts to Chassis	$ 0.15	cm	114.3			$ 17.15
							Sub Total	**$ 23.69**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	SU
Assembly	Swaybars
Assembly #	A7007
Description	

Assm Cost	$ -
Qty	1

Total Cost	$ -

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Swaybar Levers	$ 25.80	1	$ 25.80
2	Swaybar Linkages	$ 73.00	1	$ 73.00
3	Swaybar Mounts	$ 2.22	4	$ 8.88
4	Swaybars	$ 13.26	1	$ 13.26
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 120.95**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	$ -

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.150

Part Cost	$ 25.80
Qty	1
Total Cost	$ 25.80

System	SU
Assembly	Swaybars
Part	Swaybar Levers
Part #	70700
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Lever Welded Plates	$ 2.25	0.43	kg		-	.069" THK Steel Sheet	2.73	0.20	7850.0000	1	$ 0.96
771	Steel, Alloy	Lever Clamps	$ 2.25	0.35	kg		-	1-1/8" Steel Round Bar	6.41	0.07	7850.0000	1	$ 0.79
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.76**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set Up Machine For Steel Sheet	$ 1.30	unit	0.125			$ 0.16
149	Sheet metal shearing	Cut Sheet Metal	$ 0.25	cut	10			$ 2.50
146	Sheet metal bends	Bends For Shape	$ 0.25	bend	4			$ 1.00
132	Machining	Machine Steel Sheet	$ 0.04	cm^3	12.52			$ 0.50
132	Machining	Machine Steel Bar	$ 0.04	cm^3	1			$ 0.04
76	Weld	Weld Levers	$ 0.15	cm	54.78			$ 8.22
121	Drilled holes < 25.4 mm dia.	Material Removal	$ 0.35	hole	24			$ 8.40
85	Assemble, 1 kg, Loose	Assemble on Car	$ 0.06	unit	4			$ 0.25
							Sub Total	**$ 21.07**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
63	Washer, Grade AN	Lever to Weldnut	0.154	19.05	mm		mm	4	$ 0.62
23	Bolt, Grade AN	Lever to Weldnut	0.19	6.35	mm	12.7	mm	4	$ 0.76
23	Bolt, Grade AN	Clamp Adjuster	0.19	6.35	mm	12.7	mm	4	$ 0.76
38	Nut, Grade AN	Locknut	0.21	6.35	mm		mm	4	$ 0.84
								Sub Total	**$ 2.98**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.316

Part Cost	$ 78.60
Qty	1
Total Cost	$ 78.60

System	SU
Assembly	Swaybars
Part	Swaybar Linkages
Part #	70701
Description	Linkage connecting rocker to swaybar

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Front Swaybar Linkage Tube	$ 2.25	0.02	kg		-	Steel Tube	0.57	0.05	7850.0000	2	$ 0.10
771	Steel, Alloy	Rear Swaybar Linkage Tube	$ 2.25	0.05	kg		-	Steel Tube	0.57	0.11	7850.0000	2	$ 0.22
771	Steel, Alloy	Weldnuts	$ 2.25	0.01	kg		-	Steel Bar	1.27	0.01	7850.0000	8	$ 0.18
20	Rod End, Suspension		$ 7.02	6.35	mm		-					8	$ 56.16
				-									
				-									
				-									
				-									
												Sub Total	**$ 56.66**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
152	Tube cut	Cut to Length	$ 0.15	cm	1.27			$ 0.19
153	Tube end preperation for welding	Preparation for Welding	$ 0.75	end	8			$ 6.00
155	Weld - Round Tubing	Tube to Weldnut Welding	$ 0.38	cm	10.16			$ 3.86
121	Drilled holes < 25.4 mm dia.	Drill weld nut hole	$ 0.35	hole	8			$ 2.80
141	Tapping holes	Tap weldnut	$ 0.35	hole	8			$ 2.80
							Sub Total	**$ 15.65**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
63	Washer, Grade AN	Spacers	0.153	19.05	mm		mm	16	$ 2.45
23	Bolt, Grade AN	Swaybar Linkage Bolts	0.27	6.35	mm	28.575	mm	8	$ 2.16
38	Nut, Grade AN	Swaybar Linkage Locknuts	0.21	6.35	mm		mm	8	$ 1.68
								Sub Total	**$ 6.29**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.050

Part Cost	$ 2.22
Qty	4
Total Cost	$ 8.88

System	SU
Assembly	Swaybars
Part	Swaybar Mounts
Part #	70702
Description	

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Swaybar to Chassis Mount	$ 2.25	0.02	kg		-	Steel 1" Square Tube	1.20	0.03	7850.0000	1	$ 0.05
790	Plastic, Acrylic (per kg)	Mount Insert	$ 3.30	0.02	kg		-	Delrin Insert	5.25	0.03	1420.0000	1	$ 0.07
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 0.13**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
152	Tube cut	Cut Square Tube to Length	$ 0.15	cm	2.54			$ 0.38
76	Weld	Weld Square Tube to Chassis	$ 0.15	cm	10.16			$ 1.52
83	Assemble, 1 kg, Interference	Interference Fit of Delrin	$ 0.19	unit	1			$ 0.19
							Sub Total	**$ 2.09**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.050

Part Cost	$ 13.26
Qty	1
Total Cost	$ 13.26

System	SU
Assembly	Swaybars
Part	Swaybars
Part #	70703
Description	Steel Tube

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
771	Steel, Alloy	Front Swaybars	$ 2.25	0.12	kg		-	0.5" (049) Steel Tube	0.45	0.34	7850.0000	1	$ 0.27
771	Steel, Alloy	Rear Swaybars	$ 2.25	0.21	kg		-	0.5" (049) Steel Tube	0.45	0.60	7850.0000	1	$ 0.48
771	Steel, Alloy	Weldnut Adapters	$ 2.25	0.04	kg		-	0.5" Steel Bar	1.27	0.04	7850.0000	4	$ 0.36
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.11**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Set Up to Machine Weldnuts	$ 1.30	unit	0.25			$ 0.33
132	Machining	Machine Weldnuts	$ 0.04	cm^3	4.06			$ 0.16
121	Drilled holes < 25.4 mm dia.	Drill Weldnut Holes	$ 0.35	hole	4			$ 1.40
143	Threading, Internal (machining)	Thread Weldnut Holes	$ 0.10	cm	10.16			$ 1.02
152	Tube cut	Cut Swaybars to Length	$ 0.15	cm	1.27			$ 0.19
153	Tube end preperation for welding	Prepare Swaybar Tubes	$ 0.75	end	4			$ 3.00
155	Weld - Round Tubing	Weld Weldnuts to Swaybars	$ 0.38	cm	15.95			$ 6.06
							Sub Total	**$ 12.15**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Wheel Assembly
Assembly #	A8001
Description	

Assm Cost	$ 7.75
Qty	1

Total Cost	$ 7.75

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Tire	$ 85.00	4	$ 340.000
2	Valve Stem	$ -	1	$ -
3	Wheel	$ 82.50	4	$ 330.000
4	Wheel Weights	$ 4.06	1	$ 4.063
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 674.06**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
574	Adhesive	Attach balance weights to wheel	$ -	-	unit		-						$ -
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
86	Assemble, 10 kg, Interference	Assemble Tire and Wheel	$ 1.88	unit	4			$ 7.50
85	Assemble, 1 kg, Loose	Place balance weights on wheel	$ 0.06	unit	4			$ 0.25
							Sub Total	**$ 7.75**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Wheel Assembly
Part	Tire
Part #	80100
Description	Hoosier R25B tire

Weight (kg)	4.490

Part Cost	$ 85.00
Qty	4
Total Cost	$ 340.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
895	Tire, Hoosier, R25B, 13"-20.5 x 7.0		$ 85.00	-	unit		-					1	$ 85.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 85.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Wheel Assembly
Part	Valve Stem
Part #	80101
Description	

Weight (kg)	0.010

Part Cost	$ 1.00
Qty	4
Total Cost	$ 4.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
908	Valve Stem (and Tire Inflation)		$ 1.00	-	unit		-					1	$ 1.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 1.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Wheel Assembly
Part	Wheel
Part #	80102
Description	13 inch Keizer Wheels shells

Weight (kg)	3.326

Part Cost	$ 82.50
Qty	4
Total Cost	$ 330.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
921	Wheel Shells, 13", 3 Piece, Keizer, Aluminum		$ 82.50	-	unit		-					1	$ 82.50
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 82.50**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Wheel Assembly
Part	Wheel Weights
Part #	80103
Description	Wheel balance weights

Weight (kg)	0.050

Part Cost	$ 4.00
Qty	1
Total Cost	$ 4.00

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
923	Wheel Weights (and Balancing)		$ 4.00	-	unit		-					1	$ 4.00
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 4.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
							Sub Total	$ -

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Front Hubs Assembly
Assembly #	A8003
Description	

Assm Cost	$ 5.20
Qty	2

Total Cost	$ 10.40

ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Front Hubs	$ 46.60	2	$ 93.207
2	Front Wheel Bearings	$ 34.38	2	$ 68.750
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 161.96**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
61	Power Tool <= 6.35 mm	Tighten lug nuts	$ 0.25	unit	8			$ 2.00
							Sub Total	**$ 2.00**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
41	Nut, Lug	Attach wheel to wheel hub	0.4	15	mm		0	8	$ 3.20
								Sub Total	**$ 3.20**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	1.200

Part Cost	$ 46.60
Qty	2
Total Cost	$ 93.21

System	WT
Assembly	Front Hubs Assembly
Part	Front Hubs
Part #	80300
Description	Machined Front Hubs

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
744	Aluminum, Normal	Hub adapter	$ 4.20	1.20	kg		-					1	$ 5.04
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 5.04**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup mill and jig	$ 1.30	unit	4			$ 5.20
132	Machining	Remove material	$ 0.04	cm^3	489.62			$ 19.58
112	Machining Setup, Install and remove	Setup lathe	$ 1.30	unit	1			$ 1.30
132	Machining	Remove material	$ 0.04	cm^3	223.22			$ 8.93
121	Drilled holes < 25.4 mm dia.	10mm holes	$ 0.35	hole	4			$ 1.40
121	Drilled holes < 25.4 mm dia.	12mm holes	$ 0.35	hole	4			$ 1.40
83	Assemble, 1 kg, Interference	Press studs into hub	$ 0.19	unit	4			$ 0.75
							Sub Total	**$ 38.56**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
54	Stud, Grade 8.8 (SAE 5)	Wheel studs	0.57	15	mm	25.4	mm	4	$ 2.28
37	Nut, Grade 8.8 (SAE 5)	Rotor nuts	0.18	15	mm		mm	4	$ 0.72
								Sub Total	**$ 3.00**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.300

Part Cost	$ 34.38
Qty	2
Total Cost	$ 68.75

System	WT
Assembly	Front Hubs Assembly
Part	Front Wheel Bearings
Part #	80301
Description	Front Wheel Bearings

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
23	Wheel Bearing, Ball, Radial	Lets wheel rotate	$ 20.65	59.94	mm	11.861	mm					1	$ 20.65
28	Wheel Bearing, Tapered Roller	Lets wheel rotate	$ 13.35	50.80	mm	12.7	mm					1	$ 13.35
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 34.00**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
83	Assemble, 1 kg, Interference	Press Bearing into upright	$ 0.19	unit	2			$ 0.38
							Sub Total	**$ 0.38**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	$ -

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	$ -

School	University of Delaware
Team	Blue Hen Racing
Car #	067

System	WT
Assembly	Rear Hubs Assembly
Assembly #	A8004
Description	Full Rear Hub Assembly

Assm Cost	$ 4.00
Qty	2

Total Cost	$ 8.00

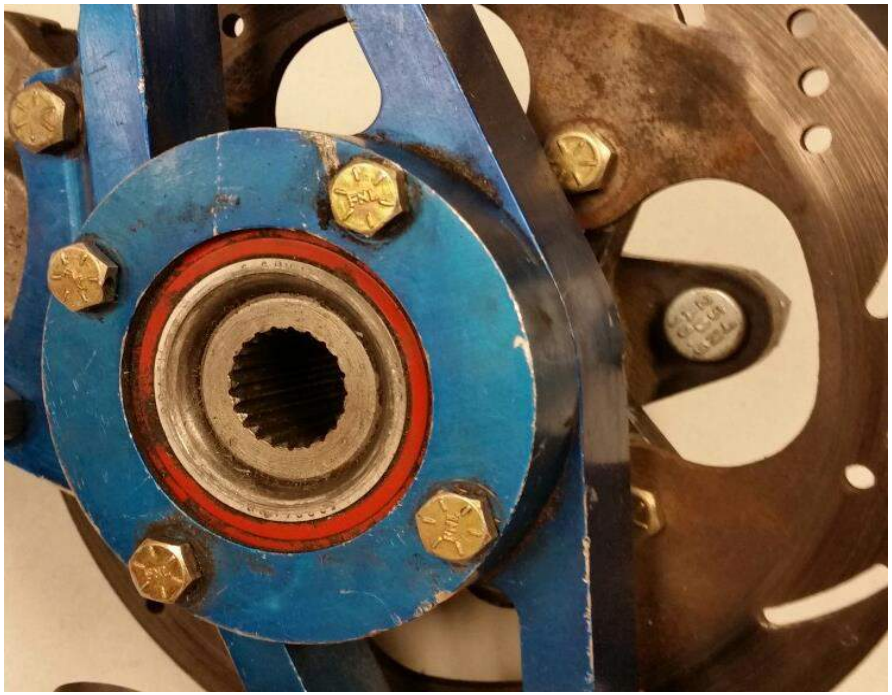
ItemOrder	Part	Part Cost	Quantity	Sub Total
1	Rear Hubs	$ 163.86	2	$ 327.729
2	Rear Wheel Bearings	$ 28.99	2	$ 57.975
3				$ -
4				$ -
5				$ -
6				$ -
7				$ -
8				$ -
			Sub Total	**$ 385.70**

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (cm)	Density (gm/cm^3)	Qty	Sub Total
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ -**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
61	Power Tool <= 6.35 mm	Tighten lug nuts	$ 0.25	unit	4			$ 1.00
63	Ratchet <= 25.4 mm	Attach adapter to hub	$ 0.75	unit	4			$ 3.00
							Sub Total	**$ 4.00**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**



School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	5.200

Part Cost	$ 163.86
Qty	2
Total Cost	$ 327.73

System	WT
Assembly	Rear Hubs Assembly
Part	Rear Hubs
Part #	80400
Description	Rear Hub & Rear Hub adapter

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
772	Steel, Mild	Rear Hub	$ 2.25	2.10	kg		-					1	$ 4.73
744	Aluminum, Normal	Rear Hub Adapter	$ 4.20	0.50	kg		-					1	$ 2.10
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 6.83**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
112	Machining Setup, Install and remove	Setup Mill and Jig (steel)	$ 1.30	unit	4			$ 5.20
112	Machining Setup, Install and remove	Setup Mill and Jig (Alum)	$ 1.30	unit	4			$ 5.20
132	Machining	Remove Material (Steel)	$ 0.04	cm^3	1015	Material - Ste	3.00	$ 121.80
132	Machining	Remove Material (Alum)	$ 0.04	cm^3	118.49			$ 4.74
121	Drilled holes < 25.4 mm dia.	10mm holes (Steel)	$ 0.35	hole	4	Material - Ste	3.00	$ 4.20
121	Drilled holes < 25.4 mm dia.	10mm holes (Alum)	$ 0.35	hole	4			$ 1.40
121	Drilled holes < 25.4 mm dia.	12mm holes (Alum)	$ 0.35	hole	4			$ 1.40
121	Drilled holes < 25.4 mm dia.	6.35mm holes (Alum)	$ 0.35	hole	16			$ 5.60
119	Broach, Internal	Splines (steel)	$ 0.50	cm	2	Material - Ste	3.00	$ 3.00
90	Assemble, 15 kg, Line-on-Line	Press hub into bearing (steel)	$ 1.88	unit	2			$ 3.75
83	Assemble, 1 kg, Interference	Press wheel studs into hub	$ 0.19	unit	4			$ 0.75
							Sub Total	**$ 157.04**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
54	Stud, Grade 8.8 (SAE 5)	Wheel studs	0.57	15	mm	25.4	mm		$ -
37	Nut, Grade 8.8 (SAE 5)	Rotor nuts	0.18	15	mm		mm		$ -
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**

School	University of Delaware
Team	Blue Hen Racing
Car #	067

Weight (kg)	0.300

Part Cost	$ 28.99
Qty	2
Total Cost	$ 57.98

System	WT
Assembly	Rear Hubs Assembly
Part	Rear Wheel Bearings
Part #	80401
Description	Rear Wheel Bearings

Material ID	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Material Description	Area (cm^2)	Length (m)	Density (kg/m^3)	Qty	Sub Total
26	Wheel Bearing, Double Row, Ball, Radial	Lets axle spin	$ 28.80	57.15	mm	25.4	mm					1	$ 28.80
				-									
				-									
				-									
				-									
				-									
				-									
				-									
												Sub Total	**$ 28.80**

Process ID	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
83	Assemble, 1 kg, Interference	Press bearing into upright	$ 0.19	unit	1			$ 0.19
							Sub Total	**$ 0.19**

Fastener ID	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub Total
								Sub Total	**$ -**

Tooling ID	Tooling	Use	UnitCost	Unit	Quantity	PVF	FracIncld	Sub Total
							Sub Total	**$ -**