#REF!

 University
 Ecole Centrale Lyon

 Competition Code
 FS

 Year
 2017

 Car #
 081

The cost of assembles on this chart should not include the cost of the parts in the assembly but only the materials, processes, fasteners and tooling in the assembly level.

			1	I	T	1				I				
										_				Details
				_		Descripti			Material	Process	Fastener	Tooling		Page
Line Num.	Area of Commodity	Asm/Prt #	Rev. Lvl.	Asm	Component	on	Unit Cost	Quantity	Cost	Cost	Cost	Cost	Total Cost	Number
	Engine and Drivetrain	EN A0001	AA	D'ff and affect	<u>Differential</u>		91,03	1	78,48	9,90	1,32	1,33	91,03	3
	Engine and Drivetrain	EN 01001	AA	Differential	Housing		125,31	1	21,58	100,59	3,14		125,31	13
	Engine and Drivetrain	EN 01002	AA	Differential	Bearing Carrier		10,73	2	6,21	4,52			21,46	14
	Engine and Drivetrain	EN 01003	AA	Differential	<u>Tie rod support</u>		1,88	4	0,21	1,67			7,53	15
	Engine and Drivetrain	EN 01004	AA	Differential	bearing carrier tab		0,92	4	0,13	0,80			3,70	16
	Engine and Drivetrain	EN A0002	AA		<u>Turnbuckle</u>		15,75	2	5,00	8,76	1,32	0,67	31,49	5
	Engine and Drivetrain	EN 02001	AA	Turnbuckle	<u>Tie rod tab</u>		0,92	8	0,13	0,80			7,40	17
	Engine and Drivetrain	EN 02002	AA	Turnbuckle	<u>Threaded tube</u>		2,44	4	0,17	2,27			9,74	18
	Engine and Drivetrain	EN 02003	AA	Turnbuckle	<u>Tie rod spacer</u>		0,24	16	0,02	0,21				19
	Engine and Drivetrain	EN A0003	AA		<u>Driveshaft</u>		232,30	1	200,00	15,92	16,38		232,30	6
	Engine and Drivetrain	EN 03001	AA	Driveshaft	Inboard tripod housing		67,72	2	9,53	58,19			135,44	20
	Engine and Drivetrain	EN 03002	AA	Driveshaft	Outboard tripod housing		59,57	2	8,02	51,55			119,13	21
	Engine and Drivetrain	EN 03003	AA	Driveshaft	Right axle		20,86	1	3,34	17,52			20,86	22
	Engine and Drivetrain	EN 03004	AA	Driveshaft	Left axle		20,70	1	3,30	17,40			20,70	23
	Engine and Drivetrain	EN A0004	AA		Chain set		79,44	1	55,60	19,11	4,73		79,44	7
	Engine and Drivetrain	EN 04001	AA	Chain set	Front sprocket		16,15	1	2,378718	13,77154	.,		16,15	24
	Engine and Drivetrain	EN 04002	AA	Chain set	Rear sprocket		16,88	1	4,25919	12,61712			16,88	25
	Engine and Drivetrain	EN 04003	AA	Chain set	Rear sprocket adapter		45,13	1	9,886555	35,2389			45,13	26
	Engine and Drivetrain	EN 04004	AA	Chain set	Rear sprocket spacer		0,30	6	0,026087	0,273867			1,80	27
	Engine and Drivetrain	EN 04005	AA	Chain set	chain shield		9,69	1	2,866226	6,822			9,69	28
	Engine and Drivetrain	EN A0005	AA	Chair set	Air Intelia Contain		63.29	- 1	36,00	22.02	4.44	0,83	63,29	9
			AA	Air Intoles Contains	Patternal and a second		, -	1			4,44	0,03		
	Engine and Drivetrain	EN 05001		Air Intake System	Bottom plenum	-	4,97	1	1,77	3,20			4,97	29
	Engine and Drivetrain	EN 05002	AA	Air Intake System	Upper Plenum		18,81		1,76	17,06			18,81	30
	Engine and Drivetrain	EN 05003	AA	Air Intake System	<u>Pipes</u>		16,31	1	1,52	14,78			16,31	31
	Engine and Drivetrain	EN 05004	AA	Air Intake System	Upper Pipes		0,99	1	0,09	0,90			0,99	32
	Engine and Drivetrain	EN 05005	AA	Air Intake System	Obstruction Plate		0,85	1	0,10	0,75			0,85	33
	Engine and Drivetrain	EN 05006	AA	Air Intake System	Plenum Mount		1,25	2	0,06	1,19			2,49	34
	Engine and Drivetrain	EN A0006	AA		Throttle body		130,70	1	119,82	8,98	1,24	0,67	130,70	11
	Engine and Drivetrain	EN 06001	AA	Throttle body	<u>Throttle Frange</u>		5,18	1	0,73	4,45			5,18	35
	Engine and Drivetrain	EN 06002	AA	Throttle body	Restrictor		5,88	1	1,73	4,15			5,88	36
	Engine and Drivetrain	EN 06003	AA	Throttle body	Throttle Housing		4,35	1	0,92	3,43			4,35	37
	Engine and Drivetrain	EN 06004	AA	Throttle body	Throttle axle		2,73	1	0,06	2,67			2,73	38
	Engine and Drivetrain	EN 06005	AA	Throttle body	TPS axle		2,71	1	0,04	2,67			2,71	39
	Engine and Drivetrain	EN 06006	AA	Throttle body	Cable housing		3,57	1	0,17	3,40			3,57	40
	Engine and Drivetrain	EN 06007	AA	Throttle body	Axle stop		2,04	1	0,26	1,78			2,04	41
	Engine and Drivetrain	EN 06008	AA	Throttle body	Ram pipe		12,51	1	4,01	8,50			12,51	42
	Engine and Drivetrain	EN 06009	AA	Throttle body	Throttle Plate		1,49	1	0,07	1,42			1,49	43
	Engine and Drivetrain	EN 06010	AA	Throttle body	Tabs		0.82	2	0.01	0.81			1,64	44
	Engine and Drivetrain	EN 06011	AA	Throttle body	Mount 1		0.74	1	0.04	0.70			0,74	45
	Engine and Drivetrain	EN 06012	AA	Throttle body	Mount 2		0,75	1	0,05	0,70			0,75	46
	Engine and Drivetrain	EN 06013	AA	Plenum Mount	Throttle Body		1,75	1	0,05	1,70			1,75	47
	Engine and Drivetrain			cam Wount	Area Total		1,70	•	612,05	632,60	33,89	4,17	1361,93	
		FR A0006	AA		Chifter		69,44	1	42,48	26,22	0.41	0.33	69,44	48
	Frame and body		AA	Shifter	Smiler See her days to the		,	1	,	12.15	0,41	0,33	69,44	50
	Frame and body	FR 06001			Engine gear box drum gear		14,58	1	2,43	, -				
	Frame and body	FR 06002	AA	Shifter	Engine gear box shifting, pinion shaft		17,64	1	2,43	15,21				51
	Frame and body	FR 06003	AA	Shifter	Engine gear box actuator tab		1,89	1	0,05	1,84				52
	Frame and body	FR 06004	AA	Shifter	Front engine gear box actuator mount		2,83	1	0,04	2,79				53
	Frame and body	FR 06005	AA	Shifter	Rear gear box actuator mount		2,65	1	0,11	2,54				54
	Frame and body	FR 06006	AA	Shifter	Engine gear box actuator coupling		7,54	1	1,22	6,28	0,04			55

Line Num.	Area of Commodity	Asm/Prt #	Rev. Lvl.	Asm	Component	Descripti on	Unit Cost		Material Cost	Process Cost	Fastener Cost	Tooling Cost	Total Cost	Details Page Number
Line Nuin.	Area or commounty	ASIII/FIL#	IVEA. FAI.	ASIII	Component	011	Unit Cost	Quantity	COSL	COSL	CUSI	CUSI	Total Cost	Nullibel
	Frame and body				Area Total				48,75	67,03	0,45	0,33	69,44	

Ecole Centrale de Lyon Engine and Drivetrain System Assembly Differential P/N Base EN A0001

AA

Suffix Details Différentiel Car # 81

FileLink1 FileLink2 FileLink3 Asm Cost Qty 247,69

Extended Cost \$ 247,69

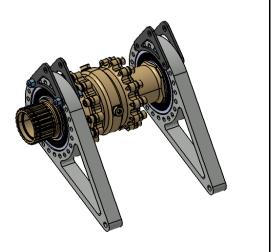
ItemOrder	Part	Part Cost		Quantity	Sub	Total
10	Housing	\$	125,31	1	\$	125,31
20	Bearing carrier	\$	10,73	2	\$	21,46
30	Tie rod support	\$	1,88	4	\$	7,53
40	bearing carrier tab	\$	0,92	4	\$	3,70
		_		Sub Total	\$	158,00

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Bearing, Ball, Radial	Right differential bearing	\$ 40,25	90	mm	20	mm					1	\$ 40,25
20	Bearing, Ball, Radial	Left differential bearing	\$ 38,18	90	mm	18	mm					1	\$ 38,18
30	Fluid, Oil	Differential oil	\$ 0,75	0,06	liter							0,06	\$ 0,05
40	Paint		\$ 10,00	0,005	m²							1	\$ 0,08
50	Internals		\$ 110,00	1	unit							1	\$ 110,00
												Sub Total	\$ 78,48

temOrder	Process	Use	Unit	Cost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Weld	Weld tabs to frame	\$	0,15	cm	15,8			\$	2,37
20	Aerosol Apply	Paint tabs	\$	5,25	m^2	0,005			\$	0,03
30	Assemble, 3 kg, Interference	Assemble the housing and the bearings	\$	0,56	unit	2			\$	1,12
		Assemble the bearing carriers and the								
40	Assemble, 1 kg, Interference	bearings	\$	0,19	unit	2			\$	0,38
50	Assemble, 3 kg, Line-on-Line	Put the bearing carriers and tabs in place	\$	0,38	unit	2			\$	0,76
60	Ratchet <=25.4 mm	Bolt the bearing carriers to tabs	\$	0,75	unit	2			\$	1,50
70	Reaction Tool <= 25.4 mm	Bolt the bearing carriers to tabs	\$	0,25	unit	2			\$	0,50
80	Assemble,1kg, Loose	Put the tie rods supports in place	\$	0,06	unit	4			\$	0,24
		Bolt the tie rods supports to the baring								
90	Ratchet <= 6.35 mm	carriers	\$	0,50	unit	4			\$	2,00
100	Reaction Tool <= 6.35 mm	Bolt the tie rods supports to the baring carriers	\$	0,25	unit	4			\$	1,00
	•	•			•	•	•	Sub Total	Ś	9.90

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub To	otal
10	Bolt, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,19	8	mm	45	mm	2	\$	0,38
20	Bolt, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,19	8	mm	45	mm	2	\$	0,38
30	Nut, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,04	8	mm			2	\$	0,08
		Assemble bearing carrier and tie rods								
40	Bolt, Grade 8.8 (SAE 5)	supports	\$ 0,08	6	mm	35	mm	4	\$	0,32
		Assemble bearing carrier and tie rods								
50	Nut, Grade 8.8 (SAE 5)	supports	\$ 0,03	6	mm			4	\$	0,12
60	Washer, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,01		unit			4	\$	0,04
	-	•		•	•	•	·	Sub Total	\$	1,32

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionIncluded	Sub Total	
10	Welds - Welding Fixture	Tabs	\$ 500,00	point	8	3000	1	\$	1,33
							Sub Total	\$	1,33



University
System
Assembly
P/N Base
EN A0002
Suffix
AA
Details
Vis-en-lanterne, biellette

Car # 81

FileLink1 FileLink2 FileLink3 Asm Cost \$ 20,67 Qty 2

Extended Cost \$ 41,34

ItemOrder	Part	Part Cost	Quantity	Sub Total
10	Tie rod tab	\$ 0,92	4	\$ 3,70
20	Threaded tube	\$ 2,44	2	\$ 4,87
30	Tie rod spacer	\$ 0,24	8	\$ 1,89
			Sub Total	\$ 5,59

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub T	Fotal
10	Rod End, Industrial	Male left threads rod end	\$ 2,	0 8	mm							1,00	\$	2,50
20	Rod End, Industrial	Male right threads rod end	\$ 2,	0 8	mm							1,00	\$	2,50
												Sub Tota	1 \$	5,00

temOrder	Process	Use	UnitCost	Uni	it	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Weld	Weld tabs to frame	\$ 0,1	.5 c	cm	15,8			\$	2,37
20	Aerosol Apply	Paint tabs	\$ 5,2	.5 r	m^2	0,002			\$	0,01
30	Assemble, 1 kg, Line-on-Line	Put nuts on rod ends	\$ 0,1	.3 ι	unit	2			\$	0,26
40	Assemble, 1 kg, Line-on-Line	Put rod ends on threaded tube	\$ 0,1	.3 ι	unit	2			\$	0,26
50	Wrench <= 25.4 mm	Tighten the nut to the tube	\$ 1,5	0 ι	unit	2			\$	3,00
60	Reaction Tool <= 25.4 mm	Tighten the nut to the tube	\$ 0,2	.5 ι	unit	2			\$	0,50
70	Assemble, 1 kg, Loose	Put tie rod on tie rod support and spacers	\$ 0,0	16 L	unit	3			\$	0,18
80	Ratchet <= 25.4 mm	Put the M8 bolt	\$ 0,7	5 ι	unit	1			\$	0,75
90	Reaction Tool <= 25.4 mm	Put the M8 nut	\$ 0,2	.5 ι	unit	1			\$	0,25
100	Assemble, 1 kg, Loose	Put tie rod on tab with spacers	\$ 0,0	6 ι	unit	3			\$	0,18
110	Ratchet <= 25.4 mm	Put the M8 bolt	\$ 0,7	5 ι	unit	1			\$	0,75
120	Reaction Tool <= 25.4 mm	Put the M8 nut	\$ 0,2	.5 ι	unit	1			\$	0,25
								Sub Total	\$	8,76

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub To	tal
10	Bolt, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,19	8	mm	45	mm	2	\$	0,38
20	Bolt, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,19	8	mm	45	mm	2	\$	0,38
30	Nut, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,04	8	mm			2	\$	0,08
		Assemble bearing carrier and tie rods								
40	Bolt, Grade 8.8 (SAE 5)	supports	\$ 0,08	6	mm	35	mm	4	\$	0,32
		Assemble bearing carrier and tie rods								
50	Nut, Grade 8.8 (SAE 5)	supports	\$ 0,03	6	mm			4	\$	0,12
60	Washer, Grade 8.8 (SAE 5)	Assemble bearing carriers and tabs	\$ 0,01		unit			4	\$	0,04
	_			•			•	Sub Total	\$	1,32

	temOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	Fraction Included	Sub Total	
I	10	Welds - Welding Fixture	Tabs	\$ 500,00	point	4	3000	1	\$	0,67
I								Sub Total	\$	0,67

University
System
Assembly
P/N Base
Suffix
Details

Ecole Centrale de Lyon
Engine and Drivetrain
Driveshaft
EN A0003
AA

Car #	81

FileLink1
FileLink2
FileLink3

Asm Cost	\$ 388,45
Qty	1

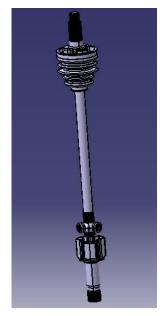
Extended Cost \$ 388,45

ItemOrder	Part	Part Cost		Quantity	Sub 1	Гotal
10	Inboard tripod housing	\$	67,72	2	\$	135,44
20	Outboard tripod housing	\$	59,57	2	\$	119,13
30	Right axle	\$	20,86	1	\$	20,86
40	<u>Left axle</u>	\$	20,70	1	\$	20,70
				Sub Total	\$	156,15

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Constant Velocity Joint, Tripod	Tripod for driveshaft	\$ 45,00		unit							4,00	\$ 180,00
20	Constant Velocity Joint, Boot	Boot for driveshaft	\$ 5,00		unit							4,00	\$ 20,00
												Sub Total	\$ 200,00

ItemOrder	Process	Use	UnitCos	t	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
		Assemble a tripod housing and the								
10	Assemble, 3 kg, Interference	differential	\$	0,56	unit	2			\$	1,12
20) Wrench <= 25.4 mm	Fasten the differential and a tripod housing	\$	1,50	unit	2			\$	3,00
30	Assemble, 1 kg, Interference	Assemble a boot and an axle	\$	0,19	unit	4			\$	0,76
40	Assemble, 1 kg, Interference	Assemble an axle and a snap ring	\$	0,19	unit	4			\$	0,76
50	Assemble, 1 kg, Line-on-Line	Assemble a tripod and an axle	\$	0,13	unit	4			\$	0,52
60	Assemble, 1 kg, Interference	Assemble an axle and a snap ring	\$	0,19	unit	4			\$	0,76
70	Assemble, 3 kg, Loose	Assemble an axle and a tripod housing	\$	0,19	unit	4			\$	0,76
80	Assemble, 1 kg, Interference	Assemble a boot and an tripod housing	\$	0,19	unit	4			\$	0,76
90	Assemble, 3 kg, Interference	Assemble a tripod housing and a hub	\$	0,56	unit	2			\$	1,12
100	Assemble, 3 kg, Interference	Assemble a tripod housing and a hub	\$	0,56	unit	2			\$	1,12
110	Assemble, 3 kg, Interference	Assemble a hose clamp and an axle	\$	0,56	unit	2			\$	1,12
		Assemble a hose clamp and an tripod								
120	Assemble, 3 kg, Interference	housing	\$	0,56	unit	2			\$	1,12
130) Wrench <= 25.4 mm	Bolt tripod housing to hub	\$	1,50	unit	2			\$	3,00
i								Sub Tota	\$	15,92

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub	Total
10	Retaining Ring, R-ring	Snap ring for retaining tripods	\$ 0,09	20	mm			8	\$	0,72
20	Hose Clamp, Spring Steel	fasten the boot	\$ 0,92	65,5	mm			2	\$	1,84
30	Hose Clamp, Spring Steel	fasten the boot	\$ 0,28	20	mm			2	\$	0,56
40	Bolt, Grade 8.8 (SAE 5)	Assemble the tripod housings and the differential	\$ 0,08	8	mm	20	mm	2	\$	0,16
50	Nut, Grade NAS 6-Point	Fasten the tripod housing and the hub	\$ 6,55	20	mm			2	\$	13,10
								Sub Tota	 \$	16,38



University
System
Assembly
P/N Base
Suffix
Details

Ecole Centrale de Lyon
Engine and Drivetrain
Chain set
EN A0004
AA

Car # 81

FileLink1 FileLink2 FileLink3 Asm Cost \$ 120,44 Qty 1

Extended Cost \$ 120,44

ItemOrder	Part	Part Cost		Quantity	Sub To	otal
10	Front sprocket	\$	1,00	1	\$	1,00
20	Rear sprocket	\$	1,00	1	\$	1,00
30	Rear sprocket adapter	\$	1,00	1	\$	1,00
40	Rear sprocket spacer	\$	6,00	6	\$	36,00
50	chain shield	\$	1,00	1	\$	1,00
				Sub Total	\$	41,00

ItemOrder Ma	aterial	Use	UnitCost		Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub 1	Γotal
10 Ch	nain	520 Chain	\$	0,05	1112	mm							1112,00	\$	55,60
													Sub Total	\$	55,60

ItemOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Weld	Weld lower chain shield to frame	\$	0,15	cm	15			\$	2,25
		Put the rear sprocket adapter on the								
20	Assemble, 3 kg, Interference	differential	\$	0,56	unit	1			\$	0,56
30	Assemble, 1 kg, Interference	Put the retaining ring in the groove	\$	0,19	unit	1			\$	0,19
40	Assemble, 1 kg, Loose	Put spacers on adapter	\$	0,06	unit	6			\$	0,36
50	Assemble, 1 kg, Loose	Put rear sprocket on adapter	\$	0,06	unit	1			\$	0,06
60	Ratchet <= 25.4 mm	Bolt rear sprocket to adapter	\$	0,75	unit	6			\$	4,50
70	Reaction Tool <= 25.4 mm	Bolt rear sprocket to adapter	\$	0,25	unit	6			\$	1,50
80	Assemble, 1 kg, Interference	Put the front sprocket in place	\$	0,19	unit	1			\$	0,19
90	Ratchet <= 25.4 mm	Bolt front sprocket to engine	\$	0,75	unit	1			\$	0,75
100	Assemble, 5 kg, Line-on-Line	Put chain in place	\$	0,63	unit	1			\$	0,63
110	Adjustment - Misc.	Chain tension	\$	5,00	unit	1			\$	5,00
120	Assemble, 1 kg, Loose	Put the upper chain shield	\$	0,06	unit	1			\$	0,06
		Bolt upper chain shield to lower chain								
130	Ratchet <= 25.4 mm	shield	\$	0,75	unit	2			\$	1,50
		Bolt upper chain shield to lower chain								
140	Reaction Tool <= 25.4 mm	shield	\$	0,25	unit	2			\$	0,50
150	Assemble, 1 kg, Loose	Put the upper chain shield on the engine	\$	0,06	unit	1			Ś	0,06
	Ratchet <= 25.4 mm	Bolt upper chain shield to engine	Ś	0,75		1	1		Ś	0,75
	Reaction Tool <= 25.4 mm	Bolt upper chain shield to engine	\$	0,25		1			\$	0,25
		The state of the s		-,	. · ·		1	Sub Total	\$	19,11

rder	Fastener	Use	UnitCost		Size1	Unit1	Size2	Unit2	Quantity	Sı	ub Total
		Assemble the rear sprocket with the									
10	Bolt, Grade 12.9	adapter	\$ 0	,54	10	mm	50	mm	6	\$	\$ 3,2
		Assemble the rear sprocket with the									
20	Nut, Grade 8.8 (SAE 5)	adapter	\$ 0	,07	10	mm			6	\$	\$ 0,4
		Assemble the rear sprocket with the									
30	Washer, Grade 8.8 (SAE 5)	adapter	\$ 0	,01		unit			12	\$	\$ 0,1
		Assemble the upper chain shield with the									
40	Bolt, Grade 8.8 (SAE 5)	lower	\$ 0	,08	8	mm	20	mm	2	\$	\$ 0,
		Assemble the upper chain shield with the									
50	Nut, Grade 8.8 (SAE 5)	lower	\$ 0	,04	8	mm			2	\$	\$ 0,
		Assemble the upper chain shield with the									
60	Washer, Grade 8.8 (SAE 5)	lower	\$ 0	,01		unit			4	\$	\$ 0,
		Assemble the upper chain shield with the									
70	Bolt, Grade 8.8 (SAE 5)	engine	\$ 0	,04	6	mm	20	mm	1	\$	\$ 0,
		Assemble the upper chain shield with the									
80	Nut, Grade 8.8 (SAE 5)	engine	\$ 0	,03	6	mm			1	\$	\$ 0,
		Assemble the upper chain shield with the									
90	Washer, Grade 8.8 (SAE 5)	engine	\$ 0	,01		unit			2	\$	\$ 0,
		Assemble the front sprocket with the									
100	Bolt, Grade 8.8 (SAE 5)	engine	\$ 0	,08	8	mm	20	mm	1	\$	\$ 0,
		Hold the rear sprocket adapter in place on									
110	Retaining Ring, External	the differential	\$ 0	,50	52	mm			1	\$	\$ 0,
•		•	•			•	•	•	Sub Total	¢	\$ 4,

University
System
Assembly
P/N Base
Suffix
Details
Accelerate de Lyon
Engine and Drivetrain
Air Intake System
EN A0005
AA
Air Intake assembly

Car #	81
-------	----

FileLink1 FileLink2 FileLink3

Asm Cost	107,71
Qty	1

Extended Cost \$ 107,71

ItemOrder	Part	Part Cost		Quantity	Quantity Sub Total	
10	Bottom plenum	\$	4,97	1	\$	4,97
20	Upper plenum	\$	18,81	1	\$	18,81
30	<u>Pipes</u>	\$	16,31	1	\$	16,31
40	Upper pipes	\$	0,99	1	\$	0,99
50	Obstruction plate	\$	0,85	1,00	\$	0,85
60	Plenum Mount	\$	1,25	2,00	\$	2,49
•		_		Sub Total	\$	44,42

ItemOrder	Material	Use	UnitCo	ost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub T	otal
1	0 Hose, Rubber	Rubber brushing	\$	9,00	50	mm							4,00	\$	36,00
													Sub Total	\$	36,00

ItemOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Assemble, 1kg, Line-on-line	Assemble pipes and bottom plenum	\$	0,13		1		1	\$	0,13
20	Ratchet <= 6,35 mm	Tighten parts together	\$	0,50		12		1	\$	6,00
30	Reaction tool <= 6,35 mm	Reaction for process 20	\$	0,25		12		1	\$	3,00
		Assemble upper plenum, bottom								
40	Assemble, 1kg, Line-on-line	plenum and uper pipes	\$	0,13		1		1	\$	0,13
50	Ratchet <= 6,35 mm	Tighten parts together	\$	0,50		8		1	\$	4,00
60	Reaction tool <= 6,35 mm	Reaction for process 20	\$	0,25		8		1	\$	2,00
70	Assemble, 1kg, Interference	Assemble rubber brushing to engine	\$	0,19		4		1	\$	0,76
80	Assemble, 1kg, loose	Put clamp on brushing	\$	0,06		4		1	\$	0,24
90	Assemble, 1kg, Interference	Assemble pipes on rubber brushing	\$	0,19		4		1	\$	0,76
100	Screwdriver > 1Turn	Tighten hose clamp	\$	0,50		4		1	\$	2,00
110	Power Tool, < 6,35mm	Tighten obstruction plate with engine	\$	0,25		4			\$	1,00
120	Power Tool, < 6,35mm	Tighten plenum mount with obstruction plat	\$	0,25		2			\$	0,50
130	Ratchet <= 6,35 mm	Tighten plenum mount with pipes	\$	0,50		2		1	\$	1,00
140	Reaction tool <= 6,35 mm	Reaction for process 130	\$	0,25		2		1	\$	0,50
	·	_			•	•	•	Sub Total	\$	22,02



nOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub T	otal
10	Bolt, Grade 8.8 (SAE 5)	M4 bolt for process 20	\$ 0,02	4	mm	20	mm	12	\$	0,24
20	Nut, Grade 8.8 (SAE 5)	M4 nut for process 20	\$ 0,02	4	mm			12	\$	0,24
30	Washer, Grade 8.8 (SAE 5)	M4 washer for process 20	\$ 0,01	4	mm			12	\$	0,12
40	Bolt, Grade 8.8 (SAE 5)	M6 bolt for process 80	\$ 0,04	6	mm	20	mm	4	\$	0,16
50	Bolt, Grade 8.8 (SAE 5)	M6 bolt for process 90	\$ 0,04	6	mm	20	mm	2	\$	0,08
60	Nut, Grade 8.8 (SAE 5)	M6 nut for process 90	\$ 0,03	6	mm			2	\$	0,06
70	Washer, Grade 8.8 (SAE 5)	M6 washer for process 90	\$ 0,01	6	mm			2	\$	0,02
80	Hose Clamp, Miniature Bolt	Clamp for process 40	\$ 0,72	55	mm			4	\$	2,88
90	M6 bolt for process 50	M6 bolt for process 50	\$ 0,04	6	mm	16	mm	8	\$	0,32
100	Nut, Grade 8.8 (SAE 5)	M6 nut for process 50	\$ 0,03	6	mm			8	\$	0,24
110	Washer, Grade 8.8 (SAE 5)	M6 washer for process 50	\$ 0,01	6	mm			8	\$	0,08
				·				Sub Total	\$	4,44

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionIncluded	Sub Total
10	Welds - Welding Fixture	Exemple de Tooling	\$ 500,00	point	5	3000	1	\$ 0,83
							Sub Total	\$ 0,83

University
System
Assembly
P/N Base
Suffix
Details
Ecole Cenrale de Lyon
Engine and Drivetrain
Throttle body
EN A0006
AA

Car#	81

FileLink1 FileLink2 FileLink3

Asm Cost	176,04
Qty	1

Extended Cost \$ 176,04

ItemOrder	Part	Part Cost		Quantity	Sub Total
10	Throttle Frange	\$	5,18	1	\$ 5,18
20	Restrictor	\$	5,88	1	\$ 5,88
30	Throttle Housing	\$	4,35	1	\$ 4,35
40	Throttle Axle	\$	2,73	1	\$ 2,73
50	TPS Axle	\$	2,71	1	\$ 2,71
60	Cable Housing	\$	3,57	1	\$ 3,57
70	Axle Stop	\$	2,04	1	\$ 2,04
80	Ram pipe	\$	12,51	1	\$ 12,51
90	Throttle Plate	\$	1,49	1	\$ 1,49
100	<u>Tabs</u>	\$	0,82	2	\$ 1,64
110	Mount 1	\$	0,74	1	\$ 0,74
120	Mount 2	\$	0,75	1	\$ 0,75
130	Hose Clip	\$	1,75	1	\$ 1,75
	•	<u> </u>	·	Sub Total	\$ 45,34



temOrder Material	Use	UnitCos	st	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub 1	Total
10 Air filter		\$	0,15	420	cm^2							420,00	\$	63,00
20 Paint	Tabs painting	\$:	10,00	1,50E-03	m^2							1,50E-03	\$	0,02
30 Spring, Tension (General)	Torsion spring	\$	1,00									1	. \$	1,00
40 Spring, Tension (General)	Helicoidal spring	\$	1,00									1	. \$	1,00
50 Seal, O-ring, Elastomer	Sealing with airfilter	\$	0,05									1	\$	0,05
60 Seal, O-ring, Elastomer	Sealing with plenum	\$	0,05									1	. \$	0,05
70 Cable, pull	Throttle cable	\$:	15,00	2,5	m							2,5	\$	37,50
80 Cable, adjuster		\$	1,00									1	. \$	1,00
90 Mount, vibrating damping, Sandwich	Isolation between throttle and frame	\$	8,10	30	mm							2	\$	16,20
												Sub Total	Ś	119.82

ItemOrder	Process	Use	UnitCos	it	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Weld	Tabs welding	\$	0,15	cm	4		1	\$	0,60
20	Aerosol apply	Tabs painting	\$	5,25	m^2	0,0015		1	\$	0,01
30	Assemble, 1kg, Interference	Assemble throttle housing on restrictor	\$	0,19	Unit	1		1	\$	0,19
40	Assemble, 1kg, Interference	Assemble flange on restrictor	\$	0,19	Unit	1		1	\$	0,19
50	Assemble, 1kg, Interference	Assemble ram pipe on restrictor	\$	0,19	Unit	1		1	\$	0,19
60	Assemble, 1kg, Interference	Assemble throttle plate in restrictor	\$	0,19	Unit	1		1	\$	0,19
70	Assemble, 1kg, Interference	Assemble TPS axle	\$	0,19	Unit	1		1	\$	0,19
80	Assemble, 1kg, Interference	Assemble cable housing axle	\$	0,19	Unit	1		1	\$	0,19
90	Assemble, 1kg, Interference	Assemble negative stop	\$	0,19	Unit	1		1	\$	0,19
100	Ratchet <= 6,35mm	Tighten M5 bolt	\$	0,50	Unit	1		1	\$	0,50
110	Reaction tool <=6,35mm	Reaction tool for M5 nut	\$	0,25	Unit	1		1	\$	0,25
120	Assemble, 1kg, Line-on-line	Assemble torsion spring	\$	0,13	Unit	1		1	\$	0,13
130	Assemble, 1kg, Loose	Assemble axle stop	\$	0,06	Unit	2		1	\$	0,12

	·	-					Sub Total	\$	8,9
290	Reaction tool <=6,35mm	Reaction tool for M6 nut	\$	0,25	Unit	2	1	\$	0,5
280	Ratchet <= 6,35mm	Tighten M6 bolt	\$	0,50	Unit	2	1	\$	1,0
270	Assemble, 1kg, Loose	Mounts and Tabs	\$	0,06	Unit	2	1	\$	0,:
200	, neaction tool 4-0,55mm	Assemble Vibration-Damping,	7	0,23	Oilit	-		7	0,
	Reaction tool <=6,35mm	Reaction tool for M6 nut	Ś	0,25		2	1	ς.	0,
	Ratchet <= 6,35mm	Tighten M6 bolt	Ś	0,50		2	1	Ś	1
240	Assemble, 1kg, Loose	Assemble hose clip and Mounts	\$	0,06	Unit	1	1	\$	0
230	Assemble, 1kg, Loose	Assemble cable	\$	0,06	Unit	1	1	\$	C
220	Hand, Loose <=6,35mm	Tighten throttle adjuster	\$	0,25	Unit	1	1	\$	C
210	Assemble, 1kg, Loose	Assemble cable adjuster	\$	0,06	Unit	1	1	\$	C
200	Screwdriver <1 Turn	Tighten clamp	\$	0,12	Unit	1	1	\$	0
190	Assemble, 1kg, Loose	Assemble air filter and clamp	\$	0,06	Unit	1	1	\$	C
180	Reaction tool <=6,35mm	Reaction tool for M6 nut	\$	0,25	Unit	2	1	\$	C
170	Ratchet <= 6,35mm	Tighten M6 bolt	\$	0,50	Unit	2	1	\$	1
160	Assemble, 1kg, Interference	Assemble throttle body on plenum	\$	0,19	Unit	1	1	\$	C
150	Assemble, 1kg, Loose	Assemble seal on throttle body	\$	0,06	Unit	2	1	\$	(
140	Ratchet <= 6,35mm	Tighten M5 bolt	\$	0,50	Unit	1	1	\$	(

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub T	otal
10	Bolt, Grade 8.8 (SAE 5)	Process 90	\$ 0,02	5	mm	10	mm	1	\$	0,02
20	Nut, Grade 8.8 (SAE 5)	Process 90	\$ 0,02	5	mm			1	\$	0,02
30	Bolt, Grade 8.8 (SAE 5)	Process 130	\$ 0,02	5	mm	10	mm	1	\$	0,02
40	Bolt, Grade 8.8 (SAE 5)	Process 160	\$ 0,04	6	mm	16	mm	2	\$	0,08
50	Nut, Grade 8.8 (SAE 5)	Process 160	\$ 0,03	6	mm			2	\$	0,06
60	Washer, Grade 8.8 (SAE 5)	Process 160	\$ 0,01	6	mm			2	\$	0,02
70	Hose Clamp, Miniature Bolt	Process 190	\$ 0,80	75	mm			1	\$	0,80
80	Bolt, Grade 8.8 (SAE 5)	Process 240	\$ 0,04	6	mm	16	mm	2	\$	0,08
90	Nut, Grade 8.8 (SAE 5)	Process 240	\$ 0,03	6	mm			2	\$	0,06
100	Washer, Grade 8.8 (SAE 5)	Process 240	\$ 0,01	6	mm			2	\$	0,02
110	Nut, Grade 8.8 (SAE 5)	Process 270	\$ 0,03	6	mm			2	\$	0,06
								Sub Total	Ś	1.24

ItemOrd	r Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionIncluded	Sub Total
	10 Welds - Welding Fixture	Tabs welding	\$ 500,00	point	4	3000	1	\$ 0,67
							Sub Total	\$ 0,67

Page 13

University
System
Engine and Drivetrain
Assembly
Part
Housing
P/N Base
EN 01001

FileLink1 FileLink2 FileLink3 FileLink1
FileLink2
FileLink3

Extended Cost \$ 125,31

Suffix AA

Details bought, cost as made

mOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub T	otal
		Material for differential												
10	Aluminium, Premium	housing	\$ 4,20					Round 102mm diam.	8,17E-03	0,09	2712	1	\$	8,19
		Material for differential												
20	Aluminium, Premium	housing cover	\$ 4,20					Round 102mm diam.	8,17E-03	0,07	2712	1	\$	6,06
30	Aluminium, Premium	Material for differential cover	\$ 4,20					Round 102mm diam.	8,17E-03	0,08	2712	1	\$	7,23
40	Seal, O-ring, Elastomer		\$ 0,05									2	\$	0,10
												Sub Total	\$	21,58

emOrder	Process	Use	Unit	Cost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
		machining of the differential							
10	Machining Setup, Install and remove	housing	\$	1,30	unit	1			\$ 1,
		Machining of the diffrential							
20	Machining	housing	\$	0,04	cm^3	623	Material - Aluminium	1	\$ 24,
		Tapped holes for the							
30	Tapping holes	differential housing	\$	0,35	hole	24			\$ 8
		Tapped holes for the drain							
		screw of the differential							
40	Tapping holes	housing	\$	0,35	hole	3			\$ 1,
		Setup and removal of the							
		machining of the differential							
50	Machining Setup, Install and remove	housing cover	\$	1,30	unit	1			\$ 1,
		Machining of the diffrential							
60	Machining	housing cover	\$	0,04	cm^3	426	Material - Aluminium	1	\$ 17.
		hole for the differential							
70	Drilled holles <25,4mm dia	housing cover	\$	0,35	hole	12			\$ 4,
80	Broach, External	Broach of the housing cover	\$	0,50	cm	3,5			\$ 1
		Setup and removal of the							
90	Machining Setup, Install and remove	machining	\$	0,35	unit	1			\$ 0,
		Machining of the differential							
100	Machining	cover	\$	0,04	cm^3	538	Material - Aluminium	1	\$ 21
110	Drilled holles <25,4mm dia	hole for the differential cover	\$	0,35	hole	12			\$ 4,
		Assemble the three parts and				_			
	Assemble, 1 kg, Line-on-Line	the two seals	\$	0,13	unit	2			\$ 0
130	Ratchet <= 6.35 mm	Assemble the three parts	\$	0,50	unit	24			\$ 12
		Bolt the drain screws to	١.						
140	Ratchet <= 25.4 mm	housing	\$	0,75	unit	3			\$ 2,
								Sub Total	\$ 100,

ItemOrder	Fastener	Use	UnitCo	ost	Size1	Unit1	Size2	Unit2	Quantity	Sul	b Total
10	Bolt, Grade 12,9	Assemble of the three parts	\$	0,06	6	mm	14	mm	24	\$	1,44
20	Washer, Grade 12,9		\$	0,02		unit			24	\$	0,48
30	Bolt, Grade 10,9	Drain screw	\$	0,07	8	mm	8	mm	3	\$	0,21
40	Crush Washer	Copper washer for impermeability of the differential	\$	0,34	8	mm			3	\$	1,01
									Sub Tota	al \$	3,14

Page 14 CostReport_GreenFS.xlsx

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon
System Engine and Drivetrain
Assembly Differential
Part Bearing Carrier
P/N Base EN 01002
Suffix AA
Details

FileLink1 FileLink2 FileLink3 Car # 81

Part Cost \$ 10,73

Qty 2

Extended Cost \$ 21,46

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
													i
10	Aluminium, Premium	Material for the bearing carrier	\$ 4,20	0,231	m	0,118	m	Rectangular area 231mm x 118 mm	2,726E-02	0,02	2712	1	\$ 6,21
												Sub Total	\$ 6,21

ItemOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal for laser							
10	Machining Setup, Install and remove	cutting	\$	1,30	unit	1			\$ 1,30
		Main shape contouring and							
20	Laser Cut	holes for bolts	\$	0,01	cm	157	Material - Aluminium	1	\$ 1,57
		Setup and removal for							
30	Machining Setup, Install and remove	machining	\$	1,30	unit	1			\$ 1,30
40	Reemed hole	Hole for bearing insertion	\$	0,35	hole	1	Material - Aluminium	1	\$ 0,35
	-	•			•	•	•	Sub Total	\$ 4,52

Page 15 CostReport_GreenFS.xlsx

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon System Engine and Drivetrain Assembly Differential Tie rod support EN 01003 Suffix AA Details

FileLink1 FileLink2 FileLink3 **Car #** 81

 Part Cost
 \$ 1,88

 Qty
 4

Extended Cost \$ 7,53

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub To	otal
		Material for the tie rod												
10	Steel,mild	support	\$ 2,25	0,063	m	0,063	m	Rectangular area 63mm x 63mm	0,0040	0,0030	7850	1	\$	0,21
												Sub Total	Ś	0.21

ItemOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal for laser							
10	Machining Setup, Install and remove	cutting	\$	1,30	unit	1	4 parts cut from a single machine setup	0,25	\$ 1,30
20	Laser cut	Cut shape outline	\$	0,01	cm	37	Material - Steel	3	\$ 0,37
								Sub Total	\$ 1,67

Page 16 CostReport_GreenFS.xlsx

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon
System Engine and Drivetrain
Differential
Part bearing carrier tab
P/N Base EN 01004
Suffix AA
Details

FileLink1 FileLink2 FileLink3 **Car #** 81

 Part Cost
 \$ 0,92

 Qty
 4

Extended Cost \$ 3,70

ItemOrder M	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub T	Total
10 St	iteel, Mild	Material for the tab	\$ 2,25	0,043	m	0,033	m	Rectangular area 43mm x 33mm	0,00142	0,01	7850	1	\$	0,13
												Sub Total	\$	0,13

Ite	emOrder	Process	Use	UnitCo	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
			Setup and removal of the							
	10	Machining Setup, Install and remove	machining	\$	1,30	unit	1	4 parts cut from a single machine setup	0,25	\$ 0,33
	20	Laser Cut	Shaping of the tab	\$	0,01	cm	16	Material-Steel	3	\$ 0,47
									Sub Total	\$ 0,80

Page 16

CostReport_GreenFS.xlsx Page 17

FileLink1

FileLink2

FileLink3

University Ecole Centrale de Lyon Engine and drivetrain System Assembly Turnbuckle Part Tie rou to P/N Base EN 02001

Suffix Details

FileLink1 FileLink2 FileLink3 Car # 81 Part Cost Qty 0,92 4

Extended Cost \$ 3,70

ItemOrder Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub T	otal
10 Steel, Mild	Material for the tab	\$ 2,25	0,043	m	0,033	m	Rectangular area 43mm x 33mm	0,00142	0,01	7850	1	\$	0,13
											Sub Tota	\$	0,13

ItemOrder	Process	Use	UnitCo	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
		Setup and removal of the								1
10	Machining Setup, Install and remove	machining	\$	1,30	unit	1	4 parts cut from a single machine setup	0,25	\$ 0,33	
20	Laser Cut	Shaping of the tab	\$	0,01	cm	16	Material-Steel	3	\$ 0,47]
	•	•						Sub Total	\$ 0,80	,

Page 18 CostReport_GreenFS.xlsx

FileLink1

FileLink2

FileLink3

University
System
Assembly
Part
P/N Base
Suffix
Details

Ecole Centrale de Lyon
Engine and drivetrain
Turnbuckle
Threaded tube
EN 02002
AA

FileLink1 FileLink2 FileLink3 Car # 81

 Part Cost
 \$ 2,44

 Qty
 2

Extended Cost \$ 4,87

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, Mild	Tube	\$ 2,25	0,017	m			Round diameter 17 mm	0,00023	0,04	7850	1,00	\$ 0,
												Sub Total	\$ 0,:

ItemOrder	Process	Use	UnitCos	it	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$	1,30	unit	1			\$ 1,30
20	Machining	Shaping of the threaded tube	\$	0,04	cm^3	5,06	Material-Steel	3	\$ 0,61
30	Threading, internal	Threading for the rod ends	\$	0,10	cm	3,6			\$ 0,36
						•	_	Sub Total	\$ 2,27

CostReport_GreenFS.xlsx Page 19

FileLink1

FileLink2

FileLink3

University Ecole Centrale de Lyon Engine and drivetrain System Assembly Turnbuckle Part Tie rod spa
P/N Base EN 02003 Tie rod spacer Suffix Details AA

FileLink1 FileLink2 FileLink3 Car # 81 Part Cost Qty 0,24 8

Extended Cost \$ 1,89

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub 1	otal
10	Aluminium, Normal		\$ 4,20	0,02	m			Cylinder 20 mm diameter	0,00031	0,006	2712	1,00	\$	0,02
ı												Sub Total	\$	0,02

temOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$ 1,30	unit	1	8 parts made from a single machining setup	0,125	\$ 0,16
20	Machining	Shaping of the spacer	\$ 0,04	cm^3	1,31	Material-Aluminium	1	\$ 0,05
							Sub Total	\$ 0,21

Page 20 CostReport_GreenFS.xlsx

Car #

FileLink1

FileLink2

FileLink3

81

University
System Engine and drivetrain

Assembly Driveshaft FileLink2

Part Inboard tripod housing EN 03001

Suffix AA

Details Bought part, cost as made

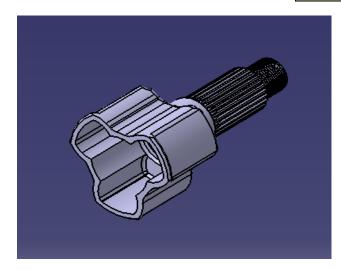
 Part Cost
 \$ 67,72

 Qty
 2

Extended Cost \$ 135,44

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
		Material for the inboard tripod											
10	Steel, Alloy	housing	\$ 2,25					Round 65,5mm diam.	0,00337	0,16	7850	1,00	\$ 9,5
												Sub Total	\$ 9,5

ItemOrder	Process	Use	UnitCos	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
		machining of the tripod							
10	Machining Setup, Install and remove	housing	\$	1,30	unit	1			\$ 1,30
20	Machining	Shaping of the tripod housing	\$	0,04	cm^3	453	Material-Steel	3	\$ 54,36
		Setup and removal of the							
30	Machining Setup, Install and remove	broach of the tripod housing	\$	1,30	unit	1			\$ 1,30
40	Broach, External	Broach of the tripod housing	\$	0,50	cm	2,45			\$ 1,23
	·	•				•		Sub Total	\$ 58,19



Page 21 CostReport_GreenFS.xlsx

Car# Part Cost Qty 81 59,57 University Ecole Centrale de Lyon FileLink1 Engine and drivetrain System FileLink2 FileLink1 Assembly Driveshaft FileLink2 Extended Cost \$ 119,13 Part Outboard tripod housing FileLink3 P/N Base EN 03002 FileLink3 Suffix Details Bought part, cost as made

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Tot	tal
10	Steel, Alloy	Material for the tripod housing	\$ 2,25					Round 65,5mm diam.	0,00337	0,13	7850	1,00	\$	8,02
												Sub Total	\$	8,02

nOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
		machining of the tripod							
10	Machining Setup, Install and remove	housing	\$	1,30	unit	1			\$ 1,30
20	Machining	Shaping of the tripod housing	\$	0,04	cm^3	378	Material-Steel	3	\$ 45,31
	0			-,-					-
		Setup and removal of the							
30	Machining Setup, Install and remove	broach of the tripod housing	\$	1,30	unit	1			\$ 1,30
40	Broach, External	Broach of the tripod housing	\$	0,50	cm	4,2			\$ 2,10
		Setup and removal of the							
		threading of the tripod							
50	Machining Setup, Install and remove	housing	\$	1,30	unit	1			\$ 1,30
		Threading of the tripod							
60	Threading, External (machining)	housing	\$	0,10	cm	2,4			\$ 0,24
	•						•	Sub Total	\$ 51,55



Page 22 CostReport_GreenFS.xlsx

Part Cost Qty Car# 81 20,86 University Ecole Centrale de Lyon FileLink1 System Engine and drivetrain FileLink2 FileLink1 Assembly Driveshaft Extended Cost \$ Part Right axle FileLink3 FileLink2 20,86 P/N Base EN 03003 FileLink3 Suffix AA Details Bought part, cost as made

ItemOrder Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10 Steel, Alloy	Material for driveshaft axle	\$ 2,25					Round 24mm diam.	0,00045	0,41	7850	1,00	\$ 3,34
						•	_				Sub Total	\$ 3,34

ItemOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
10	Machining Setup, Install and remove	machining of the axle	\$	1,30	unit	1			\$ 1,30
20	Machining	Shaping of the axle	\$	0,04	cm^3	80,1	Material-Steel	3	\$ 9,62
		Setup and removal of the							
30	Machining Setup, Install and remove	broach of the axle	\$	1,30	unit	1			\$ 1,30
40	Broach, External	Broach of the axle	\$	0,50	cm	10,6			\$ 5,30
								Sub Total	\$ 17,52



Page 23 CostReport_GreenFS.xlsx

	-					
University	Ecole Centrale de Lyon		Car #	81	Part Cost	\$ 20,70
System	Engine and drivetrain	FileLink1		_	Qty	1
Assembly	<u>Driveshaft</u>	FileLink2	FileLink1			
Part	Left axle	FileLink3	FileLink2		Extended Cost	\$ 20,70
P/N Base Suffix	EN 03004		FileLink3			
	AA					
Details	Bought part, cost as made					

ItemOrder Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10 Steel, Alloy	Material for driveshaft axle	\$ 2,25					Round 24mm diam.	0,00045	0,41	7850	1,00	\$ 3,30
											Sub Total	\$ 3,30

ItemOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
10	Machining Setup, Install and remove	machining of the axle	\$	1,30	unit	1			\$ 1,30
20	Machining	Shaping of the axle	\$	0,04	cm^3	79,2	Material-Steel	3	\$ 9,50
		Setup and removal of the							
30	Machining Setup, Install and remove	broach of the axle	\$	1,30	unit	1			\$ 1,30
40	Broach, External	Broach of the axle	\$	0,50	cm	10,6			\$ 5,30
				Sub Total	\$ 17,40				



Page 24 CostReport_GreenFS.xlsx

FileLink1

FileLink2 FileLink3

University
System Engine and drivetrain
Assembly Chain set
Part Front sprocket
P/N Base EN 04001
Suffix AA

FileLink1 FileLink2 FileLink3 Car # 81

 Part Cost
 \$ 16,15

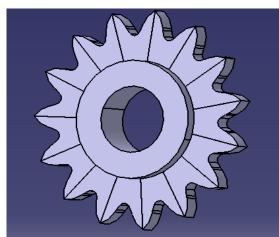
 Qty
 1

Extended Cost \$ 16,15

Details Bought part, cost as made

ItemOrder Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub T	otal
10 Steel, Mild	Material for front sprocket	\$ 2,25					Round 95mm	0,00709	0,02	7850	1,00	\$	2,38
											Sub Total	\$	2,38

ItemOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove	Setup and removal of the mach	\$	1,30	unit	1,00			\$ 1,30
20	Machining	Shaping of the sprocket	\$	0,04	cm^3	86,10	Material-Steel	3	\$ 10,33
		Setup and removal of the	l						
30	Machinig Setup, Install and remove	broach of the sprocket	\$	1,30	unit	1,00			\$ 1,30
40	Broach, Internal	Broach of the sprocket	\$	0,50	cm	1,68			\$ 0,84
								Sub Total	\$ 13,77

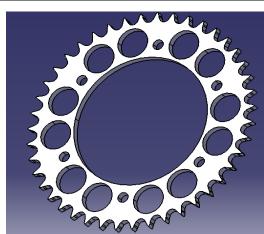


Page 25 CostReport_GreenFS.xlsx

Car# Part Cost Qty 81 University Ecole Centrale de Lyon 16,88 FileLink1 System Engine and drivetrain FileLink2 FileLink1 Assembly Chain set Extended Cost \$ Part Rear sprocket FileLink3 FileLink2 16,88 P/N Base EN 04002 FileLink3 Suffix AA Details Bought part, cost as made

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub To	otal
10	Aluminium, Normal	4,2	\$ 4,20					Round 230mm	0,04155	0,01	2712	1,00	\$	4,26
												Sub Total	\$	4,26

ItemOrder	Process	Use	UnitCos	t l	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
		Setup and removal of the								7
10	Machining Setup, Install and remove	machining of the sprocket	\$ 1	1,30	unit	1			\$ 1,3	0
20	Machining	Shaping of the sprocket	\$ (0,04	cm^3	283	Material - Aluminium	1	\$ 11,3	
								Sub Total	\$ 12,6	2



Page 26 CostReport_GreenFS.xlsx

FileLink1

FileLink2

FileLink3

University
System
Engine and drivetrain
Assembly
Chain set
Part
Rear sprocket adapter
EN 04003
Suffix
Details

FileLink1 FileLink2 FileLink3 **Car #** 81

 Part Cost
 \$ 45,13

 Qty
 1

Extended Cost \$ 45,13

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Tot	tal
10	Aluminium, Premium	Material for the adapter	\$ 4,20					Round 183mm	0,02630	0,03	2712	1,00	\$	9,89
												Sub Total	\$	9,89

ItemOrder	Process	Use	Unit	Cost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
10	Machining Setup, Install and remove	machining of the adapter	\$	1,30	unit	1			\$ 1,30
20	Machining	Shaping of the adapter	\$	0,04	cm^3	701			\$ 28,04
		Setup for machining the other							
30	Machining Setup, Change	side of the adapter	\$	0,65	unit	1			\$ 0,65
		Shaping of the other side of							
40	Machining	the adapter	\$	0,04	cm^3	7,5			\$ 0,30
50	Drilled holes < 25.4 mm dia.	Hole for the rear sprocket	\$	0,35	hole	6			\$ 2,10
		Setup and removal of the							
60	Machinig Setup, Install and remove	broach of the adapter	\$	1,30	unit	1			\$ 1,30
70	Broach, Internal	Broach of the adapter	\$	0,50	cm	3,1			\$ 1,55
	•	•			='	•	•	Sub Total	\$ 35,24



Page 27 CostReport_GreenFS.xlsx

Part Cost Qty Car # 81 University Ecole Centrale de Lyon 0,30 FileLink1 6 Engine and drivetrain System FileLink2 FileLink1 Assembly Chain set Extended Cost \$ Part Rear sprocket spacer FileLink3 FileLink2 1,80 P/N Base EN 04004 FileLink3 Suffix AA Details ItemOrder Material UnitCost Size1 Unit2 Area Name Quantity Sub Total Use Unit1 Size2 Area Length Density

Item	nOrder	Process	Use	UnitCo	ost I	Unit	Quantity	Multiplier	Mult. Val.	Sub Total					
														Sub Total	\$ 0,03
	10	Aluminium, Normal	4,2	\$	4,20	0,018	m			Round diameter 18 mm	0,00025	0,009	2712	1,00	\$ 0,03

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$ 1,3	unit	1	6 parts made from a single machine setup	0,166666667	\$ 0,22
20	Machining		\$ 0,0	1 cm^3	1,43	Material - Aluminium	1	\$ 0,06
							Sub Total	\$ 0,27

Page 28 CostReport_GreenFS.xlsx

FileLink2

FileLink3

University Ecole Centrale de Lyon System Engine and drivetrain Assembly Chain set Chain shield P/N Base EN 04005 Suffix AA Details

FileLink1 FileLink2 FileLink3 Car # 81
FileLink1

 Part Cost
 \$ 9,69

 Qty
 1

Extended Cost \$ 9,69

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub To	otal
10	Steel, Mild	Material for the chain shield	\$ 2,25					Rectangular area 77mm x 3mm	0,00023	0,70	7850	1	\$	2,87
												Sub Total	Ś	2.87

ItemOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
		Setup and removal of the							
10	Machining Setup, Install and remove	machining of the shield	\$	1,30	unit	1			\$ 1,30
20	Laser Cut	Shaping of the chain shield	\$	0,01	cm	132,4	Material-Steel	3	\$ 3,97
30	Sheet metal bends	Bend to shape	\$	0,25	bend	2			\$ 0,50
40	Drilled holes < 25.4 mm dia.	Hole for the lower chain shield	\$	0,35	hole	3			\$ 1,05
								Sub Total	\$ 6,82

Page 29 CostReport_GreenFS.xlsx

Car# Part Cost Qty 81,00 4,97 University Ecole Centrale de Lyon FileLink1 FileLink2 System Engine and Drivetrain 1,00 Assembly Air Intake System FileLink1 FileLink2 Extended Cost \$ Part Bottom plenum FileLink3 4,97 **P/N Base** EN 05001 FileLink3 Suffix Details

ItemOrder Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10 Aluminium, Normal		\$ 4,20	0,423	kg			rectangular aera, 304x300 mm	0,062	0,0025	2712	1	\$ 1,77
											Sub Total	\$ 1,77

It	emOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
										1
	10	Machining Setup, Install and remove	Setup for laser cutting	\$ 1,30	unit	1			\$ 1,30	
	20	Laser cut		\$ 0,01	cm	190,2		1	\$ 1,90	-
								Sub Total	\$ 3,20	, T



Page 30 CostReport_GreenFS.xlsx

Car# Part Cost Qty 18,81 1,00 81,00 University Ecole Centrale de Lyon FileLink1 FileLink2 Engine and Drivetrain System Assembly Air Intake System FileLink1 Part FileLink3 FileLink2 Extended Cost \$ 18,81 Upper Plenum P/N Base EN 05002 FileLink3 Suffix AA Details The upper part of the plenum

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Tota	ıl
10	Plastic, Nylon		\$ 3,30	0,533	kg							1	\$ 1	1,76
												Sub Total	\$ 1	L ,7 6

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Rapid Prototype - Plastic		\$ 32,0) kg	0,533			\$ 17,06	ô
							Sub Total	\$ 17,06	6

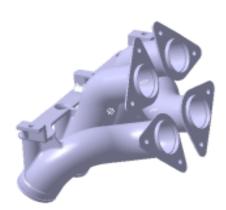


Page 31 CostReport_GreenFS.xlsx

Car# Part Cost Qty 81,00 University Ecole Centrale de Lyon 16,31 FileLink1 FileLink2 1,00 System Engine and Drivetrain Assembly Air Intake System FileLink1 FileLink2 Extended Cost \$ 16,31 Part Pipes FileLink3 **P/N Base** EN 05003 FileLink3 Suffix AA Details Déscription brève de la pièce

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Plastic, Nylon		\$ 3,30	0,462	kg							1	\$ 1,52
												Sub Total	\$ 1,52

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Rapid Prototype - Plastic		\$ 32,0) kg	0,46			\$ 14,78	
							Sub Total	\$ 14,78	8



Page 32 CostReport_GreenFS.xlsx

University	Ecole Centrale de Lyon		Car # 81,00	Part Cost \$ 0,99
System	Engine and Drivetrain	FileLink1		Qty 1,00
Assembly	Air Intake System	FileLink2	FileLink1	
Part	Upper Pipes	FileLink3	FileLink2	Extended Cost \$ 0,99
P/N Base	EN 05004		FileLink3	
Suffix	AA			
Details	Déscription brève de la pièce			

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	0 Plastic, Nylon		\$ 3,30	0,007	kg							4	\$ 0,09
												Sub Total	\$ 0,09

ItemOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	l
10	Rapid Prototype - Plastic		\$ 3	32,00	kg	0,007		4,00	\$ 0,90	1
								Sub Total	\$ 0,90	l



Page 33 CostReport_GreenFS.xlsx

FileLink1

FileLink3

FileLink2

University
System
Engine and Drivetrain
Assembly
Part
Obstruction Plate
P/N Base
Suffix
Details

Ecole Centrale de Lyon
Engine and Drivetrain
Air Intake System
Obstruction Plate
EN 05005
AA

FileLink1 FileLink2 FileLink3 Car # 81,00

 Part Cost
 0,85

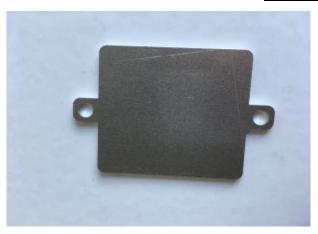
 Qty
 1,00

0,85

Extended Cost

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminium, Normal (per kg)		\$ 4,20	0,023	kg			rectangular aera, 80x53 mm	4,24E-03	2,00E-03	2712	1,00	\$ 0,1
												Sub Total	\$ 0,1

l	temOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
	10	Machining Setup, Install and remove	Setup for laser cutting	\$	1,30	unit	1		0,5	\$ 0,65
	20	Laser cut		\$	0,01	cm	10,1		1	\$ 0,10
									Sub Total	\$ 0,75



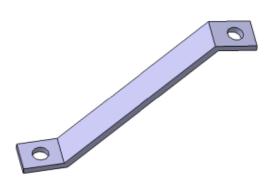
Page 34 CostReport_GreenFS.xlsx

Car# 81,00 University Ecole Centrale de Lyon FileLink1 FileLink2 System Engine and Drivetrain FileLink1 Assembly Air Intake System FileLink3 FileLink2 Part Plenum Mount **P/N Base** EN 05006 FileLink3 Suffix Details AA

Part Cost	1,25
Qty	2,00
Extended Cost	2,49
	-

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, Mild		2,25	0,027	kg			rectangular aera, 115x10 mm	1,15E-03	3,00E-03	7850	1	\$ 0,06
												Sub Total	\$ 0,06

Item	Order	Process	Use	UnitCos	t	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
	10	Machining Setup, Install and remove	Setup for laser cutting	\$ 1	1,30	unit	1	2 part cut from a single machine setup	0,50	\$ 0,65	
	20	Laser cut		\$ (0,01	cm	1,2	Material - Steel	3,00	\$ 0,04	
	30	Sheet metal bends		\$ (0,25	bend	2			\$ 0,50	
									Sub Total	\$ 1,19	



CostReport_GreenFS.xlsx Page 35

81,00

Car # University Ecole Centrale de Lyon FileLink1 FileLink2 Engine and Drivetrain System Assembly Throttle Body FileLink1 Part FileLink3 FileLink2 Throttle Frange **P/N Base** EN 06001 FileLink3 Suffix Details AA Bought, cost as made

Part Cost Qty 5,18 1,00

Extended Cost 5,18

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminium, normal	Stock material for part	\$ 4,20	0,174	kg			Rectangular aera, 40*20mm	8,00E-04	0,08	2712	1	\$ 0,73
												Sub Total	\$ 0,73

	temOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
L	10	Machining Setup, Install and remove		\$ 1,30	unit	1			\$ 1,30
	20	Drillet holes <25,4mm dia.		\$ 0,35	hole	5			\$ 1,75
	30	Machining		\$ 0,04	cm^3	35	Aluminium	1	\$ 1,40
								Sub Total	\$ 4,45

CostReport_GreenFS.xlsx Page 36

FileLink2

FileLink3

University Ecole Centrale de Lyon Engine and Drivetrain System Assembly Throttle Body Part Restrictor **P/N Base** EN 06002 Suffix Details AA

Bought, cost as made

FileLink1 FileLink2 FileLink3 Car# 81,00 FileLink1

Part Cost Qty 5,88 1,00 5,88

Extended Cost

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminium, normal	Stock material for part	\$ 4,20	0,38	kg			Round diam 42 mm	1,38E-03	0,11	2712	1,00	\$ 1,73
												Sub Tota	l \$ 1,73

ItemOrder	Process	Use	UnitCost	Uni	nit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$ 1,	30 unit	nit	1			\$ 1,30
20	Machining	Cut out shape	\$ 0,	04 cm/	1^3	35	Aluminum	1	\$ 1,40
30	Machining, setup, change		\$ 0,	65 unit	nit	1			\$ 0,65
40	Machining		\$ 0,	04 cm/	1^3	20	Aluminum	1	\$ 0,80
								Sub Total	\$ 4,15

Page 37 CostReport_GreenFS.xlsx

FileLink1

FileLink3

FileLink2

University
System Engine and Drivetrain
Assembly Throttle Body
Part Throttle Housing
P/N Base EN 06003
Suffix AA

Bought, cost as made

Details

FileLink1 FileLink2 FileLink3 Car # 81,00

 Part Cost
 4,35

 Qty
 1,00

Extended Cost 4,35

Sub Total \$

0,92

I	ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area
ſ	10	Aluminium, normal	Stock material for part	\$ 4.20	0.201	kg			Rectangular aera, 45*30mm	

Area	Length	Density	Quantity	Sub Total
1.35E-03	0.06	2712	1.00	\$ 0.92

ItemOrder	Process	Use	UnitCos	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$	1,30	unit	1			\$ 1,30
20	Machining		\$	0,04	cm^3	28	Aluminum	1	\$ 1,12
30	Machining, setup, change		\$	0,65	unit	1			\$ 0,65
40	Machining		\$	0,04	cm^3	9	Aluminum	1	\$ 0,36
								Sub Total	\$ 3,43

Page 38 CostReport_GreenFS.xlsx

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon
System Engine and Drivetrain
Assembly Throttle Body
Part Throttle Aske
P/N Base EN 06004
Suffix AA

FileLink1 FileLink2 FileLink3 Car # 81,00

 Part Cost
 2,73

 Qty
 1,00

Extended Cost 2,73

Suffix AA
Details Bought, cost as made

ItemOrder	Material	Use	UnitCost	Si	ize1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub To	otal
10	Steel, mild	Axle material	\$ 2,	25	0,025	kg			Round 10mm	7,85E-05	0,04	7850	1	\$	0,06
													Sub Total	\$	0,06

ItemOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$	1,30	unit	1			\$ 1,30
20	Machining		\$	0,04	cm^3	4	Material, Steel	3	\$ 0,48
		Setup part for machining							
30	Machining, setup, change	of the back face	\$	0,65	unit	1			\$ 0,65
40	Machining	Machining of the back face	\$	0,04	cm^3	2	Material, Steel	3	\$ 0,24
								Sub Total	\$ 2,67

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon Engine and Drivetrain System Assembly Throttle Body Part TPS axle P/N Base EN 06005 Suffix Details AA

FileLink1 FileLink2 FileLink3 Car# 81,00 Part Cost Qty 2,71 1,00

Extended Cost 2,71

Bought, cost as made

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, mild	Axle material	\$ 2,2	5 0,)25 kg			Round 10mm	7,85E-05	0,03	7850	1	\$ 0,0
												Sub Total	\$ 0,0

ItemOrder	Process	Use	UnitCo	st	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$	1,30	unit	1			\$ 1,30
20	Machining		\$	0,04	cm^3	4	Material, Steel	3	\$ 0,48
		Setup part for machining							
30	Machining, setup, change	of the back face	\$	0,65	unit	1			\$ 0,65
40	Machining	Machining of the back face	\$	0,04	cm^3	2	Material, Steel	3	\$ 0,24
								Sub Total	\$ 2,67
								Sub rotal	[\$

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon Engine and Drivetrain System Assembly Throttle Body Part Cable housing P/N Base EN 06006 Suffix Details AA

Bought, cost as made

FileLink1 FileLink2 FileLink3 Car# 81,00 Part Cost Qty 3,57 1,00

Extended Cost 3,57

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Tota	al
10	Steel, mild		\$ 2,25	0,075	kg			Rectangular aera, 60x2 mm	1,20E-04	0,08	7850	1	\$ (0,17
												Sub Total	\$ (0,17

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$ 1,30	unit	1			\$ 1,30
20	Laser cut		\$ 0,01	cm	35	Material steel	3	\$ 1,05
30	Sheet metal bends		\$ 0,25	bend	3			\$ 0,75
40	Weld		\$ 0,15	cm	2			\$ 0,30
							Sub Total	\$ 3,40

FileLink1

FileLink3

FileLink2

University Ecole Centrale de Lyon Engine and Drivetrain System Assembly Throttle Body Part Axle stop **P/N Base** EN 06007 Suffix Details AA

Bought, cost as made

FileLink1 FileLink2 FileLink3 Car # 81,00

Part Cost Qty 2,04 1,00

Extended Cost 2,04

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, mild	Axle material	\$ 2,25	1,160E-02	kg			Round 25mm	4,91E-04	0,03	7850	1	\$ 0,26
												Sub Total	\$ 0,26

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove		\$ 1,30	unit	1			\$ 1,30
20	Machining		\$ 0,04	cm^3	4	Material, Steel	3	\$ 0,48
	_				•	_	Sub Total	\$ 1,78

Page 42 CostReport_GreenFS.xlsx

Car # 81,00 University Ecole Centrale de Lyon FileLink1 FileLink2 Engine and Drivetrain System Assembly Throttle Body FileLink1 Part FileLink3 FileLink2 Ram pipe **P/N Base** EN 06008 FileLink3 Suffix Details AA Bought, cost as made

Part Cost	12,51
Qty	1,00
	12.51
Extended Cost	

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminium, normal	Stock material for part	\$ 4,20	0,954	kg			Round 80 mm diam	5,03E-03	0,07	2712	1,00	\$ 4,01
												Sub Total	\$ 4,01

	temOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
I									
	10	Machining Setup, Install and remove		\$ 1,30	unit	1			\$ 1,30
	20	Machining		\$ 0,04	cm^3	180	Aluminium	1	\$ 7,20
ſ		_						Sub Total	\$ 8,50

University System Assembly Part P/N Base Suffix Details	Ecole Centrale de Lyon Engine and Drivetrain Throttle Body Throttle Plate EN 06009 AA Bought, cost as made		FileLink1 FileLink2 FileLink3]					Car # FileLink1 FileLink2 FileLink3	81,00		Part Cost Qty Extended Cost	1,49 1,00
ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, mild		\$ 2,25	0,032	kg			Round 32 mm diam	8,04E-04	0,005	7850)	1 \$ 0,07
												Sub Tota	1 \$ 0,07
	1					1							
ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total					
	Mankining Catus Install and assess		ć 130					1.30	. [
	Machining Setup, Install and remove			unit	1			\$ 1,30					
20	Machining		\$ 0,04	cm^3	1	Material steel	3	\$ 0,1					
I							Sub Total	\$ 1,43	2				

Page 44 CostReport_GreenFS.xlsx

University Ecole Centrale de Lyon
System Engine and Drivetrain
Assembly Throttle Body
Part Tabs
P/N Base EN 06010
Suffix AA
Details

FileLink1 FileLink2 FileLink3 Car # 81,00

FileLink1 FileLink2 FileLink3
 Part Cost
 0,82

 Qty
 2,00

Extended Cost 1,64

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, mild		\$ 2,25	0,005	kg			Rectangular aera, 17x12 mm	2,04E-04	0,003	7850	1	\$ 0,01
												Sub Total	\$ 0,01

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
1	0 Machining Setup, Install and remove		\$ 1,30	unit	1	2 parts cut from a single machine setup	0,50	\$ 0,65
2	0 Laser cut	Outlines	\$ 0,0:	cm	5,28	Material steel	3	\$ 0,16
							Sub Total	\$ 0,81



Page 45 CostReport_GreenFS.xlsx

			1 age 15		costneport_orcem sixis
University	Ecole Centrale de Lyon			Car # 81,00	Part Cost 0,74
System	Engine and Drivetrain	FileLink1			Qty 1,00
Assembly	Throttle Body	FileLink2		FileLink1	
Part	Mount 1	FileLink3		FileLink2	Extended Cost 0,74
P/N Base	EN 06011			FileLink3	
Suffix	AA				
Details					

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	0 Aluminium, normal	Stock material for part	\$ 4,20	0,009	kg			Rectangular aera, 86x10mm	8,60E-04	0,004	2712	1	\$ 0,04
												Sub Total	\$ 0,04

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
10	Drilled holes	holes	\$ 0,	5 hole	1	2		\$ 0,70)
				•			Sub Total	\$ 0,70)



Page 46 CostReport_GreenFS.xlsx

University	Ecole Centrale de Lyon								Car #	81,00		Part Cost	0,75
System	Engine and Drivetrain		FileLink1									Qty	1,00
Assembly	Throttle Body		FileLink2						FileLink1				
Part	Mount 2		FileLink3						FileLink2			Extended Cost	0,75
P/N Base	EN 06012			_					FileLink3			•	<u>.</u>
Suffix Details	AA												
Details													
	_												
ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total

10	Aluminium, normal	Stock material for part	\$ 4,20	0,012	kg kg			Rectangular aera, 40*20mm	1,09E-03	0,004	2712	1 \$	0,05
												Sub Total \$	0,05
ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total					
10	Drillot holos «2F Anono dio		ć ODE	hala	1		1	Ċ 0.70	1				

10 Drillet noies <25,4mm dia.	\$ 0,35 noie	2	1	\$ 0,70
			Sub Total	\$ 0,70



FileLink2

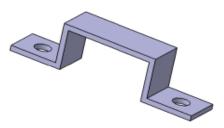
University Ecole Centrale de Lyon Engine and Drivetrain System Assembly Throttle Body Part Hose clip **P/N Base** EN 06013 Suffix Details AA

FileLink1 FileLink2 FileLink3 Car# 81,00 Part Cost Qty 1,75 1,00 1,75

FileLink1 **Extended Cost** FileLink3

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
1	0 Aluminium, normal	Stock material for part	\$ 4,20	0,012	kg			Rectangular aera, 109*10mm	1,09E-03	0,004	2712	1	\$ 0,05
												Sub Total	\$ 0,05

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Drillet holes <25,4mm dia.		\$ 0,35	hole	2		1	\$ 0,70
20	Sheet metal bends		\$ 0,25	bend	4		1	\$ 1,00
							Sub Total	\$ 1,70



University
System
Frame and Body
Assembly
P/N Base
Suffix
AA

Details Shifting system

Car # 81

 Asm Cost
 116,56

 Qty
 1

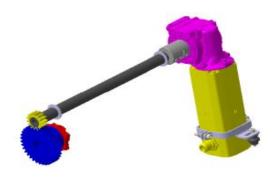
FileLink1 FileLink2 FileLink3

Extended (\$ 116,56

ItemOrder	Part	Part Cost		Quantity	Sub	Total
10	Engine gear box drum gear	\$	14,58	1	\$	14,58
20	Engine gear box shifting, pinion shaft	\$	17,64	1	\$	17,64
30	Engine gear box actuator tab	\$	1,89	1	\$	1,89
40	Front engine gear box actuator mount	\$	2,83	1	\$	2,83
50	Rear gear box actuator mount	\$	2,65	1	\$	2,65
60	Engine gear box actuator coupling		7,54	1	\$	7,54
				Sub Total	\$	47,12

ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub	Total
10	Paint	Protect steel tab from rust	\$ 10,00	0,005	m^2							1,00	\$	0,05
20	Motor, 12 Volt, DC Brushless Servo	Engine gearbox actuator (motoreductor)	\$ 40,00	1	unit							1,00	\$	40,00
30	Mount, Vibration-Damping Sandwich	Maintain motor to frame	\$ 2,43	9	mm							1,00	\$	2,43
												Sub Total	\$	42,48

ItemOrder	Process	Use	UnitC	ost	Unit	Quantity	Multiplier	Mult. Val.	Sub	Total
10	Weld	Welding gear tab on frame	\$	0,15	cm	5		1	\$	0,75
20	Aerosol Apply	Protect gear tab from rust	\$	5,25	m^2	0,005		1	\$	0,03
30	Power Tool <= 25.4 mm	Remove engine case bolts	\$	0,25	unit	13	Disassemble	0,8	\$	2,60
40	Assemble, 3kg, Line-on-Line	Remove engine case bolts	\$	0,38	unit	1	Disassemble	0,8	\$	0,30
50	Power Tool <=6,35 mm	Remove Clutch pressure bolts	\$	0,25	unit	5	Disassemble	0,8	\$	1,00
60	Assemble, 1kg, Loose	Remove clutch pressure springs	\$	0,06	unit	5	Disassemble	0,8	\$	0,25
70	Assemble, 1kg, Loose	Remove pressure disk assembly	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
80	Assemble, 1kg, Loose	Removes clutch disk assembly	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
90	Power Tool <= 25.4 mm	Remove central clutch nut	\$	0,25	unit	1	Disassemble	0,8	\$	0,20
100	Assemble, 1kg, Loose	Remove central clutch assembly	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
110	Assemble, 1kg, Loose	Remove clutch guide	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
120	Assemble, 1kg, Loose	Remove clutch roller case assembly	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
130	Assemble, 1kg, Loose	Remove clutch flywheel	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
140	Power Tool <= 25.4 mm	Remove shifting shaft retaining bolt	\$	0,25	unit	5	Disassemble	0,8	\$	1,00
150	Assemble, 1kg, Loose	Remove shifting shaft retaining plate	\$	0,06	unit	1	Disassemble	0,8	\$	0,05
160	Assemble, 3kg, Line-on-Line	Remove shifting shaft	\$	0,38	unit	1	Disassemble	0,8	\$	0,30
170	Power Tool <= 25.4 mm	Remove shifting shaft stop	\$	0,25	unit	1	Disassemble	0,8	\$	0,20
180	Power Tool <= 6.35 mm	Remove gearshift drum stopper assembly	\$	0,25	unit	1	Disassemble	0,8	\$	0,20
190	Assemble, 1kg, Interference	Remove shift drum stopper assembly	\$	0,19	unit	1	Disassemble	0,8	\$	0,15
200	Power Tool <= 25.4 mm	Remove shift star bolt	\$	0,25	unit	1	Disassemble	0,8	\$	0,20
210	Assemble, 1kg, Loose	Mount gearbox drum gear	\$	0,06	unit	1			\$	0,06
220	Power Tool <= 25.4 mm	Tighten shift star bolt	\$	0,25	unit	1			\$	0,25
230	Assemble, 1kg, Interference	Mount retaining ring on shifting pinion shaft	\$	0,19	unit	1			\$	0,19
	Assemble, 1kg, Loose	Mount washer on shifting pinion shaft	\$	0,06	unit	1			\$	0,06
250	Assemble, 1kg, Line-on-Line	Mount shifting pinion shaft	\$	0,13	unit	1			\$	0,13
260	Assemble, 1kg, Loose	Mount washer on shifting pinion shaft	\$	0,06	unit	1			\$	0,06



270	Assemble, 1kg, Interference	Mount retaining ring on shifting pinion shaft	\$ 0,19	unit	1			\$ 0,19
280	Assemble, 1kg, Line-on-Line	Mount gearbox actuator coupling	\$ 0,13	unit	1			\$ 0,13
290	Assemble, 3kg, Loose	Mount clutch flywheel	\$ 0,19	unit	1			\$ 0,19
300	Assemble, 1kg, Loose	Mount clutch roller case assembly	\$ 0,06	unit	1			\$ 0,06
310	Assemble, 1kg, Loose	Mount clutch guide	\$ 0,06	unit	1			\$ 0,06
320	Assemble, 1kg, Loose	Mount central clutch	\$ 0,06	unit	1			\$ 0,06
330	Assemble, 1kg, Loose	Mount central clutch washers	\$ 0,06	unit	1			\$ 0,06
340	Power Tool <= 25.4 mm	Tighten central clutch nut	\$ 0,25	unit	1		0,8	\$ 0,20
350	Assemble, 1kg, Loose	Mount clutch disc	\$ 0,06	unit	1			\$ 0,06
360	Assemble, 1kg, Loose	Mount pressure disk assembly	\$ 0,06	unit	1			\$ 0,06
370	Assemble, 1kg, Loose	Mount clutch pressure springs	\$ 0,06	unit	1			\$ 0,06
380	Power Tool <= 6.35 mm	Mount clutch pressure bolts	\$ 0,25	unit	5	Fastener Engagement le	1,25	\$ 1,56
390	Assemble, 3kg, Line-on-Line	Mount engine case	\$ 0,38	unit	1			\$ 0,38
400	Power Tool <= 25.4 mm	Mount engin case bolts	\$ 0,25	unit	13	Fastener Engagement le	1,25	\$ 4,06
410	Assemble, 1kg, Loose	Mount front actuator mount	\$ 0,06	unit	1			\$ 0,06
420	Assemble, 1kg, Loose	Mount rear actuator mount	\$ 0,06	unit	1			\$ 0,06
430	Assemble, 1kg, Loose	Mount washers on screws	\$ 0,06	unit	2			\$ 0,13
440	Assemble, 1kg, Loose	Mount nut on screws	\$ 0,06	unit	2			\$ 0,13
450	Assemble, 1kg, Loose	Mount washers on screws	\$ 0,06	unit	2			\$ 0,13
460	Hand - Start Only	Mount nut on screws	\$ 0,12	unit	2			\$ 0,24
470	Assemble, 3kg, Line-on-Line	Mount actuator assembly on coupling	\$ 0,38	unit	1			\$ 0,38
480	Assemble, 1kg, Loose	Mount elastomere on tab	\$ 0,06	unit	1			\$ 0,06
490	Assemble, 1kg, Loose	Align rear mount with tab	\$ 0,06	unit	1			\$ 0,06
500	Assemble, 1kg, Loose	Mount washer on elastomere screw	\$ 0,06	unit	1			\$ 0,06
510	Wrench <= 6.35 mm	Tighten elastomere screw	\$ 1,00	unit	1	Fastener Engagement le	1,5	\$ 1,50
520	Wrench <= 6.35 mm	Tighten actuator mount's bolts	\$ 1,00	unit	2		1,25	\$ 2,50
530	Reaction Tool <= 6,35 mm		\$ 0,25	unit	2			\$ 0,50
540	Wrench <= 6.35 mm	Tighten coupling bolts	\$ 1,00	unit	4		1,25	\$ 5,00
							Sub Total	\$ 26,22

ItemOrder	Fastener	Use	Unit	Cost	Size1	Unit1	Size2	Unit2	Quantity	Sub	Total
10	Bolt,Grade 8.8 (SAE 5)	Fasten star gear to the shaft	\$	0,16	8	mm	40	mm	1	\$	0,16
20	Bolt,Grade 8.8 (SAE 5)	Lock actuator between mount brackets	\$	0,02	4	mm	20	mm	3	\$	0,06
30	Washer, Grade 8.8 (SAE 5)	Lock actuator between mount brackets	\$	0,01	4	mm			5	\$	0,05
40	Nut, Grade 8.8 (SAE 5)	Lock actuator between mount brackets	\$	0,01	12	mm			2	\$	0,02
50	Washer, Grade 8.8 (SAE 5)	Make contact between mount brackets	\$	0,01	14	mm	21	mm	2	\$	0,02
60	Retaining Ring, External	Retain shifting pinion shaft	\$	0,05	14	mm			2	\$	0,10
									Sub Total	\$	0,41

ItemOrder	Tooling	Use	UnitCost	Unit	Quantity	PVF	FractionInc	Sub	Total
10	Welds - Welding Fixture	Welding gear tab on frame	\$ 500,00	point	2	3000	1	\$	0,33
							Sub Total	\$	0,33

 Part Cost
 \$ 14,58

 Qty
 1
 University Ecole Centrale de Lyon Car# 81 System Frame and Body FileLink1 FileLink1 Assembly Shifter FileLink2 Part Engine gear box drum gear FileLink2 **Extended (** \$ 14,58 FileLink3 **P/N Base** FR 06001 FileLink3 Suffix

ItemOrde	Material	Use	UnitCost		Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Steel, Alloy	Axle material	\$	2,25	0,247	kg			Round 27mm diam	5,73E-04	0,24	7850	1	\$ 2,43
													Sub Total	\$ 2,43

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove	Setup for machining	\$ 1,30	unit	1		1	\$ 1,30
20	Machining	Shift star contact	\$ 0,04	cm^3	50	Material - Steel	3	\$ 6,00
30	Machining Setup and change		\$ 0,65	unit	1		1	\$ 0,65
40	Machining	Screw holes	\$ 0,04	cm^3	5	Material - Steel	3	\$ 0,60
50	Drilled holes < 25,4 mm diam		\$ 0,35	hole	6		1	\$ 2,10
60	Gear Shaping (hobbing)		\$ 0,50	hole	1	Material - Steel	3	\$ 1,50
							Sub Total	\$ 12,15

Details



University	Ecole Centrale de Lyon		Car #	81	Part Cost \$ 17,64
System	Frame and Body	FileLink1			Qty 1
Assembly	<u>Shifter</u>	FileLink2	FileLink1		<u> </u>
Part	Engine gear box shifting, pinion shaft	FileLink3	FileLink2		Extended (\$ 17,64
P/N Base	FR 06002	•	FileLink3		·-
Suffix	ΔΔ				

ItemOrder Material	Use	UnitCost	S	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10 Steel, Alloy	Axle material	\$ 2	,25	0,203	kg			Round 27mm diam	5,73E-04	0,24	7850	1	\$ 2,43
												Sub Total	\$ 2,43

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove	Setup for machining	\$ 1,30	unit	1		1	\$ 1,30
20	Machining	Shift star contact	\$ 0,04	cm^3	97	Material - Steel	3	\$ 11,64
30	Machining Setup and change		\$ 0,65	unit	1		1	\$ 0,65
40	Machining	Screw holes	\$ 0,04	cm^3	1	Material - Steel	3	\$ 0,12
50	Gear Shaping (hobbing)		\$ 0,50	hole	1	Material - Steel	3	\$ 1,50
							Sub Total	\$ 15.21



Details

University	Ecole Centrale de Lyon								Car#	81		Part Cost	\$ 1,89
System	Frame and Body		FileLink1						•			Qty	1
Assembly	<u>Shifter</u>		FileLink2						FileLink1				
Part	Engine gear box actuator tab		FileLink3						FileLink2			Extended (\$ 1,89
P/N Base	FR 06003								FileLink3				
Suffix	AA												
Details													
ItemOrder	Material	Use	UnitCost	Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total

ItemOrde	er Process	Use	UnitCost		Unit	Quantity	Multiplier	Mult. Val.	Sub Total	
1	0 Machining Setup, Install and remove	Setup for laser cut	\$	1,30	unit	1			\$	1,30
2	0 Laser cut		\$	0,01	cm	18	Material - Steel	3	\$	0,54

0,020 kg

2,25

Material for the tube part

10 Steel, Mild

0,54 Sub Total \$ 1,84

Rectangular aera, 23x37 mm

8,51E-04 3,00E-03

7850

1 \$ 0,05 Sub Total \$ 0,05



University	Ecole Centrale de Lyon		Car #	81	Part	Part Cost	Part Cost \$
System	Frame and Body	FileLink1	· ·		Qty	Qty	Qty
Assembly	<u>Shifter</u>	FileLink2	FileLink1				
Part	Front engine gear box actuator mount	FileLink3	FileLink2		Exte	Extended 0	Extended (\$
P/N Base	FR 06004		FileLink3		•	•	•
Suffix	AA						
Details							

ItemOrder	Material	Use	UnitCost		Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10	Aluminium, normal	Material for part	\$	4,20	0,009	kg			Rectangular aera, 104x11 mm	3,15E-03	3,00E-03	2712	1	3,90E-02
			•										Sub Total	\$ 0,04

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove	Setup for laser cut	\$ 1,30	unit	1			\$ 1,3
20	Laser cut		\$ 0,01	cm	24	Material - aluminium	1	\$ 0,2
30	Sheet metal bend		\$ 0,25	bend	5			\$ 1,2
							Sub Total	\$ 2,7



	<u>_</u>					
University	Ecole Centrale de Lyon		Car #	81	Part Cost \$	2,65
System	Frame and Body	FileLink1	·		Qty	1
Assembly	<u>Shifter</u>	FileLink2	FileLink1			
Part	Rear gear box actuator mount	FileLink3	FileLink2		Extended (\$	2,65
P/N Base	FR 06005		FileLink3			
Suffix	AA					
Details						

ItemOrder Material	Use	UnitCost		Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Total
10 Aluminium, normal	Material for part	\$	4,20	0,026	kg			Rectangular aera, 105x30 mm	1,14E-03	3,00E-03	2712	1	0,11
												Sub Total	\$ 0,11

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove	Setup for laser cut	\$ 1,30	unit	1			\$ 1,30
20	Laser cut		\$ 0,01	cm	24	Material - aluminium	1	\$ 0,24
30	Sheet metal bend		\$ 0,25	bend	4			\$ 1,00
							Sub Total	\$ 2,54



University | Ecole Centrale de Lyon

System | Frame and Body | FileLink1 | FileLink2 | FileLink2 | FileLink3 | Fil

ItemOrder	Material	Use	UnitCost		Size1	Unit1	Size2	Unit2	Area Name	Area	Length	Density	Quantity	Sub Tota	al
10	Steel, normal	Material for part	\$	2,25	0,035	kg			Round 27mm diam	5,73E-04	0,35	2710	1	\$ 1,2	22
	_					•	•		_				Sub Total	\$ 1,2	22

ItemOrder	Process	Use	UnitCost	Unit	Quantity	Multiplier	Mult. Val.	Sub Total
10	Machining Setup, Install and remove	Setup for machining	\$ 1,3	0 unit	1			\$ 1,30
20	Machining		\$ 0,0	4 cm^3	5	Material - Steel	3	\$ 0,60
30	Machining Setup and change		\$ 0,6	5 unit	1			\$ 0,65
40	Machining		\$ 0,0	4 cm^3	3	Material - Steel	3	\$ 0,36
50	Machining Setup and change		\$ 0,6	5 unit	1			\$ 0,65
60	Machining		\$ 0,0	4 cm^3	1	Material - Steel	3	\$ 0,12
70	Drilled holes < 25,4 mm diam		\$ 0,3	5 hole	4			\$ 1,40
80	Threading, Internal (machining)		\$ 0,1	0 hole	4	Material - Steel	3	\$ 1,20
				•		•	Sub Total	\$ 6,28

ItemOrder	Fastener	Use	UnitCost	Size1	Unit1	Size2	Unit2	Quantity	Sub	Total
10	Bolt, Grade 8.8 (SAE 5)		\$ 0,0	1	mm .	10	mm	4	\$	0,04
								Sub Total	\$	0,04

