

2013 FIRST Robotics Competition

Inspection Bill Of Materials for Team 1700 Gatorbotics

Item	Source/Mfg	Description	Part Number	Size	Units Sold In	Quantity	Unit Price (\$)	Total Price	Notes
Team: Gatorbotics		Team #: 1700		Date: 2/16/13	City: Palo Alto	State: California	Regional 1: Autodesk Portland	Regional 2: Silicon Valley Regional	
Bumpers									
Pool noodles	re-purposed	foam pool noodles	(am-0512)	2 1/2 inch 3/4 inch thick	5' piece	3	\$3.00	\$9.00	
Plywood	re-purposed	Plywood		2' x 4'		1	\$17.50	\$17.50	
Fabric	JoAnn's	Red and blue fabric		precut size	piece	1	\$37.26	\$37.26	
White paint	excess from past years, Artist's Loft	flow acrylic white paint			quart	1	\$15.00	\$15.00	
Wood	re-purposed	1" square dowel		1" square	36" sticks	0.5	\$3.50	\$1.75	
Fasteners/Clasps	McMaster	Draw Latches	1590A13	1-1/16" Latch Distance	10-pack	3	\$10.57	\$31.71	
							Subtotal	\$112.22	
Chassis									
Aluminum tubing	Alan Steel	1"x1" aluminum tubing		1/16 inch	foot	11.25	\$1.66	\$18.68	
Bellypan	Alan Steel	2' x 3' flat sheet		1/8 inch	piece	1	\$75.00	\$75.00	
Aluminum tubing	Alan Steel	1"x2" aluminum tubing		1/8 inch	foot	9.1	\$4.10	\$37.31	
Bellypan waterjetting	mentor	manufacturing cost -- donated by mentor				1	\$0.00	\$0.00	
Skateboard Wheels	Black Diamond Sports	Skateboard wheels		66 mm diameter	4 pack	1	\$39.95	\$39.95	
Triangle Skid Plates	Tap Plastics	we cut from piece of plastic		1 in by 2 in, 1/2 in thick	slab	0.5	\$30.00	\$15.00	
							Subtotal	\$185.94	
Arms									
U-Tracks	Alan Steel	1"x2" aluminum U-track		1/8 inch	foot	12	\$6.08	\$72.96	
Cam rollers	McMaster	High-Performance Perma-Lube Track Rollers	3643K8	1 inch diameter	each	8	\$35.37	\$282.96	
Chain	re-purposed	35 series roller chain -- ANSI		35-chain	foot	12.5	\$3.14	\$39.25	also found on AndyMark
Hook metal	Alan Steel	2' x 3' sheet of steel welded plasma-cut		1/8 inch	sheet	1	\$136.08	\$136.08	
Hook manufacturing	mentor	manufacturing cost -- donated			unit	1	\$0.00	\$0.00	
Springs	McMaster	Torsion springs			unit	4	\$7.00	\$28.00	
Sprockets	re-purposed	1in. outside diameter			unit	4	\$6.06	\$24.24	
Shafts	re-purposed	3/8 inch wide shaft		3 3/4 inches	foot	4	\$1.05	\$4.20	
Shaft Collars	re-purposed	3/8 inch shaft collars	6436K13	3/8 inch	unit	8	\$3.61	\$28.88	
Motors	KOP	CIM Motors			piece	2	\$0.00	\$0.00	
Gearboxes	Custom	40:01:00			unit	2	\$50.00	\$100.00	
Hook Mounts	custom	Hook mounts		custom cut	custom cut	2	\$10.00	\$20.00	Steel? Aluminum?
							Subtotal	\$736.57	

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Item	Source/Mfg	Description	Part Number	Size	Units Sold In	Quantity	Unit Price (\$)	Total Price	Notes
<i>Pusher Downer</i>	(Home Depot, AndyMark)	(Axle, Bearing, Lifter, Solenoid)	(am-0512)	(1/4 inch)	(Piece, Inch, 2"x4")				
Delrin	Tap Plastics	1/4 inch thick Delrin		3" x 8"	cut to size	1	\$5.00	\$5.00	
Worm gear	McMaster	14-1/2 Deg Pressure Angle Worm Gear Cast Iron, 12 Pitch, 18 Teeth, 1.5" Pitch Diameter	57545K511		piece	1	\$60.31	\$60.31	
Motor	2013 KOP	mini-CIM	PM25R-35F-1001		unit	1	\$0.00	\$0.00	
Lead Screw	Metek/Haydon Kerk	Lead Screw	LSSSSR-062-0250-FY36	5/8" dia.	piece	1	\$142.14	\$142.14	
Worm	McMaster	STL Worm, 12 Pitch, w/ 1/8" X 1/16" Kwy for 14-1/2 Deg Pressure Angle Worm Gear	57545K527		unit	1	\$29.22	\$29.22	
Lead Screw Nut	Metek/Haydon Kerk	Anti-Backlash Lead Screw Nut	VHDFNR-062-0250-BZ00	5/8" dia.	Units	1	\$114.33	\$114.33	
Shaft Collar	KOP	Shaft Collar			piece	1	\$0.00	\$0.00	
Bearings	KOP	Bearings			piece	2	\$0.00	\$0.00	
U-channel	Alan Steel	1" x 2" Aluminum U-Channel		1/8 inch	foot	4.2	\$6.08	\$25.54	
Aluminum	Alan Steel	1x2 rectangular channel		1/16 inch	inch	7	\$0.50	\$3.50	
Aluminum	Alan Steel	3/4 inch square tubing		1/16 inch	foot	3.4	\$1.41	\$4.79	
Motor Mount	ACE	U-Bolt	5007976	unit	units	2	\$6.99	\$13.98	
							<i>Subtotal</i>	\$398.81	
<i>Pneumatics</i>									
Air compressor	Suspension Connection	Viair 90C Light Duty Air Compressor	#00090		piece	1	0	\$0.00	
Pneumatic Tubing	FIRST Choice / AndyMark	1/4 in tubing	fc13-030		foot	6	\$0.27	\$1.64	6-8 FIRST Choice Credits for 50 ft
Air Tank	Pneuaire	Reservoir Cartridges	RC2.5X10	44 Cubic Inches	piece	1	\$0.00	\$0.00	
Regulator	re-purposed	Air pressure regulator			piece	2	\$20.00	\$40.00	
Pressure Gauges	re-purposed	Visual pressure gauges			piece	2	\$16.00	\$32.00	
Pressure Switch	re-purposed	Pneumatic pressure switch			piece	1	\$20.00	\$20.00	
Pneumatic Connections	re-purposed	3-way splitters			unit	3	\$8.00	\$24.00	
Solenoid	re-purposed	VPLE18-M5H-4/2-1/4 valve (white block)			unit	2	\$30.00	\$60.00	
Relay	KOP	12V, 20A max Relay	SPIKE-RELAY-H		unit	1	\$40.00	\$40.00	
							<i>Subtotal</i>	\$217.64	
<i>Electronics</i>									
Victors	VEX Pro	Victor 888 speed controller	vex-217-2769		unit	4	\$49.99	\$199.96	Two given in KOP
Victors	VEX Pro	Victor 884 speed controller	not currently sold		unit	3	\$30.00	\$90.00	
Encoders	AndyMark	US Digital Encoders	am-0174		unit	2	\$23.00	\$46.00	
PWM Cables	AndyMark	3-wire PWM cables	am-0695	36", 12"	1-pack	7	\$3.00	\$21.00	also found in KOP

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Robot Light	(Home Depot, AndyMark) KOP	(Axle, Bearing, Lifter, Solenoid) 12V Light	(am-0512) 855PB-B12ME522	(1/4 inch)	(Piece, Inch, 2"x4") unit	1	\$0.00	\$0.00	
Wire	KOP	assorted gauge wire		6-22 gauge	KOP	lots	\$0.00	\$0.00	
Terminals	KOP	various - from Terminal Bag	various	small, large	KOP bag	1	\$0.00	\$0.00	
Battery	KOP	12V, Non-spillable, Lead Battery	NP18-12B	13.5 lb	unit	1	\$0.00	\$0.00	
Robot Circuit Breaker	KOP	120A, Automotive style breaker	CB185-120		unit	1	\$0.00	\$0.00	
Power Distribution Board	KOP	KOP Power Distribution Board	am-0265		unit	1	\$0.00	\$0.00	
Digital Sidecar	KOP	Digital SideCar	am-0266		unit	1	\$0.00	\$0.00	
cRIO	Rookie KOP	4-slot cRIO	cRIO-FRC II		unit	1	\$0.00	\$0.00	we ordered it, but we could have used our old one
Circuit Breakers	KOP	20A, 30A, 40A Circuit Breakers	VB3-A20-F57, VB3-A30-F57, MX5-A40		unit	16	\$0.00	\$0.00	
Limit Switches	Mouser	Snap-acting Microswitch	KOP: V7-2B17D8-048		unit	6	\$15.00	\$90.00	Also known as a Microswitch in KOP (2 given)
Camera	KOP	AXIS M1013 Camera	am-0667		unit	1	\$187.00	\$187.00	Probably from FIRST Choice
Bridge	KOP	D-Link Wireless Bridge	DAP-1522 Rev B		unit	1	\$0.00	\$0.00	
Bridge Power Converter	KOP	Bridge DC/DC 12V --> 5V Power Converter	CLL25-24S05		unit	1	\$0.00	\$0.00	
Solenoid Breakout Module	AndyMark	2011 Solenoid Breakout	am-0868		piece	1	\$0.00	\$0.00	
							Subtotal	\$633.96	
Drivetrain									
Wheels	AndyMark	6" plaction wheel with Roughtop tread		6" diameter	wheel	2	\$29.00	\$58.00	
Gearboxes	AndyMark				unit	2	\$0.00	\$0.00	
Chain	McMaster	Standard ANSI 25 series chain	6264K2		foot	0	\$3.73	\$0.00	
Shaft Collars	Ruland	Shaft Collars			piece	12	\$5.00	\$60.00	Also found on FIRST Choice
Shafts	re-purposed	Shafts			piece	6	\$2.00	\$12.00	
Sprockets	AndyMark	6 tooth, 25 series, 7075 Aluminum Sprocket	am-0277		piece	6	\$11.00	\$66.00	
Motors	KOP	CIM	AM802-001A/PM25R-45F-1003		unit	4	\$0.00	\$0.00	
Key Hubs	AndyMark	500 Key Hub (for wheels)	am-0077		piece	6	\$10.00	\$60.00	
							Subtotal	\$256.00	

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	(Home Depot, AndyMark)	(Axle, Bearing, Lifter, Solenoid)	(am-0512)	(1/4 inch)	(Piece, Inch, 2"x4")				
TOTALS								\$2,541.13	Less than \$4000
Ball and socket castors		Re-purposed			Unit	4	\$0.00	\$0.00	
Cardboard						1	\$0.00		
Battery Mount		Made from sheet metal				1	\$20.00	\$20.00	
AndyMark Motor		Similar to 0904				1		\$50.00	