

FIRST ROBOTICS- PARTS AND SUPPLIERS LIST FOR 2013

rev Jan 9, 2013

(adapted from FIRST's Where to Get More database by Team Paragon Robotics-571)
 This parts list not endorsed or approved by US FIRST, so use with you best judgement
 Send suggestions for additional parts for the list to parts-571@hotmail.com

---ELECTRICAL (WIRING + PARTS)---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	Price (10)
2-wire jumper cable (24in)	PCCables.com	3203	Y (5X)	Y (5X)	www.pccables.com		\$ 1.65
Adapter, DB9 to RJ12	Cable Wholesaler	31D1-16400		Y (1X)			
	Amazon	B0058U535Y			www.amazon.com		\$ 2.80
	Marlin P Jones	14646PL			www.mpja.com		\$ 1.95
	Andy Mark	FC13-094	F Choice		www.andymark.com		5FC credits
Adapter, Ring to QC terminal	TE Connectivity	42214-2					
	DigiKey	A27868-ND			www.digikey.com	per 10	\$ 1.70
Battery	EnerSys	NP18-12		Y (1X)	www.enersys.com or www.dantona.com		
		NP18-12B	Y (1X)				
		am-0795 (set of 2)			www.AndyMark.com		\$ 83.00
		ES17-12 MK		N	www.mkbattery.com		
		am-0844 (set of 2)			www.AndyMark.com		\$ 83.00
Battery plug (charge status marker)	AndyMark, Inc	am-0122	Y (4x)	Y (4x)	www.andymark.com		\$ 1.00
Battery Base Kit	AndyMark, Inc	am-0477		Y (1X)	www.andymark.com		\$ 14.00
Battery Charger	Batteries Plus	SC-600A		Rookie	many online retailers have carry this item. No specific outlet has been arranged.		
	Schumacher	SC-600A			www.amazon.com		\$ 25.25
Battery Charger (3 bank)	AndyMark, Inc	am-2026			www.andymark.com		\$ 189.00
Battery plug and harness (assembled)	AndyMark, Inc	am-0009	Y (3X)	Y (3X)	www.AndyMark.com		\$ 15.00
Battery plug (unassembled) SB50 #6 RED	Anderson Power Products, Delphi	6331G1			helmar fork lift parts	1	
		am-0546			www.AndyMark.com		\$ 3.50
Battery charger plug (unassembled) SB50 #10 RED	Anderson Power Products, Delphi						
		6331G2			helmar fork lift parts		
Cable Assembly, Ethernet	Lyme Computer Systems	(5ft cable)		Y (1X)	ubiquitous		
		078-505	Y (1X)				
		PC Cables	02710 (10ft cable)			www.pccables.com	
Cable Assembly, Ethernet crossover	Lyme Computer Systems	(5ft cable)		Y (1X)	ubiquitous		
		PC Cables	02219 (10ft cable)			www.pccables.com	
Cable, RJ12 (6 conductor flat) (100ft spool) (1000ft spool)	??	8102-66107		Y (1X)			
	Digikey	H0061R-100-ND			www.digikey.com	6	\$ 20.85
	Marlin P Jones	6286WI			www.mpja.com		\$ 69.95
Cable RJ12- 6C x 7ft	Steren	306-707SL		Y (1X)	www.amazon.com		\$ 0.99
	Pan Pacific	DC-546P-7-GR			www.cablesandconnectors.com		\$ 4.99
Cable RJ12- 6C x 25ft	Phillips	SWL6160/17			www.amazon.com		\$ 2.09
	Radio Shack	279-422			www.radioshack.com		\$ 12.99
	Pan Pacific	DC-546P-25-GR			www.cablesandconnectors.com		\$ 12.99
C-Base	AndyMark, Inc	various			www.andymark.com		
Circuit breaker (20A)	Snap Action	VB3-A20-F57	Y (5X)	Y (5X)	Cooper Bussman	1	
		am-0289			www.andymark.biz		\$ 6.00
Circuit breaker (30A)	Snap Action	VB3-A30-F57	Y (2X)	Y (2X)	Cooper Bussman	1	
		am-0290			www.andymark.biz		\$ 6.00

Circuit breaker (40A)	Snap Action	MX5-A40	Y (4X)	Y (4X)	Cooper Bussman	1	
		am-0288			www.andymark.biz		\$ 7.00
Circuit Breaker (120A)	Terminal Supply Company	CB3-SM-120	Y (1X)	Y (1X)	http://terminalsupplyco.com/default.aspx	1	
	Bussman	CB185-120					
		am-0282			www.andymark.com		\$ 29.00
DC/DC Pwr Converter (12V-5V)	Current Logic	CLL25-24S05	Y (1X)	Y (1X)			
	Andy Mark	am-0899			www.andymark.com	\$ 15.00	
DB37 Extension Cable	Cables ToGo	02688		Y (1X)	www.cablestogo.com		\$ 19.99
DB37 Ribbon Extension Cable (24")	AndyMark, Inc	am-0672			www.andymark.com		\$ 35.00
DB37 Ribbon Extension Cable (10")	AndyMark, Inc	am-0504			www.andymark.com		\$ 31.00
DB37 Male Connector		DE-6100-1221-8		Y (1X)			
DB37 Female Connector		DE-6100-1286-1		Y (1X)			
DB37 Connector Cap		none		Y (2X)			
Encoder Connector (shell) for Jaguar	Digikey	609-2338-ND			www.digikey.com		\$ 1.06
	Pololu	1904			www.pololu.com		\$ 0.69
Pins for Encoder connector	Digikey	609-2305-ND			www.digikey.com		\$ 0.43
	Pololu	1930			www.pololu.com	11	\$ 5.95
E-Stop Button	Engraved Pens	am-0515			www.andymark.biz	1,5	\$ 13.00
Heat Shrink Tubing 1/16" black	3M	80-6116-0069-5	Y()				
Heat Shrink Tubing 1/16" black (4ft)	Marlin P Jones	16326 HS			www.mpja.com		\$ 0.59
Heat Shrink Tubing 1/16" black (100ft)	Marlin P Jones	15335 HS			www.mpja.com		\$ 5.95
Heat Shrink Tubing 1/16" red (4ft)	Marlin P Jones	16602 HS			www.mpja.com		\$ 0.59
Heat Shrink Tubing 1/16" clear (4ft)	Marlin P Jones	16632 HS			www.mpja.com		\$ 0.59
Heat Shrink Tubing 1/8" black	3M	80-6116-0089-3	Y()				
Heat Shrink Tubing 1/8" black (4ft)	Marlin P Jones	16328 HS			www.mpja.com		\$ 0.75
Heat Shrink Tubing 1/8" black (100ft)	Marlin P Jones	16337 HS			www.mpja.com		\$ 6.69
Heat Shrink Tubing 1/8" red (4ft)	Marlin P Jones	16604 HS			www.mpja.com		\$ 0.75
Heat Shrink Tubing 1/8" clear (4ft)	Marlin P Jones	16634 HS			www.mpja.com		\$ 0.75
Heat Shrink Tubing 1/4" black (4ft)	Marlin P Jones	16329 HS			www.mpja.com		\$ 0.95
Heat Shrink Tubing 1/4" black (100ft)	Marlin P Jones	16338 HS			www.mpja.com		\$ 8.83
Heat Shrink Tubing 1/4" red (4ft)	Marlin P Jones	16605 HS			www.mpja.com		\$ 0.95
Heat Shrink Tubing 1/4" clear (4ft)	Marlin P Jones	16635 HS			www.mpja.com		\$ 0.95
Heat Shrink Tubing 3/8" black (4ft)	Marlin P Jones	16330 HS			www.mpja.com		\$ 1.10
Heat Shrink Tubing 3/8" black (100ft)	Marlin P Jones	16339 HS			www.mpja.com		\$ 10.66
Heat Shrink Tubing 3/8" red (4ft)	Marlin P Jones	16606 HS			www.mpja.com		\$ 1.10
Heat Shrink Tubing 3/8" clear (4ft)	Marlin P Jones	16636 HS			www.mpja.com		\$ 1.10
Heat Shrink Tubing 1/2" black (4ft)	Marlin P Jones	16331 HS			www.mpja.com		\$ 1.25
Heat Shrink Tubing 1/2" black (4ft)	Digikey	RNF012K-ND			www.digikey.com		\$ 4.17
Heat Shrink Tubing 1/2" black (100ft)	Marlin P Jones	16340 HS			www.mpja.com		\$ 12.96
Heat Shrink Tubing 1/2" red (4ft)	Marlin P Jones	16607 HS			www.mpja.com		\$ 1.25
Heat Shrink Tubing 1/2" clear (4ft)	Marlin P Jones	16637 HS			www.mpja.com		\$ 1.25
Heat Shrink Tubing 3/4" black (4ft)	Marlin P Jones	16332 HS			www.mpja.com		\$ 1.99
Heat Shrink Tubing 3/4" black (100ft)	Marlin P Jones	16341 HS			www.mpja.com		\$ 24.99
Heat Shrink Tubing 3/4" red (4ft)	Marlin P Jones	16608 HS			www.mpja.com		\$ 1.99
Heat Shrink Tubing 3/4" clear (4ft)	Marlin P Jones	16638 HS			www.mpja.com		\$ 1.99
Heat Shrink Tubing 1" black (4ft)	Marlin P Jones	16333 HS			www.mpja.com		\$ 2.29

Heat Shrink Tubing 1" red (4ft)	Marlin P Jones	16609 HS			www.mpja.com		\$ 2.29
Heat Shrink Tubing 1" clear (4ft)	Marlin P Jones	16639 HS			www.mpja.com		\$ 2.29
Jumper	FCI	68786-102LF am-0658	Y (4X)	Y (4X)	ubiquitous www.AndyMark.com		\$ 0.25
Microswitch (large-without roller)	Honeywell	V7-2B17D8-048	Y (2X)	Y (2X)	ubiquitous		
	Allied Electronics	642-2173			www.alliedelec.com		\$ 2.52
	McMaster-Carr	7090K37			www.mcmaster.com		\$ 7.91
Microswitch (mini-with roller)	Radio Shack	275-017			www.radioshack.com		\$ 3.19
Microswitch (mini-with roller)	Marlin P Jones	16317 SW			www.mpja.com		\$ 0.89
Mini-Anderson Connectors		various			www.powerwerx.com		
Mini-Anderson Connectors		various			www.robotmarketplace.com		
Mini-Anderson Connectors (kit)	AndyMark, Inc	am-2198			www.andymark.biz		\$ 12.00
Panel signal device (signal lamp)	Rockwell Automation	855PB-B12ME522	Y (1X)	Y (1X)	http://shop.rockwellautomation.com	3	
					discontinued- Dec 2011		
Potentiometer (50kohm)	Radio Shack	271-1716			www.radioshack.com		\$ 3.19
Power connector, PD Bd-24VDC, 4pos	Sauro	CTF040V8	Y (2X)	Y (2X)	www.andymark.com or www.ni.com		
		am-0295			www.andymark.com		\$ 3.50
Power connector, cRio-24VDC, 2pos	Sauro	CTF020V8					
		am-2076			www.andymark.com		\$ 2.50
Power connector, Wago	Diamond Technologies	734-102	Y (6X)	Y (4X)	www.diamonddt.com or 866-837-1931		
		am-0296			www.andymark.com		\$ 2.25
Pushbutton switch	Radio Shack	275-1547			www.radioshack.com	4pcs	\$ 3.69
Ribbon Cable	3M	80-6100-7608-7	Y (5ft)				
RC Extension cable (??)	Robot Marketplace	RC-218FJ36			www.robotmarketplace.com		
Repl #6 contacts for batt conn	Anderson Power Products, Delphi	903G1			helmar fork lift parts		
Repl #10 contacts for batt conn	Anderson Power Products, Delphi	904G1			helmar fork lift parts		
RJ-12 Modular Plug					www.lowes.com	25 pcs	\$ 5.95
	Radio Shack				www.radioshack.com		
	Philmore	TEC3			www.cablesandconnectors.com	9	\$ 3.99
Rotary Limit Switch	AutomationDirect	AAP2T51Z11			www.automationdirect.com		\$ 14.25
Rotary Selector Switch (binary-16pos)	C&K	RTAC-22.5BSAD25S					
Serial Cable	Latham Time				not available - do not contact source		
Servo 6" extension cable (PWM cable)		SEA-01			LynxMotion		\$ 1.95
		276-1427 (pack of 4)			www.ifrobotics.com		\$ 19.95
Servo 12" extension cable (PWM cable x3cond)	LynxMotion	SEA-02			LynxMotion		\$ 1.95
	Andy Mark	am-0693		Y (1X)	www.andymark.com		\$ 2.50
	Hansen Hobbies	no part number			www.hansenhobbies.com		\$ 2.45
	Pololu	2184			www.pololu.com		\$ 2.49
Servo 12" extension cable (PWM cable x2cond)	Andy Mark	am-0693			www.andymark.com		
Servo 24" extension cable (PWM cable x3cond)	LynxMotion	SEA-03			LynxMotion		\$ 1.95
	Andy Mark	am-0694			www.andymark.com		\$ 2.75
	Pololu	2185			www.pololu.com		\$ 3.49
Servo 36" extension cable (PWM cable x3cond)		am-0695	Y (8X)	Y (8X)	www.andymark.com		\$ 3.00

		276-1976 (pack of 4)			www.ifrobotics.com		\$ 19.95
Servo Y-splitter cable (PWM cable x3cond)	Pololu	788 (modified, plastic covers removed)			www.pololu.com		\$ 3.25
		276-1423 (pack of 2)	Y (2X)	Y (2X)	www.ifrobotics.com		\$ 14.95
					www.andymark.com		
Servo 12" cable (connector 1 end) (PWM cable x3cond)	Hansen Hobbies	no part number			www.hansenhobbies.com		\$ 1.70
Solderless Breadboard	Twin Industries	TW-E40-1020		Rookie	www.twinind.com		\$ 6.99
Tape, Black Electrical, Super 33+	3M	80-6108-3383-4	Y (1X)				
Tape, Red Electrical, 35-Red	3M	80-6108-3390-9	Y (1X)				
Terminal blocks (12pos, 10A, 8mm centers)	AutomationDirect	BM-M092CS (pack of 50)		Y (2X)	www.automationdirect.com		\$ 51.00
	Radio Shack	274-680 (similar)			www.radioshack.com		\$ 2.99
Terminal Lug (bag of 8) (copper,screw compression terminal)	BURNDY	KPA4CUNPL	Y (8x)	Y (8x)	BURNDY is not yet ready to take orders, in process		
Terminal Lugs (#6AWG, 1/4" lug)	BURNDY	YAZV6CTC14FX	Y (8X)	Y (8x)	BURNDY is not yet ready to take orders, in process		
		am-0805			www.andymark.com		\$ 1.25
Terminal lugs- assorted			Y	Y			
Tie wraps, 4"	BURNDY	CT18075C	Y (100x)	Y (100x)	BURNDY is not yet ready to take orders, in process	11	
Tie wraps, 4"	Cables to Go	43036			www.amazon.com	11	\$ 2.11
Tie wraps, 8"	BURNDY	CT50175C	Y (100x)	Y (100x)	BURNDY is not yet ready to take orders, in process	11	
Tie wraps, 8"	Gardner Bender	46-308			www.amazon.com	11	\$ 5.08
Window Motor Connector Housing		12129487	Y (4X)	Y (4X)			
Window Motor Connector Pin		12110845	Y (8X)	Y (4X)			
Wire- #6AWG red	Wire and Supply	MTW-6G (red)	Y (1.5ft)	Y (2ft)	www.wireandsupply.com	13	\$ 0.68
Wire- #6AWG black	Wire and Supply	MTW-6G (black)	Y (1.5ft)	Y (2ft)	www.wireandsupply.com	13	\$ 0.68
Wire- #10AWG red	Wire and Supply	MTW-10G (red)			www.wireandsupply.com	13	\$ 0.30
Wire- #10AWG white			Y (10ft)	Y (10ft)			
Wire- #10AWG black	Wire and Supply	MTW-10G (black)	Y (10ft)	Y (10ft)	www.wireandsupply.com	13	\$ 0.30
Wire- #12AWG red	Wire and Supply	MTW-12G (red)			www.wireandsupply.com	13	\$ 0.19
Wire- #12AWG black	Wire and Supply	MTW-12G (black)			www.wireandsupply.com	13	\$ 0.19
Wire-#12AWG red/blk zip cord		OC-12gZIP			www.robotmarketplace.com	13	\$ 0.99
Wire- #14AWG red	Wire and Supply	MTW-14G (red)	Y (10ft)	Y (10ft)	www.wireandsupply.com	13	\$ 0.16
Wire- #14AWG black	Wire and Supply	MTW-14G (black)	Y (10ft)	Y (10ft)	www.wireandsupply.com	13	\$ 0.16
Wire-#14AWG red/blk zip cord		OC-14gZIP			www.robotmarketplace.com	13	\$ 0.65
Wire- #18AWG red	Wire and Supply	MTW-18G (red)	Y (10ft)	Y (10ft)	www.wireandsupply.com	13	\$ 0.08
Wire- #18AWG black	Wire and Supply	MTW-18G (black)	Y (10ft)	Y (10ft)	www.wireandsupply.com	13	\$ 0.08

---ELECTRICAL (CONTROL)---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	Price
Analog Breakout	Diversified Systems	A003266		Y (1X)		1	
		am-0267	Y (1X)		www.andymark.com		
		am-0867			www.andymark.com		\$ 24.00
Breakout Mounting Screw (4-40x3/4")	McMaster-Carr	1ME99		Y (4X)			
		87913356	Y (4X)				
		90272A113			www.mcmaster.com	11	\$ 2.16
Analog Input Module	National Instruments	9201			www.ni.com/FIRST	1 & 3	

Camera, Axis 206	Anixter	288635			many online retailers have carried this item, however it has been discontinued. No outlet has been arranged.		
Camera, Axis M1011	Axis Communications	M1011 (0302-004)		Rookie	www.axis.com		
	Andy Mark	am-0667			www.andymark.com		\$ 179.00
Camera-Axis Case	NH Precision	Axis Case		Rookie	www.andymark.biz, drawings available at www.usfirst.org		
	Andy Mark	am-0700			www.andymark.com		\$ 8.00
Camera Tilt Base	NH Precision	Axis Case		Rookie	www.andymark.biz, drawings available at www.usfirst.org		
	Andy Mark	am-0527			www.andymark.com		\$ 9.50
Camera Pan Plate	NH Precision	MI-00013		Rookie	www.andymark.biz, drawings available at www.usfirst.org		
	Andy Mark	am-0525			www.andymark.com		\$ 11.00
Camera Servo Brace	NH Precision	Axis Case		Rookie	www.andymark.biz, drawings available at www.usfirst.org		
	Andy Mark	am-0526			www.andymark.com		\$ 7.50
Camera- complete mtg kit less camera	Andy Mark	am-568			www.andymark.com		\$ 64.00
Camera-110V power supply				Rookie			
Camera- power connector							
Classmate Netbook	Intel/CTL Corp	NBC2G089A		Rookie	www.ctlcorp.com/shop	1	
Classmate battery							
Cypress Breakout PCB		am-0543			www.andymark.com		\$ 22.00
Digital I/O Module	National Instruments	9403			www.ni.com/FIRST	1 & 3	
Digital SideCar	Diversified Systems	A003333 am-0866		Y (1X)	www.andymark.biz www.andymark.com	1	\$ 82.00
Digital Sourcing Module	National Instruments	9472			www.ni.com/FIRST	1 & 3	
FirstTouch I/O Module	Cypress			Rookie	www.cypress.com > buy > development kits (use PSoC-U code for discount)		
		am-0564			www.andymark.com		\$ 30.00
FRC Controller and I/O kit (8slot)	National Instruments	NI-cRIO-FRC			www.ni.com/FIRST	1 & 3	\$ 750.00
FRC Controller and I/O kit (4slot)		NI-cRIO-FRC II		Rookie			\$ 525.00
Insight Diagnostic Tool	Bit Built Technologies	am-2438			www.andymark.com		\$ 59.00
Joystick, Attack 3	TigerDirect	963291-0403		Rookie	www.tigerdirect.com		\$ 21.76
	Andy Mark	am-0598			www.andymark.com		\$ 24.00
NI Rookie packet	National Instruments			Rookie	www.ni.com/FIRST		
Power Distribution Board	Diversified Systems	A003206 am-0865	Y (1X)	Y (1X)	www.andymark.biz	1	\$ 189.00
Radio, Driver Station	Insight/Calence	WRT160N			ubiquitous	1	
Radio, Robot	TigerDirect/Insight	WGA600N			www.tigerdirect.com	6	
	Linksys	WGA600N					
Radio, Robot	D-Link	DAP-1522 Rev A		Rookie	many online retailers have carry this item. No specific outlet has been arranged.		
	D-Link	DAP-1522 Rev B	Y (1X)				
	Amazon				www.amazon.com		\$ 65.88
	Andy Mark	am-0839			www.andymark.com		\$ 89.00
	New Egg				www.newegg.com		\$ 76.99
Relay Module (Spike)	Innovation First	SPIKE-RELAY-H 217-0220	Y (1X)	Y (1X)	www.vexrobotics.com www.ifrobotics.com	1	\$ 34.95 \$ 34.95
Solenoid Breakout	Diversified Systems	A003265 am-0868 FC13-097		Rookie	www.andymark.biz www.andymark.biz	1	\$ 24.00
			F Choice				8 FC credits

Speed Controller (Jaguar)	Texas Instruments (fma Luminary Micro	MDL-BDC		Y (2X)	www.luminarymicro.com/jaguar	3	
		217-3367			www.vexrobotics.com/vexpro		\$ 59.99
		726-1189ND			Digikey	6	
		am-0878			www.andymark.com		
Speed Controller kit (motor/jag/wire)	Andy Mark	am-0990			www.andymark.com		\$ 129.00
Speed Controller (Talon)	Talon Speed Controller	am-2195			www.andymark.com		\$ 59.00
Speed Controller (Victor 884)	Innovation First	FR-VIC884		Rookie	www.vexrobotics.com		
		217-2769			www.vexrobotics.com/vexpro		\$ 49.99
		VICTOR			www.ifirobotics.com		\$ 89.99
STOP Sticker		none	Y(1X)				
USB 4-port hub	Targus	ACH74US (?)		Rookie	www.targus.com		\$ 26.99
VEX Motor Controller 29	Vex Robotics	276-2193		Y (1X)	www.vexrobotics.com		\$ 9.99

---MOTORS FANS SERVOS---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	
2½" CIM Motor	Vertical Engineering Sales, LLC	FR801-001	Y (2X)	Y (4X)	www.andymark.com, www.banebots.com, www.robotshop.ca, or www.trossenrobotics.com		
		am-0255			www.andymark.com		\$ 28.00
		217-2000			www.ifirobotics.com		\$ 27.99
		M4-R0062-12			www.banebots.com		\$ 28.00
Mini-CIM Motor	VEX Pro	217-3371	Y (1X)		www.vexrobotics.com		\$ 27.99
BAG Motor	VEX Pro	217-3351	Y (1X)		www.vexrobotics.com		\$ 27.99
9015 Motor (RS-500 series)	Andy Mark	am-0912	Y (2X)	Y (1X)	www.andymark.com		\$ 13.00
Compact Fan (Large)	ebm papst	4212/12H	Y (1X)	Y (2X)	Contact Dottie Reeve @ 860.284.4801 or dottie.reeve@us.ebmpapst.com		
Compact fan (mini)	ebm papst	412	Y (3X)	Y (6X)	Contact Dottie Reeve @ 860.284.4801 or dottie.reeve@us.ebmpapst.com		
Mabuchi motor	Mabuchi	RS555SH-2670			not available - do not contact source		
Mabuchi motor	Mabuchi	RS555VC-3754			not available - do not contact source		
Window Motor - Left	Denso International America, Inc.	262100-3040	Y (1X)	Y (1X)	not available - do not contact source		
Window Motor - Right	Denso International America, Inc.	262100-3030		Y (1X)	not available - do not contact source		
Window Motor- Right	Keyang	16227960	Y			15	
Window Motor- Right	Keyang	fc13-071			www.andymark.com		First CH
FisherPrice Motor (2011-12)	FisherPrice/PowerWheels	am-0821		Y (2X)	www.andymark.biz		\$ 13.00
FisherPrice Motor (2009-10)		am-0316			www.andymark.biz	\$ 13.00	
Mounting screw (M3x0.5 x 30mm)		0801-0198D		Y (4X)			
Mounting screw (M3x0.5 x 30mm)	McMaster-Carr	92005A132			www.mcmaster.com	11	\$ 3.72
PG-27 Planetary Gearbox with RS775 Motor	Andy Mark	am-0915			www.andymark.com		\$ 69.00
PG-71 Planetary Gearbox with RS775 Motor (2012)	Andy Mark	am-0914	Y (1X)	Y (1X)	www.andymark.com		\$ 75.00
PG-71 Planetary Gearbox with 9015 Motor (2011)	Andy Mark	am-2084			www.andymark.com		\$ 89.00
PG-188 Planetary Gearbox with RS775 Motor	Andy Mark	am-2193			www.andymark.com		\$ 79.00
RS-375 Motor	Bane Bots	M5-RS550-12		Y	www.banebots.com		\$ 5.25
RS-500 Motor	Bane Bots	M5-RS550-12		Y	www.banebots.com		\$ 7.25
RS-775 Motor (12V nominal)	Bane Bots	M7-RS775-12		Y	www.banebots.com		\$ 12.75

RS-775 Motor (18V nominal)	Bane Bots	M7-RS775-18			www.banebots.com		\$ 17.50
Servo	Hitec RCD	HS-322HD		Rookie	www.hitecrhd.com		
		LXDEL7			www.towerhobbies.com		\$ 9.99
Snow Blower Motor/Gearbox	Andy Mark	am-2235	Y		www.andymark.com		TBD
Throttle Control Motor	Denso International America, Inc.	AE235100-0160	Y (4X)	Y (2X)			
Throttle Control Motor	Andy Mark	FC13-020	Y		www.andymark.com	15	First Ch
Two Wire Motor 393	VEX	276-2177		Y (1X)	www.vexrobotics.com		\$ 19.99

---MECHANICAL---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes
Bearing-Pillow Block 1/2" shaft	Triangle Manufacturing	BD1508P		Y (2X)	www.triangleOshkosh.com/robotics	
Bearing-Pillow Block 1/2" shaft	Triangle Manufacturing	BDN8	Y (2X)		www.triangleOshkosh.com/robotics	
Bearing-Flange mount for 3/8" shaft	Triangle Manufacturing	FMN6	Y (2X)	Y (2X)	www.triangleOshkosh.com/robotics	
Bearing-Flange mount for 5/8" shaft	Triangle Manufacturing	FMN10		Y (2X)	www.triangleOshkosh.com/robotics	
Bearing Block (1.5"squ x 3/8" bore)	Bane Bots	PB-S3751-BB			www.banebots.com	\$ 10.00
Bearing Block (2.5"squ x 1/2" bore)	Bane Bots	PB-S5002-BB			www.banebots.com	\$ 12.50
Bearing, 3/8ID, 7/8OD (industry type R6ZZ)	AndyMark, Inc	am-0516		Y	www.andymark.com	\$ 4.50
	McMaster-Carr	60355K703			www.mcmaster.com	\$ 5.88
	ENCO	327-7950			www.use-enco.com	\$ 20.50
	Bane Bots	MB-S375B-1			www.banebots.com	\$ 1.25
Bearing, 1/2ID, 1-1/8OD, flanged (industry type FR8ZZ)	AndyMark, Inc	am-0030		Y (2X)	www.andymark.com	\$ 3.00
	Amazon	FR8ZZ			www.amazon.com	\$ 12.83
Bearing 1614ZZ (3/8"ID 1-1/8"OD)	AndyMark, Inc	am-0209		Y (12x)	www.andymark.com	\$ 5.00
	McMaster-Carr	6384K58			www.mcmaster.com	\$ 7.25
Bearing (1/2"ID 1-1/8"OD)	AndyMark, Inc				www.andymark.com	\$ 5.00
	McMaster-Carr				www.mcmaster.com	\$ 7.25
	Bane Bots	MB-S500B-1			www.banebots.com	\$ 1.75
Bearing (1/2" ID flanged nylon)	AndyMark, Inc	am-0947		Y (2X)	www.andymark.com	\$ 0.50
Belting - custom order	Gates Corporation	www.gates.com			www.gates.com/FIRST	2
Belting + drive pulleys - FIRST kit	Gates Corporation			Y (1X)	www.gates.com/FIRST	
Brass Bushing/Spacer (0.250ID, .335OD)	AndyMark, Inc	am-0300			www.andymark.com	\$ 0.50
	Hardware store item					
Bronze Bearing- 56pc Assortment	Grainger	1X968			www.grainger.com	\$ 69.10
Chain, #25, 10ft length	MSC Direct	58636853			www.mscdirect.com	\$ 40.75
	McMaster-Carr	6261K171			www.mcmaster.com	\$ 37.30
Chain, #35, 10ft length 10ft length 10ft length 20ft length	MSC Direct	58636671		Y (10ft)	www.mscdirect.com	\$ 29.58
	Jack's Small Engines	250001			www.jackssmallengines.com/gochain.cfm	\$ 35.15
	AndyMark, Inc	am-0367			www.andymark.com	\$ 24.00
	McMaster-Carr	6261K172			www.mcmaster.com	\$ 62.80
Coupler, Denso motor	Pelham Plastics	Denso-6	Y (2X)	Y (4X)	an outlet has not been arranged - do not contact source	
Double Doozy Motor Adapter	AndyMark, Inc	am-0629			www.andymark.com	\$ 120.00
DryLin N Linear Guide System	igus	NK02-40-2-610	Y (1X)		www.igus.com	3
DryLin S Aluminum Shaft (5/8")	igus	AWI-10			www.igus.com	3
Dual Lock Strip	3M	70-0705-2105-2	Y (5ft)			
Energy Chain Cable Carrier	igus	05-4-038-0	Y (1X)	Y (1X)	www.igus.com	3
Energy Chain Cable Carrier (1.5W x1H)	igus	I-475			www.reidsupply.com	13 \$ 14.40

Energy Chain Mounting Bracket Set	igus	050-20-12		Y (1X)	www.igus.com	3	
FisherPrice Gearbox	FisherPrice/PowerWheels	00968-2821		Y (2X)	not available - do not contact source		
Gears (misc)	Boston Gear				www.bostongear.com		
	McMaster-Carr				www.mcmaster.com		
	PIC Design				www.pic-design.com		
	AndyMark, Inc				www.andymark.com		
Gear 19T, 32DP	AndyMark, Inc	am-0604			www.andymark.com		\$ 10.00
Gear 20T, 32DP	Boston Gear	GE-3220			www.reidsupply.com		\$ 13.29
Gear 60T, 32DP	AndyMark, Inc	am-0927			www.andymark.com		\$ 15.00
GEM Planetary Gearbox (3.67:1)	AndyMark, Inc	am-0449			www.andymark.com		\$ 77.00
GEM Planetary Gearbox (13.5:1)	AndyMark, Inc	am-0270			www.andymark.com		\$ 120.00
GEM Planetary Gearbox (49.4:1)	AndyMark, Inc	am-0401			www.andymark.com		\$ 163.00
Grip Material (Velcro)	3M	70-0067-0149-7	Y (1X)				
igus bag (assortment)	igus		Y	Y	www.igus.com		
igus clip bearing (3/8")	igus	MCI-06-01	Y (2X)		www.igus.com		
iglide bearing (5/8" sleeve)	igus	JSI-1012-08	Y (2X)		www.igus.com	3	\$ 2.60
	Andy Mark	FC13-117	F Choice		www.andymark.com		3FC credits
iglide bearing (5/8" flanged)	igus	JFI-1012-08	Y (2X)		www.igus.com	3	\$ 3.09
	Andy Mark	FC13-120	F Choice		www.andymark.com		3FC credits
iglide bearing (5/8" thrust)	igus	MTI-10	Y (2X)		www.igus.com	3	\$ 2.70
iglide bearing (3/8" bushing)	igus	MCI-06-02			www.igus.com	3	\$ 1.62
igubal Flange Bearing (1/4") (adjustable flanged bearing-2 hole)	igus	EFOI-04R			www.igus.com		
	Grainger	4LFN8			www.grainger.com		\$ 3.87
igubal Flange Bearing (3/8") (adjustable flanged bearing-2 hole)	igus	EFOI-06R			www.igus.com		
	Grainger	4LFP1			www.grainger.com		\$ 4.69
igubal Flange Bearing (1/2") (adjustable flanged bearing-2 hole)	igus	EFOI-08R			www.igus.com		
	Grainger	4LFP2			www.grainger.com		\$ 5.76
	Andy Mark	FC13-121	F Choice		www.andymark.com		5FC credits
igubal Flange Bearing (5/8") (adjustable flanged bearing-2 hole)	igus	EFOI-10	Y (2X)		www.igus.com	3	\$ 10.28
	Grainger	4LFP3			www.grainger.com		\$ 7.00
igubal Rod End Bearing (3/8-24)	igus	EBRI-06R			www.igus.com		
	Grainger	4LFL3			www.grainger.com		\$ 6.00
igubal Rod End Bearing (5/8-18)	igus	EBRI-10R	Y (2X)		www.igus.com	3	quote
	Grainger	4LFL6			www.grainger.com		\$ 13.20
	Andy Mark	FC13-122	F Choice		www.andymark.com		5FC credits
Key 2mm x 2mm x 10mm	AndyMark, Inc	am-1121		Y (4X)	www.andymark.com		\$ 0.50
Key 2mm x 2mm x 10mm	McMaster-Carr	96717A065			www.mcmaster.com		\$ 3.73
Key 1/8" x 1/8" x 0.70"	AndyMark, Inc	am-1043		Y (2X)	www.andymark.com		\$ 0.70
Key 1/8" x 1/8" x 0.75" (10pack)	Grainger	5WE31			www.grainger.com	9	\$ 4.51
Key 1/8" x 1/8" x 12" (cut to length)	McMaster-Carr	98535A130			www.mcmaster.com		\$ 2.07
Key 4mm x 4mm x 12mm	AndyMark, Inc	am-1249			www.andymark.com		\$ 0.75
Key 4mm x 4mm x 12in (cut to length)	McMaster-Carr	92288A110			www.mcmaster.com		\$ 3.81
Key, 2x2mm and 1/8"x1/8" pack	AndyMark, Inc	am-2219			www.andymark.com		\$ 5.50
Key, assorted imperial sizes	Harbor Freight	67540			www.harborfreight.com		\$ 7.99
Latex Tubing (1/8" ID, 0.094wall)	Kent Elastomer		Y (5ft)	Y (5ft)	ubiquitous		
Lazy Susan (3in square)	Triangle Manufacturing	3C			www.triangleOshkosh.com/robotics		
Lazy Susan (4in square)	Triangle Manufacturing	4C			www.triangleOshkosh.com/robotics		

Lazy Susan (6in square)	Triangle Manufacturing	6C			www.triangleOshkosh.com/robotics		
Lazy Susan (6in round)	Triangle Manufacturing	6C2501			www.triangleOshkosh.com/robotics		
Lazy Susan (9in round)	Triangle Manufacturing	9C			www.triangleOshkosh.com/robotics		
Lazy Susan (12in round)	Triangle Manufacturing	12C			www.triangleOshkosh.com/robotics		
Lazy Susan (12in round-ring style)	McMaster-Carr	18635A52			www.mcmaster.com		\$ 31.59
Lazy Susan (17-1/2in round-ring style)	Rockler	12451			www.rockler.com		\$ 76.39
Lazy Susan (23-5/8in round-ring style)	Rockler	56875			www.rockler.com		\$ 177.49
Lead Screw w/ nut	Haydon Kerk Motion Products	BZ8M16 X 15"			www.haydonkerk.com		
Master Link for #35 Chain	AndyMark, Inc	FC13-050	F Choice		www.andymark.com		4FC credits
	MSC Direct	58639006		Y (4X)	www.mscdirect.com		\$ 0.87
	Jack's Small Engines	250084			www.jackssmallengines.com/gochain.cfm		\$ 1.64
	AndyMark, Inc	am-0368			www.andymark.com		\$ 0.75
	McMaster-Carr	6261K191			www.mcmaster.com		\$ 0.72
One-pitch link	PEER Chain	??			www.peerchain.com		
Output sprocket, double, 15 tooth	AndyMark, Inc	S35-15DHE					
		am-0421			www.andymark.com		\$ 10.00
Output sprocket, double, 12 tooth	AndyMark, Inc	am-0736		Y (2X)	www.andymark.com		\$ 9.00
P60 Planetary Gearbox (for 375 motor)	Bane Bots	various			www.banebots.com		\$44-74
P60 Planetary Gearbox (for 500 motor)	Bane Bots	various			www.banebots.com		\$44-74
P60 Planetary Gearbox (for 775 motor)	Bane Bots	various			www.banebots.com		\$44-74
P80 Planetary Gearbox (for CIM motor)	Bane Bots	various			www.banebots.com		\$79-157
PG-71 Planetary Gearbox Only (2011)	Andy Mark	am-0939			www.andymark.com		\$ 60.00
Reflective Material	Reflexite	GP020		Y (28ft)			
	AndyMark, Inc	am-0905			www.andymark.com		\$ 20.00
Reflective Material-Silver Marking Film (4" x 27ft)	3M	8830					
	AndyMark, Inc	FC13-144	F Choice		www.andymark.com		8FC credits
Scotch Weld, Liquid Adhesive-CA8	3M	62-3815-0130-3	Y (1X)				
Scotch Weld, Rubber Adhesive-PR100	3M	62-6164-0350-7	Y (1X)				
Shaft- 3/8" x 36" keyed	McMaster-Carr	1497K22			www.mcmaster.com		\$ 34.52
Shaft- 1/2" x 36" keyed	McMaster-Carr	1497K32			www.mcmaster.com		\$ 37.19
Shaft- 5/8" x 36" keyed	McMaster-Carr	1497K42			www.mcmaster.com		\$ 41.45
Shaft Collar assortment	Ruland		Y (1bag)	Y (1bag)	www.ruland.com		
Shaft Collar- 3/8" bore steel	Ruland	CL-6-F			www.ruland.com		
Shaft Collar- 1/2" bore steel	Ruland	CL-8-F			www.ruland.com		
Spacer- plastic, 0.505ID x 3/16in long	AndyMark, Inc	am-1181		Y (2X)	www.andymark.com		\$ 0.20
Spacer- plastic, 0.42ID x 2.5in long	AndyMark, Inc	am-0244		Y (6X)	www.andymark.com		\$ 1.50
Spacer- plastic, 0.42ID x 1.86in long	AndyMark, Inc	am-0243		Y (6X)	www.andymark.com		\$ 1.50
Spacer- Alum, 3/4"OD, 1-1/4in long	McMaster-Carr	92511A106			www.mcmaster.com		\$ 4.34
Sprocket, double, 15 tooth	AndyMark, Inc	S35-15DHE					
		am-0421			www.andymark.com		\$ 10.00
Sprocket, #35, dbl, 12 tooth, alum	AndyMark, Inc	am-0736		Y (2X)	www.andymark.com		\$ 9.00
Sprocket, #35, 26 tooth, alum	AndyMark, Inc	am-0737		Y (4X)	www.andymark.com		\$ 9.00
Sprockets - custom order	Gates Corporation	www.gates.com			www.gates.com/FIRST	2	
Sprocket, #35, 22-tooth, alum	AndyMark, Inc	am-0245			www.andymark.com		\$ 9.00
Sprocket, #35, 22-tooth, steel	BandB Manufacturing	35A22 (min bore)			www.bbman.com		\$ 6.70
Sprocket, #35, 22-tooth, steel	Martin Sprocket	35BS22			www.martinsprocket.com		
Sprocket, assorted, alum	Jack's Small Engines	various			www.jackssmallengines.com/gokart_alumsprkt_35f.cfm		

Transmission (AM Toughbox)	AndyMark, Inc	various			www.andymark.com		\$ 66.00
Transmission (CIMple Box)	AndyMark, Inc	am-0734		Y (2X)	www.andymark.com		\$ 50.00
VersaPlanetary Gearbox	VEX Robotics	various (217-2724)			www.vexrobotics.com		varies
VHB Double Sided Tape	3M	70-0062-9144-0		Y(1X)			

---SOFTWARE---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes
Autodesk Software Tools	Autodesk				www.autodesk.com/first	2
Designer software	Altium	n/a			www.altium.com	2
FRC Software Bundle	National Instruments				frcparts@usfirst.org	
Java Postcard	Sun Microsystems	n/a			http://first.wpi.edu/FRC/frcjava.html	
Labview Software			Y (1X)			
Mathcad	PTC				www.ptc.com/go/first or firstsupport@ptc.com	2
Pro/ENGINEER	PTC	for creating CAD models		Y	www.ptc.com/go/first or firstsupport@ptc.com	2
ProductView	PTC	for visualizing your robot design		Y	www.ptc.com/go/first or firstsupport@ptc.com	2
Restoration Key (USB)	TigerDirect.com				www.tigerdirect.com to purchase a drive, frcparts@usfirst.org to have it reimaged	
Voucher- Vision Processing SW	Robo Realm		Y (1X)			
Windchill	PTC	for team collaboration		Y	www.ptc.com/go/first or firstsupport@ptc.com	2
Windriver Software			Y (1X)			

---SENSORS---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes
Encoder, 360PPR, kit of 2 sets	US Digital	am-0791			www.andymark.com	\$ 74.00
Encoder, 250PPR, kit of 1 set	US Digital	am-0180			www.andymark.com	\$ 39.00
Encoder, 250PPR, 1 set, no cable	US Digital	am-0174			www.andymark.com	\$ 29.00
Encoder -Base	US Digital	E4P-360-250-S4149			www.usdigital.com/first	
Encoder - Codewheel	US Digital	E4P-360-250-S4149			www.usdigital.com/first	
Encoder - Cover	US Digital	E4P-360-250-S4149			www.usdigital.com/first	
Encoder - Installation Tool	US Digital	E4P-360-250-S4149			www.usdigital.com/first	
Encoder - 4C Cable	Andy Mark	am-0175			www.andymark.com	\$ 6.80
Magnetic encoder, board	austria microsystems	AS5030			http://www.austriamicrosystems.com/eng/Products/Magnetic-Encoders	
Magnetic encoder, magnet	austria microsystems				http://www.austriamicrosystems.com/eng/Products/Magnetic-Encoders	
Miscrosoft Kinect	Microsoft	LPF-00068		Y (1X)		
	Amazon				www.amazon.com	\$ 109.99
Sensor panel	Analog Devices/Diversified Systems	Gyro		Y (1X)	The gyro is unique and is not available for purchase. Comparable gyro is available at www.digikey.com	
Sensor Panel- Accelerometer		ADXL345	Y (1X)			
Sensor Panel-Gyro		ADXRS652BBGZ-RL	Y (1X)			
Sensor panel	Analog Devices/Diversified Systems	Accelerometer		Y (1X)	www.digikey.com	
Sonar Range Finder	Max Botix Inc	LV-MaxSonar-EZ1		Y (1X)	www.maxbotix.com	\$ 29.99

---PNEUMATIC---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	
Air Compressor	Gardner Denver Thomas, Inc.	405ADC38/12			www.drillspot.com		\$ 365.81
	Viair	am-2005		Rookie	www.AndyMark.com		\$ 64.00
Accumulator (16cu in)	Clippard	AVT-32-16			www.clippard.com		\$ 29.60
Accumulator (32cu in)	Clippard	AVT-32-32		Y (1X)	www.clippard.com		
Accumulator (30cu in)	Andy Mark	am-2007			www.AndyMark.com		\$ 12.50
Accumulator mtg bracket (lg)	Andy Mark	am-2008			www.AndyMark.com		\$ 1.50
Bimba Cylinders - custom order	Bimba Manufacturing			Y	www.bimba.com	2	
Brass bag	Parker - Brass Division	PKT12326		Y	to find distributors, click http://www.parker.com/portal/site/PARKER/menuitem.5f7d57d9c19d0b688621d68a237ad1ca/?vgnextoid=2f2880961f66e010VgnVCM1000000308a8c0RCRD&vgnnextfmt=defa ult. Follow <i>Product Selection: FITTINGS > INDUSTRIAL FITTINGS > BRASS AND PLASTIC INDUSTRIAL FITTINGS > BRASS AND PLASTIC INDUSTRIAL FITTINGS - INCH ></i>		
Brass Elbow 1/8F x 1/8M (90deg)	Parker - Brass Division	2-2-SE-B			www.amazon.com		\$ 11.59
	Watts	A-712			www.homedepot.com		\$ 3.12
Brass Elbow 1/8F x 1/8M (45deg)	Parker - Brass Division	2-2-SVE-B			www.amazon.com		\$ 6.61
Brass Reducer 1/4F x 1/8M		6MN88			www.grainger.com	9	\$ 18.04
Brass Reducer 1/4M x 1/8M	Andy Mark	am-2025			www.AndyMark.com		\$ 4.00
	Parker - Brass Division	4-2-RB-B			www.amazon.com		\$ 4.10
	Watts	A-738			www.homedepot.com		\$ 1.75
Brass Reducer 1/4F x 1/8M	Parker - Brass Division	4-2-RA-B			www.amazon.com		\$ 8.13
Bulkhead Connector	NITRA	FB14-18N					
	Andy Mark	am-2033			www.AndyMark.com		\$ 5.00
	Automation Direct	FB14-18N			www.automationdirect.com	5 pack	\$ 14.25
Brass Coupling 1/8F x 1/8F	Watts	A-706			www.lowes.com		\$ 3.29
Dump Valve	Andy Mark	am-2023			www.AndyMark.com		\$ 7.50
	Andy Mark	am-2257			www.AndyMark.com		\$ 3.50
	Parker Hannifin	MV709-2			www.parker.com		
		CMVL-25			midwest control?		
Main Regulator, adjustable	Norgren	R07-100-RNEA		Y (1X)	www.norgren.com/usa		
		am-2020			www.AndyMark.com		\$ 28.00
Main Regulator Mounting Kit	Norgren	18-025-003		Y (1X)	www.norgren.com/usa		
Metering Control Valve	Parker - Brass Division	FCC731-4-2		Y	www.parker.com		
Pneumatics base kit	various	am-2000			www.AndyMark.com		\$ 269.00
Pneumatic fitting pack	various			Y			
Pneumatic tubing	Freelin-Wade	1J-151-48P-FW			www.protubing.com	3	
Pneumatic fitting- 1/8NPT x 1/4 tube	Parker - Brass Division	W68PLP-4-2		Y	www.parker.com		
Pneumatic fitting- 1/4 tube elbow	Parker - Brass Division	W369PLP-4-2		Y	www.parker.com		
Pneumatic fitting- 1/4 tube elbow	SMC	SMC-220			www.reidtool.com		\$ 4.24
Pneumatic fitting- 1/4 tube splice	SMC	SMC-115			www.reidtool.com		\$ 3.23
Pneumatic fitting- 1/4 tube tee	Parker - Brass Division	364PLP-4		Y	www.parker.com		
Pneumatic fitting- 1/4 tube tee	SMC	SMC-390			www.reidtool.com		\$ 4.64
Pneumatic fitting- for Festo valve (M7 x 1/4" tube)	FESTO	183740		Rookie			
	PLCCenter	183740			www.plccenter.com		\$ 2.92

Pressure Gauge	Norgren	18-013-212		Y (2X)	www.norgren.com/usa			
		am-2003			www.AndyMark.com			\$ 15.00
Pressure Switch	Nason	SM-2B-115R/443		Y (1X)	www.nasonptc.com			
		am-2006			www.AndyMark.com			\$ 29.00
Relief Valve	Norgren	16-004-011		Y (1X)	www.norgren.com/usa			
		am-2002			www.AndyMark.com			\$ 32.00
		FC13-055			F Choice			www.AndyMark.com
Secondary Regulator (1/8" ports, 100PSI, yellow ring)	Monnier	101-3002-1		Y (1X)	www.monnier.com			
Secondary Regulator Bracket	Monnier	13536		Y (1X)	www.monnier.com			
Solenoid valve (24VDC-double coil)	FESTO	VUVG-L10-B52-T-M5		Rookie	www.festo.com/cms/en-us_us/9697.htm			
Solenoid valve (24VDC-double coil)		VUVG-L10-B52-T-M7						
Solenoid valve (12VDC-double coil)	FESTO	am-0888			www.AndyMark.com		\$ 112.00	
Solenoid valve (12VDC-single coil)	FESTO	13026684			none?	6	\$ 31.95	
Solenoid Valve Harness (FESTO)	FESTO	566654		Rookie				
	PLCCenter	566654			www.plccenter.com		\$ 2.04	
Solenoid Valve e-block (FESTO)	FESTO	566716		Rookie				
	PLCCenter	566716			www.plccenter.com		\$ 7.93	
Teflon tape	HPE Automation			Y (1X)	www.hpeco.com			
Teflon tape (1/4"W x 43ft)	Amazon	FRA900063			www.amazon.com		\$ 4.63	
Teflon tape (1/4"W x 50ft)	McMaster-Carr	4591K11			www.mcmaster.com		\$ 2.31	

---RAW MATERIALS---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	
Aluminum angle (1"x1"x1/8" x 8ft) (sharp corner)	Home Depot	56760					\$ 13.28
	Metals Depot	A3118-6063			www.metalsdepot.com		\$ 10.16
	On Line Metals	none			www.onlinemeteals.com		\$ 8.19
Aluminum C-channel (chassis part)	AndyMark	am-0202		Y (6x)	www.AndyMark.com		\$ 18.00
Aluminum extrusion (1"x1")	80-20	10-10			www.80-20.net		
Aluminum extrusion (1"x1" x8ft)	McMaster-Carr	47065-T101			www.mcmaster.com		\$ 26.36
Aluminum extrusion (1"x1" x8ft)	Reid Tool	AES-1010			www.reidtool.com		\$ 22.08
Aluminum extrusion (1"x1")	T-Slots	TS10-10GR			www.tsslots.com	3	
Aluminum extrusion (1"x2")	80-20	10-20			www.80-20.net		
Aluminum extrusion (1"x2" x8ft)	McMaster-Carr	47065-T107			www.mcmaster.com		\$ 44.64
Aluminum extrusion (1"x2" x12ft)	Reid Tool	AES-1020-145			www.reidtool.com		\$ 56.55
Aluminum extrusion (1"x2")	T-Slots	TS10-20GR			www.tsslots.com	3	
Aluminum Hex tube (1/2")	AndyMark	am-0756		Y (1x)	www.AndyMark.com		\$ 5.00
Alum shaft 3/8" dia x 24", 3/32" key	McMaster-Carr	1570K33			www.mcmaster.com		\$ 32.87
Alum shaft 1/2" dia x 36", 1/8" key	McMaster-Carr	1570K43			www.mcmaster.com		\$ 35.85
Alum shaft 5/8" dia x 36", 3/16" key	McMaster-Carr	1570K53			www.mcmaster.com		\$ 38.51
Alum shaft 5/8" dia x24in ,anodized	igus	AWI-10-L	Y (2X)		www.igus.com		
Aluminum sq tube 1"x1"x1/16" x6ft	Home Depot	42330					\$ 21.64
	Metals Depot	T31116			www.metalsdepot.com		\$ 23.36
	On Line Metals	none			www.onlinemeteals.com		\$ 8.60
Bumper Fabric- Sample		none	Y (1X)				

Bumper Fabric (Blue)	Seattle Fabrics	FC1-4345 Mariner Blue		www.seattlefabrics.com	7,8	\$ 13.50
	AH&H Fabrics			www.ahh.biz	7,8	\$ 15.30
Bumper Fabric (Red)	Seattle Fabrics	FC1-1500 Red		www.seattlefabrics.com	7,8	\$ 13.50
	AH&H Fabrics			www.ahh.biz	7,8	\$ 15.30
Polycarbonate (1/16" x 24x24)	AndyMark	am-0982		www.AndyMark.com		\$ 12.00
	McMaster-Carr	8574K51		www.mcmaster.com		\$ 13.59
	Home Depot					
Polycarbonate (1/8" x 24x24)	AndyMark	am-0980		www.AndyMark.com		\$ 20.00
	McMaster-Carr	8574K53		www.mcmaster.com		\$ 22.39
	Home Depot					
Pool Noodles (bumper core)	Ocean State Job Lot					\$ 1.99
	Aqua World			www.amazon.com		\$ 2.45
Steel shaft 10mm dia x 30", 4mm key	AndyMark	am-2393		www.AndyMark.com		\$ 33.00
Steel shaft 3/8" dia x 36", 3/32" key	McMaster-Carr	1497K22		www.mcmaster.com		\$ 34.52
Steel shaft 1/2" dia x 36", 1/8" key	McMaster-Carr	1497K32		www.mcmaster.com		\$ 37.19
Steel shaft 1/2" dia x 24", 1/8" key	ENCO	327-8801		www.use-enco.com		\$ 12.36
Steel shaft 5/8" dia x 36", 3/16" key	McMaster-Carr	1497K42		www.mcmaster.com		\$ 41.45
Steel shaft 5/8" dia x 36", 3/16" key	ENCO	319-4278		www.use-enco.com		\$ 18.00
Strut nut (1x 1/4-20)	80-20	3382		www.80-20.net		
	McMaster-Carr	47065-T142		www.mcmaster.com		\$ 2.30
Strut nut (1x 1/4-20) and screw	Reid Tool	AES-3386		www.reidtool.com		\$ 0.46
Strut nut (2x 1/4-20)	80-20	3280		www.80-20.net		
	McMaster-Carr	47065-T147		www.mcmaster.com		\$ 4.29
	Reid Tool	AES-3280		www.reidtool.com		\$ 0.69

---TOOLS ETC---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	
Arbor Press (manual 1ton)	ENCO	805-1010			www.use-enco.com		\$ 60.40
	Palmgren	890-8803			www.use-enco.com		\$ 85.03
	Grizzly Tools	G-4018			www.grizzly.com		\$ 59.95
	Dayton	4Z328			www.grainger.com		\$ 104.95
Broach, 2mm (to mate gears to CIM)	McMaster-Carr	8805A11			www.mcmaster.com		\$ 44.62
	Grainger	12V230			www.grainger.com		\$ 72.75
Broach, 4mm (to mate gears to PG-xx)	McMaster-Carr	8805A13			www.mcmaster.com		\$ 53.66
	Grainger	12V232			www.grainger.com		\$ 93.95
Bushing, 8mm dia x 2mm slot	McMaster-Carr	8804A71			www.mcmaster.com		\$ 11.29
Bushing, 10mm dia x 4mm slot	McMaster-Carr	none?			www.mcmaster.com		
Caliper 6in digital	Fowler (54-101-150-2)	317-0430			www.use-enco.com		\$ 46.43
	Harbor Freight	47257			www.harborfreight.com		\$ 29.99
CD - Basic Electronic Measurement	Fluke Industrial				use www.fluke.com , "Where to Buy", enter zip code or online		
Chain Breaker (#25-60)	McMaster-Carr	6051K15			www.mcmaster.com		\$ 26.65
Chain Break/Splice Tool	Dave's Discount Motors	Dark Soul Chain Tool			www.davesmotors.com	6	\$ 26.99
	221 Robotic Systems	Dark Soul Chain Tool			www.team221.com		\$ 30.00
Crimper- #6AWG lugs	Burndy	Y1MRTC					
		am-0806			www.AndyMark.com		\$ 199.00
Crimper- #8-#2AWG Wire		360-646			www.parts-express.com		\$ 39.71

---OTHER---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	Price (10)
Bag, 48" x 36" x 120"		114200	Y (2X)				
FRC Sticker		none?	Y (1X)				
Voucher- Automation Direct	Automation Direct	none?	Y (\$20)				
Voucher- Digikey	Digikey	none?	Y (\$25)				
Voucher- Maxbotix	Maxbotix	none?	Y (\$35)				
Flyer- AMS Magnetic Encoder		none?	Y (1X)				
Flyer- Catalyst 2013 Game Simulation		none?	Y (1X)				
Flyer- Graduating Senior		none?	Y (1X)				
Flyer- PTC Software		none?	Y (1X)				
Flyer- Scholarship Info		none?	Y (1X)				
Frisbee, Blue	Wham-O	53214 (blue)	Y (1X)				
	Andy Mark	am-2013-Blue			www.andymark.com		\$ 5.50
Frisbee, Red	Wham-O	53214 (red)	Y (1X)				
	Andy Mark	am-2013-Red			www.andymark.com		\$ 5.50
Frisbee, White	Wham-O	53214 (white)	Y(2X)				
	Andy Mark	am-2013-white			www.andymark.com		\$ 5.50
Tag, Serialized		9001-16	Y (6X)				

- NOTES: 1) Per the game rules, this is the only permitted part of its kind in the FIRST Robotics Competition in order to facilitate a fair and even-handed competition.
2) These items were not physically in the kit, but were donated to each FRC team through FIRST. To take advantage of the donation, please follow the link.
3) This item may be available at a discount for FRC participants. The discount may be limited in availability, please contact supplier for details.
4) Please note that terminals, hardware, and wire are ubiquitous and are not included on this list.
5) Not used in 2012 game
6) Not presently available (Dec 2012) from this supplier
7) Price per yard
8) 1000 Denier Cordura fabric
9) Bag of 10 pieces
10) Prices for reference only, not guaranteed- accurate at the moment they were investigated. Check price and availability.
11) Pack of 100 pieces
12) Send suggestions for additions to the list to parts-571@hotmail.com
13) Price per foot
14) Price per set of 4
15) Presently available as part of First Choice program only
16) Call supplier for list for FIRST parts available