

FIRST ROBOTICS- PARTS AND SUPPLIERS LIST FOR 2013

rev Dec 30, 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	2014 KOP	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	31D1-16200			Y (1X)			
	Amazon	B0058U535Y				www.amazon.com		\$ 4.18
	Marlin P Jones	14646PL				www.mpja.com		\$ 1.95
	Cables and Connectors	ATI-G9F6				www.cablesandconnectors.com		\$ 3.79
	SF Cable	31D1-A2				www.sfcable.com		\$ 1.10
	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	\$ 1.82
Battery	EnerSys	NP18-12			Y (1X)	www.enersys.com or www.dantona.com	6	NAV
		NP18-12B		Y (1X)				
		am-0795 (set of 2)				www.AndyMark.com		
		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		\$ 32.91
Battery Charger	Pro Charging Systems	RS1						
	AndyMark, Inc	am-2555				www.andymark.com		\$ 94.00
Battery Charger (3 bank)	Pro Charging Systems	RS3						
	AndyMark, Inc	am-2026				www.andymark.com		\$ 189.00
Battery plug and harness	AndyMark, Inc	FC14-019	F Choice			www.andymark.com	10FC Credits	
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	\$ 3.50
		am-0546				www.AndyMark.com		
Battery charger plug (unassembled) SB50 #10 RED	Anderson Power Products, Delphi							
		6331G2				helmar fork lift parts		
Cable Assembly, Ethernet	Lyme Computer Systems	(5ft cable)	F Choice	Y (1X)	Y (1X)	ubiquitous		
		078-505						
	AndyMark, Inc	FC14-041				www.AndyMark.com	5FC Credits	
	PC Cables	02710 (10ft cable)				www.pccables.com		\$ 1.90
Cable Assembly, Ethernet (3ft)	Grainger	4DE71				www.grainger.com	6	NAV
	Grainger	5PZU3				www.grainger.com		\$ 3.58
	AndyMark, Inc	FC14-045				www.AndyMark.com	5FC Credits	
Cable Assembly, Ethernet (7ft)	Marlin P Jones	19236-TT				www.mpja.com		\$ 1.95
Cable Assembly, Ethernet crossover	Lyme Computer Systems	(5ft cable)			Y (1X)	ubiquitous		
	PC Cables	02219 (10ft cable)				www.pccables.com		\$ 2.99
Cable Assortment, CAN/RJ12 (1x 24", 3x 10")	AndyMark, Inc	FC14-017	F Choice			www.AndyMark.com	5FC Credits	

Cable, RJ12 (6 conductor flat)	??	8102-66107			Y (1X)			
(100ft spool)	Digikey	H0061R-100-ND				www.digikey.com	6	NAV
(100ft spool)		A0061R-100-ND				www.digikey.com		\$ 18.36
(1000ft spool)	Marlin P Jones	6286WI				www.mpja.com	6	NAV
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
	Amazon	8102-66107				www.amazon.com		\$ 3.33
Cable RJ12- 6C x 14ft	Amazon	940				www.amazon.com		\$ 2.25
Cable RJ12- 6C x 25ft	Phillips	SWL6160/17				www.amazon.com		\$ 2.09
	Radio Shack	279-422				www.radioshack.com		\$ 9.99
	Pan Pacific	DC-546P-25-GR				www.cablesandconnectors.com		\$ 12.99
C-Base	AndyMark, Inc	various				www.andymark.com		
Circuit breaker (5A)	AndyMark, Inc	am-2096				www.andymark.com		\$ 6.00
Circuit breaker (10A)	AndyMark, Inc	am-2097				www.andymark.com		\$ 6.00
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						
	Andy Mark	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 (6ft)	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)			
(crimp onto ribbon cable)	Digikey	HMM37H-ND				www.digikey.com		\$ 4.62
DB37 Female Connector		DE-6100-1286-1			Y (1X)			
(crimp onto ribbon cable)	Digikey	HFM37H-ND				www.digikey.com		\$ 4.87
DB37 Connector Cap		none			Y (2X)			
Encoder Connector (shell) for Jaguar	Digikey	609-2338-ND				www.digikey.com		\$ 0.79
(5 pin)	Pololu	1904				www.pololu.com		\$ 0.69
Ethernet Port Saver	SF Cable	CAT5-01MF				www.sfcable.com		\$ 5.77
(1ft M-F cable)	Andy Mark	FC14-022	F Choice			www.andymark.com	5FC Credits	
Pins for Encoder connector	Digikey	609-2305-ND				www.digikey.com		\$ 0.43
	Pololu	1930				www.pololu.com	100pcs	\$ 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	16335 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 1/8" blue (4ft)	Marlin P Jones	16614 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		\$ 24.95
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
Heat Shrink Tubing Ass't (large sizes)	Andy Mark	am-2233				www.andymark.com		\$ 13.00
Jumper	FCI	68786-102LF		Y (4X)	Y (4X)	ubiquitous		
		am-0658				www.AndyMark.com		\$ 0.25
LED strip, blue, 12VDC, 19.7in	SuperbrightLEDs	NFLS-B30X3-WHT				www.superbrightleds.com		\$ 15.95
LED strip, red, 12VDC, 19.7in	SuperbrightLEDs	NFLS-R30X3-WHT				www.superbrightleds.com		\$ 15.95
LED strip, R/G/B, 12VDC, 11.6in	Marlin P Jones	17363				www.mpja.com		\$ 4.95
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 (large-with roller)	McMaster-Carr	7090K38				www.mcmaster.com		\$ 10.35
Microswitch (mini-with roller)	Radio Shack	275-017				www.radioshack.com		\$ 3.49
Microswitch (mini-with roller)	Marlin P Jones	16317 SW				www.mpja.com		\$ 0.89
Microswitch (mini-with roller)	DigiKey	SW1243-ND				www.digikey.com		\$ 3.20
Mini-Anderson Connectors		various				www.powerwerx.com		
Mini-Anderson Connectors		various				www.robotmarketplace.com		
Mini-Anderson Connectors		various				www.cablesandconnectors.com		
Mini-Anderson Connectors (kit of 16)	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		\$ 3.49

Power connector, PD Bd-24VDC, 4pos	Sauro	CTF040V8		Y (2X)	Y (2X)	www.andymark.com or www.ni.com		
		am-0295				www.andymark.com		
Power connector, cRio-24VDC, 2pos	Sauro	CTF020V8						
		am-2076				www.andymark.com		
Power connector, Wago (2pin 3.5mm pitch)	Diamond Technologies WAGO	734-102		Y (6X)	Y (4X)	www.diamondt.com or 866-837-1931		
		734-102						
		am-0296				www.andymark.com		
Pushbutton switch	Radio Shack	275-1547				www.radioshack.com	4pcs	\$ 3.99
Pushbutton switch	NKK	SB4011NOMG				www.nkkswitches.com		
	Digikey	SB4011NOMG-ND				www.digikey.com		\$ 7.18
	AndyMark, Inc	FC14-063	F Choice			www.andymark.com		5FC credits
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/RJ-25 Modular Plug	Ideal	85-345				www.homedepot.com	25 pcs	\$ 5.97
	Radio Shack	279-421				www.radioshack.com	10 pcs	\$ 8.99
	Philmore	TEC3				www.cablesandconnectors.com	9	\$ 3.99
Rotary Limit Switch	AutomationDirect	AAP2T51Z11				www.automationdirect.com		\$ 14.25
	Marlin P Jones	30142 SW				www.mpja.com		\$ 9.95
	Honeywell	EVN2000A						
	AndyMark, Inc	FC14-001	F Choice			www.andymark.com		5FC credits
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)	LynxMotion	SEA-01				www.lynxmotion.com		\$ 1.95
		276-1427 (pack of 4)				www.ifirobotics.com		\$ 19.95
Servo 12" extension cable (PWM cable x3cond)	LynxMotion	SEA-02			Y (1X)	www.lynxmotion.com		\$ 1.95
	Andy Mark	am-0693				www.andymark.com		\$ 2.75
	Hansen Hobbies	no part number				www.hansenhobbies.com		\$ 2.45
	Pololu	2184				www.pololu.com		\$ 2.49
Servo 24" extension cable (PWM cable x2cond)	Andy Mark	am-2133				www.andymark.com		\$ 2.00
Servo 24" extension cable (PWM cable x3cond)	LynxMotion	SEA-03				www.lynxmotion.com		\$ 1.95
	Andy Mark	am-0694				www.andymark.com		\$ 3.25
	Pololu	2185				www.pololu.com		\$ 3.49
Servo 36" extension cable (PWM cable x3cond)				Y (8X)	Y (8X)			
		am-0695				www.andymark.com		\$ 3.00
		276-1976 (pack of 4)				www.ifirobotics.com		\$ 19.95
Servo Y-splitter cable (PWM cable x3cond)	Pololu	788 (modified, plastic covers removed)		Y (2X)	Y (2X)	www.pololu.com		\$ 3.25
		276-1423 (pack of 2)				www.ifirobotics.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
String Potentiometer (kit only)	Andy Mark	am-2618				www.andymark.com		\$ 17.00

String Potentiometer (w/ enclosure)	Andy Mark	am-2674				www.andymark.com		\$ 40.00
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		\$ 3.49
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		
						www.homedepot.com		
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	100pcs	
Tie wraps, 4"	Cables to Go	43036				www.amazon.com	100pcs	\$ 2.11
Tie wraps, 3.9" with ID flag	Panduit	298-1101-ND				www.digikey.com	100pcs	\$ 3.68
Tie wraps, 8"	BURNDY	CT50175C		Y (100x)	Y (100x)	BURNDY is not yet ready to take orders, in process	100pcs	
Tie wraps, 8"	Gardner Bender	46-308				www.amazon.com	100pcs	\$ 5.08
Tie wraps, 48"	Grainger	4JC51				www.grainger.com	50pcs	\$ 64.62
	Andy Mark	FC14-026	F Choice			www.andymark.com		5FC Credits
Toggle Switch DPDT On-Off-On	NKK Switch	M2023SS1W02				www.nkkswitches.com		
	Andy Mark	FC14-049	F Choice			www.andymark.com		5FC Credits
Toggle Switch SPST On-None-(On)	NKK Switch	M2015ES1W03				www.nkkswitches.com		
	Andy Mark	FC14-046	F Choice			www.andymark.com		5FC Credits
Toggle Switch SPST On-Off	NKK Switch	M2011S3A1W03				www.nkkswitches.com		
	Andy Mark	FC14-042	F Choice			www.andymark.com		5FC Credits
Toggle Switch SPDT On-Off-(On)	NKK Switch	M2019SA1W03				www.nkkswitches.com		
	Andy Mark	FC14-048	F Choice			www.andymark.com		5FC Credits
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-#10AWG red/blk zip cord	Cables and Connectors	FS-34219				www.cablesandconnectors.com	per ft	\$ 2.05
	Power Werx	Wire-RB-10-50				www.powerwerx.com	50 ft	\$ 63.06
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
	Andy Mark	am-0904				www.andymark.com	25 ft	\$ 16.00
	Power Werx	Wire-RB-10-50				www.powerwerx.com	50 ft	\$ 40.12
	Cables and Connectors	FS-34220				www.cablesandconnectors.com	per ft	\$ 1.48
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
	Cables and Connectors	FS-34221				www.cablesandconnectors.com	per ft	\$ 0.68
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

Wire Hold Down Base (screw type)	Andy Mark	am-2594				www.andymark.com	25pcs	\$ 3.00

---ELECTRICAL (CONTROL)---

Part Description	Supplier	Part Number	2014 KOP	2013 KOP	2012 KOP	Where to get more...	Notes	Price
Analog Breakout	Diversified Systems	A003266		Y (1X)	Y (1X)		1	
		am-0267				www.andymark.com		
		am-0867				www.andymark.com		\$ 24.00
Breakout Mounting Screw (4-40x3/4")		1ME99		Y (4X)	Y (4X)			
		87913356						
	McMaster-Carr	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 M1013 (2013 version)	Andy Mark	am-0667				www.andymark.com		\$ 187.00
Camera, Axis M1013 (2014 version)	Andy Mark	FC-091	F Choice			www.andymark.com	55FC Credits	
	Axis Communications	M1013				www.axis.com		
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-0568				www.andymark.com		\$ 64.00
Camera-110V power supply					Rookie			
Camera- power connector (2.1/5.5mm)	Andy Mark	am-2298				www.andymark.com		\$ 4.00
Camera- light ring, green LED	SuperbrightLEDs	AE60-G15				www.superbrightleds.com		\$ 7.95
	Andy Mark	FC14-060	F Choice			www.andymark.com	10FC Credits	
Classmate Netbook-2012	Intel/CTL Corp	NBC2GO89A			Rookie	www.ctlcorp.com/shop		
Classmate Netbook-2013	Intel/CTL Corp	???	F Choice	Rookie		www.ctlcorp.com/shop		
	Andy Mark	FC14-005				www.andymark.com	100 FC credits	
Classmate Netbook-2014	Intel/CTL Corp	NBCE11V	F.C. + Rookie			www.ctlcorp.com/shop		
	Andy Mark	FC14-101				www.andymark.com	100 FC credits	
Classmate battery								
Cypress Breakout PCB	Andy Mark	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			Y (1X)	www.andymark.biz	1	
		am-0866	www.andymark.com	\$ 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		
		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
FRC Controller only (4slot)	Andy Mark	FC14-035	F Choice			www.andymark.com	100 FC credits	
Insight Diagnostic Tool	Bit Built Technologies	am-2438				www.andymark.com	6	NAV
Joystick, Attack 3	TigerDirect	963291-0403			Rookie	www.tigerdirect.com	6	NAV
Joystick, 3D	TigerDirect	963290-0403				www.tigerdirect.com		\$ 29.99
	Andy Mark	am-0598				www.andymark.com	6	NAV
NI Rookie packet	National Instruments				Rookie	www.ni.com/FIRST		
Power Distribution Board	Diversified Systems	A003206		Y (1X)	Y (1X)		1	
		am-0865				www.andymark.biz		\$ 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
Radio Power Connector	Radio Shack	274-1569				www.radioshack.com		\$ 3.19
Radio Power Connector+Wire	Andy Mark	am-2298				www.andymark.com		\$ 4.00
Relay Module (Spike)	Innovation First	SPIKE-RELAY-H		Y (1X)	Y (1X)	www.vexrobotics.com	1	\$ 34.95
		217-0220				www.ifirobotics.com		\$ 34.95
Solenoid Breakout (2011-12 version)	Diversified Systems	A003265			Rookie		1	
		am-0868				www.andymark.biz		\$ 24.00
		FC13-097		F Choice		www.andymark.biz	8 FC credits	
Speed Controller (Jaguar)	Texas Instruments (fma Luminary Micro	MDL-BDC				www.luminarymicro.com/jaguar	3	
		217-3367				www.vexrobotics.com/vexpro		\$ 59.99
		726-1189ND			Y (2X)	Digikey		NAV
		am-0878				www.andymark.com	6	
Speed Controller kit (motor/jag/wire)	Andy Mark	am-0990				www.andymark.com	6	NAV
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
Stellaris Launchpad PCB	Texas Instruments	LM4F120				www.ti.com		
	Andy Mark	FC14-011	F Choice			www.andymark.com	30FC Credits	
STOP Sticker		none		Y(1X)				
USB 4-port hub	Targus	ACH74US			Rookie	www.targus.com		\$ 26.99
USB 4-port hub (with on/off switches)	Grainger	5XGD8				www.grainger.com	6	NAV
	Andy Mark	FC14-027	F Choice			www.andymark.com	5FC Credits	
USB cable-1ft extension	Grainger	5XGA1				www.grainger.com	6	NAV
	Andy Mark	FC14-038	F Choice			www.andymark.com	5FC Credits	
USB cable-6ft extension	Grainger	5XGA5				www.grainger.com	6	NAV
	Andy Mark	FC14-039	F Choice			www.andymark.com	5FC Credits	
VEX Motor Controller 29	Vex Robotics	276-2193			Y (1X)	www.vexrobotics.com		\$ 9.99
X-Box Controller	Microsoft	52A-00004				www.microsoft.com		\$ 39.95
	Amazon	52A-00004				www.amazon.com		\$ 32.60

	Andy Mark	FC14-039	F Choice			www.andymark.com	30FC Credits
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---MOTORS FANS SERVOS---

Part Description	Supplier	Part Number	2014 KOP	2013 KOP	2012 KOP	Where to get more...	Notes	
2½” CIM Motor	Vertical Engineering Sales, LLC	FR801-001	F Choice	Y (2X)	Y (4X)	www.andymark.com, www.banebots.com, www.robotshop.ca, or www.trossenrobotics.com		30FC Credits
		am-0255				www.andymark.com		
		FC14-090				www.andymark.com		
		217-2000				www.ifirobotics.com		
		M4-R0062-12				www.banebots.com		
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		
	Andy Mark	FC14-105	F Choice			www.andymark.com		5FC Credits
Compact fan (mini)	ebm papst	412		Y (3X)	Y (6X)	Contact Dottie Reeve @ 860.284.4801 or dottie.reeve@us.ebmpapst.com		
	Andy Mark	FC14-127	F Choice			www.andymark.com		5FC Credits
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		
	Andy Mark	FC14-102	F Choice			www.andymark.com		15FC Credits
Window Motor - Right	Denso International America, Inc.	262100-3030			Y (1X)	not available - do not contact source		
	Denso International America, Inc.	E6DF-14A365-BB				www.densocorp-NA.com		
	Andy Mark	FC14-068	F Choice			www.andymark.com		15FC Credits
Motor Electrical Connector Shell	Andy Mark	FC14-182	F Choice			www.andymark.com		5FC Credits
Motor Electrical Connector Pin	Andy Mark	FC14-181	F Choice			www.andymark.com		5FC Credits
Window Motor- Right	Keyang	16227960		Y			15	
	Andy Mark	fc13-071		F Choice		www.andymark.com		First CH
	Andy Mark	FC14-071	F Choice			www.andymark.com		15FC Credits
FisherPrice Motor (2011-12)	FisherPrice/PowerWheels	am-0821			Y (2X)	www.andymark.biz		NAV
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
	Andy Mark	FC14-070	F Choice			www.andymark.com		15FC Credits
PG-71 Planetary Gearbox with RS775 Motor (2012,13,14)	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
	Andy Mark	FC14-072	F Choice			www.andymark.com		15FC Credits
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.hitecrcd.com		
	Andy Mark	FC14-002	F Choice			www.andymark.com		5FC Credits
		LXDEL7				www.towerhobbies.com		\$ 9.99
Snow Blower Motor/Gearbox	Andy Mark	am-2235		Y		www.andymark.com		\$ 39.00
	Andy Mark	FC14-067	F Choice			www.andymark.com		15FC Credits
Throttle Control Motor	Denso International America, Inc.	AE235100-0160		Y (4X)	Y (2X)			
	Andy Mark	FC13-020		Y+ FC		www.andymark.com	15	First Ch
	Andy Mark	FC14-020	F Choice			www.andymark.com		5FC Credits
Two Wire Motor 393	VEX	276-2177			Y (1X)	www.vexrobotics.com		\$ 19.99
Window Regulator-Pair	The Connection	262100-4342; 262100-4332				www.platinumparts.com		
	Andy Mark	FC14-136	F Choice			www.andymark.com		30FC Credits

---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		\$ 3.00
	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		\$ 3.00
	McMaster-Carr	6384K58				www.mcmaster.com		\$ 7.25
Bearing (1/2"ID 1-1/8"OD) (industry tpe R8)	AndyMark, Inc	am-0029				www.andymark.com		\$ 3.00
	McMaster-Carr					www.mcmaster.com		\$ 7.25
	Bane Bots	MB-S500B-1				www.banebots.com		\$ 1.75
Bearing 6002 2RS (15mm ID, 32mm OD)	Shuster	SHU 6002 2RS C3				www.shusterbearings.com		
	AndyMark, Inc	FC14-108	F Choice			www.andymark.com		5FC Credits
Bearing 6000 2RS (10mm ID, 26mm OD)	Shuster	SHU 6000 2RS C3				www.shusterbearings.com		
	AndyMark, Inc	FC14-109	F Choice			www.andymark.com		5FC Credits
Bearing 63/22 2RS (22mm ID, 56mm OD)	Shuster	SHU 63/22 2RS				www.shusterbearings.com		
	AndyMark, Inc	FC14-111	F Choice			www.andymark.com		5FC Credits
Bearing 6303 2RS (17mm ID, 47mm OD)	Shuster	SHU 6303 2RS				www.shusterbearings.com		
	AndyMark, Inc	FC14-107	F Choice			www.andymark.com		5FC Credits
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		\$ 12.00
	McMaster-Carr	6261K172				www.mcmaster.com		\$ 62.80
Chain Tensioner (#25 chain)	AndyMark, Inc	am-0986				www.andymark.com		\$ 20.00
CIM Motor Mounting Bracket	AndyMark, Inc	am-2488				www.andymark.com		\$ 9.00
Coupler, Denso motor	Pelham Plastics	Denso-6		Y (2X)	Y (4X)	an outlet has not been arranged - do not contact source		
	AndyMark, Inc	FC14-135	F Choice			www.andymark.com		5FC Credits
Coupling, Flex beam, 1/4" x 1/4"	AndyMark, Inc	FC14-078	F Choice			www.andymark.com		10FC Credits
	Ruland	PCR12-4-4-A				www.ruland.com		
Coupling, Rigid, 1/4" x 1/4"	AndyMark, Inc	FC14-076	F Choice			www.andymark.com		10FC Credits
	Ruland	CLX-4-4-A				www.ruland.com		
Coupling, Flex beam, 3/8" x 3/8"	AndyMark, Inc	FC14-079	F Choice			www.andymark.com		10FC Credits
	Ruland	PCR16-6-6-A				www.ruland.com		\$ 55.39
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	
Ferrule (3/32"wire cable crimp/splice)	Blue Hawk	0348559				www.lowes.com	pair	
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	FC14-117	F Choice			www.andymark.com		5FC Credits
	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	FC14-120	F Choice			www.andymark.com		5FC Credits
	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
	Andy Mark	FC14-119	F Choice			www.andymark.com		5FC Credits
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-10R		Y (2X)		www.igus.com	3	\$ 5.29
	Grainger	4LFP3				www.grainger.com		\$ 7.00
	Andy Mark	FC14-121	F Choice			www.andymark.com		5FC credits
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)	AndyMark, Inc	FC14-148	F Choice			www.andymark.com		5FC Credits
	Triangle Manufacturing	3C				www.triangleOshkosh.com/robotics		
Lazy Susan (4in square)	Triangle Manufacturing	4C				www.triangleOshkosh.com/robotics		
Lazy Susan (100mm round)	Igus	PRT-01-30				www.igus.com		
	AndyMark, Inc	FC14-100	F Choice			www.andymark.com		5FC Credits
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)	AndyMark, Inc	FC14-064	F Choice			www.andymark.com		5FC Credits
	Triangle Manufacturing	12C				www.triangleOshkosh.com/robotics		
Lazy Susan (12in round-narrow style)	McMaster-Carr	18635A52				www.mcmaster.com		\$ 31.59
Lazy Susan (17-1/2in round-narrow style)	Rockler	12451				www.rockler.com		\$ 76.39
Lazy Susan (23-5/8in round-narrow style)	Rockler	56875				www.rockler.com		\$ 177.49
Lead Screw w/ nut (single start)	Haydon Kerk Motion Products	BZ8M16 X 15"				www.haydonkerk.com		
	AndyMark, Inc	FC13-050		F Choice		www.andymark.com		4FC credits
Lead Screw w/ nut (double start)	AndyMark, Inc	am-2492				www.andymark.com		\$ 55.00
Lead Screw w/ nut (7/16" dia)	Haydon Kerk Motion Products	BFM043-24				www.haydonkerk.com		
	AndyMark, Inc	FC14-095	F Choice			www.andymark.com		5FC Credits
Lead Screw w/ nut (3/8" dia)	Haydon Kerk Motion Products	BFM6007 x 18				www.haydonkerk.com		
	AndyMark, Inc	FC14-116	F Choice			www.andymark.com		5FC Credits
Master Link for #35 Chain	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		
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
Pulley, V-Belt	Andy Mark	FC14-037	F Choice			www.andymark.com		5FC Credits
Reflective Material	Reflexite	GP020			Y (28ft)			
	AndyMark, Inc	am-0905				www.andymark.com		NAV
Reflective Material-Silver Marking Film (4" x 27ft)	3M	8830						
	AndyMark, Inc	FC13-144		F Choice		www.andymark.com		8FC credits
Rod End Pivot Bearing (3/8")	Triangle Manufacturing	AL7008						
	Andy Mark	FC14-138	F Choice			www.andymark.com		5FC 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- steel and aluminum: see raw materials								
Shaft Collar assortment	Ruland			Y (1bag)	Y (1bag)	www.ruland.com		
Shaft Collar- 1/4" bore alum, 2 piece	AndyMark, Inc	FC14-073	FC			www.andymark.com		5FC credits
	Ruland	SP-4-A				www.ruland.com		
Shaft Collar- 1/4" bore alum, clamp	AndyMark, Inc	FC14-066	FC			www.andymark.com		5FC credits
	Ruland	CL-4-A				www.ruland.com		
Shaft Collar- 3/8" bore steel	Ruland	CL-6-F				www.ruland.com		
Shaft Collar- 3/8" bore alum, 2 piece	AndyMark, Inc	FC14-074	FC			www.andymark.com		5FC credits
	Ruland	SP-6-A				www.ruland.com		
Shaft Collar- 3/8" bore alum, clamp	AndyMark, Inc	FC14-094	FC			www.andymark.com		5FC credits
	Ruland	CL-6-A				www.ruland.com		
Shaft Collar- 1/2" bore steel	Ruland	CL-8-F				www.ruland.com		
Shaft Collar- 1/2" bore alum, clamp	AndyMark, Inc	FC14-075	FC			www.andymark.com		5FC credits
	Ruland	CL-8-A	FC			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)				
Winch/cable puller	Haul Master	30131				www.harborfreight.com		\$ 19.99

---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	\$ 47.00
Encoder, 250PPR, 1 set, no cable	US Digital	am-0174			www.andymark.com	\$ 40.00
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	AMS	AS5145B			www.ams.com	
	Andy Mark	FC14-062	F Choice		www.andymark.com	5FC Credits
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 puchase. 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	2014KOP	2013 KOP	2012 KOP	Where to get more...	Notes	
Air Compressor (1.03CFM)	Gardner Denver Thomas, Inc.	405ADC38/12				www.drillspot.com		\$ 365.81
	Viair	0090C				www.viaircorp.com		
	Andy Mark	am-2005			Rookie	www.AndyMark.com		\$ 69.00
	Andy Mark	FC14-140	F Choice			www.AndyMark.com	30FC Credits	
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 (574ml)	Clippard	AVT-PP-35				www.clippard.com		??
	Andy Mark	FC14-040	F Choice			www.AndyMark.com		
Accumulator (30cu in)	Andy Mark	am-2007				www.AndyMark.com	6	NAV
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=default . Follow <i>Product Selection: FITTINGS</i> > <i>INDUSTRIAL FITTINGS</i> > <i>BRASS AND PLASTIC</i> <i>INDUSTRIAL FITTINGS</i> > <i>BRASS AND PLASTIC INDUSTRIAL FITTINGS</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 (60PSI) Mounting Kit	Norgren	18-025-003			Y (1X)	www.norgren.com/usa		
	Andy Mark	FC14-010	F Choice			www.AndyMark.com	5FC Credits	
Metering Control Valve	Parker - Brass Division	FCC731-4-2			Y	www.parker.com		
Pneumatics base kit	various	am-2000				www.AndyMark.com		\$ 267.00
Pneumatic fitting pack	various				Y			
Pneumatic fitting kit	Andy Mark	am-2678				www.AndyMark.com		\$ 195.00
Pnuematic tubing (50ft black)	Freelin-Wade	1J-151-48P-FW				www.protubing.com	3	
Pnuematic tubing (100ft black)	Freelin-Wade	FIRST-BAG-01-BLACK				www.freelin-wade.com	100ft	\$ 371.24
Pnuematic tubing (50ft black)	Andy Mark	FC14-034	F Choice			www.AndyMark.com	5FC Credits	

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 (0-160PSI, rear port)	Norgren	??	F Choice			www.norgren.com/usa		
	Andy Mark	am-2003				www.AndyMark.com		\$ 18.00
	Andy Mark	FC14-051				www.AndyMark.com	5FC Credits	
Pressure Gauge (0-100PSI, bottom port)	HPE Automation	18-013-212	F Choice		Y (2X)	www.norgren.com/usa		
	Andy Mark	FC14-025				www.AndyMark.com	5FC Credits	
Pressure Switch	Nason	SM-2B-115R/443			Y (1X)	www.nasonptc.com		
	Andy Mark	am-2006				www.AndyMark.com		\$ 29.00
	Andy Mark	FC14-006	F Choice			www.AndyMark.com	5FC Credits	
Relief Valve	Norgren	16-004-011			Y (1X)	www.norgren.com/usa		
	Andy Mark	am-2002				www.AndyMark.com		\$ 35.00
		FC13-055		F Choice		www.AndyMark.com	6FC credits	
		FC14-055	F Choice			www.AndyMark.com	5FC Credits	
Secondary Regulator (1/8" ports, 100PSI, yellow ring)	Monnier	101-3002-1			Y (1X)	www.monnier.com		
	Andy Mark	FC14-125	F Choice			www.AndyMark.com	5FC Credits	
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						
	Andy Mark	FC14-098	F Choice			www.AndyMark.com	10FC Credits	
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 (1/4"W x 43ft)	HPE Automation				Y (1X)	www.hpeco.com		
Teflon tape (1/4"W x 43ft)	Andy Mark	FC14-036	F Choice			www.AndyMark.com	5FC Credits	
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		\$ 1.86

---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.onlinemteals.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.tslots.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.tslots.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.onlinemteals.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		\$ 14.04
	Home Depot							
Polycarbonate (1/8" x 24x24)	AndyMark	am-0980				www.AndyMark.com		\$ 17.00
	McMaster-Carr	8574K53				www.mcmaster.com		\$ 25.69
	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 (single 1/4-20)	80-20	3382				www.80-20.net		
	McMaster-Carr	47065-T142				www.mcmaster.com		\$ 2.30
Strut nut (single 1/4-20) and screw	Reid Tool	AES-3386				www.reidtool.com		\$ 0.46
Strut nut (double 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	2014 KOP	2013 KOP	2012 KOP	Where to get more...	Notes	
Adjustable Wrench 6"	Andy-Mark	FC14-003	FC			www.AndyMark.com		5FC
	Grainger	12C205				www.grainger.com	6	NAV
	Cooper Tools	AC26CVS				www.walmart.com		\$ 32.47

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		\$ 47.70
	Grainger	12V230				www.grainger.com		\$ 72.75
Broach, 4mm (to mate gears to PG-xx)	McMaster-Carr	8805A13				www.mcmaster.com		\$ 57.36
	Grainger	12V232				www.grainger.com		\$ 93.95
Bushing, 8mm dia x 2mm slot	McMaster-Carr	8804A71				www.mcmaster.com		\$ 12.21
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		\$ 28.00
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
Crimper- #20-#6AWG Wire		360-644				www.parts-express.com		\$ 39.59
Crimper- #22-#10AWG Wire		360-642				www.parts-express.com		\$ 19.55
Crimper- RJ11/RJ12 Connectors	Radio Shack	279-405				www.radioshack.com		\$ 37.99
Crimper- RJ11/RJ45 Connectors	Ideal	30-696				www.homedepot.com		\$ 54.99
	Ideal	30-496				www.amazon.com		\$ 39.64
Crimper- mini Anderson Conn		TRICRIMP				www.powerwerx.com		\$ 39.99
	Andy-Mark	am-2554				www.AndyMark.com		\$ 48.00
Crimper- mini Anderson Conn	Andy-Mark	am-2519				www.AndyMark.com	Junk!	NAV
Crimper- PWM Contacts	Andy-Mark	am-2672				www.AndyMark.com		\$ 26.00
Debur Tool (with 10 spare cutters)	Vargus/Shaviv	540-0469				www.use-enco.com		\$ 36.78
Digital Multimeter	Fluke Industrial	2100135D				use www.fluke.com , "Where to Buy", enter zip code or online		
	Fluke Industrial	2538790 (model 115)						
	Andy-Mark	FC14-029	F Choice			www.AndyMark.com	55FC Credits	
Driver bit (14pc kit)	Grainger	1AVA4				www.grainger.com	6	NAV
	Andy-Mark	FC14-028	F Choice			www.AndyMark.com	5FC Credits	
Extension Cord (14AWG 50ft)	Grainger	1FD55				www.grainger.com		\$ 43.65
	Andy-Mark	FC14-124	F Choice			www.AndyMark.com	5FC Credits	
Gear Puller (2T, 2+3 jaws)	Enco	891-4057				www.use-enco.com		\$ 40.98
	McMaster-Carr	6340K41				www.mcmaster.com		\$ 54.83
Gear Puller (5T, 2+3 jaws)	Sears	9-46906				www.sears.com		\$ 49.99
Gloves, pair	Grainger	2RA69			Y (1X)	ubiquitous		
Hand Tools- Misc	ACE Hardware Stores							
	Enco							
	Grainger							
	Home Depot							
	Lowe's							
	McMaster-Carr					www.mcmaster.com		
	MSC							

	True Value Hardware Stores							
Heat Gun								
Plier, locking 9in	Grainger	5MX38				www.grainger.com		\$ 10.41
	Andy-Mark	FC14-126	F Choice			www.AndyMark.com	5FC Credits	
PTC Sticker	PTC					www.ptc.com/go/first or firstsupport@ptc.com	2	
PVC Pipe Cutter (1-5/8" max)	Brass Craft	T-012X				www.homedepot.com		\$ 14.28
	Wolverine	PST002				www.amazon.com		\$ 16.87
Soldering Iron (40W with stand)	Weller	WLC-100				www.amazon.com		\$ 42.95
Soldering Gun (200/260W gun)	Weller	D550-PK				www.amazon.com		\$ 46.32
Strap Wrench (53in)	Grainger	2TVX5				www.grainger.com		\$ 40.37
	Andy-Mark	FC14-007	F Choice			www.AndyMark.com	5FC Credits	

---WHEELS---

Part Description	Supplier	Part Number	2013 KOP	2012 KOP	Where to get more...	Notes	Price (10)
FIRST Wheel, acetal, 8"	AndyMark, Inc	am-0494			www.andymark.com		\$ 12.00
FIRST Wheel, rubber, 8"	AndyMark, Inc	am-0420			www.andymark.com		\$ 12.00
HiGrip Wheel, 6"	AndyMark, Inc	am-0940		Y (6x)	www.andymark.com		\$ 8.00
HiGrip Wheel, 6" (rev II)	AndyMark, Inc	am-0940			www.andymark.com		\$ 10.00
Mechanum Wheel, 6"	AndyMark, Inc	am-0137			www.andymark.com	set of 4	\$ 253.00
Omni Wheel, 6" plastic	AndyMark, Inc	am-0013			www.andymark.com		\$ 28.00
Omni Wheel, 6" aluminum	AndyMark, Inc	am-0097			www.andymark.com		\$ 45.00
Pneumatic Wheel, 8"	AndyMark, Inc	am-0970			www.andymark.com		\$ 37.00
Skyway wheel (various sizes)	Skyway				www.skywaywheels.com	16	
Caster	Hudson Bearing				oxford Caster		
Caster	Hudson Bearing				oxford Caster		

---OTHER---

Part Description	Supplier	Part Number	2014 KOP	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 2013) 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

