

Sea Perch ROV

Parts and Tools Lists

These lists have been compiled in order to assist you in building the Sea Perch in your classroom and in ordering the necessary parts and tools. Please consult the construction manual and reference your Sea Perch training to verify what you will need.

The suggested vendors have been selected for convenience, price, and/or ease of use. Many of the items may be available at lower cost from other sources, or may be already available at your school (especially tools). Many items come in bulk, or are only available in quantities or packages larger than that needed for a single Sea Perch kit. In these cases, the cost per kit is calculated as a fraction of the minimum order quantity and price. When ordering for multiple kits, verify the quantity needed to order with the quantity needed for each kit and the minimum order quantity. Do not rely solely on the quantity column for the number to order. Many vendors have significant quantity discounts available, and some may have educational discounts.

Key

Qty.	Quantity - number of items needed for 1 kit, or length needed for items such as wire.
Size	Size or amount of item required, or unit of measure.
Item	Description of item.
Suggested Vendor	Suggested source for purchase of items.
Cat.No.	Catalog Number of item in suggested vendor's catalog
Minimum Package Quantity	Minimum amount available from vendor in a single order - may be more or less than needed for 1 kit
Per Package Cost	Cost of minimum order.
Order Quantity (# Pack.)	Number of packages of minimum order size needed for 1 kit.
Cost	Cost of quantity needed to order
Per Kit Cost	Cost of material needed for 1 kit.
Notes	Additional information, including quantity discounts and alternative sources

These lists were last updated in June 2005. All items were available from the suggested vendors at that time, but availability may change.

Sea Perch

Master List - Parts for 1 vehicle

Qty.	Size	Item	Suggested Vendor	Cat. No.	Minimum Package Quantity	Per Package Cost	Order Quantity (# Pack.)	Cost	Per Kit Cost	Notes
Vehicle Frame										
1	14 in	3/8", ABS H-Column	Plastruct	H-12	1	\$ 1.30	1	\$ 1.30	\$ 1.30	
1	5 ft	1/2", Sch. 40 PVC Pipe	McMaster-Carr	48925K91	1	\$ 1.20	1	\$ 1.20	\$ 1.20	
10	each	PVC elbows, 1/2" Sch. 40	McMaster-Carr	4880K21	1	\$ 0.27	10	\$ 2.70	\$ 2.70	
4	each	PVC Tees, 1/2" Sch. 40	McMaster-Carr	4880K41	1	\$ 0.33	4	\$ 1.32	\$ 1.32	
1	12"x8"	Polyethylene Mesh (per foot)	McMaster-Carr	9314T33	1	\$ 1.09	1	\$ 1.09	\$ 1.09	
3	each	Conduit straps (motor mounts)	McMaster-Carr	9429T36	50	\$ 6.56	1	\$ 6.56	\$ 0.39	
10	each	#6 x 1/2" stainless steel sheet metal screws	McMaster-Carr	92465A148	100	\$ 6.13	1	\$ 6.13	\$ 0.61	
6	each	#6 stainless steel flat washers	McMaster-Carr	90107A007	100	\$ 2.71	1	\$ 2.71	\$ 0.16	
2	each	Football floats 3"x5"	Aquatic Ecosystems	NF7	1	\$ 1.80	2	\$ 3.60	\$ 3.60	
4	each	1 oz. and/or 2 oz. Lead fishing sinkers								
Thruster Assembly										
3	each	35 mm plastic film cans - option 1	Any photo developer	often free	1	\$ -	3	\$ -	\$ -	
		35 mm plastic film cans - option 2 (sample vials)	US Plastics	81037	1	\$ 1.25	3	\$ 3.75		Quantity Discount available
3	12 v	Motors	Jameco	232021	1	\$ 2.25	3	\$ 6.75	\$ 6.75	100+ @ \$1.79ea.
3	each	plastic bushing	Jameco	162392	10	\$ 2.50	1	\$ 2.50	\$ 0.75	
3	each	1/8" plastic propeller .19 .35	Tower Hobbies	DUMB1860	1	\$ 1.15	3	\$ 3.45	\$ 3.45	
Tether Cable (40ft. long each)										
40	ft. long	Cat 5 cable, 4 twisted pair, stranded (by the foot)	Jameco	201582	100	\$ 18.00	1	\$ 18.00	\$ 7.20	Quantity discounts available
Control Box										
1	each	Plastic box 4.9"x2.5"x1.5"	Jameco	18913	1	\$ 3.69	1	\$ 3.69	\$ 3.69	10+ @ \$3.32ea.
2	each	DPDT center off toggle switches	Jameco	21952	1	\$ 1.29	2	\$ 2.58	\$ 2.58	Quantity Discount available
2	each	SPDT mom. push button switches	Jameco	28062	1	\$ 3.69	2	\$ 7.38	\$ 7.38	Quantity Discount available
2	each	Alligator clips	Jameco	256524	2	\$ 0.45	1	\$ 0.45	\$ 0.45	Quantity Discount available
1	each	Insulator for alligator clip - Red	Jameco	248971	2	\$ 0.21	1	\$ 0.21	\$ 0.11	Quantity Discount available
1	each	Insulator for alligator clip - Black	Jameco	248962	2	\$ 0.21	1	\$ 0.21	\$ 0.11	Quantity Discount available
1	each	Fuseholder, In-line, 1.25"x.25" fuse	Jameco	151917	1	\$ 0.99	1	\$ 0.99	\$ 0.99	Quantity Discount available
1	10 A	10 A slow-blow fuse	Jameco	69569	1	\$ 0.74	1	\$ 0.74	\$ 0.74	Quantity Discount available
6	ft. long	#18AWG speaker wire, 6 foot length	McMaster-Carr	70405K34	1	\$ 0.12	6	\$ 0.72	\$ 0.72	250+ @ \$.09/ft.
Expendable Supplies										
0.5	ring	Wax Toilet Bowl Ring (1/2 ring for each vehicle)	McMaster-Carr	2793K31	1	\$ 1.35	1	\$ 1.35	\$ 0.68	@ HomeDepot: 8 rings for \$3.35
2	ft. long	#24 stranded hookup wire, red (by 100' roll)	McMaster-Carr	7587K921	100	\$ 5.83	1	\$ 5.83	\$ 0.12	
2	ft. long	#24 stranded hookup wire, black (by 100' roll)	McMaster-Carr	7587K922	100	\$ 5.83	1	\$ 5.83	\$ 0.12	
15	6 in.	6" cable ties (aka: zip-ties or tie-wraps), black	McMaster-Carr	7130K42	100	\$ 3.39	1	\$ 3.39	\$ 0.51	
3	inches	Butyl Rubber Tape ("Monkey Dung") 16yard roll	McMaster-Carr	76385A15	576	\$ 12.57	1	\$ 12.57	\$ 0.07	
1	roll	Electrical tape	Jameco	285587	1	\$ 0.95	1	\$ 0.95	\$ 0.95	Higher quality tape also available
1	roll	Solder, 60/40 rosin core (contains lead)	Jameco	170456	1	\$ 1.39	1	\$ 1.39	\$ 1.39	
Total for ROV					Total for minimum order quantity		\$ 109.34	\$ 51.11	per kit, w/o battery or charger	

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Battery & Charger										
1	12 v	Battery, Sealed Lead Acid (SLA), 12 volt, 7 AH	Jameco	264057		\$ 16.95				Quantity Discount available
1		Charger - 12v, 4-10AH SLA (PSC-12800A)	McMaster-Carr	7448K67		\$ 41.14				
		Alternative Source for battery	batterymart.com	SLA-12V7-F1				\$ 9.95		
		Alternative Source for charger*	batterymart.com	ACC12BC0500D-1				\$ 9.95		
		*Cord required for alternative charger	batterymart.com	ACC-D-1766				\$ 1.95		
Total for Battery and Charger						Standard - \$ 58.09	\$ 21.85	- Alternative source		

Individual Tools (suggested for each Sea Perch kit)										
1		4.9 gal plastic tub (carrying case for Sea Perch)	IWP	rhp2222		\$ 5.26				
1		PVC pipe ratchet cutters	PlumbingStore.com	4657		\$ 17.88				@ McMaster: #8336A13, \$44.37
1		Screwdriver, flat, medium	McMaster-Carr	5682A18		\$ 4.17				
1		Screwdriver, phillips, small	McMaster-Carr	5682A27		\$ 3.11				
1		Scissors	McMaster-Carr	3608A14		\$ 11.51				
1		Slip joint pliers	McMaster-Carr	5624A8		\$ 7.50				
1		Needle nose pliers	McMaster-Carr	53895A19		\$ 13.67				
1		Diagonal cutter pliers	McMaster-Carr	3621A11		\$ 5.54				
1		Wire strippers (26-16 AWG Stranded)	McMaster-Carr	7294K58		\$ 9.43				
1		Eyeguards	McMaster-Carr	52755T9		\$ 4.81				Quantity Discount available, 10+
1		Soldering Iron	Jameco	224611		\$ 7.95				Many options available, for +/- \$
1		Soldering Stand	Jameco	36329		\$ 4.95				
1		Soldering Iron Tip, conical	Jameco	226018		\$ 0.95				
1		Sharpie (marker)	Office Depot, etc.							
1		Ruler	Office Depot, etc.							
1		Pen	Office Depot, etc.							
1		Pencil	Office Depot, etc.							
1		Pad of paper (as lab notebook)	Office Depot, etc.							
1		Paint set, enamel, regular colors (optional)	Tower Hobbies	LXHH93		\$ 7.19				
1		Paint brush set (optional)	Tower Hobbies	LXB838		\$ 3.39				
Shared Tools (shared by multiple Sea Perch kits)										
1		Bench vise, 4"	McMaster-Carr	5310A42		\$ 48.87				cheaper @ HomeDepot, etc.
1		Drill bit, 1/4"	McMaster-Carr	2901A124		\$ 1.86				Quantity Discount available, 12+
1		Drill bit, 1/8"	McMaster-Carr	2901A115		\$ 1.01				Quantity Discount available, 12+
1		Drill bit, 3/32"	McMaster-Carr	2901A113		\$ 0.88				Quantity Discount available, 12+
1		Machinist's Scraper (Triangular Blade, 4" blade)	McMaster-Carr	4291A16		\$ 10.76				
1		Twisted Pair Cable Stripper (for tether sheath)	McMaster-Carr	4333K26		\$ 21.10				@ Jameco: #230447, \$18.89
1		Digital Multimeter for debugging	Jameco	220812		\$ 9.79				
1		Solder wick	Jameco	41081		\$ 1.49				
1		Hand drill, variable speed - corded or cordless	Sears, Home Depot, etc.	various		\$ 29.99				Many types available: \$30-\$200
1		Electric Skillet (by Presto)	Ace Hardware	65987		\$ 29.99				Any Hot plate and pan will do
1		Metal cup or beaker for melting wax								cups with handles suggested
1		Thruster potting holder (wood, fine nails, wood glue)	Hardware store							
Total for Tools						\$ 263.05				

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Web Addresses of Vendors

Ace Hardware	www.acehardwareoutlet.com
Allied Electronics	www.alliedelec.com
Aquatic Ecosystems	www.aquaticeco.com
BatteryMart.com	www.batterymart.com
Home Depot	www.homedepot.com
IWP	www.rubbermaidproducts.com
Jameco	www.jameco.com
McMaster-Carr	www.mcmastercarr.com
Plastruct	www.plastruct.com
The Plumbing Store	www.PlumbingStore.com
Sears	www.sears.com
Tower Hobbies	www.towerhobbies.com
US Plastics	www.usplastic.com

Old Suppliers (no longer used in this list, but still useful as backup)

Radio Shack	www.radioshack.com
Small Parts Inc.	www.smallparts.com
Newark Electronics	www.newark.com
Contact East	www.contacteast.com
DataComm Warehouse	www.warehouse.com
Go Fishin	gofishin.com

Optional Accessories for the Sea Perch

Sensors

Hobo Data Loggers	http://www.iscienceproject.com/	K-12 teachers can sign them out for free!
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Underwater cameras

Resources Unltd	http://www.resunltd4u.com/	part# GM-300KX-10	\$179
Security labs	http://spycorder.com/waterproof.htm	Model # SLC-131	\$150
Polaris	www.polarisusa.com		
Matco	www.matco.com		

Tank for testing ROV (allows for testing during adverse weather)

Aquatic Eco Systems	http://www.aquaticeco.com/	QT502, \$352, Portable Tank, 450 gallons - 30 inches high, 6ft diameter
		QT110, \$75, Oval tank, 110 gallons - 52.5 x 36.5 x 21
		QT 160, \$92, Oval tank, 160 gallons - 59 x 40 x 21