A Ceiling Hoist for Fours

The inevitable space crunch hit our boathouse last year, so we looked to the ceiling for storing a couple of fours. We installed two winch systems and they have been working out great! They are easy to use and anyone can lift a four to the ceiling in less than a minute.

We did not want to have a four land on someone's head, so I spent some time researching winches and other parts. I went out of my way to get high strength components because of the safety factor. That meant ordering most of them from an industrial supply house. That's no harder than any other type of mail order. The supplier I used was McMaster-Carr. They have a gigantic catalog. They took personal credit cards and the order always arrived the next day.

The Winch: The critical feature on the winch is an automatic brake approved for overhead lifting. There is no messing around with little racket levers or anything. You simple turn the crank in one direction to lift and in the other direction to lower. If you let go of the handle, nothing happens. The manufacturer's bragging points on this type of winch are *safety* and *ease of use by inexperienced personnel*. Perfect.

The Cable: I went with 1/8" vinyl coated steel cable. It is strong, flexible and easy to work with. The vinyl coating makes it roll over pulleys easier. Remember to trim the coating off where you use a cable clamp.

Cable Clamps: Make sure you get forged steel, not malleable iron. There is a big strength difference. The ones at your local hardware store may be the cheap malleable iron ones, which are no good. When you tighten the nuts, you need to really crank down on them. The ones I bought specified the necessary foot-pounds of torque.

Eye Bolts: Forged steel, with a shoulder to help with side loading. For each primary anchor above the boat, I teamed an eye bolt up with a couple of two hole backup plates (leftover from dock building) and a standard 3/8" carriage bolt. This way the eye bolt can never pull out of or split the ceiling beam.

Pulleys: The bigger the pulley diameter, the easier it is to pull the cable over it. I got the ones that are specifically designed for use with aircraft or steel cable.

Slings and Spreader Bar: The boat's gunnels rest on 2x4s. The 2x4s are suspended from a single snap link. For the slings, I used 1" nylon webbing from a rock climbing store. There are some really weak types of webbing out there, so make sure you get the strong stuff. Alternatively, you can use nylon rope.

I have put together a parts list for our system to lift one boat. As I said, this system has been working well for us for over a year now, but… If you plan on installing a similar lift, then it is your responsibility to evaluate the safety of the system that you install and to comply with any applicable codes or safety regulations.

Parts List for Rowing Shell Overhead Winch System

(part numbers and prices as of 2000)

Quantity	Description	Source	Part No.	Units	Price each	Total price
1	Winch: one-speed spur gear with automatic brake, gear cover, 1000lb capacity, **approved for overhead lifting**	McMaster-Carr	3196T42	each	85.05	85.05
100	Cable: vinyl coated wire rope, 7x19 galvanized steel, 1/8"-7/32" dia, 2000lb breaking strength	McMaster-Carr	8912T52	foot	0.31	31.00
4	Wire rope clip and thimble kit, **forged steel**, for 1/8" rope, 1 thimble + 2 clips	McMaster-Carr	3372T21	kit	3.63	14.52
4	Pulleys: wire rope block with swivel eye, std type, 3" OD single sheave, 800lb working load	McMaster-Carr	3099T18	each	13.24	52.96
4	Eyebolts, shoulder pattern, 3/8"-16 x 3", 1400lb working load, forged steel	McMaster-Carr	3014&63	each	7.73	30.92
4	Threaded connectors, standard jaw, zinc plated steel, 3/8" stock dia, 1760lb working load	McMaster-Carr	8947T18	each	2.02	8.08
1	Side-mount pulley, single sheave closed, 1/4" rope dia	McMaster-Carr	3074T11	each	13.23	13.23
2	Spring snap link, zinc plated steel, 3/8" stock dia, 400lb working load	McMaster-Carr	3934T12	each	3.03	6.06
4	2-hole backup plate	Merco Marine or Lowes				
8	Carriage bolts, zinc plated, 3/8"-16 x 2.5"	local				
12	Lock nuts, 3/8"-16	local				
12	Fender washers, 3/8"	local				
2	2x4 to rest gunnels on	local				
2	80" webbing or rope straps	Mountaineering store				

Tools:
bolt cutters to trim cable
utility knife to cut coating off of cable
power drill with 3/8" bit
wrenches (for cable clamps, carriage bolts & tiny little cable clamp on winch)
hammer