

Composite Engineering

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Single Shell Rack – Standard kit for carrying an un-rigged boat

Materials:

A. Main Beam	2"x 4"x .125" rectangular tube x 54.5"
B. Forward Channel	1"x 3"x .125" channel x 10.5"
C. Track Towers (2)	2"x 4"x .125" rectangular tube x 2.74"
D. Half round (2)	50"x 2.25" black acetal round
E. Mounting Block Channel	1.0"x 1.5"x .125" channel x 15.0"
F. Mounting Block Channel Spacer	1.5"x 2.0"x .125" rectangular tube

Fasteners:

(4)	#8-32 x 0.375" Phillips pan head screw	(16)	1/4-20 Hex Nuts
(4)	1/4-20 x 0.63" Button socket head bolt	(1)	9" Leech line
(5)	1/4-20 x 1.00" Button socket head bolt	(1)	5/16" x 21" Bungee
(4)	1/4-20 x 1.25" Socket head bolt	(4)	3/16" x 18" Bungees
(2)	1/4-20 x 2.50" Socket head bolt		
(4)	0.25 ID x 0.50 OD x 0.50"thick Nylon Washers		

Tools Needed:

-7/16 wrench	-3/16 Allen wrench
-Phillips head screwdriver	-5/32 Allen wrench

Assembly:

1. Attach forward channel to main beam with (4) 1.25" soc hd cap bolts and (4) hex nuts on top of (4) 0.5" thick nylon washers. Note that the 2 bungee holes should face aft, 1 forward.
2. Attach mounting block channel on top of mounting block channel spacer to main beam with (2) 2.5" soc hd cap bolts and (2) hex nuts. Note orientation of notches facing aft in Fig 2. (Remove channel for easier loading when transporting boat with rigger attached. See page 3 for accessory.)
3. Turn over main beam and install bungee knobs (4) at ends and (1) in forward channel using (5) 1" but soc hd bolts and (6) hex nuts. For the forward channel knob use two nuts (one on inside & outside of channel). Do not screw bolts in all the way, leave protruding for bungees to loop onto.
4. Flip rack back over. Attach the (2) acetal half rounds to the track towers with (4) #8-32 x 0.375" pan Phillips head screws. (Note these may come pre-installed.) Attach the towers to the Forward Channel with (4) 0.63" but soc hd bolts and (4) hex nuts. For 21 cm track spacing acetal rounds facing out (as pictured in fig 1), for 16.5 cm acetal rounds facing in.
5. **Bungees. Forward (bow)** – (1) 5/16" x 21" bungee with 9" polyester leech line tied into a loop. **Scull bungees** forward and aft – (4) 3/16" x 18" bungee looped through spacers under channel and tied with overhand knot.
6. Mount the rack securely to your car roof rack with the clamps provided. Note that the cross bars should be at least 3 feet apart. The new style clamps should keep the sculls away from the rack. If not, use foam to prevent the sculls from chafing.

Mounting the Shell on the Rack

7. Place the shell on the rack with the tracks on the acetal rounds and the aft mounting blocks in the channel. Tighten the thumb screws securely. Loop the thick bungee through the rope handle on the seat deck and attach it to the protruding bolt on the forward channel. It should be snug so the boat does not bounce off the tracks when you drive through a pothole.
8. Additionally we strongly advise to secure the bow with ropes to the left and right sides of the hood of your car. This provides additional security in case of crosswinds. Attach a red flag to the stern. Load your sculls onto each side of the rack and secure them with the 4 bungees.

Single Shell Rack Photos

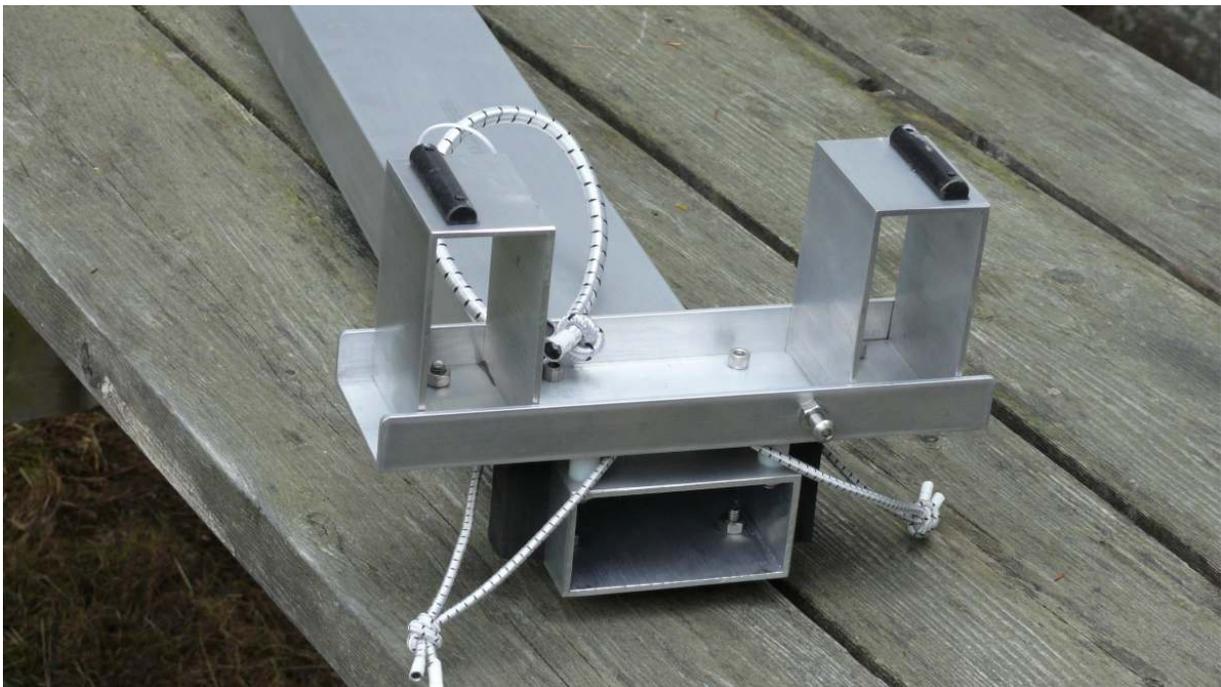


Fig 1: Bow End Top. Forward channel with two tower racks on white washers. Note position of black acetal rounds for 21 inch track spacing. Turn them around for 16.5 inch track spacing. Also note the main tiedown bungee with leech line loop and 2 scull bungees.



Fig 2: Stern End Top. Mounting block channel on channel spacer. The accessory for carrying the boat with rigger is visible behind the channel (see next page).



Fig 3: Full Rack Top View. Forward channel facing right, Mounting block channel on the left with accessory channel (optional).

Single Shell Rack – Optional accessory for carrying boat with rigger attached

Materials:

G. Wing Rigger Support .312" x 1.5 rectangle 15.0"

Fasteners:

(4)	#10-24 x 0.50" Phillips flat head screw	(2)	1/4-20 x 0.75" Flat soc head bolt
(2)	0.25 ID x 0.50 OD x .032" thick Nylon washers	(2)	1/4-20 Hex nuts
(2)	3/8"ID x 5/8"OD x 1/8" Rubber gromets	(2)	Plastic eye straps

Assembly:

1. Mount Wing Rigger Support to main beam with (2) 1/4 - 20 x 0.75" flat soc hd cap screws and (2) hex nuts. Place nylon shim washer (1/32) under one side to match the left over right of rigger, typically 1/32" or 1/4 of the difference on the mounting bars. For a L over R rig shim goes under left mount (if facing stern end of rack). Install rubber grommets.
2. Install (2) Plastic Eye Straps with (4) 10 – 24 x 0.5" flat Phillips head screw on bottom side of main beam.
3. **Bungees - Aft (stern)** – (2) 5/16" x 50" one each tied through plastic eye strap into a loop with an overhand knot.