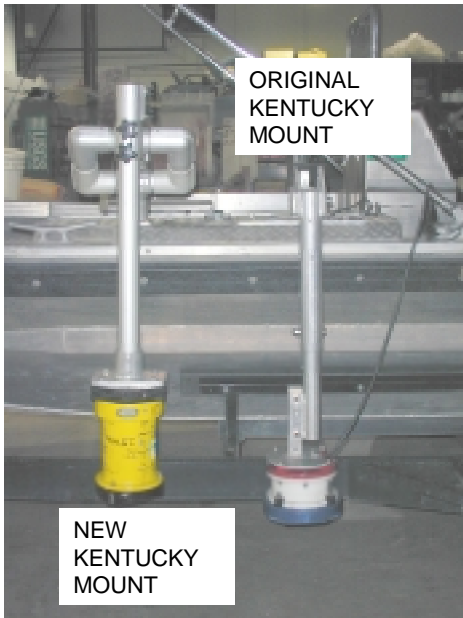


Kentucky Mount II

Introduction



Many USGS users have used the original mount developed by Harry Hitchcock in Kentucky (figure 1). This mount easily and efficiently deploys an ADCP off the side of a boat. Unfortunately there were never any plans or specifications for the mount and most of the mounts are unique and parts cannot be interchanged. The mount also requires a machine shop and numerous aluminum welds to fabricate. Due to the work required in the machine shop the cost of this mount approaches \$1000.

Figure 1. Kentucky mounts.



Figure 2. New Kentucky mount.

The objective of developing the new Kentucky mount was to retain the functionality of the original mount, reduce the cost, eliminate the need for a machine shop, and allow the ADCP to be locked in the down position. Utah, Florida, and several other USGS Districts have had success in developing mounts using Speed-Rail from The Hollaender Mfg. Co.¹ A new Kentucky mount has been developed using Speed-Rail, which requires only an allen wrench, pipe cutter, and socket set to construct (figure 2). The mount can easily deploy either a Sontek ADP or RDI Rio Grande. There is no reason an RDI Broadband ADCP could not be deployed with this mount, but it has not been tested with this unit.

¹ Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Functional Description

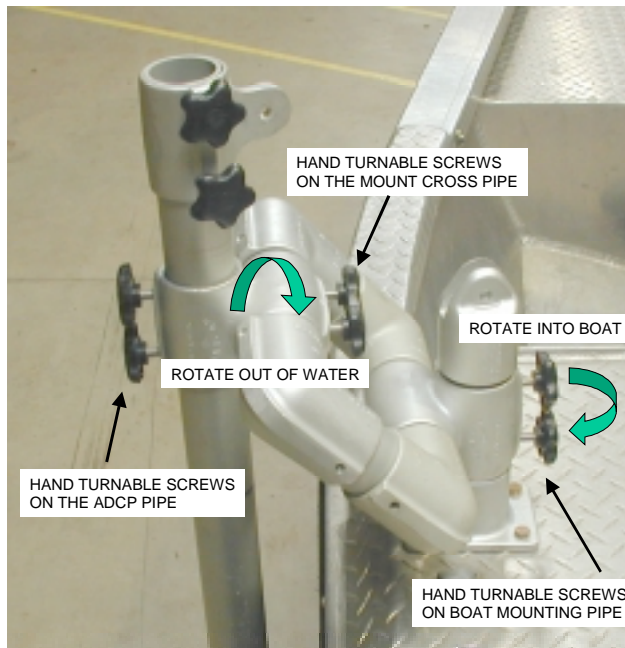


Figure 3. Operation of new Kentucky mount.

The new Kentucky mount allows the ADCP to be deployed downward and locked into place with the hand-turnable screws (figure 3). By loosening the screws on the mount cross pipe and the boat pipe, the ADCP can be lifted out of the water and rotated and set inside the boat. Currently there is not locking mechanism to lock the ADCP in a horizontal position but a rope or strap could be used to accomplish this. The hand-turnable screws on the ADCP pipe can be used to adjust the draft of the ADCP. The mount design assures that all moving parts are captive, that is, the hand-turnable screws on the ADCP pipe, the cross pipe, and the boat pipe can be loosened and the ADCP will not fall into water.

Parts Required

Only about 8 ft of pipe is required but 24 lengths are the minimum available from Hollaender. Alternatively, a local supplier of 2-inch schedule 40 pipe could be used. Hollaender does provide anodized pipe, which, may be hard to find at most local suppliers. All fittings should be ordered with stainless steel set screws. Note: anodizing takes an extra month to get from Hollaender.

Table 1. Parts list and pricing for anodized fittings and pipe.

Part Description	Quantity	Unit Cost	Total Cost
#3-9 2" Elbow w/ SS screw	4	13.59	54.36
#10-9 2" Offset Cross w/ SS screw	2	22.43	44.86
#17M-9 2" Adj. Elbow / Tee Male w/ SS screw	1	13.04	13.04
#17F-9 2" Adj. Elbow / Tee Female / SS screw	1	15.41	15.41
#48-9 2" HD Flange w/ SS screw	1	23.99	23.99
#47-9 2" Rect. Base Flange w/ SS screw	1	13.68	13.68
Pipe 2" 6061T6 Sch. 40 Anodized Al. Cut into 8 ft lengths	24	7.12	170.88
Broken bundle charge	1	50.00	50.00
Trim Cuts	2	1.50	3.00
Screw SS Hand Turnable 3/8-16	9	2.25	20.25
TOTAL COST			409.47

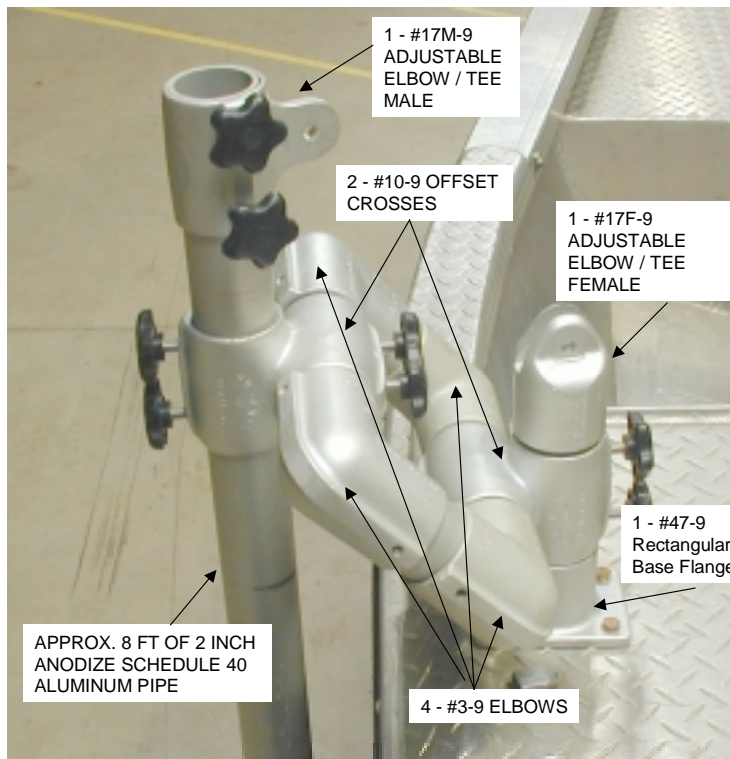


Figure 4. Parts required for mount fabrication.

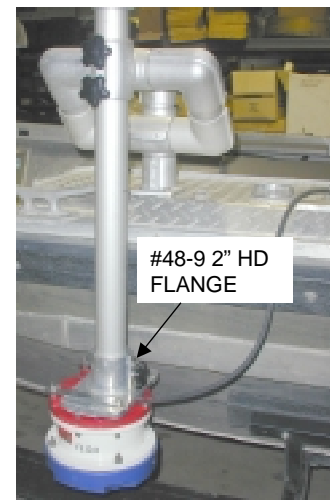
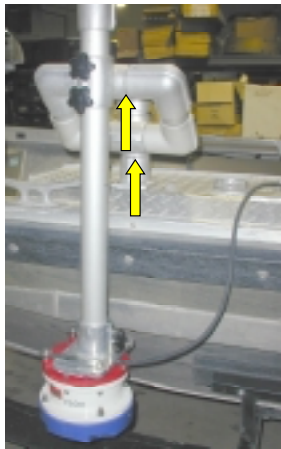


Figure 5. Flange mounted on RDI Rio Grande.

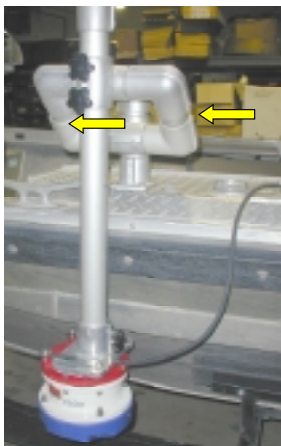
Fabrication Notes



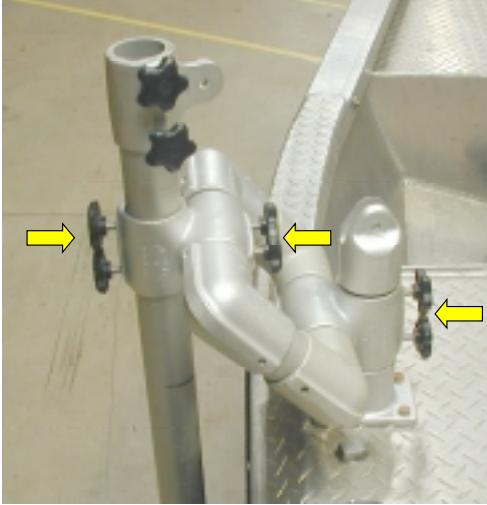
#47 Rectangular flange is bolted to boat in a suitable location. The length of pipe fit into the flange should only be sufficient to accommodate the offset cross and the female adjustable elbow (#17F). The #17F serves only to hold the bracket captive. This could be replaced by a bolt through pipe to keep the bracket from sliding up over the top of the boat-mounting pipe.



The length of pipe cut to make the cross pipes for the bracket should only be long enough to accommodate the offset crosses with just enough gap to allow the offset cross holding the ADCP pipe to rotate freely.



The length of pipe cut to make the sides of the bracket should be long enough to extend the bracket over the side of the boat.



The SS screws in the #47 flange and the offset cross holding the ADCP pipe should be replaced with the hand-turnable screws. The offset cross connecting the mount to the boat should have the SS screws on the boat pipe portion of the cross replaced with the hand-turnable screws. These hand-turnable screws allow the position of the ADCP to be easily locked into place.

The angle of the bracket is necessary to allow the ADCP pipe to be tilted out of the water into a horizontal position. This is adjusted by tightening the SS screws left in the offset cross.



The ADCP pipe should be cut to an appropriate length for the boat. The #17M, male adjustable elbow is attached to the top of the pipe to prevent it from sliding down through the offset cross, which could result in loss of the ADCP. It is recommended that pipe be drilled so that one of the screws in the #17M extends into the pipe. The screw could be replaced by a bolt.



The #48 HD flange can be fastened to the ADCP using stainless steel all thread and nylon locking nuts as show. Two aluminum straps are used to secure the flange to the ADCP.



The bottom of the ADCP pipe should be installed in the #48 flange and the upper SS screw replaced by a longer bolt. The bolt should be tightened to mark the pipe. A hole to accommodate the bolt should then be drilled into the pipe. This allows the bolt to be put through one side of the pipe when screwed in. The lower SS screw should be replaced by a hand-turnable screw. The hand-turnable screw when tightened will create a snug fit of the ADCP to the pipe.

Final Note

1-1/2 inch pipe and fittings are more readily available and could possibly be used. However, there will be about a 40% loss of strength if schedule 80 1-1/2 inch pipe is used.