

# *The \* TOTER \**



"A GREAT SMALL WATERCRAFT YOU CAN TOTE ANYWHERE, ANYTIME, ANYWAY."

## **ELECTRIC TROLLING MOTOR & CONTROL ASSEMBLY** **Design II - Basic Switch Assembly**

The choice of Motor is the boatbuilders. Certain minimum requirement are:

12 Volt (one deep cycle battery), 40 pound thrust, simple speed controls.  
Because of motor size variations, some dimensions  
will have to be calculated by the builder.

## Table of Contents - Motor Mount Assembly

<u>Page #</u>	<u>Description</u>
TM	Cover Page
TM-0	Table of Contents
TM-1	Motor Assembly Layout Drawing
TM-2	Motor Mount Drawing
TM-3, 4 & 5	Steering Arm Drawings
TM-6	Wiring Diagram
TM-7	Bill Of Materials
TM-7, 8 & 9	Photos
	<i>The Motor can be conventionally mounted on the transom, but may require some minor structural modifications.</i>
	<i>The following plan is for those who wish to convert it to an integral part of the overall "TOTER" design.</i>
	<b>The use of best-quality products is recommended.</b>
	<b>Assembly instructions assume some previous use of hand tools, materials and assembly methods.</b>
	<b>Minimum Tools Required:</b>
	<b>Jig Saw, Hand Drill, Wood File, Drill Bits, Countersink, Screwdriver, Sandpaper, Paint Brushes &amp; Dropcloth.</b>

The purpose for this revised version of the *Toter* Motor Mount and Controls section is to provide a simpler and less costly method of assembly.

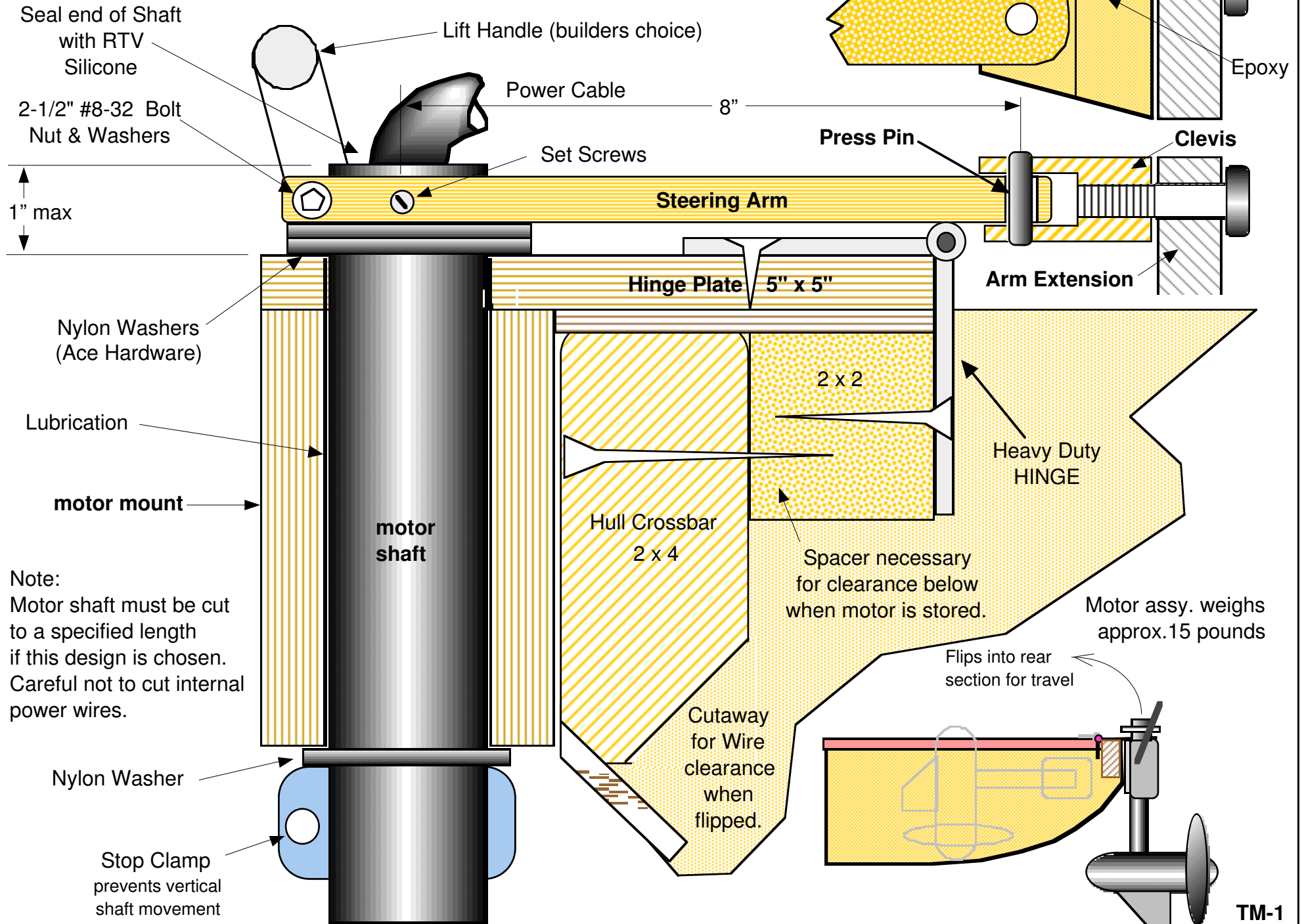
The original motor switch is utilized, eliminating the need to construct a relay control box, and associated electrical wiring.

One benefit is the return of reverse motor function, and the 5 forward speeds.

Some of the detail design is based on the motor choice by the builder. As a result, connection types will need to be decided by the builder. Attached photos can be of assistance.

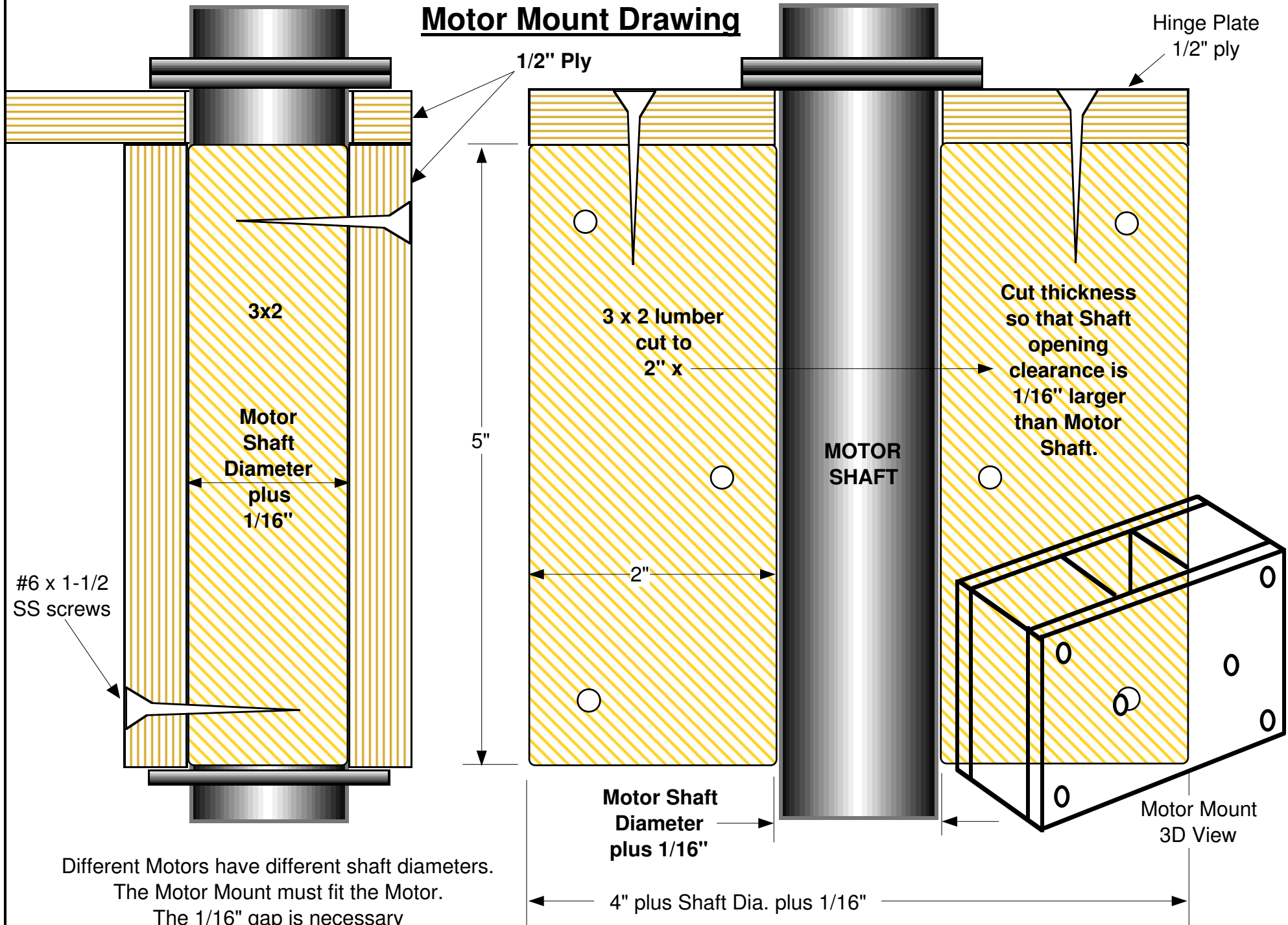
The attached documents attempt to convey the design and assembly of The TOTER using simple graphics and text. No in-depth description is provided, nor is necessary.

# MOTOR MOUNT and STEERING ARM Design Layout



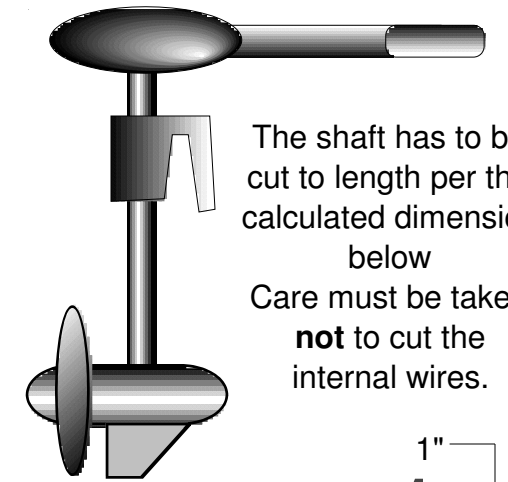
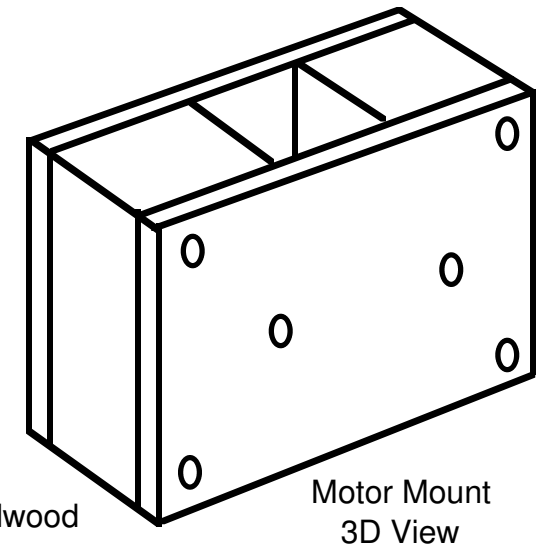
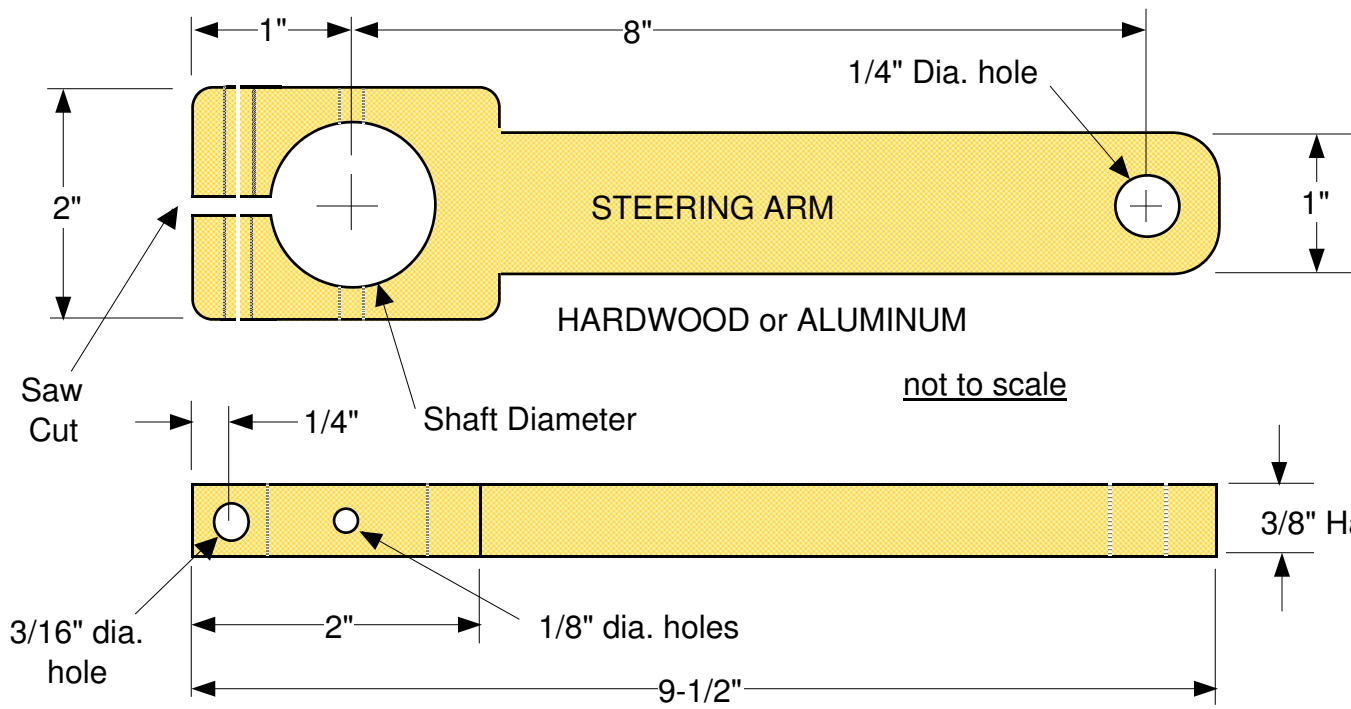
Note:  
 Motor shaft must be cut to a specified length if this design is chosen. Careful not to cut internal power wires.

# Motor Mount Drawing



Different Motors have different shaft diameters.  
 The Motor Mount must fit the Motor.  
 The 1/16" gap is necessary  
 for movement.





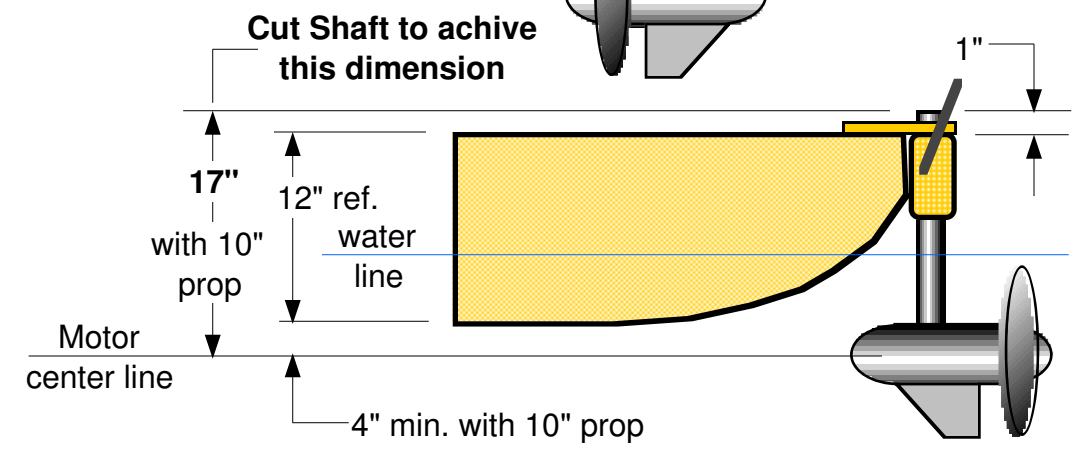
The shaft has to be cut to length per the calculated dimension below  
Care must be taken **not** to cut the internal wires.

Build the Motor Housing prior to any Motor modifications.

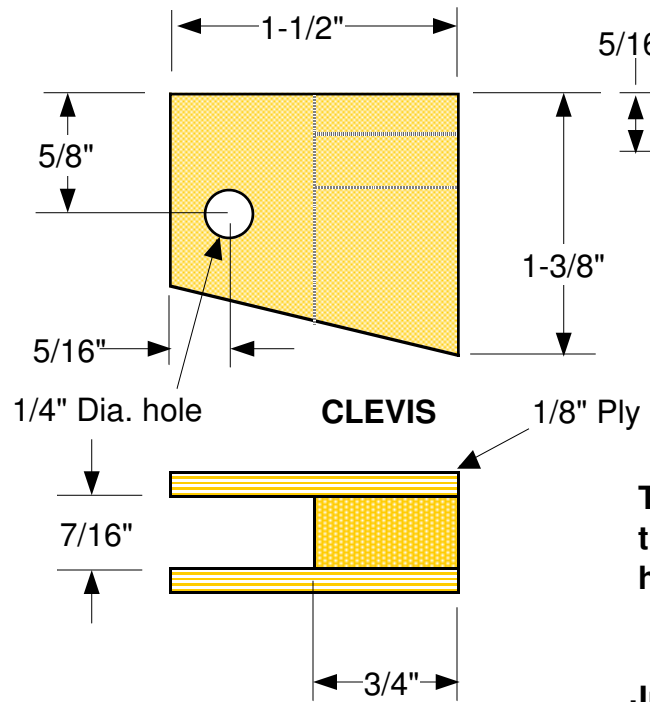
Disassemble the Motor Controls & the Mounting Hardware from the motor shaft.  
Identify & mark the Negative & Positive power wires.  
Identify & mark each Speed control wire.  
Remove the wires from the switch, and then the mounting hardware below.

The shaft should now be ready to cut .

Use a hacksaw and support the shaft while cutting a straight line.  
Rotate shaft while cutting.  
File the inside & outside edges to remove burrs.

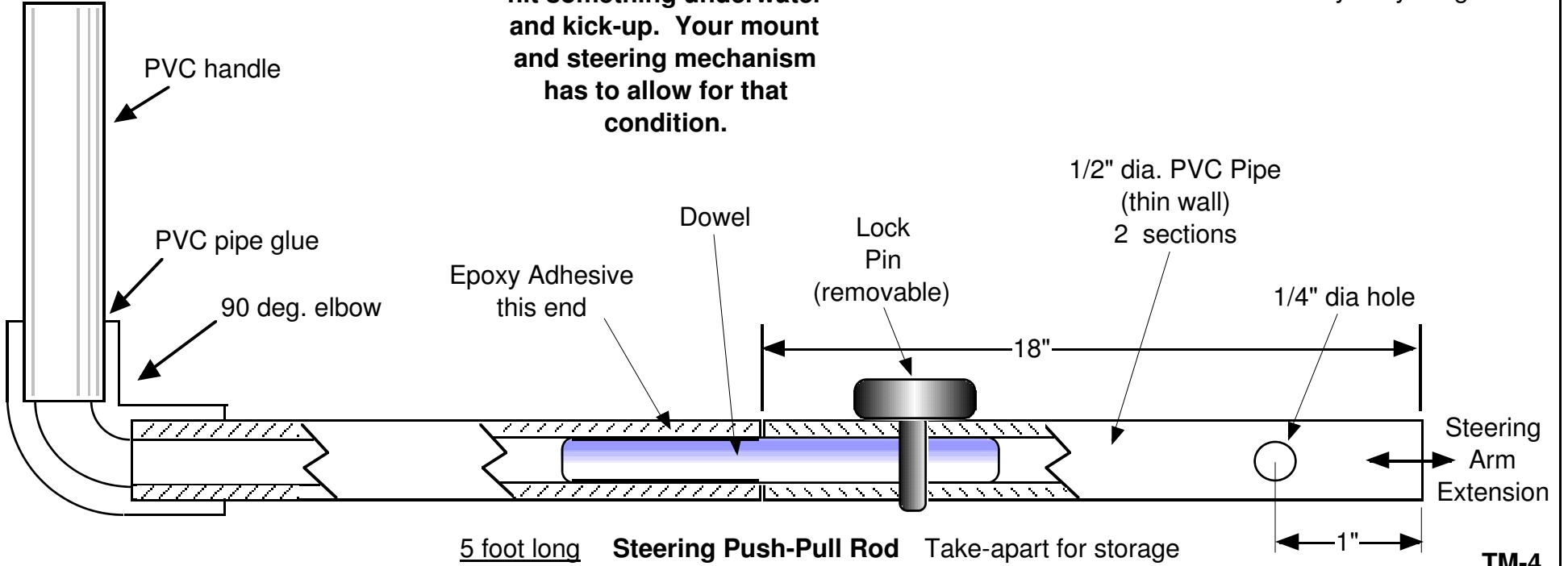
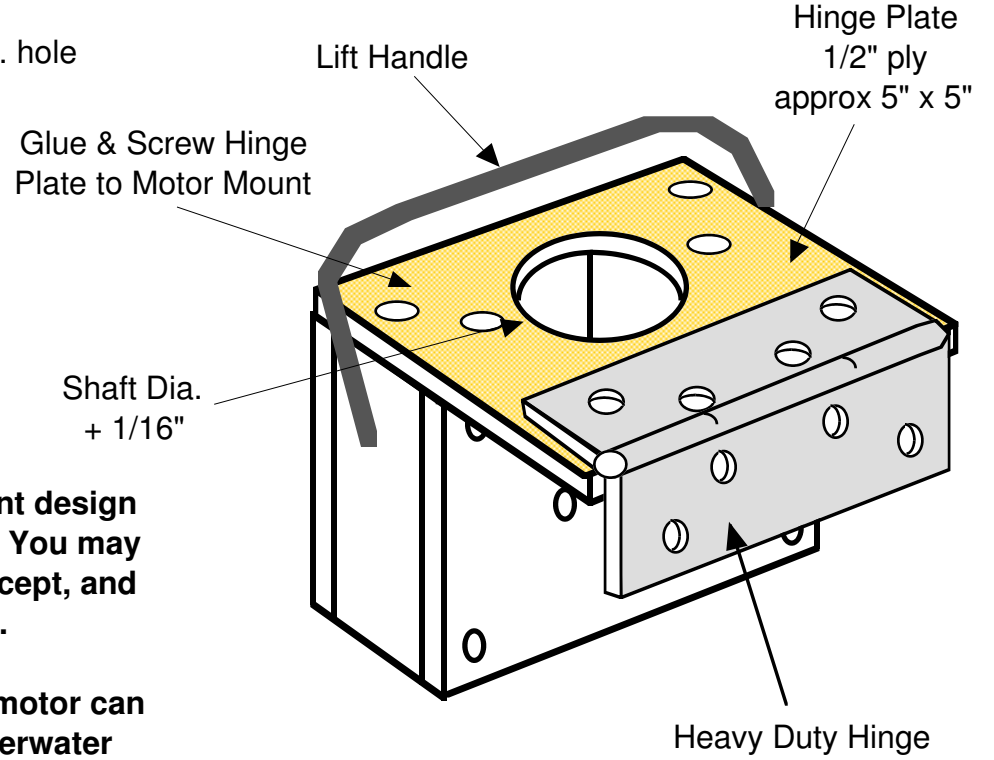


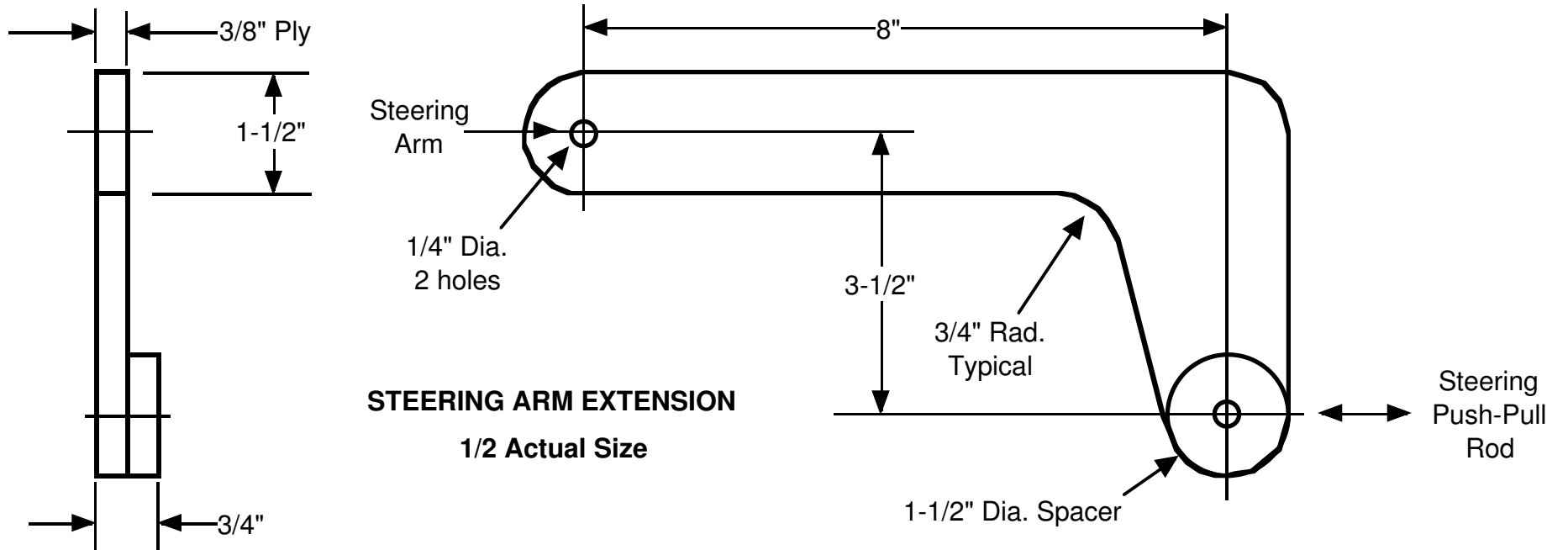
Shaft Length Calculator



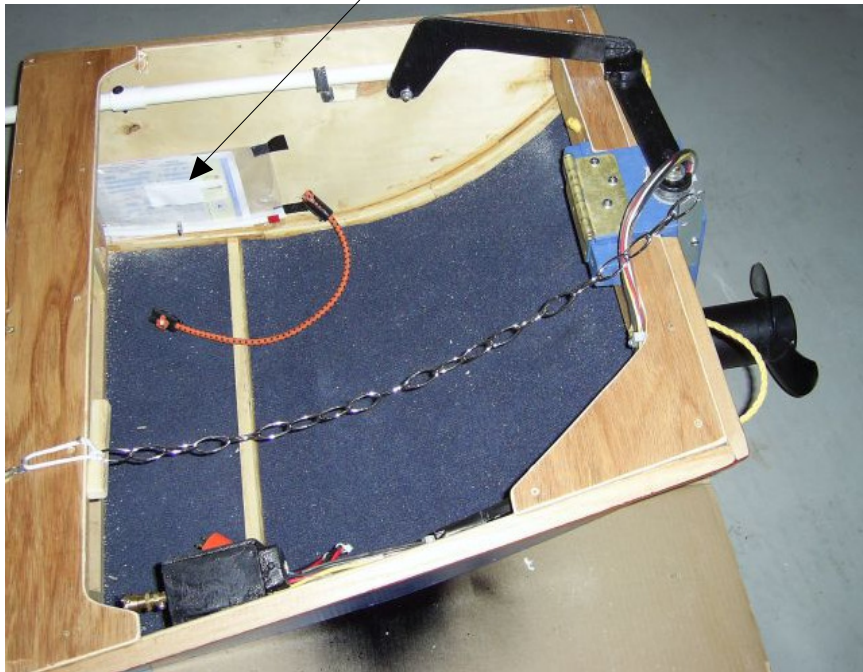
This is a Motor Mount design that worked for me. You may have a different concept, and that's great.

Just remember, the motor can hit something underwater and kick-up. Your mount and steering mechanism has to allow for that condition.

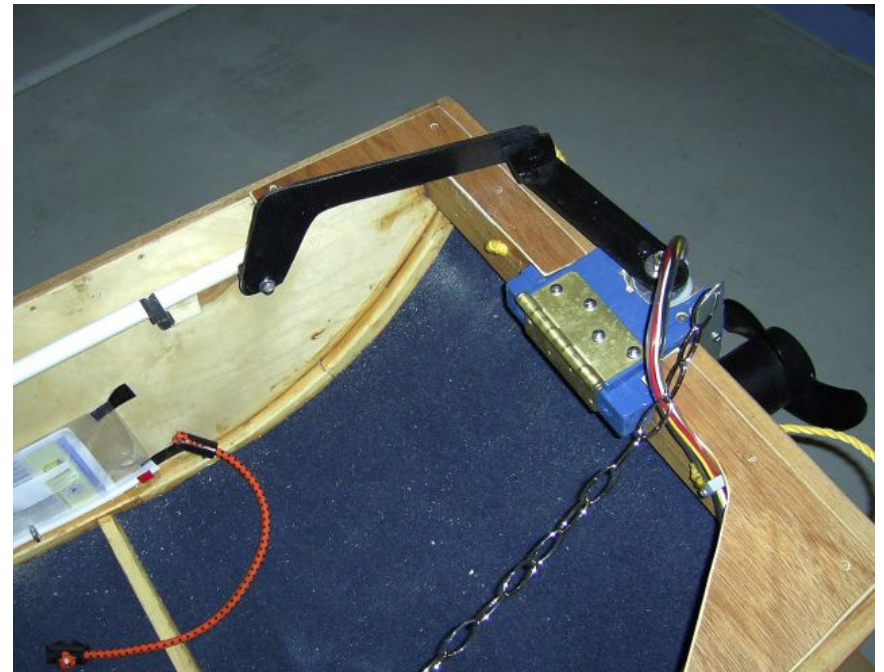




Notice registration papers  
(in plastic bag) taped to hull



Steering Arm Extension assembled



## WIRING DIAGRAM

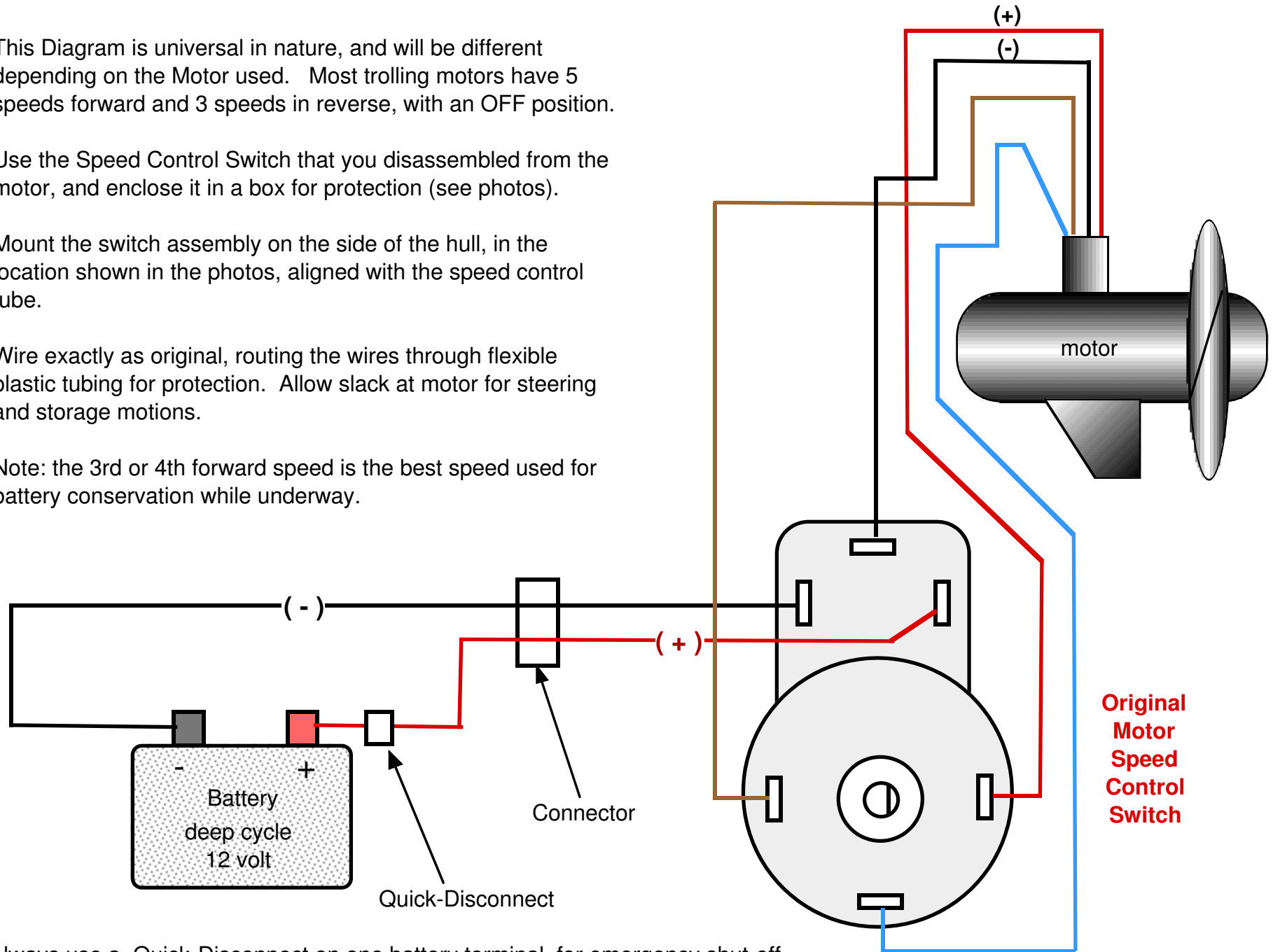
This Diagram is universal in nature, and will be different depending on the Motor used. Most trolling motors have 5 speeds forward and 3 speeds in reverse, with an OFF position.

Use the Speed Control Switch that you disassembled from the motor, and enclose it in a box for protection (see photos).

Mount the switch assembly on the side of the hull, in the location shown in the photos, aligned with the speed control tube.

Wire exactly as original, routing the wires through flexible plastic tubing for protection. Allow slack at motor for steering and storage motions.

Note: the 3rd or 4th forward speed is the best speed used for battery conservation while underway.



Always use a Quick-Disconnect on one battery terminal, for emergency shut-off.

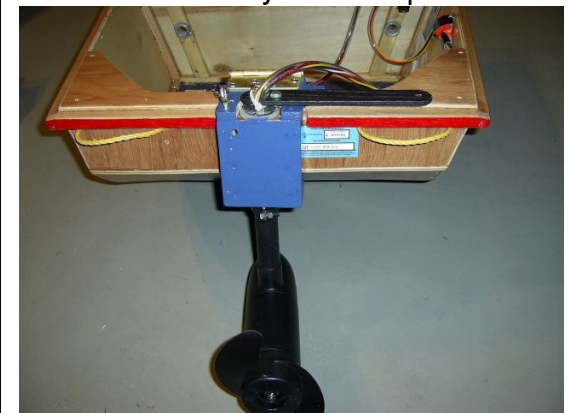


Place actual expense numbers in “Actual & Date” when purchased.

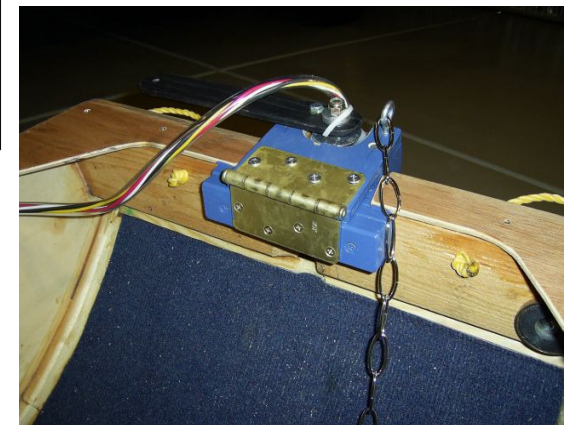
<b>Motor, Control &amp; Materials</b>				
<b>Qty.</b>	<b>Material</b>	<b>Estimated Cost</b>	<b>Actual</b>	<b>purchase Date</b>
1	Trolling Motor (40 Pound Thrust min.)	\$200.00		
1	10 Ga. stranded wire, 12 feet	\$10.00		
1	3 Prong Connector Assemblies	\$8.00		
1	12 Volt Deep Cycle Marine Battery	\$80.00		
1	12 V Battery Charger, Deep Cycle	\$50.00		
1	Motor Mount Wood & Materials	\$15.00		
1	Steering Arm Materials	\$4.00		
1	1/2 Dia. PVC Pipe, Steering Rod, 10 feet	\$3.00		
	It must be noted that changes to materials or design are completely up to the builder.			
	There is no one method of wiring or assembly that is correct, only what works for the individual builder, and produces a safe and reliable vessel.			
	Total estimated Motorized cost =	<b>\$370.00</b>		



Motor in ready to lower position



Motor Lowered



Motor Hinge Detail

It must be noted that because all motors are different, some dimensions and construction details must be developed by the builder. This includes the Switch Housing and the method by which the Speed Control Rod is connected to the Switch. Regardless, it must be a method that allows easy disassembly of the Rod from the Switch, for transportation and storage purposes.

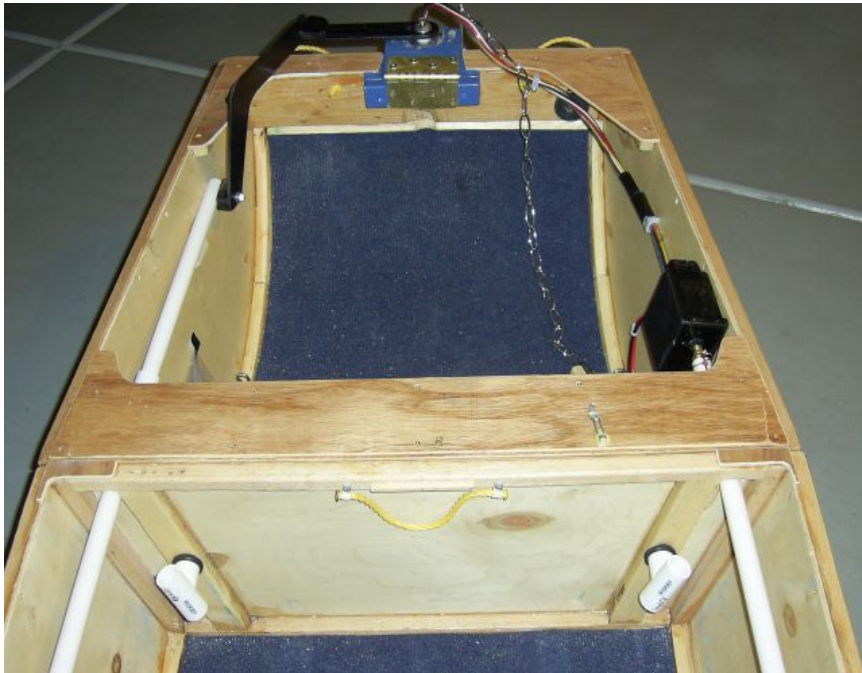
**PHOTOS**

Typical  
Motor  
Mounting

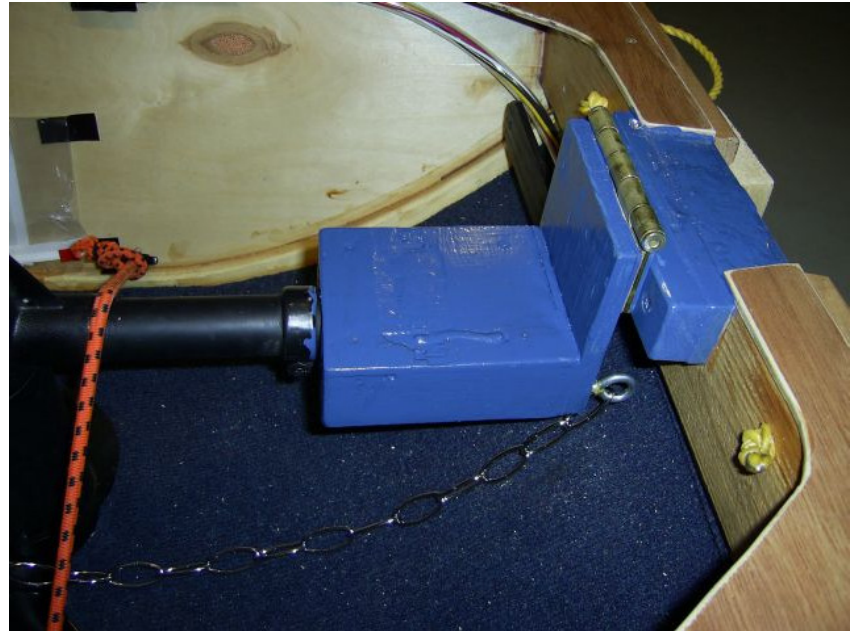
Heavy  
Duty  
Hinge

Note: when  
motor is  
in use  
compartment  
can be used  
for gear.

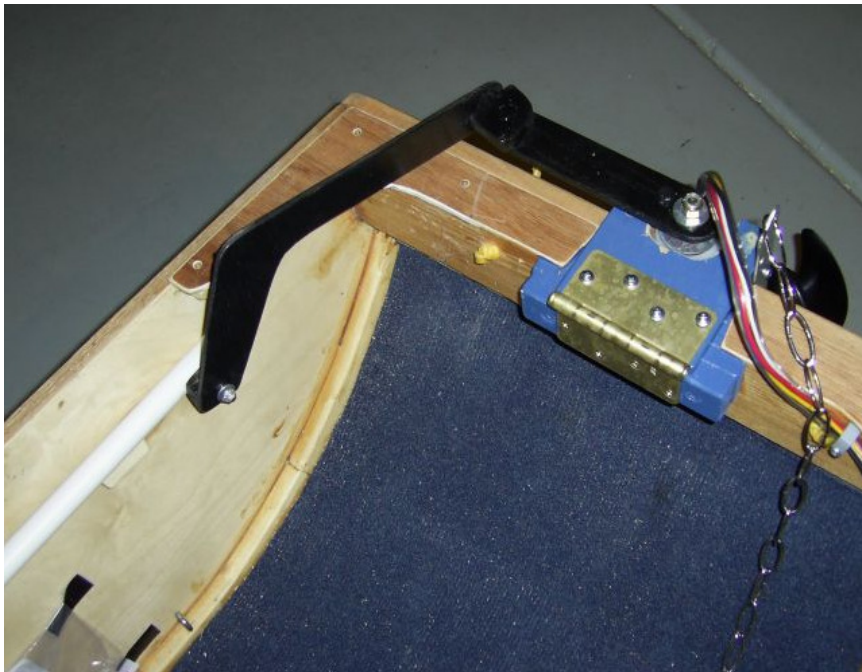
Motor  
Pull-Up  
Cord or  
Chain



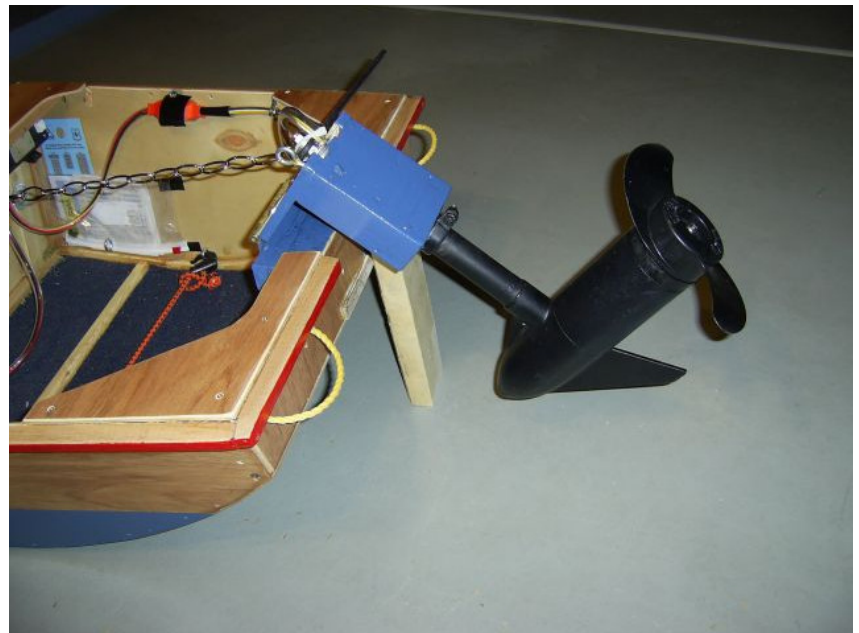
Motor Compartment showing actuation rods



Motor Mount Detail



Steering Arm Extension



Motor Secured in Position to be lowered.



**PHOTOS**

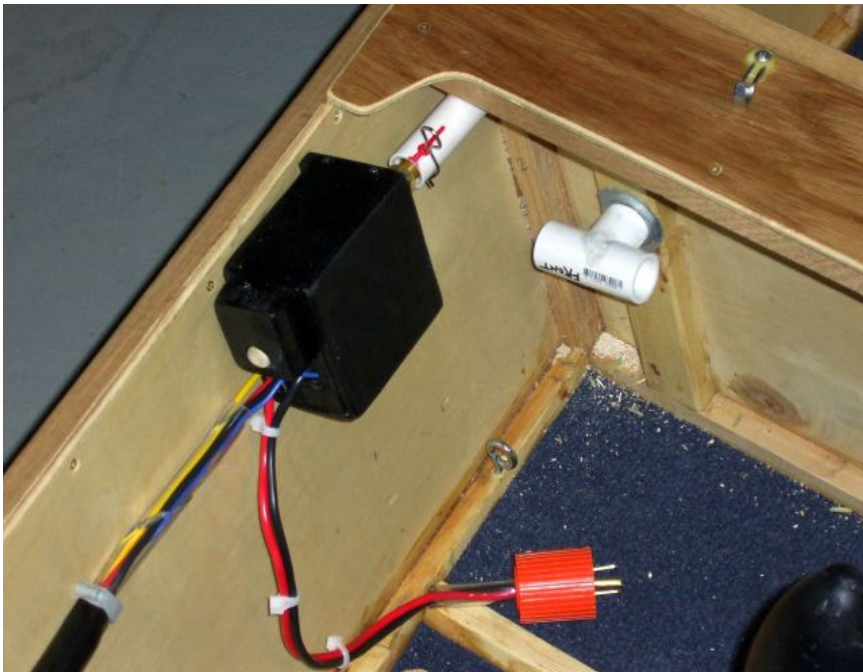


Hand Steering Push-Pull Rod.



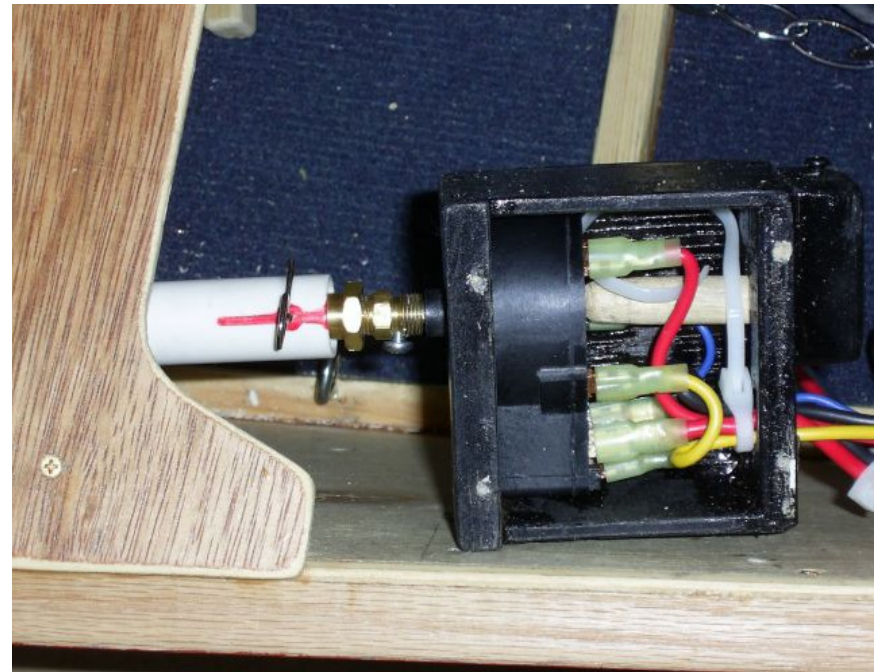
Motor Controls

Hand Speed Control Extension Rod



Motor Speed Control Switch Housing

Speed Switch Mounting



Switch Connection Detail