

How to Add Engine Details to the H&M Viper GFK Hull

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The Hydro & Marine Viper GFK hull is a model of a modern, piston powered, hydroplane. It is easy to add simulated “velocity stacks” to the hatch to replicate engine details to give the hull a realistic look. This article shows how to make these “stacks” and install them in the hatch to make a scale, piston powered, Fast Electric hydroplane hull. Photo 1 shows the finished engine details on the hatch.



Photo 1: The finished detailed hatch and hull

1: REQUIRED MATERIALS

The following materials are required to add the engine details to the hatch.

Materials

5/32” minimum thickness aircraft plywood
9/32” diameter aluminium tubing
7/16” diameter wood dowel
.030” sheet styrene
Medium thickness CA Glue
5 minute epoxy glue
320 grit sand paper

2: MAKING THE “STACKS”

Since most piston powered hydroplanes use twelve cylinder engines, twelve simulated velocity stacks were added to the hydroplane model. To make the stacks, simply cut the 9/32” aluminium tube into twelve, 5/8” long pieces. The length is not critical since the stacks will be trimmed to the desired length after they are glued into the base. Once the stacks are cut to length, it is desirable to widen the tops of the stacks to simulate the flared opening on real velocity stacks. The ends of the aluminium tubes are flared by gently tapping the cone-shaped dowel into the end of each tube. The dowel tool was made by sanding and filing a cone shape end to the wood dowel. Photo 2 shows the dowel tool and cut aluminium pieces.



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Photo 2: 9/32" aluminium tubing pieces and the dowel used to widen the ends



Photo 3: Rectangular plywood base with holes drilled for the tubes

3: MAKING THE BASE

The stacks are held in place by gluing them into a thin plywood base. Before making the base, decide on the configuration of the stacks in the hatch. This example shows the stacks grouped in two clusters of six, and the stacks are in-line with each other. Once the configuration has been finalised, cut a 1-1/4" X 3-1/2" rectangle out of thin plywood. The minimum required thickness for the plywood is 5/32". Mark the stack layout on the wood base and drill the twelve holes as shown in Photo 3. Test fit the aluminium tubing to make sure the stacks line up as desired. Do not glue the tubes into the base yet – this will be done after the tube height is finalised in Step 5.

4: HATCH OPENINGS

Once the stacks have been placed (not glued) in the base, it is possible to determine the required hatch openings to accommodate the stacks. In this example, each hatch opening is 7/8" X 1-3/8" and there is a 1/4" gap between the openings. Mark the dimensions to be cut on the hatch and cut the openings using a cutting wheel and dremel tool. To prevent scratching the hatch, cover the area to be cut using low tack masking tape. The tape also makes it easy to mark the openings on the hatch. Photo 4 shows the finished openings cut in the hatch.



Photo 4: Hatch openings to accommodate "stacks"



Photo 5: Stacks in painted base after being glued to desired height.



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5: FINAL STACK ASSEMBLY

Test fit the stacks and base in the hatch opening to ensure the stacks will fit correctly and that there are no gaps between the base and openings. Remove all the stacks from the base, and prime and paint the base the desired colour. In this example, the base was primed and painted black with Krylon spray paints. After the base has been painted, re-assemble the stacks and test fit the base and stacks in the hatch. Adjust the stack heights so they protrude through the hatch to the desired height. Make sure the tops of the stacks are level. Glue the stacks in the base to the desired height using medium CA glue. Trim the excess the aluminium tube from the underside of the base using a cutting wheel and dremel tool. Photo 5 shows the finished stacks and base. A coat of Krylon clear coat was applied to the base and stacks to protect the finish. The next step is to sand the bottom of the wood base so that it is flat and smooth. Cut a rectangle, the same size as the wood base, out of .030" sheet styrene and glue it to the underside of the base. Make sure the sheet is fully seated on the wood since this will prevent water from entering the hull through the stacks. Photo 6 shows the sheet styrene glued onto the wood base.

6: INSTALLING THE BASE IN THE HATCH

Test fit the finished base and stacks in the hatch and tack glue the base in place. Apply a bead of epoxy glue around the entire edge of the wood base to prevent water from entering the hull around the base. Check to ensure that all gaps between the base and hatch are sealed with the epoxy to ensure a waterproof joint. Photo 6 shows the base glued into the hatch.

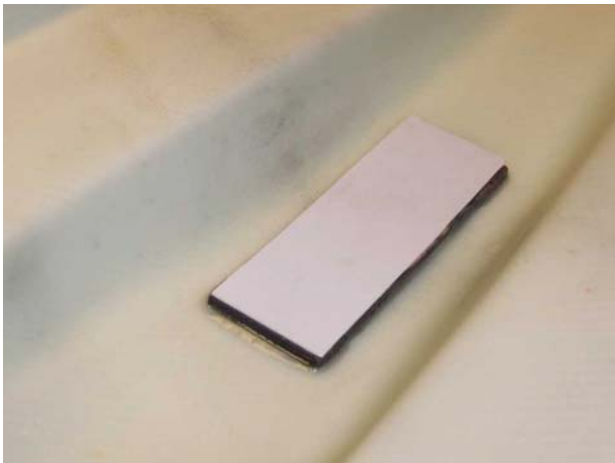


Photo 6: Finished base and stacks glued into the hatch (underside)



Photo 7: Stacks installed in hatch

Photo 7 shows the completed hatch with the engine details. The simulated engine details really highlight that this model replicates a piston powered hydroplane!