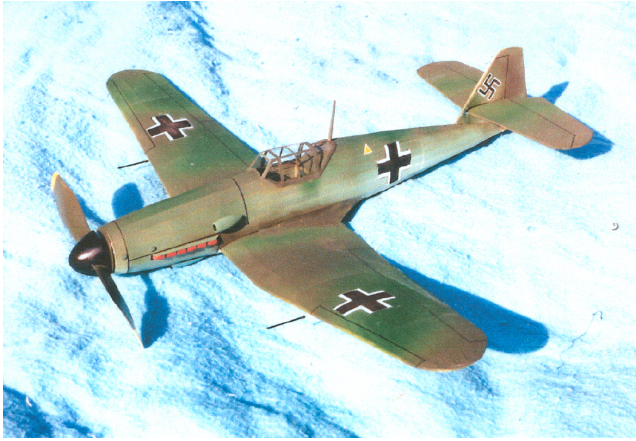


# THE MESSERSCHMITT BF-109H FOR THE WWII EVENT

by Bill Henn

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Early in 1943, because of the ever increasing altitudes of enemy bomber formations attacking the Reich, the German Air Ministry (RLM) realized the need for an improved high altitude fighter/interceptor airplane. Proposals to satisfy this need were requested from various aircraft manufacturers. In a report by Messerschmitt to the German Air Ministry dated July 26, 1943, the company proposed a high altitude aircraft based on the existing BF-109G.

Modifications included the addition of a DB603 supercharger on the DB605 engine, and the addition of a 7 foot long center section to the wing. In order to save weight, the pilot's back armor was deleted and the armament limited to three weapons, a 30 mm cannon firing through the propeller hub and two 20 mm cannons mounted in pods under the wings.

Messerschmitt initiated the manufacture of a number of BF-109G's under the designation BF-109H. These airplanes used the DB605 engine with the GM-1 injection boost system. While general handling characteristics were acceptable after the vertical and horizontal stabilizers were enlarged to correct yaw and pitch problems, the aircraft did exhibit a serious wing flutter at high diving speeds. During a test flight Fritz Wendle encountered the problem and pulled up sharply. As he was pulling up, the wing tore off and Wendle was forced to bailout. The name of this pilot should be familiar to aviation historians. Five years earlier, it was Wendle who flew the especially built ME-209V-1 to a record breaking speed of 469 mph. This record stood for 30 years until it was broken by 14 mph by Darryl Greenameyer in a highly modified Grumman Bearcat with a 3500 hp engine.

After the loss of one airplane, those that remained were delivered to a Luftwaffe base in Guyancourt, France. These BF-109H's were used to fly high altitude sorties over England for an indefinite period. In fact, there were undocumented reports that they shot down several Lancaster bombers while engaged in these patrols. Other versions of the BF-109 were being

developed in parallel during this period. The BF-109K was approximately 25 kph faster than the BF-109H at ground level and at boost altitude. The BF-109H had in its favor a greater service ceiling and a somewhat greater rate of climb. However, the reduced structural strength of the BF-109H's new wing was a significant limiting factor in the minds of RLM officials, and further development of the fighter was cancelled. In late May, 1944 the German Air Ministry selected the FW-152H for the high altitude roll.

Despite its failings, the BF-109H is an extremely attractive subject for a rubber scale model, and it has a good deal more potential for excellent performance than other BF-109 variants. Because of its added wing area it can be built to a lower wing loading, and is likely to have greater stability than BF-109 variants with shorter wings. Since the potential of the BF-109H was obvious, I decided to build one to add to my collection of WW II fighters.

Although a reasonable facsimile of the BF-109H could be made by using a plan for the "G" model and enlarging the tail surfaces and adding an extra section in the middle of the wing, I decided to use a plan of the "H" variant drawn by Lubomir Koutny. I have built a number of successful models from Koutny plans and am impressed with their accuracy and the quality of their engineering. Since I believe larger models are more stable and glide better, I enlarged the 23" wingspan drawing to a span of 27.5". This gave me an additional advantage in that I could use the same propeller and motor that worked so well on many of my other models. (Ed. Note: *This plan can be obtained from: <http://freeflightsupplies.co.uk>. Just scroll down until you find the plan, and read the shipping and payment instructions*)

The process of enlarging the model increased the spacing between the formers making it necessary to reposition formers #6 and #7 and add another former between these two. Admittedly this was somewhat of a time consuming nuisance, but I thought it was worthwhile at the time. The only other changes made to the Koutny design were to the wing and stabilizer. Multispar construction was used in the wing along with a 10% Neelmier airfoil. The same airfoil was thinned down to 5-6% for the stabilizer. I have used these same sections on all my models built over the last dozen years with excellent results.

The model was covered with Esaki green tissue on top, and light blue chalked Esaki white tissue on the bottom. It was then sprayed with the standard Luftwaffe colors of the period, dunklegrau RLM 74 and grauviolet RLM 75. The spinner was painted with schwarzgrun RLM 70. The 10" diameter prop was carved from medium balsa to an 11" pitch. This propeller works well with the 15% as well as 50% motors used in most of my models.

The completed weight of the model was 36.5 grams including the small amount of ballast necessary to achieve a CG of 35%. Even though the BF-109H is somewhat heavier than most of my other models, it is still within my self-imposed wing loading limit of 0.4 grams/sq. in. The initial thrust settings were 0-1 degree right and 3 degrees down. The wing was mounted with 3 degrees positive incidence.

My BF-109H was trimmed out using the same procedures I have described in many other articles.

The glide was adjusted for a straight, floating path with the motor and propeller removed, then the power mode was adjusted for a left turn using only thrust (not rudder) changes. I have learned not to fuss with rudder adjustments unless the model really does not turn when gliding. Usually, they do. It is worth mentioning that I have found that low wing models with long wings like the BF-109H will fly in an equally stable manner in a right power mode. Like rubber endurance models, rubber scale models will climb faster and reach a higher altitude with a right power pattern. However, it has been my experience that low wingers are easier to trim with a left power mode.

Only minimal adjustments were required for final trim. The BF-109H is a very stable craft, and consistent flights of over two minutes were easily achieved in still morning air using a 50% motor made from 4 strands of .160" rubber. The motor must be braided to take out slack, 140 turns in each hank.

Almost nine years have passed since this model was built. During that time I competed with a 23" WS Fiat G-55 and a 23" WS Reggiane-2005 in local contests. Both models were built from slightly revised David G. Smith plans and each weighed 19-20 grams. Despite their light weight, they were rugged enough to withstand years of windy weather flying. Both ships flew extremely well, especially the G.55, which was almost unbeatable. My success with these models convinced me that they were more than large enough for serious competition. In view of this, if I were to build another BF-109H, it would be to the same size as the Koutny plan, 23" wingspan. Such a model would have the span as the Fiat and Reggiane but a slightly shorter and slimmer fuselage. Therefore, it could be built lighter in the same manner.

Some revisions to the Koutny plan are recommended. Use 4-6 Ib balsa for everything except the wing spars. The Koutny wing has 24 ribs, and the fuselage has an innumerable number of stringers. My 23" span models did just fine with only 14 ribs (made from 1/32" balsa) and two spars running along the top of the ribs at about 20% and 40% chord. Attractive scale fuselage cross sections can be achieved with insignificant weight gain by using only 16 stringers (1/20" sq. balsa). Formers should be cut from 1/32" sheet balsa. Former #2, the first one to the rear of the nose where the model is held while winding, should be reinforced at the top and bottom with cross pieces of 1/16"x1/8" strip. Former #S, which is located at the wing trailing edge at the point where the model is held during launch, should also be reinforced with 1/16"x1/8" strip, but only at the bottom.

The same 8.5D x 9.5P carved propeller that I used on my G-55 and RE-2005 should work well on the BF-109H. An alternative would be to use a plastic prop. The 8" diameter Peck would be a poor choice, but a 9.5" diameter Peck trimmed to 8.5" and lightened would work quite well. The modification process is simple. With a scissor, snip 1/2" from the end of each blade and some material from the sides of the blades from the 1/2 chord mark to the tip. The squared off tip should measure 3/4". The corners can be rounded slightly. Refer to the photograph below. Scrape the propeller blades with a razor blade to reduce weight, sand the rough edges and balance. If desired the modified prop

can be spray painted.

Four strands of 3/32" rubber worked well in my G-55 and RE-2005 when these models were flown in 15% events. A lighter BF-109H would have to use a thinner motor in order to get the number of turns required for it to be competitive. When flown in unlimited rubber events, four strands of 1/8" rubber weighing about 50% of the model weight should provide outstanding performance.

If anyone questions the eligibility of the BF-109H for the WW II event, I suggest they refer to the book *Messerschmitt BF-109F-K* by Willy Radinger and Wolfgang Otto, Schiffer Military History, 1999. This book clearly states that some of the BF-109H aircraft produced were based at Guyencourt France during the occupation, and that they were used for sorties over England. This is by far the most authoritative and comprehensive book on late model BF-109's that I have ever read. Much of the information included was derived from the archives of Daimler Benz A.G. Co., Messerschmitt A.G. Co. and many other reliable sources in Germany. Many of the drawings in the book are copies of actual Messerschmitt factory documents.

