

## UH-1B/C MODEL HISTORY

Once the HU-1A entered service with the Army, several areas that needed improvement were noted. As with most aircraft, and helicopters in particular, there was the question of more power. Lycoming began a series of improvements to the T-53 engine that would continue for years to come. The first T-53-L1A engines produced only about 770 shaft horse power. The improved L5, and L7/9 series improved that to over 900 SHP. The more powerful engines also meant that a number of other improvements the Army wanted could also be made in the new "B" model.

<<http://238awc.org/history/UH-1/BellUH-1.jpg>> If you look carefully at pictures of the A and B model Hueys you can see many of the changes made. First, the B model is a little longer, allowing for a larger cargo compartment. The window in the cargo door of the A model is almost square, where the one in the B model is more rectangular. The difference in width of the windows is about the difference in length of the aircraft. It isn't much, but it allowed more room for the medical attendant the Army wanted. The other major difference was in the main rotor mast and mounts. The rotor mast of the B model is longer, which places the blades higher above the body of the aircraft. This allowed for slightly better maneuverability, but mostly helped prevent incidents of the main rotor striking the tail boom. You may also note that the counterweights have been moved from hanging under the blade grip to on top of it. Although they flew much the same from a pilot's prospective, the B model was a real improve <[http://238awc.org/history/UH-1/uh-1\\_1965\\_01.jpg](http://238awc.org/history/UH-1/uh-1_1965_01.jpg)> ment.

In 1962, the designations were changed from HU-1A or B to UH-1A or B, in accordance with the new system. About the same time, UH-1s began to deploy to Viet Nam. The Army had also been working on the "airmobile" concept, and began looking at the Huey as a possible helicopter gunship. The A model remained mostly in the Medivac or utility role, but the B model soon became the choice as the best available helicopter for use as a gunship.

Conditions in Viet Nam proved difficult in many cases, and the Army began to look for ways to improve the B model. As usual, more power was one answer and Lycoming came up with the T-53-L11 engine. This engine, and a beefed up transmission, gave the Huey 1100 SHP. Bell was also working on a stretched body version of the Huey, the D model, <<http://238awc.org/history/UH-1/uh1c-2.jpg>> but that's another story. One thing the Army really wanted for the gunship version of the Huey was better turning ability, and a more stable platform. Bell decided that both things could be done by putting a new, wide cord, main rotor on the B model. The rotor was called the "540" rotor system and the blades had a much wider cord (measured from leading to trailing edge) than the normal blades.

After only brief testing, the new blades were sent to Viet Nam to be installed on B models there to make the first "hybrid" B/C model Hueys. The results were almost disastrous. Those B models still had L9 engines, and didn't have the power to handle the larger blades. They also found that in the hot-high conditions of Viet Nam, the tail and tail rotor of the B couldn't handle the extra torque, resulting in loss of control in the yaw axis. The project was returned to Bell for major changes.

The first change was the L11 engine and transmission for any aircraft with the new rotor, but there was a lot more. The vertical tail surface was enlarged and given a directional airfoil in place of the symmetrical design of the B model tail. This helped improve the yaw control. Next the fuel tank was redesigned, and made a little larger. It also made the C model the only Army Huey with the fuel filler on the left side of the aircraft. Finally, an entirely new hydraulic system was added. The control system had been redesigned for the new rotor, but this resulted in a system that required over 500 pounds of force to move the "collective pitch" control. That was fine when the hydraulics worked, but if they failed it was real trouble. The new system had dual hydraulic systems, and an emergency "accumulator" as well. All these changes pushed the introduction of the C model back into 1966. Once all the changes had been tested and approved, Bell made the decision to start production of the C model by modifying the B models then on the production line. The result was a small number of Hybrid B/C models that had most of the C model changes in the B model body. It's not known how many of the hybrid B/C models were built, but the 174th AHC which was formed in early 1966 was equipped with at least nine of them, and probably ten. There is still some debate over exactly what these aircraft were. TACOM history designates them as "hybrids", but many of the members of the 174th swear they were full C models. I believe they were "hybrids", but the differences were mostly internal, and not noticeable. Photos do show the first 174th C

models did not have the brace for the weapons mount that was standard for most C models, and some other small detail differences. Most of these aircraft were later rebuilt to C model standard, and one 65-09423, later served with the 238th AWC.

Many UH-1B model aircraft were converted to C model, during rebuild at the Bell factory or at Corpus Christi. This causes some confusion because they retained their B model serial number. One other confusing change on the records is the listing of many C model aircraft as M model. The M model was originally used to designate a very small number of C models that were modified at Bell to carry the INFANT night vision system, and were powered by the T-53-L13 engine. Many UH-1C model aircraft were converted to the L13 engine "in house" by units in Viet Nam, including all of those used by the 238th AWC, but were not called M models at the time.

Trying to distinguish the B and C models in pictures can be difficult, unless the picture clearly shows certain details. The different rotor head and wider blades of the C model would distinguish it, but these are seldom that clear. Some older B models still had the scoop air intake, but this was replaced with the screen filter intake on all B and C models in Viet Nam, so that isn't a good identifier. The "cat whisker" antennas on the nose may also identify a B model, but many Bs had these removed. If the picture shows the tail clearly, the wider and more curved tail of the C model may show up well. The two best features to look for though are the pitot tube, on the nose of the B model, but on the roof of the C model, and the fuel filler cap on the right side of the B model about mid way up the side, but on the left side of a C model and much higher up. The B and C model used the same weapons systems.

UH-1 series <[http://238awc.org/history/UH-1/uh1\\_series.htm](http://238awc.org/history/UH-1/uh1_series.htm)> AH-1G Cobra <<http://238awc.org/history/UH-1/cobra.htm>> Return <<http://238awc.org/aircraft.htm>>