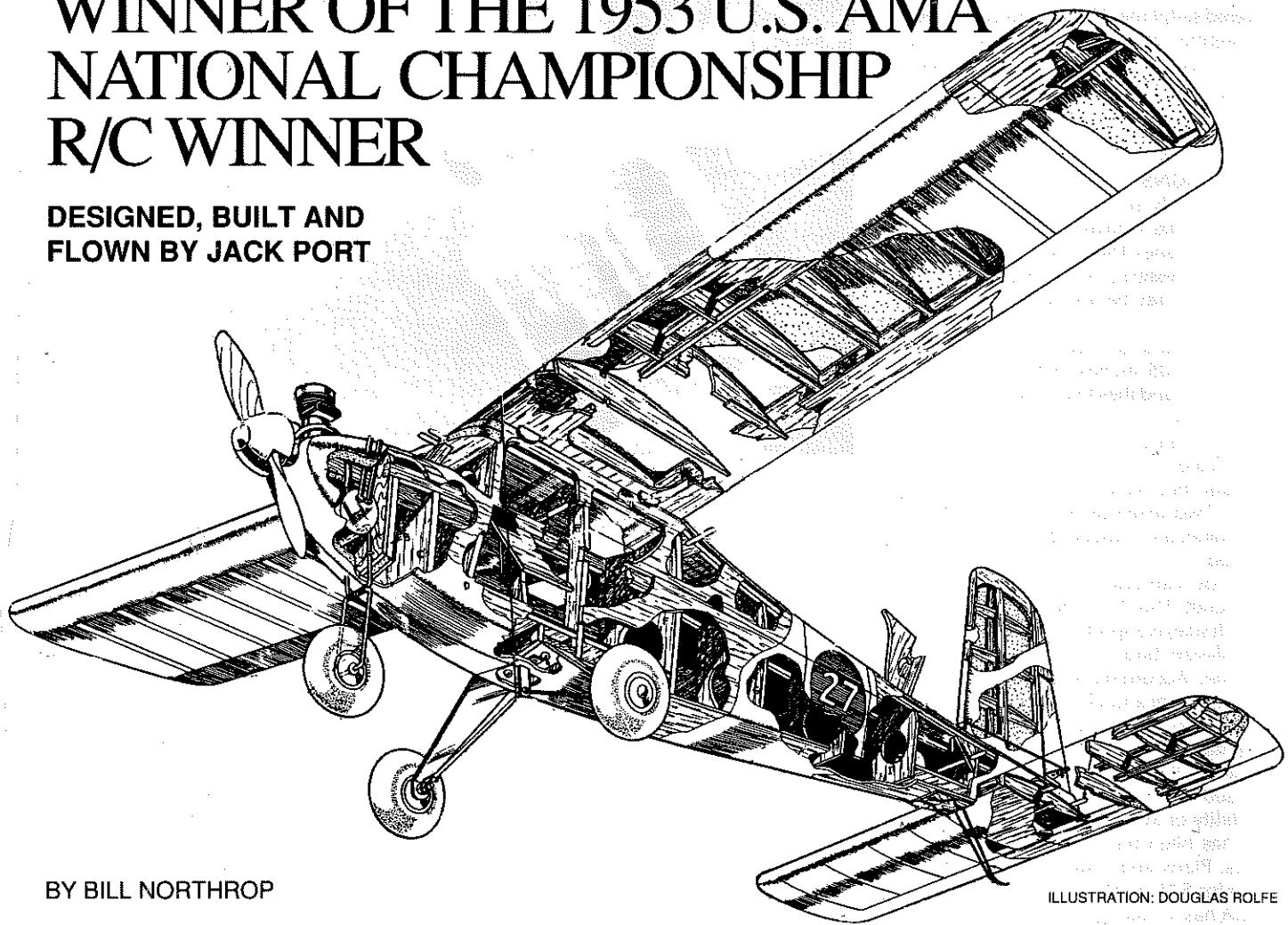


HIGH-Q

WINNER OF THE 1953 U.S. AMA NATIONAL CHAMPIONSHIP R/C WINNER

DESIGNED, BUILT AND
FLOWN BY JACK PORT



BY BILL NORTHROP

ILLUSTRATION: DOUGLAS ROLFE

Turning point in competition rules normally occurs when someone comes up with a design innovation which immediately obsoletes the current rules, requiring a dramatic rules change. Ironically, Jack Port, with his High-Q R/C model made history at the *time* of a turning point in radio control aerobatic competition, but was not directly instrumental in bringing it about. In fact, if anything, you could almost say that Jack and his High-Q almost upset the apple cart of progress!

By 1953, improvements in R/C electronics had made it more and more obvious that rules would have to be created to separate R/C models into more than one basic category for competition. For most of the years leading up to 1953, nearly all R/C flying was accomplished using one single control... of the rudder. Only advanced experimenters were accomplishing somewhat reliable control of more than one function on a model, so there was no real need to separate the rudder-only flier from those few who

were able to enjoy the luxury of also moving the elevator and controlling the engine speed, none of which could be done simultaneously.

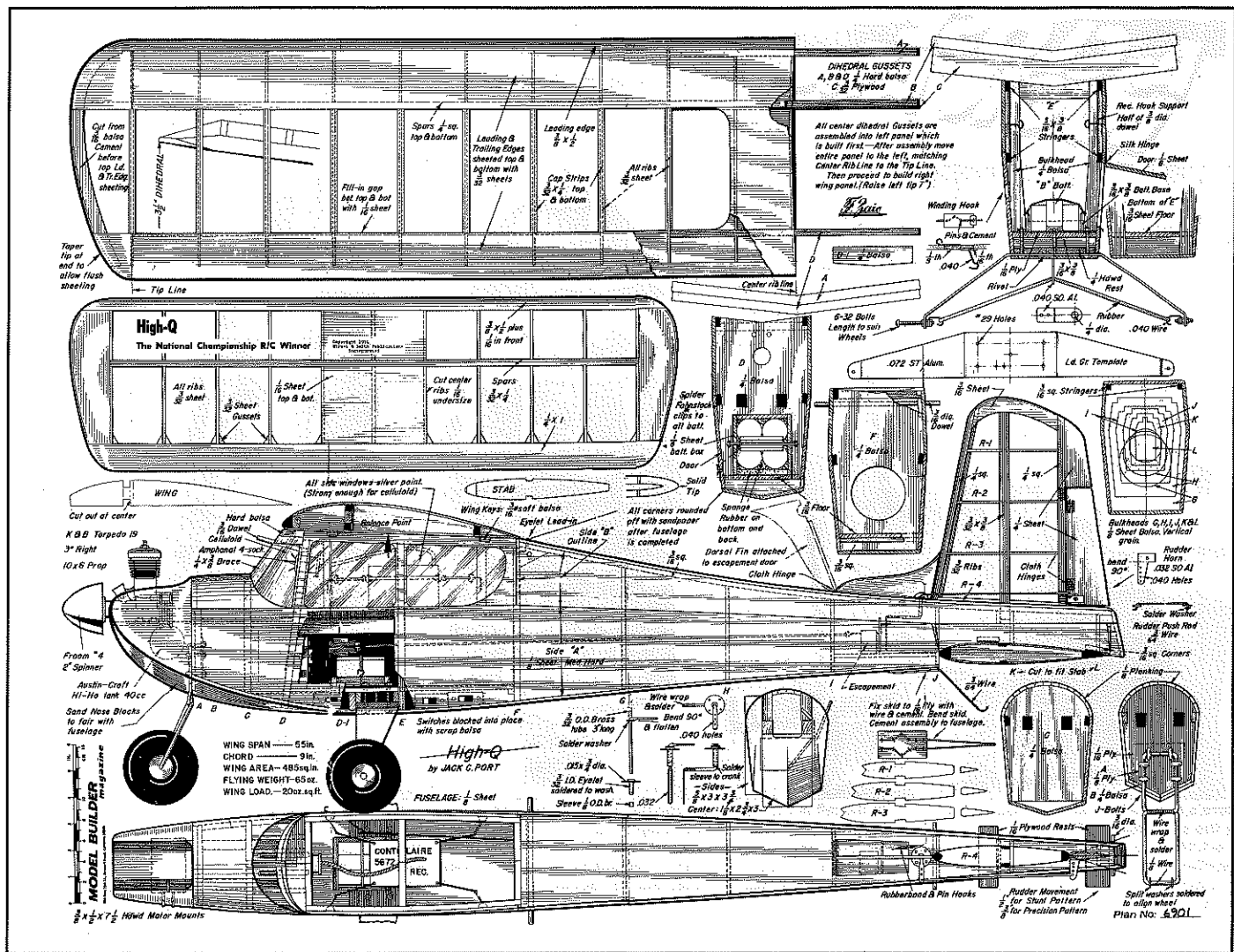
However, by 1953, it was obvious that multi-control radio equipment and multi R/C aircraft were becoming more common, and rules for separate classes were just over the horizon. Meanwhile, a few skilled designers and fliers were getting amazing results from aircraft that flew rudder-only and could still hold their own in competition against the aircraft with more, but not yet as reliable control systems. And so it was that Jack Port made history. In the last year before R/C competition was separated into three classes; Rudder-Only, Intermediate, and Multi, Jack took on all comers at the 1953 AMA Nationals and won the R/C event with his rudder-only controlled High-Q. We say "THE" R/C event, because at that time, pattern was the only R/C event. There was no Scale, no Pylon, no Soaring, no Helicopters, or what have you. The rule book was much

thinner in those days!

In 1953, R/C competition also allowed two flights; one for precision pattern, the other for aerobatics (none of which you could really call "precision... "recognizable" was a better term!). The name "Pattern" has stuck to this day, though, of course, the "school" maneuvers are long gone, replaced by properly named "precision aerobatics." Typically, as with Jack Port and his High-Q, the expert pattern fliers using rudder-only control back in the early '50s trimmed their ships differently for each type of flight. For precision pattern, the stab was shimmed for less decalage between wing and stab, getting as close to 0-0 as possible without losing all ability to recover to level flight from a nose-down attitude. The engine was detuned by partially plugging the intake so that altitude gain was very gradual, and finally, rudder throw was reduced slightly. This allowed the model to go through the precision maneuvers with as little altitude change as possible, controlling the climb

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FULL SIZE PLANS AVAILABLE: SEE PAGE 106

with minor applications of rudder, which as explained before, was always to immediate full deflection... no proportional... and of course, no throttle control. The engine ran at one preset speed until it emptied the tank... period! The High-Q drawings, according to the construction article by Jack Port in the March 1954 issue of *Air Trails* magazine, and reproduced herein from the full-size plans (copies of which we are making available, see page 106), show the flying surfaces in the Precision Pattern trim. For more lively aerobatic performance, as called for in the Stunt Pattern, shim the leading edge of the stab down for one degree more negative incidence.

Note that the main gear is located just ahead of the balance point (Bless you, Jack! You named it correctly, instead of calling it the C.G.), which was a departure from the normal position back then, as it is now, for trike gear configurations. In days when the takeoff as well as the landing were judged as maneuvers, having no elevator control made for some interesting compromises in effecting takeoffs and landings. With the nose gear short and the main gear aft of the B.P., a model would usually remain stuck once it landed and the negative angle of the wing took control of things. But then there was the

matter of getting *unstuck* during takeoff! For non-competition flying, this was the age of the hand launch. But if you wanted takeoff points... Fortunately, most contest runways were rough enough that sooner or later, the nosewheel would bounce off a foreign object on the ground during the takeoff run, which would suddenly put the wing at a positive angle of attack, and if the model had flying speed, it was up, up, and away. By today's standards, such a takeoff was worth about two or three points, but at least it made a score! Many crafty rudder-only pilots judged their model's takeoff run so it would hit a grass-filled expansion joint on a paved runway just as it reached flying speed! Except for the additional drag, grass runways always worked better... lots of bumps!

With Jack's landing gear arrangement on the High-Q, the model actually rested on a tailskid and rolled up on the nosewheel during takeoff, still having a slight positive angle of attack. Upon landing, the wheel positioned all but eliminated bounce. As we pointed out previously, a rudder-only model could be made to flare for a smooth landing by keying the rudder one way to create a slight dive, then hitting opposite and neutralizing to bring the nose up just before touchdown. A bit tricky, but very satisfying

when you timed it just right.

Construction of the High-Q is very conventional, even by today's standards for a sport/trainer type of R/C model. The plans are quite self-explanatory for the average builder, and should be no problem to scratch build. Note that the drawing was made by one of the best all-time model aircraft draftsmen, Frank Zaic, who John Pond talked about in his "Plug Sparks" column last month, and some more in this issue. To keep within the same power range as the original K&B .19 "Greenhead" engine, we'd suggest the slightly more powerful K&B Sportsman 20.

Jack's model was equipped with his own "Controlaire" radio. The receiver used a single CK-5672 hard tube, and was possibly the forerunner of his kit radio, the SM-1, which was this writer's first, and quite reliable kit radio. A Sigma 4F relay reacted to the radio's current change upon receipt of a signal, keying a self-neutralizing rubber-band-powered escapement. Jack was later to produce radio equipment for John Maloney's World Engines company. Many vintage R/Cers remember the "Mule." Jack passed away at a very much too early age, and his wife, Mary, tells us that a reproduction of the High-Q is etched on his gravestone.

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