HOBBICO SUPERSTAR .40™ ARF

Introduction

Hobbico's SuperStar 40™ All Wood Almost Ready To Fly .40-sized trainer has been one of the mainstream R/C trainers for more than 5 years. The SuperStar has trained thousands of pilots, taking them from raw student pilots all the way through medium aerobatic flyers.

The SuperStar is distributed by Great Plains and is available in most hobby shops for about $100. The plane is a true ARF, requiring the builder to glue the wing halves together, glue the stab and fin in place and then install the radio, engine and fuel system. The ARF kit includes all the accessories. Total construction time is about 35 hours and requires no special skills. The result is a sharp looking trainer with clean lines. (Photo 1)

Photo 1

Photo 2

The SuperStar 40 is a somewhat older design than the RTF planes sold today. It's 60 in. wingspan results in a slightly higher wing loading than most of the newer trainers. But the SuperStar's smaller size and lighter weight have some advantages. As Photos 4 & 5 show, The SuperStar is a very clean trainer that looks good in the air. The bottom of the right wing sports a wide blue stripe for better visibility and attitude identification.

With a good .46-size engine, the SuperStar is more aerobatic-capable than the larger 40-size trainers. Inverted flight is easier, loops are larger and more round while spins and snap rolls are actually possible. These maneuvers are gentle in a SuperStar, but *possible*.

Our Test Model

The SuperStar we flight-tested is the older version, covered with a thick plastic film. SuperStars sold today feature Monokote® covering and are 5-6 oz. lighter than the version we tested. However, both versions fly about the same. The newer version has slightly more vertical performance. Our test plane was powered by an OS .46 FS with about 200 flights on it. As you can see in Photo 2, the engine is not new and neither is the spinner. However, this engine still turns an APC 11 x 6 propeller well over 11,000 rpm while having an ultra-reliable idle. This engine's longevity and performance make a good statement about OS engines' durability and usefulness.

This particular SuperStar illustrates the performance and handling a pilot would experience once the plane and engine have been flown a while. It is not just new "out of the box", having flown only a few test flights. Instead, it is a truer example of what a pilot can expect from this aircraft throughout its service life.

This plane was equipped with the new Eagle Tree Systems Flight Data Recorder. Using the Recorder, we obtained the flight data summarized in the following chart:

Flight Data Results*

Take Off Speed:	20 mph
Climb Out Speed:	25 mph
Best Training Speed:	35 mph
Top Speed:	62 mph
Sustained Climb Rate:	1,800 ft./min.
Range:	22-25 minutes
Dive Speed:	68 mph
Best Glide Speed:	28-30 mph
Gliding Descent Rate:	-1,000 ft./min.
400' Glide Distance:	1,045 ft.
Level Stall Speed:	17 mph
60-deg. Bank Stall Speed:	21 mph
Landing App. Speed:	32 mph
Touch Down Speed:	18 mph

*All results are an average of 3 flight tests

Aircraft Specifications

Type:	Basic Trainer
Engine Used:	OS .46 FS
Propeller:	APC 11 x 6
Top RPM:	11,400
Idle RPM:	2,400
Test Weight:	5.75 lbs.
CG Location:	At Spar per Directions

Elevator Movement: up- 0.87"; Dn- 0.75"
Aileron Movement: up-0.67"; Dn- 0.37"
Rudder Movement: 0.75"

Weather Data

Temp	Wind	Alt.
55 deg. F.	5-7 mph	250 ft.

Eagle Tree Systems' Flight Data Recorder allows us to know exactly what is happening in the air. Whenever possible, Sport Aviator will present this objective data. As more Test Pilot's Reports become available, basic comparisons can be made between aircraft.

The Flight Data Recorder also tracks receiver, battery and servo performance. We could not notice any radio problems during any flight but the Recorder revealed that two of the JR 501 servos in this plane were beginning to show signs of wear after "only" 15 years of use and about 1,200 flights. One servo was on the elevator and may have eventually caused problems. It was slow answering the receiver's movement requests. Nice to know this information before a problem happens. The old servos were replaced with new JR 517's and the problem reports disappeared.

Basic Flight Test

As always, we started by taxi testing the SuperStar on grass about 2 in. long. The wheels are widely spaced so there was never a hint of tipping or steering problems. The plane rolled about 100 feet on the takeoff run and then lifted smoothly into the air. We used about half the available up elevator to rotate. (Photo 3) The plane climbed out well but did need a touch of right rudder or aileron to hold a straight line.

Photo 3

Photo 4

A trainer's requiring just a small amount of right rudder is important to a student pilot. It helps teach the new pilot not to correct for the engine's torque with ailerons. All higher performance planes will require substantial right rudder for climbs and takeoffs. It may be better for the student pilot to learn rudder inputs on the trainer, which climbs better with rudder but does not *demand* it, rather then to learn rudder control on a high performance plane that can snap stall without it. The SuperStar will takeoff and climb without rudder input but the right wing has to be held in a slight right bank. This is just the right balance for a trainer.

After climb out, we leveled off and set half throttle (8,700 rpm on the ground). The SuperStar requires about 20% up elevator to make level turns in both directions. This is somewhat more elevator input than larger 40-size trainers and is due to the SuperStar's higher wing loading (21 ounces per square foot).

Learning to make level turns flying the SuperStar takes the student pilot somewhat longer than when flying a larger 40-sized trainer. But once the new pilot masters turns with this plane, it's very easy to move on to learning slow flight, glides and landing approaches. The student pilot already knows proper elevator control.

Learning to make level turns with the larger 40-size trainers is easier. But learning other elevator-dependent flight régimes, such as maintaining a *constant* descent rate during landing approaches, takes longer flying a newer trainer. The student pilot has to master the elevator/airspeed control that the SuperStar pilot already learned while making a proper turn.

Advanced Flight Tests

After making level turns, we tried some basic aerobatics. 125 ft. diameter loops could be repeated forever without a trace of a wing drop. Multiple rolls stayed on track and required about 30% down to maintain level flight. Single rolls took 3 seconds and required a 45 degree nose up start to avoid needing down elevator, while inverted, to roll out into level flight.

This plane will spin in either direction but must to be forced to enter the spin. The only consistent spin entry was to raise the nose past 45 degrees with the engine at half power. As the stall break occurs, add full aileron and rudder in the same direction while holding full up elevator and half throttle. The SuperStar will enter a slow spin until the throttle is reduced or the controls neutralized. Either input causes the plane to recover from the spin into a shallow dive. Full recovery is easy from that point. It is impossible to accidentally mishandle the SuperStar into a spin.

Photo 5

Photo 6

Snap rolls are slow and big, with plenty of time to think. Level inverted flight, (Photo 6), required half of the available elevator input. The SuperStar did offer to roll out of inverted flight on its own, but it did not take much aileron input for the pilot to decline the offer. Outside loops, however were not possible, as the plane would not remain inverted in the loop's second half, even with full aileron and rudder control.

Stall turns require some opposite aileron during rudder input. The SuperStar responds to the small rudder with authority and makes an attractive stall turn. Being somewhat acrobatically capable is a major asset for the SuperStar. The new pilot will not become bored with this plane after takeoffs and landings start to seem routine.

Summary

The SuperStar did not exhibit any adverse yaw tendencies except during power-off stalls. One wing or the other (the plane is laterally balanced) dropped slightly just before the stall break. But the low wing was easily picked up with just a touch of corrective rudder input. Aileron control alone would not pick up the down wing until after the break The SuperStar's ailerons, as do all ailerons on flat-bottomed wings, became slow near the stall speed and caused moderate adverse yaw just before, and during, the stall itself. The yaw was easily corrected with small rudder inputs.

Airspeed and altitude control were very easy to maintain during the landing approach and touchdown. The plane responded immediately, and honestly, to throttle and elevator input. Pulling up elevator during final approach immediately slowed the plane without excessive altitude gain or loss. Adding a little throttle immediately slowed the descent rate, without causing a large speed increase. Final touchdown was always nose-high with a 30-40 foot ground roll. (Photo 7)

Photo 7

The SuperStar is a very honest basic trainer. It lets student pilots know what they are doing wrong and always responds, usually with a very slow response rate that allows the pilot time to think. The plane responds the same way to each type of pilot abuse. This makes it easy for the student pilot to avoid making the same mistakes in the future. The plane is easy to fly, very rugged and easy to repair.

The test plane itself has helped introduce more than 20 student pilots to R/C. Most had little trouble with even their first flight. Some few talented individuals actually learned to fly on this plane within a week. For only $100 for the complete airframe with all accessories, there is probably no better trainer made for the money.