Squall! High performance EDF model with 3800KV motor and 5 bladed fan for 3 cell Li-Po batteries. 3 Cell Version

> Jual Super-high performance EDF model with 3400KV motor and 3 bladed fan for 4 cell Li-Po batteries.

# **ASSEMBLY INSTRUCTIONS**

CAUTION The Phase 3 Models Squall EDF is designed for intermediate to advanced pilots. It is not intended for beginners/ It is not a trainer!



**Includes High-Performance Brushless Motor, Ducted Fan Assembly and Brushless Electronic Speed Controller** 

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#### SPECIFICATIONS AND FEATURES

Wingspan:	650mm (25.6″)
Length:	885mm (34.8")
Weight RTF:	Squall! 600~650g (21.2~22.9oz)
	Squall! HP 650~780g (22.9~27.5oz)
Motor RPM:	45,000~50,000
Motor:	Squall! - 3800KV (11.1v) Brushless
	Squall! HP - 3400KV (14.8v) Brushless
ESC:	Squall! - 40A (11.1v) Brushless
	Squall! HP - 45A HP (14.8v) Brushless
Radio Required:	4 channel with elevon mixing and three
	9~10g micro servos
Battery Required:	Squall! - 3 cell 2500mAh 20C Li-Po
	Squall! HP - 4 cell 2500mAh 20C Li-Po
<ul> <li>Moulded Light</li> </ul>	tweight Airframe
• High-Efficienc	y Ducted Fan Unit Included
• High-RPM Bru	shless Motor Included
• 45 Amp Brush	less Speed Controller Included
Extensive Dec	al Sheet Included
• Fast and Fasy	Assembly
and Eddy	

Over 100 High-Resolution Colour Photos to Guide You

**IMPORTANT** Before beginning assembly, please read and understand the warnings listed on the next page. Failure to read and understand these warnings could lead to bodily harm and/or injury. The Phase 3 Models Squall EDF, is not intended for those under 14 years of age, unless closely supervised by an adult.

Made in Taiwan

Squall! EDF ARTE - Product Number PH019 Squall! HP EDF ARTF - Product Number PH020

#### FOR YOUR SAFETY - PLEASE READ AND UNDERSTAND THESE WARNINGS!

#### **GENERAL WARNINGS**

- DO NOT fly your aircraft if another aircraft is on the same frequency as you
- **NEVER** fly your aircraft from the street or at night. Always fly in an open area free from obstructions.
- When flying, make sure that any spectators are behind you.
- Always be conscious of the spinning rotor. Be careful not to allow loose clothing to be draw in the rotor.
- Because your aircraft is operated by radio control, it is important to make sure that you are always using fresh and/or fully charged batteries.
   NEVER allow the batteries to run low or your could lose control of the aircraft.
- **NEVER** attempt to disassemble any of the aircraft's components especially the electronics.
- **DO NOT** allow any of the elecrical components to get wet or electrical damage may occur.
- You should complete a successful range check of your radio control equipment prior to each new day of flying, or prior to the first flight of a new or repaired model aircraft.
- If your airplane gets dirty, do not use any solvents to clean it. Solvents will damage the foam and plastic. Use a dry cloth to clean any dirt from the outside of the aircraft.

#### RADIO SYSTEM WARNINGS

- Always turn on your transmitter before turning on the aircraft and always turn off the aircraft before turning off the transmitter.
- Always unplug the Li-Po battery when not flying the aircraft.
- **NEVER** cut the receiver antenna shorter or you could lose control of the aircraft during flight.
- When flying the aircraft, make sure your transmitter antenna is completely extended.
- NEVER attempt to disassemble or modify any of the radio control system components.

#### LITHIUM POLYMER BATTERY WARNINGS YOU MUST READ THIS BEFORE CHARGING YOUR BATTERY

- This product may explode or catch fire. Serious injury can result from misuse. Serious injury, loss of property, fire and death can result from misuse of this product.
- All instructions, warnings and cautions must be followed at all times. Failure to do so can lead to serious injury or fire.
- **DO NOT** use this product before reading and understanding all directions and warnings.
- DO NOT use or charge if the battery is hot.
- **DO NOT** leave in direct sunlight or in a hot car or storage area.
- DO NOT overcharge. Maximum voltage for each pack must be followed.
- DO NOT get wet or expose to moisture.
- **DO NOT** short-circuit the Li-Po battery.
- ONLY discharge and charge the Li-Po battery outdoors or in a firesafe container.
- **DO NOT** leave the Li-Po battery connected when not in use.
- **DO NOT** operate or charge unattended.
- **DO NOT** use the product if you do not understand the warnings and proper use of the product.
- Always let the Li-Po battery cool and "rest" between uses and charging.
- We recommend the use of a firesafe container when charging or storing.
- DO NOT charge inside your car or inside your house.
- Inspect the Li-Po battery before each use for swelling or other malformation. If the cell has ballooned, it MUST be discarded.
- First check the polarity and then connect Li-Po battery to your charger.
- In use, do not over-discharge or exceed maximum discharge.
- When handling the Li-Po battery, remember not to poke, bend or damage the cells. The cell's outer casing is soft and can be damaged.
- Remember, the cells must never exceed 160 degrees Fahrenheit (71° C) for any reason.

#### INTRODUCTION

Thank you for purchasing the Phase 3 Models Squall! EDF. Before completing the final assembly of your new aircraft, please carefully read through this assembly manual in its entirety. Doing

so will ensure your success the first time around. Note that the construction method is identical for Squall! and Squall! HP - only the motor, fan and ESC differ between the two models. Squall! is for 3 cell Li-Po batteries and Squall! HP is for 4 cell Li-Po batteries

Check our website for more information on this and other exciting Phase 3 Models! www.phase3models.com



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#### ASSEMBLING THE SQUALL EDF

#### Step 1

Mix up a quantity of rapid epoxy and apply to the wing root ensuring that it is thoroughly coated.



#### Step 2

Push the wing panel firmly against the mating surfaces of the fuselage ensuring that it is correctly aligned.

#### Step 3

Apply strips of tape to hold the wing in place as the epoxy cures. Wipe off any excess adhesive before it sets.

#### Step 4

Repeat the process for the second wing panel, again using sufficient rapid epoxy.

#### Step 5

Page 4

Apply strips of tape to hold the wing in place as the epoxy cures.

















Prepare your elevon servos by connecting a pair of 300mm extension leads.

#### Step 7

Test fit the servo in its moulded cut-out, then apply a smear of epoxy to the servo.

## Step 8

Push the servo into position ensuring that the lead exits in its moulded slot and the output horn is to the rear.

#### Step 9

Ensure that there is no excess lead trapped under the servo through the surface of the wing by gently pulling the lead taut.

### Step 10

Glue the second servo in position, again ensuring the lead is pulled down into its moulded slot.

To ensure adequate battery cooling, we recommend opening up an air exit from the battery bay into the duct.



Using a large round file or Permagrit tool as shown here, continue to open up the air exit.

#### Step 13

An exit hole of approximately 30mm diameter will ensure adequate cooling air is drawn over the battery during high load conditions.

#### Step 14

To allow cooling air in, we recommend making two entry holes in the front of the fuselage as shown.

#### Step 15

Make the second hole on the other side of the fuselage in the same position.















Use a couple of strips of masking tape to retain the elevon servo leads in their respective slots.

## Step 17

Prior to fitting the control horns, trim away the clear hinging tape from the slots in the elevon.

## Step 18

Locate a control horn and insert from the top side of elevon. Note that the horn is orientated forwards.

#### Step 19

Push the horn down into place ensuring that it is flush with the top surface of the elevon.

Step 20

Slide an elevon horn retaining plate over the horn, noting its orientation.

Squeeze the two parts together until the bottom of the horn is flush with the underside of the elevon.



#### Step 22

Locate a control horn self tapping screw and install through the top of the horn and into the retaining plate.

#### Step 23

Do not over tighten the retaining screw you do not want to crush the elevon.

#### Step 24

Fit the second elevon horn using the same procedure.

#### Step 25

Locate a moulded clevis and threaded pushrod. Screw the clevis onto the rod until the thread is just visible through the clevis.















Ensuring the servo and elevon are centred, fit the clevis in its horn and mark the position the pushrod crosses the outer hole in the servo horn.

## Step 27

Form a z-bend at the marked point and cut off the excess pushrod wire as shown.

## Step 28

Connect the prepared z-bend to the servo horn's outermost hole. This should be approximately 10mm out from the servo's centre.

#### Step 29

Adjust the pushrod's length by screwing the clevis in or out until the elevon is centred. Now push the clevis into the control horn until it clicks.

Step 30

Complete the second elevon linkage using the same procedure above.

Prepare the ESC by soldering on your choice of connectors. We recommend 4mm gold bullet connectors. Ensure the polarity is correct.



#### Step 32

Test fit the fan unit, noting the wires fit in the moulded channel under the fin mount. Apply epoxy sparingly as you may wish to remove the fan unit at some point in the future.

#### Step 33

Glue the fan unit in position making sure none of the wires are trapped. Hold in place until the epoxy cures.

#### Step 34

Prepare your rudder servo's control horn as shown. Centre the servo.

# Step 35

Check the fit of your servo in the moulded recess and trim the foam if necessary. Apply a small quantity of epoxy to the servo.













Glue the servo in position noting its orientation with the servo horn to the rear of the fin.

#### Step 37

Ensure the base of the servo does not protrude below the base of the fin.

## Step 38

Before fitting the rudder control horn, trim away the clear hinging tape from the slot in the rudder.

#### Step 39

Fit a control horn through the rudder and fit a retaining plate in the same way as the elevon control horns were fitted.

### Step 40

Complete the installation of the horn by installing a self tapping screw through the control horn and into the retaining plate.

Prepare a rudder pushrod by screwing a clevis onto the rod until the thread is just visible through the clevis.



#### Step 42

Centre the rudder servo and the rudder. Fit the clevis in its horn and mark the position the pushrod crosses the hole in the servo horn one in from the outermost.

#### Step 43

Form a z-bend at the marked point and cut off the excess pushrod wire as shown.

#### Step 44

Adjust the pushrod's length by screwing the clevis in or out until the rudder is centred. Now push the clevis into the control horn until it clicks.



Thread the rudder servo lead though the opening in the top of the fuselage and ensure that the motor leads are pushed down into their recess.













Mix up some epoxy and thoroughly cover the base of the fin taking care not to get epoxy on the servo or motor leads.

## Step 47

Pulling the rudder servo lead down into the duct, glue the fin in position ensuring that it is square and perpendicular to the wing.

## Step 48

Once the epoxy has cured, turn the model over and attach a 300mm extension lead to the rudder servo.

#### Step 49

Attach a length of double sided tape or Velcro (hook and loop) to the electronic speed controller.

Step 50

Secure the speed controller in its moulded recess in the fuselage duct as shown.

Feed the servo extension leads through the air exit hole and into the radio bay.



#### Step 52

Hold all leads in place in the duct using clear tape or masking tape. Do not allow leads to remain loose in the duct as there is a risk they will be drawn into the fan.

SEE PAGE 25 - SETTING UP THE ESC YOU CAN NOW TEST THE ESC AND FAN UNIT. ENSURE THE FAN ROTATES ANTI-CLOCKWISE VIEWED FROM THE FRONT.

#### Step 53

Mix up sufficient rapid epoxy and coat the bottom of the lower cowl and sparingly apply epoxy to the fan unit recess to secure the fan unit to the cowl.

#### Step 54

Glue the lower cowl in position making sure it is firmly pressed into its recessed slots. Ensure that the rear of the cowl is aligned with the rear of the fuselage.

#### Step 55

Use small strips of masking tape to accurately hold the cowl in position as the epoxy cures.



















Now apply epoxy to the inside of the prepainted, moulded intake lip as shown.

## Step 57

Glue the intake lip moulding in position making sure that any excess epoxy that squeezes out is wiped off.

## Step 58

Use small strips of masking tape to ensure the moulded intake lip is held tightly to the cowl as the epoxy cures.

IMPORTANT: IF YOU PLAN TO FIT THE OPTIONAL VECTORED THRUST UNIT DESCRIBED AT THE END OF THIS MANUAL - PLEASE OMIT STEP 59 AND 60 AND DO NOT FIT THE MOULDED TAILPIPE.

## Step 59

Mix up a small amount of epoxy and apply to the inside of the moulded tailpipe.

### Step 60

Slide the tailpipe in position and apply a couple of strips of tape to secure it while the epoxy cures.

Apply more epoxy to the inside of the moulded nosecone.



#### Step 62

Slide the nosecone in position. Wipe off any excess epoxy that squeezes out.





Locate the servo cover mouldings. Trim them with a sharp knife using the moulded lines as a guide.

Step 64 Apply a tiny smear around the perimeter of the first elevon servo cover. Do not apply too much adhesive.



#### Step 65

Glue the cover in position and hold or apply a small strip of masking tape while the epoxy cures.













Step 66 Repeat for the second elevon servo cover.

Carefully trim the rudder servo cover to clear the output horn. Now apply a smear of epoxy to the perimeter of the cover.

## Step 68

Glue the cover in position and hold or apply a small strip of masking tape while the epoxy cures.

## Step 69

Trim the decals from decal sheet leaving a small perimeter of clear around each. Remove just one corner of the backing paper and position the decal correctly.

### Step 70

Carefully remove the remaining backing paper while rubbing down the decal. Work slowly to avoid any wrinkles.

Once applied, carefully cut through the decal where the rudder separates from the fin.



Ensure that you don't cut the hinge tape, run a sharp knife through the decal when the rudder hinges.

#### Step 73

Apply the main wing decal in the same way buy only removing a corner of backing paper to start with.

#### Step 74

Carefully remove the remaining backing paper while rubbing down the decal. Work slowly to avoid any wrinkles.



#### Step 75

Using a ruler and sharp knife, run a sharp knife through the decal when the elevon hinges. Work carefully to ensure that you don't cut the hinge tape.













Use the back of your knife to smooth the cut decal down into the hinge line.

## Step 77

Apply the decals to the other wing panel and fin. Now add the all-important Squall! decal.

## Step 78

Just the Phase 3 decals to add to each side of the fuselage and the top of the model is complete.

## Step 79

Turn the model over and apply the longer black strip to the front of the model. Apply the end of the decal in the duct (just in front of the air exit hole

### Step 80

Work forward to the nose, carefully removing the backing paper and rubbing down the decal as you go.

Use a sharp knife to trim the decal flush with the moulded nosecone.



#### Step 82

Starting from the intake lip, apply the second black decal to the underside of the cowl.





Trim the rear of the decal flush with the moulded tailpipe using a sharp knife.

#### Step 84

The underwing decals are best applied singly, but you can mark their positions with a pencil before separating them from the decal sheet.



#### Step 85

Apply the second stripe ensuring that it remains parallel to the first or use the pencil guide marks you made. Rub down the decal as you remove the backing paper.











Repeat the for the second wing panel working from from the trailing to leading edge.

## Step 87

The final stripe is applied in the same way with the backing paper removed carefully as you work your way to the leading edge.

#### Step 88

Again, using a ruler and sharp knife, run through the decal when the elevon hinges working carefully to ensure that you don't cut the hinge tape. Use the back of your knife to smooth the cut decal down into the hinge line.

#### Step 89

Apply a strip of double sided tape or Velcro (hook and loop) to the rear of your receiver.

#### Step 90

Attach the receiver to the base of the fuselage towards the rear of the radio bay.

Connect the two elevons, rudder and ESC's throttle lead to the appropriate receiver channel outputs and tidy the wiring with cable ties.





Prepare the Li-Po battery mount by removing the backing paper from the Velcro (hook and loop) supplied.





Attach it to the balsa battery mount, pressing it firmly in position.

# Step 94

Remove the second backing paper and attach your Li-Po to the Velcro as shown.



#### Step 95

Use the supplied Velcro strap to give an additional level of security to the battery retention. This is a highly aerobatic model and you don't want to lose the battery in flight!





Ensure that the Velcro retaining strap is orientated as shown as it is glued into the model with the tray in this position.

#### Step 97

Place the battery on its tray into the radio bay.Temporarily fit the canopy and test the balance point as shown below.

#### BALANCE POINT (C/G)

The Squall! should balance at a point 60mm back from the leading edge where the wings meet the fuselage. The Squall! must be correctly balanced before flying. The aircraft should sit level or slightly nose down when you support it on a balancer or with your finger tips at the balance point. Move the Li-Po battery on its tray forwards or backwards until the model balances correctly.



Now remove the canopy and carefully mark the position of the tray.



#### Step 99

Use plenty of epoxy to attach the battery tray to the base of the fuselage in this position in the radio bay.

#### Step 100

Hold the battery in position while the epoxy cures. The battery can now be removed for charging by releasing the Velcro strap.

#### Step 101

The canopy is supplied factory trimmed and ready to fit. Simply locate the rear 'W' latch in its cutout in the rear of the canopy.



#### Step 102

Keeping the canopy pulled forward, slip the front 'W' catch in the cutout in the front of the canopy and allow it to snap into place. Pushing the front canopy catch towards the rear allows the canopy to be removed.



The Squall! is complete. Now set-up the control throws as shown below.

#### **CONTROL THROWS**

All control throws are measured at the control surfaces widest point and each is measured from neutral. Begin with the 'Normal' throws and safe centre of gravity position. Experienced flyers can increase the throws to the 'Highly Aerobatic' once they are happy flying the model.

NORMAL THROWS:		HIGHLY AEROBATIC THROWS:			
Elevator	12mm Up/Down	.20% Expo	Elevator	22mm Up/Down	.40% Expo
Aileron	12mm Up/Down	.20% Expo	Aileron	22mm Up/Down	.40% Expo
Rudder	10mm Left/Right	.20% Expo	Rudder	16mm Left/Right	.25% Expo

Safe CG is 60mm from leading edge of the outer wing panel.

Aerobatic CG is up to 70mm from leading edge of the outer wing panel.

Do not attempt to test fly the model with the Highly Aerobatic throws or CG position!

#### SETTING UP THE ESC

The Squall! is supplied with an electronic speed controller (ESC) that is very simple to set up. It is connected as shown in the diagram here.



To Flight Battery

If you are using a Futaba transmitter, reverse the throttle channel. If you are using a JR transmitter, leave the throttle channel in its normal position. If your are using a different transmitter, refer to the user's guide provided with your radio control system. In all cases, set the throttle ATV (Adjustable Travel Volume) set at 120% on full throttle.

With the throttle control stick at its LOW position, switch on the transmitter. Connect a fully-charged LiPO battery. There is no separate switch, so connecting the Li-PO battery will turn on the airborne radio components and begin the motor arming process.

The ESC emits three short 'beeps' to confirm that it is armed. Now slowly move the throttle control stick and the fan will spin.

#### SPARE PARTS LIST

PH019-01	Airframe Parts - All Squall!
PH019-02	Canopy (Blue) - All Squall!
PH019-03	Decal Sheet - All Squall!
PH019-04	Linkage Set - All Squall!
PH019-05	ESC 40A (11.1v) - Squall!
PH019-06	ESC 45A HP (14.8v) - Squall! HP
PH019-07	Motor 3800kv (11.1v) - Squall!
PH019-08	Motor 3400kv (14.8v) - Squall! HP
PH019-09	Fan Unit (No Impeller) - All Squall!
PH019-10	Fan Impeller-3 Blade - Squall! HP
PH019-11	Fan Impeller-5 Blade - Squall!
PH019-12	Fan Adaptor - All Squall!
PH019-13	Vectored Thrust Unit - All Squall!
PH019-14	Vectored Linkage Set - Squall!



FLYING THE SQUALL

Always turn on the transmitter before connecting the Li-Po battery. Ensure the throttle stick is at its low position. Connect the Li-Po battery and check that all control surfaces deflect in the correct direction when the sticks are moved. Ensure the model balances correctly and that the control throws are correct.

Perform a range check. While the Squall! is very easy to hand launch on your own we recommend that you ask a friend to help for the first flight so you can concentrate on trimming. Grip the model by the fuselage under cowl. Test the motor by pushing the throttle fully open then pull it fully back.

If there is any wind, get your helper to turn and face directly into it. Open the throttle and have model launched from shoulder height with a firm, level push. The model will accelerate quickly. Allow it to gain speed in straight and level flight.

The Squall! is a high performance jet that yields its best performance when flown smoothly. It is perfect for high speed beat-ups and large open aerobatics. The Squall! HP on 4 cell packs is in its element when being wrung out through extreme manoeuvres. With a quality battery, the vertical performance is limitless as it will have a greater than 1:1 thrust to weight ratio.

After landing, unplug and remove the battery from the model and allow it to cool completely before recharging it for your next flight.

#### **REPAIRING THE SQUALL**

Most damage can be repaired quickly and easily. If the damage is beyond repair, spare parts are available for purchase. If a foam part is going to break during a crash it will usually break cleanly. To repair a clean break, follow the procedures below:

• Glue the broken parts together, using a thin layer of 5 minute epoxy or white glue. Hold the parts together and in alignment until the glue fully cures.

• Apply a strip of clear tape over the seams to strengthen the joint even more.

WARNING It is very important that you use no solvents or Cyanoacrylate (C/A) glue, which can damage foam. If any of these chemicals comes in contact with the foam parts, the parts will be destroyed. Use only epoxy or white glue to repair damaged foam parts.

#### OUR GUARANTEE

Phase 3 Models guarantees this kit to be free from defects in both material and workmanship, at the date of purchase. This does not cover any component parts damaged by use, misuse or modification. in no case shall Phase 3 Model's liability exceed the original cost of the purchased kit.

In that Phase 3 Models has no control over the final assembly or material used for final assembly, no liability shall be assumed for any damage resulting from the use by the user of the final user-assembled product. By the act of using the final user-assembled product, the user accepts all resulting liability.

