



Bf-109G PNP

Instruction Manual



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PLUG-N-PLAY



Wingspan: 43.5 in
Length: 39.4 in
Weight: 35.3 oz
Motor: ParkZone 15-size 720Kv brushless outrunner motor
ESC: E-flite 30-amp Switch-Mode BEC brushless



Bf-109G PNP Instruction Manual

Fast, agile and armed to the teeth, Willy Messerschmitt's BF-109 dominated European skies at the outset of World War II. With the exception of Britain's Spitfire, the "109" outclassed nearly every other fighter it faced between 1939 and 1941. In that short time, its pilots, many of whom had honed their tactics in the Spanish Civil War, racked up thousands of aerial victories. Now anyone can experience the thrill of flying the Messerschmitt on a smaller scale with this fully-aerobatic, brushless-powered Plug-N-Play™ reproduction from ParkZone. And getting it airborne is about as simple as it gets. Just attach the wing and tail, install your full range receiver, charge your battery and you're flying.

The ParkZone® Messerschmitt Bf-109G comes out of the box with a realistic Luftwaffe paint scheme inspired by the markings of a Bf-109 flown by Eric Hartmann—Germany's leading WWII ace. Other scale touches include landing gear doors, exhaust stacks, gun ports and a port-side supercharger intake.

Charge-and-Fly™ convenience, outstanding flight performance and beautiful scale detail—with the ParkZone Messerschmitt Bf-109G, you get it all.

Bf-109G PNP already has the 3-wire servos, a ParkZone 15-size low Kv outrunner brushless motor, and an E-flite® 30A brushless ESC. The decals have already been applied, as well. You will only need to add your own 1800-2200mAh battery, charger, full range transmitter and a receiver. In as little as an hour, you can be ready for your first flight with the Bf-109G PNP. This means you can spend your time refining your flying skills, not your building skills.

Warning: Although your ParkZone Bf-109G PNP comes almost ready to fly, this aircraft is for experienced RC pilots only and is not a toy! Misuse of the plane can cause serious bodily harm and damage to property. Therefore, only an experienced RC pilot should fly it.

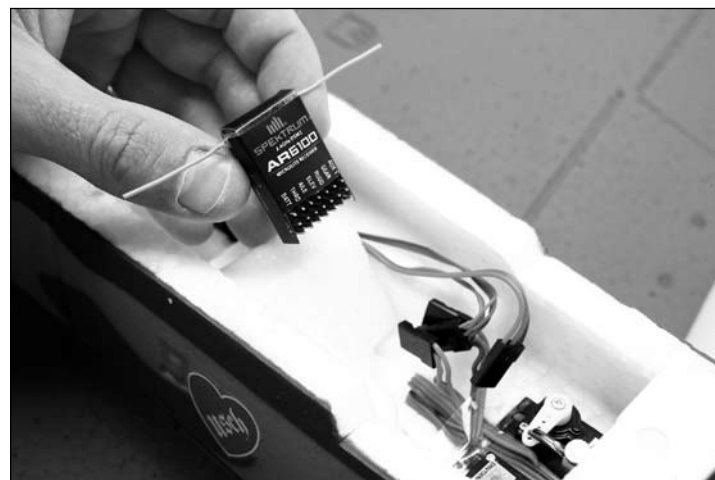
Note: A 4-channel or greater radio is required for the Bf-109G PNP. A 5-channel or greater will be needed if the optional flaps are used.

Age Recommendation: 14 years or over. This is not a toy. This product is not intended for use by children without direct adult supervision.

Step 1

Installing Receiver

1. Install the receiver in the location shown in the photo using hook and loop tape or double-sided servo tape.
2. Plug in the elevator and rudder servo into the appropriate ports of the receiver. Plug Y-harness into the aileron channel of the receiver and plug the ESC lead into the throttle channel.



Step 2

Attaching the Wing

In order to attach the wing of your Bf-109G, please follow these simple instructions:

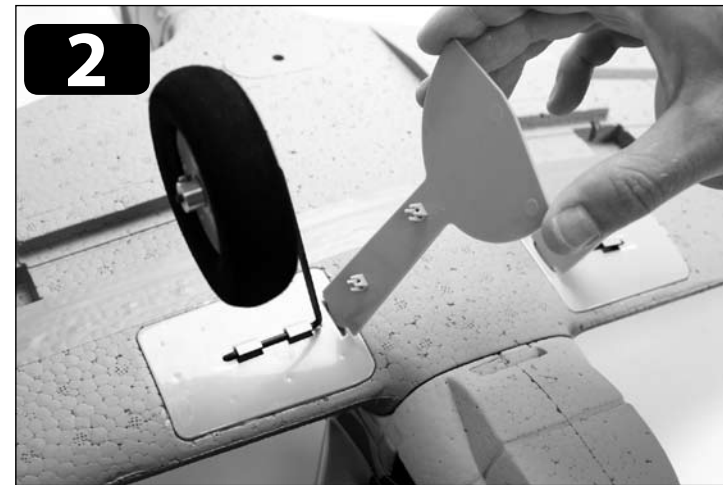
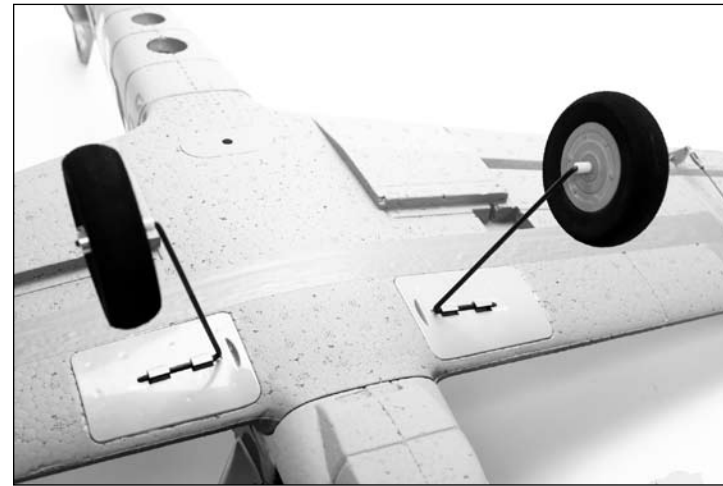
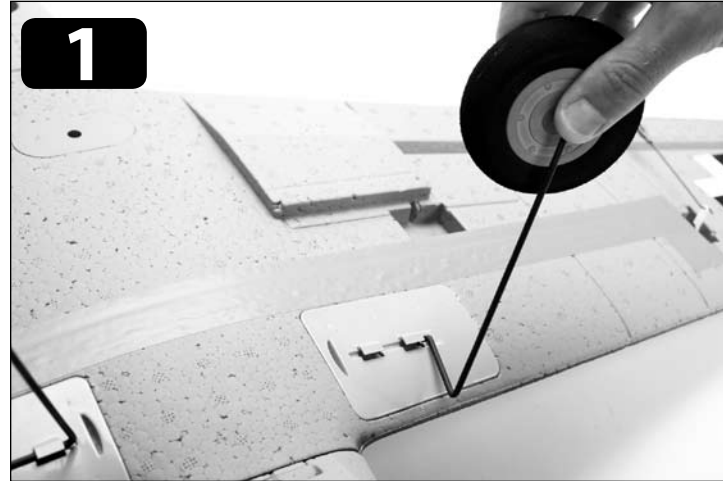
1. Locate the included wing-securing screw.
2. Turn over the fuselage so you are looking at the bottom. Do the same with the wing.
3. Connect the aileron leads to the installed Y-harness, noting proper orientation. Route the Y-harness lead through the access hole in the bottom of the fuselage.
4. Carefully align the two locator pins on the front of the wing into the two small holes in the front of the fuselage.
5. Slide the aileron leads inside the fuselage so that they will not become pinched in between the wing and the fuselage when securing the wing.
6. Slide the trailing edge of the wing into the fuselage as shown, making certain it is perfectly centered. This must be done correctly in order to allow the screw to thread into the fuselage. Once you are certain the wing is centered, tighten the screw to secure the wing.
7. The wing is correctly installed when no gap exists between the wing and fillet.
8. Gently pull up on the rear of the canopy hatch to remove and set aside.
9. Plug the Y-harness lead into the AIL port of the receiver.



Step 3

Installing the Landing Gear

1. Install the main landing gear by inserting it into the locator hole in the wing. Swivel the landing gear toward the retaining clips and gently snap into place.
2. Snap landing gear doors onto the landing gear wire with the top of the door in the slot in the landing gear plate.



Step 4

Attaching the Horizontal Stabilizer

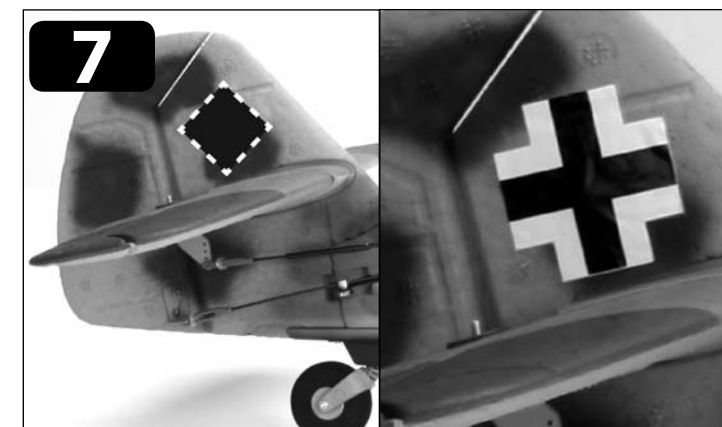
1. Locate the horizontal stab of the tail.
2. Slide the stab joiner rod into one side of the stab. Slide the stab with the joiner rod through the fuselage and then slide the opposite stab onto the fuselage.
3. Use the tape provided to properly secure the tail to the fuselage as shown. Use the tape on the top and bottom of each side of the tail (total of 4 applications).
4. Turn on the transmitter and plug in the flight battery. Make sure the trim levers are centered and the left stick is in the full down position.
5. Locate the clevis and rod exiting the sides of the fuselage, and attach the clevis to the outermost hole on the control horn.
6. Make sure both elevators are even to each other by adjusting the clevises. Make any trim adjustments as necessary prior to flight.

Note: To make trim adjustments to the horizontal stabilizer:

- a. Turn on radio transmitter.
- b. Plug in fully charged battery into fuse.
- c. Use the elevator trim of the radio by moving up or down to center the tail at neutral when the gimbal is also at neutral. If these changes are not sufficient, center the transmitter elevator trim lever, then remove the clevis from the control surface and turn clevis in or out as needed to move the control surface back to neutral.

Warning: Always keep hands and all objects away from the propeller in case the motor is engaged. A moving propeller can cause severe injury and/or damage.

7. Your Bf-109G is supplied with a small Maltese cross for the tail insignia, to be applied as shown. For those desiring a more accurate tail insignia, an optional swastika decal is available separately (PKZ4930, not available in all territories).



Step 5

Installing the Propeller and Spinner

1. Slide collet onto motor shaft.
2. Slide spinner backplate followed by the propeller onto the collet shaft.
3. Thread aluminum hex nut onto threaded collet and tighten securely.
4. Install spinner making sure it is keyed into the spinner backplate and using a Phillips screwdriver install the 3mm x 10mm screw. Take care to center the propeller blades in the cutouts of the 3-bladed spinner, without allowing any of the blades to contact the spinner.

Note: Another available option is the 2-bladed spinner (PKZ4908). The included motor has a low Kv that was engineered to match the included 3-bladed propeller. If a two-bladed propeller is used with the stock motor, we suggest using a 12 x 12 electric propeller. In addition, the E-flite Apprentice motor is a higher Kv and is a drop-in fit for the stock Bf-109G motor.

Warning: Use of the 3-bladed prop with the Apprentice motor will result in excess current and likely damage the motor.



Step 6

Range Checking your Radio System

After you have finished the final assembly, it is time to range check the radio system within the Bf-109G PNP.

Prior to each flying session

- Turn on the transmitter prior to plugging in the flight battery. With the airplane on the ground and motor running, you should walk away approximately 100 feet and still have full control of all functions while following the specific range test feature of your transmitter. **If this is not the case, do not fly!** Call the Horizon Support Team at 1-877-504-0233.

- Always make sure that all controls are functioning per the transmitter input that you are giving. This includes ailerons, rudder, elevator and throttle.
- Always make sure you have fully charged the transmitter batteries.
- **Always remove the flight battery from the airplane when you are done flying, or when you are on the way to the flying field.**

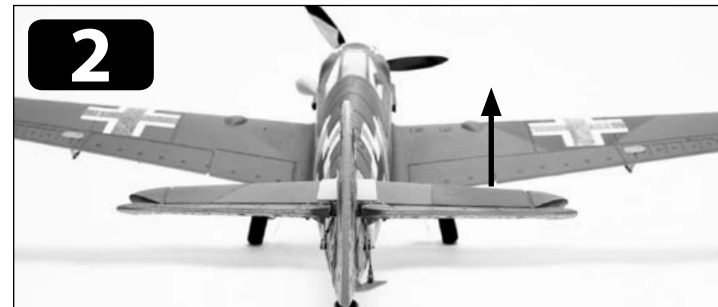
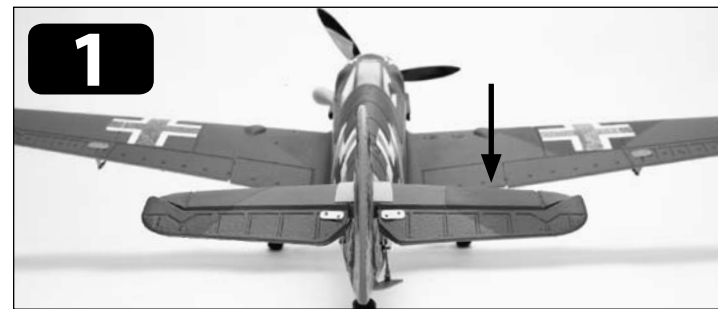
Step 7

Control Direction Test

1. Move the elevator stick on the transmitter forward and aft to check elevator pitch control. When the stick is pushed forward, the elevator should move down.
2. When the elevator stick is moved aft the elevator should move up.
3. Move the aileron stick left and right to check aileron roll control. When the stick is pushed to the left, the left aileron should move up and the right aileron should move down.
4. With the aileron stick pushed right, the right aileron should move up and the left aileron should move down.
5. Move the rudder stick left and right to check yaw control. When the stick is pushed to the right the rudder should also move to the right (if viewed from behind the airplane).
6. With the rudder stick pushed to the left, the rudder should move to the left (if viewed from behind the airplane).

If at any time during the test the controls respond in the opposite direction, it may be necessary to reverse/change the direction of operation of the flight controls.

Follow your transmitter instructions to change the direction of the various flight controls.



Step 8

Flying

Always choose a wide-open space for flying your ParkZone Bf-109G PNP. It is ideal for you to fly at an AMA sanctioned flying field. If you are not flying at an AMA approved site, always avoid flying near houses, trees, wires and buildings. You should also be careful to avoid flying in areas where there are many people, such as busy parks, schoolyards, or soccer fields. Always follow local ordinances. We recommend only flying your Bf-109G in light winds.

Prior to Each Flight

- Always make sure your Bf-109G PNP is properly trimmed.
- Always make sure the receiver, ESC, and battery are properly secured.
- Always verify the propeller is on securely.
- Always ensure the servo reversing switches on the transmitter are set correctly.
- Always verify the dual rates switch is set at where you plan on flying. We recommend LOW rates for your initial flying. The Bf-109G PNP is VERY maneuverable on high rates and requires a lot of experience to handle properly.

Center of Gravity Location

The CG Location is 2 3/8 inches from leading edge at the "D" shaped indentation closest to the landing gear wheel bump. This CG location has been determined with the ParkZone 1800mAh 11.1V Li-Po battery installed.

Control Surface Travel Information

Note: Measured at widest point of control surface

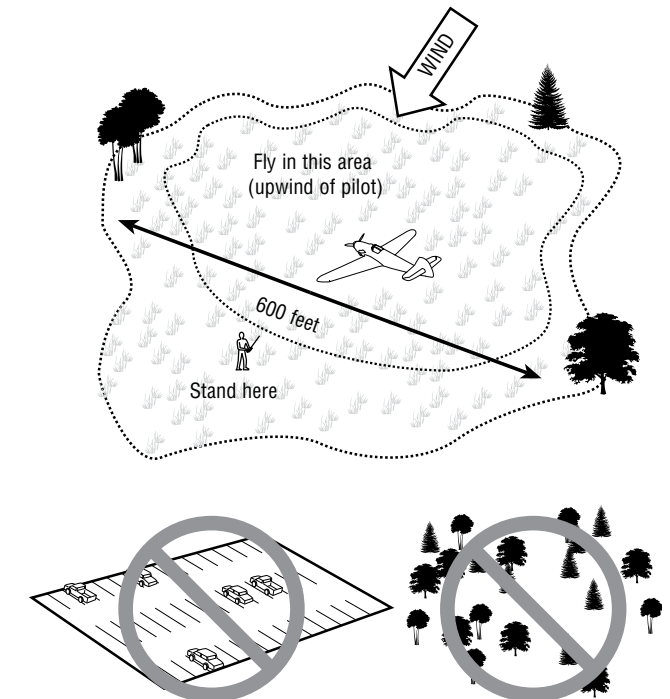
	High Rate	Low Rate
Aileron:	5/8 up/down	3/8 up/down
Elevator:	5/8 up/down	3/8 up/down
Rudder:	3/4 left/right	1/2 left/right

	Mid Flap	Full Flap
Flap	1/2 inch	1 inch

Ailerons if flaps are used.

	High Rate	Low Rate
Ailerons:	3/4 up/down	3/8 up/down

Note: Mid flap is used if transmitter has three-position flap switch, otherwise use the full flap setting.



Bf-109G Takeoff and Landing Tips

The ParkZone Bf-109G is an accurate rendition of the full-size Bf-109G. Like the full size, takeoffs and landings are more critical than previous with ParkZone warbirds.

With the large scale 3-blade propeller there is a lot of torque that is most noticeable during takeoff. The Bf-109G requires right rudder input during the takeoff run to avoid veering left. If the power is applied too quickly during the takeoff, it is possible to have the plane veer left, and also tip the airplane, scraping the wingtips. The torque is also noticeable in the air if the throttle is moved from low power to full power quickly. Always use a gradual application of power and never increase the power to full throttle too quickly.

Due to the scale landing gear placement and angle the Bf-109G can tip up and scrape the wingtips. The airplane needs to be flown from the start of the takeoff run and during landing, taking care to keep the wings level even when rolling on the ground. **Abrupt rudder inputs will tip the plane and cause the wingtips to scrape on the ground.**

The Bf-109G is easiest to land doing a wheel landing (two point). A wheel landing (two point) is when the airplane touches down on the main landing gear first with the tailwheel off the ground. The Bf-109G can be landed in three point attitude, where all three wheels touch down at the same time, but the wheel landing is easier to accomplish. Because of the large prop, if the power is pulled all the way back when landing, the propeller acts like a large air brake. Fly the airplane down to the ground using 1/4 - 1/3 throttle to allow for enough energy for a proper flare.

The 30-amp E-Flite ESC comes with the brake engaged on the Bf-109G to keep the airplane from slowing down as quickly when the power is pulled all the way off, instead of having the propeller freewheel and cause more drag. It is still advisable to land with power on as it allows more time to flare the airplane for a smooth landing.

Flaps

When using the optional flaps, the takeoffs and landings are easier. When taking off, the tail will come off the ground quicker allowing better rudder control during the takeoff roll. The smaller ailerons require the wing to be flown during the takeoff run.

During landing, the flaps allow a landing approach to be steeper with the ability to use more throttle. The flaps make the plane come in at a slower airspeed and make it easier to flare and settle in for a smooth landing.

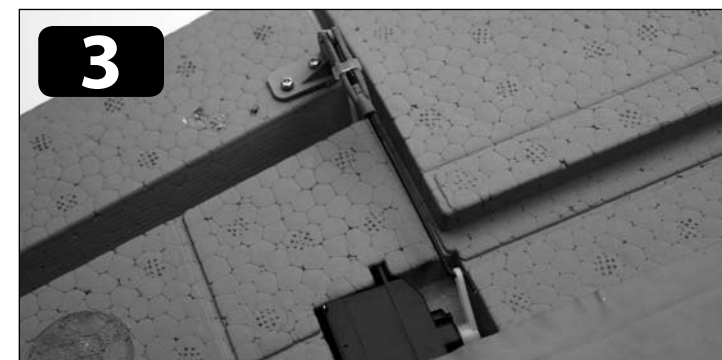
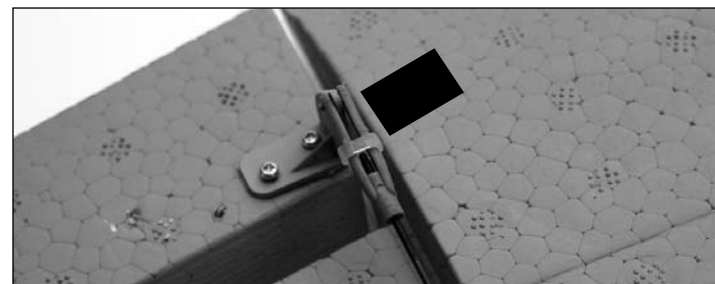
Optional Flaps

The Bf-109G is equipped with servo pockets in the wing for making the flaps operational. To make the flaps functional you will need two additional servos (PKZ1081), the flap pushrod set (PKZ4921), and a Y-harness (PKZ1063).

1. Plug Y-harness into the flap or gear channel of the receiver. Plug flap servos into the y harness. Power on radio and move the flap switch to the up position. Turn off radio and unplug airplane. (see image 2 for servo arm orientation in the up position).
2. Place servos in flap pockets using hot glue, silicon glue, or double-sided servo tape. Peel back the tape covering the servo lead and run the flap servo leads in the same channel. Re-secure the tape over the servo leads.
3. With the ailerons in the neutral position attach control horn so the holes in the horn are over the hinge line. Use the aileron control horns for position reference.
4. Attach pushrod to servo control horn and adjust clevis so it attaches to the control horn on the outer hole without pushing or pulling on the aileron.
5. Cut the aileron at the panel line on the aileron. Make sure there is 1/16 inch gap between the aileron and flap to prevent interference between the two surfaces.
6. Power on the airplane and radio and make sure you are getting even throw on both flaps.

Note: When the flaps are installed the aileron area is much smaller than when using the full span ailerons. The roll rate in flight will be reduced. The aileron throw can be increased to compensate for the reduced aileron area. See step 8 for control throw for the ailerons with flaps installed.

Note: The flap servo pockets have been positioned so it is possible to make the inboard flaps operational. This will require the purchase of an additional flap linkage set. The outline for the inner flap is on the top surface of the wing. Hinging options are up to the modeler to implement. Picture below shows placement of additional control horn for inboard flaps.



Note: The recommended settings are set at the default settings (see point #5, page 11).

30-Amp Pro Switch-Mode BEC Brushless Controller

Your Bf-109G PNP comes out of the box with the E-flite 30-Amp Pro Switch-Mode BEC Brushless Controller. This controller has been designed for use in radio control aircraft and is designed to support motor currents up to 30 amps continuous, and a 5-volt Switch-Mode BEC circuit capable of 700mAh continuous current on any recommended input voltage with a 3- to 4-cell Li-Po battery. It is suitable to use with most radio brands.

If you intend to fly your Bf-109G PNP stock, then there is no need to program your ESC. It comes installed with the default settings. If you intend to re-program the ESC, we strongly recommend removing the propeller first in order to keep it from spinning if the motor is accidentally engaged.

Note: ALWAYS assume the motor and the propeller are live. ALWAYS keep clear of the propeller at all times. The high rpm of the brushless motor can cause severe injury.

Features

- Up to 30-amp continuous current with proper airflow, 35-amp peak
- 5-volt Switch-Mode BEC circuit capable of 700mAh continuous current on any recommended input voltage
- Drives up to 5 analog or 4 digital sub-micro servos with the BEC
- 3S-4S Li-Po or 9- to 12-cell Ni-MH/Ni-Cd input voltage
- Programmable motor braking
- Safe power-arm mode prevents accidental starts
- Programmable low voltage cut-off with settings for 3S Li-Po (9.2V), 4S Li-Po (12V) or 74% of battery starting voltage
- Programmable soft start for helis and airplanes
- Auto motor shutdown if signal is lost or there is interference
- Programmable timing has 5 user-selectable ranges for use with a larger variety of brushless motors
- Heli mode for starting the motor with a low speed ratio
- Optional RS232 Serial Link available for programming (EFLARS232)
- Pre-wired connectors - E-flite EC3 connectors on battery input and 3.5mm female gold bullets on motor output leads

Using the 30-Amp Pro Switch-Mode BEC Brushless Controller

This controller is very simple to use, and for safety, will not arm the motor until the throttle stick has been held in the Idle/Off position for more than 1 second. The controller will indicate the soft cutoff voltage setting every time you plug the battery in by first emitting a low, long tone, to indicate startup. Depending on the selected cutoff voltage (default is 74%), you will then hear the respective number of medium length mid tones to indicate the cell count or a musical tone for the 74% cutoff, helping you to confirm the setting before every flight. Proper air cooling is required during flights so the ESC should be placed in an area where air flows over the controller.

Connecting the ESC to the Motor

The three wires from the motor connect to the three female gold bullet connectors on the ESC. The order of connection to the motor is not important; any motor wire can be plugged into any connector. If the motor runs backwards, you can simply unplug and switch any two of the motor wire plugs connected to the ESC.



Mounting the ESC

Choose a location that has good airflow and offers good protection. Do not cover the side with the flat heat shield with hook and loop or tape as this will greatly reduce its effectiveness. Mount the ESC with a combination of hook and loop, 2-sided foam tape, and/or tie wraps.

Starting Your Power System

1. Turn on your transmitter and ensure the position of the throttle stick is set to Idle/Off.
2. Plug the battery pack into the controller. You will hear 1 low long tone to indicate startup, then the respective number of medium-length mid tones to indicate the cell count or a musical tone for the 74% cutoff, followed by 3 rising tones to indicate the controller is armed.

3. When you move the throttle stick upward, the motor will run. Continue to move the throttle stick upward to the full throttle (high) position, and the motor will run faster. When the throttle stick goes below the start-up position, the motor will stop running.
4. Check servo motion as part of your preflight check. It is very important to make sure linkages are free-moving with no binding.

Remember, when in the programming mode:

Full Throttle = Stick Up
Idle = Stick Down

5. The default settings (from the package) for your E-flite 30-Amp Pro ESC are as follows:
 - Voltage cutoff set for 3S
 - Open stock default is set to Brake Off, but Brake On will be set to on for Bf-109G
 - Timing set at 15 degrees
 - Throttle Input Range set at 1.2ms to 1.8ms
 - Start-up Rate (Acceleration Delay) set at 0.25 seconds
 - PWM Frequency set at 8kHz
 - Operating Mode set to normal (airplane)

Entering the Programming Mode

1. With the battery disconnected from the controller, and the transmitter turned on, first move the throttle stick to full throttle (>1.7ms) position. Leave it in this position and then connect the battery to the controller.
2. Wait for 5 seconds, and the ESC will give two sets of fast ringing tones to indicate you have successfully entered the programming mode.
3. Once you hear these tones, move the stick to center (between 1.4 and 1.7ms) for 5 seconds, and the controller will beep 1 time, indicating you are now in Menu 1.
4. The controller will now wait 5 seconds for you to make your selection; your programming options are either full throttle (>1.7ms) or idle (<1.3ms).
5. When you have made a valid selection, the control will beep once with a lower tone, and you can move the stick back to center for the next menu item (2 beeps, 3 beeps and so on). If you do not make a selection within 5 seconds, the controller will move to the next menu item.

6. If you want to make changes in the programming menus (see specific instructions below) move the throttle stick to full throttle (>1.7ms) position. You will have 5 seconds to make your selection.
7. If you want to advance to the next menu, allow the programming to skip to the next menu after the 5 seconds have expired.

Programming Menu 1 – Voltage Cutoff

Use this option to set the voltage at which the controller will shut down the motor to prevent damage to your battery when it reaches the cutoff voltage. You will know your battery pack has reached auto cutoff when you hear the motor “pulse” repeatedly.

1. Move the throttle stick to full throttle (>1.7ms) position to make changes to the voltage cutoff programming.
 - a. To select 3-cell low voltage cutoff – You will hear 3 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - b. To select 4-cell low voltage cutoff – You will hear 4 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - c. To select 5-cell low voltage cutoff – You will hear 5 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - d. To select 6-cell low voltage cutoff – You will hear 6 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - e. To select 74% cutoff – You will hear 7 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

IMPORTANT NOTE ABOUT 74% CUTOFF: *This option will activate the soft cutoff at 74% of startup voltage or 9.2V, whichever is higher. For example, if your pack measures 16.8 volts at startup, then the soft cut will occur at 12.4 volts. The 74% cutoff option will check the startup voltage every time you plug the battery into the controller, so beware of using partially charged packs, as the system cannot protect your Li-Po batteries if you are using the 74% cutoff and connect a partially charged pack. You will know your battery pack has reached soft auto cutoff when you hear the motor “pulse” repeatedly. We recommend you land your model as soon as you hear the motor pulse (indicating the pack voltage has dropped to the cutoff voltage level) to prevent over-discharge of the Li-Po battery pack, and to prevent sudden power loss.*

Programming Menu 2 – Brake Type

The default setting is Brake Off. This option gives you the choice to have the ESC stop the propeller during flight (Brake On) or allow it to windmill (Brake Off). Use the Brake On option for folding propellers.

1. Move the stick to center (between 1.4 and 1.6ms) for 5 seconds, and the controller will beep 2 times, indicating you are now in Menu 2.
2. Move the throttle stick to full throttle (>1.7ms) position to make changes to the Brake Type programming.
 - a. To select No Brake/Brake Off – You will hear 1 short beep. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - b. To select Soft Brake – You will hear 2 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - c. To select Medium Brake – You will hear 3 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - d. To select Hard Brake – You will hear 4 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

Programming Menu 3 – Timing

The default setting is 15 degrees. As a general rule, lower pole count motors use lower timing and higher pole count motors use higher timing. Please refer to your motor instructions and specifications for an indication of the number of poles.

LowTimingAdvance

Timing Degrees – 5 & 10
 Motor Poles – 2 to 4
 Expected Performance – Good balance of power and efficiency
 Motor Poles – 6 or more
 Expected Performance – Best efficiency and run time (lowest power)

StandardTimingAdvance

Timing Degrees – 15 & 20
 Motor Poles – 6 to 12
 Expected Performance – Good balance of power and efficiency
 Motor Poles – 14 or more
 Expected Performance – Best efficiency and run time (lowest power)

HighTimingAdvance

Timing Degrees – 25
 Motor Poles – 12
 Expected Performance – Highest power, less efficiency
 Motor Poles – 14 or more
 Expected Performance – Good balance of power and efficiency

1. Move the stick to center (between 1.4 and 1.6ms) for 5 seconds, and the controller will beep 3 times, indicating you are now in Menu 3.
2. Move the throttle stick to full throttle (>1.7ms) position to make changes to the Timing programming.
 - a. To select 5 Degrees – You will hear 1 short beep. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - b. To select 10 Degrees – You will hear 2 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.

- c. To select 15 Degrees – You will hear 3 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
- d. To select 20 Degrees – You will hear 4 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
- e. To select 25 Degrees – You will hear 5 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

Programming Menu 4 – Throttle Input Range (PWM)

The default setting is 1.2ms to 1.8ms and should work with most radio systems. This option allows for proper throttle input with many different radio systems. However, some radios have a wider output range, and may give a more linear response with the 1.1ms to 1.9ms range. If you feel there is too much “dead” area in the stick movement near full throttle, try adjusting the end points in your radio, or change to the wider input range. Be aware that if these settings are not correct, it may be impossible to arm the controller.

1. Move the stick to center (between 1.4 and 1.6ms) for 5 seconds, and the controller will beep 4 times, indicating you are now in Menu 4.
2. Move the throttle stick to full throttle (>1.7ms) position to make changes to the Throttle Input Range programming.
 - a. To select 1.2ms to 1.8ms – You will hear 1 short beep. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - b. To select 1.1ms to 1.9ms – You will hear 2 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

Programming Menu 5 – Start-Up Rate

The default setting is 0.25 seconds. The start-up rate is the time it takes to reach maximum motor speed. Changing the setting to 1 second can be useful with power-fragile gear boxes.

1. Move the stick to center (between 1.4 and 1.6ms) for 5 seconds, and the controller will beep 5 times, indicating you are now in Menu 3.
2. Move the throttle stick to full throttle (>1.7ms) position to make changes to the Start-up Rate programming.
 - a. To select .25 second – You will hear 1 short beep. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - b. To select 1 second – You will hear 2 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

Programming Menu 6 – PWM Switching Frequency

The default setting is 8kHz, which should be acceptable for most motors. If you have a low or very low inductance motor and know you need to use a higher PWM Frequency (refer to the manual included with the motor), then you can change the setting. Otherwise, we recommend leaving the default setting.

1. Move the stick to center (between 1.4 and 1.6ms) for 5 seconds, and the controller will beep 6 times, indicating you are now in Menu 6.
2. Move the throttle stick to full throttle (>1.7ms) position to make changes to the PWM Switching Frequency programming.
 - a. To select 8kHz PWM Frequency – You will hear 1 short beep. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.

- b. To select 16kHz PWM Frequency – You will hear 2 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
- c. To select 32kHz PWM Frequency – You will hear 3 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

Programming Menu 7 – Operating Mode

The default setting is set to Normal (airplane) Mode, which is limited to a start-up rate of 0.25 or 1 second. Alternatively, the Heli Mode can be selected which reduces the start-up rate to 5 seconds for the first start-up and any start-up after the motor/ESC has been stopped for more than 5 seconds. This helps to prevent damaging the motor, gears or any other components from an abrupt start-up when none of the parts are moving. Any time the motor/ESC has been stopped for less than 5 seconds in Heli Mode, the start-up will be immediate. This allows power to be applied immediately, such as when aborting an auto-rotation attempt or for any other reason, to help prevent a crash. Remember, you must wait more than 5 seconds after stopping the motor/ESC in order for the 5-second start-up to occur again.

1. Move the stick to center (between 1.4 and 1.6ms) for 5 seconds, and the controller will beep 7 times, indicating you are now in Menu 7.
2. Move the throttle stick to full throttle (>1.7ms) position to make changes to the Operating Mode programming.
 - a. To select Normal Mode – You will hear 1 short beep. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the next selection.
 - b. To select Heli Mode – You will hear 2 short beeps. Move the throttle stick to center (between 1.4 and 1.6ms). The controller will beep 2 times, indicating you have set the program selection or leave in full throttle for 5 seconds to advance to the first selection again.

Troubleshooting

The controller will beep more quietly than normal if the input voltage is below the cutoff voltage when the battery is connected. Check the voltage of the battery pack to see if it is correct (charged), or the programmed cutoff setting if the input voltage is set incorrectly for the voltage of the pack being used.

If you have trouble arming the controller (and the throttle trim has been set to minimum), enter the programming mode and try changing the setting to 1.1ms–1.9ms in Programming Menu 4 to see if it helps correct the problem. If it is a computer radio, you may alternatively increase high and low throttle ATV (endpoint) percentages.

Note: *Increasing the high ATV will not have a consequence on arming issues, only low ATV.*

Some transmitters, including all Futaba transmitters, will require the throttle channel to be “reversed” for proper operation.

Replacement Parts

Make sure that you keep your Bf-109G PNP flying. Replacement parts are available at your local hobby shop or from Horizon Hobby (www.horizonhobby.com). Please try your local hobby shop first. By supporting them, they will be there when you need them.

Item #	Description
PKZ1063	Servo Y-Harness
PKZ1064	Metal Gear Set: DSV130M
PKZ1081	SV80 Servo (Long Lead): Bf-109G Ailerons
PKZ1090	DSV130M Servo (Short Lead): Bf-109G Rudder, Elevator
PKZ4901	Propeller: Bf-109G 10.6 x 7.8
PKZ4903	Decal Sheet: Bf-109G
PKZ4907	3-blade spinner: Bf-109G
PKZ4913	Clear Canopy & Painted Pilot: Bf-109G
PKZ4916	15 720Kv Brushless Outrunner Motor: Bf-109G
PKZ4920	Painted Wing (No Servo): Bf-109G
PKZ4922	Pushrods with Clevis: Bf-109G
PKZ4923	Main Landing Gear Plates: Bf-109G
PKZ4924	Complete Tail Wheel
PKZ4925	Horizontal Tail with Accessories: Bf-109G
PKZ4926	Cowl: Bf-109G
PKZ4927	Main Landing Gear: Bf-109G
PKZ4928	Scale Landing Gear Doors
PKZ4929	Rudder Servo Arm
PKZ4931	Motor Mount
PKZ4932	Prop Adapter: Bf-109G
PKZ4967	Painted Bare Fuselage: Bf-109G
PKZ4970	Replacement Airframe
EFLA1030	30-Amp Pro Switch-Mode BEC Brushless ESC

Optional Parts

Item #	Description
PKZ1031	11.1V 1800mAh Li-Po Battery
PKZ1040	Variable Rate 2- to 3-cell DC Powered Balancing Li-Po Charger
PKZ1030	11.1V 2200mAh Li-Po Battery
PKZ1063	Servo Y-Harness: Optional Flaps
PKZ1081	SV80 Servo (Long Lead): Optional Flaps
PKZ4908	Spinner for Two-bladed Propellers
PKZ4921	Flap Pushrod Set
PKZ4930	Swastika Decal for Tail (Not available in all territories)
SPMR5500	DX5e Mode 2 Full Range Transmitter
SPMR6600	DX6i Mode 2 Full Range Transmitter

Recommended Touch up Paints

Floquil GRAUGRUN RLM74 PACTRA (Gray Green)
 Floquil LICHTBLAU RLM76 (SG) MM (Light Gray-Blue)
 Gunze-Sangyo RLM 75 (Gray)
 Model Master Modern Desert Sand FS 33637 S-1963 (Yellow)

Age Recommendation: 14 years or over. This is not a toy. This product is not intended for use by children without direct adult supervision.

Warranty Period

Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the “Product”) will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original Purchaser (“Purchaser”) and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER’S INTENDED USE.

(c) Purchaser Remedy- Horizon’s sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser’s exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or

misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

Safety Precautions

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to a service technician.

Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. A Service Repair Request is available at www.horizonhobby.com on the “Support” tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Warranty Inspection and Repairs

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

Non-Warranty Repairs

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. Please note: non-warranty repair is only available on electronics and model engines.

United States

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822
USA

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Support Team
4105 Fieldstone Road
Champaign, Illinois 61822
USA

Please call 877-504-0233 or e-mail us at productsupport@horizonhobby.com with any questions or concerns regarding this product or warranty.

United Kingdom

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Hobby UK
Units 1-4 Ployters Rd
Staple Tye
Harlow, Essex
CM18 7NS
United Kingdom

Please call +44 (0) 1279 641 097 or e-mail us at sales@horizonhobby.co.uk with any questions or concerns regarding this product or warranty.

Germany

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Technischer Service
Hamburger Strasse 10
25335 Elmshorn
Germany

Please call +49 4121 46199 66 or e-mail us at service@horizonhobby.de with any questions or concerns regarding this product or warranty.

Compliance Information for the European Union



Instructions for Disposal of WEEE by Users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



Declaration of Conformity

(in accordance with ISO/IEC 17050-1)

No. HH20090822

Product(s): PKZ BF-109 PNP
Item Number(s): PKZ4975
Equipment class: 1

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

EN 301 489-1, 301 489-17

General EMC requirements for Radio equipment

Signed for and on behalf of:
Horizon Hobby, Inc.
Champaign, IL USA
August 22, 2009

Steven A. Hall
Vice President International Operations
and Risk Management
Horizon Hobby, Inc.

