

# BLADE® 450X

#1 BY DESIGN



Instruction Manual  
Bedienungsanleitung  
Manuel d'utilisation  
Manuale di Istruzioni

## RTF

SPEKTRUM™ DSMX® CONTROL + BEASTX® FLYBARLESS TECHNOLOGY



## NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit [horizonhobby.com](http://horizonhobby.com) and click on the support tab for this product.

## Meaning of Special Language

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

**NOTICE:** Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

**CAUTION:** Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

**WARNING:** Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.



**WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. 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. Do not use with incompatible components or alter this product in any way outside of the instructions provided by Horizon Hobby, LLC. This 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 serious injury.

**Age Recommendation: Not for children under 14 years. This is not a toy.**

## Safety Precautions and Warnings

- Always keep a safe distance in all directions around your model to avoid collisions or injury. This model is controlled by a radio signal subject to interference from many sources outside your control. Interference can cause momentary loss of control.
- Always operate your model in open spaces away from full-size vehicles, traffic and people.
- Always carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.).
- Always keep all chemicals, small parts and anything electrical out of the reach of children.
- Always avoid water exposure to all equipment not specifically designed and protected for this purpose. Moisture causes damage to electronics.
- Never place any portion of the model in your mouth as it could cause serious injury or even death.
- Never operate your model with low transmitter batteries.
- Always keep aircraft in sight and under control.
- Always move the throttle fully down at rotor strike.
- Always use fully charged batteries.
- Always keep transmitter powered on while aircraft is powered.
- Always remove batteries before disassembly.
- Always keep moving parts clean.
- Always keep parts dry.
- Always let parts cool after use before touching.
- Always remove batteries after use.
- Never operate aircraft with damaged wiring.
- Never touch moving parts.

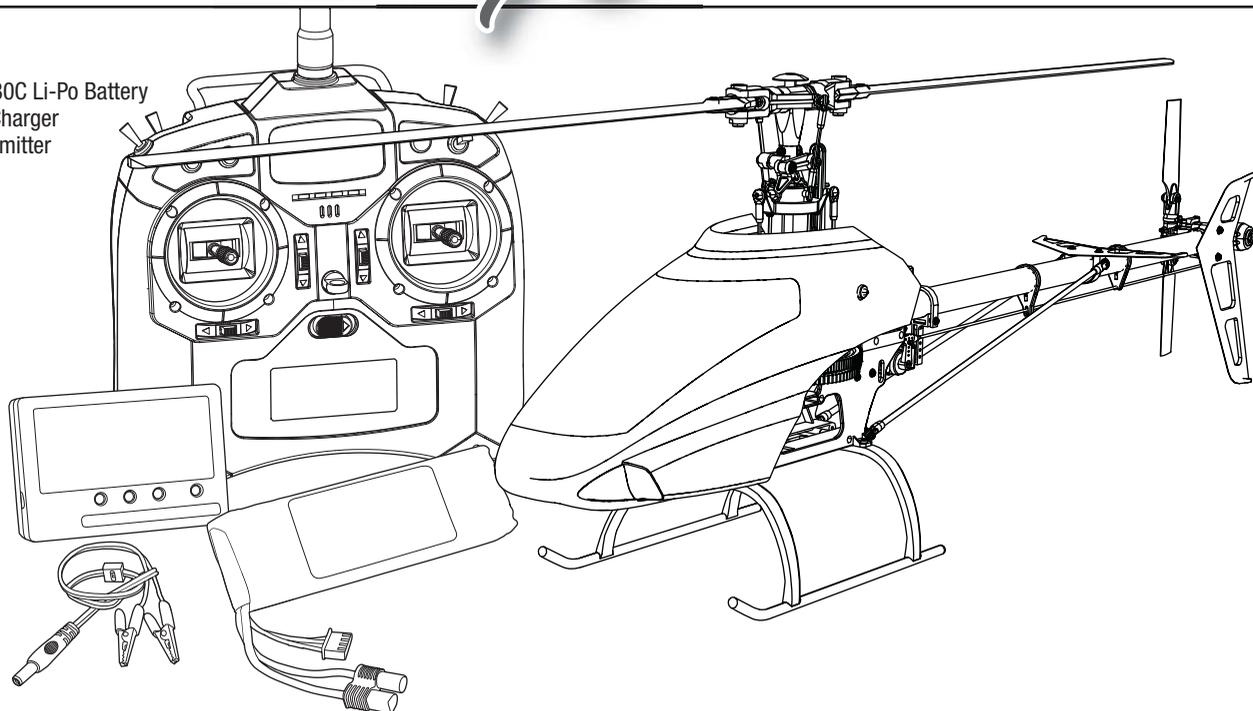


**WARNING AGAINST COUNTERFEIT PRODUCTS:** If you ever need to replace a Spektrum component found in a Horizon Hobby product, always purchase from Horizon Hobby, LLC or a Horizon Hobby authorized dealer to ensure authentic high-quality Spektrum product. Horizon Hobby, LLC disclaims all support and warranty with regards, but not limited to, compatibility and performance of counterfeit products or products claiming compatibility with DSM or Spektrum.

# BLADE® 450X

## Box Contents:

- Blade 450 X
- 3S 11.1V 2200mAh 30C Li-Po Battery
- DC Li-Po Balancing Charger
- Spektrum DX6i Transmitter
- 4 AA Batteries



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## Specifications

<b>Length</b>	34.3 in (870mm)	<b>Tail Rotor Diameter</b>	6.1 in (155mm)
<b>Height</b>	8.8 in (225mm)	<b>Flying Weight</b>	25.3 oz (717 g)
<b>Main Rotor Diameter</b>	28.5 in (725mm)		

## Components

<b>Airframe</b>	Blade® 450 X	<b>Charger</b>	DC Li-Po Balancing Charger
<b>Motor</b>	440H Brushless Outrunner, 4200Kv	<b>Transmitter</b>	Spektrum DX6i Transmitter
<b>Receiver</b>	Spektrum™ AR7200BX with BeastX® Technology	<b>Swash Servos</b>	Digital Cyclic Servo 12 g Metal Gear
<b>ESC</b>	35-Amp Brushless ESC	<b>Tail Servo</b>	Digital Tail Servo 12 g Metal Gear
<b>Battery</b>	3S 11.1V 2200mAh 30C Li-Po	<i>To register your product online, visit <a href="http://www.bladehelis.com">www.bladehelis.com</a></i>	

## First Flight Preparation

- Remove and inspect contents
- Begin charging the flight battery
- Install the flight battery in the helicopter (once it has been fully charged)
- Program your computer transmitter
- Bind your transmitter (BNF only)
- Familiarize yourself with the controls
- Find a suitable area for flying

## Charging Warnings

The Battery Charger (EFLC3115) included with your helicopter has been designed to safely charge the Li-Po battery.

**CAUTION:** All instructions and warnings must be followed exactly. Mishandling of Li-Po batteries can result in a fire, personal injury and/or property damage.

- By handling, charging or using the included Li-Po battery, you assume all risks associated with lithium batteries.
- If at any time the battery begins to balloon or swell, discontinue use immediately. If charging or discharging, discontinue and disconnect. Continuing to use, charge or discharge a battery that is ballooning or swelling can result in fire.
- Always store the battery at room temperature in a dry area for best results.
- Always transport or temporarily store the battery in a temperature range of 40–120° F (5–49° C). Do not store battery or model in a car or direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Always charge batteries away from flammable materials.

## Battery Charging

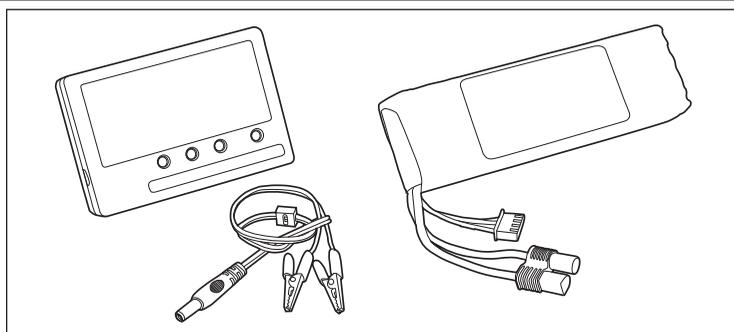
**CAUTION:** Charge only batteries that are cool to the touch and are not damaged. Look at the battery to make sure it is not damaged e.g., swollen, bent, broken or punctured.

**CAUTION:** Only use a charger specifically designed to charge a Li-Po battery. Failure to do so could result in fire causing injury or property damage.

**CAUTION:** Never exceed the recommended charge rate.

## Flying Checklist

- Always turn the transmitter on first
  - Plug the flight battery into the lead from the ESC
  - Allow the ESC to initialize and arm properly
  - Fly the model
  - Land the model
  - Unplug the flight battery from the ESC
  - Always turn the transmitter off last
- Always inspect the battery before charging.
  - Always disconnect the battery after charging, and let the charger cool between charges.
  - Always constantly monitor the temperature of the battery pack while charging.
  - **ONLY USE A CHARGER SPECIFICALLY DESIGNED TO CHARGE LI-PO BATTERIES.** Failure to charge the battery with a compatible charger may cause a fire resulting in personal injury and/or property damage.
  - Never discharge Li-Po cells to below 3V under load.
  - Never cover warning labels with hook and loop strips.
  - Never leave charging batteries unattended.
  - Never charge batteries outside recommended levels.
  - Never charge damaged batteries.
  - Never attempt to dismantle or alter the charger.
  - Never allow minors to charge battery packs.
  - Never charge batteries in extremely hot or cold places (recommended between 40–120° F or 5–49° C) or place in direct sunlight.



## The Battery Charging Process

1. Connect the charger to a 12V power source, noting proper polarity.
2. The **CHARGE STATUS** LED glows solid red.
3. Connect the battery balance lead to the charger. The balance connector is keyed to prevent reverse polarity.
4. The **CELL STATUS** LEDs glow solid green or yellow and the **CHARGE STATUS** LED glows solid red when the battery is charging.
5. Charging is complete when all LEDs glow solid red.
6. Always unplug the battery from the charger immediately upon completion of charging.

**CAUTION:** Overcharging a battery can cause a fire.

## LED Indications

Cell Status LEDs	Charge Status LED	Instruction
Off	Red Solid	Battery charger is powered. Li-Po battery is not connected
Yellow	Red Solid	Li-Po battery is connected. Charger is balancing the battery pack cells
Green	Red Solid	Li-Po battery is connected and charging
Red	Red Solid	Li-Po battery is connected and charging is complete
Off	Blinking Red	No Li-Po battery connected: Voltage is outside the input voltage range Li-Po battery connected: At least one battery cell voltage is below 2.6V

## Low Voltage Cutoff (LVC)

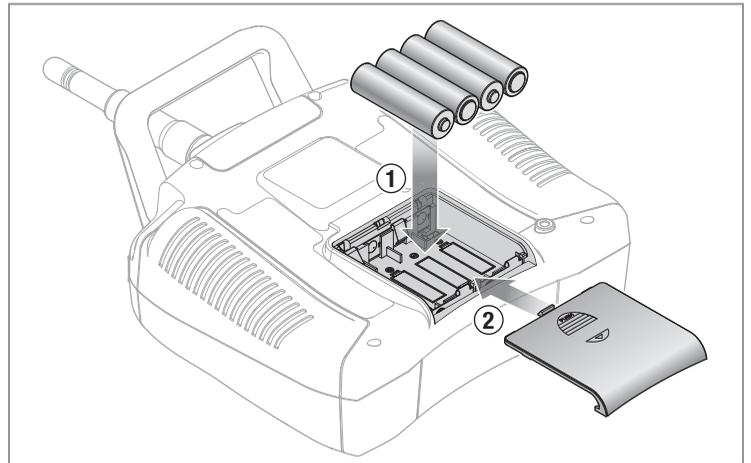
The ESC will continuously lower power to the motor until complete shutdown when the battery reaches 9V under load. This helps prevent over-discharge of the Li-Po battery. Land immediately when the ESC activates LVC. Continuing to fly after LVC can damage the battery, cause a crash or both. Crash damage and batteries damaged due to over-discharge are not covered under warranty.

Repeatedly flying the helicopter until LVC activates will damage the helicopter battery.

Disconnect and remove the Li-Po battery from the aircraft after use to prevent trickle discharge. During storage, make sure battery charge does not fall below 3V per cell.

## Installing the Transmitter Batteries

Replace transmitter batteries when the transmitter beeps and flashes a warning screen.



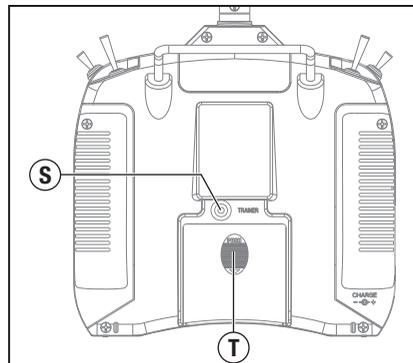
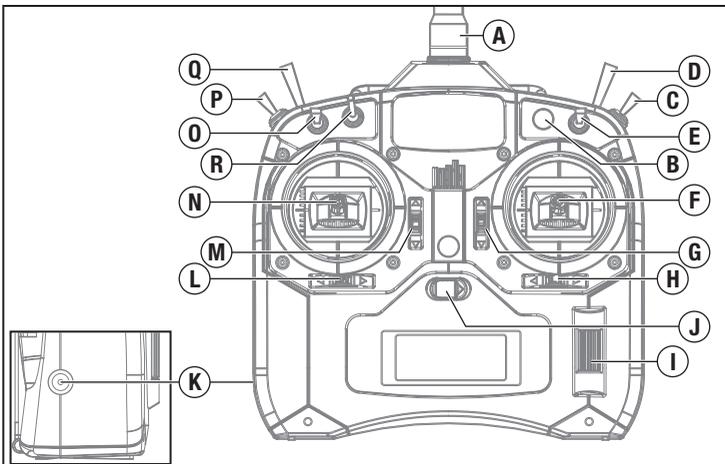
## Transmitter Functions

Function
<b>A</b> Antenna
<b>B</b> Throttle Cut
<b>C</b> Mix/Throttle Hold (Mode 2) Trainer/Bind (Mode 1)
<b>D</b> Rudder Dual Rate (Mode 2) Gear/Flight Mode (Mode 1)
<b>E</b> Aileron Dual Rate

Function
<b>F</b> Aileron/Elevator Stick (Mode 2) Aileron/Throttle Stick (Mode 1)
<b>G</b> Elevator Trim (Mode 2) Throttle Trim (Mode 1)
<b>H</b> Aileron Trim
<b>I</b> Roller
<b>J</b> On/Off Switch

Function
<b>K</b> Charge Port
<b>L</b> Rudder Trim
<b>M</b> Throttle Trim (Mode 2) Elevator Trim (Mode 1)
<b>N</b> Throttle/Rudder Stick (Mode 2) Elevator/Rudder Stick (Mode 1)
<b>O</b> Elevator Dual Rate

Function
<b>P</b> Gear/Flight Mode (Mode 2) Rudder Dual Rate (Mode 1)
<b>Q</b> Trainer/Bind (Mode 2) Mix/Throttle Hold (Mode 1)
<b>R</b> Flap/Gyro
<b>S</b> Trainer Port
<b>T</b> Battery Cover



The transmitter comes with a thin clear plastic film applied to some front panels for protection during shipping. Humidity and use may cause this film to come off. Carefully remove this film as desired.

For more information on the transmitter, go to [www.horizonhobby.com](http://www.horizonhobby.com) and click on the support tab for the Spektrum DX6i to download the instruction manual.

## Transmitter Mode Conversion

You can change transmitter modes between Mode 1 and Mode 2. This conversion requires both a programming and a mechanical change.

### Programming set up

1. Power on the transmitter.
2. Press the roller, scroll to Setup List and press the roller to access the Setup List.
3. Select Copy/Reset in the Setup List. When the Copy/Reset menu screen opens, select Reset.

4. Move the Aileron D/R switch forward and backward FOUR TIMES. A screen will display Mode 1 and Mode 2.
5. Select the desired mode.
6. After you change the transmitter Mode in the Setup List, you will need to make mechanical changes to the transmitter gimbals.

**CAUTION:** Always power off the transmitter and remove the batteries before adjusting stick tension or friction straps. Not doing so could result in property damage or injury.

## Mechanical Conversion

Mechanical conversion is required to change between Modes 1 and 2. The mechanical conversion consists of the following steps:

### Removing the Rear Case:

1. Power off the transmitter and remove the transmitter batteries.
2. Remove the six Phillips head screws that secure the rear transmitter case half.
3. Put the transmitter face down on a piece of foam or a towel and remove the rear case.

**CAUTION:** Use care to not pull or disconnect any of the wires attached to the back transmitter half.

### Changing the Throttle Ratchet:

1. Locate the silver throttle friction straps on both gimbals.
2. To change the throttle ratchet, loosen the throttle strap so it does not touch

## Transmitter Setup

Program your transmitter before attempting to bind or fly the helicopter.

### SETUP LIST

Model Type	Reverse		Swash Type	Timer
HELI	THRO	N	1 Servo 90 Degree	Type: Down Time: 4:00 Switch: Trainer
	AILE	N		
	ELEV	N		
	RUDD	R		
	GYRO	N		
	PITC	R		

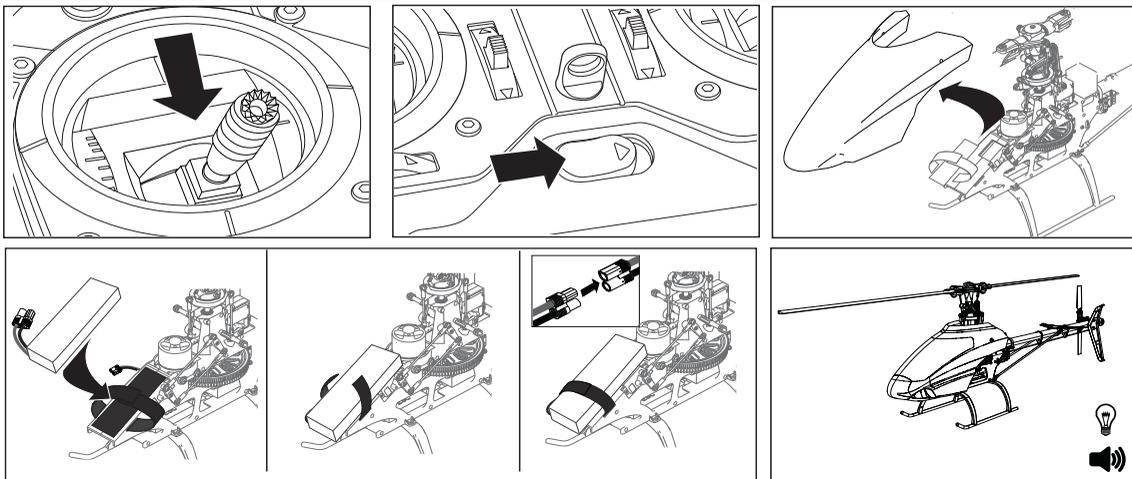
### ADJUST LIST

Switch	Dual Rate / Expo			Travel Adjust		Sub-Trim*	
	Pos.	D/R	Expo				
AILE	0	100%	INH	THRO	100%	THRO	0
	1	85%	INH	AILE	100%	AILE	0*
ELEV	0	100%	INH	ELEV	100%	ELEV	0*
	1	85%	INH	RUDD	100%	RUDD	0*
RUDD	0	100%	INH	GYRO	100%	GYRO	0
	1	85%	INH	PITC	100%	PITC	0

\* Never use sub-trims or trims on AILE, ELEV or RUDD channels with the AR7200BX.

Gyro				Throttle Curve					Pitch Curve					Swash Mix		
Pos.	Rate	SW-F. Mode		L	2	3	4	H	L	2	3	4	H			
0	77.0%	NORM	0	NORM	0%	30%	60%	60%	60%	NORM	30%	40%	50%	75%	100%	INHIBIT
1	77.0%	STUNT	0	STUNT	75%	75%	75%	75%	75%	STUNT	0%	25%	50%	75%	100%	
				HOLD	10%	10%	10%	10%	10%	HOLD	0%	25%	50%	75%	100%	

## Installing the Flight Battery



1. Lower the throttle.
2. Power on the transmitter.
3. Center the throttle trim.
4. To allow the ESC to arm and to keep rotors from initiating at startup, turn on throttle hold and normal flight mode before connecting the flight battery.
5. Attach hook material to the helicopter frame and loop material to the battery.
6. Install the flight battery on the helicopter frame. Secure the flight battery with a hook and loop strap. Connect the battery cable to the ESC.

**CAUTION:** Always keep the power lead positioned AWAY from the elevator servo. Failure to do so could cause the lead to get caught, resulting in a crash causing property damage and injury.

**CAUTION:** Make sure the flight battery does not come in contact with the motor. Failure to do so will cause the motor, ESC and battery to overheat, resulting in a crash causing property damage and injury.

7. Do not move the helicopter until the AR7200BX initializes. The swashplate will move up and down, indicating that the unit is ready. The AR7200BX will also emit a solid BLUE Status LED when it is ready.
8. The helicopter motor will emit 2 tones, indicating the ESC is armed.

**CAUTION:** Always disconnect the Li-Po battery from the aircraft receiver when not flying to avoid over-discharging the battery. Batteries discharged to a voltage lower than the lowest approved voltage may become damaged, resulting in loss of performance and potential fire when batteries are charged.

## Transmitter and Receiver Binding

The transmitter comes prebound to the model. If you need to rebind, follow the directions below.

### Binding Procedure

1. Insert the bind plug in the BND/DAT port on the receiver.
2. Connect the flight battery to the ESC. The H menu LED should be flashing, indicating the AR7200BX is in bind mode.
3. Move the throttle stick to the desired failsafe position (low throttle position in normal mode).
4. Power on the transmitter while holding the Trainer/Bind switch. Hold the Trainer/Bind switch until binding is complete. The system will connect within a few seconds. Once connected, the H LED will turn off and the AR7200BX will start the initialization process.
5. When the initialization process is complete, menu LED H will turn OFF and the Status LED light will come ON solid BLUE.
6. Disconnect the flight battery and remove the bind plug from the AR7200BX. Store the bind plug in a convenient place.

**WARNING:** You must move the throttle to the LOW/OFF position during binding. Failure to do so may cause the rotor blades to spin and the helicopter to lift during the AR7200BX initialization, which could result in damage to property and injury.

**NOTICE:** Remove the bind plug to prevent the system from entering bind mode the next time the power is turned on.

If you encounter problems, obey binding instructions and refer to transmitter troubleshooting guide for other instructions. If needed, contact the appropriate Horizon Product Support office.

## Throttle Hold

Throttle hold only turns off the motor on an electric helicopter. You maintain pitch and direction control.

The blades will spin if throttle hold is OFF. For safety, turn throttle hold ON any time you need to touch the helicopter or check the direction controls.

Throttle hold is also used to turn off the motor if the helicopter is out of control, in danger of crashing, or both.

## Control Tests

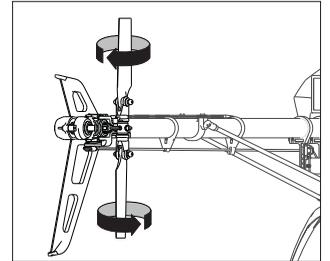
**CAUTION:** You must complete the Rudder and Cyclic tests prior to flight. Failure to complete the tests ensuring the sensor directions are not reversed can cause the helicopter to crash, resulting in property damage and injury.

### Rudder

1. Power on the transmitter.
2. Turn TH HOLD ON and put transmitter in normal mode.
3. Connect the helicopter battery to the ESC.

**NOTICE:** Do not allow the helicopter to move until the Status LED is solid blue and all menu LEDs are OFF. The gyro will not operate correctly if the helicopter moves before the Status LED is solid blue.

4. Move the rudder stick to the right. The tail rotor blades move as shown. If they do not move as shown, reverse the rudder channel in the transmitter (refer to your transmitter manual for instructions).
5. Release the rudder control. Manually turn the helicopter nose to the left. The tail rotor blades automatically move as shown. If they do not move as shown, refer to the AR7200BX manual for information on reversing the tail sensor direction (Setup menu point F).



### Cyclic

When using a flybarless rotor head, you are controlling rotational rates while the AR7200BX controls the servos. You are not directly controlling the servos with the transmitter.

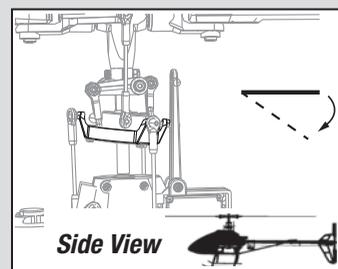
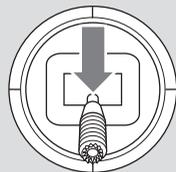
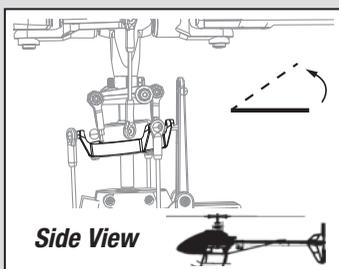
**It is normal for the swashplate to slowly move back to its original position after a stick input and for the servos to not move at the same speed as your control sticks.**

1. Tilt the helicopter forward. The swashplate should tilt backward.
2. Tilt the helicopter backward. The swashplate should tilt forward.
3. Roll the helicopter left. The swashplate should roll right.
4. Roll the helicopter right. The swashplate should roll left.
5. If the swashplate does not move in the correct direction, you will need to reverse the cyclic sensor direction. Refer to the AR7200BX manual for more information (Setup menu point M).

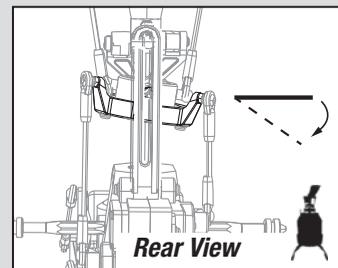
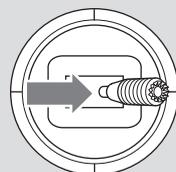
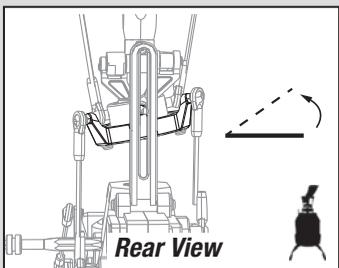
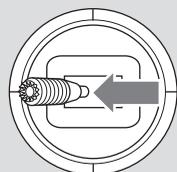
## Cyclic and Collective Control Test

Turn on Throttle Hold when doing the control tests.

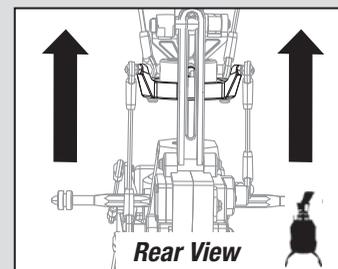
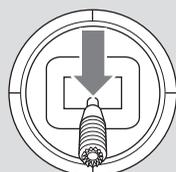
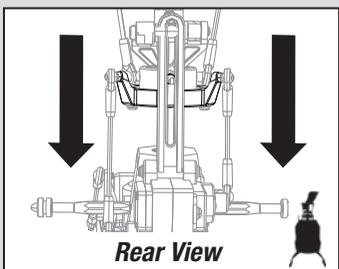
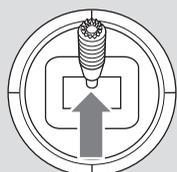
### Elevator



### Aileron



### Collective Pitch



## Motor

Place the helicopter outdoors on a clean, flat and level surface (concrete or asphalt) free of obstructions. Always stay clear of moving rotor blades.

1. The motor beeps twice when the helicopter's ESC arms properly. Before you continue, confirm that TH HOLD is ON.

**WARNING:** The motor will spin when throttle is increased while TH HOLD is OFF.

2. Check the swashplate directions to ensure they are moving in the correct direction. Please refer to the diagrams above for reference.



**WARNING:** Stay at least 30 feet (10 meters) away from the helicopter when the motor is running. Do not attempt to fly the helicopter at this time.

3. Ensure the throttle is lowered completely. Confirm the transmitter is still set to normal flight mode. Turn throttle hold off at this time. Slowly increase the throttle until the blades begin to spin. The main blades spin clockwise when viewing the helicopter from the top. The tail rotor blades spin counterclockwise when viewing the helicopter from the right-hand side.

## Pre-Flight Checklist

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Check all screws and ensure that they are tight</li> <li><input type="checkbox"/> Check belt tension and ensure that it is not too tight or too loose</li> <li><input type="checkbox"/> Check main and tail blades to ensure they are not damaged</li> <li><input type="checkbox"/> Check all links and make sure they move freely but do not pop off easily</li> <li><input type="checkbox"/> Check that flight battery and transmitter battery are fully charged</li> <li><input type="checkbox"/> Check all wires to ensure that they are not cut, pinched, or chafed and are properly secured</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Check all wire connections</li> <li><input type="checkbox"/> Check gears and make sure no teeth are missing</li> <li><input type="checkbox"/> Do a complete control test</li> <li><input type="checkbox"/> Check that servos are functioning properly</li> <li><input type="checkbox"/> Check to make sure flight battery is properly secured</li> <li><input type="checkbox"/> Check to make sure AR7200BX is properly secured</li> </ul> |
|--|--|

## Flying the Blade 450 X

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Always keep aircraft in sight and under control</li> <li>• Always turn on throttle hold at loss of control or rotor strike</li> <li>• Always use fully charged batteries</li> <li>• Always keep transmitter powered on while aircraft is powered</li> <li>• Always remove batteries before disassembly</li> <li>• Always keep moving parts clean</li> <li>• Always keep parts dry</li> </ul> | <ul style="list-style-type: none"> <li>• Always let parts cool after use before touching</li> <li>• Always remove batteries after use</li> <li>• Always keep people and pets at least 30 feet away when the flight battery is connected</li> <li>• Never operate aircraft with damaged wiring</li> <li>• Never touch moving parts</li> </ul> |
|---|--|

## Consult local laws and ordinances before choosing a location to fly your aircraft.

Select a large, open area away from people and objects. Your first flights should be outdoors in low-wind conditions. Always stay at least 30 feet (10 meters) away from the helicopter when it is flying.

The Blade 450 X is intended to be flown outdoors.

 **CAUTION:** The Blade 450 X is intended for pilots with experience flying aerobatic, collective pitch helicopters. The Blade 450 X is more responsive than other Blade helicopters. If you are not an experienced 3D or collective pitch helicopter pilot, do not attempt to fly this product.

## Takeoff

Deliberately increase throttle and establish a hover at least 24" (0.6 meter) high, outside of ground effect.

 **CAUTION:** Do not give any aileron, elevator or rudder commands before takeoff or the helicopter may crash during takeoff.

## Flying

The helicopter lifts off the ground when the rotor head reaches a suitable speed. Establish a low-level hover to verify proper operation of your helicopter. You must not set any trim; the flybarless design of the Blade 450 X renders trim unnecessary. Setting trim or sub-trim can cause an unwanted drift or rotation of the helicopter.

## Gyro Gain Adjustment

- If the tail wags or oscillates, lower the gain on the gyro.

*On your transmitter's gyro menu, decrease the gyro gain values a small amount at a time until the helicopter is stable within a particular flight mode.*

- If the tail is drifting while hovering, increase the gain on the gyro.

*On your transmitter, increase the gyro gain values a small amount at a time until the tail starts to wag/oscillate. Afterwards, reduce the gain until the tail stops wagging/oscillating within a particular flight mode.*

## Blade Helicopter Belt Tension

Belt tension that is too tight results in loss of power and causes the belt to wear more quickly. Tension that is too loose can cause belt damage and loss of tail rotor control in flight.

### To check for proper belt tension:

1. View the tail rotor drive belt through the opening at the back of the main frame.
2. Use a hex wrench or standard screwdriver to compress the belt through the opening.
3. Apply light pressure on the belt, compressing the belt toward the left side of the tail boom.
4. The belt tension is correct if the compressed side of the belt reaches approximately halfway to the opposite side of the belt.
  - a. If the compressed side of the belt reaches farther than halfway to the other side of the belt, the tension is too loose.
  - b. If the compressed side of the belt does not reach halfway to the other side of the belt, the tension is too tight.

### To adjust belt tension:

1. Loosen the two horizontal stabilizer screws.
2. Loosen the four screws at the back of the main frame.
3. Slide the boom forward or aft to adjust the belt tension.
4. When the belt tension is properly adjusted, tighten the four screws at the back of the frame.
5. Tighten the horizontal stabilizer screws.

## Post-Flight Inspections and Maintenance

<b>Ball Links</b>	Make sure the plastic ball link holds the control ball, but is not tight (binding) on the ball. When a link is too loose on the ball, it can separate from the ball during flight and cause a crash. Replace worn ball links before they fail.
<b>Cleaning</b>	Make sure the battery is not connected before cleaning. Remove dust and debris with a soft brush or a dry lint free cloth.
<b>Bearings</b>	Replace bearings when they become notchy (sticky in places when turning) or draggy.
<b>Wiring</b>	Make sure wiring does not block moving parts. Replace damaged wiring and loose connectors.
<b>Fasteners</b>	Make sure there are no loose screws, other fasteners or connectors. Do not over tighten metal screws in plastic parts. Tighten screw so parts are mated together, then turn screw only 1/8th of a turn more.
<b>Rotors</b>	Make sure there is no damage to rotor blades and other parts which move at high speed. Damage to these parts includes cracks, burrs, chips or scratches. Replace damaged parts before flying.
<b>Gyro</b>	Make sure the AR7200BX is securely attached to the frame. Replace the double-sided tape when necessary. The helicopter will crash if the AR7200BX separates from the helicopter frame.

First flights should be performed in normal mode and low cyclic and rudder dual rates until you are familiar with the flying manner of the Blade 450 X. Discover the rates that fit your flying style.

 **CAUTION:** Always fly the helicopter with your back to the sun and the wind to prevent loss of flight control.

## Landing

Establish a low level hover. Deliberately lower the throttle until the helicopter lands. Do not give any aileron, elevator or rudder commands when the helicopter is landing.

### When the helicopter is in stunt mode:

- The rotor head speed is constant.
- The main rotor will increase negative pitch as the throttle/collective stick is moved from the middle stick position to the low stick position. Negative pitch allows the helicopter to fly upside down and perform aerobatics.

Change between stunt and idle up modes in a hover with the throttle near the hovering stick position.

The helicopter may go up or down when you change between modes due to the difference in the throttle and pitch curves.

 **WARNING:** Do not use wooden main blades with the Blade 450 X or injury and/or property damage could occur. Only use Blade 450 X approved carbon fiber main blades.

SETUP MENU *Menu LED solid*

 Status-LED:	OFF	Purple	Red Flashing	Red Solid	Blue Flashing	Blue Solid
<b>A</b> Mounting orientation				upright (vertical)	flat (horizontal)*	
<b>B</b> Swashplate servo - frequency	User defined	50 Hz	65 Hz	120 Hz	165 Hz	200 Hz*
<b>C</b> Tail servo - center position pulse length	User defined	960 µs		760 µs		1520 µs*
<b>D</b> Tail servo - frequency	User defined	50 Hz	165 Hz	270* Hz	333 Hz	560 Hz
<b>E</b> Tail servo - rotor endpoints	Tail stick - move to right endpoint and wait/left endpoint and wait					
<b>F</b> Tail - sensor direction				normal*		reversed
<b>G</b> Swashplate - servo centering	Reference position	ELE center pos.		ALL center pos.		PIT center pos.
<b>H</b> Swashplate - mixer	User defined	mechanical	90°	120°*	140°	140° (1=1)
<b>I</b> Swashplate - servo directions	nor rev rev	nor nor rev*		nor rev nor		nor nor nor
<b>J</b> Swashplate - cyclic pitch geometry	Aileron stick – adjust 6° cyclic pitch on the roll axis (blades aligned with fuselage)					
<b>K</b> Collective pitch range	Collective stick on max and min position and use tail stick to adjust desired pitch. Stock settings provide +/- 12 degrees of collective pitch.					
<b>L</b> Swashplate - cyclic limit	Move aileron, elevator and pitch sticks – adjust max limits with tail stick					
<b>M</b> Swashplate - sensor directions	rev   rev	rev   nor		nor   rev		nor   nor*
<b>N</b> Pirouette optimization direction				normal		reversed*

PARAMETER MENU *Menu LED is flashing quickly*

 Status-LED:	OFF	Purple	Red Flashing	Red Solid	Blue Flashing	Blue Solid
<b>A</b> Swashplate - cyclic center adjustment	Aileron and elevator stick – reset with tail stick					
<b>B</b> Control behavior	User defined	normal	sport*	pro	extreme	transmitter*
<b>C</b> Swashplate - pitching up behavior	User defined	very low	low	medium*	high	very high
<b>D</b> Tail - HeadingLock gain	User defined	very low	low	medium*	high	very high
<b>E</b> Stick deadband	User defined	1	2*	3	4	5
<b>F</b> Tail - torque precompensation IX)	User defined	off*	low - nor	high - nor	low - rev	high - rev
<b>G</b> Cyclic response	User defined	normal*	slightly increased	increased	high	very high
<b>H</b> Pitch boost	User defined	off*	low	medium	high	very high

\* The AR7200BX included with your Blade 450 X helicopter is pre-programmed with these default settings. If you perform a factory reset on the included AR7200BX will default back to these helicopter settings.

To perform a Blade 450 X AR7200BX factory reset, enter any Setup menu and press the setup button for 10 seconds. After performing the factory reset, you will need to re-center the swashplate servos by using setup menu G.

If you update the firmware on the AR7200BX to non-Blade 450 X firmware, all Blade 450 X helicopter default settings will be deleted. You will need to complete the entire AR7200BX setup process before flying the helicopter again. Please refer to the Spektrum AR7200BX instruction manual included with your helicopter for more information.

## AR7200BX Parameter Menu Tips

Refer to the Spektrum AR7200BX manual to fine tune the Blade 450 X to your flying and control style via the AR7200BX parameter menu.

If you would like to change the control behavior of the flybarless system to a pre-defined behavior in the AR7200BX, adjust parameter B (default behavior is transmitter).

If you would like to have the cyclic behavior to feel more linear OR more like a flybarred helicopter, increase the cyclic response by adjusting parameter G (default is 'slightly increased').

Refer to the Spektrum AR7200BX manual for specific details on each parameter.

## AR7200BX Fine-tuning and Adjustment

Observed Behavior	Suggested Adjustment
Cyclic response too slow or too fast	Adjust the control behavior parameter in the AR7200BX to fit your flying style.
Control inputs feel delayed	Increase Dial 2 on the AR7200BX
The helicopter seems to overshoot control input and then return	Decrease Dial 2 on the AR7200BX
The helicopter tail stops too abruptly	Decrease Dial 3 on the AR7200BX
The helicopter tail does not stop precisely	Increase Dial 3 on the AR7200BX
	Increase the rudder gain in your transmitter
	Adjust the rudder heading lock gain parameter in the AR7200BX
	Make sure the tail drive belt tension is adjusted correctly

## Troubleshooting Guide

Problem	Possible Cause	Solution
Helicopter will not bind to the transmitter (during binding)	Low flight battery or transmitter battery voltage	Fully charge or replace the flight battery and/or transmitter batteries
	AR7200BX is not in bind mode	Make sure the bind plug is connected to the AR7200BX BND/DAT port
	Transmitter is not in bind mode	Power on the transmitter while holding the Trainer/Bind switch. Hold the Trainer/Bind switch until binding is complete
	Transmitter too close to the helicopter during binding process	Power off the transmitter. Move the transmitter to a larger distance from the helicopter. Disconnect and reconnect the flight battery to the helicopter and follow binding instructions
Helicopter will not link to the transmitter (after binding)	Helicopter is bound to a different model memory (ModelMatch radios only)	Disconnect the flight battery. Select the correct model memory on the transmitter Reconnect the flight battery
	Flight battery/Transmitter battery charge is too low	Replace or recharge batteries
AR7200BX will not initialize	The helicopter was moved during initialization	Lay the helicopter on its side during initialization if windy
	The transmitter is powered off	Power on the transmitter
	Controls are not centered	Center elevator, aileron and rudder controls. Make sure the throttle is at idle
Helicopter will not respond to the throttle but responds to other controls	Throttle not at idle and/or throttle trim is too high	Lower the throttle stick and lower the throttle trim
	The transmitter is not in normal mode or throttle hold is on	Make sure the transmitter is in normal mode and throttle hold is off
	The motor is not connected to the ESC or the motor wires are damaged	Connect the motor wires to the ESC and check motor wires for damage
	Flight battery charge is too low	Replace or recharge flight battery
	Throttle channel is reversed	Reverse the throttle channel on the transmitter
Helicopter power is lacking	Flight battery has low voltage	Fully charge the flight battery
	Flight battery is old or damaged	Replace the flight battery
	Flight battery cells are unbalanced	Fully charge the flight battery, allowing the charger time to balance the cells
	Excessive current is being drawn through the BEC	Check all servos and the helicopter motor for damage
	Tail drive belt tension is not correct.	See "Checking Tail Drive Belt Tension" in this manual
Helicopter will not lift off	Main rotor head is not spinning in the correct direction	Make sure the main rotor head is spinning clockwise. Refer to the motor control test
	Transmitter settings are not correct	Check throttle and pitch curve settings and pitch control direction
	Flight battery has low voltage	Fully charge the flight battery
	Main rotor blades are installed backwards	Install the main rotor blades with the thicker side as the leading edge
Flight battery will not charge	Input voltage to the charger is too low	Input voltage must be between 11.5–15V DC with a minimum 3A current
	The battery balance tab is damaged	Make sure the balance tab wires are fully seated in the balance plug
	The flight battery is overdischarged	If any cell voltage drops below 3V, the battery is damaged and must be replaced
The helicopter tail spins out of control	Rudder control and/or sensor direction reversed	Make sure the rudder control and the rudder sensor are operating in the correct direction
	Tail servo is damaged	Check the rudder servo for damage and replace if necessary
	Inadequate control arm throw	Check the rudder control arm for adequate travel and adjust if necessary
	Tail belt is too loose	Make sure the tail drive belt tension is adjusted correctly
The helicopter wobbles in flight	Cyclic gain is too high	Decrease Dial 1 on the AR7200BX
	Headspeed is too low	Increase the helicopter's head speed via your transmitter settings and/or using a freshly charged flight pack
	Dampers are worn	Replace the main rotor head dampers

## Limited Warranty

### What this Warranty Covers

Horizon Hobby, LLC, (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase.

### What is Not Covered

This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, or (vi) Product not compliant with applicable technical regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

### Purchaser's Remedy

Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

### Limitation of Liability

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. 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 the Product, purchaser is advised to return the 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). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

### WARRANTY SERVICES

#### Questions, Assistance, and Services

Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must

contact your local distributor or 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 visit our website at [www.horizonhobby.com](http://www.horizonhobby.com), submit a Product Support Inquiry, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

### Inspection or Services

If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. 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. An Online Service Request is available at [http://www.horizonhobby.com/content/\\_service-center\\_render-service-center](http://www.horizonhobby.com/content/_service-center_render-service-center). If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

**NOTICE:** Do not ship Li-Po batteries to Horizon. If you have any issue with a Li-Po battery, please contact the appropriate Horizon Product Support office.

### Warranty Requirements

**For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date.** Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

### Non-Warranty Service

**Should your service not be covered by warranty, service 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 service you are agreeing to payment of the service without notification.

Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website [http://www.horizonhobby.com/content/\\_service-center\\_render-service-center](http://www.horizonhobby.com/content/_service-center_render-service-center).

**ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.**

## Warranty and Service Contact Information

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs and Repair Requests)	<a href="http://servicecenter.horizonhobby.com/RequestForm/">servicecenter.horizonhobby.com/RequestForm/</a>	4105 Fieldstone Rd Champaign, Illinois, 61822 USA
	Horizon Product Support (Product Technical Assistance)	<a href="http://www.quickbase.com/db/bghj7ey8c?a=GenNewRecord">www.quickbase.com/db/bghj7ey8c?a=GenNewRecord</a> 888-959-2304	
	Sales	<a href="mailto:sales@horizonhobby.com">sales@horizonhobby.com</a> 888-959-2304	
United Kingdom	Service/Parts/Sales: Horizon Hobby Limited	<a href="mailto:sales@horizonhobby.co.uk">sales@horizonhobby.co.uk</a> +44 (0) 1279 641 097	Units 1-4 , Ployters Rd, Staple Tye Harlow, Essex, CM18 7NS, United Kingdom
Germany	Horizon Technischer Service	<a href="mailto:service@horizonhobby.de">service@horizonhobby.de</a>	Christian-Junge-Straße 1 25337 Elmshorn, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	
France	Service/Parts/Sales: Horizon Hobby SAS	<a href="mailto:infofrance@horizonhobby.com">infofrance@horizonhobby.com</a> +33 (0) 1 60 18 34 90	11 Rue Georges Charpak 77127 Lieusaint, France
China	Service/Parts/Sales: Horizon Hobby – China	<a href="mailto:info@horizonhobby.com.cn">info@horizonhobby.com.cn</a> +86 (021) 5180 9868	Room 506, No. 97 Changshou Rd. Shanghai, China 200060

## FCC Information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



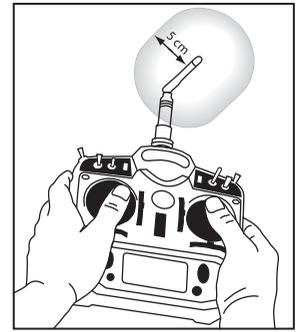
**CAUTION:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

### Antenna Separation Distance

When operating your Spektrum transmitter, please be sure to maintain a separation distance of at least 5 cm between your body (excluding fingers, hands, wrists, ankles and feet) and the antenna to meet RF exposure safety requirements as determined by FCC regulations.

The following illustrations show the approximate 5 cm RF exposure area and typical hand placement when operating your Spektrum transmitter.



## IC Information

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

## Compliance Information for the European Union

AT	BE	BG	CZ	CY	DE	DK
EE	ES	FI	FR	GR	HR	HU
IE	IT	LT	LU	LV	MT	NL
PL	PT	RO	SE	SI	SK	UK
IS	LI	NO	CH			

### Declaration of Conformity

(in accordance with ISO/IEC 17050-1)

No. HH2014070201

Product(s): Blade 450 X RTF

Item Number(s): BLH1900, BLH1900M1

Equipment class: 2

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, EMC Directive 2004/108/EC and LVD Directive 2006/95/EC:

EN 300-328 V1.7.1: 2006

EN301 489-1 V1.9.2: 2012

EN301 489-17 V2.1.1: 2009

EN60950-1:2006+A11:2009+A1:2010+A12: 2011

EN55022:2010 + AC:2011

EN55024:2010



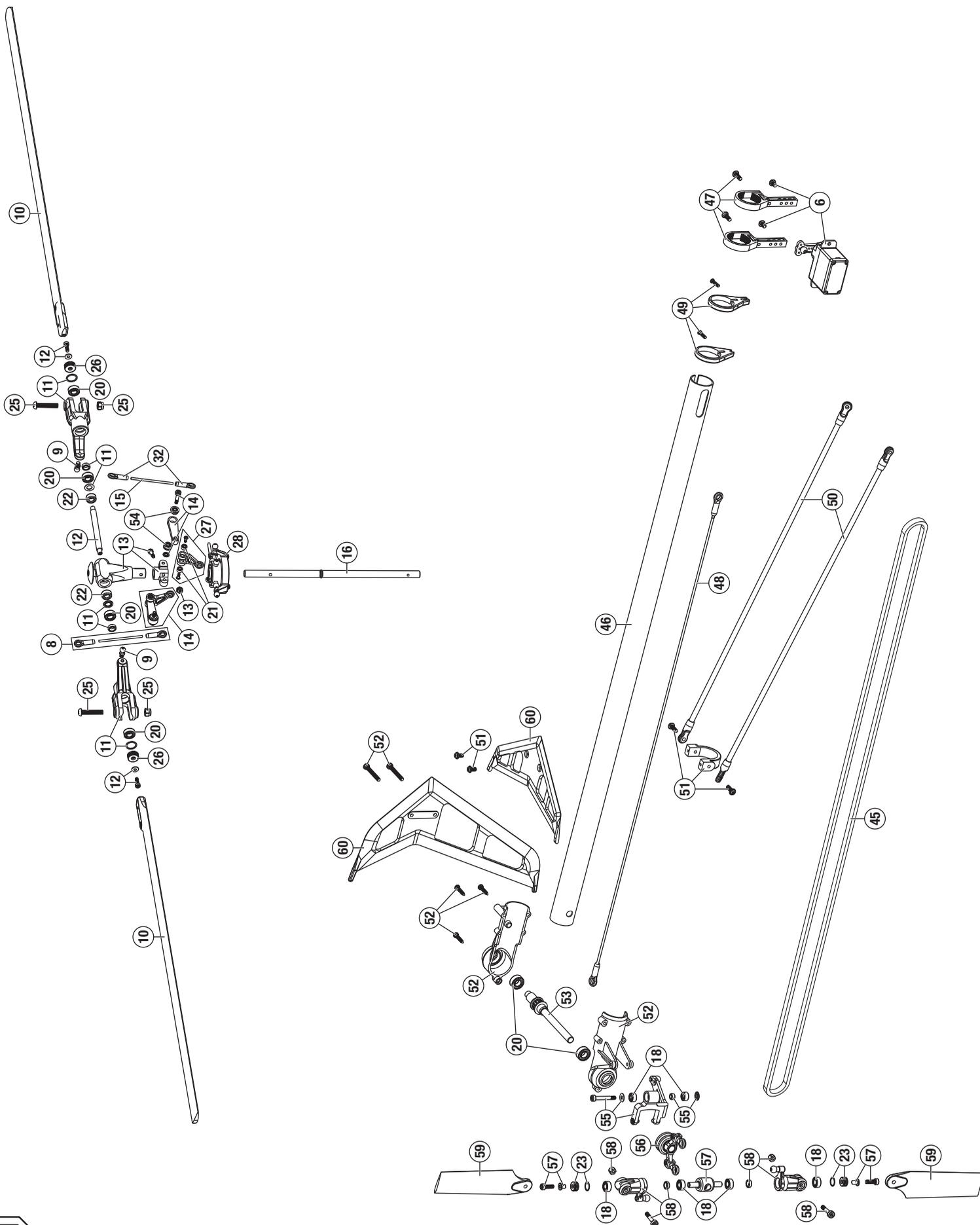
Signed for and on behalf of:  
Horizon Hobby, LLC  
Champaign, IL USA  
July 2, 2014

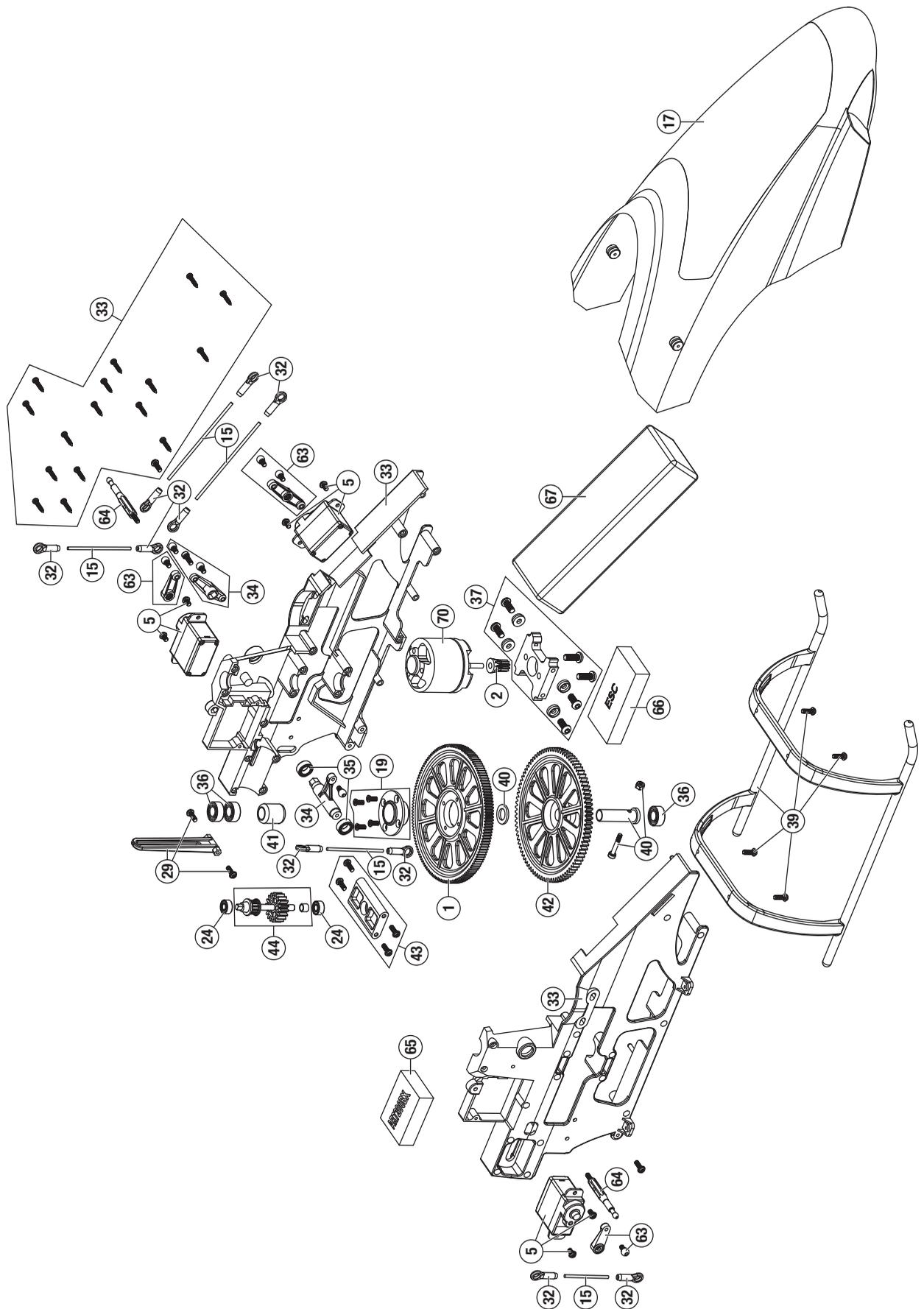
Robert Peak  
Chief Financial Officer  
Horizon Hobby, LLC

### 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.





## Parts List / Ersatzteile / Pièces de rechange / Pezzi di ricambio

#	Part #	English	Deutsch	Français	Italiano
1	BLH1901	Helical Main Gear B450/300X/CFX	Blade 450/300x/300CFX: Hauptzahnrad schrägverz.	B450/300X/300CFX - Couronne principale hélicoïdale	Ingran. principale elicoidale B450/300X/CFX
2	BLH1902	Helical Pinion 10T B450/300X/CFX	Blade 450/300x/300CFX: Ritzel 10 Z schrägverz.	B450/300X/300CFX - Pignon hélicoïdal 10T	Pignone elicoidale 10T B450/300X/CFX
3	SPMSP1040	Gears, Metal Cyclic 12 g Servo	Spektrum Ersatzgetriebe Taumelscheibenservo dig. 12g MG	Servo digital 12g cyclique - Pignons métal de remplacement	Ingranaggi in metallo per servo ciclico 12g
4	SPMSP1041	Gears, Metal Tail 12 g Servo	Spektrum Ersatzgetriebe Heckrotorservo dig. 9g MG	Servo digital 12g anti-couple - Pignons métal de remplacement	Ingranaggi in metallo per servo coda 12g
5	SPMSH3050	Cyclic Servo 12 g Metal Gear	Spektrum Taumelscheibenservo dig. 12g MG	Servo digital 12g de cyclique, pignons métal	Servo ciclico 12g con ingran. metallo
6	SPMSH3060	Tail Servo 12 g Metal Gear	Spektrum Heckrotorservo dig. 12g MG	Servo digital 12g anti-couple, pignons métal	Servo coda 12g con ingran. metallo
7	SPMSP2052	Servo Case 12 g Metal Gear	Spektrum Servogehäuse Set 12g MG	Servo digital 12g - Boitier de servo	Scatola per servo 12g
8	BLH4301	Flybarless Linkage Set: B450 X	Flybarless-Anlenkgestänge-Set: B450 X	Set de tringleries Flybarless : B450 X	Set giunti senza flybar: B450 X
9	BLH4303	Main Rotor Blade Grip FBL Control Balls (2): B450 X	FBL Hauptrotorblatthalterung-Steuerungskugelhöpfe (2) B450 X	Rotules de commande de pieds de pales principales FBL (2) : B450 X	Sfere di controllo FBL stringi pale del rotore principale (2): B450 X
10	BLH4315	CF FBL Main Blade Set 325mm with washers: B450 X	CF FBL Hauptblatt-Set 325 mm, mit Unterlagsscheibe B450 X	Set de pales principales 325 mm CF FBL avec rondelles : B450 X	Set pale principali CF FBL 325 mm con rondelle: B450 X
11	BLH4317	Flybarless Main Rotor Grip Set: B450 X	Flybarless-Hauptrotor-Halterungs-Set: B450 X	Set de pieds de rotor principal Flybarless : B450 X	Set stringi pale del rotore principale senza flybar: B450 X
12	BLH4321	Flybarless Spindle Set (2): B450 X	Flybarless-Spindel-Set (2): B450 X	Set d'axes Flybarless (2) : B450 X	Set perno senza flybar (2): B450 X
13	BLH4322	Aluminium Flybarless Head Block Set: B450 X	Aluminium-Flybarless-Rotorkopfblock-Set: B450 X	Set de moyeu de tête Flybarless en aluminium : B450 X	Set blocco testa senza flybar in alluminio: B450 X
14	BLH4331	Flybarless Follower Arms: B450 X	Flybarless-Tastarme: B450 X	Bras suivants Flybarless : B450 X	Bracci inseguitore senza flybar: B450 X
15	BLH4338	Linkage Rod/Pushrod Set: B450 X	Anlenkgestänge-/Schubstangen-Set: B450 X	Set de tringleries de traction/pression : B450 X	Set asta/asta di spinta del giunto: B450 X
16	BLH4347	Flybarless Main Shaft (2): B450 X	Flybarless-Hauptwelle (2): B450 X	Axe principal Flybarless (2) : B450 X	Albero principale senza flybar(2): B450 X
17	BLH1908	Yellow Canopy 450X RTF	Blade 450X RTF: Kabinenhaube gelb	Blade 450 X RTF - Bulle jaune	Capottina gialla 450X RTF
18	EFLH1115	Bearing 3x6x2.5mm (2): B450 3D/X, B400	Lager 3 x 6 x 2,5 mm (2): B450 3D/X, B400	Roulement 3x6x2.5mm (2) : B450 3D/X, B400	Cuscinetto 3x6x2,5 mm (2): B450 3D/X, B400
19	BLH1603	One-Way Bearing Hub with One-Way Bearing: B450 3D/X	Lagemabe für Einweglager mit Einweglager: B450 3D/X	Moyeu de roue libre/roue libre : B450 3D/X	Mozzo con cuscinetto unidirezionale: B450 3D/X
20	BLH1605	4x8x3 bearing Main Grip and Tail shaft (4): B450 3D/X	4 x 8 x 3 Lager Haupthalterung und Heckwelle (4): B450 3D/X	Roulement 4x8x3 de pieds de pales et d'axe anticouple (4) : B450 3D/X	Cuscinetto albero principale e albero di coda 4x8x3 (4): B450 3D/X
21	BLH1607	1.5x4x2 Bearings Washout Links (4): B450 3D/X	1,5 x 4 x 2 Lager Washout-Gestänge (4): B450 3D/X	Roulements épaulés 1.5x4x2 (4): B450 3D/X	1,5x4x2 cuscinetti collegamenti washout (4): B450 3D/X
22	BLH1608	Dampeners 80 Deg (4): B450 3D/X	Dämpfer 80 Grad (4): B450 3D/X	Amortisseurs 80 deg (4) : B450 3D/X	Smorzatori 80 gradi (4): B450 3D/X
23	BLH1612	Tail Grip Thrust Bearings: B450 3D/X	Heckhalterung-Gegenlager: B450 3D/X	Butées à billes de pied de pale d'anticouple : B450 3D/X	Cuscinetti di spinta stringi pale di coda: B450 3D/X
24	BLH1613	3x7x3 Bearing (2): B450 3D/X	3 x 7 x 3 Lager (2): B450 3D/X	Roulement 3x7x3 (2) : B450 3D/X	3x7x3 cuscinetto (2): B450 3D/X
25	BLH1616	Main Rotor Blade Mounting Screw and Nut Set (2): B450 3D/X	Set Hauptrotorblatt-Befestigungsschrauben und Nuten (2): B450 3D/X	Set de vis et d'écrou pour pales principales (2) : B450 3D/X	Set vite di fissaggio e dado della pala del rotore principale (2): B450 3D/X
26	BLH1620	Main Grip Thrust Bearing (2): B450 3D/X, B400	Haupthalterung-Gegenlager (2): B450 3D/X, B400	Butées à billes de pieds de pales principales (2) : B450 3D/X, B400	Cuscinetto di spinta stringi pala principale (2): B450 3D/X, B400
27	BLH1632	Washout Control Arm Link Set: B450 3D/X	Washout-Steuerarmgestänge-Set: B450 3D/X	Set de tringleries de Washout : B450 3D/X	Set collegamento braccio di controllo washout: B450 3D/X
28	BLH1633	Aluminum and Composite Swashplate: B450 3D/X, B400	Aluminium- und Verbundstoff-Taumelscheibe: B450 3D/X, B400	Plateau cyclique en aluminium et composite : B450 3D/X, B400	Piatto ciclico in alluminio e in composito: B450 3D/X, B400
29	BLH1634	Anti-Rotation Bracket Guide: B450 3D/X, B400	Anti-Rotations-Bügel/-Führung: B450 3D/X, B400	Guide de plateau cyclique : B450 3D/X, B400	Staffa guida anti-rotazione: B450 3D/X, B400
30	BLH1635	Control/ Linkage Ball, Long (4): B450 3D/X, B400	Steuerkugelhkopf/Kugelhkopf Anlenkgestänge, lang (4): B450 3D/X, B400	Tringleries de commandes, longues (4) : B450 3D/X, B400	Comando/ sfera del giunto, lungo (4): B450 3D/X, B400
31	BLH1636	Control- Linkage Ball, Short (10): B450 3D/X, B400	Steuerkugelhkopf/Kugelhkopf-Anlenkgestänge, kurz (10): B450 3D/X, B400	Tringleries de commandes, courtes (10) : B450 3D/X, B400	Comando/ sfera del giunto, corto (10): B450 3D/X, B400
32	BLH1637	Ball Link Set (20): B450 3D/X, B400	Kugelhkopffannen-Set (20): B450 3D/X, B400	Set de rotules (20) : B450 3D/X, B400	Set collegamento sfera (20): B450 3D/X, B400
33	BLH1639	Main Frame Set: B450 3D/X	Hauptrahmen-Set: B450 3D/X	Châssis : B450 3D/X	Set telaio principale: B450 3D/X
34	BLH1640	Elevator Control Lever Set: B450 3D/X, B400	Höhenruder-Steuerhebel-Set: B450 3D/X, B400	Set de leviers de commande de profondeur B450 3D/X, B400	Set leva comando elevatore: B450 3D/X, B400
35	BLH1641	5 x 8 x 2.5 Bearing Elevator Control lever (2): B450 3D/X, B400	5 x 8 x 2,5 Lager Höhenruder-Steuerhebel (2): B450 3D/X, B400	Roulements 5x8x2,5 de levier de commande de profondeur (2) : B450 3D/X, B400	5 x 8 x 2,5 cuscinetto leva comando elevatore (2): B450 3D/X, B400
36	BLH1642	5 x 10 x 4 Bearings Main Shaft (2): B450 3D/X, B400	5 x 10 x 4 Lager Hauptwelle (2): B450 3D/X, B400	Roulements 5x10x4 d'axe principal (2) : B450 3D/X, B400	5 x 10 x 4 cuscinetti albero principale (2): B450 3D/X, B400

#	Part #	English	Deutsch	Français	Italiano
37	BLH1643	Aluminum Motor Mount Set: B450 3D/X, B400	Aluminium-Motorbefestigungs-Set: B450 3D/X, B400	Set de fixations moteur en aluminium : B450 3D/X, B400	Set montante del motore in alluminio: B450 3D/X, B400
38	BLH1644	Hook & Loop Battery Strap: B450 3D/X, B400 (not shown)	Akku-Klettverschlussband B450 3D/X, B400 (nicht gezeigt)	Sangles crochet et boucle pour ruban adhésif d'accu : B450 3D/X, B400 (non représenté)	Bandella e gancio della batteria: B450 3D/X, B400 (non mostrato)
39	BLH1645	Landing Gear Set: B450 3D/X	Fahrwerk-Set: B450 3D/X	Set de train d'atterrissage : B450 3D/X	Set del carrello di atterraggio: B450 3D/X
40	BLH1649	One-Way Bearing Shaft and Shim Set: B450 3D/X, B400	Set Einweglagerwelle und Unterlagsscheiben: B450 3D/X, B400	Axe de roue libre et set de rondelles : B450 3D/X, B400	Set albero ingranaggio di autorotazione e spessore: B450 3D/X, B400
41	BLH1652	One-Way Bearing 6 x 10 x 12: B450 3D/X, B400	Einweglager 6 x 10 x 12: B450 3D/X, B400	Roue libre 6x10x12 : B450 3D/X, B400	Cuscinetto unidirezionale 6 x 10 x 12: B450 3D/X, B400
42	BLH1653	Main Tail Drive Gear (2): B450 3D/X	Heckhauptgetriebe (2): B450 3D/X	Couronne d'anticouple (2) : B450 3D/X	Ingranaggio di trasmissione di coda principale (2): B450 3D/X
43	BLH1654	Tail Drive Shaft Lower Bearing Block Mount: B450 3D/X	Befestigung Heckantriebswelle unterer Lagerblock: B450 3D/X	Support de roulement inférieur : B450 3D/X	Montante blocco cuscinetto inferiore dell'albero di trasmissione di coda: B450 3D/X
44	BLH1655	Tail Drive Gear Pulley Assembly: B450 3D/X, B400	Heckgetriebe-Riemenscheiben-Anordnung: B450 3D/X, B400	Arbre d'anticouple pignon/poulie : B450 3D/X, B400	Gruppo puleggia ingranaggio di trasmissione di coda: B450 3D/X, B400
45	BLH1656	Tail Drive Belt: B450 3D/X, B400	Antriebsriemen Heck: B450 3D/X, B400	Courroie d'anticouple : B450 3D/X, B400	Cinghia di trasmissione di coda: B450 3D/X, B400
46	BLH1657	Tail Booms (2): B450 3D/X	Heckausleger (2): B450 3D/X	Poutre de queue (2) : B450 3D/X	Aste di coda(2): B450 3D/X
47	BLH1658	Tail Servo Boom Mount (2): B450 3D/X	Servobefestigung Heckausleger (2): B450 3D/X	Fixation de servo d'anticouple (2) : B450 3D/X	Montante asta servo di coda (2): B450 3D/X
48	BLH1659	Tail Linkage Pushrod set (2): B450 3D/X	Anlenkgestänge-/Schubstangen-Set für Heck (2): B450 3D/X	Tringlerie de commande d'anticouple (2) : B450 3D/X	Set asta di spinta giunti di coda (2): B450 3D/X
49	BLH1660	Tail Pushrod Support Guide Set: B450 3D/X	Heck-Schubstangen-Stützföhrung-Set: B450 3D/X	Set de guide de commande d'anticouple : B450 3D/X	Set guida di sostegno asta di spinta di coda: B450 3D/X
50	BLH1661	Tail Boom Brace Support Set (2): B450 3D/X	Heckauslegerhalterungs/Stützset (2): B450 3D/X	Set de renforts et supports de tube de queue (2) : B450 3D/X	Set sostegno braccio asta di coda (2): B450 3D/X
51	BLH1662	Horizontal Stabilizer Fin Mount: B450 3D/X	Befestigung horizontale Stabilisierungsflosse: B450 3D/X	Fixation de dérive et stabilisateur : B450 3D/X	Montaggio deriva di stabilizzazione orizzontale: B450 3D/X
52	BLH1663	Tail Case Set: B450 3D/X	Heckabdeckungs-Set: B450 3D/X	Set de boîtier d'anticouple B450 3D/X	Set case coda: B450 3D/X
53	BLH1665	Tail Rotor Shaft and Drive Pulley (2): B450 3D/X	Welle und Antriebsscheibe Heckrotor (2): B450 3D/X	Axe et poulie de rotor d'anticouple (2) : B450 3D/X	Albero rotore di coda e puleggia di trasmissione (2): B450 3D/X
54	BLH1666	2x5x2.5 Bearing: B450, B400	2 x 5 x 2,5 Lager: B450, B400	Roulement 2x5x2.5 : B450, B400	2x5x2,5 cuscinetto: B450, B400
55	BLH1667	Tail Rotor Pitch Lever Set: B450 3D/X	Heckrotor-Pitchhebel-Set: B450 3D/X	Set de levier de pas d'anticouple : B450 3D/X	Set leva pitch del rotore di coda: B450 3D/X
56	BLH1668	Tail Rotor Pitch Control Slider Set: B450 3D/X	Heckrotor-Pitchschieberegler-Set: B450 3D/X	Set de slider d'anticouple : B450 3D/X	Set cursore comando passo rotore di coda: B450 3D/X
57	BLH1669	Tail Rotor Hub Set: B450 3D/X	Heckrotornaben-Set: B450 3D/X	Moyeu d'anticouple : B450 3D/X	Set mozzo rotore di coda: B450 3D/X
58	BLH1670	Tail Rotor Blade Grip Holder Set: B450 3D/X	Heckrotorblattalterungs-Set: B450 3D/X	Set de pieds de pales d'anticouple : B450 3D/X	Set sostegno stringi pala rotore di coda: B450 3D/X
59	BLH1671	Tail Rotor Blade Set: B450 3D/X	Heckrotorblatt-Set: B450 3D/X	Set de pales d'anticouple : B450 3D/X	Set pale del rotore di coda: B450 3D/X
60	BLH1672	Stabilizer Fin Set White: B450 3D/X	Stabilisierungsflossen-Set, weiß: B450 3D/X	Set Dérive/stabilisateur, blanc : B450 3D/X	Set deriva di stabilizzazione bianca: B450 3D/X
61	BLH1673	Complete Hardware Set: B450 3D/X	Komplettes Hardware-Set: B450 3D/X	Set de visserie : B450 3D/X	Set completo hardware: B450 3D/X
62	BLH1674	Mounting Accessories, Screwdriver & Wrench: B450 3D/X, B400 (not shown)	Befestigungszubehör, Schraubenzieher & Schraubenschlüssel: B450 3D/X, B400 (nicht gezeigt)	Set d'outils tournevis et clés : B450 3D/X, B400 (non représenté)	Accessori montaggio, cacciavite e chiave: B450 3D/X, B400 (non mostrato)
63	BLH1676	Servo Arm Set: B450 3D/X, B400	Servoarm-Set: B450 3D/X, B400	Set de bras de servos : B450 3D/X, B400	Set braccio del servo: B450 3D/X, B400
64	BLH1679	Canopy Mounts (2): B450 3D/X	Canopy-Befestigungselemente (2): B450 3D/X	Fixations de bulle (2) : B450 3D/X	Staffe di montaggio calottina (2): B450 3D/X
65	SPMAR 7200BX	Spektrum AR7200BX	Spektrum AR7200BX	Spektrum AR7200BX	Spektrum AR7200BX
66	EFLA335H	35A Pro S-BEC Brushless ESC	35 A Pro S-BEC Brushless-ESC	CEV Brushless Pro S-BEC 35 A	35A Pro S-BEC Brushless ESC
67	EFLB 2200S30	2200 mAh 3S 11.1V 30C LiPo 13AWG EC3 (not shown)	2200 mAh 3 S 11,1 V 30 C LiPo 13 AWG EC 3 (nicht gezeigt)	Li-Po 11,1 V 2200 mAh 3S 30C 13AWG EC3 (non représentée)	2200 mAh 3S 11,1 V 30C LiPo 13AWG EC3 (non mostrato)
68	BLH1001	Mini Helicopter Main Blade Holder (not shown)	Mini-Helikopter-Hauptblatt-Halterung (nicht gezeigt)	Support de pales principales Hélico (non représenté)	Supporto pala principale Mini elicottero (non mostrato)
69	EFLC3115	3S 11.1V LiPo Balancing Charger, 1.8A (not shown)	3S 11,1 V LiPo-Balancer-Ladegerät, 1,8 A (nicht gezeigt)	Chargeur-équilibreur Li-Po 11,1 V, 1,8 A 3S (non représenté)	3S 11,1 V LiPo caricabatterie con bilanciatore, 1,8 A (non mostrato)
70	EFLM 1360HA	Brushless 440 Helicopter Motor, 4200Kv	Brushless 440 Helikoptermotor, 4200 KV	Moteur d'hélicoptère Brushless 440, 4200Kv	Motore brushless elicottero 440, 4200 KV
71	SPMA3031	Pot Adjustment Tool: AR7200BX	Verstellwerkzeug Potentiometer: AR7200BX	Outil de réglage de potentiomètre : AR7200BX	Attrezzo regolazione potenziometro: AR7200BX

## Optional Parts / Optionale Bauteile / Pièces optionnelles / Pezzi opzionali

Part #	English	Deutsch	Français	Italiano
BLH1903	Helical Pinion 11T B450/300X/CFX	Blade 450/300x/300CFX: Ritzel 11 Z schrägverz.	B450/300X/300CFX - Pignon hélicoïdal 11T	Pignone elicoidale 11T B450/300X/CFX
BLH1904	Helical Pinion 12T B450/300X/CFX	Blade 450/300x/300CFX: Ritzel 12 Z schrägverz.	B450/300X/300CFX - Pignon hélicoïdal 12T	Pignone elicoidale 12T B450/300X/CFX
BLH1905	Helical Pinion 13T B450/300X/CFX	Blade 450/300x/300CFX: Ritzel 13 Z schrägverz.	B450/300X/300CFX - Pignon hélicoïdal 131T	Pignone elicoidale 13T B450/300X/CFX
BLH1906	Helical Pinion 14T B450/300X/CFX	Blade 450/300x/300CFX: Ritzel 14 Z schrägverz.	B450/300X/300CFX - Pignon hélicoïdal 14T	Pignone elicoidale 14T B450/300X/CFX
BLH1907	Helical Pinion 15T B450/300X/CFX	Blade 450/300x/300CFX: Ritzel 15 Z schrägverz.	B450/300X/300CFX - Pignon hélicoïdal 15T	Pignone elicoidale 15T B450/300X/CFX
BLH4302	Flybarless Setup Tool: B450 X	Flybarless-Setupwerkzeug: B450 X	Outil de réglage Flybarless : B450 X	Attrezzo setup senza flybar: B450 X
BLH4317A	Aluminum Flybarless Main Rotor Grip Set: B450 X	Aluminium-Flybarless-Hauptrotorhalterungs-Set: B450 X	Set de pieds de rotor principal Flybarless en aluminium : B450 X	Set stringi pale del rotore principale senza flybar in alluminio: B450 X
BLH4331A	Aluminum Flybarless Follower Arms: B450 X	Aluminium-Flybarless-Tastarme: B450 X	Bras suiveurs Flybarless en aluminium : B450 X	Bracci inseguitore senza flybar: B450 X
BLH4381A	Smokey Canopy: B450 X	Smokey Canopy: B450 X	Bulle Smokey : B450 X	Calottina grigia: B450 X
BLH1633A	Aluminum Swashplate: B450 3D/X, B400	Aluminium-Taumelscheibe: B450 3D/X, B400	Plateau cyclique en aluminium : B450 3D/X, B400	Piatto ciclico in alluminio: B450 3D/X, B400
BLH1634A	Aluminum Anti-Rotation Bracket/Guide: B450 3D/X, B400	Aluminium-Anti-Rotations-Bügel/-Führung: B450 3D/X, B400	Guide de plateau cyclique en aluminium : B450 3D/X, B400	Staffa/guida anti-rotazione in alluminio: B450 3D/X, B400
BLH1645B	Landing Gear Set, Black: B450 3D/X	Fahrwerk-Set, schwarz: B450 3D/X	Jeu de train d'atterrissage, Noir : B450 3D/X	Set del carrello di atterraggio, nero: B450 3D/X
BLH1654A	Alum Tail Drive Shaft Lower BearBlck: B450 3D/X, B400	Aluminiumbefestigung Heckantriebswelle unterer Lagerblock: B450 3D/X, B400	Palier inférieur d'arbre d'anticouple en aluminium, Noir : B450 3D/X, B400	Blocco cuscinetto inferiore albero trasmissione di coda in alluminio: B450 3D/X, B400
BLH1655A	Aluminum Tail Drive Gear Pulley Assy: B450 3D/X, B400	Aluminium-Heckgetriebe-Riemenscheiben-Anordnung: B450 3D/X, B400	Arbre pignon/poulie transmission d'anticouple aluminium B450 3D/X, B400	Asse puleggia ingranaggio di trasmissione di coda in alluminio: B450 3D/X, B400
BLH1657C	Carbon Fiber Tail Boom: B450 3D/X	Karbonfaser-Heckausleger: B450 3D/X	Poutre en carbone : B450 3D/X	Asta di coda in fibra di carbonio: B450 3D/X
BLH1658A	Aluminum Tail Servo Boom Mount: B450 3D/X, B400	Aluminium-Servobefestigung Heckausleger: B450 3D/X, B400	Support de servo d'anticouple en aluminium B450 3D/X, B400	Montante asta del servo di coda in alluminio: B450 3D/X, B400
BLH1661A	Tail Boom Brace/Support Set/Aluminum E: B450 3D/X	Heckauslegerhalterung/Stützset/Aluminium E: B450 3D/X	Set de renforts et support de poutre en aluminium E : B450 3D/X	Sostegno asta della coda/set supporto/alluminio E: B450 3D/X
BLH1662A	Aluminum Horizontal Stab Fin Mount: B450 3D/X	Aluminium-Befestigung horizontale Stabilisierungsfosse: B450 3D/X	Support de dérive et stabilisateur en aluminium : B450 3D/X	Montante deriva stabilizzazione orizzontale in alluminio: B450 3D/X
BLH1663A	Aluminum Tail Case Set: B450 3D/X	Aluminium-Heckabdeckungs-Set: B450 3D/X	Set de boîtier d'anticouple en aluminium B450 3D/X	Set case coda in alluminio: B450 3D/X
BLH1665A	Tail Rotor Shaft Aluminum Drive Pulley: B450 3D/X	Welle und Antriebsscheibe Heckrotor, Aluminium (2): B450 3D/X	Axe d'anticouple et poulie aluminium : B450 3D/X	Puleggia trasmissione in alluminio dell'albero del rotore di coda: B450 3D/X
BLH1667A	Aluminum Tail Rotor Pitch Lever Set: B450 3D/X	Aluminium-Heckrotor-Pitchhebel-Set: B450 3D/X	Levier de pas d'anticouple en aluminium : B450 3D/X	Set leva del pitch del rotore di coda in alluminio: B450 3D/X
BLH1668A	Aluminum Tail Rotor Pitch Control Slider Set: B450 3D/X	Aluminium-Heckrotor-Pitchschieberegler-Set: B450 3D/X	Set de slider d'anticouple en aluminium : B450 3D/X	Set cursore comando passo rotore di coda in alluminio: B450 3D/X
BLH1670A	Aluminum Tail Rotor Blade Grp Set: B450 3D/X	Aluminium-Heckrotorblatt-Set: B450 3D/X	Pieds de pales d'anticouple en aluminium : B450 3D/X	Set stringi pala rotore di coda in alluminio: B450 3D/X
BLH1671B	Tail Rotor Blade Set, Black: B450 3D/X	Heckrotorblatt-Set, schwarz: B450 3D/X	Set de pales d'anticouple, Noir : B450 3D/X	Set pale del rotore di coda, nero: B450 3D/X
BLH1671C	Tail Rotor Blade Set Carbon Fiber: B450 3D/X, B400	Heckrotorblatt-Set, Karbonfaser: B450 3D/X, B400	Set de pales d'anticouple en carbone : B450 3D/X, B400	Set in fibra di carbonio delle pale del rotore di coda: B450 3D/X, B400
BLH1672B	Stab/Fin Set, Black: B450 3D/X	Stabilisator/Flossen-Set, schwarz: B450 3D/X	Set de stabilisateur/dérive, Noir : B450 3D/X	Set stab/der, nero: B450 3D/X
BLH1672C	Stab/Fin Set, Carbon Fiber: B450 3D/X	Stabilisator/Flossen-Set, Karbonfaser: B450 3D/X	Set de stabilisateur/dérive en carbone : B450 3D/X	Set stab/der, fibra di carbonio: B450 3D/X
BLH1676A	Aluminum Servo Control Arms: B450 3D/X, B400	Aluminium-Servosteuerarme: B450 3D/X, B400	Bras de servos en aluminium : B450 3D/X, B400	Bracci comandi servo in alluminio: B450 3D/X, B400
BLH1679A	Aluminum Canopy Mounts: B450 3D/X	Aluminium-Canopy-Befestigungselemente: B450 3D/X	Supports de bulle en aluminium : B450 3D/X	Montanti calottina in alluminio: B450 3D/X
BLH1690A	Swash Leveling Tool: B450 3D/X, B400	Taumelscheibe-Nivellierungswerkzeug B450 3D/X, B400	Outil de réglage de plateau cyclique B450 3D/X, B400	Strumento di livellamento del piatto ciclico: B450 3D/X, B400
BLH4399	Aluminum 450 Flybarless Conversion Set: B450 3D	Aluminium-450 Flybarless-Umrüstungs-Set: B450 3D	Set de conversion 450 Flybarless en aluminium : B450 3D	Set conversione senza flybar 450 in alluminio: B450 3D

Part #	English	Deutsch	Français	Italiano
BLH1671OR	Tail Rotor Blade Set, Orange: B450 3D/X, B400	Heckrotorblatt-Set, orange: B450 3D/X, B400	Set de pales d'anticouple, Orange : B450 3D/X, B400	Set pale del rotore di coda, arancione: B450 3D/X, B400
BLH1671YE	Tail Rotor Blade Set, Yellow: B450 3D/X, B400	Heckrotorblatt-Set, gelb: B450 3D/X, B400	Set de pales d'anticouple, Jaune : B450 3D/X, B400	Set pale del rotore di coda, giallo: B450 3D/X, B400
BLH1671GR	Tail Rotor Blade Set, Green: B450 3D/X, B400	Heckrotorblatt-Set, grün: B450 3D/X, B400	Set de pales d'anticouple, Vert : B450 3D/X, B400	Set pale del rotore di coda, verde: B450 3D/X, B400
BLH1699	450 Carrying Case	450 Tragekoffer	Coffret de transport 450	Valigetta per il trasporto 450
	DX8 DSMX Transmitter Only	DX8 DSMX Nur Sender	Émetteur DX8 DSMX seul	Solo trasmettitore DSMX DX8
	DX7s 7 Ch with AR8000 No SX's	DX7s 7 Ladegerät mit AR8000 Keine SXs	DX7s 7 voies avec AR8000 sans servos	DX7s 7 canali con AR8000 senza SX
	DX6i DSMX 6-Channel Transmitter Only	Nur DX6i DSMX 6-Kanal-Sender	Émetteur DX6i DSMX 6 voies seul	DX6i DSMX 6 canali senza trasmettitore

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US 7,391,320. Other patents pending.

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