JAGUAR

Instruction Manual

2CH 2AD No.8216

3CH 3AD No.8302

2CH 2ADM No.8221/8223

3CH 3ADM No.8305

Introduction

Congratulations on your purchase of an ACE Jaguar radio system. All new Jaguar 2AD, 3AD, 2ADM and 3ADM are designed by the state-of-the-art IT technology in Taiwan. With proper use and care, ACE Jaguar will make the control advanced and simple, and provide you with many years of enjoyment. Before operating your new radio system or installing it into your model, please take a few minutes to familiarize yourself with the various features of the system by reading this owner's manual thoroughly.

Features

Transmitter

- Available in 2-ch (Jaguar T2D) and 3-ch (Jaguar T3D)
- Digital proportional precise control
- Servo reversing
- External charging jack for NiCd battery pack
- LED battery level indicator with low power flashing
- Adjustable neutral position for throttle trigger
- Easy access crystal
- All SMT circuitry for dependability
- Unique ergonomic transmitter design

Receiver

- Built in BEC (Battery Eliminator Circuit)
- Super-Heterodyne for extra long range
- Crystal interchangeable for versatility

Servo

- Most reliable high torque motor
- Dual sleeve bearings support
- Standard size to fit most models
- High impact material
- Brand new fashion design

System Contents

Radio system	Jaguar 2AD	Jaguar 3AD	Jaguar 2ADM		Jaguar 3ADM
Product No	8216	8302	8221	8223	8305
Transmitter	Jaguar T2D	Jaguar T3D	Jaguar T2D	Jaguar T2D	Jaguar T3D
Receiver	TR-202A	TR-402A	TR-203A	TR-203A	TR-405A
Servos	S1903 (x 2)	S1903 (x 2)	C1016 (x 2)	C1016 (x 1)	C1016 (x 2)
Switch harness (x1)					
Receiver battery holder (x1)					
Mounting Hardware and frequency flag set (x1)					

Specifications

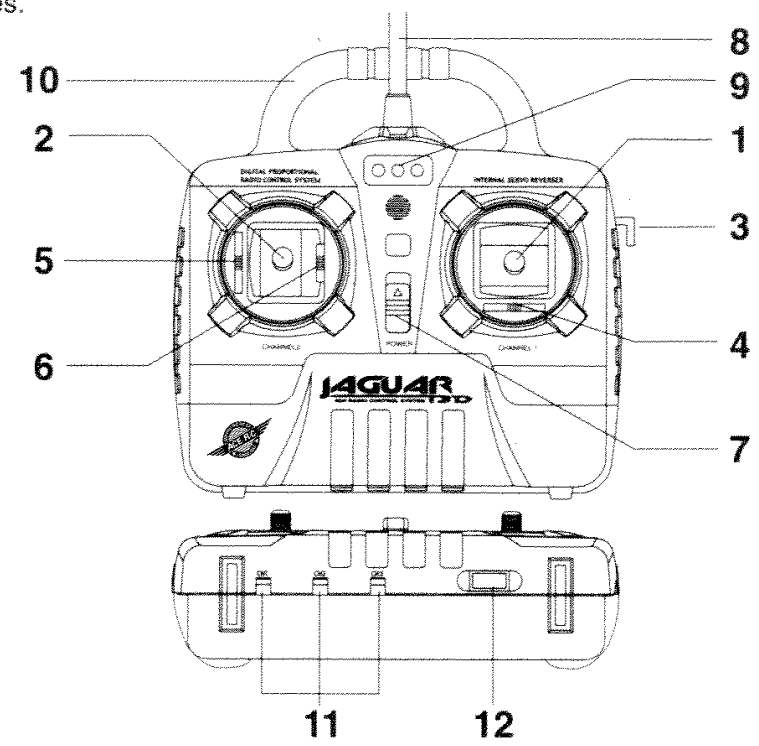
Transmitter	Jaguar T2D	Jaguar T3D	Jaguar T2D	Jaguar T3D
Configuration	Dual Stick	Dual Stick w/Slide throttle	Dual Stick	Dual Stick w/Slide throttle
Frequency	26MHz, 27MHz, 40MHz			
Modulation AM	Pulse Proportional Modulation (ppm)			
Current Drain	200mA@12V			
Weight	450g (15.9 oz)			

Receiver	TR-202A	TR-402A	TR-203A	TR-405A
Frequency	26MHz, 27MHz, 40MHz			
Channel	2	4	2	4
BEC	Yes	No	No	No
Single conversion	455KHz			
Channel spacing	20KHz		10KHz	
Receiver batteries	AAx4(UM-3x4)		AAAx4	
Current Drain	35mA@6V		10mA@4.8V	
Dimensions	48x34x22 mm (1.89 x1.34x0.87 in)		35.6x26x15 mm (1.40 x1.02x0.59 in)	
Weight	25g (0.89 oz)		10g (0.35 oz)	

Servo	ACE S1903	ACE C1016
Control	Pulse width control	
Operation Range	+/- 45 degrees (without trims)	
Power Supply	4.8-6.0 V (shared with receiver)	
Current Drain	10mA at idle/ 650mA at stall	5.0mA@4.8V
Output torque	3kg-cm (42.18 oz)	1.6kg-cm (22.2 oz)@4.8V
Transit time	0.19sec/60 degrees of travel	0.10sec/60 degrees of travel
Dimensions	40.9x20x37 mm (1.61x0.78x1.46 in)	22.1x11.4x23.6 mm (0.87x0.45x0.93 in)
Weight	46g (1.62 oz)	9g (0.32 oz)

Transmitter Controls

1. **Steering/Rudder stick(CH1):** Controls the steering of the model.
2. **Throttle Stick/Elevator(CH2):** Controls the speed of engine/motor in the model or control the elevator.
3. **Slide Control/Throttle(CH3; T3D only):** For extra function or as a throttle control.
4. **Steering/Rudder Trim(CH1):** Used to shift the neutral position of the steering servo.
5. **Throttle/Elevator Trim(CH2):** Used to shift the idle position of the throttle servo.
6. **Throttle Kick-Down(CH2):** Used to shift the physical position of the throttle stick. This is required by some speed controllers and by gas engines.



7. **Power Switch:** Turns the transmitter on or off.
8. **Antenna:** Never operate the transmitter without extending this antenna or you may create interference to other modeler.
9. **Voltage indicator:** These three lights will indicate the condition of the transmitter battery. When the red light(left) begins to flash it is time to change to cells.
10. **Handle:** Provides an easy means of transporting the transmitter.
11. **Servo reversing switches:** Reverses the direction of the servo.
12. **Crystal:** The frequency could be changed by replacing the new crystal set. It is recommended to use the original manufactured crystal set and change the Transmitter and Receiver Crystal at the same time.
13. **Charging Jack:** Recharge the transmitter battery. Only use the rechargeable cells and equivalent to Futaba Adaptor. The Ni-Cd Conversion Kit P/N 2915AC is recommended.

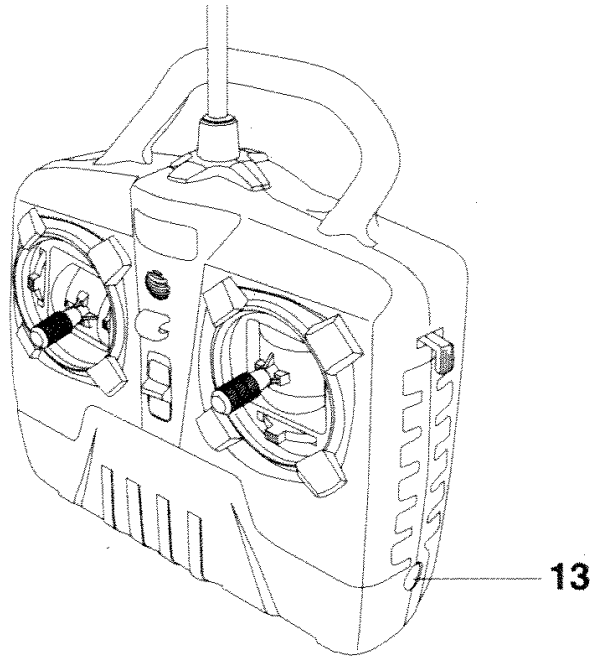


Fig.1

Installation

Installing the transmitter batteries:

Install the AA cells into the transmitter as shown in the drawing. (Fig. 2) Use only fresh, alkaline cells, all of the same brand. Make certain that the contacts in the battery holder stay clean by using a pencil eraser to gently remove any corrosion or dirt that may accumulate on them. It is recommended to do this each time you install fresh cells into your transmitter.

WARNING:
NEVER ATTEMPT TO RECHARGE ALKALINE BATTERIES, OR ANY DRY CELLS!

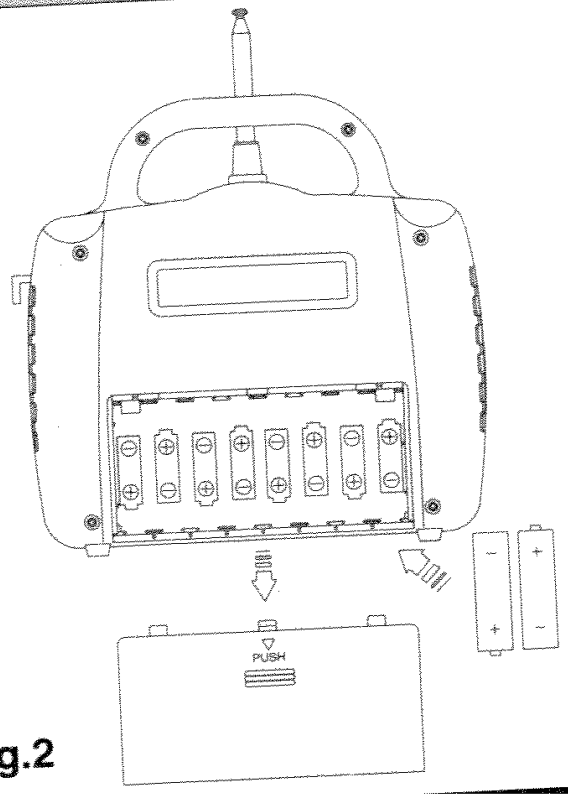


Fig.2

You may also use NiCd cells (#ACE2915 NiCd Conversion Kit is recommended) in your transmitter. They can be charged through the charge jack located on the side of the transmitter. (Fig. 3)

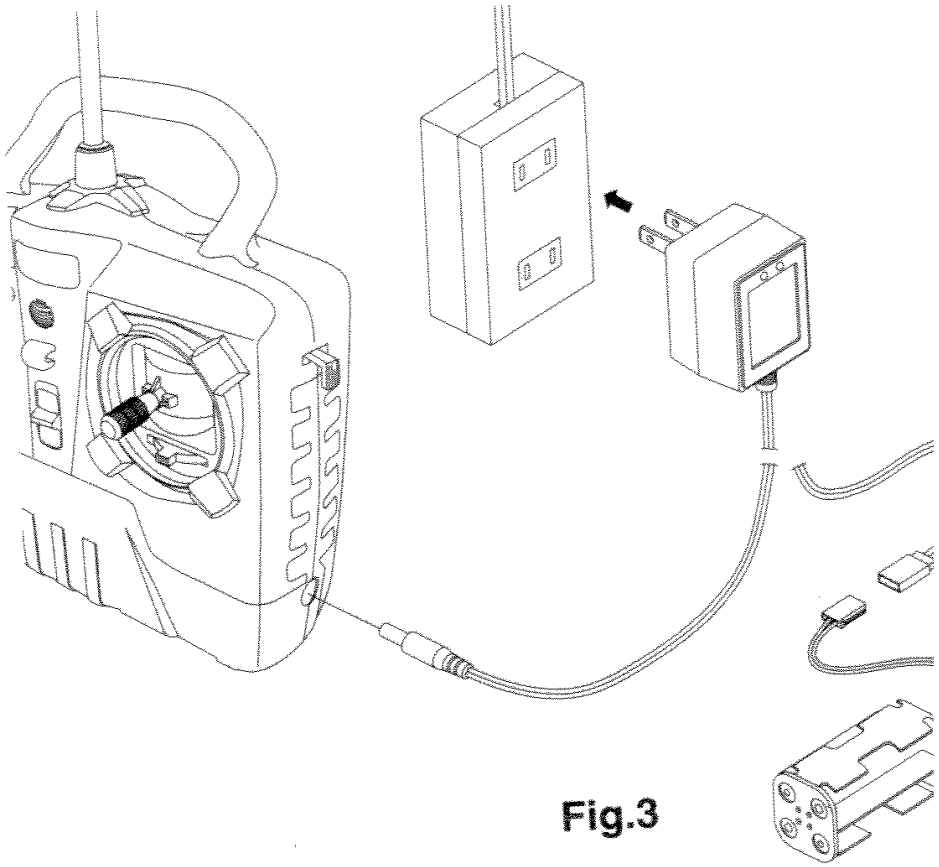


Fig.3

Install the receiver batteries:

Place 4 fresh AA alkaline dry cells into the battery case, making sure to observe the proper polarity.

CAUTION:
IMPROPER INSTALLATION OF THE DRY CELLS CAN CAUSE SEVERE DAMAGE TO YOUR RECEIVER AND SERVOS!!

Maintain the battery contacts in the same way as described in previous section. Insert the switch harness plug into the receiver slot marked "BATT" as shown in Fig 4.

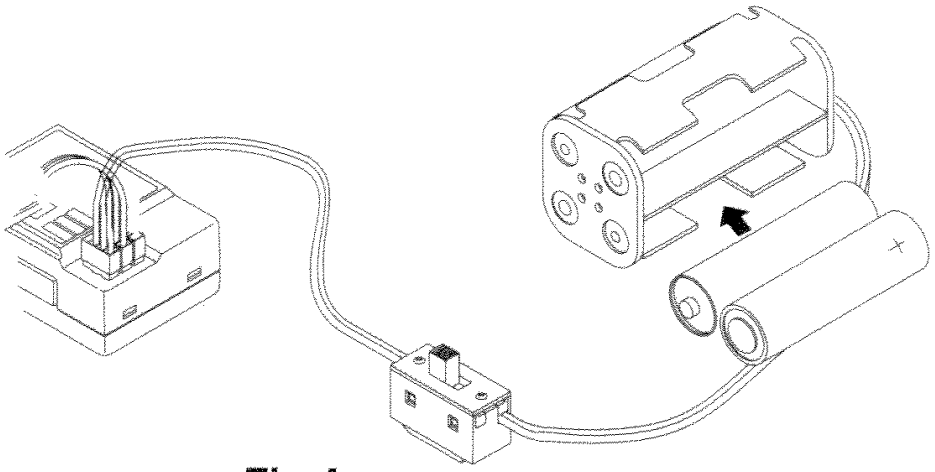


Fig.4

Using the servo reversing feature:

When installing servos into your model, it is sometimes necessary or convenient to reverse the output direction of the servo. The direction of travel for each individual servo can be changed by simply operating the reversing switch that corresponds to the channel number on the receiver where the servo is plugged in. Under normal circumstances, CH1 is Steering/Rudder, CH2 is Throttle/ Elevator, and CH3 is for extra function. The reversing switches are recessed into the transmitter to prevent accidental operation.

Radio Installation:

Before installing your radio into your model, connect the receiver, servos, and switch harness/battery pack as Fig 5. In addition to checking for proper operation, this "bench test" will help you to become familiar with the operation of your radio. After connecting the airborne components, extend both the transmitter and receiver antennas to their full length. Begin by turning on the transmitter, then turn on the receiver switch. Make sure that all servos and trims levers are operating, and take a few moments to "play" with your system. After completion of your bench testing, turn off the receiver, followed by the transmitter.

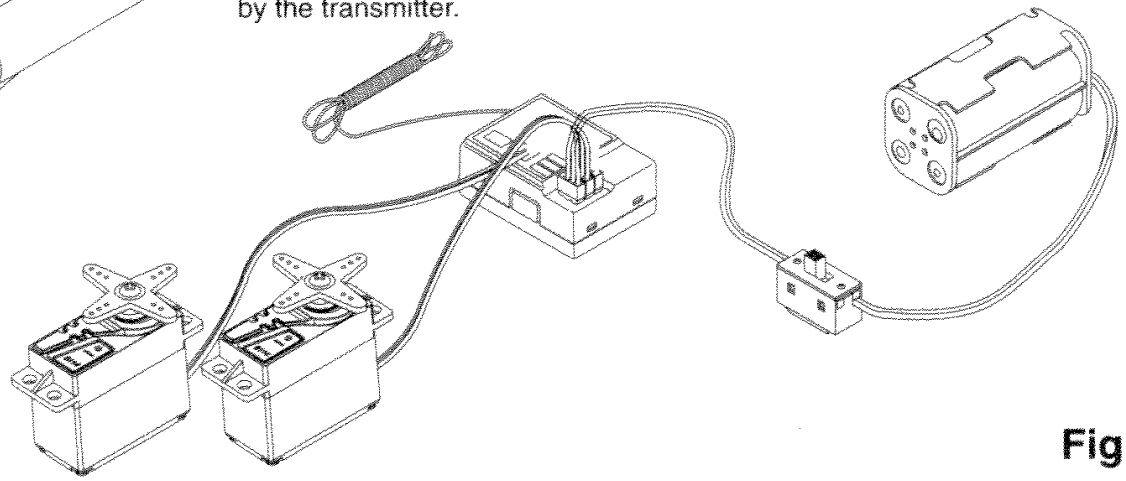


Fig.5

Note for New R/C Enthusiasts:

Always follow the "transmitter on first, off last" procedure. A good way to remember this is to remind yourself to always have your receiver "listening" to the transmitter. If you turn the transmitter off prior to turning off the receiver, the receiver has nothing to "listen to", and this condition can sometimes damage the servo output gear train because of "jitters" or excessive servo travel beyond normal limits. Now, let's install your radio into your model:

Servos:

Mount the servos as recommended in your model's instruction manual, Follow these general guidelines for servo mounting. Remember that vibration is the biggest enemy of servos. Always use the supplied rubber grommets properly installed in the mounting lugs of the servo case as Fig. 6. Install the mounting screws securely, but compress the rubber grommet "just a little", or the shock absorbing properties of the grommet will be lost. Make sure that the servo case does not touch any part of the servo tray, as the vibration transmitted throughout the model will reduce the life of your servos. Vibration is more severe in a gas model when compared to an electric powered aircraft, although a careful servo installation (regardless of model type) will result in a longer, trouble-free service life from your radio.

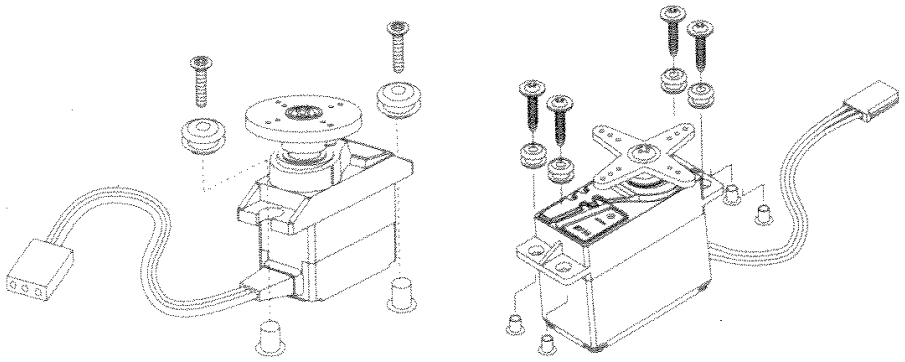


Fig.6

Receiver Installation:

Note the location of the receiver in your model's instruction manual or plans. Space available in your model will determine how much padding can be placed around the receiver. When the receiver in a good quality foam rubber, such as those available from Du-Bro, Carl Goldberg, Sig, and others. R/C foam is made from natural rubber, which eliminates vibration far better than synthetic foam. The small investment in a quality foam will be repayed many times over should you crash your model! When wrapping the receiver, keep in mind that you are trying to cushion a delicate piece of electronic equipment, so "wrap" the foam, don't "stretch" it around the receiver. You can keep the foam cushion in place with some cellophane tape. (See more figures in page 10.)

Many modelers prefer to install their receiver into the model at this point, with no further protection. Another sizeable group of modelers prefer to go a step further, and place the foam-wrapped receiver into a plastic bag, secured with a rubber band around the receiver case as well as the servo and battery wires. The advantage of the plastic wrap is the protection against fuel or oil in the event of a major crash. The disadvantage of the plastic, especially if you use in very hot and humid conditions, is that moisture can accumulate inside the receiver, and the resulting corrosion of the circuit board can cause receiver malfunction.

HELPFUL HINT:

If you choose to wrap your receiver in both foam and a plastic bag, it is a good idea to periodically remove the receiver from your model, remove the foam and bag, and let the receiver "air out". This maintenance procedure will let you determine if any moisture is accumulating in the protective wrap. Small holes cut into the bag will allow airflow into the receiver, and eliminate the need for the periodic checks, although you will lose a certain amount of protection against fuel or oil with this step.

Battery Installation:

Always wrap the battery pack in foam, and mount it in the location specified in your models instructions. Always wrap the battery pack in a plastic bag, as its location (close to engine and fuel tank) makes fuel proofing vital.

Switch Installation:

Pick the most convenient location for your on/off switch as required by your particular model. Always mount the switch on the opposite side of the engine exhaust. After mounting the switch, carefully bundle any excess servo wire with cable ties, keeping them away from any moving item (pushrod, servo arm, etc.) that could catch and cut the wires. Any empty space in your fuselage radio compartment can be filled with excess foam.

Receiver Antenna:

Refer to your model's instructions for the location desired for the receiver antenna to exit the Body or Fuselage. A general guideline is to exit the antenna from the Body / Fuselage at the closest possible point to the receiver, that is, have as much antenna as possible outside the model. Use a strain relief (a knot will work) where the antenna exits the model, to avoid the antenna being ripped out of the receiver in the case of a mishap. For airplane, you might use a strain relief at the point of attachment outside the fuselage, as well. A rubber band works well for this. REMEMBER: THE ANTENNA WIRE IS YOUR MODELS "LINK" TO THE TRANSMITTER. Take care to eliminate any chance of the antenna wire being caught or tangled in the prop, wheels, etc. The length of the receiver antenna is critical to the proper operation of your radio. Never cut the antenna for any reason, as you will severely limit the range of the system, resulting in a crash.(See more hints in page 11.)

Final Checks:

Once you have completed the radio installation to your satisfaction, test the operation of the system before hooking up any push rods or control cables. At this time you can determine the proper direction of the servos, and use the reversing switches as needed.

Before connecting the pushrods or control cables, make certain that there is no binding or unnecessary drag on the controls. A poorly constructed and/or operating pushrod system causes excessive power consumption by the servos, and will quickly drain the receiver pack as well as make your model perform poorly.

Once satisfied with the pushrods, attach them to the servo arm/horn per your models instructions.

With all transmitter trim levers set in their neutral position, turn on the radio system and reconfirm proper control surface direction. Take your time with this step, as countless airplanes have crashed because of their "expert" builders failing to notice that the ailerons/rudder or elevator were hooked up backwards!

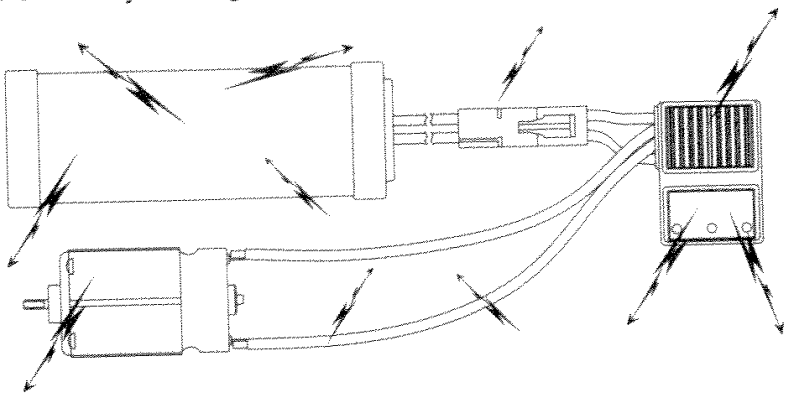
Adjust the pushrods mechanically to achieve neutral centered control surfaces with neutral transmitter trim.

The design, engineering, and production staff at Ace R/C wish you might happy with your new Jaguar system.

Some Useful Hints or Notes

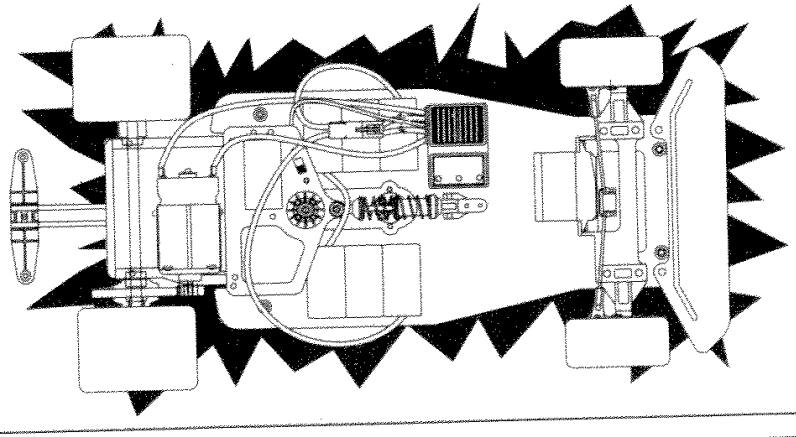
The Source of Electromagnetic Induction(EP car) and Noise

We assume that all areas where large currents are flowing are generating noise. Always locate antenna wires and receivers as far away as possible from the motor, ESC, NiCd batteries, motor wire or other noise sources. Note that noise is a type of radio wave, it is important to reduce the possibility of interference by locating a fine position for receiver and antenna.



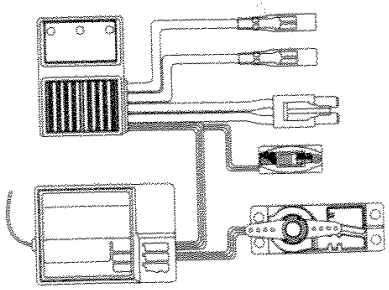
HELPFUL HINT

Metal and carbon chassis can also conduct noise, it is suggested that you route the antenna away from the chassis.

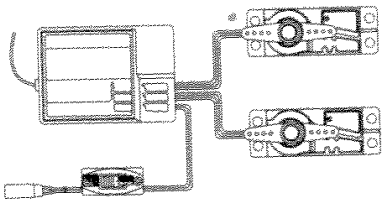


Receiver Installation

Always install the receiver as far as possible from the motor, ESC, NiCd batteries, motor wire or other noise sources. Especially, do not route the motor wire next to the receiver, crystal or receiver antenna. FET servo blue wire(7.2V) and switches can also generate noise, position them as far away as possible from the receiver and the antenna. Make sure your motor is equipped with noise suppression diodes or capacitors.



USE W/ESC

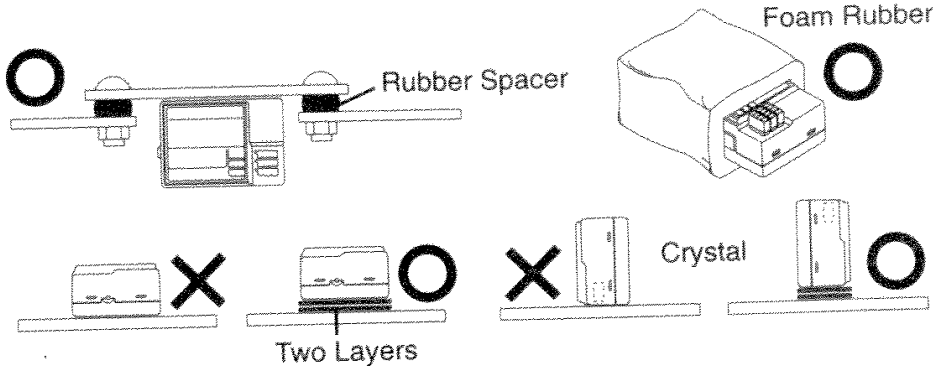


USE W/O ESC

It is recommended to apply the foam rubber to protect your receiver. If you mount the receiver on chassis then two layers of two touch foam tape is always better than one layer.

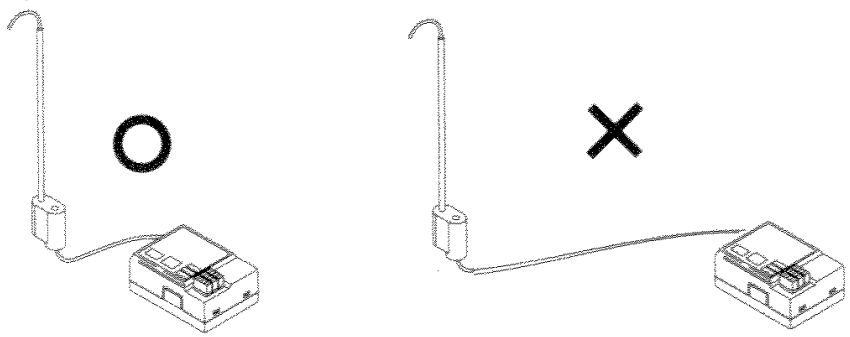
Position the crystal side at the top instead of the bottom side.

Please refer to the following diagrams.



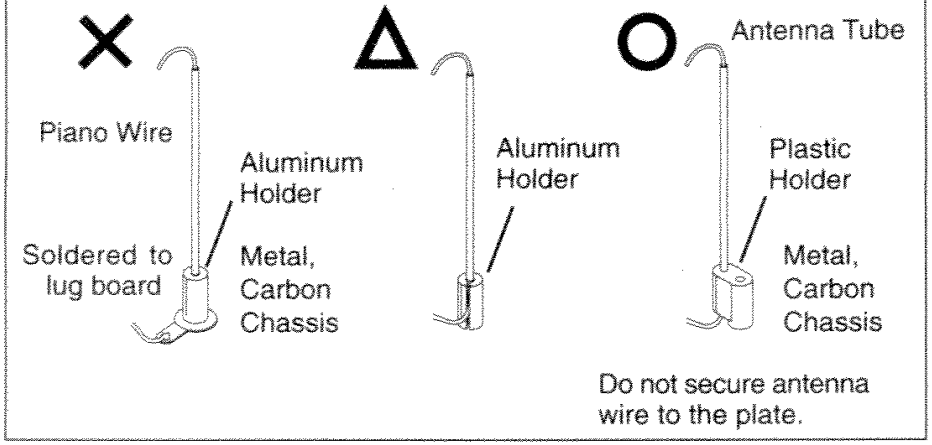
Antenna Installation

Install the antenna holder as near as possible to the receiver.



The shorter, the better. It will be easier to get the nearby noise if it is too long.

Please refer to the above diagrams when you mount the antenna holder on to the metal or carbon chassis.



Using Caution at the Flying Field or Racing Track

- Always check if there is anyone operating on the same frequency. If so, make sure that you don't turn on at the same time.
- Do not operate the model or use the radio in rain, lightning, or at night.
- Do not operate the model or use the radio if you have been drinking alchohol or under the influence of any other substance that will affect your skills.
- Always check battery power before you operate.
- The servos will glitch at ±25˚ if there is any frequency at about 200~250 MHz nearby when using this radio.

After Running

- Always keep your transmitter clean: wipe it with a mild detergent or window cleaner if there is any fuel, oil, dirt, or dust on the transmitter. DO NOT get any water inside the transmitter enclosure.
- Keep out of reach of children
- Do not store the radio in temperatures below -10 C (14F) degree or above 40C (104F) or in a humid, dusty, or high vibration environment. Keep the radio away from direct sunlight.
- To prevent corrosion, take out the batteries if you are going to store the radio for a long period.

Frequency List (U.S.A.)

The following frequencies are available . They may be used for any R/C model.

27MHz

- 26.995 MHz Brown Flag
- 27.045 MHz Red Flag
- 27.095 MHz Orange Flag
- 27.145 MHz Yellow Flag
- 27.195 MHz Green Flag
- 27.255 MHz Blue Flag

Each frequency is assigned a colored flag. Attach this flag to the end of your transmitter antenna so that other modelers can determine your frequency from a distance. This is very important since it is not possible for more than one model to operate on the same frequency at the same time.

Service

Thunder Tiger strives to bring you the highest level of quality and service we can provide. We race and test our products around the world to bring you state-of-the-art items. Thunder Tiger guarantees that you should enjoy many hours of trouble free use from our R/C products. Thunder Tiger products have been sold worldwide through the authorized distributors that are supported directly and rapidly from Thunder Tiger. You may find that Thunder Tiger is always pursuing to explore new items creatively with highest quality. To update the latest product information and to get the best technical support, please feel free to contact your local hobby shops or Thunder Tiger authorized distributor.

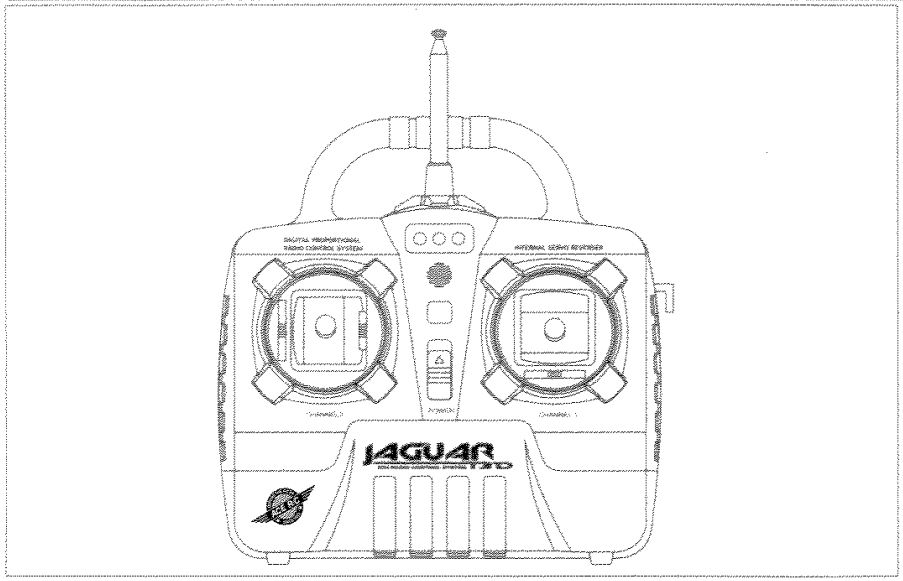
FCC Rules and Regulations

You are responsible for the proper operation of your station (transmitter) at all times and are responsible for observations, servicing, and maintenance as often as may be necessary to ensure proper operation. Each internal repair and each internal adjustment to an FCC type accepted R/C transmitter must be made in accordance with the technical regulations specified by the FCC. The internal adjustments should be performed by, or under the immediate supervision and responsibility of, a person certified as technically qualified to perform transmitter maintenance and repair duties in the private land mobile services and fixed services by an organization or committee representative of users in those services.

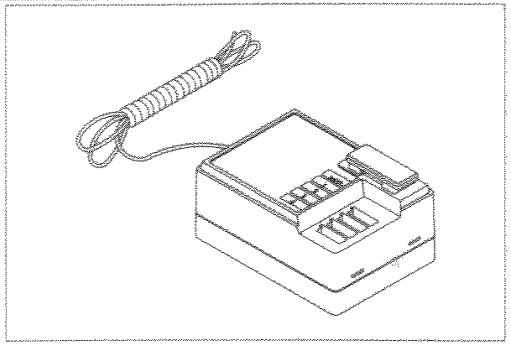
The FCC at this time does not require the modeler to obtain a special license for the operation of this unit. However, it is still the owner's responsibility to observe all FCC rules & regulations governing its use. For a copy of these rules write to:

Federal Communications Commission
Washington, DC 20554

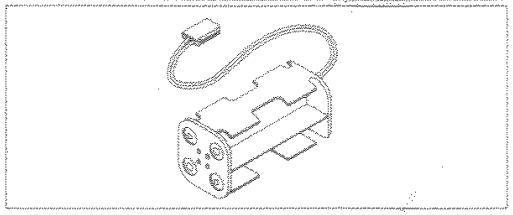
Jaguar Accessories



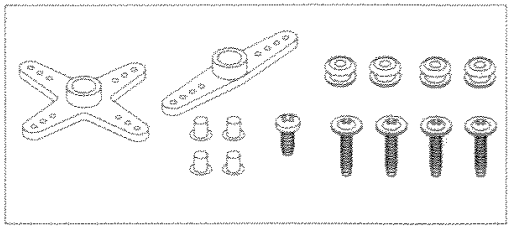
AQ0424 T2D 27MHz Transmitter
AQ0425 T3D 27MHz Transmitter
AQ0456 T2D 40MHz Transmitter
AQ0475 T3D 40MHz Transmitter



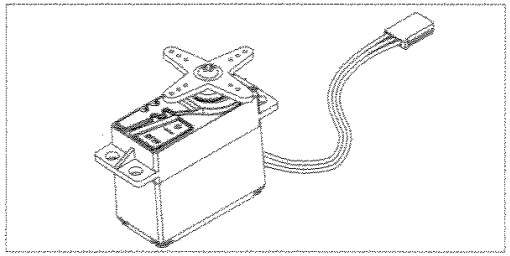
AQ0418 TR202A 2CH AM 27MHz Receiver
AQ0415 TR402A 4CH AM 27MHz Receiver
AQ0579 TR203A 2CH AM 27MHz Receiver
AQ0487 TR405A 4CH AM 27MHz Receiver
AQ0455 TR202A 2CH AM 40MHz Receiver
AQ0423 TR402A 4CH AM 40MHz Receiver
AQ0586 TR203A 2CH AM 40MHz Receiver
AQ0570 TR405A 4CH AM 40MHz Receiver



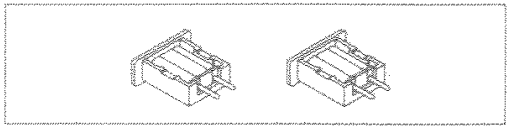
AG2059 4 Cell Battery Holder for TR202A
AQ0086 4 Cell Battery Holder for TR402A
AQ0089 4 Cell Battery Holder for TR203A/TR405A



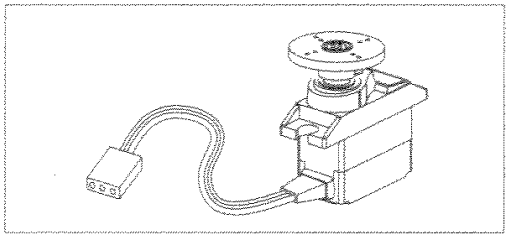
AQ1496 Servo Accessory Package for C1016
AQ1499 Servo Accessory Package for S1903



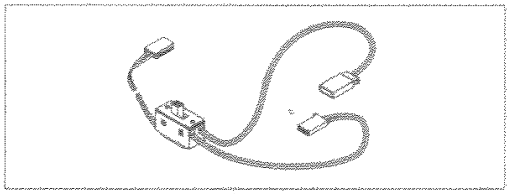
8114 ACE R/C SERVO S1903



AQ0311 AM26.995 MHz Crystal set CH1
AQ0312 AM27.045 MHz Crystal set CH2
AQ0313 AM27.095 MHz Crystal set CH3
AQ0314 AM27.145 MHz Crystal set CH4
AQ0315 AM27.195 MHz Crystal set CH5
AQ0316 AM27.255 MHz Crystal set CH6



8117 ACE R/C MICRO SERVO C1016



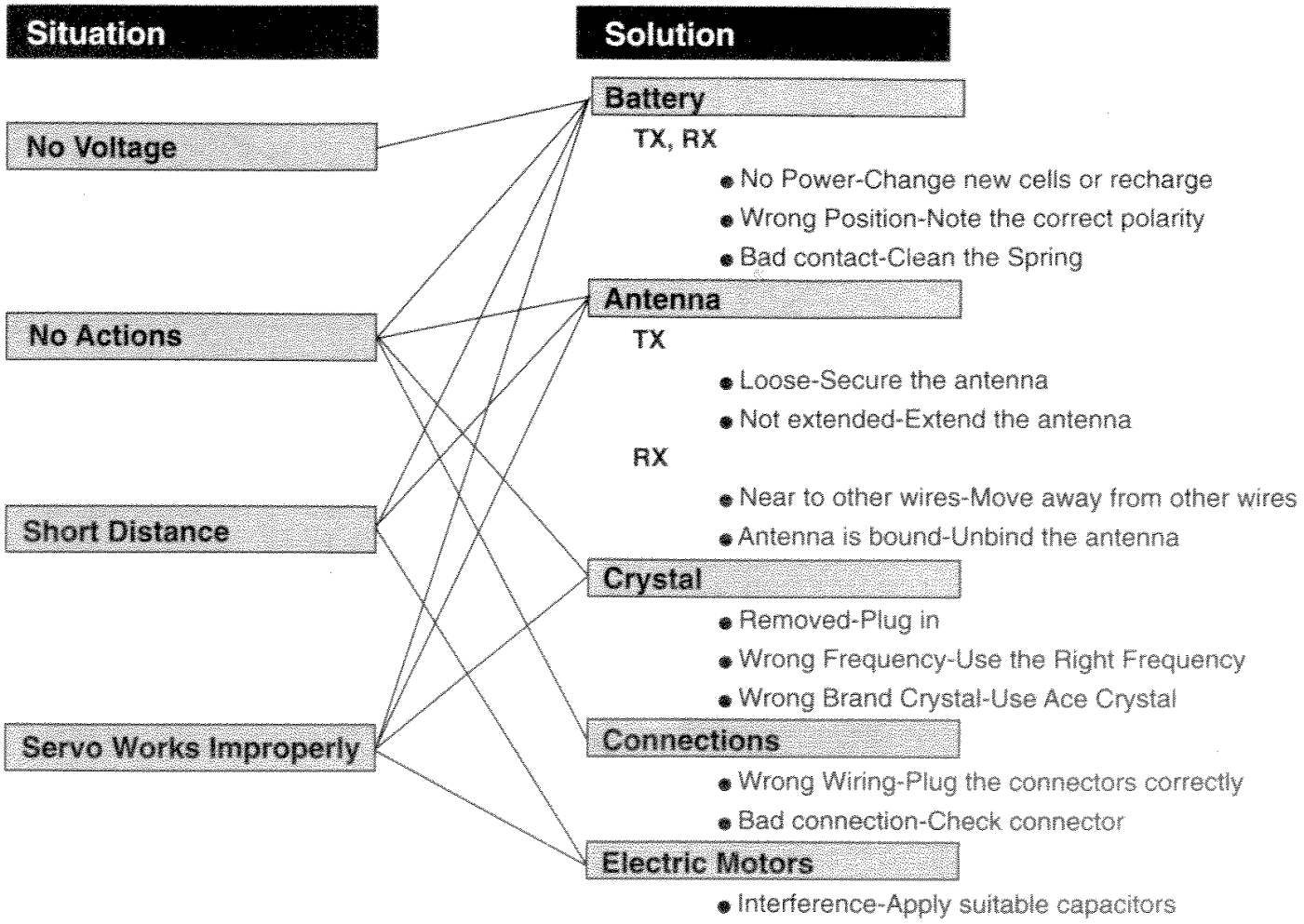
AG2060 BEC Switch Harness for TR202A
AG2078 Futaba Switch Harness for TR402A/TR203A/TR405A

Other items of interest

	Model	P/N
ESC	ACE BLC-10P	No.8024
	ACE BLC-25P	No.8025
Brushless motor	Ripper OBL 2928/09	No.2354
	Ripper OBL 2928/07	No.2355
	Ripper OBL 2924/14	No.2356
	Ripper OBL 2924/11	No.2357
Battery	Li-Po 1050mAh 7.4V 2S1P	No.2800
	Li-Po 1050mAh 11.1V 3S1P	No.2801
	NiMH 1200mAh 8.4V 2/3A flat Tamiya	No.2933
	NiMH 1200mAh 8.4V 2/3A hump Tamiya	No.2934
	NiMH 1200mAh 9.6V 2/3A flat Tamiya	No.2935
	NiMH 1200mAh 12V 2/3A flat Tamiya	No.2936

Trouble Shooting

Do not try to operate your model if you find your radio is not working properly. Check out the radio as following steps. If you can not solve the problems then contact authorized tech support for help. For customer in North America, please contact Ace R/C Tech Support for service.



Manufactured by

THUNDER TIGER CORP.

http://www.thundertiger.com

JC0797.V3