

Transmitter		Receiver	
Channels:	2-channel	Channels:	2-channel
Transmitting frequency:	27, 75MHz	Receiving frequency:	27, 75MHz AM band
Modulation type:	AM band	Operating Voltage:	4.8V to 8.4V(BEC)
Current drain:	Approximately 250mA	Dimensions:	1.87" x1.24" x0.62"
Output power:	less than .75W	Receiving range:	350 yards

SERVOES AND REPLACEMENT PARTS

Stock #	Description	Torque	Speed	Weight	Dimensions
TOWM4505	SYS3000 TS-10 Micro Servo	34.40oz.-in.	.18 sec @ 60°	0.60 oz.	1.1 x 0.5 x 1.1"
TOWM4510	SYS2000 TS-5 High Speed Nano Servo	16.70oz.-in.	.11 sec @ 60°	0.34 oz.	0.9 x 0.4 x 0.8"
TOWM4525	SYS3000 TS-53 Standard Servo	44.00oz.-in.	.23 sec @ 60°	1.31 oz	1.6 x 0.8 x 1.4"
TOWM4545	SYS3000 TS-69 Standard BB Servo	41.25oz.-in.	.22 sec @ 60°	1.59 oz.	1.6 x 0.8 x 1.4"
TOWM4565	SYS3000 TS-75 1/4 Scale BB Servo	110.00oz.-in.	.19 sec @ 60°	3.63 oz.	2.3 x 1.1 x 2.0"
TOWM5210	SYS2000 TS-80 Giant Scale BB Servo	275.00oz.-in.	.19 sec @ 60°	5.36 oz.	2.6 x 1.2 x 2.3"
TOWM5215	SYS2000 TS-71MG Super Torque Servo	110.00oz.-in.	.23 sec @ 60°	2.12 oz.	1.6 x 0.8 x 1.5"
TOWM5220	SYS2000 TS-67 Standard 2BB Servo	42.60oz.-in.	.20 sec @ 60°	1.62 oz.	1.6 x 0.8 x 1.4"
TOWM5225	SYS2000 TS-65 Standard HT 2BB Servo	77.00oz.-in.	.16 sec @ 60°	1.73 oz.	1.6 x 0.8 x 1.5"
TOWM5230	SYS2000 TS-63 Low Profile Retract Servo	90.80oz.-in.	.50 sec @ 60°	1.24 oz.	1.7 x 0.9 x 1.0"
TOWM5235	SYS2000 TS-59 Low Profile Aileron Servo	61.10oz.-in.	.18 sec @ 60°	1.23 oz.	1.7 x 0.9 x 1.0"
TOWM5240	SYS2000 TS-35 High Power Mini BB Servo	55.00oz.-in.	.14 sec @ 60°	0.95 oz.	1.3 x 0.7 x 1.2"
TOWM5241	SYS2000 TS-35MG High Power Mini Servo	55.00oz.-in.	.14 sec @ 60°	1.09 oz.	1.3 x 0.7 x 1.2"
TOWM5245	SYS2000 TS-15 Sub Micro Servo	15.10oz.-in.	.20 sec @ 60°	0.49 oz.	1.0 x 0.5 x 0.9"

Note: All servos equipped with universal connector. Torque and speed ratings based on 4.8V input.

To order any System 3000 servos or replacement parts, please call Tower Hobbies at 800-637-6050, or see the information below

FCC STATEMENT

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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

WARRANTY AND REPAIR

1-YEAR LIMITED WARRANTY
*U.S.A. and Canada Only

Tower Hobbies warrants this product to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase. During that period, Tower Hobbies will, at its option, repair or replace without service charge any product deemed defective due to those causes. You will be required to provide proof of purchase (invoice or receipt). This warranty does not cover damage caused by abuse, misuse, alteration or accident. If there is damage stemming from these causes within the stated warranty period, Tower Hobbies will, at its option, repair or replace it for a service charge not greater than 50% of its then current retail list price. Be sure to include your daytime telephone number in case we need to contact you about your repair. This warranty gives you specific rights. You may have other rights, which vary from state to state.

For service on your Tower Hobbies product, warranty or non-warranty, send it post paid and insured to:
HOBBY SERVICES
 1610 Interstate Drive
 Champaign, IL 61821

CONTACTING TOWER HOBBIES

Via Phone: Toll-Free in the US and Canada: 800-637-6050
 Outside the US and Canada: 217-398-3636
 Toll-Free FAX in the US and Canada: 800-637-7303
 FAX Outside the US and Canada: 217-356-6608

Via The Internet: E-Mail: info@towerhobbies.com
 World Wide Web: <http://www.towerhobbies.com>

Via Mail: Tower Hobbies
 PO Box 9078
 Champaign IL 61826-9078

TOWER HOBBIES®

SYSTEM 3000™

2TS 2-CHANNEL AM RADIO CONTROL SYSTEM
INSTRUCTION MANUAL
FOR R/C CAR AND BOAT USE

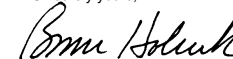
First of all, let me just say "Thank You!" for choosing the Tower Hobbies® System 3000™ 2TS! All of us here at Tower Hobbies are very pleased with the 2TS, because we feel it offers you, the Tower Hobbies customer, one of the very best values available in a car, boat or airplane system.

We don't say that on the strength of the price alone; we also say it because of the many (and sometimes, subtle) features it offers. In fact, one of its most important features is one you can't see: durability. The 2TS's receiver features vibration-resistant surface-mount components to protect it against the bumps and jolts that are inevitable in fast-paced R/C action. And of course, the receiver and transmitter are robotically assembled, to ensure top-quality construction.

It's quality you can feel right from the start, in the solid way the 2TS meets your grasp. The transmitter is surprisingly lightweight and balanced in your hands – just right for hours of fatigue-free fun. But as always, the true test of any tool is how well it performs – and that's where the 2TS excels. It offers exceptional steering and throttle control, with an adjustable neutral position on the throttle stick. Red and green LEDs provide instant and accurate power status, along with warning you when battery power is low. And because the receiver features BEC (Battery Eliminator Circuitry), you can reduce your model's mass by the weight of a receiver battery – ideal for getting the last ounce of speed and run time out of every pack.

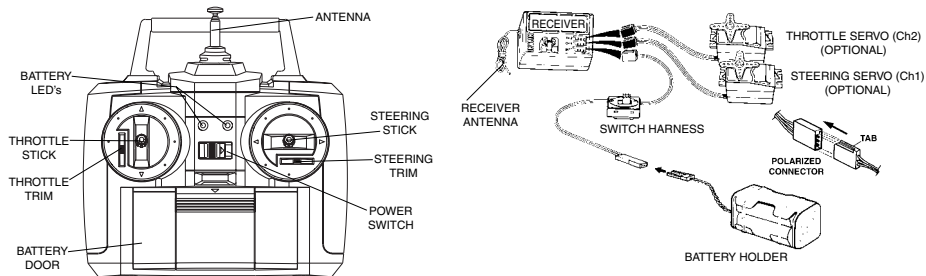
And with the performance come 2TS conveniences. Servo reversing for installation ease. Trims that are easy to find and adjust. A retractable antenna, switch harness, frequency flags, support and help from our Tower Hobbies' Tech Staff – and a full, 1-year warranty on all parts and labor. The 2TS has every one of these features – and as a 2TS owner, you have it all! Again, thanks for buying from Tower Hobbies. Enjoy!

Sincerely yours,



Bruce R. Holecck
 Founder and Chief Executive Officer,
 Tower Hobbies

QUICK REFERENCE GUIDE



NOTE: This Quick Reference Guide is a condensed version of all information given in this manual. We strongly recommend you first read this entire manual before operating your System 3000 R/C system.

1. Install 8-AA alkaline batteries into the transmitter's battery holder located on the front of the transmitter. Be sure to install the batteries in the direction shown on the battery holder.
2. Install 4-AA batteries in the receiver battery holder.
3. Connect servos, 4-cell battery pack and switch harness to the receiver as shown above.
4. Turn on the transmitter, then turn on the receiver switch harness.
5. Center the steering and throttle trim adjustments and make sure all servos operate according to transmitter movements.
6. Turn off the system, receiver first, then transmitter.
7. Install the entire radio system into your model as shown in the model's instruction manual (see above for proper channel usage).
8. If you need to reverse the direction in which a servo rotates, remove the battery door on the front of the transmitter and locate the reversing switch for that particular channel and slide it to the "R" position.
9. With the transmitter antenna collapsed, you should maintain smooth control of your model from at least 30 feet away. If not, refer to the 2TS's Troubleshooting Guide on page 3.

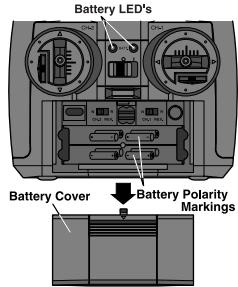


FIGURE 1

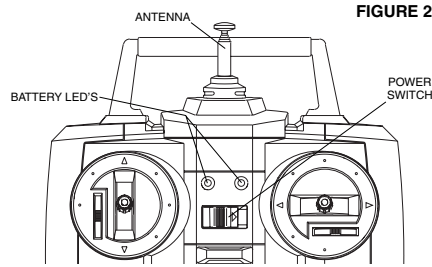


FIGURE 2

The transmitter (Tx) requires 8 "AA" batteries. Do not mix old and new cells. Do not mix alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) batteries. To install the batteries, slide open the battery door on the front of the Tx (see figure 1). Install 8 "AA" batteries in the holder following the configuration molded into the case, making sure to note the proper polarities on each cell. Close the battery door.

Turn the Tx power switch on (see figure 2). The red and green "BATT" LED's should illuminate. If not, turn off the Tx and check the configuration of the batteries to make sure each cell is firmly in place and in the proper direction. If the red LED blinks, the batteries are low on power and should be replaced. **DO NOT OPERATE AN R/C VEHICLE WITH LOW BATTERIES AS IT COULD RESULT IN REDUCED RANGE AND POSSIBLE LOSS OF CONTROL OF THE MODEL.** Install the Tx antenna by threading it firmly into place in a clockwise direction.

During normal conditions, the **range**, or safe operating distance from the Tx to the Rx is as far as you can clearly see the model. The 2TS operates on the 27 or 75MHz frequency bands. There are 30 different channels in the 75MHz band ranging from 75.410MHz (Ch61) through 75.990MHz (Ch90) and six channels in the 27MHz band ranging from A1 (26.995Mhz) to A6 (27.255Mhz). For safety reasons, you must always be aware of what channel you are using so that no two radios in the same area are EVER operating on the same frequency simultaneously. Mount the **frequency flags** that are supplied with your R/C system onto your Tx antenna so that other modelers at the track can identify your channel number.

INSTALLATION

SERVO

Because there are a variety of specific applications for servos in R/C modeling, different servos are designed for different applications. Tower Hobbies offers a large line-up of servos which you can choose from (see page 4). For each servo, use a servo horn long enough to accommodate the entire range of movement for that particular control.

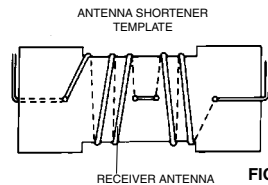


FIGURE 3

RECEIVER, SWITCH HARNESS AND RECEIVER BATTERY (refer to diagram in the Quick Reference Guide)

Insert 4-AA alkaline batteries into the receiver **battery holder** in the direction shown on the battery holder. After the servos and receiver are mounted into your model per the model's manual, connect the servos and switch harness to the receiver as shown. The servo connectors are polarized to prevent improper connection, but do pay close attention when connecting them to the receiver. The black wire goes toward the outside edge of the receiver case. If you are using an **electronic speed control (ESC)** connect the ESC's throttle lead to channel 2 in the receiver and refer to the ESC's instructions for further set-up details (the battery holder and switch harness can be omitted when using an ESC). Center the steering and throttle trim adjustments (see figure 2). Turn on the Tx, then the Rx switch harness. Make sure all servos operate according to the movement of the Tx controls. Turn off the Rx switch harness or ESC, then the transmitter and be careful not to move the servo output arms from their centered position during installation.

Completely un-wind and route the receiver antenna according to the model's instructions. Do **NOT** cut the antenna or you may lose adequate operational range. If your antenna is too long to route through your model, make an antenna shortener out of cardboard with the template provided in figure 3. Keep the antenna away from moving parts and the power wires in your model to avoid interference. Also, use capacitors on your electric motors as described in your model's instructions to help eliminate motor noise in electric cars.

STEERING AND THROTTLE

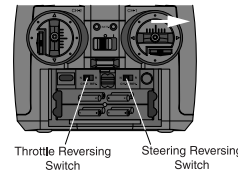


FIGURE 4

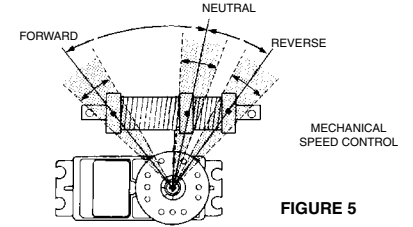
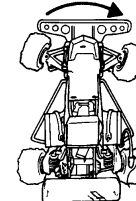


FIGURE 5

Steering: Move the steering stick left and right. Be sure there is no binding and that the car's steering controls move in the proper direction (see figure 4). If the stick is pushed to the right but the car turns left, move the steering reversing switch to the "R" position, and vice-versa.

Throttle: Move the throttle stick up. Be sure that your motor can reach full throttle (carburetor fully open on a gas engine and wiper on mechanical speed control moves to furthest forward contact for electric models). If the throttle servo moves in the wrong direction, move the throttle reversing switch to the "R" position. With the trigger released, the carburetor should be open approximately 1/16" for idling. The car should brake when the trigger is pushed away. Adjust the idle stop screw on the carburetor if the engine dies when the brake is applied (see the model's instruction manual). With mechanical speed controls, the wiper should be between the forward and reverse contacts when at rest, and should touch the full reverse contact when the trigger is pushed forward (see figure 5).

Range test the radio system prior to operation. With the Tx antenna collapsed, you should be able to smoothly control movement of all control surfaces on your model from at least 30 ft. on the ground. If not, refer to the 2TS's Troubleshooting Guide below for directions.

Throttle Stick Adjustable Neutral Position: Perform the following only if you will be using an ESC. The neutral position is pre-set at the factory. Remove all batteries from the battery holder **BEFORE** opening the transmitter. Remove the front case of the transmitter by removing the four screws from the rear of the transmitter (see figure 6). Move the setting lever on the throttle stick body to the position as shown in figure 7. Close the front case while being careful that the stick levers, trim levers, power switch, LED's, and battery contacts do not get caught. Replace the four screws on the rear of the transmitter.



FIGURE 6

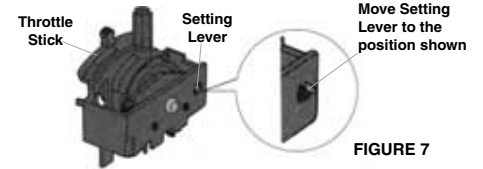


FIGURE 7

TROUBLE SHOOTING GUIDE

Problem:	Possible Cause:	Solution:
Short range	Collapsed Tx antenna	Fully extend the Tx antenna
	Interference	Check frequencies in area, check Rx installation
	Rx antenna poorly routed	Re-route Rx antenna
	Low Tx or Rx battery	Replace the batteries
	Rx or Tx out of tune	Send radio to Hobby Services for tuning
	Severed Rx antenna	Send radio to Hobby Services for repair
Short runtime	Crash damage	Send radio to Hobby Services for repair
	Low Tx or Rx batteries	Replace the batteries
Tx LED's flashing Tx LED's on but servos do not function	Binding servos causing excess battery drain	Free binding components in pushrods or moving surfaces, see model's manual
	Tx batteries need replaced	Replace the batteries
	Rx batteries need replaced	Replace the batteries
	Rx switch in off position Switch harness connected incorrectly	Turn on switch harness See quick reference guide
Interference or servos glitching	Another Tx is on your channel	Do not operate your system until other system is not in use
	Outside interference (Pagers, transmission towers, etc)	Check your local R/C club for conformation of dangerous frequencies in your area
One glitching servo	Bad servo	Send servo to Hobby Services for repair