



Advanced Training Systems

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MT-74 Ranger

Operations Manual



NOTE: Before servicing the MT-74 Robotic Platform, please read and understand the following instructions completely. If you need assistance please contact:

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Installing the Batteries in the MT-74:

1. Ensure the power switch is in the OFF position.
2. Remove the covers by turning the silver knobs counter clockwise and pulling up at the same time. The covers will pivot to the rear. Once the cover is at a 45-degree angle, you can completely remove the cover and set it aside.
3. Set the battery in place using the black handles, making sure to align the cable on the battery with the cable in the hull of the MT-74. Ensure the battery is fully in place.
4. Connect the large red connector. The connector will only mate in one direction to ensure polarity. To disengage, firmly pull the connectors apart. CAUTION: Do not pull on the wires; only use the connector housing.
5. Repeat for the second battery. Both batteries are required for the unit to operate. Each battery supplies 12V to the unit, which operates at 24V. The motors as well as the motor controller are rated at 24V. The combination of batteries supplies 24V. The unit will operate down to 14V (7V in each pack) before under-voltage shutdown occurs. However, at this low voltage, the unit will move much slower and operation is not recommended due to the possibility of battery deep discharge.
6. Once both batteries are connected and in place, replace the covers by inserting the notches over the studs and rotating shut. Press down and turn the knob fully clockwise until it stops. Double check that the cover is secure by gently pulling up on the front lip.



Installing Batteries in the handheld Target Controller:

1. Slide the bottom cover towards the front of the unit.
2. Insert 8 AA alkaline batteries in the battery holder.
3. Re-insert the cover in the slots, then snap shut.
Refer to the manual included with the transmitter for further information.

Powering the Controller:

1. Slide the power switch to the ON position without touching the trigger or the steering wheel.
2. Verify battery voltage on the display. Replace batteries if “Low” condition is displayed.
3. Turn power off when not in use, One must turn the MT-74 Platform off first.

Powering the MT-74 Unit ON:

1. For safety purposes, the hand held target controller should be turned on before the MT-74 Platform is powered to the ON position. Once the controller is powered, you can turn the switch ON at the MT-74. It is very important that when powering ON the MT-74, you do not touch the controller’s trigger or steering wheel. Doing so could cause the MT-74 to move without warning. When operating the power switch you should hear an audible mechanical click from inside the MT-74. This click indicates the power control relay is operating normally. This click is not the switch.



2. Turn Power OFF when not in use. Make sure you turn the power OFF at the MT-74 platform first, then the controller can be powered OFF.

Operation of the MT-74:

Both the trigger and steering wheel have linear speed control. The further you pull the trigger or turn the wheel, the faster the unit will respond.

Straight:

To make the MT-74 go straight, pull the trigger on the remote without turning the wheel. The further you pull the trigger, the faster the unit will move.

Turn:

Without pulling the trigger, by rotating the wheel one way or the other, the unit will respond with a move in that direction. The unit operates on the principle of skid steering, meaning the tires on opposite sides of the platform turn in opposite directions to make the turning motion. If you turn the wheel fully in one direction, the MT-74 will spin in circles on its own diameter. CAUTION: Although fun, this creates increased tire wear.

Forward and Turn:

To make the unit go forward and turn gently, pull the trigger and rotate the wheel one direction or the other to initiate a turn. When pulling the trigger at full speed, the unit will not turn. You must reduce speed slightly to allow the unit to turn. This safety feature ensures the unit travels in a straight line at full speed.

Reverse:

The unit operates the same in reverse. To make the unit move in reverse, push the trigger by extending your finger upwards.

Refer to the manual included with the transmitter for further information on the transmitter's operation.

Mounting the Paper Target Holder:

1. Select an orientation for the holder if required.
2. Remove the black T handle nuts.
3. Place the holder over the studs on the top of the platform.
4. Re-install the black T-handle nuts to securely fasten the holder in place.
5. Install the Mannequin target or 2x2 poles as desired.

Ensure that the target is a safe distance above the MT-74 to avoid any stray rounds from impacting the platform.

Since the MT-74 platform is compatible with many different ATS target systems like the PT-61 and PT-51 tactical targets, special adapter brackets will be required. For those brackets, a separate instruction sheet will be included along with any necessary hardware.



Charging the MT-74 Batteries:

The batteries may be removed or left in the unit for charging. To charge the batteries, simply connect the pack to a high frequency, 12 VDC smart charger. It is essential that a smart charger be used to charge the packs. Smart chargers charge the packs at a high rate and taper the charge as the packs near full charge. Once a full charge is completed, the chargers will remain in the float state, keeping the batteries topped off and avoiding overcharging, which decreases battery life and performance. Either two individual chargers or a single, dual bank charger should be used. Do not connect both battery packs to a single bank charger.

MT-74 Antenna:

The red tube sticking up from the top of the MT-74 is the unit's receiving antenna. Take care not to bend or damage this tube as it will affect the MT-74 platform's effective control range.

MT-74 Receiver and Motor Controller:

The motor controller and receiver are housed under the center of the platform. There are no serviceable parts for either the motor controller or receiver, so there is no need to remove this cover.

MT-74 Power Switch:

The power switch is a sealed toggle switch (DPDT ON-ON). To replace the switch in the event it becomes damaged:

1. Disconnect the batteries.
2. Remove the 4 screws on the switch plate; pull the switch assembly out.
3. Note the position of the wires. The center terminal has the white and yellow wires on it. The OFF position of the plate should have the red wire. The ON side of plate should have the 2 black wires on it.
4. Remove the damaged switch. Replace the new switch into the plate.
5. Re-install the plate to the chassis using the 4 screws.



MT-74 Tires:

The MT-74 tires have tubes in them. If for some reason you get a flat, it is easy to replace the tube.

1. Let all the air from the tire.
2. Remove the 4 large Phillips head bolts from the wheel.
3. Split the rim. It is two pieces and should easily come apart.
4. Pull the old tube out.
5. Insert the new tube.
6. Thread the valve stem through the hole in the outer rim.
7. Assemble the inner rim and secure to the hub using the 4 bolts removed in step 2.
8. Inflate the new tube to about 15 psi. Do not over inflate, as the unit will bounce unnecessarily. If the tires are under-inflated, the tires will spin on the rims and could damage the tubes.

Wheel hubs are glued to the motor shafts using an industrial retaining compound. Do not attempt to remove them as you may damage the hub or motor unit.



MT-74 Spec Sheet

MT-74

Weight (w/ 2 batt. Packs)	120#
Foot Print	31"x26"x10" (LxWxH) w/ bumpers
Carry capacity:	150#
Radio:	2.4 GHz Spread Spectrum Futaba Style
Maximum Effective Range:	Up to 1000 meters line of sight
Run Time	3 hours/2 battery packs (50% duty Cycle)
Tire Size	10"x3.5" Pneumatic
Motor	4 – 24V 120W 270rpm IP44 Direct Drive Motors
Speed (forward/reverse)	0 to 11.75 feet/second variable speed
Color	Desert Tan

Optional Mounts

Dual Stake Pockets
PT-61 A or B Pop up Targets
PT-51 Dummy Dumper Reactive Target
Mannequin Mike 3DHT
Army E, F, IVAN 2D Silhouettes
Surveillance cameras
IED search and destroy missions
Portable lighting systems
Mobile phones (for hostage negotiations)
Fire-back Systems
Pyro systems

CAUTION: Be sure to read, follow and understand the following instructions.

Failure to follow this instruction manual may result in serious bodily harm to yourself or others.

Do Not Ride This Device. The MT-74 Platform is not designed to carry passengers.

This device is a radio controlled, wireless device operating in the 2.4 GHz unlicensed frequency band. It is possible that interference from an outside source could cause unwanted movements of the unit. Ensure all users and bystanders are alert and clear of the unit.

This unit is not 100% waterproof. Driving this unit through puddles, lakes, streams, rivers, snow, ice, sleet or rain could damage the unit.

The MT-74 platform moves fast and is heavy. Slamming the bumpers into people or stationary objects can cause substantial damage to the unit, the object, or bodily harm to the person. Avoid this at all times.

This unit is not a tow truck or plow. Using this unit to pull or push heavy unapproved objects is not recommended. It could cause severe damage to the unit.

Continuing to apply power to the unit when stuck (when at least one wheel on each side is not turning) will likely damage the electronics. This stall condition will cause the motors and motor controller to overheat and could cause permanent damage.

Turn the power OFF when not in use.

Do not drive the unit off jumps and ramps. Do not drop the unit. Do not jump onto the MT-74. Any of these actions could cause the chassis to bend or may cause damage to the motors and motor shafts.