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PT-68 TARGET SYSTEM OPERATIONS MANUAL

NOTE: Before operating or servicing the PT-68 target system, please read the following instructions completely. If you need assistance, please contact us at 651-429-8091 or info@atstargets.com

PT-68 QUICK START GUIDE

Unpacking

Unpacking the Unit: Verify that all the parts are included with the target unit. Each box should include the following items: Target Unit, Spare Parts Kit, Antenna, and Manual.

Operating Modes

Sniper

Selected by toggle switch. Operator lifts steel sniper target and retracts leaving the target standing. Rifle fire knocks target down. A transmitter is required to use this mode.

Lifter

Selected by toggle switch. Operator lifts and lowers target on command.

If used with hit sensor, target goes down when hit 1 to 20 times (user selectable). A transmitter is required to use this mode.

Auto

Selected by toggle switch. Operator lifts steel sniper target and retracts leaving the target standing. Rifle fire knocks target down and after a brief delay the target is lifted for the next shot. A wireless transmitter is not needed for this mode of operation. Without a transmitter you will not need to assign a target number.

Assigning Target Number

Before the target can be used a target number must be assigned. The factory default for the target number is zero, which means the target number is unassigned. Before you assign a target number the target will only respond to ALL when using the transmitter. Each target must have a unique target number. If duplicate target numbers exist, one or both targets with the same number may fail to operate correctly. Target numbers can range from 1 to 200. We highly recommend stating with 1 and using sequential numbers up to the number of target units you have. This will speed up retrieving hit scores

Put an antenna on the target and the transmitter. Install a 9 volt alkaline battery in the transmitter. It should display "TARGET _ RUN" on the bottom line of the display. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. With the power switch on the target in the **OFF** position press the **LEARN** key on the transmitter. The display will indicate that it is ready to learn the target. Turn the target power switch **ON** and the transmitter will detect the target's serial number and target number. Press enter to continue. It takes several seconds to download the information from the target. When it is finished a menu will appear. Press the up arrow to select "TARGET CONTROL" and press **ENTER**. On this menu select "TARGET #" and use the number keys to enter the desired target number and press enter. The target number will be changed in the target unit and the information from the target will be downloaded to verify the change. Press **EXIT** as many times as it takes to get to the "TARGET_RUN" display. The target number will remain stored in the unit. Turning the power switch off or even removing the battery will not erase it. You may want to mark the assigned target number on top of the gray control box with a waterproof marker.

Test the target operation

Put the mode switch in the Mike position. The transmitter display should show "TARGET _ RUN" on the bottom line. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. **Check to see that all personnel and obstructions are clear of the target unit.** To operate the target enter the target number you assigned into the transmitter and press **FOE**. The target arm should move to the up position. Press **DOWN** and it should move to the down position. **Turn target power switch off before continuing.**

Mount Target Holder and Target

Use the instructions with the target holder for mounting.

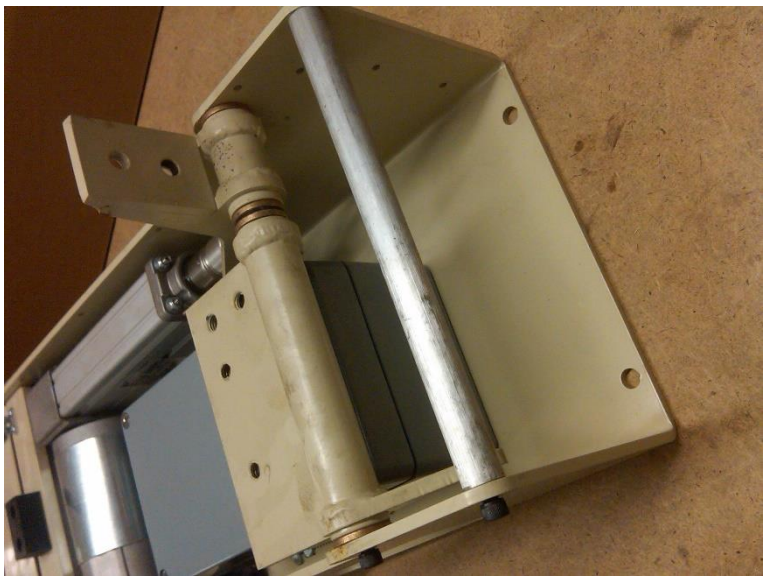
Mount Hit Sensor for Mike Lifter

Remove the backing from the hit sensor exposing the adhesive and stick it to the target as shown. We recommend using duct tape to support the wires. This will prevent the sensor from flexing and increase its life. Connect the cable from the hit sensor to the extension cable and the other end of the extension cable to the control box. Route the cable as shown. Use duct tape to support the cable as needed.

In the above picture the top port is the RS-485 Data and charging port. The bottom port is where the hit sensor plugs into.

The RS-485 port is not available on all units. When available this port can be used to program the settings into the unit, change the HP channel of the radio, or charge the on-board battery.

These units are supplied with radios and higher power lifting actuators for use with a mannequin and a pole. The lifting arm is adjusted for 90 degrees of motion. The actuators are factory adjusted for the sniper plate and auto-reset mode as best as they can be and still accommodate the mannequin on a pole. This adjustment however, is different than a standard auto reset lifter. The up and down angles can be adjusted to allow for further retraction and pushing of the plate. A standard auto reset unit will add 5 degrees to the retraction and push strokes. In addition, the pushing bolt is adjusted out to remain in contact with the plate as it contacts the up stop. Do not adjust the pushing bolt out further without adjusting the retraction of the push arm. Extending the bolt will cause the plate to impact it when falling and this may cause damage to the lifting mechanism. You can adjust the actuator by removing the front cover. Remove the 8 sheet metal screws and remove the front cover. It may be necessary to loosen the cap screws slightly on one side to allow the chassis to open further.



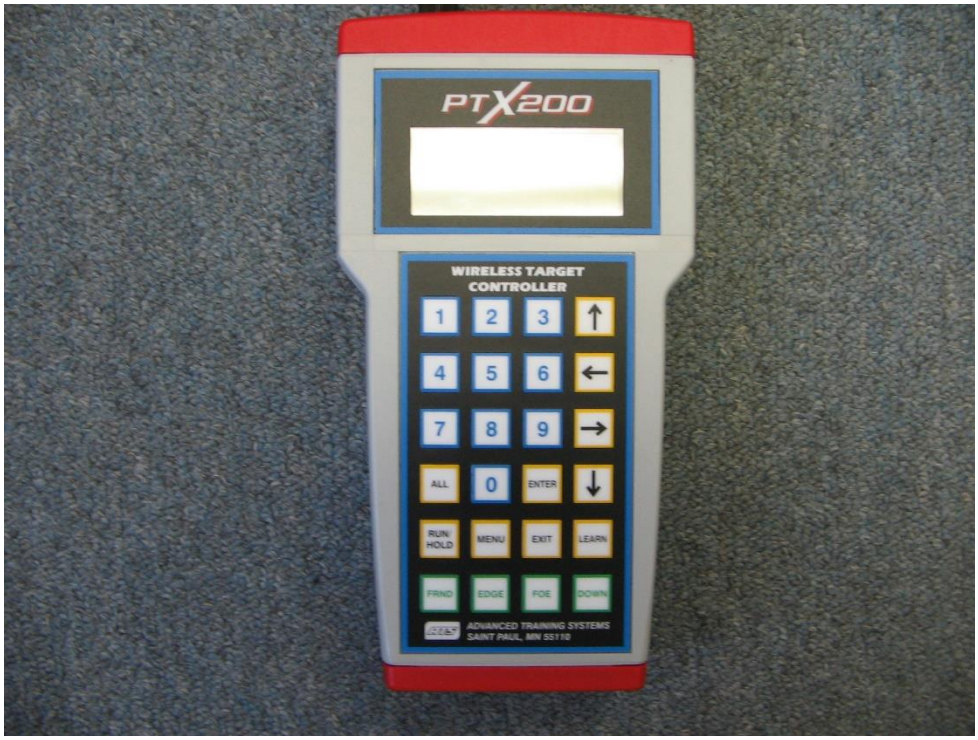
To adjust the retraction and extension you can turn the red and white screws on the end of the actuator. The Red screw adjusts the down position of the pushing arm. Turn the screw clockwise to make it arm retract further. The White screw adjusts the up position of the pushing arm, turn the screw counterclockwise to make the arm push further past 90 degrees. There are about +/- 10 turns of adjustment for each screw.

PTX-200 TRANSMITTER

General Information

The transmitter operates at 902-928 MHz spread spectrum frequency hopping. The RF output power is 4 mW. The operating range is up to150 meters when the target is in line of sight. For indoor and urban training operations the range may be reduced depending on the type of obstructions encountered.

A standard 9-volt alkaline battery provides power. When the unit is off (the display is blank) it draws about 20 micro amps from the battery. If the transmitter will not be used for a month or more remove the battery. The battery life will depend on how the transmitter is used. If you send one command to the targets every 30 seconds you will get at least 40 hours of operating time from the battery. Under normal operating conditions, typical meantime between battery failure is about 3-4 weeks.



Please refer to the above illustration when reading the following operating instructions.

Turning the Transmitter On or Off

When the display is blank, pressing any key will turn the unit on. There is no need to be concerned about which key to press because the key that turns it on will be ignored. There is no way to manually turn the unit off. It turns itself off after about 100 seconds without pressing a button. When it has turned itself off, it will turn on in the same state as when it turned off.

The Menu System

To enter the menu system the display should read "TARGET _ RUN" on the bottom line. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. Press **MENU** and the opening menu will be displayed. There will be an arrow to the left of one line. That arrow can be moved to other lines by using the up or down arrow keys. When the arrow points to the desired selection, pressing **ENTER** will take you to that item. If you are setting up a target unit and the arrow is pointing to a line with an item you wish to change, pressing the **LEFT ARROW** key will decrement that item and pressing the **RIGHT ARROW** key will increment that item. Once the item you are changing is set as desired, pressing **ENTER** will execute the change. The **EXIT** key backs up to the previous display.

Number Entry

Target numbers and serial numbers are entered with the number keys on the keypad. Most other numbers are changed using the left or right arrow keys. When entering target numbers or serial numbers there is no need to enter the leading zeros. When target numbers or serial numbers are displayed, the leading zeros are not displayed.

If you make an error in entering a target number or serial number, correct it by typing over it. For example, if you intend to enter target number 2 but you press 5 instead, type 002 to correct it.

TARGET CONTROL

9 Button Mode

If you have 9 or fewer target units, you may want to use the 9 button mode to control the targets. You can select this mode from the opening menu. When in this mode, pressing buttons **1-9** will cause the target with that target number to change state. If the target is up, it will go down and if the target is down it will go up.

Run Mode

In run mode the display should read "TARGET _ RUN" on the bottom line. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. To operate a specific target, enter that target number or press **ALL** if you want all targets to respond, then with the green buttons at the bottom of the keypad choose the desired face. If you do not have a twister (or bi-directional) target arm, the **FRND (Friend); EDGE** or **FOE** function keys will bring the target up and the **DOWN** function key will bring the target down.

To use target groups, (You must assign targets to groups to use this feature. See "Groups", under "Target Set Up" on page 11.), press the **RIGHT** or **LEFT ARROW** key and the word **"TARGET"** will be replaced by **"GROUP"**. Enter the group number with the number key, then choose the face. All targets with that group number will respond to the command.

Hold Mode (Programs)

When you are in run mode, pressing the **RUN/HOLD** key will put the transmitter in hold mode. Notice the * in the left column and the "RUN" is replaced with "HOLD" to indicate hold mode. Hold mode is different from run mode in that the commands do not go to the target as they are entered. The commands are stored in memory and sent when the **RUN/HOLD** key is pressed again. This allows you to enter simple programs from the keypad. For programs of more than 125 commands you must create them on a computer using special software and download them to the transmitter. You can enter target and group commands as in run mode and there are two additional commands, "PAUSE" and "DELAY". Use the left and right arrows to display these commands. Pause stops commands from being sent to the target until you press enter. Press **ENTER** when "PAUSE" is displayed to store a pause command. Delay allows you to stop commands from being sent to the target for a fixed length of time. When "DELAY" is displayed, enter 1-240 seconds and press **ENTER**. A program cannot begin with a PAUSE or DELAY, only with TARGET or GROUP.

Saving Programs

Programs are created in hold mode as described above. You may run the program before saving it or save it as soon as you enter it. The **EXIT** key will delete the commands to allow you to create a new program. When the commands are displayed press **MENU** and select "PROGRAMS" and "SAVE". You can save up to 125 commands in each program and 10 programs can be saved. The programs are saved in nonvolatile memory so they will remain saved even when the battery is replaced. There are menu selections for recalling and deleting programs. You can overwrite an old program without deleting it first. When a program is recalled pressing **RUN/HOLD** will execute it.

Editing Programs

Only programs created from the keypad can be edited. Computer generated programs must be edited with a computer. To begin editing you first need to have a program on the display. To display a program, either enter one as in **Hold Mode** above or RECALL a program. The program you are editing must have been originally created from the keypad.

Once the program is displayed, pressing the up arrow gets you into edit mode. The bottom line of the display will show "_<--DEL INS-->". The up and down arrows will move the pointer in the far left column up and down to select the line you desire. Delete and Insert are the only actions you can take. The left arrow deletes the selected line and the right arrow inserts a line above (earlier in time) the selected line. Pressing the right arrow inserts a blank line. You must enter a new command as in **Hold Mode** above.

Computer Generated Programs

Programs with up to 10,000 commands can be created with optional Universal Target Controller software and an optional Programming Cable (part number 8000-0646). The transmitter must be prepared to receive data from the computer. The following menu entries prepare the transmitter:

MENU>PC COMM/SCORES>PC CONNECTION

The display will prompt you to press enter when ready, you may do so either before or after the cable is connected to the computer. The display should read:

SERIAL
COMMUNICATION

EXIT CANCELS

Do not leave it in this mode for long periods of time because it does draw power from the battery. Press **EXIT** as many times as it takes to get the display to read "TARGET _ RUN" on the bottom line to increase battery life.

TARGET SETUP

General Information

The target unit can be customized for your application by changing parameters in the target unit. There is a list near the end of this manual that shows the parameters that you can change. The parameters are stored in nonvolatile memory so they will remain the way you set them even if the battery must be replaced. Changes can be made using the transmitter.

Contacting the Target

There are 3 ways to contact the target: Learn mode, by serial number or by target number.

Learn Mode

The display should read "TARGET _ RUN" on the bottom line. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. You must be within reach of the target unit. Turn off the target's power switch. On the transmitter press **LEARN,** the display will then indicate that it is in learn mode. Because the radio receiver must remain on when in this mode, the transmitter will automatically exit the learn mode in about 30 seconds to conserve power. Turn on the target's power switch. When the target is turned on it will transmit its serial number and target number. The numbers will be displayed on the transmitter's display. Press **ENTER** and after several seconds the target's parameters will be downloaded and a menu will appear. The target has now been contacted.

By Serial Number

The display should read "TARGET _ RUN" on the bottom line. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. Press **MENU** select "SETUP TARGET" then select "SETUP BY SER#". Using the number keys enter the serial number of the target you want to contact. There is no need to enter the leading zeros and if you do they will not be displayed. Press **ENTER** and the serial number and target number will be displayed. Press **ENTER** and after several seconds the target's parameters will be downloaded and a menu will appear. The target has now been contacted.

By Target Number

The display should read “TARGET _ RUN” on the bottom line. If there is something else displayed, press **EXIT** as many times as it takes to get to that message. Press **MENU** select “SETUP TARGET” then select “SETUP BY TRG#”. Using the number keys enter the target number of the target you want to contact. There is no need to enter the leading zeros and if you do they will not be displayed. Press **ENTER** and the serial number and target number will be displayed. Press **ENTER** and after several seconds the target’s parameters will be downloaded and a menu will appear. The target has now been contacted.

Once the target has been contacted the menus will be available to change the desired parameters.

Utility Menu

LOAD DEFAULTS

Pressing **ENTER** when this line is selected will restore all of the target parameters to factory defaults. Be sure to reassign a target number to the unit after executing this command.

TARGET VER

This is for information only. It displays the target’s firmware version.

TRGT BATT

This is for information only. It displays the target’s battery voltage.

Groups

Every target can be a member of up to 4 different groups. When you are in the “ASSIGN GROUPS” menu there are 4 places to assign group numbers to the target. They are Groups A-D. They all do the same thing. They cause this target to respond to a group command. For example: Say you have 10 targets arranged in 2 rows with 5 targets in each row. You could assign all 5 targets in row 1 to respond to group 1 and all 5 targets in row 2 to respond to group 2. When a group 1 command is sent all the targets in row one will respond and when a group 2 command is sent all the targets in row 2 will respond. That way you can quickly control all 5 targets in row with one transmitter command. You can still control the targets individually by their target number. To setup this scenario just set GROUP A to 1 in the 5 targets in row 1 and set GROUP A to 2 in all the targets in row 2.

Leave all the GROUP B-Ds set to zero. If you want a target to respond to more than one group number put that group number in GROUP B and the target will respond to either of the 2 groups commands.

TARGET BATTERY

The battery is a supplied 12 volt lead acid type. A 12 volt car battery will operate the target. Small batteries work well. Use a larger battery if you want longer run times.

You can measure the battery voltage with the transmitter. Contact the target and go to the "UTILITY MENU". The battery voltage will be displayed. If it is below 11.5 volts it should be recharged.

HIT SENSING

General Information

Hit sensing is accomplished using a thin film vibration sensor. It produces a voltage when a bullet passes through the target. The voltage is conditioned by the target unit so a single hit can be scored when a bullet hits the target. Other events can also be detected as a hit. A quick tap with your finger may be counted or the target unit moving and hitting a hard surface as the target moves up and down. To keep the hit sensing accurate, be sure the target unit is firmly mounted. Bullets fired into the target while it is on its way up will not be detected. Bullets can be detected at a rate of at least 5 rounds per second.

The target is shipped with Hit Style off. To activate hit sensing, use the transmitter and contact the target unit. Select "HIT SETTINGS" and press enter. Use the left and right arrows to choose "DIE" mode and press enter. "HIT SENSE" and "HIT COUNT" may be changed if desired. "BOB" mode is not supported with the PT-68.

BOB Mode

May not function as expected, do not use BOB mode

DIE Mode

When the target is up (FRND, EDGE, FOE) hits will be detected until the “HIT COUNT” number is reached then the target will go down and stay down until the target is commanded to go up by the transmitter.

Hit Sensitivity

Hit sensitivity or “HIT SENSE” determines how hard the target must be hit to detect a hit. The range of this number is 1-20. The lower the number the more sensitive it will be. The factory default is 3, which will work for most weapons.

Hit Count

Hit count can be set from 1 to 20 hits. This is the number of hits required to cause a BOB or a DIE to occur. Each time the target is cycled down and back up the count in the unit is cleared to zero, that way each time the target is presented to the shooter it will take the same number of hits. Do not confuse the hit count with the hit score.

Hit Score

The hit score is accumulated in the target unit until the unit is turned off or cleared by a command from the transmitter. The maximum number of hits that can be stored is 225. If more hits are detected when it is already at the maximum, it will stay at the maximum. Hit scores can be retrieved, viewed and cleared with the transmitter. From the opening menu choose “HIT SCORES” and “RETRIEVE SCORES”. Once you have made the selection to retrieve scores, the transmitter will query all target numbers starting with 1 and continuing to 200. This process takes about 30 seconds to complete. The display will show you how many targets have been found. When it has queried all your targets you may terminate the search by pressing **EXIT** or you may let it finish on its own. Either way it will display a list of the targets along with their scores. You can scroll up and down the list with the up and down arrow keys. Press exit to leave this display and you will be given a chance to clear the scores in all the targets or to just leave the display without clearing. Either way, the scores you retrieved will remain in the transmitter for viewing until you retrieve the scores again or remove the transmitter’s battery.

TARGET HOLDERS

The target unit is designed to lift a maximum of 50 pounds at 1 foot from the pivot point. If the actuator is overloaded it will blow the fuse while it tries to move the load. If you continue to operate the unit with an overload it may damage the actuator or circuit

boards. The available Mike holder with the mannequin and the steel sniper target both can be used with this unit.

APPENDIX

Example Target Setup

Turn on Hit Sensing in DIE Mode

Be sure the unit you are changing is on.
A. Press MENU
B. Select SETUP TARGET and press ENTER
C. Select SETUP BY TRG# and press ENTER
D. Use the number keys and enter the target number to change and press ENTER
E. Once contact is made press ENTER
F. Select HIT SETTINGS and press ENTER
G. With HIT MODE selected press the right arrow until DIE is displayed and press enter
H. Choose the desired number of hits by selecting HIT CNT and using the right or left arrow to increase or decrease the HIT CNT number
I. Exit from the menu system and you can use the target with hit sensing

Restore Factory Default Settings

Be sure the unit you are changing is on.
A. Follow steps A-E above to contact the target
B. Select UTILITY MENU and press ENTER
C. Select LOAD DEFAULTS and press ENTER
D. The target number will now be unassigned. It must be set to use the target.
E. Press EXIT and the opening Target setup menu will appear.
F. Select TARGET CONTROL and press ENTER
G. Select TARGET NUMBER and use the number keys to select a target number and press ENTER
H. Press EXIT enough times to return to the “TARGET _ RUN” line and the target can be controlled by the target number you just entered

See the body of the manual for more details on these and other target settings.

Factory Defaults and Option Ranges

OPTION	FACTORY DEFAULT	RANGE
Hit Count Sensitivity	3	1 lowest – 20 Highest
Hit Style	0FF	Off, Bob, Die
Hits to Die	1	1-20
Hit Position	NORMAL	Normal, Reverse, Non-Edge
Die face	DOWN	Down, Edge, Foe, Friend
Target Number	0	0 = Unassigned 1 - 200
Target Speed	HIGH	Low, High
Data Port	NONE	None, PortA, PortB, Both
Group Member A,	0	0 = No Group 1-30
Group Member B,	0	0 = No Group 1-30
Group Member C,	0	0 = No Group 1-30
Group Member D,	0	0 = No Group 1-30

Glossary

9-BUTTON	Transmitter mode for one touch control of 9 or less targets, targets with numbers 1-9 will toggle position when buttons 1-9 are pressed on the transmitter.
ALL	Any target that is turned on will respond to the ALL command regardless of TARGET NUMBER. The ALL command is only valid for movement commands.
BOB	BOB will force the target to the DIE FACE and will immediately return to the current face.
BULLET DEFLECTOR	Steel Barrier that mounts in front of the base unit and will deflect LOW VELOCITY ammunition.
CHARGE PORT	Labeled PORTA and PORTB, a charger can be connected to either port with the target ON or OFF.

DATA PORT Labeled PORTA and PORTB, setting one or both of the data ports will disable status sends to the port, This is only used if a pendant or I/O control box is connected

PAUSE A program command used to stop the program execution for a fixed length of time.

DIE After the correct number of hits is detected the target moves to the DIE FACE and remains there until the transmitter moves the target

DIE FACE The face the target will DIE or BOB to when the correct number of hits has been detected by the hit sensor.

DOWN Commands the unit to move the target to a down position

EDGE Commands the unit to present the shooter with the edge of the target

FOE Commands the unit to present the shooter with an opposition face

FRIEND Commands the unit to present the shooter with a friendly face

GROUP A group is a set of targets with a common GROUP NUMBER, a group can contain any number of targets. A target can be a member of up to 4 different groups. Group numbers range from 1 to 30. The group number is stored in the target not the transmitter.

HIT SCORES Reset upon base unit power up. This is the number of valid hits a target has received regardless of the HITS TO DIE setting. The base unit will count each valid hit up to a maximum count of 225 hits. After reading the hits with the transmitter they can be cleared or left unchanged. The scores can be viewed at any time using the VIEW SCORES menu option.

HIT SENSAVITITY Setting will determine how hard of an impact is required to trigger the hit sensor. Higher numbers require a harder impact to trigger sensor.

HITS TO DIE Number of hits to trigger a DIE or BOB action

HIT POSITION NORMAL—Target up hit sensor active; Friend, Edge, Foe will Bring target up. Down brings target down. REVERSE— All functions are reversed; Friend, Edge, Foe are active when the arm is in the nest, Hit sensor also active when arm in nest. Down will bring target up. NON-EDGE is reverse operation but edge will not be a valid option.

HIT SENSOR Thin film with an adhesive back and 2 wires. Can be connected to the terminal block on the TARGET ARM using a screwdriver. The sensor is not polarized so either wire can be connected to either terminal.

HIT STYLE The target will ignore the hit sensor when off. After the correct number of hits are detected the target will either DIE or BOB. DIE will change the target to the DIE FACE and remain there until the transmitter moves the target. BOB will force the target to the DIE FACE and will immediately return to the current face.

LEARN — Transmitter button to retrieve the SERIAL NUMBER and TARGET NUMBER of a unit. With the base unit off, pressing learn will put the transmitter into a special mode. Turning the base unit on will allow the transmitter to get the data from the base unit and display it on the screen. Programming may begin once the SERIAL and TARGET numbers have been LEARENED.

LOAD DEFAULTS — Restore factory settings to the target

LOW VELOCITY — Ammunition that travels at less than 1300 fps examples would be 22LR, 9MM, 40S+W, 45ACP.

PAUSE — A program command used to stop the program execution until the operator wants it restarted.

RUN/HOLD — Transmitter button to enable programming on the fly. Run mode, commands will be sent from transmitter immediately, Hold mode stores commands until RUN/HOLD is pressed then it starts sending the commands entered.

SERIAL NUMBER — A unique number for each base unit, this number can not be changed. Leading zeros should be ignored when entering a serial number

TARGET ARM — Steel tubing that connects to the output shaft of the unit. The TARGET HOLDER bolts to the target arm. Be sure to install the TARGET HOLDER correctly or damage to the unit may be caused

TRGT BATT — Battery Voltage of the target unit.

TARGET HOLDER — Bracket that bolts to the target arm. An “Army E” target will connect to the curved part of the target holder using 3 bolts and washers. Be sure the target is captured between the washer and curved bracket.

TARGET NUMBER — A unique number for each target that is user defined. This number allows independent control of each unit from the transmitter. A target number of 0 means no TARGET NUMBER has been assigned. ALL will still control the target. Each target should contain a unique TARGET NUMBER, if duplicate target numbers exist one or both targets may fail to operate correctly. Target numbers range in value from 1 to 200.

TARGET SPEED — The speed at which the target raises and lowers. High is 100% speed, Low is 75% speed. Only 2 choices exist for target speed

TARGET VERSION — The version of software installed in the control board of the unit.

TWISTER — An optional arm that attaches to the target unit. This arm will rotate 180 degrees and presents the shooter with 3 face options FRIEND, EDGE, FOE.