

# **PORTATREE PROFESSIONAL TRACK SYSTEMS**

## **INSTALLATION PROCEDURE FOR 300 FT SAND DRAG TRACKS**

1. Unpack all of the equipment and immediately inspect for shipping damage. Damages should be immediately reported to the carrier and noted on the carriers receipt. Hidden damage should be documented and shown to the carrier's representative. Portatree is not responsible for damage by shipping carriers and we cannot make claims from our end. Check the contents and match up to the invoice and packing list.
2. The first track function is to layout the track. The starting line should be selected and temporarily marked. The starting line will consist of a pre-stage, stage, and guard beam detector in each lane. The pre-stage (you may not have a detector, but your cable has a cable end for pre-stage) is 7 inches before the stage beam and the guard beam is located 15 inches in front of the stage beam line (some sand drag tracks have the guard beam up to 18 inches in front of the Stage Beam). The guard beam location is the starting line and all down track detector locations should be measured from the guard beam line. **NOTE: If you are not using your pre-stage and intend to leave the cable outside, Please keep the cable end cover securely with plastic to keep water from entering the connection and shorting it out.**
3. The 60-foot mark and detector location should be measured from the guard beam mark – 60 feet – or 61 feet 3 inches from the stage beam location. After laying out a temporary line at the 60-foot location, you should square up the starting line and 60 foot location by measuring the diagonals. Even though you may not be using a 60-foot mark, it is a good idea to permanently mark the track.
4. When the starting line is permanently marked, you can then permanently mark the 60-foot location and by measuring down each side of the track with the same measuring device, mark the 234 (M.P.H.—66 foot trap) and 300-foot locations (most sand drag tracks utilize a 10 foot M.P.H. trap so you will be marking the 290 foot location). All measurements are from the guard beam imaginary location or 15 inches in front of the stage beam location. Permanently mark the track for future reference.
5. After the entire track is permanently marked, you can begin locating the detectors. You must center these units on the marked line and do the same with the reflectors. Some tracks have the detectors in the middle of the track, and some on the outside of the track. Usually if you have purchased a MPH/finish win light junction box, you are mounting your detectors on the outside of the track. In this case your reflectors will be in the middle of the track.
6. All mounting stands and brackets should be made of very rigid material so as to resist vibration and flexing. The starting line receivers will be mounted in the center of the track, back to back with plenty of adjustment for moving the detector up/down and left/right. Emitters will be mounted on the outside of the track at the starting line and should also have plenty of adjustment to align to the detector.
7. The 60 foot detectors will be mounted in the center of the track (or outside of the track if you have specified) and the reflectors will be at the edge of the track. Again you must allow for adjustment to align to each other.
8. Run a pull line tight across the track. The pull line should be 2 inches off of the track surface at the starting line, and 6 inches off at all other locations, all the way across the track surface. The center of the detection beam should be located on the center of the pull line. The reflector must also be on this centerline.

9. Perform the same beam location technique at the mph and finish line locations. After all detectors and mounts have been located, it is best to cement the bracket bases so that they do not move in the ground.
10. The wiring of the track can now begin. There is one main cable that goes to the starting line and tree. Locate the gray interface box in the tower and run the main wire out to the center of the track. All connectors are labeled and can be routed to their respective locations. The Christmas tree can be located and connected to the starting line 25 pin male connector. If you have a professional tree, the cable will run directly out to the tree. There is 40 feet of wire from the Christmas tree so that it can be moved up to forty feet in front of the starting line. It should be out at least 25 feet and many tracks are now out 40 feet.
11. Next locate the mph junction boxes if you have them. If you do not have these junction boxes, your wire will be located down the center of the track. These junction boxes should be located at the finish line on the outside of the track and have enough wire to move them off the edge of the track. We have a 12 position terminal strip inside which contains the wires for the mph and finish line detectors as well as the win light, stop light and spare wires for that lane.
12. There are two lengths of wire that will be used to reach the finish line on both sides of the track. The longer length is for the far lane and the shorter length is for the near lane to the tower. Sometimes we ship one continuous length of cable. Always start at the furthest point from the tower.

**NOTE: Item 13 is for tracks that have the wire running down the sides of their track and who are utilizing MPH/Finish junction boxes.**

13. The junction box has a wiring schematic under the cover. The wires should be bared back about  $\frac{3}{4}$  inch twisted and folded over and twisted again and then soldered. Make the solder joint small enough to get into the terminal strip and then fasten with the screw. The drain wire (bare wire) can be attached separate terminal if supplied. At the finish line, you will need a relay to power you win lights. It should not draw more than 40 milliamps at 12 volts. We recommend a solid-state relay like a Grainger part#: 5Z946 or 5Z948 rated at 10 Amps or part#: 5Z956 rated at 25 Amps, but a radio shack catalog # 275-248 relay will work for win lights and is rated at 10 amps and 125 volts ac. Use a perforated board cat# 276-1395 to mount the relay on. Run a wire out of the finish line junction box to the relay. Do not mount the relay in the junction box.
14. The other end of each of these wires is to be terminated in the tower inside of the interface box. Wiring is as follows:
  - RED AND BLUE WIRE – POSITIVE 12 VOLTS D.C.
  - BLACK AND WHITE WIRE – GROUND 12 VOLTS D.C.
  - BROWN AND GREEN WIRE – SIGNALS – TO TERMINAL STRIP
  - BROWN IS MPH – GREEN IS FINISH
  - GRAY WIRE – WIN LIGHT GROUND SIGNAL
  - PINK WIRE – POSITIVE 12 VOLTS D.C.
  - ALL SPARE WIRES TO GROUND
  - IF USING STOP LIGHTS:
  - ORANGE WIRE – STOP LIGHT GROUND SIGNAL
  - YELLOW WIRE – POSITIVE 12 VOLTS D.C.
15. The time slip printer can be located up to 1,000 feet away. We can provide a custom cable for the time slip printer.

16. Before connecting the computer, power up the interface box by connecting the red wire to positive and the brown wire to ground 12 volts D.C. An A.C. to D.C. converter can be used but it must have a minimum of 2 amps of supply current. Do not use an inexpensive supply or you may encounter start up problems with the Portatree Professional. We recommend an automotive battery with a 6 amp battery charger continually charging the system.

**NOTE:**

- 1. Do not power up the Portatree Professional computer until all tree and track connections are properly attached to the sub d connectors.**
  - 2. Do not use the small transformer to power up the Portatree Professional in conjunction with the interface box. The interface box will power up the Portatree Professional.**
17. After powering up the interface box you will have power to all of your detectors. You can align all of the detectors by sweeping left/right and up/down. The red L.E.D. will illuminate when the detector is aligned. Read the literature to efficiently align them. They may or may not require sensitivity adjustment.
  18. The computer can be connected after the detectors are all working. Disconnect the 12-volt power to the interface box and then plug the two 25 pin sub d connectors into their respective positions. Power up the interface box. Read the manual on the PORTATREE PROFESSIONAL COMPUTERS OPERATION. SET THE COMPUTER ACCORDINGLY. PLEASE WATCH THE VIDEO SUPPLIED WITH THE SYSTEM AS IT WILL ANSWER MANY OF YOUR QUESTIONS.
  19. Now the starting line can be set using the pre-stage and stage lights on the Christmas Tree. Use the Portatree video to understand how rollout is set and build a rollout wheel to set the rollout. After the rollout is set and the detectors are securely fastened. You must keep the detectors out of the direct sunlight and you must keep them out of heavy moisture condition. We suggest covering the detectors with a white PVC pipe.
  20. All detectors must have covers over them to keep them out of the weather and to keep the sun from directly contacting them. The starting line takes a lot of time to set up correctly so you may want to permanently fix them and place a rigid steel cover over them.

**PLEASE BE VERY CAREFUL DURING INSTALLATION TO AVOID LENGHTY TROUBLE SHOOTING. IF YOU HAVE ANY QUESTIONS, PLEASE CALL 508-278-2199 OR FAX 508-278-5887 OR E-MAIL [tech@portatree.com](mailto:tech@portatree.com)**

Sand Drag Tracks require the same accuracy as asphalt drags so it is very important for you to take you time setting up the system. Make sure that you fully read and understand the photo cell alignment procedures so that you will get proper and consistent results.