How to install a detection loop on a dirt track?

1 Positioning the detection loop

All wiring of the detection loop must be installed according to the drawing below in order to avoid a serious degradation in the performance of the system.
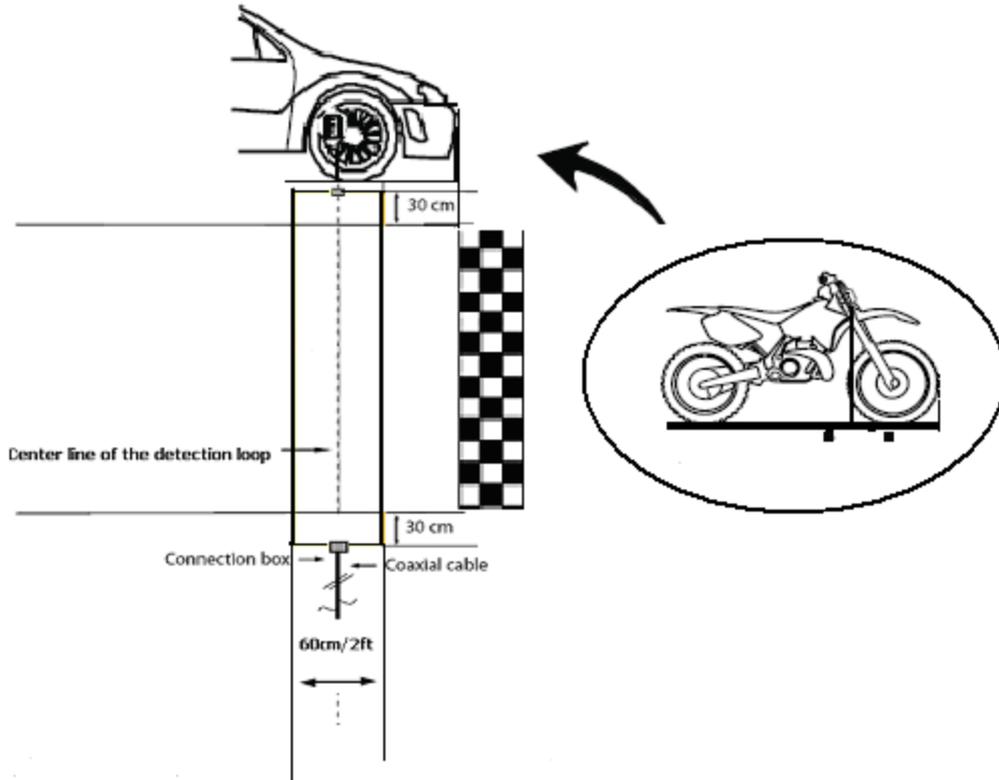
Pre-Installation considerations:

- The detection loop must be positioned in such a way that the transponder is above the center of the detection loop when the front of the vehicle crosses the finish line.
- The width of the detection loop should exceed the width of the track by 60cm/2ft (30cm/1ft on each side, see overview above).
- The detection loop can be used for a track width of a maximum 12 m (66 ft).
- The detection loop is sensitive to interference, sometimes emitted by cables. If possible, keep other cables 5 m (15 ft) away from the detection loop.
- In order to avoid false inputs, make sure vehicles on other parts of the track will not get closer than 5 m (15 ft) to the detection loop.

2 Installation of the detection loop

For dirt tracks, the detection loop is best installed in plastic conduits at a maximum of 30cm (1ft) below the surface. The maximum depth should be chosen in a way that the cars/motorcycles cannot dig out the detection loop.
However please respect the maximum distance between loop and transponder, which is 60cm (2ft) for cars and 120cm (4ft) for motorcycles.
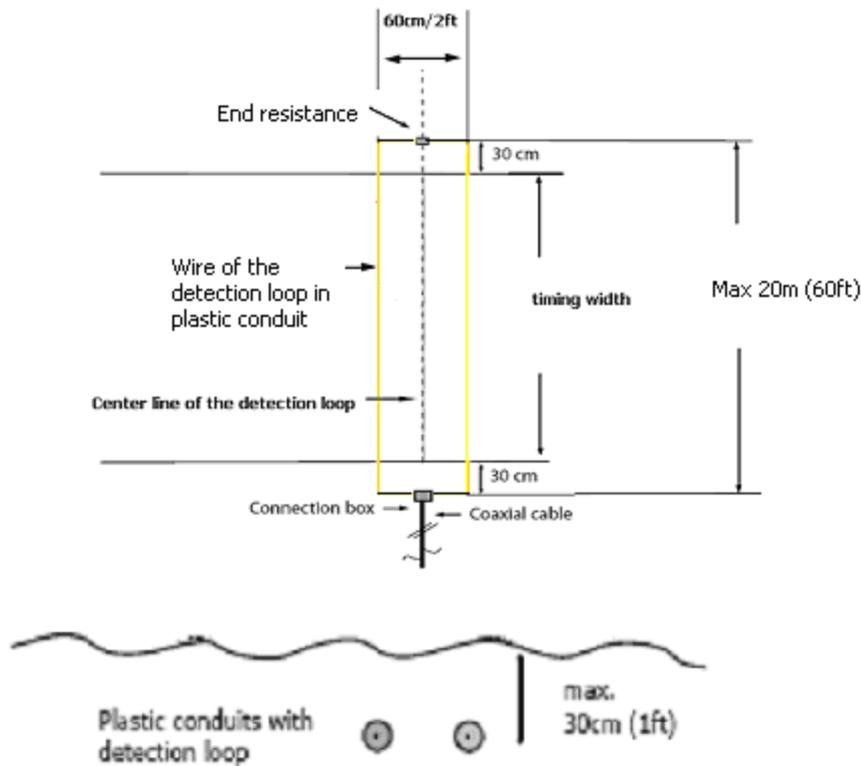
Detection loop installation overview

a) When the position of the detection loop is defined (see chapter 1), dig 2 trenches about 60 cm (2 ft) from each other. The width of the detection loop should exceed the timing width by 60cm/2ft (30cm/1ft on each side, see Detection loop installation overview above)
b) Pull the wires of the detection loop through plastic conduits and cut the excess length of the detection loop wires. When pulling the detection loop wire through the plastic conduit, it is a good idea to pull another non-metal wire through. This wire then can be used to install a new loop wire in case it gets damaged.
c) When all wires are installed, place the heat shrinkage sleeve over a detection loop wire end.
d) Solder the loop wire end to the short wire end of the connection box. When soldering the wires together, the solder should flow through the entire connection and not only around it.
e) Put the shrinkage sleeve over the soldered connection and hold it over a heat source to shrink the sleeve.
f) Repeat c, d and e for the second wire end of the detection loop.
g) Test the loop as described in section 3
h) Fill the trench with the plastic conduits with sand. Make sure that the vehicles cannot dig out the plastic conduits.

3 Testing the detection loop installation

Once the loop has been installed, it should be tested to ensure that it is functioning correctly. We also recommend repeating the same procedure at the start of each race event.

You can determine if your loop is functioning correctly by doing the following tests:

a) Connect the detection loop to the decoder and computer running MYLAPS timing software.

b) Check the background noise, updated every five seconds in the MYLAPS timing software. The measured background noise level value should be between 0 and 40 points.
A higher value may indicate interference by other electrical equipment in the area or a bad loop installation.
Try switching off any suspected equipment or removing nearby objects and check for improvements.
Especially at night, short-wave radio transmitters may cause an increased background noise.

c) On a correctly installed detection loop, a transponder signal should be picked up at the same distance along the entire detection loop. Consult the Periodic testing loop document.

d) Check the signal strengths of the transponders as they are picked up by the system during a test with karts:
   - A good loop will yield consistent transponder signal strengths of at least 100 points with a hit rate of at least 10 points.
   - The hit rate may vary depending on the speed of the transponder passings (slower passings yield higher hit counts), but the signal strength should be consistent (< 10 points variation).