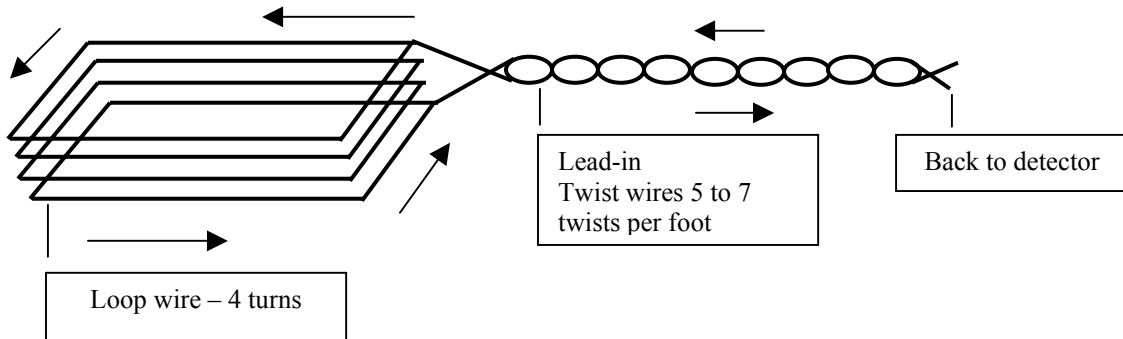


NORTHSTAR CONTROLS L.L.C.

Inductive Loop Installation Guide

An inductive loop consists of a single length of wire, usually 12 to 18 gauge, wound in a square or rectangle shape often sawcut into the pavement. Both ends of this wire are brought back to the detector and connected to the 'loop' positions as designated on the unit. With the loop properly connected to the detector and the detector unit powered up, a field will be generated around the loop. The detector unit will look for a change in frequency and inductance signaling the presence of a vehicle (metal mass) in the loop field.



The area where vehicles are to be detected determines the size of the loop. Loops can be made in many sizes and shapes depending on detection needs. Typically a square or rectangle loop is used providing maximum coverage and field height. Depending on the perimeter of the loop, a chart has been provided with recommendations on how many turns of wire will be needed.

		NUMBER OF TURNS		
		4 or 5	2 or 3	2
P E R I M E T E R	10 to 20 feet	X		
	30 to 40 feet		X	
	50 to 100 feet			X

Detection height is a major factor in reliably detecting vehicles of interest. A good rule of thumb is that the small side of the loop will determine field height and provide 1/2 to 2/3rds that distance in detection height.

Ex: 6'x4' loop (4 foot side determines height) will have a field height of 24" to 32".

Ex: 10'x6' loop (6 foot side determines height) will have a field height of 36" to 48".

For truck detection never use less than a 6' small side loop.

Ex: 6'x6', 6'x8', 6'x10' etc.

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When using a loop around a gate, remember to keep the loop at least 4' away from the gate. Detection occurs when metal is present in the field generated around the loop i.e.; vehicle chassis, metal gate, metal door.

The depth of the loop is between 1 and 2 inches. Depths over 2 inches just place the loop farther from the vehicle to be detected. The top wire should be down far enough to provide protection (1 inch) from wear and tear on the road surface. Avoid rebar if at all possible, try to stay at least 2 inches above any rebar or wire mesh.

Loop wire insulation is critical to reliable operation. Crosslinked polyethylene is strongly recommended (XLPE or XHHW). Loop wire insulation must be able to withstand abrasion from pavement shifting, moisture and oils. Stranded wire is preferred over solid core because it is less likely to become damaged due to stretching and bending.

A megohmmeter is used to test the loop for leakage to ground due to breaks in insulation. When 'megging' a loop and lead-in the insulation resistance to earth should be greater than 10MO, measured at 500 volts. With a standard Ohm meter look for a series resistance of less than 100. If no meters are available and a loop is questionable, try swapping the detector with a known working detector and note if the problem follows the loop or the detector.

Helpful Tips:

Do not use sharp objects such as a screwdriver to push loop wires into the sawcut.

Small gauge wires (16, 18) are easier to work with – but avoid very long lead-ins with smaller gauges.

Clean sawcut before placing loop wires in.

Avoid splices if possible, use one length of wire from the detector out to and around the loop then back to the detector.

Seat loop wires in sealant before filling the sawcut; encapsulate the loop wires in sealant.

Twist only the lead-in, do not twist wires around the loop.

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