
KIT INSTRUCTIONS

3M™ Parking Ultrasonic Trigger Assembly

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Ultrasonic Sensor Trigger Assembly Overview

The Ultrasonic Sensor Trigger Assembly consists of:

- An ultrasonic sensor used to detect an object in range and send a signal to another device.
- A durable, weather-resistant housing that contains the sensor.
- A stand to which the housing is connected.

The sensor can be used for a variety of applications, such as to trigger a 3M™ Parking License Plate Recognition (LPR) System camera.

Note: This document may reference legacy part numbers and product names. Please refer to the *3M Parking Price Book* for current product names or contact your customer service representative with questions.

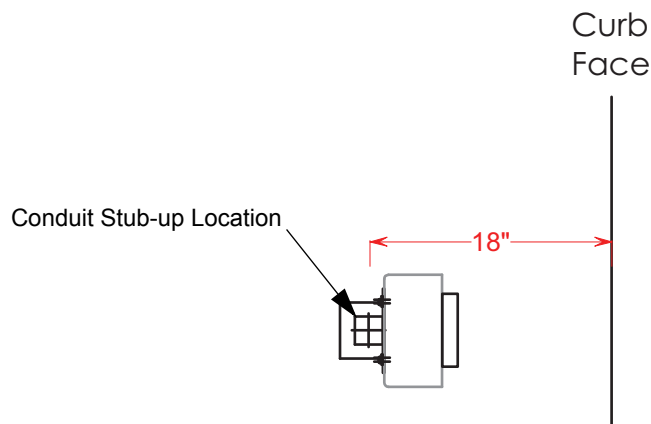
Required Tools

The tools required for installing the trigger assembly into a prepared installation site include:

- Phillips head screwdriver
- 9/16" socket wrench
- Wire cutters/strippers
- Tape or wire nuts

Preparing the Installation Site

The Ultrasonic Sensor Trigger Assembly must be installed on a flat, concrete surface that is 6" inches above the lane surface. A 2" conduit stub-up, 18" from the curb, is required to carry the power/data cable from the sensor to the applicable device.



The installation location, in relation to other lane equipment, is dependent upon the application of the trigger and the site into which the trigger is being installed. The following illustrations show the sensor position in *generic* lane layouts when the sensor is used as an LPR System camera trigger:

- Figure 1.1, on page 3, show the position of the trigger in a lane where the license plate information is captured after the patron pulls a ticket and is entering the lot (post-capture).
- Figure 1.2, on page 4, shows the position of the trigger in lane where the license plate information is captured prior to the patron pulling a ticket (pre-capture).

Note: When installing a new trigger, *always refer to the engineering drawings provided for your site*. They will give you exact dimensions for the positioning of your conduit and lane equipment, along with wiring schematics specific to the equipment that you purchased.

Figure 1.1 Generic Lane Layout for License Plate Capture After Entry (Post-Capture)

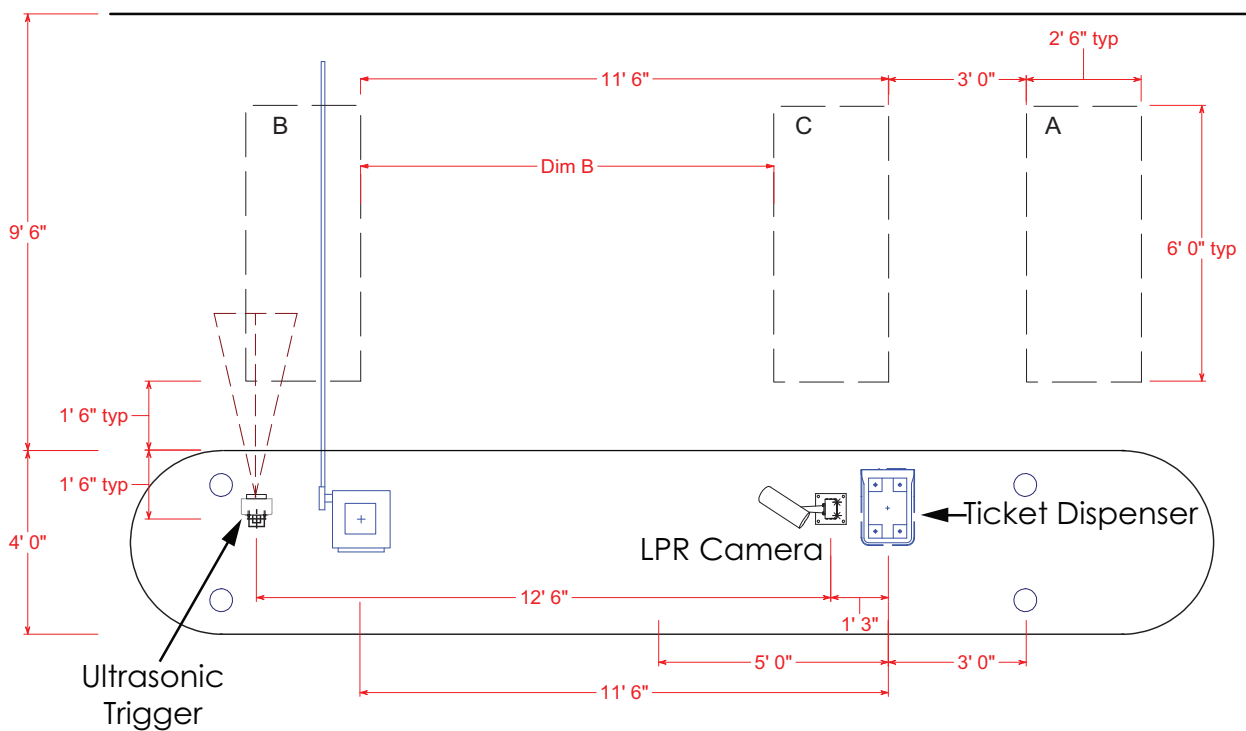
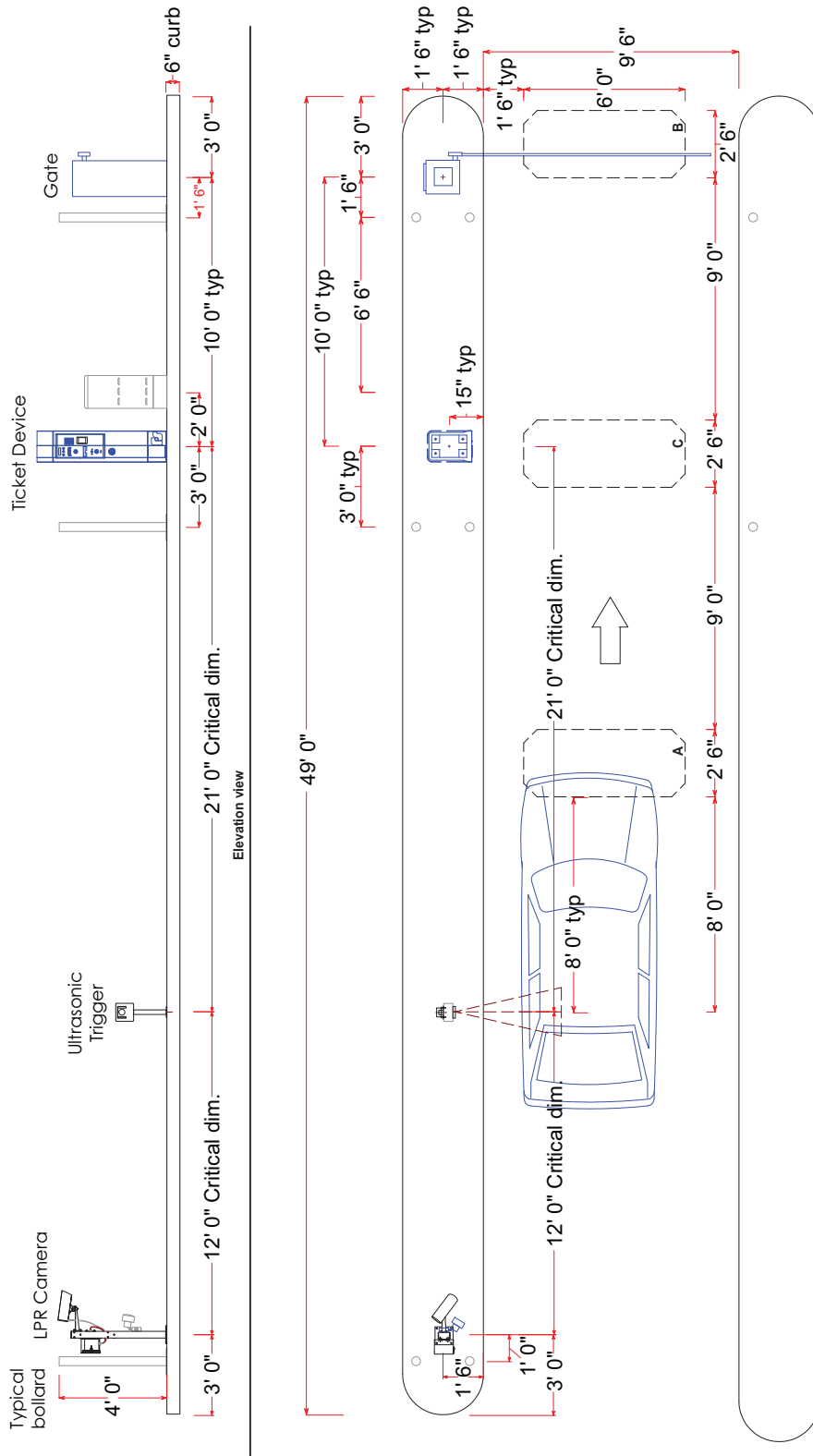


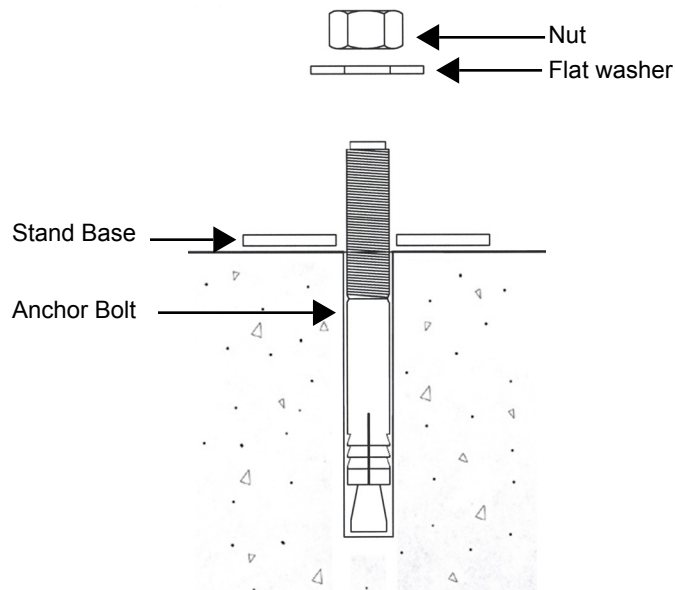
Figure 1.2 Generic Lane Layout for License Plate Capture Prior to Entry (Pre-Capture)



Installing the Stand

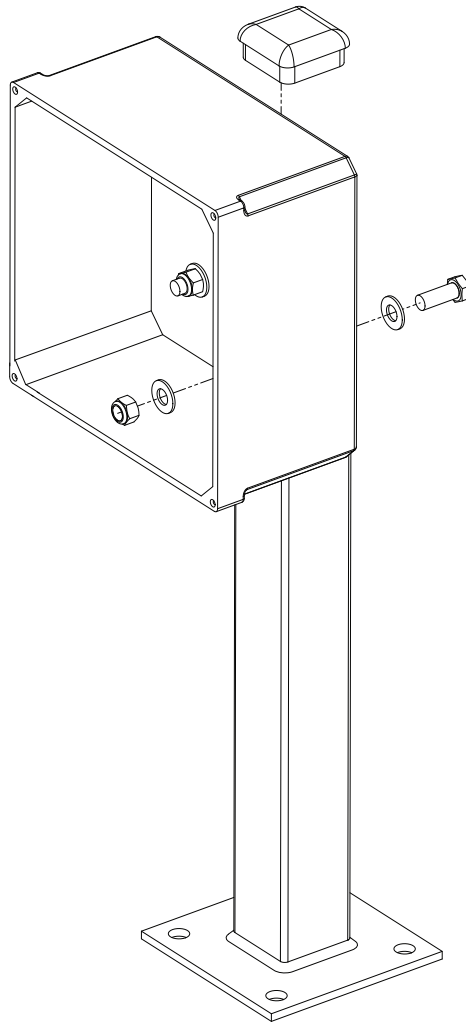
To install the trigger stand:

1. If the enclosure is connected to the stand:
 - a. Use a Phillips head screwdriver to remove the face plate.
 - b. Use a 9/16" socket wrench to remove the box from the stand.
2. Place the stand in the appropriate location based on your site's engineering drawings. Position the stand so that the hole in the base of the stand lines up with the conduit stub-up.
3. Mark the location of the mounting holes on the concrete.
4. Remove the stand and follow the manufacturer's instructions for installing the anchor bolts. The recommended bolt is **Redhead #JS-12H, 1/2" x 4 1/4" stud anchor, or equivalent**.
5. Route the incoming power/data cable(s) up through the hollow neck of the stand and through the hole in the top of the stand.
6. Attach the stand to the anchor bolts as follows:
 - a. Place the stand on the concrete, aligning the anchor bolts through the mounting holes in the base of the stand.
 - b. Secure the bolts with 1/2" flat washers and 1/2" hex nuts.



7. Connect the enclosure to the stand as follows (Figure 1.3 on page 6):
 - a. Fish the incoming cable through the hole in the back of the enclosure.
 - b. Using the 9/16" socket wrench, attach the junction box to the stand as follows:
 - 1) Feed each bolt through a 3/8" washer, then through the back of the stand into the junction box.
 - 2) Inside the box, place another 3/8" washer over each bolt and secure with a 3/8" hex nut.
8. Insert the end cap in the top of the stand (Figure 1.3 on page 6).

Figure 1.3 Connecting the Junction Box to the Stand and Inserting the End Cap



Connecting the Ultrasonic Sensor

The Ultrasonic Sensor contains a pigtail (Figure 1.4) that you connect to the applicable cable. The connections between the pigtail and cable depends upon the application. For site-specific wiring schematics, refer to your site's engineering drawings. Table 1.1 lists the wire functions. Figure 1.5, on page 8, shows the sensor wiring when using the sensor with the LPR System.

Figure 1.4 Wiring Pigtail

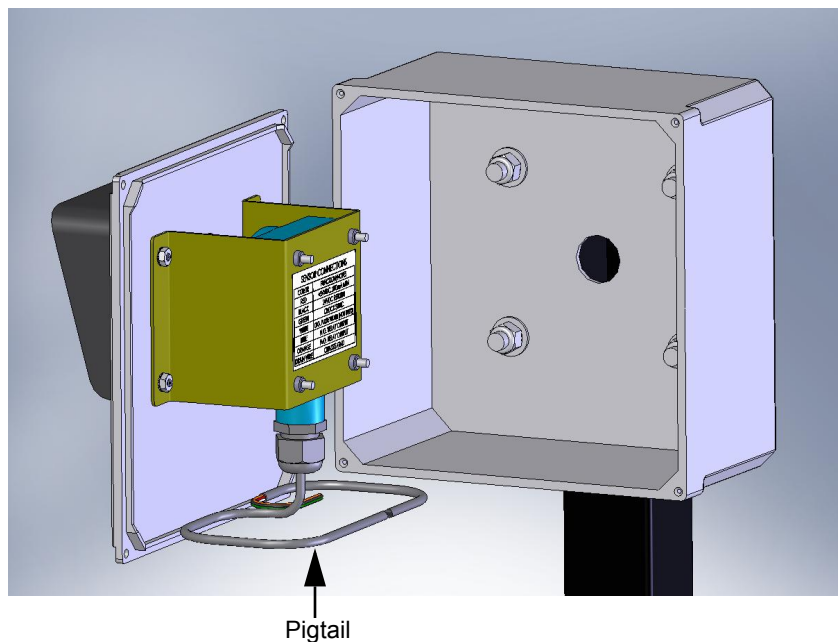
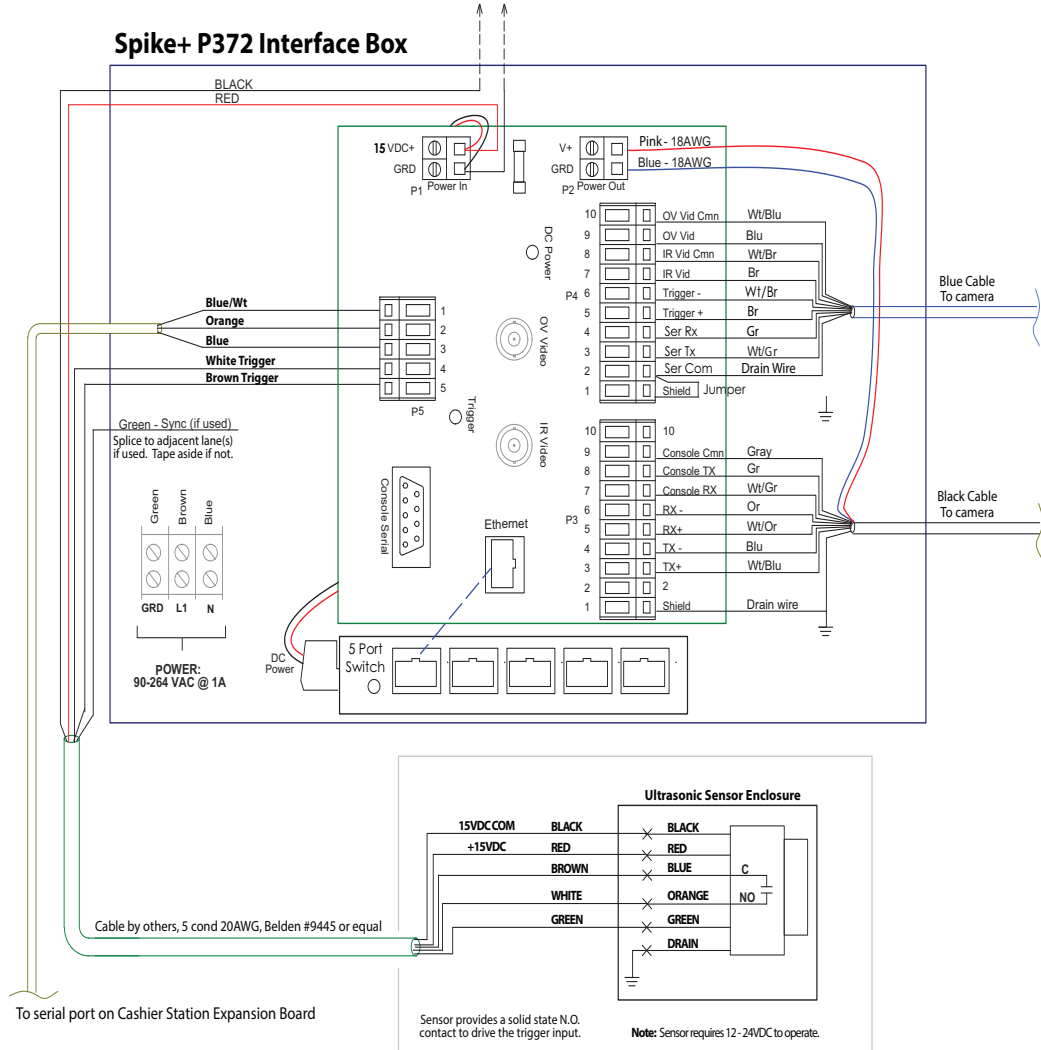


Table 1.1 Cable Connections

Wire Color	Functions	Notes
Red	+12 - 24 VDC	200 mA minimum
Black	24 VDC Return	DC Common
Green	Clock Sync	Connect green wire to green wire of adjacent lanes to prevent crosstalk.
White	Dig. Pulse Width	Not used
Blue	N.O. relay output	<120V AC/DC, 130mA maximum
Orange		
Drain wire	Ground	To chassis ground

Figure 1.5 Wiring Schematic for LPR System Camera

For manned lanes, splice sensor power to the normally open presence output of the A-loop (terminals C7 & D7 on the Barrier Gate, if available); for all other lanes, terminate to GRD terminal.



Troubleshooting

The sensor is factory-configured for license plate recognition trigger applications, set with a trigger window of 24"-48". However, if the sensor is not triggering the camera or it is triggering the camera when there is no vehicle present, try the following:

1. If there are multiple sensors installed in adjacent lanes, verify that the sensors are connected to one another via the green sync wire. This connection prevents crosstalk between sensors.
2. If all of the wiring is correct, the sensor configuration may need to be adjusted; contact your distributor to purchase the programming interface. Follow the instructions provided with the programming interface.

When activated, the sensor makes a continuous ticking noise. If cashiers or staff working in the area around the sensor find the ticking objectionable, the installer can add an optional loop to disable the sensor when there are no vehicles in the lane. Proper placement of the loop should be coordinated through 3M. In most cases, the A-loop may be available to provide this interlock function using the presence output on the C7 and D7 terminals, as shown in Figure 1.5, on page 8.

