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## THE DETECTOR TEST PANEL

The detector test panel is a very useful device for checking the operation of the traffic signal controller. Controller cabinets typically come wired with a complete set of test switches that match the maximum phase capability of the controller backpanel. For example, if the controller has a four-phase backpanel (which typically allows it to handle four vehicle phases and two pedestrian phases) then the cabinet will usually come wired with a detector test panel having four vehicle test switches and two pedestrian test switches. On the other hand, if the controller has a full eight-phase backpanel, then the cabinet will usually come wired with eight vehicle test switches and four pedestrian test switches.

It is common practice for a test switch to be provided for every potential phase, even if all of the phases are not being used at a particular intersection. For example, if an eight phase cabinet is used, yet no phase 3 or phase 7 exists at the intersection (i.e. there are no side street left turns), the detector test panel will still usually contain test switches #3 and #7. These switches will be provided even though they serve no purpose.

There are two common types of vehicle test switches, a three position "toggle" switch and a two position "button" switch. The three positions of the toggle switch are typically labeled as follows:

1. **"Normal" position** - With the switch in this position the detection system for the phase in question performs in its usual manner. The test switch should always be returned to the normal position before the technician leaves the cabinet.
2. **"Test" position** - With the switch in this position a call is placed on the phase even though vehicles may not be present in the detection zone. Many cabinet manufacturers "spring load" this switch so that the technician must apply constant pressure to the switch to maintain the actuation. Although constantly pushing down on the switch to simulate an actuation may prove a bit inconvenient, it guards against the switch being unintentionally left in a continuous call position.

When a phase is not being serviced, even though demand for the phase exists, technicians often place the switch in the "test" position to simulate actuations to the controller. If the phase is properly serviced when the switch is placed in the "test" position, this indicates that there is some problem with the detection system - such as a bad detector unit. However, if the phase is still not serviced when the switch is placed in the "test" position, then the problem is probably caused by incorrect controller settings - such as the absence of a suitable permissive period or the presence of a phase omit. Troubleshooting can be greatly facilitated by proper use of the "test" position.

3. **"Off" position** - With the switch in this position the detector for the phase is essentially disconnected from the controller. This restricts vehicle calls from reaching the controller even though there may be actual demand for the phase. When troubleshooting a signal

problem, it is sometimes handy to shut detectors off for a period of time. For example, if a side street phase is receiving service even though no vehicles are present, one can determine if the false calls are coming from the field equipment (a bad loop or detector) or from inside the controller itself (such as a recall setting being active) by simply shutting off the side street detectors via the test switches. However, one should be very careful not to inadvertently leave a test switch in the "off" position or motorists using that phase may be left stranded, being forced to dangerously "run the red".

The two position "button" test switch operates in a similar manner to the three position "toggle" switch, except that the "test" position for the button switch is activated by depressing a spring loaded button instead of a spring loaded toggle. By pressing the button and holding it down a call is placed on the phase. Taking your finger off the button returns the system to normal operation. There is no "off" position with the button switch so one cannot accidentally turn off the detection. Although this may be a nice safety feature, it restricts the types of tests that the technician can perform, and button switches are considered somewhat less powerful than toggle switches.

Pedestrian test switches also come in "toggle" and "button" varieties. With the pedestrian switch in the "normal" position the pedestrian detection system for the phase in question performs in its usual manner. However, if the button is pushed or the toggle is thrown to the "test" position then a call for pedestrian service will be placed. The pedestrian call will be "locked-in" (remembered) by the controller even if the switch is returned to the normal position.

If the cabinet has a toggle switch and the "off" position is selected, then the pedestrian phase will not be serviced unless there is some sort of internal pedestrian call active in the controller (such as a ped recall or CNA setting). Simply pushing the pedestrian button will do nothing if the pedestrian test switch is "off". Consequently, as with the vehicle test switches, the pedestrian test switches can be used to determine whether a detection problem is coming from the field (such as a shorted ped button) or is internal to the controller (such as a ped recall setting).

As the above discussion illustrates, the test panel can be a valuable ally in the troubleshooting of detection problems.