

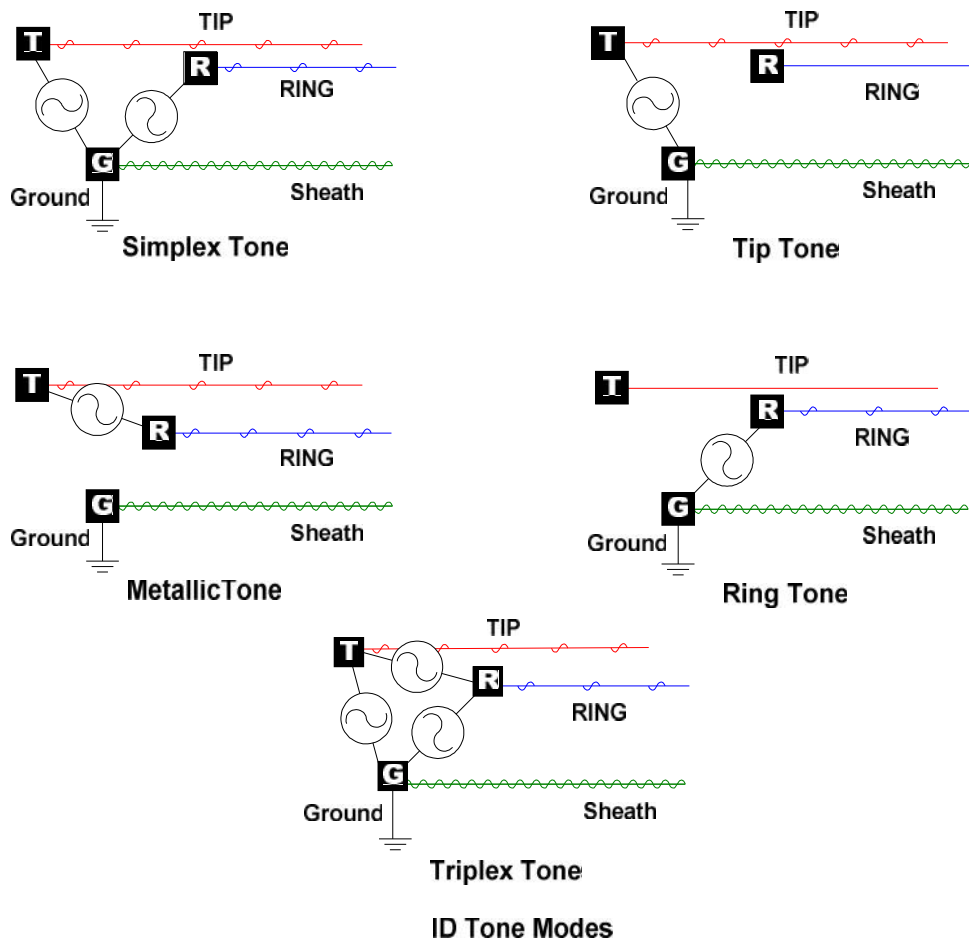
1. Cable Pair Identification

The ATV-25 provides functions to aid in the identification of cable pairs. These functions are:

Feature	Description
ID Tone	Send tone on a selected pair with short detection.
Remote Tone	Send tone from an ATV R/T on one of 100 pairs with short detection and pair test option.
Automatic Pair Identification ATV-25 to ATV-25	Pair identification using two to five ATV-25 test sets. This test compares AC and DC values to improve pair identification. The ATV-25 units communicate using a spare pair.
Automatic Pair Identification ATV-25 to ATV R/T	Pair identification using an ATV-25 test set and an ATV R/T. This test compares AC and DC values to improve pair identification. The ATV-25 and ATV R/T units communicate using a spare pair.
End-to-End Verification	Tests 25 pair to 25 pair using two ATV-25 test sets. The test verifies the Tip to Tip and Ring to Ring continuity between the local and remote ATV-25s.

1.1 ID Tone

ID tone is normally sent on cable pairs from one location to another for identification purposes. The ATV-25 can send tone in one of five modes as illustrated below.



The ATV-25 can send both 577Hz and 1004Hz tone. The following table shows the frequencies and modes available.

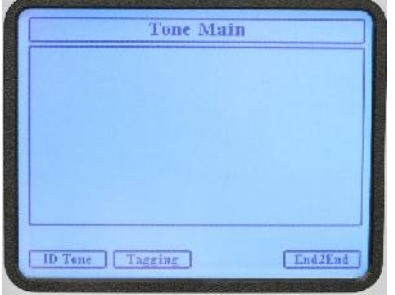
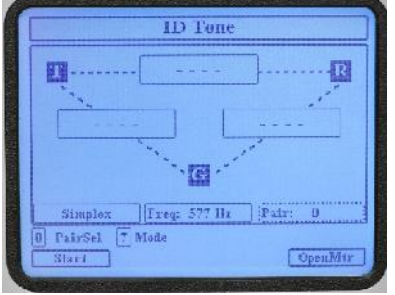
Mode	577 Hz	1004 Hz
Simplex	✓	
Metallic (TR)	✓	✓
Tip to Ground (TG)	✓	✓
Ring to Ground (RG)	✓	✓
TRI-PLX	✓	✓

1.1.1 Tone Mode Usage

The Tone modes are provided for specific pair conditions. The table below describes some typical usages for the tone modes.

Mode	Usage
Simplex	Tone is balanced on the TG and RG. A customer would generally not hear the tone on a good working pair. Simplex tone is a good choice even if a pair is shorted, one side is open, or one side of the pair is grounded.
Metallic (TR)	Tone is applied Tip to Ring. Many tone sources only have two leads and this is the typical mode for those devices. Metallic tone is also useful when sheath continuity is poor. Metallic tone should not be used if the pair is shorted or one side is open.
Tip to Ground (TG)	This mode can be used when there is a short or a ground on the Ring.
Ring to Ground (RG)	This mode can be used when there is a short or a ground on the Tip.
TRI-PLX	This mode is a combination of Simplex and Metallic. Tone is applied Tip to Ground and Ring to Ground in a way that provides a Metallic tone and minimizes cross coupling to adjacent pairs.

1.1.2 ID Tone Step-by-Step

<p>Press [TONE]</p> <p>This screen shows the available Tone Test functions of the ATV-25. This figure shows [F1] ID Tone, [F2] Tagging, and [F4] End2End.</p>	
<p>Press [F1] ID Tone</p> <p>[F1] Start, starts sending tone on the selected pair.</p> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>ⓘ Sending tone is automatically stopped if the pair, mode, or frequency is changed.</p> </div> <p>[7] Mode, changes the selection of Simplex, TR (Metallic), Ring (RG), or Tip (TG).</p>	 <p style="text-align: center;">Initial ID Tone Screen</p>

9 FreqSel changes the selection of either 577Hz or 1004Hz. Simplex mode only allows 577Hz and the **9 FreqSel** option will not be shown.

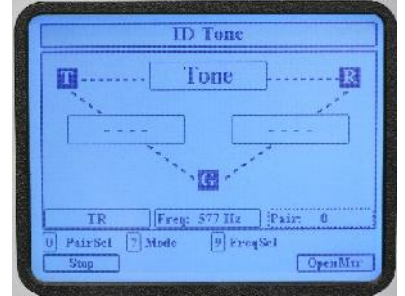
[0] PairSel, allows direct entry of a pair number. PR0 is the single pair test cord.

Press **[F1] Start**

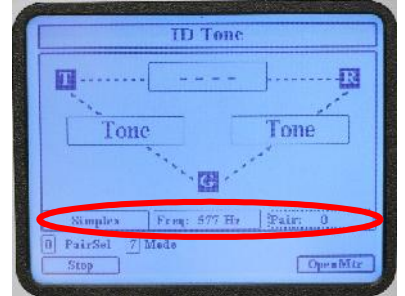
The label **Tone** appears indicating how tone is being applied. The lower portion of the screen information area displays the **Mode**, **Frequency**, and **Pair:**.

The ATV-25 displays **BUZZ** indications for pair verification. It is common practice to apply a short or ground after locating a pair with a tone probe. This confirms the identification of the correct pair. The BUZZ feature allows the user to verify the pair without additional steps to select the ohmmeter.

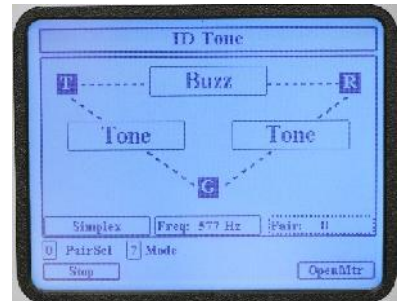
Note: The ATV-25 may indicate a BUZZ on a defective pair that has a short or ground.



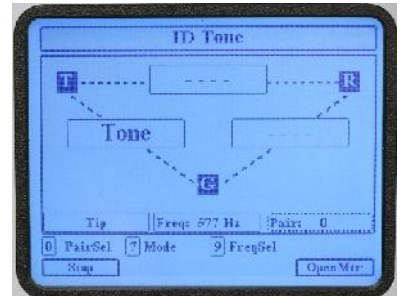
Sending tone TR (metallic), the **9 FreqSel** allows frequency selection



The ATV-25 is sending 577Hz, TR Tone on PR0.



The ATV-25 is sending simplex tone as indicated by the **Tone** indication on TG and RG. The frequency is 577Hz on PR0. The TR **BUZZ** confirms a SHORT identification of the correct pair.



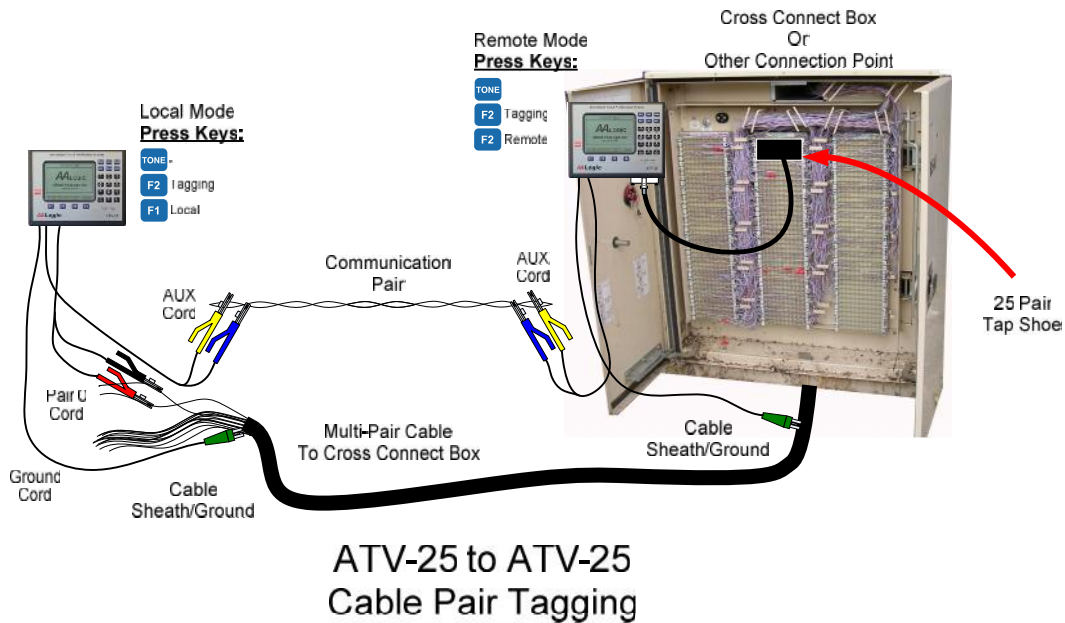
The ATV-25 is sending TG tone on PR0.



1.2 Pair Tagging ATV-25 to ATV-25

Pair tagging uses two to five ATV-25 sets to identify cable pairs. One to four ATV-25s are used at locations with access to 25 pairs at a time. These ATV-25 units are called Remotes. At least one ATV-25 is used at the pair identification location. This ATV-25 is called the Local unit.

The ATV-25 units use a common communication pair connected to the AUX cord at each ATV-25. The communication pair is used for sending data between the Local and the Remote ATV-25s. The figure below shows a typical tagging configuration using two ATV-25s.



1.2.1 Connecting ATV-25 Units for Tagging

The ATV-25 to ATV-25 tagging requires a local ATV-25 at the point where the pairs need to be identified. One to four ATV-25 units are placed at one or more locations where the count is known and can be accessed with modular connections.

A communication pair is used to connect all the ATV-25 units together. The local machine controls all the remote units on this pair. The pair must be a vacant pair and should not be one of the pairs being tagged if possible. An ATV-25 can be used to send tone on this pair to allow location using a tone probe.





As indicated in the figure above, the AUX cord is used at each ATV-25 to connect to the communication pair. The AUX cord has a blue boot on the connector and is plugged into the AUX jack on the ATV-25. The AUX cord is electrically compatible with the PR0 cord. The PR0 cord can be plugged into the AUX jack and connected to the communication pair if the AUX cord is defective or not available.





Grounding is very important. Tagging involves numerous measurements of AC and DC values on the pair. Each ATV-25 must have a good connection to sheath/ground for the cable. Poor grounding can result in communications problems and problems finding pairs.


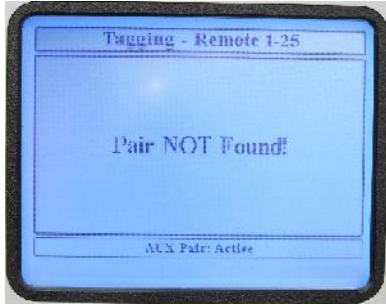
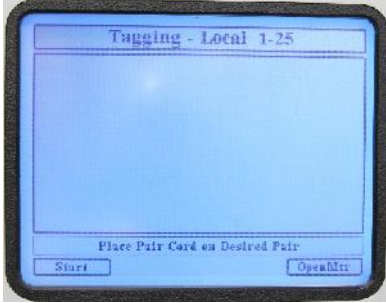
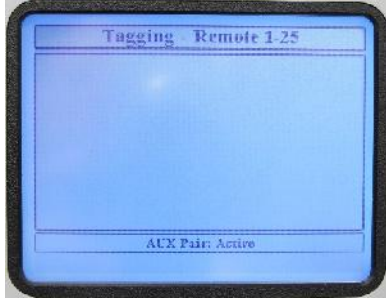
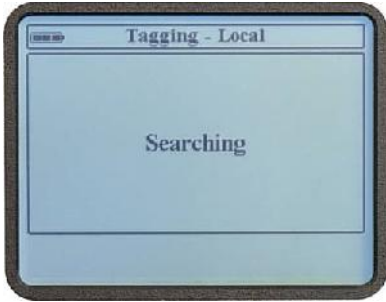

Each remote ATV-25 is connected to 25 pairs through the 25 pair connector and a tap shoe. The tap shoe has one Cinch connector for connecting to the ATV-25 and the other end has a connector to attach to a CO vertical frame, cross connect box, or modular splice. The tap shoe should be inspected for any damage to the connectors. Damaged connectors can prevent the affected pair from being identified.


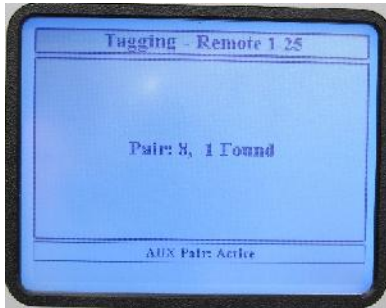

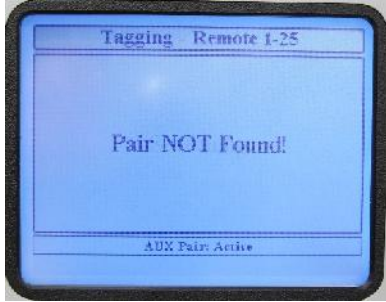
The local machine uses the PR0 cord to connect to the unknown pair. The local ATV-25 and remotes communicate when the Start button is pressed and the remotes search for a pair with the same AC and DC values on the pair as measured by the local ATV-25.

1.2.2 Pair Tagging ATV-25 to ATV-25 Step-by-Step

Local ATV-25	Remote ATV-25s
	
<p>Press [TONE]</p> <p>This screens show the available Tone Test functions of the ATV-25. This figure shows [F1] ID Tone, [F2] Tagging, and [F4] End2End.</p>	
	
<p>Press [F2] Tagging</p> <p>The tagging process requires one Local ATV-25 and one to four Remote ATV-25 units. The remote ATV-25 units can be located anywhere as long as all the ATV-25 units are connected to the same communication pair. There must always be one remote designated as 1 – 25. The user selects [F1] Local on the unit where the tagging is to be done and [F2] Remote on the others.</p>	

Local ATV-25	Remote ATV-25s
 <p>The local machine must know the number of ATV-25 remote units to expect. Even if additional remote ATV-25 units are connected, they will not be used for tagging unless they are selected in this step. Use the [F1] through [F4] keys to make the selection.</p>	 <p>Each remote must be designated one of the four 25 pair counts. At least one remote must be designated 1-25. Use the [F1] through [F4] keys to make the selection.</p>
 <p>Press [F1] Local</p> <p>The Local ATV-25 is ready to establish connection to the Remote ATV-25. The user locates the communication pair and connects the AUX cord. The pair should have tone from the 1-25 Remote. A tone probe can be used to locate the pair.</p> <p>Press the [ENT] key to connect to the Remote. The Local will attempt to communicate with the 1-25 Remote. The Local will not continue until the connection is complete.</p> <p>Check the pair and the AUX cord connections at the Local and Remote if communications is not established.</p> <p>The Ground cords should be properly connected at each ATV-25.</p>	 <p>Press [F2] Remote</p> <p>The 1-25 Remote ATV-25 begins sending 577Hz simplex tone on the AUX pair. The pair is used to communicate between the Local and Remotes. The Remotes are ready to establish communication and tagging. No other key presses are required at the remotes.</p> <p>The communication pair can be located using an amplifier probe at each remote. The 1-25 Remote sends 577Hz simplex tone until the local unit is started.</p> <p>The Remotes should have 25 pairs connected to the Cinch connector and the green Ground cord must be properly connected to sheath/ground.</p> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p><input checked="" type="checkbox"/> The communication pair must be a vacant pair without shorts or grounds. Test the pair with the Open Meter</p> </div>

Local ATV-25	Remote ATV-25s
	<p>before attempting to communicate with the local unit.</p>
 <p>The communications can be confirmed to all the remotes by attempting a pair search without the PRO cord connected. Each Remote should respond with four dashes (- - - -) indicating no pair was found. Remotes that are not communicating will have No Response displayed.</p>	 <p>Remotes will respond to search commands from the Local ATV-25. If no pair is found, the Pair NOT Found! message is displayed and the result sent to the Local ATV-25.</p> <p>Recheck the communication pair, AUX cord, and ground if a remote is not communicating with the local machine.</p>
 <p>Connect the PRO cord to the pair to be tagged. This can be any pair connected to one of the Remotes.</p>	 <p>The Remotes are waiting for a tagging command from the Local.</p>
 <p>Press [F1] Start</p> <p>The Local sends messages to the Remotes with the AC and DC voltages for the pair being tagged. The Local displays “Searching” while the Remote locates the pair.</p>	 <p>The Remotes receive the tagging commands and searches for the pair. The Remotes return the pair number if the pair is found or “Pair Not Found” if a pair match is not located.</p>

Local ATV-25	Remote ATV-25s
 <p data-bbox="266 562 805 726">Pair 8 was found by the 1 – 25 Remote. The PR0 cord is then moved to another pair and [F1] Start is pressed to start the tagging process again. Only one Remote was selected in this example.</p>	 <p data-bbox="849 562 1414 695">Pair 8 was found and returned to the Local. The Remote may find more than one pair in some cases. The pair with the best AC and DC match is returned to the Local.</p>
 <p data-bbox="266 1056 805 1121">Some pairs can be difficult to tag. Check the following:</p> <ul data-bbox="298 1129 805 1346" style="list-style-type: none"> ✓ The PR0 is properly connected and the clips are not shorted. ✓ The ground cord is properly connected to the cable sheath. ✓ Use the [F4] OpenMtr to check the pair for defects. <p data-bbox="266 1356 805 1455">Press [F1] Start to restart the tagging process after resolving any issues or move on to the next pair.</p> <p data-bbox="266 1465 805 1530">Pairs that will not tag due to defects can be identified using the ID Tone feature.</p>	 <p data-bbox="849 1056 1414 1121">Possible faults that may cause tagging problems:</p> <ul data-bbox="881 1129 1414 1774" style="list-style-type: none"> ✓ Missing bonds or other sheath continuity problem between the Local and Remotes. This problem may be solved by bonding several vacant pairs together and connecting them to the ground clips at the Local and Remote(s). Ideally, the pairs should also be connected to the cable sheath. A sheath continuity problem is a high probability if many pairs cannot be tagged. ✓ Pair Faults Pair faults such as grounds and opens on the pair can prevent tagging in some cases. An example is a pair that has grounds on the Tip, Ring, or both. This will prevent the tone from being detected by the Remote.

1.3 Pair Identification ATV-25 to ATV R/T