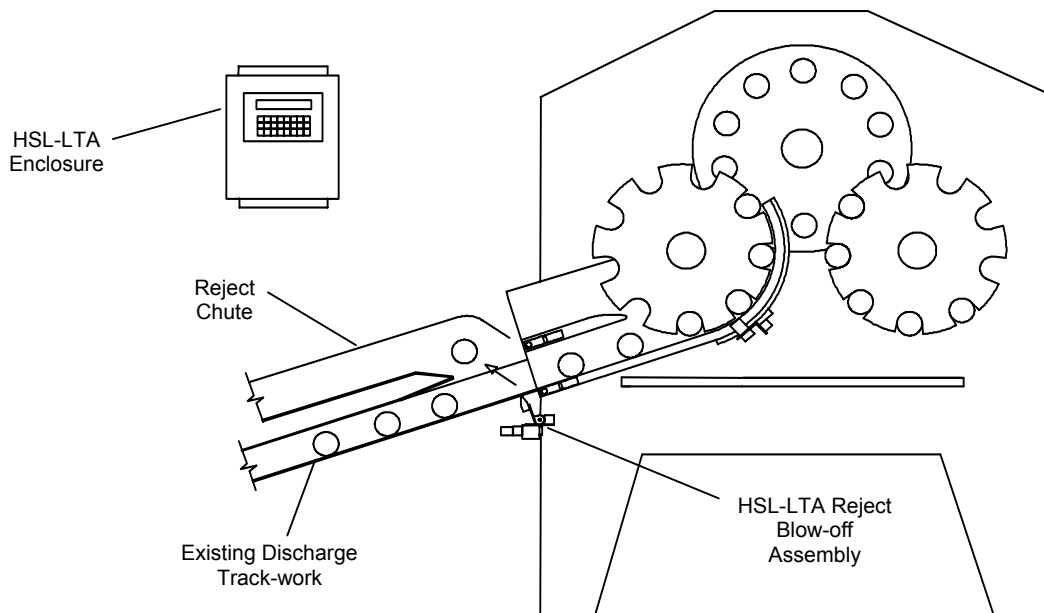


**HSL-LTA
ALCOA Light Tester
Pneumatic Reject Control (Aluminum Can)**

The Systems Engineering HSL-LTA Light Tester Pneumatic Reject Control package replaces the existing odd/even mechanical reject mechanism on Alcoa LT-8/LT-10/LT-16 Light Testers testing aluminum cans with a reject blow-off solenoid mounted in the tester discharge track-work providing the following benefits:

- ◇ **Increased Production:** By eliminating the mechanical reject, and thus the limitations of speed imposed by the response time of the mechanical reject mechanism, significant increases in speed can be achieved.
- ◇ **Reduced Downtime:** Eliminating the mechanical reject eliminates can jams caused by intermittent or poorly operating reject mechanisms thus reducing scrap and downtime to clear can jams in the machine.
- ◇ **Reduced Maintenance:** Removing the mechanical reject eliminates maintenance issues relating to the mechanisms such as worn or sticking actuators, worn air cylinders, etc.. Cost of maintaining and time involved in trouble-shooting these mechanical issues is eliminated as well.
- ◇ **Quick Pay-off:** With the potential increase in speed that can be realized, the HSL-LTA typically pays for itself in just a few months.



Features

- Replaces existing odd/even mechanical reject mechanism with a reject blow-off solenoid assembly mounted in the discharge track-work of the tester to reject leak aluminum cans. Proprietary logic tracks cans from the leak detection array receiver to the blow-off location in the discharge track-work and accurately rejects leak cans at all speeds.
- Performs high-speed control functions of Alcoa Light Tester to speeds in excess of 3,000 Cans Per Minute (machine mechanically permitting). This includes detection of leaker cans (interfaces with existing Leak detector arrays), rejection of leaker cans, alarm detection as well as data acquisition.
- Optionally accepts reject input from vision inspection systems to incorporate rejection of inspected cans with leaker reject blow-off solenoid.
- Upgrade package which interfaces with existing control system which includes: 14" X 12" X 8" control enclosure with Reject Control Module, Reject blow-off assembly (to be mounted in the discharge track-work of the tester), Can Presence sensor and Resolver (to replace existing encoder for timing).
- Performs the following control functions:
 - Interfaces with existing leak detector arrays to detect leak cans.
 - Tracks cans from leak detector to discharge mounted blow-off assembly to reject leak cans.
 - Optionally interfaces with vision inspection systems to reject visually defective cans.
 - Alarm detection: leak detection array fault, tester discharge can jam/back-up, timing signal failure, can presence sensor fail, photo eye lenses dirty fault, and missed reject detection (option).
 - Data Acquisition: Total number of good cans tested, total number of leaker rejects, total number of vision rejects, rejects per pocket, etc. (for both current and last shift).

General Description

The HSL-LTA Alcoa Light Tester pneumatic reject control package is an electronic upgrade for the Alcoa LT-8/LT-10/LT-16 Light Tester which replaces the existing mechanical odd/even reject mechanism with a reject blow-off solenoid mounted in the tester discharge track-work thus allowing significant increases in speed. The package interfaces to the existing leak detection array receiver, tracks detected leak cans from the receiver to the blow-off location in the tester discharge track-work, and accurately rejects the leak cans regardless of machine speed.

The control package is not a dedicated "black box", but instead is implemented using the high performance Systems M4503 PLC/PLS module which allows easy customization by either SEA or the end user. The module is programmed using the optional "SYSdev" (DOS based) software programming package which allows programming in any combination of Ladder Logic or high-level (subset of "C"), as well as perform on-line monitoring and trouble-shooting. The module incorporates a built-in PLS which interfaces directly with the machine-mounted resolver and provides all machine timing, eliminating the need for an external PLS.

Leaker Reject Blow-off System

The package incorporates a reject blow-off assembly which is mounted in the tester discharge track-work to reject detected leak cans. This replaces the existing mechanical odd/even reject mechanism thus allowing significant increases in speed. By eliminating the existing mechanical reject, limitations of machine speed relating to the response time of the mechanical reject are eliminated. The blow-off reject system is capable of accurately rejecting cans at speeds in excess of 3,000 Cans Per Minute. Maintenance issues relating to the mechanical reject system (i.e. worn or sticking mechanical mechanisms, worn air cylinders, etc.) which result in missed rejects or intermittent can jams are eliminated as well. Light weighting of the discharge starwheel is achieved by removal of the mechanical reject, thus aiding in the potential increase in speed.

The reject blow-off assembly consists of a bracket equipped with a high-speed blow-off solenoid and a fiber optic photo eye which is mounted in the tester discharge track-work. In conjunction with a machine mounted Can Presence sensor and resolver, leak cans are tracked from the leak detector to the reject blow-off assembly where the cans are rejected.



Vision Inspection System Reject

The package can optionally except a reject signal from a vision inspection system and reject these cans at the same discharge mounted reject blow-off solenoid. The vision system reject signal must occur between the infeed load location on the tester and the discharge of the tester. The vision reject signal must also be synchronized with the machine. The optional HSL-LTDVR Leaker/Vision diverter solenoid allows leaker rejects to be separated from vision rejects in separate bins for inspection.

Alarm Detection

The package detects the following alarms: *Leak Detection Array Fault*, *Tester Discharge Can Jam/Back-up*, *Timing Signal Fail*, *Can Presence Sensor Fail*, *Photo Eye Lenses Dirty Fault* and *Missed Reject Detection (option)*. The *Leak Detection Array Fault* occurs when a fault in a leak detector array head occurs. The *Tester Discharge Jam/Back-up* is generated if either a jam or back-up occurs at the discharge of the tester or if the Reject Photo Eye fails.

The *Timing Signal Fail* occurs when any of the timing signals generated in the PLS section fails to change state periodically while the machine is running. *Can Presence Sensor Fail* occurs when the sensor fails to detect cans while cans are flowing through the machine. The *Photo Eye Lenses Dirty Fault* indicates that the lenses of the photo eye mounted on the Reject Blow-off assembly are contaminated and need to be cleaned or are damaged and need to be repaired. The *Missed Reject Detection* occurs when a can is not detected as being rejected when the reject blow-off is activated. This alarm is implemented using the optional HSL-LTRV reject verification sensors which are mounted in the reject chute.

“HSMLT” Setup Program

The “HSMLT” setup program allows the user to easily view the HSL-LTA data or alter the HSL-LTA setup variables using an IBM PC or compatible. These variables include: Can Presence to discharge number of shifts, leak detector to discharge number of shifts, vision reject to discharge number of shifts, Can neck size, Reject pulse time, Diverter Solenoid pulse time, and the machine timing set-points. In addition to setting the variables, “HSMLT” can be used to view the current and last shift data, view the rejects per pocket, download the HSL-LTA application program to the M4503 as well as download and upload the setup data to the M4503.

Data Collection

The following data is collected for both the current shift and the previous (last) shift: Total number of good cans tested, total number of leak cans rejected, total number of vision rejects, and the total rejects per pocket. This data is viewed on the display of the HSL-LTA. The information is updated (“current” shift transferred to “last” shift) based on the change of state of a discrete input.

In addition to the shift data collection, a separate buffer is available to collect rejects per pocket counts as a diagnostics aid to the operator for trouble-shooting a light seal problem on a specific pocket. Unlike the shift data, these counts can be reset manually by the operator at will. This allows the operator to note an abnormally high count on a specific pocket, attempt to correct the problem, reset the counts and then check the counts at a later time to determine if the problem is corrected.

HSL-LTA Keypad / Display

The HSL-LTA package is based on the M4503 PLC/PLS/Display module. The keypad of the M4503 contains 24 keys consisting of data display commands, setup commands, and a numeric keypad. The display of the M4503 is a 2 line by 40 character back-lit LCD display which displays the selected data and setup menus. The keypad/display can be used by the operator to view the current and last shift data as well as the rejects per pocket diagnostic data. In addition, the keypad/display is used to activate the Reject Blow-off Solenoid test feature and can be used by authorized personnel (passcode or key switch protected) to adjust the timing and all setup parameters.

Tester Requirements

The reject blow-off assembly is mounted in the discharge track-work at the immediate exit of the tester. The can is rejected up out of the discharge track-work into a reject chute, both customer provided. This requires a straight section of track-work 18” long from where the track-work mates to the tester discharge. An opening in the top of this 18” is made for a reject clearance and to mount a discharge funnel plate.

For air tunnels, the upper lips of the air tunnel must be cut-off, welded to the plenum, and ground flush. For gravity track-work, the upper half-round rails are cut-off. In either case a new reject chute must be manufactured or the existing reject chute is modified to interface with the new reject blow-off system.



Specifications

Power Requirements:

Voltage: 100-240VAC, 50/60HZ
Current: 0.5 Amps @ 115VAC
0.25 Amps @ 230VAC

Voltage: +24VDC
Current: 2.0 Amps

Control Inputs:

Voltage Range: 10-30VDC
Input "On" Voltage (min): 10.0 volts
Input "On" Voltage (max): 30.0 volts
Input "Off" Voltage (max): 5.0 volts
Input Current (max): 15 milliamps @ Vin=30V
Optical Isolation: 1500 Vrms

Compressed Air: 90-110psi @ 0.25 SCFM

Temperature Ranges:

Operating: 0 to 55°C
Storage: 0 to 70°C

Resolver Interface:

Resolver Type: Systems Electronics Group
RSV34-MS1
Resolver Cable: Systems Electronics Group
RSV-RSCBLE-XX

Outputs:

Voltage Range: 10-30VDC
Output "On" Voltage (min): VCC-2.00 volts
Output "On" Voltage (max): VCC-0.25 volts
Output "Off" Voltage (max): 1.5 volts
Output "On" Current (max-cont): 0.5 Amps DC
Output "On" Current (100msec): 3.0 Amps DC
Optical Isolation: 1500 Vrms

Ordering Information

The HSL-LTA package includes a 14" X 12" X 8" NEMA 12 enclosure which should be mounted in close proximity to the tester. An addition, a reject blow-off assembly is provided which is mounted in the discharge of the tester. The order number for the HSL-LTA is as follows:

<u>Part Number</u>	<u>Description</u>
HSL-LTA	Alcoa Light Tester Pneumatic Reject Control package (for aluminum can) including the following: 1ea. HSL-LTA/LTS Enclosure (14" X 12" X 8") with M4503 Reject Control Module. 1ea. BRK-LTB-SOL Reject Blow-off Assembly with blow-off solenoid and Fiber Optic Photo Eye. 1ea. BRK-LTB-HD Hardware Kit including funnel plate and mounting brackets. 1ea. BRK-LTB-PRX Can Presence Sensor 1ea. RSV34-MS1 Resolver 1ea. RSV-RSCBLE-100 Resolver Cable 1ea. HSL-LTA/LTS User's Manual 1ea. HSL-LTA/LTS Program Disk 1ea. M4500 User's Manual

HSL-LTA Options (*purchased separately*)

<u>Part Number</u>	<u>Description</u>
HSL-LTRV	Reject Verification Sensors (to be mounted in reject chute)
HSL-LTDVR	Leaker/Vision Diverter Solenoid Assembly (to be mounted in reject chute)

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