



FACTORY ACCEPTANCE TESTING (FAT)

The purpose of this document is to demonstrate the finding of the testing of the Shutters for the LICK APF enclosure. Please tick yes or no and provide description if you answer no to a question.

Shutter Frame Full Travel → YES NO (if no please describe findings)
(Cable wrap function and limit switch function)

Comments: Both front and rear shutter tested OK as evidence by video on CD provided

Both Shutter Home

→ **Rear** Distance from home (32°) (see comments) mm

→ **Front** Distance from home (32°) (see comments) mm

→ **Both** Gap between frame ends (see comments) mm- Distance from home (32°) (see comments) mm

→ Test 1 ΔD to reference 0mm and (see comments) mm

→ Test 2 ΔD to reference 0mm and (see comments) mm

→ Test 3 ΔD to reference 0mm and (see comments) mm

Comments: No scissor lift, so measuring gap between two frames was omitted, front relative position (Control marker - 58mm) was measured and:

1. Both shutters @ 20° approximately from home
2. Both shutter homed
3. Measured front
4. Repeated

Rear Shutter positive end of Travel-Yes No ΔD from switch activation <5mm

Rear Shutter negative end of Travel -Yes No ΔD from switch activation <5mm

Front Shutter positive end of Travel- Yes No ΔD from switch activation <5mm

Front Shutter negative end of Travel-Yes No ΔD from switch activation N/A

→ with rear @ EOT

→ with rear shutter @ zenith

Comments: Front shutter end of travel by current limit when collision occurs
Current Limit was set at 20% of full load.



Front sector test

Yes No

Comments: Front shutter was out of the front sector, command rear to home-rejected

Moved front shutter into the front sector. Re issue home command: (rear moves to home, so operation is as expected) and homing sequence value is 8

Front Shutter Sag (10 min test)

Yes No

0mm of sag in 10 minutes

Comments: Front shutter position was held in servo mode, evidenced by video

Front Shutter repeat position, nominated position is 32° rear -32°

→ Test 1 (in mm from nominated position) (59)+1mm Rear (24)+2

→ Test 2 (in mm from nominated position) (58) 0 mm Rear(21) - 5

→ Test 3 (in mm from nominated position) (59)+1mm Rear(19)- 7

Comments: Fluctuation are due to shutter tensioner on drives, measured was within tolerance, maximum design fluctuation will be 30mm on longitude.

Front and Rear Shutter Speed test

Trailing edge of shutter from spring line to Zenith 90° in x seconds after acceleration

Front

Up- 49.47

Down-49.61

Up- 49.67

Down- 49.53

Rear

up 49.47

down 49.61

up 49.40

down- 49.30

UP Average Front: 49.57 1.82°

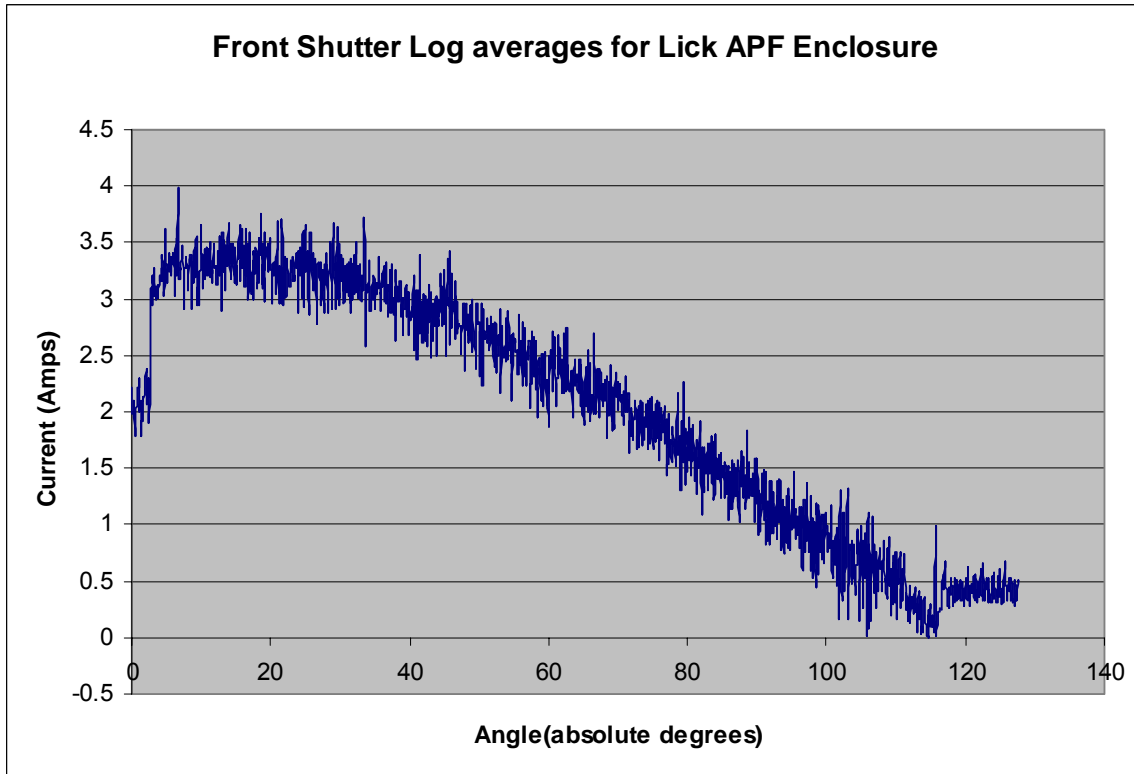
Up Average Rear: 1.82°

→ At line Voltage of 238V

Comments: Test evidence in video and stills. Specification is 2.0 seconds. Can be adjusted in software- We are asking for a concession on this item Matthew Radovan to allow for programming adjustments to be made.



Front Shutter Current Log



Comments: Reference is the arch beam spring line. Marker was the front shutter mid point. Travel was from front of the enclosure to the rear (negative travel direction.)

Test completed by:
Stephen Marchant

Observed by:
Martin Hanley
Keith Bates- Electrical Engineer