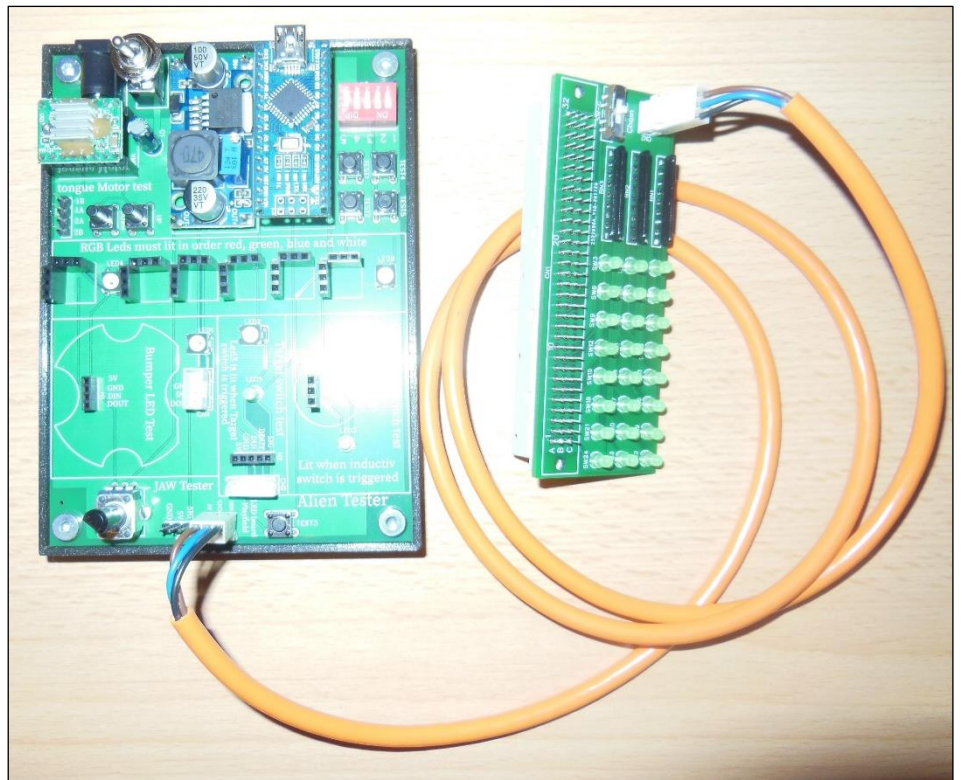


Operating Instructions

ALIEN Tester

Operating Instructions



ALIEN Tester - Operating Instructions - ENG - Rev: 1.0

Date: 2021-03-01

Averell

Original Instructions!

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1 Introduction

The ALIEN tester can be used to check individual components as well as completely installed components on the playfield.

The ALIEN Tester is ideally operated via an external power supply with 12V voltage.

The LEDs, Arduino boards, etc. are operated with 5V.

A "Step Down" on the board of the ALIEN Tester regulates the input voltage from a maximum of 36V to 5V and 3A.



ATTENTION

Possible danger for the stepper motor!

The stepper motor for the Xenomorph is operated directly with the applied input voltage of the power supply!

- The stepper motor can be operated with up to 24V, but is only supplied with 12V voltage in the pinball machine.
- Only use a power supply with a maximum voltage of 24V to avoid damage to the stepper motor and its driver board.
- Operation with a 12V power supply is recommended, which is completely sufficient for all functions.



Note

The plug-in connector for the servo is designed on the ALIEN tester so that a standard servo can be connected. Heighway Pinball had the connectors twisted on both the servo and the Xeno board.

There is an illustrated recommendation to change the Xeno board and the connector plug on the pinball servo to the standard connections so that a defective servo can be quickly and easily replaced in the event of a fault.



CAUTION

Incorrectly plugged components!

Components can be damaged

- Before each test, check that the components are correctly plugged onto the ALIEN tester.



CAUTION

Dangerous, electrical voltage!

Components can be damaged

- Always switch the ALIEN tester **OFF** when you want to attach a component.
- Always switch the ALIEN tester **OFF** before removing a component.
- Always switch the ALIEN tester **OFF** before you want to plug the board adapter into a board under the playfield.
- Always switch the ALIEN tester **OFF** before you want to remove the board adapter from a board under the playfield.

2 Testing individual components



Note

To test the servo or the stepper motor, the DIP switch must be switched off at position "5".

2.1 JAW Tester

The potentiometer (1) next to the servo connection in the "**JAW Tester**" field can be used to move the servo (2) continuously to the left and right.

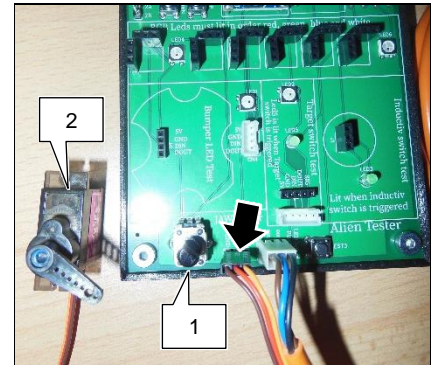


Fig. 2: JAW Tester



Note

The JAW tester can only be used when the driver board is plugged in.

2.2 tongue Motor test

The two buttons "**Up**" (1) and "**Down**" (2) in the "**tongue Motor test**" field can be used to move the stepper motor forwards and backwards. The stepper motor is moved as long as the corresponding button is pressed.

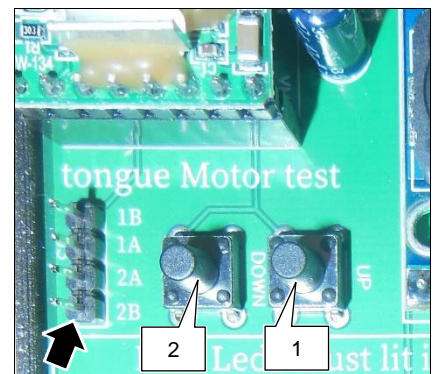


Fig. 3: tongue Motor test



Note

There is no switch-off in the end positions for the control of the stepper motor. The stepper motor moves in both directions until it reaches the stop.

- Therefore, press and hold the corresponding key only as long as necessary.

2.3 Target switch test and Slingshot LED



Note

To test the lighting and switches, the DIP switch must be switched on at position "5".

A target switch or a slingshot LED must be plugged onto the ALIEN tester in such a way that the LED or the switch points in the direction of the "CN2" plug connector.

Appropriate symbols are also printed on the board to indicate how the components are to be plugged in.

Target switch or Slingshot LED with cable can be tested in installed condition via the connector "CN2" (3). To do this, the connecting cable between the playfield board and the target switch or slingshot LED is disconnected from the playfield board and plugged into the ALIEN tester.

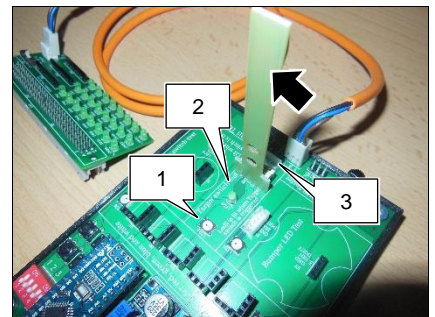


Fig. 4: Slingshot LED standard

For the improved Slingshot LED with two LEDs, the two LEDs must point in the direction of the "CN2" plug connector.

As soon as the ALIEN tester is switched on, the LED colors are switched through. As an indicator serves "LED 2" (1).

When the Target switch is actuated, the green "LED 5" (2) on the ALIEN Tester lights up.

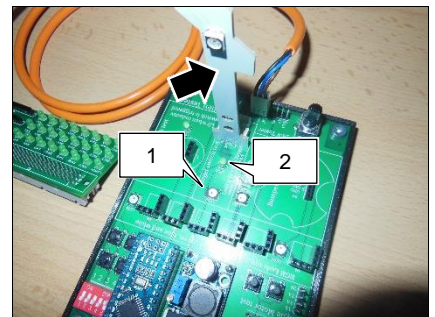


Fig. 5: Slingshot LED improved version

2.4 Bumper LED Test

The Bumper LED is to be plugged in according to the symbol on the ALIEN Tester.

As soon as the ALIEN tester is switched on, the LED colors are switched through. As an indicator serves "LED 1" (1).

Bumper LED with cable can be tested in installed condition via the plug-in connection "CN4" (2). To do this, the connecting cable between the playfield board and the bumper LED is disconnected from the playfield board and plugged into the ALIEN tester.

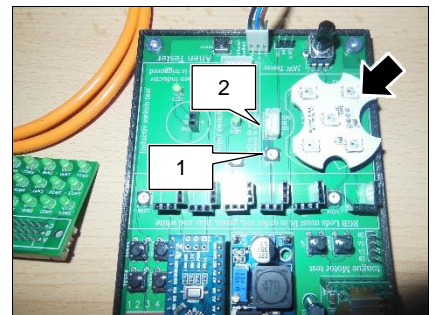


Fig. 6: Bumper LED

2.5 Inductiv switch test

The inductiv switch must be plugged in according to the symbol on the ALIEN tester.

When plugging in, make sure that the plug strip is selected that runs parallel with the contacts in the center.

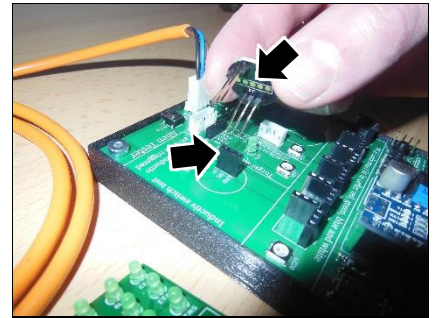


Fig. 7: Inductiv switch connector strip

As soon as the ALIEN tester is switched on, the inductiv switch is activated. A small red flickering LED on the inductiv switch serves as an indicator.

When the Inductiv switch is triggered, for example with a pinball, the green "**LED 3**" (1) on the ALIEN tester lights up.

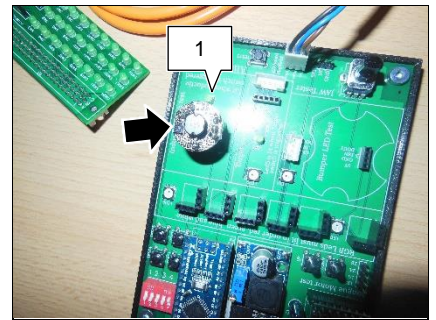


Fig. 8: Inductiv switch plugged

2.6 RGB LED

A single RGB LED can be tested via slot "U1".
As soon as the ALIEN Tester is switched on, the LED colors are switched through.
As an indicator serves "LED 4" (1) that the data bus of the LED is in order and information is passed on to the next RGB LED.

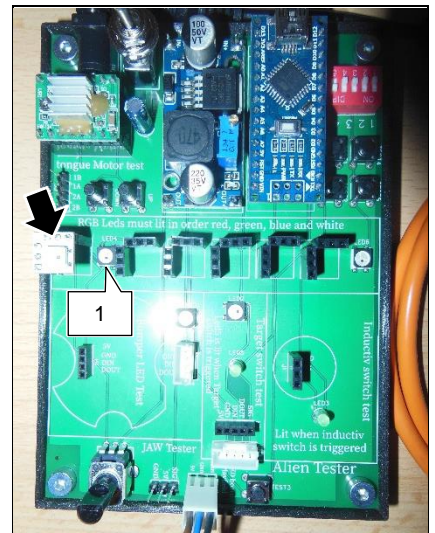


Fig. 9: Check single RGB LED

Several RGB LEDs can be tested via the slots "U1" to "U6".
As soon as the ALIEN Tester is switched on, the LED colors are switched through.
As an indicator serves "LED 4" (1) that the data bus of the first LED in "U1" is in order and information is passed on to the next RGB LED in "U2".
As an indicator serves "LED 6" (2) that the data bus of the LEDs from "U2" to "U6" is in order and information is forwarded to the next RGB LED.

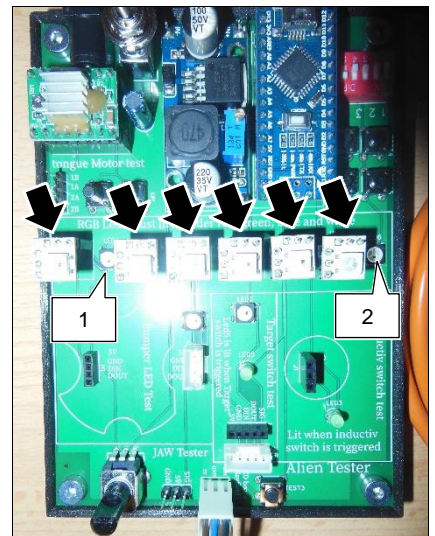


Fig. 10: Check multiple RGB LED



Note

Correct testing of multiple RGB LEDs is only possible if all slots from "U1" to "U6" are populated.

3 Testing the components on the playfield



Note

All tests with the ALIEN tester on the playfield are performed with the pinball machine switched off.

To test the components on the playfield, the corresponding I/O board must be removed.

In the next step, the board adapter (1) is plugged onto the corresponding board and connected to the ALIEN tester (3) via the data cable (2).

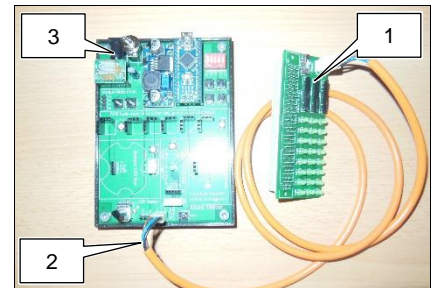


Fig. 11: Board adapter with data cable

The 24 LEDs (arrow) on the board adapter show the status of the switches, including the optos (only drop targets via I/O Board 2 - Center Playfield) and are numbered accordingly. When a switch on the playfield is activated, the corresponding LED on the board adapter lights up. On the optos, the corresponding LEDs light up when the drop targets are on top. The three channels (chain) "A", "B" and "C" of the lamp matrix can be switched through with the slide switch (1) analogously to the designation in the lamp test of the pinball machine (see chapter 4 "Lamp matrix").



Fig. 12: Slide switch



Note

To avoid ghost lights when testing RGB LEDs, the ALIEN tester must be switched off and on again before each change of the channel to be tested.

The ALIEN tester is switched on and now supplies the components to be tested on the playfield with the required voltage via the board adapter (1).

In addition, the insert LEDs are controlled.

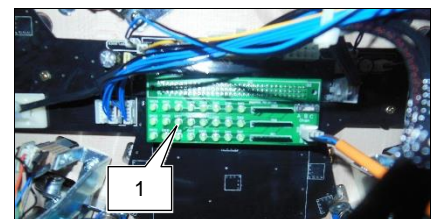


Fig. 13: Plugged board adapter



Note

During testing, individual components such as an RGB LED can of course also be plugged into the ALIEN tester. This is connected in parallel with the RGB LEDs on the playfield. This is especially helpful to check the new RGB LED for proper function before installation.

4 Lamp matrix

The following I/O Boards can be tested with the ALIEN Tester:

- I/O Board 1 - Xenomorph
- I/O Board 2 - Center Playfield
- I/O Board 3 - Apron

4.1 I/O Board 1 - Xenomorph

I/O Board	Chain	Number	Lamp insert/ Description
1 Xenomorph	A	1	GI Left Orbit Top
		2	GI Left Orbit Top Center
		3	GI Middle Orbit Center
		4	GI Subway
		5	GI Left Pop
		6	GI Lane Guide Left
		7	Top Lane 1
		8	GI Lane Guide Middle
		9	Top Lane 2
		10	GI Right Orbit Top
		11	Left Jet 1
		12	Left Jet 2
		13	Left Jet 3
		14	Left Jet 4
		15	Left Jet 5
		16	Right Jet 1
		17	Right Jet 2
		18	Right Jet 3
		19	Right Jet 4
		20	Right Jet 5
	B	1	GI Right Pop 1
		2	GI Right Pop 2
		3	GI Right Orbit Left
		4	Middle Orbit Upper Right
		5	GI Scoop Left
		6	GI Left Ramp
		7	GI Middle Orbit Low Right
		8	GI Middle Orbit Middle Right
		9	Super
		10	Standup 1
		11	Standup 2
		12	Centre Target Symbol
		13	Left Xenomorph Target
		14	Right Xenomorph Target
		15	Bottom Jet 1
		16	Bottom Jet 2
		17	Bottom Jet 3
		18	Bottom Jet 4
		19	Bottom Jet 5
		20	GI Left Xenomorph

Tab. 2: Lamp matrix I/O Board 1 - Xenomorph

4.2 I/O Board 2 - Center Playfield

I/O Board	Chain	Number	Lamp insert/ Description
2 Center Playfield	A	1	GI Left Revive
		2	Weyland
		3	Mother
		4	Left Eject Symbol
		5	Vent 1
		6	Left Upper Flipper Lower
		7	Left Upper Flipper Higher
		8	GI Saucer
		9	Left Orbit Arrow
		10	Left Orbit Symbol
		11	Left Ramp Arrow
		12	Left Ramp Drop
		13	Bonus 4x
		14	Bonus 2x
		15	Bonus 6x
		16	Double Scoring
		17	Vent 2
		18	APC 1
		19	APC 2
		20	APC 3
		21	Yutani
	B	1	GI Bank Target Top
		2	GI Bank Target Middle
		3	GI Bank Target Bottom
		4	Side Loop Symbol
		5	Standup 5
		6	GI Weapon 5
		7	Right Orbit Symbol
		8	Upper Right Flipper High
		9	Right Orbit Arrow
		10	Right Upper Flipper Low
		11	Right Lane Symbol
		12	Standup 4
		13	Right Ramp Arrow
		14	Right Ramp Drop
	C	1	Host
		2	Extra Ball
		3	Lock Lit
		4	Recharge
		5	Recharge Target
		6	Centre Ramp Arrow
		7	GI Recharge
		8	GI Left Orbit Lower
		9	GI Left Eject
		10	Vent 3
		11	Airlock
		12	Left Loop Symbol
		13	Centre Target Arrow
		14	Standup 3
		15	GI Weapon Target 4
		16	Chestburster Target
		17	GI Right Orbit Lower
		18	GI Right Flipper Top

Tab. 3: Lamp matrix I/O Board 2 - Center Playfield

Lamp matrix

4.3 I/O Board 3 - Apron

I/O Board	Chain	Number	Lamp insert/ Description
3 Apron	A	1	All Out War
		2	Save Newt MB
		3	Ambush MB
		4	Sentry Guns MB
		5	Hypersleep MB
		6	Destruct
		7	Left Mode 4 (Tunnel Hunt)
		8	Left Mode 3 (Find Jonesy)
		9	Left Mode 2 (Acid Burn)
		10	Left Mode 1 (Derelict Ship)
		11	Loader Battle
		12	Right Mode 4 (Queens Nest)
		13	Right Mode 3 (Bug Hunt)
		14	Right Mode 2 (APC)
		15	Right Mode 1 (Combat Drop)
		16	GI Left Flipper Low
		17	Scream
		18	GI Left Flipper High
		19	Revive Right
		20	Revive Left
	B	1	GI Revive Right
		2	GI Revive Left
		3	GI Right Flipper Low
		4	Again
		5	GI Right Flipper High
		6	Special
		7	GI Right Sling Bottom
		8	GI Right Sling Top
		9	GI Left Sling Bottom
		10	GI Left Sling Top

Tab. 4: Lamp matrix I/O Board 3 - Apron

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