TANGLES' PIN PARTS

TPP-1025

Bally / Stern Rectifier Board

Description

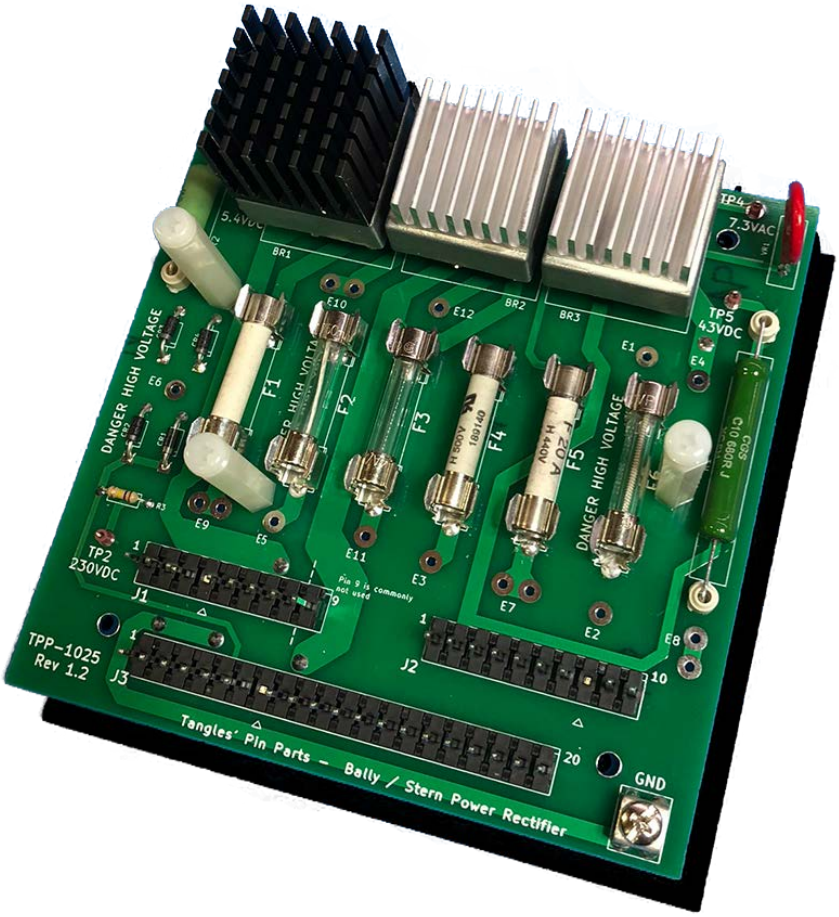
Tangles presents a board to replace Stern TA100 and Bally AS-2518-18 rectifier boards. The original boards suffer from undersized rectifiers, over-heating and high current stress in the through-hole plating of some connectors.

With the introduction of the TPP-1025 replacement board we present the following features:

- 3 high current rectifiers (35A)
- Heatsinks installed on all three rectifiers.
- Quality Molex branded connectors.
- All high current paths have expanded traces.
- Ceramic stand-off mounts for the high power resistors.
- Heavy wire to route current from the bottom of the PCB to the top, not relying on the through-hole plating.
- Screw terminal for enhanced grounding.
- Multiple solder points for transformer pins E7, E8, E9 and E10 for machines that have multiple wires at these points.
- 9th pin added to J1. This makes it compatible with machines need the extra wire.
- Littelfuse or Siba brand fuses.
- Littelfuse fuse branded fuse clips and MOV.
- Quality branded wire wound power resistors.
- Vitreous enamel 10w resistor for exceptional heat tolerance.
- Includes poly-carbonate safety shield
- Includes a pack Molex branded plugs and trifurcon pins to re-pin the wiring harness.

Warning: Lethal voltages are present in Pinball machines and on this board. This service procedure is suitable for qualified persons only. A moderate level of servicing skill is required to complete the installation of this board.

NOTE: This board is suitable for experienced repairers only



Machine Compatibility

Bally Games:

Black Jack, Dolly Parton, Eight Ball, Evel Knievel, Freedom, Frontier, Future Spa, Harlem Globetrotters, Hotdoggin', KISS, Lost World, Mata Hari, Mystic, Night Rider, Nitro Groundshaker, Paragon, Playboy, Power Play, Rolling Stones, Silverball Mania, Six Million Dollar Man, Skateball, Space Invaders, Star Trek, Strikes & Spares, Supersonic, Viking, Voltan

Stern Games:

Ali, Big Game, Catacomb, Cheetah, Dracula, Dragonfist, Flight 2000, Free Fall, Galaxy, Hot Hand, Iron Maiden, Lectronamo, Lightning, Magic, Memory Lane, Meteor, Nineball, Orbitor One, Pinball, Quicksilver, Seawitch, Stargazer, Stars, Stingray, Split Second, Ted Nugent, Trident, Viper, Wildfyre

Note: J1 Connector header pin 9 is used for KISS, Future Spa and Space Invaders. All other Bally and Stern games do not use pin 9.

Installation Notes

This document assumes those following have a moderate level of skill in Pinball servicing to achieve a safe and effective installation.

Tools required:

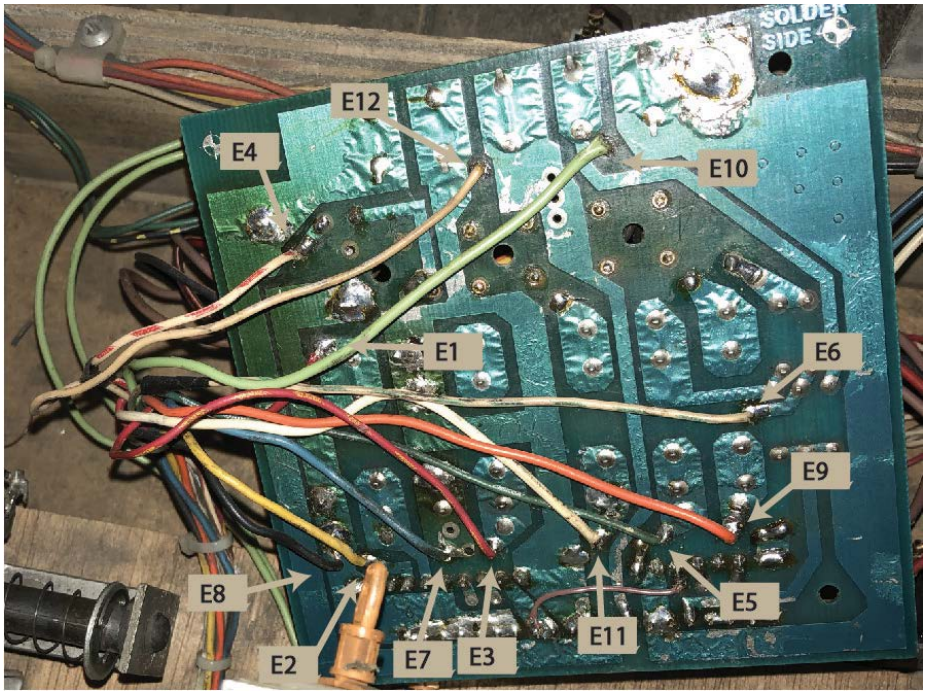
- Moderate to high powered soldering iron.
- Multimeter (to verify voltages)
- Wire strippers
- Wire cutters
- Molex crimper suitable for crimping the .156" pins

When installing this board it is important to identify the transformer wires soldered to the back of the PCB. I present here a table of standard colours that may assist in the wire identification. I encourage installers to label each wire as they are removed from the old board so they do not get mixed up.

E1	Red	
E2	Yellow	
E3	Red / Yellow	
E4	White / Red	
E5	Green	
E6	White / Green	
E7	Blue	
E8	Black	
E9	Orange	
E10	Green	
E11	White	
E12	White / Black	

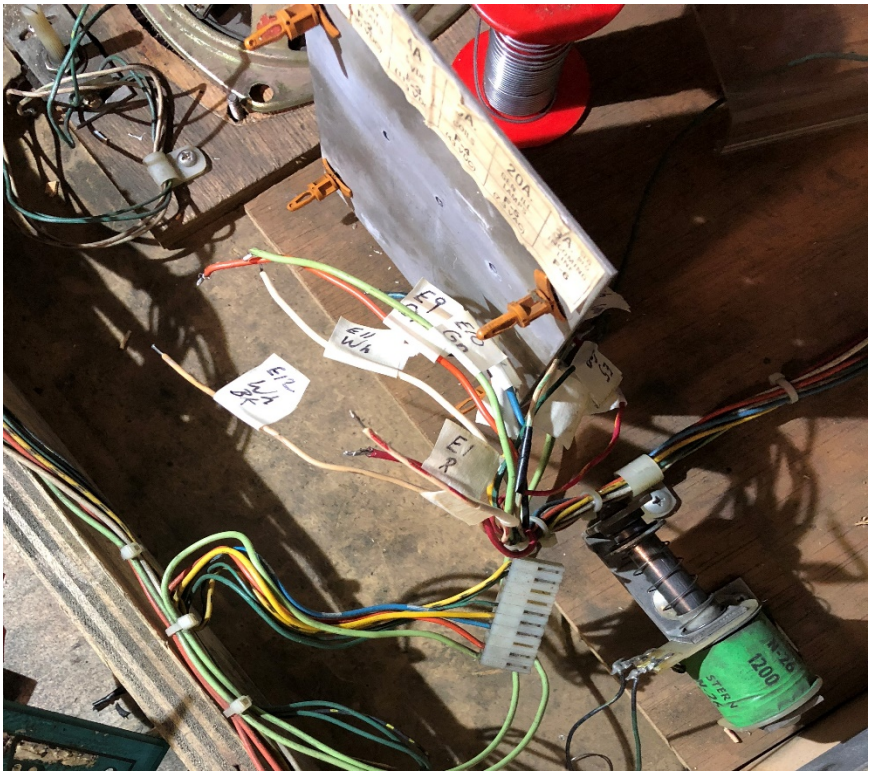
The wire colours provided should be taken as a guide only as machines may have differences, or may have had wires replaced with a non-standard colours.

Here's a photo of the underside of a TA100 board with the transformer points identified:



Part 1: remove the old board

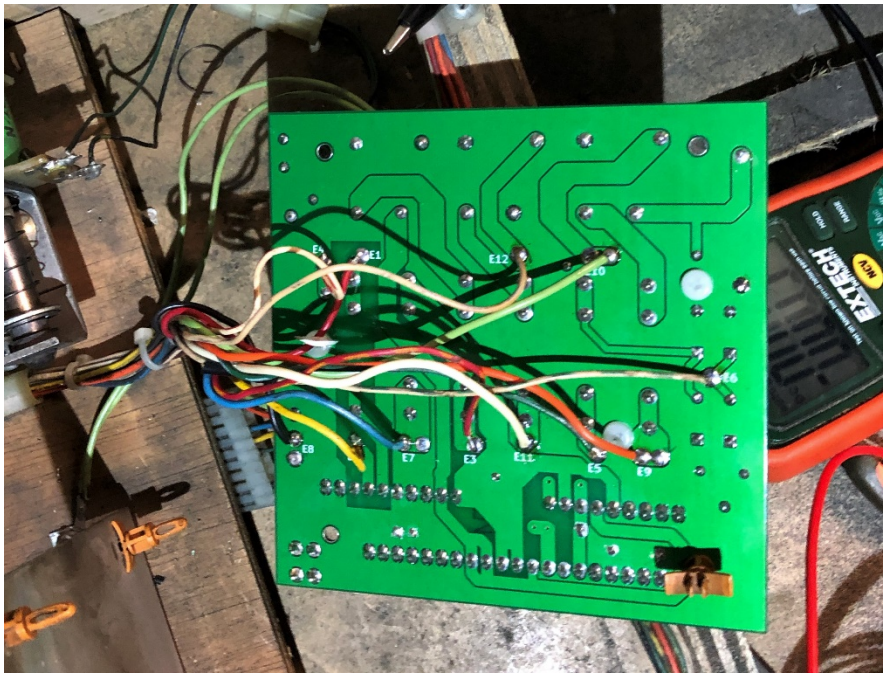
Remove the wires from the old board by desoldering or snipping one wire at a time. Attach a label to each wire using masking tape identifying the E-location the wire came from. This ensures the wires are not mixed up in the transition.



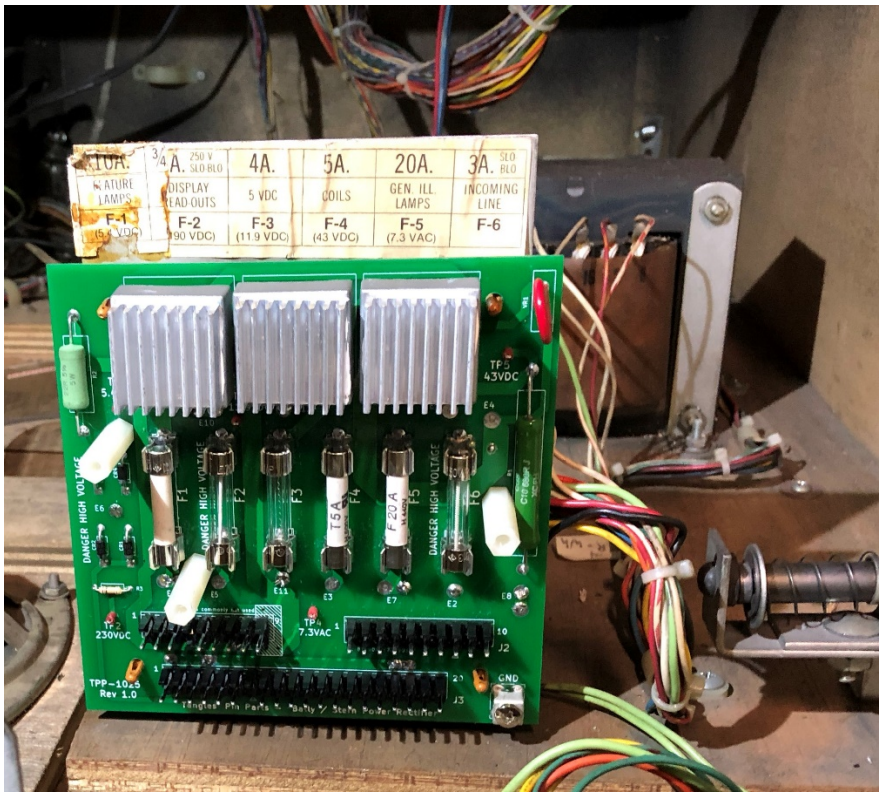
Part 2: Install the new board

When all wires are removed from the old board, reconnect them to the new board. Note the new TPP-1025 board has the ‘E’ numbers printed on the reverse of the board.

It is recommended that the wires are inserted through the holes in the PCB and soldered on both the front and the back of the board.



Reattach the board to the mounting posts and install the Lexan safety shield.



Part 3: Replace Plugs and Pins

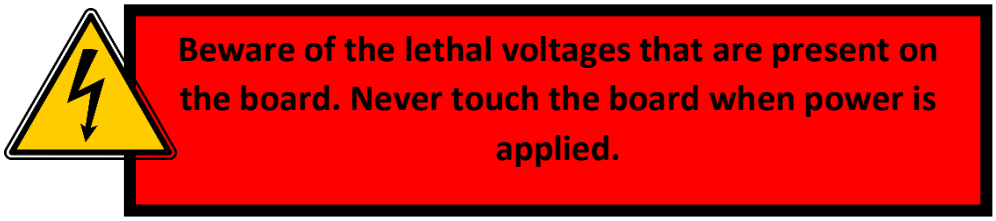
If replacing the Molex connectors and pins on the wiring harness (recommended) I recommend this be done one wire at a time. This reduces the possibility of mixing the wires up.

Snip each wire in turn and:

- Strip the insulation
- Cripm on the trifurcon pin
- Insert into the Molex housing.

Doing one wire at a time means mistakes are less likely.

Part 4: Test and verify voltages



- Ensure mains power is OFF
- Connect ONLY plug J2. (Plugs J1 and J3 disconnected)
- Connect Multimeter to read appropriate test point and the ground pin.
- Turn power on and note the voltage.
- Turn power off to move test leads to the next point.

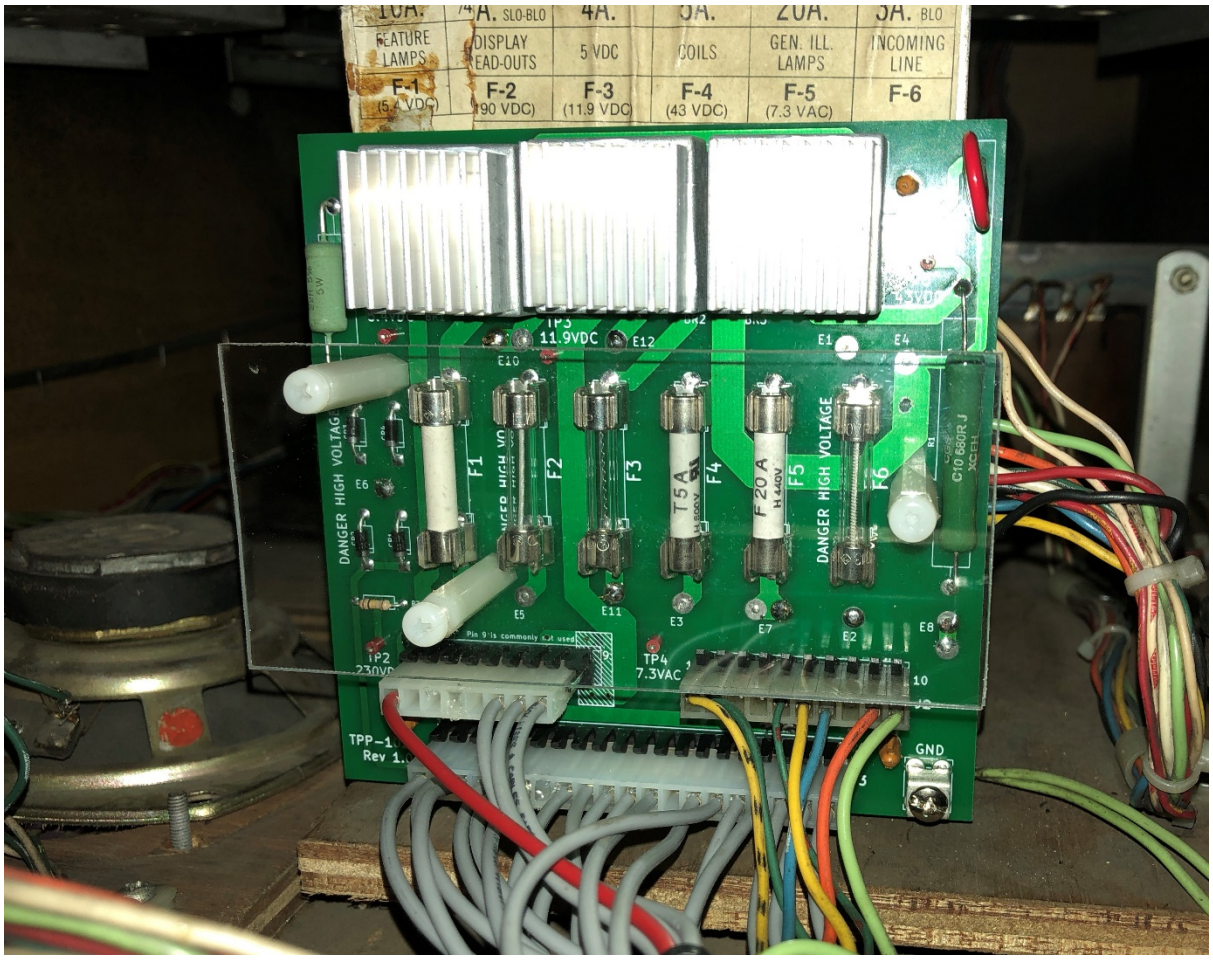
I recommend a multimeter with alligator clips be used.

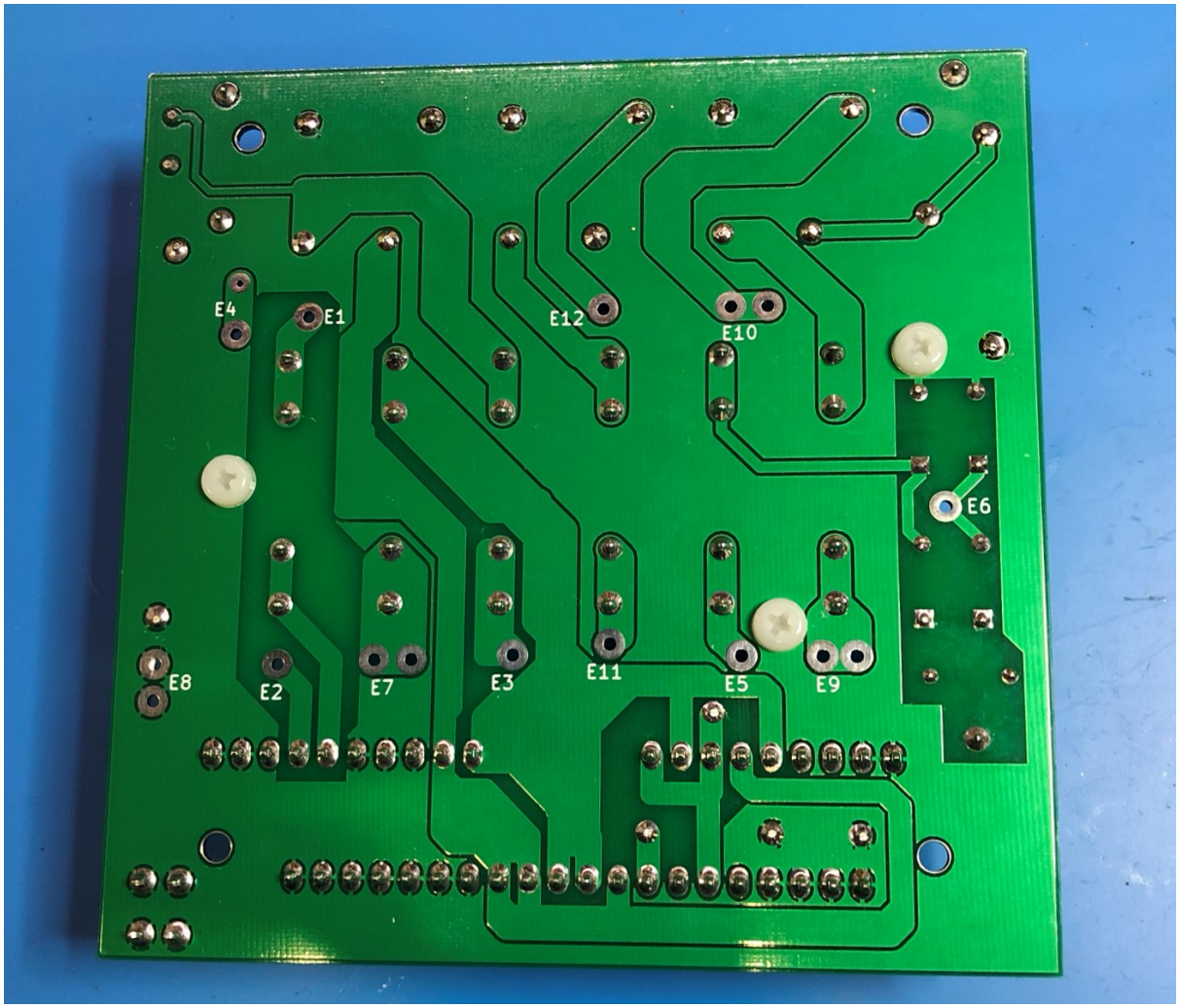
Fuses

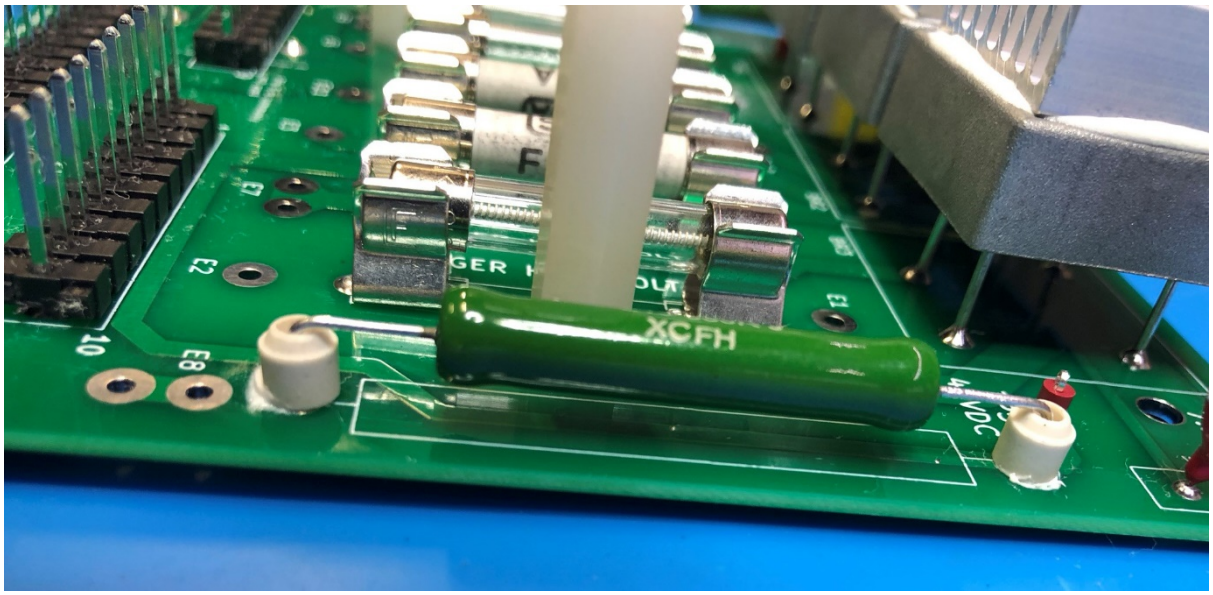
Standard fuses (supplied) are listed here. You need to check with your machine's manual for the correct fuse values.

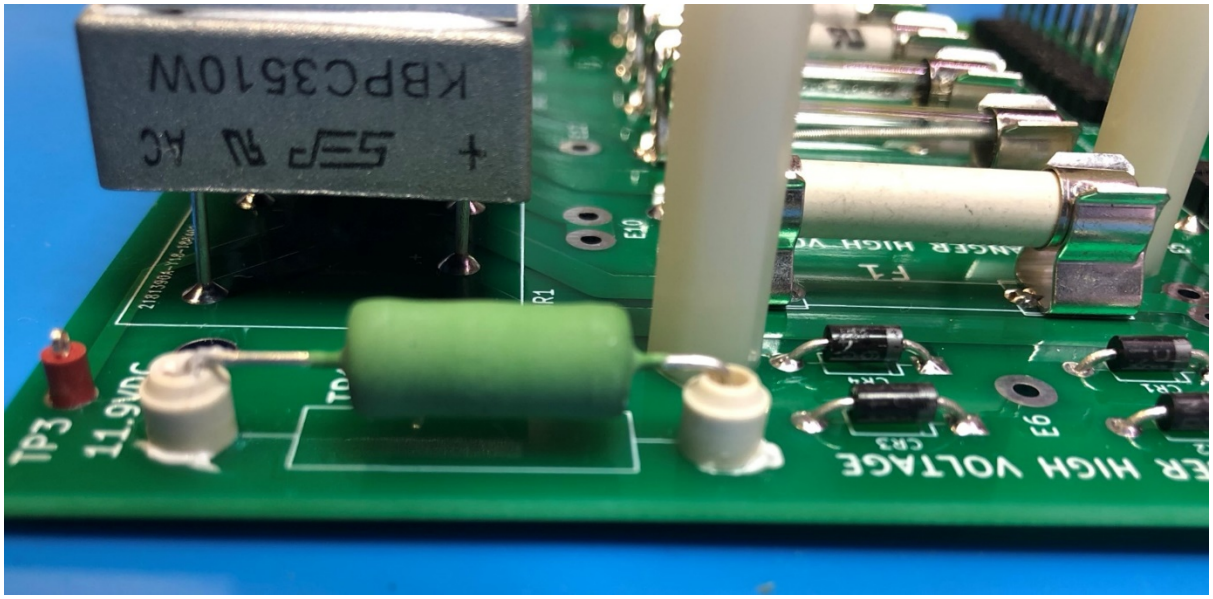
F1 = 10A	(Fast blow)
F2 = 3/4A	(Slow blow)
F3 = 4A	(Slow blow)
F4 = 5A	(Slow Blow)
F5 = 20A	(Fast blow)
F6 = 3A	(Slow blow)

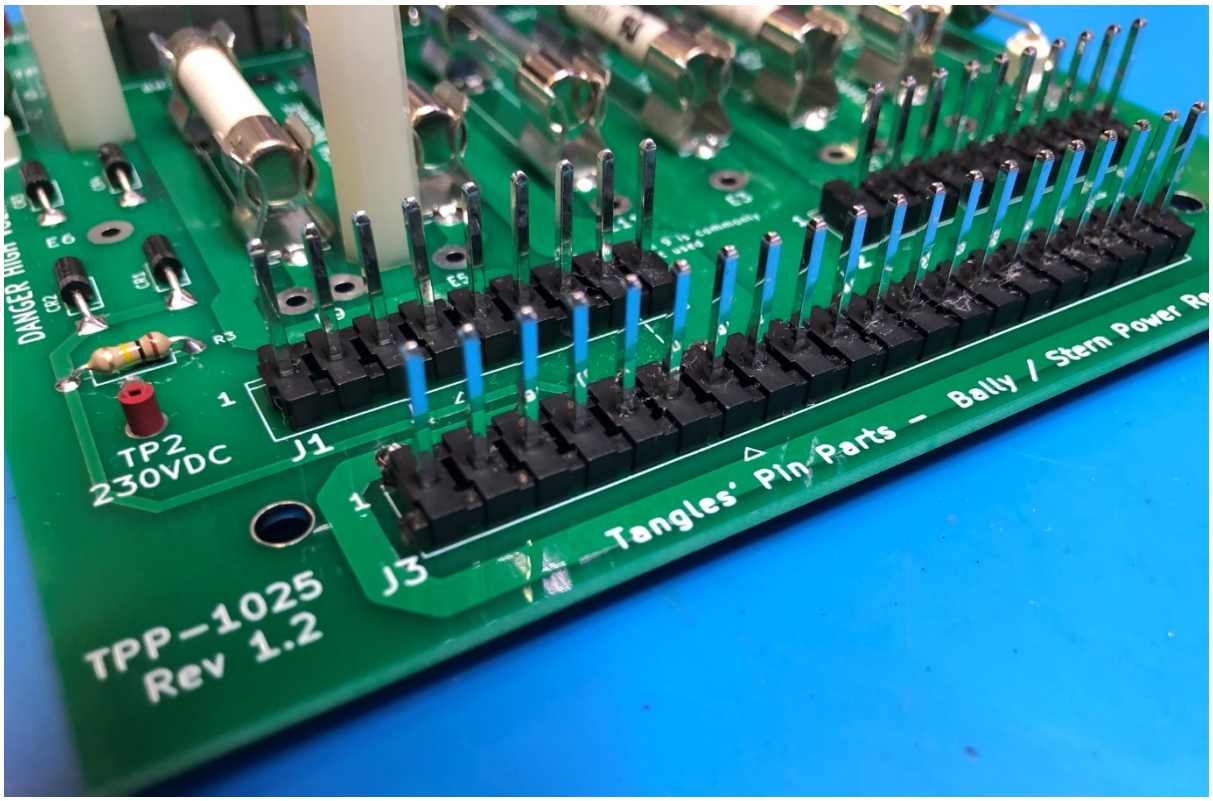
Photo Gallery

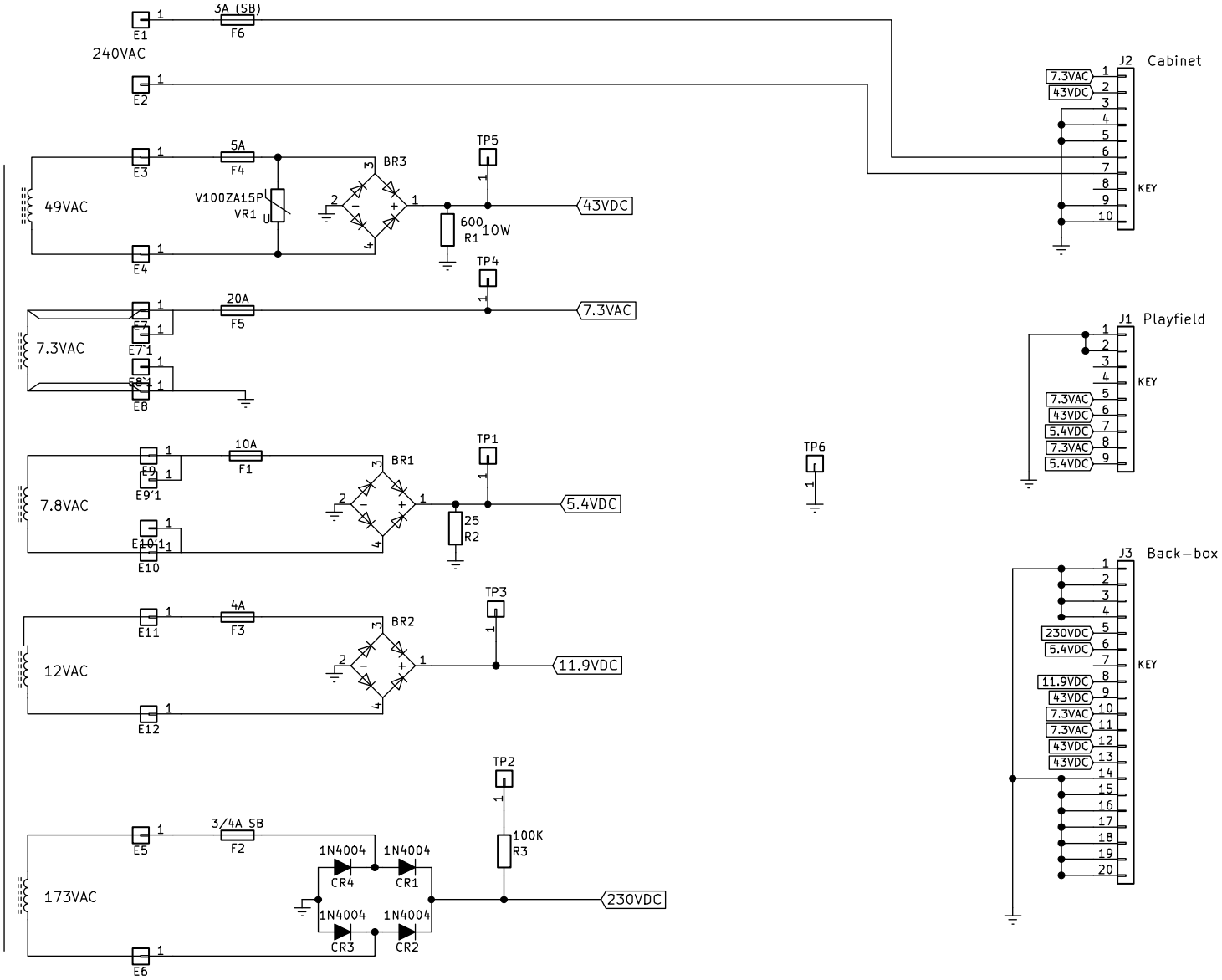



E4
E1
E12
E10
E6
E8
E2
E7
E3
E11
E5
E9


E2
E8
XCFH


KBPC3510W
TP3
11.9VDC
HIGH VOLTAGE


DANGER HIGH
TP2
230VDC
J1
J3
TPP-1025
Rev 1.2
Tangles' Pin Parts - Bally / Stern Power


E1
3A (SB)
F6
240VAC
E2
J2 Cabinet
7.3VAC
43VDC
KEY
E3
5A
F4
49VAC
V100ZA15P
VR1
BR3
TP5
43VDC
600
R1
10W
E4
TP4
E7
E71
20A
F5
7.3VAC
E8
J1 Playfield
E9
E9'1
10A
F1
7.8VAC
BR1
TP1
5.4VDC
25
R2
E10'1
E10
TP6
J3 Back-box
230VDC
5.4VDC
11.9VDC
43VDC
7.3VAC
E11
4A
F3
12VAC
BR2
TP3
11.9VDC
E12
TP2
E5
3/4A SB
F2
1N4004
CR4
CR1
CR3
CR2
100K
R3
173VAC
230VDC
E6