OWNERS MANUAL

MANUAL NO. 01 *REV. DATE: 7/2016*

ZTPRE

Zen Triode Preamplifier

REMOTE CONTROL OPTION

A dual motorized volume control option is available on the ZTPRE where both volume controls can be operated simultaneously with a single remote control.

Operating two independent volume controls with a single volume control allows you to make volume level adjustments from across the room while maintaining any balance adjustments you may have made. For example, let say you turned on your ZTPRE and raised the volume approximately half way up on each side with the remote. The two channels are balanced with each other but your listening position is off center slightly so you manually turn the right or left volume control to center the image to your liking. The difference in level between the two channels is preserved just the way you set it while the volume is raised and lowered with the remote.

At any time the two channels can be reset to perfect balance by simply turning the volume all the way down and then raising it back up to the desired level.

Indicators on the volume knobs give you a visual indication of the level for each channel. These are analog ALPS volume controls with an input impedance of 50K for each channel. Since they are not stepped attenuators but have the more desirable infinite adjustment making possible fine adjustments to both volume and channel balance, each control measures the actual resistance as the control turns so that it knows where it is. It does this by dividing the range of the control into 99 positions which can be adjusted 1 at a time with the remote control up or down.

Since there is a microprocessor in each control that measures the actual resistance as the control turns, it simply rotates the motor as long as it has to increment the control to the desired resistance. As is the nature of analogue controls, some drifting occurs as things warm up which means that to keep accurate, the control may have to be physically rotated slightly more or less, all of which is handled by the microprocessors. The result of this 'on the fly' correction is that the indicators of the volume control knobs will not always match perfectly.

HOW TO PROPERLY OPERATE THE REMOTE CONTROL

The ZTPRE remote has an ON/OFF button not to turn your preamp on or off but to turn the microprocessors in the volume controls ON or OFF. It is located here at the top of your remote, indicated by the red button. Additionally, the lower small AV button has been programmed to do the same thing, it can turn your volumes controls ON or OFF just like the red button. You can use either one.

The UP and DOWN channel buttons do nothing.

The + and - Volume buttons are used to raise and lower the volume of the ZTPRE by first turning ON the remote if you haven't already and then pressing the up or down button for just a 1/2 a second or less. You will see the volume controls respond by moving 1 increment of the 99 positions possible.

Short repeated presses quickly increment the volume up or down.

Pressing and holding the + or - volume buttons will increment the unit 1 position followed by a 1 second delay followed by a continuous rotation until you take your finger off the button.

NOTE: If power button on the remote has not been turned ON, the volume controls will not increment in small steps, but instead wait for a full second or two and then rotate continuously. This is because the microprocessors are not turned on, so you can think of it as being in **stupid mode**.

smart mode

STEP ONE - Push the Power button

STEP TWO - Press the + or - volume buttons in repeated short presses to increment the volume controls up or down with 99 steps of precision.

UNBALANCED INPUT OPTIONS

The ZTPRE is available with an optional transformer balanced input option making it possible to convert an unbalanced input to a fully balanced input. When this option is used a single RCA jack is seen instead of a 3 pin XLR jack.

The advantage of this is in maintaining a fully balanced system. Using a RCA to XLR adapter jack in place of this option will also work but will unbalanced the entire system which may or may not reduce sound quality.

It is important to understand that most balanced sources will have somewhere between 3.5 and 10.5 volts of signal whereas most unbalanced RCA components will seldom have more than 2 volts. This means, even with the balanced input transformer option, whatever you have plugged into it will still only have 2 volts and thus play much quieter than your balanced sources causing you to have to turn the volume control much higher to reach the same listening level. This is normal, but needs to be understood or else you might think something is wrong.

One nice trick when running a single ended source into the ZTPRE is to put a single tube gain stage on your source to raise the voltage to around 6 volts or so. Decware makes a product that does this called the ZSTAGE.

INPUT SELECTOR OPTION

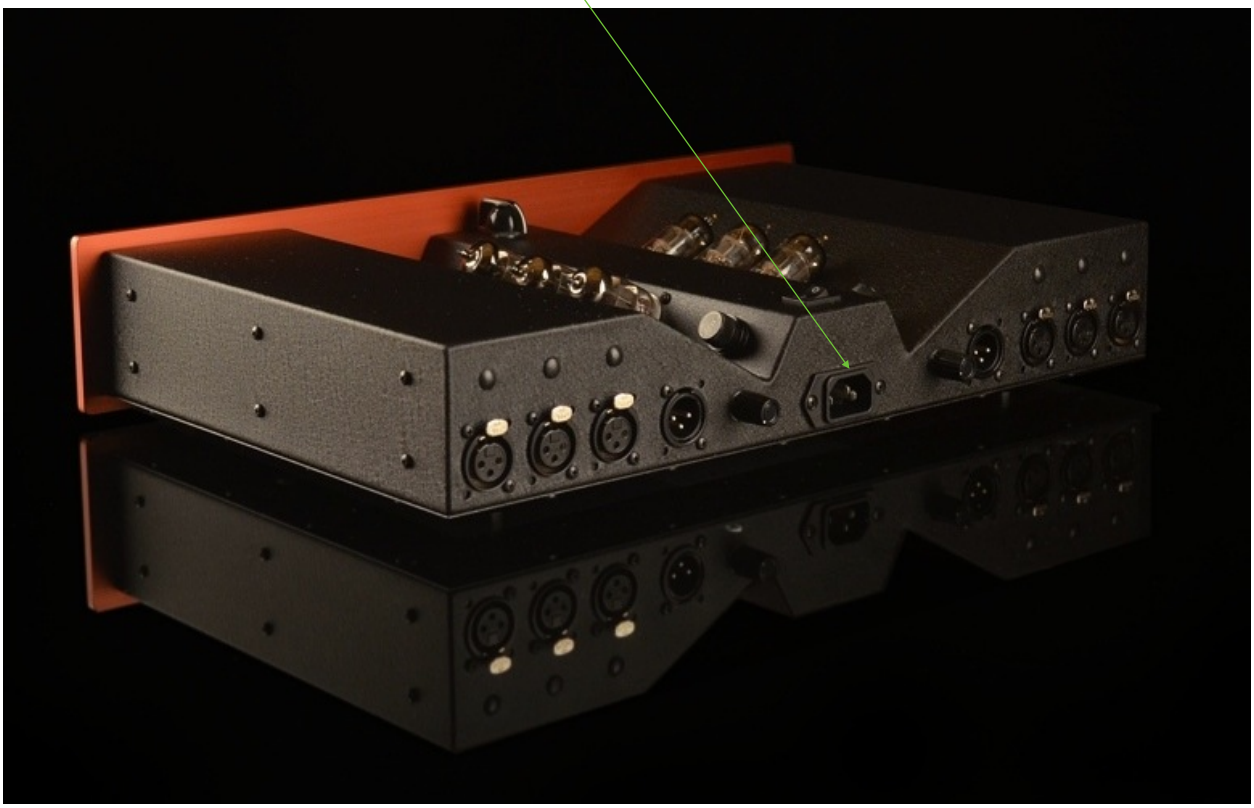
The ZTPRE comes with optionally up to 3 inputs making it possible to select from 3 different source components. The input selector is located on the top side of the unit just behind the face plate.

The input selector is set up from left to right meaning when you have it in your hand, fully counter-clockwise is input # 1 and conversely fully clockwise is input # 3. The picture above shows the selector in position # 2.

The input selector switch is a rotary type (obviously) but perhaps not so obvious is that it uses silver contacts to preserve signal integrity. It is set up with a 1/4 inch shaft being american made and is fitted with a chicken head knob with a clear white line making it all to easy to not only see, but in the dark, feel, where it is set.

IEC POWER CORD CONNECTOR / FUSES

The ZTPRE uses a standard high quality IEC connector making it compatible with all after market power cords including our own DHC-1 which is recommended. Unlike so many “hi-end” components in this price range, this is not a 75 cent IEC jack, but instead very high quality worthy of a good power cord. Even many aftermarket ‘audiophile’ power connectors are actually just gold plated 75 cent jacks so don’t be fooled.



The fuses are located on either channel of the ZTPRE and are rated at 2 amps each. Fuse specification is:

250V 2A Slo-Blo A 576-0313002.MXP

Physical Size is:
6.3 mm x 32 mm

The specification shown is available from mouser.com or you can call DECWARE at (309) 822 5255 for replacement. Also you can source your own fuses so long as they are the same physical size and rating. If you use an “audiophile” fuse, make sure it’s not a standard ceramic fuse with a new wrapper or paint job as there are many fake hi-end fuses available for 1000 times more than the actual fuse really costs. Your money would be better spent on cables, or tubes.

The power switch activates both channels at the same time. As you know, the ZTPRE is a fully dual mono amplifier which is why there are two fuses. These fuses cover both power supplies in both channels. Do not use larger than a 2 amp slow blow fuse or your warranty will be void.

OUTPUT LEVEL CONTROLS

The ZTPRE features an output level control for each channel which sets the output voltage of the ZTPRE to match the amplifier's input sensitivity. It is recommended for DECWARE amplifiers that have input level controls also known as gain controls and also used as volume controls when no preamp is used, to have the output level of the ZTPRE at full and experiment from there, whereas using the ZTPRE with non-DECWARE amplifiers it would be best to follow this set up as your starting point:

Turn your amplifier ON and let it warm up a bit. While it warms up be sure your output level controls are turned all the way down.

Turn on your source and raise the volume controls to the half way point. You will hear no sound yet, because the output level controls are turned all the way down. Slowly raise each control one click at a time until the amps are playing at your normal listening level. The ZTPRE output controls are now set. From this reference point you can experiment with setting the output controls higher or lower and compensating with the master volume controls on the front of the ZTPRE. Just go with whatever sounds the best. You are listening for dynamics, density, and a fullness to the sound when you make these adjustments.

The output level controls come standard with ALL variations of the ZTPRE. They consist of 20 position gold contact stepped attenuators using 1% precision metal film resistors with no leads and no circuit boards. There is no signal degradation as a result of these controls.

STUDIO OPTIONS

The small 1/4 inch plug you see above each of the three XLR input jacks on each channel are for studio use and are set up with input level controls for each input using the same gold contact stepped attenuators. This option is not offered on the web site but is available. Contact DECWARE for current costs per input if you're using the ZTPRE in a studio environment where the levels of each input must be accurately matched.

Alternately, these spaces can also be used for transformer coupled RCA output jacks using the Jensen wide bandwidth transformers.

Studio options can also include custom ground schemes other than the ZTPRE's anti-ground-loop design which holds the audio ground 10 ohms above true ground with a 6.8 uf 600V Polypropylene film cap bypass.

TUBES

The ZTPRE uses 3 dual triodes per channel to create a true balanced preamp. So if you look at this preamp and think of it as a V6 race engine as it's looks would suggest, it is actually a V12 using 12 triode stages to achieve audio bliss.

ZTPRE is designed for the higher heater current requirements it's factory tube compliment of 6N1P-EB tubes. These are the smoothest and the warmest tubes available making use with digital sources particularly synergistic. Replacement tubes are always available from DECWARE.

One of the unique features of the ZTPRE are the heater circuits. Each channel has it's own AC heater supply which was found to sound better than DC due to the inevitably higher current potential for the dollar, and the ZTPRE took it a step further with a high voltage 18.9 volt supply rather than 6.3 volts. This requires all the heaters of all three tubes on each channel to be wired in series. After extensive testing between AC, DC, it was found AC sounded better. After additional testing between 6.3volts where each tube is wired in parallel vs. 18.9 volts where all three tubes are wired in series saw another market increase in sound quality. It creates an interconnectedness between all the tubes of the various channel and gives it the more transparent single ended sound the ZTPRE is famous for.

This means that if the heater burns out in one tube, all three will go dead just like old fashioned Christmas tree lights! This is very rare of course but helps to know what can happen in rare cases.

The main rule with this type of circuit is that all three tubes should match as far as heater draw. See next page.

TUBE HEATER CURRENT

The three tubes of each channel have the heaters wired in series which means that ideally you want all three tubes to match. It definitely means that where the factory tube compliment of 6N1P-EB tubs are concerned, you either have to run all 6N1P-EB's or NONE at all. In other words, you can run 6922's, good strong 6DJ8's, or 7DJ8's. Some Russian 6N23P's may also work well so long as they are relatively matched.

To be clear, you can NOT mix 6N1P's with 6DJ8 or 6922 or 7DJ8 or any other compatible tube at the same time without side effects. The reason for this is that the 6N1P has a higher current draw on it's heaters than all of the other tubes mentioned. Running tubes with miss-matched current draws like this can have effects like having your 6N1P prematurely fail, or having one or both of the other tubes run with starved heaters causing higher harmonic distortion which some people would actually like.

Also, when it comes time to change tubes if you notice one tube that has grown darker in appearance than the others it is an indication that it was a weaker tube or had a heater that drew more current causing it to run hotter or both. This is not a real sonic issue, but deserves explanation in so much that if you want all your tubes to balance out perfectly and last the same amount of time aka wear evenly, then make sure they all match. Match the sections of each tube and then match the tubes themselves. This will have little sonic benefit except over time, in that you'll get longer periods of time between tube changes.

The factory tube compliment of 6N1P-EB tubes have a rated life of 6000 hours.

TUBE HEAT IN GENERAL

Due to the design of the ZTPRE's tube layout, even if configured without a selector and completely covered by a metal plate (worse case scenario) there would still be adequate ventilation for the tubes out the back so no worries about overheating.

WARM UP

The ZTPRE has no unique requirements other than the typical warm up time associated with tube gear. After the unit is turned on, the tubes will begin to warm up and glow and begin to pass signal after apron 30 seconds or so. The best sound quality, as with all tube gear, will come some time after the 20 minute mark.

MAXIMUM ON TIME

There is no time limit or suggested maximum amount of time the ZTPRE can be left on. If left on indefinitely it will have to be turned off for tube replacement every 6000 hours.

OUTPUT JACKS

The ZTPRE has two XLR fully balanced outputs, one per channel that are directly connected to the output level controls previously discussed.

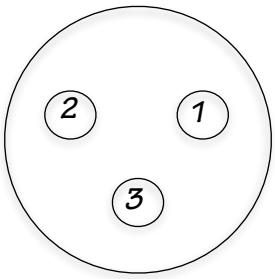
These balanced outputs have an impedance sufficient to drive cables up to 40 feet without issues.

XLR BALANCED OUTPUT

PIN 1 is AUDIO GROUND

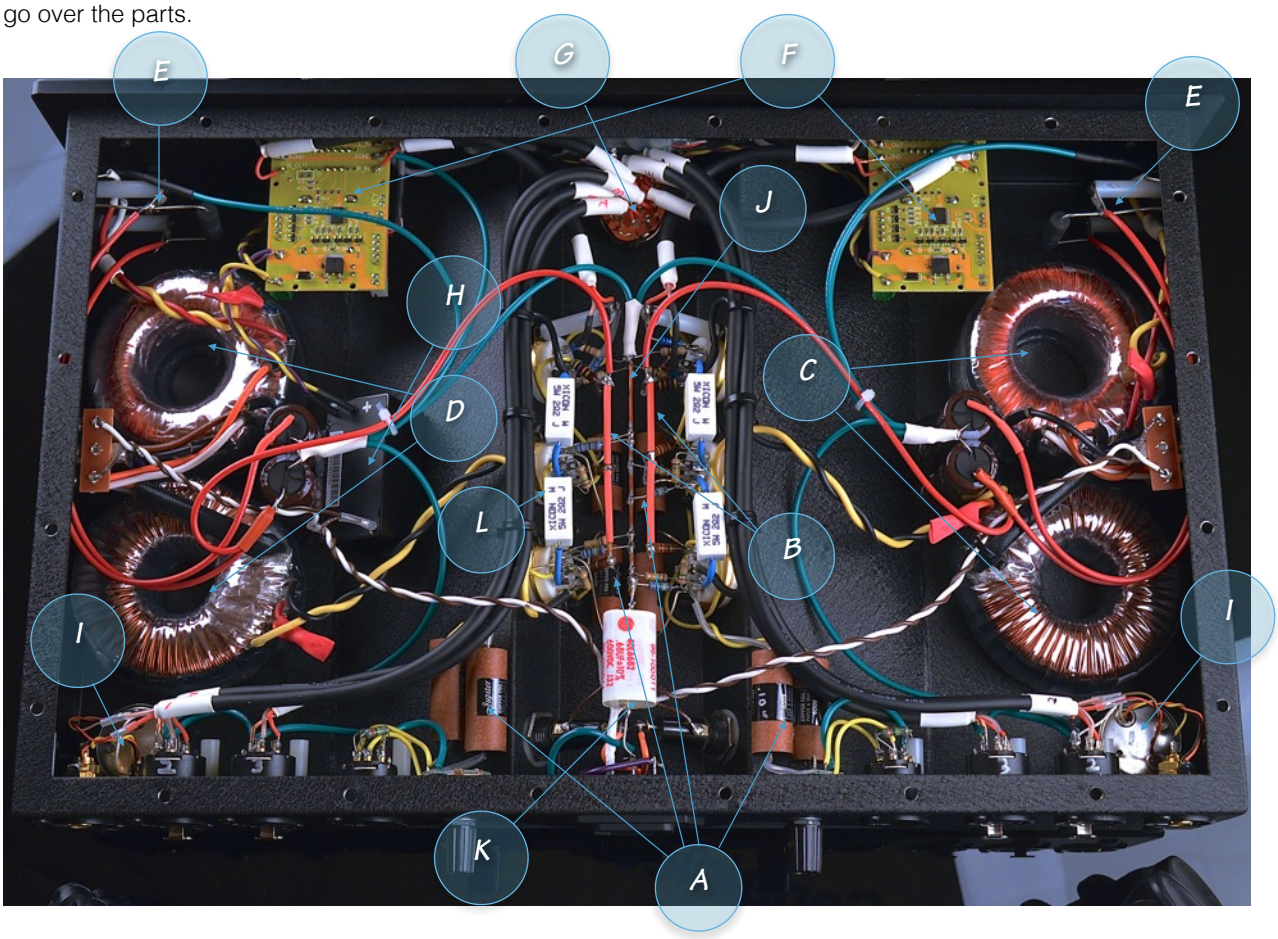
PIN 2 is SIGNAL

PIN 3 is SIGNAL



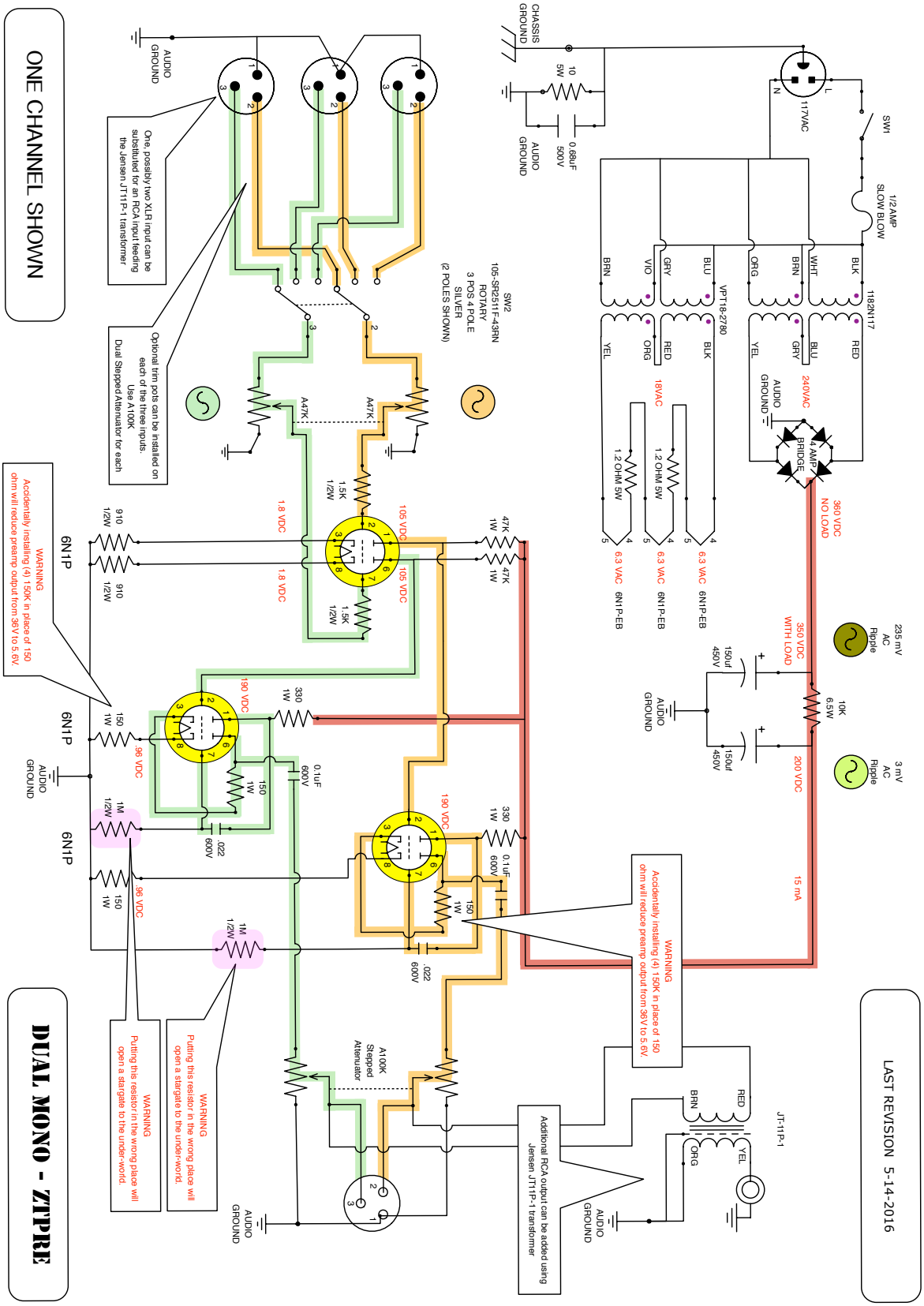
INTERNAL COMPONENTS

There are no user serviceable parts inside the ZTPRE, but there is a risk of high voltage shock of potentially 300VDC which can be stored by the capacitors inside. To keep curious hands out, we can look inside here and go over the parts.



The ZTPRE chassis is steel with powder coat finish. Transformers are floating on silicon to minimize coupling while at the same time adding mass. The shape of the chassis makes it incredibly stiff and vibration resistant. The following is a description of the internal parts shown above.

A) There are four coupling capacitors per channel for a total of eight. Shown are cryo-treated copper foil beeswax. Standard coupling caps are polypropylene film and foil caps like “K” shown above.
B) These red lines are actually the copper power supply rails, one per channel.
C) High Voltage and Low voltage transformers for left channel. The low voltage powers the tube heaters.
D) High Voltage and Low voltage transformers for right channel. The low voltage powers the tube heaters.
E) Ultra Fast Recovery high current bridge rectifier for each channel.
F) Motorized ALPS volume controls
G) Input selector switch
H) Regulated supply for motorized volume controls
I) Jensen wide bandwidth balanced input transformer
J) Copper Ground Buss of only three inches
K) Anti-Ground Loop circuit
L) Tube heater dropping resistors between each series tube heater. Two per channel.


ONE CHANNEL SHOWN
DUAL MONO - ZTPRE
LAST REVISION 5-14-2016
CHASSIS GROUND
AUDIO GROUND
117VAC
SW1
1/2AMP SLOW BLOW
10 5W
0.68uF 500V
VPT16-2780
1182N117
240VAC
4 AMP BRIDGE
360 VDC NO LOAD
350 VDC WITH LOAD
200 VDC
15 mA
18VAC
1.2 OHM 5W
6.3 VAC
6N1P-EB
150uf 450V
10K 6.5W
235 mV AC Ripple
3 mV AC Ripple
SW2
105-SR2511F-43RN
ROTARY
3 POS 4 POLE
SILVER
(2 POLES SHOWN)
A47K
1.5K 1/2W
910 1/2W
47K 1W
1.8 VDC
105 VDC
6N1P
330 1W
150 1W
190 VDC
96 VDC
0.1uF 600V
.022 600V
1M 1/2W
A100K Stepped Attenuator
One, possibly two XLR input can be substituted for an RCA input feeding the Jensen JT11P-1 transformer.
Optional trim pots can be installed on each of the three inputs. Use A100K Dual Stepped Attenuator for each
WARNING
Accidentally installing (4) 150K in place of 150 ohm will reduce preamp output from 36V to 5.6V.
WARNING
Putting this resistor in the wrong place will open a stargate to the under-world.
Additional RCA output can be added using Jensen JT11P-1 transformer
JT-11P-1
RED
BRN
ORG
YEL