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Jensen Twin Servo® 500

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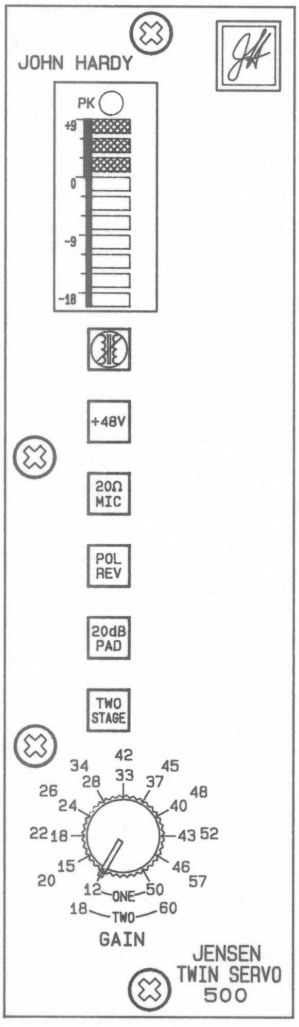
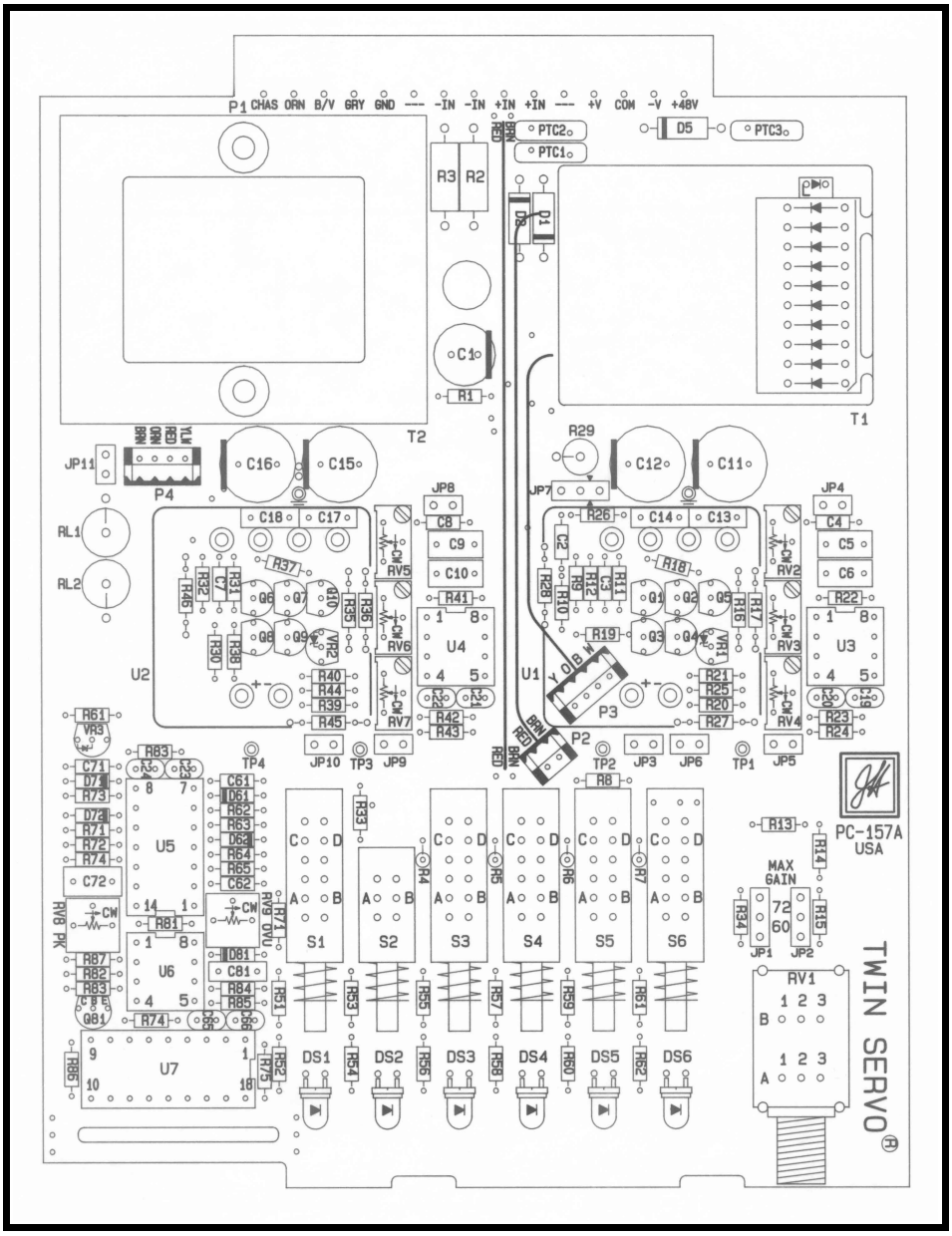
Preliminary Information

The **Jensen Twin Servo® 500** brings the essence of the original Jensen Twin Servo® 990 Mic Preamp to the 500-series format. New features have been added for greater creativity and flexibility. The combination of Jensen's best mic-input transformer (JT-16-B), a pair of 990C discrete op-amps, Jensen's best output transformer in its size class (JT-11-DM) and the total absence of coupling capacitors in the signal path provide outstanding performance.





Details

Standard features:

- **Jensen JT-16-B Input Transformer.** Jensen transformers are known worldwide as the best audio transformers, and the JT-16-B is their best mic-input model. If you thought transformers were a compromise, you haven't heard the JT-16-B! The large size, low impedance ratio (150:600Ω) and proprietary 80% nickel core material (nickel-iron-molybdenum) allow it to handle extremely high signal levels with lower distortion, flatter frequency response, wider bandwidth and more linear phase response than the more typical higher-ratio transformers. The JT-16-B provides superior common mode rejection and can handle much higher common mode voltages than transformerless mic preamps. It eliminates the need for input coupling capacitors that are required in transformerless preamps to keep the phantom supply voltage from getting into the active circuitry where it could cause damage. Those capacitors degrade the sound quality because of dielectric absorption, a condition where a portion of the signal passing through the capacitor is absorbed by the dielectric (insulator) of the capacitor, then released a short time later. This causes a smearing of the sound.
- **The 990C Discrete Op-Amp** is faster, quieter, able to drive lower impedance loads and better sounding than the typical monolithic op-amps and discrete op-amps found in other equipment. Each individual (discrete) transistor, resistor, diode, capacitor and inductor of the 990 has been carefully chosen for its task. This provides a level of performance that is not possible in a monolithic op-amp where all components are fabricated on the same tiny chip of silicon.
- **JT-11-DM Output Transformer** is Jensen's best output transformer in its size class. It is basically a one-size-smaller version of the JT-11-BMQ that is used in the original Jensen Twin Servo® 990 Mic Preamp, just the right size for the 500-series format. It provides a balanced, isolated and floating output to eliminate ground loops. Again, if you thought transformers were a compromise, you haven't heard the JT-11-DM!
- **No Coupling Capacitors in the Signal Path,** thanks to the use of *input bias current compensation* circuitry and *DC servo* circuitry. These special circuits provide superior methods of controlling input bias currents and DC offset voltage, allowing the complete elimination of coupling capacitors from the signal path. Eliminating those capacitors eliminates the degradation to the signal that they would cause.

Switches:

There are six push-button switches in the Jensen Twin Servo® 500. They use the same custom transparent push-buttons with LED backlighting and the same switches as the original Jensen Twin Servo® 990 Mic Preamp. They include two new functions:

- **Transformer Bypass (output transformer):** If you have ever wondered what effect the Jensen output transformer has on the audio quality, simply bypass it and find out! Since the JT-11-DM is the best Jensen output transformer in its size class, you don't need to worry about having it in the signal path. But now you can try it both ways. Note that you will lose the isolation that the transformer provides, so a ground loop may result. But you now have a simple way to try things with and without the output transformer.
- **+48V:** This switch turns on the Phantom Power for condenser microphones.
- **20 Ohm Mic:** Most microphones have an output impedance in the general vicinity of 150 ohms. But there are some mics that have a significantly lower output impedance. The 20 Ohm Mic switch fine-tunes the impedance match between mics that have an unusually low output impedance and the JT-16-B input transformer.
- **Polarity Reverse:** Sooner or later you will encounter a situation where a microphone cable is wired incorrectly at one end, resulting in a polarity reversal of the signal. Or, a mic may not sound quite right, perhaps because it interacts with another mic that is picking up the same sound source. Activating the Polarity Reverse switch will correct the first problem, and may offer an improvement for the second problem.
- **20dB Pad:** This switch attenuates the audio signal by 20dB before it reaches the input transformer. This can be helpful with extremely high input levels that might result in a final preamp output level that is too high, even with the gain control set to its lowest setting.
- **Two Stage Operation:** The original Jensen Twin Servo® is a two-stage mic preamp, designed to provide the lowest distortion when using very high gain settings. At very high gains, a single-stage design might have higher distortion than a two-stage design due to limits in open loop gain of one op-amp when used at very high gains. But what about lower gain settings? A single-stage design might have an advantage. The Jensen Twin Servo® 500 makes it possible to switch to single-stage operation by deactivating the Two Stage switch. This bypasses one of the 990C op-amps. Try it both ways, then use whichever you prefer.

The **Two Stage Operation** switch and the **Transformer Bypass** switch are new features with the Jensen Twin Servo® 500. Also, you now have both the **20dB Pad** switch *and* the **20 Ohm Mic** switch available at the same time.

The Jensen Twin Servo® 500 uses the same custom diamond-knurled knob for the gain control and has the same brushed aluminum, black-anodized finish for the front panel as the original Jensen Twin Servo® 990 Mic Preamp.

Additional features include a pair of plug-in jumpers on the circuit board so you can change the maximum gain from 60dB to 72dB for situations where extremely high gain is required. These jumpers are located directly behind the gain control.

The meter includes a 10-segment LED bar graph consisting of seven yellow LEDs and three red LEDs, and a separate red LED labeled “PK” (Peak) to indicate when very high output levels have been reached. The main bar graph covers a range of -18VU to +9VU in equal steps of 3dB. The 0VU point is adjustable, normally set to represent an output level of +4dBu. The PK LED is adjustable, normally set to illuminate when the output level reaches +18dBu, about 3dB before the actual clipping point.