

# Valve Pre-amplifier P 10

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The **P 10** valve pre-amplifier is the latest unit in our series of High-End two-channel analogue equipment. Its no-compromise construction and the equally uncompromising sophistication of its circuit design elevate this pre-amplifier to the very highest level. Even from the outside, the arrangement of the valves clearly indicates the amplifier's symmetrical double mono layout. The signal paths are absolutely identical, as is the sound quality. The interior of the machine (see below) confirms this beyond all doubt.

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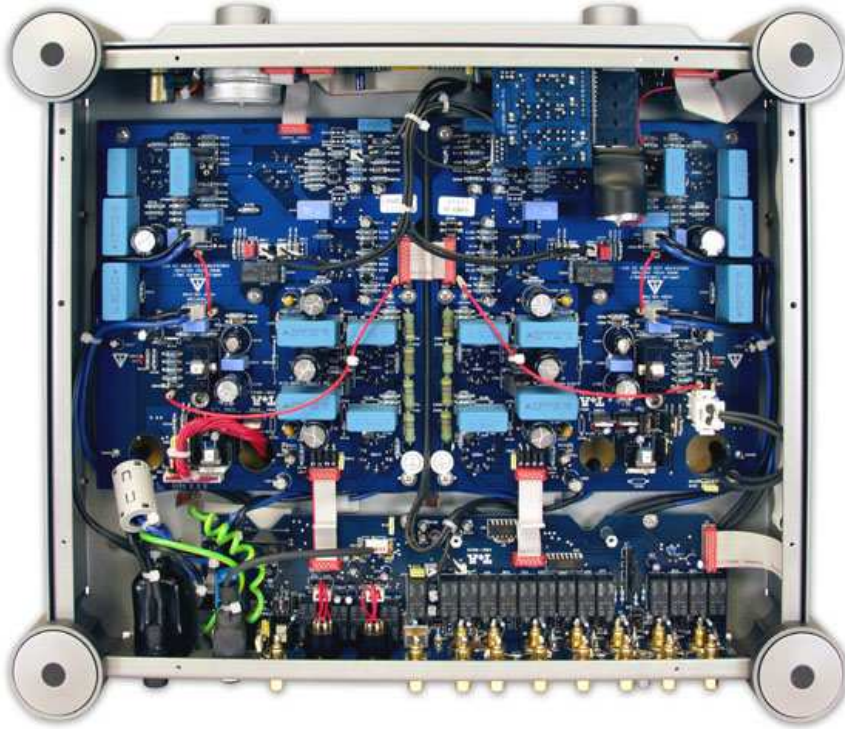
## ***Circuit concept***

the **P 10**'s five valves per channel represents an extraordinary level of complexity. Why such complication? The answer is simple: we were not prepared to accept the quality of sound which was available in the 1950's. Modern high-resolution source devices, with their unprecedented bandwidth, dynamic characteristics and minimal harmonic distortion, are far more demanding than their predecessors. If we insist on maintaining the very highest standards in terms of sound quality and musicality, and if the pre-amplifier is not to become the limiting factor in the reproduction chain as far as sound quality is concerned, then simplistic electronic concepts cannot be used.

All the amplifying stages of the **P 10** take the form of differential cascode amplifiers. This circuit design is responsible for the machine's extremely broad frequency bandwidth and excellent linearity. The valves in the amplifying stages are the „LPS“ version (Long Plate / Spiral Filament) of the 12AX7, which offers particularly low distortion. The potential sound quality of these valves has already been proved in the D10 and the front end of the V10. In fact, the linearity and quality of the **P 10**'s amplification stages are so high that we decided against including any form of negative feedback. Even though the classic negative feedback is entirely absent, the **P 10**'s total harmonic distortion and frequency linearity values are excellent.

The output stage is of fully symmetrical construction, and features both asymmetrical (Cinch) and balanced (XLR) signals. The excellent ECC99 high-current triode valve has proved its worth in the D10, and we decided to use the same component as it enables us to achieve outstandingly low output impedances. The result is that it can drive active

## Construction



- Opto-electronic input select switch with magnetic detent.
- Compound case consisting of steel, machined aluminium and acrylic
- Case feet with integral shock absorbers
- Low-impedance Cinch and XLR outputs for professional-standard connections, even with long cables
- Two-stage volume control with ALPS precision quadruple potentiometer for minimum possible total harmonic distortion and optimum signal : to noise performance
- Only the highest-quality components are used throughout, including mica capacitors, 1% metal film resistors and film capacitors
- Socket for the superb PHE-MC and PHE-MM phono modules.
- Input stage with minimal-length signal paths and galvanic all-pole isolation of source devices
- High-End gold-plated sockets made of solid brass.

### All-pole input section

when the inputs are switched on the **P 10**, „all poles“ are switched - i.e. the earth connection of the source device is switched in addition to the signal conductor. This is very complex to implement, but ensures that all unused source devices are



galvanically isolated from the **P 10**.

At any one time only a single device - the one currently selected for listening - is connected to the amplifier. In conventional Hi-Fi systems earth currents are free to wander around between the individual components, and these can have a significant adverse effect on sound quality. The problem is solved completely by the all-pole input selection of the T+A **P 10**.

As with the V10, the input switch is based on an extremely solid mechanical rotary angle encoder featuring a zero-wear opto-electronic sensor. This control, with its slop-free operation and accurate magnetic detents gives a feeling of incredible solidity and precision.

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### ***Floating ground concept***

ground and interference currents, some of them significant, flow between the earth connections of Hi-Fi devices. These currents cause voltage drops across the connecting leads resulting in increased hum and noise at the amplifier's input, either of which can have a perceptible adverse effect on the sound quality.

We were determined to eliminate these unwanted effects in the **P 10**, and have adopted a solution which is entirely new in the field of audio equipment. The low-impedance earth connection can be isolated at the amplifier's inputs, and we employ differential amplifiers in the **P 10** input instead of a conventional earth-related amplification circuit. This technology is used in ultra-sensitive laboratory measuring equipment, where it is known as a „floating ground“ circuit. The important factor with this type of circuit is that the input stage must be able to cope well with high common mode voltages. However, this is precisely the point where, by their very nature, valves have an advantage over semi-conductors. Valves operate at high voltages - more than ten times higher than those used with transistors - and this makes them ideally suited to this purpose. Since this advantage applies to any source device, i.e. including those which do not feature XLR outputs, we consider this concept to be better than the use of XLR inputs.

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### ***Mains power supplies, voltage supply***

valve amplifiers place much more exacting demands on the mains power supply than conventional transistor units. The anodes of valves require high operating voltages - in our case more than 350 V - as well as high-current heating voltages. These requirements are very divergent, and for this reason the **P 10** is fitted with separate, specialised mains sections. A shared basic feature of both mains power supplies is their layout as high-frequency flyback converters. This type of circuit effectively eliminates the low-frequency hum interference which is unavoidable with conventional mains transformers. For the heating circuit we use a D.C. voltage which is stabilised extremely accurately, and also features a „soft-start“. This also prevents hum feedback, and avoids premature valve failure, as they are heated gently and always operated at the optimum heating voltage, regardless of fluctuations in the mains voltage. The overall result is an extended effective life of the delicate amplifier valves. A micro-processor constantly monitors the entire system.

The anode voltage is also stabilised electronically with great accuracy. The slightest

residual interference to the anode voltages is eliminated by the use of separate passive filter circuits for each channel, and reservoir capacitors of extreme dimensions (2000uF / 450 V).

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## Specifications

- Principle:* Double-mono valve pre-amplifier  
of fully symmetrical construction
- Frequency response:* 0,1 Hz - 250 kHz
- Total harmonic distortion:* < 0,01 %
- Amplification:* 3,5 times
- Volume control range:* 0 ... 90 dB
- max. channel deviation at -60 dB:* < 0,2 dB
- Volume control:* quadruple ALPS precision potentiometer
- Interfaces:* TASI Surround interface
- High-level inputs:* 6, include 1 input (AUX/PH)  
can be upgradet with Phonomodul (optional)
- Input impedance:* 20 kOhm
- Input sensity:* 250 mV / 20 kOhm  
Floating-Ground switchable
- Outputs:*
- Output impedance:* < 150 Ohm
- Balanced:* 4-pin XLR with control valtage  
3-pin XLR optional
- Unbalanced:* Cinch, Tape Out
- Headphone:* 32 - 600 Ohm
- Valves per channel:* 1 x 12AX7 LPS (double triode)  
2 x 12AT7 (double triode)  
4 x ECC 99 (double triode)
- Dimensions (H x W x D):* 17 x 44 x 39 cm
- Weight:* 10 kg  
F10 remote-control handset included
- Finishes:* Alu silver, titanium