



# XP-17 Owner's Manual

## WARNING

**Water and moisture:** This device should not be used near water ( as per example, near a bathtub, washbasin, kitchen sink, laundry tub, wet basement or swimming pool ). Care should be taken such that objects do not have the opportunity to fall, and that liquid is never spilled onto or into the device enclosure through openings.

**Power Sources:** This device must be connected to a mains power source in strict accordance with the supplied product owners manual. Please verify that the AC mains voltage specified in the product manual matches those requirements indicated on the unit and the AC voltage provided to your location by the power company. The product **MUST** be connected to a MAINS socket outlet with a protective earthing connection.

**Power Cords:** Pass Labs provides a power supply cord that meets all legislated requirements for the market in which the product was originally sold. If you choose to substitute an after-market product we urge you to choose one that is fully safety rated by the necessary local authority.

Power supply cords should be routed so that they are not likely to be walked on, abraded, or pinched by items placed on or against them, paying particular attention to cords where they enter plugs or exit from a device. Never under any circumstance insert a cut or damaged power cord into a mains power socket. Cables should never be connected / disconnected with equipment powered up. Failure to heed this warning may damage or destroy equipment.

**Ventilation:** Power-amplifiers run warm, but you should be able to place your hands on them without discomfort. You must allow for this heat in installation, by providing for free air circulation around the product. Leave a minimum of 6" of space around the amplifier. The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table-cloths, curtains, etc.

### Other Warnings:

No naked flame sources, such as lighted candles, should be placed on the apparatus; This amplifier is suitable for tropical climates under 2000m and ambient temperatures of 40 degrees C or less.

**Servicing:** To reduce the risk of fire, electrical shock or other injuries, the user should not attempt to service the device beyond that which is described in the operating instructions. All other servicing must be referred to qualified service personnel.

**For Units With Externally Accessible Fuse Receptacle:** Unplug the device from all sources of power before changing or inspecting any fuse. Replace fuse with one of same physical size, type and rating as that specified by the manufacturer for that product.

### Country Specific Warnings:

China: For use at altitude 2000m or lower.

Norway: Apparatet må tilkoples jordet stikkontakt.

Sweden: Apparatens skall anslutas till jordat uttag.

Finland: Laitte on liitettävä suojakoskettimilla varustettuun pistorasiaan.

Denmark: Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.

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## **Introduction:**

For well over 60 years, Audiophiles have loved their vinyl. Not only has analog vinyl been treasured for its unique sound character, but for the true vinyl cognoscente there is something cathartic about displaying, handling and playing LP's on a fine turntable.

Technology frequently becomes better with age and with age technology frequently becomes high art. So, it is with analog reproduction; the media as we know it today is capable of truly amazing performance. For many audiophiles, it continues to be the media of choice.

Pass Laboratories has long been respected for building some of the finest phono-stages in the audio industry. Since 1999 the venerable Pass Laboratories X-ono has been respected by both consumer and professional user as one of the premiere reference phono-stage pre-amplifiers.

As associated equipment in the audio chain has improved we at Pass Labs found ourselves longing for an improved phono-stage with even lower noise, greater resolution and sonic ease than we had enjoyed with the Pass Labs earlier phono stages. The XP-17 takes what we learned from developing our premier product line and has brought some of those elements to a smaller, less costly package

The XP-17 has a very accurate RIAA equalization curve. This curve is accurate to better than 1/10 dB across 10 octaves. The accuracy of this curve does not vary with an adjustment change of gain or cartridge loading.

The XP-17 features gain adjustable from between 56dB and 76dB; a range sufficient to allow successful operation of not only high output moving magnet cartridges, but also the lowest output moving coil cartridges without the use of an auxiliary step-up transformer.

This extremely low noise / high gain structure of the XP-17 is capable of cleanly and quietly delivering in excess of 0.5V line level signal output with a phono cartridge input of 80 micro-volts. These are some of the best performance figures in the industry, and spectacular for a piece at this price point.

Thank you for purchasing the XP-17, we trust that you will find it easy to set up and a joy to use.

## **Setup:**

The XP-17 is a single chassis design with internal power supply which attaches to house power through a standard fused and grounded IEC inlet. A tag affixed to the chassis will indicate voltage and current requirements for the XP-17.

Before operation, please verify that the indicated line voltage is consistent with the line voltage where you intend to install this piece of equipment. Line voltage is determined at the time of construction and not user changeable. Line voltage will be 100 Vac, 120 Vac, 220 Vac or 240 Vac.

In addition, the rear panel also has a standard fused IEC 320 inlet socket, which accepts standard detachable power cords for connection to house power and an integral fuse holder for safety. Unit's built at 100 / 120 Vac will be fused for ½ amp; units intended for 220 / 240 Vac will be fused at ¼ amp.

In all instances the fuse will be a FST single use slow blow fuse (5mm x 20mm). Substitution of another time constant other than slow blow will not harm the amplifier but we would not expect longevity from the fuse element. It is strongly suggested that you not substitute any other type fuse or fuse rating.

We include a power cord with this product that meets all recognized compliance standards for safety. Should you wish to add an aftermarket power cord you are welcome to do so. The product accepts any cord-set with an IEC 60320 C13 connector or equivalent. We strongly suggest that you only use cord-sets that meet the legal directives of your specific country.

The single chassis XP-17 comes with one sets of input connections, two sets of output connections (RCA and XLR), and a single 5-way binding post for turntable grounding. These are located on the rear panel of the pre-amplifier.

## **Adjustment:**

On the rear panel, you will see two sets of 8 pole DIP switches for each channel, these switches allow you to select gain, and adjust cartridge loading. Next to the IEC inlet you will see graphic representation of how the two pairs of switches interact.

Cartridge loading can be adjusted from a couple ohms to 47k-Ohms, with a parallel capacitance from 100 pF to 750 pF. The default setting with all loading switches in the "OFF" position is 47k-Ohm and 100 pF.

From the factory, the XP-17 ships with a default setting appropriate for many moving coil cartridges: 100 ohms with a gain of 76 dB.

To set the XP-17 for your particular cartridge you will need to have some salient information on the cartridge. If you do not have that cartridge information please contact your dealer or the Pass Laboratories factory. We will attempt to help you with that data, but by no means do we have factory data on every cartridge ever built.

Please be aware that the XP-17 is a dual mono design, whatever setting you select for one channel the other channel will need to be set identically.



The XP-17 does not differentiate between moving magnet (MM) or moving coil (MC) phono-cartridges you will simply be setting gain as is appropriate for your specific cartridge. In all instances the switch-tab for any selection will need to be up for "on" and down for "off".

Moving Magnet will most likely require a gain setting of 56 dB. Most other cartridges will work with 66 dB gain. Very low output cartridges (typically moving coil) may require 76 dB gain

Once you have selected an initial load and gain you will need to attach the RCA connectors from your turntable to the XP-17 you will also need to attach the ground connection from your turntable to the single white five-way binding post on the XP-17. The XP-17 will function without this connection made up but the background noise level will likely be excessive.

### **Moving Magnet:**

If you have selected a Moving Magnet cartridge you will also need to select capacitance. It will be impossible to give suggestions for correct capacitance with any given cartridge, due to the huge variation in capacitance on the cables. The optimal value as with resistive loading is selected by listening.

There are three capacitive loading switches with values of 100pF, 220pF and 320 pF; these are in addition to a fixed value of 100pF. You may select any switch or number of switches; the values are additive. The range of values available is 100pF – 750pF. The correct value is that which gives the best overall tonal balance. Typically, if the cartridge sounds too bright more capacitive loading will be required.

The typical Moving Magnet cartridge is fairly predictable working into 47k-ohm load at 56 dB gain. Resistive loading is fixed at 47k-ohm with all loading switches off. If you require something other than 47k-ohm, please contact the factory.

### **Moving Iron:**

Moving Iron cartridges typically load at 47k-ohm or 10k-ohm and are not at all sensitive to capacitive loading, gain typically 66 dB.

## Moving Coil:

To operate the Pass Labs XP-17 as a Moving Coil pre-amp you should most likely start with 66dB gain. If the output proves too low then 76 dB is more appropriate.

The XP-17 is fully capable of overloading the input stage of many line stage pre-amps, which is why we suggest starting off with lower gain and increasing it if warranted. If you are hearing distortion that sounds like a dirty cartridge during loud passages, try reducing the gain,

The predominate loading effect on Moving Coil cartridges will be resistive loading, adding capacitance may in some cases selectively reduce perceived output at higher frequencies.

Resistively the XP-17 has a fixed input value of 47k-ohms and user selectable values of 10, 27, 47, 100, 250, 500, 750, and 1K. Selecting "On" for any of these values places that value in parallel with the 47k-ohm or any other value selected. From a purely mathematical perspective this gives a possible  $2^8$  resistive loading selections according to Ohm's law for parallel resistors.

We're very grateful to Georg Simon Ohm for sharing his discovery with us, but leave the math of all the perturbations to those so inclined.

From a practical standpoint, the values indicated in the table below are likely sufficient to cover the needs of all but the most obscure cartridge.

After you have selected a resistive cartridge loading that gives the best overall spectral balance and the most dynamic presentation you may choose to add or subtract capacitive loading to slightly trim the high-end response.

in ohms	1 10	2 25	3 50	4 100	5 250	6 500	7 825	8 1K
10	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
17	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
25	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
33	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
50	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
83	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
91	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
100	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
166	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
200	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
250	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
311	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
333	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
452	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
500	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
825	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
1000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
47000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

After you have selected a resistive cartridge loading that gives the best overall spectral balance and the most dynamic presentation you may choose to add or subtract capacitive loading to slightly trim the high-end response.

Please understand the loading of a moving coil cartridge is a very inexact science at best, specific recommendations should be taken (and offered) very lightly. I encourage you to think separately from the cartridge manufacturer and choose your resistive loading values accordingly. The cartridge maker may have for example anticipated a transformer being used as the initial stage of gain, the XP-17 with its active elements is a very different proposition. As an added complexity part of the cartridge loading is provided by the lead-in wiring, the resistance, and reactance of that wire must be accounted for in choosing loading values in the XP-17. As long as you derive your final setting empirically you may ignore these effects, your moving coil cartridge will not.

An improperly loaded cartridge will suffer every unwanted sonic anomaly, ranging from lack of definition and bass to a very strident and screechy high end. Making the mistake of not loading channels identically adds additional confusion. Please verify that loading for one channel is duplicated in the other accurately.

Cartridge loading is a compromise between what works best for the cartridge and what sounds best for the listener. Specifically, we are looking for a compromise loading which sounds best across the whole audio spectrum.

## Maintenance:

**Leave it on or turn it off:** The product is designed to be left on all the time. The exception to this might be a case where the preamp will not be used for an extended time - in that case it can be turned off.

**Cleaning:** The finish can be damaged by harsh cleaners and abrasive cloths. We find a damp soft cloth works best. You can also use a mild solution of Windex or white vinegar.

**Replacing the fuse:** The fuse should only be replaced with the same type and size as indicated on the rear. Audio Specialty FUSE: NOTE: The "Overload" and "Time Delay characteristics" will differ slightly (due to the different metallurgy of the fuse elements) between commercial grade and audio grade fuses. We can't guarantee that your audiophile grade fuse, won't blow at a different in-rush current threshold, than your stock commercial fuse. Use of other than approved fuses, may invalidate your product warranty and result in product damage.

How to replace the fuse:



### XP-17 Specs:

Power consumption:	35 Watts
Gain:	76, 66, 56 dB balanced, 70, 60, 50 unbalanced
output impedance:	110 Ohms RCA, 220 Ohms balanced
input impedance:	10 - 47K Ohms more than 200 values
Capacitive loading:	100 -750 pF
RIAA curve accuracy:	+/- 0.1 dB 20 - 20 KHz Passive / Active EQ
Distortion and noise:	0.004%
Dimensions:	17"w x 12.5"d x 4"h
Weight:	19lbs

## Warranty Information

We go through great effort to make a soundly engineered, and superbly performing product of lasting durability. But we also understand that things infrequently go wrong, if you have any questions or problems please contact either your dealer or the factory, we are here to support the product and you, the user.

All Pass Laboratories products purchased new from an authorized Pass Laboratories dealer in North America are covered by a transferable, limited 3-year warranty. This warranty includes all parts and labor charges incurred at the factory or factory specified repair facility, exclusive of any subsequent or consequential damages. Damage due to physical abuse is specifically excluded under this warranty.

For this warranty to apply the customer is responsible for returning the product unmodified to the factory within the specified warranty period. The customer assumes all responsibility for shipping and insurance to and from the factory or a factory specified repair facility. The conditions and stipulations of this Pass Laboratories warranty only applies to units originally sold new through an authorized dealer. Warranty on factory repair is 60 days and covers only the scope of the original repair.

Non-North America customers should consult with their original Pass Labs dealer or distributor for warranty repair instruction prior to contacting the factory or shipping product to the factory for repair.

Non-North American product must be returned to the country of origin for warranty service. Foreign distributors are only required to offer warranty service on Pass Laboratories product that they have imported, verifiable by serial number.

Please note: Conditions of warranty service and customer rights for product purchased outside the United States may vary depending upon the distributor and local laws. Please check with your local distributor for specific rights and details.

Any modifications to Pass Laboratories products that have not received written factory approval nullify all claims and void all provisions of the warranty and liability by the maker or authorized distributor. Should a modified product be returned to the factory for repair the owner will be required to pay all necessary charges for the repair in addition to those charges required to return the product to it's original configuration.

In the case of safety issues, no product shall be returned to the customer without those safety issues being corrected to the most recent accepted standards.

Removal or alteration of original Pass Labs serial numbers voids the factory warranty. Product with altered or missing serial numbers will be suspect as counterfeit or stolen product.

Pass Laboratories will not repair or in any way indemnify any counterfeit or cloned product. Pass Laboratories does not offer products in voltages intended for international markets either to authorized Pass Labs dealers or to third parties located in the United States or Canada.



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