

# Fukami Preamplifier

because music moves us



蜂鳥

HACHIDORI

<https://hachidori-onkyo.com>



# Fukami: 'to look deeply, intensely' Passion, dedication, craftsmanship...

The Fukami is an all-tube preamplifier for open-reel tape and phono playback. It includes sophisticated features for optimum interfacing with the sources and downstream components.

Unassuming in its presentation, the Fukami is designed to be an open window to the subtleties and emotional impact that the best analog recordings can convey. Rather than call attention to specific details, it allows the gestalt of the music to move the listener directly.

The sonic objectives, user features, construction techniques, and aesthetic design are realized as an integrated whole to be timeless and devoid of extraneous frills. In this sense, it is an embodiment of Zen philosophy.

With proper care and maintenance, the Fukami will provide consistent performance and listening pleasure for generations.



Window of Enlightenment

## Zen philosophy

With origins in Mahayana Buddhism, Zen travelled from China to Japan in the 12th century and has had a profound impact on Japanese thought, art and culture which continues to this day. Emphasizing enlightenment via intuition and direct experience, facilitated by meditation, it has influenced many Japanese kōgei traditional arts. Dispensing with the mundane in favor of what is essential has resulted in art forms of timeless beauty and daily use items of great simplicity and practical utility. An important element of Zen-inspired paintings and architecture is the Enso circular symbol. It represents the lack of beginning and end, a good example of the lack of duality found in Zen thought.

# Sound

## State of the art sound quality

Cable shield driver for high-impedance tape heads; eliminates the possibility of in-band head resonance and high frequency peaking/roll off by eliminating the effect of cable capacitance loading.

Push-pull 600 Ohm output driver uses output transformers with Permalloy cores to minimize high-order harmonic distortion. A precision discrete Class A DC servo is used to balance plate currents to minimize low frequency distortion.

All audio coupling, equalization and phase compensation capacitors are dipped silver mica types, which provide a combination of superlative sound quality and high stability and reliability. Special circuit design techniques are employed to allow their use, given quite limited available capacitance values.



User Adjustable Equalization

# Usability



## High degree of flexibility and ease of use

Two-stage stepped attenuators, offering wide range and precise, repeatable output level adjustment; useful for maximizing the dynamic range of A/D converters.

Sophisticated output level metering, especially suitable for interfacing directly with high-resolution A/D converters to maximize their dynamic range. Accurate, high-speed peak hold function allows highest peak during playback to be held indefinitely.

Front (open)



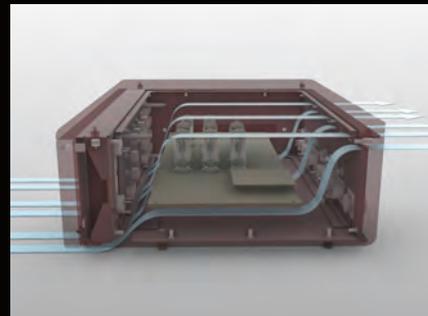
# Quality

## High degree of reliability and longevity

Except for a pair of 12BH7 output tubes, 12AX7/ECC83 tubes are used for their combination of sound quality, availability, and low current operation, which yields long life of tubes and associated components.

Power supply and audio chassis are designed with effective passive cooling to extend component life.

Components are operated well within their ratings to ensure long life.



Ventilation structure

# Maintenance



Fukami Underside

## Ease of maintenance and repair

All high-voltage power supply and audio wiring is point-to-point for maximum reliability. Components are mounted on turret posts for easy field replacement when needed.

Use of electrolytic capacitors is limited to the extent practical, and long-life types have been chosen where necessary.

Rear

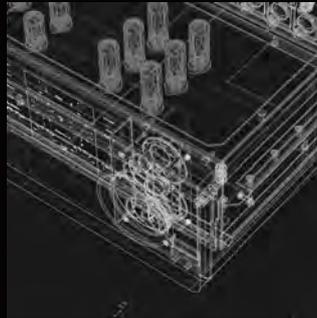


# Design

## Understated but beautiful aesthetic design

This elegant design has a traditional look, but breaks from tradition by combining Wajima Nuri exterior panels with a 3D CAD-verified monocoque aluminum frame.

As with the electronic circuits, the exterior panels are made with materials and techniques which can last for a lifetime and allow for easy removal and repair to as-new condition if scratched or damaged.



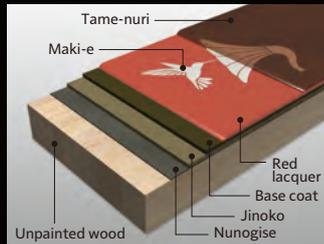
3D design image



Hand polishing



Maki-e applied by hand



Wajima-nuri process

## “Wajima-nuri” urushi lacquerware

Wajima-nuri is a nationally designated lacquerware considered to be the highest expression of lacquer craft in Japan. This technique is only practiced by registered artisans in Wajima city.

Wajima-nuri reflects the ancient Japanese philosophy of craftsmanship which emphasizes high quality and longevity.

The process begins with the application of Nunogise cloth to the wood substrate, followed by the application of a Jinoko base coat, a mixture of locally-sourced fine clay and lacquer. This helps to strengthen and stabilize the wood. After sanding, a base coat of pure lacquer is applied, followed by repeated steps of sanding and application of lacquer, each followed by periods of air drying in controlled temperature and humidity conditions. After application of a coat of red lacquer, the Hachidori logo is hand painted using the Maki-e technique and lacquer containing fine silver or gold powder. The top coat is applied using the Tame-nuri technique and extensive hand polishing, yielding a deep shine with subtle color gradations which are unique to each piece. The process involves about 20 steps and takes approximately 10 months to complete.



## About HACHIDORI Inc.



Hachidori was established in 2018 by Jonathan Knight to provide unique products and services to the high-end audio community.

While modern circuit design, 3D CAD design, CNC machining, and advanced surface finishing techniques are employed, the sonic and technical goals of Hachidori are based on a reverence for the Zen-like simplicity and natural, musically compelling sound of the best vintage audio equipment. A similar reverence for many Japanese traditional arts led to a desire to incorporate them in a product which is not only functional, but can be enjoyed as an interior design element for decades to come.

The Fukami preamplifier is the result of a 5-year collaboration between Hachidori (product concept, circuit design), Age Design (aesthetic and 3D mechanical design), Chubei (Wajima nuri lacquer) and various engineers, artisans, metalworkers, surface finishers, etc.



President  
Jonathan Knight

Jonathan enjoyed audio as a hobby with his father from a young age and has been building amplifiers and speakers since his teens. He worked at an audio repair facility during his student years and learned much about component selection and construction techniques which contribute to long-term reliability and longevity. He has owned and studied hundreds of amplifiers, tape recorders and speakers spanning the 1920s to the present day and has applied these learnings to the design concepts and implementation of the Fukami preamplifier. 27 years in analog and mixed-signal semiconductor R&D and management have contributed unique solutions to some of the problems associated with an outboard tape preamp. A similar amount of time living in Japan and spending time with many Japanese audiophiles have provided perspectives which further contributed to his vision.

## Fukami Preamplifier electrical specifications

Equalization options	NAB	7.5 ips, 19cm/s and 15 ips, 38 cm/s	
	CCIR	15 ips, 38cm/s and 30 ips, 76 cm/s	
	AES	30 ips, 76cm/s	
	RIAA		
Equalization accuracy	RIAA 100-10kHz	typical: +/-0.25dB	worst case: +/-0.4dB
	RIAA 20-20kHz	typical: +0.25/-1dB	worst case: +0.4/-1.5dB
	Tape 100-10kHz	typical: +/-0.25dB	worst case: +/-0.5dB
	Tape 20-20kHz	typical: +0.25/-1dB	worst case: +0.5/-3dB <sup>1</sup>
Input impedance	user adjustable, 0-300K Ohm in parallel with 30pF		
Recommended tape head inductance	150-800 mH <sup>2</sup>		
Input sensitivity for +4dBm (1.2V RMS) output	RIAA	-49dBu (2.8mV RMS at 1 kHz)	
	Tape	-46dBu (3.9mV RMS at 1 kHz)	
Voltage gain (at zero attenuation)	RIAA	53dB	
	Tape	50dB	
Output level attenuation	Precision switched attenuators	0-9dB in 1 dB increments 0-50dB in 10 dB increments	
Load impedance	600Ohm or >3kOhm, user configurable <sup>3</sup>		
Output at clipping, 1 kHz	Bridging (>3K Ohm load) +30dBm/ 25V RMS		
Output level metering	VU	200ms rising/falling (0.2dB accuracy at FS)	
	Peak Program	<10us rising (0.2dB accuracy at FS) 1.5s to fall 20 dB	
	Infinite Peak Hold	<10us rising (0.2dB accuracy at FS)	
Output level metering sensitivity	User adjustable, ganged VU and PP/Peak Hold and separate VU and PP/PH		
AC power requirement	95-240VAC 50/60 Hz <sup>4</sup> , approximately 60W		
Dimensions (WxDxH)	463 x 370 x 180mm		

Note 1: Frequency response is measured with a flux loop. Error depends on precision of equalizer adjustments and response of tape head.

Note 2: Self noise of the preamplifier may be too high if head inductance is much lower than 150 mH.

A stepup transformer should be employed for low-impedance heads (e.g. Studer A80VU).

Note 3: Output amplifier needs to be loaded with approximately 600 Ohms, included from factory for bridging applications (greater than 3K Ohm load). Internal 600 Ohm resistor should be removed for driving 600 Ohm loads.

Note 4: Power transformer taps are configurable for worldwide requirements.



Fukami Preamplifier



Fukami Power Supply

A separate power supply is used to minimize hum and reduce temperature rise and overall dimensions of the preamplifier.

Dimensions (WxDxH) : 370 x 200 x 125mm



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## Project partners



CHUBEI

CHUBEI Nakashima  
<https://n-chubei.com>

AgeDesign

AgeDesign Co., Ltd.

<https://www.agedesign.co.jp>

The company was founded in 1872 in Wajima, Noto, Japan, under the name of Chubei (the first lacquer artisan in our family). While inheriting the traditional craft of Wajima-nuri, we have added our own unique techniques to produce more robust and elegant products.

Established in 2005, Age Design provides precision design and 3D CAD services, but is also well versed in traditional Japanese craft techniques. Connecting modern industrial design and craft allows the creation of simple, beautiful and unique designs.

## Special thanks



Ishikawa Plate

Ishikawa Plate Co., Ltd.  
<https://www.ishikawaplate.co.jp>



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<http://ishimorimokko.co.jp>