

PIONEER

QA-800

A single unit, four-channel pre/main amplifier for the creation of a living presence quadraphonic sound field.



This radically new Pioneer pre/main amplifier is your passport to the stunning adventure of four-channel stereo. A total capability unit that provides up to 204 watts of musical power at 4 ohms, the QA-800 permits the creation of a brilliant concert hall acoustical field in your own listening room without the additional cost of multiple stereo accessories. Its total of four amplifiers, and ingenious "quadralizer" circuitry, means that you may create four-channel sound from any existing two-channel stereo source which you now possess: pre-recorded tapes, your own stereo discs, or FM broadcast. The QA-800 offers a choice of two Quadralizing Effect Systems for home music reproduction: (1)

the "Matrix" operation, which creates a room-enveloping sound field without specifying instrument locations, and (2) the "Phase Shift" operation, which produces normal, transparent two-channel stereo sound from the front speakers, but adds a phase-shifted concert hall effect with a slight echo effect from two rear speakers. Either of these quadraphonic effects are possible simply by pushing a switch that is conveniently located on the front instrument panel. The rich sound of quadraphonic stereo is here now. And Pioneer's QA-800 gets you into this total sound picture better than any other unit of its kind or price.

QA-800



AN INTRODUCTION TO QUADRAPHONIC SOUND

Audio technologists have long been concerned with the potential of four-channel sound for the reproduction of an authentic "living presence" within the usual confines of the home music room. Today that sound is a reality, and the Pioneer QA-800 creates it for your own home. Four-channel sound technology is such a rapidly progressing field for the reason that no other form of sound reproduction can so accurately re-create the ambience of the concert hall or the reality of original sound characteristics. Four-channel sound is simply the ultimate in home music entertainment. Remember, as you sit in a concert hall or auditorium, you are bombarded by sound waves from all conceivable directions. What you hear is not simply the sound of the musical instruments that are being played in front of you, but the sounds which are reflected from the walls on both sides or the rear of the hall, as well as the reverberations of your own applause. The sound you hear, thus, is composed of both direct and indirect sound waves as they converge upon your ears.

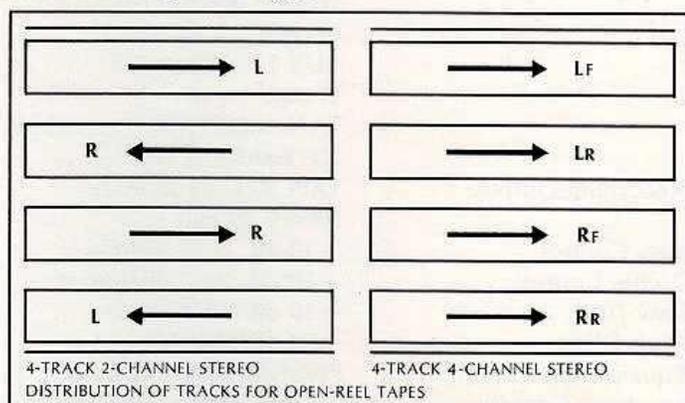
Conventional two-channel stereo has had as its main objective the re-creation—in the best tonal quality possible with the use of two microphones—of the sounds being played on the stage in front of a concert audience. But four-channel stereo takes the sound of music a completely new step

forward—to the re-creation of the entire sound field that surrounds you while you listen to a concert. With quadraphonic sound, loudspeaker systems are placed in front and in back of you. You are enveloped in sound, you are able to hear the reproduction of the actual reverberations and reflected sounds of the concert hall. And the results, as well you might imagine, are stunningly effective.

There are today a number of different four-channel stereo sound systems, each with certain key advantages for the music listener. But the Pioneer QA-800 is capable of providing each of the different four-channel modes. The QA-800 can be set by a single switch to provide any of three different four-channel modes, as well as provide reproduction of conventional two-channel stereo. It is a self-contained quadraphonic music system. The amplifier, four speakers and your favorite musical source (tape, records, FM) are all that is required for the new four-channel sound. You do not need additional amplifiers or synthesizers. Moreover, the QA-800 may be used as a standard two-channel stereo amplifier. If at this time your stereo budget prohibits the move to quadraphonic stereo, you can use the new Pioneer amplifier with your existing two speakers, then add another pair of speakers at a later date to achieve the brilliance of quadraphonic sound.

DISCRETE FOUR-CHANNEL STEREO

This system of four-channel sound employs a four-channel tape deck which reproduces sound recorded on each of four separate tracks. It is both the most authentic in terms of sound quality, and the most expensive since it requires not only a four-channel tape deck but special four-channel tapes. Since the sounds are recorded on four completely independent channels, they are reproduced at a very high degree of fidelity. Program sources available today for discrete four-channel stereo include standard open-reel tapes and 8-track tape cartridges.



MATRIX-TYPE FOUR-CHANNEL STEREO

One mode of achieving four-channel stereo sound from conventional two-channel program sources is the "matrix" system, one of the two quadralizing effect systems possible with the Pioneer QA-800. With this system, signals from a two-channel program source are fed through a unique matrix circuitry contained within the amplifier, analyzed, and divided into four different signals which are then fed to four loudspeaker systems for sound reproduction from these systems. The four signals include:

(1) For the left front loudspeaker, a composite signal, comprised of a double strength left channel signal to which is added a single strength right channel signal, is extracted and fed to the loudspeaker. ($2L + R$).

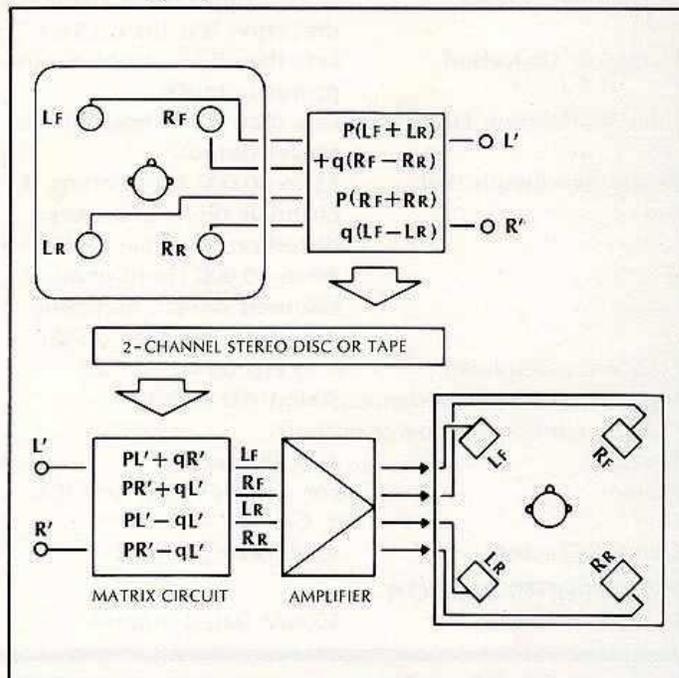
(2) For the right front loudspeaker, a composite signal, comprised of a double strength right channel signal to which is added a single strength left channel signal, is extracted and fed to the loudspeaker. ($2R + L$).

(3) For the left rear loudspeaker, a composite signal, comprised of a double strength left channel signal from

which the elements of the right signal have been eliminated, is extracted and fed to the loudspeaker. ($2L - R$).

(4) And, for the right rear loudspeaker, a composite signal, comprised of a double strength right channel signal from which the elements of the left signal have been eliminated, is extracted and fed to the loudspeaker. ($2R - L$).

To appreciate the technology of the matrix system, it is important to remember that today the majority of conventional two-channel stereo sound programs are produced by first recording the original sounds on a multi-channel system using a series of microphones. This multi-channel sound is then fed through a complex mixing system where reverberations and echo effects are often added, and then it is released, on tape or disc, as a two-channel stereo sound program. When the two-channel program is fed through the matrix circuit contained in the QA-800, it is possible to achieve the effects of four-channel stereo. Nonetheless, when the matrix system is used there is a tendency for the point of sound to wander. Thus, the system is more suited for the reproduction of popular music or small combo group performances than for large ensemble musical groups.



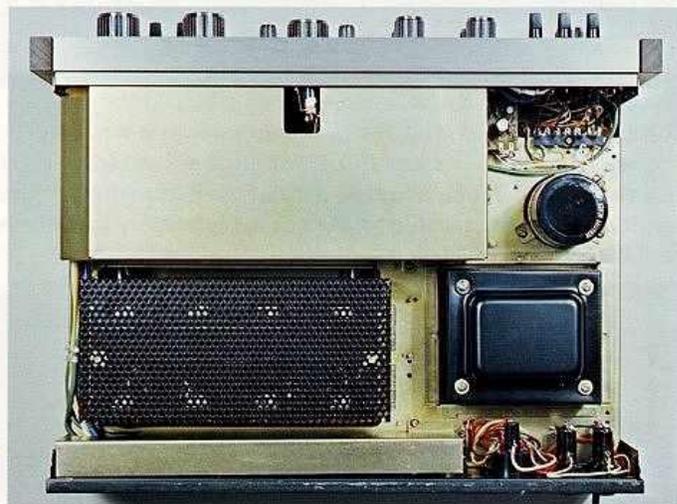
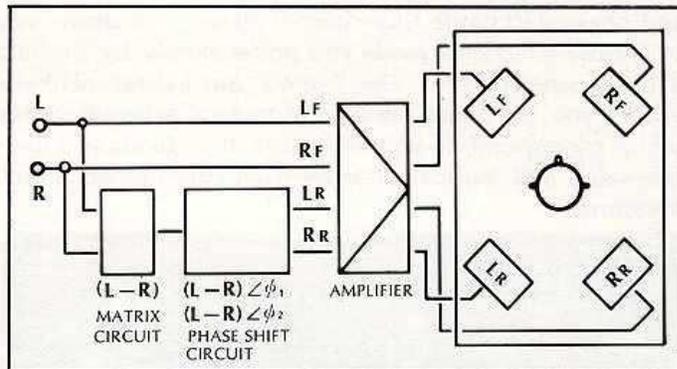
PHASE SHIFT FOUR-CHANNEL STEREO

This system was developed by Pioneer for the ultimate in four-channel stereo reproduction. With the phase shift system, the conventional left and right stereophonic channels are reproduced from the two loudspeaker systems situated in front of the listener. But added to this conventional stereo sound is a phase-shifted "wall of sound" or concert hall effect which emanates from a pair of loudspeakers placed behind the listener. These rear speakers reproduce a differential sound—the difference between the left and right speakers (L-R) to which has been added a 90° phase shift over the entire audio spectrum. The result is the rich depth of a live performance, a slight enveloping echo effect through the two rear speakers, a genuinely thrilling musical experience.

The principle of the phase shift system has a great deal to do with the way the human ear perceives sound waves. The reflected sounds of a concert hall which we hear as we sit in the audience are distinguished by their relative phase differences; we are bombarded by different levels of sound waves at different times. But since it is technically impossible to reproduce this multitude of varying sound waves on a conventional two-channel stereo recording, all two-channel musical programs available today are a long ways from re-creating the original sound field that we perceive in person at a concert.

The uniqueness of the Pioneer Phase Shift mode is its ability to reproduce to a great extent the time or phase differences in four-channel sound that are impossible to reproduce in two-channel stereo. The concert hall effect is made possible by the two rear loudspeakers. The sound is thus an "unpinpointed" sound, sort of a floating sound diffused over a broad area to provide much the same effect as the reflected, audible sounds of a concert hall.

While phase shift four-channel stereo will add extra living presence to most any musical program, it is most effective in the reproduction of classical or operatic music.



THE QUADRALIZER

At present, program sources for discrete four-channel stereo systems (in which all four channels are completely independent) are both limited and expensive. Pioneer's QA-800, however, allows you to achieve the effects of four-channel stereo sound from conventional two-channel stereo program sources by use of a special device called a "quadralizer." This special circuit device can provide both matrix and phase-shift mode four-channel stereo, and allows you to choose whichever mode you prefer simply by pushing a front panel button. The Pioneer quadralizer naturally allows you to choose the type of musical program source which corresponds to your own taste, thus giving you double value and musical pleasure from your Pioneer stereo investment.



WIDE DYNAMIC RANGE HEADAMP SECTION

The QA-800's head amp features an extremely wide dynamic range owing to its low noise, long-life silicon transistors and two-stage direct coupled circuit NFB equalizer. The result of matching these components is extremely low noise and a wide dynamic range, plus outstanding stability.



CLICK STOP TYPE TONE CONTROL

Use of low noise silicon transistors and click stop tone controls means that precise setting of all controls is possible with the QA-800. Separate controls for both front and rear speakers, when the unit is used for quadraphonic stereo, are also provided.



BIG POWER AND WIDE POWER BANDWIDTH

The power amp section of the QA-800 features a quasi-complementary single ended push-pull circuit utilizing all high-performance silicon transistors. The unit provides a generous continuous power output of 20 watts \times 4 (4 channels driven at 8 ohms, IHF), and is complemented by a remarkable 15 to 50,000Hz power bandwidth (IHF, 8 ohms, 4 channels driven).



EXCLUSIVE PIONEER LEVEL CONTROLS

In addition to the master volume control of the QA-800, which adjusts the level of all four channels simultaneously, the unit is provided with four separate level controls, one for each channel. These controls make overall balance adjustments extremely easy, and they are especially useful when front and rear speakers of different sensitivities are used. The controls also permit balance adjustments for listening from any part of the room, not only the exact center.

VERSATILE INPUT TERMINALS

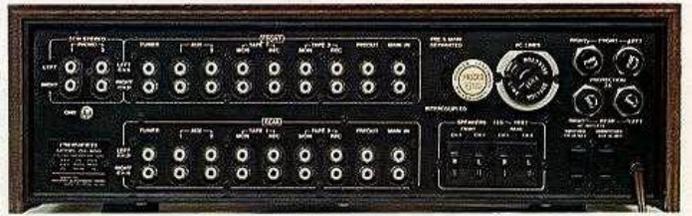
The QA-800 includes two sets each of Phono, Tape and Aux inputs. With the two Phono connections it is possible to compare two different stereo cartridges. The pair of tape inputs allows you to use both open reel and cassette decks simultaneously, and accomplish tape-to-tape duplication with ease.

PRE/MAIN SWITCHING

A switch is provided on the QA-800 to separate or couple the preamplifier and power amplifier at will. This will enable you, if you choose, to upgrade your system into a multi-amplifier stereo system by the simple addition of an electronic crossover network (Pioneer model SF-700 or SF-500) and other amps.

COMPLETE AUXILIARY CIRCUITS

The QA-800 possesses separate headphone outputs to let you monitor both front and rear signals individually. There is also a special -20 dB muting switch, high and low cut filters for reduced interference, plus a range of other professional features. The cabinet and control panels are visual symbolizations of the Pioneer "Quadralizer" concept; the overall design of the QA-800 is in famed Pioneer silver-black-wood.



SPECIFICATIONS

SEMICONDUCTORS

Transistors: 48
Diodes: 9

POWER AMPLIFIER SECTION

Music Power Output (IHF): 204 watts (4 ohms)
144 watts (8 ohms)
Continuous Power Output: 34 watts + 34 watts / 34 watts
(2 channels driven) + 34 watts (4 ohms)
27 watts + 27 watts / 27 watts
+ 27 watts (8 ohms)
Continuous Power Output: 24 watts × 4 (4 ohms)
(4 channels driven) 20 watts × 4 (8 ohms)
Power Output in the Range
of 20 to 20,000Hz: 23 watts + 23 watts / 23 watts
(2 channels driven) + 23 watts (8 ohms, harmonic
distortion less than 0.5%)
Harmonic Distortion: Less than 0.5% (continuous
power output)
Inter Modulation Distortion: Less than 0.8% (continuous
power output)
Power Bandwidth (IHF): 15 to 50,000 Hz (8 ohms, 4
channels driven, harmonic
distortion less than 0.5%)
10 to 50,000 Hz (8 ohms, 2
channels driven, harmonic
distortion less than 0.5%)
Frequency Response: 8 to 70,000 Hz ± 1 dB
Input Sensitivity/Impedance: 500mV/50 Kohms
(1 KHz, continuous power output)
Speakers: 4 to 16 ohms
Phones: For (Ch. 1, Ch. 3) and (Ch.
2, Ch. 4)
Damping Factor: 40 (8 ohms, 1 KHz)

PREAMPLIFIER SECTION

Output Voltage: 500mV (rated output)

Harmonic Distortion: Less than 0.08%
Frequency Response: 20 to 40,000Hz ± 1dB
Input Sensitivity/Impedance: PHONO 1,2: 2.5mV/50 Kohms
(1KHz, for rated output) (2 ch.)
TUNER: 200mV/100 Kohms
(4 ch.)
AUX 1,2: 200mV/100 Kohms
(4 ch.)
TAPE MONITOR 1,2: 200mV/
100 Kohms (4 ch.)
Recording Output: TAPE REC 1,2 (pin jack):
200mV (4 ch.)
Bass Control: -10 dB, +10 dB/100Hz
Treble Control: -10 dB, +10 dB/10KHz
Low Filter: -10 dB/50Hz
High Filter: -10 dB/10 KHz
Equalization Curve: PHONO: RIAA S.T.D.
Loudness Contour: +11 dB/100 Hz, +7 dB/10 KHz
with volume control
set at -40 dB position
-20 dB
Muting: -20 dB
Hum and Noise (IHF): PHONO: more than 80 dB
TUNFR, AUX: more than 90 dB
Channel Separation (1 KHz): PHONO: more than 40 dB
TUNER, AUX: more than 50 dB

MISCELLANEOUS

Power Requirements: 110, 120, 130, 220, 240V
(switchable)
Power Consumption: 400 watts (max.)
Dimensions (overall): 16¹⁵/₁₆(W) × 5¹¹/₁₆(H) × 13¹/₄(D)
inches
430(W) × 145(H) × 337(D)mm
Without package: 24 lb./
10.9 Kg.
With package: 28 lb. 6 oz. /
12.9 Kg.



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