ONKYO A-5/A-7

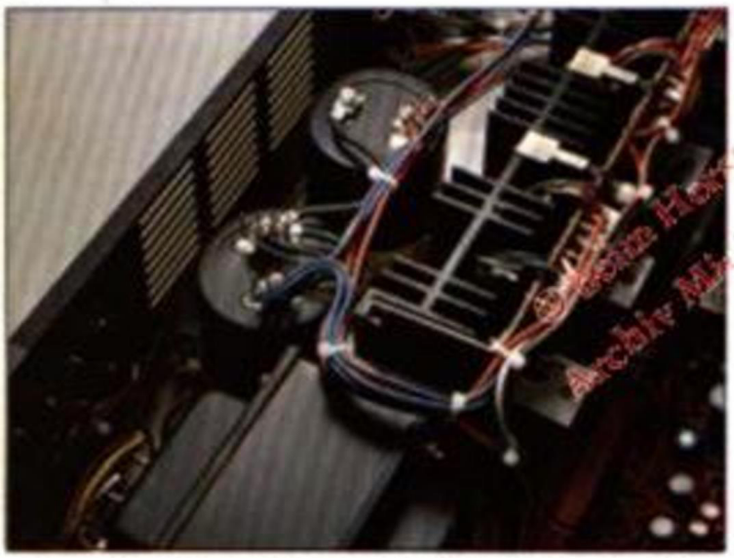
Solid State Integrated Amplifiers

You can hear the specifications

POWER WHERE IT COUNTS

Amplifier design is generally based on the assumption of zero equivalent series resistance (ESR), while in actual fact, some ESR is always present. In designing the A7 and A5, however, Onkyo has come closest to the theoretical zero ESR point than has ever been reached through application of especially large capacitors, the A-7 with 50,000 μF and A-5 26,000 μF, unusually thick ground wiring and power transformers.

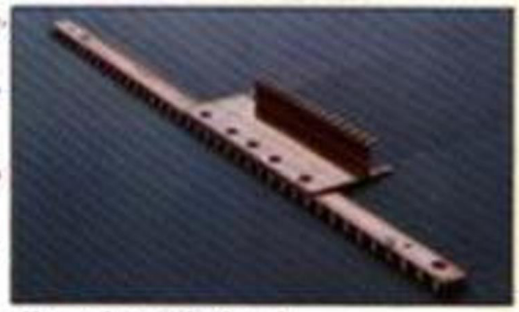
Onkyo's exclusive bus feeder ground, using copper plates in place of wire also functions to bring ESR near the theoretical zero point. If ESR is high when a pulse signal is transmitted, a difference potential occurs in the ground circuit, resulting in a sudden weakening in the pulse signal surge and an increase in crosstalk channels.



Because of its basic, very low distortion design, Onkyo amplifiers require and provide exceptionally muscular and stable power supplies. There's more power than you need for normal operation, but a lot available for when it's needed for optimum performance.

Since low end frequencies require more power than high end, this extra strength provides exceptional capabilities in bass tone reproduction. In addition, Onkyo's approach to the theoretical ESR zero point further enhances bass reproduction.

Reserve power is also an important factor in reducing a form of distortion known as "clipping," by coping with program peaks or surges. Since all sound is a waveform, clipping actually cuts the ends off the waves when there is too little power to meet sudden demands. Your music even sounds as if it were shattered, harsh and mushy. For this reason, Onkyo has established power ratings at conservative levels under a variety of conditions, all conforming to FTC (Federal Trade Commission) rules and IHF (Institute of High Fidelity) guidelines.



Finally, the massive power supplies provided in Onkyo amplifiers enable the use of "Class A" circuitry, generally acknowledged as ideal for solid state components. Class A operation is very linear with low distortion generally, and almost no crossover distortion at all.

To provide the power plus reserve, Onkyo has designed these amplifiers with large transformers which easily radiate heat and with oversize electrolytic capacitors for stability. Specially selected power transistors are mounted in oversized heat sinks for continuous heat dissipation and the entire unit is enclosed in a more ample cabinet which allows a clear flow of cooling air. Because of these considerations, the following ratings are established conservatively:

A-5 — 50 watts per channel, minimum RMS into 4 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion. 45 watts per channel, minimum RMS into 8 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion.

A-7 — 70 watts per channel, minimum RMS into 4 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion. 65 watts per channel, minimum RMS into 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion.

Overall, both amplifiers have exceptionally wide frequency response, from 2 Hz to 80 kHz ± 1 dB for the A7 and 2 Hz to 70 kHz ± 1 dB for the A5.

SIGNAL TO NOISE RATIO

Of almost equal importance to low distortion for optimum listening is high signal to noise ratios. Basically, signal is what you want to hear, while noise is what you don't want to hear. Noise may be generated by a number of factors and it is the function of good amplifier design to produce an output signal with as little extraneous noise as possible.

Signal to Noise (S/N) ratios are usually described according to accepted levels and referents. The phono equalizer and Driver Stage Class A circuitry used in Onkyo's A5 and A7 amplifiers are inherently low noise circuits. To further reduce the noise level, Onkyo uses selected transistors.

The S/N ratio is the difference between the power of the amplifier and the noise output without a signal. Such noise is generated by components pointing out the advantages of using specially selected transistors. Other factors include noise in the equipment feeding signals into the amplifier, random electrical signals and a variety of other sources. This ratio is usually expressed in decibels (dB), and the higher the ratio the better, since that demonstrates the power of the signal over the power of the distracting signal or noise.

MAIN AMPLIFIER SECTION

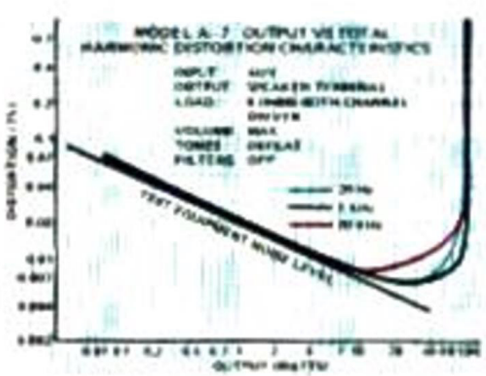
Onkyo avoids the primary distortion found in solid state amplifiers with Class A, push-pull driver stage differential direct coupled, pure complementary circuitry. Crossover distortion usually found at low power levels, is reduced to virtually nothing. Since there is ample power reserve, clipping does not become a problem either, as both amplifiers are capable of handling relatively large power demand surges.

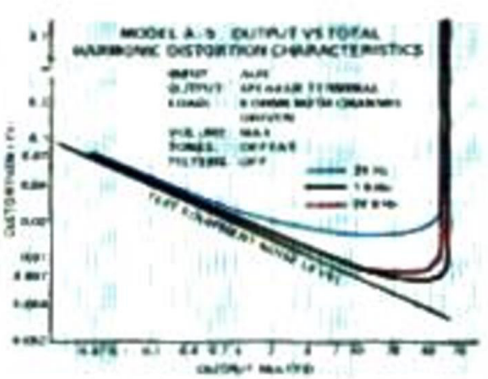
The low distortion of both amplifiers is demonstrated by square wave tests in which a signal is fed through the amplifier into an oscilloscope. The characteristics of the original signal are known, any deviation is readily apparent, and a function of the amplifier itself.

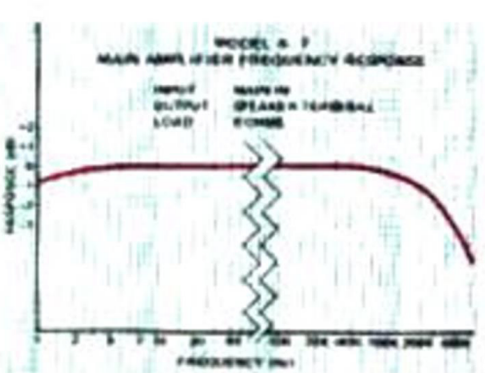
Using a 50 Hz square wave through the A5 and A7, output signals show a deviation of no more than 5% tilt or sag. Conventional amplifiers under the same conditions may have up to 25-50% sag as shown in the pictures below. At no point at rated power does either amplifier exceed 0.1% THD, and at 1 watt output – a normal listening level – THD is as low as 0.08%. S/N ratio for both is an exceptional 110 dB (IHF A Network).

A-7 A-5 CONVENTIONAL AMP

Nothing is overlooked to make Onkyo's A-5 and A-7 give full value, including protective circuitry for amplifiers and for speakers. A special voltage detection circuit acts as an electronic watchdog for overloads. In the A7, positive acting relay protection prevents damage to the power transistors and/or speakers.





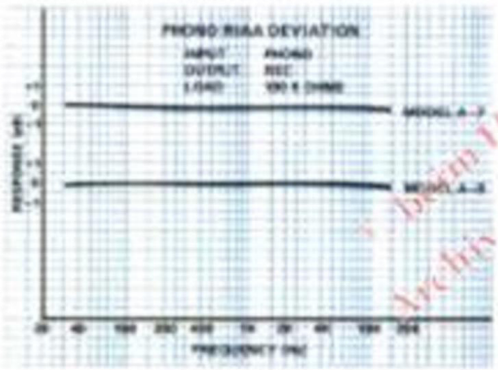


PRE-AMPLIFIER SECTION

The preamplifier section, which is separable from the main amplifier section, serves as an input and control center as well as amplifying the minute phono cartridge or tuner signal to feed the amplifier. With the exception of delivering large amounts of power, therefore, the preamp must be as capable as the amplifier.

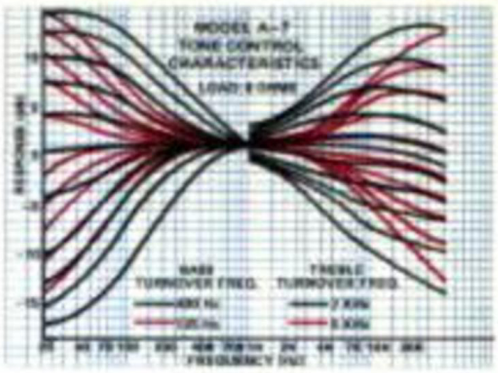
In the amplifier section of Onkyo's A7, phono equalizers are based on Class A, differential push-pull circuitry with exceptionally low noise characteristics. The A7, for example, shows a S/N ratio of 80 dB in phono.

Phono overload specifications are equally impressive for both units, providing 230 mV RMS at 1 kHz, 0.1% THD for the A7 and 170 mV RMS at 1 kHz, at 0.1% THD for the A5. Because of the excellent RIAA Curve Deviation of ± 0.3 dB, 30 Hz to 15 kHz, sound is superbly and accurately reproduced from your records. The exceptional phono overload characteristics also provide excellent transient response in both input and output as shown in the graph above, particularly in the phono equalizer.



Controls have been designed with human engineering in mind for logical placement and positive action. For example, in the A5, Onkyo devoted extra attention and positive action. And in the A7, Onkyo devoted extra attention and expense in the type of control knobs for more accurate volume and tone control. Rather than sliding or potentiometer type controls, both the A5 and A7 feature detents or "clickstops" for easy return to set positions. The A5 uses a 41-detent volume type control, while the A7 uses a 32-detent trimmed attenuator control.

The A7's tone controls are 11-detent trimmed switch types with a 2 dB per step and changeable turnover frequency. The A5 uses an 11-detent volume type control and features a Tone Defeat Switch to disable when required.



Tape and tape dubbing facilities show the fine Onkyo touch. Both amplifiers can dub from Tape 1 to Tape 2 and the reverse. Onkyo has provided another convenience, however, by adding an OFF switch position so there is no load on the REC terminal, giving better sound.

Both the A5 and A7 feature a subsonic filter which effectively eliminates most all low frequency interference from old records or turntable rumble without affecting the total sound.

Other control features include four-way speaker Selector switch for System A, System B, Off or Systems A+B. A Loudness control provides tonal compensation at every volume level.

A transient killer circuit is also included which eliminates the popping noise when the switch is turned on.

Both design and construction of the preamp sections are in every way comparable to the distinguished performance of the amplifiers for total effect which provides exquisite performance with any type of program material.

ONKYO A-5 ONKYO A-7

A new breed of solid state integrated amplifier featuring reserve power for deep down bass and low distortion. An amplifier's output is the sum of its input plus whatever noise and distortion are added during the amplification process. The best amplifiers are designed and built to add as little as possible to the original signal. Onkyo's A5 and A7 integrated amplifiers add to your listening pleasure and not to the program material.

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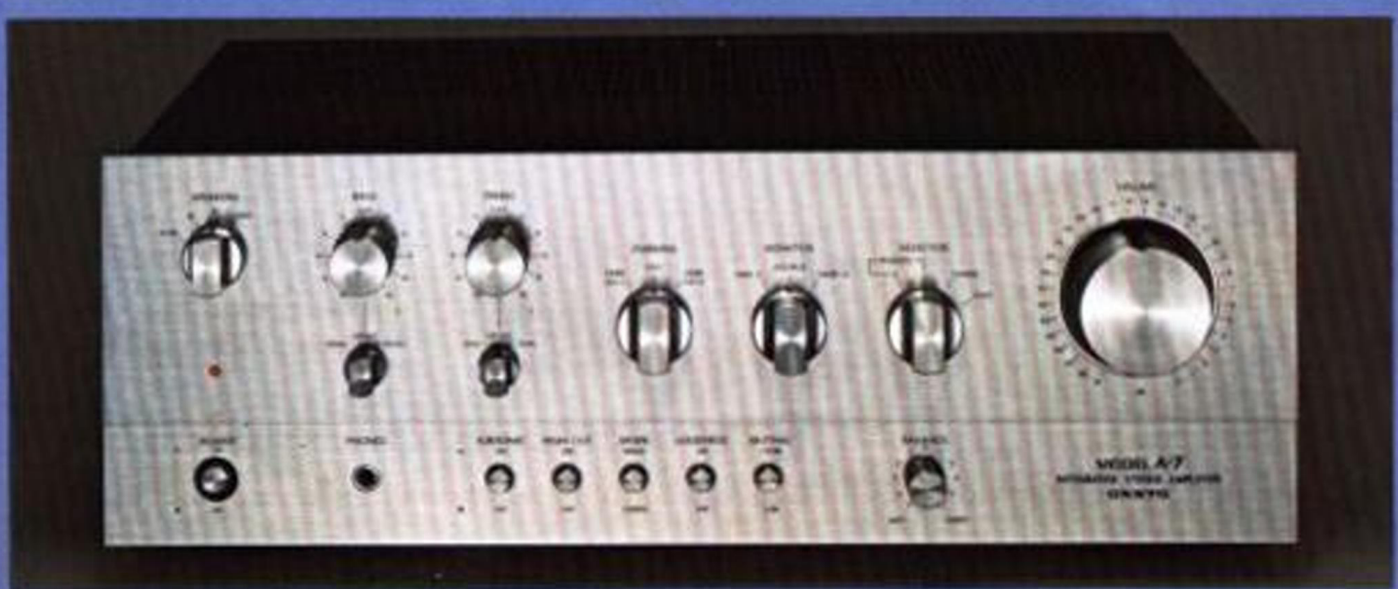

SPECIFICATIONS

	A-5	A-7
Power output, watts per channel, minimum RMS at 4 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% THD	**50**	**70**
Power output, watts per channel, minimum RMS at 8 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% THD	**45**	**65**
Power output, watts per channel, minimum RMS at 4 ohms, both channels driven at 1 kHz, 0.1% THD	60	75
Power output, watts per channel, minimum RMS at 8 ohms, both channels driven at 1 kHz, 0.1% THD	50	68

POWER AMPLIFIER SECTION

	A-5	A-7
TOTAL HARMONIC DISTORTION		
At rated power	0.1% (Tuner)	0.1% (Aux)
At 1 watt output	0.08% (Tuner)	0.08% (Aux)
IM DISTORTION (70 Hz:7 kHz=4:1)		
At rated power	0.1% (Tuner)	0.1% (Aux)
At 1 watt output	0.08% (Tuner)	0.08% (Aux)
FREQUENCY RESPONSE (±1 dB)	2 Hz-70 kHz	2 Hz-80 kHz
SQUARE WAVE RESPONSE		
Tilt at 50 Hz	better than 5%	better than 5%
S/N RATIO (IHF A NETWORK)	110 dB	110 dB
DAMPING FACTOR AT 8 OHMS	50	50
INPUT IMPEDANCE	25 kohms	100 kohms
RATED INPUT	1.5 volts	1.5 volts
LOAD IMPEDANCE	4-16 ohms	4-16 ohms

PREAMPLIFIER SECTION

	A-5	A-7
Input Sensitivity & Impedance		
Phono 1, 2	2.5 mV, 50 kohms	2.5 mV, 50 kohms
Tuner	150 mV, 50 kohms	150 mV, 50 kohms
Tape Play 1, 2	150 mV, 50 kohms	150 mV, 50 kohms
Aux	———	150 mV, 50 kohms
TOTAL HARMONIC DISTORTION (AT RATED OUTPUT)	0.08%	0.05%
IM DISTORTION (70 Hz:7 kHz=4:1)		
At rated output	0.08%	0.05%
FREQUENCY RESPONSE		
Phono	±0.3 dB at 30-15,000 Hz	±0.2 dB at 30-15,000 Hz
Tuner	+0, −1 dB at 15-40,000 Hz	+0, −1 dB at 10-50,000 Hz
Aux	———	+0, −1 dB at 10-50,000 Hz
PHONO OVERLOAD	170 mV RMS at 1 kHz, 0.1% THD	230 mV RMS at 1 kHz, 0.1% THD
TONE CONTROLS		
Bass	±10 dB at 100 Hz	±10 dB at 100 Hz (Turnover at 400 Hz)
Treble	±10 dB at 10 kHz	±10 dB at 10 kHz (Turnover at 2 kHz)
OUTPUT VOLTAGE	1.5 volts	1.5 volts
OUTPUT IMPEDANCE	2.2 kohms	2.7 kohms
MUTING	−20 dB	−20 dB
LOUDNESS (−40 dB)		
At 100 Hz	+5 dB	+5 dB
At 10 kHz	+5 dB	+5 dB
TURNOVER FREQUENCY		
Bass	———	400 Hz, 125 Hz
Treble	———	2 kHz, 8 kHz
FILTERS		
Subsonic	10 Hz (6 dB/Oct)	10 Hz (6 dB/Oct)
High	———	5 kHz (6 dB/Oct)
SIGNAL TO NOISE RATIO (IHF A NETWORK)		
Phono	75 dB	80 dB
Tuner	90 dB	90 dB
Aux	———	90 dB

CONTROLS

A-5
Power
Speakers (Off, A, B, A + B)
Selector (Phono 1, Phono 2, Tuner)
Tape Monitor (Tape 1, Source, Tape 2)
Tape Dubbing (Tape 2-1, Off, Tape 1-2)
Volume
Balance
Treble
Bass
Tone Defeat
Muting
Loudness
Mode
Subsonic Filter

A-7
Power
Speakers (Off, A, B, A + B)
Selector (Phono 1, Phono 2, Tuner, Aux)
Tape Monitor (Tape 1, Source, Tape 2)
Tape Dubbing (Tape 2-1, Off, Tape 1-2)
Volume
Balance
Treble
Bass
Turnover Frequencies
(Bass, 125 Hz, Defeat 400 Hz)
(Treble, 2 kHz, Defeat 8 kHz)
Muting
Loudness
Mode
Subsonic Filter
High Filter

OUTPUTS

A-5
Speaker A, B, Headphones
Tape Record Out 1, 2
Preamp Out

A-7
Speaker A, B, Headphones
Tape Record Out 1, 2
Preamp Out

INPUTS

A-5	A-7
Phono 1, 2	Phono 1, 2
Tuner	Tuner
Tape Play 1, 2	Aux
Main In	Tape Play 1, 2
	Main In

DIMENSIONS

A-5	A-7
17½ "W x 6¾ "H x 15"D	17½ "W x 6¾ "H x 15"D
444 mm x 159 mm x 380 mm	444 mm x 159 mm x 380 mm

WEIGHT

A-5	A-7
25.8 lbs./11.7 kg	29.7 lbs./13.5 kg

Embossed vinyl over metal cabinet.
Limited three-year parts and limited two-year labor warranty.

ONKYO® *Artistry in Sound*

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