3120 Integrated Amplifier

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Please note that this document contains the text from the original product brochure, and some technical statements may now be out of date

The NAD 3020 is the most highly praised low-power amplifier in high-fidelity history. Critics around the world have praised its accuracy, musicality, and seemingly effortless power. The 3020B the latest version of this classic, contains several improvements but no fundamental change in design.

The 3120 is identical to the 3020B in circuitry and performance, except that it has been simplified by deleting tone controls and LED power display.

The moderately priced 3020B and 3120 stereo amplifiers provide state-of-the-art performance at effective output power levels substantially greater than would be expected from their conservative rating of 25 watts per channel. This remarkable characteristic is made possible by a high-voltage, high-current output circuit that can deliver short-term bursts of double or triple the rated continuous power output into the typical impedances of real loudspeakers. NAD's exclusive Soft Clipping" circuit permits listening levels even beyond these limits, by reducing harshness at high volume settings. With respect to freedom from noise at low levels and freedom from distortion at high levels, the 3020B and 3120 are the most truly "digital ready" amplifiers in their price and power class.

Designed For Real-World Performance

Specification tables and magazine test reports confirm that virtually all modern amplifiers measure well in the laboratory, with impressive figures for parameters such as the power out-put at 8 ohms and the signal-to-noise ratio with a short-circuited phono input. But outside of the laboratory, amplifiers are not all equal.

At home you don't listen to signal generators, short-circuits, or 8-ohm test resistors; you listen to complex and dynamic musical waveforms, generated by phono cartridges and reproduced through loudspeakers whose true impedance is rarely 8 ohms. So, rather than incorporating costly refinements that yield little or no audible benefit, NAD's "real world" approach to product design is focused on obtaining optimum performance under the conditions of everyday use.

Wide Range Phono Preamplifier. The 3020B/3120 is fully ready to accommodate the demands of the digital Compact Disc via its high-level AUX input, but as long as LP discs remain a primary music source for most listeners, the quality of the phono preamp circuit must not be compromised.

Instead of the usual low-cost IC, the phono preamplifier section of the 3020B/3120 is a newly designed discrete transistor circuit whose performance matches that of far more expensive preamp systems. It interfaces correctly with the high impedance of many magnetic pickup cartridges: its RIAA equalisation is precise: and it is virtually distortionless - not only with simple sine-wave test tones but also with dynamic musical waveforms 30 dB above average level. Its signal/noise ratio is close to the theoretical limit, not only with the short-circuit input that is often used for specifications, but also when a cartridge is plugged in. Its total dynamic range is approximately 106 dB.

Moving Coil Input

A rear-panel switch provides the increased gain required for low-output moving-coil cartridges, with extremely low noise, and without the cost and complications of external MC pre-preamps or step-up transformers.

Infrasonic and Ultrasonic Filtering. Audio signals often are contaminated with interference at frequencies below and above the audible range-turntable rumble, floor vibration, tonearm/ stylus resonance, radio/TV interference, and home-computer static. Amplification of such signals would tend to waste amplifier power, cause bass distortion due to excess woofer cone travel, and produce audible intermodulation distortion. The precise, minimum-phase, audio bandpass filtering in the NAD 3020B and 3120 strips off such interference, preserving a clean musical waveform.

Wide Dynamic Range

The line-level inputs (Tuner, Aux, Tape) cannot be overloaded by dynamic signal peaks from a Compact Disc player. The total dynamic range of the amplifier, 100 dB, exceeds that of any available program source.

Musically Useful Tone Controls

Like every other aspect of the 3020B's circuitry, its Bass and Treble controls have been designed to be genuinely useful. They provide effective boost and cut at low bass and high treble frequencies, but they don't alter the tonal balance in the critical midrange the way many tone-control circuits do.

High-Voltage, High-Current Output Stage

While the 3020B/ 3120 is conservatively rated at 25 watts per channel, it behaves as if it were much more powerful. Its high-voltage design yields an IHF Dynamic Headroom factor of 3 dB, meaning that during musical transients this amplifier can deliver fully twice its rated power into an 8-ohm impedance.

Even more important for genuinely musical sound is the amplifier's interface with the complex and variable impedances of real loudspeakers, which often are much lower than 8 ohms and are partly "reactive" with high peak current demands. To supply this current to the speakers, the 3020B/3120 employs the same large output transistors that other manufacturers use In their "60-watt" amplifiers. During musical transients the circuit easily delivers over 55 watts/channel into a 4-ohm impedance and over 70 watts/channel into 2 ohms, with no protection- circuit distortion. NAD was the first manufacturer to emphasise the importance of output current capacity, and this power reserve has become increasingly important with the advent of advanced recording technologies that preserve the full dynamic range of live music.

Binding-post Speaker Terminals

Heavy-duty binding posts provide secure low-resistance connections for all types of speaker cable. Their standard s/a" spacing fits dual-banana plug connectors, facilitating quick reconnect ions among multiple pairs of loudspeakers.

Soft Clipping™

When the NAD 3020B/3120 amplifier is over-driven beyond its power capacity, the exclusive NAD Soft Clipping™ circuit gently limits the waveform voltage so that the output transistors are never driven into saturation, i.e., into "hard clipping." This feature eliminates the harsh power-supply buzz and some of the high-order distortion that hard clipping normally would cause. Thus the amplifier can safely be over-driven substantially beyond its rated power on peaks, and it will continue to sound smooth and musical.

Impedance Selector

Any amplifier is basically an electronic valve, passing power from the power supply to the loud-speaker on demand, and so the voltage and current reserves of the power-supply circuit play a major role in the amplifier's performance. NAD's unique impedance selector matches the amplifier to the loudspeakers. One setting of this switch provides increased output voltages for loudspeakers of 8 ohms or higher impedance. The other setting provides the lower volt-ages and greater output current needed to drive low impedances (4-ohm speakers or two pairs of speakers wired in parallel).

The amplifier will even drive a 2 ohm load comfortably.

NAD Makes High Performance Affordable Designed with thoughtfulness and care rarely found in budget components, the Models 3020B and 3120 amplifiers will drive the very best loudspeakers with ease and will do justice to the finest musical recordings.

The NAD 3020B and 3120 amplifiers are complemented by the NAD 4020B AM/FM stereo tuner. A separate NAD 102OB pre-amplifier is also available.

PRE-AMP SECTION

Phono input		
Input impedance *(R and C)*		47kΩ / 100pF
Input sensitivity, 1kHz	MM	2.7mV ref. 0.5V
	MC	180µV
Signal/Noise ratio *(A-weighted with cartridge connected)*	MM	75dB ref. 5mV
	MC	73dB ref. 0.5mV
RIAA response accuracy *(20Hz - 20kHz)*		±0.5dB
Line level inputs		
Input impedance *(R and C)*		20kΩ / 220pF
Input sensitivity *(ref. 1W)*		180mV
Maximum input signal		>25V
Signal/Noise ratio *(A-weighted ref 1W)*		90dB
Frequency response		20Hz - 20kHz / ±0.5dB

POWER AMP SECTION

Continuous output power into 8Ω *		25W (14dBW)
Rated distortion *(THD 20Hz - 20kHz)*		0.02%
Clipping power *(maximum continuous power per channel)*		30W
IHF Dynamic headroom at 8Ω		+3dB
IHF dynamic power *(maximum short term power per channel)*	8Ω	50W
	4Ω	55W
	2Ω	70W
Input impedance		11kΩ
Input sensitivity *(for rated power into 8Ω)*		1V
Frequency response		10Hz - 70kHz
THD *(20Hz - 20kHz)*		<0.02%
Remote		No
NAD Link		No

PHYSICAL SPECIFICATIONS

Dimensions *(W x H x D)*	420 x 96 x 240mm
Net weight	5.3kg
Shipping weight	6.7kg
Power consumption *(120 ~ 240V, 50/60Hz)*	150VA

* Minimum power per chnnel, 20Hz - 20kHz, both channels driven with no more than rated distiortion.

Dimensions are of unit's cabinet without attached feet; add up to 18mm for total height.

Dimension depth excludes terminals, sockets, controls and buttons.