

# 3020 series 20 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note that this document contains the text from the original product brochure, and some technical statements may now be out of date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 a no-frills moderately-priced amplifier designed to provide state-of-the-art performance at volume levels far in excess of what would be expected from its conservative 20-watt per channel power rating. This remarkable characteristic is made possible by high-voltage, high-current output stages which can deliver short-term bursts of two to five times the rated continuous power output into loudspeakers of widely varying impedances.

The 3020's exclusive Soft Clipping<sup>™</sup> circuit permits listening levels even beyond these limits by reducing harshness at high volume settings.

The phono preamplifier section of the 3020 contains a sophisticated 6-transistor circuit which has been engineered for extremely low noise and nearly distortion-free performance. Built-in infrasonic and ultrasonic filters further reduce the interference of non-musical signals caused by turntable rumble, floor vibration, tone arm or stylus resonances.

These uniquely designed input and output stages combine to create an inexpensive amplifier which is easily capable of driving the very best loudspeakers.

## **EFFECTIVE CONTROL FEATURES**

Like every other part of its design, the 3020's controls have been carefully considered for genuine usefulness. The Bass and Treble controls are tailored for musically effective response in the high and low frequencies without altering the critical mid-range tonal balance.

For listening at low volume levels or with sensitive headphones, the 3020's Audio Muting button reduces levels by 20 dB, expanding the useful range of the Volume control and subduing any residual circuit noise. A simple, elegant set of five LEDs accurately displays the peak power level which the amplifier is delivering to the loudspeakers, from 1 to 35 watts into 8 ohms or 2 to 70 watts into 4 ohms. The circuit monitors both channels and displays the higher output at each instant.

## **DESIGNED FOR REAL-WORLD PERFORMANCE**

If you read specifications tables and magazine test reports you will find that the majority of modern amplifiers measure well on the test bench, with impressive figures for signal-to-noise ratio, power output at 8 ohms, and ultra-low harmonic distortion, But outside the laboratory many of these products don't perform as well as their specifications suggest. In the home you don't listen to signal generators and 8-ohm test resistors, you listen to complex musical waveforms generated by phono cartridges and reproduced through loudspeakers whose impedance is seldom 8 ohms Rather than incorporating costly refinements that may test well, but yield little audible improvement, NAD's engineers have designed the 3020 for optimum performance in everyday use.

#### **HIGH-PERFORMANCE DESIGN**

#### Wide Range Phono Preamplifier

In a moderately priced amplifier you might expect to find an economy preamp circuit, but the NAD 3020 contains a phono preamp stage which is audibly identical to the finest separate professional preamps. The 3020 preamp interfaces correctly with the impedances of real phono cartridges (as many preamps do not), it is quiet enough for use with either moving-magnet or high-output moving-coil pickups, and its distortion is extremely low, not only with sine-wave test tones but also when reproducing complex high-level music signals. The 3020 was designed to achieve the best signal/noise ratio when a cartridge is plugged in (rather than with the usual, but inappropriate, short-circuit input). The total dynamic range of the 3020 is typically 107dB, ample even for the digitally-mastered recordings of the 1980s.

## **Infrasonic and Ultrasonic Filters**

Audio signals are often contaminated with interference at frequencies below and above the audible range, such as acoustic feedback, disc warps and radio interference.

Amplification of such signals yields no sonic benefit, wastes amplifier power, and may cause intermodulation distortion muddy bass, excessive woofer cone motions, and even tweeter burnout. The NAD 3020 contains a precise, minimum-phase audio-bandpass filter which strips off such interference and preserves a clean musical waveform.

## **High-Voltage High-Current Output Stage**

Although the 3020 is rated at 20 watts/channel, it behaves as if it were much more powerful. Its high-voltage design yields an IHF Dynamic Headroom factor of 3.0 dB, meaning that in musical transients the 3020 can deliver twice its rated power or 40 watts into an 8-ohm impedance.

Even more important is the amplifier's interface with the highly variable impedances of real loudspeakers, which often are much lower than 8 ohms and partly "reactive" with high peak current demands. The output transistors in the 3020 are the same large devices which other manufacturers employ in their "60 watt" amplifiers, and in musical transients the 3020 will easily deliver over 58 watts/channel into 4 ohms or over 72 watts/channel into a low 2-ohm impedance, with no distortion due to triggering of protection circuitry.

## Soft Clipping™

When the 3020 amplifier is overdriven beyond its rated power, the exclusive NAD Soft Clipping<sup>™</sup> 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 distortion which hard clipping normally would cause, thus the 3020 can be overdriven substantially beyond its rated power cleanly and safely.

# **Dual-Mode Power Supply**

The power supply circuit for the output stage is only loosely regulated, so it is free to supply the high voltages needed for a high IHF headroom factor (at 8 ohms) and also to supply the large currents at lower voltages needed for driving low-impedance loads (down to 2 ohms). An entirely separate power supply circuit, operating from another secondary winding on the power transformer, supplies extremely stable, noise-free, regulated operating voltages for the preamplifier and tone control stages; thus distortion and blurring of the stereo image due to power supply modulation cannot occur in the 3020. The NAD 3020 has earned a world-wide reputation among audio reviewers for its sensible and efficient design and superb performance.

Numerous test reports, comparing the 3020 with equipment of far greater power rating and cost have proven the 3020 to be an outstanding value.

PRE-AMP SECTION		
Phono input		
Input impedance (R and C)		47kΩ / 47pF
Input sensitivity, 1kHz		2.5mV ref. 20W
Signal/Noise ratio (A-weighted with cartridge connected)		75dB ref. 5mV
Line level inputs		
Signal/Noise ratio (A-weighted ref 1W)		>86dB
Channel separation		>60dB
Frequency response (20Hz - 20kHz)		±0.5dB
Infrasonic filter		-3db at 15Hz, 24dB/octave
Ultrasonic filter		-3dB at 35 kHz, 12dB/octave
POWER AMP SECTION		
Continuous output power into 8 $\Omega$ *		20W (13dBW)
Rated distortion (THD 20Hz - 20kHz)		0.02%
Clipping power (maximum continuous power per channel)		30W
IHF Dynamic headroom at $8\Omega$		+3dB
IHF dynamic power (maximum short term power per channel)	$\Omega^8$	40W
	$4\Omega$	58W
	2Ω	72W
Remote		No
NAD Link		No
PHYSICAL SPECIFICATIONS		
Dimensions (W x H x D)		420 x 96x 240mm
Net weight		5.3kg
Shipping weight		6./kg

\* 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.