

ART DUDLEY

# Jadis I-35

INTEGRATED AMPLIFIER



Last summer, in an uncharacteristic fit of wanderlust, I took an American Airlines flight to London. Two days later, I rode the Eurostar train to Paris in the company of my daughter and my wife, a travel agent, who had secured first-class train accommodations on her professional discount. Our ride was brisk, but the upgrade would have been a waste at any price: The Eurostar food was vile.

That would be my last bad meal for a long time: The food in Paris, from the humblest baguette to the loftiest *saumon en*

*croûte*, was brilliant, the French apparently having determined long ago that life is too short for bad food. My family and I were inspired. Since that time, we have brought to bear on our day-to-day lives as much as possible of their culinary thinking.

My story could end there, except for one thing: Not long after my return to upstate New York, I received from their North American distributor an integrated amplifier made by Jadis, the family-owned company that has, since 1983, built tube electronics in the Languedoc-Roussillon region of southern France. The

## SPECIFICATIONS

**Description** Two-channel, tubed, class-A integrated amplifier. Tube complement: three 12AU7, two 12AX7, four KT120. Line inputs: 5. Rated output power: 30Wpc into 1-16 ohms (14.8dBW). Frequency response: 20Hz-

20kHz, -3dB. Line input sensitivity: 100mV. Line input impedance: >100k ohms.

**Dimensions** 20" (510mm) W by 8.7" (225mm) H by 13" (335mm) D. Weight: 55 lbs (25kg).

**Serial number of unit reviewed** I35008.

**Price** \$7995. Approximate number of dealers: 7.

**Manufacturer** Jadis S.A.R.L., Chemin du Pech, 11800 Villedubert, France.

Tel: (33) 04-68-78-87-93.

www.jadis-electronics.com.  
US distributor: Bluebird Music Ltd., 40 Sonwil Drive Buffalo, NY 14225  
Tel: (416) 638-8207.  
Fax: (416) 638-8115.  
www.bluebirdmusic.com.

I-35 amplifier looks beautiful and—forgive the spoiler—made music in a manner that would seem to guarantee it a place among a hallowed few. Apparently, there are those among the French who believe that life is too short for bad hi-fi gear, as well.

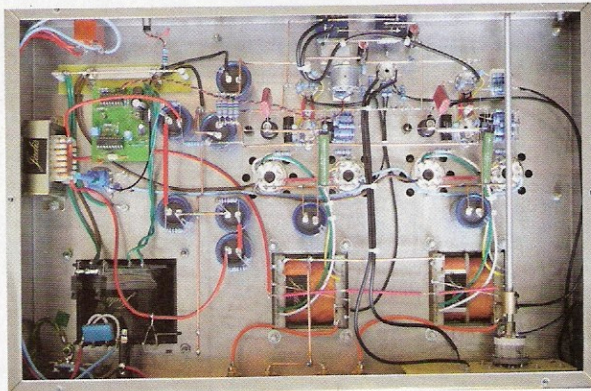
### Description

The Jadis I-35 (\$7995) is a true integrated amplifier, inasmuch as it incorporates both a stereo power amplifier and an active stereo preamplifier—the latter instead of a mere passive line stage. The distinction may seem unimportant to some, but to those of us who tend to regard passive preamps as somewhat lacking in musical drive and momentum, it is anything but. Like the vast majority of today's perfectionist-quality integrated amplifiers, the I-35 does not include a phono section.

The I-35 uses five small-signal tubes, the centermost of which—a 12AU7 dual-triode—provides line-level gain for both channels of the active preamp stage. Two other 12AU7s function as left- and right-channel phase inverters for the push-pull power section, while a pair of 12AX7s drive the power tubes.

The output section is built around the recently introduced KT120 tube, a descendent of the original Osram KT66 “kinkless tetrode.” Billed elsewhere as the most powerful beam-power tube available, the KT120 has, in the Jadis I-35, been given a somewhat more refined role, with one pair per channel biased for class-A operation, offering a crazy-high 30Wpc. The KT120s are run in autobias mode—which, one presumes, will maximize tube life—in an Ultralinear circuit, with plates and screen grids for each channel tied to the split-coil primaries of transformers designed and made in-house.

The Jadis I-35's power supply also uses Jadis's own iron: a mains transformer of considerable heft plus a moderately sized choke, the latter electrically sandwiched between two banks of reservoir capacitors, forming a pi filter of the usual sort. Rectification is all solid-state, implemented with individual semiconductor diodes for the rail. Regulation seems to be



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A look inside the Jadis I-35 integrated amplifier. The cathode bus for the output section is oddly reminiscent of the No.9 line of the Paris Metro.

especially generous for the hefty filament supply, incorporating as it does a top-mounted TO3 regulator with its own heat-sink. Indeed, during my time with the I-35 I heard not the slightest bit of hum or noise.

The I-35's construction quality is well above average. The generous size of the chassis—made necessary, I suppose, by the considerable weight of the thickly potted transformers—has been put to good use. Input connections for the hefty rotary selector switch are made using a printed-circuit board, and my review sample had a small logic board for its remote control's IR receiver; all other wiring is done by hand, point to point, with distinctly clean, logical routing and dressing of wires. Solder joints were consistently clean and well done: The I-35 looks nearly as good inside as outside.

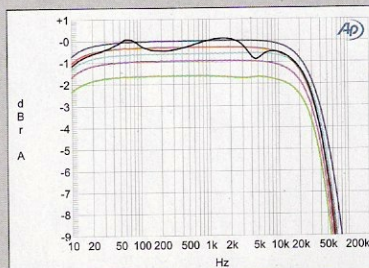
Speaking of cosmetics: Although a few other companies have aped, in the years since their debut, the signature Jadis combination of chromed steel chassis and brass-colored knobs and faceplate, none have captured quite the same

## MEASUREMENTS

I measured the Jadis I-35 using *Stereophile's* loan sample of the top-of-the-line Audio Precision SYS2722 system (see the January 2008 “As We See It” and [www.ap.com](http://www.ap.com)). I carefully installed the nine tubes, as instructed in the manual, but was then faced with the same problem Art Dudley had: Which of the two pairs of unlabeled binding posts were for the left channel, which for the right? And was one of each pair for 4 ohm and one for 8 ohm output transformer taps, as implied by the wiring diagram on the top of the transformers? As Art says, it appears that there is just one output transformer tap, duplicated on the two pairs of terminals for each channel.

The I-35 offers a maximum voltage gain of 40.9dB into 8 ohms, which is typical for an integrated amplifier; and, as AD mentioned, it inverts signal polarity. The input impedance was very much

higher than the specified 100k ohms at all audio frequencies. The output impedance was fairly low for a traditional tube design, at 0.66 ohm at low and middle frequencies, dropping slightly to 0.61 ohm at the top of the audioband. As a result, the modification of the amplifier's frequency response by the interaction of the impedance with that



**Fig.1** Jadis I-35, frequency response at 2.83V into: simulated loudspeaker load (gray), 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), 2 ohms (green) (1dB/vertical div.).

of our standard simulated loudspeaker was a mild  $\pm 0.4$ dB (fig.1, gray trace). This graph indicates that the amplifier's output falls off above the audioband, reaching  $-0.8$ dB at 20kHz and  $-3$ dB at 40kHz. As a result, the I-35's reproduction of a 10kHz squarewave shows slowed leading edges (fig.2). However, no overshoot or ringing is visible. A 1kHz squarewave was reproduced with flat tops (not shown), confirming the excellent low-frequency extension seen in fig.1. The response traces in fig.1 were taken with the volume control set to its maximum. Even though the balance control was centered, there is a 0.3dB mismatch in the two channels' outputs. Reducing the volume to “12:00” eliminated this imbalance; commendably, the ultrasonic behavior was not affected by the operation of the volume control.

Channel separation (not shown) was modest, at  $>6$ OdB below 3kHz, L-R; and



The Jadis provides five line-level inputs and two sets of unlabeled binding posts.

look: Somehow, the Jadis I-35 comes out looking lighter, smaller, and more delicate than it really is (aided in this effect by the lovely script logo, I think)—a welcome distinction in a hobby overburdened with bulk and little-boy-ishness.

### Installation and setup

As one might expect of any amplifier that, at 55 lbs, weighs more than a large microwave oven, the single most difficult part of installing the Jadis I-35 was lifting it free from its good if somewhat travel-worn carton and packing materials. For that reason, and because the rather wide amp had trouble sharing the top of my rack with my rather wide turntable (the lower shelves offered too little clearance), the I-35 spent the bulk of its time here on my hardwood floor. For their part, the amp's nine tubes were safely contained in their own subcarton, and were lettered and numbered for installation—which, after I'd determined how to remove the black-mesh tube cage, went smoothly enough.

The only other challenge came when I set about connecting the I-35 to my loudspeakers. There are two complete

sets of binding posts on the rear panel, but—apart from red rings on the top row of connectors and black rings on the bottom—there are no markings at all. Beyond suggesting that “the load impedance is pre-adjusted in the factory for loudspeakers from 4 to 16 ohms,” the owner's manual offers no clues; my confusion was made worse by a graphic atop both of the output-transformer covers, suggesting the existence of individual secondary windings for loads of 4 and 8 ohms. Ultimately I learned, from the FAQ section of the Jadis website, that the two sets of output connectors are in parallel with each other (I later saw that Jadis accomplishes this by mounting pairs of connectors together on uninsulated copper plates), and I learned from experience that the left-channel connectors are the ones closest to the left side of the amplifier *when viewed from the front*, and so on.

One hookup concern that the I-35's manual does make clear: This amplifier inverts absolute signal polarity. To hear it at its best, the user must swap the speaker connections black for red and red for black, for both channels. Which I did.

I used the Jadis I-35 with my usual source components, supplemented with a Sutherland Engineering Insight phono preamp loaned to me earlier in the year; the Insight was typically set for low gain and high impedance, and preceded by my Hommage T1 phono transformer. Loudspeakers were my Altec Valencias (16 ohms) and our review pair of DeVore Fidelity Orangutan O/96s (10 ohms). During the review period I avoided accessory AC cords, accessory fuses, isolation devices, tube rolling, burn-in recordings, and all manner of isolation devices.

### Listening

I did, however, perform one seemingly unrelated task during the I-35's first afternoon in my system: Using a recipe acquired from Chef Google, I cooked my first *petit salé*. This

### measurements, continued

>50dB below 3kHz, R-L. More important, the leakage from a driven input to an adjacent undriven input was -30dB in both channels. The input selector switch does not appear to short unused inputs to ground. It might, therefore, be worth experimenting with shorting plugs inserted into unused inputs. Noise levels were only okay, with a wideband unweighted signal/noise ratio, measured

with the input shorted but the volume control set to its maximum, of 63.5dB left and 65dB right. These ratios did not improve when the measurement bandwidth was restricted to the audioband, but did improve by 9-10dB with A-weighting. Fig.3 indicates that the Jadis's noise floor is disturbed by both odd- and even-order power-supply harmonics, the former due to magnetic interference, the

latter to electrical. I experimented with different ways of connecting the Jadis to the Audio Precision generator and analyzer. Fig.3 was taken with the condition that gave the lowest level of spurious, which was with both generator outputs and analyzer inputs floating; *ie*, neither was referenced to ground.

The I-35 is specified as having a maximum power output of 30W, equivalent

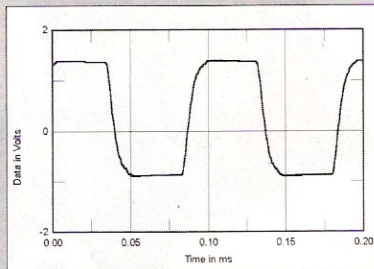


Fig.2 Jadis I-35, small-signal 10kHz squarewave into 8 ohms.

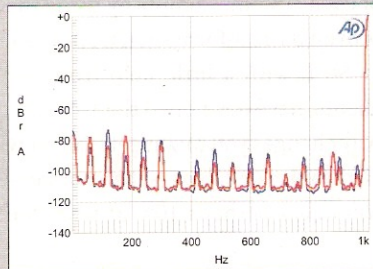


Fig.3 Jadis I-35, spectrum of 1kHz sinewave, DC-1kHz, at 1W into 8 ohms (linear frequency scale).

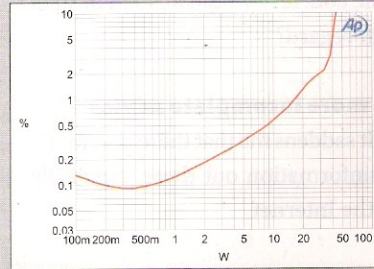


Fig.4 Jadis I-35, distortion (%) vs 1kHz continuous output power into 8 ohms.

traditional dish of green lentils and salted pork (the name means “little salty”) was introduced to me by *Stereophile* reader and Paris resident Mark Donen, whom my family and I had the pleasure of meeting in July.

Although I don't care at all for background music, the stuff is not without its place, especially when running-in a new component prior to review. So it was that afternoon, when I performed all of my lentil-soaking, carrot-chopping, pork-salting, and bay-leaf-finding chores to the sounds of—you guessed it—the well-known *Mozart à Paris*, brilliantly reissued not long ago, on seven LPs, by the Electric Recording Company (Pathé/ERC DTX 191-197). But there was a catch: Just as I find when my own Shindo preamp and amps are in the system, those Mozart recordings were impossible to ignore when the Jadis was doing the amplification honors. Time and again, I found myself interrupting my work to sit in front of the music system (which is around the corner from the kitchen). Equal parts annoyed and impressed, I had to turn off the music until dinner was served.

Once I'd settled in for serious listening, the I-35 stood in unmutte testimony to the folly of confusing a thing's sound with its appearance: The large, heavy Jadis sounded, if anything, just a bit lighter and sunnier than average—but never inappropriately so, and never to the detriment of the performance. The amp curled itself, gracefully and prettily, around the electric melodies passing through it, preserving subtleties of timing and nuance without sacrificing force. It was identifiably tubey—in the level of the saturation of its colors, and in the consistently organic, nonmechanical manner in which it played lines of notes—yet it never sounded *colored*.

With the Elgar Violin Sonata, performed by violinist Midori Gotō and pianist Robert McDonald (CD, Sony Classical SK 63331), the Jadis sounded different from my usual combination of Shindo separates, but just as satisfying in its own way. The piano's first arpeggio in the *Romance: Andante* was as deliciously physical as with the best amplification I've heard:

no small feat. The sound was tauter than that of my Shindo separates: a little less full and rich, but with better—and, it must be said, wider—spatial distinction between the two instruments. The system's sense of momentum, with the Jadis, was just about perfect, and dramatic peaks sounded easy and human. Absolutely lovely.

At the other end of the spectrum, the decidedly harsh cymbals, gritty guitar sounds, and mildly shambolic tempos throughout Big Star's surprisingly good *In Space* (CD, Ryko RCD 10677) maintained their characters, texturally, timbrally, and temporally, without taking on added distortions of any form. The music rocked, and sounded both tuneful and impolite, as hoped. In somewhat the same vein, notwithstanding the excessive (if artistically applied) compression in the original recordings, the Jadis sounded wonderful with the mono version of *The Beatles*, taken from the boxed set *The Beatles in Mono* (CD, Apple 5099969945120). The electric bass on every number throughout this album sounded almost perfect: just the right color, tautness, touch, and rhythmic aplomb. I wouldn't have minded just a little more bass weight, but the listening experience never left me wanting. I wanted, again, a little more bottom when I listened to “People Get Ready” and other selections from Aretha Franklin's *Lady Soul* (LP, Atlantic SD 8176), a recording on which there is no more important musician than Tommy Cogbill, the studio great who, with fellow-bassists Duck Dunn, Chuck Rainey, and Carol Kaye, helped define the sound of American pop music in the 1960s.

The Jadis sounded magnificent with Lovro von Matačić and the Czech Philharmonic's peerless recording of Bruck-

**The large, heavy Jadis sounded, if anything, just a bit lighter and sunnier than average.**

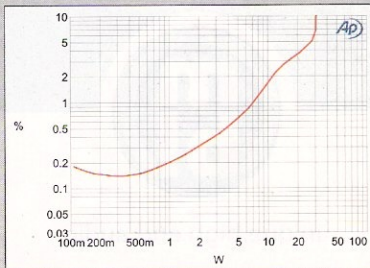
#### measurements, continued

to 14.8dBW into 8 ohms. Fig.4 plots the THD+noise percentage against output power into 8 ohms. The THD begins to increase steadily above the noise floor above 400mW, as is typical of a design with low loop-negative feedback. The minimum THD+N is fairly low at that level, at 0.09%. We indicate an amplifier's maximum output power when the THD

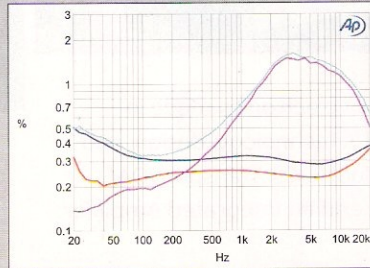
reaches 1%; this graph reveals that that happens with the I-35 delivering 17W into 8 ohms (12.3dBW). Relaxing the criterion to 3% THD, the I-35 puts out 37W into 8 ohms (15.7dBW). The picture is somewhat different into 4 ohms (fig.5): Not only is the minimum THD higher, at 0.14%, but the distortion rises faster as the output power increases. At 1% THD

the power is just 7.1W (5.5dBW), and at 3% THD it is 17.5W (9.4dBW). As supplied for review, the I-35's single output-transformer tap appears to be optimized for loads of 8 ohms and above.

This was confirmed by examining how the THD+N percentage changes with frequency at a fairly low output level, 4.9V, which is equivalent to 3Wpc into 8 ohms or 6Wpc into 4 ohms (fig.6). The distortion is relatively constant across the audioband into 8 ohms, though the left channel (blue trace) is not as linear as the right (red). The THD does rise below 100Hz, but only slightly, implying that the output transformers have appropriately hefty cores. Into 4 ohms, however, the distortion rises dramatically in the treble (cyan and magenta traces). I didn't plot the THD+N into 2 ohms, the amplifier being driven into clipping even at this modest level. (At 1kHz, the left channel's THD into 2 ohms measured 5.2%!)



**Fig.5** Jadis I-35, distortion (%) vs 1kHz continuous output power into 4 ohms.



**Fig.6** Jadis I-35, THD+N (%) vs frequency at 4.9V into: 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta).

ner's Symphony 5 (CD, JVC JM-XR24203): one of the best-sounding digital recordings in my collection, if only for the staggering quality of the music it contains. As with the other recordings I've chosen to describe the character of the Jadis, this one is characterized by supple melodic lines, brisk tempos and sudden changes of tempo, and a general level of sonic invention that is anything but static; to say the Jadis satisfied is stronger praise than it may at first seem.

Yet the Jadis didn't require complex arrangements, or even a terribly wide dynamic range overall, to impress with its musicality. Throughout the blessedly simple album *Red Headed Stranger*, by Willie Nelson (LP, Columbia/Impex IMP 6004), the Jadis I-35 maintained its focus on three things: the realistic portrayal of the tone of Nelson's voice and nylon-string guitar, and the convincingly supple, forward-leaning, nonmechanical portrayal of melodic lines. This is not to say that the French amp let everything else go to hell in a hand-basket: It simply played music in such a way that secondary concerns—bass depth, stereo imaging, etc.—took a back seat to primary concerns. Compelled nevertheless to comment on the amp's spatial performance, I would say that the Jadis I-35 offered quite respectable stereo imaging, with, as suggested above, a very good and clear sense of the spatial relationships between different sounds in a stereo recording. But it lacked the last word in the size, scale, and depth of the performing space: Recordings noted for being "stereo spectaculars," such as the classic recording, by Ernest Ansermet and the Orchestre de la Suisse Romande, of Falla's *The Three-Cornered Hat* (LP, London CS 6224), may not, through the Jadis, set high-end hearts a-flutter. But I was thoroughly happy.

### Conclusions

During its time in my system, the I-35 delivered every bit of the presence, tone, and texture that I would hope to hear from a contemporary tube amplifier: no small feat in itself. Yet looking back on my listening notes of the past couple of months, I see that most of my observations have more than

## ASSOCIATED EQUIPMENT

**Analog Sources** Garrard 301, Thorens TD 124 turntables; EMT 997, Thomas Schick tonearms; EMT OFD 25 & TSD 15 70th Anniversary pickup heads.

**Digital Sources** Meridian Explorer, Wavelength Proton USB D/A converters; Apple iMac G5 computer running Apple iTunes v.11.0, Decibel v.1.2.11 playback software; Sony SCD-777ES SACD/CD player.

**Preamplification** Hommage T2 step-up transformer; Sutherland Engineering Insight phono preamplifier; Shindo Vosne-Romanee & Masseto preamplifiers.

**Power Amplifiers** Shindo Corton-Charlemagne & Cortese, Fi 421A.

**Loudspeakers** Altec Valencia, DeVore Fidelity Orangutan O/96.

**Cables** USB: AudioQuest Carbon, Nordost Blue Heaven. Interconnect (single-ended): Audio Note AN-Vx, Shindo Silver. Speaker: Auditorium 23, Nordost Blue Heaven.

**Accessories** Box Furniture Company D3S rack (source, amplification components); Keith Monks record-cleaning machine.—Art Dudley

usual to do with music, and less to do with sound, per se: a good sign.

Indeed, although my preference endures for the sound and the presentation of my own reference electronics, the Jadis I-35 was good enough at playing music—at drawing me into the melodies and harmonies and rhythms and ideas captured in my records—that I wasn't watching the clock (or the calendar), waiting for the review period to end. This is a damn good amp for getting to the essence of music.

I haven't heard much else from Jadis's current product line; I have no idea whether or not the I-35 is representative. But the I-35 makes me want to hear more from Jadis—and I hope that I will. Life is short enough as it is. ■

### measurements, continued

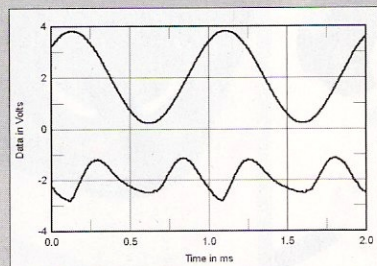
Fortunately, the distortion signature is predominantly low-order in nature, with the second harmonic the highest in level in the left channel (fig.7), and the second and third harmonics equal in level in the right (fig.8).

The I-35 didn't perform well when it came to intermodulation distortion. At

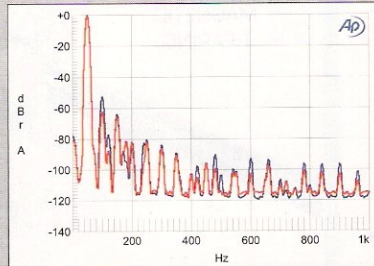
a level into 8 ohms that was well below visible clipping on the oscilloscope screen, an equal mix of 19 and 20kHz tones gave a 1kHz difference product at -49dB in the left channel (0.3%, fig.9, blue trace), with the higher-order products at 18 and 21kHz at the same level in the right channel (red), and even higher

in the left (blue). At 1W into 8 ohms (not shown), all these intermodulation products dropped by up to 20dB.

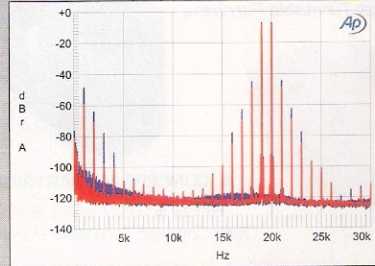
The Jadis I-35's measured performance was typical of a tube design operating with low loop-negative feedback, though the high quality of its output transformers is worth pointing out.—John Atkinson



**Fig.7** Jadis I-35, 1kHz waveform at 2W into 4 ohms (top), 0.216% THD+N; distortion and noise waveform with fundamental notched out (bottom, not to scale).



**Fig.8** Jadis I-35, spectrum of 50Hz sinewave, DC-1kHz, at 3W into 8 ohms (linear frequency scale).



**Fig.9** Jadis I-35, HF intermodulation spectrum, DC-30kHz, 19+20kHz at 10W peak into 8 ohms (linear frequency scale).