

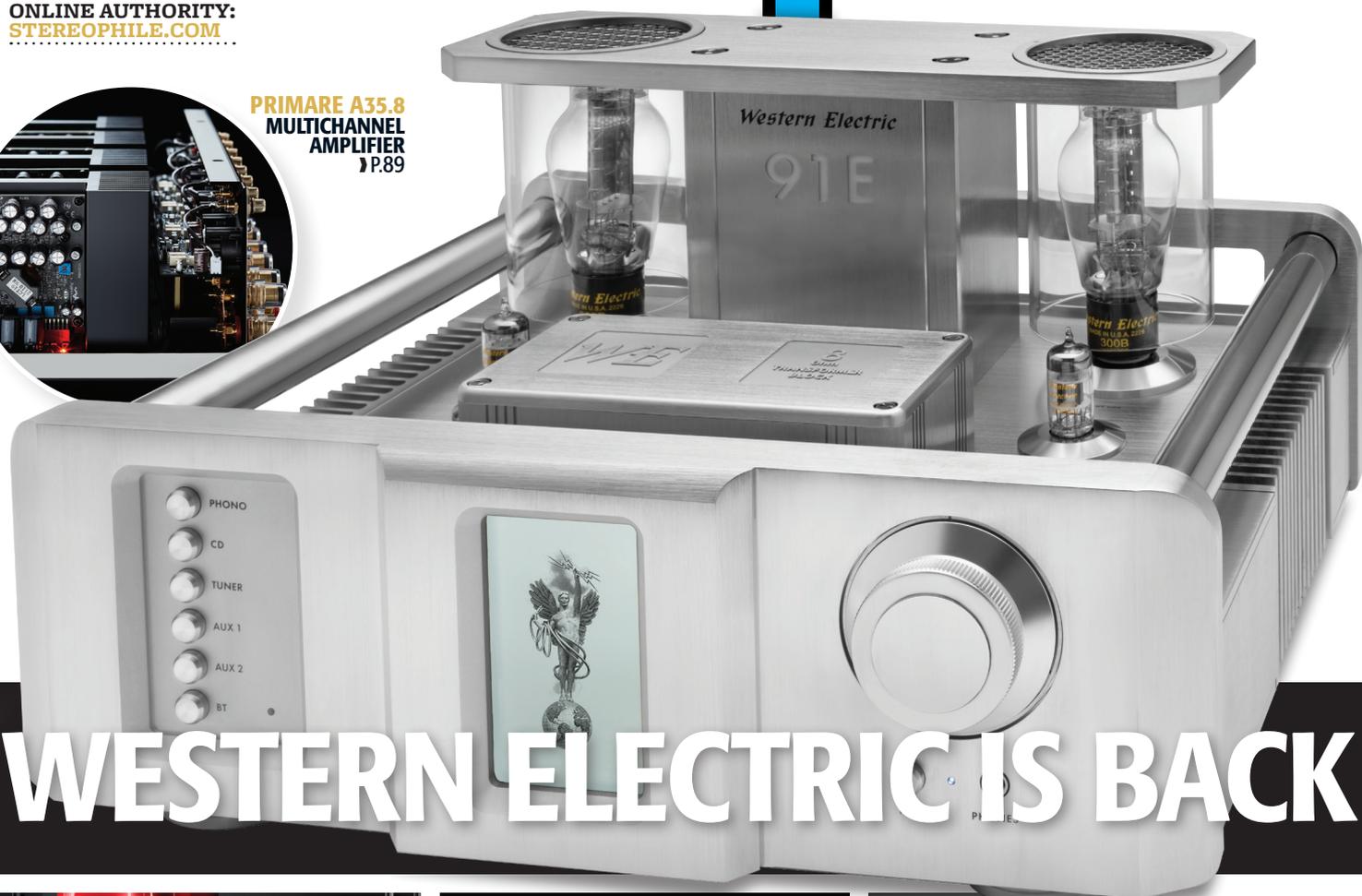
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KEN MICALLEF

Western Electric 91E

INTEGRATED AMPLIFIER

During my 30-odd years inhabiting New York City's Greenwich Village, I've seen many things come and go. Today's Village buzzes, blasts, and bellows in every direction, change itself the only constant.

Once the province of printers, factories, piers, and the maritime trade, the Far West Village, from Varick to Greenwich, plays host to a looming Disney megaplex. Concrete office blocks, empty in the 1990s, are choked with condos offering wraparound frontage, their storefronts touting Botox ("Wrinkle Prevention Studio"), cosmetic dentistry ("secretly straighten your teeth"), and bootcamp gyms ("smash your fitness goals"). At Barrow Street stands the old film-noirish Keller Hotel, its Hopperesque HOTEL sign weathered by time and grime. Farther uptown, former slaughterhouse buildings host Apple and Google offices. The nearby Ear Inn, a classic watering hole and neighborhood haunt, stands strong.

At 463 West Street, facing the Hudson, a massive, Neoclassical, 12-story building dominates its block. More than a century old, its copper-clad roof has turned a jaundiced shade of green. Proud and mysterious, its colossal Gothic gates are chained. Traffic rushes by, unaware of its historical significance.

In the 1990s, drummer Ken Micallef rented a subterranean rehearsal space in the building. (Then, as now, it is home to Westbeth Artists' Housing.) Ken—I—was unaware then that the quiet man who took my cash was Paul Bley, the jazz pianist who influenced Bill Evans, Keith Jarrett, and drummer Paul Motian. (Motian eventually left Evans to work with Bley.) The building was designated a National Historic Landmark in 2011, but I've never found a plaque there; unlike many large European cities, New York City is distinctly sparing of plaques. It's as if the city is worried they would hamper development.

463 West Street is a national monument not because jazz musicians worked there—and not because Ken Micallef rented rehearsal

space there—but because between 1897 and 1966 it was home to Western Electric, the applied-research division of AT&T, parent company of Bell Laboratories. AT&T/Bell Labs was the source of many hi-fi-related inventions including the vacuum-tube amplifier, the transistor, negative feedback, the world's first wedge-based anechoic chamber, and digital audio. (Harry Nyquist and Claude Shannon, who were involved in the development of the eponymous fundamental sampling theorem, did their work at Bell Labs.) Indeed, the first low-distortion, wide-bandwidth recording apparatus—hence, hi-fi recording—was developed at Bell Labs in 1925.¹

The Western Electric division's own creations include the Orthophonic phonograph, the Westrex cutting-lathe system, the 300B vacuum tube, considered by many the greatest triode power tube ever made, and the 1936 WE 91A single-ended triode (SET) integrated amplifier, which powered cinema systems across the country.

Reincarnation

Following the 1974 antitrust suit against AT&T and the consequent 1982 dissolution of the Bell telecommunication system, Western Electric spun down. In 1995, the company's tooling, schematics, intellectual property, and name rights were sold to entrepreneur Charles G. Whitener. In 1997, Whitener's Western Electric resumed manufacture of the Western Electric 300B vacuum tube, first at Western Electric's Kansas City works, then in Huntsville, Alabama, and finally to a new factory in Rossville, Georgia, equipped with hi-tech hydrogen-reduction ovens, automatic cathode-cleaning lines, flashy laser-welding systems, a modern water-deionization system, and an updated testing system. Earlier this year, he announced that his company would start producing several other vacuum tubes: 12AX7s, 12AT7s, 12AU7s, 6550s, and 6L6s.² If, as seems true, Whitener is determined to

SPECIFICATIONS

Description Single-ended 300B integrated amplifier. Tube complement: One matched pair Western Electric 300Bs, one pair WE ECC81s. Chassis: Machined aluminum. Output power: 20Wpc into 4 ohms (THD 10%; 10dBW), 16Wpc into 4 ohms (THD 5%; 9dBW), 14Wpc into 4 ohms (THD 3%; 8.5dBW). 20Wpc into 8 ohms (THD 10%; 13dBW), 16Wpc into 8 ohms (THD 5%; 12dBW), 14Wpc into 8 ohms (THD 3%; 11.5dBW). Operating voltage:

100V/115V/230V, 50–60Hz. Phono sensitivity, MM (10W into 4 ohms): 0.75mV; MC (10W into 4 ohms): 70µV. Phono input impedance (MM): 47k ohms, 100pF. Phono S/N ratio, MM (10W into 4 ohms, input 5mV): 83dB(A); MC (10W into 4 ohms, input 0.5mV): 73dB(A). Phono frequency response: 30Hz–20kHz (RIAA ± 0.5dB). CD S/N ratio (10W into 4 ohms, input 0.5V): 101dB(A). CD sensitivity (10W into 4 ohms): 0.27V. CD input

impedance: 20k ohms. CD frequency response: 15Hz–32kHz (–3dB). Bluetooth CODECs supported: BC, MP3, AAC, FastStream, aptX. Bluetooth sample rate (adaptive): up to 96kHz (aptX), bit depth up to 16 bits. Bluetooth frequency range: 20Hz–20kHz. Bluetooth S/N ratio: 96dB. Power consumption (operation/standby) 160W/0.3W. Power fuse: 2A, slow-blow. **Finishes** Nickel, champagne, black.

Dimensions 18.9" (480mm) W x 15" (300mm) D x 11.1" (280mm) H. Weight: 49lb (22.2kg).

Price \$14,999. Warranty: three years. Number of dealers: 17 worldwide. In US, sold direct and through dealers.

Manufacturer Western Electric 201 West Gordon Ave. Rossville, GA 30741. Tel: (404)352-2000. Email: info@westernelectric.com. Web: westernelectric.com.



elevate *his* Western Electric to the glory of the original brand, he's off to a hell of a start.

Whitener's 15-strong engineering team works in a state-of-the-art facility where, in addition to 300B vacuum tubes, they manufacture the 91E integrated amplifier (\$14,999), modeled after the company's early WE 91A amplifier.

"The goal, from the beginning, was to break through with a SET amp that allowed the 300B to perform at a never-before [heard] level," Whitener wrote in an email. "There are new 300B amps every year from other manufacturers. Our contribution needed to be something significant, something powerful that only Western Electric could pull off."

Design considerations

Whitener claims that the 91E, which was developed by a team of engineers over a period of 10 years, retains what's best about the early WE 91A—its delicacy, bloom, openness, and tonal magic—and adds modern improvements. "You'll find a solid low end and extended highs. We hoped to retain the clarity of the original 91A's midrange as a SET 300B amp. The 91E has zero negative feedback, both local and global. The design of a SET amp without negative feedback is a difficult challenge and requires selection of only the finest components in the audio chain. These factors ac-

count for the incredible soundstage performance of the 91E. THD and damping factor may measure better in push-pull configurations but not without compromising musicality and soundstage. The 91E has proprietary topology that all but eliminates audible noise." It also has remote control and Bluetooth, which Western Electric founder Elisha Gray could hardly have imagined.

"The 91E uses Western Electric's patented Steered Current Source (SCS) technology," says a description on the company website. "The unique parallel feed topology contributes half of the AC current to the plate (anode) of the 300B by modulating quiescent current. As a result, half of the power dissipation occurs in the tube, allowing for greater power output." (The 91E is rated at 20Wpc into 8 ohm with 10% THD.)

"Part of [the reason for] the increase in power is [that] we're running the 300B in Class A2, grid drive positive," Whitener explained. "The SCS circuit always keeps the power dissipation of the tube within the safe operating area (SOA), which of course extends the life of the tubes."

The 91E uses a "stepped logarithmic attenuator," the product's webpage explains, "to mimic the response of human hearing. The

1 See Bell Labs timeline: bell-labs.com/timeline/#/1920/1/open.

2 See stereophile.com/content/re-tales-22-it-time-tube-surge. Also see Herb Reichert's May 2021 Gramophone Dreams column, "The Venus Tube," at bit.ly/3QuXFLD.

attenuator consists of discrete resistors in a ladder configuration that are switched in and out of circuit to produce a logarithmic attenuation of the output signal.”

“It’s similar to an audio taper in potentiometers,” Whitener added. “Stepped attenuators have less noise and superior channel-to-channel tracking ability compared to motorized potentiometers. In essence, this microprocessor-controlled stepped attenuator uses relays to engage each discrete resistor in circuit and is accomplished with software that emulates a DAC. It complements human hearing with an algorithm for audio taper.”

When the 91E is powered, a gray image of Western Electric’s winged *Golden Boy*



MEASUREMENTS

I performed the measurements of the Western Electric 91E with my Audio Precision SYS2722 system.¹ I carefully installed the tubes following the instructions in the excellent manual, and after turning on the amplifier, waited for the 91E to optimize the bias for the 300B output tubes. Once that was done, I waited another 30 minutes before starting the testing.

The Western Electric 91E preserved absolute polarity, ie, was noninverting, from its loudspeaker, preamplifier, and headphone outputs. The volume control operated in accurate 0.5dB steps. A level of 1Wpc into 8 ohms was indicated as approximately -12dB on the front-panel meters. The maximum voltage gain at 1kHz was a fairly low 29.6dB measured at the

loudspeaker output into 8 ohms, 19.7dB from the headphone output, and -1.8dB from the preamplifier output, ie, an input of 1V resulted in an output of 998.5mV. The single-ended input impedance is specified as 20k ohms. I measured an inconsequentially lower value of 16.5k ohms at 20Hz and 1kHz, 15.5k ohms at 20kHz.

The headphone output’s source impedance was a relatively high 113 ohms across the audioband, which won’t be optimal for low-impedance headphones. The loudspeaker output impedance was a high 3.3 ohms at 20Hz, falling slightly to 2.57 ohms at 1kHz and 20kHz. The variation in the Western Electric amplifier’s small-signal frequency response with our standard simulated loudspeaker² (fig.1, gray trace) was ± 1.4 dB, which would be audible. Into

resistive loads (fig.1, blue, red, cyan, magenta, and green traces), the VTA-70 started to roll off above 10kHz, reaching -3dB at 35kHz. Fig.1 was taken with the volume control set to its maximum; the excellent channel matching was preserved at lower settings of the control. The 91E’s reproduction of a 1kHz squarewave into 8 ohms (not shown) was superbly square. The ultrasonic rolloff lengthened the risetimes of a 10kHz squarewave (fig.2), though no overshoot or ringing is present.

The 91E’s channel separation (not shown) was >60dB in both directions below 2kHz but decreased to 40dB at 20kHz. The

¹ See stereophile.com/content/measurements-maps-precision.

² See stereophile.com/content/real-life-measurements-page-2.

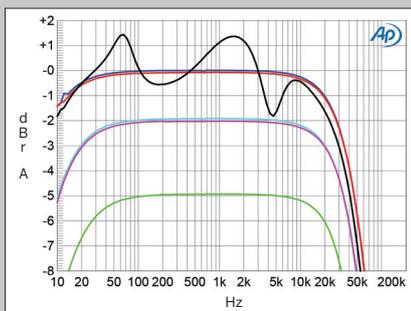


Fig.1 Western Electric 91E, frequency response at 2.83V into: simulated loudspeaker load (gray), 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), and 2 ohms (green) (1dB/vertical div.).

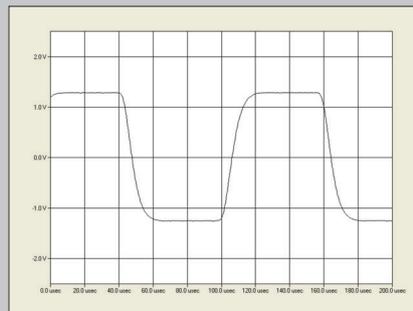


Fig.2 Western Electric 91E, small-signal 10kHz squarewave into 8 ohms.

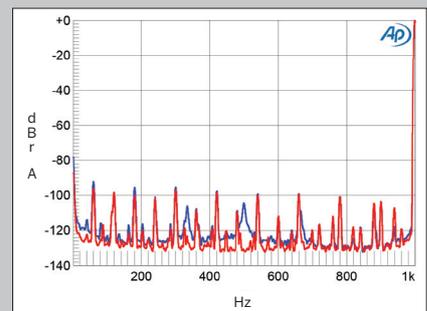


Fig.3 Western Electric 91E, spectrum of 1kHz sine wave, DC-1kHz, at 1Wpc into 8 ohms with volume control set to its maximum (left channel blue, right red) (linear frequency scale).

(formerly, *Genius of Telegraphy*), clutching his thunderbolts and electrical cables, appears momentarily in the amplifier's control display. A 30-second warm-up period follows, and then 30 seconds of microprocessor-controlled auto-bias. After 20 minutes of inactivity, the 91E goes into standby mode.

A novel feature of the 91E is its interchangeable transformer block, which is used instead of a multitap transformer. A 4 ohm transformer as well as a 16 ohm one are available as add-ons (\$999 each) to replace the included 8 ohm transformer. "We use separate transformers for different impedances because the additional windings in a traditional, tapped transformer cause the signal to deteriorate," Whitener said.

The 91E uses circuit boards. "The circuitry is much too complex for point-to-point wiring," Whitener explained. Brands and specifications of the 91E's capacitors, resistors, transformers, internal wires, RCA jacks, switches, and binding posts are not disclosed.

Setup and first impressions

Unpacking the 91E was like removing a massive jewel from a custom case. Unboxing the



measurements, continued

unweighted, wideband signal/noise ratio (ref.1W into 8 ohms), taken with the input shorted to ground and the volume control set to its maximum, was a good 79.7dB (average of the two channels). This ratio improved to 86.1dB when the measurement bandwidth was restricted to 22Hz-22kHz, and to 90.6dB when A-weighted. Spectral analysis of the low-frequency noise floor while the Western Electric amplifier drove a 1kHz tone at 1Wpc into 8 ohms with the volume control set to maximum (fig.3, blue and red traces) revealed a low level of random noise, and the AC-related spuriae at 60Hz and its odd- and even-order harmonics lay at or below -90dB.

Western Electric specifies the 91E's maximum power into 8 ohms as 20Wpc

(15.44dBW) at 10% THD, 16Wpc (12dBW) at 5% THD, and 14Wpc (11.46dBW) at 3% THD.³ With our usual definition of clipping—when the THD+noise reaches 1%—and with both channels driven, I measured a clipping power of just 1.8Wpc into 8 ohms (2.55dBW, fig.4). At 3% THD+N, I measured 9.23Wpc (9.65dBW), and at 10%, 12.8Wpc (11dBW). Slightly more power was available into 4 ohms (fig.5): 4.8Wpc (3.8dBW) at 1% THD+N; 10Wpc (7dBW) at 3% THD+N; and 14Wpc (8.45dBW) at 10% THD+N. The shape of the traces in these graphs suggests that the amplifier uses a very limited amount of loop negative feedback.

Fig.6 shows how the percentage of THD+N in both channels varied with

frequency into 8 and 4 ohms at 1V. The THD+N rose slightly at the frequency extremes and was higher in the left channel into 8 ohms (blue trace) but in the right channel into 4 ohms (gray trace). At 2.83V, which is equivalent to 1W into 8 ohms (not shown), the distortion was close to 1% in both channels.

Fortunately, the distortion waveform (fig.7) was predominantly the subjectively innocuous second harmonic,⁴ at 0.8%. The third harmonic was also present, albeit

³ Kudos to Western Electric for reporting the THD level at which maximum output power is measured.—**Jim Austin**

⁴ I created tracks on *Stereophile's Test CD 2* so listeners could hear at what percentage of second, third, or seventh harmonic they become aware of the distortion. See stereophile.com/content/istereophileis-test-cd-2-tracks-20-26.

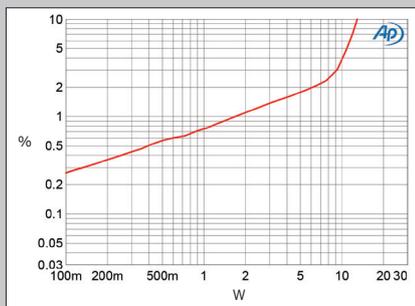


Fig.4 Western Electric 91E, distortion (%) vs 1kHz continuous output power into 8 ohms.

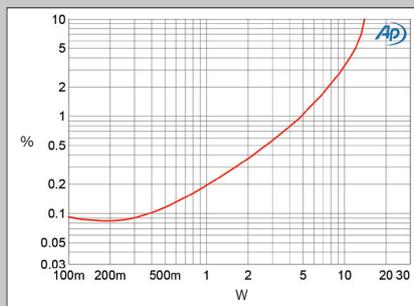


Fig.5 Western Electric 91E, distortion (%) vs 1kHz continuous output power into 4 ohms.

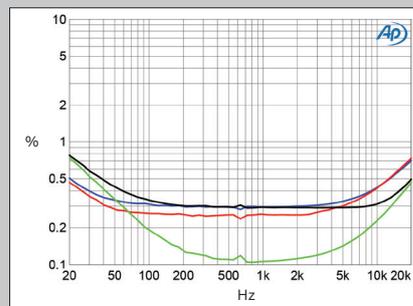


Fig.6 Western Electric 91E, THD+N (%) vs frequency at 1V into: 8 ohms (left channel blue, right red), 4 ohms (left green, right gray).

pair of 300Bs, each in its own padded container, was a treat. Full documentation accompanied both.

The 91E is massive and required careful maneuvering to fit into my Salamander rack, but two nickel-plated handlebars make moving it a cinch. I plugged in my DAC and turntables and wired up the speakers, but before I could set *Golden Boy* free to dance around in my room, I had to load my cartridges.

To use the 91E's onboard phono stage, Whitener and Western Electric's Marketing Communications Lead Cobi Boykin supplied me with six pairs of phono termination plugs (\$74/pair). Each pair was marked with capacitance for MM (100pF, 220pF, 330pF) or resistive values for MC (100 ohms, 330 ohms, 1000 ohms). Whitener recommended the 100 ohm pair for my EMT TSD15 N Super Fineline. The 330 ohm plug worked best for my Ortofon SPU Classic GE MkII MC cartridge.³

The 91E's 49lb machined-aluminum chassis, 18.9" wide, 15" deep, and 11.1" high, boasts an appealing industrial design that befits its heritage. It is big, bold, and beautiful, and its 6" tall, 1" thick faceplate commands your attention.

On the left side of the faceplate, in a recessed panel, a column



of pushbuttons allow source selection: phono, CD, tuner, aux 1, aux 2, and Bluetooth. In the center, a raised 4" × 2.5" glass display, which is easily legible from across the room, shows the selected input, the volume level, and twin VU meters. Near the bottom of the screen, the Western Electric logo glows proudly. A 2.5" volume

³ Western Electric offers advice to owners on choosing the proper phono termination plug.

measurements, continued

at a lower level, especially into 4 ohms (fig.8). By themselves, the second and third harmonics may not result in audible distortion, even at relatively high levels. However, this will only be true if they are not accompanied by intermodulation distortion. With the 91E driving an equal mix of 19 and 20kHz tones at 1Wpc peak into 4 ohms (fig.9), the 1kHz difference product lay at -50dB (0.3%), with the higher-order products at 18 and 21kHz 10dB lower in level. These products were all 5dB higher in level at 1W into 8 ohms (not shown), which experience leads me to believe is marginal performance. It is fair to note, however, that this level of intermodulation is identical to that of the Air Tight ATM-300R power am-

plifier that Art Dudley favorably reviewed in February 2019,⁵ which also used a single 300B tube for each channel's output.

To examine the behavior of the Western Electric's phono input, I connected a wire from the Audio Precision's ground terminal to the grounding lug on the rear panel, to obtain the lowest noise. The phono input inverted absolute polarity at all the outputs. I measured a maximum gain at 1kHz at the loudspeaker outputs of 71.5dB (MM) and 82.1dB (MC). I performed all the subsequent testing using the headphone output and with the volume control set to -9.5dB, to avoid overloading the tubed output stage. (Inserting a plug into the headphone jack mutes the speaker outputs.) I repeated

some of the testing at the preamplifier output.

The input impedance was 42k ohms at 20Hz and 1kHz, 34.3k ohms at 20kHz (MM) and 993 ohms at 20Hz, 979 ohms at 1kHz, 968 ohms at 20kHz (MC). The phono input's RIAA error was very low, with very good channel matching (fig.10), though the low and high frequencies rolled off a little, reaching -1dB at 35Hz and 20kHz. Set to MM, the wideband, unweighted S/N ratio with the inputs shorted to ground and the volume control set to the maximum was a good 67dB (average of both channels), ref. 1kHz at 5mV. Restricting the measurement

⁵ See fig.14 at stereophile.com/content/air-tight-atm-300r-power-amplifier-measurements.

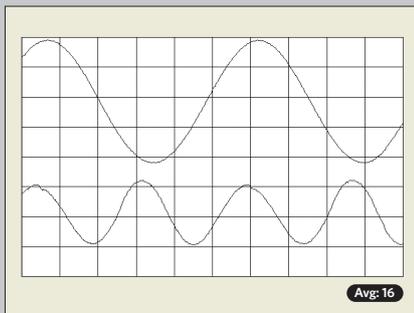


Fig.7 Western Electric 91E, left channel, 1kHz waveform at 1W into 8 ohms, 0.8% THD+N (top); distortion and noise waveform with fundamental notched out (bottom, not to scale).

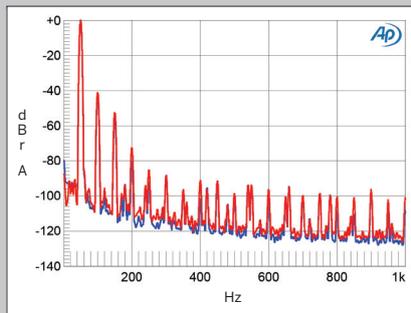


Fig.8 Western Electric 91E, spectrum of 50Hz sine wave, DC-1kHz, at 1Wpc into 4 ohms (left channel blue, right red; linear frequency scale).

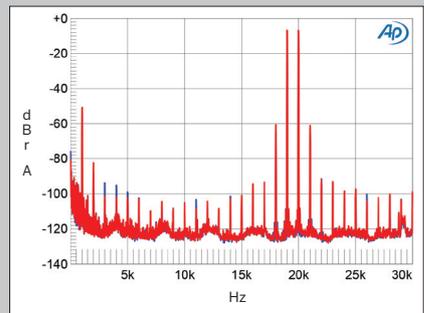


Fig.9 Western Electric 91E, HF intermodulation spectrum, DC-30kHz, 19+20kHz at 1Wpc peak into 4 ohms (left channel blue, right red; linear frequency scale).

dial dominates the right side of the faceplate, above a power button, an LED status indicator, and a 1/4" headphone jack.

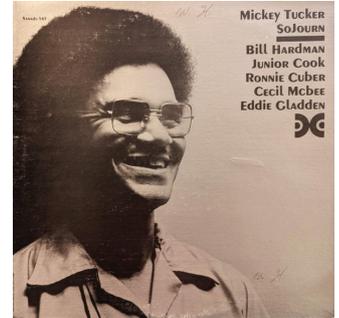
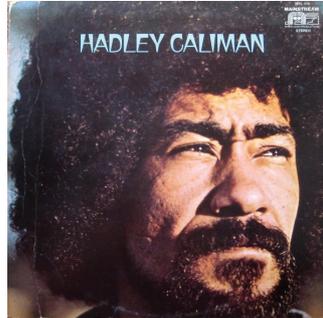
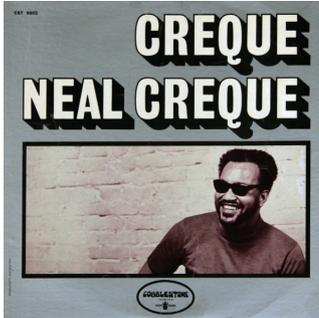
Behind the faceplate and atop the chassis, the 8 ohm transformer block is set between a pair of ECC81 driver tubes. Behind, on either side, stand the two 300B power tubes in their protective glass cylinders. A 1/2"-thick aluminum plate with ventilation grids caps the cylinders.

The back panel is all business. The left section accommodates eight gold-plated RCA pairs—labeled Phono Load, Phono In, CD, Tuner, Aux1, Aux2, Line Out, and Pre Out—as well as a ground screw and an MC/MM toggle switch. A pair of speaker binding posts is set in a small, separate section, and a third section contains Ethernet and USB inputs (both for firmware updates only), two

3.5mm control jacks, and an IEC jack. The 91E stands on four rubber-and-metal feet.

The minimalist, black aluminum remote is cleanly laid out with the essential functionality. The display dimmer is a nice touch.

Aesthetically and functionally, the 91E is a well-thought-out, well-built product. Its controls feel smooth and solid, and they performed without a glitch. Western Electric's attention to every detail was obvious, starting with the hinged, cherrywood shipping box for the 300B tubes and packing materials: dense, form-fitting foam-rubber sections for the amplifier, a screwdriver, a pin straightener, and a wrench for removing the protective grids. Heirloom-quality stuff. Accessories included a thick, hospital-grade power cord unlike any other I've seen.



measurements, continued

bandwidth to the audioband increased the ratio to 79.7dB, while an A-weighting filter further increased the ratio to 84.2dB. The S/N ratios in MC mode were 10–12dB lower, but this is still a relatively quiet phono stage.

The phono input, measured at the headphone output, had high levels of distortion, with the second harmonic the highest in level at -44dB (0.6%, fig.11) with an input signal of 5mV. The harmonic distortion signature is very similar to that measured at the loudspeaker outputs, which makes me suspect that the headphone output is derived from the single-ended tubed output stage, most likely with a series resistor. I therefore repeated the spectral analysis

at the preamplifier output (fig.12). Though high-order harmonics are visible, these all lie at or below -90dB (0.003%), and the second harmonic is now almost 50dB lower than it had been from the headphone output.

The high level of second harmonic distortion present in the headphone output affected the overload margin measurements. In MM mode, the margins, calculated from the difference between the nominal 1kHz input level of 5mV and the input voltage where the THD+N reached 1%, were disappointing, at 3.4dB at 20Hz, 4.2dB at 1kHz, and -8.4dB at 20kHz. The margins in MC mode, ref. 1kHz at 0.5mV, were all 0.5dB lower. However, repeating the overload

margin measurements at the preamplifier output gave an 8dB improvement at 20Hz and 1kHz in both MM and MC mode, though the margins at 20kHz were still low.

The Western Electric 91E is an intriguing mix of modern technology—the computer-optimized tube biasing, the precision volume control, the front-panel meters—and almost-century-old tube technology. Its measured performance is what I would expect from an amplifier with a single-ended output stage that uses a single 300B tube. Given its high levels of both harmonic and intermodulation distortion, even at lowish powers, it will work best with loudspeakers that have a 4 ohm nominal impedance and high sensitivity.—John Atkinson

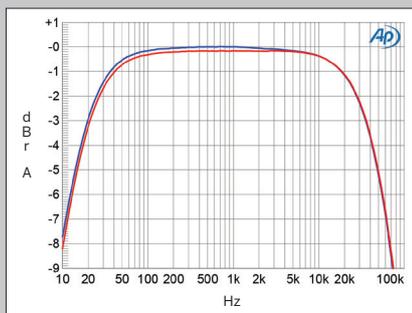


Fig.10 Western Electric 91E, phono input, response with RIAA correction (left channel blue, right red) (1dB/vertical div.).

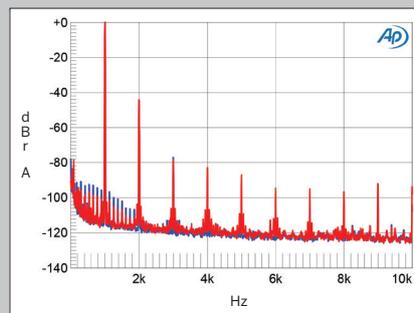


Fig.11 Western Electric 91E, MM phono input, spectrum of 1kHz sinewave, DC–10kHz, for 5mV input, measured at headphone output (left channel blue, right red, linear frequency scale).

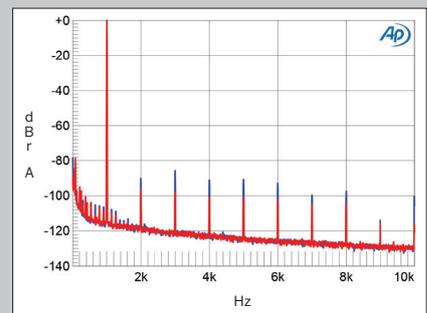


Fig.12 Western Electric 91E, MM phono input, spectrum of 1kHz sinewave, DC–10kHz, for 5mV input, measured at Preamplifier output (left channel blue, right red, linear frequency scale).

I've reviewed amplifiers with loose internal parts, confusing manuals, and poorly labeled options. The 91E harks back to the golden era of US manufacturing when superb craftsmanship was standard practice for a successful American business.

SET coherence

I well remember my first encounter with an SET amplifier. Before I bought my Shindo Allegro preamplifiers and Shindo Haut Brion push-pull power amplifier (20Wpc), the Art Audio Diavolo, which used a pair of KR VV32B power tubes to produce 13Wpc, was my amplifier of choice. The sound was what I associate with the classic SET personality. Pancakes with butter and ladles of syrup, the Diavolo sounded heavenly, with all the richness and profundity of mass in a large NYC church. Was the Diavolo transparent? Hardly. But it sounded refined, pure, and hypnotic on jazz and classical records, and it bloomed like nobody's business.

The 91E is the opposite, in every imaginable way. It is one of the most neutral, down-the-center, frequency-pure amplifiers I've reviewed. While it delivered that sweet 'n pure triode-treble audiophiles relish, and a room-filling soundstage, it exhibited a trait not commonly associated with tube amplifiers, let alone SET amps: as Whitener claimed, the 91E's low end was tight and accurate. Whether spinning Weather Report or Wagner, Brubeck or Brahms, if deep bass was impressed into the vinyl, the 91E delivered, time after time.

The uber-coherent 91E never favored one part of the frequency spectrum over another, never exploded in treble peaks, never mired me in blobby bass. The 91E's transparent midrange worked its magic in concert with its (largely) grain-free treble and fast, dense bass. This is unusual in my tube-amp experience: My old BAT VK-75 and its KT88s hit hard with tight bass, but I never enjoyed its sound as a whole. My beloved Shindo Haut Brion delivers lovely lows: soft, a little loose, somewhat rich, but texturally and

timbrally perfect. The 91E, by comparison, lacks the enveloping bass and weight of the Shindo, but it is convincing in its grip and clarity, whether on acoustic bass, electric bass, joyously thumped bass drums, timpani, or the bottom end of a cello.

Listening

Standard jazz history tells us that when fusion became popular, in the late '60s, the market for crusty swingers like Dexter Gordon and Hank Mobley dried up—that jazz was dead until Wynton Marsalis and the Young Lions rescued it in the 1980s. But (mostly) smaller indie labels including Black Jazz, Ovation, Strata-East, Catalyst, Artists House, Cobblestone, Inner City, Muse, Mainstream, Xanadu, and Groove Merchant continued to record talented jazz heads throughout the '70s. Horace Tapscott, Art Ensemble of Chicago, Black Artists Group, Arista Freedom, Enja, ECM Records, and others explored esoteric jazz territory: keyboardists Mickey Tucker, Neal Creque, and Charles Earland; guitarists Roland Prince, Calvin Keys, O'Donel Levy, and Pat Martino; and saxophonists Charles McPherson, Eric Kloss, and Hadley Caliman expanded the traditional boundaries of jazz. Guitarist Mel Brown created some of the nastiest blues skank this side of Lightnin' Hopkins.

In my listening, the 91E made the most of these artists' records, framing each in its own flatly recorded '70s jazz milieu. Mel Brown's *Blues for We* (Impulse! A-9180) was presented cleanly with a broad instrumental soundstage of startling immediacy. Every area of the stage was illuminated, and the smallest ambient details were convincingly realized. "Clarity," "detail," and "depth" fill my listening notes. The 91E excelled at creating the extravagant space and stinging textures of Neal Creque's funky jazz-and-soul on *Creque* (Cobblestone 9005); created scale and force on Hadley Caliman's *Hadley Caliman* (Mainstream Records MRL 318); and reproduced the intimate, small-studio coziness of Mickey Tucker's 1977 release



Sojourn (Xanadu Records 143).

Comparing my Tavish Audio Design Adagio phono stage with Sculpture A Mini Nano SUT to the 91E's onboard phono stage, the Tavish had more weight, bloom, and tonal color. The 91E's phono stage was cleaner though and provided more definition. It played with force, extracting more detail and revealing more instrumental complexity.

The 91E delivered treble clearly, without scorch or grit, preserved dynamics effortlessly, and presented recordings with drive and dimensionality that made listening a fun, energetic experience.

My DeVore Fidelity O/96 loudspeakers benefited from the 91E's tight bass, their 10" paper-cone woofers as well-controlled as by any solid state amplifier. Oddly, the 91E sounded less like a traditional tube amplifier with the O/96s—less so, for example, than the class-D LKV Research PWR-3 I recently reviewed. My Shindos, too, sounded more tube-like, overall, than the 91E, displaying rounder, richer tone and more enveloping soundstage bloom.

The 91E reached more of its potential with the Fleetwood DeVille loudspeakers. The SET treble truly shone in its clarity and detail. The amplifier's coherence and neutral demeanor were more evident, too. Despite the O/96s' higher specified frequency response, the 91E drove more detail through the DeVille's compression-driver tweeter than through the O/96's 1" silk-dome tweeter. But both speakers sounded fantastic with the 91E: clean, clear, and palpable.

Conclusion

Charles Whitener's claims about his Western Electric 91E integrated amplifier were spot on: The 91E *does* deliver a "solid low end and extended highs," and it does have the "clarity of the original WE 91A's midrange" and the ability to create an "incred-

ASSOCIATED EQUIPMENT

Analog sources Kuzma Stabi R turntable/4Point tonearm; Clearaudio Jubilee MC v2 phono cartridge. Thorens TD 124 with Jelco 350S tonearm and Ortofon SPU Classic GE MkII cart.

Preamplifiers Shindo Allegro. Tavish Adagio phono preamplifier.

Power amplifier Shindo Haut Brion.

Loudspeakers DeVore Fidelity Orangutan O/96, Fleetwood DeVille.

Cables Interconnect: 2m Triode Wire Labs Spirit II (RCA), 2m Analysis Plus Silver Apex (RCA). Speaker: 10' Analysis Plus Silver Apex Speaker (bananas). AC: Triode Wire Labs Obsession NCF, manufacturers' own.

Accessories AV Room Service Equipment Vibration Protectors (EVPs) beneath amplifiers, preamplifiers, and turntable platforms; Pro-Ject VC-S2 ALU Record Cleaning Machine; Audiodesksysteme Vinyl Cleaner Pro LP Cleaning System; IsoTek EVO3 Aquarius line conditioner; (2) Salamander five-tier rack; IKEA Aptitlig bamboo chopping boards (under turntable, preamp, power amps); mahogany blocks (2" x 2" x 0.5") under boards. Hi-fi set up on short wall firing into 15' x 15' room; wood slat on plaster walls.—Ken Micallef

ible soundstage."

The 91E is not your traditional treble-and-midrange-champ SET amplifier. In delivering more strength and power without compromising the low end, it's a classy machine that can frame music neutrally in a large soundstage. The 91E elicited consistent musical pleasure. Western Electric is back. ■