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# ModWright LS 36.5/KWA 150SE

There can be good arguments for teaming a tube preamp with a big solid-state power amplifier. But does this US hybrid combination really give the best of both worlds?

Review: **Steve Harris** Lab: **Paul Miller**

**M**any designers might agree with ModWright's owner Dan Wright when he says 'Valves are great voltage amplifiers. Solid-state devices are great current amplifiers. As a result, I prefer valves in preamp, source and phono stages, and I prefer a *good* solid-state design for power amplifiers. I feel that this gives the control, bandwidth, resolution and accuracy of solid-state with the beauty and organic sound of valves.'

And this does avoid some practical and economic drawbacks too. Big tube power amps that can really give 100W or so tend to be overweight, cumbersome and demanding: high-maintenance creatures that produce a lot of heat.

On the other hand, making a powerful tube amp 'user friendly' and foolproof (as VTL has done successfully) means adding a lot of solid-state control electronics as a support system for the tube circuit. And that inevitably makes the product much more expensive than a 'hair shirt' enthusiast valve amp, or a solid-state equivalent. So does Wright's approach really make the most sense?

## DONT CHANGE THE TUBE TYPES!

To find out, we're looking at the top of the range 'DM' dual-mono version of the LS 36.5 preamp, with its separate PS 36.5 power supply, and the KWA 150 Signature Edition power amplifier.

While the standard LS 36.5 has one 5AR4 (or 5U4GB) rectifier tube, the PS 36.5 contains two, which peep up rather quaintly through the top plate and so need to be installed by the dealer or end user.

Unlike the standard LS 36.5, the DM system has tube regulators too, a pair of 6EA7s (or GZ34s). These are installed before shipping, as are the two 6H30 double triodes in the LS 36.5. Essentially, the 6H30 is a development of the familiar

**RIGHT:** Inside the PS 36.5 power supply unit, which provides 'dual mono' power for the LS 36.5 preamp. Next to each of the rectifier tubes is a smaller voltage regulator tube

6922 or ECC88 double triode, but these are not compatible. ModWright warns that changing the 6H30s for other tubes will damage the unit.

## MOTORISED SOURCE SELECTION

Naturally, the mains inlet socket is at the back of the PS 36.5 PSU, but to power up from standby you just touch the LS 36.5's front-panel power button, which causes the PS 36.5's two LEDs to light while its projecting tubes begin to glow visibly. After a few seconds, a single blue LED lights on the preamp itself, and it's ready to play.

Despite the LS 36.5's inclusion of remote control and balanced inputs, the front panel layout closely resembles the old SWL 9.0 [HFN Mar '07]. The central rotary control is a source selector, its five detents marked by dots rather than anything more informative, but the leftmost position now selects the balanced input while the

far right one is a home theatre bypass or HT/BP loop. There are also three normal unbalanced line inputs.

Also marked with dots, until you get to the final '11' position, is the volume control, but both this and the source selector are motorised for remote operation. Between the two, replacing

the toggle switches of the SWL 9.0, are three push buttons for Mute, Phase (for phase invert) and HT/BP. The preamp always powers up 'in phase', indicated by blue LEDs inside the unit, which go out when you select invert.

The HT/BP button comes into action only when you have set this input using the selector switch, and toggles it between HT/BP and standard preamp mode. You have to take care how you use this input, because it defaults to HT/BP mode when powered down – the input will then go straight to the main outputs at full volume.

*'A bias setting option trades off sound quality against efficiency'*







**LEFT:** A clean, simple preamp fascia layout follows on from the earlier SWL 9.0SE. On the power amplifier, the big illuminated logo is the on/off switch

circuitry said to improve dynamics and resolution. There is cryo-treated input wiring and 12 gauge audio-grade stranded wire to the binding posts. Finally, the capacitor banks have been redesigned to give greater capacitance and lower impedance for faster current delivery to the output stage.

That illuminated central front-panel logo also forms the mains on/off switch, not just a standby. Once pressed, it flashes blue while the amp remains muted until a stabilisation sequence is completed.

#### CIRCUIT PROTECTION

Multiple levels of circuit protection are included to prevent damage to amplifier or speakers. DC input protection is provided by the input coupling transformer,

while thermal protection is provided by internal heat sensors. In case of thermal overload, the amplifier will shut down completely, and can be turned on again when cool.

Short-circuit or current overload protection is provided by ModWright's proprietary Total Silent Protection circuitry, which is completely outside the signal path. When this is triggered, the affected channel will mute, or the amp will shut down, but it can then be powered off and restarted. Finally, internal fuses are fitted but these are not accessible to the user.

In the centre of the back panel, starting from the top, there is the small toggle switch for high/low bias, then a much chunkier one for stereo/mono, and below this a single pair of speaker output terminals for use in bridged mono mode.

Below this, just above the mains inlet, is another small toggle switch to control the internal LEDs which, if desired, flood the interior with blue light and send a blue glow into the room. Then, to left and right are the expected balanced/unbalanced inputs and stereo speaker outlets.

One intriguing feature of the KWA 150 power amplifier is the bias switch. It arrived after PM's lab testing with the switch in the

At the back are balanced XLR inputs, plus four pairs of phonos. Then there is one pair of XLR balanced outputs and the three pairs of phono outputs, Main 1, Main 2 and Tape. Alongside a small grounding post is a toggle switch, which can be used in case of hum problems to disconnect the internal signal and power supply grounds from the chassis and mains earth.

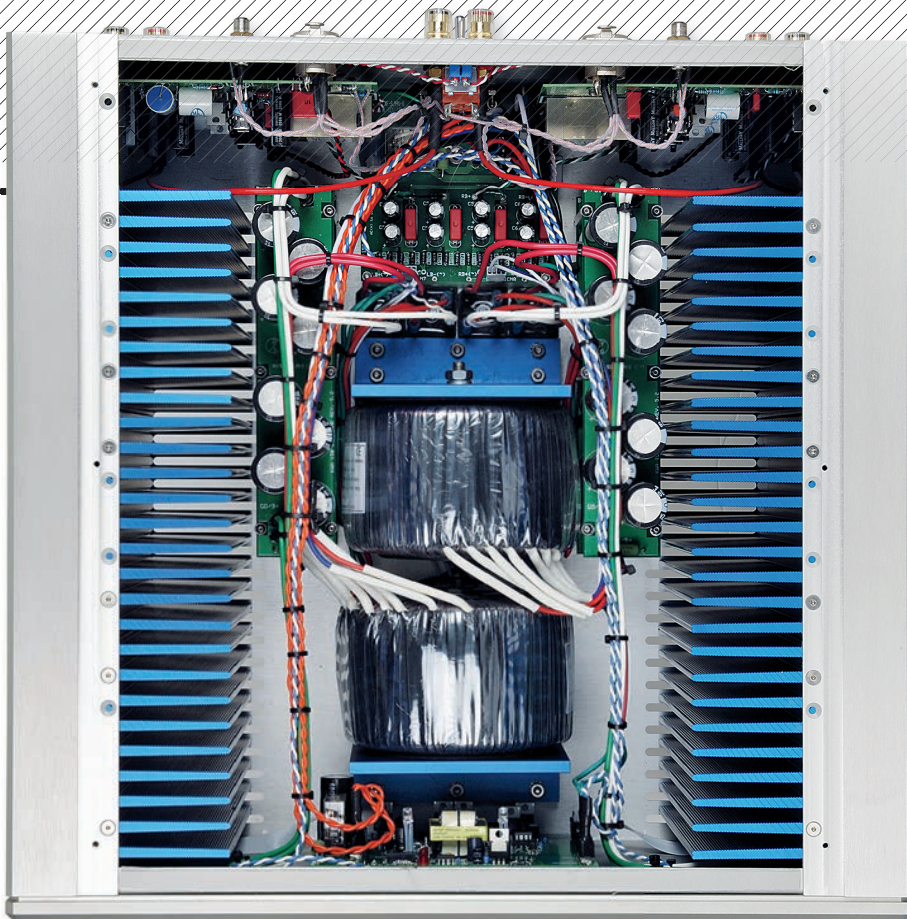
Five of the ten buttons on the neat metal-cased ModWright remote control duplicate all the front-panel functions.

It's now around three years since ModWright's KWA 150 power amp was joined by the upgraded Signature Edition reviewed here. This is a direct-coupled fully-differential design using no global feedback. The 'first watts' are said to operate in Class A, and unusually, there is a high/low bias setting switch, which trades off sound quality against efficiency.

For the Signature Edition, there's an upgraded model of Lundahl input transformer, with revisions to the input

#### THE WRIGHT STUFF

After graduating in mechanical engineering, Dan Wright became a professional engineer in the field of heating and ventilation systems, but he was a passionate audiophile. He was soon finding ways to improve existing products with parts upgrades and improved power supplies, and this became a serious spare-time activity. Wright got some welcome encouragement when his upgrade modifications for a Perpetual Technologies DAC were endorsed by the manufacturer, and in 2000 he took the plunge and launched ModWright as a full-time business. The initial offering was a tube-output-stage upgrade for the Sony CDP-777ES CD player, and similar mods for other models followed. By 2003, Wright was ready to launch a product of his own, the SWL 9.0SE preamplifier. As he explains, 'The tube stage used in our first mods, is a "Mu" stage, designed by Alan Kimmel. This initial circuit became the basis of a lot of different tube circuits that we used in our mods, and eventually in our first production piece, the SWL 9.0SE. It should be no surprise that I continue to consult with Alan Kimmel.'



High position, but naturally I experimented with this before doing anything else.

### **FINE DETAIL AND BODY**

When I put on Rebecca Pidgeon's *The Raven* [Chesky SACD 329], though, a quick comparison was enough. On the Low setting, the amplifier lost what I'd already identified as a great combination of fine imaging and unforced detail. In imaging terms, Pidgeon's vocal was now diffuse and imprecise, while the mid and treble generally took on a slightly blaring quality. Really, the sound was inferior in almost every way you could think of.

So this is not really a sonic option. Until I read the manual properly, I wondered why the Low bias setting is provided at all. It's really there in case you want to run the amp with less current consumption and consequently less heat dissipation; ModWright states that the High position will give the best sonics.

After this, of course, I listened to Rebecca Pidgeon right through to 'Spanish Harlem' and 'Remember Me'. And the amplifier really did seem to bring a fresh charm to Pidgeon's heartfelt and optimistic love songs. With the ModWright combination, as a generalisation, the sound was just bigger than with several other solid-state amps I have tried, and it was also very dynamic.

A case in point was pianist Zoe Rahman's almost unexpectedly great album

**'Finger and string noises brought a tangible reality to the performance'**

**ABOVE:** The KWA 150 has massive toroidal mains transformers and generous heatsinking. An input transformer protects the amp from DC

*Live* [Manushi MANUCD003], recorded in 2007 at the Pizza Express in London. This time, Rahman's energy was simply jaw-dropping, first of all absolutely conquering the audience and the venue on her version of Abdullah Ibrahim's 'The Stride' and then hitting new heights in duet with brother Idris on clarinet. Gene Calderazzo's drums had power and speed and Oli Hayhurst's

bass solos came over with gripping intensity.

ModWright's aim has never been to emulate the supposedly 'soft and cuddly' sound of valves. But you certainly couldn't say that this combination lacked

warmth, and when used with the B&W CM10 speakers [HFN Sep '13], it could be generous and full-bodied.

It was entirely captivating on 'Intuité' [Favored Nations 2130], where guitarist Pierre Bensusan often gets his instrument to sound more like an oud, with the help of added ambience in the studio sound. And yet the presentation here excelled in detail too, as the precisely-captured finger and string noises helped bring a tangible and inviting reality to the performance.

Always revealing of recording quality, the ModWright combination seemed to dissect the sound of Ry Cooder's pioneering digital recording *Bop Til You* ⇨

## **DAN WRIGHT**

Today there are really two ModWright businesses under one roof. ModWright Modifications handles mods for the Oppo BDP-105 and Sony HAP-Z1ES HDD audio player, for example [details at <http://www.modwright.com>], while ModWright Instruments Inc builds the complete products.

'Personnel-wise, I do have separate technicians who handle the day-to-day production of the ModWright Instruments products,' says Dan Wright. The modification work is done largely by an independent contractor who has worked for me since the early 2000s. The production crew also builds the external supplies for the mods and does most of the PCB assembly.

'In total, there are now seven people that work for ModWright Instruments and a handful of design consultants that I contract with for digital design, microprocessor programming and analogue design. I actually contract out the digital design of our products and focus on the analogue stage and power supply designs.'

On the subject of high-resolution audio and the Sony HAP-Z1ES [HFN Mar '14], Wright says 'When the music is mastered from DSD or similar high-res source, it is brilliant! I think that it is ridiculous, however, to remaster PCM-encoded music to DSD – you cannot add what was not there to begin with!

'Having said that, in the case of the HAP-Z1ES, the DSD engine that converts any lower resolution format to DSD really *does* sound good!'





# LAB REPORT

## MODWRIGHT LS 36.5 / KWA 150SE



**ABOVE:** Rear view shows the preamp's balanced inputs and outputs [centre box], while the unlabelled toggle switch is a ground lift. On the power amp [bottom], the small toggle switch is for high/low bias, the larger one for bridged mono operation

*Drop* [Warner Bros 7599-27398-2] in an arresting way. On the complex mix of 'Little Sister' it gave real intelligibility to the vocals and even the quite far-back voices seemed to have some welcome space around them. All those sizzling guitar parts wove their way through as logically separated threads in the music. Bass guitar was agile and tuneful and the track really rocked along.

### RISING TO THE OCCASION

The ModWright amplifier's inherently graceful sound, authoritative bass and excellent imaging all came into play again when I put on Fauré's *Requiem*, with the RPO and London Symphony Chorus under Richard Hickox [Carlton Classics 30366 00092]. In the *Offertorium* it was nice to hear the choir almost tangibly placed in space, and the way the sonorous cellos and basses paved the way for the solo baritone voice with organ below.

Turning finally to another jazz favourite, I put on *Art Pepper Meets*

*The Rhythm Section* [Contemporary 00252 18633826], to see how the great alto saxophonist would sound with the ModWright amp in control. In that opening solo on 'You'd Be So Nice To Come Home To', you could really feel the intensity and stress of the engagement – a record date that came after a terrible period of strung-out inactivity, and which had been organised to put him in the company of the hottest rhythm section of the day.

Then, as things progressed, you could hear how brilliantly Pepper rose to the occasion. And so, in this happy listening session, did the ModWright amplifier. ☺

### HI-FI NEWS VERDICT

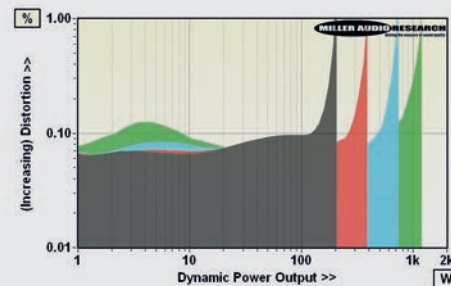
With this hybrid amp system, you hear a sound that seems to bear the hallmark of long and thoughtful development by a talented and dedicated designer, with careful component choice and attention to every detail, and it's a sound that really lets the music into the room. Perhaps it can't quite match the ultimate 'liquid' mid transparency of the finest all-tube systems, but it's still a winning combination.

Sound Quality: 84%

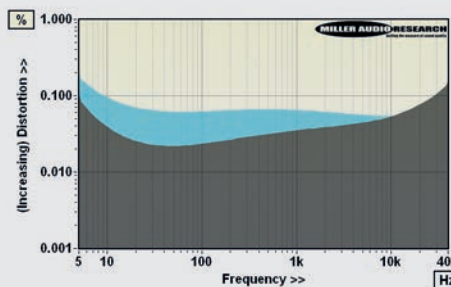


If you are looking for synergy between a pre and power amplifier, then here it is. The LS 36.5 preamp, with its unity-gain balanced-in/balanced-out configuration, has evidently been designed to work with line-level sources which provide >1530mV to drive the KWA 150SE to its rated 2x150W/8ohm output. Ultimately, the '150SE will deliver 2x185W and 2x315W into 8/4ohm with 200W/390W available under dynamic conditions. Into lower 2/1ohm loads, the solid-state output stage musters a full 730W/1190W, equivalent to 34.5A at <1% THD, via a modest 0.065ohm source impedance [see Graph 1, below]. Distortion, largely determined by the tube driver stage, is broadly unaffected by reducing load impedance.

The pattern of distortion versus output level and frequency seems perfectly matched between pre and power amp. For example, distortion increases uniformly from 0.007% at 1W/8ohm to 0.025%/10W, 0.09%/100W and 0.13%/150W via the KWA 150SE which complements almost exactly the same level of THD from the LS 36.5 preamp as it outputs the necessary voltage to drive the power amp to these power levels. Distortion versus frequency is similarly well-matched, with both amplifiers delivering ~0.03% at 20Hz to 1kHz and 0.055%/20kHz at the level required to maintain 10W/8ohm [see Graph 2, below]. The preamp's frequency response is ruler-flat from 3Hz-30kHz rising to +0.4dB/100kHz while the power amp has a similarly extended bass allied to a 'sweeter' treble, reaching -0.3dB/20kHz and -2.9dB/100kHz. Readers may view comprehensive QC Suite test reports for the ModWright LS 36.5 preamp and KWA 150SE power amp by navigating to [www.hifinews.co.uk](http://www.hifinews.co.uk) and clicking on the red 'download' button. PM



**ABOVE:** Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads



**ABOVE:** THD vs. extended frequency; LS 36.5 (1V out, blue trace) vs. KWA 150SE (10W/8ohm, black trace)

### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	185W / 315W
Dynamic power (<1% THD, 8/4/2/1ohm)	200W / 390W / 730W / 1190W
Output imp. (20Hz-20kHz, pre/power)	140ohm / 0.063-0.075ohm
Freq. resp. (20Hz-100kHz, pre/power)	+0.0 to +0.45dB / +0.0 to -2.9dB
Input sensitivity (for 0dBV/0dBW)	1000mV (pre) / 124mV (power)
A-wtd S/N ratio (re. 0dBV/0dBW)	94.5dB (pre) / 87.9dB (power)
Distortion (20Hz-20kHz, 1V/10W)	0.078-0.054%/0.028-0.053%
Power consump. (pre/idle/rated o/p)	88W / 155W/498W
Dimensions (WHD LS36.5/KW 150SE)	445x121x318/432x216x432mm



**ABOVE:** ModWright supplies a solidly built handset: phase reversal is included