

Solid Power

McIntosh release a powerful hybrid amplifier with solid-state output, fronted by valves. Noel Keywood enjoys.

With a history that starts back in 1949, kicked off by a valve amplifier of legendary ability, McIntosh remain in touch with the valve today – although perhaps I should use the term ‘tube’ for this U.S. company, based in New York. Explaining the ornately protected tubes that front up their new MA352 amplifier I am reviewing here. It’s a hybrid though: the power amplifier is transistor – just look at those heat-

sinks either side.

What the MA352 offers is valve sound and romance with transistor power; no less than 200 Watts claimed – but we measured more (see Measured Performance). The MA352 is an integrated amplifier with RCA phono-socket unbalanced Line inputs, as well as XLR socketed balanced inputs. There’s also a Phono stage for a turntable fitted with an MM cartridge, but there are no digital inputs. That’s not to say it lacks microprocessors for digital

control circuitry inside though, as our internal shot shows; this is one complex amplifier in control terms, having a remote control as well as external bus control.

When I pressed the volume control at right to switch on, the amplifier lit up immediately, LEDs beneath the valves glowing bright orange. The big power meters light blue and on came a dot matrix display panel showing status. There’s a small delay of 15 seconds as the valves warm up and when they do



the LEDs switch to bright green. This display can be switched off however, leaving the less obvious glow of the 12AT7 and 12AX7 heaters. Unexpectedly, under test when the amplifier was driven into overload the LEDs reverted to orange, warning of overload – but somehow I don't think many people will be seeing this happen.

An unusual addition is the line of five tone controls you can see at centre, that can be switched in or out by remote control so comparisons can be made. The controls must be set manually and all have a zero-position indicated on the control knob and physically by a centre click-stop. Measurement showed each of these controls offers massive boost and cut values of 15dB (+/-12dB quoted), but they have sufficient resolution to make the small tonal changes that may be needed. Centre frequencies are 30Hz, 125Hz, 500Hz, 2kHz, 10kHz, the first altering low bass, the second upper bass/warmth, 500Hz alters presence of singers, 2kHz affects treble (detail) and 10kHz tweaks upper treble (the hissy bit).

Switching in the EQ system also introduces a sharp bass roll-off filter at 15Hz to prevent the 30Hz control from subsonically over-driving loudspeakers. It can be used as an LP warp filter, something McIntosh don't mention in their literature.

Which brings me to the Phono stage. It's designed for moving magnet cartridges, but is sensitive enough – with input trim set to +6dB – to work with moving coils having strong output. Capacitive loading can be varied in 50pF steps from 50pF (minimal) up to 800pF (large). Increasing capacitance raises the



An underview, with front panel at right. McIntosh use a complex robotically manufactured board with surface mount components, including a microprocessor (just below centre).

upper mid-band and presence, whilst lowering high treble.

It took two of us to lift the 30kg (66lbs) MA352, largely because it has a massive mains transformer and power supply – explaining huge power output. The chassis is well finished in polished stainless steel but exposed edges from the folded (unwelded) chassis at front were not so nice. Width is 445mm so it will fit a 19in (482mm) rack but with a height of 251mm demands space between shelves. Depth is 440mm so again within 19in rack dimensions. McIntosh say 521mm deep including cables but this appears to include US only banana plugs we did not use.

The styling is trad.Americana, straight out of the fifties/sixties with all that brightwork – totally opposite to the bland black box common today, that makes hi-fi products look so utilitarian. McIntosh work up valve-visuals nicely, pumping up light display to its ultimate: this is an amplifier to be seen, not tucked away. Idiomatic I guess, but I found the MA352 easy and sweet to use. It has no foibles: the controls moved smoothly and the remote switches inputs and controls volume, as well as selecting a wealth of pre-set options displayed large in the dot matrix screen. Amongst them are labelling of the inputs (CD, TUNER etc), mono/stereo pass through to rear phono-socket outputs. An external remote sensor can be used and there is external trigger control. Auto power off to the preamplifier occurs after 30 minutes, but can be switched out.

The loudspeakers (Output 1) can be switched off for headphone listening, a 1/4in (6.3mm) jack being sited on the front panel.

SOUND QUALITY

I connected the MA352 to our Martin Logan ESL-X hybrid electrostatic loudspeakers and fed in CD from our Oppo BDP-205D universal player connected via Chord Company Epic balanced cables.

For LP our Timestep Evo modified Technics SL-1210 Mk2



Loudspeaker terminals sit high up, just behind the power amplifier boards. Below are Line inputs, a Phono stage with earth terminal (centre) and balanced XLR inputs at right.



With top cover removed the screened mains transformer can be seen, with power amplifier boards mounted in heatsinks either side. Convection cooling only (no fan) with thermal cutout; ours ran just warm.

Direct Drive turntable with SME309 arm was used, carrying an Audio Technica VM750 SH (Shibata tip) moving magnet cartridge.

Playing LP and then CD the overall quality of this amplifier soon became apparent. It is quite dry, super clean and dynamically powerful. And it imposed these qualities on both LP and CD equally, bringing them close to each other.

Spinning uncompressed CD and John Campbell singing Down

imposes. You get good, solid and tuneful bass, held in an iron grip.

With Nils Lofgren and Keith Don't Go (CD) his guitar strings cut out vividly, being starkly clear.

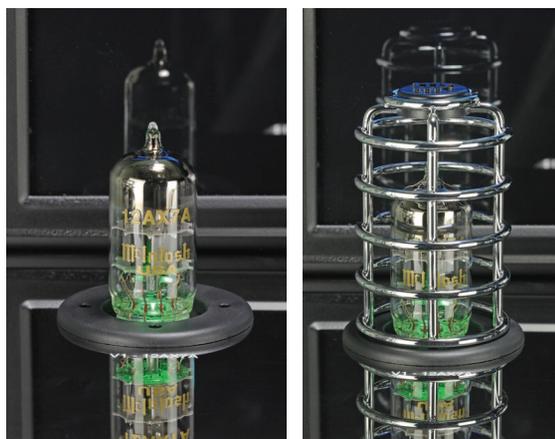
Lofgren's vocals were placed in front of me with stone-solid outlining. There was little sense of valve warmth as such, but at the same time a lovely sense of easy clarity, with good body to the sound. And it was the body in the sound that the valves were responsible for I suspect, plus a broad sound stage with a good sense of space.

This all became clearer with LP, especially with our Mobile Fidelity re-issue of Love Over Gold from Dire Straits (45rpm, 180gm). Your Latest Trick was as clean, clear and composed as CD but had more body and believability. It was a stunner: the MA352 conspired with our Direct Drive turntable and insightful Shibata tipped cartridge to deliver stabbingly powerful dynamics held in place time-wise to give a great sense of pace. Mark Knopfler's vocals had weight and presence, again with stony solidity. The bass line was weighty but rigidly timed, driving this track along with assured pace. Ride cymbals on

the drum kit shimmered and had filigree detail; the MA352 drew out their presence in the mix, capitalising upon the resolution of the Shibata stylus.

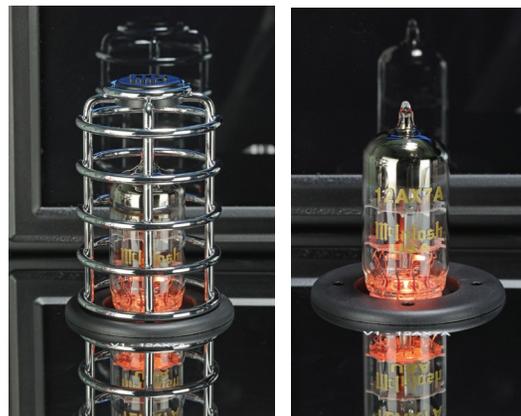
Opening kick drum strikes in Hugh Masekela's Uptownship, from his Hope LP (180gm), had powerful slam and hand drums snap in their timing. His trumpet blared out clearly centre stage, sounding brassy. There was a sense of pure clarity here, yet without sharpness. It was a sound that any listener would gurgle at as supreme high fidelity, aided by sheer dynamic thrust. Spectacular, but palatable too.

For classical I turned to a selection of hi-res files on our Astell&Kern AK120 portable player, connected by short optical digital cable into the Oppo player acting as a DAC. Both scale and depth of the Minnesota Orchestra playing Dance of the Tumblers from Korsakov's Snow Maiden (24/96) was strongly established between and beyond the X-Stat electrostatic panels, with smooth yet vivacious strings and big kettle drum strikes at the end. This amplifier finds visceral power in an orchestra and conveys it with some force.



When running the valves glow green, but this display can be switched off if desired.

In the Hole, there were enormous levels of detail and a great sense of atmosphere coming in from his microphone. This made the MA352 forensically insightful. Bass was tight and clean, if not overly heavy – but this is what high electrical damping



Safety covers over the valves lift off. The bright orange glow comes from underside LEDs, orange indicating warm up or overload.

The closely recorded and often bright sounding violin of Marianne Thorsen playing Mozart's Violin Concerto in G Major, backed by the Trondheim Soloists (24/96) came over as solid and clear, and the edginess I occasionally hear with this piece was absent. Cool and forward – yet smooth and svelte at the same time, and with fantastic internal detailing to the strings of the violin. This is a riveting piece and the MA352 did a fine job with it.

The tone controls added usefully



Big power meters give clear indication of output. They are electronically driven to capture peaks accurately. Centre scale is 2 Watts.

subtle changes, but I did not feel they were especially necessary – at least with our well honed sources. I heard no discernible difference between EQ (set flat) on or off, but I played flat, heavy 180gm LPs without warps so this is to be expected. Good though that the EQ circuits do not affect sound quality when switched in.

The meter needles swung around 2 Watts at centre scale, hitting 20 Watts only on occasion when playing loud. From previous tests I know that McIntosh use meter driver circuits that ensure an accurate peak reading; it was nice to see yet again that 20 Watts is about it, even in our large 6550 cu ft room. This

information from the meters was discernible 12ft away, as was volume level as a percentage and all settings on the large dot matrix display. All of which made driving the MA352 by remote control and getting feedback from it a no-problem experience. McIntosh do a fine job with the whole user interface, courtesy of much digital control circuitry.

CONCLUSION

In the MA352 McIntosh offer an integrated amplifier with massive power – 350 Watts into a 6 Ohm loudspeaker. Whilst the power amplifier has grip and insight, the valve stages add in body and dimensionality to the sound stage. Result: an awesome sound. The Phono stage was no after thought either, LP sounding better than digital. It's grippy and powerful, rather than warmly romantic, yet there was body in the sound that eludes most others. With an easy and engaging user interface as well, this is a fine amplifier.



The remote selects inputs, alters volume and can change operating conditions like gain Trim.

MEASURED PERFORMANCE

The McIntosh MA352 delivered 264 Watts into 8 Ohms and doubled this to 530 Watts into 4 Ohms, making it massively powerful. Few loudspeakers can handle such power so it is a tad academic. The meters are logarithmically calibrated and show true power use, which means centre scale of 2 Watts where the needle hovers; it was difficult to get to 20 Watts at right, let alone 200 Watts at end of scale. The green upright LEDs flash orange at overload.

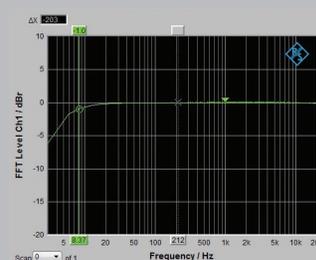
Output impedance measured a low 0.09 Ohms, giving a very high damping factor of 88, keeping a good grip on the cones in terms of electrical damping at least.

Frequency response with Equalisation switched out measured flat from 8Hz to 100kHz – wide. Switching Equalisation in introduced a low bass filter, sharply reducing gain below 15Hz, with all five tone controls set to flat, so EQ can be used to switch in a subsonic filter with LP without affecting frequency response, although this does switch in the EQ circuitry.

Each of the five tone controls introduced massive lift and cut of 15dB –

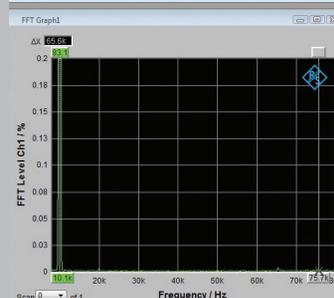
far beyond the maximum of 10dB needed or 12dB quoted. But small amounts of boost and cut can be applied for subtle variance and they can be switched out by the remote control for A/B comparison.

FREQUENCY RESPONSE



DISTORTION

| THD all | Level RMS | Frequency |
|----------|-----------|------------|
| 0.0107 % | 2.1361 V | 10.000 kHz |
| OFF | OFF | OFF |



Distortion levels were very low at all frequencies and outputs. There is no crossover distortion: at 10kHz, 1 Watt distortion measured a very low 0.01%, our analysis shows.

The Phono stage was accurately equalised to give flat frequency response from 10Hz to 20kHz. Switching EQ in introduced a steep subsonic warp filter that cut bass below 15Hz, introducing -20dB attenuation at 4Hz to prevent cone flap with warped records. Sensitivity was high at 3mV (for full output) at 0dB input trim, +/-6dB trim being available. Since adding 6dB halves the input sensitivity to 1.5mV this is adequate for moving coil cartridges (as is a 47k MM input load). Noise was minimal at -81dB.

The MA352 measured well in all areas. It has massive power, almost no distortion and no weak points. **NK**

| | |
|-----------------------------------|-------------------|
| Power (8 Ohms) | 264 Watts |
| Frequency response (-1dB) | 8Hz-100kHz |
| Separation | 70dB |
| Noise (IEC A wtd) | -98dB |
| Distortion (10kHz, 1W, 4Ω) | 0.01% |
| Sensitivity | 0.3V |
| Damping factor | 88 |

MCINTOSH MA352
£8,495



OUTSTANDING - amongst the best.

VERDICT

A stunning amplifier in sound quality and dynamic thrust. Visually alluring too.

FOR

- enormous power
- insight and clarity
- great phono stage
- ease of use

AGAINST

- weight
- size

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