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JULY 2019

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REVIEW

HI-FI WORLD

# New Classic

McIntosh release a massively powerful amplifier combination using their own classic circuitry. Noel Keywood explains – and listens.



In 1949 McIntosh of the USA came up with the 50W-1 tube (valve) power amplifier, a legendary design with a performance that set standards. Not so well known in the UK because getting them across the Atlantic was a big deal back then. Its latest successor I'm reviewing here, the new MC2152 70th Anniversary Edition, keeps the challenge going:

complex output transformers and a unique output stage design, largely retained here. See McIntosh Output Stage for more detail on all this. The massive transformers of the MC2152 account for its 56.7kg (125 lbs) weight that for us was a three-person lift.

At 17.5in (445mm) wide the power amplifier's chassis has been proportioned to fit a 19in (483mm)

surplus power, it isn't a big issue, but you get a slightly tighter, drier sound from lower impedance taps because they give stronger electrical damping of the loudspeaker. Conversely, the higher impedance taps add (slightly) to bass fullness and can be preferred with acoustically over-damped loudspeakers (wall standers). These comments apply to all valve amps, not just the MC2152. There are



ships and planes will struggle with its size and weight. And loudspeakers will quake at its power output, claimed as 150 Watts (but we measured much more).

Yes, the beast you see in our pictures is as awesome as it looks and the price is awesome too – it

comes at £16000 when purchased separately. McIntosh's accompanying C70 preamplifier (£9000) that we were given to drive it didn't lack size or complexity either, although with valves for amplification and transistors for control circuitry it is conceptually more a modern hybrid than a revamped classic. Our 70th Anniversary commemorative duo carry a £25,000 price tag.

The original 50W-1 power amplifier was distinguished by

rack, which most are. However, that has resulted in 28in (711mm) depth that is beyond most racks – at least, ones I have seen. Power tubes are eight KT88s working in pairs, with 6550s optional – no bias adjustment needed. The front preamp tubes are 12AX7s and 12AT7s. All these tubes are widely available and inexpensive, and a removable safety (heat) mesh cover is also provided.

The rear has a row of huge gold plated output terminals that suit 8 Ohm, 4 Ohm or 2 Ohm loudspeakers. Since most are nominally 6 Ohm nowadays this appears confusing but it is about optimum power transfer and best to use 4 Ohms, since most bass units are 4 Ohm. The 2 Ohm is for electrostatics. PMC loudspeakers come in at a high 10 Ohms so the 8 Ohm tap would best suit them. Because the MC2152 produces

socket unbalanced inputs and XLR balanced inputs.

The C70 matching preamplifier is equally 17.5in (445mm) wide and visually imposing. It boasts two sets of balanced line inputs, three unbalanced phono socket inputs, and a Phono stage for turntables with both moving magnet (MM) and moving coil (MC) inputs. In all there are seven inputs, chosen by a front panel rotary selector or remote control. Then there are two sets of balanced outputs (XLR), and two sets of unbalanced outputs (phono sockets). The power amplifier should be driven by the former: I used Chord Epic balanced cables to the MC 2152 power amplifier.

There are no digital inputs – at this level top quality external digital sources are expected. The C70 does fit a rack easily, being 18in (458mm) deep. However, height is significant at



**Massive output terminals 2, 4 or 8 Ohm impedance loudspeakers, accepting bare wire, 4mm banana plugs or spades.**

6in (153mm). Inside a top window is one 12AT7 and five 12AX7s. However, inside there are arrays of chips for control electronics. The phono stage is likely solid-state since low noise with moving coil cartridges isn't possible from valves, unless an input transformer is used.

The C70 under remote or manual control switches the MC2152 on though a rear d.c. control link, although the power amplifier can be switched on manually. It (C70) has remote control of volume of course.

Switch on was an illuminating experience, this New York based company not wanting to play second fiddle to Times Square it seems. The C70 glass front panel lights up with intense green graphics, red LEDs showing input selection and volume level – as our pictures show.

What they don't show is the start up sequence of the C70 that's a light show in itself, or the orange LED light sequence beneath the frontal preamp valves of the power amplifier to indicate warm up. Once up and running those same preamp valves – all eight of them – then glow either green or blue – selectable with the left rotary switch on the power amp. There's an Off position if all this is too alarming!

Two pairs of sturdy phono sockets cater for MM and MC cartridge turntables, so one of each

could be used. Related to them are rotary input load selectors on the front panel – capacitance for MM and resistance for MC – so fine adjustment can be made to load, MC running from 50 Ohms minimum up to 500 Ohms for some high(ish) output MCs like Clearaudios. The default for MCs is 100 Ohms, which the C70 has.

In keeping with tradition there are bass and treble tone controls that work in switched steps, or can be switched out. The smallest step

was a quite audible +/-2dB on either control, with a well tailored plateau characteristic; up to 10dB boost or cut can be applied to bass and 12dB to treble measurement showed.

And there's a headphone socket with optional HDX crossfeed for a less in-head experience. Plugging in mutes the loudspeakers.

Vinylistas in particular will appreciate the existence of a stereo/mono button and a balance control integrated into the volume control.

### SOUND QUALITY

The MC2152 was connected to our Martin Logan ESL-X hybrid electrostatic loudspeakers via Chord Company Signature cables, attached to the 2 Ohm tap. An Oppo BDP-205D Universal player was used to play CD, with hi-resolution digital fed in optically from an Astell&Kern AKI20 player. Also used was Arcam's CDS50, reading hi-res from a flash drive through its ESS ES9038



**A general purpose remote with volume and input switching.**



**Eight KT88 output valves, fronted by a row of small signal valves, here lit green by LEDs set beneath them. Blue is a switchable option.**



**Underneath the power amplifier sit eight (round black) smoothing capacitors, a choke and front display board at right.**

Sabre32 DAC, connected via Chord Company Epic balanced cables.

To spin LP I used our Timestep Evo modified Technics SL-1210 Mk2 Direct Drive turntable with SME309 arm, external linear power supply and Audio Technica VM750SH Shibata tipped MM cartridge, plus an Ortofon Cadenza Bronze MC cartridge.

An Isotek Evo3 Mosaic Genesis regenerated mains power supply fed the electrostatic supplies and Oppo player, the McIntosh being connected to its high current filtered, un-regenerated output.

McIntosh branded valves (tubes). At left a small-signal 12AX7 pre-amp., and at right a KT88 without USA on it because this is a GEC (UK) design. US 6550s are an option.



Beneath the C70's top panel lie six 12AX7 preamplifier valves, visible beneath a clear window.

As you might well expect the MC2152 displayed visceral power but with valves and 220 Watts you get not only a sonic juggernaut in the room but massive sound staging, with that walk-in sense of space valves provide. Orchestral works picked out this quality well, the London Symphony Orchestra playing Mars, Bringer of War, from Holst's Planets, (hi-res 24/48) filling our listening room as if the whole orchestra had just turned up to play for me.

The LSO's sections, like brass, worked in their own clear space



Inside the C70, a big C core mains transformer at left and much solid-state circuitry too.

and when those kettle drum strikes arrived they shook our room. Not just power here but a great sense of resonant insight: I could hear right into the instrument, showing me this amplifier has enormous low end timbral resolution; it doesn't produce that limpid simulacrum that comes from solid-state.

Being American my hastily written 'notes whilst playing' refer to the MC2152 sounding as large and powerful as a Mack truck, of the sort that do actually chase you (well, me) down US Freeways. And just as that big bonnet (hood) in your mirror is nicely ornamented but intimidating, so the MC2152 manages to give the same impression: you get all the fine detail, insight and 3D sound staging – with an iron fist behind it.

Working my way through our uncompressed, high dynamic range CD test tracks showed that this

McIntosh duo have solid-state cleanliness, backed by valve dynamics and sound staging: Skin was alive and almost threatening singing Skunk Anansie's 'Hedonism', set with clear perfection between our Martin Logan XStat electrostatic panels. The strong bass line of this track was big, resonant and powerful, but I was pushed back by her vocal power and the McIntosh's lucid delivery of subtle vocal inflexions.

Overall this duo is fast, has enormous sound staging and a massively powerful delivery. Nothing other than obviously impressive. But you don't get the creamier delivery that's commonly attributed to valve amplifiers.

As good as digital is becoming LP is still a force to be reckoned with, perhaps a force waiting to be surpassed, and the C70 teased a great sound from our resident



At left, two pairs of unbalanced and balanced outputs.

At right balanced and unbalanced inputs, including MM / MC Phono stage.

**MCINTOSH OUTPUT STAGE**

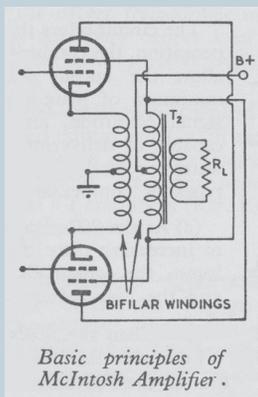
Under the skin the MC2152 has novel and sophisticated output transformers, bifilar wound and cross coupled, that in 1949 Frank McIntosh (and Gordon Gow) explained was a very efficient circuit that solved many problems, using it in their original 50W-1.

The MC2152 output transformers are of far greater size but they are key to performance and very difficult to build. Diagrams atop each output transformer make the point cross coupling is used, and also windings exist in both anode and cathode of each output tube, just like the original 50W-1.

McIntosh manage to apply quite a lot of feedback, making distortion and output impedance low. The output stage of the MC2152 is a cut above most others.

Bias is not adjustable, so either auto-bias is used or fixed bias (more power) with solid-state bias sensing and control. McIntosh extract huge power from KT88 power output valves working in push-pull pairs.

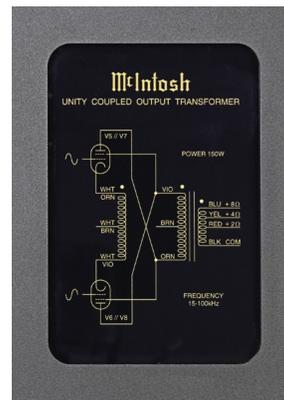
The original paper describing this amplifier's unique output stage, Audio Engineering December 1949, can be found on the net as a pdf at [www.cieri.net](http://www.cieri.net), and a comprehensive



description is available in the Radio Designers Handbook, p594 (Amazon, £188 used, £780 new). The book's diagram (1952) of the original output stage is shown here, for comparison with that on the MC2152 – at left.

Audio Technica VM750SH MM cartridge. It revealed its basic qualities of well defined but not heavy bass, but superb detail and clarity from the Shibata stylus, saxophone in Dire Straits Your Latest Trick (Mobile Fidelity, 180gm, 45rpm) hanging lucidly centre stage, the bass line striding along firmly behind. The haunting guitar surrounded by echo was vividly clear. Noise and hum were zero.

Swapping out the Audio Technica for our Ortofon Cadenza Bronze MC, that has quite high output as quality MCs go, demanded volume be turned up high; this isn't a preamp for very low output MCs. But importantly there was no hiss at high listening volume, even in front of the loudspeaker's XStat panels. Spinning The Syd Lawrence Orchestra's String Of Pearls (Chasing the Dragon, 180gm, 33rpm, 30ips master tape), solo trumpet stabbed out centre stage, trombones were lively and fruity whilst drums pounded in the background with clear power; again the lovely resonant insight this duo captures from drums and timpani was obvious and entertaining. What ever I played the McIntosh duo threw it into our room with stunning



clarity and shocking power.

There was no particular tonal character to be heard; the units are not soft or warm, quite the reverse. Transients were fast and hard edged, more like a modern solid-state power amplifier and the overall presentation quite dry compared to, say, my classic WAD 300B valve amplifier with auto-bias and little feedback.

**CONCLUSION**

As appearance suggests, this McIntosh combination offers brutal ability. But the power-station output transformers of the MC2152 are quite apart from all else. Whilst you get the power of solid-state, the sound staging, vivid dynamics and timbral resolution is that of valves – or tubes should I say. Add in Times Square levels of illumination and the C70/MC2152 are truly amazing – a visual and audible display like no other. You just need a deep wallet.

**MEASURED PERFORMANCE**

Power output of the MC2152 measured 220 Watts into 8, 4 and 2 Ohms at visual waveform clip – around 0.2% distortion. At 1% distortion it was 240 Watts.

An input of 2.2V and 4.4V (phono/XLR) is required for full output.

Distortion values were extraordinarily low, just 0.003% at 1W/1kHz rising to 0.03% just below full output. At 10kHz the figures were 0.01% (shown) and 0.1% respectively. At 40Hz just 0.09% at 150W – amazing.

Frequency response measured flat from 7Hz to 64kHz (shown). Below 7Hz gain rolls off quickly. There was minimal noise or hum; the MC2152 is effectively silent.

Output impedance measured 0.22 Ohms, giving an unusually high damping factor of 36.

The C70 preamplifier offers x5 gain XLR in-XLR out – enough for CD players and DACs (XLR 4V). Overload occurs at 16V out (XLR).

Gain from Line inputs to XLR out was x10, giving them 400mV input sensitivity. Frequency response measured flat from 7Hz-53kHz and distortion 0.002% at 2V out. Noise was around -96dB, according to which output was used (and its gain).

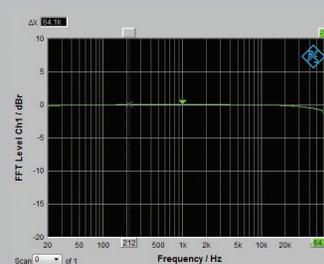
Frequency response of MM and MC phono inputs flat from 14Hz to 20kHz, a warp filter applying -10dB attenuation at 5Hz. Noise was very low at -83dB MM and -68dB MC.

The MC2152 has exceptional measured performance and the C70 is also very good all round, except MC gain is on the low side. NK

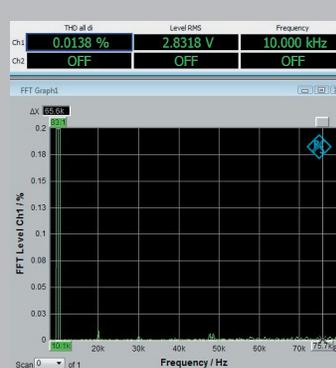
**MC2152 POWER AMPLIFIER**

<b>Power</b>	<b>220W</b>
<b>Frequency response</b>	<b>7Hz-64kHz</b>
<b>Distortion (10kHz, 1W)</b>	<b>0.01%</b>
<b>Separation (1kHz)</b>	<b>85dB</b>
<b>Noise (IEC A)</b>	<b>-117dB</b>
<b>Sensitivity (phono/XLR)</b>	<b>2.1V / 4.2V</b>
<b>Damping factor</b>	<b>36</b>

**FREQUENCY RESPONSE**



**DISTORTION**



**MCINTOSH C70 PRE AMPLIFIER**  
£9,000

**MC2152 POWER AMPLIFIER**  
£16,000



**OUTSTANDING - amongst the best.**

**VERDICT**

Massive power and punch. Overwhelms most else and has facilities and lights to match.

**FOR**

- spacious, punchy sound
- massive volume
- remote control
- MM and MC phono stage

**AGAINST**

- size and weight
- lots of heat

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