

VINTAGE RADIO

By RODNEY CHAMPNESS, VK3UG



HMV's Nippergram: a classic 1950s portable radiogram

Portable radiograms became popular during the 1950s and early 1960s and are now very much collector's items. One classic from that era was HMV's Nippergram.

By the early 1950s, 78 rpm records had become well established and listening to music was a popular pastime. The subsequent release of 33 rpm and 45 rpm microgroove long-play records continued this trend. These were a quantum leap ahead of the older 78 rpm records – they had less surface noise, were lighter and less fragile, and it was possible to play upwards of 20 minutes per side. How-

ever, you had to keep them out of the heat or they buckled.

With multi-stack record changers, several hours of continuous playing was achievable. The lounge room radiogram became an elegant piece of furniture in many homes, having taken over from the console radio of the 20s, 30s and 40s.

In earlier times, it was quite practical to take a wind-up gramophone out

into the backyard to play music but lugging a lounge room radiogram outside was an entirely different matter. The answer to this problem lay in the development of a portable record player which could easily be taken outdoors and attached to power via an extension lead. At the same time, many young people were starting to live in flats and other dwelling places with limited space so a miniature radiogram made a lot of sense. Being small, its audio output and fidelity would not be anything to write home about but at least people could have their radio and play their records too.

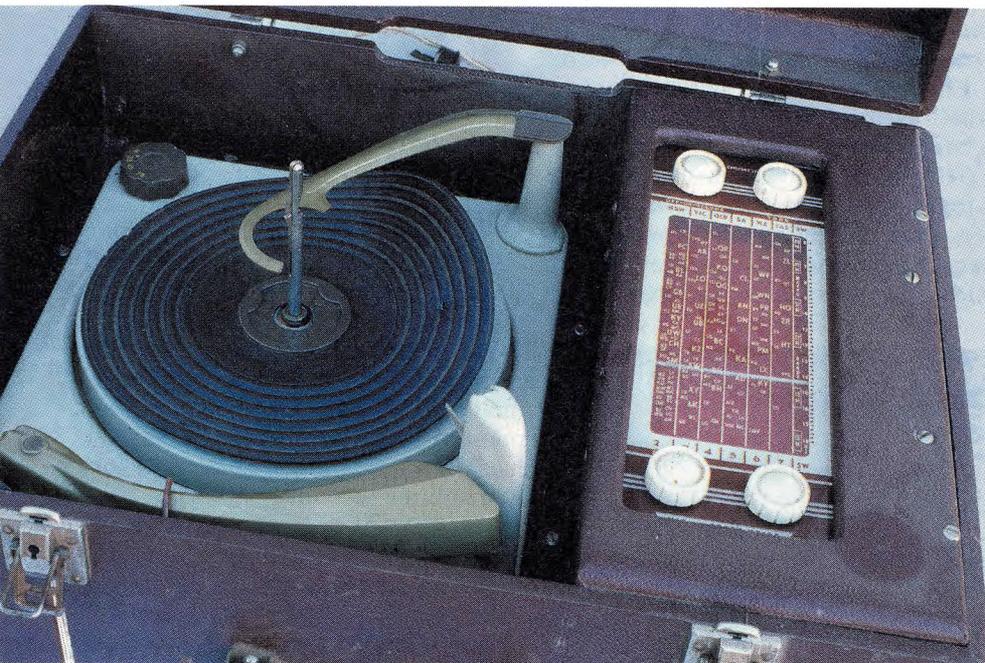
Several manufacturers, including Kriesler, Astor, HMV and others, rose to the occasion and produced their own versions of the compact radiogram. One of the most famous was the HMV Nippergram.

The HMV Nippergram

HMV produced many fine and interesting pieces of radio equipment over the years and the Nippergram in its various models is one of them. As can be seen in the photographs, the unit isn't exactly small but it can be carried reasonably easily over short distances.

Unfortunately, when it came to servicing, the radio section in the unit I was restoring wasn't all that easy to remove from the cabinet. First, the record changer had to be removed because a couple of screws that secure the radio in place were too close to the changer for a screwdriver to be used. However, in my unit, the changer had to come out and be overhauled anyway.

To remove the changer, all the wood screws around the mounting platform



This is the view inside the cabinet of the old Nippergram prior to restoration (note the buckled turntable platter). A previous serviceman had installed the turntable the wrong way around.

were removed and then the changer was eased up by lifting it at the edges. It's a bit of a tight fit and takes some time to do.

Once the changer was lifted clear, the screws holding the radio in place could be accessed. These screws (a total of four) were removed and the two screws on the outside of the cabinet around the speaker grille (these release the speaker clamps) were loosened, after which the set was gently lifted out.

My next task was to remove the cables connecting the record changer to the radio chassis and unscrew the aerial/earth terminal block at the back of the cabinet.

With all of these things undone, all of the innards were lifted clear of the cabinet. Now all sections could be worked on. But would you believe it? – the last person to work on the unit had put the changer in the wrong way. Had he installed it correctly, access to the receiver would have been quite straightforward. Did someone say something about Murphy's Law?

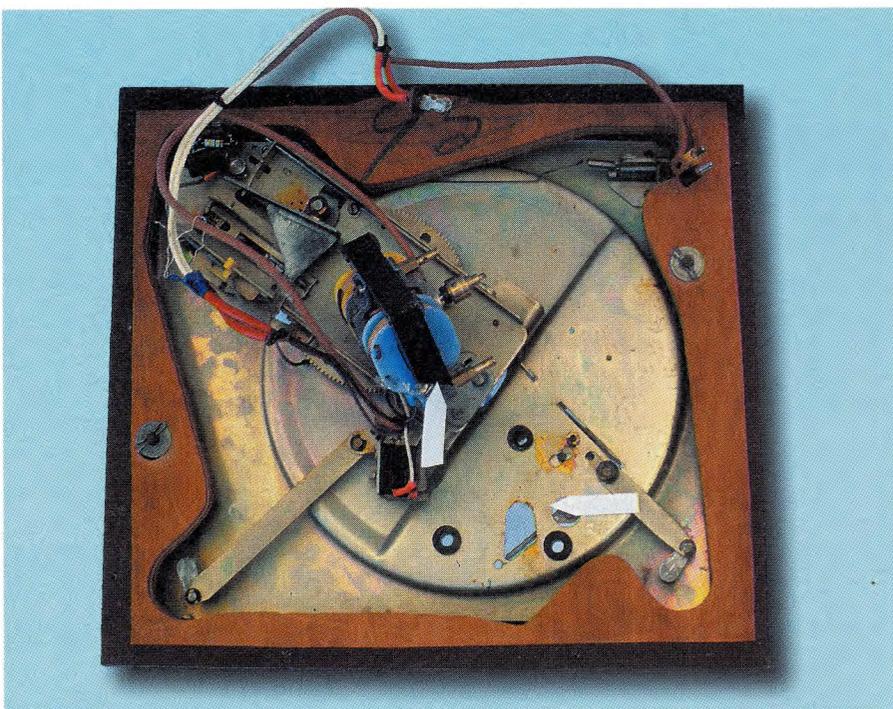
It seemed appropriate to commence restoration with a good clean-up; ie, cleaning the cabinet inside and out, the record changer and the set itself. The cabinet was cleaned with warm soapy water and a small scrubbing brush, then left to dry in the sun. The leatherette finish responds quite well to this.

When it was dry, vinyl restorer was sprayed on and rubbed into the leatherette. This took the tired look away and the cabinet is now almost like new – if you ignore the marks that cannot be removed, such as burn and scuff marks.

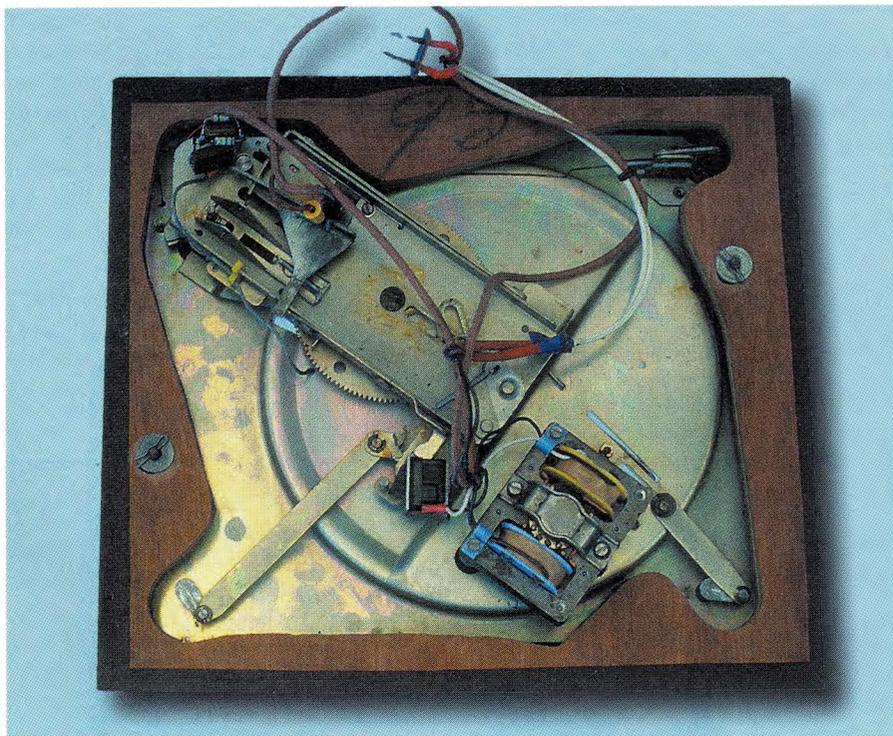
By the way, items treated with vinyl restorer look nice but can be rather slippery. A friend used this product on a bakelite cabinet and it looked tremendous. However, as he was moving it, it slipped from his hands and the cabinet did not bounce at all well!

The record changer was cleaned using a toothbrush and soapy water. This cleans all the gunk off quite well but you have to proceed carefully, so that no water gets near the pickup cartridge or the works underneath.

The receiver was so well protected from the elements that the chassis looked as though it had just come out of the factory. The knobs were the only things needing a clean and they



The rubber mounts for the motor had perished and had to be replaced. The mounting position is indicated by the white arrow at bottom right, while the second arrow indicates the motor itself after removal.



In this photo, the motor has been bolted back into position, following the replacement of its rubber mounts. A fair amount of time was spent cleaning the underside of the turntable and oiling the moving parts.

too were scrubbed with a toothbrush and soapy water.

Restoring the radio

The Nippergram is a 5-valve unit using a 6BE6 as a converter for both

broadcast and shortwave (6-18MHz), a 6BA6 455kHz IF stage, a 6AV6 as the detector and first audio stage, a 6M5 audio output stage and a 6X4 rectifier. I couldn't find the exact circuit for the Nippergram but it appears similar to

6AV6
A.F. AMP. DEMOD.

6M5
OUTPUT

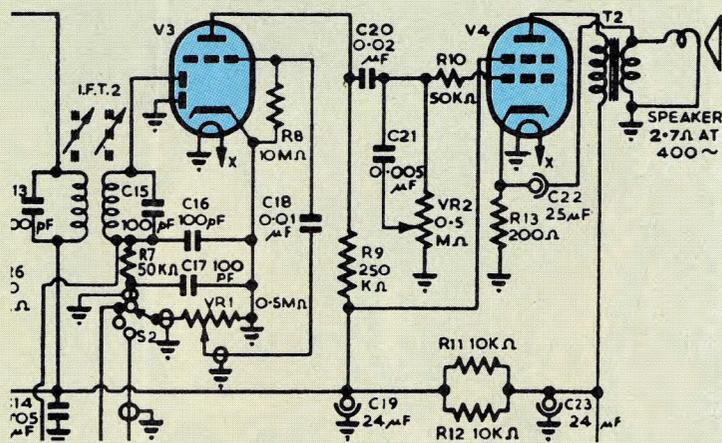


Fig.1: the HMV Nippergram uses voice-coil negative feedback in the audio output stage. An incorrect connection resulted in positive feedback and a howling noise from the loudspeaker.

it was replaced. I seem to be having a run of these lately. Having done all of these things, including checking for shorts between the HT rail and chassis, I turned the set on for the first time.

In order to observe what was happening, I had connected a multimeter (set to the 400V range) between the HT line and chassis. As it warmed up I was greeted by a violent howl from the speaker. Well at least the audio output was working!

What was causing the howling? This set, like many others, uses voice coil negative feedback. This is accomplished by connecting the cathode bypass electrolytic capacitor (C22) to the unearthed end of the voice coil, as shown in Fig.1.

The transformer that had been in the set and the nondescript replacement I used were not colour coded in the same way, so I had only a 50% chance of getting the feedback right. I got it wrong and so had positive instead of negative feedback, hence the howl.

Overcoming this problem was easy – just swap the two voice coil wires out of the transformer, so that the one that was earthed became the unearthed lead and vice-versa.

Now that music was coming from the loudspeaker, I knew that there weren't too many other problems to be found. However, as a precaution, I replaced most of the other paper capacitors, leaving only a couple in positions where leakage would be of no concern. For example, the IF stage valve cathode has a 220Ω resistor from cathode to chassis, so the capacitor across it would have had to be very leaky to cause problems – hence it was left in.

At this stage, I decided to check the IF alignment but soon ran into trouble. The output was up and down like a yo-yo if I moved or touched anything. I eventually traced the problem to the wave-change switch. A hefty dose of contact cleaner fluid and operating the control quite a few times cleared the problem.

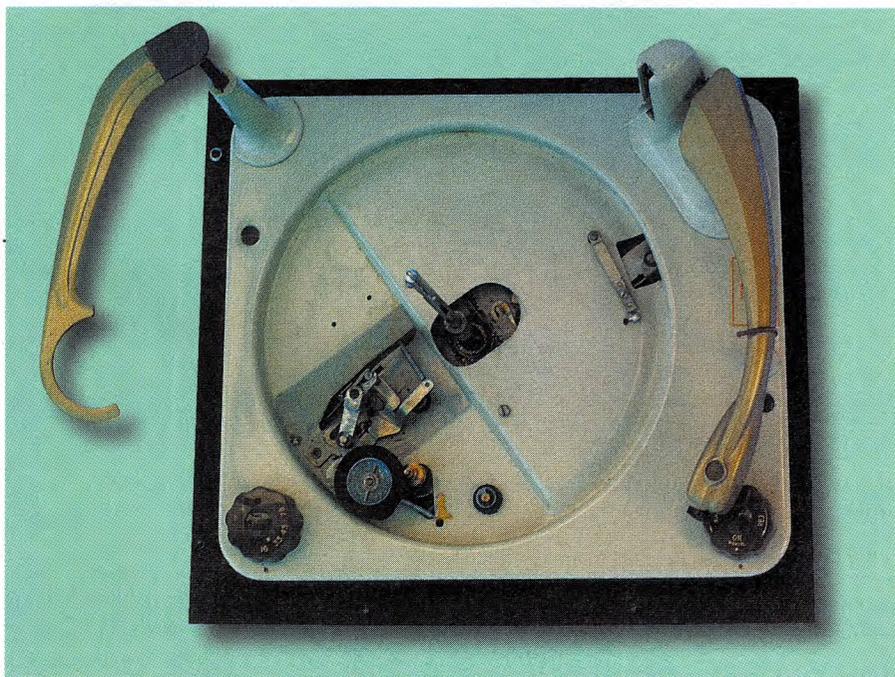
Next, I attached a signal generator with modulated output to the grid of the 6BE6 and tuned it to around 455kHz to get a response from the set. I found that the IF was near enough to 455kHz so all I had to do was find out if the cores were where they should be. The output was reduced so that

the E43G (some circuits didn't manage to get published in the AORSM manuals) and would appear to be circa 1952/5.

All the usual problems with circuit components reared their ugly heads. Anyone restoring an old set like this can be sure that there will be several leaky paper capacitors and this set was no exception. In fact, even before I turn a set on I religiously replace all the critical capacitors – the audio cou-

pler between the 6AV6 and 6M5, the AGC/AVC bypasses and usually the HT RF bypass. I also checked the resistors and found a few out of tolerance which I replaced. By the way, it is often necessary to lift an end of a resistor out of the circuit for checking, as any parallel bits will affect the reading.

Next, the speaker transformer was checked and in this case it had an open circuit primary winding and so



This view shows the top side of the changer with the turntable removed. A stepped pulley on the motor is used to set the turntable speed, via a stepping mechanism attached to the record speed control.

the output from the receiver was just above the level at which it became noisy. I tweaked each core with an insulated adjusting tool and found that peak performance was achieved if they were left where they had been.

By the way, a plastic knitting needle with the end filed flat like a screwdriver blade is ideal as an insulated alignment tool. If a metal screwdriver is used, the metal upsets the tuning and it is extremely difficult to tune the IF coils correctly.

The dial mechanism was in good order, needing only a drop of oil on each of the pulleys. This mechanism needs to be in good order before any serious attempt is made to align the front end of a set. The dial lamps were all working too, which made a welcome change.

The next job was the broadcast band alignment. The stations were found to be where they should be so the oscillator was spot on and only a minor tweak to the aerial trimmer around 1400kHz was needed to get the best performance. In fact, the alignment of this band was very good considering the set's age.

The shortwave band alignment was quite a different story, with the oscillator about 1MHz out at 17MHz. This was corrected and the aerial trimmer adjusted as well. However, at the 6MHz end, it was still out by some way and there is no adjustment.

Oh well, who seriously listens to shortwave on these sets anyway? After all, the frequency calibrations are far from precise at the best of times. In another article, I'll go into alignment in much more detail and discuss how to correct alignment problems.

In any case, the receiver is now working well and no valves needed replacement. Remember when people used to say "its only a valve" when they took their valve radio in for repair?

The record changer

In my opinion, the many later variants of the BSR record changer are simple, relatively trouble-free and usually easy to set up so that they work properly. As you can see from one of the photographs, there isn't a great deal underneath the frame.

Record changers are almost entirely mechanical devices. There's only a small amount electronic circuitry (if one could call it that) to transform the



The HMV Nippergram, fully restored and ready to go. Note the position of the stabiliser arm now that the turntable has been installed correctly.

information in the grooves on the record to an electrical signal for an audio amplifier to work with.

So how do you get one of these devices up and running? This can take some time if years of dust has impregnated itself into the congealed grease. The first job is to clean all the gunk off the mechanism using a rag and some cotton buds moistened with household kerosene. I usually start on the top side.

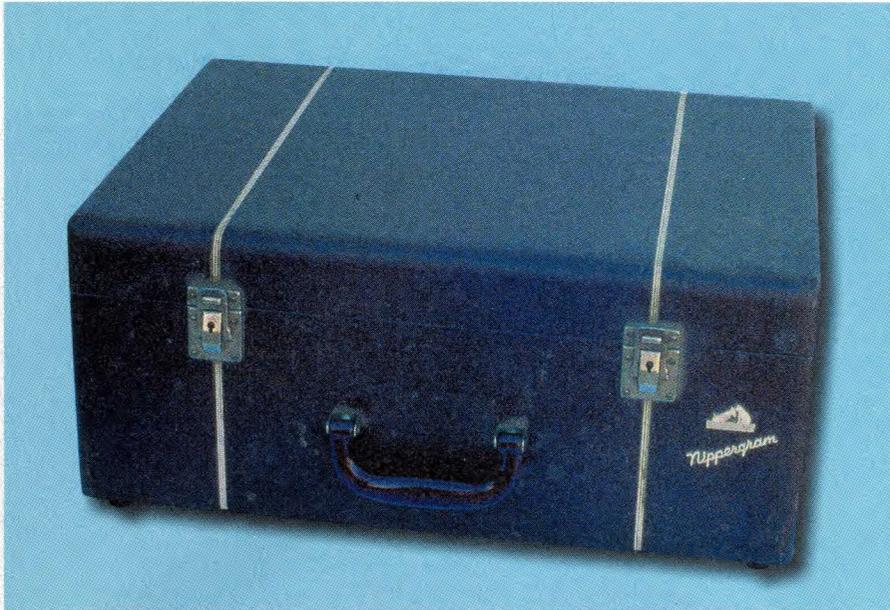
The turntable was removed by first removing the circlip at the centre of the turntable, then gently pulling it up while turning it clockwise. This exposed the works under the turntable; not that there is a lot to see here.

Next, the rubber idler pulley was removed and emery paper used to roughen up the edge. Sometimes the

rubber on the idler becomes hard which may mean restoration is difficult or impossible as I'm not aware of a source of supply.

One problem I found was that the idler was not contacting the stepped drive pulley correctly. It didn't take long to find out why – the rubber resilient mounts on the motor had perished and the motor assembly was sagging and pulling the pulley out of position.

The mounts look rather like rubber grommets but the centre hole is much smaller. I wondered for a while what could be used in their place before remembering that I had bought some tuning-gang rubber mounts (grommets) some time ago. They turned out to be almost perfect and only needed a small plastic sleeve to fill the gap



When it's all folded up, the HMV Nippergram looks very much like a luggage case. This photo shows the unit before it was given the vinyl restorer treatment, which made the case look like new again.

between the motor mount spigot and the inside edge of the grommet. A photograph shows the motor removed so that this could be done.

While the motor was out, the bearings were oiled. With some units, it's possible to oil them through a small hole in the side of the bearing case. The bearings are phosphor bronze and usually have a felt pad around them to contain the oil. I undid the screws holding the bearing in the motor and this gave sufficient access for oiling. There were covers over the bearing assembly but it was possible to flood the bearings and the felt pads through gaps in the assembly.

The idler pulley bearing was also oiled and the motor was then re-assembled and fitted back in place. The stepped pulley on the motor is used to set the turntable speed, via a stepping mechanism attached to the record speed control. This was greased and oiled after being cleaned. However, the idler pulley still wasn't sitting in the middle of each section of the pulley as selected by the speed control.

This problem was solved by undoing the grub screws on the motor shaft and shifting the pulley enough so that the idler contacted the middle of each section. The pulley and speed control system were now working well, or so I thought.

The underside of the record changer is a bit more complex and it is harder to see what is really going on. First,

the congealed grease, gunk and fluff on all the gears and slides and shafts was removed. Some areas are not easy to get at but by using a kerosene-soaked rag and cotton buds, most of the muck can be cleaned off.

Having done that, sewing machine oil was used to lubricate the mechanism and the slides, as appropriate. The changer was then mounted on a "servicing board" (to be described next month) so that its operation could be observed.

Before applying power, the pickup



The two arrows in this underside view of the tonearm point to the stylus weight adjustment spring (top) and to the drop-in point adjustment screw.

cartridge was turned midway between the microgroove and 78rpm positions, so that the stylus was no longer exposed. The stabiliser arm was then pulled up and moved to the side (as when records are going to be loaded) and the changer operated in automatic mode at 78rpm.

If the system is sufficiently clear of gunk, the tone arm will come down part way across the platter, then move towards the centre and lift off. It should then go through this routine ad infinitum, so that the oil and grease gradually works its way into all moving and sliding parts.

My unit worked OK at 78 rpm, so then it was time to see if it operated correctly at 45 rpm, 33 rpm and 16 rpm. Unfortunately, it didn't – at least not initially – and the arm wouldn't position itself correctly to drop onto the selected record size. Obviously the oil hadn't penetrated into all the necessary spots and I also found that I hadn't oiled one shaft!

A few drops of oil soon loosened things up and the arm dropped into the correct position each time it went through its cycle. However, the only way I could stop the unit from stalling during record changing was to shorten the spring on the idler pulley, to apply more pressure on the idler/motor pulley surfaces.

Adjustments

Having got the mechanism working properly, it was time to adjust the drop-in position of the pickup stylus onto the run-in groove on the discs. This is done by adjusting a screw under the tonearm, as indicated by the white pointer in the photograph. The stylus weight should be around 3-4 grams. This is hard to measure but a good approximation is achieved by adjusting the position of the spring in the holes, this time indicated by a yellow pointer.

It should be adjusted so that the pressure is the lowest that will allow the stylus to track properly and not skip on the run out groove.

At this stage, I'm still chasing some rubber to replace the perished platter. The pick-up head works fine so my vinyl records can expect to get a go on the Nippergram. It is a good idea to change the stylus if you intend to play records and many different styles are available from WES Components in Ashfield NSW.

SC