

THE ECHOES OF HANK MARVIN : HISTORY, SECRETS AND MYSTERIES

Foreword

Concerning the history as well as the successive order of use of the SEP echo chambers with magnetic drum with which Hank recorded all the Shadows' hits between 1960 and 1964, I propose a recap of what we know today about them.

The purpose is to understand their origin, their respective dates of manufacture, but also of distribution and importation (particularly for England) without forgetting the electrical and technical details which characterize them, and thus the various echo patterns which result from it; finally how, by whom and for whom, these models were manufactured and distributed.

To answer all these questions as well as possible, in addition to what I already knew, I collected as much information as possible from :

- *Phil Kelly*, the only known owner of an original SEP Signature "J" model
 - *Paul Rossiter* (a special mention to him) thanks to all the reference measurements he made to develop his echo programs on his TVS3)
 - *Spike* (*Paul's* friend) who was involved in the development of the TVS3, but also
 - *Alan Jackson* via the magazine "Shadsfax" who himself reported information given by
 - *Nigel Taylor* now deceased, but knowing those SEP he used to repair...
 - My friend *Ben Van Zon* who made his Framez/Meazzi documentation available to me.
- Needless to say, I thank them all, directly or indirectly, for their help.

And even if the final outcome of their respective opinions will show some disagreements, which I took the risk, for some, to take sides in one way or the other, and to explain, this shows how difficult it is to come up with a synthesis that makes sense.

SEP : Three letters and a Man

In the logic of things, let us already give to Caesar what belongs to Caesar !

Starting with the meaning of the acronym SEP, which defines the name of these echo chambers used between the beginning of 1960 and 1964 by Hank Marvin, and which is none other than the abbreviation of "Società Ellettronica Palomba", thus S.E.P. that I will write simply SEP.

This Italian company, based in Milan, takes the name of its director, designer and engineer, Mr. *Gino Palomba*.

As a "manufacturer/inventor", Mr. *Palomba* decided to entrust the distribution of his models of echo chambers, operating with the help of a magnetic drum, to the trio of Meazzi brothers : *Enrico*, *Remo* and *Marino* who had been established in Milan since 1953. They will distribute the various models of SEP echo chambers under the name "Framez", the acronym of Fratelli Meazzi.



In the historical context of the mid-1950s, the "mainstream" echo effect, artificially recreated using the Studio technique of a tape recorder used in "monitoring" mode (i.e., simultaneous playback of the signal that has just been recorded and is immediately mixed with the direct sound), was a real novelty in itself.

No need to specify that the echo chambers operated with valves (vacuum tubes) which was the only amplification technology of the time, and recorded, for the vast majority of them, just like contemporary tape recorders, on a magnetic tape (iron oxide deposit made on an acetate ribbon).

Only a few, such as SEP, which is already different from the others, use a machined aluminium drum to record, made magnetic by depositing iron oxide on its edge, on which the heads are pressed. This process was developed by Philips.

Early Echoes : America first

Turning to the chronology of the emergence of this novelty, the consumer echo effect, *Ray Butts* in the United States (in Nashville in particular) is considered to be the first to incorporate a tape echo effect into his model of guitar amp, known as the "Echo Sonic".

He first built such an amp for his friend *Chet Atkins* in 1954, followed by *Scotty Moore* and *Karl Perkins* the following year.

Ray Butts only applied what was already being done in the famous Sun Studio in Nashville, where Elvis was recording, and to whose voice the sound engineers added a "slap-back echo" using a tape recorder, as shown in this [Youtube](#) video

<https://www.youtube.com/watch?v=FuStmPbG528&t=20s>

Although this single rebound can be reinjected into the Echo Sonic as required, the resulting echo effect is just as simple in pattern as that obtained from a tape recorder in the studio. However, the delay associated with this single rebound, of the order of a little over a hundred milliseconds, will become the reference for the so-called "Rockabilly" echo.

As for *Ray Butts*, we can also note that it was he who developed the Gretsch "FilterTron" humbucker pickup, pickups that were to equip, mainly (but not only) and from 1957 onwards, the Chet Atkins Signature models of the brand that requested them.



Above, the photo shows the interior of Ray Butts' Echo Sonic amp, in which can be clearly distinguished the tape echo chamber that occupies the bottom of the cabinet.

However, if the invention of an echo chamber for an instrument (particularly for the guitar) operating with the help of a magnetic tape is without any doubt of American origin, we must attribute to the Italians the originality of a recording on a magnetic drum with several playback heads, SEP being the pioneer, followed by Binson and his director Mr. *Bini*.

SEP especially knew how to make complex the "echo pattern" generated by several playback heads arranged non-equidistantly from each other around the drum. It is moreover this particular positioning which makes the originality of the SEP and creates an echo pattern that is unique in its complexity.

In contrast, many other models (including Binson) have their heads mechanically distributed at regular intervals (and provided there are several of them), which can only generate a succession of delays necessarily and simply exact multiples of each other in time.

American echo chambers, whether integrated into the amp, as *Ray Butts* did, or autonomous and external to the amp, as the Fender EccoFonic (below) was going to propose at the end of the 1950s...



...or the Echoplex, initially associated with Gibson, generate, then and for the majority of them, only one echo rebound or "repeat".

However, the Echoplex's unique reading head can move mechanically on a rail and that makes it possible to change the distance separating it from the recording head, and thus to modify the delay time of the echo rebound obtained.

Finally, an "American" echo effect is most often characterised by a single rebound, more in the spirit of "repetition", as once again a tape recorder used in Studio Monitoring mode (or à la "Les Paul", a pioneer of the genre) rather than a complex pattern echo, of the Wonderful Land type or even Apache.

Echoes in Europe - SEP and the British

With the "transatlantic" gap in novelties of all kinds that has always existed between the USA and Europe, and even if England has always been a little ahead, musically speaking, of the other European countries because of the common language with the USA, it is only at the dawn of the 60's that on the Old Continent the echo effect becomes, for the amp manufacturers, a tool that will quickly become indispensable, if only to be and remain "connected" and up to date !

Since until now the only effect integrated in a guitar amp is the "Tremolo"...

We can note on this subject that the consumer electromechanical reverberation effect called "spring" type 4F patented by Hammond, and first integrated into its organs, will not appear until 1960.

For guitars, this Hammond reverb effect was not offered by Fender until 1961, first in the form of a stand-alone box outside the amp, before this effect was added and integrated (in addition to the already existing Tremolo effect, (called wrongly at Fender Vibrato) first to its "Vibroverb" amp model in February 1963 and then to its whole range (Princeton Reverb, Deluxe Reverb, Super Reverb, Twin Reverb etc.).

We can see that in a very short time, and without counting the success of the Shadows to come, both the echo effect and the reverb effect, which were unknown until then except in studio conditions, will very quickly become indispensable in live performance for guitarists.

In England, this trend which, obliged Jennings to offer an echo effect in his catalogue began, at the end of 1959.

This did not only concern Jennings and its Vox amps, but also Selmer and its "Truvoice Echo 200" echo chamber model (in addition to its Truvoice Stadium amp) and Watkins and its Wem Copicat. Two tape echo chambers that cost half the price of an SEP distributed by Jennings.

Jennings Musical Industries (JMI) was to become, according to the advertisement in Melody Maker magazine of 19 September 1959, not only an authorised but also the exclusive distributor of these SEP echo chambers for England.

INSTRUMENTALISTS • GROUPS • VOCALISTS

Facilities of a recording studio — AT YOUR FINGERTIPS



WITH THE

VOX ECHO

REVERBERATION UNIT



- Variable degrees of echo and reverberation.
- Measures only 14" x 6" x 9" weighing approx. 7 lbs.

Marino Marini and other recording groups use an ARTIFICIAL REVERBERATION UNIT—now available for the first time in this country **FROM YOUR LOCAL DEALER. 85 gns. COMPLETE.**

Brochure from —

JENNINGS MUSICAL INDUSTRIES LIMITED
UNITY WORKS • DARTFORD • KENT. Telephone 4414-7

In the above reproduction of this first advertisement, Jennings presents "his" echo chamber, without referring to Framez, let alone SEP, under the name **VOX ECHO REVERBERATION UNIT**.

It is thus from this date that Jennings will start by distributing the only possible and available model of the moment from SEP (the one corresponding to the photo of the publicity) i.e. the SEP "F" model for Framez.

We can clearly see that a simple inscription "vox ECHO" has been added, for the occasion, on one of its sides.

Thereafter, Jennings will quickly have his own Signature models made, still by SEP and under his wishes, in his name.

Starting with the SEP Signature "J" model (J for Jennings) available from the beginning of 1960, or even from the end of 1959 if we are to believe *Phil Kelly*, followed by the SEP/Vox Echo model (from Wonderful Land). It is this last model that will be used by Hank from January 1961, and which, commercially speaking for Jennings, will first add to the sales of the "J" model before replacing it.

In the end, and in chronological order : three different SEP echo chambers that Hank used between 1960 and 1964, successively or rather alternately for the first two, the SEP "F" and "J" models (we will see in detail why later), then his SEP/Vox ECHO from January 1961.

SEP production

Although SEP was a pioneer of the genre, and ahead of its time in Europe, the production of its echo/reverb effect began almost too early in 1956 for it to achieve the expected success. Even more so as it was initially reserved for the Italian market alone, it is not surprising that production remained confidential even then.

Arbitrarily identified by Framez (distributor) as "Echomatic", we know today that these different models of SEP echo chambers with magnetic drum, and released under the references "F", and perhaps under other references for the previous ones, have always remained only at the stage of the very small series produced, not to say "prototypes".

Contrary to what one might think, this production will not evolve much more from the moment Jennings will start to import them officially from the end of Summer 1959 in England. The same would be true for the following SEP Signature models.

All of them were produced in only a few units, each one not exceeding, despite the promotion that Hank was able to do, from 1960 until 1964, on the BBC or live on stage, about twenty units.

If sales remain low, even in England, there are several reasons for this :

First, since the Hammond spring reverb effect did not yet exist in 1959, these SEP echo chambers were presented, described and recommended to give a "reverberation" effect on a singer's voice.

The Jennings advertisement about them in September 1959 is totally in line with this, confirmed by the only entry, marked on the front panel : "microphone".

All these reasons only reinforce the idea, in the majority of minds, as much at the end of 1959 as at the beginning of 1960, that this device is first and foremost intended to "reverberate" a voice/song, and not to give an "effect" to an electric guitar !

This would tend to prove that at the end of 1959, not even Jennings knew that Hank Marvin would soon connect his Stratocaster to this SEP microphone input, and in so doing single-handedly influence the world of the instrumental guitar !

One can thus measure the astonishing combination of circumstances that made Hank not only have the good idea, it is true, under the impulse of *Joe Brown*, to use his SEP to give an echo and reverberation effect (halo) to his guitar, but also, and above, all the chance that he had with regard to the style of instrumental music that the Shadows were going to play, to have access to these SEP echo chambers and to their so particular echo patterns.

Result : a revolutionary "sound", in June 1960, in Apache thanks to this unique SEP echo pattern !

To complete the reasons for this low production, here are some others :

1) The main one is based on the resale price in England of these SEP by JMI (Jennings Musical Industry). Indeed, both the SEP "F" model (Framez 1959) and the "J" model (Jennings 1960) and finally the SEP/Vox ECHO model (1961) were all sold at a retail price of 85 Guineas. One Guinea being worth one Pound + one Shilling, one Pound being worth 20 Shillings, 85 Guineas therefore correspond to a little more than £89. The selling price would be equivalent to a little more than € 2,200 today, so not everyone could afford it.

So much so that a second "advertisement" (below) made by Jennings from September 1959 relating to the "F" model, proposes, that, to acquire it, to pay it on credit with monthly payments spread over 12 or 18 months.

INSTRUMENTALISTS • GROUPS • VOCALISTS

VOX-‘ECHO’ compact and portable enables the user to obtain the exhilarating effects of a large auditorium in even the smallest space. The average entertainment platform expands into 3-D life and dimensions. In addition VOX-ECHO provides unlimited gimmicks for instrumental groups, vocalists, guitarists, etc.

EASY TO USE — EASY TO OPERATE
VOX - ECHO unit simply connects between the amplifier and microphone and has separate controls with variable degrees for Echo, Modulation and Reverberation effects. These controls used in difference positions give an infinite variety of echos, multi-echoes and stunt incidental tones. Demonstration are available on request. Price 85 gns. complete or £8.18.6 deposit and 12 monthly payments of £7.16.0 or 18 monthly payments of £5.11.4.

A PRODUCT OF JENNINGS MUSICAL INDUSTRIES LIMITED . DARTFORD . KENT . ENGLAND

2) Certainly also because of a problem of insufficient reliability, coming from the layer of iron oxide deposited on the edge of the drum, which wore out until it disappeared by rubbing the heads too quickly. Once this layer was worn away, the echo disappeared. As the process to remake this iron oxide layer was the work of Philips in Milan, one can imagine the difficulty, for the common man, to have the drum repaired - even if there was a guarantee.

This explains, as we shall see later, why this simple layer of oxide was replaced, apparently as soon as the "J" signature models appeared, by an agglomerate of rubber deposited on the edge of the drum, then covered with a loop of magnetic tape.

3) Apart from England, and a few Nordic countries, including a 1961 SEP VOX ECHO listed as sold in Sweden at that time (according to *Ronnie Gustafsson*), it would it have been necessary, for us French, and once the worldwide success of Apache was achieved, to know the very existence, as well as the brand of these echo chambers used by Hank.

Some even claimed that his red guitar, discovered on the cover of the FBI Super 45 released in France (ESDF 1357), was an "HBM" since it was written on it !



This has not helped sales of the SEP echo chambers distributed by Jennings.

Concerning France, if some SEP, despite their exorbitant price, had been sold in Paris at Paul Beuscher's, Major's in Pigalle or Fratelli Crosio's place de la République between 1960 and 1961, I think that, in the music world, this would be known.

As for me, I only became a regular customer of Paul Beuscher's in 1962, the year of the Shadows' fame in France (with two appearances at the Olympia : one in March with Jet and the other in September with Licorice), I never heard of them in their shop on the Boulevard Beaumarchais when I went there, nor in their catalogue of amps and "effects" published in 1962.

In the end, an SEP production remained, for all these reasons of price, reliability and it being largely unknown outside of Britain, at the level of the very small series.

This explains the extreme difficulty to find a second-hand model nowadays.

(*Phil Kelly* even compares this extreme difficulty to find such an SEP model in our time, with that of the Dodo from Mauritius, which we know has totally disappeared.)

The Echomatic tape machines

This was not the case with the Echomatic "magnetic tape" and valve models sold later in much larger quantities under the Meazzi brand, the last straw being that it was also the same SEP Company that designed and manufactured them from 1962 onwards. The magnetic tape wears out, but it is possible to change it yourself, more easily than to replace the oxide deposit on the periphery of the drum.

Another major reason why Mr. Palomba changed his mind, from the magnetic drum to the tape.

SEP therefore manufactured and subcontracted all the known models of Meazzi Echomatic tube and tape echo chambers, referenced : PA 296, PA 304, PA 306 as early as 1962, then the PA 316, the best known in our country with its grey-painted metal transport case, throughout the 1960s.

We can note that these Echomatic Meazzi / SEP echo chambers will evolve, at the end of these same 60's, towards transistor models.

Finally, those of the 70's were subcontracted and manufactured by the Caldironi company (Milan) under the name of "M3" or "M Three", the three M's of M3 standing for Meazzi Musica Milano.

So many "Echomatic Meazzi" tape models that we French (and not only us) knew about them, and that they could be bought (even if expensive) in music shops and not only at Paul Beuscher in Paris.

All these reasons combined have led to the fact that, in the collective language, and when one evokes the SEP echo chambers used by Hank Marvin (even in England and even in relation to Hank's own words), these are given as "Meazzi". And further specified for the SEP "F" model : "Meazzi Echomatic 1" and for the Wonderful Land SEP/vox ECHO : "Meazzi Echomatic 2" !

This is both true and false, in the sense that Framez and Meazzi do not manufacture anything but has the equipment they resell or distribute subcontracted by others.

This is the reason why the Meazzi Echomatic tube and tape echo chambers type PA 316, as well as Meazzi Factotum models, have the inscription "Licence S.E.P." on their front panel.

So, I will summarize all this, by saying :

A big thank you to you Mr. Palomba (RIP) the main one forgotten in this affair !



To get to the heart of the matter, let's go back to the first SEP echo chamber used by Hank, to specify the type of model and the way he learned about it.

Hank Marvin's SEP - Terminology

Once again, everything that follows is a personal synthesis (as well as my own experience) of all the information I have been able to gather and collate on these "SEP". However, I do not claim to be right about everything.

The difference is that if I made the effort to write everything I wrote, it's because all this prose seems to me both coherent and logical, as much from a historical, manufacturing and use point of view for Hank, as from a commercial and technical point of view...

Regarding the type of the first SEP used by Hank, all those who have written on this subject agree in qualifying this first echo chamber as an "F" model. As I already pointed out in the introduction, the letter "F" is the initial of "Framez", the only official distributor of these SEPs, until then.

To get a feel for the exterior, here it is again in this Jennings advertisement reproduced previously :

INSTRUMENTALISTS • GROUPS • VOCALISTS

Facilities of a recording studio—AT YOUR FINGERTIPS

WITH THE **VOX ECHO**
REVERBERATION UNIT

- Variable degrees of echo and reverberation.
- Measures only 14" x 6" x 9" weighing approx. 7 lbs.

Marino Marini and other recording groups use an ARTIFICIAL REVERBERATION UNIT—now available for the first time in this country **FROM YOUR LOCAL DEALER. 85 gns. COMPLETE.**

Brochure from:—
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UNITY WORKS • DARTFORD • KENT. Telephone 4414-7

Since Jennings became, in the late summer of 1959, the new exclusive importer/distributor for England of these SEP echo chambers, an "F" model that I will call "basic", i.e. in its original form as it came out of the Milanese factory, since it is simply renamed : "vox ECHO" on one of the sides of its case,

Presented on the advert as possibly working "upright", it seems however obvious that it was working with its transport case laid flat, since it is under the panel signed "vox ECHO" that the mechanical part and its drum were located.

To sum up :

1) A first SEP echo chamber used by Hank, referenced model "F" and signed on its top side "vox ECHO". The electrical and mechanical characteristics of this SEP "F" will be discussed in detail later, but it is important to know that :

- This model had 5 read heads and therefore 5 associated echo echoes.
- As an option, it could be equipped from the factory with a variable speed drive for its magnetic drum, which made possible to change the delay times of all the generated echo repeats.
- Finally, this SEP "F" model, as well as the Signature "J" model that will follow, as *Paul Rossiter* mentions them on his website, are both nicknamed "Echomatic 1" in reference to Meazzi !

This doesn't help to distinguish them from each other.

2) Regarding how Hank became aware of the existence of this SEP :

According to the people involved, it was in December 1959 that *Joe Brown*, then 18 and half years old, introduced Hank to the SEP echo chamber he was using on the BBC television programme "Boy Meets Girls" produced by *Jack Good*.

The same day *Jack Good* invited *Gene Vincent* newly arrived from the US, to appear on his show before he toured the UK. The only possible date that this new information allows is therefore Sunday 5th December 1959.

The confirmation comes in the second minute of this 2014 interview with Hank :

<https://www.youtube.com/watch?v=Q1uLlhiveLM>



Hank specifies that it was after *Joe Brown* put his Gibson ES 335 TD guitar in his hands that he had him try out his SEP. This echo effect on a guitar immediately convinces Hank, as he seems to be amazed himself at how much bigger the sound is compared to the Direct/Dry sound without effect : "tonc" (sic !)

Nevertheless, and as is too often the case, his comment is all the more disturbing because if he remembers particularly well *Joe Brown's* 1959 Gibson ES 335 (a model of the brand that appeared in 1958 and was more expensive than a Stratocaster of the same period, just like the "Chet Atkins" Gretsch 6122 model that Hank would acquire two years later), he gets a bit confused, and that's nothing to say, when he talks about an "Echo Box" which would have had 7 control knobs on the front and a Vu meter.

This is more reminiscent of the Roland RE 301 and RE 501 echo chambers that Hank used during the 80's, than of one of the three different SEP's that he used during the Early Years !

So, although we now know that *Joe Brown* had the very good idea to connect his Gibson guitar to his SEP, and not to look for a reverberation effect on his voice as the Jennings ad implies, I feel like saying : it doesn't matter, since two unknowns then appear.

First of all, no one, except maybe *Joe Brown* then, and still, knows or seems to know what exact reference, if there is one, other than "F" at the end of 1959, of SEP model he used and thus presented to Hank. The "Dutch" (thanks to my friend Ben Van Zon and the considerable documentation related to the "Meazzi/Framez" echo chambers in his possession) refer to *Joe Brown's* SEP as a possible "E" index model. Except that this "E" index would have been used by SEP/Framez only during the year 1958.

If several months separate the date of purchase of *Joe Brown's* SEP from its presentation to Hank on 5 December 59, this time interval would explain the increasing alphabetical order of the indices : SEP "E", for *Joe Brown's*, then SEP "F" (imported by Jennings) for Hank's.

Why not ? But in fact, it seems almost impossible that *Joe Brown* could have taken possession of his SEP as early as 1958, that is to say, a year before he presented it to Hank. The reception of this SEP could only date from a short time before.

All this does not prevent, if in reality the letter "F" refers to all the SEP models distributed by Framez since their creation in 1956, that different "F" models, with improvements and modifications made to each of them over the years, were built. A single "F" reference that the production of these SEP remained at the stage of the very small series, or even of the prototype, can only make it credible.

In total doubt of this possible succession of index, "E" then "F", let's stay there.

That is to say, as much for *Joe Brown* as for Hank, only the "F" index, relative to all the SEP models distributed by Framez and which will be sold by Jennings, even if once again these models manufactured between 1958 and 1959 are not necessarily all identical.

Still on the subject of *Joe Brown's* SEP and in relation to what has just been said :

The second unknown is how he himself got his SEP model.

Two hypotheses :

- Either he bought it through a shop distributing "Meazzi" equipment in Italy, but shortly before Jennings became an official distributor in England.
- Or he simply bought it in London.

This solution seems much simpler, especially if *Joe Brown* is considered as one of the English artists chosen to promote Jennings products at that time. Like *Cliff Richard* or *Marty Wilde*, who, like *Joe Brown*, had their own place on *Jack Good's* BBC programme "Boy Meets Girls" in 1959.

A purchase in London seems all the more plausible as this first Jennings advertisement, which praises the merits of the "SEP" echo chambers (quoting in particular *Marino Marini* who uses one in Italy) dates again from September 1959.

Between September and 5 December 1959, when he presented his SEP to Hank, there seems to be ample time to imagine that *Joe Brown* may have bought (or been entrusted with) his SEP in London as soon as the importing began.

Or possibly, and why not, he only took possession of it a week or two before presenting it to Hank ?

In the case of Jennings selling or lending an SEP to *Joe Brown* for live promotion, it is surely no coincidence that on this this model, originally the SEP "F" in the ad, the words "vox ECHO" have been added in full on its ventilation cover.

Proof that this echo chamber is rightly presented, since its importation date, not under its real name of SEP model "F" but under that of "vox ECHO / Reverberation Unit". Not to mention the address of JMI in Kent which may suggest that this is where these echo chambers are built...

Echo and Business

It is not a question of looking for the smallest beast, but on the contrary of trying to understand the commercial relationship which exists then between :

- SEP which manufactures
- Framez which distributes
- Jennings who officially imports and resells these SEP echo chambers in England.

Because from the moment when all these first SEP models distributed in England are going to be marked (signed) with the factory "vox ECHO", not only can that be done only with the assent of Framez, but that also shows and demonstrates, through this Signature "vox ECHO", the exclusiveness which is going to be reserved, by the Italians, to Jennings, and only to Jennings !

An exclusive commercial agreement in order not to distribute simultaneously these same SEP echo chambers to other English "competitors", such as Selmer (the most direct) or even to Watkins or to someone else.

Though Cliff was already (in 1959) a "licensed artist" for the promotion of Jennings products, Cliff (singer) was not necessarily aware of what the use of such an SEP echo chamber could bring to the timbre of the Shadows' lead guitar.

One wonders if it is not because of the simple friendship between all the professional London guitarists of that time that *Joe Brown* takes pleasure in introducing Hank to this autonomous echo effect which is new in itself.

How a detail can change history !

If there is no doubt that Jennings began distributing the original SEP "F" models in September 1959, it is equally obvious (and this time commercially speaking) that, although Jennings had the exclusive right to sell his SEP echo chambers in England, he quickly sought to have his own Signature model built (still by SEP in Milan).

Because if he is going to sell echo chambers, he might as well sell them under his own name !



This Signature "J" Jennings model, nicknamed because of its brass plate stamped Jennings and studded on the top of its transport box, will be, as much in its design, its external look as in its electrical characteristics, directly derived from the Framez "F" vox ECHO model.

Just by modifying some things, like for example the addition of a sixth head on the "J" model, compared to the "F" model which has only five, but also the abandonment of its optional control of the rotation speed of the drum, and not only that. (We will see later).

For comparison, here is another more readable picture of the original SEP "F" model (still presented vertically) through a second Jennings advertisement published in 1959 :

INSTRUMENTALISTS • GROUPS • VOCALISTS
Facilities of a recording studio — AT YOUR FINGERTIPS

WITH THE **VOXECHO**
 REVERBERATION UNIT

VOLTAGE SELECTOR
 MAINS
 MOTOR
 MODULATION CONTROL
 REVERBERATION CONTROL
 ECHO CONTROL
 FOOT SWITCH
 AMPLIFIER INPUT
 MICROPHONE INPUT

- Attractive Casing Measures 9½" x 13" x 5"
- Cast Aluminium Plunger
Action Foot Switch Cut-out
- Compact Unit Weighs only 10 lbs.

Followed, below, by a photo of the SEP Signature "J" model, specially made by SEP for JMI, referring to the name "Jennings" which is engraved on this small rectangular metal plate, glued on the top and front of its case.



In spite of their obvious similarity of "look", and their superimposed "Geloso" type input/output sockets, typically Italian and for good reason, it is necessary to notice several details which will be important to distinguish them from each other in [YouTube](#) videos :

1) On the "F" model, the whole chassis of the echo chamber slides into its transport case (made of wood, apparently varnished) while the mechanical drum is protected by a ventilation grid which is screwed directly to the four upper corners of this case, oblong in cross-section, on which the words "vox ECHO" are found.

This grille, according to the Shadows themselves, was quickly unscrewed and thus dismantled in order to have access to the drum to "clean" it... Bruce even specifying that when Hank blew on the drum and the heads a cloud of iron oxide came out !

Whereas on the "J" model, if its sheathed carrying case opens forward as on the "F" model, this protective and ventilating grid of the mechanical drum is part of a top cover with side hinges that opens and dismantles more easily, to have access to the drum.

2) The carrying handle on the "F" model is a "flat" type that fits into the two side shells (à la Fender in the 60's) whereas the "J" model has a suitcase type handle, like those found on contemporary "AC 15 Vox".

3) The "F" model has three cream-coloured knobs on the front panel, while the "J" model has a black knob on its central six-way selector.

Hank Marvin's SEP Calendar

It is through these details that we should be able to know and confirm when this SEP Signature "J" model will be used by Hank, but also in principle available for sale in England.

A video of Cliff and the Shadows, dated 19 March 1960 and recently posted on [Youtube](#), would tend to prove that this "new" Signature "J" model, thanks to the sight of these various details, is or would be, not only already available for sale in England at this date of filming, but above all that Hank would have already taken possession of a copy.

But before skipping the steps, let's get back to HBM :

If it can only be a model F "vox ECHO" in stock at Jennings in London that is delivered to him first, Hank can only take possession of it at best, after December 6, 1959, since he only discovers *Joe Brown's* SEP the day before on the 5th.

However, in the period of acquisition during or after this month of December, one must also notice that it is from January 22 to February 27, 1960, included that Cliff and the Shadows leave for a one month tour in the USA and Canada...

Since it is said that once *Joe Brown's* SEP was discovered, Hank would have rushed (sic) to Jennings' shop at 100 Charing Cross Road in London to buy his "F" model, even with a margin of error of a fortnight, we can already deduce that there is a very good chance that Hank would get it back before the end of December 1959 and, by the same token, before leaving for America.

But then, if Hank took possession of his SEP model "F/ vox ECHO" during this period, the other good question is whether he took his SEP with him on this American tour, or not ?

This does not change the course of history. But the fact remains that it's this kind of question/answer that can confirm practical reality or, on the contrary, raise doubts (or even fantasies !) in the minds of everyone.

However and fortunately the only certainty that emerges is that, if Hank took possession of his SEP "F" during the month of December 1959, practice will show that a good three months would pass before he used it for the first time in Studio 2 at Abbey Road.

But before we find out how and why, one more remark :

If until then obtaining an SEP via Jennings was only done on a case-by-case basis (given its price, which was not within the reach of everyone) it seems easy to understand that the Jennings, seeing through the already well-established success of Cliff and the Shadows at the very end of 1959 (and even before the unsuspected success of Apache to come) that, if Hank is keen to use an SEP echo chamber, this can only boost the sale of this "new" SEP echo and reverb effect in England. So, for Jennings, it's a win-win situation commercially speaking.

Even more for Jennings, this first SEP "F/vox ECHO", followed by the Signature "J" model, will be associated, thanks to the Shadows, not only to its AC 15 Vox amps, but also to the importation and distribution, also very recently, for Jennings and for England, of Fender guitars. The whole package !

Let's not forget, on this subject, the delivery by Jennings, at the end of 1959, of a Fender Jazzmaster to Bruce and a Fender Precision Bass to Jet Harris, each guitar in standard "Sunburst" finish... We would later learn that it was only a loan as Jennings would remain the owner of it.



Hank's SEP : Studio and Stage

Now, and to come to the "music" through which we should be able to deduce when Hank started to use his "F" SEP, practical listening shows, in "Studio" conditions (thus from the records, only reference we have concerning this model), that the first use of this echo chamber by Hank, starts with a session at Abbey Road done on March 17, 1960 during the recording of "She Is Gone" with Cliff, a track that appears on the Me And My Shadows album.

To confirm this, it turns out that when listening to the big, semi-muffled strings (E 6th and A 5th in particular) played by Hank in this track, one hears a machine-gun-like echo (several repeats with short delays played in succession) affecting his lead guitar.

A clear sign, or at least more than plausible, of the possible variation of the magnetic drum rotation speed that this first SEP "F" model could offer as an option, in addition to the choice, by means of a rotary selector on the front panel, of the number of playback heads (out of the five possible) "activated" at the same time or by groups.

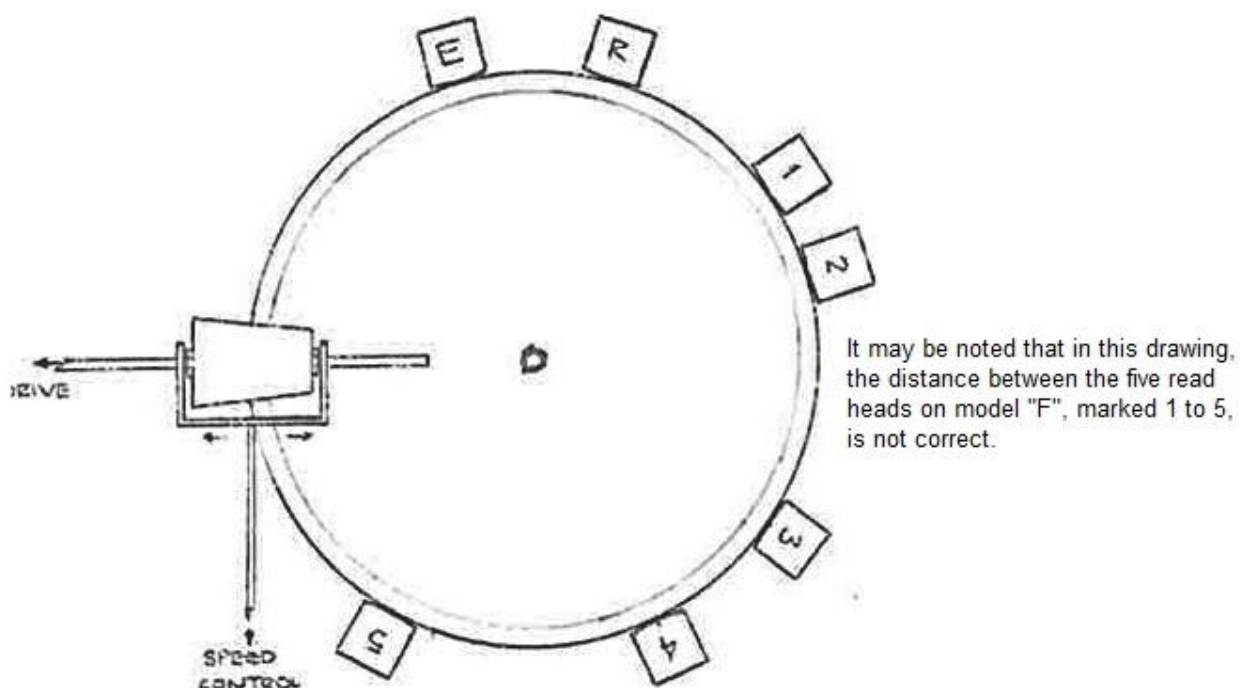
Indeed, as I suggested in the introduction, depending on the SEP "F" models manufactured, some of them offered a possible adjustment, in a ratio of 1.5 to 1 if we are to believe what *Alan Jackson* said on "Shadfax", of the speed of rotation of their magnetic drum. And from 1 to 1.5 in the sense of one and a half times faster or by a ratio of 50% faster in the 1.5 position than the slowest basic 1 position.

Immediate and obvious question : Did Hank's "F" model have this option ?

The answer is yes, because after discussing it with Bruce Welch myself a few years ago, he confirmed it to me. Bruce remembers perfectly well, because of the following detail which cannot be invented, that this first Hank SEP "F" model was only really usable on these two extreme positions of the adjustable speed of rotation of its magnetic drum, either the slowest or the fastest drum speed.

The intermediate positions generate excessive wow and flutter, making it difficult, not to say almost unusable. One more reason for this "system" to disappear on the "J" model, replaced, as an option, by two fixed speeds.

Here below is a drawing, reported again by *Alan Jackson*, which explains how the speed controller worked.



This is a conical rubber roller driven by the motor axle which is placed over the upper and outer edge of the magnetic drum.

Due to the diameter of the conical roller (like a bicycle derailleur), the speed of rotation of the drum evolves progressively between two extreme speeds : from the slowest to the fastest.

From the drawing and as the speed variation system is done "by hand" and in an entirely mechanical way, one can suspect that, in the intermediate positions (other than at full speed in one direction or the other of the conical part) a parasitic vibration, linked to the lateral mechanical play, could appear, generating this excessive wow and flutter.

However, there can be no doubt about the SEP model used by Hank on 17 March 1960 in Studio 2 at Abbey Road.

Indeed, if the following "J" model could, as an option, propose two different rotation speeds of its magnetic drum, these two speeds (predefined from the factory) being fixed and going directly from a slow to a fast one if we refer to Phil Kelly's "J" model, without passing by the intermediate positions at the risk of the too strong wow and flutter of the "F" model described by Bruce, the measurements made by Paul Rossiter on the rebound times generated by Hank's "J" model, will show that not only was this SEP only single speed, but also that this only possible rotation speed corresponded to the slowest of the "F" model.

So, if Hank had used this "J" pattern on March 17 at Abbey Road, to record *She Is Gone*, the succession of echo repeats would be spaced out by a longer length of time than those heard in this track. Which proves, conversely, that the machine-gun echo pattern heard (because of this rapid succession of repeats read in succession) can only correspond, at this moment and on this SEP "F" model of Hank, to the position of his speed controller placed on its fastest.

Perhaps, since the use of this SEP model "F" coincides with its very first use in the Studio, Hank was looking for a short bouncy echo pattern, Rockabilly type, while matching the tempo of *She's Gone*.

Similarly, and since the echo pattern heard on *She's Gone* corresponds to its fastest drum speed, it is easy to deduce (since there are no usable intermediate positions without excessive wow and flutter) that in order to obtain the final 600 millisecond rebound that characterizes the Apache pattern, the drum rotation speed of this same "F" model must correspond to its slowest magnetic drum rotation speed.

Even if all this already seems totally coherent, we can add to confirm it that, still about this SEP "F" model of Hank :

Reading the book "The Complete Chronicle Cliff Richard", we know that the very first session, at the beginning of 1960, made by Cliff and the Shadows at Studio 2 of Abbey Road, dates from March 15th. *Nine Time Out Of Ten* and *I Don't Know* were recorded on that day.

It was in the one that followed two days later, on the 17th, that *She Is Gone* was recorded, in which Hank used his SEP "F" for the first time in Studio 2.

To convince oneself of its use, and despite the high level of Studio reverb added to Hank's lead guitar in the mixes of each of these sessions, one can clearly hear the resulting difference in ambience that exists on his lead guitar, between *Nine Time Out Of Ten*, with no use of the SEP but his guitar only reverberated, and *She is Gone* with the SEP plus the same depth of Studio reverb added to its own range of its echo halo.

This information can only confirm, apart from its possible use during the American tour, or during the other concerts given live and in England before or after this period, that Hank (and the Shadows) had three and a half months to discover the possibilities and get used to this "F" model.

Jet Harris even said, according to *Alan Jackson*, that at first it wasn't so easy.

However :

If it is therefore demonstrated that it is indeed his SEP "F" vox ECHO model that Hank uses, for the first time, during this session of March 17 in Studio 2 and in She Is Gone, a big doubt appears concerning the SEP model, which he uses, this time in "live" conditions two days later, through this video shot during "ATV's Saturday Spectacular Show" (on the BBC) dated Saturday March 19, 1960, where Cliff and the Shadows perform "I Cannot Find A True Love".

Because, when you watch this video, here is the link :

<https://youtu.be/RhBFtgf88So>

From 30" onwards and several times you can clearly see an SEP on the floor. If we refer, once again, to the photo of the SEP Signature "J" model below, and compare it with the freeze frame made on the video :



#CliffRichard

Cliff Richard & The Shadows - I Cannot Find A True Love (The Cliff Richard Show, 19.03.1960)



Even if, at worst and at the same time, the SEP "F" and "J" were to be factory equipped with a black central knob, the typical shape of the carrying handle (moulded in the same way as the handles on the AC 15) associated with the general look of this model, would nevertheless prove that the SEP used live on that Saturday, March 19, 1960, by Hank, was a Signature "J" model and not his "F" vox ECHO model.

Adding that this Saturday, March 19, 1960, corresponds not only to :

- The first live BBC TV show of the year, in which Cliff and The Shadows appear since their return from America, but also
- The first time, at least on **YouTube**, that Hank is seen using an SEP echo chamber on television.

To confirm that such an SEP "J" model could, as I think, already be used by Hank on the BBC on 19 March 1960, I *contacted Phil Kelly*, to find out if he knew the date of manufacture of his own SEP Signature model.

Phil Kelly, it should be remembered, is the only person to own such a SEP "J" model, which remained in the ownership of the original British buyer for 50 years before Phil bought it back from him and had it restored.

Here's the answer *Phil Kelly* gave me (thanks !) referring to the late *Nigel Taylor* (RIP) who was a "go-to" source of information about magnetic drum SEP, as he used to service them back in the day :

"Its serial number, and the fact that it is a 2-speed, means that my SEP "J" dates from 1959."

An answer that could only confirm that in mid-March 1960, three months later, Hank could run such a Signature "J" model in live conditions. Except that at the same time (you will read about it in detail below), *Phil Kelly's* son describes his father's SEP "J" as a transitional model.

But not a transitional model in the sense of manufacturing chronology, since the last SEP/vox ECHO model (nicknamed Echomatic 2) associated with the Wonderful Land pattern was delivered to Hank in January 1961, but because, with the two possible speeds of rotation of its magnetic drum, Phil could obtain either the Apache pattern (slow speed) or the Wonderful Land pattern (fast speed).

We will see the reasons for this in detail later and under what conditions.

Thus, despite Nigel Taylor's assertion, it is difficult to imagine that Phil's SEP "J" model could have been made in 1959.

If it was to date at best from December '59, Jennings deciding as soon as the "F" models were imported to have his Signature model made, only three months separate their possible date of appearance, even if this new model is an adaptation mostly derived from the "F" model, and not a complete redesign of it.

Whereas the six months between September 1959 and the appearance of Cliff and the Shadows on the BBC on 19 March 1960, gave SEP plenty of time to design and produce this Signature "J" model for Jennings.

In these conditions, and even if, a fortiori, *Phil Kelly's* "J" model had to have been made at the end of 1959, my conclusion is still :

- 1) The SEP model used by Hank in that first BBC television appearance on March 19, 1960, is indeed a "J" model.
- 2) The various comparative measurements made by *Paul Rossiter*, between these two models "F" and "J", leave no doubt as to the order of reception, by Hank, of his two SEP echo chambers.

Leaving a glimpse that Hank was going to be equipped, at a very short interval of time, with not one, but two SEP :

- A first model "F" (vox ECHO) received by Hank in early or late December 1959, reserved, as *Paul Rossiter* pointed out, for recording at Abbey Road Studio 2 only,
- A second Signature "J" model delivered to Hank about three months later (early March 1960) after he had received his "F" model.

And as both these "F" and "J" models were indiscriminately referred to as Echomatic 1, the distinction between the two is not so easy.

This is a summary of information that deserves to be reflected upon because :

If there are very few, if any, documents to confirm the exclusive use, during this year 1960 (plus a few exceptional cases for the year 1961) of this SEP model "F" echo chamber at Abbey Road, it turns out that, thanks to the videos of Cliff and the Shadows, known to this day, shot during the whole of this same year 1960, and for the earliest known one which corresponds to March 19, we have proof that, in live BBC conditions, Hank always used his SEP Signature model "J".

Could this be a way for Hank to benefit from the new drum model seen on *Phil Kelly's* "J" model, characterised by its rubber underlay and the magnetic tape that surrounds it ?

Especially since this new type of drum will be found on the Echomatic 2.

At the same time, is it a way for Jennings to favour the sale of his Signature "J" model, made for him (and only for him) by SEP, to the detriment of the "F" model ?

Whereas the "F" model, which is reserved exclusively for him for sale in England, could very well continue to be sold by Framez in Italy, or "elsewhere" ?

In trying to trace the plausible chronology of events before his signature "J" model was delivered to Hank in early March 1960 :

In relation to the schedule of the fine team, which precedes this March date at the "BBC", and apart from the few concerts given in December 59 and early January 60 in England, if we add, during this period of acquisition and handling, the transatlantic tour which ends at the end of February, there is for all that no reliable way of knowing if Hank uses, his "F" model (first received) as much in the Studio as in live conditions as soon as he takes possession.

Unless a photo of one of our English friends turns up.

However, and now concerning its possible use at Abbey Road, it turns out that no recording session at Studio 2 appears in this time interval (between 6 December '59 and 15 March '60) except the one made on 20 December '59 during which Cliff and the Shadows just recorded : "A Voice In The Wilderness".

A track in which there is no doubt that Hank is not yet using his "F" model.

The only practical assurance comes from the fact that from March 19, 1960, which corresponds to the oldest known BBC **YouTube** video, Hank will use, from now on and during all live concerts and/or recordings of BBC TV shows as well as for some recording sessions with Cliff, his SEP "J" model.

On the other hand, and once again I agree *with Paul Rossiter* on this point, Hank's first SEP "F" model was the one he used during 1960 in Studio 2, not only :

- 1) To make most of the recordings of the songs with Cliff,
- 2) But also, and above all, to record ALL the Shadows instrumental tracks, from Apache recorded on June 17, 1960, then all those that followed, up to and including exceptionally Frightened City and Blue Star during the February 18, 1961 session.

This explains the vagueness in precisely defining the dates of reception of these two SEP models, as well as their respective first dates of use.

Remarks concerning this "F" model, by Hank :

1) Some Englishmen, including *Alan Jackson*, say (and not just think...) that Hank would have bought it, in the Jennings shop in London.

But did he have, at the end of 1959 or the beginning of 1960, enough (personal) money of 85 Guineas to do so ? Nothing is less certain.

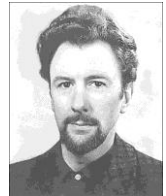
It is more likely that "EMI" bought it for him, or that the publicity Hank was going to give it through the Shadows, could also make one think that this "F" model and then a little later his "J" model were "lent" to him by Jennings...

As well as, and once again, the two Fender Jazzmaster and Precision Bass Sunburst guitars of Bruce and Jet which were lent to them by Jennings at the very end of 1959.

Even if it is anecdotal, here is another point of detail not elucidated !

Moreover, apart from the promotional publicity that was to be made, in live conditions, thanks to the SEP Signature "J" model used by Hank, the fact of being able to own these two different SEPs at the same time, also made it possible to preserve the layer of iron oxide that covered the edge of the magnetic drum of his "F" model from wearing out too quickly, especially when *Alan Jackson* specifies, via Jet Harris once again : "with a formidable rendering".

Everyone has, I think, heard about the piece of magnetic tape that *Dick Denney* glued to the periphery of the drum of Hank's "F" model, to give it a second life !



2) Now concerning this date of 18 February 61, during which Hank uses his SEP "F" at Abbey Road Studio 2 to record *The Frightened City* and *Blue Star* :

You must know that Cliff and the Shadows were playing that day in Lewisham (North London suburb), in the afternoon (3pm) and in the evening (9pm), before going to Abbey Road for the Shadows alone to record these two instrumental tracks at night.

This is one more reason to think that this SEP "F" was kept permanently at Abbey Road either "just for that" or "just in case", thus confirming the recordings made with it.

Indeed, logic would dictate that on this February 18, 1961, both in studio conditions and on stage, in a live setting, Hank should have been using his latest model, renamed Echomatic 2 SEP /vox ECHO (the one with the Wonderful Land echo pattern) that he had received a month earlier, and which had already been used to record *Kon Tiki* and *Find Me A Golden Street* on January 27, 1961.

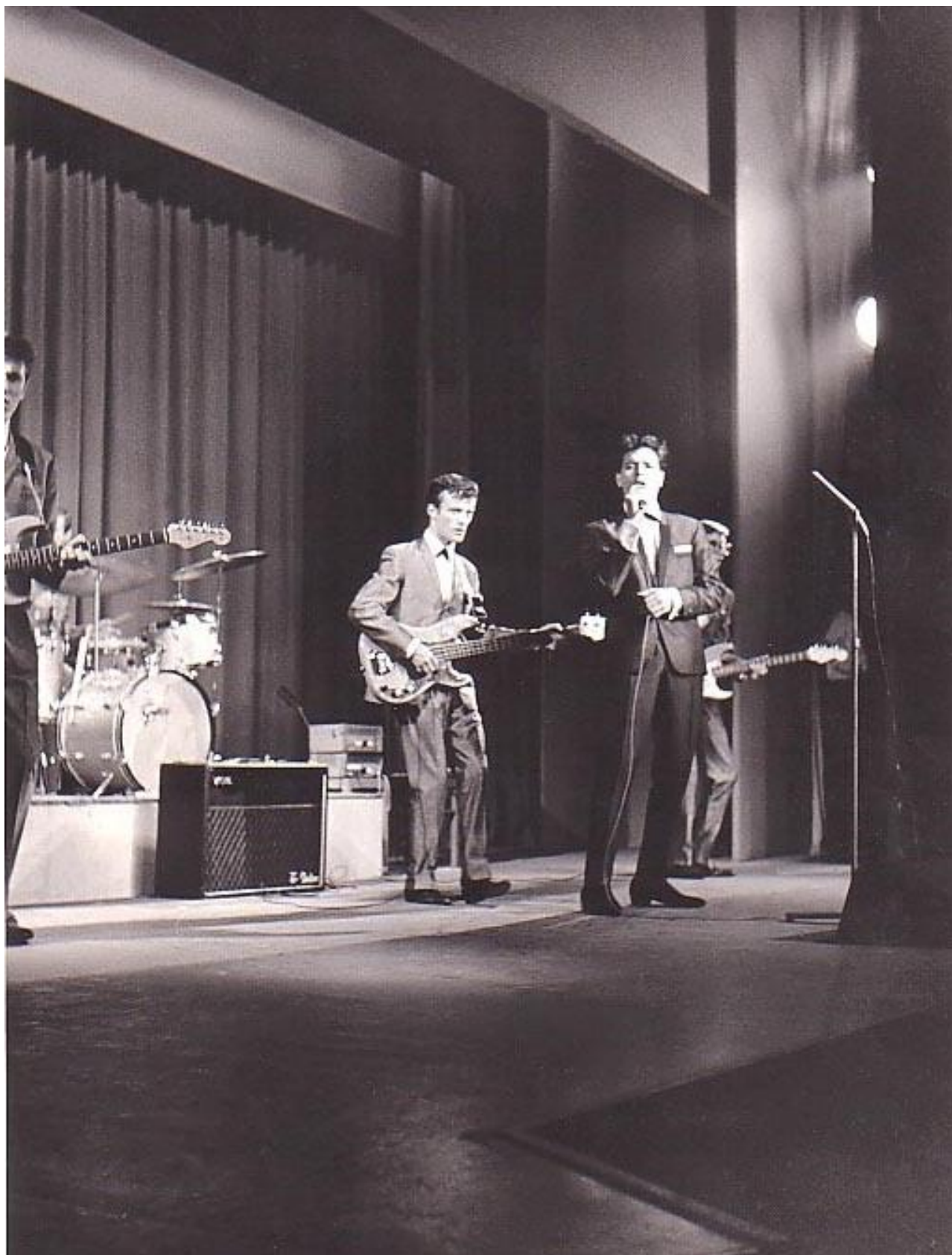
Unless, because of this obligation to record at Abbey Road in the evening, after having played live in Lewisham during the day, this last Echomatic 2 / vox ECHO model is now part of the equipment reserved and used for the concerts that will follow on from its receipt.

So that all of this same equipment (Guitars + amps + SEP/vox ECHO/ Echomatic 2) can travel by road and be used in Ipswich the next day, where Cliff and The Shadows play again in the morning and evening.

This made it exceptional for Hank to use his SEP "F" on February 18, 61, which he had voluntarily left in Studio 2, to enable him to record these two tracks.

This does not prevent Hank, in view of the photos taken in Copenhagen in August 1961 (see next page), from using two SEP as back-up.

Or to advertise them to be able to sell one or the other and especially the few "J" models still in stock at Jennings.



With, at this moment, still his "J" model associated with his vox ECHO model (from Wonderful Land) for this Scandinavian tour. The "J" model sitting on the Echomatic 2. doesn't seem to be plugged in, but there " just in case".

This also proves that from the moment Hank receives his last SEP "Echomatic 2" model, it is this model that will be used, except in rare cases such as The Frightened City, both live and in the Studio.

SEP Features

Let's now look at the different mechanical and electrical characteristics that define each of these two SEP "F" and "J" models. As we are going to talk a little more technically, I hope that the information given will remain understandable and readable for all.

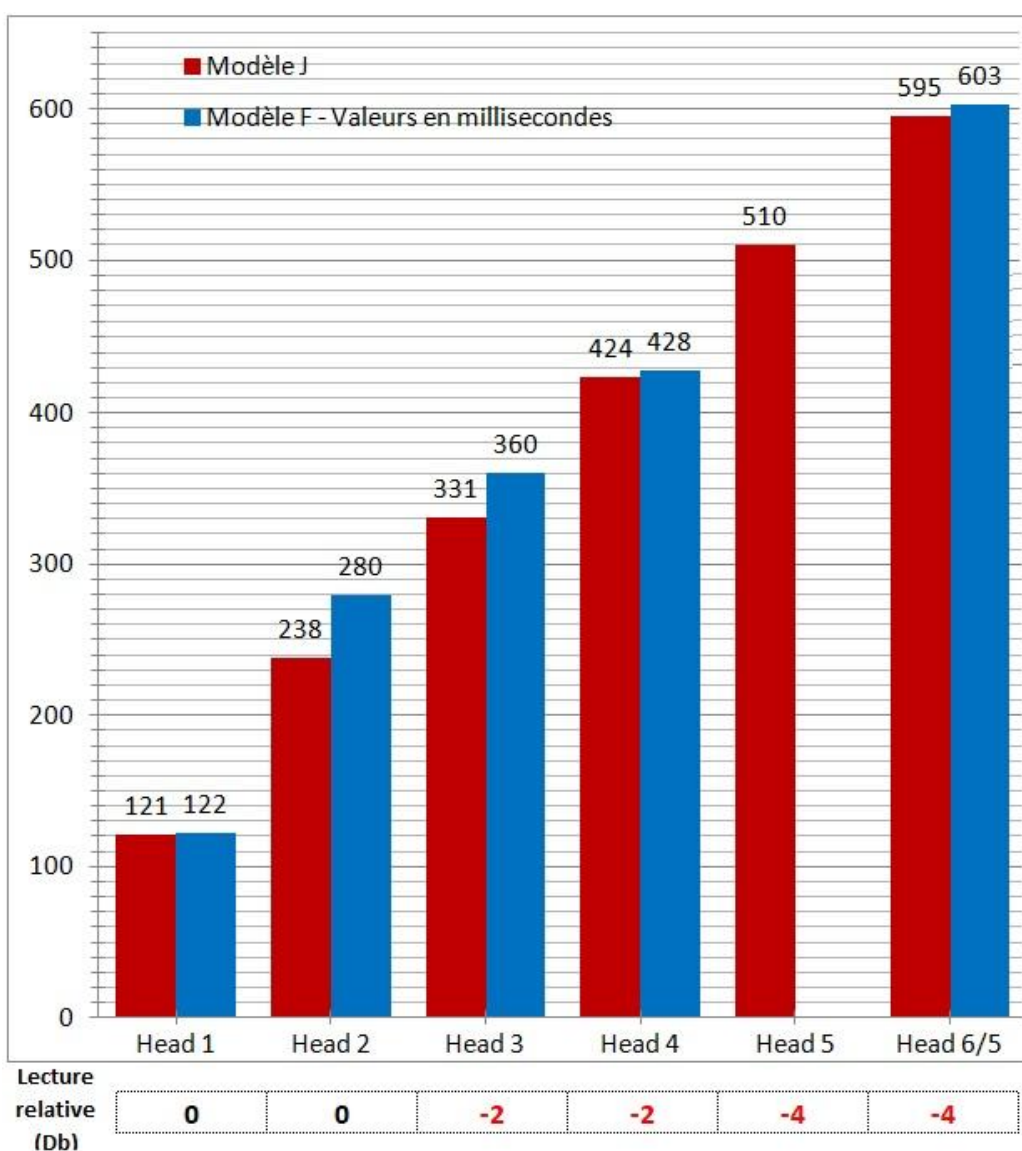
The comparative graph below describes for each model, the number of their playback heads, their output levels, and the values of the delay times of their associated repeats. It should be noted that the measurements made on the "F" models were made in relation to what can be heard and especially what can be measured in the echo patterns heard in the Shadows' instrumental titles on disc, with the addition of details thanks to the original schematics of this model (such as the schematics that Nigel Taylor must have had).

These measurements will already confirm that, since these echo patterns are, for the Shadows titles, composed of three main echo repeats always positioned in time at the same places (122, 428 and especially 603 milliseconds), the rotation speed of the magnetic drum of the "F" model must be set to its slowest position.

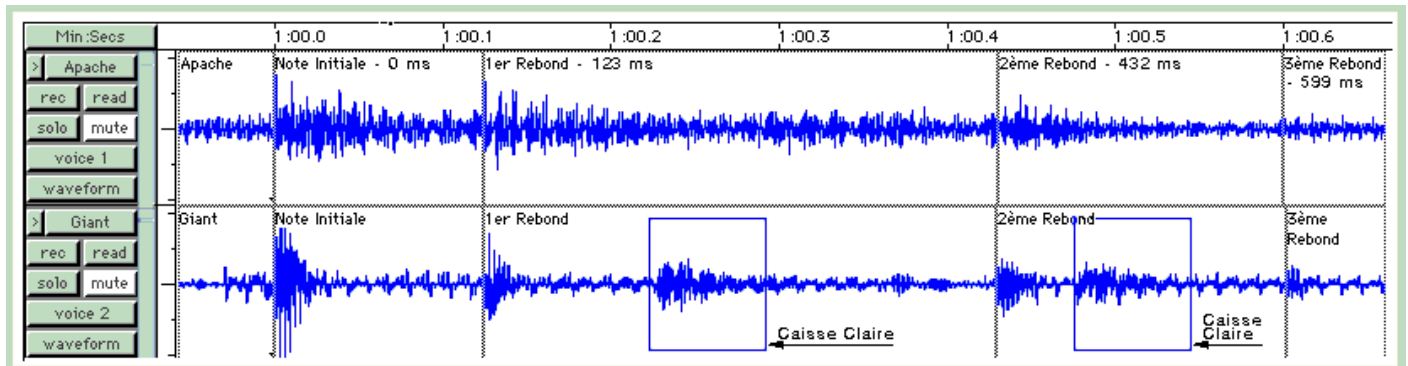
This is the reason why I speak of a single echo pattern relating to this Apache "F" model although, as will be seen later, following the instrumental titles recorded, the rotation speed being always the slowest, what changes is the number of one of the playback heads (other than 1, 4 and 5) activated, as well as the number of the head "engaged" for the feedback function.

Here are the "official" measurements, recalling the speeds used :

Model **F** : slowest drum rotation speed. Model **J** : same speed (single).



For my part, and with the measurements carried out, with my friend Roger Didier, using, as early as 1999, the Protools software (from Eurodisney Studios of which Roger was then the director) and this as much on Apache as on Theme from Giant, we had found, with astonishment, as for any discovery, for the three repeats generated by Hank's "F" model, and in relation to those provided by *Paul Rossiter* : 123, 432 and 599ms. The Protools screen of our measurements confirms this.



Our results are within 2 or 3 milliseconds of the 430 and 600 repeats. The time tolerance in relation to the adventure that takes place at each turn of the board, even without excessive wow and flutter, is more than respected !

As for the measurements made on the "J" model by *Paul Rossiter* :

By comparing the two bar charts, we can already notice that the relative reading level (in dB) of each of these three engaged heads (for the Apache pattern : 122, 428 and 603ms by the "F" model) remains almost the same in both cases.

Then, comparing the displayed times of the repeats of the "J" model, despite its additional playback head placed between the 430ms and 600ms, with the repeats of the "F" model, it becomes obvious, with an identical diameter of the magnetic drum of about 11cm and therefore with the same length of the drum circumference, that in order to obtain a last echo located at 600ms (while the mechanical distance between the recording head and the last playback head remains fixed and unchanging), its rotation speed must be and remain the same as the "F" model.

It can be deduced that the speed of rotation of the drum of this "J" model, to obtain this last rebound at 600ms (595ms) can only be that which corresponds to the slowest speed observed on the "F" model of Hank.

Although the measurements show a few milliseconds of difference between the times of these common repeats (from Apache) it is assured that they are completely inaudible in conditions of use.

Nevertheless, if practical measurements show that either of these two SEPs can reproduce the three main echoes, from the Apache echo pattern, positioned at :

- 122, 428 and 603ms for the 'F' model, and
- 121, 424 and 595ms for the 'J' model, while switching to :
- on the "F" model its read heads N° 1, 4 and 5
- and on the "J" model its read heads N°1, 4 and 6

Nevertheless, all the measurements carried out will show that other much more subtle differences in switching appear between these two models "F" and "J", linked to both the actual number of their respective engaged read heads, but also to the head(s) (singular or plural) which will provide the feedback function.

On this subject, and before anyone else :

It so happens that *Alan Jackson* had taken over, in *Shadfax* magazine, and from memory not far from 20 years ago, the description with the help I suppose of *Nigel Taylor* and the original diagrams, of the possibilities of switching and reinjection (feedback) of the 5 heads of this "F" model, and this according to the position, out of the six possible ones, of its rotary selector (central) on the front panel, called "Reverberation" (see photo from the 1959 ad).

This description by *Alan Jackson* (trying as much as possible to translate the meaning of the original text) is as follows :

The central front panel switch, labelled "Reverberation", is a six-position rotary switch that gives the following predefined combinations of heads and routings for reverberation : Starting from position "1" or "A" (fully CCW on the left) and turning clockwise.

- A All five active read heads with feedback from head 4
- B Active heads 1, 4 and 5 with feedback from head 2
- C Head 5 only active, without feedback. (single repeat)
- D No echo
- E Head 5 only active, with feedback from head 3
- F All five active heads with feedback taken from head 5

I quote *Alan Jackson* :

I have already commented on the particular switching that the 'F' model offers in the 'B' position of its select;, perhaps listening to its associated echo pattern gave Dick Denney the idea of installing pre-set volume controls for some or all of the 5 playback heads within this SEP 'F' model in order to experiment and then determine what this SEP could do best, depending on how the levels of the playback heads (which had become variable) might affect the nature of the echoes obtained.

Mark these words ! Because on the official schematic of the next Signature "J" model that you will soon discover, we find some of these same types of adjustments possible internally, via adjustable potentiometers.

And as this 'J' model is directly derived or adapted from the 'F' model.

Alan Jackson continues, leaving him to take responsibility for what he writes :

So I think I can give details of how Hank's 'F' machine was set up to record the early Shadows hits : For almost all the early Shadows instrumental tracks, Hank used position A with the lowest motor speed and head 3 completely off.

Specifying on my side : heads 1, 2, 4 and 5 active, and therefore four repeats associated to 123, 280, 430 and 600ms and not only three (the main ones at 123, 430 and 600ms),

The reading level of head 1 was the strongest.

But for Blue Star head 2 was slightly louder than head 1.

In the same way and for all the Shadows instrumental tracks recorded, the playback levels of heads 4 and 5 are kept, and always more or less the same.

The feedback taken from head 4 was mostly in the tempo of the tracks but was kept at a very low level or completely off as in Apache.

In summary, what *Alan Jackson* describes as the most commonly used switching for all Shadows Early Years recordings, using this SEP "F" model is as follows

- 1) Heads 1 + 2 + 4 + 5 active + most often re-injection (feedback) from N°4 head (except Apache without re-injection) and slowest drum speed.
- 2) With the precision that the reading level for head N°2 changes and varies according to the titles. This statement seems to me to be difficult to apply easily and quickly, even through an adjustable pot accessible internally because I can't imagine that, in the studio and for a three-hour session, one can retouch and adapt this setting for each title.

He continues : *Increasing the playback level of head N° 3, even by a small amount, brings about the galloping cyclical effect heard on FBI and Man Of Mystery.*

Finally, the "F" position (of the selector) is used, still without the playback of head 3, for The Frightened City. The long feedback from head 5 suits the tempo of this tune, but again kept very low.

He concludes : *The fastest motor speed is used in Quatermaster's Stores as well as Midnight, again using the 'A' position of the six-position selector switch although the echoes in Midnight are drowned out by the high level of reverb added by the studio.*

Hank's SEP Customised ?

It is already becoming apparent that, compared to the way this "F" model was "programmed" from the factory, through the possibilities described above and offered by its front panel Reverberation selector, modifications have been made by *Dick Denney* (or someone ?) on Hank's "F" model.

Also : What *Alan Jackson* describes as the most commonly used switching on this SEP 'F' model, relating to recordings of all the Shadows Early Years titles, is that which would therefore correspond to position A (factory default) of the six-position selector switch, BUT with the level of head No. 3 set to zero (or de-wired or shorted).

Firstly, the playback heads 1 + 2 + 4 + 5 active (head N°3 off) + feedback from head N°4 + slowest drum rotation speed and with, once again, the ultimate precision that the playback level of head N°2 changes with the titles.

This already generates quite a few modifications, compared to the original factory settings, especially as for the following "special cases", *Alan Jackson* adds that :

For Frightened City, position equivalent to the factory A position always with head N°3 Off, and with a "long" feedback by head N°5.

Conversely and still using the factory A switch, the playback level of head 3 is increased in both FBI and Man of Mystery.

Finally, for Quatermaster's Stores and Midnight, still using the A position of the selector, but this time using the fastest drum rotation speed

To summarise and to try and make sense of it, writing all these switches described by *Alan Jackson* in the same form as the table given by *Paul Rossiter* for the same instrumental tracks recorded with this model F :

1) Originally, when leaving the factory and through its front panel rotary selector, numbered A to F, the SEP "F" model offers six different switches and combinations of its 5 heads, which are as follows, these six factory electrical combinations being deduced from *Nigel Taylor's* reading of the original SEP "F" model schematic :

A *All five active heads with feedback from head 4*
 B *Heads 1, 4 and 5 active with, with feedback from head 2*
 C *Head 5 only active, without feedback. (single repeat)*
 D *No echo*
 E *Head 5 only active, with feedback from head 3*
 F *All five active heads with feedback taken from head 5*

2) Now here are the switches and combinations that *Alan Jackson* observes on Hank's SEP "F" model according to the instrumental tracks recorded :

With the slowest drum speed :

Apache	heads 1 + 2 (low) + 4 + 5	no feedback
The Stranger, Gonzales, Mustang	heads 1 + 2 (?) + 4 + 5	feedback by head N°4
Blue Star	heads 1 + 2 (strong) + 4 + 5	feedback by head N°4
Man Of Mystery, FBI,	heads 1 + 3 (strong) + 4 + 5	feedback head N°4
Frightened City	heads 1 + 2 + 4 + 5	feedback head N°5

With the fastest drum speed :

Quatermaster's, Midnight heads 1 + 2 (weak) + 4 + 5 feedback by head N°4

By comparison, and this time through the measurements made by *Paul Rossiter*, certainly with the help of "Protools"

With always and whatever the title, the use of the slow speed of rotation of its drum

Apache	heads 1 + 4 + 5	no feedback
The Stranger, Gonzales, Mustang	heads 1 + 4 + 5	feedback by head N°5
Man Of Mystery, FBI, Midnight	heads 1 + 3 (low level) + 4 + 5	feedback head N°5
Frightened City, Blue Star, Quater...	heads 1 + 2 (low level) + 3 + 5	feedback head N°2

Now comparing the different possible switches of the five heads on Hank's SEP "F" model, and as described by both *Alan Jackson* and *Paul Rossiter* :

If *Alan Jackson* often favours, in playback mode (and in addition to heads 1, 4 and 5 = the base of the pattern to be obtained) head N°2, for him and apart from Apache, the feedback is performed by head N°4.

At the same time, if *Paul Rossiter* logically favours the switching of heads 1, 4 and 5, for him, and contrary to *Alan Jackson*, head N°2 is rarely used, and the feedback (when it exists) comes, for the most part, from head N°5.

In spite of these differences (and at this stage that's the most important thing), we have the confirmation that, compared to the possibilities defined at the factory by its "Reverberation" selector on the front panel, there is no doubt that modifications have been made internally by *Dick Denney* (or by someone else ?) on Hank's SEP "F" model to obtain a different result from the basic factory echo patterns..

Several remarks then :

1) Since the SEP Signature "J" model is directly derived from the SEP "F" model with the addition of modifications dictated by Jennings, we can see, at least in the official schematic of the "J" model (as we shall see), some of this subtle cooking by adding adjustable potentiometers which also allow us to fine-tune certain parameters...

2) Without particular favouritism, I would have a preference to confirm the readings made by *Paul Rossiter*, since when I had myself made these readings thanks to Protools, at no time appeared on the graphs of Apache and Giant a level of reading of the head N°2.

Moreover, the readings made by *Paul Rossiter* show a greater consistency in the presets (by group) of titles.

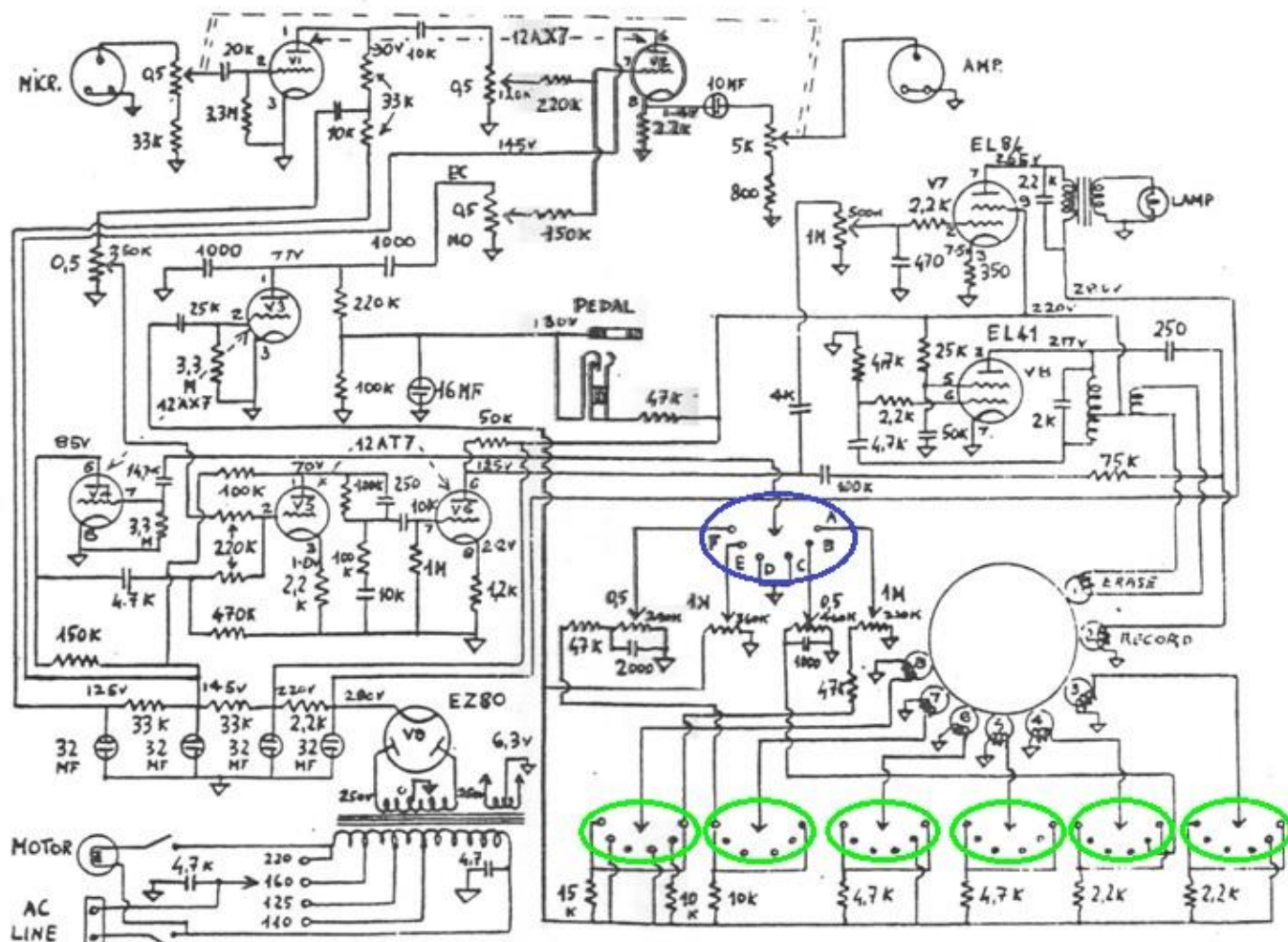
Although Alan Jackson is not wrong in his deductions, the description he makes of the modifications to be made seems more complicated to carry out in practice. At worst, the different permutations he proposes could correspond to presets obtained on each of the six possible positions of the "Reverberation" selector of Hank's "F" mode

3) Finally, as much for *Paul Rossiter* as for me, this Hank "F" model is always used, during the recording of all these instrumental tracks, whatever the various switches described, on the position of the slowest rotation speed of its drum.

To suggest, like *Alan Jackson*, taken up by *Charlie Hall*, that the fastest speed would have been used during the recording of Quatermaster's Stores and/or Midnight, does not seem very credible. Even more so if one adds a strong Studio reverb depth, which drowns out and masks these different echo repeats between them, but ?

4) On the other hand, the other great novelty that I share through all these measurements made by *Paul Rossiter*, appears as to the four presets desired and potentially obtained (for each group of instrumental tracks) by using (out of the six possible) the "Reverberation" selector on the front panel.

But before drawing the necessary conclusions, let's move on to the description of the original known schematic of the Jennings "J" model, reproduced below.



By detailing it, it will be possible to determine, by reading its diagram, the switches that can be obtained through its six-position rotary selector, and thus these different echo patterns.

Once each selection has been deciphered on this "J" model, we will compare the results obtained with those of the "F" model when it left the factory (table with purple letters edited by *Alan Jackson*) and then with those noted and grouped together on Hank's "F" model (black letter table by *P. Rossiter*).

To understand : on the diagram above, the Reverberation rotary selector is drawn as seven half-circle wafers inverted downwards, each presenting six different positions (each of the six dots drawn in black corresponds to one of these six possible positions) while the central arrow marks the common point of each of these seven wafers, six of which (those at the bottom) happen to be the 'hot' point of the six playback heads numbered from 3 to 8. (Erase head = N°1 and Record head = N°2)

The six switch sections circled in green on the diagram are not numbered.

The seventh section circled in blue allows all these sections to be identified by the position of the selector between the letters A to F. With the precision that the seven arrows of each of the seven different sections drawn, turn together from position A or 1 to position F or 6.

Thus, and following each of the six possibilities of the possible switches :

In POSITION 1 or A

Reading of the six heads simultaneously, with heads 1 and 2 at the highest level, 3 and 4 at the intermediate level, 5 and 6 at the lowest level.

These differences in playback levels being due to and obtained through the values of the mixing resistors of 2.2K = max level, or 4.7K = intermediate level or 10K or 15K = low level as shown (translated in dB) in *Paul Rossiter's* table on the subject.

And simultaneous feedback from all heads, favouring head 6 at the highest level (feedback level adjustable internally with a 1MΩ potentiometer)

In POSITION 2 or B :

Reads heads 1, 4 and 6. The playback level decreases by 2dB between head 1 and head 3 and again by 2dB between head 4 and head 6. Feedback is provided by head 2, which is not selected for playback.

In POSITION 3 or C

Playback of head 6 only. No feedback.

In POSITION 4 or D

Off" position = no echo.

In POSITION 5 or E

Playback of only head 6 (as with position 3) but this time with feedback from head 6.

In POSITION 6 or F

Playback of all six heads at once (as with position 1) with the same relative playback levels but this time with feedback from head 5.

For further understanding and to better compare the possibilities of the six different switches (from A to F) of the "Reverberation" selector on the front panel between this model "J" model and those obtained from the factory for the "F" model

For the "F" model defined above :

- A All five active heads with head 4 feedback*
- B Heads 1, 4 and 5 active with, with feedback from head N° 2*
- C Head 5 only active, without feedback. (single repeat)*
- D No echo*
- E Head 5 only active, with feedback from head 3*
- F All five active heads with feedback taken from head 5*

For model "J" (in the diagram above)

- A All six active heads with feedback from all six heads at once, with head 6 favoured*
- B Active heads 1, 4 and 6 with feedback from head 2*
- C Head 6 only active without feedback*
- D No echo*
- E Head 6 only active with feedback from the same head N°6*
- F All six active heads with feedback from head 5*

Remembering that the echo rebound times of heads 1, 4 and 5 of model "F" are the same as those of heads 1, 4 and 6 of model "J", since the rebound generated by head 5 of model "F" has the same long delay time as head 6 on model "J".

Comparing the action of each of the six possible positions of each of their Reverberation selector, one finds an obvious family resemblance between the different switches that are made, and the different heads engaged on one model as much as on the other. Mainly only the number of the feedback head changes between the two.

We have thus the proof by the reading of its diagram that this SEP Signature "J" model is, by factory construction, directly derived from the "F" model.

To make it even more telling, if we compare the switching obtained and described by *Alan Jackson* between the factory "F" model and the readings taken by *Paul Rossiter* on Hank's modified "F" model, and by groups of recorded instrumental tracks, we get this :

Factory Model "F" :

- A All five active heads with feedback of head 4*
- B Heads 1, 4 and 5 active with, with feedback from head 2*
- C Head 5 only active, without feedback. (single repeat)*
- D No echo*
- E Head 5 only active, with feedback taken from head 3*
- F All five active heads with feedback taken from head 5*

Custom "F" model for Hank :

Apache (Theme From Giant)	heads 1 + 4 + 5	no feedback
The Stranger, Gonzales, Mustang	heads 1 + 4 + 5	feedback head N°5
Man Of Mystery, FBI, Midnight	heads 1 + 3 (low level) + 4 + 5	feedback head N°5
Frightened City, Blue Star, Quatermaster	heads 1 + 2 (low level) + 3 + 5	head feedback N°2

And finally, if we do the same thing again, but this time with the four program possibilities described by *Paul Rossiter* and translate them into four of the six positions of the Hank's SEP "F" Reverb selector :

- | | |
|---|--------------------|
| A Active heads 1, 4 and 5 active | no feedback |
| B Active heads 1, 4 and 5 | feedback by head 5 |
| C Active heads 1, 4 and 5 + 3 read at low level | feedback by head 5 |
| D Active heads 1, 3 and 5 + the 2 read at low level | feedback by head 2 |

We can see that between these different switches that can be obtained on the factory "F" model, written in purple letters, and those written in black letters that list those of Hank's "F" model, that none of the six factory defined switches allow to obtain even one of the four combinations of echo patterns found on Hank's custom SEP "F" model, which will be used to record all the first Shadows instrumental tracks, since Apache.

This is, without any doubt, another great novelty !

Nobody imagined, until then, (not even me !) that Hank's "F" model could have been specially modified and customized, just for him, to allow him to obtain other conditions of echo patterns than those provided by this same SEP "F" model coming directly from the factory.

Furthermore, if we now take up the six possible switches found on the "J" model by reading its diagram, which can be summarised in the following table :

- A The six active read heads with feedback of all six heads at the same time, head N°6 favoured*
- B Active heads 1, 4 and 6 with feedback taken from head 2*
- C Head 6 only active without feedback*
- D No echo*
- E Head 6 only active with feedback from the same head N°6*
- F All six active heads with feedback from head 5*

In spite of its sixth additional playback head and the time differences that exist between the repeats generated by playback heads N° 2 and N° 3 of each of the two models "F" and "J", it turns out that even if we disregard these differences in delay times, which are nonetheless audible, we have the proof, from the table above, that apart from the position of the selector on the front panel on N°2 (or B) of this model "J", which reproduces an echo pattern that I would qualify as intermediate between that of Apache and Frightened City, obtained with the model "F" for Hank, that none of the other positions of this same six-position selector on this "J" model, allows to clone, neither one nor a fortiori the four different programs defined by *Paul Rossiter* to record, by groups of titles, all the Shadows instrumentals.

An additional proof to confirm that it is indeed his customised "F" model, that Hank will use during all these Studio recordings.

On the other hand, one must notice, still reading the diagram of the "J" model reproduced above, that one finds drawn, as I already spoke about it above, and at the level of the rotary selector with 6 positions, four adjustable potentiometers, accessible and adjustable internally to the chassis.

These four potentiometers allow, each one, to preset a different feedback level according to the selected position of the selector : A, B, E or F, and which will act :

- either on a single read head reinjected on itself,
- or on all six playback heads at the same time.

In the order of the separate and adjustable setting of the possible feedback levels obtained by each of these four potentiometers, and by marking each of them from 1 to 4 starting from the right or from position "A" on the diagram :

- Position of the selector on the front panel in 1 or A = an adjustable feedback level (in 1MOhms steps) which concerns all six read heads at the same time.
- Position of the selector in 2 or B = an adjustable feedback level (per pot of 500K) which concerns only the N°2 read head
- Selector position 5 or E = an adjustable feedback level which only concerns the single read head N°6
- Finally, when the selector switch is set to 6 or F, it is possible to adjust the feedback level of No. 5 (in 500K pots) while all six read heads are read again simultaneously and in succession

There seems to be no doubt then that, since the "J" model is simply the continuation (dictated by Jennings to SEP) of the "F" model, this same type of adjustment (by additional internal potentiometers) was already carried out on the SEP "F" model "customised" for Hank.

Even more so as the measurements relative to the different groups of Shadows titles, show indeed independent feedback of heads 2 or 5, on Hank's SEP "F" model, whereas the dry repeats, linked to heads 1, 4 and 5, are read in succession.

In addition :

These same measurements also show that, on this Hank "F" model, and unlike the "J" model (of the schematic) the read levels (this time) of heads 2 or 3, could be adjusted separately from each other in amplitude, before they could then be added to the mix of the read levels of heads 1, 4 and 5 still "active" and mixed with each other by these resistors of different values.

This is, in my opinion, and as I have already said above, another great novelty ! Even if it has already been mentioned by *Alan Jackson* via *Nigel Taylor*.

Hank's SEP - Final version

Despite the absence of any known schematic of the original SEP "F" model, these measurements confirm what the Shadows themselves have said about it ! Hank, Bruce and Jet say that when they first started using this "F" model, they were looking for the echo that would best suit the tracks recorded with Cliff.

But if they began to search in Studio condition once they returned from their American tour, logic would dictate that once the modifications to Hank's 'F' model were completed and made in-house, they could coincide shortly before or with the start of the Shadows instrumental tracks at Abbey Road, beginning with Apache.

The "echo pattern" corresponding to this period of the recording of all these Shadows instrumentals on records seems to be always the same, since it is mainly characterised by three repeats positioned at 123, 430 and 600ms, but it is obvious as *Paul Rossiter's* chart shows and demonstrates that :

- Either by adding in playback mode even at a low level, either, and at your choice, the N°2 head (and its echo at 280ms) or the N°3 (and its echo at 360ms) to these three main echoes,
- Or by associating the feedback of head N°5 (at 600ms) with head N°3 read at low level, or even by the only feedback of head N°2 on itself, even mixed at low level, that changes the deal.

The whole thing can only be confirmed if, at the beginning, one works "at random" in relation to the possibilities of the selector defined at the factory on the SEP "F" model, once each position is "refined" as the Shadows want and/or as Dick Denney (or X) manages to do, it is then enough, for Hank, starting with Apache, to simply choose one of the four pre-selections.

It then becomes, if not obvious, then quite possible that, in the end, these four different echo pattern presets were developed, on Hank's "F" model, over time, between early March and June 1960, and before each of these four presets became directly reproducible for Hank, simply by using one of the four out of the six possible positions of the front panel "Reverberation" selector.

At least, that's how I summarize it.

Four possibilities of pre-set echo "programs", and not, each time, a "search" for different parameters for each recorded track, as *Alan Jackson* suggests, such as this reading level of head N°2 which would change according to the tracks - a difficult operation to carry out on the spot, during a three-hour studio session to record three tracks.

On the other hand, once the SEP / vox ECHO (Echomatic 2) was received in January 1961 and used for the first time in Studio 2 by Hank to record Kon Tiki on 27/01/61 (and having made a clone myself from its known schematic, and therefore knowing perfectly well how this model works) the problem of the "good echo" (in its realization or in the obtaining of possible "variations" of its parameters) does not arise anymore.

Because on this last and ultimate model, always with tubes and functioning with the help of a magnetic drum and also specially built by SEP for Jennings, the reading of its diagram shows clearly, as we will see, that there are no additional adjustments internally, by potentiometers of the type used in the "F" model, allowing no possibility to act :

- on the possible (and optional) feedback on one of its four read heads,
- nor on the means of setting (adjusting) the playback level head by head,
- nor on the way to switch only 2 out of 3 or 2 out of 4.

Just a "Plug and Play" mode by construction, but above all one that is verified in practice.

This means that for the two Signature models specially made for Jennings, SEP will use and reuse the same mechanical drum with pre-drilled holes, around the drum, in the same places for the different heads, for both the Signature "J" model (Echomatic 1) and the "vox ECHO" model ("Wonderful Land" Echomatic 2).

And that in the end, it is only the speed of rotation of the magnetic drum associated with the number of "engaged" heads (only four for Wonderful Land) that will change between the two.

However, what we must remember about these two models of SEP "F" and "J" echo chambers (both called Echomatic 1 !) is that even if, or because of the fact that their production has remained low, nothing prevents improvements and/or changes, both electrical and mechanical, to have been made over time, both for the "factory" models and for Hank's own specially customised "F" model, and why not later for his Signature "J" model ?

Moreover, while Hank was equipped with both SEP "F" and "J" models simultaneously, it should be kept in mind that he only used one of each. That is to say :

- A single "F" model with variable speed drive option and
- A single "J" model with a single speed of rotation of its magnetic drum equal to the slowest presented by the "F" model.

and not several models of the same reference which could have been different between them as much from a mechanical point of view as from an electrical one.

The Last Model

To finish the "saga", let's come to the last model of SEP echo chamber used by Hank. Here is a photo of the Jennings advertisement published in 1961 and reproduced below : JMI advertisement where, this time and first, the names of Cliff Richard and the Shadows appear (not surprisingly !) even if *Marty Wilde* and *Joe Brown* are also mentioned.

Cliff Richard & The Shadows

FEATURE

VOX ECHO

REVERBERATION UNIT

INSTRUMENTALISTS · GROUPS
VOCALISTS

*Facilities of a recording studio—
AT YOUR FINGERTIPS*

Artists who feature **VOX 'ECHO'**
include :-

MARTY WILDE

EMILE FORD

JOE BROWN

THE FLEERAKKERS

PRICE 85 gns.



The VOX 'ECHO' unit simply connects between the amplifier and microphone and has separate controls with variable degrees for Echo, Modulation and Reverberation effects. These controls used in different positions give an infinite variety of echoes, multi-echoes and stunt incidental tones. Demonstrations are available on request.

JMI JENNINGS MUSICAL INDUSTRIES LTD.

UNITY WORKS · DARTFORD ROAD · DARTFORD · KENT · Tel 24414-7

Although Hank used the two models "F" and "J" throughout 1960 and in a few specific circumstances until the Spring for one and the Summer of the following year for the other, it was in January 1961 that he took possession of his third and last model of SEP magnetic drum echo chambers, also renamed "vox ECHO" in front, just like the first SEP "F" Framez model imported in 1959.

This latest SEP/vox ECHO model will, like the previous Signature "J" model, be specially manufactured by SEP in Milan, exclusively for Jennings.

Compared to what the advertisement says, and as can be read, the advertising arguments do not change the discourse concerning its uses, "recommended" just as they were already for the two previous "F" and "J" models, to "Instrumentalists, Groups and Vocalists". Even though Hank has since shown that he connects his guitar directly to it thanks to the high impedance 1 MOhms high impedance "microphones" (i.e. inputs) that were fitted to all these SEP.

Similarly, this latest SEP model is sold, like its predecessors, for 85 Guineas.

Considering its price (still not affordable) and despite the publicity that the Shadows (thanks to Hank) will be able to give it, this SEP/vox ECHO model, just like the two previous "F" and "J" models, will only be manufactured in about twenty units.

Compared to the two previous SEP models "F" and "J", it is easy to notice the evolution of the external look of this latest SEP model with its metal (and no longer wooden) carrying case and its Fender-like "flat" side handle which announce the Meazzi tube and tape echo chambers and in particular the PA 316 and "Factotum" models.

As for its connection characteristics and its possible adjustments, from the front and left to right :

We can see that this SEP / vox ECHO model has (instead of one) three "microphone" inputs, always high impedance and on Gelo sockets, which can be mixed together, thanks to the input volume knobs and their three associated white coloured knobs, on the left seen from the front.

Each volume knob of these three inputs being positioned just above its corresponding "microphone" input socket.

This mix allows, if needed, to bring an echo and reverberation effect on several voices or groups of voices at the same time, thanks to the three microphones that can be connected to them.

Next is the central black knob named "Effects" which allows you to adjust the echo effect obtained, I will come back to this in detail.

As for the last potentiometer (and its white knob) seen on the right, it allows to adjust (balance) the level of the Echo signal added to the "Direct" signal.

Since the possible and accessible "adjustments" end here, it is easy to notice that the level of feedback that one wishes to obtain is not accessible on the front panel. It is and will be later on the Meazzi tape models, only through a potentiometer located inside the chassis.

Finally, and according to his own words, it is this last SEP/vox ECHO model that will be Hank's favourite. He would use it, this time both in the studio and live (on stage or at the BBC), from the date of its reception in January '61 until the SEP/vox ECHO gave up the ghost in 1964.

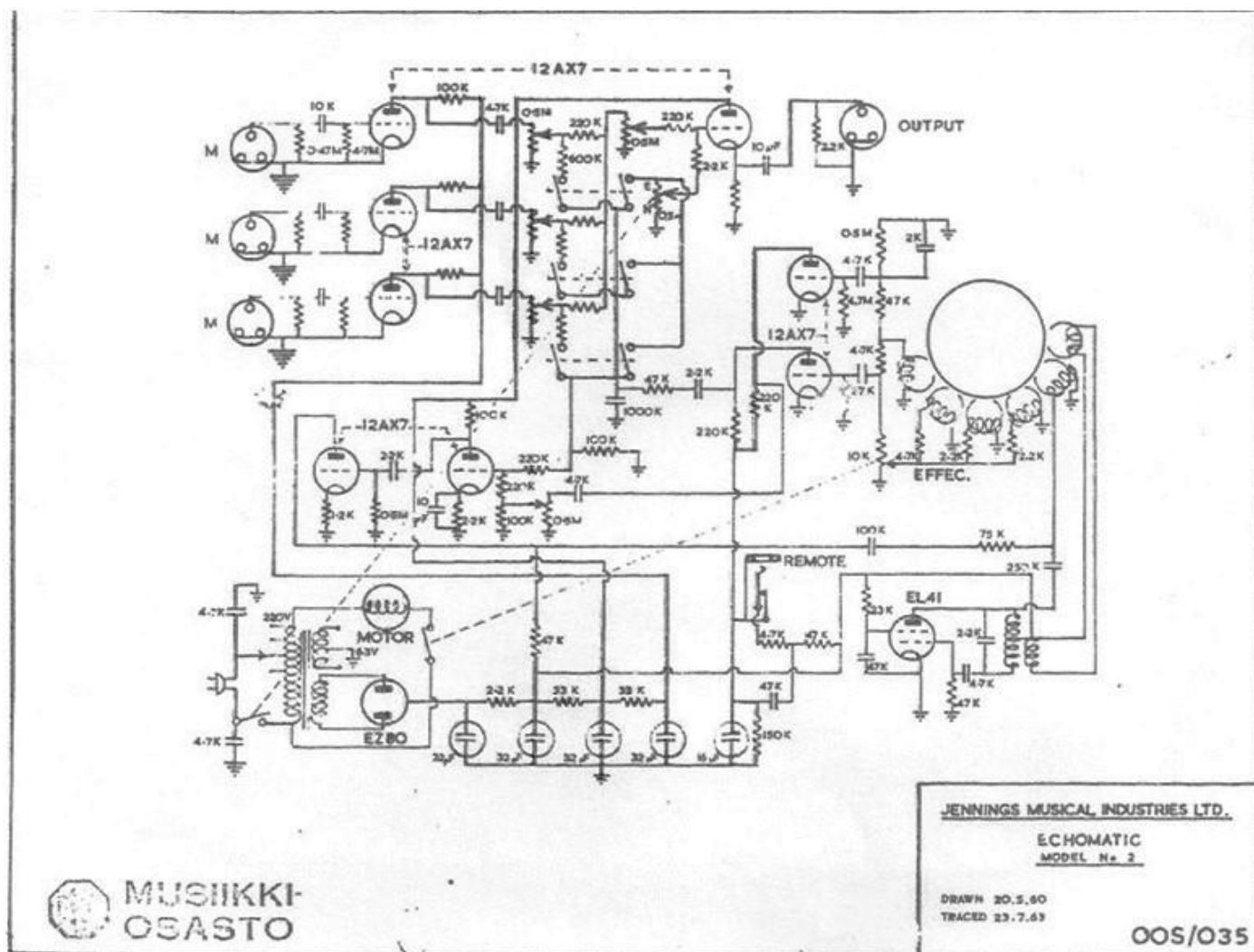
This use began with the joint recording of Kon Tiki and Find Me on 27 January 1961, The Miracle session of 31 July 64 appears to be the last instrumental track recorded using this SEP.

There is no doubt that in terms of the number of Early Years tracks recorded, it is this last model that will be used for the longest time for LPs, from all the tracks on the first album The Shadows up to and including Chattanooga Choo Choo.

Electronics and Mechanics

As for the SEP Signature "J" model, we have the schematic of the internal tube electronics of this SEP/vox ECHO model, which will allow us to define the characteristics of the generated Echo.

This schematic is reproduced below, as is the schematic of the SEP "J" model from the website <http://www.meazzi.org.uk> from Amanda Hambidge.



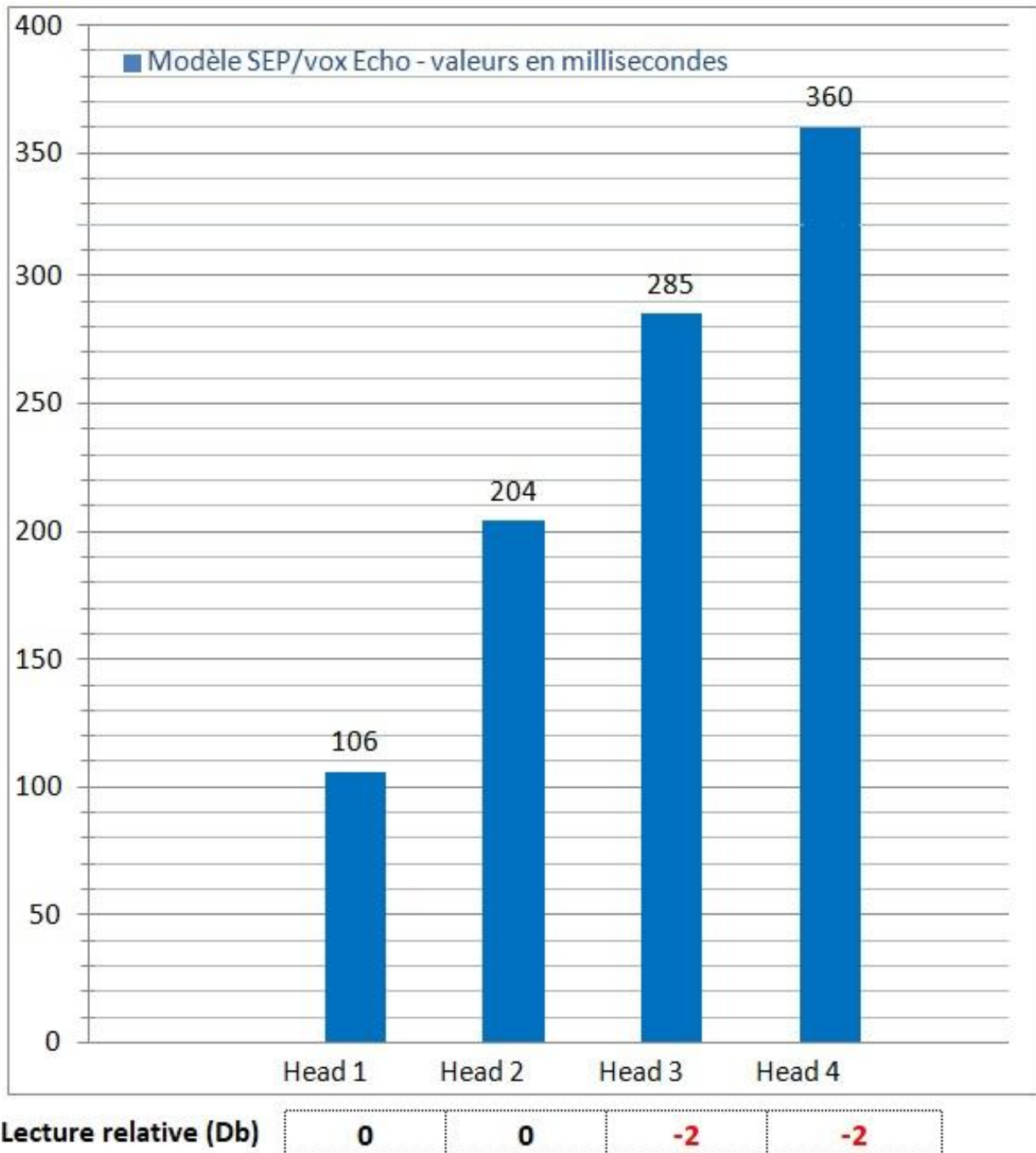
The magnetic drum is drawn and represented as a circle (on the right). One can clearly see that six heads are drawn and distributed on its periphery.

Clockwise and commenting on the head drawn at "15H" we find

- The erasing head (at 15H i.e. at 3 o'clock)
- The recording head (at 16H i.e. at 4 o'clock)
- Followed by four playback heads (between 17 and 20H : between 5 and 8 o'clock)

This means that if there are four playback heads, there are necessarily four different echo repeats in generated time.

This is confirmed by the histogram below, relating to this SEP/vox ECHO model, with delay times that I have deliberately rounded off for my part.



Back to the reading of his diagram :

As can also be seen, the reading levels of the first three heads of the same name (which correspond to the first three repeats at 100, 200 and 280ms of generated echo) are mixed (initially) by means of resistors of different values : 2.2 kOhms (2200 Ohms) for heads N°1 and N°2, and 4.7 kOhms (4700 Ohms) for head N°3.

It is already obvious that, like the two previous SEP models "F" and "J", by these different values of the resistances in this mix, the heads 1 and 2 will be favoured in level compared to the N°3.

This is clearly shown in the bar charts above since No. 3 sees its level decrease by 2dB compared to the first two.

Then, still following the diagram, we see that the common point of the mix (electrical common point of these 2.2k and 4.7k resistors) is connected to the slider of a potentiometer, which happens to be the one with the central black knob on the front panel, named "Effects".

Remarks about it : The dotted line which starts from this Effects potentiometer and ends at the motor, shows that this pot has an A/M switch at the end of its stroke on the "zero" side (CCW), that switches the motor on or off.

More precisely, in order for the motor to start and for the magnetic drum to turn, the index of the Effects pot must be turned to the minimum of the notch that puts its switch (at the end of its travel) in the "on" position.

(We all knew this on old radio sets...)

In the same way, and even before going further, we already know, by the way the respective levels of the four read heads are mixed, that if the index of this Effects pot is brought to zero (to ground on the diagram and just past the A/M notch), the mixing of the read levels of the first three heads (via the three resistors) becomes equal to zero.

In this position of the Effects pot index brought to zero, we no longer hear at all the first three echoes generated.

On the other hand :

If we follow the electrical path that corresponds to the hot spot of the last playback head N°4 : its reading level mixing with the first three through its 4,7 kOhms load resistor and the 10 kOhms "Effects" pot, this fourth playback ends up being the one that is always "active".

That is to say, that we can always hear it, provided of course (!) that the Echo volume, or rather the Direct / Echo balance potentiometer on the front panel, is turned at least a little towards the Echo side.

First, let's summarize how the echo effect works on this SEP/vox ECHO :

It's the playback level of the last echo generated by head N°4 that is always active and to which we add more or less of the mix of the playback levels of the first three repeats thanks to the "Effects" potentiometer on the front panel.

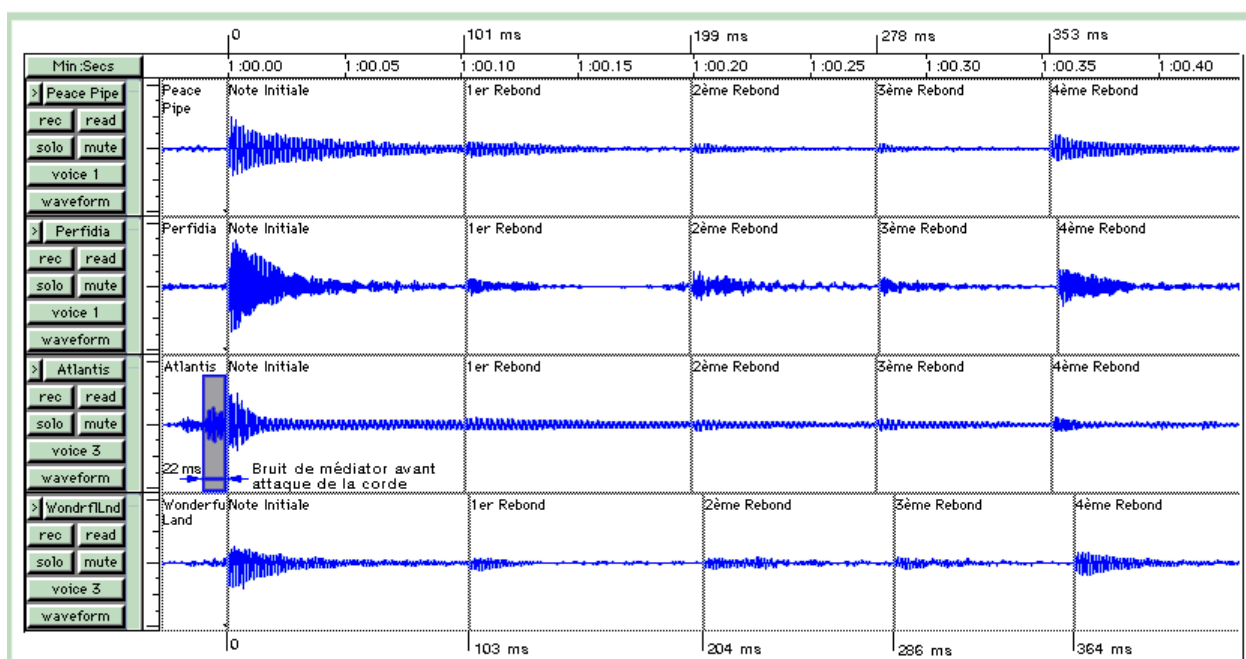
And I can say, concerning my Binson/SEP/vox ECHO clone, that when I use it, the index (pointer) of this "Effects" potentiometer is NEVER turned all the way up in the Shadows instrumental tracks that were recorded with this echo chamber by Hank. Most of the time, it is "open" so that its index is around 14/15H (2 to 3 o'clock).

Still relevant with this "priority" N°4 read head and still active : the other thing that characterises this SEP/vox ECHO model is its feedback signal principle. As you can see on the diagram, the hot spot of this N°4 head splits into two branches :

- One that joins the Effects pot and the eventual mix of the reading levels of the three others, amplified by one half of an ECC 83 (the one drawn at the bottom) to form the general echo signal.
- The other which will be independently amplified by the other half ECC 83 (drawn at the top) which will serve as a preamplifier for the reinjection of the feedback signal.

Thus, and even if there is a subtle correlation and interaction between these four playback heads through their mixing resistors, with this feedback preamp, it is easy (referring to the diagram) to understand that it is above all and only this fourth playback head which will be reinjected on itself to give the majority of this halo of reverberation typical to this model.

This particular configuration also explains why during muted note sequences (as in Wonderful Land or Peace Pipe for example, for which you can see my Protools analysis on the next page) we hear, for a muted note played, the series of four repeats read in succession, while "taking advantage" of the reverberation halo generated by the feedback, but also that when chords are slapped at the end of a song, by Hank, like Kon-Tiki or The Savage, we mainly hear this last bounce of head N°4 repeated several times on itself, in decrescendo (fading out), every 360ms.



Finally, when comparing the official diagrams of both the SEP Signature "J" model and this SEP/vox ECHO model, we do not find on the diagram of the latter model any potentiometer other than the internal feedback potentiometer which allows (as I have already pointed out) to change and intervene :

- neither on the possible feedback on only one (or x) of its four read heads,
- nor on the means of adjusting the reading level head by head (defined here from the factory by the values of the mixing resistors)
- nor on how to switch only 2 or 3 heads 'on' of the four or 2 on 4 or etc !

In the end, the SEP/vox ECHO model is the simplest of the three to use, but also the one that will generate the most interesting "echo pattern" with this "mill" of echo repeats that starts during the muted note sequences. One more reason why Hank said he liked the SEP model best.

To finish this tribute to the SEP, here is how *Alan Jackson* recovered his SEP/vox ECHO. Unfortunately, and despite the efforts of several technicians, this SEP having been so tinkered with and modified over the years, not to mention missing some major parts, this model could not be restored as of today.



On the other hand, a SEP/vox ECHO/Echomatic 2 has recently reappeared in the Netherlands and has already been put back into working order, even if there are still some adjustments to be made. Thanks to the various pictures of this one sent by *Ben Van Zon*, we can confirm what has already been said about it.

But first, back to *Alan Jackson's* SEP : The quality of the photo is "average", the original buttons have been changed to "arrow" buttons, but you can clearly see the three pots of the three "microphone" inputs followed in the centre of the "Effects" setting and the one on the right which "balances" between Normal (Direct) and Echo.

Also on this *Alan Jackson* model the two pots in the top fan drum have been added, or rather moved from inside the front panel, to make it easier to adjust :

- For one, the desired level of feedback and,
- For the other, the level of the "Direct" signal in order to obtain either a unitary input/output gain of this one, or to obtain a little gain (internally) of this same signal.

On "Shadsfax" *Alan Jackson* says :

"As you know, the '2' (by which I mean the Echomatic 2 and thus this SEP/vox ECHO) has only 4 pickup heads, but its basic (mechanical) deck still has the two extra holes that characterise the 'J' model, a six-head machine.

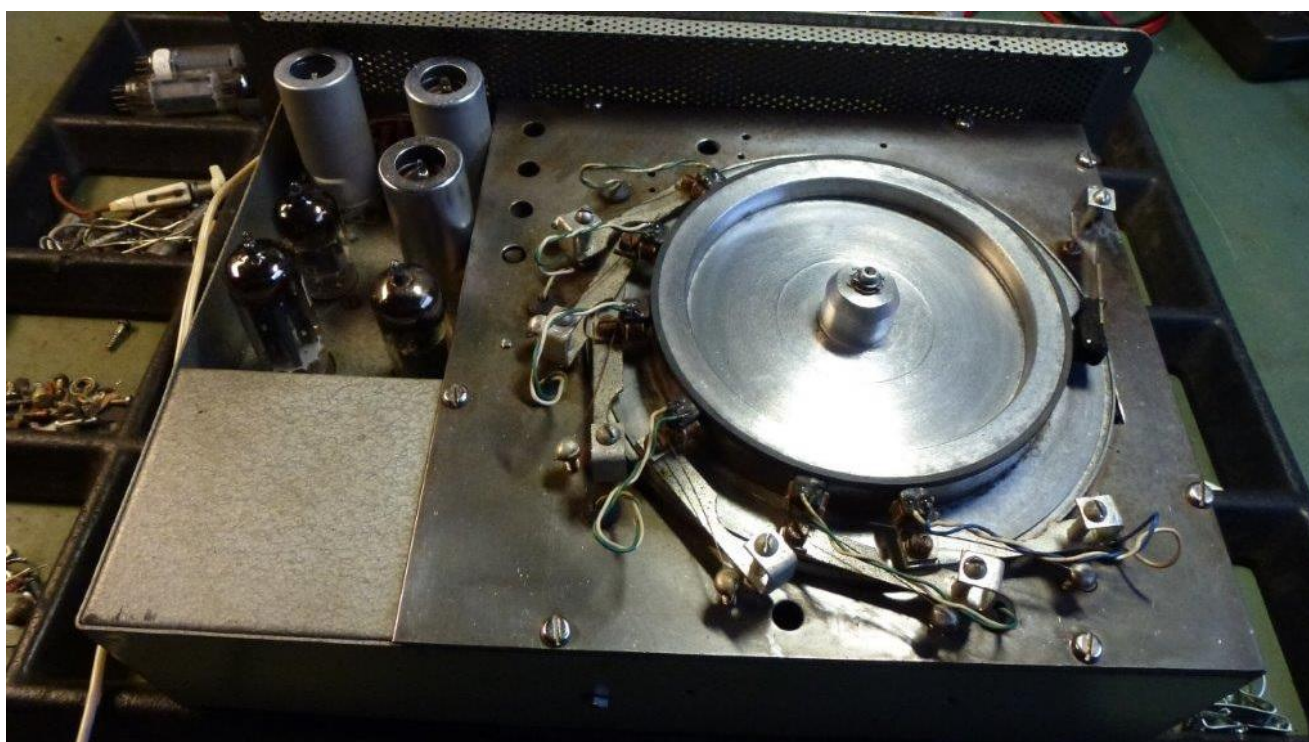
This remark confirms that if the "J" model already had a mechanical drum close to the basic "F" Framez model (since with the same rotation speed of the drum of this "J" model, it is possible to obtain the same repeats that form the Apache echo pattern and in particular the last echo located at 600ms), this time we have the demonstration that the mechanical drum of the SEP/vox ECHO model (Echomatic 2) is exactly the same as the one used on the previous Signature "J" model.

That is to say, the same mechanics are used, with the same drilling template and therefore the same mechanical spacing of the pick-up heads around the drum.

This is clearly stated by *Alan Jackson* when he talks about the two holes (already pre-drilled from the factory) on the SEP/vox ECHO drum, corresponding to pickup heads 5 and 6 of the "J" model, which are simply left free, since the Echomatic 2 has only four pickup heads.

This is clearly shown in the following two pictures of this Dutch Echomatic 2.

For the picture below and clockwise : One erase head, one record head and four play heads (grouped together).





On the picture above, you can clearly see the pre-drilled and tapped holes in the drum, which were left free on the Echomatic 2 and which were used to implant the N°5 and 6 heads of the previous "J" model.

But then!

If the positioning (and therefore the drilling template) of the read heads around the drum is always the same, whatever the SEP Signature model manufactured, the differences in rebound times observed between the "J" model and those of this SEP/vox ECHO, can only come from a simple difference in the rotation speed of their drum.

As a reminder, the first four repeats of the "J" model are positioned at :

121, 238, 331 and 424ms

The four repeats of the Echomatic 2 model are positioned (rounded) at :

100, 200, 280 and 360ms

It becomes obvious that since the heads are permanently screwed to the drum and the distances between them are fixed, remembering that if the speed increases by x% the time decreases in the same ratio, that to obtain the times corresponding to the echoes mentioned above, the rotation speed of their respective drums must be

1) Decreased by 20% from the SEP/vox ECHO echo times to obtain the first four of the six Signature "J" model echoes since for :

The first rebound is increased to $100\text{ms} + 20\% = 120\text{ms}$ (for 121)

The second echo is increased to $200\text{ms} + 20\% = 240\text{ms}$ (for 238)

The third echo we go to $280\text{ms} + 20\% = 336$ (for 331) and finally

The fourth echo we go to $360\text{ms} + 20\% = 432\text{ms}$ (for 426)

Or conversely, by increasing the speed by 16.67% from that corresponding to the times of the "J" model echoes, to obtain the times of the four SEP/vox ECHO model echoes.

First rebound at $121\text{ms} \text{ minus } 16.7\% = 100\text{ms}$ Second rebound at $238 \text{ minus } 16.7\% = 200\text{ms}$ etc. for the third and fourth. And this time it is a must.

This is the only possible ratio that can be found on *Phil Kelly's* "J" model since it can generate both Apache and W.L. echo patterns with the help of its two different speeds.

The unknown at this stage is whether, as an option and as on Hank's first SEP "F" model, a variator of this speed was offered on the SEP/vox ECHO Signature models ? And even if his Echomatic 2 didn't have one !

Because, if *Alan Jackson* speaks, as an option, only of two possible fixed speeds (one slow and one fast) concerning the "J" models, thanks to the fact that the Echomatic 2 which reappeared in Holland proposes such a "progressive" speed variator, the question does not arise anymore!



The clarification that *Ben Van Zon* gave me was that on this SEP/vox ECHO, the rotation speed that corresponds to the Wonderful Land rebound times is the slowest. That is, the position in which the roller is positioned.

To summarise what you need to remember, whether or not the speed controller is optional :

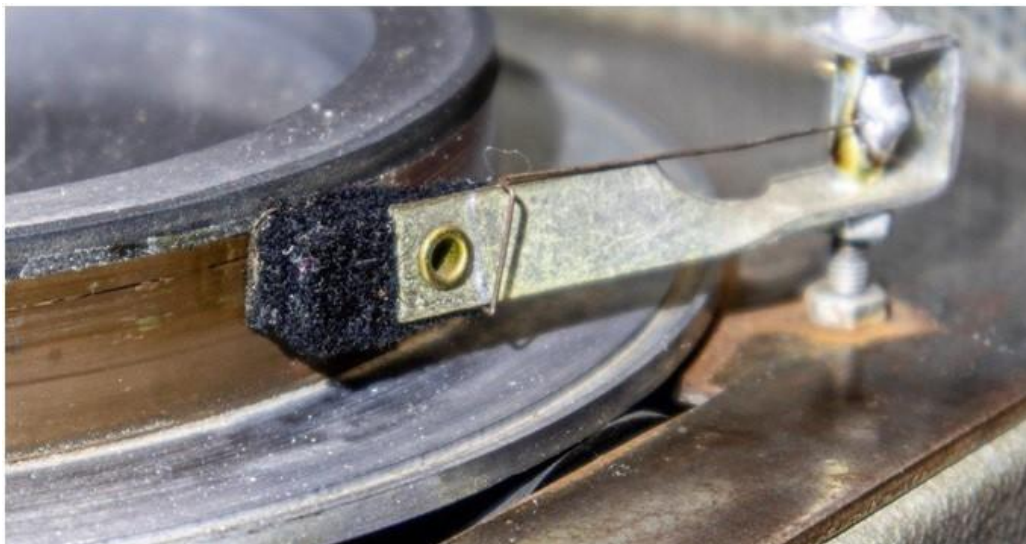
It is sufficient to increase the speed of the "J" model drum by 16.7% to obtain the measured times of the four echoes of the SEP/vox ECHO /Echomatic 2 model.

Conversely, it is sufficient to decrease the rotation speed of the Echomatic 2 drum by 20% to obtain the times associated with the first four echoes of the "J" model.

This would only confirm the idea that *Phil Kelly's* Model "J" (allegedly from 1959) and its two possible speeds came from the factory "as is".

That is to say, under the condition of a right ratio defined from the factory between these two speeds, and not that these have been specially modified, during the restoration of this "J" model, to allow it to generate the two different echo patterns of Apache and W.L.

In this case, the ratio between these different speeds would therefore be a deliberate factory choice, or a constraint simply dictated by a mechanical problem.... Choice or constraint that will become a happy coincidence later, as far as Wonderful Land's pattern is concerned !



Now we move on to the close-up view of the drum of this Dutch Echomatic 2 :

You can clearly see that this SEP model is equipped with the "new" magnetic drum I mentioned earlier, i.e. an aluminium drum covered on its edge with a layer (agglomerate) of rubber, itself covered with a half-inch wide magnetic tape loop. This one, on the picture, seems quite worn.

Both *Phil Kelly's* "J" model and these two SEP/vox ECHO/Echomatic 2 are equipped with this new type of drum, however there is no real certainty to know if this system : rubber + tape, appears simultaneously with the Signature "J" models.

In other words, was it already the same on the "J" model delivered to Hank in early March 1960 ? However, if he were to confirm that the rubber underlay appeared with the Signature "J" models, then that would mean that only the original SEP "F" model had this iron oxide deposit directly on the edge of its drum.

And that Bruce's recollection of saying after the grille was removed that "when Hank blew on the drum a cloud of oxide came out" would only apply (or at least mostly) to this first SEP "F" model Frametz.

To thank *Ben Van Zon* once again for sending me all these pictures, here is the one, top cover removed, of the interior of this SEP Echomatic 2/vox ECHO model found in Holland.



Excellent structural condition, as can be seen !

To finish with this SEP/vox ECHO / Echomatic 2 model

The picture taken from the front of this model, as much the one of *Alan Jackson* as the one above, also allows to realize that, in "live" conditions Hank could only :

- either adjust the level of the generated echo in relation to the Direct signal
- or "play" on the Effects pot on the front.

but that he could only adjust the feedback level internally, before playing.

When you realise, as I did with my Binson clone, that in the end the Effects pot was almost always turned (for the Shadows tracks recorded with this machine) at about 2/3 of its travel, as far as live "adjustments" are concerned, there is not much left to do ! And not much else if not to touch up the desired echo level (echo depth), as for example in Nivram where Hank only has the choice to lower the echo level using the Echo/Direct balance pot.

On this subject and for fun !

Below is a photo (original) taken at the Olympia, by *Jean Louis Rancurel*, of the Shadows in March 1962 and on which one can see, placed on a chair to the right of Hank's AC 30/6, his SEP/vox ECHO (Echomatic 2).



As at the time the photo was taken, Jet Harris was playing between the two covers (pickup and bridge) of his Precision Bass, there is almost no doubt that the Shadows were playing Kon-Tiki, of which here is the "sound" taken from the corresponding Europe N°1 Musicorama :

<https://www.youtube.com/watch?v=qRofp9e-41U>

In the wake of this, we can see Hank's famous Gretsch 6122 Country Gentleman guitar, placed on a stand behind him and which has made a lot of people write about (Worse than me, that's to say !)
The funniest part of the story is that the photo (copy !) below which relates to Nivram played live at the Olympia that same day, shows that Hank is still playing his Stratocaster in this track even though he recorded it with the Gretsch ! So it seems.



Phil Kelly's SEP Signature "J"

A few words about the SEP Signature "J" model, owned by *Phil Kelly* who is the only one, today, to own such a restored SEP "Jennings" model (so in principle not transformed, although).

By comparison, and reproduced in the following photos of this model before and after restoration.



Noticing two things on the top photos :

1) The signed "Jennings" label, though hardly visible, stuck to the top of the carrying case and giving it its name : model "J"

2) A magnetic strip on the edge of the aluminium drum can be seen stuck to a black rubber tape (or agglomerate), which now serves as an interface between it and the edge of the drum.

As on Phil Kelly's Signature "J" model, described by his son as 100% original and dating from late 1959, we find the same type of drum as on Alan Jackson's Echomatic 2 or the one found in Holland, we are therefore in the presence of the new principle of construction of the magnetic drum.

This detail would then tend to prove that, as soon as the Signature "J" models appeared, the SEP drums would be made magnetic, no longer by a simple deposit of iron oxide directly deposited on its edge as the "F" models are, but by a 1/4 or 1/2 inch wide strip glued on this rubber underlayer.

There is no doubt that the magnetic life of the drum could then only be increased.

Testimonials

Here is as I mentioned on page 17, what *Phil Kelly's* son, *James*, has to say about this Model "J" :

"As my father owns the only known Signature "J" model, let me clarify a few things.

While it was generally thought (given his "official" schematic which I have reproduced above) that the "4" or "D" position of the six position rotary switch on the front panel did not select any pickup head (= no echo) on the "J" model we have, this is not the case.

Unfortunately, without any further clarification as to what happens in practice instead, except that if you investigate a bit on **YouTube**, you can find this video recorded by *Phil Kelly* using his SEP "J" Echomatic 1 :

<https://www.youtube.com/watch?v=K9JzOCEzXnM>

This video of Wonderful Land shows that the echo pattern related to the Echomatic 2 is indeed reproduced with its "J" model but using the N°4 or D position of the front panel reverb selector. The original "Off" position (no echo) of the known schematics becomes, in this case, the one that corresponds to the ad hoc required switching, which precisely allows it to obtain the W.L. echo pattern.



There is no doubt then that this possibility can only be obtained by an internal electrical modification of this "J" model, made during the restoration, in an attempt to clone Hank's custom model.

"Similarly, and while it has been mentioned that the SEP "J" was offered with only one speed of rotation of its magnetic drum, in our case this is not true because our machine has two possible speeds of rotation : one slow and/or one fast.

The difference with the SEP "F" model is that while (as an option) it could have a variable speed between these two extreme positions, slow or fast, on our "J" model the speed ratios : slow or fast, are fixed.

This confirms everything I said about this above.

To additional questions, and precisely related to the speed of rotation :

From *Piet Verbruggen* :

"Hi James, These observed "differences", would they be due to the restoration or would they be due to a factory construction ? Also, what is the relationship between these two speeds ?"

James Kelly :

"Everything is original Piet. This SEP "J" has been stored in the previous owner's attic since the late sixties.... the gear ratios : slow or fast, are the same",

As what ? A question I will try to answer...

From *Stephen Mitchell* :

"Hello James,

I don't suppose you have a diagram for this version ? All the ones I have in my possession show that position "D" (or 4) is without echo. However, I had heard of the 2-speed versions of the "J" SEP, as mentioned by Alan Jackson." I keep learning more about these units all the time.

James Kelly :

"The schematic of the model "J" is on the net.

But my father's machine differs from this one as we believe it is a transitional model between the Echomatic 1 (SEP Signature "J" model) and the Echomatic 2 (SEP/vox ECHO of W.L.) but we don't know of a schematic referring to this specific model."

Personal remarks, both about these two possible fixed speeds and about a so-called transitional "J" model :

If the two speeds proposed on this "J" model are indeed the original ones defined at the factory, and as *Phil Kelly* demonstrates that he can reproduce the Wonderful Land echo pattern, then it becomes obvious and mandatory that :

1) The fast speed on this *Phil Kelly* "J" model can only match that (single speed) of the Echomatic 2. (See what I said about this earlier)

2) Although no video posted by *Phil* confirms it, the slow speed of his "J" model, corresponds to the slowest speed of Hank's "F" model, but also to the single speed version of the "J" model used by Hank. That is to say the speed that allows, by the measurements made by *Paul Rossiter*, to obtain the Apache echo pattern with a "J" model.

This shows then, even before the Apache hit coming, and even more with that of W-L which will follow, that from 1959 even at the beginning of 1960, with the appearance of this first Signature "J" model, the ratio chosen from the factory between these two fixed speeds proposed in option can only be :

- for the slower one, equal to that of the Hank "F" model in the slower position,
- for the faster one, the one that will allow, one year later, the SEP/vox ECHO/Echomatic 2 to generate the Wonderful Land echoes.

A factory choice with no ulterior motive concerning this unique possible ratio between slow and fast speed defined above on page 38.

If *James* talks about a transitional model, about his father's "J" model, it is not in the sense of "manufactured at the end of 1960" between the last "J" models produced and the advent of the Echomatic 2 /vox ECHO, but (and here is another great novelty !) because of the fact that arbitrarily from the factory, this "chosen" ratio (and without knowing it in advance) will allow, apart from the particular electrical switches to be respected, that by using the same mechanical drum on both the Signature "J" and the Signature vox ECHO models, to obtain, as the *Phil Kelly* "J" model offers as an option, the two possible basic echo patterns.

Anyway, to return to Hank :

What we must remember, about the three models of SEP echo chambers he used, and in order of reception "F" and "J" in 1960, then from January 1961 his SEP /vox ECHO, is that in practice he really needed two models totally different by construction, as much schematically (by their internal commutations) as mechanically (number of playback heads, drum rotation speed) to obtain the two echo patterns heard in the records. The first two for Apache song, the last for Wonderful Land song.

But never both with the same machine...

Epilogue

I hope that after reading all this (long !) prose, you will have learned and discovered some things about the different SEP models used by Hank between early 1960 and late 1964.

Here is the summary, excluding other models whose characteristics have been reported :

Model	Delivery	Magnetic Support	Magnetization	Nber of speeds	Variator	Nber of heads	Modifications
SEP F	1959/12	Drum	Oxide coating	2	Yes	5	Custom
SEP J	1960/03	Drum	Glued Tape / Rubber	1	No	6	Unknown
SEP Vox/Echo	1961/01	Drum	Glued Tape / Rubber	1	No	4	Factory

For my part, and once I got into it, the seemingly simultaneous use of both SEP "F" and "J" models was a real discovery that I never imagined had happened in this way before I started writing !

Moreover, the very idea of being able (wanting !) to settle with the help of adjustable potentiometers, on the Hank "F" model, the electrical characteristics that will set four different presets (linked to the amount and number of the active playback heads, as well as those generating the feedback) that will then be used for the recording (in groups) of the Shadows Early Years instrumental tracks, shows a real willingness to "apply oneself".

And to apply himself at all levels !

Starting in late 1959 with two Fender guitars for Bruce and Jet, and his SEP model "F" for Hank, followed in March 1960 by the arrival of the Gibson J200 and the second SEP model "J" model delivered to Hank. So ?

If one applies oneself so much on all these points but also on the SEP used by Hank, why not take advantage of it (as I think and imagine for a long time) to work on obtaining this famous "sound structure" which will characterize, in a "unique" way (like the SEP echo patterns) the timbre of the Shadows lead guitar.

On all these subjects, I await your questions if you have any, and if I can answer them. Thank you in any case for having taken your time to read.

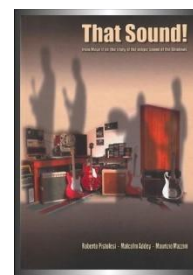
A very big thank you to *Alain Concord* (AdP) who helped me to lay out all this text and the associated photos and drawings.

Many thanks to *Philip Hawthorne*, friend of *Michel Nogr * (G7nomi), for the work he has done to check and correct a first automated translation.

Thanks also to *Bernard Coquelet* for his kind suggestions, encouragement and wise reviews as well as for inspiring a teaser video.

Finally, thanks to *Roberto Pistolesi* (RIP) who made us discover, thanks to his book "That Sound", the very existence of SEP / Milan, without whom the History of Hank's Echoes would have been totally different.

And let's not forget my friend *Ben Van Zon*, never stingy in sharing documents "Meazzi" documents in his possession...



To end on a high note, since we discover new things every day... I propose the following section

Curiosities

These are expressed through unpublished documents :

- two photos, one of which is astonishing, followed by,
- the "full page" reproduction of the first and most explicit Jennings advertisement dating from Autumn 1959, relating to the SEP (Framez) "F" model used by Hank.

In order about the two photos that follow :

The first one, posted by our friend Ben Van Zon (which *Paul Rossiter* has since reposted on his site) is this photograph, reproduced below, taken at the annual NME Pool Winners awards in London on 15 April 1962.



These "NME Pool Winners" reward, each year, several British and American artists in various musical activities. Here is a web link to the list of nominees for 1962 :

<https://www.nme.com/nme-awards/awards-history/1962-1044639>

So, on this picture, sent by *Ben*, we can see Brenda Lee, at the top of her 1,45 m (!) surrounded by the Shadows. She came specially from the United States to receive her award, which ranked her No. 1 in the category : World's Outstanding Female Singer for the year 1961. As for the Shadows, with Brian Bennett and (again) Jet Harris, they all seemed equally delighted to have received the award (still for 1961) for Best British Small Group.

Note that for Jet, this date of April 15, 62, corresponds to his last stage appearance with the Shadows since he will officially leave the band one week later, on April 22, to be replaced by Brian Licorice Locking.

Now, apart from the presence of Brenda Lee and the Shadows on this photo, and this time in direct relation with the MS, we can see on a chair (between Jet and Brian) an Echomatic Meazzi PA 306 echo chamber with tape. The PA 306 that Hank used exclusively that day, instead of his Wonderful Land "vox ECHO" SEP, for the mini-concert that the Shadows just gave at Wembley.

Comparing the Echomatic pictured above with the same PA 306 owned by *Pavel Petrus* (Austria), below, there can be no doubt.



The echo chamber pictured on the Wembley stage is indeed a PA 306.

An Echomatic Meazzi PA 306 model with an exterior look that is somewhere between the SEP Signature "J" model and its exterior wood casing with its hinged top cover, its suitcase-like carrying handle, and a front panel that, because of its three microphone inputs, is reminiscent of the Wonderful Land SEP/vox ECHO used by Hank from the end of January 1961.

This SEP/vox ECHO "model" of Wonderful Land that Hank used on the Olympia stage (as we saw above) in March 62.

That is to say, one month earlier !

I can only thank *Ben Van Zon* for these two amazing photos and *Alain Bertrand* (from Guitar Express) who "corrected" Ben who initially thought that the singer photographed with the Shadows was Connie Francis (who would also receive an NME Award but the following year)

This "NME" photo tends to prove that as soon as the production of the Meazzi Echomatic "PA" series with tubes and tape is launched and imported by Jennings, at the beginning of 1962, Hank will have the possibility to use one.

Like what ! But this situation is exceptional !

And finally, below, the full page reproduction of this Jennings publicity of Autumn 1959, in order to be able to precisely read all the characteristics, as much electrical as of the conditions of purchase (with possible credit on several months !) concerning this model "SEP "F" vox ECHO.

INSTRUMENTALISTS • GROUPS • VOCALISTS

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VOX-ECHO unit simply connects between the amplifier and microphone and has separate controls with variable degrees for Echo, Modulation and Reverberation effects. These controls used in difference positions give an infinite variety of echos, multi-echoes and stunt incidental tones. Demonstration are available on request. Price 85 gns. complete or £8.18.6 deposit and 12 monthly payments of £7.16.0 or 18 monthly payments of £5.11.4.

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Greetings to all and good reading !

By using [box](#) (thank you Bernard for the advice) everyone will be able to save my prose, and/or read and re-read it according to the mood of the moment.

Patrice

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November 25, 2022

DeepL Traduction was used first, followed by a careful correction of Philip Hawthorne.