The Fender Bassman[1] – a multiple success story

By Bernd C. Meiser & Tilmann Zwicker

1. The early years: a dedicated amp for the Precision Bass (1951 - 1954)

Leo Fender was thinking. He felt sorry for the bassists with their upright basses. It was bad enough that they had to lug around these "dog-houses" ... worse, now the guitar players, too, were drowning out the bass with Fender's new amps, and with that strange plank of a guitar he offered that refused to feed back even at high volumes. And then there were those guitarists who felt they could improve their revenue if they played bass, as well. That would be relatively easy because of the same tuning of bass and guitar (save for the lower octave of the former) if it weren't for the bass lacking any frets, and ... well, for what was stated already above.

Anyway, Leo decided that something needed to be done and went to design his electric bass - a compact, fretted, easy-to-play affair. While a fretted electric bass had already been marketed by the Tutmarc company in Seattle in the form of their Model 736 /1/, it had not gained currency. In the New York area, Everett Hull had been building his Ampeg bass amplifiers since 1946 /2/ – but in fact very much targeted the players of double bass and Jazz guitar. It is very much to the credit of the boss of the still fledgling Fender company (especially considering that Leo was actually an accountant by training) that his overall vision was not just limited to the bass itself but included a dedicated accompanying amp: the Bassman. The whole package developed into an incredible success story; it arguably was the zero hour of the modern sounds of Pop and Rock /1/. Fender's electric bass - with the most befitting name "Precision Bass" – started its triumphant march around the globe, and the Bassman, or more so the circuit concept that Leo sold under the Bassman moniker from 1958 to 1960 was to influence the emerging Blues scene, and later Rock music, as no other amplifier concept would.

But back to 1951. Like many other amplifier designers, Leo Fender based his circuits on the popular RCA Tube Receiving Manuals. In these handbooks, new concepts for circuitry were (roughly) pre-designed to lighten the users load regarding the required calculations. Keep in mind this is back in the day: there were no pocket calculators, no programmables, and the term PC (either way ;-)) didn't even exist. Tables, (slide-) rule, and compass were the order of the day – in short, the applications offered in the manual saved the user a ton of work, and they were correspondingly popular. Leo Fender already had experience with the high-power 6L6 output tubes that he had first deployed in his Fender Professional (or Fender Pro) in 1946. For clean reproduction of the low end, the smaller 6V6 was simply too weak.

[1] "Bassman" is a registered trademark of the "Fender Musical Instruments Corporation"

It appears that the schematic of the very first Bassman (i.e. the plan designated with the Fender-code 5A6 - for further details see the explanations in the appendices) has been lost in the mists of time - or maybe it never existed as such. The present authors were not able to scrounge up a (trustworthy) 5A6-plan in either literature or via an Internet search. As a result, the following discussion of the very earliest Bassman-models needs to be taken with a pinch of salt. Any comments and information regarding the matter are highly welcome to the authors (mailto:t.zwicker@gitec-forum.de?subject=Info on Bassman amp).

At the time when the first Precision Basses were sold, the Bassman was apparently not ready - in any case some sources indicate that the bass was paired up with the Pro Amp at the very beginning /3/. From that perspective, it is rather likely that, electronically, the Bassman manifested itself as a slightly pared-down version of the Pro. The Bassman sported merely two inputs with a common volume control – rather than the two separate "channels" featured in the Pro, each with a volume control and two inputs. Given the not very powerful amps available in the early 1950's, it is also conceivable that it transpired it was not the best idea to amplify the bass and a couple of other instruments with one and the same amp. Therefore the mixing facilities on bass amplifier could be toned down.

Fig. 1 shows the schematic for the Pro Amp, as it probably was in production in 1952, i.e. at the time when the Bassman was introduced.

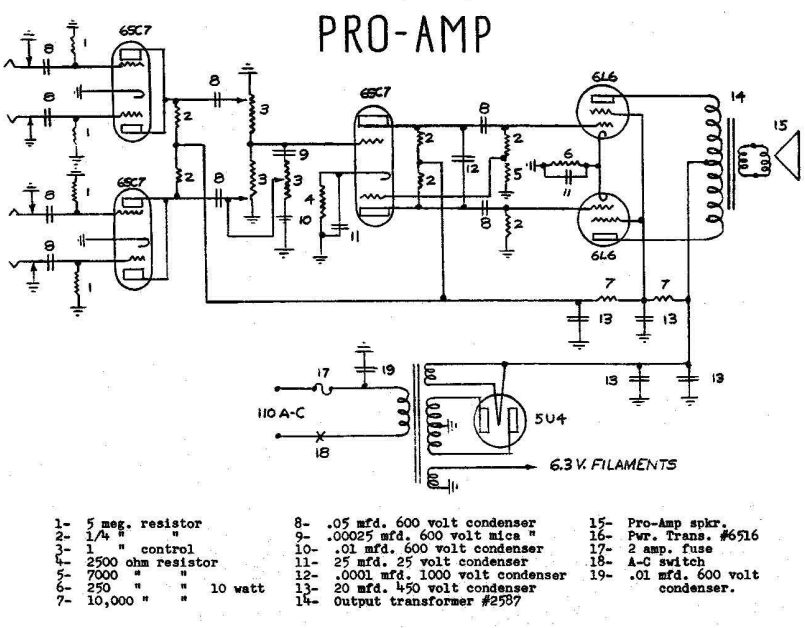


Fig. 1. Schematic of the Fender Pro - probably version 5B5, ca. 1952 (http://www.prowessamplifiers.com/schematics/fender/Pro_5b5.html)

Assuming that the Bassman simply dispensed with the input channel (and associated tube) depicted in the upper section of the schematic, we arrive at the following amplifier arrangement: The two inputs are each fed to one triode of the 6SC7 tube. The latter was a low-hum, high-gain double triode with a gain of μ=70, based on the octal tube socket that was the norm then (this is the same socket today still found on output tubes). The operating point was determined in a very-old-school manner via the initial grid-current. A simple treble-cut tone control and a volume control follow, feeding their output signal to a further 6SC7 twin triode operating as phase inverter.

This type of phase-inverter is called the paraphase circuit - it yields high gain but is not very accurate and easily runs into problems with tube-inconsistencies and -aging. For this reason – and because better-performing concepts were developed – the paraphase circuit vanished as the 1950's passed. The two power tubes in the given circuit are still the 19-Watt-type of the beam-power-tetrode 6L6, cased in a metal cover and often suffering from pronounced microphonics.

For the first Bassman, Leo Fender picked the P15N, a 15"-speaker made by Jensen, and desgned the amp cabinet with an almost entirely closed rear. Two round openings certainly helped with cooling the tubes but presumably were intended to work as a kind of bass-reflex ("ported enclosure"), as well. More than anything else, the feature of the closed back – VERY uncommon for Fender designs of the time – shows that L.F. indeed intended to design an amp specializing in bass-reproduction. Closing the back helps to avoid the dipole-radiation that in open-back cabinets kills reproduction of the very low end. The closed construction also allowed for mounting the amp chassis on the floor of the cabinet (with an open back, this kind of placement would have dramatically endangered the tubes to be physically maimed by lunch boxes, whiskey bottles or other accessories usually carried along in the rear of the amp). There was a cable connection ("umbilical cord") between the controls on the top and the chassis on the bottom, fitted with a plug at the chassis-end of the cables.

Fig. 2.1952 "TV-Front"-Bassman (w/replaced Tweed cover): this is how it would looked like in the store back in the day (photos courtesy of Ron's Vintage, © 2018; http://www.ronsvintage.com/1952 Bassman Amp.htm). After 50 years of use, the amp is likely to look differently: http://www.thevintagesound.com/ffg/bassman_tv.html

Due to the look with the broad rim and rounded edges of the speaker cutout, this first model is designated "TV-Front"-Bassman.

A first reasonably trustworthy schematic of an early Bassman is shown in Fig. 3 (possibly the 5B6-circuit from 1953), and it does indeed present a pronounced similarity to the Pro Amp (along the lines pointed out above) – but also some differences. For lack of evidence, we cannot say whether the latter possibly distinguished the Pro and the Bassman from the very beginning, or whether they already represent a first developmental step in the Bassman. Several sources (e.g. /3/) do indicate 6L6 as power tubes in the very first Bassman version, while the component layout in Fig. 3 lists the 5881. This would mean that there is a certain likelihood for the existence of a kind of 5A6-version, and that indeed already in 1953 a first advancement was issued as the 5B6-Bassman.

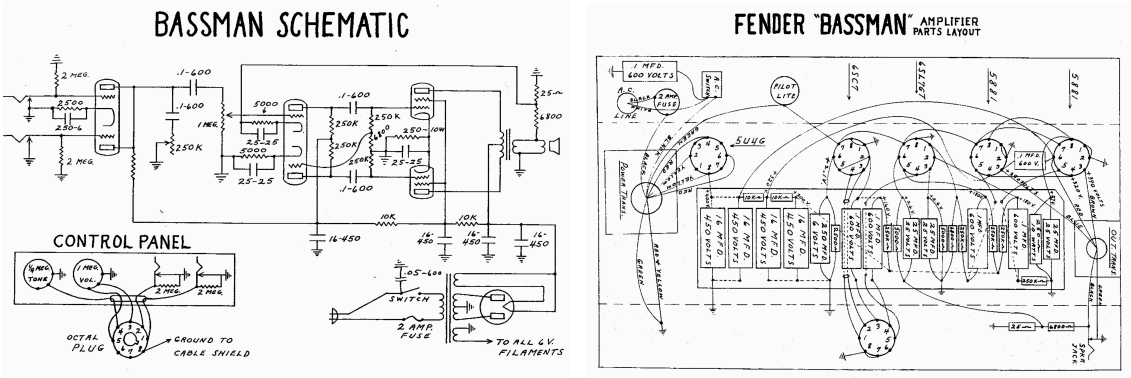


Fig. 3. First reasonably trustworthy schematic (**left**) and component layout (**right**) of the Bassman – presumably the 5B6-Version (http://www.prowessamplifiers.com/schematics/fender/Bassman_5b6-Schematic.html & http://www.prowessamplifiers.com/schematics/fender/Bassman_5b6-Layout.html).

According to the schematic in Fig. 3, the two inputs each control the grid of one triode-system of a 6SC7, just like in the Pro Amp – however, the operating point is now set via a cathode resistor and a bridging capacitor. This approach seems to find its way into the Pro Amp only two development steps later, but it can be found as early as 1953 e.g. in the Deluxe and other Fender amps. The signal is then fed to a simple tone control (treble cut), and to the volume control. A 6SL7GT octal twin-triode (low-impedance; gain: μ=70) follows, operating as phase inverter (again/still of the paraphase type). Rather than the 6L6 power tubes, we now find (as mentioned) the more robust 5881 beam-power-pentodes – possibly owing to experiences with the stronger mechanical vibrations when reproducing the Fender bass.

What is certain is a cosmetic makeover of the Bassman in 1953 (Fig. 4): The cutout in the cabinet front is now angular with a wide top panel. However, the interior structure of this resulting "Wide-Panel"-Bassman did not change: there was a 15"-speaker, a closed rear, and the amp chassis was mounted on the cabinet floor /4/.

Fig. 4. Fender catalog of 1954: "Wide-Panel" ... but not really with a Bassman in the picture! Curious detail: the amps shown as Bassman (Bassmen?) in the catalogs of '53 and '54 are NOT. The 3 visible controls and the mostly open back do not fit the bill. Presumably, these are Pro- or Bandmaster Amps the picture of which was recycled repeatedly (Fender Musical Instruments Corporation).

2. Getting down to it:
mutation into what many see as the best guitar amp (1954 - 1960)

Between 1955 and 1960, the Bassman was subject to a number of redesigns. Again, the cabinet was modified (leading to the moniker "narrow panel" due to the thin top panel on the front of the amp), but it was the overhaul of the electronics and the loudspeaker configuration that made for a particularly big difference. There was no C-model Bassman - this is only found in the guitar amps. We have not found a (trustworthy) schematic of the D-version and will discuss it in the following generally combined with the E-version. The physical layout was changed: the amp chassis (now including the controls) was moved to the top and rear of the cabinet, and Fender introduced the (then new) 9-pin miniature tubes of the 12AY7- and 12AX7-type with a gain of μ=40, and μ=100, respectively. These double-triodes were sturdier; due to the smaller vibrating internal masses they were much less microphonic and generally made for a higher-quality amplifier. Moreover, space in the chassis could be used purposefully: there was higher component density and shorter cable lengths were advantageously possibly. Fender exploited this jump in technology to a strong extent. First, one of the inputs was redesigned as "Bright"-input, and the simple/single tone control was replaced by separate Treble and Bass controls. In the D-version, the cathode-biasing gave way to the more efficient fixed-biasing; the latter was now the standard approach and is kept to this day. Since the 6L6G (with glass container) was now generally available, Fender returned to using this tube.

And then there was the thing with the loudspeaker. The acoustic tuning of the 15" speaker in the combo enclosure apparently was rather sub-optimal, and the combination of mechanical and electrical strain often was too much to bear for the speakers – reportedly they very often blew. The voice-coil carriers at the time were made of paper ... and 40 W will generate a lot of heat: try grabbing a lit 40-W-lightbulb after a few minutes ... see?!! Distributing the power amongst several speakers seemed a way out. The Twin Amp that was introduced at the same time already had a 2x12" speaker configuration, and a 4x12"-layout would have been not bad at all for the Bassman. However, had not the complaints about unwieldy equipment led to the development of the Bassman? To confront the guys with a 4x12"-monster including a built-in amplifier ... no, something like that was inconceivable at the time and would have been too much. The scenario was not (quite) ready for such a thing ... but that would change, as we all know. For the time being, Leo Fender decided to stick with the combo-concept, using a 4x10" speaker configuration: that setup could deal with the power, the membrane surface was clearly optimized relative to the 15" speaker, and at 22 kg, the amp could still be carried with one hand. Well done! The rear of the amp was, to a large extent, now left open. This might have been to avoid further pushing up the resonance frequency of the anyway tightly-suspended 10"-speakers, and/or because the design of a bass-reflex construction may have proven itself to be impractical for such a cabinet size - at least for the designers at Fender at the time. With the open-back combo, any solid reproduction of the low frequencies is impossible (due to the dipole-character), but apparently this feature was not that important at the time - and became an issue only by the end of the 1950's.

That's already a considerable development, but there was more to come.

Fig. 5. Left: Bassman 5D6: 2 rectifier tubes, 4x10"-Speaker, 2 inputs, T-B-P tone control (https://www.thegearpage.net/board/index.php?threads/1954-5d6-bassman.843169/).
Right: control panel of a Bassman 5F6-A: 4 inputs, T-M-B-P tone control (http://www.trinaamp.altervista.org/FenderBassman5F6ATweed.htm).

With the 5D6-model (rare, built in small numbers) came the introduction of a new type of tone control that took its effect in the power stage of the amp – it was called "Presence" and facilitated a "glass-cutter" treble sound. Given the flat-wound strings that were used on the bass at the time, and the muting foam glued into the bridge covers of the Precision Bass, this was a real acoustic enrichment. Other aspects this new control offered were explored by a number of guitar players in the form of this new "Rock'n'Roll"-music. The Presence-control found its way into all larger Fender amps at this time: the Pro, the Twin, etc. all received it. Leo also made his mark in the power supply: the supply voltage was now increased to beyond 400 V, and then two (!!) rectifier tubes (of the type 5Y3) found their way into the amp. This put the whole concept on a very solid basis: a device is only as good as its power supply – an old but tried-and-true wisdom.

The new Bassman had two inputs separately controllable in volume, "Normal" and "Bright", each working with one half of the 12AY7 input tube. Subsequent to the volume controls and the summing of the two channels, a further triode-amplification-stage fed a galvanically coupled impedance converter (cathode follower). The latter was supposed to drive the two-band tone-control network from low output impedance. It was, for the time being, fitted with a mild negative-feedback arrangement to reduce the gain somewhat. The 5E6-A-variant of the Bassman was different in that it varied some component values in the tone control circuit, and had some changes in the power supply (in particular the use of the 5U4 rectifier tubes), and some modifications in the bias generation.

In the D-model, the simple paraphase phase-splitter/driver was modified by use of the new 12AX7-tube, and by a redesign as self-balancing paraphase circuit. However, already after a few months, the new cathodyne circuit took over in the 5E6- and 5E6-A-versions in 1955. This driver-design is bound to play a not-to-be-underestimated role in the in the smaller Tweed Deluxe - but lets not go astray. Just like the other models, the Bassman by now had received the diagonally striped tweed, and was to become the epitome of the 50's and early 60's - the Tweed era.

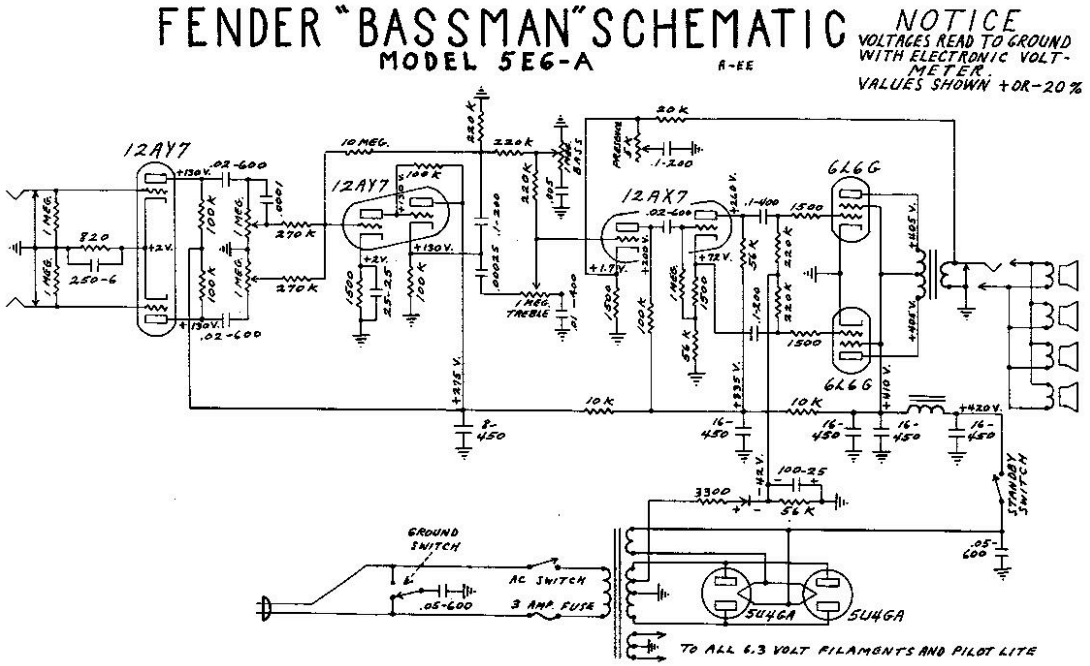
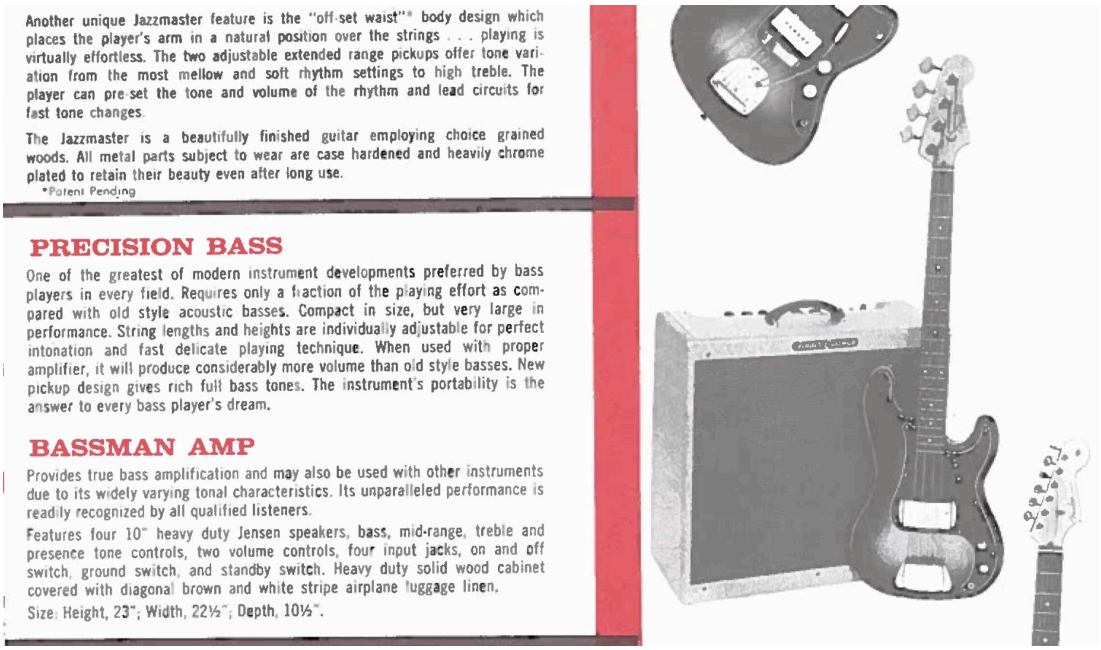


Fig. 6. Some big leaps in development as we get to the Bassman 5E6 & 5E6-A: 2 channels, Treble/Bass/Presence tone control, cathode-follower, cathodyne-driver, strong power supply, 4x10"-speaker /5/.

The electronics industry was booming, not least due to the miniaturization of the tubes. New circuitry came out of the R&D laboratories, and was of course published in the latest tube manuals. It seemed as if everything was possible in these new, modern times – the Stratocaster just introduced by Fender exemplifies this very clearly in its name, as well. The company was in top form.

1957, Leo (or rather his trusted sidekick Freddie Tavares who was in charge of developing the amp further) changed the Bassman to the design-stage 5F6. First, the 6L6G tubes were swapped for the (by now again) better performing industry-version 5881. The latter could handle 23 W of dissipation at the anode (compared to the the 6L6G's 19 W), they could stand higher voltages and – as was already mentioned – were more suitable for deployment in a combo due to their sturdier construction. Furthermore, the power supply received a hefty update: the 5U4 was dispensed with and the quicksilver-vapor rectifier 83 was called into service. This is a truly burly power-device for industrial applications that can hold its own even under adverse conditions. In addition, the capacitance of the filter capacitors (that serve as energy-storage in the power supply) was increased by a factor of no less that 2,5 - not bad at all, Messrs. Fender & Tavares! The upgrade provided the output tubes with ample power – kind of close to meltdown, and to assure that the latter could happen at least sonically, a newly developed powerful, self-balancing phase inverter circuit (as seen in the application handbooks) was included: the "long tail" differential amplifier. Such a nicely operating amp of course deserves extended possibilities of sound manipulation! Thus the tone control network was thoroughly revised and received an additional "Middle"-control. The new circuit (today known as the classic "tone stack") did attenuate the signal a bit more, but Fender simply removed the negative feedback in the gain/impedance-conversion stage feeding the tone control. This had the side effect that this stage could now be subtly pushed into crunch-mode – distortion sets in slowly and steadily, just like smooth drizzle ...



Another unique Jazzmaster feature is the "off-set waist"* body design which places the player's arm in a natural position over the strings . . . playing is virtually effortless. The two adjustable extended range pickups offer tone variation from the most mellow and soft rhythm settings to high treble. The player can pre-set the tone and volume of the rhythm and lead circuits for fast tone changes.

The Jazzmaster is a beautifully finished guitar employing choice grained woods. All metal parts subject to wear are case hardened and heavily chrome plated to retain their beauty even after long use.

*Patent Pending

PRECISION BASS

One of the greatest of modern instrument developments preferred by bass players in every field. Requires only a fraction of the playing effort as compared with old style acoustic basses. Compact in size, but very large in performance. String lengths and heights are individually adjustable for perfect intonation and fast delicate playing technique. When used with proper amplifier, it will produce considerably more volume than old style basses. New pickup design gives rich full bass tones. The instrument's portability is the answer to every bass player's dream.

BASSMAN AMP

Provides true bass amplification and may also be used with other instruments due to its widely varying tonal characteristics. Its unparalleled performance is readily recognized by all qualified listeners.

Features four 10" heavy duty Jensen speakers, bass, mid-range, treble and presence tone controls, two volume controls, four input jacks, on and off switch, ground switch, and standby switch. Heavy duty solid wood cabinet covered with diagonal brown and white stripe airplane luggage linen.

Size: Height, 23"; Width, 22½"; Depth, 10½".

Fig. 7. 1959 Fender catalog: Bassman 5F6-A (Fender Musical Instruments Corporation)

For added flexibility, both channels now received two inputs each: one high-impedance, high-gain, the other mid-impedance, low gain. At the time this was a very purposeful measure, at least if the amp was to be operated without distortion. Now, in 1957, the Bassman had design-wise almost reached its pinnacle with merely some fine-tuning to go. The choice of the 83 as rectifier tube was seen as a bit too over the top, after all. This tube was not common-place in consumer electronics, and, anticipating service issues, Fender replaced the exotic bird by the well-established GZ34 (equal to the 5AR4). The generous helping in the filter-cap department made for an almost indiscernible reduction in power. Alas ... there was still something off. The presence control newly introduced in the 5E6-A had really pushed that amp to new heights, but somehow the feature was a bit lame in the new 5F5-design, at least for some settings. Why was that? In the 5F6, the presence control was integrated into the passive, three-band tone stack located ahead of the power amp – this had been a circuit application taken from the HiFi-area and purposefully modified at Fender. It was not convincing, though, and Fender unceremoniously disconnected the presence control again from the given location – and found a new place of deployment at the second, so far signal-wise neutral grid of the phase-inverter tube. This proved to be an elegant and perfect looping-back point for negative feedback and presence control: the outstanding presence-control effect of the predecessor was again achieved. The grid-resistors so far used were removed, as well; these were intended to suppress high-frequency oscillations but apparently were no actually necessary. Fender called the resulting new model the **5F6-A**.

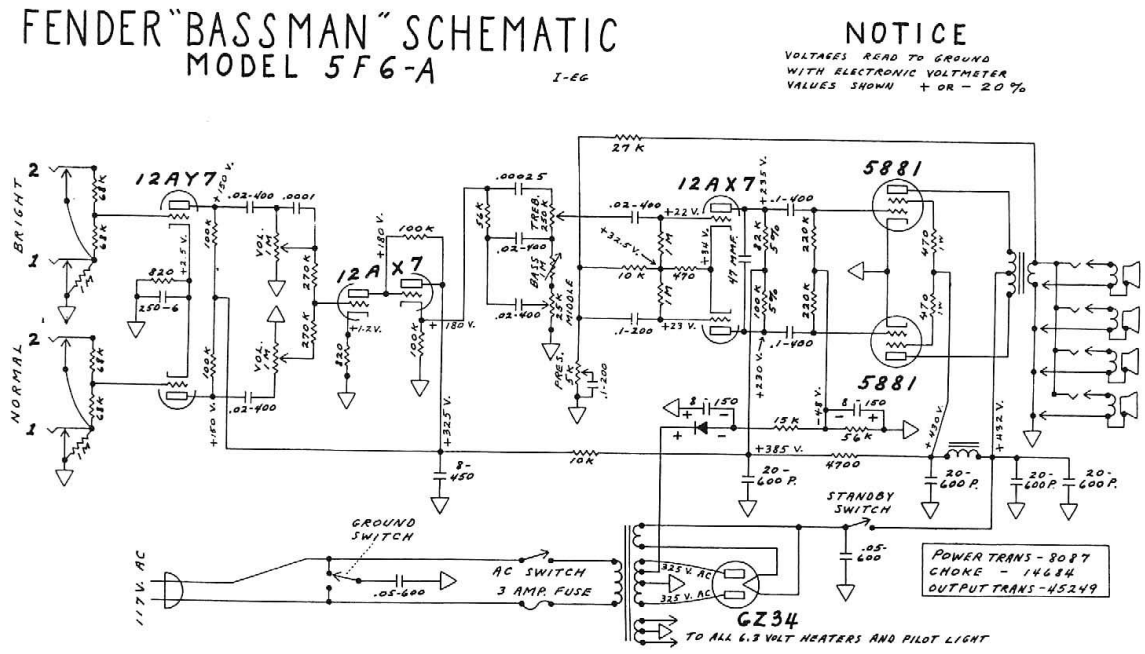


Fig. 7. What some believe to be the best guitar amp ever built ... /5/

This 5F6-A-version was produced from ´58 to ´60. It went down in history as **THE** Bassman. From about 1962, a certain Jim Marshall in England was to copy it, and with slight modifications it was to again have a serious impact on the evolution of Rock music. That is another story, though ...let's go back to Fender.

3. Return to the specialist bass amplifier (1961 - 1966)

Without knowing or intending it, Leo Fender had, with the 5F6-A, possibly put the mother of all things (i.e. Rock amps) on the map. At the time, this Bassman model was often "abused" by guitar and blues-harp players to play electric blues and rock'n'roll. However, the latter petered out around 1958, after blossoming for only four years. To add insult to injury, the so-called "Payola-affair" including corruption and bribery in radio disc-jockey circles badly discredited it. For the time being, R'n'R was dead. It was superseded by the new clean-and-clear but also non-threatening and a bit guileless sound that characterized Surf-era. Such was the drive to create a distance to R'n'R that even the guitar-giant Gibson did not dare introduce their new Firebird in 1963 as a rock-and-roll compatible instrument, but rather advertised it as a guitar to play Jazz on. It would take a few years, and a Texan named Johnny Winter, to prove in what racy manner that bird could traverse any R'n'R-riff.

In any case, Fender also reacted - especially since it was Leo F.'s very own intrinsic drive to create a clean, clear, undistorted sound at the highest loudness possible. Matching the Surf-approach, Fender and his guys designed an entirely new Bassman model, and since it was now the year 1961, the designation was - right you are! - coded as 6G6. The new B-man was a true eye-catcher: gone are combo-approach and tweed; that had been just right for wild R'n'R but was too modest for your Surf-stylings of the day.

Within the framework of a general makeover of all Fender-offerings, the amp and the speakers were separated into a dedicated larger loudspeaker box and a smaller cabinet with the amp chassis sitting on top of the box (called "piggy-back" arrangement). Both were covered with white synthetic leather supplied by the General Tire company and called Tolex. The control panel was repositioned to the upper front and given a black background distinguishing itself very visibly and elegantly from the bright Tolex. Correspondingly, "blonde Tolex era" is the moniker for this period of Fender amps. The 4x10" speakers were replaced first by a single 12", then by two 12"s of the new, more powerful Jensen C12N-type. That of course changed the sound, and the treble was not as present and "airy" as it had been – but the bass players didn't mind. To the contrary, the new, larger, now fully closed box could for the first time reproduce the low notes reasonably well, and in a balanced manner. By the way: Fender did return to the ported-box approach (bass reflex) for a short time in the 1x12", using an interesting design of the port positioned concentrically around the speaker. However, the bass-reflex was somehow not really Fender's thing, and the fully closed 2x12"-approach probably was the more reliable and certainly satisfactory solution for your regular rough use on the road. Power supply and power-stage were taken over from the previous design without significant changes, but the preamp section was entirely re-designed. It now featured two completely independent channels (one for "Bass", one for "Normal") with separate bass-, treble-, and volume-controls. To the chagrin of the guitar players, the middle control vanished entirely, and moreover the (now fixed) middle-level was on the weak side. The Bass-channel had the bass and volume control located ahead of the second triode, but the treble-control after it. In the Normal-channel, all three controls (volume, treble, bass) very positioned between the first and the second triode.

Fig. 9. Left: 1962 Bassman - now in the piggy-back design and having a closed 2x12"-box (this one sports the JBL-speakers optionally available). Note the practical tilt-back legs; amp and box could be rigidly connected via a quick-lock system. **Right:** 1965 Blackface-Bassman - die presence control is "replaced" by the - bright-switch. (photos courtesy of Ron's Vintage, © 2018; http://www.ronsvintage.com/1952 Bassman Amp.htm).).

The latter design is found to this day as the standard preamp design in many Fender amps, as well as their hotter offspring Mesa Boogie, Dumble, etc., although there the middle control has returned. The Bassman now had the 7025 tube (a high-grade industrial version of the 12AX7) operating in the preamp- and phase-inverter-stages. The 6G6 was indeed well suitable for playing bass in surf- or country-settings, but surviving R'n'R-guitarist tended to desperately avoid the new amp. They were more and more on the lookout for the old, out-of-production 5F6-A model.

It must not be left unmentioned here that later some guitarists did fall in love with the blonde Bassman, after all. For example, Brian Setzer has often been spotted relying on a couple of them for his Rockabilly style. That would bear testimony for the applicability of this amp for guitar as well. On a different path, Fender did offer first the Concert and then (from 1964) the much lauded Super Reverb to any connaisseurs preferring the 4x12"-setup.

A Fender-strategy not easily understood may be mentioned here in passing: since the introduction of the 56 Twin, Fender offered a high-power model with four power tubes in the output stage and two 12"-speakers to guitar players. In 1960, the Showman (with a separate box and different speaker configurations: 1x12", 1x15" or 2x15") joined in. The Bassman – as a bass amplifier actually requiring high power output most urgently – had to make do from 1951 to 1969 with only two power tubes and 50 W. Maybe that kind of power was seen as adequate to begin with, because things became really loud only with time. Later, it is conceivable that Fender saw the Showman (their top-of-the-line amp) as equally suitable for guitar AND bass. Our own experience would support the latter approach: a blackface Showman (paired up with e.g. two JBL K-130) proved to be a most formidable weapon for bass, as well.

In 1962, the relentless Leo Fender introduced another important innovation: silicon solid-state diodes operated as rectifiers in the power supply - true high-tech back in the day. The resulting amp, designated 6G6-A, was almost identical with its predecessor in all other aspects, but the new rectifier made for a tougher, more succinct sound at high volumes, and for less compression – good perspectives for the bass-playing brethren. To round off the affair, the bass channel was tuned to sound slightly darker, while the normal channel moved towards where the Twin Reverb would be: a strong, clean sound, but less the stuff your regular rocker would look for.

Once again, Leo changed the design of the Bassman – it is now mid 1964. First, however, a new company code for the amps was introduced (for info, see again appendix 1), but one that would not actually make it easier (at all!) to categorize the amplifiers. After brown Tolex had been used for some amps for a small period, the blonde Tolex was replaced by black Tolex; and with the control panel remaining in black, the whole arrangement today is known as "Blackface". More than ever, the whole line of Fender amps was now designed to deliver a loud, stout, clean tone, fully compatible with Leo's original objective. With a maximum anode dissipation of 30 W, the new 6L6GC actually had overtaken the 5881 (once more - what rat race!), and Fender switched (back) to the former. For driver/phase-inverter duties, the lower impedance (but at μ=60 also less gainy) 12AT7 was pressed into service, and the negative feedback of the power amp was increased. All this made for more headroom and less distortion, and with it the groundwork for legendary amps such as the Twin Reverb and the Super Reverb was laid. The presence control was removed – not only from the Bassman, but from all amps. As a kind of replacement, users received the "Bright"-switch that operated based on an entirely different principle and was less expensive on the manufacturing make, but only had an effect at low volume settings. The bass channel in the Bassman was fitted with a "Bass"-switch (rather than with a Bright switch) that changed the frequency response of the tone-control circuit somewhat. Overall, the preamp remained as it was with very minor changes.

4. (Not so smooth) Sailing under a new flag: the Bassman (and its brethren) with CBS (1966 - 1983)

Before he sold his company (effective January 1965), Leo modified the Bassman one last time to arrive at the model AA165; the frequency response of the bass channel was slightly changed. From then on, the new CBS-masters had their say; the company name was changed from Fender Electric Instruments to Fender Musical Instruments, and the cosmetic appearance of the whole amp line was to soon receive a makeover. A modern-looking, silvery panel replaced the black control panel: the "Silverface era" was arriving.

It was not that the CBS-engineers had, compared to Leo Fender, entirely different ideas about how an amp should sound, but they did sometimes have a rather much more theoretical approach to things. They started to implement all kinds of minor and major circuit and layout changes – many of those were in fact forced not least by serious production pressure. Effects of tube-parameter variance, or issues of self-oscillation were to be suppressed from the get-go already in the basic design. This was because only lower-grade tubes might be available, and because the wiring of the amps was not as neatly done as in the past. Some amps (including the flagship-models Showman, Twin Reverb, and Bassman were immediately "improved" for the worse that way, while others (e.g. the Deluxe Reverb) remained untouched until the late 60's. The excellent reputation of the Fender company was rather quickly compromised; this was also the result of the fact that the considerably increased production (Fender still had incredible – and further mounting – amounts of back-orders at the time of the sale) led to problems in quality management, despite the measures mentioned above (which unfortunately had dubious effects on the sound). The CBS people in charge did see the error in their ways rather quickly and abandoned some of the newly introduced modifications – however that did not happen for the Bassman. CBS-Fender only recovered slowly from the blow they had dealt themselves, but there were some interesting, purposeful, new developments, too. For example, the Super Bassman appeared in 1969, finally offering 100 W from four 6L6GC, and a middle control for the "Normal"-channel. In 1972, the two models were re-christened Bassman 50 and Bassman 100; the circuits were basically unchanged although "Master Volume"-controls appeared that electronically were positioned directly ahead of the driver stage.

Overall, the Bassman per se remained more or less uninteresting for guitar players, and it represented just one amp among many for bass players. That did change to some degree when Fender started to introduce the ultra-linear circuit-concept to the larger amps on the late 1970's. This feature – also fittingly termed screen-grid feedback – had previously already led the gigantic Marshall Major into notoriety. The new models were named Bassman 135 and Bassman 70 (indicating the respective wattage). Their preamps corresponded approximately to classical mid-60's circuit design with the addition of the middle control in both channels plus the already mentioned master volume. The Bassman 135 delivers a high-definition Fender sound with power in spades but still much attractive, airy tingle.

Fig. 10. Bassman 100; accompanied by a box with a rather special speaker orientation – fittingly designated "pyramid" in the www (Fender/CBS/Arbiter brochure, ca. 1974).

The continuously rising demands on the reproduction of the real low-end also show in the many experiments with the box of the Bassman outfit. First, the size of the 2x12" enclosure was dramatically increased in 1967 - that does help to keep the resonance frequency of the speakers low, but it fails to add to the quality of life of the roadies. From 1968, a giant 2x15" speaker enclosure was available that could serve in pairs together with the then new Super Bassman, and could be ordered with JBL-Speakers. Subsequently, the 2x15" was reduced in size again, and the Bassman 100 (or 135 respectively) was given a 4x12" enclosure (at last!! - see above under 2.) that featured a very peculiar, inward-folded baffle, "aiming" the speakers towards a kind of common focal point in front of the box. The corresponding thinking of the developers remains shrouded in mystery, safe for a not very helpful comment in the 1976-catalog: "...designed to take advantage of room acoustics."

From 1969 to 1982, Fender issued a whole contingent of specialized bass amplifiers that we want to at least mention in passing:
- 1969 – Bantam Bass: in fact a normal Bassman 50 but in the combo-format and fitted with a VERY exceptional, irregularly ANGLED Yamaha speaker that – to top it all off – sported a membrane composed of styrofoam. This amp has (even expressed in very friendly terms) a rather shaky reputation, but it would maybe be worth a dedicated article under the heading: "Things they built because they could ..."
- 1970 – Musicmaster Bass: more a kind of small 12-W-practice-amp with super-simple tone control, an unusual transformer-coupling in the driver-stage, and a 12"-speaker. Probably not all bad, since it was spotted backstage with Michael Anthony (of Van Halen fame). In more ways than one, this amp seems like a reminder of the original 1951 Bassman.
- 1970 – 400 PS Bass: what a monster!! 435 W (distributed to 3 outputs) to be coupled to up to 3 folded-horn speaker enclosures containing an 18" woofer each. Eat your hear out, Ampeg SVT! Highly complex tube technology – that one would certainly merit a dedicated article. Still, it would be a problematic amp in a (any?) number of ways.
- 1972 – Bassman 10: a Bassman 50 in a 4x10" speaker-arrangement contained in a combo cabinet. Does strike a bell, doesn't it! It has a closed rear, though ... striking a different bell ...
- 1977 – Studio Bass: another bass-monster – but in combo format: 200 W from 6x6L6GC, plus equalizer and a 15" EVM-Speaker. Note to the roadies: presumably not easy to schlepp.

- 1982 – Bassman 20: the successor to the Musicmaster Bass amp: one channel, 20 W with a 15".
- (Dual) Showman Reverb and 300 PS (more monsters!): in fact both guitar-amps, but offered for bass, as well, in combination with a corresponding box carrying adapted speakers (e.g. JBL D-140F).

And then there were various solid-state-lines with transistors, starting with the infamous failures of the first two transistor lines in 1966 /6/ and 1969. Having said that: the first Solid-State Bassman is reputed to actually be not a bad amp at all - for bass ... but then there are only few of them still around. There were quite passable low-budget amps issued in 1981, and very workable post-1986-amps. All these, however, share – if anything at all – at most a few topological aspects with the classic Fender amps and are not an object of this article.

5. Forward to the Past: Post-CBS

The entire Bassman line was discontinued in 1983. In 1985, doors closed in Fullerton, CA. The rights to the Fender name were bought under the chairmanship of Bill Schultz, and a new factory was opened under the name Fender Musical Instruments Co. in Brea, CA. At last, the `59 Bassman Reissue was released in 1990; this was a reproduction of the legendary old 5F6-A, built using new, affordable production techniques. It is completely without interest to the bass player, but all the more alluring to the guitar player. The sound is damn close ... and the circle does become unbroken, closing in on the good ol' times from 1959!

In conclusion, two treats from the Fender Custom Shop shall be mentioned for the sake of completeness. There's the 1994 Rumble Bass: a cool 300 W, with two 4x10" speaker arrangements - as wonderful as it was expensive ... and from 2009 to 2012 there actually was a TV-Front Bassman again – but the resemblance was limited to the cosmetics. Inside, transistors were at work, safe for one lonely 7025 double-triode ... that probably was there more as an alibi.

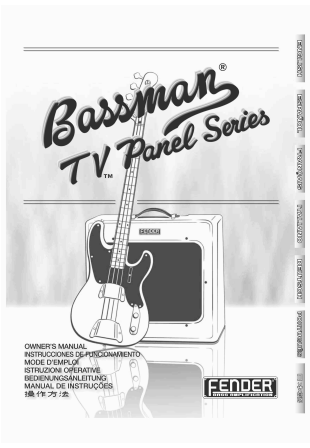


Fig. 11. Left: the Rumble Bass (1994, https://www.talkbass.com/threads/who-here-wants-to-rumble-fender-custom-shop.1231450/) made in the Custom Amp Shop, combining all that technology has to offer; 300 W of tube power, comprehensive tone control, and a lot of membrane surface from 2x4x10"-speakers.
Right: the (purely cosmetic) return to the beginnings: around 2010, Fender offers a TV-Front Bassman - but tube-wise fitted with merely a single 7025 in the preamp: transistors generate the power (https://www.fmicassets.com/Damroot/Original/10001/OM_leg_bassamp_Bassman_TV_Amps_20092012.pdf).

Appendix 1: Codes of Fender schematics /4/:

Old Fender schematics from the 50's and early 60's are characterized by a 3-character code. The first character/number "5" or "6" tells us that the respective chassis was designed in the 50's or 60's. The third character/number relates ot the company internal code for the respective amp: 1 = Champ, 2 = Princeton, 3 = Deluxe, 4 = Super, 5 = Pro, 6 = Bassman, 7 = Bandmaster, 8 = Twin, 9 = Tremolux, 10 = Harvard, 11 = Vibrolux, 12 = Concert, 13 = Vibrasonic, 14 = Showman, und 15 = Vibroverb . The letter in between indicates the technological development version that with the progressive lettering became more sophisticated. Sometimes there is a further letter attached with a hyphen: this is another circuit evolution deemed less significant.

As the blackface models entered the market from 1963, the coding changes. It now consists of two letters and a three-digit number. The amp model is not reflected in the code at all anymore. The letters stand for the sequence of the circuit developments, i.e. AB follows after the corresponding AA as the further development of the given amp. The number refers merely to the date of the corresponding AA-version. For example, the plan AA763 was designed in July 1963, and its offshoot is the AB763, although that has presumably been released only in 1964! It is always necessary to indicate (or know) the amp type, because there is a schematic coded with AB763 for each of these amps: Twin Reverb, Super Reverb, Bandmaster, Deluxe Reverb, ...). Complicated stuff!

From the early 70's, there is no coding at all anymore. The amp type is printed onto the schematic. The different versions are difficult to distinguish, though.

Appendix 2: The "Old Bassman"-schematic

In the Internet and in a number of publications /6/, a schematic is found that is designated "Old Bassman", or "5A6". Correspondingly, this schematic is often seen as the circuit of the first Bassman amp from 1952.

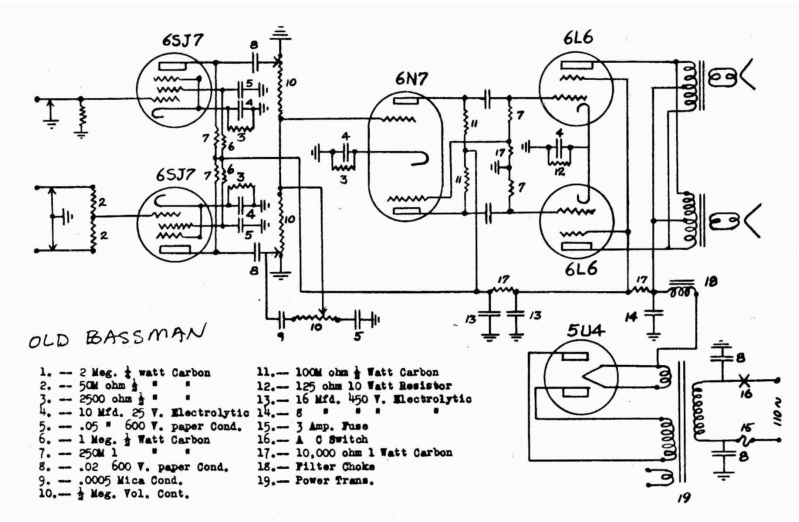


Fig. 12. The schematic presented in the Internet and in literature as "Old Bassman" or "Bassman 5A6" /5/.

Looking more closely, however, this appears to be an inaccurate conclusion. Indeed, many details in this schematic do not fit the original Bassman. In particular, this is seen in the input section shown with three inputs and three controls (2x volume and 1x tone) – a bad match for the actual Bassman with two inputs and two controls. Moreover, the so-called "Old Bassman" schematic includes TWO output transformers, while the Bassman (as also seen in pictures) had merely one.

There is, however, an early Fender amp that actually corresponds well to the so-called "Old Bassman"-schematic: the Dual Professional from ca. 1947. This amp features three inputs and three controls, and – in particular – pictures of it show two separate output transformers assigned to one of the two 10"-speakers each (this is the only Fender amp ever to have that configuration). Therefore, it is assumed that the mentioned "Old Bassman"-schematic does NOT show the schematic of the first ("old") Bassman from 1951, but that of the (even older) Dual Professional.

Fig. 13. 1947 Fender Dual Professional; 2 output transformers mounted to the speakers, and 3 controls (https://courses.physics.illinois.edu/phys406/sp2017/406emi_fender_amps.html)

Literature:

/1/ J. Roberts:
How the Fender Bass changed the World; Backbeat Books, San Francisco, 2001

/2/ G. Hopkins & Bill Moore:
Ampeg - the Story behind the Sound; Hal Leonard, Milwaukee, 1999

/3/ J. Teagle & J. Sprung:
Fender Amps - The first fifty years; Hal Leonard, Milwaukee, 1995

/4/ T. Wheeler:
The Soul of Tone - Celebrating 60 Years of Fender amps; Hal Leonard, Milwaukee, 2007

/5/ A. Pittman:
The Tube Amp Book - 4th Edition, Groove Tubes, Sylmar, 1995

/6/ T. Zwicker: The 1967 Fender Solid-State Twin Reverb – the Edsel of amps?,
https://gitec-forum.de/wp/en/new-scientific-article-the-1967-fender-solid-state-twin-reverb-the-edsel-of-amps/

/7/ Hunter, David:
High Times for Low End - History of the Fender Bassmann; Vintage Guitar, July/2018, S. 92 ff,
http://www.nxtbook.com/nxtbooks/vintageguitar/201807_v2/index.php - /92

Internet-Links:

- Fender's helpful support for customers old and new:
https://support.fender.com/hc/en-us/articles/212774686-Fender-Guitar-and-Bass-Amplifier-Owner-s-Manuals-and-Schematics-Hard-Copy-Archives

- Discussion regarding the "5A6"-Bassman-schematic:
https://forums.fender.com/viewtopic.php?f=12&t=107449

- A comprehensive collection of
  - general info: http://www.thevintagesound.com/ffg/
  - circuit diagrams: http://www.thevintagesound.com/ffg/schematics.html

- Interesting thread regarding the 5D6-Bassman:
http://www.tdpri.com/threads/another-in-a-tweed-series-5d6-bassman.279056/

- What a nice collection with great pictures:
http://www.ronsvintage.com/ixndex.htm

- Great pictures (text in cyrillic):
http://jimi.ru/read.php?98948

Note:

Just before completing this article, the authors were made aware that a quite similar article, very nicely written by Dave Hunter, had been published in the July 2018 issue of "Vintage Guitar" /7/. We still chose to publish our article, as well, since despite a number of overlaps, it does take a somewhat different angle in terms of the technical details.