



## The amplifiers Tenor 350M

### Musical fortresses

Michel Bérard

The Tenor 350M monobloc amplifiers are in fact the most recent rendition of the famous 300Hp monoblocs, with a whole artillery of improvements made during the last two years. At \$90,000 a pair, with all their characteristics and their extraordinary performance, these new amplifiers should easily rise to the very first rank in the world.

To develop such a product requires astronomical investments. In sum that's the reason for which Tenor Audio had to fold up from the audio scene towards the end of 2004. However, to the delight of all audiophiles, during two last years, the principal founders François Lemay, Robert Lamarre as well as Michel Vanden Broeck, supported by new very professional investors, are preparing to re-enter the market with the 350M. This hiatus, was not wasted since it made it possible for the founders to conceive, among other things, a new product based on its predecessor the 300Hp, already praised by the audiophile press.

For my part Tenor Audio was always the Bombardier, the Cirque du Soleil, the Céline Dion of Audio. The Best in the world, made in Quebec. Their first product launched on the market, the OTL 75 watts amplifier, is probably the one which received the most praise from the specialized press on a world wide scale. Something to be proud of. From the technical point of view, the 350M succeeds in simultaneously delivering several "tours de force" and pushes the envelope even further.

It is important to specify in all humility that the dimensions of my listening room and the speakers used drastically limit the extent of this test. It's a little as if one asked an automobile journalist to test a Bentley Continental GT downtown, where the speed limits do not exceed 90 Km/h. On the other hand I can testify to certain characteristics of the amplifier by providing account of an additional listening session carried out at an owner of the 350Ms. Moreover, the performance of such machines can easily be improved by the use of specialized power cables as well as the supported decoupling. This was impossible for me to test as a result of time and equipment constraints.

## DESCRIPTION

The unit consists of two mono blocks weighing 55 kg/120 pounds each. Measuring 71 X 50 X 21 cm / 28 X 19,5 X 8.5 inches, these "beasts" are not easily concealed. Fortunately, their design is splendid. The all aluminum frame is flanked by heat dissipation fins on each side and a massif carved wood plank with a piano finish on the front. A round perforation approximately three inches in diameter is fitted with a glass plate on which is engraved the Tenor logo. Powered, this logo is blue and in protection mode, it turns red. No buttons are visible. The main operating and mute switches are under the front plate. At the back, one finds the main power, the fuse receptacle, two pairs of WBT speaker outs, an RCA input, an XLR input, an input selector switch (RCA or XLR), two switches for grounding management of the amplifier and finally an indicator showing the number of hours the unit has been powered up to check the age of the tubes.

On a technical level, the 350M delivers 350 W into 8 ohms, 700 W/4 ohms and 1100 W/2 ohms. The signal-to-noise ratio is -105dB. The band-width is 1 to 200 000 Hz. The harmonic distortion at 350 Watts into 8 ohms is .2% and drops to .03% at 10 Watts.

## THE DESIGN

What were the objectives pursued by the designer? The extraordinary success of the OTL 75W amplifier generated demand for an amplifier having the same qualities, mainly the capacity to preserve the harmonic structural integrity, but delivering much more power in order to be able to drive the most demanding speakers all the while offering a level of reliability up to any task. But a 350W OTL "à La Tenor" would have required about 2000W of power per channel, which although possible, was unthinkable. Unless it was connected directly to a hydroelectric power station! At that point the idea of pair tubes and transistors in a completely unique circuit was in theory going to make it possible for Tenor to achieve the desired goals.

Each 350M monobloc contains two amplifiers in only one chassis. First of all we find a tube driver circuit. "the heart". A sort of mini OTL which is used to feed the transistors. This mini OTL with 5 W of power is in fact the gain stage. The circuit consists of two stages. The first made up of ECC803 Tungsol tubes and the second of ECC99 tubes being used to provide additional gain which feeds a low impedance push-pull driver composed of six 7044 double triode tubes, capable of providing approximately 10W at 600 ohms. All mounted on an independent and suspended chassis which makes it possible to feed the two stages of output transistors. This configuration makes it possible for the 350Ms to descend without difficulty down to 2 ohms when there is a strong need for current. The 350Ms have almost no practical current limitation. The limit of the bridge rectifier is fixed at 100 amps. The amplifiers can easily provide 70 amps. Enough to make the Eiffel Tower blink.

Another completely unique characteristic of the 350Ms is the instantaneous control of current by adjusting, quite as instantaneously, the precision bias of the transistors. This unique and very sophisticated process was the subject of very meticulous research and development during the last years. It is so sensitive that if you blow lightly on the chassis the mechanism for the temperature correction becomes active. Why have such a process? Quite simply because the change in temperature of a transistor, even a small change, changes its characteristics and consequently generates a change on an audible level. Moreover, the process consists of ultra-quick temperature measuring at the actual heart of the transistor. Two thermometers are used. One on the positive and one on the negative. The average temperature thus obtained is used to change the bias instantaneously and constantly in order to control the temperature.

Another interesting characteristic, Tenor uses a technique which makes it possible in theory to double the lifespan of the tubes by using only 50 to 75% of their potential. Moreover they are provided with heat dissipaters. According to the manufacturer, the tubes benefit with a lifespan of approximately 10,000 hours. The replacement cost of the tubes is not astronomical. It is part of normal maintenance, a little like changing the tires of a car every 40,000 km.

The enormous power transformer of 1.85 KVA, which took two years to develop, is in fact a double transformer. The first transformer of 7 inches is used to provide the current to the output stage and has a second transformer of 4 inches mounted on top to provide high voltage necessary for the tubes. It contains twenty-six windings. The whole thing soaked with resin to reduce vibrations to a minimum. And I confess that I was more than impressed even while holding my ear very close to the transformer, I had trouble hearing vibrations of any sort. A real "tour de force" on behalf of Tenor. BRAVO!

The current is delivered via ten regulated feed circuits. Each circuit contains its own feed. No possible contamination. The internal current wiring is in fact made up of two superimposed metal plates, so that the conductors are auto-shielded. All the signal cables are terminated with aerospace connectors. All of the soldering is made by hand with Cardas solder. Lastly, all the printed circuits are thicker than normal. The copper thickness is triple of what one finds in the industry.

## AN ARTILLERY OF PROTECTION FOR ANY CHALLENGE

Whoever can pay the asking price for a pair of 350Ms has the right to expect a product with "0" defects, guaranteed without fault and a lifespan of several decades. With this intention, the team at Tenor did not skimp. Without the technical gibberish, here is the broad outline of what was undertaken.

1. Protection against short-circuits.
2. Protection against speaker overload
3. Protection against static discharge
4. Protection against RF oscillations
5. Supervised grounding
6. Protection against overheating

I had the occasion to test, without intention of course, the effectiveness of the protection mechanisms. The first time I pushed hard the demand for current from the amplifiers while listening to a demanding piece. My electric circuit could not provide the 350M with sufficient current and the right amplifier went in protection mode. The second time, I passed very close to one of the amplifiers with my trousers and caused a static discharge. Again the amplifier went in protection mode.

All these mechanisms are beneficial not only for the amplifier itself but also for all the connected equipment, upstream or downstream. Tenor has in my opinion gone to the limit of what is possible to ensure reliability of the 350M under any condition. They are, for practical purposes, unshakeable, indestructible.

## INSTALLATION

The two "fortresses" were delivered to me in their own custom aluminum transport case. Intelligently conceived, the case is comprised of a two section cover to facilitate handling as well as casters to facilitate transport. The 350Ms are equipped with power cords from Cardas with IEC 20 amp female connectors. Unfortunately, during my tests, I could not compare different power cords, all my cables had 15 amp connectors. Taking into account their weight and dimensions, I could not experiment with various amplifier supports.

I therefore placed the two machines between the speakers and connected all the cables. The 350Ms are equipped with a "soft start" switch which, once engaged, provides a three minute delay before the device is ready to operate. This is to avoid an abrupt power up. At the risk of repeating myself, with such a transformer inside the device, I expected a minimum of noise. But to my great satisfaction: nothing! Not the least rustle. This was good omen.

I must add that powering up the 350Ms can also be carried out from a preamplifier connected to them if the latter is equipped with this option. This is increasingly common in top-of-the-line preamplifiers.

## ON TO THE LISTENING

As mentioned earlier, my first experience listening to the 350Ms took place in an owners home. A dream listening room for all seasoned audiophiles, with separate and independent circuits for each amplifier, an independent and dedicated ground for the sound system and more. The 350Ms were in a good family or what! With all that is necessary for them to blossom.

This listening session although informal allowed me to especially appreciate the impeccable handling of the 350Ms; power to spare and the absence of distortion.

I must say that a few days before receiving the 350Ms I tested the stereo model, the same one that had already been tested by Reinhard Goerner "La quête de l'absolu" Vol 5 No 6 of the magazine, obviously with less than half of the power and without all the recent improvements made to the Tenor 350Ms. I will thus start with a short comparison between the two devices.

The differences are important. We're speaking about two completely distinct worlds. Although allured by the stereo amplifier, it is necessary to acknowledge that the 350M, in addition to increased power, has much more subtlety and definition.

Throughout my listening, two outstanding points were obvious: the solidness of the low frequencies and the absence of distortion. I could increase the volume to a normally unacceptable level without it becoming unbearable and with a solid sound image. And even pushed to this high level, the 350M were barely lukewarm.

Obviously and with the risk of annoying the faithful readers of the review, for the first listening sessions, I used my most revealing discs starting with Codex / Santiago de Murcia. The lows were present, correct and certainly without the exaggeration that I had feared. The power, in this case, was expressed with accuracy and speed. The percussion instruments, the tambourine, were presented with a disarming naturalness.

The base and extreme base frequencies

I continued with my favorites including Les Sept Paroles du Christ de Dubois on the Fidelio label. On the first track, the organ digs down to 16Hz. The reproduction was solid, tight, controlled. I was not disappointed. But what the 350M delivers as well, is all that surrounds the notes, as deep and powerful as they are, remains intact, distinct. This phenomenon is even more obvious on the second track of the disc, when the choir is accompanied by the organ. The 350M brings the most solid foundation heard to date. Idem for all of the discs listened to during all the sessions. The double bass, on the disc Café Blue by Patricia Barber, is completely defined and surrounded by all its harmonics. As for the percussions, all is well anchored and in its place. No blur with an ease to locate very precisely in space not only each instrument but also each movement of the drummer's sticks. And since nothing strains the 350M, everything remains coherent. With the disc Cape Town Revisited by the Abdullah Ibrahim Trio, one does nothing but hear the drums, one literally senses the pressure of the air reaching you.

## Mid bass and mid frequencies

On the disc *You Won't Forget Me* by Shirley Horn, especially, the Tenor 350Ms really shine. On the piece *If You Go*, certain piano notes are loud and present a challenge for the majority of amplifiers. But nothing compares with the way in which the 350Ms reproduce them. The complex chords and the harmonics are distinct, without the least hint of effort or distortion.

On Schumann interpreted by Pletnev on piano, this one is squarely in the listening room and well anchored to the floor. The harmonics are not only present, but they are dissected, so much so the sonic message is well engraved and stripped of all artifact. It is easy to follow each note and to differentiate the right hand from the left hand.

## Harmonics

Prokofiev, interpreted by James Ehnes on the violin and Wendy Chen on the piano, is normally sufficiently "hard" to listen to. The 350Ms take it with ease and serve it to us without any distortion. Increasingly confident in the capacity of the 350Ms I push the volume trying to see just where I can go. But the piano so strongly hammered by the delicate Wendy Chen passes with flying colors. The violin remains natural, raucous, silky but never strident. Obviously, never does the sound get compressed. All is fixed, well in its place.

## The sound image and space

In this section I had to adjust my perception, because the 350Ms helped me realize that certain amplifiers seem more spectacular than others without them reflecting reality. And what the 350Ms deliver, is precisely this unaltered reality. After a few hours of listening and comparison, it becomes obvious to me that the Tenors have amazing accuracy. A non exaggerated image, without artifacts or adding any halo. The sound focus is ultra precise. The instrument contours are without exaggeration. However, this accuracy is essential for an amplifier of this caliber because pushed thoroughly, in a room and with speakers worthy of its potential, there is no doubt that the musical message will be delivered the most accurately possible. This manifests itself clearly when listening to *Jazz At The Pawnshop*. The instruments are right, neither more nor less large than natural. The saxophone is well in place. Same thing for the percussion.

## The dynamics

The 350M is synonymous with dynamics. Not only do they excel in this area but where they exceed the competition, is especially by their capacity to maintain these dynamics even when they are requested to over long periods. Everything becomes obvious when listening to concertos for piano with an imposing orchestral section. Often the piano starts to lack attack and especially dimensionality. Presented by the Tenors, the piano keeps its place with control and especially without any sign of distortion. Same phenomenon with percussions. The Tenors are fast. They have so much stored power that the idea would never occur to me to say that they "recover". I would also like to add, contrary to what one could believe, dynamics are not revealed by a spectacular sound but by ease, the absence of tension.

## Summary

The 350Ms from Tenor, could they be the best amplifiers for domestic use on the planet? Within the limits of what I heard, I would readily answer yes. This by taking several aspects into account: the design, the quality of manufacture, the reliability which, although it must undergo the test of time, seems to me inescapable. From the musical point of view, the 350Ms have such imposing control from one end to another of the spectrum that they are amazing in sonic realism. Their presentation is right. To summarize my thoughts, I will use the remarks of Mike Michelson of the Revue Soundstage in regards to the Parsifal Ovation enclosures: "their accuracy and their absence of coloring, their musical quality does not evoke "Wowwwws! " but "hmmmm !". This applies wonderfully to Tenor 350M which, in my opinion, pushes the limits in ultra-high-end audio. The only obvious difficulty that remains is the stratospheric price which for the moment is accessible only to most fortunate. It should also be noted that the 350Ms, to deliver all the goods, require an environment that is also ultra-high-end. The good news is that in a few months the stereo model 175S will be available at a price that will obviously be priced accordingly. Moreover, a new preamplifier and a new phono preamplifier are already on the drawing board and should be ready within approximately one year.

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Price: 90,000 \$ a pair