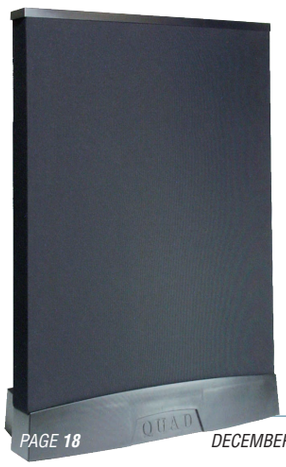
# `static


After years of waiting, Quad has finally launched its brand new 988 electrostatics. Here's what Hi-Fi World made of Huntingdon's latest panel loudspeakers.

When audiophiles heard through the grapevine that Quad was to release two all-new electrostatic 'speakers, we held our collective breath and waited for almost three years. Now, at last, both the 988 and larger 989 models are in full production, and Hi-Fi World managed to procure an early pair of each, plus the equally eagerly awaited new QC-twenty-four preamp and II-forty monobloc valve power amps, for review. Here's our view of the ESL-988, plus a preview of the valve power amp.

## YOUNGER THAN YESTERDAY

Although work on the ESL-988 started three years ago, this 'speaker shares more than a passing visual and technical resemblance to its much- loved ESL-63 predecessor - so much so that it could almost be described as a `63 'Special Edition', as fundamentally the two are the same. Circuit topology is identical, and it uses the same principle of a concentric ring of electrodes fed through a calibrated delay line - sound first leaves the centre and after a short delay leaves the next ring, and so on. This results in a spherical waveform that resembles a theoretical point source, traditionally thought to be ideal.




Despite the similarities, around ninety percent of the internal components have been re-designed, upgraded or modified. Andy Grove, who also designed the new Quad valve amps reworked the 988's audio transformers, power supply and delay line. Mylar, a strong and non-stretchable substance (and apparently often used for the sails of wind surfers), is now used as the diaphragm, as well as in the transformers. The 988s retain the same loudspeaker protection and clamping system of the 63s. Electrostatics are easily damaged through excessive input signals, so the protection circuit uses a `multifuse' device to prevent unwanted damage. If the panel is over-driven for any length of time, this circuit will effectively reduce drive to the 'speaker. Quad recommend caution if using power of over 100W per channel into 8ohms - the 988s should ideally be used with amps of between 20v and 30v RMS (50-100W into 8ohms). The protection circuits limit maximum input voltage to 40v, so although an insensitive load, there are no benefits from attempting to drive the 988s with a kilowatt each side!

One of the most common tweaks on both the 57 and the 63 was to wedge something under the frame to angle the 'speaker upwards. Quad claims to have eliminated this problem by angling the diaphragm backwards exactly five degrees. Also, a new lighter grille has been employed, and height-adjustable floor spikes which screw into the base plate are also available. The benefits of spiking electrostatics are less that those of spiking box loudspeakers, however.

The biggest difference between the 988 and its predecessor is its superior structural integrity - special attention has been paid to the rigidity of the 988, whereas the 63 was flimsy. More struts are now present, as well as a sturdy wood frame, and a new heavyweight moulded base has been added - meaning it's now more of a Rigid Rascal than a Flexible Friend. One of the aims of this structural improvement is to create a more rhythmic and exciting sound. I really get the feeling Quad want to shake off the 57 and 63s' 'pipe and slippers' image. Quite right too, as the original Quad electrostatic design was first demonstrated in 1956

## PLACEMENT

Electrostatics are more sensitive to placement than possibly any other 'speaker, despite having no 'hot spot'. As such, trying them out in more positions than you'll find in the Karma Sutra pays dividends. There are many schools of thought as to how and where you should place them in your listening room. Being a dipole design that fires to the rear as well as the front, many say you should put them either two-thirds or three quarters of the way down the listening room, angled face-on flat, rather than angled. Others say that two feet from the rear wall and slightly toed in is the way. Like most things in life, though, the best way is to find your own. Often furnishings, concrete floors and of course room size make the biggest difference. One thing's for sure though, you'll probably have to play around with the 988s for a while until you find a sound you're comfortable with. We listened to them in your average Victorian semi's front room - smallish (13' x 13') with suspended floorboards, a fairly high ceiling and an average amount of soft

# electricity

furnishings. Placed about three feet in from a bay window with heavy curtains, face on (not toed in), we thus found the right balance between damping and reverberation.

## SOUND

The first thing to say about the performance of the new ESL-988s is that they need lots of warming up - they didn't really come into their own until a good three days of constant use. Prior to this the sound was hollow and sucked out with a fairly unpleasant, shouty midrange. It's unwise to use cold or hard sounding amps with the 988s, as they won't subjectively match these 'speakers, which possess stronger treble than the ESL-63s. The rich sound of Audio Analogue's 60W per channel Puccini SE managed to get the 988s sounding fluid during running in. An ideal match for the 988s is powerful valve amplification like Quad's own new valve pre and power amps (see next month's issue for a full review). The new Quad II-fortys deliver 40W RMS, and this blend of power and vacuum tubes proved the ideal partner. Source components included a Roksan Caspian CD player, NAD's S500 Silverline CD player, and a Michell GyroDec turntable with Musical Fidelity X-LP2 phono stage (there's no phono input on the Quad preamp as yet). Speaker cables were van den Hul's Royal Jade and Nordost's frighteningly expensive SPM, interconnects were Chord Company's Anthem.

We started off with a finely honed recording in the shape of Copland's `Fanfare For The Common Man' by the Minnesota Orchestra on Reference Recordings. Its fine ambience and detail shone out through the 988s. The percussion and brass section under the baton of Eije Oue seemed as though they were transported from the recording venue into my bay window, such was the realism. The bass drum solo that heralds the opening of the piece put paid to one of the myths surrounding electrostatic 'speakers - that they have no bass. The 988s delivered seismic low frequencies coupled with that unmistakable electrostatic transparency and lack of coloration. The trumpets were smooth and yet sunny, showing a clean and detailed treble.

It's always been the mark of a Quad electrostatic that they show up fine low level detail, and the 988s continue this tradition commendably. Even at low volumes they picked up the players' movements and the odd elbow knocking the music stand. Eric Bibb's bluesy acoustic strumming on the fine Swedish Opus 3 label once again confirmed that there's nothing quite like a Quad ESL for sheer detail and presence with acoustic music. His fingers on both strings and guitar bridge were frighteningly realistic and his voice was pure and lucid beyond the standard of most cabinet 'speakers available at any price and anywhere. His breathy, close microphoned vocals drifted cleanly into the room. It's with this type of music that the ESLs reign supreme with a totally unaffected performance - a light yet full wall of sound with excellent imaging.

Something else new to these Quads is the chance to enjoy rock, pop and dance music. The previous `statics were always far better suited to string quartets than drum'n'bass, and this is something Quad apparently wished to put right. I tried them with CDs and LPs ranging from Smashing Pumpkins to LTJ Bukem, and the good news is that they rock. Admittedly maybe not as much as some such as Ruark's similarly priced Solstice or KEF's Reference Model Four, but they still have a real kick to them. Odyssey's 'Submerge' had the foundations shaking with amazingly low and uncoloured bass. This new-found rhythmic injection gives an upfront sound to rock and pop music that can sometimes be a little grating, especially with bad recordings. According to our measurements there's a slight upper mid peak present in which guitars and vocals can sound harsh, but this is the only gripe with an otherwise - dare I say - surprisingly funky sound!

The 988s are truly superb performers which are well worthy of the Quad badge. Their lifelike sound and sheer presence is rarely bettered in the audiophile universe and they possess a clarity and intricacy at all volume levels that makes them without doubt `The Best Late Night 'Speakers in The World. . .ever!'

Careful matching is needed. We used Quad's smooth valve amplifiers but they work well with quality solid-state amps too. Their forward nature and lucidity makes matching with solid-state amps a potentially painful experience with the wrong choice.

Although the 988s play most music with transparency and insight, they still favour acoustic and classical music over rock. If you've got lots of rock recordings ensure they're good ones, because bad recordings sound really bad. By the same token however, good recordings sound superlative. ■ ▶▶

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Quad's new II-forty monobloc valve power amp. The original Quad II is in the background.

The new Quad ESL–989 and below the ESL–988

**WORLD VERDICT**

Partner with suitable amplification and the 988s offer the unmistakable transparency of an electrostatic coupled with a firm hold on rhythm and bass. The bizzo!

*Measured Performance see page 111*

# How an electrostatic works

An electrostatic loudspeaker uses a thin lightweight Mylar film to move air, instead of a plastic or paper cone. Much like a sheet of Clingfilm, it is feather light, so problems associated with moving mass, such as colouration and the coarseness that comes from 'breakup' are eliminated.

The film is driven over its entire surface by an electrostatic field. This replaces the coil and magnet of a cone loudspeaker and is a massless drive system that distributes the drive force evenly across the film. Again, this is an ideal way of doing things.

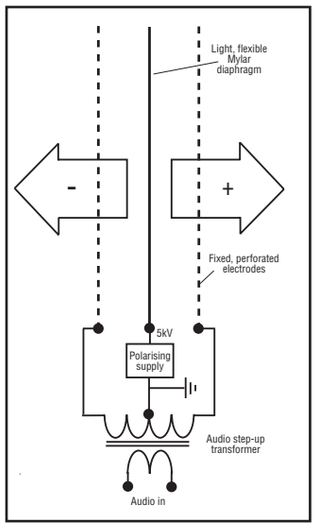
Our diagram shows in simple outline how an electrostatic like the 988 is constructed. Fixed outer electrodes carry the varying audio signal, stepped up to thousands of volts by a transformer fed from the amplifier. The thin, vibrating diaphragm lies between the electrodes, stretched in a frame. Its tension is critical. Sound generated by the diaphragm passes out through the perforations in the electrodes. An electrostatic needs a mains supply and carries on-board protection and voltage supply circuits.

The original Quad ESL-57 used a vertical-strip central treble panel, flanked by bass panels. The ESL-63 used a series of annular ring electrodes, connected by a delay line, to simulate the radiation pattern of a point-source. The new 988 retains this system. Quad have revised and improved the physical structure and component quality of the ESL-63, they say, to derive the 988, rather than make fundamental changes.

In operating principle, electrostatic loudspeakers appear perfect. In practice they are difficult to get right. Although the diaphragm has little mass, the perforated electrodes, safety screens and dust screens through which the sound must pass can affect the sound. Electrostatics work at thousands of volts, so need internal power supplies. The diaphragm has a constant, evenly distributed charge maintained by a 5kV polarising supply. An audio input transformer steps up the audio signal to many thousands of volts on the outer electrodes, as well as providing isolation from the amplifier.

Maximum volume is less than that developed by a cone loudspeaker. Protection circuits prevent overload, which would otherwise lead to sparking. Most parts must be specially sourced or manufactured, unlike cone loudspeakers where parts are produced worldwide. Even getting the right film tension is critical, a black art understood by few except Quad.

In spite of the difficulties and limitations, a good electrostatic loudspeaker can deliver a sound unmatched by other drive systems. The 988 further refines Quad's unique position in this field.




## The history of Quad's electrostatic

Quad introduced their first electrostatic loudspeaker back in 1957. Called "Walker's little wonder", after company founder Peter Walker, it was one of the earliest commercial designs and became world famous. Gilbert Briggs, founder of Wharfedale - not then allied to Quad - said "I remember meeting Stanley Kelly (a maker of ribbon loudspeakers) at the first demonstration of a full range ESL at the Waldorf in 1955, when we solemnly agreed to change into black and meet in due course in the workhouse". As good as it was, Quad's new electrostatic didn't put conventional loudspeaker manufacturers out of business, but it's introduction caused quite a stir in Britain and America.

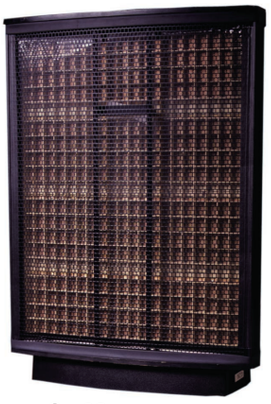
Known at the time as the Quad Electrostatic it was later dubbed the ESL-57 to distinguish it from the ESL-63. This is a little confusing because the ESL-63 was introduced in 1981; development was started in 1963.

Quad's first electrostatic had a vertical strip tweeter, flanked on either side by bass panels. Technically, the drawback of this arrangement is lateral lobing, but in practice Quad owners rarely complain about it because after spending so much on such a special loudspeaker they don't listen off-axis. All the same, Peter Walker decided he could improve matters, moving to a complex point-source radiator in the ESL-63, a system retained in the 988.

Quad is now a part of Wharfedale, itself owned by International Audio Group (IAG), based in China. The company started development of the new 988 and 989 two years ago at their Huntingdon headquarters and all manufacturing is carried out there.


Peter Walker – founder of Quad


The ESL-57


The ESL-63 with grille cover removed