

Germany's Next Top Models

Microphones known the world over are the stock-in-trade of Electro-Voice of Minnesota, and it's hard to imagine the sound reinforcement or studio scenes bereft of its products. Now, with its PL series, Electro-Voice Microphones is presenting a new range of mikes that cover a wide range of applications. We looked at and listened closely to the vocal microphones.

he new PL series from Electro-Voice microphones includes both instrumental microphones for drums and other instruments and a series of vocal microphones. In this test report, we will look more closely first at the tools for singers; our next issue then will feature a report on the instrument microphones. For this test, initially four models were made available to us: the PL24, PL44, PL80 and the top model in the series, the PL84. With the exception of the latter, each of these models employs a

Electro-Voice Microphones

 Distributor 	Bosch/EVI Audio,
	www.electrovoice.com
 Price (RRP) 	PL24 – 79 €; PL24S – 85 €;
	PL44 – 99 €; PL80 – 159 €;
	PL84 - 129 €; PL84S - 139 €

dynamic capsule with a supercardioid polar pattern. Only the condenser has a cardioid pattern; in addition, the PL24 and PL84 are available both with and without an on/off switch.

Vocal novices will find the PL24 an economical entry-level model. With this microphone, you can test your own vocal talent without needing to dig too deeply into your pocket. The PL24 is equipped with a dynamic transducer that in sound reinforcement situations offers a high degree of feedback rejection. Dynamic microphones have somewhat heavier diaphragms than their condenser cousins, and their transient response suffers somewhat as a result. On the other hand, dynamic microphones fare rather better in terms of feedback rejection, which is particularly important when the sound reinforcement equipment is not ideally aligned with respect to the microphone position. With its matt black shaft of robust steel, the PL24 does not necessarily have to be handled with kid gloves. The basket features a beautifully shaped gold-coloured wire mesh grille to which Electro-Voice Microphones has given the name Memraflex[™]. The basket is generously dimensioned to ensure that the capsule will even survive a fall from the microphone stand without mishap. The internal pop filters and spit guard are integrated

Entry-level model with the ice cornet look for vocalists - comes with (PL24S) or without (PL24) an On/Off switch



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Electro-Voice PL24,	PL24S	 Freq. response 	80 Hz–16 kHz	
 Element type Freq. response Polar pattern Sensitivity, open circuit voltage,1kHz: Related impedance Dimensions 	Dynamic 80 Hz-16 kHz Supercardioid 2,2 mV/Pa (-53 dBV) 600 Ω Length: 184 mm Shaft: 23,6 mm Head diameter: 53 mm	 Polar pattern Sensitivity, open circuit voltage,1kHz: Related impedance Dimensions Weight 	Supercardioid 2,2 mV/Pa (-53 dBV) 600 Ω Length: 189 mm Shaft: 25,6 mm Head diameter: 50,7 mm 333 q	
		Electro-Voice PL84, PL84S		
 Weight Electro-Voice PL44 Element type Freq. response Polar pattern Sensitivity, open circuit voltage,1kHz: Related impedance Dimensions 	294 g Dynamic 80 Hz-18 kHz Supercardioid 2,2 mV/Pa (-53 dBV) 600 Ω Length: 186.2 mm Shaft: 23,6 mm Head diameter: 50.7 mm	 Element type Freq. response Polar pattern Sensitivity, open circuit voltage,1kHz: Related impedance Max SPL (1% THD, 1 kHz) Self-noise Signal-to-noise ratio Dynamic range Dimensions 	Self-biased condenser 50 Hz-20 kHz Cardioid 3,5 mV/Pa (-49 dBV) 200 Ω 141 dB SPL 26 dB(-A) 68 dB(-A) 115 dB Length: 182,5 mm Shaft: 23.6 mm	
 Weight 	282 g		Shaft: 23,6 mm	
Electro-Voice PL80a, PL80c				
• Element type	Dynamisch	• Weight	294 g	

into the mesh cap and can be removed for cleaning.

I put the PL24 in the hand of our vocalist and we compared it with a tried-and-tested stage vocal classic. The PL24 - although considerably more affordable - convinced with more precise intelligibility and achieved excellent penetration in the mix. The clean reproduction of the middle frequencies, free from resonance artefacts, is itself astounding for a microphone in this price category. Two versions of the PL24 are offered - the PL24 without the on/ off switch will usually do fine for the front man, whereas the solo entertainer, who has to handle his own sound settings, would be better served by the PL24S, as, with the latter, in the event of feedback, the microphone can simply be switched off.



The PL24's supercardioid polar pattern provides excellent suppression of unwanted off-axis sound sources as well as good feedback rejection – provided, of course, the sound from the floor monitors is coming from behind the PL24 and to the side.

The PL44 also reproduces vocals with a transparent sound and you can position the voice up front in the mix. The PL44 captures overtones even better than the PL24, as its capsule has a 2kHz wider frequency range than that of the PL24. Like its little brother, the PL44 is equipped with a dynamic capsule and has a supercardioid polar pattern. Outwardly the only difference between the PL44 and the PL24 is a difference in the shape of the basket: whilst the mesh cap of the P24 is round, that of the PL44 is flatter. The microphone shafts of both models are identical and fit comfortably in the hand. They are also both nicely balanced and weigh around 290 grams.

Very good reproduction of overtones with a dynamic capsule: the PL44

The moderate proximity effect of the PL44 allows singers to control to a certain extent the amount of bass in their voice. As you move the microphone closer to your mouth, the lower frequencies are gradually boosted, giving the voice greater power and penetration. Even when maximum use is made however of this proximity effect, the lower frequency content of the vocals never becomes mushy or spongy: both with the

Test: Stage



PL24 and with the PL44, the low frequencies are firmly contoured and crisp. The capsules of both models are shock-mounted and this is very effective in reducing handling noise.

> Even when returning the microphone to the stand clamp somewhat clumsily, no bumping or banging came through the PA. The internal foam pop filter fulfils its purpose to outstanding effect: even with the microphone right up against the lips, vocals generated no popping. The capsule itself is protected by an additional layer of foam that guards not only against popping but also the entry of moisture.

> The third model for vocalist that we will examine more closely in this test is the PL80. Just like the two other microphones in the series we have

Inspired by the legendary BK-1 and the PL80 from the 80's: the new PL80a & PL80c

looked at so far, the PL80 is a dynamic vocal microphone with a supercardioid capsule. Visually reminiscent of the legendary BK-1, the PL80 is very different in its appearance from the PL24 and PL44. With the BK-1, Electro-Voice Microphones enjoyed tremendous popularity in the

eighties and nineties; it was, after all, one of the first vocal microphones with a condenser capsule suitable for use on stage. The microphone grip is in two parts and cylindrical for the first 10 centimetres or so of its length before the cone-shaped transition piece leading to the capsule. Two versions of the PL80 are offered: the PL80a (in matt black) and the PL80c (in cream). Like its younger brothers in the series, the PL80 boasts a robust and beautifully shaped basket that affords effective protection to the capsule against mechanical damage.

The PL80 has a somewhat more open sound than the PL24 and the PL44. I was a little concerned that this would impact negatively upon the feedback rejection. After being subjected to a number of tests, however, in the rehearsal room and on stage, the PL80 emerged as anything but unmanageable where feedback was concerned. In the case of the PL80 too, the stage monitors need to be to the side and behind the microphone as the supercardioid capsule is least responsive to sound sources 120° from the main axis. The PL80 – naturally in cream apparel – would tend to favour the female voice, whilst the PL24 and PL44 are most effective in pushing male voices to the front of the mix. Female vocalists – in particular those with very expressive voices – are often best served by microphones that deliver a more natural sonic image.

The top model in the PL series is the PL84, which boasts a condenser capsule with a cardioid polar pattern. Optically, the PL84 is closer to the two dynamic models, PL24 and PL44, than to the PL80, but its capsule gives it a very balanced and natural sound. The bass is captured powerfully and with great precision, yet there is no tooting or whistling in the low midrange. The brilliant overtone reproduction makes for an absolutely natural-sounding sonic image free from all artefacts, allowing the voice to achieve great clarity and presence in the mix. Condenser microphones by their very nature reproduce their sound sources in a more natural fashion and more accurately than dynamic models, which is why condenser microphones are such a popular choice in the studio for capturing vocals. The PL84 convinces with a penetrating and brilliant sound; the voice is consequently louder and more natural-sounding than when captured by the dynamic models in the series.

Thanks to its frequency-stable cardioid polar pattern, the PL84 achieves – despite its con-

denser capsule – excellent feedback rejection. If the floor monitors are directly behind the microphone, cardioid capsules offer very good feedback rejec-

tion. The smooth frequency response of the microphone means that it does not provide inordinate lift to any part of the frequency spectrum, and the consequence of this is more than simply a natural sonic image: when all frequencies are reproduced evenly, the resonance effects that are often the cause of feedback simply do not arise.

Andreas Ederhof

Studio sound on stage: the PL84 & PL84S



What should I look out for when buying a vocal microphone?

When buying a vocal microphone for the stage, you need to pay the same sedulous attention to detail as you would when buying a studio condenser. For this reason, we have prepared a checklist of things to investigate:

1. The sound

A good vocal microphone for the stage needs to offer a full bass and present treble – after all, intelligibility and penetration are the most important attributes of a good vocal microphone.

2. Feedback rejection

There's no point in having a great vocal sound when the speakers are howling. A vocal microphone for stage use must offer excellent feedback rejection, which means you should choose a microphone with a suitable polar pattern e.g. cardioid or supercardioid.

3. Ergonomics:

Most stage vocal microphones are shaped broadly like ice cream cornets so that they lie comfortably in the hand. There is nonetheless a significant degree of variation between them in terms of shape and weight – not to mention colour – and singers, whether male or female, should try out various models to discover which look and feel best to them. **4. Mechanical noise rejection**

All stage vocal microphones feature shock-mount suspensions to prevent solid-borne sound (such as handing noise) being transduced by the capsule. The latest generation of microphones tend to outperform their predecessors in this area but some are still better than others. Here again then, a test is called for. Pick up various microphones in succession and listen to see how much handling noise finds its way to the speakers and in which frequency range such noise is found.

5. Popping suppression

A good vocal microphone is equipped with a pop filter to minimize the effect of plosive consonants that would otherwise produce popping sounds. Usually the filter consists of a foam inlay placed inside the basket. You need to make sure that it is possible to remove this, so that you can wash it from time to time.

Summary

With the PL series, Electro-Voice Microphones is building on the tradition of some of the most famous microphones of recent decades. The PL24, PLL44, PL80 and PL84 stage vocal microphones reflect Electro-Voice's many long years of experience. All four microphones rank in terms of manufacturing quality, sound and design with the best to be found in the highly competitive vocal microphone market. In view of their very attractive prices, one can only say: first class microphones at a superb price! Test: Stage



Part 1: SOUNDCHECK 10/2008

Part 2: SOUNDCHECK 11/2008

Electro-Voice Microphones PL33, PL35 & PL37

The Three Musketeers

After looking in the last issue at the vocal microphones of the new PL series from Electro-Voice Microphones, it's the turn in this issue of the instrumental microphones. The PL33 for the bass drum, the PL35 for the toms and the PL37 for capturing overheads and the hi-hat.

The clamp of the PL35 fastens securely to the toms

Shaft: 42.9 mm

he PL 33 is the kick-drum microphone in the new PL series, which with its dynamic supercardioid capsule is capable of handling extremely high sound pressure levels. The generously dimensioned grille is of gold-coloured mesh, which gives the microphone a very elegant appearance. The mesh is double-layered to prevent wind noise reaching the capsule. Sometimes when you play the kick-drum, in the region of the hole in the resonance head there can be vigorous air movement that microphones render as low-frequency noise. To eliminate wind noise altogether, the basket contains an additional foam pop filter. Furthermore, directly above the dynamic capsule, they have put yet another layer of foam, though this is to protect the capsule from contamination.

Thanks to the supplied adapter, the PL33 can be screwed on to the kick-drum stand. The holder is constructed in such a way as to make it unnecessary to perform contortions when positioning the microphone: The adapter can be bent, so you can push the mike into the opening in the resonance

TECHNICAL SPECIFICATIONS

Element type Freq. response Polar pattern Sensitivity, open circ @ 1 kHz	Dynamic 20 Hz–10 kHz Supercardioid uit voltage, 0 63 mV/Pa	• Weight Electro-Voice PL37	Head diameter: 50.7 mm 236 g
Related impedance Dimensions	(-64 dBV) 150 Ω Length: 142,5 mm Shaft: 25,6 mm Head diameter: 59,2 mm	 Element type Freq. response Polar pattern Sensitivity, open circ @ 1 kHz: 	Condenser 50 Hz–16 kHz Cardioid uit voltage, 6,0 mV/Pa (45 490)
 Weight Electro-Voice PL35 Element type Freq. response Polar pattern Sensitivity, open circ @ 1 kHz: 	364 g Dynamic 50 Hz–16 kHz Supercardioid uit voltage, 2.2 mV/Pa (-53 dBV)	 Related impedance Max SPL (1% THD, 1 Self-noise Signal-to-noise ratio Dynamic range Dimensions 	200 Ω kHz) 132 dB SPL 25 dB-A 69 dB-A 107 dB Length:162.5 mm
 Related impedance Dimensions 	600 Ω Length: 108.0 mm	• Weight	Holder:81 mm 176 g

transients: Attack transients are the rapid and complex variations in the frequency spectrum that take place at the begin-

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ning of a sonic event. The 'attack phase' is of decisive importance in determining the sonic character of a musical instrument.

With the PL37, you can capture highfrequency instruments like the cymbals, hihat or acoustic guitar

head without difficulty. The XLR connector is on the end of the microphone shaft to facilitate the running of the cable. The PL33 produces what in the best sense of the term can be described as a 'traditional' kick-drum sound, with a crisp attack and a The kick-drum is the preserve of the PL33

which makes the use of large, stand-mounted microphones difficult. This is why, particularly in the field of live performance, clip-on microphones have increased sharply in popularity in recent years. The PL35 is therefore equipped with a very practical integrated swivel and an elastic clamp that fastens to the rim of the drum. Since the clamp was brand new, I had to press really hard before it would clip on to the rim. Perhaps the use of slightly more elastic material would make more sense.

The clamp of the PL35 is slightly curved, allowing you to vary the angle from which the microphone approaches the drum. Furthermore, the microphone head is swivel-mounted, allowing you to aim the PL35 at any desired point on the skin. Depending upon the sound you wish to achieve, you can therefore target

the centre or the edge of the skin in order to obtain either more sustain or more attack in the drum sound. The suspended toms are rendered by the PL35 with a round, open sound without exaggerating the shell resonance in the low midrange. Like the PL33, the PL35 convinces with an outstanding transient response, allowing the attack of the drums

The PL33 produces what in the best sense of the term can be described as a 'traditional' kick-drum sound.«

moderate boost in the bass foundation. By making use of the proximity effect, however, you can give a very strong boost to the bass frequencies simply by placing the microphone inside the bass drum. As it nears the batter head, the microphone delivers a more powerful kick-drum sound that can be integrated to outstanding effect into the mix. The **transients**, too, are reproduced very well, with the attack coming across exceptionally well.

The PL35 is also a dynamic microphone with a supercardioid polar pattern. The PL35 is optimized for capturing the toms, and thanks to its compact design can be positioned nicely above the edge of the batter head. The problem when miking the toms is often that there is comparatively little room between the top edge of the drum and the cymbals,

to be accentuated and clearly defined. The supercardioid polar pattern supports good channel separation, as its lateral attenuation is 3 dB better than that of a cardioid. As a result, the sound of the adjacent drums is effectively rejected allowing the sound engineer at the mixing console greater control over the individual signals.

The third microphone in the series is the PL37, the only condenser among the three instrumental microphones tested here. A small-diaphragm condenser microphone with a cardioid polar pattern, the PL37 is designed to capture the hi-hat or as an overhead pair to capture the cymbals. This microphone, too, makes a very robust impression: the metal shaft continues on to the microphone head, fully shielding the condenser capsule. As a result, the microphone should be fully able to withstand the often rough handling to which microphones are subjected in live applications. Since we are dealing here with a condenser microphone, the phantom power has to be turned on at the mixer or channel strip before you can operate the microphone.

The slight lift the PL37 gives the higher frequencies ensures that the cymbals are reproduced with a bright, silky sound. The frequencystable cardioid polar pattern provides outstanding channel separation making it possible to create a very beautiful stereo image with good localization of the sound sources. The hi-hat, too, is reproduced by the PL37 with a clear but unobtrusive high frequency spectrum. To obtain the best results in practice, you should aim the microphone at the edge of the top hi-hat cymbal directing it away from the snare in order to minimize the crosstalk (the spillage of the snare sound into the hi-hat channel). Even the snare can be transduced cleanly by the PL37: As a result of what for a condenser is an extremely high maximum SPL (132 dB), capturing the snare whether from above or from below is no problem. Compared to classic snare microphones with their dynamic capsules, the PL37 gives you a snare with considerably more bite and attack. The condenser capsule responds much faster than a dynamic element and therefore achieves considerably better reproduction of the transients.

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AT A GLA	NCE		
Electro-Voice Microphones PL33, PL35 & PL37			
Distributor Price (RRP) 	Bosch/EVI Audio, www.electrovoice.com PL33 – 119 €, PL35 – 99 €, PL37 – 99 €		
🔺 Very good	l price-performance ratio		
Outstanding sound reproduction			
Elegant styling			
Clamp of	Clamp of the PI 35 hard to adjust		