Langevin

OWNER'S MANUAL

LANGEVIN CR-2001
FET CONDENSER MICROPHONE

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INTRODUCTION

Thank You for purchasing the Langevin CR-2001. This microphone has an interesting evolution story. It was originally built in China for "ASC" until Manley purchased the rights to it when ASC quit the microphone business. Manley was impressed by a few of the mics but was not satisfied with the consistency. This required a visit to China to tighten quality control for both capsule and circuit boards. The solution was a combination of efforts with some critical parts supplied by Manley. A few of the early batches were finished in a black paint finish with either a VTL or a red Langevin logo- You may see some of these around. Later batches returned to the clear silver look. The final evolution was for Manley Labs to design and build new circuit boards and have all the parts placement and final construction take place in the Manley factory in California. Truly an international effort now. By the way, testing and repairs have always been done by Manley employees. This international cooperation has resulted in a good general purpose mic at an affordable price. The CR-2001 usually wins compared to European mics selling for four times the price. Some major producers have several CR-2001s for vocals and guitars and find it to be a fine general purpose mic in any studio. Enjoy.

The Langevin CR-2001 is a FET Condenser mic that features a large diaphragm capsule. The capsule itself is 1.25 inches overall with a diaphram surface of 1 inch. The membrane is 6 microns thick polyester film which supports a thin layer of gold. Besides quality materials, a large part in the art of capsule design is the tension to which the film is stretched over the precision machined brass ring. The art is the correct amount of tension and doing it in a way that insures the film stays that exact tightness for many years. Some people can play piano and some can make mic capsules - its technique, practice and special fingers. The capsule needs electronics to make it a usable microphone. The only choices are tubes or FETS. The CR-2001 uses a FET input with a bipolar output stage. The electronics require power - 48 volts phantom power is supplied from most consoles and mic preamps right along the mic cable. All you need to do is make sure it is on. For you tech heads out there - the circuit has two 1KM resistors in it. Thats 1,000,000,000 ohms or 1 gig-ohm. We joke about replacing it with a chunk of plastic. Not likely to find these kind of parts in most repair shops.

TIPS AND TECHNIQUES

Freelance engineers can safely skip this page - it is more for those less familiar with condenser mics. Let us start at the beginning. The box the mic was shipped in also has three other items. There are two varieties of mounts and a foam pop filter. The smaller mount we call a "Hard Mount"and is for situations where space is cramped or TV where a certain appearance is needed. It slides on the bottom of the mic near the XLR connector and "T" ring screws on clockwise to hold everything together. In general, with mics, avoid "over" tightening adjustments and mounts and be extra careful not to "cross thread". If it doesn't feel right it probably isn't - If substantial effort is required to remove a mic then it was over-tightened. Normally, we use the "Shock Mount" which looks like two rings - one suspended in the other by elastic which isolates the mic from most floor vibration. You simply slide the mic into the inner ring so that the ring covers the "CR-2001" label then turn the black lever on the ring counter clockwise which safely locks the mic in place. The mount can attach to either of the two standard thread types on mic stands. For the larger thread size - use a coin to unscrew the "thread adapter" counter clockwise. The lever on the side is to tighten or loosen the swivel to allow you to aim the mic where needed. The foam pop filter slips over the grill and is often needed for vocals and outdoor use where wind might be a problem. For most other uses the pop filter can be left off. Unlike stage mics, the "face" of the mic is where the label and switches are and not the end. Visually aim the mic toward the sound you want to record.

The distance from mic to instrument is your choice but you should consider a number of factors. The further a mic is from the source the more room reflections and leakage from other instruments will be picked up. At about 8 inches and closer all directional mics have a tendency to boost lows. This is called proximity effect. It can be useful or not. For some sounds (especially lead vocal) sometimes the desired sound is "intimate and close" - here, of course, the mic should be close to the mouth and more attention should be paid to excessive proximity effects and pops. Pop filters that look like stretched nylon on a ring are often used to prevent pops for vocals and often paired with the foam pop filters for some singers. There is a switch on the mic to also help these potential problems - It is called a high pass filter and is labelled as a bent line. It cuts lows below 100 hertz to remove some of the proximity effect, room rumble and pops. The position that looks like a straight line is the "flat" position with all the the lows intact. The other switch labelled 0 dB and -10 dB is called a pad (in the -10 dB position). For loud sounds you should probably switch to the -10 dB position to avoid distortion. For quiet sounds the 0 dB position will give the best noise performance.

This mic requires "phantom power" to operate. Luckily 48 volt phantom power is available on most consoles and mic preamps and this power flows down the mic cableto the mic. All you have to do is make sure phantom is turned on and use a good balanced mic cable. STOP! Turn down the monitors before turning phantom power on. The mic signal is typically about a hundredth of a volt and phantom is 48 volts. Big difference. Quite a loud pop or thump can happen when you turn on phantom. This could also happen if you change a mic or mic cable or mic patch. ALWAYS turn the monitors down before changing anything in the mic path to the preamp. 'Tis a good habit even with non-phantom mics or when phantom is turned off. "Save the Speakers" could be a good bumper sticker for old engineers.

This mic has a directional pattern called "cardioid". Cardioid comes from the same latin word that cardiac comes from and refers to the heart. Cardioid means heart shaped and is easily the most commonly used mic pattern. It tends to be most sensitive or loudest in front and least sensitive or deadest in back opposite the switches. Very few mics have a flat response in back when in cardioid so some coloration may happen to leakage from the back. You should have somebody walk around the mic while you listen to become familiar with the pattern and tone from various directions. One thing you should notice is that that the mic is not completly dead in the back. This is normal and true for any other mics you may have. Some mics have other patterns like "omni" and "figure 8". Omni is supposed to be non-directional and will pick up sound from all directions equally but in real life the back is usually different. Omni mics have no proximity effect. Figure 8 has a pattern that looks like an "8" where it should pick up sounds from the front and back but not the sides. Usually the sides have a very dead spot, the back is out of phase with the front and the proximity effect is very strong. Patterns like "hyper cardioid" and "super cardioid" are in between cardioid and figure 8 with a narrow front pattern and some back pick-up. Each can be useful and mis-used. Cardioid is easiest and usually what people expect mics to act like. Better to have a good cardioid than a poor sounding multipattern mic.

A few last tips regarding condenser mics.

The capsule is a plastic membrane just a fraction of an inch fom a back plate. These two pieces are charged with 40 volts between them. When the membrane vibrates that 40 volts changes a few hundredths of a volt and that is the signal that gets amplified inside the mic. If moisture gets into that space between the membrane and back plate it can short out the 40 volts and cause the mic to lose sound - until it drys. Remember, that the human voice is quite moist. The moister the voice of the singer and the higher the humidity the more likely the mic will quit in mid-song. It is not too common of a problem and you may never experience it but if you do relax - the sound will be back in a few minutes. To prevent this, use the pop filters, use more distance or move the mic off center of the mouth so that the moist breezes bypass the mic. This occurs with most condenser mics from time to time. If it does happen, take a 15 minute break. The mic should "come back" in a minute or two but allow that extra time to allow it to dry better or else it will just do it again in a few minutes. Don't use a hair dryer, heat or blower to dry the mic. You could do damage to the diaphram. A small fan a few feet from the mic turned on between takes is the "emergency" option. There is also a few electronic parts inside that are sensitive to moisture and contamination. Try to keep the mics as clean and dry as possible and they should last you dozens of years.

Condenser mics are rarely seen on stage for live vocals. Why ? 1) They pick up more leakage and tend to be more apt to feedback. 2) Singing real, real close into a condensor mic might create problems. 3) They are somewhat more fragile and 4) they are usually big enough to block pretty faces. Usually the only place for condensers on stage is overhead drum mics. What is a problem in one application is an advantage in another. Part of that leakage problem is a rarely percieved quality of many mics. They tend act a bit like compressors and bring up low level sounds at least compared to our normal hearing . That can work to our advantage or disadvantage depending on the situation. This is partly why you see singers in separate rooms (iso-booths) or blocked off (gobos) in band recording situations. You can't do that live.

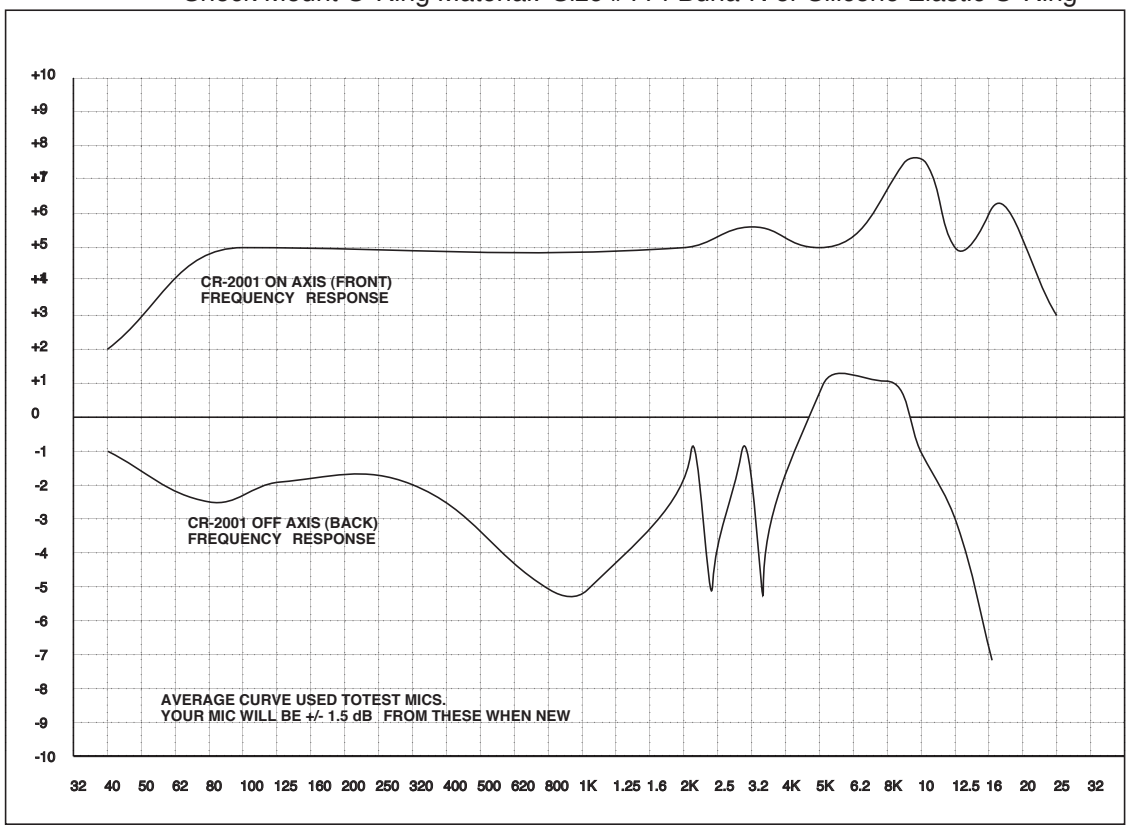
The CR-2001 is known to work as well as some very expensive mics on most singers. On some voices it is the winner out of a dozen more expensive vocal mics. On some voices it may not be "right". To be expected, some unusual voices sound best with unusual mics. Try a few mics with a new singer. You often see vocal mics hanging upside down from large mic stands in videos. It does not make a lot of difference sound-wise but it gives the artist a tendency to stretch up rather than down to a mic. The height of the mic can slightly affect the balance of nasal tone that the mic picks up. The larger stands also look "professional" and tends to discourage the singer from "adjusting" the position of the mic. In major studios, vocals are most often recorded through electro-optical compressors like the UREI LA-2A or the the Manley Electro-Optical Limiter and then directly to tape. The amount of limiting depends on the voice, song and mic technique but it is usually gentle and "invisible". One rarely sees any EQ applied to vocals until mixing. Most singers like some reverb to sing best. Thats normal but sometimes a short delay or flanger will be the trick. Do not record this effect or if you must, record it to a separate track. Many want to hear lots of voice in the headphones and headphones that are really loud. To be gently avoided. It usually causes them to sing flat and then burn out in a few hours. Try changing the phase (polarity) of the mic. If for some reason the headphones are out of phase with the real voice, it will never sound right in the headphones. Another rarely used technique is using stage monitors or speakers rather than headphones. It is tricky avoiding too much leakage and requires some careful positioning but at least make the leakage sound OK. Some find singing in the control room to be best. For communication and teamwork it works but it does make the engineer earn thier money. Headphones on... headphones off, mixing for leakage, using stage mics to record and any other tricks to make it happen.

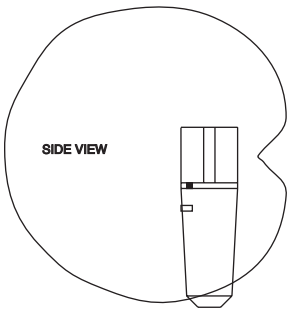
Record as cleanly and smoothly as possible and capture the music - the performance. Don't get too wrapped up in techno-world during a session. Nobody really cares about that - only the final result. Use good gear, not gear that uses you up. Be nice - its intimidating and weird to be on the "other side of the glass" and the musicians probably have a lot of "career" and "artist" emotions wrapped in this session even if they don't show it. Make it easy and fun because thats why you got into this thing in the first place. The dreams, the money..... that too.

Last bit o' advise. When you lay your mic cable on the floor consider running it neatly and flat and taping it down. Murphy's Law - you will trip on the cable, pulling over the mic stand, pushing the mic through somebodies classic Martin acoustic guitar. At the end of the session before musicians pack up, disconnect the mics *first* and move them out of danger. You can leave them on the stands but it is better to put them back in the boxes to minimise dust build-up, damage, or theft. Mics "walk" more than any other studio gear.

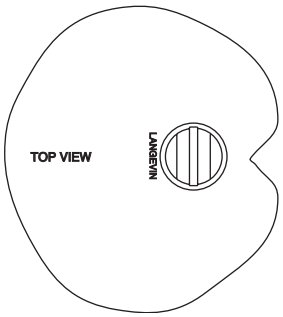
CR-2001 Specifications

Acoustical Operating Principle:	Pressure Gradient Transducer
Polar Pattern:	Cardioid
Difference between 0° and 180° :	≥12dB @ 300Hz-3KHz, ≥15dB @ 1KHz
Frequency Range:	40 Hz - 16 KHz
Source Impedance:	200 ohm ± 20% (1KHz)
Minimum Load Impedance:	1 k ohm
Maximum SPL for 0.5% THD at 1KHz:	122 dB 25 pa
with -10dB sensitivity reduction:	132 dB 79 pa
High Pass Filter:	6 dB per octave @ 100 Hz
S/N ratio (DIN 45-590) Ref. level 1 pa:	67 dB
Maximum Output:	300 mV
Power Supply (DIN 45596):	48 V ± 4 V (Phantom Powering)
Current Consumption:	2 mA
Weight:	0.475 kg (17 oz.)
Dimensions:	54 mm diameter, 200 mm long
Shock Mount O-Ring Material:	Size #114 Buna-N or Silicone Elastic O-Ring





CARDIOID PATTERN



These "cardioid" shapes show how distant a sound can be for "equal" volume and are only intended to illustrate the cardioid pattern. Try talking "around the mic" to relate it to your real world experience.

WARRANTY REGISTRATION

We ask that you please fill out this registration form and send the bottom half to:

MANLEY LABORATORIES
REGISTRATION DEPARTMENT
13880 MAGNOLIA AVE.
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Registration entitles you to product support, full warranty benefits, and notice of product enhancements and upgrades. You MUST complete and return the following to validate your warranty and registration. Thank you again for choosing to use Manley Laboratories.

MODEL **LANGEVIN CR-2001**_____

PURCHASE DATE _____ SUPPLIER _____

PLEASE DETACH THIS PORTION AND SEND TO MANLEY LABORATORIES or photocopy it and send us the copy.

MODEL **LANGEVIN CR-2001**

PURCHASE DATE _____ SUPPLIER _____

NAME OF OWNER _____

ADDRESS _____

CITY, STATE, ZIP _____

TELEPHONE NUMBER _____

Serial #'s of Associated Manley Laboratories Equipment _____

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