

Operation Guide for Lawson Models:

L47MP MKII Tube Mic

L251 Tube Mic

L47FET

L251FET

Quick Change™ Capsule System



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Safety Precautions

CAUTION! The Lawson vacuum tube mic power supply contains voltages exceeding 200 volts.

- * Disconnect the microphone from the power supply before removing or replacing Quick Change™ Capsules.
- * Disconnect the microphone from the power supply before changing the vacuum tube.
- * Your Pelican case is water proof; your microphone is not. Do not immerse your microphone in any water or liquid.
- * Do not spray cleaners directly onto your microphone. Doing so may damage the capsule. If you wish to clean the exterior of your mic, spray Windex (or similar cleaner) onto a clean towel and then wipe.
- * The capsule is housed in a protective wire cloth head assembly. Do not remove the capsule from its protective housing. To do so may damage the diaphragms and void your warranty.
- * During the warranty period, repairs should be referred to Lawson, Inc. After expiration of the warranty, for safety reasons any repairs should be referred to Lawson, Inc., or to qualified service technicians.

Introduction

Congratulations and thank you for purchasing Lawson microphones featuring the versatility of QuickChange™ capsule(s). Lawson microphones are hand-crafted in the USA by real people with pride to give you many years of service and enjoyment.

To familiarize yourself with the special features of your Lawson microphones, please take the time to read this manual.

Your Lawson microphone(s) shipped from the factory configured as indicated below:

Vacuum Tube Microphone Serial Number: ???

FET Microphone Serial Number: ???

Checked by: ???

Date: XXXX.XX.XX

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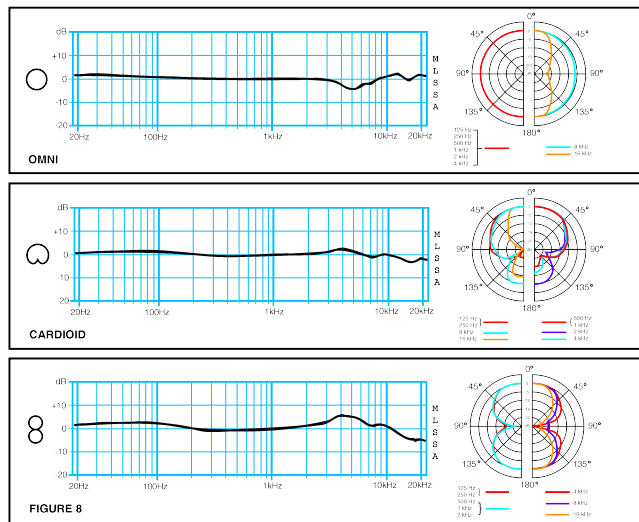
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Your Microphone Components

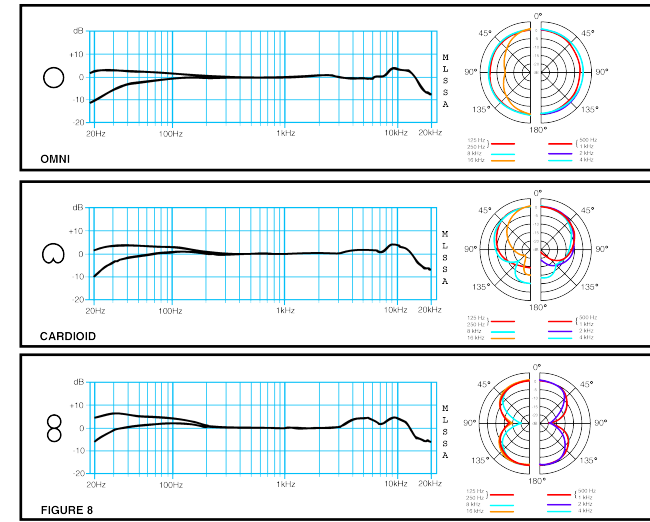
- (☺=included; ☹=not included)
- ☺☹L251 Quick Change™ Capsule--a faithful reproduction of the one inch capsule used in the Telefunken ELAM 251, a rare vintage mic renowned and coveted for its sparkling *airy* highs and warm solid lows
- ☺☹L47MP MKII Quick Change™ Capsule--a faithful reproduction of the M7 capsule used in the legendary German-made U47 and M49 microphones featuring 3-micron gold sputtered diaphragms for improved high frequency and transient response. Each capsule is precision machined from solid brass, then hand-lapped in the Lawson lab to insure consistent performance from mic to mic. The L47 is renowned for its versatility, warmth, character, and ability to stand out in a mix.
- ☺☹Universal FET (field effect transistor) 48V Phantom powered electronics that accepts any Lawson Quick Change™ Capsule. The FET features the cardioid pattern only, a -10/-20dB pad, and switchable Low Frequency control
- ☺☹Tube Electronics that accepts any Lawson Quick Change™ Capsule
- ☺☹Universal tube mic power supply featuring an infinitely adjustable polar pattern control, 10 dB pad control, and switchable Low Frequency Contour Control
- ☺☹30 foot 7-pin cable specially designed and shielded for tube mic usage
- ☺☹(1) Swivel Mic Holder(s)
- ☺☹Power Cord
- ☺☹Shock Proof Carrying Case(s)

Classic 47 Sound The classic 47 sound has been characterized as *forward, present, and warm* with the ability to *stand out in a mix* even when *wrapped with the band* making it an excellent choice for vocal and voice over applications. These characteristics in large part can be attributed to the presence rise at approximately 4.5 kHz. Although not as great as the L251, the L47MP Mk II capsule also exhibits a proximity effect that provides a warm bottom end.



L47MP MKII Frequency Responses

Classic 251 Sound The classic 251 sound has been characterized as *airy, sparkly, and breathy*. These characteristics in large part can be attributed to the broad boost at approximately 10 kHz. The L251 capsule also exhibits a large proximity effect that provides a warm bottom end.



L251 Frequency Responses

Setting Up Your Tube Microphone

The Lawson tube microphone is heavy. To protect your investment and the toes of your clients, avoid the use of lightweight stands or extremely long or unbalanced booms. When attaching the tube mic to boom stands, wrap the cable around the boom a few turns. By using the cable in this manner, it may prevent a damaging fall, especially when using quick disconnect mic holders. The L251 and L47 capsules are internally shock mounted. No external shock mounting is required.

Connect the provided 7-pin cable from the tube microphone to the power supply. This cable should be connected BEFORE the power supply is plugged into the AC wall outlet (AC mains) and BEFORE being switched to the **ON** position. This procedure will avoid unnecessary power surges to the vacuum tube and insure maximum tube life. Allow at least five minutes warm-up time for maximum signal-to-noise ratio.

Use a standard 3-pin XLR mic cable between the tube mic power supply and your mic pre. Forty-eight volt (48V) phantom power is not necessary. If applied, it will have no effect on the performance of the tube mic. The tube mic only requires 20 to 30dB of mic preamp gain at the console with close-up vocals. To insure lowest distortion, monitor the console meters with the channel fader at its unity gain setting (0 dB) and then set the gain of the mic preamp. Make this adjustment BEFORE inserting outboard limiters, equalizers, etc.

The Lawson logo engraving indicates the front of the microphone. This side of the microphone normally points toward the sound source. Use of a fabric windscreen is recommended to prevent pops when doing up-close vocals.

The mic head and base are plated with nickel and/or 24 karat gold to provide a lasting finish. To clean the mic, apply a small

amount of glass cleaner directly to a lintless cloth and gently wipe. Do not spray cleaners directly onto the mic.

Proximity Effect is the low frequency boost that occurs with close miking. The closer the mic, the greater the low frequency boost. Adjusting the pattern control actually changes proximity effect. The greatest proximity effect occurs in the figure 8 position. No proximity effect occurs in the omni position. Adjusting the pattern control changes proximity effect and frequency response as illustrated in the plots. To achieve your desired results, experiment with various combinations of miking distance, polar pattern, and low frequency contour switch positions.

Multi-Pattern/Cardioid Only Position Your tube mic features a Multi-pattern/Cardioid-only switch located on the base of the tube microphone. A blue LED behind the mic windscreen glows when the multi-pattern mode is selected. When the cardioid-only position is selected, the multi-pattern control on the power supply is disabled and the blue LED inside the head is off. The cardioid-only position increases the output of the microphone by about 3 dB at the same time lowering the noise floor by the same amount. **Note! Turn the microphone channel down at the console before changing the position of this switch as an ear and speaker destroying A-bomb wump will ensue.**

Note! Turn down the microphone channel at the console before changing the position of the 10dB pad and the Cardioid-Only switches to prevent transient thumps.

Polar Pattern Selection The pattern selector control knob is located on the front center of the tube microphone power supply unit. This control is continuously variable and allows small incremental settings anywhere between major directional patterns. In other words, you are not limited to a few preset clickstops. You may find it valuable and

informative to have the power supply in the control room and make pattern adjustments while monitoring a performance to find the ideal position. ***Make sure your microphone is set to the MP mode by checking the position of the switch on the base of the microphone. The polar pattern control is disabled in the C mode.*** A blue LED inside the windscreen glows when the multi-pattern mode is selected.

It is normal to experience a slight low-frequency noise while the pattern control is being rotated. The pattern change is not instantaneous. Please allow five to ten seconds for the new pattern to stabilize after readjustment.

10dB Pad Output may be reduced by 10dB with the switch located on the left-hand side of the power supply unit. **Note! Turn down the microphone channel at the console before changing the position of this switch to prevent transient thumps.** The -10 dB pad switch actually lowers the capsule polarizing voltage thus lowering the input level to the vacuum tube and raises the sound pressure level capability. To preserve the low noise floor, use the -10 dB position for extreme sound pressure levels only.

Low Frequency Contour Control (-BASS/L251 ↔)

L47/+BASS A two-position low frequency contour switch is located on the front of the universal power supply. This switch can be changed during a performance without transient clicks or pops. The FET electronics provide the same low frequency effects.

With the L251 capsule, the **L251** (or **-BASS**) position provides a faithful reproduction of the original ELAM251 (a 6 dB/octave rolloff below 100 Hz). The **+BASS** position provides extended low frequency characteristics and more profound proximity effect (actually a flat frequency characteristic).

With the L47 Quick Change™ Capsule on your tube electronics, the **L47** (or **+BASS**) position provides a faithful reproduction

of the original U47 low frequency characteristics (no low frequency rolloff). The **-BASS** position provides a 6 dB/octave rolloff below 100 Hz).

Vacuum Tube Your tube mic uses the 6N1P vacuum tube. This tube is a standard nine-pin vacuum tube. All tubes used in Lawson tube mics have been specially selected for extremely low noise. It is important when replacing this tube to obtain a low noise 6N1P tube that has been selected for low noise characteristics specifically related to use in microphones. Lawson, Inc., can supply these specially selected tubes. To further insure low noise, an innovative, low-loss tube socket is utilized employing military grade, heavily gold-plated beryllium copper contacts, resulting in unparalleled grip, low contact resistance, and long life.

Replacing the Vacuum Tube. To remove the vacuum tube, first unplug the power supply cable from the mic. Disassemble and remove the mic holder by removing the two wing/thumb nuts exposing the base of the microphone as seen here.

Remove the two Phillips screws on the bottom of the

microphone. The C/MP plate and the body cylinder can then be removed exposing the internal vacuum tube and circuitry. Grasp the tube and pull straight down toward the base of the microphone, taking care not to use sideward motion which could bend the tube pins. Make sure the pins

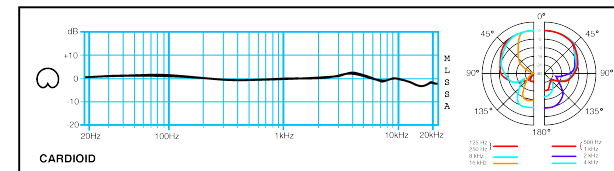


are straight on your new tube by using a tube pin straightener. Line up the tube pins with the socket and push straight in. Replace the body cylinder. Replace the C/MP plate making sure to line up the toggle switch handle with the hole. Replace the two Phillips screws. Do not over-tighten. Reassemble swivel mic holder.

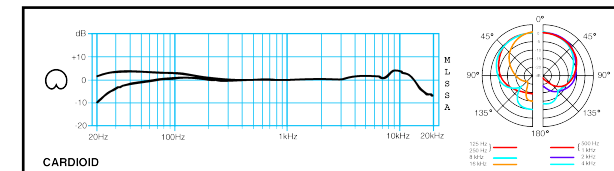
How to Replace the Fuse Disconnect the power supply from the electrical outlet. The fuse holder is located on the rear of the power supply unit just above the AC power connector. To replace the fuse, pull the fuse retainer cap with a screwdriver. Examine the 1/2 amp (500 mA) fuse visually or with an electrical continuity tester. Replace the fuse, if necessary. (A spare fuse is included in the retainer cap.) Insert the new fuse into the fuse retainer cap. Insert the cap and fuse into the holder by pushing straight in. If the unit continues to blow fuses, refer the unit to a competent service technician. Do not attempt repairs yourself as potentially dangerous voltages are present within the power supply and unauthorized repairs during the warranty period may void the warranty.

Setting Up Your FET Microphone

Use a standard 3-pin XLR mic cable between the FET microphone and the console microphone input with 48 volt phantom. The FET only requires 20 to 30 dB of mic preamp gain at the console with close-up vocals. To insure lowest distortion, set the gain of the console mic preamp, and monitor the console meters BEFORE the insertion of any outboard limiters, equalizers, etc.



L47FET Frequency Response



L251FET Frequency Response

10dB/20dB Pad A 10 or 20 dB reduction in sensitivity can be achieved with the miniature three-position toggle switch located in the microphone base:

Center = no attenuation

10 = -10dB

20 = -20 dB

The -10 and -20 dB positions help to insure low distortion operation when miking instruments of very high sound pressure levels. To maintain lowest noise, use pads only when miking high sound pressure levels. **Console fader levels should be lowered before changing pad settings as loud transients may occur.**

Low Frequency Rolloff A gentle 6dB per octave low

frequency roll-off is provided by the use of another two-position toggle switch in the microphone base:

F = Flat/No rolloff

LC = Low Cut

The two positions of this control provide the same characteristics as the two-position switch on the Lawson tube mic power supply. The rolloff is designed to counter the low frequency buildup which occurs as a result of the proximity effect when closely miking voices/instruments. **Console fader levels should be lowered before changing rolloff settings as loud transients may occur.**

Quick Change™ Capsule System

Your Lawson Quick Change™ Capsules are fully compatible with other Lawson microphones in the Quick Change™ series and may be used on your Lawson tube electronics with full multi-pattern functionality. To disconnect the head from your tube microphone, **first turn off the power supply and disconnect the 7-pin cable at the mic.** When disconnecting the head from your FET electronics, there is no need to disconnect the three-pin cable, however, it is advisable to turn down your fader at the console. Using a Phillips head screw driver, remove the three stainless steel screws that are located just below the microphone wire cloth screen. After removal of these screws, hold the mic body with one hand and with the other hand, pull the head/capsule section up and off, separating the head from the mic body. Replace with the Lawson Quick Change™ capsule of your choice by carefully mating the connectors. Replace the three screws into the head. Do not overtighten these screws. Reconnect the 7-pin cable to the microphone and turn on the power supply.

*The capsule is the heart of a condenser microphone. The integrity of the capsule, more than any other element, determines the microphone's character and quality as a transducer. In 1927 German inventors von Braunmuhl and Weber patented the operating principles for a new condenser microphone capsule. In 1932 these principles were first incorporated into the manufacture of German microphones. Today these classic microphones are still revered and sought after for their **special** sound. Lawson Microphones continues this 60-year-plus heritage and pays homage to the genius of those past designers and makers of timeless classics.*

L251 Specifications Summary

Frequency Range	20 to 20,000 Hz
Polar Patterns	Cardioid, omni-directional, figure 8, and infinite intermediate patterns; also cardioid-only position
Sensitivity at 1 kHz	11.6 mV @ 1 Pascal (94 dB SPL) 18 mV/Pascal (cardioid only)
Max SPL (1 kHz 3%)	134 dB (144 db SPL with -10 dB pad)
Equivalent Noise Level	16 dBA multi-pattern 13 dBA cardioid-only
Rated Impedance	150 ohms
Tube	6N1P/6922 dual triode
Connector	7-pin gold-plated XLR
Low Frequency Contour	"L251"=Rolloff & "+Bass"=Flat
Pad	-10 dB
Dimensions	Mic: 9.75"L, 2.375"D Supply: 8"L X 4.375"W X 2.625"H
Shipping Weight	14 lbs.
Power Supply (VAC factory set)	100/120/200/220/240

L47MP MKII Specifications Summary

Frequency Range	20 to 20,000 Hz
Polar Patterns	Cardioid, omni-directional, figure 8, and infinite intermediate patterns; also cardioid-only position
Sensitivity at 1 kHz	11.4 mV @ 1 Pascal (94 dB SPL) 18.2mV (cardioid-only mode)
Max SPL (1 kHz 3%)	134 dB (144 db SPL with -10 dB pad)
Equivalent Noise Level	16 dBA multi-pattern 13 dBA cardioid-only mode
Rated Impedance	150 ohms
Tube	6N1P/6922 dual triode
Connector	7-pin gold-plated XLR
Low Frequency Contour	"L47"=Flat & "-Bass"=Rolloff
Pad	-10 dB
Dimensions	Mic: 9.75"L, 2.375"D Supply: 8"L X 4.375"W X 2.625"H
Shipping Weight	14 lbs.
Power Supply (VAC factory set)	100/120/200/220/240

L251FET Specifications Summary

Frequency Range	20 to 20,000 Hz
Polar Patterns	Cardioid (full multi-pattern functionality with Lawson MP Electronics)
Sensitivity at 1 kHz	11 mV @ 1 Pascal (94 dB SPL)
Max SPL (1 kHz 3%)	135 dB (-10 145dB; -20 155 dB)
Equivalent Noise Level	18 dBA
Rated Impedance	150 ohms
Connector	3-pin gold-plated XLR
Low Frequency Contour	6 dB per octave @ 100 Hz
Pad	-10 dB and -20 dB
Dimensions	Mic: 6.25"L, 2.375"D
48V Phantom	(nominal) 1mA

L47FET Specifications Summary

Frequency Range	20 to 20,000 Hz
Polar Patterns	Cardioid (full multi-pattern functionality with Lawson MP Electronics)
Sensitivity at 1 kHz	11 mV @ 1 Pascal (94 dB SPL)
Max SPL (1 kHz 3%)	135 dB (-10 145 dB; -20 155 dB)
Equivalent Noise Level	18 dBA
Rated Impedance	150 ohms
Connector	3-pin gold-plated XLR
Low Frequency Contour	6 dB per octave @ 100 Hz
Pad	-10 dB and -20 dB
Dimensions	Mic: 6.25"L, 2.375"D
48V Phantom	(nominal) 1mA

Warranty

One-Year Limited Warranty

Lawson Incorporated microphones purchased in the U.S.A. from Lawson, Inc., or its authorized agents are warranted for one year from date of purchase by Lawson, Inc., to be free of defects in materials and workmanship (vacuum tubes excluded). In event of such defect, product will be repaired promptly without charge or, at our option, replaced with a new product of equal or superior value if delivered to Lawson, Inc., prepaid, together with the sales slip or other proof of purchase date. **Prior approval from Lawson, Inc., is required for return.** This warranty excludes vacuum tubes, defects due to normal wear, abuse, shipping damage, or failure to use product in accordance with instructions. This warranty is non-transferable and is void in the event of unauthorized repair or modification.

For return approval and shipping information, contact Lawson, Inc., 2739 Larmon Avenue, Nashville, TN 37204 U.S.A.

To validate and extend your warranty to five years, please return the enclosed registration card.

Notes
