

9800 Martel Road
Lenoir City, TN 37772

PM2CREW Intercom Expansion Unit

Unit Part Number 11918, 11918R,
11918P6, 11918R6
11918P8, 11918R8

Passenger Intercom System

Installation and Operation Manual

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PS Engineering
PM2Crew Expansion module (11918)

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Revision 3: Added remote pot information

Revision 4: Added 8-place

Section I General Information

1.1 Introduction

The **PM2Crew** is a panel mounted, multi-place intercom expansion unit used to add extra stations to an intercom system. Please read this manual completely before installation to minimize the risk of damage to the unit and to become familiar with all the features.

1.2 Scope

This manual contains installation and operational instructions for the following PS Engineering units:

Model	Description	Part Number
PM2CREW	4-place intercom expansion unit system	11918
PM2CREW Remote	Blind-mount expansion unit w/remote squelch	11918R
PM2CREW	6-place intercom expansion unit system	11918P6
PM2CREW Remote	6-place blind-mount expansion unit	11918R6
PM2CREW	8-place intercom expansion unit system	11918P8
PM2CREW Remote	8-place blind-mount expansion unit	11918R8

1.3 Description

The **PM2CREW** (11918) is an intercom expansion unit with volume and squelch controls for the passengers. This unit is designed to work in combination with the PM1000 (11900, 11900D), PM1000II (11902, 11922, 11906), PM2000 (11915) intercoms and PMA4000 Audio Panel to provide 4 or 6 additional passenger stations. The part number 11918R is designed for remote, or blind mounting. A remote squelch control is provided to adjust the VOX threshold, the volume control is factory set for optimum level.

The 11918P6 and 11918R6 are 6-place expansion units. The 11918P8 and 11918R8 are 8-place expansion units.

1.4 Approval Basis

None.

It is the installer's responsibility to determine the applicable approval basis for this installation. This unit is not designed for use in any flight crew situations, and has no effect on any critical aircraft systems. There is no significant weight or electrical load presented to the aircraft. The unit can be installed without any special tools or knowledge.

1.5 Specifications

Input power:	from main unit
Headphone Impedance:	150-1000 Ω typical
Audio Distortion:	<10% @ 75 mW into 150 Ω load
Aircraft Radio Impedance:	1000 Ω typical
3 dB Mic Frequency Response:	350 Hz — 6000 Hz
3 dB Music Frequency Response:	200 Hz to 15 kHz
Unit weight:	10 Ounces (0.342 kg)
Dimensions:	1.25" H x 2.60" W x 5.50" D (3.2 x 6.6 x 14 cm)

1.6 Equipment required but not supplied

- A. Headphones, 150 Ω stereo, as required
- B. Microphones, up to four, as required
- C. Interconnect wiring
- D. Intercom or PMA4000 primary unit
- E. Headphone and microphone jacks (up to 8, as required)

Section 2 Installation

2.1 General Information

The **PM2CREW** comes with all necessary hardware for a typical installation. The unit is installed either in the panel (11918) or mounted blindly (11918R). If panel mounted, it can be installed near the audio panel, or a panel near the passengers. If blind mounted, it can be mounted nearly anywhere. If blind mounted, the squelch control should be mounted in a location convenient to the passengers. The 11918R volume control for the passengers is factory set for a balanced output, but can be field adjusted through the holes in the side of the unit.

Installation of the **PM2CREW**, using the available wiring and hardware supplied, does not require special tools or knowledge other than described in FAA Advisory Circular 43.13-2. It is the installer's responsibility to determine the approval basis for this installation. A FAA Form 337, or other approval may be required. See Appendix B for example of FAA Form 337.

2.2 Unpacking and preliminary inspection

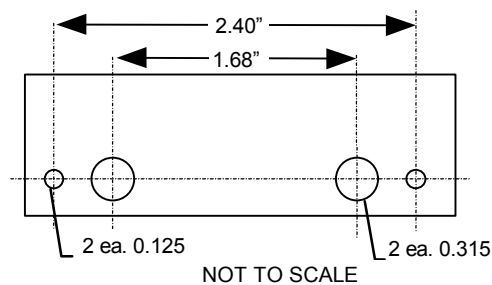
The **PM2CREW** was carefully inspected mechanically and thoroughly tested electronically before shipment. It should be free of electrical or cosmetic defect.

Upon receipt, verify that the parts kit includes the following:

PM2CREW Installation Kits

Part Number	Description	11918 Quantity	11918P6 Quantity	11918R Quantity	11918R 6 Quantity	11918R Quantity	11918R 6 Quantity
475-440-0318	#4-40 Machine screws, black	4	4	4	4	4	4
625-002-0002	Knobs	2	2	2	2	2	2
425-025-0002	25 pin Sub-d male connector	1	1	1	1	1	1
425-025-0003	Connector hood	1	1	1	1	1	1
430-001-0001	Aluminum face plate	1	1	1	1	1	1
430-002-002	PM2CREW Label	1	1	1	1	1	1
250-009-0002	Remote Squelch Installation kit			1	1		1
200-004-0004	Operator's and Installation Manual	1	1	1	1	1	1

2.3 Equipment installation procedures



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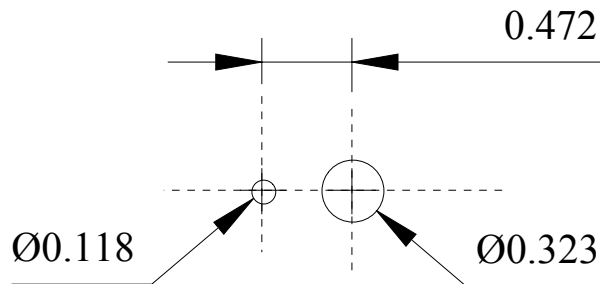
For panel mounted installation

1. Using the template, drill four holes in the instrument panel in a location convenient to the pilot or passengers position(s).
2. Insert the **PM2CREW** from behind the instrument panel, aligning the holes for the knobs.
3. Place the aluminum faceplate over the knob shafts and secure, using the two # 4-40 round head screws provided.
4. Apply the PM2Crew label to the panel, using care to align the holes over the knob shafts.
5. Install the knobs over the volume and squelch control shafts.

Blind mounting:

1. Install the unit in a convenient bulkhead, as above. Add the aluminum doubler if the panel is less than 0.040" thick.
2. Remote mount the squelch control in a location convenient to the passengers.
3. If desired, the volume can be adjusted at installation, there are two holes in the side of the unit, one for left, and another for right channel.
4. If desired, a remote switch (not included) can be installed to override the SoftMute function. This should be located convenient to the passengers.

Remote Squelch Mounting:



Remote Squelch Mounting Holes (Pot 675-020-0103)

Not to scale. Dimensions in inches,

2.4 Cable harness wiring

To complete the installation, a wire harness must be made as shown in Appendix D. PS Engineering can make a custom-tailored wiring harness for the installer. All harnesses use Mil-spec quality components with professional techniques, and are fully tested before shipment. Contact PS Engineering for more information. The PM2Crew connects to the main unit through a 4- or 5-conductor, shielded cable.

2.4.1 Electrical Noise Issues

WARNING: You must use separate shielded cables for the microphone and headphone jacks. Combining these two wires WILL cause loud oscillations and degrade the intercom function. The oscillation is caused by the cross-coupling between the large headphone signal and the small microphone signal. The resulting feedback is a high-pitched squeal that varies with the volume controls.

Shielding can protect the system from radiated noise (rotating beacon, power supplies, etc.). However, installation combinations occur where minor interference is possible. The **PM2CREW** was designed in an interference -protected chassis and has internal filter capacitors on all input lines.

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Ground loop noise occurs when there are two different return paths for the same signal, such as airframe and ground return wire. Large cyclic loads such as strobes, inverters, etc., can inject audible signals onto the airframe return path. Follow the wiring diagram very carefully to help insure a minimum of ground loop potential. Radiated signals can be a factor when low level mic signals are bundled with current carrying power wires. Keep these cables separated.

Insulating washers are **required** on all mic and headphone jacks to isolate them from aircraft ground.

2.4.2 Power Requirements

The **PM2CREW** was designed to work with the main intercom unit. No other power is required.

2.4.3 Interconnection with main unit

Interface between the PM2CREW and the main intercom is through a 5-wire shielded cable. Monaural systems, such as the PM1000-series or PMA4000 require the left and right sides of the audio input be combined. A 4-conductor cable can be used with these systems.

Function	PM2CREW	PM2000	PM1000 Series	PMA4000
Expansion Power	1	17	15	17
Expansion Ground	14	1	2	3
Audio Input (rt.)	2	5	16	4
Audio Input (lt.)	15	18		
Audio Output	3	4	3	5

2.4.4 Six and eight place units (11918P6 and 11918R6, 11918P8 and 11918R8)

The PM2CREW 6- and 8-place versions reconfigure the microphone input, converting mic grounds into MIC high, and therefore are not interchangeable with a standard 4-place 11918 unit. Two extra headsets are paralleled from the amplifiers.

2.4.5 Auxiliary Inputs

An entertainment device can be connected to the **PM2CREW**. Install a 1/8" music jack convenient to the passengers to connect the stereo entertainment device into the system. A "Soft Mute" system is installed in the **PM2CREW** that will mute the music during conversation on the local intercom. Radio traffic or conversation on the main intercom will not mute the music.

A second, monaural input is provided for other purposes, such as public address cabin briefing, or providing radio interface for cases where the intercom does not have radio on the expansion bus (PM1000D for example).

NOTE:

The **PMA4000** music input is present on the expansion output. If this is used, **DO NOT** connect the entertainment input to the PM2CREW.

A soft mute inhibit switch (not included) can be installed between 11918 connector pins 12 and 24. Closing this switch places the PM2CREW into Karaoke mode.

WARNING: Local oscillators and other internal signals from CD or radio equipment can cause undesired interference with VHF navigation and communication equipment. Before takeoff, operate the entertainment device to determine if there is any adverse effect on aircraft systems. If any unusual operation is noted in flight, immediately switch the entertainment device off.

Section III OPERATION

Switching on the intercom or PMA4000 automatically activates the PM2CREW unit. .

3.1 Adjusting The Volume

The volume control and squelch controls only affect the headsets connected to the PM2CREW directly, and not the main unit.

3.2 Adjusting The Squelch Control

The **PM2CREW** provides individual VOX circuits for passenger 1, passenger 2, and another for passengers' three and four. With the engine running, set the squelch control knob by slowly rotating the squelch control knob clockwise until you no longer hear the background noise in the earphones. When the microphone is positioned properly near the lips, normal speech levels should open the channel. When you have stopped talking, there is a delay of about one-second before the channel closes. This prevents squelch closure between words, and helps eliminate choppy intercom conversation.

Section 4 Warranty and Service

4.1 Warranty

In order for the factory warranty to be valid, the installations in a certified aircraft must be accomplished by a FAA- certified avionics shop and authorized PS Engineering dealer. If the unit is being installed by a non-certified individual in an experimental aircraft, a factory-made harness must be used for the warranty to be valid.

PS Engineering, Inc. warrants this product to be free from defect in material and workmanship for a period of one year from the date of installation. During this one-year warranty period, PS Engineering, Inc., at its option, will send a replacement unit at our expense if the unit should be determined to be defective after consultation with a factory technician.

This warranty is not transferable. Any implied warranties expire at the expiration date of this warranty. PS Engineering SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. This warranty does not cover a defect that has resulted from improper or unreasonable use or maintenance as determined by us. This warranty is void if there is any attempt to disassemble this product without factory authorization. This warranty gives you specific legal rights, and you may also have other rights that may vary from state to state. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusions may not apply to you.

4.2 Factory Service

The **PM2CREW** is covered by a one-year limited warranty. See warranty information.

Contact PS Engineering, Inc. at (865) 988-9800 or www.ps-engineering.com/support.shtml before you return the unit. This will allow the service technician to provide any other suggestions for identifying the problem and recommend possible solutions.

After discussing the problem with the technician and you obtain a Return Authorization Number, ship using approved materials and carrier (no US Mail) product to:

PS Engineering, Inc.
Customer Service Department
9800 Martel Road
Lenoir City, TN 37772
(865) 988-9800 FAX (865) 988-6619

Appendix B Instructions for FAA Form 337

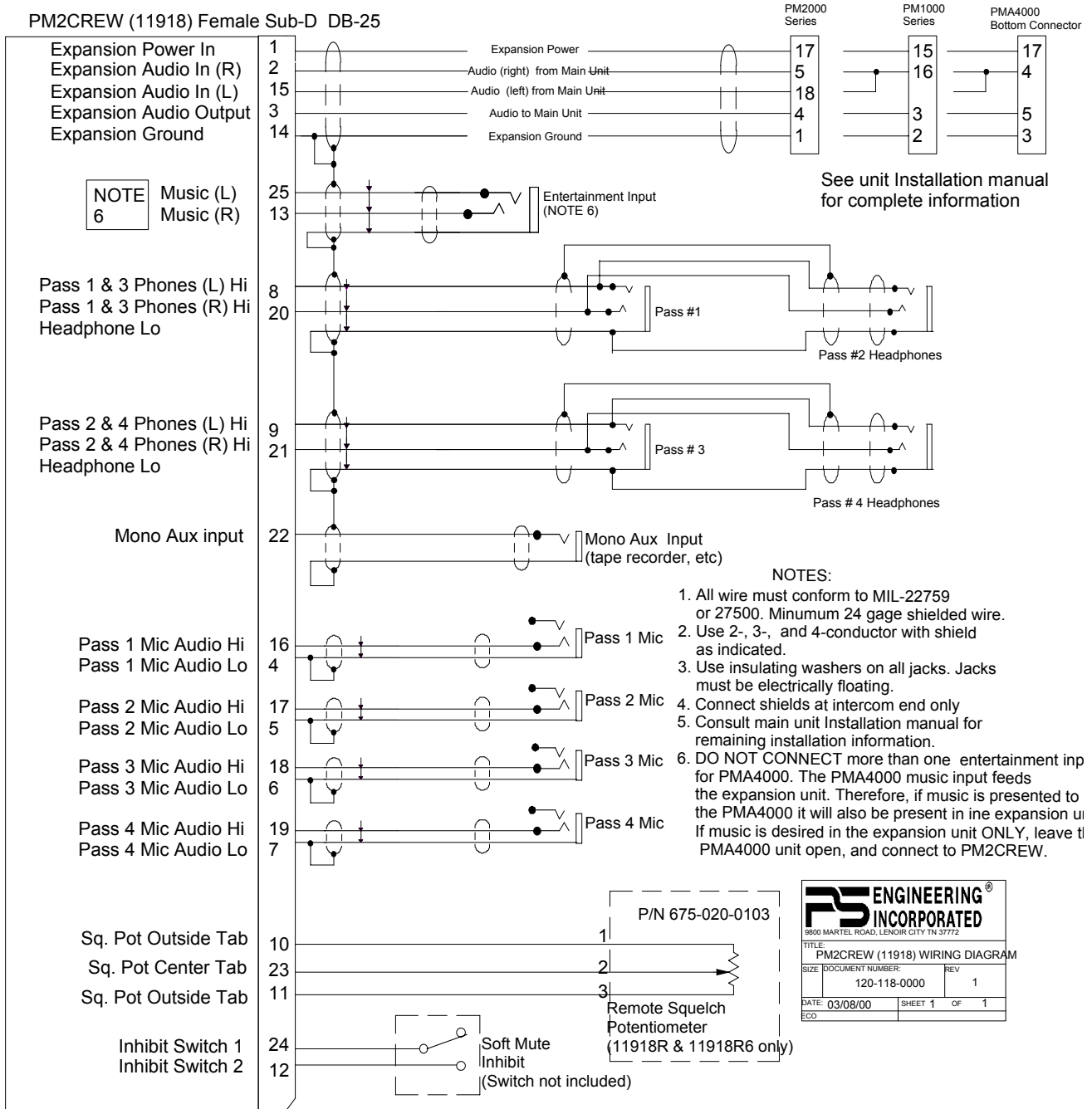
One method of airworthiness approval is through an FAA Form 337, *Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)* In the case of the PM2CREW part number 11918, you may use the following text as a guide.

Installed 4-place intercom expansion unit, PS Engineering PM2CREW, part number 11918 in (location) at station ____ Installed per AC43.13-2, Chapter 2, paragraph 23 (Instrument Panel Mounting). Installed per PS Engineering *Installation Operators Manual* p/n 200-004-xxxx, revision 0, dated ().

Interface to existing audio system in accordance with installation manual and in compliance with practices listed in *AC43.13-2*, Chapter 2. All wires are Mil-Spec 22759 or 27500. No connection to the aircraft dimmer bus is required. No additional connection to aircraft power is made.

Aircraft equipment list, weight and balance amended. Compass compensation checked. A copy of the operation instructions, contained in PS Engineering document 200-004-(), revision (), Dated (), is placed in the aircraft records. All work accomplished listed on Work Order _____.

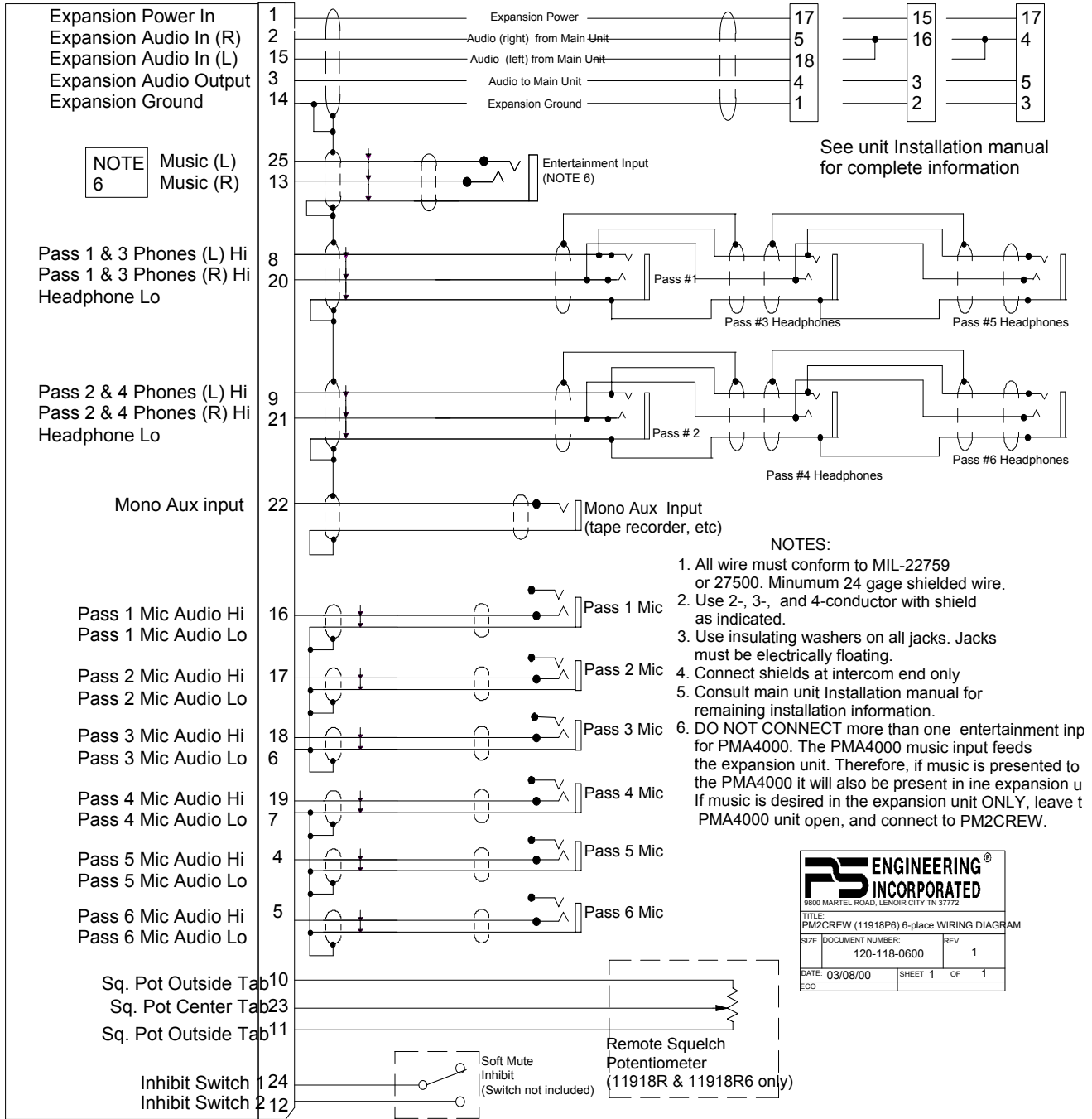
Appendix D Wiring Information



PM2CREW (11918, 11918R) Wiring

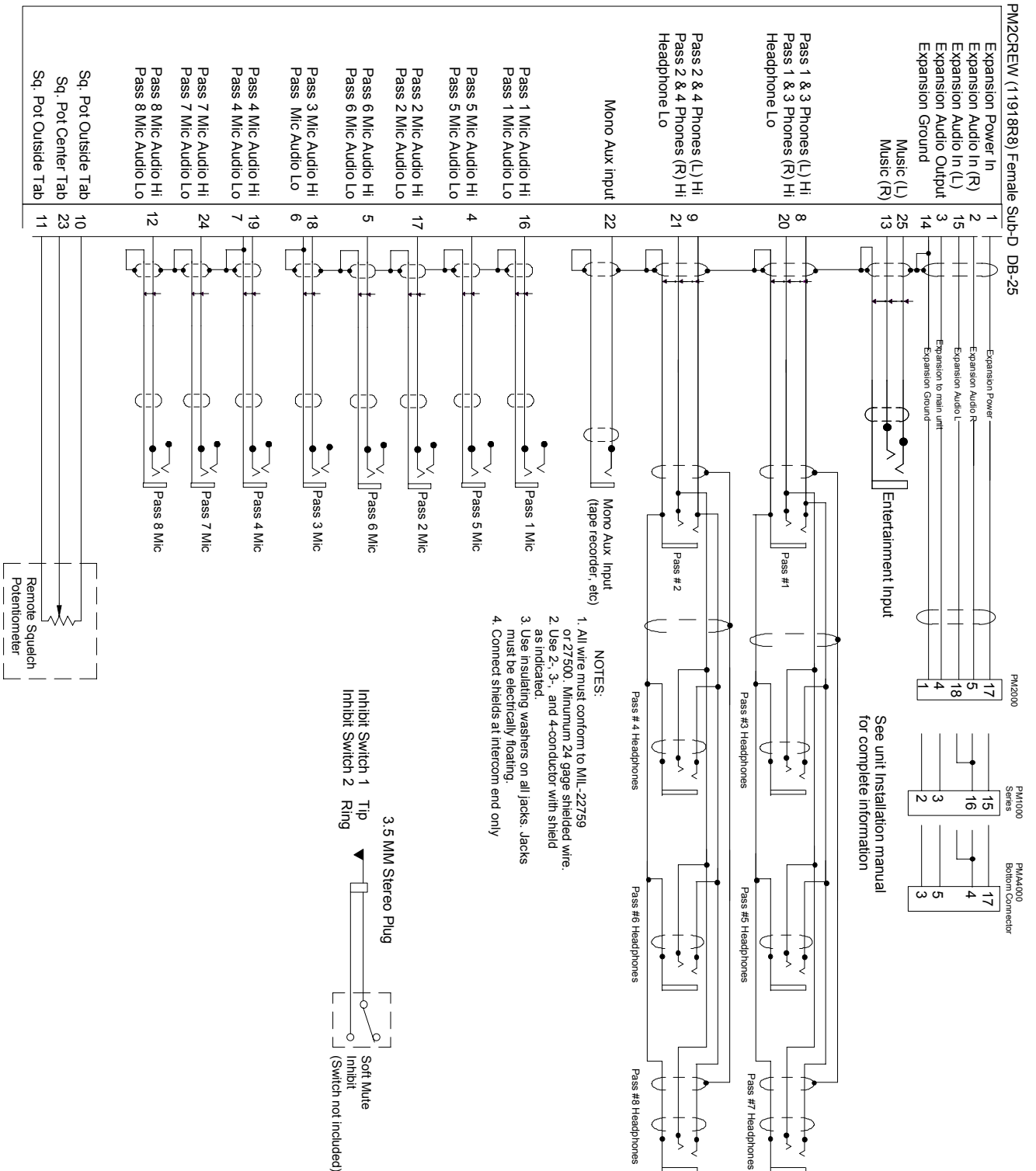
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PM2CREW (11918P6) Female Sub-D DB-25



6-place PM2CREW (11918P6, 11918R6) Wiring

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8-place PM2CREW (11918P8, 11918R8) Wiring