

Sigtronics Sport 200 S Installation Instructions

INTRODUCTION

ATTENTION INSTALLER: To assure a trouble free installation, please read the entire instructions through once before beginning.

Sport 200 S SYSTEM SPECIFICATIONS

CONFIGURATION – The Sigtronics Sport 200 S Intercom system is specifically designed for permanent, panel mounted installation in aircraft. The Sport 200 S provides voice activated (VOX) intercom, a Push-to-intercom mode for applications where voice activated (VOX) intercom operation is not desired, and music input for two headset positions in a small single chassis unit.

STEREO MUSIC INPUT – Music input accepts standard portable music headphone or line level outputs. Automobile Speaker level outputs can be adapted for use with Sport 200 S systems.

COMPATIBILITY – Sigtronics Sport 200 S intercoms have been designed to operate with all standard general aviation aircraft radios and headsets.

SIZE: Panel 1" x 2.5". Chassis - 1" high x 2.5" wide x 4" deep. Can be mounted either horizontally or vertically in the aircraft panel.

WEIGHT: 5.5 ounces (Sport 200 S intercom unit with panel and knobs). Jacks and wiring harness weigh 6.0 ounces

INPUT POWER: 11VDC through 32VDC. Maximum current drain 0.11 Amps

DISTORTION: Less than 1% total harmonic distortion.

WARRANTY: Sport 200 S intercoms are constructed of high quality components and carry a five year parts and labor warranty.

HARDWARE SUPPLIED

Besides the intercom unit and instructions, each Sport 200 S system comes with the following hardware:

Headphone Output Jacks - Accept standard 0.250" aircraft stereo or monaural headphone plugs.	2
Microphone Input Jacks - Accept standard 0.206" aircraft microphone plugs. (U93 plug compatible jacks can be used in place of the jacks provided – monaural installations only).	2
Mic Jack Insulating Washers, Flat	2
Mic Jack Insulating Washers, Shoulder	2
Intercom Panel - lettered on both sides.	1
Intercom Control Knobs	2
Mounting Screws 4-40 x 1/2	2
Drill Template - Adhesive backed hole size pattern for drilling aircraft panel.	1
Intercom/Aircraft Interface Cable (4 feet long)	1
Headphone/Music Interface Cable (4 feet long)	1
Stereo music input jack 3.5mm	1



MUSIC MUTE OPTIONS

FACTORY DEFAULT - PARTIAL MUSIC MUTE DURING ICS - When listening to music and someone speaks on the intercom the default factory operation is to partially mute the music so you can hear the conversation. The Sport 200 S intercoms have one additional option that can be enabled if desired. This option is enabled with the intercom removed from the aircraft.

FULL MUSIC MUTE DURING ICS OPTION - The music can be completely muted during intercom conversations. To enable this option, small jumper wires are installed on the solder side of the circuit board.

CHASSIS INSTALLATION

UNIT PLACEMENT

The Sport 200 S unit has been designed to mount either horizontally or vertically in your aircraft panel. The location selected for the Sport 200 S unit requires a minimum front panel area of 2 1/2" by 1". Depth required behind panel is 4" plus cable access.

CAUTION: Move the aircraft flight controls through the limits of travel while observing the selected area and making sure that the rear of the intercom and cable will not interfere with any aircraft control components.

PANEL PREPARATION:

1. Position the adhesive drill template on the aircraft panel in the selected area.
2. Center punch each hole at the cross lines. (Five holes are in a straight line and equally spaced 0.4" apart)
3. Drill 1/8" pilot holes in all five places.
4. Enlarge holes to 1/4" and 3/8" per the template.

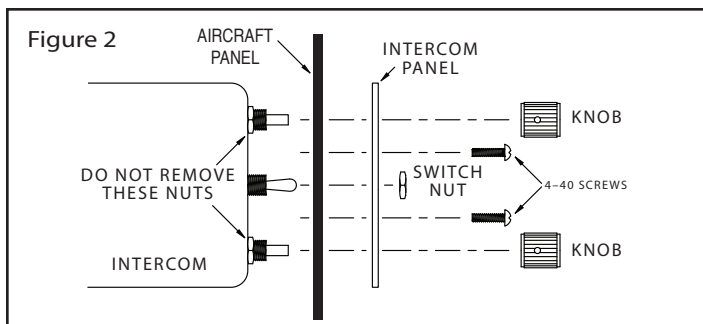
MOUNTING CHASSIS (See Figure 2)

1. Remove the knobs from the Volume and Squelch controls using a 0.050" Allen wrench. Remove the nut from the ON/OFF switch. **NOTE: DO NOT REMOVE** the nuts from the Volume and Squelch controls.



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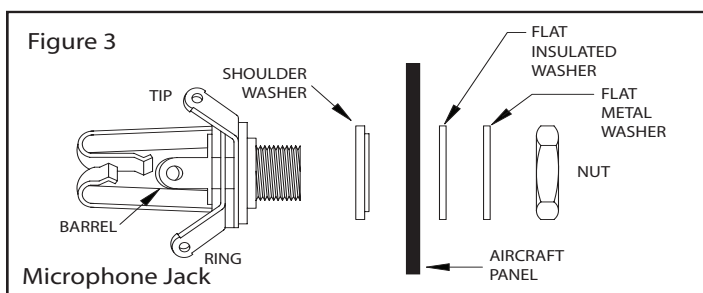
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2. Insert the Sport 200 S unit from the rear of the aircraft panel with the appropriate arrow on the unit chassis pointing upwards.
3. Install the printed Sport 200 S panel and lightly thread the two 4-40 screws through the holes in intercom panel. The nuts on the Volume and Squelch controls will fit inside the 3/8" diameter holes.
4. Tighten the two screws and switch nut.
5. Install the knobs on the Volume (VOL) and Squelch (SQ) control shafts and tighten the Allen screws.

MOUNTING HEADPHONE AND MICROPHONE JACKS (See Figure 3)

1. Locate the mounting areas. (One mic and one headphone jack required for each headset). Again, make sure that the jacks will not interfere with any aircraft control components. (Note that the jack contacts will



expand when a plug is inserted into the jack and must have clearance to prevent shorting.)

2. Drill 3/8" diameter holes for headphone jacks and install.
3. Drill 1/2" diameter holes for the mic jacks and install with the insulating washers supplied. (See Figure 3).

Note: If the aircraft already has pilot headset jacks, the location can be used for intercom with the following changes. The mic jack must be re-wired as follows:

1. Remove any existing wires from the tip, ring, and barrel connections.
2. Connect the intercom white/black wire to the ring terminal.
3. Connect one end of a ground wire to the barrel terminal of the mic jack and connect the other end to Intercom Central ground Point "A".
4. Install insulating washers as necessary if the barrel of the mic jack is mounted in metal. For the headphone jack, replace the mono headphone jack with the stereo headphone jack. Connect the green wire (P2 pin 1) to the tip connection. Connect the white/green wire (P2 pin 2) to the ring connection.

WIRING INSTRUCTIONS

Connections should be made as shown in Figure 4 and indicated in Tables 1 & 2. Also read the following notes referenced in Tables 1 & 2. If longer wire lengths are required, use a good quality multi stranded hook-up wire - 22 gauge or larger. Although not necessary, shielded audio wire can be used if desired.

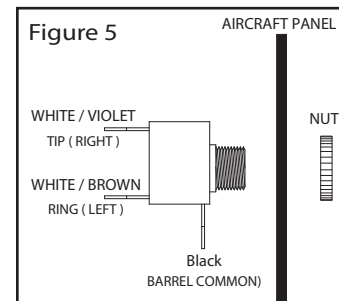
1. The blue wire from Pin 3 must be connected to the aircraft radio headphone output - **NOT** the speaker output. **NOTE** - If aircraft radio volume heard in the headsets changes significantly when switching the ON/OFF switch a minor modification to the installation will fix this. Just install a small 1/4 watt resistor in line with the blue wire. Select a value between 220 and 560 ohms for best results.

2. Connect all intercom mic jack grounds to a single aircraft chassis ground point - Intercom Central ground Point "A" - as shown in Figure 4. (Use the black washers supplied to insulate the intercom mic jacks from aircraft chassis ground). Note this intercom central grounding point is used to eliminate any unwanted electrical noises, such as alternator whine or strobe noise, from being induced into the intercom system through the grounds. All intercom mic jack barrels must be insulated from ground where they are mounted and connected back to Intercom Central Ground Point "A" on their own individual ground wire. Similarly, both intercom ground wires (J1 pin 4) and the push-to-transmit switch grounds must also be connected back to Intercom Central Ground Point "A". It is not necessary, however, to connect the headphone jack barrels to Intercom Central Ground Point "A". They can either be grounded where they are mounted or some place nearby.

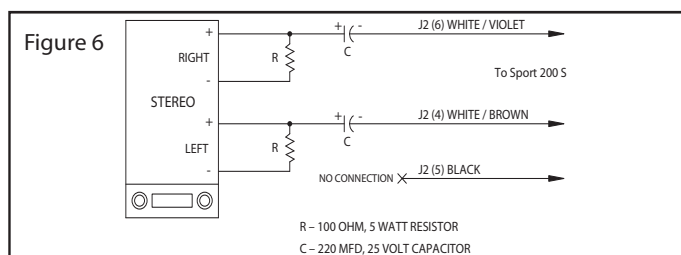
3. The red wire may be connected to either 12V (14V) or 24V (28V) power source. No switching or adjustments are required to operate from either source.

4. The Sport 200 S system provides a stereo music input. This music input accepts portable music Headphone or Line level music sources. The wiring diagram shows how to wire the Sport 200 S for use with a portable stereo music source. A small stereo input jack is supplied for this purpose. Connect the White/Brown, White/Violet, and Black wires to one jack as shown in Figure 4. Identify the jack terminals using Figure

5. Drill a 1/4-inch hole for the jack and mount on the aircraft panel. To use, connect an adapter cable between the music input jack and the output of the portable stereo. Suitable cables are available at your local Stereo or electronics store as well as from Sigtronics. Speaker level output car stereo music sources can also be used with the Sport 200 S system. A Floating Ground Adapter or a four wire to three wire converter will have to be used between the Stereo and the Sport 200 S music input. Figure 6 shows such an adapter and how it is wired into the Sport 200 S.



5. The Sigtronics Sport 200 S system can be installed as shown for use with Stereo headsets. Alternatively, monaural general aviation type headsets can be used. To use monaural headsets follow the installation instructions as normal except for the wiring of the stereo headphone jacks. Use the stereo headphone jacks supplied with the Sigtronics Sport 200 S but leave the "RING" connections open. Instead connect both headphone wires to the "TIP" of the respective jacks. Connect both the WHITE/GREEN and GREEN on to the TIP of the headphone jack.



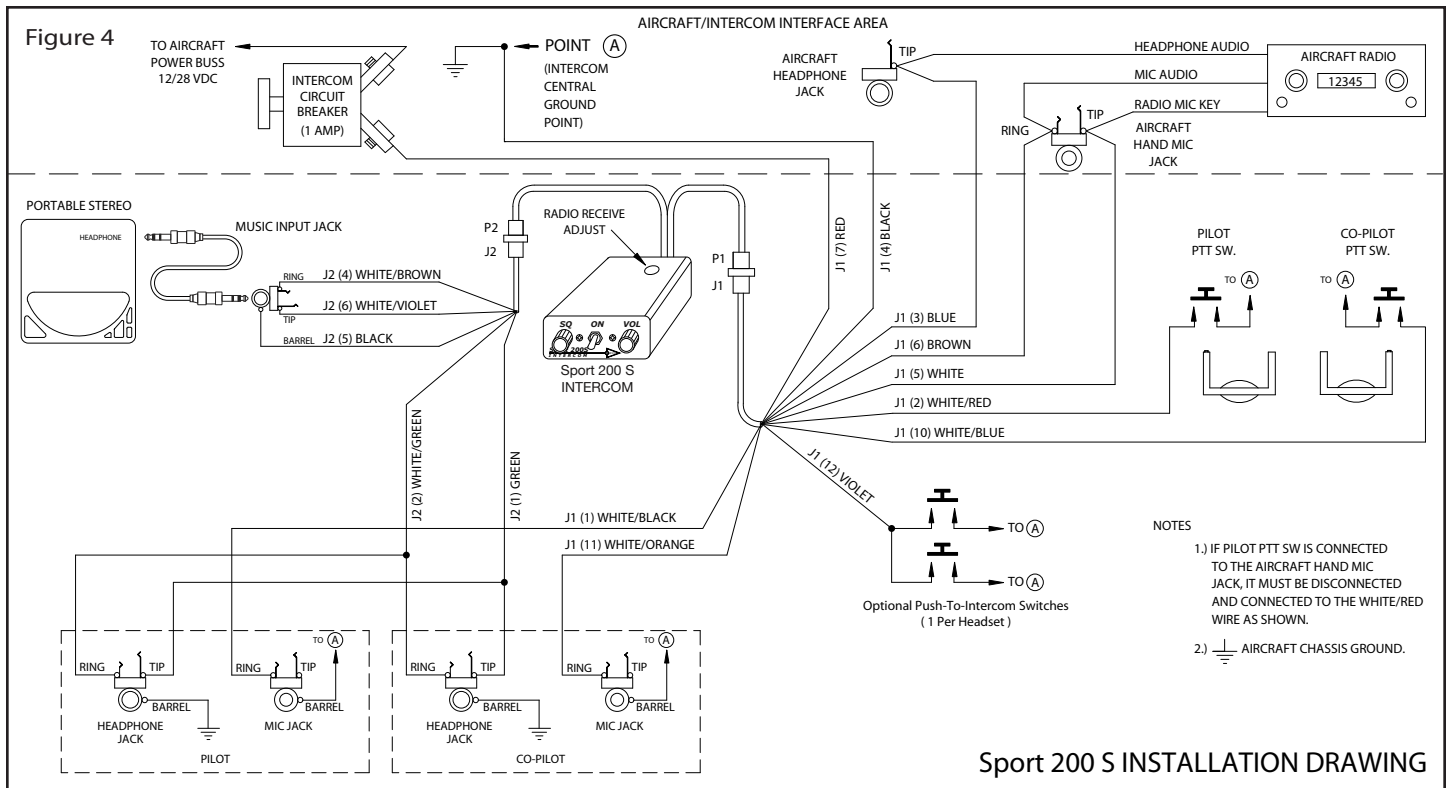


TABLE 1 - P1/J1 - See Wiring Instructions			
PIN	WIRE COLOR	FUNCTION	CONNECT TO
1	White/Black	Pilot Mic Input	Ring Terminal of Pilot Mic Jack
2	White/Red	Pilot Transmit Switch Input	Pilot Transmit Switch (PTT) (Switch to Ground to Transmit)
3	Blue *1	Radio Headphone Input	Radio Headphone Output
4	Black *2	Intercom Central Grounding Point "A"	Aircraft Chassis Ground
5	White	Radio Transmit Key Output	Tip Terminal of Aircraft Hand Mic Jack, or Key Input of Aircraft Radio or Audio Panel
6	Brown	Transmit Mic Audio Output	Ring Terminal of Aircraft Hand Mic Jack or Mic Input of Aircraft Radio or Audio Panel
7	Red *3	12 through 28 VDC Power Input	Intercom Circuit Breaker
8	NC	None	No Connection
9	NC	None	No Connection
10	White/Blue	Co-Pilot Transmit Switch Input	Co-Pilot Transmit Switch (PTT) (Switch to Ground to Transmit)
11	White/Orange	Co-Pilot Mic Input	Ring Terminal of Co-Pilot Mic Jack
12	Violet *6	ICS PTT	ICS PTT Switches

TABLE 2 - P2/J2 - See Wiring Instructions			
PIN	WIRE COLOR	FUNCTION	CONNECT TO
1	Green *5	Intercom Right Headphone Output	Tip Terminal of Headphone Jack
2	White/Green *5	Intercom Left Headphone Output	Ring Terminal of Headphone Jack
3	NC	None	No Connection
4	White/Brown *4	Music Input Left Channel	Left Music Source Headphone or Line output
5	Black *4	Music Input Common	Music Source Common Headphone or Line Output
6	White/Violet *4	Music Input Right Channel	Right Music Source Headphone or Line Output

6. The Violet wire (J1 pin 12) is provided on the Sport 200 S for an optional Push-to-intercom function. For wiring and additional instructions see the "Sport 200 S PUSH-TO-INTERCOM INSTRUCTIONS" section on page 4. Make sure any unused wires are properly insulated and kept from shorting to any other wires or aircraft ground. Skip down to the "INSTALLATION CHECK OUT AND ADJUSTMENT" section on this page.

INSTALLATION CHECK-OUT AND ADJUSTMENTS

After the unit is installed, again check that the Sport 200 S unit chassis, jacks, and wiring harness are clear of all aircraft operating controls and cause no interference with them. Next, to check out the Sport 200 S unit installation, plug in all the headset mic and phone plugs into the respective intercom jacks. Put on the pilot's headset and position the boom mic close to the mouth. Voice clarity is best when the mic is at one side of the mouth and 1/4" from the lips.

To assure that the aircraft radios, pilot's headset, and PTT switch are connected and functioning properly, switch the Sport 200 S ON/OFF switch to the "off" position. If applicable, set the aircraft audio panel to "Headphone" position. Then turn on the aircraft radio(s) as usual, and verify that the pilot can hear the radios and can transmit using his push-to-transmit switch and headset. Aircraft radio(s) and audio panel should operate exactly as they did before the Sport 200 S system was installed. Aircraft radio reception should also be heard in the co-pilot headsets. There should be no intercom between headsets with the Sport 200 S unit "off." Next turn the Sport 200 S unit "on." Set the Sport 200 S volume control to mid-position. Set Sport 200 S squelch control fully clockwise. Verify that the Pilot and co-pilot can operate the aircraft radio(s). As before, both headsets on the intercom will hear the aircraft radio(s). Check that both headset positions can intercom.

Mic Output Adjust

It may be necessary at this time to adjust the Sport 200 S unit mic output to the aircraft radios. A small adjustable potentiometer is provided inside the unit for this purpose. It is accessible through a hole in the side of the Sport 200 S chassis. It is marked "Mod. Adj.," and can be adjusted with a

small blade screwdriver. In the event of over-modulation (garbled) or reports of weak transmissions over the aircraft radio, an appropriate adjustment can be made. Clockwise rotation increases the output level to the aircraft radio mic input. Counter-clockwise rotation decreases modulation level. This adjustment sometimes needs to be made after the initial installation of the intercom or if a new radio is installed. (The output is set for unity gain at Sigtronics).

Radio Receive Adjust

It may also be necessary to adjust the unit radio receive input from the aircraft radio. A small adjustable potentiometer is provided inside the unit for this purpose. It is accessible under a sticker on top of the chassis box (see Figure 4), and can be adjusted with a small blade screwdriver. In the event of low aircraft radio volume in the "ON" mode relative to "OFF" mode, an appropriate adjustment can be made. Clockwise rotation increases the input level to the Sport 200 S radio receive input. Counter-clockwise rotation decreases input level. This adjustment sometimes needs to be made after the initial installation of the intercom or if a new radio is installed that has a low output impedance or low output power. The adjustment is best made with all headsets plugged in. (The input is set full CCW which is unity gain for 500Ω radios). **Note:** Be sure to replace the sticker when you have completed the adjustment.

You are now ready to check for proper wiring of the music source. First, make sure squelch is off (full counter clockwise) and intercom is ON. Turn on the music source and listen for music through pilot and co-pilot headsets. There should be music.

If everything checks out, refer to the Sport 200 S OPERATING INSTRUCTIONS sheet for proper use and other operating modes of the Sigtronics Sport 200 S intercom system. If something does not work as described, carefully go over the intercom wiring again. If something is still not right or you have any questions regarding the installation and operation of the Sigtronics Sport 200 S intercom or any other Sigtronics product feel free to contact us directly or E-mail us at tech@sigtronics.com. Technicians are available Monday through Friday 8 am to 4:30 PM Pacific time.

See the separate Sport 200 S OPERATING INSTRUCTIONS sheet for complete operation information.

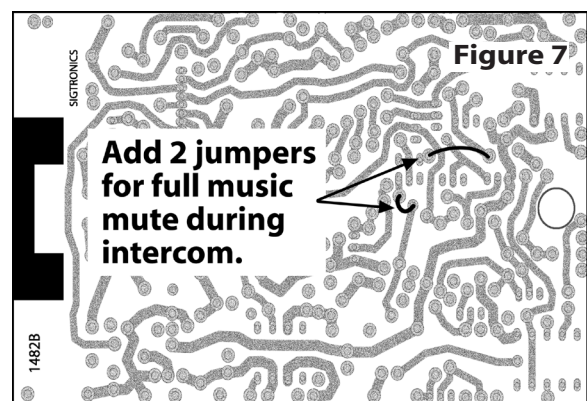
HOW TO SELECT MUSIC OPTION

To select full music mute during intercom the unit must be removed from the aircraft. This is done by first removing the volume and squelch control knobs with a 0.05 inch Allen wrench. Then remove the two mounting screws and switch nut that holds the unit in the panel. The unit is now free for removal from the aircraft after disconnecting the cables at the plugs.

To enable this option, modification to the bottom of the units' circuit board is required. **CAUTION** – a qualified technician should perform this modification. First remove the three screws securing the bottom cover to the case and carefully lift and remove the cover. Note that the circuit board does not have to be removed from its case to complete the modifications.

To select full mute during intercom solder the two small-insulated jumper wires at the locations specified in Figure 7.

Replace the cover and secure it with the three screws as before. Install the unit back into the panel and plug in the two cables.



Sport 200 S PUSH-TO-INTERCOM INSTRUCTIONS

Install a separate momentary switch at each headset position. Connect per Figure 4. To use the push-to-intercom feature, turn the squelch control on the intercom fully counter-clockwise. Then to activate, press the push-to-intercom switch(s). Alternately, to use the intercom in voice activated (VOX) mode set the intercom squelch as normal. See the separate Sport 200 S OPERATING INSTRUCTIONS sheet.

Model: SPA-200S

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