Arrakis Systems

Application Notes For the 150 sc, 500 sc, 2000 sc, 2100 sc series consoles.

1. Power Supply

A: Place power supply in a well vented area. You can not stack all kinds of equipment on top of each other in a tight equipment rack. Leave at least two rack spaces (3 ¼) inches above and below the power supply.

B: The problem shows up when you turn on the input channels. As you add more channels and leave them on the console audio will either shut down or will get distorted. This may be due to the calibration of the 1.5 amp and 3 amp power supplies. As you are turning input channels on the power supply's load will increase and the 3 amp power supply's negative voltage will drop below the 1.5 amps negative voltage setting. On the sc series consoles adjust the 1.5 amp voltage setting to + 12.0 and – 12.0 volts. On the 3.0 amp power supply adjust the voltage to + 12.30 and –12.30. You want the 3.0 amp power supply 300 mill volts higher than the 1.5 amp power supply.

2. Intermittent Ribbon Jumpers

The ribbon jumpers supply the ground, power supply voltage, logic control, and audio busses to the PC boards. Over the years you may lose one or more ribbon connections. To test put a 1 khz test tone into channel 3 of the first preamp PC board. Set the level to 0vu on the VU meters. Move the ribbon jumper back and forth and watch the program and audition VU meters. If the needle moves with the movement of the ribbon you may have an intermittent ribbon jumper.

3. Crosstalk

A: Check your minus outputs on the Output PC board OB-3A. The minus should not go to ground. The common problem is driving the unbalanced input record source such as a cassette deck. The proper hookup should be the plus goes to the center of the RCA plug, and the shield ground goes to the outside ring of the plug. Do not connect the minus console output to the RCA plug.

B: On the SC series audio consoles that use the OB3-A output PC board you will have some interaction between the earphone, cue, and monitor power amps. These power amps are fed from the same DC power supply.

you may add extra bypass filter capacitors to the monitor amp mounted on the back wall. Use 2200 MFD 24 volt capacitors from the positive DC supply to ground and the negative DC supply to ground. You may replace the 10 MFD caps C3 and C4 that are used for that purpose. I have found this will greatly reduce the monitor amp cross talk.

4. Cleaning

After you have added any new equipment and new wiring to the console, vacuum out the PC boards. You may use a small paint brush with the vacuum. This should remove any debris that may have entered the console.

5. Oscillations

When installing your phone hybrid to the utility right mix minus output, install two 300 ohm resistors in series with the plus and minus outputs to the phone hybrid input. This will prevent any oscillations that may occur.

6. RF Noise

A: RF problems are tricky and each installation is unique to it's own situation however, there are installation techniques that have proven to be very successful. The studio needs a good station ground. This is very important in the high RF environments with AM & FM transmitters. This ground should be a minimum of a 2 inch wide copper strap. In some studios with very high RF use 4 to 6 inch copper strap. This strap should go to each studio to form a star ground. Take the end of the ground strap and attach it to your copper ground stake separate from the RF ground system. Over the years my experience has shown me by separating the studio ground from the transmitter ground I have greatly reduced RF noise in the studio wiring. The copper strap should connect directly to the console chassis. You may use short jumpers from the copper strap to your other equipment to ground them. Try to keep these jumpers as short as possible as not to act as an antenna.

B: On the OB3-A output PC board install 47pf capacitors in the VU meter driver section. Place the 47pf capacitors in parallel with the 500k trim pots for audition left, audition right, program left and program right.

7. Console Calibration

A: You will need a AC voltmeter and Tone generator to set up the console calibration. Set the tone generator frequency to 1khz, set the output level to +4db or 1.22 volts rms.

B: Mono the line input by connecting the left plus to the right plus, jumper the left minus to the right minus. Connect the tone generator output to this console input.

C: Set the fader to the in hand setting. On the slide fader count six lines from the top towards the bottom of the fader. With a rotary fader console set the fader at the 12 o'clock position.

D: Set the input trim pot located on the input PC board all the way counter clockwise. Refer to page 57 in the turbo sc manual. This is the unity gain setting for the console.

E: Connect the AC voltmeter to the console output PC board OB3-A. Start with the audition left, audition right, program left, program right, audition mono, program mono, utility right used for mix minus output. Set there trim pots for plus 4db or 1.22 volts RMS on the AC voltmeter.

F: After you have finished with output summing amp adjustments now set your VU meter levels. Adjust the VU meter trim pots located on the output PC board OB3-A.

Set the VU meter needle to 0 VU or 100% on each VU meter. You may refer to page 55 in the turbo sc manual.

G: Setting the Cue power amplifier output level. Turn the cue fader level on the top lid of the console all the way clockwise. Connect a 8 ohm load to the cue amplifier output. Connect the AC voltmeter to the cue amplifier output and adjust the cue input trim pots for plus12db output level. The cue input trim pots are located at the back right side of the OB3-A output PC board.

Console calibration is very important for a clean running studio. You want to minimize the crosstalk and noise, and give the maximum headroom the console is capable of producing.

8. Unbalanced Inputs and Outputs

A: You may connect unbalanced consumer audio sources to the audio consoles balanced inputs and outputs. When connecting the output of a CD player the center of the RCA plug should go to the plus input. The outside shield of the RCA plug should go to the minus and ground connection of the console input. You will have to increase the input signal level to the console input. Use the input trim pot on the consoles input PC board and adjust the level.

B: When connecting the record input to a cassette or minidisk connect the RCA center to the plus output on the consoles output PC board. Connect the outside shield of the RCA plug to the ground connection on the output PC board. DO NOT connect or use the minus console output to the RCA plug leave this connection open. Use only the plus and ground connections at the audio console output PC board.

With factory calibration the audio console output is at the +4db level. The VU meter will read 0vu or 100%. To feed the –10db level for the unbalanced consumer equipment use a 10k ohm pot. Place this 10k ohm pot in between the console audition output and the consumer equipment record input. The top connection of the pot will go to the audio consoles audition plus output. The wiper of the pot will go to the consumer record input to the center of the RCA plug. The bottom connection of the pot will go to the consoles ground connection. The record input shield of the RCA plug will connect to the consoles ground connection as well. Now you have an adjustable input level control for your consumer record device.

C: When using unbalance consumer equipment be careful of your grounding as not to create any ground loops. RF interference and noise may cause problems when using unbalanced equipment as well. With FM RF interference use ferrite beads or chokes. Wrap the audio wire around and through the choke at the console inputs. Add additional chokes along the wire length if interference is severe.

9. ITT Shadow Switch Maintenance

You may find that removing the ITT shadow switches from the PC board may be quite difficult. Trying to remove the switches with out the proper desoldering equipment will usually damage the PC board traces and prove to be very time consuming. For in field repair please try the following repair method below. You will save yourself time and aggravation.

This procedure will be used on all of the ITT shadow switches used in the Arrakis series consoles. You may clean or replace your ITT switch parts. This is a preferred repair method, which prevents damage to the PC board. The switch has three main parts, the lens cap, the white insert, and the black switch housing. You will remove the white insert with the lens cap still attached. The square (orange color) lens cap is on the monitor switch, the square (green color) lens cap is on the buss select switch.

On the round yellow A/B switch cap, which is used on the input modules, there is a leg from the yellow color part that will hook through a hole in the switch frame. Gently squeeze the yellow clip and push it through the switch frame hole in the direction of the lens cap. You may also remove and or replace the lens caps from the white insert if it is necessary.

Now you may remove the white insert, which has the sliding, contacts on each side. To remove the white insert, which is located inside the black switch housing, find the top hold clamp, which is located at the top of the black switch housing. Look between the two rows of solder eyelets. Push in slightly the white insert with your finger then gently lift the top hold clamp and at the same time pull the white insert piece out of the black switch housing. Be careful not to bend the hold clamp up to far and brake it off or you will be replacing the black switch housing.

You may now either replace or clean your white insert piece. To replace remove the white insert from the new switch you just purchased. To clean, hold the white insert between your pointer finger and thumb. Clean the sliding contacts with a contact cleaner such as Techspray 1622-10S or a quality tuner wash such as Blue shower etc. Clean the inside of your black switch housing by using a cotton swab. Wash out any lose debris with the tuner wash. Do not use any type of lubricant inside the switch housing.

This ITT switch comes in 3 styles, momentary, latching, and interlocking. For the latching switch, remove the C clamp located at the top of the switch that is held down with a spring. Move the spring up and lift the C clamp out. For the interlocking style such as the A/B type, or multi select, push down the opposite switch and then remove the white insert as described above. You must push down all the way to remove the sliding interlocking tab. Once you go through this procedure you will find it takes less time to do and far better than trying to remove the switch from the PC board and damaging the PC traces.

10. P&G SLIDE FADERS

This cleaning procedure will be used on the Penny & Giles 3100 series slide fader. Remove the black end cap that has the wires coming out of it. Now slide the blue PC board out all of the way. To clean the PC board use a cloth and spray with tuner wash then buff the board until clean. Now remove the slider arm, be careful not to bend the slider wires. When cleaning the slider wires wipe in one direction only. Start at the slider arm body and wipe away from it. Now with a cloth, clean the slider shaft. You may use a silicone lubricant on the slider shaft only. Do not use any petroleum lubricants as this will break down the nylon parts inside the slider arm. To reassemble insert the blue PC board first. Install just halfway, then insert the slider arm with the slider wires facing the blue PC boards black surface. The black surface is the conductive plastic part that you just cleaned. Now insert the blue PC board in all the way to the end. Reinstall the rubber washer on to the slider shaft; install the end cap and screws. For slide fader parts please contact www.pennyandgiles.com or in the USA contact www.manquen.net.