

SPIRIT M SERIES

M-SERIES

USER GUIDE



SAFETY GUIDE

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USER GUIDE

SAFETY SYMBOL GUIDE

For your own safety and to avoid invalidation of the warranty all text marked with these Symbols should be read carefully.



CAUTIONS
Must be followed carefully to avoid bodily injury.



WARNINGS
Must be observed to avoid damage to your equipment.



NOTES
Contain important information and useful tips on the operation of your equipment.



IMPORTANT
Please read this manual carefully before connecting your Mixer to the mains for the first time.

CE	This equipment complies with the EMC directive 89/336/EEC and LVD 73/23/EEC and 93/68/EEC Environment: E1-E4 This product is approved to safety standards:	
	Product Part Nos:	
M4: RW5631	EN60065 : 1994 UK/EU	
M8: RW5632	UL6500 : 1996 US	
M12: RW5633	CSA E65 : 1994 CAN	
Inrush Current: 4 Amps Peak		
For further details contact:		
Harman International Industries Ltd. Cranborne House, Cranborne Road Potters Bar, Hertfordshire, EN6 3JN, UK		
Tel:	+44 (0) 1707 665000	
Fax:	+44 (0) 1707 660482	
e-mail:	info@soundcraft.com	

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Part No. ZM0252
Issue: 1.2

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Harman International Industries Limited
Cranborne House
Cranborne Road
POTTERS BAR
Hertfordshire
EN6 3JN
UK

Tel: +44 (0)1707 665000
Fax: +44 (0)1707 660742
<http://www.soundcraft.com>

USER GUIDE



WARRANTY

- 1 **Soundcraft** is a trading division of Harman International Industries Ltd .
End User means the person who first puts the equipment into regular operation.
Dealer means the person other than Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft or its accredited Distributor.
Equipment means the equipment supplied with this manual.
- 2 If within the period of twelve months from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected the Equipment or the defective component should be returned to the Dealer or to Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.
- 3 Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Soundcraft) and postage must be prepaid.
- 4 This warranty shall only be valid if:
 - a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and
 - b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and
 - c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and
 - d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance Soundcraft's recommendations.
- 5 Defects arising as a result of the following are not covered by this Warranty: faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.
- 6 The benefit of this Warranty may not be assigned by the End User.
- 7 End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.



IMPORTANT SAFETY INSTRUCTIONS

CAUTIONS

- To avoid the risk of fire, replace the mains fuse only with the correct type and value fuse, as marked on the rear panel.
- **ATTENTION:** - Afin de réduire le risque de feu remplacer seulement avec fusible de même type.
- **MAiNS VOLTAGE SELECTION**
This setting is **NOT** User Adjustable.
This unit is capable of operating at either 230V AC or 115V AC mains voltages $\pm 10\%$, which are set at the time of manufacture and marked on the rear panel. It is important to ensure that the correct mains voltage is present at your mains outlet and that the correct fuse is fitted before switching on the unit.
To change the mains operating voltage, refer to qualified service personnel.
- **REPLACING MAINS FUSE**
Switch the ON/OFF switch to the OFF position. Remove the mains lead from the connector. Use a small screwdriver to unscrew the fuse carrier from its location to the left of the mains power connector. Check the fuse is of the correct type and value and replace if necessary; also check that the voltage selection as marked on the rear panel is correct for the mains supply level before switching the unit ON again.
If the mains fuse fails repeatedly this may be because an electrical safety hazard exists. The unit must be taken out of service and referred to the Soundcraft dealer from where the equipment was purchased.
- **THIS UNIT MUST BE EARTHED**
Under no circumstances should the mains earth be disconnected from the mains lead.
- **ATTENTION:** - Cet appareil doit être branché à la terre.
- The wires in the mains lead are coloured in accordance with the following code:
Replacement Part No: FJ8016 (UK) : FJ8017 (EU) : FJ8018 (US & CAN)

	<u>UK & EU</u>	<u>US & CAN</u>
Earth / Ground:	Green and Yellow	Green and Yellow
Neutral:	Blue	White
Live:	Brown	Black

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth / ground symbol:

The wire which is coloured Blue or White must be connected to the terminal in the plug which is marked with the letter N.

The wire which is coloured Brown or Black must be connected to the terminal in the plug which is marked with the letter L.

Ensure that these colour codings are followed carefully in the event of the plug being changed.

- Do not install near any heat sources such as radiators, heat resistors, stoves, or other apparatus (including amplifiers) that produce heat.

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- Do not use this apparatus near water.
- Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use cables and hardware specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as power-supply cord or plug is damaged., liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.
- It is recommended that all maintenance and service on the product should be carried out by Soundcraft or its authorised agents. Soundcraft cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.
- If a trolley is used, use caution when moving the trolley / apparatus combination to avoid injury from tip-over.



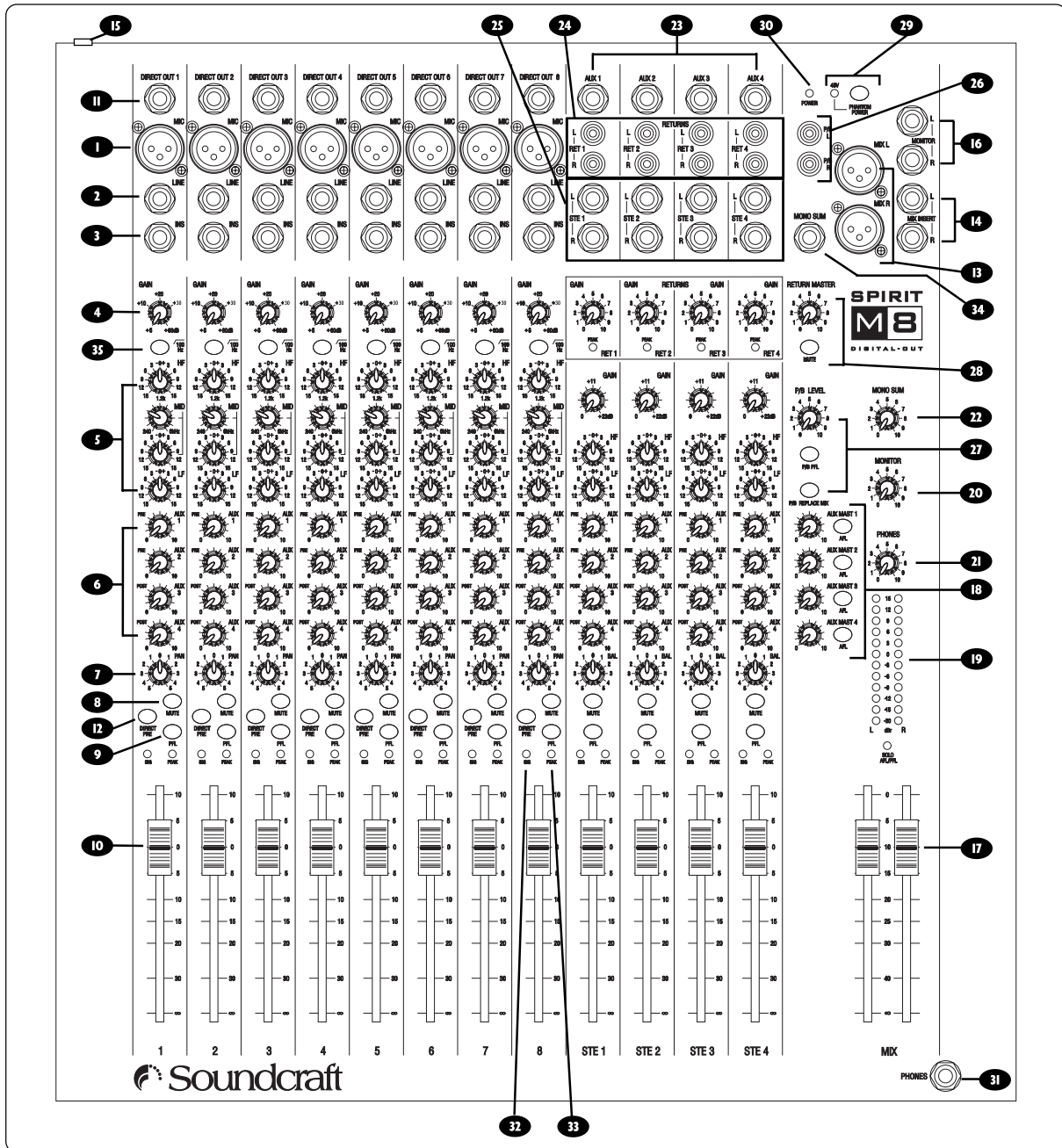
WARNINGS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- This unit contains no user serviceable parts. Refer all servicing to a qualified service engineer, through the appropriate Soundcraft dealer.
- Clean only with a damp cloth.
- DO NOT block any of the ventilation openings. DO NOT install where air cannot flow over the rear of the unit. DO Install in accordance with the manufacturers instructions.

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OVERVIEW



To get you working as fast as possible, this manual begins with a 10 second tutorial. Here you can find quick information on any feature of the console, and a page reference **P** where you can find a more detailed explanation.

THE 10 SECOND TUTOR



1 MIC INPUT (XLR)

WARNING: Do Not apply Phantom Power before connecting a Microphone.

2 LINE INPUT (1/4" Jack)

3 INSERT POINT (1/4" Jack)

4 GAIN CONTROL

Connect Microphones here. If you are using a condenser mic ensure phantom power is supplied by pressing the switch at the top of the master section **29** **16**

Connect Line level sources here **16**

Connect Signal processors here **16**

Adjust this to increase or decrease the level of the incoming signal **17**

SPIRIT M SERIES

- 5 EQ STAGE Adjust these controls to change the signal tone 17
- 6 AUX SENDS Adjust these controls to change the level of the signal to an FX unit or an artist's monitors (head phones/in-ear/stage monitors). Aux 1&2 are pre-fade, while Aux 3&4 are post-fade 17
- 7 PAN CONTROL Use this control to position the signal within the stereo field 17
- 8 MUTE SWITCH When this is pressed you will hear no signal from the channel 18
- 9 PFL (PRE-FADE LISTEN) When pressed the signal will appear on the monitor outputs - use this to monitor the post eq signal from the channel 18
- 10 INPUT CHANNEL FADER This is used to control the level fed to the Mix Bus 18
- 11 DIRECT OUTPUT (1/4" Jack) This output can be used to send the channel signal to a recording device, such as a multi-track recorder 16
- 12 DIRECT PRE This switch controls the source for the direct output. When the switch is down the D/O is pre-fade, and when the switch is up the D/O is post-fade 18
- 13 MIX OUTPUTS (XLR) Connect these to your analogue recording device, or to your amplification system 22
- 14 MIX INSERTS (1/4" Jack) This is a pre-fade break in the signal path which can be used to feed a dynamics or mastering device. The signal is sent from the tip of the jack plug and the return path comes back in on the ring of the jack plug 22
- 15 S/PDIF OUTPUT This is a digital version of the Mix Output and can be used to send any source or the entire mix to a digital recorder or computer sequencer via the appropriate hardware 25
- 16 MONITOR O/Ps (1/4" Jack) These are used to feed your monitoring system. This can be directly to powered monitors, or indirectly via an amplifier to standard monitors 22
- 17 MASTER FADER This fader controls the overall level of the mix bus 22
- 18 AUX MASTERS These controls can be used to adjust the overall level of a specific auxiliary send to an effects unit 21
- 19 MAIN METERS These show the level of the mix outputs. When the PFL/AFL LED is lit, the meters show the level of the signal sourced 21
- 20 MONITOR CONTROL This controls the level of the signal sent to your monitoring system 21
- 21 PHONES CONTROL This controls the level of the signal sent to the headphones jack socket 21
- 22 MONO SUM CONTROL This controls the level of the signal sent to the mono sum output 22
- 23 AUX OUTPUTS (1/4" Jack) These four outputs can be used to send the channel signal to an FX unit or an artist's monitors (headphones/in-ear/stage monitors). Aux 1&2 are pre-fade, Aux 3&4 are post-fade 20
- 24 STEREO RETURN INPUTS (RCA Phono) These four inputs can be used to connect the return signal from an FX unit, or a stereo feed from consumer devices such as CD-Players, Minidisc etc. The level of these inputs are controlled by the RET1,2,3 & 4 controls and are sub-mixed via the returns master control before being sent to the Mix Outputs 19
- 25 STEREO INPUTS (1/4" Jack) These four inputs can be used to connect line level stereo inputs from keyboards, sound modules, samplers, computer based audio cards etc. These inputs pass through a normal channel strip, with EQ, Auxes and a Balance control 19
- 26 PLAYBACK INPUT (RCA Phono) Here you can connect the playback from your recording device 22
- 27 PLAYBACK CONTROLS Use this to control the level of the playback signal. There is also a PFL/AFL switch and a PLAYBACK REPLACES MIX switch 21
- 28 RETURNS MASTER This controls the overall level of the stereo return inputs. There is also a MUTE switch so that you can quickly compare your mix, with and without FX 22
- 29 PHANTOM POWER Press this to switch the phantom power (48V) on for condenser microphones **WARNING:** Do Not apply Phantom Power before connecting a microphone 21
- 30 MIXER POWER LED This LED will light when the unit is switched on 21
- 31 HEADPHONES (1/4" Jack) Plug your headphones into this socket 27
- 32 SIGNAL PRESENT LED This is used to indicate the presence of a signal on a specific channel 18
- 33 PEAK LED This is used to indicate signal clipping on a specific channel 18
- 34 MONO SUM OUTPUT This output provides a Mono sum of the main L & R mix outputs 22
- 35 100Hz FILTER When pressed, this switch significantly reduces the level of frequencies below 100Hz 17



USER GUIDE

INTRODUCTION

Thank you for purchasing a Soundcraft mixer. We take great pride in our latest addition to the Spirit range of mixing consoles - you have taken a step in the right direction and should never look back.

The Packaging which your Spirit M Series arrived in, forms part of the product and must be retained for future use.

Owning a Soundcraft console brings you the expertise and support of one of the industry's leading manufacturers, and the results of nearly 3 decades of supporting some of the biggest names in the business. Our knowledge has been attained through working in close contact with leading professionals and institutes to bring you products designed to get the best possible results from your mixing.

Built to the highest standards using quality components and surface mount technology, the Spirit M Series is designed to be as easy to use as possible. We have spent years researching the most efficient methods of control for two key reasons:

1) Engineers, musicians, writers and programmers all need to have very few interruptions to the creative process; our products have been designed to be almost transparent, allowing this process to breathe.

2) Whether performing or recording, time is a very expensive and rare commodity. Our products have a user interface which is recognised by millions to be the industry standard because of its efficiency.

The sonic qualities of our products are exemplary - some of the same circuits which are used on our most expensive consoles are employed in the Spirit M Series, bringing you the great Soundcraft quality in a small format console without compromise.

You will also be glad to know you have a one year warranty with your product from the date of purchase. The Spirit M Series has been designed using the latest high-end software based engineering packages. Every console from Soundcraft has been proven to stand up to all the stress and rigours of modern day mixing environments.

The entire Spirit M Series is manufactured using some of the most advanced techniques in the world, from high density surface mount PCB technology, to computer aided test equipment able to measure signals well outside the range of normal hearing. As each console passes through to be quality checked before packing there is also a human listening station. Something we have learnt over the years is that the human touch counts - and only by using people can you ensure the product meets the high demands of the user.



ADVICE FOR THOSE WHO PUSH THE BOUNDARIES

Although your new console will not make any noise until you feed it signals, it has the capability to produce sounds which when monitored through an amplifier or headphones can damage hearing over time.

Please take care when working with your audio - if you are manipulating controls which you don't understand (which we all do when we need to learn), make sure your monitors are turned down. Remember that your ears are the most important tool of your trade, look after them, and they will look after you.

Most importantly - don't be afraid to experiment to find out how each parameter affects the sound - this will extend your creativity and help you to get the best from your mixer and the most respect from your artists and audience.



INSTALLATION AND SAFETY PRECAUTIONS

ABOUT THIS MANUAL

This manual describes the safety precautions, warnings, specifications, installation and operating procedures specific to the following Soundcraft products only:

- **Spirit M4** **RW5631 UK / EU / US**
- **Spirit M8** **RW5632 UK / EU / US**
- **Spirit M12** **RW5633 UK / EU / US**

The information in this manual should be read by end users of one of the above products only. In particular, this manual should not be read in conjunction with any other product not listed above.

The above products do not contain any user-serviceable parts and the user guide does not contain any technical servicing information. Qualified service personnel can obtain a separate Technical Manual incorporating the user guide, Part No ZM0255 from Soundcraft or one of its accredited distributors.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor. Soundcraft shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual.

INSTALLING THE MIXER

Correct connection and positioning of your mixer is important for successful and trouble-free operation. The following sections are intended to give guidance with cabling, connections and configuration of your mixer.

- Choose the mains supply for the sound system with care, and do not share sockets or earthing with lighting dimmers.
- Position the mixer where the sound can be heard clearly.
- Run audio cables separately from dimmer wiring, using balanced lines wherever possible. If necessary, cross audio and lighting cables at right angles to minimise the possibility of interference. Keep unbalanced cabling as short as possible.
- Check your cables regularly and label each end for easy identification.

SAFETY PRECAUTIONS

For your own safety and to avoid invalidation of the warranty please read this section carefully.

In particular, you should also read the Cautions and Warnings on pages 5-6 of this manual.

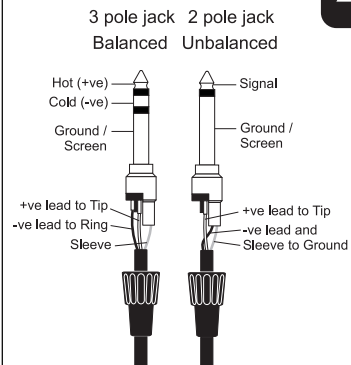
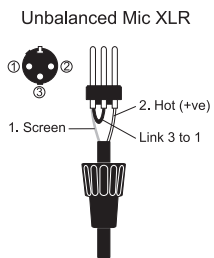
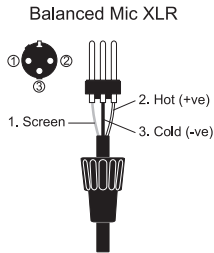
**The console must only be connected to the Mains
Power voltage indicated on the rear panel.**

**To avoid the risk of fire, replace the mains fuse only with the
correct value fuse, as indicated on the rear panel.**

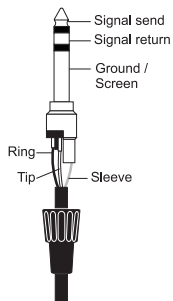


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INPUTS



Inserts



WIRING UP

Please refer to pages 35/36 for additional wiring details.

MIC INPUT

The mic input accepts XLR-type connectors and is designed to suit a wide range of BALANCED or UNBALANCED low-level signals, whether from delicate vocals requiring the best low-noise performance or close-miked drum kits needing maximum headroom. Professional dynamic, condenser or ribbon mics are best because these will be LOW IMPEDANCE. While you can use low-cost HIGH IMPEDANCE mics, you do not get the same degree of immunity to interference on the microphone cable and as a result the level of background noise may be higher. If you turn the PHANTOM POWER on, the socket provides a suitable powering voltage for professional condenser mics.

DO NOT use UNBALANCED sources with the phantom power switched on. The voltage on pins 2 & 3 of the XLR connector may cause serious damage. BALANCED dynamic mics may normally be used with phantom power switched on (contact your microphone manufacturer for guidance)

The input level is set using the input GAIN knob.

The LINE input offers the same gain range as the MIC input, but at a higher input impedance, and is 20dB less sensitive. This is suitable for most line level sources

WARNING !

Start with the input GAIN knob turned fully anticlockwise when plugging high level sources into the LINE input to avoid overloading the input channel or giving you a very loud surprise!

LINE INPUT

Accepts 3-pole 'A' gauge jacks, or 2-pole mono jacks which will automatically ground the 'cold' input. Use this input for sources other than mics, such as keyboards, drum machines, synths, tape machines or guitars. The input is BALANCED for low noise and immunity from interference, but you can use UNBALANCED sources by wiring up the jacks as shown, although you should then keep cable lengths as short as possible to minimise interference pick-up on the cable. Note that the ring must be grounded if the source is unbalanced. Set the input level using the GAIN knob, starting with the knob turned fully anticlockwise. Unplug any MIC connection when using the LINE input.

INSERT POINT

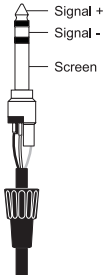
The unbalanced, pre-EQ insert point is a break in the channel signal path, allowing limiters, compressors, special EQ or other signal processing units to be added in the signal path. The Insert is a 3-pole 'A' gauge jack socket which is normally bypassed. When a jack is inserted, the signal path is broken, just before the EQ section.

The signal from the channel appears on the TIP of the plug and is returned on the RING, with the sleeve as a common ground.

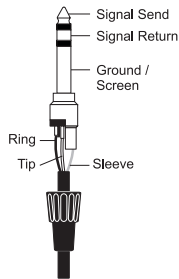
The Send may be tapped off as an alternative pre-fade, pre-EQ direct output if required, using a lead with tip and ring shorted together so that the signal path is not interrupted.

OUTPUTS

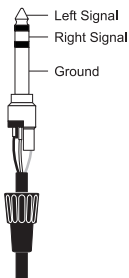
Mix Output
Aux Outputs
Mono Output
Monitor Outputs
Direct Outputs



Mix Inserts



Headphones



STEREO RETURNS RET-1/2/3/4

These accept RCA phono jacks to allow easy connection to hi-fi equipment or DAT players. The input is unbalanced, and ideal for pre-show music sources or signals that do not require any EQ or effects. These can also be used as effect returns using cables described later in this document.

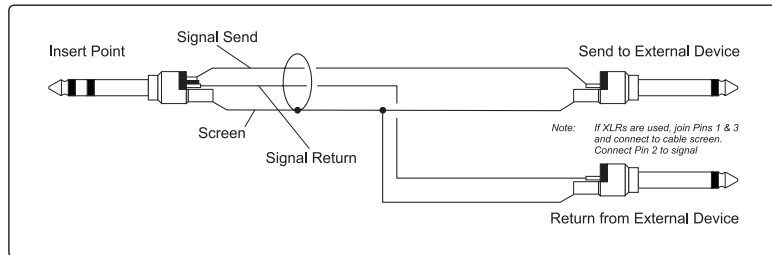
STEREO INPUTS STE-1/2/3/4

These accept 3-pole 'A' gauge jacks, or 2-pole mono jacks which will automatically ground the 'cold' input. Use these inputs for sources such as keyboards, drum machines, synths, tape machines or as returns from processing units. The input is **BALANCED** for low noise and immunity from interference, but you can use **UNBALANCED** sources by wiring up the jacks as shown, although you should then keep cable lengths as short as possible to minimise interference pick-up on the cable. Note that the ring must be grounded if the source is unbalanced.

Mono sources can be fed to both paths by plugging into the Left jack only.

MIX INSERTS

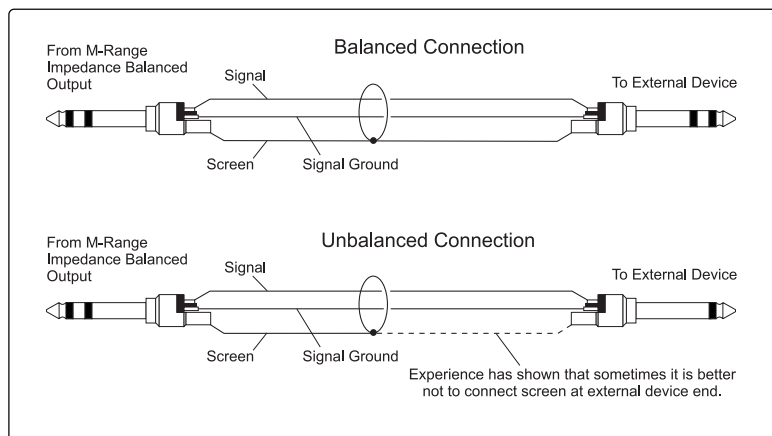
The unbalanced, pre-fade Mix insert point is a break in the output signal path to allow the connection of, for example, a compressor/limiter or graphic equaliser. The Insert is a 3-pole 'A' gauge jack socket which is normally bypassed. When a jack is inserted, the signal path is broken, just before the mix fader.



The mix signal appears on the **TIP** of the plug and is returned on the **RING**. A 'Y' lead may be required to connect to equipment with separate send and return jacks as shown below:

MIX & SUB OUTPUTS

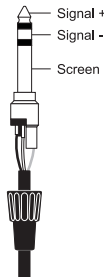
The **MIX** and **SUB** outputs are on 3-pole 'A' gauge jack sockets, wired as shown, and incorporate impedance balancing, allowing long cable runs to balanced amplifiers and other equipment.



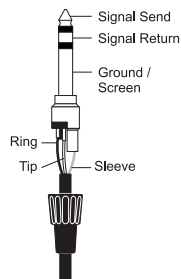
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OUTPUTS

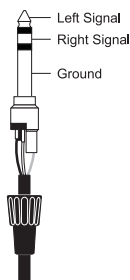
Mix Output
Aux Outputs
Mono Output
Monitor Outputs
Direct Outputs



Mix Inserts



Headphones



AUX OUTPUTS

The Aux outputs are on 3-pole 'A' gauge jack sockets, wired as shown on the left, and are balanced, allowing long cable runs to balanced amplifiers and other equipment.

CHANNEL DIRECT OUTPUTS

The Direct outputs are on 3-pole 'A' gauge jack sockets, wired as shown on the left, and are unbalanced.

HEADPHONES

The PHONES output is a 3-pole 'A' gauge jack, wired as a stereo output as shown, suitable for headphones of 200Ω or greater. 8Ω headphones are not recommended.

POLARITY (PHASE)

You will probably be familiar with the concept of polarity in electrical signals and this is of particular importance to balanced audio signals. Just as a balanced signal is highly effective at cancelling out unwanted interference, so two microphones picking up the same signal can cancel out, or cause serious degradation of the signal if one of the cables has the +ve and -ve wires reversed. This phase reversal can be a real problem when microphones are close together and you should therefore take care always to connect pins correctly when wiring audio cables.

GROUNDING AND SHIELDING

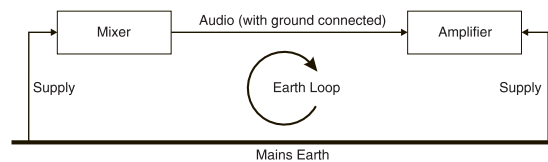
For optimum performance use balanced connections where possible and ensure that all signals are referenced to a solid, noise-free earthing point and that all signal cables have their screens connected to ground. In some unusual circumstances, to avoid earth 'loops' ensure that all cable screens and other signal earths are connected to ground only at their source and not at both ends.

If the use of unbalanced connections is unavoidable, you can minimise noise by following these wiring guidelines:

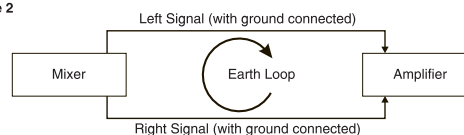
- On INPUTS, unbalance at the source and use a twin, screened cable as though it were balanced.
- On OUTPUTS, connect the signal to the +ve output pin, and the ground of the output device to -ve. If a twin screened cable is used, connect the screen only at the mixer end.
- Avoid running audio cables or placing audio equipment, close to thyristor dimmer units or power cables.
- Noise immunity is improved significantly by the use of low impedance sources, such as good quality professional microphones or the outputs from most modern audio equipment. Avoid cheaper high impedance microphones, which may suffer from interference over long cable runs, even with well-made cables.

Grounding and shielding is still seen as a black art, and the suggestions above are only guidelines. If your system still hums, an earth loop is the most likely cause. Two examples of how an earth loop can occur are shown below.

Example 1



Example 2



WARNING! Under NO circumstances must the mains earth be disconnected from the mains lead.



PROBLEM SOLVING

Basic problem solving is within the scope of any user if a few basic rules are followed.

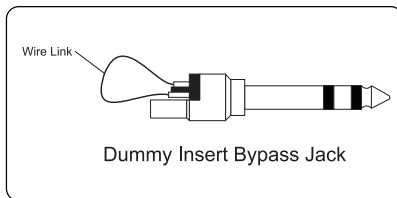
- Get to know the Block Diagram of your console (see page 36).
- Get to know what all parameters and/or connection in the system are supposed to do.
- Learn where to look for common trouble spots.

The Block Diagram is a representative sketch of all the components of the console, showing how they connect together and how the signal flows through the system. Once you have become familiar with the various component blocks you will find the Block Diagram is quite easy to follow and you will have gained a valuable understanding of the internal structure of the console.

Each Component has a specific function and only by getting to know what each part is supposed to do will you be able to tell if there is a genuine fault! Many 'faults' are the result of incorrect connection or control settings which may have been overlooked.

Basic Troubleshooting is a process of applying logical thought to the signal path through the console and tracking down the problem by elimination.

- Swap input connections to check that the source is really present. Check both Mic and Line inputs.
- Eliminate sections of the channel by using the insert point to re-route the signal to other inputs that are known to be working.
- Route channels to different outputs or to auxiliary sends to identify problems on the Master section.
- Compare a suspect channel with an adjacent channel which has been set up identically. Use PFL and AFL to monitor the signal in each section.
- Insert contact problems may be checked by using a dummy jack with tip and ring shorted together as shown below. If the signal appears when the jack is inserted it shows that there is a problem with the normalising contacts on the jack socket, caused by wear or damage, or often just dirt or dust. Keep a few in your gig tool box.



If in doubt please contact Soundcraft customer support.

PRODUCTS UNDER WARRANTY

USA customers should contact **Alex Welti** (e-mail: awelti@harman.com) National Service Manager at Soundcraft USA. Telephone: (615) 360-0458

UK customers should contact their local Dealer.

Outside the UK and USA, customers are requested to contact their territorial distributor who is able to offer support in the local time zone and language. Please see the Distributor listings on our website (<http://www.soundcraft.com>) to locate your Local Distributor.

OUT-OF-WARRANTY PRODUCTS

For out-of-warranty consoles purchased in the United Kingdom, please contact the **Customer Services Department** (e-mail: csd@soundcraft.com) at the factory in Potters Bar, Hertfordshire: Telephone +44 (0)1707 665000.

For all other out-of-warranty consoles, please contact the appropriate territorial distributor.

When mailing or faxing please remember to give as much information as possible. This should include your name, address and a daytime telephone number.

Should you experience any difficulty please contact **Customer Services Department** (e-mail: csd@soundcraft.com)