

### Quick Start

Rane would like to thank you for selecting the TTM 52 Performance Mixer. The TTM 52 is one of the top performance mixers available. It features the same high quality components, reliability and performance as the Rane TTM 54 mixer with a reduced feature set (see the comparison chart on the last page of the Data Sheet, contained in this manual.) For experienced turntablists, the operation of the TTM 52 will be very familiar, however, the TTM 52 has some unique features. These new features will be mastered more quickly if you read the entire manual. *Right!* We know some of you can't resist jumping right in, so please read at least this portion of the manual. It will help you get a good start and learn how to properly care for your faders.

- **GAIN TRIM:** These controls are intended to set the signal level *before* the Crossfader. **Always** set the **GAIN TRIM** controls to indicate an *average* signal level of +4 on the meter with the **Program Faders** set to *maximum*. **Never** use the **GAIN TRIM** controls to set the output level. **Always** use the **MASTER LEVEL** control to set the output level. *This is a very simple thing, yet makes a huge difference in the performance of your mixer.*
- **PHONES:** The headphone output of the TTM 52 is a *high power* output stage (unlike most you have used before). There are some notable differences...
  - The headphone output of the TTM 52 delivers *very high* volume into your headphones.
  - To avoid pain, **never** put headphones on your head and *then* plug them in.
  - **Always** start with the PHONES LEVEL turned down and then turn it up to the desired level.
  - Because of the high current and low output impedance, **never** short one side to ground **or** short left and right together as is possible with mono cup headphones. *Note: Low power headphone stages typically use large resistors on their outputs, which allow shorting, but prevent high power. The TTM 52 gives you high power but does not allow shorting.*
- **MIC LEVEL:** For best performance, keep this control at **0** when not in use.
- For instructions on *rotating Phono/Line* switches to the desired location, see page Manual-6.
- **Do not spray cleaner** or lubricant into the front of the **Program Faders** or **Crossfader**. The fluid will just run out the bottom of the unit. **Never use unapproved cleaner** or lubricants such as skateboard wheel lube, as corrosive damage may result, voiding the warranty. See page Manual-6 for cleaning and replacement instructions and cleaner recommendations.
- **Never connect anything except an RS 1 or other approved Rane AC power supply to the thing that looks like a telephone jack on the rear.** This is an 18 VAC center-tapped power unit. Consult the Rane factory for replacement or substitution.
- **WEAR PARTS:** This product contains the following wear parts subject to the ninety (90) day warranty period described on page Service-1: *FT 45 Active Crossfader & Channel Fader Assembly(3); ST 1 Phono/Line Switch Assembly (2).*

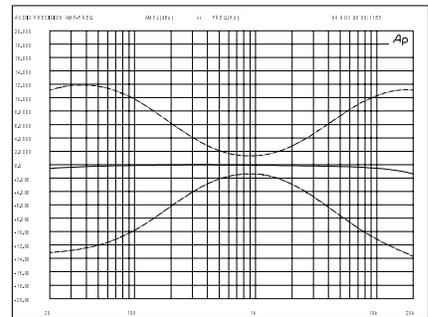
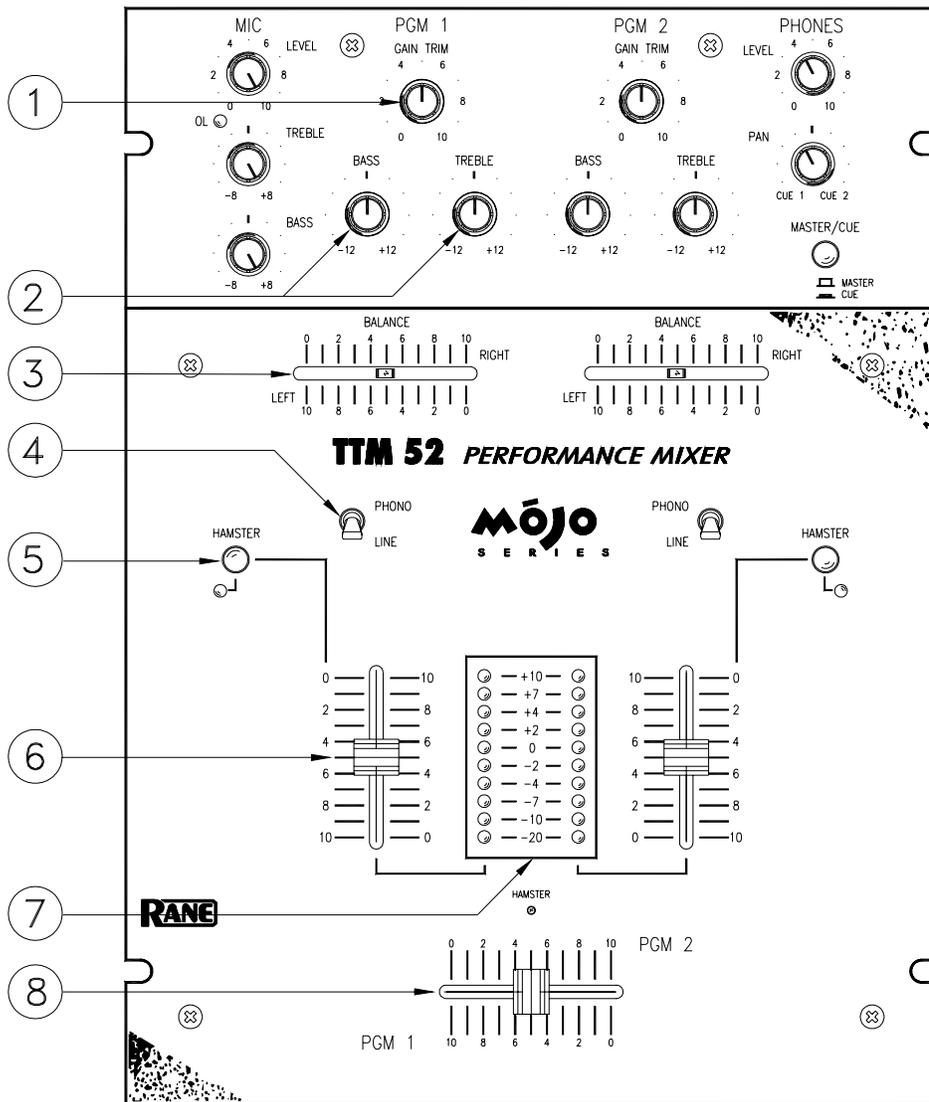


Figure 1. Bass & Treble Controls

- ① **PGM 1** and **PGM 2** input **GAIN TRIM** controls are used to adjust input level. *With the **Program Faders** (see ⑥) at maximum, set controls to give a peak reading of +4 on the meter. Set the **Master Level** to minimum while adjusting). It is always best to run the input level at +4 to +7. Use the **MASTER LEVEL** (see ⑮) control to adjust the volume at the **MASTER OUT** (see ⑰).*
- ② **BASS** and **TREBLE** controls provide  $\pm 12$  dB of EQ for **PGM 1** and **PGM 2**. The graph shown in Figure 1 indicates the response of the filters.
- ③ **BALANCE** controls are used for **LEFT/RIGHT** balance of **PGM 1** and **PGM 2** or for **LEFT/RIGHT** Pan effect. Push the control to the left and sound moves to the left channel. Push the control to the right and sound moves to the right channel.
- ④ **PHONO / LINE** source select switches are provided for **PGM 1** and **PGM 2**. These are “clickless” switches suitable for “transform scratch” applications. The switches are field replaceable and may be rotated in 45° increments. *See Figure 4 on page Manual-6 for rotation and replacement instructions.*
- ⑤ **HAMSTER** switches are provided for **PGM 1** and **PGM 2 Program Faders**. These switches reverse the operation of the adjacent **Program Fader**. When engaged, signal is *off* with the **Program Fader up**, and *maximum* with the **Program Fader down**.
- ⑥ **Program Fader** controls for **PGM 1** and **PGM 2** are ultra low noise, long-life, monorail devices. An *ActiveFader™* design completely isolates the control element from the audio, providing the highest reliability and performance. *See page Manual-6 for cleaning and replacement instructions.*

⑦ **PGM 1** and **PGM 2 Meters** provide true L+R Dual Mono indication of **Post-Program Fader** signal levels. Ten segment resolution is provided with a one second peak hold indication. With the Program Fader set to maximum, the input **GAIN TRIM** should be set to indicate an average level of about +4.

⑧ **Crossfader** control is implemented using Ranes' proprietary *ActiveFader™* design. As with the **Program Faders**, all audio is isolated from the control element, greatly extending the life and performance of the control. *See page Manual-6 for cleaning and replacement instructions*

⑨ **CROSSFADER CONTOUR** control allows adjusting the “shape” of the **Crossfader** response from a gentle curve for smooth, long running fades, to the steep pitch required for top performance cut and scratch effects shown in Figure 3.

⑩ **CROSSFADER HAMSTER** control allows reversing the operation of the **Crossfader**. *With the combination of ActiveFader™, CONTOUR control, and HAMSTER control, the TTM 52 provides a level of flexibility and performance previously unavailable.*

⑪ **PHONES LEVEL** control adjusts the loudness of the Headphone output signal. Always start with the **LEVEL** at minimum (CCW) and increase to a comfortable level with signal present and your headphones on. This prevents tossing them across the room after you put them on and plug in with the level set too high. The **TTM 52** Headphone Amplifier delivers *very high* sound pressure levels (SPL) into most headphone loads. Because of the high current and low output impedance, *never* short one side to ground *or* short left and right together as is possible with mono cup headphones. *Note: Low power headphone stages typically use large resistors on their outputs, which allow shorting, but prevent high power. The TTM 52 gives you high power but does not allow shorting.*

⑫ **MASTER / CUE** switch is used to select the **HEADPHONES** monitor source:

- Use **MASTER** to rehearse your performance. This signal is the same as that at the **MASTER OUT**, but is *not* affected by the **MASTER LEVEL** control.
- Use **CUE** to monitor the Program Input signal, so you can “Cue” a signal before fading in. This signal is *not* affected by the **Program Faders** or **Crossfader**.

⑬ **PHONES PAN** control is only active when **CUE** is selected. This control allows you to **PAN** between **Program 1** or **Program 2**.

⑭ **HEADPHONES** jack provides a high current output, capable of driving headphones between 8 ohms and 600 ohms.

PGM 1      Crossfade Contour Control      PGM 2

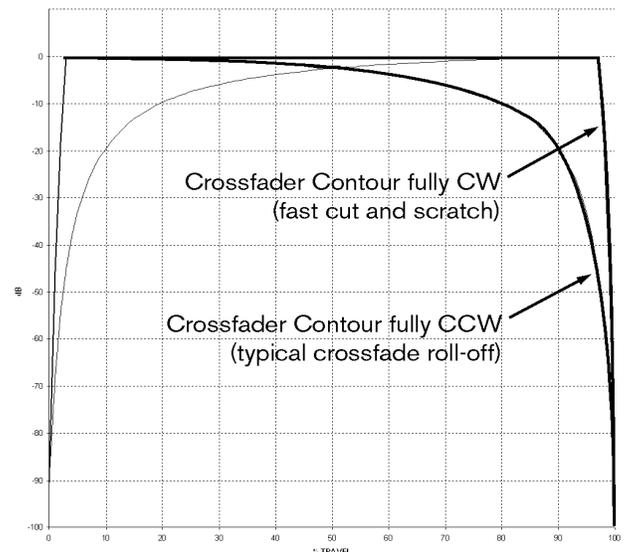
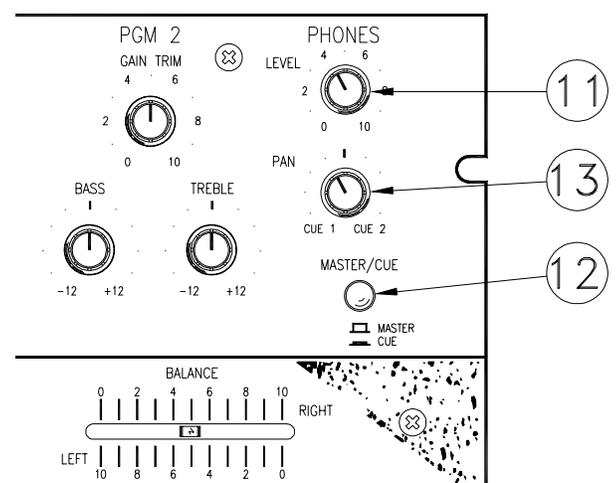
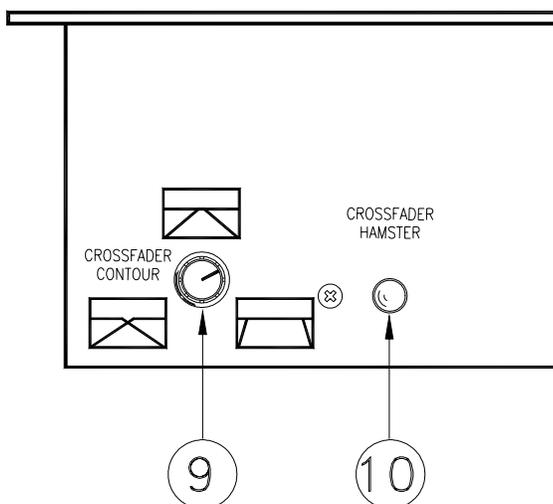
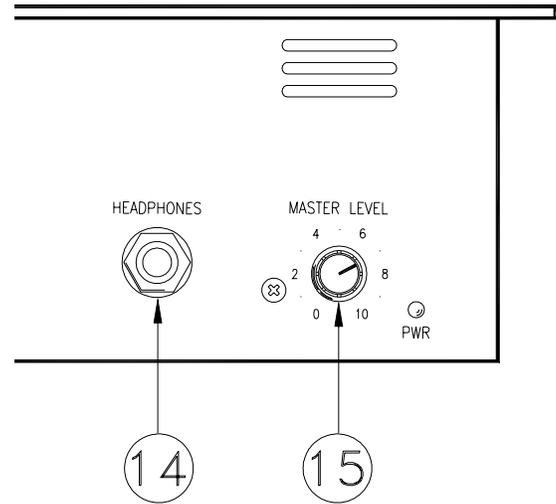


Figure 3. Crossfader Contour control



Because the amplifier is capable of high current drive, it is important that the outputs are not shorted together or to ground. *Do NOT use single cup phones that short tip and ring.*



15 **MASTER LEVEL** adjusts the **MASTER OUTPUT** level for both the balanced and unbalanced outputs.

16 **POWER** connector. *This is not a telephone jack!* Connect only the **Rane RS 1** power supply included with your **TTM 52**. The ground screw terminal may be used to solve potential grounding problems with other equipment. See *Chassis Grounding* on page Manual-6.

17 **MASTER OUT** includes two sets of stereo outputs:

- The 1/4" **TRS** jacks provide high current **BAL**anced output, which should be used whenever driving equipment with a balanced input or running distances greater than about 10 feet. Due to the high drive capability and low impedance, *never* use a mono 1/4" Tip/Sleeve (no ring) cable in this jack; this grounds one side of the **BAL**anced output.
- Use the **UNBAL**anced output for shorter runs, such as connecting to a recorder, looping to another mixer, or to other *local* signal processing or amplifiers. See *Sound System Interconnection* on page Manual-7.

18 **PGM 1** and **PGM 2** inputs include both **PHONO** and **LINE** input.

- **PHONO 1** and **PHONO 2** inputs are RIAA compensated inputs with 18 dB per octave, 20 Hz rumble filters.
- **LINE 1** and **LINE 2** inputs are unbalanced line level inputs with a nominal sensitivity of -10 dBV.
- **PHONO/LINE** selection is made as described in section 4.
- **PGM 1** inputs are sent to the left side of the Crossfader. (HAMSTER switch out)
- **PGM 2** inputs are sent to the right side of the Crossfader. (HAMSTER switch out)

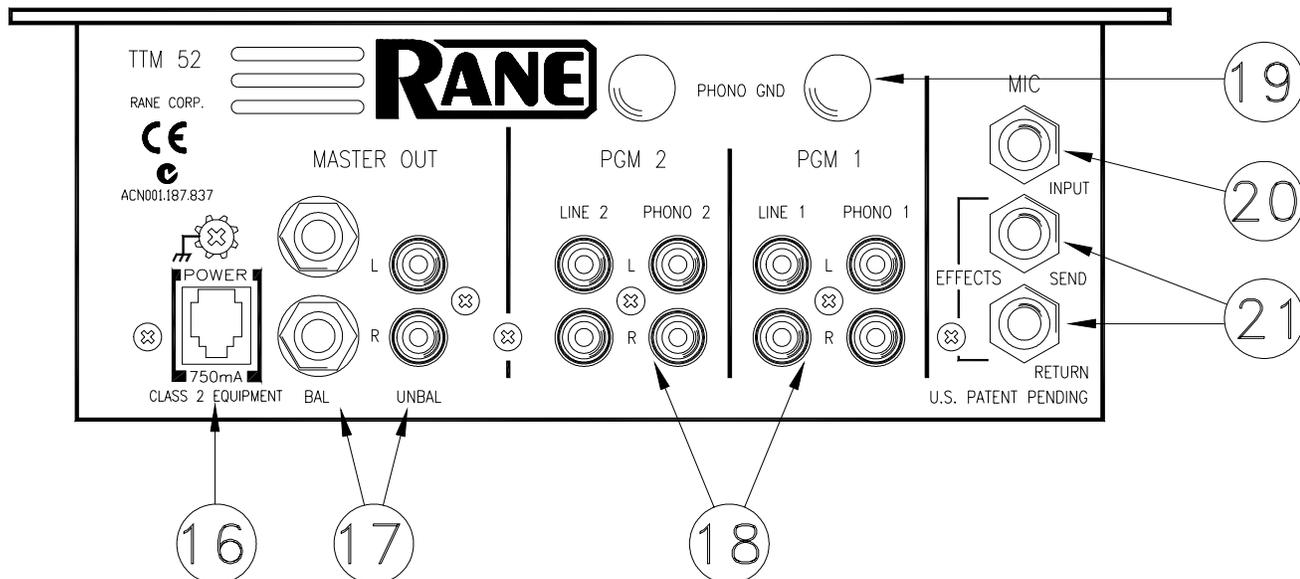
19 **PHONO GND** terminals provide an independent ground connect point for two turntables. It is very important that each turntable have a very good ground connection to one of these terminals. The thumb screws *are not captivated*, so use care not to spin them off and lose them.

20 The **MIC INPUT** is a balanced 1/4" TRS input specifically designed for a *dynamic microphone*.

21 **MIC EFFECTS** jacks are unbalanced mono 1/4" Tip/Sleeve. This is an independent Effects Loop for the mic. There is no engage switch, so the mic signal is always processed when you have an effects box connected.

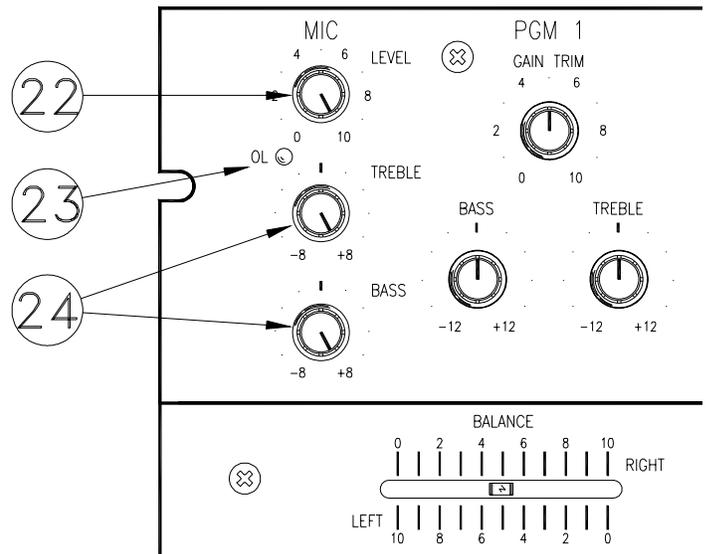
- The **SEND** jack provides the output *to* your effects processor.
- The **RETURN** jack provides an input for the signal returning *from* your effects processor.

22 **MIC LEVEL** sets the gain of the Mic Input. The range of operation is off to +60 dB. There is no engage switch, so set the



**MIC LEVEL** to 0 when not in use.

- ②③ The **OL** indicator lights 6 dB *before* clipping. Adjust the **MIC LEVEL** so that the **OL** indicator flashes only when you shout into the microphone.
- ②④ **MIC TREBLE** and **BASS** controls provide as much as 8 dB of boost or 8 dB of cut. Response is flat when the controls are set to center detent.



## IMPORTANT NOTE

### CHASSIS GROUNDING

If your system exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units somewhere. Here are some things to try:

1. Check that the turntable grounding wires are connected to the PHONO GND posts (see ①⑨).
2. Try combinations of lifting grounds on units that are supplied with ground lift switches or links.
3. If your equipment is in a rack, verify that all chassis are tied to a good earth ground, either through the line cord grounding pin or the rack screws to another grounded chassis, or tied to the ground screw located just above the POWER jack.
4. This unit's outboard power supply does *not* ground the chassis through the line cord. Make sure that this unit is grounded either to another chassis which is earth grounded, or directly to the grounding screw on an AC outlet cover by means of a wire connected to a screw on the chassis with a star washer to guarantee proper contact (see ①⑥).

Please refer to *Sound System Interconnection* on page Manual-7 for further information on system grounding.

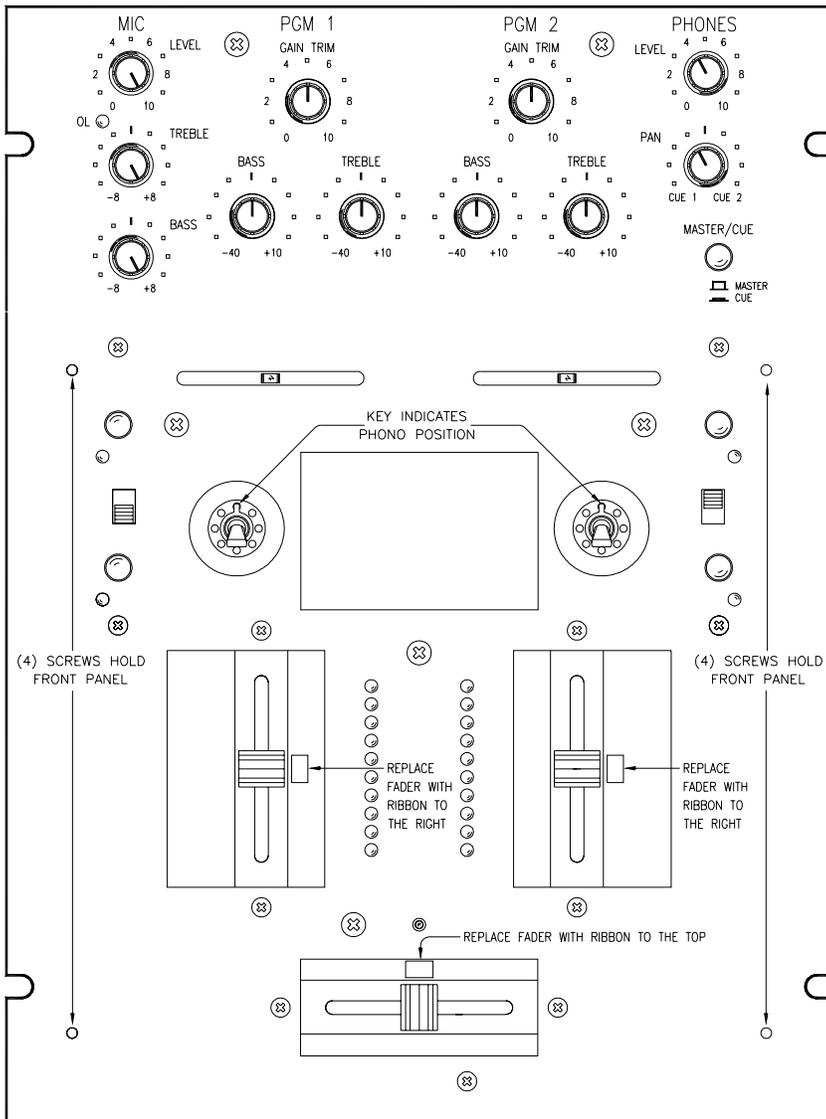


Figure 4. Phono/Line switch rotation or replacement

## Rotating or Replacing Phono/Line Switches

1. Remove the metal faceplate with a #2 Phillips screwdriver.
2. Remove nut and key washer while holding bottom of switch assembly.
3. Rotate or install switch with key pointing to desired PHONO position.
4. Install key washer.
5. Install nut, tighten securely with a 5/16" nut driver.
6. Replace faceplate.

## Replacement Wear Parts

### Replacement Phono/Line switch assembly: ST 1

### Replacement Fader Assembly: FT 45

All three faders use the same part.

Follow steps A and C in the Fader Cleaning instructions to the right.

Replacement assemblies available from your local Rane dealer.

## Fader Cleaning

With heavy use in harsh environments, the faders may need lubrication. This treatment extends longevity and can make used faders as good as new. The fader assembly must be removed from the TTM 52 for proper cleaning. We recommend any of the following cleaning solutions:

- Caig Cailube MCL 100% spray lubricant
- Caig Cailube MCL 5% spray cleaner
- CRC 2-26

Order CaiLube MCL® from:  
 CAIG Laboratories, Inc.  
 12200 Thatcher Ct.  
 Poway, CA 92064  
 Phone 619-486-8388  
 Fax 619-486-8398  
 Web <http://www.caig.com>

## CLEANING INSTRUCTIONS

### A. Front panel removal

1. Disconnect the power cord.
2. Remove (3) slide fader knobs.
3. Remove (4) #4-40 front panel screws.  
*Faders and switches are now accessible.*

### B. Fader assembly removal

To remove any single fader:

1. Remove (2) 3mm screws.
2. Draw fader assembly out through hole.
3. Remove ribbon cable.

### C. Fader cleaning

1. Hold the fader assembly away from the mixer.
2. Position the fader at mid-travel.
3. Spray cleaner/lubricant into both ends of the fader.
4. Move the fader over its full travel back and forth a few times.
5. Shake excess fluid from the fader assembly.
6. Wipe off excess fluid.

### D. Fader assembly installation

1. Connect the ribbon cable to the fader assembly.
2. Place the fader assembly in position with the ribbon connector to the right side or top, as shown.
3. Line up the fader screw holes with the mixer mounting holes.
4. Install (2 provided) 3mm screws. *Using the wrong screw will ruin the fader!*
5. Replace the front panel and knobs.

## SOUND SYSTEM INTERCONNECTION

Rane's policy is to accommodate rather than dictate. However, this document contains suggestions for external wiring changes that should ideally only be implemented by trained technical personnel. Safety regulations require that all original grounding means provided from the factory be left intact for safe operation. No guarantee of responsibility for incidental or consequential damages can be provided. (*In other words, don't modify cables, or try your own version of grounding unless you really understand exactly what type of output and input you have to connect.*)

### THE ABSOLUTE BEST RIGHT WAY TO DO IT

Use balanced lines and *tie the cable shield to the metal chassis (right where it enters the chassis) at both ends of the cable.*

A balanced line requires three separate conductors, two of which are signal (+ and -) and one shield. The shield serves to guard the sensitive audio lines from interference. Only by using balanced line interconnects can you *guarantee* (yes, *guarantee*) hum-free results. Always use twisted pair cable. Chassis tying the shield at each end also *guarantees* the best possible protection from RFI [radio frequency interference] and other noises [neon signs, lighting dimmers].

### THE NEXT BEST RIGHT WAY TO DO IT

The quickest, quietest and most foolproof method to connect balanced and unbalanced is to **transformer isolate all unbalanced connections**. Your audio dealer can recommend such a transformer.

The goal of transformer adaptors is to allow the use of *standard cables*. With these transformer isolation boxes, modification of cable assemblies is unnecessary. Virtually any two pieces of audio equipment can be successfully interfaced without risk of unwanted hum and noise.

Another way to create the necessary isolation is to use a *direct box*. Originally named for its use to convert the high impedance, high level output of an electric guitar to the low impedance, low level input of a recording console, it allowed the player to plug "directly" into the console. Now this term is commonly used to describe any box used to convert unbalanced lines to balanced lines.

### THE LAST BEST RIGHT WAY TO DO IT

*If transformer isolation is not an option, special cable assemblies are a last resort.* The key here is to prevent the shield currents from flowing into a unit whose grounding scheme creates ground loops (hum) in the audio path (i.e., most audio equipment). Do not be tempted to use 3-prong to 2-prong "cheater" adapters to lift grounds. This is a dangerous and illegal practice.

It is true that connecting both ends of the shield is theoretically the best way to interconnect equipment – though this assumes the interconnected equipment is internally grounded properly. Since most equipment is *not* internally grounded properly, connecting both ends of the shield is not often practiced, since doing so can create noisy interconnections.

A common solution to these noisy hum and buzz problems

involves disconnecting one end of the shield, even though one can not buy off-the-shelf cables with the shield disconnected at one end. The best end to disconnect is a matter of personal preference and should be religiously obeyed; choose inputs or outputs and always lift the side you choose (our drawings happen to disconnect the outputs). If one end of the shield is disconnected, the noisy hum current stops flowing and away goes the hum — but only at low frequencies. A one-end-only shield connection increases the possibility of high frequency (radio) interference since the shield may act as an antenna. Many reduce this potential RF interference by providing an RF path through a small capacitor (0.1 or 0.01 microfarad ceramic disc) connected from the lifted end of the shield to the chassis. The fact that many modern day installers still follow this one-end-only rule with consistent success indicates this and other acceptable solutions to RF issues exist, though the increasing use of digital and wireless technology greatly increases the possibility of future RF problems.

See the following page for suggested cable assemblies for your particular interconnection needs. Find the appropriate output configuration from either your mixer output or the MX 22 output (down the left side), and then match this with the correct balanced or unbalanced input to the MX 22 or the amplifier (down the right side.) An "off-the-shelf" cable may be available or modifiable. Soldering should only be attempted by those trained in the art.

### SUMMARY

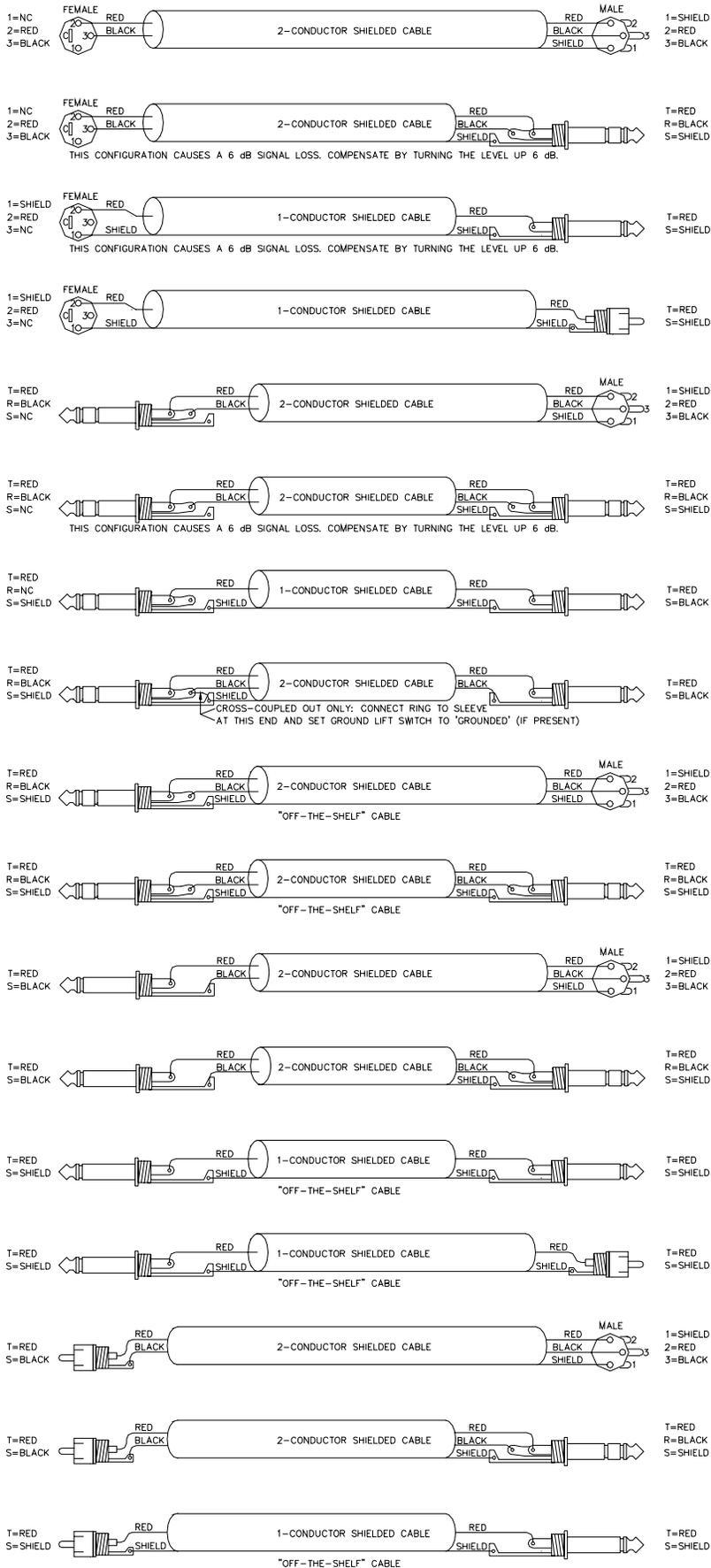
If you are unable to do things correctly (i.e. use fully balanced wiring with shields tied to the *chassis* at the point of entry, or transformer isolate all unbalanced signals from balanced signals) then there is no guarantee that a hum free interconnect can be achieved, nor is there a definite scheme that will assure noise free operation in all configurations.

### WINNING THE WIRING WARS

- Use balanced connections whenever possible.
- Transformer isolate all unbalanced connections from balanced connections.
- Use special cable assemblies when unbalanced lines cannot be transformer isolated.
- Any unbalanced cable must be kept under ten feet (three meters) in length. Lengths longer than this will amplify the nasty side effects of unbalanced circuitry's ground loops.

This information was condensed from Rane Note 110, "Sound System Interconnection". If you would like the complete note, call or email the factory, download it from Rane's web site <http://www.rane.com>, or ask your dealer for a copy.

# VARIOUS XLR, RCA & 1/4" CABLE ASSEMBLIES



FROM OUTPUT

TO INPUT