

QUICK START

You asked for it, you got it! The MP 2016S now has Split Cue! If you don't know what that is, we suggest you take the time to read this entire manual so you learn lots of other things to get the best sound and features out of your new mixer. But if you know what Split Cue is, at least read this section to refresh your knowledge of the rest of the MP 2016S.

There are four dedicated phono preamplifiers. One each for Input channels 1-4. Switches on the rear panel set each preamplifier for **LINE** or **PHONO** operation. Make sure you have these switches set correctly for your application.

There are two dedicated **MIC** preamplifiers, one each for Input channels 5-6. Rear panel switches set each preamplifier for **LINE** or **MIC** operation. Make sure you have these switches set correctly. **MIC GAIN** controls adjust each preamplifier for the correct sensitivity. With a **MIC** selected and **ENGAGED**, set the front **INPUT GAIN** control to "10" and adjust the rear **MIC GAIN** to just keep the Input Channel **SIG / OL** indicator green, not red. Set the rear panel tone controls as desired. The **MIC ENGAGE** switch ducks the **BOOTH** Output by 12 dB unless defeated with internal jumpers.

Before installing this mixer permanently, be sure to read the **MIC / LINE INPUTS** section on page Manual-6.

All five stereo line-level **AUX** Inputs are available for each of the six Input Channels.

Adjust the **INPUT GAIN** controls so they blink the green **SIG / OL** indicators. If an indicator is red, the **INPUT GAIN** control is set too high. This provides optimum signal to noise, dynamic range and **MIX LEVEL** control consistency.

The **BOOTH** may select **CUE** or **MASTER** as its source. **CUE** allows monitoring Inputs in the booth without headphones.

WEAR PART

The MP 2016S contains no wear parts. The XP 2016S contains the following wear part subject to the ninety (90) day warranty period described on page Service-1: (1) *Active Crossover Assembly F 60X*.

The **XP 2016S** switch engages the optional XP 2016S processor. If the XP 2016S is not connected, the switch has no effect.

The **EFFECTS LOOP** switch switches the Loop in (*up*) or out (*down*). If nothing is connected to the **EFFECTS LOOP RETURN**, the switch has no effect.

The **MASTER MONO / STEREO** switch influences both **BOOTH** and **HOUSE OUTPUTS**. It does not affect the **EFFECTS LOOP** or **TAPE OUTPUTS**.

Two **TAPE OUTPUTS** are provided. One is a **PRE-EFFECTS** Loop and one is a **POST-EFFECTS** Loop. The **POST-EFFECTS** Loop Tape Output has a **LEVEL** control and may be used as a pre-tone control **AUX** Output.

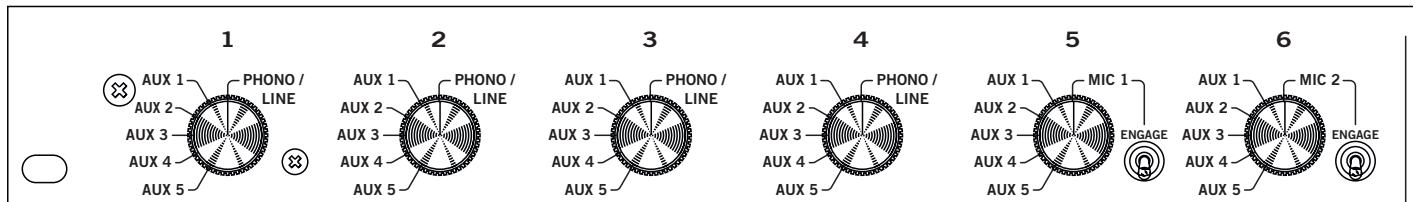
The MP 2016S Master Output uses *Accelerated Slope™* tone controls that provide full "kill" for **TREBLE**, **MID** and **BASS**.

The **MASTER SIG / OL** indicator monitors the master mix before and after the tone controls. This indicator should light green most of the time. It is OK for it to flash red on occasion. This provides optimum signal-to-noise and dynamic range. **HOUSE** and **BOOTH** are the only level controls that do not affect the **MASTER SIG / OL** indicator.

The **HOUSE OUTPUT** has both balanced (XLR) and unbalanced (RCA) Outputs. To avoid hum, always use the balanced (XLR) Outputs for longer cable runs (typically greater than 10 feet, or 3 meters).

Headphone cueing allows monitoring **MASTER** or **CUE** sources. If **MIX LEVEL** controls are operated at less than "7", be sure to turn the **PHONES LEVEL** down before selecting a **CUE** as it may be *much* louder than the Master Mix. The Headphone Output is low-impedance high-current, so *do not* short the tip and ring together or to ground.

MP 2016S FRONT PANEL CONTROLS



INPUT SELECTORS 1-4

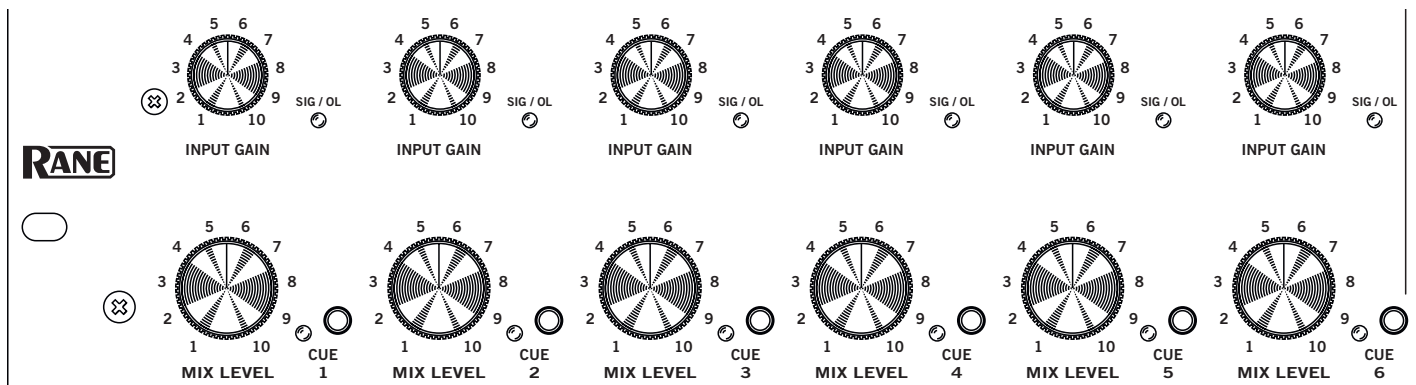
Each six-position Input Selector chooses a dedicated PHONO / LINE preamplifier, or one of five stereo line-level AUX Inputs as its Input Channel source. (PHONO / LINE switches are on the rear panel).

INPUT SELECTORS 5-6

Each six-position Input Selector chooses a dedicated mono MIC Input, or one of five stereo AUX Inputs as its Input Channel source. (MIC GAIN trim, MIC / LINE switch and MIC tone controls are located on the rear panel).

MIC ENGAGE

MIC 1 and MIC 2 ENGAGE switches allow switching a mic on (*up*) or off (*down*). A MIC Input must be selected *and* MIC ENGAGE *on* to activate a MIC Input. When a mic is not in use, be sure to switch MIC ENGAGE *off*. The MIC ENGAGE switches also activate the Booth Ducker. This attenuates the Booth Output -12 dB whenever a MIC ENGAGE switch is on, even if MIC Input is not selected (internal jumpers allow disabling the Booth Ducker—see **Mic/Line Inputs** on page Manual-6).



INPUT GAIN

INPUT GAIN controls allow the user to match input levels. Adjust these to make the SIG / OL indicator flash green. If the indicators turn red, reduce the INPUT GAIN. Adjusting the INPUT LEVEL controls correctly maximizes dynamic range and provides consistent MIX LEVEL response.

Input SIG / OL

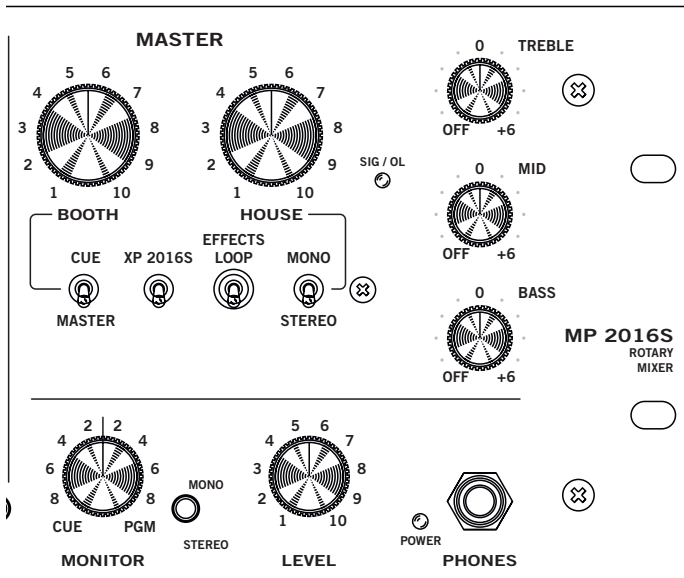
These dual-color indicators provide help in setting correct input levels. A flashing green indication is optimal. A red light that lasts more than a flash is a request to turn down the INPUT GAIN.

MIX LEVEL

These studio-grade controls determine the Master MIX LEVEL. For optimum performance, set the INPUT GAIN controls as indicated previously, and then operate MIX LEVELS between “7” and “10” for full volume. Use the HOUSE and BOOTH LEVEL controls to set the output levels. Always set the MIX LEVEL controls to minimum when not in use.

CUE

The CUE signal is selected using CUE 1-6 switches in any combination. The associated yellow indicator lights when a CUE is active.



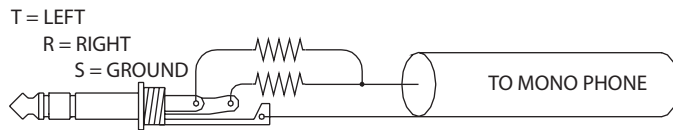
HEADPHONE MONITOR

MONITOR determines the source of the PHONES signal. With the MONITOR MONO switch out, the control pans between stereo CUE and stereo PGM signals. The PGM signal follows the HOUSE Output (same signal going to the Master House).

With MONITOR MONO selected (in), the MONITOR control pans between mono CUE (left ear) and mono PGM (right ear).

The Phones LEVEL control determines the headphone output level. If you are mixing with the MIX LEVEL controls below "7", be sure to turn the Phones LEVEL down before selecting a CUE source as it may be *much* louder than the Master Mix.

The PHONES output is very low impedance and high current so *do not short tip and ring together or tie to ground*, as is common with many low- cost mono cups. Use resistors of 300 to 600 Ω in series with each output for mono applications, although this significantly reduces output power.



The BOOTH CUE / MASTER switch selects MASTER mix or CUE selection as the Booth source. This allows CUE monitoring in the Booth without headphones. The BOOTH Level controls the volume to the Booth Output.

MASTER HOUSE Level

This studio-grade control sets the HOUSE Output level.

MASTER MONO / STEREO switch

This sets the MASTER mix signal to MONO or STEREO operation. It effects both BOOTH and HOUSE Outputs.

MASTER SIG / OL indicator

This dual color indicator helps set correct MASTER mix levels. A flashing or steady green indication is optimal. The red indicator may flash only briefly on rare occasion...regular flashing or steady-on means that distortion is imminent and Levels need reducing.

XP 2016S switch

This engages the optional XP 2016S External Processor. If the XP 2016S is not connected, the switch does nothing. If an XP 2016S is connected and the switch is on (*up*), it routes the MIX LEVEL Outputs to the XP 2016S and returns a stereo MASTER signal to the MP 2016S.

EFFECTS LOOP switch

This engages the EFFECTS LOOP when *up*. If nothing is connected to the EFFECTS LOOP RETURN, the switch has no effect.

TREBLE tone control

Allows adjusting the amplitude of frequencies above 4 kHz from +6 dB to OFF (full kill).

MID tone control

Allows adjusting the amplitude of frequencies between 300 Hz and 4 kHz from +6 dB to OFF (full kill).

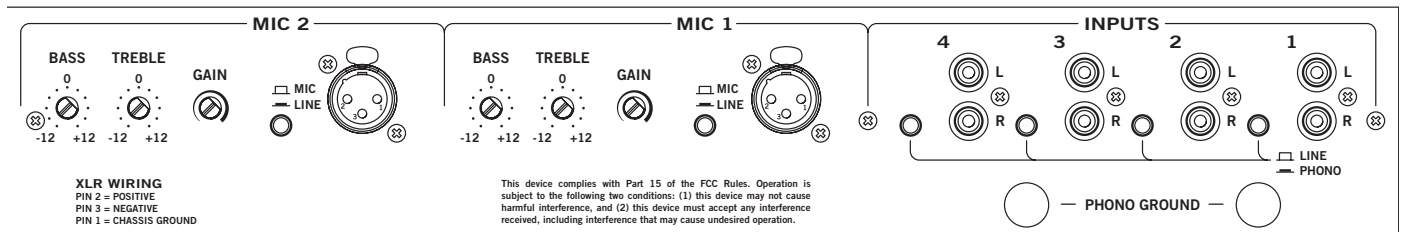
BASS tone control

Allows adjusting the amplitude of frequencies below 300 Hz from +6 dB to OFF (full kill).

POWER indicator

This yellow indicator lights whenever AC power is connected to the unit.

REAR PANEL INPUTS & OUTPUTS



MIC 1 and MIC 2 XLR jacks

The MIC 1 Input provides a dedicated balanced preamplifier for Input Channel 5, while MIC 2 provides the preamplifier for Input Channels 6. Each may operate in MIC or LINE mode. Each of these preamplifiers features GAIN trim with BASS and TREBLE tone controls.

MIC / LINE switches

These select MIC or LINE mode for the MIC Inputs. In MIC mode, the gain range is 20 to 50 dB. In LINE mode, the gain range is 0 to 30 dB. In addition to setting the proper gain range for MIC or LINE level Inputs, these switches also select the proper Input impedance.

MIC GAIN trim

These controls adjust the preamplifier for optimum dynamic range. Each has a range of 30 dB, allowing a wide range of sources to be used. To properly set this control, set the associated front panel INPUT GAIN to “10”, turn the MIC ENGAGE switch *on* and adjust the MIC GAIN so that the input SIG / OL indicator flashes red only during very loud peaks. The front panel INPUT GAIN control can then be adjusted as required according to the instruction outlined above under INPUT GAIN control.

MIC TREBLE and BASS controls

Separate TREBLE and BASS controls are provided for each MIC preamplifier. These allow adjustment of the tonal response of each Mic or Line source at the MIC Inputs. If you add a significant amount of boost, you may need to readjust the rear panel GAIN trims as outlined before.

INPUTS 1-4 RCA jacks

INPUTS 1-4 provide dedicated preamplifiers for Input Channels 1-4 respectively. Each may operate in RIAA PHONO or LINE mode.

PHONO / LINE switches

These switches set Input Channel preamplifiers 1-4 for PHONO or LINE mode. Make certain these switches are set correctly for your source.

PHONO GROUND

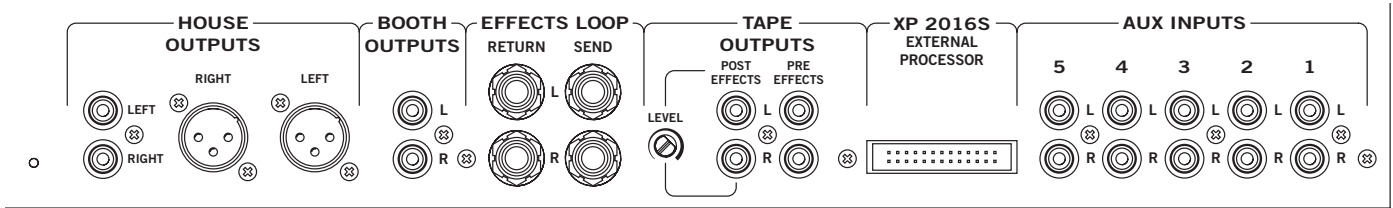
These lugs are provided to connect ground wires from turntables. When using a turntable, proper grounding is essential.

IMPORTANT NOTE: CHASSIS GROUNDING

If after hooking up your system it exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units somewhere.

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.

Please refer to the RaneNote “*Sound System Interconnection*” supplied with this manual and available from our website for further information on system grounding.



EFFECTS LOOP SEND ¼" jacks

SEND Outputs are unbalanced standard ¼" tip-sleeve jacks. They provide a line level Output for external signal processing or effects units. If effects are not being used, these outputs may be used as Auxiliary Outputs.

EFFECTS LOOP RETURN ¼" jacks

RETURN Inputs are unbalanced standard ¼" tip-sleeve jacks. They provide the Input from external signal processing or effects units. Switching jacks are used so there is no loss of signal if the front panel EFFECTS LOOP switch is active with no effects connected. RETURN Inputs are *not* appropriate for Auxiliary Inputs as this signal is only selected when the front panel EFFECTS LOOP switch is active, at which time Master signal is derived *only* by the signal present at the RETURN Inputs, the mix signals are disconnected.

BOOTH OUTPUT RCA jacks

The unbalanced stereo BOOTH OUTPUT is normally used for booth monitoring. As previously outlined, very flexible source selection is provided as well as MIC ducking. Remember, the BOOTH OUTPUT is attenuated by 12 dB whenever one of the front panel MIC ENGAGE switches is active (unless ducking has been defeated with the internal jumper. See *Mic/Line Inputs* on page Manual-6).

HOUSE OUTPUT jacks

Both balanced (XLR) and unbalanced (RCA) jacks are provided. For long runs, we highly recommend using the balanced XLR outputs. The unbalanced RCA outputs are intended for short runs of less than 10 feet (3 meters). Both may be used simultaneously if required.

AUX INPUTS 1-5 RCA jacks

These five stereo AUX Inputs are unbalanced, line level Inputs available for selection on all six Input channels.

XP 2016S EXTERNAL PROCESSOR

The XP 2016S port provides the required socket for connecting the ribbon cable (supplied with the optional XP 2016S). If an XP 2016S is not connected, the front panel XP 2016S engage switch has no effect. If ribbons longer than that supplied with the XP 2016S are used, crosstalk may increase and immunity to RF, magnetic and conducted interference may be compromised — don't do it.

TAPE OUTPUT – PRE-EFFECTS RCA jacks

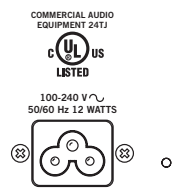
This unbalanced line-level Output is located *before* the EFFECTS LOOP and tone controls for recording the Master Mix. MIC Inputs are mixed as any other source and will be present at both TAPE OUTPUTS.

TAPE OUTPUT – POST-EFFECTS RCA jacks

This unbalanced line-level Output is located *after* the EFFECTS LOOP and *before* the tone controls. This may be used as an Auxiliary Output. For this application, as well as for more flexibility when recording, a LEVEL control has been provided as described below.

TAPE OUTPUT – POST-EFFECTS LEVEL control

This adjusts the POST-EFFECTS TAPE OUTPUT from unity gain to *off*, allowing optimum sensitivity adjustment for recording or for an Auxiliary Output.



POWER IEC jack

Connects anywhere in the world to AC line voltage, 100-240 VAC.

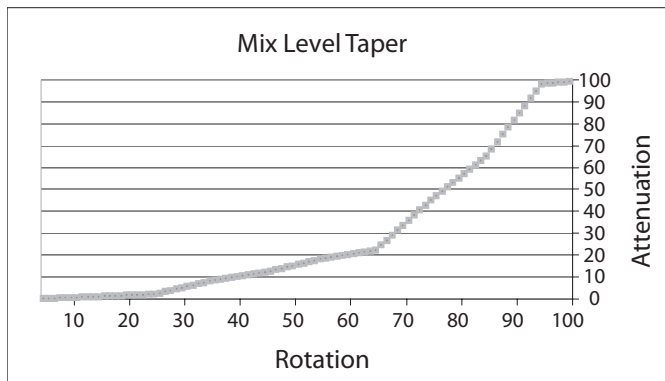
OPERATION

RIAA PHONO/LINE INPUTS

Input channels 1 through 4 each have a dedicated preamplifier. A rear panel switch allows setting these preamps for PHONO or LINE level signals. *Make sure you have the switch in the correct position for your application.* The source selectors for Input channels 1 - 4 may select the dedicated PHONO / LINE preamplifier or one of the five stereo AUX Inputs as the source.

With normal program material playing, set the INPUT GAIN control to a level that causes the SIG / OL indicator to *flash* green. The SIG / OL indicator should *not* flash red. This will ensure optimum signal to noise ratio and dynamic range. If INPUT GAIN controls are set too high, you may not have the required headroom for mixing multiple Inputs. If your levels are set too low, signal-to-noise ratio is compromised.

In addition to optimizing noise and dynamic range, properly setting INPUT GAIN allows the MIX LEVEL control to operate predictably over its entire range. The taper of the MIX LEVEL control is *non-linear* and will have *different* attenuation verses rotation characteristics depending on its position. As can be seen in the figure below, if you are mixing between 30% and 60% of rotation, MIX LEVEL will behave much differently than if operated between 65% and 95% of rotation.



MIC / LINE INPUTS

Input channels 5 and 6 each have dedicated preamplifiers. A rear panel switch allows setting these Inputs for MIC or LINE level signals. *Make sure you have the switch in the correct position for your application.* While these Inputs are designed for use with dynamic microphones (no phantom power) or wireless microphones with line level output, they will accept just about any mono signal. While balanced operation is highly recommended, these Inputs may be operated unbalanced with short cables to the source (less than 10 feet or 3 meters). The source selectors for Input channels 5 and 6 may select the dedicated MIC / LINE preamplifier or one of the five stereo AUX inputs.

Prior to permanent installation, adjust the preamplifier GAIN, BASS and TREBLE controls (located on the rear panel) for the intended source.

In addition to the MIC / LINE switch, each preamplifier has a rear panel MIC GAIN trim. To properly set the MIC GAIN, set the front panel INPUT GAIN control to "10." This allows

the INPUT GAIN SIG / OL indicator to accurately indicate the signal level. Adjust the MIC GAIN so the *red* OL indicator just stays off during the highest signal peaks (if a microphone is in use, *yell into it*). The MIC GAIN control should only have to be set once for the source in use. Use the front panel INPUT GAIN control for trimming the gain after installation.

Next adjust the rear panel MIC 1 and MIC 2 BASS and TREBLE controls for the desired tonal quality. If you add a lot of BASS or TREBLE boost, you may want to readjust the MIC GAIN control to avoid possible overloading.

MIC 1 and MIC 2 each have an ENGAGE switch to the right of the Input Selector. For a mic signal to be active, the selector must be set to MIC *and* the MIC ENGAGE switch set to ENGAGE (*up*).

When *either* of the switches is set to the ENGAGE position, the BOOTH OUTPUT is ducked (attenuated) by 12 dB (about 1/4th) to reduce potential feedback. If you do *not* want the BOOTH OUTPUT to duck when a MIC source is engaged, you can remove the top cover and set the internal jumper accordingly. There is an independent Ducker select jumper for MIC 1 and MIC 2.

It sounds like a lot of trouble to set the input stages up correctly, however, you will be amazed at how much better your performance sounds.

MIX LEVEL

With the Input stages properly adjusted, you are free to use the MIX LEVEL control for *mixing*. For most applications, channels will be mixed at about 70% to 100% rotation. BOOTH and HOUSE level controls then set the output volume. The MASTER SIG / OL indicator displays the signal level of the *mix*. The Green SIG indicator should flash or remain on. The Red OL indicator should remain off (it may flash occasionally, but if it is on every beat it is too hot). To correct an overload condition, one or more of the MIX LEVEL controls must be turned down. The MASTER SIG / OL indicator monitors the signal *before and* after the tone control, so if you use a lot of boost, remember to monitor this indicator.

STONE CONTROLS

The MP 2016S uses high-performance tone control circuits that isolate the signal into three bands. The level of each band is independently controlled, and then recombined. This topology provides full "kill" for TREBLE, MID and BASS. If all three bands are set to the same level, there will be no change in *frequency response, only amplitude*. It is the *difference in settings* that determines the tonal quality of the signal. These advanced tone controls provide excellent dynamic response with fixed phase shift. Control is smooth and predictable. The tone controls can isolate beats, vocals and "high-hat," as well as adjust general tonal quality. Remember that the dedicated Mic tone controls (on the rear panel) are used to equalize the Microphone Inputs.

OPTIONAL XP 2016S EXTERNAL PROCESSOR

Combining the optional XP 2016S EXTERNAL PROCESSOR with the MP 2016S adds three-band, full-cut, *Accelerated-Slope™* tone controls and A-POST-B Crossfader Assign switches for *each* of the six Input channels. You also get a high-performance *Active-Crossfader™* with full-range Contour control and a stereo 10-segment peak dBu Master / Cue Meter with peak hold. With these added features, the system accommodates the diverse needs of virtually all DJ mixing styles.

The post MIX LEVEL signals from the MP 2016S are routed to the XP 2016S, processed by the tone controls, then assigned to the A side of the fader, B side of the fader or *post fader*. The *mixed* signal is returned to the MP 2016S. If the XP 2016S engage switch is active, the MASTER signal gets the XP 2016S mix. If the XP 2016S engage switch is not active, the MASTER signal just gets the MP 2016S mix.

CHANNEL 1-6 TREBLE

Allows adjusting the amplitude of frequencies above 4 kHz from +6 dB to OFF (full kill).

CHANNEL 1-6 MID

Allows adjusting the amplitude of frequencies between 300 Hz and 4 kHz from +6 dB to OFF (full kill).

CHANNEL 1-6 BASS

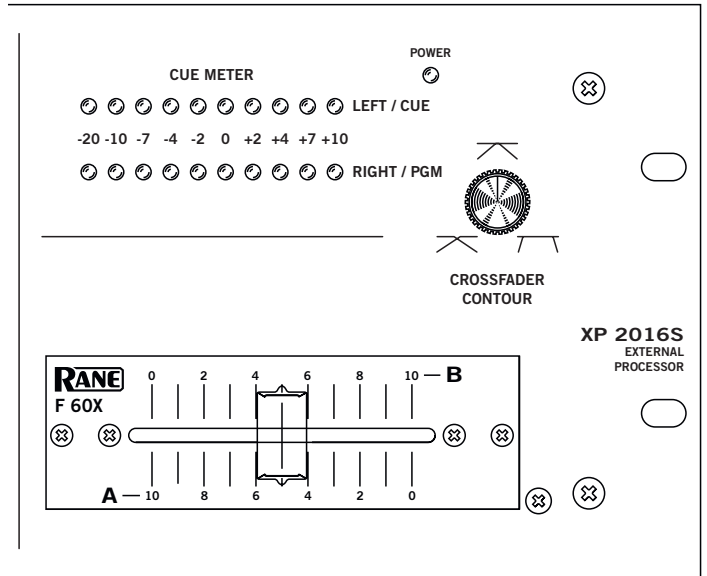
Allows adjusting the amplitude of frequencies below 300 Hz from +6 dB to OFF (full kill).

CHANNEL 1-6 A/POST/B Assign

These switches assign each of the six input channels to the A side of the Crossfader, B side of the Crossfader or POST Crossfader.

CROSSFADER

This implements using Rane's proprietary *Active Crossfader™* design. All audio is isolated from the control element, greatly extending the life and performance of the control. See page Manual-8 for cleaning and replacement instructions.



CROSSFADER CONTOUR

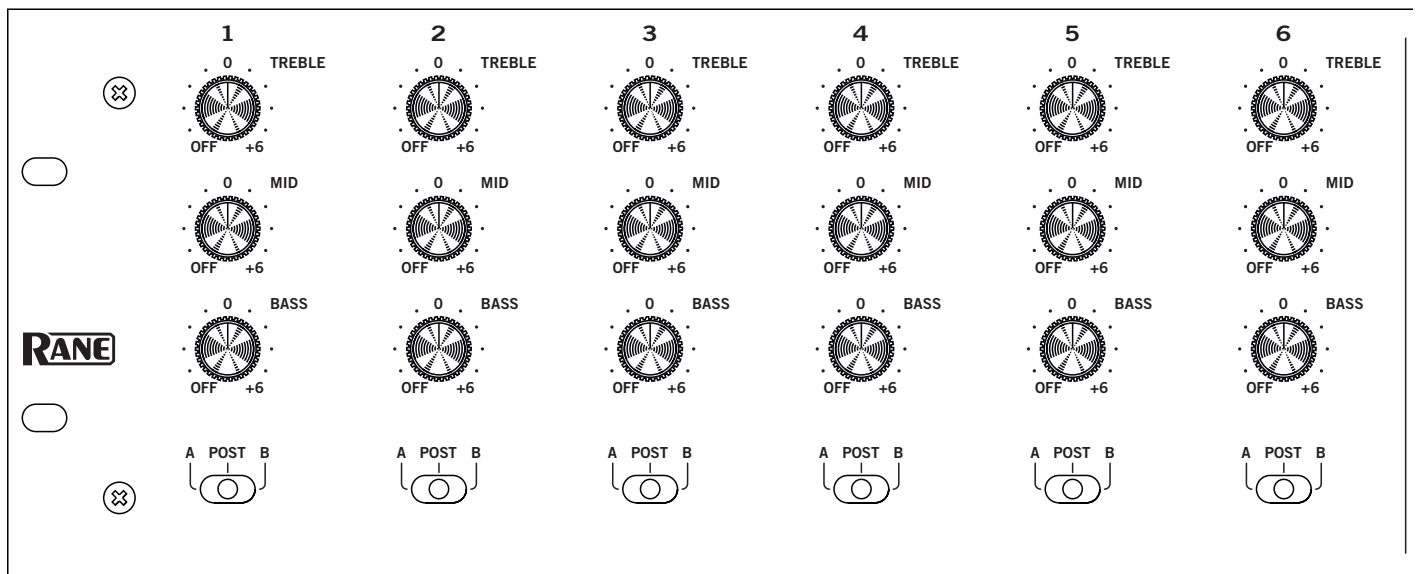
This control allows adjusting the “shape” of the Crossfader response from a gentle curve for smooth long running fades, to the steep pitch required for performance cut and scratch effects. (See the graph in the Data Sheet.)

PEAK PROGRAM / CUE METER

The stereo 10-segment Cue Meter on the XP 2016S monitors the same signal as the headphones. See the HEADPHONE MONITOR section on page Manual-3.

POWER indicator

This yellow indicator lights whenever AC power is connected.



MP 2016S Mixer Port

This is the required socket to connect the XP 2016S to the MP 2016S, using the ribbon cable supplied with the XP 2016S. If a ribbon longer than that supplied with the XP 2016S is used, crosstalk may increase, and immunity to RF, magnetic and conducted interference may be compromised. *So don't do it!*

POWER

This power jack receives the cable from the RS 1 power supply shipped with the unit. The chassis ground screw located just above the jack is intended for earth grounding the chassis (see the Chassis Grounding note on page Manual-4).

XP 2016S Ribbon Connections: (PIN 1 marked Ñ)

- 1) GND
- 2) GND
- 3) MIX RIGHT OUT
- 4) MIX LEFT OUT
- 5) GND
- 6) METER LEFT IN
- 7) METER RIGHT IN
- 8) GND
- 9) CH 6R IN
- 10) CH 6L IN
- 11) GND
- 12) CH 5R IN
- 13) CH 5L IN
- 14) GND
- 15) CH 4R IN
- 16) CH 4L IN
- 17) GND
- 18) CH 3R IN
- 19) CH 3L IN
- 20) GND
- 21) CH 2R IN
- 22) CH 2L IN
- 23) XP 2016 ENABLE (GND)
- 24) CH 1R IN
- 25) CH 1L IN
- 26) GND

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 XP 2016S for proper cleaning. We recommend any of the following cleaning solutions:

Caig DeoxIT FaderLube F100 spray lubricant (www.caig.com)
Caig DeoxIT FaderLube F5 spray cleaner (www.caig.com)
CRC 2-26 (www.crcindustries.com)

Order DeoxIT® from:
CAIG Laboratories, Inc.
12200 Thatcher Ct.
Poway, CA 92064
Phone 858-486-8388
Fax 858-486-8398
Web www.caig.com

CLEANING INSTRUCTIONS

A. Fader assembly removal

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

B. 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.

