MIXER MX1/8

Introduction

Mixer MX1/8 was designed for use as part of transportable stereo studio equipment EP5/11, in which it is the left-hand one of three units of the main console. The MX1/8 carries controls for two stereo channels (ST1 and ST2), a stereo echo channel and an independent mono channel. It also carries two group faders, a group master fader and a main gain control. Its inputs comprise those for its own channels together with those from 10 mono channels controlled on another unit.

The face panel of the MX1/8 is shown in Fig. 1 and its circuit is shown in Fig. 3. The unit when in operation is connected to other sections of the EP5/11 by five 10-pair screened cables UN1/107 and an 8-way cable.

Faders

All faders are of one type, the PB/38Q/4S, ganged by coupling clips where required. The PB/38Q/4S has 30 steps, with a loss of 1·5 dB per step above step 14; below this setting the loss increases rapidly.

In use a high fader setting is desirable to ensure a good signal/noise ratio and smooth control, but it is also often necessary to work with some gain in

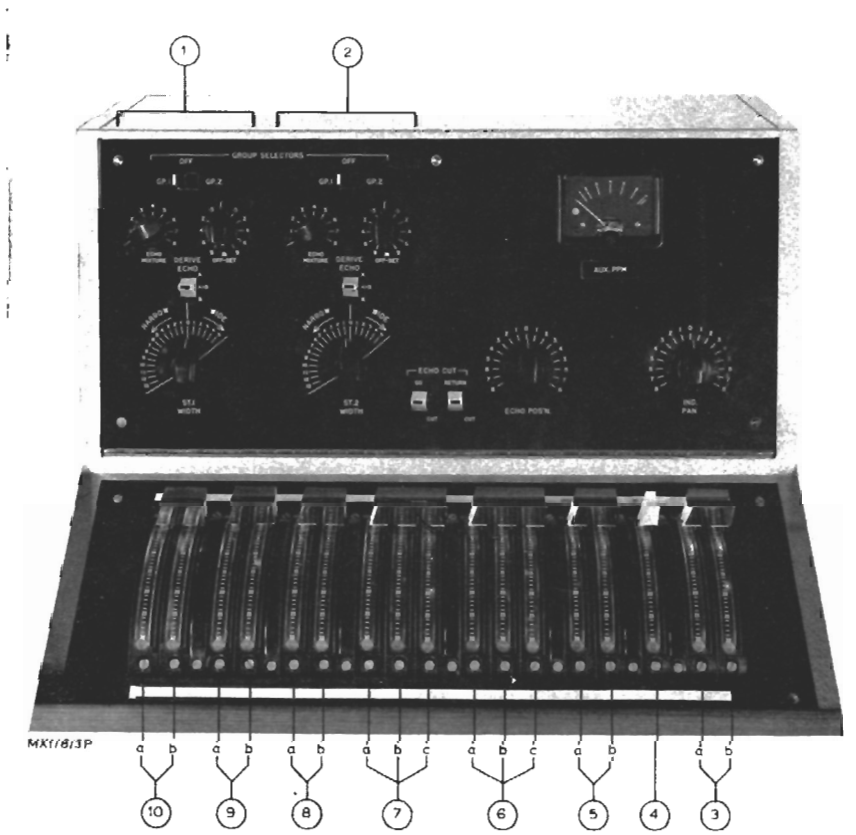

Fig. 1. MX1/8 Control Panels

1. Controls associated with stereo channel 1
2. Controls associated with stereo channel 2
3. Main fader (a = *A*, b = *B*)
4. Independent channel fader
5. Group master fader (a = *M*, b = *S*)
6. Group 2 fader (a = *M*, b = *S*, c = echo go)
7. Group 1 fader (a = *M*, b = *S*, c = echo go)
8. Echo return fader (a = *M*, b = *S*)
9. Stereo channel 2 (a = *M*, b = *S*)
10. Stereo channel 1 (a = *M*, b = *S*)

hand. These requirements are both met by making stop 25 the normal operating point, the control margin being then 7·5 dB.

On fading up each fader, its scale is illuminated with a brilliance which can be varied by a *Dim/Bright* switch at the rear of amplifier cabinet CA2/3 which is trolley 2 of the EP5/11 when the equipment is rigged.

Stereo Channels

To reduce the effect of 'flickering' when stereo faders are operated, left and right signals are converted to sum and difference signals in sum-and-difference networks prior to the stereo channel faders and group master fader.

A left signal is customarily designated *A* and a right signal *B*, their sum and difference $(A + B)$ and $(A - B)$ being often denoted by *M* and *S* respectively.

The design of the sum-and-difference circuits allows *Width* controls to be provided. These take the form of differential faders, Type RD/L132, equipped with dials calibrated in arbitrary units and labelled *Narrow* where *S* is reduced relative to *M* and *Wide* where *M* is reduced relative to *S*. The useful range in the *Wide* direction is limited by out-of-phase effects, and the scale is therefore shorter on this side.

Each sum-and-difference network (Fig. 2) comprises LL/62SN transformers with their secondaries series-aiding to provide an *M* signal and series-opposing to provide an *S* signal. A further pair of transformers reverses the process, restoring *A* and *B* signals following the *Width* controls. The LL/62SN transformers are mounted together on a subchassis in the bottom of the unit.

On each stereo channel, a *Derive Echo* switch allows the echo go signal to be derived from left, right or centre, corresponding to *A*, *B* or $(A + B)$.

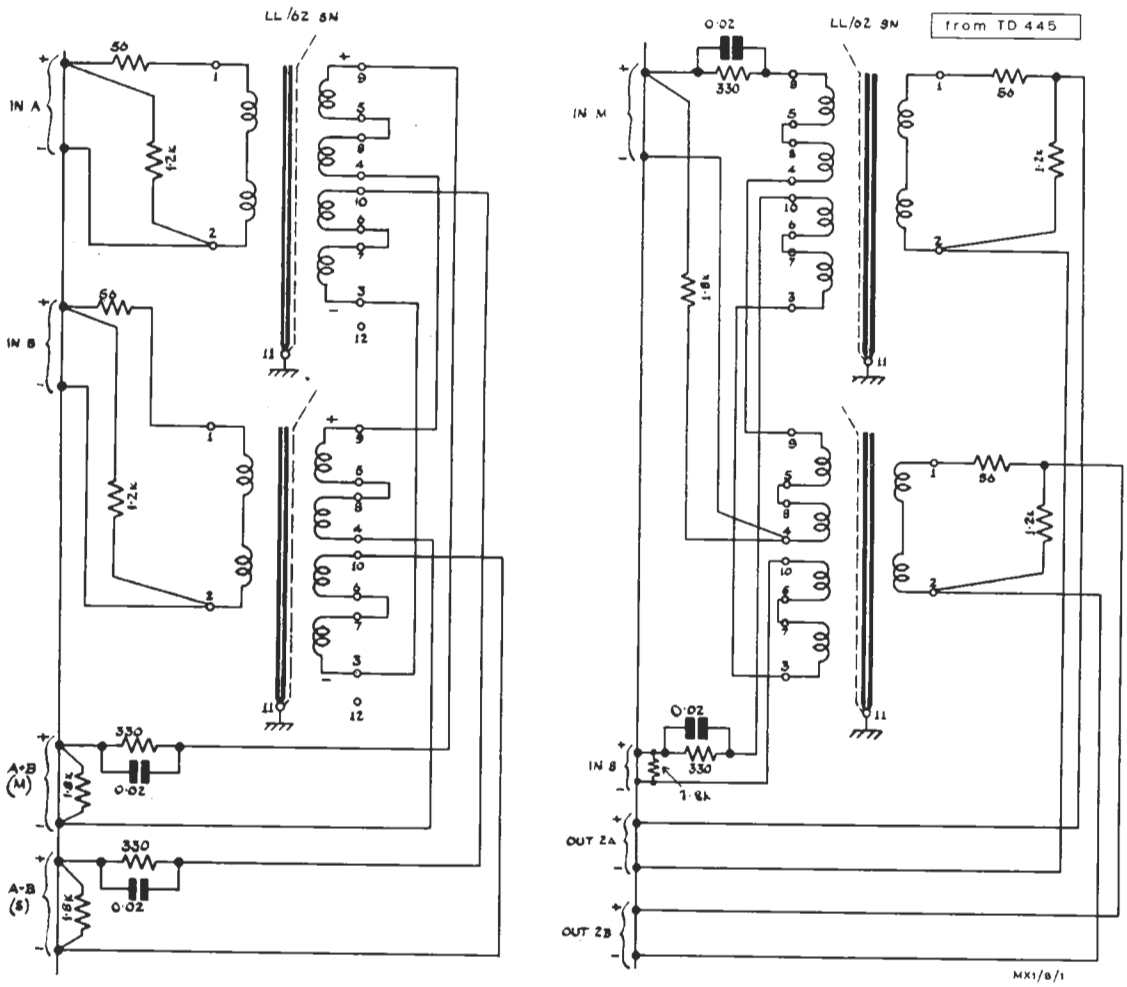

Fig. 2. MX1/8 Sum-and-difference Network

Group, Group Master and Main Controls

The two group faders and the group master fader are operated in the *M* and *S* condition. The final main gain control carries separate *A* and *B* signals.

Each of the two group faders is a three-ganged unit, fading its echo go signal together with the 'direct' *M* and *S* signals.

Echo Return Channel

This is a stereo channel which is normally used to accept inputs from two echo springs in the CA2/3 (trolley 2), but can alternatively be used as a third 'direct' stereo channel taking its inputs from the normal microphone sockets or the jackfield on the CA2/2 (trolley 1).

To select the echo springs as source, the 8-pole dummy plugs attached to short chains at the rear of the CA2/3 must be inserted in their sockets. These dummy plugs must be removed when the echo springs are not required.

The inputs to the echo springs or external echo equipment are *A* and *B* signals from a stereo channel or simulated *A* and *B* signals (divided by a pan-pot) from a mono channel. These *A* and *B* signals are applied to the echo return channel. The output of the echo return channel joins the main chain at the input to the group master fader, so a sum-and-difference network is required to convert the *A* and *B* signals to the *M* and *S* condition.

An *Echo Position* pan-pot allows the returned echo signal to be weighted to one side or the other, irrespective of its origin.

An *Echo Cut* key is provided in both the echo go and the echo return circuit, so that echo can be cut either with a tailing-off effect or abruptly.

Independent Channel

This is a mono channel which joins the main chain, via a hybrid transformer and pan-pot, *after* the main gain control.

Auxiliary P.P.M.

An auxiliary P.P.M. mounted on the MX1/8 is fed via a selector switch on the MX1/9 which, when the EP5/11 is rigged, is the right-hand unit of the main console.

Interconnection Facilities

Interconnections with other units of the EP5/11 are made at the rear of the unit, the plugging system being indicated on an engraved panel. The main circuits are brought out on five 26-way Tuchel sockets, which engage with plugs on UN1/107 10-pair cables. An 8-pole fixed plug is also fitted to receive a low-voltage a.c. supply from trolley 2 to feed the fader scale lamps. The 8-way cable carrying this circuit is otherwise unused, and can if necessary be treated as a spare for the three other similar cables used elsewhere on the EP5/11.

Also at the rear of the unit are four break-jacks carrying the echo go circuits of stereo channels ST1 and ST2. The jacks make the channel echo outputs available should a system other than that provided be required. The level at this point is about −30 dB, and the circuit is balanced by transformers T10, T12, T14 and T16 when the jack inners are opened.

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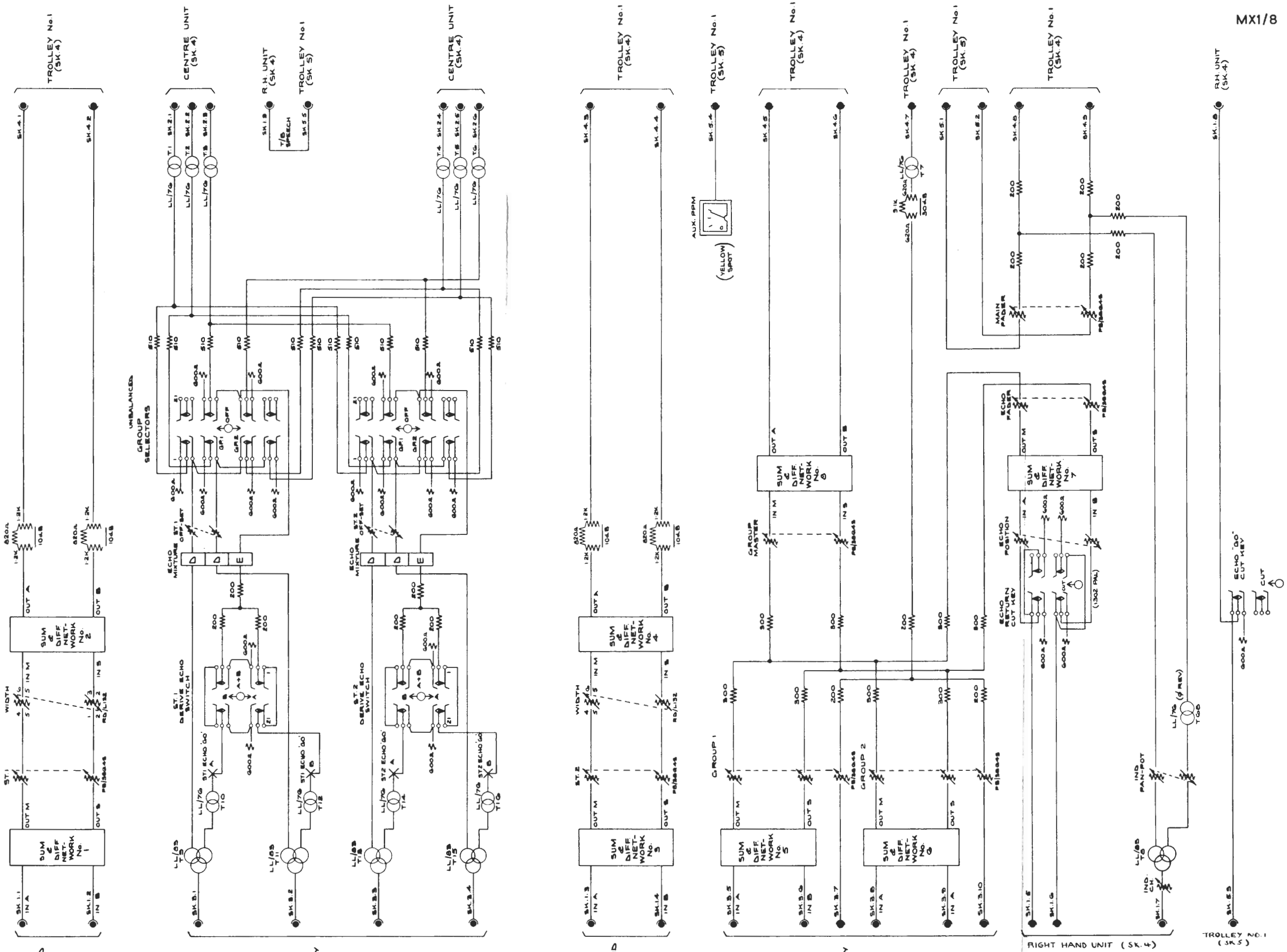

Fig. 3. MX1/8 Circuit