TAPE ECHO

REPLICATOR

HANDCRAFTED IN DENMARK

REPLICATORMODULE by **T-REX ENGINEERING**

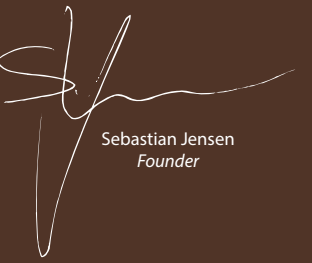
T-REX

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Made by T-REX Denmark, 2016



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www.t-rex-effects.com

CONGRATULATIONS

on your purchase of the T-Rex Replicator Module!

The Replicator is a true tape echo with modern features that were not available on tape echoes in the past.
A tape echo works by recording and playing back audio on a magnetic tape loop run by a motor. The time it takes for the tape to go from the record head to the playback head(s) will determine the delay time. A feedback circuit sends the delayed audio back to the recording head for multiple repetitions that fades over time.
On a tape echo, the delay time can be shortened by either turning up the motor speed or placing the playback head(s) closer to the record head. Longer delay times require a slower motor speed or longer distance between the record head and the playback head.
There are two playback heads on the Replicator, each mounted in a fixed position in relation to the record head. Head2 is placed at exactly half the distance from the record head as Head1, so the delays coming from Head2 will always be half as long as the ones from Head1. The delay time is varied by changing the speed of the motor that drives the tape reel.
The output of Head1 is slightly louder than Head2´s. You can use Head1 for lead lines with longer delay times, Head2 for more subdued/short echos or both for a very special dual delay sound that alternates the loudness of the repeats, giving the effect a different "rhythmic" feel.

The Replicator Module version is optimized for studio/line level use and can only be powered from a ±12VDC power supply using an IDC ribbon power cable.



POWER SUPPLY

Connect the ribbon power cable from your module power supply so that the red line on the cable faces down (-12V DC). The small line next to the power socket indicates the -12V DC connection.

NOTE: You may cause damage to the unit if the power is reversed, so check that the connections are correct.

CONTROLS

Master Volume: Controls the overall output level of the pedal. At the maximum setting, the output is boosted appr. 8dB.

Chorus: Controls the depth of the modulation effect that is applied when the chorus is switched ON. Turn this up for deeper pitch modulation of the delay signal(s).

NOTE: Please see "Helpful hints" for more details.

Saturate: Controls the recording level of the rec. head. Depending on how strong the incoming signal is, the record head can be driven into saturation when this control is turned up. The corresponding led indicates when this happens. Settings just below where the led lights up will give you the cleanest/loudest effect signal with the least amount of noise. Higher settings will make the repeats more compressed, overdriven and fuzzy, with added harmonic content.

NOTE: Although the Replicator can handle very loud input signals, the recording head will saturate sooner, the louder the input signal is. If the optimal dry/effect-signal ratio cannot be obtained, turn down the input signal to the pedal.

Delay level: This controls the level of the delay(s). At the maximum setting, the delays will have appr. the same level as the dry signal (depending on the setting of the Saturate knob).

Feedback: This controls the amount of repetitions of the delay. When set to minimum only the first delay will be heard. At high settings, the Replicator´s repeats will self-oscillate. This control is bypassed if a CV signal is applied to the CV input jack (feedback).

NOTE: Self-oscillation will occur at different settings, depending on how fast the tape is running, how the filter switch is set and which "heads"-mode is selected.

Delay time: This controls the speed of the motor, and thereby the delay time. Depending on which playback head(s) is chosen, the max/min delay time available is:
Head1: 350 - 1360ms
Head2: 175 - 680ms
This control is bypassed if a CV signal is applied to the CV input jack (time).

SWITCHES

On/off: This switch bypasses the effect, using a relay in a true bypass config. This means that when the pedal is off, the incoming signal is routed straight to the output jack.

Heads: This switch will cycle through the three following configurations of the two playback heads:

Green: Playback Head1 is on. In this conf. the longest delay times can be set. If tap tempo is used, the echo time will be in sync with the tapped tempo.

Red: Playback Head2 is on. This conf. gives you the shortest delay times. If tap tempo is used, the echo time will be half of the tapped tempo.

Orange: Both heads are on. In this configuration, the first head feeds back via the second head´s feedback path. The difference in the two playback heads´ output level creates a rhythmic feel to the repeats.

The figure on page 8-9 illustrates the difference in delay output level of the three modes.

Chorus: Activates the modulation of the delay(s).

Tap Tempo: This switch is used for tapping in a delay time. Head1 follows the tapped tempo 1:1 and Head2 is 2:1 (half the time). Tempos outside of the unit´s min/max-values will be ignored. The tap tempo function can be used to set the delay time of head1. The figure on page 8-9 illustrates how the tapped tempo correlates to the three modes.

Filter: This switch activates a low-pass filter when set to the "down" position. The filter makes the echos darker and lessens the background noise a bit. The filter will have an impact on how quickly the unit goes into self-oscillation.

NOTE: The direct signal will still be output when the pedal is bypassed, due to the true bypass switching.

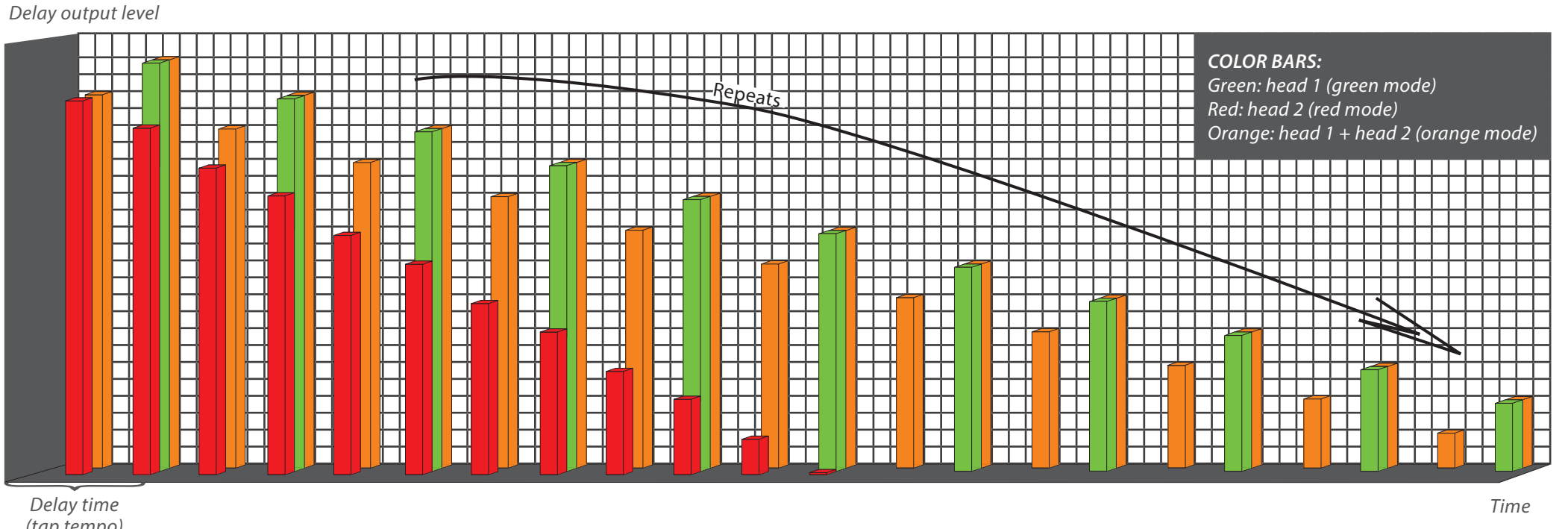
Input: Connect your signal source (instrument/mixer send/fx loop send/etc.) to this jack using a mono 1/8" jack.

Output: Connect your amplifier/mixer return/fx loop return/etc.) to this jack mono 1/8" jack.

Kill dry: This switch will mute the direct signal when set to the "down" position.

Speed CV: 1/8" mono jack input for controlling the echo time (motor speed) with a control voltage signal (0-5V).

Feedback input: 1/8" mono jack input for controlling the feedback parameter with a control voltage signal (0-5V).


Delay output level
Repeats
COLOR BARS:
Green: head 1 (green mode)
Red: head 2 (red mode)
Orange: head 1 + head 2 (orange mode)
Delay time
(tap tempo)
Time

MAINTENANCE

The Replicator´s moving parts as well as the tape heads WILL need a bit of cleaning every once in a while. If the unit is used on a regular basis, the tape cartridge will wear out faster and the various parts will need cleaning more often. In contrast to older tape echo units, the Replicator is very easy to maintain and the cartridge can be replaced in seconds.

Replacing the tape cartridge:
Turn off the effect (motor stops) and take out the knurled screw. Pull down the lever below the heads and lift out the cartridge. Insert a new cartridge while pulling down on the lever. Install the knurled screw and release the lever.

Cleaning the tape heads/roller:
Take out the tape cartridge and release the lever. Use a cotton swab dipped in isopropyl alcohol (wipe off any excess liquid on a piece of tissue paper) and carefully clean the heads where the tape touches them. If the heads are very dirty, you may do this a few times until the cotton swabs no longer has residue on them.
Clean the roller wheel by turning the pedal on and carefully put a cotton swab dipped in isopropyl alcohol (wipe off any excess liquid on a piece of tissue paper) up against the wheel while this rotates. Again, if the wheel is very dirty, do this a few times until the cotton swabs no longer has residue on them.

NOTE!: It may be necessary to remove the metal cover before performing the above steps, for better access to the heads/cartridge.

Adjusting the heads:
The heads can be adjusted for optimal sound and performance of the pedal. This is done by turning the small screw on the lever. If the tape heads are too close or too far away from the tape reel, the pedal will not perform its best and sound quality is compromised. Turn the screw clockwise until the delays can no longer be heard, then counter-clockwise until the delayes are audible and clear with no “fluttering”. Adjustment of the heads is not needed at every cartridge replacement and should only be performed if the delayes are particularly dark sounding/not audible or you have excessive flutter in the sound.



HELPFUL HINTS

Sound quality:
As the motor´s speed is increased, so is the high frequency content of the delays. Conversely, if the motor is running at a slow speed, there will be a high frequency loss. The Replicator has auto-compensation for this, in order to deliver the best sound quality at any motor speed (delay time).
However, there will be some treble loss as the delay time approaches maximum. In the old days, players would hear this when they modified their tape echos by slowing down the (fixed) motor speed. Because the Replicator works on the exact same principle, so will you.
This is just one of the many quirks that makes a tape echo stand out from other delay designs and we encourage you to take advantage of this "split personality" by using it musically and creatively.

Tap Tempo:
The minimum delay time that can be tapped is 350ms. Therefore we do not recommend using tap tempo for setting short delay times, because the pedal will ignore anything below 350ms. If you want to dial in a short delay that is in sync with the song you are playing, you should adjust the delay time manually by turning the delay time knob or by using an expression pedal.
Alternately, you can tap in a tempo that is twice as long as what you want and switch to Head2(red) mode.
That will make the delay time half as long as the tapped tempo, but since the needed delay time is twice as short, you end up with the right delay time that is in sync with the tempo of the song. The shortest delay time available is then 175ms. (Head2).

Saturate/Delay level:
The Saturate knob works like an input level control for the delays and the Delay level knob works like an output level control, so turning one of them up will make the delays louder (unless you saturate the record head). If turning the Delay Level up does not give you enough effect, please check if the Saturate knob is set too low.

Delay Time/Feedback:
You can create various effects by turning these knobs in real-time. For example, if the feedback is turned to maximum, the oscillation that occurs can be swept up and down in pitch by the Delay Time knob.
To make this a bit easier to do while playing, the player can control these parameters via a control voltage signal from an external signal generator.
For best results, the feedback should be turned up right after the note(s) you want to oscillate has been played. If the delays ring out before you turn the knob, the oscillation will be dirtier, noisier and not as evident.

Chorus:
The Replicator´s chorus effect is created by modulating the pitch of the delay signal. As the delays ring out, the pitch of the notes will go up and down, much like using the vibrato bar on an electric guitar. On older tape echo units, this modulation was caused by wear and tear on the tape echo parts. On the Replicator, it is built in deliberately.
The effect is most effective when long, sustained notes are played at higher delay level settings. When playing staccato notes or setting the delay level low, the chorus will not be as audible.
The effect should be used to add some color or "movement" to the sound, and should not be mistaken for a dedicated chorus unit.

TECHNICAL SPECS	
Input impedance @ 1KHz	1M Ohm
Output impedance @ 1KHz	Lower than 2,5K Ohm
Power supply	± 12V DC
Current draw @ ±12V DC	300mA
Maximum input signal	8,7V p-p (12dBu)
External connectors	Input, Feedback, Speed, Output, Feedback CV, Time CV
Controls	Chorus, Volume, Saturate, Feedback, Delay Level, Time, Heads, Chorus on/off, Filter switch, Tap tempo, Killdry, On/off
Pedal size incl. knobs (WxHxD)	222 x 38 x 129 mm / 8,74 x 1,50 x 5,08 inch
Weight excl. packaging	922 kg / 32,52 oz

T-REX WARRANTY CONDITIONS

T-Rex offers a 2-year warranty on all our products. In the unlikely event of a malfunction, please contact our technical support at service@t-rex-effects.com before sending us the product for repair. Read more about warranty conditions at www.t-rex-effects.com/service

ABOUT T-REX

Based in Vejle, Denmark, T-Rex Engineering makes classic and signature effects pedals for the world's best musicians. Our approach blends hi-tech innovation with old-world craftsmanship – always in the service of killer tone.

EU REGULATIONS • ENVIRONMENT PROTECTION

T-Rex accepts and follows the regulations and directives issued by the EU. We find these environment protecting regulations very good, and we are happy to follow them.

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