



# Dynalux Manual

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#### DYNALUX OVERVIEW

Building on the success of the Tonelux TX5C compressor range, the Dynalux is a powerful new two channel 19" rack unit that can be used either as a feature rich stereo compressor, two highly capable mono compressors or by using the VARILINK feature, a two-channel compressor utilising a reactive variable link between compressor one and compressor two.

Both Dynalux compressors include a TYPE control, which allow the Dynalux to effortlessly move between traditional Feed Back and modern Feed Forward audio compression styles. Furthermore, the Feed Forward and Feed Back compression styles can also be used together by blending the audio signal through both the Feed Forward and Feed Back circuitry simultaneously.

In addition, the Dynalux also provides the option to blend or mix a compressed wet signal with the unaffected dry signal by use of the MIX control.

Each channel also features a TILT control for an easy and immediate EQ effect and a selectable Inverse Pink Noise Filter for selective frequency compression/manipulation.

An external sidechain input is also provided with each channel compressor and when selected, this can allow an external source to trigger or activate each compressor at a precise and deliberate moment.

The dynamic sections of both channels can be separately switched in and out or even bypassed completely. Bypassing is a useful tool for quickly comparing effected and unaffected audio signals. The output of the Dynalux is equipped with a high-end audio output transformer, which can be switched in or out of the dynamic audio path. This can be used to add warmth to the sound of the audio.

Visual monitoring of both the compressed and uncompressed signal can be easily seen with a quick glance at the Dynalux front panel VU meters. The channel VU signal meters can also be set to monitor either the input or output signal levels, depending on user preference.

How to use the Tonelux Dynalux is very much down to the individual and what they are looking to achieve. The Dynalux provides some of the most comprehensive compression tools available in a single unit. Below, we will go through the main features in more detail.

#### THE TOGGLE SWITCH

ON



Please note the all-toggle switches are on or active in the up position and off in the down position.

#### FEED BACK & FEED FORWARD COMPRESSION STYLES



The Dynalux features two different types of dynamic compressor, offering either Feed Back (FB) or Feed Forward (FF) compression options. This provides the user with a choice between the smooth nature of the Feed Back compression effect, and the aggressive nature of the Feed Forward compression effect, and any combination of the two can be used on channel one or channel two of the Dynalux.

#### SELECTING AND BLENDING COMPRESSION STYLES



The Dynalux TYPE control allows the user not only to switch between the two compression types, but to fade or blend between the two styles.

Rotating the TYPE control fully anti-clockwise, the compressor will use 100% of the Feed Back compression circuitry. Turning the TYPE control fully clockwise, the compressor will use 100% of the Feed Forward circuitry. In the center position, the effect will be 50% Feed Back and

50% Feed Forward compression. Being able to blend the two compression types anywhere from 0 to 100% gives the user enormous tonal flexibility.

#### RATIO CONTROL & OVER COMP



In addition to the TYPE control, you will find the RATIO control. Ratios of 1.5:1 to 20:1 can be set using the first half of the RATIO control.

In relation to the output level, setting the RATIO control to 20:1, would mean for every 20dBu of signal peaking above a predetermined THREASHOLD level, would result in a positive ratio of approximately 1dBu of gain. This is typical of most compressors when setting the RATIO to 20:1.

In addition to usual Ratio selection, is the OVER COMP section of the RATIO control. Moving the RATIO control beyond 20:1 and into OVER COMP, results in a negative ratio output.

You can think of it as this, the standard compression ratio will allow for a positive ratio output (as described above using a ratio of 20:1 as the example), a limiter on the other hand, would simply limit the signal to a level set at a desired threshold, so it results in neither a positive nor negative ratio output, while the OVER COMP feature on the Dynalux, results in a negative ratio.

See figure 1 below, which compares the output of each example described above.

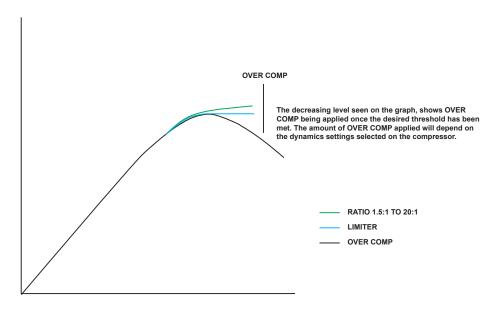


figure 1

Effectively, use of the RATIO OVER COMP allows the user to over compress the audio signal. This provides a harder than normal compression of the signal, but also results in a lower-level audio signal on the compressor output, and for this reason, an auto gain is provided on each channel of the Dynalux.

#### **AUTOGAIN**



The Dynalux RATIO control works alongside another useful feature called AUTOGAIN. When the RATIO has entered the OVER COMP proportion of the RATIO control, AUTOGAIN will automatically apply a suitable boost to the audio signal. This helps to keep a constant audio level at the compressor output, meaning focus can be on achieving the desired compression, rather than worrying about dropped levels at the output.

This can be further tweaked by use of the channel's MAKEUP GAIN control, which can provide additional gain to the compressor output, if required.

#### MAKEUP GAIN



For a more hands on level control, AUTOGAIN can also be disabled, enabling full manual control of the compressor output level using only the MAKE GAIN control.

The MAKEUP GAIN control ranges from 0 to +15 dBu boost, with +6 dBu being at the halfway point on the control.

#### **ATTACK**



Compressor attack times can be set using the ATTACK control on the Dynalux, which includes the addition of a X5 switch. This allows for a range of extremely fast attack (in the microsecond range), all the way through to an exceptionally smooth slow attack.

#### RELEASE



The Release control can be almost instantaneous through to 3 seconds. The release circuit is a unique 3 stage circuit that auto releases the faster signals at a rate of 10 times the release of the lower frequency signals. All of this combined with an automakeup gain system, keeps the gain at unity regardless of the amount of compression.

#### THRESHOLD



The threshold or point at which the compressor starts to compress can be set to anywhere between -20 & +20 dBu, with 0 dBu being at the control centre point. When a signal peaks beyond the set threshold, the red TH LED indicator will illuminate a warning.

#### MIX CONTROL



Supposing you want to blend some of the compressed signal (wet) with the raw unaffected signal (dry), the Dynalux MIX control allows just this. When turned fully down, the signal remains fully dry, but by turning up the MIX control up, the wet signal is increased and blended with the dry signal. At the midway point on the MIX control, the audio signal is split 50% dry and 50% wet. Increasing the MIX control beyond the halfway point maintains the wet level and decreases the dry level until the dry signal is completely removed, eventually leaving only the wet compressed signal.

#### EXTERNAL SIDECHAIN





Each channel of the Dynalux features a switchable EXTERNAL SIDECHAIN input. The sidechain can be switched into and out of circuit using the EXT S/CH switch on the Dynalux front panel.

The sidechain input will allow an external audio source to trigger the channel's compressor. An example might be a snare drum signal connected to the sidechain input, triggering the compressor to react on a bass track, momentarily allowing the snare to sound more clearly, before allowing the bass guitar to

return to the original level immediately after.

Connection to the SIDECHAIN is via 3/4" Jack found on the rear of the Dynalux which is normalled to the input.

The SIDECHAIN input is designed for a balanced input signal.

For more information on the SIDECHAIN, see the Dynalux flow diagram at the end of the manual.

#### TILT EQ



An EQ is available to each channel in the form of a TILT EQ control. Turning the TILT control clockwise will provide up to 6 dBu boost on the high end, while cutting the low end by the same amount. Turning the TILT control anti-clockwise, will boost the low end up to 6 dBu, and cut the high end by the same amount.

Looking at the diagram below, you'll see the user has a choice of using the TILT EQ alone, or a combination of the TILT EQ plus the IPN filter before the signal enters the RMS DETECTOR. With the IPN filter switch in the off (down) position, only the TILT EQ is enabled. The TILT is however always active regardless of the IPN switch. Keeping

the TILT nulled in the 12 o'clock position will leave the signal unaffected by the TILT EQ.

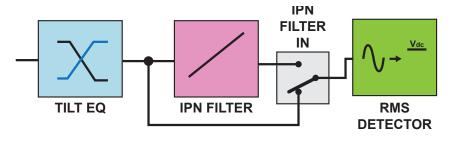


figure 2

#### INVERSE PINK NOISE FILTER (IPN)

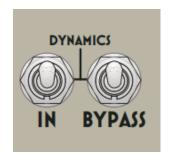


In addition to the TILT EQ, the Dynalux features an Inverse Pink Noise filter (IPN). The IPN is a filter that has an inverse response to the hearing energy curve. When selected, it equalizes the signal going into the RMS detector, so it "hears" like the human ear. It flattens the level of background noise by acting in a similar manner to a Hi-Pass filter, by removing excess low-end noise and presenting a clearer level signal from which to work from.

The IPN filter is selectable via the front panel IPN switch. When IPN switch is activated, the IPN filter is added to the TILT EQ. Nulling the TILT EQ by setting it to its 12 o'clock position, and activating the IPN, will allow use of the IPN filter, without the TILT EQ affecting the signal.

Both the Tilt EQ and IPN filter are placed in the channel sidechain before the RMS detector, providing a frequency dependant compression and not an equalization of the incoming signal.

#### DYNAMIC CONTROL



The dynamic controls on the Dynalux can be switched into and out of circuit, using the IN/OUT switch. When the IN switch is selected to the IN position, the dynamic controls are in circuit and active. When the IN switch is selected to the OUT position, the dynamics are out of circuit, and will have no effect on the audio signal passing through.

In addition to the IN switch, a BYPASS switch is also provided, which when is selected to the BYPASS position, will connect the channel input directly to the channel output, allowing the signal to bypass all

the dynamic circuits within the channel.

When BYPASS is selected, the IN/OUT switch is completely bypassed, causing it to have no effect on the signal routing and as such, is made redundant. In regular use, the BYPASS switch is selected to its off position, allowing the audio signal to be sent from the channel input to the dynamic circuits of the Dynalux.

Selecting both the IN and the BYPASS switch to OUT and OFF positions respectively, will allow the audio signal to bypass the dynamics circuits but, unlike setting the BYPASS switch to the off position alone, in this combination, the audio signal will not be affected by the dynamics, but will pass through the transformer output section of the Dynalux. This allows the user to add a warm transformer texture to the audio, without adding dynamics before it leaves the Dynalux.

In the event of a power failure, the unit will default to bypass mode.

# CHANNEL INPUT ON ON CHANNEL DYNAMICS DYNAMICS IN/OUT CHANNEL DYNAMICS IN/OUT CHANNEL DYNAMICS IN/OUT CHANNEL DYNAMICS IN/OUT

figure 3

#### CONTROLS ACTIVE INDICATOR



A CONTROLS ACTIVE indicator is provided on each channel of the Dynalux. The CONTROLS ACTIVE indicator will react differently, depending on the selection of the DUAL MONO / MASTER SLAVE STEREO switch in the MODE SELECT area of the Dynalux located between channel one and channel's two's VU meters.

#### CONTROLS ACTIVE IN DUAL MONO MODE





When DUAL MONO MODE is selected, and either of channel's DYNAMICS IN switch is activated and the dynamics controls become active, the associated channel's CONTROLS ACTIVE indicator will illuminate.

#### CONTROLS ACTIVE IN MST/SLAVE STEREO MODE





When the MST/SLAVE STEREO MODE is selected, only channel one's CONTROLS ACTIVE indicator will function as a warning that the dynamic controls are active. In MST/SLAVE STEREO MODE, channel one's dynamic controls will be used as the master controls over the dynamics of both channel one and two of the Dynalux.

If either of the channel BYPASS switches are set to on, the CONTROLS ACTIVE indicator on the channel with the BYPASS selected will be off, as the signal is bypassing the dynamics circuit.

More detailed information on dual mono and stereo functions can be found in the DUAL MONO & STEREO COMPRESSION section of the manual.

More information on the BYPASS can be found in the DYNAMIC CONTROL section of the manual.





#### **VU METERING**

Metering is provided by way of two traditionally styled LED back-lit VU meters on each channel. The upper VU meter will display either the channel input level or

the channel output level. This is selectable via the front panel MTR switch.

The lower meter VU meter will display the GAIN REDUCTION when the compressor is active. It will read zero when it is not active. The meter will always show the gain reduction regardless of the IN/OUT switch status. This allows the user to see that when IN is selected on that channel, there will be compression already activated.

#### DUAL MONO & STEREO COMPRESSION



The Dynalux can be used as either two dual mono compressors or alternatively, as a stereo compressor. Switching between dual mono and stereo is accomplished by way of the DUAL MONO / MST/SLAVE STEREO switch, which is found in the MODE SELECT section between the channel VU meters.

When set to DUAL MONO, and both channel's DYNAMICS IN/OUT switches are set to IN and active, channels one and two will work independently. In this mode, signal entering channel one will be unaffected by the compressor in channel two and vice versa, as they are working as two separate compressors. In this condition, the CONTROLS ACTIVE LED indicator will

be illuminated on both channels one and two of the Dynalux.

Setting the Dynalux to MST/SLAVE STEREO, sets the Dynalux to work as a linked stereo compressor. Channel one becomes the master channel and channel two becomes the slave. In this mode, the dynamics are set for both compressors on channel one, while the dynamic controls on channel two are redundant, but should be nulled to avoid any confusion. As the dynamic controls on channel two will have no effect on the signal through channel two, the CONTROLS ACTIVE LED indicator will be illuminated on channel 1 only.

In stereo mode, the signal feeding both the left and right channels are summed together and now affecting how hard the compressor responds equally on both left and right channel signals. In other words, a reaction by the compressor to the signal on the left, will be equal on the right and vice versa.

#### WYARILINK - COMBINING DUAL MONO & STEREO COMPRESSOR MODES



VARILINK is an adaptive compression feature, that combines both Dynalux channel compressor's together and allows for interaction between them. This is unlike the Dynalux when used as two separate MONO compressors, and unlike the MST/SLAVE STEREO MODE, in which both channels are controlled by the dynamic settings of channel one.

When activated, the VIRILINK provides additional control over the Dynalux two mono channel compressors, by linking both channel's Voltage Controlled Amplifiers (VCA's) together by means of a dc control voltage or compression voltage.

Once both channels' compressor VCA's have been linked together, they will immediately start to have a controlling effect on one and another. The degree to which they will affect each other will be determined by the LINK % control, and the nature of the effect they have on each other,

will be determined by the dynamic settings set up on each channel at that moment.

For example, supposing the audio signal on channel two triggers the compressor on channel two, as it would in MONO MODE, with VARILINK activated, as the control voltage of channel

two's VCA is sent to channel one, if the control voltage exceeds the current control voltage on channel one's VCA, the dynamics set on channel two will momentarily be imposed on the audio signal on channel one. If the LINK % is set at 100%, then 100% of the dynamics will be imposed, at 50%, only 50% of the dynamics will be imposed. While channel two was the trigger in this case, and sent its own control voltage to channel one, it's important to remember, the same could happen in the other direction and channel two receive channel one's control voltage. Again, if this exceeds channels two's current control voltage, then channel one's dynamics would be imposed on channel two. As the incoming audio signals fluctuate on the two channels and the threshold points on each compressor are met, the two compressors will react in real time and the compressor VCA with the higher controlling voltage at the moment will be the dominant compressor, compressing both audio signals simultaneously.

#### OPERATING THE VARILINK



Within the Dynalux MODE SELECT area, you will find the VARILINK controls. For the VARILINK to function, the Dynalux must be set to the DUAL MONO MODE setting in the MODE SELECT area.

Set both channel DYMANICS BYPASS switches to the DYNAMICS position and set both channel DYNAMICS IN/OUT switches to the IN position.



Switching the VARILINK switch to ON, will activate the VARILINK function and illuminate the VARILINK ACTIVE green LED indicator. However, if either of the channel's DYNAMICS switches are set to BYPASS, the VARILINK will not function.

More information on the BYPASS can be found in the DYNAMIC CONTROL section of the manual.

With the VARILINK feature setup, the LINK % control will now allow the user to adjust the control of both channel VCA's simultaneously and smoothly.

When the LINK % control is set at 50% (its minimum setting), channel one has 50% of its VCA control linked into channel two's compressor. At the same time, channel 2 has 50% of its VCA control linked to that of channel one. By turning the LINK % control to 100%, channel one will have 100% of its VCA control linked to channel two's compressor and channel two has 100% of its VCA control linked to channel one. See figure 4 below.

If the LINK % is set at 50%, and a control voltage is created by an audio signal peak such as a musical beat on channel two, then 50% of channel two's VCA control voltage is immediately sent to, and importantly, added to channel one's compressor VCA control voltage.

While VCA voltages are in a constant state of fluctuation when connected to an audio source, you can think of this as control voltage 1 plus, a percentage of control voltage 2 (which is determined by LINK % control) at any moment in time.

The VARILINK (Link %) control allows for equal dc control voltages of between 50% and 100% to be sent from one VCA to another.

The dc voltage is added to the receiving VCA's voltage.

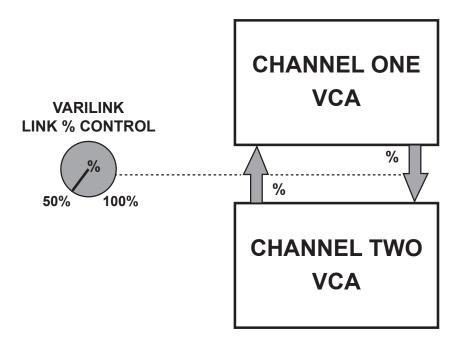
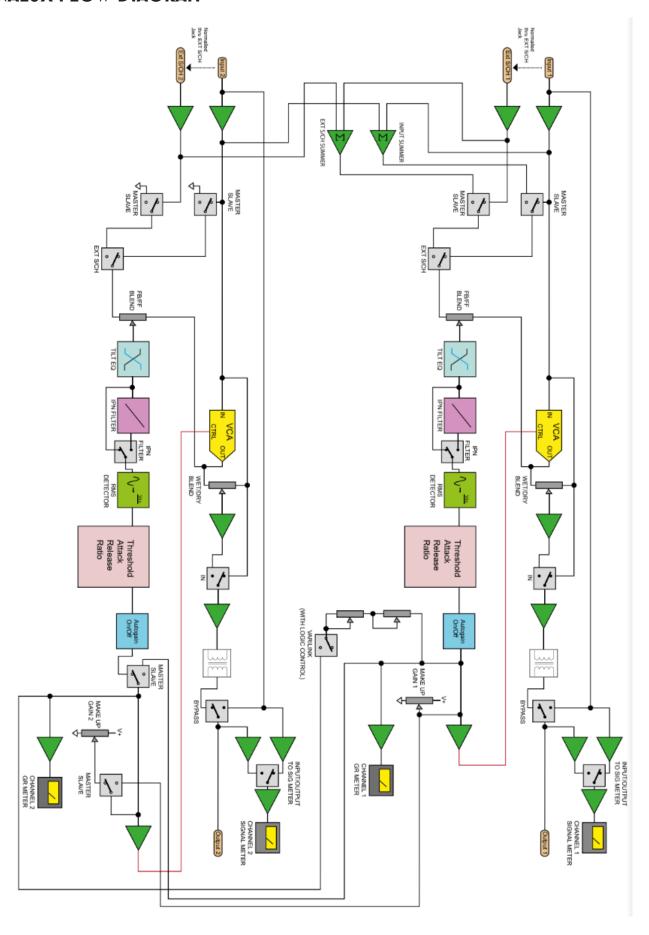


figure 4

Since the LINK % control provides both VCA's with equal control over one another, had the audio on channel one been the trigger, instead of channel two. Channel two's VCA would have been sent 50% of channel one's control voltage, adding to its own voltage and resulting in channel two's compressor activating, regardless of the audio content on channel 2.

It is not possible to link in only one direction. Using the LINK % control will always provide equal VCA control over one another.

### DYNALUX FLOW DIAGRAM



#### FEATURES/SPECIFICATIONS

- Two separate channels of compression housed in 2U Rack unit.
- Completely discreet design with special Tonelux op amps.
- Transformer Output Not in BYPASS mode.
- External Sidechain inputs for each channel.
- · Sidechain TILT and IPN Filters.
- Variable Threshold from -20VU to +20VU.
- Variable Ratio levels from 1.5:1 to 20:1 to Over Compress with Autogain selectable.
- Variable Attack and Release.
- Transition of feed-forward and feed-back compression.
- Wet/Dry Mix Control and Gain Make-Up control for Parallel Compression.
- Dual Mono Stereo Mode Compression
- Variable Link (VARILINK) compression control between Channel 1 and 2.
- Dual Analog VU Meters per channel Input/Output (Selectable) and Gain Reduction.
- Bypass switch allows Input to Output direct connection, default on power outage.
- Quiescent Noise <-95dBu (Dynamics OUT and not Bypassed)</li>
- Self -Noise in compression <-92dBu (Dynamics IN and not Bypassed)</li>
- Frequency Response @-3dBu: <5 Hz to 70 KHz.</li>

# Important Safety Information



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO AVOID FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPARATUS TO WATER, RAIN OR MOISTURE.

**NOTE** — This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

**ATTENTION** — Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

These limits are designed to provide reasonable protection against harmful interference in a commercial/residential installation respectively. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by any combination of the following measures: (1) Relocate or reorient the receiving antenna (2) Increase the separation between the equipment and the receiver (3) Plug the equipment into an outlet on a circuit different from that to which the receiver is connected (4) Consult your dealer or experienced radio/television technician for additional assistance.

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#### LIMITED WARRANTY

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Product has proven defective in material
or workmanship, then written notice
with a full explanation of the claim shall
be given promptly by the Purchaser to
PMI but all claims for warranty service
must be made within the warranty
period. If after investigation PMI

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- 4. Proof of Purchase: The dealer's dated bill of sale must be retained as evidence of the date of purchase and to establish warranty eligibility.
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PMI Audio Group takes seriously its obligations under the RoHS directive and insists that its factories use only components that are certified RoHS compliant, as well as lead-free solder. In a very few cases the necessary components may not yet be available to the world market but we work continuously to eliminate any such exceptions at the earliest opportunity. Our printed Circuit Boards (PCB's) and all soldered joints have been leadfree since 2005.

# Statement of WEEE Policy

PMI Audio Group manufactures many complete electronic products which are covered by the European Union's "Waste Electric and Electronic Equipment" directive 2002/96/EC (WEEE). This directive seeks to ensure that waste electric and electronic equipment is disposed of in an environmentally responsible manner, at the end of its life cycle. PMI Audio Group takes seriously its obligations under this directive to take back WEEEaffected products and, from 13th August 2005, will mark all such products with the crossed-out wheeled bin symbol.



Business to Business products: PMI Audio Group will cost-neutrally take back WEEE-affected electric and electronic equipment in this category, from 1st January 2006. PMI Audio Group will work with disposal and recycling partners working within the EU. The waste electric and electronic equipment can then be turned over to a disposal and recycling companies in the countries concerned.

Business to Customer products: emerging electric and electronic equipment will be disposed of by local authorities' collection systems.

**Dual Use products**: this equipment will be disposed of by local authorities' collection systems.





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