



- Saber Construction

MHS STUNT SABER (-STAFF) EXAMPLE FOR \$135

- Blade holder: \$15.75 <http://www.thecustomsabershop.com/MHSV1-Blade-Holder-Style-11-P293.aspx>
- LED holder \$9.00 <http://www.thecustomsabershop.com/MHS-Heat-Sink-V4-Flat-Style-P841.aspx>
- LED \$14.95 <http://www.ledsupply.com/leds/cree-xml-rgbw-star-led>
- Lens : \$1.25 <http://www.ledsupply.com/led-optics/10193-carclo-lens-plain-tight-spot-led-optic>
- Lens holder \$0.23 <http://www.ledsupply.com/led-optics/10734-carclo-lens-holder>
- Blade retention screw \$1.75: <http://www.thecustomsabershop.com/8-32-x-38-Black-Acetal-thumb-screw-P1039.aspx>
- Main body: \$20.50 <http://www.thecustomsabershop.com/Hilt-style-3-P868.aspx>
- Switch hole:\$7.00 <http://www.thecustomsabershop.com/Machine-recessed-12mm-AV-switch-hole-P938.aspx>
- Switch : \$8.48 <https://www.amazon.com/Latching-URTONE-Aluminum-Suitable-Mounting/dp/B01KA4FM4Y/>
- Pommel: \$8.00 <http://www.thecustomsabershop.com/MPS-Pommel-style-7-P386.aspx>
- Staff extension: \$22.00 <http://www.thecustomsabershop.com/10-Double-female-threaded-connector-P401.aspx>
- Staff adapter \$7.00 <http://www.thecustomsabershop.com/Double-ended-male-threaded-connector-style-1-P127.aspx>
- Printed 18650 battery holder, wires and some resistors, lets say : \$10
- Thick PC blade \$12.50 <http://www.thecustomsabershop.com/1-Thick-walled-Trans-White-PolyC-40-long-P528.aspx>
- Blade tip \$3.50 <http://www.thecustomsabershop.com/Shouldered-1-thick-walled-blade-tip-with-reflective-disc--P139.aspx>

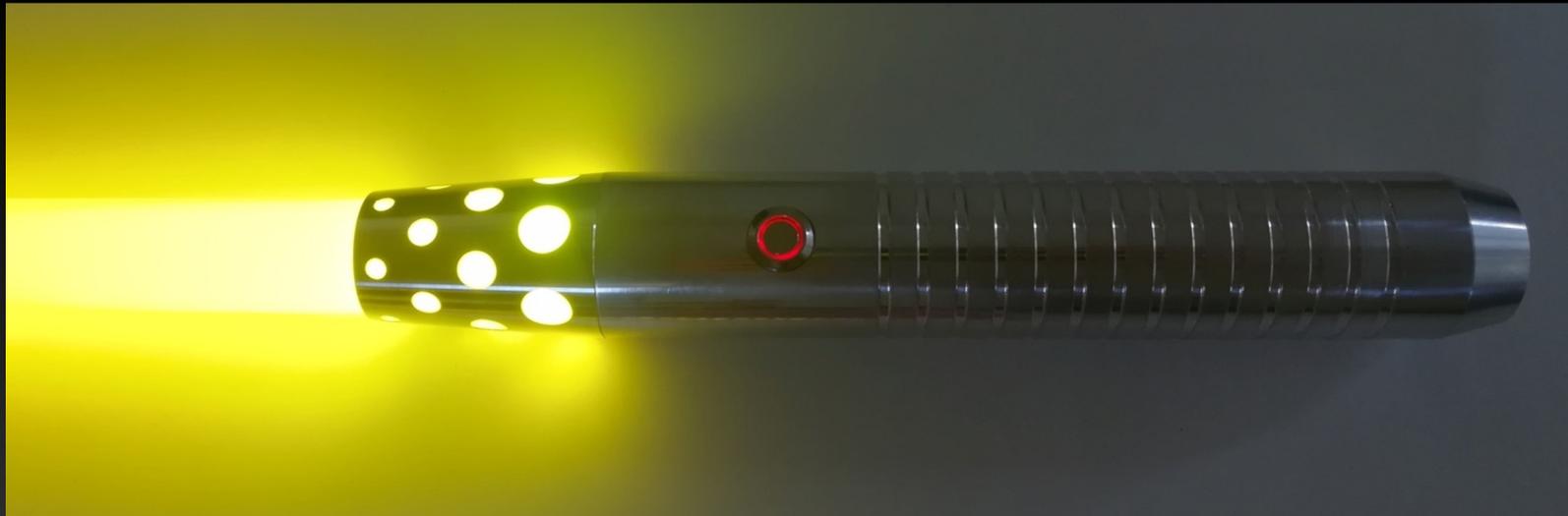




LIGHTSABER TEAM



AND YOU CAN REMOVE THE EXTENSION ...





ADD A SLEEVE (EASY 3D PRINT)





LIGHTSABER TEAM



ADD A \$15 CHOKE

<http://www.thecustomsabershop.com/MHS-choke-style-1-short-P317.aspx>



LED'S

- Tri Cree:

the baseline, bright, that's up to 12W power (depending on the exact color and current)

- <http://www.thecustomsabershop.com/Cree-Tri-XP-E2-C138.aspx>

- <http://www.ledsupply.com/leds/cree-xlamp-xt-e-royal-blue-leds>

(perfect for blue saber or to make a green saber with a photon blade)

- Tri-Rebel :

said to be less bright, but some think that blue and red are nicer color than Cree, rebel royal blue and deep red are certainly great

- <http://www.thecustomsabershop.com/Luxeon-Tri-Rebel-Star-P777.aspx>

- The Cree XML

is a lot of bang (bright) for the buck and battery runtime - one of my favorites:

(<http://www.cree.com/led-components/products/xlamp-leds-arrays/xlamp-xm-l-color>)

- <http://www.ledsupply.com/leds/cree-xml-rgbw-star-led>

- LEDengine :

- <https://www.digikey.com/product-detail/en/led-engin-inc/LZ4-V4MDPB-0000/1537-1161-ND/5880529>



LED HOLDER AND LENS

Heatsink and LED holder:

- <http://www.thecustomsabershop.com/Heatsink-module-for-1-ID-tubes-P1027.aspx>
- <http://www.thecustomsabershop.com/Blade-Holders-C32.aspx>

For the Cree XML

Lens : \$1.25 <http://www.ledsupply.com/led-optics/10193-carclo-lens-plain-tight-spot-led-optic>

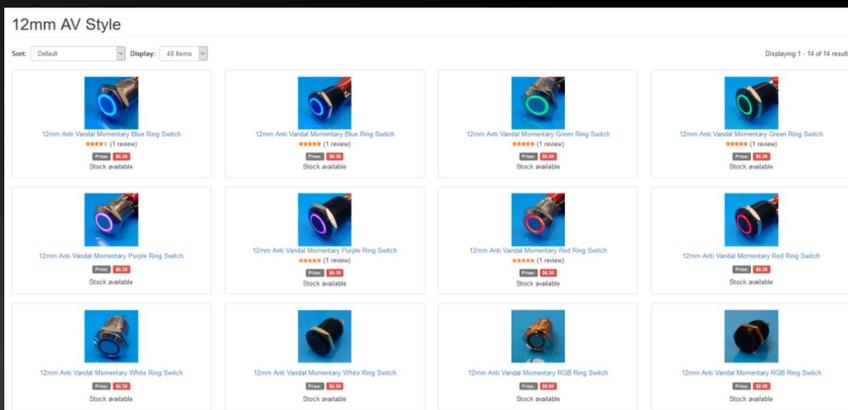
Lens holder \$0.23 <http://www.ledsupply.com/led-optics/10734-carclo-lens-holder>



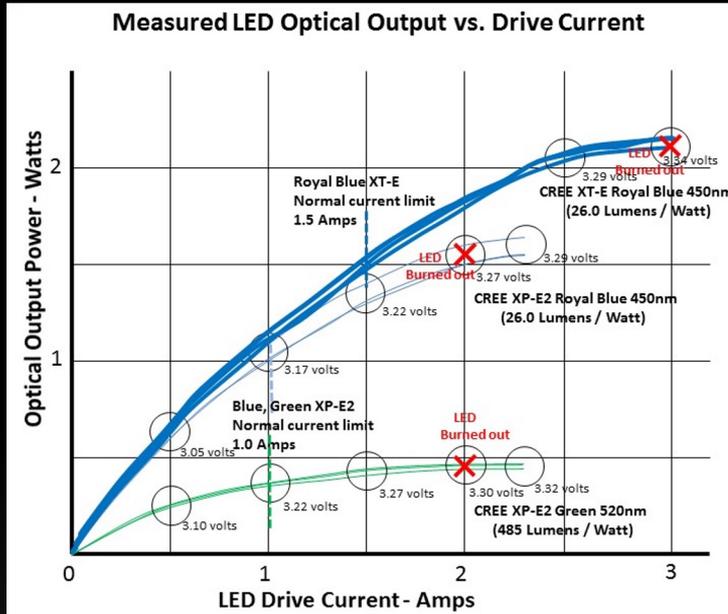
SWITCHES

- For a saber without electronics one needs a "latching" switch
- While for a saber with a FX board one usually uses a momentary switch
- Those come with hole diameters of 10.6 or 12 or 16 mm (I prefer 12mm styles)
Be careful that the switch fits in the hilt and is not too long !

- <http://www.thecustomsabershop.com/Guarded-Style-C67.aspx>
- <https://www.amazon.com/Latching-URTONE-Aluminum-Suitable-Mounting/dp/B01KA4FM4Y/>
- <https://www.amazon.com/Yakamoz-Self-locking-Latching-Button-Industrial/dp/B01D1GIDOO/>
- <https://www.amazon.com/Yakamoz-Self-locking-Latching-Button-Industrial/dp/B01D4HE79U/>
- <https://www.amazon.com/uxcell-Green-Self-Locking-Button-Switch/dp/B00PZOQLIQ/>
- <https://www.amazon.com/SupportTM-Momentary-Button-Stainless-Waterproof/dp/B01EJ9EAXU/>

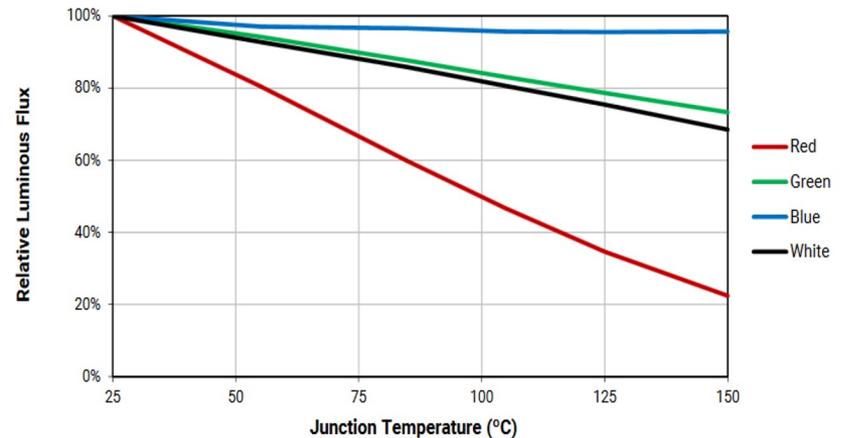


Why a super high power LED isnt as good as you think ...



RELATIVE FLUX VS JUNCTION TEMPERATURE ($I_f = 350 \text{ mA}$)

The following graph represents typical performance of each LED die in the XLamp XM-L Color LED.



from Photonic Bladesmith from fx-sabers.com

- High power sucks the battery dry in no time !
A 18650 Lilon cell has approx 10-12Wh (watt-hours) in it.
At 12W power that means its empty in 1 hour while at 3W it will last 4 hours ...
- Higher power is not as bright as you might hope for ...
- All that power heats up the LED and the light efficiency drops
A hot high power red might produce less light than a cool low power LED !

Blades - 1inch OD

White (thin walled) :

- <http://www.thecustomsabershop.com/1-Thin-walled-Trans-White-PolyC-40-long-P529.aspx> (\$10.25)
- bullet tip: <http://www.thecustomsabershop.com/Clear-bullet-1-thin-walled-blade-tip-P361.aspx> (\$5.50)
- round tip: <http://www.thecustomsabershop.com/Clear-1-thin-walled-blade-tip-P138.aspx> (\$3.50)

White (thick walled):

- <http://www.thecustomsabershop.com/1-Thick-walled-Trans-White-PolyC-40-long-P528.aspx> (\$12.00)
- <http://www.thecustomsabershop.com/Shouldered-1-thick-walled-blade-tip-with-reflective-disc--P139.aspx> (\$3.50)

Blue: (thin walled)

- <http://www.thecustomsabershop.com/1-Thin-Walled-Enhanced-Blue8482-PolyC-40-long-P1196.aspx>
- <http://www.thecustomsabershop.com/Enhanced-Blue8482-bullet-1-thin-walled-blade-tip-P1155.aspx>

Photon green (thin walled)

- <http://www.thecustomsabershop.com/1-Thin-Walled-Photon-Green8482-PolyC-40-long-P1084.aspx>
- <http://www.thecustomsabershop.com/Photon-Green8482-bullet-1-thin-walled-blade-tip-P1090.aspx>

To glue the tip into the pipe best to use is SCIGRIP 16 or 4

Saber Power Cores

4x AAA rechargeable batteries (approx 3-4Wh energy):

- <https://www.amazon.com/AmazonBasics-High-Capacity-Rechargeable-Batteries-Pre-charged/dp/B00HZV9YE0>
- <https://www.amazon.com/AmazonBasics-Rechargeable-Batteries-8-Pack-Pre-charged/dp/B00CWNMXQW>



1x 18650 Liion cell (approx 10-12Wh energy)

use protected cells unless you know what you are doing :

<https://www.amazon.com/Panasonic-NCR18650B-3400mAh-Protected-Batteries/dp/B00NUI47OY>



Battery chargers:

LiitoKala 100 and clones: (7\$)

<https://www.amazon.com/Battery-charger-lithium-ion-battery-18650/dp/B072MZSY3Q>

liitokala 402 (15\$) good to charge 4x AAA as well as 18650s

<https://www.amazon.com/Liitokala-Smart-battery-Charger-lithium/dp/B073XDHYYY>

Nitecore D2 (15\$)

<https://www.amazon.com/Nitecore-Charger-Universal-Rechargeable-Batteries/dp/B00KW2ZDJO>

Nitecore D4 (26\$)

<https://www.amazon.com/Nitecore-Integrated-Displays-Rechargeable-Batteries/dp/B00L1XYX4Y>

LiitoKala 500 (30\$) - currently one of the best chargers out there ...

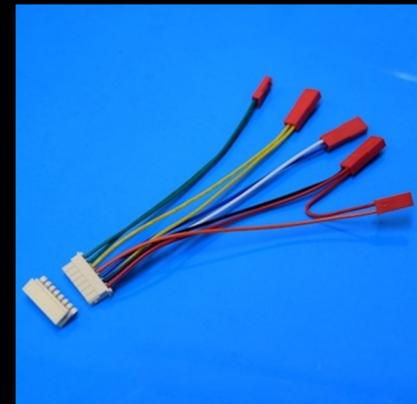
<https://www.amazon.com/LiitoKala-Lii-500-Battery-charger-capacity/dp/B073R7VCMZ>



JST RCY quick connects and conventions

TCSS NBV4 cable definition:

- Red/Black female = Battery
- Green male = Speaker
- Yellow female = Momentary switch
- Blue/White female = Main LED
- Orange/Red male = FOC LED

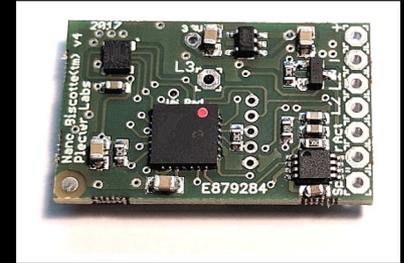


Sound boards for 1x Lilon cell (18650)

Plector Labs - Nano Biscotte \$67

http://www.plecterlabs.com/shop/product_info.php?products_id=73

<http://www.thecustomsabershop.com/Nano-Biscotte-Sound-Module-V4-P806.aspx>



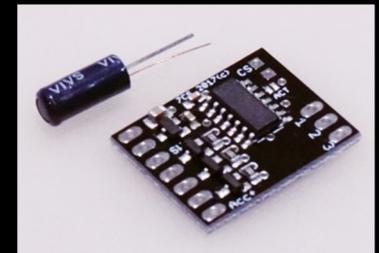
Naigon's Electronic Creations - Spark 2

<http://saberigniter.com/spark2.aspx>



CoreFX V2 (no sound, but color mixing) \$20

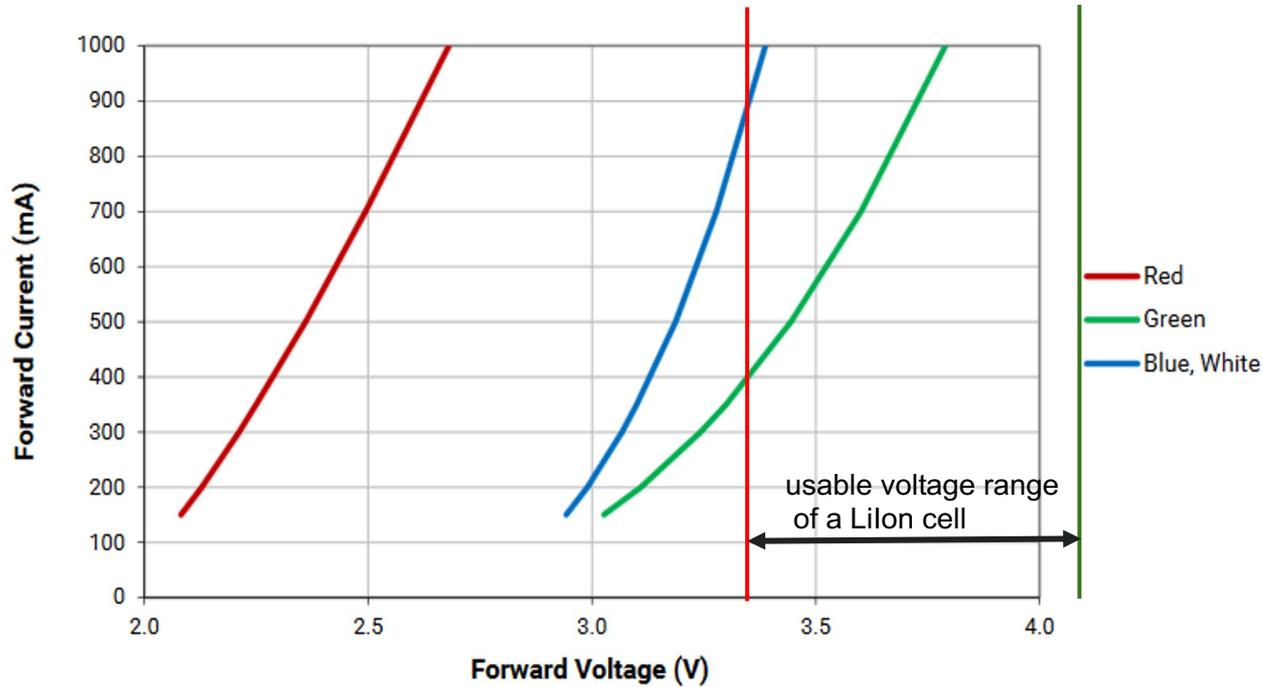
<https://thesaberarmory.com/product/corefx-v2-stunt-color-changing-circuit-board/>



LED drive and resistors

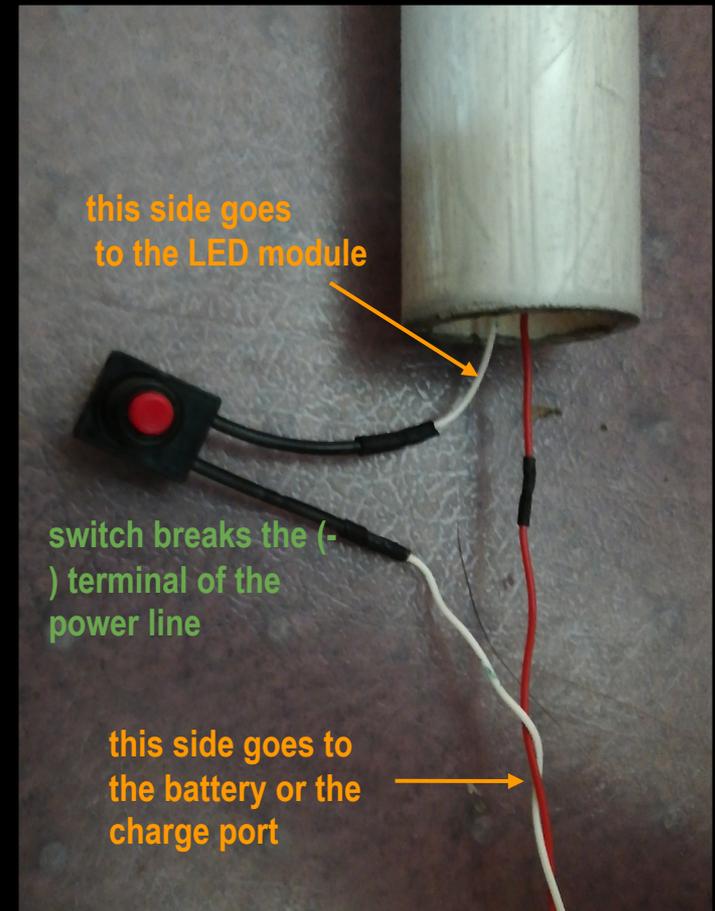
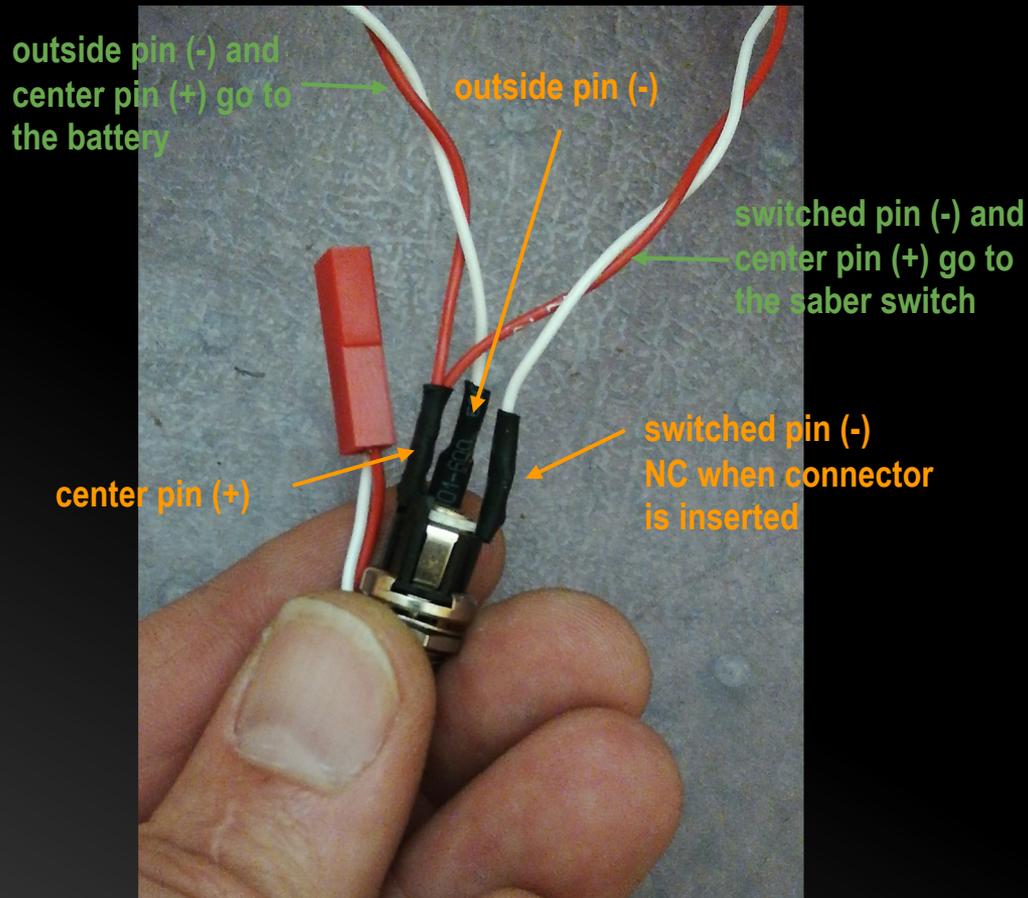
ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$)

The following graph represents typical performance of each LED die in the XLamp XM-L Color LED.





Stunt Saber: switch and charge port wiring





LIGHTSABER TEAM





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