NEXUS Ti6L
TRANSMISSION INTERFACE KIT
SUITS GM 6L SERIES
(WITH COMPATIBLE OS VERSIONS)

QUICK START GUIDE

HT-196002



Congratulations on purchasing the Nexus Ti6L Transmission Interface Kit for GM 6L series automatic transmissions!

This device, in conjunction with a 6L Transmission Harness (HT-187007), enables a Nexus ECU or VCU to integrate and control a supported GM 6L series automatic transmission running a compatible OS version.

Whether you're starting a new setup or upgrading your vehicle's transmission control, the Nexus Ti6L kit offers a seamless and efficient automatic transmission control interface.

This quick start guide will walk you through the installation of your Nexus Ti6L kit and guide you in configuring the system within the Nexus Software Programmer (NSP) to ensure a smooth installation and optimal functionality of your new automatic transmission interface.



What's included?

- HT-196002 - Nexus Ti6L Transmission Interface - Suits GM 6L Series
- HT-187007 - Transmission Harness (6Lx0)
- Opposing DTM-6 and DTM-8 connectors and pins
- Quick start guide

Features:

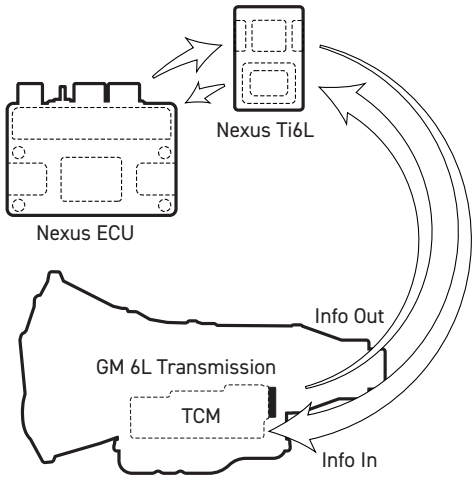
- Fully terminated transmission harness to suit GM 6Lx0 transmissions
- Plug and Play with a Nexus Rebel LS ECU terminated harness
- Easy Rebel LS Setup Wizard using the Haltech NSP Software or Haltech Connect App
- Convenient TCM OS update support

SPECIFICATION	DETAILS
Product Name	Nexus Ti6L Transmission Interface Kit suits GM 6L series
Supported ECUs	Nexus Rebel LS ECU Nexus Series ECU / VCU
Supported Transmissions	**6L80 running a compatible OS version** **6L90 running a compatible OS version**
Connector	34 Pin AMP Superseal (Type 2 keyway)
LED Indicator	1 x Status LED Green (Normal operation) Orange (Boot mode)
Communications	CAN 1 (Haltech Protocol) CAN 2 (6L TCM Protocol)
Operating Voltage	8.0V to 22.0V
Ambient Temperature	105°C / 221°F (Max)
Dimensions	70mm x 110mm x 34mm
IP Rating	IP66

Transmission Control Overview

The GM 6Lx0 transmission is supported by Nexus ECUs via CAN communication through a Nexus Ti6L, which interfaces with the factory Transmission Control Module (TCM) inside the transmission. Using the information provided by the Nexus ECU, the TCM makes decisions regarding when and how to shift between gears. Data sent from the Nexus ECU includes engine parameters such as RPM, engine demand, throttle position, and engine torque.

Likewise, the TCM sends information back to the ECU, such as gear position, park/neutral state, torque limits, and torque reduction requests as necessary.



TCM Operating System

The Nexus ECU and Ti6L can identify and will only operate with a 6L transmission running a compatible Operating System (OS) version.

If the OS version is incompatible, the Ti6L will need to flash a compatible OS into the TCM using the NSP software to ensure proper transmission operation.

For more information about the TCM reflashing process and compatible OS versions, scan the QR code above.

1. Prepare the vehicle and workspace - Park the vehicle on a flat surface, engage the parking brake, and disconnect the battery. Lift the vehicle using a hoist, or secure it with jack stands if using a jack. Ensure the engine and transmission are cool before beginning the installation.

2. Install the 6L transmission harness -

Locate the round connector at the rear of the transmission and plug in the matching 16-pin connector from one end of the 6L transmission harness.

Next, route the transmission harness toward the engine and connect the DTM06-8S transmission breakout connector to the corresponding transmission connector found on your engine harness (e.g. a Rebel LS main harness).

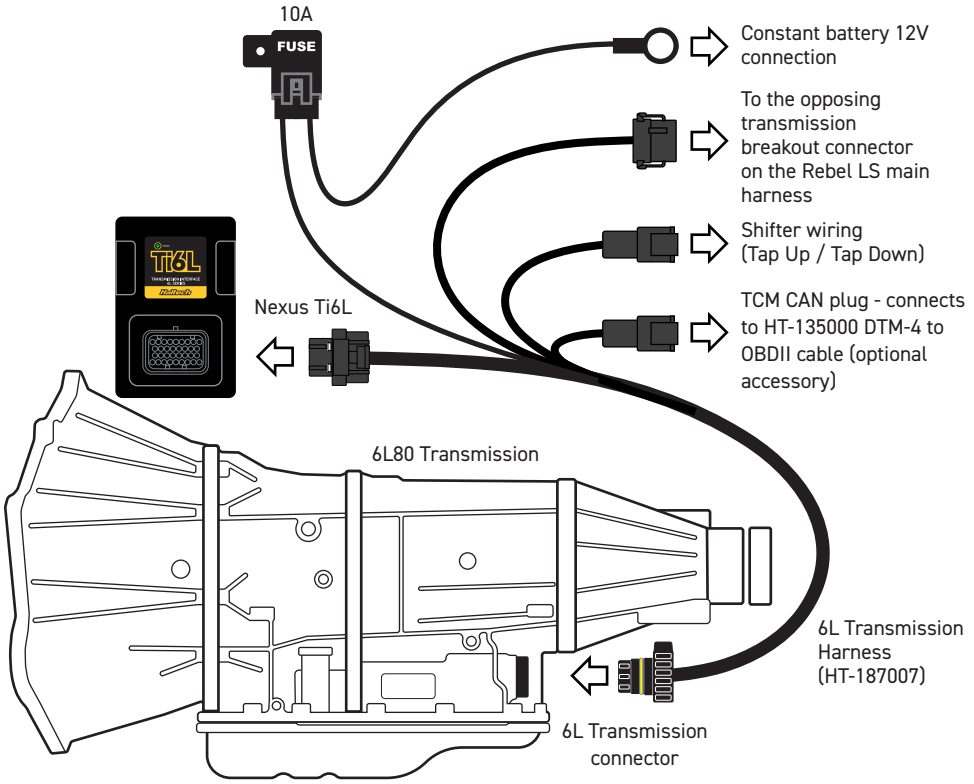
If you are using this 6L transmission harness with a universal Nexus ECU/VCU that has been custom-wired using a universal harness, the DTM06-8S transmission breakout connector must be wired to the Haltech CAN system, which provides switched 12V power, power ground, and the CAN High and CAN Low wires required for CAN communication.

Refer to the pinout table on the right for the DTM06-8S transmission breakout connector on the transmission harness.

3. Install the Nexus Ti6L

Find a suitable location in the engine bay (e.g. the firewall) to mount the Nexus Ti6L that allows the 34-pin Superseal Nexus Ti6L connector from the transmission harness to plug in.

4. Power up the Nexus Ti6L - Secure the inline fuse holder and connect the 8 mm ring terminal to the battery's positive terminal to supply constant power to the transmission. At this stage, the battery can be reconnected to power up the entire vehicle.



5. TCM CAN plug - This connector is not required for use with the Nexus ECU and Ti6L. It is included solely to provide access for a third-party reflashing tool if needed. This can be connected to an HT-135000 DTM-4 to OBDII cable to enable OBDII access for the reflashing tool when needed.

6. Check all connections - Double-check all connections for tightness and proper routing. Ensure the harness is securely fastened with zip ties to prevent contact with moving parts or heat sources. Carefully lower the vehicle from the jack stands.

At this stage, your Nexus Ti6L is successfully installed and ready to be configured within the Nexus ECU using the Nexus Software Programmer (NSP).

Transmission Breakout Connector Pinout Reference:



Transmission Breakout Connector
DTM06-8S Black
(Wire side view)

PIN	FUNCTION	WIRE COLOR
1	+12V switched	Pink / Red
2	Power ground	Black
3	CAN High	White
4	CAN Low	Blue
5	Unused	Do not connect
6	Unused	Do not connect
7	Unused	Do not connect
8	Unused	Do not connect

6L Transmission Connector Installation

Before installing the connector, make sure the inner part is fully extended, as shown on the right. If it is retracted, you can push the inner part outward from the rear until it clicks into place. A retracted connector will engage the socket but not fully engage the pins on the mating transmission connector, resulting in no electrical connection.

After extending the connector, ensure the connector ring is fully rotated counterclockwise against the inner part to lock the keyways in place.

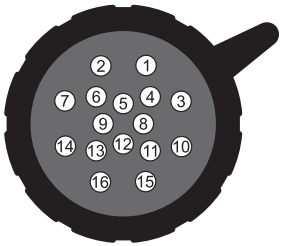
Once everything is set, plug the connector into the transmission with the connector ring tab pointing upward, and twist it clockwise while gently pushing forward to locate the keyway (approximately at the position shown below). Once seated, twist the connector further about a quarter turn clockwise to lock it in place.



Extended connector



Retracted connector



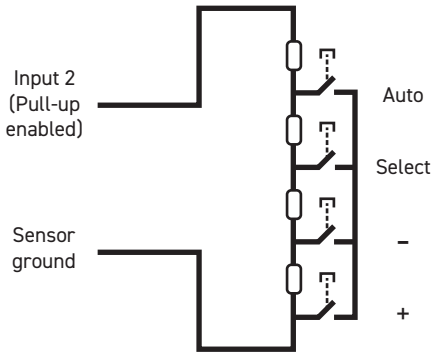
6L Transmission Connector
(Wire side view)

PIN	FUNCTION	WIRE COLOR
1	Unused	Do not connect
2	Unused	Do not connect
3	Park / Neutral signal	White
4	Constant 12V	Red
5	Power ground	Black
6	Brake signal	Brown/Black
7	Unused	Do not connect
8	Unused	Do not connect
9	Switched 12V	Brown/Green
10	TCM CAN High	White
11	TCM CAN Low	Blue
12	Switched 12V	Brown/Green
13	Terminating resistor	White/Yellow
14	Terminating resistor	White/Yellow
15	Unused	Do not connect
16	Unused	Do not connect

Shifter Connector (Tap Up, Tap Down)

The HT-187007 6L Transmission Harness is equipped with a black DTM04-6P "Shifter" connector that provides spare analogue voltage inputs from the Nexus Ti6L. If not already connected to your Nexus ECU or PDM, these inputs can be wired to 6L transmission shifters with Manual or Sports mode, enabling tap up and tap down gear changes. In some shifters, this is indicated by "+" and "–" symbols, while others use paddles behind the steering wheel, or a combination of both.

Most of these 6L shifters incorporate a resistor ladder circuit, where the tap up, tap down, and other switches are all integrated into a single circuit. Each function provides a different resistance (ohms) reading, which the Ti6L detects and differentiates. Some aftermarket 6L shifters may instead use discrete switch circuits for each function, or a combination of discrete circuits and the resistor ladder setup.



Example of wiring a 6L transmission shifter with tap up and tap down functionality (resistor ladder circuit)



Shifter Connector Pinout
DTM04-6P Black
(Wire side view)

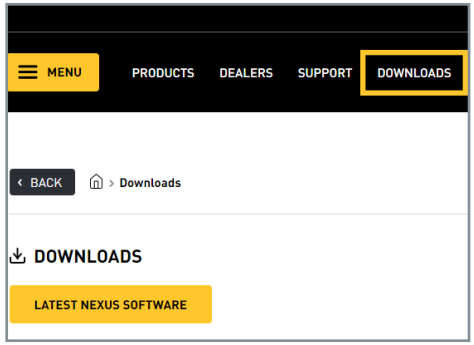
PIN	FUNCTION	WIRE COLOR
1	+5V	Orange
2	Ti6L Input 2	White / Yellow
3	Ti6L Input 3	White / Gray
4	Ti6L Input 4	White / Violet
5	Sensor ground	Black / White
6	Unused	Do not connect

NOTE: It is important to remember that this application only supports 6L transmissions that expect shifter tap up and tap down signals to be wired external to the transmission, with the shift request signals transmitted over CAN. If your transmission's shifter tap up and tap down signals are wired directly to the transmission via the 16-pin connector, you will need to wire them in the same way.

Scan the QR code above to learn more about wiring different 6L shifters and setting up the Shift Requests function in NSP.

Installing the NSP software

Haltech NSP (Nexus Software Programmer) is the software used for configuring the Nexus Ti6L Transmission Interface. Follow these steps to install the Haltech NSP software:



1. Download the NSP installer - Go to the Haltech website (www.haltech.com), navigate to the 'Downloads' section, and click on the download link for Nexus Software Programmer.

2. Run the installer file - Once the download is complete, locate the downloaded file (usually in the 'Downloads' folder of your computer) and double-click on the file to run the Nexus Software Setup Wizard.

3. Launch Haltech NSP - Once the installation is complete, you can launch the Haltech NSP software from the Windows 'Start' menu or using the desktop shortcut that was created.







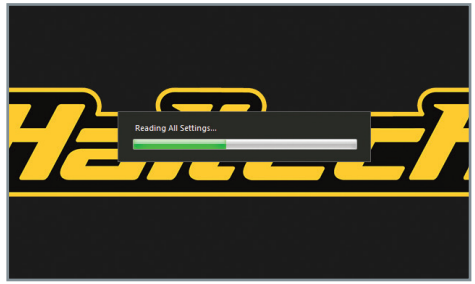
Going online with your Nexus Rebel LS ECU

The Nexus Ti6L Transmission Interface is a Haltech CAN device configured within your Nexus Rebel LS ECU through the Setup Wizard.

To begin, open the NSP software and connect the supplied Haltech USB cable between your laptop and the USB-C port on the front of your Nexus ECU.



This USB connection allows the NSP software to read or write settings into the ECU or use the Rebel LS Setup Wizard if you're starting a new map.



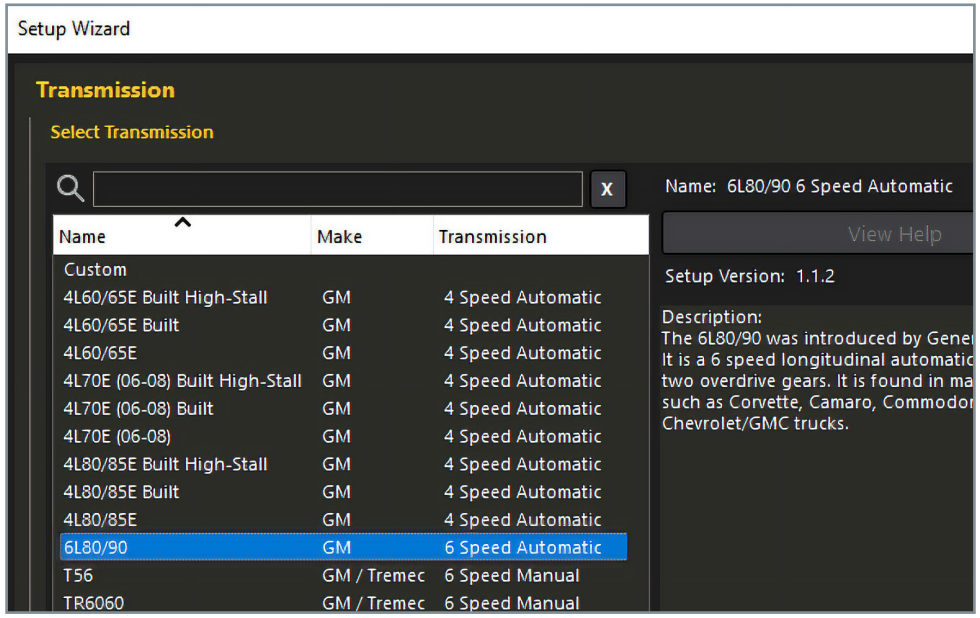
Nexus Ti6L setup using the ECU Setup Wizard

The Rebel LS ECU Setup Wizard will guide you through creating a base map by defining the specific engine, camshaft, throttle type, MAP sensor, injectors, and ignition coils you're using.

Towards the end of the Setup Wizard, you will be prompted to select which GM series transmission you have - choose 6L80/90 and continue to complete the setup.

By selecting this transmission, NSP will automatically configure your ECU to communicate with the Ti6L and apply all related transmission control settings.

Upon completing the Setup Wizard, your transmission will be ready for use.



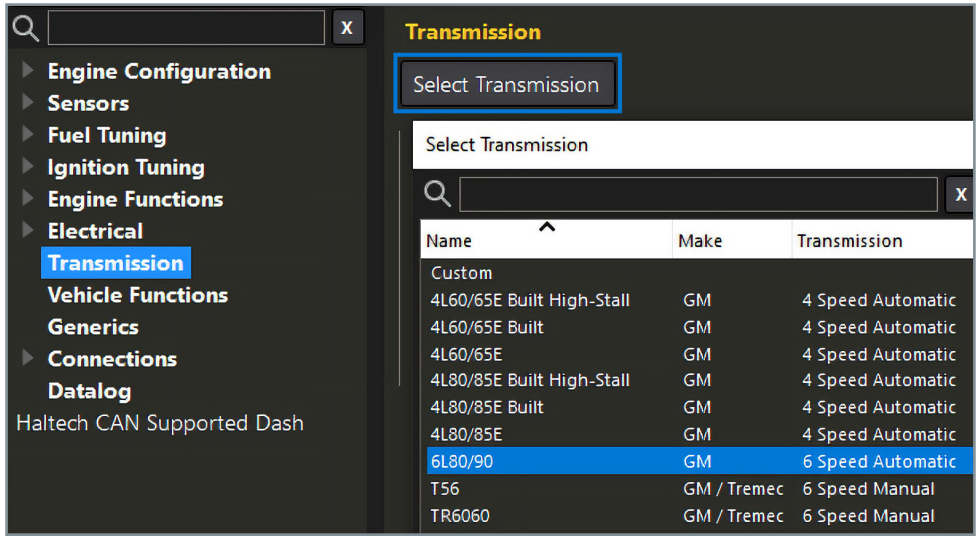
Nexus Ti6L - setting up manually

If you are manually setting up the Nexus Ti6L Transmission Interface - such as when modifying an existing ECU map or using the Nexus Ti6L with a universal Nexus ECU/VCU - the first step is to navigate to the Transmission section in the Navigation Tree on the left side of the NSP software and click "Select Transmission."

This will open a window displaying a list of GM transmissions. Select "6L80/90" and click OK.

NSP will then automatically configure your ECU to communicate with the Ti6L and apply all related transmission control settings.

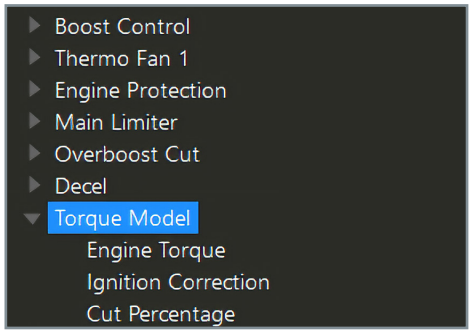
A list of these settings will be displayed for you to review and confirm. Once confirmed, your transmission will be ready for use.



Torque Model Function

The Torque Model function, found in NSP under Engine Functions, represents how much torque your engine produces under various conditions, as well as the strategies used when torque reduction is required. This function is also essential for operating the 6L transmission, and the NSP software will prompt you to enable it if you are manually setting up the Ti6L.

Enabling this function for the first time and using the default values provides a good starting point. However, if you experience transmission performance issues or a lack of smooth operation, the Engine Torque Table and related settings should be fine-tuned to reflect actual engine torque values based on dynamometer data.



For more information on how to set up the Torque Model Function, scan the QR code on the right.

PINOUT INFORMATION

Nexus Ti6L connector
AMP 34-pin Keyway 2
Wire side view



PIN	PIN TYPE	FUNCTION	WIRE COLOR (HT-187000 HARNESS)
1	CAN 1 High	Haltech CAN High connection	White
2	CAN 1 Low	Haltech CAN Low connection	Blue
3	+12V switched	Ti6L +12V power input	Pink / Red
4	Power ground	Ti6L power ground input	Black
5	Unused	Do not connect	
6	Unused	Do not connect	
7	Output 1	Brake signal output	Brown / Black
8	Unused	Do not connect	
9	Output 3	Switched +12V output	Brown / Green
10	Unused	Do not connect	
11	Unused	Do not connect	
12	Unused	Do not connect	
13	+5V	+5V sensor supply	Orange
14	Unused	Do not connect	
15	Unused	Do not connect	
16	Unused	Do not connect	
17	Unused	Do not connect	
18	Unused	Do not connect	
19	Unused	Do not connect	
20	Unused	Do not connect	
21	Unused	Do not connect	
22	Input 1	Park /Neutral switch input	White
23	Input 2	Shifter input 1	White / Yellow
24	Input 3	Shifter input 2	White / Gray
25	Input 4	Shifter input 3	White / Violet
26	Sensor ground	Sensor ground	Black / White
27	Unused	Do not connect	
28	Unused	Do not connect	
29	Unused	Do not connect	
30	CAN 2 High	Vehicle (TCM) CAN High connection	White
31	CAN 2 Low	Vehicle (TCM) CAN Low connection	Blue
32	Unused	Do not connect	
33	Unused	Do not connect	
34	Unused	Do not connect	

WARRANTY CERTIFICATE

At Haltech we make every effort to design and manufacture fault-free products that perform up to or above the market expectations. All our products are covered by a Limited 12 Month Warranty.

Haltech Limited Warranty

Unless specified otherwise, Haltech warrants its products to be free from defects in material or workmanship for a period of 12 months from the date of purchase.

If the Haltech product is found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of purchase. Proof of purchase in the form of a copy of the original purchase invoice, receipt or bill of sale which indicates that the product is within the warranty period, must be presented to obtain warranty service.

Replacement or repair of a defective product shall constitute the sole liability of Haltech. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations, either expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Haltech, be liable for special or consequential damages.

Product Returns

Please include a copy of the original purchase invoice, receipt or bill of sale along with the unused, undamaged product and its original packaging. Any product returned with missing accessory items or packaging will incur extra charges to return the item to a re-saleable condition.

All product returns must be sent via a freight method with adequate tracking, insurance and proof of delivery services. Haltech will not be held responsible for product returns lost during transit.

Returns of Products Supplied in Sealed Packaging

The sale of any sensor or accessory supplied in sealed packaging is strictly non-refundable if the sealed packaging has been opened or tampered with. This will be clearly noted on the product packaging. If you do not accept these terms please return the sensor in its original unopened packaging within 30 days for a full refund.

A sensor or accessory product may be returned after 30 days of purchase (with its sealed packaging intact) for credit only (no refunds given) and will be subject to a 10% restocking fee.

Installation of Haltech Products

No responsibility whatsoever is accepted by Haltech for the fitment of Haltech Products. The onus is clearly on the installer to ensure that both their knowledge and the parts selected are correct for that particular application. Any damage to parts or consequential damage or costs resulting from the incorrect installation of Haltech products are totally the responsibility of the installer.

Always disconnect the battery when doing electrical work on your vehicle. Avoid sparks, open flames or use of electrical devices near flammable substances. Do not run the engine with a battery charger connected as this could damage the ECU and other electrical equipment.

Do not overcharge the battery or reverse the polarity of the battery or any charging unit. Disconnect the Haltech ECU from the electrical system whenever doing any welding on the vehicle by unplugging the wiring harness connector from the ECU.

After completing the ECU installation, make sure there is no wiring left un-insulated. Uninsulated wiring can cause sparks, short circuits and in some cases fire. Before attempting to run the engine ensure there are no leaks in the fuel system.

All fuel system components and wiring should be mounted away from heat sources, shielded if necessary and well ventilated. Always ensure that you follow workshop safety procedures. If you're working underneath a jacked-up car, always use safety stands!

Haltech Off-Road Usage Policy

In many states it is unlawful to tamper with your vehicle's emissions equipment. Haltech products are designed and sold for sanctioned off-road/competition non-emissions controlled vehicles only and may never be used on a public road or highway.

Using Haltech products for street/road use on public roads or highways is prohibited by law unless a specific regulatory exemption exists (more information can be found on the SEMA Action Network website www.semasan.com/emissions for state by state details in the USA).

It is the responsibility of the installer and/or user of this product to ensure compliance with all applicable local and federal laws and regulations. Please check with your local vehicle authority before purchasing, using or installing any Haltech product.

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