

Installation Instructions For Lingenfelter LNC-003 Dual RPM Launch Controller

Adjustable 2-Step RPM Limiter For GM LSx Series Engines



PN: L460105297

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Parts List

#	Part number	Description
1	LNC-003	LPE Dual RPM Launch Controller
1	XX03975-0003	72" trigger wire harness (<i>part of PN LNC-003</i>)
2		Hook & loop tape, 3.5" length
4	AV16037	Self-tapping screw
1	L450080000	Transient voltage suppression (TVS) diode kit
1	L950050000	LPE technician's screwdriver
2	L920180000	LPE bumper sticker & sponsor decal
1		Instructions

Optional Items

• Additional transient voltage suppression (TVS) diode	L450080000
• STOV-004 MPH activated switch	L460340004
• CTAP-001 Clutch and Throttle actuated position switch	L460190108
• CTAP Plug-And-Play harness for Corvette, Camaro & CTS-V	L480370108
• Sealed 40 amp heavy duty relay kit	L450100000
• LPE microswitch kit	L480330000
• Red 12 vdc LED with 30 cm leads	L450120000
• Red LED lighted paddle toggle switch, 20 amp	DC-7600500
• Connector, AMP Mate-N-Lock, Female 1-pos	571-14803490
• Connector, AMP Mate-N-Lock, Male 1-pos	571-14803510
• Connector, AMP Mate-N-Lock Pin, 24-18 AWG	571-606181
• Connector, AMP Mate-N-Lock Socket, 24-18 AWG	571-606171
• Toggle switch	CLT-V1D1BC0B

Specifications:

- Custom molded high temperature glass filled Nylon 6 enclosure with direct access to the controller settings without requiring removal of a cover or access panel.
- 40 MHz 16-bit automotive qualified processor with eight channel Enhanced Time Module.
- Each coil drive circuit has a dedicated timer to keep the timing accurate over the full RPM range.
- Independent coil drive provides Sequential Ignition Kill when RPM limiting is active.
- Reverse battery protection.
- Both of the activation inputs have active clamps and optical isolation to suppress electrical noise from external solenoids (such as trans brake and line lock).
- Digital filter provided in software to further isolate electrical noise on the activation inputs.
- Separate Primary and Secondary RPM x100 & RPM x1000 switches for easier setting adjustments.
- RPM limiter activation point can be adjusted from 1500 to 9,900 RPM in 100 RPM increments.
- **Ground Activation** and **+12 Volt Activation** inputs for the Primary RPM limit activation.
- Dedicated +12 volt activation input for the Secondary RPM limiter.
- True plug-and-play coil pack connection design for ease of installation and removal.
- Fully encapsulated (potted) construction for added durability.
- One year warranty (from date of purchase).

LNC-003 description:

The LNC-003 Dual RPM Launch Controller is a true 2-Step spark based RPM limiter for use with LSx based engines and ignition systems. The LNC-003 provides two RPM limit settings - a Primary and a Secondary.

The LNC-003 can be used to provide consistent launch RPM off the line in drag racing and other standing start racing applications. In turbocharged applications the LNC-003 can also be used to load the engine and help build additional boost off the line.

The LNC-003 can also be used as an adjustable individual cylinder RPM limiter, providing reliable and fast acting spark based engine RPM limit control. This is especially useful in vehicles that have auxiliary fuel control systems where it is not possible to make sure that both the factory ECM/PCM and the auxiliary systems both turn off fuel at exactly the same time. The reason this is important is that if the two don't completely cut fuel at the same time you will run lean when the one system cuts off the injectors (but not the other), risking severe engine damage.

WARNINGS:

The RPM limiter function of the LNC-003 acts by disabling spark to individual cylinders and not fuel like most production RPM limiters so the 2-Step/Launch Control function is not meant for use on the street or for use on cars equipped with catalytic converters. The 2-Step/Launch Control function of the LNC-003 is only for use at the race track on race vehicles not equipped with catalysts. Failure to follow these precautions can result in premature catalyst failure.

DO NOT operate the engine with the LNC-003 RPM limit active for extended periods of time. Due to the raw fuel in the exhaust when the RPM limit is active, a risk of backfiring exists if you do so.

DO NOT place in direct exposure to exhaust manifolds, turbocharger turbine housings or other underhood items that are high temperature heat sources (radiated heat sources). The warranty does not cover damage due to melted enclosures or wiring due to improper installation.

Do NOT submerge the Controller in liquid or directly wash the unit with liquid of any type! The switches on the LNC-003 are sealed but are NOT rated for high pressure wash, use caution if power washing near the LNC-003 controller

Important Information regarding spark plug wires and spark plugs:

You must use noise suppression ignition wires and resistor type spark plugs with this Controller. The LNC-003 Controller contains High Frequency Digital Electronics and will NOT function correctly without Noise Suppression Wires! Some aftermarket wires that claim to be noise suppression type wires do not offer the same noise suppression level as the production wires and other aftermarket spark plug wires.

Note: The LNC-003 receives power and ground from the coil pack connectors. The +12V and ground activation wires are not power and ground for the controller.

Switches and indicator lights:

Red (Power) LED:

- Comes on solid on start-up (power on)
- When active RPM is reached, red LED will blink (even if activation wire is not triggered)

Green (Activation) LED:

- Slow blink rate (4 Hz) for Primary Activation only
- Medium blink rate (8 Hz) for Secondary Activation only
- Fast blink rate (16 Hz) for both Primary and Secondary inputs on



Settings:

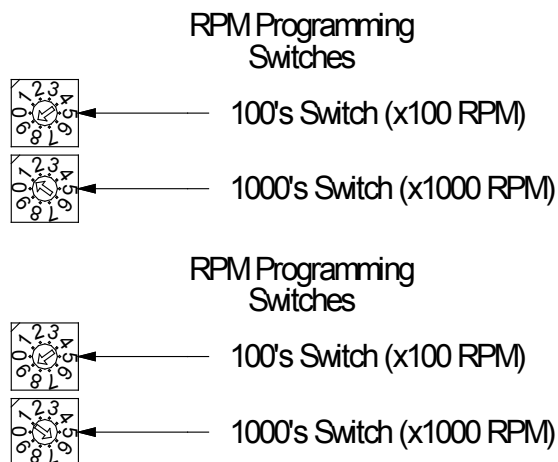
- Controlled by two (2) ten position switches (Primary **RPM**) and two (2) sixteen position switches (**Secondary RPM limit**)
 - Two (2) ten position switches for selecting hundreds of RPM (x100) and thousands of RPM (x1000) for the Primary RPM limit setting
 - Two (2) sixteen position switches for selecting hundreds of RPM (x100) and thousands of RPM (x1000) for the Secondary RPM limit setting. Switch positions after 9 not used.

Notes:

- The LNC-003 RPM limiter function will not trigger at RPM levels below 1500 RPM
- If both the Primary and the Secondary RPM limit are enabled then the Primary setting is selected
- The Primary RPM limit setting can be set higher or lower (or the same as) the Secondary RPM limit setting
- **Changes to the switch point settings (RPM, Degrees, Rate) must be done with the ignition off**
 - The switch positions are only read on start up

Example settings:

- 1900 RPM activation point for launch control
 - Upper (x100) RPM switch on position 9
 - Lower (x1000) RPM switch on position 1
- 6900 RPM activation point for RPM limiter
 - Upper (x100) RPM switch on position 9
 - Lower (x1000) RPM switch on position 6



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Installation:

- Make sure the ignition is off before beginning installation.
- You can mount the LNC-003 using the supplied hook and loop tape or the supplied self tapping screws.
 - Do NOT mount the LNC-003 directly on top of the engine or near the exhaust manifolds due to heat concerns.
 - Do NOT mount the LNC-003 in the line of site of high temperature objects such as exhaust manifolds, turbine housings etc. If needed, put a heat shield in between the heat source and the module to protect the plastic case.
 - Do NOT install within 6" of nitrous solenoids or other devices with strong magnetic fields.
 - If you have relocated coil packs, do not run the high voltage spark plug wires alongside the low voltage coil pack wires. Keep the wires as far apart as possible and, if they do have to intersect, have them intersect at right angles.
- Disconnect the pack connectors on each side of the engine and then plug the LNC-003 wiring harnesses in between on each side. It does not matter which bank of cylinders each side of the LNC-003 harness connects to.
- The only wiring that is required is for the trigger wire(s) depending on how you want to enable the device. See pages 8 to 14 for an example vehicle wiring diagrams.
- The possible Primary RPM trigger/activation connection methods are:
 - Ground activation wire (green) - connect this wire to a source that supplies a ground path when you want the LNC-003 to become active
 - +12 volt activation wire (yellow) - connect this wire to a source that supplies +12 volts when you want the LNC-003 to become active (i.e. brake light switch, line-lock solenoid)
 - Switch connected in between the ground activation wire and the +12 volt activation wire (green wire connected to yellow wire through a switch, usually a momentary switch)
 - Ground activation wire connected to +12 volt activation wire (green connected to yellow) for standard RPM limiter operation (LNC-003 always active)
- Set the desired Primary RPM switch activation point using the two ten position rotary switches for the 1000 RPM increment (x1000) and the 100 RPM increment (x100).
- The Secondary RPM trigger/activation connection method is:
 - +12 volt activation wire (orange) - connect this wire to a source that supplies +12 volts when you want the Secondary RPM limit of the LNC-003 to become active (i.e. brake light switch, line-lock solenoid)
- Set the desired Secondary RPM switch activation point using the two (2) sixteen position switches for selecting hundreds of RPM (x100) and thousands of RPM (x1000) for the Secondary RPM limit setting. Switch positions after 9 are not used.



Launch Control/2-Step Features

The independent coil drive of the LNC-003 provides sequential ignition kill when RPM limiting is active. The desired RPM limiting is set as shown on page 4. The activation for the Primary RPM setting of the Launch Control/2-Step function is controlled by the ground (green) or +12 volt (yellow) activation wires. The activation for the Secondary RPM setting of the Launch Control/2-Step function is controlled by the +12 volt (orange) activation wire.

If you are triggering off of the clutch switch, the 2-Step will trigger each time you depress the clutch pedal. This can be used to provide an ignition cut/torque cut on each gear change to potentially allow for faster shifts/faster clutch engagement.

If you do not want the 2-Step to trigger when you engage the clutch pedal once you are moving then you will need to install a momentary switch or use the Lingenfelter MPH activated switch. With the MPH activated switch you can set at what MPH you want the 2-Step activation to be disabled.

Additional Notes

Important Information regarding spark plug wires and spark plugs:

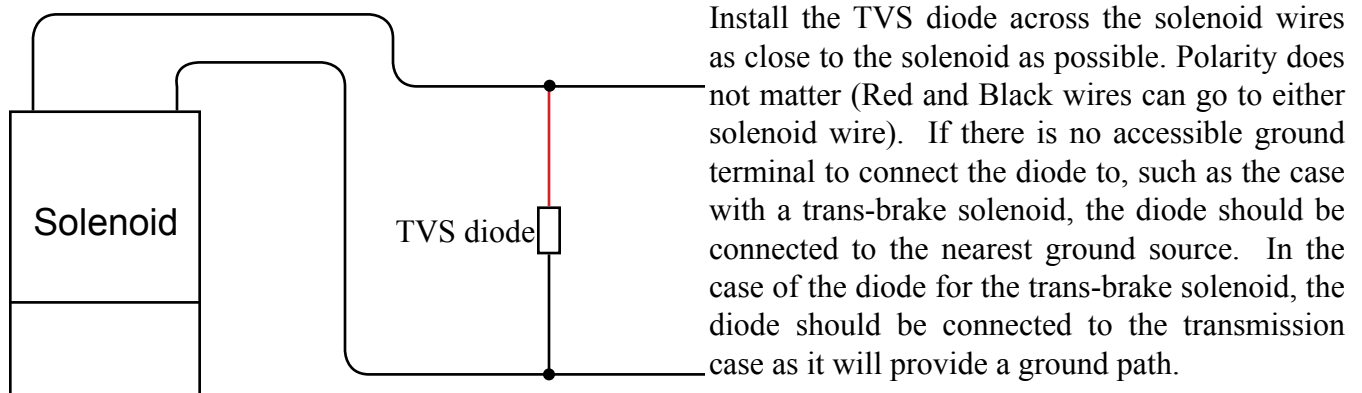
You must use noise suppression ignition wires AND resistor type spark plugs with this Controller. The LNC-2000 Controller contains High Frequency Digital Electronics and will NOT function correctly without Noise Suppression Wires or resistor type spark plugs!

Note about manual transmission clutch switch/position sensor on GM vehicles:

- On manual transmission vehicle applications please note that most GM vehicles have two clutch switches (a cruise control switch at the top of the travel and a neutral safety clutch switch at the bottom of the travel). Make sure you are connecting to the correct one. In testing LPE has found that the upper clutch switch (cruise control switch) has erratic output and causes improper operation of the LNC. The wiring diagrams on the following pages show how to connect to the correct clutch switch. On the 2008-2016 Corvette, 2010-2016 Camaro and 2009-2015 CTS-V GM has switched to a single clutch position sensor with an analog 0-5 volt output. The output of this sensor is actually from high to low. The clutch position sensor will not trigger the LNC directly or most relays and a TPS/clutch switch must be wired in on the vehicles. This can be done using the LPE CTAP-001 (PN L460190108) or you can add a microswitch to the clutch pedal assembly.
- On GM manual transmission vehicles with the two clutch position switches, the lower clutch switch is the switch that should be used to trigger the LNC. The problem, however, is that the lower clutch switch is powered by a circuit that is only energized while the vehicle is cranking. For the LNC to work with the lower clutch switch, a relay must be added before the switch in order for the switch to be powered while the vehicle is running. Refer to the clutch switch wiring diagram on page 8 for instructions on how to modify the circuit correctly.

Nitrous, line-lock, trans-brake and other solenoid usage warning:

LPE has found that these solenoids can cause fly-back voltage levels at times in excess of 600 volts. These voltage levels have the potential to damage sensitive electronics including the LNC-003, the PCM/ECM and other modules in the vehicle. Lingenfelter Performance Engineering has developed a transient voltage suppression (TVS) diode kit (PN L450080000) for use with line-lock solenoids, trans-brake solenoids and other aftermarket automotive solenoids of this type. LPE recommends the use of our noise suppression diode on all vehicles that have a line lock or trans-brake. This kit comes with one TVS diode. If you have a vehicle with multiple solenoids we recommend obtaining additional TVS diodes for those solenoids.



LPE recommends using TVS diodes on:

- Nitrous solenoids
- Nitrous purge solenoids
- Fuel solenoids
- Line-lock solenoids
- Trans-brake solenoids

Example wiring diagrams:

The following pages show examples of how the LNC-003 can be wired in different vehicle applications. Many other possible installation methods exist.

1998-2002 F-Body and 1997-2008 Corvette Factory Clutch Switch Diagram	page 8
Manual Transmission with Linelock	page 9
Manual Transmission with Linelock and Nitrous	page 10
Automatic Transmission with Linelock	page 11
Automatic Transmission with Linelock and Nitrous	page 12
1998-2002 F-Body and 1997-2008 Corvette Factory Clutch Switch Diagram with the STOV-004 and LNC-003 modules	page 13
LNC-003 Recieving +12V Activation Input from NCC-001 or NCC-002 based on VSS	page 14
LNC-003 Wiring Diagram	page 15

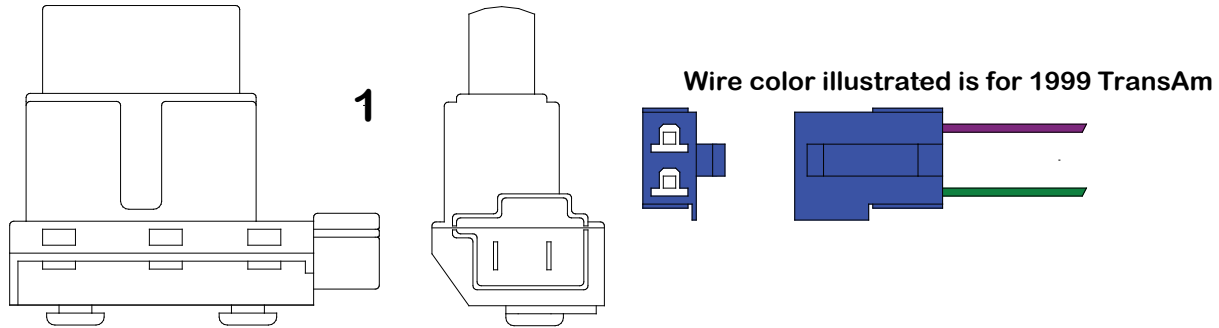
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1998-2002 F-Body and 1997-2008 Corvette Factory Clutch Switch Diagram

WARNING: Splicing the Clutch Pedal Position Switch signal wire is required for vehicles that are equipped with a Clutch Pedal Position Switch. For vehicles equipped with a Clutch Pedal Position Sensor, DO NOT CUT the signal wire. Vehicles equipped with CPP sensors include 2008+ Corvettes 2010+ Camaro, and 2009-2015 CTS-V.

- 1 - Locate CPP (Clutch Position Switch) and unplug 2-wire connector.

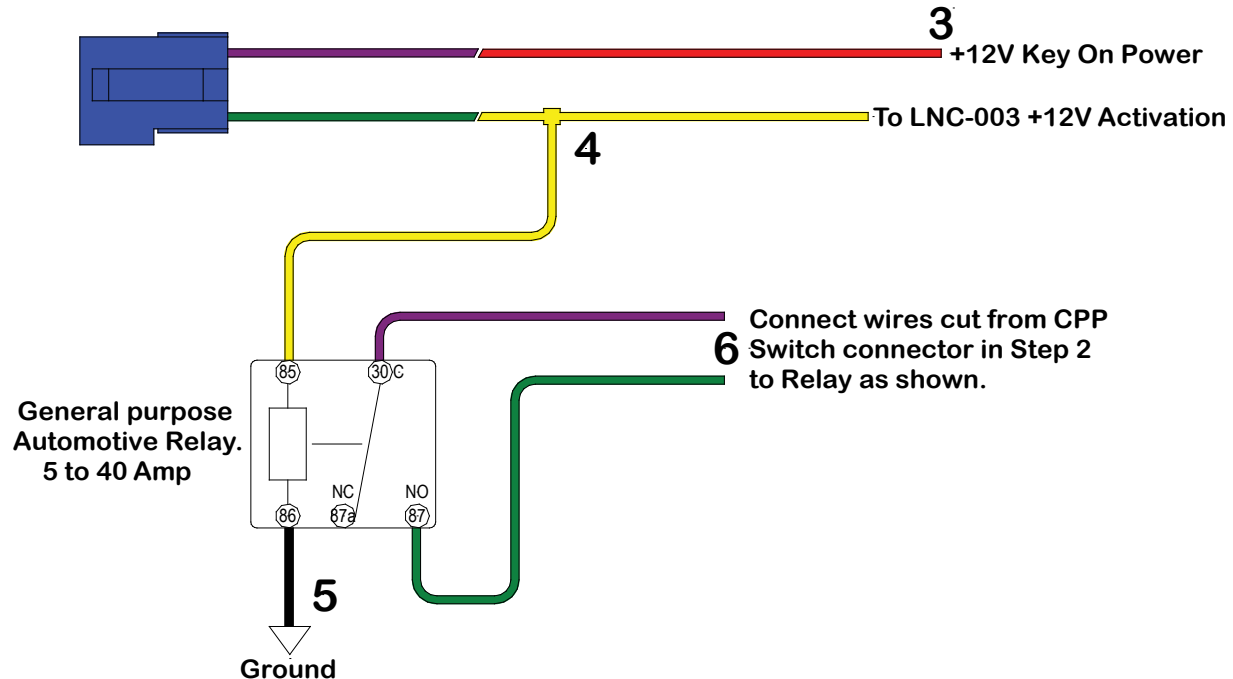


- 2 - Cut wires approx. 3" back from connector.



- 3 - Find +12 volt Key On power source and connect to one wire of CPP connector.

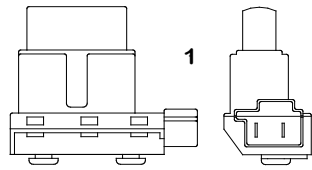
- 4 - Splice two wires onto remaining CPP connector wire and connect one wire to #85 on Relay. The extra wire will be used for LNC-003 Launch Controller activation.



- 5 - Connect terminal #86 on Relay to Ground.

- 6 - Connect wires cut from CPP Switch connector to Terminals #30 and #87 as shown. Pin #87 is the Normally Open (NO) terminal. Wire color may vary for model/year.

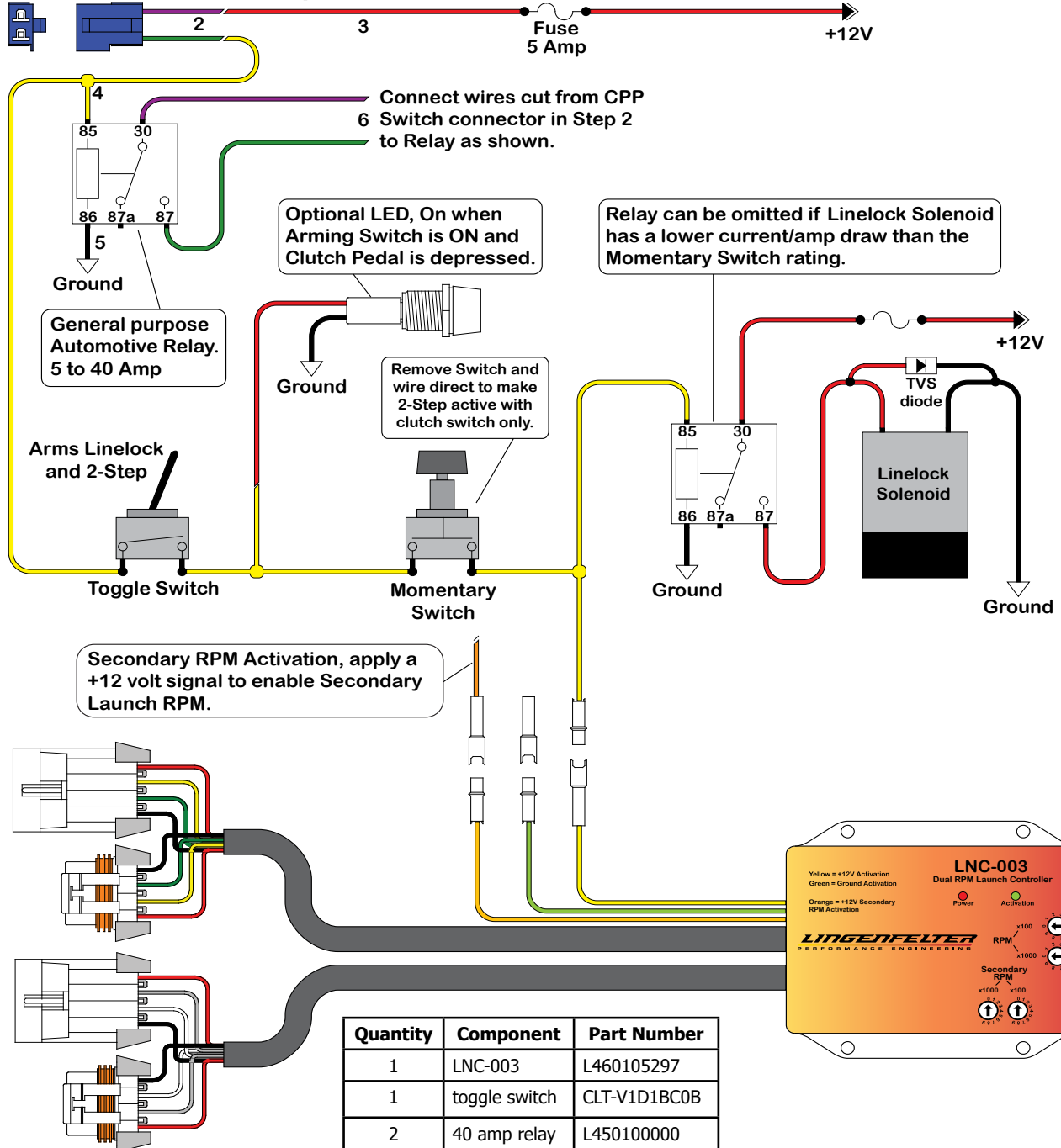
Manual Transmission with Linelock



Wire color illustrated is for 1999 TransAm

Use this wiring configuration to simultaneously activate the 2-step feature and linelock using the Clutch Switch and/or a momentary push button switch. Once the momentary switch is released, the 2-step feature and linelock are disabled.

- 1 - Locate CPP (Clutch Position Switch) and unplug 2-wire connector.
- 2 - Cut wires approx. 3" back from connector.
- 3 - Find +12 volt Key On power source and connect to one wire of CPP connector.
- 4 - Splice two wires onto remaining CPP connector wire and connect one wire to #85 on Relay. The extra wire will be used for LNC-002 Launch Controller activation.
- 5 - Connect terminal #86 on Relay to Ground.
- 6 - Connect wires cut from CPP Switch connector to Terminals #30 and #87 as shown.

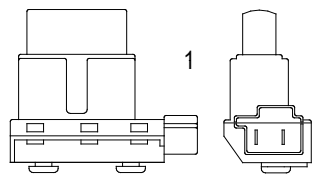


Quantity	Component	Part Number
1	LNC-003	L460105297
1	toggle switch	CLT-V1D1BC0B
2	40 amp relay	L450100000
1	red LED	L450120000
1	clutch switch	14094368

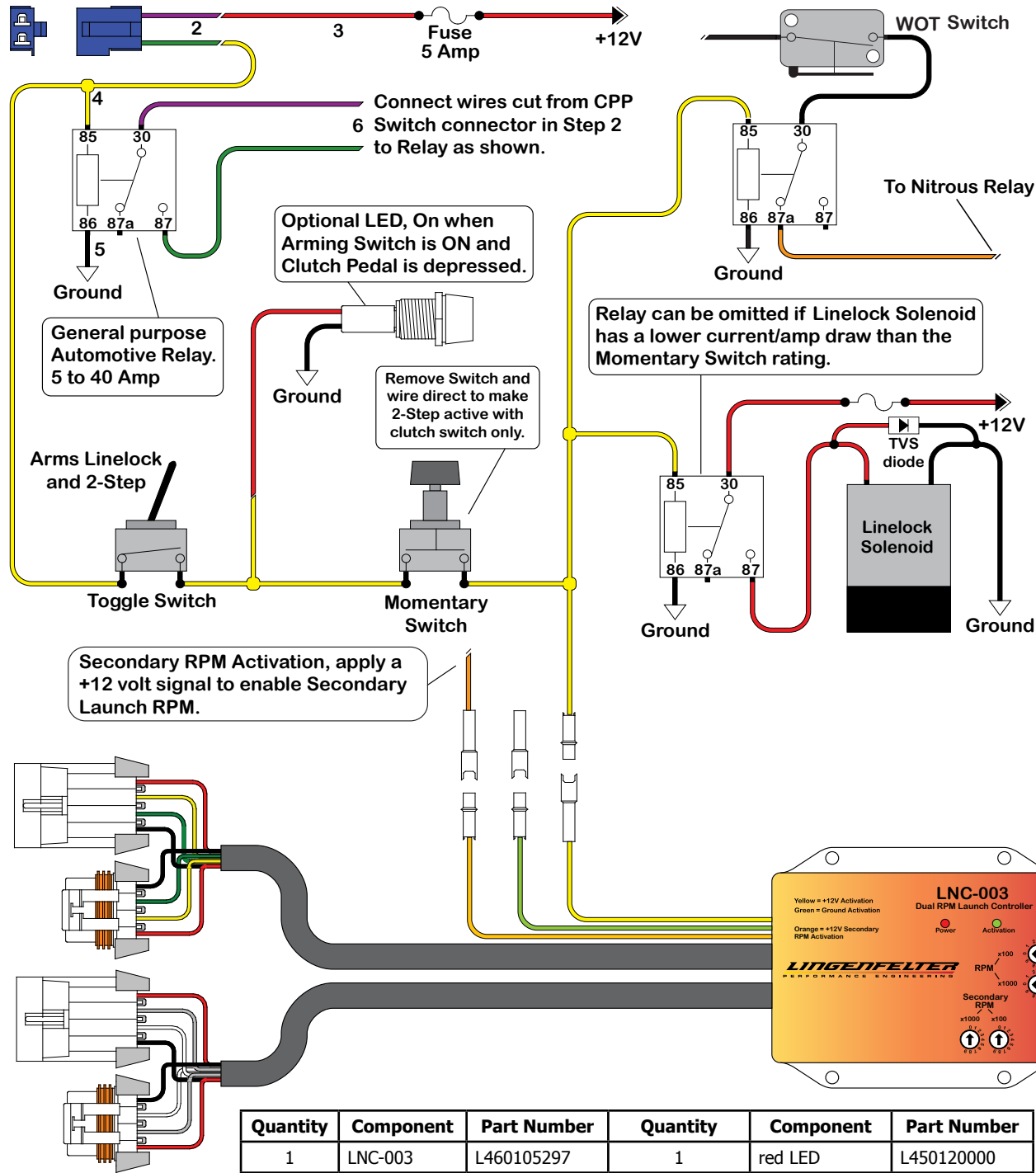
Manual Transmission with Linelock & Nitrous

Use this wiring configuration to simultaneously activate the 2-step feature and linelock using the Clutch Switch and/or a momentary push button switch. Once the momentary switch is released, the nitrous is enabled and is controlled by a WOT switch.

- 1 - Locate CPP (Clutch Position Switch) and unplug 2-wire connector.
- 2 - Cut wires approx. 3" back from connector.
- 3 - Find +12 volt Key On power source and connect to one wire of CPP connector.
- 4 - Splice two wires onto remaining CPP connector wire and connect one wire to #85 on Relay. The extra wire will be used for LNC-003 Launch Controller activation.
- 5 - Connect terminal #86 on Relay to Ground.
- 6 - Connect wires cut from CPP Switch connector to Terminals #30 and #87 as shown.



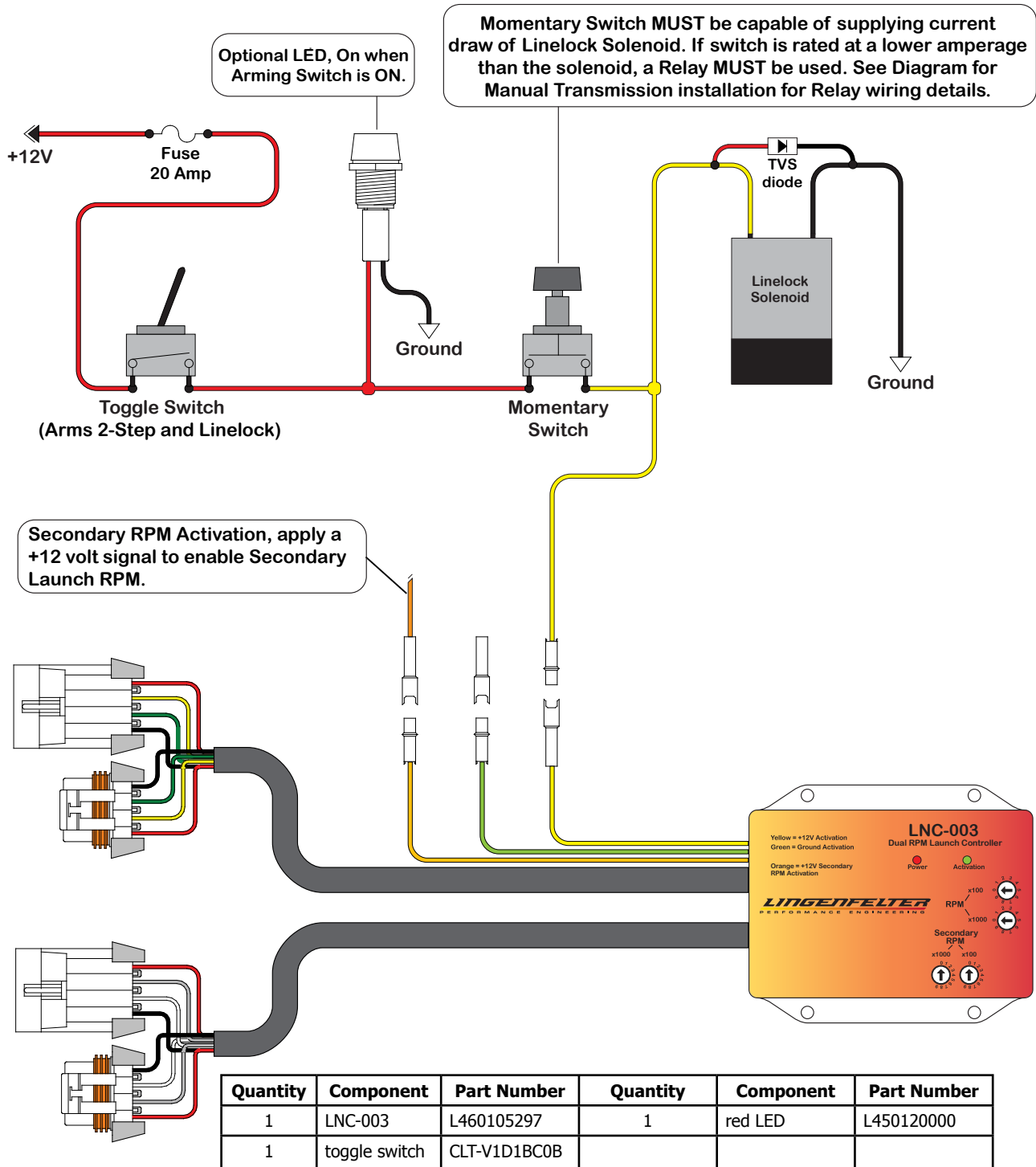
Wire color illustrated is for 1999 TransAm



Quantity	Component	Part Number	Quantity	Component	Part Number
1	LNC-003	L460105297	1	red LED	L450120000
1	toggle switch	CLT-V1D1BC0B	1	clutch switch	14094368
3	40 amp relay	L450100000	1	microswitch	L480330000

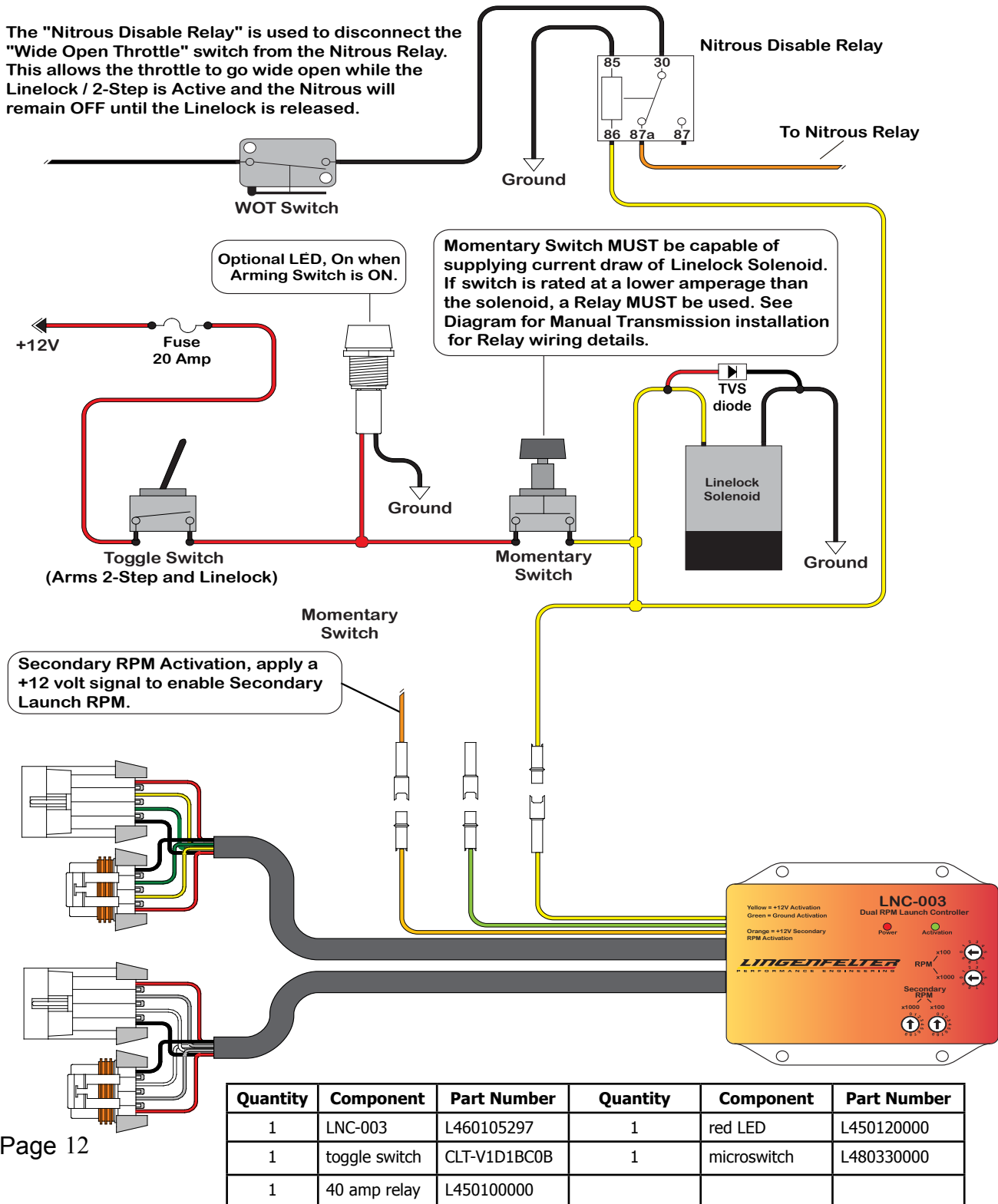
Automatic Transmission with Linelock

Use this configuration to activate Linelock and the 2-step function using a momentary push-button switch. Once the toggle switch is flipped ON and the momentary switch is pressed, Linelock and the 2-step function will be activated. When the push button is released, Linelock and the 2-step function will be deactivated.



Automatic Transmission with Linelock & Nitrous

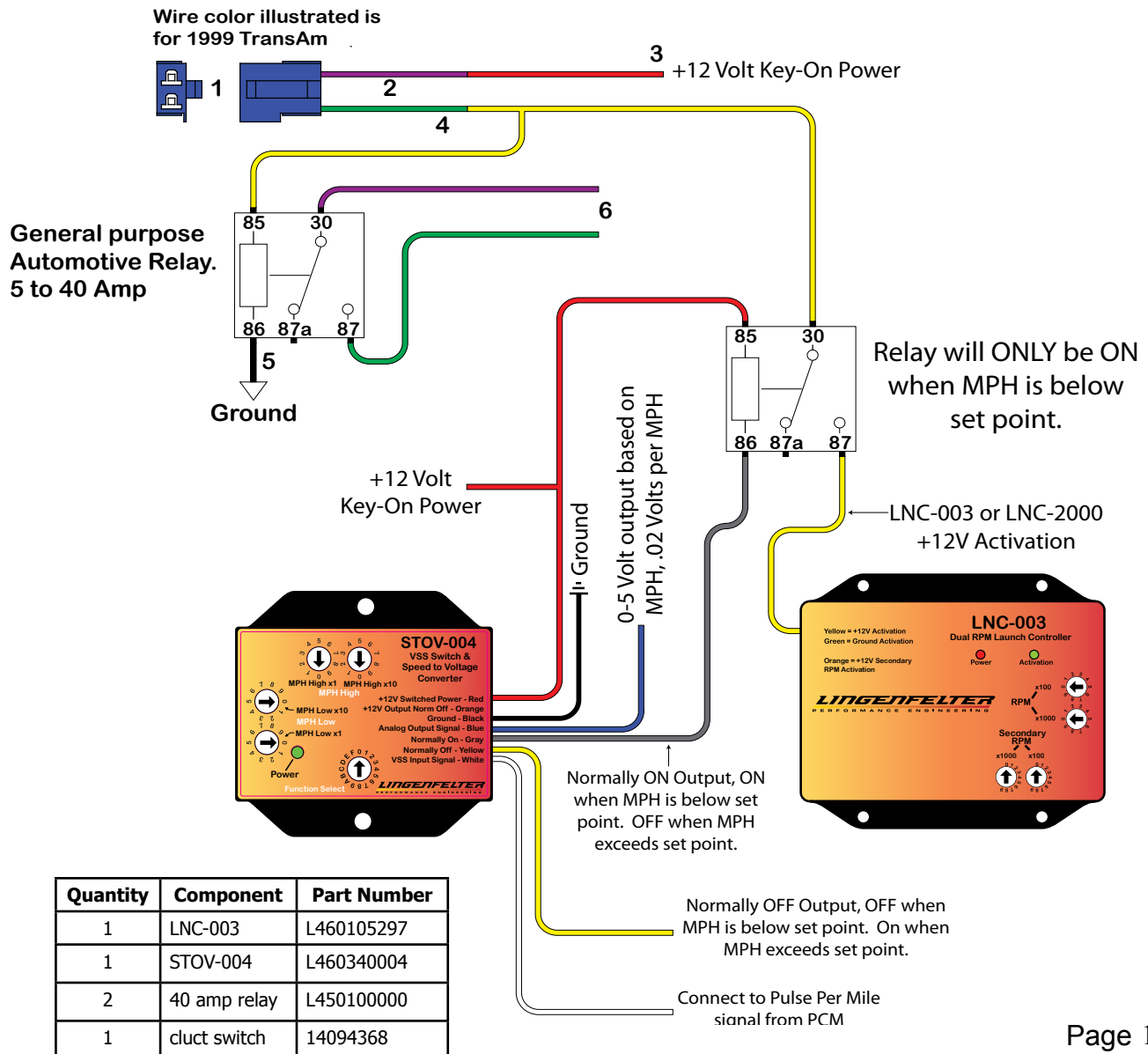
Use this configuration to activate Linelock and the 2-step function using a momentary push-button switch. Once the toggle switch is flipped ON and the momentary switch is pressed, Linelock and the 2-step function will be activated and the nitrous will be disabled. When the push button is released, Linelock and the 2-step function will be deactivated and the nitrous will be enabled.



1998-2002 F-Body and 1997-2008 Corvette Factory Clutch Switch Diagram with the STOV-004 and LNC-003 Modules

In this configuration, the STOV-004 is being used to only allow a 2-step controller to be active at the line. Once the vehicle is moving, the STOV-004 switches the relay, disabling the 2-step controller. Set the MPH switch point to a speed below your first gear shift point.

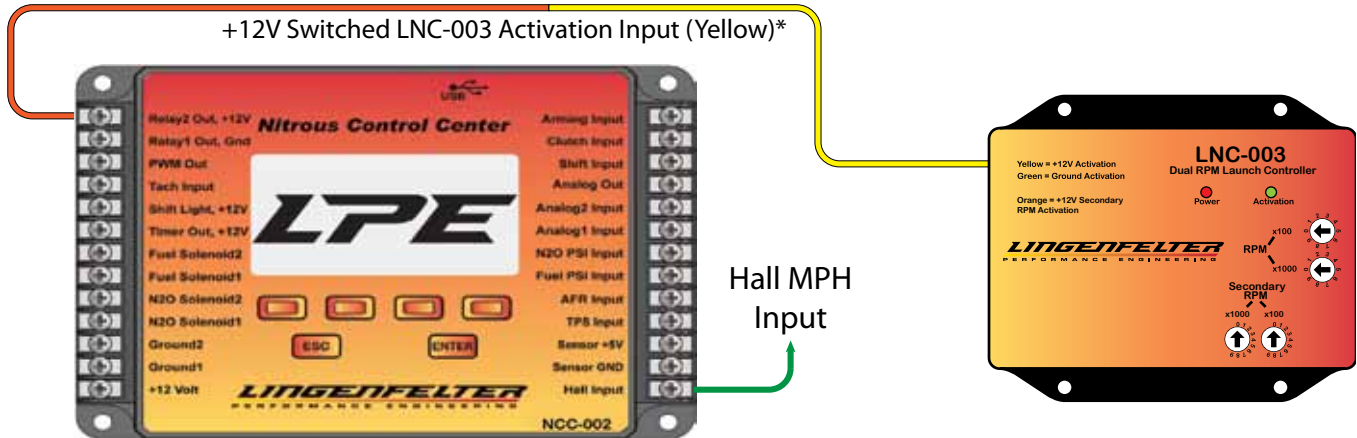
- 1 - Locate CPP (Clutch Position Switch) and unplug 2-wire connector.
- 2 - Cut wires approx. 3" back from connector.
- 3 - Find +12 volt Key On power source and connect to one wire of CPP connector.
- 4 - Splice two wires onto remaining CPP connector wire and connect one wire to #85 on Relay. The extra wire will be used for LNC-003 Launch Controller activation.
- 5 - Connect terminal #86 on Relay to Ground.
- 6 - Connect wires cut from CPP Switch connector to Terminals #30 and #87 as shown.



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LNC-003 Receiving +12V Activation Input from the Lingenfelter NCC-001 or NCC-002 Nitrous Control Center
Use this configuration to allow the NCC-001 or NCC-002 to activate or deactivate the LNC-003 based on vehicle speed.



Vehicle applications:

The LNC-003 is designed for use on all known GM LS series engine applications (LS1, LS6, LS2, LS7, LS3, LQ4, L76, L92 and other Gen III and IV GM V8 applications along with other GM V8 engines using the same ignition coil system) including the following vehicles:

- 1997-2004 C5 Corvette
- 2005-2013 C6 Corvette (including Z06)
- 1998-2002 LS1 V8 equipped Camaro and Firebird
- 2004-2006 Pontiac GTO
- 2008-2009 Pontiac G8 with the L76 or the LS3 engine
- 2004-2007 Cadillac CTS-V
- 1999-2013 GM CK trucks (Tahoe, Yukon, Escalade, H2, Sierra, Silverado, Avalanche) with the 4.8, 5.3, 6.0 and 6.2L Gen III and IV V8 engines (will not work on 305 & 350 Vortec engines)
- 2003-2006 Chevrolet SSR
- 2006-2009 Trailblazer SS and other S/T body trucks with the 4.8, 5.3 and 6.0L Gen III & IV GM V8 engines
- CK trucks with 8.1L V8 engines (L19) with individual coil ignitions
- front wheel drive 5.3L LS4 Gen IV V8 equipped cars (Impala SS, Grand Prix & Monte Carlo)

The LNC-003 should also function with these products but has not yet been tested with them:

- aftermarket coils for the LS series engines (such as the MSD coils) used with GM ECM/PCM.
- aftermarket engine management systems and ignition systems (Accel, BigStuff3, Motec, FAST, MSD, etc.) that run the production GM coils.

The LNC-003 can be used on the 2009-2013 ZR1 Corvette (LS9 engine), the 2009-2014 Cadillac CTS-V (LSA engine) or the 2012-2014 ZL1 Camaro (LSA engine) but you will need to change the connectors because the LS9 and the LSA use a different combined coil and fuel injector harness. Contact LPE for these connectors (part #s 15336037, 15422562, 15326939, 15336034).

The LNC-003 can be used on GM Gen V V8 engines (2014 L83, L86 and LT1) but you will need to hard wire it into the coil harness as these engines do not use the same coil pack harness connectors as the earlier engines.

The LNC-003 will NOT work with other individual coil ignition systems like those found on the GM Northstar or Ecotec engines or on the Ford modular V8 and the Chrysler Hemi V8.

Troubleshooting:

- Intermittent misfire or other erratic vehicle operation.
 - Have someone monitor the LED's on the LNC and note what they are doing when the problem occurs. Try changing the RPM settings on the LNC - does the problem still occur and, if so, at the same RPM?
 - Disconnect the activation input and retest (leaving the LNC connected to the coil packs)
 - Does the problem still occur?
 - If no, the problem is likely coming from the activation input.
 - Check for an erratic activation signal or electrical noise on the activation input. Are you using a microswitch or momentary switch. Bypass this device to confirm that it isn't giving you erratic activation signals. Are you using a mechanical relay in a high vibration/acceleration environment? If so, try switching to a solid state relay.
 - If yes, disconnect the LNC from the vehicle completely and test again. If the problem still occurs, it is not related to the LNC.
 - If the problem goes away, re-install the LNC and test the following:
 - Re-route the LNC wiring harness away from the spark plug wires and/or ignition coils.
 - Make sure the wires are not run in parallel with electrical wiring including fuel injector harness wires or nitrous solenoid wires.
 - Mount the LNC in a different location.
 - If you are using aftermarket spark plug wires, try changing back to the stock spark plug wires or a different brand of spark plug wires. Make sure you are using noise suppression spark plug wires.
 - If you are using aftermarket/non OEM spark plugs, confirm that they are really a resistor type plug.
- No power LED on LNC/no vehicle start up
 - Try disconnecting everything and plugging it all back in - you may have corroded or loose connections. Inspect all connectors and wires for damage and wear.
- LNC is active all of the time
 - Have someone check the LED's to see what they do when the LNC activates.
 - Make sure that the LNC ground activation wire is not connected to an "always on" ground. This connection is not a module ground but an activation ground.
 - Make sure you don't have the yellow and green activation wires connected to each other - this will cause the LNC to always be active.

When contacting LPE please have the following information available:

- 1. Year, make and model of the vehicle**
- 2. Description of when the problem is occurring**
- 3. Overall behavior of the vehicle**
- 4. Any aftermarket electrical products installed (coils, spark plug wires, spark plugs, etc.)**
- 5. How you have it wired/activated**
- 6. The settings on your LNC (RPM)**

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NOTICES:

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufacturer's product used with this product.

Lingenfelter Performance Engineering assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

Lingenfelter Performance Engineering assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by Lingenfelter Performance Engineering on vehicles used for competition racing.

It is the purchaser's responsibility to check the state and local laws and sanctioning body requirements pertaining to the use of this product for racing applications. Lingenfelter Performance Engineering does not recommend nor condone the use of its products for illegal street racing.

DISCLAIMER:

The information provided in this document is intended for informational purposes only and is subject to change without notice. Lingenfelter Performance Engineering also reserves the right to make improvements and/or changes to the product described at any time without notice.

For additional product installation information and technical support, contact LPE or your LPE products distributor. You can also find technical support and usage discussions regarding this product and many other LPE products in our Internet forums:

http://www.lingenfelter.com/forum_lingenfelter/index.php

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Limited Warranty:

LPE warrants the Lingenfelter LNC-003 Launch Control Module to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from the date of purchase. If the module is found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of LPE. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall LPE be liable for special or consequential damages.

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