

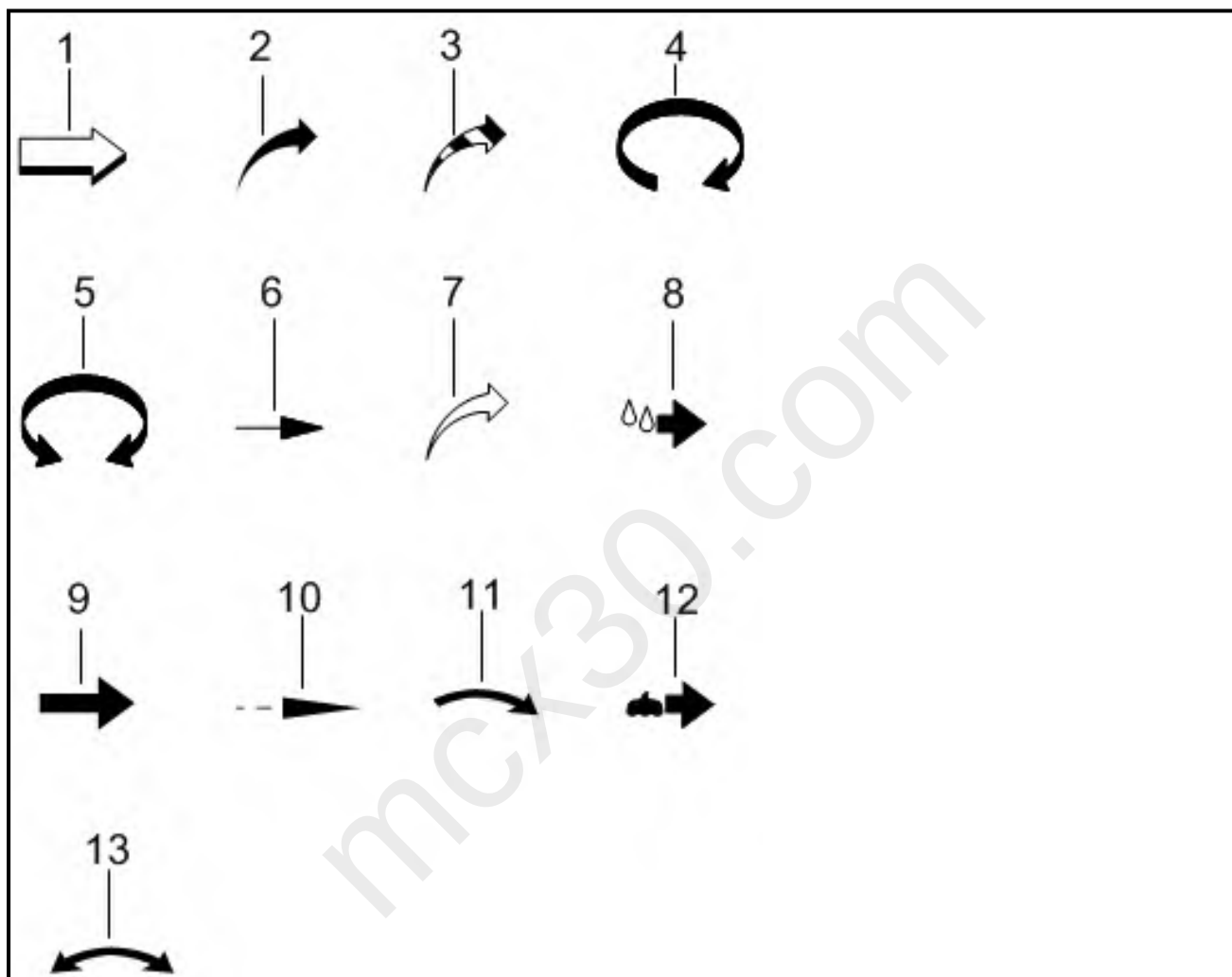
## 2018 GENERAL INFORMATION

### General Information - Traverse

## INTRODUCTION

### ARROWS AND SYMBOLS

The arrows and symbols shown below are used in service information to indicate position of vehicle, direction, and location.



| Callout | Component Name                                                                                         |
|---------|--------------------------------------------------------------------------------------------------------|
| 1       | Front of Vehicle Arrow - Direction of arrow may vary.                                                  |
| 2       | View Detail Arrow - Direction of arrow may vary.                                                       |
| 3       | Ambient Air Mixed with Another Gas or Indicate Temperature Change Arrow - Direction of arrow may vary. |
| 4       | Motion or Direction Single Arrow                                                                       |
| 5       | Motion or Direction Double Arrow                                                                       |
| 6       | Dimension Arrow - Used for showing a dimension.                                                        |
| 7       | Ambient/Clean Air Flow or Cool Air Flow Arrow - Direction of arrow may vary.                           |
| 8       | Lubrication Point Arrow - Oil or Fluid                                                                 |
| 9       | Task Related Arrow - Used to show task related location.                                               |
| 10      | Sectioning Arrow - Used to show sectioning.                                                            |
| 11      | Motion Arrow - Direction of arrow may vary.                                                            |
| 12      | Lubrication Point Arrow - Grease or Petroleum Jelly                                                    |

| Callout | Component Name         |
|---------|------------------------|
| 13      | Multidirectional Arrow |

## ACRONYMS AND UNITS

### Acronyms

| Acronym | Meaning                       | Definition                                                                                                                                                                                                                                                                                                                                                 |
|---------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2WD     | Two-Wheel Drive               | Indicates that a vehicle has 2 driven wheels OR that a 4WD vehicle uses only 2 wheels for propulsion. So it can be the description of a vehicle configuration OR the operational mode of the drivetrain.                                                                                                                                                   |
| 4WD     | Four-Wheel Drive              | Four-wheeled vehicle with a drivetrain that allows all four wheels to receive power from the engine simultaneously which provides better control on various surfaces. Can be used to describe the configuration of the vehicle OR as the operational mode of the drivetrain. 4WD vehicles usually can turn 2 wheels off to be in a 2WD mode. See also AWD. |
| A/C     | Air Conditioning              | The cooling and dehumidification of indoor air for thermal comfort.                                                                                                                                                                                                                                                                                        |
| A/D     | Analog to Digital             | Used in context of converting electrical analog signals to digital signals.                                                                                                                                                                                                                                                                                |
| ABS     | Antilock Braking System       | System on motor vehicles which prevents the wheels from locking while braking which helps the driver maintain control in heavy braking conditions.                                                                                                                                                                                                         |
| AC      | Alternating Current           | An electrical current whose magnitude and direction vary cyclically.                                                                                                                                                                                                                                                                                       |
| AGM     | Absorbent Glass Mat           | the AGM battery uses a very absorbent micro fiberglass material to trap the gas generated during discharge and recharge.                                                                                                                                                                                                                                   |
| AM      | Amplitude Modulation          | Method of impressing data onto an alternating-current (AC) carrier waveform.                                                                                                                                                                                                                                                                               |
| APP     | Accelerator Pedal Position    | A pedal that controls the throttle valve.                                                                                                                                                                                                                                                                                                                  |
| AWD     | All-Wheel Drive               | All-wheel-drive systems are designed to function on all types of surfaces, both on- and off-road, and most of them cannot be switched off. This can also be called full-time four wheel drive. See also 4WD.                                                                                                                                               |
| AWG     | American Wire Gauge           | American wire gauge is a standardized wire gauge system used since 1857 predominantly in the United States for the diameters of round, solid, nonferrous, electrically conducting wire.<br>E.g. a wire of AWG10 has a diameter of 2.588mm, AWG20 corresponds to a diameter of 0.812mm.                                                                     |
| B+      | Battery Positive Voltage      | The electrical potential on the positive terminal of the battery.                                                                                                                                                                                                                                                                                          |
| BARO    | Barometric Pressure           | Atmospheric pressure as measured by a barometer.                                                                                                                                                                                                                                                                                                           |
| BCM     | Body Control Module           | This module supplies vehicle occupants with visual and audible information and controls various vehicle functions,                                                                                                                                                                                                                                         |
| BECM    | Battery Energy Control Module | Control module used to regulate the battery voltage.                                                                                                                                                                                                                                                                                                       |
| BPP     | Brake Pedal Position          | Position of the foot pedal that moves a piston in the master brake cylinder.                                                                                                                                                                                                                                                                               |
| CAN     | Controller Area Network       | Serial data connection between control modules by Bosch                                                                                                                                                                                                                                                                                                    |

| Acronym         | Meaning                            | Definition                                                                                                                                                                                                                                                                                               |
|-----------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CCM             | Chassis Control Module             | The module that controls various vehicle functions on the Chassis, like Engine/Trans Mount, Active Grille Air Shutter, Load Leveling, etc••                                                                                                                                                              |
| CD              | Compact Disc                       | A small optical disk on which data such as music, text, or graphic images is digitally encoded.                                                                                                                                                                                                          |
| CNG             | Compressed Natural Gas             | This a substitute for gasoline or diesel fuel. It is made by compressing natural gas (which is mainly composed by methane (CH <sub>4</sub> ), in a percentage range of 70% to 98%)                                                                                                                       |
| CO              | Carbon Monoxide                    | This is a product of the incomplete combustion of carbon-containing compounds, at room temperature this is a gas. It consists of one carbon atom covalently bonded to one oxygen atom.                                                                                                                   |
| CO <sub>2</sub> | Carbon Dioxide                     | Chemical compound composed of two oxygen atoms covalently bonded to a single carbon atom.                                                                                                                                                                                                                |
| CPA             | Connector Position Assurance       | Part of an electrical connector that prevents the connector from moving out of its socket. Usually needs to be pressed to unlock the connector when disconnecting it.                                                                                                                                    |
| CPP             | Clutch Pedal Position              | A lever operated with the foot that controls the coupling that connects or disconnects driving and driven parts of a driving mechanism.                                                                                                                                                                  |
| CV              | Constant Velocity                  | Used in conjunction with CV joints, which connect two shafts at an angle while both shafts always have the same rotational speed without variations.                                                                                                                                                     |
| CVT             | Continuously Variable Transmission | A transmission in which the ratio of the rotational speeds of two shafts, as the input shaft and output shaft of a vehicle or other machine, can be varied continuously within a given range, providing an infinite number of possible ratios which improves fuel economy.                               |
| D               | Drive                              | D on the transmission gear selector lever.                                                                                                                                                                                                                                                               |
| DAB             | Digital Audio Broadcast            | Technology for broadcasting of audio using digital radio (carries information via digital signal) transmission.                                                                                                                                                                                          |
| DC              | Direct Current                     | Continuous current, constant flow of electric charge.                                                                                                                                                                                                                                                    |
| DLC             | Data Link Connector                | This is an electronic connector typically located underneath the driver's side dashboard, just above the pedals. The connector has 16 pins.                                                                                                                                                              |
| DMM             | Digital Multimeter                 | Electronic measuring instrument that combines several functions in one unit. The most basic instruments include an ammeter, voltmeter, and ohmmeter.                                                                                                                                                     |
| DOHC            | Dual Overhead Camshaft             | Dual overhead camshafts (DOHC) are higher performance engines, they produce more power, and can run at higher speeds because they allow an engine to have four valves per cylinder. Each camshaft operates two of the valves, one camshaft handles the intake valves, and one handles the exhaust valves |
| DPF             | Diesel Particulate Filter          | Device designed to remove diesel particulate matter or soot from the exhaust gas of a diesel engine.                                                                                                                                                                                                     |
| DRL             | Daytime Running Lamps              | White lights mounted on the front of an automobile that automatically switch on when the key is turned and are intended for daytime use, to increase the visibility of the automobile.                                                                                                                   |

| Acronym | Meaning                                             | Definition                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DSCC    | Distance Sensing Cruise Control                     | A type of cruise control that automatically maintains the distance between vehicles.                                                                                                                                                                                                                                                                                                                                                   |
| DSP     | Digital Signal Processor                            | A specialized microprocessor designed specifically for digital signal processing, generally in real-time computing.                                                                                                                                                                                                                                                                                                                    |
| DTC     | Diagnostic Trouble Code                             | An electronic signal stored in an automotive computer, indicating the presence of a fault detected by that computer.                                                                                                                                                                                                                                                                                                                   |
| DVD     | DVD                                                 | A popular optical disc storage media format the size of a CD. Used mainly for movies but also for data. DVD has no spelled out version (officially it does not mean Digital Video Disc or Digital Versatile Disc, it just means DVD).                                                                                                                                                                                                  |
| EBCM    | Electronic Brake Control Module                     | This module contains a microprocessor and software for antilock braking system operation.                                                                                                                                                                                                                                                                                                                                              |
| ECM     | Engine Control Module                               | This electronic module works with a vehicle's sensors and engine control devices to insure that the engine operates at maximum efficiency and performance. It performs three vital functions. Receives electronic signals from engine sensors. Analyzes the data and makes an engine performance decision (based on the pre-set parameters within the unit). Sends an "output command" to an actuator that adjusts engine performance. |
| ECT     | Engine Coolant Temperature                          | A measure of how hot or cold the fluid which flows through the engine in order to prevent its overheating, transferring the heat produced by the device to other devices that utilize or dissipate it.                                                                                                                                                                                                                                 |
| EEPROM  | Electrically Erasable Programmable Read-Only Memory | A non-volatile storage chip used in computers and other devices to store small amounts of volatile data, e.g. calibration tables or device configuration.                                                                                                                                                                                                                                                                              |
| EGR     | Exhaust Gas Recirculation                           | Is an NOx (nitrogen oxide and nitrogen dioxide) reduction technique used in most gasoline and diesel engines. EGR works by recirculating a portion of an engine's exhaust gas back to the engine cylinders.                                                                                                                                                                                                                            |
| EMI     | Electromagnetic Interference                        | Electromagnetic interference (also called radio frequency interference) is a disturbance that affects an electrical circuit due to either electromagnetic conduction or electromagnetic radiation emitted from an external source.                                                                                                                                                                                                     |
| ESD     | Electrostatic Discharge                             | The sudden and momentary electric current that flows between two objects at different electrical potentials.                                                                                                                                                                                                                                                                                                                           |
| EV      | Electric Vehicle                                    | A category of vehicles that only have an electric drive system.                                                                                                                                                                                                                                                                                                                                                                        |
| EVAP    | Evaporative Emission                                | A system that controls the fuel fumes in the fuel tank.                                                                                                                                                                                                                                                                                                                                                                                |
| FM      | Frequency Modulation                                | In telecommunication this is a way to convey information over a carrier wave by varying its frequency.                                                                                                                                                                                                                                                                                                                                 |
| FWD     | Front-Wheel Drive                                   | A form of engine/transmission layout used in motor vehicles, where the engine drives the front wheels only.                                                                                                                                                                                                                                                                                                                            |

| Acronym          | Meaning                                 | Definition                                                                                                                                                                                                                                                                                                                                            |
|------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GMLAN            | General Motors Local Area Network       | A local-area network is a computer network covering a small geographic area, like a home or vehicle. This specific type of LAN connects several controllers inside the vehicle and was developed by General Motors.                                                                                                                                   |
| GPS              | Global Positioning System               | Satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense.                                                                                                                                                                                                                          |
| GSM              | Global System for Mobile Communications | Globally accepted standard for digital cellular communication.                                                                                                                                                                                                                                                                                        |
| GVW              | Gross Vehicle Weight                    | Maximum total weight of a road vehicle or trailer that is loaded, including the weight of the vehicle itself plus fuel, passengers, cargo, and trailer tongue weight.                                                                                                                                                                                 |
| HD               | Heavy Duty                              | Robust design to accommodate large work loads.                                                                                                                                                                                                                                                                                                        |
| HID              | High Intensity Discharge                | A type of light that produces a bright light by using gas filled bulbs. (gas is usually mercury, metal halide, and high-pressure sodium) Uses very little battery power and is a very "cool" light.                                                                                                                                                   |
| HO2S             | Heated Oxygen Sensor                    | Heated oxygen sensors have an internal heater circuit that brings the sensor up to operating temperature more quickly than an unheated sensor. An oxygen sensor must be hot (about 600 - 650°F) before it will generate a voltage signal. The hot exhaust from the engine will provide enough heat to bring an O2 sensor up to operating temperature. |
| HVAC             | Heating Ventilation Air Conditioning    | This system is sometimes referred to as climate control. Ventilation air ducts installed throughout a vehicle that supply conditioned air to a room through rectangular or round outlet vents.                                                                                                                                                        |
| I <sup>2</sup> C | Inter-Integrated Circuit                | Serial data connection between Integrated Circuits (microchips) inside a control module invented by Phillips                                                                                                                                                                                                                                          |
| IAT              | Intake Air Temperature                  | Temperature of the air entering intake air flow system of the engine.                                                                                                                                                                                                                                                                                 |
| ICE              | Internal Combustion Engine              | An engine in which the combustion of fuel and an oxidizer (typically air) occurs in a confined space called a combustion chamber.                                                                                                                                                                                                                     |
| ID               | Identification                          | Number or Code that identifies a component or control module. Can be written on the part or be transmitted on a bus or via radio.                                                                                                                                                                                                                     |
| ISP              | Internet Service Provider               | A company that furnishes corporations and individual consumers with various services, mainly access to the Internet.                                                                                                                                                                                                                                  |
| ISS              | Input Shaft Speed                       | Rotational speed of the input shaft of a transmission.                                                                                                                                                                                                                                                                                                |
| LAN              | Local Area Network                      | Standard network connection PC's.                                                                                                                                                                                                                                                                                                                     |
| LCD              | Liquid Crystal Display                  | A thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector.                                                                                                                                                                                                                      |
| LED              | Light Emitting Diode                    | Small light bulbs that fit easily into an electrical circuit they do not have a filament that will burn out, and they do not get especially hot. They are illuminated solely by the movement of electrons in a semiconductor material.                                                                                                                |

| Acronym | Meaning                                            | Definition                                                                                                                                                                                                                                                                            |
|---------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LIN     | Local Interconnect Network                         | Computer networking bus system used within automotive network architectures. Similar to CAN, but cheaper and less powerful.                                                                                                                                                           |
| LPG     | Liquefied Petroleum Gas                            | A mixture of mainly propane and butane, produced commercially and stored under pressure to keep it in a liquid state.                                                                                                                                                                 |
| MAF     | Mass Air Flow                                      | The amount of air drawn into the engine                                                                                                                                                                                                                                               |
| MAP     | Manifold Absolute Pressure                         | Pressure in the engine intake system after the throttle valve referenced to a perfect vacuum.                                                                                                                                                                                         |
| MDI     | Multiple Diagnostics Interface                     | A device used by GM dealers that enables a PC to communicate with the control modules in a vehicle.                                                                                                                                                                                   |
| MIL     | Malfunction Indicator Lamp                         | An indicator of the internal status of a car engine.                                                                                                                                                                                                                                  |
| MOST    | Media Oriented Systems Transport                   | Serial communication bus to transmit audio and video information.                                                                                                                                                                                                                     |
| N       | Neutral                                            | A state of the transmission in which it is not engaged.                                                                                                                                                                                                                               |
| NiMH    | Nickel Metal Hydride                               | A type of rechargeable battery that uses a hydrogen absorbing alloy for the negative electrode.                                                                                                                                                                                       |
| NOx     | Nitrogen Oxides                                    | Refers to any of the following oxygen compounds of nitrogen or a mixture of them. Nitric Oxide, Nitrogen dioxide, Nitrous Oxide, Dinitrogen trioxide, Dinitrogen tetroxide, Dinitrogen pentoxide.                                                                                     |
| O2      | Oxygen                                             | A colorless, odorless, tasteless, gaseous chemical element with the chemical symbol O and atomic number 8.                                                                                                                                                                            |
| O2S     | Oxygen Sensor                                      | An electronic device that measures the proportion of oxygen (O2) in the gas or liquid being analyzed.                                                                                                                                                                                 |
| OBD     | On-Board Diagnostic                                | A generic term referring to a vehicle's self-diagnostic and reporting capability.                                                                                                                                                                                                     |
| OEM     | Original Equipment Manufacturer                    | A producer that provides a product to its customers, who proceed to modify or bundle it before distributing it to their customers.                                                                                                                                                    |
| OSS     | Output Shaft Speed                                 | Rotational speed of the output shaft of a transmission.                                                                                                                                                                                                                               |
| P       | Park                                               | A state in which the transmission is set so one can leave the vehicle.                                                                                                                                                                                                                |
| PCB     | Printed Circuit Board                              | A thin plate on which chips and other electronic components are placed.                                                                                                                                                                                                               |
| PCM     | Powertrain Control Module                          | A control module that features the functions of both, the engine and the transmission control module.                                                                                                                                                                                 |
| PCMCIA  | Personal Computer Memory Card Industry Association | An international standards body and trade association with over 100 member companies that was founded in 1989 to establish standards for Integrated Circuit cards and to promote interchangeability among mobile computers where ruggedness, low power, and small size were critical. |
| PIN     | Personal Identification Number                     | A secret numeric password shared between a user and a system that can be used to authenticate the user to the system.                                                                                                                                                                 |
| PPE     | Personal Protective Equipment                      | Protective clothing, helmets, goggles, or other garment designed to protect the wearer's body from injury.                                                                                                                                                                            |
|         |                                                    |                                                                                                                                                                                                                                                                                       |

| Acronym | Meaning                            | Definition                                                                                                                                                                                                                                                                                                                                                       |
|---------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRNDL   | Park, Reverse, Neutral, Drive, Low | Park, Reverse, Neutral, Drive, Low (automatic transmission positions).                                                                                                                                                                                                                                                                                           |
| PTC     | Positive Temperature Coefficient   | Refers to materials that experience an increase in electrical resistance when their temperature is raised.                                                                                                                                                                                                                                                       |
| PTO     | Power Take-Off                     | A splined driveshaft, usually on a tractor or truck that can be used to provide power to an attachment or separate machine. This mechanism allows implements to draw energy from the tractor's engine.                                                                                                                                                           |
| PVC     | Polyvinyl Chloride                 | A thermoplastic copolymer.                                                                                                                                                                                                                                                                                                                                       |
| PWM     | Pulse Width Modulation             | Square shaped type of signal that carries the information in the ratio between on and off times.                                                                                                                                                                                                                                                                 |
| R       | Reverse                            | Rearward: directed or moving toward the rear;                                                                                                                                                                                                                                                                                                                    |
| RAM     | Random Access Memory               | A type of computer data storage. It today takes the form of integrated circuits that allow the stored data to be accessed in any order.                                                                                                                                                                                                                          |
| RCT     | Radiator Coolant Temperature       | This is the heat intensity of the radiator coolant measured in degrees. The radiator is a part of the cooling system that removes the engine heat. Coolant is a mixture of water and antifreeze (ethylene glycol) which lowers the freezing point of the water in the coolant system, this fluid also picks up heat from the engine and transfers it to the air. |
| RDS     | Radio Data System                  | A standard from the European Broadcasting Union for sending small amounts of digital information using conventional FM radio broadcasts.                                                                                                                                                                                                                         |
| RF      | Radio Frequency                    | A frequency or rate of oscillation within the range of about 3 Hz and 300 GHz. This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves.                                                                                                                                                             |
| ROM     | Read-Only Memory                   | A class of storage media used in computers and other electronic devices. Data stored in ROM cannot be modified.                                                                                                                                                                                                                                                  |
| RPO     | Regular Production Option          | A three digit/letter code given to parts, assemblies, and systems originally installed on the vehicle. These RPO codes designate options and are assigned by General Motors.                                                                                                                                                                                     |
| RSA     | Rear Seat Audio                    | An auxiliary set of controls that operate the main audio system from the rear seat. Rear passengers can also operate a different media source than the front passengers.                                                                                                                                                                                         |
| RWD     | Rear-Wheel Drive                   | A common engine/transmission layout in which the engine is in the front of the vehicle, but the front mid-engine, rear mid-engine and rear engine layouts are also used.                                                                                                                                                                                         |
| SCV     | Speed Controlled Volume            | The volume control is set for a desired sound level in the vehicle as the vehicle increases its speed, the sound level is adjusted.                                                                                                                                                                                                                              |
| SDM     | Sensing and Diagnostic Module      | The name given to air bag modules used in General Motors vehicles.                                                                                                                                                                                                                                                                                               |

| Acronym | Meaning                           | Definition                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SIM     | Subscriber Identity Module        | Part of a removable smart card Integrated Circuit Card. This is used for mobile cellular telephone devices such as mobile computers and mobile phones. SIM cards securely store the service-subscriber key used to identify a subscriber. The SIM card allows users to change phones by simply removing the SIM card from one mobile phone and inserting it into another mobile phone or broadband telephony device. |
| SIR     | Supplemental Inflatable Restraint | Technical term for the air bag. Air bag is a stretchable membrane, which inflates during an automobile accident to provide cushioning to the passenger's head and torso to prevent injury to the passengers.                                                                                                                                                                                                         |
| SPI     | Serial Peripheral Interface       | This is an interface that enables the serial (one bit at a time) exchange of data between two devices. An SPI operates in full duplex mode. This means that data can be transferred in both directions at the same time. It is a standard bus technology like CAN or I2C.                                                                                                                                            |
| SPS     | Service Programming System        | System that enables repair facilities to update the software in control modules.                                                                                                                                                                                                                                                                                                                                     |
| SUV     | Sport Utility Vehicle             | A passenger vehicle which combines the towing capacity of a pickup truck with the passenger-carrying space of a minivan.                                                                                                                                                                                                                                                                                             |
| SVS     | Service Vehicle Soon              | Indicator lamp or symbol for a malfunction related to a vehicle component or system.                                                                                                                                                                                                                                                                                                                                 |
| TA      | Traffic Announcement              | Message spoken on radio regarding the movement of vehicles or pedestrians through an area or along a route. The buttons on radios that enable this announcements are also often labeled TA.                                                                                                                                                                                                                          |
| TAC     | Throttle Actuator Control         | A motor which moves the engine throttle plate or valve, controlled by the engine control module. A throttle plate limits the amount of air entering a internal combustion gasoline engine.                                                                                                                                                                                                                           |
| TAP     | Transmission Adaptive Pressure    | The transmission control module learns each component's characteristics and adjusts fluid pressure accordingly.                                                                                                                                                                                                                                                                                                      |
| TCC     | Torque Converter Clutch           | Resides in a torque converter to connect an engine to an automatic transmission. The clutch is applied when conditions are correct to achieve a 1:1 ratio of engine crankshaft to transmission input shaft.                                                                                                                                                                                                          |
| TCM     | Transmission Control Module       | A module that controls electronic automatic transmissions. It uses sensors from the vehicle as well as data provided by the Engine Control Module to calculate how and when to change gears in the vehicle for optimum performance, fuel economy and shift quality.                                                                                                                                                  |
| TDC     | Top Dead Center                   | The piston is in its highest position relative to the combustion chamber.                                                                                                                                                                                                                                                                                                                                            |
| TIS     | Techline Information System       | The PC-based global dealership diagnostic software that provides the technician the ability to reference the most recent service information via the service department's computer.                                                                                                                                                                                                                                  |
| TPA     | Terminal Position Assurance       | An additional locking mechanism inside an electric connector that holds the pins in place.                                                                                                                                                                                                                                                                                                                           |

| Acronym | Meaning                          | Definition                                                                                                                                                                                                                                                                                                                                                           |
|---------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TV      | Television                       | A telecommunication system for broadcasting and receiving moving pictures and sound over a distance.                                                                                                                                                                                                                                                                 |
| USB     | Universal Serial Bus             | A type of communication bus connection between a computer and a peripheral device.                                                                                                                                                                                                                                                                                   |
| VCI     | Vehicle Communications Interface | A diagnostic tool that communicates to modules of multiple communication protocols in a vehicle by converting vehicle serial data into PC serial data communication.                                                                                                                                                                                                 |
| VIN     | Vehicle Identification Number    | Used by manufacturers to uniquely identify motor vehicles using 17 characters.                                                                                                                                                                                                                                                                                       |
| VSCM    | Vehicle Stability Control Module | This module uses information from several sensors to detect a loss of vehicle traction, then works with the antilock brake system to apply individual brakes to help keep the vehicle on its intended path.                                                                                                                                                          |
| VSS     | Vehicle Speed Sensor             | Sends data regarding how fast the car is traveling at the moment of driving. It is designed to be able to record the rate at which the vehicle's crankshaft is spinning.                                                                                                                                                                                             |
| WOT     | Wide Open Throttle               | When the throttle blade or valve is at its maximum open position, allowing maximum air to enter an internal combustion gasoline engine.                                                                                                                                                                                                                              |
| WLAN    | Wireless Local Area Network      | Standard to transmit digital data via radio frequency.                                                                                                                                                                                                                                                                                                               |
| XM      | XM (Satellite Radio)             | XM Satellite Radio Holdings (XM) is one of two satellite radio services in the United States and Canada. XM provides pay-for-service radio, analogous to cable television. Its service includes 73 different music channels, 39 news, sports, talk, and entertainment channels, 21 regional traffic and weather channels and 23 play-by-play sports channels (2008). |
| XML     | Extensible Markup Language       | A markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.                                                                                                                                                                                                                                   |

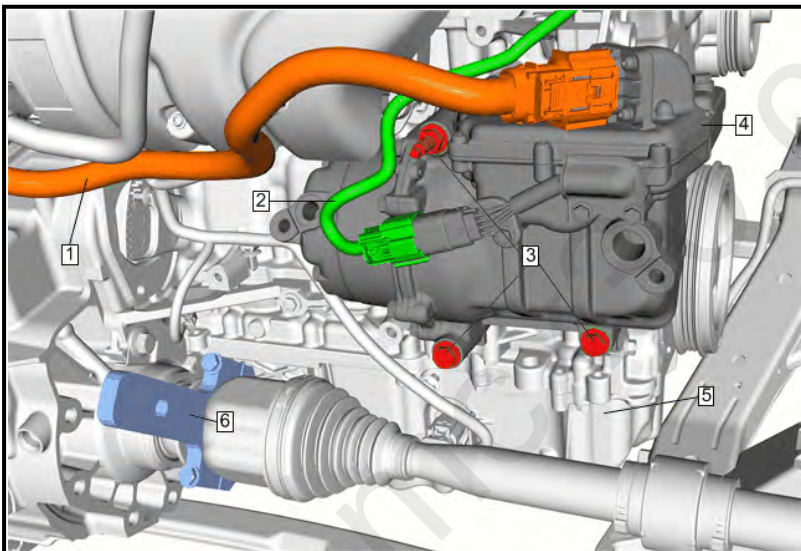
## Units

| Unit                    | Meaning                      | Definition |
|-------------------------|------------------------------|------------|
| m <sup>2</sup>          | Square Meter                 | Area       |
| A                       | Ampere                       | Electrical |
| Ah                      | Ampere Hour                  | Electrical |
| C                       | Coulomb                      | Electrical |
| dBm                     | Decibel Meter                | Electrical |
| dBmV                    | Decibel Millivolt            | Electrical |
| mV/DIV                  | Millivolts per Division      | Electrical |
| mV/s                    | Millivolts per Second        | Electrical |
| Ω                       | Ohm                          | Electrical |
| V                       | Volt                         | Electrical |
| V/DIV                   | Volts per Division           | Electrical |
| V/ms                    | Volts per Millisecond        | Electrical |
| W                       | Watt                         | Electrical |
| mm <sup>3</sup> /stroke | Cubic Millimeters per Stroke | Flow       |
| gal/h                   | Gallons per Hour             | Flow       |
| g/s                     | grams per second             | Flow       |

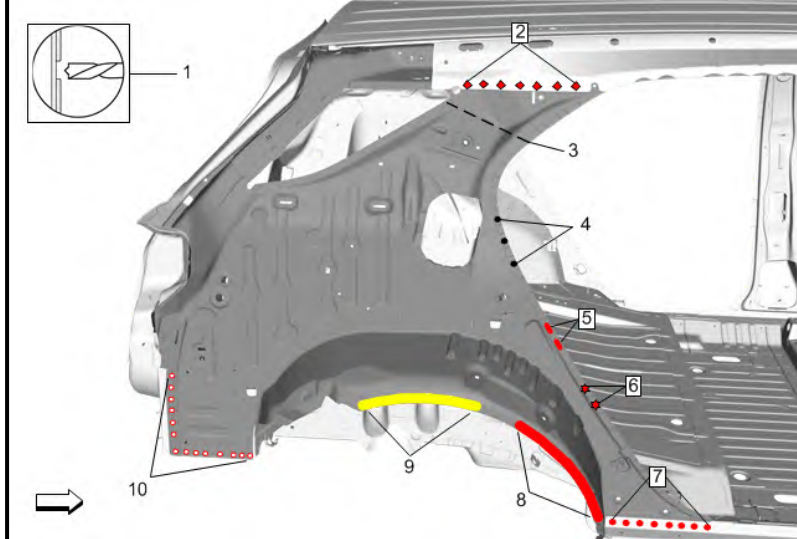
| Unit             | Meaning                     | Definition |
|------------------|-----------------------------|------------|
| g/stroke         | Grams per Stroke            | Flow       |
| kg/100km         | Kilograms per 100 Kilometer | Flow       |
| kg/h             | Kilograms per Hour          | Flow       |
| km/L             | kilometer/liter             | Flow       |
| L/100km          | Liters per 100 Kilometers   | Flow       |
| L/h              | Liters per Hour             | Flow       |
| L/min            | Liters per Minute           | Flow       |
| MPG              | Miles per Gallon            | Flow       |
| mg/s             | Milligrams per Second       | Flow       |
| mg/stroke        | Milligrams per stroke       | Flow       |
| ft               | feet                        | Length     |
| in               | Inch                        | Length     |
| m                | Meter                       | Length     |
| mi               | Mile                        | Length     |
| bar              | Bar                         | Mechanical |
| bar/min          | Bars per Minute             | Mechanical |
| in. H2O          | Inches of Water             | Mechanical |
| in. H2O/s        | Inches of Water per second  | Mechanical |
| kPa/s            | Kilopascals per Second      | Mechanical |
| N                | Newton                      | Mechanical |
| N.m              | Newton Meter                | Mechanical |
| Pa               | Pascal                      | Mechanical |
| Pa/s             | Pascals per Second          | Mechanical |
| lb ft            | Pound Foot                  | Mechanical |
| PSI              | Pound-Force per Square Inch | Mechanical |
| Counts           | Counts                      | Misc.      |
| Cycles           | Cycles                      | Misc.      |
| dB               | Decibel                     | Misc.      |
| Â°               | Degree                      | Misc.      |
| Â°C              | Degree Centigrade           | Misc.      |
| Â°CA             | Degree Crankshaft Angle     | Misc.      |
| Â°F              | Degree Fahrenheit           | Misc.      |
| Â°/s             | Degree per Second           | Misc.      |
| Hz               | Hertz                       | Misc.      |
| kbit/s           | Kilobit per second          | Misc.      |
| lx               | Lux                         | Misc.      |
| ppm              | Parts per Million           | Misc.      |
| %                | Percent                     | Misc.      |
| %/min            | Percents per Minute         | Misc.      |
| %/sec            | Percents per Second         | Misc.      |
| Pulses           | Pulses                      | Misc.      |
| :1               | Ratio                       | Misc.      |
| RPM              | Revolutions per Minute      | Misc.      |
| Steps            | Steps                       | Misc.      |
| W/m <sup>2</sup> | Watts per Square Meter      | Misc.      |
| g                | g (Acceleration)            | Movement   |
| km/h             | Kilometers per Hour         | Movement   |
| m/s              | Meters per Second           | Movement   |
| m/s <sup>3</sup> | Meters per Second Cubed     | Movement   |
| m/s <sup>2</sup> | Meters per Second Squared   | Movement   |
| MPH              | Miles per Hour              | Movement   |

| Unit           | Meaning                              | Definition |
|----------------|--------------------------------------|------------|
| mm/s           | Millimeters per Second               | Movement   |
| d              | Day                                  | Time       |
| h              | Hour                                 | Time       |
| hh:mm:ss       | Hour:Minute:Second                   | Time       |
| ms/DIV         | Milliseconds per Division            | Time       |
| min            | Minute                               | Time       |
| s              | Second                               | Time       |
| s/DIV          | Seconds per Division                 | Time       |
| yy-mm-dd       | Year-Month-Day (2 digits)            | Time       |
| yyyy-mm-dd     | Year-Month-Day (4 digits, preferred) | Time       |
| m <sup>3</sup> | Cubic Meter                          | Volume     |
| gal            | Gallon                               | Volume     |
| L              | Liter                                | Volume     |
| mL             | milliliters                          | Volume     |
| US gal         | US Gallon                            | Volume     |
| US pt          | US Pint                              | Volume     |
| US qt          | US Quart                             | Volume     |
| kg             | Kilogram                             | Weight     |

### GRAPHIC COLORS AND GRAPHIC SYMBOLS



| Callout | Component Name                                                                        |
|---------|---------------------------------------------------------------------------------------|
| 1       | Orange - High voltage electrical connectors and harnesses being removed or installed. |
| 2       | Green - Electrical connectors and harnesses being removed or installed.               |
| 3       | Red - Fasteners being removed or installed.                                           |
| 4       | Dark Gray - Standout color that shows the component being removed or installed.       |
| 5       | Light Gray - Background detail to show component location.                            |
| 6       | Light Blue - Special tool being used.                                                 |



| Callout | Component Name                           |
|---------|------------------------------------------|
| 1       | Drill through top layer of material only |
| 2       | Structural Rivet                         |
| 3       | Sectioning Location                      |
| 4       | Drill Hole                               |
| 5       | Mig Braze Slot                           |
| 6       | Self-Piercing Rivet                      |
| 7       | Mig/Mag Plug Weld                        |
| 8       | Adhesive                                 |
| 9       | Apply Heat                               |
| 10      | Resistance Spot Weld                     |

## CUSTOMER CONCERN VERIFICATION SHEETS

The GM Customer Concern Verification Sheets have been designed to improve communications between the service customer and the technician. The more clearly the technician understands the concern and its symptoms, the more likely the concern will be fixed right the first time.

The GM-wide Customer Concern Verification Sheets are available in GM Global Connect. The Customer Concern Verification Sheets may be printed and reproduced locally.

## TRAINING

### Dealers

All U.S. GM Dealers participating in the Center of Learning / GM Service Technical College (STC) Programs can enroll through the Center of Learning website at <https://www.centerlearning.com>. Within the website, there are individual training paths that are designed to assist in planning the training needs for each individual and their job role. Dealers who have questions about Center of Learning Training should contact the Center of Learning help desk at 1-888-748-2687. The help desk is available Monday through Friday, 8:00 am - 9:00 pm Eastern Standard Time, excluding holidays. For GM Access support, contact the GM Access Help Desk at 1-888-337-1010.

### Fleets

GM Fleet customers with GM Warranty In-Shop agreements are able to participate in service technical training through the Center of Learning/GM Service Technical College (STC).

Assistance for GM fleet registered customers using GM STC training is provided by the Center of Learning help desk at 1-888-748-2687. The help desk is available Monday through Friday, 8:00 am - 9:00 pm Eastern Standard Time, excluding holidays. For GM Access support, contact the GM Access Help Desk at 1-888-337-1010.

Most GM STC course materials have associated charges.

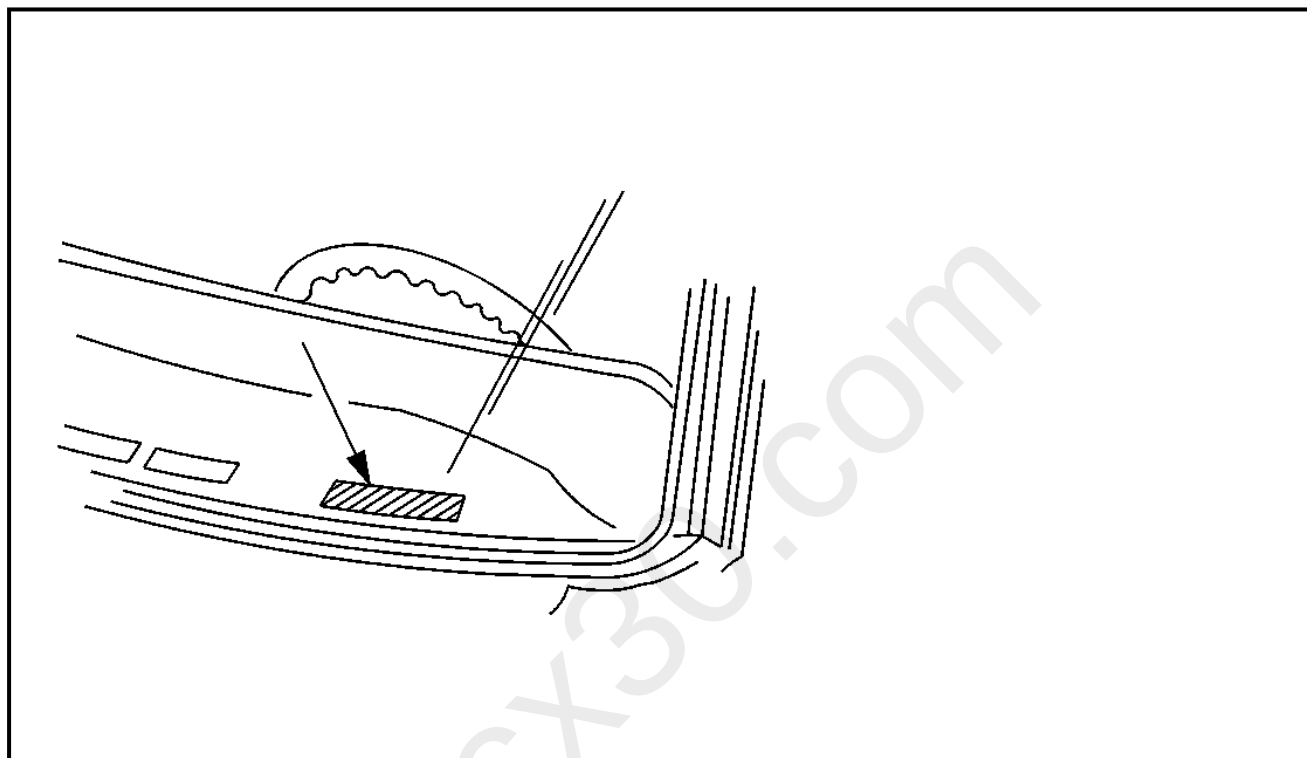
To purchase authentic GM STC Training Materials, contact the GM Training Materials Headquarters at 1-800-393-4831.

### Non-GM Dealer Technicians

Technician training for non-GM dealers is available through ACDelco. This training is for ACDelco PSC and Fleet program members employed in the automotive or truck service industry.

ACDelco courses are available at approved GM STC Training Centers. Availability and schedules can be obtained by calling 1-800-825-5886 (prompt 1) or contact us via the web at [www.acdelcotechconnect.com](http://www.acdelcotechconnect.com) and select the Training tab. Seminars are also offered through the ACDelco Warehouse Distribution channel. Contact your Local ACDelco representative or distributor directly for more information.

### VEHICLE, ENGINE AND TRANSMISSION ID AND VIN LOCATION, DERIVATIVE AND USAGE



The vehicle identification number (VIN) plate is the legal identifier of the vehicle. The VIN plate is located on the upper LH corner of the instrument panel (I/P). The VIN number can be seen through the windshield from the outside of the vehicle:

#### Vehicle Identification Number (VIN) System

| Position | Definition                   | Character | Description                                                                 |
|----------|------------------------------|-----------|-----------------------------------------------------------------------------|
| 1        | Country of Origin            | 1         | United States                                                               |
| 2        | Manufacturer                 | G         | General Motors                                                              |
| 3        | Vehicle Brand/Type           | N         | Chevrolet MPV                                                               |
| 4        | GVWR/Brake System/Body Style | E         | Class E: 6, 001 lbs - 7, 000 lbs, Hydraulic, Four Door Cab/Utility Extended |
| 5 - 6    | Chassis/Series               | R/E       | Traverse L FWD                                                              |
|          |                              | R/F       | Traverse LS FWD                                                             |
|          |                              | R/G       | Traverse LT Cloth                                                           |
|          |                              | R/H       | Traverse LT Leather                                                         |
|          |                              | R/K       | Traverse Premier                                                            |
|          |                              | R/L       | Traverse LS FL                                                              |
|          |                              | R/M       | Traverse LT FL                                                              |
|          |                              | R/8       | Traverse FWD (Non US, Non Canada)                                           |
|          |                              | V/F       | Traverse LS AWD                                                             |

| Position | Definition            | Character | Description                                                                                                                                                       |
|----------|-----------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                       | V/G       | Traverse LT Cloth AWD                                                                                                                                             |
|          |                       | V/H       | Traverse LT Leather AWD                                                                                                                                           |
|          |                       | V/J       | Traverse Premier AWD                                                                                                                                              |
|          |                       | V/K       | Traverse High Country AWD                                                                                                                                         |
|          |                       | V/L       | Traverse LS FL AWD                                                                                                                                                |
|          |                       | V/M       | Traverse LT FL AWD                                                                                                                                                |
|          |                       | V/8       | Traverse AWD (Non US, Non Canada)                                                                                                                                 |
| 7        | Restraint System      | K         | Active Manual Belts, Airbags - Driver and Passenger - Front (1st row), Front Seat Side (1st row), Front Inboard Seat Side (1st row), Roof Side (All seating rows) |
| 8        | Engine Type           | W         | LFY - Engine, Gas, 6CYL, V6, 3.6L, SIDI, DOHC, ATSS, GEN 1                                                                                                        |
| 9        | Check Digit           | -         | Check Digit                                                                                                                                                       |
| 10       | Model Year            | J         | 2018                                                                                                                                                              |
| 11       | Plant Location        | J         | Lansing Delta Township, MI                                                                                                                                        |
| 12 - 17  | Plant Sequence Number | -         | Plant Sequence Number                                                                                                                                             |

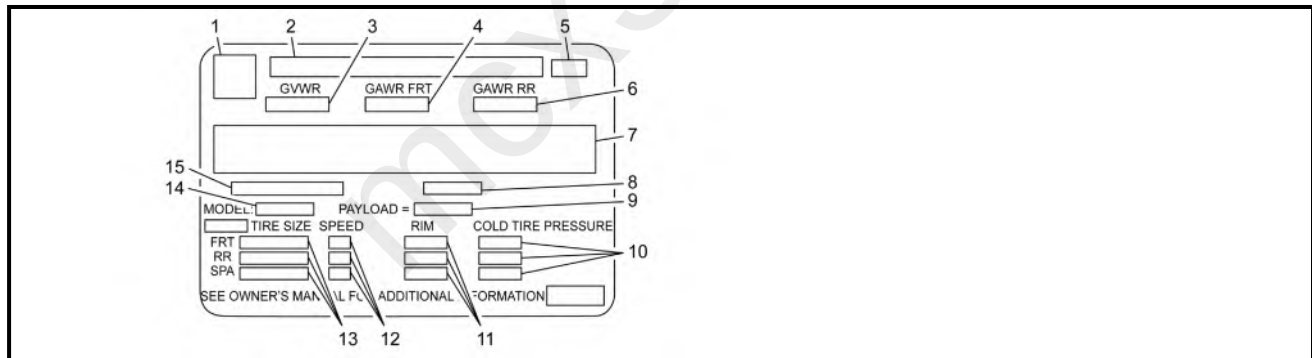
### 3.6L RPO LFY Engine ID and VIN Derivative Location

Refer to [Engine Identification](#) .

### 9T65 (M3V) Transmission ID and VIN Derivative Location

Refer to [Transmission Identification Information](#) .

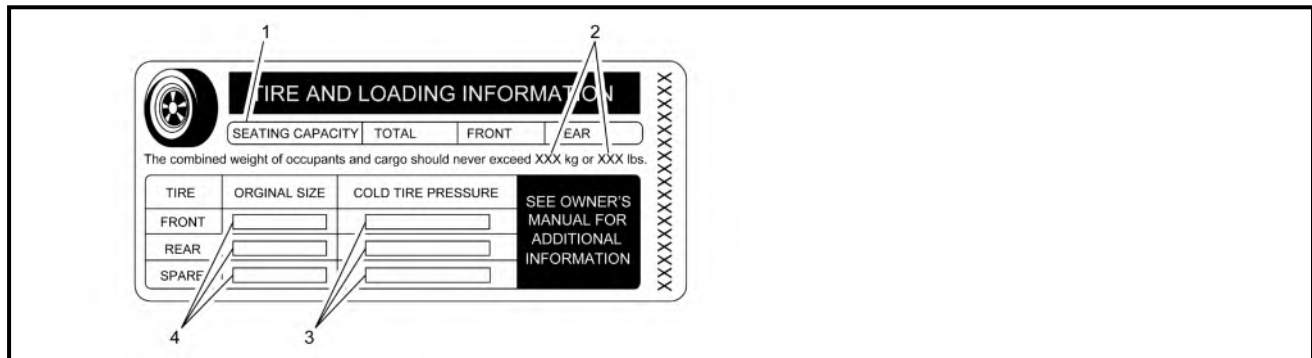
## VEHICLE CERTIFICATION, TIRE PLACARD, ANTI-THEFT, AND SERVICE PARTS ID LABEL



### Vehicle Certification Label

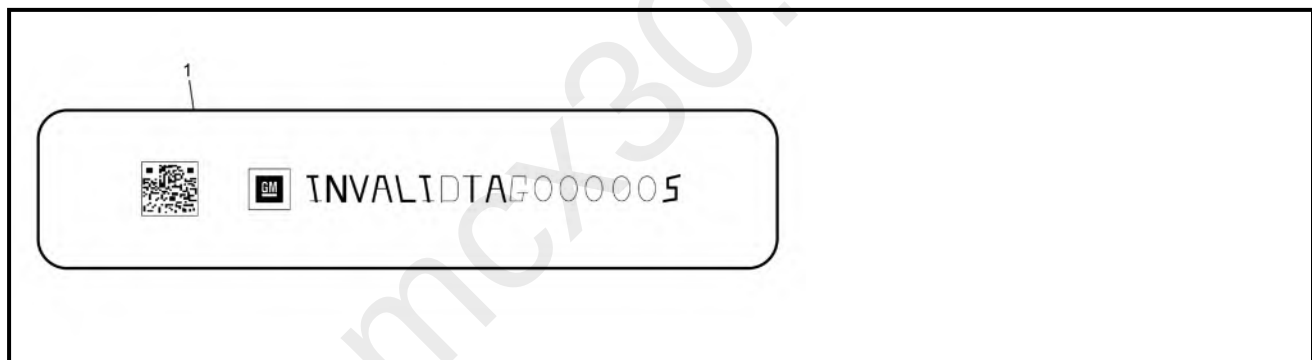
| Callout                                                                                                             | Description                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The vehicle certification label is attached to the center pillar (B-pillar) and displays the following assessments: |                                                                                                                                                                                                                                                                                            |
| 1                                                                                                                   | Logo                                                                                                                                                                                                                                                                                       |
| 2                                                                                                                   | Name of Manufacturer                                                                                                                                                                                                                                                                       |
| 3                                                                                                                   | Maximum Gross Vehicle Weight Rating (GVWR)                                                                                                                                                                                                                                                 |
| 4                                                                                                                   | Maximum Gross Axle Weight Rating (GAWR) - Front                                                                                                                                                                                                                                            |
| 5                                                                                                                   | Final Date of Manufacture (Month and Year MM/YY)<br>Date of manufacture callout C is to reflect the date that the vehicle is counted as built. In those cases where a replacement label is needed, the replacement label should reflect the actual build date not the date of replacement. |
| 6                                                                                                                   | Maximum Gross Axle Weight Rating (GAWR) - Rear                                                                                                                                                                                                                                             |
| 7                                                                                                                   | Certification Statement                                                                                                                                                                                                                                                                    |
| 8                                                                                                                   | Vehicle Class Type (Pass Car, etc.)                                                                                                                                                                                                                                                        |

| Callout | Description                                  |
|---------|----------------------------------------------|
| 9       | Payload                                      |
| 10      | Tire Pressure, Front, Rear, and Spare (Cold) |
| 11      | Original Tire Rim Size                       |
| 12      | Tire Speed Rating                            |
| 13      | Original Equipment Tire Size                 |
| 14      | Engineering Model Number                     |
| 15      | Vehicle Identification Number (VIN)          |



### Tire Placard

| Callout                                                                                              | Description                                  |
|------------------------------------------------------------------------------------------------------|----------------------------------------------|
| The tire placard is attached to the center pillar (B-pillar) and displays the following assessments: |                                              |
| 1                                                                                                    | Specified Occupant Seating Positions         |
| 2                                                                                                    | Maximum Vehicle Capacity Weight              |
| 3                                                                                                    | Tire Pressure, Front, Rear, and Spare (Cold) |
| 4                                                                                                    | Original Equipment Tire Size                 |



### Anti-Theft Label

| Callout | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <p>The Federal law requires that General Motors label certain body parts on this vehicle with the VIN. The purpose of the law is to reduce the number of motor vehicle thefts by helping in the tracing and recovery of parts from stolen vehicles.</p> <p>Labels are permanently affixed to an interior surface of the part. The label on the replacement part contains the letter R, the manufacturer's logo, and the DOT symbol. The anti-theft label must be covered before any painting, rustproofing procedures, and uncovered after the procedures. Failure to follow the precautionary steps may result in liability for violation of the Federal Vehicle Theft Prevention Standard and possible suspicion to the owner that the part was stolen.</p> |

### Service Parts ID Label

This label is located on the inside of the glove box and contains the Vehicle Identification Number (VIN), the model designation, the paint information, production options, and special equipment. If there is no label, there is a barcode on the certification label on the center (B-pillar) to scan for this same information.

### RPO CODE LIST

The following table provides the description of the Regular Production Option (RPO) codes that are available on the vehicle. The vehicle's RPO list is printed on the Service Parts Identification Label.

| <b>RPO</b> | <b>Description</b>                                                                                    |
|------------|-------------------------------------------------------------------------------------------------------|
| 1FL        | PACKAGE-FL OPTION 1                                                                                   |
| 1L0        | PACKAGE-L                                                                                             |
| 1LS        | PACKAGE-LS OPTION 1                                                                                   |
| 1LT        | PACKAGE-LT OPTION 1                                                                                   |
| 1LZ        | PACKAGE-LZ OPTION 1                                                                                   |
| 2FL        | PACKAGE-FL OPTION 2                                                                                   |
| 2LT        | PACKAGE-LT OPTION 2                                                                                   |
| 2LZ        | PACKAGE-LZ OPTION 2                                                                                   |
| 3LT        | PACKAGE-LT OPTION 3                                                                                   |
| 4AA        | INTERIOR TRIM-JET BLACK                                                                               |
| 4GR        | INTERIOR TRIM-JET BLACK/LOFT BROWN                                                                    |
| 4HN        | INTERIOR TRIM-DK ATMOSPHERE/MEDIUM ASH GRAY                                                           |
| 4HW        | INTERIOR TRIM-JET BLACK/DK GALVANIZED                                                                 |
| 5AZ        | ACCESSORY-SAFETY KIT - UNIVERSAL                                                                      |
| 5Y3        | ACCESSORY-TOW BALL - TRAILER HITCH                                                                    |
| AAB        | MEMORY-DRIVER CONVENIENCE PACKAGE                                                                     |
| ABC        | SEAT CONFIGURATION-#3                                                                                 |
| ABE        | SEAT CONFIGURATION-#5                                                                                 |
| ACO        | IDENTIFICATION-ACCESSORY CATALOG OFFERING                                                             |
| AHT        | ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL/FUNCTIONAL, DRIVER                                           |
| AKO        | WINDOW TYPE-PRIVACY                                                                                   |
| AKP        | WINDOW TYPE-SOLAR ABSORBING                                                                           |
| AL0        | SENSOR INDICATOR-INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR                               |
| AL9        | LUMBAR DRIVER-SEAT, POWER, 2 WAY                                                                      |
| AQ5        | ADJUSTER PASS ST-POWER 6 WAY                                                                          |
| AR9        | SEAT-FRT BKT, DELUXE                                                                                  |
| AS8        | SEAT THIRD ROW-60/40 BENCH, POWER FOLD                                                                |
| ASV        | EQUIPMENT-SENSOR AIR MOISTURE & W/S TEMP                                                              |
| AT8        | RESTRAINT PROVISIONS-CHILD, RR SEAT, RR FACING                                                        |
| AT9        | LUMBAR PASSENGER-SEAT, POWER, 2 WAY                                                                   |
| ATH        | LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS                            |
| ATS        | LOCK CONTROL, ENTRY-REMOTE ENTRY, STANDARD RANGE, PASSIVE ENTRY, ALL DOORS                            |
| AX4        | RESTRAINT CONVERSION-SEAT, MAN, EUROPEAN                                                              |
| AXP        | VEHICLE TYPE-MULTI-PURPOSE PASSENGER VEHICLE                                                          |
| AYQ        | RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER & PASS FRT, FRT SEAT SIDE, FRT INBOARD SEAT SIDE, ROOF SIDE |
| B52        | MOLDING ROCKER-BLACK                                                                                  |
| B6R        | DECAL PACKAGE-3                                                                                       |
| B87        | MOLDING B/S-BLACK                                                                                     |
| BAG        | PARTS PKG-EXPORT                                                                                      |
| BGP        | SALES PACKAGE-SAFETY PACKAGE VAR. 2                                                                   |
| BN2        | SALES PACKAGE-SAFETY PACKAGE VAR. 3                                                                   |
| BTV        | REMOTE START-ENGINE                                                                                   |
| C32        | HEATER-HEATING/DEFROSTER SYSTEM, REINFORCED, ELECTRIC                                                 |
| C3U        | ROOF-SUN, GLASS, SLIDING, ELEC, TRANSPARENT GLASS FIXED                                               |
| C69        | HVAC SYSTEM RR-AIR CONDITIONER                                                                        |

| <b>RPO</b> | <b>Description</b>                                                          |
|------------|-----------------------------------------------------------------------------|
| CAV        | ACCESSORY-TRAY - TRUNK/CARGO AREA                                           |
| CG6        | ORNAMENTATION-EXTR, NAMEPLATE, VAR 1                                        |
| CJ2        | HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT              |
| CK2        | COUNTRY-YEMEN                                                               |
| CL5        | COUNTRY-PERU                                                                |
| CR9        | COUNTRY-MOROCCO                                                             |
| CS1        | COUNTRY-TUNISIA                                                             |
| CU0        | COUNTRY-UKRAINE                                                             |
| CU7        | COUNTRY-KUWAIT                                                              |
| CU8        | COUNTRY-SAUDI ARABIA                                                        |
| CV3        | COUNTRY-MEXICO                                                              |
| CV4        | COUNTRY-ISRAEL                                                              |
| CV6        | COUNTRY-CHILE                                                               |
| CV8        | COUNTRY-IRAQ                                                                |
| CX2        | COUNTRY-COLOMBIA                                                            |
| CX9        | COUNTRY-LEBANON                                                             |
| CXH        | SALES PACKAGE-INTERIOR LEATHER PACKAGE                                      |
| CY2        | COUNTRY-JORDAN                                                              |
| CZ3        | COUNTRY-RUSSIA                                                              |
| CZ6        | COUNTRY-KAZAKHSTAN                                                          |
| D2G        | COUNTRY-ALGERIA                                                             |
| D2O        | COUNTRY-CURACAO                                                             |
| D2Y        | COUNTRY-ANTIGUA                                                             |
| D3H        | COUNTRY-BELARUS                                                             |
| D3J        | COUNTRY-CAYMAN ISLANDS                                                      |
| D3K        | COUNTRY-DOMINICAN REPUBLIC                                                  |
| D3L        | COUNTRY-EL SALVADOR                                                         |
| D3M        | COUNTRY-GUATEMALA                                                           |
| D3P        | COUNTRY-HAITI                                                               |
| D3Q        | COUNTRY-HONDURAS                                                            |
| D3S        | COUNTRY-QATAR                                                               |
| D3U        | COUNTRY-ST MAARTEN                                                          |
| D4C        | COUNTRY-BAHRAIN                                                             |
| D4G        | COUNTRY-BAHAMAS                                                             |
| D4N        | COUNTRY-COSTA RICA                                                          |
| D4X        | COUNTRY-ARUBA                                                               |
| D5D        | COUNTRY-NICARAGUA                                                           |
| D5K        | COUNTRY-SURINAM                                                             |
| D5P        | COUNTRY-UNITED ARABIC EMIRATES                                              |
| D75        | HANDLE O/S DOOR-BODY COLOR                                                  |
| DCP        | PROCESSING-DIRECTIONS & CONNECTIONS SERVICE PACKAGE                         |
| DLT        | PLANT CODE-LANSING DELTA TOWNSHIP, MI                                       |
| DP6        | MIRROR PROVISIONS-HOUSING, PAINTED                                          |
| DP9        | MIRROR PROVISIONS-HOUSING, CHROME                                           |
| DPU        | COUNTRY-BONAIRE                                                             |
| DPX        | COUNTRY-TURKS AND CAICOS ISLANDS                                            |
| DR9        | MIRROR O/S-LH & RH, REMOTE CONTROL, ELECTRIC, HEATED, MANUAL FOLDING, BLACK |
| DRZ        | MIRROR I/S R/V-LT SENSITIVE, FULL VIDEO DISPLAY                             |
| DUJ        | ASHTRAY-SMOKER'S PACKAGE                                                    |
| DVZ        | GVW RATING-2, 800 KG/6173 LBS                                               |

| RPO | Description                                                                                       |
|-----|---------------------------------------------------------------------------------------------------|
| DWK | MIRROR O/S-LH & RH, RC, ELEC, HEAT, FLAT/DRVR, MANFOLD, CNVX/PASS, TURN SIG IND                   |
| DWM | MIRROR O/S-LH & RH, RC, ELEC, HEAT, AUX WFOV/DRVR, MANFOLD, CNVX/PASS, TURN SIG IND               |
| DXZ | MIRROR O/S-LH & RH, RC, ELEC, HEAT, FLAT/DRVR, MANFOLD, CNVX/PASS, TURN SIG IND, LT SENS DRVR     |
| DZE | MIRROR O/S-LH & RH, RC, ELEC, HEAT, AUX WFOV/DRVR, MANFOLD, CNVX/PASS, TURN SIG IND, LT SENS DRVR |
| E6H | COUNTRY-OMAN                                                                                      |
| E7C | COUNTRY-LIBYA                                                                                     |
| EF5 | COUNTRY-PANAMA                                                                                    |
| EF7 | COUNTRY-UNITED STATES OF AMERICA (USA)                                                            |
| EPM | MODEL CONVERSION-ALL WHEEL DRIVE                                                                  |
| F48 | CHASSIS DRIVE LINE-ALL WHEEL DRIVE (AWD)/FOUR WHEEL DRIVE(4WD), DRIVER SELECT                     |
| FE2 | SUSPENSION SYSTEM-RIDE, HANDLING                                                                  |
| FE9 | CERTIFICATION-EMISSION, FEDERAL                                                                   |
| FHO | VEHICLE FUEL-GASOLINE E10                                                                         |
| FXC | RATIO-TRANSAXLE FINAL DRIVE 3.49                                                                  |
| G1W | PRIMARY COLOR-EXTERIOR, ABALONE WHITE TRICOAT(140X)                                               |
| G2X | PRIMARY COLOR-EXTERIOR, HAVANA MET-1 (439C)                                                       |
| G99 | AXLE POSITRACTION-TWIN CLUTCH, ELECTRONIC                                                         |
| G9K | PRIMARY COLOR-EXTERIOR, SATIN STEEL GRAY MET-3 (464C)                                             |
| GAJ | APPEARANCE PACKAGE-HIGH COUNTRY                                                                   |
| GAN | PRIMARY COLOR-EXTERIOR, SWITCHBLADE SILVER MET (G) 636R                                           |
| GAZ | PRIMARY COLOR-EXTERIOR, SUMMIT WHITE (G) 8624                                                     |
| GB8 | PRIMARY COLOR-EXTERIOR, BLACK MEET KETTLE MET (384A)                                              |
| GGA | PRIMARY COLOR-EXTERIOR EDIBLE BERRIES MET (409B)                                                  |
| GMU | PRIMARY COLOR-EXTERIOR, PEPPERDUST MET-2 (441B)                                                   |
| GPA | PRIMARY COLOR-EXTERIOR, GASOLINE MET-2 (457B)                                                     |
| GPJ | PRIMARY COLOR-GLORY RED TINT-2 (434B)                                                             |
| H0U | INTERIOR TRIM CONFIG-CLOTH, LEVEL 2, JET BLACK                                                    |
| H0Y | INTERIOR TRIM CONFIG-LEATHER, LEVEL 1, JET BLACK                                                  |
| H1T | INTERIOR TRIM CONFIG-CLOTH, LEVEL 1, JET BLACK                                                    |
| H1Y | INTERIOR TRIM CONFIG-LEATHER, LEVEL 2, JET BLACK                                                  |
| H79 | INTERIOR TRIM CONFIG-LEATHER, LEVEL 2, DK ATMOSPHERE/MED ASH GRAY                                 |
| H80 | INTERIOR TRIM CONFIG-LEATHER, LEVEL 4, JET BLACK/LOFT BROWN                                       |
| HBO | INTERIOR TRIM CONFIG-LEATHER, LEVEL 1, DK ATMOSPHERE / MED ASH GRAY                               |
| HJO | INTERIOR TRIM CONFIG-CLOTH, LEVEL 2, DK ATMOSPHERE / MED ASH GRAY                                 |
| HK8 | INTERIOR TRIM CONFIG-CLOTH, LEVEL 2, JET BLACK /DK GALVANIZED                                     |
| HK9 | INTERIOR TRIM CONFIG-LEATHER, LEVEL 1, JET BLACK /DK GALVANIZED                                   |
| HKE | INTERIOR TRIM CONFIG-LEATHER, LEVEL 2, JET BLACK/DK GALVANIZED                                    |
| HVK | INTERIOR TRIM CONFIG-CLOTH, LEVEL 1, DK ATMOSPHERE / MED ASH GRAY                                 |
| I18 | ENGINEERING YEAR-2018                                                                             |
| IO5 | RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY                                    |

| <b>RPO</b> | <b>Description</b>                                                                                                 |
|------------|--------------------------------------------------------------------------------------------------------------------|
| IO6        | RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY, EMBEDDED NAVIGATION                                |
| IOA        | RADIO-INFOTAINMENT SYSTEM - MIDLEVEL FACEPLATED HMI, MIDLEVEL CONNECTIVITY                                         |
| J61        | BRAKE SYSTEM-POWER, FRT & RR DISC, ABS, 17"                                                                        |
| JNK        | PROVISIONS-TOW HOOKS                                                                                               |
| K05        | HEATER ENG-BLOCK                                                                                                   |
| K4C        | CHARGER-INDUCTIVE PORTABLE WIRELESS DEVICE                                                                         |
| KA1        | HEATER SEAT FRT-DRVR & PASS                                                                                        |
| KA3        | HEATER ENG-BLOCK, 220V                                                                                             |
| KA6        | HEATER SEAT-REAR                                                                                                   |
| KI6        | RECEPTACLE-ELECTRICAL, FRT CONSOLE RR 110 VOLT                                                                     |
| KI7        | RECEPTACLE-ELECTRICAL, FRT CONSOLE RR 230 VOLT                                                                     |
| KL9        | ENG CONTROL-STOP/START SYS, CONVENTIONAL AT, CONVENTIONAL MT OR BRAKE RELEASE LATE RESTART                         |
| KR1        | REFRIGERANT-AIR CONDITIONING                                                                                       |
| KRV        | REFRIGERANT-LOW GWP                                                                                                |
| KSG        | CRUISE CONTROL-AUTOMATIC, ADAPTIVE, WITH STOP/GO                                                                   |
| KU9        | VENTILATED SEAT FRT-DRVR & PASS                                                                                    |
| KW7        | GENERATOR-170 AMP                                                                                                  |
| KW8        | GENERATOR-155 AMP                                                                                                  |
| LFY        | ENGINE-GAS, 6 CYL, V6, 3.6L, SIDI, DOHC, ATSS, GEN 1+                                                              |
| LTG        | ENGINE-GAS, 4 CYL, 2.0L, SIDI, I4, ALUM DOHC, VVT, DCVCP, TURBO, E0-E100, ALUM                                     |
| M3V        | TRANSMISSION-AUTO 9 SPD, 9T65, GEN 1                                                                               |
| N06        | STEERING COLUMN LOCK-ELECTRICAL                                                                                    |
| N08        | LOCK CONTROL-FUEL FILLER DR, REM CONT                                                                              |
| N38        | STEERING COLUMN-TILT, TELESCOPING, POWER                                                                           |
| N3R        | STEERING WHEEL-URETHANE                                                                                            |
| NE1        | CERTIFICATION-EMISSION, GEOGRAPHICALLY RESTRICTED REGISTRATION FOR VEHICLES UP TO 14, 000 LBS GVW (USE 2003 MDL YR |
| NE4        | EMISSION SYSTEM-EEC 14                                                                                             |
| NE8        | EVAPORATIVE SYSTEM-LEVEL 3 EMISSIONS                                                                               |
| NE9        | EMISSION SYSTEM-EEC 09                                                                                             |
| NP5        | STEERING WHEEL-LEATHER WRAPPED                                                                                     |
| NTB        | EMISSION SYSTEM-FEDERAL, TIER 3                                                                                    |
| NUB        | EMISSION SYSTEM-CALIFORNIA, ULEV70                                                                                 |
| NWM        | SHIELD-LOCK & LATCH, CLOSURES                                                                                      |
| PXJ        | WHEEL-18 X 7.5, J, ALUMINUM, DESIGN 7                                                                              |
| Q3N        | TIRE ALL-255/55R20 SL 107H BW AL3                                                                                  |
| QO5        | TIRE ALL-255/65R18 SL 111T BW ALS VAR 1                                                                            |
| QO6        | TIRE ALL-255/65R18 SL 111T BW ALS VAR 2                                                                            |
| RDI        | ACCESSORY-KEYLESS ENTRY                                                                                            |
| RIA        | ACCESSORY-FLOOR LINER - CONTOURED                                                                                  |
| RIB        | ACCESSORY-FLOOR LINER - CONTOURED - 3RD ROW                                                                        |
| RIK        | ACCESSORY-BADGE - EXTERIOR, PACKAGE, DESIGN 1                                                                      |
| RN2        | ACCESSORY-ILLUMINATED EMBLEM - EXTERIOR - DESIGN 1                                                                 |
| RT1        | WHEEL-18 X 7.5, J, ALUMINUM, DESIGN 5                                                                              |
| RTI        | WHEEL SPARE-18 X 4.5, B, STEEL, DESIGN 1                                                                           |
| RVG        | ACCESSORY-ADAPTER - TRAILER HARNESS                                                                                |
| RVX        | ACCESSORY-BALL MOUNT - TRAILER HITCH                                                                               |
| RWS        | ACCESSORY-FLOOR MATS - CARPET                                                                                      |

| <b>RPO</b> | <b>Description</b>                                                   |
|------------|----------------------------------------------------------------------|
| RWU        | ACCESSORY-CARGO AREA ORGANIZER - COLLAPSIBLE                         |
| RXX        | ACCESSORY-MOLDING - RR LICENSE OPENING TRIM                          |
| RYT        | ACCESSORY-FIRST AID KIT                                              |
| S08        | ACCESSORY-HIGHWAY SAFETY KIT                                         |
| S0M        | ACCESSORY-ILLUMINATED DOOR SILLS                                     |
| S1V        | ACCESSORY-HEADPHONES - RSE                                           |
| S2D        | ACCESSORY-WHEEL - 20 X 8.0 - J - ALUMINUM - DESIGN 6                 |
| S3U        | ACCESSORY-LAMP KIT - FRONT FOG                                       |
| S44        | ACCESSORY-LOCKING PIN - TRAILER HITCH                                |
| S47        | ACCESSORY-LUG NUTS                                                   |
| S4X        | ACCESSORY-MIRROR COVERS/SKULL CAPS - ALTERNATE FINISH - PAINTED      |
| S6P        | ACCESSORY-REMOTE START KIT                                           |
| S6W        | ACCESSORY-SEAT COVER - MUDDER (PROTECTIVE)                           |
| SAI        | ACCESSORY-SILL PLATES - STAINLESS                                    |
| SAO        | ACCESSORY-SMOKERS PACKAGE                                            |
| SD5        | ACCESSORY-TIRE PRESSURE MONITOR                                      |
| SDE        | ACCESSORY-TRAILER HITCH - REMOVABLE                                  |
| SDI        | ACCESSORY-TRIANGLE - REFLECTIVE                                      |
| SFE        | ACCESSORY-WHEEL LOCKS                                                |
| SFZ        | ACCESSORY-EMBLEM - EXTERIOR - DESIGN 1                               |
| SIF        | ACCESSORY-RSE - PORTABLE MEDIA CONNECTIVITY PACKAGE                  |
| SIL        | ACCESSORY-RSE - PORTABLE MEDIA CONNECTIVITY PKG - W/INTEGRATED POWER |
| SJ9        | ACCESSORY-GRILLE / GRILLE INSERTS - ALTERNATE FINISH 1               |
| SLY        | WHEEL-20 X 8.0, J, ALUMINUM, DESIGN 7                                |
| SN6        | WHEEL-20 X 8.0, J, ALUMINUM, DESIGN 9                                |
| SP6        | WHEEL-20 X 8.0, J, ALUMINUM, DESIGN 14                               |
| SR2        | ACCESSORY-RSE - DUAL HEADREST DISPLAY W/WIRELESS CONNECTIVITY        |
| SR3        | ACCESSORY-RSE - DUAL HEADREST DISPLAY W/WIRELESS CONNECTIVITY & DVD  |
| SS8        | WHEEL-20 X 8.0, J, ALUMINUM, DESIGN 16                               |
| SS9        | WHEEL-20 X 8.0, J, ALUMINUM, DESIGN 17                               |
| T3U        | LAMP FRT FOG-FRT FOG                                                 |
| T4F        | HEADLAMPS-HIGH INTENSITY DISCHARGE                                   |
| T4L        | HEADLAMPS-LED                                                        |
| T79        | LAMP-FOG, RR                                                         |
| T7E        | LAMP SYSTEM-DAYTIME RUNNING, LED                                     |
| T89        | LAMP-TAIL & STOP, EXPORT                                             |
| T90        | LAMP-SIGNALING & MARKER, EXPORT                                      |
| TB5        | BODY EQUIPMENT-LIFT GATE (POWER)                                     |
| TB8        | CONTROL, HEADLAMPS-RH RULE OF THE ROAD                               |
| TC2        | BODY EQUIPMENT-LIFT GATE, POWER, HANDS FREE                          |
| TDM        | MODE-TEEN DRIVER SETTINGS                                            |
| TFK        | ALARM-SEAT BELT WARNING                                              |
| TQ5        | HEADLAMP HIGH BEAM-AUTO CONTROL                                      |
| TR6        | CONTROL, HEADLAMPS-LEVELING SYSTEM, MANUAL                           |
| U05        | HORN-DUAL                                                            |
| U19        | SPEEDOMETER-INST, KILO & MILES, KILO ODOMETER                        |
| U2K        | DIGITAL AUDIO SYSTEM-S-BAND                                          |
| U80        | DISPLAY-COMPASS                                                      |
| UD7        | PARK ASSIST-REAR                                                     |

| <b>RPO</b> | <b>Description</b>                                                                    |
|------------|---------------------------------------------------------------------------------------|
| UDA        | COMMUNICATION SYSTEM-VEHICLE, DEACTIVATED                                             |
| UDC        | DISPLAY INSTRUMENT-DRIVER INFO ENHANCED (ONE COLOR GRAPHIC)                           |
| UDD        | DISPLAY INSTRUMENT-DRIVER INFO ENHANCED (MULTI COLOR STANDARD GRAPHIC)                |
| UE1        | COMMUNICATION SYSTEM-VEHICLE, ONSTAR                                                  |
| UE3        | COMMUNICATION SYSTEM-VEHICLE, CHEVYSTAR                                               |
| UE4        | SENSOR INDICATOR-FOLLOWING DISTANCE                                                   |
| UEU        | SENSOR INDICATOR-FORWARD COLLISION ALERT                                              |
| UFG        | SENSOR INDICATOR-REAR CROSS TRAFFIC ALERT                                             |
| UG1        | OPENER-GARAGE DOOR, UNIVERSAL                                                         |
| UGN        | COLL IMMINENT BRK-ALL SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| UHX        | LANE ACTIVE SAFETY-KEEP ASSIST                                                        |
| UHY        | COLL IMMINENT BRK-LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| UI3        | COMMUNICATION SYSTEM-VEHICLE, ERA GLONASS                                             |
| UJ5        | ACCESSORY-DVD ENTERTAINMENT SYSTEM - HEADREST - DUAL                                  |
| UKC        | SIDE ACTIVE SAFETY-OBSTACLE DETECTION ENHANCED                                        |
| UKJ        | PED DETECTION FRT-BASIC, PEDESTRIANS                                                  |
| UQA        | SPEAKER SYSTEM-PREMIUM AUDIO, BRANDED AMPLIFIER                                       |
| UQF        | SPEAKER SYSTEM-STANDARD AUDIO                                                         |
| URC        | SWITCH-FLEXRIDE MODE SYSTEM                                                           |
| UVD        | STEERING WHEEL HEAT-MANUAL                                                            |
| UVH        | VISION-360 VIEW, MONO, ANALOG                                                         |
| V08        | COOLING SYSTEM-HEAVY DUTY                                                             |
| V33        | TOOL KIT-ROAD, EMERGENCY                                                              |
| V59        | RAIL-ROOF                                                                             |
| V64        | RAIL-ROOF, SILVER                                                                     |
| V76        | HOOK-TOW                                                                              |
| V78        | VEHICLE STATEMENT-(NONE)                                                              |
| V79        | VEHICLE STATEMENT-CUSTOMS UNION (INCLUDING RUSSIA)                                    |
| V83        | VEHICLE STATEMENT-ECE ORGANIZATION                                                    |
| V87        | VEHICLE STATEMENT-GULF STATES ORGANIZATION                                            |
| V8C        | VEHICLE STATEMENT-MEXICO                                                              |
| V8D        | VEHICLE STATEMENT-US                                                                  |
| V8E        | VEHICLE STATEMENT-CANADA                                                              |
| V8I        | VEHICLE STATEMENT-ISRAEL                                                              |
| V92        | TRAILER PROVISIONS-                                                                   |
| VAV        | ACCESSORY-FLOOR MATS - ALL WEATHER                                                    |
| VDZ        | INDICATOR-HAZARD WARNING, AUTOMATIC ACTIVATION                                        |
| VFT        | PROTECTOR-VEHICLE, CORROSION PREVENTIVE                                               |
| VGC        | PROTECTOR-FILM, PAINT ETCH PREVENTIVE                                                 |
| VGP        | PROTECTOR-IMPACT, PEDESTRIAN                                                          |
| VI4        | ACCESSORY-FLOOR MATS - PREMIUM CARPET - 3RD ROW                                       |
| VJ2        | LABEL, EXPORT-HEADLAMP ADJUST                                                         |
| VJ4        | LABEL, EXPORT-CHILD SEAT LOCATION                                                     |
| VK3        | LICENSE PLATE FRONT-FRT MOUNTING PKG                                                  |
| VKN        | ACCESSORY-FLOOR MATS - ALL WEATHER - 3RD ROW                                          |
| VKU        | ACCESSORY-MIRROR CAPS - CHROME                                                        |
| VL2        | LABEL, SPARE-CAUTION, COMPACT SPARE                                                   |
| VL4        | LICENSE PLATE FRONT-FRT MOUNTING PKG, EEC                                             |
| VLI        | ACCESSORY-MAT - TRUNK / CARGO AREA                                                    |

| RPO | Description                                         |
|-----|-----------------------------------------------------|
| VLL | ACCESSORY-CROSS RAILS - ROOF RACK - REMOVABLE       |
| VP6 | NOISE CONTROL-                                      |
| VPM | MODIFICATION-NOISE CONTROL, MEXICO                  |
| VQK | ACCESSORY-SPLASH GUARDS - CUSTOM MOLDED             |
| VR5 | PROVISIONS-SLOW VEHICLE WARNING TRIANGLE MOUNTING   |
| VR6 | HOOK-TIE-DN SHPG                                    |
| VRS | ACCESSORY-CARGO SECURITY SHADE                      |
| VRV | ACCESSORY-SPLASH GUARDS - CUSTOM MOLDED - PAINTED   |
| VT7 | OWNERS MANUAL-ENGLISH LANGUAGE                      |
| VTI | SHUTTERS-FRONT GRILLE, ACTIVE, UPR                  |
| VV4 | COMMUNICATION EQUIP-MOBILE INTERNET CONNECTIVITY    |
| VWD | ACCESSORY-CENTER CAP - WHEEL - DESIGN 4             |
| VXW | ACCESSORY-ASSIST STEPS - MOLDED                     |
| VYW | ACCESSORY-FLOOR MATS - PREMIUM CARPET - DESIGN 1    |
| VZ3 | LABEL-MERCURY DISPOSAL NOTIFICATION                 |
| W2D | ACCESSORY-CARGO NET                                 |
| WBL | SALES PACKAGE-SPORT                                 |
| WH6 | ACCESSORY-CARGO NET - FLOOR MOUNTED                 |
| WL1 | ORNAMENTATION-NAME PLATE "RS" RR                    |
| WMI | SHUTTERS-FRONT GRILLE, ACTIVE, UPR AND LWR          |
| WMJ | VIN MODEL YEAR-2018                                 |
| WPL | SALES PACKAGE-LUXURY                                |
| X88 | MARKET BRAND-CHEVROLET                              |
| XAI | ACCESSORY-TIRE ALL-255/55R20 SL 107H BW AL3 VAR 1   |
| XL8 | FREQUENCIES RATING-433 MHZ                          |
| Y5G | SALES PACKAGE-TURBO SPORT                           |
| YF5 | CERTIFICATION-EMISSION, CALIFORNIA                  |
| YM8 | IDENTIFICATION-LIMITED PERSONALIZATION OPTION (LPO) |
| Z49 | COUNTRY-CANADA                                      |
| Z5A | MODEL CONVERSION-L                                  |
| ZCD | TIRE SPARE-T135/70R18 SL 104M BW SPR                |
| ZL3 | SALES PACKAGE-CONVENIENCE                           |

## FASTENERS

### Metric Fasteners

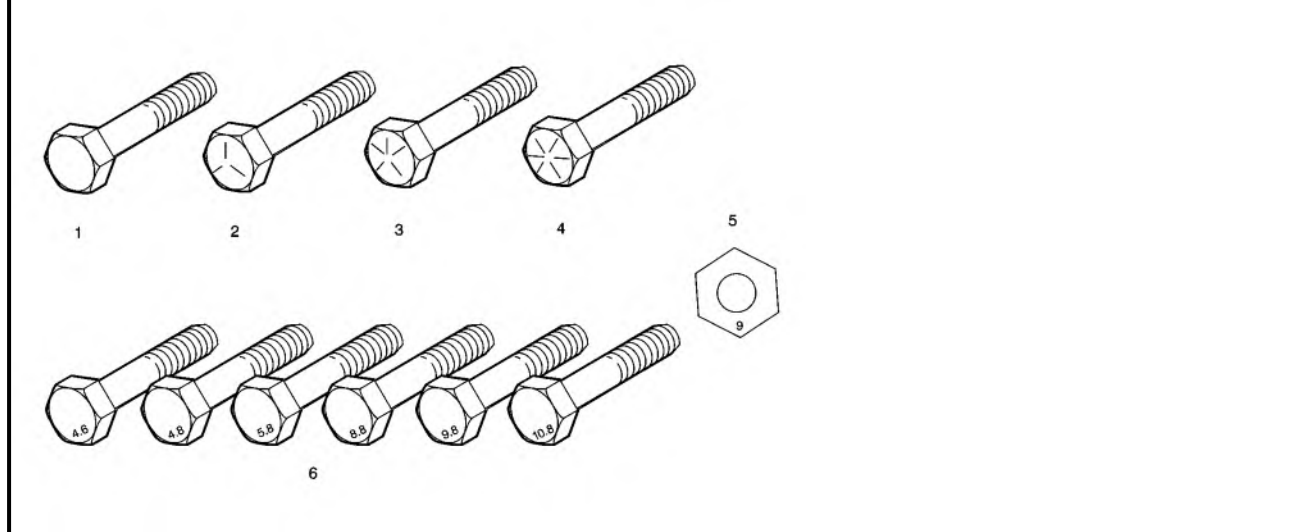
This vehicle provides fastener dimensions using the metric system. Most metric fasteners are approximate in diameter to equivalent English fasteners. Make replacements using fasteners of the same nominal diameter, thread pitch, and strength.

A number marking identifies the OE metric fasteners except cross-recess head screws. The number also indicates the strength of the fastener material. A Posidrive® or Type 1A cross-recess identifies a metric cross-recess screw. For best results, use a Type 1A cross-recess screwdriver, or equivalent, in Posidrive® recess head screws.

GM Engineering Standards and North American Industries have adopted a portion of the ISO-defined standard metric fastener sizes. The purpose was to reduce the number of fastener sizes used while retaining the best thread qualities in each thread size. For example, the metric M6.0 X 1 screw, with nearly the same diameter and 25.4 threads per inch replaced the English 1/4 - 20 and 1/4 - 28 screws. The thread pitch is midway between the English coarse and fine thread pitches.

### Fastener Strength Identification

|  |
|--|
|  |
|--|



| Callout | Component Name                                             |
|---------|------------------------------------------------------------|
| 1       | English Bolt, Grade 2 (Strength Class)                     |
| 2       | English Bolt, Grade 5 (Strength Class)                     |
| 3       | English Bolt, Grade 7 (Strength Class)                     |
| 4       | English Bolt, Grade 8 (Strength Class)                     |
| 5       | Metric Nut, Strength Class 9                               |
| 6       | Metric Bolts, Strength Class Increases as Numbers Increase |

The most commonly used metric fastener strength property classes are 9.8 and 10.9. The class identification is embossed on the head of each bolt. The English, inch strength classes range from grade 2 to grade 8. Radial lines are embossed on the head of each bolt in order to identify the strength class. The number of lines on the head of the bolt is 2 lines less than the actual grade. For example, a grade 8 bolt will have 6 radial lines on the bolt head. Some metric nuts are marked with a single digit strength identification number on the nut face.

The correct fasteners are available through GM SPO. Many metric fasteners available in the aftermarket parts channels are designed to metric standards of countries other than the United States, and may exhibit the following:

- Lower strength
- No numbered head marking system
- Wrong thread pitch

The metric fasteners on GM products are designed to new, international standards. The following are the common sizes and pitches, except for special applications:

- M6.0 X 1
- M8 X 1.25
- M10 X 1.5
- M12 X 1.75
- M14 X 2.00
- M16 X 2.00

### Prevailing Torque Fasteners

Prevailing torque fasteners create a thread interface between the fastener and the fastener counterpart in order to prevent the fastener from loosening.

#### All Metal Prevailing Torque Fasteners

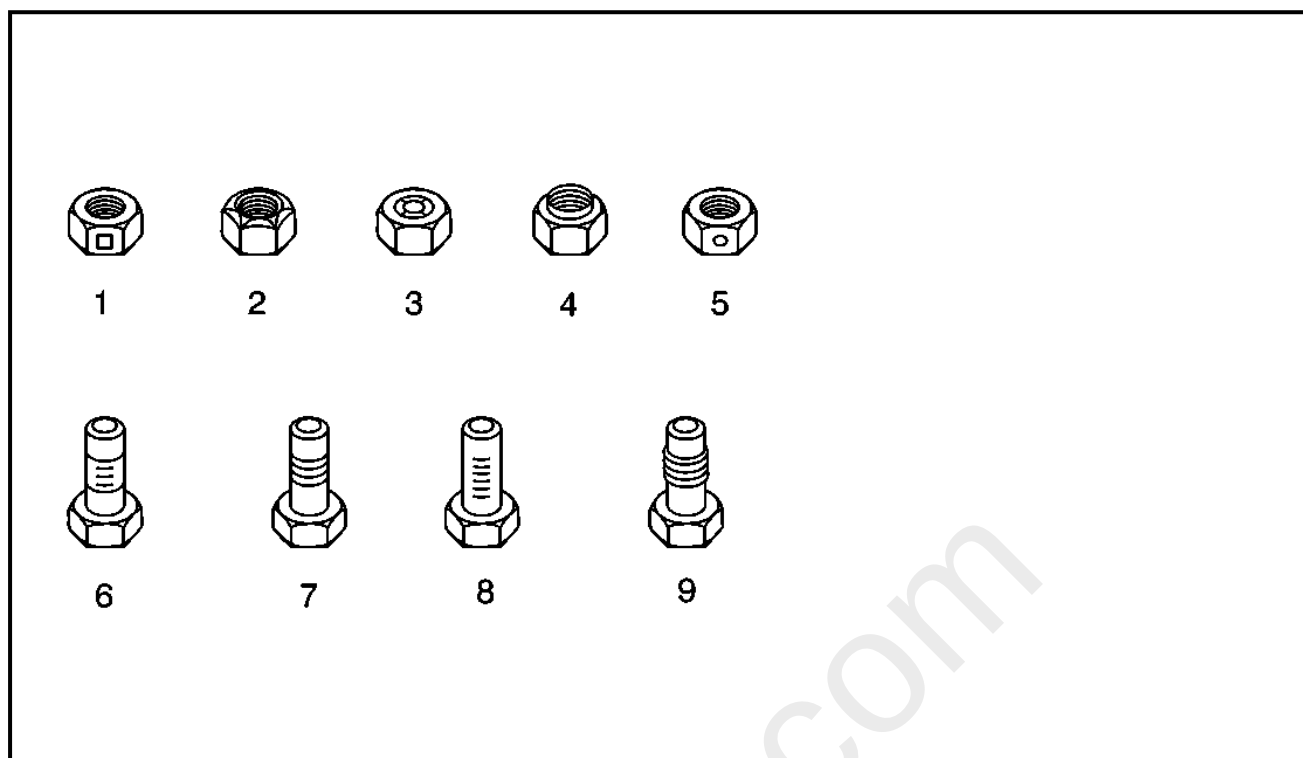
These fasteners accomplish the thread interface by a designed distortion or deformation in the fastener.

#### Nylon Interface Prevailing Torque Fasteners

These fasteners accomplish the thread interface by the presence of a nylon material on the fastener threads.

## Adhesive Coated Fasteners

These fasteners accomplish the thread interface by the presence of a thread-locking compound on the fastener threads. Refer to the appropriate repair procedure in order to determine if the fastener may be reused and the applicable thread-locking compound to apply to the fastener.



| Callout | Component Name                                        |
|---------|-------------------------------------------------------|
| 1       | Prevailing Torque Nut, Center Lock Type               |
| 2       | Prevailing Torque Nut, Top Lock Type                  |
| 3       | Prevailing Torque Nut, Nylon Patch Type               |
| 4       | Prevailing Torque Nut, Nylon Washer Insert Type       |
| 5       | Prevailing Torque Nut, Nylon Insert Type              |
| 6       | Prevailing Torque Bolt, Dry Adhesive Coating Type     |
| 7       | Prevailing Torque Bolt, Thread Profile Deformed Type  |
| 8       | Prevailing Torque Bolt, Nylon Strip Type              |
| 9       | Prevailing Torque Bolt, Out-of-Round Thread Area Type |

A prevailing torque fastener may be reused ONLY if:

- The fastener and the fastener counterpart are clean and not damaged
- There is no rust on the fastener
- The fastener develops the specified minimum torque against its counterpart prior to the fastener seating

## Metric Prevailing Torque Fastener Minimum Torque Development

| Application                           | Specification |         |
|---------------------------------------|---------------|---------|
|                                       | Metric        | English |
| All Metal Prevailing Torque Fasteners |               |         |
| • 6 mm                                | 0.4 N.m       | 4 lb in |
| • 8 mm                                | 0.8 N.m       | 7 lb in |
|                                       |               |         |

| Application                                 | Specification |          |
|---------------------------------------------|---------------|----------|
|                                             | Metric        | English  |
| • 10 mm                                     | 1.4 N.m       | 12 lb in |
| • 12 mm                                     | 2.1 N.m       | 19 lb in |
| • 14 mm                                     | 3 N.m         | 27 lb in |
| • 16 mm                                     | 4.2 N.m       | 37 lb in |
| • 20 mm                                     | 7 N.m         | 62 lb in |
| • 24 mm                                     | 10.5 N.m      | 93 lb in |
| Nylon Interface Prevailing Torque Fasteners |               |          |
| • 6 mm                                      | 0.3 N.m       | 3 lb in  |
| • 8 mm                                      | 0.6 N.m       | 5 lb in  |
| • 10 mm                                     | 1.1 N.m       | 10 lb in |
| • 12 mm                                     | 1.5 N.m       | 13 lb in |
| • 14 mm                                     | 2.3 N.m       | 20 lb in |
| • 16 mm                                     | 3.4 N.m       | 30 lb in |
| • 20 mm                                     | 5.5 N.m       | 49 lb in |
| • 24 mm                                     | 8.5 N.m       | 75 lb in |

#### English Prevailing Torque Fastener Minimum Torque Development

| Application                           | Specification |            |
|---------------------------------------|---------------|------------|
|                                       | Metric        | English    |
| All Metal Prevailing Torque Fasteners |               |            |
| • 1/4 in                              | 0.5 N.m       | 4.5 lb in  |
| • 5/16 in                             | 0.8 N.m       | 7.5 lb in  |
| • 3/8 in                              | 1.3 N.m       | 11.5 lb in |
| • 7/16 in                             | 1.8 N.m       | 16 lb in   |

| Application                                 | Specification |          |
|---------------------------------------------|---------------|----------|
|                                             | Metric        | English  |
| • 1/2 in                                    | 2.3 N.m       | 20 lb in |
| • 9/16 in                                   | 3.2 N.m       | 28 lb in |
| • 5/8 in                                    | 4 N.m         | 36 lb in |
| • 3/4 in                                    | 7 N.m         | 62 lb in |
| Nylon Interface Prevailing Torque Fasteners |               |          |
| • 1/4 in                                    | 0.3 N.m       | 3 lb in  |
| • 5/16 in                                   | 0.6 N.m       | 5 lb in  |
| • 3/8 in                                    | 1 N.m         | 9 lb in  |
| • 7/16 in                                   | 1.3 N.m       | 12 lb in |
| • 1/2 in                                    | 1.8 N.m       | 16 lb in |
| • 9/16 in                                   | 2.5 N.m       | 22 lb in |
| • 5/8 in                                    | 3.4 N.m       | 30 lb in |
| • 3/4 in                                    | 5 N.m         | 45 lb in |

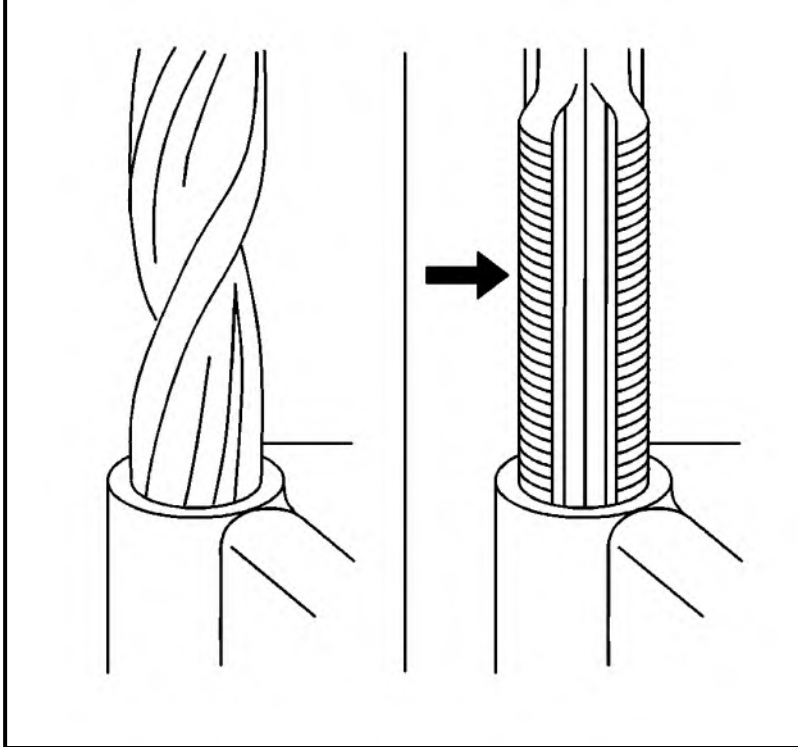
## THREAD INSERTS

General Purpose Thread Repair Kits.

These kits are available commercially.

### Repair Procedure

1.



**WARNING:** Refer to [Safety Glasses Warning](#) .

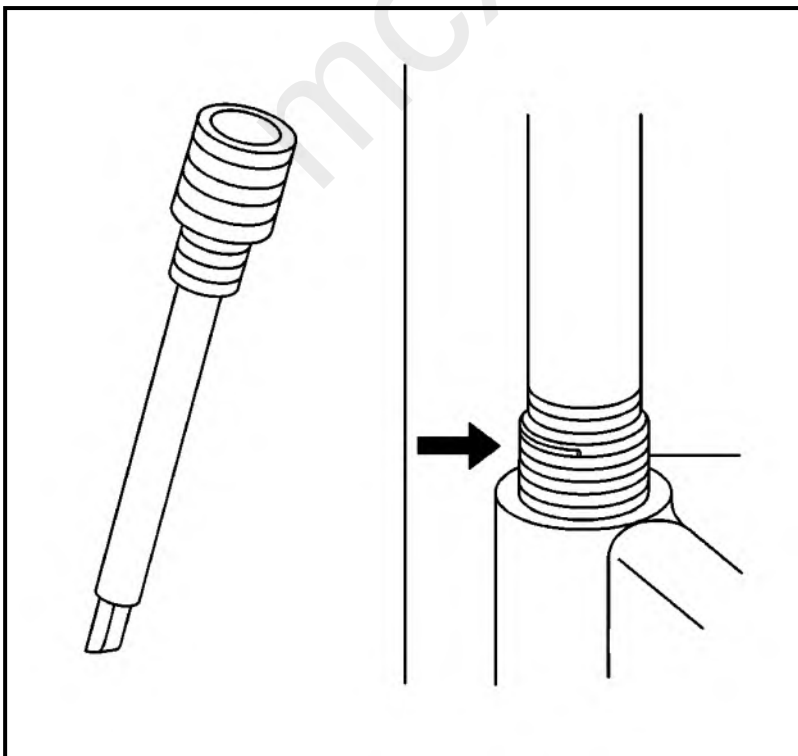
**NOTE:** Refer to the thread repair kit manufacturer's instructions regarding the size of the drill and tap to use.

**Avoid any buildup of chips. Back out the tap every few turns and remove the chips.**

Determine the size, the pitch, and the depth of the damaged thread. If necessary, adjust the stop collars on the cutting tool and tap to the required depth.

2. Drill out the damaged threads. Clean out any chips.
3. Lubricate the tap with light engine oil. Tap the hole. Clean the threads.

4.



Thread the thread insert onto the mandrel of the installer. Engage the tang of the insert onto the end of the mandrel.

**NOTE:** The insert should be flush to one turn below the surface.

5. Lubricate the insert with light engine oil, except when installing in aluminum and install the insert.
6. If the tang of the insert does not break off when backing out the installer, break the tang off with a drift.

## REGISTERED AND NON-REGISTERED TRADEMARKS

Listed below are Registered Trademarks (®) or Non-Registered Trademarks (™) which may appear in this service information.

| A                       |
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| O                      |
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| P                      |
| PASS-KEY®              |
| PASS-KEYII®            |
| PASSLOCK™              |
| PK3®                   |
| Pozidriv®              |
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| Q                      |
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| R                      |
| RAINSENSE™             |
| Rapid Fire®            |
| S                      |
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| Sunrayce®          |
| Superlube®         |
| Syclone®           |
| <b>T</b>           |
| Tech 2®            |
| Techline®          |
| Teflon®            |
| Tefzel®            |
| Theft-IA®          |
| Theftlock®         |
| Tiltmaster®        |
| TORX®              |
| Transjel®          |
| Transguide®        |
| Twilight Sentinel® |
| <b>U</b>           |
| Ultralite®         |
| <b>V</b>           |
| Velcro®            |
| <b>W</b>           |
| Weatherpack™       |

## DOOR LOCK AND IGNITION LOCK FOLDING AND NON-FOLDING KEY CUTTING

High Security keys are available from the service parts system.

Obtain the key code from the security card or from the GM Dealer World, Parts, Key Code Look Up system.

If you have the key code and access to a Triax-E., BD Laser or other code key cutting machine from the GM Dealer Equipment Catalog, you may cut a new key.

If you have the original key and access to a Matrix S, BD Laser or other key duplicating machine, you may duplicate the key.

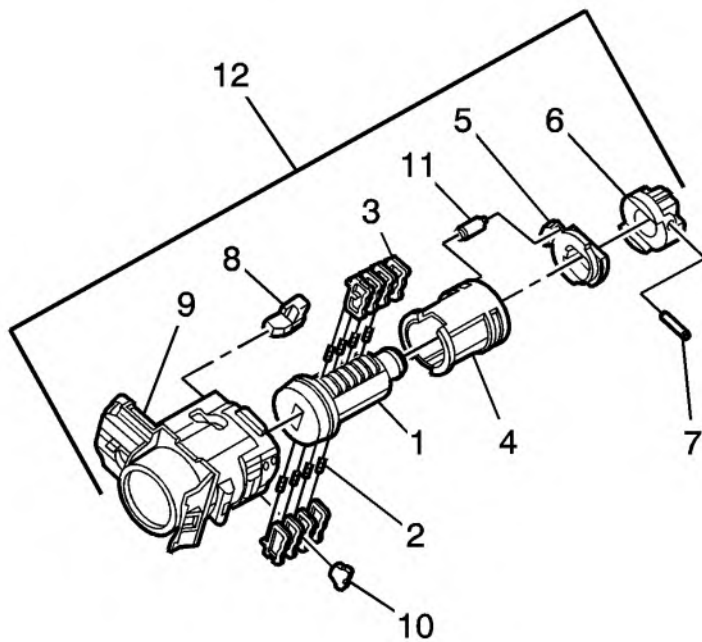
If you do not have a high security key cutting machine, order the side cut key from the service parts system. Include the key code in the NOTE field. Indicate the timing and the method of the shipment.

Inspect the new key operation in the lock cylinder. Ensure the new key operates effectively.

## FRONT SIDE DOOR LOCK CYLINDER CODING (FREE WHEELING)

### Special Tools

**BO-49753** Assembly Tool



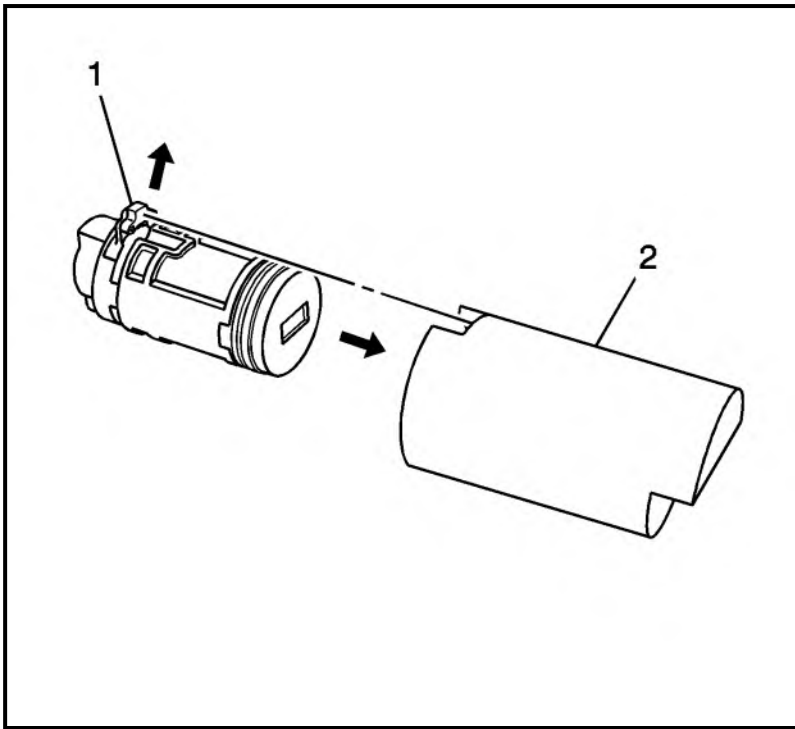
The door lock cylinder uses 8 of the 8 cut positions. The tumbler positions are staggered from side to side, 4 on one side and 4 on the other, are not self-retaining, and are not snap in.

**NOTE:** All lock cylinders for side milled keys have right and left tumblers. The location of the tooth of the tumbler determines whether it is right of left. Illustrations in this procedure show the right tumblers on the top and the left tumblers on the bottom. All tumblers are marked 1R, 1L, 2R, or 2L. The number being cut depth and the letter meaning right or left.

1. Hold the door lock cylinder (1) so the side with the 4 tumbler spring pockets faces up, pocket nearest to the cylinder head.
2. Insert the tumbler springs (2) into the 4 spring pockets. This side uses left tumblers.
3. Install the tumbler (3) for key cut position one in the slot nearest to the front of the lock cylinder. Install the remaining tumblers, key cut positions 3, 5, and 7, following the key code and same process. Press the tumblers in place until they are secure.
4. Check the correct loading of the tumblers by inserting the key into the cylinder. All tumblers should be flush with the lock cylinder body.
5. Turn the cylinder so the side with the 4 tumbler spring wells faces up. This side uses right tumblers.
6. Insert the tumbler springs into the 4 spring pockets.
7. The first tumbler closest to the front of the lock cylinder to be loaded will be the second key cut position, the second number in the key code. Install the remaining tumblers for the key cut positions 4, 6, and 8. Press the tumblers in place until they are secure.
8. Check the correct loading of the tumblers by inserting the key into the cylinder. All tumblers should be flush with the lock cylinder body.
9. Insert the key and lightly lubricate the cylinder body diameter and tumbler surfaces and a small amount in the head of the cylinder using the supplied grease.
10. Insert the sleeve (4) onto the cylinder assembly.

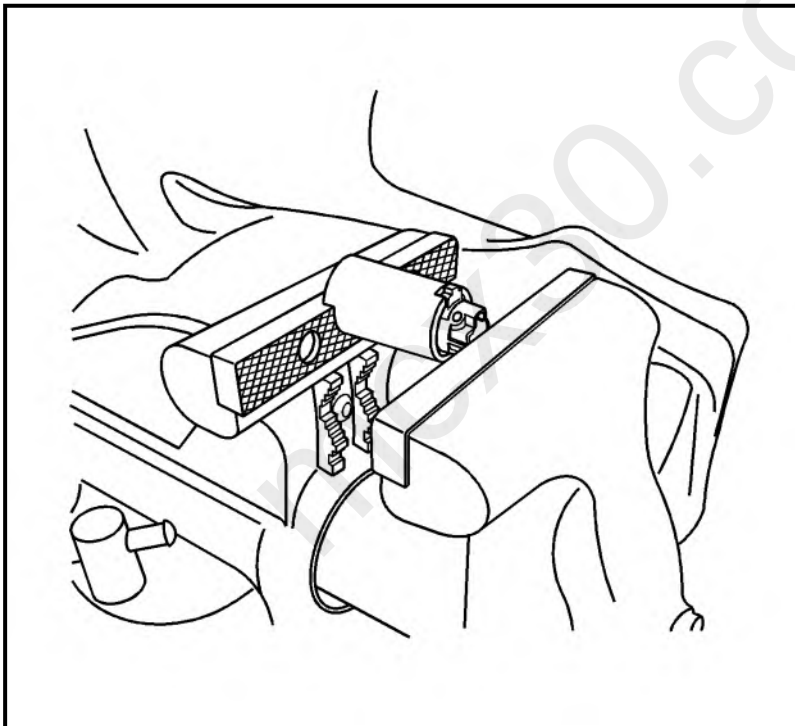
11. Insert the clutch (5) and driver (6) onto the cylinder (1).

12.



Load the cylinder into the **BO-49753** assembly tool so that the clutch (1) indexes with the notch in the opening of the tool (2).

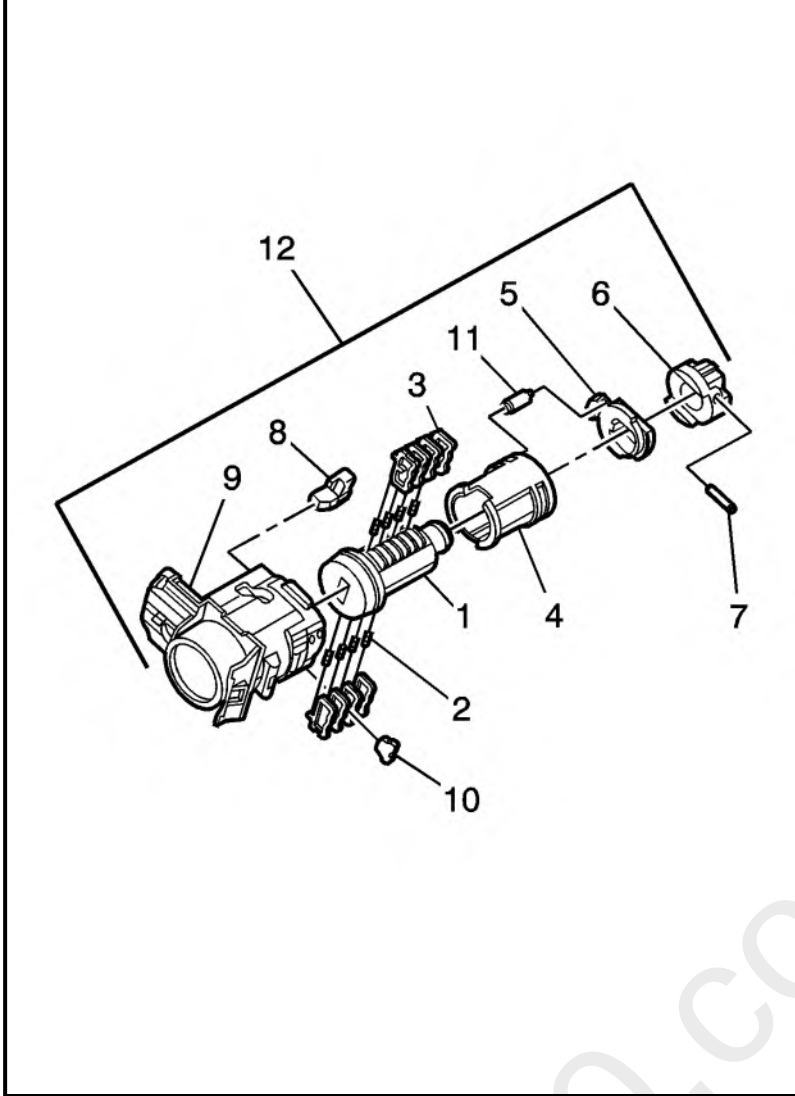
13.



Load the assembly tool with the lock cylinder into a vice and tighten the vice **ONLY** enough to hold the tool and lock the cylinder in place.

14.

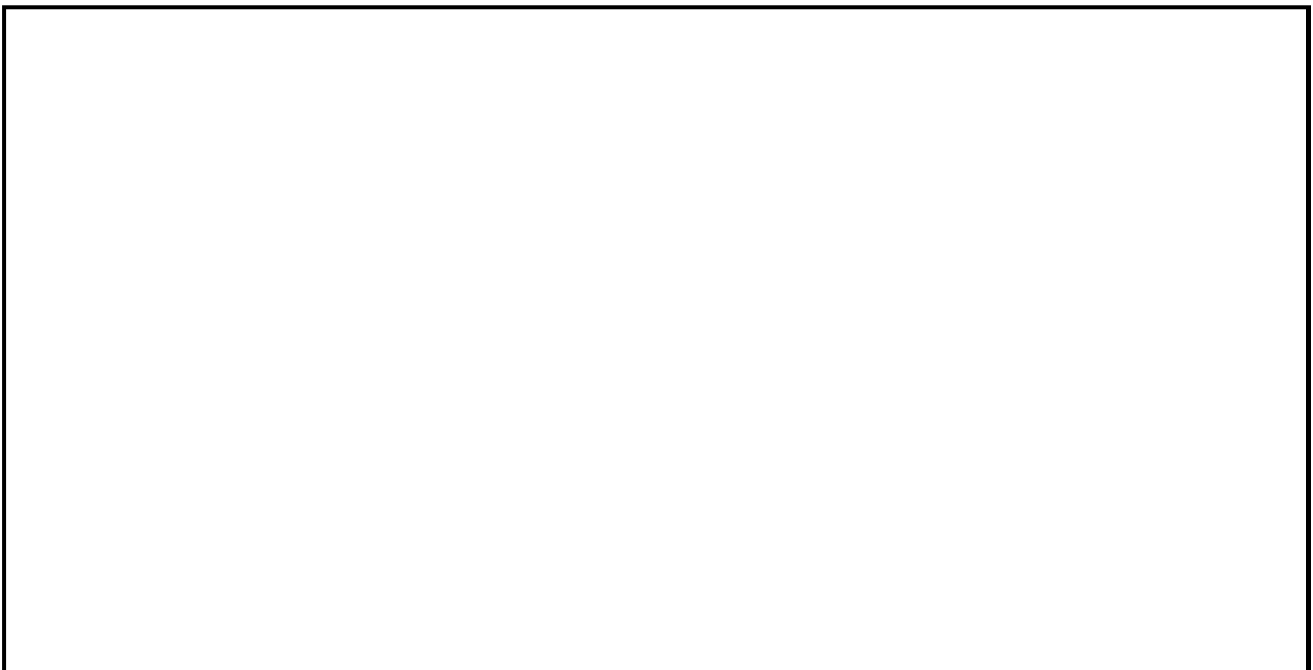


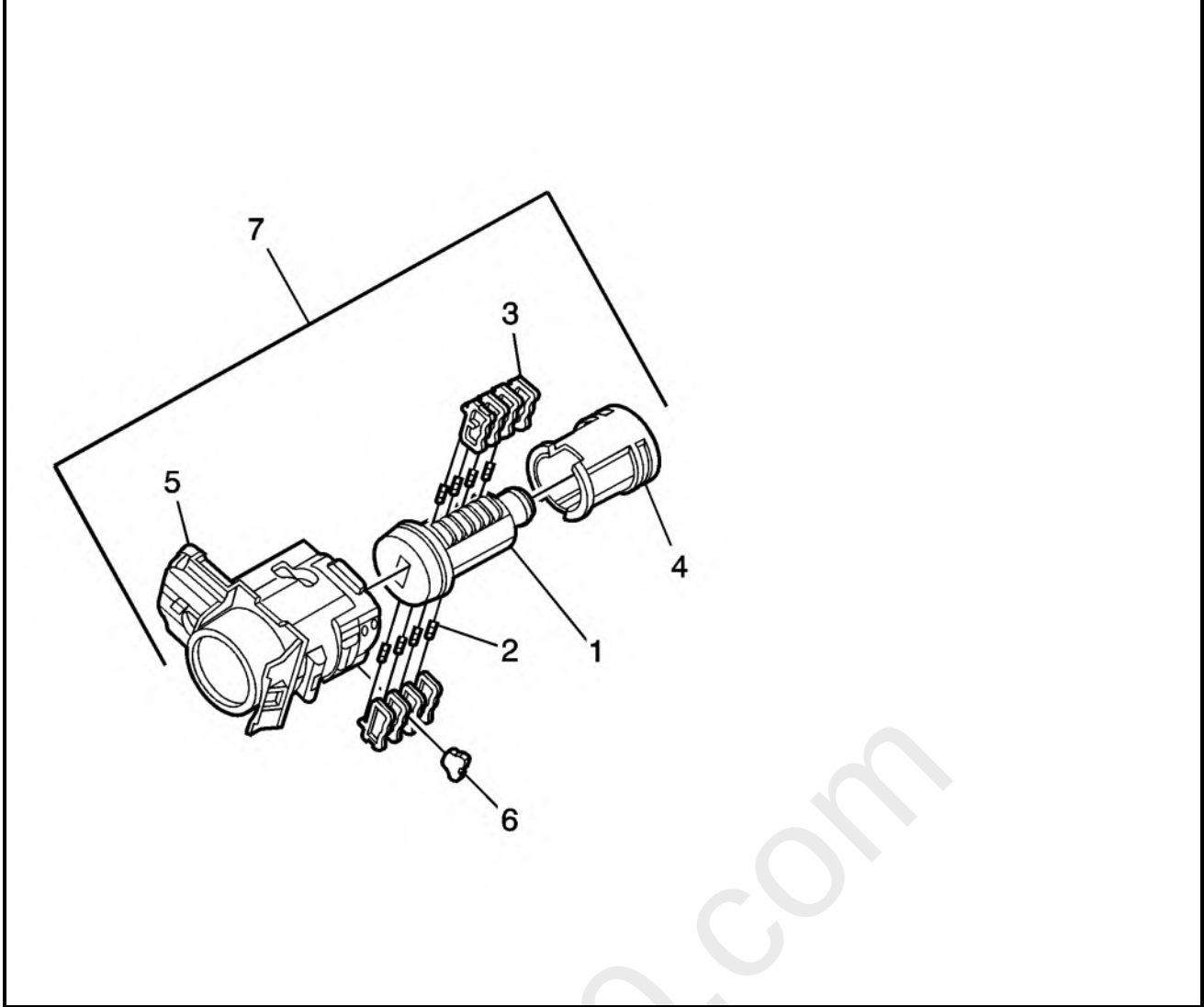


Insert the roll pin (7) into the driver (6) and install it using a 1/16 inch pin punch.

15. Insert the buffer (8) in the case (9), verify the buffer is properly seated.
16. Install the free wheel pin (11) in the sleeve (4) and clutch (5) and insert the assembly into the case (9).
17. With the lock cylinder assembly installed in the case (9), install the retainer (10) and stake the retainer in place using a small punch and hammer to peen the case material onto the exposed ends of the installed retainer (10).
18. Insert the key into the lock and function the lock to check for proper assembly and smooth operation.

### **FRONT SIDE DOOR LOCK CYLINDER CODING (NON FREE WHEELING)**





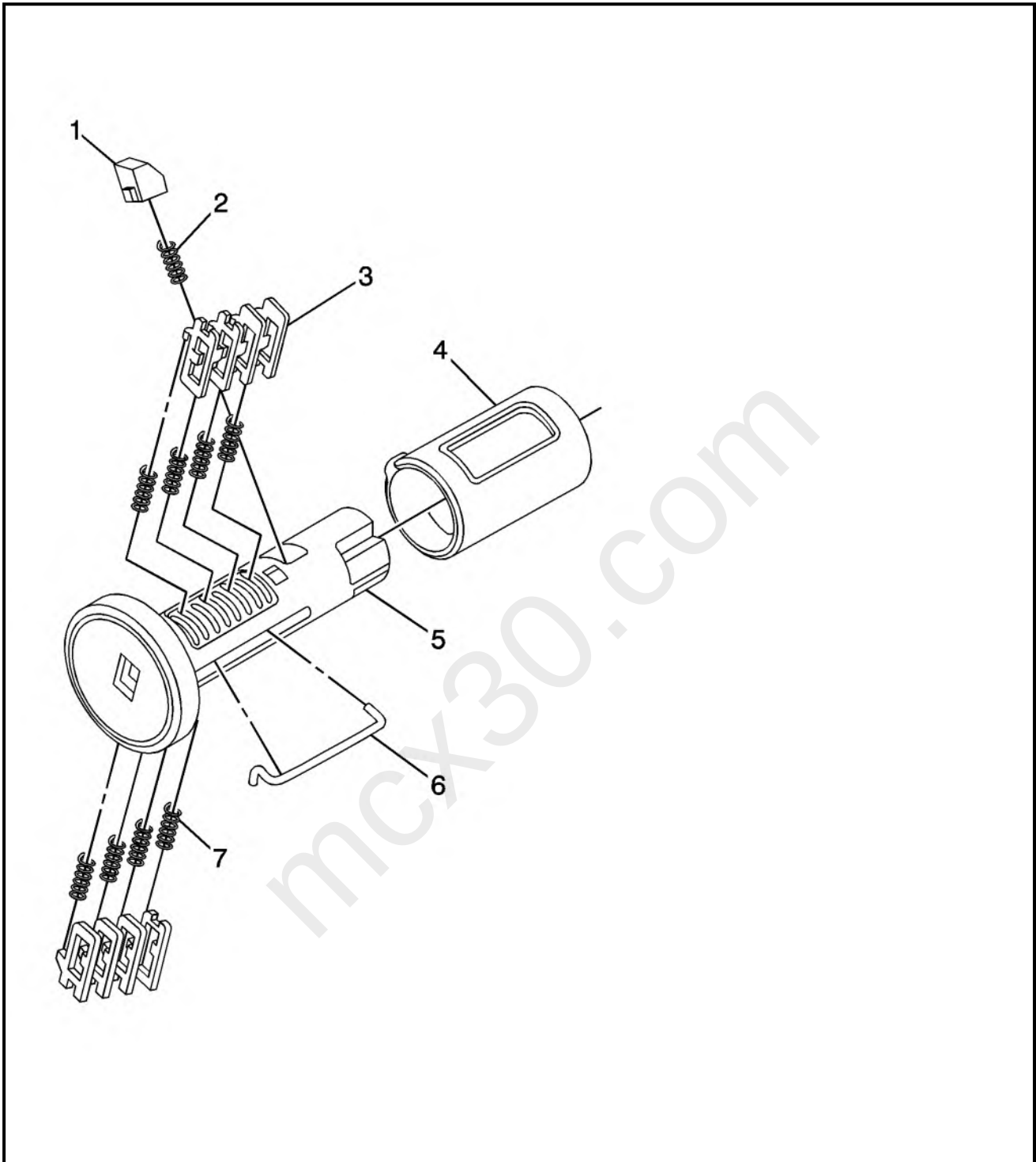
The door lock cylinder uses 8 of the 8 cut positions. The tumbler positions are staggered from side to side, 4 on one side and 4 on the other, are not self-retaining, and are not snap in.

**NOTE:** All lock cylinders for side milled keys have right and left tumblers. The location of the tooth of the tumbler determines whether it is right of left. Illustrations in this procedure show the right tumblers on the top and the left tumblers on the bottom. All tumblers are marked 1R, 1L, 2R, or 2L. The number being cut depth and the letter meaning right or left.

1. Hold the door lock cylinder (1) so the side with the 4 tumbler spring pockets faces up, pocket nearest to the cylinder head.
2. Insert the tumbler springs (2) into the 4 spring pockets. This side uses left tumblers.
3. Install the tumbler (3) for key cut position one in the slot nearest to the front of the lock cylinder. Install the remaining tumblers, key cut positions 3, 5, and 7, following the key code and same process. Press the tumblers in place until they are secure.
4. Check the correct loading of the tumblers by inserting the key into the cylinder. All tumblers should be flush with the lock cylinder body.
5. Turn the cylinder so the side with the 4 tumbler spring wells faces up. This side uses right tumblers.
6. Insert the tumbler springs into the 4 spring pockets.
7. The first tumbler closest to the front of the lock cylinder to be loaded will be the second key cut position, the second number in the key code. Install the remaining tumblers for the key cut positions 4, 6, and 8. Press the tumblers in place until they are secure.
8. Check the correct loading of the tumblers by inserting the key into the cylinder. All tumblers should be flush with the lock cylinder body.
9. Insert the key and lightly lubricate the cylinder body diameter and tumbler surfaces and a small amount in the head of the cylinder using the supplied grease.
10. Insert the sleeve (4) onto the cylinder assembly.

11. Insert the assembly into the case (5).
12. With the lock cylinder assembly installed in the case (5), install the retainer (6) and stake the retainer in place using a small punch and hammer to peen the case material onto the exposed ends of the installed retainer (6).
13. Insert the key into the lock and function the lock to check for proper assembly and smooth operation.

### LOCK CYLINDER CODING - IGNITION



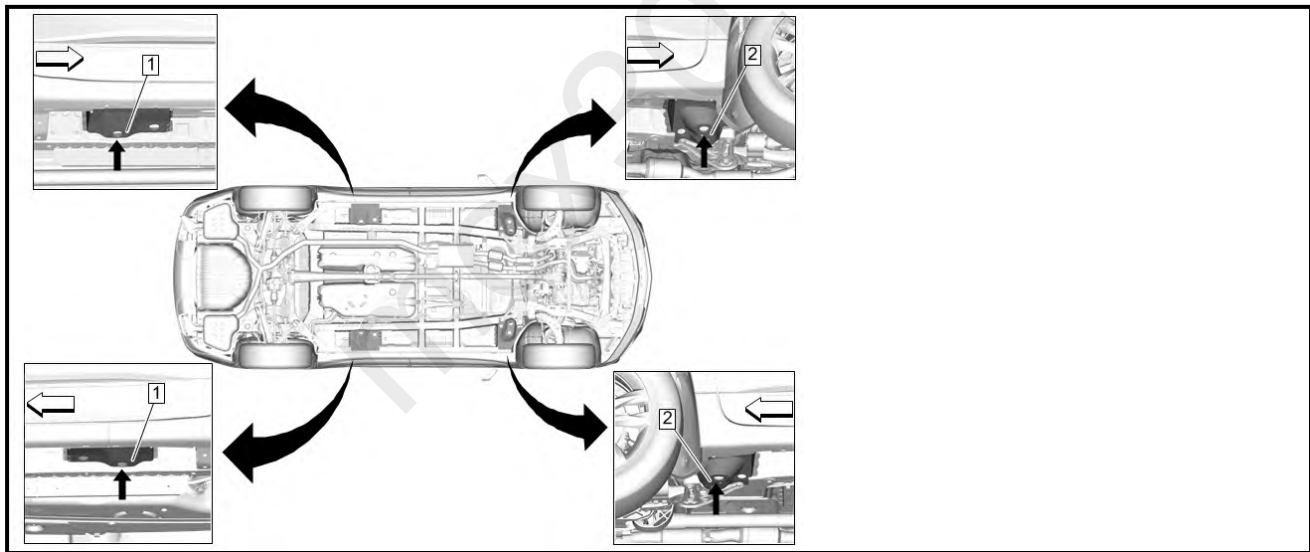
The ignition lock cylinder uses 8 key cut positions, 1 - 8. The ignition cylinder tumblers (3) are located on alternate sides of the cylinder (5). They are not snap-in and are not self-retaining. It follows the key code with the first tumbler being the first depth of the key code, closest to the head of the key.

**NOTE:**

**All lock cylinders for side milled keys have right and left tumblers. The location of the tooth of the tumbler determines whether it is right or left. Illustrations in this procedure show the right tumblers on the top and the left tumblers on the bottom. All tumblers are marked 1R, 1L, 2R, or 2L. The number being cut depth and the letter meaning right or left.**

1. Hold the ignition cylinder assembly (5) so the side with the tumbler spring pocket located closest to the head of the cylinder is facing up.
2. Insert the tumbler spring (7) into each of the 4 spring pockets of the cylinder assembly. This side of the cylinder used left tumblers.
3. The first tumbler (3) to be loaded will be the first key cut position, which is the first number in the key code. Install the tumbler in the slot over the spring. Install the remaining tumblers following the key code and same process, pressing the tumblers in place until they are secure.
4. Rotate the cylinder assembly. Insert the tumbler spring into each of the spring pockets of the cylinder assembly. This side of the cylinder used right tumblers.
5. The first tumbler (3) to be loaded will be the second key cut position, the second number in the key code. Install the first tumbler in the slot over the spring. Install the remaining tumblers following the key code and same process, pressing the tumblers in place until they are secure.
6. Inspect for correct loading of the tumblers by inserting the key into the cylinder. All tumblers should drop flush with the lock cylinder body diameter.
7. With the key in the cylinder assembly insert the round connector (6), insert the retainer spring (2) in the retainer slot located in the cylinder assembly. Insert the retainer (1) lining it up in the slot over the spring. Depress the retainer and hold.
8. Insert the cylinder into the sleeve (4) as shown in the print. Make sure the actuator stays located properly in the cylinder.
9. When the key is removed, the lock should stay together.
10. Lightly lubricate the outside surface in the tumbler area of in the lock body and down the key slot using the provided grease. Insert and extract the key 5 times to lubricate the keyway.
11. Insert the key and function the lock 3 times to distribute the grease inside the sleeve.
12. Verify the key position for inserting the lock into the column.

## LIFTING AND JACKING THE VEHICLE



**WARNING:** To avoid any vehicle damage, serious personal injury or death:

- When major components are removed from the vehicle and the vehicle is supported by a hoist, support the vehicle with jack stands at the opposite end from which the components are being removed and strap the vehicle to the hoist.
- When performing work in the engine compartment or under the vehicle, ensure that the hood is fully open, or opened to its secondary latch. When the hood is opened to the secondary latch, the vehicle will disable the remote start features from the key fob and OnStar mobile app. Failure to open the hood, or open the hood to the secondary latch while doing a repair in the engine compartment or under the vehicle can result in inadvertent vehicle starting which could result in personal injury or damage to a vehicle.

**WARNING:** To avoid any vehicle damage, serious personal injury or death, always use the jackstands to support the vehicle when lifting the vehicle with a jack.

**CAUTION:** Perform the following steps before beginning any vehicle lifting or jacking procedure:

- Remove or secure all of the vehicle contents in order to avoid any shifting or any movement that may occur during the vehicle lifting or jacking procedure.
- The lifting equipment or the jacking equipment weight rating must meet or exceed the weight of the vehicle and any vehicle contents.
- The lifting equipment or the jacking equipment must meet the operational standards of the lifting equipment or jacking equipment manufacturer.
- Perform the vehicle lifting or jacking procedure on a clean, hard, dry, level surface.
- Perform the vehicle lifting or jacking procedure only at the identified lift points. **DO NOT** allow the lifting equipment or jacking equipment to contact any other vehicle components.

Failure to perform the previous steps could result in damage to the lifting equipment or the jacking equipment, the vehicle, and/or the vehicle contents.

**NOTE:** Be sure to place a block pad between the lift pad surface and the vehicle or utilize an integrated lift with pad to prevent underbody damage.

### Vehicle Lifting - Frame Contact Lift

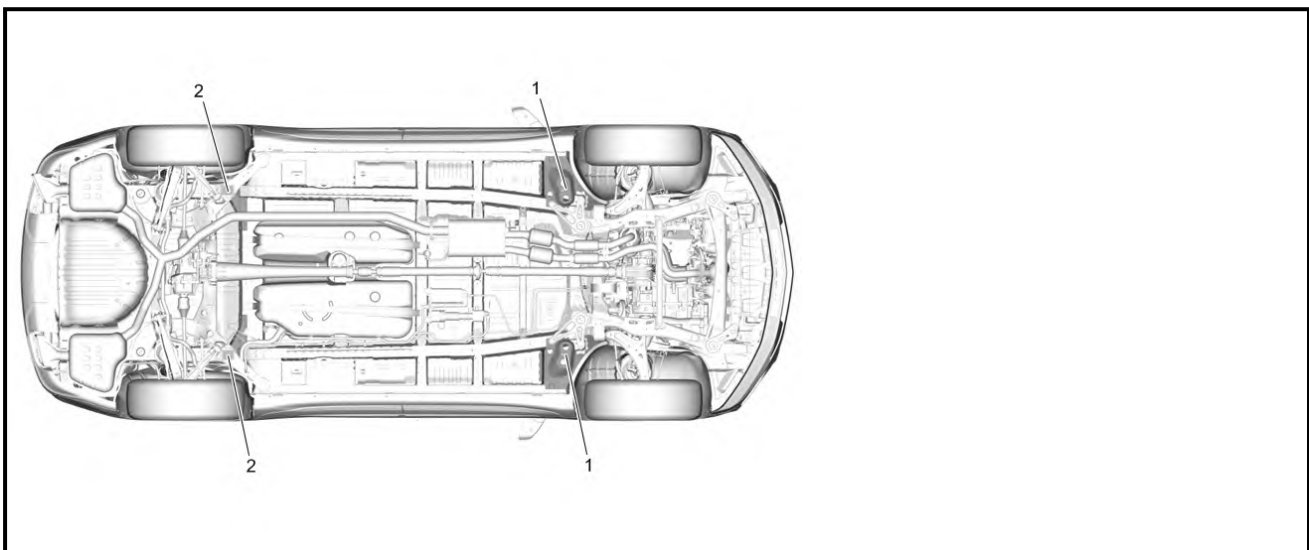
#### Front Lift Pads

When lifting the vehicle with a frame-contact lift, place the front lift pads on the front compartment outer side rail extension (2), as shown.

#### Rear Lift Pads

When lifting the vehicle with a frame-contact lift, place the rear lift pads on the underbody rear side rail extension (1), as shown.

### Vehicle Jacking and Supporting



**CAUTION:** When you are jacking the vehicle at the front locations, be certain that the jack or the jack lift pad does not contact the front fascia, front fascia air dam, or the front fenders. If such contact occurs, vehicle damage may

result. When jacking at selected front locations additional clearance may be required for the jacking points.

**NOTE:**

- When you are lifting a vehicle with a service jack, block the wheels at the opposite end from which you are lifting. Use jack stands to provide additional support.
- Be sure to place a block pad between the jack lift surface and the vehicle or utilize an integrated jack with pad to prevent underbody damage.

**Front of Vehicle**

When lifting the Front of the vehicle with a service jack, only lift the vehicle on the pad location (1), as shown.

When supporting the Front of the vehicle with a service jack stand, only support the vehicle on the pad location (1), as shown.

**Rear of Vehicle**

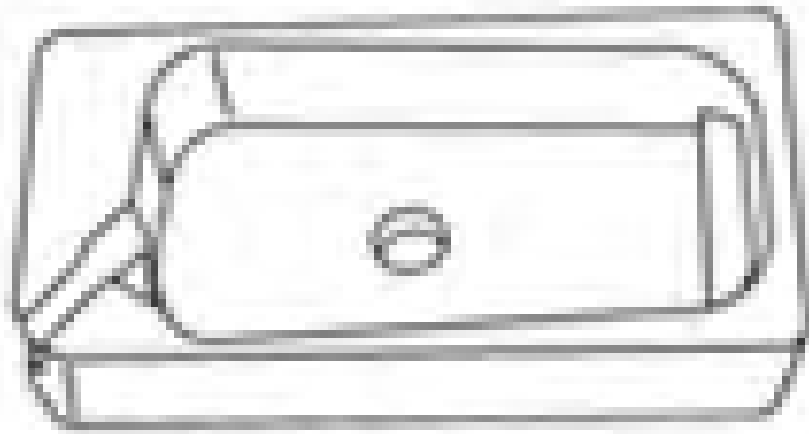
When lifting the Rear of the vehicle with a service jack, only lift the vehicle on the pad location (2), as shown.

When supporting the Rear of the vehicle with a service jack stand, only support the vehicle on the pad location (2), as shown.

**SPECIAL TOOLS AND EQUIPMENT**

**SPECIAL TOOLS**

| Illustration | Tool Number/<br>Description |
|--------------|-----------------------------|
|              |                             |

| Illustration                                                                                                                                                           | Tool Number/<br>Description              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
|   | BO-51098<br>Flip Key<br>Blade<br>Fixture |

## SPECIAL TOOLS ORDERING INFORMATION

### Special Tools

The special service tools shown in this service information that have product numbers beginning with J, BO, GE, CH, DT, EN, EL, SA, OR KM are available for worldwide distribution.

US, Canada and Caribbean only:

**NOTE:** For Special Service tools only - see different location below for diagnostic tools & equipment.

Bosch Automotive Service Solutions

28635 Mound Road

Warren

MI

48092-3499

U.S.A

Phone: 1-800-GM-TOOLS

Monday through Friday

8:00 am - 7:00 pm Eastern Standard Time

Fax: 1-800-578-7375 or 586-578-7321

gmspecialservicetools.service-solutions.com

Mexico, Including Central America:

Bosch Automotive Service Solutions

Mitla No. 442 Col. Vertiz Narvarte

03600 Mexico City

Mexico

Phone: +5255 2595 1630

Fax: +5255 2595 1639

Inquiries can be sent to: [herramientas@service-solutions.com](mailto:herramientas@service-solutions.com)

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Mitla No. 442 Col. Vertiz Narvarte

03600 Mexico City

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Phone: +5255 2595 1630

Fax: +5255 2595 1639

Inquiries can be sent to: [herramientas@service-solutions.com](mailto:herramientas@service-solutions.com)

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05805-000 São Paulo

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Phone: +55 11 5851-7477

Fax: +55 11 5853-7479

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Robert Bosch Korea Ltd, Service Solution

689-17 Geumjeong-dong, Gunpo-si, Gyeonggi-do, 435-862

Korea

Phone: 82-31-457-9520

[sales.korea@servicesolutions.com](mailto:sales.korea@servicesolutions.com)

Fax: 82-31-427-9522

Greater China, SGM

Bosch Automotive Service Solutions China

333 Fuquan Road North IBP, Changning District

Shanghai 200335 P.R.

Phone: 86-21-22182668

[sales.cn@service-solutions.com](mailto:sales.cn@service-solutions.com)

Fax: 0086 21 2218 2677

Australia:

Bosch Automotive Service Solutions Australia

1555 Centre Road,

Clayton

Vic. 3168

Phone: 1300 783 031

Fax: (3) 9541 6138

Inquiries can be sent to: [customerservice.au@service-solutions.com](mailto:customerservice.au@service-solutions.com)

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