VANDERHALL

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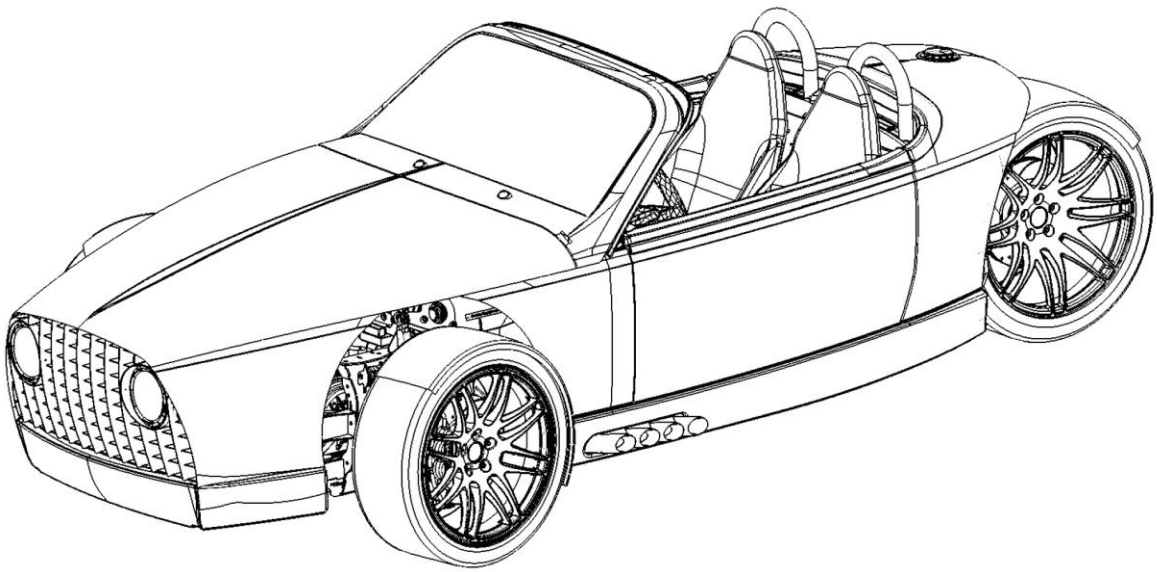
Service Manual



2016, 2017 Laguna

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1. General Information

1.1. General Information

1.1.1. Introduction

1.1.2. Foreword

This manual provides information on the diagnosis, the service procedures, the adjustments, and the specifications for the Vanderhall Laguna.

The technicians who understand the material in this manual and in appropriate Dealer Service Bulletins better serve the vehicle owners.

When this manual refers to a brand name, a part number, or a specific tool, you may use an equivalent product in place of the recommended item. All information, illustrations, and specifications in this manual are based on the latest product information available at the time of publication approval. Vanderhall Motorworks reserves the right to make changes at any time without notice.

1.1.3. Definition of Danger, Warning, Caution, and Note

The diagnosis and repair procedures in a Vanderhall Service Manual contain both general and specific Dangers, Warnings, Cautions, Notes or Importants.

Vanderhall is dedicated to the presentation of service information that helps the technician to diagnose and repair the systems necessary for the proper operation of the vehicle; however, certain procedures may present a hazard to the technician if they are not followed in the recommended manner. Dangers, Warnings, Cautions and Notes or Importants are elements designed to prevent these hazards, however, not all hazards can be foreseen. This information is placed at strategic locations within the service manual. This information is designed to prevent the following from occurring:

Serious bodily injury or death to the technician
Damage to the vehicle
Unnecessary vehicle repairs
Unnecessary component replacement
Improper repair or replacement of vehicle components

1.1.3.1. DANGER Defined

When encountering a DANGER, you will be asked to take a necessary action or not to take a prohibited action. If a DANGER is not heeded, the following consequences may occur:

Serious bodily injury or death to the technician
Serious bodily injury or death to other technicians in the workplace area

1.1.3.2. WARNING Defined

When encountering a WARNING, you will be asked to take a necessary action or not to take a prohibited action. If a WARNING is not heeded, the following consequences may occur:

Serious bodily injury to the technician
Serious bodily injury to other technicians in the workplace area
Serious bodily injury to the driver and/or passenger(s) of the vehicle, if the vehicle has been improperly repaired

1.1.3.3. CAUTION Defined

CAUTIONS call special attention to a necessary action or to a prohibited action. If a CAUTION is not heeded, the following consequences may occur:

Damage to the vehicle
Unnecessary vehicle repairs
Unnecessary component replacement
Improper operation or performance of the system or component under repair
Damage to any systems or components which are dependent upon the proper operation of the system or component under repair

Improper operation or performance of any systems or components which are dependent upon the proper operation or performance of the system or component under repair
Damage to fasteners, basic tools, or special tools
The leakage of coolant, lubricant, or other vital fluids

1.1.3.4. NOTE or IMPORTANT Defined

NOTE and IMPORTANT statements emphasize a necessary characteristic of a diagnostic or repair procedure. NOTE or IMPORTANT statements are designed to do the following:

Clarify a procedure
Present additional information for accomplishing a procedure
Give insight into the reason or reasons for performing a procedure in the manner recommended
Present information that will help to accomplish a procedure in a more effective manner
Present information that gives the technician the benefit of past experience in accomplishing a procedure with greater ease

1.2. Danger

In order to reduce the chance of death, personal injury and/or property damage, carefully observe the instructions that follow:

- This service manual is intended for use by professional, qualified technicians.
- Attempting repairs or service without the appropriate training, tools, and equipment could cause death or injury to you or others.
- This could also damage the vehicle, or cause the vehicle to operate improperly.
- Proper vehicle service and repair are important to the safety of the service technician and to the safe, reliable operation of all motor vehicles.
- If you need to replace a part, use the same part number or an equivalent part. Do not use a replacement part of lesser quality.
- The service procedures we recommend and describe in this service manual are effective methods of performing service and repair.
- Procedures may include navigational link references to other service procedures. It is important to understand all necessary precautions within these procedures before starting a procedure.
- Some of the procedures require the use of tools that are designed for specific purposes.
  - These tools, especially lifting equipment and devices, should be inspected for damage, defects, wear, defective welds, deformation and increase in length.
  - If the lifting equipment and devices fail the inspection, do NOT use.
- Any person who intends to use a replacement part, a service procedure, or a tool that is not recommended by Vanderhall, must first establish that there is no jeopardy to personal safety or the safe operation of the vehicle.
- This manual contains various “Dangers”, “Warnings” and “Cautions” that you must observe carefully in order to reduce the risk of personal injury during service or repair.
- Improper service or repair may damage the vehicle or render the vehicle unsafe.
- These “Dangers”, “Warnings” and “Cautions” are not exhaustive.
- Vanderhall Motorworks cannot possibly warn of all the potentially hazardous consequences of your failure to follow these instructions.in serious injury or death.

1.3. Symbols

The Vanderhall Laguna as well as this service manual has components and labels that utilize symbols instead of text. Symbols are often shown with text describing the operation or information related to a specific component, control, message, gage, or indicator

1.3.1.1. Vehicle symbol Chart

: Air Conditioning

: Antilock Brake System (ABS)

: Brake System Warning Light

: Charging System

: Cruise Control

: Do Not Puncture

: Fuses

: Headlamp High/Low-Beam Changer

: Malfunction Indicator Lamp

: Oil Pressure

: Power

: Traction Control

: Do Not Service

: Engine Coolant Temperature

: Flame/Fire Prohibited

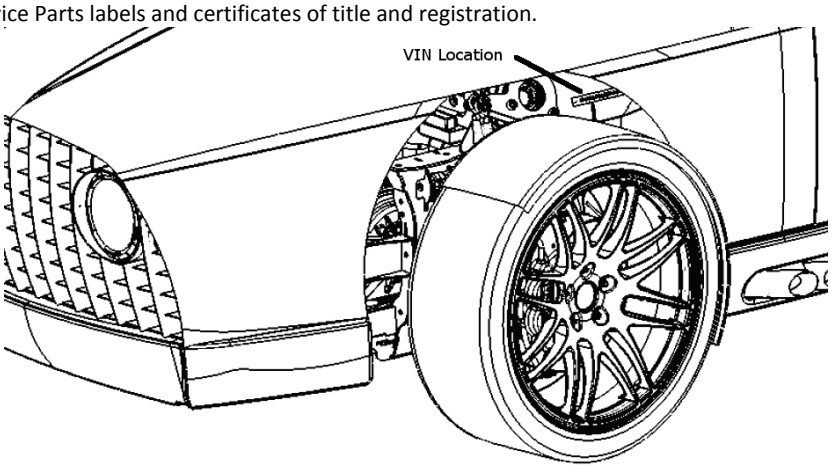
: Fuel Gauge

: Under Pressure

: Windshield Washer Fluid

1.4. Vehicle VIN

This legal identifier is on the front left corner of the chassis, located behind the shock. The VIN also appears on the Vehicle Certification and Service Parts labels and certificates of title and registration.



The following key can be used to identify the vehicle you are working on:

Position	1 to 3	4	5	6 to 8	9	10	11	12 to 14	15-17
Definition	WMI part 1	Vehicle Type	Engine Type	Horsepower	Check Digit	Model Year	Assembly Plant	WMI part 2	Sequential Serial
Values	1V9= Vanderhall Motor Works, Inc.	T=Three Wheel Vehicle	B = 4 cylinder, 1400 cc	200	Calculated	G=2016 H=2017 I=2018	Provo, UT	190=Vanderhall Motor Works, Inc.	001….

1.5. Lifting the Vehicle

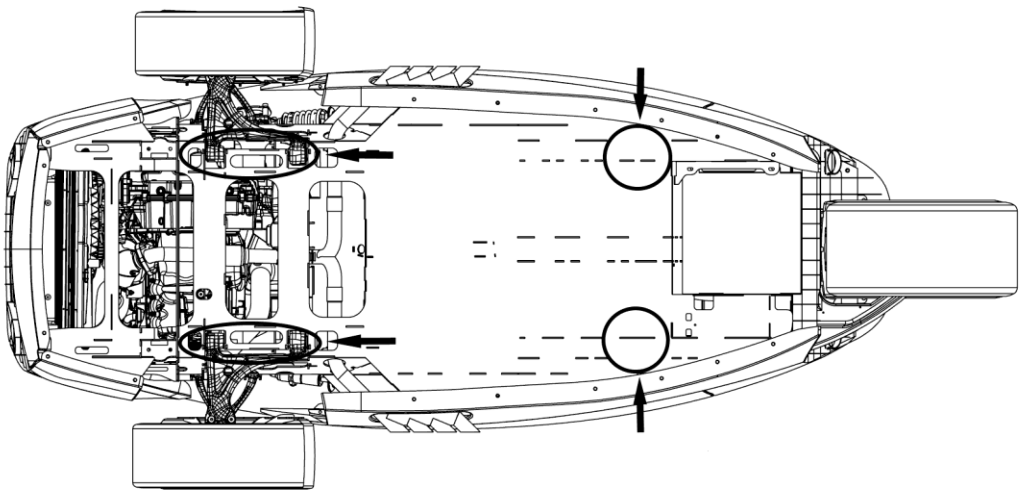
Note
The use of a LOW PROFILE LIFT ARMS SYSTEM may be required to avoid unwanted contact with the vehicle's body and structure depending on lifting equipment used. Refer to the manufacture's recommendation for their applications of low profile lift arms system for their lifting equipment.

Y Danger
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.

Y Danger
To avoid any vehicle damage, serious personal injury or death, always use the jack stands 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. o 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
When you are lifting a vehicle with a vehicle jack or a service jack, block the wheel at the opposite end from which you are lifting and the rear if possible. Use jack stands to provide additional support.



Front Lift Pads
When lifting the vehicle with a frame contact lift and/or vehicle jacking with service jack, place the front lift pads in the Areas shown

Rear Lift Pads

When lifting the vehicle with a frame contact lift and/or vehicle jacking with service jack, place the rear lift pads in the Areas shown

1.5.1. Special Tools and Equipment

There are several special tools required to service the Vanderhall Laguna. These tools are identified in specific repair sections. Tools can be purchased from Vanderhall Service.

1.6. Maintenance and Lubrication

1.6.1. Maintenance

1.6.1.1. Maintenance Schedules

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Check engine oil level and oil life percentage. Change engine oil and filter, if needed.	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Clean or Replace engine air cleaner filter (or every 4 years, whichever occurs first).				?				?				?			?				?
Replace spark plugs								?							?				
Change automatic transmission fluid.						?						?					?		
Change brake/clutch fluid (or every 3 years, whichever occurs first)						?						?					?		
Drain and fill engine cooling system (or every 5 years, whichever comes first).																			?
Replace timing belt, idler pulley, and timing belt tensioner													?						
Inspect evaporative control system						?						?					?		
Inspect engine accessory drive belts for fraying, excessive cracks or obvious damage (or every 10 years, whichever occurs first)																			?

1.6.2. Specifications

1.6.2.1. Approximate Fluid Capacities

Application	Specification	
	Metric	English
Cooling System	6.5 L	6.9 qt
Engine Oil with Filter	4.0 L	4.2 qt
Fuel Tank	35 L	9 Gal