

VULCAN 800
VN800



Motorcycle *95-04*
Service Manual

Quick Reference Guide

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This quick reference guide will assist you in locating a desired topic or procedure.

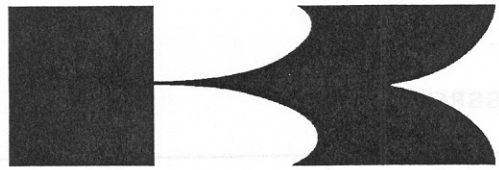
- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
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Kawasaki

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Motorcycle Service Manual

LIST OF ABBREVIATIONS

A	ampere(s)	lb	pound(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) Celsius	r	revolution
DC	direct current	rpm	revolution(s) per minute
F	farad(s)	TDC	top dead center
°F	degree(s) Fahrenheit	TIR	total indicator reading
ft	foot, feet	V	volt(s)
g	gram(s)	W	watt(s)
h	hour(s)	Ω	ohm(s)
L	liter(s)		

Read OWNER'S MANUAL before operating.

EMISSION CONTROL INFORMATION

To protect the environment in which we all live, Kawasaki has incorporated crankcase emission (1) and exhaust emission (2) control systems in compliance with applicable regulations of the United States Environmental Protection Agency and California Air Resources Board. Additionally, Kawasaki has incorporated an evaporative emission control system (3) in compliance with applicable regulations of the California Air Resources Board on vehicles sold in California only.

1. Crankcase Emission Control System

This system eliminates the release of crankcase vapors into the atmosphere. Instead, the vapors are routed through an oil separator to the intake side of the engine. While the engine is operating, the vapors are drawn into combustion chamber, where they are burned along with the fuel and air supplied by the carburetion system.

2. Exhaust Emission Control System

This system reduces the amount of pollutants discharged into the atmosphere by the exhaust of this motorcycle. The fuel and ignition systems of this motorcycle have been carefully designed and constructed to ensure an efficient engine with low exhaust pollutant levels.

3. Evaporative Emission Control System

Vapors caused by fuel evaporation in the fuel system are not vented into the atmosphere. Instead, fuel vapors are routed into the running engine to be burned, or stored in a canister when the engine is stopped. Liquid fuel is caught by a vapor separator and returned to the fuel tank.

The Clean Air Act, which is the Federal law covering motor vehicle pollution, contains what is commonly referred to as the Act's "tampering provisions."

"Sec. 203(a) The following acts and the causing thereof are prohibited...

(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any manufacturer or dealer knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser.

(3)(B) for any person engaged in the business of repairing, servicing, selling, leasing, or trading motor vehicles or motor vehicle engines, or who operates a fleet of motor vehicles knowingly to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title following its sale and delivery to the ultimate purchaser..."

(Continued on next page.)

NOTE

- *The phrase "remove or render inoperative any device or element of design" has been generally interpreted as follows:*
 1. *Tampering does not include the temporary removal or rendering inoperative of devices or elements of design in order to perform maintenance.*
 2. *Tampering could include:*
 - a. *Maladjustment of vehicle components such that the emission standards are exceeded.*
 - b. *Use of replacement parts or accessories which adversely affect the performance or durability of the motorcycle.*
 - c. *Addition of components or accessories that result in the vehicle exceeding the standards.*
 - d. *Permanently removing, disconnecting, or rendering inoperative any component or element of design of the emission control systems.*

WE RECOMMEND THAT ALL DEALERS OBSERVE THESE PROVISIONS OF FEDERAL LAW, THE VIOLATION OF WHICH IS PUNISHABLE BY CIVIL PENALTIES NOT EXCEEDING \$10,000 PER VIOLATION.

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:

- Replacement of the original exhaust system or muffler with a component not in compliance with Federal regulations.
- Removal of the muffler(s) or any internal portion of the muffler(s).
- Removal of the air box or air box cover.
- Modifications to the muffler(s) or air intake system by cutting, drilling, or other means if such modifications result in increased noise levels.

Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

For the duration of the warranty period, we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

To get the longest life out of your vehicle:

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki Motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki motorcycles are introduced by the Special Tool Catalog or Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

How to Use This Manual

In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference

Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Ignition Coil section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

This manual contains four more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

NOTE

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

- Indicates a procedural step or work to be done.
- Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a NOTE.
- ★ Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

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General Information

Table of Contents

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1-2 GENERAL INFORMATION

Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a motorcycle, read the precautions given below. To facilitate actual operations, notes, illustrations, photographs, cautions, and detailed descriptions have been included in each chapter wherever necessary. This section explains the items that require particular attention during the removal and reinstallation or disassembly and reassembly of general parts.

Especially note the following:

(1) Dirt

Before removal and disassembly, clean the motorcycle. Any dirt entering the engine will shorten the life of the motorcycle. For the same reason, before installing a new part, clean off any dust or metal filings.

(2) Battery Ground

Disconnect the ground (–) wire from the battery before performing any disassembly operations on the motorcycle. This prevents the engine from accidentally turning over while work is being carried out, sparks from being generated while disconnecting the wires from electrical parts, as well as damage to the electrical parts themselves. For reinstallation, first connect the positive wire to the positive (+) terminal of the battery

(3) Installation, Assembly

Generally, installation or assembly is the reverse of removal or disassembly. However, if installation or assembly sequence is given in this Service Manual, follow it. Note parts locations and cable, wire, and hose routing during removal or disassembly so they can be installed or assembled in the same way. It is preferable to mark and record the locations and routing whenever possible.

(4) Tightening Sequence

When installing bolts, nuts, or screws for which a tightening sequence is given in this Service Manual, make sure to follow the sequence. When installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit, thus ensuring that the part has been installed in its proper location. Then, tighten them to the specified torque in the tightening sequence and method indicated. If tightening sequence instructions are not given, tighten them evenly in a cross pattern. Conversely, to remove a part, first loosen all the bolts, nuts, or screws that are retaining the part a 1/4-turn before removing them.

(5) Torque

When torque values are given in this Service Manual, use them. Either too little or too much torque may lead to serious damage. Use a good quality, reliable torque wrench.

(6) Force

Common sense should dictate how much force is necessary in assembly and disassembly. If a part seems especially difficult to remove or install, stop and examine what may be causing the problem. Whenever tapping is necessary, tap lightly using a wooden or plastic-faced mallet. Use an impact driver for screws (particularly for the removing screws held by non-permanent locking agent) in order to avoid damaging the screw heads.

(7) Edges

Watch for sharp edges, as they could cause injury through careless handling, especially during major engine disassembly and assembly. Use a clean piece of thick cloth when lifting the engine or turning it over.

(8) High-Flash Point Solvent

A high-flash point solvent is recommended to reduce fire danger. A commercial solvent commonly available in North America is standard solvent (generic name). Always follow manufacturer and container directions regarding the use of any solvent.

(9) Gasket, O-Ring

Replace a gasket or an O-ring with a new part when disassembling. Remove any foreign matter from the mating surface of the gasket or O-ring to ensure a perfectly smooth surface to prevent oil or compression leaks.

(10) Liquid Gasket, Locking Agent

Clean and prepare surfaces where liquid gasket or non-permanent locking agent will be used. Apply them sparingly. Excessive amount may block engine oil passages and cause serious damage.

Before Servicing

(11) Press

When using a press or driver to install a part such as a wheel bearing, apply a small amount of oil to the area where the two parts come in contact to ensure a smooth fit.

(12) Ball Bearing and Needle Bearing

Do not remove a ball bearing or a needle bearing unless it is absolutely necessary. Replace any ball or needle bearings that were removed with new ones. Install bearings with the manufacturer and size marks facing out, applying pressure evenly with a suitable driver. Apply force only to the end of the race that contacts the press fit portion, and press it evenly over the base component.

(13) Oil Seal and Grease Seal

Replace any oil or grease seals that were removed with new ones, as removal generally damages seals. Oil or grease seals should be pressed into place using a suitable driver, applying a force uniformly to the end of seal until the face of the seal is even with the end of the hole, unless instructed otherwise. When pressing in an oil or grease seal which has manufacturer's marks, press it in with the marks facing out.

(14) Circlip, Retaining Ring, and Cotter Pin

When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more. Install the circlip with its chamfered side facing load side as well.

Replace any circlips, retaining rings, and cotter pins that were removed with new ones, as removal weakens and deforms them. If old ones are reused, they could become detached while the motorcycle is driven, leading to a major problem.

(15) Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the sliding surfaces have an adequate lubricative film. During assembly, make sure to apply oil to any sliding surface or bearing that has been cleaned. Old grease or dirty oil could have lost its lubricative quality and may contain foreign particles that act as abrasives; therefore, make sure to wipe it off and apply fresh grease or oil. Some oils and greases in particular should be used only in certain applications and may be harmful if used in an application for which they are not intended.

(16) Direction of Engine Rotation

To rotate the crankshaft manually, make sure to do so in the direction of positive rotation. Positive rotation is counterclockwise as viewed from the left side of the engine. To carry out proper adjustment, it is furthermore necessary to rotate the engine in the direction of positive rotation as well.

(17) Replacement Parts

When there is a replacement instruction, replace these parts with new ones every time they are removed.

Replacement parts will be damaged or lose their original function once they are removed. Therefore, always replace these parts with new ones every time they are removed. Although the previously mentioned gasket, O-ring, ball bearing, needle bearing, grease seal, oil seal, circlip, and cotter pin have not been so designated in their respective text, they are replacement parts.

(18) Electrical Wires

All the electrical wires are either one-color or two-color. A two-color wire is identified first by the primary color and then the stripe color. For example, a yellow wire with thin red stripes is referred to as a "yellow/red" wire; it would be a "red/yellow" wire if the colors were reversed. Unless instructed otherwise, electrical wires must be connected to wires of the same color.

Two-Color Electrical

Wire (cross-section)	Color Indicated on the Wire	Color Indicated on the Wiring Diagram
<p>Red Wire Strands Yellow Red</p>	Yellow/Red	<p>Y/R</p>

1-4 GENERAL INFORMATION

Before Servicing

(19) Inspection

When parts have been disassembled, visually inspect these parts for the following conditions or other damage. If there is any doubt as to the condition of them, replace them with new ones.

Abrasion	Crack	Hardening	Warp
Bent	Dent	Scratch	Wear
Color change	Deterioration	Seizure	

(20) Specifications

Specification terms are defined as follows:

"Standards" show dimensions or performances which brand-new parts or systems have.

"Service Limits" indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

Model Identification

VN800-A1 (US and Canada Models) Left Side View:



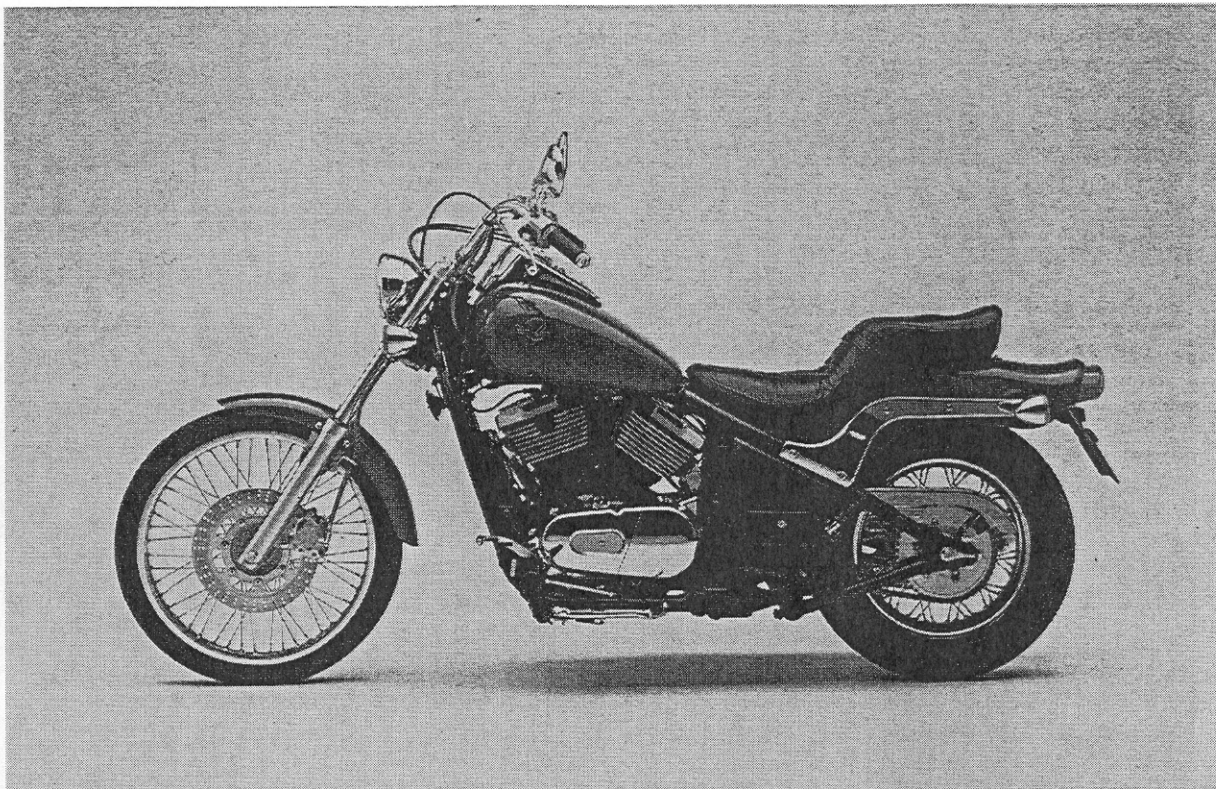
VN800-A1 (US and Canada Models) Right Side View:



1-6 GENERAL INFORMATION

Model Identification

VN800-A1 (Europe Model) Left Side View:



VN800-A1 (Europe Model) Right Side View:



General Specifications

Items	VN800-A1, A2, A3, A4, A5
Dimensions:	
Overall length	2 370 mm, (CN)(US) 2 360 mm
Overall width	825 mm
Overall height	1 170 mm
Wheelbase	1 625 mm
Road clearance	160 mm
Seat height	710 mm
Dry mass	225 kg, (CA) 225.5 kg
Curb mass: Front	107 kg
Rear	137 kg, (CA) 137.5 kg
Fuel tank capacity	15.0 L
Performance:	
Minimum turning radius	2.9 m
Engine:	
Type	4-stroke, SOHC, V 2-cylinder
Cooling system	Liquid-cooled
Bore and stroke	88.0 x 66.2 mm
Displacement	805 mL
Compression ratio	9.5
Maximum horsepower	40.5 kW (55 PS) @7 000 r/min (rpm), (CN) 44.1 kW (60 PS) @7 500 r/min (rpm), (ST) 24.2 kW (33 PS) @3 000 r/min(rpm), (FR) 39.3 kW (53 PS) @7 000 r/min (rpm) (UTAC's norm), (US) ---
Maximum torque	64 N-m (6.5 kg-m, 47.0 ft-lb) @3 300 r/min(rpm), (CN) 64.7 N-m (6.6 kg-m, 47.7 ft-lb) @3 500 r/min (rpm), (ST) 55 N-m (5.6 kg-m, 40.5 ft-lb) @3 000 r/min (rpm), (FR)(UK)(US) ---
Carburetion system	Carburetor, Keihin CVK 36
Starting system	Electric starter
Ignition system	Battery and coil (transistorized)
Timing advance	Electronically advanced(digital igniter)
Ignition timing	From 5.0° BTDC @1 000 r/min (rpm) to 37.5° BTDC @6 750 r/min (rpm)
Spark plug	NGK CR7E or ND U22ESR-N
Cylinder numbering method	Front to rear, 1-2
Firing order	1-2
Valve timing:	
Inlet	Open 22° BTDC, A2 ~ 19° BTC Close 78° ABDC, 71° ABDC Duration 280°, 270°
Exhaust	Open 72° BBDC, A2 ~ 69° BBDC Close 28° ATDC, 31° ATDC Duration 280°, 280°

1-8 GENERAL INFORMATION

General Specifications

Items	VN800-A1, A2	VN800-A3,A4,A5
Lubrication system	Forced lubrication (wet sump)	←
Engine oil:		
Grade	SE, SF or SG class	←
Viscosity	SAE10W-40, 10W-50, 20W-40, or 20W-50	←
Capacity	3.2 L	←
Drive Train:		
Primary reduction system:		
Type	Gear	←
Reduction ratio	2.184 (83/38)	←
Clutch type	Wet multi disc	←
Transmission:		
Type	5-speed, constant mesh, return shift	←
Gear ratios:		
1st	2.250 (36/16)	2.533 (38/15)
2nd	1.600 (32/20)	1.650 (33/20)
3rd	1.230 (32/26)	1.230 (32/26)
4th	1.000 (29/29)	1.000 (29/29)
5th	0.857 (24/28)	0.857 (24/28)
Final drive system:		
Type	Chain drive	←
Reduction ratio	2.875 (46/16)	2.470 (42/17)
Overall drive ratio	5.382 @ Top gear	4.625 @ Top gear
Frame:		
Type	Tubular, double cradle	←
Caster (rake angle)	34°	←
Trail	149 mm	←
Front tire:		
Type	Tube	←
Size	80/90-21 48H	←
Rear tire:		
Type	Tube	←
Size	140/90-16 71H	←
Front suspension:		
Type	Telescopic fork	←
Wheel travel	150 mm	←
Rear suspension:		
Type	Swingarm (uni-trak)	←
Wheel travel	100 mm	←
Brake Type:		
Front	Single disc	←
Rear	Drum	←
Electrical Equipment:		
Battery	12 V 12 Ah	←
Headlight:		
Type	Semi-sealed beam	←
Bulb	12 V 60/55 W (quartz-halogen)	←
Tail/brake light	12 V 5/21 W × 2, (CN) (US) 12 V 8/27 W × 2	←
Alternator:		
Type	Three-phase AC	←
Rated output	23.5 A/14 V @ 8 000 r/min (rpm)	←

Specifications subject to change without notice, and may not apply to every country.

(CA): California Model
 (CN): Canada Model
 (FR): France Model

(ST): Switzerland Model
 (UK): U.K. Model
 (US): U.S. Model

Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the motorcycle in good running condition. **The initial maintenance is vitally important and must not be neglected.**

OPERATION	FREQUENCY	Whichever comes first → ↓	† ODOMETER READING						
			800 km	5 000 km	10 000 km	15 000 km	20 000 km	25 000 km	30 000 km
OPERATION	Every								
Spark plug - clean			•	•	•	•	•	•	•
Spark plug - check*			•	•	•	•	•	•	•
Valve clearance check*				•		•		•	
Air suction valve - check*			•	•	•	•	•	•	•
Air cleaner element - clean		•		•		•		•	
Throttle grip play - check*		•		•		•		•	
Idle speed - adjust*		•	•	•	•	•	•	•	•
Fuel hoses, connections - check*			•	•	•	•	•	•	•
Fuel system - check*				•		•		•	
Coolant - change	2 yers								•
Evaporative emission control system (Cal) - check*		•	•	•	•	•	•	•	•
Engine oil - change	year	•	•	•	•	•	•	•	•
Oil filter - replace		•		•		•		•	
Oil screen - clean		•		•		•		•	
Radiator hoses, connections - check *	year	•		•		•		•	
Fuel hose - replace	4 years								•
Clutch - adjust		•	•	•	•	•	•	•	•
Drive chain wear - check *			•	•	•	•	•	•	•
Drive chain - lubricate	300 mm								
Drive chain slack - check*	800 km								
Brake lining or pad wear - check*			•	•	•	•	•	•	•
Brake fluid level - check*	month	•	•	•	•	•	•	•	•
Brake fluid - change	2 years						•		
Brake hoses, connections - check*			•	•	•	•	•	•	•
Brake hose - replace	4 year								
Brake master cylinder cup and dust seal - replace	2 years								
Caliper piston seal and dust seal - replace	2 years								
Brake play - check*		•	•	•	•	•	•	•	•
Brake light switch - check*		•	•	•	•	•	•	•	•
Brake camshaft - lubricate	2 years								
Brake cable - replace*	2 years								
Steering - check		•	•	•	•	•	•	•	•
Steering stem bearing - lubricate	2 years						•		
Front fork oil - change									•
Tire wear - check*			•	•	•	•	•	•	•
Spoke tightness and rim runout - check*		•	•	•	•	•	•	•	•
Swingarm pivot, uni-trak linkage - lubricate				•		•		•	
General lubrication - perform			•	•	•	•	•	•	•
Nuts, bolts, and fastener tightness - check*		•		•		•		•	

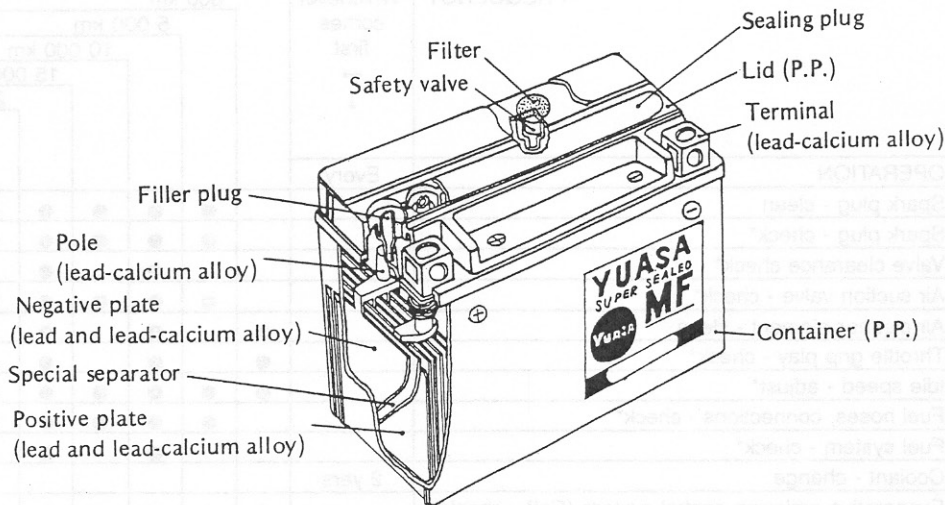
† : For higher odometer readings, repeat at the frequency interval established here.
 * : Replace, add, adjust, clean, or torque if necessary.
 (Cal) : California Model only

1-10 GENERAL INFORMATION

Technical Information - Sealed Battery

A sealed battery is installed in this model. The battery is a sealed type, and so cannot be performed the electrolyte level check and topping-up.

(I) Construction

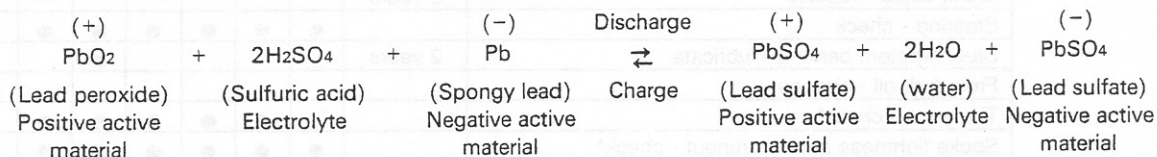


(II) Main Features

- | | |
|---|--|
| 1) Maintenance free..... | It is not necessary to check the electrolyte level and top-up the electrolyte. |
| 2) No electrolyte leakage..... | As the electrolyte is retained firmly in the special separators, there is no free electrolyte in the battery. |
| 3) Instant activation system..... | It can be used instantly after filling only the electrolyte without initial charge. |
| 4) One-push motion electrolyte filling..... | It is possible to fill the electrolyte <u>by easy one-push motion</u> . |
| 5) Safety construction..... | If the battery internal pressure rises abnormally high, the safety valve opens to release the gas inside the battery to restore the normal pressure and prevent the battery from rupturing. After restoring the normal pressure, the safety valve closes and the battery is sealed again. Moreover, a ceramic filter is disposed on top of the safety valve under the lid to remove risk of ignition or explosion caused by fire from outside. |
| 6) Compact and high performance..... | No presence of free electrolyte allows the battery made lower in height, thus resulting in enhanced volume efficiency. Moreover, gas being absorbed inside the battery eliminates the need for a gas exhaust tube. |
| 7) Strong charge/discharge characteristics | It can amply withstand deep charge/discharge cycles. |

(III) Principle of Sealing Structure

A lead-acid battery operates under the following chemical reaction:

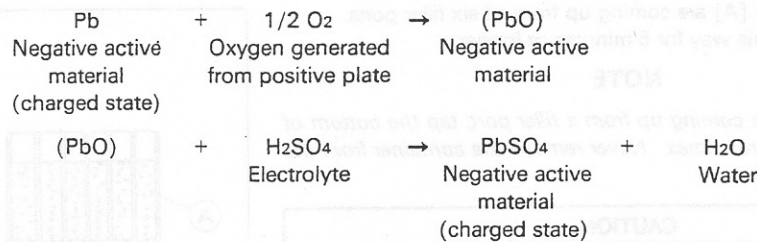


Normally in an ordinary lead-acid battery when it comes to an end of a charge, where the lead sulfate being a discharge product returns to lead peroxide and spongy lead, the charge current flowing thereafter is used exclusively to decompose electrolytically water from the electrolyte, thus resulting in generation of hydrogen gas from the negative plate and oxygen gas from the positive plate. The gases so generated are released out of the battery, causing the amount of electrolyte decreased to require occasional water replenishment.

A maintenance free battery, however, is so designed that, when it is overcharged, even if the positive plate is fully charged, the negative plate remains not fully turned to spongy lead. Therefore, even when the positive plate is overcharged generating oxygen gas, the negative plate is not fully charged, hence generating no hydrogen gas.

Moreover, the oxygen gas generated from the positive plate immediately reacts with the charged active material on the negative plate, and returns to water, with the ultimate result of no water loss.

Technical Information - Sealed Battery



Thus, the negative plate is made as not to get fully charged. Even if the overcharge continues, the oxygen gas generated inside the battery is absorbed by the negative plate, a process called oxygen cycle, which keeps water loss theoretically at nil, and allows the battery to be sealed.

(IV) Filling the Battery with Electrolyte

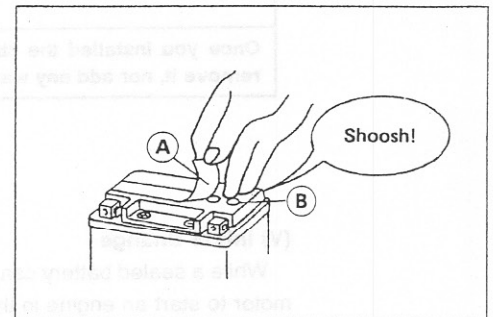
CAUTION

Do not remove the aluminum seal sheet sealing the filler ports until just before use.
Be sure to use the dedicated electrolyte container for correct electrolyte volume.

- Check to see that there is no peeling, tears or holes in the sealing sheet.
- Place the battery on a level surface.
- Remove the sealing sheet [A].
- When removing, check to hear an air-sucking sound "Shoosh!" from filler ports [B].

NOTE

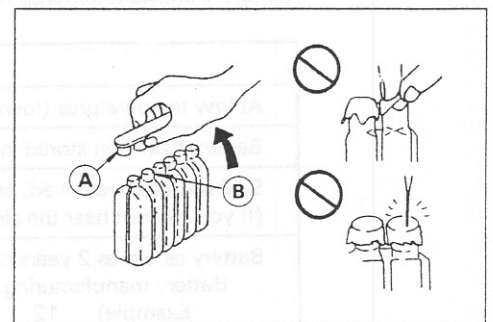
- A battery whose sealing sheet has any peeling, tears, holes, or from which the air-sucking sound was not heard requires a refreshing charge (initial charge).



- Take the electrolyte container out of the vinyl bag.
- Detach the strip of caps [A] from the container.

NOTE

- Do not discard the strip of caps because it is used as the battery plugs later.
- Do not peel back or pierce the sealed areas [B].



- Place the electrolyte container upside down with the six sealed areas in line with the six battery filler ports.
- Push the container down strongly enough to break the seals. Now the electrolyte should start to flow into the battery.

NOTE

- Do not tilt the container as the electrolyte flow may be interrupted.

