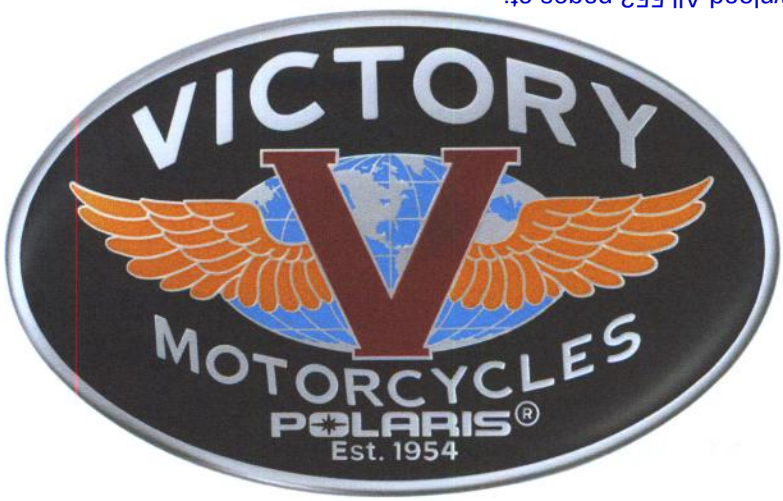
THE NEW AMERICAN MOTORCYCLE™

2011
SERVICE MANUAL

Victory Cross Roads™
Victory Cross Country™



THE NEW AMERICAN MOTORCYCLE™

2011

VICTORY CROSS ROADS™ • VICTORY CROSS COUNTRY™

FOREWORD

The information printed within this publication includes the latest product information at the time of print. The most recent version of this Service Manual is available to Victory Dealers in electronic format at www.polarisdealers.com.

This manual is designed primarily for use by trained Victory service technicians in a properly equipped shop and should be kept available for reference in the shop area. All references to left and right side of the vehicle are from the operator's perspective when seated in a normal riding position.

Some procedures outlined in this manual require a sound knowledge of mechanical theory, tool use, and shop procedures in order to perform the work safely and correctly. Read the text and be familiar with the service procedures before starting the work. Certain procedures will require the use of special tools. Use only the proper tools as specified. If you have any doubt as to your ability to perform any of the procedures outlined in this service manual, contact an authorized Victory dealer for service.

Comments or suggestions about this manual should be submitted via Ask Polaris. Consumers can direct comments or suggestions to: Service Publications Department, Polaris Sales Inc., 2100 Hwy 55, Medina, Minnesota 55340.

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CHAPTER 1
SPECIFICATIONS / GAUGE / AUDIO

1

GENERAL INFORMATION

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SERVICE RULES

In order to perform service work efficiently and prevent costly errors, technicians should read the text in this manual and familiarize themselves with the procedures before beginning. Notes, Cautions and Warnings have been included for clarification of text and safety concerns. Knowledge of mechanical theory, tool use and shop procedures are necessary to perform some procedures in this manual safely and correctly.

Use only genuine Victory service parts, including fasteners that require replacement if removed. Do NOT substitute fasteners or hardware.

Cleanliness of parts and tools as well as the work area is of primary importance. Dirt and foreign matter will cause damage to precision parts. Clean the motorcycle before beginning service. Clean all parts before installing.

If difficulty is encountered in removing or installing a component, look to see if a cause for the difficulty can be found. If it is necessary to tap the part into place, use a soft face hammer and tap lightly.

Always follow torque specifications as outlined throughout this manual. Incorrect torquing may lead to serious machine damage or in the case of steering, driveline, and chassis components, can result in loss of control during operation of the motorcycle, which may result in severe personal injury or death.

If a torquing sequence is indicated for nuts, bolts or screws of a certain component, start all fasteners and hand tighten. Following the method and sequence indicated, tighten evenly to the specified torque value. When removing nuts, bolts or screws from a component with several fasteners, loosen them all about 1/4 turn before removing them to prevent distortion of that component.

Replace all oil seals, sealing washers, gaskets, and O-rings with new ones during assembly. Be sure the mating surfaces for the gasket are clean and smooth to avoid leaks and maintain specified tolerances.

Some procedures require removal of retaining rings or clips. Removal can weaken and deform these parts, therefore, they should always be replaced with new parts. When installing new retaining rings and clips, use care not to expand or compress them beyond what is required for installation.

Victory lubricants and greases have been specially formulated to provide maximum performance and protection when applied properly. In some applications, warranty coverage may be void if improper lubricants are used.

Parts requiring grease should be cleaned thoroughly and fresh grease applied before reassembly. Deteriorating grease loses lubricity and may contain abrasive foreign matter.

Always replace locking hardware such as lock nuts or lock washers, fasteners that have pre-applied locking agent, or any other fasteners as noted in this service manual with genuine Victory hardware from an authorized Victory dealer.

Working with batteries can be hazardous. Review all battery warnings and cautions.

SAFETY INFORMATION

Understanding Safety Labels & Instructions

READ AND BECOME FAMILIAR WITH ALL WARNING AND CAUTION SYMBOLS AND STATEMENTS LISTED BELOW AND IN THE TEXT OF THIS MANUAL BEFORE YOU BEGIN WORK.

⚠ This is the safety alert symbol. When you see this symbol on the vehicle or in this manual, be alert to the potential for personal injury. Your safety is involved!

⚠WARNING

Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

⚠CAUTION

Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

NOTICE:

Indicates a hazardous situation, which, if not avoided, could result in damage to the motorcycle.

⚠WARNING

Gasoline is extremely flammable and explosive under certain conditions.

- Always stop the engine and refuel outdoors or in a well ventilated area
- Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored
- Do not overfill the tank. Do not fill the tank neck above the fuel tank insert. Leave air space to allow for fuel expansion
- If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately. Never try to syphon gasoline using mouth suction
- If you spill gasoline on your skin or clothing, immediately was it off with soap and water and change clothing
- Never start the engine or let it run in an enclosed area. Engine exhaust fumes are poisonous and can cause loss of consciousness or death in a short time

⚠WARNING

The engine exhaust from this product contains chemicals known to cause cancer, birth defects or other reproductive harm.

⚠WARNING

Improper repairs or service can create unsafe conditions that may cause severe personal injury or death.

⚠WARNING

The engine and exhaust components on this product become very hot during operation and remain so for a period of time after the engine is stopped.

⚠WARNING

Never run the engine in an enclosed area without a properly functioning exhaust gas evacuation system connected to the product.

⚠WARNING

Modifications to this motorcycle not approved by Victory may cause loss of performance, excessive emissions, and make the machine unsafe for use.

⚠WARNING

Brake fluid is poisonous.

KEEP OUT OF REACH OF CHILDREN.

⚠WARNING

Wear insulated protection for hands and arms or wait until hot components have cooled sufficiently before working on the product.

⚠WARNING

Brake fluid is poisonous. Do not ingest or allow brake fluid to contact eyes. Always wear eye protection when working with brake fluid.

⚠WARNING

Battery electrolyte is poisonous. It contains sulfuric acid. Serious burns can result from contact with skin, eyes or clothing.

⚠WARNING

Care should be taken to be sure the motorcycle will not tip or fall while elevated. Severe personal injury or death could occur if the motorcycle tips or falls.

NOTICE

Brake fluid will damage plastic, painted and rubber parts. Protect these surfaces whenever the brake system is being serviced.

GENERAL SPECIFICATIONS

2011 Cross Roads / Cross Country Specifications

		Cross Roads	Cross Country / NESS
CAPACITIES & DIMENSIONS	Oil Capacity	5.0 Qt. (4.75 ltr) (Approximately 4.5 qts. or 4.25 ltr at oil & filter change)	
	Fuel Capacity	5.8 US Gal (22.0 ltr) (1.0 U.S. gal / 3.8 ltr reserve)	
	Fuel Type / Octane Minimum	Premium Unleaded / 91 Octane	
	Dry Weight	745 lbs (338 kg)	765 lbs (347 kg)
	Wet Weight	780 lbs (354 kg)	800 lbs (363 kg)
	Gross Vehicle Weight Rating	1360 lbs. (617 kg)	
	Gross Axle Weight Rating	Refer to Manufacturer Information label on frame of vehicle (left side of steering head)	
	Maximum Load	Subtract Wet Weight from GVWR or refer to Rider's Manual. Never exceed GVWR	
	Overall Length	104.4 in. (265.0 cm)	
	Overall Width	36.0 in. (91.4 cm)	39.2 in. (99.5 cm)
	Overall Height	56.3 in. (143.0 cm)	53.2 in. (135.1 cm)
	Seat Height	26.3 in (66.8 cm)	
	Ground Clearance	5.8 in (14.8 cm)	
	Total Storage Volume	21.3 gallons (80.6 liters) See Saddlebag Warning (inside right saddlebag lid)	
	Passenger Capacity	1	
	Wheelbase	65.7 in (166.9 cm)	
	Rake / Trail	29 Degrees / 5.6 in. (14.2 cm)	
ENGINE	Engine Type	VICTORY Freedom® V-Twin	VICTORY Freedom® V-Twin
	Engine Configuration	50° SOHC V-Twin 4 Stroke	50° SOHC V-Twin 4 Stroke
	Engine Displacement	1731cc / 106 cubic inch 6 speed (106 / 6 engine)	
	Engine Cooling System	Air / Oil	
	Compression Ratio	9.4:1	
	Compression Pressure	210 - 225 psi (1448 - 1551 kPa)	
	Valve Train	4 Valves per cylinder. Hydraulic Lifters & Cam Chain Adjusters (No Adjustment)	
	Bore x Stroke	101 x 108 mm	
	Idle Speed / Fast Idle Speed	NOT ADJUSTABLE - ECM Controlled by IAC (Spec Idle Speed is 950 +/- 100 RPM)	
	Fuel System / Throttle Body Bore Size	Closed Loop Sequential Electronic Fuel Injection / Dual Bore 45 mm	
	Exhaust System Type	Split Dual Exhaust With Crossover	
	Lubrication System	Wet Sump	
	Spark Plug Type (Gap)	NGK DCPR6E (.032 in. / .8 mm)	
	Dry Weight (Engine Approximate)	265 lbs. (120 Kg)	
BRAKES	Brake Type (Front / Rear)	Disc / Disc	
	Front Brake	Dual 300x5mm Floating Disc / 4 Piston Calipers	
	Rear Brake	Single 300x7mm Floating Disc / 2 Piston Caliper	

Specifications may change with the addition of custom order options and / or accessories. Polaris Sales Inc. reserves the right without prior notice to discontinue at any time at its discretion any of the items herein or change specifications or designs without incurring any obligation to the customer.

2011 Cross Roads / Cross Country (cont.)

		Cross Roads	Cross Country
DRIVE SYSTEM	Transmission Type	Manual, 6 Speed Constant Mesh with True Overdrive	
	Clutch Type	Wet, Multi-Plate, Diaphragm Spring	
	Primary Drive Type	Wet, Gear Drive w/ Torque Compensator	
	Primary Reduction Ratio	1.5:1	
	Final Drive Type / Belt Width / Final Drive Ratio	Carbon Fiber Reinforced Belt / 28mm / 2.12:1	
	Gear Shift Pattern	1 Down, 5 Up	
	Internal Gear Ratios 1st	3.13:1	
	2nd	2.02:1	
	3rd	1.50:1	
	4th	1.20:1	
	5th	1:1	
	6th	.87:1	
SUSPENSION	Front Wheel (Size / Type)	Cast or Billet / 3.00 x 18 (inch)	
	Rear Wheel (Size / Type)	Cast or Billet 5.00 x 16 (inch)	
	Front Tire	Dunlop Elite 3 - 130/70R18 63H Radial	
	Rear Tire	Dunlop Elite 3 - 180/60R16 M/C 80H Radial	
	Minimum Tread Depth	.063 in. (1.6mm)	.063 in. (1.6mm)
	Front Type	Inverted Telescopic Cartridge Fork (TYPE 2 KYB)	
	Front Travel	5.1 in. (13 cm)	
	Front Tube Diameter	43 mm (1.7 in.)	43 mm (1.7 in.)
	Rear Shock Type	Single, Monotube Air Adjustable Shock	Single, Monotube Air Adjustable Shock
	Rear Swingarm Type	Cast Aluminum with Constant Rate Linkage	
	Rear Travel (inches)	4.7 in (12 cm)	
LIGHTS	Headlamp	High H-11 55W / Low: H-11 55W	
	HID Headlamp (If equipped)	High H-11 / Low: D1SR	
	Turn Signal Lamp	Non-Serviceable LED	
	Brake / Tail / License Plate Lamp	Non-Serviceable LED	
	Alternator / Battery	625W (48A @ 13.0VDC) / 12V 18AH 310 CCA	
FUSES	Turn Signal / Horn	10 amp fuse	
	Chassis	20 amp fuse	
	Engine	15 amp fuse	
	Fuel Pump / Ignition Coil	15 amp fuse	
	Ignition	10 amp fuse	
	Lights	20 amp fuse	
	Circuit Breakers	See fuse box label (Chapter 2)	
FUEL	Fuel Type	Premium Unleaded / 91 Octane Minimum	
	Fuel Pump Pressure	3.51 BAR (351 kPa) (51 psi)	
	Fuel Pump Volume (Approx. @ 12 V)	60 liters / hr (500 ml or 16.9 oz. / 30 seconds) (0.26 gal / min)	
	Fuel Level Sensor Resistance	Empty: 250 Ohms / Full: 50 Ohms	
	Fuel Pump Current Draw	Less than 5.0 Amps	
	Fuel Injector Resistance	11.4 - 12.6 Ohms	

Specifications may change with the addition of custom order options and / or accessories. Polaris Sales Inc. reserves the right without prior notice to discontinue at any time at its discretion any of the items herein or change specifications or designs without incurring any obligation to the customer.

VEHICLE LOADING

GROSS VEHICLE WEIGHT RATING (GVWR)

⚠ WARNING

Exceeding the gross vehicle weight rating of your motorcycle can reduce stability and handling and could cause loss of control. NEVER exceed the gross vehicle weight rating of your motorcycle.

The *maximum load capacity* of your motorcycle is the maximum weight you may add to your motorcycle *without exceeding the GVWR*. This capacity is determined by calculating the difference between your motorcycle's gross vehicle weight rating and the wet weight.

Refer to the specification section of this manual or the Manufacturing Information / VIN label on the motorcycle frame for model-specific information. Refer to Information label section in this manual (page 1.9) for location on the motorcycle.

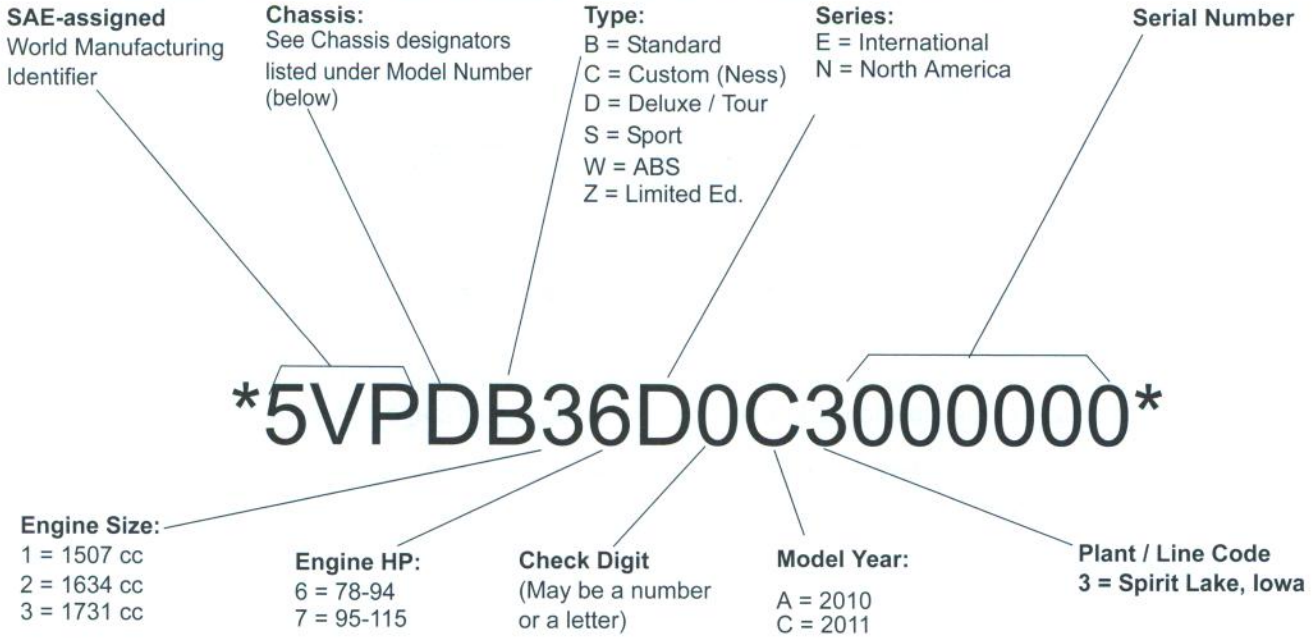
When determining the weight you will be adding to your motorcycle, and to ensure you do not exceed the maximum load capacity, include the following:

- operator body weight
- passenger body weight
- weight of all riders' apparel and items in or on apparel
- weight of any accessories *and their contents*
- weight of any additional cargo on the motorcycle

VEHICLE INFORMATION

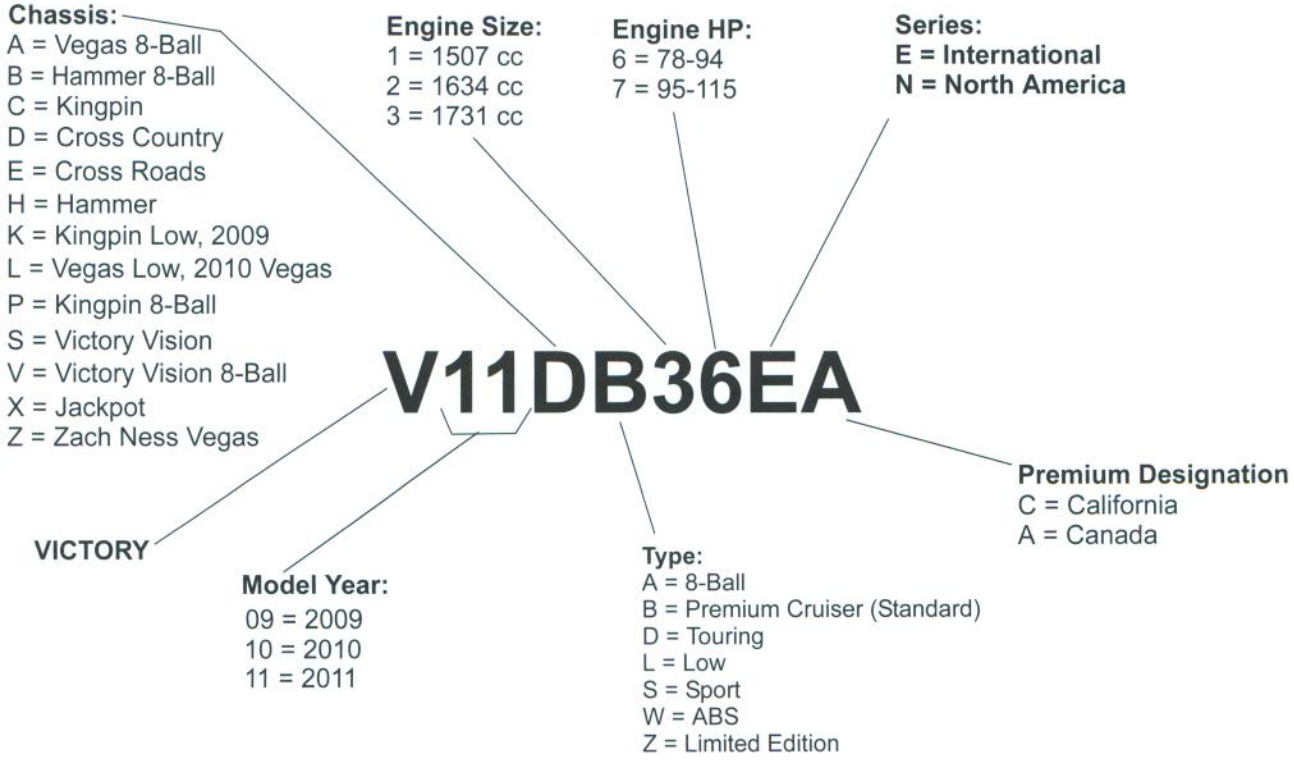
VEHICLE IDENTIFICATION NUMBER (VIN)

See "VIN NUMBER / MANUFACTURER LABEL" on page 1.9. for location on the vehicle.



MODEL NUMBER

See "VIN NUMBER / MANUFACTURER LABEL" on page 1.9. for location on vehicle.



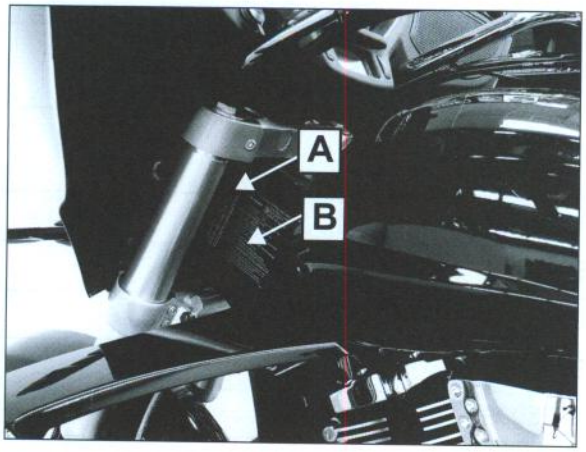
VIN NUMBER / MANUFACTURER LABEL

The Manufacturer Information Label (A) contains the following:

- Vehicle Identification Number (VIN) (also stamped into frame on right side of the steering head).
- Gross Vehicle Weight Rating
- Gross Axle Weight Rating
- Tire and Wheel Information
- Date of Manufacture

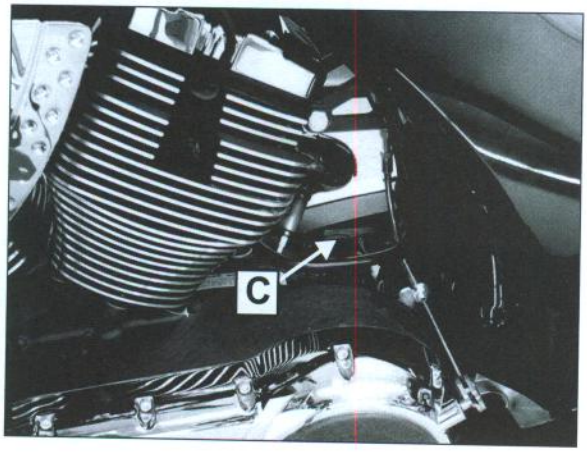
VECI / NECI / TIRE INFORMATION LABELS

The Vehicle Emission Control Information (VECI) and Noise Emission Control Information (NECI) labels are located at (B).



ENGINE NUMBER LOCATION

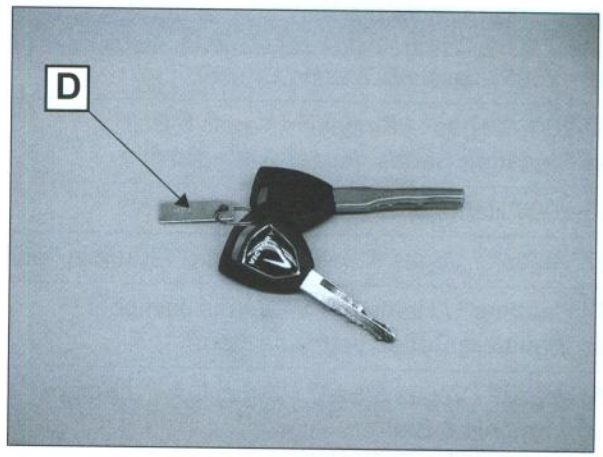
The engine number (C) is stamped into the right crankcase boss and identifies engine model and serial number.



KEY IDENTIFICATION NUMBER

The key identification number (D) is stamped on a tag attached to the key ring. If key and identification number are lost or misplaced, the lock set must be replaced.

Key blanks are available from Victory. Locksmiths familiar with the motorcycle industry will be able to cut a replacement key with an I.D. number and a key blank.

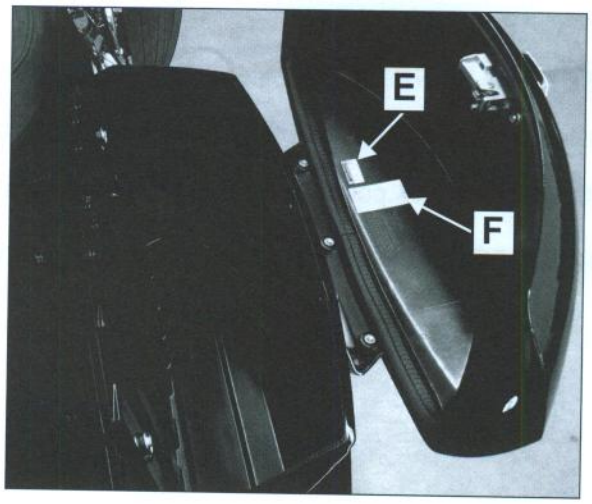


SADDLEBAG WARNING LABEL

Saddlebag Warning Label (E).

REAR SHOCK AIR PRESSURE LABEL

Rear Shock Air Pressure Label (F).



PUBLICATIONS & TECHNICAL LITERATURE

PUBLICATION PART NUMBERS

Some Victory publications, such as Owner's Manuals and Parts Books are available on-line and can be downloaded from the Victory motorcycles web site (http://www.polarisindustries.com/en-us/Victory/). Click on the *Riders* pull down menu and select *Manuals and Parts*.

Service Manuals can be purchased through any authorized Victory motorcycle dealer. The part numbers are listed in the following table. Some manuals are available for purchase on-line at *www.purepolaris.com*.

VICTORY SERVICE MANUAL PART NUMBERS	
2002 - 2006 Classic & Touring Cruiser	9919632
2003-2006 Vegas® / Kingpin® / Vegas 8-Ball® / Ness Signature Series Vegas® & Kingpin®	9920337
2005-2006 Hammer® / 2006 Vegas Jackpot®	9920340
2007 Vegas® / Vegas 8-Ball® / Kingpin® / Kingpin Tour®	9920837
2007 Hammer® / Hammer® S / Vegas Jackpot® / Ness Signature Series Vegas Jackpot®	9920838
2008 Vegas® / Vegas 8-Ball® / Vegas Low™ / Kingpin® / Kingpin Tour® / Kingpin 8-Ball®	9921242
2008 Hammer® / Hammer® S / Vegas Jackpot® / Ness Signature Series Vegas Jackpot®	9921247
2009 - 2010 Vegas®, Kingpin®, Hammer® / Vegas Jackpot®	9922432
2008 - 2010 Victory Vision®	9922444
2011 Vegas, Kingpin, Jackpot, Hammer	9923014
2011 Vision	9923025
2011 Cross Roads, Cross Country	9923030

MATERIAL SAFETY DATA SHEET (MSDS)

To review or print a Material Safety Data Sheet for Victory maintenance products, chemicals or lubricants:

DEALERS: Visit www.polarisdealers.com / news forms & links / pure polaris OR contact Dealer Support

NON-DEALERS: Please contact Polaris Customer Service at: 1-888-704-5290 (French speaking 1-204-925-7100)

REFINISHING

VICTORY TOUCH-UP & REFINISHING PAINT

Service Paint products are available in three different sizes and applications. Some paint colors require up to 3 components to create a color. Prices subject to change without notice. Dealer is responsible for freight on paint and paint products.

Detailed paint ordering information is available on the dealer web site (www.polarisdealers.com).

.6 ounce bottle: (Order Multiple of 2) For brush touch-up of small nicks.

10 ounce aerosol can: (Order Multiple of 2)
Apply light even coats for best results. Recoat time is from 30-60 minutes or after 4 days of drying to prevent lifting.

Quarts: (Sold as each)
For repaint of properly prepared plastic components or metal substrates.
Paint is a high quality acrylic urethane manufactured by U.S. Paint.
Mix as indicated on back of paint can. Paint can be recoated after paint is tack free or has "flashed off".
Paint finish may be wet sanded and buffed after coating has cured.

How to order:
Authorized Victory Dealers only. Place your order via the dealer web site at:
www.polarisdealers.com / News Forms & Links / Pure Polaris

NOTE: There will be a 25% service fee charged for all returns. Polaris dealer will be responsible for return freight

VICTORY DETAIL & FINISH RESTORER KITS AND PRODUCTS

A Detail Kit (polish, wax, and dressing) and a Restore Kit (polish, and swirl / scuff remover) is available from the Victory parts department for painted surface protection and to remove minor surface imperfections.

Visit **www.purevictorypolishes.com** for a complete list of genuine Pure Victory detailing products.

Detail Kit: 2872195 Includes Non-Abrasive Wash, Swirl Remover / Polish, Polywax Final Finish, Vinyl / Rubber Protector, Applicator and Cloth.

Restore / Polish: 2872192 (12 oz. Aerosol)

PAINTING TERMS

The following terms describe the general operations referred to in the Paint Color Code chart on page 1.12.

E-Coat (Factory Applied): This material is used as a rust protection. It is also used to form a bond between bare metal and the primer or base coat.

Primer: Primer is necessary when applying some colors such as Flame Yellow, Sonic Blue, Solar Red, etc. The purpose of a primer coat is to prevent bleed-through or transparency in subsequent color coats. Full-hide colors (such as black) do not require primer.

Base Coat: A color paint layer applied under another color or under the clear topcoat to improve color matching and consistency.

Top Coat: Outermost layer of paint or clear coat.

PAINT COLORS BY MODEL

The 8th Digit of the model number (either a C, D, L, or U) designates the Series:
(C = CANADA, D = Domestic (49 State), E = Europe, L = CALIFORNIA, and U = United Kingdom.

The 9th letter of the model number designates the color.

2011 VICTORY CROSS ROADS CUSTOM	
Model Number	**Model**
V11BB36NA, NAA, NAC	Solid Black
V11BB36EA	Black (soft bags)
V11EB36EA	Black (hard bags)
V11BB36NC, NCA, NCC	Crimson
V11BB36NC	Crimson (soft bags)
V11EB36EC	Crimson (hard bags)
2011 VICTORY CROSS COUNTRY	
V11DB36NA, NAA, NAC, EA	Solid Black
V11DB36NB, NBA, NBC, EB	Imperial Blue Metallic
V11DB36NR, NRA, NRC, ER	White & Silver

PAINT COLOR CODES

For current information Victory Dealers can go to www.polarisdealers.com/News, Forms, and Links. Enter PAINT CODES in the search box.

PAINT COLOR:	PAINT CODE	NOTES
Midnight Cherry	P-554	
Cruiser Black	P-266	
Tinted Black	P-585	
Cruiser Black & Graphite w/ Skull Graphic	P-1293	
Metallic Flake Additive	METALLIC	Add vial of flake to quart of clear base
Clear	C	
Clear Metallic	CM	Clear with metal flake added
UNDERCOATERS (Base Coat Only)	WU, OWU, PWU, VVU	WU=White Undercoater; OWU=Off-White Undercoater; PWU=Pearl White Undercoater; VVU=Victory Violet Undercoater

BREAK IN PERIOD

BREAK-IN PROCEDURE

There is never a more important period in the life of a new Victory motorcycle than the period between zero and 500 miles (805 km). A Victory motorcycle is manufactured using the best possible materials and manufacturing techniques, but the final machining process is the break-in. During break-in period, many parts in the engine wear and polish to correct operating clearances. During this time, the operator should:

- Avoid prolonged full throttle operation.
- Avoid operation which might result in excessive heating of the engine.

The general break-in guidelines are as follows:

BREAK-IN GUIDELINES		
Miles/km	**Throttle Position**	**Notes**
0-90 miles	0-1/3	Avoid prolonged operation above 1/3 throttle. Stop engine and let it cool following every hour of operation. Vary speed of motorcycle. Do not operate machine at one set throttle position.
90-300 miles	0-1/2	Avoid prolonged operation above 1/2 throttle. Stop engine and let it cool following every hour of operation. Vary speed of the motorcycle. Do not operate machine at one set throttle position.
300-500 miles	0-3/4	Avoid cruising speeds above 3/4 throttle.
500 miles	**Replace the engine oil and engine oil filter.** Perform 500 mile service on the machine. See chapter 2 for more information.	
500 +	Avoid prolonged full-throttle operation. Vary the engine speed occasionally. Follow the pre-ride inspection outlined in the owner's manual.	

EMISSIONS

EMISSION CONTROL SYSTEMS

The U.S. Environmental Protection Agency and California Air Resources Board (CARB) require manufacturers to certify that their motorcycles comply with applicable exhaust emissions standards during their useful life, and that motorcycles built after January 1, 1983 comply with applicable noise emission standards for one year or 6,000 km (3,730 mi) after the time of sale to the ultimate purchaser, when operated and maintained according to the instructions provided.

EMISSION SOURCES

An internal combustion engine produces carbon monoxide and hydrocarbons during operation. Hydrocarbons must be controlled because under some conditions hydrocarbons react with sunlight to produce photochemical smog. Carbon monoxide must be controlled because it is toxic.

EXHAUST EMISSION CONTROL

Victory Motorcycles have an electronic engine management system which controls fuel delivery and ignition timing to control hydrocarbon and carbon monoxide emissions. Follow the Periodic Maintenance Interval Table on page 2.4 and inspect the emission control system as outlined in this manual. No adjustments can be made to the EEC system.

NOISE EMISSION CONTROL SYSTEM

Tampering with Noise Control Systems is Prohibited. Federal law prohibits the following acts or causing thereof:

1. The removal or rendering inoperative by any person other than for purposes of maintenance, repair or replacement, any device or element of design incorporated into the motorcycle 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 motorcycle after such device or element of design has been removed or rendered inoperative.

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

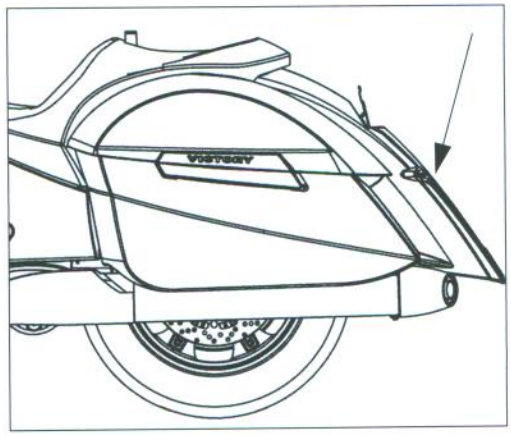
1. Removal of, or puncturing the muffler, baffles, header pipes or any other component which conducts exhaust gases.
2. Removal or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving part of the motorcycle or parts of the exhaust / intake system with parts other than those specified by the manufacturer.

CRANKCASE EMISSION CONTROL

The crankcase emission control system is comprised of a closed system that routes crankcase emissions through the air cleaner into the combustion chamber.

EVAPORATIVE EMISSION CONTROL

California models are equipped with an Evaporative Emissions Canister (A) mounted under the rear fender. Activated charcoal inside the canister temporarily stores fuel vapor from the fuel tank vent system. The Electronic Control Module (ECM) opens a canister purge valve that connects the charcoal canister to the intake tract (when conditions are correct) to purge the canister of vapors absorbed by the charcoal. Refer to Chapter 5 for system diagram and Chapter 2 for maintenance.



SPECIAL SERVICE TOOLS

GENERAL / PRECISION MEASURING TOOLS

TOOL	PART NUMBER
Bearing & Seal Driver Set	PV-43558
Bodywork Removal Tool Set	PV-49955
Bore Gauge Set, 50-100mm	PV-3017
Decal, Service Bulletin Completion	7170107 (Order from Victory Parts Dept.)
Dial Caliper (Metric, 0-150mm)	PV-26900-7
Dial Caliper (Electronic Conversion. English 0-6" / Metric 0-150mm)	PV-39776
Dial Indicator, Adjustable (Metric. 10mm travel)	PV-26900-12
Dial Indicator Stand, Flexible. Magnetic Base	PV-34481
Engine Ear Listening Device	PV-39565
Feeler Gauge Set	PV-26900-8 or PV-26900-9
Outside Micrometer (0-25 & 25-50mm)	PV-3006, PV-3007
Outside Micrometer Set (0-100mm)	PV-3009
Small Hole Gauge Set	Commercially Available
Straight Edge, Precision	PV-34673
Surface Plate	Commercially Available
Telescoping Gauge Set	PU-45423
Torque Wrench (3/8" Drive 0-50 in-lb. beam type)	PV-43543
Torque Wrench (1/2" Drive 0-150 lb-ft. beam type)	PV-43552
Torque Wrench (3/8" Drive 15-100 lb-ft. click type)	PV-43564

TUNE UP & MAINTENANCE TOOLS

TOOL	PART NUMBER
Belt Tension Gauge	PV-43532
Belt Tension - Sonic Tension Meter	Commercially available
Cylinder Leakdown Tester	PV-35667-A
Compression Gauge Set	PV-33223
Oil Pressure Gauge Set	PV-43531
Vacuum Brake Bleeder	PV-50204
Front Brake Lever Reserve Inspection Adapter	PV-50104

ELECTRICAL TOOLS

TOOL	PART NUMBER
Ammeter Inductive Clamp for Fluke 73™ Multimeter	PV-39617
Cruise Control Jumper Harness (Diagnostic) Kit	PV-49358
Electrical Connector Test Adapter Kit	PV-43526
Inductive Timing Light	PV-43537
Multimeter, Fluke 73™	PV-43546
Battery / Conductance Tester	MDX - 610P

ENGINE, CLUTCH, & TRANSMISSION TOOLS

TOOL	PART NUMBER
Clutch Shaft Bearing Support (for clutch shaft installation)	PV-47331
Crankcase Assembly Tool (Crankcase Installer)	PV-46299 (Must be used with PV-45030) and Adapter (Extension) PVX-47429
Crankcase Assembly Tool Adapter	PVX-47429
Crankshaft Bearing Protector	PV-47207
Crankshaft Rotation Tool	PV-48736
Crankcase Separator (Crankcase Removal)	PV-47332B (MY11 complete new kit), or PV-47332A & PV-50371 (PV-50371 updates PV-47332A for MY11 engines)
Engine Hoist or Lift	Commercially Available
Engine Lock Tool	PV-43502-A
Engine Stand	Commercially Available
Flywheel Puller	PV-43533
Mainshaft (Clutch Shaft) Holder	PV-45028
Crankcase Installation Tool (Crankcase Assembly)	PV-46299 (Must be used with PV-45030)
Mainshaft (Output Shaft) Seal Installation Tool	PV-43505
Piston Ring Compressor (97mm +)	Includes PV-43570-1 Pliers, PV-43570-2 Band (3 5/8" to 3 7/8")
Valve Spring Compressors (Adapter is PV-43513-A)	PV-1253 or PV-4019 (Quick Release)

STEERING & SUSPENSION TOOLS

TOOL	PART NUMBER
Blind Bearing Remover Set	PV-43551
Wheel Bearing Service Set	PV-49462
Fork Spring Compressor	PV-49463
Cartridge Shaft Extension	PV-49453
Cartridge Holder	PV-49452
Fork Oil Level Gauge	PV-59000-A
Fork Seal Driver 43mm, Inverted Forks	PV-47035
Fork Seal Guide Tool, 43mm	PV-47037
Steering Bearing, Wheel Bearing Installation Set	PV-43515
Steering Stem Bearing Adjustment Socket	PV-43508
Steering Stem Bearing Spanner Wrench	PV-43509
Shock Spring Compressor	PV-43571

WHEEL & TIRE TOOLS

TOOL	PART NUMBER
Air Pressure Gauge	PV-48909 (Victory Air Pump & Gauge) Or Commercially Available Tire Pressure Gauge
Tire Bead Breaker (May be part of the tire removal equipment being used)	Commercially Available
Tire Mounting Lubricant	Commercially Available
Tire Removal Equipment	Commercially Available
Rim Protector	PV-43536
Wheel Balancing/Truing Stand	Commercially Available

FUEL SYSTEM & FUEL INJECTION TOOLS

TOOL	PART NUMBER
(See Chapter 5 for more information)	
Victory/Polaris Diagnostic Tool Kit	PU-46085-A
PU-46085-A (above) INCLUDES:	Digital Wrench Software: PU-48731
	Standard Interface Cable: PU-47151
	Victory Adapter: PV-46085-2
	SmartLink Interface Kit: PU-47471
Electrical Connector Test Adapter Kit	PV-43526
Cross Roads / Cross Country Fuel Tank Fitting plug tool	PV-50251
Fuel Pressure Gauge	PU-43506-A
Fuel Pressure Gauge Adapter	PV-48656
Fluke 73 Digital Multi-Meter or Fluke 77 DMM	PV-48656 (Fluke 77 - PV-43568)
Laptop Computer (Refer to diagnostic software user manual or HELP section for minimum specifications	Commercially Available
Relay Jumper (to bypass fuel pump relay and run pump)	PU-49466

TOOL ORDERING INFORMATION

Order Special Service Tools from SPX Corporation (Phone 800-328-6657 / FAX 586-578-7375) or use the link on the Victory Dealer Web site.

If you are not a Victory dealer use the phone or FAX number listed above or visit http://polaris.spx.com/

TRANSPORTING, ELEVATING, AND SECURING THE MOTORCYCLE

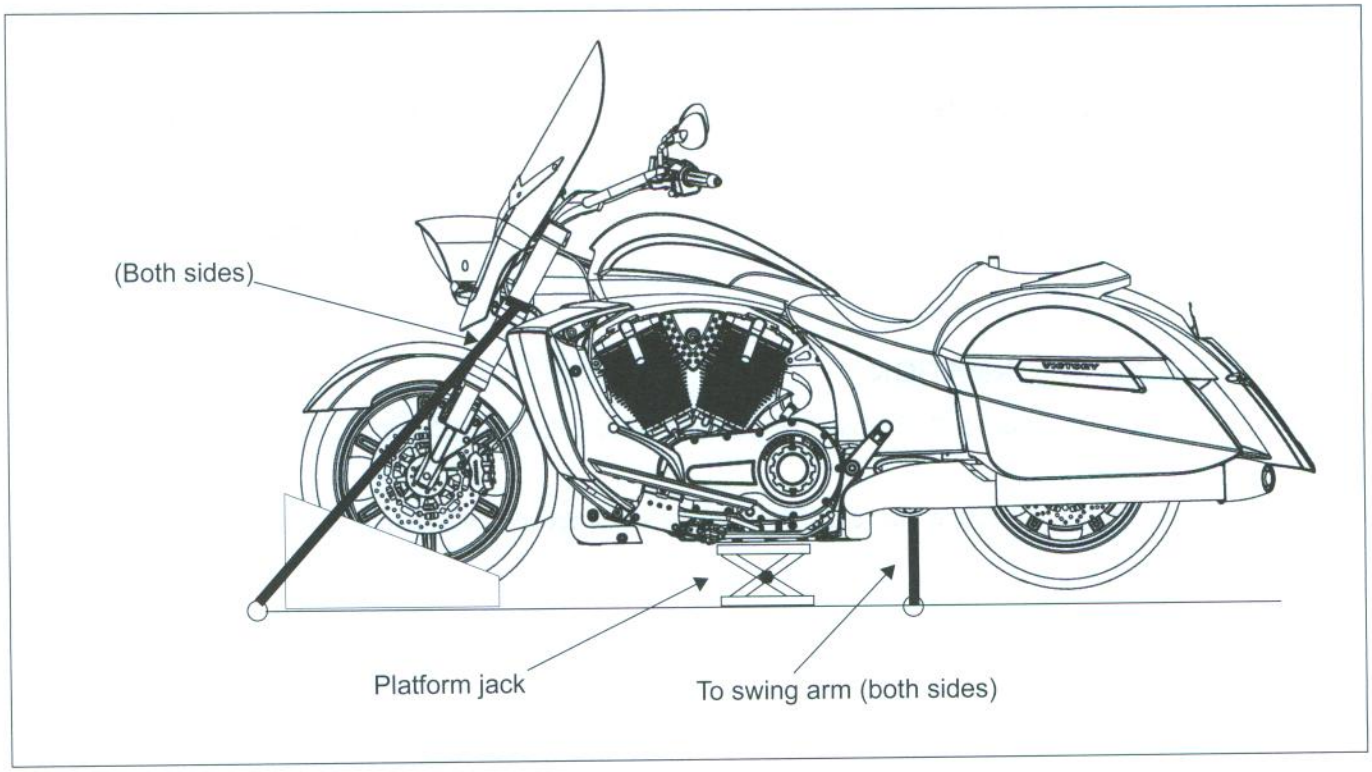
GENERAL GUIDELINES

⚠ WARNING

Care should be taken to be sure the motorcycle will not tip or fall while elevated. Severe personal injury or death could occur if the motorcycle tips or falls.

If you must transport the motorcycle or secure it to a lift table:

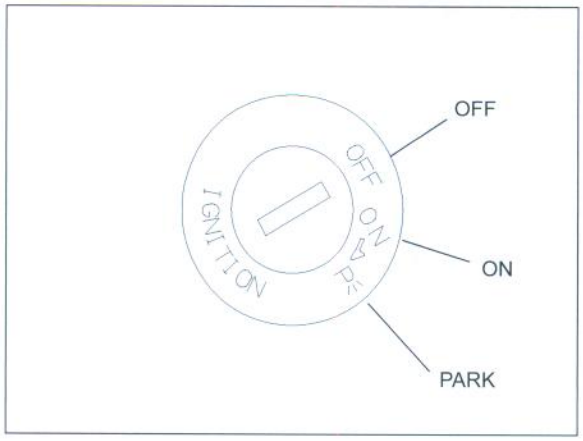
- Use a truck, trailer, or lift table designed or equipped properly for motorcycles. Review truck, trailer or lift manufacturer's recommendations.
- Do not tow the motorcycle with another vehicle, as towing will impair the motorcycle's steering and handling, which can cause a loss of control.
- Position and restrain the motorcycle so it remains upright on the truck, trailer, or lift table as gasoline may leak out of the fuel tank vent if the motorcycle is transported at extreme angles. Gasoline is a fire hazard and it can also damage the motorcycle's finish.
- Do not restrain the motorcycle using the handlebars. Place soft tiedown straps around lower triple clamp and fork tube, clear of any cables, wire harness, or other parts.
- Secure the rear of the motorcycle with tiedowns around the swingarm, being careful to avoid brake lines, exhaust, drive belt, or drive belt guards.
- The motorcycle can be elevated by placing a stable, flat platform jack or lift mechanism on a firm flat surface and lifting under the engine crankcase. The platform should be a *minimum* 12 inches square, and clear of any components under the motorcycle. DO NOT attempt to lift the motorcycle without properly securing it with straps.



KEY SWITCH

IGNITION KEY

The ignition key operates the ignition switch and saddle bag locks.



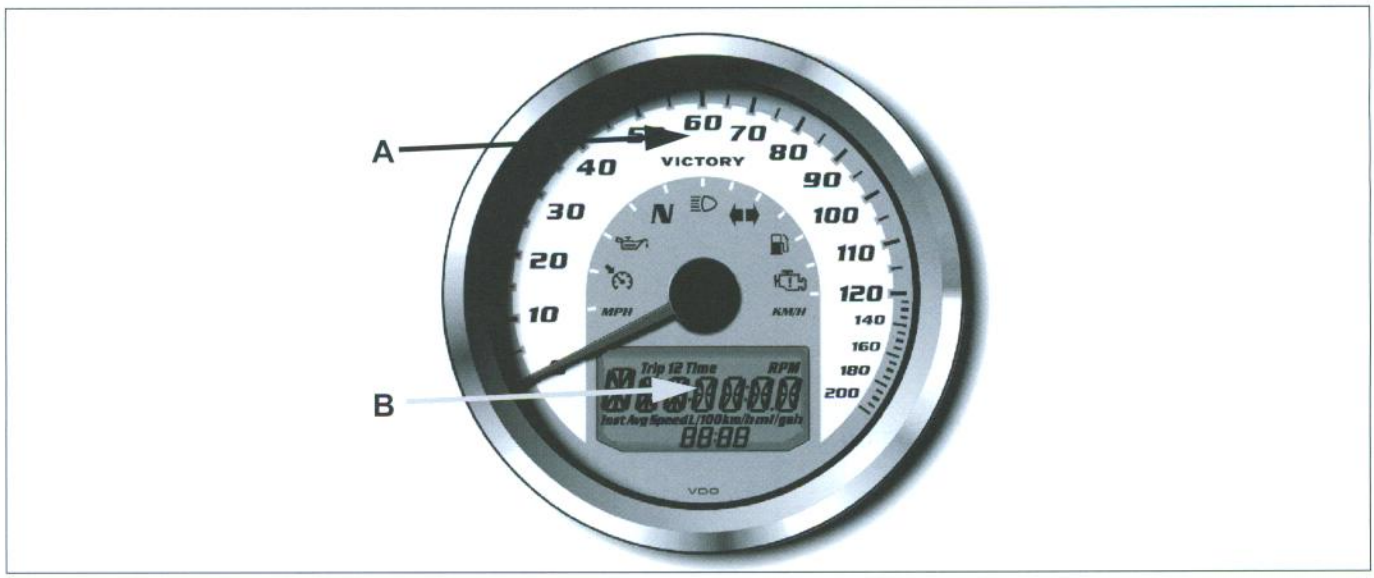
IGNITION SWITCH

The ignition switch has 3 positions - OFF, ON, and PARK.

Ignition Switch Function

OFF	No electrical circuits are active. Ignition key can be removed from the switch.
ON	All electrical circuits are energized and the ignition key cannot be removed. The headlight, tail light, and instrument lights illuminate. The engine stop/run switch must be in the RUN position to start the engine or activate the turn signals and other electrical features.
PARK	Tail light, indicator lights, and license plate light illuminate. The radio can be operated and instrumentation is active. The emergency flashers can be activated and the ignition key can be removed. You must push the ignition key into the switch to select the PARK position.

CROSS ROADS SPEEDOMETER / INSTRUMENTS



SPEEDOMETER (A)

The speedometer receives an input signal from the ECM. The ECM outputs the speed information to the speedometer via CAN. These outputs are displayed by the analog needle (speed) or in the MFD window (distance). The speedometer operates only when the ignition switch is in the On position and the speed sensor has an input (vehicle is moving). Refer to Chapter 19 for speedometer or sensor diagnostics.

Multi-Function Display (MFD) (B)

The MFD can display many items, selectable by the MODE button on the RH handlebar switch. See chapter 19 for more information.

The MFD can display the following: (some accessory modes listed)

- Odometer
- Trip Odometer 1 & 2
- Fuel Economy
- Tachometer
- Gear Indicator
- Clock
- Trip Hours
- Avg. Speed
- DC Voltage
- Ambient Air Temp
- Diagnostic Functionality (Engine Error Codes)

Speedometer Gear position Indicator

The Gear Indicator will show two dashes (--) if the stop/run switch is in the RUN position and the motorcycle is not moving while in gear. The dashes also display if the stop/run switch is in the STOP position. The two dashes will also display of the clutch lever is pulled IN while the vehicle is moving and in gear (coasting).

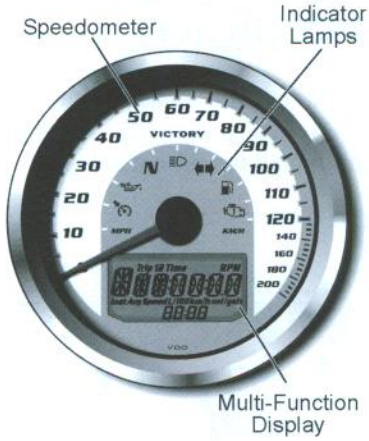
The Gear indicator will show the gear number (1 through 6) when the vehicle is running AND the vehicle is moving AND the transmission is in gear 1 through 6 AND the clutch lever is out and the clutch is engaged. The letter "N" is displayed in Neutral.

Speedometer INDICATOR LIGHTS

Instrument Cluster

Speedometer

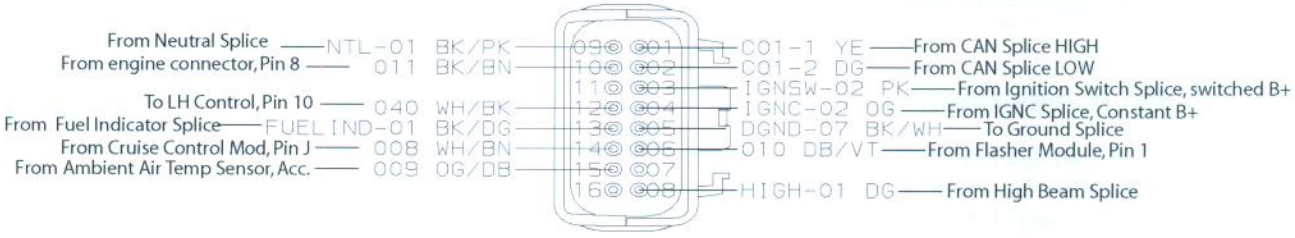
The speedometer displays vehicle speed in either miles per hour (MPH) or kilometers per hour (km/h).



Indicator Lamps

Lamp	Indicates	Condition
N	Neutral	This lamp illuminates when the transmission is in neutral and the ignition key is in the ON position.
	High Beam	This lamp illuminates when the headlamp switch is set to high beam.
	Turn Signal	The turn signal indicator flashes when the left, right, or both turn signals (hazard) are active. *If a bulb fails, or if there is a short circuit in the signal system, the lamp flashes at more than twice the normal rate.*
	Low Oil Pressure	This lamp illuminates when the ignition switch is in the ON position and the engine is off, indicating that the indicator circuit is functioning properly. This lamp also illuminates if engine oil pressure drops below safe operating pressure. If this lamp illuminates while the engine is running, turn the engine off as soon as safely possible and check the oil level. *If the oil level is correct and the lamp remains on after the engine is restarted, turn the engine off immediately.*
	Low Fuel	This lamp illuminates when approximately one gallon (3.8 liters) of fuel remains in the fuel tank.
	Check Engine	This lamp illuminates momentarily when the ignition switch is in the ON position and the engine is off. This indicates proper function. *If this lamp illuminates while the engine is running, contact an authorized VICTORY dealer promptly for diagnosis.* The light will remain on if the tilt sensor shuts down the engine. See page 37. If abnormal sensor or engine operation is detected the light will remain on as long as the fault condition exists. Retrieve the error codes for diagnosis. See page 22. This lamp is also known as a malfunction indicator lamp (MIL).
	Cruise Control Engaged (if equipped)	

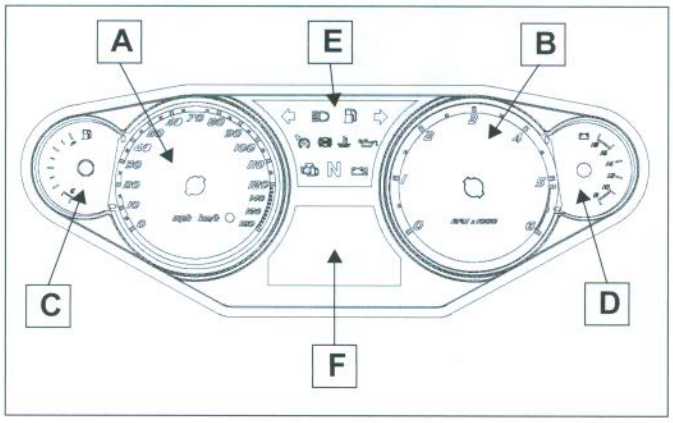
Speedometer Connector



PIN	FUNCTION
01	SPEEDOMETER CAN HIGH
02	SPEEDOMETER CAN LOW
03	SPEEDOMETER SWITCHED POWER
04	SPEEDOMETER CONSTANT POWER
05	SPEEDOMETER GROUND
06	FLASHER INDICATOR OUT
08	HIGH BEAM INDICATOR
09	NEUTRAL INDICATOR
10	OIL PRESSURE INDICATOR
12	SET SWITCH OUTPUT
13	FUEL INDICATOR LIGHT
14	CRUISE INDICATOR OUTPUT
15	AMBIENT AIR TEMP SIGNAL

INSTRUMENT CLUSTER (CROSS COUNTRY)

The instrument cluster includes the speedometer (A), tachometer (B), fuel gauge (C), volt meter (D), indicator lamps (E), and multi-function display (F).



SPEEDOMETER (Cross Country)

(A) The speedometer displays current speed in either miles per hour (MPH) or kilometers per hour (km/h).

TACHOMETER (Cross Country)

(B) The tachometer displays engine speed in revolutions per minute (RPM). A red line on the face indicates maximum safe engine RPM.

⚠ WARNING

Excessive engine speed can cause engine damage or failure, which could result in serious injury or death. Do not allow engine speed to exceed the red line.

FUEL GAUGE (Cross Country)

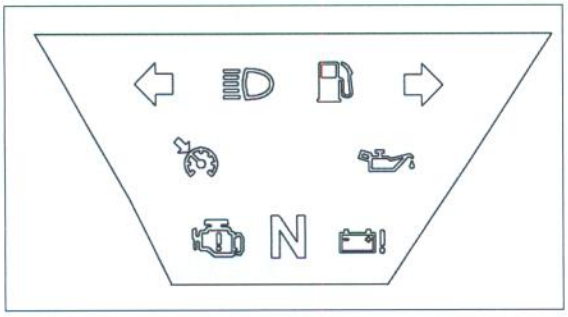
(C) The fuel gauge displays fuel level. The key must be in the ON or PARK position. For most accurate reading, sit on the motorcycle and bring it to the upright position. To change display units (metric) see page 1.26.

VOLT METER (Cross Country)

The volt meter displays battery voltage when the key is in the ON position. If the engine is not running, approximate battery voltage displays. If the engine is running, approximate charging voltage displays.

INDICATOR LAMP DISPLAY (Cross Country)

The indicator lamps are located on the upper display in the center of the instrument panel.



Indicator Lamp Function (Cross Country)

Neutral	Illuminates when transmission is in neutral and ignition key is in the ON or PARK position.
High Beam	Illuminates when the head lamp switch is set to HIGH BEAM.
Check Engine	The Malfunction Indicator Lamp (MIL) illuminates momentarily when the ignition switch is in the ON position and the engine is off. This indicates proper function. The light will remain on if the Tip Over Sensor (TOS) shuts down the engine. If abnormal sensor or engine operation is detected the light will remain on as long as the fault condition exists. Retrieve the error codes for diagnosis (page 1.24).
Low Oil Pressure	The Low Oil Pressure indicator illuminates when the ignition switch is in the ON position and the engine is off, indicating that the indicator circuit is functioning properly. This lamp also illuminates if engine oil pressure drops below safe operating pressure. If this lamp illuminates while the engine is running, turn the engine off as soon as safely possible and check the oil level. If the oil level is correct and the lamp remains on after the engine is restarted, turn the engine off immediately.

Indicator Lamp Function (Cross Country)

(L) (R) Turn Signal	One arrow flashes when the corresponding turn signal is activated. Both flash when the hazard is activated. If a bulb fails, or if there is a short circuit in the signal system, the lamp flashes at more than twice the normal rate.
Low Fuel	The Low Fuel indicator illuminates when approximately 1.0 gallons (3.8 liters) of fuel remains in the fuel tank.
Low Battery	This lamp illuminates when battery voltage is low. Inspect battery and charging system. See Chapter 16.
Cruise Control	Cruise Control indicator illuminates when cruise control power is ON and a set speed is selected. Review *Cruise Control Safety & Operation* in the Rider's Manual before operating the Cruise Control.

MULTI FUNCTION DISPLAY (MFD) (Cross Country)

Use the MODE button (page 1.27) to toggle through the modes of the MFD. To change display units (metric) see page 1.26. Permanent and trip computer modes are described on the following pages.

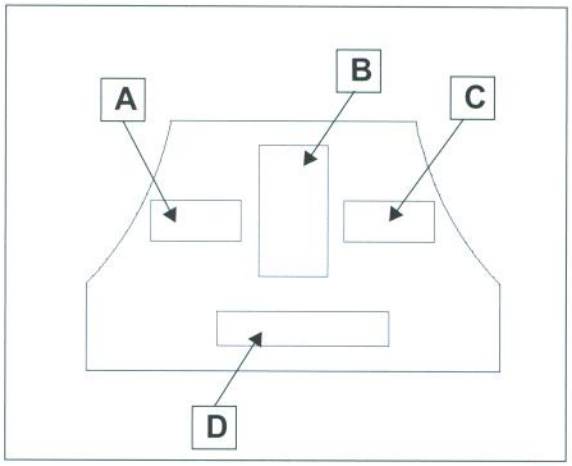
PERMANENTLY DISPLAYED MODES:

- Clock (A)
- Gear Position (B)
- Ambient Temperature (C)

TRIP COMPUTER (D) MODES*:

- Odometer
- Trip Odometer 1 & 2**
- Average Fuel Economy**
- Average Speed**
- Fuel Range
- Instantaneous Fuel Economy
- Trip Hours Meter**

**Press and hold the mode button to reset.



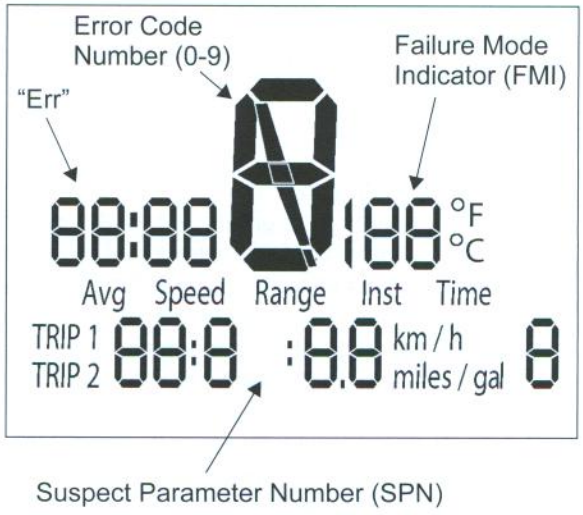
ENGINE ERROR CODES (Cross Country)

The error screen displays only when the check engine (MIL) light is on or when it goes on and off during one ignition cycle (key on / key off cycle). Error codes are not stored. When the key is turned off, the code and message is lost, but it will reappear if the fault occurs again after starting the engine.

If the MIL light illuminates, retrieve the error codes from the display or connect Digital Wrench to view historic and current fault codes (Chapter 5).

To retrieve error codes from the display:

1. If the error codes are not displayed, use the mode button to toggle until "Err" displays in the clock area.
2. Record the three code numbers displayed in the gear position, temperature, and odometer displays.
3. Refer to Chapter 5 for a list of codes.



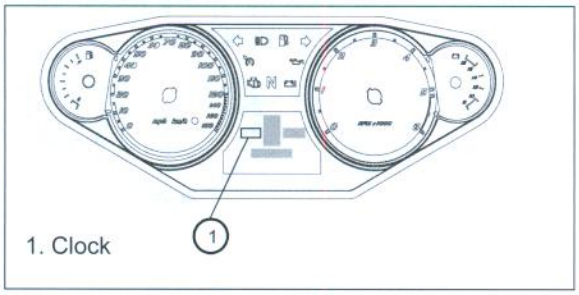
CLOCK (Cross Country)

The clock is displayed with the key in the ON or PARK position.

The clock must be reset any time the battery is disconnected or discharged.

To change from 12 hour clock to 24 hour clock, see page 1.26.

To set the clock:



1. Clock

NOTE: If the LOW FUEL light is flashing, the display will not enter the CLOCK SET mode.

Setting the clock:

1. Turn the key to ON or PARK. Use the MODE button (page 1.27) to toggle the display to **ODOMETER**.
2. Press and *hold* the MODE button until the hour segment flashes, then release the button.
3. With the segment flashing, tap the MODE button to advance to the desired setting.
4. Press and hold the mode button until the next segment flashes. Release the button.
5. Repeat Steps 3 and 4 twice to set the 10-minute and 1-minute segments. After completing the 1-minute segment, Step 4 will save the new setting and exit the clock mode.
6. Turn the key OFF.

TRIP INFORMATION (Cross Country)

Average speed, average fuel economy, and a trip timer are displayed individually using the MODE button. *Average fuel economy data is most accurate when taken over multiple trips or multiple tanks of fuel.*

To RESET the above items, tap MODE button until desired data item is displayed, then press and HOLD the MODE button until the item resets.

The Trip Timer accumulates time only when the ignition switch is in the ON position.

GEAR POSITION (Cross Country)

The Gear Indicator will show two dashes (--) if the stop/run switch is in the RUN position and the motorcycle is not moving while in gear. The dashes also display if the stop/run switch is in the STOP position. The two dashes will also display of the clutch lever is pulled IN while the vehicle is moving and in gear (coasting).

The Gear indicator will show the gear number (1 through 6) when the vehicle is running AND the vehicle is moving AND the transmission is in gear 1 through 6 AND the clutch lever is out and the clutch is engaged. The letter "N" is displayed in Neutral.

TRIP ODOMETER (Cross Country)

(3) The trip odometer shows total miles traveled since the trip odometer was reset. Use the MODE button (page 1.27) to toggle between odometer and trip meter. To reset the trip meter:

- Turn the key ON and toggle to the trip meter to TRIP 1 or 2.
- *Hold* the MODE button until the trip meter resets.
- To change from miles to kilometers see page 1.26.