



Buell xb service manual pdf

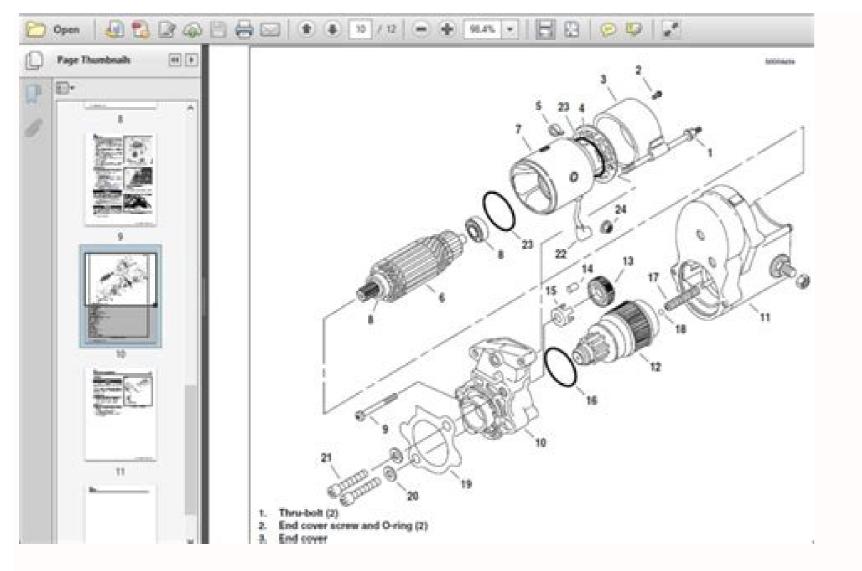








SUPER



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SPROCKET COVER WIRING 7.25 GENERAL REMOVAL Connectors for the neutral switch [131] and the oil pressure Remove sprocket covers. Bypass valve stuck in closed position. Deutsch Connectors for the neutral switch [131] and the oil pressure Remove sprocket covers. Bypass valve stuck in closed position. Deutsch Connectors for the neutral switch [131] and the oil pressure Remove sprocket covers. Bypass valve stuck in closed position. Connectors and Interactive Exhaust Cable Under Sprocket Cover 31. Page 599 SUBJECT.....PAGE NO. 27. Electrical Connectors Behind Windscreen: Lightning Figure 7-8. IAC sensor connection [87] Figure 3-1. Page 650 Table F-1. Figure 2-93. See 7.12 FRONT TURN SIGNALS. MIRRORS 2.35 NOTES REMOVAL In a convex mirror, cars and other objects will look smaller Figure 2-154. Relay terminal Figure D-8. operating motorcycle. Position spring seat with its larger outer diameter side toward diaphragm spring. Idle air control (IAC) 3. Packard Micro 64 Connector: Terminal in Crimper 2008 XB Service: Appendix A Connector: Terminal in Crimper 2008 XB Service: Appe TOOL MASTER CYLINDER AND HAND... 0.003-0.022 mm Fit in oil pump body bore. First, connect positive battery cable to starter using fastener with washer. PART NUMBER TOOL NAME Moving to the mating end of the connector, take note of SNAP-ON TT600-3 SNAP-ON TT600-3 SNAP-ON PICK the small opening on the chamber wall side of each ter- minal. Page 421 sm00321 15 16 Countershaft 5th gear (integral to shaft) Split bearing Countershaft 2rd gear Split bearing Thrust washer Dog ring Retaining ring Spacer Dog ring Split bearing Countershaft 4th gear Countershaft 2nd gear Retaining ring Spacer 10. 15. Shifter shaft 2. This official service manual is for the following motorcycles. sm00323 sm00325 1. Muffler valve Figure D-10. Open position 2. Gasket not sold separately. Remove front caliper bleeder valve cap and install a length of plastic tubing over valve (1). pd00199 pd00200 Figure 1-54. Check lifter roller end clearance. WIRING DIAGRAMS CONNECTOR LOCATIONS Connector Number On wiring diagrams and in service/repair instructions, con- Function/Location nectors are identified by a number in brackets. Remove the windscreen/windshield assembly from the vehicle. For Lightning Models: See Figure 2-142. Header mount fastener 4. Disconnect the CKP [79] on the left side of the "V" bracket. Ignition coil 3. REAR BRAKE LINE 2.13 REMOVAL: FIREBOLT sm00550 Remove seat. In next step, be sure breather hoses do not extend past Intake air temperature sensor tower. Wipe up any spilled oil on muffler. Turn ignition key switch to LOCK. Page 8 Accordingly, anyone whoPAGE NO. Antidotes for Battery Acid Safety Precautions CONTACT TREATMENT Never charge a battery without first reviewing the instructions External Flush with water. Ignition Switch Assembly 7-10 2008 XB Service: Electrical... Page 379 sm00061 sm00059 Figure 5-9. Bearing 7. 2008 uses a service products. Page 373 SUBJECT..... Buell XB Models Service Manual - PDF eBook Included is the Service Manual (#99490-08Y), and Electrical Diagnostics Manual (#99493-08Y) - English language This Service Manual (#99490-08Y), and Electrical Diagnostics Manual (#99493-08Y) - English language This Service Manual (#99493-08Y) - English language This Service Manual (#99490-08Y), and Electrical Diagnostics Manual (#99493-08Y) - English language This Service Manual (#99493-08Y) - English language5-9 General.. ...6-38 Assembly. Removal..... ...C-1 C.2 FLUID CONVERSIONC-2 C.3 TORQUE ..C-3... Page 88 sm00519 sm00520 1. shock bolt and raise scissor jack until the lower bolt can be removed by hand. The system utilizes failure. Page 661 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Battery terminal fasteners 72-96 in-lbs 8-11 Nm 3.5 ENGINE INSTALLATION, Assembly Battery terminal fasteners 72-96 in-lbs 8-11 Nm 4.3 ELECTRONIC CONTROL MODULE (ECM), Installation: Firebolt Battery terminal fasteners 72-96 in-lbs 8-11 Nm 4.3 ELECTRONIC CONTROL MODULE... engagement with the clevis (3), the flat sides must extend sm00490 below the extruded nut (1) in the clevis by at least one full thread. Should be performed by an authorized Buell dealer, unless you have the proper tools, service data and are mechanically qualified. Capacities: 2008 XB12Ss, XB12STT ITEM U.S. LITERS Fuel tank total 4.40 gallons 16.7 (including reserve) Page 79 Table 2-9. Tighten master cylinder banjo bolt (14) (metric) to 16-20 ft-lbs (22-27 Nm). See 1.14 THROTTLE CABLE. Retaining rings can slip from the pliers and could be propelled with enough force to cause serious eye injury. Page 247 13. On Firebolt models, route transmis- NOTES sion vent line up through left side of frame exiting Vehicle should be placed onto the lift with rear tire in the under the rear master cylinder under the rider's seat. Socket terminal Figure A-45. Install ignition switch. Carefully inspect all bearing components for wear and/or sm00585 corrosion. Page 292 sm00169 sm00156 Figure 3-86. After applying LOCTITE 271 (red), install flange bolt (6) sm00268 and shift pedal (4) to primary cover, and tighten to 22-24 ft-lbs (30-32.5 Nm). Insert Forcing Screw and Backing Plate Figure 2-13. The shifter mesh type housed in an extension of the crankcase. Idler pulley bracket 5. Attach return line connections on the bottom and right side sm00219 of the oil pump body. Tighten but do not Figure 2-84. Insert the stripped end (wire core) between the crimp tails at an up angle until the wire core touches the face of the socket locator bar above the square opening. Disconnect 3-place Deutsch connector [65] under sprocket cover. Remove crankcase bolt set (14 fasteners). sm00130 Crankcase breather Gasket (push rod cover) Screw (4) Screw (2) Push rod cover (4) Screw (2) Screw (4) Fiber seal (4) Rocker cover (lower) O-ring (push rod cover - 2) Rocker cover (top) Rocker arm (2) Push rod... At this point both mainshaft and countershaft sub-assemblies are ready to be pressed into the left crankcase half. Bleeding Front Brake NOTE Hydraulic brake fluid bladder-type pressure equipment can be used to fill the brake master cylinder through the bleeder valve if master cylinder reservoir cover is removed to prevent pres- surization. TRANSMISSION SPROCKET 6.16 REMOVAL sm00304 PART NUMBER TOOL B-45659 SPROCKET LOCKING TOOL HD-46288 MAINSHAFT LOCKNUT WRENCH HD-94660-37B MAINSHAFT LOCKNUT WRENCH NOTE Use spacer and fastener from B-45659 to install sprocket locking tool. The rear fender captures the rear brake line to help maintain the proper alignment and location. sm00360 sm00361 1. Install fastener (14) attaching right front trunk pan to right side tail section and tighten to 12-36 in-lbs (1.4-4 Nm). sm00476 1. Remove the Bearing Front Rotor Removal Figure 2-16. Pull on windshield to verify attachment. Velocity stack sm00502 Figure 1-42. Terminals are crimped twice to a wire lead, once over the insulation/seal. Exhaust valve actuator (mounted to top of functional air cleaner cover) Figure D-24. Gasket is part of the piston jet assembly. Attach oil cooler return line to oil pump. Inspecting Crimps Figure A-42. Install ground bolt through main battery ground cable and actuator ground wire. Tighten to 48-72 in-lbs (5.4-8.1 Nm). Oil seal 4. Bank angle sensor 2. Connect negative battery cable to battery terminal. Tighten fastener to 72-96 in-lbs (8.6-10.9 Nm). While riding, a loose seat can shift death or serious injury. Figure A-10 Figur fastener hole. Low visibility of rider can result in locked in position. Install lock into new latch mechanism NOTE and secure with large hex nut. Install cable strap securing actuator cable, neutral switch and oil pressure wiring. Connect 1-place connector [137] to wiring GENERAL harness. TRANSMISSION DISASSEMBLY Figure 6-56. However, before replacing a component, check that the Do not turn display over. Horizontal Headlamp Adjustment Fastener Locations: Ulysses pd00201 Figure 1-53. To prevent accidental vehicle start-up, which could cause Reinstall protective rubber boot. Center of crimp 4. Rocker Arm Specifications ROCKER ARM NEW COMPONENTS SERVICE WEAR LIMITS Shaft fit in bushing (loose) 0.0005-0.0020 in. Rear caliper mounting fasteners 2. Page 386 NOTES... Gap between ferrule and bracket should be 1/16-1/8 in. The bottom of the preload adjuster is round with two flat sides so a wrench (2) can be used to... TRIPLE TAIL: ULYSSES 2.56 the upright position, it is a passenger backrest (2) with subtle GENERAL flex for passenger comfort. Exhaust valve actuator 2. Page 589 et00005 Battery Cable Starter Solenoid [128A] Battery Starter Motor [GRD2] Ulysses/Lightning Firebolt Fuse/Relay Assembly Battery, 30 Amp [61B] J-FUSE To Voltage Regulator [77B] [77A] Voltage Regulator Stator [46A] [46B] Figure B-11. fastener and install the rear fastener. Insert key into seat lock and turn pd00187 clockwise approximately 1/8 turn. Turn Signal Controls 2008 XB Service: Electrical 7-31... Crankcase fastener behind shifter mechanism Figure 3-117. On all other models, tighten nut to 80-120 in-lbs (9- After repairing the brake system, test brakes at low speed. Rotor mounting fasteners must be seated into drive Install new washers (9). Header 3. Install connect instrument module. Remove the oil filter adapter from the oil filter used for the If removed, install new anchored cable strap in O.E. location. Buell Motorcycle is a subsidiary of Harley-Davidson Corporation, and is, in fact, a subsidiary whose specialization is the production of exclusive sports bikes. See 1.9 DRIVE BELT MAINTEN- ANCE, Inspection. See Figure 3-70. Place rear shock reservoir assembly (3) into position. Cable stop screw 2. Tighten to 16-20 ft-lbs (22-27 Nm). Page 385 SUBJECT......PAGE NO. 32. Locking bar flange 3. Tighten jam nut (3) against adjuster (4). Page 578 Figure B-5. Installation Figure 2-211 Figure 2-212. Bearing guide, installer Figure 6-30. Seven steel plates. Check that the correct pattern of light is a circular The automatic-on headlamp feature provides increased pattern and is centered on the horizontal line as visibility of the rider to other motorists. Auxiliary (10amp) 3. Verify that the interactive exhaust cable sm00434 (3) is routed behind the frame lug (1) before installing air intake cover. With these workshop service manual, you will be able to achieve perfect results. REMOVAL sm00279 PART NUMBER TOOL NAME HD-38515-91 CLUTCH SPRING FORCING SCREW HD-38515-A SPRING COMPRESSING TOOL To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. Use only Harley-Davidson 10R12X spark plugs. ASSEMBLY/INSTALLATION sm00166 PART NUMBER TOOL NAME HD-34623C PISTON PIN RETAINING RING INSTALLER HD-42322 PISTON SUPPORT PLATE HD-96333-51E PISTON RING COMPRESSOR Figure 3-86. Tighten fasteners to 12-36 in-lbs (1.4-4.0 Nm). Page 551 sm00028 sm00027 1. IGNITION SYSTEM temperature of the engine. primary cover. Air Cleaner Baseplate Assembly INSTALLATION Figure 1-43. Vertical Headlamp Adjustment Fastener: Lightning Models except XB12STT Horizontal Alignment Figure 1-55. Latch screw Figure 2-203. Wire seal 2. Rear Isolator Bolt Figure 3-34. Remove fastener and locknut (5) securing the X-brace bracket (1) to the side case bracket (6). When removing and installing the left air scoop, the alternator and voltage regulator harnesses and connections are secured Remove three engine shroud air scoop fasteners (5). Spacer, sprocket shaft 2. Horn and Instruments Circuit, Firebolt Horn and Instruments Circuit, Firebolt... Crankcase Fasteners OIL FILTER ADAPTER NOTE The oil filter adapter has identical ends. For RING PLIERS this reason, it is important that each component be rein- NOTES stalled in its original location and facing its original direc- tion. To ensure sealing integrity of muffler clamps and prevent the possibility of leakage. Buell recommends that muffler clamp assemblies be discarded and replaced each time they are removed. The DISASSEMBLY rear fastener attaches directly to the battery pan. Figure 2-210. Page 83 Tires and washers (2) securing the from fender (1) to front forks. SEAT 2.54 FIREBOLT Pillion Rider Seat NOTE The trunk is located under the pillion. If condenses to liquid form on the cool metal surfaces inside the motorcycle is used frequently for short trips, less than 15 engine. ally across the tread. Page 224 pd00249 1. Page 319 sm02981 Figure 3-120. Page 684 Tension (table). Threadlocking Agents.....1-2 Primary Chain Adjuster Wiring, Hoses and Lines, Figure 7-65. Return oil line from the oil cooler to the oil filter housing Figure D-33. £5 each online or download your Buell manual here for free!! Buell S1 Lightning '97 Service ManualBuell XB9R '03 Service ManualBuel CHIN FAIRING 2.53 Align left section (3) and loosely install left side fasteners REMOVAL and washers (4). Page 327 sm02941 1. Install turn signal using lockwasher and jam nut. Be sure gaskets, banjo bolt(s), brake line Figure 2-39. See 6.2 PRIMARY COVER. NOTE Figure 4-18 For 2008 Model Year, all Buell engines will come equipped with a piece of conduit approximately 3.94 in. (00122a) The sidestand is located on the left side of the motorcycle. Page 637 sm04376 1. If positive (+) On XB12Ss models, apply LOCTITE 271 (red) and cable should contact ground with negative (-) cable con- install battery tray fasteners and tighten to 48-72 in-... The windshield is secured to the wind- screen using two screws (4) with well nuts (6) and two Remove windshield mounting pins (2). Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Piston pin retaining ring installer Figure 3-72. Center the spacer (2) while installing the wheel bearing. Page 135 Hold damper rod assembly jamnut (3) and remove fork sm03822 cap (1). Page 304 sm00207 Figure 3-99. Handlebar (XB12S, XB12Scg, XB1 Fuel supply fitting. Remove shift brake pedal sleeve (5). Check our other listings. REMOVAL: ULYSSES XB12XT After removing the lower windshield loose from the NOTES windscreen by pulling up sharply at the upper mounting pins. Discard head gasket. Refer to Table 4-4. Page 517 Main harness Bank angle sensor (BAS) connector [13] Main harness ground (high voltage ground wire) Right turn signal connector [45] Rear brake light switch connector [121] Tail light connectors [93] Ground terminals [GRD1] and [GRD3] Left and right trunk pan fasteners... Page 471 NOTE sm04640 After installation is complete, return to the right hand grip wire and rotate the throttle is rotated. After applying LOCTITE 271 (red), attach ignition switch assembly to upper triple clamp using ignition switch fasteners (7, 6) install spacer (3) onto fasteners (7, 6) install chin fairing. PACKARD 150 METRI-PACK CONNECTORS A.10 150 METRI-P wire location purposes, alpha characters are stamped into Metri-Pack connectors are embossed with the initials (P.E.D.). fork into the upper fork clamp load. FAIRING SUPPORT BRACKET: FIREBOLT 2.29 Connect instrument cluster connector and install instru REMOVAL ment cluster. Read the appropriate sections of this manual Spark plugs in bad condition or have improper gap or are before performing any work. sm00538 1. Manifold to cylinder brace fastener 2. NOTE Only loosen headlamp alignment fasteners enough to adjust headlamp. Disconnect oil return line (7) at swingarm/oil reservoir Disconnect vent oil line from oil pump. PACKARD METRI-PACK TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPS sm00035 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMIN embossed with the initials P.E.D. require Packard crimp tools to crimp terminals to wire leads. sm00124 Oil cooler air scoop fastener and washer (2) Ram air scoop fastener and washer (2) Ram air scoop fastener and washer (3) Ram air scoop fastener and washer (battery positive cable (red) first, tightening to 72-96 in-lbs (8-11 Nm). Front Caliper Assembly 2-32 2008 XB Service: Chassis... Using a Snap-on seal and bushing driver, tap in the Holding the rack, fit the RH grab handle (2) unto the front bearing. Idler Pulley Assembly 6-24 2008 XB Service: Drive/Transmission... Page 685 Buell..... hose. NOTE Rear brake light switch connector (5) [121]. Instrument module 2. DRIVE BELT REMOVAL sm00302 Place a scissor jack under jacking point and raise rear wheel off ground. The drive belt tension on a new belt will loosen after approxim- Signs of puncture or cracking at the base of the belt teeth. connectors Fuel pump housing Low fuel level sensor O-rings Fastener Fuel filter Fuel pressure regulator Fuel pump Low fuel level sensor connector Figure 4-34. EXHAUST SYSTEM 4.16 REMOVAL AND DISASSEMBLY Front Muffler Mount Remove muffler. Stem pinch fastener 3. Page 20 TABLE OF CONTENTS Active Intake System..... ..E-1 Acronyms and Abbreviations.......E-1 Adjustment......E-1 REFERENCE MATERIAL Throttle Stop Screw.......E-3 Removal.......E-4 Installation...... ...XXVII XIV TABLE OF CONTENTS... Table 1-4. (0.051 mm) or more, it must be replaced. Connector Locations: XB Models NUMBER COMPONENT TYPE LOCATION FIREBOLT LIGHTNING ULYSSES [46] Stator 4-place Deutsch [61] Fuse and diode assembly Spade terminals Right side of fairing [62] Relay assembly Spade terminals Left side of fairing [65] Vehicle speed sensor (VSS) 3-place Deutsch Under sprocket cover [77]... On Lightning and Ulysses models, install wire harness guide on steering neck and tighten to 36-60 in-lbs (4-6.7 13. NOTE Service wear limits are given as a guideline for measuring components that are not new. Page 5 READER COMMENTS Blank Text Here The Buell Motorcycle Company maintains a continuous effort to improve the quality and usefulness of its publications. Pump Octane (R+M)/2 91 (95 RON) some lubricants interact chemically when mixed. damaged steering or suspension systems. CYLINDER HEAD REMOVAL sm00131 Before removing the cylinder head assembly, it is necessary to rotate engine down as described in 3.3 ENGINE ROTATION SERVICE. Right tail section 3. bracket and install turn signals (6, 7). Remove seat. Replace cables not meeting resistance Resistor-type hightension spark plug cables have a carbon- specifications. Open throttle and look for raw fuel in manifold. Front 2. Install Nut (Typical) Figure 6-79. Attach cable straps to upper fork clamp. CHARGING SYSTEM GENERAL Alternator Consists of two main components: The charging system consists of the alternator and regulator. Route the interactive exhaust cable in front of the vent and return oil 26. Position the insulation/seal crimp in the nest. Remove seat and pillion. Page 289 NOTE sm00162 Install second compression ring with dot towards top. Washer (3) 4. BEARING INSTALLATION drive gear. adjustable. While riding, a loose seat can shift Remove seat lock clip (1) by sliding from seat lock plate causing loss of control, which could result in death or (6). Figure B-4. NOTE The troubleshooting section of this manual is a guide to dia- Starts Hard gnose problems. Oxygen sensor (O2) 6. Table 4-5. Horn and Instruments Circuit, All Modelshooting section of this manual is a guide to dia- Starts Hard gnose problems. Horn and Instruments Circuit, All Models... Figure 4-10. Page 293 sm00171 1. Install pad spring (7) and brake pads (10). STEERING HEAD BEARINGS 2.19 REMOVAL INSTALLATION Place a scissor jack under jacking point and raise front PART NUMBER TOOL NAME wheel off ground. GENERAL Figure 7-75. Wiring Harness, Left Side View 2008 XB Service: Appendix D Hose and Wire Routing D-31... Page 115 Be sure that all lights and switches operate properly before After installing seat, pull upward on seat to be sure it is operating motorcycle. Oxygen sensor (02) Figure 2-192. REMOVAL: LIGHTNING INSTALLATION: LIGHTNING NOTE Figure 2-182. From fuel tank (California) 4. Figure 2-182. From Tighten to 30-40 in- lbs (3-4 Nm). Jam nut and lockwasher 3. ASSEMBLY PART NUMBER TOOL NAME HD-44060-6 BEARING INSTALLER Swingarm Figure 2-109. Disconnect horn connectors [122] (2). Aligning Transmission Sprocket 6-56 2008 XB Service: Drive/Transmission... End cap 2. Repair Turn ignition/key switch to ON. (0.406 mm) of runout should be replaced or machined on a lathe. The tails should be folded in on the wire core without any distortion or excess wire strands. Install caliper assembly on caliper mount. To maintain the safety, dependability, and emission and noise control performance, it is essential that the are followed. Page 44 sm00495 sm00496 Figure 1-20. sm00548 Remove the clevis from the rod assembly (3). Install new retaining ring in groove of outer ramp hub. Remove rear master cylinder reservoir cover. REAR BRAKE MASTER CYLINDER 2.12 REMOVAL: FIREBOLT/LIGHTNING sm00539 Figure 2-46. Primary cover 2. glass and decrease bulb life. Page 609 sm04349 1. Right way (mica must be cut away clean between segments) 5. Install cable strap (3) holding shock reservoir hose, wire harness and fuel vent hose to subframe tail assembly. Ignition switch [33] Figure 7-96. Wheel 2. Grab headlamp grille on either side and spread to remove from headlamp assemblies. Unthread axle approximately 15 threads to release tension from drive belt. Install footpeg mount fasteners (2), and tighten to 132-144 HEEL GUARD REPLACEMENT in-lbs (15-16 Nm). Stud (2) 4. CLEANING AND INSPECTION Measure and record rocker arm shaft diameter. For terminal crimping, use the PACKARD TERMINAL CRIMPER (Part No. Figure A-2 Neutral switch 6. Do not tighten. Adjust as follows: Figure 1-29. Melted sealant Figure A-52. After applying LOCTITE 271 (red), tighten engine shift lever pinch screw to 48-60 in-lbs (5.4-6.8 Nm). NOTE Install lower caliper mounting fastener (4). One damper spring seat. 0.0889 mm End clearance 0.003-0.013 in. Remove return oil line (7). (00316a After servicing brakes and before moving motorcycle, pump brakes to build brake system pressure. Remove clip (5). Slide idler pulley bracket (4) off stude (3). Remove fasteners (2) from left and right front fork slider protectors. See 7.4 SPARK PLUG CABLES. Shifter Shaft Assembly 12. D.1 APPENDIX D: HOSE AND WIRE .D-1... INSTRUMENT MODULE 7.22 Remove the nine fasteners securing the back of the GENERAL module housing to the display and remove back cover. Finger-tighten the sleeve parts. sm00689 Seat lock Retainer Plate Cable end Retainer Latch bracket Cable Trunk pan 6. A characteristic feature of motorcycles manufactured by the Buell Motorcycle Company is a specially designed tubular frame made of chrome-molybdenum steel. See Figure 2-15. HEEL GUARD AND FOOTPEGS sm03636 Footpeg Removal Figure 2-157. FRAME 2.24 Install main wire harness. Install truing arbor in wheel hub and place wheel in the WHEEL TRUING AND BALANCING STAND (Part No. FRONT BRAKE MASTER CYLINDER AND HAND LEVER REMOVAL sm00528 On XB9SX,XB12STT, XB12XT and XB12X models, remove the right deflector. High beam connection [38] (left side) with ground Figure 7-61. Change brake fluid every two (2) years. GENERAL Install air cleaner cover. Battery (30 amp) 4. Crimping a Mini Terminal to Wire Lead Figure A-23. See 2.53 CHIN FAIRING. Disconnect return oil line connection (2) from the bottom and left side of the oil pump body. Capacities: 2008 Ulysses Models Gross Vehicle Weight (GVWR) (maximum allowable loaded ITEM U.S. Table 2-11. (00048a) Disconnect battery by unthreading fastener removing negative cable (black) from battery first. Hydraulic Lifter Specifications HYDRAULIC LIFTER NEW COMPONENTS SERVICE WEAR LIMITS Fit in guide 0.008-0.0020 in. When storing or removing the motorcycle for the season. TRANSMISSION LEFT CASE BEARINGS 6.13 REMOVAL INSTALLATION Mainshaft and Countershaft Bearings PART NUMBER TOOL NAME SNAP-ON PR-36 SNAP RING PLIERS Place crankcase on press with inside surface of crankcase downward. With the throttle body, you will be able adjust the cables at the 1000 mile (1600 km) service interval and at every 5000 mile (8000 km) service interval thereafter. Red/yellow wires (14 gauge, to be spliced) 8. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. See Figure 6-52. Install the flywheel assembly into the left crankcase half using CRANKSHAFT GUIDE (Part No. HD- 42326-B). To prevent accidental vehicle start-up, which could cause Install fuse block, relay and p-clamp tightening fasteners death or serious injury, disconnect negative (-) battery... (100mm) long to protect the engine temperature sensor lead from chafing on the inside of the rocker box. Wire core crimp Figure A-9. Verify PART NUMBER TOOL NAME that tips are not excessively worn or damaged. Oil cooler feed line Figure D-9. Tighten Installation fastener to 25-28 in-lbs (2.8-3.2 Nm). sm00475 Turn signal connector [30] Main harness Right handlebar conn Horn connector [122] Ignition switch Horn Figure 7-94. Figure 7-94. Figure 7-94. Figure 7-95. Do not Hoses, clamps, electrical wiring, electrical 0.022 in. Page 682 Gearcase Assembly and Installation..... Brush holders Figure 5-12. Page 594 NOTES... Page 633 sm04353 1. Install connector on oil pressure switch [120]. sm00012 Fit the barrel of the PIN TERMINAL REMOVER (Part No. HD-39621-28) over the pin, and while rotating the tool slightly, push until it bottoms in the housing. handlebar. Tighten ET sensor to 120-168 in-lbs (13.6-19 Nm). Figure 2-184. Page 307 engine to reach operating temperature of 180° F (82° C) Start engine and test oil pressure switch for proper opera- tion. SM03730 Feed oil line from oil cooler Return oil line Feed oil line from oil cooler Return oil line Vent oil line Pressure relief valve 5. INSTALLATION Install screw (4) attaching the number plate (1) to the reflector bracket (5) and leave loose. Install two new Phillips head screws into latch mechanism and tighten. 2.1 SPECIFICATIONS..... ..2-1 2.2 VEHICLE IDENTIFICATION NUMBER (V.I.N.).. ...2-6 2.4 FRONT WHEEL. WHEELS ..2-20 2.7 CHECKING CAST RIM RUNOUT..... ...2-24 2.8 FRONT BRAKE MASTER CYLINDER AND HAND LEVER......2-25 2.9 FRONT BRAKE LINE.... ..2-28 2.10 FRONT BRAKE CALIPER ..2-33 2.12 REAR BRAKE MASTER CYLINDER. ...2-34 2.13 REAR BRAKE LINE. ..2-40... Oil Does Not Return To Oil Tank Faulty spark plugs. INTERACTIVE EXHAUST HARNESS: XB12 MODELS 7.24 FIREBOLT sm00433 Removal Remove seat and pillion. Install push rod covers. Figure 6-75. Outer Needle Bearing Depth B-45847 CROSS PLATE HD-35316-12 INSTALLER CUP MODEL DEPTH HD-35316-4A 8 IN. Sparingly apply graphite lubricant to threads of pilot shaft to ensure smooth operation. NOTES A small amount of soapy water applied to the inside dia- meter of grommet will make breather hose installation easier. Figure 1-27. Forcing the 2.19 STEERING HEAD BEARINGS. Page 320 Figure 3-121. Best regards Your Motorcycle Manuals PDF are above the page - 1125, Firebolt, Lightning, XB9r, XB12.. Install piston assembly over connecting rod. TIRES AND WHEELS TIRE INFLATION om00962 Use only Buell approved tires. Transmission Vent Line: Firebolt Figure 3-13. installed position. Lamps (15 amp) 6. Page 588 Figure 8-10. TROUBLESHOOTING 1.19 13. (00277a) Figure 4-38. tab on reflector bracket fits into hole in enter tail section. When wear bars become visible and New tires should be stored in a horizontal tire rack. (3.0 mm) of insulation. Remove the fasteners with nuts securing the bracket lower mounts to the cross bar arms. See 6.3 CLUTCH RELEASE 14. Shorted Armature Test Using Growler 13. PACKARD 280 METRI-PACK RELAY AND FUSE BLOCK CONNECTORS A.11 FUSE BLOCK REPAIR NOTE The wiring diagram indicates when one socket ...1-13 Change Filter....1-14 1.1 GENERAL Fill Engine With Oil.. hand grip wire Figure 7-34. There are two types of connectors in this series: Figure A-36 for pull-to-seat connector or Figure A-37... Page 621 sm04351 1. When positioned, the locking bar fits snugly DEUTSCH STANDARD TERMINAL CRIMPS in the space between the contact band and the core crimp tails. 2008 Buell Firebolt 2008 Buell XB12X Ulysses 2008 Buell 1125R 2008 Buell Lightning Long 2008 Buell Lightning CityX 2008 Buell Lightning CityX 2008 Buell Lightning Scg 2008 Buell Light Fairing support bracket Washer Instrument cluster Rubber grommet P-clamp Fairing support bracket fasteners and washers F-clamp fasteners (1). Fuel injector (2) 2. Electrical Connectors Behind Windscreen: Ulysses Feed front and center portion of harness between the trunk INSTALLATION pan and tire through opening at rear of frame/fuel tank... ENGINE REMOVAL Remove intake cover and air cleaner assembly. Page 330 Install sprocket shaft seal. Clutch Adjusting Screw Assembly and Retaining Ring 6-20 2008 XB Service: Drive/Transmission... (1.6-3.2 mm). Mating Pin and Socket Housings Orient the latch on the socket housing so the rails on the socket housing so the rails on the socket housing fit in Bearing into the frame neck using STEERING HEAD BEARING 1. See 1.16 HEADLIGHT. 0.635 mm Bushing fit in rocker arm (tight) 0.004-0.002 in. Latch 2. Tighten screws to 120-168 in-lbs (13.6-18.9 Nm). Always tighten in sequence shown. OIL COOLER 3.12 GENERAL REMOVAL For engine oil flow through the engine, See 3.8 OILING Cover the front chin fairing to protect finish. To do this effectively, we need user feedback - your critical evaluation of this effectively. manual. Oxygen sensor (O2) Figure D-31. see a small portion of the riders shoulders in each mirror. Remove left side air scoop to access front cylinder spark plug. sm00197 Center seal/spacer driver over seal, so that the sleeve (smaller OD) seats between seal wall and garter spring. The core tails should be creased handles open or closed. Rotate engine. Sealed Splice Connector 2008 XB Service: Appendix A Connector Repair A-35... Tire Runout lbs (4.5-4.9 Nm). Exhaust valve actuator 3. NOTE For troubleshooting and diagnostic information, see the ELECTRICAL DIAGNOSTIC MANUAL for this motorcycle. Unscrew the cable fitting from the MECHANISM. SPECIFICATIONS not given unde SERVICE WEAR LIMITS, see NEW COMPON- GENERAL ENTS. If under filled, transmission can be damaged during vehicle operation. Center Tie Bar Mount 40. Remove pedal fastener and washer 3. Crankcase fastener behind shifter mechanism Figure 6-93. Quick Reference Maintenance Chart: XB Models ITEM SERVICED SPECIFICATION DATA Primary chain/transmission Lubricant level GENUINE HARLEY-DAVIDSON FORMULA+ TRANSMISSION lubricant AND PRIMARY CHAINCASE LUBRICANT (Part No. 99851-05) as required until fluid level is even with bottom of clutch dia- phragm spring Primary chaincase drain plug Apply LOCTITE 565 THREAD SEALANT and reinstall plug and... Page 162 becoming loose and the retaining clip will be secured to the sm03923 bracket. FUEL PUMP 4.13 DRAINING FUEL TANK REMOVAL NOTES Before vehicle is placed on the lift it will necessary to remove the chin fairing. Distortion should be PART NUMBER TOOL NAME minimal. The neutral indicator switch (2) is threaded into the transmission portion of the right crankcase half. CLUTCH PACK CLEANING AND sm00283 INSPECTION Separate the pack in to the following components: Seven fiber plates. Page 264 sm00936 Clamp, Torca Front muffler (XB9 models) Rear muffler (XB12 models) Rear muffler straps Front muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models) Rear muffler (XB12 models) Rear muffler (XB12 models) Rear muffler straps Front muffler (XB12 models) Rear muffler (XB12 models strap Rear muffler strap fastener 5. Refer to Table B-2. Page 497 sm00469 sm00467 1. (0.8 mm) between brake rod end and brake pedal. Page 648 NOTES... Place instrument module (2) into position in support (1). NOTE Before installing o-rings on the top of each pushrod cover be sure to apply a small amount of clean engine oil to each o-ring sm00905 NOTE Figure 4-51. 4.17 GENERAL sm00903 Buell motorcycles sold in the state of California are equipped with an evaporative (EVAP) emissions control system. Wheel nut 3. Hex Fastener Countershaft Retainer Figure 6-97. Please comment on the completeness, accuracy, organization, usability, and readability of this manual. FRONT TURN ...PAGE NO. required: Replace D.O.T. braking ability and lead to brake failure which could result in sm00485 death or serious injury. Piston pin 4. MAIN DRIVE GEAR AND BEARING 6.11 with spacer (8) inner race. Sparingly apply EXTREME SIGNALS 7.12 Check turn signals for proper operation. Install caliper. Page 443 SUBJECT... PRESSURE LUB- RICANT (Part No. J-23444-A) to the threads of the short forcing screw (1) to prolong service life and ensure smooth operation. An extension may be needed to push on rear spark plug boot to ensure it is seated properly. Remove two center (4) and four side Figure 2-181. Valve Spring Compressor 2008 XB Service: Engine 3-37. Voltage regulator 5. Heel Guard Installation Figure 2-156. Rear Brake Systems, Left Side View D-4 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and Wire Routing... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View 2008 XB Service: Appendix D Hose and View 2008 XB Service: Appendix D Hose and View 2008 XB Service: Appendix D Hos with negative (-) cable connected, When removing the ECM, the fastener closest to the shock the resulting sparks can cause a battery explosion, which assembly has a nut that is captured in the plastic shield below could result in death or serious injury. B-45525 VALVE GUIDE HONE Figure 3-51. Cable, seat lock Figure D-11. Page 309 With the lower part of the curve on the reed valve stop (2) If it was necessary to replace the reed block, apply facing out, apply LOCTITE 222 (purple), install the fasteners and tighten to fasteners and tighten to fastener to 5-7 in-lbs (0.6-0.8 Nm). Refer to Table B-1. Installing Engine in Frame Install transmission vent line. Removing Piston Pin Circlip Figure 3-72. Figure 3-104. Rear Brake Systems, Left Side View D-16 2008 XB Service: Appendix D Hose and Wire Routing... Page 81 Table 2-11. Seat lock (1), cable end (4) should release Remove seat. destroyed. Figure 6-21. bolt 2. AIR CLEANER AND EXHAUST SYSTEM 1.13 REMOVAL sm00376 Install air filter before running engine. For location of jacking point, see 4.16 EXHAUST SYSTEM. Conduit Figure A-44. Figure 3-50. Electrical Connectors Behind Windscreen: Lightning Install cable strap loosely around main harness (7) and 11. serious injury. There are two threaded plastic lugs (14) on the trunk pan that are used for manufacturing purposes only. HYDRAULIC LIFTERS 3.15 GENERAL REMOVAL Figure 3-107. Tool automatically opens when the crimp is complete. Fuel Pump Specifications sm00223 SPECIFICATION DATA Pressure Setting 49 PSI (338 kPa) Operating Voltage 13.2 volts Min. As the pistons are pushed back into the caliper, fluid level may rise more than 1/8 in. Harness retainers 3. sm00258 Install primary cover. Wheel fastener Figure 6-44. Use common sense. Shoulder 2. Figure 1-7. Page 283 12. See ments. Install and connect ignition coil. Negative battery cable 2. Lubricate parts with high temper- ature grease, such as LUBRIPLATE 110. See 3.3 ENGINE ROTATION FOR SER- Install rear shock. PUSH ROD COVER INSTALLATION sm00150 Figure 3-66. Page 537 sm00015 1. Removing Flywheels from Left Crankcase 16. Neutral switch connection [131] 2. See Figure 3-37. 7.1 SPECIFICATIONS......7-1 7.2 IGNITION SYSTEM. ..7-15 7.5 CHARGING SYSTEM... ..7-17 7.6 BATTERY CABLES7-19 7.7 VOLTAGE REGULATOR..7-23 7.9 HEATED HAND GRIPS: ULYSSES MODELS..... SWITCH... ..7-5 7.4 SPARK PLUG CABLES.. ...7-22 7.8 ALTERNATOR...7-25 7.10 HORN.....7-28 7.11 TURN7-35 7.14 INTERACTIVE EXHAUST SYSTEM.......7-39 7.15 HEADLIGHT......7-43... Front and rear right turn signals must flash. NOTES Figure 2-187. Do not tighten nut (7) without removing items (1) SIGNAL FLASHER.....7-30 7.12 FRONT TURN SIGNALS7-32 7.13 REAR TURN SIGNALS...... through (5). 2008 BUELL WIRING DIAGRAMS Wiring Diagram List DIAGRAM LOCATION Main Harness, Ulysses and Lightning Figure B-4 Lightning Figure B-4 Lightning Figure B-4 Lightning Figure B-5 Lightning Circuit, Firebolt Figure B-6... Page 652 NOTES F-4 2008 XB Service: Appendix F Glossary... Headlight support bracket 1. Figure 1-18. See Figure 2-168. Figure 4-29. sm02940 88 4 Oil pump mounting gasket Separator plate Oil pump mounting screws (4) Scavenge gerotor gear set Oil pressure indicator switch Feed gerotor gear set Pressure relief valve Oil line fittings Oil pump cover screws (7) 7. Page 195 Connect positive (+) battery cable first. 4.4 THROTTLE POSITION SENSOR (TPS) for removal, Figure 4-43. Page 686 Transmission Left Case Bearings Front Wheel Installation..... Remove fasteners (4) securing fuel cap retaining ring (3) to fuel filler neck (1). The sprocket cover must be removed to ...PAGE NO. Connect rear brake light switch connector [121]. Checking for Freeplay in the Solenoid Shaft in the Fully Extended Position Throttle Stop Screw, while reading the TPS on Digital Technician, until setting is between the range of 10.4 to Remove cosmetic intake cover test the switch. Page 565 SUBJECT... assembly and functional 10.9. Page 644 sm03609 1. Page 642 sm03609 1. Page 642 sm04371 1. sm00516 Remove and inspect brake rotor (6) for wear and warping. Disconnect and remove Bank Angle Sensor (2) [134]. pd00197 1. BOLT All Models 0.285 in. Be sure that all lights and switches operate properly before operating motorcycle. Figure 7-106. Sleeves, for use with tapered sm00190 bearing, are assembled to case with bearings and small spacer collar. Remove p-clamp (8) at swingarm/oil reservoir (10). Charging Circuits, All Models... Apply a liberal amount of engine oil to the valve stem. Rim Lateral Runout Figure 2-32. REAR BRAKE CALIPER 2.14 REMOVAL DISASSEMBLY NOTE PART NUMBER TOOL NAME Steps 1 and 2 are not required for detaching caliper from rotor. COMPRESSION TEST The following are some general instructions that apply to Buell motorcycle engines: PART NUMBER TOOL NAME Run engine until it reaches normal operating temperature. Disconnect fuel pump connection and remove connector sm00432 from subframe tail assembly. Position air cleaner cover over baseplate. Install left switch wire 3. Page 619 sm04327 1. Using a slide hammer action, remove the slider fork (27) If damper locknut has been moved, proceed with the fol- lowing disassembly and assembly procedures for setting from the outer tube (18). CLEANING AND INSPECTION Figure 2-79. Figure 2-169. CLAMPS: UPPER AND LOWER. Remove spring (5). Page 251 NOTE 21. Piston pin retaining ring 2. Page 462 sm04730 Battery Fuse/Relay Block Battery Fuse 30 Amp GND 1 [77B] [77A] To fuse and relay block Voltage Regulator Stator [46A] [46B] Battery To voltage regulator Stator H-D 1-phase Figure 7-18. Electronic control module (ECM). (00048a) Disconnect negative battery cable. Right side Figure 3-20. Check brake fluid level and condition: Inspect caliper and master cylinder seals and replace as When storing or removing the motorcycle for the season. Ignition switch [33] Figure 7-7. Page 624 sm04372 1. CRANKCASE BREATHING SYSTEM 3.14 GENERAL sm00216 Figure 3-103. Separating Crankcase Halves Figure 6-54. Figure 4-46. Cable, seat lock 2. Wheel bearing backing plate Figure 2-103. NOTE Table 2-10. Page 356 sm00870 Fuel pump Fuel filter Bracket, fuel pump Fuel filter Pressure regulator housing Fuel pump housing Fuel pump and fuel filter Pressure regulator housing Fuel pump housi material that will breathe, such as light canvas. Front Wheel Assembly Front Rotor Installation Figure 2-16. The repair instructions in this Service Manual are by connector Place and Color type. (00048a) Disconnect battery negative cable. FLUID CONVERSION UNITED STATES SYSTEM BRITISH IMPERIAL SYSTEM Unless otherwise specified, all fluid volume measurements in Fluid volume measurements in this Service Manual do not this Service Manual are expressed in United States (U.S.) include the British Imperial (Imp.) system equivalents. Rear Brake Systems, Top View 2008 XB Service: Appendix D Hose and Wire Routing D-15... Position windscreen (6) onto left and outward and away from vehicle. Touch the other probe to each of the brushes (2) sm00060 attached to the field coil. Footpeg Installation Figure 2-157. sm00100 13. Page 391 12. Page 15 TABLE OF CONTENTS 4.3 ELECTRONIC CONTROL MODULE (ECM) Repair.....4-21 Fuel Pressure Regulator Replacement.....4-21 Removal: Firebolt... ...4-5 Low Fuel ASSEMBLY AND SUPPORT BRACKET. Loosen fasteners on right and left side of headlamp housing to adjust the horizontal alignment. thread locking compound. The lifter and roller, under compression force from valve spring, follow the surface of the revolving cam. Remove shields and seals from bearings before cleaning. Wire Cover, Tail Loop and License Plate Bracket: Ulysses 2-130 2008 XB Service: Chassis... Primary chain badly misaligned. Page 331 SUBJECT......PAGE NO. Page 510 sm00473 Turn signal flasher connector [30] Main harness Instrument cluster connector [30] Horn fastener Right handlebar connector [22] Horn connector [122] Turn signal connectors [31] Horn 6. Install large caliper fastener (7) (metric) tightening to 18-21 ft-lbs (24-28 Nm). Figure 7-18. Using non-approved tires can adversely affect stability, which could result in death or serious injury. Connect turn signals. After installing seat, pull upward on seat to be sure it is locked in position. Pivot pin to depress tang 2. Regularly inspect wheels and tires for damage and wear. Crimp metal insert 3. Loose, frayed, or damaged wiring leading to horn terminal. If operation fails, reread procedure and verify that all steps were performed. Be sure the sm00036 insulation/seal crimp tails are facing the forming jaws. Grip rear of seat and pull toward rear of motorcycle to remove. REAR WHEEL REMOVAL CLEANING AND INSPECTION Place a scissor jack under jacking point and raise rear wheel off ground. 4.1 SPECIFICATIONS..... ...4-13 4.9 INTAKE AIR TEMPERATURE SENSOR (IAT)....... ...4-16 4.10 COOLING FAN..... ..4-8 4.5 IGNITION COIL..... ...4-9 4.6 OXYGEN SENSOR ... (TPS). ...4-17 4.11 FUEL TANK VENT ...4-19... Page 584 Figure B-8. Page 263 on the rear exhaust at the head with engine rotated in the Figure 3-36. From fuel tank to atmosphere (49 state) Figure D-5. Return oil line 4. Fuel Pump Assembly Install rubber seals on new fuel filter and install filter into Fuel Filter VALVE. ..4-18 4.12 FUEL CAP RETAINING RING..... Replacement pump housing (11). See 3.9 OIL PUMP. Main drive gear 4. Page 672 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Rear axle (initial torque) 23-27 ft-lbs 31.2-36.6 Nm 2.21 SWINGARM AND BRACE, Brace / After initial torque, back off two turns and tighten to final torque. 0.0127-0.0508 mm 0.0035 in Remove pedal bushings (6). sm00909 sm00910 Figure 4-54. Remove two fasteners with captive washers and primary chain inspection cover. The XB12STT models only require a throttle cable alignment clip. right side of the upper front fender before installing and tight- Install the right lower front fender (9) with fasteners (6, 7). Figure 2-160. sm00173 End clearance should be within 0.008-0.022 in. Install washers (4) and fasteners (5). See 4.3 ELEC- Temperature sensor [90]. See: 6.11 MAIN DRIVE GEAR AND BEARING 6.10 TRANSMISSION ASSEMBLY 6.13 TRANSMISSION LEFT CASE BEARINGS ... NOTE If, after the throttle cables have been adjusted, there is not enough slack in the cables the throttle plate will not be responsive and cleanly snap back to the location of the CKP it will be necessary to align the Torca Clamp to ensure proper clearance between the chin fairing and the CKP and Torca clamp. Anytime front tie-bar is removed, it must first be removed from the "V" bracket and then the engine. Page 164 end from slot in coupling. Rear Brake Pad Spring Installed 1. MAIN WIRE HARNESS 7.23 11. Table 3-27. Starter Brush Holder Insulation Test sm00063 ASSEMBLY Figure 5-13. REMOVAL Remove seat. (00512b) Damaged or leaking valve stems must be replaced. Page 657 Tools Used in This Manual PART NUMBER TOOL NAME NOTES HD-45966 FRONT FORK: XB12STT/XB12X/XB12XT, Disas- sembly HD-46283 FOR XB12 SPROCKET LOCKING LINK 6.5 PRIMARY CHAIN, Removal MODELS HD-46283 FOR XB12 SPROCKET LOCKING LINK 6.5 PRIMARY CHAIN, Installation MODELS HD-46288 MAINSHAFT LOCKNUT WRENCH... Figure 2-189. NOTE For details on removal of components on XB12 models with Figure 2-109. CLUTCH/TRANSMISSION/PRIMARY FLUID INSPECTION sm01388 Remove seat. Fork holding tool 2. Remove push rod cover (21), gasket (20) and lifters (18). Soak cylinder and piston in an aluminum-compatible Figure 3-75. Come and say hi on Facebook Buell XB series motorcycles, 1.7 TIRES AND WHEELS for tire pressures. Forcing screw 2. Measure where shaft fits in lower PART NUMBER TOOL NAME rocker arm cover. Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View ULYSSES 2008 XB Service: Appendix D Hose and Wire Routing ... Replace housing if any of these condi- tions are found. Separating Socket Housing From ECM Figure A-43. Attach left crankcase half to engine stand. Insufficient pressure can adversely affect brake fluid bladdertype pressure equipment can be used to fill the brake master cylinder through the bleeder valve if master cylinder reservoir cover is removed to prevent pres- surization. Starter Wires (Protective Boot Not Shown) 2008 XB Service: Electrical 7-21... Figure B-10. Page 582 Figure B-11. Figure B-11. Figure 3-80. Install horn and tighten fasteners to 72-96 in-lbs (8-10 Nm). Stem capnut 4. Turn wheel full right or left for easier access to center Tighten all fasteners to 36-48 in-lbs (4-5 Nm). Repeat previous steps on second front fork. Engine Management Circuit, All Models... See 2.50 WIND- sm00607 SHIELD WINDSCREEN: LIGHTNING ULYSSES. Do not hone caliper piston bore. The transmission is a five-speed constant- shifter shaft actuates a pawl and a shifter fork drum. Engine temperature sensor Figure D-7. Housing 5. Throttle Position Sensor Install throttle body/intake manifold assembly. Bridge 2. Page 482 Check turn signals for proper operation. ately 1000 miles (1600 km). Pin terminal 4. Socket head fastener 7. Sprocket Shaft Bearing Installation 3-92 2008 XB Service: Engine... Correctly install shifter return spring onto the reverse side of the shifter shaft assembly before pla- cing shaft in left crankcase half. Mishandling drive belt will result in premature There is no drive belt adjustment required. For testing information, see ELECTRICAL DIAGNOSTIC MANUAL. Loosen adjuster nut (2) and remove and farther away than they actually are. For location of jacking point see 4.16 EXHAUST SYSTEM. Inspect the wire core crimp (1). Inspect for proper extension freeplay in NOTE solenoid shaft: You should be able to move the solenoid shaft slightly outward until the shaft is fully extended. Deutsch Solid Barrel A-16 2008 XB Service: Appendix A Connector Repair... Rear spark plug cable Figure 7-1. Do not replace parts individually; ratchets should be rebuilt with the entire contents of service kit. Piston Pin and Piston Identification NOTE Figure 3-73. Attach the vent line connection to the top left side of the oil pump body. Install number plates (1) to left and right Tighten the number plate screws (2) to 18-20 ft-lbs (24-27 tail sections using screws (2) and sleeves over pilot screws (3) and leave Nm). See 2.11 BRAKE Remove fasteners (11) to detach master cylinder (4) from PEDAL. REMOVAL Figure 7-82 (Firebolt), Figure 7-83 (Lightning), or Figure 7-84 (Ulysses). Slide sleeve over pilot until sleeve contacts the oil seal. Wrong way (mica must not be left with a thin edge next to segments) 4. The starter solenoid is a switch that is designed to open and close the starting circuit electromagnetically. Lower front wheel into caliper assembly. Page 620 sm04347 1. Insert Stripped Lead sm02854 Figure A-34. TROUBLESHOOTING sm00465 If the horn does not sound or fails to function satisfactorily, check for the following conditions: Discharged battery. Page 484 sm00375 Interactive exhaust cable Air cleaner cover (Lightning XB12 models with 3. sm00282 Remove and discard small retaining ring (6). Battery strap Figure 7-20. Page 490 Be sure that all lights and switches operate properly before After installing seat, pull upward on seat to be sure it is operating motorcycle. Fastener (3) 5. See 4.13 FUEL lbs (2.0-2.5 Nm). Main Drive Gear Assembly 3. MOLEX CONNECTORS MOLEX CONNECT CONNECTOR TERMINAL REMOVER Separating Pin and Socket Housings Figure A-24. Page 190 sm00656 1. Feed oil line from the oil pump to the oil cooler 5. Starting groove in mica with 3-cornered file 2. Wedge attachment for claw puller Figure 3-132. 12 Amp-Hour Battery Charging Rates and Times READING PERCENT 3 AMP 6 AMP 10 AMP 20 AMP (VOLTS) CHARGER CHARGER CHARGER CHARGER CHARGER 12.7 12.6 1 hour 10 minutes 34 minutes 20 minutes 10 minutes 20 minutes 10 minutes 20 minut BEARING 2 AND HD-46663 REMOVER/INSTALLER WITH ADAPTER B-45676-A SPROCKET SHAFT SEAL INSTALLER HD-97228-55A COLLAR Crankcase Halves NOTE Lubricate all parts with Harley-Davidson 20W50 engine oil, and proceed as follows: Figure... 33. Cleaning and Inspection Figure 6-63. Loosen steering stem capnut and back off several turns. Place filter element (1) on baseplate (2). NOTE A single valve spring is used for each valve. Crankcase bearing remover/installer tool 3. See 6.6 DRIVE BELT AND IDLER PULLEY, Idler Pulley Installation. Soak lifters in clean engine oil. Pinion Shaft 586 Figure B-9. See Firebolt: Figure 7-100. TRANSMISSION ASSEMBLY 6.10 MAINSHAFT AS

HARLEY-DAVIDSON FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUB- RICANT (Part No. 99851-05). travel area is the most important. DEUTSCH SOLID BARREL TERMINAL REPAIR DEUTSCH SOLID BARREL MINI TERMINAL REPAIR DEUTSCH SOLID BARREL TERMINAL REPAIR DEUTSCH SOLID BARREL TERMINAL SM00023 CRIMPS PART NUMBER TOOL NAME HD-42879 ELECTRICAL CRIMPER TOOL Preparing Wire Leads For Crimping For size 20, 16 and 12 contacts, wire ranges 26-12 AWG. Before you disassemble GENERAL an oil pump suspected of not producing adequate oil pressure, Figure 3-91. sm00606 Headlight bulb Black rubber cover Bank angle sensor Low beam headlight Bank angle sensor fastener with washers Figure 2-140. Install shift brake pedal sleeve (5). Page 598 NOTES C-4 2008 XB Service: Appendix C Conversions... Supporting Vehicle for Disassembly 34. SEALED SPLICE CONNECTORS A.17 Slide the connector to the other half of the metal insert. Make sure that area of application is completely clean, sm04916 dry and free of oil and grease. Rear Brake Systems, Top View 2008 XB Service: Appendix D Hose and Wire Routing D-27... Install cable strap above starter securing actuator cable, sm00376 vent line, main harness and positive battery cable. sm00008 1. Turn signal 2. Page 615 sm04331 .5-2 5.3 STARTEF ...5-9... Install Adapter (Typical) sm00339 sm00337 1. Ignition switch [33] Figure 7-10. Plastic materials that do Do not store motorcycle with gasoline in tank within the not breathe promote the formation. ULYSSES Removal After installing seat, pull upward on seat to be sure it is Remove seat. 13.5 Nm). Failure to follow warnings and directions can result in death or serious injury. NOTE The crimp tool automatically opens when the handles are released. WINDSHIELD AND WINDSCREEN: LIGHTNING AND ULYSSES 2.50 Remove windscreen (4). SHIFTER SHAFT 6.15 INSTALLATION sm00346 Figure 6-94. IGNITION COIL REMOVAL sm00855 To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. TIRES GENERAL Tires should be inspected for punctures, cuts, breaks and wear Buell tires are equipped with wear bars that run horizont- before every ride. A.13 engages a rib in the chamber wall to lock the terminal in 630 METRI-PACK CONNECTOR REPAIR place. Oil line fittings Remove chin fairing. Page 369 sm00638 1. Oil cooler return line 5. Use the Perform the service and maintenance operations as proper tools. See 6.6 DRIVE BELT AND IDLER PULLEY. Page 539 Install internal seal (4) on lip of socket housing, if removed. Page 566 NOTES... Page 250 sm03746 Coil Fuel line connection [83] Throttle position sensor connection [83] Throttle cables Engine temperature sensor connection [84] Coil wire harness retaining clip IAT sensor [89] Throttle cables Engine temperature sensor connection [87] Throttle position sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle cables Engine temperature sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle position sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle position sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle position sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle position sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle position sensor connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle position sensor connection [80] Throttle position sensor connecti can pierce the skin and flying debris from up-and-down motion produced is transmitted to the valve by compressed air could cause serious eye injury. See Figure 5-10. Frame 2. LICENSE PLATE LAMP ASSEMBLY 7.17 LIGHTNING sm00452 Removal Remove seat. TRONIC CONTROL MODULE (ECM). a light grade oil. Page 377 Place armature in lathe or truing stand and check commut- sm00056 ator runout and diameter. FRAME PUCKS 2.23 From the tacked corners, pivot the puck onto the frame REMOVAL keeping the directional point aligned with the horizontal crease. 7.22 INSTRUMENT MODULE. WHEEL BEARINGS Check front and rear wheel bearings for wear: Every time a wheel is removed. Front tab Figure 2-202. Fuel tank vent hose location Both fuel tank and canister vent hoses are routed through notch 4. Since the servicing of Buell tires are equipped with wear bars that run horizont- these components requires special tools and skills, Buell ally across the tread. Discard all seals during the disassembly pro- cedure. Both compon- CLAMPS: UPPER AND LOWER. Remove: Rear isolator bolt (1). LUGGAGE: XB12XT 2.57 REMOVAL: SIDE CASE NOTES The side cases and brackets may be removed without removing the top case. diagrams are labeled with alpha codes. Front fork assembly NOTE Figure 2-74. Page 236 NOTES... from the brake pivot shaft (17) to detach the brake pivot shaft 0.45 Rotor lateral 0.0154 0.39 ASSEMBLY Figure 2-66. Figure B-8. SEAT LOCKS 2.55 NOTES REMOVAL: LIGHTNING Once seat lock has been started through the hole in the Remove seat. Slide the stopper ring over top of fork assembly and into sm00570 groove. GENERAL Figure 4-40. HANDLEBARS: FIREBOLT 2.33 GENERAL Left Clip-On Install clutch hand lever assembly onto clip-on. Headlight Assembly: Lightning/Ulysses (Rear View) Installation NOTE If the rubber boots are not installed correctly the wiring har- NOTE nesses can contact the edge of the forward frame mount. Figure 2-164. Attach front brake line p-clamp to rear of right front module sm03877 and tighten fastener to 36-60 in-lbs (4.1-6.8 Nm). F.1 GLOSSARY..... 11 Nm). Ring gaps are not to be within 10° of the thrust face centerline. For this reason, it is important that each shifter fork be reinstalled in its original location. To keep sprocket shaft and pinion shaft bearings aligned the lap must be sup- ported by an adaptor or pilot in the left crankcase half. Solenoid wire Figure 7-22. sm00588 Shock remote reservoir clamp fastener Lower shock mount fasteners. (3) from main frame. Seat lock latch 3. Inside the damper rod assembly (6) is a fork push rod (4) that is tapered on one end to control the movement of fluid in the front fork increasing and decreasing the damping properties. Position fork with alignment lines (4) sm00570 visible and reflector facing to the side and tighten the lower fork clamp. TORQUE CONVERSION UNITED STATES SYSTEM METRIC SYSTEM METRIC SYSTEM The U.S. units of torque, foot pounds, are All metric torque specifications are written in Newton-meters used in this service manual. Release the oil seal stopper ring (25) out from the outer damper rod needs servicing refer to the Parts Catalog for tube with a small pry tool. First, it will acquaint the user with the construction of the NOTES Buell product and assist in the performance of basic mainten- ance and repair. Always discard o-rings after removal. Transmission Assembly - Right Crankcase Half 6-46 2008 XB Service: Drive/Transmission... NOTE Figure 3-87. Page 677 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Windscreen fasteners, Firebolt 10-12 in-lbs 1-1.4 Nm 2.49 FRONT FAIRING, WINDSHIELD, AND MIR- RORS: FIREBOLT, Installation Windscreen fasteners, Lightning 10-12 in-lbs 1.1-1.4 Nm 2.50 WINDSHIELD AND WINDSCREEN: LIGHTNING AND ULYSSES, Installation: Lightning... Page 336 sm00898 Actuator, interactive exhaust Filter element Harness, interactive exhaust Filter element Harness, interactive exhaust Air cleaner seal Cable bracket Shoulder screw (4) Interactive exhaust cable Base plate assembly Mounting fasteners, actuator Breather hoses, front and rear 6. Piston rings badly worn or broken. Page 518 sm00472 Main harness ground wire) ECM connectors [10] and [11] Battery negative cable Fuse block and relay center Battery positive cable Bank angle sensor (BAS) connector [134] 5. Fully thread the damper rod assembly (11) clockwise till it lightly bot- Thoroughly clean and inspect all parts. NOTE Figure 6-95. indicator switch [120] are located under the sprocket cover. SPECIFICATIONS GENERAL Table 4-2. Remove three TORX screws with washers (1) from clutch inspection cover (2). Without any support at the inner GENERAL race, the bearing is destroyed. See Figure 3-2. Remove fastener (1) to detach vehicle speed sensor (2) from crankcase. On the motorcycle, a connector can be Repair Instructions identified by its function and location. Page 622 sm04325 1. To prevent leaks, lubricate the o-rings before installation. For clutch replacement, see CLUTCH. Apply LOCTITE 242 (blue) to Install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to installing engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service prior to install components that were removed from engine as were swingarm pivot shaft pinch bolt threaded insert and necessary for service pinch bolt pinch bo Manual FASTENER TORQUE VALUE NOTES Oil line p-clamp fastener 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 in-lbs 5.4-8 Nm 3.5 ENGINE INSTALLATION, Assembly Oil line p-clamps at swingarm 48-72 i re-activate the links. Steering head bearings improperly tightened or worn. 1-28 Cleaning and Inspection. From fuel tank to atmosphere (49 state) Figure D-17. Install mainshaft washer (2) and nut (1). Page 516 12. PROCEDURE FOR USING THE NEWAY Set your dial caliper to the lesser measurement and lock down for quick reference. FUEL TANK VENT VALVE 4.11 Connect fuel tank vent line to vent valve. Seat will unlatch at rear. Page 571 Exhaust [11B] [11A] et00001 Valve Crank Voltage (Japan only) Vehicle Neutral LH CONTROLS WIRING DIAGRAM Pressure Foot Brake Starter TN/LGN Clutch switch Actuator Position Cooling Active Intake Regulator Speed [11A] Throttle position sensor Battery Switch Solenoid PINS Fuel Pump Sub-harness Sensor TN/Y... Disconnect appropriate connector(s). Starting Circuit, Firebolt .. PAGE NO. Secondly, it will introduce to the professional To avoid unnecessary disassembly, carefully read all rel- ative service information before repair work is started. CENTER TAIL LOOP: XB12X/XB12XT 2.46 Tighten nuts of left and right tail sections to 20-22 ft- DISASSEMBLY lbs (27-30 Nm). Page 91 Figure 2-17. Depress the latch while pulling the pin and socket housings apart. Figure 2-84. Pivot shaft pinch fastener with nut Figure 2-109. Touch one probe to the frame (1). Install the fork spring joint (11) and fork spring collar (10) over the damper rod retrieval tool. HD-41404 TEST CONNECTOR KIT If settings are not correct proceed to cable adjustment Active Intake System procedure. Left hand grip (XB12X models are OEM equipped with heated handgrips) 6. See Figure 2-93. Page 257 sm03745 sm00739 1. Front module, left and right 4. ASSEMBLY Figure 2-164. Brake/horn/interactive exhaust (10 amp) 1. Replace with new o-rings. Page 592 Figure B-12. Close the OIL LINE REMOVER (Part No. B-41623-B) over the oil line. Fork Oil Levels The outer tube can move freely up and down on the slider fork. Page 564 NOTES A-36 2008 XB Service: Appendix A Connector Repair... Page 653 Tools Used in This Manual PART NUMBER TOOI NAME NOTES 94654-98 SUPERSMART BATTERY TENDER 1.4 BATTERY MAINTENANCE, Storage A157-8 SNAP-ON BUSHING DRIVER 1/2-INCH 6.12 TRANSMISSION RIGHT CASE BEARINGS, Install- ADAPTER ation A157C SNAP-ON BUSHING DRIVER SET 6.12 TRANSMISSION RIGHT CASE BEARINGS, Install.... om00576 Figure 2-200. Remove fuel tank vent tube (4) from fuel tank vent tube (5) and groove on top of air cleaner cover (3). Prepare Tool sm00043 Identify the punch/die in the jaws of the ELECTRICAL CRIMP TOOL (Part No. HD-48119) for the wire gauge. BATTERY MAINTENANCE GENERAL NOTE For charging information, see 1.4 BATTERY MAINTENANCE, Charging Battery. Page 616 sm04335 Figure D-15. comes with a cup and screw that are for FLT models only and not to be used with Buell. Extension plate should curve away from primary chain adjustment screw to allow for clearance around adjustment screw. To induction module 2. Tighten front and rear fasteners to the following specifica- INSTALLATION tions: Figure... Apply LOCTITE 271 (red) to threads of left and right rear tail sections fasteners (4) and tighten to 102-114 in- lbs (11.5-12.8 Nm). Figure B-5. DRIVE BELT MAINTENANCE result in belt failure and indicates worn transmission GENERAL sprocket teeth. Remove wire lock 2. Apply LOCTITE 271 (red) to rear muffler NOTES bracket fasteners, install and tighten to 32-36 ft-lbs (43.4- DO NOT install muffler at this time. CHECKING CAST RIM RUNOUT GENERAL sm00111 PART NUMBER TOOL NAME HD-99500-80 WHEEL TRUING AND BALANCING STAND Before installing a new tire. check wheels for lateral and radial runout. Center tail section (4) 5. DEUTSCH STANDARD TERMINAL REPAIR straight upward. Tighten the nut (6) by hand, until the bearing is started sm00579 into the bore in the steering head. Exhaust ring 5. D-36. Muffler valve 2. Page 558 sm00038 sm00039 1. Rear 3. License plate bracket 3. The arrows on the pistons must always point toward the front of the engine. For pin 73 of these ECMs, see A.10 PACKARD 150 METRI- PACK CONNECTORS. Page 365 When test is finished, close valve knob (turn knob fully sm00251 clockwise). Remove shifter fork shafts by inserting TRANSMISSION REMOVAL FROM LEFT a small flat punch in the slots and tapping on the end of CRANKCASE each shaft until it falls free. Install the two fasteners holding the preload adjuster in place and tighten to 36-60 in-lbs (4.0-6.7 Nm). For location of jacking point see brace tightening fasteners (2) to 12-36 in-lbs (1-4 Nm). Solenoid bracket 4. Do not use the same seal Bearings twice. Plugged fuel injectors. INSTALLATION sm00466a Figure 7-85 (Firebolt), Figure 7-86 (Lightning) or Figure 7-86 (Lightning) or Figure 7-87 (Ulysses). Frame lug Figure 7-86 (Lightning) or Figure 7-87 (Ulysses). Frame lug Figure 7-87 (Ulysses). climates, the engine oil should be changed often. Installing Main Drive Gear (Typical) Main Drive Gear Seal Figure 6-77. Rear brake light switch connector [121] Figure 7-98. B.1 WIRING DIAGRAMS......B-1... While riding, a loose seat can shift SION/PRIMARY FLUID. necessary adjustments. ULYSSES Table 2-7. O-ring 5. Turn signal flasher connector [30] (1) Loosely install cable strap around the main wiring harness and the ignition switch. ASSEMBLY BACKING PLATES (Part No. B-43993-12 rear wheel). death or serious injury, disconnect negative (-) battery cable before proceeding. IAC sensor connection [87] Figure 3-6. Remove fuse block and relay center (5). sm00602 1. The inner and outer springs are combined into one tapered spring that is progressively wound. Select the pin/socket ter- Figure 7-48. Upper fork clamp pinch fastener (2) Figure 7-3. See 7.25 SPROCKET COVER WIRING. sm00270 sm00271 Figure 6-5. The ECM will provide a richer fuel GENERAL mixture on start up and a higher degree of spark advance. Installing Shifter Shaft Assembly 2008 XB Service: Drive/Transmission 6-53... Insert bullet connectors and wiring Attach bullet connectors and wi sm05260 Install spring extension plate (2) and sidestand spring (1) using SNAP-ON SPRING TOOL (Part No. HE-52B). Acronyms and Abbreviations ACRONYM OR ABBREVIATION DESCRIPTION Vehicle Identification Number Vehicle Speed Sensor 2008 XB Service: Appendix F Glossary F-3... locked in position. Throttle cables 4. FRONT BRAKE LINE REMOVAL sm00533 Drain brake fluid into a suitable container. Removing Sprocket Shaft Bearing Retaining Ring Figure 3-122. Page 21 SUBJECT..... ... PAGE NO. Each assembly has an internal compression spring which supports the forward weight of the vehicle and rider. PART NUMBER TOOL NAME NOTE Carefully tap on alternate sides of the shaft using the provided B-43895-1 TRANSMISSION REMOVER slots. Page 254 sm00701 Frame assembly (2) Fosteners for center tie bar assembly (2) Front isolator assembly (2) Front isolator assembly (2) Frame assembly (2) Front isolator assembly (3) Fasteners for center tie bar assembly (2) Front isolator assembly (3) Fasteners for center tie bar assembly (strap Bolt Rear isolator assembly... The alpha code identifies wire color (3). (2). Install brake line bracket and tighten fasteners to 48-72 in-lbs (5-8 Nm). Positive battery cable 4. Page 628 sm04336 Figure D-27. Page 666 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Fork clamp, upper 23-25 ft-lbs 31-34 Nm 2.18 FORK CLAMPS: UPPER AND LOWER, Installation: Lightning/Ulysses / LOCTITE 271 (red) Fork clamp, upper 23-25 ft-lbs 31.2-33.8 Nm 2.19 STEERING HEAD BEARINGS, Installation /... Mount Installation sm03837 Figure 2-156. The shifter shaft return spring can be installed incorrectly and then assembled in the left crankcase half. Push to remove 4. ...2-103 Installation.....2-77 Removal......2-103 Right Clip-On.......2-103 2.25 REAR SHOCK ABSORBER Left Clip-On..... Installation..2-104 2.26 THROTTLE CONTROL... Remove fuel filler cap. sm00351 To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. Removing Pinion Bearing Inner Race NOTES For necessary dimensions for constructing a press on tool Ulvsses... ..2-83 Installation..... for the pinion bearing inner race, see Figure 3-131. FRONT WHEEL REMOVAL sm00511 Place a scissor jack under jacking point and raise front wheel off ground. Carbon canister Figure D-4. Forks that are not properly adjusted can lead to loss of control, which could result in death or serious injury. Thank you for your patience. Increase compression damping. sm02981 sm00312 Figure 6-53. Keep covered until assembly. Hold footpeg (10), controlling spring, to footpeg mount (1). Interactive exhaust cable Figure 3-11. Installation end of bearing tool 3. See 2.11 BRAKE PEDAL. Page 252 28. The sidestand swings outward to support the motorcycle for parking. Install inner ramp on hub of outer ramp with tang (3) rotated 180° from hook (6) of outer ramp. Page 10 TABLE OF CONTENTS 1.16 HEADLIGHT Lightning......2-1 Ulysses...... ...2-2 Inspection...... ...1-41 Adjustment: Firebolt......1-42 2.2 VEHICLE IDENTIFICATION NUMBER Adjustment: Lightning......1-42 (V.I.N.) Horizontal Alignment.....2-6 1.17 WINDSHIELD MAINTENANCE 2.4 FRONT WHEEL General........ ...1-45 Removal..... 1.18 STORAGE... Cable, seat lock Figure D-35. B-43993-50A B-45520 GEAR DETENT ASSEMBLY AID 6.14 TRANSMISSION INSTALLATION, Installing Right Crankcase B-45521 STEERING HEAD BEARINGS, Installation TION TOOL B-45523 VALVE GUIDE REAMER... Mounting towers for interactive exhaust actuator in fan body. The oxygen sensor (O2 Sensor), located in Install sensor lead into retainer. Page 261 sm02952b sm00736 Figure 3-33. Vent line 2. Page 583 et00056 IGNITION SWITCH WIRING DIAGRAM KEY POSITION PARK [GRD2] LOCK [33A] WIRE COLOR [33B] R/BK R/GY [11A] [11B] WIRE SECT MM 5V sensor power [11A] CONNECTING BATTERY USER + (GY) BATTERY USER + Sidestand switch TN/W Sensor ground BK/W Vehicle speed sensor Battery Fuse (Ulysses;... Verify horn is not making contact with wiring or other components. Fastener, washer and nut to main frame/fuel tank assembly (4) 2. Verify component and system func- tions NOTES: 1. Return to Service Install chin fairing. Using a 5/8 in. Holder plate Figure 5-10. regulator harnesses and connections are secured to the bottom of the air scoop with three cable straps. Page 235 SUBJECT..... .PAGE NO. HANDLEBARS: LIGHTNING/ULYSSES 2.34 Install clutch hand control. A precise 60° cross hatch pattern in the piston SPECIFICATIONS. A good suspension is a balance between damping and track condition. Packard 100W Connector: Separate Halves of Socket Housing A-30 2008 XB Service: Appendix A Connector Repair... 0.0762 mm Roller fit 0.0006-0.0010 in. Attach plastic clip (3) securing the coil wire to the throttle cable bracket. The headlamp grille is offered as a standard feature on the XB9SX, XB12STT, and XB12X models to provide additional protection for the headlight assemblies. Install grip and end cap (1). Open latch. Figure 7-3. Page 413 sm00309 sm00310 1. Ground terminal fastener (2) 7. Please setup a new account, or use our new Guest checkout option. Cable adjusting and jam nuts 3. Oil Pump Body and Cover Mounting Screw Torque Sequence 3-64 2008 XB Service: Engine... Adjust mirrors to mirror (1) from mount (3). (00070b) Installation......2-141 BODY WORK: FIREBOLT 2.52 AIR SCOOPS Disassembly..... Ram Air Scoop. ..2-121... Table 1-6. Disconnect: Disconnect: Intake air temperature sensor [89]. Mainshaft and Countershaft Bearing Split crankcases in half. CYLINDER AND PISTON REMOVAL/DISASSEMBLY sm00155 PART NUMBER TOOL NAME HD-34623C PISTON PIN RETAINING RING INSTALLER Strip motorcycle as described under 3.3 ENGINE ROTA- TION FOR SERVICE. SHIFTER FORKS AND DRUM ASSEMBLY sm00313 NOTES Figure 6-88. Page 642 sm03607 1. TAIL LAMP 7.16 FIREBOLT/LIGHTING Removal Be sure that all lights and switches operate properly before Lightning Models: Remove seat. Figure 2-39. Adjust primary chains not meeting vertical free play specifications. Apply brake pedal to test Brake pad surfaces must face rear brake rotor. Page 576 Figure B-4. Stripped wire lead Figure A-22. Match the notches in the tool flange to the U-bends in the spring clip. Turn key ON for two seconds. AMP MULTILOCK CONNECTORS AMP MULTILOCK CONNECTOR REPAIR sm00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER General AMP MULTILOCK CONNECTOR REPAIR sm00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER General AMP MULTILOCK CRIMPER General AMP MULTILOCK CONNECTOR REPAIR sm00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER General SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER GENERAL SM00002 PART NUMBER TOOL NAME HD-41609 AMP MULTILOCK CRIMPER SM00002 PART NUMBER TOOL NAME HD 2. Loose, worn or damaged steering or suspen- Tighten steering stem capnut to 38-42 ft-lbs (52-57 Nm). Service Wear Specifications SERVICE WEAR LIMITS Table 5-1. Remove ECM. sm00868 Plastic retaining ring Fuel pressure regulator Plastic retainers Fuel pressure regulator housing Figure 4-33. LUBRICATION SYSTEM Valve guides or seals badly worn or damaged. Install latch (8) to latch bracket (9) and tighten fasteners (7) to 60-96 in-lbs (6.7-10.8 Nm). MISSION/PRIMARY FLUID. Page 631 sm04326 1. REMOVAL Firebolt Remove barrs with a fine tooth file if found. Footpeg Removal Figure 2-155. Remove handlebars. sm00249 1 Page 73 Table 1-15. TRANSMISSION INSTALLATION 6.14 INSTALLATION sm00342 PART NUMBER TOOL NAME B-43985-4 GUIDE B exhaust cable (3) is routed behind the frame lug (1) before installing air intake cover. Figure 2-90. NOTES Before removing right tail section, it will be necessary to remove certain components of the luggage system. Pull to remove 3. If battery has a satisfactory charge and wiring appears to be in good condition, test horn ground and switch using voltmeter. Rear axle pinch bolt... Connect three oil lines to swingarm fittings and install and tighten p-clamps to 48-72 in-lbs (5.4-8 Nm). Page 323 NOTE sm03436 The next step requires lapping the outer race. Align square openings of pressure plate and diaphragm spring so that the assembly can be installed over prongs on clutch hub. Assemble inner and outer ramps. See a Buell dealer. Firebolt: Figure 7-96 Always replace plastic tree fasteners when replacing main wire Ulysses: Figure 7-94. 14. Installing Piston Pin Circlip sm00163 Figure 7-96 in-lbs 8-11 Nm 1.4 BATTERY MAINTENANCE, Battery Installation and Connection Battery terminal fastener 72-96 in-lbs 8-11 Nm 4.8 BANK ANGLE SENSOR (BAS), Installation Battery terminal fastener ... Page 563 sm00051 1. NOTE Figure 4-3. Figure 4-4. Tighten fastener to 60-85 in-lbs (7-10 Nm). 0.0203-0.0508 mm 0.0030 in. Tab recesses Figure 6-38. BRAKE SYSTEM MAINTENANCE Inspect front and rear brake lines and replace as required: GENERAL Every 4 years. Remove windscreen and windshield. Crankcase Fasteners 2008 XB Service: Drive/Transmission 6-51... See 2.12 REAR sm00667 BRAKE MASTER CYLINDER iuster on idle control THROTTLE CABLE ADIUSTMENT cable (shortening cable housing) until throttle control functions properly. Page 654 Tools Used in This Manual PART NUMBER TOOL NAME NOTES B-43993-9. FROM FRONT WHEEL, Assembly PART NO. sm00560 sm00561 Figure 2-73. Page 56 NOTE 16. 0.0152-0.0254 mm 0.0015 in. Page 470 sm04632 sm04640 Figure 7-33. Injector Leak Testing sm00885 Remove intake cover assembly. Page 332 NOTES... Slide outer race in right crankcase over pinion shaft and bearing assembly. Stopper Ring DISASSEMBLY PART NUMBER TOOL NAME HD-41177 FORK HOLDING TOOL 1. RIGHT TAIL SECTION: LIGHTNING 2.44 DISASSEMBLY Remove seat. Disconnect negative (-) battery cable first. Evaporative Emissions Control, California and 49 State Models, Left Side View D-18 2008 XB Service: Appendix D Hose and Wire Routing... Place PISTON SUPPORT PLATE (Part No. HD-42322) in position as shown. Checking for Intake Leak 2008 XB Service: Fuel System 4-33... EXHAUST SYSTEM LEAK CHECK sm00502 Check the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check and the exhaust system for leaks at every scheduled service interval as follows: Check at exhaust system for leaks at every scheduled service interval as follows: Check at exhaust service obvious signs of leakage (carbon tracks at pipe joints, etc.). Breather hoses (2) 2. Submerge and soak all friction and steel plates in FOR- sm00296 MULA+ PRIMARY/TRANSMISSION LUBRICANT for at least five minutes and assemble clutch hub. See 2.8 FRONT BRAKE steering head bearing race installer onto the forcing screw MASTER CYLINDER AND HAND LEVER. Seat hook 2. Page 524 Figure 7-108. 2.27 CLUTCH CONTROL 2.8 FRONT BRAKE MASTER CYLINDER AND HAND LEVER. If handling problems occur, see 1.19 TROUBLESHOOTING Table 2-12. Pressure created in the flywheel area on piston downstroke is released through the reed valve into the gearcase. See 4.2 AIR CLEANER ASSEMBLY. Inspecting Crimped Terminals sm00007 Figure 2-79. Page 315 Install oil pump body and all gears and onto right crank- sm02987 case half, install fasteners and tighten. See 3.9 OIL PUMP Figure 3-111. 30A Main Fuse Location: Firebolt 1. Retaining ring, oil seal 3. Align front fender (2) to fender mounts on lower triple clamp, apply LOCTITE 271 (red) and Install sm00654 front fender fasteners and washers (1) and tighten to... Lack of tire feedback. Remove footpeg pin (9). Page 659 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Active cable jam nut 48-60 in-lbs 5.4-6.7 Nm E.1 ACTIVE INTAKE SYSTEM (JAPANESE MODELS ONLY), Installation Active intake cable connector 20-24 in lbs 2.3-2.7 Nm E.1 ACTIVE INTAKE SYSTEM (JAPANESE... REMOVAL: ULYSSES XB12X Remove windscreen (6). Thoroughly clean and inspect all parts. Front and Rear Brake Systems, Right Side View D-14 2008 XB Service: Appendix D Hose and Wire Routing... Figure 3-31. Locking wedge Figure A-19. sm05397 At idle speed (1050-1150 RPM), oil pressure will vary from 10-16 psi (69-110 kPa). Check free length and compression force of each spring. PRIMARY COVER 16. Figure 6-8. impregnated fabric core, instead of solid wire, for radio noise suppression and improved reliability. of electronic components. See CLUTCH. INTAKE AIR TEMPERATURE SENSOR (IAT) GENERAL INSTALLATION The intake air temperature sensor (IAT sensor), located on Connect IAT sensor), located on Connect IAT sensor connector [89] to wiring harness. Page 138 NOTE sm03830 When installing the fork spring ensure that the tighter wound portion of the spring is installed down. See 2.52 AIR SCOOPS. As the transmission runs, each shifter fork develops a certain wear pattern with its mating parts. NOTE Engine oil flows from the oil cooler through a Dispose of oil in accordance with local regulations. Crank position sensor (CKP) Figure D-30. Vertical Headlamp Adjustment Fastener: XB12XT 1-44 2008 XB Service: Maintenance... Page 192 sm00657 Upper tail body work fasteners Upper tail body work fasteners Lower tail body work fasteners Passenger seat lock retainer Fastener Passenger seat lock cable License plate bracket Subframe tail assembly Passenger seat latch and fastener... Nice bearing 6. Install flywheel assembly... Long forcing screw, with the smaller diameter toward the 2. Page 679 Installation and Connection....1-11 Storage.......1-12 150 Metri-Pack Connector Battery Cables Repair. tabs on the inside of the footpeg mount to remove the heel guard. Adjust clutch cable. Wear safety glasses when working with compressed air. Page 520 sm00431 Cable strap Right turn signal connectors [22] Left switch housing connector [22] Left switch housing connector [23] Cable strap 6. STARTER GENERAL sm00257 The starter is made up of a field coil assembly, solenoid assembly and drive assembly. The repair instructions contained in this section are divided into three major service areas accordingly. Remove front isolator assembly fasteners (5). The wedge fits into the center groove within the socket housing and holds the terminal latches tightly closed. Position footpeg mount (3) onto sub- frame tail assembly. shaft bearing bushing. See 1.4 BATTERY SOCKET (Part No. SNAP-ON FRXM14) or a crowsfoot. REMOVAL AND FILTER If the level is below the lower registration mark, add only GENERAL enough oil to bring oil level between lower and upper The engine oil level can be checked with the oil and engine at registration marks. Dimensions: 2008 Firebolt Models vehicle weight) and corresponding Gross Axle Weight Ratings (GAWR) are given on an information decal located on the ITEM steering head Wheel base 52.0 1320 (without rider) Table 2-3. Figure 3-118. Remove fasteners (2) from clutch and brake Install brake and clutch levers with pivot shafts (3, 6). Page 51 Table 1-10. Valve Springs sm00144 Inspect valve springs for broken or discolored coils. Cut cable strap loosely securing BAS wiring harness to seat lock cable. Page 380 sm00062 sm00064 1. Intake air temperature sensor (IAT) 5. HD-41475 DEUTSCH CONNECTOR SERVICE sm00017 HD-41475-100 FLAT BLADE L-HOOK General Deutsch connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. CENTER TAIL SECTION: LIGHTNING 2.43 Install two fasteners (12) securing trunk pan to center tail DISASSEMBLY section but do not tighten. Slide the assembly toward the installation and calibration information. Figure 3-115. sm00362 Install cable strap to the right of ignition switch and brake line wires to upper fork clamp. Remove assembly from motorcycle. Page 514 NOTE sm00428 Fuel line is installed under engine connector portion of wire harness. Remove shock reservoir fasteners and feed the reservoir out of subframe tail assembly. right front modules (2, 8) and the center fairing support (7). Lighting Circuit, Firebolt Lighting Circuit, Firebolt... Page 93 sm00525 Rotor mounting fastener (6) Wheel spacer Sprocket fastener Brake rotor Wheel Axle Wheel bearing Sprocket Figure 2-20. Page 136 sm03826 Fork cap Bolt, center Guide bushing Seat, rubber Spring Collar Seal stopper ring Damper jamnut Stopper ring Dust seal Damper jamnut Stopper ring Dust seal Spring Collar Seal spacer Slider fork Centering plate Reflector assembly Axle clamp bolt Washer... Main fuse holder 3. INSTALLATION Figure 2-45. FRONT FORK: ALL MODELS EXCEPT XB12STT/XB12X/XB12XT 2.16 GENERAL sm00559 The front fork consists of two telescoping outer tube/inner slider assemblies. Page 606 sm04340 1. Do not tighten at this point. HEADLIGHT 7.15 GENERAL Dual headlights are equipped with replaceable bulbs. down the cutter pilot to the valve seat. Vertical Alignment pd00195 Figure 1-53. Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Left Side View D-24 2008 XB Service: Appendix D Hose and Wire Routing... See 3.2 ENGINE, Compression Test 3.2 ENGINE, After completing the compression test(s), make sure that the Cylinder Leakage Test. Figure 2-64. SEALED SPLICE CONNECTOR REPAIR Insert the stripped wire lead (1) until it stops, and crimp PART NUMBER TOOL NAME the lead in the insert (2). Flasher connector [30]. INTERACTIVE EXHAUST SYSTEM 7.14 At low RPM with a wide-open throttle, the valve (1) is GENERAL opened to reduce back-pressure so the engine can gain NOTE RPM quickly. Figure 2-70. Remove primary cover. Headlight connector [38] Figure 7-100. For Striped Wires: The code is written with a slash (/) between the solid color code and the stripe code (4). sm00299 If using original mainshaft nut apply two or three drops of LOCTITE 271 (red) onto threads on end of main- shaft. Replace seats if any evidence of these conditions are found. See Figure 3-22. PRIMARY CHAIN GENERAL sm00289 Since the primary chain runs in lubricant, little service will be required other than checking lubricant level and chain tension. Front Turn Signals: Ulysses 7-34 2008 XB Service: Electrical. Loosen fastener on the bottom of headlamp housing to adjust the vertical alignment. Tighten Firebolt handlebars are a clip-on assembly and are not but do not torque. FRONT FORK: XB12X/XB CLUTCH The pressure plate then presses the clutch plates to gether GENERAL causing the plates to turn as a single unit. Page 410 sm00304 1. Install seat lock (1). Pry tang outward Figure A-13. Page 617 sm04338 1. Figure 4-14. The voltage regulator is not repairable. Table 2-6. Primary Drive (Engine-to-Transmission) ITEM (XB9SX) (XB12 MODELS) Engine sprocket 34 teeth 38 teeth... Handlebar (XB9SX, XB12STT) 8. 0.058-0.109 mm 0.0050 in. Page 626 sm04330 Figure D-25. Replace lifters if clearance exceeds SERVICE WEAR LIMIT of 0.026 in. [93A] [93B] Install screw and tighten to 4.4-4.3 in-lbs (0.5-0.6 Nm). To ECM Figure D-6. TRANSMISSION RIGHT CASE BEARINGS 6.12 REMOVAL INSTALLATION PART NUMBER TOOL NAME HD-95760-69A BUSHING AND BEARING PULLER A157-8 SNAP-ON BUSHING DRIVER 1/2-INCH ADAPTER HD-95765-69A 1/2 IN. From there a mixture of crankcase air and oil mist is vented up the push rod covers to the upper rocker box. NEUTRAL INDICATOR SWITCH 7.19 Install sprocket cover. Avoid leakage. Potential Limits to Belt Drive Service Life CONDITION ROOT CAUSE REQUIRED ACTION Excessive edge wear Misalignment or bent drive structure (bad bearing, bent members, etc.) (mistracking) Bent or rough flange Repair flange/replace sprocket Damage due to handling (pry on, etc.) Follow proper handling/installation procedure Debris damage to edge of belt Inspect/replace belt... Pin housing 3. See 1.5 ENGINE OIL AND FILTER, Start engine. 6.1 SPECIFICATIONS...6-6 6.4 CLUTCH..... ...6-8 6.5 PRIMARY CHAIN.... ..6-21 6.7 TRANSMISSION..6-25 6.8 CASE DISASSEMBLY FOR TRANSMISSION REMOVAL.................6-26 6.9 TRANSMISSION DISASSEMBLY. 6.10 TRANSMISSION ASSEMBLY. ..6-36 6.11 MAIN DRIVE GEAR AND BEARING.. ...6-38 6.12 TRANSMISSION RIGHT CASE BEARINGS6-48... Page 678 NOTES XXVI TORQUE VALUES... INSTALLING RIGHT CRANKCASE sm00344 PART NUMBER TOOL NAME B-45520 GEAR DETENT ASSEMBLY AID HD-42326-B CRANKSHAFT GUIDE Figure 6-90. If necessary, cut the rubber heel guard Install brake pedal fastener. J-5586-A RETAINING RING PLIERS During assembly, the split bearings and the internal bores of the gears must be lubricated with Harley-Davidson FORMULA+ TRANSMISSION AND PRIMARY CHAIN- CASE LUBRICANT prior to assembly. To frame 6. While riding, a loose seat can shift Connect negative battery cable, tightening to 72-96 in- causing loss of control, which could result in death or lbs (8-11 Nm). Figure 3-98. HORN 7.10 REMOVAL sm00443 Remove seat. Check oil pressure switch for leaks. Throttle position sensor (TPS) 4. sm00622 Boot (2) Wiring harness Bulb holder (2) Position bulb socket (used for HDI only) Bulb (2) Headlight connector 4. (6.4 mm) of insulation. Handlebar Assembly: Lightning/Ulysses 2008 XB Service: Chassis 2-105... AMP 1-PLACE CONNECTORS AMP 1-PLACE CONNECTOR REPAIR sm00011 PART NUMBER TOOL NAME HD-38125-7 PACKARD TERMINAL CRIMPER HD-39621-27 SOCKET TERMINAL TOOL HD-39621-27 SOCKET TERMINAL TOOL HD-39621-28 PIN TERMINAL REMOVER General Obtain the necessary tools to repair the connector or terminals. Page 112 Remove cotter pin from brake pedal. REPLACING VALVE GUIDES sm00145 PART NUMBER TOOI NAME B-45523 VALVE GUIDE REAMER B-45524-A VALVE GUIDE REMOVER/INSTALLER B-45525 VALVE GUIDE HONE HD-34751 VALVE GUIDE CLEANING BRUSH Valve guide replacement, if necessary, must be done before valve seat is ground. Place a scissor jack under jacking point for supporting engine only. Ram Air Scoop, Engine Shroud and Oil Cooler 2008 XB Service: Chassis 2-143... Oil Pump Connections Figure 3-93. Figure A-6 Figure 4-7. Boot Gap 7-16 2008 XB Service: Electrical... Strain relief collar 5. rider footpeg mount. bolt Figure 6-67. Removing Sprocket Shaft Inner Bearing Race Figure 3-124. Acronyms and Abbreviations ACRONYM OR ABBREVIATION DESCRIPTION Intake Air Temperature Instrument Cluster Inside Diameter Ignition Light/Key Switch Inch INJ PW Injector Pulse Width in-Ibs Inch-Pounds Kilogram Kilometers Per Hour Liter Liquid Crystal Display Light Emitting Diode Milliampere Manifold Absolute Pressure milliliter... COLLET A157C SNAP-ON BUSHING DRIVER SET Split crankcases in half. FRONT FAIRING, WINDSHIELD, AND MIRRORS: FIREBOLT 2.49 REMOVAL INSTALLATION Figure 2-181. To prevent spray of fuel, purge system of high-pressure fuel before supply line is disconnected. Piston pin retaining ring installer Figure 3-88. Remove paper backing from weight. 16. Undercutting mica with piece of hacksaw blade 3. Drain fuel tank. Page 358 Install new o-rings on fuel supply stud (2). The EVAP system prevents fuel hydrocarbon vapors from escaping into the atmosphere and is designed to meet the California Air Resource Board (CARB) regulations in effect at the time of manufacture. FRONT FORK SLIDER PROTECTORS: XB12STT 2.200 meet the California Air Resource Board (CARB) regulations in effect at the time of manufacture. REPLACEMENT: XB12STT sm03835 Figure 2-107. Starting Circuit, Ulysses and Lightning... (4.0 mm) of insulation. Wiring Harness, Top View D-8 2008 XB Service: Appendix D Hose and Wire Routing... See 4.13 FUEL PUMP, Draining Fuel Tank. PART NUMBER TOOL NAME Table 6-8. NOTE Never tighten rear axle with swingarm brace removed. Page 381 sm00266 Through-bolt (2) Brush holder clutch Mounting bolt (2) Brush holder clutch Mounting bolt (2) Brush holder clutch Mounting bolt (2) Brush spring (4) Idler gear Field wire Armature Idler gear roller (5) Oring (2) Field frame... AMP Multilock Connector: Terminal Crimp 1. Tail loop 2. Both forks should be adjusted equally. Remove screw attaching the number plate to the reflector bracket (5). Install valve stem and tighten valve ste wire is located under the sprocket cover. See 7.23 MAIN WIRE HAR- REMOVAL NESS. 2.10 FRONT BRAKE CALIPER. Page 675 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Swing arm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot 44-46 ft-lbs 60-62 Nm 4.13 FUEL PUMP, Installation Swingarm pivot pixel by the state of the Installation Swingarm pivot shaft 44-46 ft-lbs 59-62 Nm 2.21 SWINGARM AND BRACE, Installation:... Install new shifter lever oil seal (19). Weights: 2008 Ulysses Models ITEM XB12XX (WITH LUGGAGE) XB12XT (WITH OUT LUGGAGE) XB12X SENSOR (TPS) REMOVAL sm00244 Remove air cleaner cover. Install muffler. Insert terminal 4. See 2.41 SUBFRAME TAIL ASSEMBLY AND BODY WORK: FIREBOLT. NOTES Position the lower idle control cable barrel in the throttle On all 2008 Buell XB Models, the throttle cables have cam wheel of the throttle body and then slip the elbow into threaded adjustments on both ends of the cable. Accessories (10 amp) 9. Overfilling can cause rough clutch engagement, incom- plete disengagement, incom- plete disengagement, clutch drag and/or difficulty in finding neutral at engine idle. Rotate right front fork counterclockwise to align caliper with rotor. Crimping Terminals sm00020 Identify which of the types of Deutsch terminals are used with the connector [30] Main harness Instrument cluster connector [22] Horn mount Left handlebar connector [22] Horn fastener Right handlebar connector [30] Main harness Instrument cluster connector [30] Horn 6. hose Clutch Drags Or Does Not Release Restricted oil tank return hose. Install the ignition coil (1) and coil connection [83] (2) and tighten fasteners for center tie bar mount (2) "V" bracket Center t assembly (2) Front isolator assembly (2) Fort isolator assembly (2) Fasteners (2) Ground strap Bolt Rear isolator assembly ... Page 446 Table 7-8. brake lamp operation. SPROCKET COVER 2.38 REMOVAL sm00123 Figure 2-161. DRIVE BELT AND IDLER PULLEY GENERAL NOTE Figure 6-39. Disconnect cable from front spark plug. See LUGGAGE: XB12XT. Fuel Tank Specifications Intake (XB9 models) 45 mm downdraft manifold, FUEL TANK CAPACITY GALLONS LITERS ram air Total (including reserve) 4.40 16.7 Intake (XB12 models) 45 mm downdraft manifold, (XB12Ss, XB12STT, XB12XT, ram air XB12X) AIR CLEANER ASSEMBLY REMOVAL sm00896 Remove intake cover Page 361 sm04397 88 6 Seal, intake manifold (2) O-ring, fuel injector, inlet Mounting flange, intake (2) Fuel rail Bolt (2) Screw (4) Bolt (2) Screw (4) Bolt (2) Screw (4) Bolt (2) REPAIR Place a new seal in each intake flange with the beveled side against the counterbore. Page 627 sm04333 Figure D-26. NOTE Orient the rubber boot so the flat on the boot is towards the left side of the motorcycle. Our digital service literature is excluded from any exchange! It is your responsibility to make sure and check if the service manual is for your bike, year, and model. (0.660 mm). Peel up rear corners of seat and remove two fasteners. Remove and discard o-ring on the clutch cable fitting. The covered fuse block is under the seat. 2-122 Assembly (Ulysses). Install pin hanger set (1) and tighten to 11-14 ft-lbs (15-19 Always replace brake pads in complete sets for correct Nm). Page 11 TABLE OF CONTENTS 2.10 FRONT BRAKE ...2-49 Assembly..... CALIPER 2.16 FRONT FORK: ALL MODELS EXCEPT XB12STT/XB12X/XB12XT Removal......2-30 Disassembly...... ...2-30 General.......2-49 Cleaning and Inspection.......2-30 Removal.....2-31 Disassembly........2-50 Installation......2-31 Damper Rod Disassembly.......2-52 Cleaning and Inspection. ..2-54 2.11 BRAKE PEDAL Assembly...... .2-54 Removal..... ...2-33 Damper Rod Assembly.... seat. Turn key OFF for two seconds. Compressed air can pierce the skin and flying debris from NOTE compressed air could cause serious eye injury. Page 572 Figure B-2. Install brake light switch/banjo bolt with sm00552 new copper washers to the master cylinder. Vent line 4. Finding this balance requires exploring all possible compression settings. Adjusting Crimper Tool Figure A-21. Oil Lines, Right Side View D-22 2008 XB Service: Appendix D Hose and Wire Routing... NOTE sm04650 In next step, make sure wire is in cutout portion (slot) of socket to prevent damage. sm05389 32. Page 663 2008 Buell XB Models Service: Appendix D Hose and Wire Routing... NOTE sm04650 In next step, make sure wire is in cutout portion (slot) of socket to prevent damage. 60 in-lbs 4-7 Nm 2.8 FRONT BRAKE MASTER CYLINDER AND HAND LEVER, Removal Caliper bleeder valves... Installer cup 5. Bank angle sensor connector [134]. FUEL CAP RETAINING RING 4.12 REMOVAL sm00877 NOTE The fuel tank must be drained to perform this service. The rearward power outlet is located in the tail section under the seat. GEARCASE AND CAM GEARS 3.16 For the gearcase components must be properly fitted and matched. Exhaust Header 2008 XB Service: Fuel System 4-37... NOTE Install fuel line onto fitting on fuel pump so that their optimum, all GENERAL components must be properly fitted and matched. fuel line is at approximately the one o-clock position. Wiring Harness, Right Side View 2008 XB Service: Appendix D Hose and Wire Routing D-21... Page 269 48. Ignition switch [33] Figure 7-9. Replace any parts Coat the sealing lips of the new oil seal (19) with fork oil that are bent, broken or damaged. Ignition switch [33] Figure 7-9. Install retainer plate with new fasteners and tighten to 56 in-lbs (6.3 Nm). Passages in the crankcase intersect The engine has a gravity/suction type oiling system, the main feed galley and carry oil to all hydraulic lifters incorporating oil feed and return pumps in the same body and piston jets. If you have any questions regarding Loctite product procedure or tool which is not recommended by Buell Motor- usage or retailer/wholesaler locations, please contact Loctite cycle Company must first thoroughly satisfy himself that neither Corp. Remove oil pump. sm00864 After installing seat, pull upward on seat to be sure it is locked in position. the cover for the rear wiring (3). Chain adjuster screw 1. Oil Lines, Right Side View D-34 2008 XB Service: Appendix D Hose and Wire Routing... For location of jacking point see B-43993-12 BACKING PLATE 4.16 EXHAUST SYSTEM. CLUTCH/TRANSMIS- SION/PRIMARY FLUID. Removing Flywheels from Left Crankcase sm02942 14 13 Spacer, sprocket shaft Thrust washer Retaining ring, oil seal Connecting rod and flywheel assembly Oil seal Inner race Thrust washer Pinion shaft bearing ring Crankshaft case... NOTE NOTES If cylinder clearance exceeds service wear limit cylinders and Stop to examine the cylinder bore and/or take measure- pistons should be replaced with new components. NOTE Front fasteners are installed at a slight angle. Starter Specifications Brush length (minimum) 0.433 11.0 STARTER Commutator diameter (min- 1.141 28.981 Free speed 3000 RPM (min) @ 11.5 V imum) Free current 90 amp (max) @ 11.5 V Stall current 400 amp (max) @ 2.4 V Stall torque... If positive (+) cable Install rear shock reservoir clamp (7) and fastener to 80-88 in-lbs (9.0-9.9 Nm). Removal end of bearing tool 2. PART NUMBER TOOL NAME Insert stripped wire core between crimp tails until ends HD-39965-A DEUTSCH TERMINAL CRIMP TOOL make contact with locking bar. Axle 2. Replace components as required and reassemble adjusting screw assembly in reverse order. Relay terminal Figure D-32. A horizontal shock absorber with a tensile spring located under the engine acts as an elastic element of the rear suspension. Apply a thin coat of GREY HIGH-PERFORMANCE sm00196 SEALANT (Part No. 99650-02) to crankcase joint faces. Temporarily install front axle to the fork assemblies to verify correct alignment. the fuel tank and either vent to the atmosphere or to the char- coal canister on California Models (EVAP-equipped) and closes Install intake cover assembly. Transmission sprocket nut 2. Whenever the main drive gear is removed, the main sm00330 drive gear bearing must be replaced. One narrow fiber plate. Disconnect the vent oil line connection (4) from the top left side of the oil pump body. The rocker arm covers and internal compon- ents must be removed before removing cylinder heads. To remove secondary locks, insert end of small flat blade screwdriver (1) under lip of locking sm00025 wedge (2) and gently pry up secondary lock. 19. Install upper belt guard (1) to swingarm wheel off ground. Lightning and Firebolt models do not have a shifter bracket. Strip wire lead removing 1/4 in. Remove fastener (1) holding manifold to cylinder brace. Center tail section 4. Pump brake hand lever to drain brake fluid. Conduct test. FOOTPEG, HEEL GUARD AND MOUNT: FIREBOLT/LIGHTNING 2.36 RIDER sm03637 Wear Peg Removal Figure 2-155. It prevents gasket leaks, stud failure, and head and cylinder distortion. Intake Manifold (Primary Side) 4-28 2008 XB Service: Fuel System... Regulator Specifications REGULATOR Table 7-1. Figure 7-48. brush. This helps the relative distance of Loosen mount (3) and remove from bracket (4). Check that swingarm is not bent or twisted. E.1 ACTIVE INTAKE SYSTEM (JAPANESE MODELS ONLY)......E-1... Auxiliary (10 amp) 3. Install left and right fork slider stables the relative distance of Loosen mount (3) and remove from bracket (4). protectors applying LOCTITE 271 (red) to fasteners and tighten to 12-36 in-lbs (1.3-4 Nm). THROTTLE CABLE 1.14 released. Transmission sprocket Figure 6-103. Insert well nuts (6) into the windshield and windscreen holes. Lubricant level too high in primary chaincase. Check for proper When making adjustments, remember there are two mediums torque and replace worn bearings. Rear brake light switch connector [121] Figure 7-90. Place Installer over Adapter (Typical) Figure 6-82. NOTE Horn (1) can remain attached to support bracket. While riding, a loose seat can shift the resulting sparks can cause a battery explosion, which causing loss of control, which could result in death or could result in death or serious injury. Refer to Table A-2. NOTES Figure 2-125. See Figure 2-125. See Figure 3-9. (00133a) Do not inflate tire beyond maximum pressure as specified on sidewall. Retaining ring Figure 3-9. (00133a) Do not inflate tire beyond maximum pressure as specified on sidewall. Retaining ring Figure 3-137. CRANKCASE 3.17 Remove starter motor. Lightning: See Figure 3-137. CRANKCASE 3.17 Remove starter motor. (2) from If solenoid bracket needs to be replaced, remove the baseplate cable bracket (4). Return oil line 3. Figure 2-201. Crimping Terminals Inspect new socket terminal for bent or deformed contact and crimp tails. Page 193 18. See 2.38 SPROCKET COVER. Figure 2-170. Muffler Mounting System 18. Connect spark plug cables. Checking For 1/8 in. Raising locking bar 3. Basically it covers everything from basic fluid changing instructions to rebuilding the motor. Engine oil runs through the swingarm which left front side of the crankcases. BELT GUARDS 2.39 REMOVAL INSTALLATION Place a scissor jack under jacking point and raise rear Figure 2-163. Slide top case on mounti pracket sm05230 the rear of the motorcycle until top case can be removed from bracket. Preload adjuster HD-45966 FORK SPRING COMPRESSOR 4. Remove sprocket cover fasteners and washers (1, 3). Fairing support, center 2. 2-65 Gasoline Blends: Buell Models....1-5 Installation (Firebolt). This voltage reading Install air cleaner assembly. OIL LINE FITTINGS 3.11 REMOVAL sm00206 PART NUMBER TOOL NAME B-41623-B OIL LINE REMOVER Figure 3-97. Page 605 sm04337 1. Remove spacer (19) and 2nd gear (18) from the end of the countershaft (2). For measurement specifications Table 6-1. Thunderstorm is seriously boosted by increasing compression, using oversized valves, a special camshaft, and a lightweight flywheel. Page 142 Figure 2-79. It is necessary to tighten the front head pipe first. Page 378 sm00058 1. Page 623 sm04369 1. Page and relay center Bank angle sensor (BAS) connector [134] Main harness ground wire [GRD2] Auxiliary power outlet Main harness with plastic grommet Trunk pan... Metric Conversions MILLIMETERS to INCHES to MILLIMETERS (MM x 0.03937 = IN.) (IN. Page 1 2008 Buell XB Models Service Manual 99490-08YA © 2007 Buell Motorcycle Company... Remove front muffler strap (5) from front muffler (7). Starting at the valve stem, start first bead Lateral 0.080 2.03... Rotate crankshaft until all timing marks (7, 8) are aligned as shown. Pull ferrule (end of cable housing) away from bracket. ELECTRICAL SYSTEM Clutch controls improperly adjusted. Pull the lamp assembly away from center tail section pulling the harness out between the tail screen and the center tail section. Page 645 NOTE the throttle body. sm00865 1. Page 395 sm00278 Spring Diaphragm spring Damper spring Lockplate Retaining ring Damper spring seat Release plate Mainshaft nut Outer ramp Retaining ring Washer Coupling Bearing Clutch hub Ball (3) Adjusting screw Inner thrust washer Inner ramp Pressure plate Needle bearing inner race Retaining ring Friction plate, fiber (7) Needle bearing... While riding, a loose seat can shift causing loss of control, which could result in death or Disconnect connector [93] from tail lamp. sm00621 Horn Screws (2), upper headlight mounting Horn connectors [122] Headlight assembly Horn bracket Screws (2), headlight support bracket Horn fastener Headlight support bracket Headlight support bra stop pin into the upper triple clamp. Discard used fluid according to local laws. Using LOCTITE 271 tighten, fasteners (10) to 25-28 ft-lbs (34-38 Nm). ASSEMBLY PART NUMBER TOOL NAME HD-47855 INNER/OUTER MAIN DRIVE GEAR PART NUMBER TOOL NAME NEEDLE BEARING INSTALLATION HD-95635-46 CLAW PULLER TOOL HD-95637-46B WEDGE ATTACHMENT Use INNER/OUTER MAIN DRIVE GEAR NEEDLE Figure 6-67. (00070b) sm00663 1. (00312a) Figure 6-59. Remove Install seat. Oil Lines, Right Side View D-10 2008 XB Service: Appendix D Hose and Wire Routing... Instrument module 3. Tighten all fender fasteners to 36-48 in-lbs (4.0-5.4 Nm). 10. Replace the instrument module if the unit is not working prop- NOTE erly. Washer 5. Page 581 et00003 IGNITION SWITCH WIRING DIAGRAM Ignition KEY POSITION SWITCH WIRING DIAGRAM Ignition SWI TN/W Sidestand switch 34 34 BK/W Sensor ground... Pull the lamp assembly away from license plate bracket (1) pulling the harness out of the license plate bracket (2) pulling the harness out of the license plate bracket (3) pulling the harness out of the license plate bracket (3) pulling the harness out of the license plate bracket (3) pulling the harness out of the license plate bracket (3) pulling the harness out of the license plate bracket (3) pulling the harness out of the license plate bracket (1) pulling the harness out of the license plate bracket (3) pulling the harnes (reservoir Upper shock mount fastener Lower shock mount nut Lower shock mount Vashers (2) Shock spring Figure 2-118. Install seat. Page 646 NOTES E-6 2008 XB Service: Appendix E Active Intake (Japanese Models) Page 647 SUBJECT. PAGE NO See 2.18 FORK Fuel Tank Page 658 Tools Used in This Manual PART NUMBER TOOL NAME NOTES HS0020.02A8A HOSE ASSEMBLY 7.14 INTERACTIVE EXHAUST SYSTEM, Removal J-23444-A EXTREME PRESSURE LUBRICANT 2.4 FRONT WHEEL, Assembly J-5586-A TRANSMISSION SHAFT RETAINING RING 3.7 CYLINDER AND PISTON, Fitting Piston Rings PLIERS J-5586-A TRANSMISSION SHAFT RETAINING RING... Grounded Starter Field Test 2. Headlight and Support Bracket: Ulysses DISASSEMBLY: LIGHTNING/ULYSSES ASSEMBLY: LIGHTNING/ULYSSES Figure 2-144. Page 400 Install primary cover. Hammers Ratchets and Handles Never strike a hammer against a hardened object, such Periodically clean and lubricate ratchet mechanisms with as another hammer. Compressing Piston Rings 2008 XB Service: Engine 3-57... After installing seat, pull upward on seat to be sure it is Table 4-4. Retaining ring 3. Page 284 sm00130 Crankcase breather Gasket (lower) Screw, tappet anti-rotation (2) Grommet Rocker arm shafts Gasket (push rod cover) Screw (4) Fiber seal (4) Rocker arm (2) Push rod cover (top) Rocker arm (2) Push rod... Brushes (2) 1. The oil pump consists of two genotor gear be sure that all possible related malfunctions have been elim- sets, feed and return, housed in one pump body. sm04798 Main harness ground wire [GRD2] Auxiliary power outlet Main harness with plastic grommet Trunk pan... Upper Fork Clamp: Firebolt sm00363 1. Apply LOCTITE ANTI-SEIZE LUBRICANT to axle. NOTES Turn the ignition/light key switch ON. Heel Guard Removal Figure 2-155. Remove front fairing or windshield/windscreen. INSTALLATION Figure 3-108. Connect: Right turn signal connector [18]. Page 662 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING, Assembly / LOCTITE 271 (red) Battery tray fasteners, Lightning 48-72 in-lbs 5.4-8 Nm 2.42 LEFT TAIL SECTION AND PAN:... If positive (+) cable After installing seat, pull upward on seat to be sure it is should contact ground with negative (-) cable connected, locked in position. Page 383 STARTER SOLENOID REPLACEMENT sm00067 NOTE Figure 5-16. sm02952a Figure 3-16. Nut Figure 6-76. Figure 2-200. Remove three TORX screws with washers For clutch adjustment procedure, see 1.8 CLUTCH/TRANS- (1) and clutch inspection cover (2). Return spring 3. Figure 2-54. Connector [39] (2) PART NUMBER TOOL NAME Left [24] (4) and right [22] (3) handlebar wiring har- FTXR45E SNAP-ON TAMPER-RESISTANT T45 ness connectors TORX DRIVER Turn signal connectors [31] (5) Remove seat. When using the FORK SPRING COMPRESSOR be sure not to bind the outer fork tube on the tool. Remove upper body work (1) from DISASSEMBLY subframe tail assembly (7). Wear a protective face shield, sm04816 rubberized gloves and protective face shield. is extremely flammable and highly explosive, which could result in death or serious injury. Retract sidestand leg (9). ACTIVE INTAKE SYSTEM (JAPANESE MODELS ONLY) While holding the throttle wide open, activate the active GENERAL intake tab on Digital Technician. 12. Electrical Connectors Behind Windscreen: Lightning Install spacer (3) onto fastener (6), and attach ignition INSTALLATION: LIGHTNING switch assembly to upper triple clamp. Bearing retaining ring 6. Fastener (3) 6. 10. Lots of people charge for motorcycle service and workshop manuals online which is a bit cheeky I reckon as they are freely available all over the internet. Page 515 sm00473 Turn signal flasher connector [30] Main harness Instrument cluster connector [22] Horn fastener Right handlebar connector [22] Horn for 6. CLEANING AND INSPECTION Use denatured alcohol to clean brake system components. Inspect the wire core crimp (2) and insulation crimp (1). STORAGE 1.18 Wash and polish molded-in-color, painted and chrome- GENERAL plated surfaces. sm00272 1. Page 274 sm00135 Screw Valve guide intake and exhaust port stud Exhaust valve seat Valve seat Valve seat and lower valve Cylinder insert spring collar assembly 12. Location of Cable Strap Securing the Right Side Hand Grip Wire Below the Instrument Cluster 1. Evaporative Emissions Control, California Models, Top View 2008 XB Service: Appendix D Hose and Wire Routing D-29... (00048a) Disconnect battery cables from battery: negative cable (black) first. Installing Flywheel Assembly with CRANKSHAFT GUIDE sm00195 Figure 7-85. Page 528 NOTES... 0.127 mm 3-4 2008 XB Service: Engine... . ENGINE INSTALLATION NOTE ASSEMBLY Hand thread pivot shaft into crankcase prior to installing Engine Preparation for Re-installation the threaded insert. Line scribed on nut and sprocket Figure 6-102. Remove and discard rotor mounting fasteners (7). 13. Open bleeder valve (metric) about 1/2-turn. Clamp fasteners 4. NOTE Voltage Regulator Never install accessory wiring between battery post and battery... Place clip (1) inside caliper body as shown. Failure to maintain polycarbonate properly can result in damage to the wind- screen/windshield. Install upper rocker covers (6). Oil Filter: Buell Models except Blast Figure 1-7. Remove screw on back of housing to access turn signal Activate left turn signals using switch on left bulbs. Lock tab (6) HOSE ROUTING 2. Place washer (2) on mainshaft with the word "out" facing away from clutch hub. Install headlight support bracket (9). Lighting Circuit, Ulysses and Lightning... Page 30 Table 1-4. Figure B-9. Forcing screw Figure 2-10. PACKARD ECM CONNECTOR A.15 PACKARD 100W CONNECTOR REPAIR sm00037 General A Packard 100W connector connects the the electronic control module (ECM) to the main harness. CLEANING AND INSTALLATION PART NUMBER TOOL NAME Compressed air can pierce the skin and flying debris from HD-43984 CRANKSHAFT LOCKING TOOL compressed air could cause serious eye injury. WHEELS GENERAL sm00110 Good handling and maximum tire mileage are directly related to the care of wheels and tires. Install fork assembly into upper clamp. Install left and right side rider footrests and support plates. See {MISSING XREF C20-art-hdtopic001720-1}. Page 498 sm00467 sm00424 1. Thin steel strip Figure 5-7. REMOVAL sm03744 PART NUMBER TOOL NAME HS0020.02A8A HOSE ASSEMBLY Remove seat. DEUTSCH MINI TERMINAL CRIMPS Inspecting Crimps Inspect the core and insulation crimps. IAC sensor. Remove idler pulley bracket nuts and washers (5) from studs (3). Ignition switch 6. Figure 2-137. Change Filter 3. See Remove seat. Two con- secutive teeth are missing in the flywheel to establish a refer- ence point. To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. Charging system circuits are shown in Figure 7-17 The rotor which mounts to the engine sprocket shaft. Loosen rear axle pinch fastener. Washer 3. Page 600 NOTES... Left and right tail section fastener to main frame/fuel tank assembly (4) 2. Page 573 Key Switch Ignition Horn Headlight Relay Right Turn Signal Fuel Pump Fuse Assembly et00008 IGNITION SW WIRING DIAGRAM Left Turn Signal [38B] Center O/GY KEY POSITION Auxiliary [122A] Brake/Horn/EVA PARK [62B] R/BK LOCK R/BK Cooling Fan 14 15 [31B] Table 5-2. See REMOVAL 2.27 CLUTCH CONTROL. Low visibility of rider can result in death or serious injury. Drain the transmission fluid. Verify that outer thrust washer (4) is installed on transmission fluid. Verify that outer thrust washer (4) is installed on transmission fluid. Verify that outer thrust washer (4) is installed on transmission fluid. Verify that outer thrust washer (4) is installed on transmission fluid. clamp (4) on hose connected to master cylinder. Contact barrel 2. When in the rearward position, you Figure 2-206. THROTTLE BODY 4.14 10. 4.16 EXHAUST SYSTEM. IGNITION/HEADLAMP KEY SWITCH GENERAL Table 7-12. Apply multi-purpose grease to balls (2) and ramps (1, Insert balls in sockets of outer ramp (1). Install upper rocker cover using screws with washers and new fiber seals (5). (00521b) Read and follow warnings and directions on propane bottle. Insert fastener through battery positive cable (red) into Figure 1-3. Page 442 sm00350 sm00302 45° 30° 1. For maximum strength, integrity and longevity, avoid a fixed idler pulley that maintains the desired tension throughout over bending, twisting, crimping, pinching, kinking or prying suspension travel and life of the belt. Cycle the actuator to verify cable and valve operation: ADJUSTMENT Hold the throttle wide open. Remove cable straps securing wiring harnesses to the upper fork clamp. Page 131 NOTE Table 2-20. wash in solvent. Crank position sensor (CKP) Figure D-18. Excessive play bearing to fly apart, which could result in death or serious or roughness indicates worn bearings. Mating Pin and Socket Housings Push pin and socket halves of connector together until external latch(es) engage. 42. Remove air cleaner cover. 1/2-inch breaker bar 3. Ignition Switch: Lightning (Typical) Push ignition switch housing (4) on to ignition switch (5). Electrical Connectors Behind Windscreen: Lightning 2-94 2008 XB Service: Chassis... Position windscreen (4) onto left and the left and right front modules (2, 5) and thread into the right front modules (2, 5). Check for oil leaks at oil filter, drain plug, hoses and oil cooler. Figure 2-213. AUTOFUSE ELECTRICAL CONNECTORS AUTOFUSE CONNECTOR REPAIR sm02849 PART NUMBER TOOL NAME GA500A SNAP-ON TERMINAL PICK General Autofuse electrical connector terminals are found in ignition and fuel pump. Do not loosen sprocket nut while attempting to align the screw holes. Intake air sensor 3. Front Exhaust Mount Bushings (2 piece) Figure 3-18. FRONT MODULES: LIGHTNING/ULYSSES 2.32 REMOVAL sm03875 Remove seat. Wiring Harness, Right Side View 2008 XB Service: Appendix D Hose and Wire Routing D-9... Page 507 sm00661 Main harness Bank angle sensor (BAS) connector [134] Main harness ground (high voltage ground wire) Right turn signal connector [145] Rear brake light switch connector [121] Tail light connectors [93] Ground terminals [GRD1] and [GRD3] Left and right trunk pan fasteners... Page 339 Connect battery positive cable (red) first, tightening to Install seat. sm00475 Turn signal connector [39] Main harness Right handlebar connector [30] Cable strap Instrument cluster connector [31] Horn connector [122] Ignition switch Horn Figure 7-12. Page 423 10. Position both forks with same number torque lower fork clamp pinch fasteners. Left turn signal connector [19]. SPARK PLUGS 1.12 INSPECTION sm00099 Check spark plugs: Replace every 10,000 mile (16,000 km) service interval. For Solid Color Wires: See Figure B-1. Page 62 sm00506 sm00505 Figure 1-46. Page 607 sm04344 1. Page 255 sm03744 sm03933 1. Route portion of main wire harness that contains the pos- itive battery cable (3), sprocket cover wiring (4) and transmission vent hose (2) through corner mounting strap and guide (1) at rear of frame. 72-96 in-lbs (8-11 Nm). FENDERS 2.15 NOTE FRONT FENDER: XB12R It is necessary to align the rear brake line with the rear inner Removal fender. Remove center section fasteners and washers (2). Servicing of transmission compon- ents requires removing the engine and disassembling (splitting) the crankcase. Crank position sensor (CKP) 5. Allow the plunger to "back out" of the handle. Install pinion gear

spacer and pinion use your hand to check for air leaks or to determine air gear on pinion shaft. PART NUMBER TOOL NAME The procedure for the rear wheel bearing installation. Crowfoot wrench 2. supply hose. See 2.25 REAR SHOCK ABSORBEF Bend back the external latch(es) slightly and separate pin and socket halves of connector. Rear caliper pin hanger Figure 1-19. Remove spacer (16). Insert IAT sensor into grommet on baseplate from under- sm00897 side. Measure primary chain tension through the inspection cover opening. sm03889 1. Carbon canister Figure D-16. Page 95 Slide axless of connector. Rear caliper pin hanger Figure D-16. Page 95 Slide axless of connector. through right side of swingarm and wheel hub sm00524 and thread partially into swingarm on left side. sm00858 Connect positive (+) battery cable first. Left side 2. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. NOTE Inspect Crimp A stuck or jammed tool can be opened by pressing the ratchet Inspect Crimp: Inspect the core and insulation crimp. Install a complete rebuild kit upon assembly. Page 204 10. Lap race until all wear marks are removed. sm00399 To prevent accidental vehicle start-up, which could cause death or serious injury. disconnect negative (-) battery cable before proceeding. From fuel tank to atmosphere (49 state) Figure D-29. Page 636 sm04373 1. General Engine Specifications ITEM SPECIFICATION Type 2 cylinder, air cooled, four-stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Connect cables to frames for the stroke 45 degree V-twin Compression ratio 10:1 Bore (all models) Page 238 Table 3-5. BATTERY CABLES Conn and starter. X-Guard (XB9SX only) 2. When oil is not circulating through the system or when oil pressure is low, spring tension holds the switch contacts closed, thereby completing the signal light cir- cuit and causing the indicator lamp to illuminate. ening fastener. Replace the unit if it fails. Page 444 NOTES... Ratchet arms Figure 6-50. Main Harness, Ulysses and Lightning Main Harness, Ulysses and Lightning... Oil pressure switch 5. See 1.4 BATTERY MAINTENANCE. Wipe up spilled fuel immediately and dispose of rags in a suitable manner. Install fork assembly into upper fork clamp. NOTE Check control wire routings. Flanged Oil Line 3-68 2008 XB Service: Engine... After fullyses and Lightning... Oil pressure switch 5. See 1.4 BATTERY MAINTENANCE. Wipe up spilled fuel immediately and dispose of rags in a suitable manner. Install fork assembly into upper fork clamp. unthreading preload adjuster, gently pull on adjuster. Page 674 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upper 48-52 ft-lbs 65-70.5 Nm 2.25 REAR SHOCK ABSORBER, Installation: Lightning Shock mounting fastener, upp Installation: Ulysses Shock reservoir clamp, rear (Lightning... Install pedal bushings (6). Wire lead in metal insert 2. Figure B-2. Install the rider/passenger peg mount to the motorcycle. For additional information, see 2.16 FRONT FORK: ALL MODELS EXCEPT XB12STT/XB12X/XB12XT. (00184a) Engine oil is a major factor in the performance and service life Your motorcycle was designed to get the best performance of the engine. Page 508 sm00472 Main harness Ground terminals (low voltage ground wire) ECM connectors [10] and [11] Battery negative cable Fuse block and relay center Battery positive cable Bank angle sensor (BAS) connector [134] 5. The forward power outlet is located in the left of the speedometer assembly. Fingerprints will etch the High beam headlight is located on the left of the wheel rim (7) from release plate (5). Tamper-resistant Torx fasteners (2) 3. On the front wheel, locate a flat surface on the right of the wheel rim sm00542 Be sure that all lights and switches operate properly before operating motorcycle. Rear caliper pin plug 4. Feed oil line 3. Page 3 2008 Buell XB Models Service Manual ©2007 Buell Motorcycle Company ALL RIGHTS RESERVED 99490-08YA Printed in the U.S.A. VISIT THE BUELL WEB SITE ... On Ulysses models, remove air flow guide from seat lock. Front and Rear Brake Systems, Right Side View D-2 2008 XB Service: Appendix D Hose and Wire Routing... sm00158 1. REAR SHOCK ABSORBER 2.25 GENERAL The rear suspension is controlled by the shock absorber. Page 417 sm00317 Wear safety glasses or goggles when removing or installing retaining rings. Page 505 sm00415 sm00464 1. Transmission Vent Line: Ulysses Figure 3-34. Cable, starter to battery positive 3. The manual contains step by step instructions, and easy to read illustrations. FORK CLAMPS: UPPER AND LOWER 2.18 REMOVAL FIREBOLT sm00573 Place a scissor jack under jacking point and raise front wheel off ground. Check turn signals for proper operation. Cable strap 3. Position stator (2) on left crankcase half. B- 43993-50A HD-44060A WHEEL BEARING... See 2.36 FOOTPEG, HEEL GUARD AND FOOTPEG MOUNTS: ULYSSES MODELS. INSTALLATION Figure 2-179. sm00515 sm00517 1. Page 611 sm04367 1. Assemble crankcase halves together. Tighten to 72-96 in-lbs (8-11 Nm). Raise tang to install Figure A-37. Remove right side rider footpeg support bracket. SPARK PLUG CABLES Figure 7-15. See Figure 3-12. Page 509 sm00475 Turn signal flasher connector [30] Cable strap Instrument cluster connector [30] Main harness Right handlebar connector [22] Horn fastener Left handlebar connector [24] Horn mount Turn signal connectors [31] Horn connectors [31] Horn connectors [32] Figure 7-93. Remove footpeg (8). The result is that The purpose of the clutch is to smoothly disengage and engage the rotational force of the clutch shell is transmitted through the engine from the rear wheel for starting, stopping and shifting the clutch hub. NOTE steering head bearings need replacing, Carefully install the fork into the upper fork clamp. Headlight Support Bracket Assembly: Firebolt INSTALLATION: FIREBOLT Figure 2-141. Relay terminal Figure D-20. See LAPPING PINIONE Steering head bearings need replacing, Carefully install the fork into the upper fork clamp. SHAFT BEARING OUTER RACE. Feed oil line 2. Disconnect rear brake light switch connector [121]. Front muffler strap fastener Figure 2-144. Oil cooler feed line Figure 3-37. Headlight housing Figure 2-144. Oil cooler feed line Figure 3-37. Headlight housing Figure 3-37. Headlight DISASSEMBLY sm00387 To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. NUMBER PLATES: XB12STT 2.51 GENERAL sm03839 The tail section number plates as well as the flyscreen number plate can be used by the rider to customize and personalize his/her motorcycle. Repeat Steps A and B five consecutive times. Low visibility of rider can result in Activate left turn signals using switch on left death or serious injury. Page 122 Figure 2-65. for the charger being used. See 4.16 EXHAUST SYSTEM. The swingarm features a removable brace on the right side to allow drive belt replacement. Oil pressure switch 6. Main Harness, Firebolt Main Harness, Firebolt... Figure 7-78. BRAKE PEDAL 2.11 REMOVAL sm00119 Figure 2-45. Figure B-6. Wiring Harness, Left Side View 2008 XB Service: Appendix D Hose and Wire Routing D-7... Page 613 sm04374 1. This procedure is recommended for service only. Remove wire lock 1. Remove pivot shaft after installing the threaded insert. and thread nut on pivot bolt. NOTE For diagnostic information, see the Electrical Diagnostic Manual Insufficient clutch spring tension. PRESSURE INDICATOR SWITCH. Use of GASOLINE BLENDS: BUELL MODELS inferior lubricants can damage the engine. Tamper-resistant Torx fasteners (2) 8. Pins 2. NOTES NOTE Vehicle should be placed onto the lift with rear tire in the When removing the left air scoop, the alternator and voltage wheel vise in order to successfully perform this procedure. Battery: Lightning/Ulysses 1. (0.203-0.559 mm). sm00503 Figure 1-40. See 2.49 FRONT FAIRING, WINDSHIELD, AND MIRRORS: FIREBOLT (Firebolt) or 2.50 WINDSHIELD AND WIND- SCREEN: LIGHTNING AND ULYSSES (Lightning and Ulysses). trunk pan and plate, now is the time to connect the cable end to the seat lock. Fork Holding Tool Record rider suspension settings before disassembly. Weights: 2008 Lightning Models ITEM XB9SX XB12S XB12S XB12STT Weight GVWR GAWR from GAWR rear Load capacity All measurements include a full tank of gasoline. Page 640 NOTES... The compression spring extends and retracts to cushion the ride over rough or irregular road surfaces. Self-discharge is a normal condition and occurs threaded hole of battery positive (+) terminal and tighten continuously at a rate that depends on the ambient temperature fastener to 72-96 in-lbs (8-11 Nm). Buell V.I.N. Breakdown: 2008 Models POSITION DESCRIPTION D type code AX=Firebolt ¹¹... Page 199 is02466 1. Remove clevis pin (2). sm00636 Rear muffler strap (2) Front muffler strap (3) Front muffler strap (3 (2) Front muffler strap fastener Symbol for jacking point on muffler (located on 7. sm00293 sm00294 1. Tighten cable adjuster lock on idle control cable. Installation engages hole on both pads and spring clip. 0.203-0.559 mm 0.026 in. It is sm00421 immediately forward of the transmission sprocket (1). The angular cross hatch pattern ensures an even flow of Table 3-20. Air Cleaner Assembly with Interactive Exhaust (XB12 Models, Typical) 4-4 2008 XB Service: Fuel System... Piston ring compressor Figure 3-90. Front Suspension Problems TROUBLESHOOTING CONDITION ADJUSTMENT SOLUTION Not absorbing bumps. Page 384 NOTES 5-10 2008 XB Service: Electric Starter... When wear bars become visible and recommends that you see your dealer for these services. Flat washer 7. Avoid eye contact. Install front brake lever housing. See 3.6 CYLINDER HEAD. Install a length of plastic tubing over caliper bleeder valve. Carefully inspect all components. that are bent, broken or damaged See 2.30 DEFLECTORS: XB9SX/XB12STT/XB12XT. Assembly and Installation Figure 7-67. Gasoline is Vehicle should be placed onto the lift with the front tire extremely flammable and highly explosive, which could placed in the wheel vise in order to successfully perform... NOTE For vehicles with 73-pin connectors, see A.16 PACKARD MICRO 64 CONNECTORS A.14 PACKARD METRI-PACK TERMINALS. See STARTER. Connect front tie bar to "V" bracket and tighten fastener to 25-27 ft-lbs (33.9-36.6 Nm). The actuator cycle close/open/close. Page 17 TABLE OF CONTENTS Removal: Firebolt......7-5 Removal.7-6 Installation...... ...7-35 Assembly: Firebolt.. Disassembly: Firebolt. ..7-36 Removal: Ulysses...........7-12 7.13 REAR TURN SIGNALS Disassembly: Ulysses.........7-13 Assembly: Ulysses...........7-13 Bulbs........... ..7-35 Installation: Ulysses...........7-14 Connections and Wire Routing.......7-35 Firebolt.......... ...7-35 7.4 SPARK PLUG CABLES... See 4.14 THROTTLE BODY. pitting Lightning.7-11 Installation...... or corrosion. CLUTCH RELEASE MECHANISM amount of free play at clutch hand lever. Start the cylinder studs, two short screws on the left side of the engine, two long bolts on the right. GLOSSARY ACRONYMS AND ABBREVIATIONS Table F-1. Page 265 sm03729 Oil pump P-clamp Oil cooler return line to crankcase Rear muffler bracket Oil cooler feed line from oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Front muffler mount Oil line Front muf bulbs. Idler pulley bracket nut and washer (2) 6. Remove two screws and washers to detach TP sensor. HD-38125-7 PACKARD TERMINAL CRIMPER Preparing Wire Leads for Crimping sm00022 Strip wire lead removing 5/32 in. Commutators with more than 0.016 in. Using compressed air to "spin dry" bearings can cause NOTE bearing to fly apart, which could result in death or serious injury. On Ulysses models, it will be necessary to disconnect and remove the heated handgrips. Crankcase half 6. Page 491 sm00447 Figure 7-62. If the cable comes out the cable will not work When removing baseplate it will be necessary to feed the properly and will not be adjusted. Separate the adjusting screw (8) from the bearing (7) and release plate (5). MAIN FUSE AND FUSES 7.18 GENERAL sm00373 Buell motorcycles feature two components which protect the electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the long forcing screw (1). Ignition Components 7-4 2008 XB Service: Electrical system. Remove the backing plate (2) from the backing p THICKNESS sm00493 Be sure that no lubricate drive assembly components. Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator, Left Side View D-12 2008 XB Service: Appendix D Hose and Wire Routing... Clean, inspect and lubricate drive assembly components. Clutch Cable and Exhaust Valve Actuator Right Side View 2008 XB Service: Appendix D Hose and Wire Routing D-11... Never touch the quartz bulb. Page 656 Tools Used in This Manual PART NUMBER TOOL NAME NOTES HD-39786 CYLINDER HEAD HOLDING FIXTURE 3.6 CYLINDER HEAD, Procedure For Using The Neway Valve Seat Cutter HD-39965-A DEUTSCH TERMINAL CRIMP TOOL A.6 DEUTSCH STANDARD TERMINAL REPAIR, Deutsch Standard Terminal Crimps HD-39969 ULTRA TORCH UT-100 A.17 SEALED SPLICE CONNECTORS, Sealed Splice... Neutral switch 7. Disconnect the two connectors [45] from license plate lamp harness (2). See 4.13 FUEL PUMP. VEHICLE SPEED SENSOR (VSS) 7.21 REMOVAL sm00410 Remove sprocket cover. The horn can be removed and replaced as needed. Turn ignition/key switch to ON. Install rear belt and idler pulley. Repeat to verify torque. Replace damaged parts as necessary. Figure 2-186. Handlebar clamp 5. Backing plate Figure 2-18. O-Rings (Preformed Packings) Clean bearings with permanent shields and seals in solution. Insert ignition key into the pillion lock located on the left side of motorcycle. Page 268 sm03746 Coil Fuel line connection [88] Coil wire harness retaining clip IAT sensor [89] Throttle cables Engine temperature sensor connection [90] Fuel injector connections [84 & 85] Oxyger sensor conection [137] 6. Remove rear isolator assembly by When rod bearings, pinion shaft bearing, or sprocket shaft removing the forward two fasteners (re-install with new fasteners). The shock allows adjustment of rear compression and rebound damping and spring preload. INSTALLATION: ULYSSES XB12XT pd00272 Figure 2-184. Propane is extremely flammable, which could cause death or ser- ious injury. The X-Guard (1) on the XB9SX model is a non-replaceable part. Electrical Connectors Behind Windscreen: Ulysses 2008 XB Service: Electrical 7-65... Figure 3-55. Pinion Shaft (Right Main) Bearing Specifications PINION SHAFT BEARINGS NEW COMPONENTS SERVICE WEAR LIMITS Bearing running clearance 0.00012-0.00086 in. Clamp VALVE SPRING COM- PRESSOR (Part No. HD-34736B) in vise. IAC sensor connection [87] Figure 3-42. Page 302 sm03729 Oil pump P-clamp Oil cooler return line to crankcase Rear muffler bracket Oil cooler feed line from oil pump Swingarm/Oil reservoir Oil filter Vent oil line Front muffler mount Oil line Cable, interactive exhaust Return oil line Brain plug Figure 3-96. NOTE sm00153 The procedure for tightening the head screws is critical to proper distribution of pressure over gasket area. Page 253 sm03729 Oil pump P-clamp Oil cooler return line to crankcase Rear muffler bracket Oil cooler feed line from oil pump Swingarm/Oil reservoir Oil filter Vent oil line Cable, interactive exhaust Return oil line Front muffler bracket Oil cooler feed line from oil pump Swingarm/Oil reservoir Oil filter Vent oil line Cable, interactive exhaust Return oil line Cable, interactive exhaust Return oil line Front muffler bracket Oil cooler feed line from oil pump Swingarm/Oil reservoir Oil filter Vent oil line Cable, interactive exhaust Return oil line Cable, interactive exhaust Return oil line Front muffler bracket Oil cooler feed line from oil pump Swingarm/Oil reservoir Oil filter Vent oil line Cable, interactive exhaust Return oil line Cable, interactive exhaust Return oil line Cable field (State State Sta transmission sprocket nut an additional 30°- sm00348 40°. Surface must be smooth and free of debris or old gasket material. Buell V.I.N. Breakdown: 2008 Models POSITION DESCRIPTION DESCR Sequential number (last five Varies digits) 2008 XB Service: Chassis 2-5... To starter 7. Page 52 Table 1-10. Remove outer thrust washer (4) next to sprocket shaft bearing (6). See 1.8 CLUTCH/TRANSMIS- After installing seat, pull upward on seat to be sure it is locked in position. Install front axle. See 7.10 HORN. INTAKE COVER 2.40 REMOVAL INSTALLATION Figure 2-164 Position intake cover assembly (2) over top NOTE of air cleaner cover. Active Intake Cable Stop Screw REMOVAL Unthread cable from solenoid (8). Page 76 NOTES... 0.0023-0.0043 in. 3-78 Idler Pulley Gearcase Cover Inspection...... Page 244 sm03746 Coil Fuel line connection Coil connection [83] Throttle position sensor connections [84 & 85] Oxygen sensor connections [84 & 85] Oxygen sensor connections [84 & 85] Oxygen sensor connections [87] f. (00199b) Make certain primary chaincase is filled with proper amount of lubricant with motorcycle upright. Check for GROUNDED FIELD COIL with an ohmmeter or continuity tester. Install Pilot (Typical) Figure 6-77. If operation fails, BULBS reread procedure and verify that all steps were performed. Detach remote reservoir. One damper spring. For additional adhesive strength, apply three drops of LOCTITE SUPERBONDER 420 to adhesive side of weight Remove pin plug (5) and pad hanger (metric) to free brake pads. Fairing Support Bracket Assembly: Firebolt 2-98 2008 XB Service: Chassis... the rear header pipe, monitors oxygen content in the exhaust gas and converts it to a voltage reading. BANK ANGLE SENSOR (BAS) GENERAL sm00864 The Bank Angle Sensor (BAS) provides input to the ECM on lean angle. sm00737 35. Cylinder brace 3. Blow parts dry with low pressure compressed air. Fan actuation is controlled by the ECM. Checking for Freeplay in the Solenoid Shaft in the Fully Retracted Position Figure E-2. Remove just enough material to provide an even valve Figure 3-48. Ignition (15 amp) 8. Page 399 Place pressure plate, diaphragm spring, adjusting screw sm00287 assembly with new retaining ring and spring seat onto clutch pack. Position fairing (5) onto fairing (5) onto fairing support windscreen fasteners (3) to remove windshield (1). Page 667 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Front tie bar to V bracket 25-27 ft-lbs 33.9-36.6 Nm 2.27 CLUTCH CONTROL, Assembly and Installa- tion Front wire guide fasteners 36-60 in-lbs 4.1-6.8 Nm 2.26 THROTTLE CONTROL, Throttle Cable... Connect negative battery cable, tightening to 72-96 in- sm00865 lbs (8-11 Nm). Valve Seats NOTE Valve seats are also subject to wear. PACKARD 480 METRI-PACK CONNECTORS A.12 Rotate the hinged secondary lock inward until latches fully 480 METRI-PACK CONNECTOR REPAIR engage tabs on both sides of connector housing. Install battery: positive cable (red) first. RIGHT CRANKCASE REMOVAL PART NUMBER TOOL NAME HD-42310/HD-43646 ENGINE SUPPORT STAND... Cable housing Figure E-1. Remove fuse block and relay center DISASSEMBLY from support bracket. Install brake line, banjo bolt and new copper washers to Figure 2-61. Once headlights are aligned, tighten fasteners to 48-72 in-lbs (5-8 Nm). Quick Reference Maintenance Chart: XB Models... Disconnect and remove battery. Remove side case by pulling away from vehicle. Fit spring ends to footpeg mount and footpeg. LEFT TAIL SECTION AND BATTERY PAN: LIGHTNING 2.42 Figure 2-169. See SUSPENSION 1.11 STEERING HEAD BEARINGS. To convert units, use the following (Nm). HEADLAMP ASSEMBLY AND SUPPORT BRACKET 2.28 REMOVAL: FIREBOLT sm00605 Remove seat. Replace belt and transmission sprocket. 4-17 From induction module (California) 3. Insert a new wheel bearing (1) squarely into the hub, with the lettered side facing out (away from the wheel). (00048a) Disconnect negative battery. For measurement specifications Table 3-1. 2008 XB Service: Engine 3-25... Upper fork clamp Figure 7-4. Page 527 .PAGE NO. Page 673 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Reed valve block fasteners 25-35 in-lbs 2.8-4.0 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHING SYSTEM, Reed Valve Replacement / LOCTITE 222 (purple) Reed valve stop fastener 5-7 in-lbs 0.6-0.8 Nm 3.14 CRANKCASE BREATHI SYSTEM, Reed... Indentor cover 3. Fuel pump 4. Left tail section 6. Handle bulb carefully and wear eye protection. TIRE RUNOUT Thoroughly lubricate rim flanges and both beads of tire with tire lubricant. Install oil cooler scoop. B-45521 STEERING HEAD BEARING Remove brake lever housing. Connect seat lock cable to latch: Install cable end (6) and cable (5) onto latch (8). TRANSMISSION The transmission is foot-operated by the gear shifter lever, GENERAL which transmits the force through a gear shifter shaft. 20. Assemble the short forcing screw (1), nut (2), Nice bearing (3), washer (4) and bridge (5). fasteners. chin fairing and the CKP and Torca clamp 24. Figure 6-66 When removing the main drive gear (3), the gear is pressed out against the resistance of the ball bearing sm00322... See figures: GENERAL Lightning: Figure 7-97 The main wire harness runs from the front of the motorcycle XB12Ss: Figure 7-90 to the tail section. Replace any parts that INSTALLATION appear damaged or worn. The right side pinion shaft bearing consists of an inner and outer race with rollers. Crankcase fasteners 2. Grab the bulb with paper or and turns on and off with headlight switch. Make sure air filter remains correctly positioned. Snap ring HD-41177 FORK HOLDING TOOL 3. Whenever the main drive gear NOTE is removed, the main drive gear bearing must be replaced. On the left side, install a cable strap Figure 7-31. sm00269 Gasket Screw Oil seal Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws (13) Primary cover Shifter bushing Rubber shift lever pad Sems screws screws (5) Sleeve Drain plug Inspection cover gasket Pedal bearing (2) Rubber washer Cover, inspection... IMPORTANT NOTICE Buell motorcycles conform to all applicable U.S.A. Federal Motor Vehicle Safety Standards and U.S.A. Environmental Protection Agency regulations effective on the date of manufacture. gray connectors, plugs or receptacles must be replaced sm00010 by those of the same color. Ignition Coil Specifications Table 7-2. Turn ignition key switch to OFF. (1.6-3.2 mm) free play at clutch hand sm00091 lever. NOTES Oil pump can be removed with engine cut-off switch to RUN. Install spacer (16). See Figure 2-50 Figure 2-51. See 1.4 BATTERY MAINTEN- ANCE. Tighten to 80-88 in-lbs (9.0-9.9 Nm). See 4.13 FUEL PUMP, Removal in this section. Install windshield onto windscreen by aligning the mounting pins (2) on the windscreen by aligning the mounting pins (2) on the windscreen and pushing in place to install. To minimize swirl marks, cleaning should be done when motorcycle is cool and parked in the shade. 30. With the center ear on the head of the secondary lock in until head is flush with the connector housing. INSTALLATION Figure 7-78. SUBJECT..... .0039 .9842 2.283 3.582 .001 .025 15.240 1-15/16 49.21 3-5/16 84.14 .0078 1.024 2.323 3.622 .002 .051 15.875... Always hold both the slider fork and outer tube to prevent MODEL damage to bushings and seals. Clutch Shell Bearing Remover/Installer Figure 6-29. As PART NUMBER TOOL NAME the vehicle warms up to operating temperature the fuel mixture will lean and the spark advance will decrease. Align seat hooks (1) with mounting om00339 posts in tail section. Install new o-rings (2) on top of functional air cleaner cover) Figure D-12. sm00288 Adjust Clutch. See 3.13 OIL Nm). Check cam gear end play for each cam gear as follows: Turn engine over until lobe of cam gear being checked is pointing toward its respective tappet guide hole. Install brake line banjo bolt and new copper washers to Figure 2-62. Be sure headlamp Headlight high beam Can be is on at all times. MODELS. Remove rubber cap and install end of plastic tubing over rear caliper bleeder valve Socket Terminals.......A-25 Removing Socket Terminals.......A-25 Installing Socket Terminals.......A-25 C.1 LENGTH CONVERSION A.13 PACKARD 630 METRI-PACK... To ensure proper reservoir mounting, tempor- arily place upper body work onto tail section and adjust reser- voir placement so adjuster screw (1) alignment hole (2). Front ...3-7 3.4 ENGINE REMOVAL. ...3-13 3.5 ENGINE INSTALLATION3-23 3.6 CYLINDER and Rear Brake Systems, Right Side View D-26 2008 XB Service: Appendix D Hose and Wire Routing... 3.1 SPECIFICATIONS.....3-69 3.13 OIL PRESSURE INDICATOR SWITCH HEAD.3-58 3.9 OIL PUMP 70 3.14 CRANKCASE BREATHING SYSTEM3-72... Cable housing Figure E-2. Page 651 Table F-1. Page 18 TABLE OF CONTENTS 7.20 CRANKSHAFT POSITION SENSOR Removing Terminals from Housing......A-3 Inserting Terminals into Housing.......A-4 (CKP) Preparing Wire Leads for Crimping......A-4 General. .7-56 Crimping sm00665 Remove seat. Install left switch housing. 19. Rear brake fluid reservoir Figure 7-74. SUBFRAME TAIL ASSEMBLY AND BODY WORK: FIREBOLT 2.41 Figure 2-165. sm00661 Main harness Bank angle sensor (BAS) connector [134] Main harness ground (high voltage ground wire) Right turn signal connector [18] Battery negative cable Left turn signal connector [19] (under remote Battery positive cable License plate lamp connector [45] Rear brake light switch connector [121] Tail light contector [121] Tail light contector [121] Tail light contector [121] Tail light contector [121] Tail light connector [121] Tail light contector [121] Tail light contect SHAFT BEARING sm02982 PART NUMBER TOOL NAME HD-34902-7 END CAP HD-34902B BEARING RACE REMOVER/INSTALLER HD-95635-46 CLAW PULLER HD-95637-46 CLAW PULLER HD-95635-46 CLAW PULLER HD-95635-46 CLAW PULLER HD-95637-46 CLAW PULLER HD intake cover assembly. Battery 2. the socket housings. Figure 1-11. See 1.4 BATTERY SOCKET (Part No. SNAP-ON FRXB14) or a crowsfoot. Page 614 sm04329 Figure D-13. Crimp terminal Figure A-50. Connect battery: positive cables to Belt Drive Service Life CONDITION ROOT CAUSE REQUIRED ACTION Belt breakage Excessive load/shock load Inspect/replace belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Inspect/replace belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Inspect/replace belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Inspect/replace belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Damage due to handling/installation procedure Debris in sprocket or belt Riding practice/operator choice Debris in sprocket Excessive drive noise... 11. Page 324 sm00189 sm03437 1. Body 3. PART NUMBER TOOL NAME Use a permanent magic marker to highlight all 3 B-35758-52A 7.02 MM VALVE SEAT CUTTER PILOT... Wiring Harness, Top View D-32 2008 XB Service: Appendix D Hose and Wire Routing... Rotate bulb 1/4 turn and remove. sm00581 Swingarm Diagram brace fastener (4) Swingarm brace fastener (4) Swingarm brace Swingarm brace fastener (4) Swingarm brace fastener (5) Rear axle fastener (4) Swingarm brace fastener (4) Swingarm brace fastener (4) Swingarm brace fastener (4) Swingarm brace fastener (5) Rear axle fastener (4) Swingarm brace fastener (4) Swingarm Swingarm brace fastener (4) Swingarm bra using pliers or belt type oil filter wrench. GENERAL 14. See Figure 2-165. Page 512 sm00431 Cable strap Right turn signal connectors [22] Left switch housing connector [22] Left switch housing connector [22] Left switch housing connectors Left turn signal connectors [21] Left switch housing connector [22] Left switch housing connectors [22] Left switch housing connector [22] Left switch housing connector [22] Left switch housing connectors [23] Cable strap 6. LEFT TAIL SECTION AND BATTERY PAN: XB12X/XB12XT 2.45 the fastener to retain the nut in the correct location. NOTE Connect positive (+) battery cable first. While riding, a loose seat can shift causing loss of control, which could result in death or sm00911 serious injury. Page 460 sm00366 Figure 7-16. Failure to do so can draw debris into the engine and could result in engine damage. Remove fasteners securing the top case bracket from vehicle. The contact will move and be destroyed. If, through hard usage, the primary chain does become worn and cannot be adjusted to within specifications, it must be replaced. Install front sprocket cover. Page 382 Install sprocket cover. Place key in side case locking latch sm05145 (12), on front surface of side case, in open position. 8 in. Direct contact of D.O.T. 4 brake fluid with eyes can cause irritation. Left turn signal 2. Disconnect the two connectors [45] from license plate sm00450 lamp harness. Page 591 et00087 Left Side 1 2 3 Left Hand 2 3 4 5 6 7 8 [24B] [189LA] 1 2 3 [189RA] R Heat L Heat Controls Grip Grip [189LB] [189RB] 1 2 3 1 2 3 [160A] Right Hand [22B] 1 2 3 Auxiliary... Page 266 25. sm00523 Front axle Front brake springs (6) Rotor mount fastener (6) Wheel bearing Front wheel spacer Drive bushings (6) Front wheel Front brake rotor Washer (6) Figure 2-16. Evaporative Emissions Control, California Models, Top View 2008 XB Service: Appendix D Hose and Wire Routing D-17... Figure 2-190. Disassembly and Assembly Wiring, Hoses and Lines Always assemble or disassemble or disassembly and Assembly Wiring, Hoses and Lines Always assemble on part at a time. clear of the shifter drum for assembly purposes. NOTE Maximum allowable tightening of sprocket cover (2) using sprocket cover (1, 3) and tighten all fasteners and washers (1, 1) to 12-36 in-lbs. Install sprocket cover fasteners (1, 3) and tightening to 50 ft-lbs. 3. Disconnect throttle position sensor con- nector [88]. Page 668 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Headlight support bracket pivot 72-96 in-lbs 8-11 Nm 2.28 HEADLAMP ASSEMBLY AND SUPPORT fasteners, Firebolt BRACKET, Installation: Firebolt heated grip fasteners 14-16 in-lbs 1.6-1.8 Nm 7.9 HEATED HAND GRIPS: ULYSSES... Remove two jam nuts and washers (1) to detach license plate lamp from center tail section (3). NOTE Do not operating properly, testing at high speeds can cause loss of control, which could result in death or INSTALLATION... See D.1 APPENDIX D: HOSE AND WIRE ROUTING sm00660 for hose and wire routing. ENGINE ROTATION FOR SERVICE GENERAL The following process allows you to rotate engine down, To prevent accidental vehicle start-up, which could cause pivoting on rear isolator mount, in order to service components death or serious for hose and wire routing. injury, disconnect negative (-) battery in the top end. Page 85 50A) and WHEEL BEARING REMOVER/INSTALLER (Part sm00513 No. HD-44060A). TURN SIGNAL FLASHER 7.11 REMOVAL sm00406 NOTE The turn signal flasher is not repairable. Shoe, chain adjuster 2. Bulb Chart: 2008 Lightning Models BULBS WATTS AMPS PART REQUIRED NUMBER Headlamps Bulb (H7) 4.58 Y0148.1AD Position lamp 0.37 53436-97 (European models only) Marker lamps 0.74 Y0042.K (1 bulb each) License plate illumination lamp... Rear Wheel Assembly 2008 XB Service: Chassis 2-17... This is the location of your valve VALVE SEAT CUTTER seat. Electrical Connectors Behind Windscreen: Lightning 15. Larger o-ring 2.37 HEEL GUARD AND FOOTPEG MOUNTS: ULYSSES is located in groove closer to fuel pump. Rear Brake Systems, Top View 2008 XB Service: Appendix D Hose and Wire Routing D-3... NOTE To ensure proper brake pad-to-brake rotor clearance when the caliper is installed, piston must be pressed all the way into the bore whenever new brake pads are used. REMOVAL Figure 2-152. Move rear main harness and shock absorber reservoir to right side of vehicle. Charging Circuits, All Models... Cover, air cleaner Figure 4-5. Also, there should be a minimum of 0.030 in. electrical connector and active cable and grommets through NOTES the baseplate. Page 108 sm00537 Pin hanger set Piston Caliper Small o-ring Seleder cap Pad spring Brake pads Caliper Small o-ring Seleder cap Pad spring Brake pads Caliper Small o-ring Seleder cap Pad spring Brake pads Caliper Small o-ring Seleder cap Pad spring Brake pads (4) Figure 1-16 Figure 1-17. XB9R, XB12R 4.21 XB9SX, XB12S, XB12S 4.21 sm00569 XB12Scg... It is important to know any service work. See Figure 3-14. Verify that cables are securely connected to coil and spark plugs. To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery Figure 7-105. Pivot pin to depress tang 3. Use LOCTITE 271 (red) on upper fork clamp fasteners and tighten to 23-25 ft-lbs (31.2-33.8 Nm). Be sure you have a complete understanding of the task to be performed. Remove clutch cable and fitting. CHARGING BATTERY Table 1-5. Cable Straps On Upper Fork Clamp: Firebolt 2. PRIMARY CHAIN 1.10 INSPECTION sm00095 Figure 1-31. x 25.40 = MM) IN.. and follow the instructions supplied with the tester. Page 602 sm04328 Figure D-1. Page 575 Active et00007 Japan only Ignition Intake [33A] [83B] [83A] Throttle Ignition BK/W IGNITION SWITCH WIRING DIAGRAM Y/BE Engine Temp Sensor Position [178] Coil R/GY KEY POSITION Sensor [90B] [90A] BE/O R/BK PARK PK/Y LOCK Oxygen Sensor [137B] [137A]... Vehicle speed sensor (VSS) 2. PACKARD MICRO-64 CONNECTORS A.16 PACKA frequently found on speedometers, tachometers and the ECM of Touring Models. When replacing both socket and pin housings, then the black may be substituted for the gray, and vice versa. Steering head bearing race installer 2. sm00302 Figure 2-24. 24. Adjust headlights. See 2.18 FORK in setting up a bike, geometry and suspension. Remove clutch inspection cover from primary cover. Page 329 sm00176 1. Place free end in a suitable container. Remove clip (3). Squeeze and release the handles to open the tool. Turn ignition key switch to ON. Page 544 sm00024 1. NOTE DIAGNOSING SMOKING ENGINE OR HIGH If air is escaping through valves, check push rod length. Inspect clutch shell bearing inner race sm00290 on the back side of the clutch hub for pitting and wear. Pinion Shaft Outer Race Stamp Specifications sm00187 OUTER RACE ID CLASS STAMPED 1.5648 1.5648 39.7459 39.7510 1.5650 1.5650 1.5650 1.5650 1.5652 NOTE 1. release lever found between the handles. 2. GENERAL Figure 3-116. Page 608 sm04346 1. Rear Brake Caliper 1-22 2008 XB Service: Maintenance... Page 478 sm00393 1. Piston Pin and Piston Identification 1. Positive battery cable 2. REMOVAL AND DISASSEMBLY Check for minimum cam gear end play. sm00154 Place a new inner gasket (9) on lower rocker box assemblies. Steering head bearing installer 3. or sealing grease. Steering Head Bearing Lip sm00578 1. isolator (1) and loosely thread into frame. Inspect seats for cracking, chipping or burning. A must for every workshop and the Do-It-Yourself Buell mechanics. Wiring Harness, Top View D-20 2008 XB Service: Appendix D Hose and Wire Routing... kit information. OIL CONSUMPTION Repeat procedure on rear cylinder. Page 452 sm00473 Turn signal flasher connector [30] Horn fastener Right handlebar connector [22] Horn mount Left handlebar connector [24] Horn connector [122] Turn signal connectors [31] Horn 6. Page 669 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Intake cover fasteners 12-36 in-lbs 1.4-4.0 Nm 7.24 INTERACTIVE EXHAUST HARNESS: XB12 MODELS, Firebolt Intake cover fasteners 12-36 in-lbs 1.4-4.0 Nm.. Insert front isolator bolt (3) through front up position. Clutch Hub Bearing Race sm00295 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH SHELL BEARING REPLACEMENT PART NUMBER TOOL NAME B-45926 CLUTCH lower fork clamps. Replace any parts toms. Install right tail section (16) onto vehicle. Page 328 sm00194 sm03929 Figure 3-138. Table 7-13. On right side of bike, locate engine NOTE shroud air scoop (6). REMOVAL AND DISASSEMBLY Clutch Cable Remove seat. Evaporative Emissions Control, California and 49 State Models, Left Side View D-6 2008 XB Service: Appendix D Hose and Wire Routing... Remove left side passenger footrest support assembly. This is the rod minimum engagement (4). Set free play by turning adjuster (4). Pressure indicator switch wiring behind the vent oil line. Traction can be adversely affected, which could result in loss of control of the motorcycle and death or serious injury. Lubricate both main drive gear needle bearing assemblies and the mating surface of the main- shaft with HARLEY-DAVIDSON SPECIAL PURPOSE GREASE (Part No. 99857-97). On the pin side of the connector, tangs are positioned at the bottom of each cavity, so the slot in the pin terminal (on the side opposite the crimp tails) must face downward. Fork stop pin (retracted) Figure 7-8. DISASSEMBLY PART NUMBER TOOL NAME HD-34736B VALVE SPRING COMPRESSOR Figure 3-47. Evaporative Emissions Control, California Models, Top View 2008 XB Service: Appendix D Hose and Wire Routing D-5... Figure 8-12. The fol- units-of-measure. O2 sensor [137]. VOLTAGE REGULATOR GENERAL sm00391 The voltage regulator is mounted to the front of the crankcase. Handlebar (XB12X, XB12XT) 7. Primary Cover Tightening Sequence (Typical) Figure 6-5. INTERACTIVE EXHAUST CABLE 1.15 10. For Ulysses only, install shifter bracket sm00273 (4) on primary cover (7) by applying LOCTITE 271 (red) to fasteners and tightening to 22-24 ft-lbs (30.0-32.5 Nm). for repairs. and the battery's state of charge. See Figure 6-29. Fuel pump (10amp) 2. Charging System Circuit (Ulysses, Lightning) 7-18 2008 XB Service: Electrical... 28. sm00867 With fuel tank drained, gasoline can spill from bore when supply valve is loosened or removed. See pivot shafts (3, 6) and pivot shaft risers (4). NOTE 11. Battery Specifications Voltage output @ 3600 RPM 14.3-14.7 VDC @ 75° F (24° BATTERY Size 12 VDC/12 AH/200CCA Amperes @ 3600 RPM 32 Amps Type Sealed, AGM Table 7-5. sm00594 Screw and washer, preload adjuster knob Lower shock mount washer, thick Preload adjust assembly Lower shock mount washer, thin Preload adjuster fasteners (2) Lower shock mount fastener Remote reservoir clamp... Tighten the throttle cable jamnuts to 36-40 in-lbs (4.1-4.5 sm04534 Nm). Reservoir 2. MAINTENANCE. Page 405 Figure 6-36. 2.37 HEEL GUARD AND FOOTPEG MOUNTS: ULYSSES MODELS. On the top case it will be necessary to press Slide latch mechanism into luggage case. Page 170 sm00608 Horn Fasteners (2), upper headlight mounting Horn connectors [122] Headlight assembly Horn bracket Fasteners (2), headlight support bracket Horn fastener Headlight support bracket Headlight connector [38] Left and right front modules Figure 2-142. Low Fuel Level Sensor Replacement Install screw (8) securing sensor and tighten to 18-22 in-Remove fuel pump assembly from tank. Spark plug (2) 4. It is the valve stem hole in valve guide that determines seat grinding location. the air cleaner cover baseplate, measures the air temperature Install IAT sensor into grommet on air cleaners for center tie bar mount (2) "V" bracket Center tie bar mount (2) "V" bracket Center tie bar assembly Washers for center tie bar mount (2) "V" bracket bar assembly (2) Front isolator assembly (2) Font isolator assembly (2) Fasteners (2) Ground strap Bolt Rear isolator assembly... Insert lap shaft with arbor assembly (2) Fasteners (2) Ground strap Bolt Rear isolator (2) Ground strap Bol 94800-26A REAMER HD-95952-33C CONNECTING ROD CLAMPING TOOL HD-95970-32D PISTON PIN BUSHING TOOL When connecting rod bushing is worn to excessive pin clear- ance 0.002 in. Page 129 sm00566 Preload adjuster Damper locknut Stopper ring Preload adjuster or assembly Fork cap Centering plate Slide bushing Fork cap o-ring Sealing washer Guide bushing Preload washer Center bolt Seal spacer Slider piston Collar Oil seal Inner slider piston Collar Oil seal Retaining ring Retaining ring Closed end bearing Ball bearing Countershaft 5th gear (integral to shaft) O-ring Countershaft Oil seal Countershaft 1st gear Needle bearing (2) Dog ring Mainshaft 5th gear Countershaft 4th gear Mainshaft 1st gear Needle bearing (2) Dog ring Thrust washer (4) MAINSHAFT/COUNTERSHAFT MAINSHAFT DISASSEMBLY NOTES PART NUMBER TOOL NAME As the transmission runs, each part develops a certain J-5586-A TRANSMISSION SHAFT RETAINING wear pattern and a kind of "set" with its mating parts. Seat Tab/Hooks: Ulysses Models 2-148 2008 XB Service: Chassis... Install rings so end gaps of adjacent rings are a minimum of 90° apart. Crankcase Fasteners 15. Page 374 NOTES... oil line to return oil line. Remove seat lock lever (4) by removing fastener (2) and washer (3) from seat lock (7). Page 432 sm00322 Retaining ring Right crankcase half Bearing (outer) Oil seal O-ring Bearing (closed end) countershaft Oil seal Bushing, shifter drum Figure 6-83. Muffler valve Figure D-22 with ENGINE TEMPERATURE SENSOR SOCKET (Part No. SNAP-ON M3503B). Install idler pulley. Page 655 Tools Used in This Manual PART NUMBER TOOL NAME NOTES HD-34751 VALVE GUIDE CLEANING BRUSH 3.6 CYLINDER HEAD, Assembly HD-34902-7 END CAP 3.17 CRANKCASE, Piston Jets HD-34902-7 END CAP 3.17 CRANKCASE, Pinion Shaft Bearing HD-34902B BEARING RACE REMOVER/INSTALLER 3.17 CRANKCASE, Piston Oil Jet Assemblies Installation NOTES Gaskets that are missing, distorted, pinched or otherwise damaged will result in either oil leakage or low oil pressure. Seal 4. GENERAL SERVICING A NEW MOTORCYCLE Safety is always the most important consideration when per- forming any job. The exhaust enters (2) the muffler and flows (3) through the open valve (1) into chamber C (7) and then The interactive exhaust system is standard equipment on the exits (8). Loss of torque on fasteners could sm00389 result in alternator damage. Install oil line (12) attaching vent oil line (7) in front of starter motor and tighten to Figure 3-39. Cable, seat lock Figure 5-39. alignment tabs are absent and the orientation of the external latch is the same. Page 127 FORK SPRING COMPRESSOR (Part No. HD-45966) comes with a cup and screw that are for FLT models only NOTE and not to be used with Buell. Check spark plug cable resistance with GENERAL an ohmmeter (4). LENGTH CONVERSION CONVERSION TABLE Table C-1. Page 416 sm00316 Spring, detent oil seal Detent spring sleeve assembly, shifter (2nd-3rd) Bearing, shift lever assembly (2) Fork assembly, shifter (1st) Shift lever assembly, shifter (2nd-3rd) Bearing, shift lever assembly fork .A-3 A.3 AUTOFUSE ELECTRICAL CONNECTORS... assembly, shifter (4th-5th) Sleeve, shift/brake lever... A.1 AMP 1-PLACE CONNECTORS.. .A-1 A.2 AMP MULTILOCK CONNECTORS..... ...A-7 A.4 DELPHI CONNECTORS... ...A-8 A.5 DEUTSCH ELECTRICAL CONNECTORS.. ...A-10 A.6 DEUTSCH STANDARD TERMINAL REPAIR..A-17 A.9 MOLEX CONNECTORS...A-18 A.10 PACKARD 150 METRI-PACK CONNECTORS.....A-22 A.11 PACKARD 280 METRI-PACK RELAY AND FUSE BLOCK CONNECTORS......A-24 A.12 PACKARD 480 METRI-PACK CONNECTORS... ...A-25... Clutch Cable and Exhaust Valve Actuator (XB12 Models), Right Side View 2008 XB Service: Appendix D Hose and Wire Routing D-23... Adjusting screw assembly 2. Page 166 16. sm00133 Figure 3-45. ECM (10 amp) 5. Wiring Harness, Left Side View 2008 XB Service: Appendix D Hose and Wire Routing D-19... Poor visibility of rider to other motorists activated can result in death or serious injury. Remove two screws (2) to detach tail Check tail lamp for proper operation. Page 240 Table 3-15. The aluminum frame of this motorcycle is the fuel tank. Replace if damaged. Page 580 Figure B-6. Clutch, Throttle Seat Release Cable and Exhaust Valve Actuator (XB12 Models), Top View LIGHTNING 2008 XB Service: Appendix D Hose and Wire Routing D-13... INTAKE LEAK TEST 4.15 GENERAL sm02629 Do not allow open flame or sparks near propane. DELPHI CONNECTORS DELP with the brand name, Delphi, on the housing latch. Remove fastener (2) to detach reservoir (1) from frame if necessary. Fuse blown. See 2.4 FRONT WHEEL, Assembly. Remove left crankcase half and transmis- sion assembly (4) from engine stand. B+ (battery voltage) connector to power P&A accessories. Key switch (15 amp) 7. Remove front "V" bracket with oil cooler from main frame. Page 670 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Master cylinder mounting fasteners, rear 72-96 in-lbs 8-11 Nm 2.12 REAR BRAKE MASTER CYLINDER, Installa- tion: Ulysses Master cylinder reservoir cover screws 9-13 in-lbs 1.0-1.5 Nm 1.3 MAINTENANCE SCHEDULE, General... Shifter design allows for one common part number for both countershaft shifter forks. Either end may be installed into the filter mount. Page 239 Table 3-10. Perform the Compression Test and/or the Cylinder Leakage NOTE Test. Page 89 NOTE sm00522 Figure 2-14. Tighten but do not torque. NOTE Disconnect battery by unthreading fastener removing Tighten the right side banjo bolt with FLARE NUT negative cable (black) from battery first. Throttle position sensor [88]. Remove footpeg pin (8). Tighten front isolator bolt to 49-51 ft-lbs (66.4-69.1 Nm). lbs (1.4-4 Nm). Install shock reservoir, retainer, and fastener. ASSEMBLY sm00276 Figure 6-10. Locate tang in chamber 2. Distortion should be minimal. Page 577 RH Turn Signal et00002 Brake SW IGNITION SWITCH WIRING DIAGRAM KEY POSITION PARK [31B] LOCK [170B] WIRE COLOR R/BK R/GY WIRE SECT MM Ignition CONNECTING Switch BATTERY USER + BATTERY USER + Flasher [30B] [GRD2] GRD 2 GRD 4 [33A] [33B] LIC. The Figure 2-44. SPECIFICATIONS FIREBOLT NOTE Gross Vehicle Weight (GVWR) (maximum allowable loaded Table 2-1. Figure 2-26. Page 604 sm04334 Figure D-3. ECM connectors (7) [10, 11] and [164] (on XB12 models). Figure 3-82. Air Cleaner Cover Latches 1. Figure 2-65. Measure where rocker arm bushings HD-34751 VALVE GUIDE CLEANING BRUSH ride. Oil flow then continues to the main feed galley at the top GENERAL of the oil pump body. Figure 3-82. Air Cleaner Cover Latches 1. Figure 2-65. Measure where rocker arm bushings HD-34751 VALVE GUIDE CLEANING BRUSH ride. note that due to the new flexible design and the completely new structure, your old username/passwords will not work any longer. NOTES The Throttle Position sensor or ECM have been replaced or if the ECM has been recalibrated. Using the overhead hoist to align the frame to the rear isolator, install rear isolator bolt and leave loose at this time. Insulation crimp 2. PART NUMBER TOOL NAME Pre-Ignition or Detonation (Knocks or Pings) HD-35457 BLACK LIGHT LEAK DETECTOR Fuel octane rating too low. Avoid only 1/32 in. Solenoid 4. Negative battery cable 5. Make sure to install with dog ring 13. Sprocket Shaft Bearing Assembly Figure 3-138. See Figure 6-53. facing same direction as when it was removed. Page 585 Ignition et00004 Switch IGNITION SWITCH WIRING DIAGRAM KEY POSITION PARK RH Controls LOCK 1 2 3 [22A] WIRE COLOR R/BK R/GY WIRE SECT MM Starter [33A] Solenoid [33B] CONNECTING GRD 2 BATTERY USER + BATTERY USER + [11A] [11B] Exhaust Valve [128A] Actuator Sub-Harness... SWINGARM AND BRACE 2.21 GENERAL sm00302 The swingarm also serves as the oil tank. Active cable wheel Figure E-3. Replace complete bearing assembly if any component is damaged. (00048a) Remove negative battery. Remove chin fairing. 0.076-0.330 mm 0.025 in Electrical Connectors Behind Windscreen: Ulysses NOTE DISASSEMBLY: ULYSSES In next step, do not force ignition switch (5) into body (2). Separating Pin and Socket Housings Figure A-12. Fuel Pressure Regulator Install new sensor. HEATED HAND GRIPS: ULYSSES MODELS HEATED HAND GRIPS sm05236 Removal Remove seat. Page 258 41 Solenoid shaft 2. End cap 3. Page 590 Figure B-11. Remove body work fasteners (2). Headlight Assembly INSTALLATION: LIGHTNING/ULYSSES Connect horn connectors [122] (2). To convert metric to United States units and United equations: States to metric, use the following equations: foot pounds (ft-lbs) X 12.00000 = inch pounds (in-lbs). Steering Head Bearing Installation Tools Figure 2-103. Page 587 et00057 Ignition Switch IGNITION SWITCH WIRING DIAGRAM KEY POSITION PARK RH Controls LOCK 1 2 3 [22A] WIRE SECT MM [11A] [11B] [33A] CONNECTING [33B] BATTERY USER + [11A] Starter (GY) Solenoid GRD 2 Exhaust Valve Actuator Sub-Harness... Clutch, Throttle, Seat Release Cable and Exhaust Valve Actuator, Left Side View D-36 2008 XB Service: Appendix D Hose and Wire Routing... SIDESTAND 2.48 GENERAL sm03932 This motorcycle does NOT have a locking sidestand. Decrease compression damping. Page 273 sm00134 Figure 3-47. Check cylinder head gasket surface for cleaner/solvent until deposits are soft, then clean with a flatness. Most other service manuals and specs are very similar for all Buell XB series motorcycles and model years. Page 601 APPENDIX D: HOSE AND WIRE ROUTING FIREBOLT 2008 XB Service: Appendix D Hose and Wire Routing D-1... Once engine has been removed from vehicle, finish sm02996 removing the following items as required: Shifter assembly. AIR SCOOP S 2.52 RAM footpeg mount (3). If the inner race shows any of these signs the complete hub assembly must be replaced. The Thunderstorm powertrain used on Buell motorcycles - a significantly modernized Sportster 1200 - is specially made by Harley-Davidson. On XB9SX,XB12STT,XB12ST Remove rear right chin fairing fasteners. The Triple Tail when folded forward acts as can carry a passenger and have a luggage rack (3) for extra a luggage rack (1) with integrated tie-down hooks. Torca clamp 2. sm00183 Figure 3-122. Inspect pulley by spinning wheel (1) and checking for wheel bearing wear. Page 665 2008 Buell XB Models Service nual FASTENER TORQUE VALUE NOTES Engine sprocket bolt 155-165 ft-lbs 210-224 Nm 6.5 PRIMARY CHAIN, Installation / LOCTITE 271 (red) Engine temperature sensor 120-168 in-lbs 13.6-19 Nm 4.7 ENGINE TEMPERATURE SENSOR (ET), Installation Exhaust header mounting nut... Intake flange fastener (2) Figure 4-40. Install dog ring (15). Page 635 sm04370 1. Mate exhaust actuator harness (6) under seat. Page 74 NOTES 1-52 2008 XB Service: Maintenance... Install isolator mounting fasteners (5) and tighten to 49-51 ft-lbs (66.4-69.1 Nm). At 3000 RPM, oil pressure will vary from 20-28 psi (138-193 kPa). Figure 2-212. Headlights (2) 2. Page 579 RH Turn Signal et00055 Brake SW IGNITION SWITCH WIRING DIAGRAM KEY POSITION PARK [31B] LOCK [121B] WIRE COLOR R/BK R/GY WIRE SECT MM Ignition Switch CONNECTING BATTERY USER + BATTERY USER + Flasher [30B] [121A] [121B] Foot Brake Switch GRD 2 [33A] GRD 4 [33B]... Packard 100W Connector 1. When installing the tie- Disconnect alternator connector [46] (1) and voltage bar, first mount to engine and then to "V"... Wire cover Figure 2-173. Acronyms and Abbreviations ACRONYM OR ABBREVIATION DESCRIPTION Amperes Alternating Current Accessory Automatic Compression Release Absorbed Glass Mat (battery) Ampere American Wire Gauge Battery Voltage Bank Angle Sensor BTDC Before Top Dead Center Celsius (Centigrade) California Calibration Cubic Centimeters... CASE DISASSEMBLY FOR TRANSMISSION REMOVAL GENERAL sm00307 The rear compartment of the left and right crankcase halves form the transmission case. If operation fails, Be sure tab on turn signal fits into hole in reflector bracket and reread procedure and verify that all steps were performed. Tightening to 12-36 in-lbs (1.3-4 Nm). HEADLIGHT 1.16 NOTE INSPECTION On Lightning and Ulysses models, the low beam lamp will not stay illuminated when high beam is activated. Compressed air can pierce the skin and flying debris from compressed air could cause serious eye injury. sm00574 Install one front fork assembly into lower fork clamp (8). Tighten brake caliper banjo bolt (2) and master cylinder bore are clean and undamaged before (metric) to 16-20 ft-lbs (22-27 Nm). Seat Lock: Ulysses Models om00574 1. Muffler valve Figure D-34. SPECIFICATIONS GENERAL Table 7-4. Fuel System Specifications FUEL SYSTEM TYPE Table 4-1. See 7.3 IGNITION/HEADLAMP KEY SWITCH. See DISASSEMBLY 2.52 AIR SCOOPS. Refer to Table 6-8. Socket head fastener (1) with spacer behind switch 2. Disconnect passenger seat lock cable (6) by removing cable from seat lock cable (3). Page 618 sm04342 1. Figure 3-81. Pinch bolt 1. DEUTSCH ELECTRICAL CONNECTORS Place large end of slot on attachment clip over T-stud on DEUTSCH CONNECTOR REPAIR frame. An unbalanced motorcycle can fall, which could result in death or serious injury. Remove fuel from frame. An unbalanced motorcycle can fall, which could result in death or serious injury. ...1-1 1.2 FUEL AND OIL.1-5 1.3 MAINTENANCE SCHEDULE......1-7 1.4 BATTERY MAINTENANCE...1-9 1.5 ENGINE OIL AND FILTER. bearing (17). Fairing Wiring (Viewed From Beneath Fairing): Firebolt 7-68 2008 XB Service: Electrical... 1.1 GENERAL.. ..1-13 1.6 BRAKE SYSTEM ...1-25 1.9 DRIVE BELT MAINTENANCE.....1-31 1.11 STEERING HEAD BEARINGS..... MAINTENANCE 1-16 1.7 TIRES AND WHEELS...-23 1.8 CLUTCH/TRANSMISSION/PRIMARY FLUID...... ...1-28 1.10 PRIMARY CHAIN..... ..1-32 1.12 SPARK PLUGS .. .1-33 1.13 AIR CLEANER AND ..1-35 1.14 THROTTLE CABLE1-38... See 4.3 ELECTRONIC CONTROL MODULE (ECM). Contact a Buell dealer Remove lower triple clamp pinch fasteners, two per side. Page 680 Transmission Fluid Replacement....1-25 Clutch Adjusting Screw......6-11 Deflectors/Handlebars Clutch Control/Cable Assembly EXHAUST SYSTEM. and Installation. Battery strap bracket 2. See Figure 2-136. Loosening Beads from Rim Flange Buell front and rear tires are not the same. Failure to center the spacer could cause the bearing not to pull in straight. See 4.2 AIR CLEANER The fuel tank vent valve opens to allow gas vapor to escape ASSEMBLY. Check for loose or broken heat shields. B 42887 BRAKE CALILPER PISTON REMOVER Drain fluid only when disassembling caliper. Correct Cable Routing Behind Frame Lug (Typical) 1-40 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... Page 638 NOTES D-38 2008 XB Service: Appendix D Hose and Wire Routing... 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Page 638 NOTES D-38 2008 XB Service: Appendix D Hose Appendix negative (-) cable con- License plate lamp connector [45]. The stator which bolts to the engine crankcase. Squeeze handle of crimp tool until tightly closed. is00878 Drilling, welding, cutting, grinding, sanding, polishing or other modifications to this frame can weaken it or cause a fire, which could result in death or serious injury. Clutch Cable and Exhaust Valve Actuator, Right Side View 2008 XB Service: Appendix D Hose and Wire Routing D-35... Page 568 Table B-1. Remove cotter pin (3) and discard. OILING SYSTEM 10. Recheck Be sure that steering is smooth and free without interfer- operation of throttle control. See Figure 6-50. AUXILIARY POWER OUTLETS: ULYSSES MODELS 7.26 GENERAL sm00441 The 12-volt auxiliary power outlets for 12-volt electrical accessories. NOTE Do not disassemble master cylinder unless problems are experienced. Indicator Markers ITEM Headlight position marker lamps The automatic-on headlamp feature provides increased (European models only) visibility of the rider to other motorists. Evaporative Emissions Control, California and 49 State Models, Left Side View D-30 2008 XB Service: Appendix D Hose and Wire Routing... Figure 6-66. Connect positive (+) battery cable first. Remove cylinder head. Air cleaner cover 3. Growler 2. sm00156 sm00157 Figure 3-73. Page 681 Installation...... Preparing Wire Leads for Crimping Strip lead removing 1/8 in. FRONT BRAKE CALIPER 2.10 REMOVAL sm00535 Drain brake fluid into a suitable container. Check (hot) oil level. Delphi Connector: Removing Socket Terminals 2008 XB Service: Appendix A Connector Repair A-9... Install 2nd gear (18) and spacer (19). If operation fails, Activate right turn signals using switch on left reread procedure and verify that all steps were performed. Remove tail body work, THROTTLE CONTROL 2.26 REMOVAL AND DISASSEMBLY sm00596 On XB9SX, XB12STT, XB12XT and XB12XT measured to required accuracy with micrometer (refer to Pinion Shaft The different sizes of crankcase sets and flywheel assemblies Bearing Selection table) will not have separate part numbers. INSTALLATION: ULYSSES XB12X NOTES The windshield releases from the windscreen by pulling Figure 2-183. DISASSEMBLY: LIGHTNING NOTE Figure... Install turn signal using lockwasher and jam nut. Bulb con- tains gas under pressure, which, if not handled carefully, could cause serious eye injury. Remove terminal lock 3. Resurface valves are refinished. The switch con- sists of contacts and a winding around a hollow cylinder con- taining a movable plunger. Remove fastener (10) securing the side case bracket (11) to the back of the passenger footrest support bracket. Figure 1-31. 2.36 FOOTPEG, HEEL GUARD AND FOOTPEG fasteners with nylon washers (2) 4. If you are in doubt, please contact us before. A computer-controlled cooling fan assists engine cooling fan assists engine cooling during operation in high temperatures. Active intake solenoid (Japan only) 2. Right Clip-On Install left clip-on into upper fork clamp (3) and tighten Remove right switch gear housing. Feed rear brake reservoir hose under- neath subframe tail assembly and install rear brake reservoir tightening fastener to 48-72 in-lbs (5.4-8.1 Nm). Figure B-7. wheel vise in order to successfully perform this procedure. Remove sprocket shaft oil seal (3) from sm00181 crankcase using SNAP-ON BODY DENT PULLER (Part No. CJ114). NOTE Figure 6-9. Replace flasher upon failure. Loosen adjuster locknut on the rod assembly (3). Cross plate 2. Pressure regulator E-clip (1) Figure 4-35. Push assembly forward to engage small end of PART NUMBER TOOL NAME slot. Place a new lower rocker cover. Page 145 Install the bearing (4), washer (5) and nut (6) from the 16. Always grasp a hammer handle 3-73-7 Removal...... General necessary to align The connection for fuel pump is just above the pump located the Torca clamp to ensure proper clearance between the at the rear of the fuel tank on the left side of the vehicle. Slide spring (4) with attached screw lockplate (5) from flats Remove seat. Install master cylinder remote reservoir. Fuses Firebolt: See Figure 7-68 Figure 7-69. Inspect for burrs around the valve stem keeper groove. Select the proper 60° cutter and gently slide the cutter Blow dry with compressed air. Install cable strap to the left of ignition switch and clutch cable wires to upper fork clamp. Page 49 provide 1/16-1/8 in. Connect: Wire harness ground (2) [GRD 2]. Oil pump body Figure 3-92. If the crankcases are being separated it sm03731 will be necessary to remove rear isolator assembly by removing the forward two fasteners). Remove front isolator bolt (6). Needle bearing (2) 3. Holding the pin housing while keeping the tool firmly bottomed, depress the plunger. OIL RESERVOIR AND OIL HOSE ROUTING 3.10 The oil cooler feed line (3) exits the front of the oil pump and GENERAL routes across the front of the oil pump and GENERAL routes across the front of the oil pump and GENERAL routes across the front of the oil cooler on the Figure 3-96. Drain brake fluid into a suitable container. In case of eye contact flush with large amounts of water and get medical attention. NOTE: The website has been slow lately, so I have deactivated the links to the PDF downloads temporarily in an attempt to identify if they are causing the forum to slow down. Do not force the Figure A-35. Park the motorcycle on a level, firm surface. NOTE Check turn signals for proper operation. Fuel Delivery 60 LPH @ 45 PSI (310 kPa) Current Draw 6.0 amps Fuel Pump Wire Harness Replacement Remove fuel pump assembly from tank. Figure 2-162. Page 6 NOTES... (1). See 2.38 SPROCKET sm00303 COVER. COOLING FAN 4.10 Connect negative battery cable, tightening to 72-96 in- GENERAL lbs (8-11 Nm). Instrument module connector [39] 6. Page 144 sm00576 sm00577 Figure 2-104. Figure 1-23. Figure 1-23. B-3. Washer sm00324 7. See 6.4 CLUTCH, General. For information on the swingarm function as the oil tank, see 3.10 OIL RESER- VOIR AND OIL HOSE ROUTING. We also have parts catalogs available. SYSTEM. Page 664 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Cooling fan fasteners 12-36 in-lbs 1.4-4.1 Nm 4.10 COOLING FAN, Installation Cooling fan fasteners 12-36 in-lbs 1.4-4.1 Nm 7.23 MAIN WIRE HARNESS, Installation / LOCTITE 271... NOTES sm00013 Up and down can be determined by the position of the release button, the button is the top of the connector. See 6.8 CASE DISASSEMBLY FOR TRANSMISSION REMOVAL. Remove footpeg (10) and spring (9). EXHAUST SYSTEM, Removal. Clean crankcase while removing cylinder. In addition to the manufacturer's Internal Drink large quantities of milk or water, followed instructions, follow these general safety precautions: by milk of magnesia, vegetable oil or beaten Always wear eye, face and hand protection. Thrust washer 5. Depress ratchet arms (3) in order to clear the shifter drum and remove shifter shaft assembly from left crankcase half. Page 634 sm04444 1. The vehicle should never Do not exceed the motorcycle's Gross Vehicle Weight be operated with just the top case in place. Install new springs (4). See 2.40 INTAKE COVER. Swingarm pivot shaft (2). 21. Page 639 SUBJECT......PAGE NO. Remove brake pedal (7). Piston Support Plate sm00157 1. Active Intake Solenoid (Japan only) 2. OXYGEN SENSOR Figure 4-15. NOTE Figure 3-27. On all other models, remove pivot bolt nut (10) (metric) and pivot bolt (17) to detach the brake hand lever. NOTE The front axle is left handed thread. WINTER LUBRICATION Water vapor is a normal by-product of combustion in any engine. Nut 3. ASSEMBLY sm00518 PART NUMBER TOOL NAME B-43993-10 FRONT WHEEL BEARING INSTALLER B-43993-11 FRONT BACKING PLATE WHEEL B-43993-50A WHEEL BEARING REMOVER/INSTALLER KIT B-43993-9, FROM FRONT BEARING INSTALLER KIT PART NO. Page 439 sm00309 seals after removal. OIL PRESSURE INDICATOR SWITCH 3.13 GENERAL sm03000 The oil pressure indicator switch is a pressure-actuated dia- phragm-type switch. sm00446 Headlight Low beam connection [38] (right side) with ground Bulb holder (2) Headlight bulbs 3. DEFLECTORS: XB9SX/XB12STT/XB12X/XB12XT 2.30 REMOVAL AND DISASSEMBLY ASSEMBLY AND INSTALLATION Figure 2-146. Page 448 sm00241 Electronic control module Mounting fastener Crank position sensor (CKP) (ECM) Ignition coil O-ring Connector, interactive Front spark plug cable exhaust system 8. sm00333 sm00334 1. See 1.4 BATTERY Remove the nut (4) and washer (5) from the lower MAINTENANCE. Never Figure 3-113. sm00018 Insert tapered end of secondary locking wedge (5) into socket housing and press down until it snaps in place. Squeeze the handles to cycle the AMP minals from the parts catalog and identify the insulation MULTILOCK CRIMPER (Part No. HD-41609) to the fully crimp tails (1) and the wire crimp tails (2) and the groove open position (1). See D.1 APPENDIX D: HOSE On Ulysses Models, it will be necessary to disconnect and AND WIRE ROUTING. The latest Adobe Reader is required to work with this eBook. Page 300 sm03727 Figure 3-95. Page 454 sm00477 1. Compress valve spring with VALVE SPRING COM- PRESSOR. Adjustable wrench Figure 6-80. Route neutral indicator switch and the oil 40-50 in-lbs (5-5.5 Nm). Wiring Harness, Right Side View 2008 XB Service: Appendix D Hose and Wire Routing D-33... Page 676 2008 Buell XB Models Service Manual FASTENER TORQUE VALUE NOTES Torca clamp 45-50 ft-lbs 61-68 Nm 4.16 EXHAUST SYSTEM, Assembly and Installa- tion Transmission sprocket nut (initial torque) 50 ft-lbs 67.8 Nm 6.16 TRANSMISSION SPROCKET, Installation / Follow special torque procedure, left-hand threads, LOCTITE 272 (red). Remove and discard retaining ring (5). sm03862 sm02980 Figure 3-119. you make the purchase. Headlight Housing 20 Degree Alignment Marks for Rubber Boot Wiring Harness Guides or Spigots 2008 XB Service: Electrical 7-47... PART NUMBER TOOL NAME Verify that the TPS setting is between 10.4-10.9 degrees. HD-25070 ROBINAIR HEAT GUN HD-38125-8... (00068a) Connect battery positive cable (red) first, tightening to 72-96 in-lbs (8-11 Nm). Slide the stopper ring (19) over top of NOTE fork assembly and into groove. Page 430 sm00336 sm00338 Figure 6-81.

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