Chapter One
General Information

Chapter Two
Troubleshooting

Chapter Three
Periodic Lubrication, Maintenance & Tune-up

Chapter Four
Engine Top End

Chapter Five
Engine Lower End

Chapter Six
Primary Drive & Clutch (1986-1990 Models)

Chapter Seven
Primary Drive & Clutch (1991-2003 Models)

Chapter Eight
4-Speed Transmission (1986-1990 Models)

Chapter Nine
5-Speed Transmission (1991-2003 Models)

Chapter Ten

Chapter Eleven

Chapter Twelve
Electrical System

Chapter Thirteen
Wheels, Tires & Secondary Drive

Chapter Fourteen
Front Suspension & Steering

Chapter Fifteen
Rear Suspension

Chapter Sixteen
Brakes

Chapter Seventeen
Body

Index

Chapter Nineteen
Wiring Diagrams
CONTENTS

QUICK REFERENCE DATA ........................................... IX

CHAPTER ONE
GENERAL INFORMATION ........................................... 1
  Manual organization
  Warnings, cautions and notes
  Safety
  Serial numbers
  Fasteners
  Shop supplies
  Tools
  Measuring tools
  Electrical system fundamentals
  Service methods
  Storage

CHAPTER TWO
TROUBLESHOOTING .................................................. 32
  Starting the engine
  Engine performance
  Electrical component replacement
  Starting system
  Charging system
  Ignition system (1986-1997 models)
  Ignition system (1998-2003 models, except 1200S models)
  Ignition system (1998-2003 1200S models)
  Fuel system
  Engine noises
  Engine smoke
  Leakdown test
  Engine lubrication
  Clutch
  Transmission
  Electrical testing
  Electronic speedometer/tachometer
  Turn signal module (1991-1996 models)
  Turn signal module (1997-2003 models)
  Excessive vibration
  Front suspension and steering
  Brake problems

CHAPTER THREE
LUBRICATION, MAINTENANCE AND TUNE-UP ...................... 113
  Fuel type
  Maintenance schedule
  Routine safety checks
  Tires and wheels
  Periodic lubrication
  Periodic maintenance
  Tune-up
  Air filter
  Compression test
  Spark plugs
  Ignition timing adjustment
CHAPTER FOUR
ENGINE TOP END .................................................. 151
- Tools
- Rocker cover assembly
- Cylinder head
- Valves and valve components
- Pushrods and covers
- Cylinder
- Pistons and piston rings
- Oil tank and oil lines

CHAPTER FIVE
ENGINE LOWER END ............................................. 197
- Tools
- Engine service
- Engine stand
- Engine
- Valve tappets and guides (1986-1990 models)
- Valve tappets (1991-2003 models)
- Gearcase cover and timing gears
- Oil pump (1986-1990 models)
- Oil pump (1991-2003 models)
- Oil filter mount (1986-1990 models)
- Oil filter mount (1991-2003 models)
- Crankcase and crankshaft
- Cylinder studs
- Engine break-in

CHAPTER SIX
PRIMARY DRIVE AND CLUTCH (1986-1990 MODELS) ................. 251
- Primary drive cover
- Clutch release mechanism
- Primary chain adjuster
- Primary drive/clutch
- Clutch cable

CHAPTER SEVEN
- Primary drive cover (1991-1993 models)
- Primary drive cover (1994-2003 models)
- Clutch release mechanism (1991-1993 models)
- Clutch release mechanism (1994-2003 models)
- Primary chain adjuster
- Primary drive/clutch
- Clutch cable

CHAPTER EIGHT
FOUR-SPEED TRANSMISSION (1986-1990 MODELS) ................. 284
- Transmission
- Shifter mechanism

CHAPTER NINE
- Transmission
- Shift forks and shift drum
- Mainshaft and countershaft
- Main drive gear
- Access door bearings
- Right transmission case bearings
- Shift mechanism

CHAPTER TEN
FUEL, EMISSION CONTROL AND EXHAUST SYSTEMS (1986-1987 MODELS) .......... 333
- Air filter backplate
- Carburetor
- Intake manifold
- Fuel hose and clamps
- Throttle and idle cables
- Choke cable
- Fuel tank
- Fuel shutoff valve
- Exhaust system
- Evaporative emission control system (California models)
CHAPTER ELEVEN
FUEL, EMISSION CONTROL AND EXHAUST SYSTEMS (1988-2003 MODELS) ............... 350
Air filter backplate
Carburetor
Intake manifold
Fuel hose and clamps
Throttle and idle cables
Starting enrichment valve (choke) cable
Fuel tank
Fuel shutoff valve (1988-1994 models)
Fuel shutoff valve (1995-2003 models)
Exhaust system (all models except 883R models)
Exhaust system (883R models)
Evaporative emission control system (California models)

CHAPTER TWELVE
ELECTRICAL SYSTEM ............................................................... 392
Electrical component replacement
Electrical connectors
Battery (1986-1996 models)
Battery (1997-2003 models)
Charging system
Alternator (1986-1990 models)
Alternator (1991-2003 models)
Ignition system (1986-1997 models)
Ignition system (1998-2003, all models except 1200S models)
Ignition system (1998-2003 1200S models)
Ignition coil
Bank angle sensor (1998-2003 models)
Manifold absolute pressure (MAP) sensor (1998-2003 1200S models)
Starter
Starter solenoid
Lighting system
Electronic speedometer/tachometer
Switches
Horn
Electrical bracket
Turn signal flasher (1986-1990 models)
Turn signal module (1991-2003 models)
Circuit breakers (1986-1997 models)
Fuses (1998-2003 models)
Electrical connectors
Wiring diagrams

CHAPTER THIRTEEN
WHEELS, TIRES AND SECONDARY DRIVE ..................................... 466
Motorcycle stands
Front wheel
Front hub (1986-1999 models)
Front hub (2000-2003 models)
Rear wheel
Rear hub (1986-1999 models)
Rear hub (2000-2003 models)
Drive chain and sprockets
Drive belt and sprockets
Wheel runout
Laced wheels
Disc and cast wheels
Wheel balance
Tires

CHAPTER FOURTEEN
FRONT SUSPENSION AND STEERING ....................................... 500
Handlebar
Front fork (all models except 1200S models)
Front fork (1200S models)
Steering head and stem
Steering head bearing
Steering play adjustment
CHAPTER FIFTEEN
REAR SUSPENSION ................................................................. 526
Shock absorbers ................................................................. Swing arm

CHAPTER SIXTEEN
BRAKES ................................................................. 533
Brake fluid selection ........................................................ Rear brake caliper (1986-early 1987 models)
Brake service ............................................................... Rear brake caliper (late 1987-1999 models)
Front brake caliper (1986-1999 models) ................................ Rear master cylinder (late 1987-2003 models)
Front brake caliper (2000-2003 models) ................................ Brake hose and line replacement
Front master cylinder (1986-1995 models) ................................. Brake disc
Front master cylinder (1996-2003 models) ................................. Bleeding the system
Rear brake pads (1986-early 1987 models) ................................. Brake fluid draining
Rear brake pads (late 1987-1999 models) ................................ Flushing the brake system
Rear brake pads (2000-2003 models) ........................................

CHAPTER SEVENTEEN
BODY ................................................................. 590
Seat ................................................................................ Forward foot controls (1999-2003 883C
Front fender .......................................................................... and 1200C models)
Rear fender ........................................................................ Sidestand
Footrests ........................................................................ Fork lock

INDEX ................................................................. 601

WIRING DIAGRAMS ................................................................. 606
# QUICK REFERENCE DATA

## MOTORCYCLE DATA

<table>
<thead>
<tr>
<th>MODEL:</th>
<th>YEAR:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VIN NUMBER:</th>
<th>ENGINE SERIAL NUMBER:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CARBURETOR SERIAL NUMBER:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

## TIRE INFLATION PRESSURE (COLD)¹

<table>
<thead>
<tr>
<th>psi</th>
<th>kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Up to 300 lb. load²

<table>
<thead>
<tr>
<th>Front</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 models</td>
<td>30</td>
</tr>
<tr>
<td>883 and 1100 models</td>
<td>26</td>
</tr>
<tr>
<td>1986-1990</td>
<td>30</td>
</tr>
<tr>
<td>1991-2003</td>
<td>207</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rear</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 models</td>
<td>36</td>
</tr>
<tr>
<td>883 and 1100 models</td>
<td>248</td>
</tr>
<tr>
<td>1986-1990</td>
<td>30</td>
</tr>
<tr>
<td>1991-2003</td>
<td>248</td>
</tr>
</tbody>
</table>

### Up to GVWR maximum load³

<table>
<thead>
<tr>
<th>Front</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 models</td>
<td>30</td>
</tr>
<tr>
<td>883 and 1100 models</td>
<td>207</td>
</tr>
<tr>
<td>1986-1990</td>
<td>26</td>
</tr>
<tr>
<td>1991-2003</td>
<td>207</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rear</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 models</td>
<td>40</td>
</tr>
<tr>
<td>883 and 1100 models</td>
<td>276</td>
</tr>
<tr>
<td>1986-1990</td>
<td>32</td>
</tr>
<tr>
<td>1991-2003</td>
<td>276</td>
</tr>
</tbody>
</table>

1. Tire inflation pressure is for original equipment tires. Aftermarket tires may require a different inflation pressure.
2. 300 lb. load includes rider, passenger and cargo.
3. The gross vehicle weight rating (GVWR) is listed on a decal mounted on the frame.

## ENGINE OIL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>HD rating</th>
<th>Viscosity</th>
<th>Ambient operating temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD Multi-grade</td>
<td>HD350</td>
<td>SAE 10W/40</td>
<td>Below 40° F</td>
</tr>
<tr>
<td>HD Multi-grade</td>
<td>HD350</td>
<td>SAE 20W/50</td>
<td>Above 40° F</td>
</tr>
<tr>
<td>HD Regular heavy*</td>
<td>HD350</td>
<td>SAE 50</td>
<td>Above 60° F</td>
</tr>
<tr>
<td>HD Extra heavy*</td>
<td>HD350</td>
<td>SAE 60</td>
<td>Above 80° F</td>
</tr>
</tbody>
</table>

*Not recommended for use when ambient temperature is below 50° F.

## ENGINE AND PRIMARY DRIVE/TRANSMISSION OIL CAPACITIES

- Oil tank refill capacity with filter replacement: 3.0 qt. (2.8 L)
- Transmission (includes primary chaincase):
  - 1993-2003 models: 32 oz. (946 ml)
RECOMMENDED LUBRICANTS AND FLUIDS

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake fluid</td>
<td>DOT 5</td>
</tr>
<tr>
<td>Chain lubricant</td>
<td>H-D Chain Spray or HD High-Performance Chain Lube</td>
</tr>
<tr>
<td>Standard drive chain</td>
<td>H-D High-Performance Chain Lube or automotive lubricant rated API GL-5 with a viscosity index of SAE 80 or 90.</td>
</tr>
<tr>
<td>O-ring drive chain</td>
<td></td>
</tr>
<tr>
<td>Front fork oil</td>
<td>H-D Type E or equivalent</td>
</tr>
<tr>
<td>Fuel</td>
<td>Unleaded</td>
</tr>
<tr>
<td>Octane</td>
<td>Pump research octane of 89 or higher</td>
</tr>
<tr>
<td>1986-1990 models</td>
<td>Pump research octane of 87 or higher</td>
</tr>
<tr>
<td>1991-2003 models</td>
<td>H-D Sport Trans Fluid or equivalent</td>
</tr>
</tbody>
</table>

MAINTENANCE AND TUNE UP TORQUE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>ft.-lb.</th>
<th>in.-lb.</th>
<th>N•m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter cover</td>
<td>–</td>
<td>36-60</td>
<td>4.1-6.8</td>
</tr>
<tr>
<td>Front fork cap to fork tube*</td>
<td>11-22</td>
<td>–</td>
<td>15-30</td>
</tr>
<tr>
<td>Primary chain adjuster locknut</td>
<td>–</td>
<td>98-144</td>
<td>11.1-16.3</td>
</tr>
<tr>
<td>Primary cover retainin screws</td>
<td>60-65</td>
<td>–</td>
<td>81-88</td>
</tr>
<tr>
<td>Rear axle nut</td>
<td>11-18</td>
<td>–</td>
<td>15-24</td>
</tr>
<tr>
<td>Spark plug</td>
<td>14-21</td>
<td>–</td>
<td>19-28</td>
</tr>
</tbody>
</table>

*1200S. Other models no specification available.

MAINTENANCE AND TUNE-UP SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake pad minimum thickness</td>
<td>0.082 in. (1.59 mm)</td>
</tr>
<tr>
<td>Clutch cable free play</td>
<td>1/16-1/8 in. (1.6-3.2 mm)</td>
</tr>
<tr>
<td>Drive belt deflection</td>
<td>9/16-11/16 in. (14.3-17.5 mm)</td>
</tr>
<tr>
<td>1991-1999 models</td>
<td>5/16-3/8 in. (7.9-9.6 mm)</td>
</tr>
<tr>
<td>2000-2003 models</td>
<td>1/4-5/16 in. (6.4-7.9 mm)</td>
</tr>
<tr>
<td>883, 1200, 1200S models</td>
<td>No. 530 (3/8 in. wide) x 110 links</td>
</tr>
<tr>
<td>883H and 883C models</td>
<td>1/4 in. (6.4 mm)</td>
</tr>
<tr>
<td>Drive chain</td>
<td>120 psi (828 kPa)</td>
</tr>
<tr>
<td>Drive chain free play*</td>
<td>900-950 rpm</td>
</tr>
<tr>
<td>Engine compression (min.)</td>
<td>1500-1500 rpm</td>
</tr>
<tr>
<td>Idle speed</td>
<td>1000-1050 rpm</td>
</tr>
<tr>
<td>1986-1987 models</td>
<td>Cold engine (9.6-12.7 mm)</td>
</tr>
<tr>
<td>Slow idle</td>
<td>Hot engine (6.4-9.6 mm)</td>
</tr>
<tr>
<td>Fast idle</td>
<td>Spark plugs HD-6R12</td>
</tr>
<tr>
<td>1988-2003 models</td>
<td>Gap (0.038-0.043 in. (0.97-1.09 mm)</td>
</tr>
<tr>
<td>Primary chain free play</td>
<td>Tire wear/maximum tread depth 1/16 in. (1.6 mm)</td>
</tr>
</tbody>
</table>

*Rider on seat.