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Sportster Technical Menu



Below you can find a vast array of technical information about the Sportster model motorcycle created by Harley-Davidson in 1957.

The information is divided into four sections:

[Ironhead Models \(1957-1985\)](#)

[Evolution Models \(1986-later\)](#)

[Reference Material \(All Years\)](#)

[Misc Resources - Sportster Parts, Tech Bulletins, etc.](#)

Click on a section above or simply scroll down the page to review the technical categories that are available.

Select the Ironhead or Evolution sections for year specific information. For general subjects pertaining to all Sportsters, select the Reference section. Because there is some overlap in technical information between the Ironhead and Evolution models, if you don't find what you are looking for in one section you might want to explore the equivalent category in the other model section.

Select the Miscellaneous Resources for information about resources that can be helpful to servicing and maintaining your Sportster. You'll find parts sources, service bulletins, recalls, manuals, etc. in this section.

Be sure to visit our Parent Site - XLForum.net to discuss everything related to Harley-Davidson Sportsters:

<https://www.xlforum.net>

Ironhead Engine Models (1957-1985)

Ironhead Technical Categories

- **Engine Mechanicals - Top & Bottom End**
 - [Cases, Covers, Crankshaft](#)
 - [Cams, Tappets](#)
 - [Crankcase Ventilation](#)
 - [Cylinders, Heads, Pistons & Rods](#)
 - [Rocker Box, Rocker Arms, Pushrods, etc.](#)
 - [Engine Mounts](#)
- **Oiling and Lubrication**
 - [Engine Oil System](#)
 - [Oil Pump](#)
 - [Oil Tank, Lines and Routing](#)
 - [Oil Leaks](#)
 - [Trans/Primary Oiling and Venting](#)
- **Carburetor, Intake Manifold & Exhaust**
 - [Basic Carb Model Info](#)
 - [Intake Manifold](#)
 - [Exhaust System](#)
 - [Air Cleaner](#)
- **Electrical System**
 - [The Basics - Voltage & Ground](#)
 - [Fuses, Relays, Batteries, Charging System](#)
 - [Switches, Instruments, Lights, Turn Signals](#)
 - [Stock Wiring Schematic Drawings](#)
- **Engine Control**
 - [Ignition, Coil, Plugs, VOES, Timing](#)
 - [Starter/Solenoid](#)
 - [Kick Starter](#)
- **Primary Drive & Clutch**
 - [Primary Design, Engine Sprocket](#)
 - [Clutch Basket, Hub, Plates, Release, Adjustments](#)
- **Transmission & Final Drive**
 - [1957-1970 4-Speed](#)
 - [1971-1985 4-Speed](#)
 - [Gears, Sprockets](#)
- **Suspension**
 - [Front Forks](#)
 - [Fork Oil](#)
 - [Rear Shocks](#)
 - [Swingarm](#)
- **Wheels, Brakes & Tires**
 - [Axles, Wheels & Tires](#)
 - [Brakes](#)
- **Body Parts**
 - [Frame, Triple Tree, Etc.](#)
 - [Fenders, Etc.](#)

- [Fuel Tank - Petcock, Etc.](#)
- [Seats, Side Covers](#)
- [Handlebars, Levers & Cables](#)
- [Foot Controls, Pegs, Kickstand](#)
- **Ironhead Service Videos**
 - [Video Menu \(in Miscellaneous Resources\)](#)
- **Ironhead Sportster - General Information**
 - [1957 - 1969](#)
 - [1970 - 1977](#)

Evolution Engine Models (1986-later)

Evolution Technical Categories

- **Engine Mechanicals - Top & Bottom End**
 - [Cases, Covers, Crankshaft](#)
 - [Cams, Tappets](#)
 - [Crankcase Ventilation](#)
 - [Cylinders, Heads, Pistons & Rods](#)
 - [Rocker Box, Rocker Arms, Pushrods, etc.](#)
 - [Engine Mounts](#)
- **Oiling and Lubrication**
 - [Engine Oil System](#)
 - [Oil Pump Unit](#)
 - [Oil Tank, Lines and Routing](#)
 - [Oil Leaks](#)
 - [Trans/Primary Oiling and Venting](#)
- **Carburetor, Intake Manifold & Exhaust**
 - [Basic Stock Carb Model Info](#)
 - [Keihin CV40 Carb Functions, Adjustments, Tuning](#)
 - [Intake Manifold](#)
 - [Exhaust System](#)
 - [Air Cleaner](#)
- **Electrical System**
 - [The Basics - Wire Gauge, Wire Color, Voltage & Ground Checks](#)
 - [Fuses, Relays, Batteries, Charging System](#)
 - [Switches, Instruments, Lights, Turn Signals \(TSM\)](#)
 - [ICM/ECM, Serial Data Bus, CAN Bus](#)
 - [Stock Wiring Schematic Drawings](#)
- **Engine Control**
 - [Ignition Module, Coil, Plugs, VOES, Timing](#)
 - [EFI System, Engine Sensors \(EFI & Carb\), Fuel Pump](#)
 - [Starter/Solenoid](#)
- **Primary Drive & Clutch**
 - [Primary Design, Chain Adjustment, Engine Sprocket](#)

- [Clutch Design, Hub, Plates, Release Bearing & Adjustment](#)
- **Transmission & Final Drive**
 - [1986-1990 4-Speed](#)
 - [1991-2003 5-Speed](#)
 - [2004-later 5-Speed](#)
 - [Gears, Sprockets, Belts](#)
- **Suspension**
 - [Front Forks](#)
 - [Fork Oil](#)
 - [Rear Shocks](#)
 - [Swingarm](#)
- **Wheels, Brakes & Tires**
 - [Axles, Wheels & Tires](#)
 - [Brakes](#)
- **Body Parts**
 - [Frame, Triple Tree, Etc.](#)
 - [Fenders, Etc.](#)
 - [Fuel Tank - Petcock, Etc.](#)
 - [Seats, Side Covers](#)
 - [Handlebars, Levers & Cables](#)
 - [Foot Controls, Pegs, Kickstand](#)
- **Evo Service Videos**
 - [Video Menu \(in Miscellaneous Resources\)](#)
- **Evolution Specific Troubleshooting**
 - [General Practices & Procedures / Password Learn](#)
 - [Common Failures - Be Aware](#)
- **Evolution Sportster - General Information**
 - [1986-later](#)

Additional Troubleshooting & Information For All Years
Factory Tech Info, Charts, Lists, Shop Notes, Tools

Reference Technical Categories

- **Engine Mechanicals - Top & Bottom End**
 - [Bottom End](#)
 - [Top End](#)
 - [Cover Mods - \(Primary / Gearcase / Inspection / Sprocket\)](#)
 - [Evo Crankcase Pressure and Engine Breathing](#)
 - [Breather Venting / Relocation](#)
 - [Ironhead Crankcase Pressure and Engine Breathing](#)
 - [Ironhead - Aftermarket Motor Mounts and Alternatives](#)
- **Oiling & Lubrication**
 - [Engine Oil](#)

- (Includes: Changing Oil - Which Oil to Use - Oil Charts - Getting More Technical)
- [Transmission/Primary Oil](#)
 - (Includes: Charts)
- [Wet Sumping / Sit Sumping](#)
- [Engine and Primary Oil System Modifications](#)
- [Oil Lines & Modifications](#)
- [L84-85 and 86-90 Oil Filter Mount Comparison](#)
- **Oil Temperature**
 - [Sportster Engine Oil Temperature](#)
 - [External Oil Coolers](#)
- **Oil Pressure and Flow Rates**
 - [Sportster Oil Pressure \(57 to Present\)](#)
 - [Installing an Oil Pressure Gauge](#)
 - [Homemade Oil Pressure Light](#)
 - [Sportster Oil Feed Chain Pressures and Dynamics](#)
 - [Measuring Output Volume \(flow rate\) of a Gerotor Oil Pump](#)
 - [Measuring Feed Volume \(flow rate\) of the -72 Gear Type Pump](#)
- **Oil Pumps**
 - [77-Present Sportster Oil Pump Comparisons](#)
 - [Sportster Oil Pumps - Aftermarket](#)
- **Oil Filters**
 - [Understanding Oil Filters](#)
 - [Oil Filter Comparison Data for Sportsters](#)
 - [Oil Filter Internal Comparison Pics \(cut open\)](#)
 - [HD Super Premium 5 vs Napa 7148 5 micron oil filter \(picture comparison\).](#)
 - [Re-usable Oil Filters](#)
 - [Remote Oil Filters](#)
- **Oil Tank**
 - [Oil Tank Pressure](#)
- **Carburetor, Intake Manifold & Exhaust**
 - [Aftermarket Carbs and Performance Options](#)
 - [Keihin Carb Upgrades - For Butterfly and CV Types](#)
 - [Intake Manifolds](#)
 - [Exhaust Systems & Modifications](#)
 - [Fuel Lines & Modifications](#)
 - [Air Cleaners \(Aftermarket\) & Modifications](#)
 - [Ironhead - Installing a Keihin CV Carb](#)
- **Electrical System**
 - [Electrical Concepts - Wire Gauge & Current Load, Contact Resistance, AC vs DC Amp Rating, Etc.](#)
 - [Electrical Tools - Multimeter, Spark Tester, Etc.](#)
 - [Batteries - Upgrade/Alternatives](#)
 - [Charging Systems/Stators - Aftermarket](#)
 - [Body Control Modules - CANbus Options - Aftermarket](#)
 - [Lights - Headlights - Bulbs, Mods, Relocating](#)
 - [Lights - Taillights - Bulbs, Mods, Relocating](#)
 - [Lights - Turn Signals - Bulbs, Mods, Relocating](#)
 - [Instruments/Gauges - Upgrades, Mods, Relocating](#)

- [Misc - Keyswitches - BAS Bypass - Etc.](#)
- [Ignition Key Mods](#)
- [Device Connector Pinouts](#)
- [Device Connectors Compatibility \(Useful Part #s & Cross Ref\)](#)
- [Wiring Schematics - Ironheads - Simplified & Custom](#)
- [Wiring Schematics - Evo Models - Simplified & Custom](#)
- [Wire Tucks - ReRouting](#)
- [Evo Sportster Component Grounding Locations](#)
- [Ironhead Wiring Mishaps and Meltdowns](#)
- **Engine Control**
 - [Ignition Modules \(Aftermarket\), Timing Considerations](#)
 - [TC88A Map Files - Aftermarket Ignition Maps - Rico/JesterMotorwerkz/Rocketmangb](#)
 - [Ignition Tuners - Aftermarket \(2007-2022\)](#)
 - [Starters - Aftermarket](#)
- **Primary Drive & Clutch**
 - [Broken Rotor / Clutch Basket Magnets](#)
 - [Clutch Parts & Mods - Aftermarket](#)
 - [34T to 38T Engine Sprocket Conversion on 1992 XL883 Deluxe](#)
- **Transmission & Final Drive**
 - [Gears, Sprockets, Belts](#)
 - [Homemade Drive Belt Tensioner](#)
 - [In Search of 4 Speed Gear Ratios](#)
- **Suspension**
 - [Suspension - General](#)
 - [Suspension - Details - 7-Pages Theory, Set-Up, Tuning](#)
 - [Fork Oil](#)
 - [Front Forks](#)
 - [Fork Brace](#)
 - [Rear Shocks - Aftermarket/Alternatives](#)
 - [Rear Shock Lowering / Riser Blocks](#)
 - [Swingarm - Aftermarket](#)
 - [Steering Dampener](#)
- **Wheels, Brakes & Tires**
 - [Axles & Wheels](#)
 - [Brake Pads - Aftermarket, Break-in etc.](#)
 - [Brake Fluid](#)
 - [Bleeding the Brake Lines](#)
 - [Caliper / Master Cylinder Repair](#)
 - [Brake System Upgrades](#)
 - [Tire 101 \(Understanding Sizes & Descriptions, Buying, Numerous Charts - speed, load, etc.\)](#)
 - [Additional Information - Changing Tires, Cush Drive, Etc.](#)
- **Body Parts - Accessories**
 - [Fuel Tanks and Parts - Aftermarket/Spares](#)
 - [Fuel Tanks - Custom and Mods](#)
 - [Fuel Tank Cleaning, Restoration](#)
 - [Handlebars & Risers - Aftermarket](#)
 - [Mirrors](#)
 - [Levers, Grips & Cables - Aftermarket - Repair](#)

- Foot Controls, Pegs, Kickstand
- Engine Guard / Crash Bar
- Lowering the Detachable Windshield
- Helmet Locks
- Saddlebags
- Tool Bags & What To Carry
- Fenders, Mud Flaps, & Mods
- Sissy Bars, Fender Racks & Tourpaks
- Flag Holders
- Document Tubes / Holders
- Brass Accents For Your Bike
- Gremlin Bell
- **Custom Painting**
 - General Painting Procedures
 - HD Paint Codes
 - Painting - DIY, Rattle Can, Etc.
 - Painting - Powder Coating
 - Painting - Gun Coatings
- **Service Procedures**
 - Ironhead 4 Speed Transmission Removal / Inspection / Installation
 - 1986-1990 4 Speed Transmission Removal / Inspection / Installation
 - 1991-2003 5 Speed Transmission Removal / Inspection / Installation
 - 2004-later 5 Speed Transmission Removal / Inspection / Installation
 - Hydraulic Lifter - Disassembly / Inspection / Assembly
 - Replacing Rocker Arm Bushings
 - Performing a Cylinder Compression Test
 - Performing a Cylinder Leak-Down Test
 - Finding TDC of the Piston
 - Degreeing Cams
 - Measuring Pinion Shaft Runout
 - Checking the Squish Band Between the Piston and the Cylinder
 - Testing the Oil Pressure Switch
 - Polishing Aluminum and Stainless Steel
 - Trying to Get a Mirror Finish on Stainless Steel
- **General-MSR (For Maintenance, Servicing & Repair)**
 - **Troubleshooting**
 - DTC - Diagnostic Trouble Codes
 - Diagnostics - First Things First, Won't Turn Over, Won't Start
 - Diagnostics - Reading Spark Plugs
 - Engine Troubleshooting
 - Using / Diagnosing with a Slack Tube (Manometer)
 - Hunting Down Sportster Noises
 - Using a Stethoscope or Other to Hunt Down Engine Noises
 - Diagnosing Catastrophic Engine Failure in Evo Engines
 - **Compounds**
 - Assembly Lubes, Oils and Sealant

- (Includes: Bearing Grease - Anti-sieze - Threadlock)
 - [Cutting Oils, Soaking Oils and Lubes](#)
 - [Cleaning Solutions - General, Parts, Etc](#)
 - [Polishing Compounds](#)
 - [Tank, Parts and Tool Coatings](#)
 - [Electrical Compounds - Dielectric Grease, Liquid Tape, Cleaners, Etc.](#)
- **Shop Notes**
 - [Notable Quotes](#)
 - [Engine Initial Start-up, Heat Cycles and Break-In](#)
 - [Before Buying a New or Used Sportster](#)
- **Tips**
 - [Building a Rolling Chassis](#)
 - [Installing an Engine](#)
 - [Twisting Metal](#)
 - [Removing Adhesive Stickers, Emblems, Reflectors etc.](#)
- **Miscellaneous - Other**
 - [Wind Chill Chart](#)
 - [XI Bearing Numbers](#)
- **Tools & Fasteners**
 - [Tool Suggestions, Workarounds, and Sources](#)
 - (including Commercial, Homemade and Modified Tools for Sportsters)
 - [Fasteners - Bolts, Nuts, Studs, Etc.](#)
 - [Stuck, Frozen and Broken Off Bolts](#)
 - [Warped or Damaged Thread Repair](#)
 - [Torque Wrench Care and Usage, Related Charts and Information](#)
 - [Torque Wrench Field Calibration](#)
 - [General Drilling and Tapping](#)
 - [Decimal Equivalent Chart](#) (Fraction, wire gauge, letter and metric sizes)
 - [Thread Identification and Sizing Charts](#)
 - [Retaining Ring Sizing Charts](#)
 - [Press Fit Bushing in Bore Charts](#)
 - [Finding Acceptable Lengths for Gearcase/Cam Cover Screws](#)
- **Engine Conversions**
 - (Includes Top End Upgrades, Performance Mods, etc., etc.)
 - [40 Stroker Lessons](#) (living with a stroked ironhead sportster)
- **Trailer / Trailing or Otherwise Hauling a Sportster**
 - [Trailing Your Ride](#)
 - [Pull Behind Trailer](#)
 - [Hauling Your Ride in a Truck](#) (Loading / Unloading)
- **Quotes & Stories Too Good To Forget**
 - [Notable Quotes](#)
 - [Misc Stories of Interesting Characters](#)
 - [A Chat With A Whitebeard - An Epic Tale](#)
- **Raw Data**

- [\(Anything waiting to be integrated\)](#)
- **Other HD Models**
 - [Information on Other Mid-size-engine Models](#)

Miscellaneous Resources

Parts Sources, Tech Bulletins, Recalls, Factory Manuals, etc.

Misc Resources

- **Resources for Sportster Help**
 - [Sportster Parts Sources & Links](#)
 - [Factory Harley and Buell Tech Tips \(TT\), \(BB\)](#)
 - [Factory Harley and Buell Technical Service Bulletins \(TSB\)](#)
 - [Factory Parts and Accessories Bulletins \(PAB\)](#)
 - [Factory Recalls](#)
 - [Factory Instruction Sheets](#)
 - [Factory Service Manual \(FSM\) for Sportsters](#)
 - [Factory Parts Catalogs](#) (information on usage and a list of parts catalogs)
 - [HD Part Numbers Explained](#)
 - [HD Casting Numbers, Letters and Symbols Explained](#)
 - [US / Julian Day Calendars \(1951-1990\)](#)
 - [Sportster Terminology](#)
 - [Magazine Articles from the Past - Menu](#)
 - [Video Menu - Helpful User Videos](#)

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