FREE SAMPLE

The opening pages of

1966 Harley-Davidson Sportster Buyer's Guide

Read these pages exactly as they appear in the full guide.
Nothing here is rewritten or summarised — it is the product itself,
so you can judge the depth before you spend a dollar.

The full guide: https://ironheadguides.com/product/IH-HARLEY-SPORTSTER-1966

IronHead — instant PDF download after checkout.

IRONHEAD

1966 Harley-Davidson Sportster

Factory-Correct Restoration Guide

IronHead single-year guide · Model year 1966 only

KEY FACTS AT A GLANCE

- **Model year covered:** 1966 only (XLH, XLCH, and the limited-production XLRTT racer). The Tillotson-carburetor year.
- **Engine:** 883 cc (53.9 cu in) air-cooled 45-degree OHV V-twin; 3.000 x 3.8125 in bore x stroke; 9.0:1 compression; hotter camshafts (new for 1966).
- **Fuel system:** Tillotson diaphragm-type carburetor (new for 1966).
- **Ignition:** XLH: 12-volt battery and coil, breaker points. XLCH: magneto.
- **Starting:** Kick starter only.
- **Transmission:** 4-speed constant-mesh in unit; right-foot shift; chain final drive; dry clutch.
- **Chassis:** Telescopic fork; dual rear shocks; drum brakes front and rear with alloy hubs.
- **1966 colors:** Black with White tank panels; Indigo Metallic with White tank panels. Options: Hi-Fi Blue and White; Sparkling Burgundy and White.
- **Identification:** No frame VIN — the engine serial (left case, between the cylinders, e.g. 66XLCH12345) is the ownership number; even/odd rule applies (even first serial digit for 1966).
- **Production:** XLH 900; XLCH 3,900; XLRTT 25 (Sportsterpedia).
- **Key 1966-only features:** Tillotson diaphragm carburetor; hotter cams; Indigo Metallic colorway; the last kick-only year before the 1967 electric-start XLH.

SAMPLE EXCERPT — full guide available at the link on the cover sheet

1. Manufacturer history: Harley-Davidson

Harley-Davidson was founded in Milwaukee, Wisconsin, in 1903 by William S. Harley and Arthur Davidson, with Walter and William A. Davidson joining the effort. The first factory went up in 1906; the first V-twin appeared in 1909. Through the 1910s and 1920s Harley built its name on V-twins and racing success, and the 45-cubic-inch flathead models of the 1930s kept the company alive through the Depression.

The 1936 EL Knucklehead introduced overhead valves to the Big Twin line, and the 1948 Panhead refined the formula. For the sporting rider, the key ancestor is the 1952 K-series: a unit-construction 45-cubic-inch side-valve twin with foot shift and swingarm rear suspension, built to answer the British imports. The K was the direct basis for the 1957 XL Sportster — essentially the K bottom end with larger displacement, overhead valves, and higher compression.

The 1960s brought the Duo-Glide (1958) and Electra Glide (1965) to the touring line while the Sportster carried the sporting brief almost alone. In January 1969 the American Machine and Foundry Company (AMF) bought Harley-Davidson, bankrolling expansion — including Sportster assembly at York, Pennsylvania, from 1973 — through a decade of variable quality control. In June 1981 a group of Harley executives bought the company back from AMF. The Ironhead Sportster ran through the 1985 model year; for 1986 the Evolution engine replaced the cast-iron-top-end motor the "Ironhead" name describes.

For the restorer, the authority is the factory literature: the Harley-Davidson service manuals (1957-1969, 1970-1978, and 1979-1985 XL/XR) and the year parts catalogs. Sportsterpedia's marque research is the strongest secondary source for year-to-year differences; this guide cites it throughout.

2. Model history: the Ironhead Sportster

The 1957 XL was Harley-Davidson's answer to the British 650 twins that were eating its lunch: take the K-model's unit-construction bottom end, bore it to 883 cc, fit overhead valves with hemispherical cast-iron heads, and raise compression. The result made a claimed 42 bhp — nearly half as much again as the side-valve K it replaced — and the Sportster has been in the Harley range continuously ever since.

The designations work like this. **XL** was the 1957 base model (and the name reappears on a basic model in some later literature). **XLH** (1958 on) is the high-compression touring version — bigger tank, lower bars, the volume seller. **XLCH** (1958-1979, "Competition Hot") is the sportier, stripped version: high pipes, small peanut tank, and for most of its life kick-start only. **XLRTT** was a limited-production race model of the mid-1960s. **XLS** (1979 on) is the Roadster. **XLT** (1977-1978) was a short-lived touring variant with hard bags and a windshield. **XLCR** (1977-1979) is Willie G. Davidson's cafe racer. **XLX-61** (1983-1984) was the stripped budget Sportster. **XR1000** (1983-1984) was the street-going XR with race-type heads and twin Dell'Orto carburetors. The **XR-750** (1970 on) is the pure dirt-track racer — not a street model and not covered by this guide except as context.

Engineering constants across the whole Ironhead run: a 45-degree air-cooled V-twin with four gear-driven camshafts, cast-iron cylinder heads (the source of the "Ironhead" nickname), unit-construction four-speed gearbox, and chain final drive. Displacement was 883 cc (advertised as 900) through 1971 and 997.5 cc (advertised as 1000) from 1972 on.

Year	What changed
1957	First XL: 883 cc OHV V-twin (3.000 x 3.8125 in, 7.5:1), 42 bhp, Linkert DC carburetor, 6-volt electrics, kick start, drum brakes.

SAMPLE EXCERPT — full guide available at the link on the cover sheet

Year	What changed
1958	XLH (high-compression touring) and XLCH (Competition Hot) replace the single XL; higher compression, domed pistons, larger ports and valves; XLCH gets high pipes, magneto ignition, peanut tank.
1959	High-lift camshafts; period reports of 115 mph and sub-14-second quarter-miles.
1960	Detail refinements on the established 1958 formula.
1961	Hi-Fi color combinations introduced.
1962	Staggered shorty exhausts; the even/odd serial-number rule begins.
1963	Alloy fork brackets and motor mounts offered.
1964	Alloy front hubs fitted.
1965	12-volt electrical system replaces 6-volt.
1966	**Tillotson diaphragm carburetor; hotter camshafts.**
1967	Electric starting on the XLH (kick starter retained for 1967); new stronger crankcases and a stretched frame and swingarm for the XLH; the XLCH stays short-frame and kick-only.
1968	XLH becomes electric-start only (kicker optional); new front forks with more travel; about 58 bhp.
1969	Larger intake valves and revised cast-iron heads; AMF buys Harley-Davidson in January.
1970	Ownership VIN moves to the steering head (9-character format); XLCH gains electric start and battery-and-coil ignition; fiberglass boat-tail tail section; XR-750 racer debuts; about 8,650 Sportsters outsell the Electra Glide.
1971	New crankcases: the ignition timer moves into the cam-cover nose cone with automatic spark advance; wet multi-disc clutch; last year for the boat-tail option.
1972	Engine enlarged to 997.5 cc (3.188 x 3.8125 in, 9:1), 61 bhp; Bendix/Zenith carburetor; revised timer cam (dwell 90 to 140 degrees).
1973	Front disc brake; 35 mm Kayaba-type fork; turn signals standard; speedometer drive moves to the front axle; York, PA assembly begins.
1974	Cast wheels available; sales top 20,000.
1975	Left-side shift with right-side rear brake (DOT mandate), worked through linkage behind the engine; sales slump below 6,000.
1976	Bicentennial special edition; otherwise a steady year.

SAMPLE EXCERPT — full guide available at the link on the cover sheet

Year	What changed
1977	New crankcases with gerotor oil pump (frame tube notched for access); Keihin carburetor; XLCR cafe racer and XLT touring model introduced; limited Confederate Edition.
1978	Siamese 2-into-1-into-2 exhaust across the line; solid-state charging electronics; dual front discs; 75th-anniversary editions; electronic ignition phased in late in the year.
1979	New lighter, stiffer frame; rear disc brake; electronic ignition standard; XLS Roadster introduced; last year for the XLCH.
1980	Timing marks revised (advance = single dot, TDC = lazy eight); 9-character VIN with J0 suffix.
1981	17-digit federal VIN; AMF sells Harley-Davidson to the investor group in June.
1982	25th-anniversary XLH and XLS editions; Hitachi generator in the charging system.
1983	XLX-61 budget Sportster; XR1000 street model (twin 36 mm Dell'Ortos, XR750-type heads, about 70 bhp).
1984	XR1000 final year; late-year charging-system running change (the factory manual treats Late 1984-1985 as its own variant).
1985	Final year of the Ironhead Sportster; the Evolution engine follows for 1986.

The company context matters when judging a bike. The 1969 AMF takeover funded the York plant and the 1970s expansion, but the AMF years are also the era of the most variable factory quality control — which is why matching numbers, correct fasteners, and year-correct trim matter more, not less, on a 1970s Ironhead. The 1981 buyback steadied the company; the 1986 Evolution engine kept the Sportster alive by fixing the Ironhead's oil-leak and overheating reputation at its root.

3. What is unique about the 1966 Sportster

1966 is the Tillotson year — the diaphragm carburetor and hotter camshafts are the mechanical story, and it is the last kick-only year before the 1967 electric-start XLH changed the line's character. Period road-test coverage (Cycle World tested the 1966 XLCH) confirms the Tillotson as the year's new equipment.

1966-specific details:

- **Tillotson diaphragm carburetor** — new for 1966, replacing the Linkert

DC. A Linkert on a 1966 is a backward step, not originality.

- **Hotter camshafts** — the 1966 cam change is the year's internal engine

story; verify cam markings during any engine work.

- **Colors:** Black with White tank panels; Indigo Metallic with White tank

panels; Hi-Fi Blue and Sparkling Burgundy options with White.

- **Last kick-only year** — the XLH gains electric starting for 1967.
- **XLRTT: 25 built** — documented limited race production.

SAMPLE EXCERPT — full guide available at the link on the cover sheet

What did NOT exist in 1966 (common mix-ups):

- No electric start (1967 XLH); no long frame (1967 XLH); the 1966 XLH is still a short-frame, kick-only bike.

1966 buyer cautions:

- **Carburetor correctness.** The Tillotson is year-correct; Linkert and later Bendix/Keihin swaps are all common and all wrong for 1966.
- **Magneto (XLCH).** As with all magneto XLCH machines, budget for specialist magneto service on any non-runner.
- **Production mix.** At 3,900 XLCH vs. 900 XLH, the 1966 XLCH is the common 1966 Sportster — XLH claims deserve serial verification.

4. Technical restoration data — 1966 Harley-Davidson Sportster

4.1 Frame and engine numbers (1966)

There was no frame identification for purpose of ownership on 1957-1969 Sportsters — the engine number is the ownership number. It is stamped on the left side of the crankcase between the two cylinders, for example:

```
65XLCH12345
65 = model year | XLCH = model | 12345 = sequential number
```

From 1962 through 1969, models with four-digit production (serial) numbers follow an even/odd rule: an even-numbered first serial digit for even model years, an odd-numbered first digit for odd model years. The frame carries only manufacturing stampings — there is no ownership VIN on the frame. Crankcase casting numbers: 24534-57 / 24558-57 (through 1966); 1967-1971 XLH cases are 24534-67 / 24558-67 (the stronger "hump" cases). Cam-cover castings: 25202-52A (1957-1962), then the 1963-1967 era casting, then 02-68 (1968-1970).

4.2 Engine specifications (1966)

Item	Specification
Configuration	45-degree air-cooled OHV V-twin; four gear-driven camshafts; cast-iron heads
Displacement	883 cc (53.9 cu in) — advertised as 900
Bore x stroke	3.000 x 3.8125 in
Compression ratio	9.0:1
Carburetor	Tillotson diaphragm-type (new for 1966)
Ignition	12-volt battery and coil (XLH); magneto (XLCH); breaker points
Starting	Kick starter only
Clutch	Dry multi-plate
Lubrication	Dry sump; gear-driven oil pump

4.3 Carburetion and electrical

- Tillotson diaphragm-type carburetor (new for 1966)

SAMPLE EXCERPT — full guide available at the link on the cover sheet

- XLH: 12-volt battery-and-coil ignition, breaker points
- XLCH: magneto ignition
- Kick starter only (last kick-only year); 12-volt generator
- Hotter camshafts (new for 1966)

4.4 Transmission and final drive

- Four-speed constant-mesh gearbox in unit with the engine
- Right-foot shift, left-hand clutch
- Chain final drive; dry multi-plate clutch

4.5 Chassis, suspension, and brakes (1966)

- Telescopic front fork; dual rear shock absorbers
- Drum brakes front and rear with alloy hubs
- Wire-spoked wheels; 19-inch front, 18-inch rear

4.6 Paint and finish (1966)

- **Black** with White tank panels
- **Indigo Metallic** with White tank panels
- Options: **Hi-Fi Blue** and White; **Sparkling Burgundy** and White

4.7 Production numbers

XLH 900; XLCH 3,900; XLRTT 25 (Sportsterpedia) — the XLCH is the common 1966 Sportster by more than four to one.

4.8 Torque specifications

Fastener	Torque
Cylinder head bolts	65 ft-lbs — turn all bolts snug, then tighten in 1/8- to 1/4-turn increments in the factory sequence
Rocker-arm cover screws	20 ft-lbs, tightened evenly in sequence
Spark plugs	12-18 ft-lbs
Front axle nut	60-70 ft-lbs
Rear axle nut	60-70 ft-lbs

Head-bolt torque is the critical one: the factory procedure (snug, then small even increments to 65 ft-lbs in sequence) is what keeps the iron heads sealing. All other fasteners go to the factory service manual's general torque table by bolt diameter — never guess, and never use an impact wrench on engine fasteners.

SAMPLE EXCERPT — full guide available at the link on the cover sheet