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The opening pages of

1970 Harley-Davidson Sportster Buyer's Guide

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IRONHEAD

1970 Harley-Davidson Sportster

Factory-Correct Restoration Guide

IronHead single-year guide · Model year 1970 only

KEY FACTS AT A GLANCE

- **Model year covered:** 1970 only (XL, XLH, and XLCH). The first VIN year; the XR-750's debut season.
- **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; 58 bhp @ 6,800 rpm; 52 lb-ft @ 3,800 rpm.
- **Models:** Basic XL, higher-compression XLH, and the XLCH — now with electric start and battery-and-coil ignition (magneto retired).
- **Identification:** First year of the ownership VIN on the steering head: 9-character format (e.g. 3A13675H0 — 3A = XLH, H0 = 1970). One-year-only VIN pad position on the engine.
- **Styling:** Fiberglass boat-tail tail section (Willie G. Davidson design) on the XLCH.
- **Fuel system:** Tillotson HD diaphragm-type carburetor.
- **Starting:** XLH: electric (kick optional). XLCH: electric start added for 1970; kick starter retained.
- **Transmission:** 4-speed constant-mesh in unit; right-foot shift; chain final drive; dry clutch.
- **Brakes:** Drum brakes front and rear.
- **1970 colors:** White or Hi-Fi Sparkling Blue (per period sources).
- **Production:** About 8,650 Sportsters — the year the Sportster outsold the Electra Glide and became Harley's best seller.
- **Racing:** The XR-750 racer debuts and begins its long dirt-track dominance.
- **Key 1970-only features:** first frame-VIN year; one-year VIN-pad position; boat-tail debut; last dry-clutch year.

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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.

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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.

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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 1970 Sportster

1970 is a hinge year — the last of the 1960s Sportsters and the first of the modern ones. The ownership VIN moves to the steering head in the 9-character format (3A = XLH, 4A = XLCH, five-digit serial, H, year digit), the XLCH finally gets electric start and battery-and-coil ignition, Willie G. Davidson's fiberglass boat-tail appears on the XLCH, and the XR-750 begins its dirt-track reign. It is also the sales milestone year: about 8,650 Sportsters outsold the Electra Glide by nearly 1,000 units, making the Sportster Harley's best seller.

1970-specific details:

- **First frame-VIN year.** The 9-character VIN (e.g. 3A13675H0) is stamped

on the frame and engine with a steering-head label showing VIN and build date. Pre-1970 bikes have no frame VIN — do not accept one on a "1970."

- **One-year-only VIN pad position.** On 1970 engines (and some early 1971s

with carryover cases) the engine VIN pad sits between the front two lifters; from 1971 on it is on the right side of the case between the cylinders.

- **XLCH modernized:** electric start and battery-and-coil ignition replace

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the magneto; the kick starter stays.

- **Boat-tail debut** on the XLCH — the controversial fiberglass tail section, a $60 option again for 1971, then gone.
- **Last dry-clutch year** — the wet multi-disc clutch arrives with the 1971 cases.

What did NOT exist in 1970 (common mix-ups):

- No nose-cone ignition timer (1971); no wet clutch (1971); no 1000 cc engine (1972); no front disc (1973).

1970 buyer cautions:

- **VIN-pad position.** The between-the-lifters pad is the 1970 tell — a "1970" with the later pad position needs an explanation (early-1971 carryover cases are documented, but verify).
- **Boat-tail originality.** The fiberglass tail is frequently removed or replaced; check mounting and finish against survivor bikes.
- **XL vs. XLH.** Period literature lists a basic XL alongside the higher-compression XLH — verify which model the serial codes before assuming XLH specification.

4. Technical restoration data — 1970 Harley-Davidson Sportster

4.1 Frame and engine numbers (1970)

1970 is the first year of the ownership VIN on the frame. The 9-character VIN is stamped on the engine and on the frame, with a label on the steering head showing the VIN and date of manufacture. Format:

```
3A13675H0
3A = model code (3A = XLH, 4A = XLCH) | 13675 = five-digit serial
H = fixed character before the year digit | 0 = model year (1970)
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A 1971 example reads 4A13675H1 (4A = XLCH, H1 = 1971). Note a one-year quirk: on 1970 engines (and some early 1971 engines built with carryover 1970 cases) the VIN pad sits between the front two lifters; from 1971 on it is on the right side of the crankcase between the cylinders. The 1980 VIN uses a J0 suffix (example: 3A26782J0). Cam-cover castings: 25202-71 (1971-1976), 76-25202F (1977-1978), 79-25202 (1979-1980). Crankcase castings: 24534-72 / 24558-72 (1972); 24534-72 / 24558-73A (1973-1976); 24534-75 / 24558-75 (1977-1980).

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4.2 Engine specifications (1970)

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
Claimed output	58 bhp @ 6,800 rpm; 52 lb-ft @ 3,800 rpm
Carburetor	Tillotson HD diaphragm-type
Ignition	12-volt battery and coil, breaker points; 1971: timer in the cam-cover nose cone with automatic spark advance
Starting	XLH: electric (kick optional). XLCH: electric start added for 1970 with battery-and-coil ignition; kick starter retained
Clutch	Dry multi-plate (1970); wet multi-disc (1971)
Lubrication	Dry sump; gear-driven oil pump

4.3 Carburetion and electrical

- Tillotson HD diaphragm-type carburetor
- 12-volt battery-and-coil ignition, breaker points (all models — magneto retired)
- XLH: electric start (kick starter optional). XLCH: electric start added for 1970; kick starter retained
- 12-volt generator

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 (last year)

4.5 Chassis, suspension, and brakes (1970)

- Telescopic front fork; dual rear shock absorbers
- Drum brakes front and rear
- Wire-spoked wheels; 19-inch front, 18-inch rear
- Period fitment: 3.25/3.50 x 19 front (drum), 4.00 x 18 rear
- Fiberglass boat-tail tail section (XLCH)

4.6 Paint and finish (1970)

- **White** or **Hi-Fi Sparkling Blue** (per period sources)

4.7 Production numbers

About **8,650 Sportsters** for 1970 (Haynes) — the year the Sportster outsold the Electra Glide by nearly 1,000 units and became Harley-Davidson's best-selling model. The XR-750 racer debuted the same year.

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