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1931 Indian Chief Buyer's Guide

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IRONHEAD

1931 Indian Chief

Factory-Correct Restoration Guide

IronHead single-year guide · Model year 1931 only

KEY FACTS AT A GLANCE

- Model year 1931 — continuation of the 1930 DuPont-era specification
- Cast aluminum gas tanks, second and final year (1930–31 — Mecum)
- DuPont color range continues
- 74 cu in, 3-1/4 × 4-7/16 in, 42-degree side-valve V-twin
- Front and rear drum brakes; rigid rear; leaf-spring trailing-link front fork
- 3-speed standard; 4-speed and reverse-gear options
- Controls: left-hand throttle twist grip, foot clutch, hand (tank) shift, right-grip spark advance

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Year chosen: 1931. The Depression deepens and Indian builds on: the 1931 Chief carries the 1930 specification forward — DuPont colors, cast aluminum tanks in their second and final year, the gearbox options — while production sits at the post-crash floor. A 1931 is judged against 1930 in every detail; the restoration trap is fitting later-1930s parts to a bike that predates them.

1. Manufacturer history: Indian

Indian began in 1901 as the Hendee Manufacturing Company of Springfield, Massachusetts, founded by bicycle racer and manufacturer George M. Hendee and engineer Carl Oscar Hedstrom. Their first product was a motorized bicycle; by 1905 Indian was racing V-twins, and a street V-twin followed in 1907. The factory team's 1-2-3 sweep of the 1911 Isle of Man TT made Indian the largest motorcycle manufacturer in the world for a time, and the company's machines earned a reputation for strength that outlived every later corporate convulsion.

Both of Indian's immortal V-twins were designed by Charles B. Franklin, an Irish road racer who had campaigned Indians in Ireland and at the Isle of Man (including that 1911 TT sweep) before joining the Springfield factory as chief engineer. Franklin drew the Scout first — introduced in October 1919 as a 1920 model — a middleweight 42-degree side-valve V-twin with its three-speed gearbox bolted to the engine cases and a geared primary drive, the only American V-twin to use that maintenance-free system. The Chief followed for 1922 as Indian's big twin, a 61-cubic-inch machine that replaced the Powerplus, with a 74-cubic-inch Big Chief joining it for 1923. In 1923 the company renamed itself the Indian Motocycle Company — deliberately without the "r" — the spelling every pre-war tank badge carries.

The later 1920s brought expansion and upheaval: Indian bought the Ace Motor Corporation in 1927 and launched the four-cylinder Indian Four for 1928; the 101 Scout of 1928 — Franklin's masterpiece — set the handling standard; and a front brake finally arrived across the V-twin line. The 1929 crash nearly killed the company — production fell to about 4,500 machines a year and stayed there into the war years — and in 1930 the DuPont family took control, merging Indian with DuPont Motors. DuPont's paint-industry connections gave Indians the spectacular DuPont color range that defines the 1930s machines. The Depression forced ruthless rationalization: for 1932 one basic frame served the Scout, Chief, and Four; the beloved 101 was replaced by the heavier Standard Scout; and the Sport Scout of late 1934 was Indian's answer to the riders who never forgave that decision.

For 1940 every Indian gained the deep-skirted fenders that became the marque's visual signature, and the big twins gained plunger rear suspension — sprung rears a full two decades before Harley-Davidson. World War II ended civilian production in 1942; Indian built military machines instead — the 500cc 741, the 750cc 640, the Chief-based 340-B, and the radical shaft-drive

841. When civilian production resumed, only the Chief returned, and in 1953

the Springfield factory built its last motorcycles. The name passed through Brockhouse, AMC, Clymer, and bankruptcy courts before its modern revival; but every machine in this guide's line was built in Springfield, Massachusetts, between 1920 and 1953, and that is the only Indian this guide covers.

For the restorer, this history sets the parts reality: pre-war Indian factory literature is scarce, factory serial records are incomplete, and much of what is "knowledge" about these machines lives in marque specialists, the Antique Motorcycle Club of America, and the auction houses that have handled the survivors. This guide cites genuine sources for every claim and says plainly where the literature is silent.

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2. Model history: the Chief

The Chief was introduced for 1922 to replace the Powerplus — though the Powerplus continued under the "Standard" name into 1923 — as Indian's big twin and the larger, steadier brother to the Scout. Charles B. Franklin gave it the Scout's architecture: gearbox bolted to the engine cases, primary drive by gear train, 42-degree side-valve V-twin. The 1922 Chief displaced 61 cubic inches (3-1/8 × 3-31/32 in bore and stroke), the same as the Powerplus/Standard — but unlike the Powerplus, the Chief was never offered with rear suspension. For 1923 the Big Chief arrived with the engine bored to 3-1/4 inches and stroked to 4-7/16 inches for 74 cubic inches, aimed at sidecar work but an instant best-seller as a solo. The smaller 61ci Chief was discontinued after 1928, and from 1929 the 74 was simply the Chief.

A front brake was added for 1928 — late by European standards, pioneering by American ones — and the 1930 DuPont takeover dressed the big twin in the DuPont color range that made 1930s Indians rolling paint charts. The Depression-era rationalization gave the 1932 Chief a new shared frame (with the Scout and Four) and detail improvements like the Easy-On gasoline cap; through the mid-1930s the Chief evolved in detail rather than architecture, with the 1939 model getting redesigned cylinders and heads. For 1940 came the two changes that define the classic Chief: plunger rear suspension and the large, deeply skirted fenders applied across the whole Indian line. Civilian Chief production ended in 1942; the Chief-based military 340-B served with US and French forces.

After the war the Chief was the only pre-war Indian revived. The 1946–47 Chiefs kept the 74ci flathead and plunger rear but swapped the pre-war leaf-sprung trailing-link fork for a girder fork derived from the military 841; the 1947 model debuted the illuminated warbonnet fender mascot. No Chiefs were built for 1949. The Chief returned for 1950 with telescopic front forks and the engine stroked to 80 cubic inches — the final specification — and production ended in 1953, the last motorcycles built by the Springfield company. The Chief outlived every sibling: it was Indian's flagship from 1922 to the final day.

3. What is unique about the 1931 Chief

- Final year of the cast aluminum gas tanks — from 1932 the tanks are steel again; the aluminum tanks are the 1930–31 signature.
- No factory-documented mechanical change for 1931 was located — a quiet year carrying 1930 spec through the Depression's worst stretch.
- Depression-production reality: about 4,500 total Indian machines a year (Museo Nicolis) — every 1931 Chief is a low-production survivor by circumstance.

What did not change for 1931:

- DuPont colors; gearbox options; control layout — all 1930-pattern.
- Rigid rear; trailing-link leaf fork; geared primary.

4. Technical restoration data — 1931 Indian Chief

4.1 Frame and engine numbers (1931)

No complete 1931 serial table was located in surviving open literature. Record the engine number (left crankcase) and frame number (frame), plus the gearbox variant; verify against factory records via the AMCA or a marque specialist.

4.2 Engine specifications (1931)

74 cu in engine:

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Item	Specification
Type	Air-cooled 42-degree side-valve (flathead) V-twin, four-stroke
Displacement	74 cu in (about 1,210 cc; period sources give 1,206–1,213 cc)
Bore × stroke	3-1/4 in × 4-7/16 in (83 mm × 113 mm)
Compression ratio	Not published in surviving open literature
Max power	24 bhp @ 3,000 rpm (1923 Big Chief, period specification via Caddell); 34 hp (1935, Hagerty price-guide data); 40 bhp (postwar, Hagerty) — treat period power claims as indicative, not factory-certified
Valve train	Side valves, two per cylinder, via rockers from two camshafts
Fuel system	Single carburetor (Schebler-type period equipment)
Lubrication	Mechanical oil pump with total-loss characteristics — see 4.3
Ignition	Battery-and-coil with breaker points; magneto optional/factory-optioned
Transmission	3-speed, hand (tank) shift, foot clutch (4-speed and reverse-gear options in the 1930s); geared primary drive into the early 1930s, chain primary thereafter
Final drive	Chain

4.3 Fuel, oil, and electrical

Pre-war Indians run a **mechanical oil pump with total-loss characteristics**: oil is fed to the engine and not fully scavenged back in the modern recirculating sense, so **oil consumption is normal and the tank level must be checked as a pre-ride ritual**, not an occasional chore. Service guidance from the owner's literature: keep the oil tank filled to its mark, use a heavy straight-grade or period-correct multigrade engine oil, and expect the machine to mark its parking spot. No factory oil-pressure or oil-capacity figures were located in surviving open literature for this model year — set levels by the tank marks and the owner's manual for your year, not by a number from the internet.

Electrics are 6-volt, battery-and-coil with breaker points (magneto ignition was optional — and on some years a factory option — and many survivors have been converted). The charging system is marginal by modern standards: keep battery terminals clean, keep the points clean and correctly gapped per the owner's manual, and remember that a weak battery shows up first as hard starting, not as dim lights. Period equipment includes a Schebler-type carburetor and a Corbin speedometer; the ammeter and light switch live on the dash or tank panel depending on year. Reproduction wiring harnesses are available and are cheap insurance — eighty-plus years of heat, vibration, and amateur splicing hide inside every original loom.

4.4 Transmission, primary drive, and controls

Primary drive. Helical-gear primary drive — the Franklin signature: no primary chain to adjust or replace. The gearbox is bolted to the engine cases and drives through helical gears. During the rebuild, check the primary gears for backlash and pitting and the cases for cracks and oil weep; the gears are durable but the cases are not replaceable from new stock.

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Gearbox. 3-speed constant-mesh, hand-shifted at the tank, with a foot clutch. (4-speed and reverse-gear options are documented for 1930s Chiefs — Hagerty — so identify the gearbox on the bike before ordering parts.) Rebuild with new bearings, seals, and gaskets; check every gear for pitting and the shift mechanism for wear — a vague shifter is usually a worn detent or linkage, not a worn gearbox.

Controls. Controls follow the period Indian pattern documented by Hagerty for the 1930s Chief: left-hand throttle twist grip (freeing the right hand — a police-use legacy), foot clutch, hand (tank) shift lever, and spark advance on the right grip. Earlier years follow the same hand-shift/foot-clutch architecture; verify the exact control layout against the owner's manual for your year during disassembly and photograph every cable run before disconnecting anything.

4.5 Chassis, suspension, and brakes (1931)

- Rigid rear; leaf-spring trailing-link front fork.
- Front and rear drum brakes.
- 3-speed standard; 4-speed and reverse-gear options — identify the unit fitted.

4.6 Paint and finish (1931)

DuPont color range continues; Indian Red remains available. No complete 1931 color chart was located — preserve original finishes for matching.

4.7 Production numbers

Model-year splits were not located. Total Indian production held at about 4,500 machines annually through the Depression (Museo Nicolis).

4.8 Fastener and assembly guidance

No factory torque table for pre-war Indians was located in surviving open literature — this is a genuine gap, not an omission. The 1920s–30s Springfield factory worked to fits and feel, and the manuals that survive specify procedures, not Newton-meters. Work to this discipline instead:

- **Threads are coarse and the castings are old.** Clean every thread, run a

tap or die over damaged ones, and never force a fastener into an aluminum or aged-iron casting. Anti-seize on exhaust and head hardware; light oil elsewhere.

- **Cylinder-head and base nuts:** tighten in a criss-cross pattern in three

equal increments to a firm, even feel — then re-torque after the first full heat cycle and again after ~500 miles. Uneven head torque on a side-valve twin weeps oil and blows head gaskets.

- **Critical fasteners** (axles, fork links, brake anchors, engine mounting

plates, primary-drive hardware): fit with new lock washers or wire where the factory used them, and mark each with paint after final tightening so any movement shows at a glance.

- **Spokes:** bring up to even tone, not maximum tightness; an over-tensioned

old rim cracks at the nipple holes.

4.9 Tune-up and service specifications

The pre-war Indian service rhythm is simpler than a Japanese bike's but less forgiving of neglect — there is no oil filter saving you from dirty oil and no hydraulic anything adjusting itself:

1. **Oil:** check the tank before every ride; change it often (the owner's

manual interval is the authority — typically every 1,000–2,000 miles depending on year and use). Clean any screens or sediment traps at every change.

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2. **Valve clearances:** check and set per the owner's manual with the engine cold. Side-valve adjusters are screw-and-locknut; no factory clearance figures were located in surviving open literature, so set them from the manual for your year.
3. **Ignition:** clean and gap the points per the owner's manual, check the timing with a test light, and confirm the advance mechanism moves freely. Replace condensers on suspicion, not on proof.
4. **Primary drive and chains:** on geared-primary machines, check the primary gears for backlash and the cases for oil; on chain-primary machines, keep the chains clean, lubricated, and correctly tensioned — about 3/4-inch total up-and-down play at the middle of the lower run is the traditional figure.
5. **Carburetor:** strip, clean, and set the float level per the manual; verify jetting against the carburetor body stamping before ordering parts.
6. **Brakes:** inspect linings and drums every few thousand miles; the pre-war drums are small for the weight they stop — ride accordingly.
7. **Wheel bearings, steering head, fork links:** clean, inspect, and repack with fresh grease during the chassis rebuild; replace, don't nurse, pitted races.

4.10 Wear- and rust-prone areas — where to look first

1. **Fenders, undersides first.** The deep-skirted 1940-and-later fenders (and the flowing Sport Scout fenders) trap mud and moisture against the rolled edges — check from below, not from the showroom side.
2. **Rims and spokes.** Rust hides under the rim strips; chrome spokes pit and lose tone. Budget for a re-lace with correct-pattern spokes if the wheels are tired.
3. **Fuel tank interior.** Eighty-plus years of storage plus ethanol-era fuel equals rust. Inspect with a borescope; de-rust fully before any sealer, or the sealer will fail and clog the petcock screens and carburetor.
4. **Frame at the steering head and rear loops.** Check for crash damage, cracks at the neck, and rust where fenders and seats trap moisture. On keystone-frame Sport Scouts, inspect the bolted frame joints and the engine-mounting plates.
5. **Fork links and springs.** The trailing-link and girder forks wear at pivots and bushings; a vague front end is usually dried-out or worn bushings, not bent tubes.
6. **Plunger units (1940-on).** Springs sag and the plungers seize from disuse; rebuild with new springs and seals rather than shimming the old ones.
7. **Primary cases.** Geared-primary cases weep; chain-primary cases hide worn chains. Either way, open it during the rebuild — don't trust a closed case.
8. **Wiring loom.** Original cloth-insulated wiring is a fire risk; a reproduction harness is the single best electrical investment.
9. **Exhaust system.** Original pipes rust from the inside out; check the muffler seams and header flanges.
10. **Seat and rubber parts.** Leather dries and rots; grips, pedal rubbers, and wiring grommets are consumables — replace on principle.

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