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The opening pages of

1974 Yamaha XS650 Buyer's Guide

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The 1974 Yamaha TX650A

Factory-Correct Restoration Guide — IronHead

KEY FACTS AT A GLANCE

- **Model year covered:** 1974 only (TX650A, model code 447). The second-generation bike: Tait-developed frame, dual front discs, 447 engine numbers; this guide does not cover the 1973 TX650 or 1975 XS650B except where differences are explicitly noted.
- **Engine:** 654 cc air-cooled SOHC 360° parallel twin; 75.0 mm × 74.0 mm bore × stroke. Slightly LOWER compression than 1970–73 and lighter internals to reduce vibration (per Hagerty's factory-source reporting). Engine serial prefix changes to 447-.
- **Fuel system:** Two Mikuni BS38 constant-velocity carburetors.
- **Ignition:** Battery-and-coil breaker-point ignition with mechanical advance.
- **Starting:** Electric starter + kick starter; stronger starter motor for 1974, and the compression-release mechanism is DELETED.
- **Transmission:** 5-speed constant-mesh manual, gear primary drive, chain final drive, wet multi-plate clutch.
- **Brakes:** DUAL 267 mm front discs; rear drum. The first dual-disc year.
- **Wheels/tires:** Takasago alloy rims (light-alloy, high-shoulder) — wire-spoked steel rims are gone.
- **Dimensions:** 1,435 mm (56.5 in) wheelbase; 15.0 L (4.0 US gal) fuel capacity; 212 kg (467 lb) weight.
- **1974 colors (US):** Cinnamon Brown (reads maroon) or Candy Green.
- **Frame/engine serials:** 447- prefix (frame and engine); the 1974 allocation began at 447-000101.
- **Key 1974-only features:** Percy Tait-developed frame (steering-head gussets, longer swingarm, engine moved forward and down); dual discs; 447 serials; Cinnamon Brown paint.

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The Yamaha story

Yamaha's history is summarized in full in the IronHead Yamaha manufacturer guide; the key points relevant to this restoration:

- Yamaha Motor Co., Ltd. was founded in 1955, spinning out of Nippon Gakki (the musical-instrument maker) under president Genichi Kawakami.
- Yamaha's first motorcycle was the 1955 YA-1 "Red Dragonfly," a 125 cc two-stroke whose success established the tuning-fork brand in motorcycling.
- Through the 1960s Yamaha built its reputation on two-strokes — the YDS series twins and the TD/TR production racers that dominated small-displacement road racing.
- The XS-1 of 1970 was Yamaha's deliberate four-stroke answer to the Triumph Bonneville and Harley-Davidson Sportster: a 654 cc overhead-cam parallel twin aimed squarely at the American big-bike market.
- By the mid-1970s the XS650 was established as the Japanese alternative to the British twin — and it outlasted them all, running in production from 1970 through 1983.

The XS650 story

The model-line history is summarized here; the sections below cover what makes the 1974 TX650A specifically correct.

- The XS-1 (1970) launched the line: 654 cc SOHC twin, kick-start only, drum brakes front and rear, built to take on Triumph and Harley-Davidson on their home ground.
- The XS-1B (1971) refined the formula in Candy Orange, retaining the front drum brake.
- The XS-2 (1972) added the electric starter and a 298 mm front disc — the first major mechanical revision.
- The TX650 (1973) brought the larger 14 L tank and a front end provisioned for a second disc.
- The TX650A (1974) was the Percy Tait chassis revolution: longer swingarm, repositioned engine, dual 267 mm front discs, and a stronger starter with the compression release deleted.
- The XS650B (1975) restored the XS name; the XS650C (1976) moved the front calipers behind the fork legs.
- The XS650D (1977) is the best-documented Standard — Yamaha's supplementary service manual was written for it.
- 1978 split the line: the XS650E Standard (the last roadster) and the XS650SE Special (the first factory custom), both on 35 mm forks with floating calipers.
- 1979 ran three variants — F Standard, SF Special (with rear disc), and the 2F Special II — the last year of points ignition and BS38 carburetors.
- 1980 brought transistorized TCI electronic ignition and Mikuni BS34 carburetors; the lineup became Specials only.
- 1981 (H/SH) carried the formula with new colors; 1982–83 closed the line as the Heritage Special (SJ/SK).
- Total XS650 production exceeded 500,000 units across the fourteen model years.

What makes the 1974 unique

The TX650A is the most important single-year redesign in XS650 history — the bike Hagerty calls the moment the model "reached full technical maturity." Yamaha hired former Triumph test rider and racer Percy Tait to fix the first generation's chassis, and Tait's fingerprints are all over this motorcycle: the frame gained gussets at the steering head and stronger engine mounting plates, the swingarm grew longer, and the engine moved slightly forward and down to shift the center of gravity. Suspension at both ends was firmed up. The wheelbase stretched to 1,435 mm, where it stayed for the rest of the line's life.

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1974-only details:

- **447- serial prefix.** Both frame and engine numbers start with 447- for

1974 (from 447-000101). This is the permanent break from the S650- prefix — every XS650 from 1974 on carries 447-family numbering. A 1974 with S650- numbers is a re-stamped or re-titled earlier bike.

- **Dual 267 mm front discs.** The single 298 mm disc is gone; two 267 mm discs

with the opposed-piston calipers take its place. The fork lowers, wheel hubs, and master cylinder are all 1974-specific items — earlier single-disc parts do not interchange.

- **Takasago alloy rims.** Light-alloy high-shoulder rims replace steel — a

visible, checkable originality point.

- **Compression release deleted.** The stronger starter motor made the

kick-assist mechanism redundant; the square exhaust tappet cover of the early bikes gives way to the uniform covers. (The square cover shape was retained on the left exhaust for a time even after the mechanism went — verify against 1974 parts fiche, not memory.)

- **Engine softened:** slightly lower compression and lighter reciprocating

parts to calm vibration, per Yamaha's own development reporting via Hagerty.

- **Cinnamon Brown** (reads as dark maroon) or Candy Green — the US colorways.

What carried over: BS38 carburetors, points ignition, 5-speed gearbox, rear drum brake, and the fundamental 654 cc architecture.

1974 buyer cautions:

- **Frame verification.** The Tait frame's gussets and engine plates are the

identity of this bike. Check the steering head for the factory gusseting and crash damage — a straight 1974 frame with its original gussets is the foundation everything else hangs on.

- **Dual-disc plumbing.** Two calipers, two hoses, one master cylinder sized

for the pair. Mismatched master cylinders (single-disc units from earlier bikes) give a wooden lever — verify the master cylinder is the dual-disc item.

- **First-year-of-generation parts.** Several 1974 chassis parts (fork

internals, rear shocks, side covers) were revised again for 1975–76. Order by the 447- frame number against the 1974 fiche, not by "TX650" generically.

Serial numbers and model codes

Model year: 1974 · Designation: TX650A · Model code: 447. Frame and engine serials: 447-000101 onward (1974 allocation). The frame number is stamped on the steering head; the engine number is stamped on the crankcase. On a factory-correct bike the two numbers are in the same series and allocation — a mismatch means a replacement frame or engine, which must be disclosed on any judged restoration. Decode carefully: the serial prefix (e.g. S650-, 447-, 2F0-, 5V4-) identifies the model series, and the number that follows places the bike within the year's allocation. The TX650A's prefix is 447-series as listed above; any other prefix on the frame or engine means the component is not original to this model year.

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Engine and internals

654 cc (1982–83 Specials: 653 cc) air-cooled SOHC 360° parallel twin. Bore × stroke 75.0 mm × 74.0 mm; compression ratio 8.4:1 (per the factory figures for this year); output ~53 bhp. The 360-degree crank gives the classic British-twin firing interval and the line's characteristic vibration. The bottom end is shared across the entire 1970–83 run — crankcases, crankshaft, and gearbox internals interchange far more widely than bodywork does — which is why the parts fiche for the engine looks so stable year to year while the trim fiche changes constantly. Factory valve clearances (XS650D supplementary service manual): intake 0.10 mm (0.004 in), exhaust 0.15 mm (0.006 in), checked cold. Cam timing, valve seats, and guides follow the factory manual's procedures; the D supplement's torque tables are the authority for fastener values (see Section 10).

Fuel system

Carburetors: 2 × Mikuni BS38 constant-velocity. Points-era bikes (1970–79) run Mikuni BS38s; TCI-era bikes (1980–83) run BS34s. The two families share nothing in rebuild parts — jets, needles, diaphragms, and float specs are family-specific. Identify the carbs by the body stamping before ordering anything. Factory jetting for the XS650D (supplementary service manual): main jet #122.5, with market variants #117.5 and #112.5 — the manual explicitly documents all three. Set float height, synchronize the pair on vacuum gauges, and set the idle mixture by the book before chasing any jetting change; the marque forums' standing finding is that most "carb problems" are incompletely cleaned pilot circuits and intake leaks, not jetting. The fuel tap (petcock) is vacuum-operated on later bikes and gravity on early ones; either way, rebuild it — a weeping tap hydrolocks engines and washes bores.

Electrical system

Ignition: Breaker points with mechanical (centrifugal) advance. Starting: Electric starter + kick starter (stronger starter; compression release deleted). Breaker-point maintenance is the standing task: set the points gap, verify the mechanical advance moves freely and springs back (weak springs retard the curve and flatten the midrange), replace condensers on any unknown-history bike, and static-time then strobe-time the ignition. The charging system is the known weak point of the early bikes — the marque community's standing advice is to load-test the rotor and stator, replace the rectifier/regulator with a modern combined unit, and clean every bullet connector. Battery, harness, switches, and grounds: replace the battery on any unknown-history bike, unwrap and inspect the harness for chafing at the steering head and under the seat, and verify every ground — 45+ year-old grounds are the leading cause of "mystery" electrical faults.

Transmission and driveline

5-speed constant-mesh manual gearbox. Primary reduction 72/27 (2.667). Factory gear ratios (D supplement): 1st 2.462, 2nd 1.588, 3rd 1.300, 4th and 5th per the manual's table; final drive by roller chain. Clutch: wet multi-plate. Measure the friction-plate stack against the manual's service limit, check the clutch basket fingers for notching (file smooth or replace — notched baskets cause drag and false neutrals), and replace the springs as a set on any unknown-history bike. Chain and sprockets: replace as a set. Check countershaft sprocket splines for wear — neglected chains fret the splines, and a worn countershaft is an engine-out repair.

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Brakes

Dual 267 mm front discs; rear drum. Rebuild every hydraulic component on an unknown-history bike: master cylinder, calipers (new seals, pistons inspected for pitting — pitted pistons are replaced, not reused), stainless or new rubber hoses (original rubber hoses are all time-expired), and fresh DOT fluid. 1978-on floating calipers need their slide pins cleaned and greased; opposed-piston pre-1978 calipers need all four seals per caliper. Discs: measure thickness and runout against the manual's limits. Note the 1978-on disc offset change — pre-1977 and 1978-on front discs do not interchange.

Wheels, forks, and suspension

Wheels: Takasago light-alloy rims, wire-spoked; 3.50 × 19 front, 4.00 × 18 rear (period fitment). Spoked wheels: check every spoke for correct tension and the rims for true before any cosmetic work — a freshly painted rim that is bent is wasted money. Takasago alloy rims polish well but pit deeply; decide early whether the rims are candidates for restoration or replacement. Cast wheels: inspect for cracks at the spokes, especially around the disc mounts. Forks: full rebuild — new seals, fresh oil at the manual's level, stanchions inspected for pitting (pitted stanchions eat new seals; re-chrome or replace). Rear shocks: the originals are all worn out; period-correct replacements are available, but verify eye-to-eye length and spring rate against the manual.

Paint, trim, and finishes

1977-and-later factory colors for this year are listed in the Key facts section above. Paint codes and stripe layouts are year-specific — verify against the parts fiche for the TX650A, not against a generic XS650 reference. Tank and side-cover paint: base/clear two-stage in the original color, with the correct stripe width and placement. Badges are year-specific — the 1974 badges differ from neighboring years in script, color, or mounting. Chrome and brightwork: original chrome was thin; re-chrome to show standard where the bike warrants it. Special II models' chrome-look plastic trim is unique and fragile — handle with care and verify reproduction availability before stripping originals.

Torque specifications

All torque figures below are from the Yamaha XS650D factory supplementary service manual — the genuine article, applicable to the shared fasteners across the line. Always use the manual's figure for the specific fastener; the values here are the commonly referenced ones.

Fastener	Torque
Cylinder head nuts (M10)	36 Nm (26 ft-lb) — in sequence, in stages
Camshaft cap bolts (M6)	10 Nm (7.2 ft-lb)
Cam sprocket bolt	40 Nm (29 ft-lb)
Crankcase bolts (M6)	10 Nm (7.2 ft-lb)
Crankcase bolts (M8)	20 Nm (14.5 ft-lb)
Oil drain plug	43 Nm (31 ft-lb)
Front axle nut	105 Nm (77 ft-lb)
Rear axle nut	120 Nm (87 ft-lb)
Front fork pinch bolts	20 Nm (14.5 ft-lb)
Handlebar clamp bolts	23 Nm (17 ft-lb)

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Fastener	Torque
Brake caliper mounting bolts	40 Nm (29 ft-lb)
Rear brake torque arm nut	25 Nm (18 ft-lb)
Sprocket nuts	60 Nm (43 ft-lb)
Spark plugs	20 Nm (14.5 ft-lb)

Torque in stages, in the manual's sequence, with threads clean and lightly oiled unless the manual specifies dry. Cylinder-head and cam-cover fasteners are the critical ones — uneven torque warps covers and weeps oil permanently.

Service schedule and wear items

Factory service intervals (D supplement): engine oil every 1,500 miles / 6 months; oil filter every 3,000 miles; valve clearances, points (where fitted), and carburetor synchronization every 3,000 miles; brake fluid every year; fork oil every 12,000 miles; steering-head and swingarm bearings inspected every 6,000 miles.

Item	Spec / interval
Engine oil (with filter change)	2.5 L — SAE 20W-40/20W-50, every 1,500 miles
Final drive chain	Clean, lube, and adjust every 300 miles
Valve clearances	IN 0.10 mm / EX 0.15 mm, check every 3,000 miles
Breaker points (pre-1980)	Gap and timing every 3,000 miles
Carburetor synchronization	Every 3,000 miles
Brake fluid	Replace annually (DOT 3/4)
Fork oil	Replace every 12,000 miles
Tires (factory spec)	3.50H-19 front, 4.00H-18 rear (D supplement)

Consumables to replace on any unknown-history bike regardless of appearance: tires (age, not tread — anything over six years old is suspect), brake hoses, battery, fuel lines, petcock seals, fork seals, wheel bearings, steering-head bearings, swingarm bushings, chain and sprockets, points and condensers (pre-1980), and all rubber intake manifolds.

Rust-prone areas and inspection points

Check in this order: (1) fuel tank interior — liner or replace; (2) exhaust system — originals rot from the inside at the collector and muffler seams; (3) frame at the steering head and swingarm pivot; (4) rear fender and chain-guard mounting points; (5) fork lower legs at the seals; (6) brake caliper pistons and master-cylinder bores; (7) electrical connectors and grounds; (8) the advance unit (pre-1980) for frozen weights. Frame inspection: with the bike stripped, dye-penetrant or careful visual inspection of the steering-head welds and swingarm pivot area. Any crack is a stop-work item — the frame is repaired by a qualified welder or replaced, never ridden cracked.

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