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Hydraulic System Inspection & Leak Control for Excavators

Hydraulic System Inspection & Leak Control (All Excavators + Attachments) interactive checklist; commentable and export as PDF/Excel. Verify leaks and systems.

Project:	
Date:	
Filled by:	

Safety & Preparation	
1	Lower attachment to ground, neutralize controls, and de-energize hydraulics; apply lockout/tagout per approved project specifications and authority requirements.
2	Release residual pressure via designated ports; confirm system gauge reads 0 MPa before disconnects; capture photo of gauge and tags with supervisor sign-off.
3	Clean hose and fitting exteriors using lint-free rags and biodegradable degreaser; acceptance: dry, residue-free surfaces; attach before/after photos.
4	Stage spill kit, absorbent pads, and drip trays under potential leak points; acceptance: containment in place; photo evidence logged in checklist.

Hoses and Fittings	
5	Inspect hoses for abrasion, blistering, cracks, flat spots using inspection light/mirror; acceptance: no damage; tag defects and upload close-up photos.
6	Verify minimum bend radius and clamp spacing with tape measure; acceptance: ≥ OEM radius, clamps ≤ 300 mm apart; record measurements and photos.
7	Check fittings for weeping using a tissue wipe at idle pressure; verify torque with calibrated wrench to OEM spec; acceptance: dry wipe; record torque values.
8	Pressure-hold test isolated section with calibrated gauge and ball valves; hold 5 min at working pressure; acceptance: no visible leaks, ≤ 2% pressure drop; photo gauge.
9	Confirm routing clearance from hot/moving edges; measure gaps; acceptance: ≥ 25 mm clearance, guards intact; photo each constrained location.
10	Inspect protective sleeves/spirals; acceptance: intact, correctly positioned with 100% coverage at abrasion zones; attach photos.

Cylinders & Seals	
11	Examine rod chrome with 10× loupe; acceptance: no scoring/pitting > 0.1 mm or corrosion; include photo with scale reference.
12	Cycle cylinder fully 10 times; wipe rod and observe film; acceptance: no pooling at wiper, film band < 5 mm; photo of wipe test.
13	Conduct drift test on boom/stick: mark position, load, time 10 min; acceptance: ≤ 5 mm/min movement; record displacement and ambient temperature.
14	Check gland lock and fastener security; use paint-mark method; acceptance: no rotation or movement; photo paint-mark alignment.
15	Inspect for grease/oil contamination at seals; smear test between fingers; acceptance: no grit/metal fines; photo and note texture.

Pumps, Motors & Temps	
16	Verify main relief pressure with calibrated gauge; gradual ramp to relief; acceptance: OEM setpoint within ±5%; record peak MPa and engine rpm.
17	Measure case drain flow on pumps/motors with flow meter; acceptance: within OEM limits; record L/min and oil temperature.
18	Assess pump inlet noise with mechanic’s stethoscope; acceptance: no rattling/whine suggestive of cavitation; add audio note or comment.
19	IR temperature survey after 15 min at ~70% duty; acceptance: pump housing 50–85 °C; supply–return delta 10–20 °C; photos of readings.
20	Check vibration with handheld vibrometer if available; acceptance: within baseline ±20% mm/s RMS; record values and operating condition.

Filtration & Contamination	
21	Inspect filter differential indicator at ~1500 rpm; acceptance: not in red zone; record machine hours and photo of indicator.
22	Take oil sample from dedicated port; flush 100 ml before sample; acceptance: cleanliness/water within OEM targets; attach lab ticket and bottle photo.
23	Check reservoir breather/desiccant; acceptance: color not saturated, seals intact; replace if spent; record part number and photo.
24	Assess oil appearance and odor in clear jar; acceptance: clear amber, no foam/milkiness/burnt smell; side-lit photo for record.
25	Inspect magnetic plug/strainer for debris; acceptance: fine paste only, no slivers > 3 mm; upload close-up photo.

Quick Coupler & Attachments	
26	Clean/inspect flat-face couplers; depressurize lines before disconnect; acceptance: no nicks, caps installed; photo of mating faces.
27	Test coupler lock: engage/disengage; verify safety indicator visible; acceptance: pins fully extended/retained; photo or short video evidence.
28	Auxiliary flow test with flow meter/orifice at 20 MPa; acceptance: within OEM flow ±10%; record L/min and oil temperature.
29	Auxiliary relief setting: brief deadhead to confirm setpoint; acceptance: within OEM ±5%; record peak MPa and duration.
30	Attachment run-up (breaker/tiltrotator/auger) for 2 min; IR on motor/lines; acceptance: line temps ≤ 80 °C, smooth response; photo readings.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Hydraulic System Inspection & Leak Control (All Excavators + Attachments) equips field crews and fleet managers to systematically assess excavator hydraulics and attachment circuits. This practical guide covers hose and fitting condition, cylinder seal integrity, pump pressures and temperatures, contamination indicators, quick coupler lines, and attachment flow/pressure checks. By focusing on leak prevention, cavitation avoidance, and cleanliness control, you reduce environmental incidents, fire hazards, unplanned downtime, and costly component failures. The scope is limited to mobile excavator hydraulic systems and auxiliary/quick-coupler circuits, including common attachments such as breakers, tiltrotators, grapples, and augers; it excludes electronic controls, engine systems, and structural inspections. Outcomes include verified setpoints, stable temperatures under load, clean fluid, secure connections, and documented evidence for maintenance and compliance. Use this interactive checklist on any device: tick off steps, add comments, capture photos and gauge readings, and export results to PDF/Excel with a secure QR link for verification.	1. Preparation: Park on level ground, lower attachments, apply lockout/tagout. Gather PPE, spill kit, calibrated gauges (up to 40 MPa), flow meter/orifice, IR thermometer, torque wrench, UV dye/lamps if used, lint-free rags, and camera-enabled device. 2. Open the checklist on your device, select machine and attachment, confirm ambient conditions and warm-up time, and preload OEM pressure/flow/temperature targets for quick reference. 3. Start Interactive Mode: tick each step as completed, input numeric readings (MPa, L/min, °C), and attach photos of gauges, IR screens, and defect close-ups directly in the relevant item. 4. Use Comments: note observed noises, drift rates, or contamination indicators; tag actions (tighten, replace, schedule service) and assign due dates to responsible roles. 5. Export & Share: generate a QR-secured PDF/Excel report with timestamps, readings, photos, and comments; distribute to maintenance, site management, and the operator. 6. Sign-Off & Archive: capture digital signatures from technician and supervisor; store the report in your maintenance system for traceability and future baselining.