

WORKSHOP RESEARCH GUIDE

David Brown 990: noisy lift, limited travel and slow lowering

Illustrative example | 1972 stated | Prepared 27 September 2026

Reported: Loud grinding noise while lifting; three-point linkage stops halfway; very slow to drop; PTO difficult to select; smell of burning oil. No checks or repairs yet. This report addresses the supplied symptoms, not a confirmed diagnosis.

What matters first

- Stop using the lift and PTO under load. A new grinding noise and hot-oil smell warrant inspection before further operation. If the smell is sharp, smoke appears, or oil is visibly leaking, shut down and let the machine cool.
- The lift and lowering complaints may share an oil/filter or control problem. The PTO complaint can be a separate clutch/selector issue; do not assume one failed component explains all four symptoms.
- Get the full tractor prefix/serial and a photograph of the selector, PTO lever and rear hydraulic controls. The 1971 990 instruction book describes both 990A Livedrive and 990B non-Livedrive; the PTO checks differ.

Most useful first-pass sequence

Order	Check	What the result changes
1	Identify version and remove the implement. Secure the machine.	Prevents applying the wrong PTO procedure or testing under a suspended load.
2	Check transmission/hydraulic oil level, appearance, smell and visible leaks.	Low/foamy/milky/burnt oil moves supply and lubrication faults up the list.
3	Check selector, 3-way valve (if fitted), lift latch and lowering knob.	Incorrect positions can mimic a fault or make the linkage reluctant to lower.
4	Check filter history/indicator and isolate where the noise comes from.	Separates likely oil supply restriction from a control or mechanical problem.
5	Only then arrange a correctly instrumented hydraulic test and PTO clutch inspection.	Avoids replacing the pump or opening valves before basic evidence is collected.

Safety: lower attachments to ground, chock wheels, stop the engine and relieve pressure before opening any hydraulic component. Never put hands beneath raised linkage or near a rotating PTO.

1. How this 990 system fits the symptoms

The original David Brown 990 Selectamatic instruction book (publication TP631, sixth edition 1971) describes a common transmission/hydraulic oil supply, a rear-axle mounted gear pump, a Selectamatic control valve and a separate lowering adjustment. It covers the 990A Livedrive and 990B non-Livedrive, so the exact specification must be matched to this tractor.

Part of system	Normal role	Symptom it may help explain
Oil and inlet/filter	Supplies the pump and protects fine valve passages.	Low or aerated supply may produce noise and weak/erratic lifting; contamination may interfere with valves.
Pump and control valve	Pump produces flow; valve routes it to the lift or bypass.	If flow or pressure cannot be sustained, the arms can stall under load. A valve fault can mimic a weak pump.
Selector and 3-way valve	Choose Height/Depth/External control and route oil where fitted.	A wrong setting or external routing can prevent expected linkage movement.
Lowering knob, latch and valve	Meter the return flow and hold the arms.	Closed-down adjustment, latch or sticking control can slow or prevent drop.
PTO clutch/selector	Separate drive selection and clutch release.	A hard-to-engage PTO may be unrelated to the hydraulic lift circuit.

Useful factory reference values, with limits

TP631 gives a maximum lift-circuit pressure of 2,000 psi (about 140 kg/cm²) and a pump delivery of 5 imperial gal/min (22.7 L/min) at 1,800 engine rpm for its specified 990. These are book figures, not measurements on this machine or a reason to dead-head a circuit. A specialist should use the correct test points, gauge and procedure after confirming the serial and installed equipment.

Critical distinction: A pump can sound bad because it is starved of clean oil; a restriction or valve fault can create the same poor lift result. The sound must be located and the oil condition checked before calling the pump defective.

Working priority, before seeing the tractor

1. Oil supply and filter condition deserves first attention because noise occurs on lift demand and oil smells hot. 2. Control routing, lift latch and lowering adjustment can explain the strange movement and are quick to inspect. 3. A contaminated or sticking Selectamatic valve, internal leak or weak pump becomes more plausible only after those checks. 4. The PTO complaint should be tested separately against its clutch version. These are investigation priorities, not diagnosed defects.

A useful comparison is lift behaviour with no implement, then under a known modest load only after the noise and oil condition have been assessed. A load-dependent stall suggests pressure or leakage; a fixed stopping point with no load directs attention to travel, controls and obstruction. Stop immediately if the grinding persists.

2. Low-risk checks before dismantling

A. Establish the exact machine

- Record the full prefix and serial number, whether the PTO clutch is two-stage Livedrive, whether there is a 3-way valve or external spool, and whether a loader or hydraulic motor is fitted. Photograph the controls and any warning lamp.
- Describe the lift test: engine speed, oil hot or cold, attachment removed or load weight, and the height where it stops. Does it lift higher at more engine speed? Does the sound follow engine speed or only the lift lever?

B. Inspect oil and its history with the tractor off

- On level ground, check the transmission/hydraulic dipstick by the method in the correct instruction book. Note low level, foaming, water/milkiness, metallic debris and burnt smell. Locate any leak around the filter housing, pipework and rear axle. Do not top up with an unspecified grade.
- Ask when oil and the full-flow filter were last changed. TP631 calls for a new paper filter after the initial service and at least every 500 hours thereafter; it says to replace, not wash, that element. A sustained warm filter warning at the book test conditions is a service signal on machines fitted with the lamp.
- If oil is badly contaminated or metal is present, stop testing and investigate the source. A blocked filter or damaged inlet seal can starve the pump; simply installing a new pump without cleaning the supply risks repeat damage.

C. Put the controls in a known state

- With no implement and the area clear, select Height for an unloaded lift check: TP631 says hold the hand lever rearwards at Select while turning the dial. Ensure the lift latch is disengaged and, if a 3-way valve is fitted, select the internal linkage path. Set the lowering adjustment near mid-range before judging drop speed.
- Record whether the symptom changes with each correction. Do not move the selector dial by force or work beneath raised links. If control movement itself binds, stop before disassembly.

If controls now restore full lift and normal drop without noise, the immediate cause may have been an operating setting. The burning smell still merits an oil and heat inspection before returning to work.

What to write down for the case

Take a short video from a safe location showing the lever position and arm travel, with no implement attached. Note whether the sound begins at the start of lift, near halfway, or only at the stop; whether the transmission/hydraulic oil is cold or warm; and whether the PTO is engaged. These distinctions decide which branch on the next pages is worth pursuing. Do not keep the lift lever held against a stall to get a recording.

If an auxiliary valve or loader is present, note whether it functions normally and where its return pipe enters the tractor. The original 990 handbook explicitly warns that continuous-flow external equipment returned to the wrong point can deprive gearbox/PTO lubrication. That warning becomes relevant only if such equipment is actually fitted.

3. Lift stops halfway: branch by what you observe

Observation	Meaning to test next	Next action
No lift or weak lift, more noise when demanding lift; oil low, foamy or filter history poor	Supply starvation, aeration or inlet/filter problem rises in priority.	Stop, correct oil/filter/inlet issues by the correct manual, then retest unloaded.
Lift improves at higher rpm but not at idle	Flow shortage or internal leakage is possible; this alone does not distinguish pump from valve/cylinder.	Arrange controlled flow/pressure checks and inspect leakage route.
Lift stops at same height, even unloaded	A mechanical bind, control travel limit or internal hydraulic issue is possible.	Inspect linkage travel, latch, control positions and external interference; do not force it.
Lift works initially then loses ability as oil heats; smell worsens	Heat-related leakage, pressure relief or lubrication trouble deserves priority.	Stop use; specialist checks with oil at safe working temperature and correct gauge.
Other external hydraulic service works normally but 3-point lift does not	Fault may lie downstream in select/control or ram route, depending on plumbing.	Map the fitted 3-way/external circuits before removing pump.

Why the noise location matters

Listen from a safe distance with shields in place: rear axle/pump region, PTO housing, gearbox or the implement. A grinding noise only when the lift reaches its halfway stop suggests a loaded system, but it does not identify the component. Do not put a stethoscope, hand or loose clothing near rotating parts. A trained technician can distinguish pressure, flow and relief behaviour with proper equipment.

Service level

If the oil supply checks and control settings do not restore quiet full travel, commission a hydraulic pressure/flow test to the applicable service manual. TP631 figures on page 2 are comparison data for the covered specification; the appropriate safe test method and serial-specific limits belong in the matching workshop manual.

How to interpret a proper instrumented test

- If measured pump output is low at the specified test condition and inlet supply is clean and unrestricted, pump drive or pump condition becomes a stronger suspect. A low number by itself does not prove the pump is worn.
- If supply performance is healthy but the 3-point arms still stop, inspect the selected flow route, control valve, ram cylinder and internal leakage with the workshop procedure. Test at the correct oil temperature and report both pressure and flow.
- If the oil contains metallic particles or the noise is clearly gear-like, stop before repeated pressure tests. Inspect the pump drive and transmission/PTO area for damage; the hot-oil smell raises the cost of continued running.

4. Slow to lower: separate setting from fault

The David Brown book identifies a lowering handwheel on the front of the axle casing, a lift latch at the left ramshaft bracket and a mode selector. A specialist diagnostic procedure distinguishes a mechanical hold from a hydraulic failure to release. Those are more useful starting points than replacing the pump for a slow drop.

Step	If the arms drop normally	If still very slow or stuck
Remove attachment; clear area; confirm latch disengaged and adjust lowering knob from a restrictive position.	The latch or rate setting was the likely cause. Retest after oil/noise issue is resolved.	Proceed to mode and 3-way-valve check.
Use Height mode and internal linkage routing if fitted, then command lower.	A setting or routing issue is implicated.	Stop if motion is unsafe; a control/return or mechanical restriction remains.
With tractor properly supported, inspect external linkage and ramshaft movement without reaching under raised arms.	External bind may be resolved once identified.	Specialist diagnosis of return path and valve chest is warranted.

The specialist split test

A specialist split test uses the lift-cylinder bleed screw to separate hydraulic from mechanical no-drop faults: if the linkage falls when pressure is released, the hydraulic return/control side is implicated; if not, inspect latch and ramshaft mechanism. This can release a raised linkage suddenly and expose pressurised oil, so it is not an owner step in this report. Have an experienced mechanic follow the applicable service procedure with the implement removed, the machine secured and personnel clear.

Do not open the control valve chest merely because the arms descend slowly. Establish oil condition, control settings, latch state and the result of the specialist split test first.

Useful distinctions during a no-load drop check

- Arms descend normally when the lowering handwheel is opened: the previous rate setting explains the slow descent. Check whether lift noise and halfway stall remain as separate problems.
- Arms descend only in one selector or 3-way-valve setting: record every lever position. The routing/control path is more informative than a pump replacement.
- Arms still resist lowering with the engine off and no implement: a trapped-oil or mechanical hold remains possible. The specialist split test separates these, but only with safe support and an experienced operator.

Note the difference between slow descent and no descent. Procedures for a complete failure to drop should not be applied automatically to a machine that does lower slowly.

5. PTO selection: a separate diagnostic branch

“Difficulty selecting PTO” needs one more detail: does the selector lever physically resist with the engine off, or does it grind/creep only with the engine running? The answer points to different faults. The 1971 book identifies a 990A two-stage Livedrive clutch and a 990B non-Livedrive single plate. Do not assume which is fitted from the year alone.

What happens	Likely direction	Safe next check
PTO lever is stiff even with engine stopped	Selector linkage/detent or internal mechanism rather than clutch drag alone.	Inspect lever/linkage externally; do not force the shift.
Selector is easy stopped, grinds at idle running	PTO drive may still be turning; incomplete clutch release or sticking plates is possible on Livedrive.	Confirm correct clutch procedure and pedal travel; seek clutch adjustment/service if persistent.
PTO disengages but grinding comes from housing during lift demand	Possible shared lubrication or adjacent drive issue, but the sound source is not yet established.	Stop running; check oil condition, filter and PTO housing with a technician.

Manual instruction for the Livedrive version

TP631 says the first pedal stage releases transmission drive; fully depressing the pedal reaches the second stage and releases PTO drive. It instructs full pedal depression before attempting PTO selection and notes that infrequently used PTO clutch plates can bind. These points apply to the covered Livedrive configuration; have the clutch and linkage adjusted to the correct service procedure rather than forcing engagement.

Why the oil smell cannot be ignored

The 990 book says gearbox/PTO lubrication receives overflow oil from the hydraulic pump, and warns that incorrectly returned continuous-flow external hydraulic equipment can reduce lubrication. If an external motor, loader valve or improvised return is fitted, photograph and trace its connections before further use. This is a conditional concern, not a finding that the tractor has such a modification.

Questions that separate clutch drag from a selector fault

- Does the PTO shaft stop with the correct clutch action and no implement attached? Do not touch the shaft: observe from a safe position with its guard in place. Persistent rotation can indicate incomplete release, though oil drag can also turn an unloaded shaft.
- Does the selector grind only while the engine runs, and does it improve after waiting with the pedal fully down? That pattern supports a release/drag investigation on the Livedrive machine. If it also resists with the engine off, do not force the lever; gear tooth alignment or linkage/mechanical resistance may be involved.
- Does the grinding sound occur only when the hydraulic lever demands lift, regardless of PTO selection? That points the first examination back toward hydraulic load and the shared lubrication area. Record the result rather than assuming the PTO is causing the lift failure.

6. Decision record and next steps

Record after first checks	Finding / action
Serial prefix and number; 990A or 990B; fitted 3-way/external valves	_____
Oil level, colour, smell, foam, metal and filter date	_____
Noise location, engine rpm, oil hot/cold, load removed	_____
Lift travel after correct Height/internal routing	_____
Lowering after knob/latch check	_____
PTO selector: engine stopped versus running	_____

Manuals that support the repair

These Agrimanual listings support different stages of the checks. A manual is optional for the first observations; choose one only when its contents fit the work needed.

Controls and routine checks: [David Brown 990/995/996 Instructions Manual](#) — operation, hydraulic and PTO controls, lubrication and basic maintenance for the listed models.

Servicing and settings: [David Brown 770/780/880/990/1200/3800/4600 TMM Manual](#) — includes 990, hydraulic checks and settings, clutch and transmission information. It is a general technical maintenance manual, not a confirmed detailed valve-chest repair procedure.

Workshop repair if deeper work is indicated: [David Brown Main Dealers Workshop Manual](#) — the listing describes hydraulic testing and overhaul, clutch, PTO and linkage work. Confirm the file covers this tractor's exact 990 variant and serial before ordering.

Information that would refine this guide

Please send the full serial prefix/number and a photo of the tractor plate and controls; oil level and condition, filter date and any warning lamp; whether a loader or external hydraulic motor is fitted; and whether PTO selection is stiff with the engine off or grinds only while running. These answers may change the order of checks and the manual choice.

Practical next step: Record the safe observations on this page and share them with Agrimanual. Avoid operating the noisy lift or forcing the PTO while the cause remains unknown.

Have a fault on your own machine? [Request a personal Workshop Research Guide](#) with your model, symptoms and checks already tried.