

LEWIS

**E110 ECO-DIG
BACKHOE
FITTING, OPERATING,
AND MAINTENANCE
MANUAL**

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FITTING
OPERATING
&
MAINTENANCE

SAFETY PRECAUTIONS

- Study the Operator Manual and become fully familiar with the controls before operating the machine.
- Do not drink alcohol or take drugs whilst working and beware of medicines, which can cause drowsiness.
- Only start the engine or work the machine from the drivers seat or standing in the specified position next to the tractor.
- Ensure all controls are in neutral before starting the engine.
- Before commencing work test footbrake, lights, horn and all safety devices. Be sure that steering, transmission and engine speed controls are working effectively.
- If a machine is defective, report it immediately. **DO NOT OPERATE THE MACHINE.**
- When operating the machine in an enclosed area, adequate ventilation must be provided. **EXHAUST FUMES CAN KILL.**
- Only the operator should be on the machine.
- When getting on or off the machine, always use the footsteps provided, do not jump.
- Always match the machine operating speed according to the difficulty of conditions, if in doubt, **SLOW DOWN.**
- **LOOK** to ensure there are no persons or obstructions in the path of the machine **BEFORE** changing direction.
- **SELECT LOW GEAR** when driving over rough, uneven sites, especially careful when crossing ditches, logs railway lines or any other obstacle that could make the machine unstable.
- Operate straight up and down slopes, wherever possible, side-hill operation could cause the machine to roll over, especially if operating the loader.
- **ALWAYS** keep in gear when driving downhill, **NEVER** select neutral or depress the clutch pedal and coast downhill.
- Before dismounting from the machine always lower the loader and digger and/or any other attachments to the ground, apply the parking brake and stop the engine.
- Ensure the machine is parked on firm, preferably level ground. If the machine must be parked on a hill, position the machine **ACROSS** the slope, never facing up or down the slope.
- Do not drive against solid objects. If a load is too great to move use alternative operating techniques, which work the machine within its capacity.

SAFETY PRECAUTIONS CONTINUED

- Never stand or walk on the edge of excavation, especially if they are not supported. Learn to gauge the depth of excavation by a reference point on the dipper or boom.
- ALWAYS level the machine with the stabilizer legs before attempting to dig across slopes. Exercise caution when swinging the dipper downhill especially with a full bucket at maximum reach, the machine could tip.
- ENSURE trucks or hoppers are sited on flat level ground for safe loading.
- DO NOT EXCEED LIFT CAPACITIES for either the digger or loading.
- DO NOT use either the digger or loader for crane duties unless the appropriate modifications have been made to comply with relevant regulations.
- Always check overhead clearance of doorways, bridges, and telephone and power cables, especially when transporting the machine on a truck or trailer.
- ALWAYS LOCATE UNDERGROUND SERVICES such as gas, electricity, telephone and water mains BEFORE STARTING WORK.
- ALWAYS use lights, reflectors and emblems to comply with relevant regulations whenever the machine is being driven on public roads.
- BEFORE driving the machine remove excess mud, and lock the boom with the transport-locking link.
- SECURELY ATTACH loose equipment carried on the machine during transportation. Operate local road regulations.
- Observe the appropriate road regulations when towing the machine on public roads.
- ALWAYS FIT SAFETY BARS, FRAMES OR PINS. STOP the engine and de-pressurize all hydraulic systems before repairing the machine. DO NOT allow anyone to walk or stand under the loader or digger or reach through the loader arms without these precautions first being taken.
- Ensure safety guards refitted after servicing the machine.

IMPORTANT STORAGE NOTICE

Wherever possible store machine with rams closed so as to protect chrome rod. Where this is not possible, cover exposed chrome ram rod with a protective coating.

FITTING BACKHOE TO TRACTOR

1. Reverse the tractor to the backhoe and connect the 3 point linkage.
2. Adjust the top link to an appropriate length and lift the backhoe in the air.
3. Tighten the check chains to centralize and stabilize the machine.
4. Adjust the legs down until they are at their maximum length possible for the terrain that is intended to be worked on.
5. Lower the backhoe to the ground and turn off the engine.
6. Fit control lever brackets to roll bar in the preferred position. This can be on the left hand or right hand roll bar.
7. Secure control levers in position.
8. Connect quick release couplings to a suitable constant flow service at the rear of the tractor.
9. See pictures at the back of this book for correct mounting position.

IMPORTANT – BOLT TORQUE SETTINGS

Recommended Metric Bolt Torque Specifications

Bolt Size	Grade	Coarse Thread			Fine Thread		
		Pitch (mm)	Pounds-Feet	Newton Meters	Pitch (mm)	Pounds-Feet	Newton Meters
M10	8.8	1.50	32.5-41.2	44.1-55.9	1.25	36.2-46.3	49.0-62.8
	10.9	1.50	39.8-51.4	53.9-69.6	1.25	42.7-54.2	57.9-73.5
M12	8.8	1.75	48.5-61.5	65.7-83.4	1.25	55.0-69.4	74.5-94.1
	10.9	1.75	68.0-85.4	92.2-116	1.25	73.1-93.3	99.0-127
M14	8.8	2.00	76.7-96.9	104-131	1.50	86.1-109	117-148
	10.9	2.00	102-129	139-175	1.50	108-137	147-186
M16	8.8	2.00	110-136	149-184	1.50	116-142	157-192
	10.9	2.00	152-188	206-255	1.50	163-199	221-270
M18	8.8	2.00	145-174	196-235	1.50	170-206	230-279
	10.9	2.00	203-246	275-333	1.50	221-271	299-368
M20	8.8	2.50	177-213	240-289	1.50	203-246	275-333
	10.9	2.50	268-325	363-441	1.50	293-358	397-485

OPERATION OF THE BACKHOE

WARNING!

Never operate the backhoe controls, except from either the operator's seat or from behind the controls to the side of the rear wheels. Keep bystanders well clear when testing the backhoe following service or repair.

To avoid injury never use the backhoe for lifting or craning.

Operating Speeds

Normal engine speed when working is 1200-2000 rpm depending on the tractor model. However, operate at a lower speed until operating skill develops or when working in very restricted conditions, particularly around underground cables or pipes and especially if other workers are in the vicinity.

Stability

To obtain maximum stability and anchorage during digging, fully dump the loader bucket at ground level and power the loader arms down to just take the weight at the front of tractor. Ensure the legs of the backhoe are on the ground before commencing digging.

Ensure the machine is level before commencing digging.

Excavating on Slopes

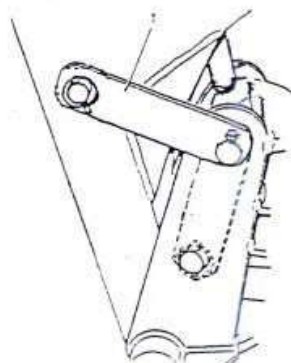
Whenever possible start excavating at the top of the slope and work downhill. When working across a slope make full use of the digger stabilizer legs to level the machine, but keep the loader bucket just clear of the ground.

WARNING!

Remember that you cannot make use of the loader bucket for added stability when working across a slope, therefore reduce the payload and avoid swinging a fully loaded bucket at full reach to the downhill side of the machine – it may tip over.

Transporting

When moving the unit from one site to another, always lock the backhoe in the transport position as shown.



CONTROLS AND OPERATION

Backhoe Controls – 2 lever control (joystick)

The main digging functions are controlled by 2 four function levers (1 & 2). The backhoe control levers are viewed from the operator's position.



Functions operated by Lever 1

Lever moved sideways towards centre of machine will swing the digger arm to the right (clockwise).

Lever moved sideways away from centre of machine will swing the digger arm to the left (anti-clockwise).

Lever pulled backwards will lift the digging arm.

Lever pushed forwards will lower the digging arm.

Functions operated by Lever 2

Lever moved sideways towards centre of the control panel crowds the bucket.

Lever moved sideways away from the centre of the control panel dumps the bucket.

Lever pulled backwards will move the dipper arm towards the machine.

Lever pushed forwards will move the dipper arm away from the machine.



Always remain on the tractor or safely behind the controls during operation to avoid injury. This is shown in the two pictures below.





Correct 3 point linkage fitment



Extend legs to fullest extent possible for digging, This will increase stability.



MAINTENANCE

Daily

- Check all mounting bolts for tightness
- Check that all securing pins are in position in pivot pins and ram pins.
- Check that hose routes are clean and free from soil and stones etc.
- Check that the area around the slewing rams is clean and clear of any debris.

First 50 Hours From New

- Check nuts on the slewing pivot for tightness
- Check bolts and nuts on mounting frame for tightness.

Every 300 Hours

- Check hoses for damage.
- Check pressure of the hydraulic circuit by fitting a pressure gauge to the stabilizer leg hose. The pressure **MUST NOT** exceed 100 Bar. The pressure relief valve fitted to the boom down service **MUST NOT** exceed 60 Bar