Operating Engine

BEFORE STARTING ENGINE

WORK IN VENTILATED AREA

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

1. Open hood and check engine oil and coolant levels. (See Service section.)

2. Open fuel shut-off valves. Check fuel filter and fuel/water separator bowls. (See Service section.)

3. If temperature is below 40°F (4°C), see Cold Weather Starting in this section.

STARTING ENGINE

IMPORTANT: To prevent engine damage:
• DO NOT use starting fluid to start engine.

1. LOCK both brake pedals (A) together with brake pedal latch (B).

2. Lift park brake lever (C) and push brake pedals (A) down to LOCK park brake. Remove foot from pedals. Pedals should stay down.
NOTE: Mid PTO is OPTIONAL equipment.

3. Place gear shift lever (A) and PTO lever(s) (B) in NEUTRAL position. Starter will not operate if gear shift lever and PTO lever(s) are not in NEUTRAL position.

4. Lower all attaching equipment to surface with rockshaft control lever (A) and/or OPTIONAL SCV lever (B). (See Using Rockshaft Control Lever or Using Optional SCV Lever in Driving Machine section.)

1070 Tractor Shown

5. Push engine speed lever (A) completely forward.

IMPORTANT: As soon as engine starts, pull speed control lever back so engine runs at 1200-1500 rpm.
- Do not run a cold engine at full throttle.
6. Turn key switch (A) clockwise to FIRST position.

7. Check indicator lamps:
   - Oil pressure indicator (B) will glow.
   - Charging system indicator (C) will glow.
   - Park brake indicator (D) will flash when park brake is LOCKED.

If any indicator lamps do not light, check with your John Deere dealer.

   A—Key Switch    C—Charging System Indicator
   B—Oil Pressure Indicator
   D—Park Brake Indicator

8. Push clutch pedal (A) all the way down.
CAUTION: Avoid possible injury or death from a machine runaway.
- Do not start engine by shorting across starter terminals. Machine will start in gear and move if normal circuitry is bypassed.
- NEVER start engine while standing on ground.
- Start engine only from operator's seat with transmission in NEUTRAL position.

9. Turn key switch (A) fully clockwise to ENGAGE starter.

10. Release key when engine starts. If key is released before engine starts, wait until starter and engine STOP turning before trying again.

IMPORTANT: Do not operate starter more than 20 seconds at a time.
- If engine does not start, wait at least two minutes before trying again.
- If engine does not start in four attempts, refer to Troubleshooting section.

11. Check indicator lamps (A and B) as soon as engine starts:
- If either oil pressure or charging system indicators glow longer than 5 seconds, STOP engine and determine cause

12. Remove foot from clutch pedal.

13. Operate engine at 1200-1500 rpm for several minutes. Do not accelerate or apply a load on engine until it warms up.
COLD WEATHER STARTING USING THERMO-START SYSTEM

IMPORTANT: To prevent engine damage:
• DO NOT use starting fluid.

1. Turn key switch (A) counterclockwise and hold it there 10-30 seconds.

2. Quickly turn key switch clockwise to START position and start engine.

COLD WEATHER STARTING AIDS

RECOMMENDATIONS:
• When operating tractor in temperatures below -15°F (-26°C), install OPTIONAL engine block heater and hydraulic system oil heater.

See your John Deere dealer for these accessories.
CAUTION: Battery gases can explode. Keep cigarettes, sparks, and flames away from battery.

1. Starting vehicle must have 12-volt negative (—) ground electrical system.
2. Tractor and starting vehicle MUST NOT touch.
3. Prepare tractor correctly.
   - LOCK service-park brake.
   - Turn off ignition key and lights.
4. Lift hood.

CAUTION: If tractor battery is frozen, do not jump-start engine.

5. Remove battery cell caps:
   - Check for frozen battery.
   - Check electrolyte level. (See Service/50-Hours section.)
   - Install battery cell caps.
6. Connect jumper cables in this order:
   - Positive (+) jumper cable to starting vehicle battery positive (+) terminal.
   - Other end of positive (+) jumper cable (A) to tractor battery positive (+) terminal.
   - Negative (—) jumper cable to starting vehicle battery negative (—) terminal.

CAUTION: DO NOT connect other end of negative (—) jumper cable to negative (—) terminal of tractor battery.

7. Connect other end of negative (—) jumper cable (B) to engine ground away from battery.
8. Try to start tractor. If voltage is too low in booster battery to turn engine, run engine in starting vehicle a few minutes.
9. After tractor engine starts, disconnect jumper cables in this order:
   - Negative jumper cable from tractor engine ground.
   - Negative jumper cable from starting vehicle battery.
   - Positive jumper cable from tractor battery.
   - Positive jumper cable from starting vehicle battery.
OBSERVING ENGINE WORK AND IDLE SPEEDS

Observe tachometer (A) when running engine:

- Slow idle speed should be 800 rpm.
- Fast engine speed under load should be 2600 rpm—870 and 970 Tractors.
- Fast engine speed under load should be 2700 rpm—1070 Tractor.
- At light or no load, fast throttle speed will increase by about 175 rpm.

Normal working speed is about 1900—2700 rpm. Any speed in this range is suitable.

DETERMINING CORRECT PTO SPEEDS

For standard PTO speed (540 rpm):

- Run tractor engine at 2610 rpm shown on tachometer (A).
- Correct engine speed is indicated on tachometer by “PTO RATED” mark (A).

IMPORTANT: To avoid implement overspeed:
- Never exceed indicated PTO maximum speed when PTO is ENGAGED.
CHANGING ENGINE SPEEDS

To increase speed:

- Push engine speed lever (A) forward.

To temporarily increase engine speed above lever setting:

- Depress foot throttle (B).

WARMING ENGINE

Do not place tractor under full load until it is properly warmed up.

1. Idle engine at about 1200—1500 rpm for 5 minutes.

2. Run engine at about 1900 rpm and under light load for 5 minutes.

IDLING ENGINE

Allowing engine to idle for long periods of time will:

- Waste fuel.
- Cause a build-up of carbon.

Idle engine with engine speed lever (A) in SLOW position.
RESTART STALLED ENGINE

To prevent abnormal heat build-up:

- Should engine stall when operating under load, restart it immediately.
- Continue with normal operation or operate at slow idle for 1 or 2 minutes before STOPPING.

STOPPING ENGINE

NOTE: The mid PTO (A) is OPTIONAL.
- Rear PTO (B) is STANDARD equipment.

1. Push PTO lever(s) down to DISENGAGE PTO(s).

2. Lower all attaching equipment to surface with rockshaft control lever (A) and/or OPTIONAL SCV lever (B). (See Using Rockshaft Control Lever or Using Optional SCV Lever in Driving Machine section.)

3. Move engine speed lever (A) to SLOW position.
4. LOCK both brake pedals (A) together with brake pedal latch (B).

5. Lift park brake lever (C) and push brake pedals (A) down to LOCK park brake. Remove foot from pedals. Pedals should stay down.

IMPORTANT: To prevent heat build-up:
- Do not STOP engine immediately after hard or extended operation.
- Keep engine running at 1500 rpm for about 2 minutes.


7. Turn key switch (A) to OFF position.

8. Remove key.