40 Cruz-Air Series F

PIN 6293084 and After Operator's Manual

CASE

9-8950

Reprinted

CAUTION: *Always proceed with caution where clearances are unknown. Be familiar with the machine's dimensions. Never approach a questionable overpass at high speed. Be prepared to stop.*

WARNING: *ALWAYS use extreme caution on slopes. Tipping can occur if the unit is swung to the side with no boom attached, or if the load is swung without raising the boom to compensate for the altered radius. NEVER attempt to travel on a steep hill with the tool attached until AFTER the boom has been placed on the uphill side. The boom, with the attachment, outweighs the counterweight. If no tool is attached place the counterweight on the uphill side.*

CAUTION: *Drive at a speed slow enough to insure safe and complete control, especially over rough terrain.*

WARNING: *Never refuel when the engine is hot or running. DO NOT SMOKE when refueling, using starting fluid, or working with batteries.*

SERVICE

POISON/DANGER: *Batteries contain sulfuric acid which can cause severe burns. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL, flush with water; INTERNAL, drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately; EYES, flush with water for 15 minutes and get prompt medical attention. Keep out of reach of children.*

WARNING: *On machines with auxiliary steering, the steering circuit is charged to a high pressure. Do not disconnect any lines, hoses or components without first releasing all pressure. To release pressure: with engine off, move steering wheel one-half turn from right to left until it becomes difficult to turn. Continue moving the wheel right to left an additional 30 times. Failure to release pressure can result in serious injury.*

IMPORTANT: Always install new decals whenever the old decals are destroyed, lost, painted over, or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your Case dealer.

Outriggers

Rear outriggers are standard, front outriggers are optional. Hydraulically powered, with electric-over-air control from cab. Independent control of left and right outriggers.

Brakes

Foot Brake: On all four wheels, hydraulic, air-actuated.
Digging Brake: On all four wheels, hydraulic, air-actuated, hand control.
Parking Brake: On input to Rear axle, spring-engaged, air-released.

Boom and Attachments

Boom Options: "E" Boom with 9 ft. (2.74 m) or 10 ft. 5 in. (3.2 m) dipperstick.
"Y" Boom with Tool Boom and Tool Boom Extension.
"Y" Boom with Heel and Grapple Booms.
"E" Boom with 10 ft. 5 in. (3.2 m) dipperstick and Pulpwood Grapple.

Buckets:

Width Capacity	Type	Weight
24″ 1/2 yd^3 (.38 m^3)	Severe duty	950 lbs (430 kg)
30″ 5/8 yd^3 (.48 m^3)	Severe duty	1050 lbs (476 kg)
36″ 3/4 yd^3 (.57 m^3)	Severe duty	1175 lbs (533 kg)
42″ 7/8 yd^3 (.67 m^3)	Standard	1000 lbs (454 kg)
60″ 5/8 yd^3 (.48 m^3)	Ditch forming	725 lbs (329 kg)
60″ 1-1/2 yd^3 (1.15 m^3)	Front loader	1096 lbs (496 kg)
60″ 1-1/4 yd^3 (1.0 m^3)	4 - in - 1	1210 lbs (548 kg)
72″ 3/4 yd^3 (.57 m^3)	Ditch forming	

NOTE: For heaped capacities add approximately 20%.

Grapples:
Pulpwood, ¾ cord capacity, 8 ft long wood
Pulpwood, ½ cord capacity, 4 ft long wood
Pulpwood, ¾ cord capacity, 16 ft long wood
Tree length grapple

Control Pattern C
(EXCAVATOR UNITS)

1. HOIST/SWING CONTROL LEVER: Controls movement of the hoist cylinders and rotation of the upperstructure.

2. AUXILIARY CONTROL PEDAL: Controls operation of extra attachments, for example, the Wrist-O-Twist.

3. AIR BRAKE PEDAL: Applies the wheel brakes to stop the machine.

4. ACCELERATOR PEDAL: Use to control the speed of the engine when travelling. Use accelerator lock when working the machine.

5. RIGHT HAND PEDAL: In this control pattern, this pedal is installed, but not used.

6. CROWD/TOOL CONTROL LEVER: Controls movement of the crowd and tool cylinders.

7. STEERING REVERSAL LEVER: Permits operator to make a normal turn when facing either end of chassis. For normal steering with turntable in WORK position (over rear of chassis), pull handle back. Push handle forward to return steering to normal TRAVEL position (turntable over front of chassis).

8. BUTTON FOR FAST HOIST: Push this button to increase hoist UP operation to approximately double the normal speed.

IMPORTANT: Industry generally does not use standardized control patterns on machines of this classification. The design of the control linkage on this machine permits many possible patterns. Only 4 control patterns will be authorized by J I Case. The only person authorized to change the control pattern is a Case Dealer. Under no conditions is an owner, operator or other person authorized to make this change.

The Case Dealer who changes the control pattern must install the correct decal for the control pattern in the cab. The identification on the decal is CONTROL PATTERN A, CONTROL PATTERN B, CONTROL PATTERN C, or CONTROL PATTERN D.

1. ENGINE OIL PRESSURE GAUGE: Gives indication of the pressure of the lubricating oil in the engine. Normal operating pressure is 40-60 psi (275-410 kPa) with engine at high idle rpm and operating temperature.

2. ENGINE WATER TEMPERATURE GAUGE: Shows the temperature of the engine coolant. Normal operating temperature is 160-185° F (70-85° C).

3. FUEL GAUGE: Indicates fuel level in fuel tank.

4. VOLTMETER: Indicates operating voltage. See chart below.

VOLTMETER

Voltage Measured	Engine Speed	Condition of Charging System
0-21 Volts	Stopped or Low Idle	Very low battery charge
22-24 Volts	Stopped or Low Idle	Low-to-normal battery charge
	Above Low Idle	Problem in charging system
24-26 Volts	Stopped or Low Idle	Normal battery charge
	Above Low Idle	Problem in charging system
26-30 Volts	Stopped or Low Idle	If needle is on the line between 26 and 27 volts, the battery in newly charged
	Above Low Idle	Normal operation range
30 or more Volts	Above Low Idle	Overcharge

GAUGES

Gauge	Indication/Range	Condition
Water Temp.	100-180° F (38-82° C)	Below Normal
	180°-219° F (82-104° C)	Normal
	219-280° F (104-138° C)	Overheating
Oil Pressure	0-6 psi (0-41 kPa)	Too low to operate
	7-34 psi (48-234 kPa)	Low (Normal to low engine speed)
	35-80 psi (241-276 kPa)	Normal (above low idle)
	81-100 psi (559-690 kPa)	High

5. LIGHT SWITCH: Controls the gauge lights, headlights and taillights.

6. HOURMETER: Gives an indication of total engine operating time.

7. TORQUE CONVERTER LIGHT: Illuminates when temperature in torque converter increases above 250° F (121° C). See TORQUE CONVERTER OVERHEATING, page 60.

DUAL BRAKE SYSTEM

This machine has a dual braking system. Normal operating pressure is 105-125 psi (720-860 kPa). System pressure must be 80 psi (550 kPa) to give normal braking. A warning light on the instrument panel illuminates when system pressure decreases below this pressure. Pressures below 80 psi (550 kPa) decrease braking capability. When system pressure falls below 60 psi (410 kPa) the park/emergency control valve activates automatically, releasing pressure from the parking brake on the drive line. The parking brake then engages to prevent machine movement.

The air pressure gauge in the instrument panel indicates air supply pressure for braking. The gauge can also be used to test the other components of the air system. When pressure falls below 80 psi (550 kPa), the low air pressure light will illuminate. At 60 psi (410 kPa) the parking brake will automatically engage. Compressor "cut-in" occurs at approximately 105 psi (720 kPa) and "cut out" at 125 psi (860 kPa).

FOOT BRAKE: The brake pedal applies pressure to the brake master cylinders which push brake fluid to each axle brake. One master cylinder operates the front axle brakes, the other master cylinder operates the rear axle brakes.

DIGGING BRAKE: The digging brake uses a hand brake valve which operates in parallel with the foot brake pedal to apply pressure to the brake master cylinders. This brake is to be used to prevent machine movement for digging or other stationary operations.

PARK/EMERGENCY BRAKE: The parking brake is an on/off brake (spring-applied, air-released). This brake has high holding capability, but low energy absorption capability. The brake can be used in situations of lower system pressure, 60 psi (410 kPa) to 80 psi (550 kPa), to permit system pressure to increase to normal. If this brake is used to stop the machine in an emergency road maneuver, the brake must be inspected for wear, and if necessary, replaced or rebuilt. The brake activates automatically at 60 psi (410 kPa) with loss of pressure. This loss of air pressure can be the result of failure of the compressor, a broken air line, or engine shutdown.

NOTE: The parking brake must NOT be used as a digging brake. If this brake is engaged during digging, digging forces will be transmitted through the axle planetaries and cause reduced gear tooth life and possible early failure of the axle planetary or differential. Always use park/emergency brake to prevent machine movement when machine is parked. Machine runaway can occur if you use the digging brake for parking. The holding capability of the digging brake decreases with loss of air pressure.

To move the machine:

1. Release the axle lockouts by pulling up on the lockout handles. These handles are in the front fenders.

2. Engage the parking brake and start the engine. See STARTING PROCEDURE, page 52. Wait for normal warm-up of the engine and the hydraulic system.

3. Put machine in travel position and set the swing brake. Fully retract the outriggers.

4. Put Steering Reversal Lever in TRAVEL position. Make sure the acclerator lock switch is in OFF position.

5. Wait until air pressure reaches 80 psi (550 kPa) minimum (needle in green zone on air gauge). Check all gauges and indicator lights.

6. Select travel range. Use HIGH range for road travel, LOW range for rough terrain. Put gear shift lever to Position 1. Select Forward or Reverse for direction of travel.

7. Look for people or obstructions. Make sure all persons are clear of the machine.

8. Release the parking brake and push the accelerator pedal. The machine will move in the direction selected. Shift to a higher gear as travel speed increases, but always use a speed slow enough to keep complete control. (**NOTE:** Engage gears only at low engine rpm.)

NOTE: First, Second and Third Gears are synchronized; range gears are not. DO NOT shift from LOW to HIGH range, or vice versa, while machine is moving.

CAUTION: *Drive at a speed slow enough to insure safe and complete control, especially over rough terrain.*

To slow the machine, release the accelerator pedal and apply the foot brake or shift to a lower gear. Stop the machine by pressing the air brake pedal. After stopping, put the forward/reverse lever in NEUTRAL and engage the parking brake.

WARNING: *After every 2 hours of travel time, or 50 miles, stop for ½ hour to allow tires to cool or premature tire failure can occur. Make sure the tires are at the recommended pressure for roading.*

RECOMMENDATIONS FOR EFFICIENT OPERATION

Prepare the Job

Before starting to work, study the ground conditions, terrain and type of material. Then prepare a method of operation according to the conditions found.

1. Know the location of underground cables or pipelines and overhead power lines. Indicate these locations clearly.

2. Remove rock and other obstructions before starting operation.

3. Know the ground pressure of the machine, especially when working in wet areas.

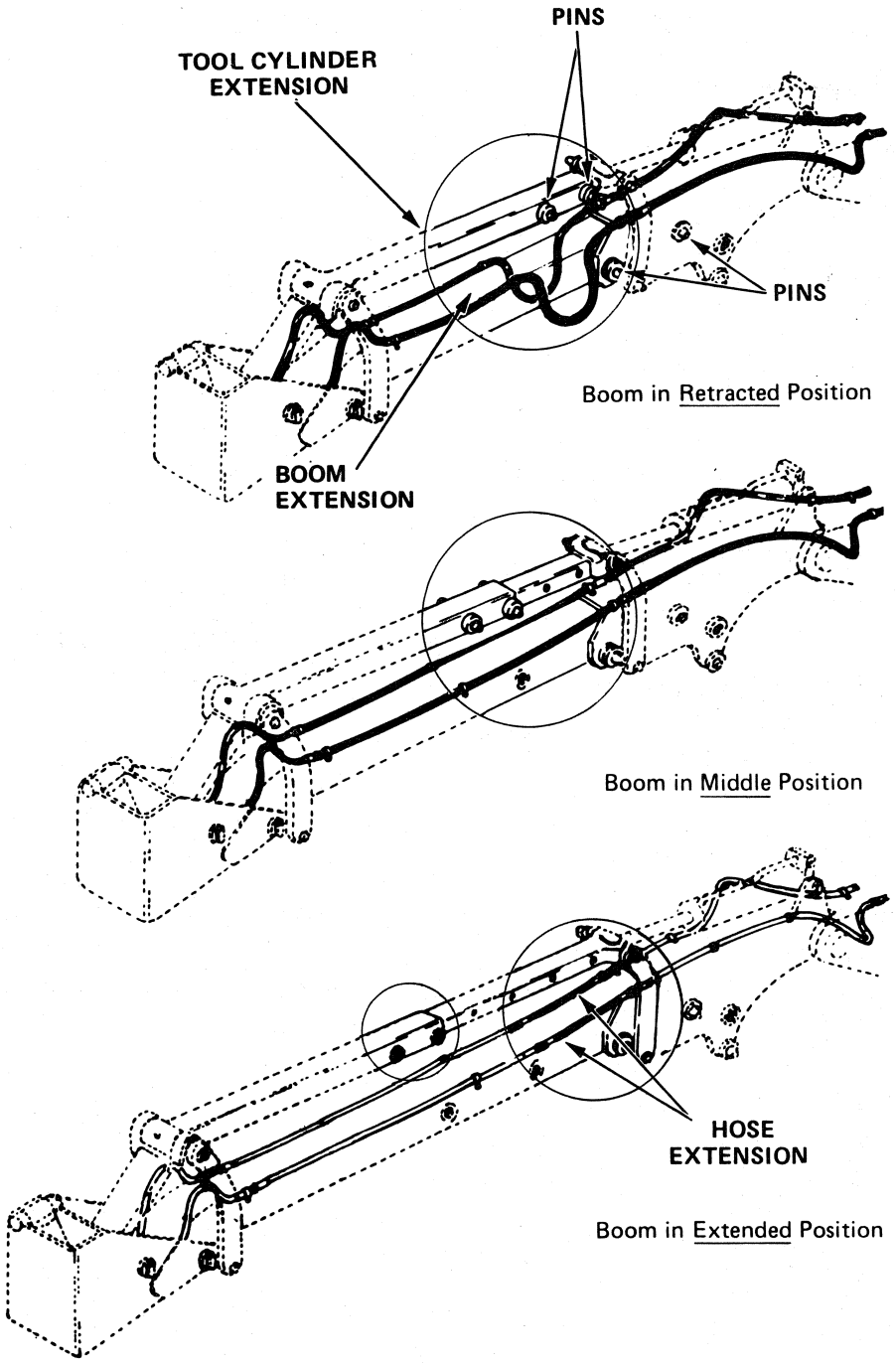
Put the machine in best working position. Normal working position is with the front of the Turntable towards the rear of the Chassis. Put the Steering Reversal Lever in WORK position.

NOTE: Release the parking brake and set the digging brake before you start to dig. The parking brake must be released when digging because this brake holds the drive shaft. Using the parking brake as a digging brake can cause serious damage to the drive train.

Before rotating the turntable, make sure the swing brake is released. This is a holding brake only and is not to be used to stop turntable rotation. The swing brake can be used in an emergency to stop the turntable if the swing control valve will not hold.

Use the outriggers to get maximum stability. When the outriggers are set, the axle oscillation locks must be set, by pushing DOWN on the handles.

Full throttle can be used for Backhoe operations and three-quarter throttle for other operations. Operating at three-quarter throttle gives enough power for most operations, with better control of the machine, increased safety and economy.



Tool Boom Extension

INTERVAL	SERVICE	INSTRUCTIONS
After Every 1000 Hours of Operation or Four Months, whichever comes first	Change oil and filter for torque converter and transmission	See page 110
After Every 1500 Hours of Operation or Two Times a Year, whichever comes first	Change oil in planetary hubs	See page 107
	Change oil in differential	See page 109
	Change oil in hydraulic system	See page 113
	Change oil in swing gearbox	See page 120
	Clean battery, posts and connections	See page 118
	Change coolant and flush radiator and cooling system	See page 105
	Clean and inspect compressor head components	See Service Manual
After Every 3000 Hours of Operation or Each Year, whichever comes first	Overhaul compressor	See Service Manual
	Apply lubrication to starter motor	See engine manual

SPARK ARRESTING MUFFLERS

NOTE: Laws of some states or provinces may require that this unit be equipped with a SPARK ARRESTOR OR SPARK ARRESTING MUFFLER. The State of California, as an example, is one state which has such regulations for agricultural and forestry application, plus a regulation for construction applications in forest-covered, brush-covered, or grass-covered lands.

Typically, such laws and regulations require spark arresting devices to be maintained in good working order and typically to be attached to the exhaust system on naturally aspirated engines (engines without turbocharger).

Alternator Charging System

CAUTION: *When you remove a battery, always disconnect the (–) negative ground cable first. When you install a battery, always connect the (–) negative ground cable last. This procedure can prevent an explosion that is caused by a spark.*

CAUTION: *Know the electrical circuit before you connect or disconnect an electrical component. A wrong connection can cause injury or damage.*

CAUTION: *Never wear metal rings or metal bands. You can make a ground for the electrical circuit and get a burn on your hand or arm.*

Rules for Service

1. Before you make repairs to the electrical system or before you charge the battery, disconnect the battery cables.

2. Before you use an electric welder on this machine, disconnect the alternator wires.

3. Keep the correct tension on the drive belts. Replace the drive belts as a set if the belts are not in good condition.

4. Always connect the negative battery cable to the negative (–) battery terminal. Always connect the positive battery cable to the positive (+) terminal on the battery. This machine has a negative ground.

5. Do not make a wrong connection with the wires of the alternator. See the service manual for this machine.

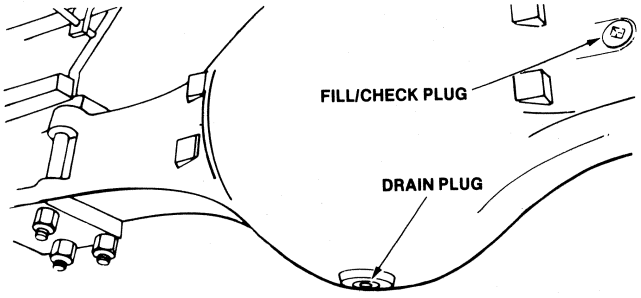
6. Do not operate the engine if the battery cables are disconnected.

7. Do not use a steam cleaner or a cleaning solvent to clean the alternator.

6. DIFFERENTIALS

Keep differential housing filled to the level of the plug on rear of differential housing. See illustration. For oil recommendation, see page 91.

Change oil every 6 months or after every 1500 hours of operation. Check the oil for metal particles. Use a solvent that is not flammable to clean the magnetic drain plug and the breather.



Differential

7. TRANSMISSION AND TORQUE CONVERTER

The torque converter and transmission have a common hydraulic system. Check the oil level before operation each day with engine running at 500-600 rpm and oil at 180-200° F (82-93° C). Clean around the dipstick before removing to keep out dirt. The oil must be even with the FULL mark on the dipstick.

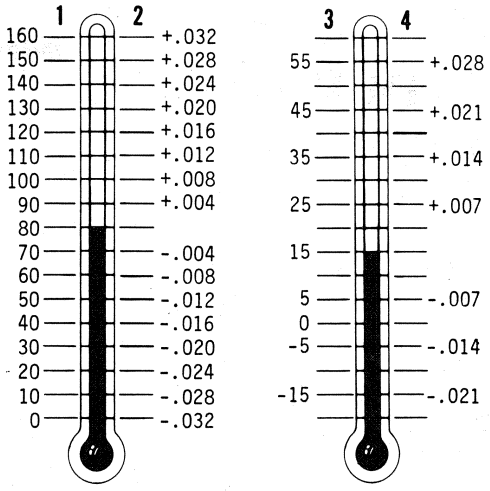
Change the oil and filter after the first 20 hours of operation on a new or rebuilt transmission. After that, replace the oil filter every 2 months or 500 hours and change oil every 4 months or 1000 hours. Keep the breather clean.

To change oil and filter:

1. Drain oil from transmission while oil is warm. Check the oil for metal particles or other indication that an overhaul is necessary. If the oil has become contaminated with metal particles, all the components of the system (pump, control valve, clutches, lines, etc.) must be cleaned. Normally, a complete overhaul of the unit is required. See Service Manual.

Specific Gravity Table

State of Charge	Specific Gravity 80° F (26.7° C)
100%	1.275
75%	1.245
50%	1.215
25%	1.185
Discharged	1.125



1. Temperature in Degrees Fahrenheit.
2. Gravity Points to Add or Subtract from Hydrometer Reading for Every 10° F Above or Below 80° F.
3. Temperature in Degrees Celsius.
4. Gravity Points to Add or Subtract from Hydrometer Reading for Every 10° C Above or Below 15° C.

To Clean the Battery

Check each battery at regular intervals for dirt, corrosion and damage. Dirt, mixed with electrolyte or moisture on the top of the battery, can cause a discharged condition in the battery. Use one of the following methods to clean the battery.

1. Use Case Battery Saver, part number M20376. Follow the instructions on the container. This cleaner does not need water.

2. Use baking soda or ammonia and flush the battery with clear water. If you do not have Case Battery Saver, use other special cleaners to prevent corrosion on the battery terminals.

CAUTION: *Storage areas for batteries must have enough ventilation to prevent accumulation of hydrogen gas from newly charged batteries.*

3. Use a battery terminal brush to clean the battery posts and cable clamps.