

Systems Operation

440 and 450 Backhoe Loaders Hydraulic and Steering System

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General Information (Hydraulic System)

SMCS - 7000

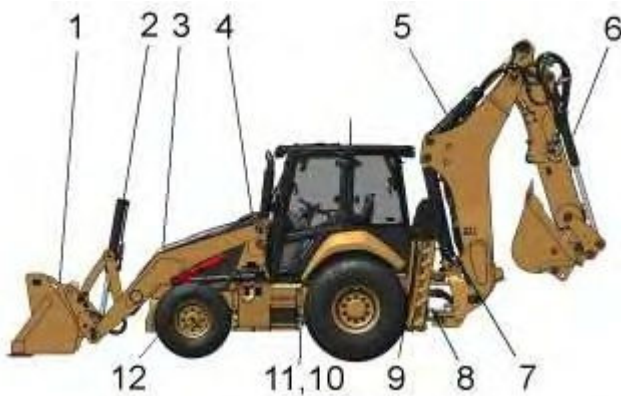
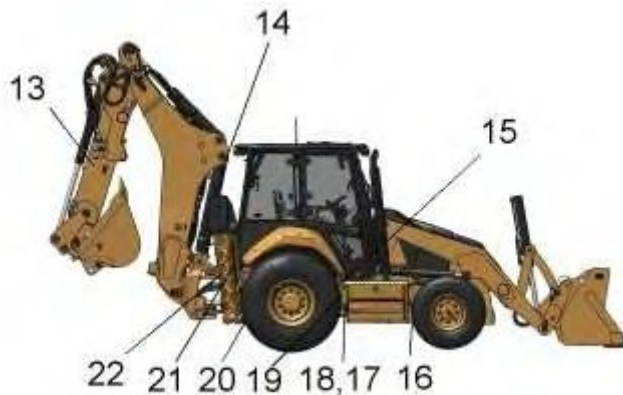


Illustration 1

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The location of components on the left side of the machine is for the backhoe loader with single tilt.

- (1) Auxiliary cylinder
- (2) Tilt cylinder
- (3) Cooler
- (4) Hydraulic tank
- (5) Stick cylinder
- (6) Bucket cylinder
- (7) Boom cylinder
- (8) Swing cylinder
- (9) Stabilizer cylinder
- (10) Filter
- (11) Metering pump
- (12) Lift cylinders



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- (13) Extendable stick cylinder (if equipped)
 - (14) Boom Cylinder
 - (15) Loader control valve
 - (16) Steering cylinder
 - (17) Ride control accumulator
 - (18) Ride control valve
 - (19) Pump
 - (20) Brake System
 - (21) Stabilizer cylinder
 - (22) Backhoe control valve
 - (23) Pilot shut off valve

The hydraulic system provides oil for the steering and for the backhoe. The system also provides oil for the loader, for the ride control and for the operation of the stabilizers. The standard hydraulic system is made up of the following components.

- Hydraulic tank (4)
- Variable displacement axial piston pump (19)
- Return oil filter (10)
- Oil cooler (3)
- Backhoe control valve (22)
- Loader control valve (15)
- Metering pump for the steering (11)
- Brake System (20)
- Various associated cylinders

The loader control valve controls hydraulic lift cylinder (12) and hydraulic tilt cylinder (2) of the bucket. If equipped, the auxiliary cylinder (1) functions with auxiliary control valve. Loader tilt cylinder (2) and loader lift cylinder (12) are components of the loader circuit. If equipped, ride control valve (18) and ride control accumulator (17) works with the loader lift circuit. A machine with single tilt will be equipped with one tilt cylinder.

The pump (19) is located in the middle of the machine, mounted to the transmission.

The hydraulic tank (4) is located in the rear of the engine compartment in front of the cab.

The backhoe control valve controls the backhoe stick cylinder (5), bucket cylinder (6), swing cylinders (8), boom cylinder (7), and stabilizer cylinders (9) and (21).

If equipped, with an extendable stick, the backhoe circuit also includes cylinder (13) and an extendable stick.

The pilot shutoff valve is in the Backhoe control valve (22). The pilot shutoff valve stops the flow of pilot oil to the Backhoe Control valve and loader valve. The pilot shutoff valve is operated by a switch inside the cab.

The stabilizer valves are attached to Backhoe control valve (22) and controls stabilizer cylinders (9) and (21).

There are four positions: raise, hold, lower, and auto up.

The hydraulic system also provides oil for steering. The standard two-wheel steering system consists of metering pump (11) and steering cylinder (16).

The metering pump (11) is located in the front of the cab. The loader control valve (15) is mounted on the right side frame under the cab. Access to the bank valves is from the bottom of the machine or by removing the floorplate.

Boom, stick, bucket, swing, E-stick, and stabilizer cylinders are all at the rear of the machine.

The stabilizer cylinders (9) and (21), the boom cylinder (7), and swing cylinders (8) are at the rear of the machine. The boom cylinder is mounted to the backhoe.

The backhoe control valve is at the back of the machine. Access is gained from the bottom of the machine or by removing covers and floor plates.

If the machine is equipped with an extendable stick, extendable stick cylinder (13), an auxiliary section, and the control is part of the hoe valve as a sectional part. The cylinder (13) is at the rear of the machine, mounted in the backhoe. The control valve is installed in the bank valve for the backhoe and the bank valve is mounted at the rear of the machine.

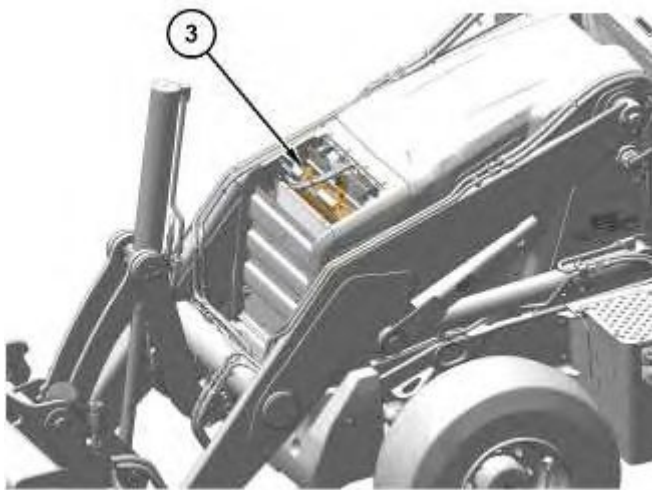


Illustration 3
Hydraulic oil cooler location
(3) Hydraulic oil cooler

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The hydraulic oil cooler (3) is mounted in front of the radiator at the front of the engine compartment. Access to the oil cooler is gained by opening the hood and removing the side covers.

The loader controls are on the right side of the operator station.

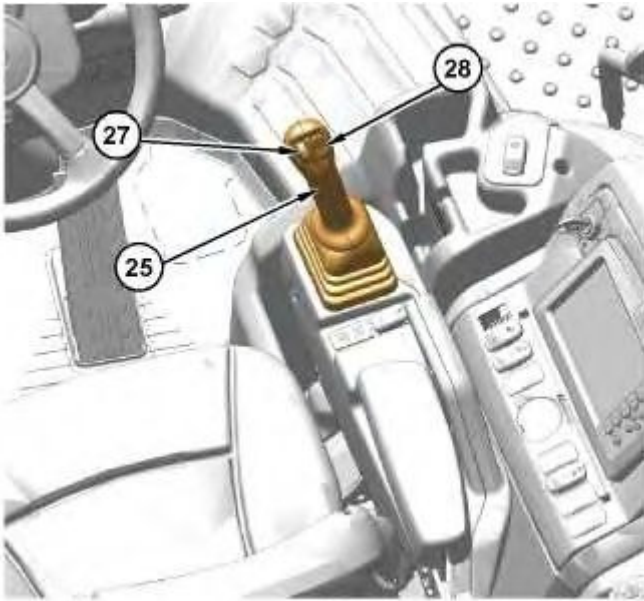


Illustration 4

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The joystick for the pilot operated loader control.

- (25) Joystick for the loader bucket
- (27) Auxiliary control switch (roller)
- (28) FNR switch



Illustration 5

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The joystick for the electro-hydraulic (EH) operated loader control (view from front).

- (25) Joystick for the loader bucket
- (26) Differential lock button
- (29) Trigger switch transmission neutralizer

The joystick for the loader bucket (25) controls FLOAT, LOWER, RAISE, RETURN-TO-DIG, TILT BACK, and DUMP positions of the bucket.

This lever also has a switch (29) to neutralize the transmission. The lever also has switches (27) for auxiliary loader functions.