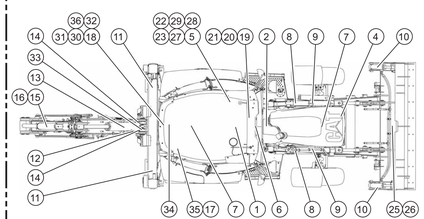
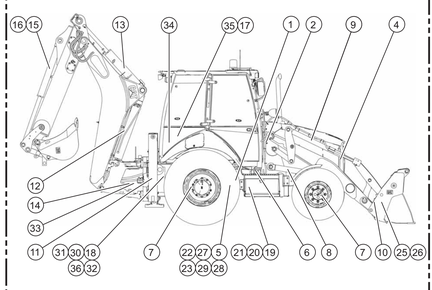
COMPONENT LIST

ITEM		NAME	420E	430E
	1	PUMP GP.	267-2755	
	2	HYDRAULIC TANK	246-5286	
	3	TANK GROUP	245-8777	
	4	COOLER	HYDRAULIC COOLER	
	5	FILTER	226-9747	
	6	HMU	210-6240	
		STEER CYLNDERS		
7	7A	FRONT	N/A	
	7B	REAR	N/A	
		LIFT CYLNDERS		
8	8A	ST	228-3509	
	8B	PLIT	228-3505	
		TILT CYLNDERS		
9	9A	ST	200-7128	
	9B	PLIT	192-3884	
	10	MP BUCKET CYL.(OPT)	N/A	
		STABILIZER CYLNDERS	N/A	
11	11A	LH	262-7049	
	11B	RH	262-7050	
	12	BOOM CYLINDER	268-9049(S) 210-7078	268-9051(S) 246-9884
	13	STICK CYL.	210-7081(S)	210-7091
	14	SWING CYL.	278-1971	
	15	BUCKET CYL.	210-7087(S)	210-7095(S)
	16	E-STICK CYL (OPT).	210-7097(S)	
		VALVE PILOT 2-BANK		
17	17A	VALVE PILOT-BODY	223-4713	
	17B	LEVER W/SWITCHES	223-4714	
	17C	LEVER W/DTNT & SWTCH (OPT)	223-4715	
	18	ACCUMULATOR	226-0420	
	19	RIDE CNTRL VALVE (OPT)	245-8780	
	20	RIDE CNTRL ACCMLTR (OPT)	162-3960	
	21	RIDE CNTR PRES. SWTCH(OPT)	131-9203	
	22	TEMP. SENSOR (OPT)	TEMP SENSOR	
	23	DIFF. PRES. SWITCH (OPT)	134-0404	
	25	COUPLER VALVE (See Volume 2)	231-2615	
	26	COUPLER CYLINDER (See Volume 2)	190-3085	
		LOADER VALVE (ST)		
27		2 BANK	266-2552	
		3 BANK	266-2553	
	27A	INLET SECTION	269-1080	
	27B	LIFT SECTION	269-1091	
	27C	TILT SECTION	269-1092	
	27D	AUX SECTION	269-1093	
	27E	OUTLET MANIFOLD	269-1079	
		LOADER VALVE (PLIT)		
28		2 BANK	N/A	
		3 BANK	266-2563	
	28B	LIFT SECTION	269-1081	
	28C	TILT SECTION	269-1082	
	28D	AUX SECTION	N/A	
		BACKHOE VALVE (CP)		
30		6 BANK	266-2556	
		7 BANK	266-2557	
		8 BANK	266-2558	
	30G	BOOM SECTION	269-1062	
	30H	STICK SECTION	269-1063	
	30J	E-STICK SECTION	269-1066	
	30K	OUTLET MANIFOLD	269-1059	
		BACKHOE VALVES (COMMON)		
32	32A	INLET MANIFOLD	269-1060	
	32B	STABILIZER SECTION	269-1061	
	32C	SWING SECTION	269-1064	
	32D	BUCKET SECTION	269-1065	
	32E	AUX SECTION	269-1067	
	32F	PATTERN SWITCHING VALVE	257-7724	
	33	VALVE GP - CUSHION RELIEF	206-3685 (STD)	
	34	VALVE GP - PILOT (BACKHOE)	267-2758	
	35	VALVE GP - PILOT (LOADER)	267-2760	
	36	MANIFOLD - PILOT	268-0094	

TAP LOCATIONS

Tap	Description
T1	Pump Discharge
T2	Load Sense
T3	Pilot Pressure
SOS	Oil Sampling





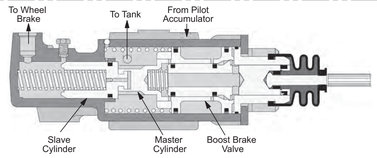
NOTE: Alpha numeric numbers are represented by the number only on the machine views.

COMPONENT LOCATIONS

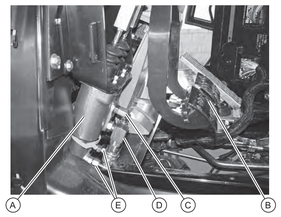
Sideshift machines feature a boom (A) that can be shifted to different positions along a frame (B). Lock pistons (D) are used to lock the boom to the frame rails. Lock piston solenoids, located on the backhoe valve outlet manifold, actuate the lock pistons.

The stabilizers (C) are used to raise and lower the machine. Sideshift and center pivot machines use the same type of control valves to operate the stabilizers.

SIDESHIFT SLIDE LOCKS



This illustration shows a sectional view of the boosted brake valve group. When the brake pedal is depressed, the boost brake valve moves to the left and inlet oil from the pilot manifold is directed to the master cylinder.

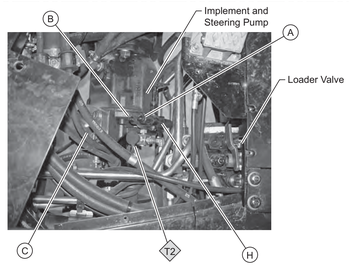


The 420E/430E machines are equipped with hydraulically assisted master cylinders, which decreases the amount of pedal effort when braking. This illustration shows the boosted brakes valve group, which uses oil from the pilot accumulator to add boost to the master cylinder. The hydraulic force multiplies the pedal effort so the operator can get more braking force with less effort.

The brake boost valves are connected to the master cylinder (A) at each brake pedal (B). Oil enters the master cylinder through the supply hose (C) and exits the master cylinder through the return hose (D). The oil flows to the service brakes through the hoses (E) at the bottom of the master cylinder.

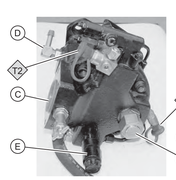
The master cylinders can be removed from the machine from inside the operator's compartment.

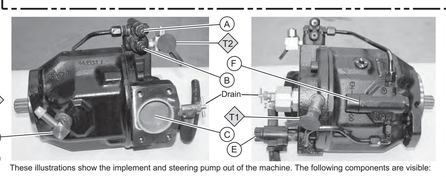
BOOSTED BRAKES



The implement and steering pump on the 420E and 430E machines is similar to the "D" Series machines, but now includes a torque control solenoid (not visible). The torque control solenoid provides an additional pump setting.

The implement and steering pump is located below the floor plate in the cab. The pump control valve (H) contains a torque control spool adjustment screw (B) and a flow compensator adjustment screw (A). The adjustment screws and the load sensing pressure tap (T2) are accessible from the cab.

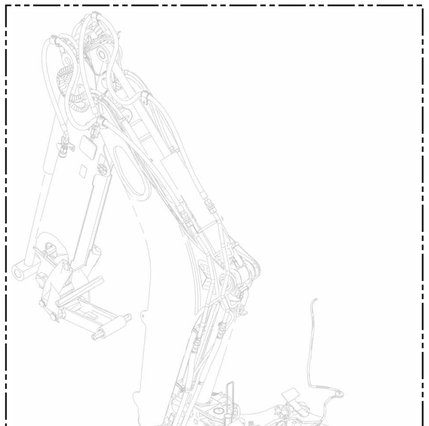


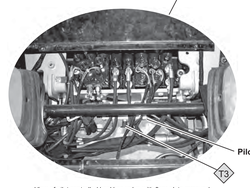


These illustrations show the implement and steering pump out of the machine. The following components are visible:

Torque control adjustment (**A**), Flow compensator adjustment (**B**), Load sensing pressure tap (**T2**), Inlet port (**C**), Case drain port (**D**), Torque control solenoid (**E**), Discharge pressure tap (**T1**), Torque limiter (**F**), Outlet port (**G**)

IMPLEMENT / STEERING PUMP 1

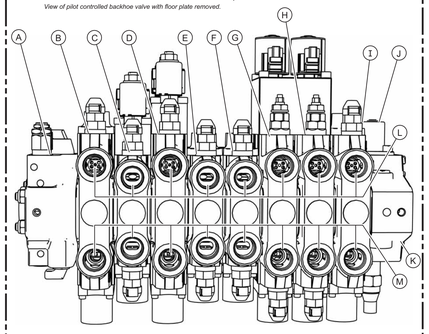




View of pilot controlled backhoe valve with floor plate removed.

Pilot Manifold

The **pilot manifold** can also be accessed with the floor plate removed. The pilot pressure tap (**T3**) is located on the pilot manifold. The pilot manifold routes pilot oil to and from the loader and backhoe pilot control valves.



EIGHT BANK VALVE (PILOT OPERATED)

The 420E/430E machines are equipped with a pilot controlled backhoe valve that is visible with the floor plate at the rear of the cab removed.

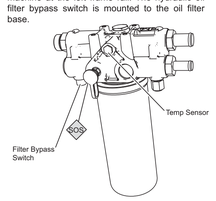
This illustration shows a eight bank backhoe valve in a 420E Backhoe Loader. The components in the backhoe valve are:

(**A**) Outlet Manifold
(**B**) Left Stabilizer Control Valve
(**C**) Auxiliary Control Valve
(**D**) Extendable Stick Control Valve
(**E**) Bucket Control Valve
(**F**) Swing Control Valve
(**G**) Stick Control Valve
(**H**) Boom Control Valve
(**I**) Right Stabilizer Control Valve
(**J**) Pilot On/Off Solenoid Valve
(**K**) Inlet Manifold
(**L**) A Ports
(**M**) B Ports

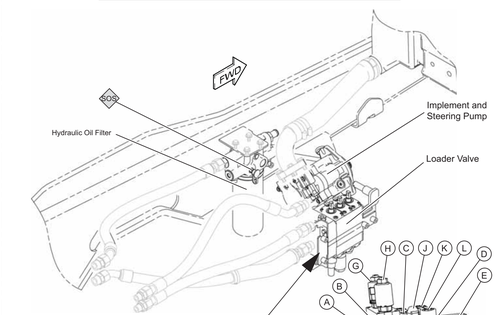
For other bank valve configurations see RENR6487 (Specifications Manual).

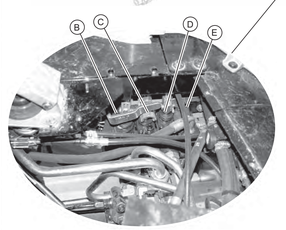
BACKHOE VALVE 30 32

The hydraulic oil filter is located below the machine at the left frame rail. The hydraulic oil filter bypass switch is mounted to the oil filter base.



HYDRAULIC OIL FILTER 5





View of mechanically controlled loader valve with floor plate removed.

***NOTE:** 420E/430E machines with a mechanically controlled loader valve or a pilot controlled loader valve use the same inlet manifold.*

THREE BANK VALVE (PILOT OPERATED)

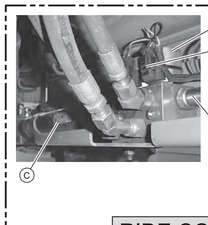
The 420E/430E machines can be equipped with a mechanically controlled loader valve or a pilot controlled loader valve as shown in this illustration.

The loader valve is accessed from below the floor plate. The loader control valve group contains:

Outlet manifold (**A**)
Auxiliary control valve (**B**)
Tilt control valve (**C**)
Lift control valve (**D**)
Inlet manifold (**E**)
Load sensing relief valve (**F**)
Solenoid for the B circuit (**G**)
Solenoid for the A circuit (**H**)
Makeup and relief valve (**J**)
B pilot line port (**K**)
A pilot line port (**L**)
Priority Valve (**M**)
Dead engine lower valve (**N**)
A ports (**P**)
B ports (**R**)

For other bank valve configurations see RENR6487 (Specifications Manual).

LOADER VALVE 27 28

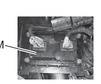


Travel at high speeds over rough terrain causes bucket movement. The optional Ride Control System acts as a shock absorber by absorbing bucket forces, which stabilize the machine.

The Ride Control System components include; ride control relay (A), ride control solenoids (B), ride control accumulator (C), and ride control pressure switch (D).

Two solenoids are now used on the "E" Series machines Ride Control System.

The Ride Control System, on machines with the optional autoshift transmission, is controlled by the Machine ECM. The Machine ECM monitors the position of the ride control switch and determines when to operate the ride control system.



RIDE CONTROL 16 17 18

CATERPILLAR®

RENR6483-01
October 2008

Schematic

420E and 430E Backhoe Loader Hydraulic System

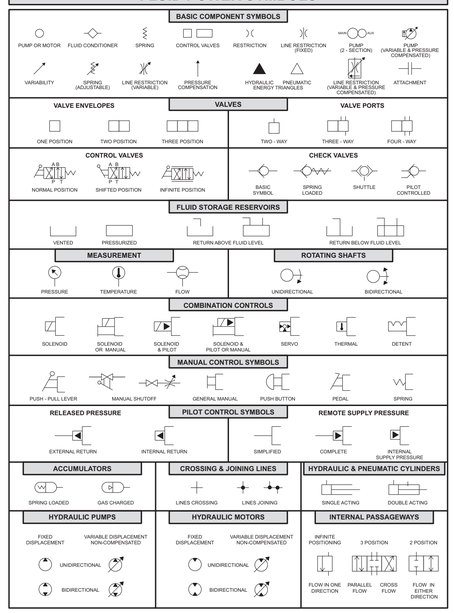
420E:
HLS1-UP
KMW1-UP

430E:
NCE1-UP
DDT1-UP
EAT1-UP
MJT1-UP

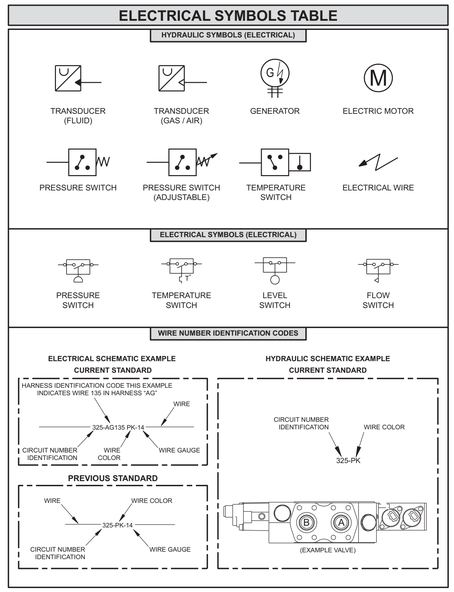
Volume 1 of 2: Single Tilt

Printed in U.S.A.

FLUID POWER SYMBOLS



ELECTRICAL SYMBOLS TABLE



RENR6483-01 VOL 1 of 2
30 Page, (Dimensions: 39 inches x 28 inches)

RENR6483-01 VOL 1 of 2

30 Page, (Dimensions: 39 inches x 28 inches)

BOOSTED BRAKES

LEFT BRAKE PEDAL

RIGHT BRAKE PEDAL

TO REAR AXLE LEFT WHEEL BRAKE

TO REAR AXLE RIGHT WHEEL BRAKE

BS

BT

BACKHOE VALVE

STAB RH

BOOM

STICK

SWING

BUCKET

E-STICK

AUX

STAB LH

STABILIZER JOYSTICK

LEFT JOYSTICK

RIGHT JOYSTICK

LOADER VALVE

LIFT

TILT

AUX

PUMP

HMU

FRONT STEER CYLINDER

TANK

LINE PATTERNS	
	Pressure Line
	Pilot / Load Sensing Pressure
	Drain / Return Lines
	Component Group
	Attachment
	Air Line
CALLOUTS	
	Taps (Pressure, Sampling, Sensor - by letter)
	Components (By number)

HYDRAULIC CIRCUIT COLOR DESCRIPTIONS
PILOT OIL OUTPUT
IMPLEMENT AND STEERING PUMP CIRCUIT
LIFT CYLINDER CIRCUIT
BUCKET CYLINDER CIRCUIT
LOAD SENSE CIRCUIT
STEERING CYLINDER CIRCUIT
STICK CYLINDER CIRCUIT
SUPPLY LINE
BOOM CYLINDER CIRCUIT
TILT CYLINDER CIRCUIT
LOADER VALVE AUXILIARY CIRCUIT
DRAIN / RETURN LINE
STABILIZER CYLINDER CIRCUIT
SWING CYLINDER CIRCUIT
E-STICK CYLINDER CIRCUIT
BACKHOE VALVE AUXILIARY CIRCUIT
BOOSTED BRAKE OIL PRESSURE

THIS SCHEMATIC IS FOR THE 420E AND 430E BACKHOE LOADER VOL 1 OF 2: SINGLE TILT

MEDIA NUMBER: KENR6483-01

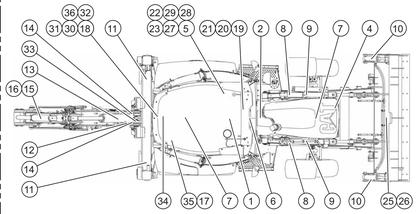
PART NUMBER: 268-0120, CHANGE: 01, VERSION: -

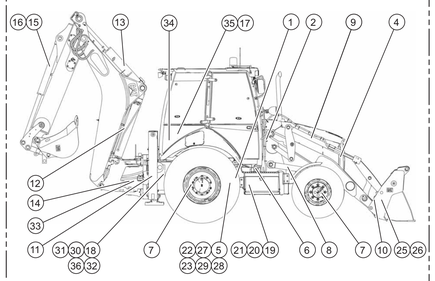
Components are shown installed on a fully operable machine.

Refer to the appropriate Service Manual for Troubleshooting, Specifications.

COMPONENT LIST			
ITEM	NAME	420E	430E
1	PUMP GP	267-2755	
2	HYDRAULIC TANK	246-5286	
3	TANK GROUP	245-8777	
4	COOLER	HYDRAULIC COOLER	
5	FILTER	226-9747	
6	HMU	210-6240	
STEER CYLNDERS			
7	7A FRONT	N/A	
	7B REAR	N/A	
LIFT CYLNDERS			
8	8A ST	228-3509	
	8B PLIT	228-3505	
TILT CYLNDERS			
9	9A ST	200-7128	
	9B PLIT	192-3884	
	10 MP BUCKET CYL.(OPT)	N/A	
STABILIZER CYLNDERS		N/A	
11	11A LH	262-7049	
	11B RH	262-7050	
	12 BOOM CYLINDER	268-9049(S) 210-7076	268-9051(S) 246-9884
	13 STICK CYL.	210-7081(S)	210-7091
	14 SWING CYL.	278-1971	
	15 BUCKET CYL.	210-7087(S)	210-7095(S)
	16 E-STICK CYL (OPT).	210-7097(S)	
VALVE PILOT 2-BANK			
17	17A VALVE PILOT-BODY	223-4713	
	17B LEVER W/SWITCHES	223-4714	
	17C LEVER W/DTNT & SWTCH (OPT)	223-4715	
	18 ACCUMULATOR	226-0420	
	19 RIDE CNTRL VALVE (OPT)	245-8780	
	20 RIDE CNTRL ACCMLTR (OPT)	162-3960	
	21 RIDE CNTR PRES. SWTCH(OPT)	131-9203	
	22 TEMP. SENSOR (OPT)	TEMP. SENSOR	
	23 DIFF. PRES. SWITCH (OPT)	134-0404	
	25 COUPLER VALVE (See Volume 2)	231-2615	
	26 COUPLER CYLINDER (See Volume 2)	190-3085	
LOADER VALVE (ST)			
27	2 BANK	266-2552	
	3 BANK	266-2553	
	27A INLET SECTION	269-1080	
	27B LIFT SECTION	269-1091	
	27C TILT SECTION	269-1092	
	27D AUX SECTION	269-1093	
	27E OUTLET MANIFOLD	269-1079	
LOADER VALVE (PLIT)			
28	2 BANK	N/A	
	3 BANK	266-2563	
	28B LIFT SECTION	269-1081	
	28C TILT SECTION	269-1082	
	28D AUX SECTION	N/A	
BACKHOE VALVE (CP)			
30	6 BANK	266-2556	
	7 BANK	266-2557	
	8 BANK	266-2558	
	30G BOOM SECTION	269-1062	
	30H STICK SECTION	269-1063	
	30J E-STICK SECTION	269-1066	
	30K OUTLET MANIFOLD	269-1059	
BACKHOE VALVES (COMMON)			
32	32A INLET MANIFOLD	269-1060	
	32B STABILIZER SECTION	269-1061	
	32C SWING SECTION	269-1064	
	32D BUCKET SECTION	269-1065	
	32E AUX SECTION	269-1067	
	32F PATTERN SWITCHING VALVE	257-7724	
	33 VALVE GP - CUSHION RELIEF	206-3685 (STD)	
	34 VALVE GP - PILOT (BACKHOE)	267-2758	
	35 VALVE GP - PILOT (LOADER)	267-2760	
	36 MANIFOLD - PILOT	268-0094	

TAP LOCATIONS	
Tap	Description
T1	Pump Discharge
T2	Load Sense
T3	Pilot Pressure
SOS	Oil Sampling





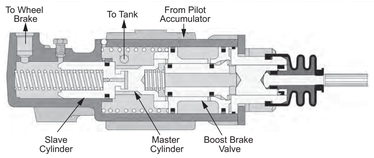
NOTE: Alpha numeric numbers are represented by the number only on the machine views.

COMPONENT LOCATIONS

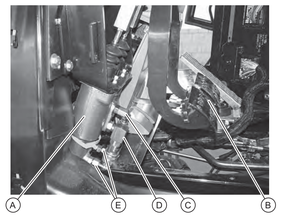
Sideshift machines feature a boom (A) that can be shifted to different positions along a frame (B). Lock pistons (D) are used to lock the boom to the frame rails. Lock piston solenoids, located on the backhoe valve outlet manifold, actuate the lock pistons.

The stabilizers (C) are used to raise and lower the machine. Sideshift and center pivot machines use the same type of control valves to operate the stabilizers.

SIDESHIFT SLIDE LOCKS



This illustration shows a sectional view of the boosted brake valve group. When the brake pedal is depressed, the boost brake valve moves to the left and inlet oil from the pilot manifold is directed to the master cylinder.

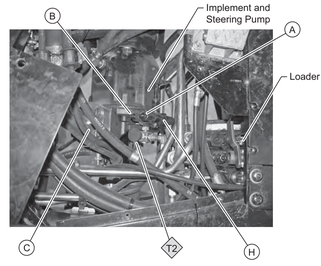


The 420E/430E machines are equipped with hydraulically assisted master cylinders, which decreases the amount of pedal effort when braking. This illustration shows the boosted brakes valve group, which uses oil from the pilot accumulator to add boost to the master cylinder. The hydraulic force multiplies the pedal effort so the operator can get more braking force with less effort.

The brake boost valves are connected to the master cylinder (A) at each brake pedal (B). Oil enters the master cylinder through the supply hose (C) and exits the master cylinder through the return hose (D). The oil flows to the service brakes through the hoses (E) at the bottom of the master cylinder.

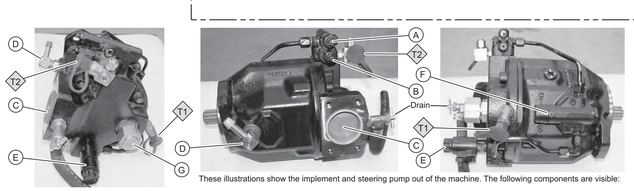
The master cylinders can be removed from the machine from inside the operator's compartment.

BOOSTED BRAKES



The implement and steering pump on the 420E and 430E machines is similar to the "D" Series machines, but now includes a torque control solenoid (not visible). The torque control solenoid provides an additional pump setting.

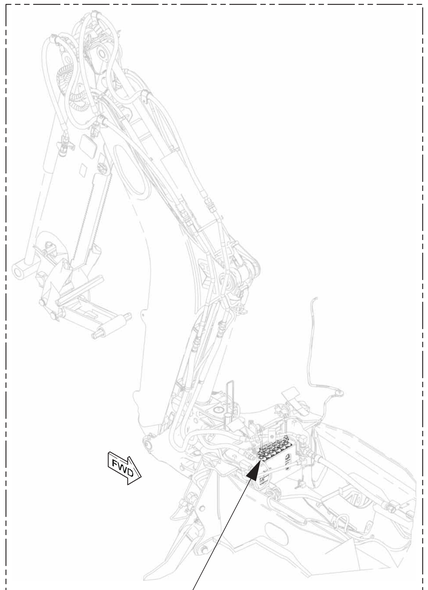
The implement and steering pump is located below the floor plate in the cab. The pump control valve (H) contains a torque control spool adjustment screw (B) and a flow compensator adjustment screw (A). The adjustment screws and the load sensing pressure tap (T2) are accessible from the cab.



These illustrations show the implement and steering pump out of the machine. The following components are visible:

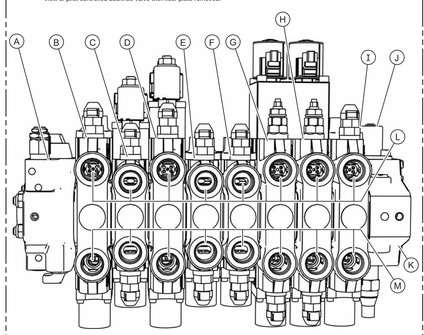
Torque control adjustment (**A**), Flow compensator adjustment (**B**), Load sensing pressure tap (**T2**), Inlet port (**C**), Case drain port (**D**), Torque control solenoid (**E**), Discharge pressure tap (**T1**), Torque limiter (**F**), Outlet port (**G**)

IMPLEMENT / STEERING PUMP 1



View of pilot controlled backhoe valve with floor plate removed.

The **pilot manifold** can also be accessed with the floor plate removed. The pilot pressure tap (**T3**) is located on the pilot manifold. The pilot manifold routes pilot oil to and from the loader and backhoe pilot control valves.



EIGHT BANK VALVE (PILOT OPERATED)

The 420E/430E machines are equipped with a pilot controlled backhoe valve that is visible with the floor plate at the rear of the cab removed.

This illustration shows a eight bank backhoe valve in a 420E Backhoe Loader. The components in the backhoe valve are:

(**A**) Outlet Manifold
(**B**) Left Stabilizer Control Valve
(**C**) Auxiliary Control Valve
(**D**) Extendable Stick Control Valve
(**E**) Bucket Control Valve
(**F**) Swing Control Valve
(**G**) Stick Control Valve
(**H**) Boom Control Valve
(**I**) Right Stabilizer Control Valve
(**J**) Pilot On/Off Solenoid Valve
(**K**) Inlet Manifold
(**L**) A Ports
(**M**) B Ports

For other bank valve configurations see RENR6487 (Specifications Manual).

BACKHOE VALVE 30 32

CATERPILLAR®

RENR6483-01
October 2008

Schematic

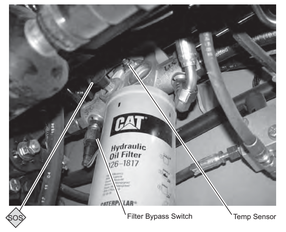
420E and 430E Backhoe Loader Hydraulic System

420E:
HLS1-UP
KMW1-UP

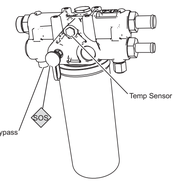
430E:
NCE1-UP
DDT1-UP
EAT1-UP
MJT1-UP

Volume 2 of 2: Parallel Lift / Integrated Tool Carrier

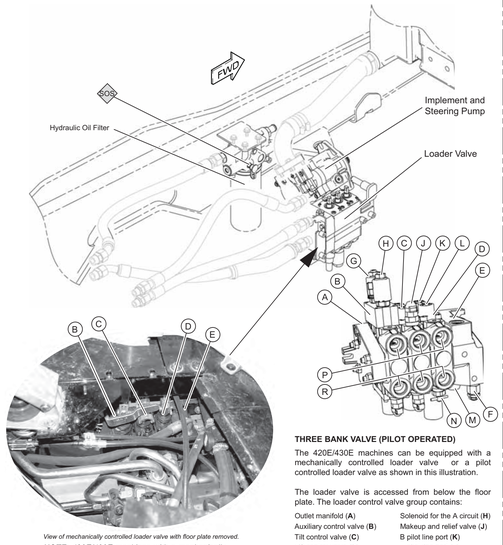
Printed in U.S.A.



The hydraulic oil filter is located below the machine at the left frame rail. The hydraulic oil filter bypass switch is mounted to the oil filter base.



HYDRAULIC OIL FILTER 5



View of mechanically controlled loader valve with floor plate removed.

***NOTE:** 420E/430E machines with a mechanically controlled loader valve or a pilot controlled loader valve use the same inlet manifold.*

THREE BANK VALVE (PILOT OPERATED)

The 420E/430E machines can be equipped with a mechanically controlled loader valve or a pilot controlled loader valve as shown in this illustration.

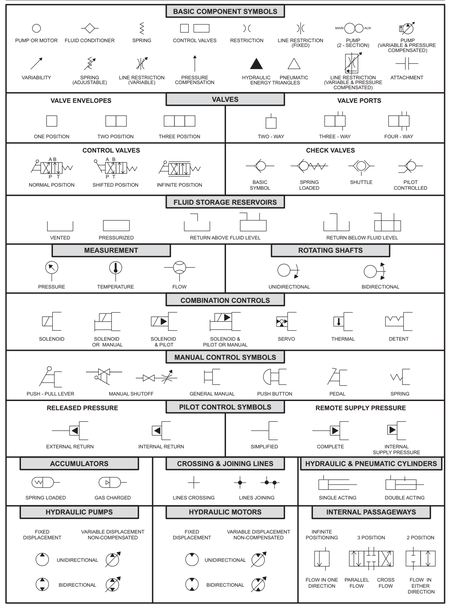
The loader valve is accessed from below the floor plate. The loader control valve group contains:

Outlet manifold (**A**)
Auxiliary control valve (**B**)
Tilt control valve (**C**)
Lift control valve (**D**)
Inlet manifold (**E**)
Load sensing relief valve (**F**)
Solenoid for the B circuit (**G**)
Solenoid for the A circuit (**H**)
Makeup and relief valve (**J**)
B pilot line port (**K**)
A pilot line port (**L**)
Priority Valve (**M**)
Dead engine lower valve (**N**)
A ports (**P**)
B ports (**R**)

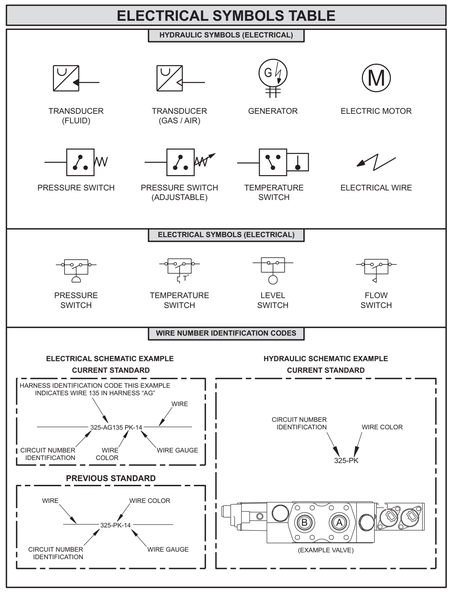
For other bank valve configurations see RENR6487 (Specifications Manual).

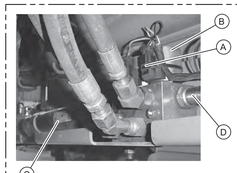
LOADER VALVE 27 28

FLUID POWER SYMBOLS



ELECTRICAL SYMBOLS TABLE





Travel at high speeds over rough terrain causes bucket movement. The optional Ride Control System acts as a shock absorber by absorbing bucket forces, which stabilize the machine.

The Ride Control System components include; ride control relay (A), ride control solenoids (B), ride control accumulator (C), and ride control pressure switch (D).

Two solenoids are now used on the "E" Series machines Ride Control System.

The Ride Control System, on machines with the optional autoshift transmission, is controlled by the Machine ECM. The Machine ECM monitors the position of the ride control switch and determines when to operate the ride control system.

RIDE CONTROL 16 17 18

RENR6483-01 VOL 2 of 2
30 Page, (Dimensions: 39 inches x 28 inches)

RENR6483-01 VOL 2 of 2

30 Page, (Dimensions: 39 inches x 28 inches)

BOOSTED BRAKES (REF)

LEFT BRAKE PEDAL

RIGHT BRAKE PEDAL

TO REAR AXLE LEFT WHEEL BRAKE

TO REAR AXLE RIGHT WHEEL BRAKE

BS

BT

BACKHOE VALVE

STAB RH

BOOM

STICK

SWING

BUCKET

E-STICK

AUX.

STAB LH

STABILIZER JOYSTICK

LEFT JOYSTICK

RIGHT JOYSTICK

LOADER JOYSTICK

FLOAT

RTD

LIFT

TILT

AUX

LOADER VALVE

HMU

FRONT STEER CYLINDER

PUMP

TANK

LINE PATTERNS	
	Pressure Line
	Pilot / Load Sensing Pressure
	Drain / Return Lines
	Component Group
	Attachment
	Air Line
CALLOUTS	
YY	Taps (Pressure, Sampling, Sensor - by letter)
00	Components (By number)

HYDRAULIC CIRCUIT COLOR DESCRIPTIONS
PILOT OIL OUTPUT
IMPLEMENT AND STEERING PUMP CIRCUIT
LIFT CYLINDER CIRCUIT
BUCKET CYLINDER CIRCUIT
LOAD SENSE CIRCUIT
STEERING CYLINDER CIRCUIT
STICK CYLINDER CIRCUIT
SUPPLY LINE
BOOM CYLINCER CIRCUIT
TILT CYLINDER CIRCUIT
LOADER VALVE AUXILIARY CIRCUIT
DRAIN / RETURN LINE
STABILIZER CYLINDER CIRCUIT
SWING CYLINDER CIRCUIT
E-STICK CYLINDER CIRCUIT
BACKHOE VALVE AUXILIARY CIRCUIT
BOOSTED BRAKE OIL PRESSURE

THIS SCHEMATIC IS FOR THE 420E AND 430E BACKHOE LOADER VOL 2 OF 2: PARALLEL LIFT / INTEGRATED TOOL CARRIER

MEDIA NUMBER: KENR6483-01

PART NUMBER: 268-0120, CHANGE: 01, VERSION: -

Components are shown installed on a fully operable machine.

Refer to the appropriate Service Manual for Troubleshooting, Specifications.