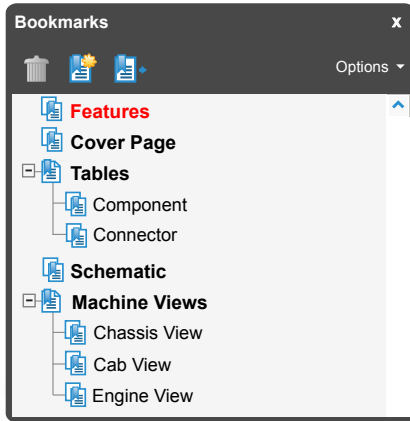


# INTERACTIVE SCHEMATIC



The Bookmarks panel will allow you to quickly navigate to points of interest.

***\*This document is best viewed at a screen resolution of 1024 X 768.***

To set your screen resolution do the following:

**RIGHT CLICK** on the **DESKTOP**.

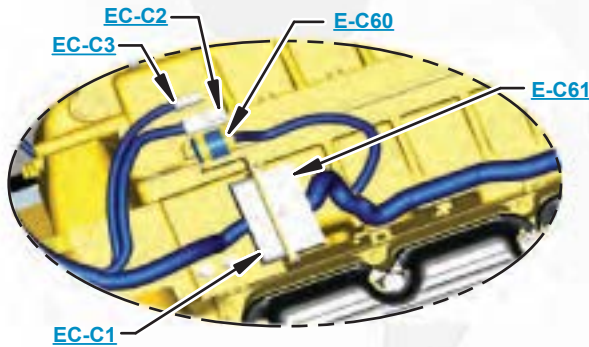
Select **PROPERTIES**.

**CLICK** the **SETTINGS TAB**.

**MOVE THE SLIDER** under **SCREEN RESOLUTION** until it shows **1024 X 768**.

**CLICK OK** to apply the resolution.

*\*Due to different monitor sizes and PDF reader preferences there may be some variance in linked schematic locations*



Click on any text that is **BLUE** and underlined. These are hyperlinks that can be used to navigate the schematic and machine views.



[Click here to save a copy of this interactive schematic to your desktop](#)

**VIEW ALL CALLOUTS**

When only one callout is showing on a machine view, clicking on this button will make all of the callouts visible. This button is located in the top right corner of every machine view page.

## HOTKEYS (Keyboard Shortcuts)

	FUNCTION	KEYS
	Zoom In	“CTRL” / “+”
	Zoom Out	“CTRL” / “-”
	Fit to Page	“CTRL” / “0” (zero)
	Hand Tool	“SPACEBAR” (hold down)
	Find	“CTRL” / “F”
	Search	“CTRL” / “SHIFT” / “F”

ELECTRICAL SYMBOLS				
Pressure Switch	Temperature Switch	Level Switch	Flow Switch	Circuit Breaker

BASIC HYDRAULIC COMPONENT SYMBOLS	
Pump or Motor	Variability
Fluid Conditioner	Spring (Adjustable)

[Click here to view the Schematic Symbols and Definitions page](#)



# SCHEMATIC SYMBOLS AND DEFINITIONS



VALVES			
ENVELOPES			
One Position	Two Position	Three Position	
PORTS			
Two-way	Three-Way	Four-Way	
CONTROL			
Normal Position	Shifted Position	Infinite Position	
CHECK			
Basic Symbol	Spring Loaded	Shuttle	Pilot Controlled

INTERNAL PASSAGEWAYS			
Flow in One Direction	Flow Allowed in Either Direction	Parallel Flow	Cross Flow
Infinite Positioning	Two Position	Three Position	

CYLINDERS	
Single Acting	Double Acting

ACCUMULATORS	
Spring Loaded	Gas Charged

PUMPS	
FIXED DISPLACEMENT	
Unidirectional	Bidirectional
VARIABLE DISPLACEMENT NON-COMPENSATED	
Unidirectional	Bidirectional

MOTORS	
FIXED DISPLACEMENT	
Unidirectional	Bidirectional
VARIABLE DISPLACEMENT NON-COMPENSATED	
Unidirectional	Bidirectional

ROTATING SHAFTS	
Unidirectional	Bidirectional

BASIC HYDRAULIC COMPONENT SYMBOLS	
Pump or Motor	Variability
Fluid Conditioner	Spring (Adjustable)
Spring	Pressure Compensation
Control Valves	Line Restriction (Variable)
Restriction	Line Restriction (Fixed)
Line Restriction Variable and Pressure Compensated	2-Section Pump
Attachment	Pump: Variable and Pressure Compensated
Hydraulic Energy Triangles	Pneumatic Energy Triangles

PILOT CONTROL		
RELEASED PRESSURE		
External Return	Internal Return	
REMOTE SUPPLY PRESSURE		
Simplified	Complete	Internal Supply Pressure

COMBINATION CONTROLS						
Solenoid	Solenoid or Manual	Solenoid and Pilot	Solenoid and Pilot or Manual	Servo	Thermal	Detent

LINES	
Crossing	Joining

MEASUREMENT		
Pressure	Temperature	Flow

MANUAL CONTROL					
Push-pull Lever	Manual Shutoff	General Manual	Push Button	Pedal	Spring

FLUID STORAGE RESERVOIRS			
Vented	Pressurized	Return Above Fluid Level	Return Below Fluid Level

HYDRAULIC SYMBOLS - ELECTRICAL							
Transducer (Fluid)	Transducer (Gas / Air)	Generator	Electric Motor	Pressure Switch	Pressure Switch (Adjustable)	Temperature Switch	Electrical Wire

ELECTRICAL SYMBOLS				
Pressure Switch	Temperature Switch	Level Switch	Flow Switch	Circuit Breaker

BASIC ELECTRICAL COMPONENT SYMBOLS	
	<b>Fuse:</b> A component in an electrical circuit that will open the circuit if too much current flows through it.
	<b>Switch (Normally Open):</b> A switch that will close at a specified point (temp, press, etc.). The circle indicates that the component has screw terminals and a wire can be disconnected from it.
	<b>Switch (Normally Closed):</b> A switch that will open at a specified point (temp, press, etc.). No circle indicates that the wire cannot be disconnected from the component.
	<b>Ground (Wired):</b> This indicates that the component is connected to a grounded wire. The grounded wire is fastened to the machine.
	<b>Ground (Case):</b> This indicates that the component does not have a wire connected to ground. It is grounded by being fastened to the machine.
	<b>Reed Switch:</b> A switch whose contacts are controlled by a magnet. A magnet closes the contacts of a normally open reed switch; it opens the contacts of a normally closed reed switch.
	<b>Sender:</b> A component that is used with a temperature or pressure gauge. The sender measures the temperature or pressure. Its resistance changes to give an indication to the gauge of the temperature or pressure.
	<b>Relay (Magnetic Switch):</b> A relay is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close the switch part of the relay.
	<b>Solenoid:</b> A solenoid is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or move a piece of metal that can do work.
	<b>Magnetic Latch Solenoid:</b> An electrical component that is activated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make electromagnet when current flows through them. It also has an internal switch that places the latch coil circuit open at the time the coil latches.

HARNES AND WIRE SYMBOLS	
<b>Wire, Cable, or Harness Assembly Identification:</b> Includes Harness Identification Letters and Harness Connector Serialization Codes (see sample).	
<b>Harness Identification Letter(s):</b> (A, B, C, AA, AB, AC, ...)	
<b>Harness Connector Serialization Code:</b> The "C" stands for "Connector" and the number indicates which connector in the harness (C1, C2, C3, ...)	
<b>Harness identification code:</b> This example indicates wire group 325, wire 135 in harness "AG".	
<b>Deutsch connector:</b> Typical representation of a Deutsch connector. The plug contains all sockets and the receptacle contains all pins.	
<b>Sure-Seal connector:</b> Typical representation of a Sure-Seal connector. The plug and receptacle contain both pins and sockets.	



# Schematic

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## **420F2 and 430F2 Backhoe Loader Hydraulic System**

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LYB1-UP  
HWC1-UP  
LYC1-UP  
HWD1-UP  
LBS1-UP  
NSB1-UP  
LYD1-UP  
HWE1-UP  
LYE1-UP  
HWG1-UP

# COMPONENT LOCATION

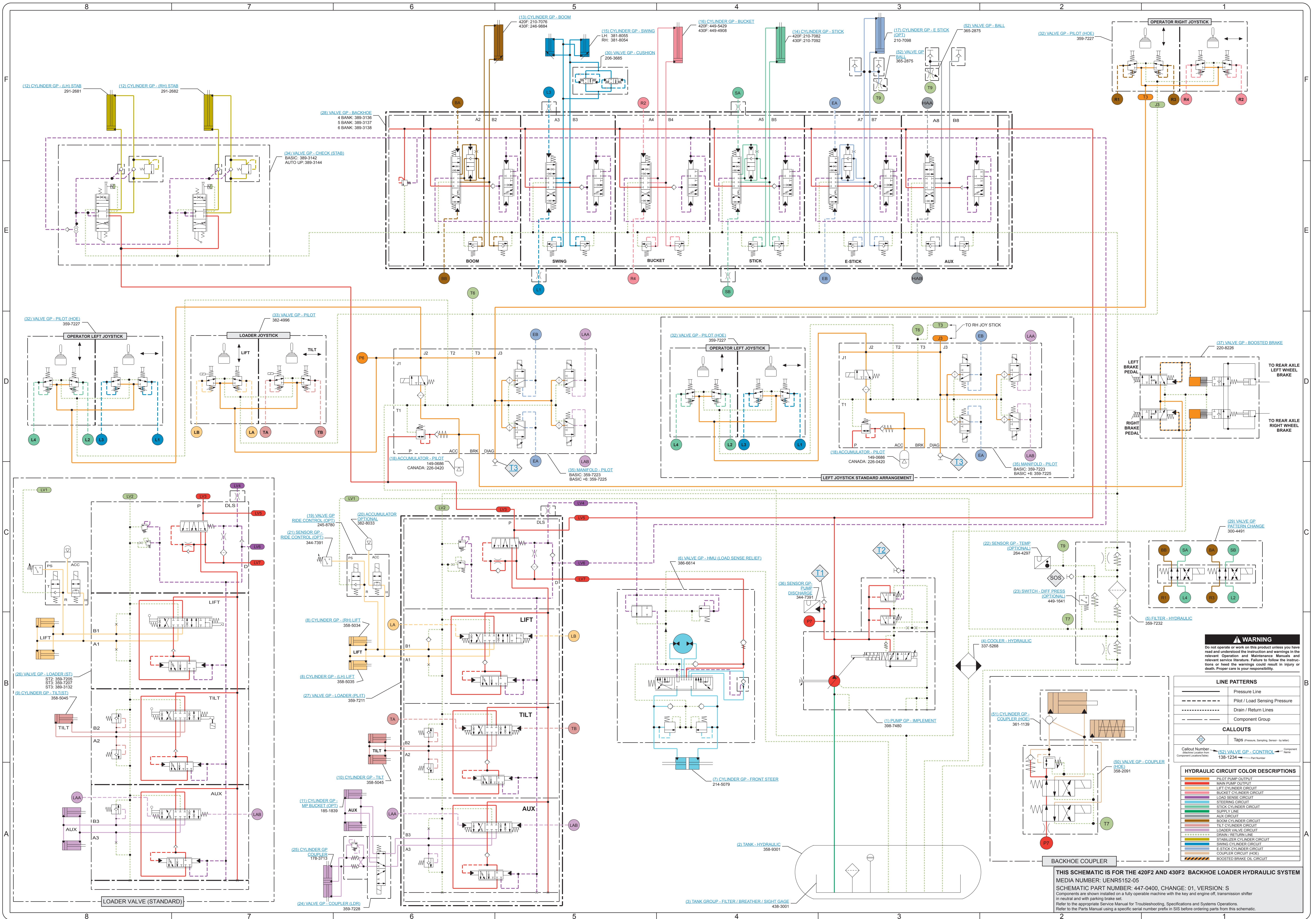


Description	Part Number	Machine Location	Schematic Location
Pump Gp - Implement	398-7480	<a href="#">1</a>	<a href="#">B-3</a>
Tank - Hydraulic	358-9301	<a href="#">2</a>	<a href="#">A-4</a>
Tank Gp - Filter / Breather / Sight Gage	438-3001	<a href="#">3</a>	<a href="#">A-4</a>
Cooler - Hydraulic	337-5268	<a href="#">4</a>	<a href="#">B-2</a>
Filter Gp - Hydraulic	359-7232	<a href="#">5</a>	<a href="#">B-1</a>
Valve Gp - HMU (Load Sense Relief)	386-6614	<a href="#">6</a>	<a href="#">C-4</a>
Cylinder Gp - Front Steer	214-5097	<a href="#">7</a>	<a href="#">A-4</a>
Cylinder Gp - Lift	LH: 358-5034	<a href="#">8</a>	<a href="#">B-6</a>
	RH: 358-5035		
Cylinder Gp - Tilt (Single)	358-5044	<a href="#">9</a>	<a href="#">B-8</a>
Cylinder Gp - Tilt (Dual)	358-5045	<a href="#">10</a>	<a href="#">A-6</a>
Cylinder Gp - MP Bucket (OPT)	185-1839	<a href="#">11</a>	<a href="#">A-6</a>
Cylinder Gp - Stab	LH: 291-2681	<a href="#">12</a>	<a href="#">F-8, F-7</a>
	RH: 291-2682		
Cylinder Gp - Boom	420F: 210-7076	<a href="#">13</a>	<a href="#">F-5</a>
	430F: 246-9884		
Cylinder Gp - Stick	420F: 210-7082	<a href="#">14</a>	<a href="#">F-4</a>
	430F: 210-7092		
Cylinder Gp - Swing	LH: 381-8055	<a href="#">15</a>	<a href="#">F-5</a>
	RH: 381-8054		
Cylinder Gp - Bucket	420F: 449-5429	<a href="#">16</a>	<a href="#">F-4</a>
	430F: 449-4908		
Cylinder Gp - E-Stick	210-7098	<a href="#">17</a>	<a href="#">F-3</a>
Accumulator - Pilot	149-0686	<a href="#">18</a>	<a href="#">D-6, D-3</a>
Accumulator - Pilot (Canada)	226-0420		
Valve Gp - Ride Control (OPT)	245-8780	<a href="#">19</a>	<a href="#">C-6</a>
Accumulator (OPT)	382-8033	<a href="#">20</a>	<a href="#">C-6</a>
Sensor - Ride Control (OPT)	344-7391	<a href="#">21</a>	<a href="#">C-7</a>
Sensor - Temp (OPT)	264-4297	<a href="#">22</a>	<a href="#">C-2</a>
Switch - Diff Temp (OPT)	449-1641	<a href="#">23</a>	<a href="#">C-2</a>
Valve Gp - Coupler (LDR)	359-7228	<a href="#">24</a>	<a href="#">A-6</a>
Cylinder Gp - Coupler	178-3713	<a href="#">25</a>	<a href="#">A-7</a>
Valve Gp - Loader (ST 2)	359-7205	<a href="#">26</a>	<a href="#">B-8</a>
Valve Gp - Loader (ST 3)	359-7207		
Valve Gp - Loader (ST 3)	389-3132		
Valve Gp - Loader (PL/IT)	359-7211	<a href="#">27</a>	<a href="#">B-6</a>
Valve Gp - Backhoe	4 Bank: 389-3136	<a href="#">28</a>	<a href="#">F-6</a>
	5 Bank: 389-3137		
	6 Bank: 389-3138		
Valve Gp - Pattern Change	300-4491	<a href="#">29</a>	<a href="#">C-1</a>
Valve Gp - Cushion	206-3685	<a href="#">30</a>	<a href="#">F-5</a>
Valve Gp - Pilot (HOE)	359-7227	<a href="#">32</a>	<a href="#">F-2, D-8, D-4</a>
Valve Gp - Pilot	382-4996	<a href="#">33</a>	<a href="#">D-7</a>
Valve Gp - Pilot (STAB)	Basic: 389-3142	<a href="#">34</a>	<a href="#">F-7</a>
	Auto Up: 389-3144		
Manifold - Pilot (BASIC)	359-7223	<a href="#">35</a>	<a href="#">C-5, C-2</a>
Manifold - Pilot (BASIC +6)	359-7225		
Sensor - Pump Discharge	344-7391	<a href="#">36</a>	<a href="#">C-4</a>
Valve Gp - Boosted Brake	220-8226	<a href="#">37</a>	<a href="#">D-1</a>
Valve Gp - Coupler (HOE)	358-2091	<a href="#">50</a>	<a href="#">A-2</a>
Cylinder Gp - Coupler (HOE)	361-1139	<a href="#">51</a>	<a href="#">B-2</a>
Valve Gp - Ball	365-2875	<a href="#">52</a>	<a href="#">F-3</a>

# TAP LOCATION



Tap Number	Description	Schematic Location
<a href="#">T1</a>	Pump Discharge Pressure	<a href="#">C-3</a>
<a href="#">T2</a>	Load Sense Pressure	<a href="#">C-3</a>
<a href="#">T3</a>	Pilot Pressure	<a href="#">C-5, C-3</a>
SOS	Oil Sampling (Not Shown - Located at Hydraulic Oil Filter)	<a href="#">C-2</a>



**WARNING**  
 Do not operate or work on this product unless you have read and understood the instruction and warnings in the relevant Operation and Maintenance Manuals and relevant service literature. Failure to follow the instructions or heed the warnings could result in injury or death. Proper care is your responsibility.

**LINE PATTERNS**

- Pressure Line
- Pilot / Load Sensing Pressure
- Drain / Return Lines
- Component Group

**CALLOUTS**

Callout Number: [Component Label/Part Number]

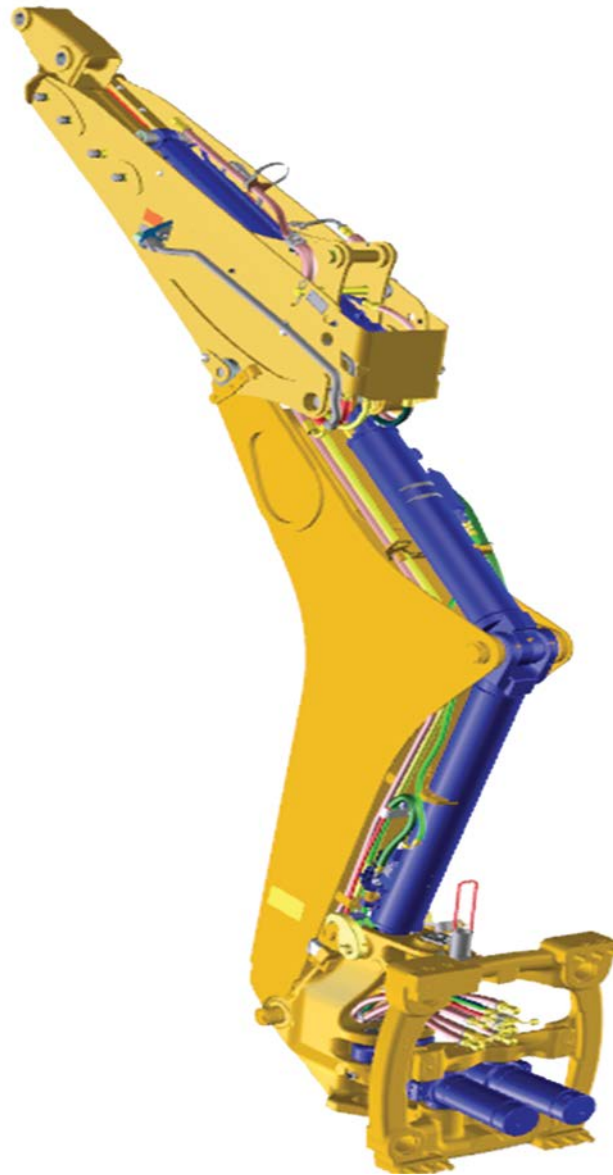
Tap# Pressure, Sensing, Sensor, by letter

138-1234 [Component Label]

**HYDRAULIC CIRCUIT COLOR DESCRIPTIONS**

- PILOT PUMP OUTPUT
- MAIN PUMP OUTPUT
- LIFT CYLINDER CIRCUIT
- BUCKET CYLINDER CIRCUIT
- LOAD SENSE CIRCUIT
- STEERING CIRCUIT
- STICK CYLINDER CIRCUIT
- SUPPLY LINE
- AUX CIRCUIT
- BOOM CYLINDER CIRCUIT
- TILT CYLINDER CIRCUIT
- DRAIN / RETURN LINE
- STABILIZER CYLINDER CIRCUIT
- SWING CYLINDER CIRCUIT
- E-STICK CYLINDER CIRCUIT
- COUPLER CIRCUIT (HOE)
- BOOSTED BRAKE OIL CIRCUIT

# BOOM WITH E-STICK



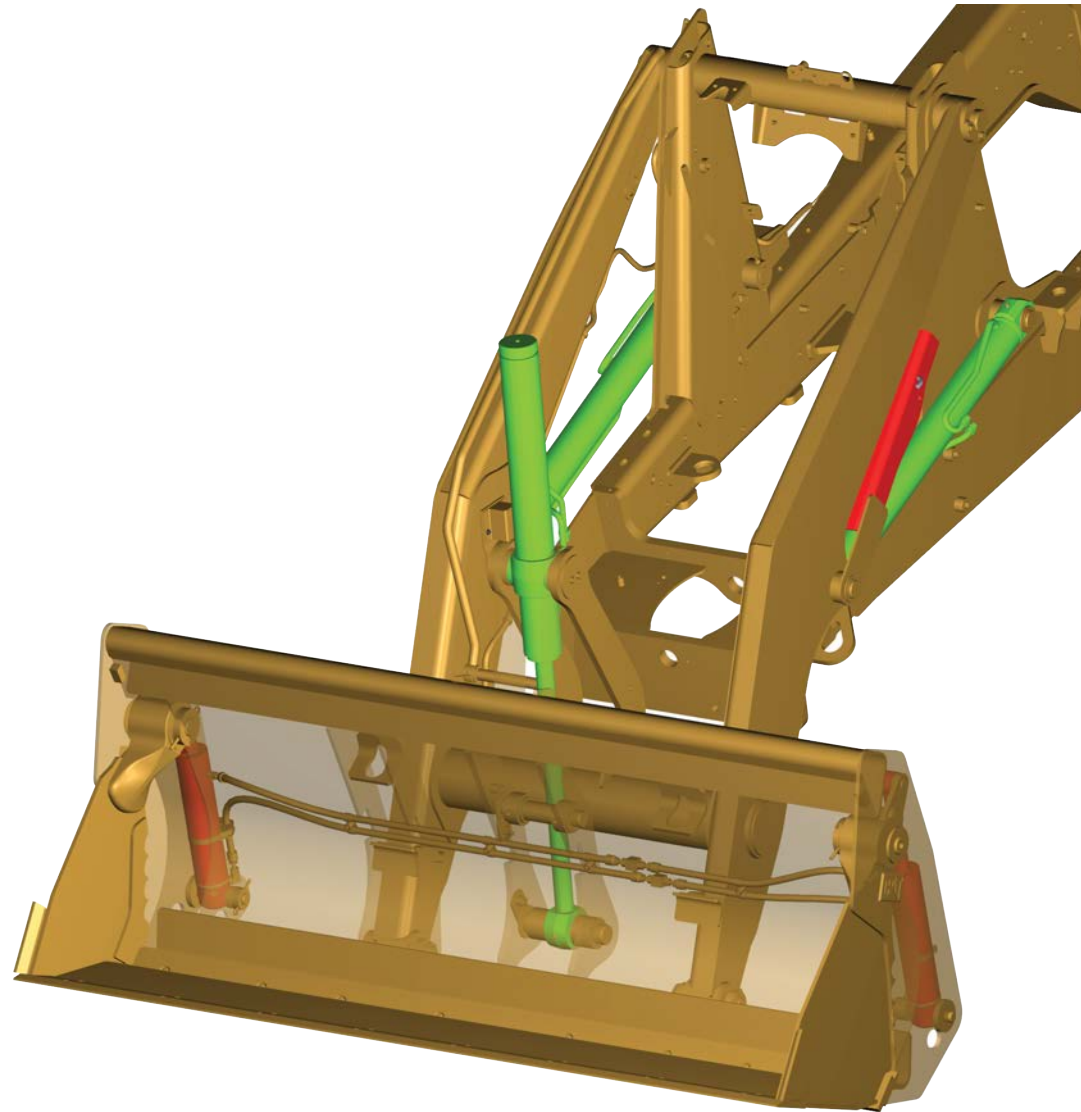
# FRONT VIEW 1



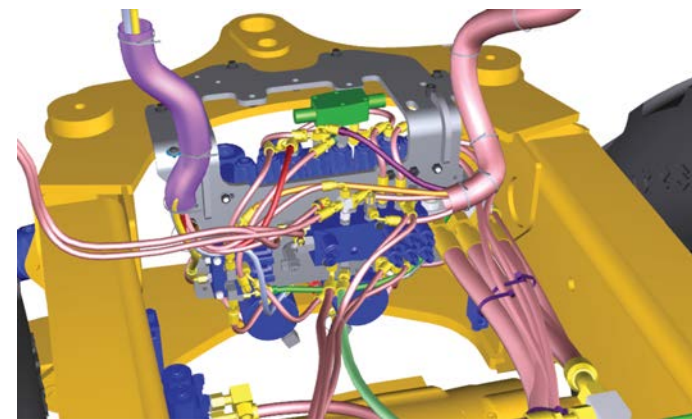
# FRONT VIEW 2



# MP BUCKET OPTION



# REAR MACHINE VIEWS



# UNDER CAB VIEW

