CASE IH AGRICULTURE

SERVICE MANUAL

AXIAL-FLOW 7120 [Y8G205001 -]
AXIAL-FLOW 8120 [Y8G205001 -]
AXIAL-FLOW 9120 [Y8G205001 -]

Contents

INTRODUCTION

Legal advice

AXIAL-FLOW 7120, AXIAL-FLOW 8120, AXIAL-FLOW 9120

All repair and maintenance works listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given; and using, whenever possible, the special tools.

Anyone who carries out the above operations without complying with the procedures shall be responsible for the subsequent damages.

The manufacturer and all the organizations of it's distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages due to the anomalous behavior of parts and/or components not approved by the manufacturer himself, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages due to an anomalous behavior of parts and/or components not approved by the manufacturer.

The information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, as well as to suit the laws and regulations of different countries.

In case of questions, refer to your Sales and Service Networks.

Basic instructions - How To Use and Navigate Through This Manual

AXIAL-FLOW 7120, AXIAL-FLOW 8120, AXIAL-FLOW 9120

Technical Information

This manual has been produced by a new technical information system. This new system is designed to deliver technical information electronically through CDROM and in paper manuals. A coding system called ICE has been developed to link the technical information to other Product Support functions, e.g., Warranty.

Technical information is written to support the maintenance and service of the functions or systems on a customer's machine. When a customer has a concern on his machine it is usually because a function or system on his machine is not working at all, is not working efficiently, or is not responding correctly to his commands. When you refer to the technical information in this manual to resolve that customer's concern, you will find all the information classified using the new ICE coding, according to the functions or systems on that machine. Once you have located the technical information for that function or system then you will find all the mechanical, electrical or hydraulic devices, components, assemblies and sub assemblies for that function or system. You will also find all the types of information that have been written for that function or system, the technical data (specifications), the functional data (how it works), the diagnostic data (fault codes and troubleshooting) and the service data (remove, install adjust, etc.).

By integrating this new ICE coding into technical information , you will be able to search and retrieve just the right piece of technical information you need to resolve that customer's concern on his machine. This is made possible by attaching 3 categories to each piece of technical information during the authoring process.

The first category is the Location, the second category is the Information Type and the third category is the Product:

- LOCATION - is the component or function on the machine, that the piece of technical information is going to describe e.g. Fuel tank.
- INFORMATION TYPE - is the piece of technical information that has been written for a particular component or function on the machine e.g. Capacity would be a type of Technical Data that would describe the amount of fuel held by the Fuel tank.
- PRODUCT - is the model for which the piece of technical information is written.

Every piece of technical information will have those 3 categories attached to it. You will be able to use any combination of those categories to find the right piece of technical information you need to resolve that customer's concern on his machine.

That information could be:

- the description of how to remove the cylinder head
- a table of specifications for a hydraulic pump
- a fault code
- a troubleshooting table
- a special tool

How to Use this Manual

This manual is divided into Sections. Each Section is then divided into Chapters. Contents pages are included at the beginning of the manual, then inside every Section and inside every Chapter. An alphabetical Index is included at the end of a Chapter. Page number references are included for every piece of technical information listed in the Chapter Contents or Chapter Index.

Each Chapter is divided into four Information types:

- Technical Data (specifications) for all the mechanical, electrical or hydraulic devices, components and, assemblies.
- Functional Data (how it works) for all the mechanical, electrical or hydraulic devices, components and assemblies.
- Diagnostic Data (fault codes, electrical and hydraulic troubleshooting) for all the mechanical, electrical or hydraulic devices, components and assemblies.
- Service data (remove disassembly, assemble, install) for all the mechanical, electrical or hydraulic devices, components and assemblies.

Sections

Sections are grouped according to the main functions or a systems on the machine. Each Section is identified by a letter A, B, C etc. The amount of Sections included in the manual will depend on the type and function of the machine that the manual is written for. Each Section has a Contents page listed in alphabetic/numeric order. This table illustrates which Sections could be included in a manual for a particular product.

	SECTION										
	A - Distribution Systems										
		B - Power Production									
			C - Power Train								
				D - Travelling							
					E - Body and Structure						
						F - Frame Positioning					
							G - Tool Positioning				
								H - Working Arm			
									J - Tools and Couplers		
										K - Crop Processing	
											L - Field Processing
PRODUCT											
Tractors	X	X	X	X	X	X		X	X		
Vehicles with working arms: backhoes, excavators, skid steers, ...	X	X	X	X	X	X	X	X	X		
Combines, forage harvesters, balers, ...	X	X	X	X	X	X	X	X	X	X	
Seeding, planting, floating, spraying equipment, ...	X	X	X	X	X	X	X		X		X
Mounted equipment and tools, ...					X	X	X		X		

SERVICE MANUAL

DISTRIBUTION SYSTEMS

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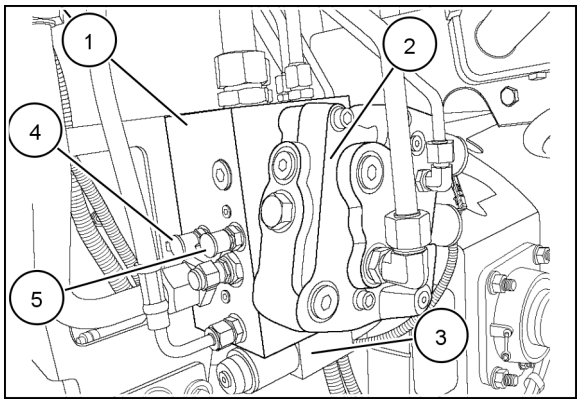
Stack valve - Overview - Main Stack Valve

AXIAL-FLOW 7120, AXIAL-FLOW 8120, AXIAL-FLOW 9120



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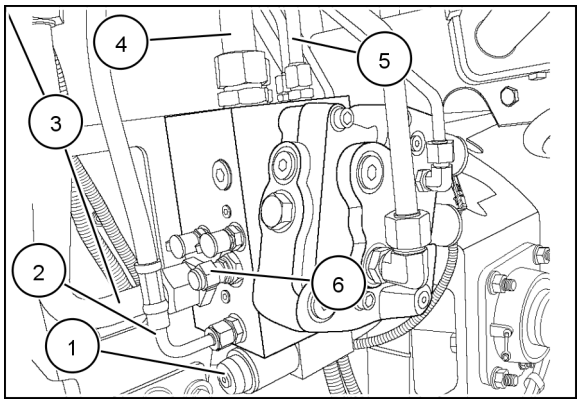
The main stack valve, **(1)** is located on the left side of the combine, just behind the rotor access covers. The main stack is the first to receive oil directly from the PFC pump, and contains the steering priority valve, header raise/lower valve **(2)**, and unloading auger swing valve **(3)** as well as the optional accumulator solenoid and header lift pressure sensor. Oil flow for the fixed speed feeder reverser circuit is also taken directly from the main stack valve.

The main stack valve contains test fittings for pump output [DIAG] **(4)** and signal line [LS DIAG] **(5)** pressures.



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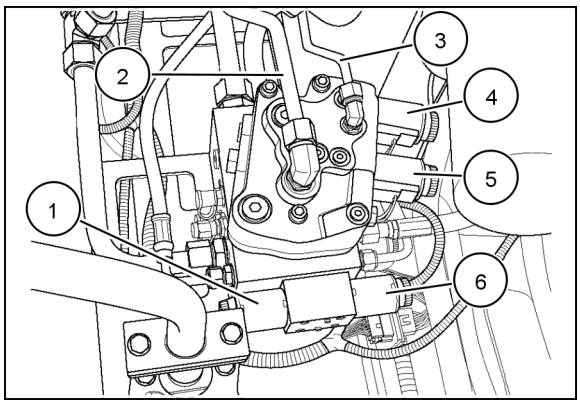
Front View Main Stack Valve

1. Unload Swing Extend Solenoid
2. Line to Unload Swing Cylinder, Rod End
3. Return Line to Pump
4. Supply Line to Feeder Valve
5. Priority Supply to Steering
6. Thermal Relief Valve, Header Lift



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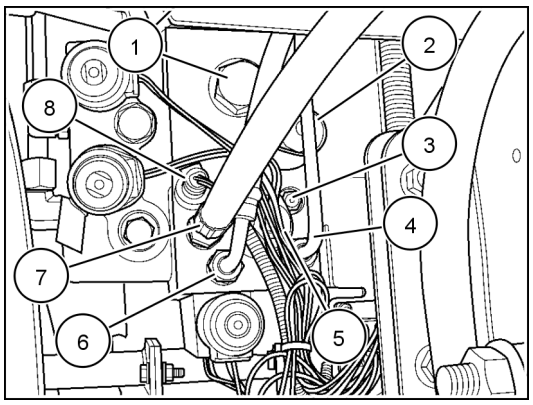
Side View of Main Stack Valve

1. Unload Swing Extend Solenoid
2. Line to Header Lift Cylinders
3. Regulated Pressure Line from Park Brake Valve
4. Header Raise Solenoid
5. Header Lower Solenoid
6. Unload Swing Retract Solenoid



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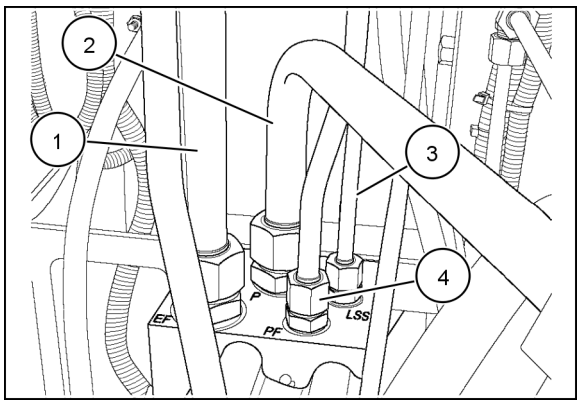
Rear View of Main Stack Valve

1. Steering Priority Valve
2. Signal (Jammer) Solenoid Valve
3. Check Valve and Bleed Orifice
4. Signal Line to Pump
5. Accumulator Solenoid Valve
6. Line to Unload Cylinder
7. Line to Accumulator
8. Header Lift Pressure Sensor **B-29**



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Top View of Main Stack Valve

1. Supply Line to Feeder Stack Valve
2. Supply Line from PFC Pump
3. Sense Line from Steering Motor
4. Supply Line to Steering Motor

Stack valve - Overview - Feeder Valve

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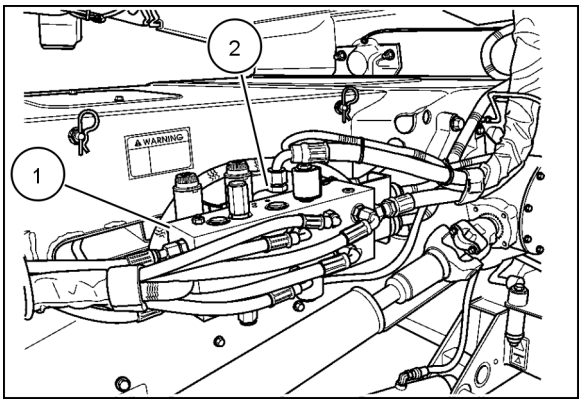

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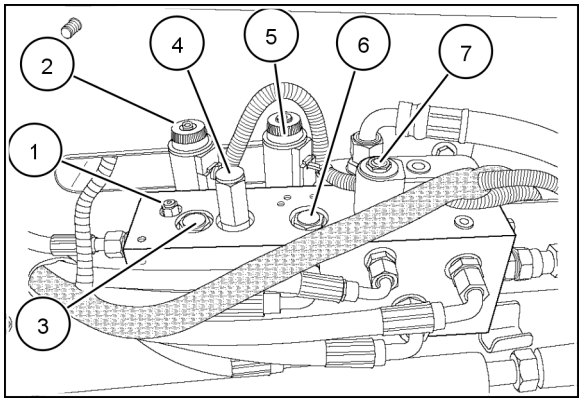
The feeder valve **(1)**, is located on the left side of the feeder housing, and is used to provide hydraulic control of all header functions. The feeder valve supports the reel drive valve **(2)**, which is mounted on the inside of the feeder valve, and includes the reel raise/lower and reel fore/aft valves as standard. If the combine is equipped with header lateral tilt, then that valve is also included in the feeder stack.



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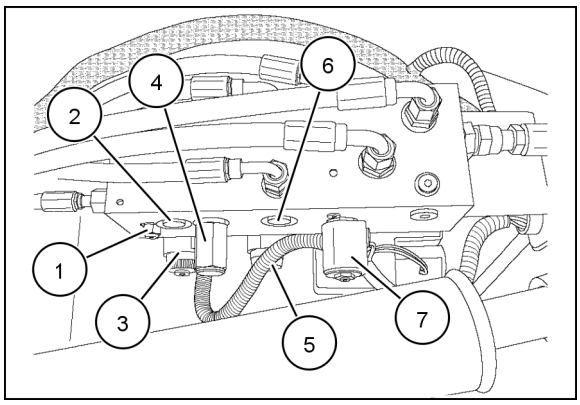
Top View of Feeder Stack Valve

1. Load Sense Check Valve
2. Lateral Tilt CW Solenoid
3. Load Check Valve, Lateral Tilt
4. Port Relief Valve, Lateral Tilt
5. Reel Aft Solenoid
6. Load Check Valve, Reel Fore
7. Reel Lower Solenoid



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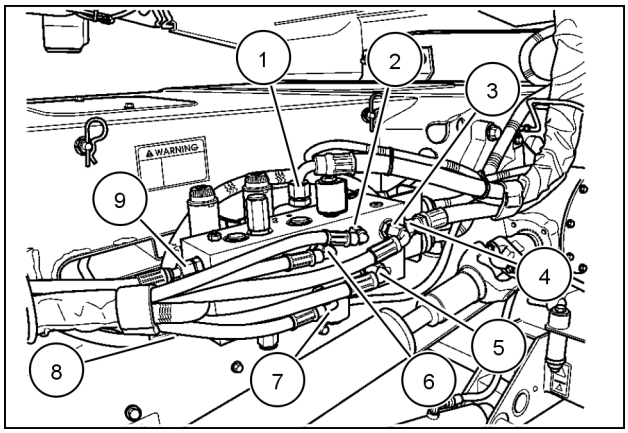
Bottom View of Feeder Stack Valve

1. Load Sense Check Valve
2. Load Check Valve, Lateral Tilt
3. Lateral Tilt CCW Solenoid
4. Port Relief Valve, Lateral Tilt
5. Reel Fore Solenoid
6. Load Check Valve, Reel Aft
7. Reel Raise Solenoid

The port assignments on the feeder stack valve are as follows:



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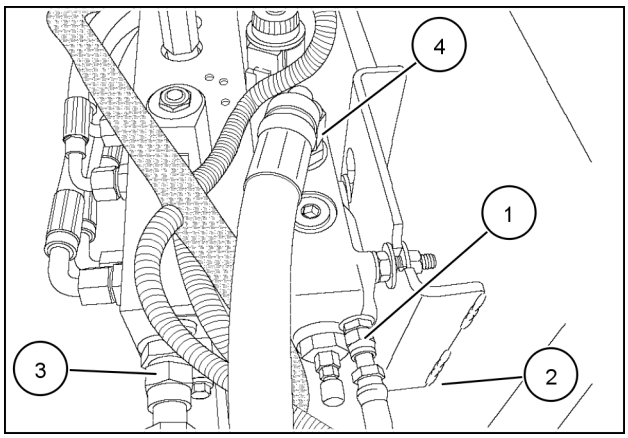
Feeder Stack Valve Ports

1. "IN" - PFC pump pressure oil input from main stack valve
2. "Lift" - Output to reel lift cylinders
3. "T1" - Return from reel drive motor
4. "T" - Return oil to reservoir
5. "Reel" - Output to reel drive motor
6. "Fore" - Output to move reel forward
7. "Aft" - Output to move reel backward
8. "Head" - (Front panel, lower port) Lateral tilt output (CW)
9. "Rod" - Lateral tilt output (CCW)



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Feeder Stack Valve, Rear

1. "LS" - Load sense output port (rear of reel drive valve)
2. "PP" - (Bottom of reel drive valve, not visible) Regulated pressure input from regulator/park brake valve
3. "T" - Return to reservoir
4. "IN" - PFC pump pressure oil input from main stack valve

Hydraulic pump - Dynamic description

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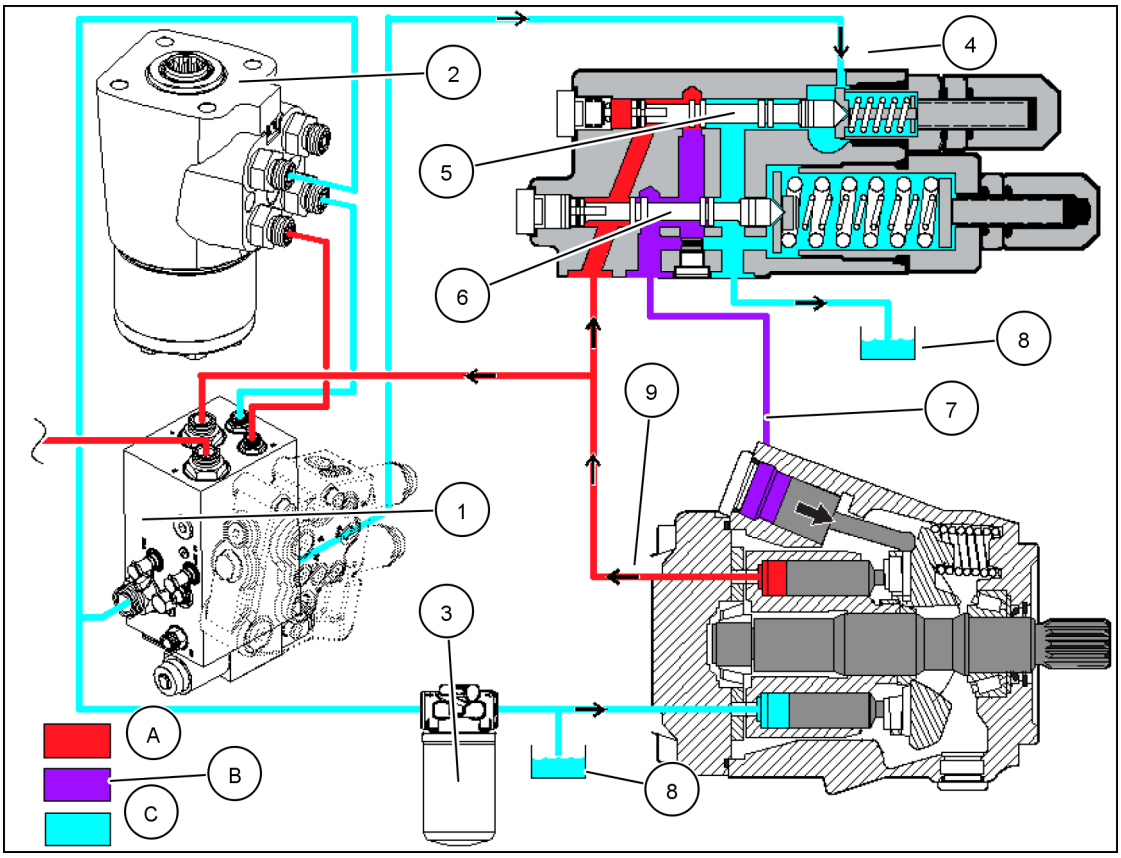

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Low Pressure Standby

A. Standby Pressure, **19 bar** (**275.5 psi**)	4. Signal Line In
B. Control Pressure	5. Flow Compensator Spool
C. Return to Reservoir/Pump	6. High Pressure Compensator Spool
1. Main Stack Valve	7. To Control Piston
2. Steering Hand Pump	8. Drain to Tank
3. Hydraulic Return Filter	9. Pump Output

LOW PRESSURE STANDBY

When there is no demand for oil flow, the pump will go into the low-pressure standby mode. Low-pressure standby means low pressure and minimal flow in the system. When the engine is not running, no pressure exists in any circuit. In this state, the swash plate control spring is holding the piston pump at full stroke. When the engine is started and the pump begins to rotate, it will momentarily try to pump oil. This creates outlet pressure at the pump. This pressure is directed to the flow compensator spool **(5)** and the high-pressure compensator spool **(6)** through passages in the piston pump back plate. The two spools in the pump compensator are both spring biased. The flow compensator spool has a **28 bar** (**400 psi**) spring , while the high-pressure compensator spool has a **210 bar** (**3050 psi**) spring. The pump pressure is directed to the non-spring side of these two spools. As pressure builds, it will cause the flow compensator spool **(5)** to shift against its spring. When the spool shifts, it allows pump oil to pass **(7)** to the pump control piston. This piston will extend and cause the swash plate to move against the control spring. The swash plate will move to a nearly zero degree angle, de-stroking the pump. In this condition, the pump will only move enough oil to make up for internal leakage within the system and maintain **29 - 38 bar** (**425 - 550 psi**). The pump will remain in this position until there is a demand for oil. In low-pressure standby mode the pump produces less heat and uses less horsepower than an open-center system. Low pressure standby also makes starting the engine easier.

Minimum system pressure is **29 - 38 bar** (**425 - 550 psi**) in the low-pressure standby mode. There is a **0.61 mm** (**0.024 in**) dynamic sensor orifice located in the steering priority spool. The dynamic sensor orifice connects the pump outlet port to the signal port of the pump compensator through the orifice check valve. If the oil in the signal line can flow through the steering hand pump too freely a **0.78 mm** (**0.031 in**) orifice in the steering hand pump signal passage

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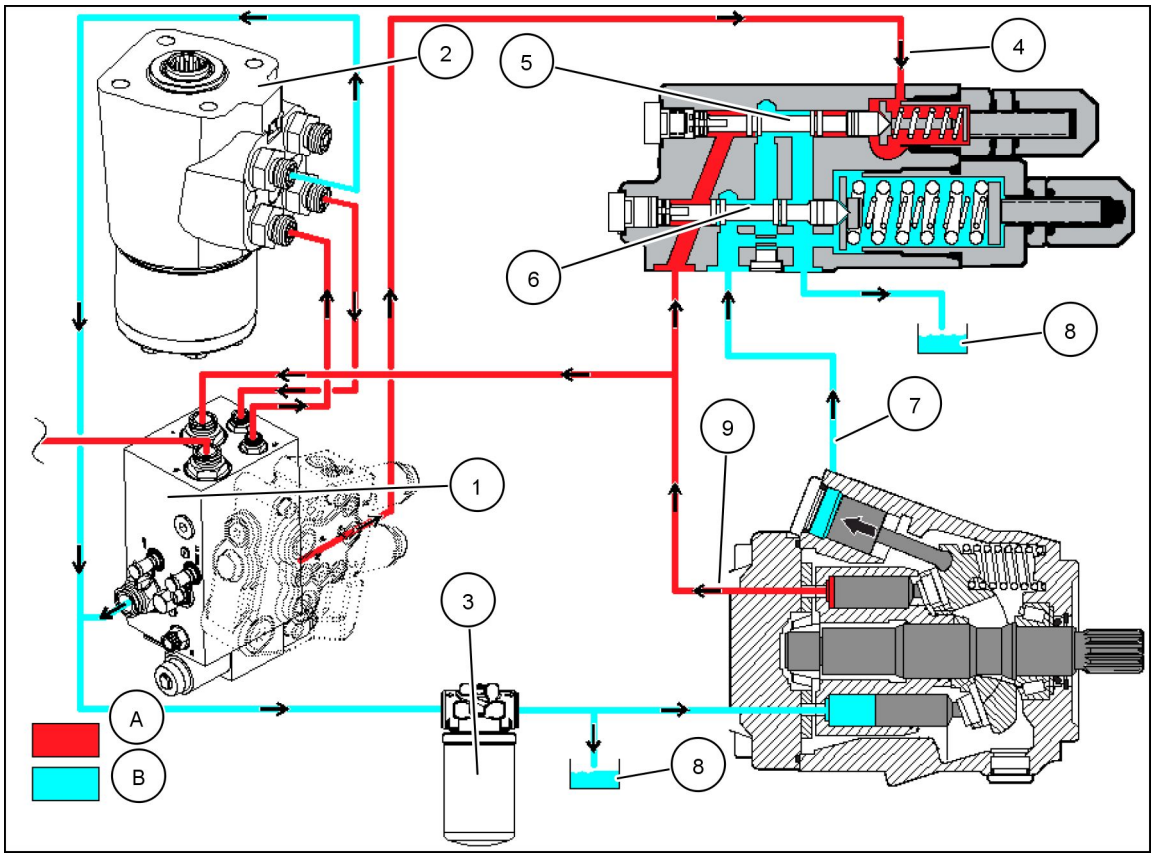
provides back pressure in the signal line. This signal pressure of **3.45 - 10.3 bar** (**50 - 150 psi**) is sent to the spring end of the flow compensator spool through the sense line **(4)**. The spring pressure of **28 bar** (**400 psi**) plus the signal line back pressure puts the pump into low pressure standby mode ranging from **29 - 38 bar** (**425 - 550 psi**).



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Pressure and Flow Compensation

A. Standby Pressure **190 bar** (**2755.0 psi**)	5. Flow Compensator Spool
B. Return to Reservoir/Pump	6. High Pressure Compensator Spool
1. Main Stack Valve	7. To Control Piston
2. Steering Hand Pump	8. Drain to Tank
3. Hydraulic Return Filter	9. Pump Output
4. Signal Line In	

PRESSURE AND FLOW COMPENSATION

The flow of oil from the pump is controlled by the difference in pressure at opposite ends of the flow compensator spool **(5)**. When a valve is opened to operate a function on the combine, the outlet pressure of the pump will drop. This drop in pressure is detected on the non-spring end of the flow compensator spool **(5)**. The spring will now shift the spool and allow oil to drain from the pump control piston into the pump case. The swash plate control spring will tilt the swash plate, causing the pump to provide more oil flow. When the flow demand of the system is met, the swash plate will be tilted to provide only the flow required by the component(s) in use. The working pressure in the system is fed back to the spring-end of the flow compensator spool **(5)** through the sense line. **(4)**. When the outlet pressure is high enough to overcome both the spring and work pressure in the sense line, the flow compensator spool will shift, allowing oil to flow to the control piston at **(7)**, causing the pump to de-stroke to match the demand.