

REPAIR MANUAL

NEW HOLLAND

CX720

CX740

CX760

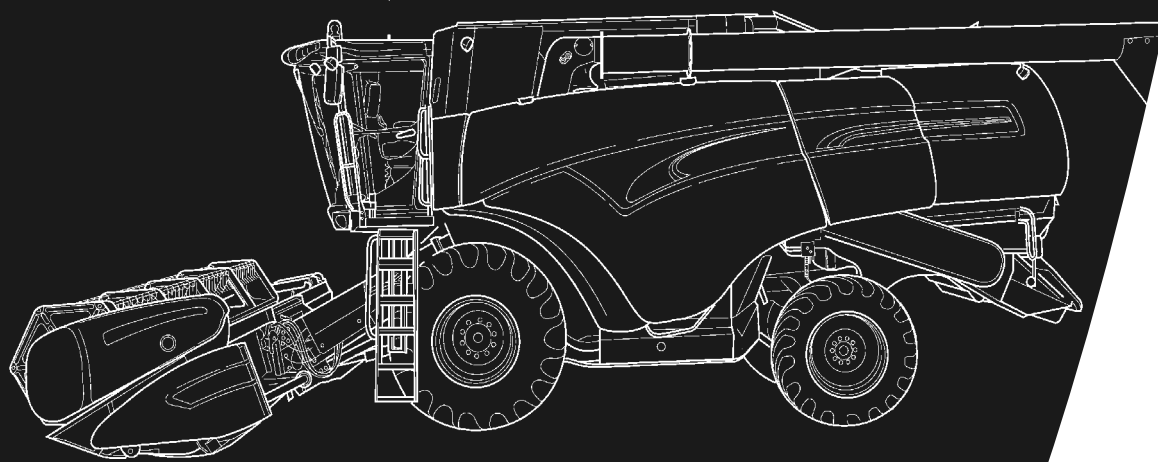
CX780

CX820

CX840

CX860

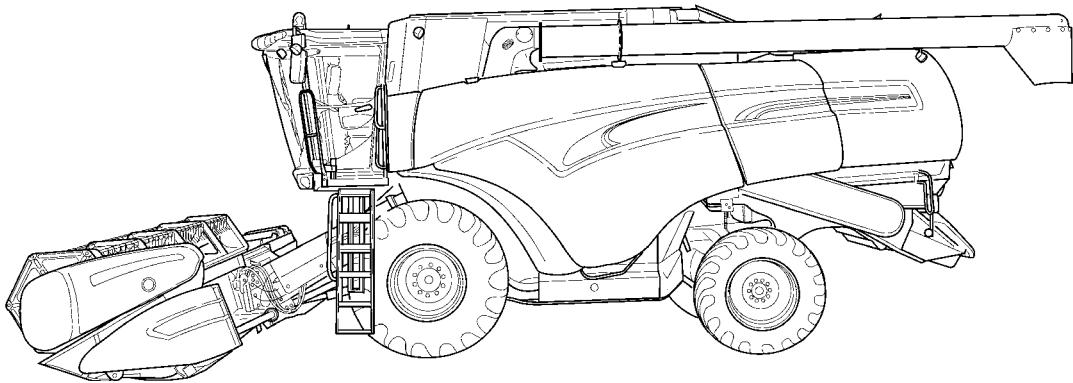
CX880



NEW HOLLAND



REPAIR MANUAL



CX720 , CX740 , CX760 , CX780 , CX820 , CX840 , CX860 , CX880

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IMPORTANT INFORMATION

All repair and maintenance works listed in this manual must be carried out only by staff belonging to the NEW HOLLAND Service network, strictly complying with the instructions given and using, whenever required, the special tools.

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

The manufacturer and all the organizations of its 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.

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Basic instructions (- A.90.A.05)

SHIMMING

For each adjustment operation, select adjusting shims and measure individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value indicated on each shim.

ROTATING SHAFT SEALS

For correct rotating shaft seal installation, proceed as follows:

- before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes
- thoroughly clean the shaft and check that the working surface on the shaft is not damaged
- position the sealing lip facing the fluid; with hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will deviate the fluid towards the inner side of the seal
- coat the sealing lip with a thin layer of lubricant (use oil rather than grease) and fill the gap between the sealing lip and the dust lip on double lip seals with grease
- insert the seal in its seat and press down using a flat punch, do not tap the seal with a hammer or mallet
- whilst inserting the seal, check that it is perpendicular to the seat; once settled, make sure that it makes contact with the thrust element, if required
- to prevent damaging the seal lip on the shaft, position a protective guard during installation operations

O-RING SEALS

Lubricate the O-RING seals before inserting them in the seats, this will prevent them from overturning and twisting, which would jeopardise sealing efficiency.

SEALING COMPOUNDS

Apply one of the following sealing compounds on the mating surfaces marked with an X: RTV SILMATE, RHODORSIL CAF 1 or LOCTITE PLASTIC GASKET. Before applying the sealing compound, prepare the surfaces as follows:

- remove any incrustations using a metal brush;
- thoroughly de-grease the surfaces using one of the following cleaning agents: trichlorethylene, petrol or a water and soda solution.

COTTER PINS

When fitting split cotter pins, ensure that the pin notch is positioned in the direction of the force required to stress the pin. Spiral cotter pins do not require special positioning.

INTRODUCTION

PROTECTING THE ELECTRONIC/ ELECTRICAL SYSTEMS DURING CHARGING OR WELDING

To avoid damage to the electronic/electrical systems, always observe the following:

1. Never make or break any of the charging circuit connections, including the battery connections, when the engine is running.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the combine or on any header attached to the combine.
 - Position the welder ground clamp as close to the welding area as possible.
 - If welding in close proximity to a computer module, then the module should be removed from the combine.
 - Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.
4. Always disconnect the negative cable from the battery when charging the battery in the combine with a battery charger.

IMPORTANT: *If welding must be performed on the unit, either the combine or the header (if it is attached), the battery ground cable must be disconnected from the combine battery. The electronic monitoring system and charging system will be damaged if this is not done.*

Remove the battery ground cable. Reconnect the cable when welding is completed.



WARNING



Battery acid causes severe burns. Batteries contain sulfuric acid. 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 vegetables oil. Call physician immediately. EYES: flush with water for 15 minutes and get prompt medical attention. 84-110

SPARE PARTS

Only use original NEW HOLLAND spare parts bearing the logo shown below.



geninfo_03 1

Only genuine spare parts guarantee the same quality, duration and safety as original parts, as they are the same parts that are assembled during standard production. Only NEW HOLLAND genuine spare parts can offer this guarantee. When ordering spare parts, always provide the following information:

- Machine model (commercial name) and serial number
- part number of the ordered part, which can be found in the "Microfiches" or the "Spare Parts Catalogue", used for order processing

TOOLS

The tools that NEW HOLLAND suggests and illustrate in this manual have been:

- specifically researched and designed for use with NEW HOLLAND machines
- essential for reliable repair operations
- accurately built and rigorously tested so as to offer efficient and long-lasting operation

By using these tools, Repair Personnel will benefit from:

- operating in optimal technical conditions
- obtaining the best results
- saving time and effort
- working in safe conditions

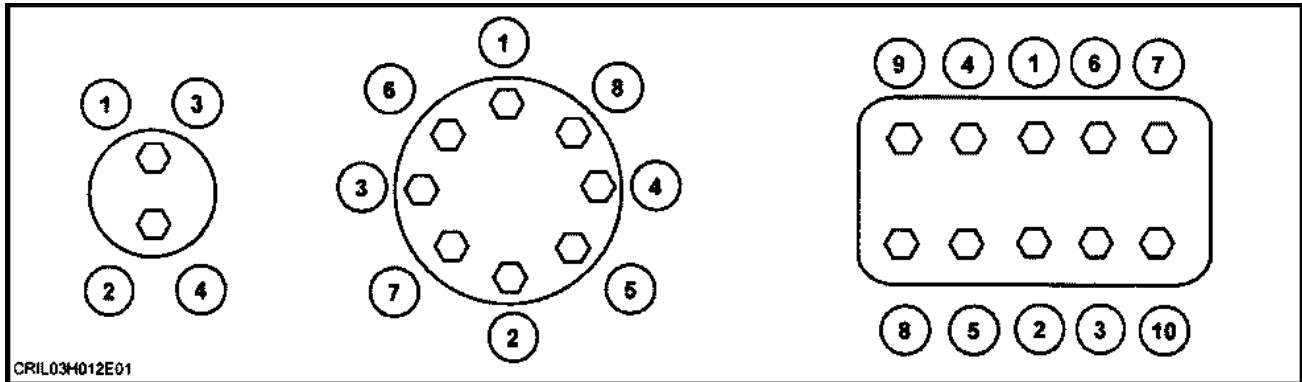
NOTE: Wear limit values indicated for certain parts should be considered to be recommended, but not binding. The terms "front", "rear", "right-hand" and "left-hand" (when referred to different parts) are determined from the rear, facing in the direction of travel of the machine during operation.

INTRODUCTION

Torque (- A.90.A.10)

Minimum hardware tightening torques Nm lb ft lb in for normal assembly applications unless otherwise stated

IMPORTANT: Shown below is the suggested initial torque tightening sequences for general applications, tighten in sequence from item 1 through to the last item of the hardware.



df5019-1 1

Imperial hardware

Nominal Size	SAE GRADE 2 Unplated or Silver plated	SAE GRADE 2 plated w/ZnCr GOLD	SAE GRADE 5 Unplated or Silver plated	SAE GRADE 5 plated w/ZnCr GOLD	SAE GRADE 8 Unplated or Silver plated	SAE GRADE 8 plated w/ZnCr GOLD	LOCK-NUTS GR.B w/GR5 BOLT	LOCK-NUTS GR.B w/GR8 BOLT
1/4	6.2 Nm 55 lb in	8.1 Nm 72 lb in	9.7 Nm 86 lb in	13 Nm 112 lb in	14 Nm 121 lb in	18 Nm 157 lb in	6.9 Nm 61 lb in	9.8 Nm 86 lb in
5/16	13 Nm 115 lb in	17 Nm 149 lb in	20 Nm 178 lb in	26 Nm 229 lb in	28 Nm 250 lb in	37 Nm 324 lb in	14 Nm 125 lb in	20 Nm 176 lb in
3/8	23 Nm 17 lb ft	30 Nm 22 lb ft	35 Nm 26 lb ft	46 Nm 34 lb ft	50 Nm 37 lb ft	65 Nm 48 lb ft	26 Nm 19 lb ft	35 Nm 26 lb ft
7/16	37 Nm 27 lb ft	47 Nm 35 lb ft	57 Nm 42 lb ft	73 Nm 54 lb ft	80 Nm 59 lb ft	104 Nm 77 lb ft	41 Nm 30 lb ft	57 Nm 42 lb ft
1/2	27 Nm 42 lb ft	73 Nm 54 lb ft	87 Nm 64 lb ft	113 Nm 83 lb ft	123 Nm 91 lb ft	159 Nm 117 lb ft	61 Nm 45 lb ft	88 Nm 64 lb ft
9/16	81 Nm 60 lb ft	104 Nm 77 lb ft	125 Nm 92 lb ft	163 Nm 120 lb ft	176 Nm 130 lb ft	229 Nm 169 lb ft	88 Nm 65 lb ft	125 Nm 92 lb ft
5/8	112 Nm 83 lb ft	145 Nm 107 lb ft	174 Nm 128 lb ft	224 Nm 165 lb ft	244 Nm 180 lb ft	316 Nm 233 lb ft	122 Nm 90 lb ft	172 Nm 127 lb ft
3/4	198 Nm 146 lb ft	256 Nm 189 lb ft	306 Nm 226 lb ft	397 Nm 293 lb ft	432 Nm 319 lb ft	560 Nm 413 lb ft	217 Nm 160 lb ft	305 Nm 226 lb ft
7/8	193 Nm 142 lb ft	248 Nm 183 lb ft	495 Nm 365 lb ft	641 Nm 473 lb ft	698 Nm 515 lb ft	904 Nm 667 lb ft	350 Nm 258 lb ft	494 Nm 364 lb ft
1.0	289 Nm 213 lb ft	373 Nm 275 lb ft	742 Nm 547 lb ft	960 Nm 708 lb ft	1048 Nm 773 lb ft	1356 Nm 1000 lb ft	523 Nm 386 lb ft	739 Nm 545 lb ft

INTRODUCTION

Metric hardware

Nominal Size	CLASS 5.8 UNPLATED	CLASS 5.8 UNPLATED	CLASS 8.8 UNPLATED	CLASS 8.8 UNPLATED	CLASS 10.9 UNPLATED	CLASS 10.9 UNPLATED	LOCKNUT CL.8 w/CL8.8 BOLT
M4	1.7 Nm 15 lb in	2.2 Nm 19 lb in	2.6 Nm 23 lb in	3.4 Nm 30 lb in	3.7 Nm 33 lb in	4.8 Nm 42 lb in	1.8 Nm 16 lb in
M6	5.8 Nm 51 lb in	7.6 Nm 67 lb in	8.9 Nm 79 lb in	12 Nm 102 lb in	13 Nm 115 lb in	17 Nm 150 lb in	6.3 Nm 56 lb in
M8	14 Nm 124 lb in	18 Nm 159 lb in	22 Nm 195 lb in	28 Nm 248 lb in	31 Nm 274 lb in	40 Nm 354 lb in	15 Nm 133 lb in
M10	28 Nm 21 lb ft	36 Nm 27 lb ft	43 Nm 32 lb ft	56 Nm 41 lb ft	61 Nm 45 lb ft	79 Nm 58 lb ft	30 Nm 22 lb ft
M12	49 Nm 36 lb ft	63 Nm 46 lb ft	75 Nm 55 lb ft	97 Nm 72 lb ft	107 Nm 79 lb ft	138 Nm 102 lb ft	53 Nm 39 lb ft
M16	121 Nm 89 lb ft	158 Nm 117 lb ft	186 Nm 137 lb ft	240 Nm 177 lb ft	266 Nm 196 lb ft	344 Nm 254 lb ft	131 Nm 97 lb ft
M20	237 Nm 175 lb ft	307 Nm 107 lb ft	375 Nm 277 lb ft	485 Nm 358 lb ft	519 Nm 383 lb ft	671 Nm 495 lb ft	265 Nm 195 lb ft
M24	411 Nm 303 lb ft	531 Nm 392 lb ft	648 Nm 478 lb ft	839 Nm 619 lb ft	897 Nm 662 lb ft	1160 Nm 855 lb ft	458 Nm 338 lb ft

IDENTIFICATION CAP SCREWS AND CARRIAGE BOLTS



SAE
GRADE 2



SAE
GRADE 5



SAE
GRADE 8



REGULAR
NUTS

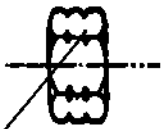


SAE
GRADE 5
HEX NUTS



SAE
GRADE 8
NUTS

LOCKNUTS



GRADE IDENTIFICATION

GRADE A NO NOTCHES
GRADE B ONE CIRCUMFRETIAL NOTCH
GRADE C TWO CIRCUMFRETIAL NOTCHES



GRADE IDENTIFICATION

GRADE A NO MARK
GRADE B LETTER B
GRADE C LETTER C

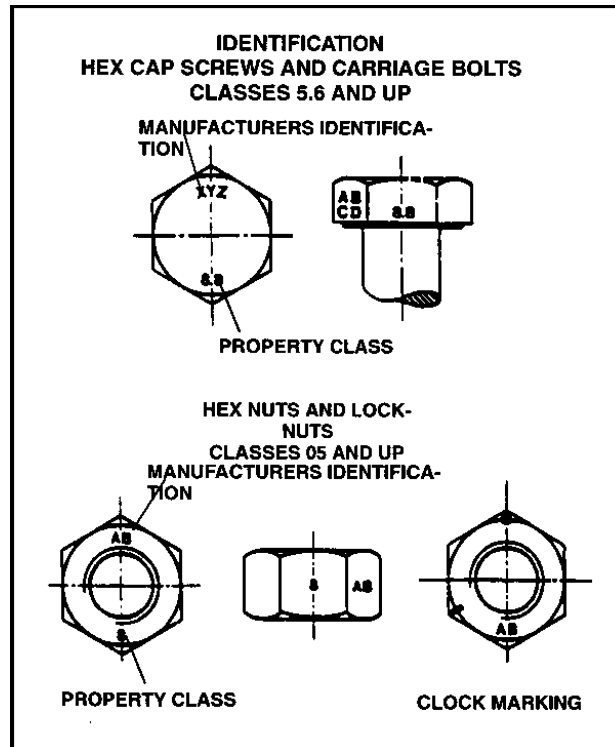


GRADE IDENTIFICATION

GRADE A NO MARKS
GRADE B THREE MARKS
GRADE C SIX MARKS

MARKS NEED NOT BE
LOCATED
AT CORNERS

INTRODUCTION



dave5019 3

INTRODUCTION

Conversion factors (- A.92.A.21)

Linear

1 mm	=	0.03937 in	1 in	=	25.4 mm
1 Km	=	0.6214 miles	1 mile	=	1.6093 km
1 m	=	3.281 ft	1 ft	=	0.3048 m

Area

1 ha	=	2.471 acre	1 acre	=	0.4047 ha
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Volume

1 litre	=	0.0063 barrel	1 barrel	=	158.987 litre
1 litre	=	0.028 US bushel	1 US bushel	=	35.2391 litre
1 litre	=	0.2642 US gal	1 US gal	=	3.7853 litre
1 litre	=	1.057 US quart	1 US quart	=	0.9464 litre
1 mm3	=	0.061 in3	1 in3	=	16387 mm3

Weight

1 kg	=	2.204 pound	1 pound	=	0.4536 kg
------	---	-------------	---------	---	-----------

Torque

1 Nm	=	0.7376 lbf.ft	1 lbf.ft	=	1.3558 Nm
------	---	---------------	----------	---	-----------

Power

1 kW	=	1.358 hp	1 hp	=	0.746 kW
------	---	----------	------	---	----------

Pressure

1 bar	=	14.505 lbf/in2(psi)	1 lbf/in2(psi)	=	0.06894 bar
1 kPa	=	0.145 lbf/in2(psi)	1 lbf/in2(psi)	=	6.894 kPa
1 pa	=	10-5 bar	1 bar	=	100 kPa

Temperature

1 °C	=	((1.8 x ° C) + 32) °F	1 °F	=	(0.56 x (° F - 32)) °C
------	---	-----------------------	------	---	------------------------

Flow

1 L/min	=	0.2642 US gpm	1 US gpm	=	3.7853 L/min
---------	---	---------------	----------	---	--------------

Product identification (- A.80.A.10)

EXPLANATION OF MACHINE SERIAL NUMBERS

Example : n° 221226001

221226001: The first two digits identify the model within a product line:

CX720 = 20

CX740 = 21

CX760 = 22

CX780 = 23

CX820 = 33

CX840 = 30

CX860 = 31

CX880 = 32

221226001: The third digit indicates the product line. There are 5 product lines in Zedelgem:

CX Combine harvesters:	1
TC/L Combine harvesters:	2
Combine headers:	3
Balers:	4
Forage Harvesters:	5

221226001: These 3 digits indicate the batch in which the machine was made.

221226001: Product line number (**1**) and batch together form the series number (1226).

221226001: The last 3 digits are a sequential number for each model within a batch.

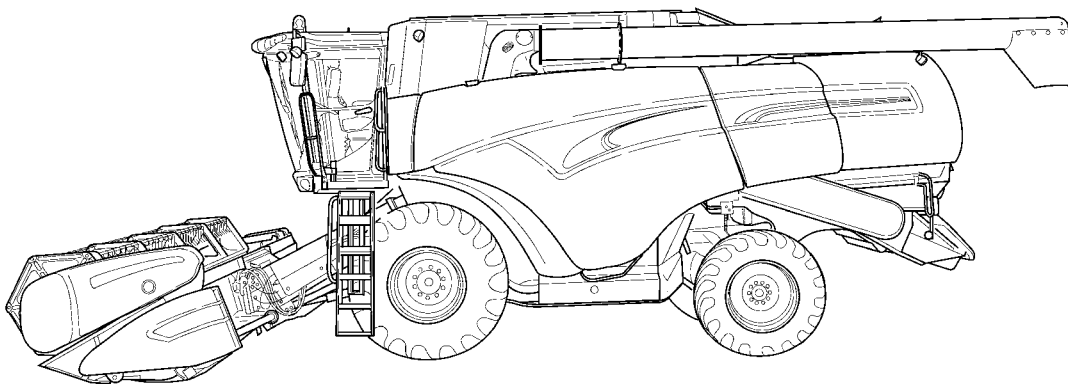
Summarizing we can say that this machine is the first CX760 of serie 1226.

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REPAIR MANUAL

DISTRIBUTION SYSTEMS



CX720 , CX740 , CX760 , CX780 , CX820 , CX840 , CX860 , CX880

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PRIMARY HYDRAULIC POWER SYSTEM - 10.A

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PRIMARY HYDRAULIC POWER SYSTEM - Special tools (A.10.A - D.20.A.40)

DESCRIPTION	NEW HOLLAND PART NUMBER (All Markets Except North America)
Blanking Cap 11/16 ORFS	297671
Pressure Gauge 0 - 10 bar (0 - 150 psi)	293241#
Pressure Gauge 0 - 40 bar (0 - 600 psi)	293242#
Pressure Gauge 0 - 250 bar (0 - 5000 psi)	293244#
Remote valve coupling	5101741 or 293449
Quick release adaptor (Female)	291924
Pressure gauge hose	292246#
1/8 NPT fitting to attach hose 292246 to gauge	291927#
Adaptor M10 x 1.0p x 7/16 JIC male (enables use of gauges with 7/16 JIC hoses if used)	297417
MiniMess (M16x2) Quick attach fitting (procure locally)	
Flow Meter 120 ltr/min (0-50 gal/min) minimum (procure locally)	
# Part of hydraulic pressure test kit 292870	
O-RING FACE SEAL TUBE ADAPTORS	PARKER HANNIFIN PART NUMBER
Tee Piece (M12x1.5 with 9/16 UNF) - CCLS Pump Load sensing	4M12R870MLOS
Tee Piece (13/16 UNF fittings) - Steering	8R6MLOS
Elbow (13/16 UNF fittings) - Steering	8ELOS
Quick Release Fitting (9/16 UNF Male) - CCLS Pump Load Sensing	PD34BTL
Quick Release Fitting (13/16 UNF Male) - Steering	PD38BTL

Hydraulic pump - General specification (A.10.A.20 - D.40.A.10)

MAIN HYDRAULIC PUMP

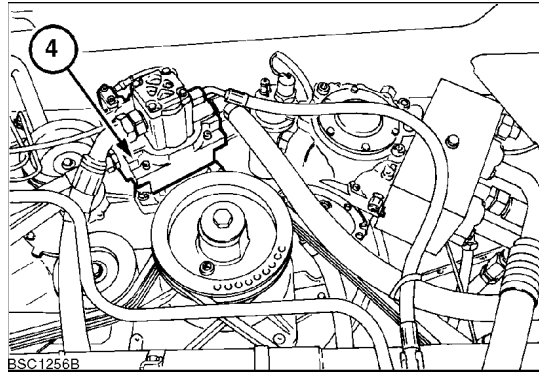
Type	Variable Flow Closed Centre Load Sensing Piston Pump
Minimum Output @ engine rated speed	114 Ltr/min 30 US gal/min
Standby Pressure	21 bar (305 psi)
Maximum System Pressure	207 bar (3000 psi)
Flow to Steering Motor	36 Ltr/min 9.5 US gal/min
Steering Pressure	186 bar (2700 psi)

PRIMARY HYDRAULIC POWER SYSTEM - Static description (A.10.A - C.30.A.20)

The high pressure circuit operates all of the work hydraulics and steering. The circuit is fed by a closed centre load sensing variable displacement pump (4). Oil is drawn by the pump, from the main reservoir, shared with the hydrostatic system, through the inline pressure filter to the mainframe valve block.

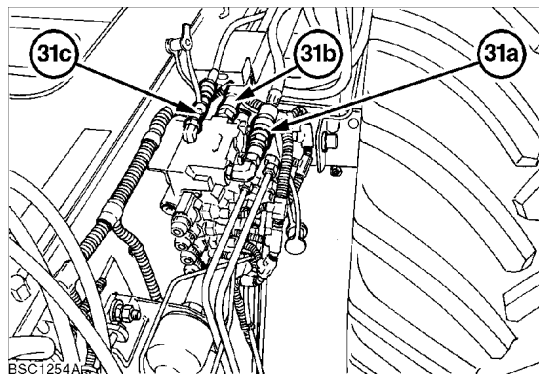
The oil enters the main frame valve block at the priority valve slice and there the oil is split, dependant on demand, to the steering valve, which has priority, or to the other hydraulic functions.

The unloading tube control, drum variator control and header height control are served by the main frame stack.



BSC1256B 1

The straw elevator and header reverser, lateral flotation control, reel vertical and horizontal adjustment and reel speed control are served by the straw elevator stack valve. The straw elevator stack valve is an extension of the main frame stack valve and is connected with pressure (31a), return (31b), and load sensing lines (31c), via quick release couplings.

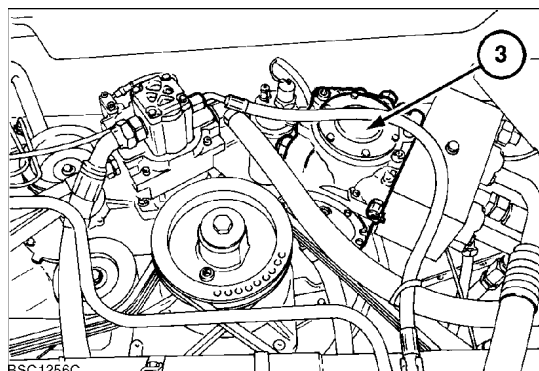


BSC1254A 2

The last section of the straw elevator stack valve is a flush valve. This valve allows a very small oil flow through the stack valves, when no services are being operated, allowing warm oil to bring the stack valve assembly gradually up to temperature.

The circuit return oil flows through to the return side filter back to the pump or to the reservoir.

The high pressure circuit is linked with the hydrostatic circuit. The hydrostatic pump (3) feeds the hydrostatic circuit. The charge return and case drain oil flows through to the thermostat and cooler back to the reservoir or high pressure circuit.



BSC1256C 3

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

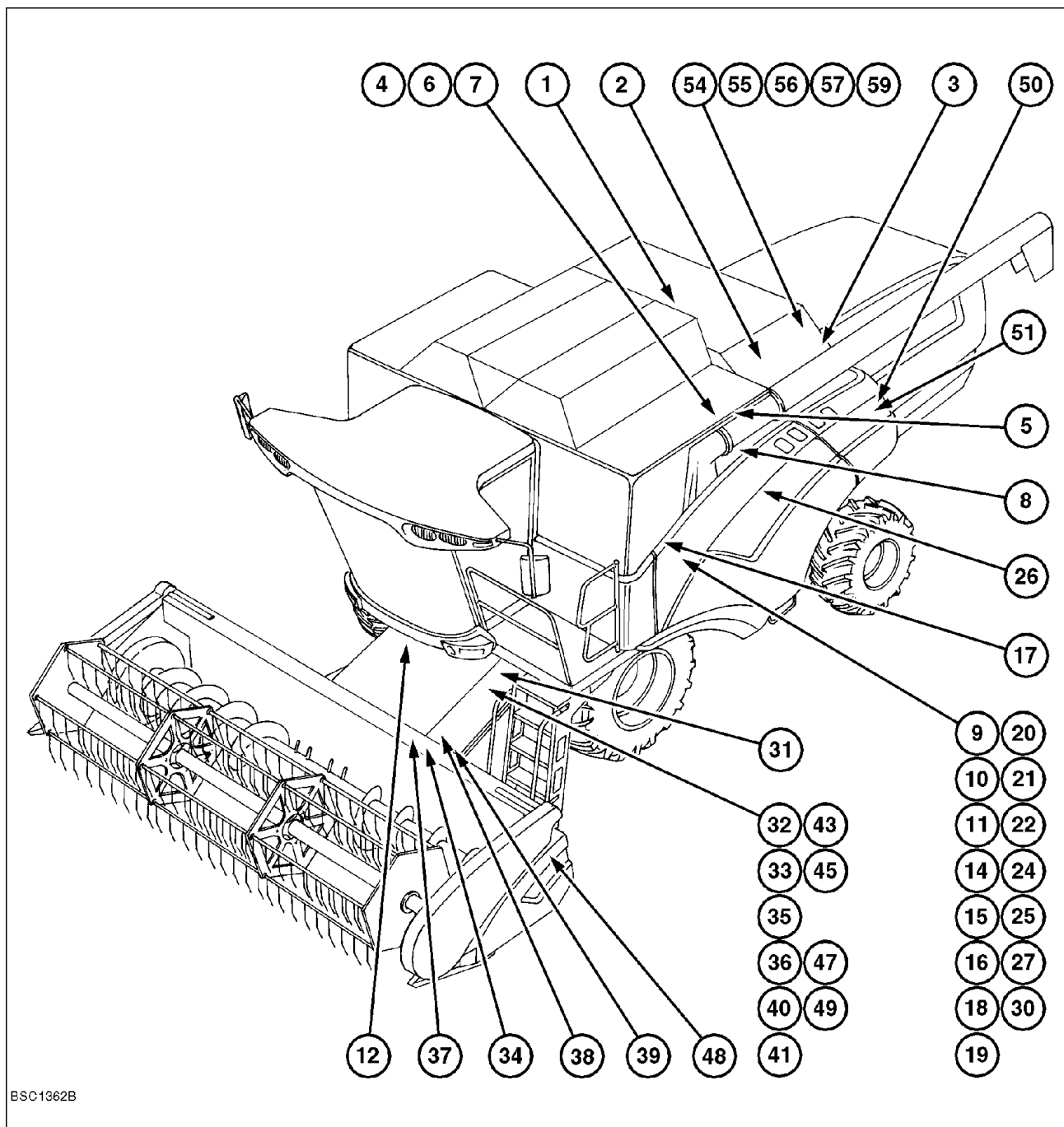
The CCLS pump uses the return oil from the hydrostatic system as its charge pressure oil and therefore does not incorporate a charge pump. The hydrostatic return oil comes into the pump via the oil cooler at the rate of **60 l/min (63 qts/min)**. Only when working in high demand conditions does the CCLS pump create an under pressure in the suction line.

PRIMARY HYDRAULIC POWER SYSTEM - Overview (A.10.A - C.40.B.10)

HIGH PRESSURE SYSTEM - COMPONENT LOCATION

1	Engine	2	Gearbox
3	Hydrostatic pump	4	CCLS pump
5	Low pressure gear pump	6	Load sensing valve
7	High pressure relief valve (197 bar (2856 psi))	8	In-line high pressure filter
9	Priority valve	10	Load sensing lock out valve
11	Load sensing shuttle valve	12	Steering motor
13	Steering cylinders	14	Header height pressure valve
15	High pressure relief valve 220 bar (3190 psi)	16	Accumulator lock out valve
17	Header suspension accumulator (70 bar [1015 psi], 0.5 L [17 oz])	18	Pressure sensor
19	Header height control valve	20	Header raise valve
21	Header lower valve	22	Header pressure compensation valve
23	Header lift cylinders	24	Electronic control unit
25	Drum variator valve	26	Drum variator adjustment plunger
27	Unloading tube control valve	28	Unloading tube cylinder lock out
29	Unloading tube cylinder	30	Top plate
31	Quick attach couplers	32	Straw elevator stack valve top plate
33	Straw elevator and header reversing valve	34	Straw elevator and header reversing motor
35	Lateral flotation control valve	36	Lateral float pressure compensation valve
37	Lateral flotation cylinder	38	Lateral float accumulator (80 bar [1160 psi], 0.5 L [17 oz])
39	Lateral float accumulator (100 bar [1450 psi], 0.5 L [17 oz])	40	Lateral float minimum pressure valve
41	Reel horizontal adjustment valve	42	Reel horizontal adjustment cylinders
43	Reel vertical adjustment valve	44	Reel vertical adjustment cylinders
45	Reel drive / speed adjustment valve	46	(Not used)
47	Reel pressure compensation valve	48	Reel drive motor
49	Flush valve	50	Return filter with by-pass
51	Blocked filter indicator switch	52	Thermostat valve
53	Cooler	54	Suction filter
55	Filler cap with breather	56	Hydraulic oil, minimum level indicator
57	Reservoir	58	Drain hose
59	Temperature sensor	60	Multi-line quick coupler

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

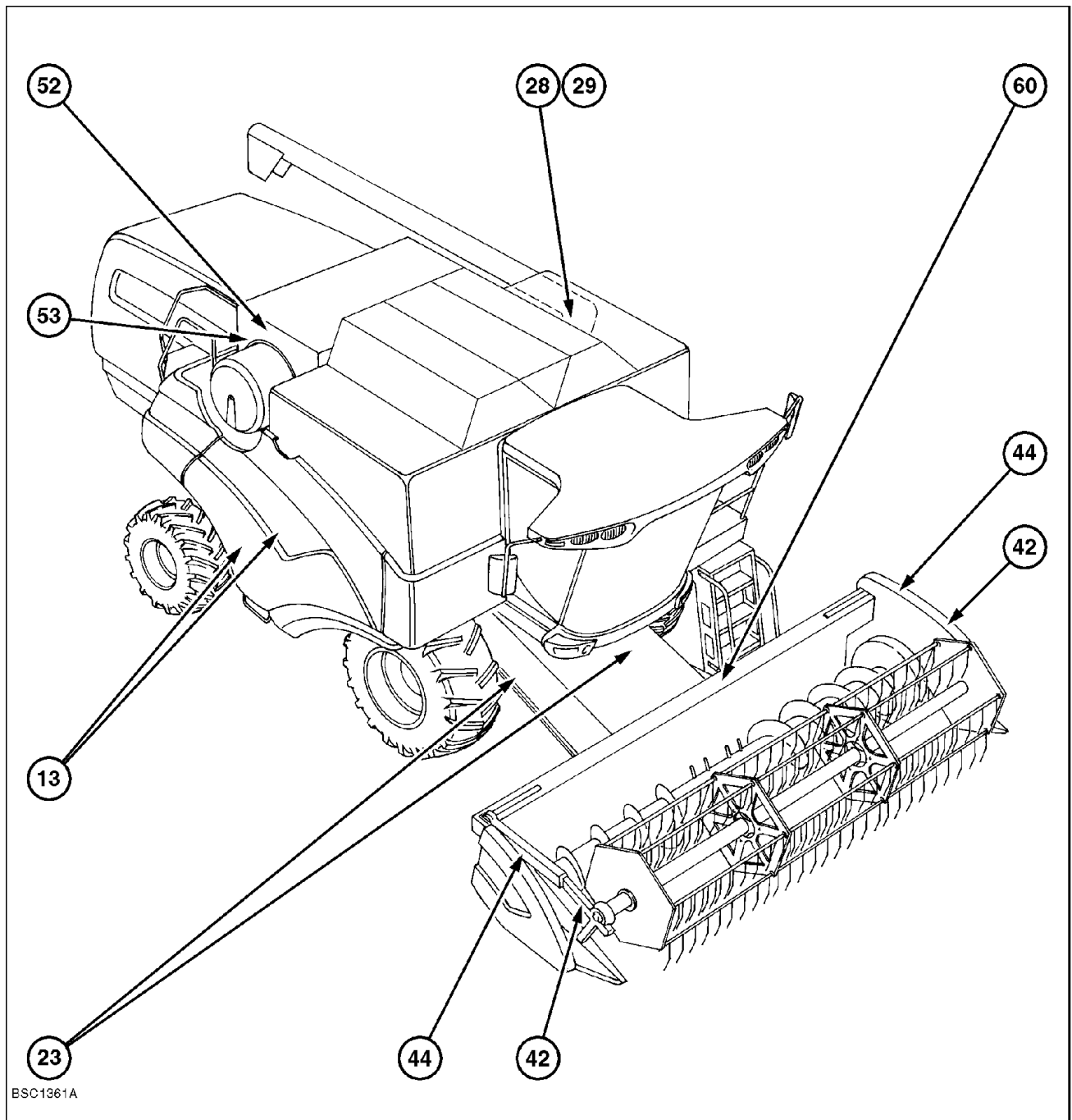


BSC1362B

BSC1362B 1

HIGH PRESSURE SYSTEM - COMPONENT LOCATION

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



BSC1361A

BSC1361A 2

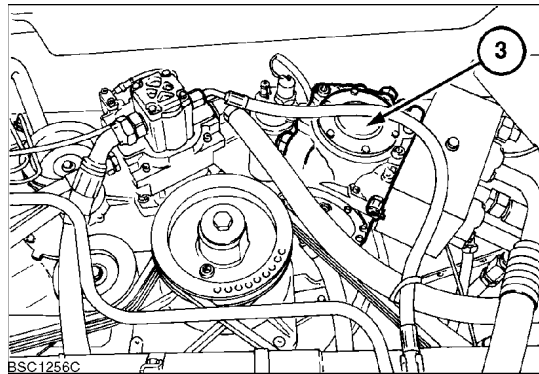
HIGH PRESSURE SYSTEM - COMPONENT LOCATION

PRIMARY HYDRAULIC POWER SYSTEM - Component localisation (A.10.A - C.40.B.20)

NOTE: The reference numbers used in the illustrations and text relate to the identification numbers used on the High Pressure Circuit Diagram, **PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schema (A.10.A-C.20.B.20)**.

(3) Hydrostatic Pump

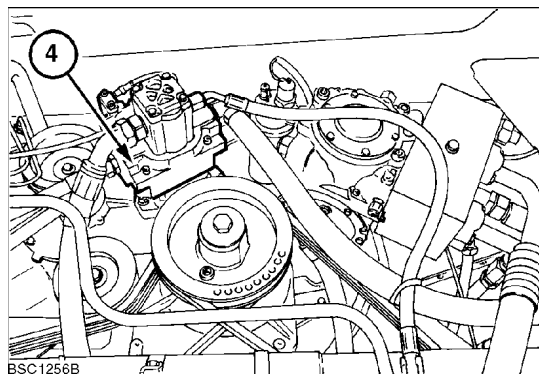
Although not part of the high pressure system, the return oil from the hydrostatic motors is used as charge pressure oil for the high pressure CCLS pump.



BSC1256C 1

(4) Closed Centre Load Sensing (CCLS) Pump

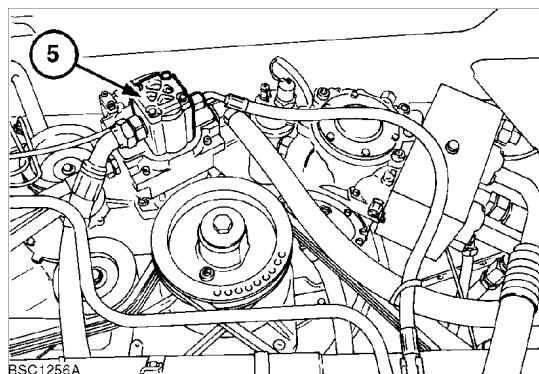
Provides the oil for the high pressure system. Will supply the pressure as demanded by the services in use due to its load sensing and variable displacement capability. Has the advantage over a fixed pump in that it reduces the engine power absorbed when maximum pump flow is not required.



BSC1256B 2

(5) Low Pressure Gear Pump

Totally separate from the high pressure system. Mounted on the CCLS pump from where it takes its drive.



BSC1256A 3

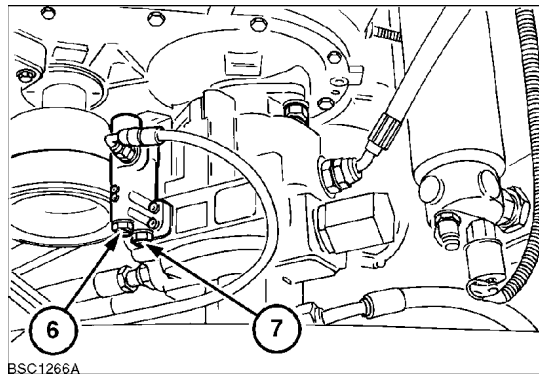
(6) Load Sensing Valve (mounted on CCLS pump)

(7) High Pressure Relief Valve (mounted on CCLS pump)

Output from the CCLS pump is determined by adjusting the angle of the swash plate. The load sensing valve senses the circuit operating pressure and adjusts the swash plate angle to control pump output. If pump output rises to 197

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

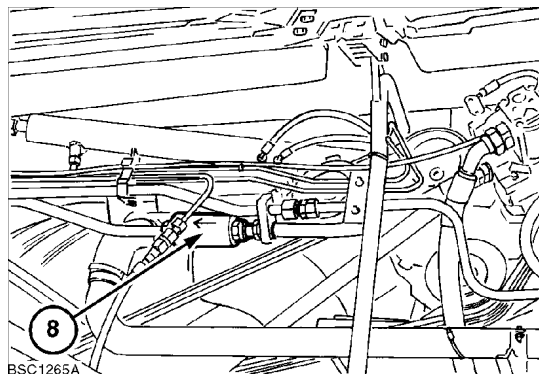
bar (2857 psi) the high pressure relief valve over rides the load sensing valve and adjusts the swash plate angle to limit maximum system pressure.



BSC1266A 4

(8) In Line High Pressure Filter

A replaceable filter located between the CCLS pump output and the high pressure system priority valve.

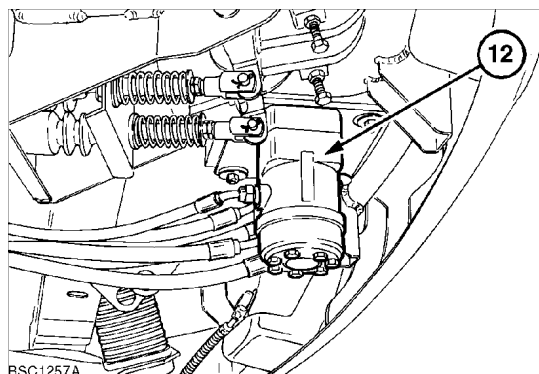


BSC1265A 5

(12) Steering Motor

Supplied oil via the priority valve in the main frame stack. The steering motor directs and controls oil to the steering cylinders, based on input via movement of the steering wheel.

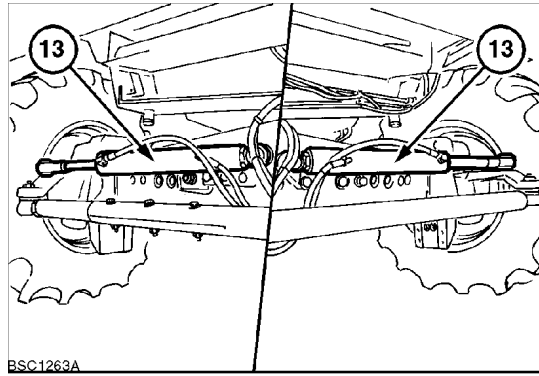
There are 2 different motors available. An OSPF **315 cc** load sensing fixed capacity unit for North America only and an OSPQ **160/320 cc** load sensing variable capacity unit for all other locations.



BSC1257A 6

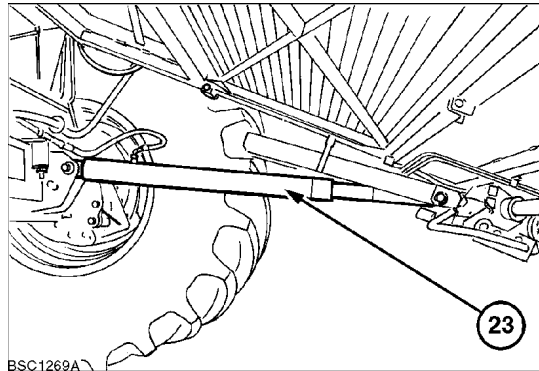
(13) Steering Cylinders

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



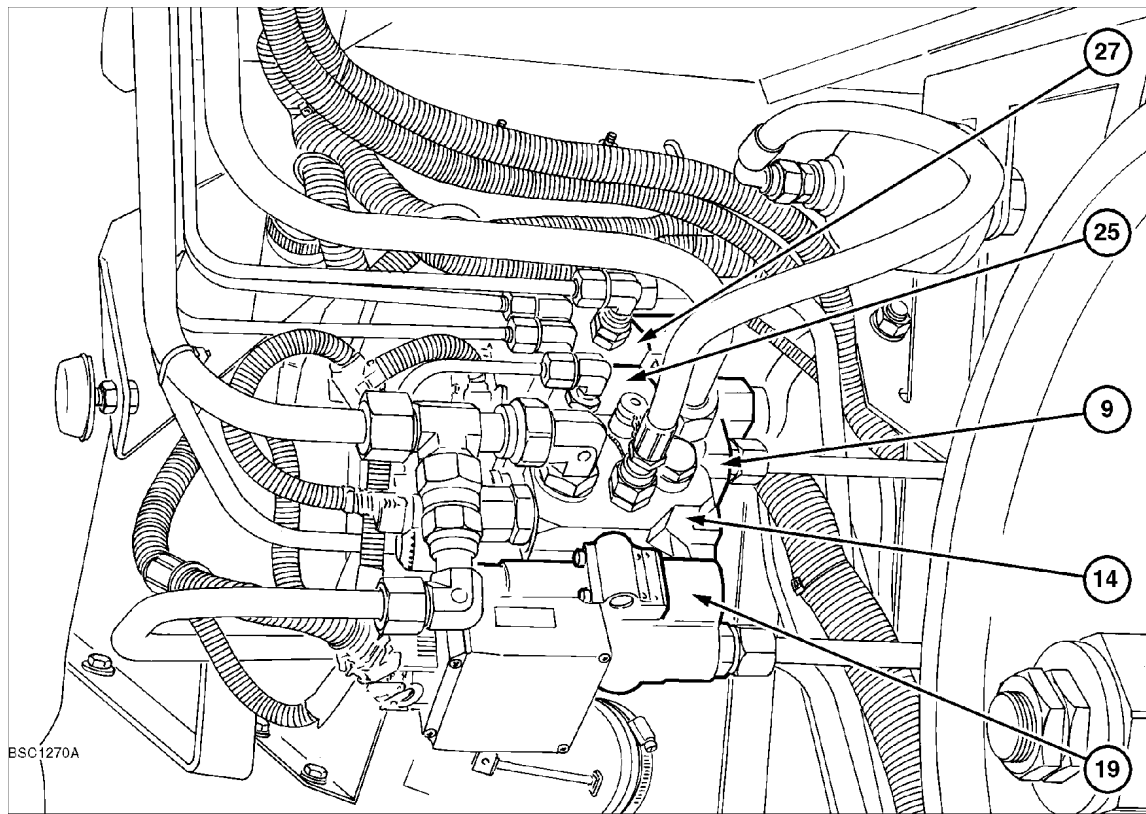
BSC1263A 7

(23) Header Lift Cylinder



BSC1269A 8

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



BSC1270A 9

Main Frame Stack Valve Assembly

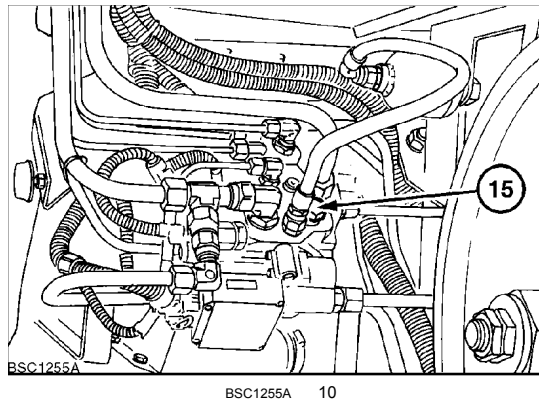
- (9) Priority Valve
Located in the main frame stack valve, receives the output oil from the CCLS pump and will provide steering with the priority for oil. Actuated by pressure within the load sense lines.
- (10) Load Sense / Steering Relief Valve
Located in the priority valve. When the pressure in the load sense circuit or steering circuit exceeds a preset value the relief valve will blow and then maintain a maximum pressure in the load sense or steering circuits.
- (11) Load Sensing Shuttle Valve
Located in each valve slice. Allows the function with the highest pressure demand to send sensing pressure to the load sensing valve on the CCLS pump.
- (14) Header Height Pressure Valve
Controls the pressure within the header height cylinders.
Contains the high pressure relief valve (15), accumulator lock out valve (16) and pressure sensor (18).
- (16) Accumulator Lock Out Valve
Solenoid controlled valve which isolates the accumulator from the raise and lower circuit.
- (19) Header Height Control Valve
Controls the raising and lowering of the header. Contains the PWM raise and lower valves and compensation valve.
- (20) Header Raise Valve
A PWM controlled valve, allows pressure oil to the raise cylinder.
- (21) Header Lower Valve
A PWM controlled valve, allows oil to be released from the lift cylinders under control.
- (22) Header Pressure Compensation Valve
Ensures that height raise speed is consistent in all operating conditions, provides compensation to pressure spikes in the system.

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

- (25) Drum Variator Control Valve
Controls the plunger within the variator drum drive unit to provide adjustable variator speed. Solenoid operated valves either allow pressure oil to provide a speed increase or release oil pressure to decrease speed.
- (27) Unloading Tube Control Valve
Controls the unloading tube cylinder. Consists of two electrically operated solenoid valves.

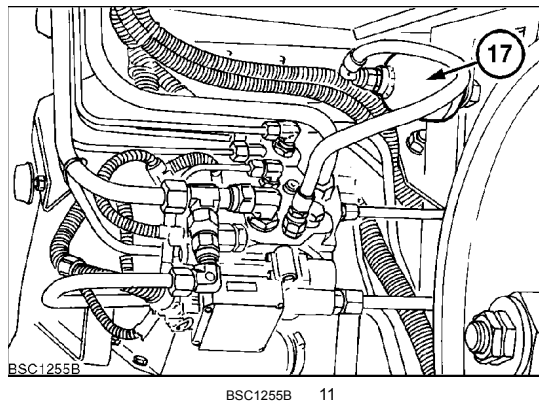
(15) High Pressure Relief Valve

This acts as a shock relief valve for the header. Sudden rises in pressure, as felt at the lift cylinders, are relieved through this valve.



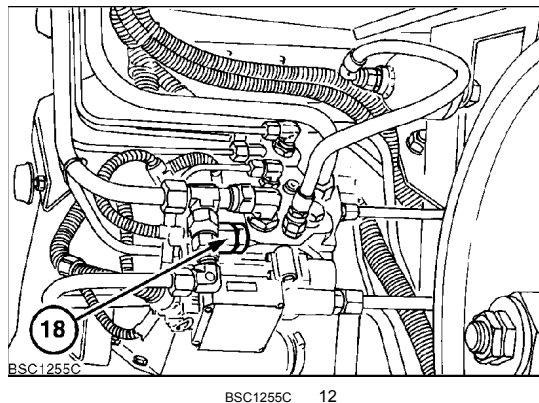
(17) Header Suspension Accumulator

Absorbs the slight movement to the header encountered during normal operating. The accumulator is rated at **70 bar** pressure with a volume of **0.5 L**.



(18) Pressure Sensor

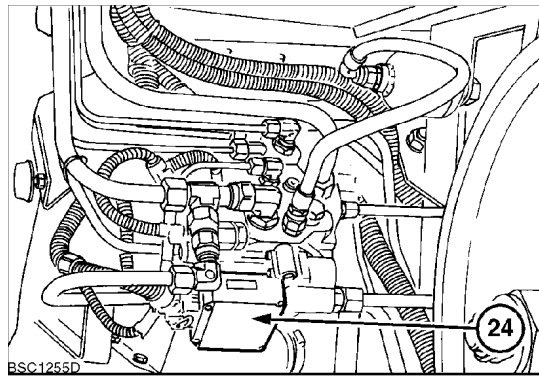
Measures the hydraulic pressure within the header circuit. Sends a signal to the header electronic control unit.



(24) Electronic Control Unit

Controls the header height via the PWM controlled raise and lower solenoids, based on the signal sent by the operator cab controls.

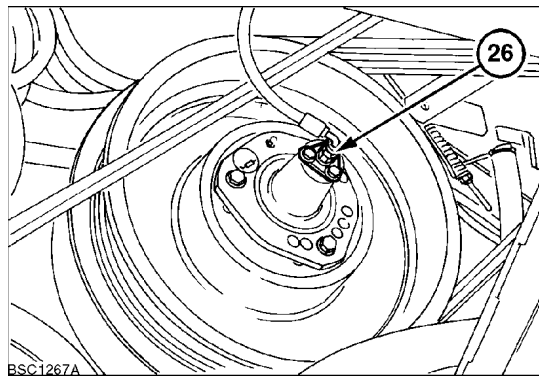
DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



BSC1255D 13

(26) Drum Variator Adjustment Plunger

Operated via the drum variator valve, the plunger is a hydraulic cylinder that operates a floating disc within the variator assembly to alter variator speed.



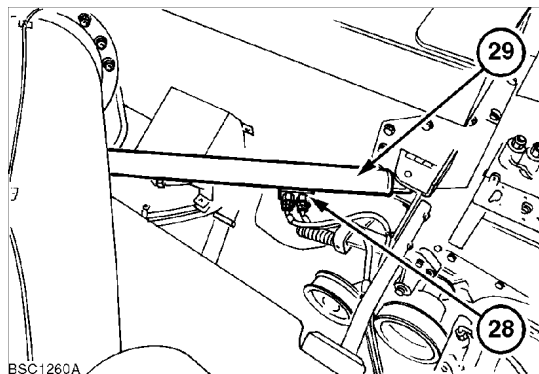
BSC1267A 14

(28) Unloading Tube Lockout Block

Isolates the unload cylinder from the control valve and pipework. Ensures that the unload tube will remain in the required position until the control valve is activated. When pressure oil is applied to the lock out block, a bleed line is supplied to the opposite side which releases the lock valve and allows oil to escape. When the pressure oil is removed the lock out valves close and prevent cylinder movement.

(29) Unload Tube Cylinder

Operates the unload arm, controlled by the unload tube control valve and lock out block.



BSC1260A 15

(31) Quick Attach Couplers

Connects the main stack valve block to the header valve block assembly.

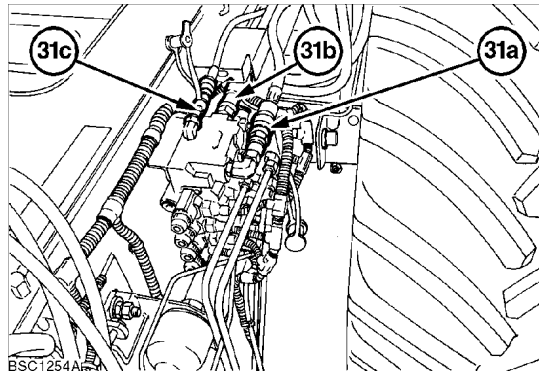
(31a) = Pressure supply

(31b) = Return line

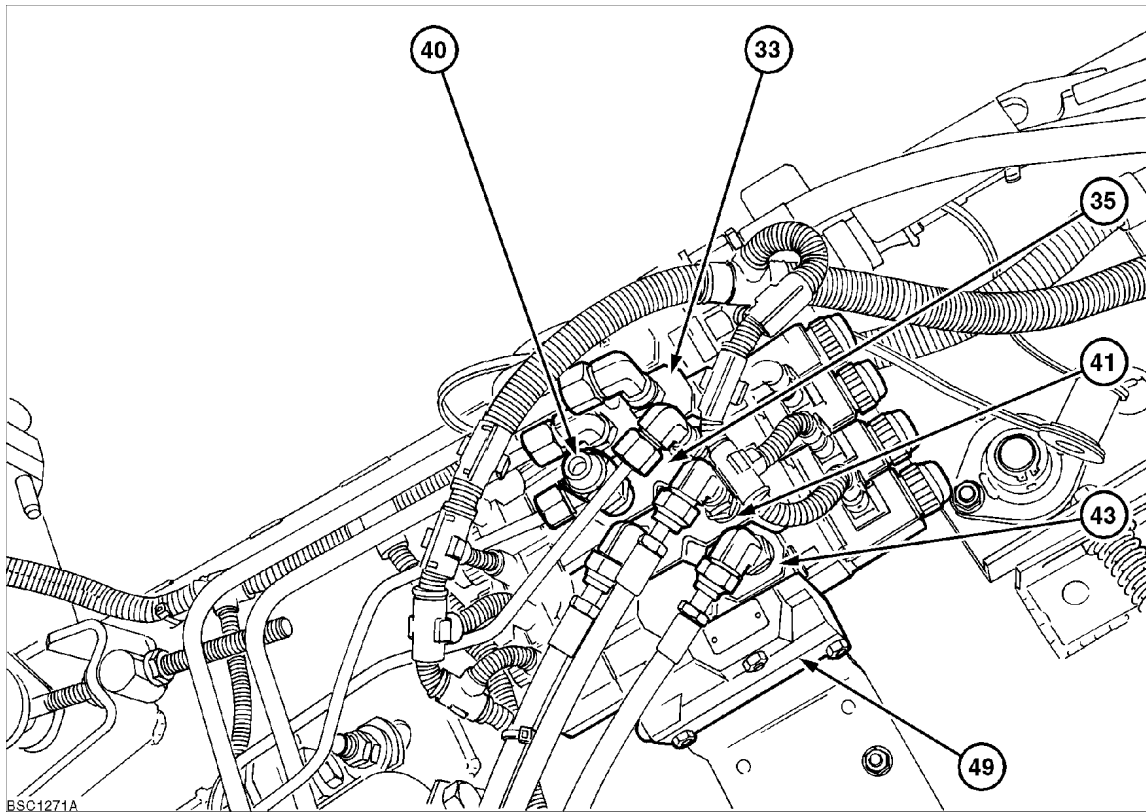
(31c) = Load sensing line

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

NOTE: The return line must always be correctly connected. The quick attach coupler of the return line incorporates check valves allowing flow back to the main frame stack valve. If the engine is started with the return line disconnected oil will escape from the valve block.



BSC1254A 16



BSC1271A 17

Straw Elevator Valve Stack

(33) Straw Elevator and Header Reversing Valve

Controls the motor for the straw elevator and header reverser. Contains two electrically controlled solenoids which move a spool to obtain forward, reverse or a float position on the motor.

(35) Lateral Flotation Control Valve

Controls the lateral flotation cylinder. Consists of two electrically controlled solenoids, a pressure compensation valve and a lock out valve.

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

(36) Lateral Float Pressure Compensation Valve

Ensures that lateral float operation is consistent in all operating conditions, provides compensation to pressure spikes in the system.

(40) Lateral Float Minimum Pressure Valve

This is a resistant valve and prevents the header from jerky counterclockwise movement and jerky operation when the cylinder is retracted. This is necessary because of the non-North American header being heavier on the left hand side. The valve is set at approximately **60 bar (870 psi)**.

(41) Reel Horizontal Adjustment Valve

(42) Reel Horizontal Adjustment Cylinders

Controls the horizontal position of the reel. The valve consists of two electrically operated solenoids and a lock out valve.

(43) Reel Vertical Adjustment Valve

Controls the vertical adjustment cylinders. Consists of two electrically operated solenoids and a lock out valve.

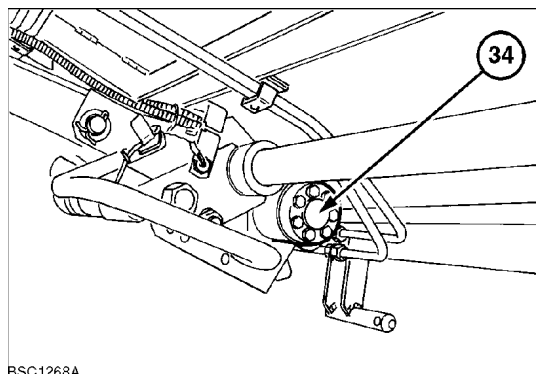
(44) Reel Vertical Adjustment Cylinders

Two cylinders, a master and a slave, supplied oil from the vertical adjustment valve (43). The slave is powered by the rod end oil of the master cylinder.

(49) Flush Valve

When there are no services in use, charge pressure oil is allowed to join the return circuit through the flush valve. This function allows a flow of oil through the header stack valve thereby circulating warm oil through the valves.

(34) Straw Elevator and Header Reversing Motor



BSC1268A 18

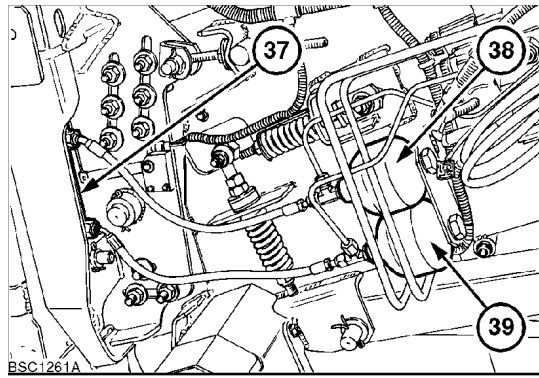
(37) Lateral Flotation Cylinder

Adjusts header angle in relation to the combine.

(38) Lateral Float Accumulator - Lowering side - **50 bar (725 psi)**

(39) Lateral Float Accumulator - Raise Side - **75 bar (1088 psi)**

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

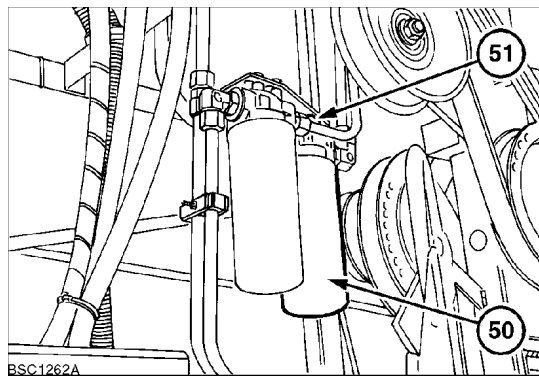


BSC1261A 19

(50) Return Filter with Bypass

(51) Return Filter Element Differential Drop Indicator.

Electrical switch to indicate pressure differential as the filter becomes clogged during service.



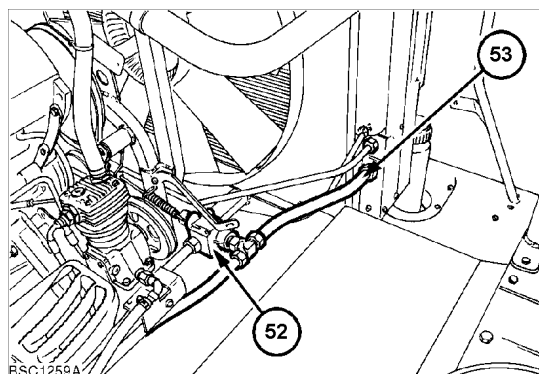
BSC1262A 20

(52) Thermostat Valve

Cooler bypass valve, directs cold oil away from the cooler and back into the return circuit. As the oil progressively warms up the oil is then allowed, by the thermostat valve, through the cooler. A relief valve is incorporated to allow direct routing to the return circuit when the pressure is too high for the system to cope with.

(53) Cooler

Hydraulic oil cooler, mounted with the engine cooler on the right hand side of the vehicle.



BSC1259A 21

(54) Suction Filter

Located in the base of the reservoir in the suction line supplying the hydrostatic pump.

(55) Filler Cap With Breather

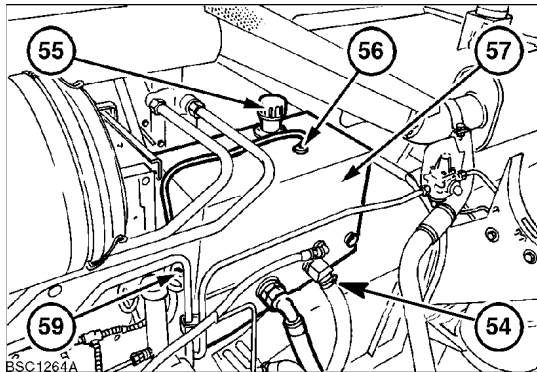
(56) Minimum level electrical switch for hydraulic oil reservoir. (high pressure system and hydrostatic system oil).

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

(57) Hydraulic Oil Reservoir (high pressure system and hydrostatic system oil).

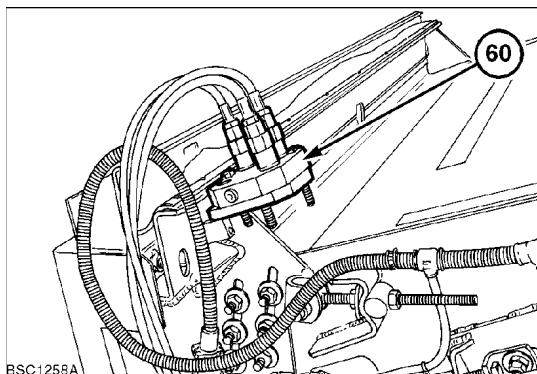
(59) Temperature Sensor

Measures hydraulic oil temperature, high oil temperature indicated at **85 °C (185 °F)**.



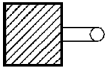
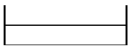
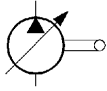
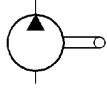
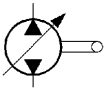
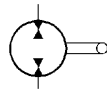
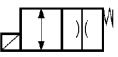
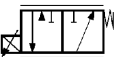
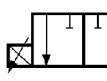
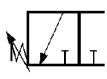
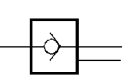
BSC1264A 22

(60) Header Hoses Quick Release Coupling.



BSC1258A 23

PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic symbol (A.10.A - C.20.C.20)

	Engine		Reservoir
	Hydraulic pump, direction with variable displacement		Hydraulic pump single direction fixed displacement
	Hydraulic pump, directional with displacement		Steering motor (bi-directional)
	Motor, single direction fixed displacement		Motor bi-directional fixed displacement
	2 position valve		3 position valve
	Proportional (PWM) valve		Pressure relief valve
	Solenoid controlled movement		Proportional solenoid movement (Pulse Width Modulation)
	Movement by or against spring tension		Movement by or against adjustable spring tension
	Movement by or against oil pressure		Lock-out valve
	Non return valve		Non return valve, pressure controlled
	Quick coupler with non return valve		Flexible hose
	Restrictor		Thermostat
	Hydro-pneumatic accumulator		Cylinder

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

	Filter		Filter opening
	Shuttle valve		Temperature sender
	Pressure sensor		

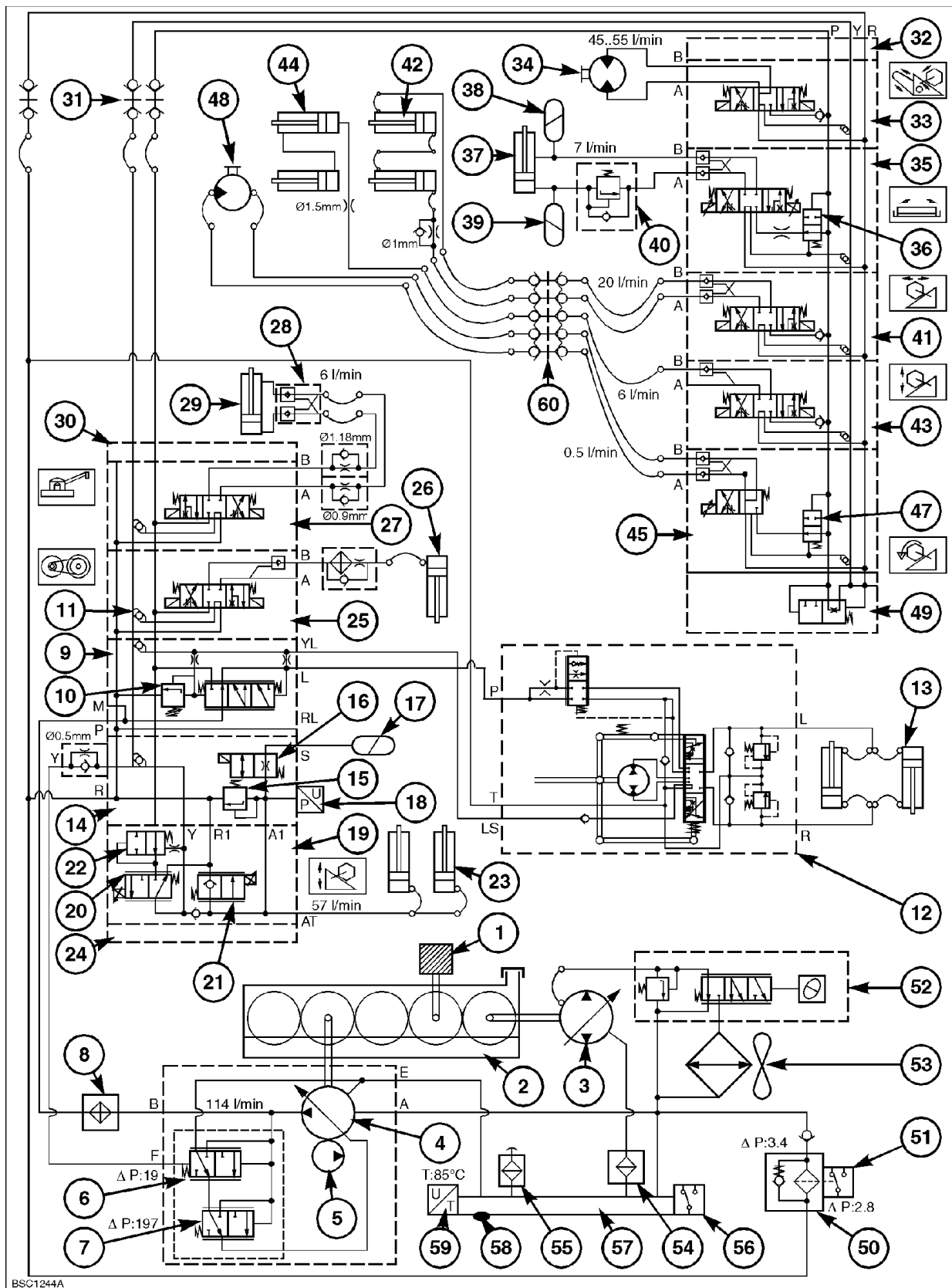
PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schema (A.10.A - C.20.B.20)

High Pressure circuit diagram

1a series 1206 - 1479

1	Engine	31	Quick attach couplers
2	Gearbox	32	Straw elevator stack valve top plate
3	Hydrostatic pump	33	Straw elevator and header reversing valve
4	CCLS pump	34	Straw elevator and header reversing motor
5	Low pressure gear pump	35	Lateral flotation control valve
6	Load sensing valve	36	Lateral float pressure compensation valve
7	High pressure relief valve (197 bar (2856 psi))	37	Lateral flotation cylinder
8	In-line high pressure filter	38	Lateral float accumulator (80 bar [1160 psi], 0.5 L [17 oz])
9	Priority valve	39	Lateral float accumulator (100 bar [1450 psi], 0.5 L [17 oz])
10	Load sensing lock out valve	40	Lateral float minimum pressure valve
11	Load sensing shuttle valve	41	Reel horizontal adjustment valve
12	Steering motor	42	Reel horizontal adjustment cylinders
13	Steering cylinders	43	Reel vertical adjustment valve
14	Header height pressure valve	44	Reel vertical adjustment cylinders
15	High pressure relief valve 220 bar (3190 psi)	45	Reel drive / speed adjustment valve
16	Accumulator lock out valve	46	(Not used)
17	Header suspension accumulator (70 bar [1015 psi], 0.5 L [17 oz])	47	Reel pressure compensation valve
18	Pressure sensor	48	Reel drive motor
19	Header height control valve	49	Flush valve
20	Header raise valve	50	Return filter with by-pass
21	Header lower valve	51	Blocked filter indicator switch
22	Header pressure compensation valve	52	Thermostat valve
23	Header lift cylinders	53	Cooler
24	Electronic control unit	54	Suction filter
25	Drum variator valve	55	Filler cap with breather
26	Drum variator adjustment plunger	56	Hydraulic oil, minimum level indicator
27	Unloading tube control valve	57	Reservoir
28	Unloading tube cylinder lock out	58	Drain hose
29	Unloading tube cylinder	59	Temperature sensor
30	Top plate	60	Multi-line quick coupler

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



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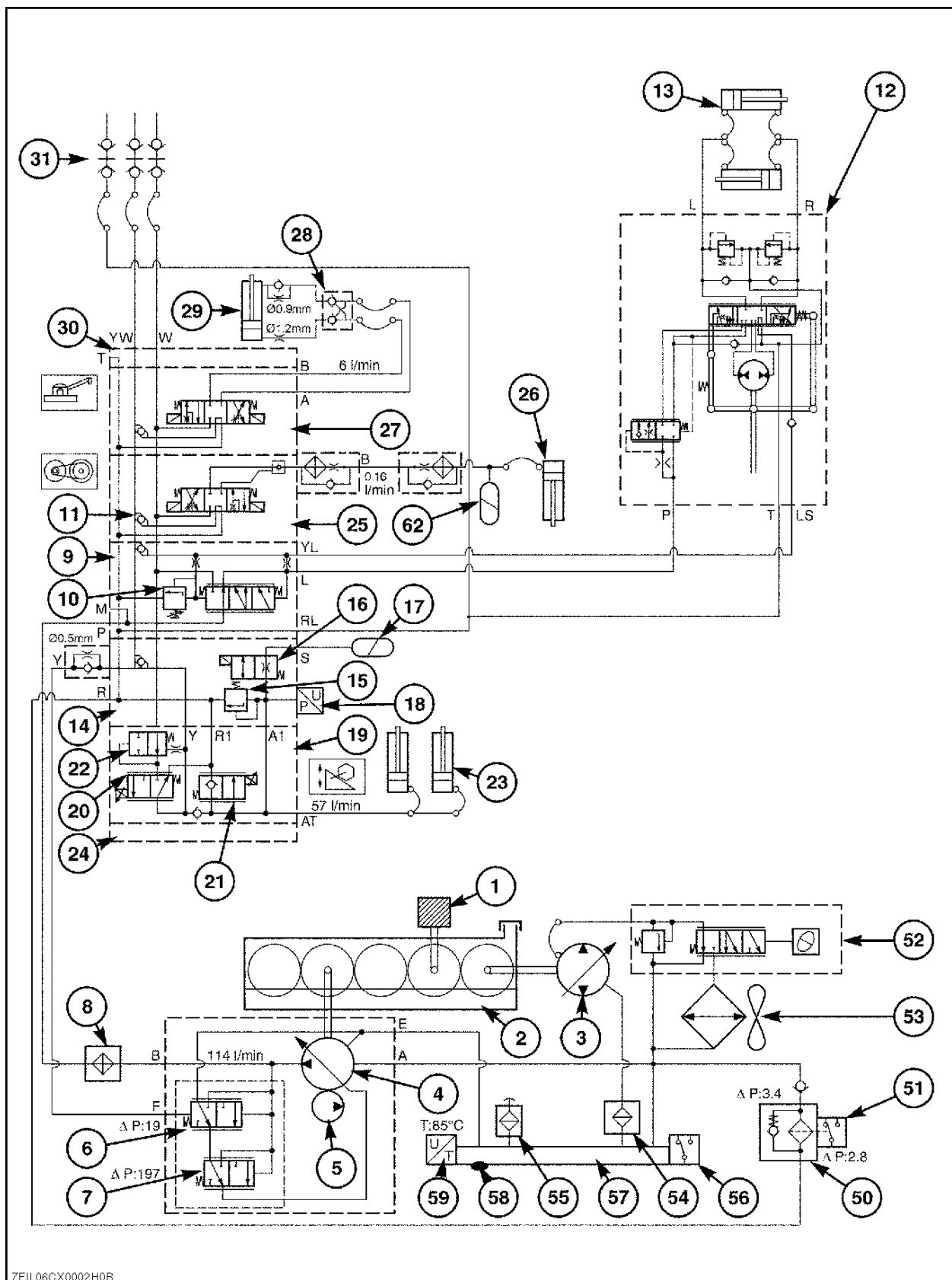
DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

High pressure circuit diagram - Main stack valve

1b series 1480 and above

- 1 Engine
 - 2 Gearbox
 - 3 Hydrostatic pump
 - 4 CCLS pump
 - 5 Low pressure gear pump
 - 6 Load sensing valve
 - 7 High pressure relief valve
(197 bar (2856 psi))
 - 8 In-line high pressure filter
 - 9 Priority valve
 - 10 Load sensing lock out valve
 - 11 Load sensing shuttle valve
 - 12 Steering motor
 - 13 Steering cylinders
 - 14 Header height pressure valve
 - 15 High pressure relief valve
220 bar (3190 psi)
 - 16 Accumulator lock out valve
 - 17 Header suspension accumulator
(70 bar [1015 psi], 0.5 L [17 oz])
 - 18 Pressure sensor
 - 19 Header height control valve
 - 20 Header raise valve
 - 21 Header lower valve
 - 22 Header pressure compensation valve
 - 23 Header lift cylinders
 - 24 Electronic control unit
 - 25 Drum variator valve
 - 26 Drum variator adjustment plunger
 - 27 Unloading tube control valve
 - 28 Unloading tube cylinder lock out
 - 29 Unloading tube cylinder
 - 30 Top plate
 - 31 Quick attach couplers
-
- 50 Return filter with by-pass
 - 51 Blocked filter indicator switch
 - 52 Thermostat valve
 - 53 Cooler
 - 54 Suction filter
 - 55 Filler cap with breather
 - 56 Hydraulic oil, minimum level indicator
 - 57 Reservoir
 - 58 Drain hose
 - 59 Temperature sensor

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



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ZEIL06CX0002H0B 2

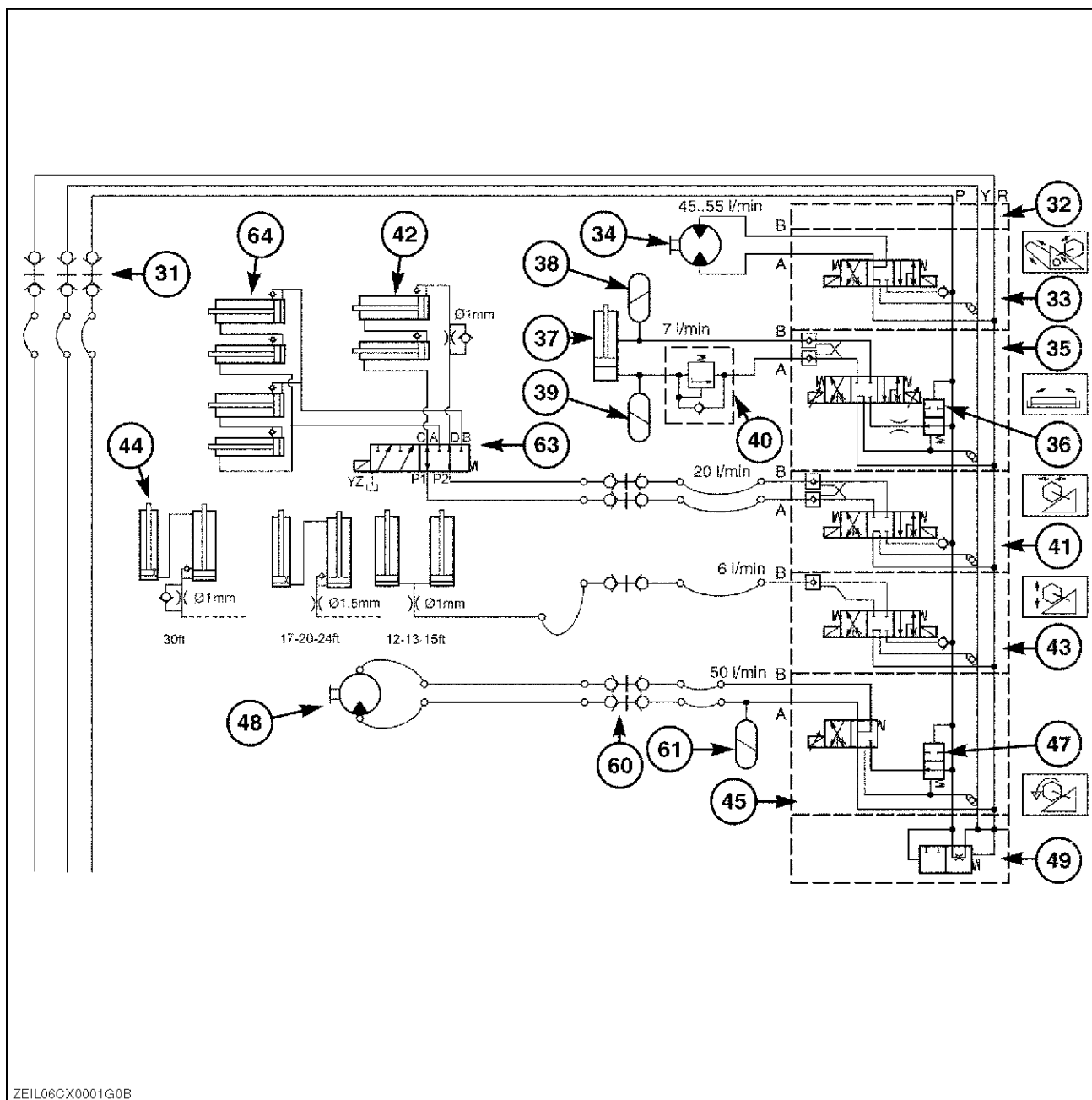
High pressure circuit diagram - Straw elevator stack valve

2b series 1480 and above

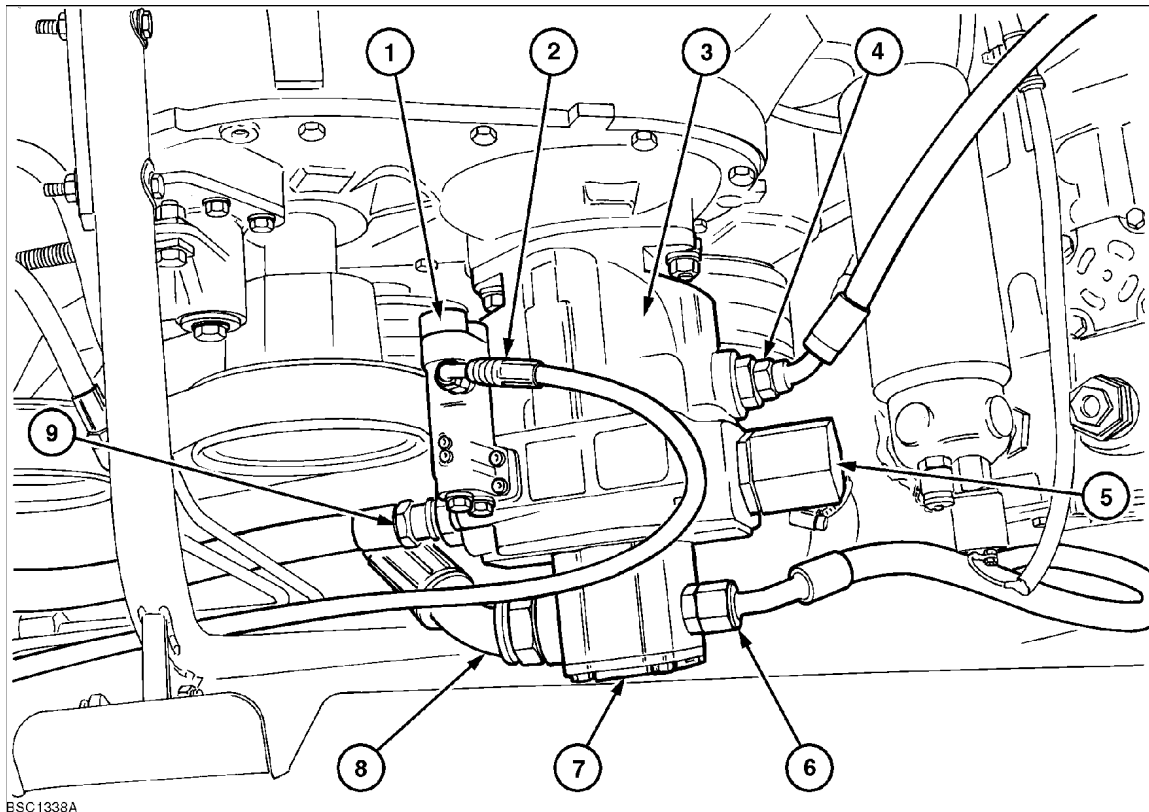
- 31 Quick attach couplers
- 32 Straw elevator stack valve top plate
- 33 Straw elevator and header reversing valve
- 34 Straw elevator and header reversing motor
- 35 Lateral flotation control valve
- 36 Lateral float pressure compensation valve
- 37 Lateral flotation cylinder
- 38 Lateral float accumulator
(**80 bar [1160 psi], 0.5 L [17 oz]**)
- 39 Lateral float accumulator
(**100 bar [1450 psi], 0.5 L [17 oz]**)
- 40 Lateral float minimum pressure valve
- 41 Reel horizontal adjustment valve
- 42 Reel horizontal adjustment cylinders
- 43 Reel vertical adjustment valve
- 44 Reel vertical adjustment cylinders
- 45 Reel drive / speed adjustment valve
- 46 (Not used)
- 47 Reel pressure compensation valve
- 48 Reel drive motor
- 49 Flush valve

- 60 Multi-line quick coupler
- 61 Reel drive accumulator
(**30 bar, 0.16 L**)
- 62 Drum variator adjustment accumulator
(**180 bar, 0.5 L**)
- 63 Varifeed valve
- 64 Varifeed cylinders

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



Hydraulic pump Variable displacement pump - Overview (A.10.A.20.02 - C.40.B.10)



BSC1338A

BSC1338A 1

High Pressure CCLS Hydraulic Pump and Low pressure Gear Pump Installation

- | | |
|---|----------------------------------|
| 1 Flow and pressure compensating valves | 6 Low pressure pump output tube |
| 2 Load sensing line | 7 Low pressure gear pump |
| 3 CCLS pump casing | 8 Low pressure pump inlet |
| 4 Pump case lubrication drain | 9 CCLS pump high pressure output |
| 5 Charge oil - hydrostatic motor case drain | |

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