CX135SR
CRAWLER EXCAVATOR

Service Manual

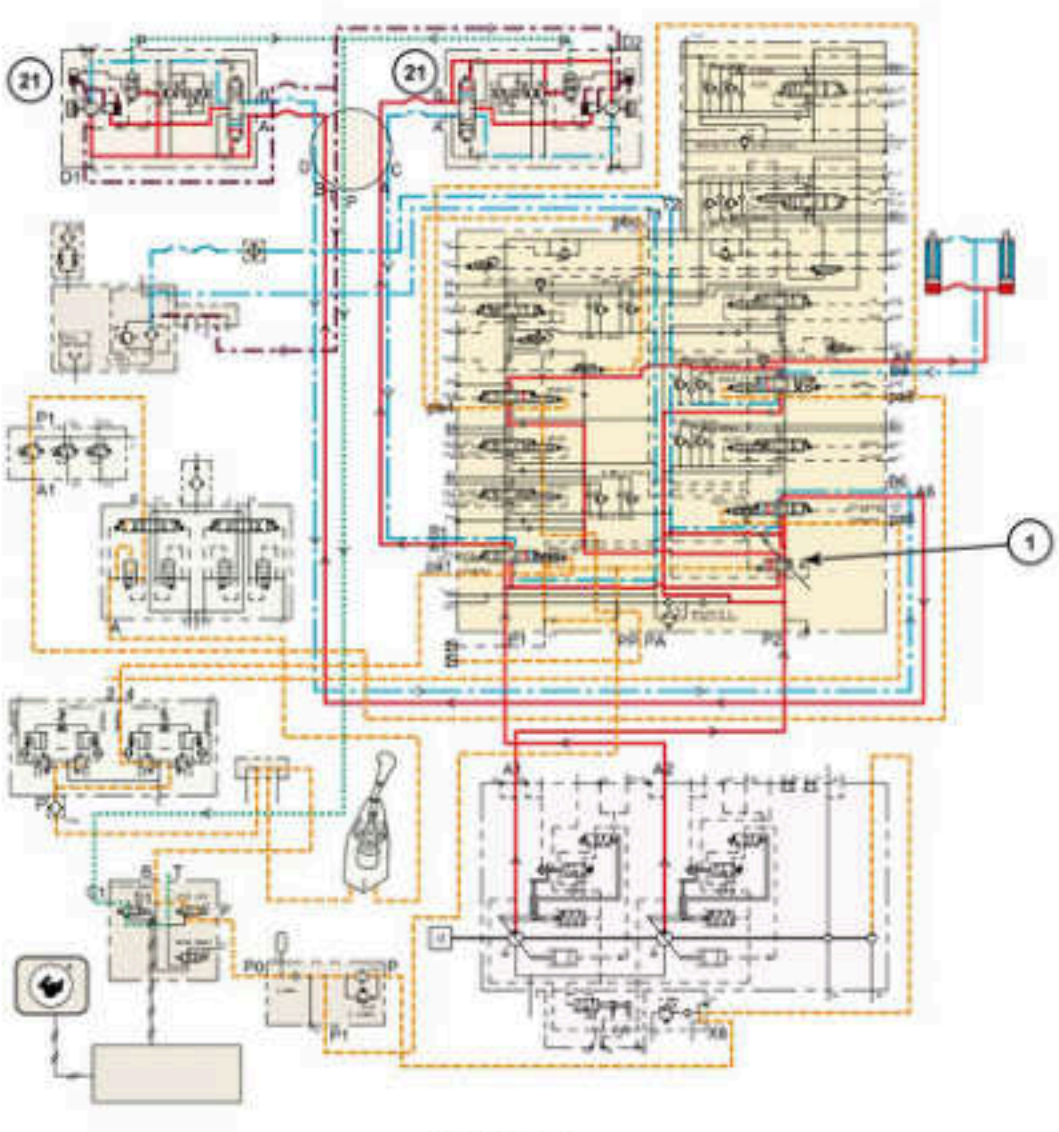
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CASE

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TRAVELLING Travel - Hydraulic schema (F.10.F - C.20.A.20)

CX135SR



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Straight-line travel circuit - Dynamic Description

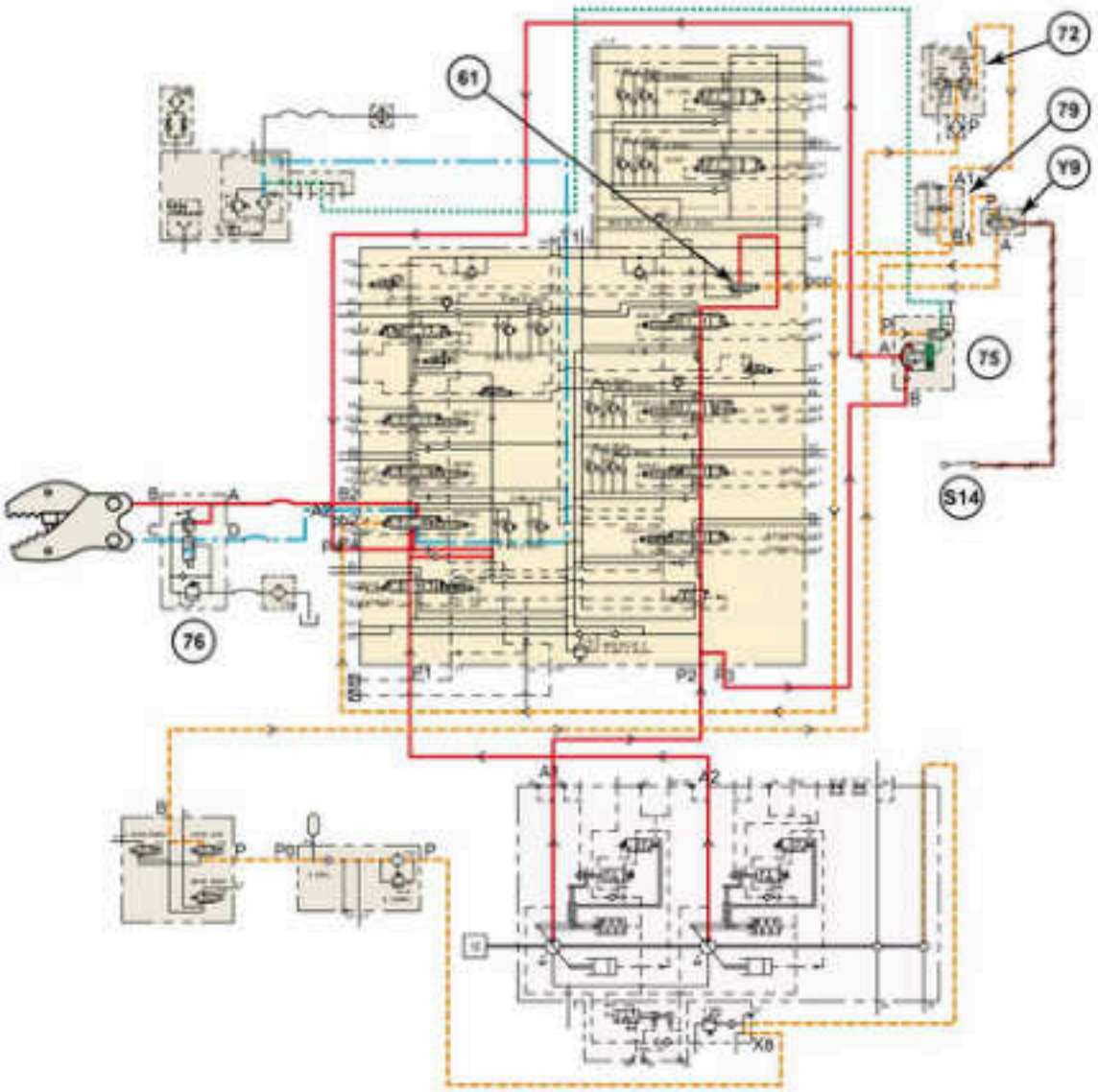
(1)	Straight-line travel valve	**(21)**	Travel motor
(Pa1/A1)	RH forward travel	**(Pb1/B1)**	RH reverse travel
(Pa6/A6)	LH forward travel	**(Pb6/B6)**	LH reverse travel
(Pa4)	Boom spool 2	**(Pa8/A8)**	Boom raising
(Pb8/B8)	Boom lowering		

STRAIGHT-LINE TRAVEL

This chapter describes the situation in which the boom is raised as the machine is travelling.

- When the boom requires raising, the boom spool is operated and the low pressure circuit coming from **(PP)** and passing through all attachment and swing spools is closed. This circuit increases in pressure up to **39 bar**, which pilots the straight-line travel valve **(1)**. The output from pump **(A2)** therefore supplies the two travel systems at **(P1)** and the output from pump **(A1)** supplies the attachment at **(P2)**. As both travel motors **(21)** are supplied in parallel, their pressure is equal and the machine travels in a straight line. In addition, if the flow is not completely expended on the attachment, the surplus from this flow is used for travel and the loss of speed is minimal.
- If functions other than the boom are used at the same time as travel, their operation is exactly the same.

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Grab circuit - dynamic description

(61)	Flow reinjection spool	**(72)**	Control pedal
(75)	Flow reinjection valve	**(76)**	3-way selector
(79)	Control shuttle block	**(P1)**	Flow at pump outlet A2
(P2)	Flow at pump outlet A1	**(Pa2/A2)**	Option circuit
(Pb2/B2)	Option circuit	**(S14)**	Hammer/grab switch
(Y9)	Dual output hammer/grab option solenoid valve .		

SHEARS

- 3-way selector **(76)** must be positioned for the grab function.
- The grab can be supplied by the outputs from pumps **(P1)** and **(P2)**.
- The output from pump **(P1)** directly supplies the option spool. The output from pump **(P2)** is forced towards the flow reinjection valve **(75)** and joins the output from pump **(P1)** at the option spool inlet.
- When hammer/grab switch **(S14)** is in the grab position, the hammer/grab dual output solenoid valve option **(Y9)** is activated.
- When control pedal **(72)** is moved forwards or backwards, the pilot pressure, after passing through control shuttle block **(79)** and hammer/grab dual flow option solenoid valve **(Y9)**, unlocks flow reinjection valve **(75)**

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CX135SR EXCAVATOR HYDRAULIC / ELECTRIC SCHEMATIC

ITEM	DESCRIPTION	PRESSURE SETTING
A –	MAIN RELIEF (STANDARD)	34.3 MPa / 343 bar / 4977 psi
B –	BOOM FASTING PORT SECONDARY RELIEF	37.8 MPa / 378 bar / 5729 psi
B1-B2 –	RELIEF ON BOOM HBCV	37.8 MPa / 378 bar / 5618 psi
C –	BOOM LOWERING PORT SECONDARY RELIEF	37.8 MPa / 378 bar / 5483 psi
D –	DIPPER OUT PORT SECONDARY RELIEF	37.8 MPa / 378 bar / 5482 psi
D1 –	RELIEF ON DIPPER HBCV	36.3 MPa / 363 bar / 5265 psi
E –	DIPPER IN PORT SECONDARY RELIEF	37.8 MPa / 378 bar / 5482 psi
F –	BUCKET OPEN PORT SECONDARY RELIEF	37.8 MPa / 378 bar / 5482 psi
G –	BUCKET CLOSE PORT SECONDARY RELIEF	37.8 MPa / 378 bar / 5482 psi
H –	PILOT PRESSURE RELIEF	3.5 MPa / 35 bar / 508 psi
I –	RIGHT-HAND SWING PORT SECONDARY RELIEF	28.0 MPa / 280 bar / 4133 psi
J –	LEFT-HAND SWING PORT SECONDARY RELIEF	28.5 MPa / 285 bar / 4133 psi
K1-K2 –	TRAVEL REVERSE PORT SECONDARY RELIEF	34.8 MPa / 348 bar / 5047 psi
L1-L2 –	TRAVEL FORWARD PORT SECONDARY RELIEF	34.8 MPa / 348 bar / 5047 psi
N1-N2 –	NEGATIVE CONTROL RELIEF	2.7 MPa / 27 bar / 392 psi
O –	OFFSET BACKHOE SECONDARY RELIEF VALVE, RIGHT-HAND	23.0 MPa / 230 bar / 3458 psi
P –	OFFSET BACKHOE SECONDARY RELIEF VALVE, LEFT-HAND	23.0 MPa / 230 bar / 3458 psi
S –	DOZER BLADE + OFFSET BACKHOE MAIN RELIEF	23.0 MPa / 230 bar / 3458 psi
T –	DOZER BLADE LOWERING SECONDARY RELIEF	23.0 MPa / 230 bar / 3458 psi
U –	DOZER BLADE RAISING SECONDARY RELIEF	23.0 MPa / 230 bar / 3458 psi
W1-W2 –	CRUSHER OPTION SECONDARY RELIEF VALVE	27.6 MPa / 276 bar / 3460 psi
Y1 –	ACCUMULATOR PRECHARGE	7.5 MPa / 75 bar / 770 psi

ITEM	DESCRIPTION
1.	HYDRAULIC RESERVOIR
2.	BREATHER
4.	BYPASS VALVE
5.	SCREEN FILTER
6.	RETURN FILTER
10.	MAIN HYDRAULIC PUMP
15.	MAIN CONTROL VALVE
16.	HYDRAULIC SWIVEL
21.	TRAVEL MOTOR
22.	SWING MOTOR
23.	TRAVEL MOTOR BRAKE
25.	RIGHT BOOM CYLINDER
26.	LEFT BOOM CYLINDER
27.	DIPPER CYLINDER
28.	BUCKET CYLINDER
29.	BOOM SAFETY VALVE
30.	DIPPER SAFETY VALVE
31.	DIPPER LOAD HOLDING VALVE
32.	BOOM LOAD HOLDING VALVE
41.	FILTER (ULTRA-CLEAN)
42.	OIL COOLER
43.	RETURN MANIFOLD
44.	OIL COOLER BYPASS VALVE
51.	ACCUMULATOR
53.	BOOM & BUCKET CONTROL LEVER
54.	SWING & DIPPER CONTROL LEVER
55.	TRAVEL CONTROL PEDAL
56.	DIPPER CONTROL SHOCK ABSORBER
57.	BOOM & DIPPER CONTROL SHOCK ABSORBER
60.	PILOT SYSTEM MANIFOLD
72.	CONTROL PEDAL (OPTIONAL)
75.	FLOW RE-INJECTION BLOCK (OPTIONAL)
76.	3-WAY SELECTOR (OPTIONAL)
78.	RETURN FILTER (OPTIONAL)
79.	CONTROL SHUTTLE BLOCK (OPTIONAL)
81.	SWING SHUTTLE BLOCK
82.	PILOT CIRCUIT FILTER
83.	SHUT-OFF VALVE (OPTIONAL)
85.	HANDFOOT CONTROL PILOT FILTER
86.	PILOT FILTER BYPASS VALVE
93.	PILOT CIRCUIT SUPPLY MANIFOLD
94.	PILOT CIRCUIT RETURN MANIFOLD
95.	BOOM/DIPPER PILOT CIRCUIT MANIFOLD
96.	SWING PILOT CIRCUIT CUSHION VALVE
97.	HYDRAULIC BREAKER FOOT CONTROL
98.	OFFSET BACKHOE FOOT CONTROL
99.	DOZER BLADE HAND CONTROL
100.	DOZER BLADE CYLINDER
101.	OFFSET BACKHOE CYLINDER
102.	3 ELECTRONIC BLOCK
SC2.	SWING PILOT PRESSURE SWITCH
SC6.	UPPER PILOT PRESSURE SWITCH (YELLOW BAND)
SC7.	TRAVEL PILOT PRESSURE SWITCH
SW3.	OVERLOAD INDICATOR PRESSURE SWITCH
MS.	PRESSURE TEST POINT (x3)
Y2.	PILOT PRESSURE SOLENOID VALVE (BLUE BAND)
Y3.	SWING BRAKE SOLENOID VALVE (PINK BAND)
Y4.	2 STAGE TRAVEL SOLENOID VALVE (RED BAND)
Y5.	CRUSHER/BREAKER OPTION TWO FLOW SOLENOID VALVE

LEGEND

- P1 PUMP
- P2 PUMP
- PILOT SYSTEM PUMP
- RETURN TO RESERVOIR
- LEAK-OFF RETURN
- SUPPLY CIRCUIT
- PILOT SYSTEM CIRCUIT
- HOSE
- COMPONENT BOUNDARY
- PIPING CONNECTION
- PIPING CROSS-OVER
- 41 COMPONENT ITEM NO.
- 3 (x1) COMPONENT NUMBER
- CONNECTION ITEM NO.
- ★ OPTIONAL ITEM NO.

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HYDRAULIC SCHEMATIC
Number 9-43660

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