



# SERVICE MANUAL

## LOAD EXCAVATOR

**ZX75**

**ZX125**

Utility Equipment  
P.O. Box 868 - 501 Sanford Ave  
Mocksville, N.C. 27028  
[www.irutilityequipment.com](http://www.irutilityequipment.com)

Book 22856462 (6-12)

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# Load Excavator ZX75



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## Load Excavator ZX75

### Diesel Engine

Manufacturer:		KHD
Type:		BF4M 1012 E
Output acc. to D/N 70020:	kW/PS	53 / 72 at 2.000 min <sup>-1</sup>
Cooling:		water
Injection:		direct injection, turbo charged
Capacity:	cm <sup>3</sup>	3.200
High idle:	min <sup>-1</sup>	2.150
Low idle:	min <sup>-1</sup>	800
Spec. fuel consumption (full load):	g/kWh	208
Tappet clearance - inlet cold:	mm	0.3±0.1
Tappet clearance - outlet cold:	mm	0.5±0.1
Torque of cylinder head studs:	Nm	30 / 80 Tightening angle 90°
Further data:		see engine operator's manual

### Electrical System

Voltage:	V	12
Battery:	V/Ah/A	12 / 105 / 450
Generator:	V/A	14 / 55
Starter:	kW/PS	3.1 / 4
Starting aid:		4 glow plug
Lighting:		acc. to German motor vehicle construction and use regulation and Euronorm.

### Transmission

Travel pump:	make	Lohmann Stolterfoht GFT 9
2-stage variable displacement motor (integrated in the travel gear):	type	A 10 VE45 HZ

### Travel Range

Travel range I:	m.p.h.	1.67
Travel range II:	m.p.h.	3.23

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## Working Hydraulics

Working pump (variable displacement pump):	type	A 10 VO 71 DFLR
Displacement:	cm <sup>3</sup> /rev	0 to 71
Gear pumps:	make	Cassapa
Displacement:	cm <sup>3</sup> /rev	14 + 14
LS-regulator (stand-by pressure variable displacement pump):	psi	362
Servo-controlled valve (cross servo control stick):	type	Rexroth 4TH6 N
Servo-controlled valve, pedal (travel):	type	Rexroth 2TH6
Servo-controlled valve, pedal (add. control circuit):	type	Rexroth 2TH6
Valve bank 1: (Mono/Circular boom)	type	6 SX 14 / 7 SX 14
Valve bank 2:	type	3 SM 12

## Pressure and Setting Values (Working)

LS-pressure relief valve (6 SX 14):	psi	4061 (valve bank 1)
Main pressure relief valve 1 (6 SX 14):	psi	4351 (safety valve)
Main pressure relief valve 2 (3 SM 12) (high pressure):	psi	3335
<b>Line relief pressures - valve bank 1 (SM 12):</b>		
MONO and circular boom:	psi	2610 / 4351
Intermediate boom:	psi	2610 / 4351
Dipper stick:	psi	4351 / 4351
Bucket:	psi	4351 / 4351
Breaker / additional control circuit:	psi	4351 / 4351
Travel left / travel right:	psi	4061 / 4061 (in motor)
<b>Line relief pressures - valve bank 2 (3SM 12):</b>		
Slewing (valves at the slew motor):	psi	1450 / 3625
Dozer blade:	psi	---
Articulation:	psi	---
Shut-off valve:	make	Bergin
Shut-off pressure (high idle):	psi	1595
Pressure reducing valve (pilot control):	make	Parker
Pilot pressure - high idle	psi	435 <sup>±2</sup>

### Slew Drive

Slew gear (up to 33010178):	type	HD 4
Slew gear (from 33010179):	type	ZFP - DR 140
Slew motor:	type	A 2 FM 28
Slew pressure (valves at slew motor):	psi	1450 / 3625 (high idle)

### Lubricants

Engine oil:	see engine instruction book
Hydraulic oil:	see IR hydraulic oil recommendation table
Transmission oil:	MIL-L-2105 B / API-GL 5, SAE 85 W 90 LS or SAE 90 LS
Multiple-purpose grease:	acc. to D/N 51825. Dripping point over 170° C. Lithium-saponified.

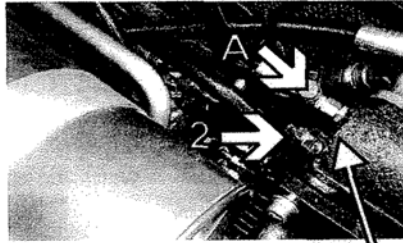
### Maintenance Parts

See Operating manual.

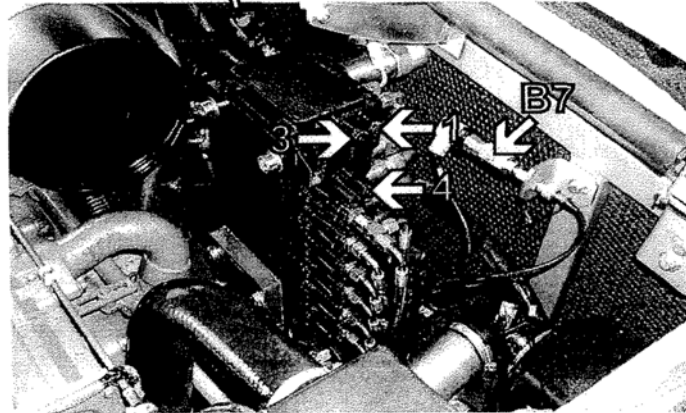
### Capacities

		gal.	
Engine oil (change):	approx.	2.64	engine oil
Hydraulic oil (tank and system)	approx.	36.98	hydraulic oil
Hydraulic oil (change):	approx.	31.70	hydraulic oil
Fuel tank:	approx.	34.34	diesel
Travel gear:	approx.	0.47	transmission oil, each
Slew gear:	approx.	0.42	transmission oil, lifetime
Cooling agent:	approx.	3.17	water with anti-corrosive and anti-freeze agent

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SX 14 valve bank 1



**A.** Test port for settings at valve bank:

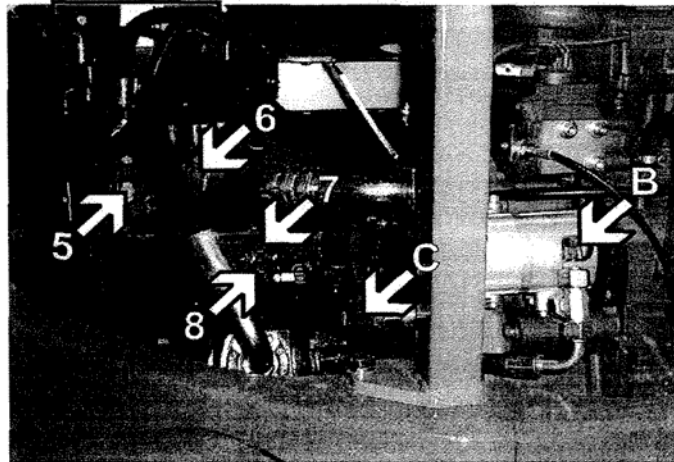
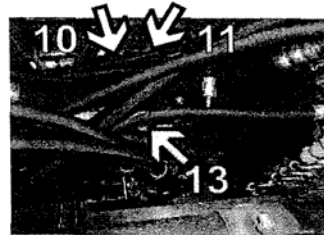
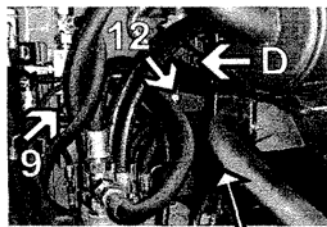
- LS - pressure (1)
  - safety valve pressure (2)
  - line relief pressures (4)
- and

Test port for settings at working pump:

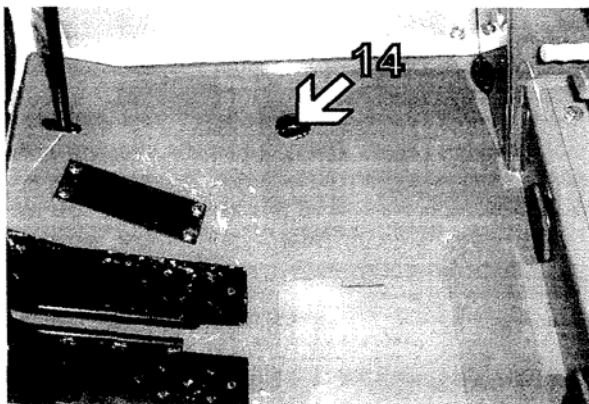
- stand-by pressure
- $A_p$  pressure

**B7.** Load warning sensor

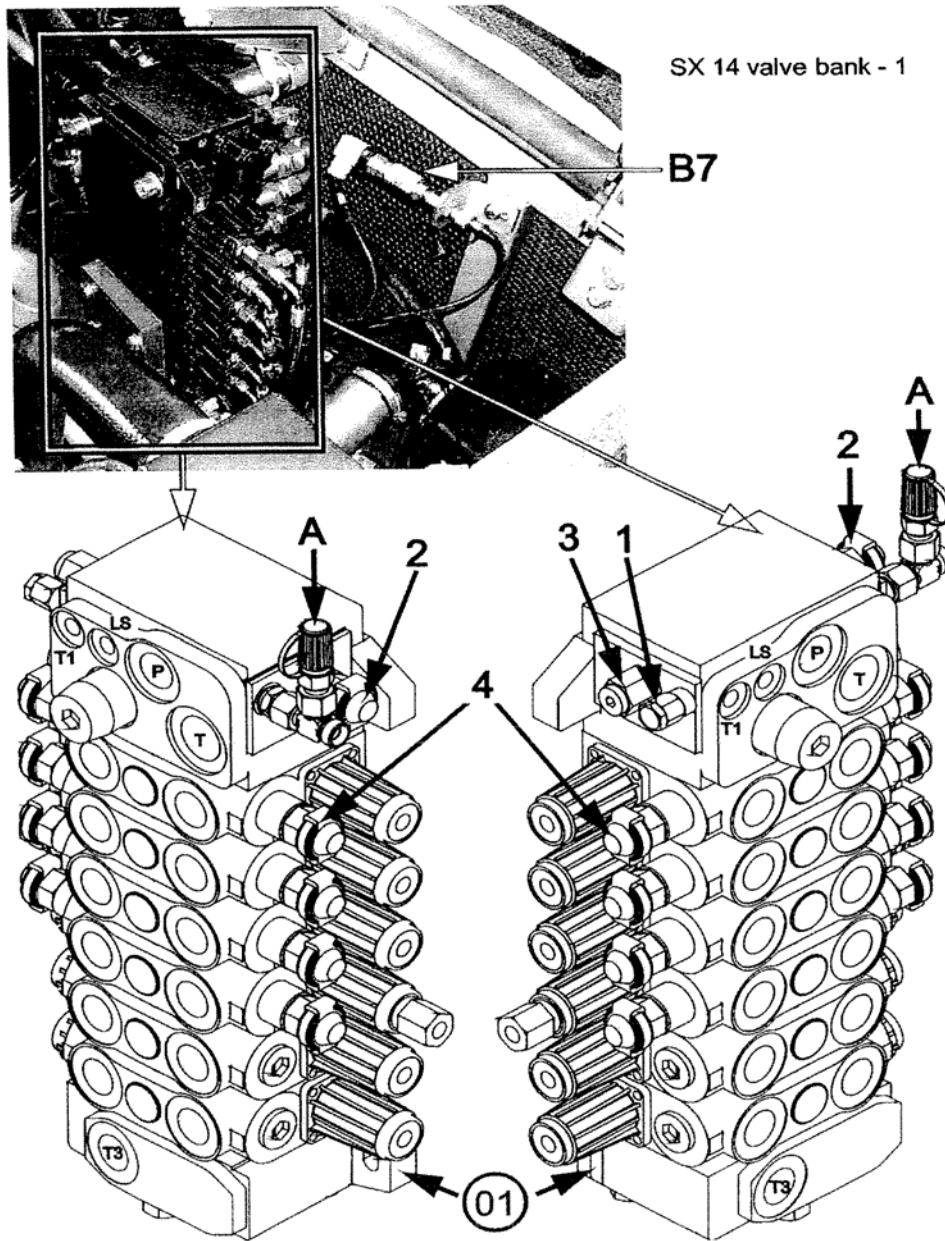
- 1. Load sensing pressure valve (adjustable)
- 2. Safety valve (adjustable)
- 3. LS - flow regulator valve (not adjustable)
- 4. Line relief valve(s) (adjustable)



- B.** Test port for settings at valve bank secondary functions and swing motor:
  - main relief at valve bank 2 (SM12) line reliefs at slew motor (10 and 11)
  - dozer blade (without line relief valves)
  - articulation (anti-cavitation valves 6)
- C.** Test port for cut-off pressure valve (9)  
e.g. dozer blade in end stroke position, full throttle. Slowly increase pressure
- D.** Test port for
  - pilot pressure (12)



Adjustment bolt at pressure reducing valve (14).  
Pilot pressure for additional control circuit.  
Adjustment of flow (e.g, speed adjustment for clam shell rotation)



01. SX 14 valve bank - 1

**A.** Test port for settings at valve bank - 1:

- LS - pressure (1)
- safety valve pressure (2)
- line relief pressures (4)

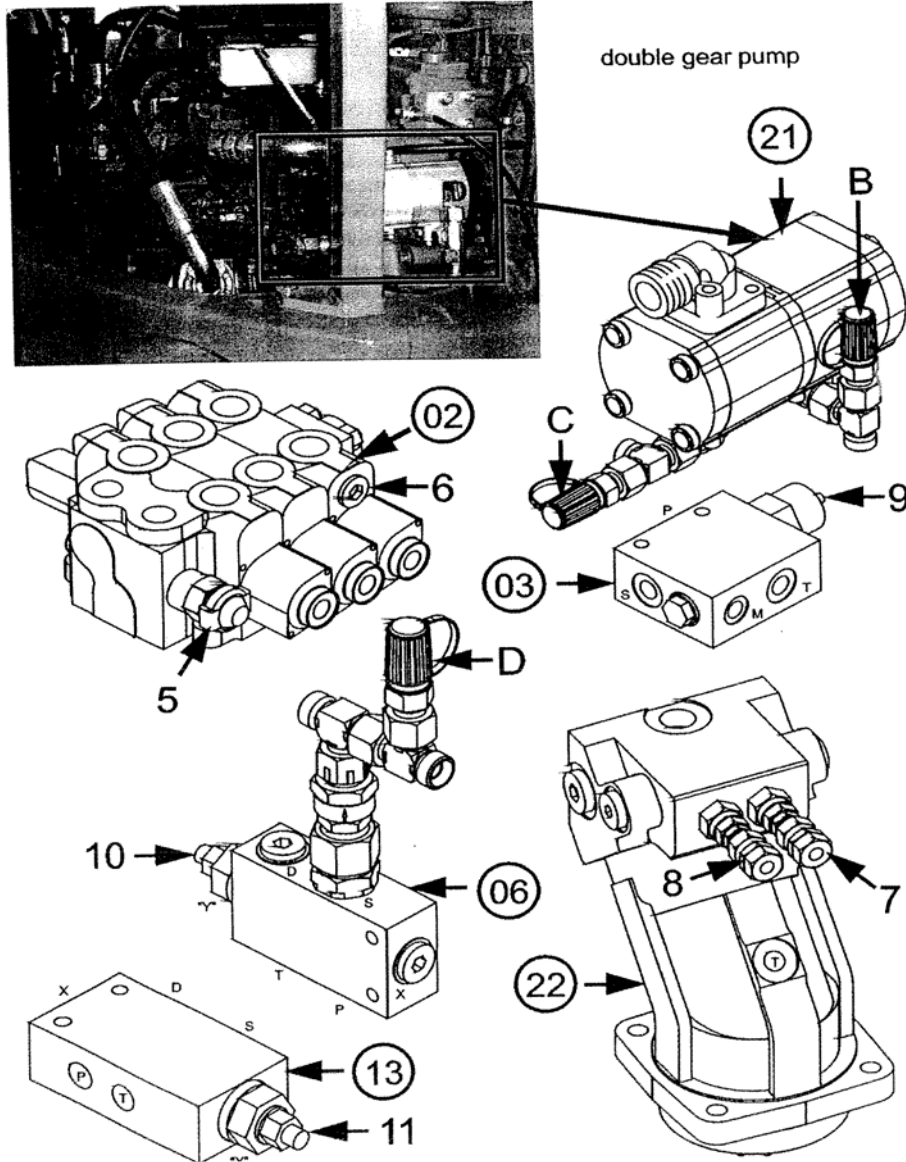
and

Test port for settings at working pump:

- stand-by pressure
- $A_p$  pressure

**B7.** Load warning sensor

- 1. Load sensing pressure valve (adjustable)
- 2. Safety valve (adjustable)
- 3. LS - flow regulator valve (not adjustable)
- 4. Line relief valve(s) (adjustable)



**21.** Double gear pump:

**B.** Test port for settings at valve bank 2, secondary functions and swing motor

**02.** Valve bank 2 (SM12):

- Main pressure relief valve (5) for
- swing (without line relief valves)
- dozer blade (without line relief valves)
- articulation (with anti-cavitation valves (6))

**22.** Swing motor

- line relief valves at swing motor (7 and 8)

**C.** Test port for settings at cut-off valve:

**03.** Cut-off valve:

- setting screw (9). e.g. dozer blade in end stroke position, full throttle, slowly increase pressure

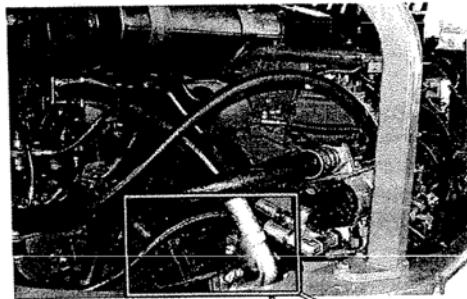
**D.** Test port for settings at pressure reducing valve

**06.** Pressure reducing valve pilot pressure

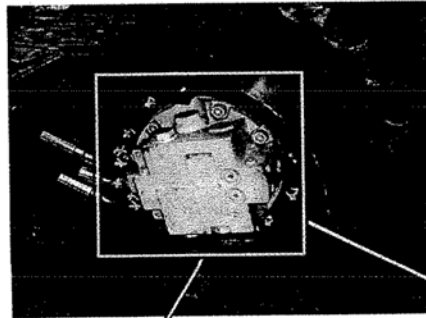
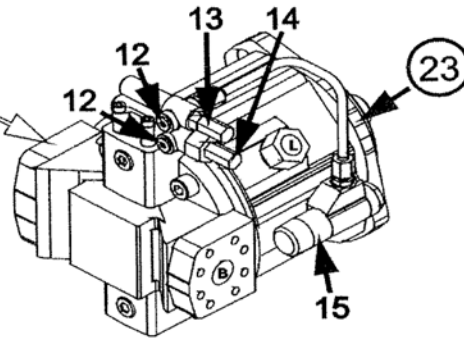
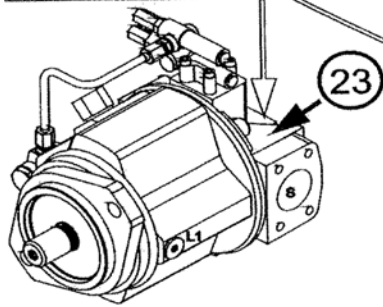
- setting screw (10)

**13.** Pressure reducing valve pilot pressure for additional control circuit)

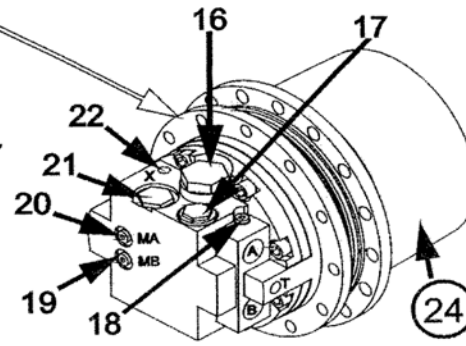
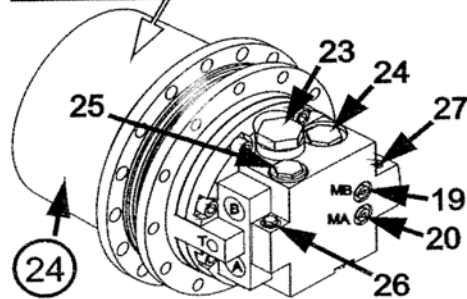
- setting screw (10). e.g. speed adjustment for clamshell grab rotation



variable displacement pump - working



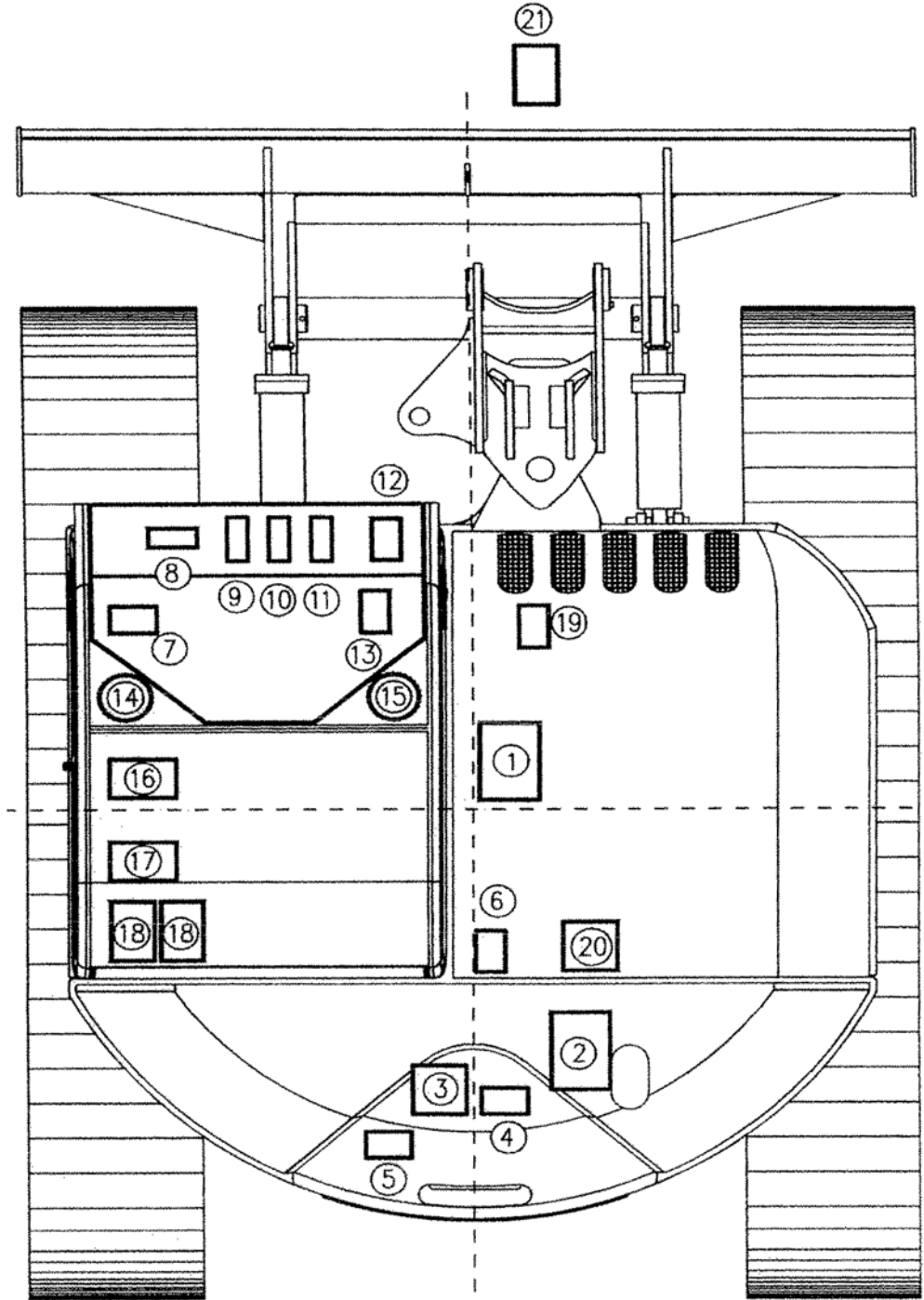
travel drive



- 23. Variable displacement pump -working**
- Plug (12)
  - $A_p$  - pressure valve (13) (power regulator)
  - load sensing regulator (14) (setting stand-by pressure)
  - power valve (15) (setting at test bench)

- 24. Travel drive**
- plug (16) (counter balance valve)
  - check valve (17)
  - pressure balance valve (18)
  - Plug (19) (test port "MB")
  - line relief valve with cushion piston (21) (4061 psi)
  - connection "X" (22) (control pressure) fast / slow
  - plug (23) (counter balance valve)
  - line relief valve with cushion piston (24) (4061 psi)
  - check valve (25)
  - pressure control valve (26)
  - shuttle valve (27)

valves 2-5 and 20 valve bank plate-mounted at top of fuel tank  
valves 7-13 and 16 underneath floor frame  
valves 17 and 18 underneath floor frame in the uppercarriage



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1. Valve bank 6 SX 14
2. Valve bank 3 SM 12
3. Pressure cut-off valve 1595 psi
4. 3/2 Way relay valve swing
5. 3/2 Solenoid high torque swing Y12
6. Pressure reducing valve pilot control 507 psi
7. 3/2 Solenoid selector valve breaker Y4
8. Pilot-operated pedal articulation
9. Pilot-operated pressure pedal travel left
10. Pilot-operated pedal travel right
11. Pilot-operated pedal intermediate boom
12. Pilot-operated lever dozer
13. Pressure reducing valve additional control circuit (clamshell)
14. Joystick left
15. Joystick right
16. Double solenoid valve, working hydraulics cut-off Y3, fast/slow Y5
17. 4/3 Solenoid operation additional control circuit clamshell Y18 / Y19
18. 2 X 4/2 Solenoid selector valve ISO - John Deere (option) YZ5 / Y26
19. Hydraulic oil thermostat valve (Wahler)
20. 4/2 Solenoid valve floating position (option) Y11
21. Load holding valve boom



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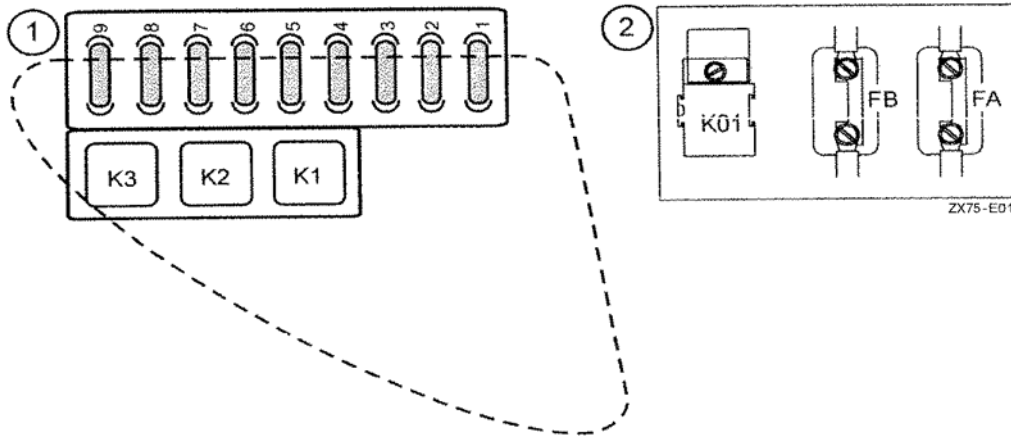
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## Electrical System

Fuse and relay box - Assignment plan.



1 = Instrument panel

2 = Next to Battery

Fuses		
Item	Ampere	Assigned to
F1	15	Interior light, radio, immobilizer, rotating beacon
F2	20	Socket, refueling pump. Optional additional heating
F3	15	Working floodlight, front
F4	15	Working floodlight, rear
F5	15	Horn, switch light, immobilizer
F6	15	Heater fan
F7	15	Wipe/Wash system
F8	5	Control module signal input
F9	15	Additional heating (option) Seat with electrical heating (option) Working floodlight(s) (optional)
FA	30	Main fuse
FB	60	Pre-heating

Relay	
Position	Function
K01	Pre-heat relay
K1	Working floodlight, front
K2	Working floodlight, rear
K3	Not assigned

Colors of Fuses	
5A	Yellow-brown
10A	Red
15A	Blue
20A	Yellow

Cable colors							
bg	Beige	dgr	Dark gray	hbr	Light brown	rt	Red
bl	Blue	ge	Yellow	hgr	Light Gray	sw	Black
br	Brown	gn	Green	hr	Light Red	vi	Violet
dbl	Dark blue	gr	Gray	nt	Nature	ws	White
dbr	Dark brown	hbl	Light Blue	or	Orange		

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