SERVICE MANUAL

TVT135, TVT145, TVT155
TVT170, TVT190, TVT195
Tractors

Print No. 6035448106

NEW HOLLAND
AGRICULTURE

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TABLE OF CONTENTS

SPECIAL TOOLS 5

FOR THE USER 7
- Engine code and serial number 7

SAFETY REGULATIONS 8

ENGINE DATA 9
- Lifting the engine 9

TECHNICAL DATA 10
- Conformance with exhaust standards 10
- Cylinder block 10
- Cylinder liners 10
- Cylinder head 10
- Valves, rocker arms and push rods 11
- Camshaft 12
- Crankshaft 12
- Flywheel 13
- Gear drive, camshaft and injection pump 13
- Con-rods 13
- Pistons, piston rings and piston pins 14
- Lubrication system 14
- Lubrication oil pump 15
- Thermostat 15
- Coolant temperature indication and monitoring (signal from sensor B22) 15
- Coolant pump 15
- Schwitzer turbocharger S200 15
- Tightening torques 16

CONSTRUCTION 17
- General 17
- Cylinder block 17
- Flywheel casing 17
- Cylinder head 18
- Valve mechanism 18
- Crankshaft drive 20
- Timing gears 21
- Lubrication system 22
- Cooling system 23
- Fan 24
- Intake/exhaust system 25

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ELECTRONIC ENGINE CONTROL SYSTEM – EEM2 26
Layout 27
Signals 28
Function 28

JOB INSTRUCTIONS 29
1. Cylinder block 29
A. Measuring the cylinder liner wear 29
B. Removing the cylinder liner 29
C. Checking the cylinder block 29
D. Replacing the camshaft bearing bush 29
E. Oversize bearing bushes for the camshaft 30
F. Fitting the plug at the rear camshaft end 31
G. Fitting the plug at the rear camshaft end after inserting an oversize bearing bush ..31
H. Installing the oil dipstick tube 31
I. Fitting the cylinder liner 31
2. Flywheel casing 33
A. Fitting the flywheel casing 33
B. Replacing the rear crankshaft sealing ring 33
3. Cylinder head 34
A. Removing the cylinder head 34
B. Removing the valves 34
C. Checking the cylinder head 34
D. Replacing the valve guides 35
E. Machining the valve seat 36
F. Replacing the valve seat rings 36
G. Grinding the valves 36
H. Fitting the valves 37
I. Fitting the cylinder head 37
4. Valve mechanism 38
A. Maintenance of the rocker arm system 38
B. Replacing the camshaft/camshaft gear wheel 38
C. Checking and adjusting the valve clearance 39
5. Crankshaft 40
A. Removing the crankshaft 40
B. Checking the crankshaft 40
C. Replacing the crankshaft gear wheels 40
D. Fitting the crankshaft 41
E. Crankshaft hub 41
F. Replacing the crankshaft belt pulley and the vibration damper 42
G. Checking the rubber element in the vibration damper 42
6. Pistons and con-rods 43
A. Removing the pistons together with the con-rods 43
B. Checking and replacing the con-rod bearings 43
C. Checking the con-rod 43
D. Checking and replacing the piston rings 44
E. Checking the pistons 45
F. Fitting the piston pin 45
G. Fitting the pistons and con-rods 45

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7. Flywheel 46
A. Replacing the starter ring gear on the flywheel 46
B. Fitting the flywheel 46
8. Timing mechanism 47
A. Removing the timing gear case 47
B. Replacing the intermediate gear wheel bearing bush 47
C. Fitting the timing gear case 48
9. Lubrication system 50
A. Checking the oil pressure valve 50
B. Removing and checking the oil pump 50
C. Assembling and fitting the oil pump 50
D. Fitting the sump 51
E. Oil cooler 51
F. Piston cooling nozzles 52
G. Recommended lubrication oils 52
10. Cooling system 53
A. Thermostat 53
B. Repairing the coolant pump 53
C. Coolant quality requirements 54
11. Intake/exhaust system 55
A. Checking the air filter 55
B. Checking the intake/exhaust system 55
C. Checking the boost pressure 55
D. Checking the turbocharger 56
E. Fitting the turbocharger 57

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Designation of sections

A#	Supply, FMGR
B#	Clutch switch 80% for reverse travel equipment
C#	Angle of rotation sensor, coupling with reverse travel equipment
D#	Potentiometer, accelerator pedal for reverse travel equipment
#	Variants on sheet 37, 39

Ground points

Electrical equipment

A3	EEM3 control unit	X0/27/14	Weld point for reverse travel equipment wiring harness, coupling
A4	FMGR		
A4/1	FMGR plug connection (white) [1]	X4/70	Plug connection for accelerator pedal [70]
A4/3	FMGR plug connection (blue) [3]	X4/70/1	Plug connection for accelerator pedal [FAHRPEDAL]
A4/4	FMGR plug connection (grey) [4]	X10/18	Plug connection for instruments wiring harness - engine wiring harness [INSTR]
A12	Central print		
B17	Angle of rotation sensor, clutch	X24/2	Plug connection for cab wiring harness, right - central print
B17/1	Angle of rotation sensor, clutch, reverse travel equipment	X24/3	Plug connection for instruments wiring harness - cab wiring harness on right [3]
F14	Fuse, FMGR, potential 30	X89/1	Plug connection for EEM3 engine control unit - engine wiring harness
F51	Fuse, supply for potential 15/1 FMGR		
K5/60	Relay for clutch [KUPPLUNG]		
K5/61	Relay for front accelerator pedal [FAHRPEDAL1]		
K5/62	Relay for rear accelerator pedal [FAHRPEDAL1]		
R8	Potentiometer, accelerator pedal		
R8/1	Potentiometer, accelerator pedal, reverse travel equipment		
S46	Clutch switch 80%		
S46/1	Clutch switch 80% [KUPPL]		
X0/3/15	Weld point for instruments wiring harness, CAN H		
X0/7/2	Weld point for wiring harness, cab, right, accelerator pedal		
X0/7/5	Weld point for wiring harness, cab, right, potential 31		
X0/27/1	Weld point for seat R		
X0/27/7	Weld point for reverse travel equipment wiring harness, potential 31		
X0/27/10	Weld point for reverse travel equipment wiring harness, accelerator pedal 2		
X0/27/11	Weld point for reverse travel equipment wiring harness, accelerator pedal 1		
X0/27/13	Weld point for reverse travel equipment wiring harness, coupling		

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SGR - 84 Cartridge input speed not plausible

Cause:

The SGR checks whether the speeds measured are plausible. This check is made on the basis of the adjustment of the hydrostat and the clutches that are engaged. The fault is stored, signalled on screen by a warning triangle and driving is only possible at a limited speed (< 8 km/h).

Possible causes:

1. Hydrostat defective.
2. Temporary malfunction of the hydrostat.
3. Temporary electrical malfunction when measuring the speeds.
4. Malfunction of the HCU.

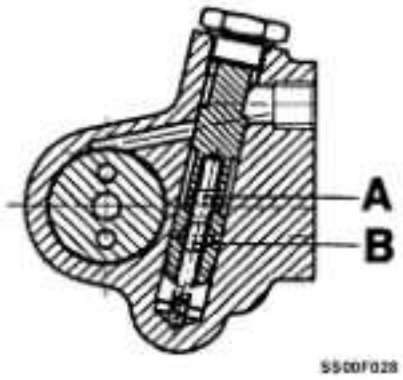
Remedy:

If fault codes SGR 64 or SGR 65 or SGR 67 do not occur at the same time, the cartridge input speed (sensor B24) is ok.

1. If the hydrostat is permanently defective, fault code SGR 53 or fault code SGR 52 or fault code SGR 61 will also occur. The causes for these fault codes must be remedied first.
2. In the case of a temporary malfunction of the hydrostat, fault code SGR 85 will also occur in most cases. Temporary malfunctions can occur as a result of cold start problems or if oil supply is insufficient for a brief period. Store the fault using the Service Tool and then delete it. Make a test drive to check the function. The transmission temperature must exceed 20°. If the fault code does not occur again, no further measures are required.
3. The software of the SGR includes measures to remedy temporary electrical malfunctions occurring when the speeds are measured. In this case run an update with the most recent software version. Store the fault using the Service Tool and then delete it. Make a test drive to check the function. If the fault code does not occur again, no further action is required.
4. Malfunctions of the HCU can be caused by electrical faults. Store the fault using the Service Tool and then delete it. Make a test drive to check the function. If the fault code does not occur again, no further action is required. If fault code SGR 84 still occurs and if fault codes SGR 144 or SGR 145 or SGR 146 occur at the same time, these faults must be remedied first.

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STEP 29



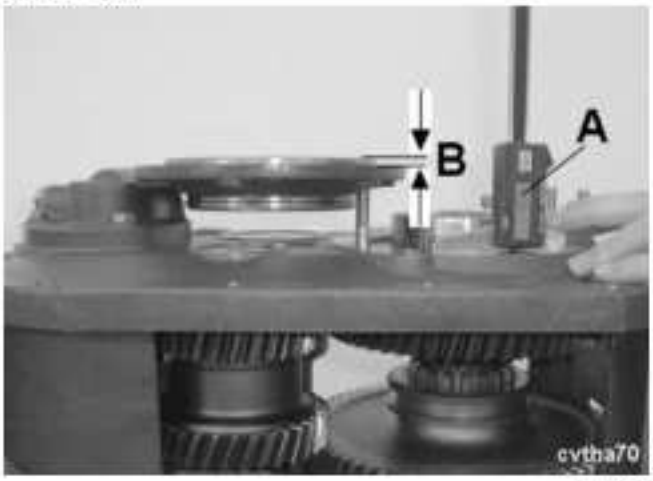
Assemble the oil feed cover.

NOTE: *Seal it using LOCTITE 518 and tighten it to the specified torque.*

Tightening torque (M8/8.8) ..... 23 Nm

A = cooling oil – clutch
B = cooling oil – feed

STEP 30



Adjust the flange shaft bearing play (0.01 - 0.05 mm):

Dimension A minus dimension B minus 0.05 mm gives the thickness of the packing washer. Fit a packing washer of the thickness which has been determined.

STEP 31



Fit the sealing cover.

NOTE: *Seal the flange surface using LOCTITE 518.*

Tightening torque (M8/8.8) ..... 23 Nm

STEP 32



Fit the PTO shaft stub.

Tightening torque (M12/10.9) ..... 110 Nm

STEP 33

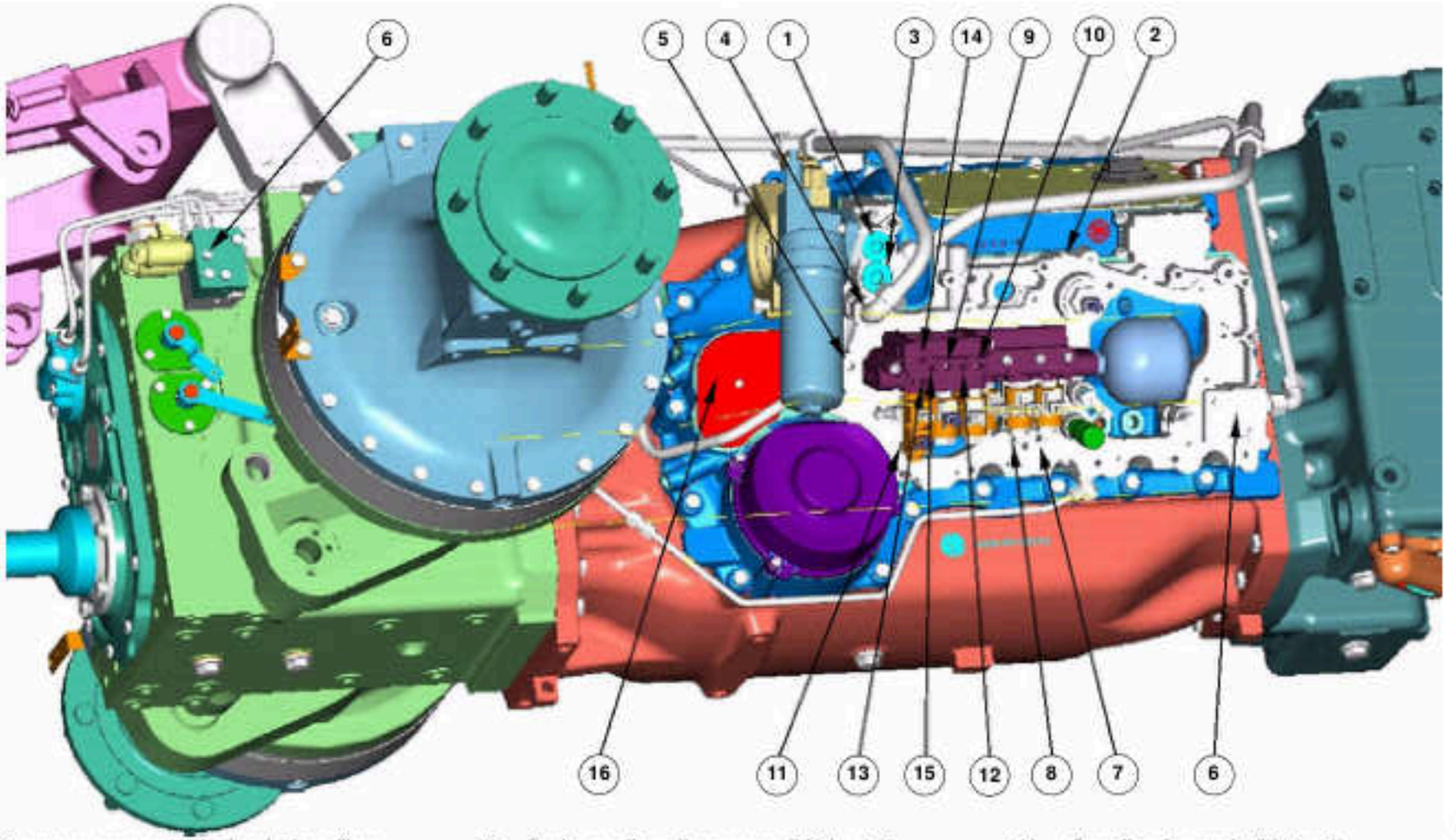


Secure both bearing pins with a sprung dowel pin.

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Test connections



1 P3 system pressure 30+ bar before filter (M33 x 2)

2 P3 system pressure 30^{+2} bar after filter (M14 x 1.5)

3 Pressure before cooler (lubricating pump pressure M33 x 2)

4 Pressure behind cooler, lubricating pressure

5 Brake cooling oil pressure (M24 x 1.5)

6 P2 system pressure 20 bar for locks, PTO front / rear

7 Coupling 1 (M10 x 1)

8 Coupling 2 (M10 x 1)

9 Coupling 3 (M10 x 1)

10 Coupling 4 (M10 x 1)

11 Coupling forwards (M10 x 1)

12 Coupling reverse (M10 x 1)

13 Parking interlock "ON" (M10 x 1)

14 Parking interlock "OFF" (M10 x 1)

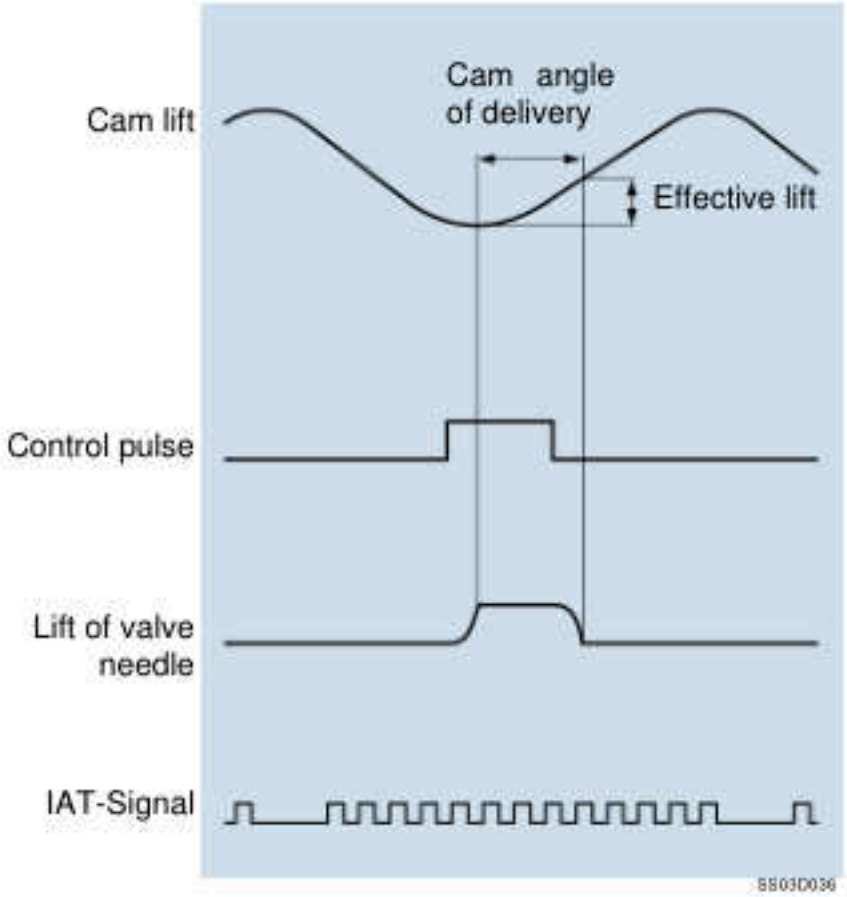
15 Four-wheel drive coupling (M10 x 1)

16 Output sensors 1 and 2 (behind cap)

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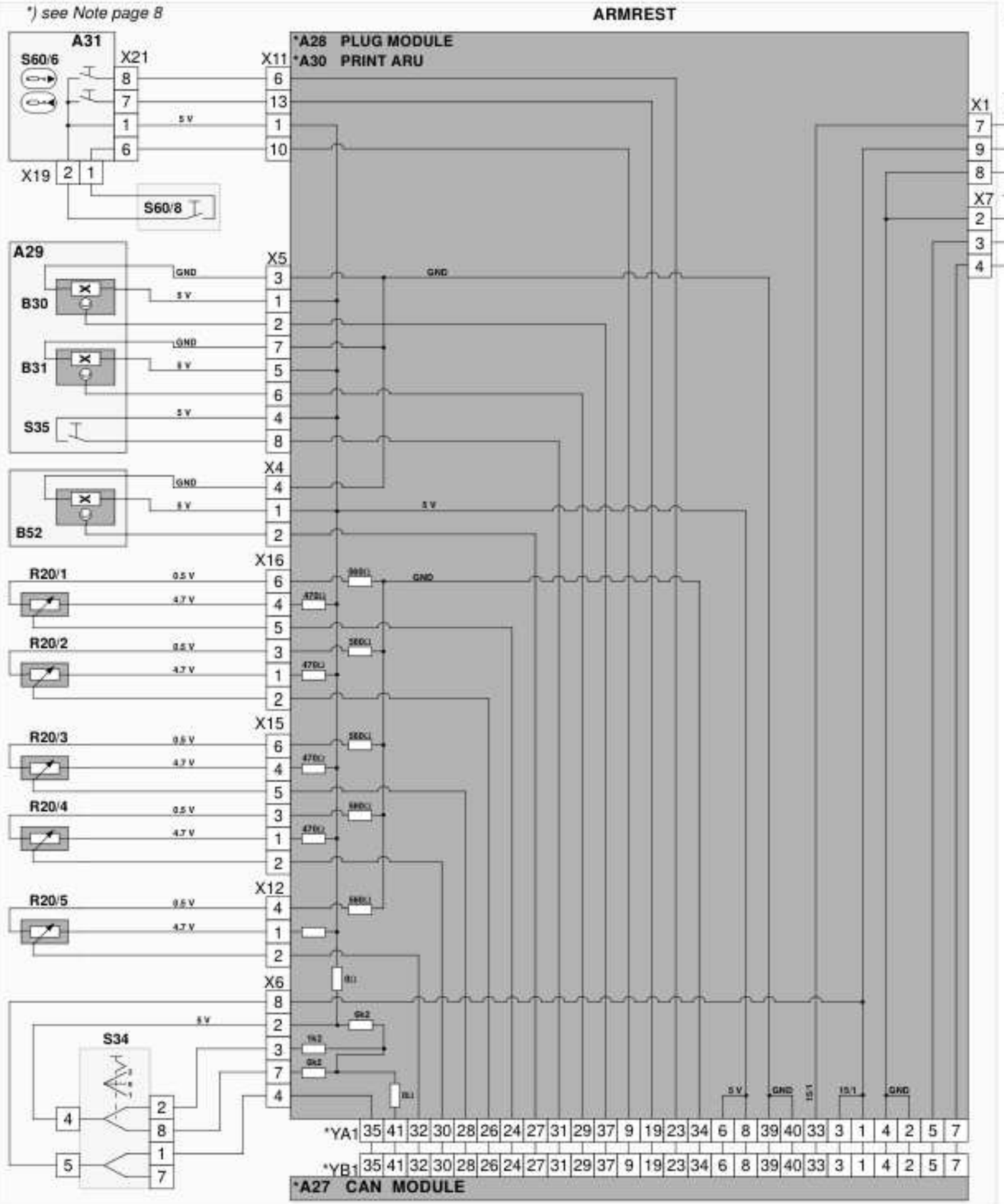
Electronic control

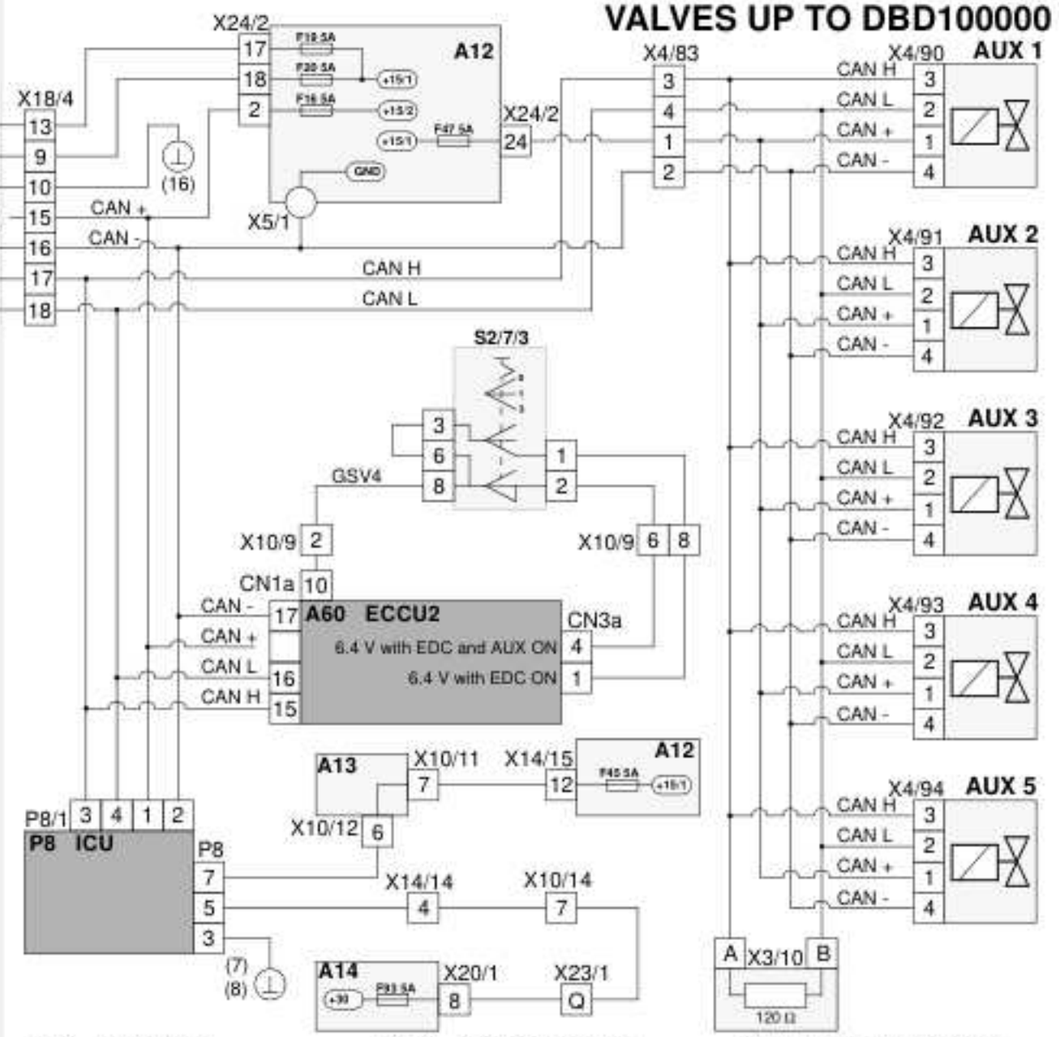
- No mechanical connection (rod or cable) exists between the engine and the controls in the cabine. The parameters supplied by the electronic drive pedal or the electronic hand throttle are conducted as electrical signals to control units like FMGR (Vehicle Control Unit) and ARU (Arm Rest Unit). There, these signals get converted into CAN messages, thus being transmitted to the EEM too.
- Messages related to engine and fuel injection are transmitted between EEM and PCU by CAN Bus.
- Taking in account the coming-in parameters and the momentary engine requirements, the EEM determines CAN messages to control injection timing and the quantity of fuel to be injected.
- The PCU (10) controls the proportional solenoid valve (14) of the hydraulic-mechanically controlled timing device (15) by means of PCC (Pulsed Current Control).
- In the injection pump, at the circumference of the rotating incremental wheel (12), there are six notches (18) arranged by symetrical division (see page 17). At the moment a notch will pass the IAT sensor (11), the signal generated will trigger the PCU (10) to energise the solenoid of the fuel-quantity solenoid valve (13). Thus the valve needle will close a port leading to the barrel. Pressure will build up and fuel, displaced by the piston(7), gets delivered to the injector (21) via delivery valve (8) and delivery port (9) to the injector.
- By CAN message, the PCU (10) gets informed for how many degrees of rotation of the incremental wheel (12) and rotating pump drive shaft (1) the pump should deliver to the very injector (this will represent a certain distance of the effective lift of the pump piston (7). After completing the desired angle, the PCU (10) will de-energise the fuel-quantity solenoid valve (13). The valve needle will open the port, as a result delivery will be stopped. The angle run through between closing and opening the valve needle will determine the quantity of fuel injected.
- The incremental wheel rotating with the crankshaft of the engine is provided with a notch too. The signal generated at this point by the engine speed sensor serves as an electronic (virtual) reference marking (e.g. Top Dead Center). In connection with the signal of the IAT sensor (11) in the injection pump, the electronic will calculate the real timing advance. Additionally, the signal of the PCC (Pulsed Current Control) to control the solenoid valve of the timing device will be altered if required.



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FUNCTIONAL SCHEMATIC DIAGRAM FOR REMOTE CONTROL VALVES UP TO DBD100000





A12	Central print	R20/5	Potentiometer AUX5	X10/14	10-pin plug connection
A13	Roof print	S2/7/3	Switch, hydraulic master	X11	16-pin plug connection
A14	Engine print	S34	Switch AUX5	X12	4-pin plug connection
A27	CAN module ---> DBD.....	S35	Joystick pushbutton	X14/14	14-pin plug connection
A28	Plug module ---> DBD.....	S60/6	AUX blue pushbutton	X14/15	14-pin plug connection
A30	Print ARU DBD..... --->	S60/8	Shift pushbutton (float position)	X15	6-pin plug connection
A29	Joystick	X1	14-pin plug connection	X16	6-pin plug connection
A31	Multi controller	X3/10	3-pin plug connection	X18/4	18-pin plug connection
A60	ECCU2	X4	4-pin plug connection	X19	2-pin plug connection
B30	Joystick longitudinal direction AUX1	X4/83	4-pin plug connection	X20/1	20-pin plug connection
B31	Joystick transverse direction AUX2	X4/90	4-pin plug connection	X21	14-pin plug connection
B52	Selector lever AUX4	X4/91	4-pin plug connection	X23/1	23-pin plug connection
CN1a	26-pin plug connection	X4/92	4-pin plug connection	X24/2	24-pin plug connection
CN3a	26-pin plug connection	X4/93	4-pin plug connection	YA1	44-pin plug connection ---> DBD.....
P8	ICU	X4/94	4-pin plug connection	YB1	44-pin plug connection ---> DBD.....
P8	10-pin plug connection	X5	2-pin plug connection	(7)	Ground point, roof hood, left
P8/1	4-pin plug connection	X5/1	Plug connection	(8)	Ground point, roof hood, right
R20/1	Potentiometer AUX1	X6	8-pin plug connection	(16)	Ground, starter
R20/2	Potentiometer AUX2	X7	4-pin plug connection		
R20/3	Potentiometer AUX3	X10/9	10-pin plug connection		
R20/4	Potentiometer AUX4	X10/11	10-pin plug connection		
		X10/12	10-pin plug connection		

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