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10. General

11. Layout

12. Repairs

13. Maintenance

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F. Changing valve seat inserts

Exhaust valves are fitted with separate valve seat inserts. If the sealing surface is damaged so badly that it cannot be repaired with machining, the seat inserts should be changed.

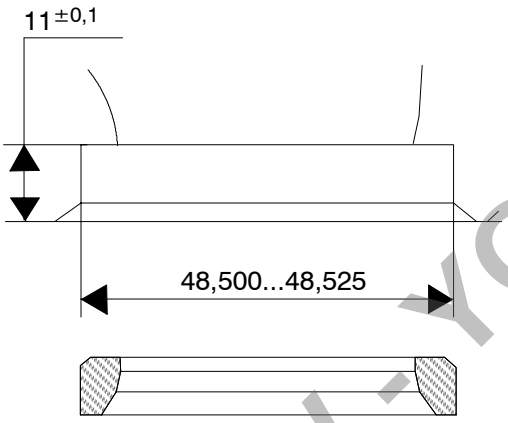
1. Grind the valve head on a discarded valve so that it sits down in the valve seat. Fit the valve and weld it in place in the seat. Cool with water.

2. Turn the cylinder head over and knock out the valve and seat.

3. Clean the valve seat location. Cool the new seat in liquid nitrogen until it stops bubbling, or alternatively place it in dry ice.

4. Fit the seat with a suitable drift. Machine the seat.

N.B. Where necessary, standard size seats can be replaced by inserts with a larger outer diameter. See Specifications.

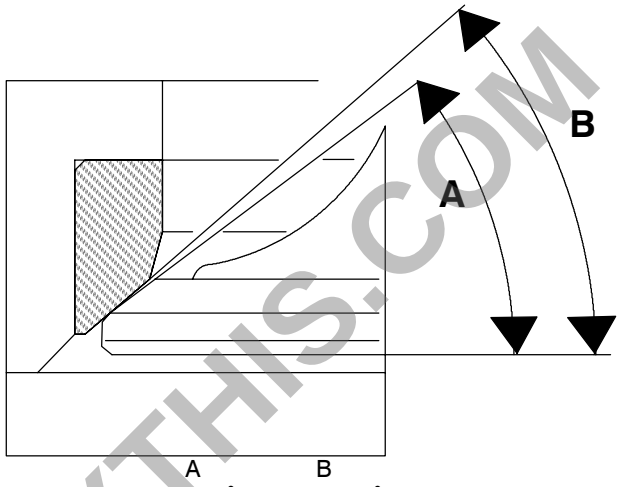


The inlet valve seat machined direct on the cylinder head, can be provided with a separate valve seat insert, order no 8366 47936. Machine the seat insert location on the cylinder head (see figure above). Fit the insert like a seat of the exhaust valve.

Note! Engines on tractors 8550 and 8750 have the valve seat inserts also on the inlet valves. From March 96 these cylinder heads have been marked with letter V, which is stamped on the cylinder head front upper surface on the exhaust side. As a spare part these heads can be fitted on all engines. The V–marked cylinder heads are also available for the 4–cylinder engines.

G. Grinding valves

In order to ensure that there is a proper seal around the valves, there is a difference in the sealing surface angles. Thus there is a very narrow sealing surface which seals effectively even after prolonged running.



	A	B
INLET	35° –20’	35° +20’
EXHAUST	45° –20’	45° +20’

1. Grind the damaged valve disc with a valve refacer. Adjust angles to **45° –20’** for exhaust valves and **35° –20’** for inlet valves.

2. If the edge of the valve head is less than **1,5 mm** after it has been ground, or if the valve stem is bent, the valve should be discarded.

3. If necessary, grind the end of the valve stem.

4. Lap the valves with lapping paste and check the contact surface with marking paint.

5. Clean the cylinder head and valves of any remaining lapping paste.

H. Fitting valves

1. Check the valve springs for straightness, length and tension using a spring tester. Compare with specifications.

2. Lubricate the valve stems and fit the valves in the correct order in the cylinder.

3. Fit the springs, spring guides and valve keepers with the aid of a lever for compressing valve springs, 9101 66200.

4. Tap the end of the valve stems lightly after fitting the valve in order to ensure that they are secure.

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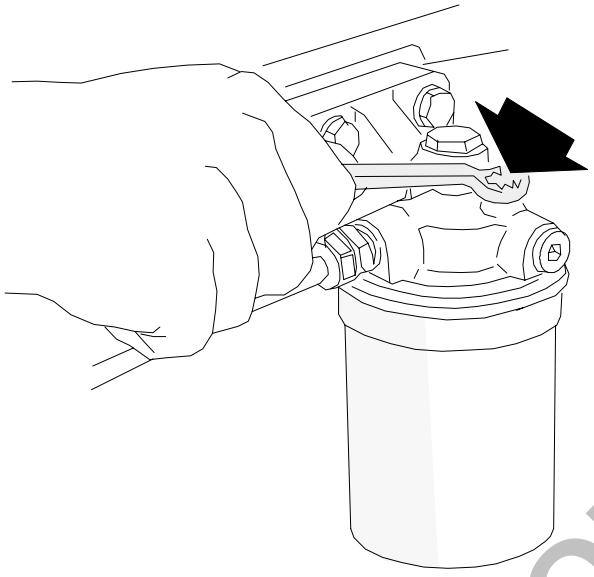
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Repair instructions

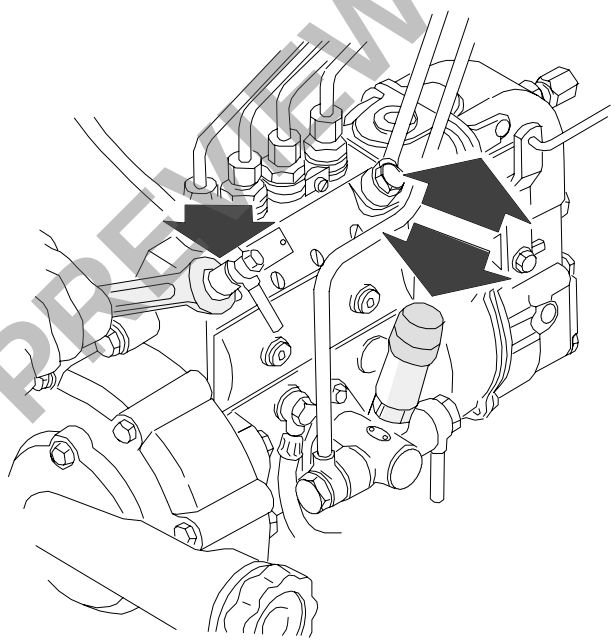
Fuel feed pump and fuel filter (Op no 222)

Bosch in–line pump

A. Bleeding fuel system



1. Slacken the bleeder screw on the filter head (8200, 8400, 8750 and 8950 have a double filter). Pump with the hand pump until the fuel flowing out at the bleeder screw is free from air bubbles. Then tighten the bleeder screw.



3. Slacken the injection pump overflow valve. Pump with the hand pump until the fuel flowing out is free from air bubbles. Tighten the overflow.

4. Wipe off any fuel from the engine.

B. Bleeding thermostart system

Always remove air from the glow plug fuel pipe when the pipe or reservoir has been emptied during repair work etc. This prevents damages to the glow plug caused by lack of fuel during starting.

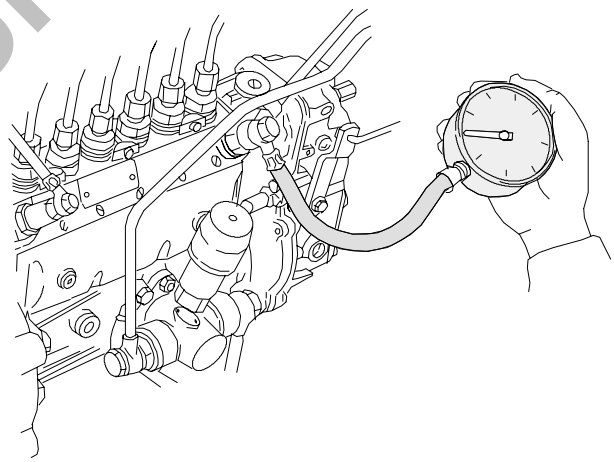
1. If the reservoir is empty, fill it e.g. with a drip pot through the breather hole on the reservoir.

2. Open the glow plug pipe connector and drain fuel from the pipe. Connect the pipe.

C. Measuring fuel feed pressure

Note! Measuring equipment, see page **220/3**.

1. Clean the fuel injection pump and the filter and the pipes between them.



2. Fit the gauge at the banjo connection on the pump, as shown above (between filter and injection pump).

3. Run the engine at low idling for a while and compare the gauge reading with the prescribed value (**0,6–1,0 bar)**.

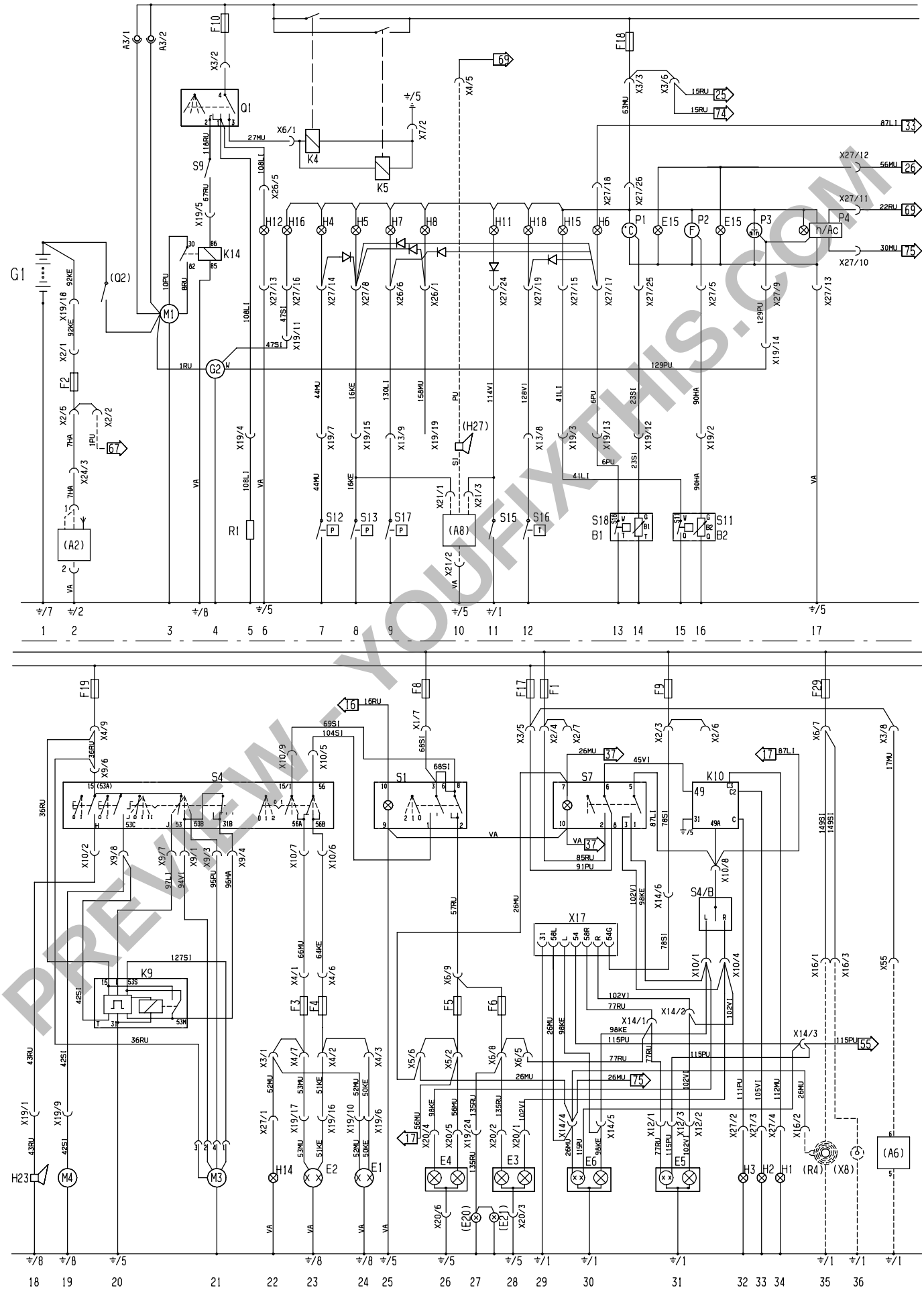
N.B. If the measured pressure is below the prescribed value, this may be caused by:

– faulty overflow valve
– blocked fuel filter
– faulty fuel feed pump
– blocked or leaking fuel pipes or unions

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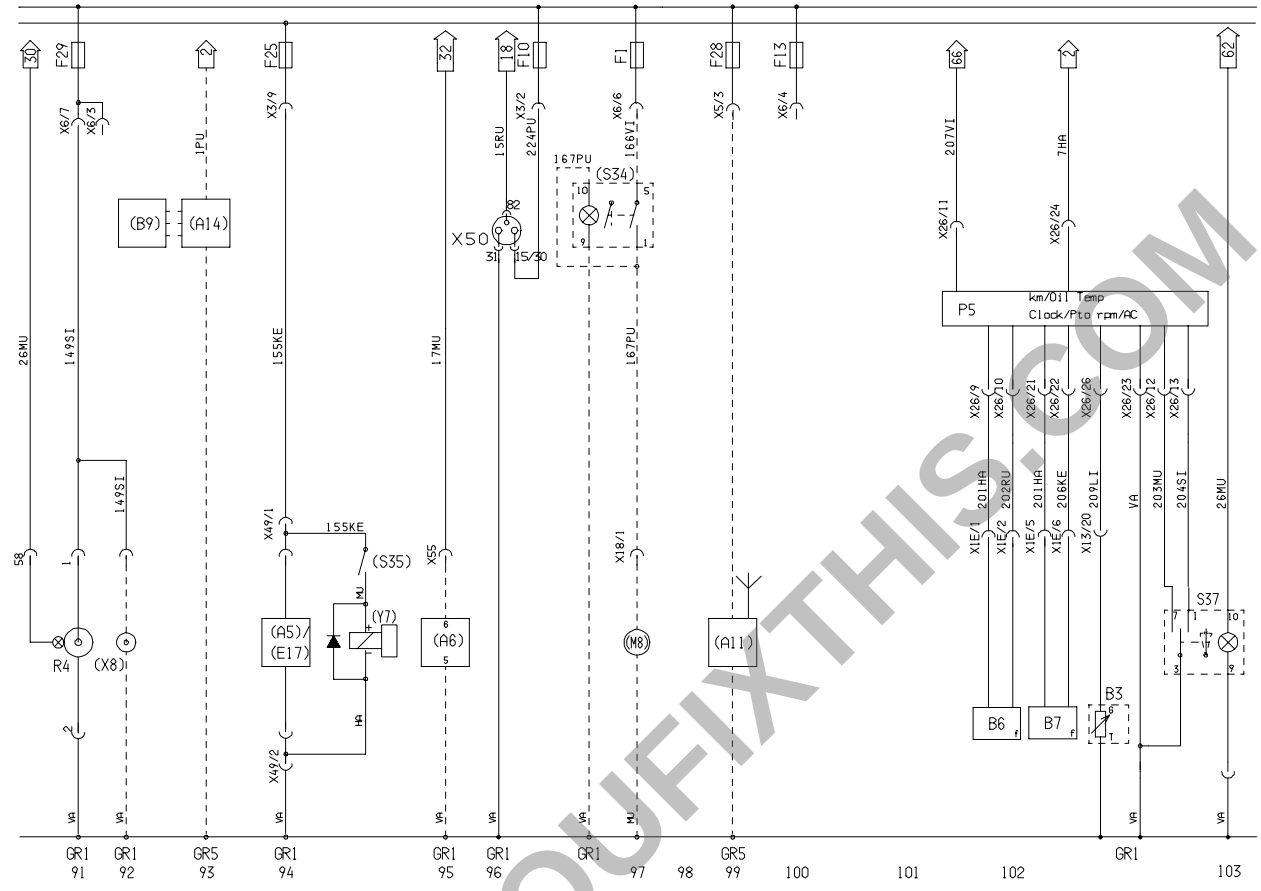
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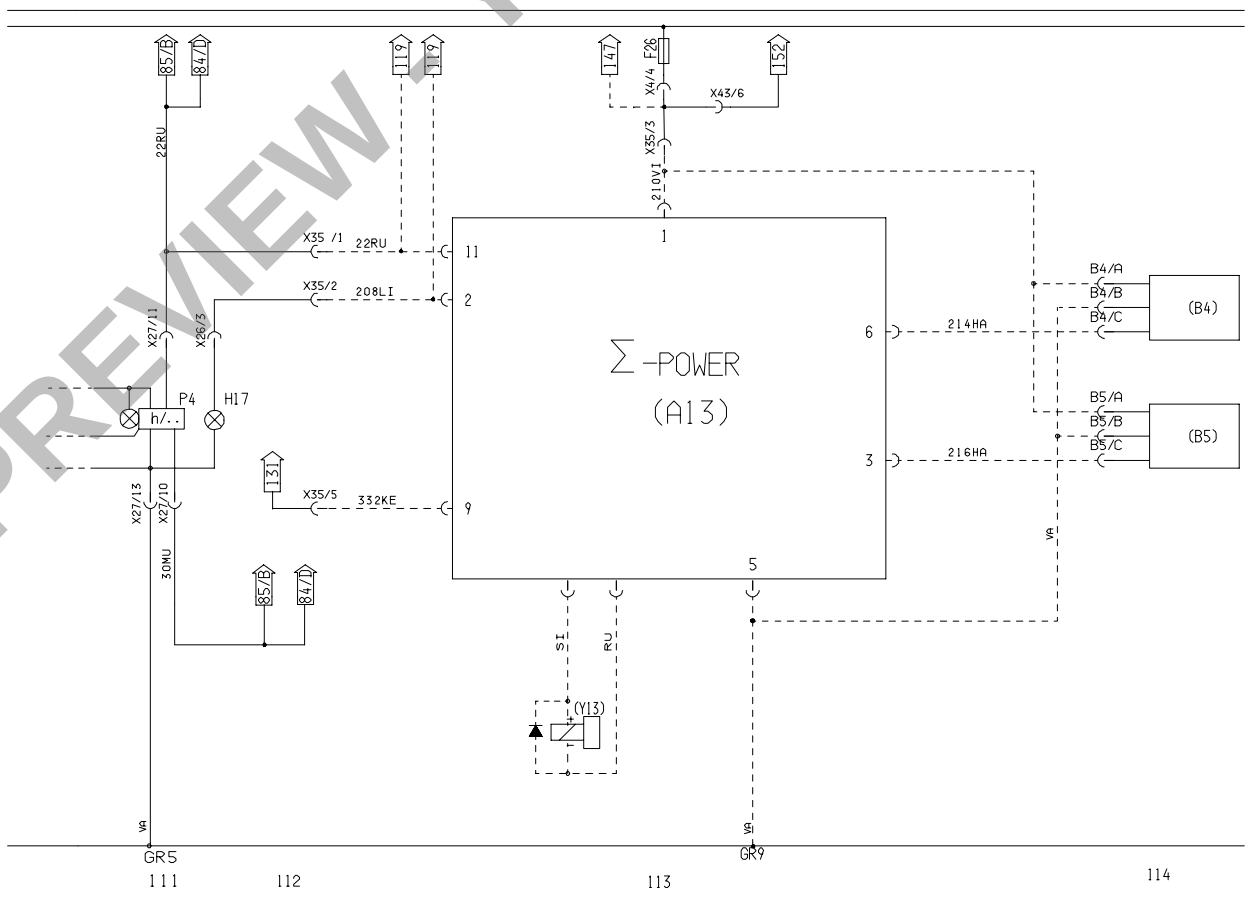
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ACV V



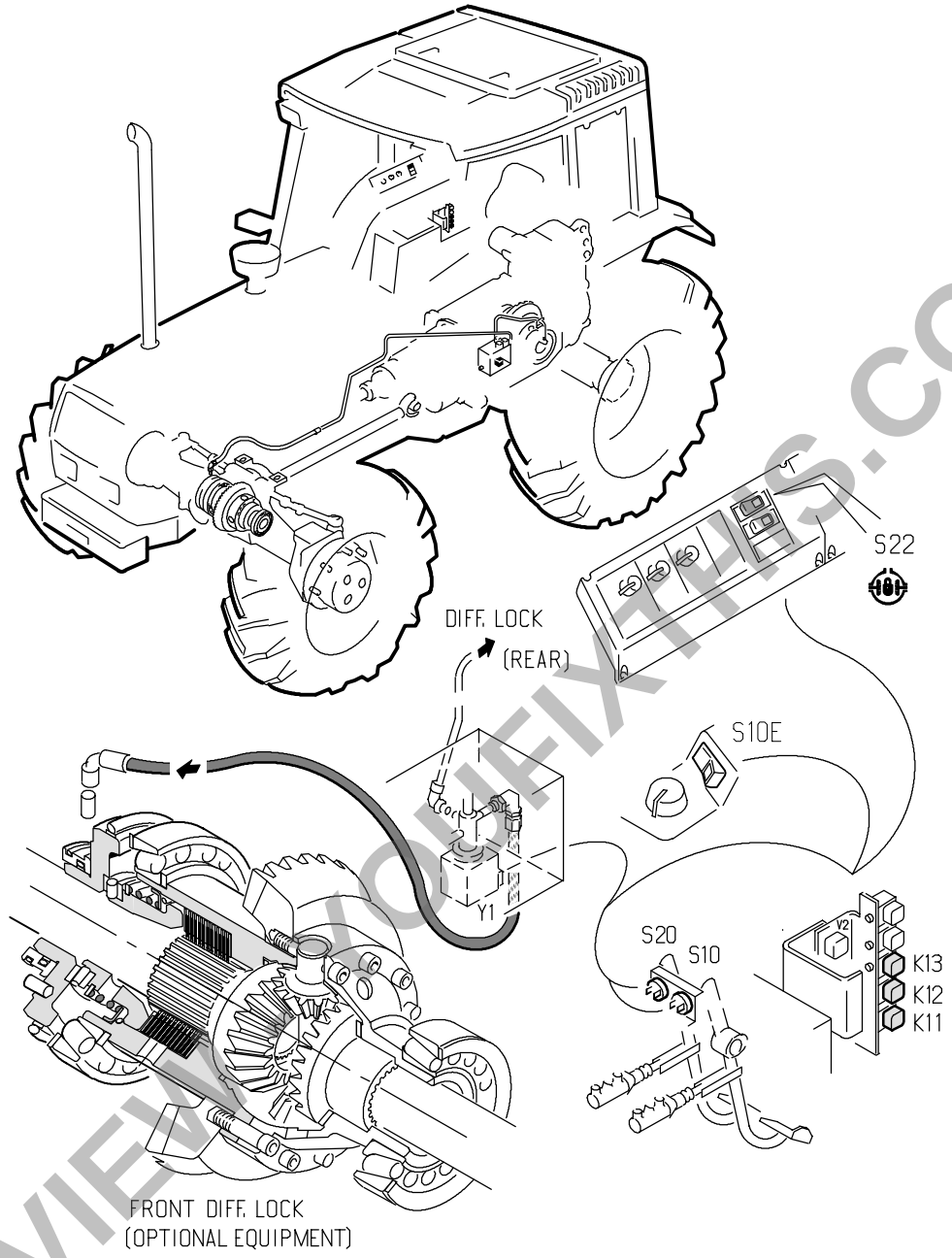
ACV VI

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B. Differential lock control



Picture 5. *Differential lock components on tractor*

Y1: *Differential lock solenoid valve*
K11, K12 and K13: *control relays*
S10 and S20: *Brake pedal switches*
V2: *diodes*
The differential lock rocking switch is placed on the selector panel on the driver's right.
In addition, the lift/lower switch also controls the diff. lock.

The relays are places in the lever console and are accessible after removing the console side panel:

K11: Switches off voltage to the diff. lock solenoid valve and switches on current to the brake lights, when the brake pedal/pedals are depressed. Switches on voltage again to the solenoid valve, when the brake pedal/pedals are released. Ind. light comes on.

K12: Switches on voltage to the solenoid valve, when the rocking switch rear edge is depressed. Ind. light comes on. When the brake pedals after this are depressed, relay K11 is closed and current from relay K12 is cut – off and the relay opens and switches off current to the solenoid valve and the ind. lights goes out. The diff. lock does not engage after this although the brake pedals are released.

K13: Switches off voltage to the solenoid valve and the lock disengages, when the lift/lower switch is in the lifting position. The lock ind. light , however, illuminates. When the implement is lowered down to the working position, switches on voltage to the solenoid valve and the differential lock is engaged.

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2. Measuring internal voltages of position sensor and draft sensors

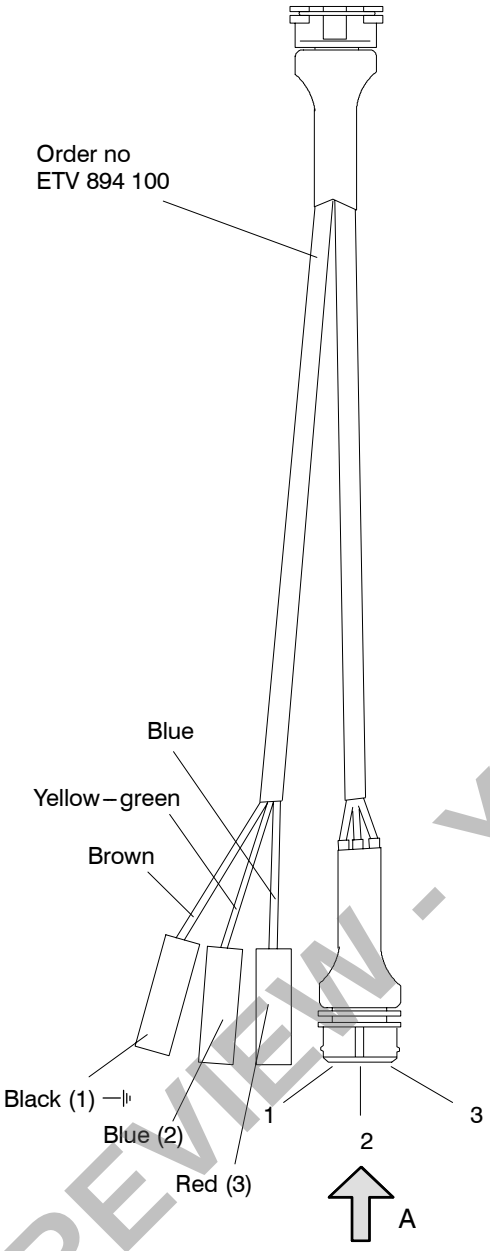
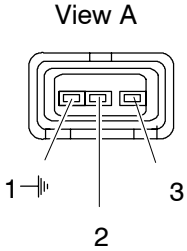


Figure 1. Tool for measuring the sensor voltages

Red = supply voltage=3
Blue = signal voltage=2
Black = earth lead=1



The condition of the sensors can be checked by measuring the sensor supply and signal voltages with the aid of a special tool.

Connect the tool into the power lift by opening the position sensor or one of the two draft sensors connectors and by fitting the tool between the lead. Switch on current and acticate the power lift with lift/lower switch.

The correct values should be:

Position sensor: (ACB / ACD)

– Measure the sensor **supply voltage** in the alternating current (AC) position of the multimeter. The value should be between the red and black connectors: 6,3–7,7 VAC

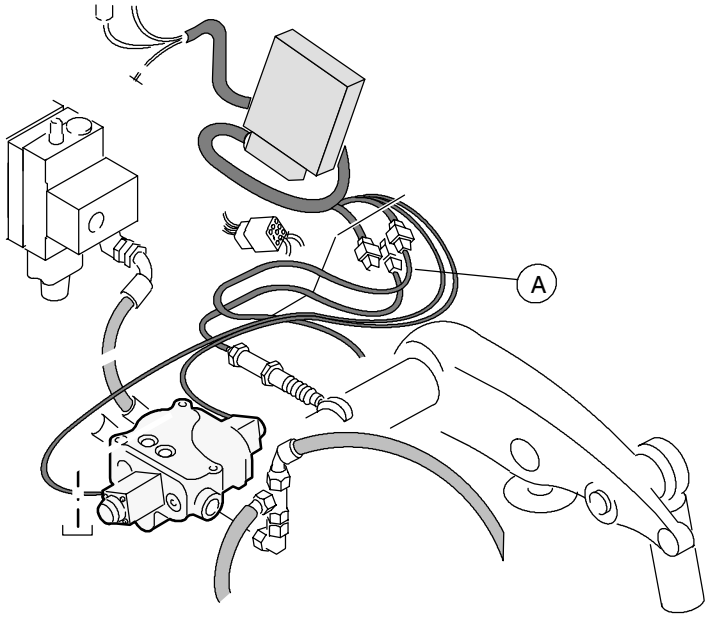
– Measure the sensor **signal voltage** in the alternating current (AC) position of the multimeter. The value should be between the blue and black connectors:
1,2...2,5 VAC lower links down.
3,0...5,0 VAC lower links up.

Draft sensors: (AC, ACB, ACD)

– Measure the sensor **supply voltage** in the direct current (DC) position of the multimeter. The value should be between the red and black connectors: 9,5–10,5 VDC

– Measure the sensor **signal voltage** in the direct current (DC) position of the multimeter. The value should be between the blue and black connectors:
2,5 VDC max pull.
7,5 VDC max push.
5,0 VDC when lower links are unloaded..

Note! If the sensors do not receive the supply voltage, check the power lift fuses and the lead connectors. If these are OK the possible fault may be inside the Autocontrol electronic unit which should be replaced.



Sensor connectors (A) are placed in the lever console in the cab and are accessible after removing console side panel.

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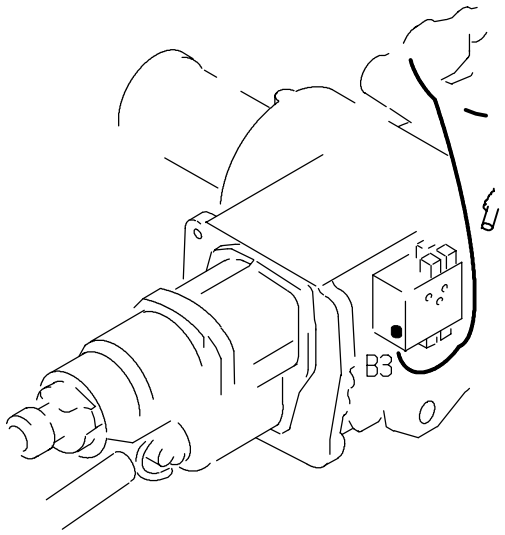
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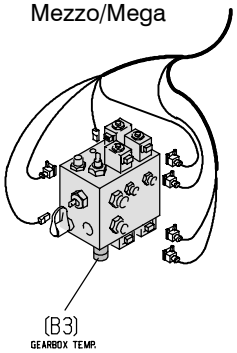
C. Gearbox oil temperature B3

(for monitoring gearbox oil temperature)

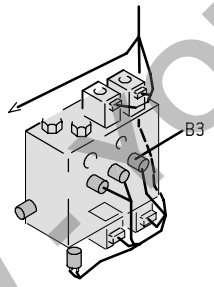
IMPORTANT! Agroline – instrument shows a fault code, if this sensor is faulty, see page **333**/**6**.



Mezzo/Mega



HiTech



Position of the sensor:
– In Mezzo/Mega: on the lower face of the servo valve block
– In HiTech: on the outer face of the servo valve block

Note! The gearbox oil temperature must be higher than +40˚C, before the instrument shows the temperature value. In lower temperatures LO (=LOW) is visible in the display.

If the display does not show the temperature value, check the sensor wires and the sensor.

Sensor resistance values:

+60 ˚C = **221.2 Ω** ±26 Ω (±4 ˚C)
+90 ˚C = **83 Ω** ±8 Ω (±3.5 ˚C)
+120 ˚C = **36.5 Ω** ±2.7 Ω (±3.5 ˚C)

The resistance can be measured between pin **X26**/**6** and frame contact. If the value is infinite, the resistance must be measured on the sensor pins.

Due to manufacturing tolerances of the sensor **B3** for instrument display, the display value can deviate a bit before the warning light of the sensor **S16** comes on.

If the gearbox oil temperature is continuously very high (e.g. +90˚...+99˚C), check the cleanliness of the oil cooler and the transmission oil level. If the gearbox oil level is at ”extra max” line, the oil overheats easily in high loads and at high driving speeds. In some cases it can be useful to reduce the oil level down to ”min” or ”max” line of the dipstick. If there is too little oil in the gearbox, it must be topped up to the dipstick lines.

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Wiring diagram, E–models, –F17106

Diagram no 32549920A on pages 350/14–16.

Sym–bol	Component	Cod-no
(A 2)	Radio	2
A 3	Electric centre	
(A 5)	Air suspension seat	93
(A6)	Agrodata	
(A7)	Elektric air filter	
A10	Control unit, Delta Power Shift	102
(A11)	Telephone	99
(A14)	Tachograph	1
B 1	Sensor, engine temperature	16
B 2	Sensor, fuel gauge	17
(B 3)	Sensor, gearbox temperature	95
(B 9)	Sensor, tachograph	1
E 1	Headlights, right	26
E 2	Headlights, left	25
E 3	Front indicator, R.H	31
E 4	Front indicator, L.H	28
E 5	Rear light, right	33
E 6	Rear light, left	32
E 7	Cabin light	46
E 9	Rear working light, R, outer	42
E10	Rear working right, R, inner	42
E11	Rear working light, L, outer	41
E12	Rear working light, L, inner	41
E13	Front working light, right	44
E14	Front working light, left	44
E15	instrument lights	17
E16	Roof console lights	21
(E17)	Seat heater	94
(E19)	Fog light, rear	35
(E20)	Parking light, right, Norway	29
(E21)	Parking light, left, Norway	30
(E22)	Registration plate light	32
(E23)	Upper head light, right	24
(E24)	Upper head light, left	23
(E25)	Parking light, upper, right	22
(E26)	Parking light, upper, left	22
F 1	15 A Hazard light, reserve	31
F 2	5 A Radio, clock, tachograph	2
F 3	10 A High beam, indicator light	25
F 4	10 A Low beam	25
F 5	5 A Parking lights, left	28
F 6	5 A Parking lights, right	30
F 7	10 A Front working lights	44
F 8	20 A Light switch	28
F 9	15 A Trailer socket/rear fog light	35
F10	15 A Heat/starter switch, thermostart	4
F11	5 A Autocontrol (+bat), buzzer	83
F12	10 A Rotating warning light, cabin light	47
F13	10 A Reserve	93
F14	15 A Water pump	97
F15	20 A Fan III– speed	56
F16	10 A Rear working lights, inner	42
F17	10 A Direction indicators, Agrodata	32
F18	5 A Instruments, warning lightsAutocontrol	17
F19	10 A Combination switch, wiper return	51
F20	10 A Rear window wiper/ washer	48
F21	15 A Fan I, II, air conditioner, floor fan	55
F22	10 A Delta Power Shift	101
F23	10 A Rear w. lights, outer	41
F24	10 A AC–4 control unit	62
F25	10 A Seat with air suspension,seat heating, rear steering prevention	93
F26	10 A Back buzzer, trailer brakes	96
F27	10 A Braking lights	65
F28	10 A Reserve (Telephone)	99
F29	10 A Cigarette lighter, power socket	91
F30	10 A ACIV sensors	66
(F31)	15 A Electric air filter	97
G 1	Battery	1
G 2	Alternator	4

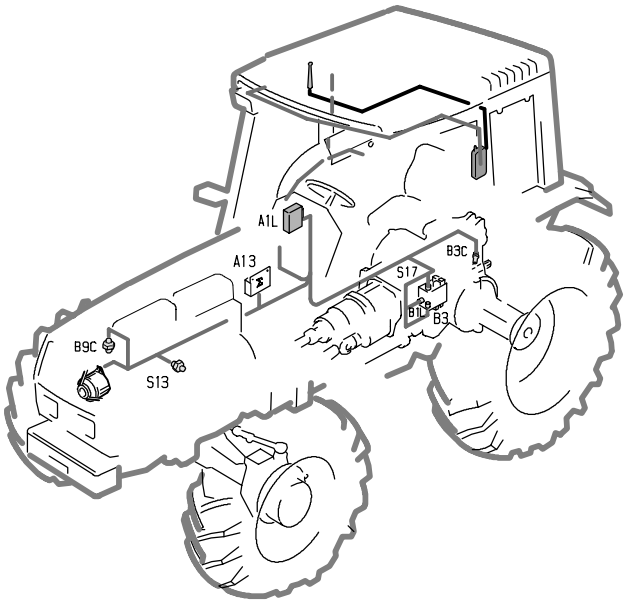
Sym–bol	Component	Cod-no
H 1	Warning light, direction indicator III	34
H 2	Warning light, direction indicator II	34
H 3	Warning light, direction indicator I	34
H 4	Warning light, air filter	7
H 5	Warning light, engine oil pressure	8
H 6	Warning light, stop, engine temp.	15
H 7	Warning light, gearbox oil pressure	9
(H8)	Light, oil filter, gearbox	10
H 9	Light, 4WD	65
H10	Light, PTO	67
H11	Light, parking brake	12
H12	Light, Thermostart	6
H14	Light, main beams	27
H15	Warning light, low fuel level	14
H16	Warning light, charging	6
H18	Warning light, gearb. oil temp.	13
H19	Light, DPS I	102
H20	Light, diff. lock	62
H21	Light, DPS II	102
H22	Light, DPS III	102
H23	Horn	50
(H24)	Rotating roof beacon	
(H27)	Back buzzer	96
K 1	Relay, front working lights	43
K 2	Relay, rear working lights	41
K 3	Relay, thermostart	6
K 4	Starter switch relay	8
K 5	Starter switch relay	9
K 6	Relay, fan III	56
K 7	Break lights	65
K 9	Relay , interval wiper	53
K10	Direction indicator relay	34
K14	Starter motor relay	4
(K17)	Relay, rear fog light	35
K18	Relay, Control stop	12
M 1	Starter motor	3
M 2	Heating fan	55
M 3	Windscreen wiper	53
M 4	Windscreen washer	51
(M 5)	Rear window wiper	49
(M 6)	Rear window washer	48
(M 7)	Floor fan	57
(M 8)	Water pump	98
P 1	Engine coolant gauge	16
P 2	Fuel gauge	17
P 3	Rev. counter	18
P 4	Hour meter/working height	19
(P 4)	Agrodata–instrument	
(P 5)	Agrodata–instrument	94
Q 1	Starter switch	4
(Q2)	Main switch	3
R 1	Thermostart	5
R 4	Cigarette lighter	91
S 1	Switch, head lights	28
S 2	Switch, rear working lights	41
S 3	Switch, fan	55
S 4	Combination control	25,34,52
S 5	Switch, front working lights	43
(S 6)	Switch, rot. warning light	47
S 7	Switch, hazard warning flashers	32
(S 8)	Switch, air conditioner	54
S 9	Starter safety switch	4
S10	Brake light contact, right	65
S11	Fuel gauge sender unit	17
S12	Pressure drop indicator, air filter	7
S13	Engine oil press. sender unit	8
S15	Sender unit to hand brake ind. light	12
S16	Gearbox temperature sender unit	13
S17	Gearbox oil pressure sender unit	9

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2. Sensors



a) Engine oil pressure sensor S13
Transmission oil pressure sensor S17

When the lubricating oil pressures drop under a certain level, the sensors ground the electric circuit and a warning light in question comes on in the dashboard (LOW). When the pressure rises up to a certain level, the sensor cuts off the circuit and the warning light goes out (OK).

Start the engine and ensure that the warning lights do not light. Disconnect the sensor wire and connect it to tractor frame at which time the warning light in question comes on. Connect the wire to the sensor pin and the warning light should go out.

Stop the engine, at which time the warning lights come on and light if the current is switched on. If the warning lights function as shown above, the sensors and wires are probably in order.

b) Engine temperature sensor B9C

Resistance values of the sensor:
– 120–148 Ω (+60˚C)
– 47–56 Ω (+90˚C)
– 35–42 Ω (+100˚C)
(the resistance increases when temperature lowers).

CareTel temperature value can be compared with the reading of the dashboard temperature gauge at which time can be estimated the size class of the value. The working temperature of the engine varies between +75...+95˚C according to loading. Engine coolant temperature can be measured with an auxiliary thermometer, at which time is obtained a more accurate value of comparison.

c) Transmission oil temperature sensor B3

Resistance values of the sensor:
– 200–250 Ω (+60˚ C)
– 75–90 Ω (+90˚ C)
(the resistance increases when temperature lowers).

If the tractor is equipped with Agrodata–instrument, the function of this sensor can be checked by ensuring that the AD–instrument shows a correct temperature value, see code 331.

In the dashboard there is a warning light for too high temperature in the transmission. Transmission oil working temperature varies between +60...+85 ˚C according to the loading.

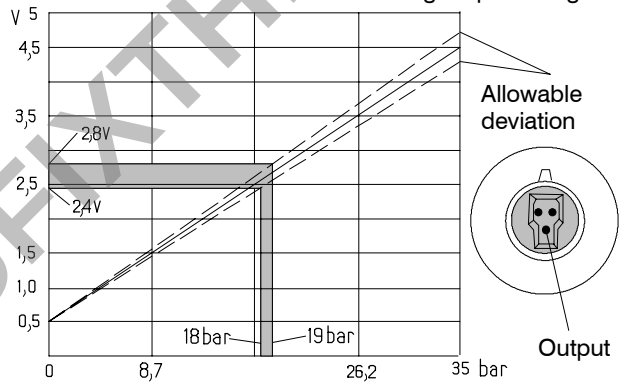
d) PTO shaft rotation speed sensor B7

Resistance of the sensor should be **1,0–1,10 kΩ**.

If the tractor has AD–instrument, check whether it shows the PTO revs. If it shows the revs and the reading reacts to the alterations of the revs, the sensor is in order.

e) Pressure sensor B1L for low pressure circuit

The basic pressure of this circuit is **18–19 bar**. The circuit maintains clutch pressures in various transmission multi–disc clutches, such as DPS, lock, 4WD, PTO, see pages **911/1–2**. Sensor output voltage (DC) depends on the pressure linearly, see diagram below. The connector must be connected to the sensor when measuring output voltages.



Others

Engine revs and running hours

CareTel takes engine revs and running hours from the alternator. In the dashboard there is a rev counter. If it seems to function and reacts to the revs alterations, the measuring circuit is in order.

CareTel running hour reading can be checked by comparing it with the reading in the dashboard.

CareTel takes the engine running mode (*) from the ignition switch position and engine revs (charging light), so that when the engine revs are over 400 r/min, CareTel assumes that the engine is running, if the ignition switch is in the running position.

Engine moment and Σ–power

These functions only on 8750 tractor, which has Σ–power, see under code 313.

In point SP there is ON, when the engine is working in the higher output range, at which time also the dashboard ETB–light lights, otherwise OFF.

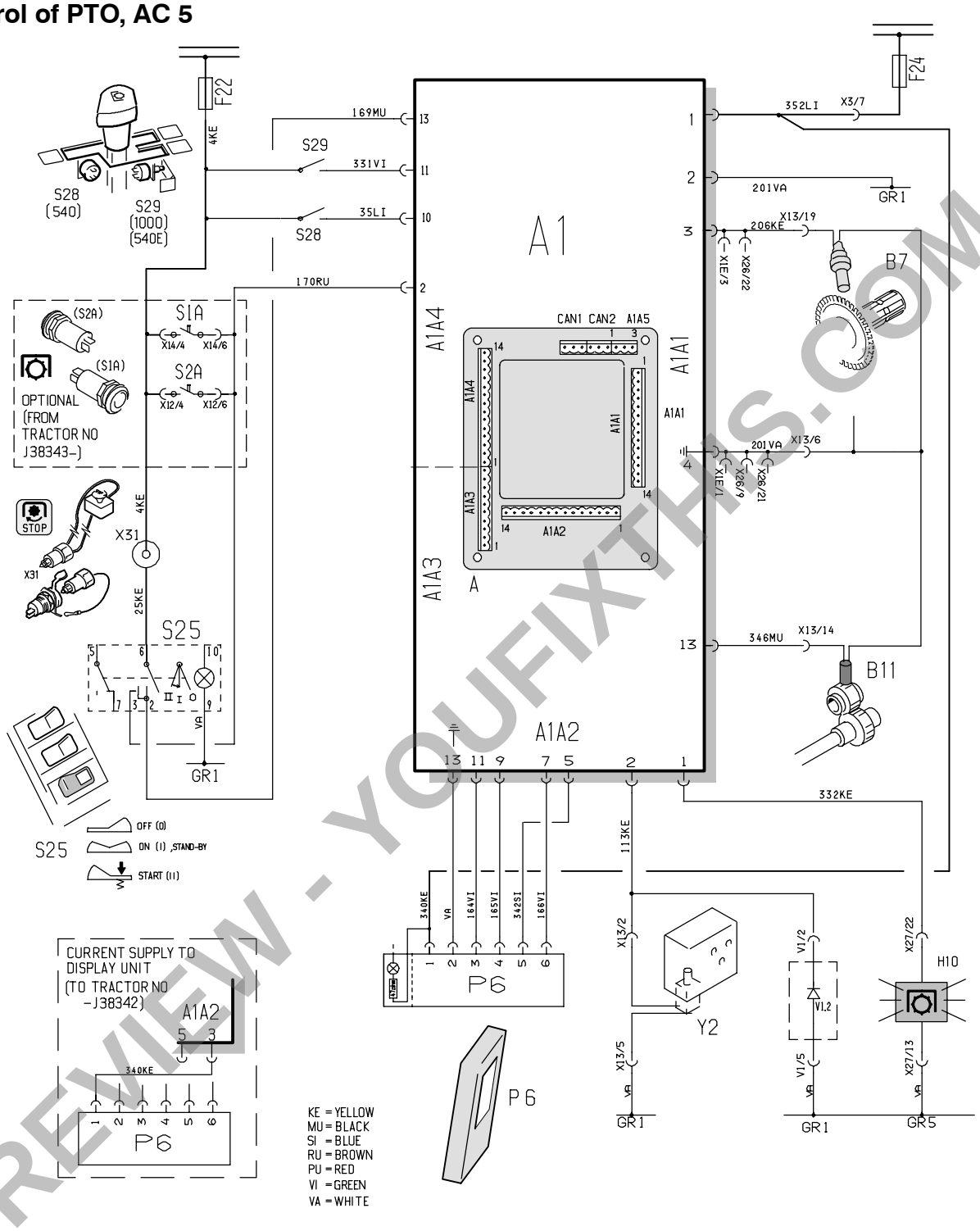
CareTel shows the engine torque as percents of the total torque.

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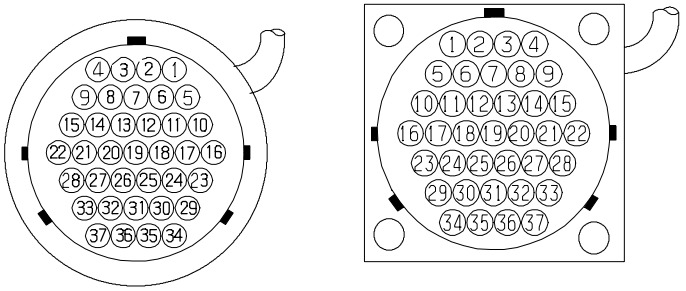
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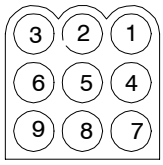
Control of PTO, AC 5



X13



V1, V4



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B) Control stop 33005600
33005610

This instruction concerns tractors with effect from ser. no. **662343–>** (ACII).
Note! The system requires the new starter switch no. 32553200 (as standard from March –94) and the electric stop of the engine.

– When a tractor drives an implement (e.g. compressor, pump etc.) without driver's control, the control stop stops the engine when:

– engine oil pressure lowers
– gearbox oil pressure lowers
– gearbox oil temperature rises
– engine coolant temperature rises

(warning light comes on normally).
If the control stop is not needed, it can be switched off with a "Control Stop" switch (S36) in the instrument panel).

NOTE! The engine starts only when the Control Stop is switched off with the switch.

B) FITTING (pages 4–6):

– Disconnect the battery earth wire. Open the lever console side panel.

– Find connector X29 in the rear part of the lever console
Connect to this connector the corresponding connector in wire loom **4**.
– Only **HiTech–models with reverse drive controls:** Fitting as above mentioned, furthermore connect the branched connector (X29, wire no 6 red) and connector wire no 15 (brown) to the stop–warning light (see picture **B1**).

– Fit the relay holder **7** onto the lever console relay bracket (to the left side and down). Fasten the holder with the same securing screw as the opposite relay has been fastened. Fit the relay **9**.

– Pass the wire loom together with other wires under the floor mat towards the instrument panel.Refit the lever console side panel.

– Tractors with old model instrumentation **to no L17306 (–L18104 HiTech):** Fit the cable which goes to the switch (S36) together with the cable to the ignition switch with cable ties.

– Pass the wire loom **4** to run up along the cab front wall into the steering wheel console. Fasten the wire loom with tape onto the other wires.

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5. Hydraulic clutch release mechanism, 668103–.

A. Bleeding the clutch circuit

Note! The bleeding hose/nipple is placed on the LH side of the tractor frame.

This release mechansim does not normally require any adjustments. The clutch pedal free travel cannot be felt, since the release bearing is in the continuous contact with the clutch. If the clutch does not release, the system must be bled.

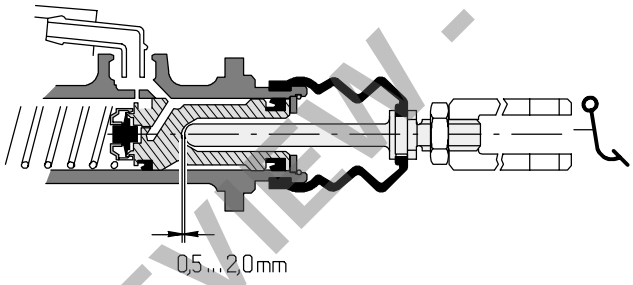
Note! Check that the reservoir is full of brake fluid before bleeding. Pump with the clutch pedal a few times, so that the system is under pressure.

– Depress the clutch pedal and at the same time open the bleeding nipple.
– When the pedal is down, close the nipple and allow the pedal to rise up.
– Continue in this way until no air bubbles come out of the nipple
– Check again liquid level in the reservoir and top up if necessary

Note! Do not allow the liquid to contact the tractor frame, since the brake fluid can damage the paint.

B. Adjusting the pedal free travel

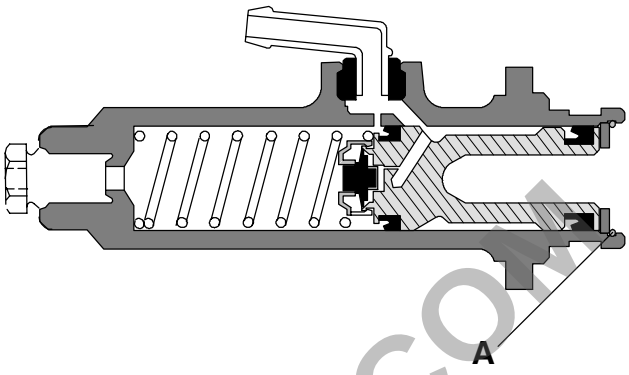
The free travel cannot be felt, since the release bearing touches the clutch release fingers all the time. Normally the pedal does not need any adjustment.



Adjust the distance between the master cylinder piston and the pedal push rod to **0,5–2,0 mm**, when the pedal is in the upper position.

This clearance can be adjusted by slackening the clevis lock nut and by rotating the clevis.

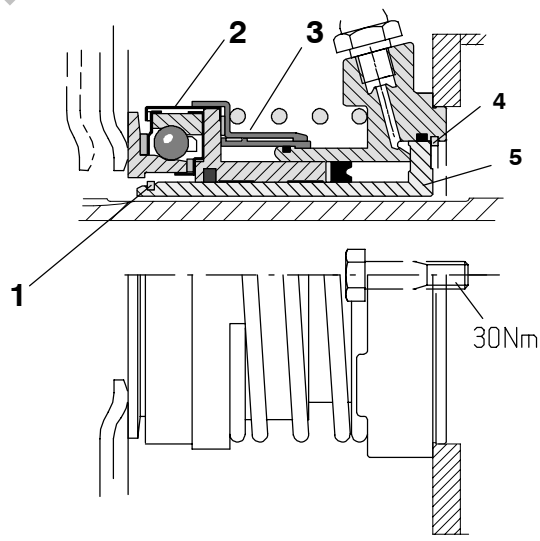
C. Master cylinder



The master cylinder is attached with two bolts onto the cab front wall.
A seal kit is available for the cylinder. The seals, piston and the spring can be removed from the cylinder by removing the circlip A and the intermediate ring behind the circlip. Lubricate new seals with brake fluid. The seals must not be lubricated with oil, because oil damages them.

D. Slave cylinder/release bearing

Note! The tractor frame is split at the clutch as before according to instruction **A** on page **411/1**. Assemble the tractor frame according to instr. **D** on page **411/3**.



1. The slave cylinder unit is attached with three bolts onto the tractor frame. The pressure hose and the bleeding hose have different threads.

2. The release bearing can be removed by releasing circlip 1. Before removing the bearing, the locking sleeve 2 claws should be released from the flange.

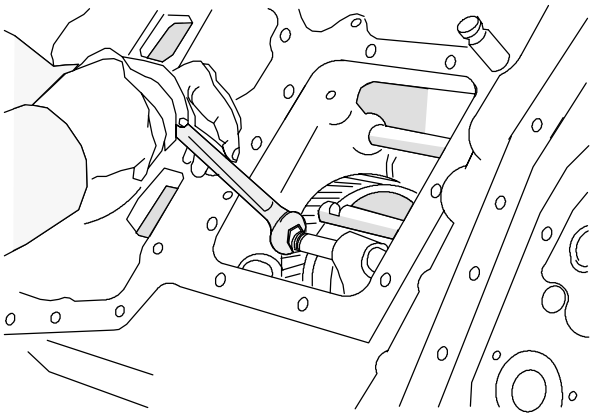
3. The plastic covering 3 cannot be removed separately. The guide sleeve 5 loosens, when you remove the circlip 4.

Important! The slave cylinder seals must not be lubricated with mineral oil. The seals are lubricated with brake fluid.
Note! When the clutch disc linings are worn, the slave cylinder shrinks correspondingly and the stroke of the cylinder remains the same (about 10 mm).

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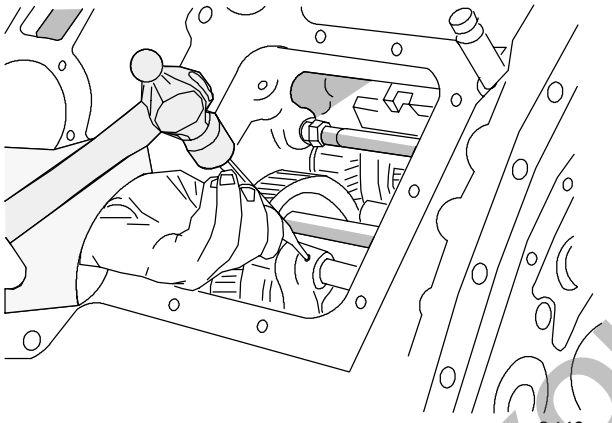
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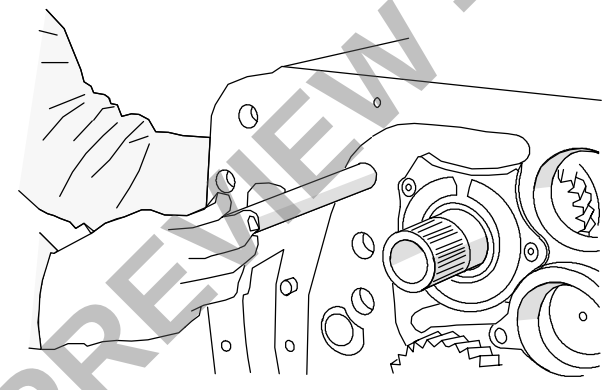
2439

– loosen the rail locking nuts



2440

– engage gear 1. Tap out the locking pins for the forks for gears 1–2, 3–4 and M–H.

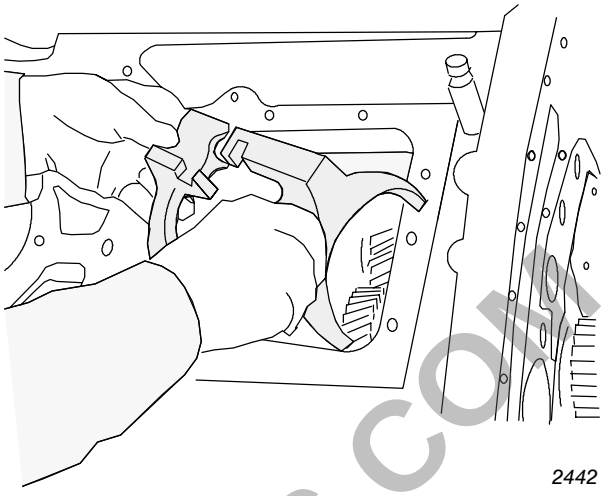


2441

– unscrew the rails from their adjusting pieces at the rear ends and pull out the rails forwards.

2. Remove the circlip on the rail for gears AVO/LL (ground speed PTO/LL–range). Open the nut at the front end of the rail and remove the rail by turning it.

Note! Take care of the released balls and springs.



2442

3. Remove the forks for gears 1–2 and 3–4 on the input shaft and remove also the sliding pieces.

4. Remove the forks for gears M–H, AVO and LL on the bevel pinion shaft. Remove also the sliding pieces on the M–H fork. Also the latest AVO and LL forks have sliding pieces.

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2. Fitting quick–shift gear

A. Attaching 2–step quick–shift gear to reverse shuttle

Important! 3–step quick shift gear (Delta Powershift), see under code **444**.

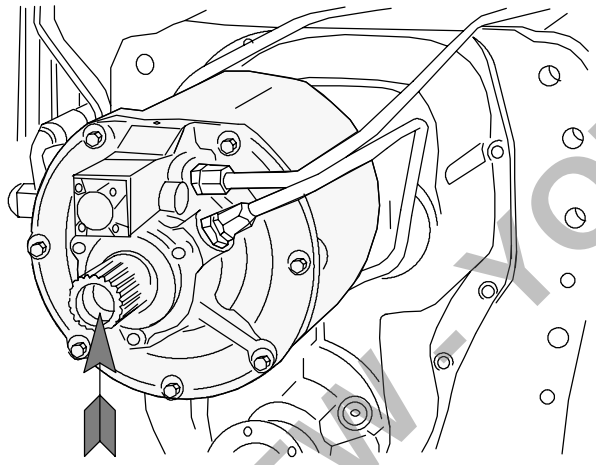
1. Fit the centring ring, large o–ring and small o–ring round the oil bore between the quick–shift gear and the reverse shuttle.

Note! If necessary, o–rings can be fixed with a little grease.

2. Place the quick–shift gear onto the reverse shuttle input shaft.

3. Tighten the quick–shift gear fixing bolts to a torque of **45 Nm**.

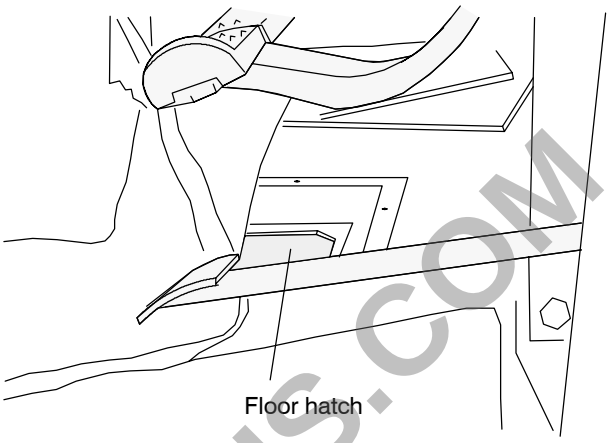
4. Connect the oil pipes and the solenoid valve lead to the quick–shift gear.



Note! Check and change, if necessary, the needle bearing and oil seal inside the input shaft front end. The seal can be fitted with drift ETV 892 180.

5. Carefully push the pump drive shaft through the input shaft fully home. Place the connecting sleeve onto the quick–shift gear input shaft.

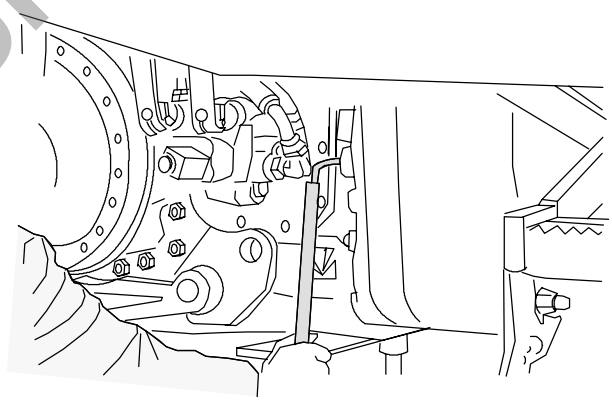
B. Assembling tractor frame between gearbox–fuel tank.



1. Open the floor hatch

2. Push the front frame against the gearbox and guide the connecting sleeve through the floor hatch.

Note! Rotate, if necessary, the flywheel for easier engagement of the pump drive shaft front end splines. Also guide the 2–step quick–shift gear solenoid valve wire into place.



3. Push the frame parts against each other so that the guide pins and studs engage with their holes. Tighten the frame joint bolts (nuts onto studs **300 Nm**, hexagonal socket–head screws **125 Nm**). Remove the supports under the tractor.

Important! If the tractor has Delta Powershift, guide the propeller shaft rear end onto the 4WD output shaft splines.

4. Connect the hoses to the hydraulic lift control valve and also the hoses to the pressure filter (on the RH side).

5. Connect the oil cooler pipes to the servo valve block (on the LH side of the gearbox).

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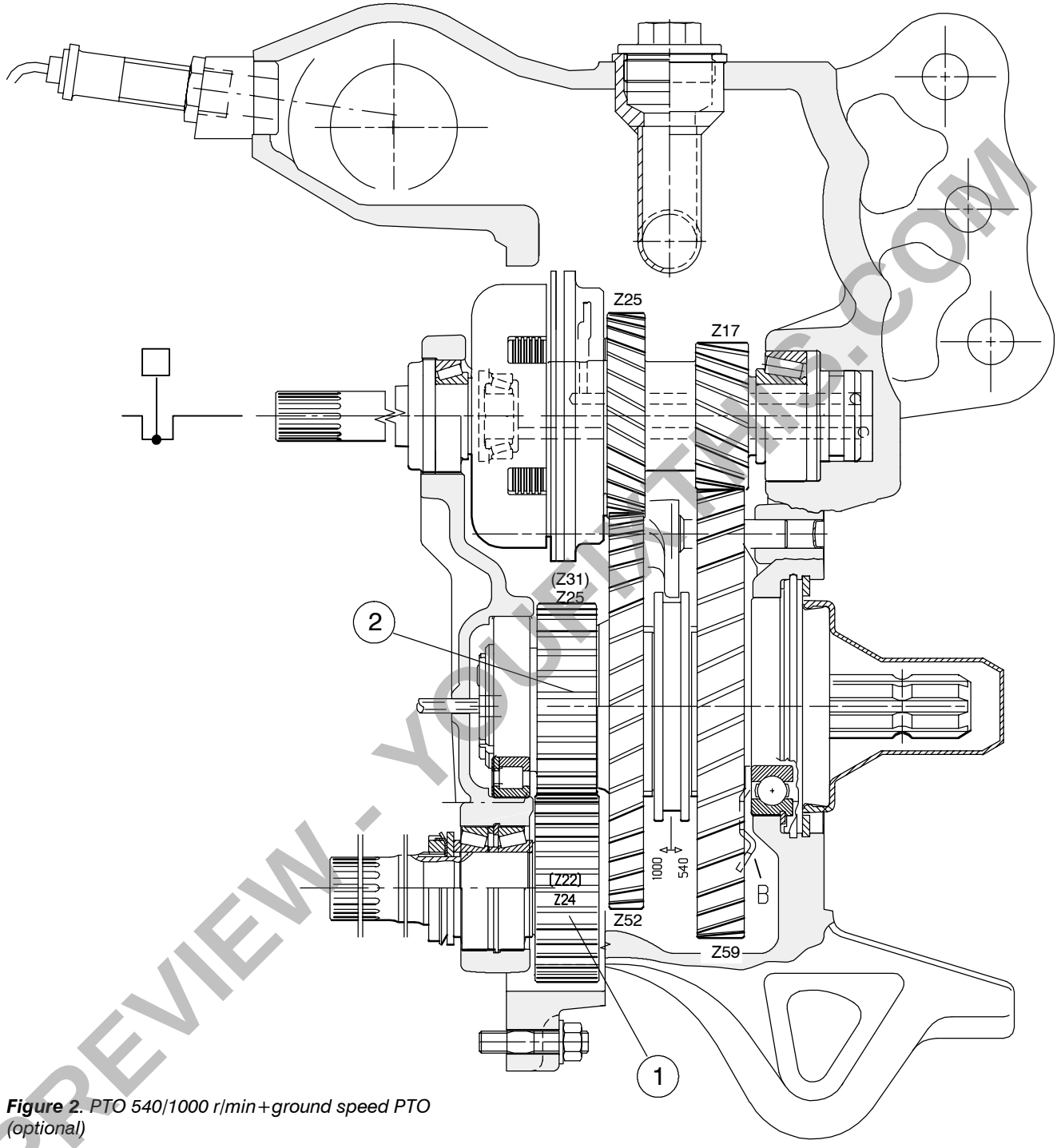


***Figure 2**. PTO 540/1000 r/min+ground speed PTO (optional)*

On this PTO unit, nominal speeds 540 and 1000 r/min are obtained in the same way as on a PTO unit without ground speed PTO (see figure 1)

In the figure above shaft (1) is for ground speed PTO. Its front end has been connected with a coupling sleeve to the rear end of the ground speed PTO output shaft in the gearbox. There is a sliding coupler for the ground speed PTO at the front end of the gearbox bevel pinion shaft.

The ground speed PTO is engaged with the same control lever as the engine PTO speeds 540 and 1000 r/min.

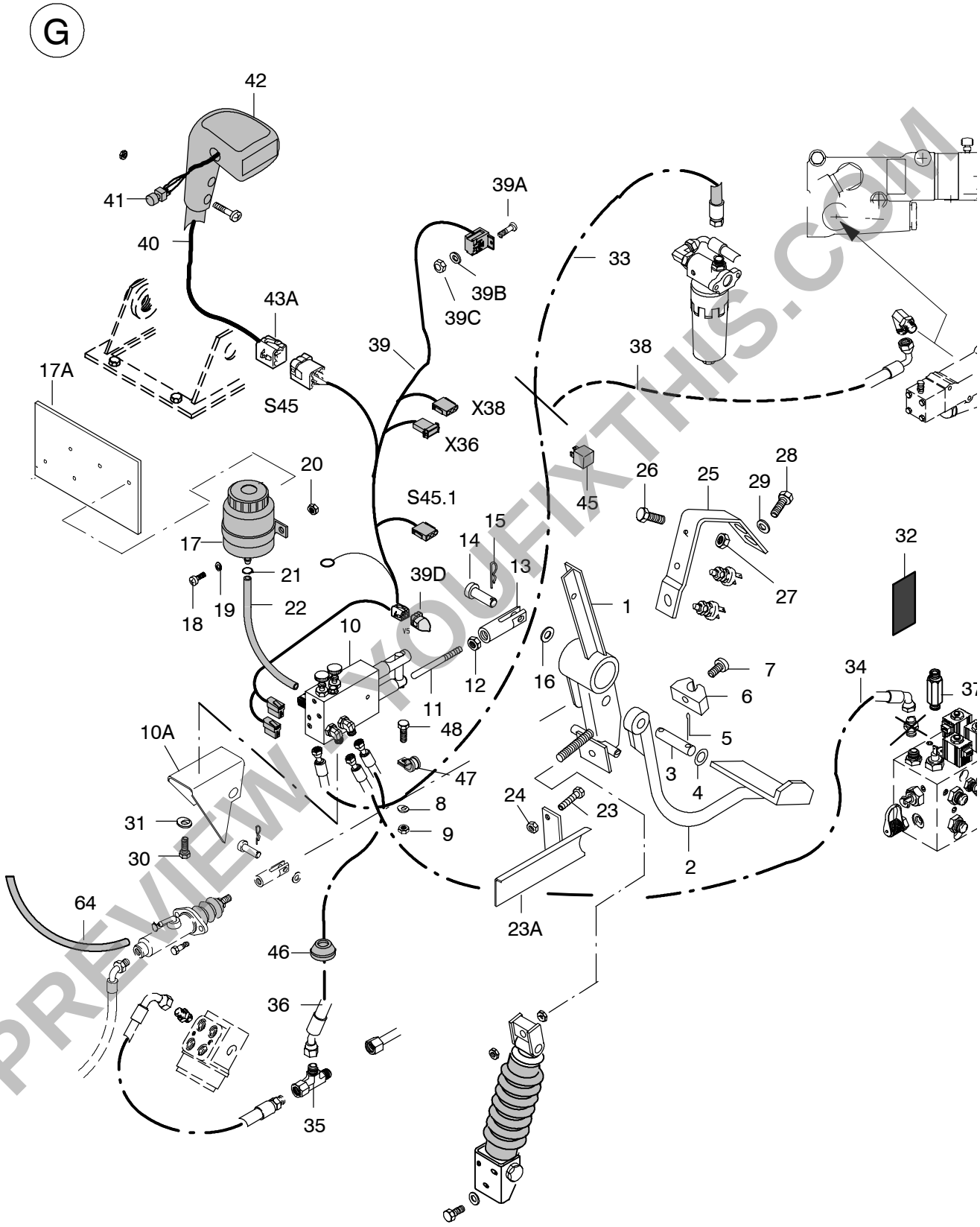
When the ground speed PTO has been engaged, the PTO shaft rotates proportional to the rear wheel rotation speed and power is transmitted from gear (1) to gear (2) on the PTO shaft.

Note! In the picture above the locking flange at the front end of the PTO shaft is the earlier version. Later version is illustrated on page **460/7**. Additionally, the clutch housing has been reinforced with a metal ring, see page **460/9**.

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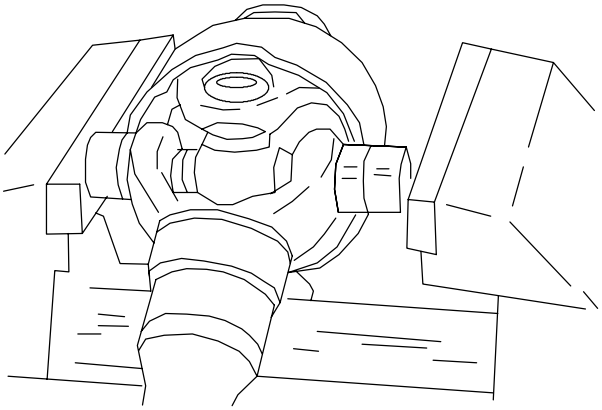
Duo–Matic:

	1	**33019000**	Paineilmajarrut	Tryckluftsbroms	Air press. brake	L.druckbremse	Frein à air comprimé	
1	1	33018700	.Liitin	Nippel	Union	Verbindung	Raccord	
2	1	32930300	.Liitin	Nippel	Union	Verbindung	Raccord	Ei takahall.laitt. Not with rev. drive controls
3	4	32930010	.Pikaliitin	Snabbkoppling	Quick coupler	Schnellkuppl.	Raccord rapide	
4	3	HA6322	.Ruuvi	Skruv	Screw	Schraube	Vis	
5	6	32930200	.Liitin	Nippel	Union	Verbindung	Raccord	
	6	32930210	.Liitin	Nippel	Union	Verbindung	Raccord	
6	16	JD0408	.Aluslevy	Bricka	Washer	Scheibe	Rondelle	
7	13	JB8904	.Mutteri	Mutter	Nut	Mutter	Ecrou	
8	1	32931010	.Kannatin	Hållare	Support	Halter	Support	
9	1	32930900	.Kannatin	Hållare	Support	Halter	Support	
10	2	32935500	.Letku	Slang	Hose	Schlauch	Tuyau flexible	
	2	33718200	.Suojaputki	Skyddsrör	Shield pipe	Schutzrohr	T. de protection	L=940
11	1	JJ4037	.Tappi	Tapp	Pin	Stift	Cheville	
12	1	JE3051	.Sokka	Sprint	Pin	Splint	Goupille	
13	1	JJ4036	.Tappi	Tapp	Pin	Stift	Cheville	
14	2	HA9230	.Ruuvi	Skruv	Screw	Schraube	Vis	
15	1	32936700	.Kannatin	Hållare	Support	Halter	Support	
16	2	32673300	.Kiinnityslaatta	Fästplåt	Mounting plate	Bef.platte	Plaque de support	
17	1	32936800	.Vipu	Spak	Lever	Hebel	Levier	
18	2	JB1108	.Mutteri	Mutter	Nut	Mutter	Ecrou	
19	2	YT2088	.Nivel	Led	Joint	Gelenk	Joint	
20	1	32936500	.Tanko	Stång	Rod	Stange	Barre	
21	1	32936000	.Teline	Konsol	Bracket	Gestell	Support	
22	3	HA9235	.Ruuvi	Skruv	Screw	Schraube	Vis	
23	3	JD0410	.Aluslevy	Bricka	Washer	Scheibe	Rondelle	
24	3	JB8905	.Mutteri	Mutter	Nut	Mutter	Ecrou	
25	2	32929800	.Pikaliitin	Snabbkoppling	Quick coupler	Schnellkuppl.	Raccord rapide	
26	1	32930610	.Liitin	Nippel	Union	Verbindung	Raccord	
27	1	32913500	.Ohjausventtiili	Styrventil	Steering valve	Steuerventil	Valve de direction	
28	4	HA8330	.Ruuvi	Skruv	Screw	Schraube	Vis	
29	1	32943900	.Liitin	Nippel	Union	Verbindung	Raccord	
30	1	32936400	.Putki	Rör	Pipe	Rohr	Tuyau	
31	1	31070500	.Letku	Slang	Hose	Schlauch	Tuyau flexible	
32	1	30458200	.Liitin	Nippel	Union	Verbindung	Raccord	
33	3	32930110	.Pikaliitin	Snabbkoppling	Quick coupler	Schnellkuppl.	Raccord rapide	
34	1	32926600	.Teline	Konsol	Bracket	Gestell	Support	
35	1	33018800	.Levy	Platta	Plate	Platte	Plaque	
36	1	32913700	.Säiliö	Behållare	Container	Behälter	Réservoir	
37	1	32913600	.Tulppa	Plugg	Plug	Stopfen	Bouchon	
38	2	32927600	.Sanka	Bygel	Bow	Bügel	Support	
39	1	32935000	.Putki	Rör	Pipe	Rohr	Tuyau	
40	1	32929700	.Pikaliitin	Snabbkoppling	Quick coupler	Schnellkuppl.	Raccord rapide	
41	1	32935700	.Putki	Rör	Pipe	Rohr	Tuyau	
42	1	32944100	.Rengas	Ring	Ring	Ring	Anneau	
43	1	32944000	.Holkki	Hylsa	Sleeve	Hülse	Manchon	
44	1	32934800	.Painemittari	Tryck mätare	Press. instr.	Dr.instrument	Manomètre	
	1	HS2638	.Lamppu	Lampa	Bulb	Lampe	Lampe	
46	2	HA8331	.Ruuvi	Skruv	Screw	Schraube	Vis	
47	1	32910500	.Pumppu	Pump	Pump	Pumpe	Pompe	Incl. Container
48	1	32936900	.Liitin	Nippel	Union	Verbindung	Raccord	
49	1	34276200	.Putki	Rör	Pipe	Rohr	Tuyau	
50	1	34276400	.Liitin	Nippel	Union	Verbindung	Raccord	
51	2	KH3612	.Tiiviste	Tätning	Gasket	Dichtung	Joint	

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4. Fit the bushings as shown in the figure above. When the bushings are in place the snap–rings can be fitted.

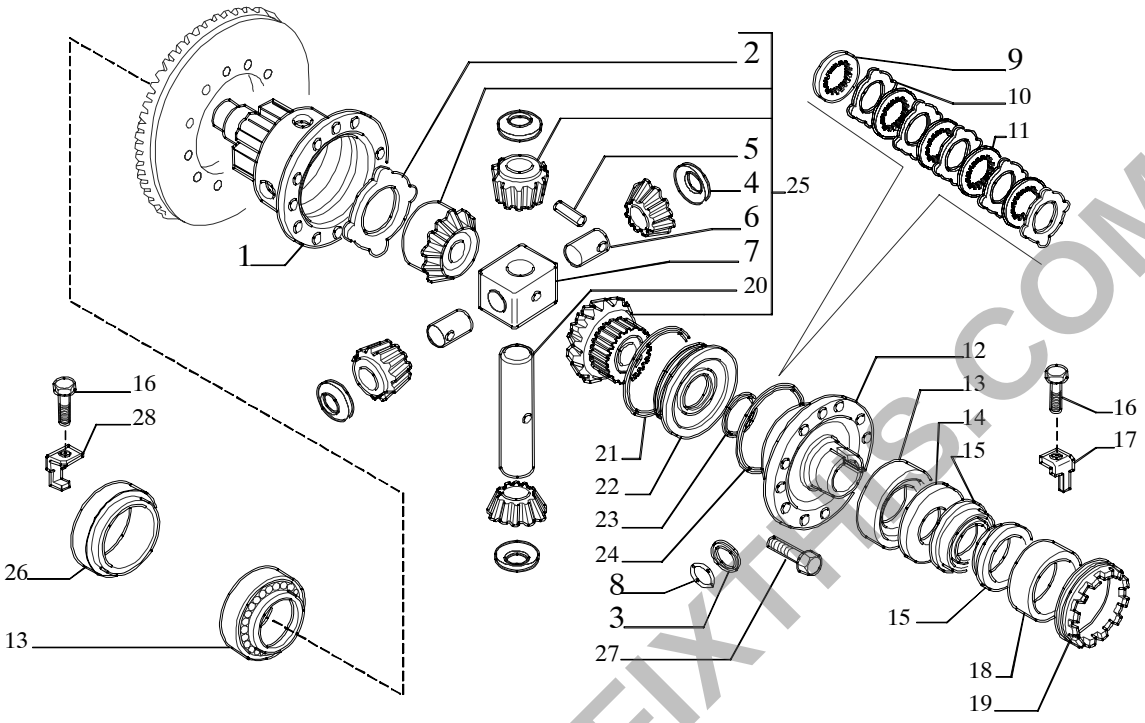
5. Fit the drive shaft (see **Op. 642 1A; 10–15**).

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D. Disassembling differential



18. Unscrew bolts (27), at which time the crown wheel is released and the differential housing is split.

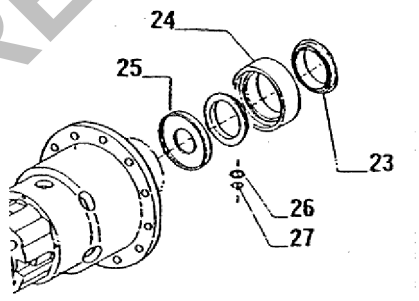
19. Remove cover (12) and change o–ring (24).

20. Remove piston (22) and change o–rings (21) and (23).

21. Remove the disc pack (9, 10, 11) (note the fitting order. Steel discs have teeth on the outer circumference) and check the condition of the discs. If the disc wear can be found, change all discs at the same time. Thickness of the discs, see page **670/2**.

22. Remove and check the condition of the differential pinions. Before removing, remove tension pins (5).

Note! In connection with damages, change all parts under pos. no. 25.



23. Check/change seals (23) and o–ring (27).

24. Check the housing wear. Small damages can be repaired with fine emery cloth.

E. Assembling differential

25. Assembling is done in a reverse order.

26. Lock the differential pinions with pins (5). Fit the disc pack and the differential side gears (disc pack contains **1 thrust plate, 8 steel discs and friction discs**. Steel discs have teeth on the outer circumference).

27. Refit piston (22) and its o–rings (23) and (21), cover (12) and o–ring (24).

Note! The differential gears have thrust washers with different thickness, see technical data. In addition, the differential gears have a certain tooth backlash, see technical data. If the thrust washers must be changed, the tooth backlash must be checked with a dial gauge.

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– Make a 52 mm hole in the instrument panel for the pressure gauge **37** (dimensions in picture **I.1**. Note! HiTech– models).
Make the hole accurate, since the gauge fixing flange is small.
Pass the gauge pipe (reservoir–gauge) through the hole in the cab front wall (beside the 37 pin connector).
Take current and ground for the gauge from the ind. light for the rear working light switch (S2) (wire no 26 black).
Connect the white earth wire. Fasten the pressure gauge.

– Assemble parts according to picture **I**.
Pour into reservoir **12A** methanol or ethylic alcohol (0,5 l).
With lever **B** can the flow of antifreeze agent cut into the system (if outdoor temperature is over 5_C. In summer the reservoir can be empty, then the lever position is unimportant).

– Pass hose **14** along the tractor left side under the battery and behind the filter and fuel injection pump to the compressor.

– Check the tightness of the system. It must be so tight that pressure does not drop more than **0,15 bar during 10 minutes** (2%), when the engine is stopped. When necessary, the leaks must be repaired.

General (picture **I.1**):

Pressure regulator (picture **A**) adjusts the system pressure to correct. When the pressure rises up to about. 8 bar, allows the regulator air to flow to atmosphere. When the system pressure lowers 0,6 bar, the regulator adjusts the compressed air to flow into the system.
The system pressure can be adjusted by turning the spring **11B** adjusting screw.

Compressed air can also be taken out for auxiliary components (pressure 8 bar) by turning union **10B** into bottom, e.g. to fill tyres. Through this union the system can be filled with auxiliary compressed air, e.g. if the tractor's own compressor is not working. Then the union must not be turned into bottom.

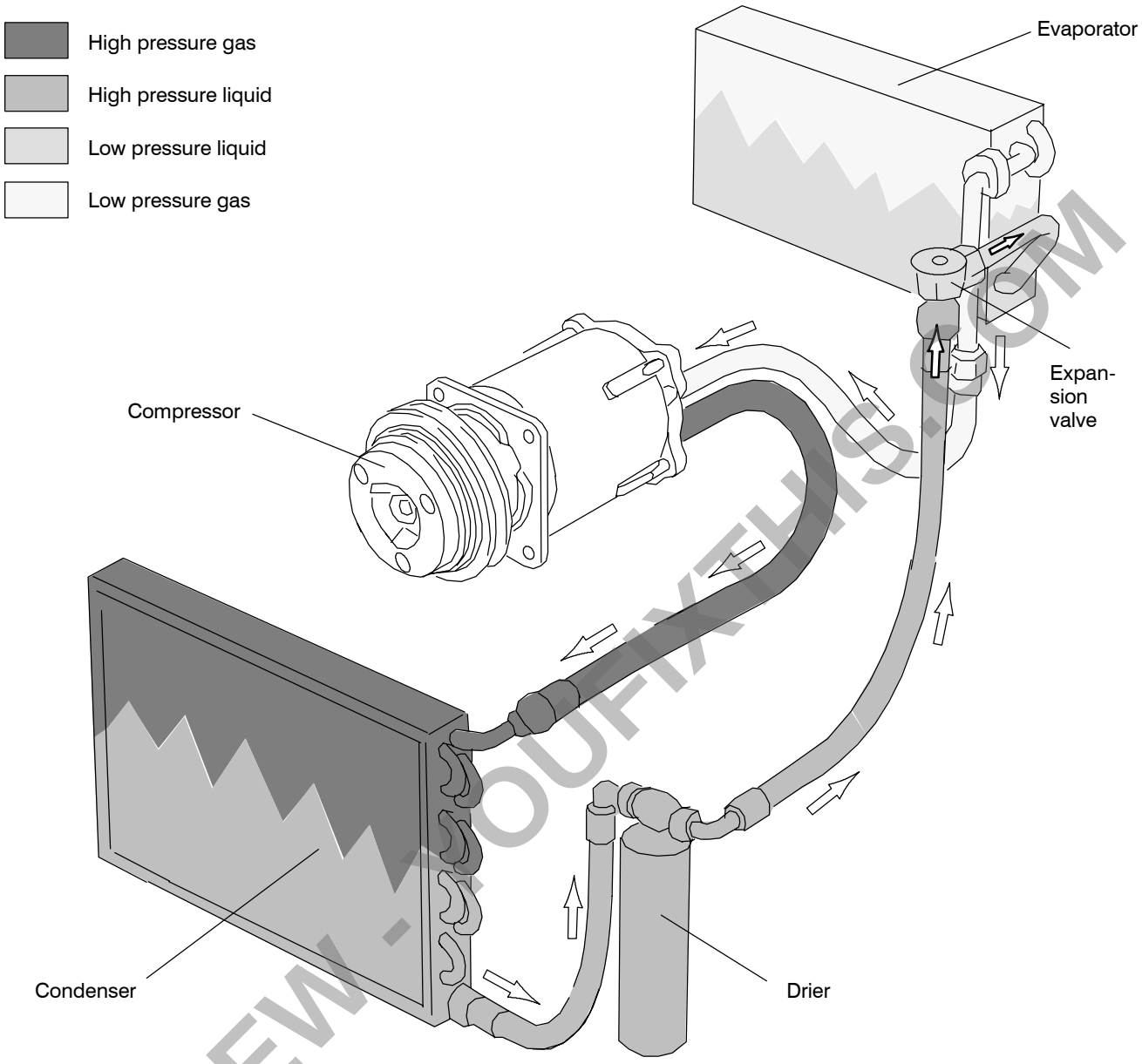
Filter **2B** must be cleaned regularly.
Valve **7B** functions also as a relief valve.

Water must be removed from the system daily by pulling or pushing the tap **10** (picture **I**) under the pressure reservoir.

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Circulation of the refrigerant begins from the compressor. The compressor sucks low pressure gas from the evaporator and compresses high pressure gas into the condenser. In the condenser gaseous refrigerant becomes condensed and emits heat to outdoors. From the condenser high pressure liquid flows via a drier to the expansion valve in which a part of the liquid vaporizes and the refrigerant cools and its pressure drops. Liquid flows from the expansion valve into the evaporator where cab heat changes liquid into gas. This low pressure gas then flows into the compressor suction side from where a new circulation begins.

Max. cooling effect corresponds to the situation when the compressor works all the time. In order to achieve a certain cooling effect, the compressor has to keep a certain pressure in the evaporator outlet side.

An evaporation temperature of Freon R12 is −30˚C at normal air pressure. The corresponding value of the R134 is −26˚C. When pressure increases the evaporation temperature rises and vice versa.

When the air conditioner is operating the low pressure hoses are cold and high pressure hoses are warm.

Liquid refrigerant from the condenser is filtered and dried in the drier container. The drier also prevents gaseous freon from entering into the expansion valve. In the drier container there is a pressure switch which switches off current to the compressor if pressure in the high pressure circuit rises too high or becomes too low:

In addition, the drier has a heat fuse (not if refrigerant R134a) which melts at **107–118 ˚C** (corresponds pressure 3,4–3,8 MPa) and refrigerant blows off. The drier has two inspection glasses through which can be checked the refrigerant filling and moisture in the system (see page **831/2**).

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	1	32510310	.Kiristin koott.	Klämma, kmpl	Clip, assy	Klammer, kompl	6000–6600
106	1	32969100	..Vastakappale	Motstycke	Counterpiece	Gegenstück	
107	1	32969200	..Välipala	Mellanstycke	Intermediate piece	Zwischenstück	
108	1	32509610	..Kiilahihnapyörä	Kilremskiva	V–belt pulley	Keilriemenrad	
109	2	LA1800	..Laakeri	Lager	Bearing	Lager	
110	1	KG3052	..Varmistinrengas	Låsring	Circlip	Sicherungring	
111	1	32510410	..Akseli	Axel	Shaft	Achse	
112	1	HC9769	..Ruuvi	Skruv	Screw	Schraube	M10x40
113	1	32509510	..Välipala	Mellanstycke	Intermediate piece	Zwischenstück	
114	2	HA6325	..Ruuvi	Skruv	Screw	Schraube	M08x30
115	1	30765700	..Suojus	Skydd	Shield	Schutz	8000–8750
120	1	33175700	.Letku	Slang	Hose	Schlauch	L=5700
121	1	33175600	.Letku	Slang	Hose	Schlauch	6000–6600
		33244410	.Letku	Slang	Hose	Schlauch	
122	1	33154900	.Teline	Konsol	Bracket	Gestell	6000–6800
	1	33154800	.Teline	Konsol	Bracket	Gestell	6900–8400
123	1	33154600	.Kannatin	Hållare	Support	Halter	
–	1	32961000	Latta	Platt	Flat	Platt	: : :
–	1	HA6324	Ruuvi	Skruv	Screw	Schraube	M08x25 : : :
–	1	JB1108	Mutteri	Mutter	Nut	Mutter	M8 : : :
–	1	HA8330	Ruuvi	Skruv	Screw	Schraube	M08x80 : : :
–	1	JD9062	Aluslaatta	Bricka	Washer	Scheibe	B8 : : :
124	2	33497900	.Tuki	Hållare	Support	Halter	
(130	1	33027900)	Suojus	Skydd	Shield	Schutz	: : :
	1	33200800	Välipala	Mellanstycke	Intermediate piece	Zwischenstück	8200
			Tuuletin	Fläkt	Fan	Ventilator	
:		Sähköpysäytin	Elstopp	Elecric stop	Elektrische stop	Stop électrique	
: : :		Pimakompr.	Med tryckluftkompr. kanssa	With air compressor	Mit Luftkompressor		
							8050–8750:
87S	1	33267400	.Kannatin	Hållare	Support	Halter	Left
	1	33267500	.Kannatin	Hållare	Support	Halter	Right
88S	4	JB1106	.Mutteri	Mutter	Nut	Mutter	M6
89S	4	JD0406	.Aluslaatta	Bricka	Washer	Scheibe	6,4
90S	4	HA6313	.Ruuvi	Skruv	Screw	Schraube	M06x16
91S	2	33268200	.Sokka	Sprint	Pin	Splint	
92S	2	33268000	.Pidin	Klämma	Clamp	Klammer	
93S	2	33268100	.Pidin	Klämma	Clamp	Klammer	
96S	2	HA8327	.Ruuvi	Skruv	Screw	Schraube	M08x50
97S	2	JD0408	.Aluslaatta	Bricka	Washer	Scheibe	8,4
98S	2	JB9927	.Mutteri	Mutter	Nut	Mutter	V M8
99S	4	625510	.Aluslaatta	Bricka	Washer	Scheibe	

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C. Fault tracing without removing pump

If the hydraulic system functions when the oil is cold, but in the operating temperature different functions are slow or powerless, this indicates that the oil pump is worn–out.

The high pressure pump can be tested by connecting a pressure gauge to the circuit and by pulling one auxiliary hydraulic valve lever to the pressure position. Now if the pressure gauge reading follows clearly the engine revs alteration, this indicates that the pump is worn.

The faulty pump can be noisy which indicates a damage in the pump. Note that a blocked suction strainer causes a shrieking sound to the pump.

A worn pump "whips" oil and due to the fluid friction the whole hydraulic system overheats. This can be verified by feeling the temperatures of the pipes and the oil reservoir. In this case, for instance, the pump pressure pipe can be essentially warmer that other pipes and the oil reservoir.

D. Internal inspection of pump

Note! Never dismantle the pump if the warranty is valid, but in this case change a new spare pump.

1. Detach the damaged pump from the tractor. Make sure that the pump and a fitting table are clean before dismantling the pump.

3. Mark all removed parts in relation to each other for easier assembling.

4. Fit always new seals. A seal kit no. 32664100 is available for the pump.

Note! When the hydraulic system is in a perfect condition, the pump housing surfaces are smooth and shiny as well as the bearing surfaces. Text below presents how faults in the hydraulic system affect the oil pump.

1. Impurities in oil – Impurities cause clear dragging grooves on the pump housing and bearing surfaces in the direction of rotation. The most evident damage caused by impurities are deep grooves on the gearwheel side surfaces. Impurities wear the pump fast resulting lowered output value.

2. Cavitation damages – Mineral oils contain 10 percent of air. In the pump suction side if suction is too high, air bubbles are formed, which fasten onto the pump housing. When pressure in the pressure side rises rapidly, the bubbles "explode" causing deep pits on the pump housing. In certain cases the cavitation generates sound, which can be heard from the pump.

Possible reasons:
1. Suction pipe or suction strainer blocked.
2. Wrong oil viscosity.
3. Air enters into system.

3. Air in oil – If air enters into the system via the suction side or via the pump drive shaft seal, this causes the same damages as cavitation. If there is too much air in oil, the oil in the reservoir foams.

4. Pump drive shaft loading – If the pump drive shaft has a strong radial loading caused by the pump drive mechanism, this causes damages to the shaft seal and air and oil leaks by the seal and after a prolonged use, the drive shaft bearings are worn unevenly. For the same reason, the pump gears cut the pump housing on one side resulting internal leakages in the pump.

Observe the following when assembling the pump

Assemble the low pressure pump and tighten the end cover bolts to a correct torque. Assemble the high pressure pump and tighten the end cover bolts only to finger tight. Blow compressed air (~ 5 bar) through the pressure side hole (suction side hole open) at which time the shafts and gear wheels are centered and at the same time tighten the end cover bolts to a correct torque of **61–68 Nm**.

Note! Without this centering the pump will probably damage after a very short operating time.

E. Maintenance

1. Check the hydraulic oil weekly/at every 50 running hours. Oil quality: 10W/30, 5W/30 or 5W/20, API GL–4 (STOU) according to the outdoor temperature.

2. The pressure filter is changed the first time at 100 hours warranty service. The second change is done at 250 running hours and the third change at 500 running hours. After that the filter is changed at every 500 running hours.

3. Hydraulic oil should be changed at intervals of 1000 running hours or yearly which one is reached first. The suction strained should be cleaned always when the oil is changed. The suction strainer should be changed more often when necessary.

Note! If You use continually the auxiliary hydraulics, the hydraulic oil and the pressure filter should be changed more often.

4. The high pressure and the low pressure can be measured according to instructions. Also different clutch pressures can be checked. The pressure limiting valve and the shock valve can be opened and cleaned. These valves can also be adjusted by changing shims.

Important! If the hydraulic power lift or the Delta Powershift have malfunctions, the pressure filter insert should be changed immediately.

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