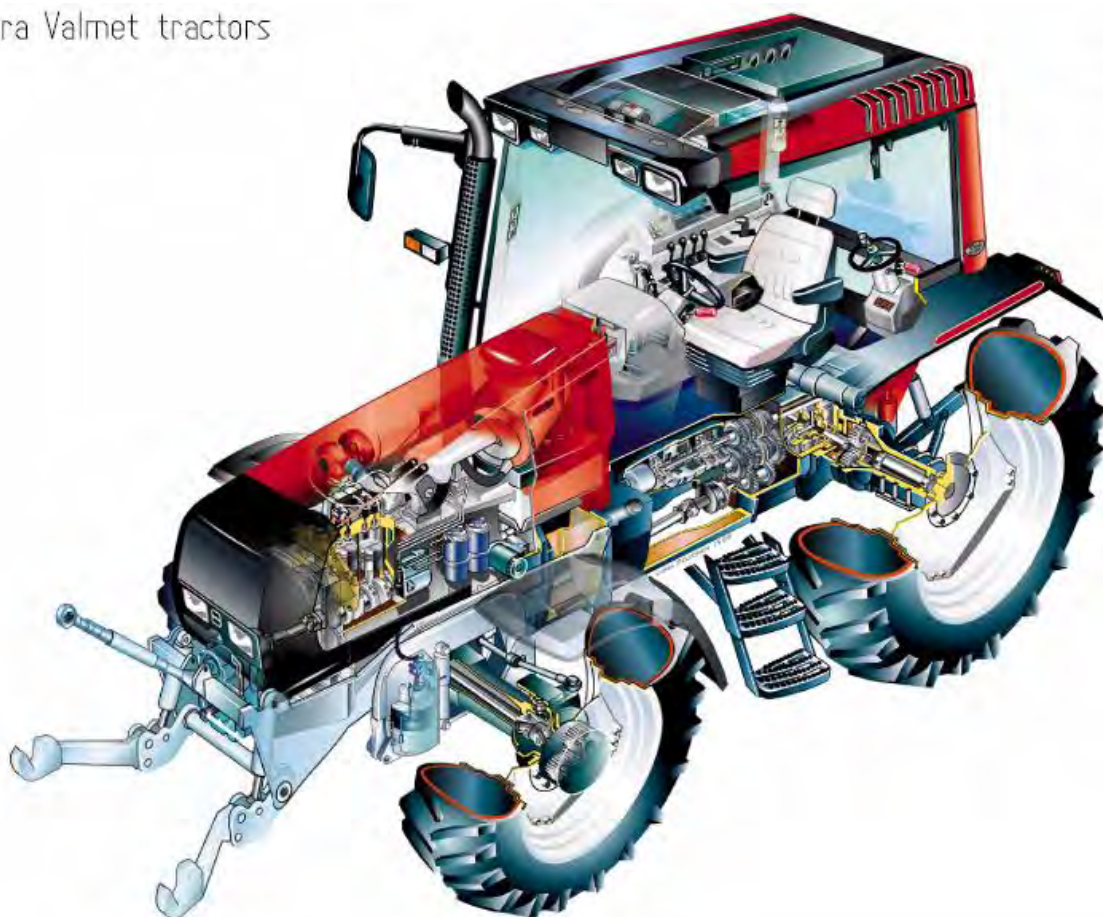


# VALTRA – VALMET MEGA MEZZO HI-TEC

Valtra Valmet tractors



## WORKSHOP MANUAL

# VALTRA

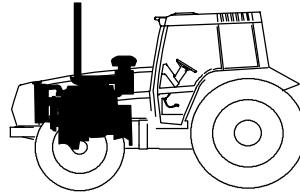
## Service Manual Tractors

Groups 10–100

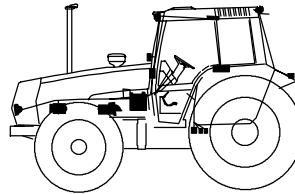
Valtra Inc.  
44200 Suolahti, Finland

Virtakäyttöön Käyttöohje  
Stromläsraie Anb. lps. fram  
rela.  
K3 20122001 K4

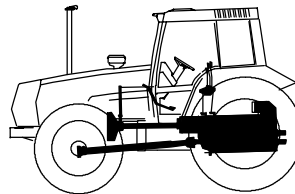
**10** General



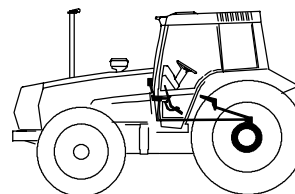
**20** Engine



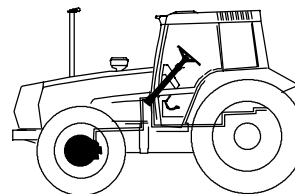
**30** Electrical system



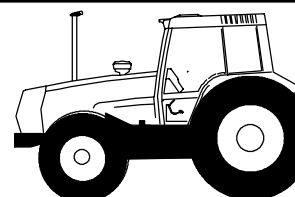
**40** Power transmission



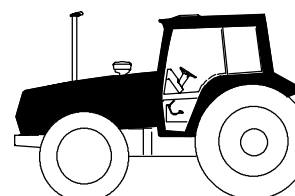
**50** Brake system



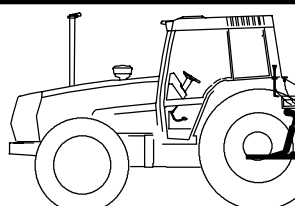
**60** Steering system and Front axle



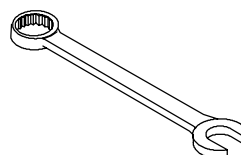
**70** Frame and Wheels



**80** Cab and Shields



**90** Hydraulics



**100** Tools

<b>34. Autocontrol – III</b>	<del>8. 11. 1990</del>	Model	Code	Page
	15. 6. 1992	6600E, 8100E	340	1

Valmet Autocontrol – III Tractor control system is a standard equipment on tractors 6600E, 6600E Hi – Trol and 8100E

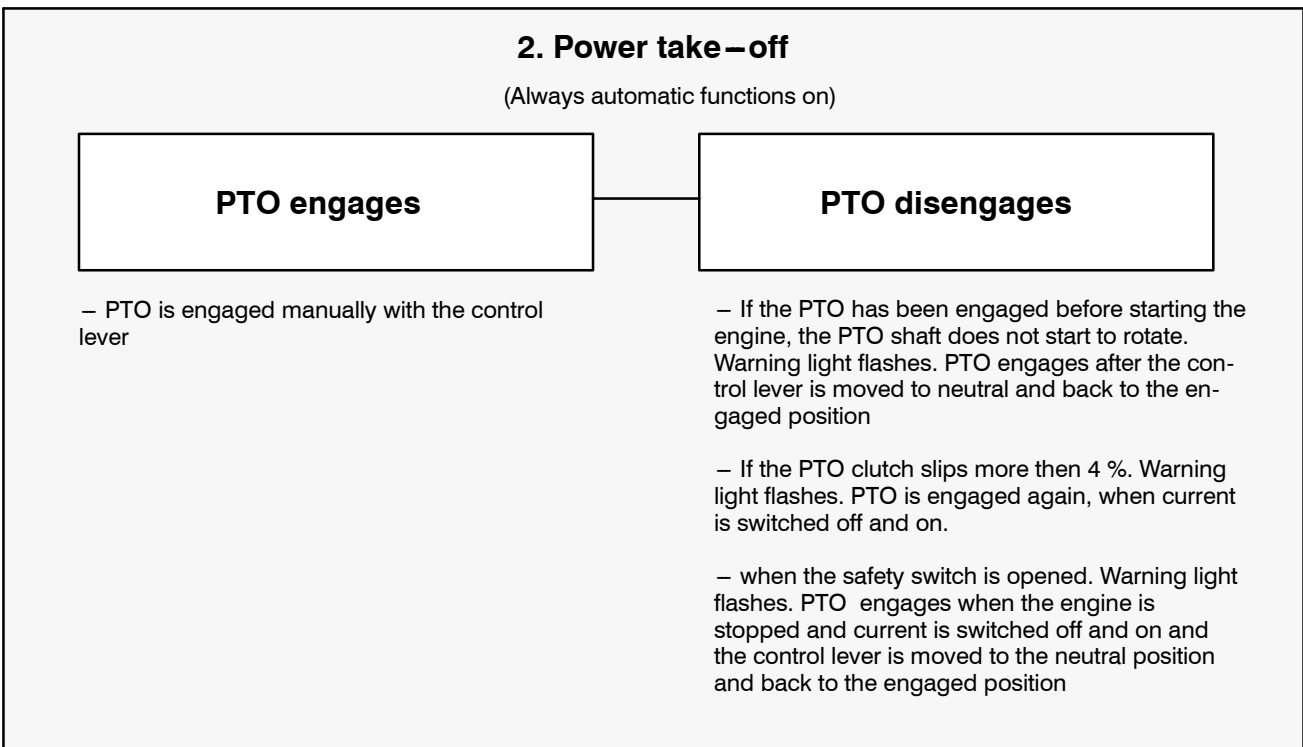
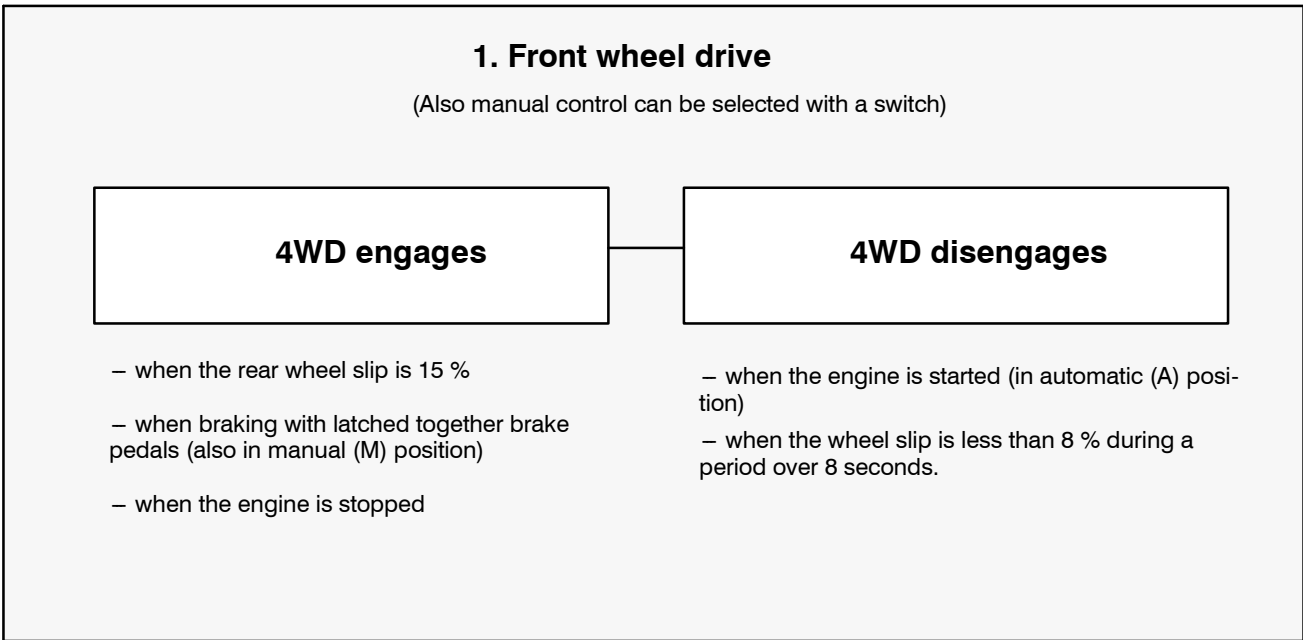
AC – III controls automatically the following functions:

- front wheel drive
- power take – off
- differential lock
- quick – shift gear
- cold starting
- slip control

Additionally AC – III measures:

- rotation speeds
- battery voltage
- temperatures
- driving speed and distance travelled
- trip area/total area
- number of items
- Application rate/liquid consumption
- position of linkage
- wheel slip
- time and costs

**Autocontrol – III controls tractor transmission as follows:**



### 3. Differential lock

(Also manual control can be selected with a switch)

#### Diff. lock engages

- when one rear wheel rotates 25 % faster than the other

#### Diff. lock disengages

- when the rear wheel slip is less than 10 % during a period of one second.
- when the brake pedal/pedals is/are pressed (also in the manual (M) position)
- when the clutch pedal is depressed
- when the front wheel steering angle is more than  $\pm 10^\circ$
- when the tractor driving speed is over 12 km/h
- when the tractor is stopped

### 4. Quick–shift gear

(Also manual control can be selected with a switch)

#### Automatic changing A1

- Gear changing according to the max. torque. Economical, changes later and allows the engine revs to fall.

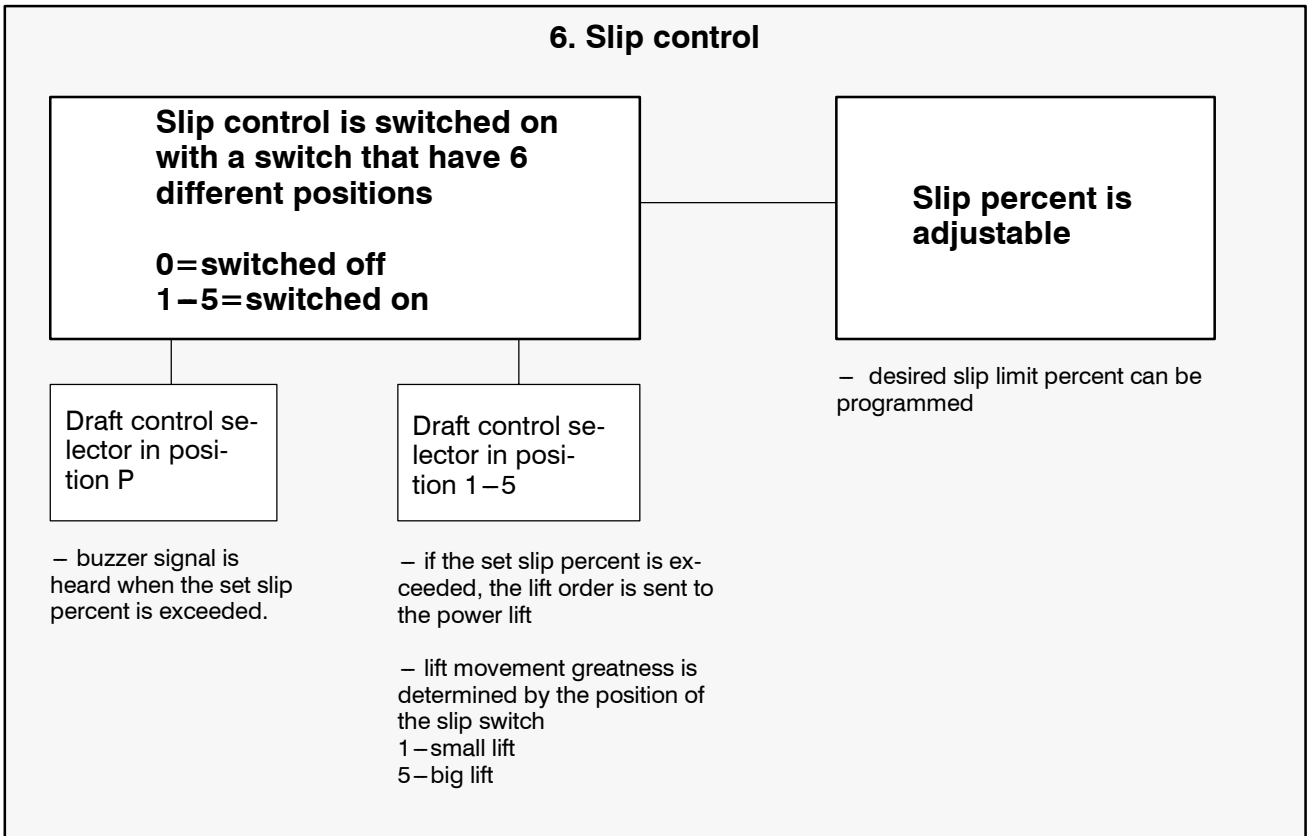
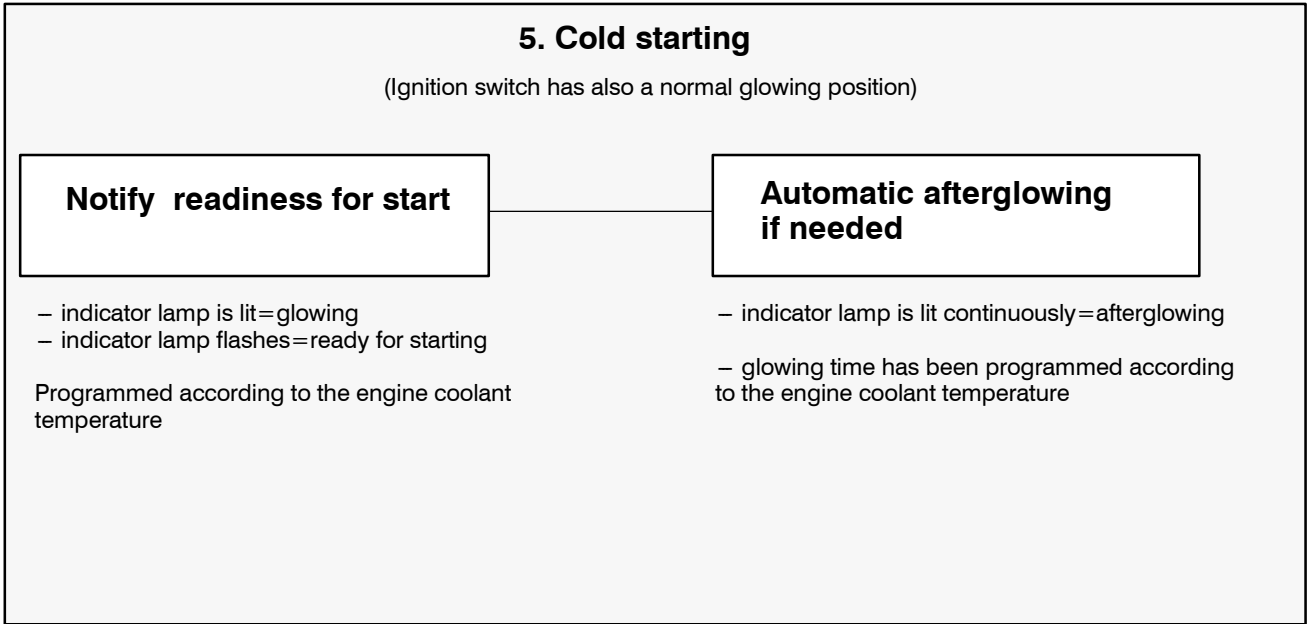
#### Automatic changing A2

- Gear changing according to the max. effect. Changes earlier and does not allow the engine revs to fall.

- Automatic gear changing, which changes to the lower gear when accelerating and to the higher gear when decelerating (in both ranges A1 and A2)

<b>34. Autocontrol–III</b>	<del>8. 11. 1990</del>	Model	Code	Page
	15. 6. 1992	6600E, 8100E	340	3

**AC–III controls also the following functions:**



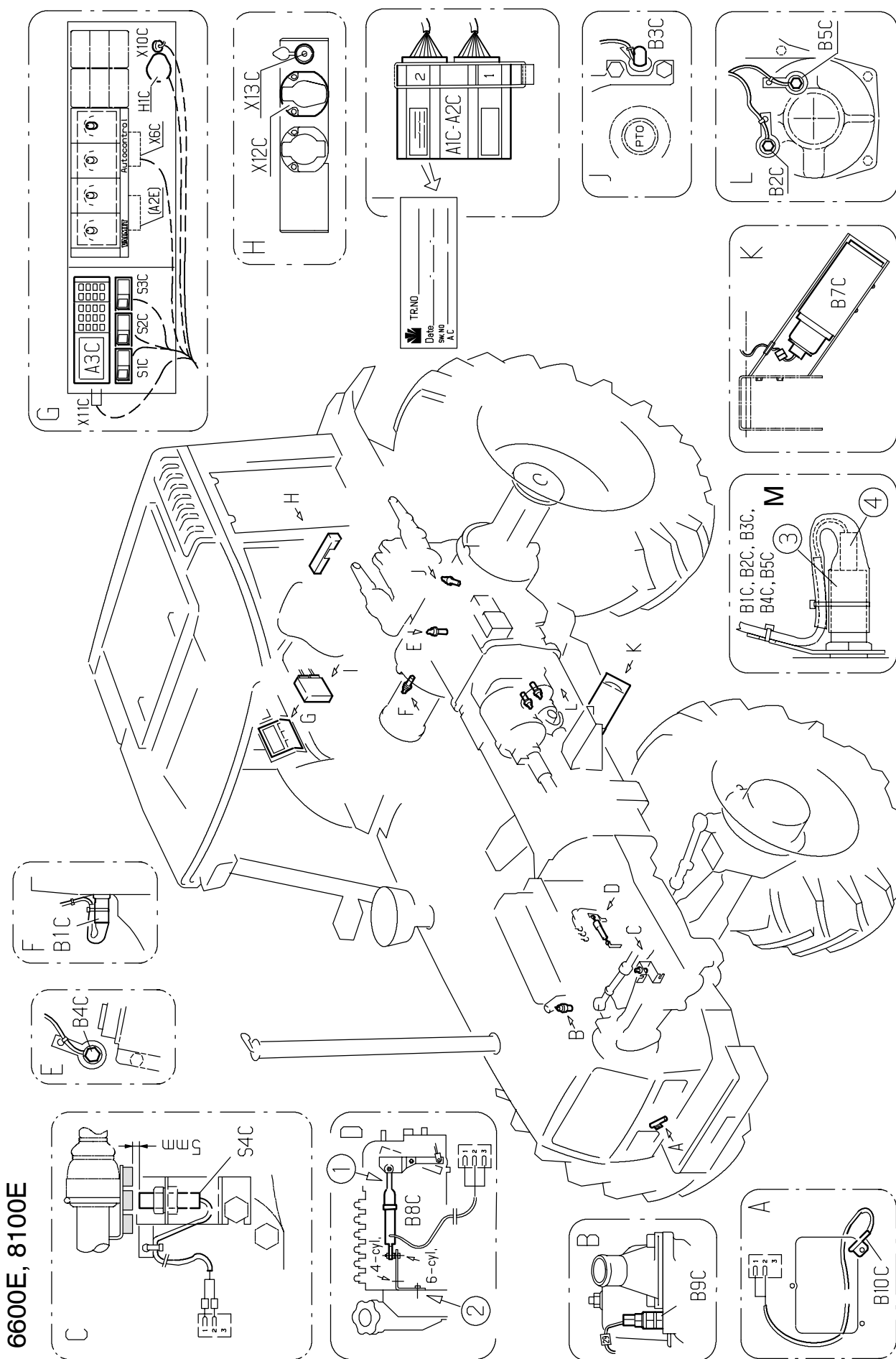


Figure 1. Components for AC—III system

6600E, 8100E

<b>34. Autocontrol–III</b>	<del>15. 6. 1992</del>	Model	Code	Page
	15. 5. 1996	6600E, 8100E	340	5

## Components for AC–III system

(see figure 1 on previous page)

### A. Sensor for outdoor temperature

Sensor (B10C) is fitted under the fixing screw for the headlight. AC–III display shows the outdoor temperature.

### B. Sensor for engine coolant temperature

Sensor (B9C) controls the cold starting automatics. An indicator light on the instrument panel shows when the engine can be started. The system controls automatically the afterglowing in cold conditions. AC–III display shows also the engine coolant temperature.

### C. Sensor for front wheel steering angle

Sensor (S4C) notifies the AC–III system when the front wheel steering angle is over  $\pm 10^\circ$ . Then the automatics disengage the differential lock. The lock is re-engaged automatically when the front wheels are turned less than  $\pm 10^\circ$ .

### D. Potentiometer on fuel injection pump

Potentiometer (B8C) notifies the system the position of the governor control lever on the fuel injection pump. AC–III compares the governor control lever position and the engine revs. Eg. the system changes automatically to the lower gear when the engine revs drop during a hard load (and vice versa)

- 1) Grease
- 2) Locking fluid Loctite 242

### E. Sensor for engine revs

Sensor (B4C) is fitted on the gearbox under the cab. The sensor measures the engine rotation speed from the gear for the hydraulic pump drive mechanism. The display shows also the engine revs. The sensor controls the engagement of the quick–shift gears and indicates if the PTO clutch is slipping.

### F. Sensor for rear axle rotation speed

Sensor (B1C) measures the rotation speed of the RH side rear axle from the impulse disc fitted on the final drive planetary gear. Engages the differential lock when the rotation speed difference between the rear axles exceeds 25 %.

### G. Display unit

Function keys on the display unit (A3C) have been presented on pages 340/6–7. Below the display unit there are switches for selecting between the manual or automatic control of the tractor transmission.

## H. Sockets at the rear of the tractor

Socket X12C (for connecting implement sensors to the AC–III system)  
PTO emergency stop socket X13 C (terminator)

## I. Central processing unit ECS (Electrical Control System)

The central unit ECS (A1C, A2C) is fitted in the lever console in the cab. On the ECS is fitted a sticker with the tractor manufacturing number etc.

## J. Sensor for PTO revs

Sensor (B3C) measures the rotation speed of the PTO shaft from the impulse disc fitted on the shaft. Display shows the PTO rotation speed.

## K. Radar

Radar (B7C) notifies the ECS the actual tractor travelling speed. The radar is used e.g. for detecting the wheel slip. The radar has been connected to the hydraulic power lift so that when the set slip percent is exceeded the lift order is sent to the power lift. The radar controls also the engagement of the front wheel drive and the differential lock.

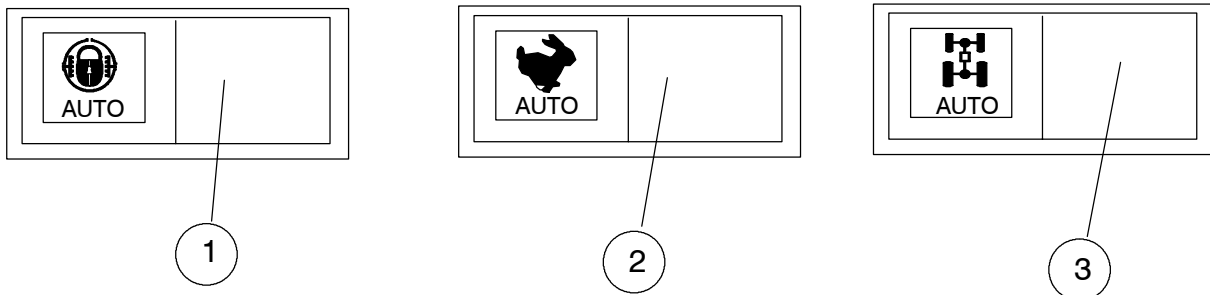
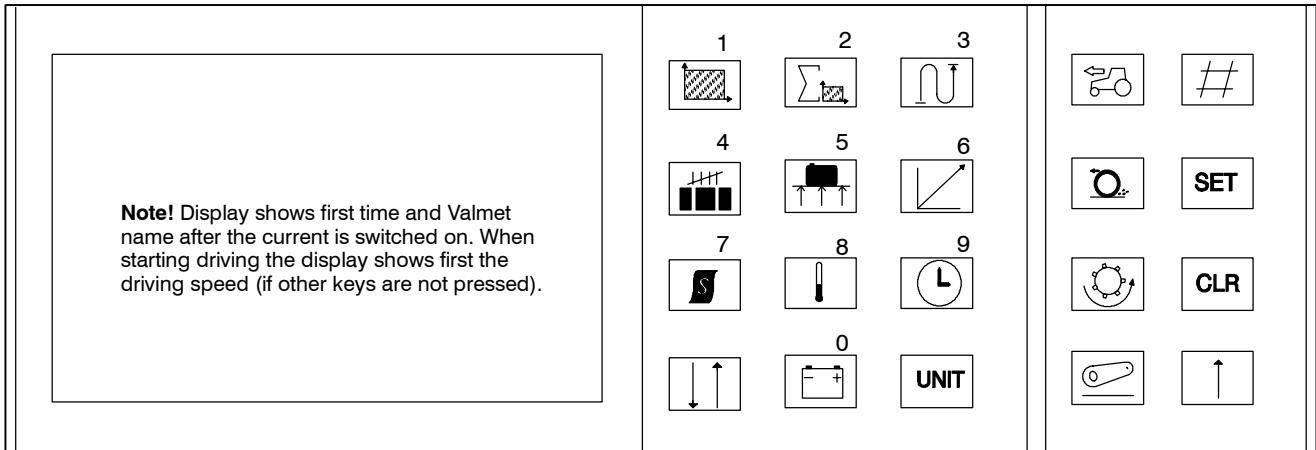
**Radar** – You are not allowed to go under the tractor which has radar (slip control models) before the current switch has been turned off. – **dangerous for eyes.**

## L. Rotation speed sensors for front axle and gearbox

Sensors (B2C and B5C) are fitted on the front face of the reverse shuttle. The gearbox speed sensor measures the bevel pinion shaft rotation speed from the impulse disc at the front end of the shaft. The front axle rotation speed is measured from the impulse disc which is fitted on the output shaft to the front axle.

## M. Fitting speed sensors

See figure M and instruction on page 341/1)



**Figure 2.** AC–III display unit, function keys and rocker switches

1. Switch for differential lock: – rear edge down=manual  
– front edge down=automatic
2. Switch for quick–shift gear: – rear edge down=manual  
(PS Algorithm)  
– middle position (A2)=automatic change according to the max. effect  
– front edge down (A1)=automatic change according to the max. torque
3. Switch for 4WD: – rear edge down=manual  
– front edge down=automatic

The function keys have been presented in the figures on the next page. Hidden functions of the keys have been marked with the double boxes. These hidden functions can be activated with a special function code

The function keys act as number keys when the SET–key is pressed.

**Calibrating mode for the hidden functions**

(this mode is needed when calibrating the quick–shift gear or when checking the speed sensors)

Some functions have been hidden from the Operator by a special code. The calibrating mode is activated as follows:  
– switch on the current and start the engine  
– press the function keys in the following order; **9–1–0–4–0–9** (do not use the SET–key, display changes every time the key is pressed).

**Note!** Now the quick–shift gear is ready for calibrating and the speed sensors can be checked. If the current is switched off the code must be input again.

– escaping from this mode is done by switching off the current.

**Parameters**

In the factory a parameter file is input with a micro computer into every AC–III system . The parameter file includes: transmission type, engine type, engaging limits for the diff. lock and the 4WD and the display language. These functions are different on different tractors.

PC is connected to the AC–III socket X10C with a middle wire. In PC there must be a Service Program which sends the parameter file into the ECS. See **Code 343**.

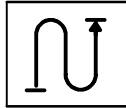
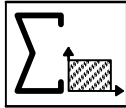
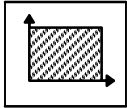
If a fault occurs in the actual parameter file , the ECS replaces the damaged file automatically with a default parameter file. The display shows this with text DEFAULT PARA every time the current is switched on.

The tractor functions properly with the default parameter file, but as soon as possible the actual parameter file must be input with a PC into the system.

Micro computer can also be used for detailed fault tracing for the AC–III system (see **Code 342**)

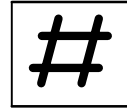


**Function keys**

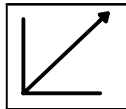
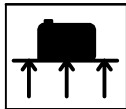


Area	Area	Distance
Trip area	Total area	Distance travelled
Working width input		Calibrating distance

**Note!** One key can have several functions. E.g. when pressing RPM–key 1–4 times, different rotation speeds can be obtained.



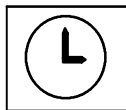
Speed	
Radar speed	Starting/stopping counter
Average speed	
Gearbox speed	
Rear wheel speed	
Front wheel speed	



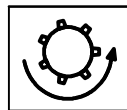
Item number	Liquid	Position
Piece counter	Liquid consumption (litres/hectare)	Position of part of implement
# Program pcs limit	Liquid amount (litres)	Calibrating pos. potentiometer
	Calibrating flow meter	# program pos actuator 1
		# automatic controlling



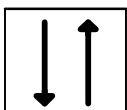
Slip	Set
Wheel slip	Programming SET value
Average slip	
Program wheel slip	



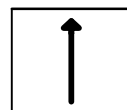
Economy	Temperature	Time
Value since start point	Coolant temperature	Time since start point
Programming the price	Outdoor temperature	Time and date
Printer		time left area or distance



RPM	Clear
Power take–off	
Engine	
Implement	
Quick–shift gear calibration	



	Voltage	Unit
Quick selection	Battery voltage	Changing unit (l, l/ha)



Linkage	
Position of lower links	Scanning menus
Calibrating linkage pos.	

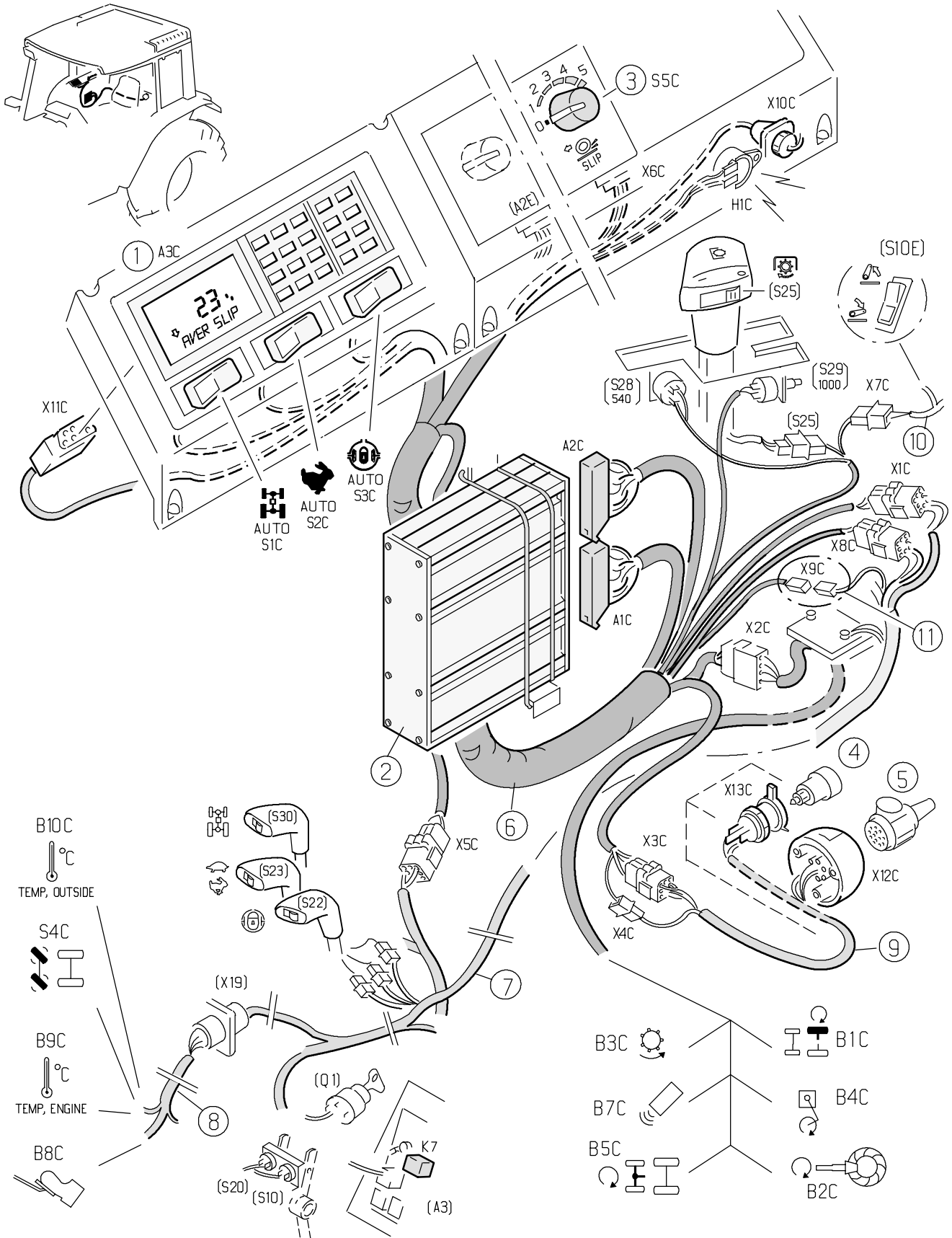


Figure 3. Autocontrol-III harness looms and connectors

(concerning component symbols, see component list on pages 340/10-12).

## Harness looms and connectors

(see figure 3 on previous page)

1. Display unit (A3C). To the display unit rear side is connected connector X11C.
2. Central processing unit (ECS) is fitted in the lever console in the cab and is accessible after removing the lever console side panel.
3. Slip Control selector (S5C).
4. PTO emergency stop socket (terminator).
5. Socket for connecting implement sensors to the AC—III system.
6. ECS harness loom.
7. Harness loom for cab.
8. Harness loom for engine.
9. Harness loom for rear sockets.
10. Harness loom for electro—hydraulic power lift.
11. If you want to use the PTO unit manually , i.e. override the ECS controls, connect connectors X9C.

## Position of connectors

The following connectors are placed in the cab lever console and are accessible after removing the console side panel:

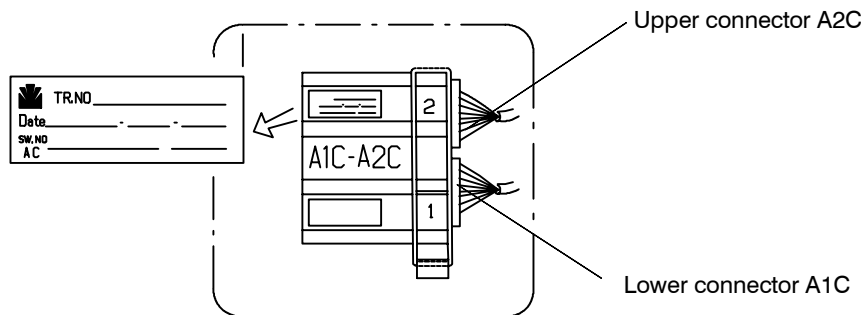
- A1C and A2C (central processing unit (2) connectors)
- X1C (connector for wires from engine harness loom (8))
- X2C (speed sensor wire connector)
- X3C and X4C (connectors for rear sockets)
- X8C (output signals from ECS)
- X9C (PTO manual control connector)

Connector X5C (switches from gear lever knobs) is on the RH side mudguard in the front part of the lever console

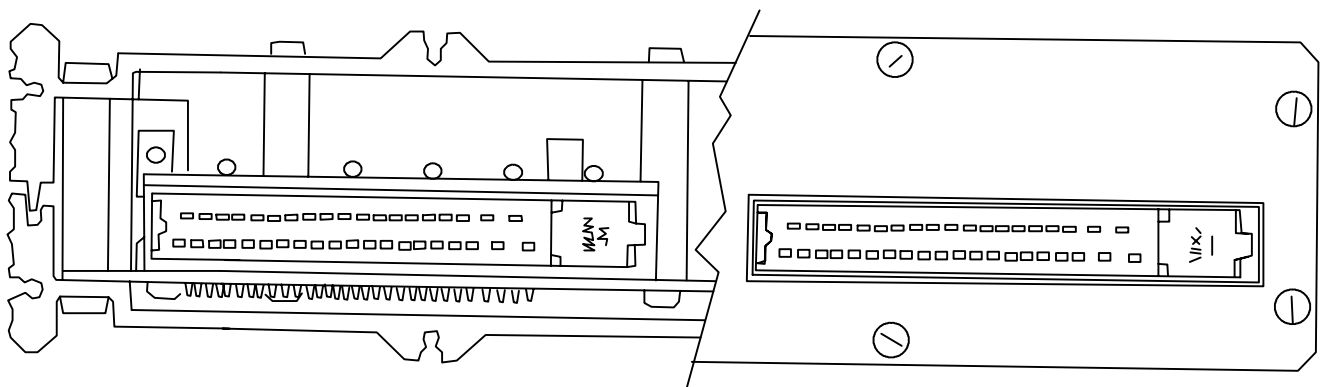
Electro—hydraulic power lift connectors which are in the lever console, are accessible after removing the ECS box (2).

Connector B8C (fuel injection pump potentiometer) is placed under the instrument panel

Connector X19 (sensors in front part of the tractor) is placed on the cab front wall on the RH side.



**Figure 4.** Central processing unit (ECS) is placed in the lever console in the cab. Central unit is accessible when the console side panel is removed.



**Figure 5.** Rear side of the ECS

Voltage measurements can be done from the pins of connectors A1C and A2C. The pins have been numbered. When measuring output signals the pins must have a load.

Supply voltage can be measured from connector A2C (earth A2C:1. Supply voltage A2C:2, A2C:21 and A2C:25 (current must be switched on).

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