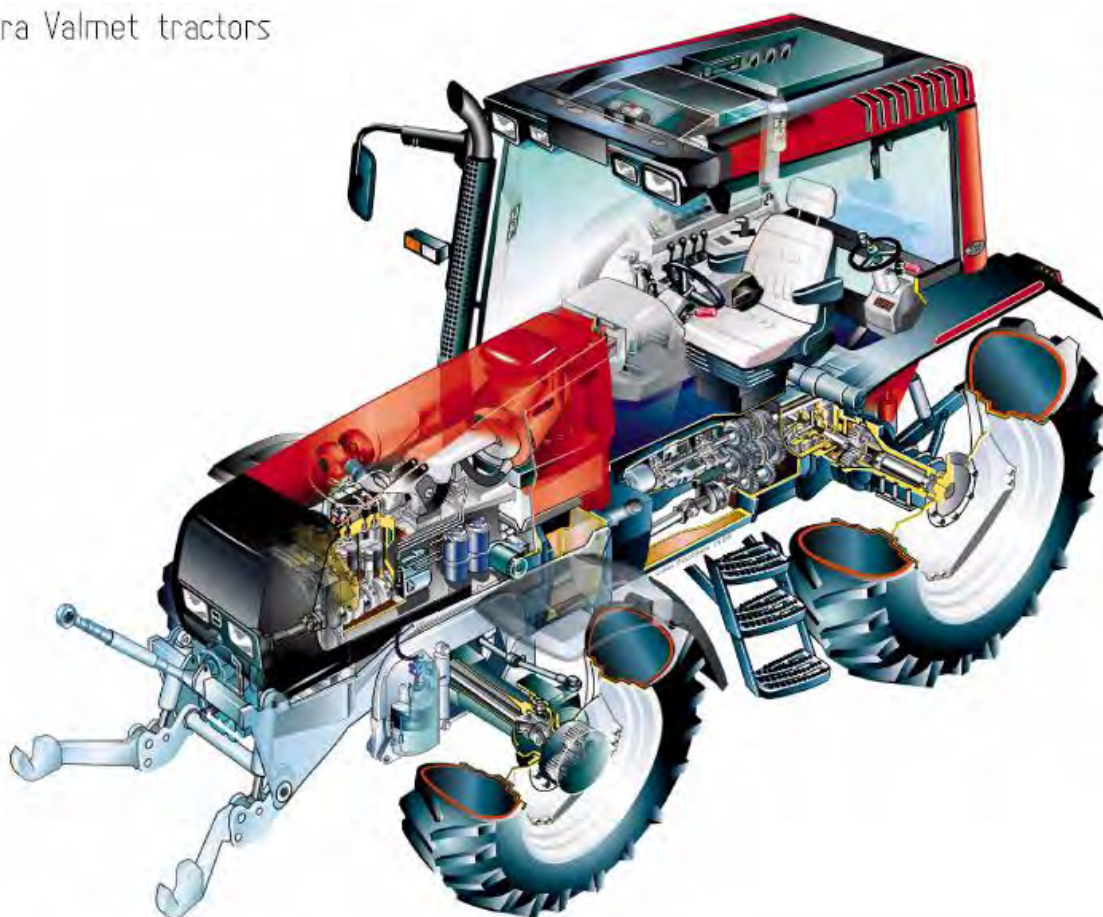


# VALTRA – VALMET MEGA MEZZO HI-TEC

Valtra Valmet tractors



## WORKSHOP MANUAL

# VALTRA

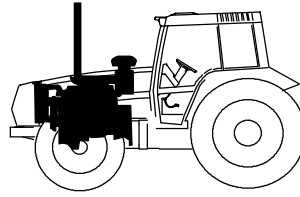
## Service Manual Tractors

Groups 10–100

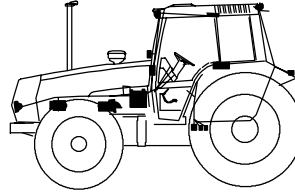
Valtra Inc.  
44200 Suolahti, Finland

Virtakäyttöön Erikytkätole  
Stromlösningar Arb. lopp fram  
relä K3 K4

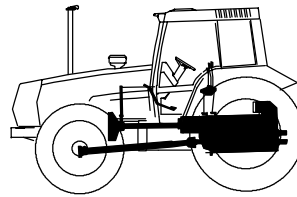
**10** General



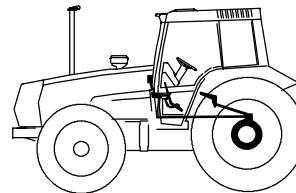
**20** Engine



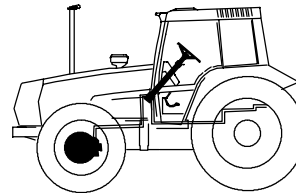
**30** Electrical system



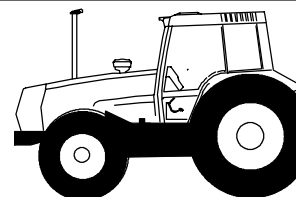
**40** Power transmission



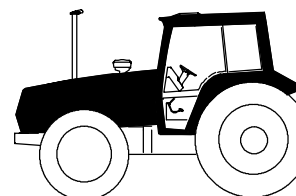
**50** Brake system



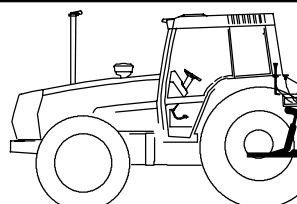
**60** Steering system and Front axle



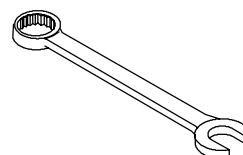
**70** Frame and Wheels



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**90** Hydraulics



**100** Tools

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|                        | 1. 6. 1999             | 6000–8950 | 220  | 1    |

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## Specifications, Bosch in–line injection pump

**Note!** Stanadyne rotary distributuon pump, see page 220/10.

### Bosch fuel injection pump

|                                       |                   |
|---------------------------------------|-------------------|
| Type (pump/governor), 6000–8750 ..... | Bosch PES...A/RSV |
| Type (pump/governor), 8950 .....      | Bosch P–pump      |
| Injection order:                      |                   |
| – 320 .....                           | 1–2–3             |
| – 420 .....                           | 1–2–4–3           |
| – 620, 634 .....                      | 1–5–3–6–2–4       |
| Direction of rotation .....           | clockwise         |
| Diameter of pump piston .....         | 9,5 mm (p: 12 mm) |
| Stroke .....                          | 8 mm (p: 11 mm)   |
| Injection advance:                    |                   |
| – 6100–6600 .....                     | 19°               |
| – 6800 .....                          | 18°               |
| – 8000, 8100 .....                    | 23°               |
| – 6000, 8400 .....                    | 21°               |
| – 8200 .....                          | 22°               |
| – 8750 .....                          | 20°               |
| – 8950 .....                          | 13°               |
| Oil fillings <sup>1)</sup> :          |                   |
| – 320 .....                           | 0,3 l             |
| – 420 .....                           | 0,4 l             |
| – 620/634 .....                       | 0,6 l             |

### Fuel feed pump

|   |                          |
|---|--------------------------|
| Type:   |                          |
| – 320 .....   | Bosch FP/KSG 24 AD 207   |
| – 420, 620, 634 .....                                       | Bosch FP/KEG 24 AD 504   |
| Construction: piston pump, separate hand pump               |                          |
| Fuel feed pressure (overflow valve opening pressure) .....  | 0,7–1,2 bar (70–120 kPa) |
| Pressure from fuel feed pump (without overflow valve) ..... | 2,7 bar (270 kPa)        |

### Injectors (see also page 220/15)

|  |                     |
|--|---------------------|
| Type .....   | five hole nozzle    |
| <b>6000–8750:</b>  |                     |
| – Opening pressure .....   | 230+10 bar (23 MPa) |
| – Setting pressure <sup>2)</sup> .....   | 240 bar (24 MPa)    |
| <b>8950, 6300 (model year 2000), 6400 (model year 2000), 8400 (model year 2000):</b> |                     |
| – Opening pressure .....   | 270+8 bar (27 MPa)  |
| – Setting pressure <sup>2)</sup> .....   | 278 bar (27,8 MPa)  |
| Sealing ring .....   | 8999 01495          |

<sup>1)</sup> When fitting fuel injection pump.

<sup>2)</sup> Value to be used when adjusting the opening pressure of a new or used injector.

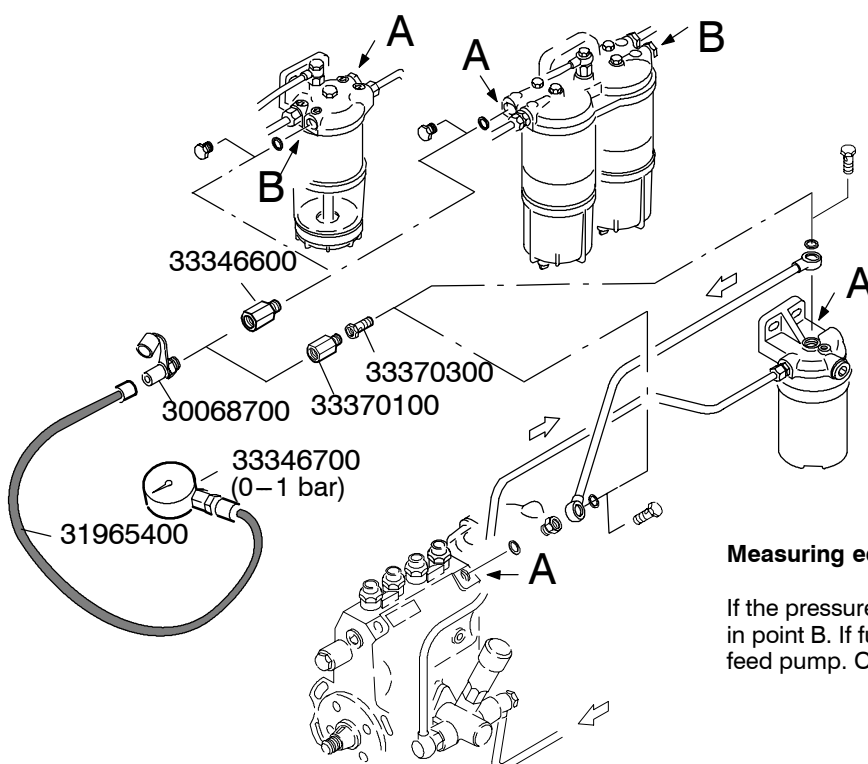
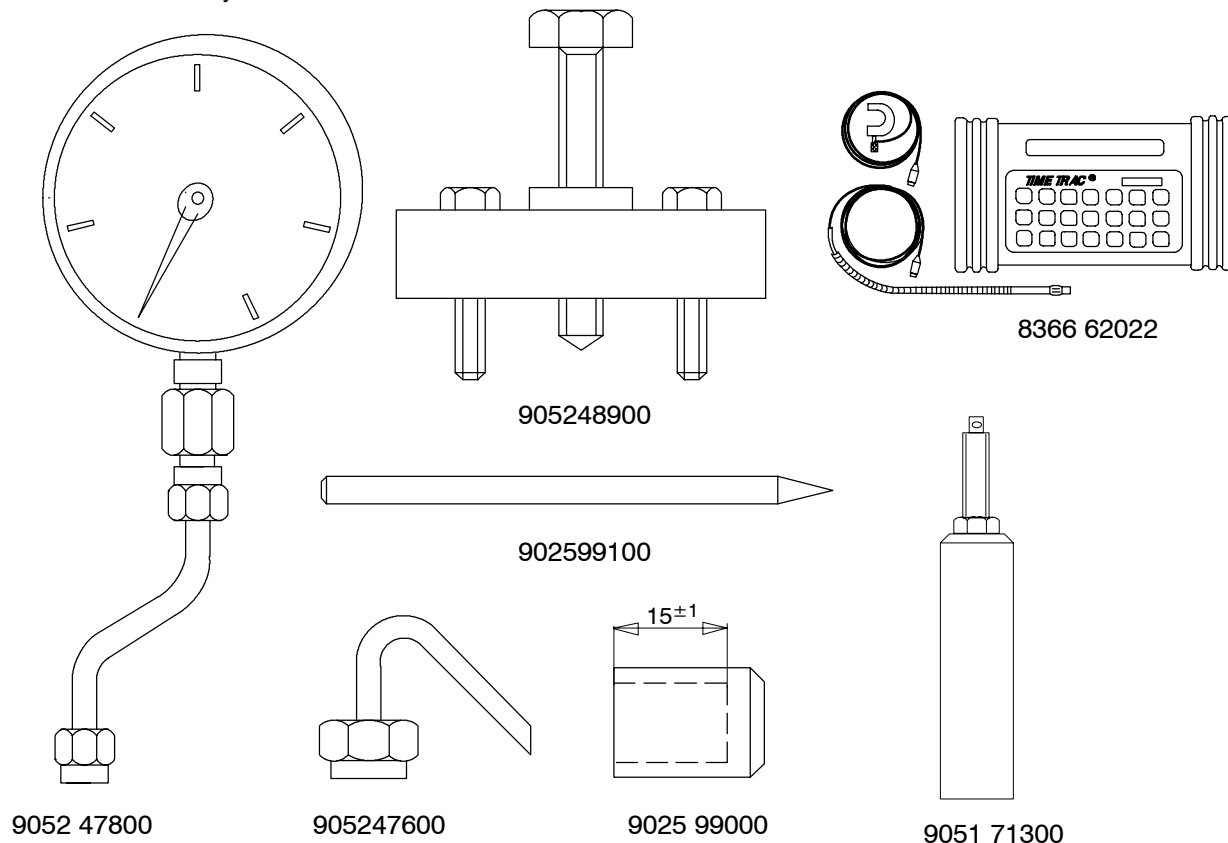
### Tightening torques

|  |       |
|--|-------|
| Injection pump gear nut .....            | 90 Nm |
| Delivery valve retainer .....            | 40 Nm |
| Injector nozzle sleeve .....             | 60 Nm |
| Injector attaching nuts (on studs) ..... | 15 Nm |

## Special tools

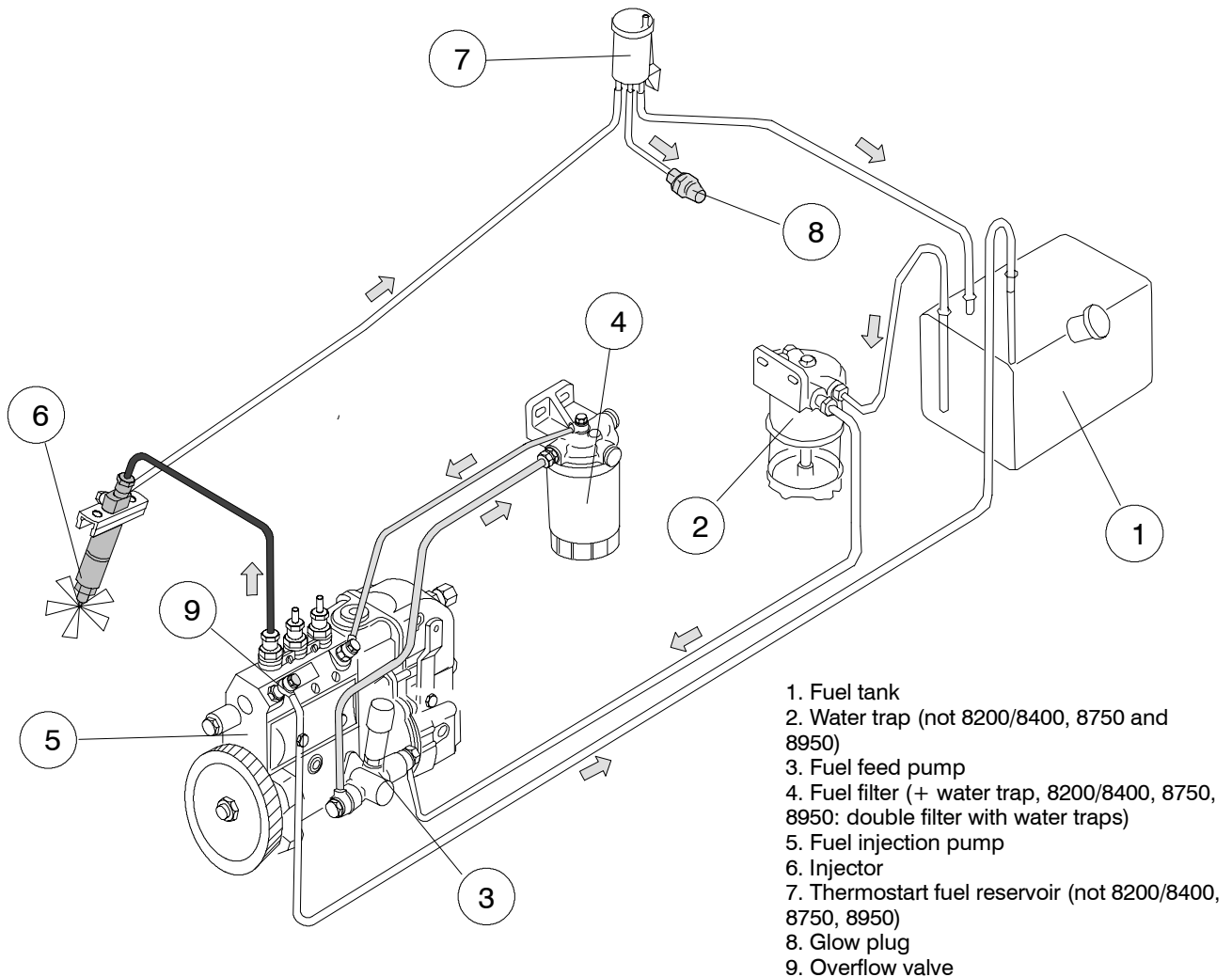
- 9052 47800 \*) Pressure gauge for checking delivery valve
- 9052 48900 \*) Puller for injection pump drive gear
- 9025 99100 \*) Locator for timing mark on the flywheel
- 9052 47600 \*) Control pipe for injection timing
- 9052 99000 \*) Sleeve for limiting control rod travel
- 9051 71300 \*) Extractor for injectors
- 8366 62022 Electronic device for checking injection timing (E–engines)

\*) Same tool as for fuel system on 505–905 tractors.



### Measuring equipment for fuel feed pressure:

If the pressure is too low in point A, check the pressure in point B. If further too low, the fault lies in the fuel feed pump. Otherwise the filter is blocked.



## Fuel system, description

Fuel feed pump (3) draws fuel from tank (1) through water trap (2) (not 8200, 8400, 8750, 8950) and forces it through filter (4) to fuel injection pump (5). The fuel injection pump pumps fuel at high pressure through the delivery pipes to injectors (6) which inject the fuel in the form of a fine mist into the combustion chamber.

Excess fuel lubricates the nozzle valve (needle) and flows in return through the thermostart device reservoir (7) (not 8200/8400, 8750, 8950) and then on to the fuel tank. When the thermostart is on (glowing) fuel runs from reservoir (7) through glow plug (8) and is ignited in the induction manifold. Excess fuel returns from the fuel injection pump through overflow valve (9) to the fuel tank.

**Important!** 8200/8400, 8750, 8950 has not the Thermostart fuel reservoir but fuel flows from the injectors to the injection pump overflow valve from where a pipe goes to the glow plug. 8200/8400, 8750 and 8950 tractors have a combined fuel filter and water trap.

## Maintenance

### Fuel filter:

– Change the fuel filter at intervals of 100 running hours or yearly.

### Water trap:

– Empty/clean the water trap at every 500 running hours.

### Fuel tank:

– Empty/clean the fuel tank at every 1000 running hours or yearly.

### Injectors

– Reconditioning of the injector should be carried out by an authorised workshop.

### Symptoms of dirty or faulty injectors are:

– Knocking is an indication that one of the injectors is faulty. When a cold engine ticks over a certain amount of knocking is unavoidable. If the engine knocks after it has reached normal operating temperature, it is very likely that one of the injectors is faulty. Air in the fuel system can also cause knocking (which should disappear after the system has been bled of air).

– Smoky exhaust gases may indicate impaired performance of the injectors. However, this can also be caused by other faults such as a blocked air cleaner.

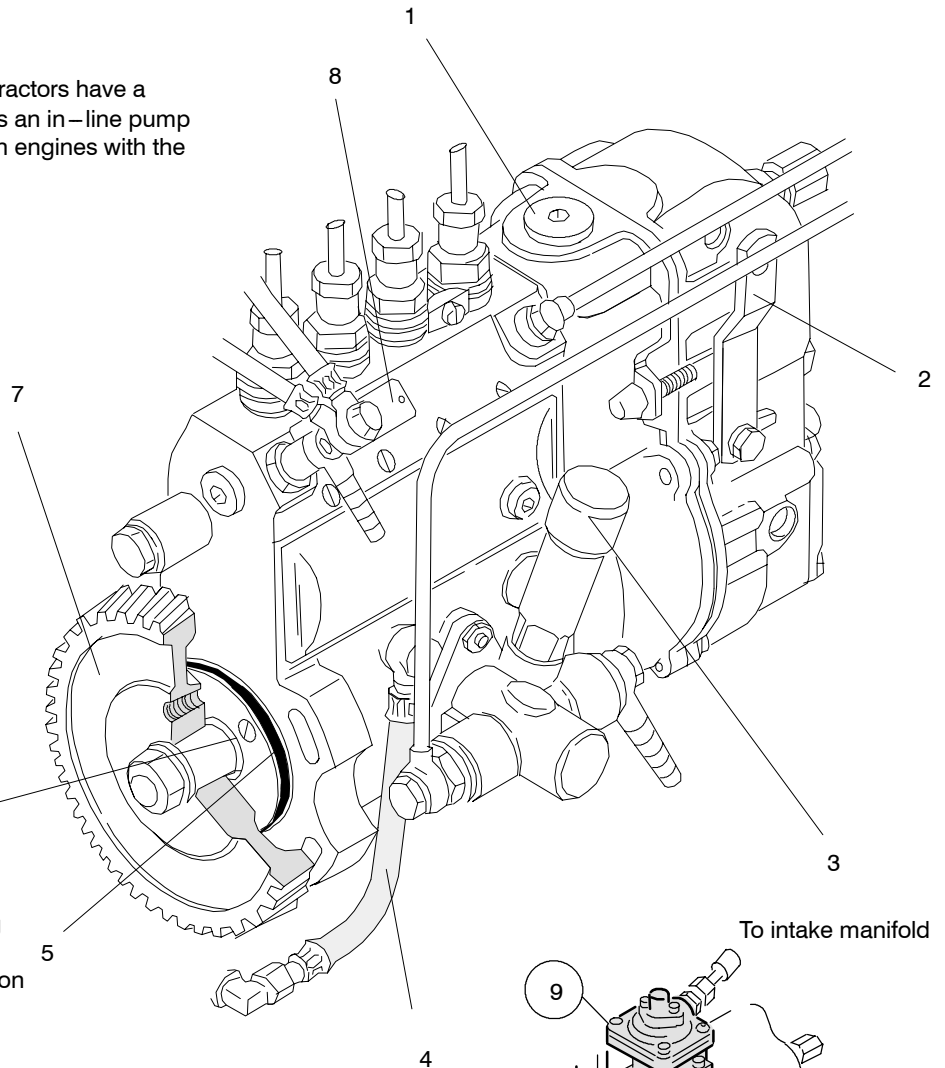
The fuel system should always be bled when the fuel system has been emptied (e.g. the fuel tank has been emptied during driving, in connection with maintenance or repair work or after a long idle period).

## Fuel injection pump

Valmet 6000–8400, 8750 and 8950 tractors have a Bosch–make injection pump which is an in–line pump and its basic construction is similar on engines with the different number of cylinders.

### Fuel injection pump

1. Oil filling plug
2. Governor control lever
3. Hand pump on fuel feed pump
4. Lubricating oil into injection pump
5. O–ring
6. Return of lubricating oil to engine
7. Drive gear
8. Type plate
9. Boost control (6800, 8750, 8950)
10. Forced–feed solenoid for starting (6800, 8750, 8950)
11. Indicator plug for adjusting injection timing (6800, 8750, 8950 + all latest tractors, which have a new governor)

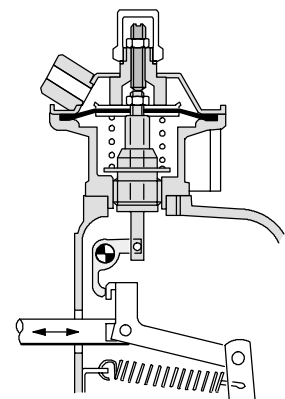
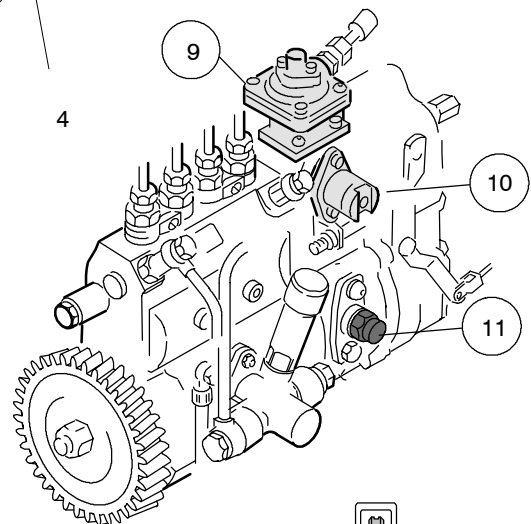


To intake manifold

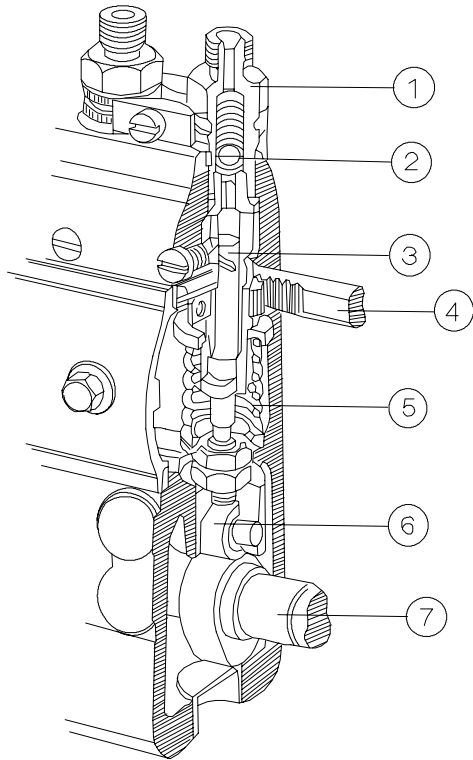
The fuel injection pump is flange mounted and sealed by one o–ring (5) in the timing gear casing. The injection pump is driven from the crankshaft through an idler gear. The injection pump is connected to the engine force–feed lubrication system through an external pipe (4). Lubricating oil returns to the engine via the hole (6) at the front end of the injection pump.

The fuel feed pressure which fills the high pressure pump elements with fuel is created by a piston pump which is attached to the side of the fuel injection pump. The piston pump is driven from an eccentric on the camshaft of the injection pump. The fuel feed pump supplies more fuel than the injection pump needs. The excess fuel flows through the overflow valve back to the fuel tank. The fuel cools the injection pump and also takes any air bubbles with it back to the tank.

**Note!** 6800, 8750 (SigmaPower) and 8950 (SigmaPower) tractors have a boost control (9), which is connected via a hose to the engine intake manifold. The boost control adjusts injected fuel amount to the cylinders according to the supercharging pressure in the engine intake manifold. In addition, these tractors have a forced–feed solenoid for starting (10) on the fuel injection pump, see page 223/9. Adjusting injection timing on 6800, 8750 and 8950, see page 223/8.

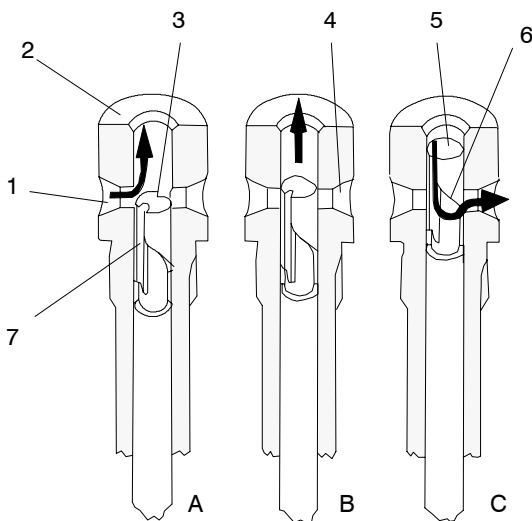


Boost control



1. Retainer for delivery valve
2. Delivery valve
3. Pump element
4. Control rod
5. Return spring for pump plunger
6. Roller tappet
7. Camshaft

The purpose of the fuel injection pump is to meter out fuel to the combustion chamber at the correct time. Plunger (3) which is driven by the pump camshaft (7) via roller tappet (6) forces the fuel through delivery valve (2) and further through the delivery pipe to the injector.



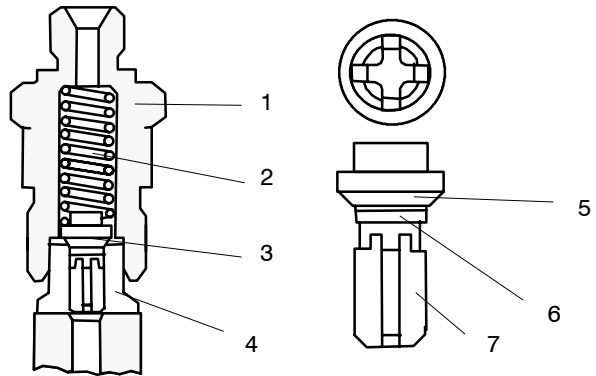
**Two-hole pump element** (maximum feed)

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>A. Bottom dead centre</li> <li>B. Fuel injection begins</li> <li>C. Fuel injection ends</li> </ol> | <ol style="list-style-type: none"> <li>1. Inlet passage</li> <li>2. Cylinder</li> <li>3. Starting groove</li> <li>4. Release passage</li> <li>5. Plunger</li> <li>6. Metering edge</li> <li>7. Vertical groove</li> </ol> |
|---|---|

The pump element consists of one plunger and one cylinder which are a matched pair and because of the fine tolerances the whole element should be changed as a complete unit.

The cylinder has two passages: inlet passage and release passage. Both passages allow fuel to enter the pressure space. The side of the plunger has one vertical groove and one metering edge which are used for adjusting the amount of fuel injected into the combustion chamber of the engine.

The top of the plunger is provided with a starting groove (delay groove) which delays the injection timing by approx. 8°. (This should be borne in mind when checking the fuel injection timing). This groove improves the cold starting properties of the engine. It works fully automatically. When the engine has stopped the control rod in the injection pump turns the plungers so that the starting groove faces towards the release passage. When the engine has started and when the injection pump has reached a certain speed, the governor pulls the control rod back into running position.



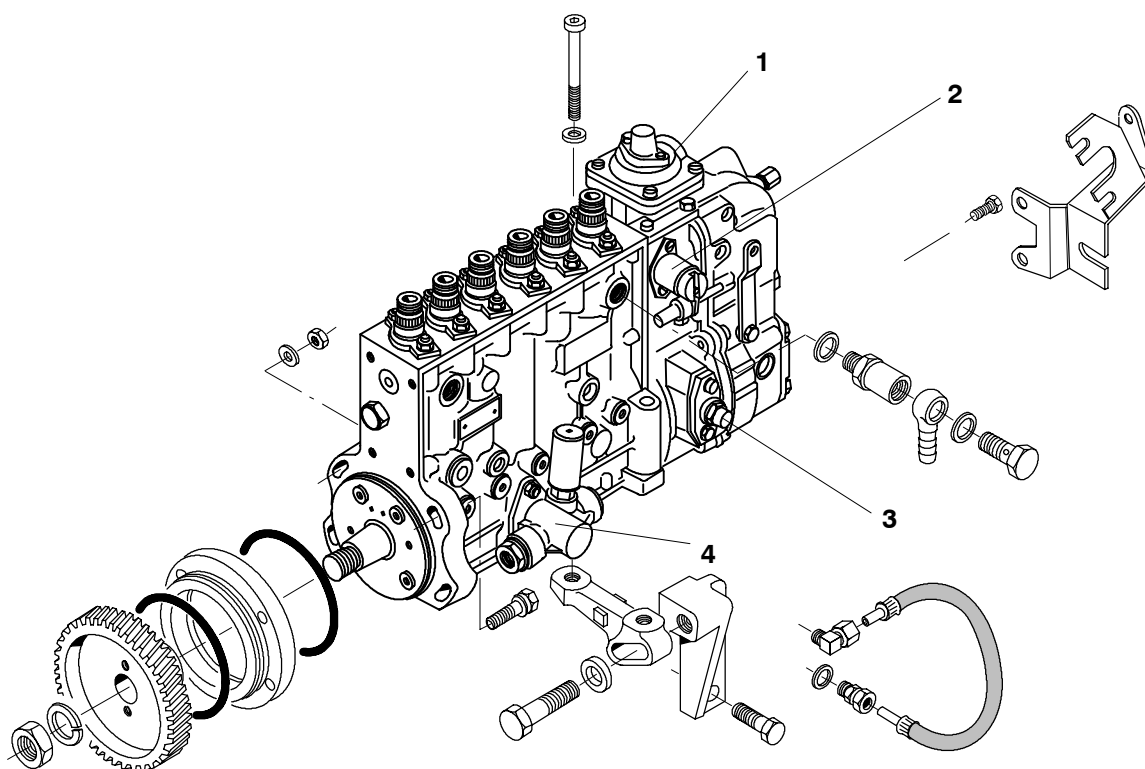
**Delivery valve**

1. Holder for delivery valve
2. Valve spring
3. Valve cone
4. Valve guide
5. Valve head
6. Pressure-reducing piston
7. Vertical grooves

The delivery valve is fitted on top of the pump element and its purpose is to close the connection between the pump element and the delivery pipe. This happens when the metering edge of the plunger passes the lower edge of the release passage, thus reducing the pressure in the space above the plunger. Its second purpose is to reduce the pressure in the delivery pipe. This is important as it enable the nozzle valve (needle) to close more quickly.

Delivery valve cone contains a pressure-reducing piston which, when the valve closes, is first lowered into the guide and then closes the connection between the delivery pipe and the pump element. The valve head is then pressed against its seat and the fuel in the delivery pipe is given the same space as the displacement of the pressure-reducing piston.





### Fuel injection pump (Bosch P-pump) on 8950 tractor.

#### 1. Boost control (for SigmaPower system)

Function is similar to the boost control on 6800 and 8750 tractors, see page 223/9.

#### 2. Forced feed solenoid for starting

Function is similar to 6800 and 8750 tractors' solenoid, see page 223/9.

#### 3. Plug for injection timing behind the cover

Injection advance is adjusted according to instr. on page 223/8

#### 4. Fuel feed pump

**Note!** Adjusting values are shown on page 220/8B.

**IMPORTANT!** The type of 8950-tractor's fuel injection pump has been changed with effect from engine no. **J18597**. Simultaneously the gas lever position sensor bracket and the lever (17 mm outer) have been changed.

### Checking electric stop solenoid (Elet-trostart)

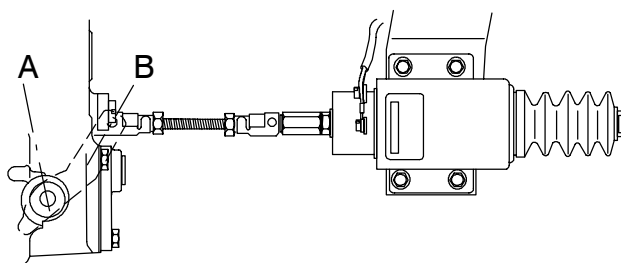
A. Running position

B. Stop position

It is important for function of the double coil solenoid (pulling and holding coil), that the piston reaches the extreme position in every stroke. The piston presses the internal switch, which connects continuous current to the holding coil which eliminates the overheating danger of the solenoid.

1. Energize the solenoid and adjust the loose lever system so that the fuel injection pump lever reaches the extreme positions in its course, see picture. The solenoid is energized during engine running.

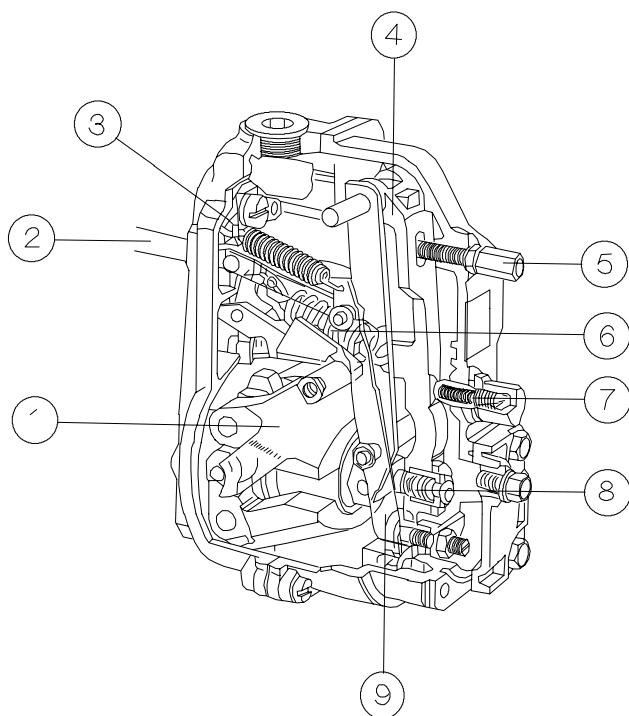
**Note!** Energize the solenoid with a battery of a correct voltage and keep the solenoid energized while adjusting.



#### Technical values:

|              |       |
|--------------|-------|
| Voltage      | 12 V  |
| Pulling coil | 41 A  |
| Holding coil | 0,5 A |
| Max. stroke  | 40 mm |

## Governor

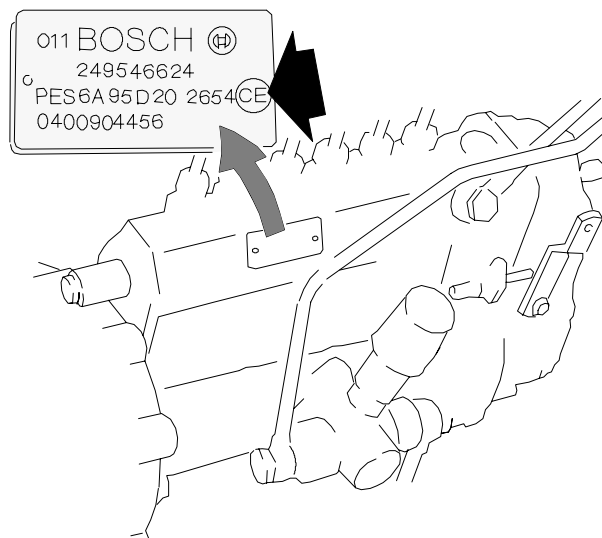


1. Governor weight
2. Control rod
3. Starting spring
4. Main lever
5. Idler screw
6. Governor spring
7. Additional spring, idling
8. Spring for equalizer
9. Governor control arm

The governor is of the centrifugal type and is fitted at the rear end of the injection pump. The governor controls the rotational speed of the engine throughout the whole speed range, and identifies the rotational speed by means of the governor weights. The position of the governor control and of the governor weights is transferred through the governor lever linkage to the control rod. The governor has one governor spring. Starter spring, which is attached to the upper end of the control lever, it pulls the control rod to the starting position when the engine stops. This means that the amount of fuel injected when the engine is started automatically becomes greater.

## Fuel injection pump type plate (Bosch in-line pumps)

The injection pump type plate shows one particular letter indicating the user application, see figure below. This letter should always be quoted when ordering a replacement pump or when looking for setting values.



The letters for different pumps on 6000–8950 tractors can be found in the tables on pages **220/8, 8B**.

|                 |                       |           |      |      |
|-----------------|-----------------------|-----------|------|------|
| 22. Fuel system | <del>1. 8. 2000</del> | Model     | Code | Page |
|                 | 1. 9. 2002            | 6000–6800 | 220  | 8    |

## Table of the fuel metering 6000–6800 (3 and 4 cyl.)

Test equipment ISO 4008, Fluid ISO 4113  
 Nozzle ISO 7440 207 bar/0,60 orifice plate  
 Pipe diam. ø6x2x600 ISO 4093

| Engine type       | Tractor                                      | Injection pump                     | Governor                     | Pump timing °       | Injected amount mm <sup>3</sup> / stroke |   | RW mm   | Boost control pressure bar         | Control rod at least 1 mm rpm | Control rod pos. 4 mm rpm |
|-------------------|--|------------------------------------|------------------------------|---------------------|--|---|---|------------------------------------|-------------------------------|---------------------------|
|                   |  |                                    |                              |                     | Max. output r/min                        | Low idling r/min                                  |   |                                    |                               |                           |
| 420 D             | 6000   | PES 4A 95 D<br>320 RS 2806<br>/ BE | RSV 375–1175<br>A2C 2178–7R  | 21°<br>2350<br>750  | 1150<br>1000<br>900<br>600<br>375        | 77–78<br>11–15                                    | 10,0±0,2<br>+0,4...0,5<br>+0,8...0,9<br>+0,8...0,9<br>4,2±0,3       | –                                  | 1195–<br>1205                 | 1270–<br>1285             |
| 320 DS            | 6100   | PES 3A 95 D<br>320 RS 2810<br>/C   | RSV 375–1150<br>A2C 2178–10R | 19°<br>2300<br>750  | 1150<br>1000<br>800<br>500<br>375        | 101–103<br>13–16                                  | 12,3±0,2<br>+0,1–0,2<br>+0,3–0,4<br>+0,3–0,4<br>4,4±0,3             | –                                  | 1170–<br>1190                 | 1240–<br>1260             |
| 420 DS<br>62,5 kW | 6300   | PES 4A 95 D<br>320 RS 2807<br>/ B  | RSV 375–1125<br>A2C 2178–7R  | 19°<br>2225<br>750  | 1100<br>1000<br>900<br>500<br>375        | 81–83<br>11–151                                   | 10,7±0,2<br>+0,2...0,4<br>+0,4...0,6<br>+0,4...0,6<br>4,2–4,5       | –                                  | 1130–<br>1150                 | 1190–<br>1220             |
| 420 DS<br>66 kW   | 6300<br>K41309–<br>L23437                    | PES 4A 95 D<br>320 RS 2807<br>/ DM | RSV 375–1175<br>A2C 2178–7R  | 19°<br>2270<br>850  | 1100<br>1040<br>700<br>500<br>425        | 97–99<br>99–101<br>12–14                          | 12,3±0,2<br>12,4±0,2<br>13,0±0,2<br>13,0±0,2<br>5,1±0,3             | –                                  | 1130                          | 1210–<br>1215             |
| 420 DS            | 6400   | PES 4A 95 D<br>320 RS 2807         | RSV 375–1125<br>A2C 2178–7R  | 19°<br>2225<br>750  | 1100<br>1000<br>900<br>500<br>375        | 91–93<br>11–15                                    | 11,4±0,2<br>+0,3–0,4<br>+0,5–0,6<br>+0,5–0,6<br>4,2–4,5             | –                                  | 1135–<br>1145                 | 1210–<br>1230             |
| 420 DW<br>70 kW   | 6400<br>Delta<br>J17109–                     | PES 4A 95D<br>320 RS 2807<br>/CH   | RSV 375–1125<br>A2C 2178–7R  | °19°<br>2225<br>750 | 1100<br>1000<br>900<br>500<br>375        | 102–104<br>11–15                                  | 13,0±0,2<br>13,2±0,2<br>13,7±0,2<br>13,7±0,2<br>4,2–4,5             | –                                  | 1135–<br>1145                 | 1210–<br>1230             |
| 420 DW<br>73,5 kW | 6400<br>Delta<br>(2000)<br>K41106–<br>L14332 | PES 4A 95D<br>320 RS 2807<br>/DL   | RSV 375–1125<br>A2C 2178–7R  | °19°<br>2200<br>850 | 1100<br>1040<br>900<br>700<br>425        | 101–103<br>104–106<br>109–111<br>109–111<br>11–13 | 12,8±0,2<br>13,2±0,2<br>13,3±0,2<br>13,3±0,2<br>4,3                 | –                                  | 1120–<br>1130                 | 1210–<br>1220             |
| 420 DS            | 6600   | PES 4A 95 D<br>320 RS 2807<br>/A   | RSV 375–1125<br>A2C 2178–7R  | 19°<br>2225<br>750  | 1100<br>1000<br>900<br>800<br>500<br>375 | 101–103<br>11–15                                  | 12,5±0,2<br>±0,2<br>+0,4<br>+0,5<br>±0,5<br>4,2–4,5                 | –                                  | 1140–<br>1150                 | 1200–<br>1220             |
| 420<br>DWI        | 6800   | PES 4A 95D<br>320 RS 2847<br>/E    | RSV 375–1200<br>A5C 2268 R   | °18°<br>2225<br>850 | 1100<br>1000<br>800<br>600<br>500<br>375 | 113–115<br>94–96<br>11–15                         | 13,4±0,2<br>13,7±0,2<br>14,0±0,2<br>14,0±0,2<br>12,7±0,2<br>3,8±0,2 | 1,0<br>1,0<br>1,0<br>1,0<br>0<br>0 | 1130                          | 1180–<br>1210             |

|                        |                       |                  |            |           |
|------------------------|-----------------------|------------------|------------|-----------|
| <b>22. Fuel system</b> | <del>1. 8. 2000</del> | Model            | Code       | Seite     |
|                        | 1. 9. 2002            | <b>8000–8950</b> | <b>220</b> | <b>8B</b> |

## Table of the fuel metering, 8000–8950 (6 cyl.)

Test equipment ISO 4008. Fluid ISO 4113. Nozzle ISO 7440 207 bar/0,60 orifice plate. Pipe diam.  $\varnothing 6 \times 2 \times 600$  ISO 4093.

| Engine type           | Tractor                          | Injection pump   | Governor                         | Pump timing °       | Injected amount mm <sup>3</sup> / stroke                              |  | RW mm  | Boost control pressure bar                                      | Control rod at least 1 mm rpm | Control rod pos. 4 mm rpm |
|-----------------------|----------------------------------|--|----------------------------------|---------------------|---|--|--|---|-------------------------------|---------------------------|
|                       |                                  |  |                                  |                     | Max. output r/min   | Low idling r/min   |  |   |                               |                           |
| 620 D                 | <b>8000</b>                      | PES 6A 95 D<br>320 RS 2806<br>/ F  | RSV 325–1125<br>A0C 2178–8R      | 23°<br>2220<br>750  | 1100<br>950<br>700<br>325   | 64–66<br><br>13–16   | 7,8±0,2<br>8,5±0,2<br>9,0±0,2<br>4,2±0,2   | –   | 1150–<br>1160                 | 1190–<br>1210             |
| 620 D                 | <b>8100</b>                      | PES 6A 95 D<br>320 RS 2806   | RSV 375–1150<br>A2C 2178 8R      | 23°<br>2225<br>750  | 1100<br>980<br>800<br>500<br>375                                      | 77–79<br><br>12–15   | 9,0±0,1<br>+0,3...0,4<br>+0,8...0,9<br>+0,8...0,9<br>4,0±0,2   | –   | 1130–<br>1150                 | 1180–<br>1200             |
| 634D                  | <b>8200</b>                      | PES 6A 95 D<br>320 RS 2806<br>/EG  | RSV 500–1125<br>A0C 2178–8R      | 22°<br>2225<br>750  | 1100<br>1000<br>900<br>800<br>750<br>600<br>375                       | 86–88<br><br>11–13   | 10,0±0,2<br>10,1+0,2<br>10,3+0,2<br>10,4+0,2<br>10,5+0,2<br>10,5+0,2<br>4,0±0,2                            | –   | 1130                          | 1190–<br>1210             |
| 620 DS<br>103 kW      | <b>8400</b><br>–K34331           | PES 6A 95 D<br>320 RS 2806<br>/G   | RSV 325–1125<br>A0C 2178–8R      | 21°<br>2200<br>750  | 1100<br>1000<br>900<br>700<br>375                                     | 84–86<br><br>13–16   | 9,8±0,2<br>10,0±0,2<br>10,2±0,2<br>10,5±0,2<br>4,2±0,2   | –   | 1120–<br>1130                 | 1180–<br>1200             |
| 620 DS<br>110 kW      | <b>8400</b><br>K32135–<br>L33320 | PES 6A 95 D<br>320 RS 2806<br>/AF  | RSV 325–1125<br>A0C 2178–8R      | 21°<br>2200<br>850  | 1100<br>1040<br>900<br>700<br>425                                     | 103–105<br>104–106<br>102–104<br>8–10                            | 12,3±0,2<br>12,3±0,2<br>12,3±0,2<br>12,3±0,2<br>3,6±0,2  | –   | 1120–<br>1130                 | 1205–<br>1225             |
| 620<br>DSIE<br>118 kW | <b>8400</b><br>L23130–           | PES 6A 95D<br>320 RS 2832<br>/ AH  | RSV 500 – 1100<br>A 5 C 2269 – R | 19°<br>2200<br>850  | 1100<br>1040<br>750<br><br>500<br>LDA<br>500<br>500<br>425            | 93–95<br>94–96<br>99–101<br><br>–<br><br>82<br>10–15             | 10,5...10,9<br>10,5...10,9<br>11,3...11,7<br>11,3...11,7<br><br>11,4...11,5<br>10,5...10,9<br>4,1...4,7    | 1,0<br>1,0<br>1,0<br>1,0<br><br>0,35<br>0,0                     | 1130                          | 1210–<br>1220             |
| 634 DS                | <b>8750</b>                      | PES 6A 95D<br>320 RS 2848<br>/C  | RSV 500–1100<br>A5C 2269 R       | °20°<br>2200<br>750 | 1100<br>1000<br>800<br>700<br>LDA<br>500<br>500<br>500<br>1100<br>500 | 128–130<br><br><br><br><br>108–110<br>12–15                      | 13,7±0,2<br>13,9±0,2<br>14,1±0,2<br>14,1±0,2<br><br>13,9±0,2<br>3,6±0,2<br>11,8±0,2<br>11,8±0,2<br>4,0±0,5 | 1,0<br>1,0<br>1,0<br>1,0<br><br>0,60<br>0,40<br>0,0<br>0,0<br>– | 1115                          | 1180–<br>1200             |
| 634<br>DSBIE          | <b>8950</b>                      | PES 6P 120<br>320 RS 3382<br>/E<br>(Tractor.no:<br>–J49321)<br><br>PES 6P 120<br>320 RS 3414<br>(Tractor.no:<br>J49322–) | RSV 425 –1100<br>POA 669         | °13°<br>2200<br>900 | 1100<br>1000<br>700<br>600<br>LDA<br>500<br>500<br>500<br><br>450     | 133–134<br><br>142–144<br><br><br>146<br>111<br>107<br><br>10–12 | 10,0±0,2<br>10,2±0,2<br>10,2±0,2<br>10,2±0,2<br><br>10,5±0,2<br>9,3±0,2<br>9,2±0,2<br><br>4,0±0,5          | 1,0<br>1,0<br>1,0<br>1,0<br><br>0,75<br>0,50<br>0,0<br><br>–    | 1120                          | 1180–<br>1190             |

|                        |                       |                  |            |          |
|------------------------|-----------------------|------------------|------------|----------|
| <b>22. Fuel system</b> | <del>1. 8. 2000</del> | Model            | Code       | Page     |
|                        | 1. 9. 2002            | <b>6000–8950</b> | <b>220</b> | <b>9</b> |

## Table of fuel equipment parts 6000–8950

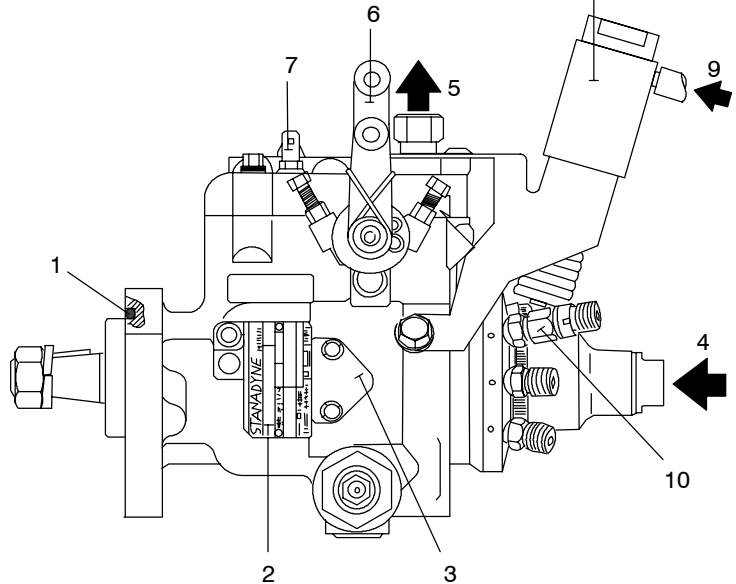
| Engine/Tractor  | Injection pump   | Element       | Delivery valve | Governor spring | Injector compl.     | Nozzle        | Nozzle holder |
|---|--|---------------|----------------|-----------------|---------------------|---------------|---------------|
| 420 D<br>Valmet <b>6000</b>                               | 8367<br>40392  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 320 DS<br>Valmet <b>6100</b>                              | 8366<br>40199  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 420 DS (62,5 kW)<br>Valmet <b>6300</b>                    | 8367<br>40174  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 420 DS (66 kW)<br>Valmet <b>6300</b><br>K41309–L23437     | 8367<br>54903  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>59808 / 358 | 8366<br>59902 | 8366<br>39971 |
| 420 DS<br>Valmet <b>6400</b>                              | 8367<br>40157  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 420 DW (70 kW)<br>Valmet <b>6400DW</b><br>J17109–         | 8367<br>54552  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 420 DW (73,5 kW)<br>Valmet <b>6400DW</b><br>K41106–L23505 | 8367<br>54902  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>59808 / 358 | 8366<br>59902 | 8366<br>39971 |
| 420 DS<br>Valmet <b>6600</b>                              | 8367<br>40173  | 8353<br>31161 | 8353<br>39126  | 8353<br>31163   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 420 DWI<br>Valmet <b>6800</b>                             | 8367<br>54640  | 8353<br>31161 | 8353<br>39126  | 8367<br>54532   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 620 D<br>Valmet <b>8000</b>                               | 8368<br>40210  | 8353<br>31161 | 8353<br>39126  | 8353<br>31780   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 620 D<br>Valmet <b>8100</b>                               | 8368<br>40158  | 8353<br>31161 | 8353<br>39126  | 8353<br>31780   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 634 D<br>Valmet <b>8200</b>                               | 8368<br>54570  | 8353<br>31161 | 8353<br>39126  | 8353<br>31780   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 620 DS (103 kW)<br>Valmet <b>8400</b><br>–K34331          | 8368<br>40395  | 8353<br>31161 | 8353<br>39126  | 8353<br>31780   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 620 DS (110 kW)<br>Valmet <b>8400</b><br>K32135–L33320    | 8368<br>54884  | 8353<br>31161 | 8353<br>39126  | 8353<br>31780   | 8368<br>54831 / 446 | 8368<br>54832 | 8366<br>39971 |
| 620 DSIE (118 kW)<br>Valtra <b>8400</b><br>L23130–        | 8368<br>54939  | 8353<br>31161 | 8353<br>39126  | 8367<br>54532   | 8368<br>54940 / 301 | 8368<br>54941 | 8368<br>54756 |
| 634 DS<br>Valmet <b>8750.</b>                             | 8368<br>54670  | 8353<br>31161 | 8353<br>39126  | 8367<br>54532   | 8366<br>39956 / –   | 8366<br>39957 | 8366<br>39971 |
| 634 DSBIE<br>Valmet <b>8950</b>                           | 8368<br>54767<br>(Tractor.no:<br>–J49321)<br><br>8368<br>54840<br>(Tractor.no:<br>J49322–) | 8353<br>54638 | 8353<br>30239  | 8368<br>64618   | 8368<br>54791 / –   | 8368<br>54792 | 8368<br>54756 |

## Specifications with Stanadyne distributor pump

**Note!** 6200, 8000R, 8050, 8150, 8450 and 8550 (also latest 6300 and 6400 from week 24/01 incl.) tractors have Stanadyne distributor pump. Also 6250Hi–8550 Hi tractors have this pump. The pump is equipped with an electric running solenoid (ignition switch stop) and with an automatic bleeding system. Stanadyne pump internal lubrication happens with aid of fuel. A separate fuel feed pump is of a membrane type and it is driven by the engine camshaft. The system includes also the Therrmostart glow plug.

**Picture.** Stanadyne distributor pump

1. Sealing ring 8368 40858
2. Type plate with pump order number (see page 220/14)
3. Timing marks under the cover
4. Fuel inlet
5. Return fuel/overflow valve
6. Revolution lever
7. Connector for wire to electric stop solenoid
8. Aneroid (E–engines)
9. Boost pressure (E–engines)
10. Detector ring for injection timing (E–engines)



### Stanadyne distributor pump

Type:

- 6200, 6300 and 6400 (24/01 –), 6250Hi–6850Hi ..... DB4 (four pressure plungers)
- 8000R ..... DB4 (four pressure plungers)
- 8050 ..... DB 2 (two pressure plungers)
- 8150–8550 ..... DB 4 (four pressure plungers)

Injection order:

- 420–engines ..... 1–2–4–3
- 620/634–engines ..... 1–5–3–6–2–4

Direction of rotation

Clockwise

Injection advance, see page 220/14:

Tightening torque of pump gear wheel nut ..... 90 Nm

### Fuel feed pump

- Construction ..... membrane pump, separate hand pump
- Fuel feed pressure (static) ..... 0,48 bar (48 kPa)
- Fuel feed pressure at test point ..... 0,2–0,5 bar

### Injectors (see also page 220/15).

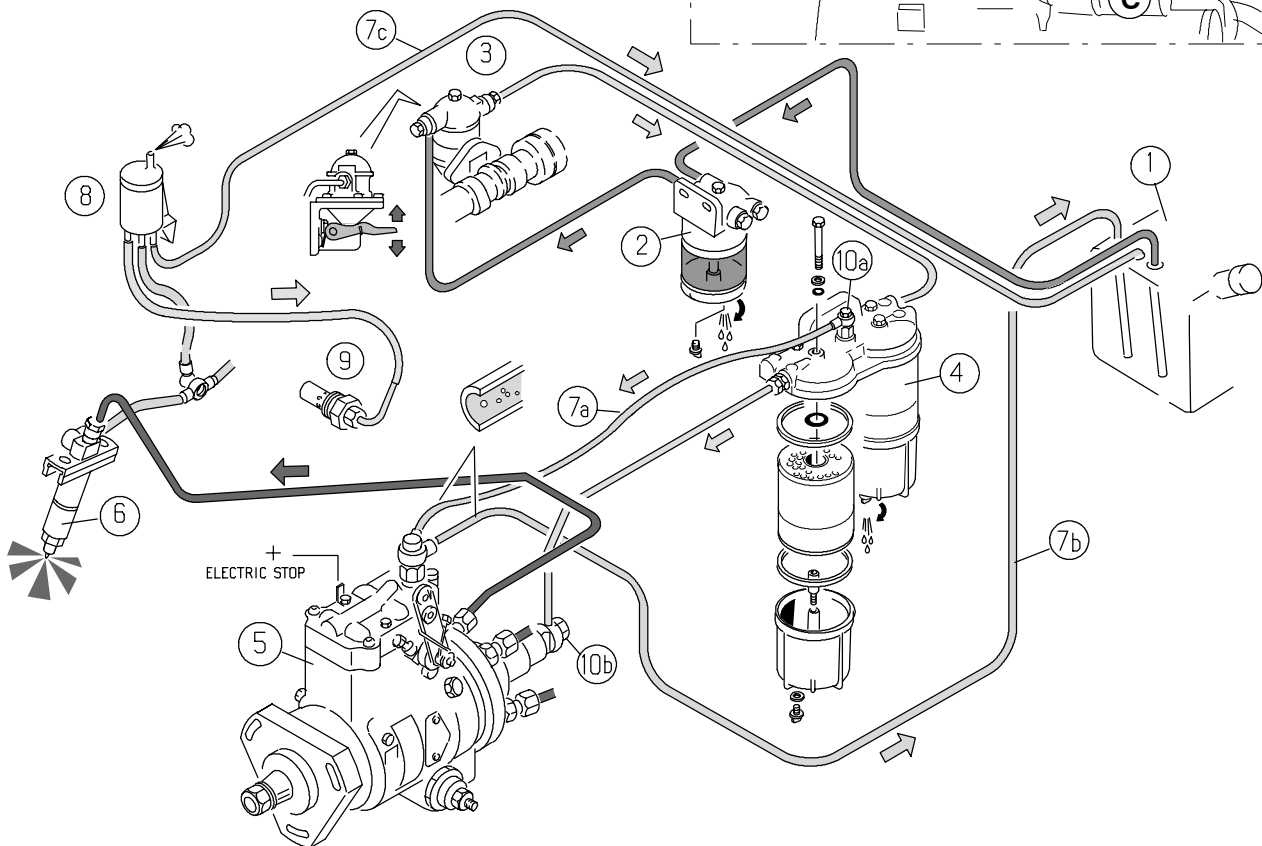
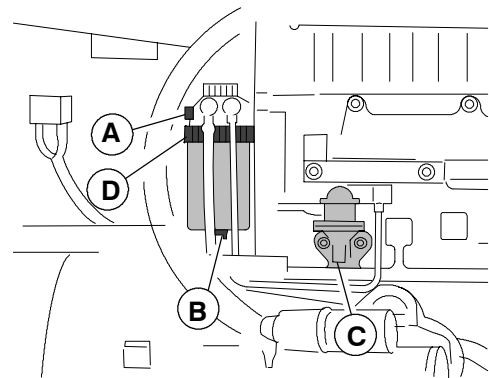
- Type ..... five hole nozzle
- Opening pressure ..... see page 220/15
- Setting pressure <sup>1)</sup> ..... see page 220/15
- Sealing ring ..... nro 8999 01495
- Injector nozzle sleeve, tightening torque ..... 60 Nm
- Injector attaching nuts (on studs) ..... 15 Nm

<sup>1)</sup> Value to be used when adjusting the opening pressure of a new or used injector.

## Fuel system with distributor pump

1. Fuel tank
2. Water trap. 6200, 6900, 6300, 6400, 8000R and HiTech tractors have a different water trap.
3. Fuel feed pump
4. Fuel filter
5. Distributor pump
6. Injector
- 7a,b,c. Return fuel to tank
8. Thermostart reservoir
9. Glow plug
- 10a, b. Bleeding screws

6200, 6900, 8000R, 6300–6400 from week 24/01 incl.  
All HiTech models. All latest Mezzo/Mega



In this fuel system, there is a separate fuel feed pump (3) on the RH side of the engine.

The system includes a separate water trap (2) and two fuel filters (4). The lower parts of the fuel filter housings have a space for possible impurities and there is a draining tap under both filter housings.

The fuel feed pump has a washable metal gauze filter. There is also a tapered metal net filter inside the distributor pump in the inlet line before the pump transfer pump.

**Important!** 6200, 6900, 8000R and all HiTech tractors have a Stanadyne water trap, which also includes a filter. There is a draining tap (B) in the bottom of the housing. Before emptying this water trap, slacken the bleeder screw (A). After emptying, close the screws and pump fuel with the feed pump (C) lever, until the water trap is full of fuel. The Stanadyne water trap filter loosens, when securing band (D) is rotated for hand and the filter is pulled downwards. When fitting a new filter, rotate the securing band until it locks the filter (click).

## Maintenance

- Check/empty the water trap weekly/at every 50 running hours.
- Open and clean the water trap at every 500 running hours (does not concern 6200 and 8000R tractors). At the same time open the taps under both fuel filter housings and allow possible impurities to run out.
- Clean the fuel tank at every 1000 running hours/yearly and change the fuel filters (6200, 8000R: also change the water trap filter).
- Check/clean injectors at every 2000 running hours/every other year. Faulty injectors cause knocking, smoky exhaust gases and loss of engine power.

**Note!** When the water trap has been emptied, refill it with fuel by pumping with the fuel feed pump (3) lever. After changing the fuel filters, bleed the fuel system, see page 223/11.

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