

Annotation:

This service bulletin contains the following information:

- speed sensor installation and adjustment rules;
- putting the rear PTO operation indication system with a RPM sensor into service.

The following note shall be added to Abbreviations and Designations point in Introduction section:

RPTO – rear power take-off,
FPTO – front power take-off.

Section 1.3.6 Principle of Operation and Purpose of Indicators on Integrated Display shall be amended as follows.

The information in point c) shall be replaced with the following:

c) Rear PTO speed gauge 3 (figure 1.5) displays the rear PTO speed on a light indicator.

The rear PTO speed gauge is actuated by signals coming from a pulse speed sensor, installed above the driven gear of the rear PTO reduction unit.

Upon engaging the rear PTO in the mode of 540 rpm the integrated indicator operates in the following way:

- the annunciator of “540 rpm” of rear PTO speed scale range 4.1 lights up;
- as the speed of the rear PTO shaft end extension reaches 320 rpm a lower segment of the rear PTO gauge 3.5 lights up in combination with the annunciator 4.1.
- as the speed further increases, together with the annunciator 4.16 the rear PTO speed segments light up successively from bottom upward in the following order: 3.4 - 3.3 - 3.2 - 3.1;
- then in the process of the rear PTO operation the rear PTO speed is displayed on indicator 3 in accordance with the upper lighting segment as per table 3.

Upon engaging the rear PTO in the mode of “1000 rpm” the integrated indicator operates in the following way:

- the annunciator of “540 rpm” of rear PTO speed scale range 4.1 lights up (figure 1.5);
- as the speed of the rear PTO shaft end extension reaches 320 rpm a lower segment of the rear PTO gauge 3.5 lights up in combination with the annunciator 4.1.

- as the speed further increases, together with the annunciator 4.1 the rear PTO speed segments light up successively from bottom upward in the following order: 3.4 - 3.3 - 3.2 - 3.1;

- as the speed of the rear PTO shaft end extension goes up above 750 rpm the annunciator 4.1 and segments 3.5; 3.4; 3.3; 3.2; 3.1 go out. Then the annunciator 4.2 and a lower segment 3.5 light up.

- as the speed further increases, together with the annunciator 4.2 the rear PTO speed segments light up successively from bottom upward in the following order: 3.4 - 3.3 - 3.2 - 3.1;

- then in the process of the rear PTO operation the rear PTO speed is displayed on indicator 3 in accordance with the upper lighting segment as per table 3.

Note – The precise value of the rear PTO speed can be seen on the multifunctional display 11 (figure 1.5).

Table 3

“540”	“1000”	Segment location on the scale
650	1150	3.1
580	1050	3.2
500	950	3.3
420	850	3.4
320	750	3.5

Point d) shall be amended as follows:

The information available:

The “2” informative field (Figure 1.6) displays the following parameters:

- Total astronomical service hours of the engine;
- Instantaneous fuel consumption;
- Electrical system voltage;
- Volume of fuel remaining;
- Hours of service from fuel remaining;
- Diagnostics of speed sensor operability;
- Diagnostics of frequency-type fuel volume sensor operability (FFVS);
- Diagnostics of CANBUS operability and connection to the ID.

The “Mode” button of the control panel 14 (Figure 1.1) shifts the display modes of “Total astronomical service hours of the engine”, “Instantaneous fuel consumption”, “Volume of fuel remaining”, “Hours of service from fuel remaining”, “Electrical system voltage”, and failure messages. The algorithms of operation of the “Diagnostics of speed sensor operability”, “Diagnostics of frequency-type fuel volume sensor operability (FFVS)”, “Diagnostics of CANBUS operability and connection to the ID” are described above)

Shall be replaced with:

The “2” informative field (Figure 1.6) displays the following parameters:

- total astronomical service hours of the engine;
- instantaneous fuel consumption;
- electrical system voltage;
- volume of fuel remaining;
- hours of service from fuel remaining;
- diagnostics of speed sensor operability;
- diagnostics of frequency-type fuel volume sensor operability (FFVS);
- diagnostics of CANBUS operability and connection to the ID;
- RPTO speed;
- FPTO speed;
- astronomical service hours of the engine within a certain time period.

The “Mode” button of the integrated display programming console 14 (Figure 1.1) shifts the display modes of “Total astronomical service hours of the engine”, “Instantaneous fuel consumption”, “Volume of fuel remaining”, “Hours of service from fuel remaining”, “Electrical system voltage”, “RPTO speed”, “FPTO speed”, “Astronomical service hours of the engine within a certain time period” and failure messages. The algorithms of operation of the “Diagnostics of speed sensor operability”, “Diagnostics of frequency-type fuel volume sensor operability (FFVS)”, “Diagnostics of CANBUS operability and connection to the ID” are described below.

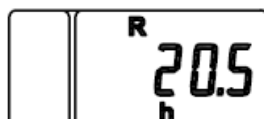
The following information shall be added to the operating procedures description:

6. RPTO indication



RPTO speed value shall be non-preemptively displayed if it is other than ‘0’, as per repetitive parameter output, using Mode button on the control panel.

7. Astronomical service hours of the engine within a certain time period.



Time counter from 0 to 9999,9.

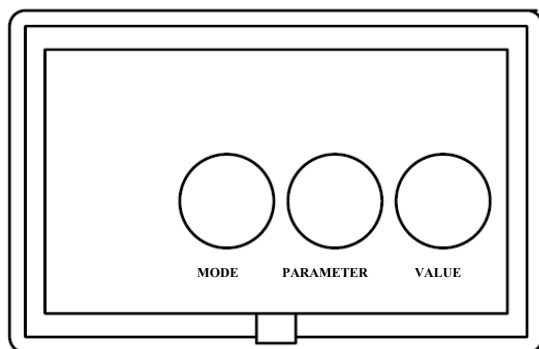
It can be reset by pressing and holding down Mode button within 5 s.

6. FPTO indication



FPTO speed value shall be priority-displayed if it is other than '0'. In this case it shall be indicated until the Mode button on the control panel is pressed or the FPTO is disabled. The speed value is displayed in this mode, if a tractor has a front PTO and a FPTO speed indicator.

Subsection 1.3.9 Integrated Display Programming Console shall be amended as follows.



The programming console 14 (Figure 1.1) allows for manually programming the indicator with the “Parameter” and “Value” buttons (see Figure 1.7), changing the display mode of parameters shown on the LCD, using Mode button

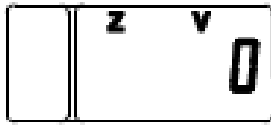
Figure 1.7 – Integrated display programming console

The passage “One unfixed value can be input in a range” shall be amended as follows.

- For “Z” - 23 to 69;
- For “I” - 1,000 to 4,000;
- For “R” - 400 to 1000;
- For “K” - 2,36 to 4,00;
- For “KV2” - 0.346 to 0.600;
- For “ZV” – 0; 12 to 99;
- For “V” - 0 to 1000;
- For “ZV” - 0 to 99.

List of programmable parameter values (graphic samples of displaying parameters and their values on multi-functional indicator in the programming mode):

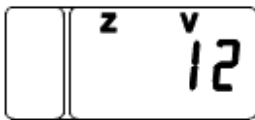
The information available:



“ZV” parameter

ZV is the teeth number of the PTO speed sensor gear
(Note – if a sensor is not installed, input “0”).

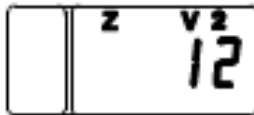
shall be replaced with:



ZV parameter

ZV – RPTO shaft teeth number
(Note – if the sensor is not installed, the value shall be 0)

The following information shall be added to the list of programmable parameter values .



ZV2 parameter

ZV2 – FPTO shaft teeth number.
(Note – if the sensor is not installed, the value shall be 0)

Subsection 2.4 Electric Equipment shall be amended as follows.

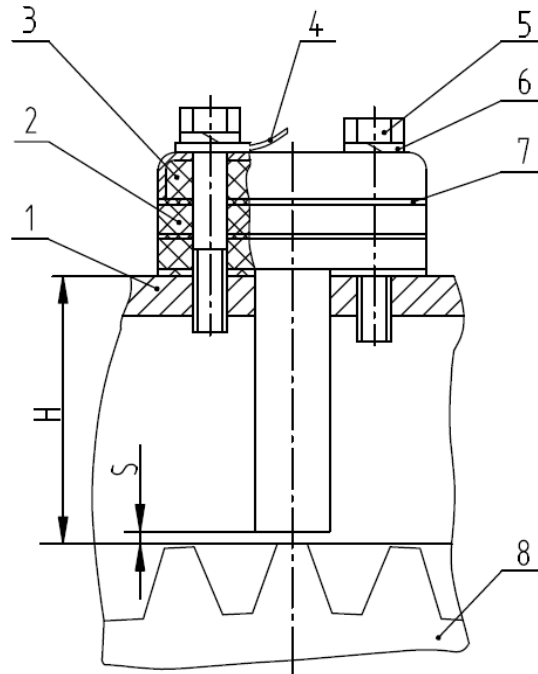
2.4 Electric Equipment

2.4.1 The electric circuit diagram for Belarus-920.4/952.4/1025.4/1221.4 tractors and the list of its components is given in Appendix A.

2.4.2 Installation and adjustment of speed sensors and RPTO rpm sensors.

2.4.2.1 In order to install the speed sensors, do the following:

- put driven gear 8 (Figure 2.9) with its teeth facing the hole in rear axle cover 1;
- in order to ensure there is clearance S, measure H value and place as many adjustment shims 7 and pad 2 as needed according to Table 4a;
- place ground wire 4 of sensor 3 underneath any bolt 5;
- seal bolts 5 with sealing paste and tighten them with a torque of 10-15 N·m.



1 – rear axle cover; 2 – pad; 3 – speed sensor; 4 – ground wire; 5 – M8 bolt; 6 – spring washer; 7 – adjustment shim; 8 – driven gear.

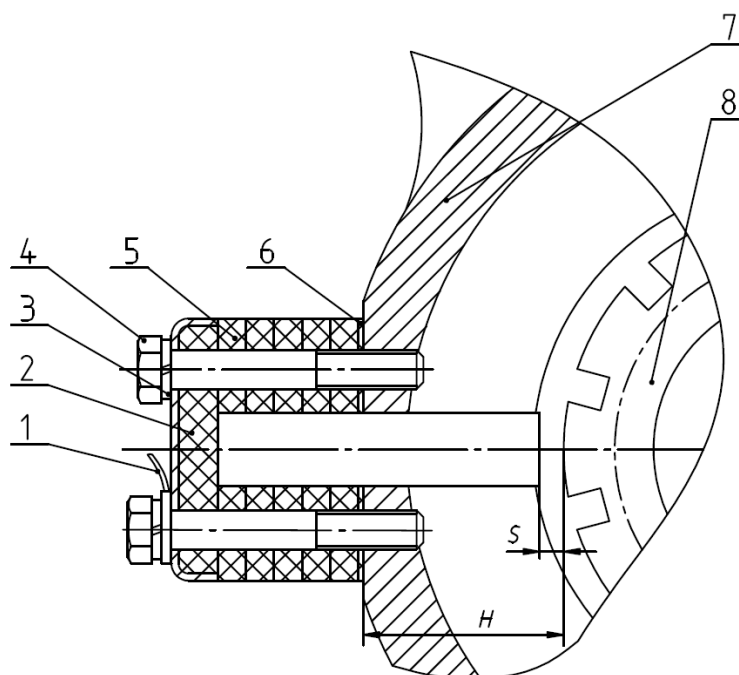
Figure 2.9 – Speed sensor installation

Table 4a – Speed sensor installation

H, mm	Number of adjustment shims 7	S, mm	Number of pads 2
50,0 – 50,8	7	2,0 – 2,8	2
50,9 – 51,5	6	1,9 – 2,5	
56,5 – 56,9	7	2,5 – 2,9	1
57,0 – 57,8	6	2,0 – 2,8	
57,9 – 58,7	5	1,9 – 2,7	

2.4.2.2 In order to install the RPTO rpm sensor do the following:

- put RPTO shaft 8 (Figure 2.10) with its teeth facing the hole in RPTO reduction gear cover 7;
- in order to ensure there is clearance S, determine H value and place as many adjustment shims 6 as needed according to Table 4b;
- place ground wire 1 of sensor 2 underneath any bolt 4;
- seal bolts 4 with sealing paste and tighten them with a torque of 10-15 N·m.



1 – ground wire; 2 – RPTO rpm sensor; 3 – spring washer; 4 – M8 bolt; 5 – pad; 6 – adjustment shim; 7 – RPTO reduction gear cover; 8 – RPTO shaft.
Figure 2.10 – RPTO rpm sensor installation

Table 4b – RPTO rpm sensor installation

H, mm	S, mm	Number of adjustment shims 6	Number of pads 5
38,0 -38,8	1,8 – 2,6	1	5
38,9 – 39,8	1,7 – 2,6	6	4
39,9 – 40,8	1,7 – 2,6	5	4