SERVICE CHECKLIST OF FD20

Always remember to follow the safety instructions when performing inspections or maintenance and service work on the robot.

Customer :	**Reviewer:**
Serial No. of robot :	**Date :**

#	Description	Corrective action	*OK*
1	Base station		
1.1	Ensure the base station is switched ON and online in GateManager		
1.2	Check that the base station's GPS antenna is fixed properly with free sky view		
1.3	Inspect the GPS antenna cable for integrity		
1.4	Inspect the power supply cable for breakage and damage		

2	Preparation		
2.1	Ensure the robot is switched ON and online in GateManager		
2.2	Park the robot with free sky view		
2.3	Charge the batteries of the robot during the service		
2.4	Convert the robot into seeding mode		

3	Robot frame		
3.2	Inspect antenna cables from main control box to GNSS antennas and GSM antenna for breakage and damage		
3.3	Check that the GNSS and GSM antennas are properly fixed/clamped		
3.4	Check that the robot has fixed RTK on both front and rear GPS		
3.5	Check that all edge lights are functional		
3.6	Pour water into the rain meter, and check in the HMI (page 4.1.5) that the robot registers it		

3.7	Check the robot for overall cleanliness and good condition		
3.8	Check for loose bolts and nuts on the wheel anchor left and right		
3.9	Check tire pressure (0.5-0.8 bars)		
3.10	Refill grease to the front wheel		
3.11	Test IMU (guide in KB: Testing and calibration of row offset when weeding in opposite direction)		
3.12	Check for moisture and dirt inside the main control box, as well as seals and grommets for leakage		

4	Rear end controller		
4.1	Check for wear and tear of rear end controller		
4.2	Inspect rear end actuator's wire harness for breakage and damage		
4.3	Check the orientation of the back wheels when the actuator is calibrated and positioned at the reset point. Both back wheels should be aligned pointing forward synchronously		
4.4	Inspect cables for the brakes and propulsion motors for breakage and damage		
4.5	Lift the back wheels from the ground and check the following on both left and right side:		
4.5.1	- The "click" sound from the brakes when activating the joystick		
4.5.2	- Check for wear and tear of the brakes		
4.5.3	- Point the joystick diagonally forward to left side and check for unusual noise from the motor and gear from right side		
4.5.4	- Point the joystick diagonally forward to right side and check for unusual noise from the motor and gear from the left side		
4.6	Check for loose bolts and nuts on rear end controller		

5	HMI box		
5.1	Check that the box can easily swing out for operation and back under the solar top		
5.2	Check if the robot moves according to joystick inputs		
5.3	Check the integrity of the HMI wire harness		
5.4	Check no water is entering the HMI box		

6	Energy supply		
6.1	Check the solar panels for breakage and damage		
6.2	Inspect the wires from the solar panels to the switch and further to the charge controller for breakage and damage		
6.3	Check the LED in “BULK” turns ON when solar panels are charging the batteries (the batteries must not be fully charged)		
6.4	Check the physical integrity of the batteries		
6.5	Update charge controller to the newest software version via the Victron app		
6.6	Measure if all solar panels produce the same energy		
6.7	Check energy values in the HMI (page 2.1.2)		

7	Safety system		
7.1	Inspect the safety wire for breakage and damage		
7.2	Activate the left safety wire switch, reset switch and reset in HMI afterwards, check that the 24V relay activates		
7.3	Activate the right safety wire switch, reset switch and reset in HMI afterwards, check that the 24V relay activates		
7.4	Activate the emergency stop, reset again and reset in HMI afterwards, check that the 24V relay activates		
7.5	Check that the front wire holder tilts down when pushed from front end (only for robots from 2021 and onwards)		
7.6	Check safety wire tensioning		
7.7	Check horn		

8	Active and passive trailers		
8.1	Inspect if any of trailers are bended or damaged		
8.2	Inspect plugs and connections of the sowing arms for sufficient connection, breakage and damage		
8.3	Inspect cables for sowing arms and between sowing arms for breakage and damage		
8.4	Check if hitch (lift) is able to move down to 5% and up to 100%		
8.5	Check for wear and tear in the trailer connection supports		
8.6	Check for poor or broken welds at the tool beam		

9	Seeding system		
9.1	Empty the seeding system for seeds		
9.2	Check the coupling of the seed motor for wear		
9.3	Check the seed discs for wear		
9.4	Install the correct seed discs of the next crop that is planned to be seeded		
9.5	Check for wear of the seed coulter (max. 3mm)		
9.6	Check roller discs incl. bearings for wear and tear		
9.7	Check for integrity of the trailers wheels and ability to rotate freely		
9.8	Check the seed pressure wheel incl. bearings for wear and tear, and if they rotate easily		
9.9	Check bushings of the seed pressure wheel connection for wear (max. 1mm)		
9.10	Check that the transparent tube through which seeds travel is not bended/folded		
9.11	Check the seeding motor for wear and tear when performing a Manual Function Test and check if it can run more than +19 rpm		
9.12	Check that the seed valves open and close when performing a Manual Function Test		
9.13	Check that the dust level in all light sensors is not higher than 30%		
9.14	Check that the seeds drop through the seeding system from the container to the seed outlet		

10	Weeding system		
10.1	Check the shaft of the weeding arm for wear (max. 1,5mm)		
10.2	Check the bushings and bolts of the connection rod between the weeding arm and weeding motor for wear		
10.3	Check the locking plates for wear		
10.4	Check the weeding wires for wear		
10.5	Check the weeding knife for wear		
10.6	Check if the weeding arms move in and out when performing a Manual Function Test		

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