SERVICE CHECKLIST of FD20

Customer : _____   Reviewer: _____   Serial No. of robot : _____   Date : _____
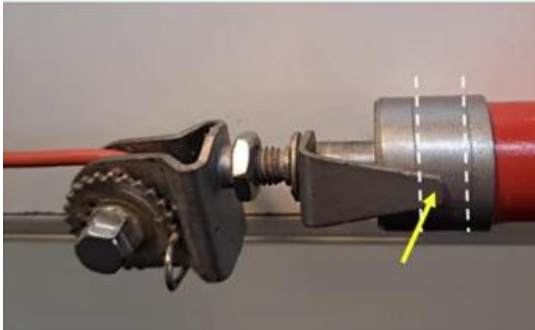
Always remember to follow the safety instructions when performing inspections or maintenance and service work on the robot.
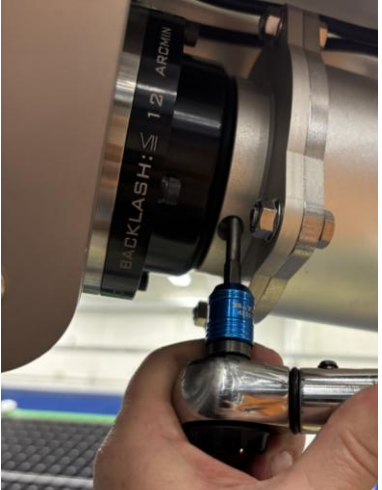
IF the Robot is under extended warranty. REMEMBER to send documentation* as proof of service

*Photo of servicing the robot. Short resume what has been done. – or possibly a copy of invoice!

Description	DATA	Notes
1 Base station		
Check the base station's GPS antenna	• Is it mounted properly with free sky view	https://knowledge.farmdroid.io/base-station-installation-guidance
Inspect antenna cables from Base Station box to the antenna.	• All cables with the name DELOCK **MUST** be changed • No Damage or corrosion	 https://knowledge.farmdroid.io/replacement-of-gnss-cables
Turn ON the base station	• Base Station V3. → Solid Green light • Base Station V2. → Check if online in GateManager	Check the numbers of satellites above 6 is required

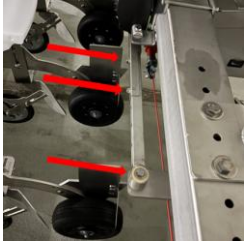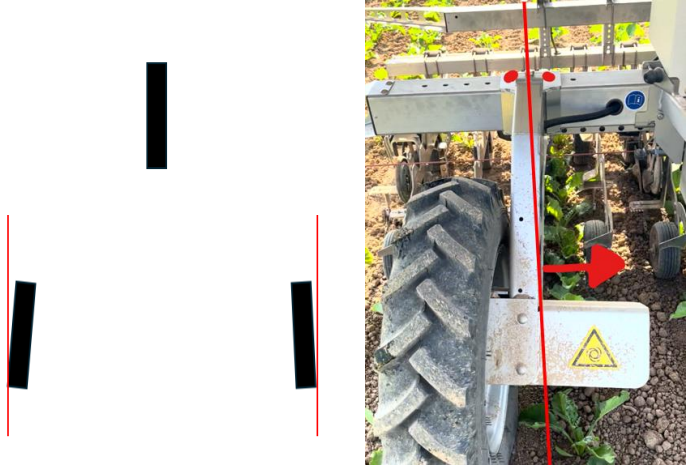| Description	DATA	Notes
2 Robot Preparation		
Turn ON the Robot and move it to an area with free sky view.		
Charge the batteries of the robot during the service		With the solar panels or wall Charger
Check for moisture and dirt inside the main control box, as well as seals and grommets for leakage		
Check for moisture and dirt inside the HMI box, as well as seals and grommets for leakage		
Inspect antenna cables from main control box to the antennas.	- no cracks or Corrosion - All cables with the name DELOCK **MUST** be changed - Check that the GNSS and GSM antennas are properly fixed	 https://knowledge.farmdroid.io/replacement-of-gnss-cables
Measure Voltage on disconnected batteries one by one, **after they are fully charged!**	- possible defective if below 24V - Ok if Voltage is Above 25,5 V	

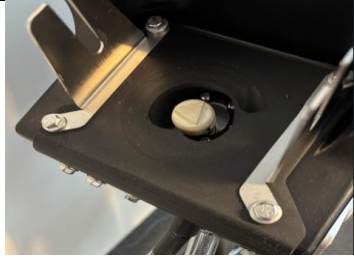| Description	DATA	Notes
Add water into the rain Sensor, and check if counting	• Counting 0.3 mm pr. click	check the HMI (page 4.1.5) Settings → Rain Sensor
Check that the robot has fixed RTK on both front and rear GPS in the HMI	• Above 6 satellites	Check the HMI (page 4.1.6) Settings → GPS and lenght
Control that the safety wire and pulley is in good condition and the safety wire switches have been adjusted right.	• Adjust if necessary 	The metal indicator (Yellow Arrow) must be adjusted, so that it is centered, in between the lines (to dotted lines) https://knowledge.farmdroid.io/safety-circuit-troubleshooting
Test if there are camera connection in the app		If there is no connection - report to Support@FarmDroid.com

Description	DATA	Notes
3. Motors, Gears and brakes		
Lift the back wheels from the ground and follow the next steps for both left and right side:		
Check coupling connection is tightened between motor and gear	• AE155 Gear tighten with <u>17NM</u> →Use 6 mm Allen key • PAII-142 Gear tighten with <u>45NM</u> → Use 8 mm Allen key 	The gear/Wheel needs to be turned, - in order to see, and align bolthead at the blind(M8): To be able to turn the wheel-The Brakes needs to be released in HMI HMI page (4.2.10) Setting→Service→ Safety functions **https://knowledge.farmdroid.io/assemble-ae155-gearbox-to-farmdroid-drive-motors**

Description	DATA	Notes
Point the joystick to up right side to see the AMP consumption. • Manual speed set to FAST 	• Check Amp consumption in HMI • Max 5 Amps consumption	• check for unusual noise from the motor and gear • Listen that the brakes releases with a clear "Click" HMI page (4.2.6) Setting→Service→ Run Information→page2
Point the joystick to up left side to see the AMP consumption. • Manual speed set to FAST 	• Check Amp consumption in HMI • Max 5 Amps consumption	• check for unusual noise from the motor and gear • Listen that the brakes releases with a clear "Click" HMI page (4.2.6) Setting→Service→ Run Information→page2

Description	DATA	Notes
Check tire pressure	• Field operations: 0.5-0.8 Bars • winter storage: 2.5 Bars	Low pressure to increase traction High pressure to keep wheel shape during winter
Grease the bearing on the front wheel		Check bearing

Description	DATA	Notes
4 steering actuator and connections		
Check for wear and tear on bushings and bolts on the actuator and connections	• M 8 – 30 NM	apply Loctite 270 Strong if the bolts are loose.
Check the direction of travel the back wheels	• M12 – 102 NM • check that the self-locking washers are mounted on the pivot screws 	Loosen bolts on the frame and push the wheel arm to correct the direction of travel and tighten again.
Check that ALL bolts on the back wheel assembly are tightened, with the following Newton meters	• M 8 – 30 NM • M10 – 60 NM • M 12 – 102 NM • M 14 – 163 NM • M 16 – 255 NM	Apply Loctite 270 Strong if the bolts are loose.

Description	DATA	Notes
5 Active and passive trailers		
Inspect if any trailers are bent or damaged		
Check if hitch beam can move up and down	• down to 5% and up to 100%	Use the UP/DOWN arrows in the main HMI menu to move the hitch beam
Check bushes for wear and tear in the trailer connection brackets		
Check for cracked welds at the tool beam		https://knowledge.farmdroid.io/tool-beam-reinforcement-bracket

Description	DATA	Notes
6 Seeding system		
Check the triangle coupling at the seed motor for wear		
Check the seed discs for wear	• Is it flat • No wear marks	
Check the seed cone and brush for wear		Remember the seedcone with brush (UPG18) might be a useful upgrade for farmers that have had seeding problems
Check the condition of the seed motor by checking RPM of the seed motor,	• OK if motor runs at more than 19 rpm	perform a manual test unit by unit – make the seed motor rotate with 100% output.
Check for wear of the seed coulter max. 3mm		

Worn seed coulter

• Does not catch the seed
• Risk of the seed is rolling HIGH
• Precision is LOW

• Does catch the seed
• Risk of seed rolling LOW
• Precision is HIGH

Description	DATA	Notes
Check roller discs and bearings for wear and tear	• Roller discs must touch each other	
Check condition of the trailer's wheels	• Do they rotate easily, without noise	
Check the seed pressure wheel incl. bearings for wear and tear	• Do they rotate easily, without noise	
Check bushings of the seed pressure wheel connection for wear	• max. 1mm play	
Check the transparent seed tube	• straight, not bend • soft and flexible • no cracks	
take the seed valve apart and clean.	• Clean from dust and dirt • Ensure parts are without rust • Check the valve moves easily and smoothly • For V1 valve, check spade for wear and that the lock ring and nylon ring are intact. • Recommended to change Seed valve V1 after maximum 2 years of use!	Recommended upgrade to New UPG19 valve, for less problems with seedvalve https://knowledge.farmdroid.io/upg19
Test the seed valves from HMI.	• Clicking sound is clear • Check one by one • Compare the sound one by one	Manual function test HMI page 4.3,

Description	DATA	Notes
Check the dust level in all light sensors	• Max 30% dust after cleaning	If the level is above 30% after cleaning. Check fiber ends at the PCB https://knowledge.farmdroid.io/upg19
perform a manual function test,	• Check that the seeds are counted with open valve • Check that the valve is closing and the sensor does not count seeds	https://knowledge.farmdroid.io/manual-function-test_guide

Description	DATA	Notes
7 Weeding system		
Check the play in the weeding arm and connection rod for wear	• max. 1,5mm	
check the coupling on the weeding motor is tight.!	• 12.5 NM apply Loctite if loose	
Check if the weeding arms move correctly	• Moves in and out correctly • Does not slip in the coupling	
Check the weeding wires and locking plates for wear.	• Replace it if necessary	https://knowledge.farmdroid.io/maintenance_of_weeding_set
Check the weeding knife for wear	• Replace it if necessary	https://knowledge.farmdroid.io/maintenance_of_weeding_set
Make a visual check of the weeding motor	• Must not have any sign of corrosion 	Is there sign of corrosion on the outside of the housing. Could indicate water inside the motor. Upgrade with new gaskets were introduced in production from 2024 If water is suspected, Inform customer about the situation, and state, that it could be a good idea, to have a weeding motor on stock.
Final test of GPS offset, and tool settings are correct and ready for seeding	• Check the alignment of the trailers and wheels. • Follow the instructions in the article	https://knowledge.farmdroid.io/row-offset

Description	DATA	Notes
8. + SPRAY		
Clean inline filters, change if necessary		https://knowledge.farmdroid.io/spray-user-manual?hsLang=en
Clean nozzle filters, change if needed		https://knowledge.farmdroid.io/spray-user-manual?hsLang=en

Clean Teejet valves		
Clean the spray nozzles		
Clean tanks	• Mixtank • Water tank • Chemical tank	
Make a full calibration	• Check for leaks while calibration is running • Compare nozzles if they are giving the same amount of Milliliters • Correct if nozzles are not given the same amount	https://knowledge.farmdroid.io/spray-user-manual?hsLang=en from page 32
Flush the system with antifreeze	• Follow the instructions	https://knowledge.farmdroid.io/spray-user-manual?hsLang=en from page 40
Dismount the Teejet valves if the robot is stored in an area were it can freeze	• Store all valve units in frost free area	