1. Obtain GT Backup File (Pre-6153 only)

2. Convert six digit SN from decimal to hexadecimal
(https://www.rapidtables.com/convert/number/decimal-to-hex.html)

3. Copy 8 digit result and split in half (e.g. 12345678 would be
[1234][5678])

4. Open GT Backup File in ST-Link Utility or STM32CubeProgrammer.

5. Change Data Width to 16 bits

6. Input first 4 digits of SN hexadecimal number (e.g. [1234]) in
0x00008000 (column 8) <-- Press Enter

7. Input last 4 digits of SN hexadecimal number (e.g. [5678]) in
0x00008000 (column 4) <-- Press Enter

8. Input first 4 digits of SN hexadecimal number (e.g. [1234]) in
0x00010000 (column 4) <-- Press Enter

9. Input last 4 digits of SN hexadecimal number (e.g. [5678]) in
0x00010000 (column 2) <-- Press Enter

10. Save file as...(e.g. ow123456-extracted-bootloader-settings.bin) <--
Use your actual SN

11. Remove Controller from GT (be careful)

12. Solder ST-Link to Controller (see reference photo)

13. Reinstall Controller with ST-Link Wires Connected/Accessible

14. Turn On GT & Open ST-Link Utility / STM32CubeProgrammer

15. Connect to GT (ST-Link Utility / STM32CubeProgrammer)

16. Remove Read Out Protection <-- This will erase all memory!

    ST-Link Utility: Target > Option Bytes... > Read Out Protection >
Level 0 (Disabled)

    - OR -

    STM32CubeProgrammer: Option Bytes > RDP > AA (Level 0)

17. Flash Saved Backup File to GT <-- GT lightbar should be flashing now!

18. Disconnect from GT (ST-Link Utility / STM32CubeProgrammer) <-- Don't
physically unplug ST-Link!

19. Power Cycle GT

20. Flash 6109 (base or patched) to GT Using ReWheel <-- Wait for the WHITE lightbar!

21. Power Cycle GT

22. Multiply mileage by 1810 (e.g. 1234 x 1810 = 2233540)

23. Convert mileage multiplication result from decimal to hexadecimal (https://www.rapidtables.com/convert/number/decimal-to-hex.html)

24. Copy 8 digit result

25. Connect to GT (ST-Link Utility / STM32CubeProgrammer)

26. Halt MCU

    ST-Link Utility: Target > MCU Core... > Run > Halt <-- Do this even if it's already halted!

    - OR -

    STM32CubeProgrammer: CPU (MCU Core) > Run > Halt <-- Do this even if it's already halted!

27. Change Data Width to 32 bits

28. Input all 8 digits of mileage hexadecimal result in 0x20002B10 (column 0) <-- Press Enter

29. Run MCU

    ST-Link Utility: Target > MCU Core... > Run

    - OR -

    STM32CubeProgrammer: CPU (MCU Core) > Run

30. Disconnect from GT (ST-Link Utility / STM32CubeProgrammer) <-- Don't physically unplug ST-Link!

31. Power Cycle GT

32. Confirm SN and Mileage via Float Remote App / Onewheel App <-- You will likely get an UPDATE popup!

33. Physically unplug ST-Link <-- The wires can be desoldered or secured/tucked for future use!

*** If you found this free guide helpful, you can buy me a coffee to show your appreciation! ***

https://www.fixmypev.com/contributors/justin-velasquez