SB, Synchronizing adjacent Auto Mower installations, 2000-03

1. Background

Adjacent installations of the Solar Mower and Auto Mower can interfere with each other. The symptom is that the affected mower stops before it crosses its own boundary wire, at the point where it borders the neighbouring installation, and gives the fault message “cannot detect loop signal” or else it crosses both its own and the neighbouring wires and moves into the neighbouring area.

Any adjacent installations with a distance below 8 m between each other should therefore be synchronised.

2. Basic principle of synchronisation

Synchronisation means giving adjacent loop systems exactly the same frequency, which prevents interference from the neighbouring loop installation. Each charging station still draws its power supply from its own transformer.

The boundary loop of the synchronising station is opened and its wires drawn over to the synchronised charging station and connected to terminals 7 and 8 on the base plate connector terminal (see figure 7).

The two wires from synchronising to synchronised station can be drawn across the working area, but they must be twisted where ever they are laid.

If the synchronising charging station (1 in figure 1 below) loses its power supply, or the synchronising wire is damaged, then charging station 2 takes over frequency control and synchronises charging station 3. The distance between charging stations 1 and 3 should if possible be at least 8 m in order to allow for the possibility of failure of charging station 2.

Synchronisation can be done from an Auto Mower installation to another Auto Mower installation or from a Solar Mower installation to an Auto Mower installation. Charging stations model 98 should be replaced with model 2000 to accept the synchronisation wiring.

3. Garden examples

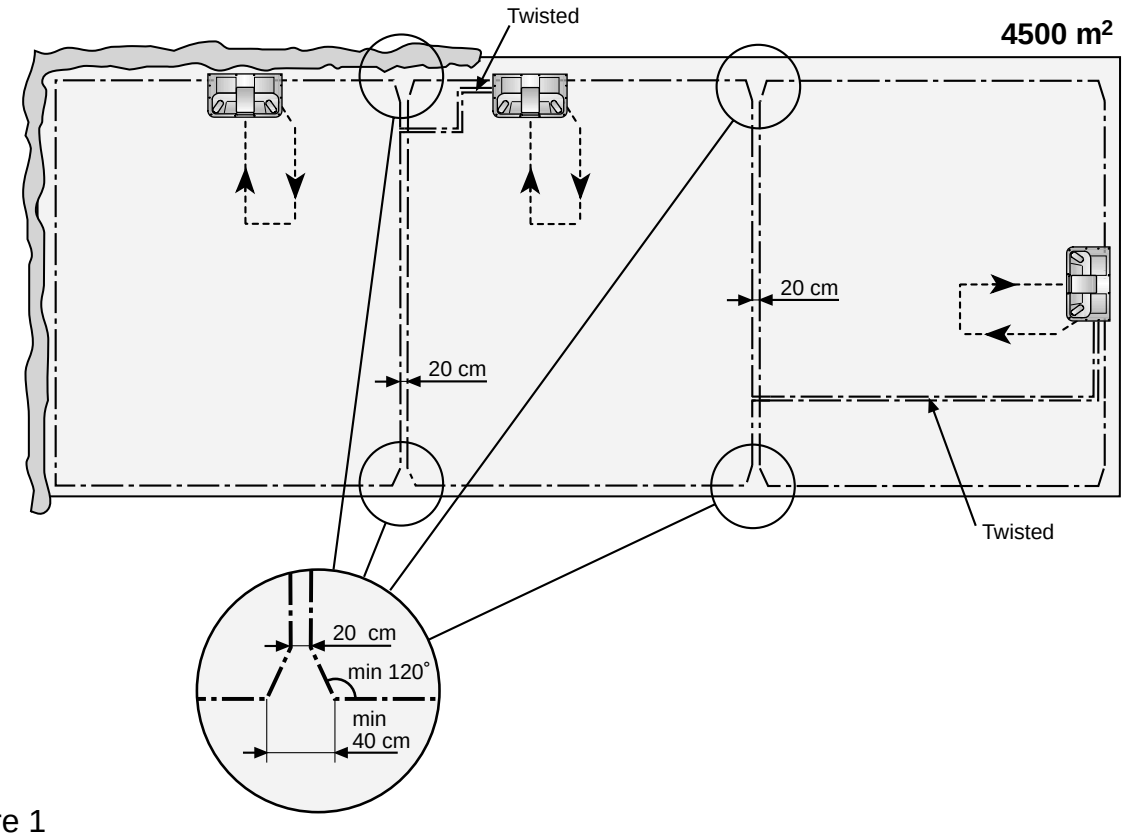

Figure 1

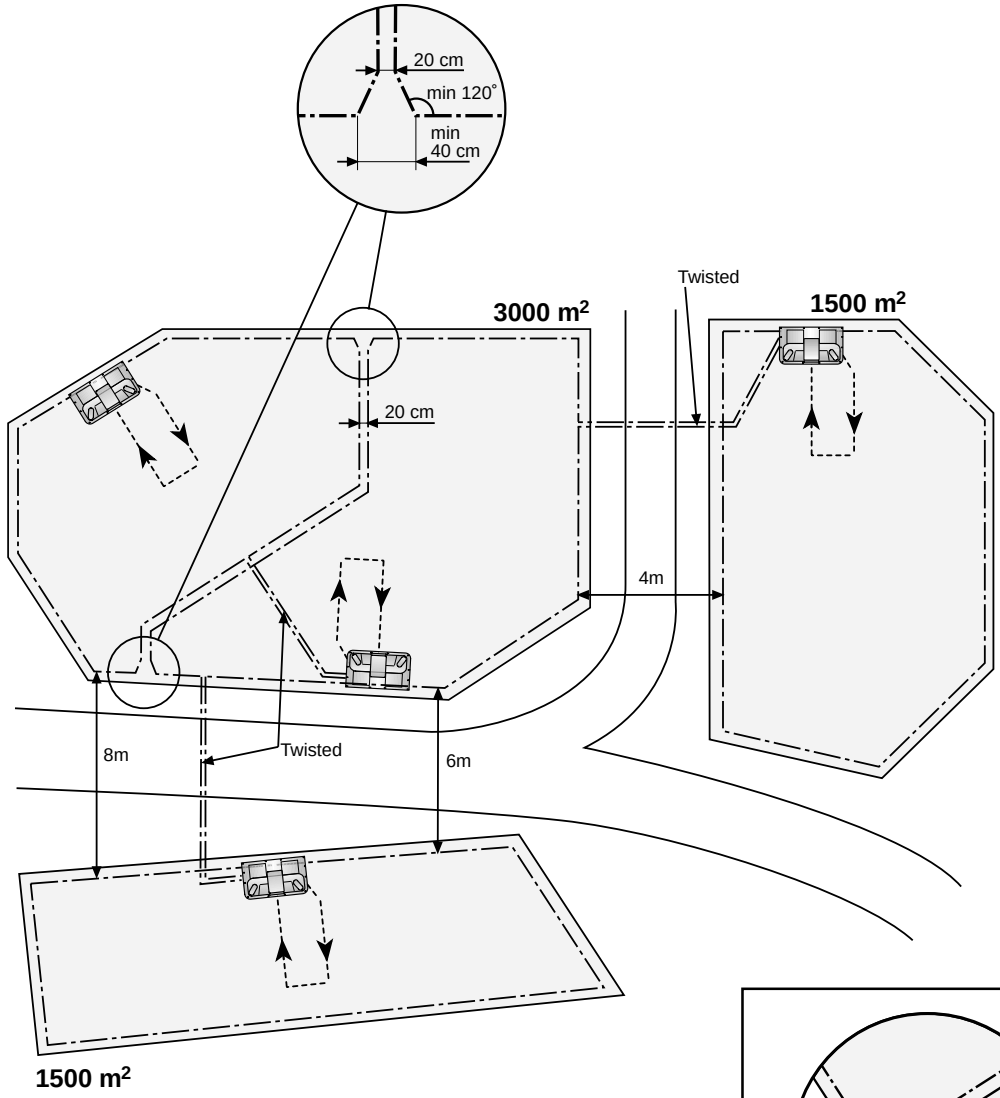

Figure 2

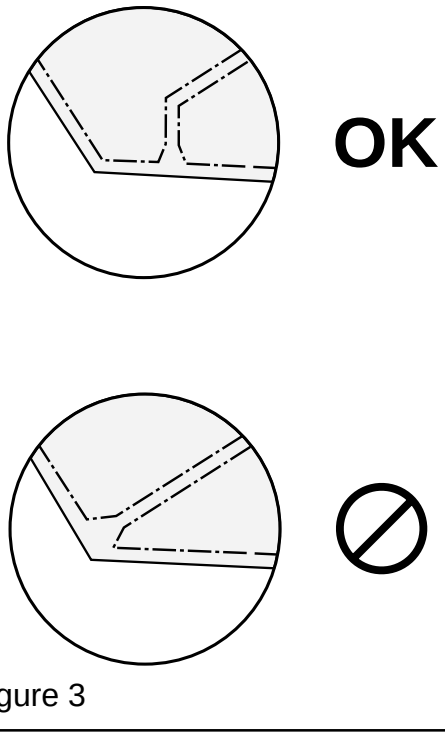

Figure 3

4. Boundary wire layout

When installing adjacent mowers working on the same lawn, the boundary cables must be installed such that no uncut grass is left between the cables. The mower normally cuts approximately 10-15 cm past the cable and a distance between the cables should therefore be 20 cm.

Avoid sharp corners along the adjacent parallel boundary cables. Try keep angles above 120°. This avoid the mower to end up in the adjacent area in case of slipping when turning etc. See figure 3. Should the sensor for any reason end up in the adjacent area, the mower would continue as if it was in it's own area.

5. Modifications necessary on different year models

- A model -98 or -99 Auto Mower running on a synchronized area need to be upgraded to the m/2000 software (Control box 535 08 01-02).
- A model -98 charging station should be replaced by a model 2000 charging station (535 09 10-01).
- A model -99 charging station needs to be furnished with the synchronizing kit 535 08 21-01, which includes a model 2000 circuit board 535 08 17-01, an 8-pole connector 535 08 96-01 and a circuit board–to–connector cable harness 535 08 97-01.
- A model 2000 Auto Mower with charging station is prepared for synchronisation and need no modifications.

6 Modifications to the charging station (necessary on model 1999 only)

6.1. Parts included in the kit 535 08 21-01 (see figure 4)

1. 1 circuit board 535 08 17-01
2. 1 8-pole connector 535 08 96-01
3. 1 cable harness 535 08 97-01
4. 1 tie rap 900 23 87-08

6.2. Necessary tools

- 4 mm allen key
- side cutter
- small screwdriver
- small adjustable wrench
- 3 mm drill

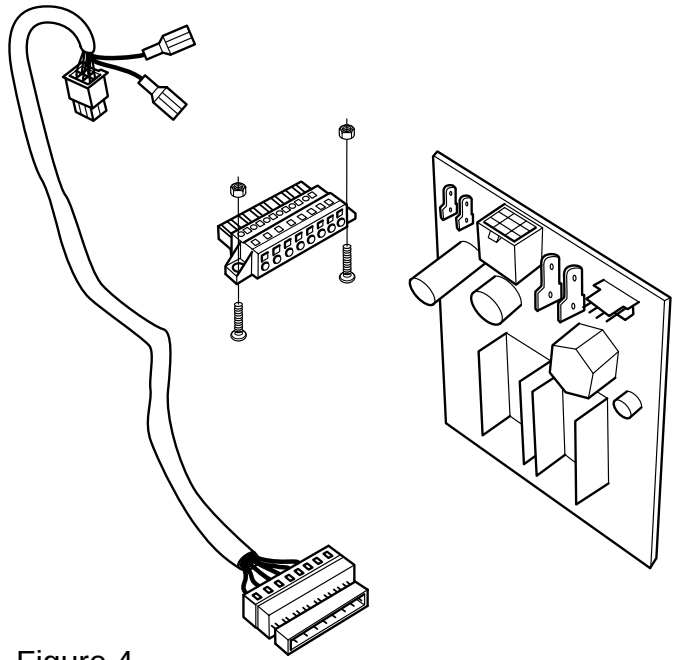

Figure 4

6.3. Modifications (see figure 5)

1. Remove the top cover (535 05 34-01) of the charging station to expose the standard circuit board (535 07 97-01) (4 mm allen key).
2. Disconnect the two fastons with the wires to the contact plates.
3. Disconnect the main 6-pole connector.
4. Cut off tie rap and remove the whole cable harness.
5. Disconnect the small 4-pole connector to the switch.
6. Remove the circuit board from the aluminum frame by sqeezing the small hooks on the spacers.
7. Mount new circuit board 535 08 17-01.
8. Connect the 6-pole connector and the two single fastons marked A (figure 6) of the new cable harness 535 08 97-01 to the new circuit board.
9. Reconnect wiring to switch and contact plates.
10. Use tie rap to fasten cable harness to the charging station as was done with the old cable.
11. Remove 6-pole connector terminal from the black base plate of the charging station.

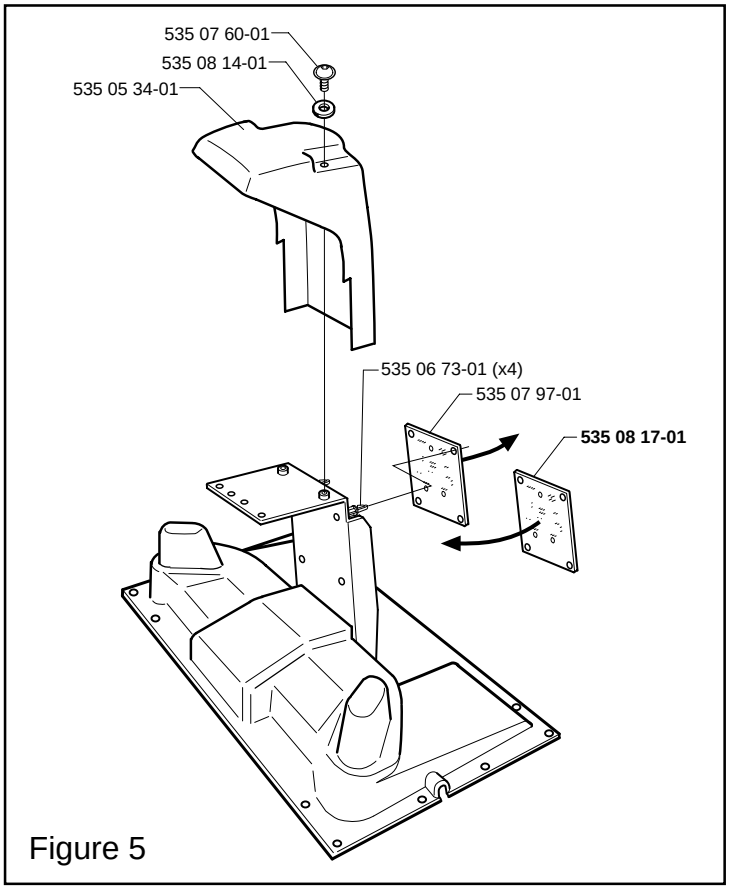

Figure 5

12. Drill one 3 mm hole and mount new 8-pole connector.
13. Mount top cover again.
14. Plug in new 8-pole cable to the new connector terminal on the base plate.

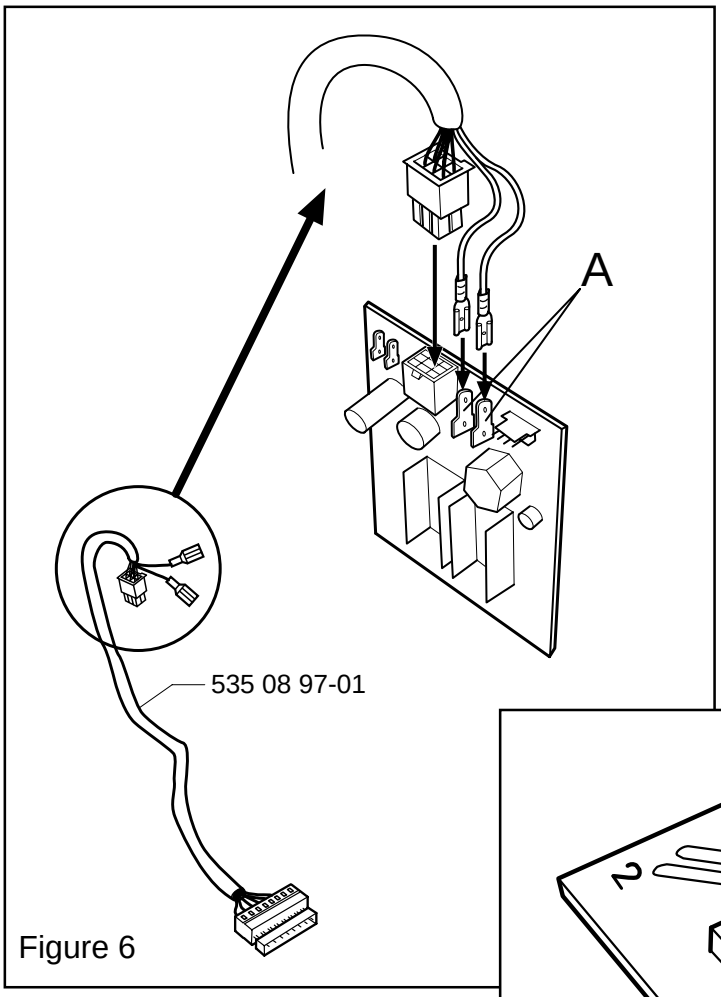

Figure 6

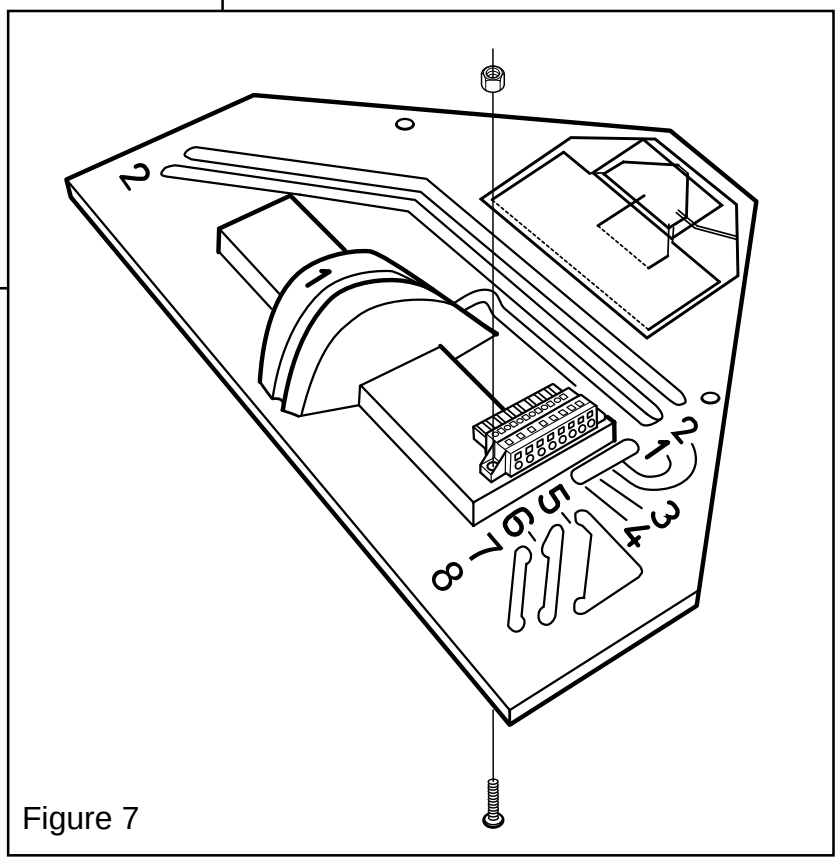

Figure 7

7. Checking the system

1. Make sure the systems (synchronising and synchronised) are energized. Check by pressing the loop check button on the charging station.

   NOTE! Disconnect the incoming sync wires while checking the loops. If the sync wires are connected, the station will indicate loops ok even if not connected.

2. Put the Auto Mower in Installation mode by entering * 5 # 1 # and leave the rear cover open.
3. Place the Auto Mower inside the search loop. The top right red LED (1 on model 98 and 3 on model -99 onwards) should now light up. Move around the machine inside the search loop to make sure the LED is always on.
4. Place the Mower outside the search area, but inside the boundary area. The LED should now be switched off and no beeps be heard.
5. Finally, place the Mower still with the rear cover open, such that the sensor is outside the boundary wire in the 20 cm corridor between the adjacent installations. The LED should now be off and a continuous beep be heard. Leave the Mower for 1 minute, during which there should be no LED flickering and no interruption in the beep.

8. Fault tracing

Should there be wrong signals shown during the system, follow the below guide.

1. Check the connection and layout of all 8 incoming wires on the base plate connectors (2 sync, 2 boundary, 2 search and 2 power cables).
2. Check the connections on the circuit board.
3. Carry out the above 5 check points on the synchronising area to make sure this system functions properly. During this check, disconnect and short circuit the sync wires on the synchronised station to create a continuous boundary wire loop.
4. Replace circuit board in the charging station.