



## ***QUICK START GUIDE – TGB 30 / TGB 40 Gearbox Controller***

This Quick Start Guide provides a basic overview to get the system up and running and to operate the different driving modes.

It is intended for quick installation and initial use only, and does not cover all available features and configurations.

Advanced functionality – particularly when using the BUU (Big User Unit) – such as detailed setup, programmable modes, diagnostics and system customization, is not fully described in this manual.

For complete information, refer to the user manual.

### **DRIVE PROGRAM OVERVIEW**

- **OR – Original**  
Behaves like the original gearbox controller.
- **UD – Manual (original shifting sequence, H1-H2-H3-M3)**  
Manual shifting with protective shifting function.
- **SS – Manual (special shifting sequence, H1-H2-M2-M3)**  
Manual shifting with special shifting sequence and protective shifting function.
- **UDP – Automatic (original shifting sequence, H1-H2-H3-M3)**  
Automatic shifting with adjustable behavior via the POTI.
- **SSP – Automatic (special shifting sequence, H1-H2-M2-M3)**  
Automatic shifting with adjustable behavior via the POTI.
- **EMG – Emergency**  
Manual emergency mode for recovery driving.
- **Free special / Free original – Custom modes**  
User-programmable automatic modes (BUU)
- **SSX – like OR but with special shifting sequence (BUU only)**



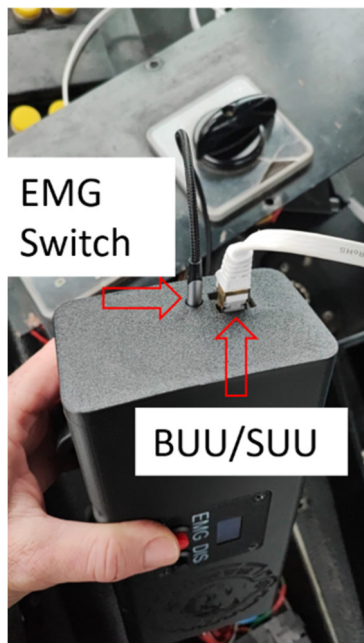
## Installation

Mount the controller like the original control unit. The controller can be mounted on the original plate; see the picture below.



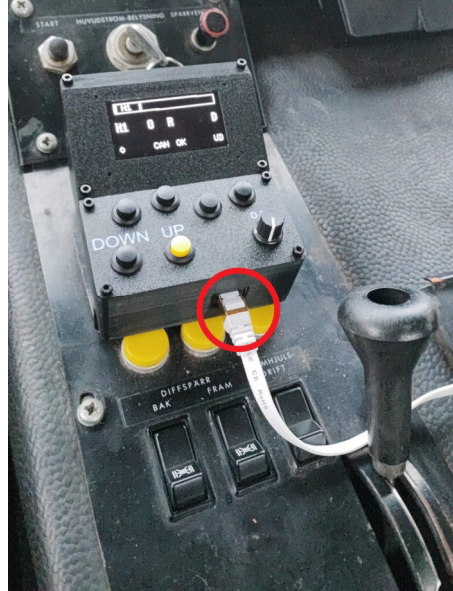
When mounting the controller on the original plate it is recommended to:  
Tighten the mounting screws until the rubber boots are compressed  
Ensure that the screw engages past the locking ring of the nut

Connect the EMG and UU cables, as well as the main cables.

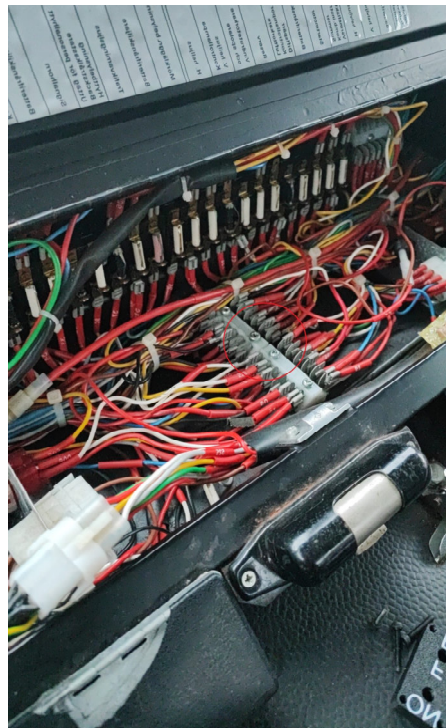




Connect the SUU or BUU

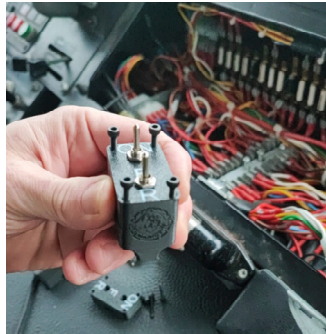


**Mount and connect the emergency unit**  
**3.1 Remove the screws in the fuse compartment.**

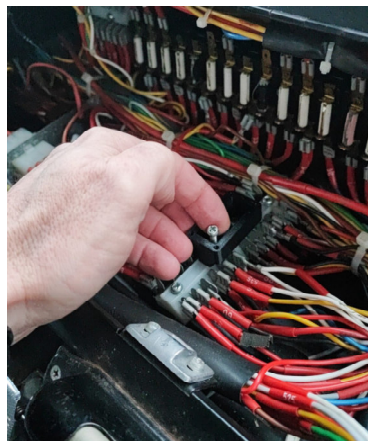




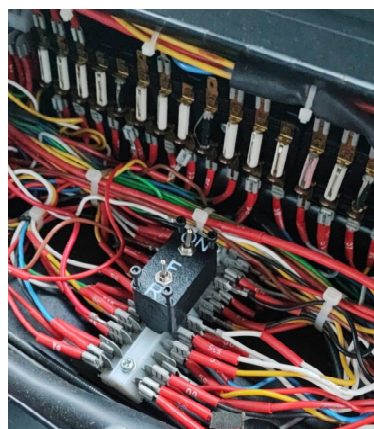
**3.2 Remove the screws from the emergency unit, as shown below, and separate the lower part of the emergency unit.**



**3.3 Mount the lower part of the emergency unit using the screws removed in step 3.1.**

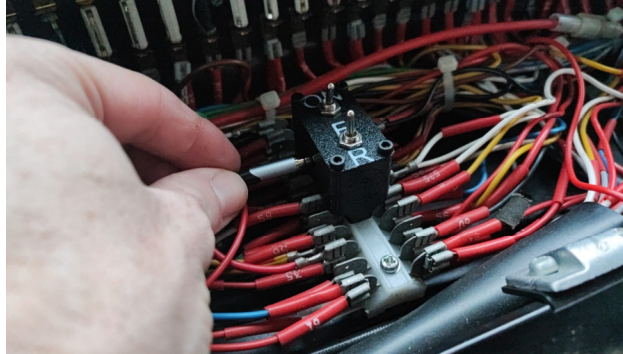


**3.4 Refit the screws removed in step 3.2.**

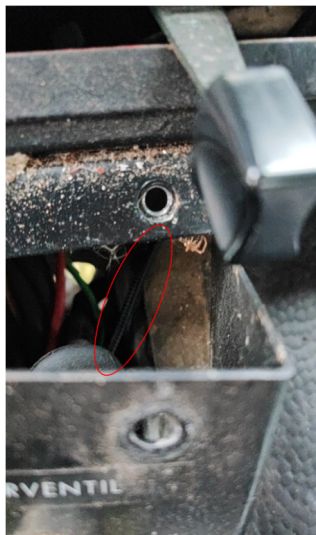




### 3.5 Connect the emergency unit.



### 3.6 Remove the panels, route the cable from the emergency unit to the controller underneath the panels, and connect it to the controller.



### 3.7 Refit the panels removed in step 3.6.



**Installation is now complete. Turn on the ignition.**



## SUU Quick Start

### Overview



### Using the Potentiometer (POTI)

The potentiometer (POTI) is used to adjust shift behaviour in automatic driving modes.



Turning the POTI changes when the gearbox shifts  
Lower value → earlier upshifts and later downshifts  
Higher value → later upshifts and earlier downshifts

This allows you to adapt the vehicle to:

driving style

terrain

load conditions. General rule: higher load = higher POTI setting.

### Important

The POTI only affects automatic modes (UDP, SSP)

No effect in manual modes (UD, SS, OR, EMG)

A POTI value of 86% is the programmed shifting point.



OR → original mode



UD mode



Hold DOWN while the switch is moved to SP.





## UDP mode

UD must be selected.

Speed below 50 Hz (vehicle should be stationary).

Hold UP + DOWN for 2.5 s.



Then turn the POTI FULL LEFT, FULL RIGHT and FULL LEFT. UP + DOWN may be held during calibration.



**CALIBRATION MUST BE COMPLETED WITHIN 6 SECONDS; OTHERWISE IT IS ABORTED.**



## SS Mode



Hold UP while the switch is moved to SP.





## SSP mode

SP must be selected.

Speed below 50 Hz (vehicle should be stationary).

Hold UP + DOWN for 2.5 s.



Then turn the POTI FULL LEFT, FULL RIGHT and FULL LEFT. UP + DOWN may be held during calibration.



**CALIBRATION MUST BE COMPLETED WITHIN 6 SECONDS; OTHERWISE IT IS ABORTED.**



## Emergency mode (Software)



Hold UP and DOWN while the switch is moved to SP.



### Forward / Reverse in EMG (Normal operation)

In EMG mode, forward and reverse are primarily selected using the gear selector:

D or S = forward / R = reverse

Shifting is done manually using UP / DOWN

GEAR SELECTOR OVERRIDE IN EMG (in case of a malfunctioning gear selector)

Press UP and DOWN simultaneously



D/R or forward/reverse must now be selected with the UP and DOWN buttons, as explained below. This remains active until restart.



## Forward

Hold DOWN pressed for 3 s



Then press UP while still holding DOWN.



## Reverse

Hold UP pressed for 3 s



Then press DOWN while still holding UP.





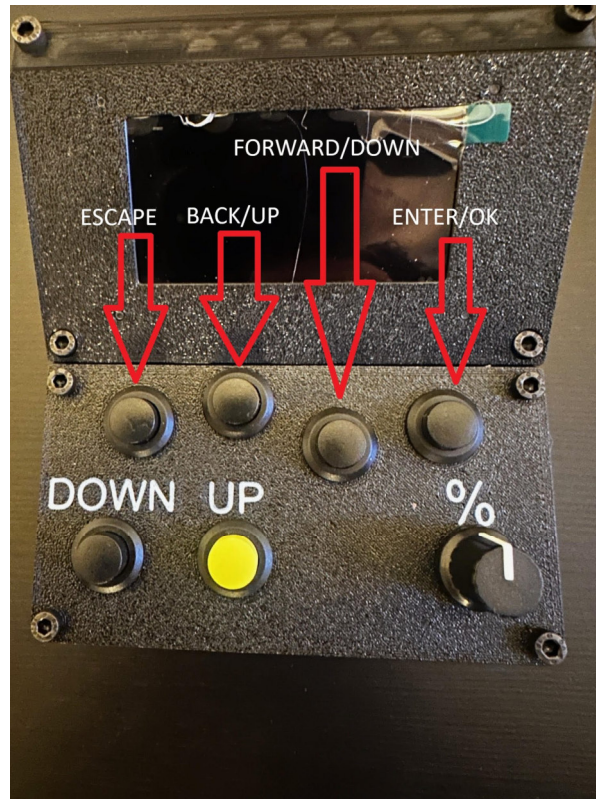
## Automatic recall of the last mode



Switch to SP without pressing any button.



## BUU Quick Start



Use FORWARD/BACKWARD to navigate

Use ENTER to open a menu or confirm a selection.

Use ESCAPE to cancel a menu or selection, or to return to the main page.

Press ENTER to confirm.

The UP and DOWN buttons are primarily used for manual gear shifting.

UP → shift up

DOWN → shift down

**IMPORTANT – BEFORE FIRST USE OF UDP, FS, FO AND SSP – Potentiometer calibration is required for adjustable automatic modes (UDP and SSP).**

Vehicle at low speed or standstill.

Hold UP + DOWN for approximately 2.5 seconds.

Turn the potentiometer: MAX → MIN → MAX.

Calibration is stored automatically.



## Pages

Page navigation via BACKWARD / FORWARD.

Pages are arranged in a cycle, so you can navigate from Main to Shiftbar using BACKWARD.

1. Main Screen
2. Modes
3. Outputs
  - DIAG
4. Inputs
5. User Profile (only in FS or FO)
6. Shiftsettings (only in FS or FO)
7. GPS Waypoint
  - GPS DIAG
8. GPS Compass
  - GPS DIAG
9. Blackout
10. Shiftbar

## Display Priority (highest → lowest)

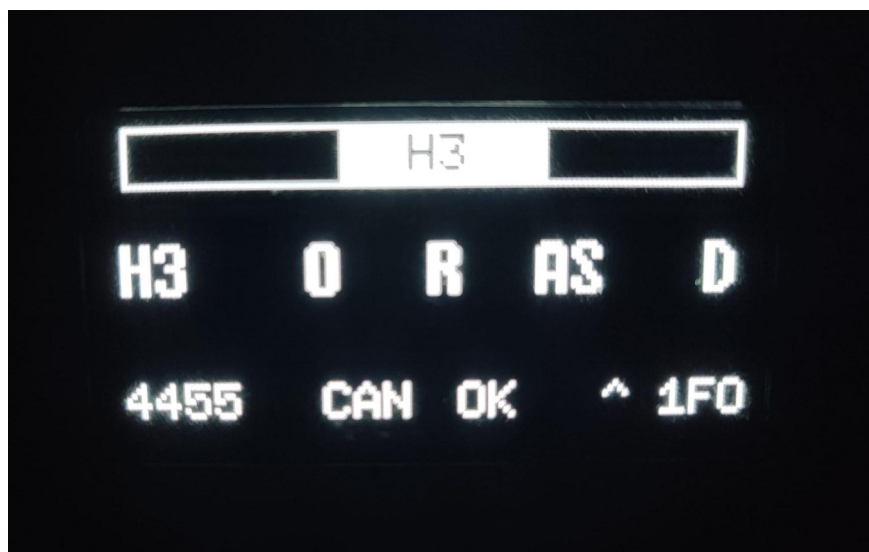
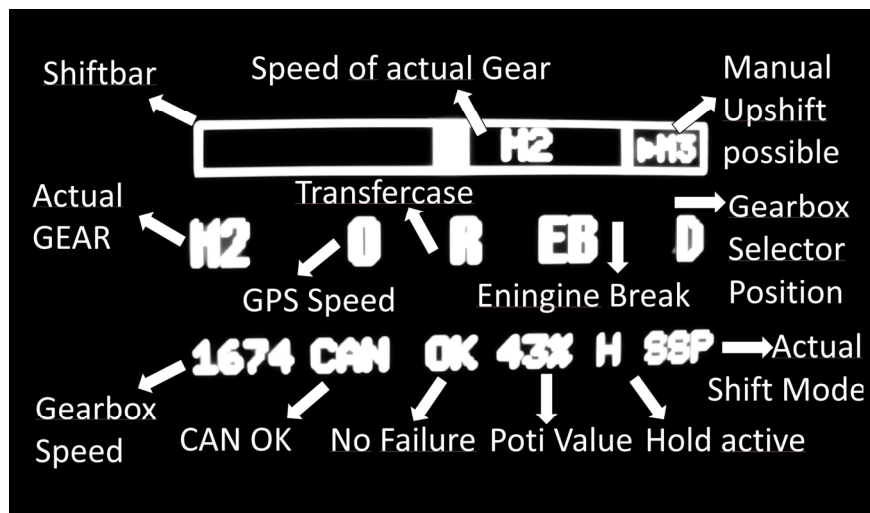
1. No CAN connection to Gearbox Controller
2. EMERGENCY SHIFTING;      Hardwired Emergency shifting active
3. F5 ; Speed sensor failure, neutral reset
4. F1 ;      A Forward and Backward Gear is active
5. F2; Multiple gear selector inputs active
6. F3; Output mismatch
7. F4; Winch activation conditions not met
8. F6; Shift condition not met
9. MAIN SCREEN

ALL OVERLAY PAGES CAN BE CANCELED BY HOLDING ESC



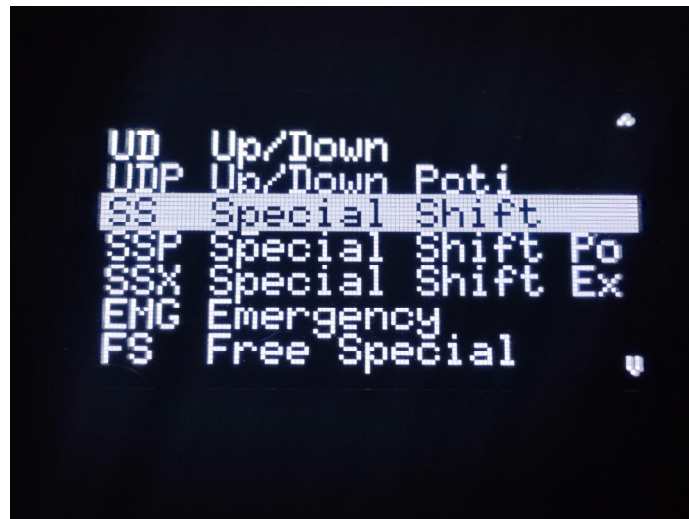
## MAIN SCREEN

### 1. Main Screen





## 2. Modes

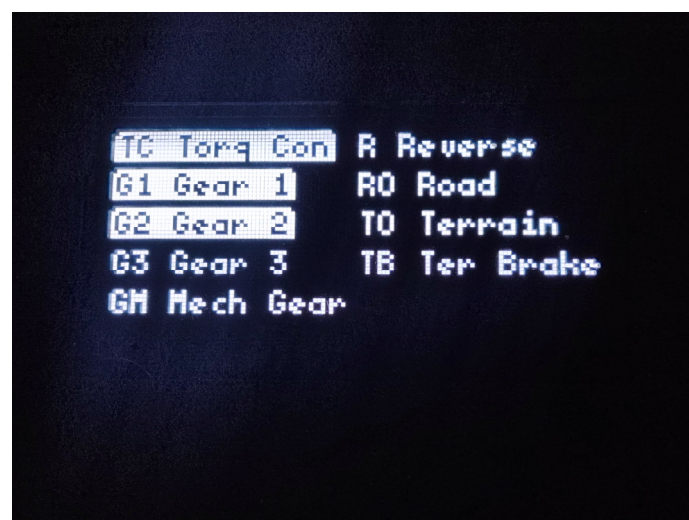


Press ENTER to enter selection mode

Navigate with FORWARD / BACKWARD

Select desired Mode and press ENTER to select or ESCAPE to cancel

## 3. Outputs



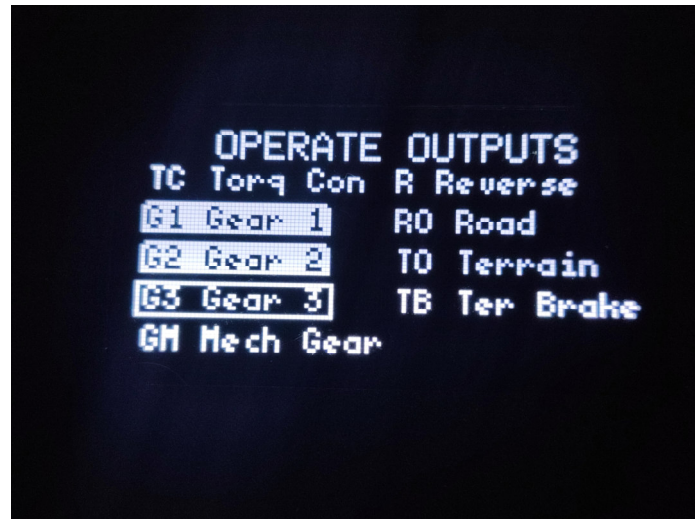
If an output is blinking, the software state and hardware state do not match.



- **DIAG**



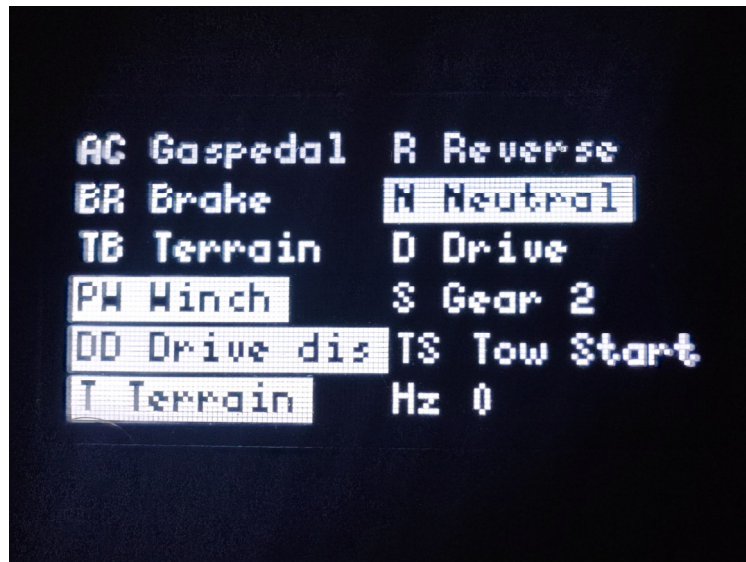
To enter DIAG mode, press ENTER for 3 s on the OUTPUT page and meet the entry conditions.



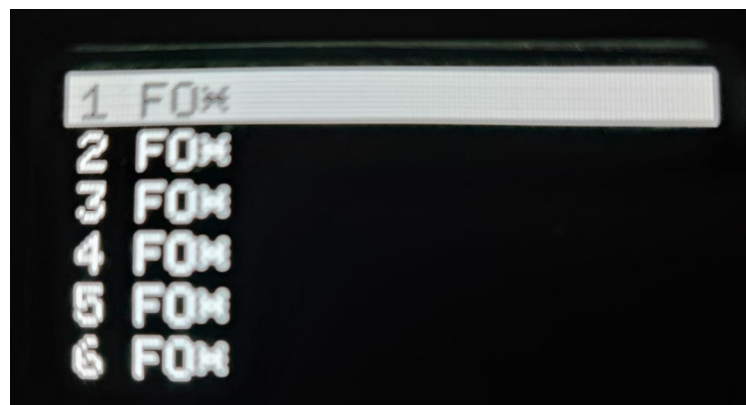
In DIAG, outputs can be switched ON and OFF individually.  
To operate outputs, use FORWARD / BACKWARD and ENTER.  
To leave DIAG mode, press ESCAPE for 3 s and confirm.  
NO SAFETY FUNCTIONS (the vehicle can move).



## 4. Inputs



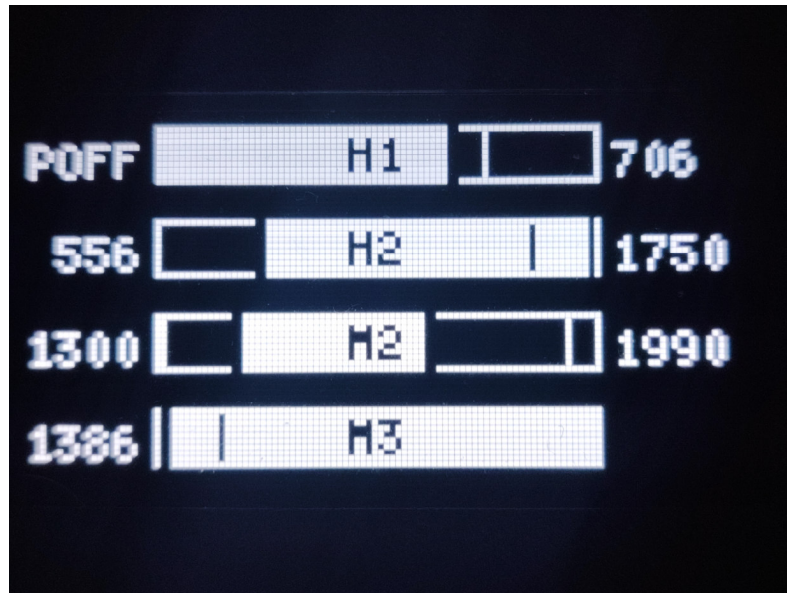
## 5. User Profile



FO is available in FO mode and FS is available in FS mode.  
Individual shortcuts for up to 6 users or use cases.



## 6. Shift settings



To enter settings, press ENTER for 3 s and confirm.

POFF = POTI OFF; PON = POTI ON

Individual settings for every upshift or downshift

Navigate with BACKWARD / FORWARD.

Select the value and press ENTER.

Coarse setting: hold UP and turn the POTI.

Fine setting: BACKWARD / FORWARD.

Confirm with ENTER.

Cancel with ESCAPE.

Leave settings: hold ESCAPE for 3 s.

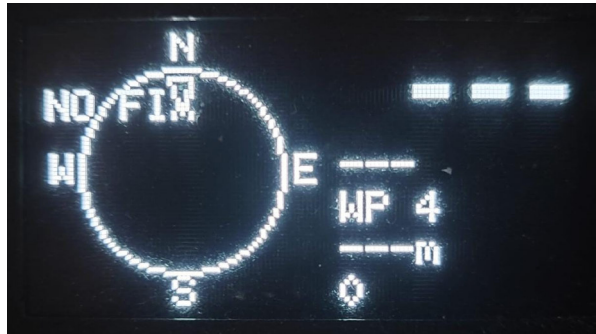
Confirm or discard settings.

The vertical bars indicate standard shift points as a reference.

The shift settings have an integrated hysteresis function to prevent unstable conditions.



## 7. GPS Waypoint



To save a waypoint, press ENTER for 3 s.

To delete a waypoint, hold ESCAPE for 3 s.

To navigate to a waypoint, press ENTER.

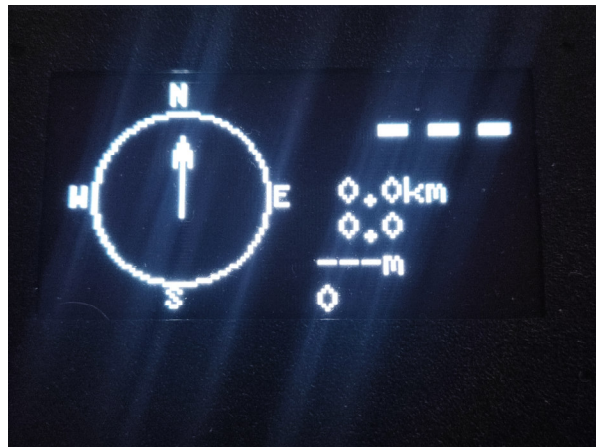
The compass rose shows heading.

The arrow shows the direction of the waypoint.

Additional information, top to bottom:

Speed, Distance to Waypoint, Waypoint Number, Altitude, Satellites

## 8. GPS Compass



The arrow shows heading.

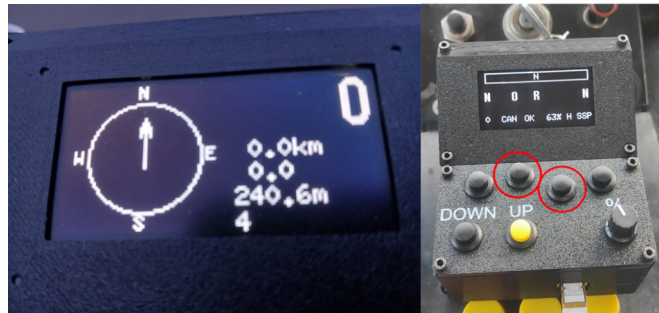
The compass rose is fixed.

Additional information, top to bottom:

Speed, Distance since power-up, Average Speed, Altitude, Satellites



## GPS Diag Page



Go to GPS COMPASS or WAYPOINT page and press FORWARD + BACKWARD for 3 s.

```
SPD:  0.1 km/h
DIR:  ---
LAT:  50.220104
LON:  7.278576
SAT:  8
```

Displayed Information

SPEED

DIRECTION

LATITUDE

LONGITUDE

SATELITES

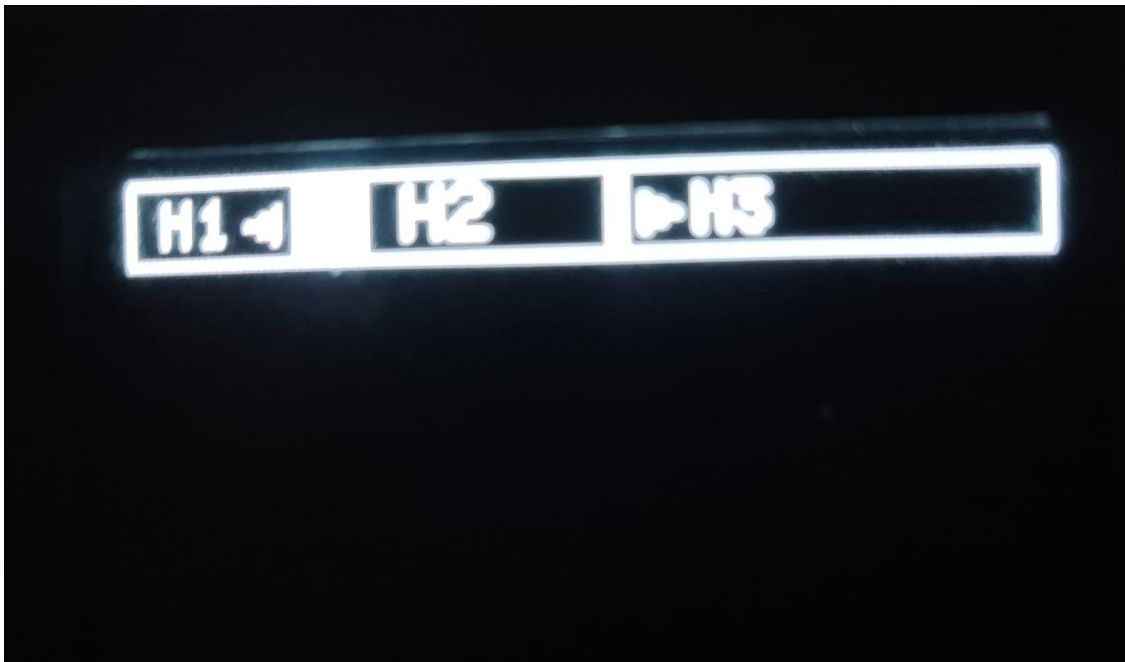


## **10.     Blackout**

THE BLACKOUT PAGE KEEPS THE DISPLAY OFF.

NO FAILURE INFORMATION OR OTHER INFORMATION WILL BE DISPLAYED.

## **11.     Shiftbar**



Displays only the shift bar from the main page.

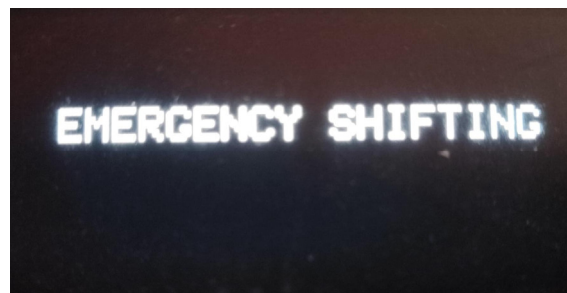


## 1. No CAN



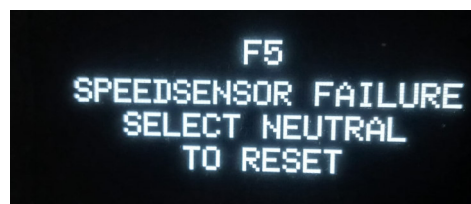
No CAN Communication with the gearbox controller  
CHECK MANUAL

## 2. EMERGENCY SHIFTING



Hardwired EMERGENCY SHIFTING is active  
CHECK EMG SWITCH in fuse box or on the gearbox controller

## 3. F5



Speed sensor reads unrealistic value jumps  
NEUTRAL is forced  
RESET via NEUTRAL RESET  
CHECK MANUAL

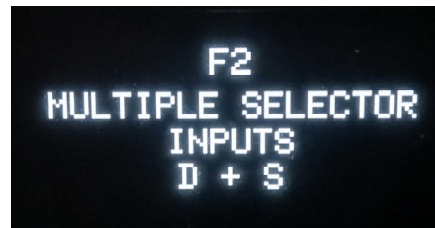


#### **4. F1**



F1 indicates a condition where a forward and a reverse gear is engaged  
CHECK MANUAL

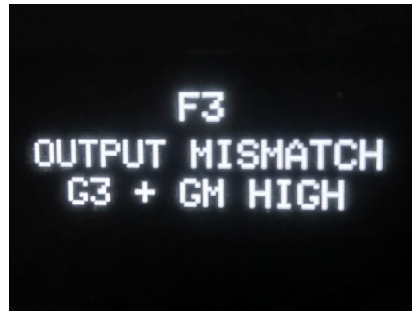
#### **5. F2**



More than one GEARSELECTOR input is detected (example here S and D)  
NEUTRAL is FORCED  
USE EMG SHIFTING MODE  
DO NOT USE HARDWIRED EMG MODE IF THE GEARSELECTOR SHOW REVERSE  
CHECK MANUAL



## 6. F3



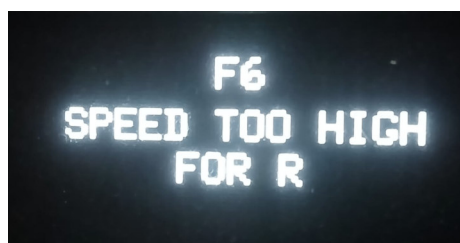
An OUTPUT hardware state is mismatching to the software state  
CHECK MANUAL

## 7. F4



Conditions for WINCH ACTIVATION are not met  
FORCED NEUTRAL till conditions are met

## 8. F6

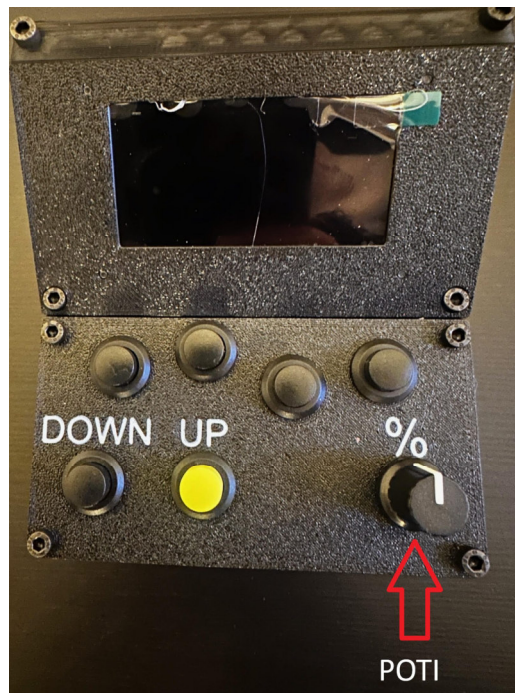


Gearbox controller refuses new command till conditions are met



## POTI

The potentiometer (POTI) is used to adjust shift behaviour in automatic driving modes.



Turning the POTI changes when the gearbox shifts  
Lower value → earlier upshifts and later downshifts  
Higher value → later upshifts and earlier downshifts

This allows you to adapt the vehicle to:  
driving style  
terrain  
load conditions. General rule: higher load = higher POTI setting.

### Important

The POTI only affects automatic modes (UDP, SSP, FO, FS)  
No effect in manual modes (UD, SS, OR, SX, EMG)  
The POTI value is displayed only when an automatic mode is active.  
A POTI value of 86% is indicated with an arrow and is the programmed shifting point.



## HOLD Function

HOLD modifies engine-brake behaviour by preventing automatic downshifts and allowing manual control.

Use:

Activate HOLD by holding FORWARD + BACKWARD for approximately 1.5 s from the main screen.



When engine brake (EB) engages (TB – “Terrängbroms” - on + no throttle):

UP / DOWN are used to control downshifts manually  
Keeps the vehicle stable during braking (e.g. in curves)

Important

It only has effect when engine brake (EB) is active

Not available in OR, SSX, EMG or DIAG

Forward / Reverse in EMG (Software)

In EMG mode, forward and reverse are primarily selected using the gear selector:

D or S = forward

R = reverse

Shifting is done manually using UP / DOWN



## GEAR SELECTOR OVERRIDE IN EMG (in case of a malfunctioning gear selector)

Gear selector override (software EMG mode):

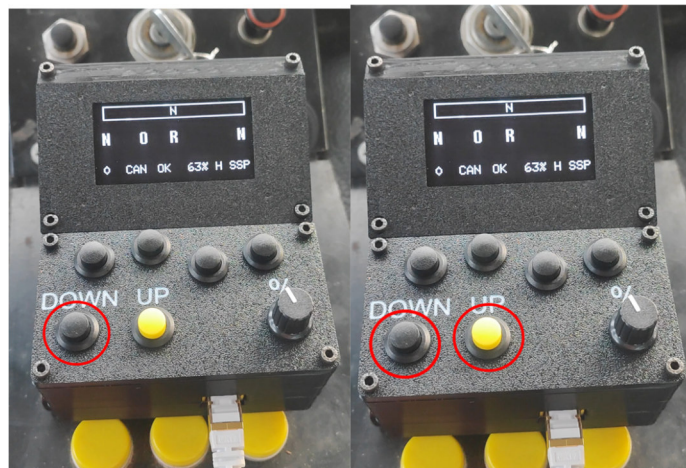


Press UP + DOWN simultaneously – forced neutral

Gear selector is ignored

Active until restart

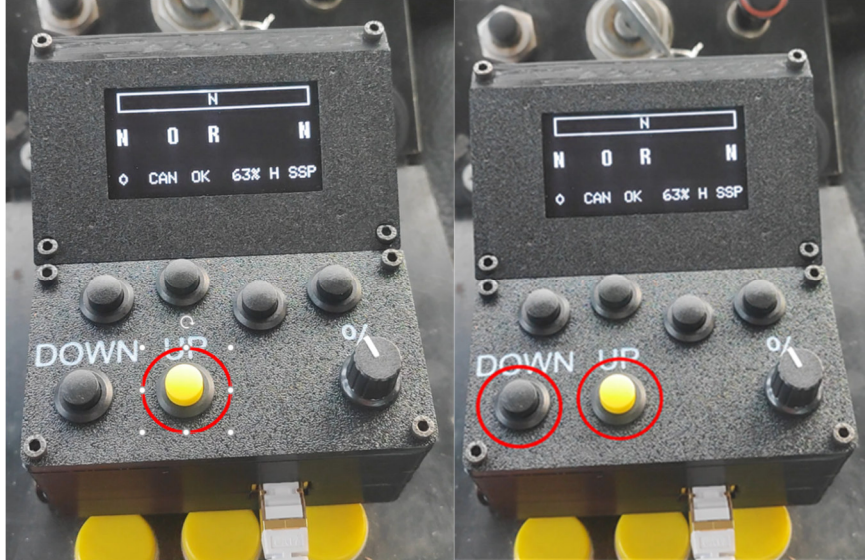
### Forward



Forward: hold DOWN for approximately 3 seconds, then press UP.



## Reverse



Reverse: hold UP for approximately 3 seconds, then press DOWN.

## Neutral Reset

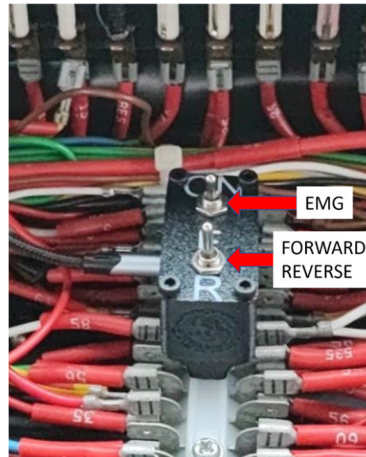
Move selector to N (Neutral)

Wait a few seconds

Return to desired drive position (D / S / R)



## Hard-Wired Emergency Mode



### Activation:

Activate the EMG switch by switching it to ON (external emergency unit / fuse box unit).

### Operation

In this mode, the system bypasses normal control logic and uses fixed gears:

D (on the gear selector) = H3 (forward)

S (on the gear selector) = H2 (forward)

F (on the emergency switch) = H2 (forward)

R (gear selector and emergency switch) = Reverse

### Important

Fixed gear only (no shifting)

Reduced functionality

Intended for emergency use only

No safety functions.



In addition to the external emergency switch, emergency mode can also be activated directly on the controller.



Press the EMG button on top of the controller  
This activates the same hard-wired emergency mode  
The controller is bypassed and shifting is handled by the relay circuit.

Shifting is replaced by fixed gear states via the selector:

D → Forward (H3)  
S → Low gear (H2)  
F → Low gear (H2)  
R → Reverse  
N → Neutral

The gearbox stays in the selected gear. No upshift or downshift occurs.



## Controller OLED Display

The controller has a built-in OLED display, primarily used for service and diagnostic information.

How to turn the display ON/OFF

Press the display button (DIS) → display ON

Press again → display OFF

If the display is requested ON for 10 consecutive power cycles, it will automatically be switched OFF. This does not affect gearbox operation.





## ON BOARD DISPLAY

Active program / mode (e.g. UD, OR, EMG, FS)

Current gear (N, H1-H3, M1-M3, etc.)

Speed signal (Hz)

Transfer state (Road / Terrain / DD)

Selector position (D / N / R / S)

Active inputs (e.g. AC, BR, TB, PW, DD, T)



### Active input meanings:

AC = Accelerator pedal

BR = brake switch

TB = terrain brake / engine brake switch

PW = winch switch

DD = Drive disconnect switch

T = terrain on selector active

### Display Priority (highest → lowest)

EMERGENCY SHIFTING: hard-wired emergency shifting active.

F5: speed sensor failure; Neutral Reset required.

F1: forward and reverse gear are both active.

F2: multiple gear selector inputs active.

F3: output mismatch.

F4: winch activation conditions not met.

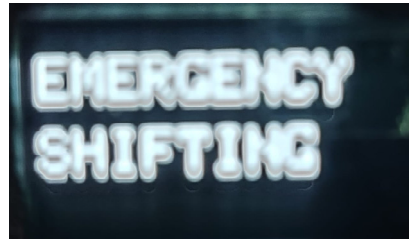
F6: shift condition not met.

CAL; (POTI calibration)

Normal information page



## 1. Emergency shifting



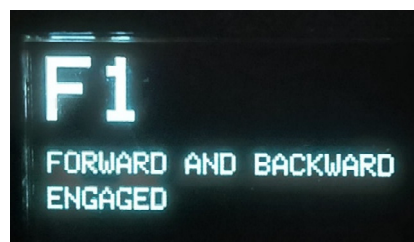
Hardwired EMERGENCY SHIFTING is active  
CHECK EMG SWITCH in fuse box or on the gearbox controller

## 2. F5 – speed sensor failure



Speed sensor reads unrealistic value jumps  
NEUTRAL is forced  
RESET via NEUTRAL RESET  
CHECK MANUAL

## 3. F1 – forward and reverse engaged



F1 indicates a condition where a forward and a reverse gear is engaged  
CHECK MANUAL



## 4. F2 – multiple selector inputs



More than one GEARSELECTOR input is detected (example here S and D)  
NEUTRAL is FORCED  
USE EMG SHIFTING MODE  
DO NOT USE HARDWIRED EMG MODE IF THE HEARSELECTOR SHOW REVERSE  
CHECK MANUAL

## 5. F3 – output mismatch



An OUTPUT hardware state is mismatching to the software state  
CHECK MANUAL

## 6. F4 – winch activation condition not met



Conditions for WINCH ACTIVATION are not met  
FORCED NEUTRAL till conditions are met



## 7. F6 – shift condition not met



Gearbox controller refuses new command till conditions are met

## 8. Normal information page



**POTI CALIBRATION ACTIVE**  
Shows raw values for diagnostics