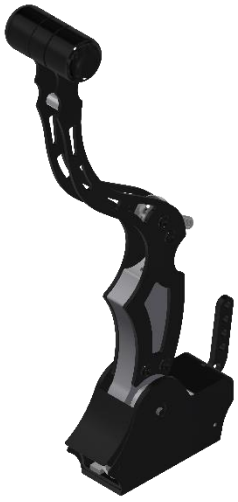
FITTING INSTRUCTIONS

MECHANICAL PUSH&PULL



PRODUCT CODE → HT-SPEED & BRAKE / ECO

We just remind you that you're installing a driving device for disable people, so this device will be essential for a life as normal as possible in full autonomy.

Sure of your comprehension, we're certain that you'll install our device with the maximum attention in order to guarantee a trustable and lasting use.

Summary

Introduction

This device is supplied with a standard kit that can be easily adapted to various types of vehicle with automatic or manual gears.
The special position it is installed in makes it possible to maintain steering wheel adjustments and does not modify knee airbag operation (where present).
SPEED & BRAKE / ECO allows the driver to brake smoothly and effectively or gradually speed up with minimum movements and effort.

Kit parts:

1 Standard Lever or ECO lever
2 Telescopic rods
2 Connecting tubes
1 connecting pin + M10 ball joint
1 lever fixing kit (standard)
1 brake pedal fixing kit (standard)
1 finishing plate
1 Fixing kit for the accelerator pedal (standard)
2 M6 ball joints

Hardware bag with:

1 Teflon washer, Ø8mm
1 bolt, M10, galvanised, white
1 bolt, M8, galvanised, white
2 self-locking bolts, M8, galvanised, white
2 split washers, Ø8mm, galvanised, white
2 split washers, Ø6mm, galvanised, white
6 washers, Ø8x16mm, galvanised, white
9 washers, Ø6x12mm, galvanised, white
2 hex head screws M8x50mm, galvanised, white
2 hex head screws M8x16mm, galvanised, white
2 countersunk screws M8x16mm, galvanised, white
2 hex head set screws with cone point, M4x6mm, burnished
2 hex head screws M6x50mm, galvanised, white
4 M6 self-locking nuts
1 grub screw M5x5mm
1 M6x25 mm hexagonal screw

General installation instructions

For installation to be correct, you must carry out a series of operations in a precise order.

Disconnect the battery.

Doing the support bracket of the lever

Identify the position where the single-lever is to be installed, considering that this position must allow the driver's seat to slide completely along the original runners or in some cases, where necessary, partially limit its travel.
In addition, consider that there must be a space of about 6 or 7 cm between the knob at the end of the single-lever and the steering wheel, so that the driver's hand does not interfere with the lever while he/she is steering.
This distance is valid for all steering wheel shapes (in the case of adjustable steering wheel).
Example of correct positioning (Picture 1).

Picture 1

In addition to the indications given, assessing the requirements and usual driving habits of the user is very important when positioning the parts.

After having found the correct position, the lever supporting bracket must be assembled.
This can be done using the standard bracket kit that is supplied.

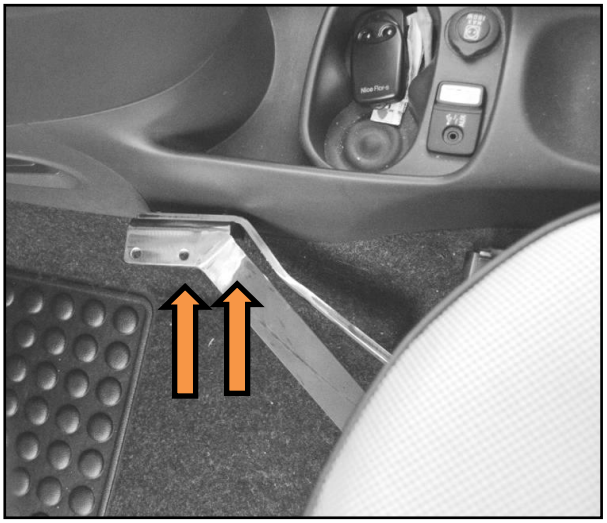
Remove the plastic parts of the vehicle gearstick console (if necessary).

The brackets in the supplied kit must be shaped, welded and/or screwed together (using M8x16mm countersunk hex screws) so that they can be fixed as shown in Pictures 2 - 3 – 4, under the original seat runners of the vehicle.
Naturally, the fixing points must be particularly sturdy and must guarantee that the single-lever supporting bracket is fixed safely.


Picture 2


Picture 3


Picture 4


Picture 5

It is also advisable to fix the brackets in a manner that is as non-invasive as possible, namely without cutting the vehicle plastic parts and carpet if possible, but using the space in the area where both meet.

Before fixing the assembled bracket to the vehicle, drill a hole in the bracket using a Ø7 mm bit where the single-lever is to be positioned and fixed as shown in Picture 5.

Fixing the single-lever to the supporting bracket

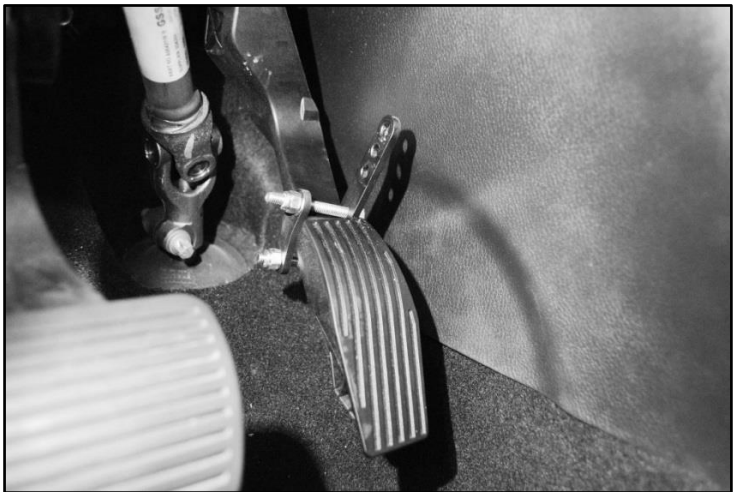
Remove the two M6x25mm hexagonal screws and reuse them (including growers and washers), removing the two nuts, to secure the single lever to the previously built support bracket (Picture 6).

Picture 6

Assembling the fixing bracket to the accelerator pedal.

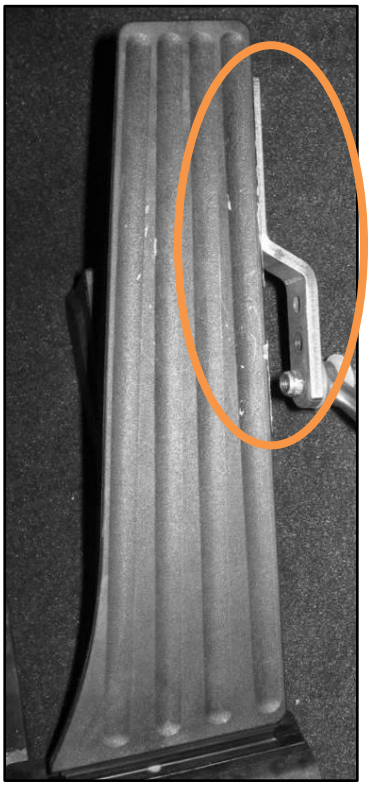
This bracket connects the accelerator pedal to the single-lever via a telescopic rod, and it can be assembled using the two parts shown in Picture 7.
It must be shaped so that the telescopic rod remains as close as possible to the plastic parts of the vehicle gearstick console, and in a manner that does not hinder pedal movement while the vehicle is being driven by an able-bodied person (Picture 8).

Picture 7



Picture 8

If the vehicle is fitted with a flat fixed accelerator pedal, use an "S"-shaped bracket piece and fix it to the pedal by means of parker screws or M6 bolts as shown in Picture 9.

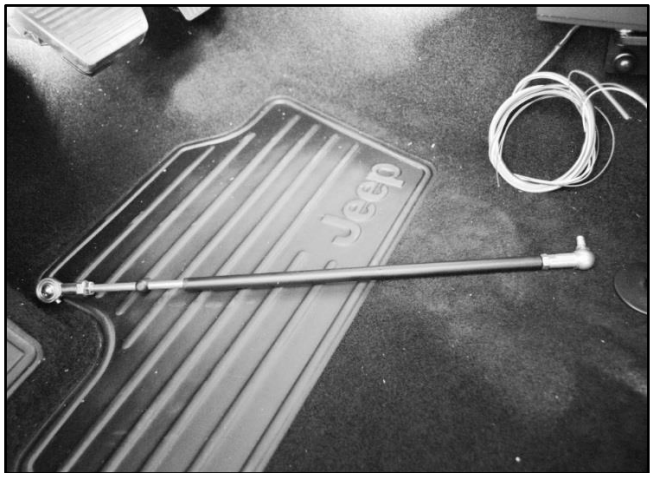


Picture 9

In rare cases where there is an accelerator pedal with a round shank, it is advisable, besides tightening the two parts making up the bracket, to make a drill preventing the bracket from rotating on the shank.
When assembling this bracket, consider how the pedal moves as it speeds up, and thus do not allow the bracket to collide with parts of the vehicle such as plastic parts, carpet, etc.
It is also important to make sure that these conditions are such in each position of the pedal during its operation.

Positioning the telescopic rod connecting the single-lever and the accelerator pedal

The kit includes an accelerator pedal throttle of a button head reinforcement bar, a limit stop and a 90-degree ball joint tube (Picture 10).



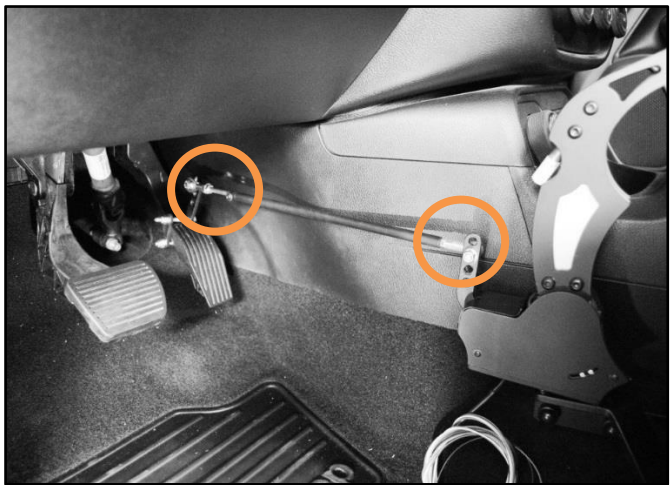
Picture 10


Picture 11

Both the reinforcement bar and the tube inserted into it are supplied longer than necessary, therefore they must be cut to useful length as shown in Picture 11.

In some cases, in order to properly connect the single-lever and the accelerator pedal, it is necessary to slightly bend the tube, paying attention to cutting the bar to a smaller length than that between the beginning of the tube and the beginning of the bend.
When carrying out this last operation, it should be noted that, if the bar is overcut, it can run out of the tube during acceleration by an able-bodied user.
To avoid this situation, shaping should be performed in such a way as to avoid causing such a situation.

Fasten the straight ball joint of the throttle to the accelerator pedal bracket with an M6x25mm hex screw, two Ø6mm washers and an M6 self-locking nut.
Fasten the throttle 90-degree ball joint to the single-lever leverage with an M6 self-locking nut and a Ø6mm washer (Picture 12).

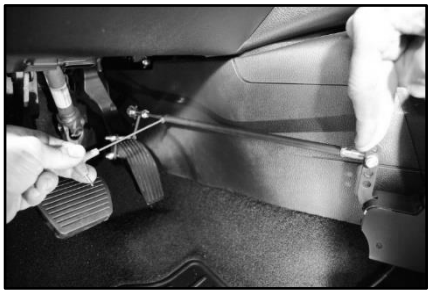

Picture 12

Accelerator stroke registration

Keep the accelerator throttle pushed towards the vehicle rear on the lever (Picture 13).
Lock the catch on the reinforcement bar of the telescopic rod to eliminate the slack on the accelerator pedal using a 2.5 mm hexagonal wrench (Picture 14 – 15).

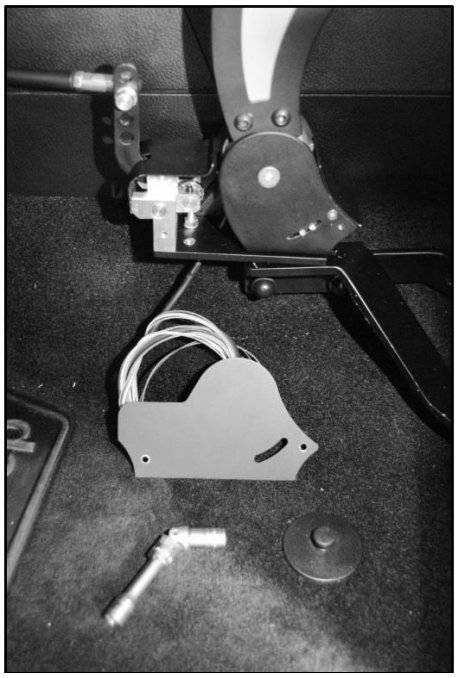
Picture 13

Picture 14

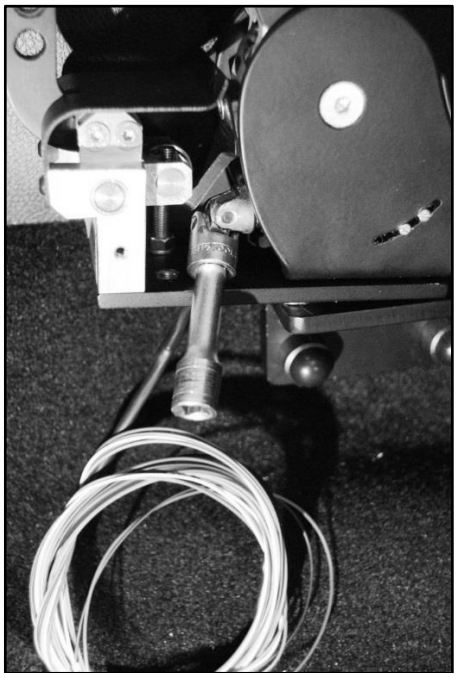


Picture 15

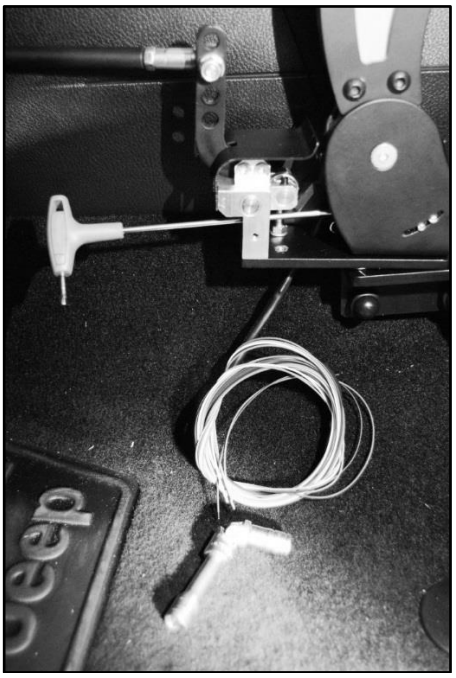
Remove the side cover casing of the single lever by unscrewing the two hex socket screws with a 2mm hex key (Picture 16).



Picture 16



Picture 17



Picture 18

With an 8mm jointed socket spanner loosen the nut on the accelerated limit stop adjusting grub screw (Picture 17).

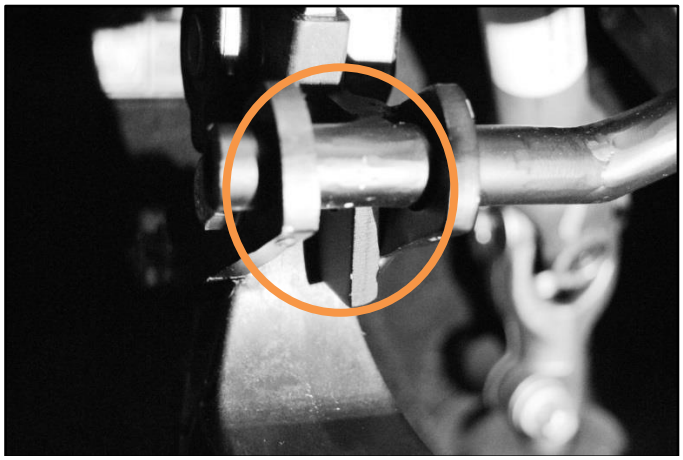
With a 2.5mm hex key, adjust the above-mentioned grub screw so as to stop the lever stroke just after the accelerator pedal travel is over (including kick down) - Picture 18.

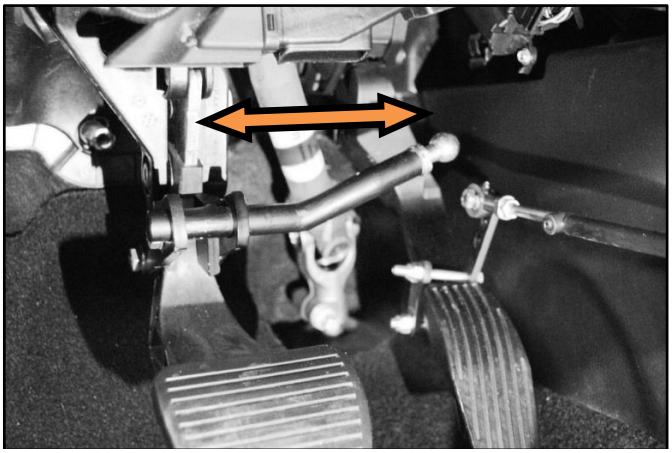
Reinstall the lever side cover casing after locking the accelerated limit stop adjusting grub screw.

Assembling the fixing bracket to the brake pedal.

This bracket connects the original brake pedal of the vehicle to the single-lever by way of the telescopic rod, and it can be assembled using the standard kit that is supplied. It must be shaped so that the telescopic rod remains as close as possible to the plastic parts of the vehicle's gearstick console, and in a manner that does not hinder foot movement between the accelerator pedal and the brake pedal while the vehicle is being driven by an able-bodied person.

To fix it to the original brake pedal, tighten the pedal between the two parts of the bracket using the two M8x50mm hex head screws and respective Ø8mm washers and M8 self-locking nuts, without making holes in the original pedal.
The two parts of the bracket are connected to each other by the Ø15mm tube supplied with the kit; the tube, which has M10 threading at the end, holds the ball joint of the telescopic rod.
Fix the Ø15mm tube to the two parts by tightening the two M4x6mm threaded caps in the test stage and definitively welding the bracket part that is to the right of the brake pedal (or to the left if the steering wheel is on the left).


Picture 19


Picture 20

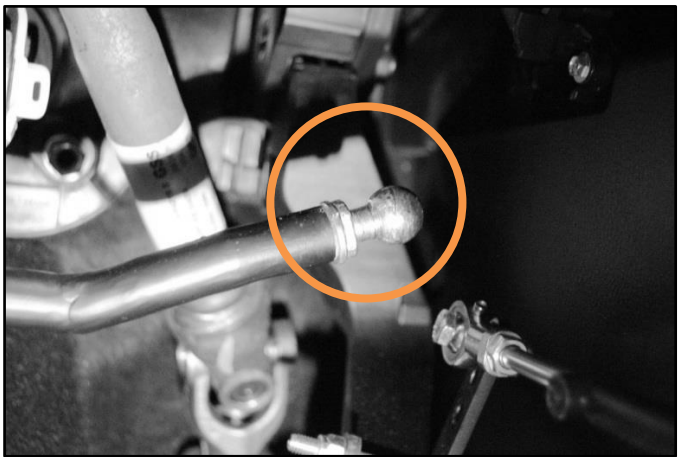
When assembling this bracket, consider how the pedal moves as it brakes, and do not allow the bracket to collide with parts of the vehicle, for example plastic parts, accelerator pedal, etc.
In addition, it is important to bear in mind that, due to wearing of the vehicle's brakes, the brake pedal stroke may be longer.

Apply the 30x25x5mm plate in the kit to the bracket to prevent rotation (Picture 19) while being pushed.
As shown in Picture 20, the bracket moves sideways, but it must not move more than 130/140mm from the pedal axis to prevent excessive pedal bending and possibly dangerous situations.

Positioning the telescopic rod connecting the single-lever and fixing bracket to the pedal

The kit includes an M10 ball joint (Picture 21).

Picture 21

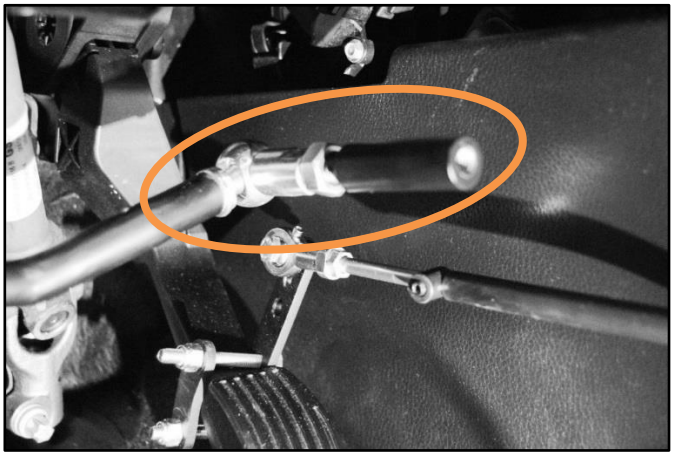


Picture 22

Remove the stop that binds the two parts of the joint, extract the spherical part with threaded shank and screw it into the M10 threaded hole in the Ø15mm tube of the previously assembled bracket (Picture 22).

The other part of the ball joint should be screwed onto the M10 threaded end of the connection (Picture 23), while the bar is fixed to the other perforated and M8 threaded end of the connection, with the tube fixed to the single-lever sliding along the outside of the reinforcement bar (Picture 24).

Picture 23

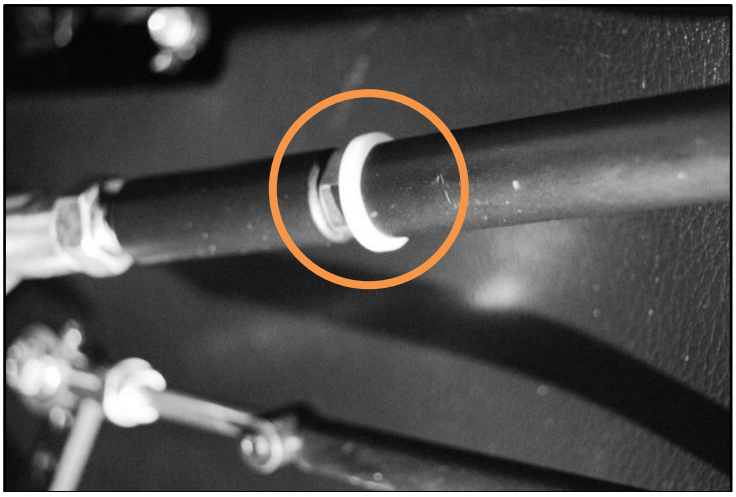


Picture 24

Both the reinforcement bar and the tube are longer than necessary therefore they must be cut to useful length as shown in Picture 24. Remember that the bar must be about 40 mm shorter than the pipe.

In some cases, to get a proper single-lever and brake pedal ratio, it may be necessary to move the position of the single lever ball joint (Picture 25) by loosening the M6 screws, removing the threaded cap and tightening everything in the required position again.

Picture 25



Picture 26

The tube abuts onto the connection, with the Teflon washer positioned as shown in Picture 26 (when the vehicle is used by an able-bodied person, the noise is muffled).
Also make sure that the bar slides freely inside the tube, without any side friction.

Insert the telescopic rod ball joint part into the spherical part fixed to the brake pedal fixing bracket and carry out an operation check while the vehicle is moving.

Functional checks

During the operation check, make sure that the vehicle brakes well and that the assembled brackets do not bend excessively. In addition, there must be a distance of at least 30-40 mm between the single-lever and the dashboard when braking abruptly, with the lever at the end of its run. This space is required for guaranteeing braking even if the brakes are worn. Also make sure that by fully accelerating with the single-lever, if present, the accelerator pedal kick down switch is also pressed.

Painting the assembled brackets

If the functional check has a satisfactory outcome, dismantle the various components and paint the brackets, after having checked the various welds.
We advise eliminating any burrs and rounding any sharp edges; wash carefully with de-greasing liquid, treat with rust preventer and paint them matt black, as close to the colour of the lever as possible.

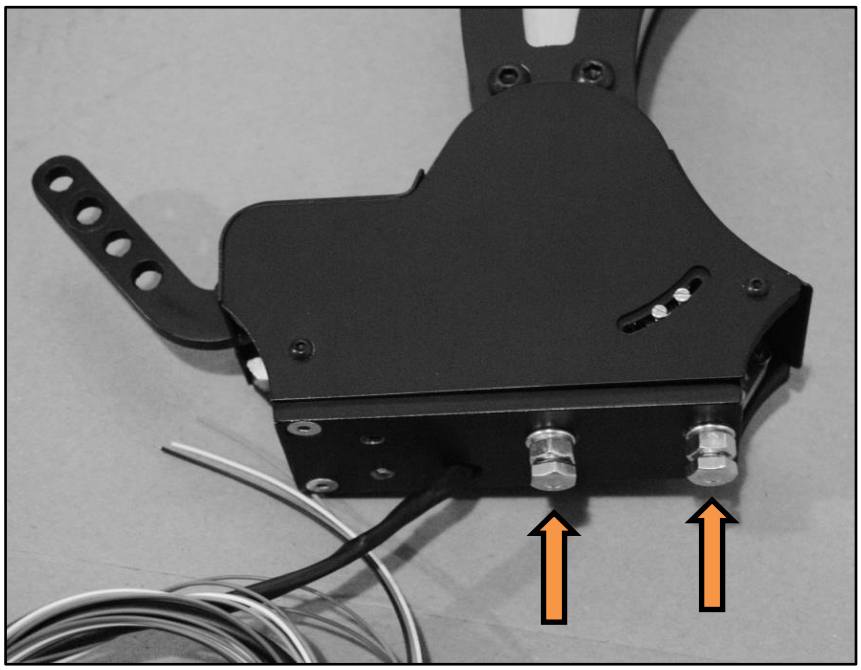
Final assembly

Reassemble the brackets of the accelerator pedal, brake pedal and single-lever support by tightening all the screws (27 – 28 Pictures).

Picture 27

Picture 28

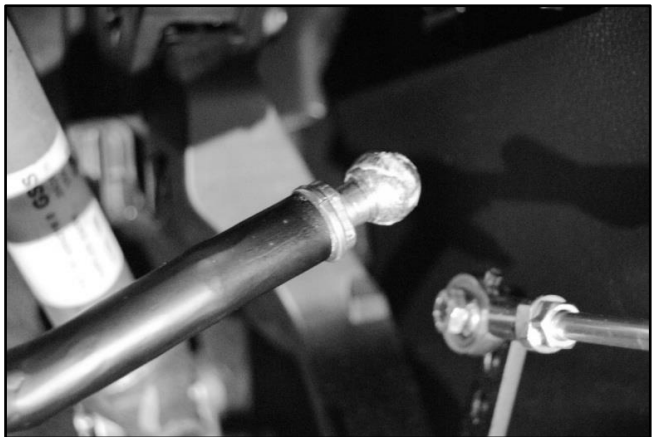
Fix the single-lever to the supporting bracket by tightening the two hex screws. M6x25mm (Pictures 29 – 30).



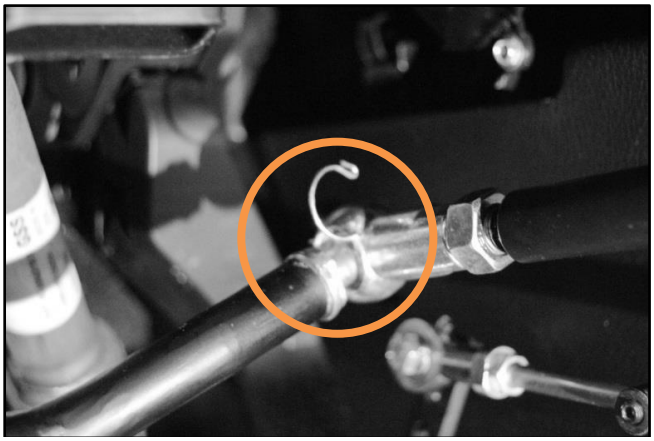
Picture 29

Picture 30

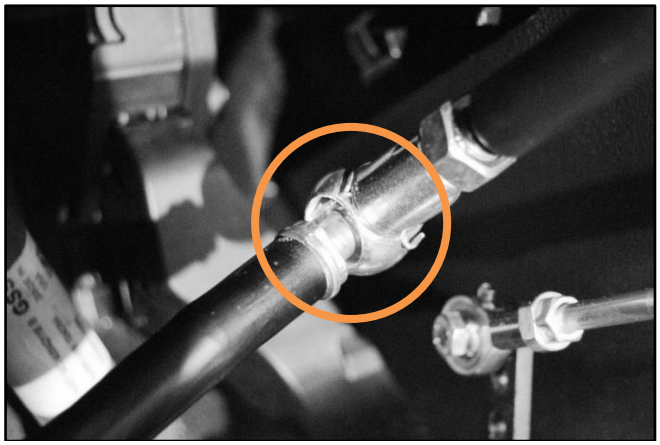
Fix the connecting telescopic rod between the bracket applied to the pedal and the brake lever, screwing the tube into the ball joint on the lever in order to fix the internally sliding bar to the connection (do not forget to add and lubricate the Teflon washer). On the opposite side of the connection, the ball joint is inserted into the sphere (use thread-locking fluid to tighten the sphere) as shown in Picture 31; remember to insert the safety stop as shown in Picture 32 and rotate it to lock it in position definitively as shown in Picture 33 (see next page).



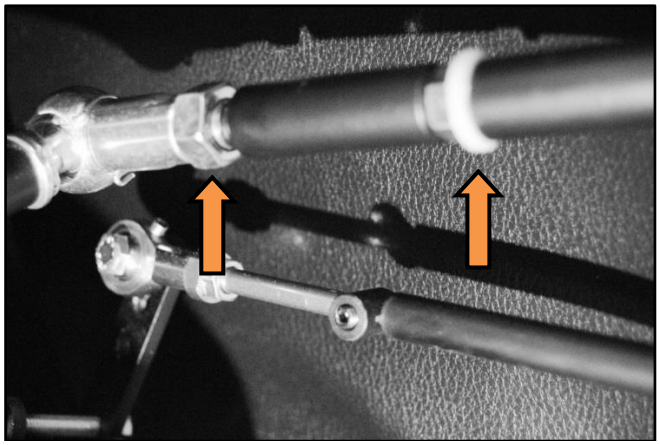
Picture 31



Picture 32



Picture 33



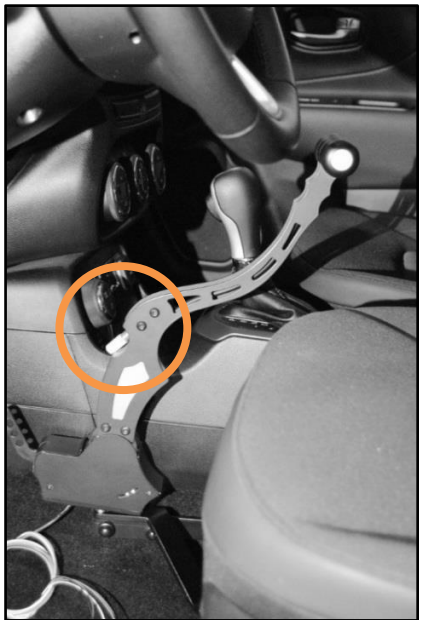
Picture 34

At this point, carry out a brake test; if the lever shows even just a few millimetres slack before it starts pushing the telescopic rod, eliminate it by adjusting the rod.

This adjustment can be performed thanks to the joint between the telescopic rod and the ball joint until the slack is eliminated (M10 sitting into place on the ball joint) – Picture 34.

If you need to push the brake pedal slightly forward when inserting the rod, you will need to perform adjustment by reducing the lever pressure on the brake pedal bracket instead of offsetting the slack.

The tube that forms the telescopic rod is screwed into an M10 ball joint fixed to the brake lever, as shown in Pictures 35 - 36.



Picture 35

Picture 36

Reassemble the accelerator telescopic throttle by repeating some of the steps described in section 4 on page 8 and below:

Fasten the straight ball joint of the throttle to the accelerator pedal bracket with an M6x25mm hex screw, two Ø6mm washers and an M6 self-locking nut.

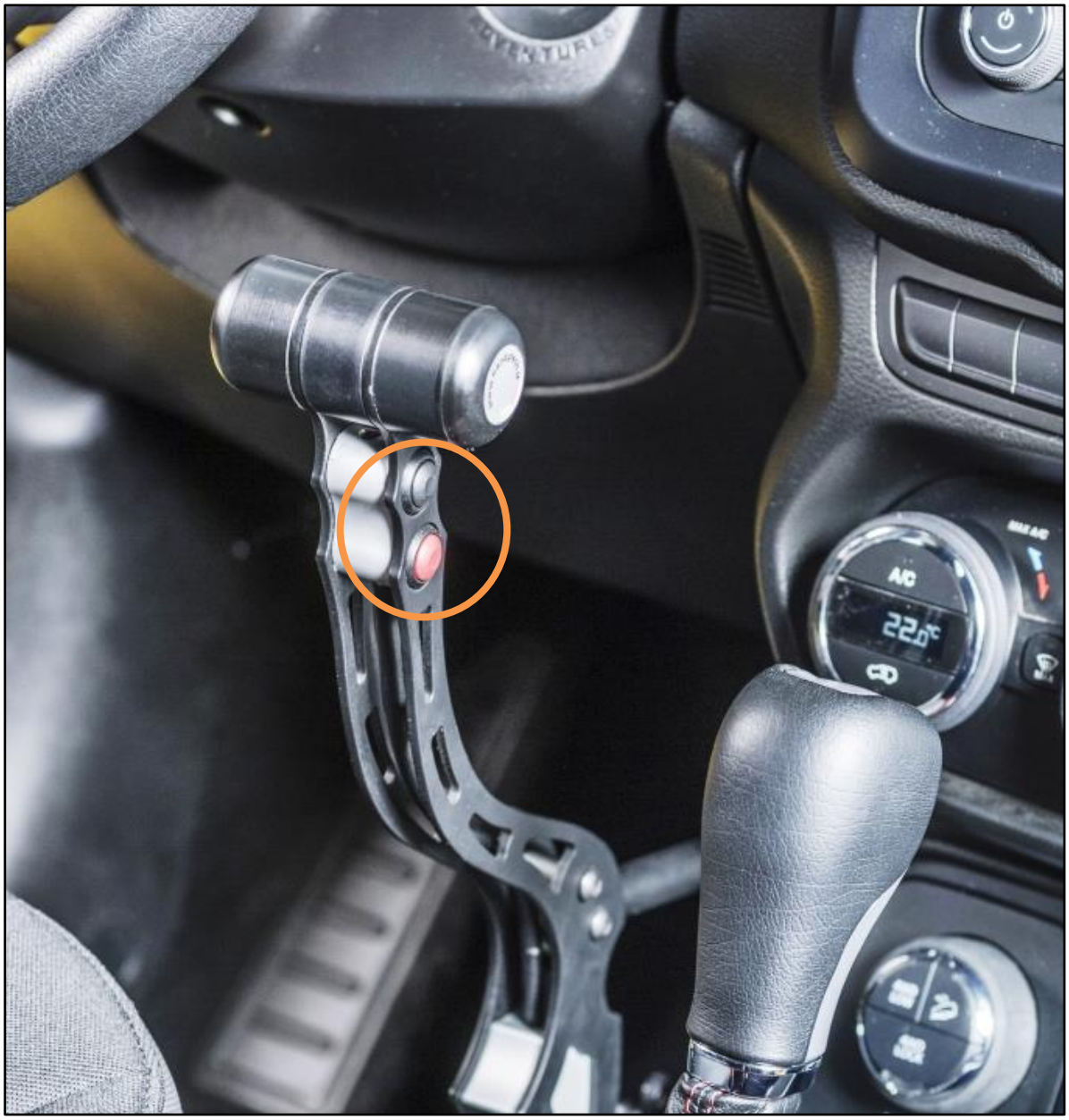
Fasten the throttle 90-degree ball joint to the single-lever leverage with an M6 self-locking nut and a Ø6mm washer (Picture 37).

Picture 37

When fixing, it is important to insert strong thread-locking fluid and screw the tube fully into the ball joint threaded shank.
It is also important to lubricate the two throttles (accelerator and brake) before final assembly.

Electrical wirings

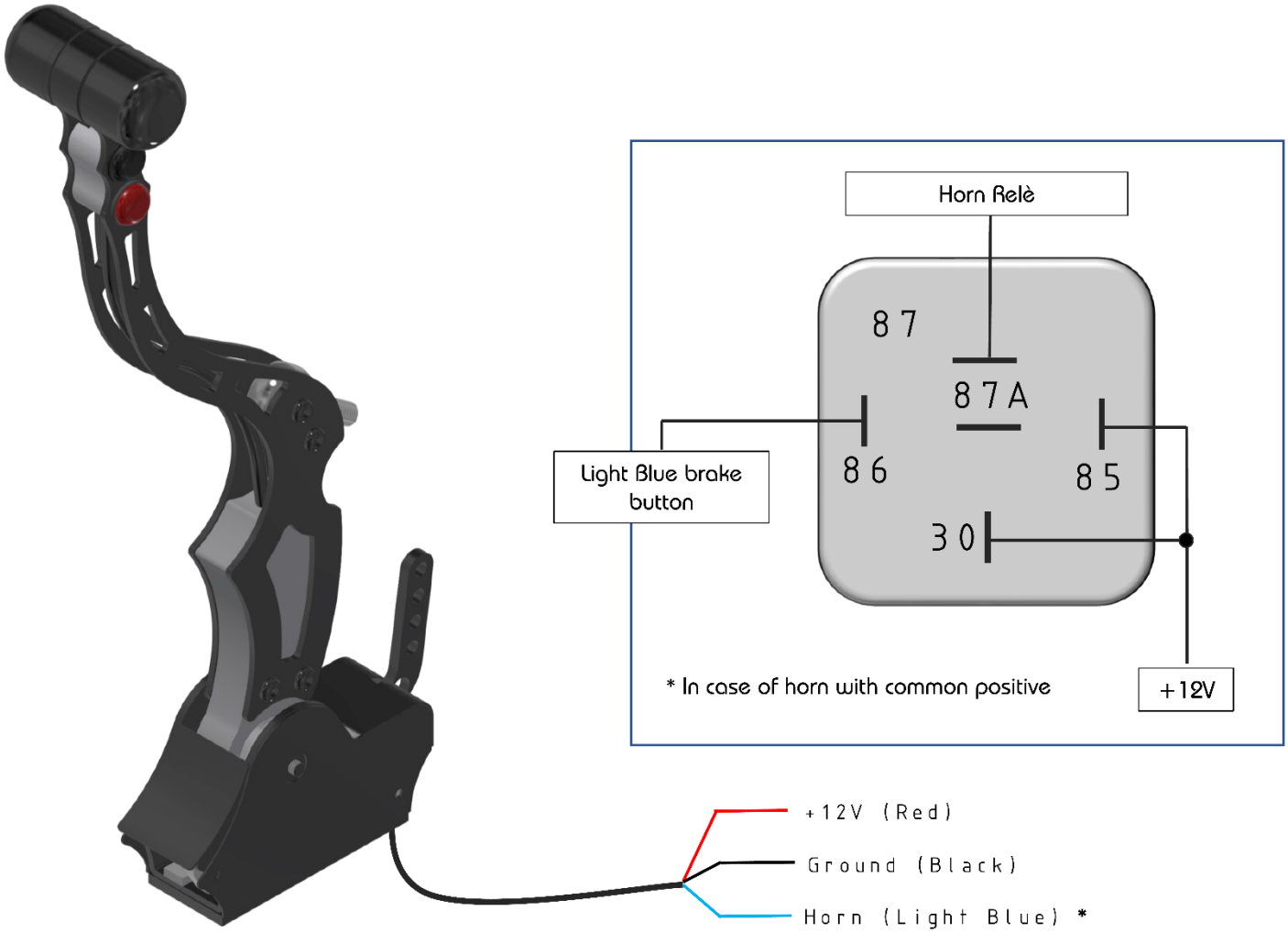
The system has an electric brake lock controlled by the red push button positioned near the lever knob, and by a black push button (not present in the ECO version) that is connected to the vehicle horn (Picture 38).



Picture 38

A double insulated cable exits from the brake lever bottom; inside it there are 3 wires of different colours as indicated below.

SPEED & BRAKE/ SPEED & BRAKE ECO



- **Black cable** to vehicle ground.
- **Red cable** to 12 Volt key-on, with insertion of a 5 Ampère fuse (if possible, use the free slots in the fuse block, alternatively apply an external one not supplied in the kit if not possible)
- **Light Blue cable** to connect to the cable supplying the horn control relay. This is a negative signal so, in the very rare cases in which the relay is activated by a positive signal, install a small electrical system consisting of a relay to activate the horn as shown in the diagram.

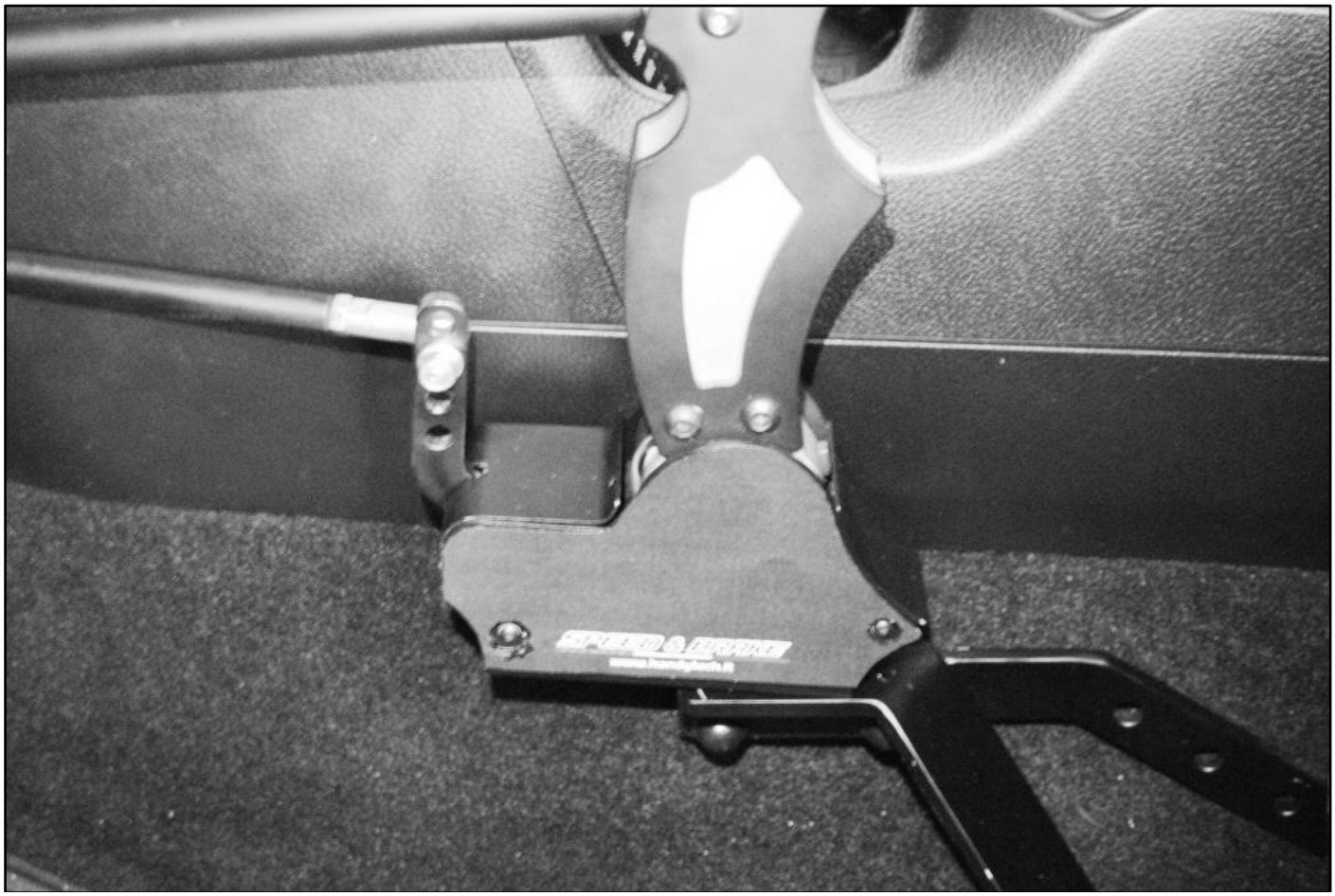
The light blue cable has a very small section therefore it can only be used to activate the horn control relay and not to directly control the horn. If the horn needs to be controlled directly, an interposing control relay must be added.

Run the cable exiting from the single-lever below the plastic parts that cover the gearstick console and below the dashboard, connecting it to the connection points to the original system of the vehicle. Do not allow it to come into contact with moving mechanical parts.

These connections must be tinned and protected with shrink tubing and also fixed along their run using plastic ties.

Make sure the horn is working correctly by pressing the black push button.
Make sure the brake block is working correctly, better if the vehicle is moving. Push the lever forward and press the red push button, then release the lever first and then the push button. The electromagnet that blocks the lever activates. After this, push the lever forward and make sure it is released going back to the home position.

Remove the film on the double-sided tape and fix the finishing plate, after having cleaned the surface carefully (Picture 39).



Picture 39

Very carefully re-assemble the previously removed plastic parts and any other parts.
Should it be required, shape these parts to allow the assembled brackets to pass through.

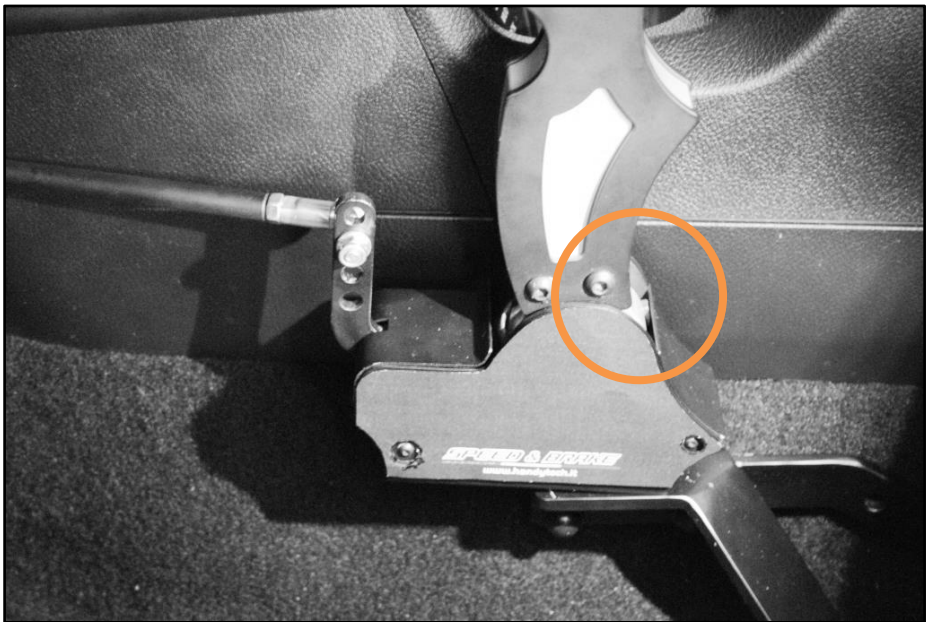
Definitively connect the battery and repeat the system operation check, both with the vehicle stopped and during a test run.

WHAT TO DO IF…

1. *After starting the motor, the brake lever is in a particularly forward position and is very hard to push (only on standard Speed&Brake).*

   Make sure the lever has not remained blocked by mistake: if it has, release it.

   If the problem persists, the brake block mechanism may be blocked. The hooking pin can be partly seen in the lower part of the lever, behind the casing (Picture 40); try to release it with a small screwdriver.
   Make sure the spring returns correctly towards the steel hook that is controlled by the electromagnet; the system will not work if the spring does not return or if the spring has yielded, therefore it must be fixed. Lubricating the sliding parts may be enough.



Picture 40

2. *The brake block does not engage when the red button is pressed (only on standard Speed&Brake).*

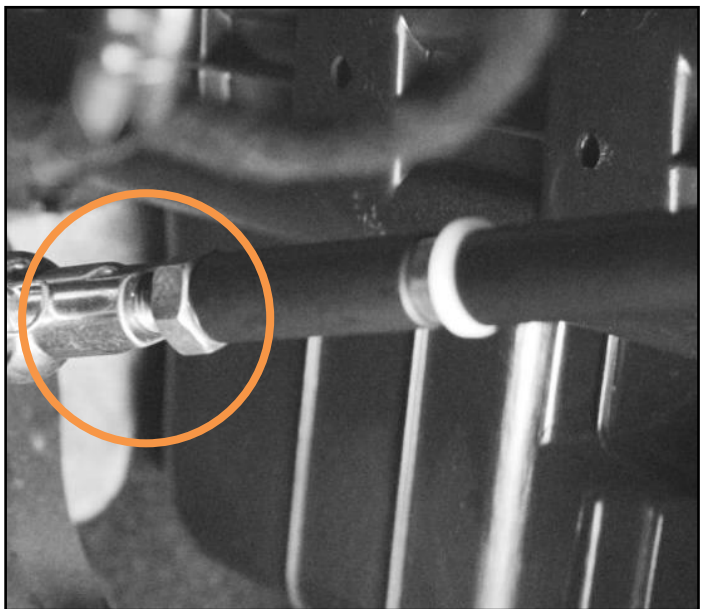
   There may be a problem with the brake block electrical system, and there are two possible solutions:
   - Check the integrity of the electrical system and the 5 Amp protection fuse.
   - Make sure the hooking system and the electromagnet are sliding and moving correctly; adjust them if necessary or simply lubricate the parts.

3. *The horn does not sound when the black button is pressed (only on standard Speed&Brake).*

   Check the integrity of the original fuse of the vehicle, if necessary, replace it with one having the same amperage; also check the integrity of the electrical system.

4. *The lever has an idle stroke from its home position to the start of braking.*

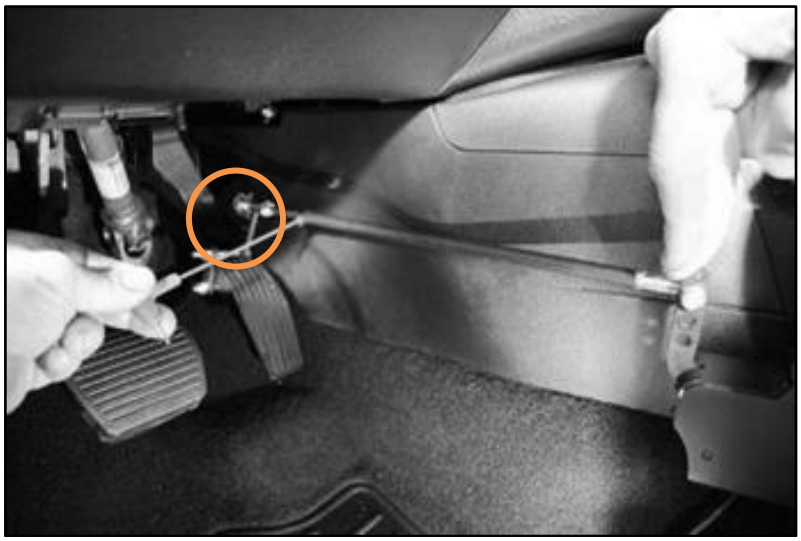
   A possible solution for solving this problem is to loosen the M10 nut on the tube connected to the telescopic rod, rotate the head counter-clockwise and tighten the M10 nut (Picture 41).



Picture 41

5. *Using the lever, you feel that from the rest position to the beginning of the acceleration, the lever has a short empty run.*

   It could be enough to loosen the locking that is present on the telescopic rod; remove the plays and lock it again (Picture 42).



Picture 42

If your system has a problem that is not listed, you must contact Handytech - Carrozzeria 71 S.r.l.

MAINTENANCE ONLY TO BE CARRIED OUT IN AUTHORISED HANDYTECH CENTRES

First check: Km. 1,500

- Check if the horn is properly working (only in case of standard Speed & Brake).
- Check the brake lock operation (only in case of standard Speed & Brake).
- Check the various parts for proper tightness and irregular slack.
- Make sure the lever properly rotates on its pin.
- Check the ball joints at the ends of the telescopic rod and lubricate them.
- Check the ball joints for proper sliding and lubricate them.
- Make sure braking is correct. Adjust if necessary.
- Make sure acceleration is correct. Adjust if necessary.
- **Check for proper operation as the vehicle is moving.**

Subsequent checks

KM. 25,000 (or after 8 months)
- Repeat the checks carried out after 1500 km.
- **Check for proper operation as the vehicle is moving.**

KM. 50,000 (or after 16 months)
- Repeat the checks carried out after 1500 km.
- In case of special wear, it is advisable to replace the ball joints that connect the telescopic rods to the brake and accelerator pedals.
- **Check for proper operation as the vehicle is moving.**

KM. 75,000 (or 24 months)
- Repeat the checks carried out after 1500 km.
- **Check for proper operation as the vehicle is moving**

100,000 - 125,000 - 150,000 km or at least once a year
- Repeat the checks carried out after 1500 km.
- It is advisable to check the conditions of the parts that are subject to wear (joint balls, sliding rods, etc.), and replace them if necessary.
- **Check for proper operation as the vehicle is moving**

Km 175,000 and more
- Repeat the checks carried out after 1500 km.
- It is also advisable, together with Carrozzeria 71 s.r.l., to check the system condition and substitute any parts that need to be replaced.
- **Check for proper operation as the vehicle is moving**

PAY ATTENTION:

After 2 years it is advisable, together with Carrozzeria 71 s.r.l., to check the system condition and substitute any parts that need to be replaced.
We remind you that outside the warranty period the maintenance program is at your discretion, but we recommend following it scrupulously because neglecting it could cause system anomalies and disadvantages in addition to creating danger while driving.
Any maintenance work on the device shall be fully borne by the customer both when the device is covered by warranty and not.

WARRANTY: 24 MONTHS OR 80.000 KM

SPARE PARTS (* only for standard Speed&Brake)

Code	Description	Quantity
HT-PUSH_SPEED & BRAKE/R/M-01	M10 ball joint (brake lever)	1
HT-PUSH_SPEED & BRAKE/R/M-02	M10 angular ball joint (brake rod)	1
HT-PUSH_SPEED & BRAKE/R/E-01*	Electromagnet	1
HT-PUSH_SPEED & BRAKE/R/M-03*	Steel hooking pin (brake block)	1
HT-PUSH_SPEED & BRAKE/R/M-04*	Partial steel sprocket (brake block)	1
HT-PUSH_SPEED & BRAKE/R/M-05*	Return spring (brake block)	1
HT-PUSH_SPEED & BRAKE/R/M-06	Bushing in synthetic material	1
HT-PUSH_SPEED & BRAKE/R/M-08	“Brake” telescopic rod provided with reinforcement bar + tube	1
HT-PUSH_SPEED & BRAKE/R/M-09	“Brake” telescopic rod connection	1
HT-PUSH_SPEED & BRAKE/R/M-10	“Accelerator” telescopic rod provided with reinforcement bar + tube	1
HT-PUSH_SPEED & BRAKE/R/M-12	Sheet metal finishing plate (lever)	1
HT-PUSH_SPEED & BRAKE/R/M-13	Lever and pedal fixing kit (standard)	1
HT-PUSH_SPEED & BRAKE/R/M-14	"BLACK" plastic plate for left hand drive	1
HT-PUSH_SPEED & BRAKE/R/M-15	"BLACK" plastic plate for right hand drive	1
HT-PUSH_SPEED & BRAKE/R/E-02	Micro-switch for accelerator disabling	1
HT-PUSH_SPEED & BRAKE/R/M-17	M6 angular ball joint (accelerator lever)	1
HT-PUSH_SPEED & BRAKE/R/M-18	M6 ball joint (accelerator bracket)	1