



Intallastion manual

THE LAB AIR SHIFTER

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Paddles assembly:

The paddles kit is supplied already assembled, it will be enough to install it between the steering wheel and the hub using the existing holes or, if necessary, drilling the carbon plate as you need.

It is possible to distance the paddles from the steering wheel by inserting between the paddles and the hinges the spacers and using longer screws (standard TBEI M4x14).

It is extremely important to attach the harness to the steering wheel with two cable ties or with tape to allow the relaxation of the spiral only.



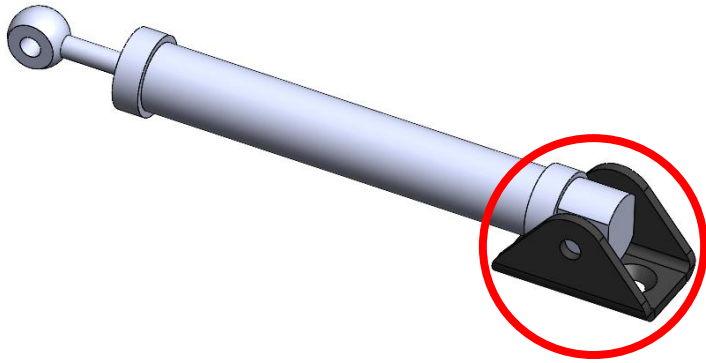
Actuator assembly:

The pneumatic actuator shall be installed as close as possible to the gearbox arm of the engine and, if possible, fixed to the engine block with a bracket.

The piston can be fixed with a support bracket like the one in the image below that allows the correct oscillation or alternatively with two Uniball M10. This is important to ensure the correct alignment of the piston without causing friction.

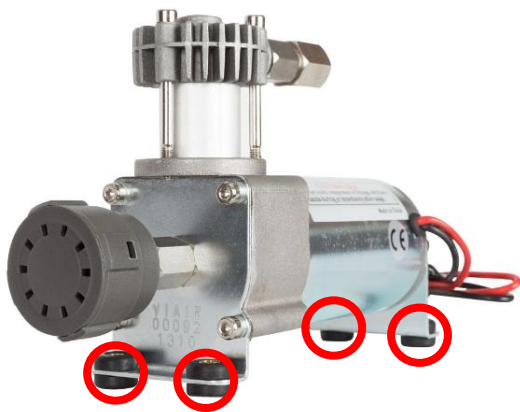
The stroke of the piston is 50mm and in the neutral position must be placed at half length (25mm from the piston completely extended).

It is important to mount the actuator so that it can rotate around the rear fixing pin.



Compressor, tank, and electrovalves assembly:

Compressor and solenoid valves are vibration sensitive components. We recommend the installation of the compressor using the four fixing points insulated at a point not subject to vibration.



The solenoid valves can be mounted directly on the actuator using the two elbow connections or separated using the quick couplings and the hose.

We always recommend mounting with separate valves to avoid vibrations that can create problems.



The tank is not sensitive to vibration and can be mounted anywhere on the vehicle using the two insulating rubber pads.



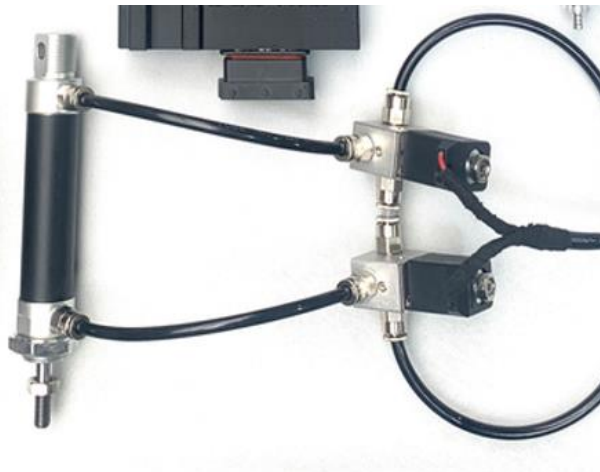
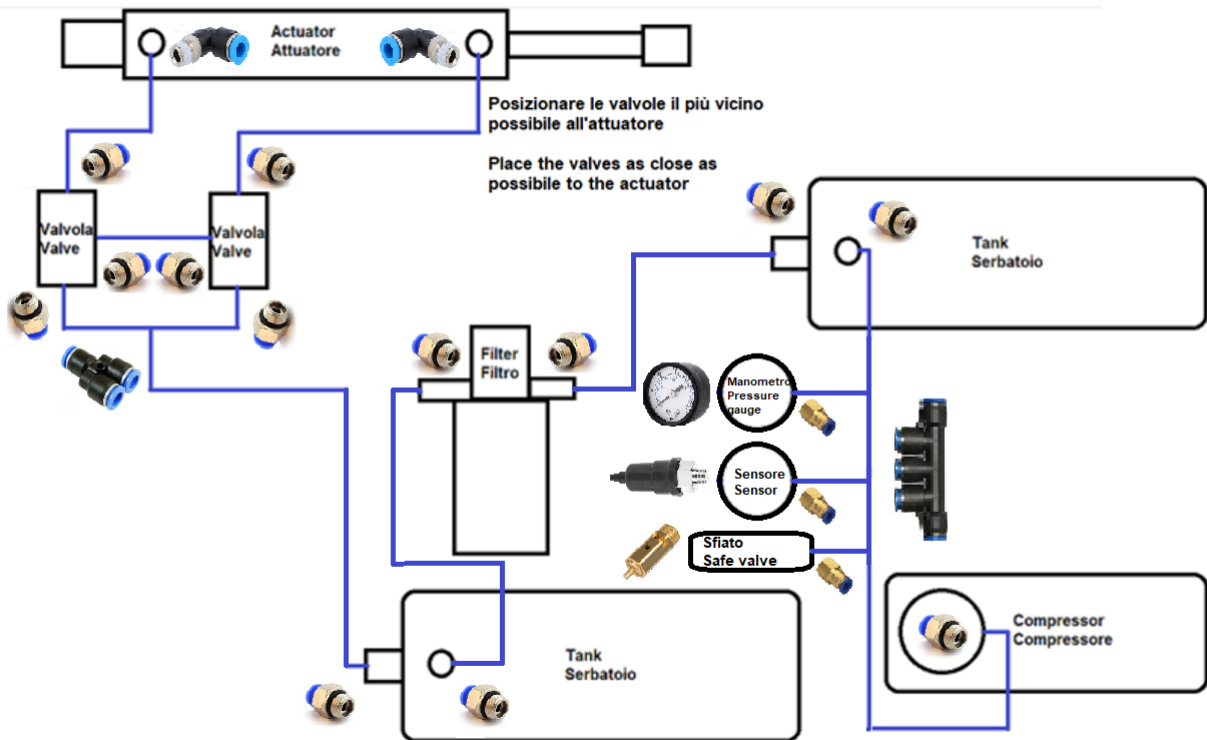
Pneumatic system assembly:

The continent kit everything you need for the complete installation:

All fittings are quick coupling, so it is enough to cut the pipe and push it into the fitting to insert it and compose the pneumatic circuit.

It is advisable to mount the filter with the regulator in a visible and accessible point so as to keep the output pressure to the piston controlled and be able to adjust it with simplicity.

To mount the pneumatic system follow the diagram shown:



The lengths are free and can be modified as needed. Additional pressure gauges/cylinders or elements can be inserted as needed without changing the sequence of the main components.

System regulation:

The pressure switch and the safety valve must be adjusted before the system is put into operation.

- 1) Completed mounting connect the vehicle power supply. The compressor will start.
- 2) Looking at the pressure gauge, first adjust the safety valve by acting with a shear screwdriver, adjusting it so that it opens above 13 bar.
- 3) At this point adjust the pressure switch (sensor) by acting on the Allen screw under the black cap, adjusting it so that the compressor turns off at 12 bar.

In case of anomalies, turn off the system and contact the service.

Electric wiring assembly:

The electrical system is plug&play, all connectors are designed in such a way that they can not be reversed. On the terminal part of the free cables there is a label indicating the function. Connect the cable "GND car" (black) to ground on the vehicle as a first pass.

C: Common

NO: Normally open

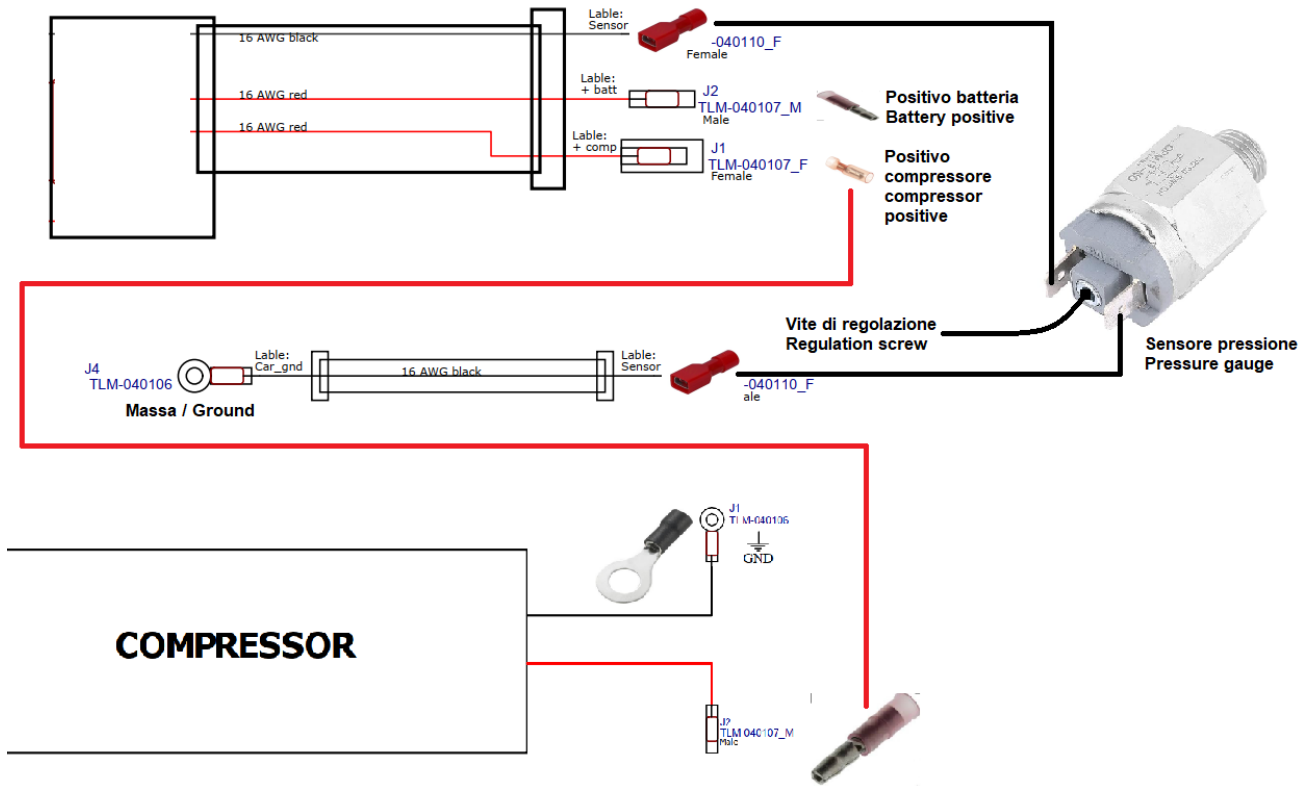
NC: Normally closed

Comp+: Positive compressor (+12-18V)

Gear 1/2/3/3/4/5/6: Gears 1/2/3/4/5/6

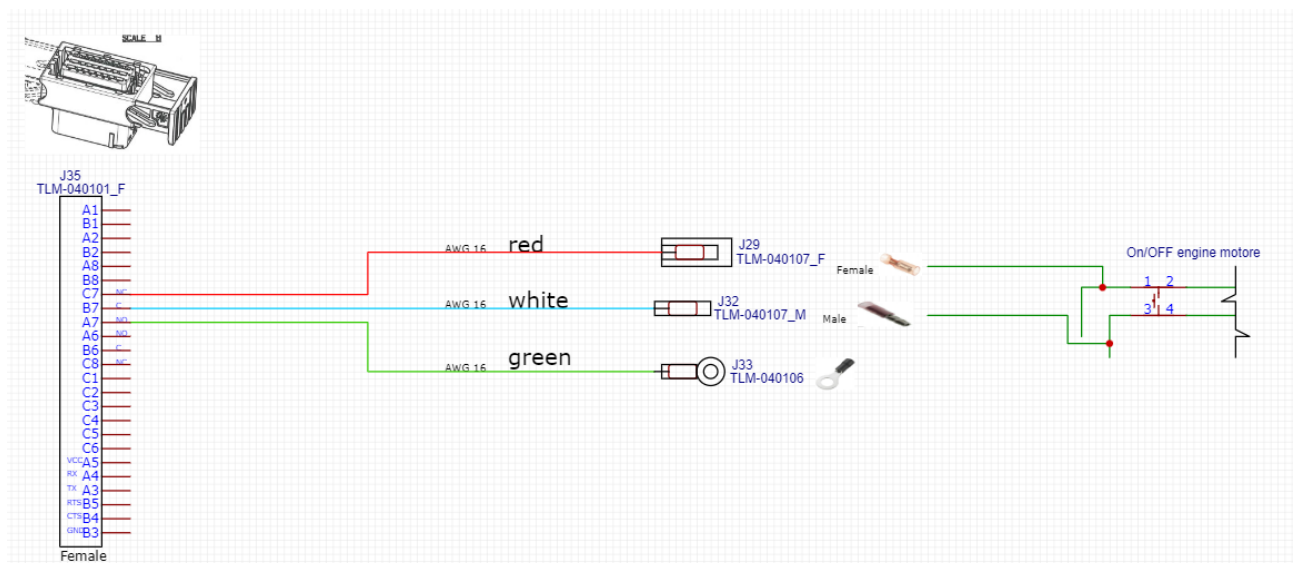
Compressor and pressure sensor:

1) Connect the relay as follows:



Cut-Off connection:

To connect the Cut-Off, connect the "Cut-off C" cable (white) and the "Cut-off NO" cable (green) in parallel to the engine shutdown button, or (in the event that the shutdown cuts off the power to the engine unit) interrupt the ground cable of the coils.



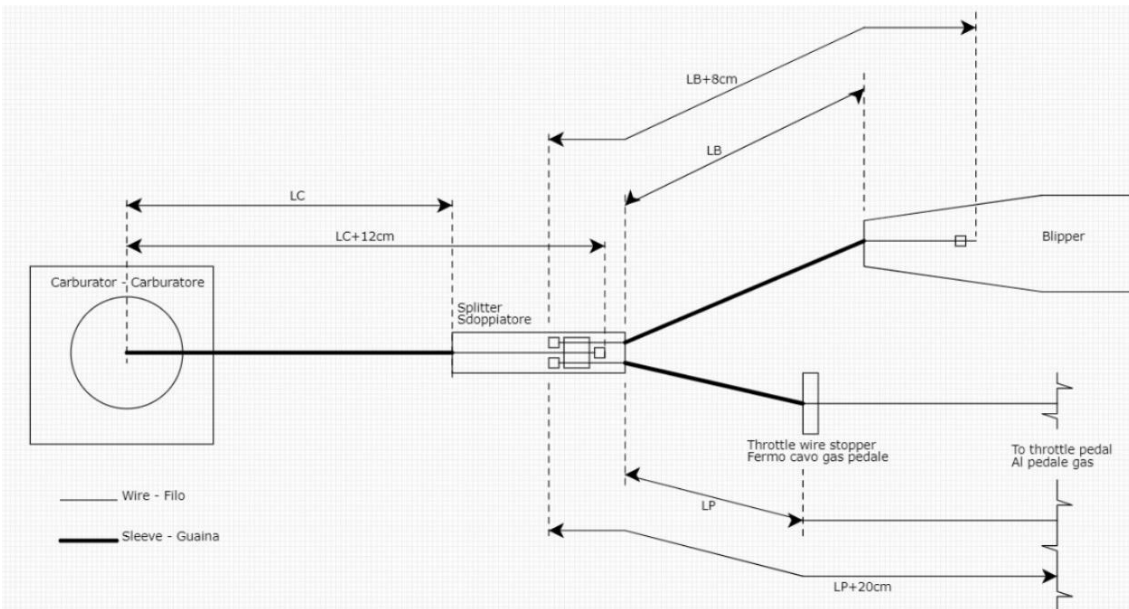
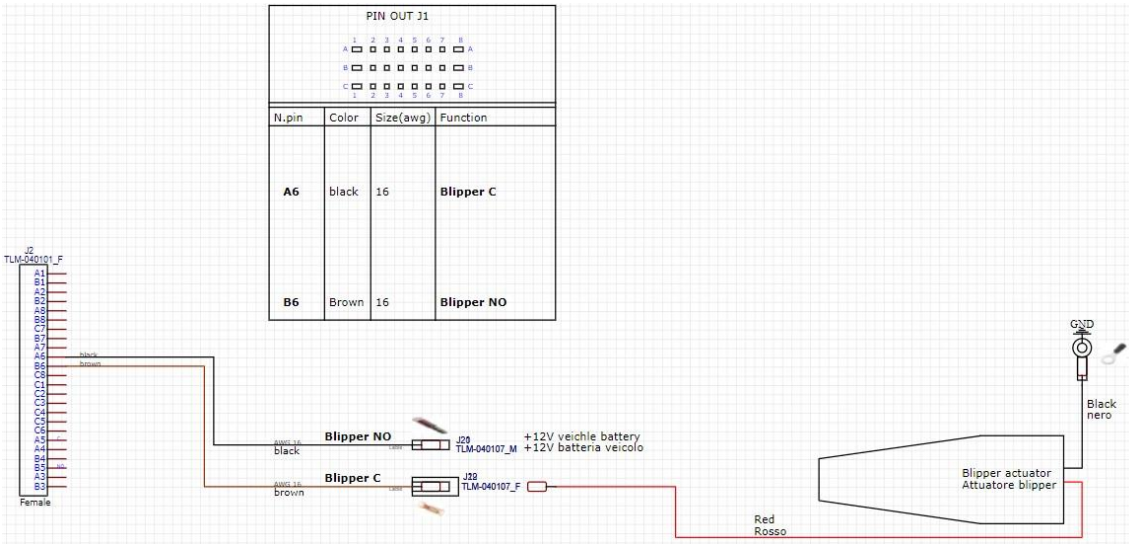
Blipper connection:

There are two solutions for mounting the blipper depending on the presence of the electronic accelerator or the wire accelerator:

Wire throttle:

If you purchased the kit with blipper actuator then you will need to connect the black ground actuator cable and the red cable to the "Blipper C" (brown).

Next you will need to connect the positive of the vehicle (+12-18V) to the cable "Blipper NO" cable (black).



Electronic throttle:

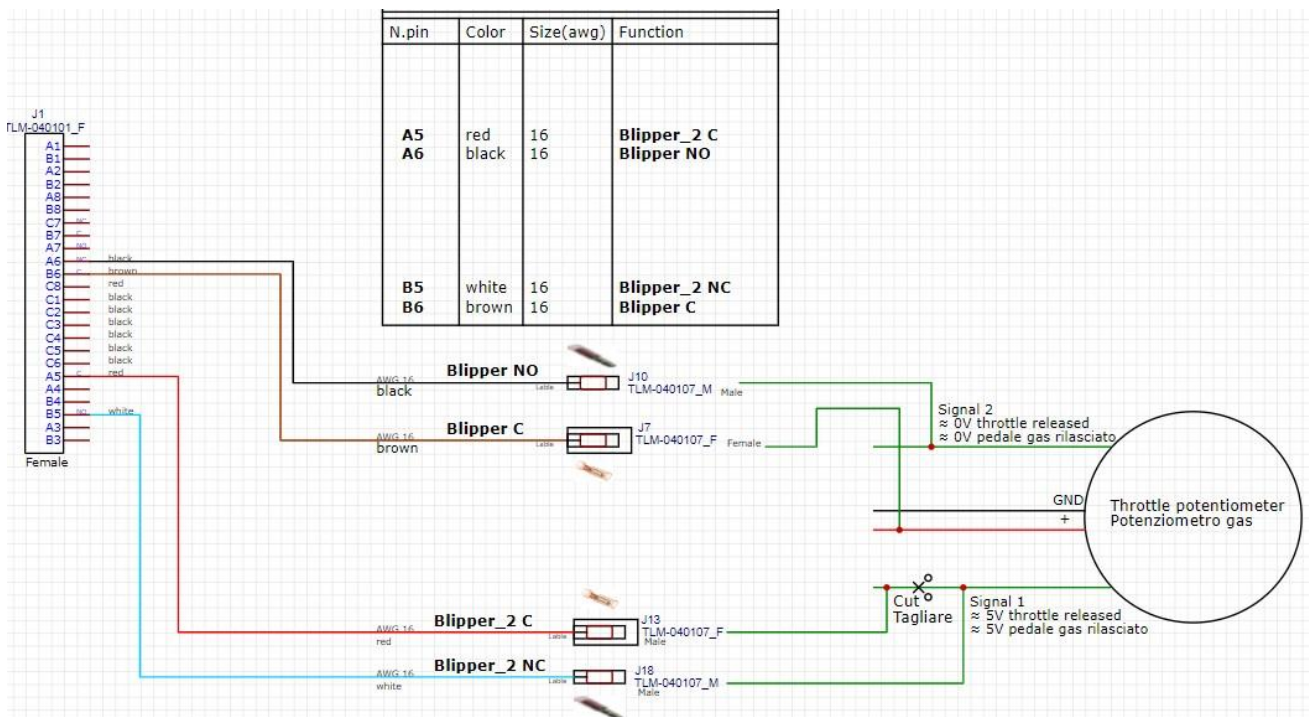
Measure potentiometer pins with the tester:

- 1 pin will be a GND (direct)
- 1 pin will always be at $\approx +5V$ (direct)
- 1 pin with accelerator released, will be $\approx +4-5V$ (the value changes by pressing the accelerator pedal)
- 1 pin with accelerator released, will be $\approx +0V$ (the value changes by pressing the accelerator pedal)

Connect the cable "Blipper_2 NC" and the cable "Blipper_2 C" to the signal $\approx +5V$ and interrupt the original line.

Connect the "Blipper NO" cable to the $\approx 0V$ signal

Connect the cable "Blipper C" to the direct $\approx +5V$

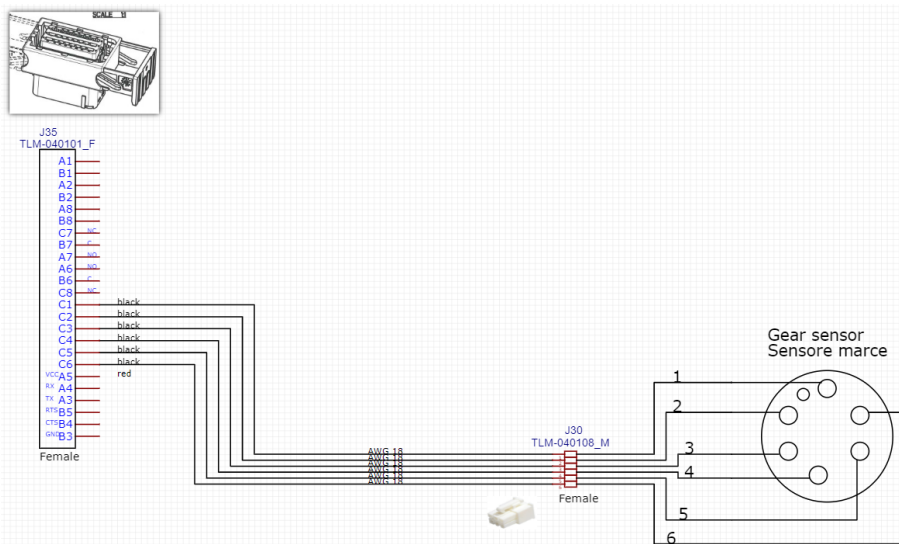


Attention:

1. The blipper actuator can be operated with both the electronic and the wire accelerator using the gas cable;
2. If you only want to get GND signals to be used in the engine unit that will then handle the cut-off and the blipper, you can always connect to ground (GND) the cables "Blipper C" (brown) and "Cut-off C" (white) to ground (GND) and you will have an output on the respective NO and NC GND input to be sent to the control unit;
3. If the wiring is not long enough, it is advisable to cut and lengthen the part of the wiring that connects to the paddle (3 pins female connector), or to request the extension kit for the paddles.

Gear counter connection:

The system can read the gear in order to adjust the parameters. It is necessary to join the 6 "gear 1-6" cables to the respective cable on the gear sensor.



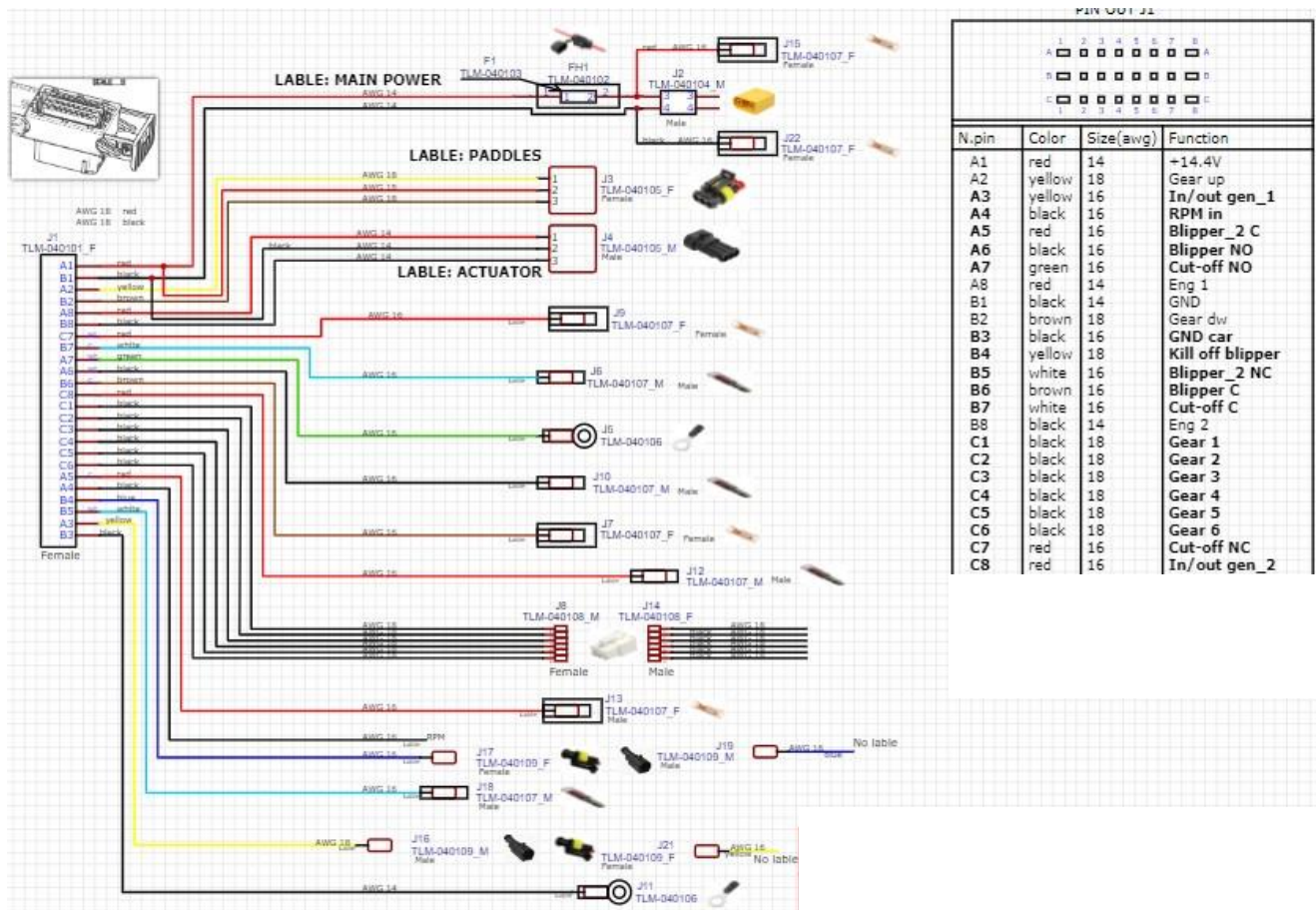
Power connection:

1. Connect the "GND car" cable to the vehicle mass (GND vehicle battery);
2. If you use the dedicated battery connect the power connector with the lipo battery, otherwise cut the yellow power connector (J2) and connect the red cable to the positive of the vehicle (+12-18V) and the black ground cable (GND of the vehicle) with suitable connectors;
3. If the kit is a "The Lab Air" connect the compressor to the power supply by connecting the black cable of compressor with ground (GND vehicle) and the cable "Comp+" (red) to the red wiring of compressor.

Notes and possible additions:

The system works with an average pressure of 8bar, adjustable by the regulator on the air filter. It is possible to insert a diverter and a second regulator to vary the pressure to increase and decrease the gear, and replace the cylinder with a larger one to increase the available capacity and therefore the constancy of the force during the changes.

Wiring diagram:



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