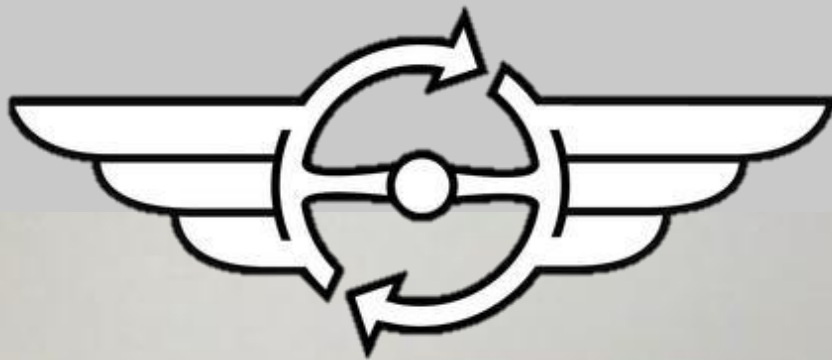


# **EZ ELECTRIC POWER STEERING**

## **INSTALLATION MANUAL**

### **BMW 2002**





# CONTENT

The Product .....	1
Contents of the set .....	2
Before and after assembly .....	3
Installation .....	4



## THE PRODUCT

Thank you for choosing an EZ ELECTRIC POWER STEERING system for its quality, certification and easy assembly. Since 2006 we produce complete steering columns with integrated power steering. All columns are custom made for each type of car and we already have 200 types in stock! For more information about our products (power steering systems and replica steering wheels) or to place an order, visit our website [www.ezpowersteering.nl](http://www.ezpowersteering.nl) or send an e-mail to [info@ezpowersteering.nl](mailto:info@ezpowersteering.nl). If you have any questions about the installation, please contact us at [workshop@ezpowersteering.nl](mailto:workshop@ezpowersteering.nl).

Version C1

Date 30/6/20

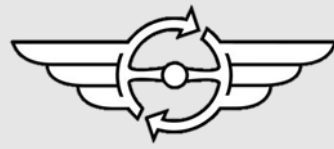
*This manual must be read carefully to avoid errors.*

*Check that all parts of the set are present. This can be done on the basis of the picture in this manual.*

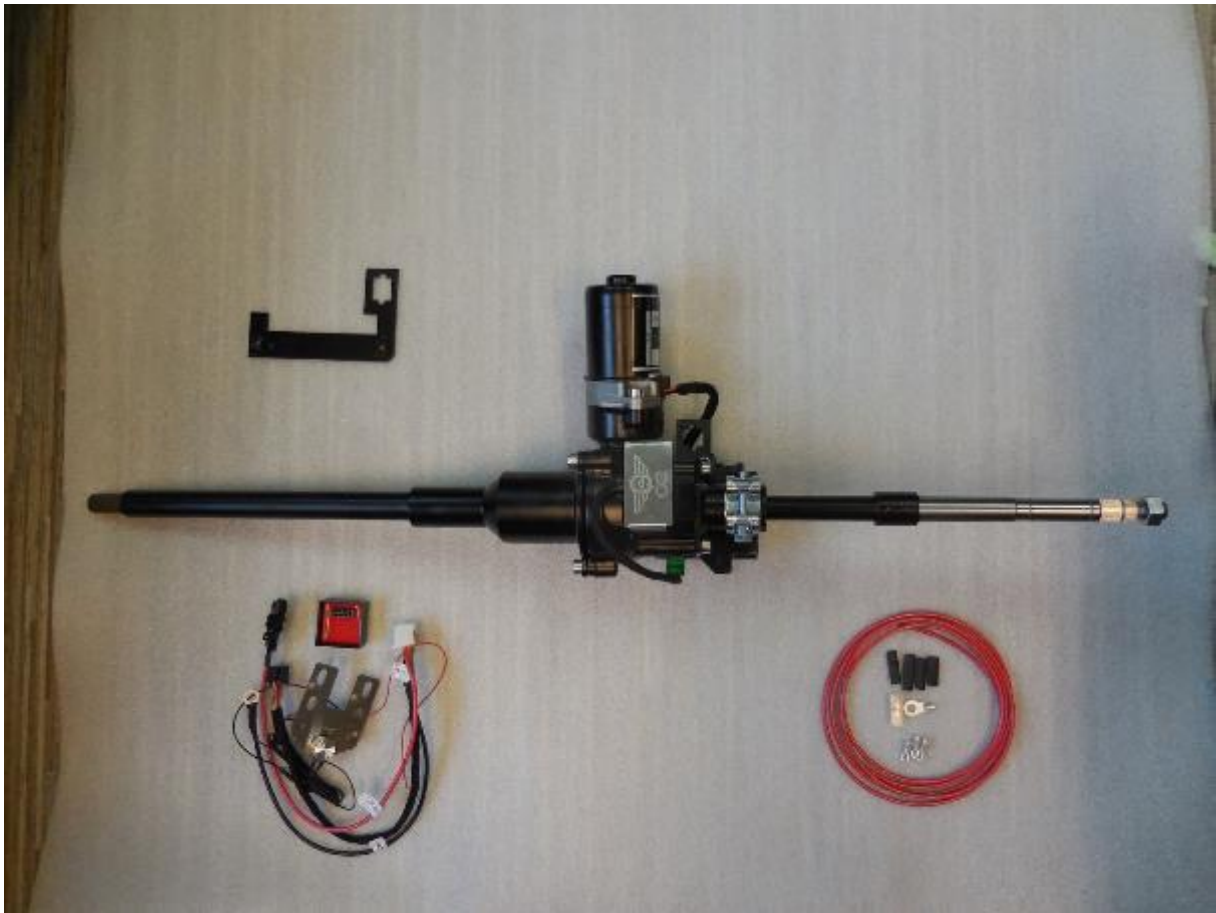
*Compare the EZ POWER STEERING column, before installation, with the original column. Check that the dimensions are the same. Also fit the handlebar on the column.*

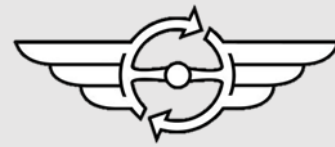
*If you do not have the skills or the tools to do the installation, have the installation done by a professional.*

*EZ POWER STEERING cannot be held liable for incorrect installation or self-inflicted damage.*



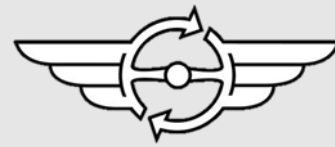
# CONTENTS OF THE SET



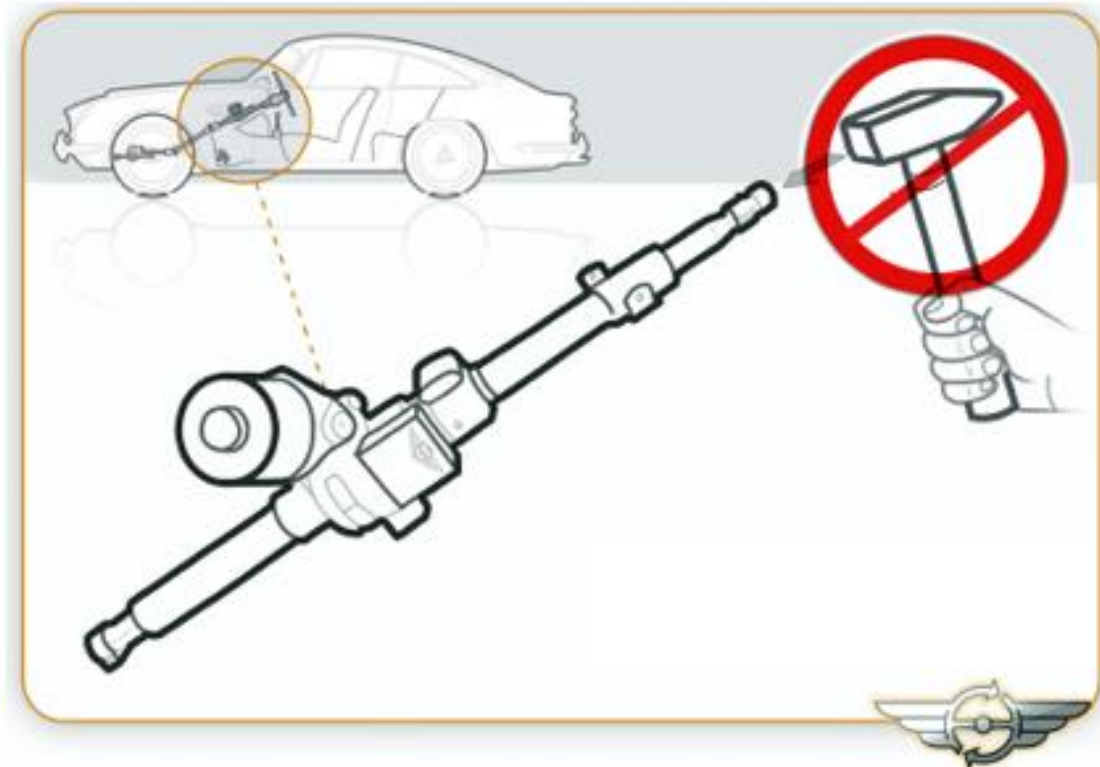


## BEFORE AND AFTER ASSEMBLY

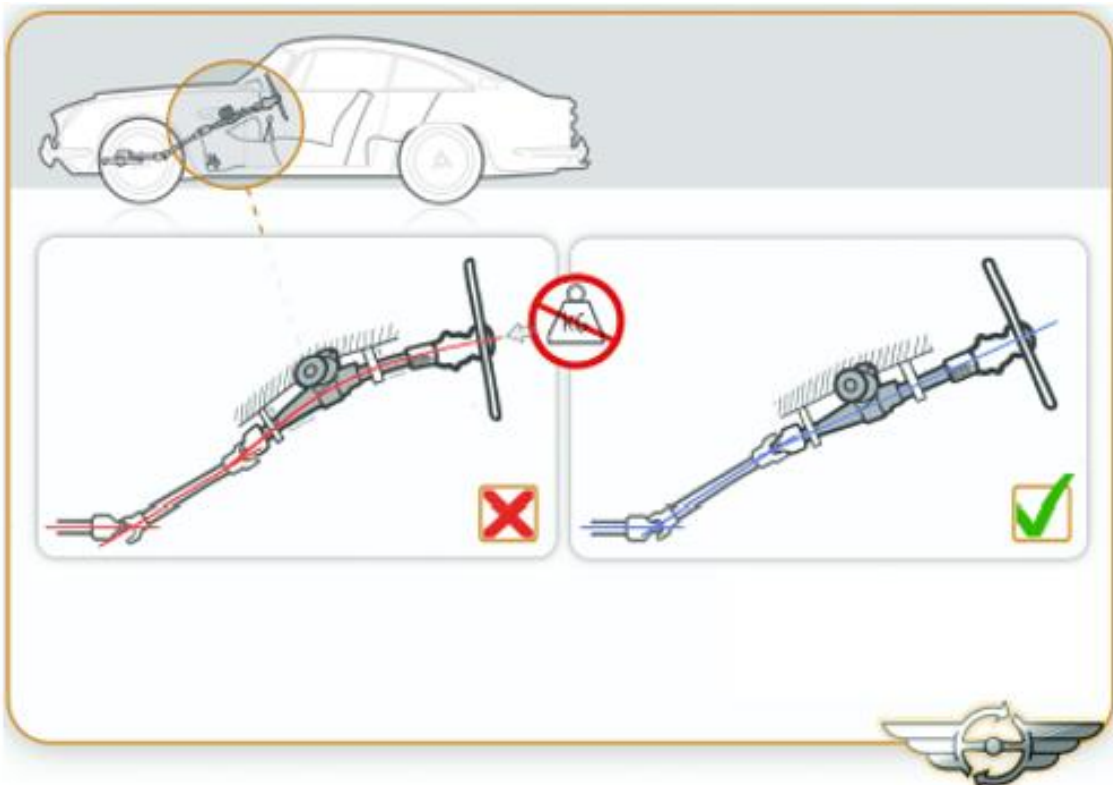




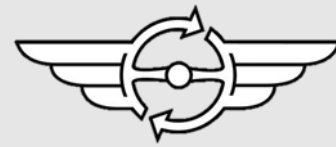
## Installation



Never strike the input shaft with an object during or after installation. This may adversely affect the sensors.

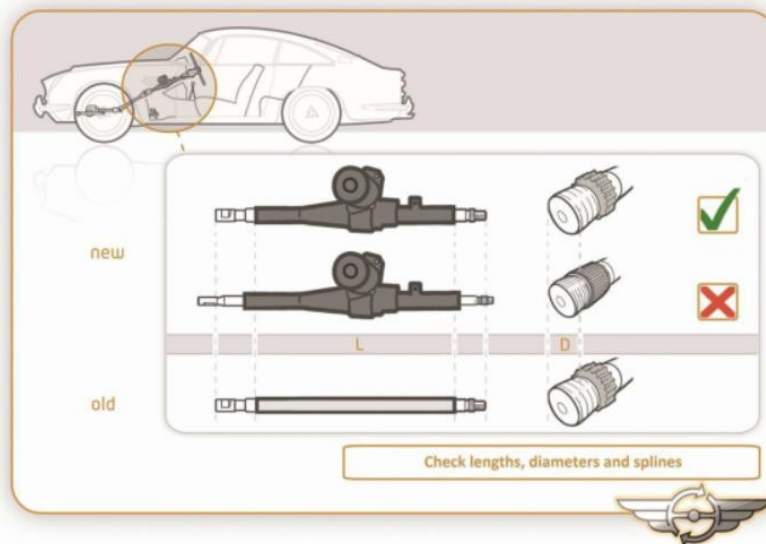


The steering system must always be properly aligned and tension-free.



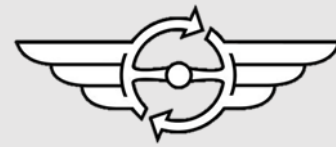
## Check length, diameter and splines

Compare the EZ Power Steering Column (EZ-unit) with the original steering column before installing it. Check if the splines on the top and bottom, the diameter of the steering tube and the length of the column are all the same as the original steering column. When in doubt you can use the original steering wheel to check the top splines for fit. Never hammer on the steering shaft of the EZ unit!



In the car industry its common to have some small tolerances in spline connections. In very exceptional cases connecting a new shaft from the EZ-unit in the original (old) U-joint could cause a tight fitting. This is sometimes relatively easy to solve by sanding only about 0,2mm (0,007 inch) in the inner part of the U-joint and also the spline on the output shaft on the EZ-unit.





## Torque tightening values in Nm.

When the new steering column is being fitted hand tighten all the bolts and check if everything turns smoothly before tightening to required Torque, use torque tightening table below:

	strength class 8.8	strength class 10.9	strength class 12.9
Bolt M6	11	16	19
Bolt M8	27	40	47

The system works with a torsion bar into the unit, this measures the amount of torque/load on the steering shaft while steering, the torque sensor measures this and sends a voltage to the ECU. The ECU uses this signal together with the speed signal to control the electric motor from the EZ-unit.

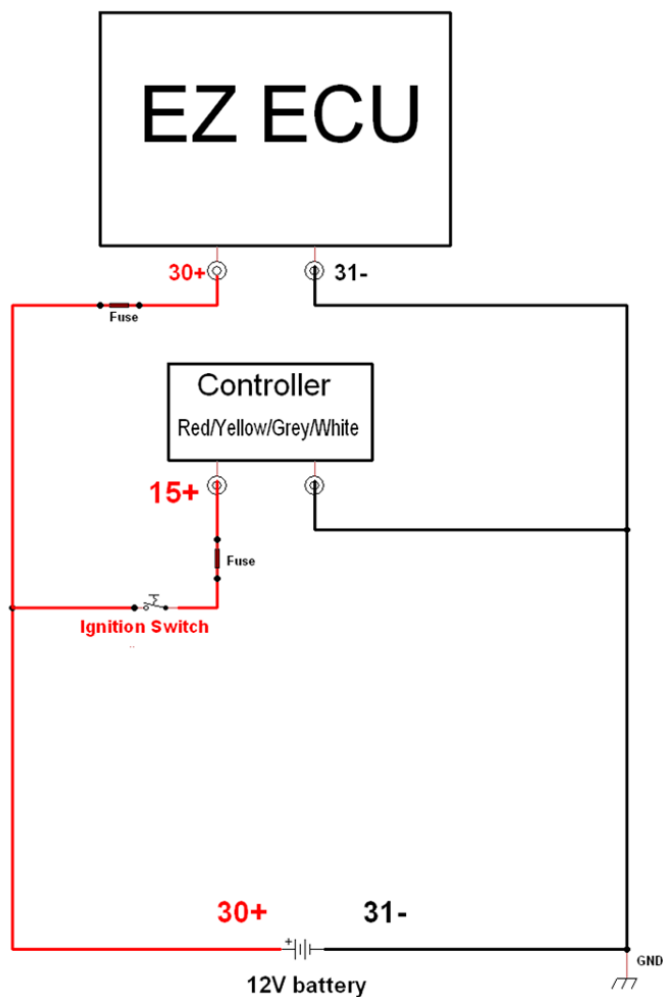
## Voltage

The basic EZ-unit, is a 12V system with negative earth! There are extra wiring sets available, so that the kit will work with a 6V or 24V system and/or positive earth. Check your vehicle setup before fitting the EZ-unit.

The red supply wire (30+) has to be connected directly to the starter relay or the plus terminal of the battery and fused with the supplied 40 Ampere fuse.

Connect the black ground wire (31-) cable eyelet to a suitable earth point (not to the column). If you have a positive earth car (Plus battery terminal connected to the chassis) ensure that you have the correct wiring loom with additional relay

The thin red wire is ignition switched (15+) and should be connected to a fused contact switched power supply. Check the voltage between the ignition switched plus against earth, with switched on ignition, this must be at least 11,5 Volt. If it drops below this the electric power steering will switch off. (When this happens during driving, the vehicle will drive similar as before the EZ conversion).



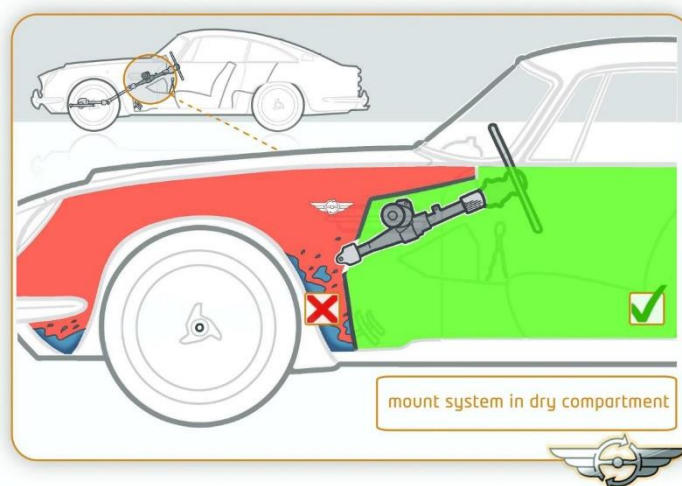




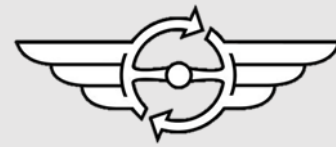
Be sure to measure the voltage under load (with other electrical devices switched on like: cooling fan, windshield wiper or electric window defroster, etc.) and with running engine.

If needed there are electrical devices available, to maintain the correct ignition switched voltage above 11.5V!

Also a simple test of the electronics is to check if you hear a click after switching on the ignition, another click should be heard after 1 or 2 seconds after switching off the ignition



The EZ unit, wiring loom, ECU and other electric components may not be exposed to high temperatures (60 degrees centigrade or higher) or a wet environment.



### Step one.

Check tyre pressure and test drive the car. Check that the steering wheel returns to the straight-ahead position. Check that the steering and instruments are not faulty. If all this is in order, proceed with the conversion.

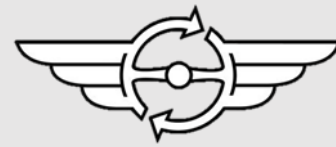
### Step 2.

Look for a power supply switched via the contact. This is necessary to control the EZ powersteering unit (see point 18). To do this, if present, remove the bottom plate under the dashboard, the switched power supply can either be removed from the contact lock or the start button. Then disconnect the ground cable from the battery. Make a choice before installation, or put the wheels and handlebars in the straight-ahead position mark this position and continue the conversion. Or determine the centre of the steering rack by the number of steering revolutions, from full left to full right, by dividing two and only adjust the wheel alignment after installation, if necessary.



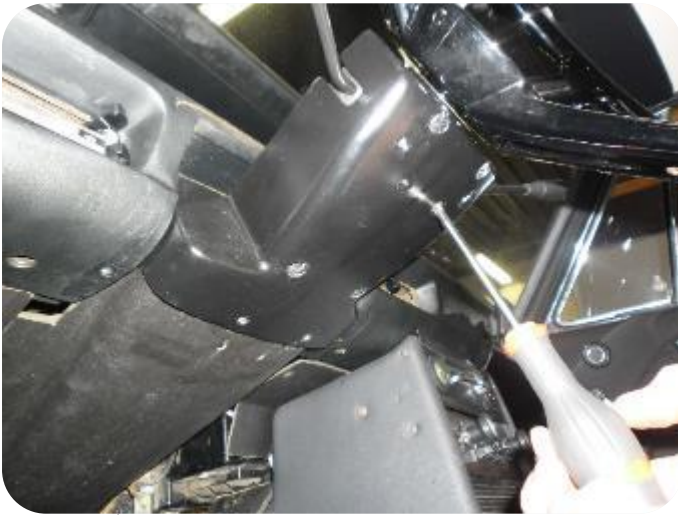
### Step 3.

Remove the horn cap.



**Step 4.**

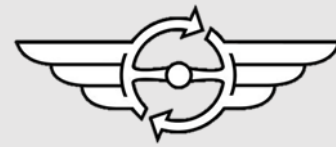
Remove the 4 mounting screws from the top cover plate of the steering column. The cover plate can then be removed.



**Step 5.**

Now remove the lower cover plate. This is mounted with 4 screws. This can now be removed.





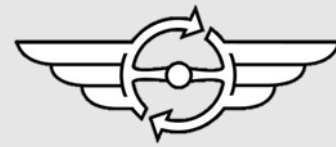
### Step 6.

Now remove the remaining protection from the steering column. This is secured with a few screws. The protection can now be removed.



### Step 7.

Remove the lower mounting bracket from the protection



**Step 8.**

The steering wheel can now be removed.



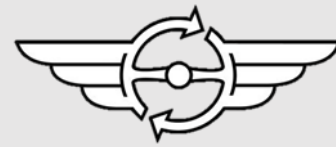
**Step 9.**

Remove the plug connectors from the steering column.



**Step 10.**

Remove the raw - and high beam - switch from the steering column. The horn ring can also be removed afterwards.



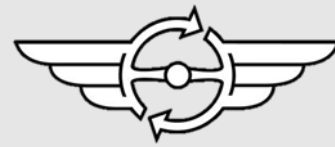
**Step 11.**

Remove the connector block from the ignition.



**Step 12.**

Remove the mounting bolt from the steering shaft on the steering rack, this is best accessible from the underside of the car.



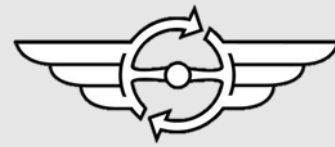
**Step 13.**

Remove the mounting bolts from the steering column in the bulkhead.



**Step 14.**

Remove the 2 upper mounting bolts from the column.



**Step 15.**

The original column can now be removed.



**Step 16.**

Remove the plugs from the mounting plate, then remove the mounting plate itself.



**Step 17.**

Mount the plugs in the EZ mounting plate and slide the mounting plate back into position.





### Step 18.

Connect the EZ wiring harness:

-Connect thick red wire 30+, via the fuse holder directly to the battery plus.

Connect the thin red wire 15+, with a contact-switched power supply (point 2)

-Join the black wire 31-, with a suitable ground point on the body.

### Step 19.

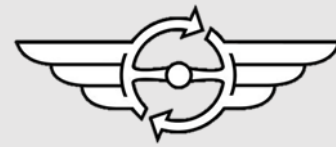
Find a suitable location for the potmeter and mount it.



### Step 20.

Place the original column next to the EZ column, and measure the projection length of the original steering shaft relative to the steering tube. Using this measurement, determine where the original column should be sawn off.





### Step 21.

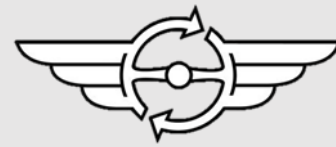
Dismantle all fastening parts of the steering shaft so that it can be removed from the steering tube (note the steering lock). After determining the correct length, the original steering tube can be shortened.



### Step 22.

Mount the spring washer on the EZ steering axle. Then mount the original shortened steering tube on the EZ unit. Do not fasten it yet, this will be done later during the final assembly.





### Step 23.

Now mount all fastening parts back on the steering axle.



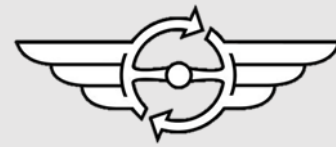
### Step 24.

Remove the flange that attaches the original column to the bulkhead from the original steering tube and mount it on the EZ unit. After this the EZ unit can be mounted in the car. Manually tighten the bolts of the mounting flange to the bulkhead.



Check the projection length of the steering shaft as measured in step 23. If necessary, adjust it by sliding the upper steering tube into the EZ unit. Then fix the column. Do not forget to secure the steering shaft (see step 12).





**Step 25.**

Now the steering tube can also be fixed to the EZ unit by means of the clamping bolt.



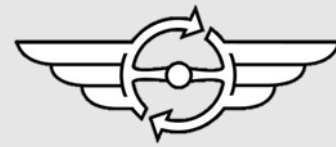
**Step 26.**

Connect the thin red wire (15+) to a contact-switched power supply (see point 2).



**Step 27.**

Mount the mounting bracket for the upholstery on the bottom of the steering column.



### Step 28.

Check the position of the direction indicator stop and adjust if necessary.



### Step 29.

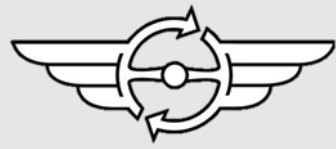
Now attach the other protective caps to the column.

### Step 30.

Now reassemble the steering wheel of the car. Or mount the steering wheel in the position of the centre of the steering rack and adjust the wheel alignment if necessary. Or mount the steering wheel in the marked straight ahead position. Make a test drive and check all systems again. Also check whether the position of the steering wheel is correct, if not adjust it.

### Step 31.

Connect the previously disconnected battery negative terminal lead. After switching on the ignition a click can be heard from the ECU, the system is now operational, check this by making steering movements. After switching off the ignition a click is heard again after about 3 seconds. The system is now switched off.



**Step 32.**

The end result.

