

# **Construction Manual Burton Car**

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## 1. INTRODUCTION

The Burton is the product of the brothers Dimitri and Iwan Gobel. These two brothers, who originate from a artistic family, developed the design of a burton from their artistic passion. Iwan is the businessman and Dimitri is responsible for the creative part of the company. Together they started importing the Lomax kitcar in 1993 and their first product followed soon, the 2CV pick- up. Duck Hunt Car Design was born.

The final idea of the Burton came from the dissatisfaction of the Lomax's quality. In 1998 Dimitri started with the creation process that had the codename "Hunter".

Dimitri has worked in his atelier in Laag- Soeren for more than a year. A couple of concepts/ sketches, 160 kg of filler and 15000 km of grating later the final form of the Burton has been born. The design reminds me of the old Alpha Romeo, delahaye, Jaguar, Bugatti, Morgan, but the result is completely new and is respected by young and old.

The first body came out of the mold on the ninth of February of 2000, also they presented the final name "Burton". In May 2000 they presented the Burton to the Dutch 2 CV loving public at the convention of Citromobil. On oldyearsday 2000 Burton Car Company already counted 89 orders, and this without any advertisement budget. Nowadays, living in 2010 we can already count an amount of around 1000 orders. This means that Burton Car Company is Netherlands biggest Sportscar manufacturer.

As we take the features of the Burton Car Company into account the succes of this company is not that surprising. The Burton has a very reliable technique. The fueleconomy is 1:20 and the Burton also has an excellent grip. The roadtax is not even €100,- a year. Above all this the costs of insuring the Burton is really low, even for young people. The maintenance is easy to handle yourself and is very affordable. The Burton comes with a hardtop that is suitable for any season of the year, it has a big amount of luggage space, in the back and in the front. This makes the Burton an excellent second car. There are many more examples of advantages. This all comes down to the combination of using all the advantages of the 2CV with the beautiful appearance of the Burton, with a much better handling. The 2CV has been introduced 50 years ago, and has been sold until 1988. In total 5 milion 2CV's have been put on the road. The knowledge and development of the technique and usage of the 2CV has grown enormously throughout the years. On this ideal basis Burton Car Company subsequently fastens the attractive body of the Burton. Because of its lesser weight and especially its deeper centre of gravity the Burton represents a more comfortable and stern car than the former 2CV. This will make your Burton an excellent travelmate!

The Burton is a complete open sportscar for young and old wich is, because of its practical suitability, also very qualified for daily use. Perfect to enjoy a tourtrip but even great to just take with you to get the groceries. The performance of the Burton is the great surprise! The simple 2CV motor knows how to handle the nearly 450 kg of Burton. If you choose to go for the tuned type of the two cilinder boxer, you will not be dissappointed. A standard ecceleration time from 0 to 100 km/h within 12 seconds, and the topspeed will reach a 140 km/h with the maximum speed of revolution. It is possible to increase the tuning, but the rolling chassis has it's restrictions.

All in all the Burton is a nostalgic looking sportcar, with the characteristics that make it perfect for daily use. Because it is a kitcar you can determine the eventual looks of the car yourself. In the

buildersmanual you can find all the options and possibilities of compositions for your car. The buildersmanual will also assist you during the building an maintaining your Burton.

Burton Car Company wishes you all the luck and enjoyment during the building and all the fun while driving!

The Burton Car Company Team



The end result



Working on the Burton

## 2. WHICH DONOR CAR?

The idea behind the Burton is quite simple: remove the body from the 2CV undercarriage and replace it with the new polyester body.

Every 2CV or Dyane can basically be used as a donor. Ami, Acadiane and some mehari's are not suited because of the extended wheelbase and chassis. Also things like suspension pots, fuel tank and handbrake lever are quite different to a 2CV or Dyane.

Before you purchase a donor car you first have to determine which car you are going to use, there have been quite a few models and there are some technical aspects you have to take in account. The following paragraphs will help you in making a choice.



Donor

### 2.1. VEHICLE REGISTRATION

Be aware that the license number of the donor car is the one that will be used for the Burton. It can be useful to try to get a hold of a donor car, which is 25 years or older, there it may result in a tax exemption for the Burton. Because of that, prices for these donors may be higher and the choice a lot smaller. Please contact a Burton representative or the relevant authorities in your country to find out exactly what the rules for putting a new body on a car are, before buying a donor-car.



Registration papers

### 2.2. BUYING A DONOR VEHICLE

The fastest way to build a Burton is of course by starting with a donor with a healthy chassis. However, such 2CV's are very rare. If the chassis of your donor has ever been replaced, it is of vital importance to check that the correct chassis number goes with the new chassis. A 2CV with a healthy chassis is of far greater value and will thus not be a cheap solution.

Your best option is likely to buy a donor with a rotten chassis and to buy a brand new, street legal, chassis separately. Again, check with the relevant authorities in your country what the rules are in such a case.

It is more than likely that a potential donor car may turn out to be in worse shape than you had expected. The original body and interior will not be used in the Burton, so that is of no importance.

Be sure to buy a car with a matching and complete set of papers and verify the chassis number. In the Netherlands, you are responsible to pay taxes, have the car insured and MOT'ed as soon as the papers are in your name. However, there is a legal way to overcome all this until the moment the Burton is ready for the road. Make inquiries in your own country to find out what the (im) possibilities are for your case.

Replacing the chassis here in the Netherlands requires interaction with and action by the relevant Dutch authorities. Once more, check out the do's and don'ts in your country.

The following paragraphs form a checklist when buying a donor car.

(In order to get familiar with the 2CV in the relative comfort of your armchair, it would be a good idea to buy a copy of the excellent 2CV restoration manual called "How to restore Citroen 2CV". It is written by Lindsay Porter and published by Veloce Publishing under ISBN number 1-903706-44-0.

It contains a wealth of information and excellent photos and tips, most of which will come handy at some point during the building process of your Burton. Availability via Internet should be easy. (Be aware of huge differences in asking price!)



Donorcars

### **2.3. INFO ABOUT THE CHASSIS**

Citroen has used many different moulds and grades of steel for the production of the 2CV chassis, making it difficult to judge the (lack of) originality of the chassis. On the picture at the right, you see a rotten chassis of an Acadiane and a brand new chassis for a very early 2CV, both of which, coincidentally, can NOT be used to build a Burton.

What is rather special about the different versions of the chassis is that the earlier versions were far less prone to rust than the ones from the eighties. In the latter period Citroen unfortunately used the so called "crisis steel", often resulting the chassis to rot within 5 years.

The chassis of a 2CV is always the first item to rot. Moisture will cause rust to appear from the inside. This makes it difficult to judge the quality of the chassis from the outside. If you spot signs of welding on the chassis or if any of the many rims are swollen, it may indicate that the chassis is beyond repair.

Always check the chassis number, even if you intend to replace the chassis. If the chassis has been replaced earlier, the number sometimes is left out or an illegal number has been used. An original chassis number can be recognised by the "double chevron" (=Citroens trade mark) in an oval at both sides of the number. A thick layer of under body coating may indicate that the car has been well maintained, however it could also be used as a camouflage. Always try to poke around with a screwdriver to find weak spots.

In reality most Burton builders may like to opt for a new chassis. It gives the certainty that the basis on which you are going to build is sound and of good quality. Once again, check with the authorities in your country what the implications are when you decide to replace the chassis and remember to stick to their rules. No greater disillusion is to find out, that your completed Burton cannot be made legal to drive, because you did not adhere to the relevant rules.



New chassis on stock



Chassisnumber



Chevron



Different types of chassis

## 2.4. ENGINES

Engines in 2CVs are ultra-reliable air-cooled flat twins with 375, 425 or 602cc capacity.

Burton Car Company recommends the 602cc engine. This is the most suitable and is found in the 2CV6, Dyane6, Ami, Mehari or Acadiane. This engine is strong and has adequate power for a Burton. Parts are available everywhere. Even in ten years it will not be a problem to buy a new engine, for example.

An alternative is a Citroën-Visa engine or a 2CV engine with a big bore kit. This has a 652cc capacity and 38 hp. These engines are completely rebuilt with new original parts and have a full one year warranty. Burton Car Company also delivers a big bore kit that you can mount yourself.

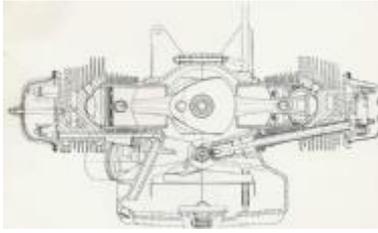
The 2CV engine is not known to leak lots of oil. In case you find an oil-leak, this is usually due to an old oil-filler tube or a dried out gasket. This happens especially with engines that have been standing still for quite some time. A faulty oil filler tube causes a rise in the internal air pressure in the engine which causes the seals to leak.

An engine that sweats a little is no reason to worry.

Be aware that the air cool housing of a Dyane engine does not readily fit in a Burton due to the sideways-connected air filter. The air cool housing is best and easily replaced by the one from a 2CV. The alternative is, to remove the air filter tube and close the hole.



Oil filler tube



Cross-section engine

## 2.5. GEARBOXES

There are not many differences between the gearboxes, which have been used over the years. Gear reductions in cars with 600 cc engines are almost similar. The most important difference between older gearbox types and the ones used after 1982 is that the earlier models are all equipped with drum brakes. Although not directly related to the gearbox itself, it is a vital point.

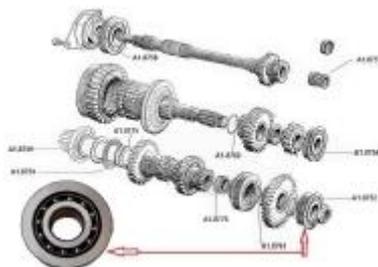
Look for the following when checking out a gearbox:

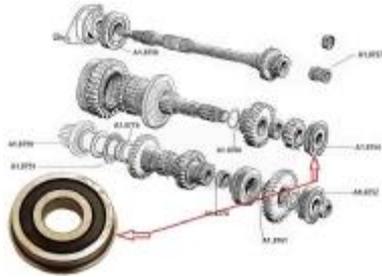
- When shifting gear, no creaking sounds are to be heard. The synchromesh rings of the second and third gear are the first ones to wear out, resulting in a “sawing” kind of noise when engaging either one of these gears.
- The first gear is not synchronised and will therefore always be noisy when engaged, unless the car is at a complete stand still.

Driving a 2CV or Dyane in reverse with too great a speed may result in the locking of the gearbox. It will have to be opened up to correct the problem. This is a highly specialised task.



Gearbox





Bearing for primary shaft rear bearing



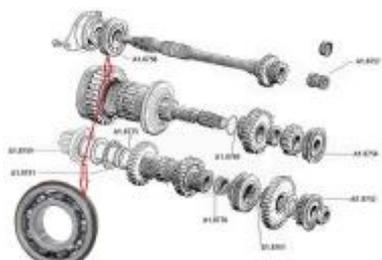
Needle bearing primary shaft



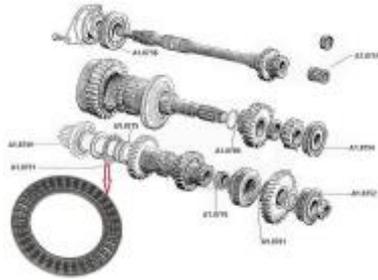
Needle bearing transmission for 2CV



Bearing for gearbox for 2CV



Bearing for primary shaft front bearing



Needle roller bearing cage gearbox



Check ring transmission for 4. gear



Check ring transmission for 2. + 3. gear

## 2.6. BRAKES

As of 1982, all 2CV's were built with disc brakes at the front. For the Dyane, this was already the case since 1978. Disc brakes have several advantages over drum brakes:

- They are simpler in maintenance, because they are accessible with the drive shafts still in place.
- No intermediate adjustments are required.
- The deceleration rate is higher and thus the braking distance shorter.
- Brake cooling is better, which means, that they are better equipped for prolonged usage in for example mountainous areas.
- Apart from being better brakes, you also have the assurance that the attached gearbox is of a more recent date

Brakes are a very vital part of any car. It is thus highly recommended to at least replace the brake shoes and – pads with new ones when building a Burton. The best approach is to rebuild the complete brake system, which may avoid the sometimes-difficult repairs in the near future, while at the same time it provides the required security.

Look for blocked brakes. To some extent, blocked callipers can be made operational again, but when they are seriously rusted, you will have to replace the relevant parts. Both callipers and cylinders are rather expensive.

Also, be aware that the discs are not allowed to be bent. You will find out soon enough because the car will vibrate vigorously when braking with bent discs.

Minimum thickness of the discs has to be 4 millimetres.

A banging noise and vibration while braking is likely to be caused by oval brake drums. The bent discs or oval drums will have to be replaced. Rusted discs may be reworked as long as the minimum thickness requirements are adhered to. All the components for the brake system, like master cylinders, tubing, callipers, discs, cylinders and of course, brake shoes and – pads are newly available. Many people choose to renew the whole braking system completely.

## **2.7. SUSPENSION**

The suspension arms may be bent. Therefore, always check the tyres for wear. If any, wear should be even at both sides of the tyre. Suspension arm bearings are expensive and there are eight of them in one car. They should last forever, but if either sand or water has managed to reach the bearings, they will wear out in a very short time. So, check and make sure that the suspension moves supple and without a sound, worn out bearings cause a rattling sound while driving over rough and uneven terrain.

Spring canisters start to rust at the front caps. If these canisters make scratchy or squeaky noises, it means that they contain rust. This can be suppressed temporarily by applying a bit of oil. However, by far the best solution is to derust the canisters (they will have to be opened by grinding off the end plates) or to replace them with non-rusted ones.

## **2.8. STEERING**

Make sure that steering is not too heavy and without play. Also check for scratchy noises coming from the front wheels. If you hear noises, you have to check the condition of the king pins and steering ball pins. Turning the steering wheel from one extreme to the other should be a smooth and bumpless movement. No play should be noticeable during the full steering wheel travel distance. If revision should be required, such is something to leave to a specialist.

A test drive will help with your judgement but only do so if the car is still in reasonable drivable condition.

## **2.9. PARTSLIST**

There are many parts directly transferable from the donor car to the Burton. A missing wing on the donor car is not a showstopper because you will not need any of the four on your Burton. However, do make sure that the following parts are included in your donor car and that they are in reasonable condition. Otherwise, you will have to find a replacement or buy them separately:

- Chassis (with original number)
- Citroen ID plate as can be found on the bulkhead.

- License plates and papers
- Chassis clips (the M7 ones used to fasten the body to the chassis)
- Spring canisters and their fittings
- Shock absorbers and their fittings
- Engine and gear box
- Front- and rear axle suspension, including the end rubbers
- Rear seat
- Battery
- Complete windscreen wiper system
- Complete handbrake (park brake) system
- Brake- and fuel lines
- Heater command stuff, including cables and fixtures
- All pedals and master brake cylinder including brake fluid reservoir.
- Bonnet stay
- Heating tubes under the bonnet
- Heat sink tubes plus their rubber grommets
- Horn
- Ignition coil plus its mounting brackets
- Petrol tank plus bracket between tank and body, the so called "saddle"

Be sure to save all nuts and bolts of the donor car, washers, clips etc. many of these have oddball sizes (M7, M9) and/or strength (10.9 and 12.9) which can be extremely difficult to find and if found, they may be very, very expensive.

Optionally:

- Seatbelts from the front seats
- Wheels, tyres and the spare wheel
- Speedometer/odometer
- Exhaust
- Headlights and indicator lights at the front

- Flapping window frames plus its hinges from the front doors , which are re-used if you go for the Burton hard top option with the “gull wings”

Switches and handles from the dashboard

### 3. DISMANTLING DONOR

It would be wise to remove all mud and other accumulated dirt from the donor car before you start to take it apart. This way you will keep your tools and workshop clean.

If you have decided to build the Burton on a new chassis, it is important that you familiarize yourself with the relevant legislation, before taking the donor car apart. See chapter 2 for more details.

Remove all fluids from the car: engine oil, gearbox oil as well as brake fluid. Removal of the lubricants is much easier when engine and gearbox have an operating temperature. Be careful not to burn yourself on any of the hot car parts though. Of course, we all take care of our environment, so these fluids have to be disposed of in the correct way and brought in appropriate containers to the relevant collection place in your community. Brake fluid will not just leave the system by itself. You will have to pump it out of the system by opening the brake bleed screws at both the front and rear brakes, subsequently drain the system by pumping the brake pedal repeatedly. Be careful not to damage the bleed screws by applying penetrating oil (like WD-40) in abundance on their threads before undoing them.

A workshop manual covering the exact donor car you have bought will be of great help during its dismantling. While taking things apart, make sure to mark each and every item appropriately and keep them together with the associated bolts, nuts and washers. Putting the rolling chassis back together again will be so much easier and quicker this way.

**IMPORTANT** This version of the instructions deals with left hand driven (=LHD) cars. Throughout these instructions, the terms “left” and “right” will be used. “Left” means, the left hand side when you are sitting in the drivers seat of the car, while “right” means the passenger side. In case you are building a right hand drive (=RHD) version, please refer to the specific section that outlines the LHD/RHD differences before you continue.

In case you do not intend to install a Burton Car Company wiring harness, make sure you leave the original harness intact, even if you intend to make a new one yourself. Please realize that problems with a (partially) homemade wiring harness are extremely difficult to solve by any specialist and that is why the Burton Car Company advises you to purchase and install a Burton wiring harness instead. If however you decide to make the wiring harness yourself, make sure to make and keep a proper wiring diagram covering your harness in detail. For further details on the harness, see chapter 6



After a few hours...



Donorcar



Left and right

### 3.1. START OF THE DISMANTLING

You start with the removal of the following parts. [Parts with a (B) behind their identification are required for the Burton. Parts with an (O) are optional. If there is neither one of these two markings behind the dismantled item, you can be sure it is not needed for your Burton]

In order to prevent unnecessary damage and /or destruction of nuts, bolts, bleeding screws etc, it is more than wise to apply WD40 (or any another penetrating lubricant) abundantly on the respective threads and give it time (several hours at least but a day or more is better) to do its work. This way you will prevent any irreversible damage. This specifically applies to the brake bleeding screws.

- Keep the bonnet half opened and push it out of its rail, either to the left or the right. Subsequently remove the license plate (B). Keep the bonnet stay (B) as well as its seating rubber (B).

- Battery (B). In order not to create any short circuit, you always need to disconnect the battery first. Do so by first disconnecting the negative (=ground) pole followed by the positive pole. Never do this the other way around! Every battery has toxic as well as aggressive contents, so always keep it upright. In case the battery is beyond its "best before" date and needs to be disposed of, do so at your local chemical waste depot. Batteries have a limited shelf life, so if the donor car has been idle for several years, its battery will be unusable due to corroded and/or bent plates. If you intend to re-use it, check it with the appropriate test tool or have that done at your local garage.

- Back doors: open them until they are at a 90-degree angle with the body and push them out upwards. Preferably, remove the door rubbers and the door catch first.

- Front doors: undo the hinges by removing the four bolts at the door side.
  - Boot lid: remove it by opening it and pushing it out sideways.
  - Front wings: undo their four bolts, disconnect the wiring and remove them together with their triangular panels.
  - Front seats: slide forwards out of their rails. Be aware of the possible locking pin.
  - Rear seat (B): press and hold pins down then tilt seat forwards, after which it can be removed.
  - Get rid of the floor mats
  - Wiring harness (O). Check the harness for possible damage and absence of modifications. Undo all connections and label them, so later you still know which connector was attached to what component and where on that component.
  - Remove the steering column. Some cars have an anti-theft device. If so, remove the part clamped around the steering column (2 small Allen bolts). Then undo the bolt (B) and clamp (B) at the extreme bottom of the steering column and remove the steering column assembly by pulling it out with brute force. Only the bolt and clamp will be re-used, however the rest (=steering column plus steering wheel) can be useful when having to move the rolling chassis, so hold on to it a little longer.
  - Undo the accelerator cable at the carburettor side and pull it inwards (out of its sheath)
  - Choke cable: same as the accelerator cable.
  - Clutch release cable: shorten the length of the outer sheath by adjusting the adjusting screws. Subsequently undo the inner cable at the pedal side.
  - Speedometer cable: is connected at the rear of the gearbox on the left hand side. First undo the fixing bolt (spanner size 11mm), then pull the cable assembly out of the gearbox.
  - Gearshift handle: undo on top of the gearbox. Save the rubber ring (B). The clamp (B) at the bottom of the gear stick will be re-used.
  - Hand brake (B): undo at the metal strip between handle and hand brake lever, subsequently pull the complete handle inwards.
  - Heater controls (B): undo at the left hand heat exchanger and keep all parts.
  - Now is the moment to undo the central wheel hub nuts of both front wheels. Once the brakes no longer function this becomes a lot more difficult. Remove the wheel, remove the cotter pin from the hub nut, have someone else engage the brakes and undo the hub nut (32 mm).
- IMPORTANT: in order to prevent unnecessary brake line replacement, spray all nipples with plenty of lubricant (WD40 or the like) and let them soak for a while before even trying to undo these connections.

- Undo the brake pipes (B) from the master cylinder (B). Preferably do so by using a special hexagonal brake pipe spanner in order to minimize damage to the brake pipe nipples. Use standard M8 bolts to close the openings in the master cylinder. That way no dirt will enter during the assembly period.
- Exhaust (B): undo at the front silencer as well as underneath the front- and rear seat. Cut the rubber bands if necessary.
- Disconnect the wire (B) for the petrol tank gauge at the petrol tank near the left rear wing.
- Remove the headlamp height adjustment by first removing the cotter pin and then turning it counter clockwise at the headlamp joint.
- Disconnect the claxon or horn (B).
- Headlamp fixing: keep all convex washers (B) as well as all associated nuts (B).

The following parts have to be removed from the body in order to be re-used on the Burton:

- Citroen identification plate on the bulk head (B). Carefully drill out the rivets.
- Heater controls plus cabling (B). Undo two bolts under the bulkhead and remove the controls plus cabling.
- Windscreen wiper motor (B). If you intend to equip your Burton with a windscreen wiper mechanism, you will have to return the wiper motor as an exchange part to the Burton Car Company. In the Netherlands, a complete windscreen wiper system is mandatory when the full size front windscreen is installed. The small, hardened steel axle (approx. 2 cm long with a bend) has to be returned. The rest can be disposed of.
- Master brake cylinder (B) and pedal assembly (B) should be removed. First, take out the brake fluid reservoir (B) by popping it out of its connecting rubber washers, using a flat screwdriver. Remove both the master cylinder M9 bolts as well as those for the pedal assembly. Once undone, both the master cylinder and the pedal assembly should be removed by pulling the complete assembly inwards. Now remove the clutch cable from the fork after which the complete pedal set can be taken out of the passenger compartment.
- License plate (B). Remove the license plate from the body.
- Ignition coil (B) and its plastic mounting brackets (B) plus the nuts and bolts used to fix them (B) should be removed from the headlight bar.
- Both the handbrake lever (B) and its guiding system (B) are needed for rebuilding. The handbrake guide has to be removed by drilling out the spot welds.
- Save the folding windows (O) along with their hinges (O) if you intend to equip your Burton with a hard top.

- Complete set of seat belts. Although the actual belts cannot be reused, their fitting bolts can be reused to mount the Burton seat belts. Beware: in the Netherlands, you are only allowed to install and use seat belts in your Burton if the Burton is equipped with a roll bar.
- Speedometer, switches and indicator lights, assuming you want to re-use them in your Burton (O)

### **3.2. SEPARATING CHASSIS AND BODYWORK**

At this point, the body and chassis are ready to be separated. Undo all the bolts, which fasten the body to the chassis. Two of them can be found in the boot, two on top of the petrol tank bracket, four under the black plastic caps underneath the rear seat and the remainder on the bottom of the passenger compartment. Apply WD40 if necessary.

Use an angle grinder to grind off any stuck bolt.

If you are not going to use any of the saved parts that are still in good condition, the Burton Car Company may be interested in purchasing them from you. Drop them a line or e-mail to find out.

The easiest way to remove the body is by pressing hard against its side. In order to be successful, you need the assistance of another person. If the body is not moving, check for any attachments you may have missed. If the body is in very good condition, it may have a resale value and you are urged to be very careful in separating the body from the chassis. If you feel that the body is of no further use, allow yourself to use an angle grinder to make the job easier. Make sure you recycle all metal scraps.

### **3.3. DISMANTLING THE CHASSIS**

Remove the following parts from the chassis. You will no longer need them

- Front and rear bumper and associated brackets.
- Bonnet lock.
- Undo both bolts (16/17 mm) at the rear of the gearbox. Do not take them out, undoing them for 1 to 2 mm will be sufficient.
- Next, undo the two bolts (16/17 mm) that attach the engine to the chassis at the front.
- Undo the negative battery cable connection from the gearbox.
- Undo the complete handbrake control lever assembly from the chassis (four M7 bolts, socket 11mm).
- Engine and gearbox can now be lifted off the chassis in an upwards direction.
- Undo the wheel nuts.
- Lift the rolling chassis and place it on axle stands, so that the wheels can rotate freely.
- Remove the wheels.
- Undo the front two shock absorber mounting nuts.

- Identify the front axle cover plates with L and R, so to prevent mistakes when they are refitted.
- Undo the front axle cover plates. The shock absorber connects to this plate. Each plate is fixed with three M9 bolts (use socket 14mm to undo them) Make sure to keep the bolts; they are extremely rare and cannot be found in the local hardware store!
- Remove all four shock absorbers by undoing the relevant nuts (socket 18 or 19). Make sure to keep the thicker as well as the thinner washers and remember their position! If the shock absorbers are greasy or even leaking, you can be sure they are past their prime and need to be replaced.
- Undo the shock absorber studs from the chassis (socket 26). These are known to be very tight so generously apply the relevant WD-40 lubricant before hand.
- Remove the spring clips from the knife-edges. These are located in the end pieces on the adjusting rods coming out of the spring canisters. This way the connection between the front and rear axles is undone.
- Clearly indicate the front of each spring canister even though this is already done by the Av (=Avant = Front) character sequence, however the identification is often invisible due to dirt and under body coating. Pull the spring canister forwards in order to remove it from the chassis. Do this so the trailing tie-rod neatly shifts along its chassis bracket.
- Remove the petrol tank bracket by undoing its four M9 (socket 14mm) bolts. Again, save the M9 bolts carefully.
- Drain the petrol tank carefully.
- Remove the petrol tank. More recent 2CV's have a plastic tank with a 25 litres capacity. A sheet metal tank will not fit a Burton and only has a 20 litres capacity. Save the rubber connecting tube between tank and filler tube. First undo the petrol line and then undo the four M7 (socket 11mm) bolts. Save all metal and plastic filler plates and washers used in fixing the petrol tank and remember where they were situated!
- Undo the brake line at the "T" coupling at the rear axle.
- Apply penetrating oil to the tubular sections with threaded ends.
- Try to undo the tubular sections using a large BAHCO. If the tubular section turns together with the BAHCO, you will have to drill a 6 millimetres hole in between the two threaded sections and put a M6 bolt in it to prevent the tubular section from turning freely.
- In almost all cases, it should be possible to cut the front tubular section from the chassis.
- Undo the rear end piece on the adjusting rod.
- Undo the rear nut from the rear tubular section.
- Remove the spring canister in forward direction.

- Both axles can now be removed, but first the washer tabs need to be knocked back. If needed you can turn the chassis upside down so access will be much easier. First, “scare” the bolts by hitting them hard with a hammer. To undo the bolts, use a hexagonal ring spanner, other spanners will slip! Fix the spanner to the bolt using an appropriate clamp to make sure the spanner cannot slip off the bolt. Remove both axles from the chassis and do not forget the aluminium filler plates used for the rear axle. They will be needed when the axles are reassembled. Make sure to remember which part fits where. If required, make a diagram and take plenty of pictures!
- Undo the front axles rubber bump stops as mounted on the side of the chassis.
- Remove brake- and fuel lines. Decide if they need to be replaced. The fuel line often can be re-used. Original brake lines are made of steel and therefore prone to rust and rot. It is highly recommended to replace the brake lines by new ones made out of a copper-nickel alloy. The metal brackets used to fixate the brake lines inside the inner rear axle tube will then have to be re-used. Remove the brake lines carefully if you intend to re-use them.
- If you have decided to use a new chassis, save the original chassis number by grinding the relevant part from the chassis. As mentioned earlier: make sure what the requirements are in the country you want the car to be registered. Rules still vary widely inside the EEC!!
- Save the chassis number part, along with the 2CV’s papers and the aluminium identification plate.
- Check the complete chassis to make sure you did not miss any bits and/or pieces.

## 4. ASSEMBLING THE CHASSIS

Make sure that the chassis is properly supported on sturdy jigs and not on a single jack. Safety first!

If you have chosen to use a second hand chassis for your Burton, carefully check the complete chassis for rust and make sure that each and every weak spot is properly repaired. The chassis will be the backbone of your car, and often the reason that the donor car does not pass the MOT test and therefore is abandoned.

This is also the reason why many builders start with a new chassis. The Burton Car Company recommends a chassis, which has been treated with Tectyl. This guarantees a proper wax like coating, that will keep it rust free, especially on the inside.

Be aware, that each type of coating should be checked and repeated every 4 to 5 years in order to be and remain effective.



Chassis on stands

### 4.1. MOT REQUIREMENTS

The same legal requirements are applicable for the Burton, as for any other car. It is important that the rolling chassis is in compliance with all legal requirements in your country.

The following are some of them: (Attention, these are legal requirements for the Netherlands). The difference may seem to be small, however they could be important.

The chassis has to carry the complete load of the car; therefore, it should not be weakened by rotted spots or any other damage. If a chassis has been - or needs to be repaired, it may only be done by welding. The alternative, pop riveting is not allowed. Special pre formed repair pieces are regularly available to repair the most common weak spots of the chassis. It is highly recommended to have your chassis treated with some sort of underbody coating in order to prevent rust in the (near) future.

The brakes of your Burton are an essential part of your safety, as well as that of others. The minimum legal requirement is a slow down of 5.2 metres per second square. For the front wheels a difference in slow down capacity between the left and right wheel of 20 percent is allowed. For the rear wheels, the allowed difference is 30 percent.

The hand (park) brake has to function properly as well. Its slow down capacity has to be 1.2 metres per second square or better. The brake discs have to have a minimal thickness of 4 millimetres. The brake lines should all be free of rust and once sanded, are not allowed to show any pitting. They also have to be properly mounted to the chassis. Of course, brake fluid leakages are out of the question.

Leakages are easy to detect. However, the slow down capacity is more difficult to verify, as long as you only have a rolling chassis, there it applies to the complete car. This is why you should have a complete breaking system in perfect working order. Any part that is potentially suspect should be replaced by a new part as a precaution.

The steering is not allowed to have too much play. The maximal play allowed for the ball pins is 1 millimetre. These ball pins should have a minimum diameter of 21 millimetres. When new, they are 22 millimetres in diameter. You are better off to replace a ball pin if it shows any play. It will need replacement sooner or later anyway and access is far more difficult once your Burton is completely assembled. Apart from that, every car drives much better when its steering is free of play.

Suspension; the spring canisters are not allowed to have any decay. (First check the lids) Inertia dampers as well as normal shock absorbers all require to be in good shape and capable to do their job. Check to see that the rolling chassis stops swaying after you pressed it down and let go again. It should neatly return to its initial state. It is also important that no suspension parts have any metal-to-metal contact. All rubber parts that are there to prevent that from happening should all be in good condition.

The engine once warmed up and idling at 800 to 850 revs a minute, is allowed to produce a 2 percent carbon monoxide (CO) emission. For the older 2CV engines, the limit is less strict. The CO emission mainly depends on a carburettor adjustment. The petrol supply line is not allowed to show any leakage; therefore, you should check all lines and connections. Both engine and gear box support brackets should be mounted tightly and are not allowed to show any signs of excessive wear. The complete exhaust system has to be gas tight and should be properly mounted and free of rattling. The maximum allowed noise level is 82 dB.

Wheels and bearings; bearings are not allowed to be felt nor heard. The width of the track front is allowed to be 128,50 cm maximum. The tyres should not show any dry cracks and are required to have at least 1.6 millimetres of profile dept. If this is less than 2.5 millimetres, it is highly recommended to replace the tyre. The same rules apply to the spare wheel!

All rubber gaiters, used on the drive shafts, as well as the ones used on the steering and suspension are not allowed to show any leaks nor dry cracks. You may pass your test with one or more leak, but if you have dry cracked gaiters, you may expect them to start leaking in no time. You are better off to replace them when the body is off the chassis



Steering arm ball joint

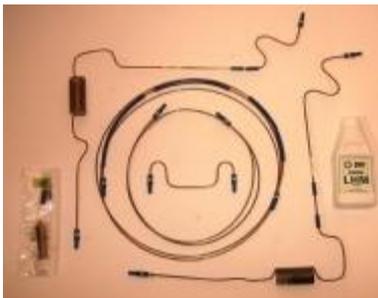


Brake disc thickness

## 4.2. FUEL AND BRAKE LINES

The first items that have to be fitted to the chassis are the brake – and petrol lines. Try to fit them exactly at the same place where they were originally situated. It is important that they are fitted properly to the chassis. You should only use the correct type of clips that are in good order being old or new. The lines should not rattle against the chassis or become loose. Be careful with the installation of these lines. Metal tubing can easily get brittle by bending, so try to avoid bending them as much as possible. The Burton Car Company can supply new brake – and fuel lines. One of our packages consists of a complete set of brake lines including all rubber parts as well as grommets and the brake fluid itself. The lines in this package are made out of a nickel copper alloy and therefore better rust resistant than those originally supplied. Also brakelines of stainless steel are available.

The fuel line consists of several pieces of rubber tubing, together with a white/transparent part made out of plastic. This plastic tube is fitted with clips, which are fitted to the chassis by slotting them in their pre-drilled holes. To connect the plastic tube to the petrol tank and to the fuel pump, a rubber fuel line with an outer diameter of 7.5 or 8 millimetres is used. Do not use any hose clamps, they are only needed on the line between the fuel pump and the carburettor, which is the pressurised part of the line.



Brake line set



Brake line front



Brake line rear



Protective cover brakeline



clips for brake + fuel line

### **4.3. MOUNTING THE SUSPENSION TUBES**

Push the rubber buffers and the inner nuts over the tie-rods. Put the spring canister in position and push the rear tie-rod through the rear support bracket, the front tie-rod and through the slot in the front support bracket.

ATTENTION! The AV marking on the spring canister should be facing the front of the car after it is fitted. (AV=Avant=Front)

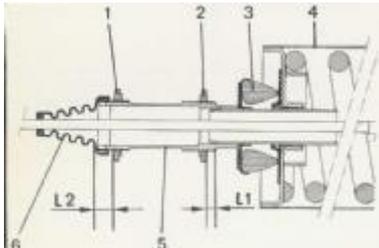
Push the tubular sections with threaded ends through the support brackets, then through the hexagonal nuts and the rubber buffers into the spring canister. Using the nuts, the spring canister should be adjusted, so it is locked between the rubber buffers fairly tight. It can still be turned by hand. Make sure that the distances L1 and L2 at the front and the back of the spring canister are about the same.

Lock the nuts with a torque of 180 Newton metres (the equivalent of 133 lb/ft)

Install the gaiters by pushing them over the end of the threaded tubular section. If needed, they can be locked using a tie wrap. Turn the end pieces onto the tie-rods so they are covered for at least 15 millimetres. Every Burton is adjusted to a lower riding height than the 2CV as a rule. In order to assure that the tie-rod is screwed in far enough into the end piece, longer end pieces may be needed, which can be supplied by the Burton Car Company.

If you adjust the riding height as described in this manual, only the two rear end pieces need to be replaced. If you like to lower the car even further, you need to replace the two end pieces at the front as well.

Always make sure that the end pieces cover the tie-rods by at least 15 millimetres .Be aware that these tie-rods, under normal operating conditions, encounter a pulling force of 1000 kilograms (more than 2000 pounds!)



Mounting the spring-tube



Pull-rod Long

#### **4.4. REAR SUSPENSION**

- Place the aluminium packing pieces on the chassis, so their elongated ends face towards the back of the vehicle. (These packing pieces are only used under the rear axle, not under the front axle).
- Lift the rear axle onto the chassis; make sure it aligns with the aluminium packing pieces.
- Fit the long bolts with the tab washers. The bolts should have a strength rating of DIN 10.9 Tighten the bolts with a torque of 45 to 50 Nm (=33-37 lb/ft) and lock them in place by bending the tab washer end over the bolt heads.
- At this point you may attach the brake line to the rear axle T piece, using an 8Nm (=6lb/ft) torque. Do not forget the rubber insert!
- Grease the knife-edges and put them in their proper place. The large ones fit at the rear, the smaller ones at the front. These knife edges should fall into place easily, when not yet loaded. This is the normal procedure. Make sure not to forget the knife-edge spring fixing clips!

The riding height can't be adjusted just yet. When the Burton is completely finished and has its final and full weight, you can set it to the right height.



Spacer rear suspension



Placing knife edge



Clip knife-edge



Mounting axle tube



Brake line

## **4.5. FRONT SUSPENSION**

- Start by fitting the rubber bump stops to the chassis. Fix them with a M10 nut. Position the front suspension unit on the chassis
- Make sure all holes and position pins are lined up.

- Place the M10x1.25 long bolts (again with strength id DIN10.9) in the relevant holes. Do not forget the tab washers!
- Tighten the bolts with a 40 to 50 Nm torque (=30 to 37 lb/ft). Bend the tabs of the tab washers back over the bolt heads, so they are safely secured.
- Grease the knife-edges and put them in their proper place. The large ones fit at the rear, the smaller ones at the front. These knife-edges fall easily into place, when not yet loaded. This is the normal procedure. Do not forget the knife-edge spring fixing clips!

The riding height adjustment is still not possible. The same applies to the wheel alignment.

Fit the gearbox bracket on the front axle tube, using two M7x35 bolts, each equipped with a star shake proof washer and do not forget the little rectangular plate.



Mounting the axle tube

Rubber stop



Mounting the axle tube

Knife edge

## 4.6. SHOCK ABSORBERS

- Fit the shock absorber studs to the side of the chassis.
- First, put the thick washer onto the shock absorber stud with its sheered side towards the chassis, then the shock absorber, followed by the thin washer and the locking nut.
- Attention!! On the front shock absorber mounting brackets, both left and right, the thick washers are not used.
- Make sure, that the shock absorbers have been fitted correctly. The so-called LIP type has a little painted dot as a fitting mark, which should be located at the top. See the picture for details.

- If you are using different shock absorbers, be sure to check the installation guidelines carefully.
- Tighten the nuts using a 35 to 40 Nm torque (=26 to 30 lb/ft)

ATTENTION!! It is possible to inadvertently switch the two front mounting brackets. Make sure these brackets are fitted as shown on the picture. Doing it the other way will severely limit the shock absorbers movement, resulting in premature shock absorber failure.



Shock absorber rear



Shock absorber front



Shockabsorber mounting

## 4.7. ENGINE AND GEARBOX

In case the following has not been done yet:

- Attach the two support brackets to the engine
- Attach the first silencer to the underside of the gearbox, using two M7x16 bolts and two flat washers
- Attach the drive shafts to the gearbox side, using M9 bolts and nuts. Preferably, use a locking bond, e.g. Loctite.
- Make sure the gaiter for the wheel side of the drive shaft is in place.
- Attach the (longer) clutch cable to the gearbox; make sure that the inner cable falls behind the clutch fork.
- Undo the rear two bolts of the gearbox, by turning them only a few times until they are able to slip over the mounting bracket

- With the use of an engine hoist or two assistants, hang the combined engine, gearbox and first silencer over the chassis.
- Make sure to introduce the two halves of each drive shaft gently as the engine/gearbox combination is lowered into position.
- Attach the gaiters on the drive shaft at the gearbox side with tie wraps.

ATTENTION! The gaiter is ONLY attached to the gearbox side!

- Tighten the bolts of the front engine support brackets
- Followed by the bolts at the gearbox bracket
- Install the parking brake cables and loosely tighten the adjusting nuts (do not do the final adjustment just yet)

## 4.8. EXHAUST

There is a special exhaust system available for the Burton, which fits nicely under the car, produces a sweet dark rumble and provides some gain in power as well. The damper and pipes are made out of stainless steel and therefore maintenance free.

Assuming everything went well, you should by now have the front silencer installed underneath the gearbox. The mounting points of the Burton exhaust system are different from the ones for the 2CV. For the Burton, you use two rubber exhaust bobbins that have M6 thread at both sides. Use locking nuts to fit them to the chassis/body. Due to high temperatures, it is wiser to use normal nuts and locking washers at the bobbin that is closest to the second silencer.

A new fitting has been developed for the second silencer. This fitting no longer extends from the underside of the car, so it cannot bend anymore. Attach the strip under the two bolts of the rear exhaust clamp in such a way that the strip is horizontally situated above the clamp. Attach one end of the bobbin to the strip and the other end to the chassis.

When the body is ready to be put in place, the thread of the bobbin will touch the body floor. Drill a hole where the bobbin touches the body floor. Fasten it with a lock nut inside the car.

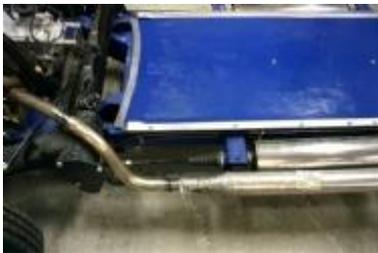
- Assemble the complete exhaust system without tightening the clamps. Check to see that the whole system fits nicely to the chassis.
- The fitting of the exhaust system of the first silencer is done with the use of a so-called "half moon" clamp of 47 millimetres diameter. We recommend to use the Burton Car Company heavy-duty clamps that perform much better and can even be re-used, unlike the original clamps. These can be found on our webshop, named 'special exhaust clamp'.
- If you are not able or have a hard time to make the connections gas tight, you may apply (sparsely) a special exhaust sealant.
- The last connection of the exhaust system is attached with a small bobbin to the chassis, as is clearly shown in the picture.
- By lining up all the exhaust connections, you should end up with a tension free fit of the whole system to the chassis. Only then you tighten the clamps securely.

After the body has been installed, you should check it one more time to see if the complete exhaust system still hangs free and does not rattle.

It is possible that the trailing pipe of the exhaust touches a bracket on the chassis or the rear hoisting bracket. Feel free to bend the bracket or to cut it off the hoisting bracket.



Exhaust front



2nd silencer



Exhaust behind swingarm



Exhaust mounting rubber rear



Exhaust middle mounting

## 4.9. PETROL TANK

The petrol tank is refitted to the chassis the way it was, using the four M7x35 bolts. Make sure that the original plastic washers and plates are re-used!

The Burton wire harness has a small separate tree with socket included, for connecting the tank float. Put these there threads now. Of these cables is the white wire No. 25 on the round pin of the float tank. The brown wire 312 connects to the flat ground connection at the fuel gauge.

The metal fuel outlet of the transmitter is connected to the white/transparent plastic fuel line by using a short piece of rubber petrol line. No clamps or clips should be used. If the diameter of the rubber tube is correct, it should result in a tight fit, when the two lines are shifted over each other.

The fuel line is routed upwards together with the brake line in front of the rear axle and subsequently goes underneath the axle to connect to the transmitter. See the picture for details.

Once the petrol tank and the fuel line have been fitted correctly, the tank saddle should be fitted. Use four M9 bolts that screw into two threaded plates fitted beneath each chassis rail. If one or more of the bolts broke off during the dismantling, you may decide to use four M10 bolts plus washers and locking bolts instead.



Brake- and fuelline

## 5. MOUNTING THE BODY

In this chapter, we will attach several parts to the body. The body is still on its stands (not attached to the chassis), so it makes it easier to be worked on.



The basic package

### 5.1. TRANSPORT AND STORAGE

After you paid your down payment for the body (15%), the Burton Car Company will order it for you and you will receive an order confirmation containing the body number and an estimated delivery time. You may pick up the body at our facilities in Zutphen, the Netherlands, using a truck, van or sizeable (preferably closed) trailer. It is recommended to transport the body in its original wooden crate. The dimensions of the crate are: length is 290 cm (approx. 9.5 feet), width is 120 cm (approx 4 feet) and height is 120 cm (also 4 feet). Leave the body inside the crate in order to prevent distortion as well as damage. It is best to store the crate in a shed, or at least at a place where it protect from rainfall (as moisture combined with the plastic wrapping material can sometimes create stains in the polyester).

### 5.2. PROPERTIES OF POLYESTER

The body and other parts are produced in the Czech Republic at a factory specialized in the production of fibreglass parts. The price/quality ratio for the Burton fibreglass is very high. The Burton is not spray painted, but is delivered in a gel coat. The gel coat layer, which defines the car's colour, is far thicker than any spray-painted coating as can be found on normal cars. Because the Burton is not spray-painted, the moulds that are used have to be in perfect condition. Any damage to the mould will be visible on every new product, therefore it is extremely important to maintain these moulds appropriately. (A full set of moulds costs about 60,000 euros). The good quality of the fibreglass parts depends on a series of factors like; durability of the material, workmanship, the correct temperature in the workshop and the time the fibreglass is allowed to harden in the mould.

Here are some of the advantages of a gel coat versus spray painted steel:

- It is lighter and stronger
- It cannot corrode
- A little scratch can easily be repaired by light sanding and a fresh polish.
- It is easier to work on and this can be done with basic equipment.
- It is more flexible
- It requires less maintenance.

There are some disadvantages as well:

- It does not dent, instead it will crack and splinter.
- It is likely to have a larger thickness
- It will never be as smooth as a metal surface.

The Burton is a hand made product. The complete design has been made without the aid of computers, so allow for minimal differences in symmetry.

### **5.3. WORKING WITH POLYESTER**

When you are sawing, sanding or drilling fibreglass, there will be dust, which is very unhealthy, when not only it is inhaled, but it is a skin irritant as well. Make sure to take the appropriate safety measures, for yourself and everybody in your vicinity, by wearing proper clothing, dust masks and safety goggles.

When you need to drill a hole in the fibreglass we advise you to use HSS (High Speed Steel) drills or as an alternative, a so-called Dremel, which is a very high-speed drill (Up to 20.000 revs) The holes for the instruments in the dashboard can best be realized by using core drills. Another possibility is to have these holes pre-drilled by the Burton Car Company, so they are there when you pick up the body. When you need to saw a hole in the body, this can best be done by using a hand- or electricity powered jigsaw, in both cases equipped with a saw blade normally used to cut metal. Do not use too much force when sawing but let the jig saw do the work instead. Be careful not to damage the coloured gel coat. An electrically powered jigsaw tends to vibrate quite a lot so we advise you to protect the gel coat against these forces by covering the surface with masking tape. Make sure that the bottom of the jigsaw will not damage the gel coat by giving it a protective layer of some sort. Make sure that the fibreglass does not get too hot; there it will result in irreversible discolouration of the gel coat. Make sure you do not drill with too high a speed. This specifically applies when you are drilling the larger holes for the instrument gauges in the dashboard and such.

The fibreglass edges can be worked on using a belt sander. Make the edges smooth with sandpaper. Be careful to protect areas you do not want to be damaged by covering them with good quality masking tape or even duck tape. With the use of a bright electric light on the inside of the body, you can easily assess the thickness of the material. Small damages or irregularities can be removed by using sandpaper. To do so you start with grain 600 or higher. Once you are happy with the result you continue by gradually lowering the grain size, so continue with 1000, 1500, 2000 and end with 2500. Make sure to use plenty of water while sanding. Finish it off by using a fine polish (e.g. Commandant 4 here in the Netherlands) and finally yet importantly, apply a quality car wax.

To make this job more enjoyable, we advise you to have the body rest on solid stands, preferably at the height of your hips.

### **5.4. CLEANING AND POLISHING**

The body is removed from the mould with the use of a release agent. This agent may leave a white shine This is often seen, specifically on darker coloured cars. Remove this shine by thoroughly polishing the whole car after the assembly is done. The Burton Car Company has put together a specific polishing set of 3M components for polishing as well as damage repair. This set will make the job easier with an excellent result. Make sure that the car is completely cleaned before you start polishing. Even the smallest grain of sand will ruin your work and leave nasty scratches.

Completely degrease the body with acetone or thinner before you start polishing. Be careful with this kind of chemicals. Proper body protection and appropriate ventilation are of vital importance.



Polishing set 3M

## 5.5. MOUNTING THE REAR MUDGUARDS

Before you fit the rear wings, it is important to get rid of the so-called separation seam. The separation seam is the edge on the wing that will be in contact with the body. We advise you to sand and polish this seam before the wing is fitted on the body. .

Protect the fibreglass next to the seam by using masking tape. Sand down the seam with waterproof sanding paper. Start with granularity P500 and working down to P2000 or even P2500. When you are done, you should have obtained a smooth but dull surface.

The original lustre is obtained by applying an appropriate polishing compound.

Sand down any unevenness on the wing surface that will be touching the body. This should be done using fairly course-sanding paper, for example grain P80.

Start by defining the location where the rear wings will be attached. At exactly 110 centimetres from the corner of the bonnet towards the rear, measured at the top ridge in the body, is the starting point where the wings are going to be attached. Mark this point with a felt pen. The mark can later easily be removed with either acetone or thinner.

The flange of the rear wings that will be in contact with the body has two indentations. These indentations will rest on the ridge of the body, defining the location and height of the wings. The mark you made earlier defines the spot where the indentation starts. The picture shows this clearly. Get an assistant to keep the wing in place. Draw the contours of the wings on the body, with the use of a felt pen. This will later enable you to properly reposition the wings.

Drill a series of eight holes in the middle of the flange, each with a diameter of 6.5 millimetres (1/4 of an inch). Make sure the holes are evenly spread along the length of the flange and make sure not to drill any holes near the height of the car floor! Place the wing against the body and mark the position of all eight holes on the body with a felt pen. Now drill the holes in the body.

Fasteners: Bag 1 of fastener-set.

Fit the wing by using stainless steel M6x20 bolts, penny washers and lock nuts.

It is advisable to use vinyl body trim between the wings and the body. The black trim is the cheapest, but you can also order trim in the same colour as your body. The trim gives a better seal between wing and body and it also looks more professional. It is applied by first gluing it to the wing flange with super glue before the wing is fitted to the body.

Now install the reflectors on the wings. Replace the self-tapping screw by a M5 bolt with washer and lock nut. Self-tapping screws should not be used in fibreglass there they are guaranteed to come loose due to vibration. The reflector can easily be taken apart by unclipping the chrome ring from the rubber seal.

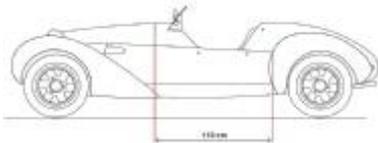
First, fit the rubber part to the wing and then clip the chrome ring together with the reflector back on. Be sure to position the reflector so that the "TOP" mark does indeed point to the top. With the use of a little silicon spray, you will be assured of a smooth refit. .

Should the wings be ajar after they have been attached, make sure that the fibreglass has to settle. Start by fitting all the bolts hand tight, wait several days and then tighten them properly. Be careful not to over tighten them or any other bolts that fix fibreglass to fibreglass. Over tightening will force the overstretched fibreglass to "flow" which can cause serious deformation.



"TOP" mark

Sanding the edge



Measuring rear wing

## **5.6. GLUING THE GAITER FOR THE STEERING COLUMN IN PLACE**

An 80 millimetres hole is located at the bottom of the bulkhead. The steering column should pass through here. In order to seal the opening, we use a drive shaft gaiter (wheel side). Re-using an old one is also possible but make sure it is properly degreased.

Make sure the gaiter fits nicely in the hole. If need be you should enlarge the hole to assure a good fit.

Roughen both the gel coat and the rubber using sandpaper. Degrease with acetone and use Sikaflex 260 to glue the gaiter in place. Check for proper fixation after 24 hours because once the body is installed there is no way you can access this area again.



Glueing the rubber

## 5.7. PEDALS

The accelerator pedal used in the 2CV is too long to be used without modification in the Burton because of a different location of the pedal set. You may either exchange the original accelerator pedal at the Burton Car Company for a modified one or you may modify the pedal yourself (refer to the drawing).

For people who are short in stature, there is an option to bring the pedals closer to the driver's seat, see chapter 5.8 for details.

Fit the pedal set and master brake cylinder on the pedal bracket. To fit the master brake cylinder, use the two M10x65 bolts and fit those through the bracket using the holes that are closest to the bulkhead.

Make sure that all pedals can move freely, specifically the accelerator pedal, which is known for its pivoting difficulty. That could either be caused by dirt on the spindle or because the pedal is turned too far on its thread.

Verify that the brake light switch is properly fitted in its slot.

Guide the master brake cylinder and pedal set assembly from the inside of the car through the oval hole in the bulkhead. If the master brake cylinder does not fit smoothly through the hole, you can enlarge the hole slightly by using a file. Fit the complete assembly to the body using eight bolts of size M6x30. Use mudguard washers on the outside. Do not forget to install the stainless steel clutch cable guide, which is situated on the engine side of the bulkhead, down on the left side and fitted to the two lower holes of the pedal set bracket. (see both the drawing and the picture for details).

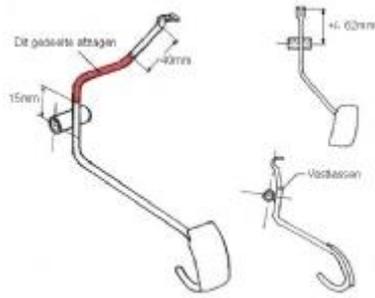
The bolt on the lower right hand side is also used to fixate the brake line in the engine bay. The bolt above it is also used to fix the heater tubing bracket as situated on the engine side of the bulkhead.

Carefully press the brake fluid reservoir back into the master brake cylinder only after having oiled the rubbers using the correct brake fluid. The reservoir is not allowed to touch the body.

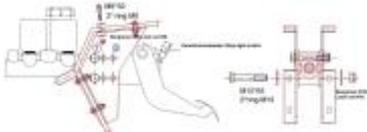
Check that the brake pedal has a free play between 0.5 and 1.0 millimetres measured between the pushrod and the master brake cylinders piston. That way a free travel of the brake pedal will be around the required 5 millimetres.

Attention: In order not to fail your local version of the MOT as well as for your own safety, both the clutch- and the brake pedal should be equipped with a correct, not worn out, pedal rubber. It is much easier to put these on before you mount the complete pedal set assembly. Later access is difficult.

The accelerator pedal of a 2CV or Burton is never equipped with such a rubber cover.



throttle modification



Pedalgear mounted



Clutchcable connection



Pedal brace



Modified pedal

## 5.8. THE SHORT LEGS KIT

A “short legs kit” has been developed by the Burton Car Company, which will bring the pedals closer to the driver. First, the master brake cylinder is fitted in the pedal bracket using the two holes closest to the bulkhead. Use four

M10 washers between the master cylinder and the bracket to fill the gap that results from the repositioned pedal set.

Replace the original brake pushrod by the longer one from the kit and fit it to the brake pedal.

Take care that the slope on the pushrod follows the slope of the pedal.

Next: the pedal set is fitted to the bracket using the holes closest to the driver. The two bushes from the kit should guide two M10x65 bolts through the two holes in the bracket closest to the driver and through the pedal set. Use appropriate washers and lock nuts for the fitting.

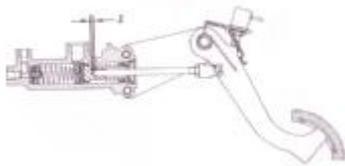
Check that the brake pedal has free play between 0.5 and 1.0 millimetre, measured between the pushrod and the master brake cylinders piston. That way free travel of the brake pedal will be around the required 5 millimetres.

The complete pedal assembly can now be fitted to the body as described in the previous chapter.

Be aware that the clutch cable guide will have to be shortened to compensate for the relocated clutch pedal.

About 35 mm needs to be cut off the pipe that guides the clutch cable. The same length can be cut off the outer skin of the throttlecable to create extra play.

Check to see if the clutch pedal remains free from the steering column (after that is put in place). You may have to bend the pedal slightly to achieve this.



Adjusting MBC pin



Long pin for brake cilinder

## 5.9. HEATER CONNECTION

Check to see that all holes in the bulkhead and related to this bracket are properly sized and aligned, using the bracket as a template.

Fit the bracket to the bulkhead on the engine side using two M6x20 bolts on the right hand side. The lower left is fitted with the bolt that also fits the pedal assembly and the upper left (next to the master brake cylinder) is fitted using the accelerator cable guide.

The bolt, which goes through the middle, is also used to fit the gearshift mechanism and will be fitted at a later stage.

Equip both sides of the fasteners with a M6 mudguard washer and use M6 lock nuts. The accelerator cable will be fitted later.

The elongated vertical slot will be used for the parking brake mechanism.



Throttle cable



Heater throughput

## 5.10. VEHICLE IDENTIFICATION PLATE FROM THE DONOR CAR

The moment has come to install the Vehicle Identification Plate, which you have saved from your donor car. Be sure to leave some room for the Burton ID plate, which the Burton Car Company can supply you on request once your car is officially road legal.

Drill two 4.5 millimetres holes using the Vehicle Identification Plate as a template.

Fit the plate, preferably using pop rivets.



identification plate

## 5.11. REAR LIGHTS

All four lamps can easily be fitted in the pre-drilled holes. The rear lamps fit in the upper holes, the flasher lamps in the lower ones. This is a legal requirement; you are not allowed to reverse the lamp positions.

The rear lights are to be equipped with a 5/12 watts double contact bulb. The flasher lamps need a 21 watts single contact bulb.

ATTENTION! All four-bulb holders are equipped with only one ground connection under one of the two M5 fitting bolts. Make sure when fitting the wiring harness, that you connect the ground wire to the right wire thread.



Ground connection



Rear lighting and direction indicator

## 5.12. WIRING HARNESS

A complete wiring harness is available for the Burton. This harness has been developed, there the disassembly and reworking of the original harness is a major task and specifically for those people not familiar with car electricity, it is far from fun. The original harness often contains faults and/or has suffered from “modifications” What makes the Burton harness special is the fact that it contains a large return wire there the glass fibre cannot act as a return because it is an isolator, not a conductor.

The ready to install wiring harness is suitable for all possible options like seven gauges, radio, third stop lamp, 12N lightning connector for the tow hook etcetera. All wires are numbered, which makes the installation very simple, while it enables you to locate any problems with ease. Multi wire plugs allow for simple disconnection to the engine and front, so it can easily be removed if needed. The reliability of this wiring harness and the shorter time needed for assembly is very advantages.

Be sure to glue (using SikaFlex 260) the wiring harness to the body before the installation of the upholstery.

Wiring harness installation is detailed in chapter 6.

## 5.13. BATTERY TRAY AND HORN

Fit the battery bay to the right hand side of the bulkhead using three M6x20 bolts in the pre-drilled holes.

The middle bolt also carries the 2CV horn, however if you decide to apply the special two-tone Burton horn, the two outer bolts are used. The stud carrying the battery bay cannot be installed until the body is fitted onto the chassis.



Battery tray + horn

## 5.14. BOOTLID

Drill the holes (8.5 millimetres) into the body that will fit the hinges. Be aware that the left- and right hand hinges are different. On the bottom of each hinge, you will find a four-character identification, which will tell you on what side it is to be used (as seen from the driver's position)

- RV LA = Right hand side – Front or Left hand side - Rear
- RA LV = Right hand side – Rear or Left hand side - Front

The older type of hinges is identified by looking at the only visible side of the hinge pin, there it always points to the middle of the car.

The hinges are chamfered and thus able to follow the slope in the bonnet and boot lid. When fitted incorrectly, a lot of stress on the fibreglass may result in damage to the gel coat.

Hinge failure is also possible and this failure caused by an incorrect fitting is not covered by our warranty.

Check the standing edge of the boot gutter. It should not exceed the thickness of 4 millimetres causing the rubber seal not to fit properly. If you encounter an area that is thicker than 4 millimetres, you may sand it down at the rough side of the fibreglass. You should leave the gel coat side alone. The height of the standing edge is also important and should not exceed 20 millimetres (see drawing). If the edge is too high it will result in a bulging boot lid.

Now that the edge is taken care of, the rubber seal should be put in place. Start at the highest side so the joint will be in the middle. Use super glue if you want to join both ends of the seal.

Make sure that the boot lid does not touch the body. If it does, first see if readjusting the hinges can solve the problem. If not, you will have to remove the excess material from the bottom of the lid by either sanding or grinding it down. Be careful if such need arises. Take your time and carefully grind or sand a little at a time, you

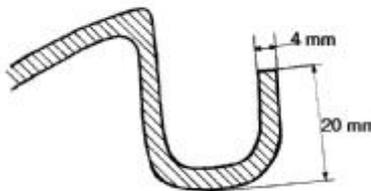
will not be happy when you find out you took too much off. Be aware that a new boot lid will set you back some 250 euros.

If the length of the threads permits it, use mudguard washers under the nuts with which you fit the hinges because it will even out the pressure on the fibreglass. Never turn the hinge once it is fitted to the body (but not yet to the lid) because it will cause nasty and hard to remove scratches on the gel coat. .

The underside of the lid probably needs some sanding or grinding as well. This may be done only when the lid is fitted with the hinges in their proper position to the body. Now you are able to easily check for the exact fit after each time you have sanded the fibreglass. As for the finishing touch, it may be a good idea to fit the chromed Burton logo on your boot lid. Before drilling the required holes, make sure you do not end up behind one of the reinforcement rims of the lid. Applying a drop of SikaFlex 260 to the holes will any leakage in the future.



Modification boot lid hinge

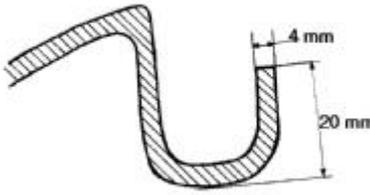


Gutter for rainwater

## 5.15. BOOTLID STAND

The stay is to be glued with SikaFlex 260 to the inside of the body on the underside of the boot gutter. Before you glue the parts together, lightly sand down the rough side of the fibreglass and make sure you carefully degrease the to be glued surfaces. Use a clamp and a piece of wood to press the bottom part of the stay against the fibreglass. Give the SikaFlex a full day to harden.

Create a 17 by 6 millimetre slot on the inside of the reinforcement rim of the boot lid at about 25 to 30 centimetres from the top of the lid (adjust according to your own preference). One way to do so is to drill a series of 6 millimetres holes and with the use of a round file make the slot smooth. Make sure the stay will really “hook” behind the fibreglass so the lid cannot be blown open by the wind nor fall in your neck thanks to gravity.



Gutter for rainwater

## 5.16. THE BOOTLID LOCK AND NUMBERPLATE LIGHT

Once the boot lid is properly placed, you may fit the lock. It is vital that the lock and catch are properly aligned otherwise the lock cannot do its job.

First drill, then file the dented square in the bootlid to the proper size.

Drill the three holes required for the lock. Use the rubber supplied with the lock as a template. In this case the indentions in the bootlid are not 100% accurate.

Fit the lock in the boot lid, using three M5x12 Allen bolts.

Fit the catch in the boot. Again, the relevant holes are indicated by the indentations in the gel coat. All you need to do is to drill the 5.5 millimetres holes. The oblong holes in the catch will allow you to adjust it. Do not tighten the bolts until you have aligned the lock and catch to your satisfaction.

While the catch is on the inside of the body, the number plate lamp bracket sits on the outside.

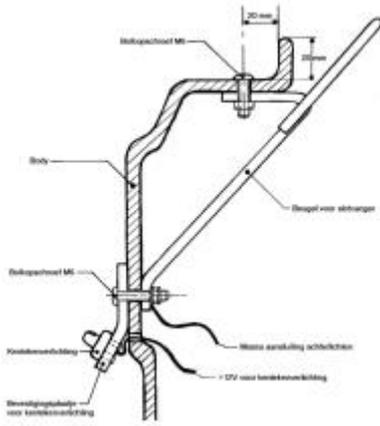
Mark the hole for the feed wire for the number plate lamp and keep in mind as where the number plate should go. Drill the hole and guide the number plate lamp feed wire through it. Make the hole water tight by either using a grommet or by applying some SikaFlex 260 to the opening.

When you are happy with the lock and catch position, you should tighten the two upper bolts. Next, you should fit the number plate lamp to the bracket. The two lower bolts of the catch will also be used to fit the number plate lamp bracket

Dutch legislation requires the number plate lamp to be fitted to the bottom of the number plate.

Make sure you know and obey to the rules that apply to your situation.

Be aware that one of the two lower bolts needs to function as the mass/ground point for the electricity. See chapter 6 for details.



Lock catch

## 6. WIRING HARNESS

In order to meet our customer requirements we developed a complete cable harness for the Burton.

With the cable harness it is possible to fit the following gauges:

- Speedometer Burton and MMB (mechanical)
- REV-counter Burton and MMB, connected on the ignition.
- Battery voltage gauge Burton and MMB.
- Fuel gauge Burton and MMB.
- Oil pressure gauge Burton and MMB.
- Oil temperature gauge Burton and MMB.
- Ampere gauge Burton and MMB, connected with 2 ring connectors.
- Clock Burton and a radio.

There are also connections for the instruments lights.

The following control lights are pre-wired in the cable harness:

- Oil pressure
- Brake fluid
- Indicator
- High beam

The Burton speedometer gauge houses three control lights (oil pressure, brake fluid and indicator).

The following switches are pre-wired in the cable harness:

- Windscreen wiper switch
- Light switch
- Indicator switch
  
- Ignition lock
  
- Starter button (optional)
- Demister switch
- Windscreen washer button

A part from this the cable harness is prepared for all the standard lighting (headlights, taillights, indicators front and rear, brake lights, interior light etcetera.)

Connection in the engine room:

- Starter engine
- Alternator
- Voltage regulator
- Brake fluid indicator
- Ignition coil
- Triangle (towing equipment) connection

We have also taken into account the following sensors:

- Oil pressure sensor

- Oil temperature sensor
- Stock 2CV fuel level sensor

The cable harness is prepared for the following accessories:

- 12v-connection in the interior
- Trailer connector for towing with a triangle. Connector can be mounted on the bulkhead.
- Light in boot space
- 3rd brake light

The cable harness is both prepared for the original ignition and electronic ignition.



Wiring harness

## 6.1. UNWRAPPING THE HARNESS

Once you have unpacked the wiring harness, it would be a good idea to first check out all the connections and connectors. Doing so will make it much easier for you to make all the required connections while lying on your back inside the car.

It is recommended to tag each connection with an appropriately named label.

The complete harness consists of the main wiring loom plus five separate smaller looms: two for the head lights, two for the front indicator lights and a wiring loom for the engine, which you may put together, depending on the options you have installed (oil temperature transmitter, 123 electronic ignition etc.)

Attaching the harness to the body is best achieved by gluing it to the inside of the body, using the SikaFlex bond. For a proper bonding, sand the fibreglass and make sure to de-grease the fibreglass and the harness.

Make sure that all the connections are installed so you know exactly which way the harness should go. This works out best by working from the back towards the front. You may also install the fuse box. The fuse box is best mounted in the interior, and on the lefthandside of the car. Place it against the upper vertical part of the firewall, directly behind the dashboard. Then put the wiring loom through the firewall using the hole drilled next to the oval hole for the Master brake cylinder.

Prepare all the areas where you want to attach the harness to the body. Do so with 10 cm intervals using SikaFlex bond.

Attach the harness securely to the body by using appropriate clamps and leave it for 24 hours to harden. Make sure to protect the body against scratches from the clamps by placing cardboard between clamps and body (see picture).



Glueing the harness

## 6.2. REAR SIDE OF THE CAR

We will go through all the connections of the main harness, starting from the rear to the front.

We will start with the connections for the right hand tail/stop light combination and the right hand indicator. Next connection is the one for the license plate illumination, followed by left hand tail/stop light and ditto indicator.

The connections bear the following codes:

- >582 Tail lights and license plate illumination
- >490 Indicator left
- >54 Stop lights
- >312 Mass/ground return (brown)
- >491 Indicator right
- >57 Optional fog tail lamp (a loose wire without connector)

Attention! For each of the four taillights, only one of the two M5 threads is internally connected to the ground return of the bulb. In order to know for sure which of the two M5 threads that is, remove the plastic cap from the armature and check the connection (see picture).



Ground connection

## 6.3. FUEL GAUGE SENSOR

While we continue our way to the front of the car, we encounter the following parts:

- >25 Connection for the fuel level transmitter
- >312 Ground

Attention! The MMB as well as the Burton fuel gauges, use the standard 2CV fuel level transmitter which does not need any kind of adaptation (as was the case with earlier versions of the gauges)

The wire should be guided along the petrol tank saddle and then through the body floor. Therefore, a hole needs to be drilled just behind the driver's seat on the left hand side. Guide the wire through this hole up into the interior, sealing the hole with a grommet or a touch of SikaFlex.

Following the wiring harness further there are another 2 connections. These are for a optional third brakelight and light in the boot.

De connection:

- > 54 Third brakelight
- >301 +12V (with fuse)
- >312 Ground

## 6.4. DASHBOARD

Next, we arrive underneath the dashboard where the connections for the following items reside:

- >57 Fog tail light (optional)

Fuse-box

The wiring harness has a fuse box built in, which includes three fuses. There is room for an optional, for now unused, fourth fuse. Accessories like the windscreen wiper, windscreen washer and de-mister could be connected to this fourth fuse.

- >30, >301 Fuse # 1, 10 Amps
- >15, >151 Fuse # 2, 15 Amps
- >58, >581 Fuse # 3, 10 Amps
- >16, >161 Fuse # 4, 10 Amps
- >32, >32 Fuse # 4, 40 Amps
- >20, Fuse #6, free for custom use

Lighting switch

- >30 + connection to battery To switch terminal marked "+"
- >56a Main beam To switch terminal marked "4"
- >56b Dipped beam To switch terminal marked "3"
- >58 Gauge lighting, side lights and tail lamps To switch terminal marked "1"

Lighting buzzer

Optional, you can install a buzzer which will help you remember to turn of the lights.

- >58 Gauge lighting
- >15 Ignition

Extend cables 58 and 15 and connect these to the red and black wires of the buzzer.

Indicator switch

- >490 To switch terminal marked "1"
- >3 To switch terminal marked "54" (the middle terminal)
- >491 To switch terminal marked "2"
- >49 to horn. To switch terminal A
- >161 (+12V for horn) To switch terminal B

The Burton indicatorswitch has a built in horn function. When the lever of the switch is pushed sideways a connection is made between A and B. Connect A or B to >49, and connect the other terminal to wire >161 (battery +).

You are free to use a different type of switch. For its connections, see the picture.

#### Flasher unit

- >151 X, to +12 Volts from the terminal
- >2 P,R to flasher indicator lamp (also knows as trafficator)
- >3 L,C to Indicator switch

Attention! The flasher unit will only work correctly when all indicator lamps (front as well as rear) are connected, generating a total load of 42 Watts. The installation should only be tested when all lamps are connected. Regardless of the type of flasher unit installed: it will only function correctly when it has been properly connected to earth (ground). For the electronic flasher unit, earth is the black wire.

#### Instrument/gauge illumination

- >310 Earth (ground or return)
- >580 Lighting

Connections for every gauge are made via the wires marked >580 and >310 (earth/ground) where the latter also functions as earth/ground for the instrument itself.

#### Ignition switch

- >30 Battery
- >50 Starter motor
- >15 Starter contact

If you prefer to install a separate starter push button, wires >30 and >15 have to be connected to the ignition switch. An additional wire needs to be installed connecting >15 from the ignition switch to one of the starter push button terminals. The wire marked >50 needs to be connected to the other starter push button terminal.

#### Ignition switch Visa (only applies when you install a steering column with lock)

- >30 Battery, connect to the red wire of the ignition switch.
- >50 Startermotor, connect to the blue wire of the switch.
- >15 Starter contact, connect to the orange wire of the ignition switch.

The ignition has an accessory position. Do you want for example a radio or map reading light connected to this position, create a wire from the (remaining) yellow wire from the ignition switch to the fuse box and connect your accessories via a fuse to lead.

#### Switch for blower:

- >92 to terminal (B)
- >93 to terminal (C)
- >163 to terminal + (A, +12V via contact)

#### Wiperswitch:

- >23 to terminal (A)
- >24 to terminal (B)
- >164 to terminal (C) (+12V via contact)

The wiper motor is controlled by a special switch that also delivers a current to the motor when it is switched 'off'. In this manner the wiper arms will, when shut off, continue to complete it's trial and return to it's proper resting position.

Switch/pushbutton wiperfluidpump:

>91 to fluidpump

>162 (+12V via contact)

A black pushbutton is supplied with the Burton Wiper-set.



Connections light switch



Ignition switch



Direction indicator



Defroster-switch



Window wiper switch

## 6.5. INSTRUMENTS

There are several possibilities regarding the gauges for your Burton: you could use the original 2CV instrumentation; you can buy one of the gauge sets as supplied by the Burton Car Company or you can collect the required gauges yourself. If you decide for the latter, make sure that the collected equipment is suitable for the 2CV car. Both the rev counter as well as the fuel level gauge are known to be awkward items. Rev counters rarely suit the two-cylinder engine (which fires with each stroke of the engine) and will give you a double indication of what you should get, if originally meant for a four-cylinder engine. Scaling them down to the proper indication can be difficult!

All gauges supplied by the Burton Car Company are specifically designed and manufactured for the Burton. This also applies to the rather unique oil temperature and oil pressure transmitters (sensors), which are both “plug and play”.

### SPEEDOMETER

Both the MMB as well as the Burton speedometer are mechanical and powered via a longer than standard cable from the gearbox.

The cable is put through a hole in the bracket which holds the gauge to the dashboard. Make sure the hole in the bracket is large enough to ensure that the cable does not seize.

Both are equipped with a lighting connection. Make sure that the cable connects perpendicular to the gauge, otherwise it will rattle and eventually snap.

The Burton version of the speedometer also includes three warning lights: main beam (blue), oil pressure and/or brake fluid level (red) and direction indicator (green).



Speedometer

### 6.5.2. RPM INDICATOR

Connect the rev counter with a Burton cable harness:

- >310 wire connect to - Earth (ground/mass) on de back of the meter
- >151 wire connect to +12V from ignition switch on de back of the meter
- >1 wire connect to S ignition signal on the back of the meter

As opposed to applying the tachometer, both the MMB and the Burton tachometers can simply be wired to the ignition without any need to adapt the generator or alternator.

Currently the MMB wiring harness has a three-pin connector for the tachometer. When installing the Burton tachometer, you will have to clip off this connector and replace it by three ¼ inch (6.3 mm) Faston connectors

Connect the rev counter without the Burton cable harness:

Ground (-) connection rev counter	->	Ground
Life (+) connection rev counter	->	+12V from ignition
Signal (S) connection rev counter	->	+ connection from ignition coil
Lights	->	+ from light switch

Setting the rev counter correctly:

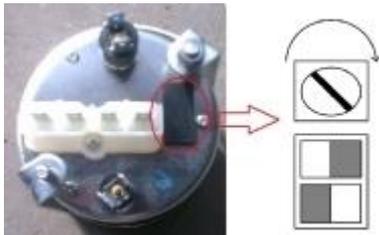
In some cases the rev counter needs a bit of tweeking to get the correct readings. This is easy to solve by taking the rubber cover from the rear of the rev counter (as seen in picture). Please check if the switches are in the right possition. Turn the top switch in order to fine tune the rev counter. Use the following example to check the setting: A standard 2CV6 (gearbox and wheels) makes 4000 RPM when driving 80kph in 4th gear.



Connections tachometer



RPM indicator



Rev counter adjustment

## VOLTMETER

A voltmeter is a very useful accessory. It principally indicates the voltage as present on the electrical system but it also shows you if the generator actually charges your battery. Thanks to that, you are able to detect failures in the charging system in a very early stage. Therefore, a broken belt or worn out brushes no longer need to result in an empty battery with the attached unpleasant aftermath.

The voltage gauge connection consists of a single connector:

>151 +12V from the ignition switch



Voltmeter

## FUEL GAUGE

The Burton or MMB fuel gauge is specifically designed to suit the 2CV fuel level transmitter, which no longer requires any modification. Fact is that these transmitters are far from accurate and significant differences exist between identical species. All that being one of the many 2CV idiosyncrasies. There is no “low level” alarm in any form so, for security reasons, bring along a jerry can with spare fuel.

The fuel gauge is installed using the following connectors:

- >151 +12V from the ignition switch
- >25 G The fuel tank transmitter



Fuel gauge

## OILPRESSURE GAUGE

This gauge indicates the lubricating oil pressure in Bar. A healthy engine should show an oil pressure of 5 to 7 Bar under normal operating conditions when the oil temperature is around 80 degrees Celsius. When running idle or when the engine oil temperature is high, this pressure will be somewhat lower.

The oil pressure gauge requires following connectors:

- >151 +12V from the ignition switch
- >187 G The oil pressure transmitter



Oil pressure gauge

## **OILTEMPERATURE**

Frequently checking the oil temperature is important, specifically with a new or rebuilt engine. The engine of the 2CV is air-cooled and the engine oil has a separate cooler. It is of vital importance that the oil has reached its operating temperature (around 80 degrees Celsius) before you expose the engine to full power. You should also make sure that the engine oil does not get too hot. Luckily, the temperature range for the 2CV engine is fairly large: from around 70 to about 100 degrees Celsius. If the temperature gets too high, see if the airflow through the oil cooler is not hindered in any way by accumulated grease, leaves or other any other combination of dirt. During the winter, you will notice that the oil temperature does not reach its low limit of 70 degrees Celsius. If that occurs you will have to partially close the grille and use a so-called winter-grille. That way the oil cooling capacity will drop, which results in the correct operating temperature.

Attention!! You have to remove the winter grille in the spring; if you do not the engine will surely overheat, with potentially expensive mechanical damage.

The oil temperature gauge requires the following connectors:

- >151 +12V from the ignition switch
- >86 Temperature transmitter



Oiltemp. gauge

## **AMPEREGAUGE**

The ammeter indicates the sum of the energy produced by the alternator (positive) and the amount of energy used by all electrical equipment in use (negative). If the result is positive, your battery is charged, as it should. When it is negative, something is wrong e.g. broken belt, short circuit or some other electrical problem. All

these problems need instant rectification, so do not continue driving when your ammeter indicates your battery is being discharged.

Connections are made as follows:

- >30 +L from the Alternator
- >32 +B to the battery (via the starter motor)

The MMB ammeter is equipped with a load resistor. This load resistor has four connector terminals:

Terminals 1 and 2 are connected with one of the two ring connectors in the wiring harness. These ring connectors are connected using a M5 bolt and nut, which have to be removed. Which of the two rings is connected to what terminal is irrelevant.

The two remaining terminals should be connected to the ammeter. Also, see the schematic diagram that comes with the ammeter for details.

When installing the Burton ammeter, that has the load resistor built in, all that is required is to connect the two ring connectors to the back of the gauge.

Attention! If you do NOT install an ammeter, you have to make sure that the M5 bolt and nut including the two ring connectors are securely insulated. Because of the direct connection to the battery and alternator, there is a constant voltage present.



Amperemeter

## **CLOCK**

Clock (harness connector x2)

- >310 to earth
- >301 Constant +12V (fused)

The clock is available as a 2-inch instrument with black face and chrome ring.

An identical connection is incorporated for use for any accessories. For example a 12V-plug for navigation or a interior light on the co-drivers side.

Accessories

- >311 to earth
- >301 constant +12V (fused)

## **WIRING DIAGRAM MMB INSTRUMENTS**

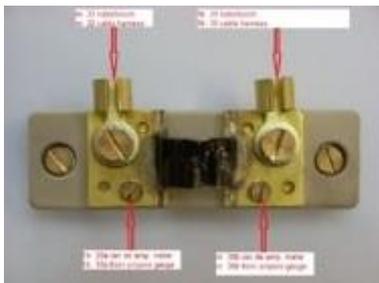
Wiring diagram for MMB gauges on the Burton cable harness:

The cable harness houses a connection for an ampere gauge. This connection can found underneath the dashboard. When the connection is not used they are screwed together and sealed to prevent short circuit. When an ampere gauge is to be used, remove the screw and connect the cables 30 and 32 on the fuse box.

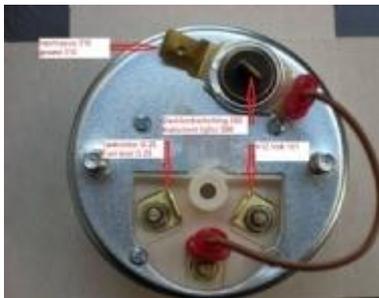
The image describe how to connect the MMB gauges.



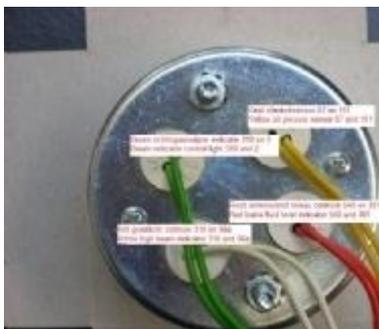
Ampere gauge MMB



Ampere gauge fuse box MMB



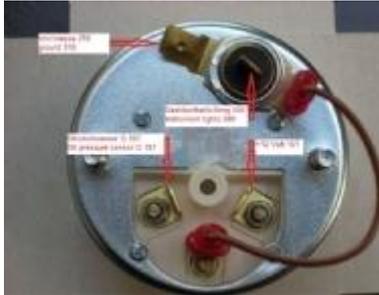
Fuel gauge MMB



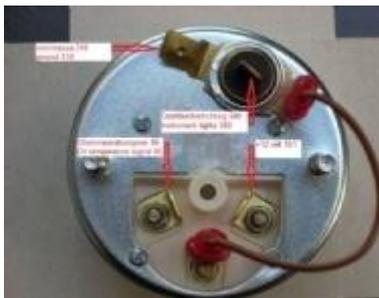
Dashboard control lights MMB



Speedometer MMB



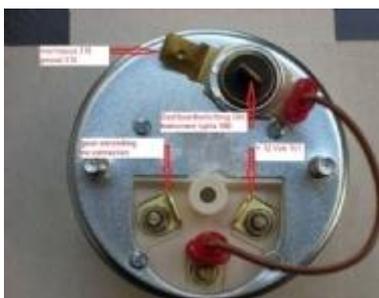
Oil pressure gauge MMB



Oil temperature gauge MMB



Tachometer MMB



Voltage gauge MMB

## 6.6. INDICATOR LIGHTS

The standard wiring harness supports four warning lights:

Oil pressure warning light (red)

>87 Oil pressure contact

>151 to +12V from the ignition

Brake fluid level warning light (red)

>540 Brake fluid level switch

>301 Constant +12v

Trafficator (green)

>310 Earth

>2 Flasher unit

Main beam warning light (blue or orange)

>310 Earth

>56a Main beam

When using the warning lights as present in the Burton speedometer, you should combine the oil pressure- and brake fluid level warning lights. Connect one side of the warning light to >151 and the other side to both >87 as well as >540. This will generate an active red warning light, if either the oil pressure or the brake fluid level or both are too low.

## 6.7. BRAKE LIGHT SWITCH

When following the wiring harness in the direction of the front of the car, we come across the brake light switch.

It is situated on top of the brake pedal and has two terminals:

>301 Constant +12V via fuse

>54 Brake lights

## 6.8. ENGINE BAY

Horn

First item to be connected is the horn. It should be installed underneath the battery tray, under any of its three fixating bolts. Use the brake fluid line, as fitted against the body, as a guide for the wire to the horn.

>49 Horn

Earth connection to the gearbox

>312 Earth

Be sure to install this terminal under the same bolt in the gearbox top lid as the standard earth strip which connects to the battery.

Connection to the voltage regulator

The voltage regulator is bolted on the left hand side of the firewall. In case your donor car was equipped with a

plastic mounting bracket, you can install that one. Otherwise, you should bolt the regulator directly to the firewall.

- >311 Earth D-
- >152 +12V from contact D+
- >4 EXC connection from alternator DF

#### Brake fluid level switch

The switch is formed by the two terminals on top of the brake fluid container.

- >540 to the warning light
- >311 Earth

#### Starter motor

- >32 to M8 bolt on starter motor that also connects to the "+" of the battery.
  - >50 Starter- or ignition switch. This connection can either be in the form of a quarter inch "Faston" connector or a ring connector on the side of the starter motor, depending on manufacturer.
- As a rule, the wiring harness is equipped with a quarter inch "Faston" connector. If a ring connector is required instead, you will have to modify the wiring harness accordingly.

#### Ignition coil

The wiring harness has three connectors for the ignition coil:

- >1 from contact points
  - >15 +12V from the ignition switch
  - >123 +12V from the 123 electronic ignition
- Either >15 or >123 is used, depending on ignition type used.

In case of Conventional ignition system (contact points):

- >1 to be connected to the "-" on the ignition coil
  - >15 to be connected to the "+" on the ignition coil
- The >123 connector is not used and should be properly insulated.

In case of a 123 ignition:

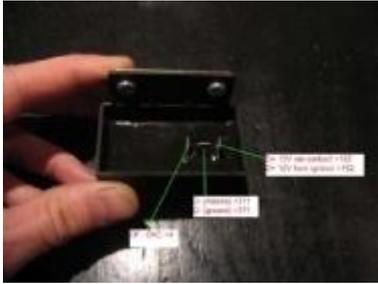
- >1 to be connected to the "-" on the ignition coil
  - >123 to be connected to the "+" on the ignition coil
- The >15 connector is not used and should be properly insulated.

#### Alternator

- >30 6 mm ring connector
- >4 quarter inch "Faston" to EXC terminal.

#### Engine harness multi connector (x6)

- >86 Oil temperature gauge
- >87 Oil pressure warning light
- >123 123 ignition (in case of electronic ignition, yellow wire 123)
- >187 Oil pressure gauge
- >1 Contact point breaker to ignition coil (in case of conventional ignition or black wire in case of 123)
- >15 +12V from Ignition switch (red wire 123)



Voltage regulator connections

## 6.9. LIGHTING FRONT

Tip: You have two options to connect the so-called sidelights: use the original ones as present in the headlamps of the 2CV or use the second filament as present in the Burton supplied indicator lights for installation on the front wings. If choosing for the latter, these indicators have to be equipped with the standard transparent lenses.

Orange or yellow ones are not allowed.

Wire code for these sidelights is either 58 or 581

Attention! It is illegal to have more than two sidelights in total. So, you either use the ones in the headlamps or the ones on the wings, not both.

Indicator Left (multi-connector x4)

>311 Earth

>490 Indicator

.>581 Sidelight

Headlamp Left (multi-connector x5)

>311 Earth

>56A Main Beam

>56B Normal Beam

>58 Sidelight (optional)

Indicator Right (multi-connector x7)

>311 Earth

>490 Indicator

.>581 Sidelight

Headlamp Right (multi-connector x8)

>311 Earth

>56A Main Beam

>56B Normal Beam

>58 Sidelight (optional)

## 6.10. THE SEPERATE CABLES

Assorted wiring harnesses

In order to simplify construction as well as installation we have decided to equip the harness with several multi-

connectors. This greatly simplifies the eventual removal of any of the front wings and allows the removal of the engine by undoing just one connector.

Defroster and wiper motor:

> 311 (2x) Earth

>93 to blower

>91 to wiper motor

Headlamps x5 and x8

This 4 core cable has to be connected inside the headlamp to the Duplo or H4 bulb and the optional sidelight.

The wires go through the headlamp housing to the outside and enter the engine compartment via a to be drilled hole of 7 to 8 mm diameter. Once the wires are fed through the hole, the connector can be installed. Refer to the already installed counterpart of the connector to see which wire has what position.

Indicators x4 and x7

This harness is made to connect the indicators, which sit on top of the large front wings, but it can also be used if cycle wings are installed. First, make the connections on the indicator side. The eyepiece goes under one of the mounting screws of the indicator housing and the two round shaped connectors fit to the indicator itself. Because this connection will be exposed to all possible weather influences, you need to carefully insulate the connections. Fixing the cable to the inside of the wings using Sika Flex turns out to work out fine.

This cable is also fed through the front into the engine compartment after which the connector can be installed.

The engine harness

The engine harness is used to connect the common parts of the 2CV engine block. This part of the harness is to be built so it suits your needs. As a rule of thumb, only the oil pressure switch and the ignition points are connected. Many people prefer to also include additional equipment like the oil pressure transmitter, temperature transmitter as well as the fully electronic 123 ignition. Our wiring set contains the following parts:

Connection for the oil pressure transmitter, consisting of two wires, The transmitter has both a contact for the warning light >87 (WK) as well as for the gauge >187 (G).

If you only wish to use the original oil pressure switch, you have three options: Most sensors are equipped with an M3 screw terminal however; later types have either a "Faston" connector or a 3 mm connector.

Connection for the temperature transmitter

The transmitter is fitted in the oil carter, replacing the drain plug. To be connected via >86

Points

The original points are connected via to >1

123-ignition

The 123-ignition is always delivered including the wiring: a red, a yellow and a black wire. As this wiring also runs via the multi connector, the relevant brass connectors (part of the wiring set) need to be crimped on the wires.

From 123-ignition to multi connector:

Red lead >15 +12 Volts from ignition switch

Black lead >1 "-" connection from the ignition coil

Yellow lead >123 "+" connection from the ignition coil

Be sure to properly fasten the harness. We suggest guiding the cables through the ventilator housing the same way as Citroën originally did it. Be sure to use a proper size grommet or gaiter to protect the wiring from the steel ventilator housing.



Routing the harness

## 7. UNITING THE BODY AND THE UNDER CARRIAGE

### Cutting the rear chassis legs:

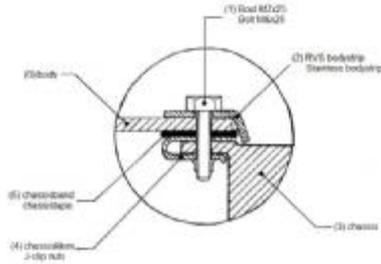
In order to fit the body properly, the rear chassis legs need to be trimmed. Cut away a pie-shaped piece, about 15mm in width. See pictures.

### Placing the body on the chassis:

The moment has come to unite the body and the under carriage. Please keep in mind that the holes of the body need to be lined up with the body strips, chassis tape, chassis clips and the chassis. Sadly most of the time this is not the case and holes might need to be drilled or filed a bit. The body needs to be mounted with M7 bolts.

Please be aware of the fact that the body needs to be fitted slightly on an angle on the under carriage in order to give the alternator enough clearance to not clash with the front of the body. Taking measurements is useless!

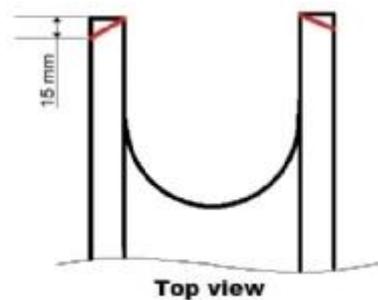
- Place the chassis clips or J-clip nuts on the chassis. (see drawing)
- Stick the chassis tape on to the chassis (see drawing)
- Put the body on the chassis. Lift the body with two helping hands and slide first the rear over the chassis. Pull the body to the front until it slides over the rear axle. Please be aware that no fuel or brake lines get stuck between the chassis and body. The body is positioned correctly when the body sits just in front of the t-link of the brake lines.
- Use the stainless body strips to prevent unwanted tension in the polyester. Please be aware of the fact that the left and right body strip are not similar.
- Puncture a hole through the chassis tape to make it possible to secure the bolts in the chassis. You can use a drill and let it turn counter clockwise to create the holes.
- When you have made sure that the connection between the chassis (3) and the floor of the body (6) are nicely sealed by the chassis tape (5) you can tighten the M7x25 bolts (1) to the J-clip nuts (4). Use a M7 sheet-metal ring between the bolts and the stainless steel body strip (2). Start with the 2 front and 2 rear bolts and work your way to the middle. This will prevent not lining the body up with the chassis. The two bolts on top of the petrol tank bracket need to have the original large sheet-metal rings to spread the tension in the polyester.
- The bolts at the rear of the chassis are the last ones you need to secure. These bolts are in the spare wheel pocket in the boot. There is a possibility these holes do not line up with the chassis. When this is the case, just drill some new holes. The old holes can be filled up with kit or polyester.
- There is a possibility that there is a hole at the front of the body strip just behind the first bolt. This is normal and can be sealed with kit to keep out water.



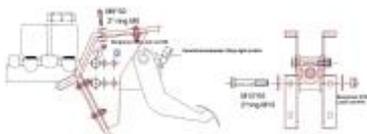
Body on chassis



Cut off rear legs of chassis



Cut the rear legs of the chassis.



Pedal gear mounted

## 7.1. FIXING THE CABLES AND BRAKE LINES

### Clutch cable:

- Put the clutch cable through the bracket with the small metal pipe that is part of the pedal gear bracket set. Attach the metal hex on to the clutch pedal. Adjust the cable with the adjusting nut until the pedal has a free movement of 2 centimetres. When the pedal free movement is correct fasten the nut with the top nut by fasten it together. Make sure that the cable has enough clearance with the exhaust.

### Throttle cable:

- Put the throttle cable through the hole in the heater connection bracket which is bolted on to the bulkhead.

- Hook the nipple of the cable on to the modified accelerator pedal. Tip: bend the two ends of the fork together to prevent the cable from flipping out.
- On the other side of the cable is a black plastic piece that you need to put through the bracket on the carburettor.
- Attach the throttle cable on to the carburettor. The U-shaped bracket is attached on to the throttle axle of the carburettor by a pin that needs to be secured with a retaining clip. Check if the cable opens and closes the carburettor completely.
- The retaining clip on the black plastic can be used to adjust the cable.

### **Brake line:**

- To prevent damage on the brake lines because of the vibration in the engine bay the brake line in the engine bay needs to be carefully fitted. From the point where the brake line is fitted onto the gearbox and the point where it's fitted onto the scuttle board the extra bit of brake line needs to be rolled up in the shape of a curl. You can use an old spray paint can to roll the brake line around.
- The brake line has to be fixed on two points onto the scuttle board between the curl and the master brake cylinder.
- Fix the brake line of the front brakes to master brake cylinder in the hole which is closest to the scuttle board (or the driver). Please be aware not to forget the rubber brake line gasket.
- Take the brake line which comes from the rear of the car through the appropriate hole in the chassis (+/- 30mm). Please be aware that the brake line does not touch the sharp edges of the chassis. A piece of fuel hose will do the trick. Fix the brake line on top of the chassis.
- Guide the brake line through the engine bay to the master brake cylinder and fix it in the front hole with a rubber brake line gasket.
- Only when the brake line is too long you can put a small curl in it to prevent it from clashing with anything in the engine bay.
- The lid of the brake fluid reservoir needs to be on the scuttle board side.
- Fill the reservoir up with the correct fluid. DOT4 fluid is used on 2CV's with drum brakes on the front and rear. LHM fluid is being used on 2CV's with disc brakes on the front. The next step is to bleed the air out of the brake system.

### **Bleeding the brakes:**

The brake fluid has to be pumped through the brake lines. There are three air-bleed nipples on the car. Two on the drum brakes on the rear and one on the left caliper on the front.

- Place a transparent hose on the air-bleed nipple on the right rear brake and put the other end of the hose in a transparent jar or bottle.

A: Check first if there is enough brake fluid in the reservoir.

B: Ask somebody to assist you with operating the brake pedal. Push the brake pedal several times until you feel enough resistance. And keep the pressure on the pedal.

C:Undo the air-bleed nipple until the pedal is all the way down to the floor and tighten the nipple again. (when the nipple is tightened the assistant can release the pedal easily)

- Repeat the steps A to C until the fluid in the transparent hose is free of air bubbles.

The next nipple to bleed the air is the left rear brake and the following is the one on the caliper.

You can check if you've done the job right if the brake pedal feels hard instead of spongy.

- When you are done check if the level of the fluid in the reservoir is on MAX.

Note: The process of bleeding of the brakes can't be done with a vacuum pump.

### Handbrake:

- Drill 4 holes in the handbrake bracket which you have taken out of the donor car. You can use the picture as an example.

- Put the handbrake through the bracket.

- Take the old metal strip that connects the handbrake to the lever of the handbrake and replace it with the longer stainless strip. Put the strip through the hole in the stainless heater connector which is fitted on the bulkhead (or scuttle board). Connect the strip to the lever which operates the handbrake cables.

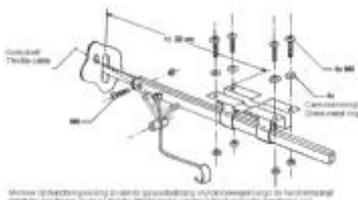
- Line up the handbrake with the bracket so that it doesn't clashes with anything. Please be aware that the throttle pedal can move free of the handbrake.

- Use the bracket as a mould to drill the holes in the body ( $\varnothing$  6.5 mm).

- Fix the bracket to the body with M6 bolts. Do not forget to use sheet-metal rings!



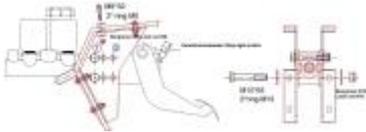
Adjustment clip



Handbrake



Clutchcable adjustment



Pedalgear mounted



Throttle pedal

## 7.2. GEAR LEVER

For the Burton a special gear lever is developed out of stainless steel.

- Put the gearlever through the hole in the heater exchanger which is bolted to the bulkhead. Bolt the bracket of the gearlever to the bulkhead with a M6x25 bolt. (make sure it's in the most upwards position)
- Bolt the other end of the gear lever to the chassis with a M7x20 bolt. Use the standard hole in the chassis.
- You can now fix the bracket which is bolted on the bulkhead to the gear lever.
- Replace the old lever which is mounted on the gearbox and replace it with the shortened version. The U-shaped bit on top of the lever needs to be lined up with the car.
- Connect both levers with the original connector (we recommend to replace the rubber bits)
- The new gear levers are not anymore supplied with thread on the bit where the connection piece sits on. So you do not need to secure it anymore with a nut. We changed this because it caused friction during gear changes.
- The gear lever doesn't need to be lubricated but if you do want to don't use lubricants like oil or grease but use silicon or Teflon spray. Oil affects the nylon bush.
- Fix the gear knob tightly use Lock-Tite if necessary and finish it off with the emblem.
- Check if you can get the car in every gear.



Gear shift rubber

Fixing the gear lever

### 7.3. STEERING COLUMN

There are two types of steering columns. A standard one and a version with a quick release for the steering wheel. The advantage of a quick release is that it's easier to get in the car and it's a perfect anti-theft protection.

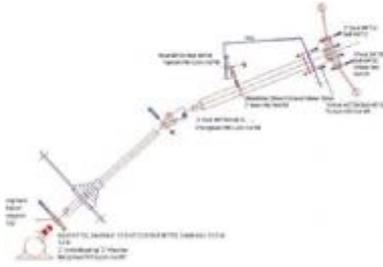
In the dashboard a hole with a diameter of 40mm is drilled for the steering column. Would you like to fit a quick release column then you need to make the hole a bit bigger in order to get the column in. The hole needs to have a diameter of 49mm (or 50mm).

- Make sure the hole in the dashboard has the correct diameter.
- Fix the lower part of the steering column on to the steering rack with the original clamp and a M7x55 bolt, leave the bolt loose for now.
- Put the top part of the column through the dashboard from the outside.
- Connect the swivel joint to both bits of the column but leave the bolts loose for now.
- Turn the steering column a couple of times in order to make sure it's centered and doesn't clash with any polyester. When you've made sure the column sits good you can fix the bolt of the swivel joint and the clamp on the steering rack.
- Drill the 4 holes ( $\varnothing 5.5$  mm) so you can fix the column to the dashboard. Please make sure that the Burton logo on the column sits nice and straight.
- Drill the 2 holes ( $\varnothing 8.5$  mm) in the bulkhead where the bracket for the columns will sit. The column will be fixed on to bracket with the 36mm exhaust clamp.
- Fix the aluminum adaptor plate to the column of the quick release. Please take notice that the quick release is mounted with American threaded bolts (5/16NF x 3/4) so don't lose them!

For the standard steering column with you can use M6x16 bolts from the bolts set to fix the adaptor plate.

- Fix the steering wheel to the adaptor plate but make sure it doesn't affect your view on the instruments on your dashboard. Please make sure you use the bolts and nuts supplied with the steering wheel. The bolts are often too long and it's best if you'd shortened them.

With the upholstery set for the car an extra bit of skai leather is supplied which can be used as a steer insert. This will cover the bolts nicely.



Drawing steering column

## 7.4. FUEL FILLER PIPE

### Mounting the stainless steel fuel-fillerpipe

- Put the fuel filler pipe from the outside through the rear fender.
- Make sure that the filler pipe fits easily in the rubber sleeve (don't forget to mount the sleeve with the clamps)
- The bottom of the flange needs to touch the surface of the fender everywhere. If this is not the case then you may need to do the following:
  - \* Sand off the edge of the hole in the wing.
  - \* Change the angle of the filler pipe.
  - \* Check if the filler pipe doesn't clash with the polyester when it goes through the hole in the body. Also check if there is no tension in the pipe when it's fitted.
- Now start drilling the holes for the fixings use the filler pipe as a mold. (make sure nothing falls in to the tank.
- Fit the fuel filler cap (in the following order: cap, gasket, fuel filler pipe and then the polyester fender) with the nuts and bolts that came with the cap. Make sure the cap is nicely flush with the fender.
- Use two hose clamps to secure the rubber sleeve around the tank and filler pipe. Please make sure the hose clamps do not clash with the brake line.

## 7.5. WIND SCREEN

For the Burton driver that likes to drive without a roof there are three options: Aero screens, low windscreen and the high windscreen. But if you like to have a roof you have to take the high windscreen.

Aero screens:

Aero screens are good looking and nostalgic but don't give much protection for the wind and rain. You can chose to fit a leather flap between the windscreen and the body for a bit more comfort. Or you can chose to only fit just one aero screen on the driver side.

When fitting the aero screens you need to keep in mind that the fixing points need to have at least 40mm clearance from the sides of the dashboard in order to be able to fit a tonneau cover. When you fit two screens the outer fixing points need to be 140mm apart (measured from the center of the fixing points). Tip: first measure out the middle of the body and then place both screens 70mm from that point.

The low windscreen:

This windscreen gives more comfort then the aero screens during light rain (only when you keep on driving). The low windscreen is best aerodynamic windscreen of the three and even gives a higher top speed. The low and

high windscreens are exchangeable because they both have the same fixing points. When you are over 1.80 meters long the high windscreen gives more comfort.

The high windscreen:

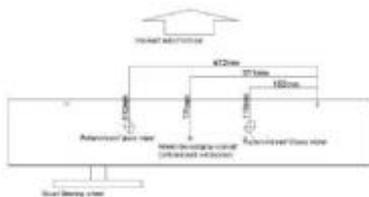
This windscreen gives more protection from the rain and you can even fit a top. When you choose to fit a high windscreen you are obligated to fit windscreen wipers, washers and a demister system.

If you don't want a demister system, windscreen wipers and washers you can choose to go to the MOT without a windscreen or with one of the other types of windscreens.

Measuring 765mm

Measuring holes to drill

Center mounting of the windscreen



Holes for windshield and wiper axes

## 7.6. MOUNTING THE WINDSCREEN

The windscreen both low and high are supplied with the following parts:

- The window frame with the glass and the and the aluminum corner pieces factory fitted.
- A mounting bracket for the rearview mirror.
- A mounting bracket for the middle piece of the window on to the body.
- Rubber seal that goes between the screen and the body.
- Two rubber pieces for the corner pieces.

It is recommended to put tape on the body to prevent the aluminum to scratch on the body.

In order to fit the low or high windscreen you need to drill 5 holes in the body. Take your time with taking the measurements so that you are sure to drill a hole at the right spot.

The middle of the windscreen is fitted on to the body with a small bracket that slides in the windscreen. This bracket is fitted with an M6 bolt through the body. On the drawing you can see how you need to measure that hole. Take the right fixing hole for the hinge as the reference for the measurements. The hole in the middle is also used for the demister plate and the windscreen wiper mechanism.

Please take notice; When you take the measurements from the left fixing of the hinge they won't be correct because of the different symmetry of the body.

Drill a  $\varnothing 6,5\text{mm}$  hole in the body. Put the bracket in the windscreen and fix it with the M6 Allen screw.

Remove the rubber seal on the bottom of the windscreen but leave the triangle pieces of rubber where they should be to prevent scratching on the body. Then put the screen on to the body.

Fix the windscreen in the middle with one of the long M6 bolts, put the bolt in from underneath the dashboard. Position the windscreen so that the bottom of the screen is meeting the body everywhere. Check the position of the screen with the following measurement: From the point where the rear side of the body curves down measure to the top of the aluminum profile in the middle of the high windscreen. This should be 765mm, see enclosed photo. This measurement and the right distance is very important when fitting a hard- or soft-top.

Push the windscreen on to the body and draw the holes in the triangle pieces of the windscreen on to the body. Take the screen of the body and drill the holes with a 5,5mm drill.

Take the rearview mirror and screw it into the bracket and put the assembly and slide it into the profile screen. Secure the bracket with a M6 Alan screw. When you are also fitting a top then use the bracket supplied with the top.

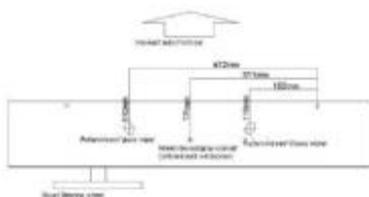
When you are also planning on fitting the Burton windscreen wiper mechanism and demister system you can now continue with the next chapter. In order to fit the tonneau cover you need to take the screen back of the body. So it is best to take that in mind in this stage.

After the windscreen wipers, demister system and tonneau cover have been fitted you can now fit the screen for good. Put the long rubber seal in the aluminum profile and cut the rubber to size if necessary. Fit the screen on to the body and first fix the 4 bolt in the triangle pieces and then the bolt in the middle.

Measuring 765mm

Measuring holes to drill

Center mounting of the windscreen



Holes for windshield and wiper axles



Windshield Mounting with defroster plate.

## 7.7. MIRRORS

Rearview mirror:

- Take the rearview mirror out of the packaging material.
- Put an M6 nut on the thread.
- Fix the bolt of the mirror onto the bracket that comes with the front windscreen
- Slide the bracket into the middle profile of the windscreen and fix it with the M6 Alan key bolt.

Side mirror:

- Saw if necessary 10 mm of the mirror bolt of both mirrors.
- Secure the mirror by putting them through the hole in the triangle piece of the windscreen and secure it with the washer and nut supplied with the mirror.

## 7.8. THE WINDSCREENWIPER MECHANISM

The low type windscreen is a winddeflector so windscreen wipers and a demister system are not necessary. When you are planning on fitting the high windscreen you are obligated to fit wipers, washers and a demister system. That's why we supply a windscreen wiper kit and a demister set

Fitting the windscreen wiper system:

Please be aware: Take notice how the windscreen wiper engine is assembled before you disassemble it so take your time. (when incorrectly assembled you can blow up your wiper engine and you will lose the warranty) When assembling the mechanism back together the arms need to be in the correct position.

The wiper mechanism is developed specifically for the Burton high windscreen and uses the original wiper engine of the 2CV. So hand in your complete old wiper mechanism when you buy a Burton wiper mechanism.

Drill the holes according the drawing with a 16mm drill.

Disassemble the wiper mechanism by taking the clips from the axles, then the washers and the aluminum angled bushes. You can then remove the axles by removing the nut on the rear.

- Place the stainless steel plate on the inside of the body.
- Fix the plate with the bolt which holds the middle bracket on its place of the windscreen.
- Put the axles through the body.
- Slide the angled bushes on the axles.
- File the holes in the body until the bushes fit nicely in to the body.

- You can now secure the mechanism with the nut from the inside of the body.
- It is recommended to use kit to prevent water from entering into the body.
- Place the washers and clips back on to the axles.

The windscreen wiper engine is connected as following:

>164: blue, +12V ignition switched

>23: white

>24: grey

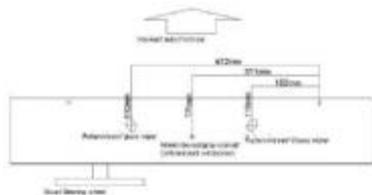
>311 black, ground

In the latest cable harness a special connector is fitted to simplify the process of connecting the wiper engine.

Last is the installation of the wiper arms and blades. The wiper arms are straight, but should be slightly bent, so the blade is parallel to the lower edge of the windscreen. This can be seen in the photo. To bend the arm, pull on the end to make it as long as possible. Then place them in a vice as shown in the picture. The arms allow themselves to be bent by hand. Use your car as a reference to see if the arms are bent far enough.



The wiperarm and the blade.



Holes for windshield and wiper axles



Bend the wiper arm

Window wiper axle in parts

## 7.9. WINDSCREEN WASHER

When you fit a high windscreen you are obligated to fit a windscreen washer system. Burton Car Company supplies a universal washer system which suits a Burton perfectly. This system is easily fitted.

The washer system contains the following pieces: a reservoir with a pump, washer jet, push button, a piece of hose and a couple of wires and connectors.

Drill a Ø 8 mm hole through the body in the middle of the windscreen (check the diameter of the washer jet!! There are different types sold in the past). Make sure you drill the hole as far as possible from the windscreen. But keep in mind you do not hit any instruments or wires. When you do not have enough space underneath the dash you can also fit the washer jet in the bonnet.

Use the nut to secure the washer jet.

Remove the bracket of the reservoir and fit it to the bulkhead where you like. We chose to fit the washer reservoir on left and the blower on the right so you keep some free space in the middle to fit a spare wheel. Draw the holes on the bulkhead using the bracket as a mould. Drill 4,5 mm diameter holes and secure the bracket with two M4 bolts with washers. Slide the reservoir on to the bracket

Chose a nice spot to fit the washer push button and drill a hole in the dashboard of Ø 21 mm (check your button for the correct diameter. Different types of buttons are sold in the past).

In chapter 6 you can read how we describe how you can connect the washer system to the cable harness.

Fit the hose on to the washer jet and connect it to the pump. You can adjust the washer by putting a needle in the opening and move it to the correct position. Take in mind the wind effects the washer jet.

An extra cable set with connectors is supplied with the cable harness so you can be able to fit the washer pump and the blower. The connections are as followed:

>91 windscreen washer pump

>311 ground

## 7.10. DEMISTER

When you are planning on fitting a high windscreen a demister system is obligated for the MOT. Keep in mind you then have less free space to fit instruments behind the dashboard. Burton Car Company has a complete demister system which is easy to install and you don't need to put the heater on.

Fitting instructions:

The system contains the following parts:

- Blower
- Switch with two speeds
- Plastic connecting part and pipe with angled cut
- Stainless steel cover plate to fit on the top of the dashboard

- Hose
- 2x screws, washers and clips and other fixing bits

A. Remove the front windscreen if necessary.

B. Place the stainless steel plate on to the body. Use the middle fixing hole of the windscreen as a reference. The slots in the plate need to be facing up to guide the air flow. Make sure the plate is nicely lined up with the dashboard and the edge of it. Draw the other three holes and the slots using the plate as a mould. One of the holes of the plate is being used for the tonneau cover. When you are not planning on fitting one you don't need to drill the hole. You can now drill the holes and file out the slots.

Photo 1.

- 1: Hole for fixing the bracket of the windscreen
- 2,3: Holes for fixing the plastic pipe (screw with special washer)
- 4: Hole for fixing the tonneau cover.

C. Fitting the blower.

The blower is being designed to fit in the engine compartment to prevent annoying noises while driving. Place the blower on the right side of the vehicle against the vertical bit of the bulkhead.

Drill a 80mm hole in the horizontal part, glue the plastic connecting part in this hole with Sika-flex kit. Put the blower in the hole and draw out the 4 fixing holes on the vertical part of the bulkhead. Drill a 50mm hole in the centre of these four fixing holes. File a small slot in the 50mm hole so you can screw the hose so to speak in the hole.

Don't forget to drill a hole for the wires that go to the blower.

D. Fitting of the other pieces.

The hose fits onto the plastic angled cut part. Slide the two screw clips onto the plastic angled part and fit it underneath the dashboard. The plastic angled part is fixed from the top of the dashboard with two screws in the two remaining holes in the stainless steel plate. Also fit the tonneau cover button fixing if necessary.

E. Finishing the fitting of the demister system.

Connect the wires of the blower and the switch. You can switch the blower off, half power and full power. A resistor is fitted in the Burton cable harness to achieve the two speeds.

A extra set of cables and connector is supplied with the Burton cable harness so you can connect the windscreen washer system and demister set. You can choose yourself where you want to put the cables through the bulkhead.

The connections are as followed:

- >93, + from demister switch
- >311, ground

Hoses for demister

Stainless plate for demister

Holes in firewall for defrosting

## 7.11. TONNEAU-COVER

A tonneau cover comes in handy when you park your car somewhere and don't want to leave it open. But also gives you comfort while driving because it gives a lot of protection from rain and wind so it is multifunctional. That's why the tonneau cover is more important than a roof when it comes to comfort.

To protect your Burton during the rain you can buy high quality tonneau covers at the Burton Car Company. You can choose between a cover with a steering wheel insert or without one.

When you have a Burton with a quick release steering wheel it's better to fit a tonneau cover without steering wheel insert because it sits better. The tonneau cover is fitted with three zippers so you can close the cover partly. A specially on colder days you are better protected against the wind and the heater system works better with a partly closed cover.

The cover is made out of convertible roof fabric and are specially developed for the Burton and is being fitted with push-buttons. Because they are handmade not one is the same so it is impossible to say where the push-buttons have to be fitted.

Note: The windscreen has to be fitted in order to be able to fit the tonneau cover.

Marking the holes is easy with ducktape. Put the ducktape on the body and press the button of the tonneau in the tape. The button will leave a mark and you can easily drill the hole on just the right spot. See the photo's for an example.

- Start on the front at both sides of the angled pieces of the windscreen. (see picture) The push-button's are fitted with bolts and nuts and it is very important that the tonneau is fitted nicely tight on the car.
- You then fix the middle push-button on to the stainless steel demister plate. When you don't have a demister plate you just measure where the hole needs to come.
- You then pull the cover nicely tight to the back and you then mark the middle push-button. (you can measure the middle from the side rail of the car). Drill the hole and fit the button.
- Fit the tonneau cover with the 4 push-buttons which you just fitted and fasten the rest of the tonneau cover with duck tape (see picture).
- When you are pleased with the result you can now mark the positions of the other push-buttons onto the body.
- Drill the remaining holes and fix the buttons on the body.
- In order to be able to fit the two buttons close to the window you'd need to take the window of the body.
- When you are not pleased with one or more locations of the buttons you can enlarge the hole and move the button until it fits perfectly.

The place for the hole is marked

Marking the hole

Taping the cover

## 7.12. DASHBOARD

For an MOT approval you need to fit your Burton instrument panel with a speedometer but a fuel gauge and Volt meter can come in handy too. A brake fluid indication light is obligated to in most cases. The dashboard of the Burton is made from polyester and can be 4 to 6 mm thick so fitting standard switches, gauges and indication light can be quiet hard and sometimes impossible. So be careful with buying your instrument panel parts elsewhere.

The advantages of the Burton gauges:

- The speedometer is accurate
- The speedometer cable fits always
- The RPM gauges is suitable for a 2 cylinder
- The fuel gauge works the right way
- The oil pressure and temperature gauges fit to the sensors
- The speedometer gauge has built in indication lights.

The MMB gauges have almost the same advantages except that the speedometer doesn't come with indicator lights. You can buy a special MMB gauge with these lights or buy separate indication lights.

Burton Car Company supplies several different types of gauges from MMB and Burton that are suitable for the 2CV and Burton.

These are the possibilities:

Gauges: Burton : MMB

1. Speedometer + distance 80mm : 80mm obligated
2. RPM 80mm : 80mm recommended
3. Fuel 52mm : 60mm obligated
4. Volt 52mm: 60mm obligated
5. Oil temperature 52mm : 60mm recommended
6. Oil pressure 52mm : 60mm optional
7. Ampere 52mm : 60mm optional
8. Indication light gauge N/A : 60mm optional
9. Clock 52mm : N/A optional

You are free to chose whatever you like and which layout you think is best but keep in mind that whilst driving you can read the meters. Take the steering wheel and see if you can still read the meters. Also keep in mind that the speedometer is more important than a ampere gauge to look at. Some systems like the demister system and windscreen wiper mechanism require specific space behind the dashboard and can't be placed somewhere else. So when you make your instrument panel layout keep in mind the location of these parts.

When you are absolutely sure about the locations of the gauges you can then measure where the centre is and mark it. You then check it again and drill a small hole in the middle of it. After checking that again you can drill or saw the holes. Please take note that when you have a hole saw put the drill in the counter clockwise position to prevent chipping and damaging of the gelcoat.

There are different possibilities to upholster the dashboard. A wooden, aluminium or leather upholstery are within the possibilities. You can set your creativity free but keep in mind for your own safety not to use sun reflecting materials or materials with sharp edges. The bottom edge must be free of sharp edges or bolts sticking out that can be a health and safety issue.

Top tip 1: Place painters tape on the dashboard on which you can draw your dashboard design. Place for an extra precision the bench and steering wheel so you can try the dash out.

The Burton wiring harness is fully equipped with the connectors you need to fit all the gauges you like. See chapter 6 for more instructions of the cable harness.

Ignition lock:

Use an ignition with start function or use a starter button.

Starter button:

Burton Car Company supplies several appropriate starter buttons.

Light switch:

A light switch has to have a least three functions: low beam, high beam and parking lights. Burton Car Company has a special turn switch with these functions.

Indicator switch:

First fit the indicator relays. Use 21 Watt lights in the indicator lights. Burton Car Company has different types of indicator switch.

Indication lights:

The Burton speedometer is fitted with three indicator lights (high beam, indicator and oil pressure). Burton Car Company sells also separate indicator lights.

Passenger grip:

For the Burton driver which likes to drive fast we have a stainless steel grip. Draw the holes using the grip as a mould. For a appropriate fit have a look at the picture.



Handgrip on dashboard

## 8. INTERIOR AND FRONT

The interior really determines the appearance of your car. Choose colours that are nicely matched; you can get inspiration from old car books and the web sites of fellow constructors.

You can choose between a bench or cobra seats, covering on the sidewalls, floor mats with a logo and many more options.

The body is actually designed around the rear bench of the 2CV. It goes without saying that the bench suits the Burton best. The entire passenger area is filled and there is no space between the reclining seat and the body. There are many options when it comes to covering the bench. With 50 colours to choose from, you can order a new cover made of imitation leather in any colour you want. Combinations are also possible.

If you do choose the Cobra sports seats, bear in mind that someone with an average Dutch posture will sit rather tight in the seats. However, the seats give you more possibilities concerning safety belts and rails to adjust the seats.



Steering wheel pops off

### 8.1. SEATING

#### Back seat or sports seats?

You can choose the rear bench of a 2CV or Cobra seats. The 2CV back seat is cheaper and more comfortable, but cannot be adjusted. The Cobra seats can be delivered including rails but are only suitable for people with a small behind who are less than 1.85 meters.

The 2CV back seat is the most common seat for the Burton. It is attached in the donor car with two ratchets. However, nothing really changes. The bench is fastened to two stainless steel profiles that need to be attached to the floor. These RVS profiles are available as "seat mounting set" at Burton Car Company. It is important to measure the bench well because sizes can differ.

Hint: The first series of rear benches were fastened in the middle. The Burton seat mounting set is only suitable for the later system in which ratchets on the left and right are used.

### **How to attach the 2CV rear bench:**

- Replace the rubbers from the rear bench that are extremely dried out. In particular, the seat on the driver's side should be in good condition. It is important for your comfort that you are seated as low as possible. You can achieve this by combining the new and old rubbers.
- Replace, if desired, the burlap mats with steel wire with the much stronger plastic mats of Burton Car Company. Recycle the steel wire from the old burlap mats.
- Grind the hook on the middle leg underneath the bench (front side).
- Now hook the profiles to the chassis of the bench and put everything in the car. Make sure that the profiles are firmly attached to the chassis.
- Seat yourself on the bench (still without the upholstery) and find a good position. Bear in mind the space between the reclining seat and the edge of the body. There should be a minimum of 5mm left for the upholstery, which will be applied later on. Also, the reclining seat should run parallel with the back edge of the tub. In addition, check whether the bench can be toppled to the front (before attaching or removing the bench) without hitting the side of the body.
- If you have put the bench in the desired position, you can get out of the car (make sure the bench does not move any more) and mark the position of the profiles.
- You can now remove everything from the compartment.
- Drill six holes through the polyester bottom to attach both profiles (Ø6.5 mm).
- The hole for both hooks of the bench should be drilled as a slot hole.
- Attach the profiles to the bottom with M6 nuts and bolts. Use good sheet-metal rings on the bottom side of the bench.
- Fasten the bench.

### **How to attach the Cobra seats:**

To fasten the Cobra seats, you need a seat frame. Make sure the holes for attaching the frame are already drilled and the chassis clips have been placed before the body has been assembled. See chapter 6.

- Put the seat frame in the car.
- Make sure the two round or square plates in the corners are pointing upwards and are on the back side.
- Drill the four front holes through the polyester and use the frame as a mould. Take care not to drill too deep; this may damage the chassis clips.
- Use M7x45 bolts with a washer to attach the frame firmly to the chassis.
- Attach the rails to the seats. [Picture] If necessary, put two collars to the front side of the seat between rails and frame. The seat is now somewhat tilted and is therefore more comfortable.
- Attach the rails, including seats, to the frame.

## **8.2. A TESTDRIVE**

As the car has no front yet, and you can still reach everything well, it is a good time to do a test drive, (on your own site obviously...)

First, check the following:

- Is there enough brake fluid in the reservoir and are the brakes vented?
- Check the engine oil level and the gearbox oil level.
- Check to ensure that there are no loose cables, especially on the exhaust.

- Are the throttle cable, clutch cable, choke and hand brake adjusted?
- If you have mounted a new engine, or renewed parts of the engine, first read the instructions in chapter ??

Test driving is one of the nicest moments of construction. Have your camera and champagne ready because this is a nostalgic moment.

- Take care with the petrol; unleaded 98 octane petrol.
- Get in the car and pull out the choke a bit.
- Start the engine. Step on the gas lightly.
- If the engine runs, you can pop the corks! (If not, read chapter 3 again... and still open the bottle to drink away the sadness...)
- Drive around and test the engine, the gear shift, the steering, the clutch and the brakes. Adjust where necessary.
- Make sure there is no oil leakage.

### 8.3. SAFETY BELTS

Safety belts are not as safe as you think in an open car without airbags and/or roll-bar. TNO research has shown that in case of an accident with an open car, your chance of survival is the greatest when you are not wearing a safety belt.

Before you start assembling the safety belts, you are advised to check the legal requirements on this subject for the country you will be driving in.

For the market abroad (TÜV), Burton Car Company has developed a special chrome molybdenum steel frame to which you can attach the safety belts. This frame has been designed for Cobra seats.

It is up to you whether you still put safety belts in your car after inspection of the SLA, this will not lead to any problems at the MOT test.

### 8.4. FRONT

- Start with the placement of the grill mesh for the cooling vents in the front.
- Cut the mesh to size with an overlap of about 2 cm on all sides.
- Glue the mesh to the polyester using Sikaflex, and hold the mesh firmly against the polyester. Sikaflex should dry for about 24 hours.

Hint: To attach the mesh, use a piece of wood on the front side of the front, and pull the mesh tightly against the front with a tie-wrap.

- After that, you can put the front against the body. [picture]

It is important for the final result that the front is well-connected to the body. The split between front and body is clearly visible, and if the width of the split is irregular you will notice that immediately. Be accurate when installing the front.

- Scour the inside of the front that will be put against the body. Use a belt sander. Make sure the polyester is 4 mm thick so that the outside of the front runs parallel with the outside of the body.
- Put the front against the body and make sure the line between front and body is parallel. The upper fold in the front should be neatly in line with the fold in the body.
- The front does not need to be on the chassis on the front side. If there is some space in between, you can fill it up with sheet-metal rings.

The front is attached to the side with four bolts. You can begin by drilling three of them. With the fourth bolt, the

big front mudguard is installed simultaneously.

- Drill the three holes (Ø 5.5 mm) in the front (see picture) and then drill them through the body.
- Attach the front to the body. Use an M5x16 roundhead on the upper side and two M5x20 for the other holes.
- Check whether the front hits the engine somewhere, and, if necessary, create more space.
- Drill two holes (Ø 6.5 mm) in the front side of the front using the holes in the chassis. The front is attached with two bolts on the front side of the chassis. These holes are already in the chassis but still need to be drilled through the front from below.
- Fasten the front on the front side with two M6 bolts and, if necessary, use a collar or sheet-metal rings (M6) as filling material between the front and the chassis.



Bolting the front to the body



Rings to fill the gap in the front

## 8.5. FRONT MUDGUARD

You can choose from two types of front mudguards. The classic package has the large mudguards tight against the front. The sports package contains “cycle-wings” which are mounted to the stub axle.

For the classic package, the following applies:

The placement and mounting of the mudguards is easiest with some extra hands. First, make sure the mudguard looks fine before you connect it. If necessary scour and polish the seam (see picture). If the mudguard is already assembled, it is difficult to reach.

### **Classic front mudguard:**

- Hold the mudguard against the front.
- Make sure the bottom of the mudguard is equal to the bottom of the body/front.
- Shove the mudguard against the notches for the rocker covers in the front.
- Remove unwanted polyester from the mudguard if this causes a poor connection at the notch of the rocker cover or at the bottom of the body.
- Make sure the wheels can turn in all positions.
- Draw the contours of the mudguard with a marker.
- Drill nine holes, proportionally divided, at ca. 2 cm within the line you have drawn. Check the bottom plate! The back hole you will drill could come close to it.
- Make sure the front is also fastened with one of these holes.
- Drill the holes (Ø6.5 mm) in the front.
- Let an assistant hold the mudguard against the body again, and drill the holes through the mudguard from the inside.
- If you want to mount rubber beads between the mudguards (see chapter 5.1), put the mudguard on its side and glue the rubbers to the polyester. This will be an easy job if you use clamps, see picture.
- Glue the rubber beads neatly around the corner and make notches for the attachment holes.
- Fasten the mudguard all around with M6x20 bolts and sheet-metal rings. Fasteners: Bag 1 of fastener-set. The bolt that also goes through the front is a smaller M5 bolt (bag 2).

#### **Mudguard holder:**

- Now put the mudguard holder (Stainless steel bars) between the body and the mudguard behind the wheel. The mudguard holder prevents the vibrating of the point of the mudguard and puts it in the right shape.
- Do not mount the mudguard holder (strips) as close to the front as possible, as the wheel could then hit the mudguard holders during wide angles. See picture.
- Push the mudguard to the outside (using the mudguard holder) until it becomes the correct shape, in line with the back mudguard.
- Bend the mudguard holder down on the body's side so that it can be attached neatly.
- Drill holes and fasten the mudguard holder with bolts and small rings. Bear in mind that the bracket should not protrude at the bottom of the mudguard.
- Always fix the mudguard holder to the nosecone of the body, and not to the body itself. This way the holder will stay attached when you remove the mudguard and the nosecone for maintenance.
- Determine the highest point of the front mudguard and drill the holes for the indicators and use the indicators as moulds.
- Mount the indicators.
- Stick the wiring under the mudguard through the front and connect it.
- Glue the wiring with Sikaflex against the polyester.

### **For the cycle wing front mudguards of the sports package, the following applies:**

Dismount the wheel.

- Mount the RVS bracket on the stub axle. First, unscrew the old bolts and use the new M7 socket caps with a hardness of 10.9. Do not forget to use the included collar for the back bolt.
- Mount the wheel and remove the carjack.
- Ensure that the distance between the wheel and the RVS mudguard bracket is 10 mm at both bars. Bend the bars of the mudguard bracket with an adjustable-joint plier if the distance is not right.

- The distance between the back of the mudguard and the road should be 120 mm. The driving height should be adjusted first.
- Fit the mudguards onto the bracket. Make sure the centre of the mudguard is put in the centre of the wheel. Bend the mudguard bracket or polish some polyester off the mudguard if this is not the case.
- Roughen the strip of the RVS bracket and the polyester by means of sandpaper.
- Scour this strip and the polyester mudguard, preferably with acetone.
- Glue – preferably at room temperature – the mudguards on the strip with Sikaflex 260! Use enough glue since there are two different materials with a different coefficient of expansion.
- Fasten the mudguards with tape to avoid movement.
- Let everything dry for at least 48 hours before you hit the road.
- Put the special indicators for “cycle-wings” on a suitable position in the front.
- Connect the wiring for the indicators.



Sanding the edge



glueing the rubber



Around the corner



Bracket for front fender

## 8.6. HEADLIGHTS

### Mounting the headlight bracket

- The headlight bracket should be placed just behind the carburettor and just in front of the air filter housing. You should bear in mind that when the engine is running, and thus vibrating, the bracket needs to be clear.
- The attachment flange of the bracket should fall on the inside of the front.
- Make sure the bracket is assembled at a right-angle to the direction of travel. To do this, you can determine the distance from the back side of the front to the bracket. This distance should be, needless to say, equal on both the left and right side.
- File two slots in the edge of the front, in order to attach the headlight bracket. File the indentation deep enough so that the headlight bracket lies nicely on the fold of the front.
  
- First, determine the location of the ignition coil. It is situated on the right side of the car (passenger side). The coil is on the right side, close to the bonnet, which means that on this side, you need 1 coil cable with a right-angled cap. On the other side, use a cable with 2 straight connections. This special spark plug cable set can be obtained at Burton Car Company.
- Draw the holes for the brackets and mark the centre with a centre punch before you start drilling.
- Mount the coil with the original supports and two M4x40 bolts to the headlight bracket.
- Now mount both headlights to the bracket, feed the cables through the headlight housing and put the headlight bracket in position. The drive adjustments for the headlights should be placed below the bracket.
- Drill the holes for fastening the entirety when the headlights are in the correct position.
- Attach the headlight bracket with M5x16 round head bolts. You can adjust the headlights by means of the slot holes in the bracket.
- Drill two little holes in the front to feed the wiring of the headlights through them. Make sure they come out in such a way that they are not too close to the heat exchanger.
- Attach the multi plugs to the wires.
- Put the rubber sleeve for the gear shift bars in the appropriate hole of the headlight bracket and then put the old bonnet support in.

During major repairs you can easily remove the front as well as the front mudguards. You will then have easier access to the engine compartment.



Ignition coil on bracket

## 8.7. HEATING

### Controls:

The heater in the Burton is controlled the same way as in the 2CV, namely with a “pull/push” cable system. The original control lever is also used. This is placed in the car under the dashboard. The original cable will probably be too short. Burton Car Company provides a longer version.

- Find a suitable place for the heater controls. Make sure it does not block anything, but that it is within hand's reach. Do not fasten the heater controls yet.
- First, attach the outer cable to the controls.
- Drill a hole in the dashboard so that the cable runs smoothly and without cracks to the left heat exchanger.
- There is a double cable attachment to the left heat exchanger so that the right heat exchanger can also be controlled. [picture]
- First, adjust the outer cables to their correct length and then do the inner cables. Hook the inner cable to the lever of the heater controls.
- Attach the cable with a screw clamp to the valve of the heat exchanger and adjust them.

While adjusting, you can use your hand to check in the heat exchanger whether the valve shuts off entirely.

- Mount the spring for the heat exchanger.
- Fasten the heater controls.

### The heat discharge:

The heat that is produced by the heater should be discharged in the right way when you do not use the heater. So it is very important to assemble the heat discharge tubes, otherwise your engine might seize. Use our specially developed rubber exhaust air hose. This product has the right angle for the Burton and will last a lifetime.

- Draw an hole on the inside of the front, just below the mudguard and in a couple of centimeters below the hole in the heat exchanger. [picture]
- Saw the hole with an electric saw
- - Stick the rubber heat exhaust air hose from outside through the front to the inside and shove it over the hole of the heat exchanger.

NB: If you have a car with cycle-wings, you can mount a grill on the outside of the front. This grill is not available at Burton Car Company.

### The heat supply:

- Place the two heater tubes between the heater transit and the inner holes of the heat exchangers.
- If necessary, cut of a piece if they obstruct shifting.

- Fasten the heater tubes to a cable with a tie-wrap. This keeps the shaking of the engine from causing them to fall on the exhaust, causing a fire.



Heater control, under dash next to the handbrake-handle.



Left heat-exchanger (fixation long and short cable)



Heatexchanger right (fixation short cable)



Heater drain hose

## **8.8. BONNET AND GRILLE**

Hinges

Attach the bonnet to the body with the hinges.

- Using a little dent in the body to mark the spot, drill the holes in the body to attach the hinges (Ø8.5 mm). Bear in

mind that there is a left and a right hinge. The bottom of each hinge indicates the side on which it should be used. It says RV, LA for the right front and left back, and RA, LV if the hinge is meant for right back and left front. This is seen from the driver's perspective, so the passenger's side is indicated by 'right'. If you do this the other way round, there is a chance your gel coat will get damaged when the valve is opened, or the hinges might break. The hinges will then be out of warranty.

- Draw the position of the headlight bracket on the bonnet and file a cavity for the bracket.

Drawing the Burton logo and mounting the grill:

The placing of the logo has already been indicated on the bonnet; the oval logo falls exactly on the notch above the opening of the grill. Depending on which logo you have chosen, it is assembled with two M3 bolts or with 2 wires that are attached to the logo. At the top of the grill, two holes have already been drilled so that the placement of the logo on the grill has already been decided.

- Place the logo neatly on the bonnet in the middle of the notch. Clamp the logo temporarily.
- Drill the two attachment holes with a diameter of 3 mm.

If you have chosen the 'open' bonnet logo, which is attached with two threads, carefully measure these holes or make a paper mould.

- The attachment of the logo is also the attachment of the grill.
- Attach the logo with two M3 bolts and jam the grill against the inside of the bonnet. Do not use the mounting kit yet.
- Make sure the grill lies straight in the bonnet.
- Drill two 6.5 mm holes at the bottom of the grill through the polyester.
- Remove the grill and logo, and then fasten it using a bit of Sikaflex mounting kit on the top and bottom of the grill.
- Attach the grill with the logo and two M6 round head bolts to the polyester and at the same time to the lock catcher on the inside of the bonnet. (Thus, the order is: M6 bolt, washer, grill, polyester, lock catcher, washer and locknut)

Make sure the lock catcher is neatly attached to the polyester; if not, scour the polyester.

Mounting the bonnet lock to the front:

- Attach the control lever to the bonnet lock. There is a spring at the bottom of the lock, remove it from the 5 mm hole. An M5x12 bolt is used for this hole to attach the control lever at the same time. The spring will be inside the small hole in the control lever. See the picture.
- Close the bonnet and mark the place on the front where the lock catcher comes. This is the middle position of the lock.
- Draw exactly the middle between the two holes on the wind hook.
- Place the wind hook temporarily on the inside of the front and keep the top of the wind hook equal to the polyester.
- The drawn centre of the wind hook should now fall equal to the centre of the lock catcher.
- Draw the holes and drill them ( $\varnothing 6.5$  mm).
- Mount the bonnet lock to the front.
- Stick the bolts through the entirety. (Order: M6x30 bolt, sheet-metal ring, polyester, wind hook, bonnet lock, sheet-metal ring and locknut)
- Close the bonnet and check whether everything clasps together. Adjust where necessary.
- If everything closes properly, the bottommost third hole can be drawn and drilled. This one will later be covered by the license plate. This hole is 48 mm below the holes for the bonnet lock. Attach with an M6x12 bolt.

- As extra reinforcement, you should, now that everything closes properly, glue the grill with Sikaflex. Do this on the top as well as on the bottom side.



Mounting the logo



Mounting the grille



Bonnet lock



View from inside



Parts for bonnet lock



Sanding the bonnet



Sanding the edge

## 8.9. SIDE PANELS

You can order ready-made upholstery for the side panels at Burton Car Company. They contain a handy side pocket and are available in the same colours as the bench upholstery (50 different colours). Of course, you can also choose not to include any upholstery in the Burton, or to create something yourself. If you choose the latter, make sure you use a material that does not rot when it becomes wet.

- For your safety and comfort, and the protection of the upholstery during the instalment, it is important that you sand the sharp edges of the tub.
- Scour the inside of the tub for adhesions and possible defects.
- Glue the side panels to the inside using 3M upholstery glue (other adhesives become loose due to the heat from the sun). Do not be too economical with the glue; apply a thick layer on the upholstery as well as on the polyester. Let the glue evaporate for ten minutes before attaching the upholstery.

## 8.10. UPHOLSTERY

Just like the ready-made upholstery for side panels, you can also order ready-made bench upholstery at Burton Car Company. It is available in 50 colours of imitation leather. Using two colours per bench is also possible.

- You have already attached the mats with (new) rubbers as described in 7.1.
- Bend the iron wires so they cannot cut through the upholstery.
- Pull the upper part of the upholstery over the reclining seat of the frame.
- Make sure the upholstery looks neat in the corners.
- Pull everything tight and knot the ropes to the back bar of the frame.
- Pull the upholstery for the seating over the frame and attach it to the sides by bringing the original bars through the fringed part of the imitation leather.
- Attach the bars into the notches of the frame. [picture]
- Use the (10) original upholstery clips for extra attachment of the upholstery to the frame to keep everything in position.
- To attach the clips, start in the middle.
- Again, pull everything tight and knot the ropes to the back bar of the frame.

## 9. ADJUSTMENTS

The adjustment of the chassis (spring and steering system) is of great importance for optimal driving comfort and road safety. Take your time to do these adjustments meticulously; you will enjoy it for many years.

The next paragraphs describe how to adjust car height and balance, wheel alignment and the maximum wheel deflection.

In addition, we provide tips about checking several parts for wear and/or damage.

### 9.1. ADJUSTING RIDE HEIGHT

The 2CV has always had a very special spring system in which the suspension of the front and rear wheel is linked to every side. Every wheel is carried on bearings on a support arm to which a drawbar is connected. These drawbars of the front and rear wheel are connected to a joint suspension tube hanging on both sides next to the chassis. There is a separate spring for the front and rear wheel in the suspension tube.

Because the suspension tubes are hung floating, the suspension of the front wheel's support arm influences the pressure of the spring of the back support arm on the same side and the other way round.

The length of the drawbars, as well as the degree of movement of the suspension tubes, can be adjusted. The drawbars are connected to the support arms by means of drawbar eyes and knife edges. The drawbar eyes are attached to the drawbars with screw-thread, so that the car height can be adjusted.

Checking and adjusting the height of the car:

Place the unloaded car ready on a flat floor with the front wheels straight. The tires should be equally worn and should have the right pressure.

Move the car up and down at the front and the back and let it settle itself.

Measure the car height at the front and the back. This is the distance from the ground to the bottom side of the chassis, just between the two bolts of the linchpin next to the locking plate. The measured distance should be:

Car Front Back

Burton 13 cm 16.5 cm

2CV 19.5 cm 28 cm

If you have measured something else, you need to adjust the height by turning the drawbar compared to the eye. Please bear in mind you can only do this if the tension is off! Jack the car all the way up until it comes off of the ground! There is a flat space on the drawbar where you can put a spanner 9. Screwing the drawbar will get the car higher; unscrewing the drawbar makes the car lower. One rotation of the drawbar means a height distance of about 5 mm.

Adjusting the car height is not enough; it could be that the car is off-balance diagonally. It may happen that the weight of the car is on the left front wheel and the right rear wheel. The other two wheels just keep the car

balanced. You will notice this because the car reacts differently if you turn left compared to turning right. This is very annoying.

Weighing should be done as follows: Jack up the car precisely in the middle between the linchpins of the rear axle tube. Use a supporting piece, as you can see on the picture. Make sure both rear wheels are off the ground.

Press the car on the front side a couple of times and let it settle itself.

Again, measure the car heights on the left front and right front. They should be precisely the same. If not, adjust them until the heights are alike. Lower the car again and check the back side again. If you want to adjust the height on the front side, equally screw or unscrew left and right to make sure the spring system will remain balanced.



Supporting piece weighing

## 9.2. WHEEL ALIGNMENT

Before adjusting the wheel alignment, it is of the utmost importance that the car height has been adjusted perfectly, so always do that first! Also make sure the tires are at the right pressure and drive/push the car forwards to its position. If this is not feasible, at least make sure the car is pushed forwards in the last meters with the wheels straight.

This is very important since several spaces in the steering system can cause quite big differences between driving forwards and backwards. As you will use your car especially for driving forwards, it is better to do the adjustments in this position.

A correct adjustment of the front wheels is not only important for good control and road-holding, but it also determines the wear and tear of tires to a high degree.

The chassis of the 2CV is built for a difference of 0-3 mm. This means that on the front side, the front wheels are 0 to 3 mm further away from each other than on the back side of the front wheels.

The steering rods need to be adjustable and safe because they control the steering of the car. That's why the adjusting sleeves need to be replaced by the stainless steel sleeves which are specially developed for the Burton. Because they are made from stainless steel it won't rust and can be adjusted at any time. For the Burton Sport model its a must due to the visual side of it.



Track rod adjusting sleeves

### 9.3. MAXIMUM WHEEL DEFLECTION

To make sure the front wheels do not hit the support arm at maximum deflection, the maximum wheel deflection should be adjusted.

This can be done with two bolts on the stub axle, by unscrewing them a bit the wheel will be confined earlier. Adjust the bolts (4 in total) on both sides so that the wheel doesn't touch anything.

### 9.4. POWER TUBE

A cheap way of boosting the 2CV block is to mount a Powertube. This suction pipe of stainless steel brings more cool air to the air filter resulting in better filling. The 0.9 bar overpressure a well-assembled Powertube can generate works like a turbo. An accurate adjustment gives the best results; a Powertube gives a 4 HP win on average!

To find the right adjustment, you are advised to participate at a power bank day. You go for a drive with a maximum of 10 Burton riders and your Burton will be tested on a power bank at least three times. On the basis of these tests, our specialists can suggest a good adjustment for your car.

See for more information on mounting the Powertube chapter 18.

## **10. SVA-TEST**

At this moment quite a few Burtons have passed the SVA test in the UK without problems. Please contact our representative Mr Cruse for more details.

### **10.1. CHANGE OF BODYWORK**

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### **10.2. CHANGE IN WEIGHT**

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### **10.3. CHASSIS NUMBER**

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### **10.4. MAKING ARRANGEMENTS FOR THE TEST**

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### **10.5. TESTPOINTS**

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## 11. HARD-TOP

In order to enjoy your Burton in all seasons we have developed a Hard-top.

With its gull-wing doors it transforms the Burton from a cool cabriolet to a flashing coupe.

There are now 3 ways to drive: Cabriolet, Targa or completely closed.

Taking out the doors only takes a few minutes and also the rear part can be removed easily.

The standard colors for the hard-top is winered and black, but of course you can have it spray-painted in any color, even in a two-tone scheme.

Mounting the hard-top.

Mounting the hard-top is not a difficult task, but it does take a reasonable amount of time to get to the optimal result.

The roof-package consists of the following components:

- Polyester doors and rear shell
- Stainless inner frames for doors and rear shell
- Hinge with detachable pin
- Gas struts
- Locking mechanism
- Rubber seals
- Rear windscreen with rubber seal
- All the nuts and bolts you need

The only thing you need to supply yourself are the flap up windows with the hinges and retainer clips from the 2CV.

The standard colors for the hard-top are black and winered. Spray-painting the roof is a very good option, but you will have to mount and adjust all the parts first. Then disassemble the complete roof and have it painted.

After this the final assemble is a piece of cake.

It is advisable to apply some tape to the body to prevent scratches. Use a piece of sandpaper/linnen to smoothen the sharp edges on the polyester parts.

Before mounting the hard-top, make sure the high windscreen is mounted at exactly the right position and angle. (see 7.6, mounting the windscreen)



Burton on winter-holiday



The end result

## 11.1. REAR PART

For the Burton are a soft- and hardtop available. The rear shell of the hardtop can be attached using the same holes as need for the softtop. When you already own a softtop, project the holes drilled for the softtop onto the rear shell of the hardtop and drill with 5 mm. When you don't own a softtop but consider purchasing a softtop later, contact Burton Car Company and use the mould that they have for drilling the holes. When you don't consider buying a softtop in the future, you can just spread the holes evenly over the flange.

1. Drill 5 holes in the rear shell, make sure they are spread evenly and drill with 5 mm.
2. Stick the rubber sealing strip to the underside of the rear shell
3. Clamp the rubber strip onto the front side of the rear shell, make sure the ends are in line with the body and extend about 1 centimetre over the t-bar as shown on the pictures. In the profile are metal clips, if they stick out, pull them out with pointed pliers, otherwise they will scratch the polyester.
4. Position the frame inside the rear shell using a few clamps and drill the top holes using a 6,5mm drill. Fasten with the M6x12 hex bolt.
5. Drill the other 4 holes from the inside to the outside using a 3mm drill. (be careful for the thread!) Then use a 4mm drill and mount the frame using the M4x10 hex bolts.
6. Mount the T-bar under the M6 bolts.
7. Place the rear shell and T-bar on the car, at the rear the shell rests on the body, at the front the lip on the T-bar slides in the windscreen. Fasten it using the short hexbolt. A piece of self-adhesive rubber seals the connection to the windscreen.

Do not drill the holes in the body yet!

8. Mount the 2 eccentrics using the M6x12 bolts.

Rubber profile bottom

Rubber profile top

T-bar in windscreen

## 11.2. DOORS

Now its time to handle the doors:

1. Place the flap-up windows in the door, make sure they have an even space around it. It is very helpful to use

pieces of cardboard around the window. Sometimes it is necessary to file a bit off the front hinges as you can see on the picture. When the windows fit nicely you can drill the holes for the hinges. These holes not necessarily match the marks in the door!

2. Mount the windows using the M4x12 screws and a washer and lock-nut on the inside.

3. The top side of the window is not sealed with a rubber but has a little clearance. Use a feeler gauge to check the clearance and file/grind the polyester if needed.

4. Mount the stainless plate inside the door, use a clamp to secure it to the window-sill and make sure the edge of the hole for the lock is situated on 200 mm from the edge of the door. (see picture)

5. Mark the hole for the lock and the 2 bolt holes and drill/file these. The plate can now be mounted. Make sure that when mounting the lock you use the felt gasket between the lock and the outside of the door.

6. Mount the hinge on the upper side of the door using the 3 M4 bolts. Make sure the rear end of the hinge is parallel to the rear side of the door.

Do not glue the hinge yet!

7. Place the tubular frame inside the door, make sure it fits neatly through the stainless steel plate and screw to the hinge using the 2 hex countersunk bolts. Measure the distance between the underside of the door and the tubular frame (outside measurement), this should be 50mm. Move the frame until this measurement is reached and drill the 2 holes for the handle. You can now mount the handle on the outside using the M4x40 bolts, place a washer between the frame and the polyester to create a bit of play. This is useful later on; if you want the door to close tighter after a while, you can remove the washers.

8. Place the rubber seals in the door, at the front of the window and at the underside of the door you stick the self-adhesive foamseal.

Filing the hinge

Measuring the hole

Flap-up window with cardboards

Mossrubber on the rim of the door

Mossrubber on edge windowframe/door

Nylon bushes

Measuring 200mm

## 11.3. ADJUSTMENTS

1. Place the doors in the T-bar and shift the central pin in place. Make sure the seam between the doors and rear shell is parallel all the way round by placing some pieces of cardboard. Duck-tape the 3 parts together. Check if the polyester clears the body and file if necessary.

2. It is very important to check if the roof is fitted well, the seams should be parallel and the doors should seal the windscreen. Have an assistant hold the rear part, move the doors up and down a few times and check again.

3. If the roof does not fit a 100% you have a few options:

\* file a bit off the edge of the door that is placed in the door, this way the door is moved more to the inside of the door.

\* The locking mechanism can be adjusted using the eccentric at the rear and moving the various bolts through their holes.

\* The rear shell can be moved from left to right a little bit.

\* The angle of the windscreen can be altered slightly.

All in all it takes quite a bit of fiddling and you should take your time for it!

It always helps to duck-tape the door to the body at the end of the day and leave it overnight. You will be amazed how the polyester will settle when gently pushed in position.

4. Once you are happy with the roof it is time to glue the hinge to the polyester using Sika-Flex. This has the benefit of sealing against rainwater and providing a very strong connection. Mark the position of the hinge and disassemble it. Use little pieces of cardboard 1mm thick placed between the polyester and hinge to act as spacers so the Sika-flex has a 1mm thickness.

5. Apply the Sika-Flex and mount the hinge using the 3 M4 bolts and nuts. Clamp the whole thing together using 2 wooden sticks with holes at the place of the bolts. Let the SikaFlex harden for 24 hours.

6. Reassemble the whole roof, make sure everything is aligned properly, drill the 5 holes in the rear part and mount it using the 5 M5x25 screws.

7. Now its time for the final adjustment of the locking mechanism, at the rear you use the eccentric and at the front you can mount the little plate with the nylon bush on the triangular plate which holds the window. For this you press the door all the way down and mark the position of the locking pin. Open the door and drill the holes, you can either tap M4 thread or use the supplied M4 locknuts.

8. Now it's time to place the gas-struts, these have to be mounted with the thick part up. At the rear the gas strut clicks right on, at the front you have to mount the ball joint on top of the windscreen. Use a clamp to roughly position the joint on the window and mount the gas-strut. Do this on both sides with open doors and adjust until the doors are both at the same height and they have +/- 1cm between them. Mark the holes for the ball joint, drill them with a 3mm drill and use the self-tapping screws. Be careful when drilling, you are very close to the glass!

9. The final job is to fit the rear windscreen. First smoothen the edges on the polyester and on the plexiglass window using fine grit sandpaper (P400), this prevents damage to the rubber. First clamp the rubber on the polyester and then push the window in from outside in. When fitted neatly you can mount the inset, preferably with a special tool.

Mounting the window can be a very fiddly job and may take some time but once its done you're ready for the first warm and dry testdrive!



Rear lock mechanism



Front lock mechanism

Gas-strut mounting



Marking the position

## 12. EXTRA'S

In order to perfect your finished Burton appearance, or make it more practical, there are several options to complete your car.

### 12.1. LICENCEPLATE HOLDER

Licenceplate holder

### 12.2. TOW-BAR

There is a removable tow bar available for the Burton.

- The tow bar should be attached to the chassis with 8 bolts. The Burton can pull a trailer with a maximum weight of 360 kg and can carry a ball bearing pressure of 45 kg.
- You are advised to turn up the suspension on the rear side if you are about to drive with a trailer.
- The wiring for the trailer is drawn from the back lights.
- The tow bar is delivered including a multiple socket and cables.

### 12.3. TRIANGLE

The triangle is a blank steel, or chromed, "triangle with tow bar". The triangle is attached to the eyes of the chassis of the 2CV/Burton and then connected to the tow bar with a trailer clutch. This is ideal if you want to take the Burton as an extra car; for example, on holiday (behind the camper/car) or if you need to tow the car.

While using the triangle, the car is on 4 wheels and steers automatically in bends. Make sure you unlock the steering lock, that the gearshift box is out of gear and the handbrake is off. The Burton should be equipped with a light bar at the rear side. If you want to use the triangle often, you can also install a multiple socket on the dashboard instead of a light bar. Now you will use the back lights, license plate lights and indicators of the Burton itself. If you want to "triangle" you can simply click the spiral cable in the multiple socket on the dashboard on one side and in the socket of the pulling car on the other side.

Mounting the triangle goes as follows:

Mount the socket on the dashboard; a suitable place is directly to the left, next to the transit of the cable tree. Normally, this is where the pressure controller is placed, but it can be moved a bit. Drill the 3 holes for the bolts and a hole for the passage of the cables to the inside. Fasten the socket.

The Burton cable tree contains the connection of a triangle. The cables are coded; connect them as follows:

black 58L (7) – dipped lights – connection >581  
yellow L (1) – indicator left – connection >490  
green R (4) – indicator right – connection >491  
red 51 (6) – brake lights – connection >54  
white 30 (3) – mass connection – connection >311

NB: the vehicle you want to “triangle” should be MOT tested and insured.



Triangle



Triangle connected to chassis



Triangle cable routing

## 12.4. IDENTIFICATION PLATES

There is an identification plate for the Burton (body number) available. These are made for you at Burton Car Company and contain the details and builder of the car. After the car has been tested, you can order the plate, which can be made on request and on open days.

- The plate is provided with a self-adhesive layer. Scour the gel coat first.
- Attach the Burton identification plate next to the plate of the donor car.



Burton identification plaque



identification plate

## 12.5. STICKERS AND STRIPING

Polyester is suitable for striping/stickers. See the pictures for several possibilities. You can order a striping set in several colours at Burton Car Company.

## 12.6. BOOT LID RACK

Burton Car Company has designed a stainless steel luggage rack in the boot lid.

- Place the luggage rack on the boot lid with the narrow side at the bottom.
- Make sure you do not drill the holes through the reinforcement rib of the boot lid.
- Make sure the measurements from the left and right of the luggage rack to the side of the boot lid are the same.

Mark the holes using the rack as a guide.

- Mount the rack with four M8x20 bolts and use sheet-metal rings on the inside.

## 12.7. GRIP-HANDLE

There is room for a grip-handle on the right side of the dashboard for those people with a sporty driving style, or, just because you prefer it.

- Make sure the handle runs nicely along the upper side of the dashboard.
- Mark the holes (6.5 mm) and drill them.
- Attach the handle with M6x20 bolts and sheet-metal rings to the inside.

## 12.8. CHROME RINGS

As decoration for the back lights, you can buy specially developed chrome rings at Burton Car Company. This gives a more luxurious and finished look to your car. The rings are easily fastened with the existing screws of the back lights/indicators.



Chrome surroundings rear lights

## 12.9. BOOTLID LOGO

- Attach the logo to the right bottom side on the boot lid.
- Determine the position of the two pins. Mind the reinforcement rib.
- Drill the holes (3.5 mm), attach the logo and slide the locking clips on the inside.

## 12.10. ALUMINIUM DASHBOARDPLATE

In order to decorate your dashboard, we have an aluminium plate that can be mounted behind the clocks. It gives a cool racing look or a more classic look in combination with the MMB clocks. The plate measures 19x100 cm. You can decide for yourself how to sort the instruments, and the shape and size of the plate.

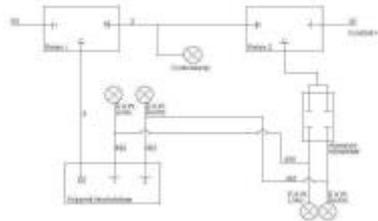
You can carefully bend the plate in the shape of the dashboard using a rubber hammer. Bend the bottom side of the plate around the polyester for the finishing touch. In addition, it is important that the curves of the plate run smoothly as an angular edge contrasts sharply against a gel coat colour.

Aluminium dashboard

## 12.11. SWITCH FOR HAZARD LIGHTS

A 2CV is usually not equipped with an emergencylight. You can fit your 2CV or Burton yourself with such a system. To do this, a second flasher relay to be placed. The electrical diagram displayed in the figure shows how this second relay should be connected.

We recommend you to use a simple rocker switch for the emergency lights, because this switch has a total of four poles, of which two pairs of two connect. It is important that the wires 490 and 491 are separately connected to a single pole of the switch . Wire C of Relay 2 then connects the two opposite poles of the switch.



Schematic hazard lights

## 12.12. SPECIAL TOOLS

For dismanteling a 2CV or something similar, you do not need that many special tools. Still, some tasks are a lot easier if you have the right equipment.

### - Rear brake adjustment drum

This special rear drumbrake will help you to set up the brakeshoes correctly and with accuracy. The adjustment drum is fitted onto the axle. Then the brakeshoes can be set up with a feeler gage.

### - Socket 44, hub/wheel bearing wrench

This cap (size 44) is used to unscrew the hub bolts (rear) and the wheel bearing bolts (front and rear). This cap is a special tool for the 2CV / Dyane / Mehari, developed and produced by Burton Car Company. For loosening the hub bolts, the magnetic rod should be removed, but this rod does need to be used for loosening the wheel bearing bolts.

Watch an instruction video made for this article [here](#).

### - Support arm wrench

With this wrench you can remove bolts that keep the support arms on the axles.

### - Track rod wrench

The steering ball joint house contain a bolt with 4 notches that keep the ball bearings of the steering ball joint arms in position. This wrench fits exactly on these notches.

Watch an instructionmovie about this product [here](#).

### - Track rod puller

The track rods are conically connected to the steering box, and for this reason the tie rods can be stuck. With this puller you won't damage the tie rods or steering box while loosening them.

### - Spanner 46

This spanner is used to remove the hex nuts from the suspension tube centre bus.

- Crank tool

This special tool is used to adjust the cranks of the rear brakes and hand brakes (front) of an A-type. The tool is thin so that you have enough space to place a spanner on the bolt.

- Socket 14 for fan

To remove the fan in order to get access to, among other things, the ignition and the fan belt.

- Socket 26 for the shock absorber bolt

This extra-long cap 26 is used to dismount the shock absorber bolt.

- Torque wrenches

To fasten the bolt and nuts sufficiently well.

- Tierodwrench

The correct balance and rideheight is critical for the handling of a Burton of 2CV. This wrench for the tierods that connect the central suspension cilinders and the suspension arms.

- Brakedrum puller

The rear brakebrums can be very hard to remove. The brakedrum puller fits onto the drum with the wheelnuts. By turning the central bolt, de puller will remove the brakedrum in a controlled fashion.

Furthermore, the following tools are for sale for constructing the Burton:

- Hole-saw set for the instruments

In order to drill holes for several instruments, you need a hole-saw set. This set consists of a drill holder, a hole saw 52 mm and a hole saw 79 mm. Suitable for a Burton clocks set as well as for an MMB.



Socket 44 for wheelbearing and brakedrum



Rear brakedrum puller



Tool for castle nut in trackrodends



Tierod wrench

## 12.13. CLOTHING

Burton Car Company has designed many accessories. Many people already know our jackets, T-shirts and overalls.

- The jackets are designed for driving in an open car, so the jacket is wind and water tight as well as being comfortable and versatile.

- The overalls are designed for, of course, tinkering. Stains are less noticeable. In addition, the zipper is covered to avoid scratches on your car.

The new Burton cap is also popular. It contains a neck-strap as a precaution so that you do not lose it at high (wind) speed.

## 12.14. BURTON OWNERS CLUB

The Burton Owners Club is a club for Burton owners and fans. They aim to support builders during the construction of the car, and organise and participate in events with Burton cars. In addition, an exclusive magazine is sent to all members.

Since the establishment of the club (early 2002) many events and meetings have been organised. Among them are one-day events in Holland for recreational drivers, meetings concerning specific technical components of the Burton or 2CV engine, as well as events of more than one day for the sportive Burton drivers.

Currently, more than 150 owners are members of the Burton Owners Club. Some of them are more active than others, but there is something for everyone. Due to sponsors, membership is free. You can subscribe via [info@burtonownersclub.nl](mailto:info@burtonownersclub.nl). After being included in our administration, you will automatically receive all Club mail and the Burton Owners Club Magazine four times a year. Check [www.burtonownersclub.nl](http://www.burtonownersclub.nl) for more information.

## 12.15. ROLLING ROAD DAY

With 10 cars tinkering to find the optimal adjustment and returning with an average of 15% more power. For only € 95,- you can make 3 runs on the power bank. It all takes place during the power bank day. In the meantime, we provide a snack and a drink. Do you want to make the most of your car, or do want more information on the power test day? Visit our web site regularly and read our newsletter.



Power test day

## 12.16. RIMS AND TIRES

Burton Car Company has designed a sports rim especially for the Burton. The sports rim is a bit broader (4j) and extends a bit more outside to give it an extra cool look. The sports rim has proven itself several times during The Total 24 Hours of Spa and is thus very suitable for rallies as well!

Spoke wheels

The real spoke wheels would fit nicely on your Burton. Unfortunately, there are quite a few disadvantages to these spoke wheels:

- \* Spoke wheels are four times more expensive than sports rims. This is partly because of the expensive adapter you need to change a "three-hole" assembly to a "spline" assembly.
- \* Spoke wheels are very vulnerable and difficult to upkeep.
- \* Spoke wheels extend more to the outside and therefore touch the mudguard edges. Removing these edges causes weak mudguards.
- \* Spoke wheels are nearly always off-balance and swing in the rim sometimes.
- \* The most important disadvantage is that the spoke wheel plus adapter is very heavy (14 kg instead of 7 kg per rim) which makes the suspension difficult to adjust. This causes a bad (dangerous) road-holding.
- \* Legally, nothing can extend more than 30 mm outside the mudguard and this is the case with the bolt of the spoke wheels.

If you still have good tyres on your donor car, check these first before buying new tyres. Carefully check the profile depth and cracks due to drought. If you need new tyres, Burton Car Company advises 135r15 tyres, but please realise there are not many options concerning the size. In fact, there are only three good options:

- \* Nankang 135r15: These tyres have the right height and the best price/quality ratio. This is also a good rain tyre due to the modern profile. We've had the best experience with these tyres.
- \* Michelin 125r15: These are the original 2CV tyres. They have a longer durability but are twice as expensive as the Nankang tyres, which could be a waste of money if you only drive a couple of thousand kilometres a year.
- \* Michelin 135r15 M+S winter tyres: If you are a more sportive driver, Burton Car Company would advise Michelin M+S (mud and snow) tyres. These tyres have a softer compound rubber and ride themselves clean because of their special profile. The profile gives them extra grip with heavy weather conditions. However, they ravel out more quickly and are very expensive.

Do not use Firestone or Uniroyal 125! Apart from the bad grip during rain, their diameter is way too small. As a result, the kilometre counter will deviate strongly and your engine will need more revs at the same speed.

Burton Car Company advises a tyre pressure of 1.8 bar on all four tyres.

The Burton sports rims are available in blank steel, and powder coated in all RAL colours (on request)..

Mounting Burton Sport rims is as follows:

- Ensure that the supplied wheel caps fit into the rim.
- If necessary, make the hubcaps fit, using a fine sandpaper at the edge to remove some of the thick powdercoating.

- Glue the caps in sports rims with Sikaflex or similar mounting kit. See the picture. A thin edge of kit on the flange of the wheelcaps is enough.

- Before mounting the Burton rim under your car, you will need to file a bit of the bottom side of the stub axle. Concerning the part on the bottom and outside of the stub axle, without any changes, the wheel will fit perfectly, but once you take a sharp bend, the rim will touch the corner of the stub axle. You can prevent this by filing about 5 mm off the stub axle. This will not affect the solidity of the stub axle. See the picture for an example. You can also choose the standard 2CV wheels.



Chamfer the hub



Burton rimm



Placing the hubcaps

## 12.17. POWER TUBE

A cheap way of boosting the power of a 2CV is by Power tube. This stainless steel induction pipe brings more cool air to the air filter and ultimately provides a better fill of the cylinder. The 0.9 bar that a well-mounted Power Tube can generate the same effect as a turbo. A proper setting of the carburettor-jets gives the best results, the Power tube provides an average of 4 HP profit!

Step 1:

Remove the air intake tube on the side of the air filter (if present) and remove the protective grille of the fan. Then also makes loosen the gas return spring, and remove the clip which attaches the gas spring to the fan housing.

#### Step 2:

Prepare the Power tube for installation. Stick the supplied piece of foam to the bottom of the tube Power . Press the holes in the piece of foam, and remove the yellow adhesive. This rubber creates an airtight connection between the power tube and the fan housing.

#### Step 3:

Drill a hole in the fan housing. Use a hole saw of 52 mm. Drill a little bit right of the hole where the gas return spring previously attached. Also cut or file down 5 mm of the upright edge of the fan housing, as seen in the picture. This creates space so the Power tube can mount flush. Be careful not to damage the oil cooler while drilling. Clean the edges of the hole with a file or a dremel.

#### Step 4:

Slide the round bracket on the Power tube and snap the supplied knee-shaped rubber onto the air filter housing. Slide the tube into the rubber and attach the Power tube at the front with the supplied M7 bolt. Drill the hole for the round mounting bracket into the plastic air filter housing, make sure it is pressed firmly against the air filter. Press the supplied bolt through it now, but do not tighten it yet. Mark the hole that is yet to be drilled in the fan housing, it's the one on the top. Remove the power tube of the car, and then drill this hole with 5.5 mm. Note again, keep clear from the oil cooler.

#### Step 5:

Final installation: Fit the Power tube for the last time and attach it to the fan housing with the screws and nuts that came with the Power tube set. Fit the round bracket to the Power tube and attach it to the air filter. The gas return spring will attach to the Power tube. The Power tube has a small hook designed especially for this.

#### Step 6:

Install other jets in your carburettor, or visit a dyno!

#### Power test day:

We organise a power test day every few months. You'll go with up to 10 Burton riders to a dynamometer, and your Burton is tested three times. Specialists will determine a perfect setting for your car. This prevents that your engine will run too lean or hot.

#### Step 7:

Only fit the curved rubber that connects the Power tube to the air filter housing after adjustment on a power bench day. This is important because otherwise your engine can run too lean or overheat.



4: Drilling a hole



2: Drill a hole and file down the edge



1: Pipe on the airbox, mounting point behind het Fan-cover, remove the throttle-spring and -clip.



3: Power tube rubber

## 12.18. BURTON JACK

The Burton jack is an essential accessory for every Burton. The standard 2CV jack cannot be used for the Burton since that one is meant to jack up the 2CV under the sills. The polyester of the Burton body is not suitable for such tension. A standard scissor jack does not suffice either because the wheel deflection of both the 2CV and Burton is very big. Therefore, the wheel will remain on the ground when using a standard jack. The solution to this problem is to jack up the support arm of the car only. The Burton jack is based on that idea. It is delivered as you can see on the pictures. The jack can be perfectly stored underneath the spare wheel.

The first thing you need to do if you have a flat tyre is to construct the supporting piece. This block should be placed in front of the flat tyre, and the car should be driven onto it.

1. Pull the handbrake.
  2. Unscrew the wheel bolts.
  3. Place the supporting block in front of the wheel, push the handbrake lever down and push the car forward so that the rim with the flat tyre rests on the block.
  4. Place the jack with the notch below the support arm, and pull the car onto the jack. Use the cut-away 'front' or 'back' depending on whether you are about to change the front or rear wheel. Roll the car forwards or backwards to lift the support arm with the wheel from the ground.
  5. You can now remove the supporting block. Unscrew the wheel bolts all the way and remove the wheel. Install the spare wheel and fasten the bolts again. Remove the jack by rolling/pushing the car off and fasten the bolts.
- NG: The block is meant to bear the height of the tyre as the support arm will get closer to the ground when the tyre is deflated. If you replace a tyre that is still inflated, you do not need the block.



Burton Jack 02



Burton Jack 03



Burton Jack 04



Burton Jack 05



Burton Jack 06

## 12.19. HOT AIR BLOWER

A hot air fan is useful both in a 2CV as in a Burton. It ensures that the warm air flows better to the interior, and improves the defroster. This manual describes the assembly in a 2CV, using the kit for the fan (item A1.8908).

In a 2CV, the fan is placed in the heat long, in the upper (shortest) part that goes to the windshield.

You will need to cut the hose for the heater. Remove some of the insulation on the inside of the hose. Make sure that the fan fits into the hose and sits airtight. You can fasten the fan with Ty-raps or hose clamps.

To control the fan, an additional switch is placed in the interior of the car. See the schedule.

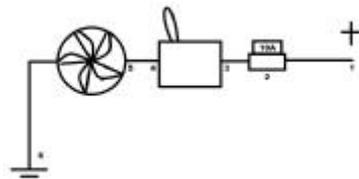
1. Using a voltage tester or multimeter, search for a wire that is hot when the car's ignition is switched on. Use the splitter that came in the kit, to branch the thread.
2. Insert the supplied line fuse, fuse 10A.
3. Mount the switch using the mounting plate in the interior. Connect the new cable with one of the isolated slide connectors.
4. Again, use a slide connector, and put the wire through the bulkhead to the hot air fan.

5 . Connect the wire to the + of the fan , use the supplied lengthener.

6. Clamp the screw eye to the ground wire of the fan. The screw eye connects to the ground terminal ( a stud )  
onthe body , near the battery.



Placement of the fan



Schedule hot air fan

## 13. CHECKING AND OVERHAULING

Before you start assembling the components again, this is the moment to clean everything and check them if necessary.



Check en refurbish

### 13.1. PETROL TANK AND BRACKET

The tank bracket can be cleaned, scoured and painted again. Under sealing is also possible. The tank bracket provides strength and safety. You can rinse the inside of the petrol tank with petrol, clean the outside and get rid of the under seal. Replace the float if it does not work anymore. Only change the float gasket if it is leaking.

### 13.2. FRONT AND REAR SUSPENSION

Check the support arm bearings by moving the arms separately. If moving is difficult you can mount new bearings. There are 8 bearings in total; 2 per support arm. These bearings are not cheap, so be frugal.

Check the wheel bearings by turning the hubs around. If you can hear the bearings you should replace them.

Also check to see whether there is rust on the bearings. If so, then the bearing has died.

The steering rods need to be adjustable and safe because they control the steering of the car. That's why the adjusting sleeves need to be replaced by the stainless steel sleeves which are specially developed for the Burton. Because they are made from stainless steel it won't rust and can be adjusted at any time. For the Burton Sport model its a must due to the visual side of it.



Track rod adjusting sleeves

### 13.3. (DIS)MANTLING FRONT SUSPENSION ARM

Removing and assembling a front suspension arm may be necessary if one of the bearings is in bad condition, if a stub axle needs replacing or if the support arm is damaged due to an accident.

Remove the drive shaft from the stub axle housing, see 3D...

Dismount the lid of the axle tube and three M9 bolts and preserve them well.

Remove the locking clips and tap the knife edge out the eye.

Loosen the steering ball joint arm on the stub axle housing. It is attached to the locking plate with two bolts. If these are removed, the arm can be easily be loosened with a hammer. Keep these bolts separated since they are stronger (10.9) than normal bolts (8.8).

Remove the linchpin from the support arm-bearing bolt and tap the bolt loose with a blunt screwdriver without damaging the threads.

Remove the arm by wiggling, pulling, moving or tapping.

Check the bearings. Red grease means rust in the bearing, which is not good. Run your finger along the bearing bush. Irregularities are not good either.

Tap out the bearing arm if you want to assemble new bearings. If the bearing bush is also damaged, you also need to dismount and throw away the bearing.

If necessary, apply the new bearing bush and the bearing in the same way as they used to be applied. Do not forget to change the inner support arm seal.

Shift the support arm over the axle and tap the outer bearing into the support arm.

Shift the outer support arm seal on the support arm bolt and turn it on the stub axle.

Fasten the bolt with 50Nm and apply the linchpin.

Mount the lid of the stub axle (including the shock absorber).

Connect the eye on the support arm and assemble the knife edge and locking spring.

Apply the drive shaft to the hub. (see 3D...)

Fasten the hub bolt with 350Nm and apply the linchpin.

Apply the steering ball joint arm to the stub axle and lock it.

#### Removing and installing stub axle pin

The stub axles ensure that the front wheels easily rotate to the left or right. When you think your car is bucketing along the street and the steering feels a bit lurching, then there is a great chance the sub axles are worn.

Lubricating the stub axles every 5000 Km, with the front of the vehicle cranked upward, considerably increases the life of the stub axles.

Check the backlash of the stub axle pins. The permitted backlash for the periodic motor vehicle test is:

\*1.5 mm sideward in upper or lower pivot, or; \* 2.0 mm in upper or lower pivot together.

\* 1.0 mm upward.

Please proceed as follows for removing and installing the stub axle pin:

Possibly demount the front control arm in order to make it all easier, see 3D.3

Straighten the folded over collar of the lower plug (see figure ...) and screw this plug out of the stub axle using a screwdriver.

Tap the upper stub axle cover (see figure 3A.4 no. 11) out of the stub axle from below using a metal pin of no longer than 7 mm.

Knock the stub axle pin out of the stub axle using a hammer and an old thinner stub axle pin as tools. Do not damage the stub axle housing here.

It is possible the stub axle won't come out. Then you should use a press with special tools. This makes it necessary to remove the control arm (see 3D.3). It regularly happens that the stub axle pin is so tight that it starts to upset when it is hit too much and too hard. Specialized companies like BCC charge between 25-50 Euros per side.

Remove the friction ring and the thrust washers (see figure 3A.4 no. 6, 7 and 8)

Remove the bushings from the stub axle using an appropriate stamp.

Make sure that you remove all burrs on the stub axle housing and the control arm using a file.

Place the bushings in the stub axle.

Place a friction ring, a thrust washer and another friction ring in the metal dust cap and place the whole including the stub axle over the wheel control arm. The dust cap including rings must be placed below the control arm, with the open side of the dust cap facing down.

Lubricate the bushings and the stub axle pin. Make sure you install the stub axle pin in the right position: At the top both lubrication holes are aligned: At the bottom the lubrication holes have a different distance to the bottom. Perpendicularly knock the stub axle pin a bit into the stub axle using a copper stamp or plastic hammer and then press it into the control arm. Make sure you force through the stub axle pin enough that the upper edge of the stub axle pin is aligned with the upper edge of the bushing.

Install the stub axle cover and lock it by knocking and by butting the stub axle over the plate.

Install the plug (see figure 3A.4 no. 10) and lock it by tapping the collar into the notch of the stub axle.

Install the ball joint arm on the bearing house (do not forget about the lock washer) and install the drive shaft (see 3D...).

Lubricate the stub axle with universal grease via the grease nipple. (See figure 3A.4 no. 13)

Tip: If you leave the new stub axle pin in the freezer overnight before installation, it will shrink somewhat and as a result is easier to install.

### Replacing front wheel bearing

Remove the wheel and the drive shaft, see 3D...)

Support the control arm and knock the wheel hub (see figure 3A.5 no. 1) out of the stub axle housing using an appropriate stamp.

Drill out the centre points for locking the Wheel bearing nut (see figure 3A.5 no. 7) using a 4 mm drill, at a depth of approximately 3 mm. The nut is usually secured at three locations.

Tap loose the Wheel bearing nut using a dull screwdriver (embosser) without damaging the thread.

Remove the retaining rings (see figure 3A.5 no. 4 and 6); tap them out of the ring nut and the sub axle housing.

Tap the bearing (see figure 3A.5 no. 10) including bearing shell out of the stub axle housing.

Clean the stub axle housing and check the thread using a thread file and lubricate the new bearing with bearing grease.

Tap the bearing into the stub axle housing (by means of a pipe with a diameter of 70 mm). Pay attention! Never load the bearing onto the inner ring when installing the stub axle.

First screw the wheel bearing nut manually into the stub axle housing. If this doesn't work, then file the thread again using a thread file.

Screw (tap) the last part well using the dull screwdriver and secure the ring nut using two or three centre points. Install the retaining ring inside the ring nut with the lip of the retaining ring facing the bearing. The outside of the retaining ring must be at "equal height" with the outside of the stub axle housing.

Place the retaining ring in the stub axle housing, the retaining ring must be "at equal height" with the outside of the stub axle housing.

Install the Wheel hub by knocking it into the bearing using a plastic hammer.

Install the drive shaft. Only after that you should not notice any backlash anymore.



Mounting the axle tube

### **13.4. (DIS)MANTLING REAR SUSPENSION ARM**

Remove the absorber

Remove the locking clip and tap the cantilever from the towing eye.

Loosen the clamp and remove the dust cap from the support arm.

Remove the brake line to the support arm of the three-way piece and eventually fill it with a M8 bolt.

Remove the nut from the retaining bolt left – right from the three-way piece segment and press the bolt inside.

Remove the cotter pin from the support arm and bearing nut. Unscrew the tap the nut with a blunt screwdriver without damaging the threads' screw.

Remove the arm wiggling, pulling, moving or knocking.

Check the bearings. Red grease means there is rust in the bearing and it's not good. Feel with your finger along the lower scale. Bumps are not good.

Tap the bearing shells from the support arm if you want to install new bearings. If you find a broken bearing you must also remove and discard the shell.

You can eventually put the new bearing and the shell in the same way as the ones that were there before.

Remember to replace the inner support.

Move the support arm over the shaft and tap the outer bearing in the support arm.

Slide the outer support arm seal on the support arm and tighten the nut on the axle tube.

Tighten the nut to 50Nm and put the cotter pin on.

When connecting the brake lines follow these instructions:

Paste the nipple down with tape so that it cannot move

Slide the spiral axle tube and guide it so that it finally is connected with the nipple in the tree-way piece. Use a new line and put the rubber nipple down to 7-9 Nm

Secure the mounting bolt of the brake line fixed with 10Nm. Note whether the ridge is into the notch of the shaft tube and check if the brake line doesn't come in contact with the axle tube.

Insert the rubber ring to the brake line to protect the shaft in the three-way piece.

Bring the plastic dust cover and secure it with a strip.

#### Replacing the rear bearing

Remove the dust cap of the brake drum

Remove the locking of the wheel hub with a chisel (see figure 3A.6 no. 2) and remove the nut (M44). You can replace or renew this nut with the one on the other side.

Remove the brake drum with a trigger or by prying with two big screwdrivers.

Drill with a 4mm drill the centre points of the wheel bearing nut about 3 mm.

Hold the brake drum and tap the wheel bearing nut with a blunt screwdriver ( ) without damaging the screw's thread. Unscrew the nut from the brake drum.

Place the drum with the ends turning down on a wooden plank and tap the bearing from the drum.

Pull the wheel bearing seal from the drum, clean the drum and check the screw's thread with a wire....veil the wire where it's necessary.

Lubricate the new bearings with grease and using a piece of pipe press it against the outer bearing shell in the drum.

Fasten the wheel bearing nut and secure it with two or three centred points.

Tap the brake drum in its place with a plastic hammer and put the hub nut securely.

Lock the nut with a chisel and some material of the nut by tapping in the groove.

Put the plastic dust cap on the drum.



Back off brake adjuster cam

## 13.5. STEERING ARMS

On top of the swivel pin housing there is a small arm, the lever, which is attached to the outer ball joint. On both outer ball joints there are adjustable control rods. These ones are also adjusted with two inner ball joints in the steering box. The steering box is built into the front axle tube behind the gearbox. The steering box includes a circular cog wheel that drives a gear rack. By turning the steering wheel the gear rack moves from left to right and pushes through the inner ball joints both rods rock back and forth. The rods move the outer ball joints and the wheels go then back and forward. Around the ball joints there are rubber cases. These ball joint cases shouldn't be torn for the APK. Replace these cases as follows:

Loosen the two bolts with which the ball joint arm is fixed to the stub axle housing

Remove the cotter pins that are attached to the ring nut.

Remove the ring nut from the control rod together with the ball seat.

Cut with a knife the old ball joint case and remove it.

Remove the ball joint arm by sliding the flat sides through the slot of the holder and pulling it downwards.

Check the ball joint, the minimum diameter is 20mm, if this is not the case, then it has to be replaced. Burrs should eventually be filed away and polished with fine sandpaper.

Pull the new ball joint case over the ball joint.

Grease the ball seat good and place the ball joint by letting the flat sides of the ball come together with the slot of the holder.

Place the ball seat and tighten the ring nut. Then tighten the ring nut a quarter back and place the cotter pins.

Assemble and secure the ball joint arm back in the steering box with two 10.9 bolts.

## 14. BRAKES

There are two different kinds of brakes used on the 2CV. They also use a different kind of brake fluid and they are not to be used together! The use of the wrong brake fluid causes major damages in the brake system.

All (old) types with drum brakes use a synthetic brake fluid DOT 4.

All (new) types with disc brakes use a mineral oil LHM. This is a green liquid, and that's why it's also called "the green system".

- Clean the green (LHM) brake system with benzene.

Never use methylated spirits or other alcohol-based agents.

Blows dry the parts after cleaning.

- Clean "the red" (DOT 4) brake system with alcohol and not with benzene.

Cleaner fluid for the brakes system

Discs for the front and back drums LHM benzene

The drums around DOT 4 with alcohol

The brake system requires little maintenance. The pads should be checked regularly for wear. Every five years the brake fluid should be renewed and once a year the brake drums should be adjusted. (See figure B1)

- Using a solid ring or a socket spanner 14, take the pegs out as indicated in the picture.

- When the brake pads are set against the drum, turn the spanner back slightly so that the drum is free.



Adjusting the brakes

### 14.1. BRAKE TROUBLES

The brake pulls to one side. This can happen because of the following reasons: The grease on the brakes discs is spread unevenly, the discs are worn out, or there is leakage on the brake hose which is the brake calliper of the engine. It can also be the oil filter cap, the seals, or the oil pipe.

You can replace the brake pads, brake hose, and the oil filter gasket and check the brake calliper. Another cause may be that the brake cylinders are stuck. In this case replacement is the only solution.

The brake pedal sinks the first time completely away and by pressure pumps again. The cause is that the rear brake-blocks are worn out. These need to be replaced and / or lined up.

The brake pedals feel 'spongy'. The cause is air in the brake system. In this case, the entire brake system has to be ventilated.

Loss of the brake fluid. The cause is either a leak in the brake hose, the brake cylinders, brake callipers, or the inside of the cylinder. In this case, you can replace the brake hose and / or the master brake cylinder, and check the callipers.

The break stays on or hangs. The reason is either that the brake cylinders are stuck, the piston may be stuck in the calliper or the pressure pin of the master cylinder does not go far enough back. In this case, you can replace the rear brake cylinders, check the brake callipers and / or adjust the pressure pin.

The balance of the breaks in front and on the rear is not good. This can be caused by the brake cylinders or the pistons being stuck, but often is a matter of a master cylinder that is wrongly attached. The correct order is: the rear hole is for the pipe to the brakes on the front and the front hole is for the brakes on the rear!

## **14.2. BLEEDING THE BRAKE SYSTEM**

The brake fluid must be pumped completely through the pipes. There are three venting nipples on the car. By the two rear brakes, (one for each break), and by the left calliper.

- Place a transparent tube on the venting nipple of the right rear wheel and let the other side of this hose run into a transparent jam jar, or something similar.
- Make sure you have enough brake fluid in the reservoir on the master cylinder. Remember the type of the liquid. If it's necessary, refill from time to time.
- Have an assistant press the brake pedal several times so that enough pressure is built.
- Loosen the brake venting nipple until the brake pedal 'sinks' and turn back the nipple while your assistant keeps pressing the brake pedal.
- If the nipple is turned off, the pedal can quietly rise again.
- Repeat this procedure until there are no air bubbles in the fluid coming out the hose.

Ventilate in the following order:

- The other rear wheel
- The left calliper in the front.

By the disc brakes, both brakes are ventilated with a nipple on the left calliper. In a well vented brake circuit the pedal feels 'hard' if you press strongly on it.

- When you are finished venting, the brake fluid reservoir must be on the MAX position after refilling.

NB Venting by a Burton cannot be done with a vacuum pump because the pipes are too thin for this.

### 14.3. (DE)MOUNTING BRAKE CALLIPERS

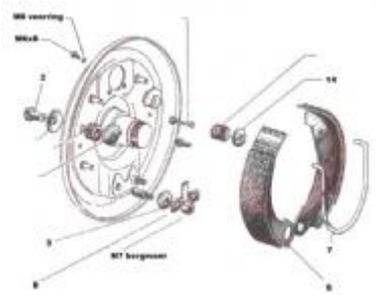
- Loosen the brake pipes from the calliper and close it with a cap.
- Disconnect the handbrake cable from the 2 M7 bolts
- Remove both calliper mounting bolts. Watch out for the retainer plate between the container and the calliper. Some brake callipers have also a bus between both halves, don't lose them!
  
- If you don't have to check the brake calliper; then clamp both halves to each other with an adhesive clip, this way there is no brake fluid leaking.
- Remove the calliper pulling it upwards. Check the brake callipers. (See 14.7)
  
- Disconnect the driving shaft and remove the brake disc. The minimum thickness of a brake disc is 4 mm. A new brake disc has a thickness of 7 mm. The lateral swing of the disc must be 0.2 mm maximum in the mounted position.
- Place the brake disc and mount the driver shaft. Tighten the bolts to 45 Nm.
- Degrease the brake discs with a brake cleanser.
- Mount the callipers. Tighten the bolts to 50 Nm. Watch out for the retainer plate between the container and the calliper. Be careful that both halves in the calliper fall exactly on each other and check if the seams of the halves fall exactly above the centre of the disc. (Here is the picture of the retainer plate).
- Mount the brake pipes and don't tighten them too much. Always use a new rubber pipe.
- Connect the hand brake cable and adjust it according to 14.9.
- If necessary, fill the brake fluid reservoir with the required green-LHM brake fluid and vent the system. (See 14.2).

### 14.4. (DE)MOUNTING REAR BRAKES

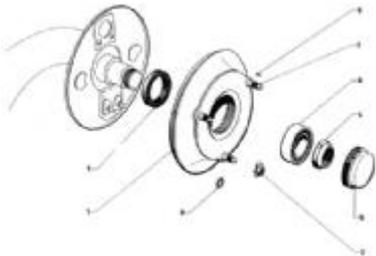
- Set the car on blocks and remove the wheel
- Remove the dust cap of the brake drum
- Tap with a chisel or a nail punch securing the hub nut outwards and remove the nut (size 44). You can renew or replace this nut with one on the other side.
- Set the brake pads back with the adjustable cams. (No. 2)
- Remove the brake drum with a hand puller or two large screwdrivers.
- Remove the spring (No. 7) and the brake lining (No. 6) turning a quarter the bonnet (No. 14) and pressing it. Remove the 2 nuts M7.
- Replace any wheel cylinder loosening the brake hose and two M6 bolts.
- Mount the new brake cylinder in reverse order. Be alert of the type of braking system (LHM or DOT 4) and always use a new rubber pipe hose.
- Secure the screws through the locking plate (8) tapping into it, or use self-locking nuts M7.
- If you mount a new brake lining slant it just a bit at the beginning and the end of the lining, this prevents squeaking and abrupt moving of the brakes.
- Mount the new brake lining and adjust it with the eccentrics (No. 3) and cams (No. 2). The margin between the brake drum and the brake lining must be of 0.2 mm over the entire length.
- Measure the interior length of the drum and make sure that everywhere it is within 0.2 mm. Adjust first the 2 lower eccentrics and then the cams at the top.
- If the adjustment is good, you can set the upper cams again a bit inside so that the drum fits over it.
- Tap the brake drum in its place with a plastic hammer and put the hub nut in firmly.

- Secure the nut with a chisel with some material of the nut into the groove tapping on the shaft.
- Mount the dust cap in the drum to the wheel.
- Now put the cams back outwards so that the lining is free from the drum.

If when driving / breaking the brakes make a squeaking noise or you feel the brake pedal going up and down it may be that the oval drum is worn out. Replacing or turning out the lathe is a solution.



Rear brake



Rear brake drum



Pulling the brake drum



Back off brake adjuster cam

## 14.5. CHANGING BRAKE PADS

New brake pads are thicker than worn out specimens, so it is necessary to press back the piston into the brake calliper. The amount of fluid that you straight from the cylinders flow back into the reservoir. Make sure that this does not overflow.

- Put a large screwdriver between the brake disc and a brake pad and press it inside until the piston is pushed completely.
- Pull one end of the double spring back and press the pad down and pull it back out and take note of how it was fitted.
- Mount first the new brake pad before you start on the other side of the disc. This prevents the piston from being pressed against the calliper.
- Press the (new) brake pad completely and then back up so that the spring falls in the opening.
- Repeat this procedure with the other brake pads; always replace both sides.
- Press the brake pedal a couple of times so the pistons fix themselves before you drive.
- Check the brake fluid level if necessary with the green LHM oil.

The first time you will notice that the brakes do not work optimally because the pads have to wear on the disc.

## 14.6. FRONT CALLIPER OVERHAUL

- Remove the calliper (see 3B.6)
  - Dismantle the brake calliper and remove the spring that holds the brake pads.
  - Remove the nozzle between the two halves and the O-ring.
  - Squeeze the piston from the cylinder with air. Hold with it a wooden board under the piston and watch out for your fingers. Never try to take out the piston with pliers because if it gets damaged is unusable.
  - Remove the rubber rings from the grooves in the cylinders.
- Do not do this with a sharp object.
- Take out the other half of the calliper the same way.
  - Clean the parts in benzene and blow them dry with air. (Especially the inner grooves). - Check the calliper and pistons for signs of corrosion or damage and replace them if necessary.
  - Submerge the two rubber rings in the LHM fluid and put the seal without the sealing lips in the inner groove and put the seal with the seal lips in the outer groove.

Work only with your hands!

- Dip the piston in the brake fluid and put it in the cylinder. Take similar steps for the other half calliper.
- Dip the O-ring in the brake fluid and insert the nozzle into the calliper.
- Attach the spring that holds the pads two halves.
- Install the calliper (see 3B.4)
- Install the brake pads (see 3B.7)
- Vent the system (see 3B.3)

Should some time pass before the calliper is mounted, it is then better to have the 2 mounting screws passed through and fix a M10 nut, the connections for the brake fluid pipe can be closed with a M8 bolt. (See photo).

While assembling, don't forget to mount the retainer plate between the brake calliper and the container.



Old calliper with overhaul set



2 calliper halves



Pressing the piston out using compressed air



Removing rubber seals



Cleaning the calliper



Pressing the piston back in



Wow!



connection tube and anti rattle spring

## 14.7. MASTER BRAKE CILINDER

It is better that you do not recondition the master brake cylinder. If the master brake cylinder is broken or worn out, it is better to replace it with a new original one.

The removal of the master brake cylinder is as follows:

2CV:

- Loosen the two brake pipes turning the nipples and pulling out the pipes very carefully.
- Loosen the reservoir by turning it gently to the left or the right and tilt it. Collect the brake oil.
- Disconnect the throttle cable and the clutch cable from the pedals.
- Loosen the master brake cylinder by removing the 2 M9 bolts in the engine.
- Disconnect the wires from the brake light switch.
- Remove the pedals together with the master brake cylinder from inside the car.

Burton:

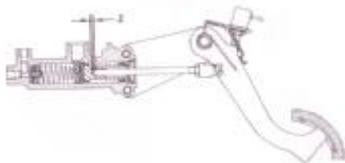
- Loosen the 2 brake pipes turning the nipples and pulling out the pipes very carefully.
- Loosen the reservoir by turning it gently to the left or the right and tilt it. Collect the brake oil.

- Disconnect the throttle cable and the clutch cable from the pedals.
- Disconnect the wires from the brake light switch.
- Loosen the master brake cylinder with the pedal support by removing the 2 M10 bolts by the pedals.
- Remove the left aluminium pedal support removing the 4 M6 bolts.
- Remove the pedals together with the master brake cylinder from inside the car.
- Loosen the master brake cylinder from the pedal bracket.
- Place the master brake cylinder back in the reverse order of removal.
- Set the throttle cable and the clutch cable to the pedal bracket and adjust it if necessary.
- Install the brake pipes with new rubber pipes for that type of brake oil. Remember that the brake pipes of the rear brakes go in the front hole and the brake pipes of the front brakes go in the rear hole (closest to the bulkhead).
- Check the tank for any cracks.
- Lubricate the reservoir rubbers with the proper brake oil and press the reservoir with your hand to the master brake cylinder. Fill the reservoir with the proper brake fluid. Vent the system (14.2).
- Check the margin of the pressure pin in the master brake cylinder, the pressure pin can be pressurized from 0.5 till 1 mm before it supports the master brake cylinder (see drawing).
- Check the pedal rubbers, they must be fitted very securely and may not be worn out. (APK= 'Vehicle Testing Regulations' requirement).
- Check the free stroke of the pedal when the brake is engaged, there must be enough margin to brake in an emergency.

If you have trouble reaching the pedals it is also possible to install a 'short leg kit', see chapter 5.8.



Master brake cilinder



Adjusting MBC pin

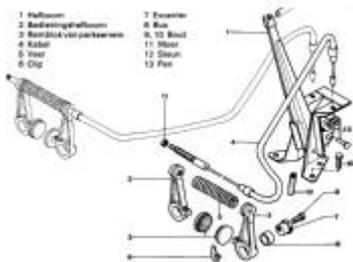
## 14.8. HANDBRAKE ADJUSTMENT

The handbrake is mounted on the front wheels and not as usual on the back wheels. Always take this into account. The use of the hand brake while driving is not recommended.

- Set the handbrake back completely and jack the car in the front and put it on blocks.
- Loosen the lock and tension adjusting nut on both handbrake cables and unscrew the bolts on both callipers of

the eccentric at the same time.

- Turn the eccentric to the right of the dial counter clockwise and the left on the dial clockwise (See this from the front of the car) until the handbrake pads are against the disc. The wheel must not be turning fast. (See figure 3b.5)
- Loosen the bolts of the eccentrics fixed with 40 Nm and hold them up against the eccentrics. Check the adjustment.
- Pull the handbrake inside the car three clicks.
- Adjust the cable for each calliper. Make sure that the ends of the outer casing and the cable itself are properly in place.
- Tighten the tension adjusting nut on both cables evenly so that the free length of the cable wire ends are equal.
- Between the handbrake lever and the impact cam should be about a margin of 0.5 mm. Tighten the lock bolts by turning them against each other.
- Put the handbrake back completely, checking that both wheels can rotate freely. Pull the handbrake complete and make sure that the wheels are not being blocked.
- Pull on the handbrake a few times. The adjustment should not be changed now.



Handbrake mechanism

## 15. ENGINE

The car is equipped with an air-cooled two-cylinder boxer engine. This engine is relatively simple in structure. Because of the simple construction of the engine has a long lifespan. A complete engine overhaul is rarely necessary because the expensive internal parts of the engine are barely worn out.

A complete engine overhaul is therefore not in this maintenance manual. The engine components that sometimes wear are very easy to replace. In this chapter you can read how you can do these repairs yourself and how you should perform regular maintenance.



Under the hood

### 15.1. VALVE CLEARANCE

Every 15.000 km the valves need to be adjusted. For a good working engine it's necessary that the valves work flawlessly. On both sides of the engine there is a cylinder head where there are a total of four valves; two inlet valves and two exhaust valves. The exhaust valves are particularly heavily strained thermally.

They are of course made for it, but because of the heating, and therefore the expansion of the valve, there must be a bit of space between the valve stem and the valve rocker. Not too much because then the valves do not open wide enough. But certainly not too little because then they cannot close.

The adjustment as described is valid for the engine 602cc, such as the ones delivered on the 2CV6 and the Dyane.

The valves must be adjusted on a cold engine. (Minimum for hours of not driving).

- First the valve covers are removed. Loosen the valve cap with a wrench 12. Sometimes it is necessary to use a plastic hammer and tap the cap before it comes loose.
- Place a container under the valve caps when you are removing them to collect the running oil.
- Check the valve of one cylinder when the same valve of the other cylinder is completely open. So, when the left exhaust valve has to be adjusted / checked, the right one should be fully pressed.
- The valve margin can be measured by placing the feeler gauge of 0.20 mm between the valve and the valve rocker. If the feeler gauge can just fit between them, then the margin is in order. The feeler should have some resistance when moving between the valve and rocker. If there's no resistance, the clearance may be too great.
- The valve margin for both inlet and exhaust valves is 0.22 mm.
- If the valve margin is different, the valves should be adjusted.

Adjusting the valves goes as follows:

- Loosen the lock nut of the adjusting screw with a key ring 10, and then the adjusting screw can be rotated until the feeler gauge of 0.20 mm can just fit between the valve and the tip of the valve rocker arm.
- With a screwdriver, hold the adjusting screw and set the lock nut back. Check the valve margin again.
- Clean the valve cap by the gasket good and always use a gasket. We advise you to use a new Burton Car Company valvecover gasket, which does'nt have to be glued to the cover. This makes the valvecovergasket

reusable.

- Make sure the cap is centered on the cylinderhead. Tighten the cap nut of the valve cap by hand. Use a wrench 12 to give the nut another one or one-and-a-half turn. The valvecover is now tightened.



These Valvecoverseals don't have to be glued anymore

## 15.2. OIL AND OILFILTER

The internal parts of the engine wouldn't last long unless a built lubrication system was present. Behind the camshaft there is a gear pump that pumps the motor oil through both tubes and pipes from the engine block to both cylinder heads. On the left side of the crank case there is an oil pressure switch that turns on the light on the dashboard when there is insufficient oil in the system. This light normally goes out when the engine has been running for a while and the oil has come under pressure.

When the oil is about 15.000 km it has done its work and it is necessary to refresh it. Change the oil in any case not later than that, all the wear it had and the contamination ensure that the oil loses its lubrication and excessive wear is the result.

If your car's mileage is low, then the maximum kilometres is not applicable. The quality of the oil decreases over time. The best is to change the oil once every 2 years. The engine and the gearbox have both a separate lubrication system. The gearbox oil should be replaced every 25.000 km. (See 3A.5)

The sump capacity of the 602cc 2CV engine is 2.2 litres. The content of the filter is 0.2 litres. If you change the oil make sure to have enough fresh oil. The prescribed type of oil is 10W-40. When renewing the oil also renew the oil filter.

- Change the engine oil regularly, the default refresh interval is 15,000 km. if driving in adverse conditions, such as short trips or elevated temperatures, then you should do it more often. It is better to change the oil when the engine is warm because the oil is thin and probably has dirt throughout.

-Place a pan under the drain plug. It is located under the engine, more or less in the middle of the ribbed sump. Clean the areas around the drain plug, take the plug out and let the oil drain at least ten minutes. Clean the drain plug thoroughly, screw it back with a new copper gasket ring and tighten to 35-45 Nm.

- Replacing the oil filter is the easiest with a strap or a special oil filter wrench. Alternatively, a long pin or screwdriver can be put through the filter in order to use it as a lever to loosen it. Please note that some oil (0.2 litres) will flow from the filter as soon as it is loose.

- Clean well the supporting area of the filter. Lubricate the seal of the new filter with engine oil. Screw the filter until it just touches the engine unit, and turns it half way by hand. Do not use wrenches or pliers when installing it.

Beware that if you assemble the filter too tight, the filter (not visible) will break.

- Fill the engine with 10W-40 oil just under the “max” mark of the warning rod. Let the engine run till the normal operating temperature is reached and check if there is leakage form the filter.

### **15.3. CLEANING THE OIL COOLER**

The oil helps with the lubrication and also with the cooling. This is the case with all cars and the 2CV is no exception. What is special in this engine is that the designers have created a small oil radiator and the airflow from the fan blows through it. The oil cooler sometimes becomes greasy from the outside. That is in itself not so bad, except that there are all kinds of dust that stick to it. A clogged oil cooler is not good. The oil becomes too hot and so do the pistons and the cylinders. As a result, it gets jammed. It is of the utmost importance that the oil cooler is kept clean.

- The exterior of the cooler can be cleaned when the front and the ventilator are removed. The cooling tunnel can remain seated.

- Installing the fan: Loosen the bolt of the ventilator with a pipe wrench 14 or a small socket wrench. Insert a rod (e.g. an extension for a socket wrench) where the fastening screw is placed and shake it several times sideways with the bar. The fan should come off. (Figure 3C.2).

- Lubricate the oil cooler at the front with a detergent such as benzene or brake cleaner. This is best done with a paintbrush. Just let the cleaner soak and then blow compressed air from behind the cooler.

- Repeat this procedure until the cooler is clean. You should now be able to see through the fins of the fan diagonally from the left.

- Make sure that after installing the fan that the V-string does not come in contact with the cooler and that it is tense enough. The string has the correct tension when you can press onto it about one centimetre.

The same airflow from the fan, that cools the oil cooler, blows also through both cylinders and cylinder heads. This combination, cooling the oil of the cylinders, makes sure that the engine, even under adverse conditions, does not easily overheat. A couple of tips:

- Be sure to have a good quality oil.

- Use the proper viscosity (thickness of the oil): 15W40.

- Change the oil every 10,000 km or at least once a year.

- Make sure that the engine is up to temperature quickly, do not let it run idle, but instead pull away quietly.

- Regularly check the oil cooler for debris.

### **15.4. OIL FILLER UNIT**

The oil filter pipe of the 2CV has two functions. The first is well known, namely filling the engine with oil. The second is the venting of the crankcase. This feature is very important. In the oil filter pipe there is a kind of pressure valve in the form of a rubber ring (membrane). In the crankcase certain pressure should always be present.

The vacuum is caused by the up and down movement of the pistons. If the pistons ‘go inwards’, the pressure in the engine will go up and then the relief valve will open. If the pistons ‘go outwards’, the engine will suck up air, this will not be possible because the ring closes.

If this ring is clogged or dried out, the crankcase will suffer over pressure. This will allow oil to leak in places

where the seal is the weakest, such as the crank shaft seals and the rubber seal. When a gasket or seal leaks into the engine, it doesn't necessary mean that the gasket is the cause, it could be that a broken oil filter pipe is the cause of the leak, a lot of oil, or there is a puddle of oil in the air filter, you may then assume that the valve is malfunctioning. The only solution is to put another valve because it is not possible to repair it.

## **15.5. REPLACING A CRANKSHAFT SEAL**

It is not common that the retaining rings of a 2CV motor start leaking after quite some kilometres. This often starts with a small drop but will become ever worse. As mentioned before, this can be caused by a defect oil filler pipe. But still, when a retaining ring is leaking, this should always be changed.

- For the replacement of the front retaining ring, the ventilator and the rubber flap below the oil cooler will need to be removed. The motor can remain built-in here.
- Sometimes there's also a metal plate behind the pipes of the oil coolers. This should be removed by folding this double and pulling it towards you through the space between the oil pipes.

If you also start replacing the rear retaining ring, the motor and gear box should be separated. Then remove the clutch and the flywheel so the retaining ring becomes visible.

- Carefully remove the retaining ring using a screwdriver or drill two small holes of 2 mm opposite each other in the middle of the retaining ring.
- Screw two parkers (those are self-tapping screws) in the holes and pull the retaining ring out of the motor.
- Grease the bore and the outside of the retaining ring.
- Orient the lip of the retaining ring towards the inside of the motor and the mark and number of the manufacturer outward.
- Tap the new retaining ring into the engine block using a plastic hammer.
- The installed retaining ring must fit 0.5 mm inside the engine housing surface.
- When replacing the rear retaining ring, please check the prise-axle retaining ring is still in good condition and replace if necessary.
- Mount the flywheel using the old tension bolts if these have not been damaged. No new tension bolts of good quality are available.

## **15.6. REPLACING THE DOUBLE JOINT SEALS**

Tappet rubbers are used for the sealing of the pushrod pipes and are located underneath the cylinders and pressed against the engine Block by means of a spring. They are called tappet rubbers because of their shape; two circular rubbers attached together with a small connecting piece. These rubbers also harden after some time and may then show leakage.

Replacing the tappet rubbers is not very difficult but this does involve special tools (torque wrench) and takes quite some time:

- Remove the air filter and the fuel pipe connected with the carburettor.
- Remove the heat exchanger (heater pots) by unscrewing the exhaust clamps.
- Remove the complete manifold including carburettor. The throttle and choke cable do not need to be removed.
- Remove the cooling plates around the cylinder at the side where you want to replace the tappet rubber. It is recommended to replace both sides at the same time.
- remove the cylinder head cover and the oil pipe at the bottom of the cylinder head. Be prepared for leakage.
- Evenly unscrew the cap nuts of the cylinder head.

- Now you can remove the cylinder head by pulling it towards you. Ensure that the cylinder does not move! The push rods often come out with the cylinder head, so do not mutually exchange those.
- Now the tappet rubbers become visible. You can replace those after neatly cleaning the different parts. Different types of tappet rubbers exist, please mount the same type. Please make sure no dirt enters the motor via the feed-through holes of the valve tappets.
- Reinstall the cylinder head. Take very good care that the aluminium push rod pipes fit well in the engine block, otherwise they will bend when the cylinder head is tightened.
- Make sure that the valves are set as freely as possible and that the push rods are well fitted. In the meantime please fit the cylinder head finger tight and make sure that the two brass rings are located below the two cap nuts and the steel ring below the lowest cap nut.
- Install the oil pipe.
- Install the cooling plates.
- Install the manifold. If the holes do not properly match, this can be adapted by tightening or loosening the cylinder head nuts.
- Attach the manifold using 19 Nm.
- Permanently attach the cylinder head using 21 Nm. Please take care of the right order: The front nut First, then the rear and the lower one.
- Adjust the valves and install the cylinder head cover using the correct torque.
- Let the engine run for a while and check for leakage.

## **15.7. FUEL SYSTEM**

The fuel system consists of the fuel tank, the pipe, the fuel pump and the carburettor. The fuel tank is located at a lower position than the engine and the fuel runs through the, largely, plastic fuel pipe until below the fuel pump. This (membrane) pump is mounted at the front left of the engine and is driven by the cam shaft.

When the engine is running, fuel is pumped into the carburettor by the pump. Inside the carburettor there's a floater which floats on gasoline. If the fuel level is rising, the floater also rises and operates a float pin. When fuel is at the right level, the float pin always stops the supply for a moment. Just as long the floater is pressed upward. The tank contains a small strainer to stop contaminations in the fuel. The carburettor also contains a small strainer and sometimes people have installed an extra fuel filter themselves.

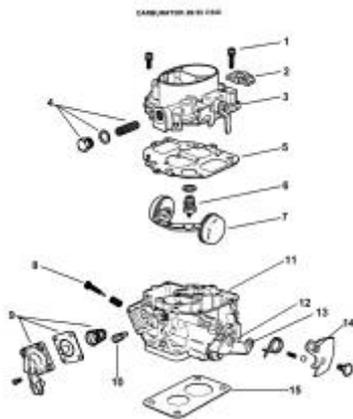
## **15.8. CARBURETTOR**

This is necessary when the carburettor is not working properly because of dirt or in case false air is sucked in somewhere. This can be noticed if the engine backfires in the exhaust system during a cold start. The carburettor can be cleaned using paint thinner and an air gun. A set of clean nozzles in the carburettor ensures the engine is running properly.

If your car is equipped with an acceleration pump on the carburettor, you can easily check if the pump is still working properly. Move the throttle on the carburettor and check if engine is (visibly) sprayed into the carburettor, the faster you move the throttle, the faster gasoline should be sprayed into the carburettor.

- Remove the air filter and the rubber junction on the carburettor.
- Remove the fuel pipe
- Loosen the throttle and choke cable.

- Unscrew the four fixing nuts of the carburettor. This is not easy as these are hard to reach with a wrench. Therefore the oil filler pipe and the acceleration pump (see figure no. 9) must often be removed from the carburettor.
  - Take the carburettor off the manifold.
  - Thoroughly clean the carburettor on the outside.
  - All nozzles can best be removed one by one and cleaned. This is best done by blowing them through using compressed air. The float chamber can be cleaned using a cloth and can then be blown clean. Take care of splashing fuel spatters and by all means you should do this away from open fire or cigarettes.
  - Check the floater height as described in 15.9.
  - Check for past leakage along the thick gasket. This is indicated by the black traces along the edge. In case of leakage, you can install two thin gaskets at the upper and lower side of the gasket.
  - Build in the carburettor, in reverse order of removing.
  - Adjust the carburettor to the stationary rpm and possibly the CO percentage. (see figure nr. 8)
- Sometimes you only need to clean the carburettor internally. In that case it's enough to remove the cover by unscrewing the six screws (see figure nr. 1). Then the cover can be carefully removed, but take care not to damage the gasket, this should remain attached to the cover. Sometimes it sticks to the lower part and you should remove it using a stripping knife or something similar. When installing please take care to tighten the screws evenly and not too tight, the aluminium carburettor is easily damaged.



Carburetor exploded view

## 15.9. FLOAT LEVEL ADJUSTMENT

- Take the carburettor cover off the carburettor and turn it around.
- Measure the distance between the core of the floater and the gasket surface including gasket. (see figure 3C.4)
- Now you should measure 18 mm; the permitted mutual difference between the floaters is 1 mm.
- If necessary, bend the lip until the right measure is achieved.
- You should also check that the floaters do not rub against the walls of the carburettor and therefore show an incorrect setting.
- Use your mouth to blow in the small pipe of the supply whilst holding the cover upside down. Now you shouldn't be able to continue blowing. Then lift the floaters, now you should indeed be able to continue blowing. If this does not function properly, the float pin should be replaced



Float level adjustment

## 15.10. CARBURETTOR ADJUSTMENTS

- Make sure the ignition box is set on time and that de valves are properly adjusted.
- Make sure the engine has the right temperature. (driven for at least 10 minutes)
- Connect a revolution counter.
- Adjust the number of revolutions using the stop bolt of the first port (21). The number of revolutions must be between 800-850 revolutions per minute.

It sometimes happens that the stationary rpm cannot be fine-tuned. In this case please proceed as follows:

- Clean and check the carburettor as described above
- Check that the retraction spring of the choke is installed.
- Check that all screws are installed and properly tightened.
- Adjust the CO emission as described below.

### 3C.12 Adjusting the CO

Obviously this should be done using a CO meter, but if the entire system is disordered, you can do a rough safe setting of the CO percentage yourself.

- Entirely screw in the CO adjusting screw and do this with great care! The screw falls in its seat in a tapered way and can very easily be damaged.
- Then turn the screw back two turns (up).
- Adjust the rpm to approximately 1000 revolutions per minute; this is slightly higher than stationary.
- Turn the CO adjusting screw back even further until the rpm increases. This is approximately half a turn.
- If all is well, you made the correct adjustment. However, if the engine is still running turbulently, it might be of help to alter the adjustment of the CO screw some more.
- Then again set the stationary rpm using the stop screw for the first stage.

## 16. SOFT-TOP

When mounting a soft-top, you increase the practicability of your Burton. As it is easy to take along, you do not need to be afraid of reaching your destination soaked with the rain. The roof is less suitable for driving all winter than the hard-top, but still the soft-top features a couple of benefits.

For example, the soft-top can be installed and de-installed in less than a minute, and it can easily be stored behind the front seats. The frame is made completely of stainless steel.

2 different soft-tops are available, a low and a high one. The low soft-top model provides enough headroom for a person of average height when using the 2CV back seat. If you mount the Cobra Seats or if your height is above average, then it is recommended to check the high soft-top model. Moreover, the high soft-top features an easier boarding. Both the low and high soft-top can be ordered in different colours.

In the showroom at Burton Car Company you can have yourself informed about all possibilities available concerning roofs.



Burton soft top



Low softtop

### 16.1. HOLES IN THE BODY

Drilling holes in the seat shell:

It is possible to have the holes be marked off by Burton Car Company. When you are in Zutphen with your car, this is definitely recommended. Then the holes are marked off for free using a jig. If you install the soft-top yourself, then please take your time to mark off the holes for drilling.

It is recommended to locally tape up the body using duct tape or painting tape. This way the bodywork is somewhat protected and you can mark off on the tape.

1. Use figure 1 to mark off the rear three holes in the seat shell. The measures in this picture are centre to centre distances and the hooks are used for the hinges of the trunk lid. Drill these holes with a diameter of  $\varnothing$  5 mm.
2. Install 3x a soft-top roof screw M5. On the inside the screws are fixed using a plain washer and a M5 locknut.

3. See Figure 2. Measure 237 mm straight up at 2 points, from the fold in the body. Connect the 2 points together and make as a horizontal line parallel to the line in the body. Do this on the left and right sides of the body.
4. Then use the soft top itself as a reference. Put the soft top on the deck of the body and pull the soft top under 3 studs already mounted.
5. See Figure 3. Drill the holes in the sides of the body on the line, with a 5 mm drill bit. Please note that if the sofftop later is stressed, the bracket will move a little further forward.
6. Install the soft-top roof screws M5 and fix the screws using a plain washer and a M5 locknut.



fig.1 Measuring the holes



fig.2 Drawing a horizontal line by making 2 markings



fig.3 Drilling the hole in the side of the body

## 16.2. ATTACHING LEFT AND RIGHT BRACKET TO WINDSHIELD

The soft-top is clamped to the windshield at 3 locations. To do this, you should attach a small bracket to the left and right triangle of the windshield. You should also place a bracket on the middle bar of the windshield to which both the interior driving mirror and the soft-top are attached.

1. The windshield is supported on both sides by 2 triangles. This triangle is attached to the windshield frame on the front using 4 screws. Leave the upper and lower screw, but unscrew the 2 middle screws. See figure 1. Pay

attention: never unscrew all screws, and then it's very difficult to place the triangle.

2. The soft-top comes with 2 small hooks which are placed on both sides of the windshield. Mount as indicated in figure 2.

3. Demount the interior driving mirror. The small bracket used to attach this stand to the windshield, is cancelled. Mount the mirror to the combined bracket that comes with the soft-top. This is used to attach the mirror and soft-top. The distance between the upper side of the middle bar and the upper side of the new bracket must amount to 45 millimetres (see figure 3).

Note: The Burton windshield has changed over time; if yours is an older type, it may be that the holes for attaching the hooks to the windshield have not yet been predrilled. In that case you will see 3 screws used to attach the triangles to the windshield. Then you need to drill the 4th hole and tap thread yourself. Take a good look at figure 2 and install the small bracket in the same position as indicated, but using only 1 screw. Now you can see where to drill the hole. Use a centre point to centre the hole, and then drill a small hole using a 3 millimetre drill. Do not drill any deeper than 17 mm. Then you can tap thread M4x1 in the hole and permanently attach the hook.



fig. 1 Undo 2 screws from windscreenframe



fig. 2 Attach hook to windscreen



fig. 3 Handle inside mirror

### **16.3. MOUNTING THE SOFT-TOP**

You are now ready to first install the soft-top on the car.

1. Put the soft-top on the back of the car. Click the soft-top on the two fasteners at the side and then slide the soft-top forward until the roof screws you place don top of the body, fall into place in the metal profile of the soft-top.
2. Attach the soft-top at the front on both triangles and above the interior driving mirror. You can further adjust the soft-top by loosening or tightening the T-pieces at the front.
3. Zip both doors into the roof. Pay attention, there's a difference between left and right. On the outside, the window should be placed in the door in an imbricate way.

## 16.4. MOUNTING THE POPPERS

Now that the soft-top is First installed on the car, you can also zip in the doors. The doors are different, the soft-top is provided with a left and right door. These can be distinguished by looking at the window which is sewed to the door in an imbricate way.

Attaching the push-buttons. Here we assume that you have a tonneau cover and that the push-buttons have already been placed on the body.

1. Stick a piece of duct tape on the inside of the door and then =firmly press the door on the push-button on the body. Then this will leave a print on the duct tape, so you have a proper marking for placing the push-buttons (see figure 1).
2. Make holes at the indicated locations and attach the push-button there (4 push-buttons per door).
3. Now 2 so-called Tenax push-buttons should be placed on both sides of the soft-top. To do this, please pinch through the flap of the soft-top at the front using a piercer and through the door on the aluminium triangle. The Tenax is placed approximately 25 mm above the front push-button of the door (see figure 2). Also take care you do not place the Tenax too close to the zipper.
4. Drill a hole of 4 millimetres in the triangle of the window on the print of the piercer. Then tap thread M5x1 in this hole. Screw the supplied Tenax button head bolt M5 in here.
5. A Tenax button should also be placed on the flap at the back of the soft-top. Please consider the zipper and the push-button for the purpose of the tonneau cover and soft-top door (see figure 3). Mark off the hole and drill it using a millimetre drill. No thread needs to be tapped for attaching the Tenax, and the Tenax button head bolt can be attached by placing a ring and locknut at the inside of the body.
6. Now attach the Tenax to both flaps. This enables you to widen the hole in the soft-top. This can be done using a hole cutter or hollow pipe with diameter of 8 millimetres. The Tenax consists of 2 parts which can be screwed together using the supplied small wrench.



fig. 1 Make a print wit ducktape



fig. 2 Make a tenax at the front



fig. 3 Make a tenax at the back