SPECIAL "CLUBS" NOUVEAUTES

COBRA ORV 4x4
- 2 différentiels (AV et AR) à glissement limité
- nouvel embrayage
- nouveau volant 38 mm
- Amortisseurs à compensation
- Barres anti-roulis AV et AR
- Bâti moteur fileté (selon le moteur choisi,
- Sortie moteur à préciser)
- Résonateur
- 1 couronne 53 dents supplémentaire

TARIF
Frs/TTC 2.562,00

PRIX SPECIAL CLUB Franco 2.305,00
ADJUSTABLE LIMITED SLIP DIFFERENTIAL

The COBRA is equipped with so-called limited slip differentials. These can be adjusted to suit the conditions of the track and are one of the great advantages of the COBRA.

Assemble as follows:

Place the steel spring washer 2° over the differential main shaft 1°, followed by the steel washer 3°, the copper 4° with nine balls 5° and the second steel washer 3°. Apply some grease to the cage, differential main shaft and the thread of the differential hub 7°. Turn the alu. adjusting nut 6° on the hub. (Use also grease when you open the differential for maintenance)

Slide hub 7° over the differential shaft; insert the thrust bearing 8°, using some grease again. The small spring clips 9° goes into the groove of the main shaft and locks the differential hub.

Tighten adjusting nut 6° gently, making sure that the small clips are correctly in the groove, check by pressing the clips in with a small screw-driver. When you are sure the clips is in place, tighten the nut by hand, and increase the pre-load (adjustable limited slip) by turning the nut 6° another 1/2 till 3/4 turn by inserting a 4mm pin in the hole of the nut and holding the hub.

Tighten the socket head screw of the nut 6° to lock the nut on differential hub 7°

Apply the drive flange 10° and fix with 3 screws M4x8 c.h.

NOTE: The correct setting of the differential can only be checked when the car is ready to run. At full throttle, hold all 4 wheels of the COBRA by pushing the car on the ground, the main gear 58° should then not turn. If it does, either of the 2 differentials or both must be tightened. This can be done through the holes in the radio-plate. Undo socket head screw of adjusting nut 6°, insert the 4mm pin in the hole of the nut and turn the wheel on the drive flange side counter clockwise. Tighten screw and check again.

Be careful not to loosen the adjusting nut too much since this may cause the small spring-clips 9° to escape from the groove, and with the differential assembled, this cannot be seen.

The differential unit is now ready. Front and rear differentials are identical so far. The differences are in the crown wheels 12-32° and 12-33°, to be placed over the correct of the differentials. (See next chapter.)

Insert ballbearing 13° in the crown wheel, and slide the crown wheel over the differential cage. The Circlips 14° locks the crown wheel onto the differential shaft 1°.

Place the spacer 11° over the drive flange 10° followed by ballbearing 13° on both ends of the differential. Now the complete differential can be placed between the bearing blocks 15°.

PINION AND CROWNWHEELS OF THE TRANSMISSION

We have experienced that it is a great advantage to have a slight difference in gear ratio between the front transmission and the rear transmission. With about 4 more drive on the front wheels, the COBRA is extremely stable in fast cornering and straight line. This of course means that both the crown wheel and the pinion have to be different, as they have to be used as a pair. Although the pinions have the same number of teeth, they are not the same! Therefore remember the following:

REAR TRANSMISSION: CROWN WHEEL 33 TEETH WITH PINION MARKED 14-33
FRONT TRANSMISSION: CROWN WHEEL 32 TEETH WITH PINION MARKED 14-32

The difference between the crown wheels can be distinguished as follows:

The 32 teeth crown wheel has 2 marks on its outline, and the 33 teeth crown wheel has 3 marks.

Another difference between front and rear transmission is the position of the crown wheel to the center of the car. As is shown clearly on the drawings, the crown wheel 12-33° of the rear transmission is placed left from the center of the car, and the crown wheel 12-32° of the front transmission is placed right from the center of the car.

If you do this wrong, you may see very strange things to happen!!

REAR TRANSMISSION AND SUSPENSION

Apply ballbearing 17° to the pinion shaft 16-33° and check if the ballbearing bears against the pinion itself. This is very important since this determines the clearance between pinion and crown wheel. When there is some light between the bearing and the pinion, sharpen the edge with a little file and check again.

Insert the pinion shaft 16-33° with the ballbearing into the transmission plate 18° (with 13mm hole) and apply this to the pre-mounted differential with the bearing blocks 15°. (crown wheel 12-31°, positioned left of center) Check the play between the crown wheel and the pinion, they should not be tight.

Plate 18° is fixed to the bearing blocks 15° with 4 parkers 4,2x20 r.h.

We will now assemble the rear wheel uprights 21°

Insert the ballbearings 17° and push the rear wheel axle 25° (with box.) in. Fit the wheelhub 26° with setscrew M5x6. Aluminium wheel nut 26-1° fixes the wheel.

Press the alu. pivot pins 22° (length 3mm) into the upper and lower rear suspension arms 19° and 20°. It should be possible to gently press them in, but if not, be careful not to damage the pins when using a hammer!

Attach the upper arm 19° and the lower arm 20° to the uprights 21°, by inserting alu. pivot pins 23° (length 4mm) and placing the 8 C-clips 24°.

Check if the suspension arms all can turn freely.

Slide the rubber gaiters 28° over the rear cardan shafts 27° (length 6mm and 2 box.)

Now the rear suspension can be assembled to the pre-mounted rear transmission.

IMPORTANT: for the right axial play of the rear cardan shafts 27°, do not apply any nylon spacers in the hexagon of shafts 1°, 10° and 25°.

Put some grease in the hexagons of wheel axles and differential and place the rear cardan shafts 27° in the hexagons of the rear wheelshafts 25°.

Place the alu. pivot pins 22° in the lower and upper (outside) hole of the plate 18°. Meanwhile manoeuvre the cardan shaft in the diff. hexagon. Now the bracket 29° can be installed and fixed to the bearing blocks 15° with 4 parkers 4,2x20 r.h.

Check the movement of the suspension arms and the axial play of the rear cardan shafts 27°. Check in both bottom and upper suspension position: the play must be minimum 0,5mm. If all is OK, the pinionshaft 16-33° can be turned easily and the wheelshafts 25° to turn.

It may be that there are some tight points but these will disappear after a few minutes of running.

The complete assembled rear transmission and suspension can now be fitted to the chassispate 51° with 5 parkers 3,5x13 r.h.
6 FRONT ANTI-ROLL BAR

The anti-roll bar is a very useful device to increase the stability of the COBRA and prevents the car from hooking in to the corners (oversteering).

Assembly as follows:
The small brass balls 43* are soldered to the anti-roll bar 42*. Take the brass balls 39* (threaded) and turn in the screw M2x8. Use some Loctite on the screw. After tightening the screw cut the head off and turn the ball 39* in the lower front suspension arm 34*. The screw 41* M2.5x25 is screwed into the nylon ball joint 40* and can be used to turn freely in the slot (or with the rod 41* to be used). The anti-roll bar 42* must be locked on the rod and turned to fit the slots and then the holes can be reamed out.

12 PARKERED BRASS BALLS 43* can be used on the anti-roll bar 42*. These parks should not be tightened because the anti-roll bar 42* must be able to turn freely in the slot in order to work correctly. The rods 43* with the ball joints 40* can now be pressed over the brass balls and the anti-roll bar is finished.

7 TRACK-RODS AND SERVO SAVER

Fit the brass balls 48* (6,3mm) on the top-side of the arms of the steering blocks 30*, and the bottom-side of servo saver part 44*, using screws M2.5x16 and nuts M2.5. Turn the nylon ball joints 49* on the track-rod 50*, total length should be 73mm to get the correct toe-in on the front wheels.

Cut the unused part of the servo-saver part 45* and fit another brass ball 48* at the bottom side, inner hole. Put the spring 46* over the servo saver parts 44* and 45* and the servo saver knob 47* to the bottom of the servo. The servo saver can now be mounted underneath the radioplate 96* with screws M4x12 r.h.

You can apply the track-rod onto the servo saver. After assembling the radioplate on the chassis, the track-rod are attached to the steering arm.

8 MIDDLE SHAFT AND DISK-BRAKE

The middle shaft and the disk brake are distributing the engine power to both the front and the rear wheels. The middle shaft may be replaced by a third differential (part nr. 5320-1). We have the experience that under almost all circumstances the COBRA performs as well or even better with a solid middle shaft as with the middle differential.

One of the advantages of the middle shaft is that in the case of breaking or loosing a cardan shaft the drive remains on either one of the transmissions. With the extra drive on the front wheels (chap. 3) we have gained a very important advantage and the solid middle shaft aids this as well.

We start with the disk brake housing 52*, insert the 2 pins 53* (2,5x20) from the rear side of the brake housing, the blank part first.

The steel brake-plates 54* have to be cut down. (on the outline with a file and on the hole with a 4mm drill). After applying this, place the 3 brake pads over the pins 54*.

Insert the disk brake cam 55* from the top of the brake housing and press the ball bearing 19* in the 13mm hole. The small ball 58* is placed in the brake hub 56* and fixed with the Circlip 59*. The brake discs 57* are placed over the other side of the brake hub (if necessary enlarge the square holes with a file to make them move easily).

Insert the middle plate 61* in the brake hub 56*. Now the middle shaft with brake hub and disk discs can be placed in the brake housing, with the 2 brake pads 54* and 12 disk 1 in the middle.
The middle shaft 61 can now be pushed further in, through the ballbearing 13 until the middle shaft protrudes about 10mm on the back-side of the drive housing.

Slide the connecting bushing 60 over the pinion shaft 16-33, with the smallest side facing the front.

The bearing block with the middle shaft is placed on the chassis plate and fixed with 2 parkers 3,5x3 r.h.

Push the middle shaft 61 further in until it is about 10mm from the pinion shaft 16-33. Slide the connecting bushing 60 in front against the ballbearing 17.

Fix the connecting bushing and the drive hub on the middle shaft and the pinion shaft with set screws M5x8. Don't forget to position the flange on the shafts!

Turning the main gear 58 will now make the rear wheels to turn.

9 MIDDLE CARDAN SHAFT

The middle cardan shaft transfers the engine power to the rear wheels. Because of possible distortion of the chassis plate and radio plate, this part of the transmission is made flexible.

Press ballbearing 13 in the bearing block 62 and ballbearing 17 in bearing block 65. Fix the bearing blocks to the chassis plate with parkers 3,5x3 r.h.

The ballbearing in 62 is facing the front, and the ballbearing in 65 facing to the rear.

Drive box 63 is fixed on the pinion shaft 16-32 with set screws M6x8. Place Circlips 64 over the second drive box. 63 and fix on the middle shaft 61 with set screw M5x8. The Circlips 64 holds bearing 13 in place.

Apply the 2 rubber gaiters 28 to the middle cardan shaft 66. By bending the chassis plate a little bit, the distance between the bearing blocks 62 and 65 will get bigger and thus allowing the middle cardan shaft 65 to be inserted in the 2 drive box 63.

This completes the transmission to the rear wheels. Turning the main gear 58 will now make all 4 wheels to turn.

10 ENGINE, CLUTCH AND MUFFLER

Only engines with a side-exhaust can be used in the COBRA. Since all the major manufacturers of engines produce a side exhaust Biggy version (CBS, PICCO, OS MAX, CIPOLLA, HP) this will not be a problem.

The flywheel is in the kit with a 3mm hole, and is suitable to all the forenamed engines except the OS Max. (see ref. list)

Insert the steel pins 51 in the 4 holes of the flywheel 67*, from the back side. Place the flywheel on the engine and turn the clutch nut 68* tight. Check the flywheel for possible unbalance. If you notice any side-movement, relocate the flywheel and try again.

The clutch shoes 69* have to be cut according to the drawing. Then place them on the pins of the flywheel and make sure they are placed counter-clockwise (i.e. the revolution of the engine).

Clutch bearings 71* are placed in the clutch-housing 70* (gently) and slide over the clutch nut 68*. C-clips 73* locks the clutch housing.

Check the free running of the clutch.

As an optional special clutch shoes 69-1* are available, together with springs 69-2*. Also more ballbearings 72* can be inserted to increase reliability.

By using different clutch housing and main gears. Gear ratio’s are available, as you can see from next table:

<table>
<thead>
<tr>
<th>main gear 58*</th>
<th>clutch housing 70*</th>
<th>gear ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>53 teeth</td>
<td>10 teeth</td>
<td>12.3:1</td>
</tr>
<tr>
<td>50 teeth</td>
<td>10 teeth</td>
<td>11.6:1</td>
</tr>
<tr>
<td>53 teeth</td>
<td>11 teeth</td>
<td>11.2:1</td>
</tr>
<tr>
<td>50 teeth</td>
<td>11 teeth</td>
<td>10.6:1</td>
</tr>
<tr>
<td>53 teeth</td>
<td>12 teeth</td>
<td>10.1:1</td>
</tr>
<tr>
<td>50 teeth</td>
<td>12 teeth</td>
<td>9.7:1</td>
</tr>
<tr>
<td>53 teeth</td>
<td>13 teeth</td>
<td>9.4:1</td>
</tr>
<tr>
<td>50 teeth</td>
<td>13 teeth</td>
<td>8.9:1</td>
</tr>
</tbody>
</table>

** only for very short tracks because of over-cutting pitch.

The engine mounts 74* only have M5 holes to fix them to the chassis plate. This is because it is not predictable to know what engine you choose to fit in your COBRA. Engine mounts for each type of engine are available (see ref. list).

To mark the holes to fix the engine on the engine mounts, fix the engine mount (the hex. screws M12x1.75 with washers). Place the engine on the engine mounts and line-up the clutch housing with the main gear 58*. Mark the holes in the mounting flanges of the engine and take the engine off.

Drill 1.5mm holes and after tap 8 thread in the engine mounts. Now fix the engine mounts 74* to the engine, using socket head screws M5x12.

After fixing the carburetor and the exhaust adaptor on the engine, the engine can be placed on the chassis plate, the gear-play adjusted, and the hex. screws tightened.

The special high-torque side muffler 75* is mounted to the chassis plate with mounting screws M5x12 r.h. 4mm washer and M5 Nylock nut.

The silicone tubing 75-1* goes in between the engine and exhaust adaptor, and is fixed with 2 wire-wraps.

11 HYDRAULIC SHOCKABSORBERS

Shock absorbers are extremely important on off-road cars and we have choosen for the QUATTRO type of shock absorbers, because of their very efficient construction. They are rather complicated, but they feature constant volume and double action with a built-in one-way valve. They are assembled as follows:

Place a small O-clip 78* in the groove nearest to the thread of the piston rod 77*.

Next the alu. valve 78*, a C-clip 78*, the nylon piston 80* with the valve-seat facing the valve, and a C-clip 78* in the third groove.

Again the thread in the piston rod 77* in this order: alu. O-ring bushing 84*, small O-ring 82*, large O-ring 83*, and last the bottom screw-plug 85* with O-ring 82* inside.

The piston rod is ready to be inserted in the cylinder 88*.

Place the alu. adjusting nut 89* on the cylinder 88*. Turn the pressure nipple 91 into the alu. pivot point 90* and apply a piece of silicone tube of 5cm. The O-ring 6x1 is applied to the alu. pivot point as well.

We advise to use an oil with a viscosity of 500. (Castrol M50) of course this changes with conditions of the track and temperature. Lighter oil should be used under colder conditions and very rough tracks.

Place the brass spacer 90* in the cylinder and turn the alu. pivot point 90* in the cylinder 88*. The O-ring 89* is used on the top cover 80*.

Turn the open side of the cylinder up and fill it with oil until the oil flows out of the silicone tube. Then close the tube with your fingers to prevent all the oil to escape. Do this slowly to let the air escape.

Insert the piston rod in the cylinder. Again very slowly to allow the oil to make place for the piston and valve. Turn the top screw-plug 85* in and if necessary let some oil escape through the silicone tube.

Still keeping the tube closed, turn the cylinder upside down and with the pivot eye 90* up, the tube may be let loose. Make sure the tube stays full with oil.