

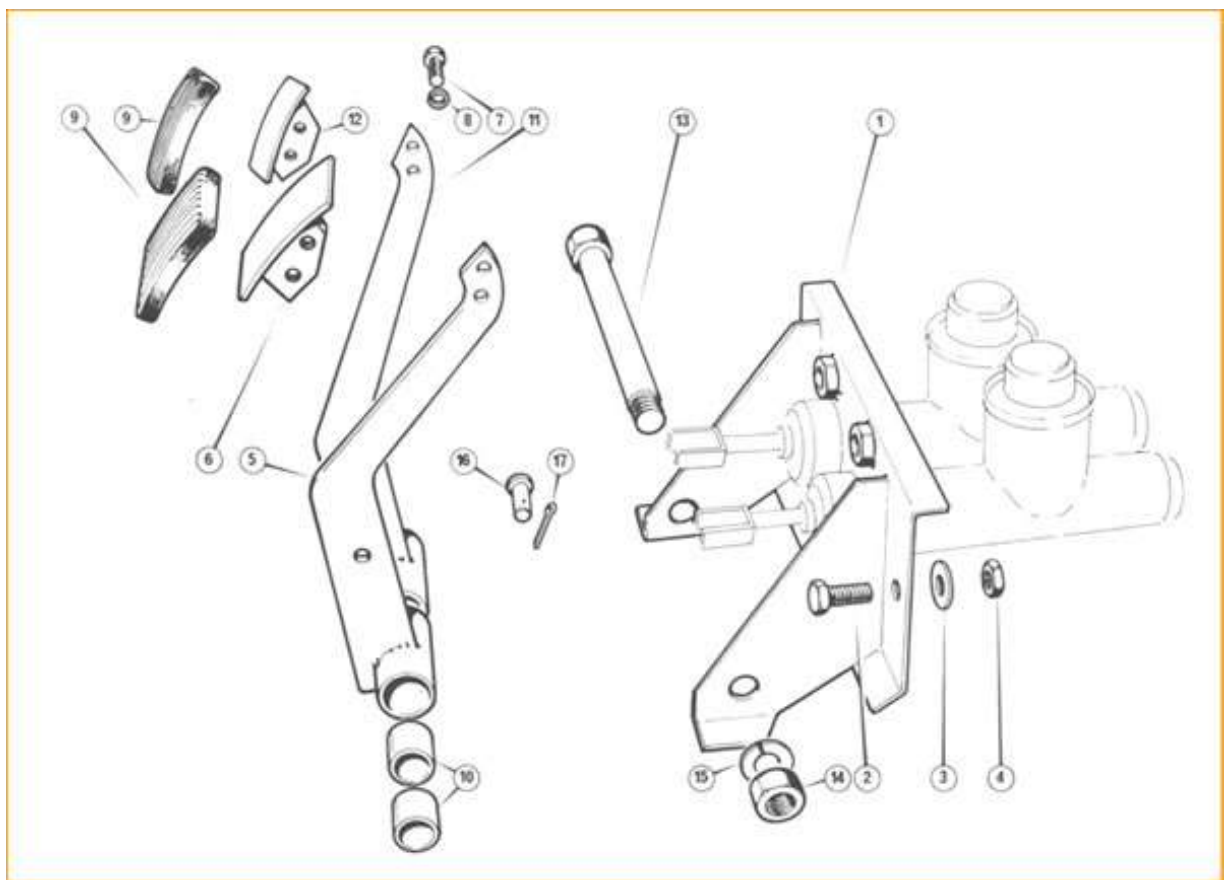


Technical Data Sheet 001 – Braking System

Bond Bug Braking System Overview

The Bug has a Lockheed hydraulic braking system operated by the brake pedal.

The brake master cylinder is attached to the brake pedal by a clevis pin with a split pin to retain it.



Removing the brake master cylinder.

It is better to empty the brake fluid system first. This can be done by opening any brake cylinder bleed nipple, and put a piece of tubing over it and the other end into an old jar. Then pump the brake pedal until there is no fluid coming out.

Remove the clevis pin split pin, and then the clevis pin. Unscrew the brake pipe nut from the rear of the master cylinder. If that's not possible? It can be done once the two mounting bolts are removed.

Overhauling the brake master cylinder

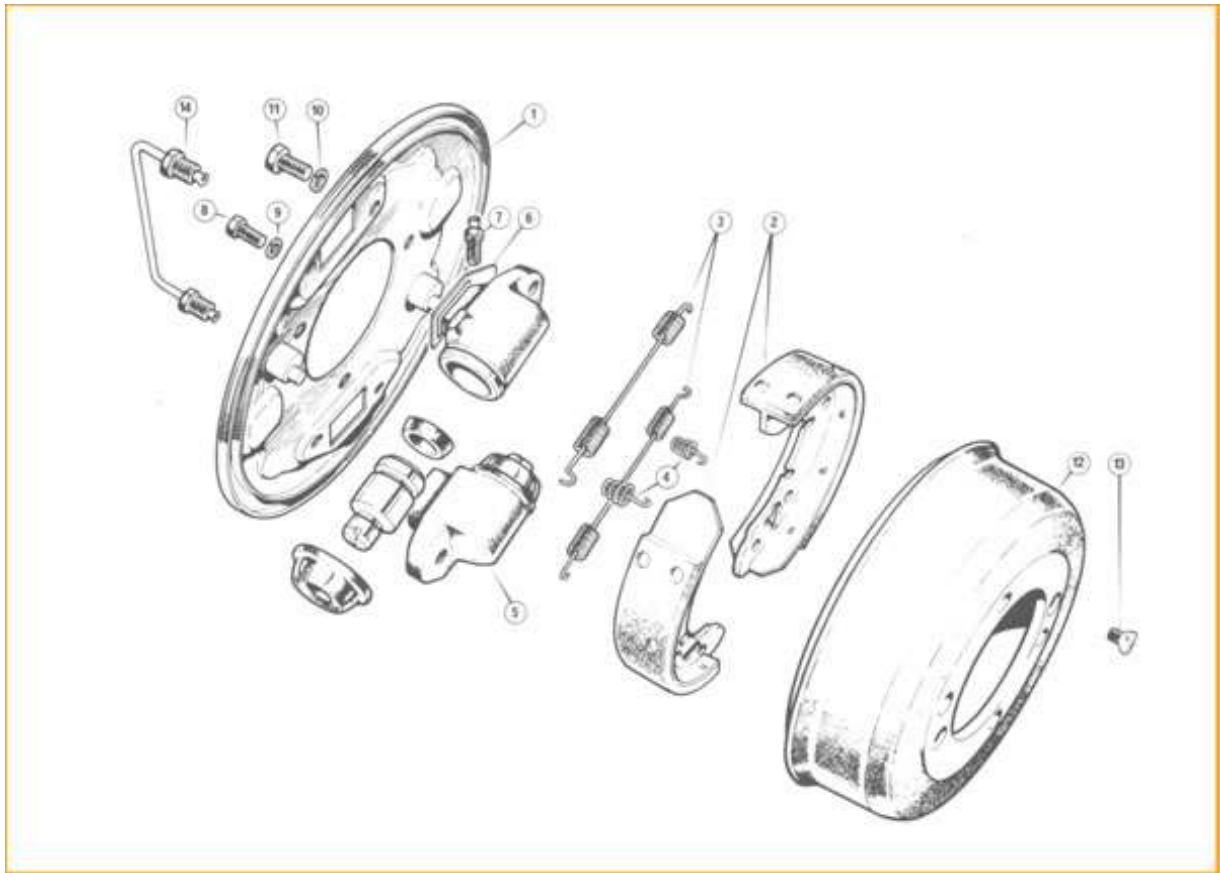
Hold the master cylinder lightly in a vice, by the part where the brake pipe goes in. Pull back the dust cover and remove the circlip. Some times the piston will just jump out. but if it's stuck? A jet of low pressure compressed air in the brake pipe hole will bring it out. Taking pictures is a good idea. Clean all the components in fresh brake fluid. Check the bore for wear and corrosion (These can be honed by a specialist if required) replace the seals, refit the piston and circlip and refit it to the car.

Front brake shoes

The front brakes are shoes and drum, with a single acting cylinder working each shoe, and return is by springs. To overhaul the front brakes, slacken the wheel nuts, jack up the car, and put it on axle stands. Remove the wheel. Take out the screw that is holding the brake drum to the hub, and tap and remove the drum. If the drum won't turn? On the brake back plate are two square shaped adjusters. A special mini tool is used to turn these anti clockwise (looking at them) the drum should then come off. Take a picture.

Inside the brake drum, are two brake shoes and two wheel cylinders, two operating brake springs, and two springs which attach the brake shoes to the wheel cylinders.

To remove the brake shoes, use a pair of pliers to pull the spring out of the wheel cylinder and turn it to the side. Pull the lower brake shoe down out of the locators on the wheel cylinders, then unhook the brake spring and remove the brake shoes. Refitting is the reverse.



Front wheel cylinders

Once the brake shoes have been removed, the wheel cylinders can be replaced by removing the brake pipes and bolts from the back of them. They may be corroded into the back plate, and will need tapped and levered to get them out.

If it's only cylinder repair kits that are being done, then the cylinders can be left in place.

To overhaul a wheel cylinder, remove the dust cover and with a pair of vice grips (curved jaws) twist the piston back and forwards while pulling it out. Check the bore for wear, clean all the parts in clean brake fluid replace the seal, and refit the piston and dust cap.

Front Brake adjusters

These are non replaceable, but can usually be freed off with vice grips on the main body inside the back plate, some heat, and penetrating oil.

The rear brakes are hydraulic single cylinder with two pistons for the foot brake, and mechanical cable for the handbrake.

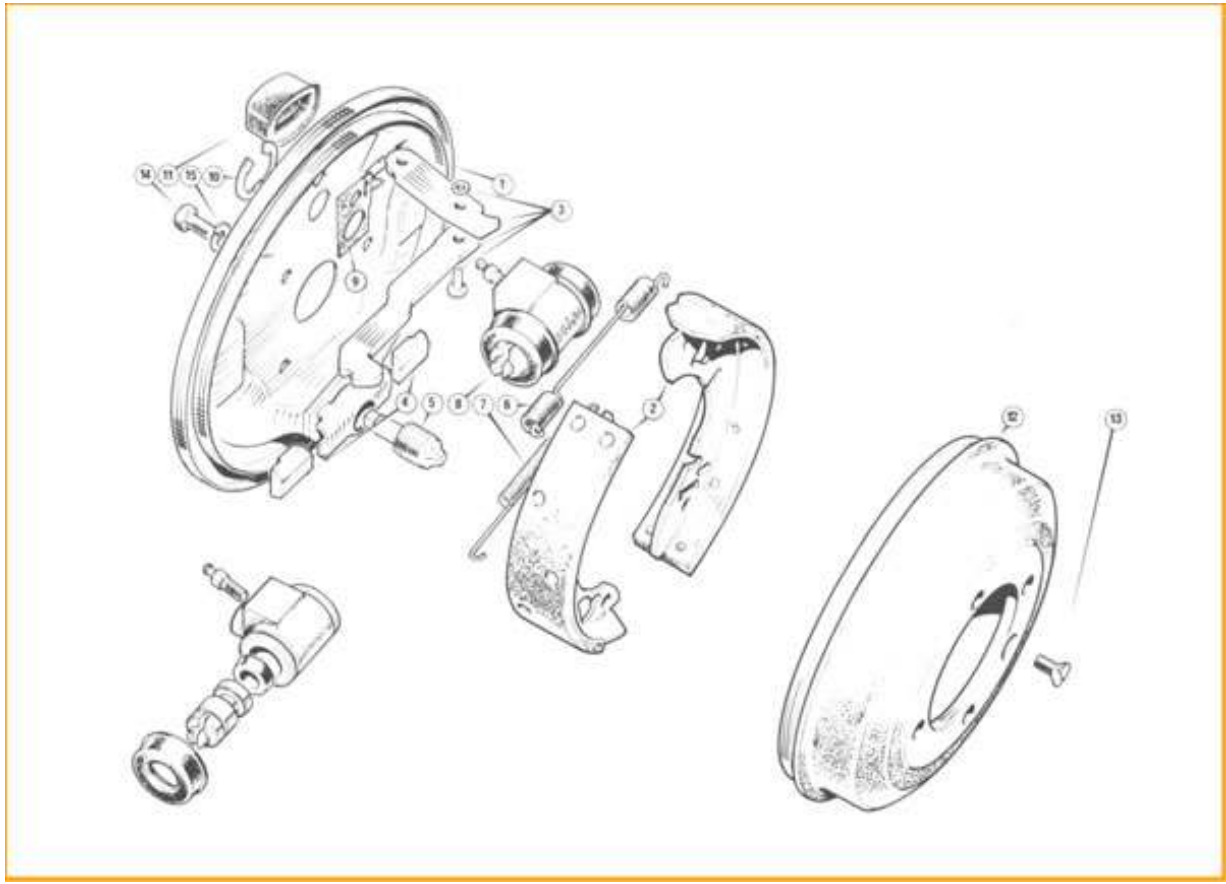
Rear Brake shoes

To remove the brake shoes, slacken the wheel nuts, and jack up the car and put it on axle stands .remove the road wheels then remove the screw that holds the drum onto the hub.

Make sure the hand brake is off the drum should turn by hand, tap it until it comes off.

If it doesn't turn, the brake adjuster at the rear will need to be backed off. This is a square shaped adjuster and requires a mini brake adjusting spanner to move it. Turning it clockwise when looking at the brake drum, until the brake drum turns free, for removal.

Take a picture of the brake shoe set up. The brake shoes can now be removed by releasing them from the slots in the wheel cylinder and the brake adjuster.



Rear wheel cylinders

To replace the rear wheel cylinder, a circlip needs to be removed from it, from the rear. This can be done with patience and two plain bladed screwdrivers, after the brake pipe has been unscrewed. They are usually corroded in, and will need levered and tapped out. Replacement is the reverse. If its only wheel cylinder repair kits that are being fitted, then remove the dust cover, and twist the piston back and forwards with curved jaw vice grips while pulling them out. Clean all parts with fresh brake fluid, check cylinder bore for wear and corrosion .Replace seals and pistons.

Rear brake adjusters

The rear brake adjusters are replaceable and are held into the back plates by two nuts at the rear. They can sometimes be freed off with some heat, and penetrating oil.

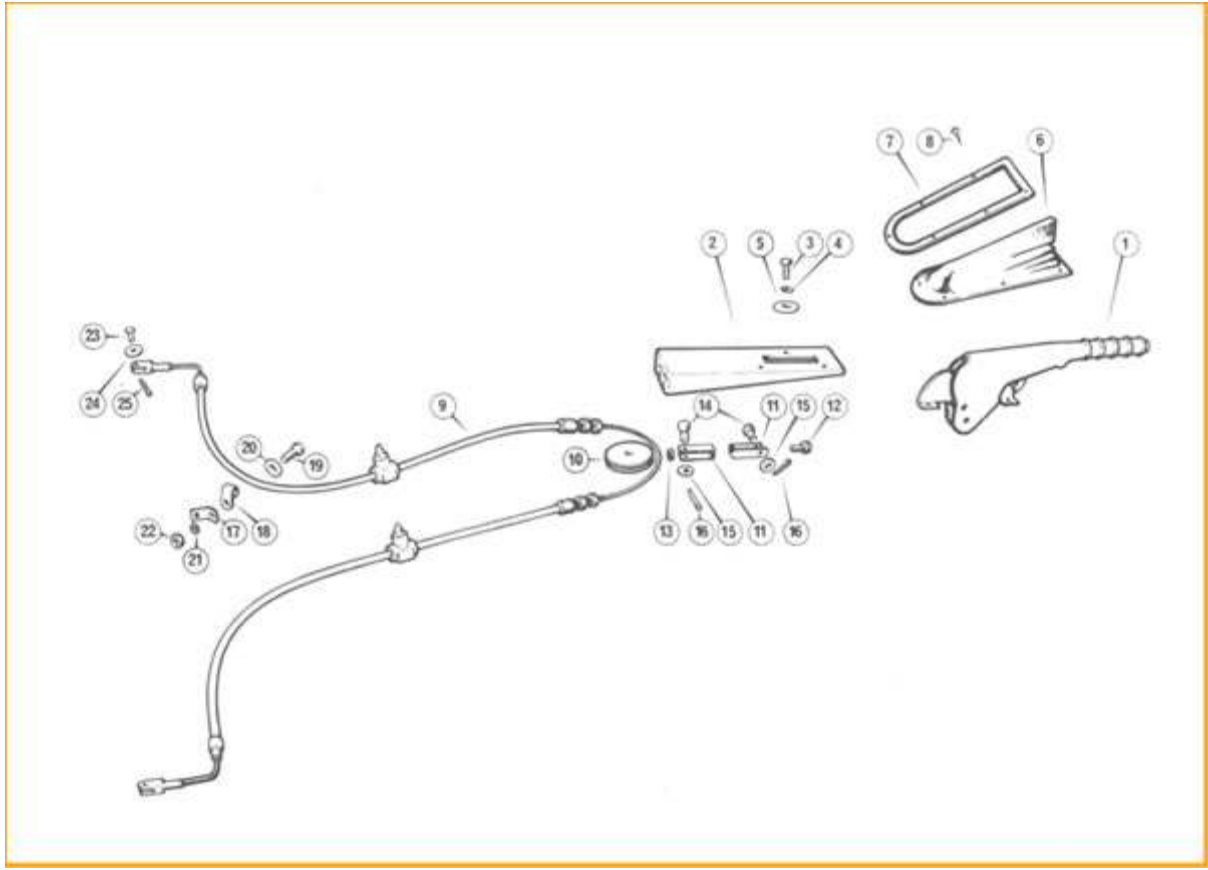
The Handbrake

The hand brake is cable operated to the rear wheels where levers inside the brake drum operate the brake shoes.

The hand brake lever is removed by removing the two bolts holding it onto the body, after slacking the brake cable adjusters and removing the clevis pin.

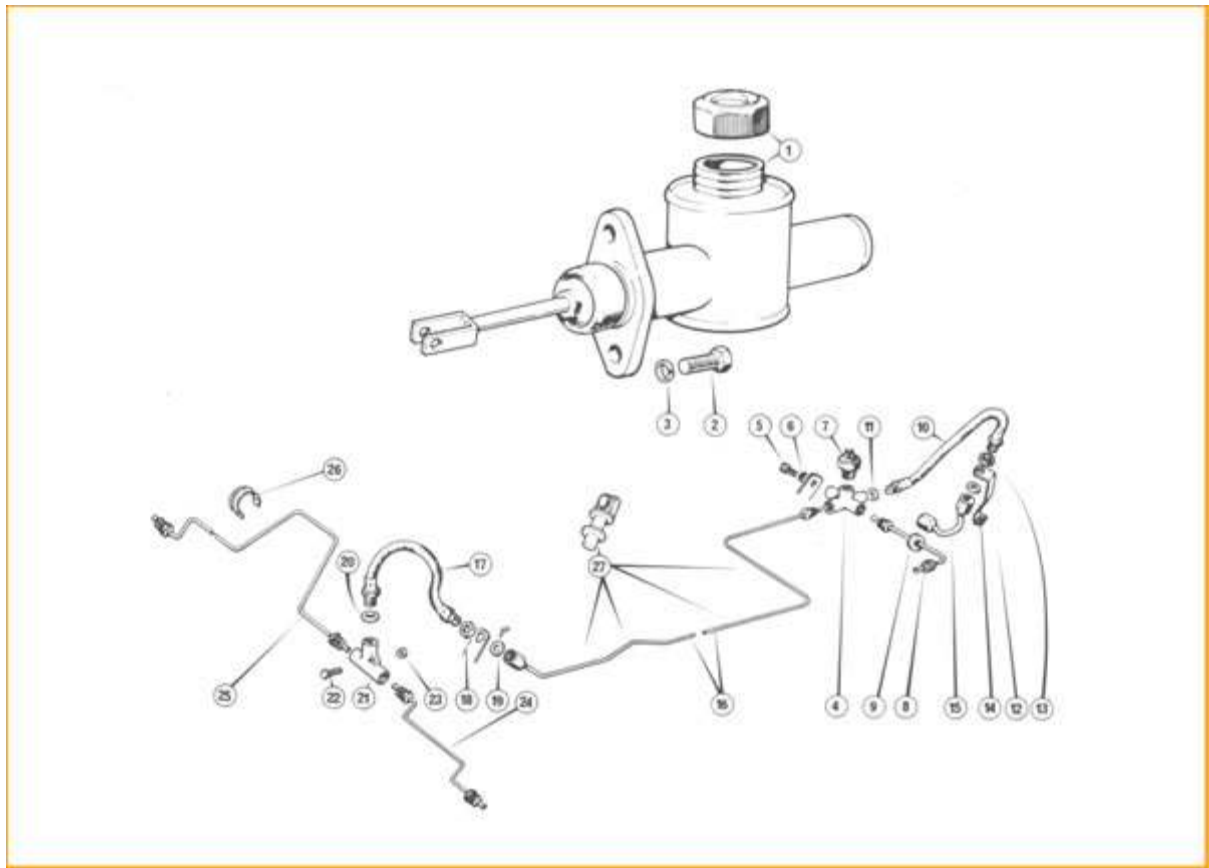
The handbrake cable is removed by releasing the cable adjusters and removing the clevis pins from the hand brake lever and the brake drum levers.

Brake drum levers, these can be removed after the rear brake shoes have been removed and the clevis pins. They tend to seize easily, but can usually be freed off with some heat and penetrating oil and two pairs of vice grips.



Brake pipes (flexi)

There are two flexible brake pipes on the bug. One front, and one rear. The front flexi brake pipe runs from a bracket at the rear of the back plate to a junction bolted to the chassis at the drivers' foot well. Remember that the pipe threads are imperial. The end at the bracket takes the metal brake pipe to the front wheel cylinders which is a single flare, and is secured by a nut. The other end is sealed by a copper washer and screw directly into the union. Also here, is the brake light switch screwed in from the top, the metal brake pipe from the master cylinder, and the metal brake pipe that takes the brake fluid to the rear flexi brake pipe. The rear flexi pipe screws into a tee piece on the rear axle and is sealed by a copper washer. The other end is secured to a bracket on the offside chassis by a nut and is single flared.



Brake pipes, metal

There are six metal brake pipes on the Bug. 1 runs from the master cylinder through a hole in the body to a union on the front chassis. 2 runs from the front flexi brake pipe to the front wheel cylinder. 3 runs between the two front wheel cylinders. 4 runs from the front chassis union, to the rear flexi brake pipe. 5 runs from the offside rear wheel cylinder to the tee piece on the rear axle. 6 runs from the nearside rear wheel cylinder to the tee piece on the rear axle. They should all be imperial ends with single flares except for the ones that join onto the flexis' which are double flared.

Brake bleeding

To bleed the brakes, fill up the master cylinder with brake fluid, and loosely replace the cap. Connect a bleed pipe to the near side bleed nipple, and run it into an old jar. Pump the brake pedal until some pressure is felt, then get an assistant to open the near side rear bleed nipple until the brake pedal goes down. Close the bleed nipple. Keeping the master cylinder topped up, repeat this operation until the fluid comes through clear. Next do the same at the offside rear brake cylinder, then the front. Once this is done, press on the brake pedal as hard as is possible, and check all joints and unions for leaks.

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