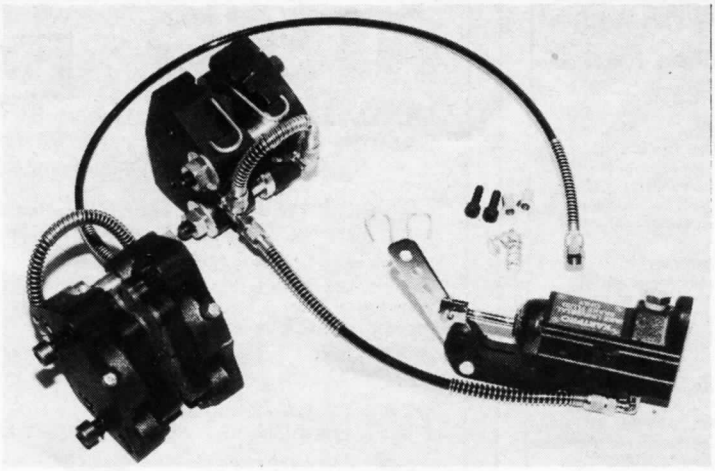
LOOKING AFTER KP BRAKES



The K.P. brake uses principles quite well established over the years as most suitable for karting and has not been adapted from a motorcycle or car brake. Firstly, the brake pads are fully retracting, thus ensuring that there is no contact between pad and disc until the brake is applied. Secondly, the hydraulic system is completely sealed and acts in a push-pull fashion. In a properly set up brake there is no leakage of oil, no air gaining access to the internals and no need to top up the hydraulic fluid. With a brake of the type described, it is necessary to adjust for pad wear. In some brakes this is done by removing shims, but in the K.P. Brake a unique arrangement of adjusting screws is used.

A brake properly set up can be trouble free for a considerable period of time, but it must be remembered that the brake operates in a hostile environment and therefore it is unwise to neglect it for too long a period of time before refurbishing. Bleeding such a brake is only necessary on initial assembly or after reconditioning and therefore this feature is in itself the best fault indicator. In other words, if the brake has become spongy, it is not the time to bleed the brake, but to check for oil leakage or air ingress and to immediately put repairs in hand.

Experience has shown that faults generally arise from incorrect setting up, i.e. pads not parallel, or too far from the disc, the chassis bracket out of line with the disc or tampering or neglect. It is to assist in ensuring that a brake is functioning perfectly that the following notes have been written.

The K.P. 100 Brake is supplied filled with oil and tested for correct operation. It is filled with Castrol Racing Brake Fluid; this oil is compatible with Universal Auto Brake Fluid, but not with Transmission Oil, which is used in at least one other brake. Contamination of even the correct brake fluid with engine oil, grease or petrol may be sufficient to swell the seals and cause malfunction and therefore cleanliness is essential when carrying out repairs.

The pipe fittings are taper threaded and assembled to the brake bodies by the manufacturer using Loctite Hydraulic Sealant 542. The fitting thread does not leak unless removed by an "enthusiast" and re-assembled without a sealant — just turning the fitting is sufficient to break the seal. The nylon pipe is of a special quality and will give no trouble if routed along the chassis sensibly. Only the correct pipe should be used for replacement.

To give the brake or any brake for that matter a fair chance, the bracket on the chassis must be true and square to the axle/disc. This is often not the case and shimming or packing must be used to align the brake. If the brake is not true to the disc, the pads will rub and when the brake is applied the piston will push the pad into alignment with the disc, but obviously the piston will then be moving at some angle to the centre line of the cylinder in which it works and wear will result with the possibility of the piston sticking. Check also that the fixing holes allow the pads to sit in the correct position on the disc and that the disc does not rub any part of the brake. Elongate the holes with a round file if necessary.

Assuming that the brake is mounted correctly, the disc should be centred between the pads and locked onto the axle using the cross cap head bolt. It is advisable to slacken the bolts on either side of the slit in the carrier which secure the disc to the disc carrier, and retighten afterwards. The brake as supplied is set up for a disc of .180" thickness (5mm) which means that there should be no more than .010" between each pad and the disc (something like the thickness of a luggage label). If adjustment to achieve this is necessary, slacken the two M10mm special nuts holding the two halves of the brake together and turn the adjusting screws equal amounts using a small length of bar or hexagon key, making sure that each screw is turned the correct amount to keep the pads parallel.

Excessive clearance between the pads and the disc means that there is too much travel in the hydraulic system (lost motion). This means that some, or in the worst case most, of the travel is taken up before the pads touch the disc and there may be insufficient travel for the brake to continue to function correctly during a race. For those drivers who like some free play at the pedal before the brake comes on, then this must be achieved between the pedal and the master cylinder lever by leaving the cable or rod slack.

Additionally, pistons which travel too far when the brake is applied collect dirt which is then pulled back into the cylinder on retraction, eventually causing wear and sticking. Note also that excessive clearance between pad and disc may be sufficient to allow the pad to move above the pad retainers and the pad could be thrown out with of course, serious results.

If air in the system is suspected, an easy way to check is to move the master cylinder lever until one or both pads begin to move, note the amount that the push rod in the master cylinder moves through the rubber dust cap. This will be about a 0.25" in the normal way. If the distance is rather more than this then air is present. Examine the brake for oil leakage and if none is seen remove the filler plug in the master cylinder and top up the oil, refit and tighten the plug. If the symptoms reappear then there is a fault in the brake which should be removed and returned to the manufacturer or his agent.

Brake pad wear — many types of pads have been tested and several types are in use, but in general all are satisfactory for sprint racing. If wear is excessive, in every case investigated it has been shown that the driver is not positioned comfortably in the kart and during a race unknowlingly applies the brake. There may, of course, be some who are of nervous disposition!

Changing brake pads — there are two types of brake in use in respect of the method used for brake pad retraction.

The method which has been in use for many years consists of coil springs and spacers which are attached to the rear of the pad by cap head screws. The springs and spacers must be free to move in their housings and this means that these should be cleaned and lightly greased at least when changing pads or as dictated by track conditions. Care must be taken to see that the screws do not come loose and a small amount of Loctite Screwlock on the threads would assist. Rotational forces on the pads are taken up by the castings in which the pads rest. The screws are for withdrawal only.

The more recent alternative to the method just described for pad withdrawal is the use of wishbone springs especially designed for the purpose. This method permits more rapid pad removal and is considered by the manufacturer to be the preferred. Replacement pads should be 12mm thick, which is less than the thickness if purchased from an auto stockist. Whilst it may be possible to fit thicker pads the adjuster screws will not be engaged by the necessary amount. Do bed pads in by moderate braking when they are new. Recently, advice from an experienced user has been received which shows that overheating and consequent piston sticking problems have been caused by the positioning of the number plate, which has deflected the cooling air flow from the brake caliper. It would perhaps be a good idea to position the number plate, if possible, to form an air deflector to deflect air onto the caliper and disc.

The brake is a very important item on a kart and will give trouble free service if used properly. These notes may help to this end. Remember, a brake is for stopping, it does not make you go faster unless you are the genius who does it all at the end of the straight. For many reasons it is absolutely essential to keep the brake adjusted as described.

Bob Banbury

NEW SPRINT KARTS

occupies one rear bearing cage and the sprocket carrier is a one piece unit.

The seat stays now attach to the right-hand frame tube and from the cross member. All engines now mount in cradles. A full range of GRP body items is available in a variety of colours. The first 125cc models have just had their debut in France and reports indicate excellent handling and braking with greatly improved steering. The first batch of the 250s has gone to Australia and they are caught in a Customs strike so although there is no reason to expect that it will be any less successful than its smaller brothers, confirmation will have to wait for a few weeks yet.