



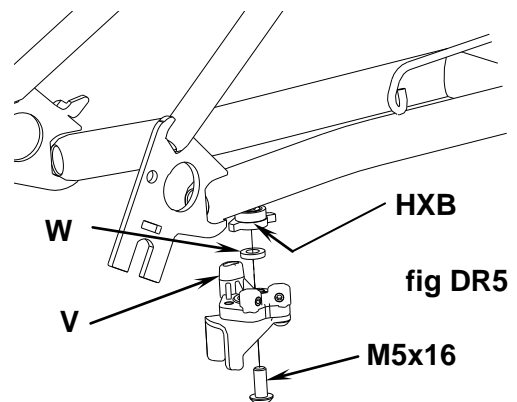
## REPLACING DERAILLEUR ACTUATOR PARTS (CHAIN PUSHER, CHPUA).

If you are only replacing the actuator plate or the "wing-plate", there is no need to disconnect the M3 screw linking the CHPUA to the dogleg DL (fig DR9). For replacement of any other items, this screw should be detached, and it's best if the rear wheel is removed. [Also, if the bearing is of the original, ball-bearing type, we strongly recommend that while working on this part of the bike, you replace this with the new plain bearing (QCHPUBRGA).]

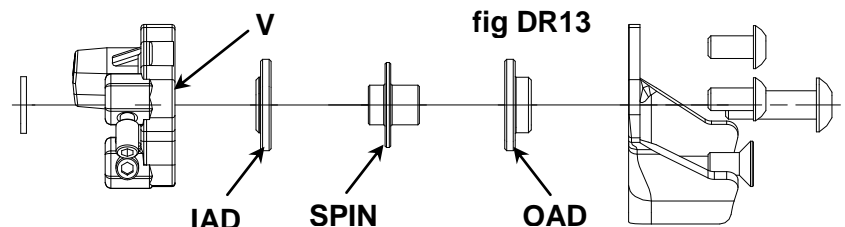
### Chain pusher bearing.

Note: if you are fitting a new bearing, the original bearing may be a ball bearing assembly, combined with a special thick washer W (fig DR5). This has now been superseded, and you will now have been supplied with a new plain bearing, which needs to be fitted with a standard M5 washer at W, and a longer screw, M5 x 16 rather than M5 x 12.

1. With the derailleur up (in high gear), remove the chain tensioner, and get the chain out of the way.
2. With the derailleur trigger down (in low gear), remove the M3 x 30 screw (fig DR9, below). Because the wheel is so close, this can be a bit awkward: life is easier if you remove the rear wheel.
3. Undo the main mounting screw (3mm hex key, M5 button head), and lift the assembly from its mounting boss HXB. Unless you are replacing it, don't lose the washer W.
4. Undo the three M4 screws (2.5mm hex key, two button-head and one countersunk screw), and remove them and the plate..



5. Push the old bearing out from the nylon chain-pusher-body V, and remove any dirt from the housing.
6. The new bearing, fig DR13, comprises an inner acetal disc IAD with a **small** raised boss, a hollow stainless spindle, SPIN, with two bosses (the **shorter** of which must engage the IAD), and an outer acetal disc OAD, with a **larger** raised boss. The two acetal discs are a gentle press fit into the recess in the chain-pusher-body, V, and the three parts should be fitted (with grease on the spindle) as per figure DR13.



7. Reassemble the plate. Take care not to cross-thread nor to overtighten these, as this could strip the thread in the nylon.
8. Feed the M5 x 16 screw through the spindle and the M5 washer W, screw it into the boss HXB (taking care not to drop the washer W), and secure firmly. Check that the assembly can rotate freely to and fro. Because of the way the new bearing is assembled, there may be some initial stiffness in the bearing: if there is, this must be got rid of; this is done simply by applying a firm rocking force to the CHPUA, left to right and fore/aft. If the bearing remains stiff, there is no point proceeding further, as it must be free.
9. Feed the M3 screw through the chain pusher body, and into the dogleg DL (fig DR9, below), and do it up. Do not overtighten the screw, and when it reaches the end of its travel, **back it**

**off one full turn:** the dogleg should not be clamped tight against the CHPUA. Check that the CHPUA can still rotate freely.

10. Fit the rear wheel, if it was removed. With the trigger up, fit the chain to the outer sprocket, fit the chain tensioner, and check the adjustment as below.

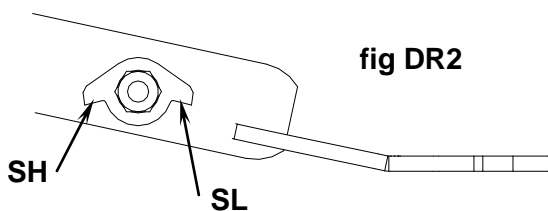
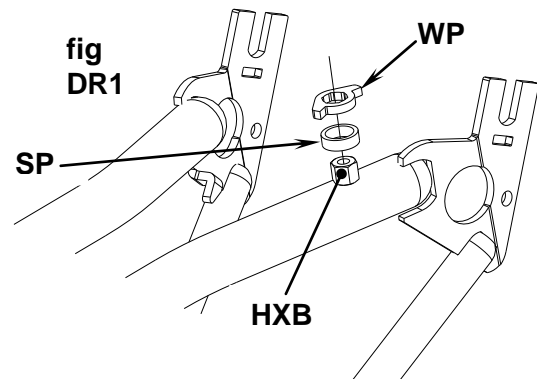
### Chain pusher plate.

Follow steps 1, 4, 7 & 10 above. When re-fitting the plate, take care not to push down too hard when doing up the three screws.

### Chain pusher "wing-plate".

Follow steps 1 and 3 above.

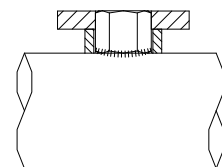
Prise the old wing plate off the boss HXB, taking care not to skew it as you do so, and remove the plastic washer SP.



Place the new plastic spacer, SP, over the hex boss, fig

DR1, and address the wing plate WP to this boss. The orientation must be as shown in fig DR2 (the two

surfaces SH & SL facing outwards): address the wing plate to the hex boss so that you feel the male hex starting to key into the hole in the wing plate (if necessary, try the wing plate the other way up). Using a suitable drift, tap the wing plate down till it's near-enough flush with the end of the hex boss (fig DR3). If the wing plate is a loose fit, then apply some paint (or other suitable "filler") to the boss HXB.



Follow steps 8 & 10 above to refit the actuator and chain tensioner.

### Chain pusher assembly complete:

Note: if you are fitting a new assembly, the bearing in the old assy you are replacing may be a ball-bearing, combined with a special thick washer W (fig DR5). This has now been superseded, and the assembly now supplied has a new plain bearing, which needs to be fitted with a standard M5 washer at W, and a longer screw, M5 x 16 rather than M5 x 12.

Follow steps 1, 2, 3, 8, 9 & 10 above.

## DERAILLEUR ADJUSTMENT.

After any changes or maintenance on the rear frame fittings or wheel, the settings should be checked. With a new chain pusher, the derailleur stop screws must be adjusted.

You should also be aware that, for satisfactory gear changes and smooth running, apart from these stop screws, two key elements of the system have to move freely: the actuator (or "chain-pusher"), and both idlers on the chain tensioner.

### Chain pusher adjustment.

Use the stop screws, fig DR9, on the chain pusher. The idea is that, in high gear, the inner face of the inner upright IU, fig DR16, shall be as close as possible to the idler wheel, without any rubbing pressure while the idler rotates (to give the slickest change with minimum wear): when the setting is right, you should just be able to see daylight between the two while turning the cranks *forwards*, perhaps with occasional contact. Use a 2mm hex key in the forward stop screw H for adjustment.

The same principle applies for the lower gear setting, only this time, fig DR17, the inner face of the outer upright OU has to just not rub on the idler, and the rear stop screw L is used for adjustment.

**Cable adjustment** should seldom be necessary, as the trigger moves the cable twice as far as the movement of the chain-pusher (an over-ride spring *inside* the dogleg DL absorbs this movement).

### Derailleur trouble shooting.

If the derailleur still malfunctions after adjustment, or if turning the adjustor screws has no useful effect, and there is no obvious sign of dirt obstructing free movement, then the procedure for diagnosis is as follows. Step 1, remove the chain tensioner: this allows you to identify whether the problem lies with the idlers on the chain tensioner (they should be free to move in and out 7mm) or with the chain-pusher. If the chain-pusher does not move freely, and the cause is not obvious, try slackening the M3 screw slightly (there is supposed to be clearance). Step 2, remove this M3 screw completely: this allows you to identify whether there is a problem with the cable and the dogleg link DL (e.g. dirt on the spring, misalignment of cable and cable stops, etc.), or with the chain-pusher (e.g. hidden dirt, seized bearing: you may need to remove the chain pusher from the frame).

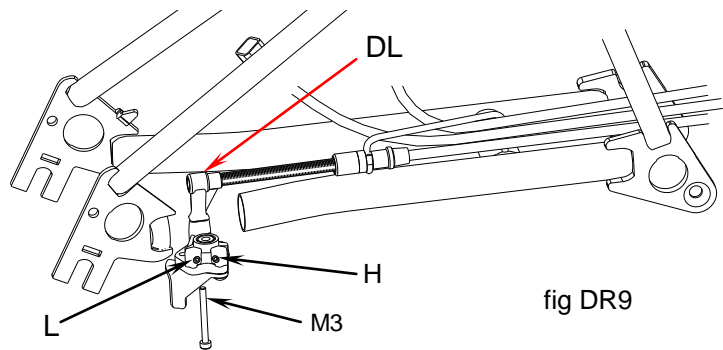


fig DR9

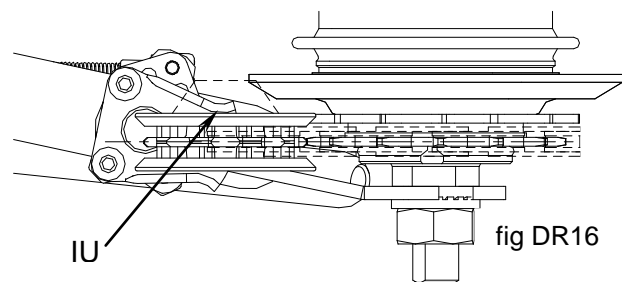


fig DR16

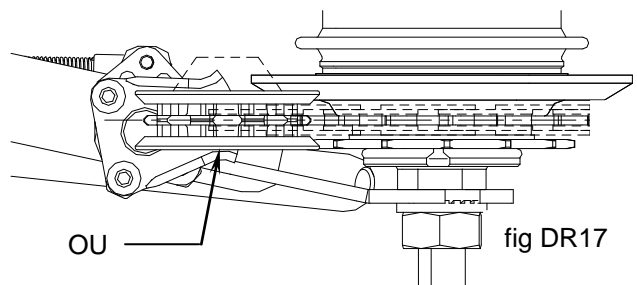


fig DR17