

PC14 R.G.M. MOTORS MASTER CYLINDER RELINE

When criticising the braking performance of the Norton Commando (which people usually do). It should be remembered that the Commando was one of the very first production bikes to be equipped with a disc front brake way back in 1972, with design work commencing in 1969/70.

Going back over 35 years traffic conditions were totally different, as nothing else could stop on the proverbial sixpence it didn't matter that the Commando couldn't. Today's traffic is a different ball game, a fully laden arctic could easily out brake a standard Commando, so the goal posts so far as braking performance is concerned have been moved.

The three main problems with the standard system are as follows:

1. Brake disc is too small.
2. Standard caliper retains too much heat if used repeatedly at high speed.
3. Relationship between Master cylinder fulcrum position/piston size and caliper piston size is wrong, leading to low line pressure and a lack of feel.

Solution to 1 and 2 is to fit one of our 12" floating disc kits, these fit directly to the standard hub and require no modifications, the caliper included in the kit also dissipates heat more effectively. The solution to problem 3 is just as important but not so simple, it is however the cheapest and most cost effective improvement.

Currently we can offer 3 solutions, either purchase a Grimeca master cylinder from us, these have a 13 mm bore but having their own integral clamp they do not retain the switch cluster.

Fit a Lockheed racing brake lever to the standard Norton master cylinder, these obviously do not reduce the bore but do improve performance by virtue of the fact that they have an improved length to fulcrum ratio.

The third and probably best solution is to have your standard master cylinder relined to 13 mm (.520") (standard size is .625"). We have produced a kit, which consists of a 13 mm threaded brass sleeve, a 13 mm piston fitted with seals and return spring, an adjustable piston pusher, a 3/8 bleed nipple and the standard dust boot and circlip. This kit is our item number 875, but I should stress that it is intended for use only by people who are familiar with the workings of hydraulic braking systems and who have good workshop facilities, kit 874 includes us fitting the kit to your master cylinder. The problem with installing this kit on a Norton is basically that there is a variance between Norton master cylinders of about .080" on the optimum piston pusher length, too long a piston pusher takes the piston past the reservoir bleed hole and the fluid cannot get in front of the piston and the brake cannot be bled. Too short a piston pusher means that the piston seal has to travel some distance before it reaches the bleed hole, resulting in the first part of the lever movement merely pumping fluid back into the reservoir and then there can be too much lever movement and the lever pulls right back towards the handlebar. That is the only advantage of the bigger standard piston, as it moves more fluid for a given lever movement it is not so sensitive to these discrepancies. In our workshop we build master cylinders with the customers own lever and so can set the optimum length of piston pusher. If doing the job yourself it is possible to adjust the piston position via adjustment of the pusher, or filing the pad on the brake lever to allow it to move further out.

PLEASE NOTE. RE-WORKING MASTER CYLINDERS SHOULD ONLY BE UNDERTAKEN BY PEOPLE WITH THE APPROPRIATE SKILLS AND EXPERIENCE. WE AND OTHERS HAVE SUCCESSFULLY RE-LINED SEVERAL HUNDRED MASTER CYLINDERS, IMPROVING THE PERFORMANCE GREATLY. PLEASE DON'T BLAME US IF YOU MAKE A MESS OF IT. IF YOU WISH US TO DO THE JOB PLEASE SEND ONLY THE BARE CLEAN MASTER CYLINDER BODY PLUS YOUR LEVER AND PIVOT BOLT BUT PLEASE NOTE, THESE ARE DONE IN BATCHES, APPROXIMATELY EVERY TEN WEEKS.

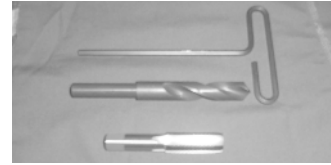
KIT CONTENTS

- 1, INSTRUCTION SHEET
- 2, NITRILE SEALING WASHER.
- 3, BRASS THREADED REDUCING SLEEVE.
- 4, PISTON AND SEALS ASSEMBLED
- 5, DUST BOOT
6. DUST BOOT LOCATION WASHER
7. 3/8 BLEED NIPPLE
8. STAINLESS ADJUSTABLE PISTON PUSHER



TOOLS REQUIRED

- 1 X 18 MM X 1.5MM PITCH TAP
- 1X 16.5MM TWIST DRILL
- 1X 5MM T HANDLE ALLEN KEY, LONG SERIES

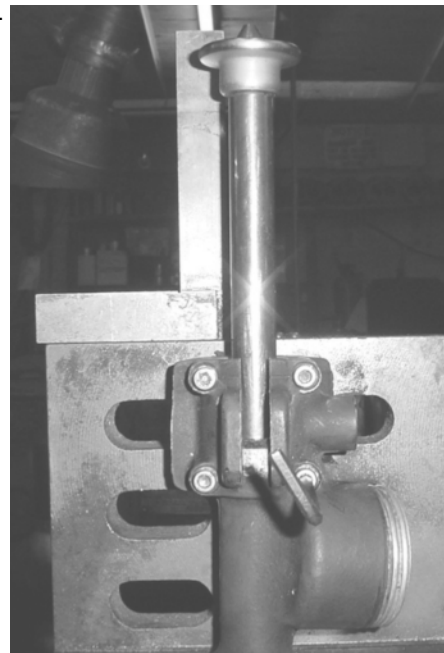
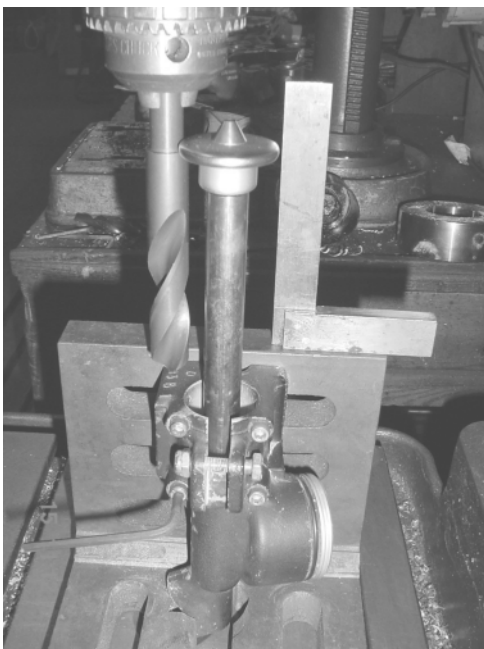


We can provide the above tool pack on a purchase or loan basis, they can be supplied as a kit for £25.00 inc VAT. If they are returned in good condition within 8 weeks of invoice date we will refund the £25.00 paid in the form of a credit note. Redeemable for all products available from RGM MOTORS. please note because of the cost involved in issuing other forms of refund we will only issue refund on a credit note basis. **NO EXCEPTIONS.**

INSTRUCTIONS (Assuming customer is doing a self build)

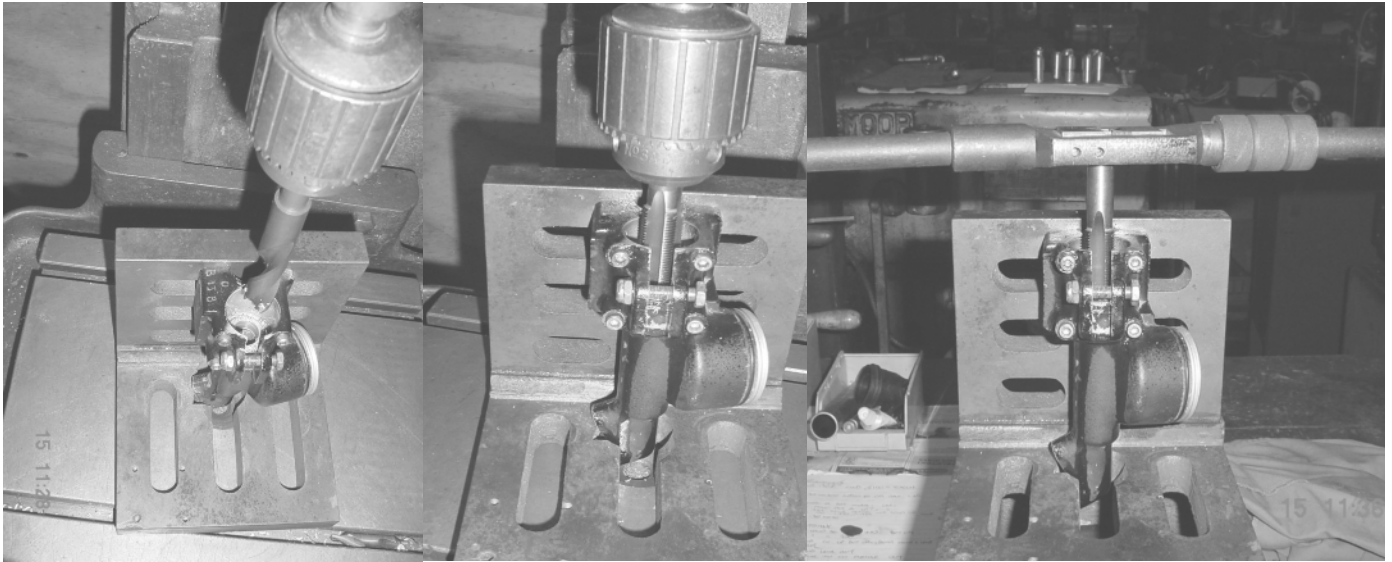
- 1, REMOVE AND DISMANTLE MASTER CYLINDER, CLEAN AND DE-GREASE. BAG AND STORE ALL INTERNALS.
- 2, ARRANGE A METHOD OF ACCURATELY AND SECURELY LOCATING MASTER CYLINDER BODY AND DRILL 16.5MM TO THE BASE OF THE BORE OF THE MASTER CYLINDER. IT IS IMPERATIVE THAT THIS HOLE IS DRILLED TRUE TO THE BORE, I HAVE FOUND IT FAIRLY EASY WITH A BENCH DRILL BUT DIFFICULTY WILL BE EXPERIENCED DOING THIS JOB BY HAND.

Pics below show a 5/8 mandrel used in conjunction with a set square and an angle plate to obtain appropriate accuracy.



- 3, TAP M18X1.5 AGAIN THIS WILL NEED TO BE TAPPED TRUE TO THE BORE, I WOULD RECOMMEND USING ONE OF THE PROPRIETARY TAP GUIDES OR STARTING THE THREAD USING THE DRILL PRESS AND THEN CAREFULLY CONTINUE IN THE NORMAL MANNER, WITH OUR TAP 8 ROTATIONS IS PLENTY (MINIMUM SEVEN ROTATIONS) AND THIS SHOULD GIVE THE 9MM OF FULL THREAD REQUIRED.

P.T.O.



4. Thoroughly wash the body, hot soapy water will do fine, be sure to remove all traces of swarf, grease, etc. and be sure to clear the two holes into the reservoir. Clean and dry all components.
5. Place the nitrile washer in the bore of the master Cylinder, carefully press down to the bottom, wipe a little silicon sealer into the master cylinder thread. A very small amount as excess can block reservoir holes. Carefully slide the sleeve into the master cylinder, engage the thread and tighten fully. Tighten sufficiently to compress the washer slightly, Be sure the allen key is not projecting past the end of the sleeve as you tighten the sleeve this will prevent the sleeve from fully going home.
6. Carefully clean the bore and remove any traces of thread tape or silicon, Particularly from the end of the sleeve where the piston enters, compressed air can be used to good effect, particularly through the two small holes into the reservoir.
7. Fit the hydraulic brake switch. And carefully press piston assembly into the bore, take care when engaging the seal.
8. Fit the bleed nipple where the brake hose would normally go.
9. Offer the piston pusher up to the piston, locate with brake lever, add pivot bolt.
10. Fill reservoir approx. 1/3 full, allow a few minutes for fluid to enter cylinder, agitate the lever, this should produce air bubbles, it should be possible to bleed up the master cylinder fully without using the bleed nipple at all, holding the master cylinder in your hand and positioning it such that the holes in the reservoir are at the top will whilst operating the lever will work. This is where you have to use some judgement and position the piston, if its past the

Holes it will be very difficult to bleed, if to far out movement is wasted pumping fluid into the reservoir. If the fluid is not entering the bore and you are sure the piston is not to far in then the holes may be obscured with silicon, a blast of compressed air could be useful here, after removing the piston. The position of the piston can obviously be dictated using the adjuster, it can also be allowed to move further out by filing the location pad on the lever, this can often give a better lever position, and also compensates slightly for the additional lever movement resulting from

the bore reduction, but care must be taken to ensure the O ring seal on the end of the piston does not exit the bore. Once bled up, ie no more air enters the reservoir and lever is firm, a small column of fluid should be seen entering the reservoir as the lever is pulled in.

11. The master cylinder can now be fitted, although applying a steady pressure to check for leaks is a good idea. If the master cylinder is not to be used it is best left filled and ready and in a dry place, brake fluid being hydro

scopic.

If it is to be fitted, try to ensure the line and caliper is full, do not try to push air downhill, it should be possible to agitate air up into the reservoir and without touching the caliper bleed nipple at all persuade all the air out of the system.

ALL THE MASTER CYLINDERS WE ASSEMBLE ARE BUILT AND BLED AND PUT ON A PRESSURE TEST JIG FOR A

MINIMUM OF 10 MINUTES TO CHECK FOR LEAKS AND LEVER MOVEMENT.

Do not use any fancy brake fluids, straight forward DOT 4 is all that is required.

PLEASE RETURN THIS PART OF FORM WITH TOOLS
FOR CREDIT FOR TOOL PACKAGE.



TOOL PACKAGE 050186