

# SCHOOLBOY HOWLERS

## Two-stroke expansion pipes: how fast, how legal?

Rorty expansion boxes are all very nice for impressing your mates and terrorising the local neighbourhood, but it looks as though their days may be numbered. Although at the moment there are no strict noise limits or regulations governing the sale of aftermarket exhaust systems for two-strokes, the Department of Transport is looking into their control. The British Motorcyclists Federation has asked the DoT to investigate this as a means of forestalling the prospect of even tougher noise regulations in the future. It seems likely that something of the form of a British Standard may be devised, and this will probably at least mirror the new noise regs that come into force from this October on new machines. These regulations bring the UK into line with the rest of the EEC and place lower limits on 125cc to 500cc machines, in addition to introducing a new and tougher test method that is particularly hard on the present 750cc and up bikes.

*Which Bike?*'s particular interest centred on the value of the typical expansion chamber being fitted to many sporty two-stroke twins, and how much our own subjective reactions to the pipes were based on fact.

Many of the pipes being used are very noisy, but we could only see any virtue in that if they produced any improvements in performance, weight-saving or appearance.

We asked three manufacturers and suppliers to offer a set of pipes suitable for the RD250LC Yamaha long-term test machine. At the MIRA timing strip we tested the bike for top speed and acceleration and then measured the noise level according to the new EEC test 78/1015. The top speed was checked with standard gearing and jetting for the carburettors. To remove any variations resulting from standing start quarter mile techniques, the acceleration was tested by gunning the bike from 30mph in second gear, which turned out to be a remarkably consistent method.

The noise test takes the new and tougher test method form of passing a calibrated microphone positioned 7.5 metres to one side of the track. The bike is accelerated from 30mph in third gear over 20 metres past the microphone in both directions. The limit for new bikes is to be 83db(A). You'll note that third gear is required for

the test: this equates to about 4,000rpm on a 250LC, which is way below the power band (very conveniently); so, to give some idea of how much noise is developed higher up the rev range, we also tested the pipes in second gear as well.

To give benchmarks, the stock 250LC recorded a mean top speed (average of two directions) of 99.7mph. The rolling quarter mile mean was 14.2 seconds with a terminal speed of 84.4mph. The noise level in the 78/1015 test was 78.5db(A), well under the limit, but in second gear the level was 87.5db(A). The (A) suffix to the decibel reading indicates that the readings are on the 'A' scale, which reproduces the sensitivity of the human ear. An increase of 3db(A) is roughly equivalent to a doubling in noise energy level. Here's what we found out.

### Micron

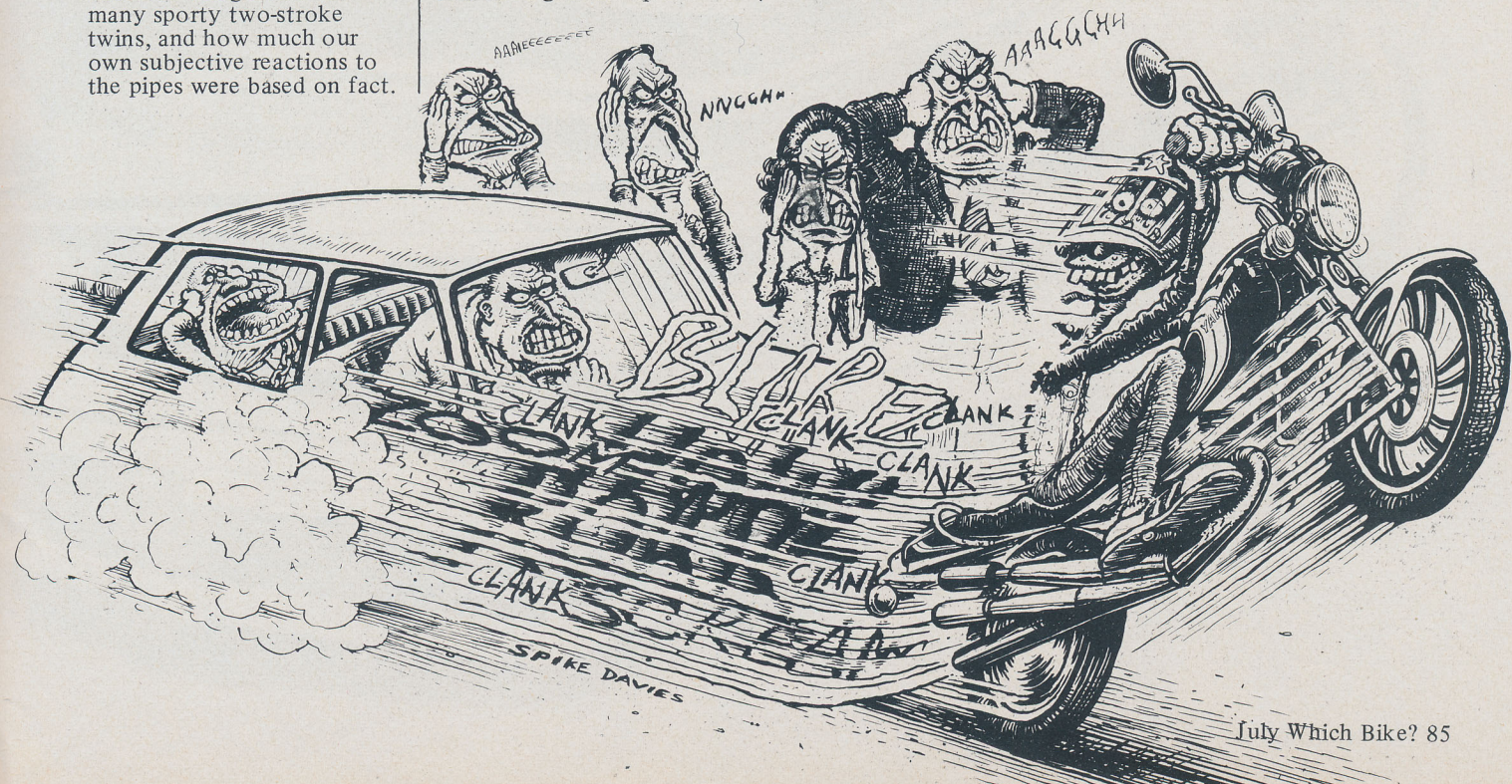
The Micron expansion chambers are short and light. They look good with small silencers

at the end of each stinger, and are finished in either black or normal chrome plate at a cost of £99.50 including VAT. They fitted easily in minutes, using the standard gaskets, and were rattle and vibration free. The power was improved from 6,000rpm upwards, but the bottom end was sharpened up only after the carburettor needles were reset in the fourth notch. At the top end the engine revved easily to 9,000rpm, where a slight power plateau occurred, after which the revs would jump to just over 10,000, compared to the stock power band from 6,600 to 8,800 rpm. The mean top speed was upped to 103.3mph, suggesting that the power isn't appreciably improved at the top. But the acceleration was improved to 13.6 seconds at 86.6mph terminal, indicating that the mid-range was much better.

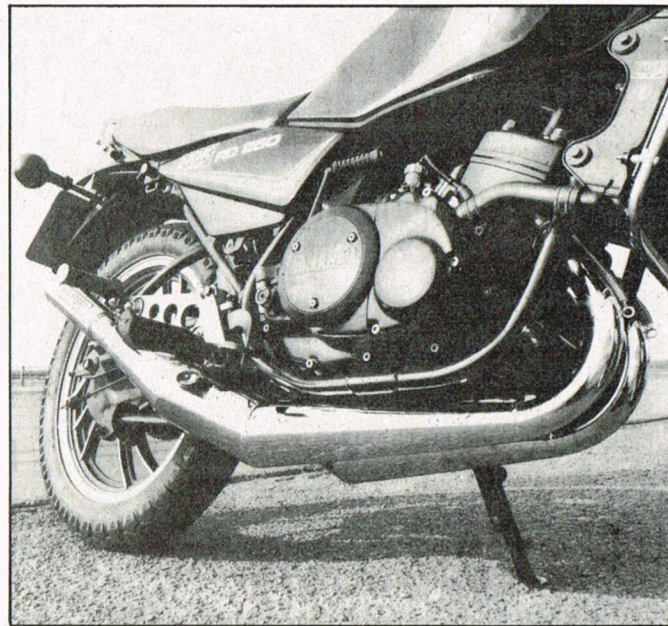
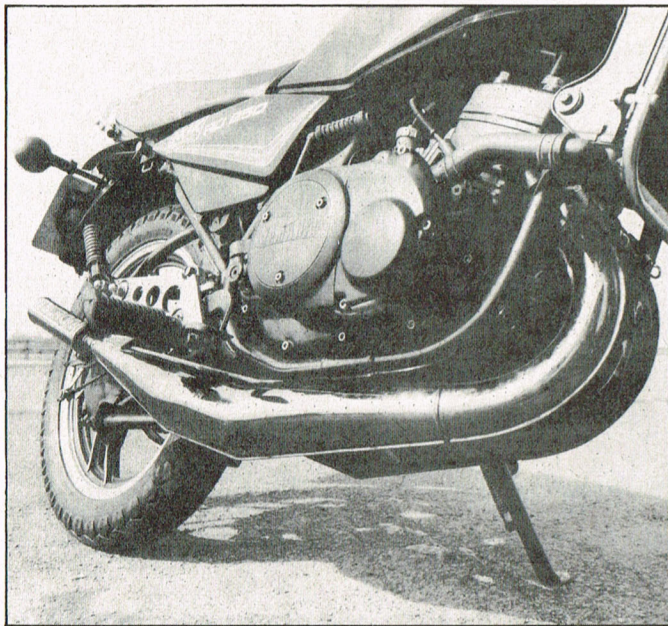
The Microns were very loud, however, emitting a sharp crackle that was hard to put up with in dense traffic. When tested, this was confirmed by a very illegal 91.5db(A) in the 1015 test, which jumped to an ear-piercing 99db(A) when the engine hit the power band.

### J&R

The J&R Powerpipes were supplied by Sondel Sport in North London and were not only the longest but the cheapest at £85 including VAT for the pair in either black or chrome finish. They are made from welded cones instead of the two-piece full-length seam of the Micron, and have removable silencers.







Micron: noisy and fast

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Fitting was quick, but one of the down pipes was at the wrong angle to the cylinder and, although it sealed ade-

quately for the test, we don't think it would have lasted long, particularly as the flange holes for the two cylinder studs were too large, making for a poor alignment. They sounded like tin cans at first, but this was only because the pipes didn't clear the side stand. The noise level, 90db(A), wasn't quite as bad as the Micron but the overall performance was the biggest disappointment on these pipes. Top speed was down to a mean 92.9mph and, although the acceleration test produced a time of 13.9 seconds, the terminal speed was 82.6mph. This suggests that while the mid-range power was okay the top end

Allspeed: neat and fast

was down — a hypothesis that was confirmed by the feel of the engine, which dropped off in power beyond 8,000 rpm. The manufacturer suggests jetting up if necessary, so we fitted a set of 210 main jets instead of the stock 190s, but these were too rich. It's possible that 200 mains may work better, but there are too many other faults with the pipes to make this worth bothering with.

### Allspeed

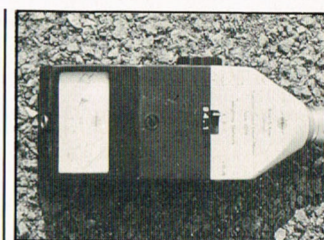
The Allspeed pipes look like a cross between the other two sets, with chrome-plated welded cones and short silencers. Their main

difference is that the down pipes slide into sleeves which are bolted rigidly to the cylinders and are held in with springs, racing machine style. The sleeves need extra gaskets and washers to fit which aren't supplied with the pipes, a shortcoming that put us off them at first. But the pipes work brilliantly for the price of £101.20 for chrome or £83.95 for the black finish. Although the top speed was only marginally increased to 100.9mph, the mid-range power was boosted to the point where the bike would pull easy wheelies when the revs hit 5,500 in bottom gear and the dreaded LC flat spot all but dis-

appeared. At the top end the power reached about the same peak as the stock pipes, which isn't a bad thing as over-revving could knock out the main bearings and big ends prematurely. Measure of the mid-range improvement was that the quarter mile time dropped to 13.5 seconds, with a terminal speed of 87.3mph. The most significant feature of the Allspeeds was that, while they produced a metallic and sporty exhaust note, they were legal for the new regs. In the approved test they recorded 81db(A), 2db(A) inside the limit. Even in the power band, the pipes recorded only 90.5db(A), which was better than the Microns in third gear.

### Conclusions

We weren't expecting any of the pipes to be inside the new noise regulations, but the Allspeeds were well inside, and gave a massive shot in the arm to the power band in the mid range as a bonus. On those grounds alone we'd recommend them as being the best



The noise meter can't lie — this is connected to a microphone for the tests.

of the three here. We'd only use the Microns if we lived in the country and then only as long as the local Plod was well clear. We wouldn't bother with the J&R pipes at all.

John Nutting

### Addresses

Allspeed Manufacturing Ltd,  
26/28 Pretoria Road,  
Romford, Essex. Tel: 0703 47375

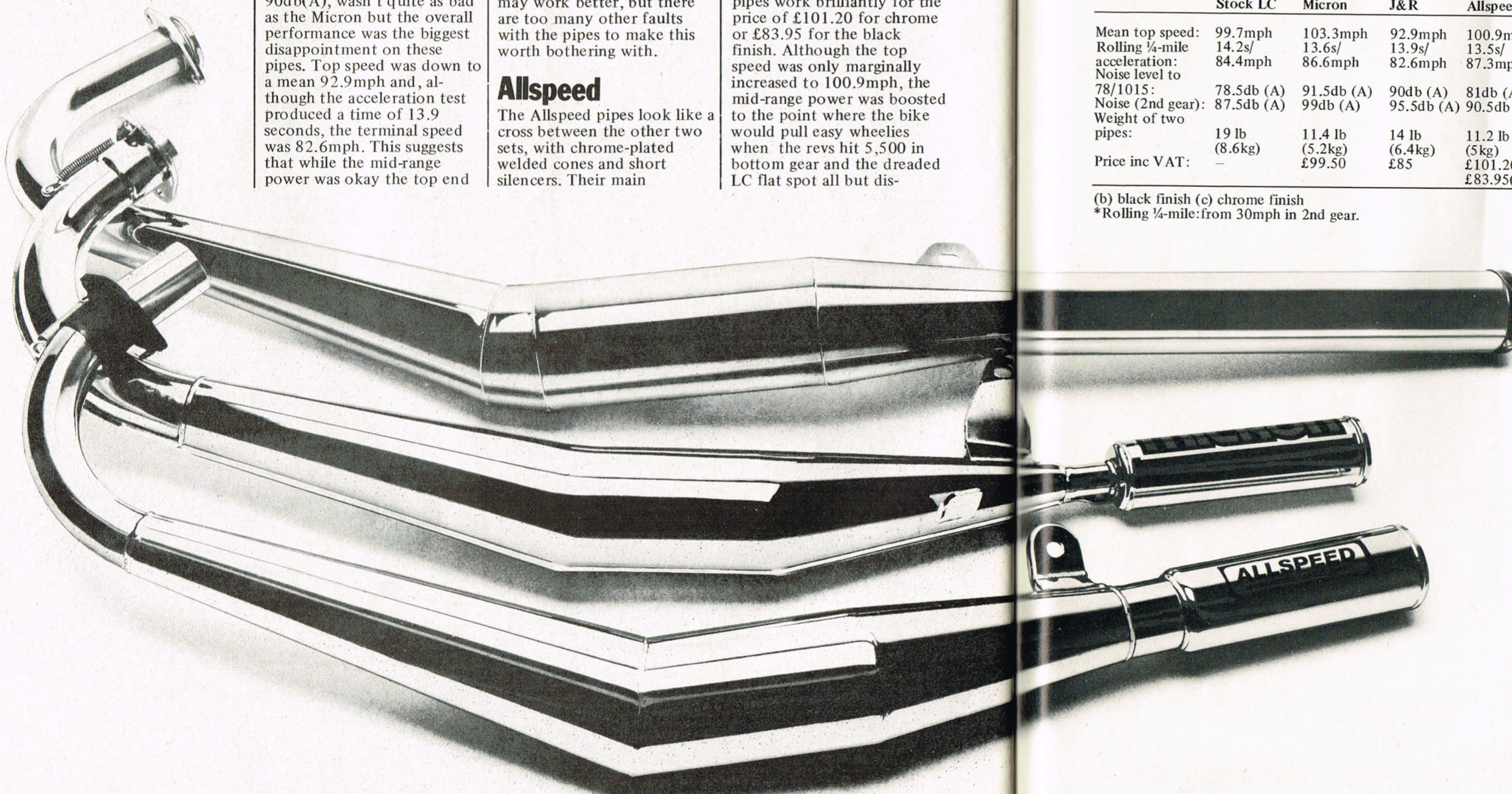
Sondel Sport (J&R), 28-32  
Highbury Corner, London N5  
Tel: 01-609-3832/4137

Codnor Light Fabrications  
(Micron), Birchwood Way,  
Cotes Park Industrial Estate,  
Somercotes, Derbyshire.  
Tel: 077383 6133

### POWER PIPE FIGURES

	Stock LC	Micron	J&R	Allspeed
Mean top speed:	99.7mph	103.3mph	92.9mph	100.9mph
Rolling ¼-mile acceleration:	14.2s/84.4mph	13.6s/86.6mph	13.9s/82.6mph	13.5s/87.3mph
Noise level to 78/1015:	78.5db (A)	91.5db (A)	90db (A)	81db (A)
Noise (2nd gear):	87.5db (A)	99db (A)	95.5db (A)	90.5db (A)
Weight of two pipes:	19 lb (8.6kg)	11.4 lb (5.2kg)	14 lb (6.4kg)	11.2 lb (5kg)
Price inc VAT:	—	£99.50	£85	£101.20(b) £83.95(c)

(b) black finish (c) chrome finish  
\*Rolling ¼-mile: from 30mph in 2nd gear.



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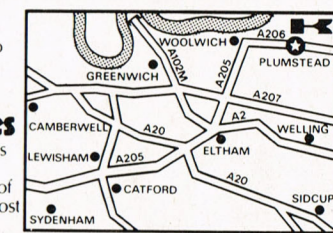
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