May 1993

AA Car test

R9323A

Supplements R9046

Rover Metro Automatic and Diesel

TWELVE MONTHS AGO, ROVER ANNOUNCED automatic and diesel versions of our favourite small hatchback. Both feature "bought-out" components. The auto box comes from Volvo and is technically known as CVT, which stands for continuously variable transmission. This different sort of automatic is fast gaining popularity among small-car users because it wastes less power than a conventional "stepped" gearbox tied to a torque converter.

The diesel engine is a Peugeot-Citroën all-alloy unit used also in the Peugeot 106 and Citroën AX. Perhaps because the Metro is heavier, Rover has opted for lower overall gearing than is found currently on either of the French cars.

The one thing that survives unscathed in both applications is the Metro's impressive blend of ride and handling, which makes it such a pleasure to drive. Both models suffer from increased steering effort when parking, the more so if your automatic comes with the Si's even wider (55-Series) low-profile tyres. Mind you, it compensates on the open road with really grippy cornering and braking, backed up by a wonderful sense of reassurance at the helm that it wants to go exactly where you steer it, with the uncanny precision of a guide dog. The ordinary 65-Series radials fitted on L models (and our C diesel) have little to apologise for, and they produce steering effort on these heavier diesel and automatic versions that proves to be midway between the Si and a manual 1.1S we compared them with. We stress this because disabled or elderly drivers could be interested, particularly in the automatic, and no power assistance is available on the Metro. It pays, therefore, to take all this tyre business into account.

More about the automatic

This CVT uses the kind of simple centrifugal clutch engagement from a standstill that has been criticised (on the Ford Fiesta, for example) for inducing slightly jerky snatching as you move away or come to rest. The Nissan Micra and Fiat Panda use a different, electromagnetic clutch that avoids this problem entirely. Our Metro test car revealed only a hint of this snag and,

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PERFORMANCE

Acceleration in Drive time in seconds

STANDING START	0-30mph	0-60mph	¼ mile
	4.4	13.0	19.5

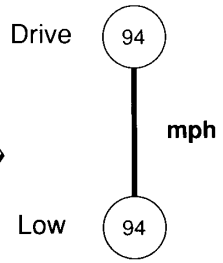
mph	30	40	50	60	70
THROUGH THE RATIOS	2.2	4.9	8.7	13.9	

20 mph	30	40	50	60	70
SPEED RANGES USING KICKDOWN	4.5	7.0			
		5.5	9.5		

Maximum speeds

using accelerator kickdown

REVS PER MINUTE	Low	Drive
	5100	5100



FUEL CONSUMPTION

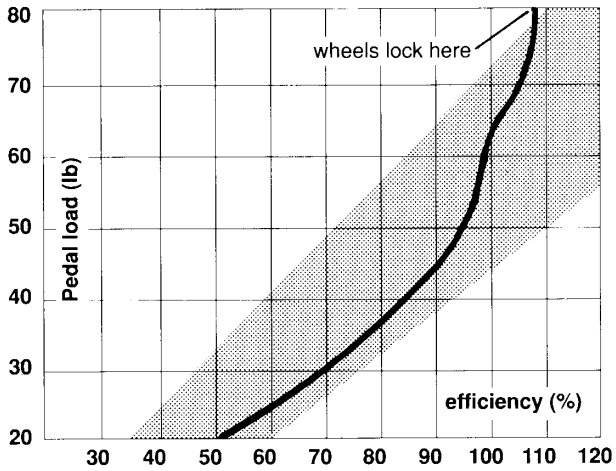
Fuel grade for tests: unleaded Premium, 95 octane

Normal range	mpg
Hard driving, heavy traffic	28½
Short journeys in the suburbs	31
Motorway – 70mph cruising	35½
Brisk driving, mixed roads	38
Gentle driving – rural roads	41½
Typical mpg overall	**36½**
Realistic tank range*	28 litres/ 225 miles

**based on fuel gauge/warning lamp and filling station experience*

SAFETY

Brakes (without ABS) How pedal loads affect braking



Braking efficiency shown as a percentage of gravity (ie 100% = 1.0g)

Ideally the braking curve should be a gentle sweep and lie within the shaded zone of this graph. If it's above, the brakes are too heavy; if it's below, they are too light – although this is more acceptable on cars with ABS.

50-0mph best stop	98% / 85ft
Handbrake only	36%

Fade test

How hard use affects braking (Ideal brakes show no change)

Pedal load needed for 75% stop (lb)

At start of test	35
After constant use	38
After severe use	66

Safety check list

Steering true 'feel' of the road?	✔
Brakes powerful?	✔
sensible effort?	✔
fade resistant?	✘
Seatbelts front – effective?	✔
convenient?	✔
rears – effective?	✔
convenient?	✘
Head restraints front– effective?	✔
rear – effective?	✘
Interior thoroughly padded?	✘
Fuel shielded filler?	✔
protected tank?	✔

PERFORMANCE

Acceleration time in seconds

STANDING START	0-30mph	0-60mph	¼ mile
	5.3	18.6	21.7

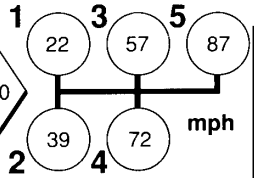
mph	30	40	50	60	70
THROUGH THE GEARS	3.1	7.5	13.3	22.0	
IN 5TH GEAR	7.7	15.5	24.9	36.4	
IN 4TH GEAR	5.5	11.5	18.0	26.6	

20 mph	30	40	50	60	70
5TH/4TH SPEED RANGES	16.7/11.7	17.2/12.5			
		15.5/11.5	20.9/15.1		

Maximum speeds

REVS PER MINUTE	1st	2nd	3rd	4th	5th
	4700*	4700*		4650	

**for best acceleration*



FUEL CONSUMPTION

Fuel grade for tests: diesel

Normal range	mpg
Hard driving, heavy traffic	42½
Short journeys in the suburbs	49
Motorway – 70mph cruising	50
Brisk driving, mixed roads	58½
Gentle driving, rural roads	69½
Typical mpg overall	**56**
Realistic tank range*	28 litres/345 miles

**based on fuel gauge/warning lamp and filling station experience*

combined with a smooth accelerator action, left little to criticise.

This set-up also retains some in-gear creep, whereas the Micra will roll back on a slope, even in gear. The Metro auto isn't an easy car to push into the garage because the inertia in the 'box remains even in neutral, but this means that it rolls less readily as you're waiting in neutral in a traffic queue, so you tend to resort less to the handbrake as you sit there.

In open road or town driving, the Metro automatic is the epitome of unobtrusive efficiency, once you're tuned in to the logic of gearing that varies to suit a constant engine speed, rather than the engine speed having to vary to suit a constant gear ratio. CVT makes overwhelming sense, but it still takes time to get used to it. Its full-throttle take-off from rest gives a fair imitation of an airliner preparing for take-off and the car's ability to handle over 5000rpm at such times, without any sign of a jolt or distress, is most impressive; "seamless" seems the best word to describe its progress. Even pulling the lever into L (for low) fails to produce a nod of the head.

The amount of engine braking this produces on the overrun is very useful, as the revs sit at 4000 and its mechanical hand restrains the car without your even touching the brake. Under power, you can select L in anticipation of an opportunity to overtake and have the engine all peppy and ready to go, yet in reality the use of full accelerator in D will give acceleration times that are at least as good.

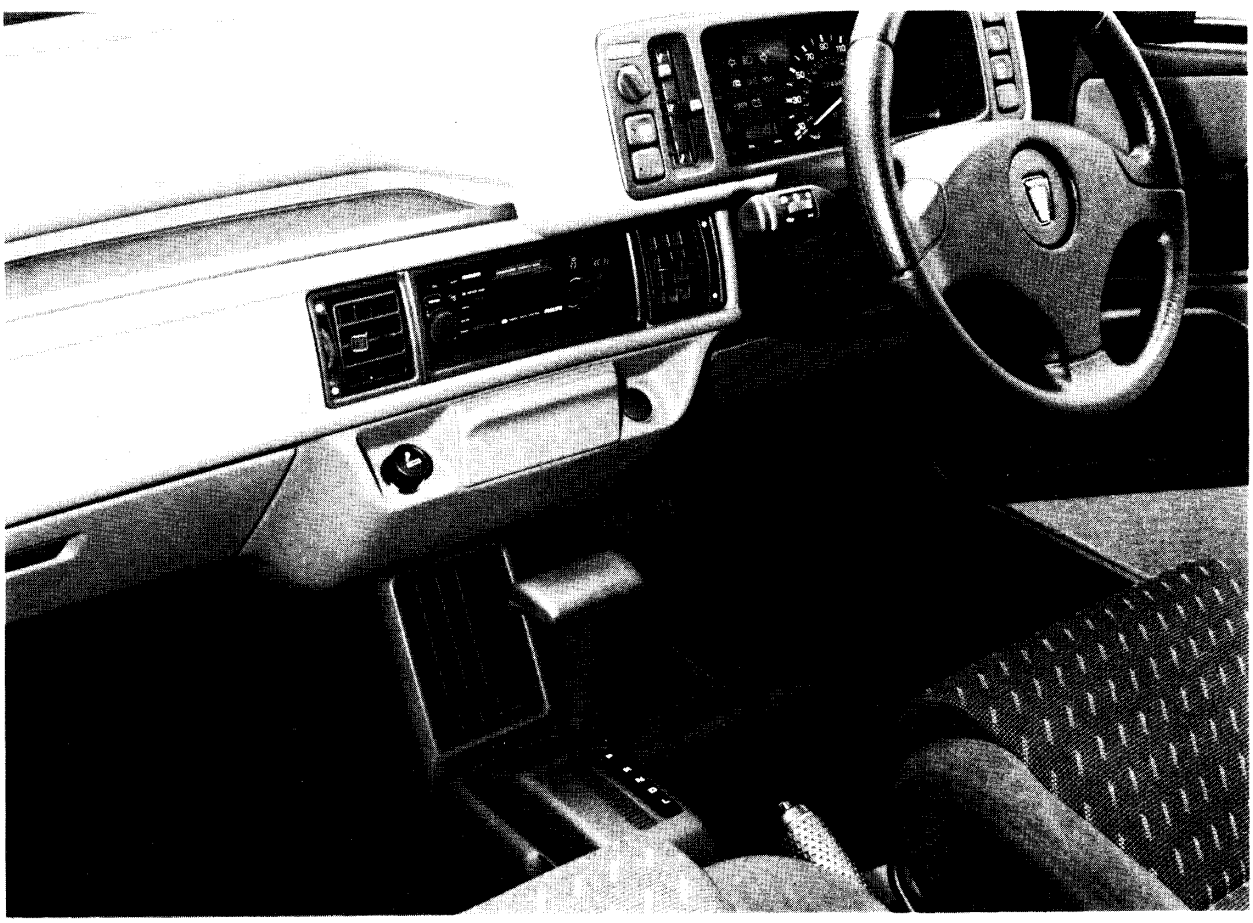
The selector is free-acting in N, D and L (a good feature), but is just a shade too heavy in its movement. Most of the time, however, just leave it in D – the 'box knows best and with its long, languorous stride on the motorway, you wouldn't believe small-car motoring could be so effortless.

Ultimate performance is only mildly compromised by the transmission, but fuel economy (not the Metro's strongest point in any case) is depressed by about 3mpg overall, compared with a 1.4 five-speed manual. If most of your motoring involves short journeys, you won't notice much difference, however.

Diesel alternative

Thanks to its all-alloy construction, this engine puts less weight over the front wheels than the automatic; the result is largely unimpaired steering and handling compared with a 1.1L we know well – just a shade more weight at the steering wheel.

The use of low gearing (18.8mph per 1000rpm in fifth is low by diesel standards) certainly helps this lowest-powered Metro to remain reasonably lively in upper-gear overtaking, comparing favourably with the 1.1 in fifth- and fourth-gear times. It feels more lethargic when fully stretched, however, with a 5½sec difference on the stopwatch from 30 to 70mph, compared with the 1.1 petrol model. In fact, our car's governor was intruding before the maximum power rpm could be attained, hence the need to change up earlier. Because of this, the absence of a tachometer



(or even simple speedometer markings) leaves the driver wondering at times when he should change up, to keep the power flowing.

This diesel proves remarkably smooth and quiet around town or in the mid-range, but it begins to sound more hyperactive after 65 to 70mph. At such times, you almost grope for an Audi-type sixth ratio. The shift quality is excellent and the clutch smooth and light, emphasising the consummate skill with which this transplant has been achieved. It even looks neat and uncrowded in the under-bonnet area.

As our tables show, fuel consumption also reflects the choice of short gearing. Your cruising speed on longer trips has a significant effect on the mpg figure. It's interesting to note that short journeys in the suburbs, complete with cold starts, give virtually the same consumption as motorway cruising at 70mph; on the 1.1 petrol version, there's a 10mpg difference. Still, 56mpg overall remains highly respectable for a small diesel. It certainly bails out the Metro's pitifully small fuel tank and gives a respectable range that's signally lacking in petrol versions.

VERDICT

These two Metros go off in entirely different directions to seek their fortunes and win customers. Yet they retain one thing in common – they both feel remarkably smooth and refined in their respective market sectors, and offer a touch of class rather than stark statistical superiority.

TECHNICAL SPECIFICATION

Metro 1.4Si Automatic		Metro 1.4C Diesel
	ENGINE	
transverse 4; 75.0mm bore x 79.0mm stroke = 1396cc. All-alloy block and head; 5 main bearings	**Type and size**	transverse 4; 75.0mm bore x 77.0mm stroke = 1360cc. All-alloy block and head; 5 main bearings
9.75:1	**Compression ratio**	22.0:1
belt-driven single overhead camshaft actuating two valves per cylinder via hydraulic tappets	**Valve gear**	belt-driven single overhead camshaft actuating two valves per cylinder via bucket tappets (with shims)
single-point fuel injection and three-way catalyser with lambda sensor. 32½-litre (7-gallon) tank; no low-fuel-level lamp. Fuel required: unleaded only, 95 octane minimum	**Fuel system**	indirect mechanical diesel injection pump fed from 32½-litre (7-gallon) tank; no low-fuel-level lamp. Fuel required: diesel
fully programmed electronic, integrated with fuel injection via coil and breakerless distributor	**Ignition system**	compression ignition with electrical (glow plug) cold start pre-heating
75bhp at 5500rpm	**Maximum power**	52bhp at 5000rpm
86 lb ft at 4000rpm	**Maximum torque**	61 lb ft at 2500rpm
	TRANSMISSION	
continuously variable by steel-element pusher belt and pulleys controlled by pressurised hydraulics. Centrifugal multi-plate clutch. Ratio range overall within gearbox: low 2.47, high 0.44:1	**Type**	7.1in diaphragm-spring clutch; cable-operated. 5-speed (all synchromesh) gearbox. Ratios: first 3.42, second 1.95. third 1.33, fourth 1.05 and top 0.85:1
(including secondary reduction) 5.77:1, to front wheels	**Final drive**	3.77:1, to front wheels
ranges from 4.3 to 23.7 (theoretical)	**Mph per 1000rpm**	18.8 in top, 15.3 in 4th
3050 (observed) cruising on level road	**Rpm at 70mph**	3715 in top gear
	WEIGHT	
2000 lb	**with full fuel tank**	1940 lb

CHASSIS

Details are as shown in report R9046