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A Tale of

An abundance of good gear, or too much of a good thing? CHRIS GABLE tries the ARB Land Cruiser, fitted with *all* the options.

IN ITS ELEMENT, ARB's showcase Land Cruiser is a superb vehicle. Outside that element it is a vehicle with problems, indicative of, dare we say it, 4X4 vehicle "accessorising".

On paper, the vehicle shapes up well; it has a turbocharged diesel engine, Fairey overdrive, 170-litre fuel tank, carry rack, good-looking Cheviot Armorlite alloy wheels and purposeful 12R X 15 Bridgestone Desert Dueler tyres. Then there is the state-of-the-art winch/bar combination with roller fairlead, 8000lb Warn Hi-Lift winch and proper driving lights: A smorgasbord of desirable 4X4 accessories.

The vehicle works well off-road where, a decade ago, 4X4 vehicles spent most of their lives. But it needs an understanding, even sympathetic drive, on the bitumen where, according to the people who profess to know these things, 4X4 vehicles now spend most of their lives.

The ARB Sydney-office Land Cruiser wasn't built-up as an open-road vehicle. As we said at the start, it is a showcase vehicle, on which prospective buyers can see "in



What do you do when your heart's set on a Land Cruiser but you also want an automatic transmission? Simple, reports CHRIS GABLE. You just go out and have one fitted!

Two Land Cruisers

BARRY and Beth Thomas weren't put off by the fact that Toyota Land Cruisers don't offer ex-factory automatic transmissions. They wanted an automatic Land Cruiser . . . and they got one.

Their new Diesel HJ-60 wagon went to Dubbo's Bullitt Transmissions before the Thomas' even drove it; before they'd even driven any Land Cruiser. The vehicle was fitted with a General Motors Turbo Hydramatic 400 automatic gearbox and a Fairey Overdrive — the prototype of a system designed and built by Bullitt's manager and former power boat racer and motor racing engineer, Keith Mulholland.

According to Barry Thomas, the drive back to Coonamble had never been sweeter.

The Thomases wanted a Land Cruiser for several reasons: they liked the look and the concept of the 60 Series wagon; they wanted a second four-wheel drive because the 100-metre drive from the Dubbo-Coonamble road to their front door became a mire after rain; and, because they knew

The ARB the metal" the vehicle protection equipment, the impressive AIT turbocharger unit, the Fairey overdrive, the big winch, the wheels and tyres, and the rest. And every item on that smorgasbord list is well-made and well-fitted.

But we had the chance recently to drive the vehicle on the open road, and that was where the problem started. With narrower wheels and tyres and without the carry rack and side ladder (which we didn't need on our 3000 km trip) most of the problems wouldn't have arisen. Fuel consumption would have been more reasonable and the vehicle might have been more manoeuvrable. It might even have been quieter. The turbocharger might have been more effective and the Fairey overdrive might have worked a lot better than it did.

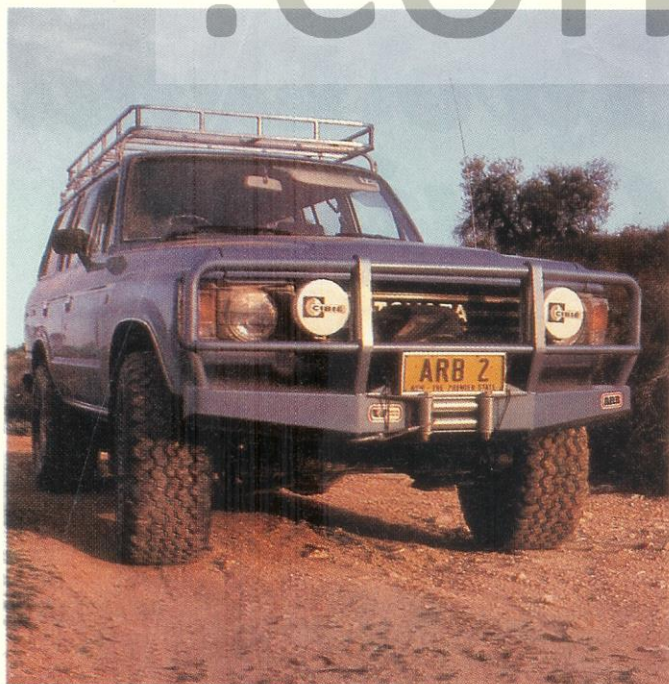
No, in its dressed-up form, the vehicle didn't work on the open road.

Which takes us back to the aforementioned "accessorising" to which most 4X4 vehicle owners are drawn. ARB says most of its customers are knowledgeable about 4X4 vehicle accessories. People who don't understand why they want a certain type of accessory — but feel their vehicle must have it, anyway — get straightforward explanations from ARB staff.

But not all unknowledgeable 4X4 vehicle owners go to people like ARB for the accessories they simply must have. By acquiring good-looking (yet non-functional) accessories in a piecemeal fashion, they risk smothering their vehicle with accessories which will rob it of its performance potential.

The tyres on the ARB Land Cruiser, for instance, were flotation tyres. Knowledgeable four-wheel drivers would appreciate that fact but 4X4 novices might equate wide tyres with performance road cars. On a vehicle which has the aerodynamics of a brick, the rolling resistance offered by ultra-wide tyres on a 4X4 vehicle is too high for highway driving.

The drag caused by a carry rack and bull bar can also outweigh their advantages (unless they are in constant use or the vehicle is used for serious off-road work). The ever-popular side steps (which ARB won't manufacture because it doesn't believe in drilling chassis members or



The Auto from a hard-on-cars relative that you can't kill diesel Land Cruisers with a stick. They wanted an automatic Land Cruiser because Barry wanted a change from driving a manual 4WD large distances six days a week and because Beth didn't want to contend with a manual Land Cruiser gearchange with their two young sons onboard.

"I do building work for the cockies a long way out of town," Barry Thomas said when we went to Coonamble to drive his auto 'Cruiser.

"I tow a four-tonne trailer behind the old Nissan ute parked out the front. I might go 70 miles from home in any direction — Carinda, Quambone, Pilliga, all around — six days a week. None of the other builders in the district will travel as much as I do."

"We wanted a four-wheel drive mainly so that Beth could get into town and back when the road was boggy. But we agreed when we decided to buy one that it had to be an automatic, even though we wanted a Land Cruiser."

Coonamble Toyota dealer, Keith Glover (no relation to Editor Ian) approached Peter Rowe of Bullitt Transmissions with the Thomas' tall order. Rowe didn't flinch because he and Keith Mulholland had wanted to develop an automatic Land Cruiser anyway. And Glover, much to his credit, let Barry and Beth keep their Commodore wagon trade-in while the prototype transmission conversion was being built up.

"Bullitt originally wanted it for three weeks but ended up keeping it for four and a half months," Barry said. "But we were tolerant because the automatic gearbox was what we wanted. We knew they'd hit problems and they wanted to get the vehicle right before they gave it back to us."

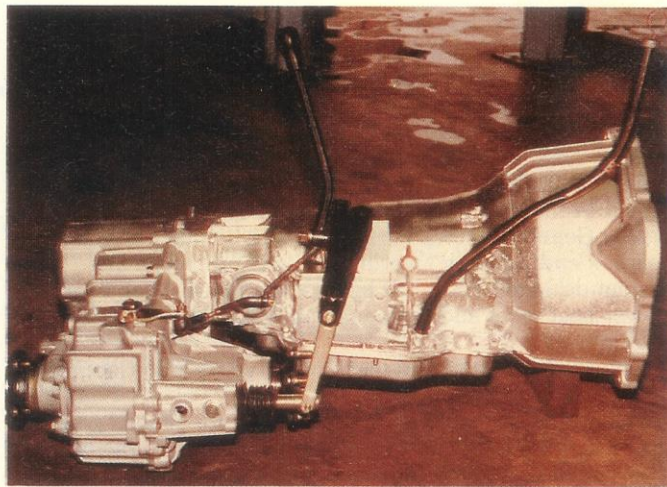
The long wait, according to Barry, was worth every minute.

"The car is unreal," he said. "Instead of being just a four-wheel drive, it's now more like a car. It's smoother. It just seems to change the vehicle completely. I've driven a couple of manual Land Cruisers since we got this one and they're no comparison. Our Land Cruiser is like driving a different type of vehicle."

"The manuals seem to me to be a lot noisier inside and to ride a bit rougher. The automatic is a hell of a lot smoother and you haven't got the hassle of changing gears."

"The only problem we've had with it has been a slight rattle in the gear selector when we hit a bad bump. And I've been told that can be fixed with a cable selector system."

"We got spot-on 20 mpg when we drove it to West



New bell housing especially designed by Bullitt Transmissions.

The ARB

vehicle panels) create even more drag.

Long-range fuel tanks add weight to a vehicle (as do all accessories in varying degrees) and that weight penalty can also count against highway performance and fuel economy.

Our best fuel consumption from the ARB Sydney-office Land Cruiser was 6.3 km/l (17.7 mpg). That figure was recorded on a 500 km open-road drive with the vehicle sitting on 100 km/h average (120-130 km/h between towns). The Fairey overdrive lever was in its "in" position.

For comparison, we drove between some fuel stops with the overdrive "in" and some with the overdrive "out". And while fuel consumption was improved with the lower engine revs, 17.7 mpg isn't what we expected of a diesel-engined Cruiser with overdrive. Even a turboed diesel.

Our worst fuel consumption — recorded with the overdrive "out" and driving into a slight headwind — was 4.25 km/l (11.98 mpg). Luggage weight was negligible and only two people were on board.

As we said earlier, those figures — together with the pronounced understeer and vehicle "wandering" on uneven road surfaces — would be improved by fitting narrower tyres to the ARB Land Cruiser. Even 10R X 15

The Auto

Wyalong and back and I was pretty pleased with that," he said. "There are a lot of hills and the traffic was bad, so there was a lot of accelerating for overtaking."

From underneath the vehicle, the conversion looks neat; with obvious signs of Keith Mulholland's engineering being the specially-made bell housing and an adaptor plate and yoke which mates the standard transfer case to the transmission. The Fairey Overdrive unit is in its normal position, alongside the transfer case.

Inside, the changes are even more apparent. There obviously isn't a clutch pedal, the Fairey Overdrive In-Out shifter is just below the Toyota's small transfer case shifter and a Holden T-bar selector stands proud, housed in its own custom-built, vinyl-covered console.

"We used the Turbo 400 because it is the same transmission as the one used in Jeep Cherokees, Cadillacs, Rolls Royce and the like," Keith Mulholland said at Bullitt's Dubbo workshop. "In Sydney they've put C4 transmissions into Land Cruisers but they're nowhere near as strong as the Turbo Hydramatic 400. The C4 is made for five-litre engines but the Turbo 400 is used in Rolls Royces with over eight litres. And the unit has been used very successfully as an off-road transmission in Jeep Cherokees.

"There is no easy way around getting a strong transmission. That's why we picked a Turbo 400 unit. It wasn't an easy transmission to fit to the Land Cruiser but it was the strongest available."

Mulholland built a steel prototype of his specially-designed bell housing and had a pattern maker in Sydney make up a mould. The housing was cast in alloy at Parkes and was machined — along with all the other modifications and adaptations — in the workshop at Bullitt Transmissions.

"The only work done outside was the casting of the bell housings and the making-up of a special shaft," he said.

"The whole thing has been designed so that the conversion can be done economically but the end result is still strong. We don't have to change diff ratios. It's more or less a unit we can bolt in and it works right away. Drive is one-to-one and the Fairey Overdrive gives the two ratios. The overdrive unit works exactly the same as if it was on a manual transmission.

Underway, the vehicle is impressive. The overdrive shift can be left in and — once you've accustomed yourself to driving a Land Cruiser without a clutch and a manual gear lever — the T-bar selector left in Drive.

"It's a bit different from what I thought it was going to be," Barry Thomas said. "I thought we'd have the automatic, then when we wanted to go into overdrive we'd have to shift it into overdrive. We leave the overdrive shifter in the 'in' position and it puts itself into overdrive automatically.

"The only time we've been told to drive with the overdrive in the 'out' position is when we're towing a horse float or a heavy trailer, where you don't want overdrive. In those circumstances, it doesn't automatically put itself into overdrive.

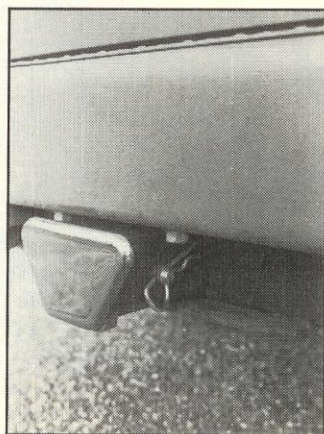
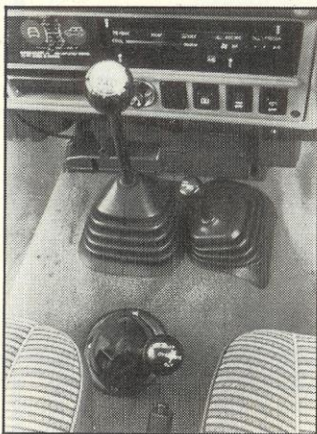
"The overdrive makes it beautiful for cruising and the transmission is strong enough to enable you to move off from rest in overdrive," Keith Mulholland said.

And he's right. The Turbo 400 automatic gets away smartly and changes are smooth and quiet. The first change is around 40 km/h and second is right on 70 km/h (indicated) in easy driving. And in overdrive-top, the engine is allowed to loaf at 2500 rpm at an indicated 100 km/h and 2900 rpm at 120 km/h. Off-road, it felt too smooth to be a Land Cruiser.

But Barry Thomas remains a manual four-wheel

Right: Carry rack with side steps — do you really need them or are they just "a drag"?

Below: Overdrive did not give the improved fuel consumption we'd expected — another sign of 4WD "over-dressing"; Slide-in style tow bar was yet another extra.



The ARB

tyres would see an improvement.

For the record though, here is a list of performance figures achieved in various driving conditions and with the Fairey overdrive both "in" and "out". Acceleration tests were done on flat, straight country roads and figures have been corrected from the incorrect speedometer — another product of the changed wheels and tyres.

Acceleration tests

Overdrive Out

0-60 km/h 8.3 seconds
0-80 km/h 13.4 seconds
0-100 km/h 24.1 seconds

Overdrive In

0-60 km/h 8.7 seconds
0-80 km/h 16.1 seconds
0-100 km/h 26.3 seconds

Speeds in gears (to redline):

Overdrive Out

First: 22 km/h
Second: 44 km/h
Third: 80 km/h
Fourth: 102 km/h (at 3000 rpm)

Overdrive In

First: 32 km/h
Second: 60 km/h
Third: 100 km/h
Fourth: 120 km/h (2800 rpm)

Cruising speeds/rpm:

Overdrive Out

Fourth gear: 81 km/h (2500 rpm)
Fifth gear: 113 km/h (3000 rpm)

Overdrive In

Fourth: 103 km/h (2500 rpm)
Fifth: 113 km/h (2300 rpm)

Now, having said all that, those figures are just not possible in a Cruiser running on song. We feel that the turbo had been "tightened up too much", or that the injectors were playing up. (The latter is probable, as we did an injector late in the trip).

The ARB Land Cruiser had enormous potential. The Fairey overdrive offers a complete third range of gears which overcome such traditional Land Cruiser gearing problems as the gap between second and third on uphill runs. The AIT turbocharger is a strong-yet-subtle answer for diesel Cruiser owners who want extra performance or extra towing power. And the hardware — the ARB engineered protection equipment and long-range tank — is arguably the best money can buy. The wheels and tyres were just too specialised.

Yet as an example of a 4X4-with-the-lot, the Cruiser wasn't a true all-terrain vehicle.

At the risk of harping on the point, we'll offer the following advice: If you are outfitting a true all-terrain vehicle, consider with care the accessory mix.



Large bull bars can carry a fuel penalty unwarranted in all but "serious" off-road use.

The Auto

drive man for real off-road work.

"I've done as much mud driving as anyone and I know you just can't go past a manual; no way in the world," he said.

The conversion and the vehicle itself were too new for us to run acceleration figures but seat-of-the-pants judgement makes us suspect the auto Cruiser would lose nothing in highway driving to a manual version.

Keith Mulholland agreed.

"I'd say that if you lined up the two vehicles side-by-side you'd find there wouldn't be very much between them," he said. "If anything, the automatic might be quicker because first is so low in the manual, meaning you have to change so soon after you move away. The automatic is deceptively quick.

"Automatics have the torque multiplication of the torque converter which really gets them off the mark. They don't get any of the hesitation that you get with a manual. It's just pulling smoothly all the time."

Mulholland has documented every step of the conversion and has enough confidence in it to have more bell housings made up for Land Cruiser conversions. But only for Land Cruiser conversions.

"We'll only modify Land Cruisers because we feel that is where the market is and because we believe they are a good vehicle," he said. "They're strong and nicely finished inside."

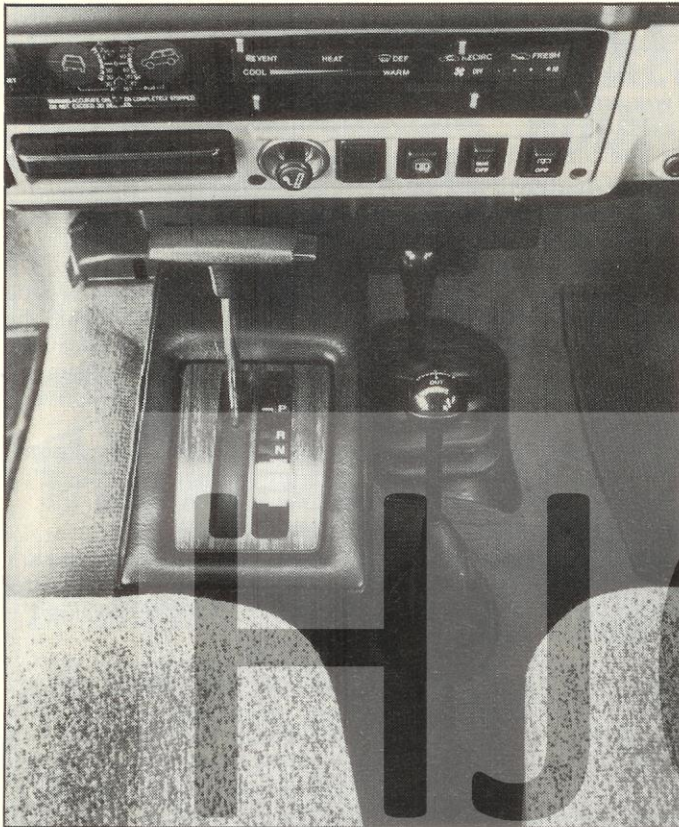
Barry and Beth Thomas like their automatic Land Cruiser for the same reasons. In fact, they like it so much they've included it in their plans for moving from Coonamble, with its boggy drive up to their home.

"About a month after we bought the vehicle, we decided we were going to build a motel at West Wyalong and move down there," Barry Thomas said. "We're both born and bred in Coonamble but it goes from one extreme to the other; it's hot as hell in summer and freezing cold in winter. I've just cut back to working six days a week and I've worked 12-hour days for a long time now. I want to be in a position to watch my kids grow up. I'll be able to do that with the motel and we'll eventually sell up and move to the NSW north coast.

"But we don't regret buying the Land Cruiser and we're going to keep it. When we move to the north coast we'll be able to use it for driving along the beach and going four-wheel driving. And we'll use it as the family car while we're at West Wyalong."

Keith Mulholland believes the automatic





"Pick a gear, any gear . . ." The T-bar fits neatly alongside the 4WD transfer and overdrive levers.

The Auto conversion will easily last the distance.

"I don't expect any problems with it," he said. "I've been a mechanic for 25 years and worked on racing cars and raced power boats pretty successfully. And I know from both racing and power boating that if one little thing goes wrong, you're in a lot of trouble. I've built the same sort of strength into this unit that I'd build into anything for a speedboat or racing car. There was a lot of work in it but it wasn't as complicated as a lot of the things I've put into boats."

The pan will come off the transmission after the Thomas prototype has covered a few thousand kilometres. Mulholland will drain the oil and check for metal deposits.

"Any problem will be very minor," he said. "I've already designed a cable system, using Commodore parts, to overcome the minor rattle Barry has told me about. It's important to use readily available parts because it's no good putting in units you can't get parts for. I'll use marine cable and I reckon that will last forever."

Barry and Beth Thomas' automatic Land Cruiser was the first step in plans by Bullitt Transmissions to market its Turbo 400/Fairey Overdrive automatic conversion. Cost will be around \$4500.

And if the interest around Dubbo and Coonamble is any indication, there will be plenty of work to do.

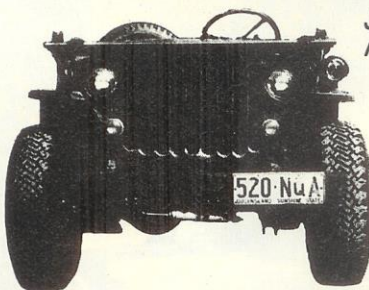
"A few people have driven my Land Cruiser and they've told me they didn't want to get back into their manual gearbox vehicles," Barry Thomas said. "They've told me they'll go to the automatic conversion."

"And when I park it in town I usually come back to find a few of the cockies standing around it, just staring in the window at the T-bar shifter."

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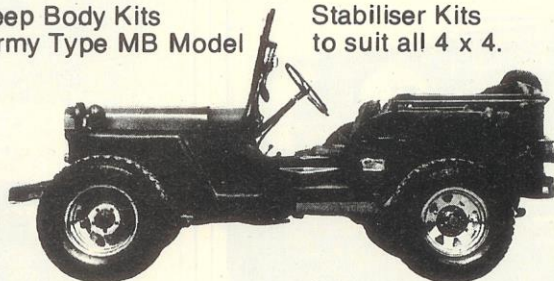
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