TOYOTA CELICA WITH TURBO....

SLICKER

SLEEKER

BILL BUCKLE has a reputation for dabbling in devices aimed at improving stock standard vehicles and this time he's come up with a super-professional turbocharger kit that is 'bug-less' and very effective. John Bryson took the turbo-Toyota on test and concludes that it's a winner.

Turbo-charging — the anti-pollution equipment with performance benefits has traffic authorities in a turmoil — on one hand it boosts performance by an incredible degree (shame, shame), yet correct installation immediately cuts down noxious emissions by a dramatic amount ("whacko", say the conservationists). So where does this leave the Turbo-Toyota?

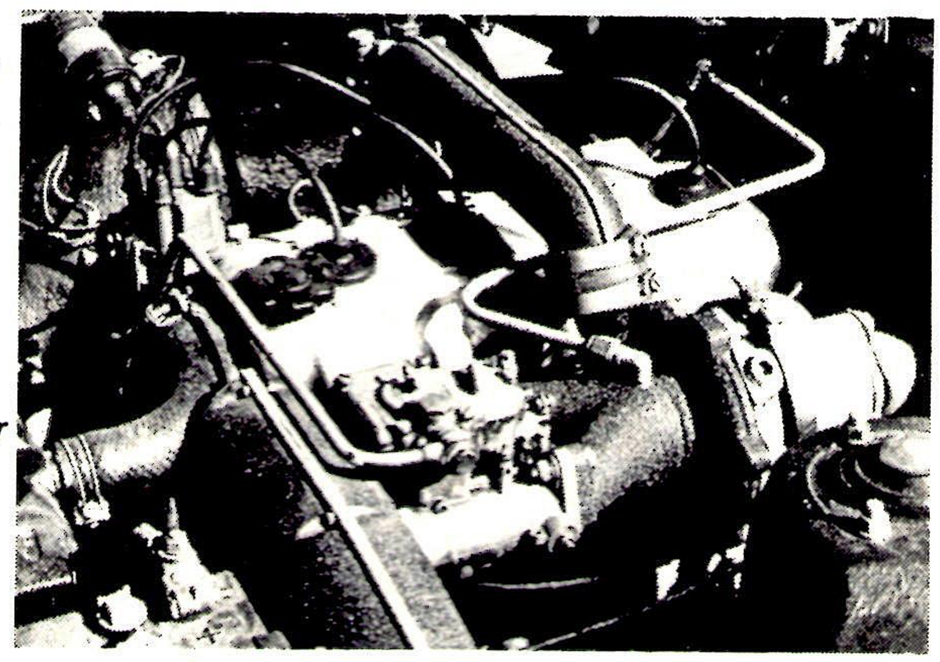
This leaves it freely available to anyone with around $750, a yen for super performance and a conscience that calls for clean air.

"Boost the power of your Celica up to 80percent", claims Bill Buckle, adding with restrained politeness that this boost only costs $875 — plus $120 if Buckle fits the equipment.

A stock Celica 1600 puts out 56bhp at the rear wheels using 5000rpm in third on Phil Wickham's dynamometer in Brookvale. Buckle claims 116bhp, on the same dyno under similar conditions, so the conversion seemed worth testing.

Buckle's specifications were turned into reality by Teterin Engineering at Newcastle. The finished product is up to the professional standards one expects for an expensive conversion.

COLOR PAGE: The turbo Toyota goes as well as it looks, although you'd be guaranteed to get second glances from the constabulary. Posing next to a standard version the Buckle 'beast' looks very aggressive. RIGHT: The Turbo kit is simplicity itself. Consisting of just the turbo unit, a Weber carb and the cross-over pipe (arrowed). BELOW: Already one of Australia's most popular sporties, the Celica's appeal can only be enhanced by this logical and sensible performance-booster.



Up to 3800rpm the normal Celica performance provides some sporting urge but from then, until maximum boost of around 10psi is attained at 6000rpm, the benefit of the turbocharging is felt with a noticeable surge forward. Not so much a bang in the back as just smooth, rapid acceleration. It's ideal for overtaking movements when one doesn't want to be in the wrong lane for long.

Probably the smartest thing Buckle asked for, was to have the boost spread over a wide limit. One can change gears without coming out of the boost area so that acceleration remains constant and progressively quicker.

In this Government controlled age of "Big Brother", "Speed Kills" and "Soak the Motorist" obviously we did not verify that the turbocharged Celica would pull over 6500 in top; but it is definitely possible to attain six!

SLICKER SLEEKER

CAR WAS standard apart from the Turbo and wide wheels and tyres — and although handling was good, it had trouble matching the extra power in tight, hard running. High averages were easily maintained on the highway.

PERFORMANCE

(Standard Celica figures shown in brackets)

FUEL CONSUMPTION: litres/100km
Average for Test: 16.0
Competition conditions: 18.8
Touring conditions: 8.6

ACCELERATION:
0-60km/h: 5.1secs (5.4)
0-100km/h: 8.9secs (12.6)
0-120km/h: 16.4secs (20.2)
0-160km/h: 22.9secs (39.8)

SPEEDS IN GEARS

	Max. km/h	
1st.	50 (48)	@ 6500rpm
2nd.	87 (88)	@ 6500rpm
3rd.	129 (128)	@ 6500rpm
4th.	169 (177)	@ 6500rpm
5th.	196 (185)	@6100rpm

OVERTAKING TIMES (Holding gears):

km/h	2nd	3rd	4th
30-60	3.3 (3.4)	—	—
50-80	4.0 (4.5)	—	—
60-100	—	4.9 (7.3)	10.00 (11.4)
80-120	—	4.8 (12.2)	11.00 (11.2)
100-130	—	—	7.02 (11.8)

TOP SPEED 196.34km/h (192.8km/h)

STANDING 400m
Average: 16.05secs (18.2)
Best Run: 15.90secs (18.0)

Any Celica owner with a small amount of mechanical knowledge should be able to fit the Buckle kit in a weekend, with time to spare.

All that's involved is the turbo unit, which is a well-engineered compressor that gets it's urge from the exhaust gases. Consequently, the more revolutions the greater the boost — until the camshaft is no longer effective. A 40 DCOE Weber carburettor bolts onto this, along with a black-crackle-finished cross-over manifold and airbox — and a complete exhaust system.

This exhaust system sounded a little rowdy at speed and could attract unwelcome attention. The Buckle machine is also painted brilliant purple and finished off with a spoiler that advertises the goodies under the bonnet — a little too gaudy for us. Along with the instructions come gaskets, oil leads and fuel lines plus new choke and throttle cables.

Economy will probably not be a major consideration for a Turbo Celica owner. With occasion to use this power in safety most people realise power demands fuel and a 194 km full bore run consumed 30litres. The surprise trip was from Tumut to Picton, 480km at legal limits all the way, for only 34litres. In old figures that is 15 miles per gallon hard, or 33mpg easy.

Toyota are to be congratulated because they are fast catching up with that particular charisma that one associates with a Fiat Sports or an Alfa GTV. It has taken Bill Buckle to add the power to match these leading Italian sports cars.

Inexperienced drivers will not appreciate the turbo-Celica because the best effect comes with smooth driving, progressive acceleration and generally using the car as it is meant to be, rather than twiddling the wheel. However, we don't think that the man who can afford the conversion kit will be wasting his money.

Buckle's car had been fitted with Konis, which felt a little firmer than normal, but the only modifications were a set of Globe alloy wheels fitted with Ohtsu 185 x 13 radials. Because the suspension is standard it copes reasonably with Hume "Highway" conditions and makes the coupe a touring vehicle rather than a race or rally machine.

The Ohtsu tyres were surprisingly effective in the manner that one comes to associate with good Japanese radials such as Bridgestone. Running from Yass to Tumut through Wee Jasper emphasised the versatility of the Celica and how a modern radial can cope with average gravel roads.

About the only problem we encountered was during the Wee Jasper run when the brakes faded. Recovery was a matter of easing up for a few hundred yards so the scoops, built into the spoiler, could direct cooling air to the discs. Even so a premium Bendix or Hardie Ferodo pad lining combination seems essential, to complement the addition of turbo power.

The lasting impression of the test is the smooth, rapid response when accelerating, particularly in the top three of the five gears. Should you be fortunate enough to find an area where it is permissible and safe, a cruising pace of 150/160 km/h is quite feasible. Surprisingly, for a performance car, 70/80 km/h is just as pleasant — and costs a lot less.

Whether you select turbo-power or not depends on your needs. Some of the experts who inspected the turbo-Celica were of the opinion that $750-plus was a little heavy. But, their alternatives were practically complete rebuilding, to achieve anything like the same performance.

If you total what two Webers linkages, a manifold system, completely worked overhead camshaft and balancing, plus a competition clutch to match the $35 changeover unit of Bill Buckle's, then there is not as much difference in total cost as first seems. Especially if you have to pay full labour costs for high-performance engineering such an undertaking demands.

The fact that the turbo-Celica has done well over thirty thousand kilometres of development and proving, without major problems and rebuilds, speaks for itself.

During the test period we certainly explored the potential of the Celica. The only problems encountered were when the initial turbo gasket (asbestos) failed during the fifth acceleration run and the high temperature gas melted the nylon accelerator cable.

It is rather interesting to note at this time that motoring writers have been criticised for unduly 'promoting' Japanese vehicles. When one checks on the values offered for 1972 model cars of similar age and mileage to the Celica some interesting thoughts are generated.

A '72 manual Celica is worth $2850 and to bring it to the Buckle standard another thousand dollars could easily be spent. A '72 Falcon

GT sells for around $4500, a '72 XU1 $3350 and a '72 Charger R/T $2850, plus more if a Six-Pack is fitted.

Just what would you select? For the record those models ran from zero to 160km/h in similar times to the 22.5 seconds taken by the Celica. The XA 351 GT Falcon was timed at 19.2 seconds, a 308 GTS Monaro 24.8 and a V7 770 Charger 23.6. E49 Chargers did a little better with 21.2 seconds. Using a similar-sized vehicle a Torana XU1 reached 128km/h (80 mph) in 13.7 seconds compared with the Celica's 17.2 but the final 20mph took the Torana's time to 24.6 seconds.

Most diesel motors now in production are turbo-charged, especially in America where the fines for black smoke are astronomical — local authorities and bus companies please take note.

These tend to be low-boost, non-performance increasing applications particularly suited to the peculiarities of diesel.

Petrol motors have demanded a finer standard of engineering, particularly as matching turbocharger output to engine capacity has been a major bug-bear.

The anti-pollution value of the bolt-on equipment is that incoming air-mixture is diluted by residual exhaust gases within the exhaust manifold, thus lowering nitrous oxide (NoX) outputs. The afterburning, within the turbine housing, lowers the carbon monoxide output.

A lot of heat is generated around the turbine area but, despite running hard during a 30 degree celsius day, the water temperature never rose over an indicated 200 F, and was usually on 180 F.

The fact that this particular car is running standard components after so much hard usage tends to prove why the average Australian buyer is markedly swinging from local products — most buyers claim the Japanese cars offer value for money.

In the turbo-Celica the installation is a particularly mild form of improvement. Disregarding the anti-pollution aspect the centrifugal pump commences to operate from around 2000rpm.

But it is really noticeable after 3,800 rpm when about 5psi of boost is induced.

As the throttle is progressively opened, so this boost increases until slightly over 10lb of maximum pressure forces fuel into the original manifold, via the cross-over system.

Amazingly, when compared with previous turbo-charging systems overseas, there is no 'lag' in throttle response on the Buckle-Teterin machine.

We were impressed that a recorded 80percent power increase at the wheels had not shown weaknesses in the transmission train of the Celica. The synchromesh was a little slow when trying for ultimate performance figures. There was a vibration from the exhaust pipe around six thousand but it looks like the original engine mounts are still in place and maybe they are a little soft. We asked David Inall, who did the research and development work for Teterin and Buckle, about the problems he had to solve.

"Throttle response lag was probably my most important hurdle. I have been working on turbos since 1969 and accumulated a lot of data which I was able to base the development project on."

"Vital points were the gas flow and boost required for various capacity motors. To cut a long story short I was able to prove my theories and there are now quite a number of production turbo-charged models on the road. Bill Buckle has put seven Celicas on the road alone."

The car that Modern Motor tested was an adaption of a stock standard Celica with equipment bolted-on. It would be interesting to see what would happen if a real performance version was developed. For example the standing 400 metres time is reduced from 18.2 seconds to 15.9 seconds.

There is a lot to be said for hidden muscle because, generally, he who has it should be mature enough to be satisfied with the knowledge, rather than the demonstration beloved of so many at traffic lights.

The Turbo-Celica is like a tiger when needed, but, generally those turbo-charged claws are sheathed and economical, allowing enjoyable motoring for the wise. As a car it provides the best of two worlds and could well prove that power does not corrupt.

RIGHT: The signwriting was a bit much for us, but the spoiler and its brake-cooling air scoops worked well. LEFT: Cooling air is fed back to the brakes through this fibreglass tube, an extension of the spoiler. A 'rest' of a few hundred metres was enough to allow the fading brakes to cool — so the air ducts do their job.