August 1982

$2.00* NZ $2.50*

TwoWheels

KAWASAKI'S RED-HOT 550!

Plus:

HARLEY FXRS and YAMAHA IT465

Also:

RIDING HONDA'S SENSATIONAL VT 250

TURBOS: DO WE NEED THEM?

Contents

August 1982

Editor
Brian Cowan
Editorial
Julia Cullen
Don Cox
Art Director
Lindsay Hannington
Production
Keith Swann
John Taylor
Advertising Production
Eric Moore
Bike Tests
Dave Bourne
Craig Lamberton
Col Miller
Lester Morris
Kel Wearne
Contributing Writers And Photographers
Grant Aisthorpe
B. J. Akhurst
Patrick Behar
Peter Bellamy
Mike Boylan
Geoff Hall
Jan Heese
Doug Jackson
Greg McBean
Graeme McElligott
Graham Monro
Anthony Seymour
Prue Timpson-Wearne
Leo Vogelzang
Elton Ward

Cover by Greg McBean
And many thanks to the weather, for its cooperation, and the Vicks cough drops afterwards.

NEWS

TESTS

FEATURES

RIDING

DEPARTMENTS

Freelance contributions are welcomed by the magazine and submissions should be addressed to The Editor, TWO WHEELS, 154 Clarence Street, Sydney 2000. Submissions must be accompanied by a stamped, self-addressed envelope for their return. The publisher accepts no responsibility for unsolicited manuscripts, photographs or transparencies.

Annual subscription rate to addresses in Australia $24.00. Other countries $A27.00.

Back Copies: Gr Floor, 154 Clarence St, Sydney. Photostat service inquiries to Julia Cullen, 5th Floor. **Advertising:** National Advertising Manager, John Miller, 154 Clarence St, Sydney 2000. Phone 268-9811. **Melbourne:** 150 Lonsdale St, Melbourne 3000. Phone 662-1222. **Adelaide:** THE ADMEDIA GROUP PTY LTD, 24 Kensington Road, Rose Park 5067. Phone 332-8144. **Brisbane:** GEOFF HORNE AGENCIES, P.O. Box 247, Kenmore 4069. Phone 202-6813. **Perth:** TONY ALLEN, ALLEN & ASSOCIATES, 1st Floor, 224-226 Stirling St, Perth 6000. Phone 328-3633. P.O. Box 191, Doubleview 6018. **New Zealand:** RON COOK, Sun Alliance House, 42-44 Shortland St, Auckland, GPO Box 486. Phone 30311. **London:** PETER HOLLOWAY, Ludgate House, 107 Fleet St, London EC4A2AL. **Japan:** Bancho Media Services, 15 Sanyei-Cho, Shinjuku-Ku, Tokyo 160. Phone (03) 359-8866. Telex BMSINC J25472.

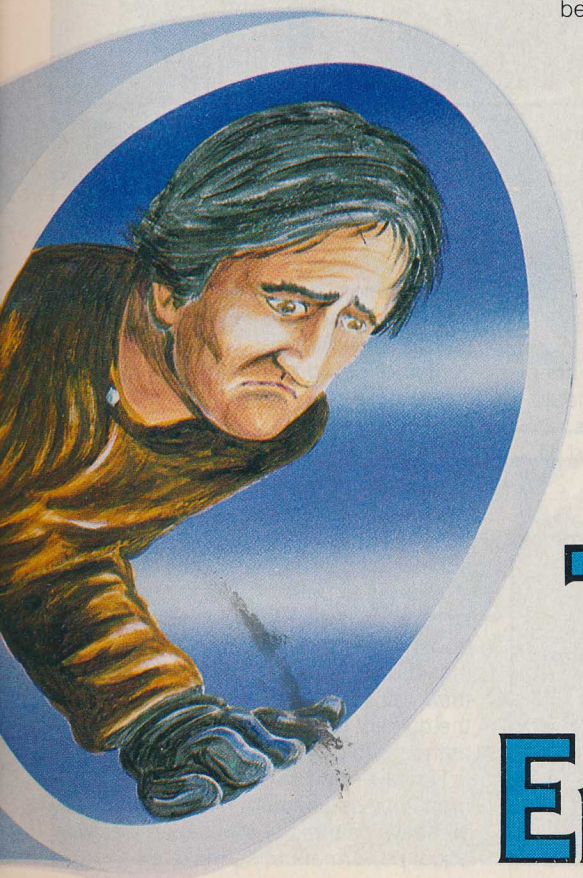
Printed in New Zealand by Comprint. Published by Murray Publishers Pty Ltd, 154 Clarence St, Sydney, 2000.

*Recommended Price.

DISTRIBUTORS: GORDON & GOTCH (A/SIA) LTD, MELBOURNE. MURRAY PUBLISHERS PTY LTD, SYDNEY.

The major buzz-word of '82 is "Turbo". But, says KEL WEARNE, we might all be sucked into a turbo-maze, victims of an exercise in market manipulation which may ultimately hold back good motorcycle design.

TURBOS: Era or Error?



MAN was busily making things more complicated for himself even before some speed freak thought up the wheel. Through the years, there have been intermittent attempts to simplify matters but the movement for a down-to-earth lifestyle has not changed the face or direction of our society; the hippies, surfers, nature-trippers and Grow-Your-Owns have remained minor pimples of sub-cultures on the body of the industrialised West. The best of intentions have little chance of denting the armour of the Merchant Titan. The Staff of Power rests firmly with the conservatives and those who wheel and deal in making us want more . . . and more means more complications.

This cancer has infected motorcycles for so long that it seems the days of simple bikes are gone for good. And now it has taken a further step, as the image-makers of the four-headed monster which creates the majority of our motorcycles have come up with mass-produced turbos. It's an idea designed to lure the fantasy-seeker in all of us, and extract more money from those who fall under its spell.

And that's what it is, a "Sell Spell" to further initiate us into the wonders of modern design packages in annual doses. At times like these, wading through the assortment of promotional material, I envy every guy I see riding a Triumph, rat Norton or Guzzi.

The Turbos have arrived with a salvo of superlatives and a fanfare of publicity. On the surface they appear as bikes designed for the rider and more advanced than anything else you can buy. It's hard not to get caught up in the rhetoric which surrounds such obvious statements of each company's technical competence.

But rather than get swamped by these image-making models we should look at where the real thrust is — the new technology is closer to medium capacity machines such as Honda's VF750 V4.

The Turbos may be competent and may be sharp; may even display the latest "innovative" design and gadgetry, but they are still outside the mainstream of motorcycling. The problem is the impact on the volatile, mercurial buying public (which refused point-blank to buy the subtle but reliable Suzuki RE5 rotary, never giving it a chance, and which also shocked Honda by being intimidated by the CBX, going instead for the 900/4). The public's response is therefore notoriously difficult to predict. It might just fall for the turbo trickery in a big way, in which case the genuine advances being made in mid-range models will be held back, to the detriment of motorcycling in general.

So here we have "Tyrannosaurus Turbo," larger than living daydreams, bolder than the pages of "Hustler," better looking than the Penthouse Pet of the Year, and more tantalising than an F18! Guaranteed to turn the head of allcomers in the streets, including girls in pelvic-hugging Mazda RX7s. Only discerning machos need apply!

But we might have the corollary — the "Tyranny of the Turbo" where the market is dominated by annual "image-makers" like the annual ratings season on television; turbos or such quasi-technocratic turn-ons bristling with innovative "features" which all distract the market from demanding what should be the prime objective of any motorcycle manufacturer — to build and sell light, simple, reliable, efficient and effective motorcycles.

What's new on the turbos?

Despite the glossy claims there isn't a great deal new on the four models apart from the turbo units themselves. There is a certain amount of ingenuity in how each Company has combined what it has shown before or used somewhere else. In other words the overall packaging is the key.

The Suzuki's 16-inch front wheel is a first for a roadster, while it could be argued that the precise layout of its Full Floater rear end and the Kawasaki's Uni-Track haven't been seen before, but that's about where it ends. Yamaha's Cycom on-board computer has so far been restricted to the XJ1100 turbo show-stopper, leaving the production XJ650LJ with a much more commonplace instrument setup.

As for the anti-dive forks (Suzuki and Kawasaki), rising rate single shock rear suspension (Honda, Suzuki and Kawasaki), microprocessor-controlled fuel injection (Kawasaki, Honda, Suzuki), vented discs, integrated cockpit/fairings, and digital instrument displays, well they've all been seen prior to their usage on the turbos.

You should be careful to isolate the turbo engine from the centre stage hoorah about the package. This is nothing but a carefully choreographed portrayal of cosmetic glitter as gifts to woo you to the image. In some cases the items concerned would be better fitted to that manufacturer's top high-performance superbike.

TURBOS: Era or Error?

What the turbos don't offer

The turbos will not be lighter than top line current superbikes of larger capacity; they will not be easier to service; nor more reliable or necessarily last longer. Nor will the turbos give more performance (at this stage) than the larger capacity group. They will have some advantage in mid-range acceleration but that is hardly a reason to believe a turbo is better.

And turbos certainly will not be cheaper or more economical to buy, to run and to maintain.

The bikes (all four Japanese models) were not designed from the drawing board onwards to be turbos and thus they will suffer the same drawbacks as any engine suddenly given a forced increase in power. The four are nothing more than middle capacity engines with forced induction to provide the same sort of power you get with the current crop of one litre machines. The turbos combine more current technology and more total rider comfort design than usual from Japan but this hardly qualifies them as radical or worthy of "best-ever" accolades!

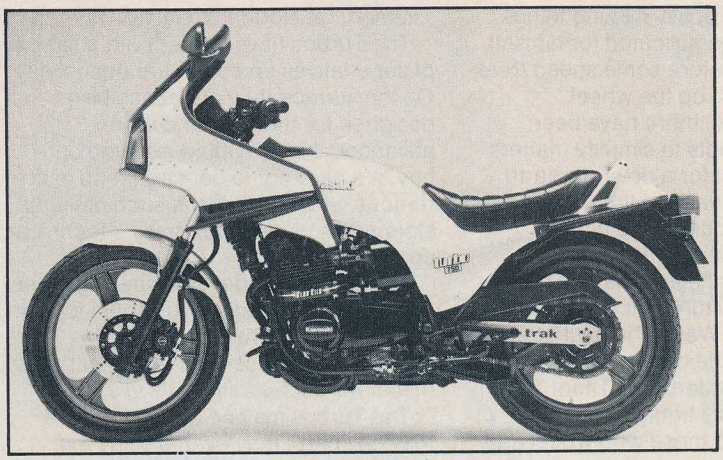
The table below compares the turbos with conventional top-of-the-line Japanese roadsters in two simple but significant areas — dry weight and approximate top speed. It not only supports the time-honoured dictum, "you can't beat cubes," but also demonstrates that the turbos are not only no faster, but are also no lighter than the simpler conventional bikes. What you have is very heavy medium capacity machines given the performance of the big-bores at the cost of simplicity and possibly reliability.

The demands of a turbo

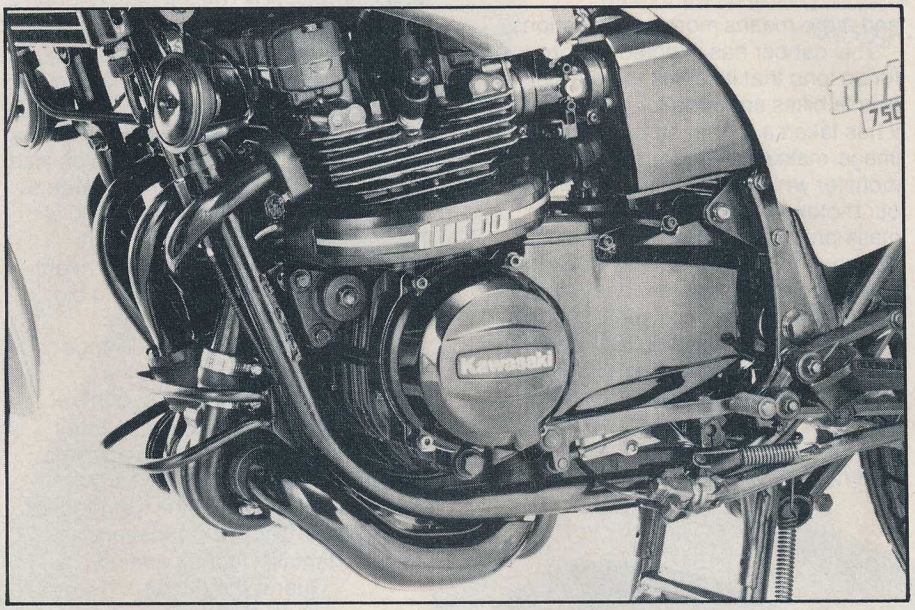
The life of a turbo engine is not easy (as many owners who have bought bolt-on kits and haven't done the full internal work before giving the bike a run, have found to their expense). Turbos need lots of inside work to be reliable. The idea of forced induction is not new. One of the main reasons why the vast majority of car and bike motors are still normally aspirated is simply that turbo motors are hard to sort out and make completely reliable.

To encompass the total turbo concept every part of a motor's internals should be bolstered — studs, rods, pistons, crankshaft, clutch, gears, improved oil flow and surge control, low compression, different timing requirements and really, to do it right, stronger crankcases.

Turbos were invented for one reason — performance. Forget the carefully worded "social conscience" bits about improved economy, additional safety, less pollution. When you dial on boost on a turbo it will vacuum your tank out quicker than Stephen Gall can quaff a container of Big M milk after a long, hot moto.



Kawasakis have been the popular choice for the majority of after-market turbo installations, but the company has been the least eager of the Big Four to join the scramble towards a production puffer.



What do turbos do?

Perform, that's what they do; give the rider heaps of Going Places feel. The Japanese turbos offer remarkable acceleration at moderate boost stretching to potent in the 100 km/h-plus bracket, a wide spread of boost power and the ability to reach maximum speed (and redline) quicker than most machines on the road. And the current designs will provide good manners to go with that performance.

However one must remember they are medium displacement bikes which are as heavy as the one litre superbikes with equal performance. To make an

TURBO COMPARISON

	Conventional						Turbos		
	HONDA CB1100R	HONDA CB900	KAWASAKI Z1100 shaft	KAWASAKI GPz1100	KAWASAKI Z1000J	KAWASAKI Z750	SUZUKI GSX1100	YAMAHA XJ650T	HONDA CX500T	KAWASAKI Z750T
Approx. weight (kg)	245	250	267	250	238	234	243	238	250	240
Approx. Top Speed (km/h)	235	220	217	225	220	205	230	220	210	230

Intergalactic GaspBlaster you must take a *big* engine and add a turbo. Which in all fairness to the small numbers of absolute raving loonies out there, is not something anyone in the industry or the press or the trade wants to see you take off the showroom floor.

So the Japanese have gone for a smaller engine. I think it is not small enough. The alternative to the heavy 500-800 cm^3 size is the 200-400 class where the new diminutive turbo units could do wonders.

The bikes

Whatever the consensus of the Four-Headed Bike Beast towards turbos and marketing, all four have stayed within the medium capacity. Honda led off the centre stage act with the CX500T, followed closely by Yamaha's XJ650L, then Suzuki with its GS650 turbo Katana look-alike and the only non-pretender so far, the Kawasaki Z750T which is unashamedly built for being illegal.

There are differences and similarities in the concepts. Shaft drive (Yamaha and Honda), enclosed chain (Suzuki) and chain (Kawasaki). Three have 19-inch front wheels while Suzuki went radical with 16-inch. The rear wheels are all 18-inch except for Honda's 17-inch. All have new wheel designs, nicely done but they have not gone the full hog and made them wide rims to suit current wide tyre technology.

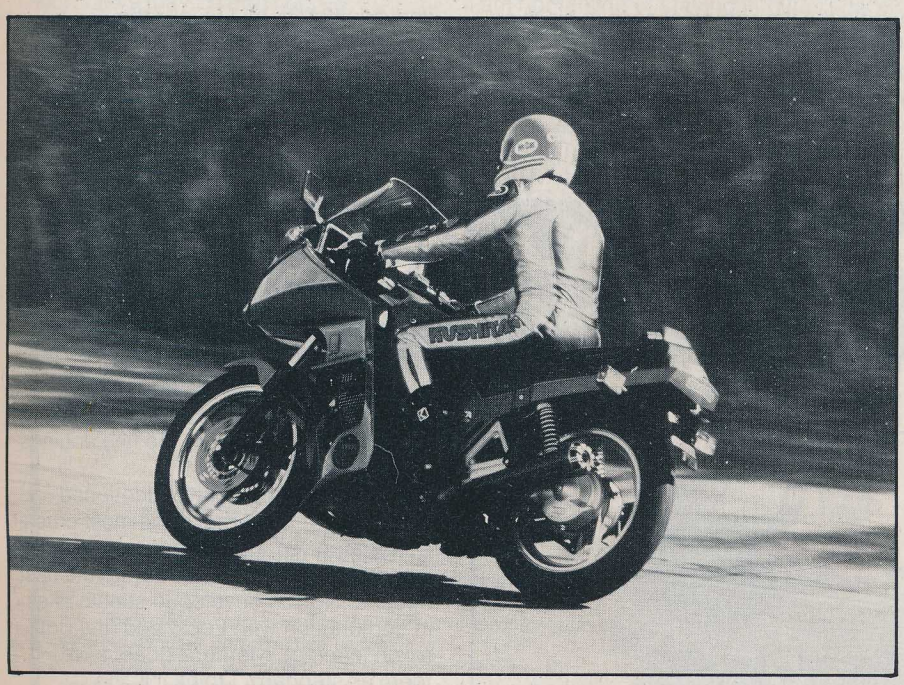
Three have fuel injection, the Yamaha and its four carbies being the odd one out. The same three have a version of their race-developed single shock rear suspension but Yamaha's old monoshock was impractical to include in the four-cylinder turbo design, so it gets two conventional adjustable rear units. The Suzuki and Kawasaki have anti-dive forks. Styled and integrated instruments and fairings help create the total package machine.

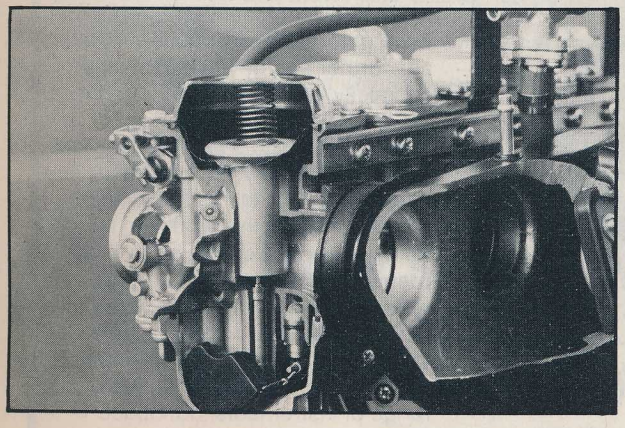
The turbos

While the previous bolt-on turbos were all derived from car and aircraft units and thus far too big for the small motorcycle engines (requiring near peak revs to get boost), the Japanese have done it again — three manufacturers have come up with the smallest turbo units seen. Real capital has gone into these and it is probable that IHI (Honda and Suzuki), Mitsubishi (Yamaha) and Hitachi (Kawasaki) units will be seen in alternatives if the turbo bikes do not sell well enough to amortise the cost of the investment.

The Honda is probably the most comprehensive design as a total package, highlighting its position as Number One and continuing the pressure on the rest. Yet each manufacturer took a differing route towards determining the optimum position of the turbo unit on the bike. Honda had it easy with the V-twin, slotting it between the two cylinders; Yamaha went low, placing the unit at the rear of the engine under the frame, a long way from the header pipes; Kawasaki has taken the opposite direction and fitted the unit as close to the exhaust ports as possible, right at the front of the engine necessitating extremely short headers indeed; Suzuki stayed conventional placing its unit in the space usually occupied by the bank of carbies at the rear of the cylinders.

Naturally all four designs will have made significant reductions in the common problem of "turbo lag," that pause after opening the throttle before the exhaust gases get the turbo spinning hard enough to affect power delivery — and conversely after closing the throttle, the time it takes for the "blow" of the exhaust gases to stop pushing the charge in.





Swoopy looks, moderate power increase, and novel answers to engineering questions are the characteristics of Yamaha's XJ650L. While everybody else has plunked for digital fuel injection, Yamaha has come up with pressurised carbs. The company could be hedging its bets on the future of turbos. Pressurised carbs cost a heap less in R&D than digital fuel injection . . .

Prices and alternatives

You will be required to pay anything from $4000 to $6000 for these special-edition models. You will also pay more for servicing and operating.

Or you could, if you put your money where your mouth is in terms of getting The Best, buy a secondhand or wrecked superbike, have the engine checked, then purchase a specialist frame such as a Rickman, Martin or Harris (I leave out the exotic Bimota/Eglis for these are ridiculously expensive), and have the bike built. So for anything from $5000 to $8000 (depending on the frame, expenditure on wreck etc.), you could have yourself a truly superb road machine and attention grabber!

For the same money and less you could always buy a "plain" one-litre muscle bike; you know — the normally-aspirated firebreathers, the ones that don't have to be forced to perform. Add a decent fairing and items of choice to personalise it and you have a reliable and truly potent bike.

TURBOS: Era or Error?

The wrong direction

I think turbos are the wrong direction for motorcycling. Like the four-valve-per-cylinder heads which have become fashionable, this spillover from racing is of dubious benefit to the street rider. Kawasaki thankfully has found that paring weight and retaining the two-valve design equals the same power, although marketing pressure will probably dictate four valves in the near future.

Likewise, when we rode the XZ550 watercooled V-twin in Japan it was lightish and nimble and fast but retained some of the quirky handling patterns we have come to expect from Japan. These frame movements were later verified by a computer on screen at the R&D section. The XJ650L also had weave characteristics in winds and across undulations in corners. So despite the "innovations" it is questionable whether the Japanese have changed their chassis designs or marketing rationale from that of the seventies — which was to build engines (which they are great at doing) and not worrying too much about the rest.

I respect the Japanese as businessmen, the merchants of motorcycling who have KO'd the rest of the world in volume sales (as in a myriad of other things). But I do not respect them as motorcyclists or complete designers. Innovation means inventing; it isn't just copying. It means seeing the whole the way an artist sees in his mind the finished picture and creates it — the turbos still carry the air of computer/group consensus finalisation.

I will change my tune when the Japanese concentrate on manufacturing bikes for riders and for real safety. The Katana was a start (and it was designed by a European) and the racing-only original CB1100R was okay.

I suggest the following as pre-requisites to achieve what I would see as the correct trend of motorcycle design:

Frames: It seems logical for the Japanese to take the Martin/Rickman/Harris or such specialist frames and make a decent mass production derivative of them. I favour the externally-triangulated frame but European specialists have many ideas; no doubt they will eventually get it right before the Japanese tackle the problem.

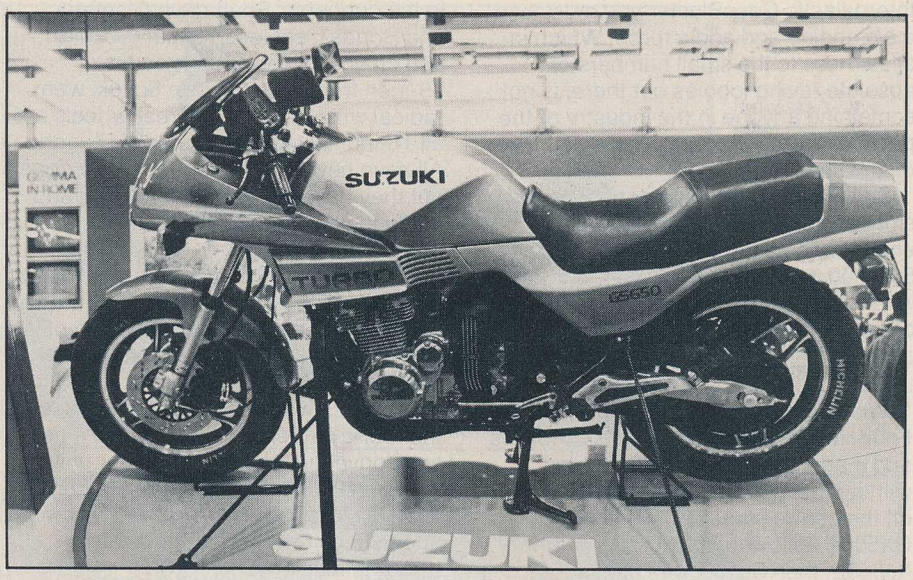
I suggest using proper metals, either chrome moly or large diameter thin-wall tubing for such frames. The market pays for chrome moly frames in MX and enduro models. Road enthusiasts will also be happy to pay.

Such frames would provide a light, stable and strong basis for the engines and, coupled with the improved suspension compliance and adjustability, would be a huge advance in getting the most from the fine engines already available.

Anti-skid brakes: I have mentioned these before as perhaps the most crucial new feature on mass produced (or limited production) bikes during the past decade. Norton developed such brakes in conjunction with Lockheed (the Brits again leading). Mercedes cars have them as standard. I think it is the responsibility of manufacturers to get them onto bikes immediately — before any further engine development or gimmicky instruments are introduced.

Can you imagine the impact of being able to grab fistfuls of brakes anytime — cold, hot, wet, dry, sandy — and know the wheels will not lock! The mind boggles at what this would do for safer riding, for novices through to experts.

Instrumentation: I keep harping on realistic instruments, ones which reflect the need to know what is going on inside, with a view to minimising damage (and thus operating costs). A practical range of instruments, not Space



Perhaps the most complete of the proddie-turbos, Suzuki's 650 offers stunning good looks, el tricko chassis and suspension work, and moderate performance. Okay, so why not a normally-aspirated 900 in the same layout?

The One That Started It All, Honda's CX500CT. For six grand, you can have the performance of a 350 off-boost, of a 900 on-boost, the weight of a 1000, the lines of a Michelangelo sculpture, superb suspension, and a feeling of owning something exclusive.

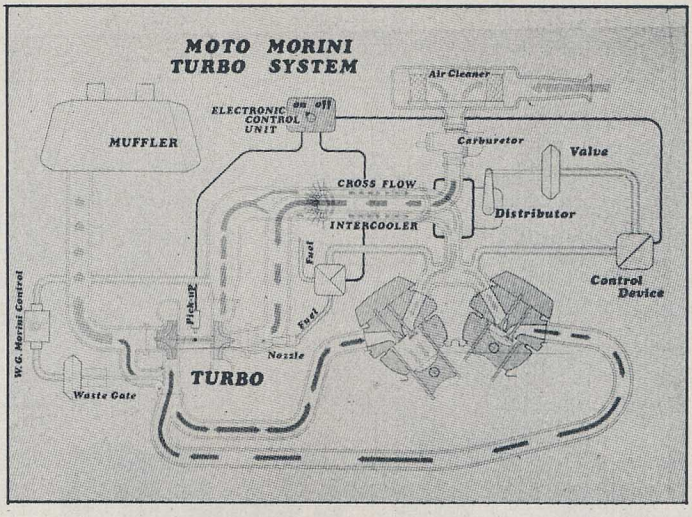
Invaders, is the go; head temperature, oil temp and separate oil pressure gauges, (also a decent oil cooler on Australian models), basic speedo and tacho.

Lighting: Another thing I am paranoid about. Poor lighting seems a modus operandi of manufacturers. I have never found a bike with adequate standard lighting for the conditions of our roads and the encounters of the animal kinds so common here. I suggest it appropriate that manufacturers study and improve the whole concept of lighting on high performance machines.

Graunch design: While not vital, the integrated fairing and cockpit is a sound idea. The design should consider what gets damaged in a slide down the road and at least some thought should be given to minimising this. The Katana for example comes up very well in slides along the asphalt.

The objective of sound design should include the areas of damage when a bike goes down, especially considering the lack of readily available replacement parts.

Such views may be considered reactionary. But the really important things in riding are weight, handling, suspension, brakes, frame and assorted ergonomic considerations including seat height and such. I don't think the Japanese are being innovative at all.



Theoretically, one of the most advanced turbo systems yet shown comes from Morini. Features like the air/air intercooler and the distributor which recycles the charge at low throttle openings (thus reducing compressor stall-out, and consequent "lag") are right out of four-wheeled Formula One. Pity is, it will probably never reach production.

Pure power is useless.

The proof of simplicity as a practical and desirable end is the vast distances that old fashioned push-rod BMW and Moto Guzzi twins can average without fatiguing the rider/pillion at high speeds. I am not talking of staying in hyperspace at timewarp velocity which the big multis can do, but which no rider can maintain. In other words human factors affect and control the top end touring averages and the simpler bikes do it easier than the exhausting multis.

In ten years Open Roading my fastest city to city trip ever was on a Guzzi 850T which had nowhere near the top end nor complexity of the then current superbikes, but which allowed steady, accurate, low-fatigue cruising in excess of 175 km/h.

When Japan implements the design considerations I have outlined to produce such riders' machines then I will become a Believer. In the meantime the turbos are not my idea of how to get a good blow job! *