

New Pontiac Grand Prix GXP gets PBR Performance

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Introduction



Grant Anderson
PBR International

Welcome to the latest edition of *On The Move*. As the 2004 year draws to a close we can reflect on what has been a very exciting and demanding year for PBR.

Overall, the automotive industry to which we supply in the USA, Australia, Europe, Thailand and Malaysia has been relatively buoyant with only recent softening due to the impact of elections and commodity prices. The Australian automotive industry is heading for record sales and increasing export opportunities for local vehicle manufacturers.

Recent new product launches during 2004 in the USA, Europe and Australia, with increased value content, along with additional projects coming on line from late 2005 through 2006, position PBR well in terms of volume growth.

Our focus on technology advancement has been a key element of business activities this year with the opening of our new

research centre and favourable responses to our by-wire park brake options known as ePark™.

In this latest edition of *On The Move*, we take a closer look at the ePark™ products, which were awarded the Gold Automotive Engineering Excellence Award by the SAE-A.

We catch a glimpse of the new PBR brake systems on the Pontiac Grand Prix GXP, Pontiac GTO and Holden Monaro as well as the new brake upgrade package developed for Holden by Design.

On the manufacturing front, we review the latest brake caliper assembly technology being installed at our Columbia facility in North America.

We hope you enjoy reading this latest issue.

Grant Anderson

More coupe grunts means bigger brakes

Holden's coupe platform which spawns the Monaro in Australia and the Pontiac GTO in North America has recently undergone a facelift for each of these models.

One of the most significant changes has been an increase in power for both vehicles with the GTO shifting up to a 6.0litre V8 engine capable of delivering 300kW and 530Nm of torque. Whilst the Monaro remains as a 5.7litre V8, power has increased to 260kW with 500Nm of torque.

In response to the increase in power, PBR was called in to develop a more aggressive brake package. The new Performance package is the same across both vehicles and focuses on a significant increase in front rotor sizing and a shift to vented rotors both front and rear. The inclusion of much larger disc pads using a performance based friction material completes the package.



The new VZ Monaro features a more aggressive PBR brake system.

"In response to the increase in power, PBR was called in to develop a more aggressive brake package."

Drive tests by local Australian magazines have talked up the new brake system on the Monaro and are more than happy with its response to the increase in power. And with comments like the following, we're more than happy with the result.

"Washing off speed isn't a problem, the larger improved braking package providing plenty of stopping power and feel through the pedal." – NRMA

New Pontiac Grand Prix GXP gets PBR Performance

Performance is what the hype was all about when Pontiac revealed its new Grand Prix GXP sedan at the California International Auto Show in Anaheim during October.

The new GXP will be the first Grand Prix to offer a V8 engine in almost 20 years when it goes on sale in the first quarter of 2005. The GXP's 5.3 litre, 290 horsepower, engine also features GM's "Displacement on Demand" technology which cuts off four cylinders during low-load conditions, improving fuel economy by as much as 12 percent.

"By developing the GXP's stopping power as complete corner modules PBR was able to maximise the brake system's performance."

There's no point having all that extra power, though, unless you have a brake system to match. So PBR developed and delivered racetrack inspired brake corner modules to provide enhanced stopping power, and great brake pedal feel, to deal with the mighty GXP performance.

The new Pontiac Grand Prix GXP has been fitted with a PBR High Performance brake package consisting of; high stiffness twin-piston alloy front calipers, on 323 x 32mm cross-drilled brake rotors, with performance disc pads installed both front and rear.

The rear corner modules also feature the unique PBR Banksia single-shoe drum-in-hat parking brake, that separates the park brake and service brake functions, to eliminate performance compromises in the rear disc service brakes. For aesthetic

appeal; all of the brake calipers are finished in PBR's distinctive Flame colour, complete with GXP logos on the front.

By developing the GXP's stopping power as complete corner modules PBR was able to maximise the brake system's performance.



Focused on road safety

In the brake business, safety is the bottom line. At PBR, Australia's only manufacturer of brake systems, we live and breathe safety every day of the year, so it was no surprise when we were recently invited to present at the SAE-A (Society of Automotive Engineers - Australasia) Road Safety seminar in September this year.

The seminar was conducted as an opportunity for like-minded industry groups to share information on the latest developments in regulations and trends in road and vehicle safety.

Safety information was shared to participants under the broad topics of; regulations and trends, sharing the roads

and new vehicle safety product development and included presentations by VicRoads, Transport Accident Commission, Bicycle Victoria and Ford Australia.

PBR provided the group with an update on safety developments in brake systems and future brake system technologies including the shift towards brake-by-wire.



Around the globe

TEAM ESTABLISHED FOR CHINESE PRODUCTION

PBR's parent company, Pacifica Group Limited, has recently appointed the key management team members for their new manufacturing venture in China. David Liu has been appointed as General Manager and Arthur Tu as Chief Financial Officer. Ross Bowra, previously from PBR, has been appointed as Manufacturing/Engineering Project Manager.

The new operation will consist of two facilities to be built in Dalian, in the North East of China. Already a major

automotive manufacturing centre and large seaport, Dalian is ideally placed to service domestic and international markets.

The first of the ventures is a machining, plating and sub-assembly operation which is due to be completed in early 2005. Export of product is due to commence in the second quarter of 2005. Work will commence on building the second operation, an iron foundry in Qtr 4 2005.

China's growth as an automotive manufacturer, and as a domestic market, has been spectacular. It currently manufactures 4 million vehicles per annum. Automotive industry estimates suggest that by 2007, China will supplant Japan as the world's second largest manufacturer and, by 2020, it will surpass North American production to become the world's biggest.

Electric park brakes win gold!

PBR's new brake-by-wire park brake systems, known as ePark™, are turning some heads in the industry at present. The ePark™ systems have just been awarded the Gold Automotive Engineering Excellence Award by the SAE-A (Society of Automotive Engineers – Australasia).

The judging panel declared that the provision of two variants provides maximum potential for application and tailoring for different vehicle manufacturers and the wants of their customers.

Since January this year a Ford Falcon fitted with the new systems has been touring Europe, the United States and Japan demonstrating the new technologies to vehicle manufacturers. The feedback has been exceptional with ePark™ being acknowledged as the lightest, quietest and most responsive system currently available in the market.

Stefan Anger (right) accepts the award on PBR's behalf.



Latest assembly technology for Columbia

Producing reliable braking systems day after day demands a focussed investment in the very latest production technology. At PBR, the responsibility for keeping the organisation at the cutting edge of manufacturing technology is vested in its sister company, Pacifica Group Technologies (PGT).

PGT has developed the vast majority of PBR's global production processes, with the latest being a series of machines that can

efficiently assemble any one of five different types of brake caliper. These latest assembly lines have been installed in PBR's plant in Columbia, North America, where they produce calipers for the Chrysler 300, Ford Freestyle and Ford 500.

In line with PBR's zero defects policy the new assembly lines have been equipped to perform a broad range of validation and outcome verification checks on finished assemblies. Validation testing on brake calipers includes measurement for bolt torque, high pressure leak testing and residual drag.

PBR is unique in that it is one of only a handful of brake caliper manufacturers to test every caliper for residual drag as it comes off the assembly line. Bruce Henshall, PGT Assembly Technology Development Manager, explains,

“PBR is unique in that it is one of only a handful of brake caliper manufacturers to test every caliper for residual drag as it comes off the assembly line.”

“This is essential to confirming that both our assembly and machining processes are correct.”

The new assembly lines also managed to catch the judge's eye for the inaugural PACE Zenith awards earlier this year, where they were nominated as a finalist. The PACE Zenith awards are awarded for leadership in engineering and technological excellence and innovation.





Product spotlight

PBR'S ePARK TECHNOLOGY IMPRESSES VEHICLE MANUFACTURERS

In December 2004 PBR International's ePark™ technology demonstration vehicle will return to Australia after having spent 12 months abroad showcasing the latest by-wire park brake technology to over twenty of the world's leading vehicle manufacturers.

But before the vehicle even has its wheels settled back on home soil, the tour has raised some smiles for the PBR management team. Hardly surprising given that virtually every demonstration has been met with nods of approval from vehicle engineers.

By-wire technology applied to park brakes is not new. An increasing number of luxury vehicles, particularly in Europe, have an electronically actuated park brake fitted. Most of the key brake manufacturers around the world have either developed or are developing a version of this technology.

PBR has taken by-wire park brake technology to the next level by developing three variations of its ePark™ system.

"PBR is the first brake company to offer by-wire park brake solutions that will accommodate all of the vehicle manufacturer's fitment options."

Conventional park brakes are fitted to the vehicle as either a drum-in-hat configuration – where the park brake operates inside the rear disc rotor – or an integral caliper configuration – where the park brake mechanism is an integrated part of the rear brake caliper. In each case the park brake is actuated by a cable system connected to a hand brake lever inside the cabin.

PBR is the first brake company to offer by-wire park brake solutions that will accommodate all of the vehicle manufacturer's fitment options.

With ePark™ fitted as an ePB (electric Park Brake) for drum-in-hat configurations, the park brake is applied by sending an electronic signal to PBR's patented actuator mechanism, which is fixed to the rear axle. The actuator mechanism then applies load to the axle cable which engages the park brake. For light commercial trucks or other heavy duty applications, this configuration is also available with a load intensifier fitted.

The alternative fitment for integral rear calipers is to install PBR's ePBHC (electric Park Brake Hydraulic Caliper). In this instance a small actuator mechanism is fitted



Above: PBR's electric actuator for integral rear caliper configurations is arguably the smallest unit available today.

Left: PBR's electric actuator for drum-in-hat configurations is small, fast and quiet.



elimination of unnecessary cabling simplifies the vehicle assembly process.

Because the overall system weight of a by-wire park brake system is less than conventional park brakes it can assist in improving fuel economy and lowering fuel emissions.

PBR's ePark™ systems also facilitate a range of additional features which can be tailored to suit vehicle manufacturer's needs. The introduction of drive-away assist and auto-apply helps protect the driver from potentially dangerous situations. The anti-theft option ensures that the applied park brake cannot be released during incidences of unauthorised vehicle entry.

After-sales park brake service costs are also reduced because regular adjustment of cable slack is no longer required and the process of changing brake shoes in service is simplified.

The ePark™ systems were developed at an Australian purpose-built by-wire development facility known as RABiT (Research centre for Advanced By-Wire Technology). The utilisation of unique vehicle simulation software in this environment has enabled more advanced solutions to be developed in a much shorter timeframe than many of PBR's competitors.

In addition to PBR's demonstrator vehicle, ePark™ technology has appeared on the two Axxess Australia concept vehicles, Holden's eCommodore concept vehicle and more recently on Toyota Australia's Sportivo Coupe concept vehicle.

to the rear of the caliper. The park brake is applied by sending an electronic signal to the actuator mechanism, which then applies the disc pads to the brake disc rotor.

All PBR ePark™ systems are designed to communicate directly with the vehicle's controller area network (CAN) which facilitates ongoing monitoring and feedback of the system's performance. The CAN link also enables dialogue with other vehicle systems which increases the level of features able to be offered by ePark™.

During recent product demonstrations with vehicle manufacturers in Europe and North America the PBR ePark™ systems were praised as being the lightest, quietest and most responsive by-wire park brake systems currently available in the market.

In many ways by-wire park brake applications are the forerunners to full brake-by-wire, which will ultimately see brake hydraulic systems made redundant. However, by-wire park brakes offer enormous advantages to both vehicle manufacturers and vehicle owners that can be realised immediately.

The removal of the park brake lever creates endless opportunities for designers to more effectively utilise console space, whilst the

Brake upgrades by design



The Holden by Design (HBD) team have just released a Performance brake upgrade package as an accessory option for VT-VYII series vehicles and the V8s from the VZ series vehicles.

The sales and marketing team at HBD is excited by the prospects for this new addition at a time when increasing numbers of new vehicle owners are enquiring about options for brake upgrades.

PBR has developed the new brake package

which includes a shift to larger slotted disc rotors, larger front calipers and performance friction material. For drivers who have a more aggressive driving style or regularly tow heavy loads, the new brake package offers improvements in pedal feel, reduction in brake fade and significantly reduced stopping distances.

The release of this new package is yet another example of PBR's ongoing expansion into the performance brake market.



Oz industry update

With the October sales figures locked away the likelihood of an Australian auto industry record year is all but guaranteed.

The Federal Chamber of Automotive Industries expectation of 960,000 vehicle sales by year end now looks pretty close to the mark following a record 81,667 vehicles sold in October, 3.1 per cent up on the same month last year.

For 17 of the last 18 months the Australian automotive industry has enjoyed record

sales with year to date sales up 4.8 percent on 2003.

Last year's sales record of 909,811 will be swamped largely as a result of booming sales in the four-wheel-drive, luxury car and light commercial vehicle categories.

Medium SUV sales for October were up 73.7 percent on 2003 increasing year to date figures to 59.2 per cent over last year. Much of this growth can be attributed to the local release of Ford Australia's Territory

model which seems to have helped stimulate interest in the category.

The general strength of the Australian economy is the other key factor. This is reflected in the Prestige car segment where sales are up 8,308 or 36.6 percent for the year to date over the same period last year.

And who is leading the race for brand supremacy? Year to date at the end of October has Toyota ahead of Holden by 18,833 sales.

Adding value to brake service

As the service environment becomes increasingly cluttered with brands and product options it is important to maintain a clear understanding of what the customer really needs.

PBR's Aftermarket business is driven by this philosophy – where the brand promise is; *to add value to people's businesses.*

A recent review of PBR's Australian Aftermarket brake caliper range in line with customer needs has led to the introduction of a new product line designed to optimise service flexibility and save time whilst retaining OE quality levels.

PBR's Aftermarket caliper range now consists of three options:

Piston Housings – which consist of factory assembled and tested caliper bodies complete with pistons and seals.

Padless Calipers – which are a complete new caliper assembly without the disc pads.

Loaded Calipers – which are a complete new caliper assembly including OE quality disc pads.

The new range will assist businesses that want to avoid the time-consuming practice of overhauling brake calipers using caliper repair kits. This will result in time saving and improve quality through using factory assembled and tested units.

