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DIESEL TORQUE

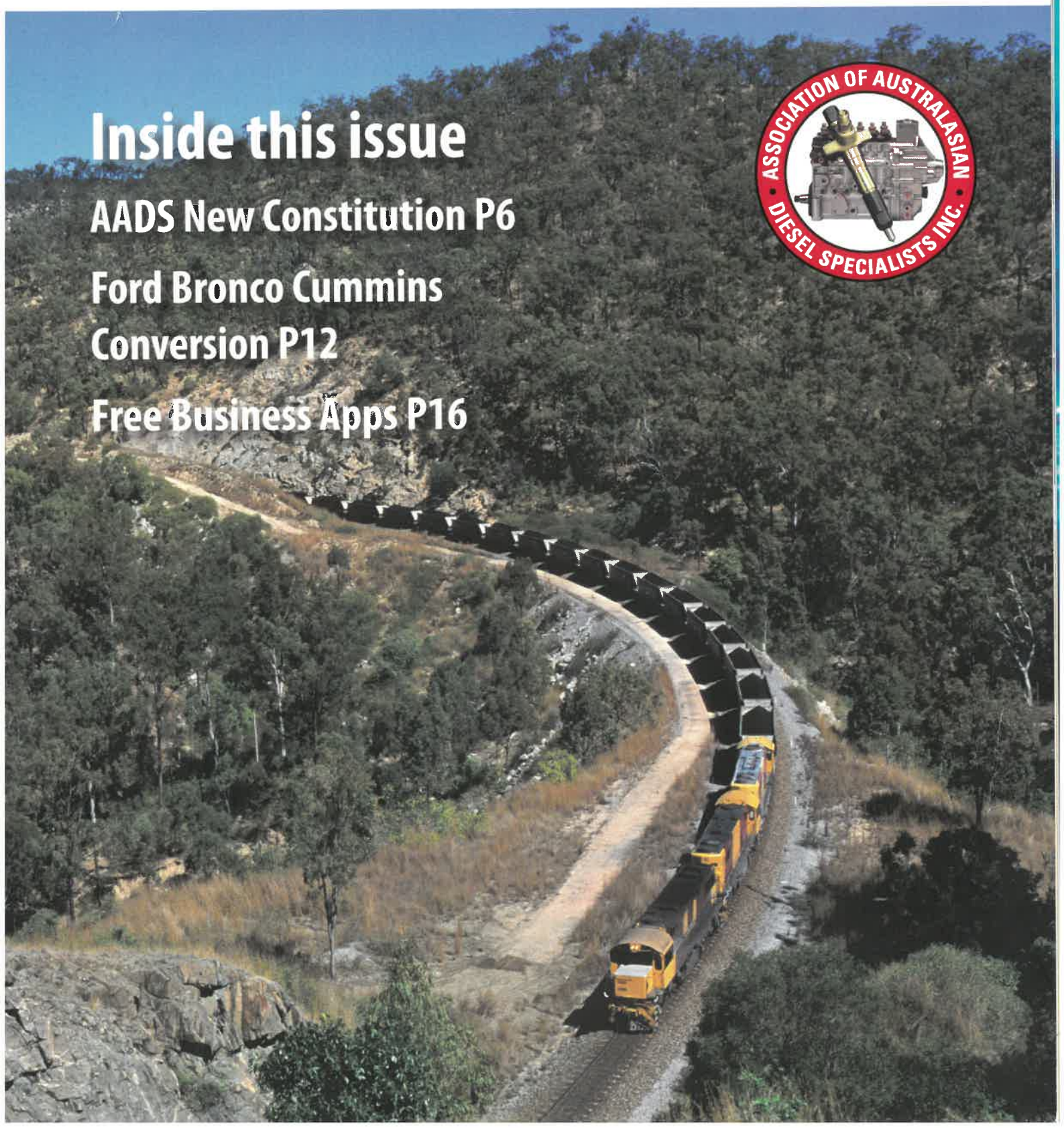
OFFICIAL MAGAZINE OF THE ASSOCIATION OF AUSTRALASIAN DIESEL SPECIALISTS INC. (AADS)

Inside this issue

AADS New Constitution P6

**Ford Bronco Cummins
Conversion P12**

Free Business Apps P16





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Contents



President's Report	4
AADS Conference 2013	5
AADS New Constitution.....	6
Letters to the Editor.....	8
Ford Bronco Cummins Conversion	12
Branch Reports.....	14
Free Business Apps	16
AADS Code of Conduct.....	17
Technical Help Desk	18

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PRESIDENT'S REPORT

President's Report



The Gold Coast in March for our Convention is building to be a great weekend. The team are putting together a great range of speaker and activities, so please make sure you have the dates set aside in your diary now.

You will all know we held a special General Meeting in November to vote on the new constitution. The first meeting we didn't quite get a quorum so it was put off for a week as per the constitution and on the following week a further Special General Meeting was held. We needed a lesser number for the quorum this time so the meeting went ahead. At this meeting the constitution was voted in and has now become our new set of rules to work to. I know it has taken a long time to get this completed and I would like to thank Francis and the Board for their support over this period. I am sure they all got sick of me asking questions and then pushing to get this finished.

We are now working towards a policy for apprentice training with TAFE. This has been very difficult to get people all on the same page. We are heading down the right track I feel and I would like to think we will have something in place by March. On this matter we have asked the New Zealand Branch if they can provide some of their training details to help what is happening in Australia. Of course you must always remember that NSW will need something different.

I would like to wish all members and their families a happy holiday season and we all look forward to a great New Year.

Mike Hurley
AADS President

DIESEL TORQUE

OFFICIAL MAGAZINE OF THE ASSOCIATION OF AUSTRALASIAN DIESEL SPECIALISTS INC. (AADS)

Editorials Required

Diesel Torque is your magazine. Currently most articles are submitted by your respective State Chairmen and members of the National Committee.

We would encourage the members to submit any articles of interest that everyone would enjoy reading. It does not necessarily have to be technical, diesel or turbo oriented. We are looking for articles of interest across the board to all who read our magazine. Write an article of interest, find an article that you think would help others and submit it to your State Chairman for publication.

- All submissions can be sent to the following email address
aads@aads.com.au
- All pictures should be sent separate from text, preferably in jpg format and all articles written in Word.
Do not embed images into the word document.

Help yourselves to your own magazine and think how you can contribute to make it something that is of interest to your fellow members. This is your association, make it a success. We look forward to receiving your contribution for the next publication.

**Help Yourself,
It's Yours.**





Surfers Paradise
Marriott Resort
& Spa
QLD, Australia



Don't forget to save the date for the AADS 2013 Conference. Come along and be part of this major industry event from 14 – 17 March 2013 which is being held at the Surfers Paradise Marriott Resort and Spa on the Gold Coast, Queensland.

Proceedings will get underway with a social program, golf and fishing on Thursday 14 March 2013 and the day will round off with drinks at the bar.

Over the two days of conference, there will be presentations from industry leaders, a number of dealer meetings, as well as a 'Think Tank' session to consider the future direction of the AADS. This will also be an opportunity to meet your colleagues, hear what is happening, mingle with your peers – and even make some new friends within the industry! You will also be able to see the latest equipment from manufacturers and other technical suppliers at the exhibition that will be held during the conference.

The social function highlight will be the Conference Dinner on Saturday 16 March 2013, where you can wine and dine the night away.

The conference will conclude with brunch and a final keynote speaker on Sunday 17 March 2013.

If you have any queries regarding the conference and/or exhibition, please contact Daniel Evans at the AADS 2013 Conference Secretariat on Tel +61 2 9431 8600 or email aadsconf@theassociationspecialists.com.au.

Check the website for
updated information
www.aads.com.au





AADS has a New Constitution

The association has been considering moving to a new constitution for a number of years now. This has taken up a considerable amount of time by the Committee and legal fees to reach the point where a new constitution has been drafted, considered and has now been approved.

The association had not registered an amendment to its constitution with the New South Wales Department of Fair Trading since 1994. The New South Wales *Associations Incorporation Act 2009* requires the constitutions of all associations registered in New South Wales to comply with the requirements of the Act. It was suggested by NSW Fair Trading in a letter to AADS in 2011 that it should consider “whether it is appropriate to adopt a new constitution as opposed to amending the constitution”.

There are a couple of changes to the provisions in the constitution. Outlined below are the key issues to be aware of in the constitution.

Membership

The categories of membership have been simplified. A table outlining the categories, criteria and rights of voting are below. All members of the association must also abide by the Code of Conduct. These membership categories will form the basis for membership renewals for the 2013-14 financial year.

MEMBERSHIP CATEGORY	MEMBERSHIP CRITERIA	RIGHTS AND VOTING	DIESEL TORQUE	SERVICE PLIERS
Service Member	Any person who primarily carries on the business of the repair of diesel fuel injection (dfi) or turbo-chargers or allied ancillary equipment	Each member has one vote at a general meeting of the association and one vote at a Branch meeting of the association only if the member has a business located in the State or Territory governed by that Branch.	YES	YES
Manufacturing, Marketing and Distribution Member	Any person involved with any of the following: (i) the manufacture of dfi and turbocharger parts; or (ii) the manufacture of diesel engine parts and/or allied ancillary equipment; or (iii) the distribution or sale of parts for dfi, turbo-chargers, diesel engines and/or allied ancillary equipment	Each member has one vote at a general meeting of the association and one vote at a Branch meeting of the association only if the member has a business located in the State or Territory governed by that Branch.	YES	NO
Affiliate member	Any person who is working in the dfi or turbo-charger industry or any person who has an interest in the diesel vehicle industry	Has no right to vote but is entitled to receive notice of and to attend general meetings of the association.	YES	NO
Honorary Life Member	Any person admitted by the committee as an Honorary Life Member in recognition of exemplary service given to the association and its members	Continues with rights consistent with their original membership category. Can vote at a Branch meeting at the Branch in the State where the member lives.	YES	depends on original membership category
Honorary Member	Any person admitted by the committee who has given service to or contributed to the recognition and status of the association and its members	Has the right to attend general meetings but will have will not be able to vote at meetings or be appointed as a committee member.	YES	NO

National Committee

The committee is to consist of a maximum number of 10 members comprising:

- The Office-Bearers of the Association
- President
- Vice President
- Treasurer
- Secretary or Executive Officer
- Public Officer

At least 5 ordinary committee members to be elected by postal ballot prior to the annual general meeting of the association. Branch Chairs are encouraged to nominate themselves for election to the committee but are not obliged to do so.

Bylaws

There are three bylaws which are part of the Constitution. The first deals with the Branches – their establishment and operation, the second is the Member Code of Conduct and the third is the Repair Classification Code System.


The constitution has now been registered with NSW Fair Trading and is available in the members only section of the website if you would like to look at the specific clauses.




Change of email address aads@aads.com.au

In order to more closely link to the address of the AADS website, a new email address has been created for the Association. The email address is now aads@aads.com.au. The old email address will continue to be recognised and forwarded to the new address so there shouldn't be any lost emails.

Could you please update your records to show the new address.



Member Association of Diesel Specialists



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DEAR EDITOR

LETTERS TO THE EDITOR



Do You Really Know What You Have Done?

Keith Jurgs, *Honorary Life Member*

The Board held a meeting on 25th February 2012 at which the Public Officer reported that he had discussed with the lawyers (Holman Webb) a proposal to use the Department's model constitution as the basis of a new constitution genuinely believing that it would result in a less complex, more effective and easier to read constitution. Whilst the resultant constitution was subjected to a postal ballot and duly declared adopted, how many members are as confounded as I am with how the lawyers constructed the new constitution and managed to overlook so many errors and anomalies that are evident in it? As a matter of fact, I personally found that the new constitution (not only lacks substance and guidelines in several areas) is confusing, hard to follow and more difficult to understand than any constitution that I have been involved with over the past 38 years.

During his report the Public Officer advised that the lawyers had identified sixteen (16) points in the model constitution that the Board may wish to review and change. After discussing the clauses identified by the lawyers, the Board decided that some needed to be modified and/or altered and their decisions on each of the points were then sent on to the lawyers together with instructions to proceed with the drafting of a new constitution. After having read through the details of the discussions that had been recorded of that meeting and the "Annexure A" that was eventually submitted by the lawyers, the new constitution is obviously a mixture of parts taken from the 1994 constitution and then inserted into a modified version of the Department's model constitution.

However, there is no mention in the discussions held at the above meeting about which particular rules and/or parts were to be taken out of the 1994 constitution and

inserted into relevant places in the new constitution. **It would be of interest to know when the decision was made for this to be done or by whom?** We know that the lawyers must have been instructed to include them because clause 1.4 and by-law 2 and by-law 3 are actual extracts from the 1994 constitution.

Rather than compiling a list of the errors and anomalies that I found whilst reading through the new constitution, there are several major issues that need to be brought to the attention of the Board:

1. In clause 1.4, why wasn't the opportunity taken to update and modernise the objects of the association? Surely someone should have realised that the objects of the association (originally written way back in 1976) would need to be revised after all these years and take into account the effect that technology has had on them.
2. Clause 2.4(b) only provides for **the manufacture or distribution or sale of parts not the actual manufacturer** of dfe, turbochargers, diesel engines, etc. According to the new constitution as it is written, it implies that the likes of Bosch, Delphi, etc. will no longer be allowed to be AADS members anymore? **Why?** During all of the years since it was founded, the manufacturers have been supportive members of AADS through their sponsorship of functions at conventions, mounting exhibits of their products, giving talks on trends within the industry and basically have always been **supporters not detractors**. Are certain persons who were behind the development of this new constitution actually scared of the involvement of the manufacturers?
3. Since its inauguration in March 1976, all AADS constitutions (including those prior to and after incorporation) have clearly stipulated that AADS is to be run by **service members for the benefit of the servicing sector**. However, that may no longer be the case, because according to clause 16.7 of the new constitution **any** financial member of AADS can nominate for a position on the committee.

When you actually analyse the wording of clause 16.7, it actually implies that AADS could well end up no longer being controlled, managed and run by service members. In addition, there is a distinct possibility that AADS could finish up being run by a majority of members from one area. **Is this what members want to happen?**

4. Early in 2008 the Board terminated the services that had been provided from 1987 until then by an executive officer. The Board then appointed and began using the services of a secretariat called Australian Professional Centre (APC) that has since changed its name to "the Association Specialists". For some unknown reason there is **no mention anywhere in the new constitution** about the services of "the Association Specialists" being retained as the secretariat for the management of AADS, consultants and organising AADS conventions. **Why?** Have their services been terminated?
5. Why wasn't provision made in clause 21 for committee meetings to use technology to hold its meetings? By using video conferencing or teleconferencing to hold its meetings, it would save the cost of airfare, accommodation and other expenses that arise when face to face meetings are held.
6. No provision has been made to admit into membership personnel who don't need any DFIE servicing facilities but are qualified and proficient in the use of on-vehicle test equipment to diagnose faults in electronic DFIE and engine control systems that may only need a faulty part or unit to be replaced to rectify a problem. **Why?** On-vehicle diagnosticians will be playing an ever increasing role in the diesel service industry in the years ahead so why not have them on board as members?
7. The manner in which Appendix B and By-Laws 1 and 2 have been set out at the end of the constitution certainly gives the impression that they are clauses that were overlooked and have been added as an afterthought.

What you really have done though in adopting the new constitution is that you have:

1. virtually "signed a contract without reading the fine print". Members need to be aware that a constitution is a contract between an association and its members who agree to adhere to the provisions outlined in the constitution,

2. adopted a mishmash of 27 Rules plus Schedule 4 extracted from the 1994 constitution and the use of 125 clauses taken verbatim from the Department's model constitution plus Schedule 3 of the Regulations,
3. not acknowledged that the use of diagnostics for on-vehicle testing of electronic DFIE and engine control systems has already emerged as a growth industry,
4. as the saying goes "you have made your bed so now you will have to lie in it" and
5. succeeded in ensuring that AADS will now take its first step backward since 1976.

Now is the time for all genuine members to "stand up and be counted", express their opinion on all of the above issues and whether or not the new constitution will re-energise AADS as proposed. **Therefore, it is very important for all members to attend the next meeting of their branch**, make sure that the above issues and the new constitution are tabled and fully discussed at the meeting, **do not be afraid to express your personal opinion on each of the issues** and for the meeting as a whole to come up with a consensus of opinion as to what your branch recommends being done to rectify or overcome each and every one of the above issues and the errors and anomalies that do exist in the constitution. Your branch chair should then be instructed to table your branch's decisions at the next meeting of the Board.

The claim that the 1994 constitution had become unworkable due to its complexity and changes in the industry occurring since 1993 cannot really be substantiated by known facts. For example, amendments were made to the 1994 constitution in 2003 and adopted but never registered. At that point in time (September 2003) the members had obviously decided that, by adopting the amended constitution, provision was being made for the foreseeable future needs of the association.

In conclusion, over the years I have always endeavoured to keep an eye and open mind on AADS affairs but I doubt if this new constitution is going to encourage ex-members to rejoin or to be an incentive for anyone to become a member. In the short term, AADS could find itself approaching a "fork in the road ahead" and, depending on which fork it decides to take, AADS may well end up going down the same road that the Institute of Diesel Engineers did some years ago.

The New Constitution

Mick Rankin, *Honorary Life Member*

I understand that Keith Jurgs has submitted an article to be published in the next issue of Diesel Torque regarding the recent adoption of a new constitution for AADS and, like him, I am an honorary life member and still maintain an interest in the association's affairs.

Early in 2009, some members of the Board thought that the constitution needed to be completely changed and a lot of association funds have since been spent on legal fees in several attempts to amend and update the constitution that was last officially amended in 1994. I acknowledge that as time passed and new technology was introduced into the diesel fuel injection and turbocharger industries, some updating of the constitution did become necessary. However, to replace a constitution that served the AADS so well for many years, instead of making a few well considered changes and/or amendments that would serve the membership well into the future, AADS is now stuck with a constitution that is so full of errors that it may well send the Association into oblivion.

Other areas that are of concern are the lack of support by the service members in running the association, especially some of the Branch chairmen and their committees who are not providing any input at all for members overall by way of quarterly branch reports in Diesel Torque about what is happening at their branches. In addition, the revamped magazine (Diesel Torque) is a shadow of the original magazine and does not provide AADS members with any content at all relevant to the ongoing happenings of AADS or the FIE industry and its members. There is no contribution from the DFIE and turbo-charging manufacturers to keep members up-to-date with the changes that are taking place at a rapid rate and it will not be long before the smaller shops are left behind, as it was before AADS was originally formed.

When AADS was originally formed by Keith Jurgs and a few like-minded DFIE service shops in NSW, it was with the firm idea that it would be run by the service repair business owners for the purpose of exchanging ideas, provide each other with technical support and helping each other to source spare parts that at that time were extremely difficult to obtain. As we all now know, over the years the need for such intershop support has diminished due to some of the foundation members having passed on or retired and the new generation of service shop operators do not seem to think that they need the support of their fellow specialists anymore.

The association will only regain the status that it once held if it had a similar constitution to the one that was just rescinded and some of the current service members could show the same dedication, initiative and vision held by 4 strong advocates who have passed away (John Meredith, Arthur Walz, Tom Beesley and Lance Hosking) and 4 surviving members Keith Jurgs, Dennis Harper, Don Wilkey and myself.

FUEL INJECTION FOR THE BODY AND SOUL

Leonie's Ham & Cheese Lasagne



Instead of normal lasagne, try a little divine fattening but delicious Ham and Cheese lasagne.

You may want to put this recipe aside and try it with left over Christmas ham.

INGREDIENTS

2 cups chopped good quality ham
1 cup chopped shallots
1/2 cup finely chopped onion
1 1/2 round blue vein, similar amount of tasty cheese

METHOD

Make béchamel sauce and melt the cheese into it over a very low heat.

Layer as you would with lasagne sheets, ham shallots and onion, béchamel, repeat, sprinkle parmesan on top and bake for 1.4 hours on 160C. Stand 10 mins to set.

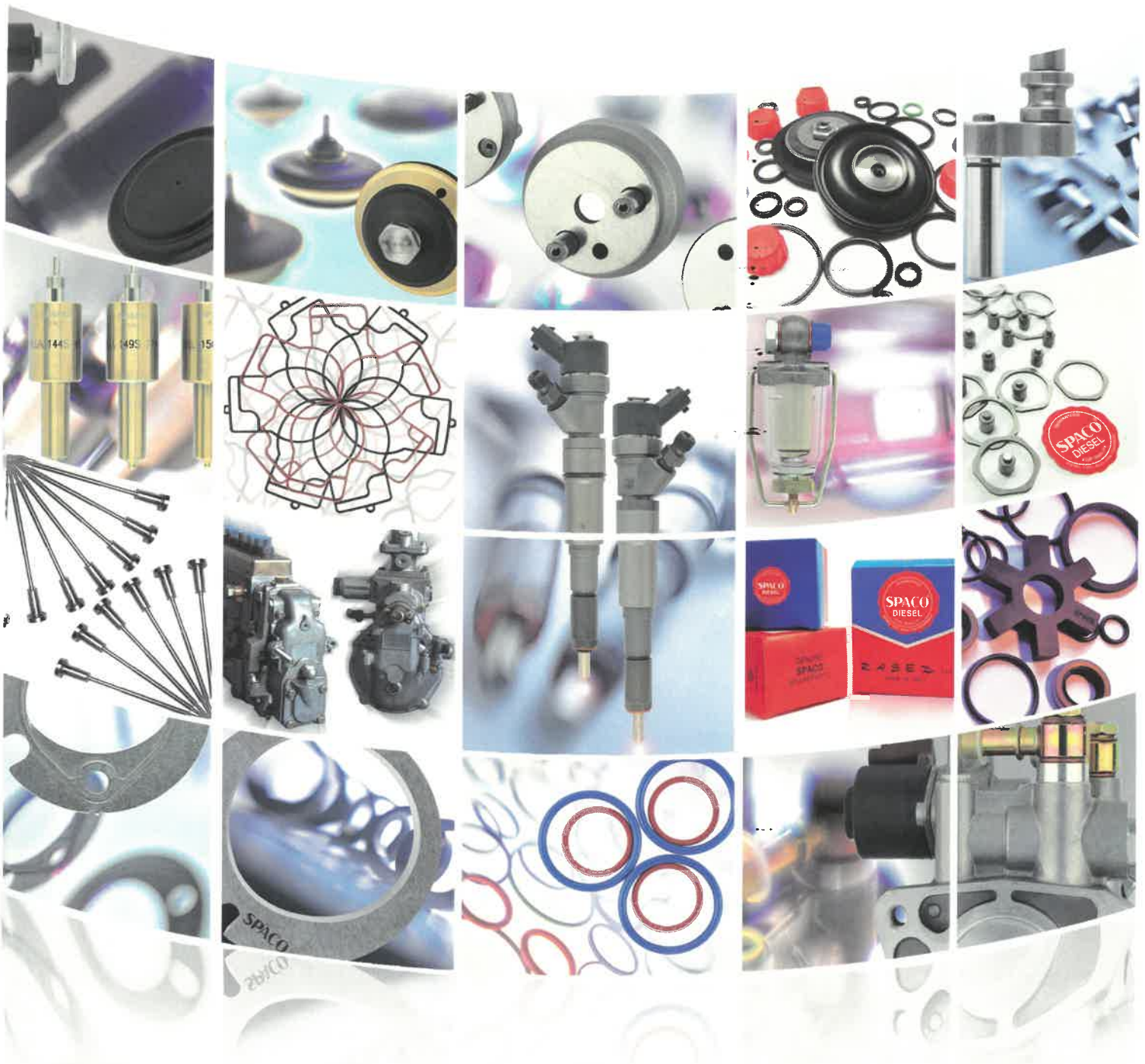
Serve with lightly dressed salad.

Of course with all recipes, if you can think of something that may enhance the dish, like mushrooms etc...lash out and do it!

Remember, eating is not your enemy...eating too much is!! Merry Christmas!

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GOS Performance's Ford Bronco Cummins Conversion

Ryan Harris



Some swap projects are a little cliché. But getting a 12-valve Cummins to fit into a 1996 Ford Bronco? Now we have something unique.

Jerry Schmidt opened GOS Racing and Performance in 1994. Jerry says "It grew to a point where I was ready to step aside. Aden McDonnell and his family were customers of ours and heard I was going to sell. Because they were such good customers and friends, I made them an offer they couldn't refuse."

Aden came to Washington before he took over GOS, and saw Jerry's new 2005 F350 Harley Davidson truck. Jerry says "he liked my truck so much that he bought one when he got back to Montana. Months later he was complaining about how much work it was to keep the Harley truck clean and was thinking about getting rid of it. I suggested he look for a 99.5 Ford with a 7.3 and put a Cummins in it, the rest is history. He hated me for a while when he did the first conversion, but still has the 99.5 F250 with a Common Rail.

That set the stage for GOS Performance to become one of the premier Cummins swap shops in the industry.

Having done close to 20 conversions, Jerry suggested something different to Aden. His idea was to put a Cummins in a full-size Ford Bronco. Aden liked the idea, and they both thought it would be a fun challenge.

The two established some guidelines for the unique project. "First, it had to be a P-pump 12-valve," said Jerry. "It needed an automatic transmission. We wanted it to make at least 500 rear-wheel horsepower. And we had to complete the conversion in less than three weeks."

That's just what the power train had to do. The Bronco also had some strict guidelines. It had to be a 1996 model year, which was the last production year of the full-size Bronco. The pair wanted it to be straight and clean without any need for body repair, paint work or upholstery. They also wanted to find a Bronco with less than 100,000 miles on it.

Jerry says it took nearly two years to find the right Bronco that fit that bill. He found one in Boise, Idaho. Jerry called a friend in Caldwell who manages the Les Schwab tire store and had him

inspect the Bronco. It met the criteria, so his friend picked up the Bronco and took it back to the tire store where they installed a 4-inch Tuff Country lift kit along with new 16-inch Weld wheels and 32-inch tires.

"It needed an automatic transmission. We wanted it to make at least 500 rear-wheel horsepower. And we had to complete the conversion in less than three weeks."

Automatic Transmission Specialists in Livingston Montana built the trans using a Sun Coast Extreme kit, a 4-pinion planetary and a Transgo Tugger kit. The converter is from Idaho Transmission; it's a billet triple-clutch, low-stall converter.

When the Bronco arrived in Washington, Aden and Jerry started planning the conversion and assembling parts and pieces. They used Quad mounts for the motor. Those plus the A/C mounts and alternator mounts came from Auto World in Kalispell, Montana.

The engine adapter came from De-Stroke. The transmission is an E4OD from a 1996 F350 Power Stroke. Jerry says they went this route since it has a bigger bell housing so they could use a larger converter.

The transfer case is an electric-shift 1325 BW. They shortened the rear drive shaft and lengthened the front drive shaft because the transmission was moved back about two inches. New u-joints were installed on both shafts before being installed.

Automatic Transmission Specialists in Livingston Montana built the trans using a Sun Coast Extreme kit, a 4-pinion planetary and a Transgo Tugger kit. The converter is from Idaho Transmission; it's a billet triple-clutch, low-stall converter.

The P7100 has been flow matched and balanced at 490cc. Internals on the pump include a number 6 plate that is custom ground. It also has 4,500-rpm governor springs and 191 laser-cut delivery valves.

The injectors are Dynamite Diesel Performance's 80 hp sticks and the timing is set at 17.5 degrees.

The donor motor only had 82,000 miles on it, so all Jerry and Aden did was a complete reseal job from top to bottom and front to rear. The transfer case was rebuilt. The front end was completely rebuilt including the brakes. The rear end had an Eaton TruTrac differential installed.

Under the hood, Jerry and Aden used an ATS three-piece manifold which was mounted upside-down to allow for more clearance. The manifold was machined to allow the turbo to be clocked for better angles on the intercooler tubes.

Because the No. 6 valve cover sits so close to the firewall/cowl you can't get the cover off for valve adjustment. The typical solution would be to notch the firewall. Jerry thought this was a bit crude, so he came up with the idea of machining off the top off the valve cover and using dowel pins to keep it aligned when installing.

The turbo Jerry and Aden used is an Industrial Injection Phat Shaft 52/80 and will pull 48 psi of boost. The head is held on with ATS head studs.

They also used the stock Dodge power steering and vacuum pumps with custom hoses. The wiring is the Bronco's stock stripped-down harness. This way, if there is ever the need to pull the motor, there is one basic connection linking the motor to the chassis just like the 5.8L that GOS removed.

The motor came with a Banks Twin Ram which they used. The transmission is controlled by a Powertrain Control Solutions computer. With that computer, they can set any shift sequence they want, including converter lock up. It even has a 'Dyno Mode' and they can data log using a laptop linked to the PCS. This data logging has let Aden and Jerry record 0 to 60 times in the 4.7- to 4.8-second range.

The exhaust and intercooler tubes were hand-built. The exhaust is 4-inch 409 stainless steel and uses a 34-inch Magnaflow muffler. The intercooler is from a 2004.5 Dodge Cummins.

Jerry and Aden also robbed the dash out of a 1996 Ford Power Stroke for the diesel tachometer and diesel-only fuel gauge.

Jerry and Aden also robbed the dash out of a 1996 Ford Power Stroke for the diesel tachometer and diesel-only fuel gauge.

Source:
GOS Performance
1-800-620-4467
www.gosperformance.com

Branch Updates



Neil Quick *NSW Chairman*



There goes another year in what seems like the blink of an eye. With the hectic life that most people seem to have nowadays it's hard to see where the time goes. We had our last meeting for the year plus our AGM at Penrith Panthers.

As no other people put their hands up for committee positions, they were filled by the current committee and congratulations to them. The first of our speakers was from the Department of Fair Trading and gave handouts and a good explanation of the current warranty rules. The rest of the afternoon was filled with hands on demonstration of the Launch scan tool plus diagnostic procedures.

We also had the SGM for the amendments to the Association's new Constitution that did not produce a quorum but was finally put to bed the following weekend as per rules of the current constitution.

Our next Association Conference is at Surfers Paradise in Queensland in March 2013 and is the biennial conference for exhibitors. We hope to have a wide range of products for ALL members big and small so I encourage everyone to think seriously about attending this conference and make it a great success.

As Christmas is just around the corner I would like to wish everyone a Merry Christmas and a happy, prosperous and safe New Year.

A man was walking down the street when he was accosted by a particularly dirty and shabby-looking homeless man who asked him for a couple of dollars for dinner.

The man took out his wallet, extracted ten dollars and asked, "If I give you this money, will you buy some beer with it instead of dinner?"

"No, I had to stop drinking years ago," the homeless man replied.

"Will you use it to go fishing instead of buying food?" the man asked.

"No, I don't waste time fishing," the homeless man said. "I need to spend all my time trying to stay alive."

"Will you spend this on green fees at a golf course instead of food?" the man asked.

"Are you NUTS!" replied the homeless man. "I haven't played golf in 20 years!"

"Well," said the man, "I'm not going to give you money. Instead, I'm going to take you home for a shower and a terrific dinner cooked by my wife."

The homeless man was astounded. "Won't your wife be furious with you for doing that?"

The man replied, "That's okay. It's important for her to see what a man looks like after he has given up drinking, fishing and golf."



David Kite *NZ Chairman*



It has been a long year and its drawing to an end, so I hope all are enjoying a Christmas rush. I have been reading that the NZ government has been taking submissions for relicensing of vehicles. We all hope they take everyone's opinions on board and make some good changes. Will it

get more economical to own a diesel or not?

For all of those that have had some sort of business interruption, whether it be earthquakes, floods, etc, I do hope the New Year brings you something good.

With that, I would like to give you something to think about. I just recently lost my office lady/business partner to cancer. Her death was very unexpected and it was a bit of an eye opener for me just how much I had been leaving to her. Who would ever think you might have to know how to do end of month statements, reports and work out how to add up your creditors and pay them? Who would think that the office lady does all that work?

Well people, I can now tell you that, as owners, you need to know the other side of your business. You should try sitting in her seat every now and then just to get a bit of an insight in how it all works. Trust me, when you have to try and do her job on your own, the days become very long.

With those thoughts in mind, I wish you all a very Merry Christmas and a safe and Happy New Year.

Walter Urbancic *QLD Chairman*



Merry Christmas everyone – hoping that everything is going well for all. Not much has happened here in Queensland lately. It has been another year of dramatic changes in the industry with the massive increase in repairs to common rail vehicles. I

am sure that everyone is getting lots of work from this now and finding the right scan tool has been a bit of hit and miss. Some do some jobs and others do some jobs, but no one tool can do the lot which has been an expensive exercise for all.

Our last meeting will be in early December and we are doing some training on scanners. We asked that you bring your own so you can compare and see the difference, which could save you considerable time and money in the purchase of your next intended scanner.

The next AADS Convention will be held here in Queensland at the Gold Coast and the program looks very interesting. We have some great guest speakers lined up for the sessions and a good line up of displays.

Until next time have a Merry Christmas and Happy New Year.



FREE apps to help with business planning

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Member Code of Conduct

Members of the Australasian Association of Diesel Specialists agree to the following Code of Conduct.

1. Each member shall at all times act fairly and honestly in all dealings and shall conduct himself with strict professional courtesy and integrity so that the association and the industries it represents project a reputable professional image.
2. When recruiting personnel, the relevant member shall advertise any position/s in the usual accepted manner and not resort to acquiring personnel by unethical means.
3. All members shall render assistance and advice to one another as far as practicable whenever requested to do so.
4. Whenever information classified as confidential and for use by members only is supplied by the association, members shall ensure that it is treated as being confidential to members only.
5. Members engaged in the selling of replacement units of diesel fuel injection equipment, turbochargers, allied ancillary equipment and/or associated spare parts shall have clean, established premises and ensure that all or any manufacturer's identification labels and/or marks on such units and/or spare parts are intact so that warranty (if any) can be readily obtained and/or given upon the sale of such units and/or spare parts to their customers subject always to the rights of the customer at law.
6. Any member servicing equipment shall maintain clean workshop premises (preferably air-conditioned) which are equipped with tools and equipment capable of servicing and testing all diesel fuel injection equipment, turbochargers and/or allied ancillary equipment which the member holds himself as being capable of servicing.
7. Any member servicing equipment shall adopt a strict maintenance program to ensure that all test equipment installed and used by him is capable of meeting the requirements of the test specifications which are established from time to time by each manufacturer of the diesel fuel injection equipment, turbochargers and/or allied ancillary equipment serviced by the member.
8. It is recommended that all members engaged in servicing equipment should warrant against failure any repairs and/or service effected by them due to faulty workmanship or defective parts for a specific number of kilometres or period of time subject always to the consumer's rights at law and/or the terms and conditions of warranty as specified by the parts manufacturer on any parts supplied.
9. Members servicing equipment shall (wherever practicable) use a job identification code and stamp or etch this code in a readily visible position on each job done by them and to affix at least one (1) lead seal using the sealing pliers supplied as part of membership. The aforesaid code shall incorporate the following:
 - repair classification code (T, P or R) as set out in Bylaw 3;
 - their allocated service number (which is on their sealing pliers); and
 - the month and year of repair.
10. Any member, who is requested to service equipment that is alleged to have recently been serviced by a fellow member and is not operating satisfactorily (whether it has been coded in accordance with Bylaw 3 or not), shall contact and fully discuss the matter of warranty or otherwise with the member concerned and shall not denigrate or make any adverse comments on his fellow member's workmanship whatsoever.
11. The association may refuse to list members servicing equipment in the records of the association as being capable of servicing any particular type of equipment until it has been established that they possess adequate service tools, test equipment and maintained up-to-date technical data enabling them to do so.

Grand Elgrand

This article is a true description of an AECS technical help desk problem and how it was solved.

Vehicle: 2003 Nissan Elgrand 3.5Ltr V6 Petrol A/T

Problem Presented to the Helpdesk

This Nissan people mover has had engine failure after the manifold length adjustment valves had fallen into the cylinders. The engine had been removed and rebuilt. After fitting the rebuilt engine, it does not fire up anymore.

The engine has been out 2 times since (removal of sub frame required!) to check cam and crank timing amongst various other things.

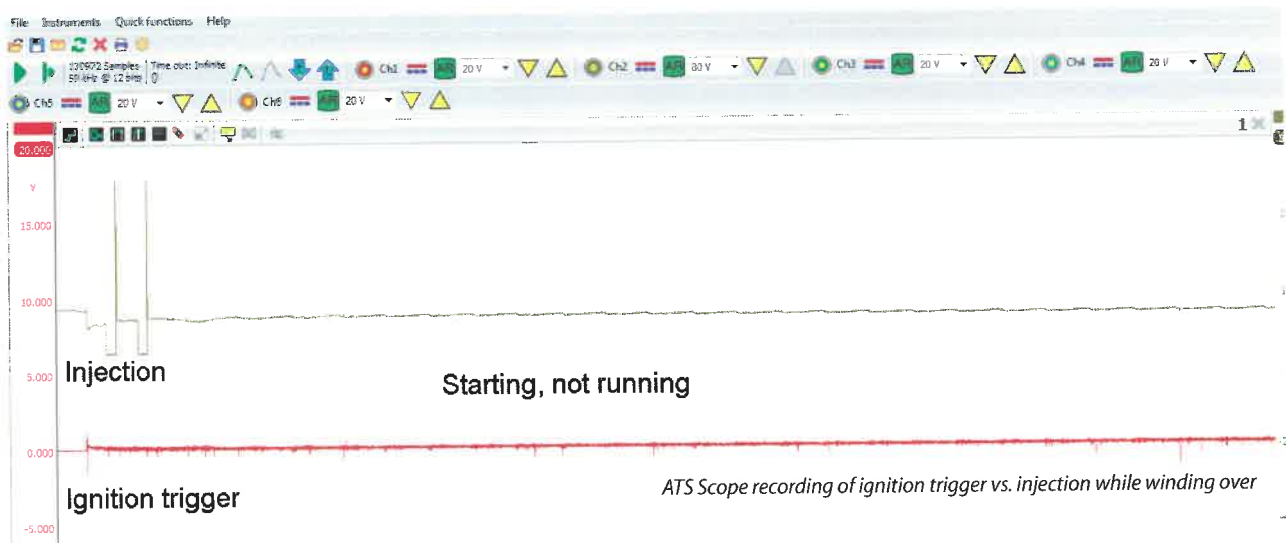
The vehicle has been to several garages, some with scopes over a period of at least 6 months. No fault codes were ever set by the ECU according to the technicians we spoke to.

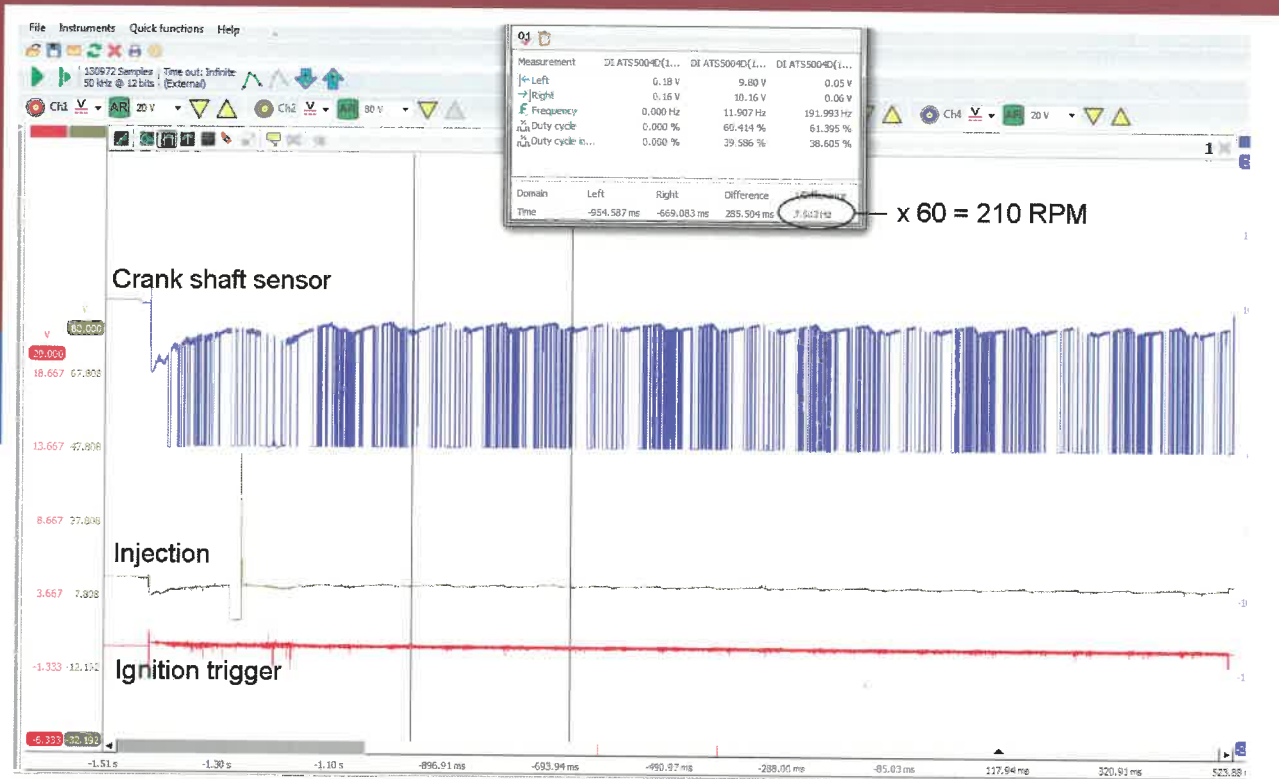
Everything has been done to this vehicle to try to make it go. Some garages had measured ignition vs. injection and had noted that the engine sometimes has only one ignition pulse and always one or sometimes two injection pulses.

The cam and crankshaft sensors had been replaced, the vehicle has had twice a new ECU fitted; the wiring between the crankshaft sensor and ECU has been replaced.

New keys had been programmed and the CAN data bus was checked as the immobiliser function of the ECU was suspected. After months, the vehicle ended up in a workshop of which the owner owns the ATS scope and enjoys AECS technical support. After a number of measurements, they decided to call us for advice.

Please read all the detail in this report to fully appreciate how YOU could get into trouble!





ATS 4 channel scope recording of crank sensor vs. injection and ignition.

Start Fresh

In cases like this, it is best to start clean with no regard for what has happened in the past. When an engine does not go, the usual first measurement is ignition vs. injection. (see reading on page 18).

We had no ignition trigger and a couple of injection pulses. To us at the help desk it looked like a clear crankshaft or crank/cam shaft sensor issue. It seems as if the ECU dumped some start fuel and then continued waiting for a proper crank position.

Crankshaft vs. Ignition/Injection

Again, no ignition and only one injection pulse (as shown on the reading above). We had to look at the crankshaft pattern in detail. It always helps to knowingly look at one full crankshaft revolution or else it can be very hard to look at a repetitive pattern finding irregularities.

We placed the cross hairs so that they lined up with approx. 3 dips in the crankshaft sensor signal; this represents the starter motor fighting 3 compressions (pulling battery voltage down). Three compressions equals one revolution on this 6 cylinder engine. To double check, the frequency in the 'value window' on the screen indicates a crank speed of 210 RPM, which is normal start speed.

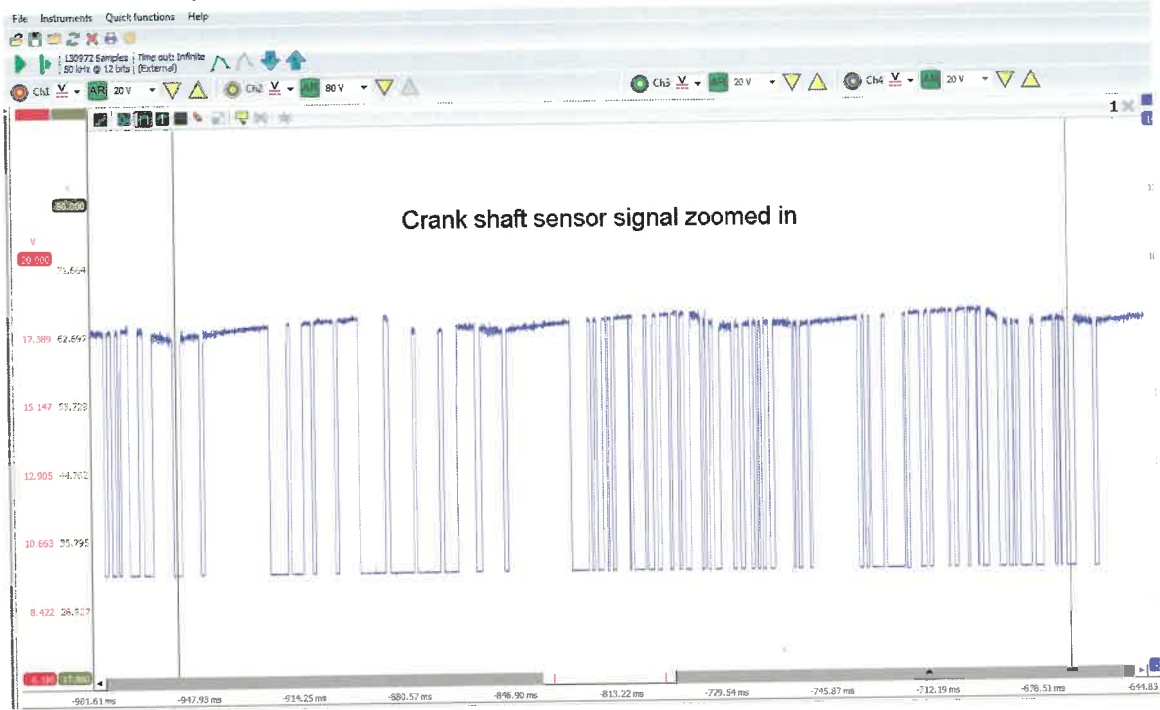
Crankshaft Sensor Pattern

Zooming in on the one revolution section of the crankshaft sensor pattern (see page 20) we started doubting if we were connected to the correct wires and if we measured at the correct sample speed, as this is a very irregular pattern.

We have never seen a good running Nissan producing a signal like this. However, I have dealt with some 'strange' Nissan Hall-effect sensor signals before. In all cases, the magnetic balance of the sensor was disturbed by removing steel brackets, leaving bell-housing bolts out etc. I have even published an article about one some time ago (see www.aecs.net/techsupport).

By just looking at the plastic sensor and the aluminium bell housing it looked like a cage was missing, a steel cage that alters the magnetic field of the sensor. Often placing anything of steel attached to earth close to the sensor will overcome that problem.

We placed part of a washer around the sensor. The ins and outs of this are dealt with in the AECS AED training.



Zoomed in on the crankshaft sensor pattern section between the cross hairs.



Washer

The washer fitted, created a beautiful crankshaft pattern, (see page 21) but the engine still would not go!

Two Problems

We had to consider that we had multiple problems as this engine had gone through so many hands. In our view, we still had a crank/cam shaft relation problem.

We recorded the crankshaft and both camshaft sensor and found that the RH cam sensor pattern was NOT 360 crankshaft degrees out of phase with the LH cam sensor pattern.

We looked at the pattern in detail and noted that the RH sensor did not switch at logic crankshaft positions. The LH sensor made more sense. We disconnected the RH sensor and started the engine (see page 21).

Engine Noise

Yes, that started the engine for the first time in many months! It took a while before it fired, but it went. The pattern recorded is after the engine started (see page 22).

While running we plugged the cam sensor in to have a nice clean signal of a stable running engine. This made it easier to see the phase offset.

It was now obvious why the engine was not firing up; two problems, the crankshaft signal, and the camshaft sensor signal were both incorrect, getting the ECU into calculation trouble.

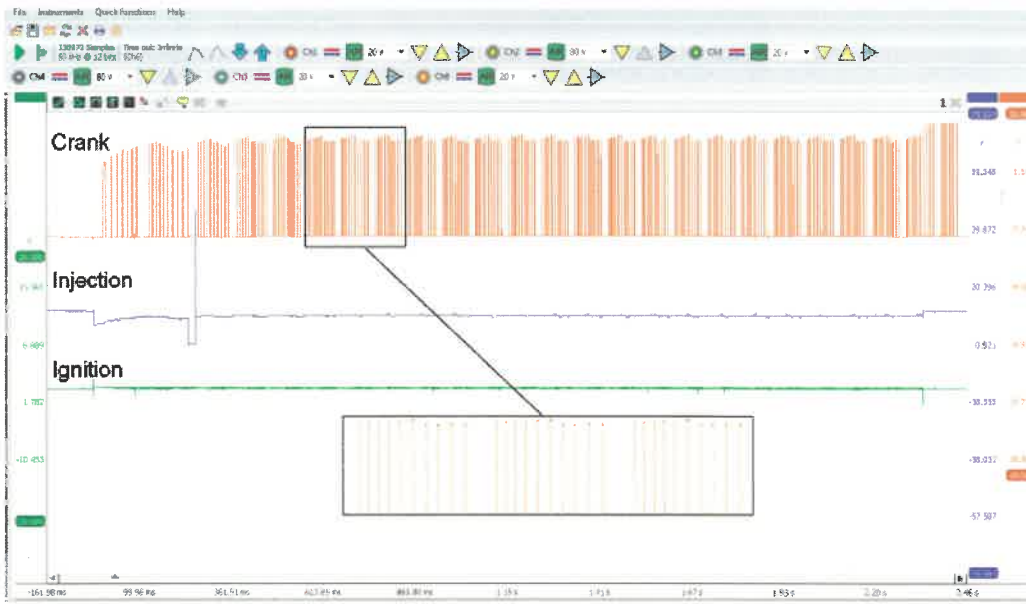
It was still hard to start as the ECU was waiting for the RH sensor signal but after a few revolutions, it would go into limp home and would fire up anyway

Cam

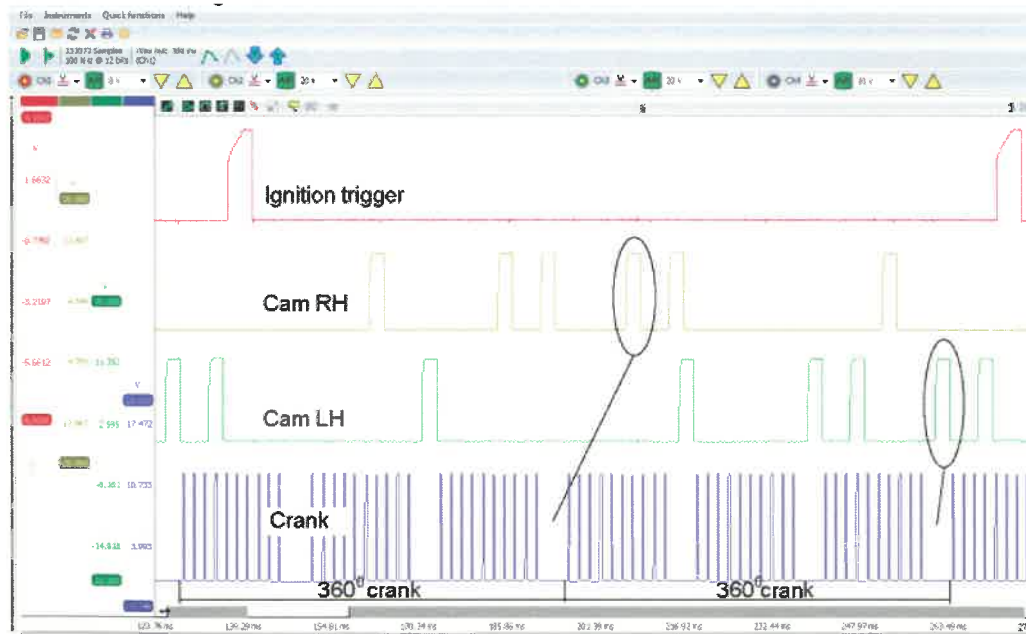
With the RH cam sensor connected, the engine would not fire up. Connecting the sensor with the engine running had no influence on the running of the engine; however, a RH cam sensor fault code was logged. Resetting this code with a scan tool while the engine was running stalled the engine.

Starting the engine with RH sensor connected and LH disconnected gave us Ignition and injection but the engine would not run (timing out of phase).

This confirmed for us the RH cam shaft tone wheel has to be repositioned on the cam shaft, which means engine removal (3rd time!!!).



We still had exactly the same ignition and injection pattern but the crankshaft pattern was fine.



Ignition trigger, RH cam, LH cam and crank recording zoomed to 2 revolutions. Please look at cam offset difference.

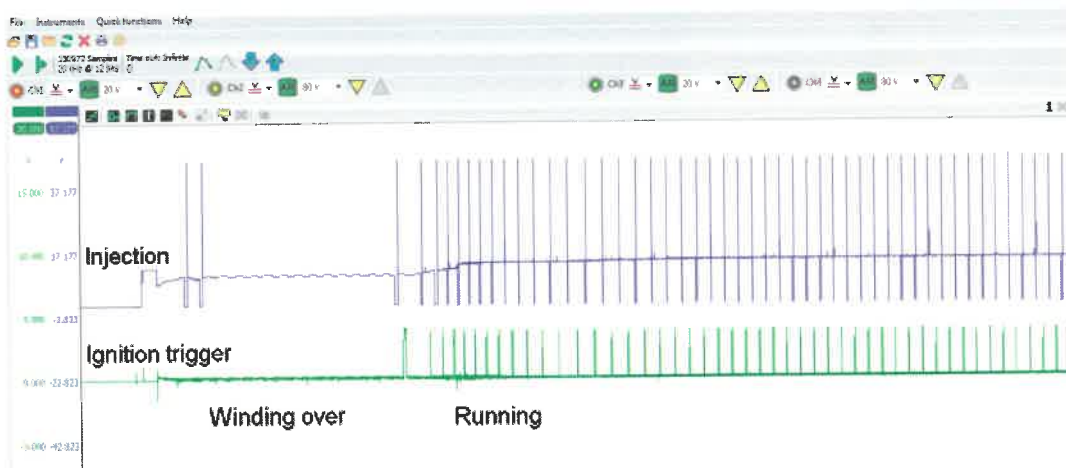
Crank

With the washer removed from the crank sensor and the RH camshaft sensor disconnected, the engine would run briefly and stall during our first attempt, later it would not start at all. We recorded the crankshaft, camshaft and ignition trigger pattern and zoomed in to just before the engine stalled (*see page 22*). The crankshaft sensor is back to being irregular. With the washer back around the sensor, the engine would run beautifully again.

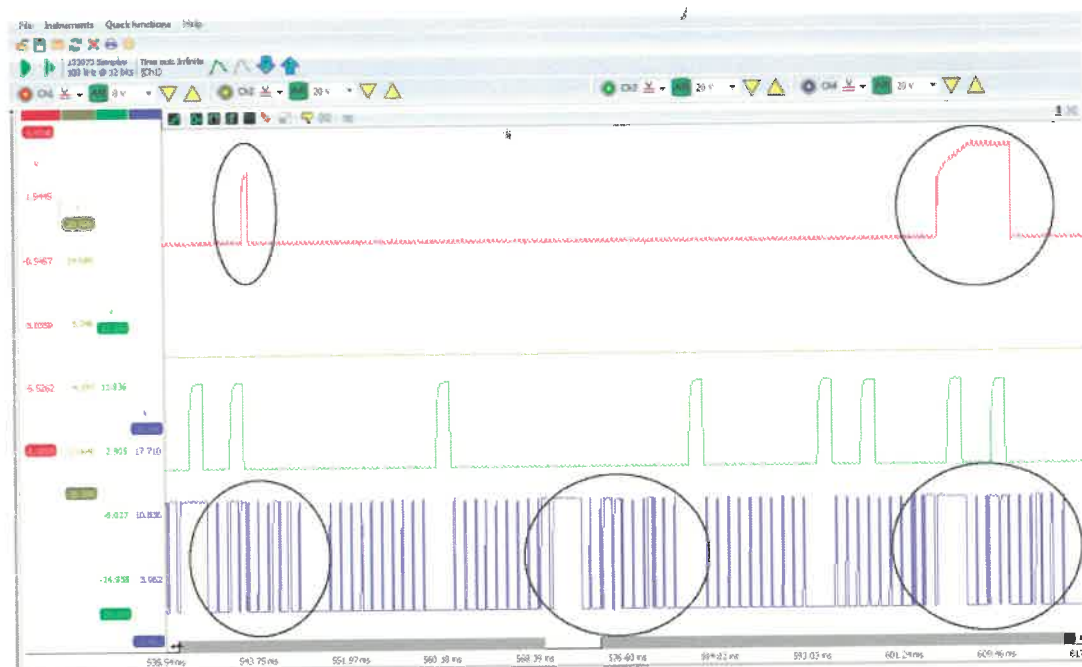
Understanding

Most of the steps taken in the process by the other garages I understand; the replacement of the crank sensor, the replacement of the ECU, the new wire installed between the crank sensor and the ECU. The technicians were in the right area and in their mind they had done all they could by replacing all. I also understand that they started to doubt the immobiliser, after all the ECU was not switching the coils and injectors as it should while all inputs were checked and came from replaced items.

Below is a recording of ignition vs. injection with the RH sensor disconnected.



Ignition trigger vs LHcam vs crank shaft sensor with the washer removed, just before stall. Please note the RH cam sensor is disconnected to make the engine start.

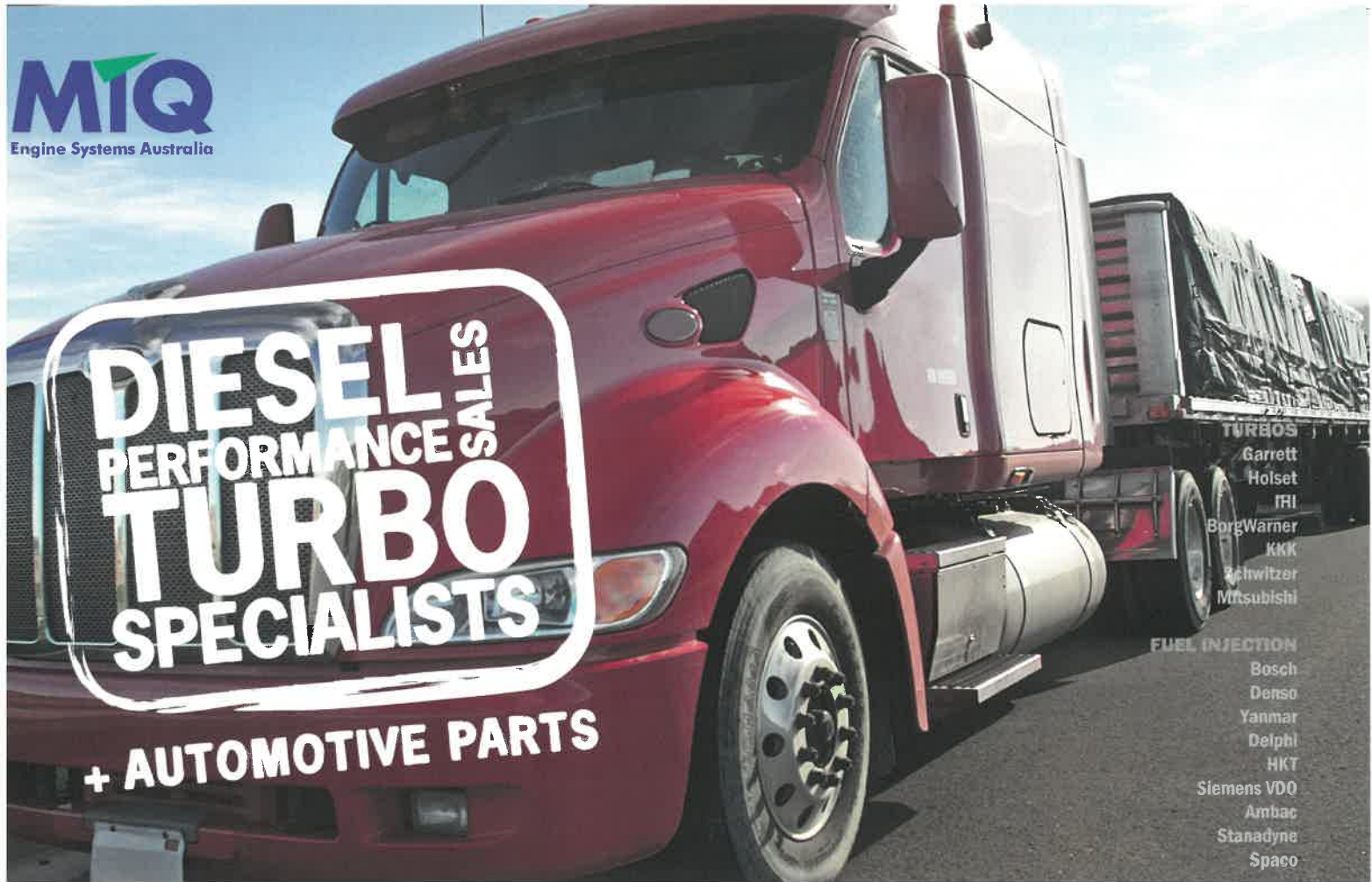


Injection vs. ignition after steel washer placed and RH camshaft sensor disconnected. Engine runs but is hard to start.

But why a decent scope was not used very early on in the process is hard to comprehend. I personally would have started with the scope recording exactly how it has been described in this report. It took in actual diagnostic time only just over 3 hours labour, of which a large part was used to get the wires probed up. To say that the bonnet space on the Elgrand is not very grand is an understatement.

Conclusion

This very, VERY expensive story came to a good conclusion in the end as a result of AECS equipment, AECS technical support and AECS training. Also the fact that at we at AECS (here in NZ) could 'look over the shoulder' of the technician made a big difference. Looking at his recorded patterns via the internet is very useful, as so often has been proven already in the past 12 years. Operating the AECS technical help desk are Peter, an electronics university graduate, Paul an ex Williams F1 sensor technician and Herbert Leijen.



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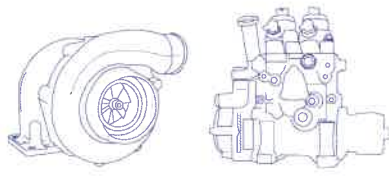
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