

BRENDAN CASEY – Australia’s number 1 authority on hydraulic equipment maintenance and reliability, reveals ...

How to get thousands of hours in extra service life from your hydraulic equipment, eliminate unnecessary breakdowns, reduce unscheduled downtime and slash thousands of \$\$\$\$ off your operating costs – GUARANTEED!

Dear Hydraulic Equipment User,

Hydraulic components are expensive, right? So when you don’t get maximum mileage from them it hurts your bottom line. If you're an owner-operator, it hurts your wallet directly. If you're a manager or supervisor, it hurts your budget - and maybe even your performance bonus. But the fact is ...

more than 70% of spare parts sold for hydraulic equipment are replacements for defective components ...

I uncovered this startling revelation while conducting research for my best-selling book, *Insider Secrets to Hydraulics*. And that’s not all. I also discovered that **the reason for 90% of these defects is improper maintenance**. So when you understand just how big the spare parts business is, you know that poor maintenance practices are ...

costing hydraulic equipment users billions of \$\$\$ every year.

And many of my industry colleagues agree. Here’s what just a couple have said:

“I think Mr Casey is being **very** conservative in his estimate of failure attributed to lack of maintenance. I have 40 years of hydraulics experience and would put that number considerably higher. If modern hydraulic components are installed and maintained properly, the spare parts business wouldn't be viable.”

Verne Middleton
Hydraulics & Lubrication Engineer
Olin Corp.

“In my 33+ years of working with hydraulics I've always known that improper lubrication and system contamination, as a result of inadequate maintenance, are the two biggest hitters of premature component failures.”

C.J. Foley
Fluid Power Instructor
General Motors

That’s the bad news. But the good news is ...

These costly failures can be avoided -- if you know how!

The problem is, the information you need to prevent premature failures and maximize the service life of your hydraulic equipment isn't widely available. It's not that it's rocket science – far from it. But you won't find it in the machine manual and it's not taught in everyday, how-it-works, hydraulics classes. As a consequence, **most owners, operators, mechanics, technicians and engineers are clueless when it comes to proper maintenance of hydraulic equipment.** It's not their fault – they just haven't been given the opportunity to learn. And that's why I'm writing to you today.

Who am I and why should you listen to me?

My name is Brendan Casey and I've spent the better part of 18 years working in and running hydraulic repair shops, in other words, rebuilding hydraulic components. During this time I kept seeing the same pattern:

Failed hydraulic component comes into shop along with concerned customer who wants to know why it has failed after a relatively short time in service. Based on what I saw after tear-down, I would explain the cause of failure - for example, high contamination levels, wrong oil viscosity, high temperature operation, cavitation, faulty circuit protection devices and so on. Customer leaves thousands of dollars poorer with repaired component and a hard-learned lesson on hydraulic equipment maintenance.

For as long as there are hydraulic equipment owners, mechanics and maintenance people out there who believe that hydraulic equipment doesn't require any special kind of attention, this vicious circle will continue.

Over the past 30 years, the performance, sophistication and operating pressures of hydraulic equipment have increased significantly. This is particularly true in the case of mobile hydraulic equipment. As a result, modern hydraulic equipment is not only more expensive to fix when it breaks, proactive maintenance is imperative to maximise service life and minimise operating costs. It's not realistic to expect to run a hydraulic machine for 10,000 hours, without checking anything more than the oil level, and not have any problems.

In an effort to bridge the knowledge gap on what needs to be done to get maximum life from hydraulic equipment, I've written two books on the subject: ***Insider Secrets to Hydraulics*** and ***Preventing Hydraulic Failures***. Here's a sample of what's been said about them:

"Thanks for the great work on the two publications, *Insider Secrets to Hydraulics* and *Preventing Hydraulic Failures*. I have been in the hydraulics business for the past 20 years and it is very difficult to find any decent material on hydraulic equipment maintenance, reliability and failure analysis. These two books cover it all in easy to understand language."

Paul W. Craven, Certified Fluid Power Specialist
Motion Industries

In addition, I write a regular column for *Machinery Lubrication* magazine, which is read by 36,000 maintenance and reliability professionals in North America and Europe. My technical articles are also regularly published in *InMotion* magazine, which is read by 8,900 fluid power professionals in Australia and New Zealand. I've presented technical papers and workshops at international

conferences such as Lubrication Excellence 2004 (USA), National Conference on Fluid Power 2005 (USA) and Lubrication Excellence 2005 and Reliability World 2005 (USA). And I've been hired by the **University of Western Australia** to present maintenance and reliability training on hydraulic equipment.

As you've probably gathered, the maintenance and reliability of hydraulic equipment is a subject I'm passionate about and one that I'm considered by my peers to be a leading authority on.

But I also understand that there's only so much you can get out of reading a book. That's why **I'll personally show you**, step-by-step ...

how to save money and reduce downtime by preventing unnecessary hydraulic equipment breakdowns ...

during a series of one-day, "**Hydraulic Breakdown Prevention Workshops**" I'm presenting around Australia in 2007. No matter what type of hydraulic equipment you own, operate, repair or maintain, this is an event you can't afford to miss. You'll learn **what every hydraulic equipment user ought to know ... that most mechanics DON'T!**

Here's a small sample of what I'll cover:

- ✔ **Contamination control is the most important preventative maintenance routine for hydraulic equipment, right? WRONG!** And I'll explain why.
- ✔ How the construction of different types of pumps and motors make them susceptible to certain modes of failure and what to do about it – less than 1% of maintenance people know or understand this.
- ✔ **Why hydraulic oil is THE most important component of any hydraulic system and not a consumable to be purchased on price alone.**
- ✔ How the four main types of contamination reduce the performance and cut-short the service life of hydraulic components.
- ✔ **Do you know it costs ten times more to remove contamination that it does to exclude it in the first place?** I'll explain the top 10 sources of contamination and their methods of exclusion.
- ✔ Four common causes of lubrication-related failures and how to avoid them. Get on top of this issue and you'll save a bundle.
- ✔ **Why air is possibly THE most dangerous contaminant of hydraulic oil!** Two common failures caused by aeration and how to easily prevent them.
- ✔ Which lubricated contacts of hydraulic components rely on hydrostatic balance for trouble-free operation and how to maintain them.
- ✔ **Do you know that cavitation can reduce the service life of a gear pump by as much as 50 percent? And the consequences are much worse for piston and vane pumps.** I'll cover the 12 most common causes of cavitation failures and how to prevent them.
- ✔ How over-pressurisation damages hydraulic pumps and motors and how to avoid it.

✓ **How to avoid consequential damage and reliability problems caused by high-temperature operation. PLUS -- eight common causes of overheating and their remedies.**

✓ How excessive case pressure and cavitation cause similar damage to a piston pump and how to easily eliminate it.

PLUS – I’ll be presenting a bonus session explaining **how to set-up and optimise a preventative maintenance program for hydraulic equipment**. I presented this workshop at the University of Western Australia in July 2006 and here’s what was said about it:

“This should have been required learning when I did my apprenticeship 13 years ago! Your presentation was well thought out, covering everything from fluid cleanliness to failure analysis. Everyone from fitters to engineers will benefit from this knowledge. Well done.”

Darren Mackie
Heavy Equipment Fitter
BHP Billiton Iron Ore – Mt Newman Mine

After participating in this workshop I’m certain that you or your maintenance people will be able to make a measurable contribution towards extending component life, reducing downtime and cutting the operating cost of your hydraulic equipment.

And that’s why your investment of only \$597, to attend this workshop is such a solid one. Heck, these days that’s less than a single drum of good quality hydraulic oil. PLUS – given the high cost of hydraulic components, you only need to pick-up one thing on the day that solves a problem or prevents a failure and you’ve recovered your modest attendance fee ten-fold. But perhaps more importantly ...

How much will it cost YOU if you DON’T attend?

Would you invest \$597 to save \$70,000? This is a ‘no-brainer’ for most of us. Well, here’s an eye-opening case study for you:

I recently conducted failure analysis and a reliability audit on a 300 kilowatt hydrostatic transmission. The hydraulic system was running a synthetic ester, biodegradable hydraulic fluid. This \$12/litre hydraulic fluid had been destroyed in less than 12 months and a set of pumps shortly after. So with \$20,000 worth of hydraulic fluid and \$50,000 worth of pumps ruined in short order, my client was understandably wondering what went wrong.

The system was built and installed by a reputable distributor. From a hydraulic engineering perspective the circuit was adequately designed and the system well built. But from a maintenance and reliability perspective it left a lot to be desired. My client, the end user, didn’t have a lot of experience with hydraulic equipment and was reliant on the company that built the system to guide them on its maintenance.

An oil analysis program had been set up, but it seems the only thing anyone was taking any notice of was particle contamination. All the warning signs pointing to oxidative failure of the oil went unnoticed. The oil started polymerizing, coating internal components with sludge. These gum-like deposits block lubrication passages, reduce heat transfer and cause valve stiction. The

oxidation process diminishes foaming resistance and air release properties of the oil, which in turn causes damage through aeration and gaseous cavitation.

By the time I got involved, the original set of pumps had already failed and the hydraulic oil had an Acid Number of 10 and water content of 6,500 parts per million. So I set about establishing the root cause of failure and instigating measures to ensure it didn't happen again.

As I've said already, it's not rocket science – far from it. But the problem for my client was the information they needed to prevent this maintenance disaster was not readily available to them.

The principles and procedures I put in place to prevent a reoccurrence of the failures described above, are the same ones you'll learn when you attend my **Hydraulic Breakdown Prevention Workshop**. Had my client had this information and applied it diligently at the outset, they could have saved themselves more than \$70,000 – and a lot of downtime and aggravation.

If any of this sounds self-serving, then consider this. Like everyone else on the supply side of this industry I make a hellava lot more from maintenance failures than I do from failure prevention. My fee for sorting out the **maintenance disaster** described above ran to five figures. And I get offered more of this type of work than I can take on. I don't tell you this to brag, but rather to point out I really don't mind if you sit on your hands. But understand the price of doing nothing is much, much higher than taking action and attending this workshop.

A \$40 gift just for registering

PLUS - your hydraulic equipment maintenance IQ will get an immediate boost as soon as you register. How? Because I'll send you a copy of my best-selling book *Insider Secrets to Hydraulics* – valued at \$40, upon receipt of your registration. Now in case you're thinking: "WOW, Brendan you're last of the big spenders", this book is actually **worth its weight in gold**. These aren't my words, but those of Sandy Dunn, a leading maintenance management consultant. Here's what he said:

"Insider Secrets to Hydraulics has the potential to **save many organisations lots of money**. It should be on the bookshelf of every engineer, supervisor, planner and technician that deals with hydraulic equipment... **it's worth its weight in gold.**"

As you can see, the information contained in this book alone could easily save you your modest tuition fee. And even if you already have a copy, remember it's equally valuable in the hands of one of the other guys in your team.

A \$250 gift for attending

But that's not all. When you attend my **Hydraulic Breakdown Prevention Workshop** you'll also get a voucher for a one hour telephone consult with me. I routinely charge \$250 per hour for advice on maintenance and reliability matters, so this FREE bonus is worth \$250 on face value. Why am I doing this? Because I understand for you to get **maximum value** from attending this workshop, you have to implement what you learnt when you return to your factory, plant or mine. This free bonus is designed to assist you in that process. If questions or issues arise, or problems crop up, you can call me and "pick my brains" - for no charge.

Ironclad 100% money-back guarantee

AND - I insist that you attend my **Hydraulic Breakdown Prevention Workshop** entirely at my risk. That's why it comes with a **Risk-Free, 100% Money-Back Guarantee**. There's absolutely NO RISK on your part in attending. You **MUST** be totally delighted with your decision to attend.

If at the end of the presentation you feel that you haven't learnt anything about preventing hydraulic breakdowns that will more than recover your modest attendance fee; or I somehow misled you into attending; or I misrepresented the content of the presentation in some way; or you're unsatisfied for any other reason, just let me know and I'll cheerfully refund your attendance fee in full, PLUS \$100 towards your documented travel expenses. AND the entire workshop notes, your FREE telephone consult with me and your FREE copy of *Insider Secrets to Hydraulics* together valued at \$290 are yours to keep, so ...

How can you turn down an offer like this?

Frankly, if you have any kind of responsibility for hydraulic equipment at all, I can't think of any good reason why you wouldn't attend this **Hydraulic Breakdown Prevention Workshop** – or at least send one of your guys along. The tuition fee is less than a drum of hydraulic oil, you only have to pick up one thing on the day to recover this modest investment, you get \$290 worth of FREE gifts and if you're not totally delighted after attending the workshop, I'll cheerfully refund your tuition fee in full, plus \$100 towards your document travel expenses. What could be fairer than that?

And in case you're thinking there's a lot of this type of training available - so you can do it anytime, you're mistaken. The content of my **Hydraulic Breakdown Prevention Workshop** is unique in the marketplace. You won't see it being offered by TAFE, or the multitude of other training organisations out there. Sure, these organisations do offer "how-it-works" hydraulics classes, but that's not what this workshop is about. It's about **cutting your hydraulic equipment operating costs by reducing the incidence of faults, breakdowns, premature failures and unscheduled downtime - through the implementation of proven maintenance practices and procedures.**

Numbers are strictly limited, so **don't wait, print-out, complete and return the attached registration form to reserve your seat today.**

Yours for better hydraulics knowledge,



Brendan Casey
HydraulicSupermarket.com

P.S. #1 Don't forget, the price of doing nothing is a lot higher than taking action. And by responding right away, your hydraulic equipment maintenance IQ will get an immediate boost because **you'll receive your FREE copy of *Insider Secrets to Hydraulics* – valued at \$40, but said by others to be “worth its weight in gold” - within a week!**

P.S. #2 And remember, as Benjamin Franklin once said: **“An investment in knowledge always pays the best interest.”**

P.S. #3 If you have any questions at all, call me on 08 9380 6659 and I'll do my best to answer them.

Hydraulic Breakdown Prevention Workshop Registration Form

___ Yes Brendan, I'm serious about reducing my hydraulic equipment operating costs and downtime. So count me in and reserve my seat. I look forward to receiving my FREE copy of your book *Insider Secrets to Hydraulics* valued at \$40. Further, I understand there's **no risk** on my part in attending, because if I'm not completely satisfied with any aspect of the presentation, all I need do is tell you on the day to get a full refund of my attendance fee, plus \$100 towards my documented travel expenses. I will be attending your (Please tick one):

- ~~Gold Coast Workshop: Friday 25 May, 9.00am – 3.00pm, Legends Hotel, Surfers Paradise~~
 ~~Melbourne Workshop: Friday 10 August, 9.00am – 5.00pm, Novotel St Kilda, 16 The Esplanade, St Kilda~~
 Sydney Workshop: Friday 12 October, 9.00am – 5.00pm, Stamford Plaza Sydney Airport Hotel, Cnr Robey & O'Riordan Streets, Mascot
 Perth Workshop: Friday 16 November, 9.00am – 5.00pm, **University of Western Australia**, Nedlands Perth

(Please print clearly)

First Name.....

Last Name.....

Business Name.....

Email Address.....

Postal Address.....
.....

Phone Number.....

Fax Number.....

Registration fee per person: \$597 plus GST.

***Bring a friend or colleague and he or she attends for half price – only \$297 + GST save \$300!**

Colleague's Name.....

___ I will mail/fax a Purchase Order

___ I am attaching a cheque

___ Please charge my credit card

Credit Card Type Visa Mastercard

Credit Card Number.....

Expiry Date (MM/YY).....

Name on Card.....

Signature.....

WHEN COMPLETE, FAX THIS FORM TO **08 9388 9895**

HydraulicSupermarket.com

PO BOX 1029

West Perth WA 6872

Tel 08 9380 6659

What people say about Brendan Casey's books and seminars:

"The knowledge I've gained from your information has been so valuable it has earned me a raise!"

Jack Bergstrom
Sharpe Equipment

"I love your style of presenting information. You present things in simple, basic, easy to understand terms - instead of being overly technical. I think *Preventing Hydraulic Failures* is an excellent presentation of accurate information. I **highly recommend it to anyone who seriously wants to maintain fluid power systems to their utmost capacity.**"

C.J. Foley
General Motors

"*Insider Secrets to Hydraulics* has the potential to **save many organizations lots of money**. It should be on the bookshelf of every engineer, supervisor, planner and technician that deals with hydraulic equipment... **it's worth its weight in gold.**"

Alexander (Sandy) Dunn
Assetivity Pty Ltd

"I am compelled to advise you of the wealth of knowledge I have gained from reading your literature. **It is in fact worth every cent.**"

Kurt Ferreira
Maintenance Consultant

"Your book *Insider Secrets to Hydraulics* does not just sit on the bookshelf in my office; today I had to refer back to "Maintaining Fluid Cleanliness" again and explain to all in sundry the meaning of ISO standards and how to interpret Oil Analysis Particle Count results."

Gary K. Nathan
Freeport Indonesia

"Thanks for the great work on the two publications, *Preventing Hydraulic Failures* and *Insider Secrets to Hydraulics*. I have been in the hydraulic business for the past 20 years and it is very difficult to find any decent material on hydraulic maintenance. These two books **cover it all in easy to understand language.**"

Paul W. Craven
Motion Industries

"I am half way through *Insider Secrets to Hydraulics* at the moment and very impressed with it. I **don't often find a technical book that is enjoyable and educational.**"

Joe Goodin
ROV Technician

"Brendan, *Insider Secrets to Hydraulics* is a great book.

I made two mistakes:

1. Waiting so long to get it, and
2. Not having you autograph it!"

Frank Wagoner
SMC Rig Repair

As you can see, you don't want to miss Brendan Casey's
Hydraulic Breakdown Prevention Workshop,
Register TODAY!