

JAPANESE SHOCK TACTICS



KYB



SHOWA



The world's two biggest suspension companies - Showa and KYB - have a shared history that owes more to Japanese business culture than product.


  NICK DOLE

Much of your bike, be it Japanese, European or made by a clog-wearing madman in a shed, has been assembled with parts procured from subcontracted and subsidiary suppliers. It might say Yamaha on the tank, but they won't make every single item for their bikes. The front and rear suspension are one of the main non-manufacturer-produced parts any machine wears-

but just who makes those items on your bike? For over 70 years, two Japanese companies - Showa and Kayaba - have been manufacturing bouncy bits for motorcycle producers around the world. Between these two, they supply the majority of the world's surface transportation suspension.

But who are these shock giants? Showa is generally associated with Honda, as the big H is a shareholder

in them. It's the same deal with Yamaha and Kayaba. In the '70s, when Kayaba was pushing into the US market, they shortened the name to KYB as the Americans had trouble pronouncing the full version. Gotta love them Yanks!

As you'd expect, both are big players in the business world, with Kayaba listing 1.7 billion Yen (\$200m) in assets and Showa 2.3 billion (\$270m). 

BUSINESS CULTURE, JAPANESE-STYLE



Yamaha's YZ450F KYB fork has the flattery of being copied by Showa.

So how can a manufacturer that has a share in a suspension company reject their products and use a competitor's offering? The answer is that Japanese society dictates that it's not all about price, and that culture plays a bigger part.

The first level of Japanese business culture has its roots in the three main religions – Confucianism, Shintoism and Buddhism. All of which are above the natural world and our known universe, meaning that each follower believes that every single thing, including people, has its own soul or spirit. The Japanese call this Numen.

The second aspect is the circular grouping that forms the basis of the culture. These four circles are concentric, the nucleus being the family, second is the fellows, the homeland is the third and the rest of the world the fourth. Differing moral and ethical codes are applied to each group.

These circles are viewed as larger entities than the people in the group, and all connect to the Numen in a direct way. This takes us to the four circles of business relationships.

At the centre of culture comes family and closely-related business partners. The next circle includes long-time customers and financial institutions and traders. Each of these business associates are encouraged to maintain a balance between benefits to the group and debts owed to it. If a company does not offer enough benefits to counterbalance its debts, they are usually expelled from the circle – a bit like Ben Stiller in *Meet the*

war', but this is not the case for traditional Japan.

The key is how the debts to each other are balanced. An example of how these debts work is if KYB helps Suzuki when they are in the midst of serious financial difficulties,

not extraordinarily unreasonable, Suzuki will continue to purchase KYB's product. If their products are not sophisticated enough to meet Suzuki's standards, Suzuki will offer to help them improve their products.

The reverse is if Suzuki were to change the above policy soon after repaying its debt to KYB – such as buying cheaper products from Showa – then not only KYB, but also other corporations who have been aware of the process, will regard Suzuki as an untrustworthy company in their business community. Foreign companies, especially American ones, do not understand this 'fairness' context. They are more likely to switch immediately to Showa once the debt to KYB has been paid off.

This difference in the understanding of fairness is the main difference between Japanese and non-Japanese companies.

“We are used to ‘crush your competitor’ and ‘business is war’ but this is not the case for traditional Japan.”

Fockers. The third group is Japan as a whole and the competing companies within it, although the ethics are one of free competition. The fourth and last circle is the world.

Western business has a difficult time understanding free competition. We are used to ‘crush your competitor’ and ‘business is

then Suzuki will give the most preferential trade status to KYB after overcoming its difficulties. Suzuki will rarely change this policy, even when it finishes repaying its monetary debts to KYB.

Moreover, even if KYB's products are relatively more expensive, as long as the price is

A BRIEF HISTORY OF SHOWA

Established in 1938 to produce landing-gear parts for aircraft, Showa switched to suspension units, hydraulics, steering systems, differential gears and other drive-related parts in post-war Japan, 1946. They listed on the Tokyo stock exchange in 1963 and established a US subsidiary in 1979. While there are now many manufacturing plants spread over Japan, Thailand, China, Spain, UK and Brazil, all the MX suspension is from Japan – as it's at the high-end of suspension technology. To prove a point, take the shocks off a CRF230 and you'll see the made in Brazil markings.

The mid-'80s was when we started to notice the Showa stickers and began drawing opinions on how the companies operated, based on their

suspension packages from year to year.

Showa has always appeared to be the most conservative of the two companies, with great manufacturing capability and a bunch of motionless engineers in white coats. It was not hard to imagine how the feedback from the test rider to the final production suspension got a little lost in a sea of well-meaning corporate re-interpretation. Some of the most loved 43mm conventional (RWU) forks from the 1986-1987 CR250R were Showa's with the newly developed cartridge fork. In contrast, some of the most horrible early '90s USD forks were also Showa and the issues of rigidity in the tubes would not be fully understood for another decade.

Shock view. Showa's reservoir (left) drops while KYB's stays level.



A BRIEF HISTORY OF KAYABA

Shiro Kayaba founded Kayaba Industry in 1919, whose main products were aircraft catapult launchers, landing-gear and an interesting gyrocopter during WWI. The company was reorganised as part of the unconditional surrender of Japan after WWII and in 1945 began manufacturing automotive and motorcycle suspension components.

After listing on the Tokyo stock exchange in 1959, Kayaba expanded its product range to include earth moving equipment, cement-carrying trucks and ship components. Like Showa, their high-end motorcycle suspension is still wholly manufactured and developed in Japan. This is because the MX market is a flagship for both brands and

certainly instils more company pride than looking at a new garbage truck, even if it is state of the art.

To confuse things even more so there is a third, smaller suspension manufacturer, Soqi (pronounced Sock-e). Originally part of the Showa group, Soqi is now under the Yamaha banner and is often confused with KYB. Soqi manufacture Ohlins' units under licence in Japan, though for OEM fitment only. To understand how these relationships function, we need to look at Japanese culture and specifically their religion.

Perhaps as a result of its US ties, Kayaba reflects a more western business culture than Showa.

WHO SUSPENDED WHO?



For many years, the CR125 was KYB-shod, the CR250 wore Showa and the CR500 just couldn't make up its mind, swapping from Showa to Kayaba in 1995. In one of the most bizarre decisions – and a true reflection of the culture – the 1996 CR250 had KYB forks and a Showa shock. Honda went back to Showa forks with the new alloy frame in 1997 and has only returned to KYB on the '09-on CRF450R. In somewhat of a tribute to KYB, the 2010 CRF250R has a Showa fork that could only be described as a carbon copy of the KYB 48mm unit. It seems they may have conceded defeat.



Get ready for the biggest mix of KYB and Showa in history! The RM-Zs have used 47mm Showas since '07, but the 250 wore KYBs in 2004-2006. The best-selling DR-Z400 runs Showa, while the RM250 has been KYB since '02 – with an open-chamber fork – but they used a Showa twin-chamber before that. It was an unusual 49mm size. Then there were the '96-'97 conventional twin-chamber Showas. The 49mm forks that Showa (USA) had left over in '01 were the basis for the Pro Circuit 'factory' forks. Owner Mitch Payton saw a bunch of forks that were destined for the crusher, added billet axle feet and nitride coatings – instantly becoming factory kit.



Like Suzuki, there tends to be a lot of brand swapping – for price, performance or perhaps culture – no-one seems to know why (or they're not saying). Kawasaki has traditionally used KYB, but the KX250F started to use Showa from '06, while the KX450F remains KYB. The KX125 and 250 models have run KYB for all eternity. Kawasaki was the first company to use the 48mm fork in '01 and it took till '04 for Yamaha to catch-up.



Going against the grain of the other Japanese brands, Yamaha uses KYB almost exclusively in all its motorcycles. When Honda was using the Showa twin-chamber fork in '97, it took until '05 for KYB to release their own twin-chamber. The cylinder-valve fork Yamaha persisted with from '96 to '04 made a lot of suspension tuners busy. The new for '05 forks only lasted one year but they got it right in '06 as the basic design has been unchanged to date. And to confirm its great design and feel, Honda now uses it on the CRF450R.

> Honda's 1996 CR250 was a tale of two ends, the front being KYB-shod and the rear Showa-equipped. The next year would see an all-Showa model.



On The Tools

FUTURE TRENDS

Active suspension anyone? We've been there in the '80s, and it was dumped pretty quickly.

It was not fun that when you left the jump's face, the computer thought you needed more rebound damping because you'd stuffed the approach up, leaving you without the intended pre-jump lift. With good suspension, it's all about predictability in the same way that fly-by-wire throttles have to be intuitivte before they are acceptable on a motorcycle. Formula One currently uses a version of terrain-adjustable suspension but the old oil damper and coil spring fundamentals remain. Ducati has electronically adjustable clickers that were pioneered in World Superbikes but have since been banned. BMW and Ducati have used a similar system in some dual-sport bikes but it's not exactly mainstream.

How about air-cells for springs? Fox tried it in the '70s and Boge tried again with the BMW X-challenge. Light, cheap to make but not a crowd-pleaser. Mountain bike suspension makers seem to have got the air-cell to perform

to a decent level but there's a long way to go before it becomes the norm on your dirt bike. Fox has recently re-entered the market and if anyone knows how to make an air spring work, it's Fox, but they're still using coil springs.

Like the average waistline,

“Like the average waistline, fork tube diameter has slowly been creeping up.”

fork tube diameter has slowly been creeping up. We raced on 31 and 33mm forks in the '70s, 41 and 43mm in the late '80s and '90s. At the height of this trend we saw 50 and 52mm factory forks, but 48mm seems to be the magic number for flex, seal life and weight. When the tubes get too big they carry too much oil in the unsprung part of the fork.

For the next few years it will be refinement of existing designs, bigger shock bodies (with bigger oil capacities, bigger adjusters and new anti-friction coatings). Showa has released a new spin on

an old concept in the shape of the 2011 KX250F forks – one leg to handle damping, the other just for the spring. The advantages are an equalisation of the weight of the calliper, meaning the front-end is better balanced and only one fork has to be disassembled for valving changes. But there are disadvantages – there's not a wide range of differing springs available for them and there's a degree of insensitivity in the valving. They work okay for your average rider but not for racing. Clearly a move to reduce costs rather than increase performance.

WP (the White Power name went the way of the Golliwog biscuits) has sadly pulled their aftermarket suspension business back to almost extinction, concentrating on OEM supply solely. Only Ohlins is offering some innovation with their TTX units. The through-rod zero displacement dampers that are being seen on cars have a great application in motorcycles, so it would be interesting to look at a design for a zero displacement fork cartridge. But there are design limitations for motorcycles due to space! 📌