





## STAGE 2:

# LOCKED & LOADED

With handpicked performance upgrades, the standard 2011 KX450F has drifted into obscurity. Meet the fitter, faster, leaner T-Build KX450F.

— OLLIE SHARP & OLLIE SHARP & JAKE JACKSON —

**A**ny bike I've raced in the past, whether it's been a two- or four-stroke, has always been modified in three key areas first. Generally, I'll stick to upgrading the suspension, brakes and exhaust before touching the engine's internals. Covering those three aspects first is essential to building a fast bike.

An overpowered engine bolted into a poorly performing chassis is

an express ticket to the back of the pack. *Transmoto's* T-Build KX450F project is based on that exact philosophy.

As reported in the July issue, I tested a standard 2011 KX450F with several hours on the meter. That let me understand both the bike's strengths and weaknesses, and what was required to transform it into a nationally competitive race weapon. Armed with a handpicked

shopping list of performance parts, the KX450F evolved into a finely tuned tool. You won't find any unnecessary bling. There's no titanium exhaust system and no anodised engine plugs. Clutch, mapping and pipe aside, the engine itself has been left completely untouched. It's gone from standard to purpose-built moto-weapon without any unnecessary bolt-on bits, and it's a real keeper.



## THE PROCESS

When it comes to suspension, knowing your weight, riding style, riding experience and preferences, all helps suspension tuners get it right the first time. Teknik Motorsport was in charge of the suspension upgrade on our KX450F and can do anything from the bare essential upgrade to an A-Kit package. Having provided vital feedback from earlier testing, the standard Kayaba fork and shock were returned to *Transmoto* with slightly heavier springs, front and rear. Internally, Teknik installed their T-Valve kits for better oil flow on the compression stroke and tailored the settings. An SDI linkage kit replaces the OEM unit to create a more linear rising rate. It also lowers the bike's rear-end slightly to increase straight-line stability.

To sharpen the front-end's turning

characteristics, we've bolted on a set of billet aluminum Applied Racing triple clamps with a 22mm offset. The front Kevlar-braided brakeline has been replaced with an Artrax steel-braided line to increase feel and pad pressure, and a huge 270mm Artrax oversize disc kit amplifies the KX450F's stopping power.

While we could've kept the Kawi's standard ECU, an Aussie-made Vortex X10 releases untapped potential inside the 450s 'safe' operating parameters. The X10's ability to make the best of every horsepower and boost throttle response also comes with 10 preloaded maps for a variety of conditions.

The standard exhaust, while doing a good job of keeping noise emissions to a low 94dB, is replaced with an equally quiet Yoshimura RS-4 system to let the engine breathe. However, I've opted for the cost-effective stainless/aluminum

system, not titanium, for its durability and better heat dissipation properties.

On top of improved throttle response, boosted braking performance and more predictable suspension in super-rough conditions, I've also improved the bike's ergonomics. Artrax 50mm wide footpegs replace the standard arch-cutters to provide more grip and stability for my size 12 boots. A Blackbird tall seat foam and gripper seatcover replace the woefully soft standard unit, and I've bolted on a preferred set of 996 Renthal Twin-Wall handlebars with dual-compound Kevlar grips.

For the 450's drivetrain, there's a complete Hinson BilletProof system to provide more oil through the clutch pack and handle the extra abuse. By bathing the clutch in more oil and manufactured to tighter tolerances, the Hinson unit provides better feel, especially at high temperatures, and a longer lasting clutch.

## UPGRADES

SUSPENSION			CHASSIS		
Teknik T-Valve kitted forks	\$588	www.teknikracing.com.au	Applied Racing 22mm offset triple clamps	\$459	www.teknikracing.com.au
Teknik T-Valve kitted shock	\$588	www.teknikracing.com.au	Artrax 50mm footpegs	\$89.95	www.ficeda.com.au
SDI Linkage Kit	\$599	www.teknikracing.com.au	EXHAUST		
ENGINE			Yoshimura RS-4 stainless/aluminum system	\$649	www.serco.com.au
Vortex X10 ECU	\$769.00	www.vortexcdi.com	ERGONOMICS & CONTROLS		
Uni Filter ProComp 2	\$65	www.ficeda.com.au	Renthal Twin-Wall handlebars	\$169.95	www.cassons.com.au
GEARBOX			Renthal Kevlar dual-compound grips	\$29.95	www.cassons.com.au
Hinson Complete BilletProof	\$1295	www.serco.com.au	Blackbird high seat foam	\$89.95	www.offroadimports.com.au
GEARING			Blackbird gripper seatcover	\$69.95	www.offroadimports.com.au
Renthal 13-tooth front sprocket	\$29.95	www.cassons.com.au	ARC folding clutch lever	\$89.95	www.lustyindustries.com.au
Renthal 51-tooth rear sprocket	\$79.95	www.cassons.com.au	ARC folding brake lever	\$89.95	www.lustyindustries.com.au
Regina RX3 520 chain	\$129.95	www.cassons.com.au	BODYWORK		
BRAKING			SPP graphics	\$289.95	www.serco.com.au
Artrax 270mm front brake rotor kit	\$199.95	www.ficeda.com.au	Acerbis complete plastics kit	\$249.95	www.offroadimports.com.au
Artrax braided brakeline	\$89.95	www.ficeda.com.au	Acerbis X-Force handguards	\$59.95	www.offroadimports.com.au
Bendix brake pads front & rear	\$57 (each)	www.ficeda.com.au	<b>TOTAL: \$6885.25</b>		

Check [www.transmoto.com.au](http://www.transmoto.com.au) for more suspension upgrade options and their costs.

## THE RESULT

While it's been more than a month between test rides, *Transmoto's* completed T-Build KX450F couldn't be any closer to the objective I first set out to achieve. Firmer suspension settings have turned the previously plush ride into a race-focused balance between soaking heavy hits, plushness and stability. Where I was earlier concerned with the back-end stepping out or the front-end tucking through tight corners, I'm now confident the bike won't do anything silly at high speed. The benefits from the extra feel and predictability are massive. Swapping the standard 24mm offset triple clamps for the Applied 22mm offset clamps was a standout upgrade. The front-end is more planted through turns and the bike doesn't want to stand up at the apex. What's more, turning the 450 is now so much easier. On top of the offset change in the triple clamps, the SDI linkage delivers a smoother rising rate and shock action.

It's made the back-end more planted and track straighter, delivering more drive into the ground and soaking up a great deal of harshness.

As well as sounding ultra-horn, Yoshimura's RS-4 exhaust system has let the engine breathe and, as a result, there's slightly more power on tap. Coupled with the Vortex X10, the throttle response is instant and the engine revs without restraint to a higher limit. There isn't a great deal more horsepower, but the engine seems to revel in the ECU's ability to spread it out across the range - exactly what I was after. Vortex's pre-installed slippery track map also works well to dull the power delivery around greasy race circuits.

Bumping the standard gearing from 13/50 to 13/51 meant I could easily pull a gear higher with the added torque from the exhaust/ECU upgrades. The Hinson clutch (which comes with its own springs) appears to have made the clutch-pull slightly stiffer, but its feel and take-up are noticeably more consistent.

Upgrading the standard ergos to Renthal Twin-Wall handlebars and grips, ARC levers, and larger Blackbird seat and Artrax footpegs, all made the 450 more comfortable to ride for my larger frame. I've always found standard handlebars too narrow and the seat too low. Artrax's 270mm oversized front disc kit, together with their steel-braided front brakeline, is night and day better than the standard brake system. Not only is there now gobfuls of braking power, there's also a lot more feel at the lever.

Underlying this T-Build project has been the notion that a small number of key upgrades will produce the most significant improvements. And that's exactly what we've achieved. I couldn't have been more stoked with the 450s performance in its final trim. And the funny thing is, many of the upgrades we've done to this 2011 bike have now been integrated into the just-released 2012 model. Read on for our ride impression on the new 450, and a comparo between it and our T-Build. 🏍️

## WHEELS

Michelin Starcross MH3 tyres wrap the standard front and rear rims. They're suited to a mix of intermediate and hardpack terrain, but also perform well in muddy conditions. Inside the MH3s is a set of Michelin's Ultra Heavy Duty tubes to reduce the risk of a mid-moto flat. A 270mm oversized front brake kit comes courtesy of Artrax for massive stopping power, while an Artrax steel-braided front brakeline replaces the standard Kevlar-braided one. Bendix brake pads front and rear provide the bite on the discs.

## COCKPIT

Alongside the Renthal 996 Twin-Wall handlebars and dual-compound Kevlar grips, there's a set of Acerbis X-Force handguards to protect the digits from roost and rocks. They come with an extra protection flap, which I've left off to reduce bulk. ARC folding brake and clutch levers replace the buttery-soft standard units.

## THE LOOK

An Acerbis complete plastics kit replaces every panel on the bike and they fit like a glove. All you need to do is swap the washers over from old to new. Serco's SPP graphics department supplied the custom-designed laser-cut *Transmoto* graphics package, which gives the 450 a real individual personality.

# LOCKED & LOADED



## DRIVETRAIN

Clutch hardware in most standard dirt bikes struggles to withstand the torture of or national-level racing. To combat this, a Hinson BilletProof clutch has been installed to reduce tolerances between parts and is drilled for improved oil flow through the clutch pack. We run a shorter 13/51 Renthal sprocket combo (standard is 13/50), while a Regina RX3 chain connects the two to put the power to the ground.

“With a handpicked shopping list of performance parts, the KX450F evolved into a finely tuned tool.”

## ERGOS

Kawasaki's OEM seat foam turns to mush at around 15 hours of use. Because I wanted more legroom between the seat and the footpegs, I replaced the standard foam with a 20mm taller Blackbird seat and gripper cover. Replacing the Kawi's standard footpegs is a set of super-sharp oversized 50mm Artrax units. They're good!

## ENGINE

The KXX450F's standard engine produces just over a 50hp and is particularly strong in the mid-range. I wasn't after anymore power, but spreading it out across the range more effectively was an important objective. To achieve that, we mated a full stainless/aluminum Yoshimura RS-4 exhaust with a Vortex X10 ECU.

## SUSPENSION

Along with Teknik Motorsport's upgrades to the Kayaba fork and shock, there's an SDI linkage assembly to lower the rear-end slightly and provide a more linear rising rate. While the T-Build's new suspension only received the bare essential upgrades, Teknik does provide a premium A-Kit service, like that used on factory race bikes, if money is no object or you. Check [www.transmoto.com.au](http://www.transmoto.com.au) for details.



# KAWASI REBORN

The KX450F has always been predictable and powerful. But after evolving slower than its rivals in recent years, Kawasaki has delivered something special for 2012; with launch control, a slimmer frame and adjustable ergos!

OLLIE SHARP OLLIE SHARP & JAKE JACKSON

If there weren't any bike pictures accompanying the PR that read "all-new slimmer chassis, adjustable riding position and upgraded shock absorbers", you could be mistaken for thinking you were about to be hit with another tasteless dose of *Zoo* magazine. Which ever way you look at it, we reckon you're much better off, because Kawasaki's new 2012 KX450F is ready to please. And, unlike a lingerie model, it's not just limited to rich ugly dudes.

Through the past half-decade, Kawasaki's

KX450F has been screaming to be top dog in the Open-class pack. It may have racked up some impressive titles around the world during that time, but it's struggled to keep up with the fast-paced evolution of its competitors. Never suffering from a lack of raw power, the KX450F has, however, struggled to get into and around turns. Which is exactly why a set of 22mm offset triple clamps is always one of the first upgrades any privateer or factory team do to the bike. Not only that, but the KX-F's ergonomics have been increasingly

regarded as old-school and porky.

While the lion's share of Kawi's development budget may have gone into the soon-to-be-released 2012 KX250F with its all-new twin injector nozzles, improvements to the 2012 KX450F are certainly significant enough to sever the bike from all past incarnations.

Kawasaki Australia recently held the launch for their new bike at Macarthur Motorcycle Club's national MX track in Appin, and *Transmoto* was invited along to see what all the buzz was about.

## WHAT'S NEW

Calling the refinements to the 2012 KX450F subtle would be an understatement. It ain't a ground-up rebuild, but the bike represents a significant departure from its past. Perhaps the biggest improvement to the KX450F is the frame, which is 4mm slimmer than previous model's. Covering it is a modern and streamlined bodywork package. The new 450 is very much focused on ergonomics that can be better customised to the rider. On the 22mm offset triple clamps, there's now four handlebar position options that deliver 35mm of movement. Meanwhile, the set of large platform footpegs can now be mounted in two positions: standard or 5mm lower – a move aimed squarely at taller

riders or racers who prefer a lower foot position.

Taking holeshot buttons to an electronic level is Kawi's ingenious Launch Control System. Activated by a button on the handlebar, the subdued engine map limits the rush of power as you dump the clutch to dramatically increase drive off the startline. The temporary ECU map only works in first and second gears; once you hook third, the system reverts back to full power.

Kawasaki's FI Calibration Kit wasn't the easiest ECU mapping unit to use, so they're now offering three pre-programmed maps in the form of DFI couplers (standard, hard and soft). They're a welcomed addition and can quickly change the engine's ECU mapping at the track, without delving into the more complex calibration kit.

Inside the engine, a new bridge-box bottom

piston with revised skirting results in less friction for quicker response, and new intake cam profiles contribute to a better delivery of power down low. In tune with updated styling, Kawi has given the standard muffler some artistic love. It's now 60mm shorter but, due to its internal design, still conforms to FIM noise regulations.

To improve shifting and gearbox durability, first gear is now 2.8mm wider, the shifter fork has dropped 0.9mm in length for a quicker action, and they've increased the number of engagement dogs and slots from three to four. While the suspension sees minor tweaks for 2012 – improved bottom-out resistance, for one – you can now use an optional tie-rod in the shock linkage (1mm longer than standard) to lower the seat height by 4mm and make the linkage's rising rate more linear. 📌



### DFI COUPLER

Want to liven the KX450F's engine or numb it down for the conditions? No problem at all. Just connect the hard or soft DFI coupler for instant power delivery changes.



### TRIPLE CLAMPS

Every rider prefers a different handlebar position. For 2012, the KX450F's bar mounts can be fixed in four positions. That's an impressive 35mm of adjustability.



### MUFFLER

New styling also means a new aesthetically pleasing triangular-shaped muffler. It's 60mm shorter than last year's, a tad fatter and still meets FIM regulations.

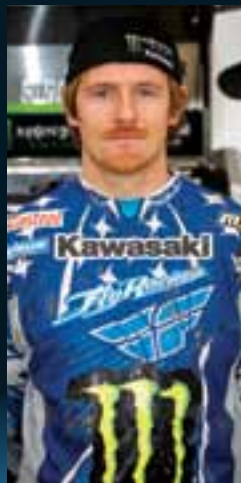


### LAUNCH CONTROL

Ground control to Major Tom ... Kawasaki's new electronic 'holeshot' device is cleanly integrated into the handlebars. It works a treat, especially with aggressive maps.



## SAYS KAWI'S TEAM RIDERS...

**BILLY MACKENZIE:**

"I prefer an aggressive engine, so when I first went out on the bike I had the powerful hard map DFI coupler plugged in. And it definitely suited this track. Straight away, I felt more comfortable. I really liked the height of the back-end, the slimness of the frame and its lighter, more agile feel. I use the power to drift the back-end around and position the bike in corners, and because of the chassis set-up, I found it really easy to stay in the centre of bike. The ability to change the power via the DFI coupler is cool as you can quickly customise the bike to different track conditions. Being able to adjust the ergos between handlebars and footpegs makes it ideal for a variety of riders, no matter their size and ability. The launch mode definitely has room to improve for Pro racing, but for the majority of riders racing at club level, having that option will help them out of the gate."

**DEAN FERRIS:**

"A few things stuck out for me straight away. The new frame is slightly skinnier and makes it easier to grip the bike, especially as I ride standing up a lot. Over the past few years, Kawasaki's seats have been really soft. Now it seems firmer; making it feel more like the seat on my race bike. And I'm picky about my seat. The three map options for the ECU are really good. In the morning, when the track was very slippery from all the watering, I used the soft plug to calm the engine down. Later in the day, once some ruts had formed, I had a ball on the hard map. Also, starting with the launch control is fantastic. I can't believe someone hasn't invented that sort of riding aid earlier, and we'll be using it during racing for sure. All the changes made to the suspension and chassis make the bike turn-in so much better, so I reckon it's only going to get harder to improve these bikes a lot in the future."

DOES IT FEEL  
DIFFERENT?

Considering the frame is only 2mm slimmer on each side and the bodywork has been streamlined, it's made a surprisingly big difference to the feel of the KX450F's ergos. The cockpit is noticeably slimmer and more compact. Kawasaki may be claiming harder seat foam, but it feels the same as last year's, albeit brand new, and only time in the saddle will reveal how fast it turns to mush. Despite this, the new seat is actually flatter overall, not only making it easier to move around on, but also making you feel more in control from above the machine. And compared to older models, there's no ugly overlapping bodywork plastic to snag your boots or kneebraces. I moved the footpegs down a notch to provide extra leg space and instantly felt more comfortable. Long gone is the cumbersome big-bike feeling that plagued the older KX-Fs.

HAS THE TWEAKED  
CHASSIS IMPROVED  
THE HANDLING?

The KX450F has always been super-stable on rough tracks. While it preferred railing long, fast, sweeping corners, the same couldn't be said for tighter turns. The changes made to lessen the rigidity in the rear linkage, the addition of 22mm triple clamps up front, and the internal fork and shock refinements, have combined to produce a 450 that's nimble on its feet while retaining plenty of overall stability.

Simply put, if the 22mm offset triple clamps were the only mod they made for 2012, it'd do the trick.

DFI COUPLERS – GIMMICK  
OR FOR REAL?

Suzuki was the first manufacturer to offer the DFI coupler idea to quickly change the ECU's power delivery for varying conditions. KTM and Yamaha both offer tuning tools to achieve a similar result, although they're not quite as simple to use. No matter how trackside EFI tuning is offered, there's nothing better than taking advantage of all that technology between your legs. After several motos using the standard coupler (or map), we installed the hard coupler (more responsive map) and it made the engine so responsive and aggressive, that it was almost unusable around the hardpack Appin track. Obviously, it's designed for loamy tracks. For slippery conditions, the soft map works really well at de-tuning the engine. To get that sort of result previously, you had to invest in an aftermarket ECU.

DOES LAUNCH  
CONTROL WORK?

Under real-world use, the handlebar-activated launch control mode isn't just a cool gadget; it's a major benefit. While it will never replace perfect starting technique, activating the launch map helps to smooth out the power delivery in first and second gears. It's designed to maximise drive and limit wheelstands. ↘



Timing starts with an iPhone is less than scientific, but from the dozen starts performed, my racing background preferred starting without the launch mode activated. However, once the hard coupler was connected to the ECU, the launch mode had a more noticeable effect in controlling the Kawi's eruption of

power. Like the prolific spread of holeshot buttons over the past decade, I'd expect Kawi's launch mode will follow a similar trend. It's perfect for a large chunk of the market. And for the Pros, it means a slight tweak in their starting routine to take advantage of the additional engine – and traction – control.

**“Never suffering from a lack of raw power, the KX450F has, however, struggled to get into and around turns.”**

### 2011 vs 2012

Since Kawasaki's release of the 2012 KX450F, we've been keen to put our T-Build 2011 KX450F up against it. Even though Kawasaki has clearly stepped in the right direction with their latest 450, you might argue that pitting a race-ready bike against the latest-generation stocker isn't really comparing apples with apples. But Kawi's 2012 450 is worthy of butting heads with modified older-gen model.

To do this, we took both bikes to Macarthur Park's practice track and rode them back-to-back. Updated suspension, the addition of 22mm offset clamps, improved ergos and a slimmed-down frame for the latest 450 certainly doesn't relegate the 2011 450 to solely a spare parts bike. Knowing the 2011 KX-F's weaknesses in ergonomics, braking and steering – the same areas the KX450F design team has now addressed – helped us to evolve the 2011 KX-F into a very good machine. We've upgraded it to handle rough tracks, turn better with the 22mm offset triple clamps and given

the engine a better spread of power with an aftermarket ECU and exhaust. The only two areas we couldn't modify were knocking 4mm off the width of the frame or adding the new bodywork.

As much as I'm in awe of Kawasaki's latest offering, testing both machines in the same conditions made me realise how much better a personalised bike can really be. While I still favour the slimmer frame and bodywork on the latest 450, mods made to the chassis, braking and power delivery in our T-Build 450 won my vote. It's faster, better-handling and more comfortable to ride.

So, what does this mean for Kawi owners looking to upgrade or racers purchasing a run-out special? Owning a 2012 KX450F will certainly put a smile on your face, as the complete package is the best Kawi has produced in years. But even with selected mods from our T-Build project, a well-sorted 2011 450 will make you just as competitive on the track, albeit without the ease of ECU map changes. 🏁

### SPECS – 2012 KX450F

RRP (incl GST, excl pre-delivery)	\$11,999
Distributor	www.kawasaki.com.au
Warranty	No warranty

#### ENGINE

Capacity	449.0cc
Bore x Stroke	96.0 x 62.1mm
Cooling	Water-cooled
Engine Type	Single-cylinder four-stroke, DOHC
Compression Ratio	12.5:1
Transmission	5-speed
Final Gearing	13/50
Clutch	Wet, multi-plate, cable-operated
Fuel Capacity	7.0 litres
Carburetor	43mm Keihin EFI

#### SUSPENSION

Fork	Kayaba –48mm USD twin-cartridge
Shock	Kayaba Uni-Trak

#### GEOMETRY

Claimed Weight (fuel & fluids)	113.5kg
Wheelbase	1480mm
Seat Height	960mm

#### RUNNING GEAR

Handlebars	Renthal 971
Front Tyre (as tested)	Bridgestone Motocross M403
Rear Tyre (as tested)	Bridgestone Motocross M404

#### BRAKES

Front	Nissin – 250mm disc
Rear	Nissin – 240mm disc

### MORE ONLINE...

Head to [www.transmoto.com.au](http://www.transmoto.com.au) for more images and video from the launch, and interviews with Team Monster Energy Kawasaki's Dean Ferris and Kawasaki Australia's Rudi Baker.

