



SUZUKI 1980 PE400T & 1981 PE400X

Photo: Suzuki Motor Company

Unlike its smaller PE175 and PE250 brethren, the PE400 boasted a purpose built enduro motor with no direct links to its RM counterpart

Although the original IT400C Yamaha was little more than a converted YZ motocrosser, its debut in 1976 realised a major dirt bike design theory.

Beer n' barbecue experts had long argued that the ultimate enduro bike should be little more than an MX'er with lights and a muffler. "More mumbo, less weight, more suspension!", the masses clamoured; inspired by visions of magazine-transformed YZ projects festooned with PP headlights, skinny fat plastic tanks and aftermarket power pipes.

So Yamaha simply fed the enduro-deprived market exactly what it craved with the IT400C; sourcing 95% of its components straight off the YZ400 counterpart model. This bold move paid off. By 1980, Yamaha had reaped the benefits of four years of market sector leadership and enduro competition feedback. It showed, with the 1980 IT425G emerging as a vastly improved, purpose-built enduro machine that had evolved away from its motocross heritage to pursue its own path through a process of refinement.

The impact of the big IT on the growing enduro market sector was not lost on Honda or Suzuki. By 1979 Honda responded with the XR500, the Big Daddy of a three model XR enduro range. However, at a claimed 123kg (270lbs) the 35 horsepower Big Red Thumper was overshadowed as a serious enduro contender by the 112kg (247lbs) Yamaha IT400F.

Suzuki were also ready to jump on the big bore enduro band wagon, having already dabbled with the PE250 and PE175. Rather than follow Yamaha's design path in refining a motocrosser into an enduro contender, Suzuki needed to think more laterally in conceiving a big bore PE that would hold its own against the monoshock IT.

Suzuki's PE range began with the PE250 in 1976; a direct derivative of the RM250 motocrosser with many shared components and design features. The PE175 which followed two years later, as Suzuki blatantly pursued maximum market share, took a similar design path, drawing heavily on the RM125 engine and chassis.

Both models were successful, but they also accentuated Suzuki's lack of presence in the big bore segment where the Yamaha IT remained unchallenged. With Yamaha so entrenched with the big IT, Suzuki had no alternative but to produce a first time winner in any new PE400 - even if that demanded a total "blank sheet of paper" approach.

Suzuki's major reason for avoiding the over-250cc enduro sector was the unsuitability of a motocross model which would normally be used as the design springboard for a PE derivative, in this case the RM400.

Because the long stroke motor RM400 was unsuited to enduro conversion, if Suzuki had opted to convert the RM400 (as they had with the RM to PE250 project) it would have entailed a massive redesign of the basic RM400 engine to overcome two of its major shortcomings as an enduro powerplant. The first was the RM's lack of primary kick start. Second was the RM's fearsome reputation as a high power muscle machine with minimal grunt in the low end-to-mid range power

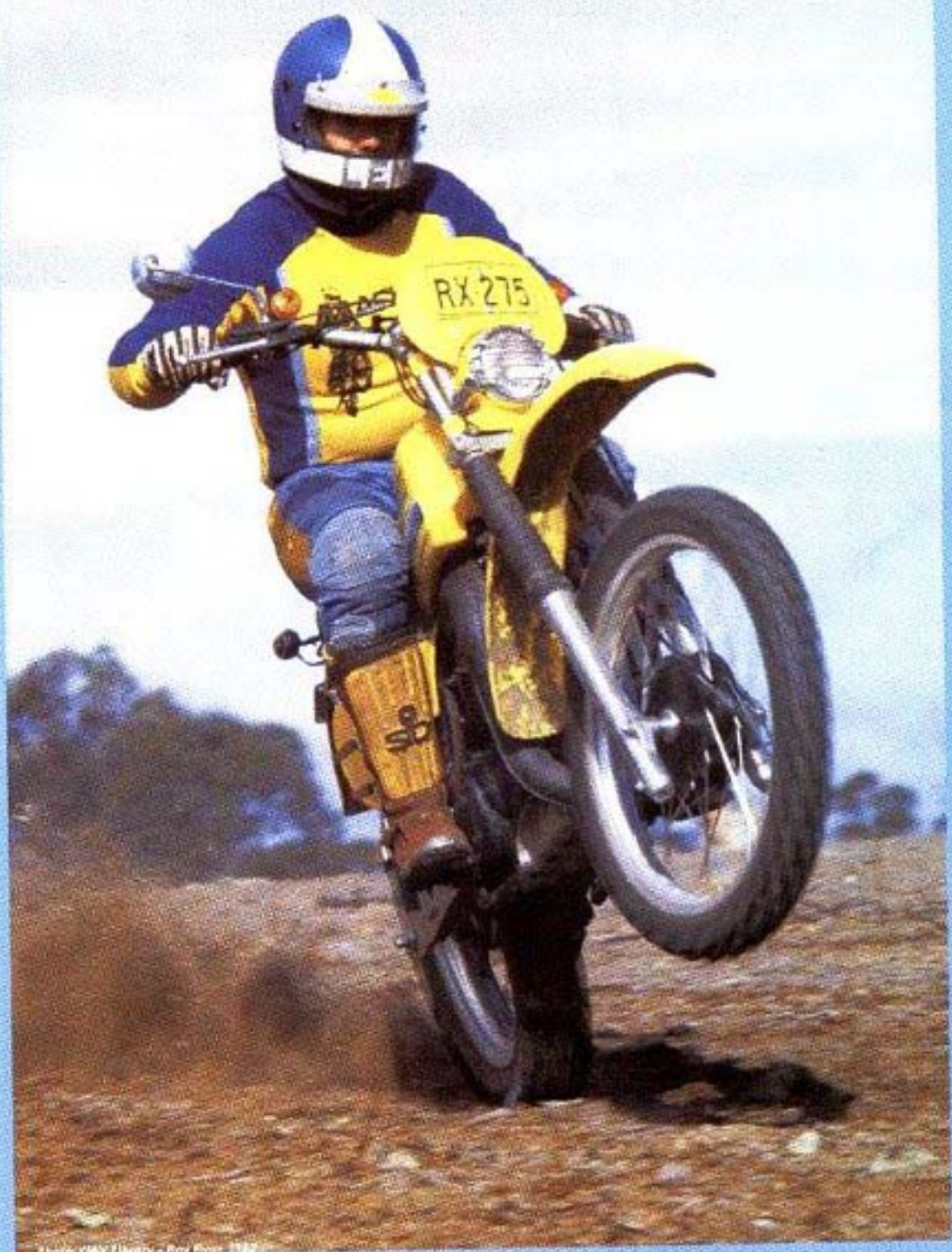
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400T combined 011111

ZAP ON TAP



Tall seat height, long travel suspension and mucho muscle. So you wanted wheelies?

transition. What had worked so sweetly with the smaller RM250 could not be easily applied to the bigger RM to achieve a similarly successful outcome.

Unwilling to tap into the existing RM400 parts bin, Suzuki engineers and Hamamatsu's corporate bean counters were understandably reluctant to take the plunge with what could become an open cheque book development program for a PE400 enduro motor.

However, there were people within Suzuki's U.S. office with fewer reservations. One was John Morgan, then head of Team Suzuki, whose role included overseeing the specifications of all U.S. market competition models. That included the PE enduro range and Morgan reported his concerns about missing out on a potential IT400-killer back to Japan.

He once again underlined the RM400's unsuitability as an organ donor for any new big bore PE but proposed a rational and cost effective alternative. Morgan again focussed attention on the highly successful RM/PE250 program. His briefing to the Japanese

engineers included a recommendation to build a new PE400 motor around the current RM250 unit. This would not only achieve primary kick start capability but also a shorter 70mm stroke that he believed would deliver excellent bottom end power when teamed with an increase in bore size from 67mm to 85mm.

The PE400 motor that Morgan conceived displaced 397cc, fractionally smaller than the 417cc (80mm x 83mm) RM400 unit. In production form, it also boasted several subtle refinements; including a stronger bottom end with a larger conrod and main bearings. Larger crank flywheels were specified to help smooth power delivery in a motor that utilised the RM250 six transfer port design and reed valve configuration. Topped off with a well muffled exhaust pipe to meet U.S. Forestry regulations, the new American-influenced short stroke motor was more flexible and user friendly than the old RM unit in every respect. It not only delivered a more usable powerband, but one that continued working well beyond the rpm parameters of the motocross-only RM

engine. That meant more bottom end, smoother transition to mid range and only 1.5 hp down from the RM400 race motor between 3,000 - 4,500 rpm. Beyond that, the PE400 ruled the roost, notching up 3.5 horsepower more than its "race proven" RM400 counterpart beyond 7,500 rpm. Initial reactions by those who rode the PE were that it could even have been a contender in anything but Expert class motocross.

Suzuki backed up the muscular motor with one of their best dirt bike gearboxes of the decade, a smooth shifting five speed, and delivered a PE that would pull from virtually zero revs. At the top end, the 1980 PE400T was not quite as long legged as the Yamaha IT425G, but this was irrelevant to most riders. Flexibility, grunt and user friendliness were what counted in enduros and that's precisely what the PE delivered in large family-sized serves!

Even when matched against the larger IT465H Yamaha in 1981, the PE400X proved almost as strong. Giving away a few ccs to the big IT meant little when the PE motor was





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Photo: Suzuki Motor Company

PE400T combined RM250-derived suspension, mild steel chassis and short stroke 397cc reed valve engine to deliver awesome traction and grunt

capable of outrevving the Yam. One test of the day claimed, "You never feel as if it's dropped off the pipe... the PE just gets you there better, because power is always on tap whenever you need it".

IF IT AIN'T BROKE.....

The boffins who drove the US-inspired PE400 project were as influential with Hamamatsu's chassis design department as they had already been with the boys down in Engine Design. Their input showed in an RMT-derived chassis which was remarkably easy to steer, or thread through tight sections, and was only flawed by its limited steering lock. In the interests of economy, the RM's chrome moly tubing made way for mild steel in the PE but Suzuki wisely carried over the excellent RM-style aluminium swingarm and magnesium engine cases.

Using ultra long travel RM suspension would have given the PE the gangly 300mm stance it needed to match the monoshock IT, but would have created conflict in the form of soaring seat height. Sourcing front and rear suspension from the PE250 was a minor compromise which still gave 250mm (9.8") front and 257mm (10.1") rear wheel travel, yet with an acceptable seat height of 950mm (37").

Nevertheless, at the time of the PE's release, the jury still seemed to be out on this point. Some testers preached that only those over 5'10" would be grinning from ear-to-ear

with their new PE400s, while others touted that the vertically challenged would love the "low seat height". In reality, the PE seat was 25mm taller than that of the IT465H, so please draw your own conclusions with the wisdom of hindsight.

There was no such conflict with the PE front suspension. Acclaimed as comparable to those of the RM, with air caps and multiple adjustments, the PE400's forks were the same KYB leading axle units that had already been used on the PE250. They remained unchanged for their debut on the 400 enduro model. Unfortunately the same PE250-style shocks also found their way into the mix, bringing their inherent shortcomings of harsh damping and lack of adjustability to what might have otherwise been a flawless off road chassis and suspension package. After copping considerable flak over the shocks on the original PE250, Suzuki's decision to stay with the same units for the PE400 defied logic and hinted at management by purse strings. Fortunately, aftermarket units were prevalent, affordable and popular and the imperfect OE shocks were easily glossed over by the 400's brilliant motor and crisp chassis.

WELCOME TO THE BIG BORE ENDURO CLUB

While not a lightweight at 113kg (249lbs) in both T and X model configurations, the PE400 was almost delicate by comparison to the opposition. It weighed in seven kilos lighter than the Yamaha IT, which had bulked up to 120kg with the 1981 IT465H, and was a

full 10kg lighter than the four stroke Honda XR500 (123kg).

Attention to detail kept the PE to a manageable mass and also matched the IT in terms of hardware and general fittings. PE400 buyers enjoyed equipment that included a quick detach rear wheel with inbuilt cush drive and a fully detachable RM-style sidestand.

The rear wheel setup was straight out of the "Boy's Own Guide to the ISDT" - a slot in the backing plate was retained in the swingarm by a tab, so after removing the chain, backing off the rear brake and slipping the axle out, the wheel simply fell away. There was also a large resettable odometer on U.S market models, while Australian market PE400s went one step further with a speedo and road legality package that made the PE fully road licensable in all states.

Minor criticism was levelled at the first model, the PE400T. The taillight fell apart from a combination of vibration and inadequate



Photo: VMAX Library - 1980
Australian market bikes carried road speedo and legal license equipment. U.S spec. PE400s used smaller enduro - style odometer



Photo: VMAX Library - 1980
If your cat got stuck in a tree then you could almost have ridden your PE400 up there to retrieve it



SPECIFICATIONS SUZUKI PE400 ENDURO

Production year	1980	PE400T
	1981	PE400X

Dimensions

Seat height	950mm	37"
Wheelbase	1,445mm	56.9"
Ground clearance	320mm	12.6"
Weight - dry	113kg	249lbs

Engine

Type	Two stroke single	
Bore x Stroke	85.0 x 70.0mm	
Capacity	397cc	
Power	37.6 hp @ 7,000 rpm	
Compression ratio	7.3:1	
Oil system	Premix	
Carburettor	Mikuni 36mm	
Induction	Reed valve	
Ignition	Suzuki CCI	
Clutch	Wet, multi disc	

Transmission

Type	Constant mesh, five speed	
Primary reduction	Gear 2.28:1	
Secondary	46T/15T	3.07:1
Ratios	1st	2.63
	2nd	2.00
	3rd	1.56
	4th	1.22
	5th	1.00

Chassis

Front suspension	KYB forks - 250mm (9.8") travel	
Rear suspension	Gas/oil shocks - 257mm (10.1") travel	
Front tyre	3.00 x 21 4PR IRC	
Front brake	SLS drum	
Rear tyre	5.10 x 18 4PR IRC	
Rear brake	SLS drum	
Capacities		
Fuel tank	10.6 litres	2.8 US galls

mounts, there was no folding brake pedal or gear shift lever tip and the plastics were marginal at best. Those deep valanced yellow plastic guards were well shaped but they never looked the same after that first spill. Neither did the decals; all of which usually went AWOL after the second or third ride.

Photo: VMX Library - 1980

On fast fire roads the PE was a bullet. Through the tight stuff it threaded like a smaller bike

While the plastics remained unchanged, apart from some fine tuning of the graphics on the PE400X, the second model also arrived with a taillight that would survive a tough weekend in the dirt.

In every sense, the PE delivered the level of detail and refinement which was expected of a mass production enduro bike in the early '80s - easy starting, a high level of waterproofing, sound ergonomics, effective engine crankcase protection and lightweight motocross-derived running gear. Even the plastic fuel tank didn't leak.

As the last of Japan's Big Three to join the Big Bore Enduro Club, Suzuki's entry was masterful in its timing and its execution.



PE was remarkably user friendly for an Open class enduro bike

BIG CLUB FOR THE BIG ENDURO

The PE400T (1980) and PE400X (1981) are very good bikes, taking into account their origins from the early TS range and race breeding from the RMs. With this formula, Suzuki could not go wrong. The first difference between them is the T had a bash/skid plate, the X did not, and the tank and side panel decals were different on both models. For example, the T had the word "Suzuki" on the tank above the telltale PE three coloured blue stripes and the side panels had the "400" numbers within the stripes. The X was different, insofar as it had white "Suzuki" lettering and white "400" on these stripes. There was only a slight difference on the muffler mounting brackets from model to model and the rest of both bikes was the same, and also the handling and performance.

Torque is the biggest and impressive thing about the PE400. It would pull you out of almost any sticky situation and the motor would fight the Yamaha IT425. It revs a little higher, but is responsive and has a tendency to wheelie. Also, it has a primary kick starter, so you can start in gear, which is good for those tricky unannounced stops.

The PE suspension has plenty of travel front and rear, but to take the PE into serious competition you needed to replace the rear shocks. It is a pity that Suzuki did not pass the rear suspension of the RM onto the PE400. The subtle differences from country to country were - U.S had plastic tanks and trip meters. Australia had plastic tanks, speedos and indicators. UK had metal tanks and speedos. Other countries mainly had plastic tanks and speedos/tripmeters.

Amongst the various Suzuki dealers that supply PE parts, we have had good experiences with Suziparts (Australia) and Crooks Suzuki (UK). There certainly is still strong interest in these classic enduro machines. Just check out this site, www.suzukiPE.com

This site is dedicated to the PE Suzuki with news, views and hard-to-find parts and a members club for these bikes.

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