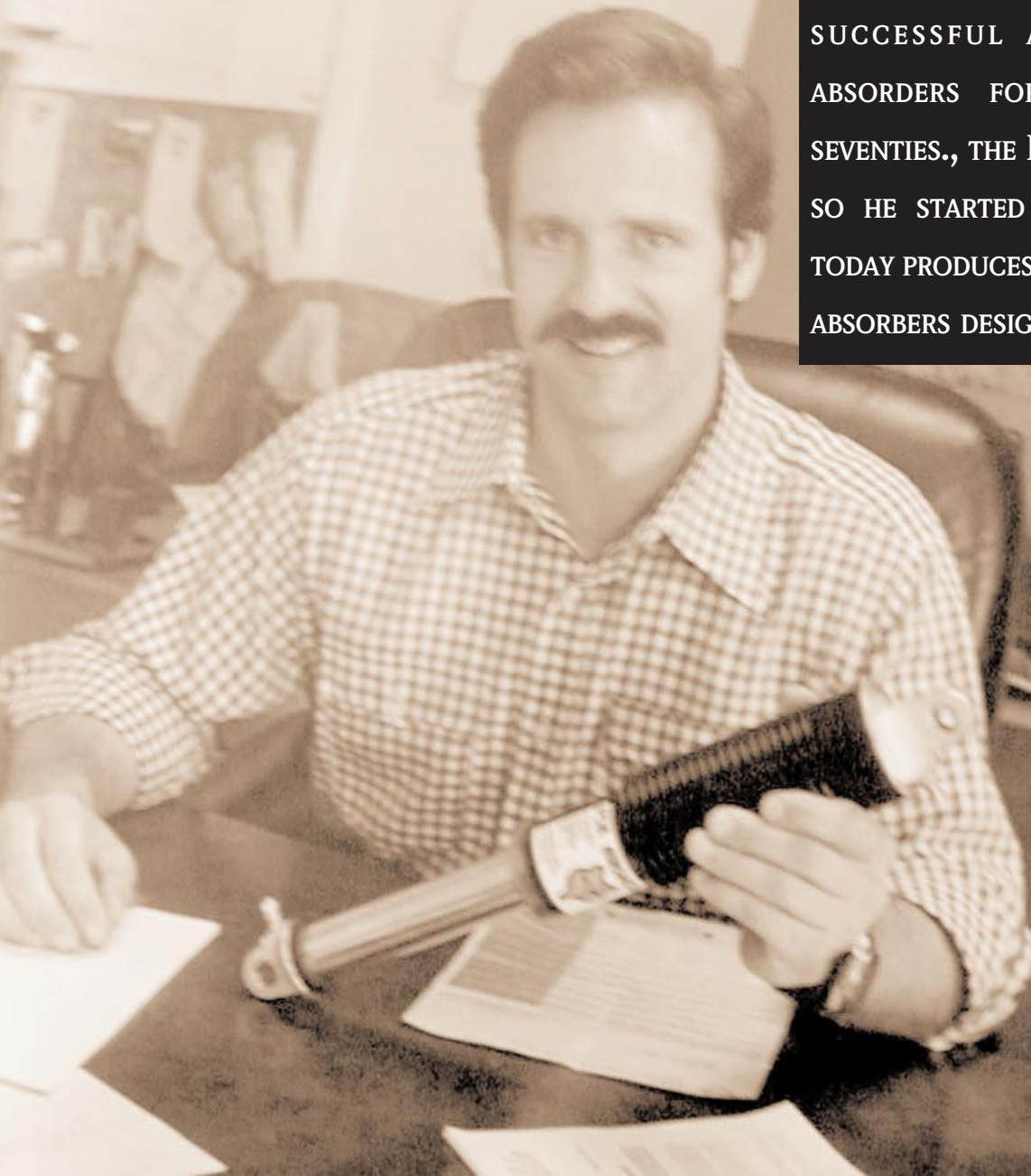


THE HISTORY OF FOX AIR SHOCKS

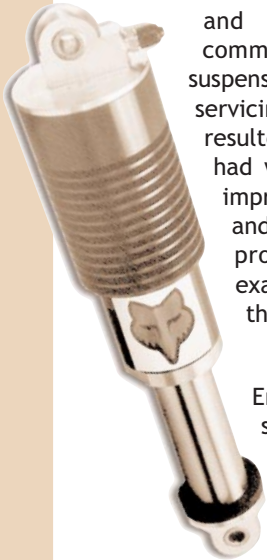
by Paul Parkinson

BOB FOX DESIGNED ONE OF THE MOST SUCCESSFUL AFTERMARKET SHOCK ABSORBERS FOR MOTORCROSS IN THE SEVENTIES., THE FOX AIR SHOX. IN DOING SO HE STARTED A COMPANY THAT STILL TODAY PRODUCES SOME OF THE BEST SHOCK ABSORBERS DESIGNED FOR RACING.



The story of Bob Fox and FOX Racing Shox is all about innovation, excellence and enthusiasm.

The story really starts with Bob's brother Geoff, of Moto-X FOX fame. Both Bob and Geoff were dirt bike and motocross enthusiasts in the early 70's. Geoff had started to develop and sell specialty parts, services and eventually clothing to the motocross community. At the advent of long travel suspensions, Geoff was selling rebuild kits and servicing Koni shocks. Geoff's initial efforts soon resulted in the development of the FOX Shox. Bob had watched some of the things being done to improve shocks by Geoff and others in industry and decided that he could develop a better product. Having seen a couple of early examples of air shocks, Bob set off to develop the product we all know as the FOX Air Shox.



Bob, utilizing his background in Mechanical Engineering, started to design and build several prototypes of the FOX Air Shox. Bob was fortunate at the time to have a friend with a garage that housed a metal lathe. Midway through 1974, several prototypes were built, and the initial design of the FOX Air Shox emerged.

Moto-X FOX's involvement with various racers in the Northern California region, allowed Bob to have leading riders try the new shock. Racing success soon came thanks to riders such as Kent Howerton and Brad Lackey. The success of the product really took off when Kent Howerton won the 1976 AMA 500cc Championship, riding a Husqvarna equipped with the FOX Air Shox. Soon, not only was the Moto-X FOX race team using the FOX Air Shox, but also factory teams such as Honda.



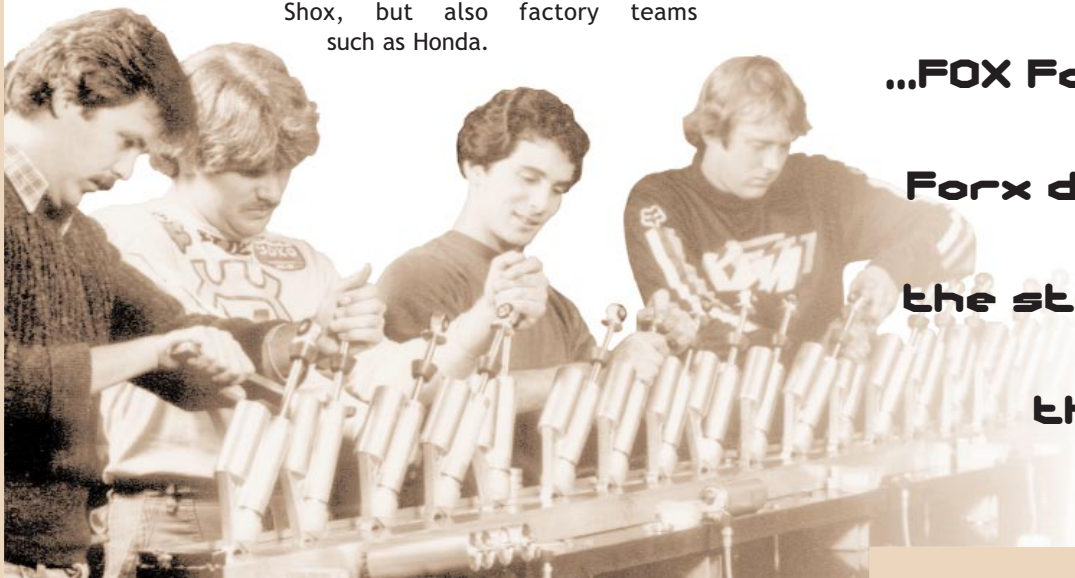
Until 1977, Bob had designed and manufactured the FOX Air Shox as a division of Moto-X FOX. The decision was made in 1977 to create a separate company, FOX Factory Inc., focusing only on the FOX Air Shox and related suspension products. The company's product line was expanded to include swing arms, designed specifically to support the new longer travel 17½ inch version of the Air Shox. The combination of the FOX Swing Arm and the 17½ inch version of the FOX Air Shox resulted in the ultimate rear suspension, offering superior control, reliability and unrivaled suspension travel.

However, the superb rear suspension possible with Bob's products were being mated to a front suspension that wasn't capable of the same level of performance. So, Bob Fox was forced to design a set of forks capable of the same level of performance as the FOX rear suspension system. The new FOX Factory Forx was designed to offer the ultimate front forks. Designed around a large stanchion tube size of 44mm, a forged lower fork body and a low friction seal system, the FOX Factory Forx defined the state of the art. Unfortunately, the seal system had some initial troubles with riders being able to quickly blow out the seals. Resolving the fork seal problem resulted in product delays and the expenditure of a considerable amount of money on revised tooling.

These delays allowed Steve Simon's forks to become the standard for high performance after market forks.

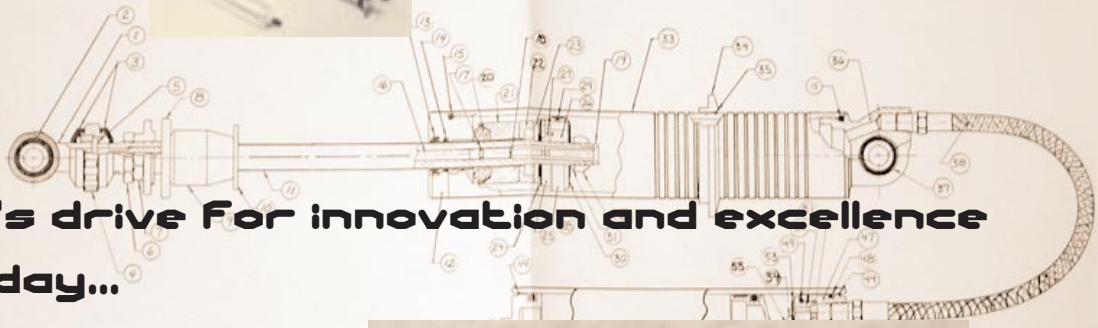


**...FOX Factory
Forx defined
the state of
the art.**





FOX TWIN-CLICKER
for Yamaha
with Exclusive Adjustable Compression Damping



The company's drive for innovation and excellence continues today...

While the period between 1977 and 1979 was dominated by the FOX Air Shox, the shortcomings of the air spring concept was becoming more pronounced. The heat build-up from more aggressive suspension designs resulted in the Air Shox spring rate increasing over the course of a race. Companies such as Works Performance and Ohlin developed newer designs that utilized dual rate external springs with deCarbon reservoir systems to offer more constant performance. In 1979 FOX Factory introduced a new FOX Factory Shox design utilizing external springs and the deCarbon oil/gas separation concept. For the first time, the FOX Factory products were chasing the competition instead of setting the standard.

The early eighties saw the second wave in the suspension revolution. Unlike the initial long travel revolution that was driven by the innovation of small specialty companies, like FOX Factory, the motorcycle manufacturers drove the second wave. The single shock designs by Kawasaki and Honda redefined the role of the shock in the suspension operation. As well, the manufacturers had learnt the lessons of the seventies and produced quality shocks and forks to match the new suspension designs. Now instead of having to replace the shock to get the ultimate suspension performance, it was possible just to modify the original factory shock. And the shocks were adjustable to suit the rider's preference or track conditions. FOX Factory kept pace by introducing the single clicker design and then the state of the art Twin Clicker shock.



coming to an end. FOX Factory responded by signing an OEM deal to supply shocks to KTM for their motocross motorcycles. However, the agreement only lasted a couple of years. By the mid eighties, FOX Factory was no longer making any products for motocross motorcycles and had developed products for other shock applications. The company's drive for innovation and excellence continues today. Bob Fox and FOX Racing Shox is a leading supplier of racing shocks for street and road-race motorcycles, off-road racing cars and trucks, bicycles, ATVs and snowmobiles. The enthusiasm for building the best racing shocks is as strong today as it was when Bob Fox decided that not only could he build a better shock, but he would also enjoy building a better shock.

Listen to the Experts!

"We've said it before . . . if you can't get a Fox Twin Clicker to work, then you're doing something wrong and shouldn't be allowed to handle anything sharper than a Twinkie. . ."

—Dirt Bike—
September 1982

FOX SHOX

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Twin Clicker®
by Fox Factory

Available now for all 1983 Hondas. Coming February 1 for Yamaha and Suzuki.

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However, the days of having to replace the original equipment shocks, in order to be competitive in motocross were



THE IntERVIEW...

This February, MotoXcross Museum had the pleasure of sitting down with Bob Fox and talking about the early days of motocross, the start of FOX Racing Shox and the FOX Air Shox.

MXM: WHAT WAS YOUR FIRST MOTORCYCLE?

BOB: I have to think... I do remember now. It was a Yamaha called the RT-1. There was a DT-1—that was a 250, the RT-1 was a 360. I think I got one of the first ones, but it was still pretty doggy. I don't think it put out the power of the 250—but that was my first bike.

MXM: HOW OLD WERE YOU AT THIS TIME?

BOB: This was 1971, so I was... 36-years old.

MXM: DID YOU EVER RACE MOTOCROSS?

BOB: Yes I did. I started racing sometime in the early seventies, 73 maybe.

MXM: DID YOU EVER WIN A RACE?

BOB: (Pause) I might not have ever won a race. The best I ever did that I can think of, is I got a second in an old-timer's—you know the old timers—that's over 40. I did that 10 years ago—I got second in the old-timers intermediate class.

MXM: WHEN DID YOU START GETTING INTERESTED IN WORKING ON THE TECHNICAL SIDE OF MOTORCYCLES? PARTICULARLY SHOCKS AND SUSPENSION?

BOB: That would be—I can tell that exactly—that's 1974, early 1974. The reason was, as you well know, that's when the suspension revolution was happening, long travel. And technically, engineering wise, what that meant—that the shocks that had been used for years were getting way over worked. The longer travel put a lot more load into them, put bigger forces into them, they had to work more, more energy, more heat. So basically shocks that had worked satisfactorily in the past were blowing up. So very simply, I am an engineer and I thought maybe I could do better.

MXM: I HAVE AN EARLY AD OF MOTO-X FOX OFFERING REBUILDING SERVICES FOR KONI SHOCKS. WAS THAT BOB FOX?

BOB: That was my brother actually. He started that. He got into the motorcycle business just before I did. He started this company—Moto-X FOX, which has now changed their name. (Now FOX Racing) He started that before I did. I saw him doing that—and I was involved in racing with him—and so hey I thought, he is doing that part of it so I'll do this shock absorber design part, the air shock.

MXM: SO WAS THE AIR SHOXS YOUR FIRST PRODUCT?

BOB: Yes, absolutely.

MXM: SO WHEN DID YOU START ON THE DESIGN, IN 1974?

BOB: Yes I did the design somewhere early, mid 74. Built the first prototype towards the last half of 74.

MXM: HOW DID YOU DEVELOP THE DESIGN. WAS IT JUST BASED ON YOUR BACKGROUND IN MECHANICAL ENGINEERING?

BOB: Yes. Well, around that time 73-74, there had been a few air shocks out there. CZ had an air shock and Honda, I don't know if they we're producing them, but they had them on their prototype racing bikes. So I had seen a couple of versions of air shocks—and something about that fascinated me. It seemed like such a better way to do it than a spring. So, that is what got me going down the air shock route. I thought it was so cool to be able to do. And from there it was mostly just engineering.

MXM: WHO WERE YOUR DEVELOPMENT RIDERS?

BOB: There were some local guys early on, and when we got further along I was fortunate enough to be able to test with Brad Lackey. He was the first big name rider I got to do some testing with.

MXM: WHEN DID YOU FIRST KNOW THE FOX AIR SHOXS WAS GOING TO BE A BIG SUCCESS?

BOB: It would be around 1976 when we won the 500cc Championship with Kent Howerton. When that happened business jumped. Winning the Championship with Howerton in 76, that was the moment.

MXM: DID BOB FOX EVER DO SWING ARMS. OR WAS THAT GEOFF'S COMPANY?

BOB: I think he might have done some but my company did some also. Let me be clearer on that—when I started actually—it was under Geoff's Moto-X FOX corporate umbrella. I was a division and did not split out separately as FOX Factory Inc. until 1977.

MXM: SO YOU THEN EXPANDED INTO FORKS & SWING ARMS.

BOB: Yes.

MXM: WHAT PRODUCT WAS YOUR MOST SUCCESSFUL?

BOB: Well, the FOX Air Shox was what really launched everything. The fork was not really a commercial success, I don't know if we even made 500 total sets. The swing arms so-so. The Air Shox was the big home run, at least back then. If you go forward in time, twenty some years, I guess you can say many things have been successful—but back then, that was THE product.

MXM: WHAT PRODUCT WAS YOUR FAVORITE OR MOST SATISFYING? NOT JUST IN MOTOCROSS, BUT IN YOUR WHOLE CAREER.

BOB: I don't really think I can answer that. I would like to give you a nice little sound-bite answer, I don't think I have a sound-bite answer. I would say this—the really technical ones, that's what I like. Actually we

are working on some new technology now. Maybe the most exciting thing I am working on—I am working on right now. As long as it is really cool engineering, that is my favorite. Success sometimes is high volume and a lot of sales, but what I really love is the cool engineering.

MXM: WHO WAS YOUR TOUGHEST COMPETITOR IN THE MOTOCROSS SUSPENSION MARKET?

BOB: Works Performance was going pretty good back then—and I guess they still are. And Ohlin—Ohlin was obviously doing really well too. So those were both good competitors.

MXM: WHY DID YOU EXIT THE MOTOCROSS MARKET?

BOB: There were a couple of things that happened. One of them was the air shock basically had certain limitations in motocross. Probably one of the main ones is, inherently a shock absorber gets hot, heats up, the faster you go—the hotter they get. So if you are working with air pressure, the air pressure increases when it gets hotter. So, there is no way around it, the shock absorber has got to get hot and when it gets hot, it has got to increase the air pressure. So you have a situation that throughout the race, the spring rate is rising. So its changing on you. Its not so bad it makes it impossible to win a race, but its not a good thing. So I think long term that was a problem, and its a problem that a spring didn't have. And that is why Works Performance and Ohlin—Ohlin maybe more so, came out with good products and they started to take away my market. So that is one factor, the Air Shox had a limited life. And the other factor is that the Japanese production bikes just started to come out with better and better shock absorbers. So where it might have been in the mid-seventies, if you were a serious racer and you bought a bike off the showroom floor, the first thing you would do is "trash" the shocks and put on a pair of aftermarket shocks. Or you were not competitive. By the time you get to 1980 and later, I am not sure any more, if you were a top pro or local pro maybe you needed something better. But if you were a typical rider may be it would be nice to have aftermarket shocks but you didn't need to have them. So that factor shrunk the market. So if you add those up, that is what I would say ended the motocross products.

MXM: WAS IT A TOUGH DECISION TO LEAVE THAT MARKET PLACE—SEEING AS THAT IS WHERE THE COMPANY STARTED?

BOB: You know in a way we didn't decide we were going to leave it. I think you try to stay with it and pretty soon you say, hey we are not making any money there, we 've got to find something else, we were no longer successful in the market. So we had to look in other directions to do what we did and grow. You know it could be argued that we could have perhaps stayed in there, there were some more technological developments and improvements in shock absorbers that were done. Ohlin did some really good work, so he stayed in that market. So possibly we could have done that, but the way things evolved, it is just not what happened.

MXM: FOX RACING SHOX HAS CONTINUED TO BE SUCCESSFUL IN OTHER MARKETS. WHAT IS THE COMPANY'S SECRET FOR ITS CONTINUED SUCCESS?

BOB: I think what FOX means to most customers is quality, good engineering, reliable, a good brand. That is what we want our image to be. Top of the line, latest technology, good value and good performance.

MXM: DO YOU OWN A MOTORCYCLE TODAY?

BOB: No.

MXM: WHAT WAS YOUR FAVORITE BIKE?

BOB: My favorite one would be a Maico, a mid-seventies Maico. Those were great. Also later in the old timers series I had a Honda 250 which was a darn good bike.

MXM: DO YOU FOLLOW MX TODAY?

BOB: Just a little bit. I know who a couple of the top riders are. I go to one race a year.

MXM: ARE YOU AWARE OF THE GROWTH OF VINTAGE MX?

BOB: I am aware of it a little bit, not a lot. I talked to Brad Lackey—I don't talk to him all the time, but we used to work with each other quite a bit. Anyway, I talked to him a couple of weeks ago. There is a Vintage race up at Sears Point in March, April. (April 28th) They are going to have hundreds of guys there. They are even talking of flying Falta in from Europe to race in the event.

MXM: THANK YOU VERY MUCH FOR YOUR TIME.

At this point I ended the interview and stopped the tape recorder. After mentioning that I had a mechanical engineering background, Bob's eyes lit up and he started a discussion on damping theory. It was very evident that Bob still has a lot of enthusiasm for designing and building the very best racing shock absorbers.



FOX Air Shox Racing Success

How successful were the FOX Air Shox in MX racing? Check out these notes made from a list in the 1978 Moto-X FOX catalog.

April 10, 1977, the 125 and 250 National Championship series started at Hangtown. In the 125cc class Pat Richter took second place using 17½-inch FOX Air Shox on his Suzuki 125B from Moto-X FOX. In the 250cc class Jim Pomeroy took second place using 17½-inch Fox Air Shox on his Honda.

May 8, 1977, Holland, Brad Lackey finishes second in the second round of the 500cc world championship. Brad switched to the 17½-inch shocks for this race after problem in the initial round on another brand of shock.

May 15, 1977, Sweden, Brad Lackey wins first Moto in today's 500cc World Championship race on his 17½-inch equipped Honda.

May 22, 1977, Finland, Brad Lackey again finishes second to Heikki Mikkola in today's 500cc World Championship race. Brad's Honda was equipped with 17½-inch FOX Air Shox.

June 19, 1977, Carlsbad CA, Jim Pomeroy wins the U.S.G.P first Moto wire to wire on his 17½-inch FOX Air Shox equipped Honda.

June 26, 1977, Canada, Brad Lackey continued his impressive 1977 season with a strong second place finish in the 500cc Canadian Grand Prix round. In the 250cc support class Frank Stacy rode his Penton to victory on FOX Air Shox.

July 3, 1977, Britain, Brad Lackey became the first U.S.A. rider to ever win a 500cc Grand Prix overall. The 17½-inch Air Shox was again part of the winning combination.

August 28, 1977, St. Pete Florida, Marty Smith became the first rider to win a national championship in more than one class today. Marty won the 125cc national championship twice before, but this day Marty won his first 500cc national championship. The 17½-inch Fox Air Shox helped Marty throughout his championship season.

I could go on with more but I think you get the point. The FOX Air Shox was used not only by the Moto-X FOX team, but also the Honda, Harley Davidson and Can AM factory teams.

Editors Note: (I apologize for cutting short the notes from the list. Many other great riders are mentioned.)

FOX Racing Shox Successes outside the MX Arena

While Bob Fox and the FOX Factory may have enjoyed initial success in motocross, their success has not been limited to motocross. In the late seventies, FOX Shox were being used in off-road racing cars with success. Roger Mears started to use the FOX Shox and won the Baja 1000 several times. FOX Racing Shox's success continues today in off-road racing. The company has a division dedicated to off-road racing and makes products for both off-road cars and trucks.

The introduction of the FOX Shox to Rick Mears, by his brother Roger, resulted in the company becoming involved in Indy Car racing. In 1981 the FOX Factory went to Indy. The company's shocks were successful very quickly. FOX Factory equipped cars, won the 1981 and 1982 Indy 500 race. In 1983, 14 out of 33 cars running at Indy were equipped with FOX Factory products. Tom Sneva won the Cart Indy Car Championship in 1983 using FOX Shox. FOX shox were being used in a wide range of open wheel racing cars including Indy, Atlantic and Formula Ford. The company was still quite small in the early 80's and while the Indy car business was prestigious, it was not overly profitable. Ken Anderson, who had been part of the driving force behind the Indy Car products and efforts, teamed up with Roger Penske and sought to purchase FOX Factory in 1984. The company was not sold and Ken left to create Penske Racing shocks, which continues the success in Indy cars originally started by the FOX Factory.

In the early eighties FOX Factory started to promote the use of the company's shocks on road-racing motorcycles. The company adapted the state of the art Twin-Clicker MX shocks for road racing and was soon successful. The Twin-Clicker shocks were so successful, that in 1982, Eddie Lawson had won the AMA Superbike Championship using them. Every team active in Superbike that year was also using the FOX Shox. Today FOX Racing Shox are still being used with great success in motorcycle road racing.

The company has also found success in other marketplaces. The FOX Racing Shox was a pioneer in the application of high performance shocks to bicycle and snowmobile suspension applications. Today FOX Racing Shox is a leader in OEM and aftermarket suspension products for mountain bikes and high-performance snowmobiles.

But don't expect the company to stop winning. They are constantly working on new suspension products to keep the winning tradition alive. It may also surprise you that FOX Racing Shox also make a shock absorber for prosthetic limbs. The company's ongoing theme of innovation, excellence and enthusiasm shows no sign of ending.

THE ROAD TO SUCCESS

No initial design of a product is perfect. Sometimes the best design comes only after careful testing and design revisions. Such was the case with the FOX Air Shox. The following pictures show the evolution of Bob's designs as he progressed towards the initial single chamber FOX Air Shox and then the final dual chamber FOX Air Shox.



RIGHT:
1978 VINTAGE 17½
INCH FOX AIR SHOX.
(DUAL CHAMBER DESIGN)



ABOVE:
A LATER PROTOTYPE STARTING TO LOOK LIKE THE
FINAL PRODUCT.

LEFT:
THE INITIAL FOX AIR SHOX WITH EXTERNAL
DAMPING ADJUSTMENT. (SINGLE CHAMBER)

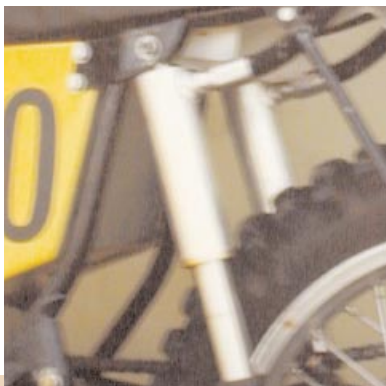


LEFT, BELOW LEFT & RIGHT:
MAICO TEST BIKE WITH
EARLY PROTOTYPE SHOCKS.
NOTE THE TWO SHOCKS
WERE CONNECTED TO A
SHARED RESERVOIR MOUNTED
ON THE REAR OF THE BIKE.
THIS WAS AN EVALUATION
VEHICLE FOR EARLY DESIGN
IDEAS.



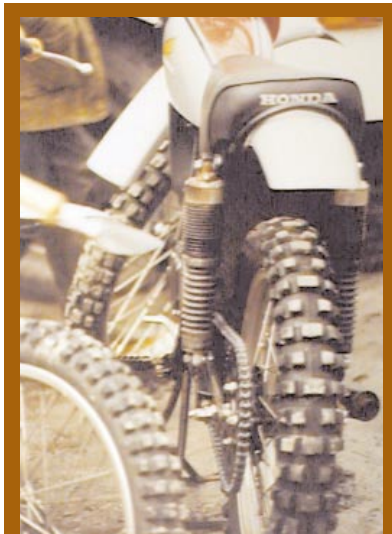
Brad Lackey played an integral part in the testing and race success of the FOX Air Shox. We asked Brad to offer a comment on what he remembered about racing with the Air Shox.

"The FOX Air Shox were like nothing else available at the time. The shocks not only offered superior fade resistance compared to other manufacturer's shocks, but they were also far stronger. This put an end to bent shocks being the cause of a DNF. The Air Shox was very adjustable so you could have a plush ride, yet still have shock travel and control for landing off the big jumps."



MOTOCROSS AIR SHOCKS

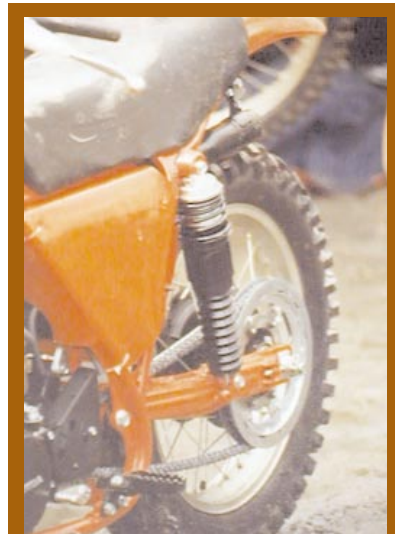
Bob Fox didn't invent or pioneer air shocks for motocross motorcycles, but he designed air shocks better than anyone else. Both Honda and CZ had factory efforts to develop air shocks. The following pictures show a number of early air shock designs taken from FOX Racing Shox's historical files.



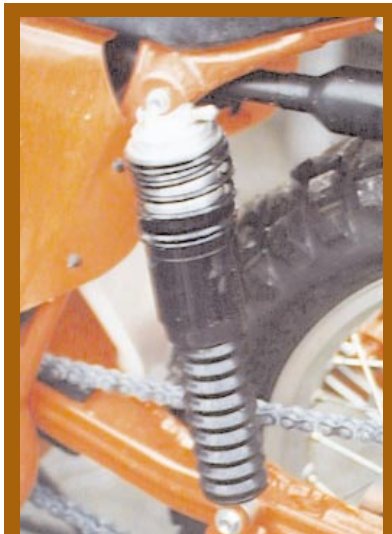
An early Honda CR250M with a pair of Honda air shocks installed on a forward mount swing arm.



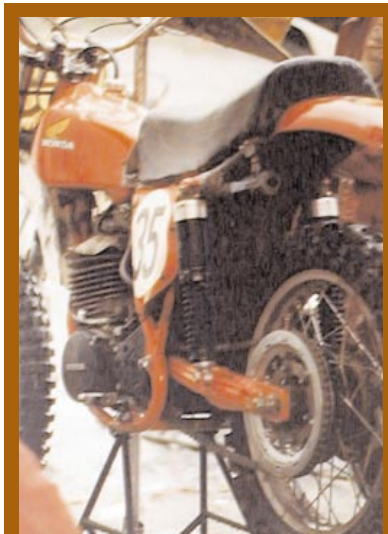
A close up of the shock on an early CR250M.



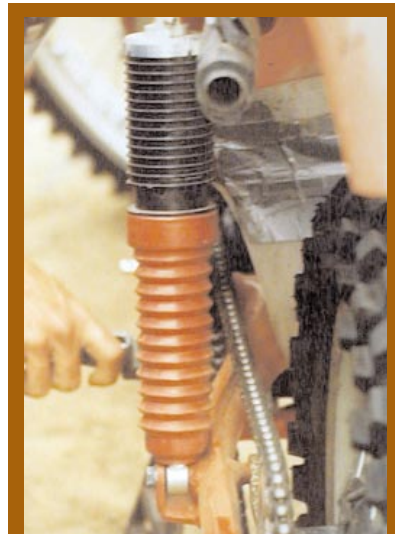
A works Honda 250 with a different air shock design.



The shock appears to have a soft external spring to provide a dual stage spring system. The year is most likely 1975.



Another Honda works bike with a different air shock design.



Honda experimented with a number of designs in this time period—this one features cooling fins on the main body.



CZ with their successful air shock from the early seventies.

It is interesting that all of the shocks in the pictures were only single chamber designs. While the original FOX Air Shox was a single chamber design, the real success came with the release of the dual chamber design in 1976. Bob Fox clearly understood what was required to build a truly winning design—and he did it better than anyone else!

WHO did WHAT

in the FOX Family of Suspension Products

The history of the Moto-X FOX and FOX Factory are intertwined. Not only were the FOX Factory products distributed by the Moto-X FOX, but Moto-X FOX also designed and built some of it's own shock and suspension products. And all of them had "FOX" in the name. So to help clarify who designed and manufactured what FOX suspension product, here is our chart to help you figure out which Fox did what.

PRODUCT NAME	DESCRIPTION	MFG.	INTRO DATE	NOTES
FOX SHOX	EMULSION SHOCK WITH EXTERNAL SPRINGS	GEOFF FOX	1975	DESIGNED BY STEVE SIMONS
FOX AIR SHOX	SINGLE AIR CHAMBER AIR SHOCK	BOB FOX	1975	EXTERNALLY ADJUSTABLE DAMPING
FOX AIR SHOX	DUAL AIR CHAMBER AIR SHOCK	BOB FOX	1976	
FOX FORX	FORK IMPROVEMENT PARTS	GEOFF FOX	1974-1975	DESIGNED BY STEVE SIMONS
SWING ARMS	ALUMINUM SWING ARMS SUPPORTING 17.5 INCH SHOCKS	BOB FOX	1977	
FOX FACTORY FORX	REPLACEMENT FORK ASSEMBLY	BOB FOX	1979	
FOX FACTORY SHOX	deCARBON GAS SHOCK WITH EXTERNAL DUAL RATE SPRINGS	BOB FOX	1979	AVAILABLE WITH INTEGRAL AND REMOTE RESERVOIR. GEOFF'S ORIGINAL EMULSION SHOCK IS STILL AVAILABLE.
SINGLE CLICKER	deCARBON GAS SHOCK WITH EXTERNAL SPRINGS AND EXTERNALLY ADJUSTABLE COMPRESSION DAMPING	BOB FOX	1982	
TWIN CLICKER	deCARBON GAS SHOCK WITH EXTERNAL SPRINGS AND EXTERNALLY ADJUSTABLE COMPRESSION AND REBOUND DAMPING	BOB FOX	1982	MANUFACTURED TODAY FOR STREET & ROAD RACING MOTORCYCLES. AVAILABLE WITH INTEGRAL AND REMOTE RESERVOIR.