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Street Rod Parts • Top Pro Stockers
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Mustang/Pinto Beef-Up Kit

It's for your C-4 auto trans— and it costs all of 27 cents!

BY JERRY SLATTERY

After talking with automatic transmission expert Toni Rossi, on the potential of the Ford C-4 for street rod use, we found that "potential" is probably the understatement of the year. This Simpson-designed transmission (the same as the TorqueFlites, Turbo 350's and 400's, and C-6) not only has good beef-up potential but also gives lasting dependability.

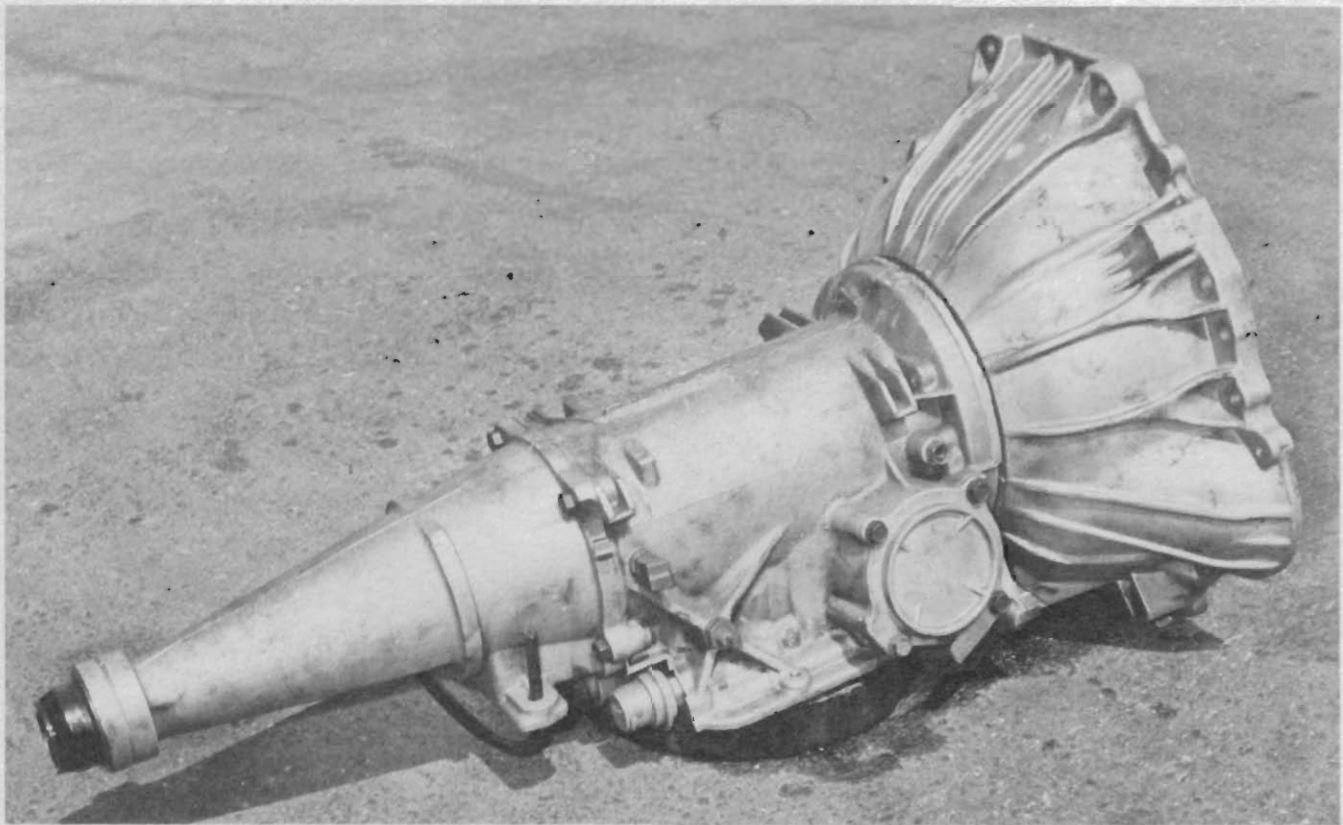
You won't believe how simple it

is to turn your Mustang/Pinto C-4 automatic trans into a super shifter for the price of one pan gasket, one valve body gasket, and a cotter pin. Now that's what we call a low-buck beef-up kit. There aren't any special tools or experience required, just a few sockets and wrenches (mostly 7/16 and 1/2-in.)

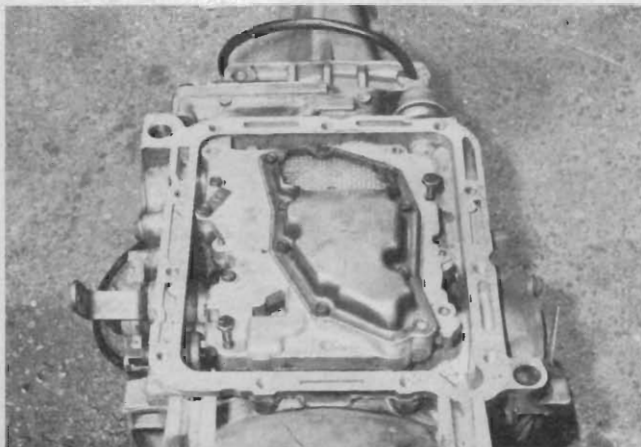
The first thing to do is drain the trans fluid and drop the pan. Remember, it's important to keep this

job as clean as possible, since any dirt or grit inside could disturb the shifting qualities of the valve body. Upon dropping the pan, remove the eight bolts holding in the valve body. It will be necessary to wiggle the shifting lever while gently pulling on the valve body. Don't force it! In the right position it will simply fall out.

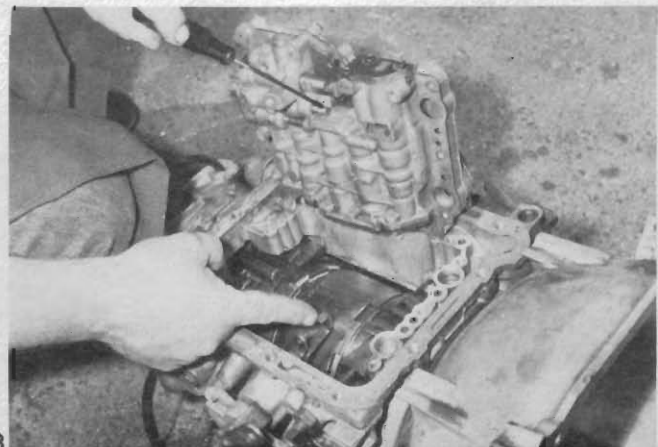
After removing the valve body, set up a clean work area on the



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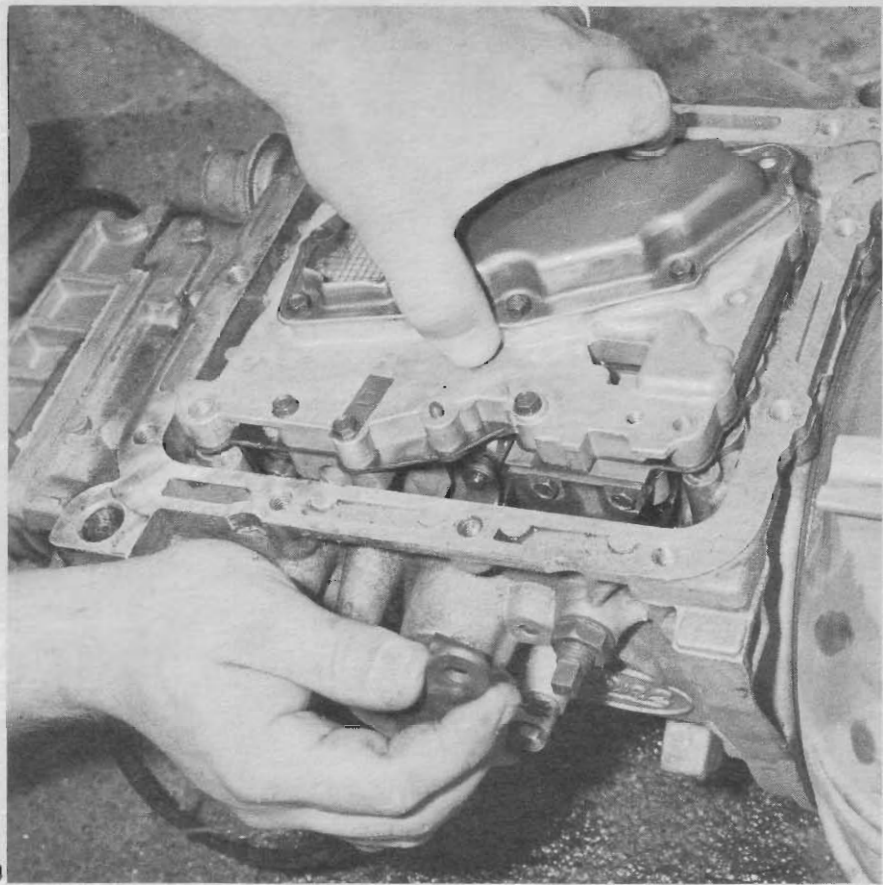


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bench and begin removing the tin filter screen. Under the filter are four bolts that must be removed along with the others holding the two valve body halves together. Next, separate the halves and remove the shift plate. The half nearest the center of the trans is the one you'll be working on.

Holding the valve body, turn it, so the end plates are facing your stomach. The lower left-hand corner is your first work area. There you will find the servo accumulator plug which looks like a tiny rubber button about 1/4-in. in diameter. Remove this rubber plug from the trans. In the same corner, just below the plug is a small triangular end plate with one bolt holding it to the side of the valve body. Take off the plate and remove the spring. Replace the plate and discard the spring and rubber plug.

To the right in the other corner is the cutback valve hidden below the fluid passages (check the photo). This cutback valve must be pinned in the down position—down, toward the end plate. Arrow in the photo indicates proper direction. It may be necessary to lift the valve body and shake it down. Then force the cotter pin down in the passage way shown. Don't worry



1. Basic Mustang/Pinto C-4 automatic trans can be turned into real super shifter with hardly any sweat (or money) at all.

2. Remove the trans pan and clean the gasket surface, then remove the eight bolts holding valve body to case.

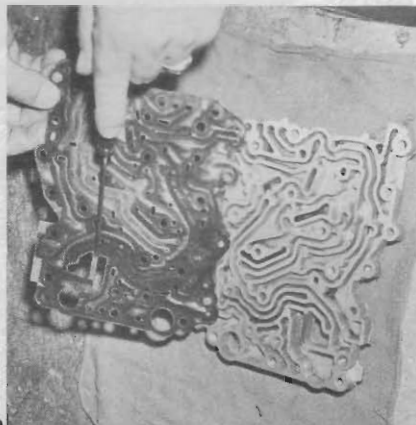
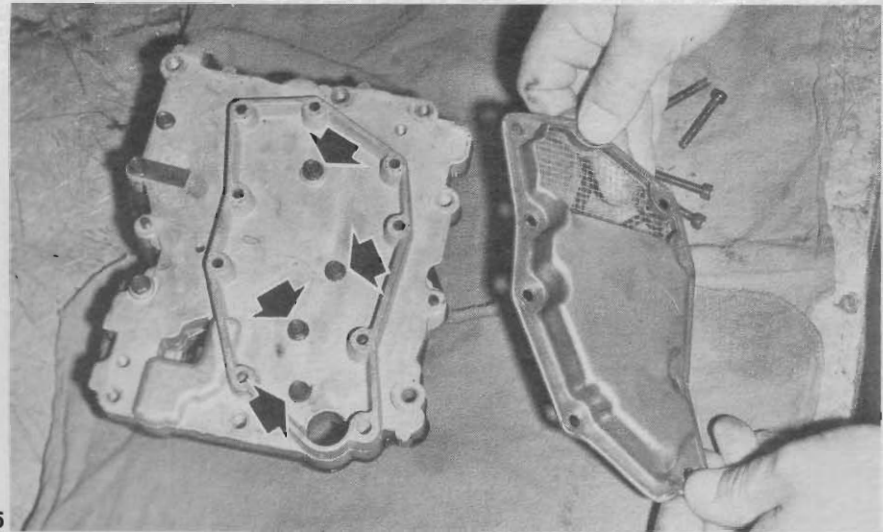
3. Shifting link (below) must clear shifting pin on valve body (above). Care should be taken in this step—don't force it!

4. Best way to disengage shift lever from valve body is to shake lever while gently pulling valve body free.

5. Place valve body on some clean rags on workbench and remove filter pan. Four bolts under filter pan (arrows) must also be removed for next step.

6. After separating valve body, check gasket for possible leaks and poor seal. Simple conditions like this blown gasket are common failures among C-4 family. Assemble valve body by soaking gasket in solvent for best seal. Using grease will expand gasket, while gasket compounds shrink the material when dry.

7. The Rossi method requires removal of this tiny servo accumulator plug. This small plug is located just above servo accumulator valve spring, which must also be removed.



Beef-Up Kit

about the pin falling out because the shift plate will hold it in place.

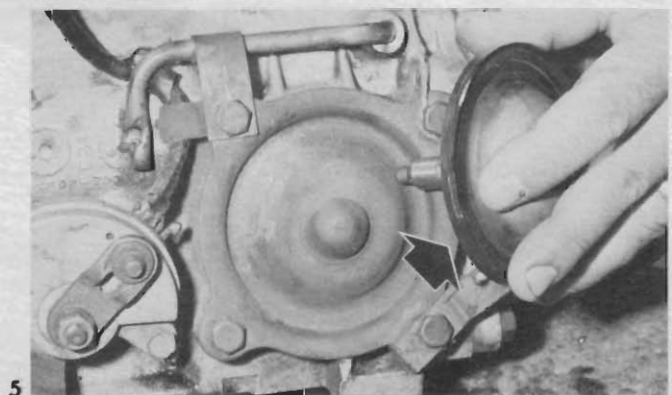
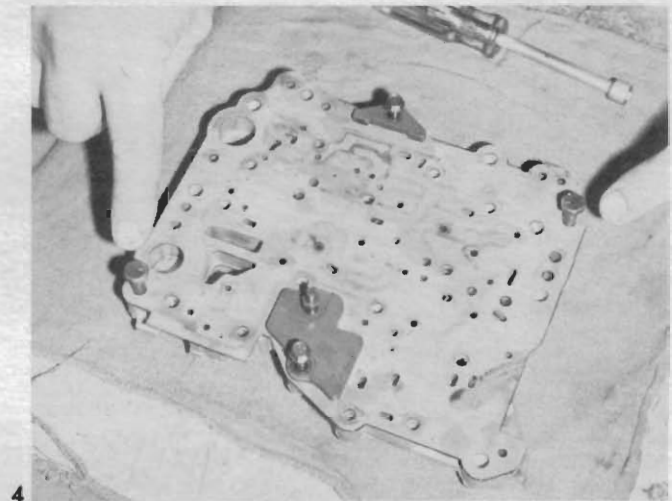
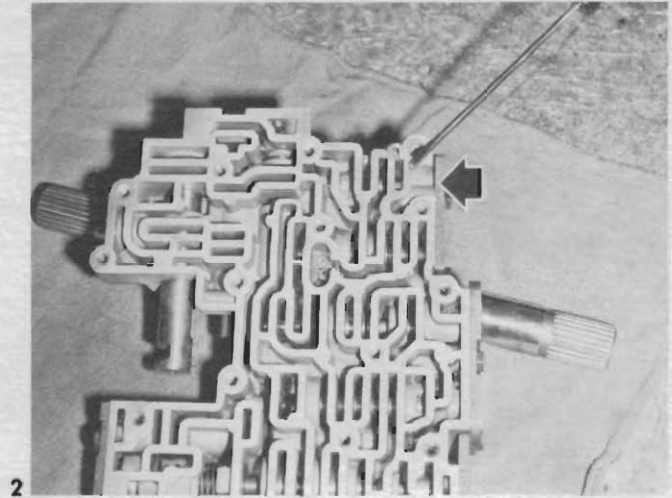
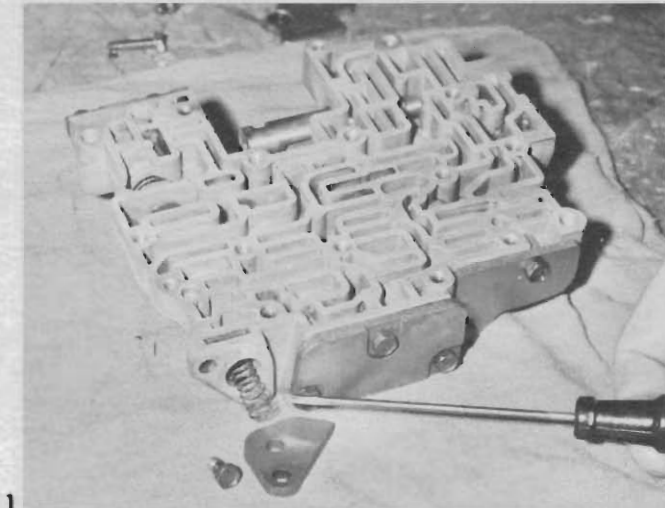
Your beef-up kit has just been installed! All you need to do now is reassemble the valve body and install it back in the transmission the same way you took it out. Toni has some assembly tips that will save you problems later. He recommends soaking the gaskets in solvent a couple of minutes. The type of material used in automatic trans-

mission gaskets seals better with solvent than with grease or gasket sealer. Grease causes the gasket to expand when compressed, and gasket sealer tends to shrink the gasket when it dries.

The C-4 does have its failures. Probably the two most common are valve body gasket leaks which can cause the trans to be totally inoperative—such as no shifts at all. The other most common failure is in the reverse gear apply valve which has an outer rubber lip that

seals off the vacuum. It's this rubber lip that tends to get hard and chip off. The most noticeable symptom would be lack of reverse gear. There's no major difficulty in correcting these C-4 failures since the trans doesn't need to be removed from the car in either situation.

In case you're not too sure what you have, the ID tag located at the base of the dipstick tube or on one of the pan bolts can be used to easily identify your trans if you check any Chilton or Motor's Man-



ual. This will tell you the year and model.

You're probably asking yourself, now that I'm done, what's happening inside the trans? Here's the deal. By removing the spring and pinning the cutback valve in position, you've raised the fluid pressure from its stock 65-85 psi to around 115 psi. The accumulator valve spring acts as a fluid cushion, absorbing some of the fluid pressure difference, giving you a nice smooth shift. Removing this valve spring allows all the fluid pressure (115 psi, instead of 75 psi) to arrive immediately, giving you a crispy little shift. This modification has also changed your shift timing. What used to shift like hot peanut butter, will now grab you by your fresh laundry. If you don't think the shifts are crisp enough, then just put it to the wood for the old passing gear—that's where you can feel all 115 psi.

What about the shift pattern? Well, it's just the same. It will shift up and down automatically just as before. If you're real quick, the job might take you less than two hours, if you have all your stuff together. Not too bad for 27 cents and a couple hours' work.

1. Just below the rubber plug is an internal spring which can be removed by dropping the end plate. Replace the small end plate.

2. Probably the most expensive part to install is the 2-cent cotter pin which holds this tiny valve in the down position. Follow the direction of the arrow.

3. Don't forget to replace this small shuttle ball in the center of the body. The valve body shift plate holds the ball in position.

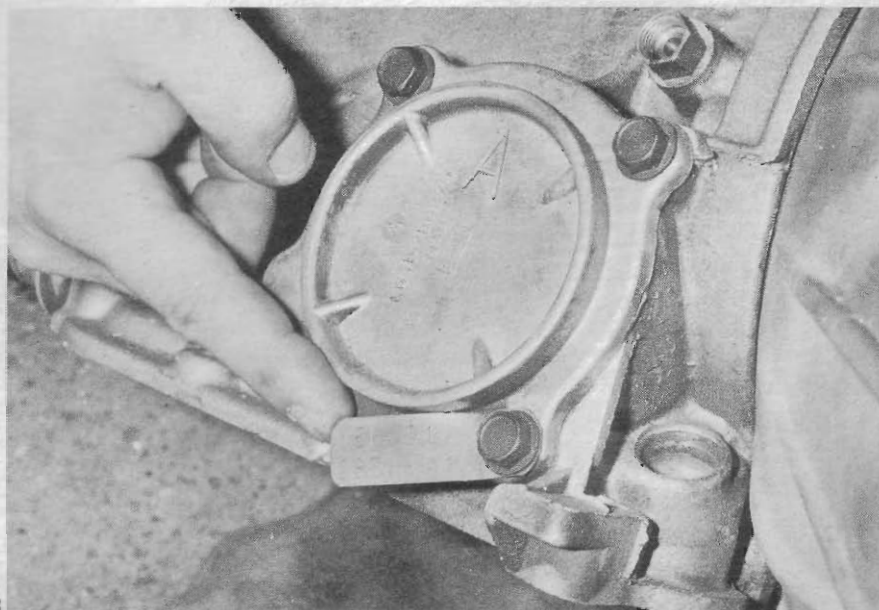
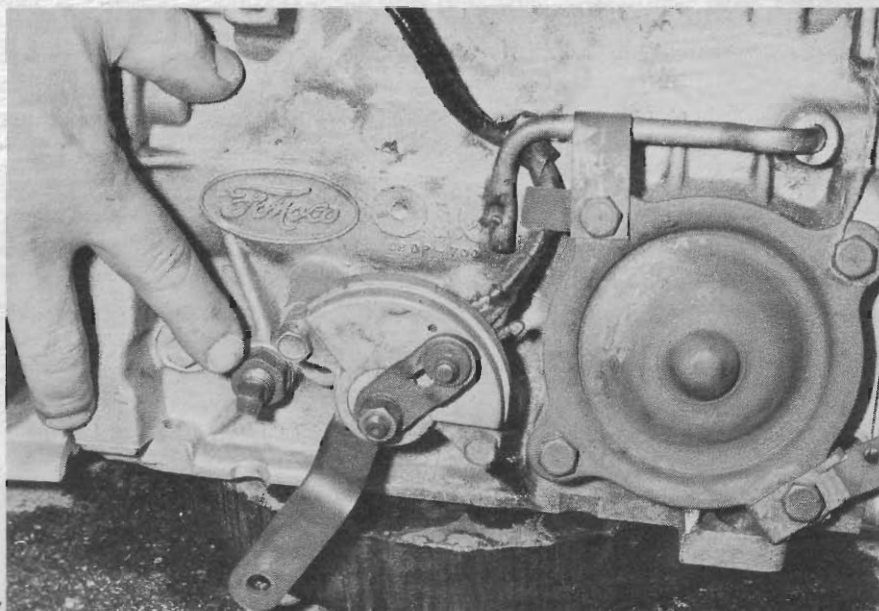
4. Two housing screws will help line up shift plate and assist in proper alignment for subassembly screws.

5. One of two most common failures with C-4 is this rubber lip (arrow) on the reverse band apply piston. It can easily be replaced by removing four bolts and installing new gasket. (The trans doesn't have to be removed from the car).

6. Minor rear band adjustments can be made with this external stud and lock nut, indicated by finger; arrow shows vacuum modulator.

7. On forward left side of trans is the front band adjustment, just ahead of shifting arm.

8. This Simpson-design transmission can easily be identified, by its tag, in any Motor's Manual. All ID tags are located at the base of the dipstick tube.



Pinto Pro Stocks By Paddack

Ford's pocket rocket is converted to an 8-sec. missile.

BY BOB McCLURG

Pro Stock racing has come a long way since its birth in 1970. Jenkin's old Camaro or Dyno Don's Maverick would be train-lengths behind the latest tubular-chassis, small-block Minis that have taken over the Pro Stock Eliminator ranks. The past two seasons of Pro Stock victories have fallen to a well-known Vega from Pennsylvania. This season, however, Nicholson, Gapp & Roush, Glidden, Blevins, Carlton, and others have shared the purses with Grumpy.

Pro Stock racing is one of the most expensive classes to compete in and it is also one of the most rapidly changing technologically. It is hard to conceive that a Mini-Pro could carry a price tag of over 20 grand, but the majority of the '73 Pros run about that much when they are first rolled out for that hopeful 8-sec. clocking.

This may well be the Year of the Pinto Pro, and one of the most successful Pinto builders in the country is Paddack Racing Enterprises, just off of U.S. 31 outside of Indianapolis. Many of you Gasser fanatics will recall Norm Paddack's notorious Willys and Opel Gassers. He's been drag racing for 15 years. In '66 he began racing on a national level with a '40 B/G Willys, which held both National and Divisional records in '66 and '67. About this time NHRA allowed rectangular steel tube frames for Gassers, and in '68 Norm built the first AA/GS Opel Kadett—Paddack's Mini Brute—which was a fine example of

Norm's ability as a builder and paved the way for the business he now runs.

In the fall of '68 the Kadett was replaced with the first Opel GT coupe AA/GS Gasser. This car won many Best Appearing and Best Engineered awards and really got Paddack Racing Enterprises off the ground. The company was formally formed in 1969, based in a 2-car garage. Within a year it was moved into larger facilities, and in March '73 it moved once again into its present 5000-sq.-ft. building.

A visit to Norm's shop reveals some of the neatest constructed Ford Pinto Pros to be built. The cars feature the latest in Pro Stock technology, and all PRE products are long on pride and craftsman-

ship. Norm was more than willing to share his construction techniques with us, and here's what we learned.

PRE tries to keep expenses down on all race car preparation, and does so by obtaining salvageable wrecks rather than "bodies in white." After the bodies have been delivered, all unnecessary parts are removed and excess weight is pared with an air chisel and glass-beading. Norm feels that glass-beading is just as thorough as acid dipping and warps the body less. However, the doors are acid dipped.

A steel chrome-moly frame is fabricated on a jig from 1½-in. x .095-in. square tubing. All joints on the frame rails are cut at 45°, Bridgeport milled, and he-



liarced. The bare chassis is then fitted with rear frame-rails and body tabs prior to preliminary body height checking for roll cage installation.

Paddack's Pintos use a stock Pinto rack and pinion with modified Pinto upper and lower steering arms. Monroe coil-over shocks are used with Pinto spindles and disc brakes. Paddack also has sets of custom upper A-arms ready should the rules be changed to allow them. The rear suspension uses a late-model Ford V-8 housing, narrowed to 38 ins., equipped with a Lenco center-section and Strange axles and disc brakes.

Paddack and his crew perform all the aluminum work on the cars, and they have built a special mold to make fiberglass rear inner fender panels to fit the trickily contoured Pinto fender well. The reason for the one-piece glass units is to prevent smoke from entering the cockpit during burnouts.

The Mini-Pros come complete with all suspension components, all aluminum paneling, fiberglass parts, titanium pedals, and interior for \$7200. Norm's price tag is competi-

tive with that of other builders, and his cars boast the highest quality. Shop personnel Paul Davis, John Sliger, Dwain Ross and Mike Mendell help Paddack and wife Vicki keep the shop active all the time. Not only does Norm have cars under Glidden, Big Stacy Shields, Rich Miracki, and others, but he also builds a plenty mean Funny Car chassis. He currently has one Funny Car and nine Pro Stocks in the building stages—including a super-trick Pinto Pro for himself.



1. Paddack saves customers money going in by using salvageable wrecks instead of bodies-in-white. Now you can see how much of the original car is left when building a Pro Stock, and reason for its high cost.

2. Norm's previous shop was set up in a converted barn. Timbers in foreground were removed from barn, installed in spanking new showroom. Paddack sells complete line of high-performance racing equipment.

3. Racing veteran Norm Paddack built reputation on famous Mini-Brule Opel gassers, is now busy building Pinto Pro Stocks and Funny Cars.

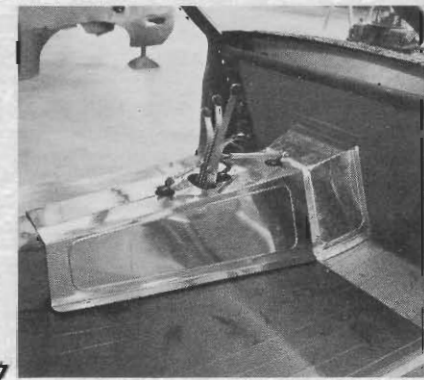
4. Paul Davis prepares one of the many aluminum panels that replace stock components in the Pinto. Flanges and beads are added for stiffness to various panels.

5. Big John Sliger removes the complete inner door panel with an air chisel. All unnecessary weight is excised from the body shell.

6. A complete tube frame/roll cage supports the body. Front suspension components are modified Pinto. Note motor plate, coil-over tube shocks.

7. A familiar sight in Pro Stockers today is the Lenco 4-speed gearbox. A separate lever controls each shift.

8. To the rear, Paddack one-piece fiberglass wheel houses prevent fire smoke from entering cockpit. They're huge to cover enormous racing tires.



The Potential Pinto

The Pinto street rod is arriving. Its disc brakes, C-4 trans, and narrow rear end make it a natural for street rod use. Here are some basic Pinto chassis ideas.

BY JERRY SLATTERY

Pinto chassis components are beginning to show up in the street rodding world more and more every day. The Pinto disc brake is just a baby brother to the Mustang discs that are common among rodders. Their vented rotors and large single-piston caliper give them a first-class rating over the non-vented foreign car type. What's more, the Pinto/early Ford spindle adaption is done the same as the larger Mustang spindles and is a job that can be handled by any machine shop. The Pinto master cylinder can also be used with your disc brake setup since it has a split reservoir. If the Pinto rear end is used, then why not use the entire Pinto

system. The Pinto rear end is about 4 ins. narrower than the world famous Chevy rear end. This small feature will eliminate tire overhang, providing the tires aren't wider than 10 to 14 ins. The station wagon is worth mentioning since it is a little beefier than the regular passenger car rear end. Probably one of the best features about the Pinto running gear is that it is available from every Ford parts department across the U.S. and Canada.

What about the engine and trans? Well there's sure no problem getting this 2000cc engine under the hood. The bare block length is 18 ins., while the width is 12 ins., and from the pan seal to the head

1. Here's a possibility not to be overlooked. It's the basic T-bucket chassis with Pinto engine and trans. Notice how far the engine can set back due to shortness of the block.

2. This narrow front-ump, 4-cylinder Pinto is a natural in any narrow set of frame rails. One advantage of the Pinto is its cross-flow head design, with the intake on one side and exhaust on the other.

3. The Pinto engine/trans combo can be connected to just about any type of rear. Here it's hooked up to an XKE Jag unit. Small Pinto converter and bellhousing keep hump in the floor to a minimum.

4. Entire Pinto running gear has been engineered into this '28 Ford chassis. Front disc brakes, rear end, master cylinder and driveshaft are all Pinto items on this chassis.



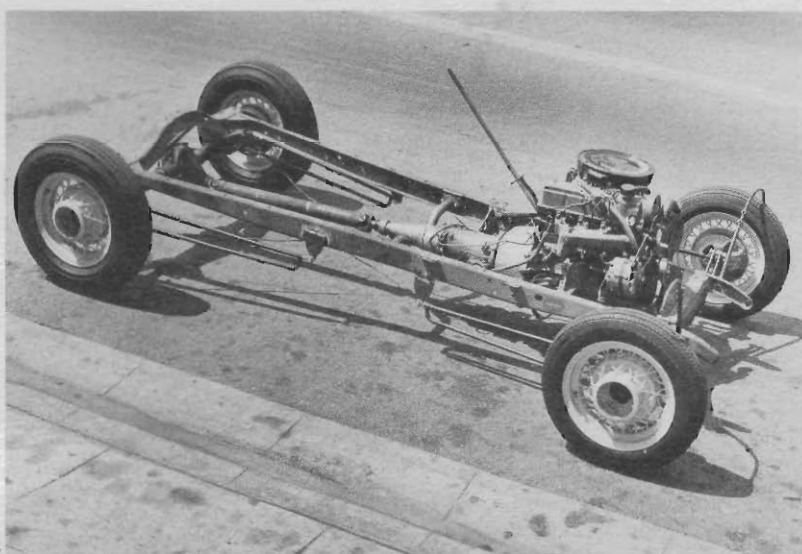
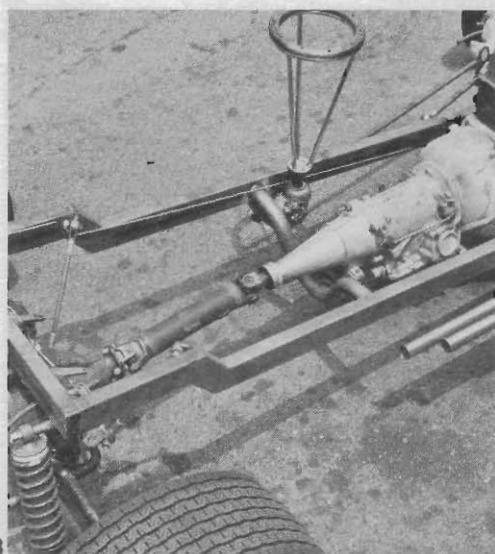
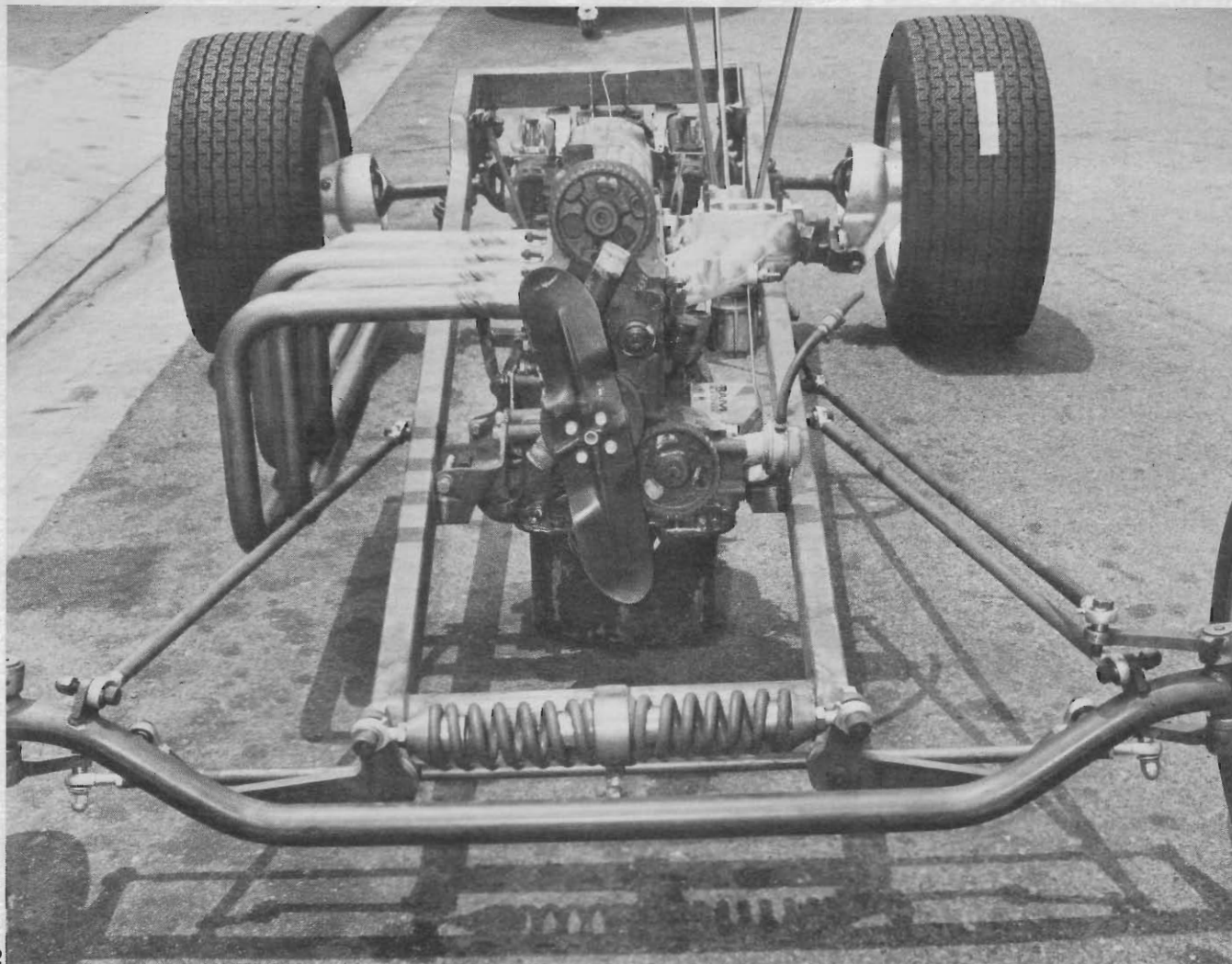
gasket, the block is only 8 ins. high. Compare these dimensions with the rodder's favorite—the Chevy. The Chevy measures 28 ins. in length and is 25 ins. wide (almost double the width of the Pinto).

As you'll notice in the photos, the Pinto engine mounts from the side. There's plenty of working

space and a million ways you could make the mounts. Weighing in at only 260 lbs. and rated at 95 hp, this little engine has five main bearings. That's definitely an indication that there's plenty of strength in the bottom end for horsepower increase, if the builder wishes more power. The crank is

made of nodular cast iron with a stroke of 3.029 ins. and a bore of 3.575 ins., an oversquare condition which means that the engine can be revved to fairly high levels.

Two transmissions are offered in the Pinto. One is a 4-speed and the other is the dependable C-4 unit that has been performing in the

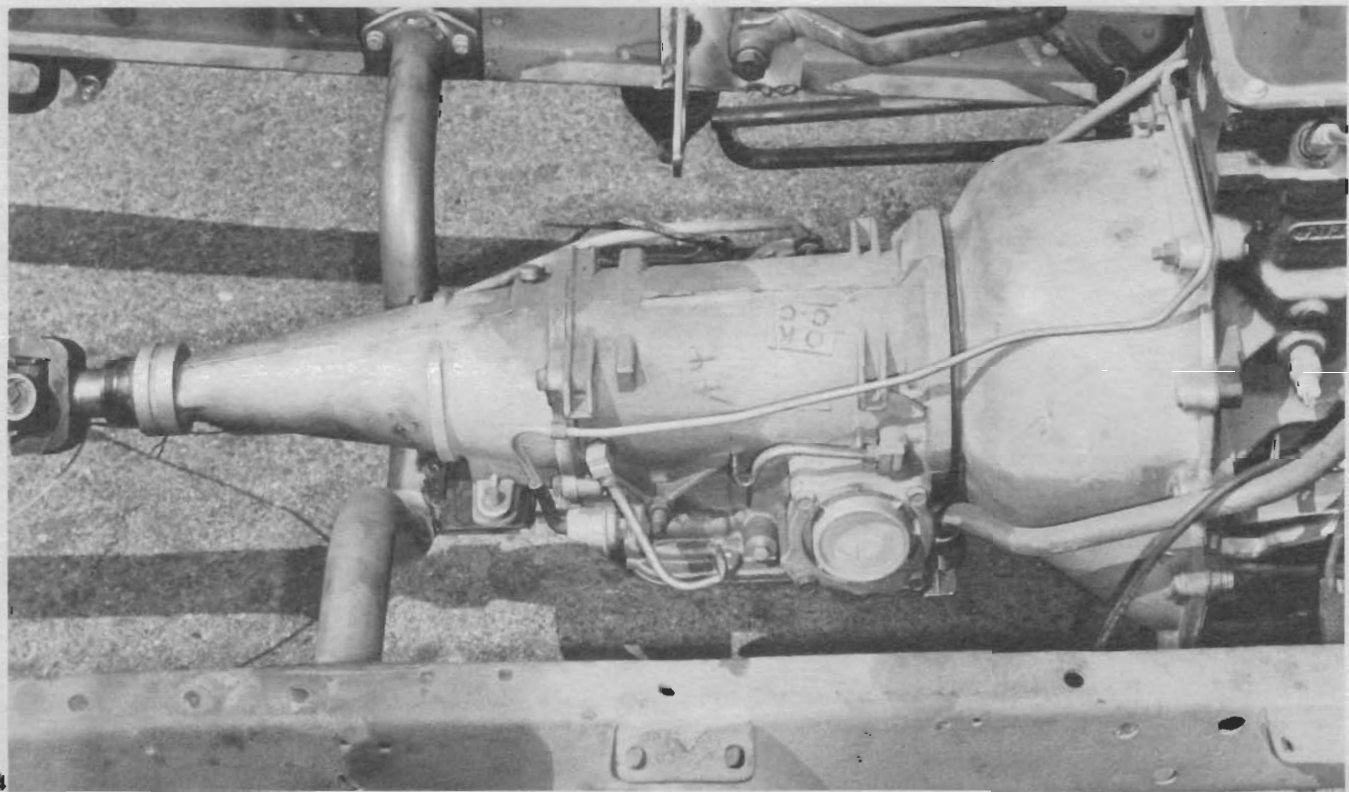
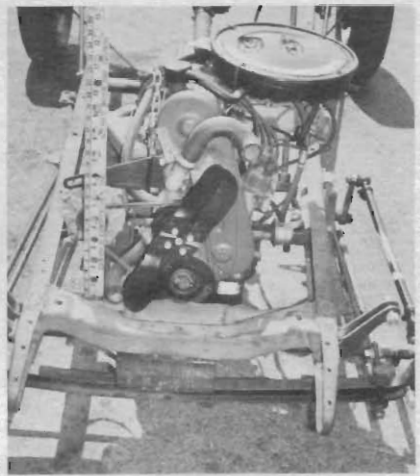
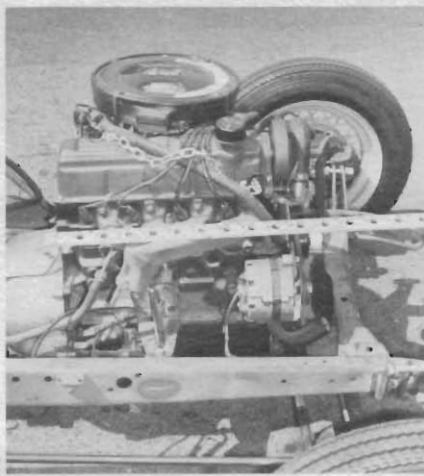
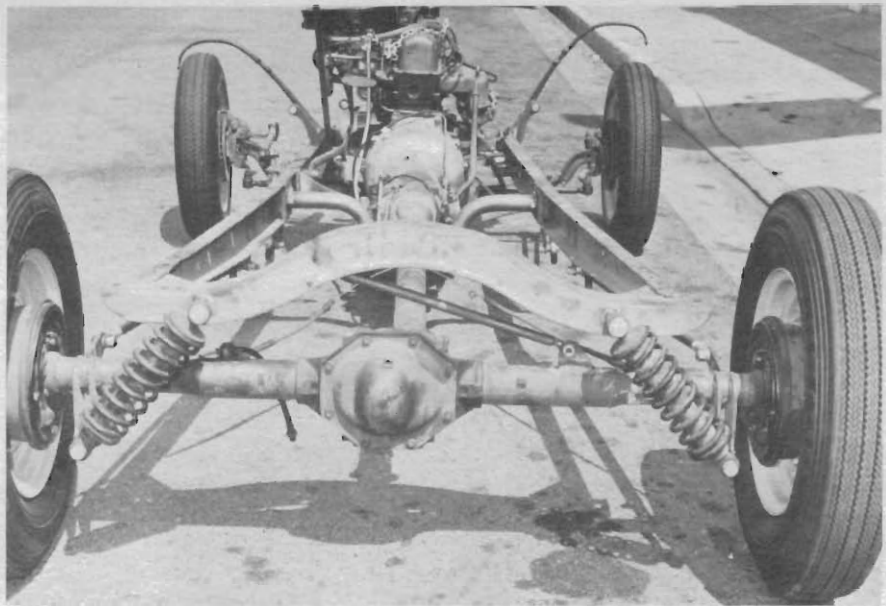


The Potential Pinto

Mustangs since 1965. Although the Mustang and Pinto both have the C-4, nothing is interchangeable, but the beef-up qualities are the same. This Simpson-designed trans is of the same design as the TorqueFlite, the Turbo 350, 400 and its big brother the C-6. So the potential is there.

If you're wondering about speed equipment, that's no problem. Sparco Performance Products handles 4-bbl. intake manifolds, cams and aluminum pistons. Scat Enterprises offers a stroker kit that will put $\frac{3}{8}$ -in. more arm on the bottom end. They also make intake manifolds to use a pair of Weber carbs. Edelbrock, Offenhauser and Weiand all offer intake manifolds to adapt Holley carbs to the Pinto. Custom headers are offered by virtually every header manufacturer.

There are still many rodders who favor big engines in their rods, but the tightening pollution laws and the hassle of maintaining the engine on long runs is slowly bringing the more economical powerplant into the picture. The simplicity of the installation, makes it unnecessary to cut up the firewall or fender wells. It all points to the definite potential the Pinto has—like its grandfather, the model A.





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1. This Pinto rear end uses XKE Jag coil-over shocks for rear support. Sway bar has been added under the crossmember. The 16-in. wire wheels mount to Pinto axle flange.

2. This Pinto engine fully dressed, including fan, is less than 24 ins. long. Note how exhaust manifold is ideally located. Stock alternator bracket will keep the alternator well under the hood.

3. This front view shows engine to be less than 24 ins. high from frame to top of motor. Simply trimming front crossmember slightly or raising engine will put bottom crank pulley clear of crossmember.

4. This tiny C-4 trans and bellhousing will eliminate any possible firewall cutting. Using stock trans mount is the way to go if you want to be able to buy your parts anywhere.

5. The shape of your engine mount will depend on the location of the engine. This is not the stock mount, but it will give you some idea where to start. Notice there is plenty of clearance to remove oil filter.

6. To mount these 16-in. wire wheels on those Pinto disc brakes requires a rather thick spacer. The Pinto spindles here have been mated to the early Ford by machining and welding.

7. Narrow rear end keeps the tires under the lenders. Imagine using the stock 13-in. wheels to put it on the ground. It would certainly help the center of gravity.

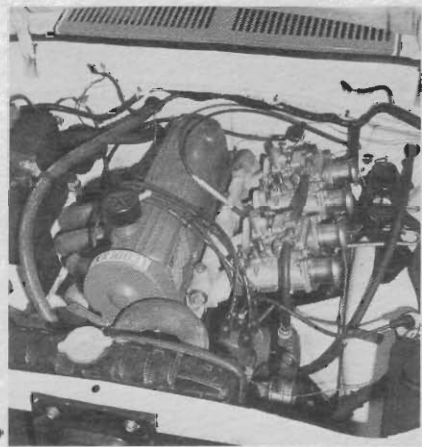
8. What could be more natural in a T like this '27 than Ford's modern version of the dependable 'banger. The Pinto 4 fits easily in even the narrow T chassis without cutting the firewall for clearance.

9. A great variety of Pinto speed equipment is available now. If you really want super-looks and super-performance; how about this: manifold for side-draft Dell Ortos? It's tight in the Ford OHV parts book!

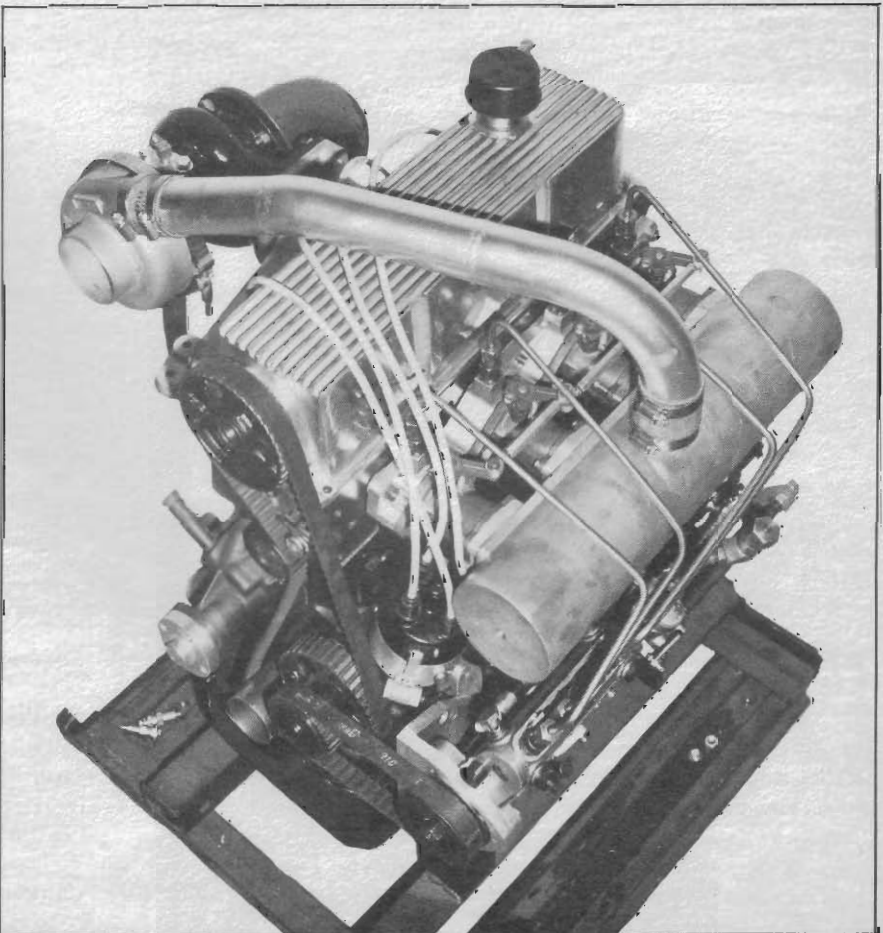
10. If you like the way the little engine fits, but you still want the performance of a big V-8, you can always add a turbocharger; several kits are on the market. Here's a Pinto 4 set up for Bonneville with turbo and Bosch timed fuel injection.



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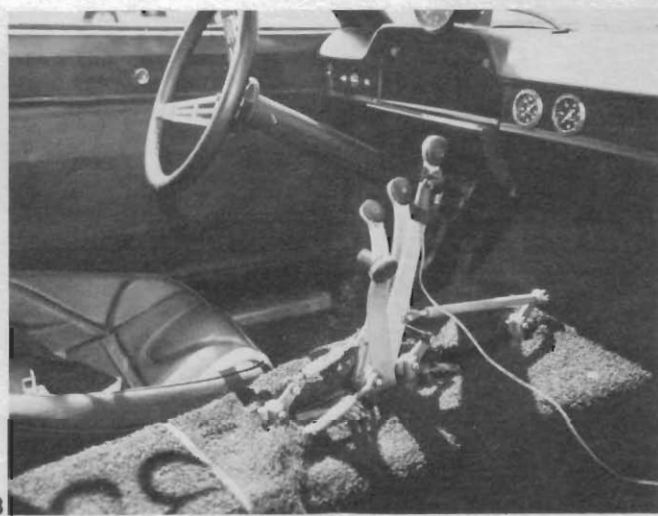
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Big Noise From Livonia

Gapp and Roush get enough horses out of their Pinto to run 9.01 e.t.'s.



Ford will sell you a new Pinto for around \$2000. For another \$23,000, you can make a Pro Stocker out of it. Bill Jenkins set the stage for the mini-car/small-block Pro Stocker with his revolutionary Vega/331. After almost two years of domination it now appears that the Ford teams have got their

kit together and are at the head of the pack.

Among the fastest and quickest of the Pinto Pro Stocks are those belonging to the team of Gapp & Roush, operators of G & R High Performance, Livonia, Mich. Wayne Gapp and Jack Roush have run legal 9.01's with their diminutive

Runabout. Construction of their latest effort uses the newest Pro Stock technology, incorporating a complete steel tube chassis, coil-over suspension, and a Lenco gearbox. A tremendous expense is incurred when building a Pro Stocker because virtually every part of the car must be modified or fabricated

1. Gettin' on the Gapp & Roush Pro Stock Pinto usually means e.i. in the low 9's. Mill is an outa sight '73 Cleveland, with just the kind of stuff you think it has!

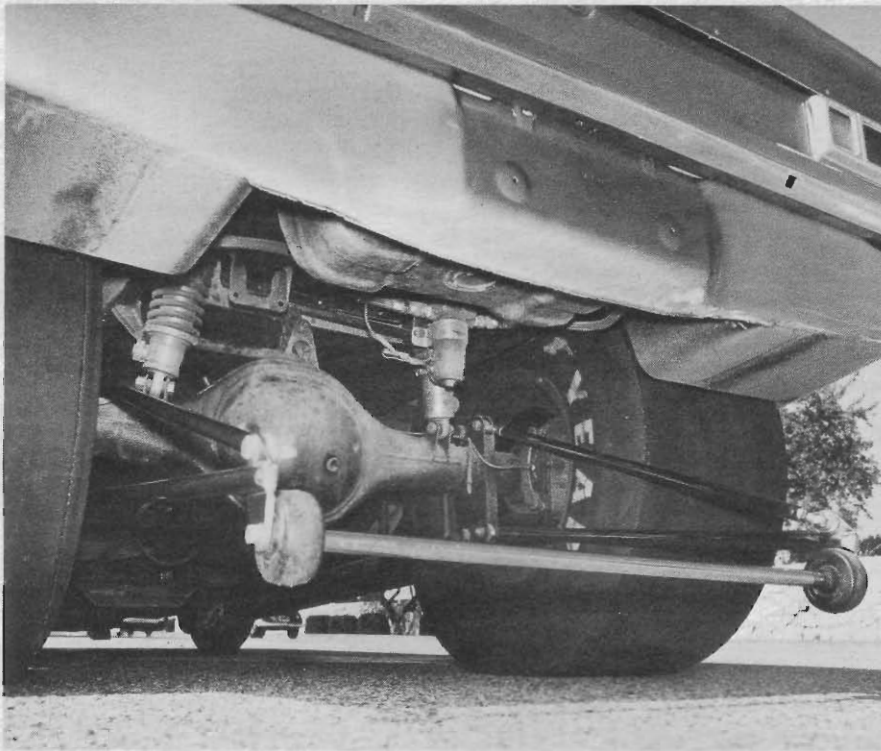
2. Partner Wayne Gapp lifts 'glass deck lid to expose twin batteries, stock Pinto gas tank, coil-overs.

3. Lenco shifter has three levers for forward speeds, one for reverse. Mechanical tach and Stewart-Warner dials monitor potent 351 Cleveland.

4. Accel, Weiland, Holley equipment boost output of small-block. All front inner paneling has been replaced with aluminum by Wolverine and front fenders are A & A 'glass.

5. Husky late Ford rear is narrowed extensively to keep giant donuts inside fenderwells. Visible are adjustable suspension units, pump.

6. Wayne (left) and Jack are joined by Ford engineers Al Buckmaster and Bill Jameson in their effort. Team is inching toward eights, 150 mph. Car is also set up for match races.



to yield the maximum performance for the weight of the car. This involves time, and you know what they say about time and money.

G & R did much of the construction of the car themselves at their shop, starting with a new Pinto "body-in-white." A body-in-white is a basic body shell that can be ordered new from Ford, without sound deadener, undercoat, engine or driveline components. The floor is then cut out of the car and a complete tube frame/roll cage by Tom Smith of Wolverine Chassis Co. is built to support the acid dipped body. Rear suspension is Monroe coil-over shock by Wolverine and G & R that hangs a big Ford rear end, narrowed and stuffed with Strange Engineering axles, 5.57 Schiefer cogs, and Pennzoil lube. Strange Engineering disc brakes retard giant Goodyears on Motor Wheel hoops. Rounding out the front end are Pinto spindles, A-arms, rack and pinion steering, and Monroe shocks.

A Lakewood scattershield, and a Buco helmet and harness contribute to safety, sharing interior space with upholstered buckets, Lenco "batch-o-levers" shifter, and aluminum paneling by Wolverine.

A potent '73 351 Cleveland, built by Gapp & Roush, is responsible for those incredible nine-ohs. G & R-prepared crank and rods swing 13:1 Brooks aluminum pistons and Seal Power rings. Heads ported and polished by G & R contain Ford stainless valves actuated by a General Kinetics cam, G & R lifters, and Ford pushrods. A Weiland High Ram and twin 660 Holleys handle the plumbing.

An Accel BEI sparker and wires light Champion plugs before spent gasses are sent through J.R. headers, 30 ins. long, 2 1/8-in. O.D. A G&R dry sump oil system allows extremely low front end height. Power is sent through Savage clutch components, and on to a Lenco "automatic" 4-speed.

Gapp & Roush have another Pro Stock Pinto identical to the one shown here. Their new race car shop is busy round the clock building cars for other racers. It looks like a good year for Wayne Gapp and Jack Roush... and Ford.

Photos by Bob McClurg

Pinto Pangra

Anyone who says the little nag can't move out in style should take this one on.

BY KALTON C. LAHUE

While some Pinto owners may disagree, there's little doubt that Maverick's baby brother comes closest to being America's answer to the venerable Volkswagen. Each is an economy car *par excellence* and both are about as mundane little creatures as you'll find anywhere. But this isn't necessarily all bad—at least there's room for improvement, and that's exactly where the Pangra comes in. So, you ask, just what's a Pangra? Well, as you'll see, it's more than just another Pinto with a pretty facelift. Pangra is probably the most exciting thing that could happen to any lowly Pinto.

PANGRA'S BIRTH

Jack Stratton of Huntington Ford in Arcadia, Calif., is the man responsible for Pangra. While most other dealers groaned when the stubby Pinto was first unveiled as Ford's do-it-yourself car, Jack chuckled in sheer delight; here was exactly what he'd been looking for. Placing a sheet of tracing paper over a photo of the Pinto profile, Stratton quickly sketched out a few changes and contacted Gene Winfield to see about getting his idea of a new body line translated into a structurally sound alteration. But

time weighed heavily upon Winfield's shoulders and so Bob Crowe of Freight Container Corp. was brought into the picture. Crowe, whose long experience in 'glass work runs the gamut from boat hulls to camper tops, suggested several changes and as a result, Pangra was redesigned while still on the drawing board. In the meantime, the Opel GT and Datsun 240-Z made their appearance and the fantastic market reception for these two personalized autos convinced Jack that he indeed had a viable idea; so much so that \$70,000 was finally committed to the project.

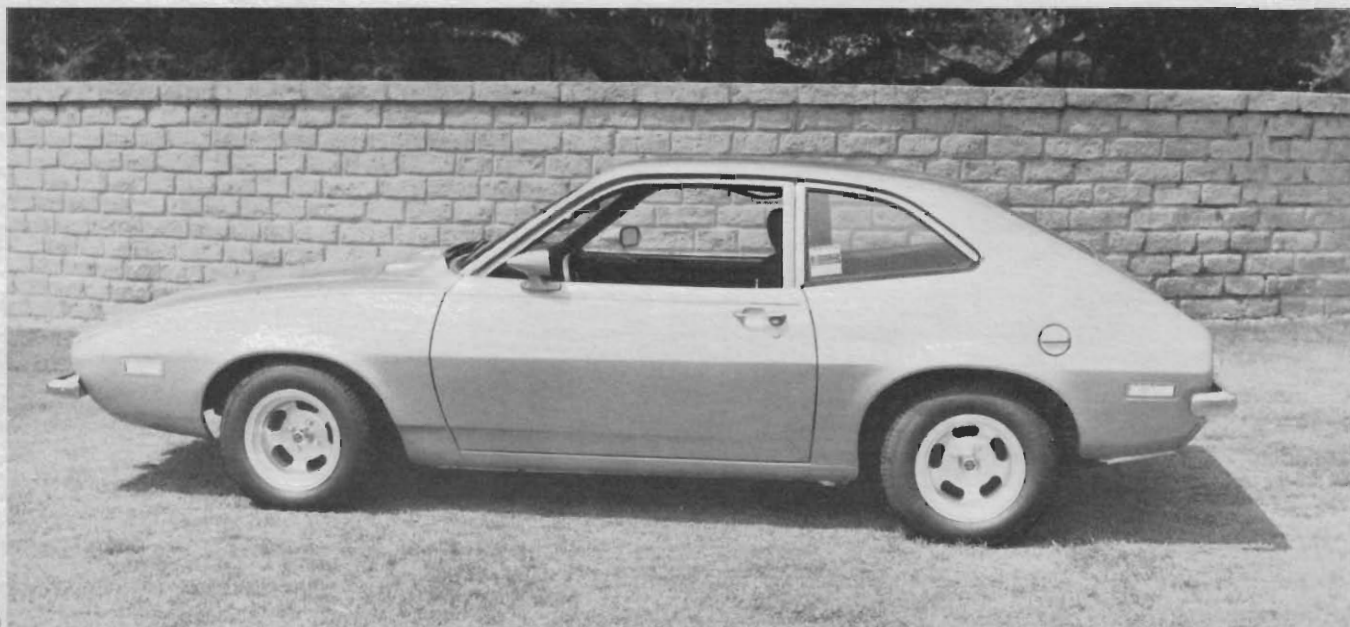
MODIFICATIONS

Pangra became more than just a stylish Pinto as Jack worked closely with Koni to redesign the suspension. Actually, the deeper he became involved with the concept of the car, the more it took on the appearance of an obsession. Full "Can Am" suspension was provided with reworked stabilizer bars, and custom Koni shocks were added to shorter front springs, with increased rate. Lowering blocks were added at the rear. The end result—a car that pulls .874 "G" force on a 200-ft. skid pad before breaking traction. If you're not too familiar with

"G" forces, skid pads, etc., one should know that Pangra is considerably better in this respect than most highly respected (and expensive) foreign sports cars, which can be depended upon to pull .740 under the same circumstances. The modified Pangra suspension also reduces side-roll, which in turn increases side-loading and cornering capability.

Wheels and tires are important to any suspension, and to make certain that Pangra would deliver the maximum from the changes made to this point, Jack investigated rim widths from 4½ to 7 ins. for tendencies of over/understeer. Settling on a 7-in. mag wheel (it produces neutral characteristics on the Pangra), he then turned his attention to the tires. The top brands of radials were tested and just when the choice had been narrowed to two tires, Stratton discovered that in addition to holding its own in all other ways, the Continental had superior wet weather characteristics. To put the icing on the cake, each Pangra sold by Huntington Ford is now dialed-in individually, as caster, camber and toe settings are completely reset.

Next, he went under the hood and took a cold, hard look at the





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puny 122-cu.-in. powerplant. Clearly, something had to be done there in order to give Pangra guts enough to live up to Jack's expectations, which had risen considerably beyond the original sketch pad scriblings as the obsession took hold. While different engines, modifications of the present one and even fuel injection were all considered, he looked ahead to the stricter emission controls coming down the pike in California and opted instead for a turbocharger with water injection. Why turbocharging? Well, it evens out cylinder and bearing loading (creating less engine wear) while cleaning up emissions (combustion is hotter and more complete). It thus seemed the only practical way to go. As a result, AiResearch, who probably has had more experience with turbochargers than anyone else, was brought into the Pangra fold and a 20-lb. unit was developed which creates two horsepower per cubic inch. Figure that one out and



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1. From the side, Pangra doesn't look much different from the Pinto from whence it came; non-Pinto lovers might not even know the difference.

2. But here's where the difference is—a completely restyled front end that combines a European flair for the unusual with solid American practicality in styling design.

3. At road level, Pangra is really impressive as it approaches. There's a massive appearance similar to current GM styling.

4. With headlamps up in operating position, Pangra takes on a sort of bug-eye look that'll turn heads wherever you go.

5. Here's how the Pinto looks once you've completed the 18-step disassembly sequence. Engine and suspension modifications have already been completed on this one.



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Pinto Pangra

you've got a good idea of Pangra's tigerish qualities on the open road, while it returns over 23 mpg from the gas tank!

Finishing touches came with the interior. After all, if you're going to ask someone to part with \$4990 for a modified Pinto, there has to be something visible besides the restyled front end. No matter how well the car performs, the owner wants something that the next guy doesn't have. As Pinto seats just didn't fit the new ride from a functional standpoint, custom Recaro seats were selected. Handmade in Germany from a design provided by orthopedic surgeons, the Recaro seats contain an additional 6-in. seat cushion and provide full lateral support while offering the complete reclining feature that's become quite popular of late.

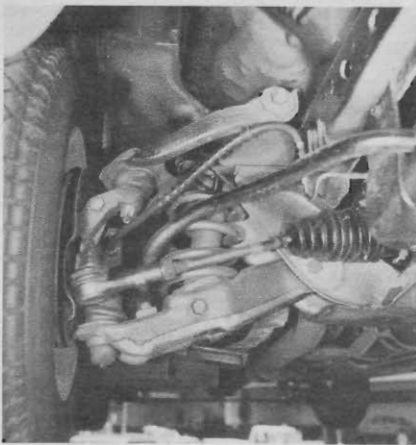
Stratton shuddered when he looked at the stock Pinto dash and its instrumentation. So he designed

a new console that fits between the seats, extends over the parking brake and shift levers, and attaches to the stock Pinto unit so neatly that even confirmed owners would swear the entire interior was completely different. Full instrumentation is provided and precisely angled toward the driver's seat for convenience in quick reading—shades of the Jensen Interceptor III! Also included is an extremely sensitive digital tachometer that gives instant readout. The tach contains a unique memory feature that can recall peak rpm turned by the driver simply pushing a button.

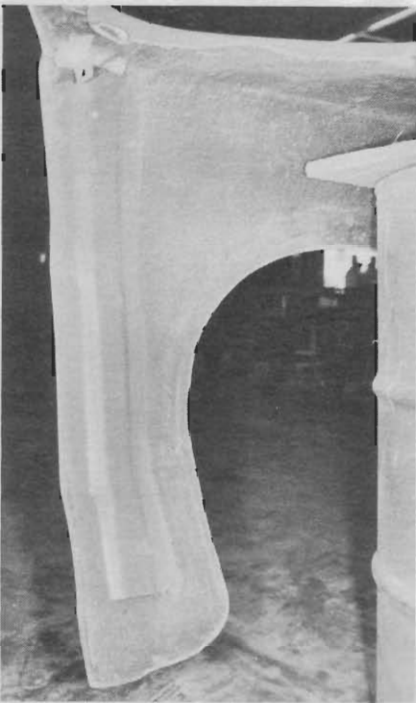
Stop and consider for a moment the changes made to the basic Pinto and you'll see that while Pangra

springs from the Pinto, it's virtually a completely different car, 10 ins. longer and 2 ins. lower. Horsepower has been increased in the neighborhood of 300%, aerodynamics is improved by about 27%, and the suspension/handling characteristics are 30% better. But it didn't all come about without its own unique problems. There were several sticky moments, for example, in getting the mechanically actuated pop-up headlights structurally sound. Once this was finally achieved, it turned out that they popped up all by themselves at 90 mph, so back to the drawing board. The original front-end components were tabbed for easy and accurate assembly, but it was discovered that getting them





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1. Kit preparation is highly personalized. Here a headlamp unit is drilled to allow refitting of the stock Pinto lamp assembly.

2. George Davis (r.) prepares the one-piece gravel pan for installation by attaching the headlamp activating bar.

3. Once the gravel pan is fitted to the front bulkhead, C-clamps and a wooden straight-edge are used to position the pan unit flush with the engine compartment line.

4. Stock Pinto headlamp units are installed in the fiberglass fenders. Stock fender side lights are also used.

5. Front suspension changes include shorter front springs with Koni adjustable shocks and a revised stabilizer bar.

6. Edge of 'glass fender is reinforced and tabbed. This makes assembly easy, fast and certain, and provides much structural strength.

7. Fenders go on next. All 'glass parts must be sanded lightly with 220 paper to remove the shiny glazed surface or paint won't adhere properly.

out of the molds was a real problem. Solving this one required reworking both design and molds to retain the tab feature, which is important to the structural soundness of the stylish front. Tabbing prevents lateral movement from road vibration.

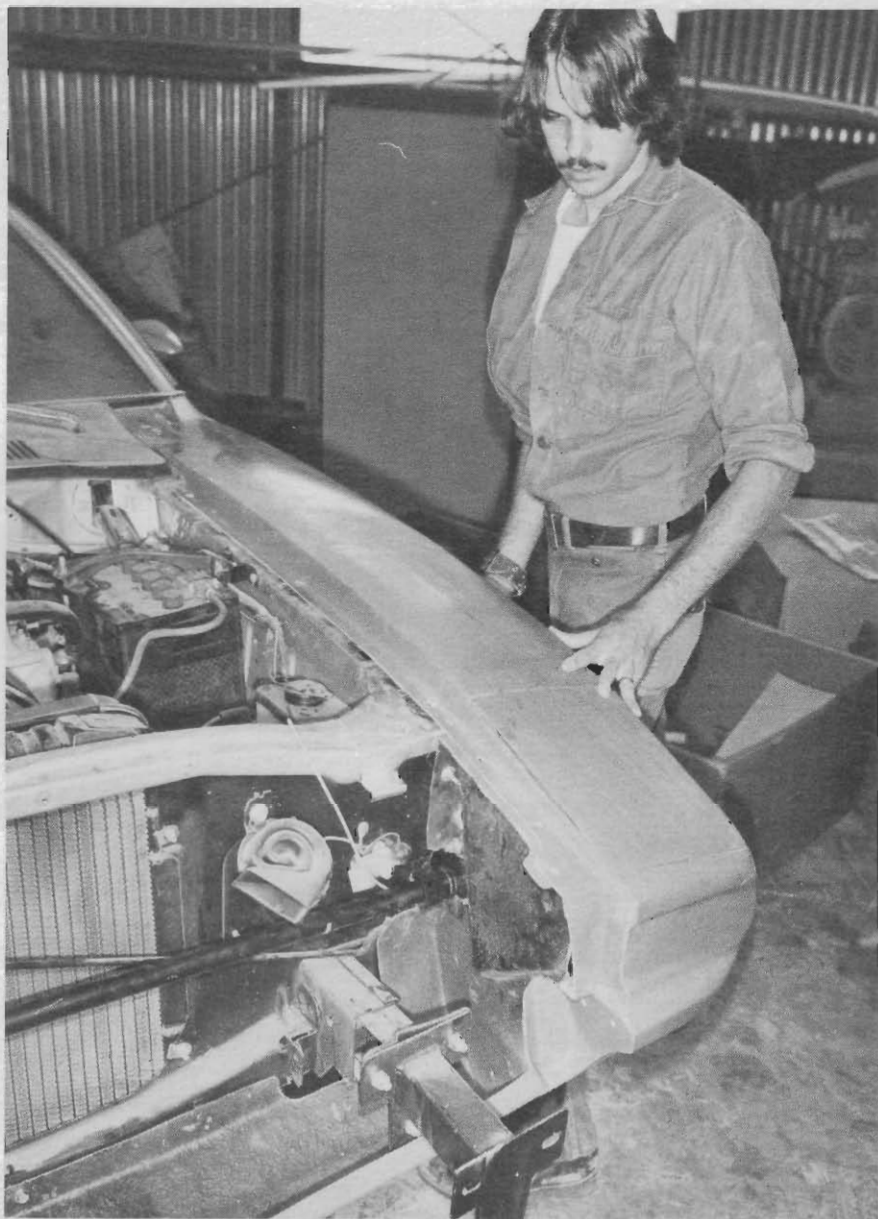
As time went by, Stratton had several opportunities to market the Pangra but each time he resisted the temptation, knowing that the car wasn't yet quite right. More than a year-and-a-half of development work went into the project, as Jack insisted that every component should be as good as craftsmen could make it. The first prototype was ready for action at Bonneville Salt Flats in August 1972, and there it was tested for speed, aerodynamic stability and safety at speeds approaching 200 mph. The knowledge

gained at Bonneville was brought back to the shop and evaluated before moving Pangra into a production stage.

As it became clear that Project Pangra was reaching reality, Stratton hopped across the country lining up a national distribution system of auto dealers and supply houses—well in excess of 100—all of whom would stock Pangra modification kits. That's right—the docile Pinto of yours can be turned into a raging Pangra right in your own backyard! It's a three-stage (three-kit) modification procedure that let's you improve styling, suspension and engine performance on a budget basis.

PANGRA KITS

Sold as Kit No. 1, the Pangra front-end assembly contains fenders,



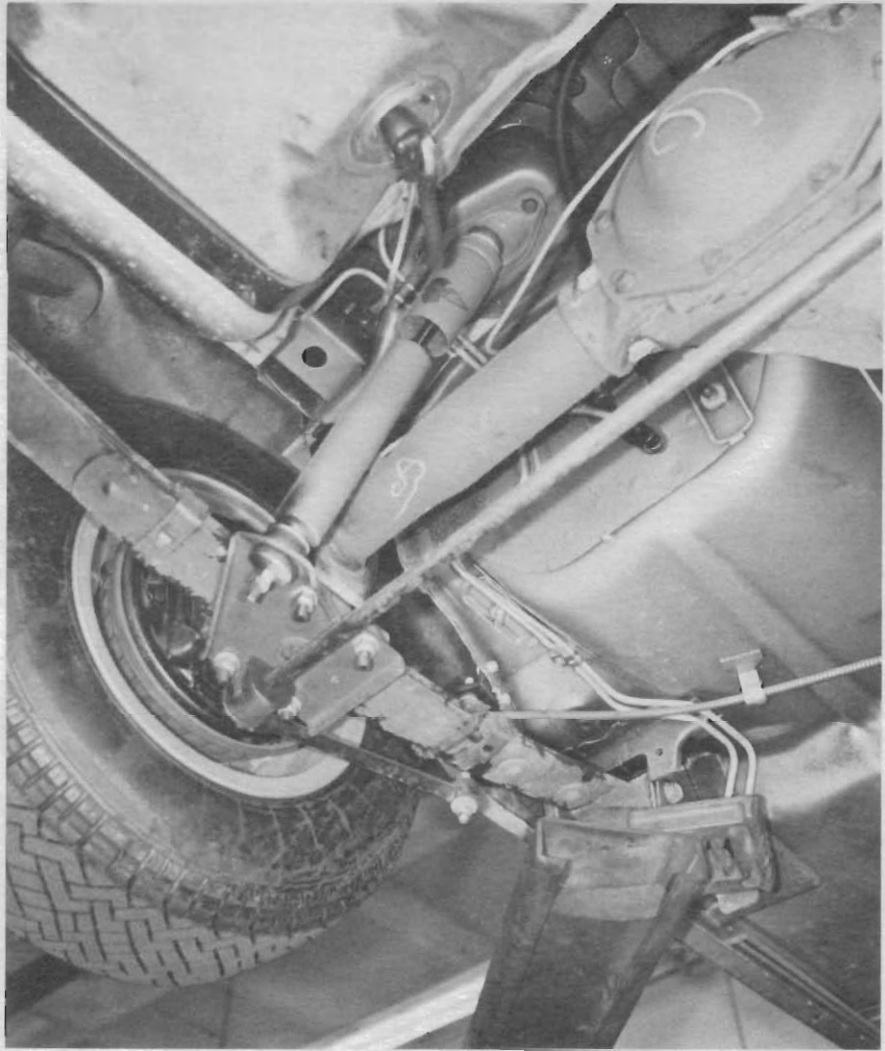
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Pinto Pangra

hood, headlight mechanism, bumper brackets and front cowl, and sells presently for \$595. Adding another \$951 brings Kit No. 2 in which you'll find the "Can Am" suspension, including four Koni adjustable shocks, front and rear stabilizer bars, front coil springs, and rear lowering goodies. But should you wish to go all the way, lay out \$1691 and ask for Kit No. 3—you'll receive all the items in Kits No. 1 and No. 2, plus the Ak Miller turbo unit, water injection, mount plates, brackets, clips, exhaust manifold, crossover intake and header pipe. If that isn't enough to turn your Pinto into a roaring stallion overnight, nothing will. And just to show you that Jack hasn't forgotten anyone, kits are also available for the Runabout and Pinto wagon models.

If you're wondering just how complicated the modification procedure is, this is one do-it-yourself project with which you won't feel cheated. While a Pangra front-end has been installed by first-timers in as little as 10 hours, those who have done so are old hands at working with modification kits. For the novice who has never done such before, it's well to plan on a solid weekend of work. A 10-page instruction booklet accompanies the front-end kit and details 18 disassembly steps to prepare for installation, followed by 110 assembly operations. But it's all very precise and well written. You'll have no difficulty at all in following the step-by-step procedure.

Now, if you really want to go the whole route, you'd save money over the long haul by going out to Arcadia and taking delivery of a completed Pangra for a vacation drive back home. Installing Kit No. 3 on a new stock Pinto brings the combined cost within a few hundred dollars of the Pangra, and you'd still need mag wheels, radials and the new interior to complete the transformation. No interior kit has been planned as yet, simply because it's somewhat of a bear to install and requires a certain amount of rewiring to connect the console instruments. Add to this the factor of Kit No. 3 installation time (about three weekends) and you can easily see that the \$4990 base price of the completed Pangra is really a bargain.





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What kind of reaction can you expect with a Pangra? Lots of long, admiring stares, of course, but to the Pinto owner with a passion for his car, the mere sound of its exhaust will tip him off that your Pangra is different. I discovered this as Jack and I left the park in Arcadia after a picture-taking session. All during our photography, a middle-aged fellow sat nearby in a Pinto with Wyoming plates, watching us intently. As we wrapped things up and prepared to leave, he stepped over to our silver Pangra and commented on its styling.

Learning that his guess about its Pinto origin was correct, he leaned closer to the window, and leering at Jack, casually offered to race his beat-up Pinto against our "hot-shot clothes horse with its fancy nose." Stratton simply smiled and matter-of-factly mentioned the turbocharger, whereupon our would-be challenger gracefully stepped back and broke into a lame grin—"No sir, I got a V-8 under my hood but I'm not about to take you on!"

Guess you'd have to call that respect. Pangra commands a good deal of that wherever it goes.



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1. Koni shocks and reworked stabilizer bar combine with lowering block at the rear. "Can Am" suspension gives Pangra a tremendous advantage on the street or strip and puts a lot of fun back into driving.

2. You can certainly tell the difference under the hood; turbocharged 122-cubic-incher is Ak Miller design and it'll leave Corvettes standing still if you don't tip your hand.

3. Pangra is equipped with 7-in. mag wheels and Continental radials to make the most of the revised suspension. When you're traveling 140 mph you want the very best under you, and the unusual tread design of this radial provides superb wet-weather gripping characteristics.

4. Custom interior includes center instrument console that extends onto stock Pinto dash, giving an entirely "new" look inside. Idiot lights are retained even though full instrumentation is provided.

5. Form-fitting Recaro seats are designed for comfort over long hauls and are shown here in partially reclined position, a good feature for rest stops on lengthy trips.

6. If you know your Pintos, you'll recognize a lever here that isn't found on the stock car. This operates the mechanical linkage to open and close the flip-up headlamps.



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Flying Pinto

*Flying cars come and flying cars go . . .
bet you haven't seen the latest.*

BY KAL LAHUE

Appearing in the mythology of ancient Greece and other cultures with regularity, man's fascination with the concept of a winged horse dates back to the very antiquity of time, but Mobil's flying horse notwithstanding, it took the technology of the 20th century to bring it to life. Well, horses still can't fly, but Ford's popular Pinto has recently acquired a set of wings, a new name and a whole new horizon, courtesy of Advanced Vehicle Engineers (AVE) of Van Nuys, Calif. (Bet you'd laugh your boots off if we didn't have the pictures to prove it!)

But it's no joking matter for Pinto lovers, and by the time you read this, AVE will be well on its way to obtaining FAA certification for its AVE Aircar, to be known as the Mizar, and production lines will be just around the corner. AVE has been in business designing and perfecting the Mizar since 1968 and sees it as a prototype of the flying car of the future. Now, as everybody knows, flying cars come and go periodically, so what exactly is the future for a Flying Pinto? According to the research that has motivated AVE to this point, it's sufficient to warrant the investment

of better than \$1 million—and that, friends, is not hay.

By the close of the "Soaring Seventies," the number of general aviation craft in use is projected at 235,000-plus, or roughly double the number in use when the company began work five years ago. It's also anticipated that those who fly private aircraft will double in number from 300,000-to 600,000-plus. Single-engine, four-seat planes seem to be the most popular, and that's exactly the market segment to which the Mizar is directed. As about 80% of all non-commercial flights are of 500 miles or less, the





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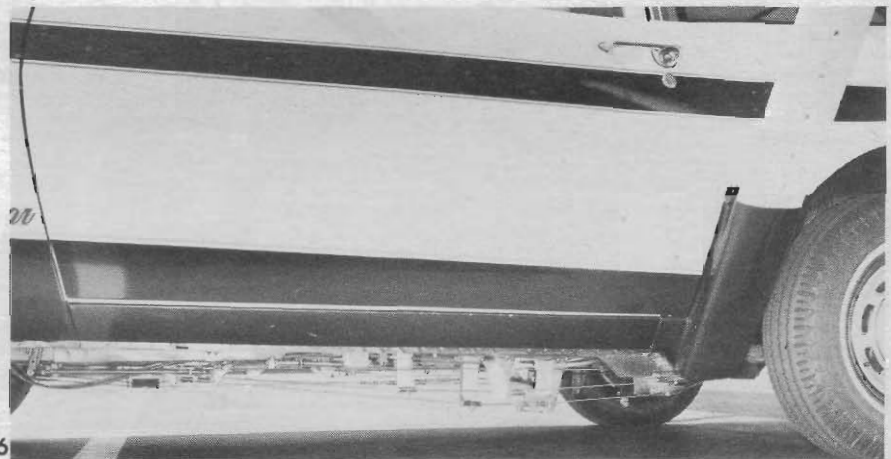


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Mizar's 1000-plus-mile range at cruising speed (with reserve) puts it right in the ball game.

AVAILABILITY

The Mizar, which takes its name from the next-to-the-last star in the Big Dipper and means, "horse," will be made available in three models that differ primarily in engine size. An Avco Lycoming 540-series powerplant will be offered in 235, 260 and 300-hp versions. Other specifications include a gross weight of 4700 lbs.; a fuel capacity of 93 gals. consumed at the rate of 13 gals. per hour at the 130-mph cruising speed; a maximum speed of 170-mph with a service ceiling of 16,000 ft.; a passenger/baggage load factor of 1400/360 lbs.; an overall length of 28½ ft. with a 38-ft. wing span and a wing area of 202 sq. ft. The whole thing stands a mere 8½ ft. high. AVE sees it as



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1. You'd never guess what's under these multicolored wraps, but it cost over \$1 million to bring to this point, so it had better be good, right?

2. Right, and good it is. That's OK, rub your eyes and take a second look—by golly, it IS a Flying Pinto!

3. And here's the pretty little lady test pilot, AVE Vice-President Lois McDonald. Let's take a look inside.

4. Flight control instruments added to Mizar dash include air speed and rate of climb indicators, altimeter, directional gyro, fuel pressure gauges, throttle, flap switch, trim tab and radio navigational equipment.

5. Cabin reinforcement in form of hidden roll-type bar is major internal structural change. Covered bar extends 360° around the inside.

6. Prototype uses external linkages to operate airframe controls, but these will all be incorporated internally in the production model.

being ideal for the commuter business use and recreational market, which has grown by leaps and bounds during the past decade. Can't you just see the look on your neighbor's face when he compares his new RV with yours?

Planned as a dual-use vehicle to fly long-distance travel and then operate as a conventional automobile for local surface travel, here's how the Mizar works. Equipped with its pusher-type aircraft engine, the Mizar airframe will be kept on telescopic supports at a convenient airport. You drive the AVE-modified Pinto to the hanger and back the car under the airframe. A self-aligning track incorporated into both units makes attachment an easy job that requires less than two minutes to complete. All flight controls and instrument hookups will be made with an umbilical connection, while structural connections will be locked in place with self-locking high-strength pins in the structurally linked track assembly and wing support connections. An on-going development program will slightly alter the connection system

to be used since it's planned to do away with the wing support struts.

READY FOR TAKEOFF

Once this is accomplished, you'll taxi to the end of the runway using the auto engine. After checking out the aircraft powerplant for pre-flight, you're ready for takeoff using both the regular Pinto and aircraft engines. While the latter has sufficient power by itself to lift the Mizar off the ground, use of the automotive engine at the same time will provide a shorter takeoff roll. Once you're airborne, the car's engine is shut off. Landings will be made on the rear wheels during touchdown, followed by four-wheel braking to a stop in 525 ft. or less.

After taxiing into position on the ground at your destination, the Mizar airframe is easily disconnected from the Pinto. Its telescopic wing supports are let down and the unit tied to conventional aircraft tie-downs for parking or storage until you're ready to hook up for the return flight. Now comes the drive into town to conduct your business or just to shake up Pinto enthusiasts

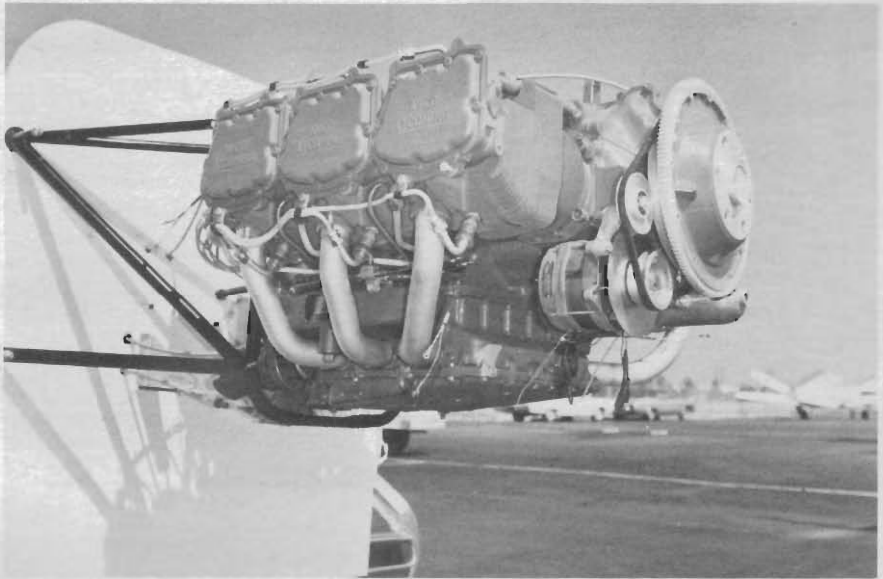
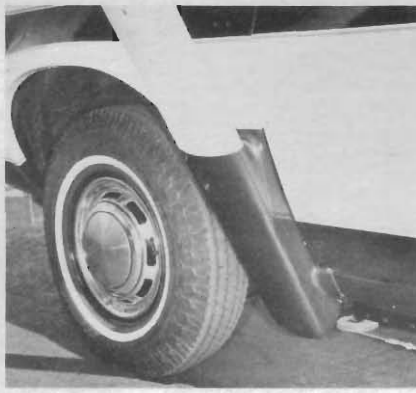
Flying Pinto

attracted by that slightly unusual looking roof line, who then peek inside and see the aircraft instruments in the car's dash. Explaining *that* to curious on-lookers alone is worth the price of admission. By now, you're probably wondering something. Not just everyone will be able to pilot his Pinto to-and-fro in this manner. You'll need a regular pilot's license just as if you were flying a Piper Cub or a Cessna.

AVE was founded as a privately-held California corporation by Hank Smolinski, who's president and chairman of the board. Its goal is to find solutions to transportation problems. Smolinski is a graduate of Northrup Aeronautical Institute, and has been involved in nearly every phase of the aircraft industry in the past two decades. The Mizar is his personal contribution to aviation's future. It will be offered for sale through the auspices of Galpin Ford and the Bert Boeckmann Co. (BBC) of Sepulveda, Calif., which has a national distribution agreement with AVE. BBC was formed by H. D. Boeckmann (who owns and operates Galpin Ford, thus the Flying Pinto and not Vega), solely to distribute the Mizar, and it's rumored that distribution rights brought \$1 million into the AVE coffers. Since acquiring the rights, BBC has been absorbed into Galpin Ford, which will establish dealerships through the United States. Once the program is in the air—so to speak—its designers intend to institute the necessary modifications to create Flying Vegas, Firebirds, and other similar hybrids. It is anticipated that development costs will be recouped from the sale of the first 475 Mizars, and AVE expects to sell that number within 30 months after the Pinto's first flight.

PROTOTYPE

For those auto enthusiasts not familiar with aircraft, AVE has capitalized on existing product design in the aircraft as well as automotive industry. The prototype airframe came from a Cessna Skymaster, but once production is underway, AVE will produce its own airframes, or more correctly, have them produced by subcontractors. At this time, the corporation does not envision engaging in full-scale auto/plane manufacturing, but will



contract instead with outside manufacturers for airframe, STOL device, aircraft engine, flight instruments, etc. Then they will assemble the components into finished Mizars.

The prototype which you see pictured here was equipped with a Teledyne Continental 210-hp engine for initial tests and was first unveiled to the press on May 8, 1973 at Van Nuys airport where it was given a series of taxi tests. After the taxi tests for the press, the Mizar was scheduled for a concentrated series of engineering flight and demonstration tests as well as static display at Galpin's showroom and at several upcoming Southern California auto shows. A public relations agency has been retained to focus attention on the Mizar. Behind the scenes, a second Flying Pinto is being test flown for FAA certification. AVE ran afoul of an annoying bureaucratic ruling in its quest for FAA certification. It seems that no plane without it can leave the ground at Van Nuys or any other metropolitan California airport, yet certification cannot be

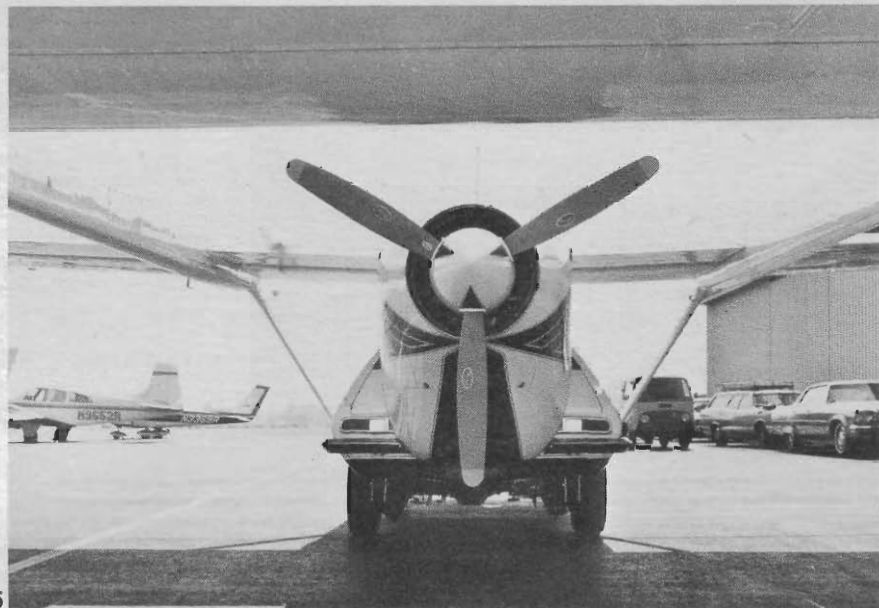
granted until it has undergone a complete flight test program as specified by the FAA. As a result, AVE had to make special arrangements to test fly the Mizar at the Navy's test facility Point Mugu, Calif.

Within a few weeks after the completion of the initial FAA evaluation, the AVE Mizar prototype will make a year-long tour of 40 major cities in the U.S. as part of a program to develop public interest and line up potential dealerships. Bert Boeckmann has nothing solid at this time in the way of a commitment from FoMoCo, but fully expects that Ford will lend its considerable support to the Mizar—and with the number of their cars he sells, there's no reason why they shouldn't. Three additional units presently being assembled will be used to complete the FAA flight certification program during the tour of the prototype.

As was said earlier, flying cars have come and flying cars have gone over the past half-century, but if this one tickles your fancy, you'd better start saving your pennies to-



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day. Production is scheduled to begin in 1974 and the modified Pinto carries a base price of \$5974. The three different airframes are expected to sell for \$12,319, \$17,440 and \$22,974—or about half the price of an aircraft with the same specs. You can drive/fly your own Mizar off the lot for between \$18,300 and \$29,000. In the meantime, step right up—who's going to be the first on the block to own the ultimate in bolt-on Pinto modifications—and be the envy of all your friends! Uses could be endless. Can't you see it now?

"Be right back ma . . . I'm going to fly over to the super market!" ✎



6

1. Wing support struts will not be used on production model, eliminating some of the Mizar's present awkward look.

2. Custom painting was done by Orv Dittmann, well known in Southern California for his work on vans.

3. Mizar prototype is equipped with Teledyne Continental 210-hp engine, but this AVCO Lycoming 540 series will replace it for FAA certification tests.

4. AVE's Henry Schroeder and Hal Blake demonstrate how collapsible wing supports for parking; your wings will work on the production model; prototype is not equipped with them.

5. It's a pity the Mizar can't be driven on the road as is; can you imagine a driver's reaction seeing this in front of him?

6. Lois McDonald taxis the Mizar onto a runway at Van Nuys airport to begin the taxi-test demonstration.

7. And here it comes! AVE engineers have actually had the thing a couple of feet off the ground (don't tell the FAA) and admit the temptation to head into the wild blue yonder was strong.



7