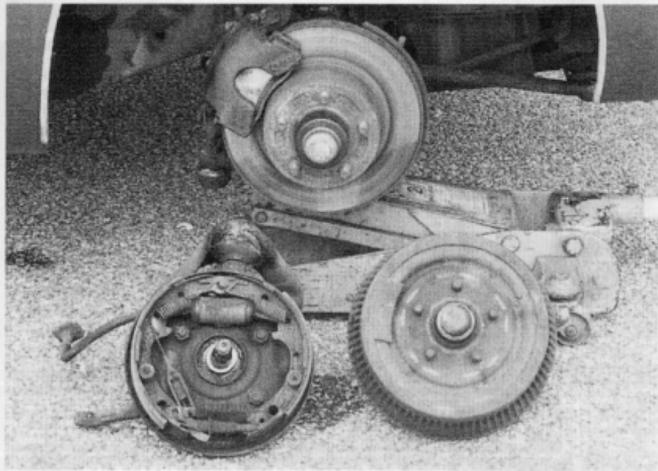


STOPPING MOPAR STYLE

SWAP YOUR FACTORY DRUMS FOR FACTORY DISC BRAKES

text and photography by Frank Adkins



It's a scenario that happens all too often. For weeks, or perhaps months, you plan a transformation for your favorite Mopar by significantly increasing its horsepower. Maybe you are installing a shopping cart full of high performance goodies on your existing mill or swapping it for a more potent powerplant. Perhaps you're going to extremes and stuffing a wild 440 into an engine bay once

occupied by a Slant Six. Regardless of the recipe you've concocted, you spend days performing the work and still more time tuning and extracting performance from your new combination. As time passes, your tweaking pays off. Your car is now running better than it ever has. Then it happens, you're blasting down the road and the Generic Motors piece in the next lane has disappeared from your side mirror and is

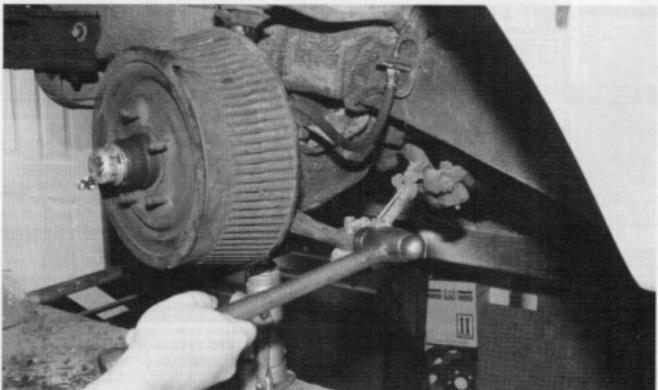
now visible only in your rearview. Your Mopar is pulling strong and sounding great. But just when it seems all is right with the world, a truck enters the roadway in front of you. Instantly your foot snaps from the carburetor's secondaries and pummels the brake pedal. What a time to find out your antiquated drum brake system is no longer up to the task of safely stopping your ride.

If this has ever happened to you (and you survived), you've probably considered some brake system upgrades. Factory-style disc brakes might seem the most logical choice. But what cars would be suitable donors, and how involved would such an operation be? Follow along, and we'll guide you through. Though we'll cover the steps necessary to convert A-, B-, and E-Bodies to disc brakes, we'll concentrate on the A-Body for this transplant, as it is a bit more involved than a B- or E-Body swap.

A-BODY

There are two different disc brake configurations found on A-Bodies. The earlier style—offered as optional equipment through 1972—was the four-piston Kelsey-Hayes setup. The second style—used from 1973-1976—was the single piston slider-type caliper used with 10 $\frac{1}{2}$ -inch rotors. Both styles used 14-inch wheels. If you're after an original appearance, then use the four-piston style. It uses the same control arms and upper ball joints as the drum brake setup, and will allow you to retain the 4-inch lug circle of your drum brake car. Keep in mind the lower ball joint is different. This setup will look original on a pre-'73 A-Body, however, parts tend to be expensive and hard to find.

On the other hand, since the single piston slider style was used as standard equipment on nearly all A-Bodies from 1973-1976, it makes sense that these parts are more readily available and less costly than the earlier pieces. Furthermore, the later-style system used thicker rotors, which are better able to absorb and dissipate heat. Retrofitting later-style discs to a drum brake vehicle requires changing the upper ball joints, upper control arms, and lower ball joints. The reason is this design uses the larger B- and E-Body ball joints. Though the lower control arms need not be changed, it may be necessary to grind up



Before you begin, your car must be supported by the frame on jackstands. After removing the cotter pin and castle nut from the outer tie-rod end, a few sharp blows to the steering arm should jar the tapered stud from its hole in the arm.

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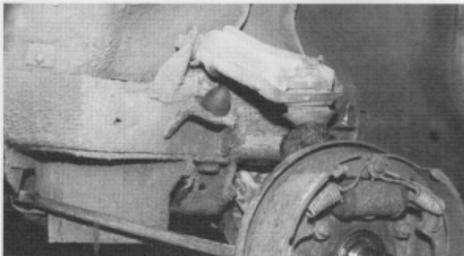
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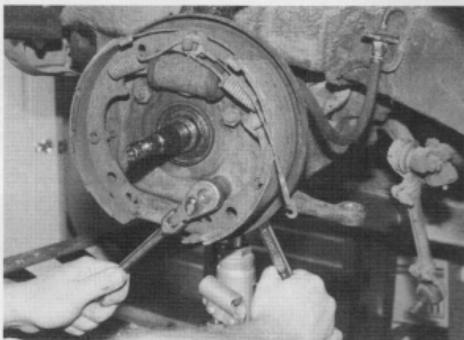
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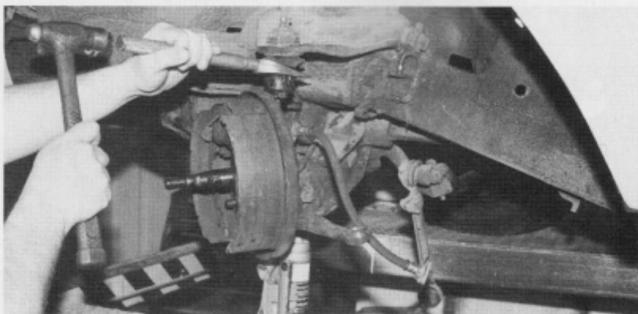
Disconnect the brake hose from the steel line at the framerail (a clip retains the hose to the tab on the framerail), then remove the brake drum.



Place a jack under the lower control arm near the lower ball joint and jack upward until the upper control arm rises from its bumper. This will relieve the tension on the ball joints.



The steering knuckle is attached to the lower ball joint by two bolts, which also pass through the backing plate. Remove them.



The upper ball joint can be separated from the knuckle in the same manner as the tie-rod end. A ball joint separator or pickle fork makes the job easier, though the ball-joint boot will usually be destroyed. (We opted for the ball-joint separator since we replaced the ball joints while the front end was apart.) With the upper ball joint disconnected, the knuckle and brake assembly can be discarded.

to 1/2-inch of material from the steering stop on each lower ball joint to maintain an acceptable turning radius. The real drawback to the later-style disc brake lies in its 4 1/2-inch lug circle. All A-Bodies built through 1972 had a 4-inch lug circle, while '73 and later A-Bodies had the larger 4 1/2-inch lug circle. (The exception would be drum-brake A-Bodies built after 1972. These cars retained the smaller lug circle of earlier cars, but they're very scarce. Nearly all '73 and later A-Bodies were equipped with disc brakes.) If you choose the later style and don't want to carry two spare tires, then your rear axle will require some attention. There were two rear axles used on pre-'73 A-Bodies: the light-duty 7 1/4-inch axle and the heavy-duty 8 3/4-inch axle. A-Bodies from 1973-1976 were built with either a 7 1/4-inch axle or the new 8 1/4-inch axle. If your car currently has a 7 1/4 axle, you may be thinking of sliding a later pair of axle shafts into your existing housing as a quick and easy solution, but it won't work. The '73 and later housings are narrower than early housings; consequently, the axle shafts are not the same length. The easiest way out would be to install a complete 7 1/4 axle from a later car or, preferably, upgrade to an 8 1/4. If your car has an 8 3/4 axle, you won't want to downgrade to a smaller axle. Custom axle shafts will probably be your best option.

B- AND E-BODY

Installing disc brakes on a B- or E-Body is easier than on an A-Body. For starters, upper-and-lower ball joints remain the same. In addition, all B- and E-Bodies have the larger 4 1/2-inch lug circle, so rear axle considerations pose no problem with these vehicles. B-Body cars built through 1969 and equipped with disc brakes received a four-piston design similar to early A-Bodies. All E-Bodies with disc brakes and '70-'77 B-Bodies were fitted with a floating caliper design, which consisted of a single-piston caliper mounted by two pins and rubber bushings. There were actually two variations of this design: '70-'75 models used 10 1/2-inch rotors; '76 and '77 models received 11 3/4-inch rotors that require 15-inch wheels. For 1978, the floating caliper design was replaced by a sliding caliper similar to later A-Bodies, and the 11 3/4-inch rotors were retained. This style was carried over to the R-Bodies ('77-'81 New Yorker, Newport, and St. Regis). Though any of these styles would easily bolt onto any B- or E-Body, keep in mind—as with the A-Body—the four-piston style is generally harder to find and more expensive. Another thing to keep in mind is all E- and B-Bodies through 1972 had the K-frame bolted directly to the front frame-rails, while '73 and later B-Bodies used thick rubber isolators between the K-frame

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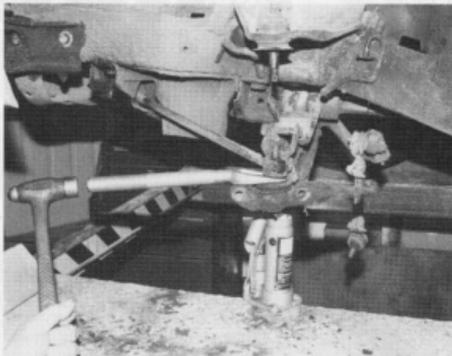
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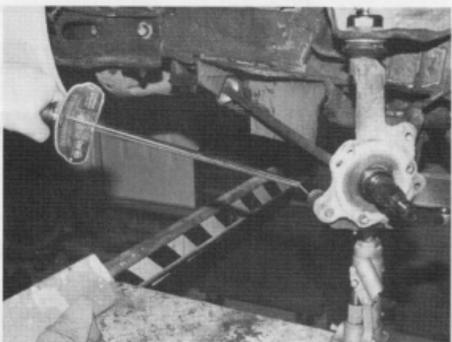
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A-Bodies use different lower ball joints between disc- and drum-brake applications, so ours had to be changed. B- and E-Bodies use the same ball joints in all applications. Again, we opted for the ball-joint separator, though a few sharp blows to the lower control arm with a heavy hammer would have done the job.



Install and torque the replacement lower-ball-joint nut and cotter pin.



The disc-brake steering knuckle can now be installed. Be sure to torque all fasteners and install new cotter pins in the upper ball joint and outer tie-rod end.



Install the disc-brake dust shield next.

and the framersails. Because of this, later B-Bodies used taller steering knuckles, which should not be interchanged with the shorter pieces. Single-piston disc brakes used on '70-'72 B- and E-Bodies used a two-piece rotor, and the disc was joined to the hub. All '73 and later A-, B-, and E-Bodies used one-piece rotors. Due to a difference in wheel bearing size, these rotors are not interchangeable. If your A-, B-, or E-Body already has a disc brake setup from a '73 or later car with 10 $\frac{1}{2}$ -inch rotors and either sliding or floating calipers, you can upgrade to larger 11 $\frac{3}{4}$ -inch rotors (in either floating or sliding caliper design) by simply replacing the rotors, caliper adapters, and installing 15-inch wheels. It wouldn't be necessary to align the car afterward since none of the suspension components would be disturbed. If your car has '72 or earlier brakes and you wish to install larger rotors, you'll need to procure a pair of steering knuckles from a '73-'76 A-Body or a '73-'74 E-Body (the same knuckles were shared between A- and E-Bodies). These knuckles accept the larger bearings of the one-piece rotors, whether they're the 10 $\frac{1}{2}$ -inch or 11 $\frac{3}{4}$ -inch variety. If you have to swap knuckles, a front-end alignment will be necessary afterward.



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The master cylinder performs the same basic function on drum- and disc-brake cars, but a disc-brake master cylinder is characterized by a larger reservoir feeding the front brakes. By design, as the brake pads wear thin, the caliper pistons must protrude further and further from their bores in order to push the pads against the rotors. Additional fluid is needed to fill the cavities behind the pistons. If a drum-brake master cylinder is used, it's conceivable that as the brake pads wear, the reservoir could run empty. This would lead to a loss of braking ability. Don't gamble with your safety. Install a disc-brake master cylinder.

PROP VALVES

Over the years, Chrysler vehicles were fitted with a number of different brake valves and combinations of valves. For the '67 model year, a dual master cylinder replaced the single master cylinder, and the brake system was separated from front to rear. A pressure differential valve was used to sense a loss of hydraulic pressure in either the front or rear half of the brake system and trip a switch, which illuminated the brake warning lamp and alerted the driver of a malfunction. Disc brake cars were fitted with an additional valve—called a proportioning valve—which limited the pressure to the rear brakes in an effort to control rear wheel lock-up on hard stops. By 1970, some systems used a third valve—called a

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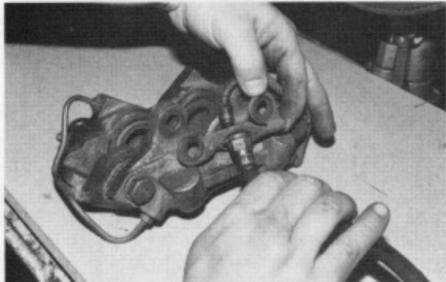
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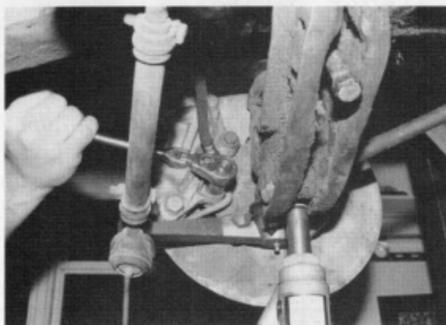
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Early style four-piston calipers use a steel line to join the rubber hose to the caliper. A bracket is used to support the hose and eliminate stress on the steel line. The bracket attaches to the caliper mounting bolts.



After the rotor is installed, the caliper is bolted to the steering knuckle from the backside. Don't forget the hose bracket.



Connect the rubber hose to the steel brake line at the framerrail. Be sure to reinstall the clip securing the end of the hose to the tab on the framerrail.



With the caliper pistons at the bottom of their bores, the new disc-brake pads are dropped into place.

metering valve—which blocked pressure to the front brakes until the rear brakes began to apply. By 1973, all these valves were built into one—a combination valve.

Taking all the pieces from one donor car for your conversion will simplify your installation and help avoid the possibility of installing incorrectly matched parts. It should also result in brake proportioning that's just about ideal. If you find either your front or rear wheels lock prematurely during a hard stop, you may want to consider installing a Mopar Performance adjustable proportioning valve. But there are a couple of other options. Installing rear wheel cylinders of a larger diameter will cause the rear brakes to apply harder, while installing smaller-diameter wheel cylinders will help correct premature rear wheel lock-up. If you're installing a single-piston, slider-type disc brake setup, you've got a third possible solution. While the outer dimensions of A-, B-, and F-Body sliding calipers are the same, A-Body calipers have smaller pistons. By installing B- or F-Body calipers on an A-Body, you could correct a rear wheel lock-up condition, while slightly reducing your brake pedal effort. Installing A-Body calipers on a B-Body could correct a front wheel lock-up problem, though this would increase pedal effort slightly.

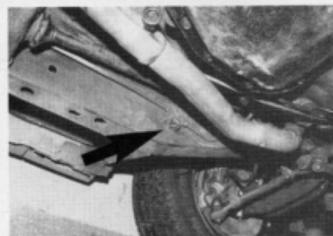
On a final note, remember the front suspension must be aligned any time a front suspension component is replaced or disturbed. Otherwise, you could experience rapid and uneven tire wear, poor handling, and erratic braking.



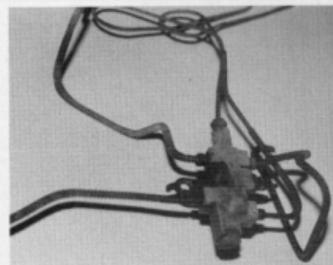
The clips are made of spring steel. They serve to retain the pads in the caliper and keep the pads from rattling.



The difference in reservoir configuration between the drum-brake master cylinder (left) and the disc-brake master cylinder is obvious. The larger reservoir on the disc-brake master cylinder feeds the front brakes. Though it's not apparent in this photo, the reservoirs in the disc-brake master cylinder are deeper than those in the drum-brake master cylinder.



Early disc-brake systems used a proportioning valve plumbed in the line to the rear brakes in addition to the pressure differential valve, and, in some cases, a metering valve.



By 1973, all the valves were incorporated into one—a combination valve. Custom brake-line plumbing may be required if you are changing to this style valve.



The line between the centers of the lower-ball-joint attaching holes is perpendicular to the vertical centerline of the knuckle. Therefore, it's possible to move the knuckles from side to side with no effect on steering geometry or the operating angles of the ball joints.



This '71 A-Body has been fitted with '73-and-up single-piston disc brakes. From the factory, orientation of the caliper on '73-and-up A-Bodies was toward the front of the rotor (as shown by the assembly on the ground). This creates a small problem on some applications. If your '72 or older car has a sway bar, the sway bar links want to occupy the same space as the calipers. The solution is to swap knuckles, calipers, and caliper mounting brackets from side to side.

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