INSTALLATION INSTRUCTIONS:
1999-2010 Honda Accord V-6 Front Disc Brakes on AMC Vehicles

PROCEED AT YOUR OWN RISK! Brakes are probably THE most important safety equipment on your car. It needs to go, but if you can't stop you have a real problem! You are modifying the brake system and must take full responsibility for those modifications. This modification has been tested and found to be safe, but the maker of these brackets/kit is not doing the installation and **cannot be held responsible for your installation or parts used.** There is no warranty on any parts save the brackets themselves, and that warranty is limited to replacement of a faulty bracket. ***The maker of these brackets/kit is in no way responsible for any damages or injuries even if the bracket should fail.***

If you are not in agreement to this return the brackets for a full refund (minus shipping).

In these instruction the maker is assuming you have a basic understanding of brake systems and know how to install and remove brake drums, calipers and pads and how to bleed brakes. Any variation to standard procedures will be noted.

I hadn't intended on writing anything but simple installation instructions, but the more I thought about it the better a general primer on brake some components seemed to be in order. See Addendum 1: About Master Cylinders and Addendum 2: About Proportioning Valves for more information.

STEP 1: PREPARE HUBS FOR ROTORS:

1. If you have drum brakes, remove the drum from the hub. This is done by first removing the studs (lugs). If you do not intend to re-use them they can be driven or pressed out. Make sure you support the hub from the rear so as not to warp it. You must take extra care to remove the lugs if they are intended to be re-used. A swedge cutting tool can be used, but will ruin the threads on the studs. If using new studs take an original to an auto parts store and match them. The studs are 1/2"-20 threads. The knurl diameter is typically 0.640" or 0.625" – measure the originals! The following Dorman studs should work, depending on knurl size:

610-225.1 – 0.640" knurl, 1-3/4" length*
610-154.1 – 0.625" knurl, 1-25/32" length (1/32" over 3/4")
610-219.1 – 0.625" knurl, 2" length
610-277.1 – 0.625" knurl, 2-1/4" length

*If a longer stud is needed the hubs may have to be drilled for Chrysler style 0.680" knurl. I couldn't find a ready source for longer 0.640" knurl studs. Knurl hole size should be 0.006-0.016" smaller than knurl. A 43/64 drill bit works for 0.680" knurl. ARP studs have an underhead radius. The knurl hole must be chamfered 0.25" to clear radius and prevent stud failure.

2. The outer edge of the drum brake hub will need to be turned down so that the Honda rotor will fit. It doesn't need much taken off. This can be done on a brake lathe or a standard lathe. DO NOT attempt to use a grinder! Material must be taken off evenly around the circumference or balance will be affected. The outside diameter of the hub should be turned to approximately 150mm (5.90"). If having a machine shop do this send a rotor with the hubs and just have them turn the hub to fit. Unless you are replacing the bearings MARK THE HUBS AND SPINDLES so the hub goes back on the spindle it came off of. I usually spray one set with paint on the base and hub, and leave the other unmarked. The important thing is to not get the outer bearings mixed up as the bearing "wears in" to the race. The rear race and bearing will stay in the hub as long as the grease seal hasn't been removed. Don't change the grease seal until ready to assemble. Clean and grease wheel bearings before installing hub.

3. If you are making hubs from a worn AMC rotor you will have to do some fitting. First cut the rotor off. This can be done with a grinder, but best done on a lathe. After the rotor is off the OD must be turned down to approximately 150mm (5.90”). If you used a grinder to remove the rotor portion make sure that area is turned down evenly or there will be balance issues. Any machine shop with a lathe can do this. This URL describes what needs to be done:
https://www.practicalmachinist.com/forum/threads/help-cutting-down-brake-rotor-hubs.256216/
The same care needs to be taken as far as mixing the bearings (unless the bearings and races are going to be changed) as with a drum hub – mark at least one.

STEP 2: INSTALL BRACKETS:

Install Brackets

1. The hubs should be off since Step 1 is preparing the hubs.

2. Remove the four bolts holding the spindle and brake backing plate (or dust shield if disc brakes).

3. Two of those bolts also hold the steering arm on. Make sure you note where the steering arm mounts.

4. Measure the length of the four bolts. There are usually two the same length, in pairs (only two different lengths). Measure from just below the head to the end. You will need four new Grade 8 bolts at least 3/8” longer than the factory bolts. ½” longer is fine, bolts are usually stocked in ½” increments. These need to be 7/16”-20 threads (fine threads). The original lock nuts can be used or new nuts with lock washers may be used. Internal toothed lock washers are preferred as they are thinner than traditional split ring lock washers. If using split ring type make sure the bolt is long enough. If you had to use ½” longer bolts they should be long enough for split ring lock washers. You may also use nylon insert lock nuts.

5. Reinstall the spindle minus the backing plate (or dust shield) with the brake bracket ON TOP of the spindle. The bolts go through the bracket, through the spindle, then through the steering knuckle. Make sure the steering arm is in the correct location.

7. Calipers to the front or calipers to the back? Good question! On some cars, like the 58-63 American, the caliper must be positioned to the rear for clearance purposes. On most cars it simply doesn’t matter. The photos show the bracket mounting the caliper to the rear (61 American is the test subject). The change to front mount simply swap everything to the other side – bracket and caliper. Braking force and forces on the bracket are the exact same in either position. Install one side then check and make sure everything clears by turning the steering all the way to one side then the other. Remember to consider where the caliper will be when the suspension is compressed (load on car and further up, such as when you hit a bump) before deciding which way to mount the calipers. Also note that the bleeder screw must be on top of the caliper.

8. Brackets are now installed.

Bracket on 1961 American

STEP 3: INSTALL HUB AND ROTOR

10. Install hub. Hub installs as it would with drum brakes. Grease or replace wheel bearings and replace rear seal as necessary.

11. Install rotor. Rotor is hat type and simply slides over the wheel studs. It should lie flat against the hub.

12. Now install the caliper. Caliper mounting bolts are M12-1.25x21. These work with a 1/16” spacer (one washer), but will need to be longer if more spacing is needed. They are threaded into the caliper. It is best to start with the lower bolt. Don’t tighten as it will have to come back off once spacing is determined. Again, note that the bleeder screw must be on top of the caliper.

13. Check for spacing between the caliper and bracket. On the 58-63 American one washer (about 1/16” thick) was required between the caliper and mount to center the caliper over the rotor. It doesn’t have to be perfectly centered, the caliper pistons will self adjust, but there isn’t much play as you can tell from the photos. Only graded washers (Grade 5 or Grade 8, metric 8.8 or 10,9) should be used for spacers – common hardware store ungraded washers are softer and can deform. Body or alignment shims may be better and come in precise thicknesses from 1/64” to 1/8” (stack for desired thickness). Shims will be a bit harder to install, but may be necessary depending on thickness needed. Shim kits are $10-15 on Amazon, $10 at Harbor Freight.

14. Once the calipers are installed connect the brake hoses and bleed the brakes.

Caliper installed on bracket, 1961 American
Note that a single washer is used between caliper and bracket as a spacer.

PARTS LIST:

All prices are from Rock Auto as of 05/27/24, rounded up to whole dollars unless otherwise noted. Shipping nor taxes are included.

NEW CALIPERS:
Ultra-Power 19B2668 (left) - $75
Ultra-Power 19B2669 (right) - $75 COMES WITH NEW BANJO BOLTS AND SEALS

REBUILT CALIPERS:
Cardone 192668 (left) - $52 + $40 core = $92
Cardone 192669 (right) - $52 + $40 core = $92 COMES WITH NEW BANJO BOLTS AND SEALS
NOTE: banjo bolts are M10-1.0 x 24 on original Honda calipers.

PADS:
Raybestos MGD959MH R-Line Metallic - $16
Raybestos MGD959CH R-Line Ceramic - $16

ROTORS:
Durago BR31257; 282 mm - $22
Bendix PRT5232; 282 mm - $28

ROTOR/PAD TWO WHEEL KIT:
Wagner ZD959VK QuickStop Ceramic Pads with Hardware - $69
Power Stop KOE2558 Includes Rotors, Ceramic Pads & Hardware - $76

HOSES:
Measure the original AMC hoses. The new hoses should be close to the same length.
In most cases 15” hoses will work. If you have new brake hoses you can use the banjo bolt adapters on them.
Raybestos BH36845 (1979-81 Camaro/Firebird, front, 15.20”) - $12
Dorman H98912 (1979-81 Camaro/Firebird, front, 15.50”) - $9
Raybestos BH36959 (79-85 Eldorado/Riviera, front left, 17.10”) - $12
Raybestos BH36960 (79-85 Eldorado/Riviera, front right, 17.10”) - $12
Dorman H98914 (79-85 Eldorado/Riviera, front left, 16.75”) - $11
Dorman H98913 (79-85 Eldorado/Riviera, front right, 16.75”) - $11
Russel Competition 657030 - 15” braided stainless - $17 (from www.summitracing.com)
(657242 – 16” - $17; 657042 – 18” - $18)

NOTE: Left and right Eldorado/Riviera hoses are due to a metal bracket on the hose. For AMC it doesn’t matter as the bracket isn’t used and can be removed. Remove bracket by cutting close to the hose. Leave the metal ring part of the bracket on the line, be careful not to cut into the hose. If the bracket doesn’t interfere with anything it won’t hurt to leave it on.
Some AMC front brake hard lines may be 7/16” instead of 3/8”. In that case use a Weatherhead #7828 adapter - $10 from NAPA.

BANJO BOLT ADAPTER:
Use with factory size AMC drum or disc lines (3/8x24NF end) and 10mm banjo bolts. Screws onto factory line.
Brake Connect BQ60 - $8 (from www.brakeconnect.com)

Addendum 1: About Master Cylinders

All the following material is intended for converting from front drum brakes to front disc brakes, with some mention of four wheel disc brakes. I simplified explanations as much as I could. For more on brake systems do some internet research! Speedway Motors has several good articles. Click on the “Learn Toolbox” link on their home page then click on “brakes” in the “Tech” section. This site is a good place to start also: http://www.how-to-build-hotrods.com/brake-system.html.

The stock brake master cylinder can be used, even a single reservoir. A dual reservoir would be safer, of course.

To use the factory drum master cylinder (1” bore) with disc brakes first remove the residual pressure valve. Do this by finding a screw that will just fit in the small hole of the tube seat in the outlets (a #8 drywall screw usually works). The screw only needs to go in the hole one or two threads. Once in, pull the screw with a pair of pliers and the tube seat will come out. Under the tube seat is a hard rubber/plastic piece and a spring. Remove those from the outlet going to the front disc brakes (and rear if you are running rear discs). The purpose of the valve is to retain about 10 psi in the brake lines so that the seals in the wheel cylinders will stay sealed. It takes about 100 psi to overcome the springs in drum brakes. Even 10 psi will cause a disc brake caliper to drag though, so the valve must be removed. If you are installing on a 58-60 American with the master cylinder in the original location under the floor you will need to install 2 psi residual pressure valves in the lines after removing the 10 psi factory valve(s). This is to prevent fluid from draining out of the calipers into the master cylinder, in effect a one-way valve. Hot rod suppliers such as Speedway Motors will have 2 psi residual pressure valves.

Residual pressure valve removed from a master cylinder. To the left is the tube seat. There will be one in each outlet of a drum master cylinder, only the rear brake outlet in a disc/drum type.

Speedway Motors in-line 2 psi residual pressure valve with 3/8” inverted flare brake line adapters. Connections on valve are 1/8” NPT.

If you want to use a disc/drum master cylinder I recommend a Dorman M99084 with 7/8” bore. The Dorman M105876 or Centric 13163031 (1983 Concord) have a 15/16” bore and are also a good choice. All three of those have the outlets on the right hand side (toward engine). There is roughly 100 psi difference between a 1” bore and 15/16” bore (smaller bore means higher pressure). A 1” bore master cylinder that works well is a Raybestos MC36237. Original Rambler and AMC drum brake master cylinders are all 1” bore. If more pressure is desired or needed, a Raybestos MC391442 is a 13/16” (0.812”). This is a Nissan part that is all one-piece cast iron similar to a typical late 60s/early 70s AMC master cylinder. It may require modification of the bolt holes to fit, and outlets are on the left side (toward fender). Outlets may be metric. Most master cylinders this small are newer and use an aluminum body with separate plastic reservoir. They can be used, but will likely need mounting bolt modifications. In general, almost any automotive master cylinder can be used, but may need mounting and line adapting. It should go without saying that I mean from similar size and weight vehicles.

Pressure from master cylinder outlets with 6 to 1 pedal ratio and 100 pounds force (leg pressure) being applied:

3/4" bore = 1359 psi
13/16" bore = 1158 psi
7/8" bore = 998 psi
15/16" bore = 870 psi
1" bore = 764 psi
1-1/8" bore = 603 psi

Unfortunately the only way to know what pressure you need is to try it. Around 800 psi is sufficient for most people. If the pedal travels well but the brakes feel like they aren’t gripping hard enough try a smaller bore size. This is a bit trickier to determine with power brakes.

The line ends from the master cylinder to the junction block or proportioning valve may need to be changed. This will vary from model to model, I can’t tell you what sizes you need. There are brass adapters available to go from one size to another. Most auto parts stores carry them, as well as Speedway Motors.

Note that the length of the pedal to master cylinder pushrod may need to be changed. The pedal should not be closer to the floor than about 2” when fully depressed as hard as you can push. If it’s closer the rod should be lengthened. If the brakes start to engage when the pedal has only been pushed about an inch the rod may be too long. Take care when shortening – only shorten about ¼” at a time. The process of removing and reinstalling may be a bit tedious until you get it right, but it’s easier to shorten the rod than to make it longer.

Centric 13163031 Master Cylinder

Addendum 2: About Proportioning Valves

Do I need a proportioning valve or combination valve? Most of the time braking is perfectly fine when converting from drum to disc brakes, but it may not be. Even with four wheel drum brakes the front brakes have more stopping power than the rear. Front drums are always larger than the rear. Sometimes they are the same diameter, but will be wider and have larger wheel cylinders.

If braking force is equal on both ends of a vehicle, the rear brakes will lock first. This happens for two reasons. First, most vehicles are front engine. The engine is the heaviest single component in a vehicle. This means the rear of most vehicles is much lighter. The exception, of course, is rear engine vehicles such as the Type 1 Volkswagen and 911 Porsche models, to name two of the most well known. The second reason is something called “weight transfer”. As the brakes are applied a vehicle tends to dip down toward the front (assuming it’s going forward). This pushes most of the weight of the vehicle toward the front. Most road vehicles therefore have 60-70% of their braking power on the front wheels with the remainder on the rear. I haven’t gone into this in detail, this is a very simplified answer.

If the rear brakes lock up before the front brakes, the rear end of a vehicle will generally start to swing around to one side. Which side and how fast depends on the crown or tile of the road surface. In any case, you DO NOT want your rear end to try to catch up to your front! You lose control of the vehicle. Modern vehicles have anti-lock brakes to combat this, in old vehicles drivers were taught to “pump the brakes”. A sliding wheel does not slow a car down effectively. The rubber of the tire’s surface melts and acts as a lubricant. So you don’t want the wheels to slide, but to turn and slow at a pace that prevents sliding. That’s hard to do in a panic stop situation even for the most seasoned driver, hence the development of anti-lock brakes, which pulse (“pump”) the brakes more rapidly than a person could.

A proportioning valve balances brake forces between the front and rear brakes and is used in conjunction with a junction block (connects all brake lines to the master cylinder), which may also have a brake fault light switch built into it. A combination valve is a junction block with a brake fault light switch and proportioning valve built into it, and some also have a metering valve in them – a “combination” of all those functions. A metering valve is only used with disc/drum brake setups. It holds the release of pressure off to the front brakes until approximately 100 psi is built up in the brake lines. It takes about 100 psi to overcome the springs in drum brakes. By holding off the release of pressure to the front disc brakes all four brakes should start to engage at the same time.

Many modern cars use a combination valve, but not all. In some cases the engineers balanced braking between front and rear by carefully selecting components. Late model AMC Concords didn’t use a combination valve, but Spirits did due to their short wheelbase. Often manufacturers used the combination valve to balance brakes so that the same rear brake components could be used over a wider range of vehicles. It was simply cheaper to use the valve rather than build and/or purchase components that were “just right” for a specific vehicle.

That doesn’t help you a lot does it? You now know why they are used, but do you need one? And which do you need? A simple proportioning valve or a combination valve?

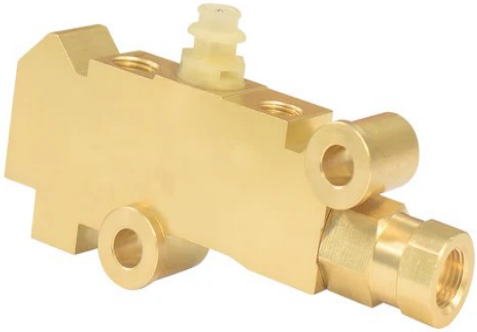
Which depends on your particular brake system and how you have it set up. Is your car old enough that it doesn’t have a brake fault light? Is the original junction block with brake fault light switch (four wheel drum and 65-70 disc/drum brakes) in good working order? In either of those cases you could use just a proportioning valve. Proportioning valves (sometimes called “hold-off valves”) can be found in fixed rates (such as were used on 1968-1970 AMCs with front disc brakes) or as adjustable models. Fixed rates were around 200 psi on Americans, Javelins, and AMX models and 400 psi on the larger cars. Camaros and A, B and E body Chryslers used the same valve as the smaller AMC cars. They can be used in any small to medium sized car. AMC mounted them in the rear of the car right in front of the rear axle, but they can be mounted anywhere in the line running to the rear between the junction block and where the line goes to the rear axle. They should be mounted

on the body before the flexible line to the axle, not on the axle itself. A set valve can be used such as the Inline Tube PR104B, or an adjustable valve . The adjustable valve needs some tuning, which I will get into in a minute.

If you have an older vehicle without a brake fault warning light and wish to add one, Inline Tube BLK244 or BLK248 can be used. The switch is normally open and completes a ground when activated by low pressure on one side. Simply wire a light to battery power (preferably switched) and to the switch terminal. The front brake line runs through one side of the switch, the rear the other. It doesn't matter if the T connecting the two front brakes to the master cylinder is before or after the switch.

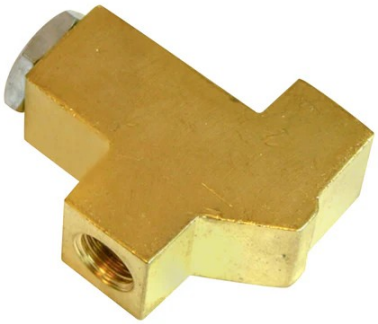
Or you could use a combination valve. Note that these valves are often called "proportioning valves", though technically they are actually combination valves. Typically a GM style valve is used. Inline Tube PR100 for disc/drum setups and PR101 for four wheel discs. Speedway Motors also has a range of these valves.

Four wheel drum brake systems don't use a balancing valve, and many four wheel disc systems don't. When all four wheels use the same type brakes it's easier to balance them by use of proper components. It is still sometimes cheaper to use a proportioning valve due to the range of vehicles sizes and weights though.



PR101 Combination valve (PR100 similar)

BLK244 distribution block w/brake fault switch



PR104B set proportioning valve ("hold-off valve")

Adjustable proportioning valve

Testing for a proportioning valve.

The only real way to know if you need a proportioning valve is to test the vehicle after the brakes are installed. Most will just use a combination valve or the fixed rate PR104B (or similar) and be done with it. That's usually fine, but if you do still test the car just so you know how it handles.

This testing procedure has worked well for me. There are no guarantees that it will work for you or is suitable for all people and vehicles. I'm just describing what has worked for me – proceed at your own risk.

The test is fairly simple. Find a large parking lot or gravel/dirt road where you have plenty room to get up to speed (40-45 mph) and is long enough so that if the rear wheels lock you can simply let off the brakes and continue going forward. A paved surface must be thoroughly wet, but very little (preferably no) standing water – you don't want to hydroplane. A dirt or gravel surface is easiest to work on. Either surface should be reasonably level.

Once the brakes are installed and verified to be working correctly, and a suitable location has been found, it's time to test. Get the car up to 40-45 mph then slam on the brakes as hard as you can. You should be able to tell if the rear brakes lock before the front. If all four lock at about the same time the vehicle should slide forward in a pretty straight line. If the surface tilts to one side or the other the vehicle may tend to move to the low side, but it should slide relatively straight. If it does, you're all set as is! If the rear of the vehicle starts to slide to one side IMMEDIATELY let off the brakes. You need a proportioning valve! If you have installed an adjustable valve you can increase the bias (usually screw in or turn to the right) and try again. Continue until the car brakes relatively straight. If the rear wants to come around and you have a standard combination you may have to remove it and install a distribution block along with an adjustable proportioning valve to get it right. I wouldn't advise installing an adjustable proportioning valve between a combination valve and the rear brakes. The proportioning valve isn't a simple pressure hold-off valve – it changes output pressure in proportion to input pressure. Two valves may interfere with each other.