INSTALLATION INSTRUCTIONS

FRONT DISC BRAKE CONVERSION KITS

SUM-BK1500, SUM-BK1500-DS, SUM-BK1501, SUM-BK1501-DS,

1964 - 72 A-BODY
1967 - 69 F-BODY
1962 - 74 X-BODY
(NOTE: 62-64 X-BODY REQUIRES 5-LUG STEERING ARMS)

Thank you for choosing SUMMIT RACING EQUIPMENT for your braking needs. Please take the time to read and carefully follow these instructions to insure the ease of your installation as well as the proper performance of the complete system.

If you believe anything to be missing or incorrect, please call our Customer Service Department at 330-630-0240.

To assure your installation will go safely and smoothly, have the following items on hand to assist you:

- JACK & JACK STANDS
- LUG WRENCH
- TORQUE WRENCH
- SOCKET SET
- BRAKE CLEANER
- WRENCH SET
- TUBE WRENCHES
- MALLET
- WHEEL BEARING GREASE
- BRAKE FLUID
1) Raise the vehicle until the wheels and tires clear the floor; support front of vehicle on jack stands. Make sure parking brake is engaged. Remove front wheels and tire assemblies.

2) Remove spindle assembly:
   a) Remove tie rod ends from spindle after removing retaining hardware. We strongly recommend the use of a splitter “picklefork” for this purpose!
   b) Remove both front shock absorbers.
   c) Compress both front coil springs with appropriate spring compressor and remove from car. The use of a safety chain around the control arms is recommended to prevent sudden spring unloading during this operation.
   d) Disconnect both upper and lower ball joints and remove spindle assemblies from car. Separate ball joints from spindle. Remove hub from spindle, save for re-installation.
   e) Retain all original hardware for possible reuse.

3) Install new spindle assembly:
   a) Check ball joints prior to re-assembly and if any play is indicated, replace with new parts.

   SPINDLE BEARING SURFACES ARE PRECISION MACHINED, PROTECT MACHINED SURFACES AGAINST DAMAGE.

   BEFORE REINSTALLING STEERING ARMS, DRILL OUT FACTORY 7/16" HOLES TO 1/2" HOLES TO ENABLE REATTACHMENT TO SPINDLE.

   NOTE: WHEN INSTALLING KITS ON 1962-64 CHEVY II / NOVA, 1965-67 V8 (5 LUG) STEERING ARMS WILL BE REQUIRED.

   b) Install new spindles and ball joints. Make sure that steering arms point toward rear of car. Torque lower ball joint to 65 ft-lbs, upper ball joint to 50 ft-lbs.
   c) Re-install coil springs in reverse manner of removal.
   d) Re-install shock absorbers. Install curved steering arms onto new spindles as in the reverse manner of removal. Note bolts are not the same length, rear bolts are 1/2” longer.
   e) Re-install tie-rod ends and castellated nuts, torque to 35 ft-lbs. install new cotter pins

4) Install caliper mounting brackets and hardware
   a) Place caliper mounting bracket over spindle with ears facing outward, 5/8” dia hole on top.
   b) Place splash shield over bracket and secure both bracket and splash shield to spindle with (1) 5/8”x 1” bolt and (2) 1/2”-20x2-1/2” bolts. Bend “tab-locks,” on splash shield against 1 bolt flat.
   c) Install new wheel bearings, after packing with a good grade of wheel bearing grease. (Inner wheel bearings must first be installed in rotors and retained with provided grease seals). Use large socket or seal installer tool for correct seating of grease seal.

   BE CAREFUL THAT ALL HYDRAULIC COMPONENTS ARE KEPT CLEAN AND FREE OF DEBRIS, INSIDE AND OUT. REMEMBER, DIRT IS THE ENEMY OF HYDRAULIC SYSTEMS. SUMMIT WILL NOT BE RESPONSIBLE FOR SYSTEM FAILURES DUE TO AN UNECLEAN INSTALLATION.
d) Install rotor over spindle and follow up with new outer bearing, retaining washer and nut. (Turbo slotted rotors are available, contact Summit for more information.)

e) Torque spindle nut to 12 ft/lbs. While turning rotor, loosen nut one flat and insert cotter pin.

! IMPORTANT! IF SLOT AND PIN HOLES DO NOT LINE UP, TURN NUT BACK ENOUGH TO INSERT COTTER PIN. MAKE SURE THAT ROTOR SPINS FREELY!

f) Install grease cap, do not tap on the center, it will crush easily

5) Preparation and Installation of calipers

a) Prior to installing calipers, connect flex lines to calipers with hollow bolt and (2) copper washers, one on top and one on the bottom. Don’t tighten bolt until after caliper is mounted.

b) Install new sleeves and bushings, provided, into all four ears of each caliper using silicone grease or non-petroleum type grease for ease of installation.

c) Install inboard brake pad with supplied support spring. Inboard pads must lay flat against piston.

d) Install outboard brake pad in the caliper with the ears of the pad over the ears of the caliper and the bottom of the pads engaged in the recess of the caliper.

e) Lubricate supplied caliper mounting bolts with silicone grease or other non-petroleum lubricant.

f) Position the caliper assembly over the rotor and line up the holes in the caliper ears with the holes in the mounting bracket. (Bleeder screws must point up)

g) Install mounting bolts, making sure that the ends of the bolts pass under the retaining ears on the inboard pad. Push bolts through to engage the bushings of the outboard caliper ears while at the same time threading the bolts into the mounting bracket. Torque bolts to 25-30 ft/lbs.

h) Clinch outboard pad to caliper casting so that the pad remains flush against the casting without clearance or movement. (This will minimize brake squeak).

! IMPORTANT! IF THE PAD DRAGS ON THE HUB OF THE ROTOR, YOU MAY NEED TO CLOSE THE TABS ON THE PADS THAT GO OVER THE OUTBOARD SIDE OF THE CALIPER

i) Temporarily connect free end of flex lines to the 12 point retainer brackets on the frame and temporarily secure with "horseshoe clip". Turn steering assembly through a full left to right turn, while noting flex lines, to assure that they do not twist or take a double bend. If incorrect, remove them from the 12 point bracket and re-orient the hose with minimum distortion. Complete permanent connection using a tube wrench.

! IMPORTANT! FAILURE TO COMPLETE THIS PART OF THE INSTALLATION MAY CAUSE BRAKE LOCK-UP IN SERVICE. THE THIN WALL INTERIOR HOSE OF THE FLEX LINE CAN COLLAPSE DURING TURNS AND RESTRICT THE FLUID FROM RELIEVING THE CALIPER BRAKE LINE PRESSURE WHEN THE BRAKE PEDAL IS RELEASED. MAKE SURE ROTOR SPINS FREELY AND THERE ARE NO INTERFERENCES.
6) Power booster (For Power Disc Brake Kits)
   a) Remove original master cylinder and save clevis and associated hardware.
   b) If kit has been ordered with power brake option, line up booster to determine which bolts
      require removal to allow attachment to fire wall. Remove four bolts and install booster
      (do not tighten fasteners at this time). Assemble jam nuts and clevis onto booster input
      shaft before final tightening.
   c) Align holes of clevis with lower hole in brake pedal arm. Adjust clevis to allow 1/8" end
      play and assure that stop light switch is still in adjustment.
   d) The most convenient vacuum source for the booster is the engine intake manifold. The
      minimum vacuum developed by the engine, at idle, should be no less than 18"h. In
      addition, the rubber hose between the intake manifold and the booster must be rated
      for vacuum service and have an outside diameter of no less than 11/32"
   e) An extension rod is supplied for those vehicles that need longer pushrods. (3/8-24
      thread).

7) Master cylinder
   a) **Always** bench bleed master cylinder before installing in car and refer to the separate
      "Master Cylinder Installation Instructions."

8) Brake fluid and bleeding the system
   a) After completing all hydraulic connections, install new brake fluid (at master cylinder
      reservoir). Remove the master cylinder and bench bleed the master cylinder. Pump
      brake pedal several times to initially fill the system and advance the caliper pistons to
      their working position.

**WHEN BLEEDING THE SYSTEM, PUMP FLUID SLOWLY INTO THE NEW
SYSTEM. IF FLUID “FOAMS”, IT WILL TAKE A LOT OF FLUID TO BLEED THE
BRAKES. SOFT PEDAL IS A RESULT OF POOR BLEEDING. TAKE YOUR TIME!**
8A) Bleeding the system
   a) When pressure bleeding is employed the correct pressure setting is 10-15 psi. (max.) for the bleeder tank.
   b) If power brakes are fitted, the engine should not be running and the vacuum reserve should be reduced to zero by pumping the brake pedal or pulling the booster vacuum hose.
   c) Tapping the caliper with a rawhide mallet, before fluid is flowing, may assist in obtaining a better bleed job.
   d) Brake bleeding can be simplified by assuring that there are no line restrictions, by using the gravity bleed approach as follows:
      1) Leave all bleeder screws open when installing calipers.
      2) Fill master cylinder reservoir, do not pressurize master cylinder or pump brake pedal; instead observe bleeder ports until brake fluid flows out; then shut bleeder valves.
      3) No further procedure is required if brake pedal is hard after shutting off all bleeder valves. Make sure that the master cylinder is "topped-off."
   e) With bleeders closed and system bled, a hard pedal should be experienced so that at full application and with the engine running, the toe of your left foot can still be placed between the bottom of the pedal and the floor.
      1) In addition there should be brake pedal end-play of 3/4 to 1" inch (from full release until initial braking action takes place).
      2) Power brake cars will experience a "drop-off" of the pedal when the engine is started. This is a normal condition, and signifies that the booster is working correctly.

DO NOT DRIVE THE CAR UNTIL THE BRAKES STOP THE CAR SAFELY, INITIAL BRAKING TESTS SHOULD BE DONE IN A SAFE OPEN AREA! LOOK FOR LEAKS AND INTERFERENCEs!

f) If brake pedal "end-play" is excessive, adjust push-rod between the brake pedal and booster (to lengthen) in 1/4 turn increments until 1" of "end-play" is achieved.

9) Final inspection
   a) Reinstall wheel and tire assemblies.
   b) Recheck all mechanical and hydraulic connections, look for brake fluid leaks, recheck brake pedal operation.
   c) Lower vehicle to ground and test braking system for proper operation in a safe area before driving on public highways.

DO NOT DRIVE IN TRAFFIC UNTIL THE BRAKES SAFELY STOP THE CAR A SAFE DISTANCE WITHOUT A SPONGY PEDAL FEEL!

BRAKING TESTS SHOULD ALWAYS BE DONE IN A SAFE OPEN AREA!

TECH LINE -- If technical help is required, please call 330-630-0240.

NOW ENJOY TRUE PERFORMANCE BRAKING!!
Why is my brake pedal soft?

1) In most cases, Air is trapped in the lines or calipers. Try re-bleeding the system. Do not force new fluid into new brake lines. It may foam and be very difficult to bleed. **Make sure that the bleeder screws on the calipers are facing upward!**

2) If all the air is out of the system, the pushrod from the booster may need adjustment, under the dash, to make it longer. Do not extend it too long or it will not allow the fluid to return, causing brakes to drag. Your pushrod may not be adjustable. If the pushrod can be made longer, try ¼ turn adjustments at a time. Summit stocks adjustable pushrods for many vehicles. In addition, the pushrod between the Booster and the Master Cylinder may need adjustment. Not all Booster to Master pushrods are adjustable.

3) You may have a bad Master Cylinder. Before you determine this, you should make sure that all the air is out of the system. When installing a new Master Cylinder, always bench bleed first. If you did not, take off the Master Cylinder and bench bleed it. (See Bench Bleeding Instructions below)

Why does the car pull to one side?
The side that the car is pulling to is the caliper that is working. Re-bleed the opposite side and try carefully stopping again.

Why does it feel like there is no Power Assist?
The Booster may not be getting enough vacuum to operate. On some high lift cams, the engine does not develop enough vacuum. The Booster needs at least 16" of vacuum to operate correctly at idle. If you do not have at least 16 inches of vacuum at idle, you may have to add a vacuum pump to your system. Check for vacuum leaks. There may be leaks in the intake manifold or hoses that would cause low vacuum. The Booster may be bad. Do a vacuum test. If the Booster can retain a vacuum for three (3) minutes after the vehicle is shut off, it is not a bad Booster (refer to steps 1 & 2). **All Master Cylinders must be bench bled in a vise before being installed on the vehicle.**

How do you bench bleed a Master Cylinder?

Secure one of the ears in a vise so that you can take a large screwdriver and push the piston in. Fill the reservoir with clean fluid. Take a dummy line or our M/C bleeding kit and hook it up to the two ports. Front line to front and rear line to rear reservoirs. Slowly stroke the master and let it return slowly. You should see many air bubbles in the fluid. Repeat this step until you do not see any more air bubbles. Summit recommends ten (10) slow pumping strokes after you see no more air bubbles. This will insure a good hard pedal. *(See Summit master cylinder bleeder kit instruction Sheet)*

What is the best pad for my vehicle?

Your choice of pads should be determined by how and where you drive the vehicle. If you drive in heavy stop and go traffic you would need a different pad than someone who is road racing. Contact Summit for the correct application.

How often should brake fluid be changed? (street application only, not racing)

When brake fluid turns brown, it is time to change the fluid. The brown color indicates that the fluid has absorbed water and dirt. D.O.T. #3 & #4 fluids absorb water. Silicone brake fluid is not for track racing.

How can I tell which reservoir is the front or rear of the Master Cylinder?
The front reservoir is usually larger than the rear. In some cases, they are the same size. As a rule, for GM cars & trucks, the rear reservoir is for the rear brakes. On Ford cars & trucks, the front reservoir is for the rear brakes. On front wheel drive vehicles, the brakes are split diagonally. Each bowl of the master cylinder services one front wheel and one rear wheel. This will be important if you are installing a distribution block, proportioning valve, or residual valve. Hint: The larger bowl will feed the disc brakes.
Where is the best place to install a proportioning valve?

The best place to install a proportioning valve is after the distribution block. **Do Not install it between the Distribution Bock and the Master Cylinder.** You will not be able to get a hard pedal. Anywhere after the Distribution Block and before the rear flex hose is acceptable for installation.

**Why should the flex hoses be replaced? They look O.K. from the outside.**

Flex hoses should be replaced every time the calipers are serviced. They flex up and down, just like a shock absorber. They are also under high pressure internally. Flex hoses have a rubber liner that will collapse over time. If it does collapse, it will act as a check valve and not allow fluid to return to the Master Cylinder.

**Will my pedal get harder by replacing the flex hoses?**

No. When the flex hoses are replaced, re-bleed the brake system. Normally what happens is that bleeding causes a harder brake pedal. A better bleeding job and taking your time will result in the same situation.

**Are the rubber flex hoses expanding causing a soft pedal?**

Not likely. A soft pedal is usually a sign of air in the system due to poor bleeding. Flex hoses have nylon webbing that is molded into the internal rubber. It is very strong and will hold up to 3,000 P.S.I. Installing braided stainless steel hoses is not necessary; it only improves appearance.

How much brake pressure does it take to stop my vehicle?

Most vehicles, power or non power brake, develop 1,200 P.S.I. When you panic stop or jump on the brakes hard, a surge of 1,400 P.S.I. can be achieved. If a factory proportioning valve installed on the vehicle, the rear brakes are only developing 600 – 700 P.S.I. Drum brakes require lower pressure because they grab more quickly. When rear disc brakes are installed, the rear brake pressure may be increased to 800 – 1,000 P.S.I. or more. A good way to check the pressures and to see if the system is working correctly, use a pressure gauge screwed into the bleeder port. A vehicle with less than 600 P.S.I. will not stop!

How tight should the wheel bearings be?

The front bearings should always be torqued. Not just hand tightened. Bearings usually require 12-15 Ft./Lbs. of torque. Then you will probably need to back off a little to align the cotter pin hole. Do Not over tighten; the bearing life will be shortened. This procedure only applies to rear wheel drive vehicles with separate bearings and races. On vehicles with one piece sealed bearing assemblies or hub assemblies, refer to a service manual.

What type of differential fluid should I use in my rear axle?

If you have positraction, use a Hypoid or Limited Slip additive that is designed for your particular rear end. If you do not have positraction, any type of 80 –90 weight gear lube is acceptable. Fluid should be changed often if you are trailering or any type of extreme usage. This fluid does brake down with time and usage.
How and why do I bench bleed a master cylinder?

When installing or replacing a master cylinder, it is critical that all air is removed from the master cylinder. This can easily be done by bench bleeding the master cylinder prior to installation. Using the master cylinder bleeder kit:

1) Place your master cylinder in a vise by the ears (not body). Make sure it is level.
2) Attach a piece of clear plastic hose to the short end of one of the plastic nozzles. Do the same to the other hose and nozzle.
3) Clip the plastic bridge to the wall and push the ends of the hose through the holes so they are SUBMERGED in the reservoir on either side of the wall.
4) Press the tapered end of the nozzle FIRML Y into the cylinder port hole with a twisting motion. Repeat this procedure on the other port hole.
5) Fill the reservoir with CLEAN brake fluid recommended by the manufacturer.
6) Using full strokes, push the piston in, then release. Do this until ALL the air bubbles have disappeared from the clear plastic hose. (CAUTION-MASTER CYLINDER WILL NOT BLEED PROPERLY UNLESS HOSES ARE SUBMERGED IN BRAKE FLUID UNTIL THE BLEEDING PROCESS IS COMPLETED.)

Now mount master cylinder and avoid brake fluid leaking out of front and rear ports during installation.

Bleeding steps for Dual Port Master Cylinder

If you have a master cylinder with dual port holes (4 port holes - 2 on each side), it is necessary to bleed both port sides of the master cylinder. If both sides of the master cylinder are not bled, there will be air trapped in the master cylinder and your brakes will not function properly.

To bleed dual port master cylinders:

1) Follow steps 1 - 6 above on the side you will be hooking the brake lines to. Plug the other side.
2) Once the air bubbles are no longer visible in the plastic hose, open the bleeder screws in the supplied plugs and allow the mater cylinder to gravity bleed. DO NOT push the master cylinder piston in while the plugs are gravity bleeding.
3) When clear, steady streams of fluid are coming out of both bleeders, close and tighten the bleeders. Give the master cylinder piston several strokes, making sure there are still no bubbles present in the clear plastic tubes.
4) Remove the tubes and plastic fittings and mount the master cylinder on the vehicle being careful not to spill brake fluid on any painted surfaces.