

TANDEM FIREWALL MOUNT TRU-BAR ASSEMBLY

SPECIFICATIONS • INSTRUCTIONS

PART NUMBERS

340-18420 • 340-18421 (w/ eyelet)

FEATURES

- ▶ Easily converts tandem master cylinder vehicles to a street performance balance bar setup with separate front and rear master cylinders
- ▶ Designed with oval mounting holes for 3.22" to 3.40" on center studs for a wide variety of vehicle fitments
- ▶ Dual circuits allow better front-to-rear brake balance by utilizing differing master cylinder bore sizes
- ▶ Easily adjust brake bias with included knob, or use an optional remote cable adjuster (P/N: 340-4990)
- ▶ Strong, lightweight forged billet aluminum construction
- ▶ Mounts dual master cylinders with 2.25" on center vertical bolt holes from Wilwood and others



P/N 340-18420



P/N 340-18421
Includes Pushrod Eyelet

Installation Notes and Precautions

Installation of this component should **ONLY** be performed by persons experienced in the installation and proper operation of disc brake systems. Before assembly begins, familiarize yourself with the following procedure to ensure a trouble-free installation.

•Wilwood's tandem firewall mount Tru-Bar assembly must be mounted using the two .42" slotted mounting holes as shown in Figure 1. It is intended to be mounted in the location of the stock

OEM master cylinder through the firewall. Ensure there is enough space so balance bar adjustments can be made and master cylinders are accessible.

•This tandem mount Tru-Bar assembly may not work in all applications and it is the installer's responsibility to determine suitability and assure full push rod travel.

WARNING

IT IS THE RESPONSIBILITY OF THE PERSON INSTALLING ANY BRAKE COMPONENT OR KIT TO DETERMINE THE SUITABILITY OF THE COMPONENT OR KIT FOR THAT PARTICULAR APPLICATION. IF YOU ARE NOT SURE HOW TO SAFELY USE THIS BRAKE COMPONENT OR KIT, YOU SHOULD NOT INSTALL OR USE IT. DO NOT ASSUME ANYTHING. IMPROPERLY INSTALLED OR MAINTAINED BRAKES ARE DANGEROUS. IF YOU ARE NOT SURE, GET HELP OR RETURN THE PRODUCT. YOU MAY OBTAIN ADDITIONAL INFORMATION AND TECHNICAL SUPPORT BY CALLING WILWOOD AT (805) 388-1188, OR VISIT OUR WEB SITE AT WWW.WILWOOD.COM. USE OF WILWOOD TECHNICAL SUPPORT DOES NOT GUARANTEE PROPER INSTALLATION. **YOU**, OR THE PERSON WHO DOES THE INSTALLATION MUST KNOW HOW TO PROPERLY USE THIS PRODUCT. IT IS NOT POSSIBLE OVER THE PHONE TO UNDERSTAND OR FORESEE ALL THE ISSUES THAT MIGHT ARISE IN YOUR INSTALLATION.

RACING EQUIPMENT AND BRAKES MUST BE MAINTAINED AND SHOULD BE CHECKED REGULARLY FOR FATIGUE, DAMAGE, AND WEAR.

Dimensions

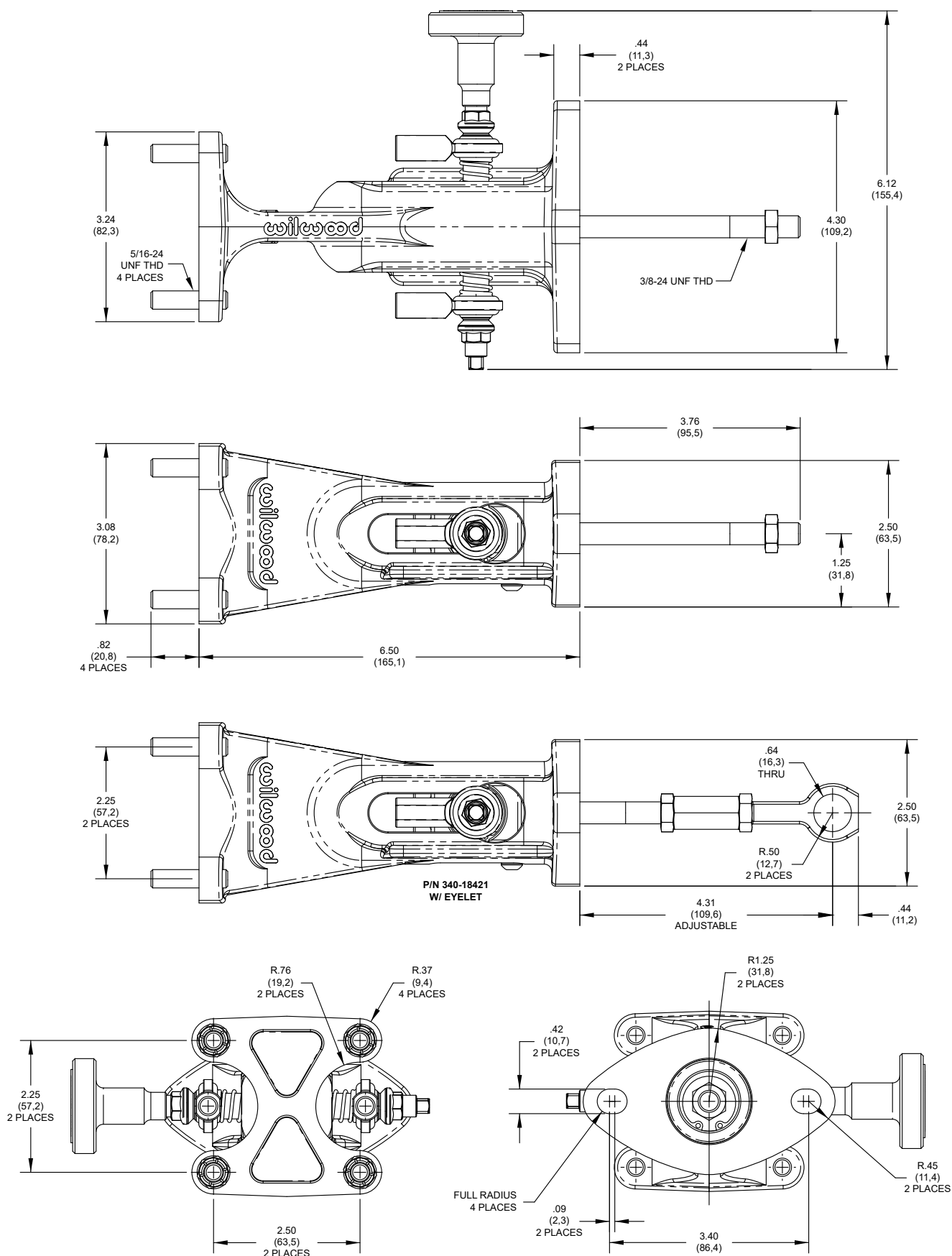


Figure 1. Tandem Mount Balance Bar Assembly, Mounting Dimensions, p/n's 340-18420 & 340-18421

Instructions

Brake pedals should be free to return when no pressure is being applied, allowing the master cylinder pushrod to return to its undepressed position. In some cases, the master cylinder spring (internal) may not be strong enough to fully return the pushrod; in this case an additional pedal return spring can be used. There are two important items for consideration:

1. The brake pedal should have an adjustable return stop on it when a strong pedal return spring is used. This prevents the master cylinder from excessively banging the snap ring stop inside the master cylinder bore (visible under the rubber boot). Adjust the stop so the pedal stops returning at the point when the master cylinder piston retracts against the snap ring.
2. The master cylinder piston must fully retract. If the master cylinder piston is not allowed to fully retract when the brake pedal is not applied, the primary inside seal will not return past the small pressure relief hole (visible within the master cylinder reservoir on some master cylinders). This can cause excessive residual line pressure and contribute to brake drag and an overheating condition.

Master Cylinder Installation and Pushrod Adjustments

Prior to attaching the master cylinder pushrods to the spherical bearing pivots on the balance bar, adjust the threaded rod to a centered position with an equal amount of the bar protruding from both sides of the Tru-Bar assembly.

For the initial bleeding and adjustment of the pedal stop position, the master cylinder pushrod lengths can be set to an equal length. Additional pushrod length adjustments to compensate for differences in master cylinder stroke can be done after the system has been bled. See Figure 2

Bleeding the System

ALWAYS bench bleed new master cylinders prior to connecting the fluid lines. Failure to properly purge all air from the master cylinder piston chamber can result in the inability to bleed the system with the lines attached. Bench bleeding new master cylinders should be done prior to installation by attaching a short length of clear line to the master cylinder outlet and submerging it below fluid level in the reservoir. SLOWLY make full strokes of the master cylinder until all air has been eliminated from the line, and no air bubbles are visible from out of the fluid ports in the bottom of the reservoir when the piston is fully released. Replace the outlet line with a plug while the master cylinders are being installed to prevent fluid from spilling out. Once the cylinders are secured to the mount, remove the plugs and connect the brake lines.

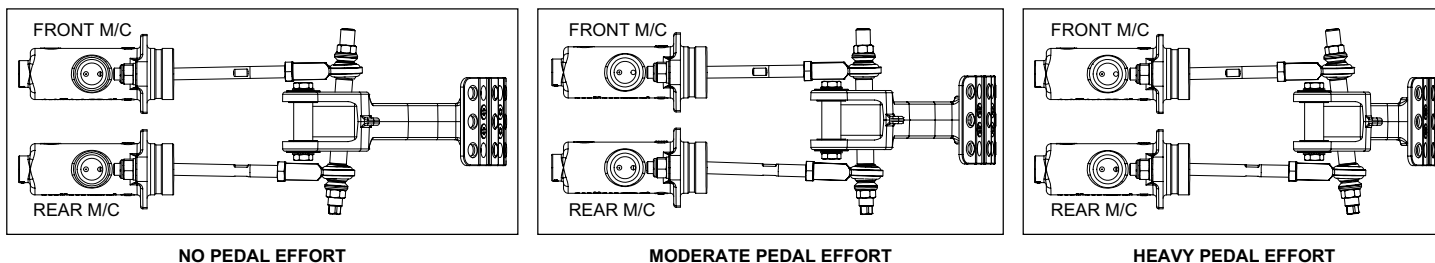
For manual bleeding of the system using the pedal, the front and rear fluid circuits should be bled simultaneously allowing both master cylinders to operate together without any bind in the Tru-Bar assembly. DO NOT attempt to fully adjust the bias to one side or the other and bleed only one cylinder at a time. This can potentially cause damage to the unit, or master cylinders.

Operational Pushrod Length Adjustment

In those few instances where a 50/50 bias system with the same caliper piston sizes at all four wheels and equal size master cylinders front and rear are employed, set the master cylinder pushrod lengths equal.

For all other vehicles with a split bias system, the pushrod lengths will require being set to different lengths to compensate for the differences in master cylinder piston stroke that occurs in a split bias system.

Figure 2 shows a typical rear wheel drive, front biased system as used on road course cars, and the subsequent changes in the balance bar that occur through the full range of pedal travel. In this scenario, the front master cylinder pushrod is adjusted longer. For other configurations using a higher rear bias, the pushrod length settings would be the opposite.



NOTE: THE PUSHROD ADJUSTMENT DEPICTED IN THIS FIGURE IS REPRESENTATIVE OF A TYPICAL ROAD RACE APPLICATION. THAT IS, LARGE CALIPER PISTONS IN FRONT, SMALL CALIPER PISTONS IN THE REAR.

Figure 2. Operational Push Rod Length Adjustment

Instructions (Continued)

The amount of difference in the adjusted pushrod lengths will be determined by the overall difference in volume displacement between the front and rear circuits. The pushrod length of the higher volume circuit must be adjusted longer to prevent binding in the Tru-Bar assembly through the entire range of pedal travel.

Observe the differences in stroke between the front and rear cylinders, and then adjust the pushrods to equalize the amount of angle change in the balance bar from fully released, to moderate, to heavy pedal effort. The balance bar should be square and perpendicular to the master cylinder pushrods at the halfway down point.

When making adjustments to set the pushrod lengths, the pedal should be fully retracted against the stop. As one pushrod is adjusted longer, the other pushrod must be adjusted an equal amount shorter to prevent either from applying any amount of pressure to either master cylinder.

NOTE: *Pushrod length does not affect front to rear bias or the timing of the circuits in any way. The bias can only be affected by moving the balance bar position. Do not attempt to adjust the pushrod length for those purposes.*

Remote Adjuster Cable Attachment

It is not necessary to use a jam nut when attaching the remote adjuster cable. The cable end coupling nut should be tightened onto the balance bar until it bottoms out. Wilwood remote adjuster cable P/N 340-4990 is recommended for use with all pedals.

Affecting Bias with the Balance Bar

The Tru-Bar balance bar affects front to rear bias by changing the position of the spherical bearing pushrod pivots relative to the fixed position centered trunnion bearing. As the balance bar is rotated, the spherical pushrod pivot bearing that moves closer to the pedal pivot bearing receives more leverage and a higher brake bias than the bearing that moves farther away. To prevent excessive side loading of the master cylinder pistons in the bores, and potential binding within the bearings, balance bar adjustments should be limited to 4 turns from center in either direction. If the vehicle requires additional bias adjustment, a change in master cylinder size, caliper piston size, or the use of an inline proportioning valve may be necessary.

NOTE: *The Tru-Bar balance bar incorporates stop spacers to prevent over adjustment. Excessive adjustments off center can lead to premature master cylinder piston and bore wall wear, as well as binding and damage to the bar itself. Therefore do not remove the stop spacers from the balance bar.*

Additional Information and Recommendations

WARNING • DO NOT DRIVE ON UNTESTED BRAKES BRAKES MUST BE TESTED AFTER INSTALLATION OR MAINTENANCE MINIMUM TEST PROCEDURE

- Make sure pedal is firm: Hold firm pressure on pedal for several minutes, it should remain in position without sinking. If pedal sinks toward floor, check system for fluid leaks. DO NOT drive vehicle if pedal does not stay firm or can be pushed to the floor with normal pressure.
- At very low speed (2-5 mph) apply brakes hard several times while turning steering from full left to full right, repeat several times. Remove the wheels and check that components are not touching, rubbing, or leaking.
- Carefully examine all brake components, brake lines, and fittings for leaks and interference.
- Make sure there is no interference with wheels or suspension components.
- Drive vehicle at low speed (15-20 mph) making moderate and hard stops. Brakes should feel normal and positive. Again check for leaks and interference.
- Always test vehicle in a safe place where there is no danger to (or from) other people or vehicles.
- Always wear seat belts and make use of all safety equipment.

Components and Accessories

<u>Part No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Description</u>
340-4990	Remote brake bias cable adjuster	290-6209	Wilwood EXP 600 Plus Super Hi-Temp Fluid
260-6765	High volume master cylinder	260-13706	2 PSI Residual Pressure Valve
260-14784	Compact remote master cylinder	260-15365	4 PSI Residual Pressure Valve
290-0632	Wilwood Hi-Temp 570 DOT 3 Fluid	260-13707	10 PSI Residual Pressure Valve