



Installation Instructions

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T-350 TRANSBRAKE

Part # 353080

PACKING LIST

- | | |
|---|---|
| <input type="checkbox"/> Compu-Flow Valve Body | <input type="checkbox"/> 353079 Solenoid Assembly |
| <input type="checkbox"/> 353081 Separator Plate | <input type="checkbox"/> 353083 Transbrake Valve |
| <input type="checkbox"/> 353089 Gaskets (2) | <input type="checkbox"/> 353332 Clutch Springs (17) |
| | <input type="checkbox"/> 353334 Transbrake Valve Spring |
| | <input type="checkbox"/> 972010 Cup Plug, 29/64" |
| | <input type="checkbox"/> 972055 Cup Plug, 2 1/4" (2) |
| | <input type="checkbox"/> Transbrake Decals (2) |
| | <input type="checkbox"/> 1 Instruction Sheet |

Packed by: _____



THIS TRANSBRAKE IS FOR NON-LOCK UP TRANSMISSIONS

This transbrake should be installed only by qualified personnel. Improper installation may cause property damage, personal injury or death.

TRANSMISSION REMOVAL

The transmission must be removed from the vehicle to properly prepare it for transbrake operation.

1. Raise the vehicle and support with jack stands or raise on an automotive lift. Make sure that the vehicle is properly supported! Place a drain pan under the transmission.
2. If your transmission is equipped with a drain plug, remove the plug and allow the fluid to drain. If your unit does not have a drain plug, remove all pan bolts except the 2 at the front of the transmission. Remove bolts one at a time, working back to front. Exercise caution as transmission fluid will splatter erratically during oil pan removal. You might need to reposition the transmission cross member in order to remove the rear oil pan bolts. If this becomes necessary, support the rear of the transmission to prevent the transmission / engine assembly from moving down and causing damage to the distributor cap and / or engine mounts. As you remove the bolts along the sides of the oil pan, the weight of the fluid will usually cause the oil pan to separate from the transmission case, allowing the fluid to drain from the rear of the pan. However, if the pan does not readily separate from the transmission case, insert a screwdriver between the oil pan and the case and pry gently to begin the draining process. Remove the two front oil pan bolts slowly about one turn at a time) and fluid will drain at a steady rate from the rear of the oil pan. Drain the oil pan completely and keep it to hold bolts and small parts.

DISASSEMBLY

Disassembly of the transmission is required to perform internal modifications necessary for this transbrake installation. Inspect the mechanical condition of the transmission during disassembly. If the transmission is properly modified and assembled with parts in excellent condition, superior results will be attained with this unit.

REMOVE AND DISCARD:

1. Front band and its related parts.
2. Governor. Reinstall the cover.
3. Valve body and separator plate.
4. Modulator and modulator valve.
5. All check balls.
6. Intermediate accumulator piston and spring from the bore on the side of the case. Reinstall the cover.
7. Center seal in direct (high) clutch drum.

TRANSMISSION CASE MODIFICATIONS

1. Install the two 2-1/4" cup plugs into the intermediate band servo piston bore located in the case under the valve body. See diagram at right.
2. Install the small cup plug in the detent cable hole.

REVERSE CLUTCH PREPARATION

Install five friction clutches. Use only FLAT steel plates and friction clutches in the reverse clutch pack. Set clutch pack clearance at .050 to .060. The piston may have to be machined in order to install the five clutches and set the clearance.

DIRECT (HIGH) CLUTCH AND DRUM PREPARATION

1. Remove the center seal from the drum.
2. Install 17 high tension release springs.
3. Install five friction clutches. Use only FLAT steel plates and friction clutches. Set clutch pack clearance at .050 to .060. The piston may have to be machined in order to install the five clutches and set the clearance.

Five friction clutches are recommended in both the direct (high) and the reverse clutch packs for extended clutch pack life. The recommended .050 to .060 clutch pack clearance is critical to minimize piston travel and the amount of f time it takes the transbrake to apply.

TRANSBRAKE VALVE AND SOLENOID

Slide the transbrake valve with its spring into the original modulator bore, then place the modulator o-ring seal on the transbrake solenoid. Install the solenoid in place of the modulator. Use two modulator retaining clips to hold the transbrake solenoid in place; one on top of the other bolted to the case with a pan bolt which has a large round surface to support the clips. This is very important to eliminate flex and securely hold the solenoid in position when the transbrake is adjusted for minimum reaction time Pro-Start racing.

Check for proper movement of the solenoid and valve before installing the valve body. The transbrake valve's large land must close the small land must open into the next passage when pushed by the solenoid.

PRO-START APPLICATIONS

When installing a transbrake for Pro-Start applications, drill a .030 bleed hole 3/8" from the edge of the direct (high) apply piston. Adjust the transbrake valve for minimum reaction time by grinding the tip of the valve that contacts the solenoid so that when the solenoid is held in the applied position, the undercut portion of the valve is open into the second circuit of the bore by only .030.

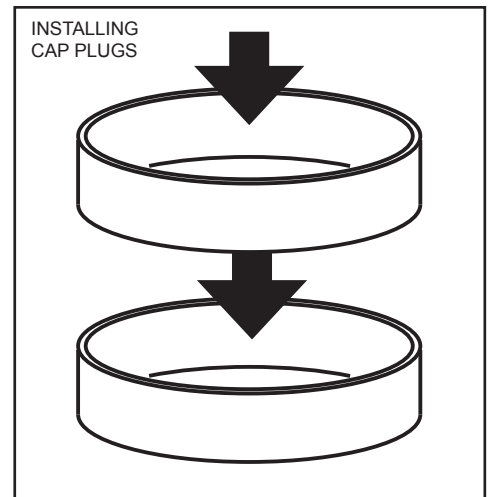
INSTALL THE VALVE BODY

Place the gaskets and separator plate on the transmission case. Install the OEM support plate. Leave the bolts loose. **Important!** Carefully line up the plate and the gaskets with the case holes. Snug down the 7 bolts.

Remove the manual valve from the OEM valve body and install it in the ATI valve body. Line up the linkage and re-use the "S" link. Install the valve body. Do not tighten any bolts until they have all been started. Snug all bolts. Tighten all bolts to 130 in/lb in a sequence starting in the center and working out. Be sure to tighten the support plate.

Check the position of the manual shift control valve with the inner selector lever in the first gear position (remember the shift pattern is reversed, PRN123). The manual shift control valve should extend approximately 3/32" out of its bore at the rear of the valve body. To adjust its position, carefully bend the "S" link connecting the manual valve to the selector lever.

Install the filter and transmission pan. Fill with Dexron ATF. Do not overfill!



SUPER STOCK APPLICATIONS

This transbrake is ideally suited for Super Stock racing as its hydraulic system is designed to switch from high pressure (approximately 225 PSI) during transbrake application to reduced pressure (approximately 150 PSI) in the first, second and high positions. This reduces unnecessary horsepower loss and provides a better ET and MPH.

PRESSURE TEST:

Main line pressure is now checked at the port with the 1/8" pipe plug located next to the intermediate accumulator piston cover on the side of the transmission case. Line pressure readings should first be taken and recorded when the transmission and fluid are cool. Then bring the transmission and fluid up to operating temperature and retake and record line pressure. Take line pressure readings in first, second and third gears at 1000 engine RPM. Take reverse and transbrake line pressure readings at 2000 RPM.

At operating temperature, line pressure should be 140 to 160 PSI in first, second and third gears at 1000 RPM. Line pressure is boosted during reverse or transbrake apply and should be 215-245 PSI at operating temperature at 2000 engine RPM.

Low line pressure and/or an excessive pressure drop between cool and hot readings indicate an internal transmission problem (worn pump and/or hydraulic leak) which must be corrected before the transmission will give satisfactory performance in a race car. If there is a problem with the transmission, carefully compare pressure in each gear and during transbrake apply with what the pressure should be to determine which hydraulic circuit the problem is in.

All racing automatics should have a main line pressure test. The pressure test will help tell if the transmission is ready to race and reduce frustration and disappoint at the track!

TRANSMISSION INSTALLATION

ATI does not recommend using a solid rear transmission mount in applications where there is a possibility of chassis flex breaking the transmission case. Broken cases can also result from excessive vibration by an out-of-balance engine, converter or drive shaft.

This valve body has a reverse shift pattern (PRN123) and MUST be used with a shifter built for a reverse shift pattern. Check the shifter adjustment in ALL selector positions. The shift cable should be securely mounted only to the shifter and the transmission. Be absolutely positive that chassis or drive train movement will not move the transmission shift lever.

Be sure the dip stick and tube to be used are compatible and will read the correct fluid level in the transmission (1/4" above pan rail). On hard launching cars, a deep pan may be needed to assure fluid around pick up at all times.

Use 12-gauge wire to connect the transbrake button to the 12 volt power source and solenoid.

USE

This transbrake valve body has a reverse shift pattern; the low and high positions have been changed.

1. Reverse gear is engaged by shifting into neutral or reverse and pressing the transbrake button. The transbrake functions only in low gear.
2. Stage the car with the engine speed above 1000 RPM to obtain higher fluid pressure and volume which will give a quicker transbrake apply.
3. Maximum engine RPM with the transbrake applied creates excessive heat very quickly. On a full tree, wait until the next to the last yellow bulb before bringing the engine speed to maximum RPM. Use a fluid cooler and inspect the condition of the fluid often.
4. This transbrake must have a 12 volt battery fully charged for the solenoid to work properly.

5. If any problems are experienced with this unit, check the apply button, all electrical connections and the by-pass delay box if used.
6. Clean the transmission pan on a regular basis to remove any contaminants which may cause a malfunction to the transbrake valve body.

REACTION TIME IS INFLUENCED BY:

- the position the driver stages the car in relation to the race track timing lights
- the type of transbrake button, its location and when the driver releases it
- the release speed of the transbrake
- weight of the race car
- the horsepower of the engine and the RPM where it produces peak torque
- stall speed and torque multiplication characteristics of your torque converter
- gear ratios of the transmission and the rear end
- type of chassis and suspension, its set-up and adjustment
- the diameter of the front tires
- drag slicks' size, sidewall construction, rubber compound, age or condition, inflation pressure and width of rims on which they are mounted
- type and positioning (height and distance apart) of race track timing lights.
- race track surface conditions

Race cars that produce quick reaction times on a Pro-Tree, are generally set up to lift the front tires out of the timing lights. This method works great on most cars but will cause a consistency problem on some cars. Consistent reaction times require positioning the race car the same distance into the staging light beam every time with the transmission fluid at the same temperature every time the car is staged.

BUILDING TIPS

Select a case with minimum wear of the lugs that position the center support. Do not use a case saver that places stress at only one point, increasing the possibility of breakage.

Select the type of direct (high) clutch drum with the intermediate overrun clutch inner race splined onto the drum. If rollers are in good condition, reuse them as they are worn and provide a good fit with the inner race. Replace any weak springs. Install a heat-treated outer race. Use three intermediate friction clutches and retain the waved cushion plate. Do not discard any intermediate release springs. These procedures will help reduce the possibility of failure.

To reduce any lag time during the 1-2 shift, use an intermediate clutch apply piston from a T-350 which used only two intermediate frictions and machine the piston to attain .040 to .060 intermediate clutch pack clearance with three frictions.

There are three designs of non-lock-up T-350 pump housings and covers. Do not mismatch them! For best direct drum support, use the pump cover which uses the needle bearing thrust washer, has a steel bushing race and steady rest teflon ring. Install a F-M-X rear support bushing in the direct drum, positioning the bushing so that its edge will not rub the edge of the first ring land on the pump cover when the transmission is assembled. Install new bushings in the pump housing, direct (high) drum, sun gear, case and extension housing. Inspect and replace the other bushings as needed.

Set end play between .015 and .030. If the end play is excessive, place a shim in the rear of the transmission, then adjust the end play with selective shims or thrust washers at the front of the transmission. Do not use any plastic washers in the transmission. Use only bronze or needle thrust washers.

Check inner selector lever for fit on a manual shaft. It must fit tight and the retaining nut must be tight.

Use a steel and brass filter for better fluid flow at high RPM.

Pump alignment is highly recommended. Pump halves may be aligned by placing the pump into the case upside down with the o-ring removed. Tighten bolts that hold the pump together. Install o-ring after removing the pump from the case.

Use only transmission fluid or petroleum jelly during assembly. Don't use grease as fluid temperature will never be high enough to melt and blend the grease into the fluid which could restrict the filter or contaminate clutches.

SUPER STOCK BUILDING TIPS

When building a T-350 for super stock racing, longevity may be traded for a better ET and MPH by using four friction clutches in high, four in reverse and two in intermediate, machining a stock pump housing and gears down to a reduced thickness for less horsepower loss. Using a T-350 needle bearing gear train or installing T-250 gear train.

There are two different thickness sun gear shells. Use the .160" thick shell in bracket racing and the .105" thick shell in super stock racing.

When using this transbrake in Super Stock racing, the pressure regulator spring may be shortened a slight amount at a time until the minimum satisfactory main line pressure for the application is found.



Accidental transbrake engagement poses a serious safety risk! You must have Safety Electronics in place to safeguard against accidental engagement of the transbrake solenoid when not intended.