

Specializing in Racing Transmissions and Valve Bodies



P/N 34G20
EXTREME

Turbo-Hydramatic 400
Billet Valvebody

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VERY IMPORTANT

This Aluminum Billet Valve Body Incorporates The Reverse Safety Feature
which means there are two things that must be done in order to back up...

PLACE THE SHIFTER IN "REVERSE"
PRESS THE TRANSBRAKE BUTTON
Shift Pattern P R N 1 2 3

The car will back-up as long as the button is held down. If the button is pushed while the transmission is in neutral, the car will also back-up. Whichever method used is a matter of personal preference and will not impose any ill effects on the transmission.

PACKING LIST

1	-	Billet 400 Valve Body	6	(5/16 - 18)	-	1 3/4" Hex Head Bolts
1	-	Seperator Plate	1	(5/16 - 18)	-	1" Hex Head Bolts
1	-	Solenoid	3	(1/4 - 20)	-	1 3/4" Hex Head Bolts
1	-	Modulator Plug	1	(1/4 - 20)	-	1 1/4" Hex Head Bolt
5	-	Teflon Sealing Rings	1	(5/16 - 18)	-	3/4" Button Head Bolt
1	-	Electrical Connector	3	(1/4 - 20)	-	5/8" Hex Head Bolts
16	-	Springs	1	-	-	Instruction Sheet
1	-	1/2" Nylon Ball				

***** WARNING *****

- 1.) **UNDER NO CONDITION IS THIS TURBO 400 TRANSMISSION TO BE NEUTRALED DURING SHUTDOWN. RIDE THE TRANSMISSION DOWN IN HIGH GEAR ONLY.**
- 2.) **ALWAYS START BURNOUT IN 2nd GEAR, THEN SHIFT TO HIGH GEAR. FAILURE TO COMPLY MAY POSSIBLY CAUSE EXTREME DAMAGE TO TRANSMISSION AND/OR POSSIBLE INJURY OR DEATH TO DRIVER.**

***** FOR YOUR PROTECTION *****

DON'T EVEN THINK ABOUT RUNNING WITHOUT A SHIELD OR A TRANS BLANKET!

IMPORTANT - ALL MODIFICATIONS ARE ESSENTIAL

This bleed hole may have already been drilled if the drum had been supplied by us. Check anyway to be sure.
Best to be safe than to be sorry.

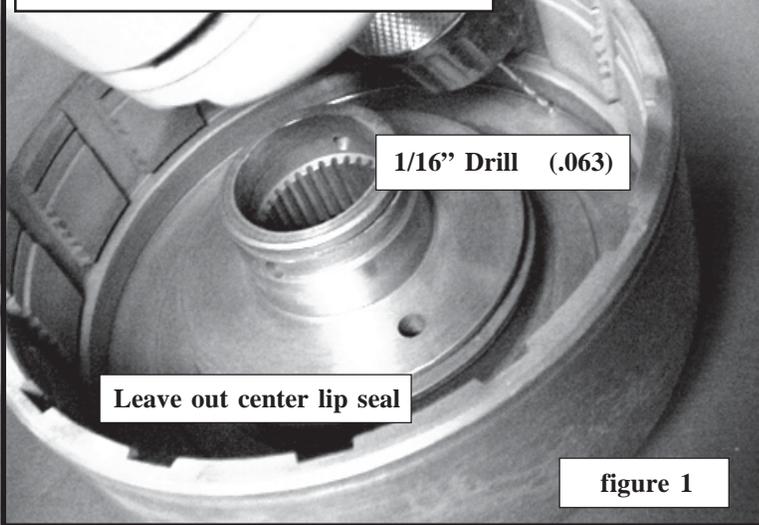


figure 1

*** CASE PREPARATION ***

Try to find a complete transmission, or core that has not been messed with and try to keep the parts together. (prevents problems). This valvebody requires no case modifications

*** REAR SERVO ***

Rear servo is installed in normal manner, the two accumulator rings may be removed if desired. (use stock springs and parts)

*** INTERMEDIATE SERVO ***

Leave out intermediate servo, servo spring, parts, and intermediate band.

*** CLUTCH PACK CLEARNCE ***

Forward and High - .050 - .070
Intermediate - .030 - .050

*****NOTICE*** Only If Bleed Hole Needs To Be Drilled (see Fig 1)**

Preparation of the high clutch drum is extremely important. Removal of piston is necessary. A 1/16 inch (.063) bleed hole is drilled through the drum in the area behind the piston. It is best to drill from the inside-out placing the hole as close to the outer sealing portion as possible (big lip seal). The drill can be held at an angle for more drilling room. (...figure 1). Reinstall piston in the drum using only two lip seals, the outer and the inner. **(Do not use the center seal).** Discard the 16 original piston springs and replace them with the special springs provided with the kit.

*** CLUTCH INFORMATION ***

6 Clutches in both drums and 4 clutches in the intermediate clutch pack. Machining and fitting is necessary here. I'm going to devote an extra page for expressing my viewpoints. Feel free to call me if you have any questions or added information.

*** NO VALVE BODY GASKETS ***

Run a flat file or a wetstone over the case to remove any high spots that might cause a crossover leak.

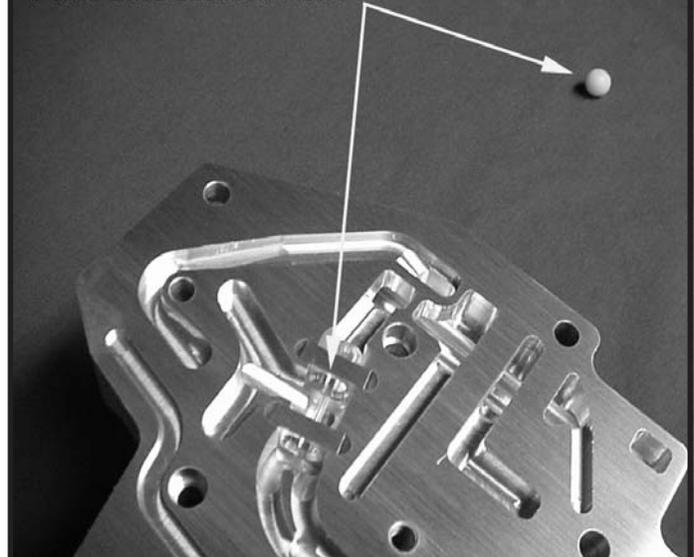
*** USE STOCK MANUAL VALVE ***

Must be free of nicks and burrs.

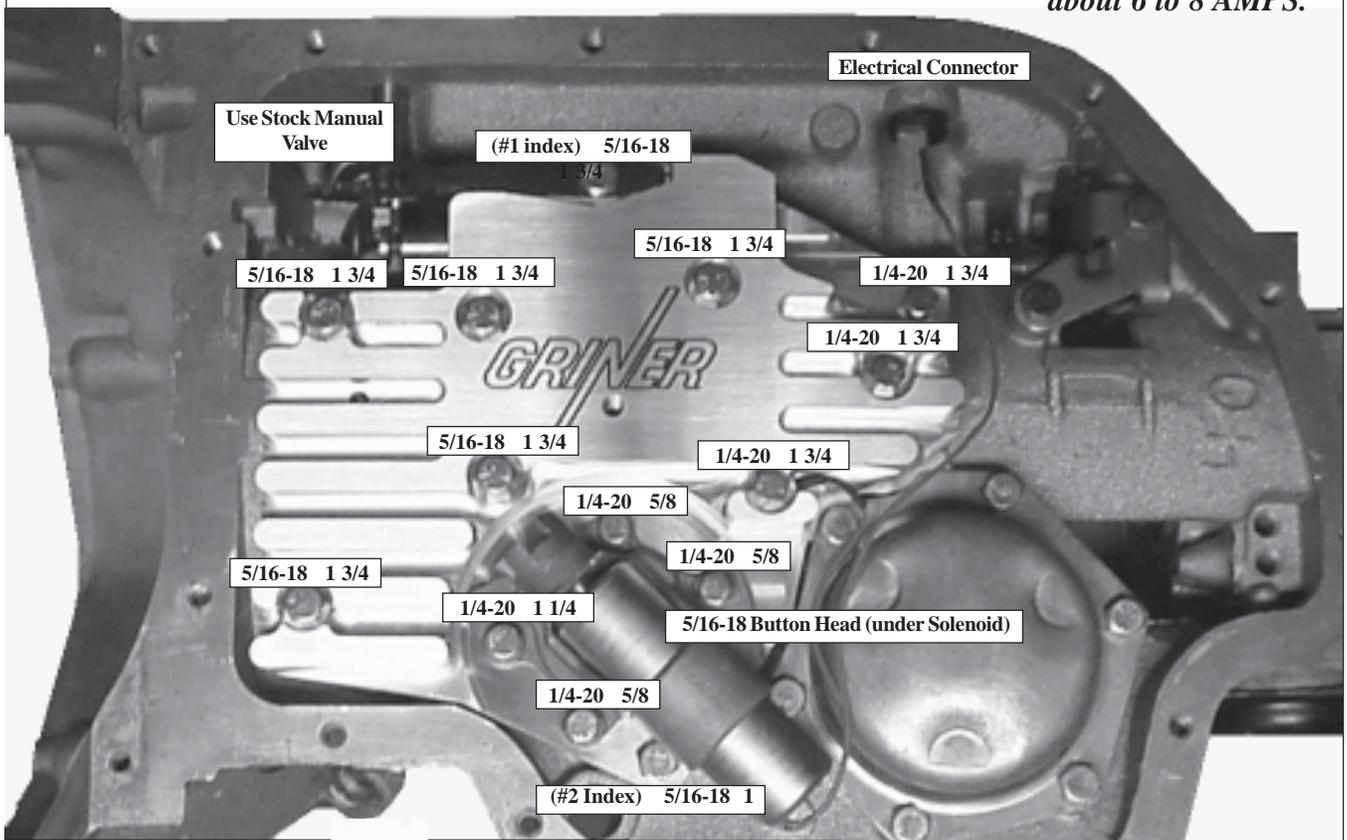
*** OIL PAN ***

Use 1968-up pan and filter (2 dimple)
(aftermarket pans are OK)

PLACE BALL BETWEEN SEATS



Transbrake Electrical Connection is activated by applying 12 (or 16) volts into the spade connector where the kickdown used to be. Use minimum 16 gauge wire and a 20 AMP fuse. Solenoid pulls about 6 to 8 AMPS.



Use Stock 400 Modulator Valve

*** NOTE ***
INSPECT VALVE

Cannot be modified or ground on in any way.

Cannot be someone else's after-market valve.



Aluminum Modulator Plug

Line Pressure seems to work best @ 200 -220 PSI

A SIMPLE TRICK

To make sure the valve body is properly aligned, start all the bolts by hand. First tighten the 5/16" bolt marked **#1 Index**. And then tighten the bolt marked **#2 Index**.

*** CENTER SUPPORT ***

INSTALLATION OF TEFLON RINGS

- 1 - Fill the grooves with assembly lube.**
(Don't worry about 2nd groove)
- 2 - Hand shape rings as round as possible.**
- 3 - Fit ring into groove.**
- 4 - Same thing for the front pump.**

The assembly lube will hold the rings in place during assembly. They will not seal until the transmission has been run, so don't expect them to pass an air check.



Combinations and Stuff

Types Of Clutches

ALTO

These are sold primarily as a racing clutch, they are usually red in color. I have little experience with this brand, therefore I am not in position to comment good or bad.

ALLOMATIC

This company is owned by Raybestos and this is they're performance line. I also have little experience with these clutches, but I have picked up on their steels. The reason is that they have all 14 drive tabs for maximum contact with the drum. They also have a thin steel (.068) that helps place 6 clutches in a 5 clutch drum.

BORG-WARNER and RAYBESTOS

Borg-Warner (B) makes about 99% of the clutches for the American auto manufactures. Raybestos (R) makes about 70% of the aftermarket clutch products and both are leaders in quality.

WHAT TO USE

For about the last 10 years, I have been leaning toward softer clutches. This only works with valvebodies capable of flowing oil along with the right line pressure to the clutch pack in the proper proportions. Most valvebodies out there are designed by the "Monkey See, Monkey Do" method. If one important detail is left out, the clutches will slide, then glaze and then you are done. This is where the hard clutches work.

Raybestos and Borg-Warner both make a green (mica filled) waffle friction that is used in the 540 Allison transmissions, we don't use these anymore. Instead, we prefer a tan colored paper clutch with either slots or a waffle pattern. There are some steels and clutches out of the 4L80E that are showing promise in some applications. Kolene steels are OK but not necessary. I honestly don't have an opinion about the Raybestos blue kevlar clutches.

Part Numbers (Transtar)

Part number is preceded by either an R or B to designate manufacturer

TH400	smooth friction /use fwd. drum only	34304	-	oem reference no.	8655619
TH400	F/D friction /slotted	Use 34304H	-	oem reference no.	24202646
TH400	F/D Steel (.068) Waved, Do Not Use	????	-	oem reference no.	
TH400	F/D Steel (.077)	Use 34305A	-	oem reference no.	8623849
TH400	F/D Steel (.090)	Use 34305C	-	oem reference no.	8625197
4L80E	Int. Friction (.080)	Use 34404	-	oem reference no.	8623151
4L80E	Int. Friction (.071)	Use 34404H	-	oem reference no.	24242966
4L80E	Int. Steel (.070)	Use 34405A	-	oem reference no.	8675522
TH400	Int. Steel (.100)	Use 34404	-	oem reference no.	8623150
TH400	Int. Steel (.100 Kolene)	Use 34405	-	oem reference no.	8623150
Allison	Hard Friction	Do Not Use R11103	-	oem reference no.	23042197

Transmission will freewheel in LO gear, and the rear band is NOT applied.

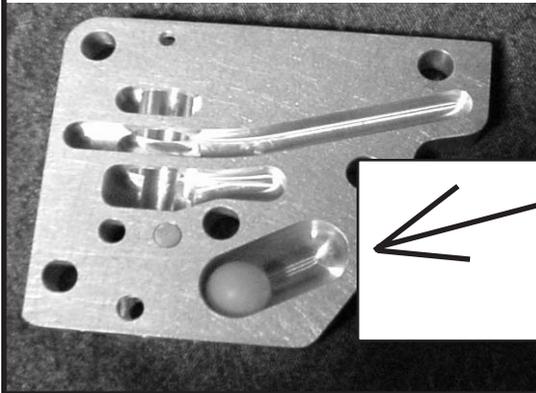
This is the way the valvebody is normally boxed and shipped,
and it is identified by using a blue separator plate.

There is a “Low Band On” option

The optional version rides down in LO gear, the rear band IS applied.

This valvebody is shipped only upon request, and is packaged a little different

It is identified by using a Purple separator plate.
It also uses an extra heavy servo return spring,
and a second 1/2 dia nylon shuttle ball that is
encased within the valvebody...



...So “Don’t Worry”

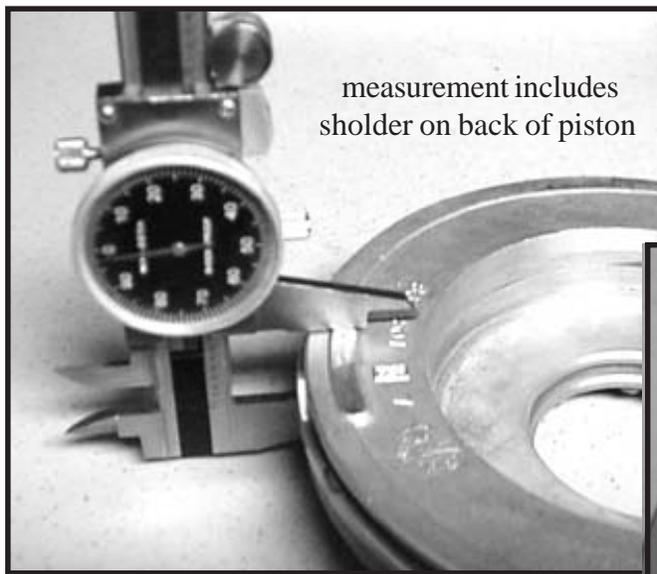
this ball was not installed here
on the blue plate versions.

SIX CLUTCHES IN A FIVE CLUTCH DRUM

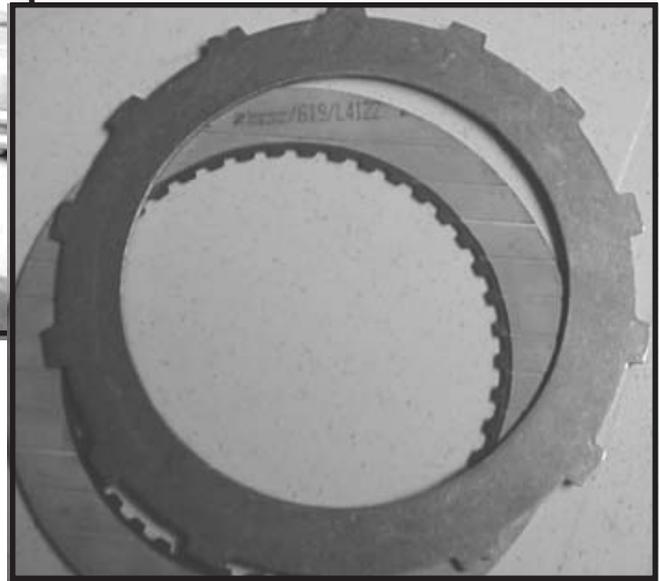
* **Machine the clutch piston to .570**

* **Borg/Warner friction with slots**
(.080 thick)- P/N B34304A

***Allomastic steels have ALL 14 tabs on them**
USE EM!!! (.077 thick -P/N 34305A)



measurement includes
sholder on back of piston



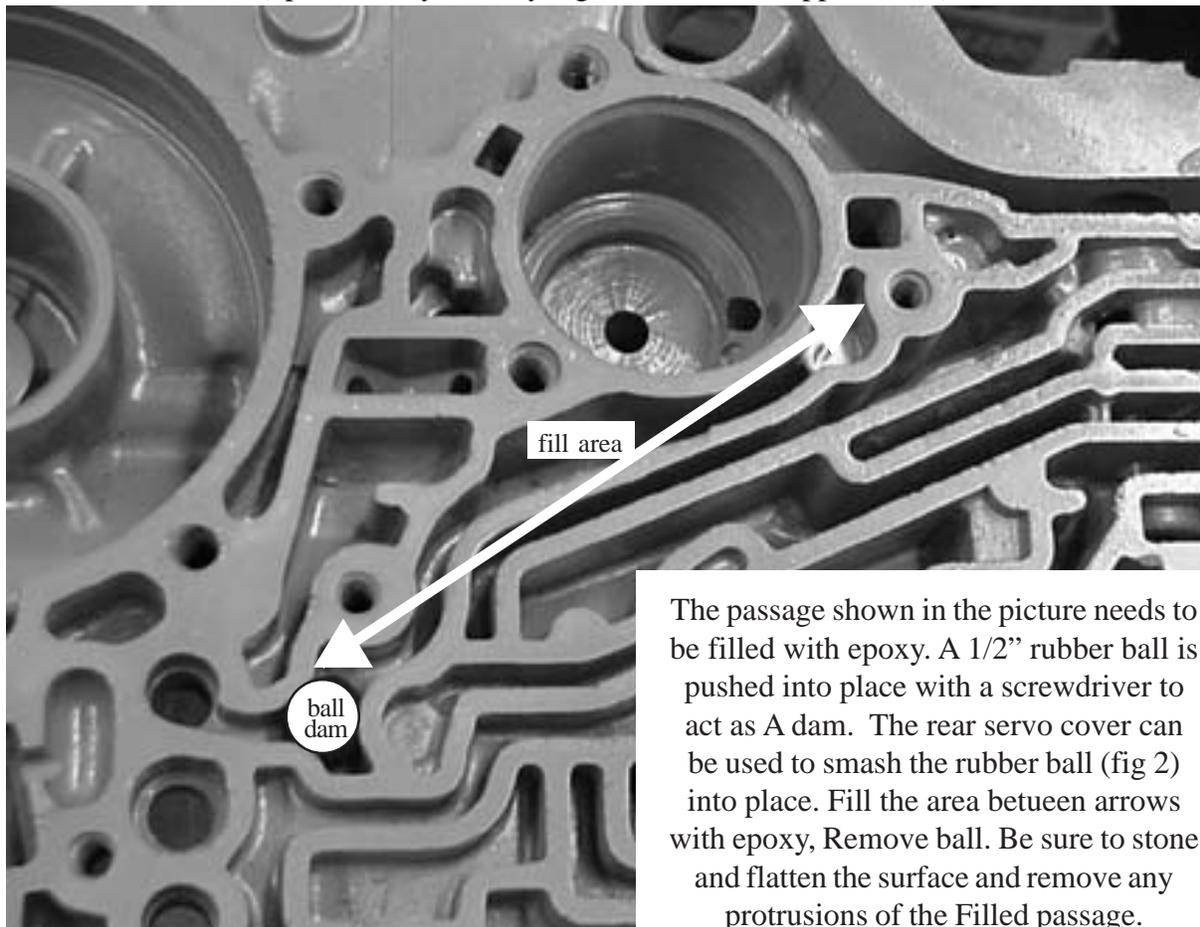
Assemble clutch pack, and check clearance. Allow
.010 per clutch or .060 for total pack clearance.

Re-machine piston if necessary.

Don’t machine piston to much, its possible for the
first steel to drop out of the slots in the drum.

Case Modifications for better fluid flow

(optional only for very high HP or nitrous applications)



The passage shown in the picture needs to be filled with epoxy. A 1/2" rubber ball is pushed into place with a screwdriver to act as A dam. The rear servo cover can be used to smash the rubber ball (fig 2) into place. Fill the area between arrows with epoxy, Remove ball. Be sure to stone and flatten the surface and remove any protrusions of the Filled passage.

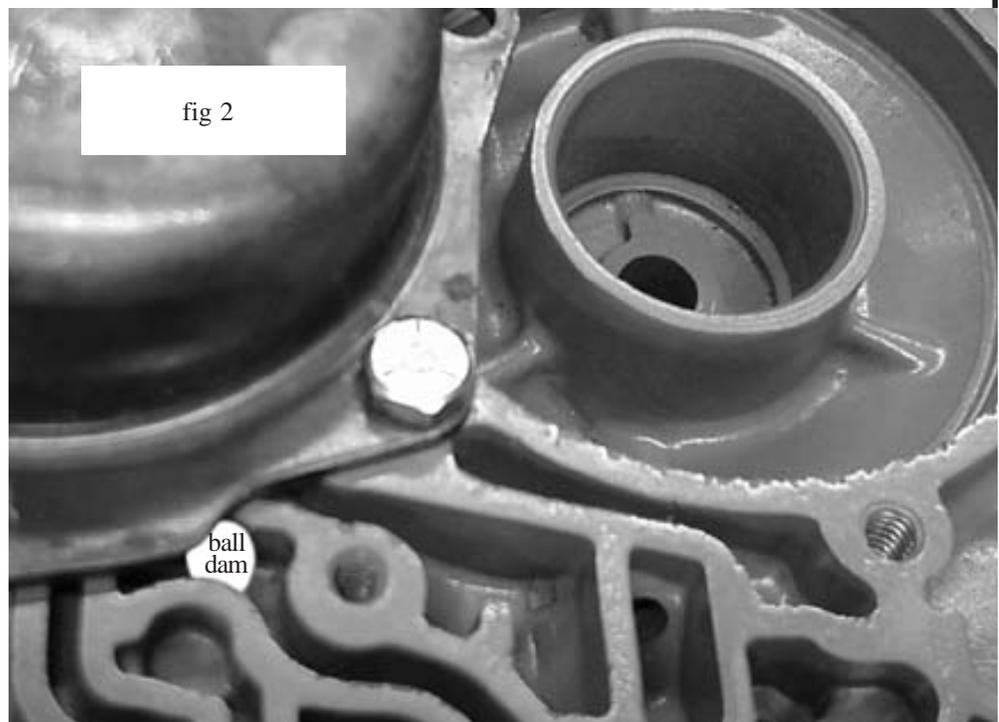


fig 2