HVDA
TRIUMPH
TRANSMISSION CONVERSIONS
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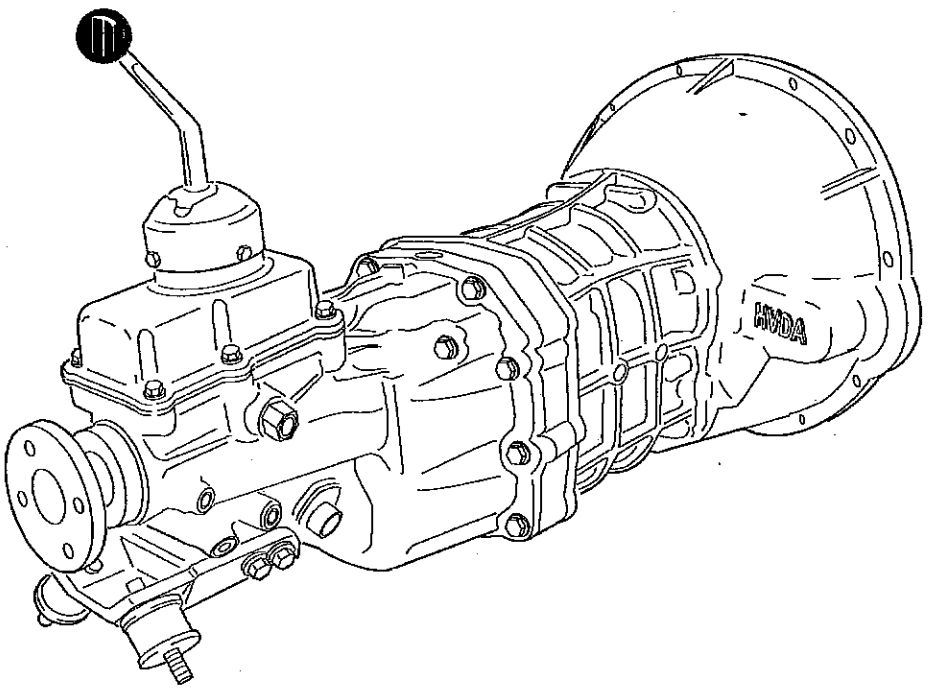
Instruction Manual



TOYOTA TO TRIUMPH TRANSMISSION CONVERSION

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The HVDA Toyota to Triumph Transmission Conversion Instructions

A. GENERAL INFORMATION

The HDVA transmission conversion kits allow you to fit all TR-2 through TR-6 series engines with Toyota 1982-1985 Celica, or 1984-1996 pickup truck 5-speed manual transmissions.

These instructions tell you how to:

- ✓ Select a Toyota transmission
- ✓ Select the correct kit for your conversion
- ✓ Gather the tools and supplies you'll need
- ✓ Remove your Triumph transmission, clutch and driveshaft
- ✓ Convert the Toyota transmission
- ✓ Install the clutch conversion
- ✓ Convert the driveshaft
- ✓ Install the throw out bearing mechanism
- ✓ Install the converted transmission in the car

The conversion is straightforward, and can be done by an experienced mechanic.

CAUTION: THESE INSTRUCTIONS ARE PROVIDED TO YOU ONLY AS AN AID FOR YOUR MODIFICATION. YOU MAKE THESE MODIFICATIONS AT YOUR OWN RISK. USE PRUDENCE AND CAUTION AT ALL TIMES. WE CANNOT ASSUME RESPONSIBILITY FOR ANY INJURIES OR DAMAGES THAT MIGHT RESULT FROM THE ACCOMPLISHMENT OF THESE PROCEDURES.

Table 1. Gear Ratios

TRIUMPH		1982-1985 CELICA			1984-1994 PICKUP TRUCK	
GEAR	TR2-6					
First	3.380:1	3.285:1	3.166:1	3.285:1	3.950:1	3.830:1
Second	2.000:1	2.041:1	1.904:1	1.984:1	2.140:1	2.060:1
Third	1.325:1	1.322:1	1.310:1	1.275:1	1.380:1	1.430:1
Fourth	1.000:1	1.028:1	0.969:1	1.000:1	1.000:1	1.000:1
Fifth	---	0.820:1	0.815:1	0.783:1	0.810:1	0.840:1
Reverse	*4.280:1*	*3.153:1*	*3.250:1*	*3.786:1*	*4.368:1*	*4.368:1*

B. SELECTING A TOYOTA TRANSMISSION

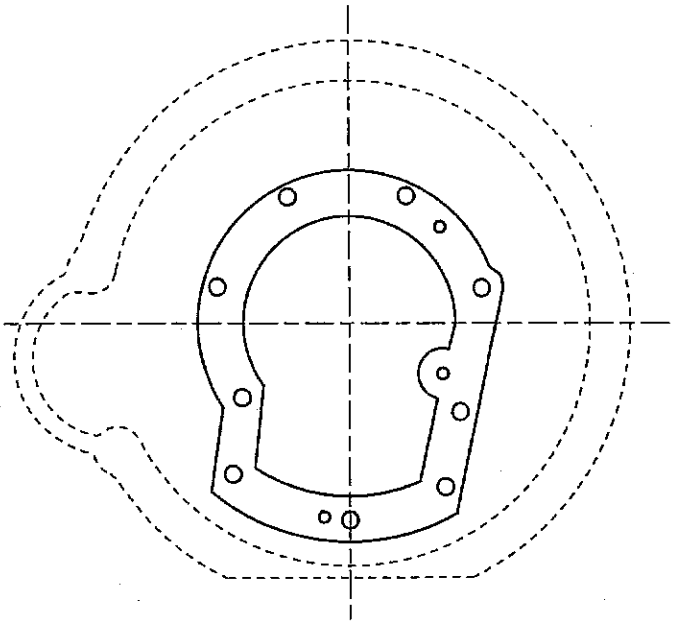
Since there are variations in the transmissions that must be accommodated by the kits, it's recommended that you get the transmission in advance. Once you have the transmission, and have verified that it is good, you can order the kit you need.

Several models of Toyota manual transmissions can be used for the conversion. Look for one that was installed on a **1982 through 1985 Celica, or a 1984 through 1996 Toyota pickup truck** (non-turbo and not 4WD). Other models, such as Supra might work, but this has not been verified by HVDA.

Gear ratios vary slightly from one model of transmission to another. If you can identify the exact model number, Table 1 compares the gear ratios of the typical Triumph four-speed transmission with your model Toyota 5 speed transmission.

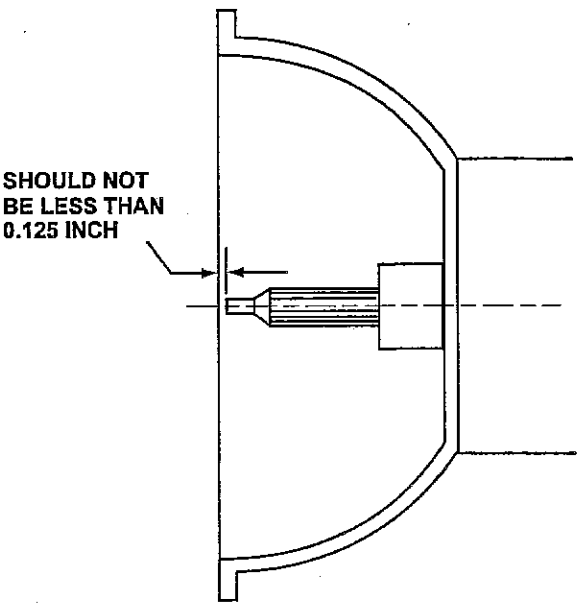
Before you buy your transmission, do the following:

1. (See Figure 1.) Check the hole pattern at the interface of the bell housing to the transmission. It should be identical the one shown.
2. (See Figure 2.) Place a good metal straightedge across the bell housing and measure the distance of the shaft from the face of the bell housing. The shaft should not be behind the face by less than 0.125 inch.
3. Note whether the shift tower is in the forward, middle, or rear location (A, B, or C, in Figure 3). This will determine which gearshift adapter you will need.



VIEW OF BELL HOUSING LOOKING FROM FRONT

Figure 1. Transmission Bell Housing Hole Pattern



CROSS SECTION OF TOYOTA BELL HOUSING

Figure 2. Input Shaft Protrusion

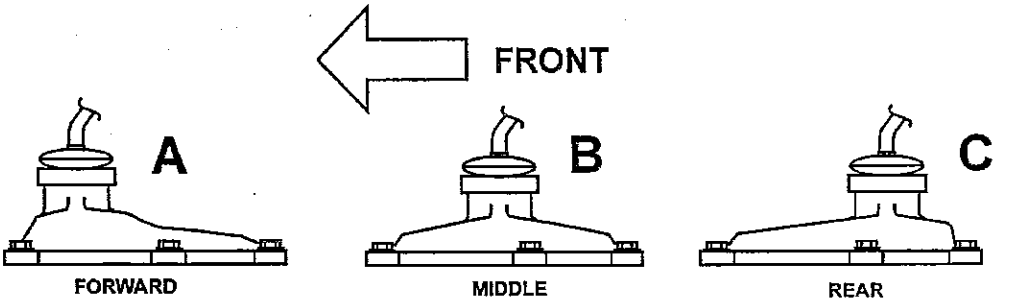


Figure 3. Shift Tower Positions

4. Inspect the transmission for wear as follows:

   (a) Look for wear in the input shaft. **Reject any transmission that has noticeable play in the input shaft.**

   (b) Put the transmission in neutral and turn the shaft. **The shaft should turn lightly and smoothly in neutral.**

   (c) Turn the shaft in each gear. There should only be a light load. Again, **the shaft should turn smoothly and noiselessly in each gear.**

   (d) Finally, Remove the shift tower and inspect the bushing inside the gear selector dog for wear or damage. **A beat-up selector dog indicates abuse and high mileage.**

5. If you are going to install the used throw out arm instead of the custom HVDA hydraulic throw out bearing kit, make sure you get the following parts with the transmission. We recommend that you get new clips and a new throw out bearing from your local parts dealer.

Table 2. Toyota Manual Throw Out Bearing Parts

ITEM	DESCRIPTION	TOYOTA PN	CHECK (✓)
1	THROW OUT BEARING CARRIER	31204-20071	( )
2	CYLINDER ASSEMBLY	31470-30222	( )
3	THROW OUT BEARING	90363-40022-77	( )
4	HUB, CLUTCH RELEASE	31231-20090.	( )
5	CLIP, RELEASE, BEARING (2 EA)	31232-22010	( )
6	CLUTCH BOOT	31126-26020	( )

C. SELECTING YOUR HVDA CONVERSION KIT

Once you have selected your transmission, you can order your conversion kit.

The kit consists of the following:

Table 3. HDVA Conversion Kit Parts List

ITEM	DESCRIPTION	QTY	CHECK (✓)
1	BELL HOUSING	1	( )
2	ADAPTER, GEARSHIFT	1	( )
3	SETSCREW, SMALL	2	( )
4	CAP SCREW, 5/16-18	1	( )
5	BALL, NYLON	1	( )
6	HOUSING, GEARSHIFT ADAPTER	1	( )
7	FLANGE,OUTPUT, SPLINED	1	( )
8	COLLAR, LOCKING	1	( )
9	CAP SCREW, SMALL	2	( )
10	DISK, CLUTCH	1	( )
11	ALIGNMENT TOOL, CLUTCH	1	( )
12	BUSHING, PILOT, BRASS	1	( )
13	BUSHING, INPUT SHAFT	1	( )
14	ADAPTER, CABLE, SPEEDOMETER	1	( )
15	BOLT, HEX, M 10 (SHORT)	1	( )
16	BRACKET, BLEED NIPPLE (OPTIONAL)	1	( )
17	MOUNT, TRANSMISSION, RUBBER	2	( )
18A	BRACKET, TRANS MOUNT (TR6 '72 & ON)	1	( )
18B	BRACKET, TRANS MOUNT, LH (TR2 – EARLY TR6)	1	( )
18C	BRACKET, TRANS MOUNT, RH (TR2 – EARLY TR6)	1	( )
19A	BRACKET, WELDMENT, LH (TR2 – EARLY TR6)	1	( )
19B	BRACKET, WELDMENT, RH (TR2 – EARLY TR6)	1	( )
20	BOLT, HEX, M 10	4	( )
21	WASHER, 10 mm	4	( )
22X	KIT, HYRAULIC THROW OUT BEARING(OPTIONAL)	1	( )

The optional hydraulic throw out bearing kit (Item 22X) eliminates the throw out lever and the conventional bearing. Both the Toyota manual throw out system, and the hydraulic kit use the Triumph hydraulic clutch master cylinder, but the hydraulic throw out bearing kit eliminates the slave cylinder. If you are going to install the used throw out mechanism, make sure you get those parts with the transmission (See Table 2). TR-2 through TR-4A also require a TR-6 pressure plate, which is not included in the kits, but can be obtained from Moss Motors, The Roadster Factory, etc.

Order a kit as follows:

1. Specify whether the shift tower is in the FORWARD, MIDDLE, or REAR position (A, B, or C, in Figure 3).
2. Specify the YEAR and MODEL of your CAR (i.e. 1965 TR-4A IRS, etc.).
3. Specify if you want a HYDRAULIC THROW OUT BEARING KIT.

D. RECOMMENDED TOOLS

You will need the following common tools, in addition to a standard Triumph backyard mechanic's tool set:

Table 4. Recommended Tools

ITEM	DESCRIPTION	QTY	CHECK (✓)
1	JACK STANDS	4 EA	( )
2	OIL DRAIN PAN	1 EA	( )
3	METRIC WRENCHES AND SOCKETS	A/R	( )
4	TORQUE WRENCH	1 EA	( )
5	METAL STRAIGHT EDGE (24")	1 EA	( )
6	MACHINIST'S RULER (1/100TH IN.)	1 EA	( )
7	MACHINIST'S CALIPERS	1 EA	( )
8	UTILITY KNIFE	1 EA	( )
9	SOFT HAMMER (COPPER, LEAD OR PLASTIC)	1 EA	( )
10	FLASHLIGHT AND/OR DROP LIGHT	1 EA	( )
11	FLOOR JACK	2 EA	( )
12	SMALL FILE	1 EA	( )
13	SMALL MECHANIC'S MAGNET	1 EA	( )
14	SCISSORS JACK	1 EA	( )

E. MATERIALS AND SUPPLIES

You'll need the following supplies to do the job:

CAUTION: DO NOT USE COMMON 90W HYPOID GEAR OIL IN THE TOYOTA TRANSMISSION. USE ONLY THE TOYOTA-APPROVED GEAR OIL LISTED BELOW, OTHERWISE YOU MIGHT DAMAGE YOUR TRANSMISSION.

Table 5. Materials and Supplies

ITEM	DESCRIPTION	QTY	CHECK (✓)
1	HIGH TEMPERATURE GEAR GREASE	A/R	( )
2	PARTS CLEANING SOLVENT	1 PT	( )
3	BRAKE PARTS CLEANER	1 PT	( )
4	DOT 3 HYDRAULIC BRAKE FLUID	A/R	( )
5	DE-NATURED ALCOHOL	1 PT	( )
6	MAXIMUM STRENGTH LOCTITE (RED)	2 OZ.	( )
7	MEDIUM STRENGTH LOCTITE (BLUE)	2 OZ.	( )
8	GEAR OIL (ONE OF THE FOLLOWING): REDLINE GEAR OIL, 75W VALVOLINE GL 5, 80-90W KENDALL GEAR OIL, 75W	3 QT.	( )
9	TAPE, ADHESIVE, CLEAR ("SCOTCH" BRAND)	A/R	( )
10	TRANSMISSION OIL SEAL, (NAPA PN 14753)	A/R	( )
11	HAND CLEANER	A/R	( )
12	CLEAN SHOP CLOTHS	12	( )

F. SAFETY PRECAUTIONS

Use good shop practices and common sense when doing these procedures. Don't take any chances that might risk someone's safety. Follow all manufacturer's warnings, cautions and recommendations when doing the conversion.

WARNING: SUPPORT THE CAR WITH JACK STANDS. DO NOT WORK UNDER THE CAR WHEN IT IS ONLY SUPPORTED BY JACKS, CINDER BLOCKS, STACKS OF WOOD, OR ANY OTHER OBJECT THAT MIGHT TIP OVER OR COLLAPSE. DISCONNECT THE BATTERY CABLES BEFORE WORKING ON THE CAR. KEEP A CERTIFIED FIRE EXTINGUISHER NEARBY IN CASE OF FIRE.

G. TRANSMISSION AND CLUTCH REMOVAL

Follow the procedures specified in your Triumph shop manual(s) to do the following:

1. Disconnect the battery.
2. Put the car up on four jack stands.
3. Remove the seats, the center console, as applicable, the carpeting, the transmission cover and the shift lever boot.
4. Drain the oil out of the transmission.
5. Bleed all of the fluid from the clutch master cylinder and slave cylinder.
6. Remove the clutch slave cylinder, connecting hose and mounting bracket.
7. Disconnect and remove the starter motor.
8. Support the engine from below.
9. Support the transmission from below with the floor jack.
10. Remove the transmission and rubber mounts, the driveshaft, the clutch assembly, the pilot bushing, and the clutch disk. Make sure you save all the hardware for re-use.
11. Remove the bell housing from the Toyota transmission with the throw out bearing, carrier, fork, and lever, attached.
12. Remove the flywheel from the engine.
13. Remove the transmission cross member from the chassis. Make sure you save all the hardware for re-use. **Late TR-6's only**, also keep the cross member for re-use.

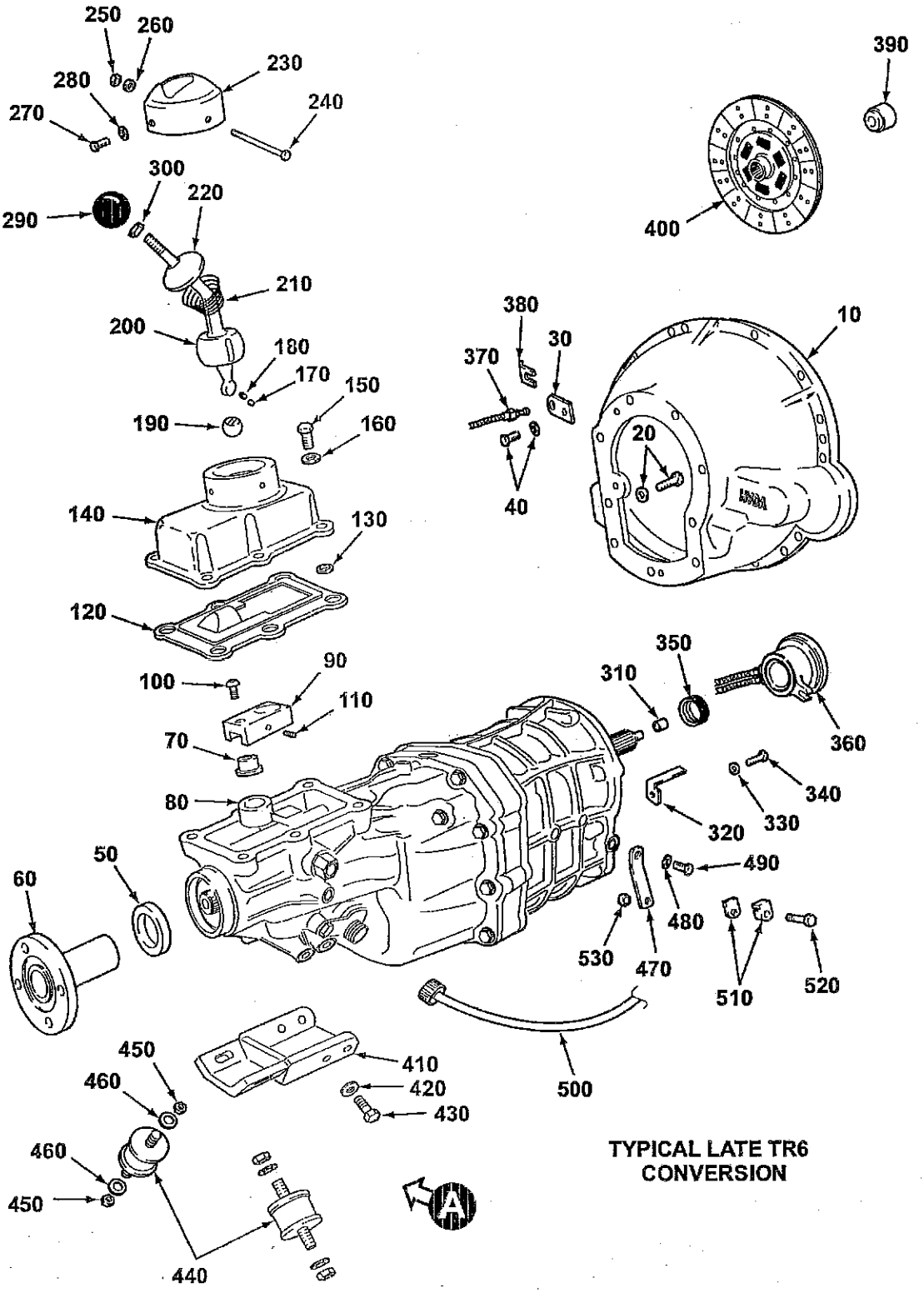
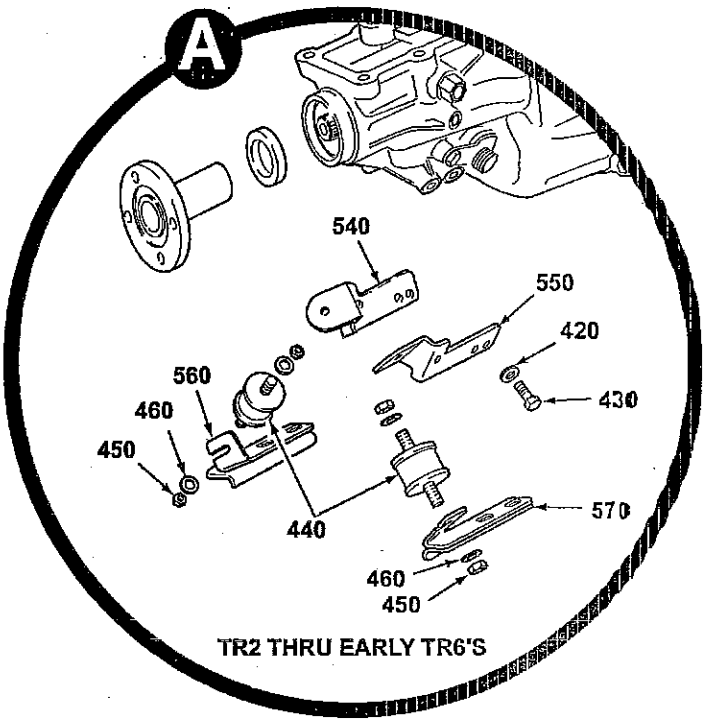


Figure 4. (Sheet 1 of 2) Transmission Conversion



LEGEND FOR FIGURE 4:

10	***BELL HOUSING (1)***
20	TOYOTA HARDWARE (9 EA)
30	***BLEED VALVE BRACKET (1)***
40	TRIUMPH HARDWARE (1 EA)
50	TRANSMISSION OIL SEAL (1)
60	***OUTPUT FLANGE (1)***
70	***ADAPTER PLUG (1)***
80	SHIFT LEVER DOG (REF)
90	***ADAPTER BLOCK (1)***
100	***SOCKET SCREW (1)***
110	***SETSCREW (2)***
120	TOYOTA GASKET (MODIFIED) (1)
130	GASKET WASHERS (6)
140	***ADAPTER COVER (1)***
150	M8 HEX BOLT (6)
160	WASHER (6)
170	PLUNGER, ANTI-RATTLE (1)
180	SPRING, ANTI-RATTLE (1)
190	***NYLON BALL (1)***
200	TRIUMPH SHIFT LEVER (1)
210	SPRING (1)
220	SPRING RETAINER (1)
230	CAP, GEAR LEVER (1)
240	1/4 X 3 INCH BOLT (1)
250	LOCKNUT (1)
260	WASHER (1)
270	1/4 X 0.5 INCH HEX BOLT (1)
280	WASHER (1)
290	SHIFT LEVER KNOB (1)
300	JAM NUT (1)
310	*INPUT SHAFT BUSHING (1)*
320	*THROW OUTGUIDE (1)*
330	WASHER (1)
340	HEX BOLT (1)
350	*THROW OUT SHIMS (AR)*
360	*HYDRAULIC THROW OUT (1)*
370	*BLEEDER VALVE (1)*
380	*BLEEDER VALVE CLIP (1)*
390	*PILOT BUSHING (1)*
400	*CLUTCH DISK (1)*
410	*MOUNTING BRACKET, LATE TR6 (1)*
420	*M10 WASHER (4)*
430	*M10 BOLT (4)*
440	*TRANSMISSION MOUNT (2)*
450	*HEX NUT (4)*
460	*LOCKWASHER (4)*
470	*SPEEDO CABLE BRACKET (1)*
480	*WASHER (1)*
490	*M10 HEX BOLT (1)*
500	*SPEEDOMETER CABLE (1)*
510	*CLAMP (1)*
520	*HEX BOLT (1)*
530	*HEX NUT (1)*
540	*LH MOUNTING BRACKET, EARLY TR (1)*
550	*RH MOUNTING BRACKET, EARLY TR (1)*
560	*LH BRACKET WELDMENT, EARLY TR (1)*
570	*RH BRACKET WELDMENT, EARLY TR (1)*

NOTE: Items shown in ***bold italic*** are supplied with HVDA kits.

Figure 4. (Sheet 2 of 2) Transmission Conversion

H. BELL HOUSING CONVERSION

1. Remove the rubber boot, the throw out lever, the throw out bearing, the ball pivot, and the spring clips from the Toyota transmission. Save the rubber boot. If you will be re-using the throw out lever and parts, set them aside.

2. Remove the Toyota bell housing by removing the ten attaching bolts and lock washers. Save the bolts and lock washers for re-use.

3. Inspect the input shaft for burrs or other damage. Clean it with solvent and lightly grease it with high-temperature gear grease.

   CAUTION: DON'T ALLOW GREASE OR OIL TO GET ON THE NEW CLUTCH DISC, FLY WHEEL OR PRESSURE PLATE.

4. See Figure 4. Try the new clutch disk (400) on the spline. It should move back and forth freely. If not, clean the splines again and check for burrs or other damage. Remove the clutch disc.

5. Install the new HVDA bell housing (10) on the Toyota transmission with the existing ten bolts and lock washers (20).

I. SHIFT LEVER HOUSING CONVERSION

1. See Figure 4. Place the Toyota transmission in neutral. Remove the shift lever, housing, gasket (120) and inner washers (130) from the Toyota transmission by removing the six attaching bolts (150) and lock washers (160). Save the gasket, inner washers, bolts and lock washers for re-use.

2. Use a sharp knife to modify the gasket (120) as shown in Figure 5.

3. Apply medium strength Loctite to the 5/16-18 cap screw (100). Support the adapter plug (70) under the dog in the shifter mechanism (80) with your finger. Place the shift converter block (90) over the dog and bolt the adapter plug to the shift converter block with the 5/16-18 cap screw.

   NOTE: If you drop the adapter plug or a setscrew in the transmission, don't worry. You can use a small magnet to retrieve it.

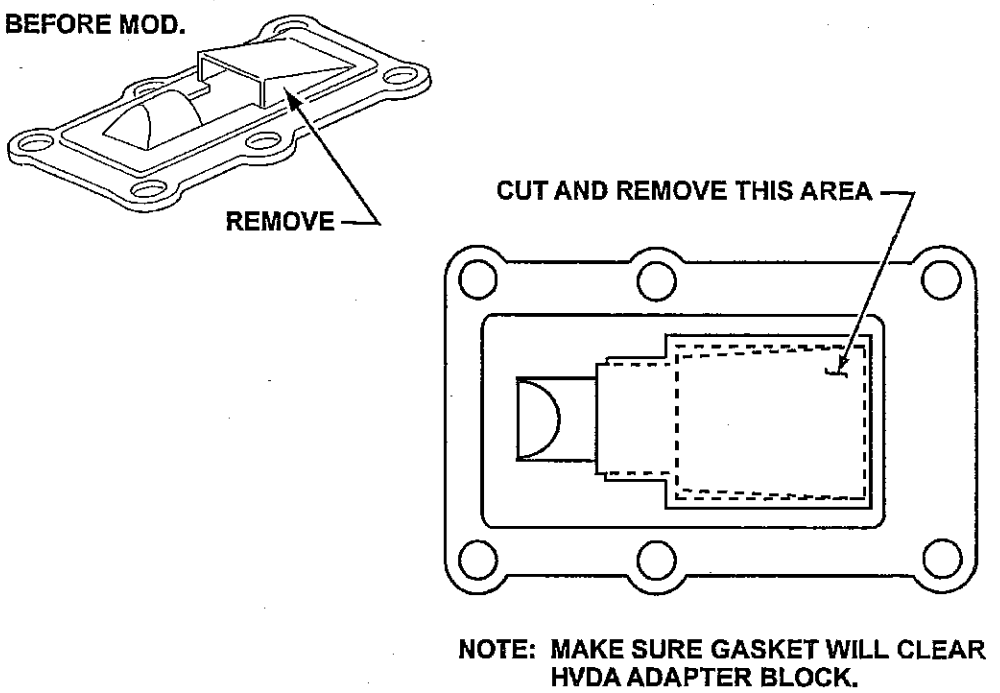


Figure 5. Gasket Modification

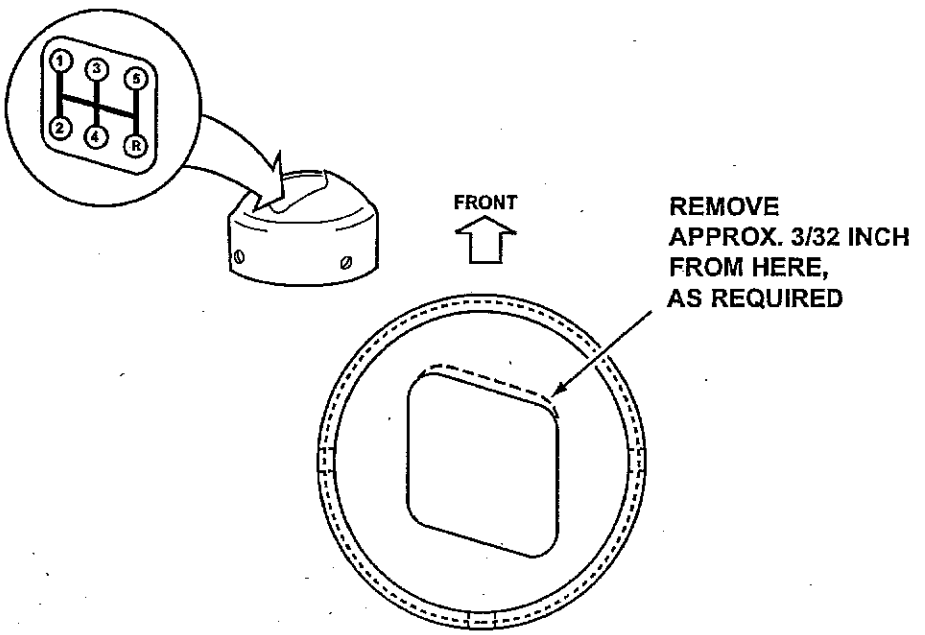
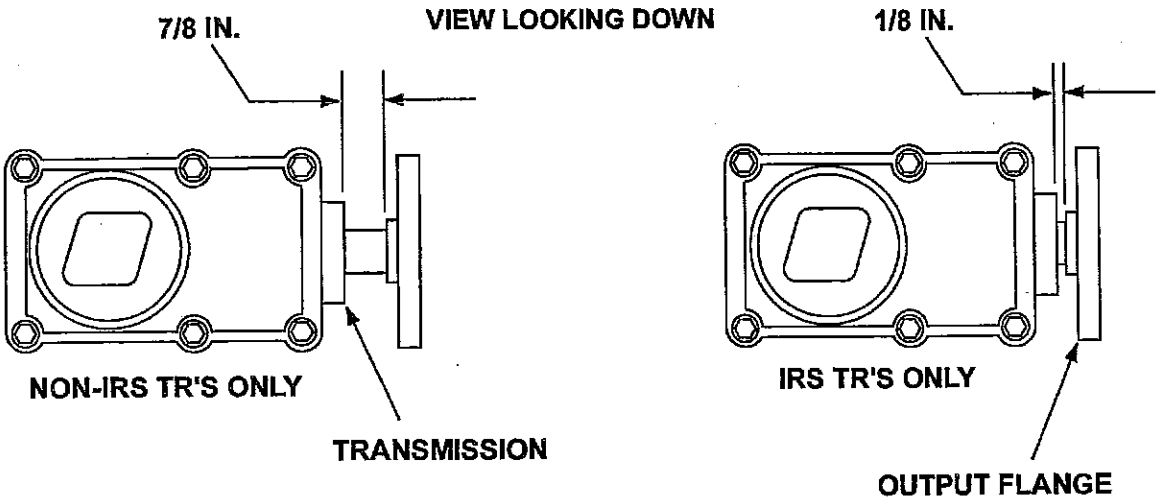
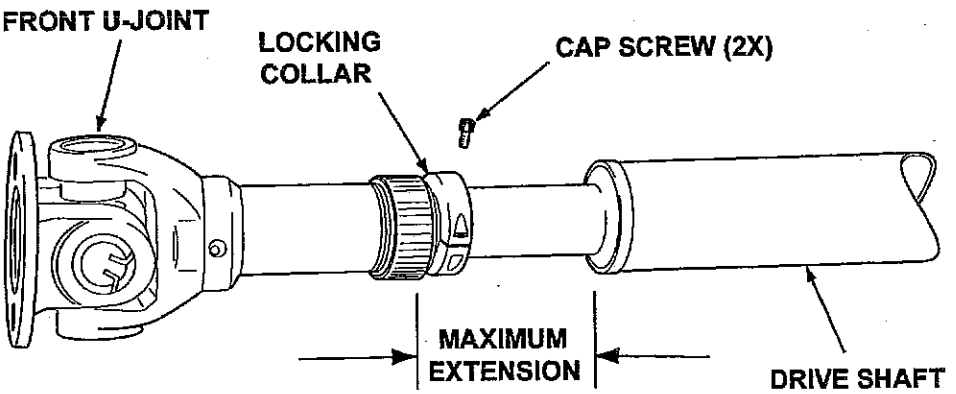


Figure 6. Shift Lever Cap Modification





NOTE: SPLINE MUST BE LOCKED AT MAXIMUM EXTENSION.
IF NECESSARY, CUT SHAFT TO LENGTH
OF DISTANCE BETWEEN TRANSMISSION OUTPUT
FLANGE AND DIFFERENTIAL INPUT FLANGE.

Figure 7. Driveshaft Modification

4. Apply medium strength Loctite to the setscrews (110). Install the setscrews in each side of the shift converter block (90). Adjust them so that the converter block will be centered in the assembly.

5. Place the modified gasket (120) on the mating surface of the transmission case. Install the six sealing washers (130) in the corresponding holes in the gasket.

6. Install the new cover (140) over the adapter mechanism with the six attaching bolts (150) and lock washers (160).

7. Press the nylon ball (190) onto the end of the Triumph shifter lever (200) with plunger (170) and spring (180). Make sure it fits snugly on the lever. If necessary, replace the plunger and spring.

8. If necessary, file about 3/32 in. out of the shift lever cap (230) in the 3rd and 5th gear position (See Figure 6) to ensure adequate clearance for the shift lever.

9. Assemble the Triumph shift lever cap (230), spring plate (220), shift lever (200), and spring (210) for installation.

10. Insert the shift lever assembly in the housing (140), making sure that the nylon ball (190) is fully engaged with the socket in the adapter plate (90). Insert the ¼ X 3-inch bolt (240) through the assembly and install the lock washer (260) and locking nut (250). At the back of the cap, install the ¼ X 0.5-inch bolt (270) and lock washer (280).

11. Check that the shift lever is properly engaged. The transmission should shift freely through the six gears.

J. OUTPUT FLANGE CONVERSION

1. Remove the oil cup from the Toyota transmission.

2. See Figure 4. Remove the existing oil seal and press a new one (50) into place. (Oil seal #14753 can be purchased from Napa Auto Parts.)

3. Install the HVDA output flange (60) over the splines in the transmission.

4. **Non-IRS TR's only:** Position the output flange (60) so that there is about 7/8-inch clearance between the oil seal (50) and the shoulder of the flange, as shown in Figure 7.

5. **IRS TR's only:** Position the output flange (60) so that there will be about 1/8-inch clearance between the oil seal (50) and the shoulder of the flange, as shown in Figure 7.

K. CLUTCH INSTALLATION

1. **Four-cylinder TR engines only:** Take the flywheel and a TR6 clutch assembly (the pressure plate) to the machine shop. Have the flywheel reground if necessary. Have the machinist drill and tap the holes necessary to mount the TR6 clutch on the flywheel, and then have him balance the assembly. When you get it back, note the balancing marks the machinist made on both parts.

2. See Figure 4. Install the new pilot bushing (390), stepped shoulder facing out, in the crankshaft. Install the flywheel on the engine. Torque the bolts as specified in the Triumph shop manual.

3. Put some scotch tape about 3-inch on the nipple of the clutch alignment tool and temporarily slip the small bushing (310) over it. It should be snug on the nipple, but easy to remove.

   CAUTION: DON'T ALLOW GREASE OR OIL TO GET ON THE NEW CLUTCH DISC, FLYWHEEL, OR PRESSURE PLATE.

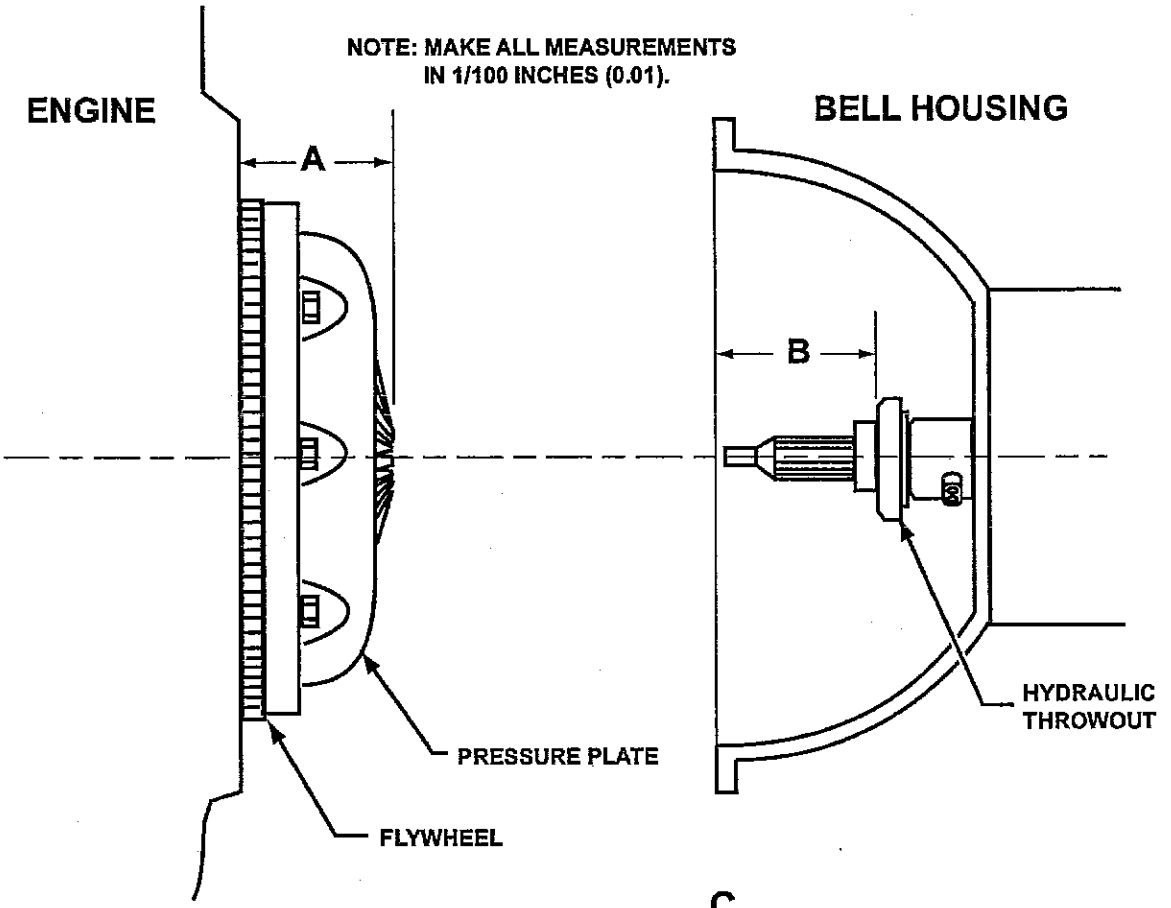
4. Install the clutch disc (400), and install the clutch on the flywheel. Tighten the bolts just finger-tight.

5. Use the alignment tool to center the clutch in the assembly, then torque the bolts as specified in the Triumph shop manual, going diagonally across the clutch from one bolt to another.

6. Once the alignment is complete, remove the alignment tool and remove the bushing from it for installation on the transmission.

L. MANUAL THROW OUT BEARING

If you are using the existing manual throw out bearing system, install the parts listed in Table 2 in the bell housing.



$$C = B - A \qquad N = \frac{C}{0.045\ IN.}$$

N = NUMBER OF SHIMS REQUIRED

Figure 8. Hydraulic Throw Out Shim Measurements

M. HYDRAULIC THROW OUT BEARING

1. See Figure 8. Use the straightedge and a machinist's ruler to measure the distance from the engine face to the top of the clutch fingers. Make several measurements and note the largest. This is measurement 'A'. Write the measurement down.

2. See Figure 4. Facing the transmission, install the throw out bearing guide (320) at the 7 o'clock position with an M 8 bolt (340) and lock washer (330).

3. Install the hydraulic throw out bearing (360) over the transmission input shaft and engage the slotted ear over the guide (320). The inlet and outlet holes should be facing the throw out hole in the bell housing (10).

4. Ensure that the throw out bearing (360) is fully collapsed. Use the straightedge and ruler to measure the distance from the surface of the throw out bearing to the face of the bell housing. This is measurement 'B'. Write the measurement down.

5. Subtract 'A' from 'B'. This is dimension 'C'.

6. Divide 'C' by 0.045 and ignore any remainder. This number is 'N'.

7. Remove the hydraulic throw out bearing and re-install it with 'N' number of shims from the shim pack (350) behind it.

   CAUTION: AVOID ANY PRELOAD OR EXCESSIVE FREEPLAY ON THE HYDRAULIC THROW OUT, OTHERWISE THE THROW OUT OR CLUTCH CAN BE DAMAGED.

8. Check the distance to the bell housing surface again. The measurement should be slightly greater than 'A'.

9. Run the hydraulic hoses out through the hole in the bell housing. Install the rubber boot over the hoses.

N. TRANSMISSION INSTALLATION

1. See Figure 4. Use a soft hammer to gently tap the small bushing (310) onto the end of the transmission input shaft.

2. **Six-cylinder TR's only:**

   (a) Check to make sure that the two locator dowels are still in place on the rear engine plate.

   (b) If any locator dowels are missing, replace them. We recommend that you use maximum strength (red) Loctite to secure them in place.

3. Use the floor jack to carefully maneuver the transmission under the car and up snug against the engine.

4. Use an existing bolt, lock washer and nut (40) to install the bleeder hose bracket (30) on the bell housing at the third hole from the bottom, as shown.

5. Attach the bleeder nipple (370) to the bracket (30) with the clip (380).

6. Attach the bell housing (10) to the engine with the twelve attaching bolts and lock washers. Leave the floor jack under the transmission.

7. **Late TR6's ('72 & on) only:**

   (a) Loosely attach the two rubber mounts (440) to the rear mounting bracket (410) and remove the crossmember gearbox mounting.

   (b) Loosely bolt the rear mounting bracket (410) to the transmission with the four M10 bolts (430) and the lock washers (420).

   (c) Maneuver the cross member into position and insert the studs on the rubber mounts (440) into the corresponding holes in the cross member.

   (d) Loosely install the attaching nuts (450) and lock washers (460) on the rubber mounts (440).

(e) Loosely attach the Triumph cross member to the frame with the four bolts and lock washers.

(f) Tighten the four M10 bolts (430). Torque them to 32-36 ft-lbs.

(g) Tighten the upper and lower attaching nuts (450) on the rubber mounts (440).

(h) Tighten the four attaching bolts on the cross member.

8. **TR2 through early TR-6's (up to '71):**

(a) See Figure 4, View A. Loosely install the LH transmission mounting bracket (540) on the transmission with the two M10 bolts (430) and lock washers (420).

(b) Install the RH transmission mounting bracket (550) on the transmission with the two M10 bolts (430) and lock washers (420). Torque the bolts to 32 to 36 ft-lbs. Remove the gearbox mounting adaptor and bracket.

(c) Loosely install the two rubber transmission mounts (440) on the LH and RH mounting brackets (540, 550) with the attaching nuts (450) and lock washers (460).

(d) Loosely install the LH bracket weldment (560) on the chassis with the attaching bolts and washers. Ensure that the rear slot engages the stud on the rubber mount (440) and install the attaching nut (450) and washer (460).

(e) Loosely install the RH bracket weldment (570) on the chassis with the attaching bolts and washers. Ensure that the rear slot engages the stud on the rubber mount (440) and install the attaching nut (450) and washer (460).

(f) Tighten the four M10 bolts (430). Torque them to 32-36 ft-lbs.

(g) Tighten the upper and lower attaching nuts (450) on the rubber mounts (440).

(h) Tighten the attaching bolts on the LH and RH bracket weldments (560, 570).

9. Lower and remove the floor jack. All components should be snugly in place and aligned.

10. Adjust header pipes, etc., so that there will be adequate clearance between the transmission and other parts.

O. DRIVE SHAFT

Prepare the driveshaft as follows:

1. See Figure 7. Extend the driveshaft to its maximum extension.

2. Install the locking collar over the extension, right next to the driveshaft, so that it cannot retract.

3. Measure the distance from the face of the front driveshaft flange to the face of the other. Write the exact dimension down.

4. **On six-cylinder model TR's:** Ensure that there is approximately 1/8 inch or more between the shoulder on the output flange and the transmission oil seal.

5. **On four-cylinder model TR's:** Ensure that there is approximately 7/8 inch between the shoulder on the flange and the transmission oil seal.

6. **On four-cylinder model TR's:** Remove the jack stands and lower the car to the ground.

7. Measure the distance from the output flange of the transmission to the flange of the differential. Write the exact dimension down.

8. **If the driveshaft dimension is longer than the distance from the transmission flange to the differential flange, it must be shortened by that amount.**

9. Take the driveshaft assembly to a driveshaft repair shop to have it balanced, and shortened (if necessary).

10. Raise the car back up on the jack stands.

11. Install the driveshaft in the car with the original bolts and NEW lock nuts. Make sure the locking collar is in place with the shaft fully extended, and that all of the machine shop's marks, on the flanges, the driveshaft, and locking collar are aligned. Apply blue Loctite to the threads of the cap screw threads.

P. FINAL ASSEMBLY

1. See Figure 4. Mount the speedometer cable bracket (470) on the side of the transmission with the short M10 bolt (490) and lock washer (480) as shown.

2. Install the speedometer cable (500) on the transmission and hook it up to the speedometer. Attach the cable to the bracket (470) with the clamp (510), the bolt (520) and the nut (530). Make sure the cable is clear of the exhaust headers.

3. **Hydraulic throw out bearing conversions only:**

   (a) Connect the flexible inlet hose to the clutch master cylinder output pipe with the appropriate male-male adapter fitting.

   WARNING: USE ONLY DOT 3 BRAKE FLUID IN THE HYDRAULIC CLUTCH THROW OUT MECHANISM. DO NOT USE SILICONE (DOT 5) OR PETROLEUM BASED FLUIDS. IF THOSE TYPE OF FLUIDS WERE IN USE BEFORE THE CONVERSION THEY MUST BE THOROUGHLY FLUSHED OUT OF THE SYSTEM BEFORE BEING CONNECTED TO THE THROW OUT MECHANISM.

   (b) Fill the reservoir with DOT 3 brake fluid and bleed the system.

4. **Toyota manual throw out bearings only:**

   (a) Install the Toyota slave cylinder on the transmission housing with the existing hardware.

   (b) Connect the Toyota slave cylinder to the Triumph clutch master cylinder with the adapter nipple.

   (c) Fill the reservoir with clean brake fluid and bleed the system.

5. Install the starter motor and connect it to the wiring harness.

6. If applicable, put the transmission in reverse and use an ohmmeter to check the backup switch, located on the left side of the transmission, before you hook it up. Connect the backup light wires to the backup light switch.

CAUTION: USE ONLY THE APPROVED GEAR OIL LISTED IN TABLE 5 IN THE TOYOTA TRANSMISSION. DO NOT USE COMMON 90W HYPOID GEAR OIL, OR DAMAGE TO YOUR TRANSMISSION MAY RESULT.

7. Fill the transmission with the approved gear oil (see page 7, item 8) until it runs out of the filler hole on the driver side of the transmission.

8. Grease the universal joints, as necessary.

9. Re-install the transmission housing, rubber shift lever boot, carpets, center console (as applicable), and the seats.

10. Remove the jack stands and lower the car to the ground.

11. Attach the battery cables.

12. Start the car and look for any fluid leaks under the transmission.

13. Listen for any noises that might indicate loose parts or interference with surrounding components.

14. Road test the car. TAKE IT EASY until you are certain everything is working okay.

15. Enjoy your HVDA transmission conversion.

If you have any questions, or if you have any comments or suggestions concerning how we could improve the conversion kits or these instructions, please contact us. If you are happy with the conversion, recommend us to your friends.

HAPPY MOTORING!

Thank you,

Herman van den Akker