T45 Rebuild: A whole 'nuther animal…by Chris Neighbors Date: July 21, 2002

The problem:

When Ford went to modular motor production in 1996, they decided that the venerable T5 needed a suitable replacement; after all, a new powerplant deserves a new transmission! The T45 is a natural progression of the T5, and therefore shares some of the same attributes and drawbacks as the T5, while being packaged differently. If you have experience with T5's, T45's *should* be a breeze (we shall see!)…

T5 comparison: First look…

The T45 differs in a number of fundamental ways from the T5. Not only is the engine bolt pattern different, but the assembly is quite different. Externally, the T5 consists of four main parts (five if you include the bell housing): the main case, the tail housing, the shifter cover, and the input bearing retainer. The T45 consists of three: the main case, the tail housing, and the bell housing. The input bearing retainer is integral to the bell, and all parts are loaded from the front (when the bell is removed) or from the rear. *After reviewing the service manual, this thing is quite a bit different from the T5, LOL! Some procedures will have to be 'adapted' during the rebuild, and I expect a handful of revisions…*

The sources:

Rebuild kits are a bit harder to find for a T45 than a T5, for some odd reason. With the shear numbers of modular motored cars out there, and a good percentage 32V Cobras, one would think rebuilds are common (well, we all know of the input shaft problems some are having, LOL!). So far, Hanlon seems to be the only source for rebuild kits, and they aren't cheap! A major rebuild kit (akin to the 94-piece D&D kits for T5's, but only has 78 pieces (see below)) runs $275 from Hanlon. D&D sells hard parts, but they do not offer a rebuild kit (at the time of writing). TTC does not offer or publish a service manual for the T45, so the only real source of literature is from the Helm factory service manual (be they purchased from Helm or found on Ebay (in paper form or on CD))…[I encourage you to get the manual before starting this tranny! *CN*]

Vendor	Phone	Fax	Website
D&D Performance	(248) 926-6220		http://www.d&dtransmissions.com
Hanlon Motorsports	(610) 469-2695	(610) 469-2694	http://www.hanlonmotorsports.com
Helm, Inc.			http://www.helminc.com

Required tools:

Metric socket(s) and ratchet (13mm)
7/8" open end wrench (reverse light)
3/16" diameter punch
Retaining ring pliers
6" or 8" calipers
1" travel dial indicator
dial indicator stand
4" C-clamp
Two-jaw puller, 6-1/2" reach *(Craftsman (9)46903)*
File, flat
Parts washer or many cans of carb cleaner!
Air compressor and air nozzle
Regular screwdrivers (2 each: large, medium, small)
3/8" or 1/2" diameter punch (I use a Chevrolet fuel pump pushrod)
Foot-pound torque wrench
Dremel w/ cut-off wheel (for marking synchro hubs/rings)
T40 and T50 Torx bits
Bearing separator *(SK 4-1/4")* and 14" long threaded rods *(5/8"-18 NF)* that fit it

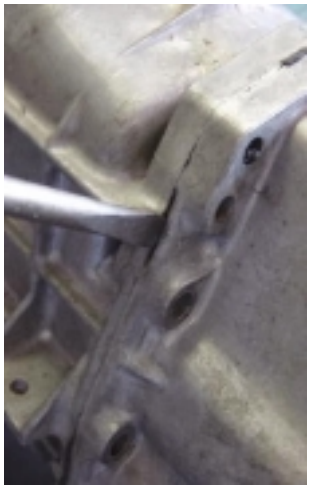
Shop press (optional, but makes life much easier)
Valco Tube-Grip (RTV sealant dispenser; the best $15 I ever spent!)
1-7/8" O.D. x 1–1/4" to 1-3/8" I.D. x 5-1/2" long pipe (for cluster bearings)

Required chemicals:

RTV (I prefer Permatex UltraBlack, but any oil resistant RTV will work.)
Loc-tite 242 (blue, removable)
Non-hardening thread sealer (Pli-A-Seal, Grey Bolt Prep, etc.)
Vaseline (for holding loose parts in place)
Four quarts of your favorite trans fluid

Let's dig in!:

(I assume the draining and removal of the transmission was successful; if not, please reconsider attempting the rebuild!) Seriously, it is my contention that if you can remove the trans without hurting yourself or breaking something, you *should* be able to accomplish the rebuild; the T45, however, is a bit trickier than a T5, so be prepared. Drain the oil before you remove the trans from the car; the drain plug is located on the passenger side of the tailhousing, and is the lower plug, appropriately marked '*DRAIN*'. Once removed, take it to the local carwash and pressure clean it. Starting with a clean transmission will make the job a bit easier…



Tailhousing:

If the shifter base has not been removed, do so by removing the four (4) 13mm headed fasteners. With shifter removed, drive the split roll pin through shift block with 3/16" punch. Remove eleven (11) tailhousing to main case fasteners with 13mm socket (long extension helps!). Using two large flat-bladed screwdrivers, break the seal as shown in the picture (the T45 has provisions for breaking the seal; the other pry-point is located diametrically opposite the one shown). Be careful here, as any fluid that didn't get drained will drain on whatever surface you are working on! Apply slight downward pressure on the shift block, and simultaneously slide the block off of shift shaft while removing the tailhousing from the trans. Once the block is free, continue to pull all the parts off and place on the bench.

Fifth and reverse gears:

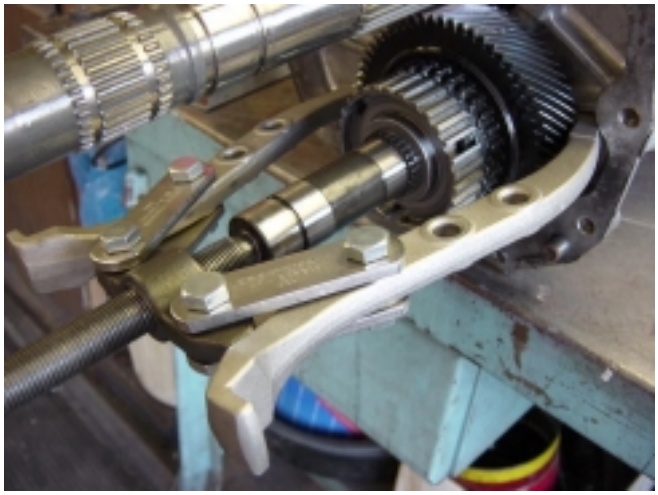
With the tailhousing removed, you should be faced with what appears to be a mess of parts; this is a correct assumption! This area is the hardest portion of the T45 to disassemble, and takes some tools and procedures to get through it successfully. The service manual has a good tool list and illustrations of use; I adapted on-hand tools to complete this portion…

Remove the rubber full fill seal by sliding it off of the output shaft. With retaining ring pliers, remove the ring that locates the speedometer drive gear, the gear itself, and the second retaining ring. The output shaft support bearing is a caged ball bearing pressed onto the main shaft with a fair amount of interference. It butts up to the reverse driven gear retaining ring, so you cannot use the reverse gear to pull the bearing off. The retaining ring is .125" thick, and allows very little room to get two pry bars (aka screwdrivers) between the bearing and reverse gear (and coupled with the press fit, it is impossible to remove the bearing in this manner). Reviewing the service manual, they show a bearing puller contraption that consists of four parts: a puller ring, bearing puller, remover/replacer tube, and a forcing screw. Total cost for tools: $205.25! Not having the resources, time, or funds to cough up, I pressed my bearing separator into use. I have an SK 4-1/4" capacity separator, and to be honest, it was a little too big for this task. The separator came into contact with the end of the cluster gear, and I could not get the lower fastener through the holes. Instead, I placed a large screwdriver through the lower half to keep it lined up (in retrospect, I should have used some 1/ 2" all-thread, instead of the 5/8" fasteners supplied with the puller). In a strange coincidence, I had purchased that day a 36" stick of 5/8"-18 all-

thread to make some harmonic balancer installers; it was the same size as the drilled and tapped holes in my separator! I cut two lengths of all-thread 14" long, and threaded them into the previously installed separator. I then took a scrap piece of rectangular tubing and drilled three holes through it: two for the long pieces of all-thread, and one in the center for a jack screw (in my case, the all-thread holes are located 5" apart, with the center hole at 2-1/2" from either hole…). Holding one nut, I turned the other nut on the jack screw and quickly removed the bearing. [**Note:** Pullers similar to the tube I built can be purchased reasonably at local auto parts stores, but you will still need the all-thread. Adjust your set-up to fit what's available, using this blurb as a reference…]

With the output shaft support bearing removed, remove the retaining ring, selectable thrust washer (it is a good idea to measure and record the thickness for reference), the reverse driven gear, needle bearing, and the bearing thrust washer.

Remove the reverse syncho hub retaining ring from the output shaft using proper pliers, along with the reverse driving gear retaining ring from the cluster. When the rings are removed, slide the reverse drive gear and spacer off of the cluster. You should now have both fifth and reverse synchro assemblies exposed. With a cut-off wheel equipped Dremel, mark both assemblies rings and hubs to insure proper orientation upon reassembly. Once marked, remove the exposed synchro insert spring from both, using a small flat-bladed screwdriver or needlenose pliers (and the reverse blocker, if not done so already). Using a 3/16" diameter punch, drive the roll pin that retains the shift fork to the shift shaft. Carefully pull the shift fork and both synchro rings (if not whole assemblies) off of their respective shafts, being careful not to cock or drop the assemblies once removed. Slide the reverse synchro hub off of the output shaft, and remove the fifth driven gear if you desire (not required at this time, as it will pass through the rear bearing race when removed from the front. I discovered this after I removed the driven gear with two large flat-bladed screwdrivers…).



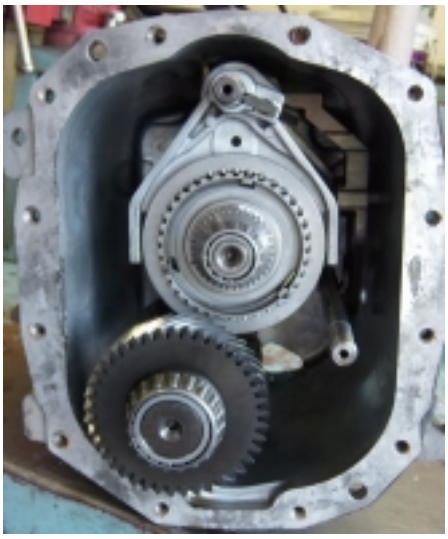
What you are left with is the fifth drive gear, held fast to the cluster gear by a press fit synchro hub. The service manual illustrates the use of a combination of tools, similar to the set-up to remove the rear bearing. However, two unique tools are required: a hub removal collet and a collet sleeve; add another $38.63 to the $205.25 already spent. Again, I searched for an alternate solution, based on time and money. I found my two jaw puller fit behind the fifth driven gear, and cleared the case, barely! [**Note:** I have a Sears Craftsman two-jaw puller, part number (9)46903. The brand is not important, but the reach is. You will need a 6-1/2" reach puller to reach behind the fifth drive gear, as shown…]. Carefully place the arms behind the gear (to avoid chipping the teeth), and turn the screw to pull both the gear and synchro hub off of the cluster gear. While it would be nice to pull the hub only off, the real estate available between the blocker and hub is VERY limited…

Bellhousing removal:

You are now finished with the hardest parts! Flip the tranny around to orient the bellhousing towards you, and remove the twelve (12) fasteners using a 13mm socket on a long extension (I use a 24" unit…). With all the fasteners removed, break the bellhousing from the main case by using two large flat-bladed screwdrivers in the intentionally supplied machined areas (the picture shows the upper right 'slot'; the lower left is diametrically

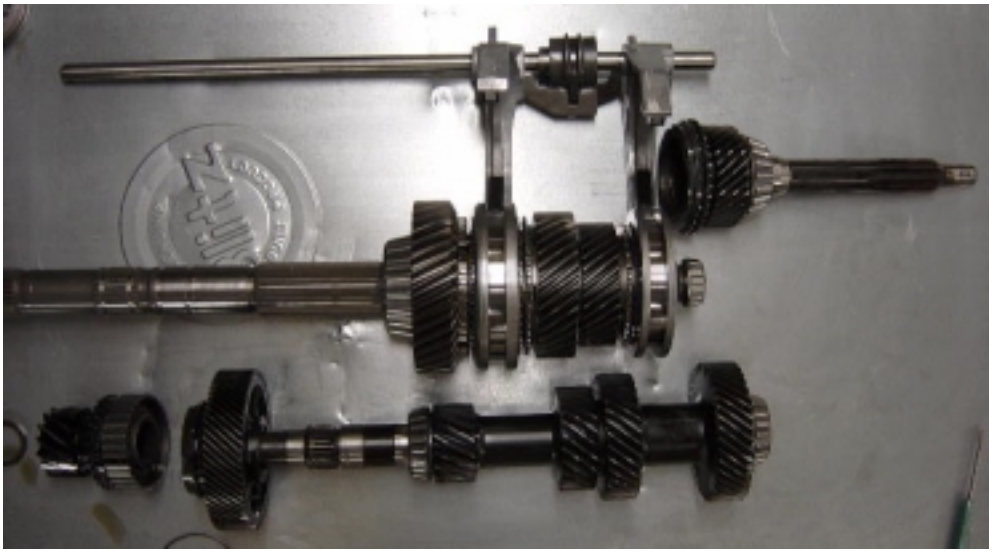
opposite). Gently break the seal, and before removing the bell, reach inside, grab the input shaft, and remove both bell and input at the same time. The fourth gear blocker may fall out; just be aware of it and try and keep it on the bench. You will be now looking the beast in the belly…





'Innards' removal:

With the bellhousing and input shaft removed, you should have a view like the above right picture. In order to remove the mainshaft (please note I use mainshaft and output shaft interchangeably, depending on what area I am speaking about. In reality, they are the same piece: the mainshaft (or is it output?)) and cluster gear, a few items need to be removed first. If not done already, remove the reverse light switch, located on the left side of the tranny, with a 7/8" open ended wrench. Remove the reverse rail shift shaft (the small rod in the above right picture) by rotating the rod, allowing the guide roller to disengage the shift lever bracket. Using a small to medium flat-bladed screwdriver (or needlenose pilers), depress the shift lever retaining clip and remove it. With a T50 torx bit, remove the shift lever anchor bolt. *Warning!* Ford used a fair amount of thread locker (or just a good one!) on this fastener; considerable effort will be required to break it loose (I suggest trying to tighten it a small amount before backing off…). As you unscrew the bolt, slide the shift lever off of the machined pivot portion. Remove the anchor bolt, lever, and clip. With a T40 torx bit, remove the shift interlock pin located in the top middle of the transmission. Again, Ford used a stout threadlocker (or an interference type thread system) to REALLY lock this fastener in position (I broke two T40 sockets, used quite a bit of penetrating oil, and spent about twenty minutes on this one! The only thing I didn't try was a bit of heat…). After the shift interlock pin is removed, the mainshaft and cluster can be removed. If you are working on the bench (as in the photos), raise up slightly on the mainshaft, and pull out about an inch or so, enough to allow the cluster to be removed. Support the mainshaft and shift mechanism, and carefully remove them from the main case at the same time.



Case disassemblies:

The tailhousing contains the reverse idler gear, bolted with a bracket and a indexed shaft. Remove the three fasteners with a T40 Torx bit, and remove the bracket, wave spring, idler gear, and shaft. The rear cluster bearing requires an internal fingered bearing puller for removal *(I have not yet done this, but think my three-jaw adapter on my slide hammer will get it out. Most likely the plastic cage and rollers will need to be removed before the puller will fit…).* Flip the tailhousing over, and remove the seal carefully by inserting a large screwdriver between the shell (on the inside) and prying up, as shown below (be careful here; you don't want to crack the housing…).

Drive the rear bushing out of the tailhousing (by driving it through) with a bushing driver; 1.800" max OD x 1.685" minor diameter. An alternate method is to deform it with a screwdriver, or cut with cold chisel, and pull out (the bushing has a seam in it; if you can find it and pry on one side, they usually "split" and come out without getting overly aggressive). There is a drain groove in the tailhousing; the perfect place to get a chisel/screwdriver under the bushing to start deformation. If you damage the bore while removing the bushing, touch up the damage with a small file and 180-220 grit sandpaper.

The main case has the bearing races for the mainshaft and cluster rear taper roller bearings pressed into the back wall. These races will need to be driven out for replacement. Orient the case on the bench so that that front opening is down, and the races are visible through the two large holes. You can either drive them out from the rear by using a punch and tapping around on the exposed lip in a circular fashion, or use a couple of large washers and a length of pipe as a driver. The cluster bearing minor bore is 2", allowing the use of an SAE 1" or USS 3/4" flat washer (or anything with a 2" diameter). The minor bore of the rear mainshaft bearing is 2-3/4", which a 1-1/8" USS or 1-3/8" SAE washers fit (To be honest, I use a punch to tap this race out…).

Congratulations! You successfully completed the teardown, and should have quite a pile of parts around you!

Clean up on aisle 9!

One of my pet peeves is casting flash; the other is sharp edges left after machining. You should have noticed during disassembly that nearly every edge of the T45 is sharp; some nearly razor. I take a flat file and break all the sharp edges on all major aluminum parts. While this isn't required, it only takes about five minutes, and if you can avoid a cut or three (and then getting cleaning fluid in it (especially carb cleaner! Yeow!) it is well worth the time (in my opinion).

Main shaft:

The mainshaft has the greatest number of components than any other single sub-assembly. For this reason, it is advisable to clear the area of all other parts while working on it. I like to stack the parts in order and correct orientation upon removal. Starting from the front of the main shaft, mark the 3/4 synchro hub and outer ring to insure proper reassembly. Remove the ring, being careful to not let the synchro inserts and springs fly off. The synchro hub may slip off, or it may need some coaxing with a two/three jaw puller. *When I rebuilt my last unit, I could not get a hold of the hub with my small two-jaw pullers. I didn't want to set up the shop press, so I placed a piece of ¼" thick aluminum plate on the concrete floor, and repeatedly dropped the main shaft assembly on the plate until the hub came off. It took about eight to ten blows, and the plate protected the end of the shaft from damage*. Remove the blocker, 3rd driven gear, caged bearing, and spacer. With the retaining ring pliers, expand

the retaining ring and slide off of the mainshaft. Slide off the spacer, 2nd driven gear, caged bearing, and spacer. Using thin screwdriver(s), remove spiral retaining ring, then remove thrust washer, inner and outer cones, and blocker. Mark orientation of 1-2 synchro ring to hub. Remove ring, inserts, and springs. From the rear of the mainshaft, remove the retaining ring and slide off 5th driven gear, and main shaft bearing and race. Slide 1st gear, caged bearing, sleeve, blocker, and inner and outer cones off of the mainshaft. Be careful during removal, as there is a spring and ball or pin detent under the sleeve; don't let it fall out and get away from you.

Inspect all components (per Tremec manual) as you clean and install them in the proper order. Lube the caged bearings with trans fluid before installing into appropriate gears. When installing first gear sleeve, note the notch in the I.D. that engages the detent (pin or ball) on the main shaft. Synchro assemblies can be trying; I usually have to do them two or three times to get them together without springs flying and inserts falling out. Just be patient and persistent, and you'll get them in place (but make sure marks are lined up!). Refer to the Helm or Tremec manuals for assembly details (There aren't many! 3-4 synchro has "winged" inserts; the 3-4 synchro ring is installed with the chamfer or groove (not the shift fork groove!) towards the input shaft; the springs that hold the inserts in place should be installed in opposite directions on each side (actually, if you install both clockwise, they will be opposite)). The tabs or ears on the outer rings of the 1-2 synchro should be oriented so that they fall into the notches in the 1st and 2nd gears; if not, the parts won't stack up properly.

And now for a little assembly!

Cluster gear front bearing race:

If you are replacing the cluster gear, and desire to change the front race (if it's not galled, pitted, or damaged, it may be reused…), then do so now with nothing else in the main case. Refer to the Helm manual for procedure and set-up to correctly replace the race. I placed my race in the freezer for a couple of hours prior to installation. I pulled the race out, installed o-ring, applied Loc-tite 271, and pressed race into main case, using proper supports. Not difficult, but some care must be exercised.

Cluster gear:

Clean the cluster gear, regardless if new or used. Install the new front bearing using the 1-7/8" O.D. pipe, and either press or drive it on with a sledge, making sure small diameter of bearing is away from the cluster gear. If you don't have a press, heat the bearing in an oven at about 200 degrees for a few minutes prior to installation. Even with no heat, it will go on quite easily if lubed and driven on. Install the cluster into the main case, seating bearing in race. Stand the case on the bellhousing mount face. Install the rear cluster bearing using the same procedure as the front. Measure the thickness of the original shim, record, and install, followed by bearing retainer and fasteners; torque to 11-15 lb-ft.

Tailhousing:

If you removed the bushing during clean-up, install a new one now. There are a couple of ways to get the bushing in; drive it in with the correct size bushing driver, or put the bushing in the freezer for several hours and hope you can get it in place before it warms up (it might help if you put tailhousing in the oven at around 200 degrees for fifteen minutes or so to expand it…). Lube the bushing with ATF, then drive it in until the end is even the tailhousing chamfer (not the major diameter; the diameter below the seal counterbore). Blow the housing out, as small slivers of aluminum and bushing material will be created during installation. Apply a thin layer of RTV to the shell of the rear seal and drive seal into place with the 3/8" or 1/2" punch; tap with hammer around the circumference of seal to avoid damage. Apply a 1/8" bead of RTV to the main case mounting surface on the tailhousing. Let the RTV cure for a few minutes, then line up over output and shift shafts. Install spring in shift block and hold in place with Vaseline. Drop detent ball onto detent plate; push shift block over ball (with shifter bushing towards the rear), and align with shift shaft. Simultaneously push the tailhousing and shift block forward, making sure shift rail and cluster gear bearing race pilot in their respective bores. Once "home", prep the bolts with sealant, install, and torque to xx-yy lb-ft. Wait to install shifter until the trans is in the car; the easiest way to fill it with fluid is through the shifter hole.

Input/output shaft preload:

Miscellaneous tidbits:

Shifter considerations:

If you don't want to cough up the money for an aftermarket shifter, there are a couple of things that can be done with the stock unit to provide more feedback; both involve removing the rubber bushing in the shifter handle. The cheapest is to braze the holes up, and drill with a "P" drill bit, in the correct locations. Steeda offers stainless steel shifter bushings; they install in place of the rubber units in minutes. While these two modifications improve driver feedback, they do not prevent the shift forks from overshifting inside the trans. Over travel of the shift forks is the main cause of shift fork failure.

Trans fluid:

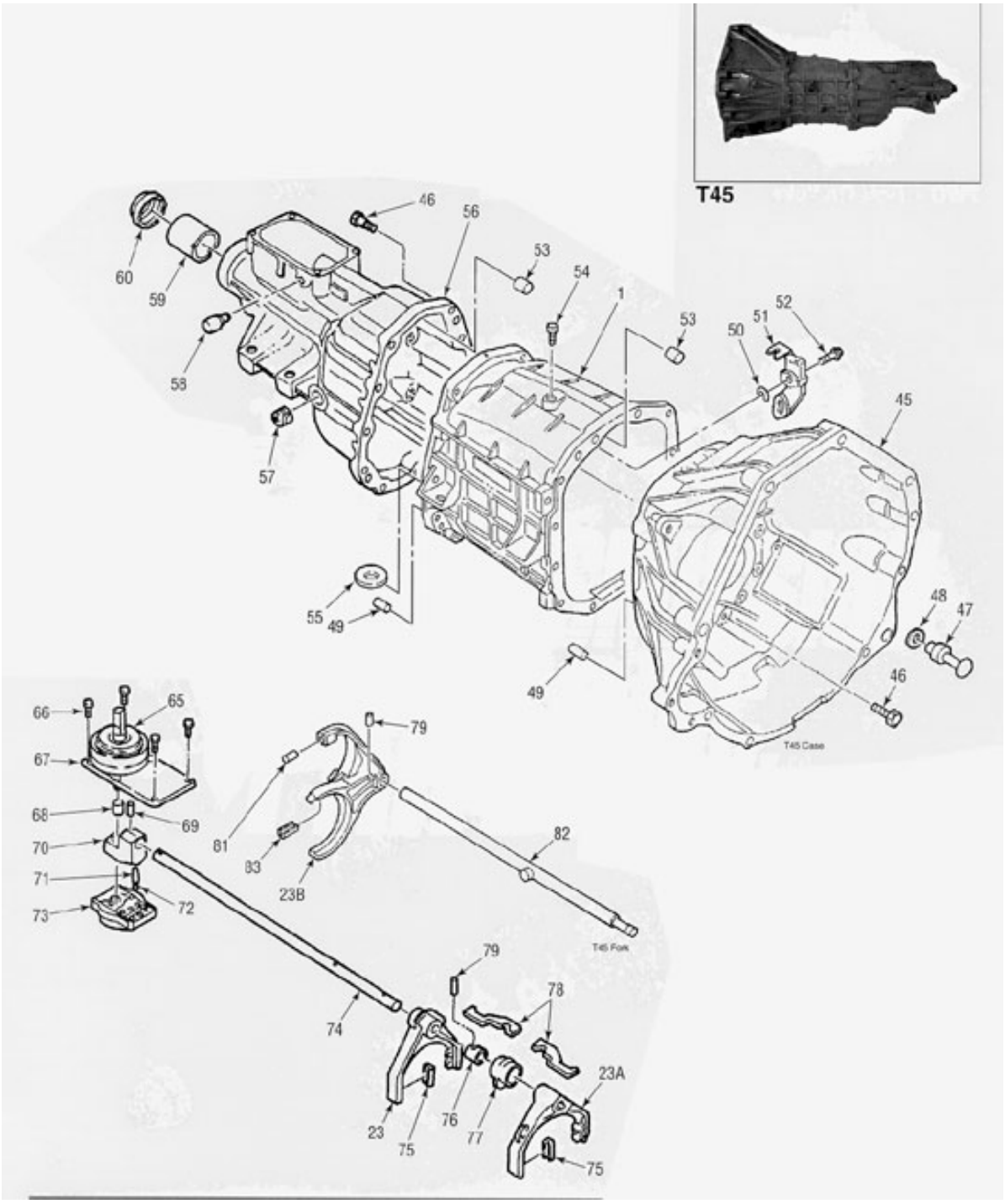
Whatever you do, do not use gear oil (e.g. 80W90) in a T45! The lubrication passages are so small on some components that rely on splash lubrication that gear oil will not flow readily and lubricate properly. You stand a chance of spalling, galling, or otherwise destroying a trans if pushed to extremes. Use Dexron II, Mercon III, or a synthetic ATF. Some synthetics have friction modifier in them; if you can find one without it, opt for that one (read the back of the container; usually they indicate whether modifier is present or not). If you use a synthetic, I have found (in the handful of friends' cars that run it) that the trans tends to whine a little more than with conventional ATF. If you don't mind the slight amount of noise, the increased service interval is nice. The fluid capacity is 6.4-6.7 pints (3.2-3.35 quarts); just fill up until it runs out of the top fill port (on the passenger side).

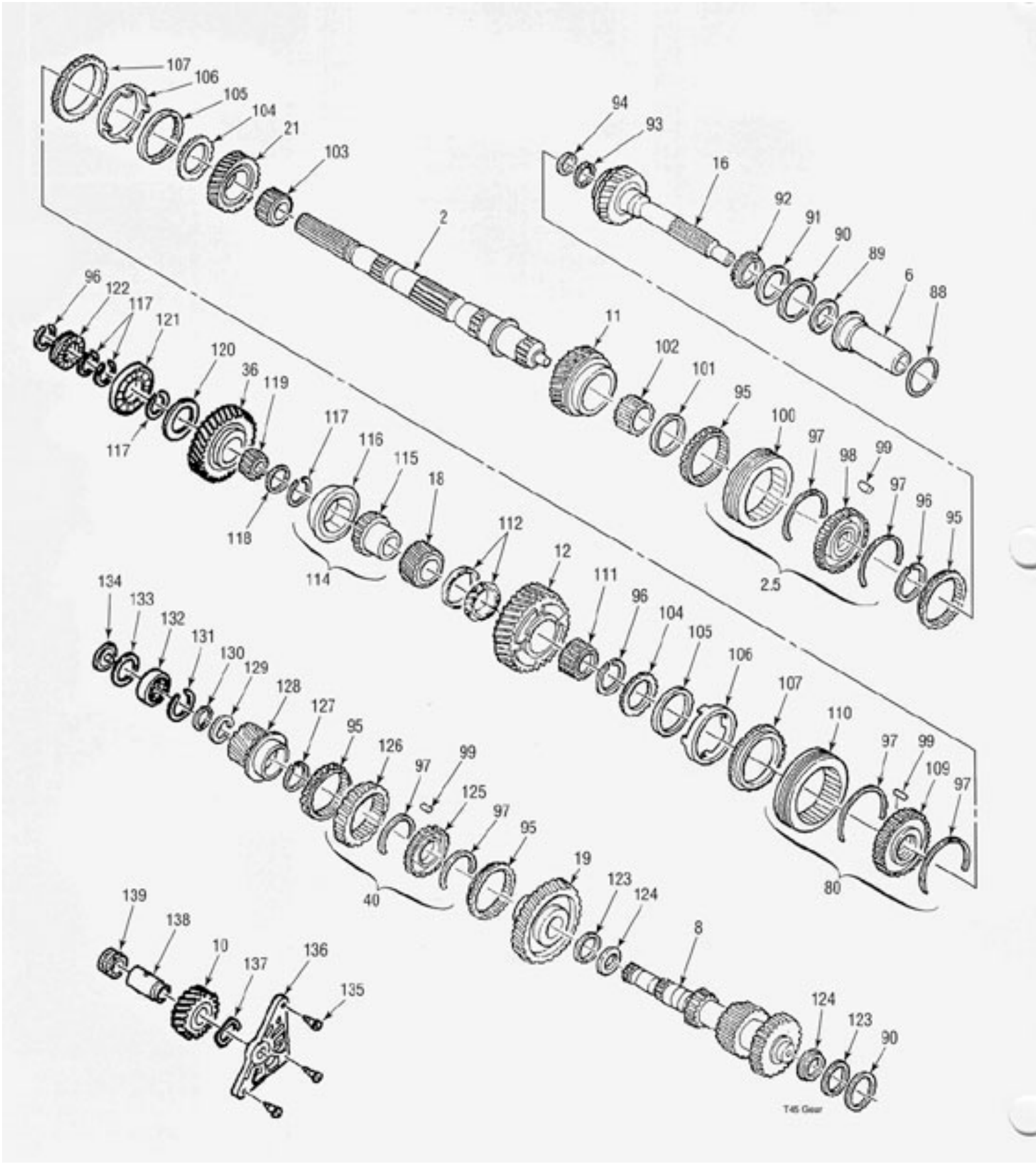
Parts list: (numbers correspond to exploded assembly drawings)

No.	Description	No.	Description	No.	Description
1	Case, main	48	Washer, lock (pivot ball)	95	Ring, 3/4/5/R blocker
2	Shaft, output (main)	49	Pin, alignment	96	Ring, retaining
3		50	Clip, reverse lever retainer	97	Spring, 1/2/3/4 syn insert
4		51	Lever, 5th/reverse shift	98	Hub, 3/4 synchro
5		52	Bolt, 5th/R lever anchor	99	Insert, 3/4/5/R synchro
6	Guide, throw-out bearing	53	Bushing, shift rail	100	Ring, 3/ 4 synchro
7		54	Pin, shift interlock	101	Shim, 3rd gear bearing
8	Gear, cluster (countershaft)	55	Magnet, debris	102	Bearing, 3rd caged roller
9		56	Housing, tail/output	103	Bearing, 2nd caged roller
10	Gear, reverse idler	57	Plug, case fill/drain	104	Washer, blocker thrust
11	Gear, 3rd driven	58	Vent, case	105	Ring, inner blocker
12	Gear, 1st driven	59	Bushing, tailhousing	106	Ring, middle blocker
13		60	Seal, tailhousing output	107	Ring, outer blocker
14		61		108	
15		62		109	Spring, 5/R synchro insert
16	Shaft, input	63		110	
17		64		111	Bearing, 1st caged roller
18	Gear, 5th gear driven	65	Boot, shifter (?)	112	Bearing, mainshaft rear
19	Gear, 5th drive	66	Bolt, shifter	113	
20		67	Shifter	114	*Reverse synchro*
21	Gear, 2nd driven	68	Bushing, shifter	115	Hub, reverse synchro
22		69	Pin, shift block retaining	116	Sleeve, reverse synchro
23	Fork, 1-2 shift	70	Block, gear selector	117	Ring, 1.495" OD retaining
24		71	Spring, shifter detent	118	Washer, thrust
25	*3rd/4th synchro*	72	Ball, shifter detent	119	Bearing, needle
26		73	Plate, gear detent guide	120	Washer, thrust (selective)
27		74	Shaft, shifter	121	Bearing, ball (output)
28		75	Insert, shift fork (pad)	122	Gear, speedo drive gear
29		76	Body, gear selector	123	Cup, cluster bearing
30		77	Sleeve, gear selector interlock	124	Cone, cluster bearing
31		78	Plate, gear shift	125	Hub, 5th/R gear synchro
32		79	Pin, roll	126	Ring, 5th/R gear synchro
33		80	*1st/2nd synchro*	127	
34		81		128	Gear, reverse drive
35		82	Rail, reverse gear shift	129	Ring, retaining
36	Gear, reverse driven	83	Insert, shift fork (pad)	130	Spacer, reverse gear

37		84		131	Ring, internal retaining
38		85		132	Bearing, steel caged roller
39		86		133	Spacer, lube funnel
40	*5th/reverse synchro*	87		134	Switch, back-up lamp
41		88	?	135	Fastener, rev/idler retainer
42		89	Seal, input shaft	136	Bracket, reverse idler
43		90	Shim, input/cluster play	137	Spring, wave
44		91	Race, input bearing	138	Shaft, reverse idler
45	Housing, bell	92	Bearing, input shaft	139	Bearing, 1.050” caged roller
46	Fastener, main case	93	Race, interface bearing	23a	Fork, 3-4 shift
47	Pivot, clutch fork ball	94	Bearing, interface	23b	Fork, 5th/reverse shift

Exploded assembly views: (Note: Exploded views courtesy of http://www.drivetrain.com/)

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T45 Gear

Rebuild kits:

Hanlon rebuild kit includes: (78 pieces total)

No.	Qty	Description	Mfg	PN	No.	Qty	Description
49	2	Bushing, shift rail			104	2	Washer, blocker thrust
50	1	Clip, reverse lever retainer			105	2	Ring, inner blocker
60	1	Seal, tailhousing	FNJ	UHO946E	106	2	Ring, middle blocker
68	1	Bushing, shifter			107	2	Ring, outer blocker
71	1	Spring, shifter detent				2	Ring, 3/ 4 blocker
72	1	Ball, shifter detent				2	Ring, 5/R blocker
75	4	Pad, shift fork (large)				6	Insert, winged synchro
83	2	Pad, shift fork (small)				3	Insert, plain synchro
89	1	Seal, input shaft	NOK	UCO159G		2	Bearing, 2.150” caged roller
90	1	Kit, selective shim (16)*	TTC	1381-410-001		1	Bearing, 2.050” caged roller
91	1	Spacer, input bearing				1	Bearing, 1.562”caged roller
	1	*Bearing set, BR1*	Koyo	*BR1*		1	Bearing, 1.050” caged roller
93		Race, bearing	Koyo	LM11710		2	Ring, 1.910” OD retaining
94		Cone , bearing	Koyo	LM11749R		3	Ring, 1.495” OD retaining
97	4	Spring, 1/2/3/4 synchro insert				1	Ring, 1.380” OD retaining
97a	2	Spring, 5/R synchro insert				1	Ring, 1.188” OD retaining
120	5	Washer, selective thrust					(.186, .191, .196, .202, .205)
121	1	Bearing, ball	KBC	6207			
123	1	Race, bearing	Koyo	M88010	131	1	Ring, internal retaining
124	1	Cone, bearing	Koyo	M88048		1	Pin, .188” roll
	2	Race, bearing	Koyo	LM67010		1	Shim, 1.715” x .025”
	2	Cone, bearing	Koyo	LM67048	133	1	Shim, 1.536” x .069”
	1	Race, bearing	NTN	4T-25520	134	1	Slinger, oil
	1	Cone, bearing	NTN	4T-25572	137	2	Ring, wave retaining
132	1	Bearing, steel caged roller	INA	FC67859			

*shim kit contains: .021, .022, .023 (2), .024 , .025, .026, .027, .028, .029, .032, .037, .040, .043, .044, .047, .050

Tools: (information courtesy of John Rubis)

Special service tools manufactured by OTC for Ford, and most are available through an OTC dealer…

Description	Part number	Use	Cost
Tube, remover			$44.33
Tube, remover/replacer	T75L-7025-B		$47.52
Puller, ring	T77J-7025-J		$16.09
Puller, bearing	T77J-7025-H		$110.87
Collet, hub removal	T96P-7025-D		$33.72
Sleeve, hub removal	T96P-7025-E		$4.91
Screw, forcing	T84T-7025-B		$30.77
Puller*			$84.95

*(needs to be purchased through a distributor)

References:

Exploded assembly views here:
http://www.drivetrain.com/transillt45.html

Revision history:

6/26/02: start of document…
7/10/02: added exploded views, BOM
7/10/02: added kit component list
7/11/02: sorted out kit list, added picture
7/19/02: real work finally; disassembled tranny, took pics. Disassembly portion written…
7/21/02: preliminary disassembly section done

Need to add/correct: