The One

The Type-9 is a firm favourite for a gearbox uprgade. Just don't make the wrong choice when buying for your classic Ford or you could end up with a pain in the neck. Follow our guide and get it right!

Gearbox Tech: Type-9 Five-Speed

A Type-9 is the natural choice of five-speed to back your classic Ford engine. We take an in-depth look at the good, the bad and the ugly.

Words and photos Jon Hill

You've just canned the nuts off your motor and the car's rocketed up to warp speed. It's now happily cruising in top gear, only you can't hear a damn thing. The reason? Well, nine times out of 10 it's because most of us have a good old four-speed transmission backing up our screaming motors. And there's nothing wrong with that... except the noise.

At motorway speeds it's nigh-on deafening, and add a good few hours of this treatment and anything the Gestapo dished out during the war seems like a quiet afternoon in the garden eating cream cakes. All those high revs of course, can have a detrimental effect on engine longevity, promoting rapid wear and early engine demise.

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So, what can you do about it? Turn the stereo up? Wear earplugs? Or, do the sensible thing and fit a five-speed? This of course drops the revs with an overdrive fifth, resulting in less noise but also increased fuel economy and less wear on the drivetrain too. It's no secret that five-speed boxes have effectively turned 60,000-mile cars into ones with 120,000-mile potential.

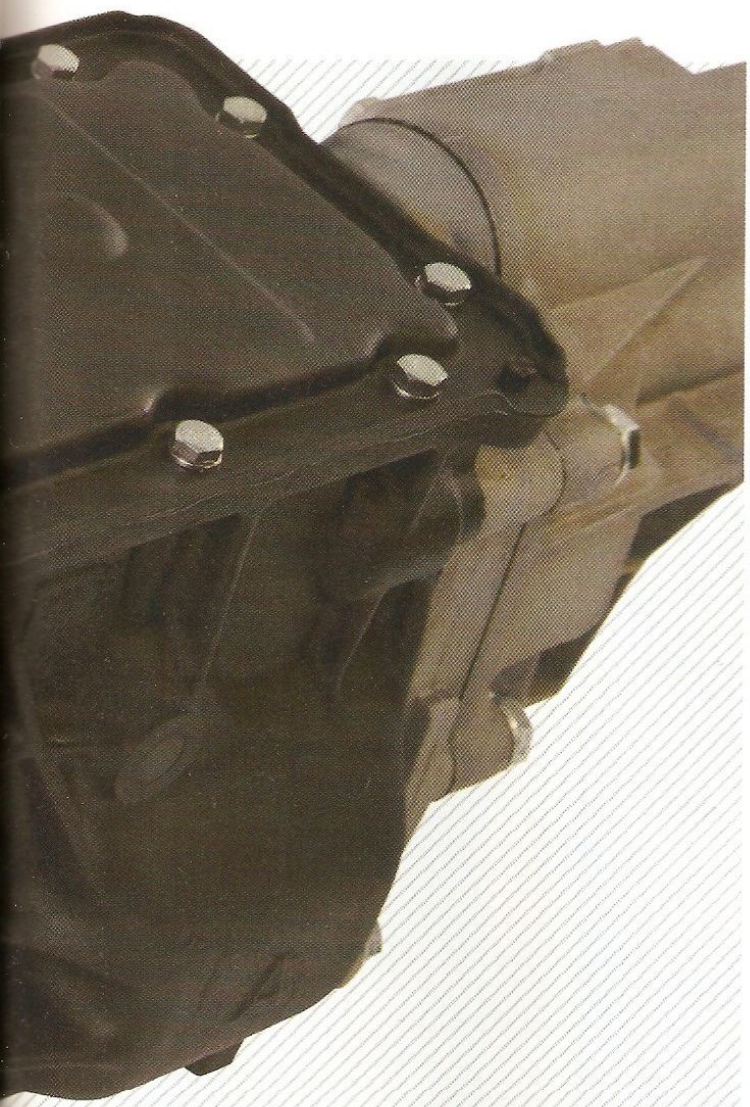
Buy Which One?

Any sane person would fit an extremely practical five-speed except for a couple of things — the weapon of choice, the Type-9, is strong but the ratios are a touch 'old-man.'

As such you hammer through first as if the world is on fire only to whack it into second and have the revs drop like you're falling off a cliff. Cruiser box the Type-9 definitely is, but a race box? Well that's a different matter.

There are fairly major differences in versions of Type-9 as well since the box was also fitted to V6 models in Sierra XR4i format and also the Capri 2.8 Injection, plus the MkII Granada. All of these boxes have different ratios and the later versions have heavier duty bearings.

By contrast though, the V6, 2.3 Granada box has the same ratios as the inline four box but looks like a 2.8 because it has a long input shaft. On top of all this, there are diesel gearboxes also looking similar externally. These could have 2.3 Sierra diesel ratios or Transit five-speed ratios.

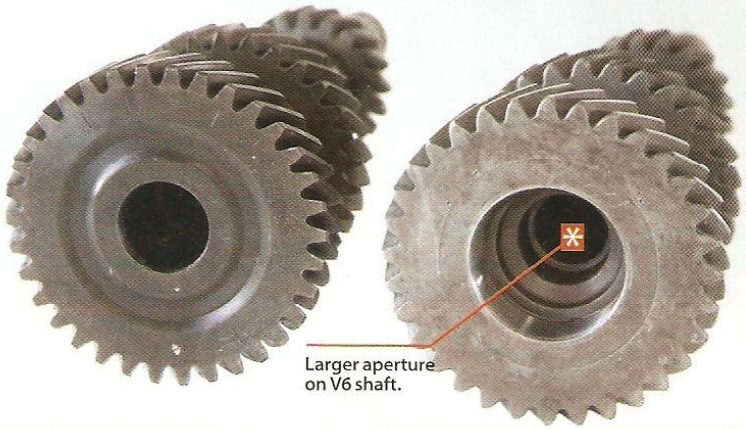


What's What

So we've established that there are two main types of T-9 gearbox — the inline four and the V6 box. However, the 2.3 V6 uses the same box as the inline four but with detail differences. Therefore, for clarity, when we refer to the V6 box, we mean the 2.8-type. But, how do you tell one from the other? The giveaway is in the front face, with the bellhousing removed.

1

1 V6 gearboxes — apart from very early ones — have bigger bearings on the lay shaft. Inline four boxes have small needle roller bearings, whereas the later 2.8/XR4i-derived box has a much larger cluster of caged roller bearings running on a three-bolt stub. This necessitated a recessed bellhousing, with a cut-out at the bottom to house the protruding stub section.

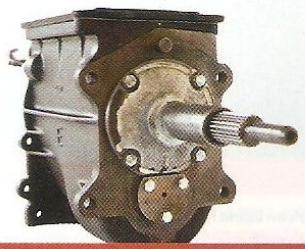


2

The inside of the lay gear obviously has a larger aperture for the corresponding bearings to fit into — on the right is the later 2.8 V6, left the inline four.

3

The lay shafts are obviously different to cope with either set of bearings but the inline four can be modified to heavy-duty, with a sleeve shown on the top shaft, so that it can be used with the earlier bellhousing.



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As such, the front seal cover on the V6 gearbox has a flat on the bottom, while below it..

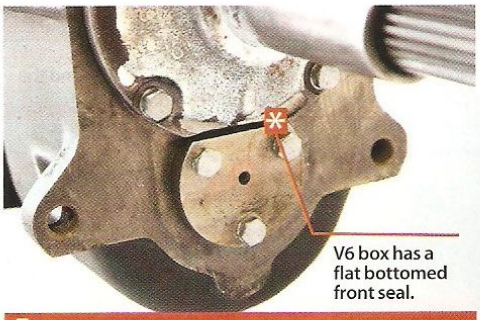
The Type-9 was built into a 4x4 version for the Sierra but it was eventually replaced by the MT75. However, the regular five-speed, rear-wheel-drive box remains extremely popular as a source for fitting a five-speed into many classic Fords, due to its compact size.

In many cars such as late Cortinas, this is a very straightforward swap, providing you have the right bellhousing. However, many early cars, such as MkI Cortinas originally fitted with a 3-rail will need transmission tunnel modifications to make it fit.

To see how much and what the options are to pep it up a bit, we've been to gearbox specialist BGH Geartech to debate the pros and cons of the classic Ford world's favourite five-speed.

Damage

The baulk rings on the Type-9 can be a weak point if the box is hurried — slam it into gear and you'll soon have problems with the rings cracking and breaking up. Best is to make smoother more precise changes.



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...is the end of the stub, which aids in carrying the larger bearings. Note also that the bottom of the case is rounded too.

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Compare this to the completely round front seal cover of the inline four gearbox...

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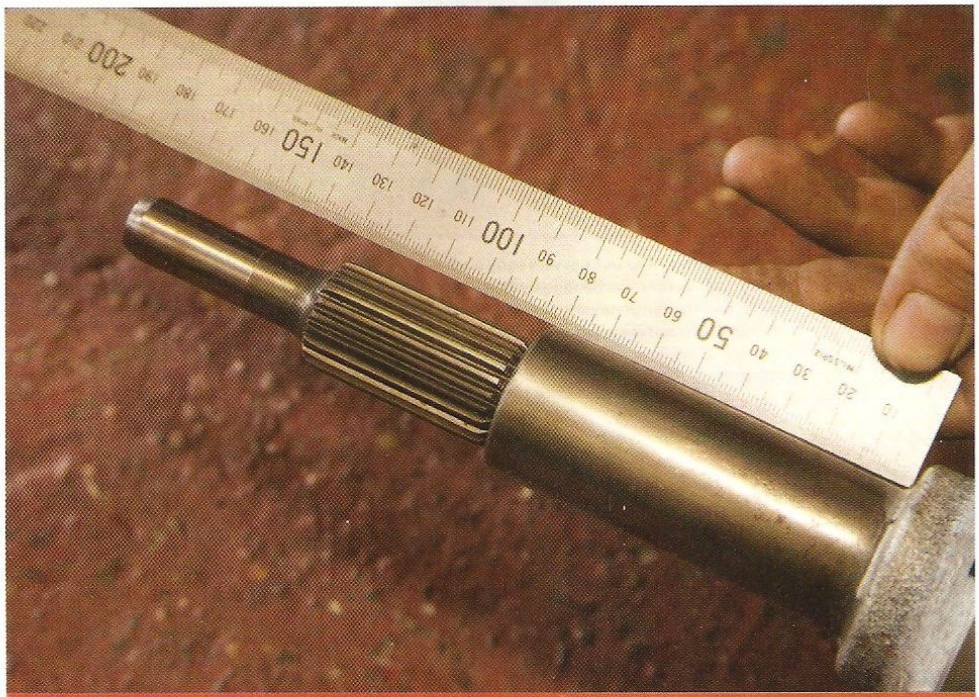
...plus the needle roller area and you'll see there's no plate, plus the bottom of the case is flatter.



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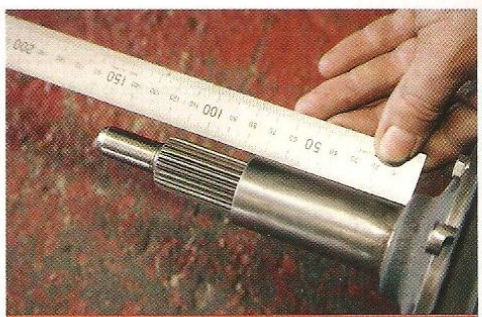
Corresponding with these details, there are differences in input shaft length too — the V6 boxes are longer, including the 2.3. Shown is the longer input shaft and front seal cover of the V6 gearbox.



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This one's an inline four box — note that it's about 35 mm shorter overall.

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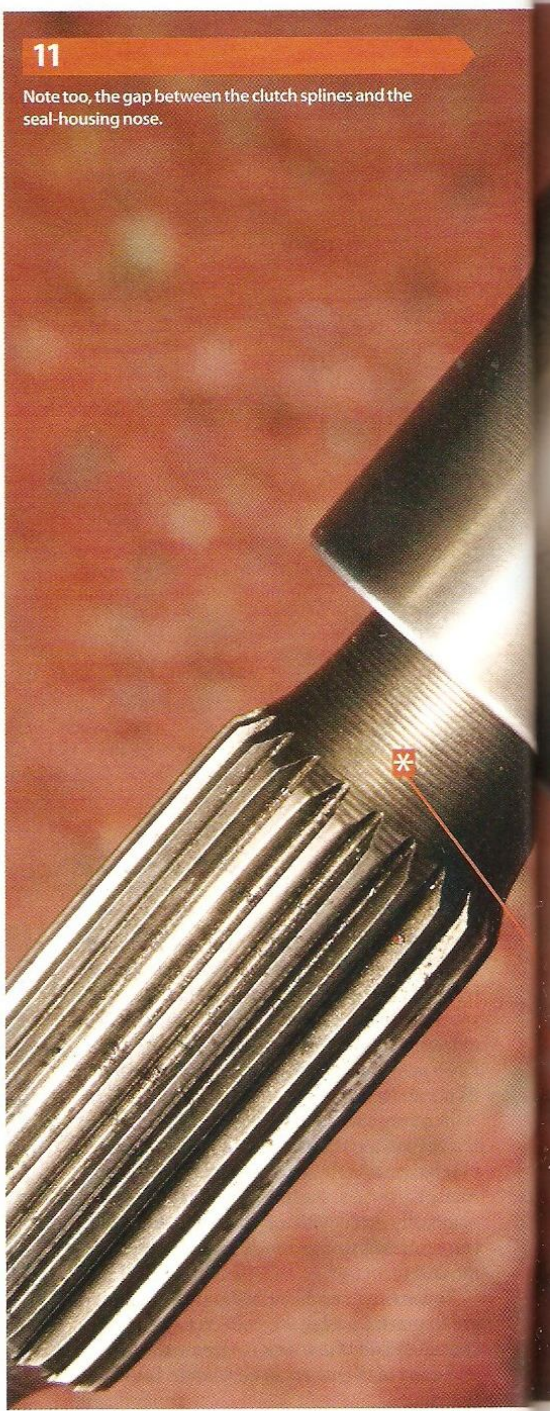
By contrast this is a diesel gearbox input shaft and front cover assembly.



11

Note too, the gap between the clutch splines and the seal-housing nose.

1

This is officially the fill level and you can see the filler plug above it, on a later gearbox casing. You can see the bulge in the casting, which is no longer used.

Case Differences

The main case is made from cast-iron alloy and remained basically the same, apart from minor differences, throughout its Type-9 career. The major revisions are around the filler plug area, which was raised up on the early versions — a carry over from the four-speed box it's derived from. During this period Ford was convinced that oil technology was such that gearboxes could be sealed for life. But, because of this reassurance, owners never bothered to check the oil level. So, when a vehicle with low oil level was labouring up a hill, the oil would run to the back of the casing, lubricating the fifth gear nicely but starving the gears at the front.

2

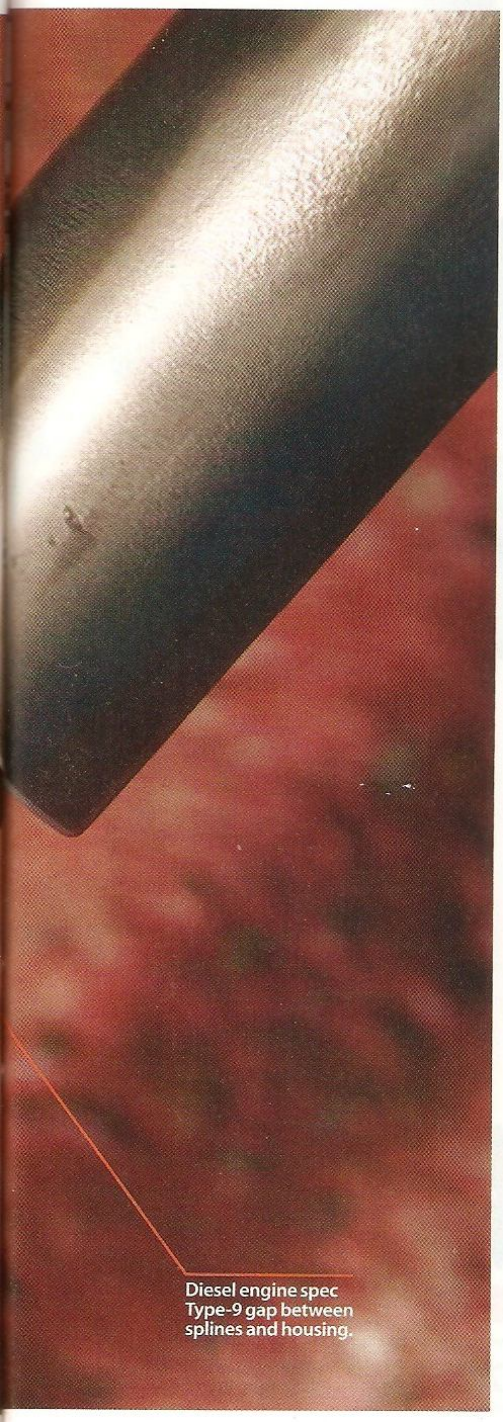
This plug level's on an early casing, which you can see is much higher — same as the four-speed.

3

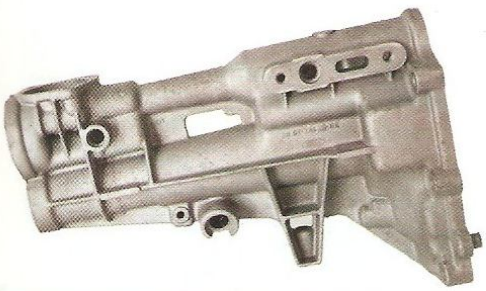
You may also find a case with this level of filler, which you shouldn't assume you can fill the box up to this level — go lower, which will need estimating since there isn't any form of dipstick. Sticking your little finger in is a method although BGH can offer a top cover and dipstick assembly.

4

From the other side, there is very little difference if any, from early and late main cases.

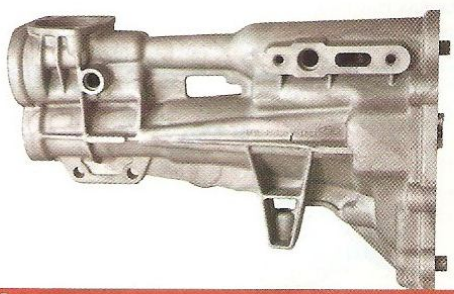


Diesel engine spec Type-9 gap between splines and housing.



1 Tail Casings

There are four main types of tail case, depending on age of the gearbox. This is the earliest type, which has a slightly different casting in the side.



2

Compared with this still early, but slightly later version, you can see it has an elongated V-section cast in, just above the crossmember mount.

3

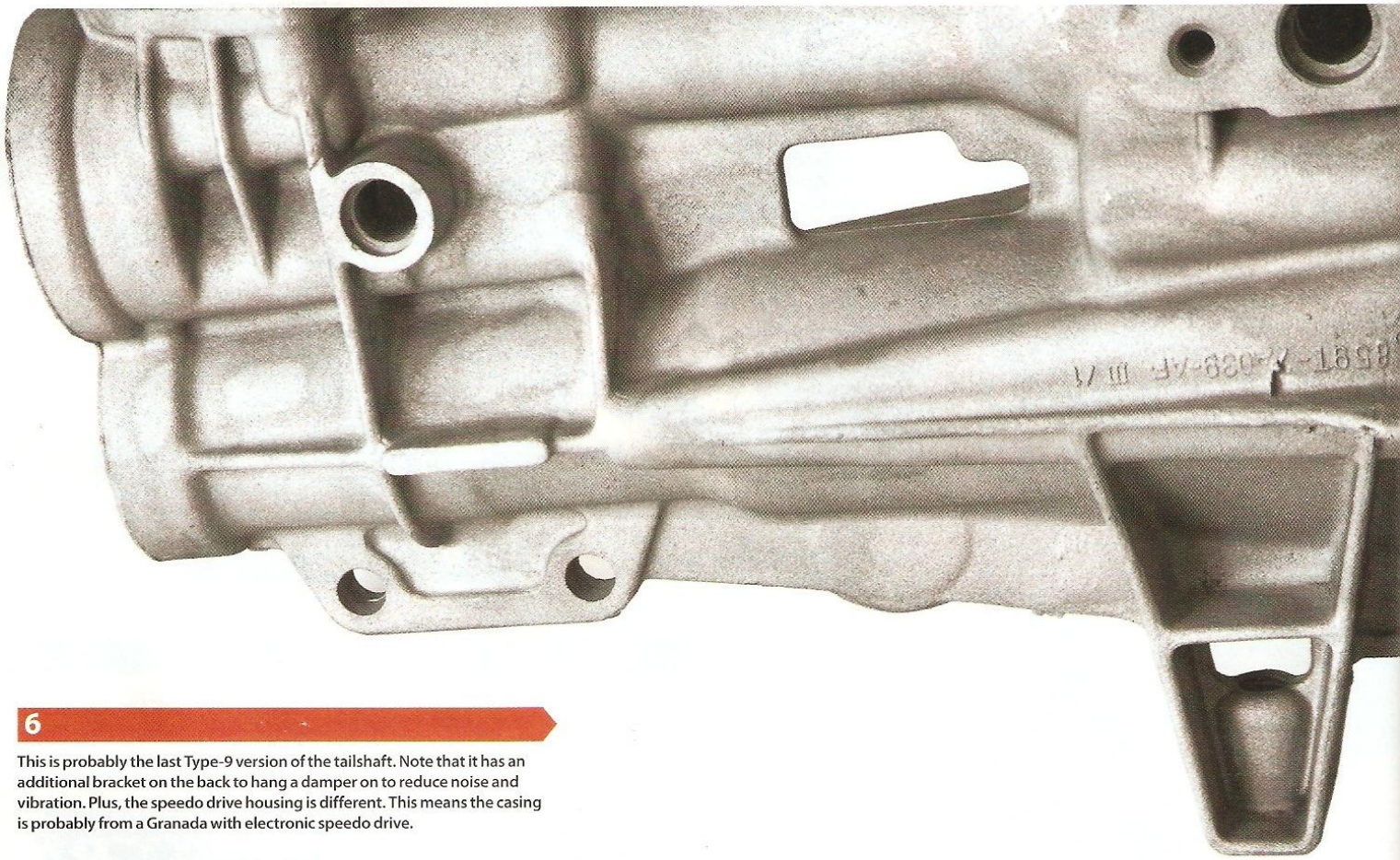
You can see it in more detail in here, whereas...

4

...it's missing here. Note the mechanical speedo drive outlet.

5

The purpose of the casting is to house this gallery, which conveys oil from the fifth gear area to the rear bush and seal, lubricating the propshaft when it's fitted.



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This is probably the last Type-9 version of the tailshaft. Note that it has an additional bracket on the back to hang a damper on to reduce noise and vibration. Plus, the speedo drive housing is different. This means the casing is probably from a Granada with electronic speedo drive.

7

Speedo drive can be in three types, all of which are either mechanical, or electronic, which the upper unit with the wires exiting from is an example of. Below this is a blanking plug, which is fitted when no speedo drive is used.

8

The three main Type-9s all have different sets of gear ratios, which are displayed in the chart opposite.

9

Overdrive gears can be altered according to the duty the box will be put to — top speed is not always king; you will need some pulling power too and for this reason the ratio can be raised or lowered.

10

All the gear kits on offer use standard-type helical gears, although BGH has some specially cut for a variety of purposes. Many also feature uprating too; mostly to the oiling, which on standard gears merely consists of a small hole for oil feed. BGH actually slots the gears to provide a greater surface area for the oil to enter and reach the mainshaft. In addition, straight-cut gears are also available, although with an obvious rise in noise level. Both Quaife and Tran-X have a wide range of standard gearsets, although both will make you ones to suit your requirements.

1 Selector Rails

The Type-9 has one selector rail, but there are three types of these according to the age of the box. The earliest, (not shown) has a blunt gearlever end and a small diameter pin for fifth gear operation. The bottom rail in the picture has a different centralising mechanism, which fits the short pin rear casing and usually has larger diameter fifth gear pins. The upper has a phosphor bronze centralising mechanism and is very reliable.

2

There's also an intermediate gear shaft with a tapered gearlever end. This is acceptable for use as long as the slightly larger-sized roll pin is doubled up with another inside it. The last though, is the best one.

Classic Ford Adaption

The inline four box is the most plentiful and the easiest to slot straight in since the input shaft is shorter. All you do is use a four-speed Sierra bellhousing, or better still an RS2000 alloy one.

However, the only problem with these bellhousings is that the corresponding RS2000 sump has a cast-in fitment for the cable clutch. And if you're not using this sump then there's a problem to overcome. Retro Ford Ltd has the solution in a readily available bracket though.

Bare in mind also that with any bellhousing swap associated with Type-9 gearboxes, always fit a new gasket and use sealant on both faces of the gasket. This will prevent leaks or water ingress, which are both common.

If you use a standard V6 box, then you will need a spacer between the bellhousing and back of the block to get over the extra input shaft length — again Retro Ford can help.

If this is the route you plan though, you can get BGH to fit a short 2.8 input shaft for your V6 gearbox but you could lose that short first gear too, or indeed uprate to a Sporting Close at the same time. In either of its series of boxes there's a heavy-duty option too. Plus, it can fit the more beefy 2.8 caged roller bearing system to the 2.0 box. Plenty of options are all there for the asking.

All Type-9 clutches were cable operated and carry a 1-inch, 23-spline input shaft.

3

28 Particularly susceptible are third and fourth gears although the first to second gear baulk rings hubs are stronger. You can see that the third gear baulk ring is far more beefy — first to second is thinner. As with most gearboxes, the dog-teeth can wear in the opposite direction to that which promotes positive gear selection — the result is the box can jump out of gear with wear. BGH's solution is to taper the teeth the other way, effectively turning them into a keystone shape, which better pulls the synchro hub into gear.

Ratio Chart

The three main Type-9s all have different sets of gear ratios, which are as follows:

Gear	First	Second	Third	Fourth	Fifth
4-Cyl and 2.3 V6	3.65	1.97	1.37	1.0	0.82
2.8 V6	3.36	1.81	1.26	1.0	0.825
Diesel	3.9	2.29	1.38	1.0	0.82

You can see that first gear on all ratios is very short. Ideally, this is where the gap needs tightening up and the way to do that is to have a longer first gear. With standard Ford ratios of course, this isn't an option.

BGH makes this possible by machining off the original first gear wheel, spline the shaft beneath, then fit and secure a longer ratio onto it, with corresponding locating splines. By doing this, BGH can offer two main sets of ratios for both series of Type-9 gearboxes. The first, known as either the 2.0 or 2.8 Long First has the aforementioned modification with a 2.98:1 or 2.83:1 first gear, according to box type. The rest of the ratios are the same as standard. The modifications to first gear therefore bring the following ratios closer together.

The other range, known as its Sporting Close, has the following ratios:

Gear	First	Second	Third	Fourth	Fifth
2.0	2.92	1.86	1.295	1.00	0.85
2.8	2.66	1.75	1.26	1.00	0.84

On these sets, the input constant mesh gears are altered from standard, and on the 2.8 Sporting Close, third gear on the lay gear is altered as well to bring them closer together. There is also an option of different fifth gear ratios on both sets of ratios too.

Clutch

Not really many problems here — there's a massive range of standard and heavy-duty clutches available to cope with any level of power and application. Suffice to say a standard Pinto clutch will take up to around 130 bhp before you need to think about upgrading it.

BGH doesn't recommend un-sprung, multi-plate or paddle clutches though, since they destroy gearboxes rather quickly. Quickshifts aren't advised either since they speed up the change, promoting short baulk ring life. Remember too that the input spline is 1-inch with 23 teeth — you'll need to remember this if you're backing your Crossflow with a Type-9 because the standard clutch is unsuitable.