GOINGINCIRCLEZ GUIDE No. 5

Tyco's Big Alco: A Tale of "Super" 630's

Several months ago I received a first-edition Alco 630, which only seemed to open a pandora's box of questions and speculation. Those original releases were rare birds in their own day – quickly revised to other drives and shells – and 30+ years later, there's no telling what any example has to say. Such as the one I received: with a shell that didn't fit, and other strange details, it begged for more digging. If only another one would turn up…

Many weeks later, one finally did!

A motley lot

A basket case with a poor acrylic paint job, it nonetheless promised to hold the answers to all the questions. And so without further ado, I present what I hope will be most of the final words about Tyco's celebrated and infamous brute: the Alco Super 630!

Origins and Catalog oddities

Tyco's 630 was first announced in the 1973 catalog, shown decorated for the Illinois Central and numbered for one of Alco's own demonstration units.

1973 Catalog Image

1973 Catalog Image

With an announced price of $18.00, no other roadnames were listed in that catalog. In addition, as mentioned on the Collectors' Resource website, the example shown in that year's catalog is an odd, preproduction example. Take note of the filled pilot, the orange roof-detail tack-ons, the lack of the long horizontal grid atop the center of the long hood, and the oddly bent handrails on both sides. Another point of interest is the nose, which is shown with a large herald applied to a smooth flat surface without the grabirons that were added to initial production runs. Additional inspection of the catalog photos reveals that the drive is not installed in this loco – as we'll see, the driveshafts extended from the fuel tanks to the trucks, but are not seen above. Speaking of trucks – they have very nicely detailed sideframes, but production examples are known to be black, not silver. Finally, while Illinois Central *GULF* 630's in all phases are common, no production Illinois Central example is known.

To see what the real production Tyco 630's actually looked like, you would have to wait for the 1974 catalog:

1974 Catalog image

The stock# examples from the 1974 catalog are very similar to 1973's prototype, but have the production open talgo pilots and nose grab irons. Interesting paint details on the catalog examples are the Santa Fe's yellow numberboards and nose stripe, and the D&H's road number location, plain herald decals, and gray chassis. (Confirmation of these details on production examples is desired!)

In addition to the examples shown above, Chessie System was also offered in this revision - I have personally seen one, several years ago. But another different, and much more interesting Chessie System 630 is shown in the very same 1974 catalog!

1974 Catalog (pg. 9) image

Keen-eyed observers may note the paint on this Chessie unit is different – the vermillion stripe is thicker and lower on the carbody, and the reporting marks are larger. Also, the nose grab irons have disappeared again. But look closely at the trucks: what you are seeing is a prototype of the under-development PowerTorque Drive, and its infamous fake "vampire" truck sideframes! No doubt painted stealth black in order to match the appearance of the trucks given to the first-edition offerings, the PowerTorque would not appear until 1975 – after another full year had elapsed:

1975 catalog image

So, a mere two years after introduction, the original 630, with its Rivarossi drive and wonderfully rendered trucks, is gone - never to return. But the story doesn't end there!

I have 4 examples of the Tyco 630, all different in various and subtle ways. I now believe I have a good chronological handle on the revisions, so I present them here. To borrow a favorite railfanning term for the sake of brevity, I will henceforth refer to the different versions as "Phases".

Left to right – Tyco Super 630 Phases I, II, III (shell), and IV

Phase I (1973-1974) Body

A classic case of taking what you can get, this poor refugee example came to me following what I can only imagine was a rough life. The badly-airbrushed tan acrylic paint was easily removed with alcohol… only to reveal a coat of enamel white… over a coat of enamel black… over the original factory Illinois Central Gulf paint! While it was necessary to remove these coats of paint to clean up the fine detailing, it was not possible to preserve the original finish. Fortunately, underneath all the muck, the unit is definitely a fine candidate for refinishing.

The most important things to note about this shell are the chassis mounting holes. There are three on each side, and one on the rear nose. They are narrow and cut low on the body. These spotting features appeared ONLY on the Phase I 630, to mount the shell to the Rivarossi-produced chassis and drive.

The short hood offers some interesting details as well. The pilot opening for the talgo couplers is smaller – and if you look closely, you can see traces of MU cables molded above it! Phases II thru IV have a larger opening that results in the loss of this detail.

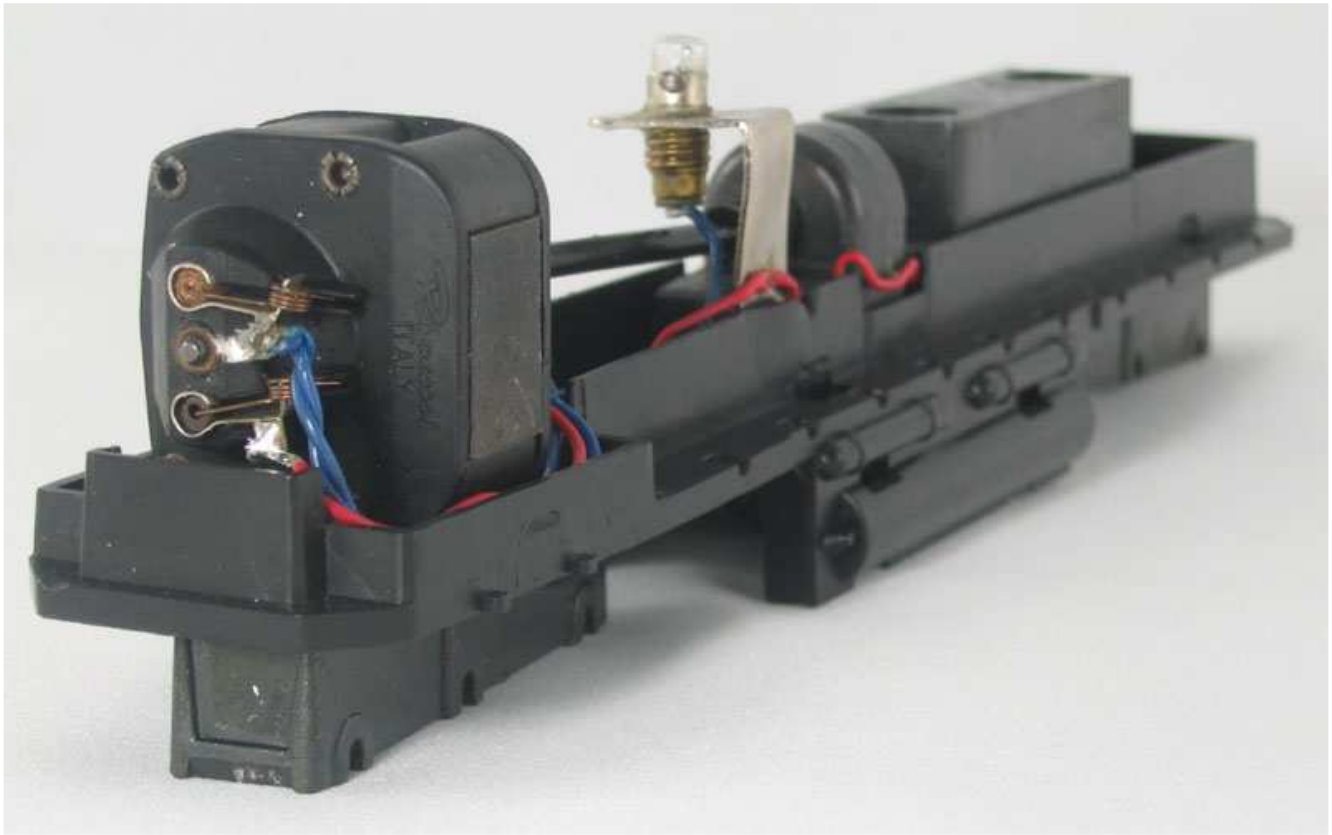
By far, the most interesting thing about the short hood nose is the large circular depression where a grab iron should be. When I was stripping the paint, I was very surprised to find that the nose herald in this location was… a paper sticker!

Now, consider this for a moment: We all know that Tyco had no issues painting and printing over the myriad of hinges, handles, louvers, and other details on the sides of the loco. The quality might not have always been great, but it was accomplished nonetheless. So why the consternation over a nose grabiron? Why use a decal at all? Certainly they deserve a measure of credit for making a recessed area to account for a paper sticker's thickness, so that it might sit flush. That's some real attention to detail! But then, of the original roadnames, only the ICG and Chessie examples could use this shape effectively!

Certainly, this is an interesting nuance to ponder – consider the discussions that the tool-and-die makers must have had with the sales, prototyping, and production departments…!

Phase I Drive

Phase I chassis, with truck drive shafts removed



Close-up of Rivarossi motor

As noted above, when developing the Super 630, Tyco eschewed its own venerable Mantua-motor drive system in favor of a Rivarossi-supplied frame, motor, and drive. This rather elaborate mechanism featured 3 drive shafts by way of driving each truck from a center differential connected to an open-frame motor above the chassis frame.

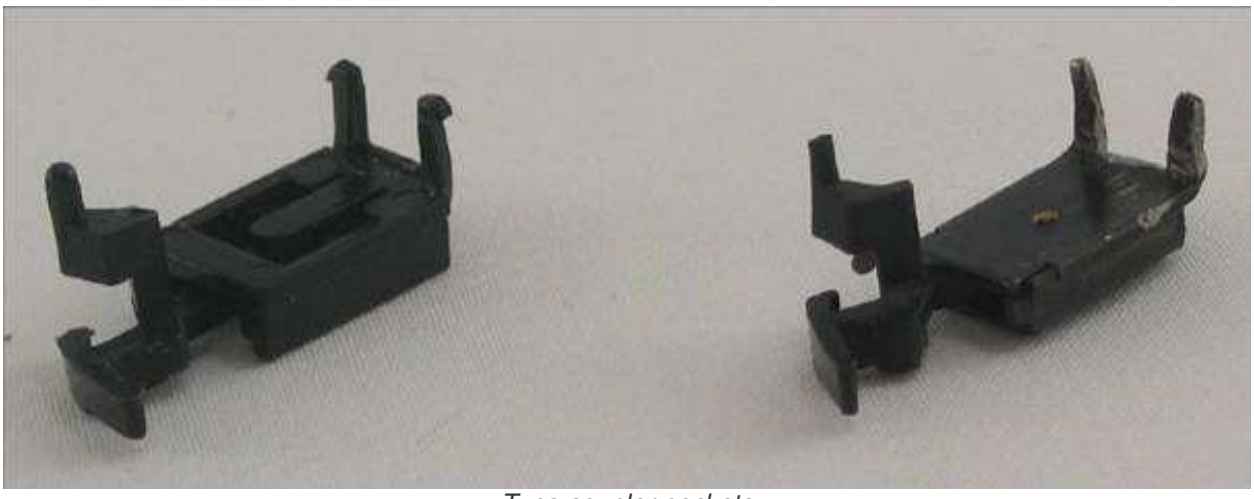
The frame is the only one ever found on a Tyco diesel that is solid, full-length, and runs nose-to-nose. Each truck has gears on each of the outboard axles; a longtitudinal drive axle with two worm gears spans the top of the truck and connects it to the differential driveshafts. The center axle is gear-less, and is sprung against a pair of brass pick-up shoes. Wheels are brass on one side, plastic on the other. In this sense, taking both trucks into account, the loco only features eight-wheel drive and two-wheel pickup – an Achilles design element.

Tyco does take credit for a couple of of exotic parts that only appear on this unit: the trucks and the "donut" fuel tank weight. It's amazing to see the incredible detail of Tyco's Alco trucks used here, compared to the woefully realized versions used on the PowerTorque and MU-2 drives.

Tyco also adapted a unique separate draft gear system for a couple years, starting with the Phase I 630. Previously, all diesel power had featured Mantua's drive system, which used a truck-mounted coupler with a draft gear box cast onto the truck frame. The 630 was the first Tyco offering to depart from this drive; the Mantua drive was never used. To mount the couplers to the new truck and drive system, the truck caps have a slotted pocket at the end:

Phase I Truck Sideframe drive cap. Note the pocket on the right end.

…into which one of the following, separately applied coupler draft-gear boxes were installed:



Tyco coupler pockets

Note the two different styles. The left one is a Phase II, the right is a Phase I. More on that in a bit.

Phase II (1974-1975) Body

Phase II 630, in first-variant Chessie paint.

Outwardly, the Phase II 630 has few detail changes, for details' sake. But the changes under the hood are most telling! Gone is the exotic and sophisticated Rivarossi drive, which was only useable in a model of this size. Taking its place, as first spied undercover in the 1974 catalog, is the first appearance of the infamous PowerTorque drive, in the Phase II 630.

PowerTorque was Tyco's own exclusive take on the venerable power-truck concept, one that Tyco boasted was smoother and more efficient than the previous Mantua MU-2 drive. Perhaps most importantly, it could be adapted to virtually any and every locomotive Tyco sold, regardless of size.

While it's hard to tell in the photos, the pilot openings are larger on this Phase II. The opening is enlarged at the top, thus the MU hoses disappear from this point forth.

In order to accommodate the new PowerTorque drive, the holes in the side of the shell change. Four or more holes on the side mean the shell was made for a PowerTorque. The hole that existed at the rear of the long hood is also gone; the original three side holes were filled in and four new ones added. The most noticeable change is the one under the cab – which moves forward into a step battery box.

Note how the first double-door's hinge does not go to the bottom…

Under the cab window, Tyco did manage to add the center hinge in place of the old mounting hole… but behind it, under the air filter grilles, they filled the hole but forgot to extend the hinges to match.

Across the line, early examples of PowerTorque-equipped diesels still included the standard "Mantua – Tyco" metal fuel tank. To add this to the 630, Tyco modified the shell to include a pair of threaded lugs in the center, to accept the tank mounting screws. Since the Phase I fuel and air tanks were cast as part of the drive-frame, Tyco created new, larger slip-on tank castings to serve this purpose.

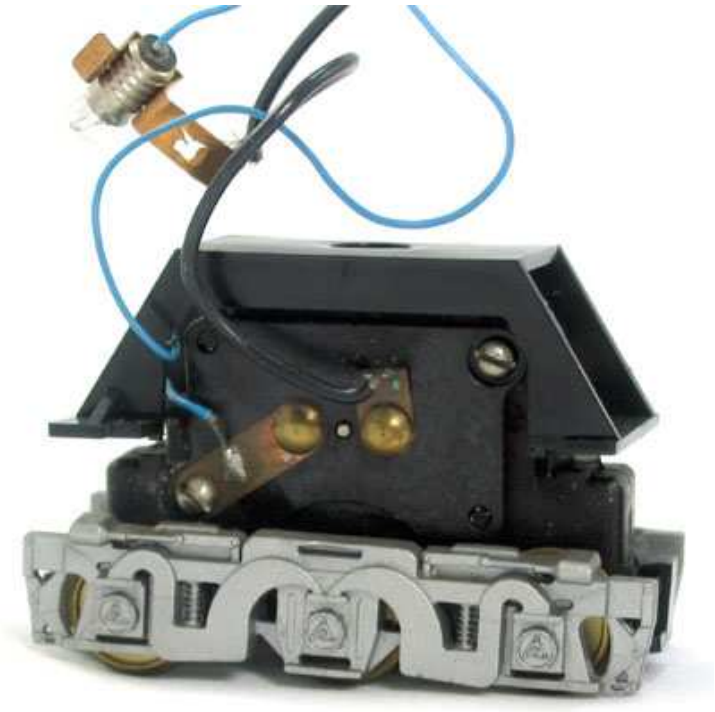
PowerTorque 630's were made for nearly 18 years! So what makes for a Phase II example? Very simply: a screw-in tank, powertorque shell, WITH nose grabirons. As evidenced by the PT prototype shot in the 1974 catalog, Tyco had already reverted to a lack of nose grabirons altogether… so the Phase II is almost as uncommon as Phase I. Closeup examinations of the 1975 Catalog's 630 assortment reveals a lack of nose grabs – so they were only available for a short two years!

Phase II drive: The Original PowerTorque

Tyco's PowerTorque drive was unleashed upon the world in 1975, and served the line until its end in the early 90's. While the basic mechanism did not change much during its 18-year run, the first couple years were in fact different.

The PowerTorque drive is basically a 3-pole armature in a cast metal housing. The armature drives a large, thin gear that is connected directly to a geared dummy axle; the two outboard axles are connected via idler gears and equipped with traction tires on one side. The other side provides electrical pickup on one pole, with the trailing dummy truck providing the other. The PowerTorque was designed with a "Function leads Form" philosophy: not a single prototype truck sideframe would fit accurately, and even the old Mantua sideframes wouldn't work, so new off-scale ones were created.

The original, "Mk1" PowerTorques do have some unique spotting features:

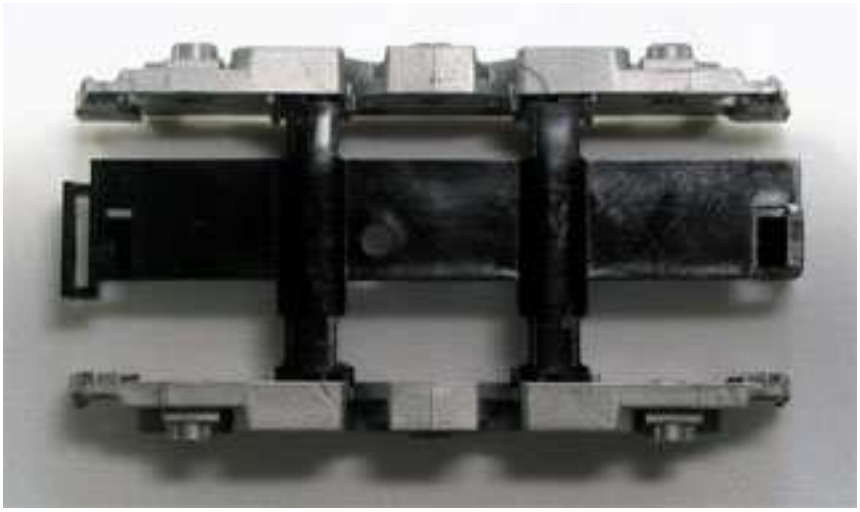


"Mark I" Powertorque motor truck, with closed cover

Key among them is the sealed, enclosed motor truck. Apparently heat became an issue, as the cover plate was quickly revised with ventilation slots and holes as seen on Phase III and other diesels - examples so-equipped are infinitely more common.

Powertorque drive (electrical) pickup truck

The trailing dummy and electrical pickup truck is also different. While it at first appears to be an empty motor truck housing, it's actually a unique piece. Later revisions have an open, angular framework appearance.



Early Powertorque truck sideframe cap, with slot for removable coupler pocket

Finally, the truck caps for Mk1 PowerTorques are unique. While most PowerTorques are found with trucks retained by three screws, the early versions only had one. And it was hardly required, as the truck was designed to snap securely onto the motor and dummy housings.

Also note the slotted pocket, similar to that found on the Rivarossi-Tyco Phase I 630 trucks. The separate draft-gear coupler boxes installed here. Since two styles of this separate coupler are known, as shown earlier, the following can now be surmised: The metal one, which bears significant resemblance to earlier Mantua MU-2 pieces, but is not known to have been used on the older diesels,

probably came with Phase I 630s. Phase II's used the plastic version. While these parts were easily lost and broken and can be scarce today, it should be noted that the Mk1 PowerTorque has also been found in numerous blue-roof "Spirit of '76" Alco C430 models – the first in that series to switch from the MU-2 drive.

Operationally, there is a huge distinction between the Rivarossi and PowerTorque drive units. One interesting feature is the "suspension" that exists on a PowerTorque. The Rivarossi frame is rigid and has virtually no play from side to side, nor inclination for climbing grades. By contrast, the PowerTorque seems to "bounce" freely, with very a fluid rocking motion in all directions. One can easily see how this would have been operationally preferable for the rough and sudden trackage changes prevalent in most train sets of the day.

So – given nose grabs and an early Mk1 PowerTorque, you have a Phase II 630!

Phase III (1975-1976) *SHELL SHOWN*

First off, the drive shown on this example is NOT the correct one! This example was the gift that opened the Pandora's Box, so I intend to keep it that way. However, the shell has all the answers here.

You can see it is similar to the PowerTorqued Phase II, but… it does NOT have grab irons on the nose!

This change was made in the mid-1970's, and the 1975 catalog evidences this feature.

I personally expect, but have not yet verified, that some of the running changes made to the PowerTorque motor would be found in Phase III, as they are definitely in place from 1977-1990.

Phase IV (1977-1990)

Rounding out my selections is a nice Phase IV example:

Operationally, it's the same as a Phase III, with one major difference: the screw-in fuel tank is now gone. In its place is the infamous snap-in tank, of a design that would be adapted to the rest of Tyco's diesel offerings. The snap-in tank can be immediately spotted by the 2 new extra holes in the shell, immediately above the tank itself, bringing the total number of holes to 6 on each side. The snap-in tank can be rather difficult and aggravating to remove, but apparently did offer the cost-savings of not having to use screws and cast weights.

This particular example also has a short-lived added feature: Directional Lighting. For a short time in the late 1970's, Tyco wired two headlight bulbs into some Super 630's and GG1's. The bulbs were made directional by adding a diode in series with each one. While directional lights are a common feature in modern models, in the 1970's this was a rare and noteworthy option.

Revised, Powertorque "Mark3" drive.

By this time the PowerTorque drive has been revised to include the ventilation holes, direct-mount headlight, and revised dummy truck casting (representative example from a C430 pictured). There is another "stepping stone" PT revision I have seen, in an F7, between the Mk1 and the version shown above, but at this point I don't feel it is worth documenting.

So, in 5 short years, Tyco's Super 630 saw 4 shell revisions and 3 different drives! That's a lot of changes for what was essentially their flagship, exclusive model.

Fuel tanks, top to bottom: Phase I, Phases II and III, and Phase IV

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Comments, corrections, submissions and other communication is welcome: goingincirclez@gmail.com