

The CircuitousRoot Part Symboling System

Open Source Hardware by
CircuitousRoot

Introduction

Everyone thinks that they know what a “part number” is, but frequently part numbers aren’t actually numbers. They can have letters and punctuation in them. It’s best to call them “part symbols.”

Part symbols can be arbitrary or they can reflect some underlying system.¹ For discussions of this subject and various historical part symboling systems, see the CircuitousRoot Notebook “Part Symboling Systems” at:

<http://www.CircuitousRoot.com/artifice/symboling/index.html>

The Lanston and CircuitousRoot Systems

For CircuitousRoot, I’m adopting a system based on that developed for the Lanston Monotype Machine Company. I find it to be a useful system in its own right, and it also allows me to incorporate Lanston part symbols directly into my own work. (I hope that this will be especially useful for Lanston machine TC, the Monotype-Thompson Type-Caster.) But please note that the CircuitousRoot system, while based on the Lanston Monotype system, is not identical to it.

This system employs an “infix” notation in which a basic alphabetic code is prefixed and suffixed by numbers and, sometimes, further letters. As an infix notation, it has the disadvantage that part symbols don’t sort in proper ASCII order - but today computer interfaces refuse to sort in real ASCII order anyway, so that probably doesn’t matter.

The Machine or Series Code

When Lanston Monotype began using their system, they were documenting an extremely complex machine (the Monotype Composition Caster). So they divided it into large sections and assigned letters to these. Later, after they began manufacturing other machines, they extended this system by assigning letter codes to these simpler machines in their entirety. Thus, ‘A’ designates a certain portion of the Monotype Composition Caster, but “TC” designates the Thompson Type-Caster in its entirety.

I’ll adopt this system wholesale (thus, my “TC” is also the Thompson), but extend it. In particular, I’ll extend it to include what I’ll call “series” of related devices or objects. So “Series HM” will include all type founder’s Hand Molds, Series TF will be Type Founders’ tools, Series TM will be Type Makers’ tools (for punchcutting, patrix cutting, matrix making, etc.) The document 0ZZ7 “Series and Machine Code List” identifies all of these codes.

¹ This system need not be known to be useful. Few Linotype mechanics know that in the Mergenthaler Linotype part symbols, which consist of a letter (sometimes two letters) followed by a number the letters refer to the original drawing sheets in which the parts were documented in very early parts lists.

The Device or Component Number Prefix

A number prefixed to this machine/device code indicates either a specific component (such as an assembly or complex part) within a machine or a single device within a series. This is a logical designation rather than an ordering code for a physical piece.² So for example:

- 18TC, the Friction Wheel of the Monotype-Thompson Type-Caster, or my own presumably interchangeable version of this part
- 8TF, a Type Founder's Type Body Gauge (set)

The Part Number Suffix

A number suffixed to this machine/device code indicates an individual part within the complete unit. So for example:

- 18TC2 Friction Wheel, ring (fiber)

Special Situations

Logical Designation vs. Ordering Code

A prefix and code by themselves (47TC, 8TF) indicate the part at a logical level, but this is not an ordering code. (I'm writing the documentation as if this device were in full commercial production even if it is not.) To turn it into an ordering code for the entire bunch of stuff that you'd like to receive in a box to use, prefix an 'X'. This 'X', if present, will always be the first prefix (coming before the revision prefix; see below). Thus:

- 8TF Type Founder's Type Body Gauge Set, Double-Ended, considered abstractly
- X8TF Ordering code to specify that you want the exact Type Body Gauge Set described

Components which Must Be Supplied as a Unit

Sometimes groups of parts must be supplied (or made, if you're making this yourself) as a complete group with the individual parts hand-fitted to each other. It is not possible, therefore, to order a single part from such a group because it will not necessarily be interchangeable with any existing part. True interchangeability of extreme-precision components is often prohibitively expensive. Both Monotype companies had components that they would only supply as completely assembled hand-fitted units. An example would be the mold for the Thompson Type-Caster. Monotype practice was to repeat the machine code (or its first letter) as a final suffix. Thus:

- 42TC1T Mold, Back Wall

² This differs from Lanston Monotype practice. They used part '1' for this. So what I would call 18TC, the Friction Wheel as an entire logical assembly, Lanston Monotype calls 18TC1. If I were actually to make a Thompson Friction Wheel (I haven't), I'd designate my as logical 18TC, but when I'm referring to the Lanston Monotype part when writing documentation about the Thompson, I'll use their part symbol and call it an 18TC1 (actually an a18TC1T, but we haven't got to the 'a' or 'T' yet).

They would, further, indicate by an asterisk in the parts list which specific components of the assembly had to be fitted at the factory. So you could buy a 42TC11 Screw (for the Mold Back Wall) on its own, but the 42TC2 Filling Piece for the Mold Back Wall had to be fitted at the factory.

I'll do much the same, but rather than repeating the machine code I'll just use the letter 'U' (for "Unit").³

Monotype put the asterisk in the price field of the parts price list. My parts lists generally won't indicate prices, so this location doesn't exist. If necessary, I'll just append an asterisk as the last suffix. So for example:

- 8TF4U Type Body Gauge Set, Fixed, Double-Ended, Box
- 8TF5 Box, metal bottom [may not be ordered separately]
- ...
- 8TF8* Box, Felts (set) [may be ordered separately]
- ...
- X8TF4 Type Body Gauge Set, Fixed, Double-Ended, Box, Complete [order this code]
[just the 8TF4U box]
- X8TF Type Body Gauge Set, Fixed, Double-Ended, Complete [order this code]
[the entire 8TF set, including the box]

Revision Codes

Nothing is perfect, so revisions must occur. If a part is revised to the degree that it no longer fits where the old part did, then it should be given an entirely new part number. But if the revision is minor, it may be indicated by a revision code in the existing part number. Lanston Monotype did this by prefixing a lowercase letter. If particular part revisions were specific to particular machines, the relevant serial numbers were listed in a note. I'll do the same. So (using a Lanston example):

- 11TC Clutch-Shifter-Rod Latch [original part, machines 10,0051 - 10,299]
- a11TC Clutch-Shifter-Rod Latch [first revision, machines 10,300 -]
- Xa11TC Clutch-Shifter-Rod Latch group [ordering code for revised component]

Standard Parts (Lanston's "Classification Numbers")

Frequently, individual parts happen to be standard components which may be purchased. It is useful to indicate this in the parts lists. There are in principle four ways to do this.

First, you can simply call out the part by specifying it completely, without assigning it a part symbol. This has the disadvantages that it doesn't quite fit with the scheme and there is the risk of identical parts being called out differently at different times.

Second, you may specify it once and use that same part symbol everywhere. Mergenthaler Linotype did this.⁴ This has the advantage of simplicity, but the disadvantage

3 Except when I'm referring to a Monotype part. In those cases I'll continue to use the original Monotype symbols.

4 They also compiled tables at the end of the parts books which listed each of these parts grouped in logical order by type, size, etc.

that the part symbol no longer indicates function (but for Mergenthaler's system it didn't anyway).

Third, you can specify a unique part symbol for each use and then indicate with some other code that this part is a particular standard component. Monotype adopted this system.

Lanston Monotype⁵ called the code a "Classification Number." It was constructed on a more-or-less standard scheme, where the first digit of the number indicated the kind of component ('1' for bolts, '3' for nuts, etc.) and the rest of the number was just assigned sequentially. This Classification Number was shown in the parts list as a bold-face item in the middle of the line (between the part symbol and the price). So:

- Foot Plow Bracket Screw, long... **233** ... a16TC4 0.08
- 72-Point Gauge Screw ... **233** ... 21TC3 0.08

(Unfortunately, the documentation specifying exactly what a screw 233 was does not survive. But still this information is invaluable in maintaining the Thompson, because if you happen to have one original part, you now know with certainty that other parts bearing the same Classification Number are in fact identical to it.)

Adopting the Lanston Classification Number scheme here would have two disadvantages. The first is the disadvantage inherent in the system: that it is only partially systematic. So if you have bolts 110 and 111 which are in some logical order, someday you'll need a bolt 110 1/2 between them. The second disadvantage is that if this system is adopted here it should incorporate by reference the entire existing Lanston system. But we don't know the actual values for many of the parts in that system, so it is likely that in adding some new part we'd duplicate an existing one. This would defeat the purpose of the system.

The fourth option is to use some external standard for "Classification Numbers." Unfortunately, I do not know of any such standard.

There is an additional complication here which has to do with practicality vs. authentic practice. This happens for the most part with screw heads. Traditionally, through the first half of the 20th century, machine screw heads were of the "cheese head" form: simple disks, sometimes slightly domed. These are no longer commonly available (the closest approximation is the "fillister head" screw, but these are usually more highly domed).

So if you've just built a reproduction of an 18th century type founder's hand mold, and have chosen to use standard modern screw threads (a perfectly valid choice), do you just use modern socket-head cap screws? You probably shouldn't - it would just look wrong. But it might be useful to know that you *could* (especially for prototyping and testing). If you're repairing a Thompson Type-Caster and you're just trying to get type out the door, should you do the same? Maybe; it's up to you.

[NOTICE: I MAY CHANGE THIS]

I do not like any of these options. So what I'll do for now is this: When an individual part exists which might be a standard manufactured part you could purchase, I'll

1. Assign it a systematic part symbol within the device, machine, or assembly
2. Call out the technical specifications for that part in the parts list

5 I'm less familiar with English practice, but I cannot see this system in use in the Super Caster parts list.

3. Record this specification in a single (CircuitousRoot-wide) list of Standard Parts

So for example: [TO DO]

Although I generally try to avoid mentioning specific companies in this documentation, I may also indicate the McMaster-Carr part number.

Symbol Features Not Used

The Monotype Corp. Ltd. (UK) employed the suffix “*assd*” (for “assembled”) to indicate units which could be ordered as complete assemblies for convenience, if desired, but which were not hand-fitted Units. Since I’m not gearing up for quantity production, this seems unnecessary here.

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<http://www.CircuitousRoot.com/oshw/index.html>

See also the printed/printable CircuitousRoot document 1ZZ0, “Licensing Terms,” which is available with the distribution of these hardware designs.

Contact

I may be reached at:

Dr. David M. MacMillan
2526 Wearne Road
Mineral Point, Wisconsin 53565
USA

or via e-mail at: dmm@Lemur.com

I prefer not to receive telephone calls. Thank you.

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- 2 2017-12-31. Minor fix.
- 1 2017-12-30. Initial version.