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Using UPC ¹ as a Unique Identifier for Mechanical Content The Challenges and Choices

The Industry Need for a Unique Identifier

Of the major trades, the mechanical contracting industry has, by far, the largest number of individual manufactured products to coordinate and manage in their daily business process. The number of individual sku's and potential configurations of individual products combined aggregates into the millions of products. These products are represented in both virtual and real forms for estimating, pricing, managing, purchasing, and installation purposes. With such a large array of individual items used within multiple project phases and software processes, there has been an ongoing desire and need within the industry for establishing a unique identifier to consistently represent mechanical objects as they pass from phase to phase and from software application to software application.

The benefits to have such a unique identifier within the mechanical industry are 1) consistency of data between manufacturers, suppliers and contractors, 2) reduced human errors that occur as data passes between project stakeholders and suppliers, and 3) enabling process and digital automation throughout the life cycle of the project. Without a unique way of identifying mechanical products, virtual or real, end users, such as contractors are left to either manually re-enter the data between project phases and software applications, or to forego any potential for automated processing between departments and stakeholders.

One Alternative, UPC

At first glance, using UPC as a method for uniquely distinguishing between the millions of mechanical manufactured products seemingly has potential. However, after an initial review of using the UPC Key it doesn't take long to recognize a combination of factors that impede the use of UPC numbers as a unique identifier at the contractor level in the trade. Consider the following:

¹ UPC, Universal Product Code (as defined in Wikipedia) is a barcode symbology (i.e., a specific type of barcode) that is widely used in the United States, Canada, the United Kingdom, Australia, New Zealand and in other countries for tracking trade items in stores

1. Many manufacturers have not and may never implement UPC numbers

Welding Fittings, Specialized High Purity, Ductile Iron, exotic alloys and other manufacturers do not use UPC's. Many others that produce made-to-order systems or items that require additional add-on components will never contain a unique UPC for every potential assembly.

2. Manufacturers do not follow UPC guidelines – Change UPC's

Manufacturers, for a myriad of reasons, are continually changing UPC numbers. Products are released into the market and then, as a result of poor planning or some other reason, a new UPC is created, while the manufacturer part number remains the same.

3. Merger and Acquisition - UPC number changes

As frequently occurs within the industry, one manufacturer is acquired by another and often, as a result, UPC's are re-issued. The confusion and mismatching created under these circumstances creates potential for human error and errors in automating exchanges between software applications.

4. UPC number fabrication

Many industry information providers base their systems on UPC numbers. In cases when a manufacturer does not assign a UPC number to a product, product set, or portfolio of products, invalid UPC numbers are created by these individual information sources. This has and will continue to create confusion and inconsistency.

5. UPC number updates from information source to new manufacturer issued UPC's

It is almost impossible to ensure that systems are updated with new UPC's once a manufacturer issues or changes them. In the case when an information provider replaces an old industry "made-up" number with real ones, significant problems occur because the old numbers will remain in many systems for years to come. Other issues within this category include users who skip updates and old users who no longer subscribe to an update service. As a result it is almost impossible to guarantee that all systems can communicate and exchange data using a UPC.

6. Secondary system updates

Contractors often have a variety of software applications each utilizing their own library of mechanical content within their application specific databases. For example, a contractor may use software applications each providing excellent domain-specific support to individual departments such as 1) estimating, 2) virtual design, 3) purchasing, 4) general ledger/back office, etc... Many of these software providers rely on information providers to build out their initial database content for their "off-the-shelf" products. However, where the issues start are that many of these software providers do

not provide continuing maintenance. They rely on information providers to maintain prices in their databases, but often do not include descriptive fields such as UPC numbers.

Another Alternative, The HPH Item Code and UPC

UPC numbers are stored in the Harrison Publishing House (HPH) repository ONLY if they have been assigned by the actual manufacturer of the product. HPH does not fabricate UPC numbers nor are they used as a key for HPH products or services. HPH prefers to store and use the manufacturer's own database unique keys for updating purposes. However the UPC field is verified during the updating and internal proof reading process executed within HPH's content team.

HPH established the "HPH Item Code" more than fifty (50) years ago as a unique identifier key and data management tool that was both extensible (unlimited usage) and "open" (shared across multiple software tools, software publishers, contractors and wholesale distributors), only limiting its usage by a set of criteria designed to manage the integrity, confidence and consistency of the HPH Item Code through the test of time. As a result, the mechanical industry is now rich in HPH Item Code usage throughout the multiple domains described above. This has created a de facto standard unique identifier key that empowers the sharing and exchange of digital data during the phases and multiple disparate software libraries used throughout the life cycle of a mechanical contractor's building project.

HPH Item Code Structure

The HPH coding structure uniquely identifies each item supported in the master HPH database repository. The coding system was developed in the mid-1960's in conjunction with the American Institute of Supply Association (AI). At that time, HPH and the industry realized that computers were going to significantly impact the business operations of the trade. The Industry Coding System was industry's first attempt to develop a universal standard for product identification for use in electronic data processing.

HPH continues to use and maintain the coding system created by the industry. It allows HPH to 100% positively identify items. Because HPH does not change update codes, the HPH code structure avoids the many shortcomings and problems associated with other coding systems.

The HPH Update Key/Code is comprised of the following four components:

Group	Mfg	Item	Suffix
012	NI	0570	D
Wrot Copper Fitting	NIBCO	1/2" 90 Street Elbow	

Group Number

This is a three digit number used to define the type of commodity group assigned to items. The materials/parts in the plumbing trade were logically classified and assigned a Group Number. For example, all Pressure PVC Plastic Fittings are in Group 017 and all Hangers are in Group 034. Therefore, manufacturers with broad product lines will have multiple group assignments.

Manufacturer ID

The Manufacturer ID is a two letter designation identifying the producer of items.

NOTE: To preserve the integrity of the coding system, the original codes assigned to items are not changed when companies are purchased or consolidated. For example, George Fischer purchased Sloane, but the update codes for the former Sloane items maintain the SL (Sloane) Manufacturer ID.

Item Number

This code component is a four digit number assigned to individual parts within a group. When possible, commodity items are assigned the same Item Number for all manufacturers. For example, a standard 1/2" Wrot C X C 90 Elbow has a code number of 0010 for Elkhart, Mueller, and NIBCO.

Suffix

The final component of the code is a one letter Suffix. Although the Suffix is rarely used and is normally a blank space, it is included as part of the code. This will allow for future additions of similar products to the database. The complete Update Key/Code is unique. No two database items will have the same code. The fact that the HPH Item Code can be used as a unique key allows HPH to develop, distribute, and maintain the industry's most reliable databases.

HPH Item Code Benefits

As a unique identifier there is not a more suitable system available today than the HPH Item Code for managing the exchange and sharing of digital data through the many phases, disciplines and stakeholders (i.e., manufacturer, supplier, and contractor) engaged in the commercial building process.

The list below represents some of the major benefits.

- 1. Widespread Use**

The HPH Item Code has been deployed in plumbing and mechanical databases throughout the country for many years. Software providers use this as the basis for their databases because of its stability and reliability

- 2. True Unique Key**

Individual items are assigned a code that no other item will ever have

- 3. Codes Never Change**

Once assigned, a code is never changed

- 4. Controlled by a Single Source**

HPH is the sole entity responsible for the codes. Therefore, with clearly defined and adhered to rules, the code integrity can be assured

- 5. Independent of Manufacturers**

The coding system does not require any effort or information from manufacturers

- 6. History/Implementation**

The code has been in use for over five decades

- 7. Logical Systems**

The coding system is based on a group system that logically places similar items together