ASME B18 Digital Fastener Library
The first ASME standard represented digitally
Content

- Who is PARTsolutions?
- Introduction of the ASME new PIN system

- Capabilities and Benefits of the Digital Library
  - Easy specification of fasteners based on all the possible characteristics
  - Automatic generation of 3D model.
  - Automatic generation of the new 18 digit PIN number for the fastener defined.
  - A PIN lookup utility.
  - A PIN converter from old PINs to new.

- Deliver Your products in the same type of Digital Product Catalog for your customers
  - Obtain new sales leads, new customers

- Utilize PARTsolutions as a way to consolidate, classify, and manage all your standard parts
PARTsolutions is the leading provider of electronic parts management systems, including part cataloging and digital part libraries.

We are focused on reducing development costs and time to market for supply chains by streamlining the standard, off the shelf part process.

Key Focus Areas
- PARTsolutions Enterprise Parts Management
- eCATALOGsolutions – Digital catalogs for component part manufacturers
- Industry Standards – Digital mastering & delivery of industry standards

We have partnered with ASME to represent the B18.24 standard digitally, using the same technology used to deliver digital product catalogs and to manage standard parts in large enterprises.
Introduction

What is ASME B18.24?
- A numerical system for identifying fasteners, and all their characteristics
- It supercedes B18.24.1, B18.24.2, B18.24.3,

When is it effective?
- ASME B18.24 was approved in April 2004, and is now in use
- Released in printed form in June 2005
- Adopted by DOD in August 2005

What is the Digital Fastener Library?
- A partnership between ASME and PARTsolutions has resulted in ASME B18 being represented in a Digital form, as an interactive software tool
- The first standard to be represented digitally in ASME 125 year history
The Digital Fastener Library is an interactive system that provides:

- Over 700 unique fastener types
- Up to 500 different configurations per type
- All the ASTM material and heat treat specs

The result: Literally Millions of unique fasteners can be defined and their PIN codes generated automatically.

The Library can provide users with a native CAD model with precise PIN in virtually any major CAD system.

The Digital Fastener Library is an interactive engineering tool.
How is the library used?

The Digital Fastener Library can be used in 2 distinct ways

- By anyone outside Engineering or the CAD department, to lookup PIN numbers and let the Library display the fastener characteristics and show a 3D view.

- By Engineering to specify fasteners feature-by-feature, and let the Library produce the PINs and CAD model they need for their CAD system.

ASME B18 Digital Fastener Library
Five Major Utilities

PINlookup Utility (standalone, or feeds into fastener specification)

Fastener Specification within PARTdataManager

Material and Finish selection

Export the 3D solid model to any CAD

Export the PIN and fastener characteristics
ASME B18 Digital Fastener Library

PIN Lookup Utility

Capability
- Pin lookup utility that takes an old 24 digit PIN, or new 18 digit PIN, and automatically generates that fastener

Benefit
- Generates and lists all the characteristics specified by the PIN
- Generates a 3D model so you can “see” the fastener. Rotate, pan, zoom, measure it or section it

1. User enters a PIN
2. The library delivers the details and the model
ASME B18 Digital Fastener Library

PIN Lookup Utility

**Capability**
- Send Fastener characteristics to others
- Publish to web pages or other sources

**Benefit**
- Understand the specifications of a fastener in an easy-to-read format
- Copy/Paste PIN numbers to avoid typing errors

Sample Web page output

<table>
<thead>
<tr>
<th>PIN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN Spec</td>
<td>ASME B18.24</td>
</tr>
<tr>
<td>PIN Spec Title</td>
<td>Part Identifying Number (PIN) Code System Standard for B18 Fastener Products</td>
</tr>
<tr>
<td>Source Document</td>
<td>ASME B18.6.3</td>
</tr>
<tr>
<td>Source Document Title</td>
<td>Machine Screws and Machine Screw Nuts (Inch Series)</td>
</tr>
<tr>
<td>Unit System</td>
<td>Inch</td>
</tr>
<tr>
<td>Base PIN</td>
<td>A2ESD8</td>
</tr>
<tr>
<td>Fastener Type</td>
<td>Screws, Machine, Flat Head, Undercut, Slotted</td>
</tr>
<tr>
<td>Thread Size (in)</td>
<td>250-28 UNF-2A [ F250 ]</td>
</tr>
<tr>
<td>Length (in)</td>
<td>0.438 [ 438 ]</td>
</tr>
<tr>
<td>Material</td>
<td>Carbon Steel</td>
</tr>
<tr>
<td>Material Spec</td>
<td>SAE J 429 - Grade 2 [ WA1 ]</td>
</tr>
<tr>
<td>Finish</td>
<td>Cadmium Plate</td>
</tr>
<tr>
<td>Finish Spec</td>
<td>ASTM E 766, Type I, Class 5 [ B4 ]</td>
</tr>
<tr>
<td>Features</td>
<td>Plain End-No Additional Features [ 1 ]</td>
</tr>
<tr>
<td>ASME 18 digit PIN</td>
<td>A2ESD8F250438WA1E41</td>
</tr>
</tbody>
</table>
ASME B18 Digital Fastener Library

Define a Fastener

Capability
- Comprehensive table of fastener characteristics appropriate for each type. Automatically builds up the fastener.
  - Nominal size, thread type, lengths, tensile strengths, finish specs, material specs, all head characteristics, special end types, radii, tolerances, etc
  - ASTM material specifications

Benefit
- Easy, multiple-choice selection of characteristics needed for the fastening task at hand

ASTM Material Specifications Table – Top Level

Portion of Fastener Specifications Table
ASME B18 Digital Fastener Library

The 18 Digit PIN is Generated

**Capability**
- Automatic generation of the new 18 digit PIN number for the fastener defined.

**Benefit**
- Calculated automatically; reduces errors when trying to assemble the number manually
- PIN number is imported into each CAD system also, to ensure correct BOM and ordering.

**PIN Code Number:**
AES01CA12C25AP5A21

Excerpt from B18.24
Automatic 3D Model Generation

Capability
- Automatic generation of a dynamic 3D model of the defined fastener for visual verification. The Library can then provide a native CAD model in virtually and CAD system. Over 85 formats are possible.

Benefit
- Virtually all major CAD systems get a native model, so you get the correct, complete part in your CAD system
- The 18 digit PIN travels with the part into your CAD, so BOM and ordering are ensured

Native
- Inventor
- AutoCAD
- Pro/Engineer
- Unigraphics
- UG-NX
- I-deas
- SolidEdge
- SolidWorks
- Catia V4
- Catia V5
- ...more
PIN Converter Utility

Capability
- A converter that will take old 24 digit PINs and automatically create the new 18 digit format
- The library delivers the specifications and the 3D model

Benefit
- Eliminates the manual 12 step process using conversion tables
- Ensures accuracy
- Makes transition to the new system easy
- Generates a dynamic 3D model for visualization, and ready for import to any CAD

PIN Conversion 12-step Instructions

```
B|210NA01|CAD|16|468GA|AB|1
```

Enter cancelled 21 digit PIN

If digit 1 above = B, M, S, or T then cell A2 below has a value of B2-7
If digit 1 above = E, N, P, R, V, or W then cell A2 below has a value of B3-6

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B 2-7</td>
<td>210NA01</td>
<td>AE B03</td>
</tr>
<tr>
<td>2</td>
<td>B 4-1</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>B 6-2</td>
<td>AD</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>B 11-2</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>B 134-5</td>
<td>468GA</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>B 136-2</td>
<td>AB</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>B 137-1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
```
SEMS
Screw and Washer Assemblies

Capability
- Specify and configure SEMS assemblies
- Multiple washer types and thickness configured for each fastener type

Benefit
- Automatically creates all components necessary for SEMS
- Assemblies are read into any CAD

In the 1930’s, The Illinois Tool Works first made machines that produced these patented pre-assembled washers and screws. They’ve been called SEMs ever since.
For more information

- See the PARTsolutions/ASME Web page at
  www.partssolutions.com
  Go to: Products, Intelligent Parts Management, Content, ASME

- From the Web site, you can
  - Learn more about the product
  - See an on-line summary of the product
  - Download an order form, and order the product

- Or contact PARTsolutions and we will be happy to assist you
  - ASME@partssolutions.com
  - (513) 453-0453
PARTsolutions

- The same Digital Fastener Library technology used with the ASME library can also be used to make YOUR company’s components available digitally to your customers.

- Benefits to end users: they can configure your products, and download them into their CAD designs, ensuring your products are chosen and specified.

- Benefits to suppliers are numerous. They are summarized in the following pages. Among them, studies show that nearly 80% of parts specified in up-front design are eventually purchased.

- Learn how other companies have benefited from PARTsolutions Digital Parts Catalogs at http://www.part-solutions.com/
What technologies are your customers using?

Deliver your products to everyone

- If your target is 100% of the market, PARTsolutions is the only choice!
- CAD vendor catalog solutions offer access to that vendor’s market share only…
A single source digital master can drive several marketing and business deliverables for your company:

- e-catalog
- on-line web pages,
- print catalogs,
- offline CD catalog,

...And be integral to your Enterprise standards parts management

"Products" Pages

PARTsolutions Enterprise
- Intelligent Part Management
- anyCAD/anyERP/anyPLM Integration

Print Catalogs

Online eCATALOGS
- Partserver.com
- Customer Websites
- Listing Services
- Other...

Single Source Master

Offline CD-ROM
Levels of e-Catalogs

Migration Path – All e-Catalogs Are Not the Same

Stage IV
Full 2D & 3D CAD; Native; All CAD Systems

Stage III
Limited 3D CAD

Stage II
2D CAD

Stage I
PDF On Web

Stage V
- Full 2D & 3D
- Native CAD
- Cross Published
- Multiple delivery modes
- Online configurators

Stage 0
Paper Only

Your Digital Part Catalog

© 2006 PARTsolutions
Real-Time Sales Leads
- It is YOUR data, put it anywhere you can use it: Excel, SalesForce.com, your CRM system.....
- Send the data directly to sales or distributors for follow-up
The PARTsolutions system is the core technology behind the ASME Digital Fastener Library, and can also be the base tool for any repository of standard parts within your company, and can bring all these libraries together. Part consolidation tools like geometric search and compare, can help optimize the total parts you manage. Contact PARTsolutions or visit our Web site for more details.
Capability

- Cross database search and find
  - Keyword, versions, geometry, patterns, measurements, ERP data (price, material, ID#)...
- Version control
- Part reduction
  - Mass comparison of existing parts, business rules drive deletion of duplicates
  - Prevent duplicates from point of entry
- IN-house portal of suppliers and their catalogs
  - Ensure your engineers are all using the same suppliers and parts

Benefit

- Reduce duplication of standard parts across departments and libraries
- Eliminate the introduction of duplicates
To learn more about the benefits of digital catalogs or intelligent standard parts management, please contact us:

www.part-solutions.com

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