

# The Boeing Solid Model Library (BSML)

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Premium Partners:



Microsoft

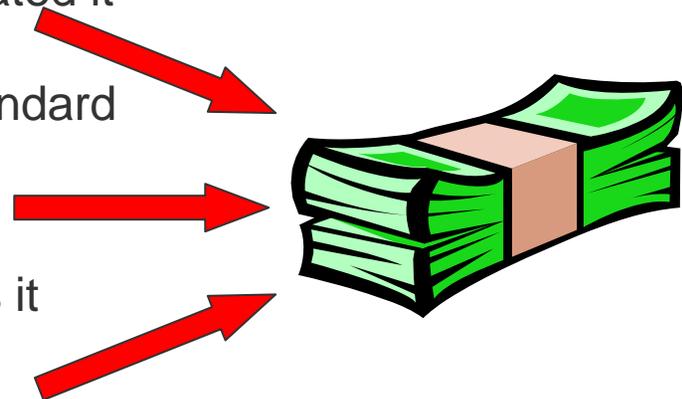
# Presentation Outline

- Overview of the BSML Application
  - Reasons for Developing the Tool
- Operational Overview
  - Interoperability With Other Systems
- Application Overview
- Overview of the Content of the BSML
- Interoperability
- Future Plans
  - BSML Variants
    - Common Source of Models across the Enterprise
    - BSML for Proprietary Programs
    - Laptop BSML Application
    - Licensed Application

# Background – Reasons for Development

## How do Engineers typically acquire part models?

- Create the model themselves
  - Redundant if someone else has already created it
  - Potentially not modeled correctly
  - May not be to the corporate or accepted Standard
  - No uniformity – everyone does it differently
- Appropriate it from another Engineer
  - Takes time to search for the person who has it
  - Takes time to find it
- Purchase it from an outside Supplier
  - Costs money
  - May not conform to the corporate Standard - rework



**“Why keep paying to have the same parts modeled over and over again?”**

# Business Opportunity!

## Capture & Re-Use Design Efforts

- Provide a Centralized Source of Validated, Reusable Models for all of The Boeing Company
- Leverage the labor dollars spent for modeling, data gathering and facilitate the Engineering exchange across the Enterprise
- **Build a model once and use it many times!**
- Allow for expansion to other types of Engineering Models and Data as opportunities are presented

# Challenges

## Challenges within The Boeing Company

- Multiple Computer Aided Design (CAD) Applications
  - UniGraphics (UG)
  - SDRC I-DEAS
  - Pro-Engineer (Pro-E)
  - Computer Aided Three-dimensional Interactive Application Version 4 (CATIA V4)
  - CATIA V5
- Dual Operating Systems
  - UNIX
  - NT
- Multiple Product Data Managers (PDMs)
  - IMAN (TeamCenter Engineering)
  - SHERPA
  - E-Matrix
  - Intralink
  - Enovia
- Multiple sets of Modeling Requirements and Standards
  - Attributes
  - Features
  - Modeling Practices, etc
- Closed area projects

# Resolved Challenges

## Challenges within The Boeing Company

- Multiple Computer Aided Design (CAD) Applications
  - UniGraphics (UG)
  - SDRC I-DEAS.....Phased Out
  - Pro-Engineer (Pro-E ).....Phased Out w/Rocketdyne
  - Computer Aided Three-dimensional Interactive Application Version 4 (CATIA V4) ).....Only for legacy Commercial
  - CATIA V5
- Dual Operating Systems
  - UNIX .....Being Phased Out
  - NT
- Multiple Product Data Managers (PDMs)
  - IMAN (TeamCenter Engineering)
  - SHERPA.....Being Phased Out
  - E-Matrix.....Currently manually integrated
  - Intralink.....Phased out w/Rocketdyne
  - Enovia
- Multiple sets of Modeling Requirements and Standards
  - Attributes
  - Features
  - Modeling Practices, etc
- Closed area projects

# Different Approaches Investigated

- Universal Models
  - Build a model that can be used with any CAD application
    - Issues with fidelity and agreement on necessary features and attributes
- Model Translators
  - Build a model with one CAD application and then translate it into other CAD application formats
    - This technology has improved and shows promise for the future
    - Issues with fidelity and agreement on necessary features and attributes
- Single Set of Data
  - Build each model (parametrically) in the different CAD applications using a single source of data common to all applications
    - This approach is consistent with other initiatives within The Boeing Company

# Operational Overview

- Independent Generation of Parametric Models on Different CAD Applications Using a Common Set of Data
  - Common Data Set is being refined to support all CAD applications
- Common Data and Model Repositories
  - UG & CATIA V5 master models & data are vaulted, explicit models are served
  - CATIA V4 data vaulted separately (as of today) in data files
- Common Front End (User Access Point)
  - The BSML interface supports multiple CAD (UG, CATIA V5)
  - Pro-E currently has been off-lined due to no demand
  - CATIA V4 models are accessed via a separate interface

# Description

- The BSML consists of tools, processes and information
  - The tools are the BSML application (Web Tool) and the Model Work Package Tracker (MWPT) application
  - The processes are how a user accesses the BSML, finds the information needed, and retrieves it
  - The information consists of models and data, as well as other types of reusable information
    - This information is not specific to any particular product
    - The BSML occupies the niche between the specific Computer Aided Engineering Tools and the Configuration Management Tools

# Description (continued)

- The BSML application is a defined process supported by software through which a user may:
  - Establish a personal user environment
  - Perform searches within the parameters of that environment
    - These parameters may be adjusted by the user
  - Retrieve the desired information
  - Use discriminators provided to select the best data for their application
- Approximately 1440 total users throughout The Boeing Company
  - Approx. 800 active users (within the last 6 months)
  - Approx. 1000 users (within the past year)

# Description (continued)

- The MWPT is an application that allows any user anywhere in The Boeing Company to request a model be added to the BSML
- The application automatically routes the request to the proper workflow based on the identity of the user
  - Users can view the status the request in real time
  - A series of notifications to the personnel involved in the workflow ensure closure of all requests
  - Statistics can be readily retrieved by the user
- This system supports cycle time reduction and redundancies can be eliminated, thus supporting a Lean environment

# BSML Application Overview

- Navigation
  - Finding parts in the BSML
- Design
  - Adding a BSML part to an assembly (The Toolbar)
- Transfer
  - Loading parts into a PDM
- Acquisition
  - Requesting new parts (MWPT)

# BSML Elements

- Web-Based System
  - Multiple User Access Points
  - Uses Web Single Sign On (WSSO) and Log-off
- Library of Part Models
  - Standards
  - Subsystems
  - Tooling
  - Support Equipment
  - Symbols
  - Configuration (currently off-line)
  - Supplier (in development)
- Unique User Parts List
- New/Change Model Request Process (MWPT)
- On-Line Help and Assistance

# User Interface/Web Page

## BSML Main Page

Library/Catalog Access

Unique User Parts List

Under “Documents”

- Features & Overview
- Part Model Request/Change Form
- Project Information
- Setup Instructions
- Training Document
- On-line User’s Guide

To access the Libraries, select either the Libraries buttons or the Library Tabs.

New Libraries will be added as needed!

**BSML**  
Boeing Solid Model Library

BSML v3.2  
BSML USER  
WSSO  
LOGOFF

HOME CONFIGURATIONS STANDARDS SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING PARTS LIST

Welcome **BSML USER!**  
Your account ID is: bsmlUser **Need Help?**

The BSML is a collection of solid models accurately depicting parts, components, assemblies and defined shapes that are used throughout The Boeing Company. The BSML is the source for solid models that have potential for reuse. This includes but is not limited to standard part models. These models may also include supporting data associated with performance, design, tooling, etc. or references to such data. The models in the BSML are considered validated when they are found to be accurate per the authoritative definition source for the item modeled and are configuration-controlled.

Search Term(s)  **SEARCH**

- Boeing Utilities
- Documents
  - Features & Overview
  - Part Model Request/Cha...
  - Project Information
  - Setup Instructions
  - User Guide
- Libraries
  - CONFIGURATIONS**
  - STANDARDS**
  - SUBSYSTEMS**
  - SUPPORT EQUIPMENT**
  - SYMBOLS**
  - TOOLING**

Pack

**April 2005**

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

**BOEING**

Project Manager - Levinskas, Edward J  
System Manager - Tompras, Anthony D  
Chief Architect - Herbstreit, Michael E  
Patent 10/155,286

# User Interface

## Enables searching for part models:

- Directory Tree Search
- Explicit Search using the BSML Search Engine
- Filtered Search

## Allows direct access to:

- Other Libraries
- User's Parts List
- Help Menu

**BSML**  
Boeing Solid Model Library

BSML v3.2  
BSML USER  
WSSO  
LOGOFF

HOME CONFIGURATIONS **STANDARDS** SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING **PARTS LIST**

Images Preferred/PDM Filter CAD Filter  
OFF ALL BSML PARTS ALL  
PMR/CF USER GUIDE **HELP**

Explicit Search Search Term(s) SEARCH

Filters

**ELECTRICAL-ELECTRONIC**

- CAPACITORS
- CIRCUIT BREAKERS
- CONNECTORS
- FILTERS
- FUSES
- KNOBS
- LIGHTS
- MISCELLANEOUS
- RELAYS
- RESISTORS
- SEMICONDUCTORS
- SWITCHES
- TERMINALS SPLICES
- TRANSFORMERS

**FLUID-MECHANICAL**

- BEARINGS
- BOLTS
- BRACKETS
- BUSHINGS
- CABLES AND CHAINS
- CLAMPS
- COLLARS
- FASTENERS
- FILLER
- FILTERS
- FITTINGS
- FLANGE
- GROMMETS
- HINGES
- HOSES
- INDICATORS
- INSERTS
- MISCELLANEOUS
- NAMEPLATES
- NUTS
- PINS

Directory Trees (expandable)

# User Interface

## Expanded Directory Trees:

- Provide Quicker Searches
- Lists all Subcategories

The screenshot displays the BSML Boeing Solid Model Library user interface. At the top, the logo and version (BSML v3.2) are visible. Below the logo, there are navigation tabs: HOME, CONFIGURATIONS, STANDARDS, SUBSYSTEMS, SUPPORT EQUIPMENT, SYMBOLS, TOOLING, and PARTS LIST. A search bar is present with a search button. Below the search bar, there are filter options: Images (OFF), Preferred/PDM Filter (ALL BSML PARTS), and CAD Filter (ALL). A search term input field and a search button are also present. The main content area shows two expanded directory trees. The left tree is for ELECTRICAL-ELECTRONIC, and the right tree is for FLUID-MECHANICAL. Both trees list various subcategories with expandable arrows. A callout box labeled 'Collapsible' points to the expandable arrows in both trees, indicating that the directory trees are collapsible.

**BSML**  
Boeing Solid Model Library

BSML v3.2  
BSML USER  
WSSO  
LOGOFF

HOME CONFIGURATIONS STANDARDS SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING PARTS LIST

Images Preferred/PDM Filter CAD Filter  
OFF ALL BSML PARTS ALL  
PMR/CF USER GUIDE HELP

Search Term(s) SEARCH

**ELECTRICAL-ELECTRONIC**

- ▶ CAPACITORS
  - ▶ TANTALUM SOLID
- ▶ CIRCUIT BREAKERS
  - ▶ THERMAL
- ▶ CONNECTORS
  - ▶ ACCESSORIES
  - ▶ ARRESTER
  - ▶ AUDIO
  - ▶ BAYONET-COUPLING
  - ▶ BAYONET-THREADED AND BREECH
  - ▶ CIRCULAR PUSH PULL
  - ▶ COAXIAL
  - ▶ EXTERNAL POWER
  - ▶ MOUNTING HARDWARE
  - ▶ RECTANGULAR
  - ▶ THREADED-COUPLING
  - ▶ ALL CONNECTORS
- ▶ FILTERS
  - ▶ RADIO INTERFERENCE
- ▶ FUSES
  - ▶ HOLDER
  - ▶ LIMITER
  - ▶ ALL FUSES
- ▶ KNOBS
  - ▶ ELECTRICAL
- ▶ LIGHTS
  - ▶ COCKPIT
  - ▶ CONNECTOR
  - ▶ DOME
  - ▶ FLOOD
  - ▶ INDICATOR

**FLUID-MECHANICAL**

- ▶ BEARINGS
  - ▶ BALL
  - ▶ BALL ROD END
  - ▶ LOCKING DEVICE
  - ▶ NEEDLE CAM FOLLOWER
  - ▶ ROLLER
  - ▶ ROLLER ROD END
  - ▶ SLEEVE
  - ▶ SPHERICAL
  - ▶ SPHERICAL ROD END
  - ▶ ALL BEARINGS
- ▶ BOLTS
  - ▶ 12 POINT HEAD
  - ▶ ADJUSTING
  - ▶ BLIND
  - ▶ BOLT-100 DEG
  - ▶ BOLT - 100 DEG
  - ▶ EYE
  - ▶ FLUSH HEAD
  - ▶ HEX HEAD
  - ▶ PROTRUDING
  - ▶ PROTRUDING HEAD
  - ▶ SELF RETAINING
  - ▶ SET
  - ▶ SHOULDER
  - ▶ STUD
  - ▶ ALL BOLTS
- ▶ BRACKETS
  - ▶ ANGLE 90 DEGREES
  - ▶ LACING
  - ▶ SUPPORT
  - ▶ ALL BRACKETS
- ▶ BUSHINGS
  - ▶ CLAMP-UP

Collapsible

# Filtering Part Models

## Filters Provide:

- Program control of parts viewed/used
- Quicker searches
- Data security
- Database comparisons
- Movement of models from BSML to a PDM

The screenshot displays the BSML Boeing Solid Model Library interface. At the top left is the BSML logo and a cartoon character. Below the logo are navigation tabs for HOME, STANDARDS, and SUBSYSTEMS. The main content area features three filter menus: 'Images' (set to ON), 'Preferred/PDM Filter', and 'CAD Filter'. The 'Preferred/PDM Filter' menu is open, showing a list of part categories such as 'ALL BSML PARTS', '40M127 NATIVE', 'AN-BLQ-11 NATIVE', 'AV-8 NATIVE', 'AV8 IMAN PDM', 'AV8 SHERPA PDM', 'B2-SBRC NATIVE', 'B2-SBRC IMAN PDM', 'C-130 NATIVE', 'CANOGA PARK NATIVE', 'CANOGA PARK PDM', 'F-15 NATIVE', 'F15 IMAN PDM', 'F15 SHERPA PDM', 'F-18 NATIVE', 'F18 IMAN PDM', and 'F18 SHERPA PDM'. The 'CAD Filter' menu is also open, showing options like 'ALL', 'CATIA-V4', 'CATIA-V5', 'GGG', 'I-DEAS', 'PRO-E', 'UG-V16', and 'UG-V18'. Below the filters, a table lists part details, including part numbers (7M1084, 7M1085) and descriptions (ADAPTER, S). The table is partially obscured by the filter menus.

Part Number	Description
7M1084	ADAPTER, S
7M1084	ADAPTER, S
7M1085	ADAPTER, S

# User Interface

## Category Pages Provide:

- Component Part Family Numbers
- Component Part Family Name
- “Thumbnail” Sketches
- Filtered Search
- “Hot” Pick Search
- Scroll- through capability
- Validation Status
- CAD Type Identification

HOME CONFIGURATIONS STAGING STANDARDS SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING PARTS LIST

Images Preferred/PDM Filter CAD Filter  
 ON ALL BSML PARTS ALL  
 PMR/CF CREATE RECORD USER GUIDE HELP

Search Term(s) SEARCH

**BOLTS**

[12 POINT HEAD] [ADJUSTING] [BLIND] [BOLT-100 DEG] [BOLT - 100 DEG] [CLOSE TOLERANCE-100 DEG] [EYE] [FLAT PAN HEAD] [FLUSH HEAD] [HEX HEAD] [MACHINE-HEX HEAD] [PROTRUDING] [PROTRUDING HEAD] [SELF RETAINING] [SET] [SHEAR, SPLINE] [SHEAR-100 DEG] [SHOULDER] [SHOULDER-HEX] [STUD] [TENSION, HEX HEAD, CLOSE TOL] [TENSION - SPLINE]

12 POINT HEAD		[Validated]	[Non-Validated]
BACB30LE	BOLT, 12 POINT HEAD, 200 KSI MIN TENSILE		
BACB30LT	BOLT, 12 POINT HEAD, SHORT THREAD		
BACB30UU	BOLT, 12 POINT HEAD, SHORT THREAD		
ADJUSTING		[Validated]	[Non-Validated]
NAS428	BOLT, MACHINE, CROWNED HEXAGON HEAD, ADJUSTING		
NAS428	BOLT, MACHINE, CROWNED HEXAGON HEAD, ADJUSTING (C-17)		
BLIND		[Validated]	[Non-Validated]
BACB30VK	BOLT, BLIND, 130 DEG HEAD, REDUCED SHEAR, LIGHT WEIGHT (NOMINAL AND OVERSIZE)		
BACB30VL	BOLT, BLIND, LOW PROFILE PROTRUDING HEAD		
BACB30VL	BOLT, BLIND, LOW PROFILE PROTRUDING HEAD		
BOLT-100 DEG		[Validated]	[Non-Validated]
3D0179	BOLT-100 DEG (C-17)		
BACB30FN	BOLT, 100 DEG SHEAR HEAD, HEX DRIVE		
BACB30JC	BOLT, 100 DEG (AN509) TENSION HEAD, HEX DRIVE		
BACB30LH	BOLT, 100 DEG HEAD, CROSS RECESS		
BACB30NN	BOLT, 100 DEG HEAD, CROSS RECESS		

# User Interface

HOME CONFIGURATIONS STANDARDS SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING PARTS LIST

Images Preferred/PDM Filter CAD Filter  
ON ALL BSML PARTS ALL  
PMR/CF USER GUIDE HELP

Search Term(s)  SEARCH

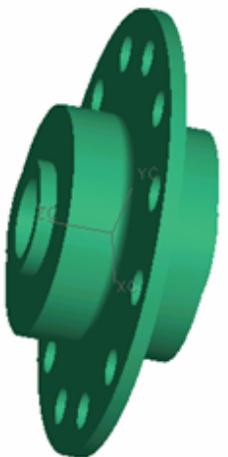
**BEARINGS**

[BALL] [BALL ROD END] [LOCKING DEVICE] [NEEDLE CAM FOLLOWER] [ROLLER] [ROLLER ROD END] [SLEEVE] [SPHERICAL] [SPHERICAL ROD END]

BALL [Validated] [Non-Validated]	
BACB10CF	BEARING, BALL , AIRFRAME
BACB10T	BALL, METAL
MS20218	BEARING, BALL, ANTI-FRICTION
MS21428	BEARING, BALL, AIRFRAME, ANTI-FRICTION, PRECISION
MS27640	BEARING, BALL, AIRFRAME, ANTI-FRICTION, HEAVY DUTY
MS27641	BEARING, BALL, AIRFRAME, ANTI-FRICTION
MS27642	BEARING, BALL, AIRFRAME
MS27643	BEARING, BALL, AIRFRAME, ANTI-FRICTION, SELF-ALIGNING, DOUBLE ROW
MS27645	BEARING, BALL, AIRFRAME, ANTI-FRICTION, SELF-ALIGNING
MS27646	BEARING, BALL, AIRFRAME, ANTI-FRICTION
BALL ROD END [Validated] [Non-Validated]	
MS21153	BEARING, BALL, ROD END - INTERNAL THREAD, SELF-ALIGNING, DOUBLE ROW, PRECISION
ST4M122	BEARING, BALL, ROD END - INTERNAL THREAD, SELF-ALIGNING, ANTI-FRICTION, AIRFRAME

## Selecting the "Thumbnail" Sketches

Select the Thumbnail icon to enlarge the view.



[ GO TO PART RECORD ]

Return

BOEING PROPRIETARY

# User Interface



**BSML**  
Boeing Solid Model Library

HOME STANDARDS SUBSYSTEMS

Images	Preferred/PDM Filter	CAD Filter
ON	ALL BSML PARTS	ALL
PMR/CF USER GUIDE HELP		

Search Term(s):  Search

## BEARINGS

(BALL) (BALL ROD END) (ROLLER BEARING) (FLUID-MECHANICAL) (SPHERICAL ROD END) (NEEDLE ROLLER BEARING) (SLEEVE BEARING)

BALL [Validated] (Not validated)

MS20218	BEARING, BALL, AIRFRAME, ANTI-FRICTION, PRECISION
MS21428	BEARING, BALL, AIRFRAME, ANTI-FRICTION, PRECISION
BACB10CF	BEARING
MS27642	BEARING, BALL, AIRFRAME, ANTI-FRICTION, PRECISION

**B**  
Boeing Solid Model Library

**Opening the Part Family Page allows the user to:**

Select from the Available Parts drop-down menu to find the desired part.

Add a part to their Parts List and to the CAD work session via the "Add Part" button.

Select the Detail Specification button to view specification or similar documents.

Select the Part Family Number or Name to open the Part Family Page

HOME STANDARDS SUBSYSTEMS TOOLING PART LIST

Images	Preferred/PDM Filter	CAD Filter
ON	ALL BSML PARTS	ALL
PMR/CF USER GUIDE HELP RETURN		

Search Term(s):  Search

STANDARDS - FLUID-MECHANICAL - BEARINGS - BALL - MS21428

## MS21428

BEARING, BALL, AIRFRAME, ANTI-FRICTION, PRECISION  
UNIGRAPHICS MODEL



AVAILABLE PARTS

EXTRA LIGHT DUTY

BOEING PROPRIETARY

# Part Family Pages

## Part Family Page Provides:

- Library Directory Tree Path
- Visual Part Verification
  - Orientation of model can be verified for placement
- Part Family Data
- Access to Detail Specification Data (if available)
- Addition of the desired part model to the user's individual part list
- Model may be directly instanced into the user's CAD workspace
- Model may be loaded into user's PDM (subject to program requirements)
- Model loaded may come from the user's selected program PDM, or from library master models

**BSML**  
Boeing Solid Model Library

BSML v3.2  
BSML USER  
WSSO  
LOGOFF

CONFIGURATIONS   STANDARDS   SUBSYSTEMS   SUPPORT EQUIPMENT   SYMBOLS   TOOLING   PARTS LIST

Images	Preferred/PDM Filter	CAD Filter
ON	ALL BSML PARTS	ALL
PMR/CF   USER GUIDE   HELP		

Search Term(s)

STANDARDS > FLUID-MECHANICAL > FITTINGS > TEE > 7M1134

**7M1134**  
TEE, TUBE - AXIAL SWAGE, SWIVEL NUT ON RUN, REDUCER



  
UG-V18  
CAD Model

Available Part Models

5000 psi  
Titanium Alloy

  
Project Manager - Levinskas, Edward J  
System Manager - Tompras, Anthony D  
Chief Architect - Herbstreit, Michael E  
Patent 10/155,286

# Detail Specification Pages

**MCDONNELL DOUGLAS**

Table I - Dimensions

Approved Callout	A ±0.030	B ±0.015	C ±0.030	D ±0.015	E ±0.015	F Ref	K ±0.016	L Ref
7M1134T040406	0.968	0.896	1.185	1.084	0.812	1.018	0.493	0.563
7M1134T040604 (B)	1.185	1.084	0.968	0.896	0.812	1.018	0.493	0.563
7M1134T040606	1.185	1.084	1.185	1.084	0.812	1.018	0.493	0.563
7M1134T040808	1.486	1.365	1.486	1.365	0.905	1.111	0.631	0.563
7M1134T060404	0.968	0.896	0.968	0.896	0.844	1.058	0.493	0.688
7M1134T060406	0.968	0.896	1.185	1.084	0.844	1.058	0.493	0.688
7M1134T060604	1.185	1.084	0.968	0.896	0.844	1.058	0.493	0.688
7M1134T061212 (B)	2.119	1.929	2.119	1.929	1.125	1.339	0.909	0.688
7M1134T080404	1.061	0.989	1.061	0.989	0.989	1.216	0.631	0.875
7M1134T080406	1.061	0.989	1.278	1.177	0.989	1.216	0.631	0.875
7M1134T120612	1.466	1.365	2.119	1.929	1.342	1.654	0.909	1.188
7M1134T121012	1.968	1.779	2.119	1.929	1.342	1.654	0.909	1.188

SCALE: NONE. (B) DENOTES CHANGE  
 DIMENSIONS IN INCHES: TOLERANCES UNLESS OTHERWISE SPECIFIED: X.XX ± 0.03; X.XXX ± 0.010; ANGLES ± 0.5°  
 DISTRIBUTION STATEMENT A. APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.

CAGE NO. 76361	TITLE McDonnell Douglas Aerospace	STANDARD PART DOCUMENT
APPROVED 33-48-13	TEE, TUBE - AXIAL SWAGE, SWIVEL NUT ON RUN, REDUCER, 5000 PSI	7M1134
REVISION (B) 35-42-47		SHEET 1 OF 1

**7M1134 (C) TUBE - AXIAL SWAGE, SWIVEL NUT ON RUN, REDUCER**

View in Game Window | View in New Window

**PEPR** User Support [Email](#) | Phone (314) 233-3878

[PEPR Home](#) | [PSDS Home](#) | [P&PDS Home](#)

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[Inside Boeing Home](#)

Images Preferred/PDM Filter CAD Filter

ON ALL BSML PARTS ALL

PMR/CF USER GUIDE HELP

Search Term(s)

STANDARDS > FLUID-MECHANICAL > FITTINGS > TEE > 7M1134

**7M1134**  
 TEE, TUBE - AXIAL SWAGE, SWIVEL NUT ON RUN, REDUCER

UG-V18 CAD Model

Available Part Models

5000 psi  
 Titanium Alloy

[Detail Specification](#)

**BOEING**  
 Project Manager - Levinskas, Edward J  
 System Manager - Tompras, Anthony D  
 Chief Architect - Herbstreit, Michael E  
 Partno: 10/155-206

# Part Selection

 **BSML**  
Boeing Solid Model Library

BSML v2.0  
ARMSTRONG, KIM A

HOME STANDARDS SUBSYSTEMS TOOLING PART LIST

Images	Preferred/PDM Filter	CAD Filter	
ON	ALL BSML PARTS	ALL	Set
PMR/CF USER GUIDE HELP RETURN			

Search Term(s):  Search

STANDARDS - FLUID-MECHANICAL - BEARINGS - BALL - MS21428

**MS21428**  
BEARING, BALL, AIRFRAME, ANTI-FRICTION, PRECISION  
UNIGRAPHICS MODEL



EXTRA LIGHT DUTY

AVAILABLE PARTS

- AVAILABLE PARTS
- MS21428-38
- MS21428-39**
- MS21428-40
- MS21428-41
- MS21428-42
- MS21428-43
- MS21428-44
- MS21428-45
- MS21428-46

# Part Selection

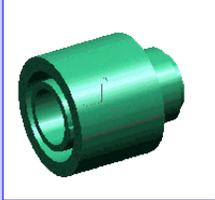
HOME CONFIGURATIONS STANDARDS SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING PARTS LIST

Images Preferred/PDM Filter CAD Filter  
ON ALL BSML PARTS ALL  
PMR/CF USER GUIDE HELP

Search Term(s)

STANDARDS > ELECTRICAL-ELECTRONIC > CONNECTORS > THREADED-COUPLING > D38999\_26

**D38999\_26**  
CONNECTOR, ELECTRICAL, PLUG, CIRCULAR,  
STRAIGHT



 UG-V18  
CAD Model

Available Part Models

**SELECT FROM AVAILABLE PARTS LISTED  
OR  
CREATE NEW PART FROM CRITERIA BELOW**

CLASS:   
SHELL SIZE:   
INSERT ARRANGEMENT:   
CONTACT TYPE:   
ALTERNATE POSITIONS:

Removable Crimp Contacts  
D38999 Series III  
Metric

## Automatic Detail Part Generation

- If a dash number is not on the “Available Parts” pulldown menu, it can be generated “on-the-fly”.
- Select configuration options from the following pulldown menus.
  - Class
  - Shell Size
  - Insert Arrangement
  - Contact Type
  - Alternate Positions
- Select the “Create New Part” button to:
  - Create the part
  - Add it to the “Available Parts” pulldown menu
  - Add it to to the user’s Parts List

# User's Parts List

## Part List Features

- Unique to the User
- Static – list is stored from session to session
- Filterable
- Provides rapid access back to Part Family information
- Provides rapid access to visual information for parts
- Works in concert with CAD applications

Choose a new Part

Current Part

HOME CONFIGURATIONS STANDARDS SUBSYSTEMS SUPPORT EQUIPMENT SYMBOLS TOOLING **PARTS LIST**

Images Preferred/PDM Filter CAD Filter  
 ON ALL BSML PARTS ALL  
 PMR/CF USER GUIDE HELP

Search Term(s)  SEARCH

**7M1084T10 LOADED AND READY TO BE OPENED/ADDED TO CAD SESSION**

DISPLAY ONLY: AIRCRAFT HANDLING - BOLTS - BONDING SEALING - CIRCUIT BREAKERS - COLLARS - DRILL MOTORS - FITTINGS - FUSELAGE - HEAT EXCHANGERS

OPTIONS	PART TYPE	PART NUMBER	NOMENCLATURE	IMAGE	TYPE
Load to CAD  Remove from List	AIRCRAFT HANDLING	MD-3	TOW TRACTOR		
Load to CAD  Remove from List	AIRCRAFT HANDLING	SD-2	AIRCRAFT TOW TRACTOR SPOTTING DOLLY		
Load to CAD  Remove from List	BOLTS	3M1169C3-10A	BOLT, 100 DEG. TENSION HEAD, GEAR DRIVE RECESS		
Load to CAD  Remove from List	BOLTS	3M1169C3-5A	BOLT, 100 DEG. TENSION HEAD, GEAR DRIVE RECESS		
Load to CAD  Remove from List	BOLTS	NAS514P632-12P	SCREW, MACHINE, 100 DEG., FLAT HEAD, FULL THREADED		
Load to CAD  Remove from List	BONDING SEALING	MARKER_BONDSEAL	MARKER, BONDING & SEALING, FULL FEATURE		
Load to CAD  Remove from List	CIRCUIT BREAKERS	MS14105-D25	CIRCUIT BREAKER, AIRCRAFT, TRIP-FREE, PUSH PULL		
Load to CAD  Remove from List	COLLARS	BACC30BH-16	COLLAR		
Load to CAD  Remove from List	DRILL MOTORS	158QGDB-S400	PIGGY_BACK_DRILL_MOTOR		
Loaded  Remove from List	FITTINGS	7M1084T10	ADAPTER, STRAIGHT, TUBE - FEMALE BEAM SEAL TO WELD		
Load to CAD  Remove from List	FUSELAGE	737_757_767	1		
Load to CAD  Remove from List	HEAT EXCHANGERS	80203-000-1	HEAT EXCHANGER, FUEL/OIL		

Clear List ADT Team List



# Part Model Request/Change Form

BSML Part Model Request Form - Netscape

File Edit View Go Communicator Help

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## Part Model Request/Change Form

*\* Required Fields*

**\* BLUES AUTOFILL** ( Completes the required fields below using the Boeing Look-Up Everything System [BLUES] )

Name <small>(select BLUES AUTOFILL)</small>		Org./Budget	
E-mail		Mail Stop	
Telephone		* Project/Program <small>(F22, 737,777)</small>	SLAM ER
* CAD System Used	UniGraphics	* Boeing Site Location	Other
* Salco/Charge Number			

New Request       Change Request       Validation Request  
(for user-supplied models)

Part Type Categories

Engineering Standard Parts

* Request Reply by Date <small>(mm/dd/yyyy)</small>		* Model Need Date <small>(mm/dd/yyyy)</small>	
* Part Number		Part Description	

# Model Requests

- Enterprise-wide request process
  - Web-based interface
- Batch submittals are available depending on site processes (text file)
- Requests are automatically routed to the proper authorities
  - Approval process is localized according to user needs
  - Budget is associated to the work package
- History database is maintained
- Real-time queries allow instant status/reporting

# BSML Information Content

- Currently contains Libraries of Standard Parts, Subsystem Components, Support Equipment and Tooling Parts, Symbols and Supplier Parts
  - CAD model files currently exist in UG and CATIA V5 formats
    - System can accommodate any format, including:
      - ❖ CATIA V4
      - ❖ Pro-Engineer
      - ❖ SDRC I-DEAS
    - Associated data, including specification and performance
- Parametric Model data files are archived. Not readily available to general users (but could be made so).
- Additional items can also be managed
  - VRML Files, Virtual Reality Files, GGG Files (python), etc.
- Data and information content is funded by the using programs.

# Interoperability

- Integration with CAD applications
  - Loads directly to UG worksessions thru Toolbar functions
  - Loads to CATIA V5 via the Alternate Download Method (ADM)
  - Integrated with CATIA V4 & Pro/Engineer as “proof-of-concept”
- Integration with PDM systems
  - Proven integration with IMAN (TeamCenter Engineering) and SHERPA
    - Part Models can be loaded directly from the PDM
    - Part Models are transferred automatically to the PDM if they do not currently exist in the PDM
  - Currently working with TeamCenter Enterprise to act as the BSML PDM
  - Integrated with E-Matrix
  - Proven as “proof-of-concept” with Intralink

# Interoperability

## ➤ Integration with Document Viewers

- Displays data files from the Production Engineering Publication Records (PEPR)
- Displays data files from the Product Standards Data System (PSDS)
- Displays data files from the Engineering Standards Distribution System (ESDS) via SPARTS

## ➤ Integration with other Tools

- Common Parts Information Management System (CPIMS) via part model links to the BSML
- SmartFastener
- SmartRouter

# BSML Variants

- Networked Enterprise BSML
  - The version available on the Company Intranet
  - Development and Production Programs use this version
- Closed Area BSML(s)
  - This is for use by Proprietary Programs
    - Behind a firewall
    - Moving new data behind the firewall is a process issue
- Stand-alone BSML(s)
  - “Lap-top” version is available for designing “on-the-go”
  - Used to take the design environment to the customer
    - Developed for first-level conceptual design

# For more information:

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