NUGM 2024

BILLS, BILLS!!

(Or, How I learned to Stop Worrying and Figured Out It's Just How You Put Stuff Together.)

TREY MILLER NOVOROI SYSTEMS, LLC



THE MANUFACTURING BILL OF MATERIAL

- This is one of the main pillars of all ERP systems.
- At its very basic level, the Bill of Material (BOM), details how a finished good is made.
 - Discreet Manufacturing hard edges, nuts and bolts, "weldments", quantities per assembly (QPA).
 - Process Manufacturing fluid mixture, recipes, chemical assay, volumetric measures per compound.
- Critical Manufacturing features of BOMS . . . Well, almost everything! But here's some big ones.
 - Planning Without properly defined BOMS, the "R" in both MRP and ERP has no meaning.
 - Costing The costs established by quantities per assembly and labor to assemble are driven by the BOM.
 - Routings How a finished good is built is frequently determined from the lowest level of its BOM on up.
 - Work Centers Hand in glove with Routings, major work center design considerations are driven by the manufacturing realities of similar BOMs.
 - So many others (Engineering, Purchasing, Shipping and Receiving. . . etc.), almost every critical aspect of a manufacturing system touches on the Bill of Material in some fashion. Bills are important!



WHO'S YOUR DADDY?

- The nature of the Bill of Material is like a family tree in that it is a hierarchy.
- The finished good is called the "top level" part, and that is the zero (0) level.
- Each "child" part under the top level is level 1, and has a parent which is the top level 0.
- Each child part under level 1 is level 2 and has a parent part which is level 1.
- So on and so on:
 - Finished Good
 - Level 1 Part A
 - Level 2 A child 1
 - Level 2 A child 2
 - Level 1 Part B
 - ... The "Lowest Level" is important. That is called the Low Level Code (LLC)
- Here's where it gets weird. Those "children" are actually components and they can have multiple "Parents" because they can all be utilized to make multiple finished goods.

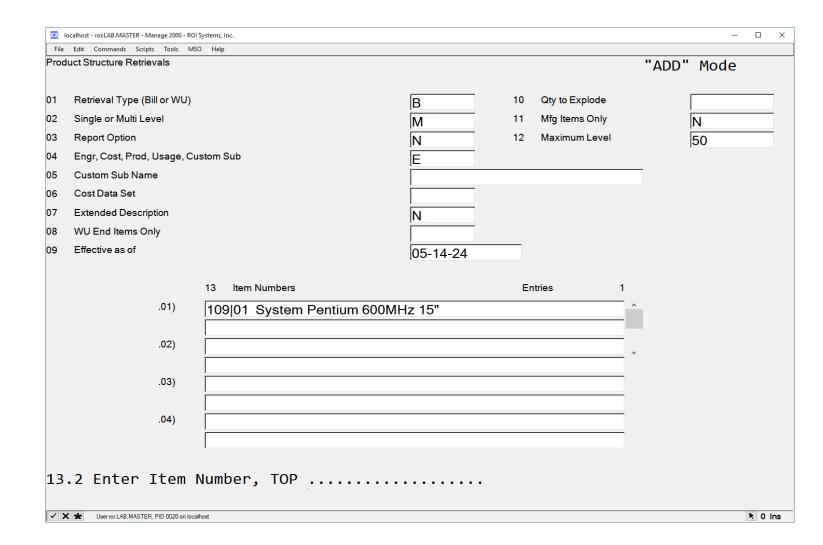


THE MANAGE 2000 SHOW.PS - MLB - SLB

- SHOW.PS is the primary function, you can actually run it independently. This is the M2k method for display of the critical bill relationship between Parent and Child assemblies.
- SLB Single Level Bill, very handy for looking at an immediate parent child assembly list.
- MLB Shows the root hierarchy in an indented display. Each Child is indented from its Parent.

Little Used OPTIONS!!

- 1. Bills or Where Used (WU)
- 4. Engr, Cost, Prod, Usage (or Custom Sub)
- 5. Custom Sub Name
- 6. Cost Data Set
- 8. WU End Items Only
- 9. Effective as of ECO system





SHOW.PS

IN SHOW.PS

File Edit View Help See III See I

SHOW.PS

11:37 CDT Tue May 14 2024 ACME Bomb Making INC Sys M2K81SP2 Acct roi:LAB.MASTER Multi-Level Manufacturing Bills of Material - Engineering Data Report For Part Number: 109l01 System Pentium 600MHz 15" - Effective as of 05-14-2024

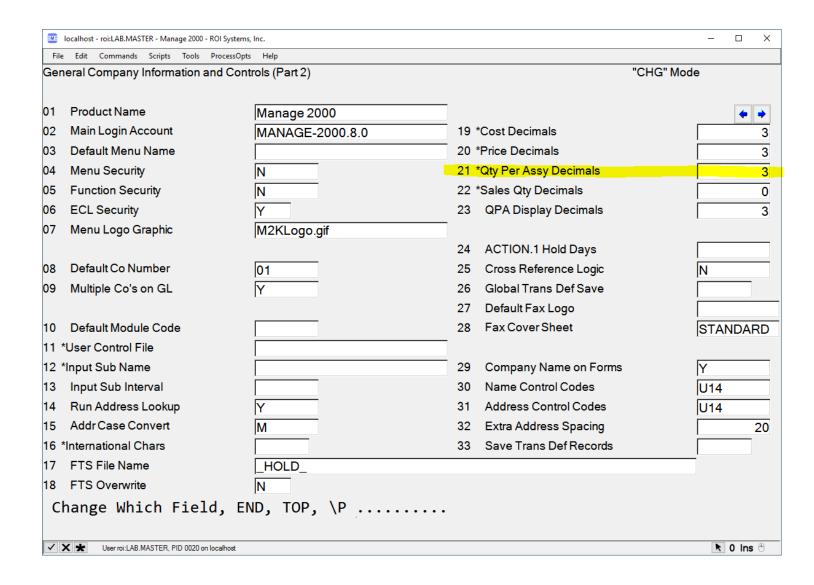
	Item									ECO											î
	Number					Engr	Rev	Lead Time	RT	Nbr	ECO	Note	Reference	Inv	Bal	Scrap	Make	Phant	Bin	PS	
Level	»	Description	Qty/Assy	Trap	UM	Status	Lvl	Offset	Seq	»	Date	Reference	Designator	Туре	Nbr	Prct	Purch	Code	Code	Туре	Lc
0	109¦01	System Pentium 600MHz 15"			EA	D	AM							FA			М				
1	201¦01	Processor Pentium 700 MHz	0.000		EA	С					09-15-94			СМ			Р				
1	210¦01	RAM, Simm, 64 MB	2.000		EA	С					09-15-94			СМ			Р				
1	216¦01	Power Supply, 400 W	1.000		EA	С					09-15-94			СМ			Р				
1	220¦01	Keyboard 104 Standard	1.000		EA	С					09-15-94			СМ			Р				
1	240¦01	Mouse, Two-button	1.000		EA	С					09-15-94			СМ			Р				
1	251¦01	Cable, Power	1.000		EA	С					09-15-94			СМ			Р				
1	310¦01	Kit, CD-ROM	1.000		EA	С	AM				09-15-94			SA			М	Р			
2	204¦01	Cable, CD-ROM	1.000		EA	С								СМ			Р				
2	214 01	Controller CD-ROM	1.000		EA	С								СМ			Р				
2	218¦01	Manual, Installation	1.000		EA	С								СМ			Р				
2	285 01	CD-ROM Drive Speed	1.000		EA	С								СМ			Р				
1	316¦01	Case, Full Size Chassis	1.000		EA	С	AM				09-15-94			SA			М				
2	259¦01	Screw, Machine, 1/4 inch	5.000		EA	С								СМ			Р		В		
	276¦01	Bezel, Plastic, full	1.000		EA	С								СМ			Р				
	301 01	Chassis, Full	1.000		EA	С	СМ							FM			М				
	259¦01	Screw, Machine, 1/4 inch	4.000		EA	С			30					СМ			Р		В		
	290 01	Steel, Sheet, 18 Gauge	0.000		SF	С			10	1003	09-29-94			RM			Р				
3	305¦01	Bracket, Drive, Full	1.000		EA	С	СМ		30					FM			М				
	290¦01	Steel, Sheet, 18 Gauge	0.000		SF	С			10	1004	09-29-94			RM			Р				
	350¦01	Steel Slit Coil 18 Ga 5"	1.220		LB	С	AM			1004	09-29-94			SA			М				
5	299¦01	Steel Coil 18Ga 60 in	1.000		LB	С				1002	09-29-94			СМ			Р				
	352¦01	Steel Slit Coil 18 Ga 18"	11.250		LB	С	AM			1003	09-29-94			SA			М				
4	299¦01	Steel Coil 18Ga 60 in	1.000		LB	С				1002	09-29-94			СМ			Р				
2	308,01	Cover, Full Size Chassis	1.000		EA	С	AM							FM			М				
3	308-1¦01	Cover, Full Size, Formed	1.000		EA	С	AM							FM			М				
	290¦01	Steel, Sheet, 18 Gauge	3.431		SF	С			10					RM			Р				
	325¦01	Paint, Almond	0.750		OZ	Α								СМ			Р			2	
	340,01	Kit 8 GB Disk Drive	1.000		EA	С	АМ				09-15-94			SA			М				
	203 01	Cable, Disk Drive	1.000		EA	С								СМ			Р				
	218¦01	Manual, Installation	1.000		EA	С								СМ			Р				
	270¦01	Controller, Disk, IDE	1.000		EA	Ċ								СМ			Р				_
<		Double Click Australia																			>

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BASIC SETUP



BILLS - BASIC SETUP - COMPANY.NAME - QPA



- The QPA decimals are referred to as QDEC in the M2k system.
- This is an initial setup constant as dictated by the "*" next to the prompt #.
- Generally you do NOT want to change these significant digits, but it can be done.

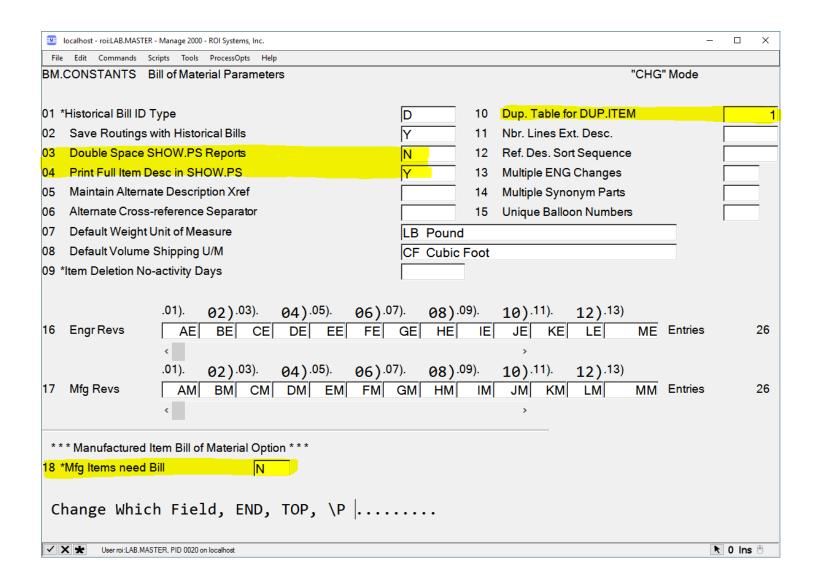


BILLS - BASIC SETUP - GL.COA.MAINT

■M=	localhost - roi:LAB.MASTE	Manage 2000 - ROI Systems, In	с.						_	
File	Edit Commands	ripts Attachments Tools	ProcessOpts MSO Help	0						
GL.	COA.MAINT - Cr	ate, Maintain GL Ch	art of Accounts					"CHG"	Mode	
01	Account Number	01-4311	-0011 COGS Mat	teria						
02	Description	COGS M	laterial			06	Inactive Date			
03	Record Type	D				07	Allocation Flag	N		
04	Balance Type	D								
05	AP Type Code									
	08	/alid Source Codes		Entries	0					
	.01)				^	09	Ledger Summary			
	.02)									
	.03)						44			
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	.07)									
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Cl	nange Whic	n Field, END), TOP, \P,	'A'lloca	tion D	ata				
~ :	★ User roi:LAB.MA	TER, PID 0020 on localhost							k 0	Ins 🖰

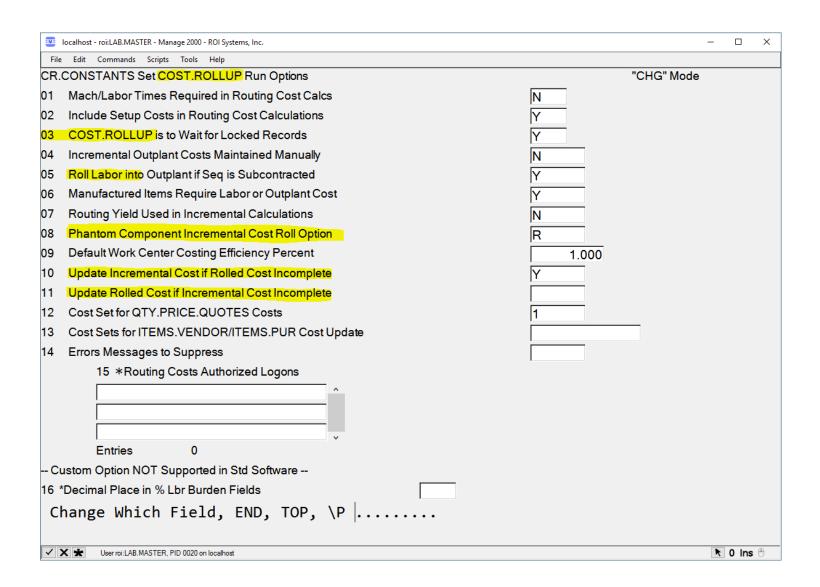


BILLS - BASIC SETUP - BM.CONSTANTS



- Basic display options for SHOW.PS. These are system wide, for all users.
- Default duplication table for DUP.ITEM.
- Manufacturing Part (as opposed to Purchase part) MUST have a bill of material.

BILLS - BASIC SETUP - COST ROLL - CR.CONSTANTS



- The Cost Rollup process is one of the most useful automated accounting features of the M2k system and it is entirely dependent upon good BOM design.
- Any feature in the CR.CONSTANTS screen which uses the term "roll" will be directly related to a bill walking operation.



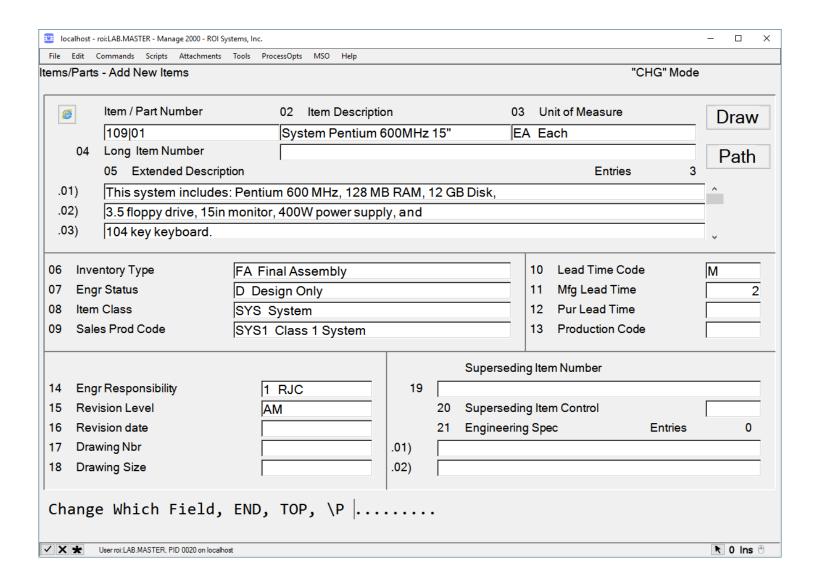
BILLS - BASIC SETUP - OTHER POTENTIAL CONSTANTS

Each of these constant settings are a discussion class in their own regard, but be aware that basic BOM setup cannot be considered complete without investigating these settings for relevance to your manufacturing processes:

- INV.CONSTANTS Inventory Constants
- COST.CONSTANTS BOMS are critical to costing and so cost constants affect BOMS
- WC.CONSTANTS Work Center constants can be used to manage BOMS on the shop floor
- MRP.CONSTANTS There is no greater impact to MRP than good bill structure
- CONTROL.ACCOUNTS Setting proper inventory accounts is critical to BOM accounting

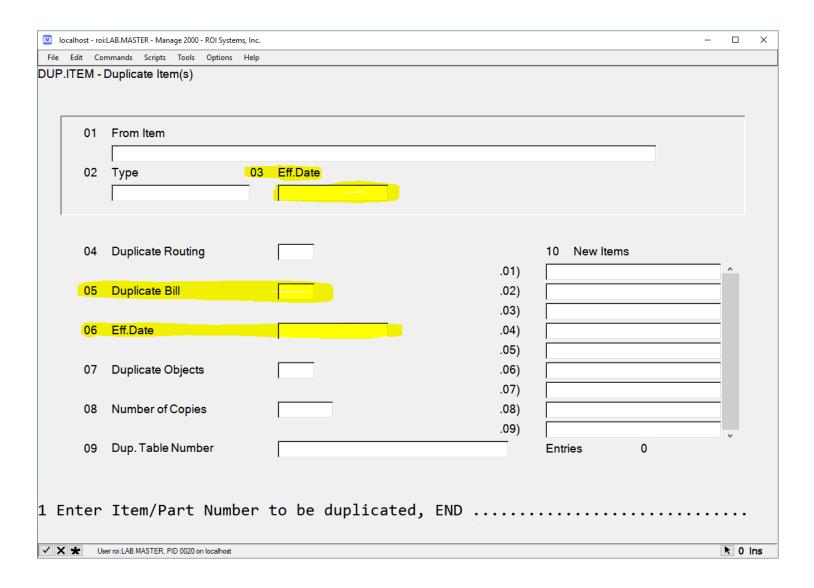


BILLS - BASIC SETUP - ITEMS





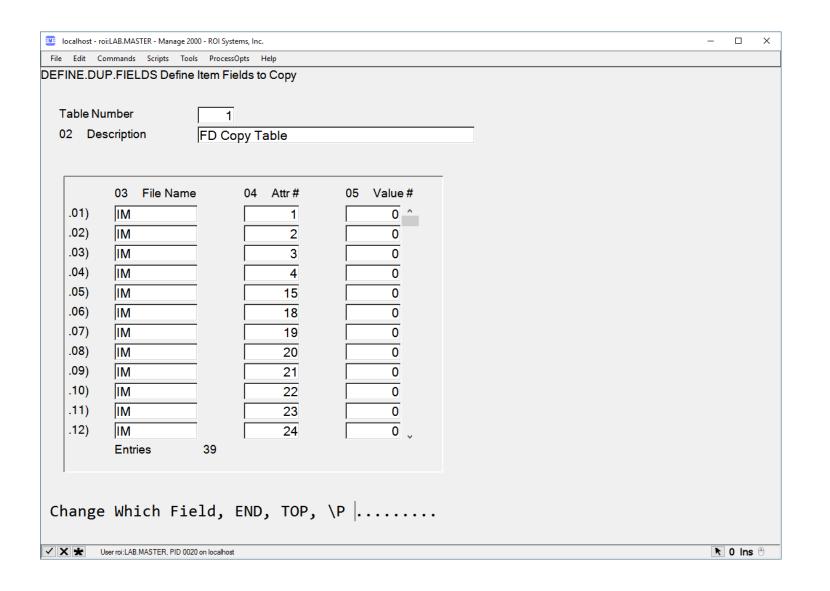
BILLS - BASIC SETUP - DUP.ITEM



- The Effective Date
 elements of the item
 duplication process
 draw on the existing bill
 of material for the item
 being duplicated.
- If you are using good engineering effective revision control, then item and bill duplication can be useful to create a copy of a part for a specific timeframe.

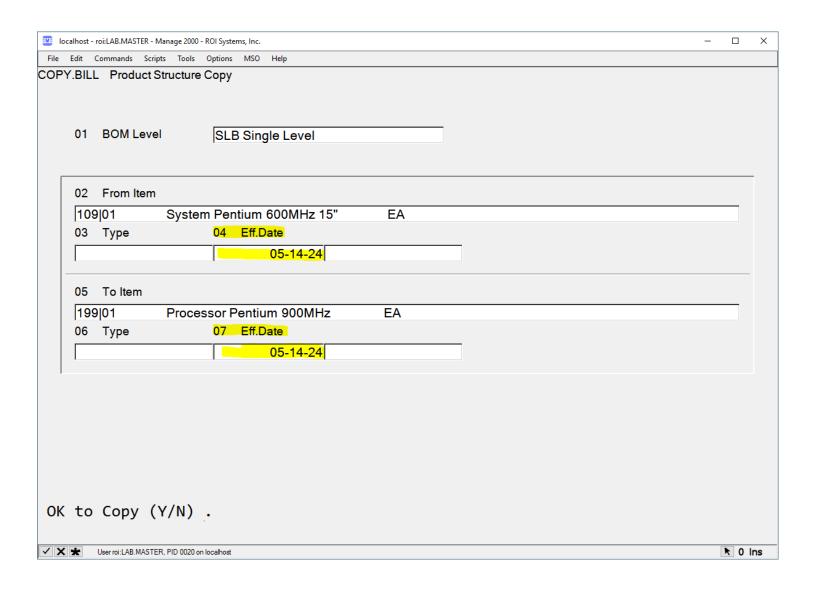


BILLS - BASIC SETUP - DEFINE.DUP.FIELDS



- Multiple duplication schemes can be dictated by the table numbers 1 – 9.
- These schemes are
 arrays of critical Item
 attributes in the Item
 Master (IM), Inventory
 Planning (IPL), and
 IM.UDEF files which will
 be duplicated when this
 table scheme is used.

BILLS - BASIC SETUP - COPY.BILL



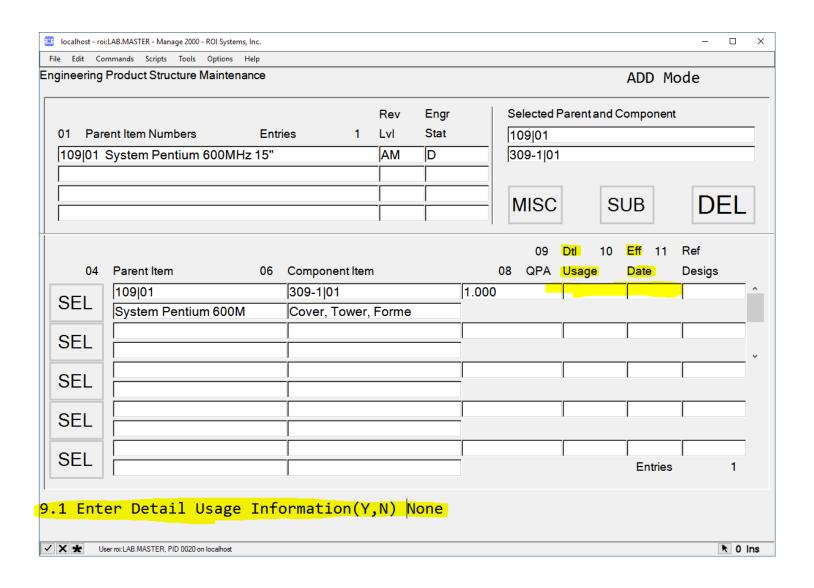
- Once again, an opportunity to used dates of effectivity can be utilized.
- The effective date BOM being copied from is a point in time (Revision) on the existing bill.
- The effective date of the BOM being copied to is the date that this bill will become useful to the system.



BILL.ENTRY



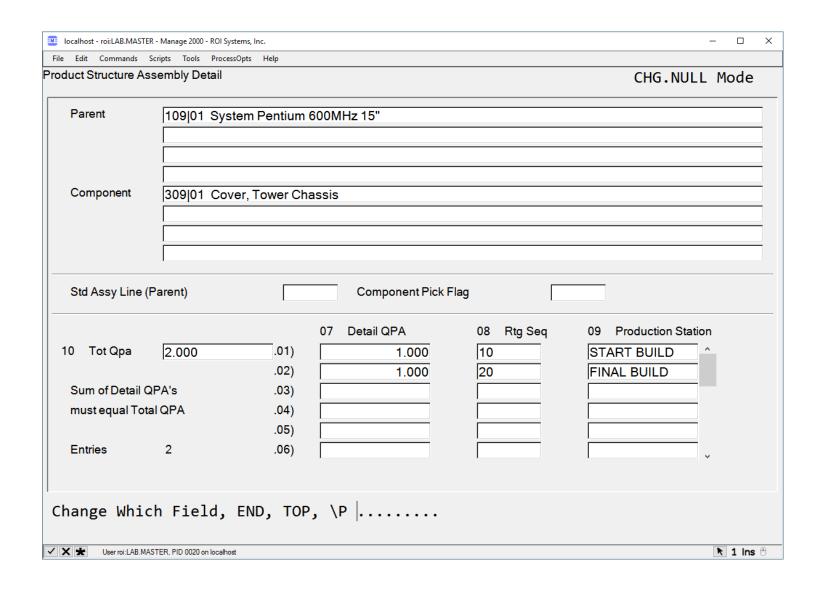
BILLS - BILL ENTRY - BOM.ENTRY



- BOM.ENTRY allows for direct detail information related to QPA to be designated in a useful data entry screen.
- The Enter Detail Usage prompt calls out a secondary screen to detail what is comprised into the QPA total.

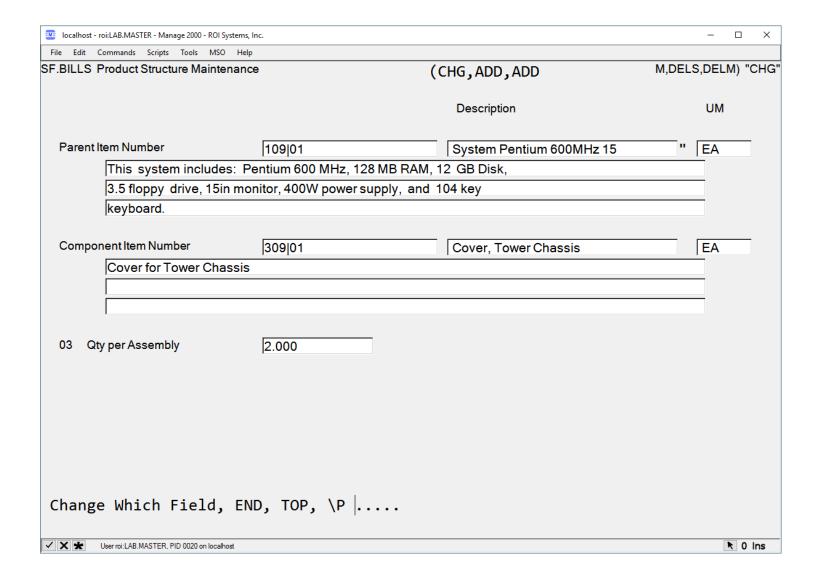


BILLS - BILL.ENTRY - BOM.ENTRY - USAGE.DETAIL



- Detail QPA must tie to the final total.
- The routing sequences provide a step by step guide for arriving at the detail QPA values.

BILLS - BILL.ENTRY - SF.BILLS



 SF.BILLS offers a very quick means for altering QPA.

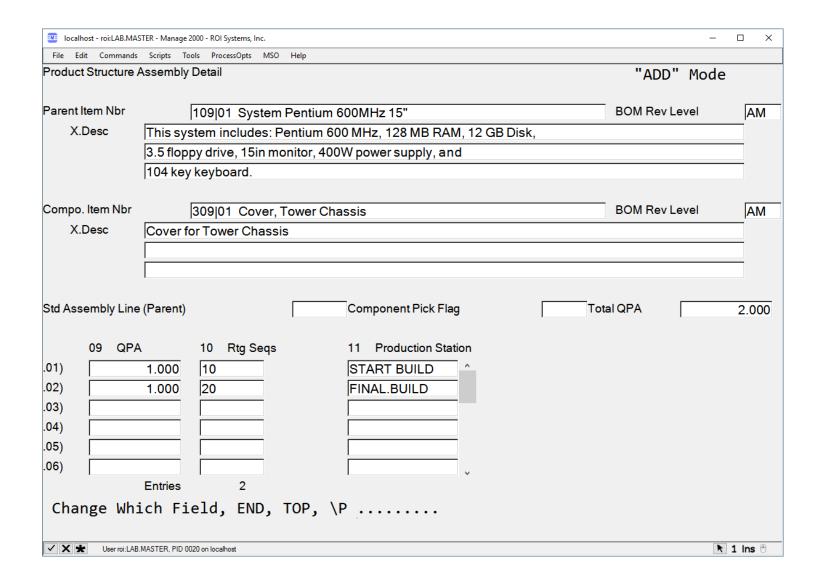


BILLS!!!

localhost - roi:LAB.MASTER - Manage 2000 - ROI Systen	ns, Inc.			_	
File Edit Commands Scripts Tools ProcessOp	<u> </u>				
LLS Product Structure Maintenance	(CHG,ADD,ADDM,DE	LS,DELM,SUB)		"CHG"	
		Description		UM	Rev
					Lvl
Parent Part Nbr	109 01	System Pentium 600I	MHz 15 "	EA	AM
	,	· · ·			
				_	
				_	
Component Part Nbr	309 01	Cover, Tower Chassis	s	EA	AM
	,,	,,			
				_	
l .					
3 Quantity per Assembly	2.000				
Routing Sequence Nbr	MULT				
Scrap Percentage	IVIOLI				
Due Date Offset Days					
•		12 Pof Docianator	NONE		
Start Date Offset Days		13 Ref Designator	NONE		
B Use as Required (Y/N)		14 Parent Notes	NONE		
Balloon Number		15 Par/Comp Notes	NONE		
) Type Code		16 Usage Detail	YES		
Wt/Vol Yield Factor		17 Eng Chg/Dt Eff	YES		
Note Reference					
9 Change Which Field,	TOP, END, \P				
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User roi:LAB.MASTER, PID 0020 on localhost				R	0 Ins 🖰



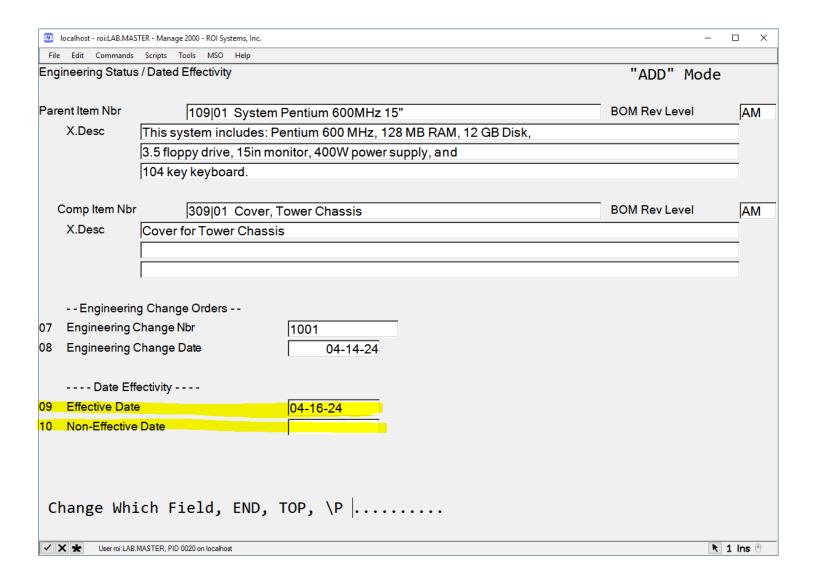
BILLS - USAGE.DETAIL



• The same usage detail system available in the BOM.ENTRY function with specific relation to only the Parent/Child relationship being operated upon on the primary BILLS screen.



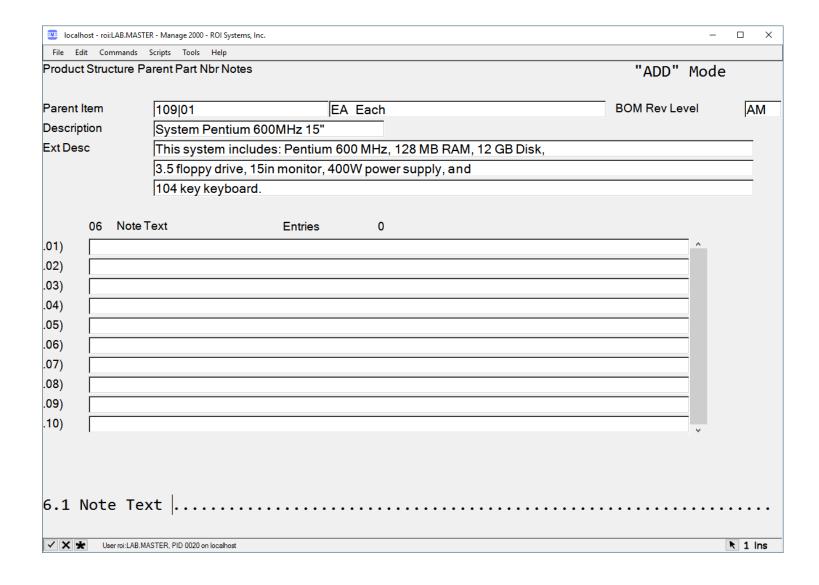
BILLS - EFFECTIVE DATES



- The effective date can be used in SHOW.PS to display the state of a bill of material at a specific point in time (revision).
- The Non-Effective date
 is the point in time that
 this parent-child
 relationship is no longer
 valid to the BOM
 structure.

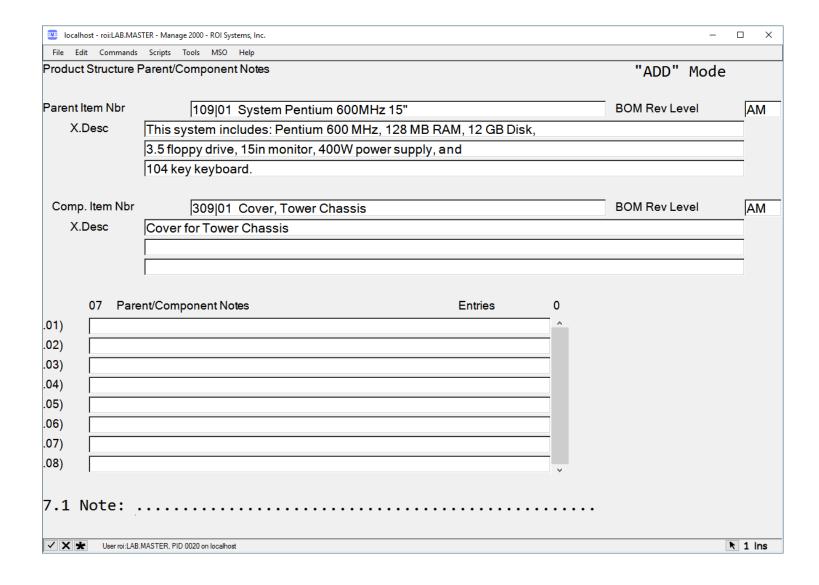


BILLS - PARENT NOTES



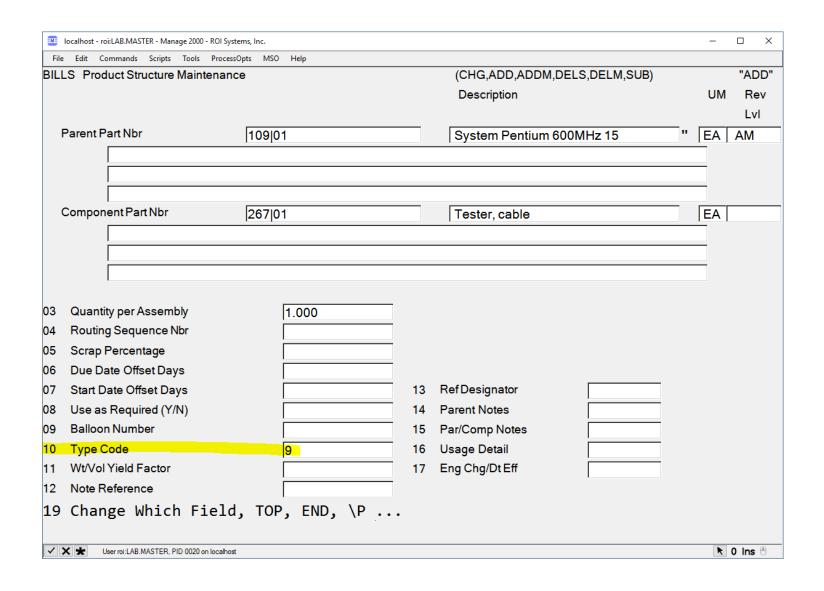
 Parent Notes are added to the Item Master (IM) record.

BILLS - PARENT/COMPONENT NOTES



Parent/Component
 Notes are added to the
 Product Structure (PS)
 record.

BILLS - PS TYPE - UNIQUELY POWERFUL!!!



- This field recognizes "blank",
 "0", or "1" for material
 requirements (MRP) planning
 but bypasses the parent component relationship for
 any user-defined code.
- If this field is blank, all types of bill of materials are valid.
- A user-defined code, which is not validated, indicates a defined product structure type. This is useful for maintaining an accurate bill of materials that includes noninventoried items. Examples are drawings, sand from a yard pile, tap water, and packaging tape.



QUESTIONS?

NUGM 2024 THANK YOU

