User Guide

Master Files Print User Defined Formulas
V21.1.0200

EFI PrintStream | *V21.1.0200 Master Files Print User Defined Formulas User Guide*

Patents

This product may be covered by one or more of the following U.S. Patents: 4,716,978, 4,828,056, 4,917,488, 4,941,038, 5,109,241, 5,170,182, 5,212,546, 5,260,878, 5,276,490, 5,278,599, 5,335,040, 5,343,311, 5,398,107, 5,424,754, 5,442,429, 5,459,560, 5,467,446, 5,506,946, 5,517,334, 5,537,516, 5,543,940, 5,553,200, 5,563,689, 5,565,960, 5,583,623, 5,596,416, 5,615,314, 5,619,624, 5,625,712, 5,640,228, 5,666,436, 5,745,657, 5,760,913, 5,799,232, 5,818,645, 5,835,788, 5,859,711, 5,867,179, 5,940,186, 5,959,867, 5,970,174, 5,982,937, 5,995,724, 6,002,795, 6,025,922, 6,035,103, 6,041,200, 6,065,041, 6,112,665, 6,116,707, 6,122,407, 6,134,018, 6,141,120, 6,166,821, 6,173,286, 6,185,335, 6,201,614, 6,215,562, 6,219,155, 6,219,659, 6,222,641, 6,224,048, 6,225,974, 6,226,419, 6,238,105, 6,239,895, 6,256,108, 6,269,190, 6,271,937, 6,278,901, 6,279,009, 6,289,122, 6,292,270, 6,299,063, 6,310,697, 6,321,133, 6,327,047, 6,327,050, 6,327,052, 6,330,071, 6,330,363, 6,331,899, 6,340,975, 6,341,017, 6,341,018, 6,341,307, 6,347,256, 6,348,978, 6,356,359, 6,366,918, 6,369,895, 6,381,036, 6,400,443, 6,429,949, 6,449,393, 6,476,927, 6,490,696, 6,501,565, 6,519,053, 6,539,323, 6,543,871, 6,546,364, 6,549,294, 6,549,300, 6,550,991, 6,552,815, 6,559,958, 6,572,293, 6,590,676, 6,606,165, 6,633,396, 6,636,326, 6,643,317, 6,647,149, 6,657,741, 6,662,199, 6,678,068, 6,707,563, 6,741,262, 6,748,471, 6,753,845, 6,757,436, 6,757,440, 6,778,700, 6,781,596, 6,816,276, 6,825,943, 6,832,865, 6,836,342, RE33,973, RE36,947, D341,131, D406,117, D416,550, D417,864, D419,185, D426,206, D439,851, D444,793.

Trademarks

Table of Contents

Introduction

Overview

What are they used for? For calculations that do not ‘fit’ the standard process calculations is PrintStream.

What types are there in print? Basically for Labor and Materials in Print processes (Art, Film, Press, Section Finishing, and Bindery).

Contact Information

EFI Support

US Phone:	855.334.4457 (first select option 3, then press option 8, then press option 1)
US Fax:	415.233.4157
US E-mail:	printstream.support@efi.com

Regular Service Desk hours are 8:00 AM to 7:00 PM Central Time, Monday – Friday. Outside of these hours, you may leave a voice mail message and an on-call support representative will be paged. Response time is based on the severity of the issue.

Note For problems involving infrastructure (i.e., computers, networks, operating systems, backup software, printers, third-party software, etc.), contact the appropriate vendor. EFI cannot support these types of issues.

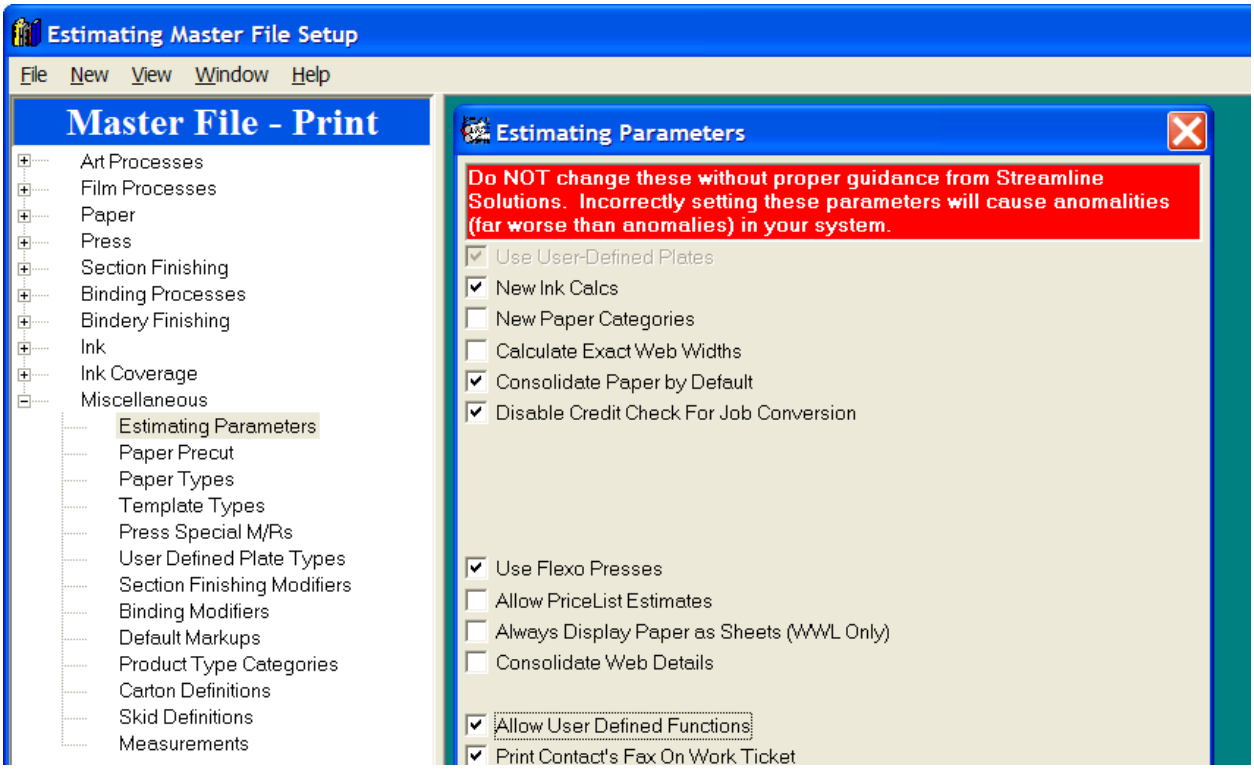
EFI Professional Services

US Phone:	651.365.5321
US Fax:	651.365.5334
E-Mail:	ProfessionalServicesOperations@efi.com

EFI Professional Services can help you perform EFI software installations, upgrades, and updates. This group can also help you implement, customize, and optimize your EFI software plus offer a range of training options.

User Defined Formulas

To setup ‘User Defined Formulas (UDF’s)’ you must first activate them in Master Files - Print > Miscellaneous > Estimating Parameters > check box called **Allow User Defined Functions**.

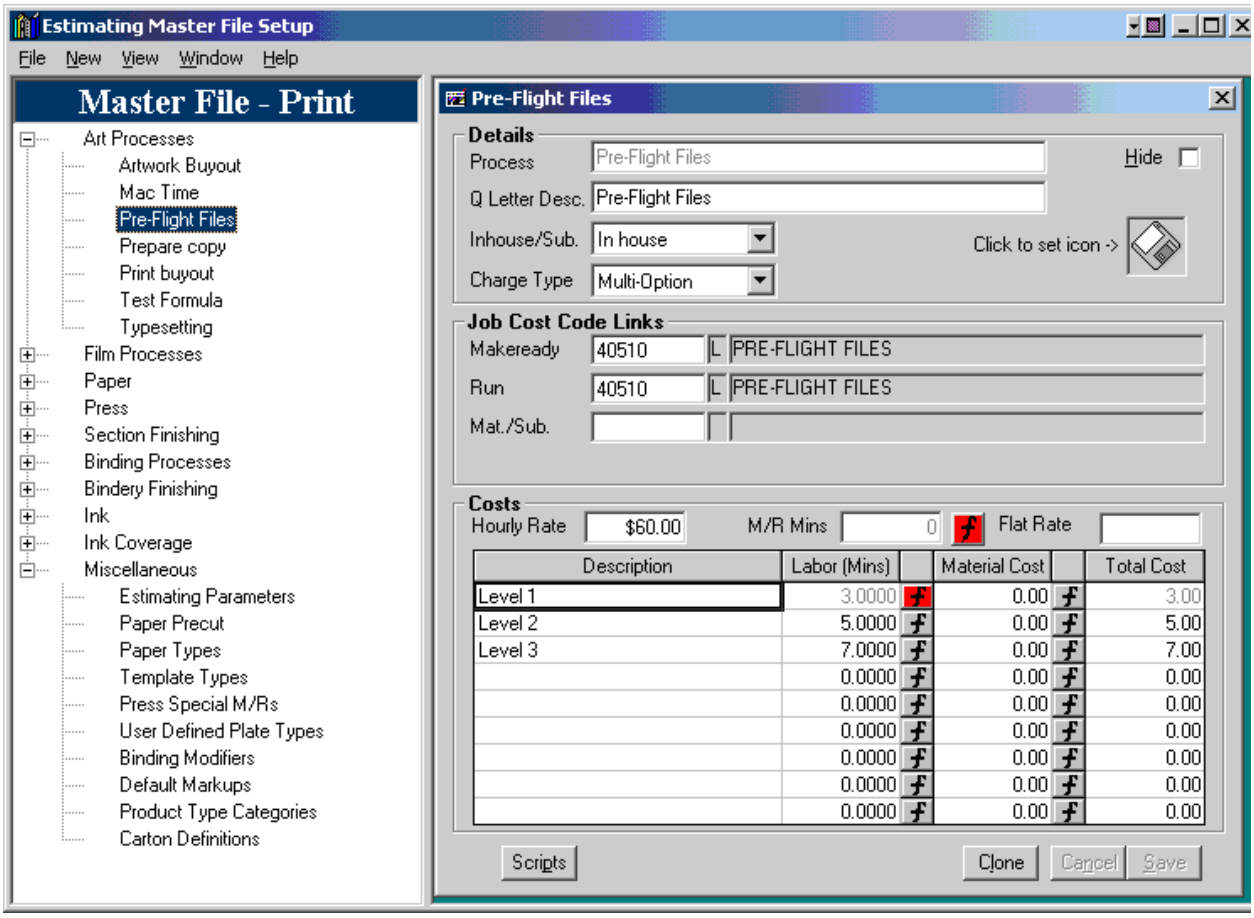


User Defined Formula Print

Once this setting has been activated, any area in Master Files - Print that allows the use of UDF's will now have a **'f'** (**Formula** button) displayed. The screen below shows what this looks like in the Art Process area.

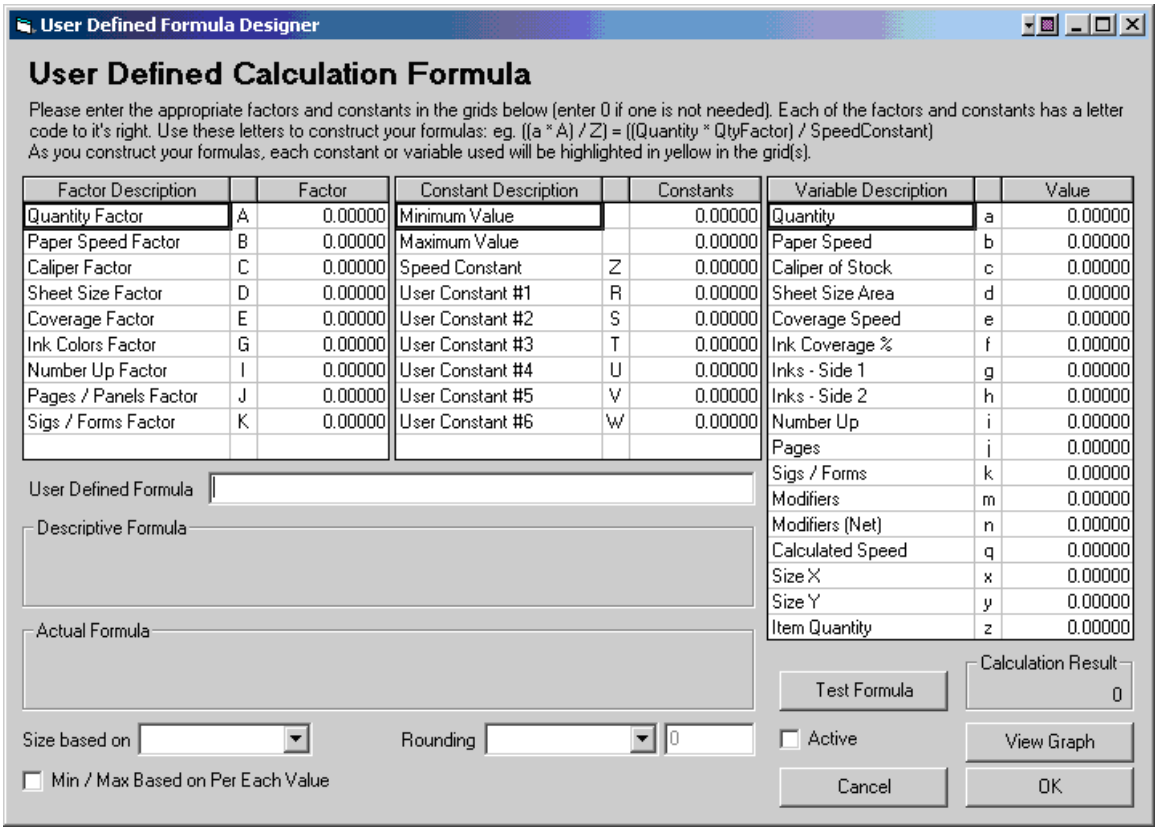
The **Formula** button will have the same appearance regardless of the form it is displayed in. If the Formula button has a RED background, this means the formula is **Active** and will be used when estimating.

If the Formula background is the same as other buttons, this means the formula is **Inactive** and the formula will not be used when estimating. There will be no lost data if the user makes a formula **Active or Inactive**. This simply tells the 'Print Estimating Engine' what calculation values to use.



User Defined Formula Designer

When the Formula button is pressed, the following screen will be displayed.



Factor Table

These are hard coded descriptions to aid in identifying what the factor is based on. Setting these values are optional. The values entered here will never change in the estimate calculation.

Constant Table

Minimum Value: This is for setting the minimum value for the Calculation Result. If set to 0 the formula will not use it to validate the result.

Maximum Value: This is for setting the Maximum value for the Calculation Result. If set to 0 the formula will not use it to validate the result.

The remaining rows are for the convenient use of the person defining the formulas. The values entered here will never change in the estimate calculation.

Variable Table

This table is used to identify various **Calculated** or otherwise unique values based upon the particular quote that is being worked on. The values entered here are for use in **testing** the formula. When doing the estimate calculation, the program will put in the actual calculated value for this item based on the estimate specifications. Depending on the area that the formula is defined for, some of the Variables will not be defined with a value. Use the table below to determine the values that can be used for each calculation type.

Art

Item Quantity (z)

Film

Item Quantity (z)

Section Finishing

Caliper of Stock (c)

Ink Coverage % (f)

Inks Side 1 (g)

Inks Side 2 (h)

Number Up (i)

Quantity (a)

Sheet Size Area (d)

Size X (x)

Size Y (y)

*If **Custom Fold** then: Size X (x) = in feed Size

Bindery

Number up (i)

Quantity (a)

Sigs / Forms (k)

*If ‘Calculate As’ is **Book Binding** then: (z) = Book Thickness

Presswork Calculations

Press Speed

Calculated Speed (q)

Caliper of Stock (c)

Coverage Speed (e)

Presswork

Inks Side 1 (g)

Inks Side 2 (h)

Job Make Ready

Inks side 1 (g)

Inks side 2 (h)

Platemaking

Combined Inks Front & Back (z)

Item Qty

Item Qty (z) = Calculated Job Make Ready Quantity

Sub Job Make-readies

Ink Side 1
Ink Side 2
Item Qty = Calculated sub Job Make Ready Quantity

Plate

If Front
Ink Side 1
ItemQty = calculated make ready quantities
If Back
Ink Side 2
ItemQty = calculated make ready quantities

Sub Plate

If Front
Ink Side 1
Item Qty = calculated make ready quantities

If Back
Ink Side 2
Item Qty = calculated make ready quantities

Remaining Variables that are Defined for All Presswork Calculation

Quantity (a)
Paper Speed (b)
Sheet Size Area (d)
Coverage Speed (e)
Number up (i)
Modifiers (m)
Modifiers Net (n)
Size X (x)
Size Y (y)

User Defined Formula

This is the area where the user will type in the formula to be used. The formula can use numbers, Arithmetic operators **(+ - * / \ ^)** and letters to represent the values used in the tables.

Descriptive Formula

This area displays the **English** representation of the formula. All Letters used in the formula are replaced by the Description used in the table.

Actual Formula

This area displays the actual calculation that will take place. All letters used in the formula are replaced by the Value assigned to that letter.

Size Based On

In development - has not been implemented yet.

Min / Max Based on Per Each Value

This box is designed to be used when building a formula for an Art or Film type process. It allows you to set the Min and Max values for an individual item rather than the total result. This will be described in greater detail in the Film area.

The setting works in this way: After the calculation is complete. It will then divide the **Calculation Result** with the value in **Item Quantity** to come up with a **Per Each Value**. It will then compare this **Per Each Value** with the Minimum and Maximum Values. If it fits in this range of values the Calculation result it left as is. But if the Per

Each Value goes outside of this range, the program will use the respective value to multiply by the Item Quantity value to determine the correct Calculation Result.

Rounding

This allows the user to specify the type of rounding to take place. It has the following options:

None – No rounding will take place

To Nearest – It will round to the nearest number specified

Up to Nearest – It will always round up to the nearest number specified

Down to Nearest – It will always round down to the nearest number specified.

The text box to the side of the combo box represents the number to round to. If the Rounding drop down combo is set to anything but None, then this text box should have a number greater than 0 set in it.

Test Formula Button

This button will cause a calculation to take place. Calculations will also take place automatically as you leave the various cells where values can be defined.

Calculation Result

This is where the calculated value of the formula will be displayed. If any rounding has been specified, this value will reflect those settings.

Active check box

This is where you specify that this formula is to be used in the estimating calculations. If checked the **Formula** button that was pressed will be displayed in Red. No formula information will be lost if this is unchecked. The only way to remove a formula from a process is to remove that process.

View Graph Button

This button is designed to be used when building a calculation for **Press Speed**. It allows you to view a graph to see how your formula will affect the press speed based on the run quantity. The graph is based on the following quantities: 200, 500, 1000, 5000, 10000, 15000, 20000, 25000, 30000, 35000, 40000, 50000, 55000, 60000, 65000, 70000, 75000, 80000, 85000.

Cancel Button

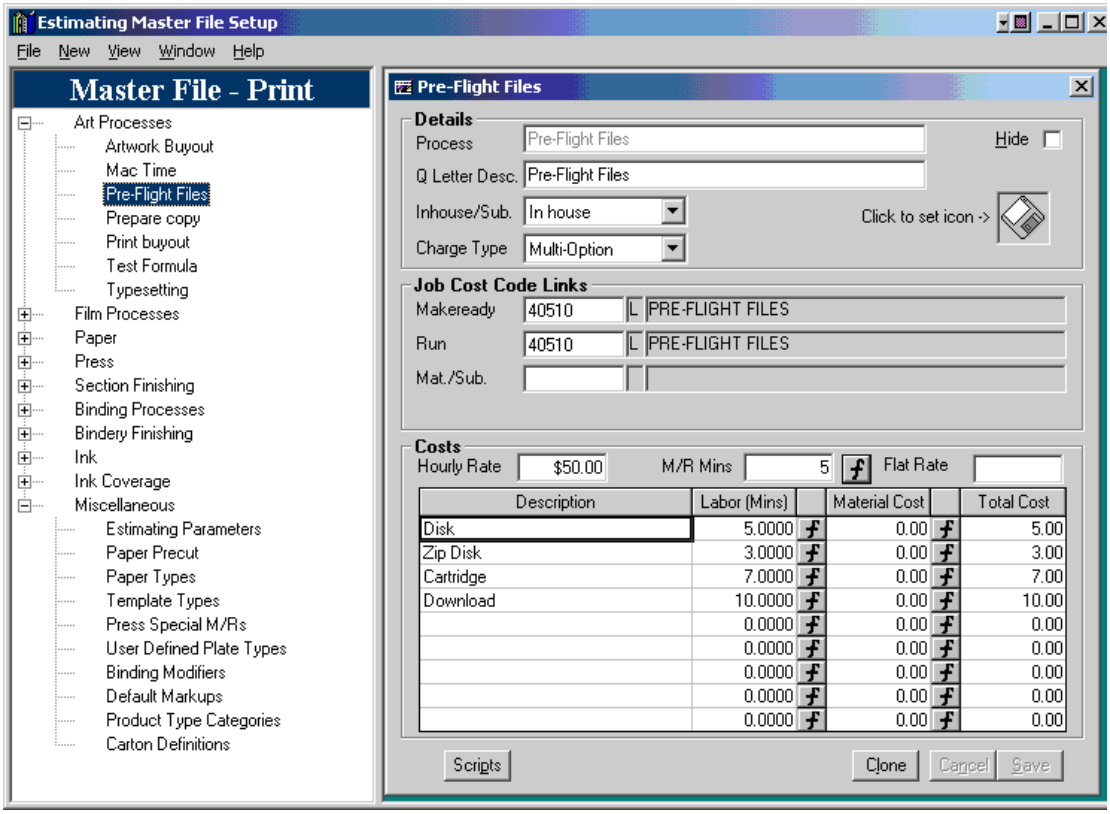
Press this button if you do not want to save any of the changes made on the User Defined Formula Designer screen. The program will return you back to the area where the **Formula** button was pressed.

OK Button

By pressing this button, all changes are saved and you are returned to the screen where the **Formula** button was pressed. The status of the Formula button will be based on the setting for the **Active** check box.

Art & Film Examples

Let's now look at some examples to see how formulas can be used. We will first look at the Art and Film areas. The logic for UDF's in these areas are the same.

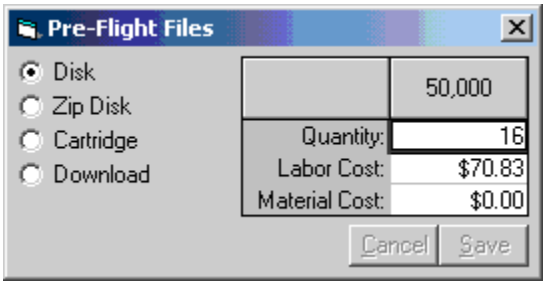


Here is a **Pre-Flight process** that has been set up for various types of media. As it is now, the calculation will take place like this.

(M/R Mins + (Labor Mins * Quantity)) / 60 * Hourly Rate = Labor Cost

Here are the actual calculation values

(5 + (5 * 16)) / 60 * 50.00 = 70.83



If a UDF is defined for M/R Mins and Labor the following formula is used.

(UDF M/R Mins + UDF Labor Mins) / 60 * 50.00 = Labor Cost

Art & Film Process Rules

The following rules apply when working on a UDF for an Art or Film process.

Since the **M/R Mins** is based on Minutes then the UDF must return a number representing the number of minutes.

Labor (Mins) is also based on Minutes so the UDF must return a number representing the number of minutes.

Material Cost is based on a Dollar ($) amount, so the Value returned by the UDF must be a dollar amount.

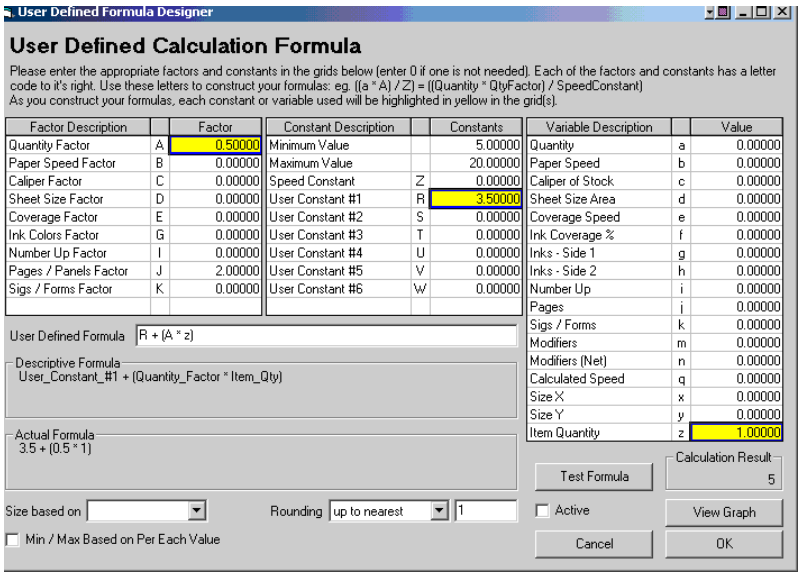
Build a UDF for M/R Mins

The reason we are doing this is because we need to have a base number and minutes and we also want to charge a little more for based on the number of pages to organize the computer to make sure there are enough resources available to start the process.

We want the calculation to be based on the following guidelines.

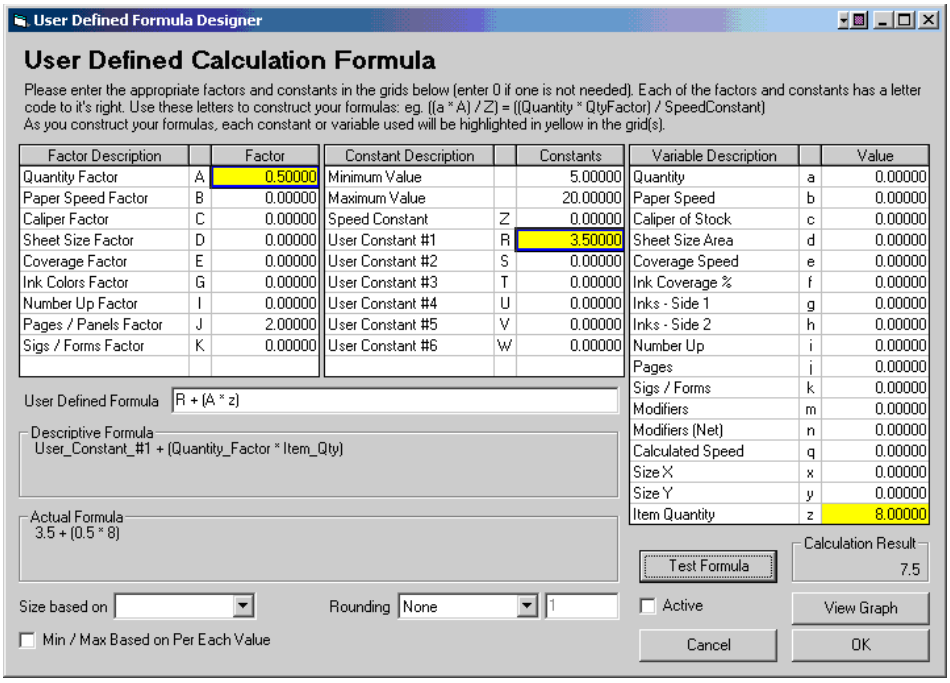
Min amount of time for MR will be 5 mins.
Max amount of time for MR will be 20 mins.
We want to allow 4 minutes for the first page and an additional ½ minute for each additional page.
And we always want to round up to the next minute.

Here is what the UDF Designer screen will look like.

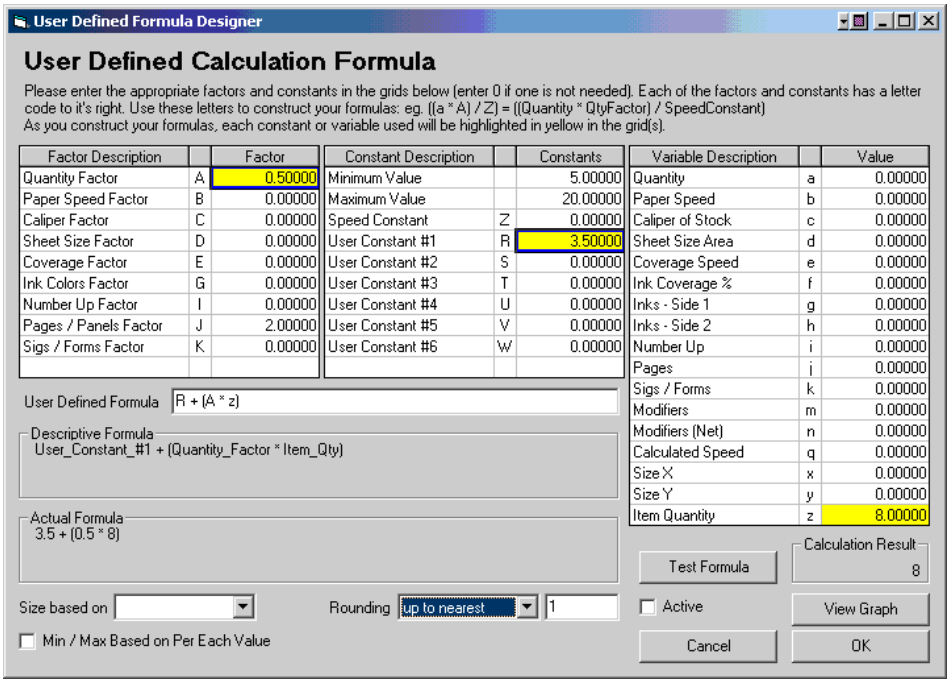


You will notice that as each Letter is entered into the UDF box the corresponding cell in the table is highlighted in Yellow. This is to help you verify that all defined values have been used in the formula. The actual result from the above settings will return 4. But since we have set the **Minimum Value** to 5, the Calculation result is 5.

Turn Rounding Off

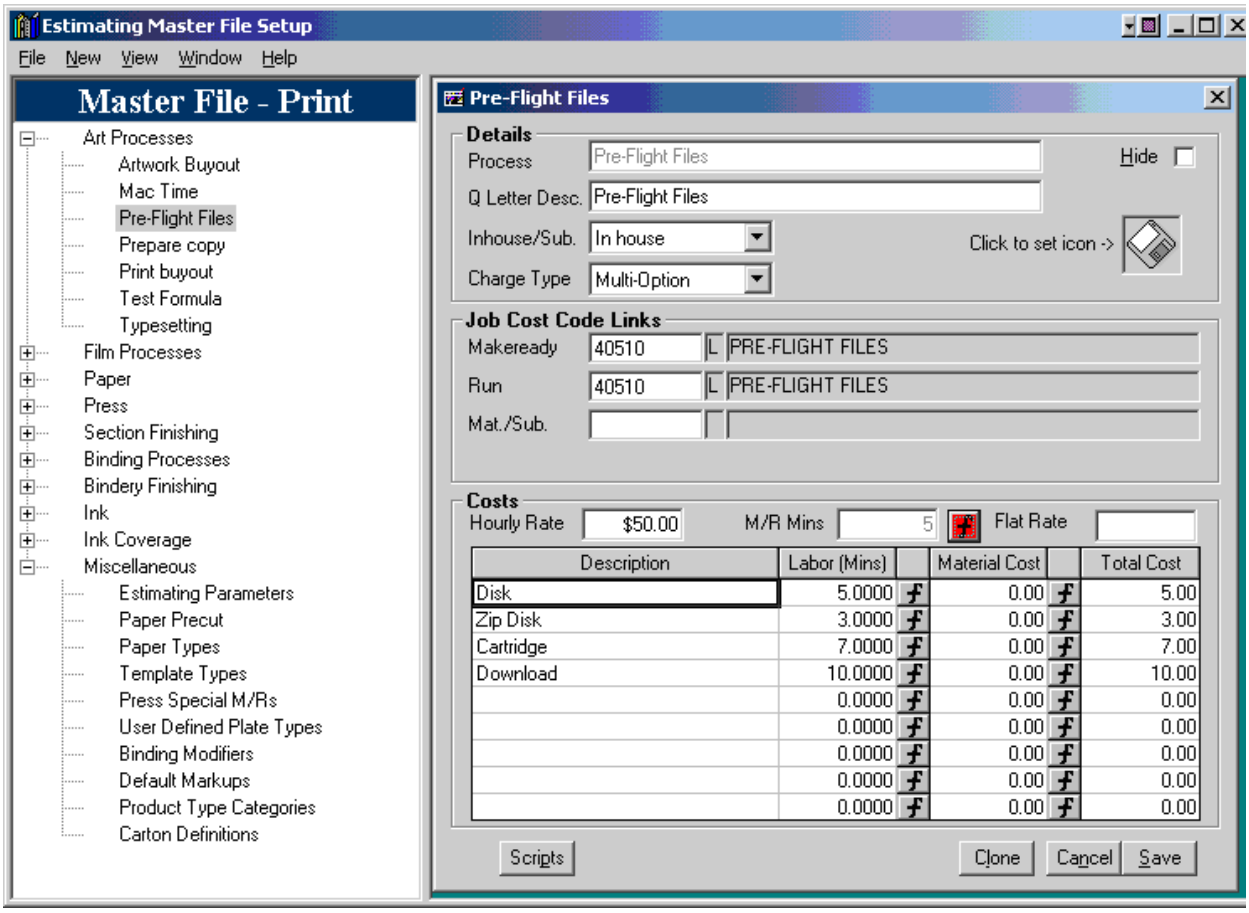


If we **turn rounding off**, and the Item Quantity to 8 the Calculation Result is 7.5.



By rounding **"up to nearest" 1** the Calculated results will be 8. If the Item Quantity is set to 250, the Calculation Result will be 20 because we have set the Maximum Value to 20. If we do not set the Maximum value to 20 the Calculation Result will be 129. Now that we are satisfied with the UDF for M/R Mins we can now select the **Active** check box and press the **OK** button.

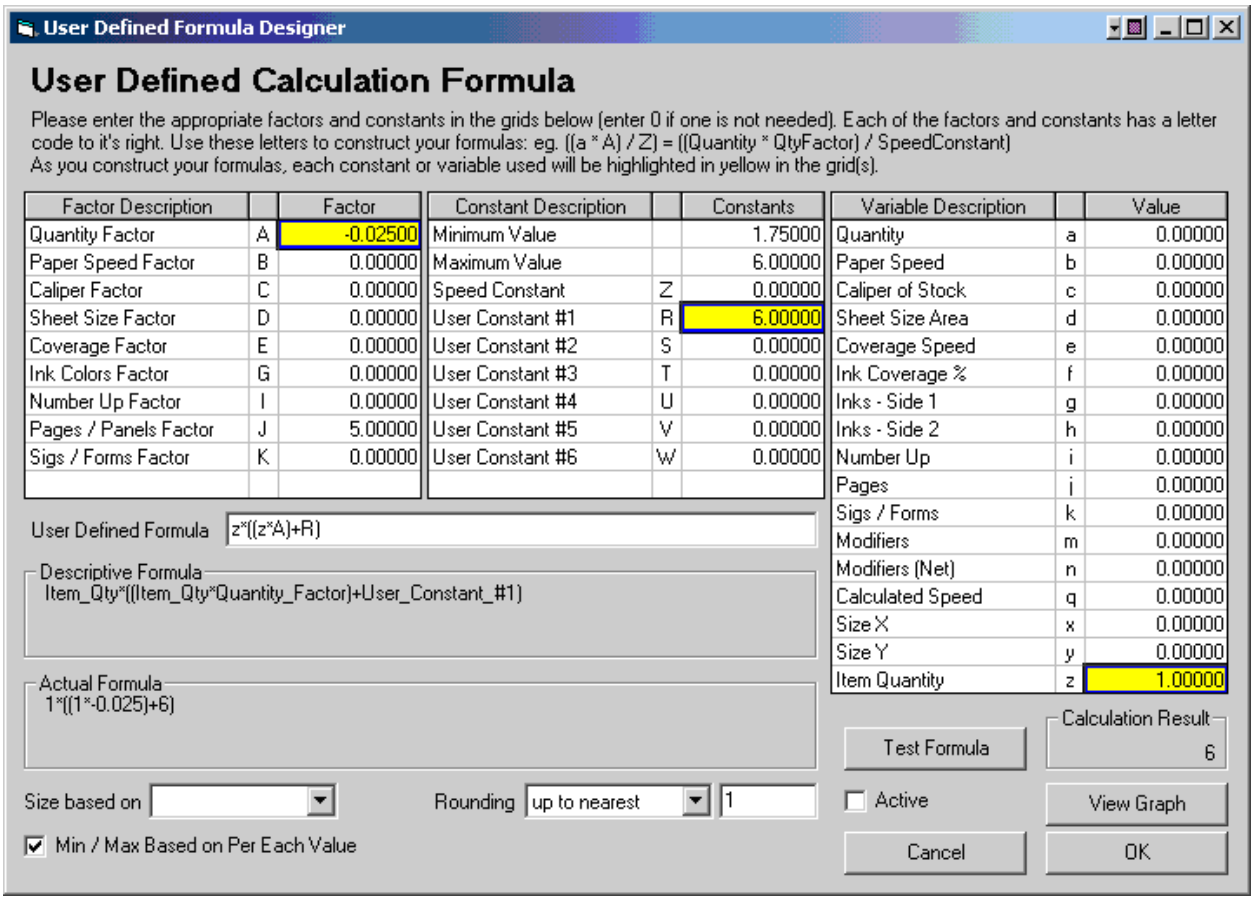
Active Formula for M/R Mins



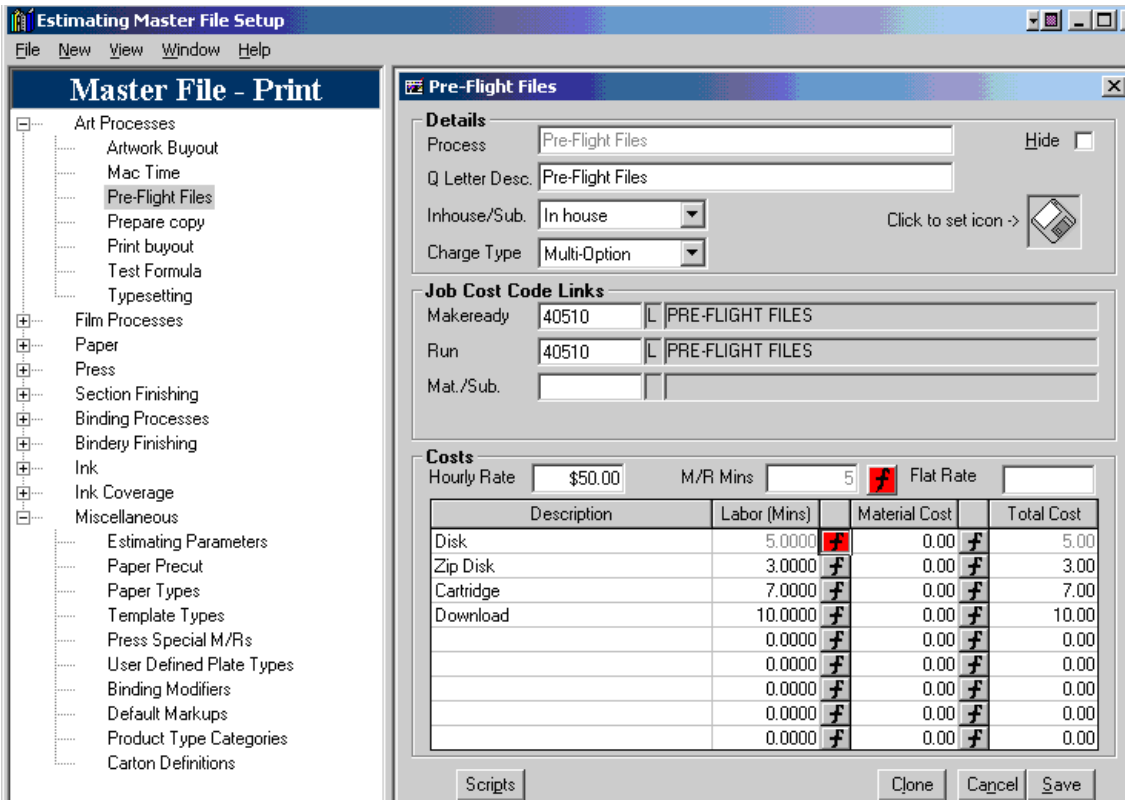
The program will return us back to the calling form and change the background color of the UDF button for M/R mins to red to tell us that the UDF for this item is now active and will be used in the estimate calculations.

Build the Formula for the Labor (Mins)

We will now build the formula for the Labor (Mins) for **Disk**. Our logic will be a little different for this one. In this case we want to change the logic to the way we charge per page (Quantity). We will charge 6 minutes for the first page and then slowly decrease the time for additional pages until we reach a minimum time per page of 1.75 minutes. We want to reach the minimum time per page after doing about 175 pages. Here is what the UDF Designer page will look like.



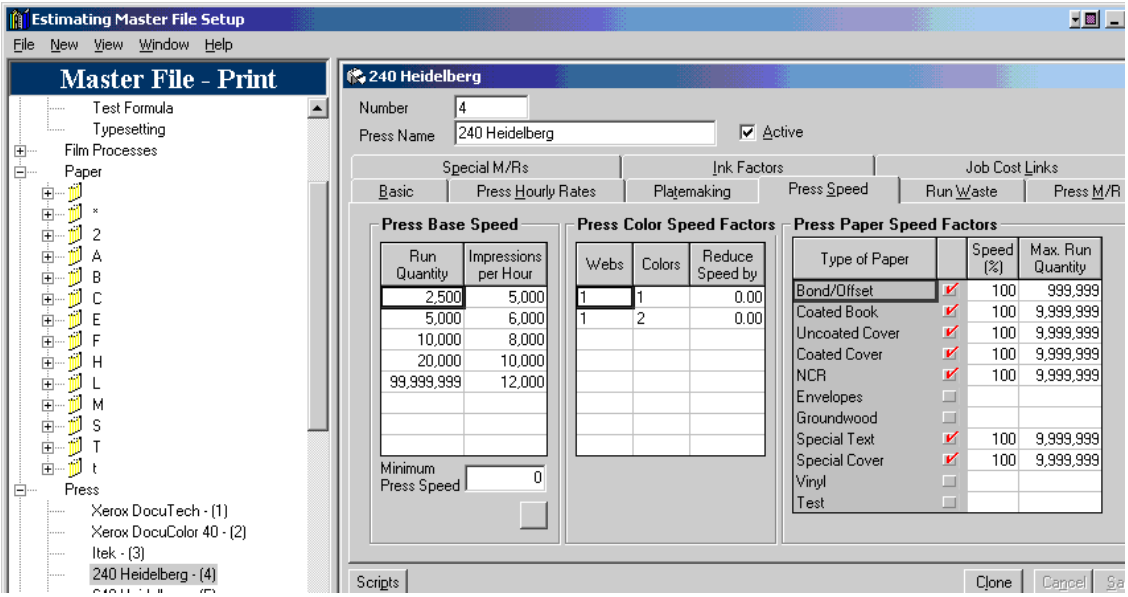
Formula Activated



Notice that as we return back the Disk Labor Min UDF button is now in Red.

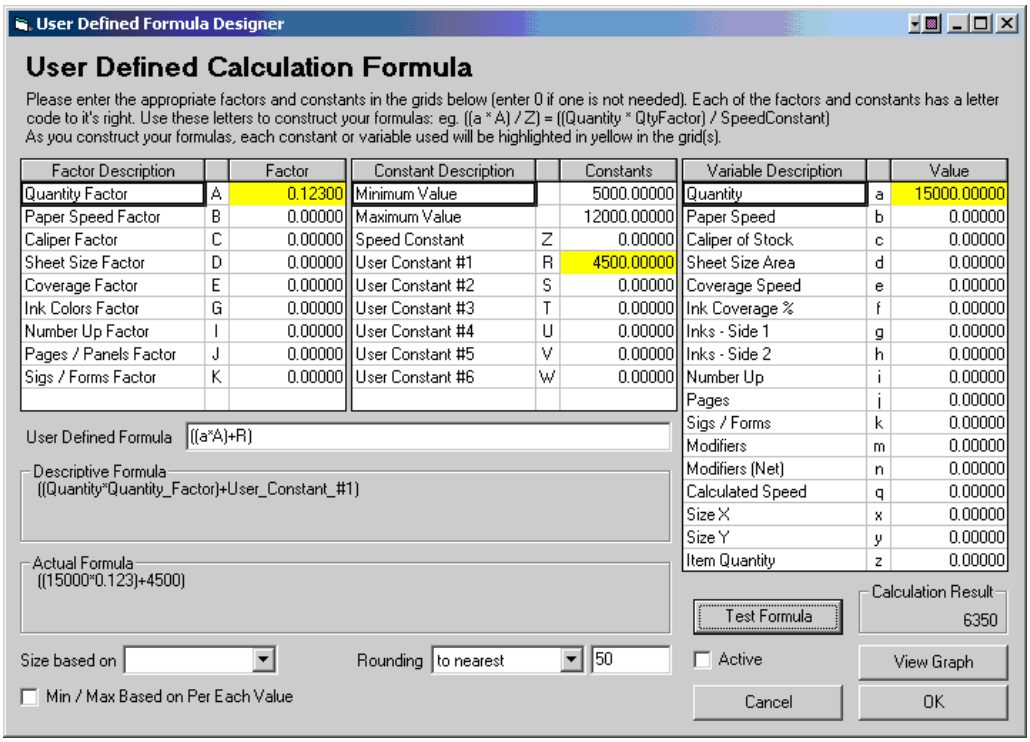
Press Speed

To build a formula to **adjust the press speed,** select the gray button below the Min. Press Speed field. Take the following press settings and give us more of a curve to what the estimated press speed will be.

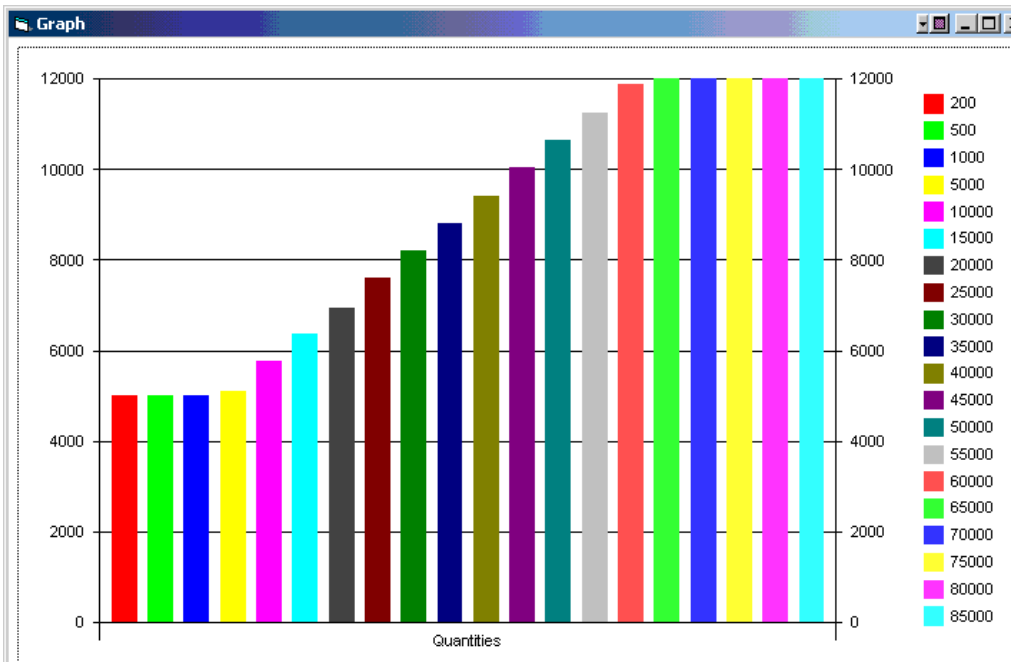


View Graph

We will press the UDF Button for **Press Speed** and the UDF Designer page will come up.



With this formula we can tell the system that the press speed will be 5000 until we run about 4000. At that point it will start to increase in speed until we are doing about 65000. The press speed will stay at 12000 from that point on. Here is what the Graph for this formula will be.



Appendix A - General Functionality Overview

Mathematical Operators

+ Add

- Subtract

* Multiply

/ Divide

\ Divide – Return Whole Number

^ Exponentiation

Use () to force sequence (precedence) of evaluating an equation

Items – A, B, C, D, E, G, I, J, K, R, S, T, U, V W, and Z are used to store user defined values. (The descriptions next to the letters were determined by the customer this was specifically designed for.)

The – a, b, c, d, e, f, g, h, I, j, k, m, n, q, x, y, z are for values that come from the estimate and are calculated by the calculation engine during the estimating process.

Minimum Value is the minimum value for the calculation. (If result of calculation is less than the minimum value then the UDF will return the minimum value.)

Maximum Value is the maximum value for the calculation. (If result of calculation is greater than the maximum value (and maximum value is greater than 0) then the UDF will return the minimum value.)

Size Based on is to allow the user to specify the size that will be used in **Sheet Size Area**. It can be Size X, Size Z or Area (in sq inches).

Rounding allows rounding of the result of the formula. Up, Down, Nearest and then the value specified.

Min / Max Based on Per Each Value is used only for Art and Film UDFs. This allows the results of the formula to set the min and max value based on a **Per each** value.

IIF Statements

The syntax is as follows: IIF(expr, truepart, falsepart)

(There is NO space between the 'F' and '('. If you put in a space system will report a variable error.)

The IIF function syntax has these arguments:

Part Description

Expr Required. Expression you want to evaluate.

truepart Required. Value or expression returned if expr is True.

Falsepart Required. Value or expression returned if expr is False.

Remarks

IIF always evaluates both truepart and falsepart, even though it returns only one of them. Because of this, you should watch for undesirable side effects. For example, if evaluating falsepart results in a division by zero error, an error occurs even if expr is True

Example for a run speed break based on quantity. (A = Quantity)

A = 10000

IIF(A < 15000, 5000, 6500)

The above will return 5000

If A = 15000 then it will return 6500

You can also nest IIF statements for even more flexibility

IIF(A < 15000,IIF(A < 7500, 4000, 5000) , IIF(A < 25000, 6500, 8000))

If A = 1000 then it will return 4000

If A = 8000 then it will return 5000

If A = 20000 then it will return 6500

If A = 50000 then it will return 8000

Operators that can be used in IIF Statements

< Less Than

> Greater Than

<= Less than or equal to

>= Greater than or equal to

== Equal to

• Not equal to

OR

AND

Use of Hard Coded Values in a Formula:

Decimal values between 0 and 1 need to be preceded with a '0.' Example;

.6 * q - will give a Syntax Error.

0.6 * q - is the correct formula

When using an = sign in an IIF, it needs to be changed to ==. Example;

IIF(o=0,F2,Z/F1*.876) Will give a Syntax Error

IIF(o==0,F2,Z/F1*0.876) Is the correct Formula

Compound Statements

Each equation statement is separated by either a Colon character (:) or by the Semi-Colon character (;)

The Result for each equation statement is saved to an internal variable. This variable is F1 for the first statement, F2 for the second statement, F3 for the third and so forth….

Here is a simple example of how this might be used:

Running Notch Case w/trim width <= 8 inches = 2000 per hour (base run rate)

Running Notch Case w/trim width > 8 inches = 1900 per hour

Running Notch Case > 1.25” bulk = 1600 per hour

User Defined Formula example:

These are the variables that would be passed from the PrintEstEngine to the User Defined Formula

q = Calculated Speed

x = Trim width

z = Spine Bulk

In this example they want the formula to return the Slowest of the two calculated speeds

IIF(x > 8, q * 0.95, q) : IIF(z > 1.25, q * 0.8, q) : IIF(F1 < F2, F1, F2)

The results for the first formula IIF(x>8, q * 0.95, q) would be assigned to F1

The results for the second formula IIF(z > 1.25, q* 0.8, q) would be assigned to F2

The Result would be from the third formula IIF(F1 < F2, F1, F2)

Here is a more complex example for Speed Adjustments for Text Bulk

If Text Bulk < ¼ inch then reduce speed by 25%

If Text Bulk > 1 inch then reduce speed by 25%

If Text Bulk > 2 inches then reduce speed by 35%

Additional Speed Adjustments for Trim Size

If Unbound Size <= 4 or Bound Size <= 5.5 then reduce speed by an additional 25%

If Unbound Size > 9 or Bound Size > 13 then reduce speed by an additional 25%

Here is my explanation as to how I set this up

Z = Your Run quantity Break between speed settings: 1000

R = Your Run Speed when running less than 1000: 1525

S = Your Run Speed when running 1000 or more: 2200

The next Variables are passed from the Estimate to the User Defined Formula calculation.

a = Run Quantity

x = Trim Size 1

y = Trim Size 2

z = Text Bulk

First let me review some of the features and rules for IIF statements and Multiple Equation User Defined Formulas.

Above the formula I have labeled each statement with its corresponding internal variable.

F1 : F2 : F3 : F4 : F5 : F6 (Result)

IIF(a<Z,R,S) : IIF(z<0.25|z>1,0.25,0) : IIF(z>2,0.35,F2) : IIF(x<=4 | y<=5.5,F3+0.25,F3) : IIF(x>9 | y>13,F4+0.25,F4) : F1 * (1-F5)

F1 is used to determine the initial speed to use based upon the run quantity. It reads like this:

If Run Quantity < 1000 then F1 = 1525 else F1 = 2200

F2 is used to determine the slowdown factor for text bulk. It reads like this:

If Text Bulk < 0.25 or Text Bulk > 1 then F2 = 0.25 else F2 = 0

F3 is used to determine the additional slowdown factor for text bulk. It reads like this:

If Text Bulk > 2 then F3 = 0.35 else F3 = F2

F4 is used to determine the additional slowdown factor for the smaller trim sizes. It reads like this:

If TrimSize1 <= 4 or TrimSize2 <= 5.5 then F4 = F3 + 0.25 else F4 = F3

F5 is used to determine the additional slowdown factor for the larger trim sizes. It reads like this:

If TrimSize1 > 9 or TrimSize2 > 13 then F5 = F4 + 0.25 else F5 = F4

F6 (Result) is used to take the run speed and apply the slowdown factor. It reads like this:

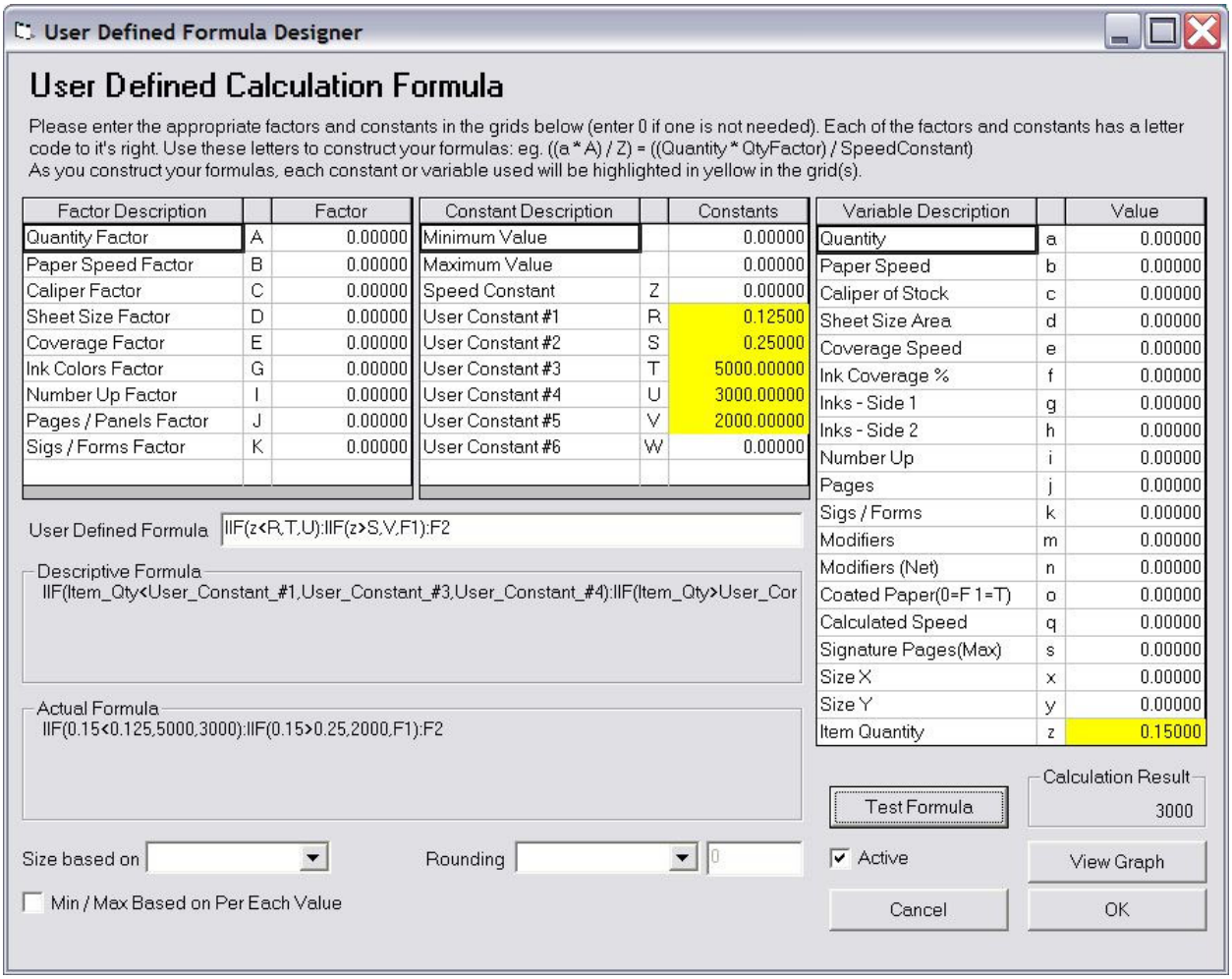
F6 F1 F5

Result = RunSpeed * (1 – Slowdown Factor)

Appendix B – UDF Examples

UDF for Folding Booklets Parallel after they have been stitched

This UDF is based on run speed breaks for a varying booklet thickness.



Number of Books Folded per Hour

Book Thickness	Books per Hour
0.000 – 0.124	5000
0.125 – 0.250	3000
0.251 and >	2000

UDF for Bindery Punch Sheets

Description: Punching Loose Sheets as a Bindery Process

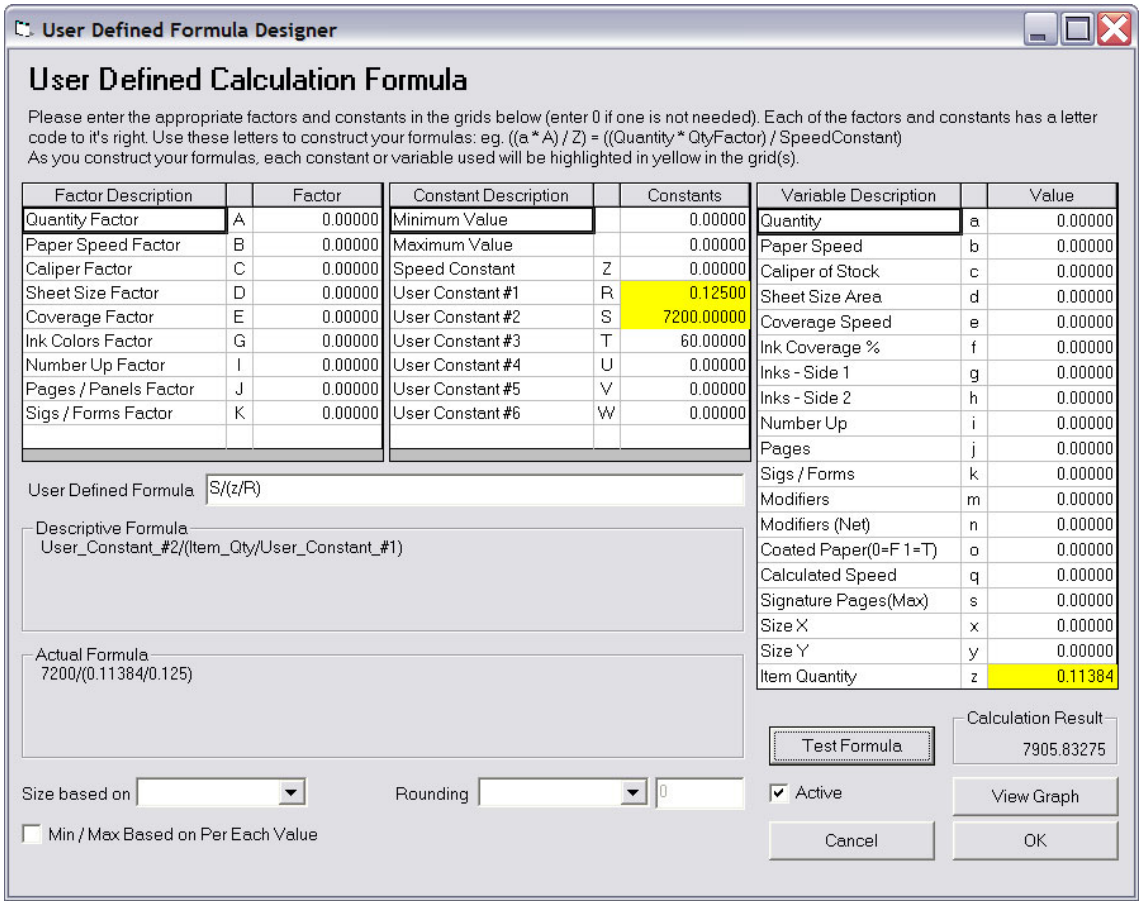
Example: 48-Page + Cover Book, Gathered, Collated, and/or Bound and Spine Trimmed to be Punched for Mechanical Binding.

User Defined Formula Designer

Under the Run Speeds Tab, click on the 'f' icon to open the User Defined Formula Designer.

Enter the User Defined Formula as 'S/(z/R)'and enter the Constant values; where 'R' represents the punch lift value in inches '0.125', 'S' as the number of punches per hour '7200', and 'z' represents the book thickness in inches. The formula calculates the number of books punched per hour.

Select the **Active** check box and click **OK**. Then **Save** the changes made to the Run Speed tab for this process.



Using the formula example above, a 48-Page + Cover book thickness measures 0.11384 inches. The formula then calculates a run speed of 7,905.83275 books per hour.

The actual calculation values are displayed above in 'Actual Formula'.

UDF for Wire-O Bind

Description: Wire-O Bind books as a Bindery Process to include both Material and Labor costs.

Example: 48-Page + Cover Book, Gathered, Collated, and/or Bound, Spine Trimmed, Punched to be Wire-O Bound.

User Defined Formula Designer (Material/1000)

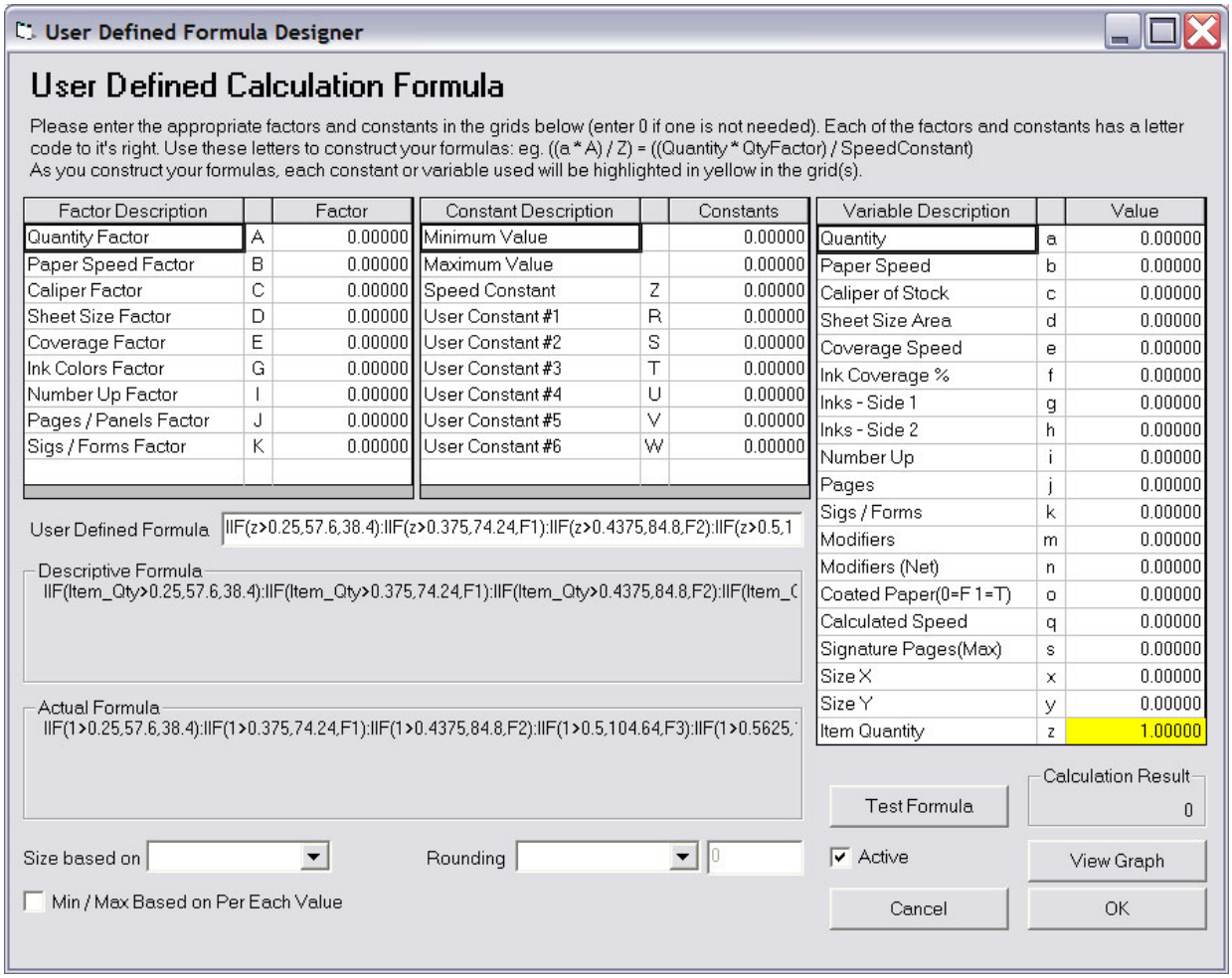
Under the Run Speeds Tab, click on the 'f' icon to open the User Defined Formula Designer.

Enter the User Defined Formula for Material/1000:

IIF(z>0.25,57.6,38.4):IIF(z>0.375,74.24,F1):IIF(z>0.4375,84.8,F2):IIF(z>0.5,104.64,F3):IIF(z>0.5625,109.20,F4):
IIF(z>0.625,135.87,F5):IIF(z>0.75,166.32,F6):IIF(z>0.875,190.26,F7):F8

The formula calculates the material/1000 based on the thickness of the book.

Select the **Active** check box and click **OK**. Then **Save** the changes made to the Run Speed tab for this process.



UDF for Material/1000 is based on this table

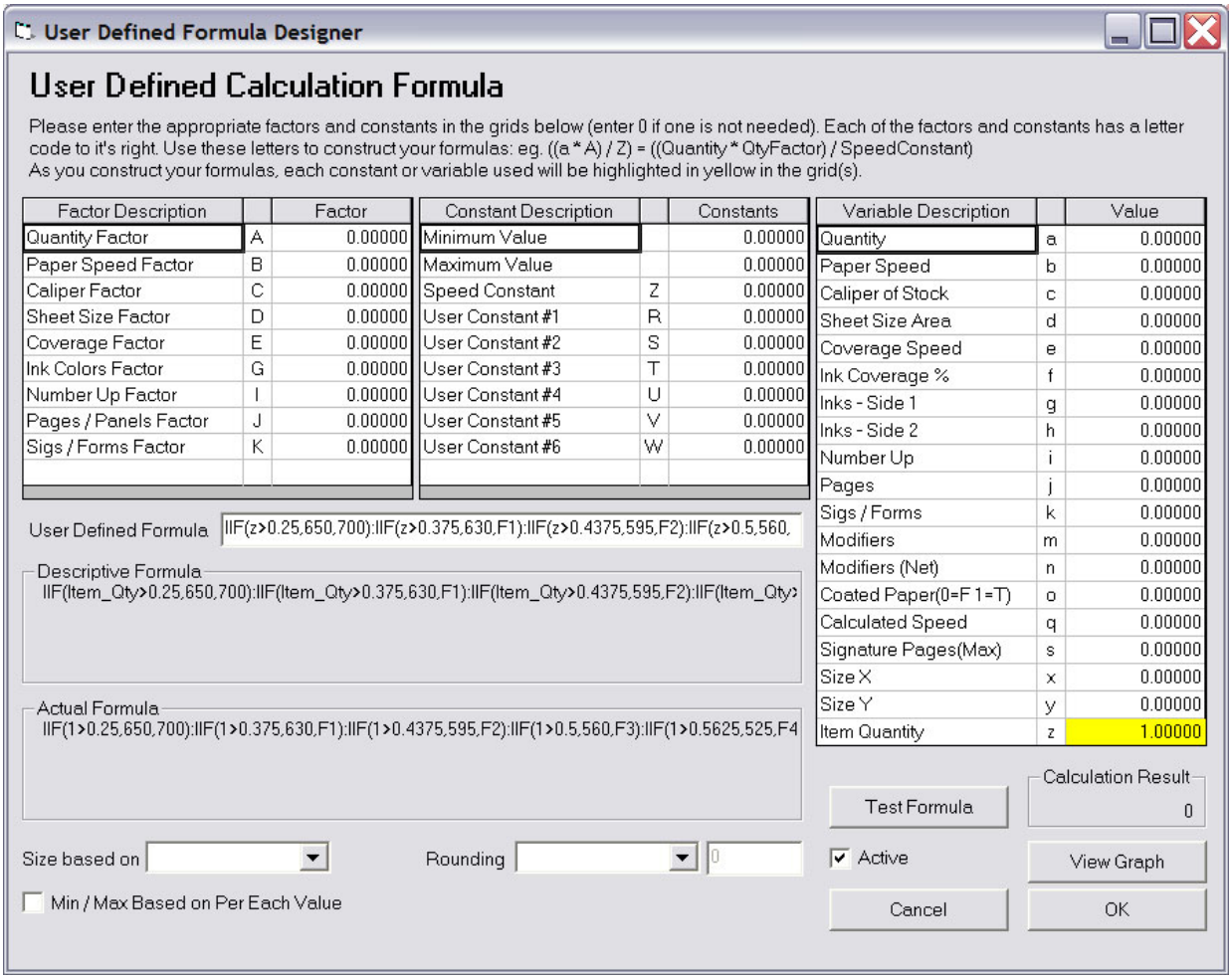
Book Thickness	Mat/1000
0.2500	$38.40
0.3750	$57.60
0.4375	$74.24
0.5000	$84.80
0.5625	$104.64
0.6250	$109.20
0.7500	$135.87
0.8750	$166.32
1.0000	$190.26

User Defined Formula Designer (Units/Hour)

Under the Run Speeds Tab, click on the 'f' icon to open the User Defined Formula Designer.

Enter the User Defined Formula for Units/Hour:
IIF(z>0.25,650,700):IIF(z>0.375,630,F1):IIF(z>0.4375,595,F2):IIF(z>0.5,560,F3):IIF(z>0.5625,525,F4):IIF(z>0.625,490,F5):IIF(z>0.75,455,F6):IIF(z>0.875,420,F7):F8

The formula calculates the number of books bound per hour based on book thickness. Select the **Active** check box and click **OK**. Then **Save** the changes made to the Run Speed tab for this process.



UDF for Units/Hour is based on this table

Book Thickness	Units/Hr
0.2500	700
0.3750	665
0.4375	630
0.5000	595
0.5625	560
0.6250	525
0.7500	490
0.8750	455
1.0000	420

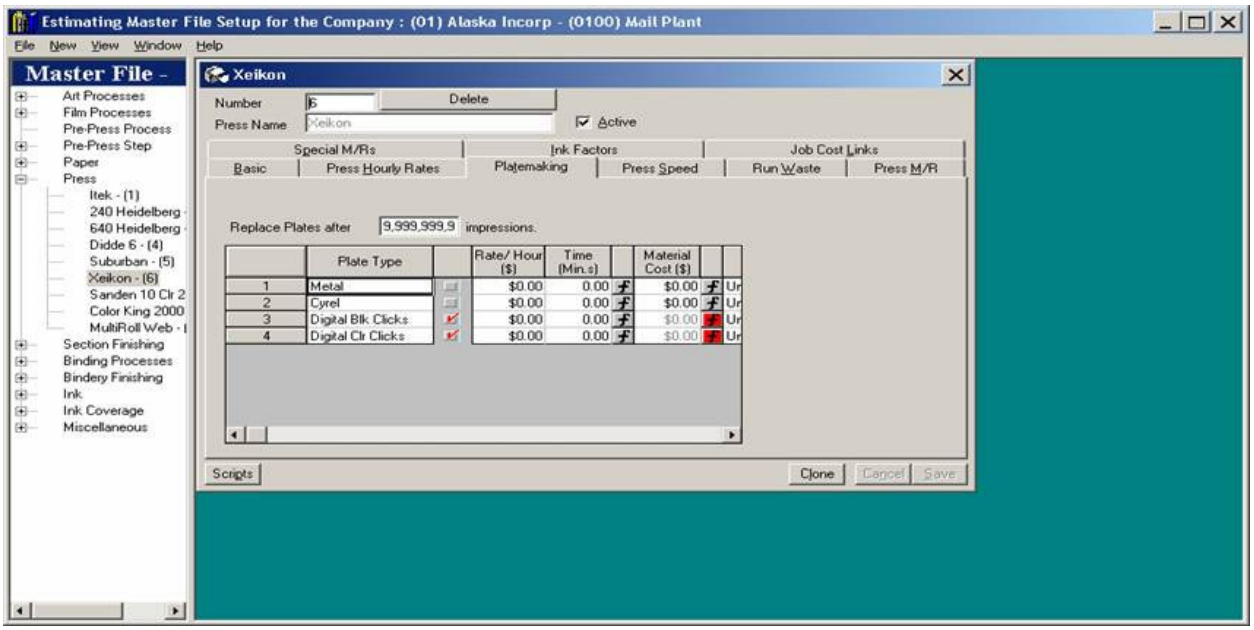
UDF for Digital Presses

The challenge with setting up the digital presses in PrintStream is that many our customers want the ability to capture the “click charge” as a material cost on the estimate for digital presses. Some users have tried to setup “toner” as inks and others have tried to build the “click charge” into the hourly rate for the machine. Neither option has worked well.

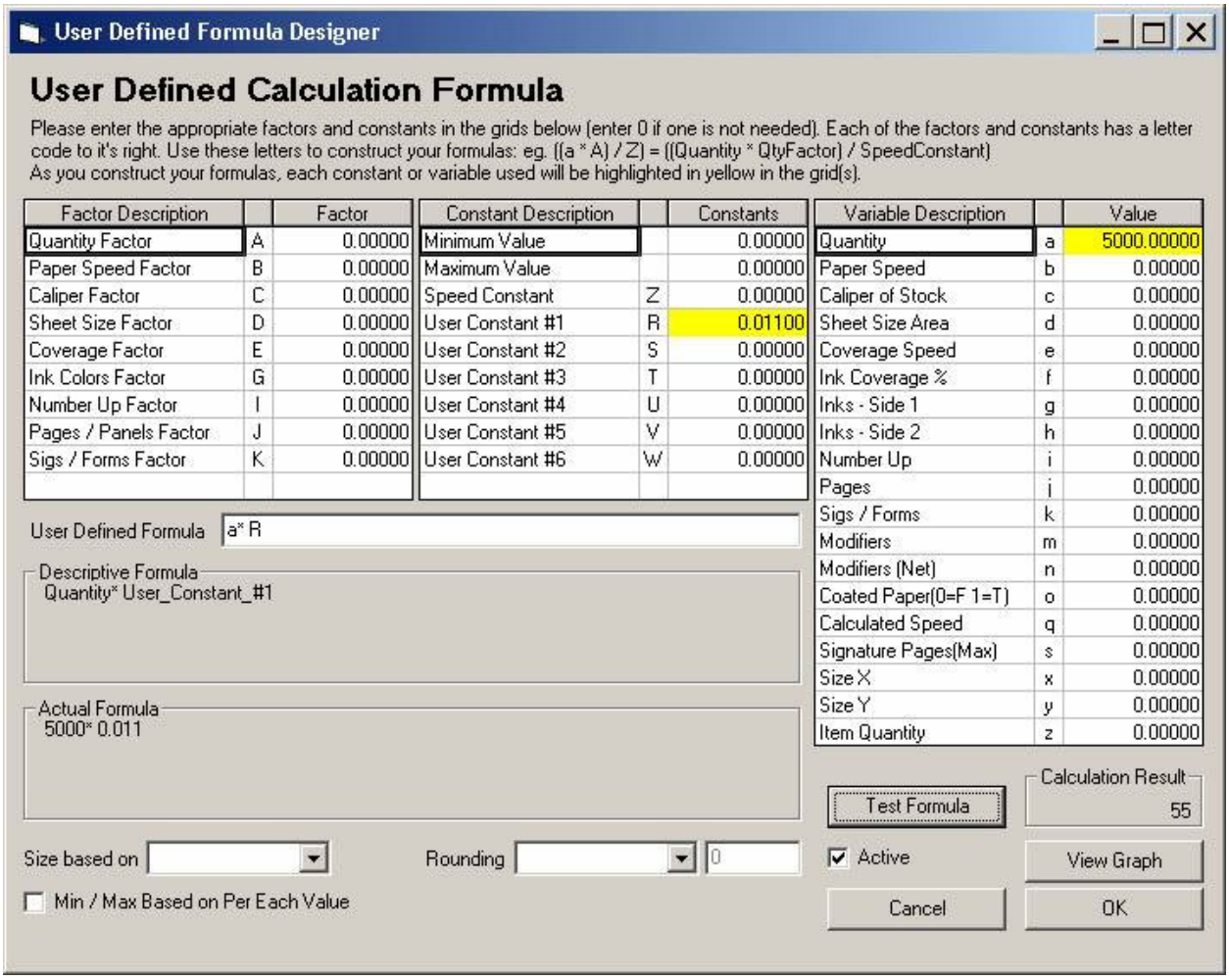
The solution below describes how to create a unique plate type for Digital Press Clicks and then create a **User Defined Formula** so that the program will calculate the click charge and include it as a material cost on the estimate. The other setups for run speeds, hourly rates, and waste will be used to calculate the labor costs, which is similar to offset presses.

Below are two examples of **User Defined Formulas** where there are two different “click charges”, one for only black and one for color. The color is a more complex formula because the “click charge” is the same whether you are running 2 colors or 4 colors. The key to the formula is that the (a) value for quantity always represents the number of impressions, not the component quantity, so the “click charge” is always calculated on the number of impressions which is how it should be.

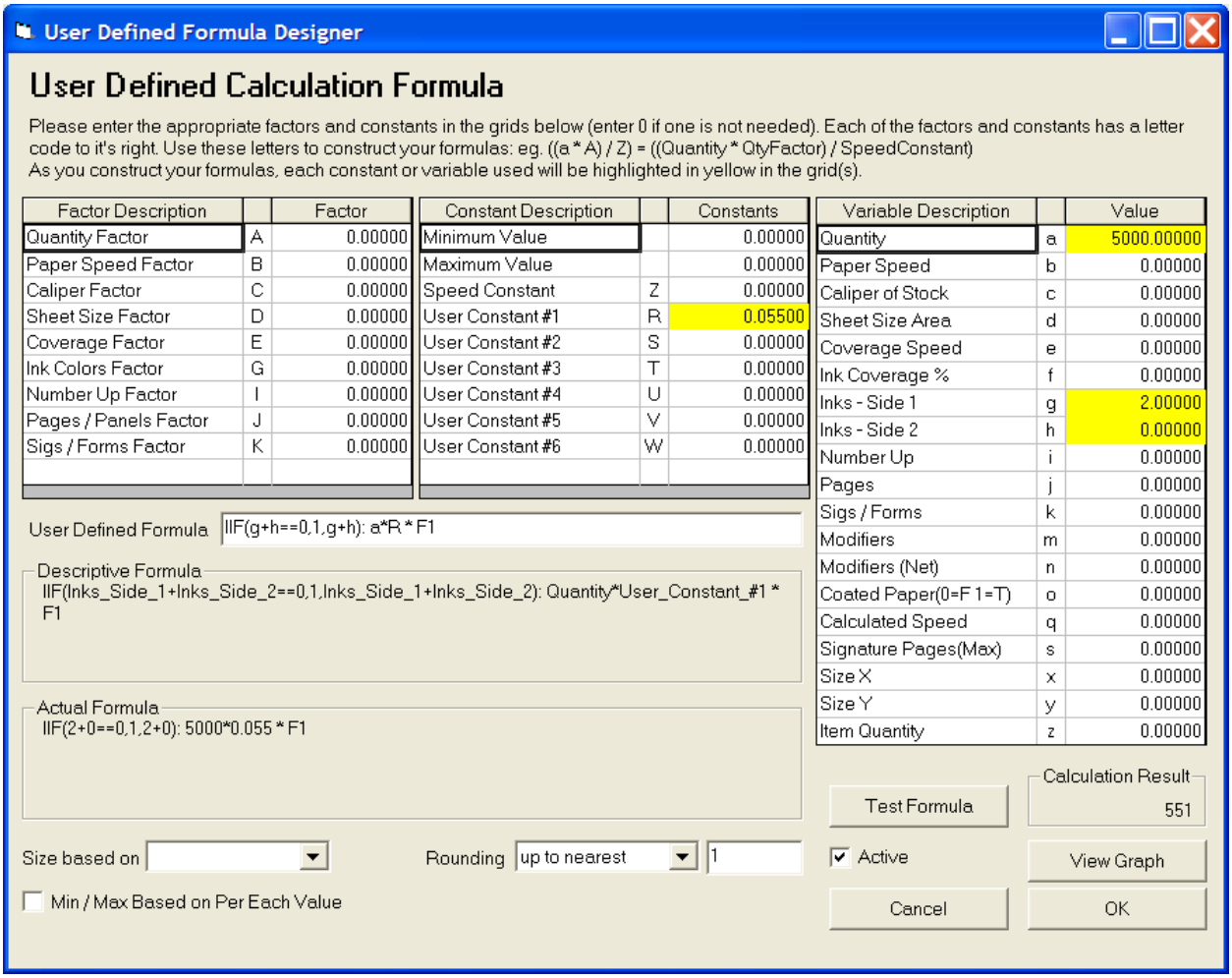
In this screenshot you can see the two different plate types one for black clicks and one for color clicks since the formulas are different. So the “click charge” will be based on the plate type you select in estimating. You can also see that the formulas are setup as **Material** formulas.



Below is the formula for the black click charge it is a really simple formula. It takes the number of impressions run on the press including run waste and multiplies it by the actual click charge. If your click charge varies by quantity you can setup a more complex formula using the “IIF” logic which will first find which quantity break it falls into and then pulls in the corresponding click charge.



This is the formula for the color click charge. This is more complex because the click charge is the same whether run 2 colors or 4 colors, so it returns the same result regardless of how many colors are being run.



How the “click charges” display on the estimate. If you want to show the “click charge” as a separate material charge then you would need to create a unique **Material Activity Code** for “Digital Click Charges” and link as the **Plate Material Activity** for this press. You could then create a line in the material area on Report 3, the Quote Breakdown report for “Click Charges” and link to this activity. On the backside of the Quote Breakdown report the “click charges” will display under the current plate charge area.

UDF for Drilling

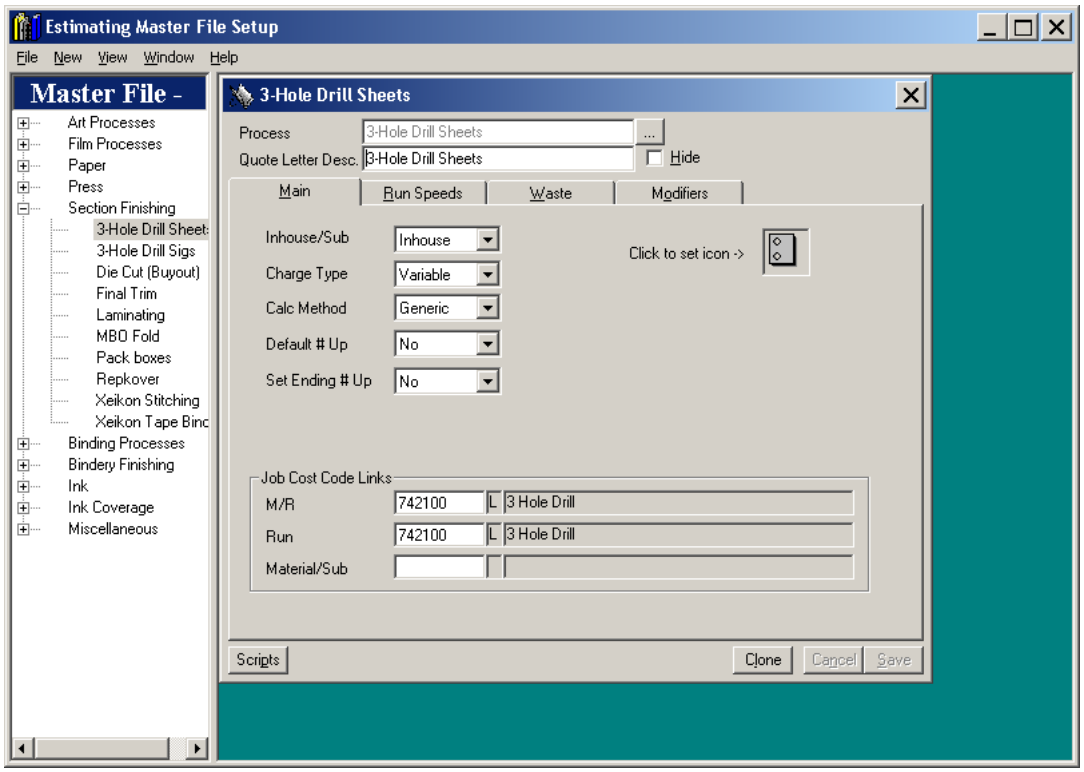
There are 3 types of Drilling Processes:

- **Drilling Sheets** Section Finishing Process (2-Page Flyers, Single Sheets)
- **Drilling Signatures** Section Finishing Process (Multiple Pages, Folded Forms)
- **Drilling Books** Binding Process (Drilling Gathered and Bound Sections)

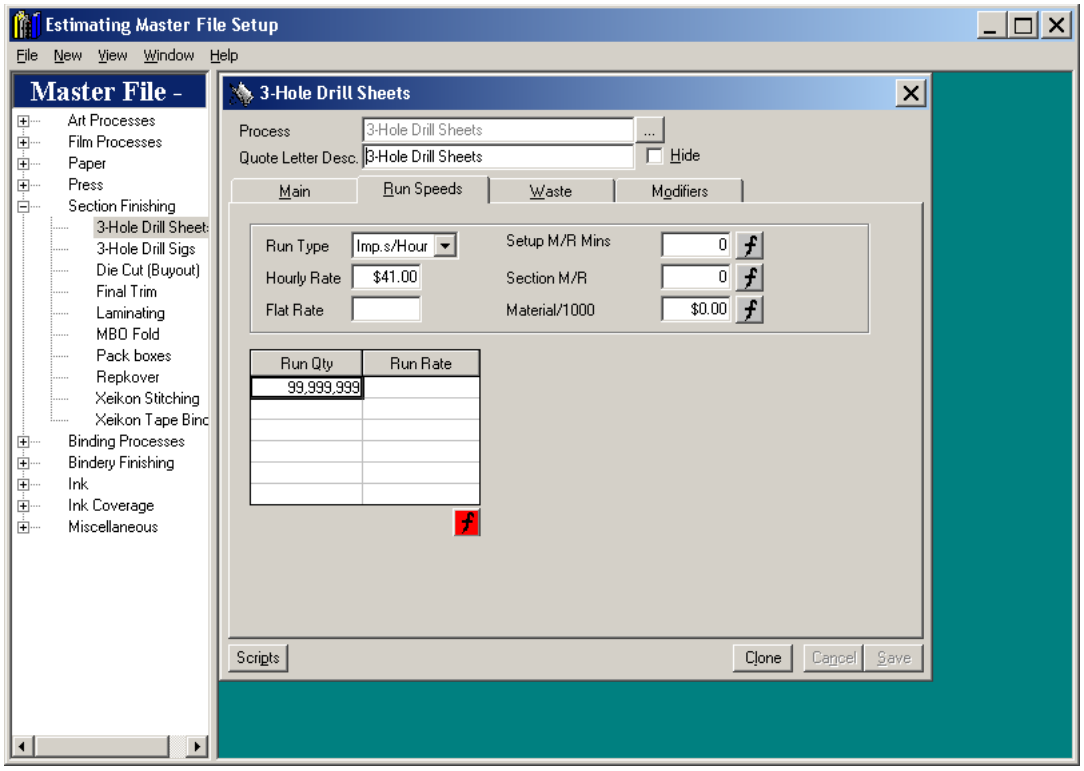
Note In the calculation formulas, upper case letters represent user defined values and lower case letters represent values that are passed through from the master files and the estimate.

Drilling Sheets

1. Set up a Section Finishing Process that uses **Generic** as the Calc Method.



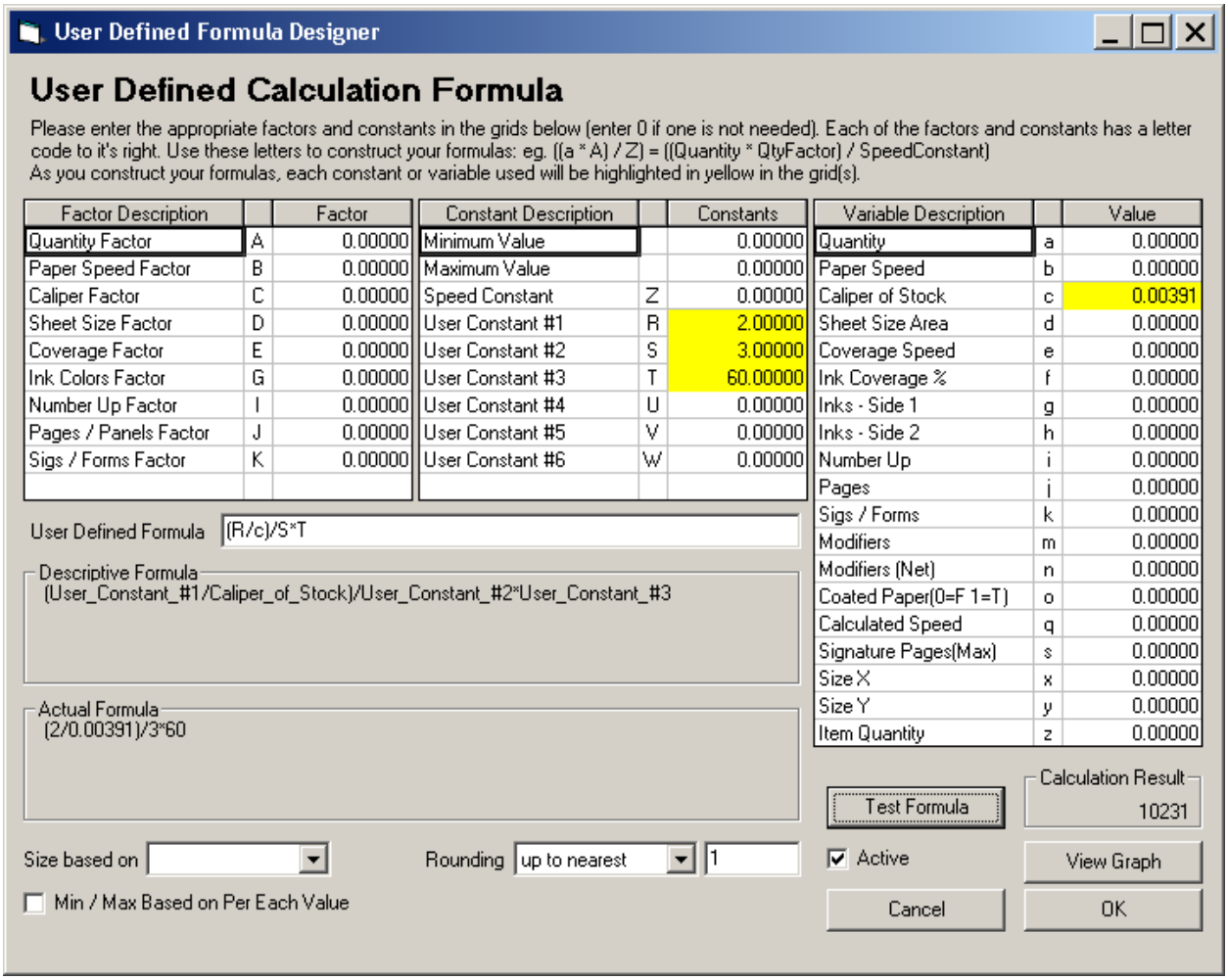
2. Set the Run Type as **Imp.s/Hour** and enter the Hourly Rate.



3. Use the formula below to determine a Run Rate for the number of sheets per hour based on a lift value.

This example uses "R" as a 2" lift value, "S" as drilling 3 minutes per lift, and "T" as 60 min per hour. "c" uses a caliper of 0.00391 (50# offset). The formula returns number of sheets per hour based on lift height, stock caliper, and number of minutes per lift. Run qty + any overs is then divided by sheets per hour to determine total hours which is multiplied by the hourly rate to give a total cost.

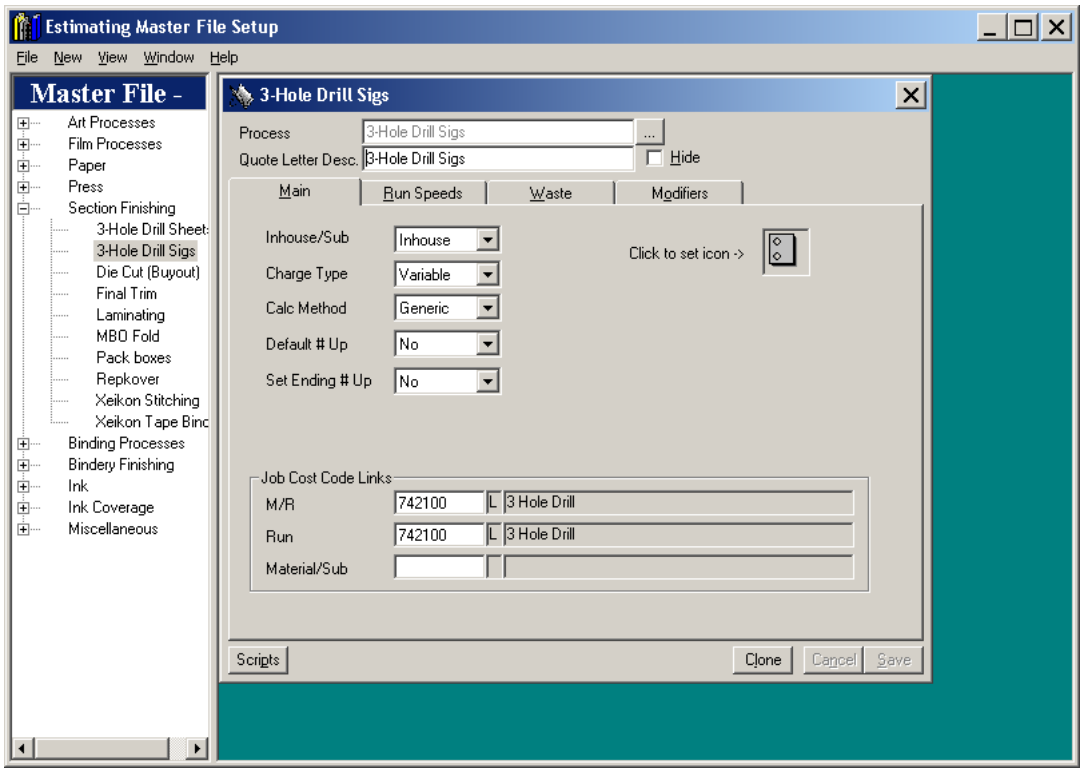
This example shows drilling 10,231 sheets of 50# Offset per hour.



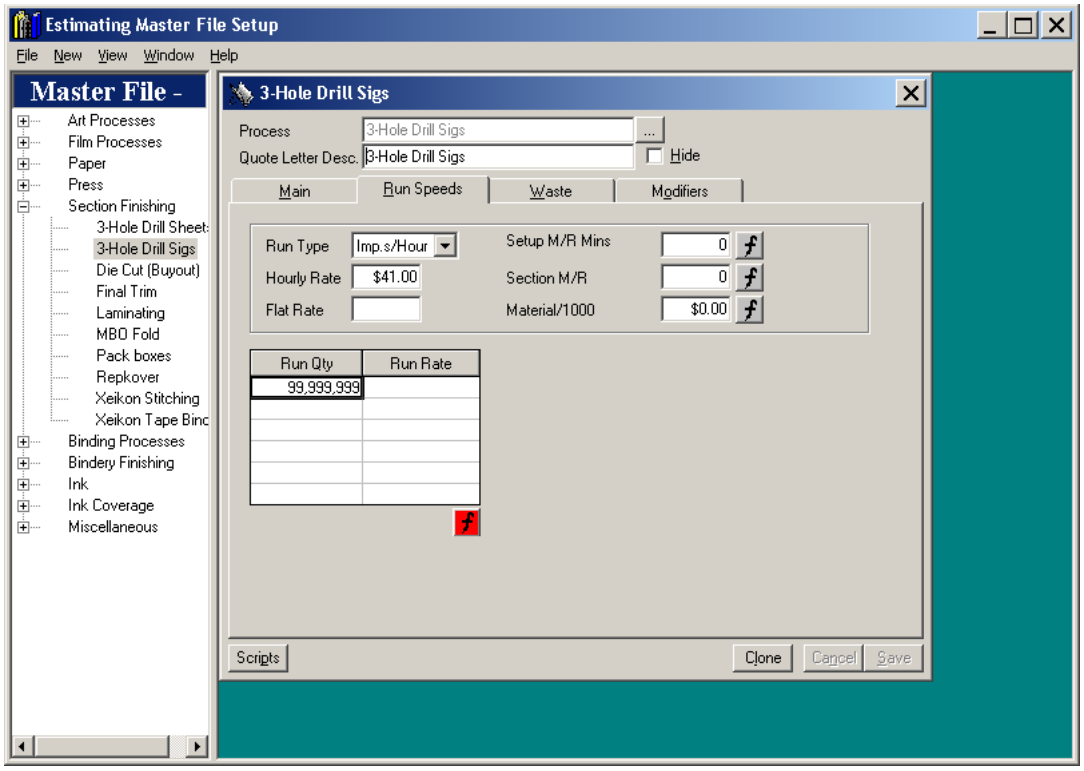
Remember to select the **Active** check box and click **OK**. Then click **Save** on the **Main** tab for this process.

Drilling Signatures

1. Set up a Section Finishing Process that uses **Generic** as the Calc Method.



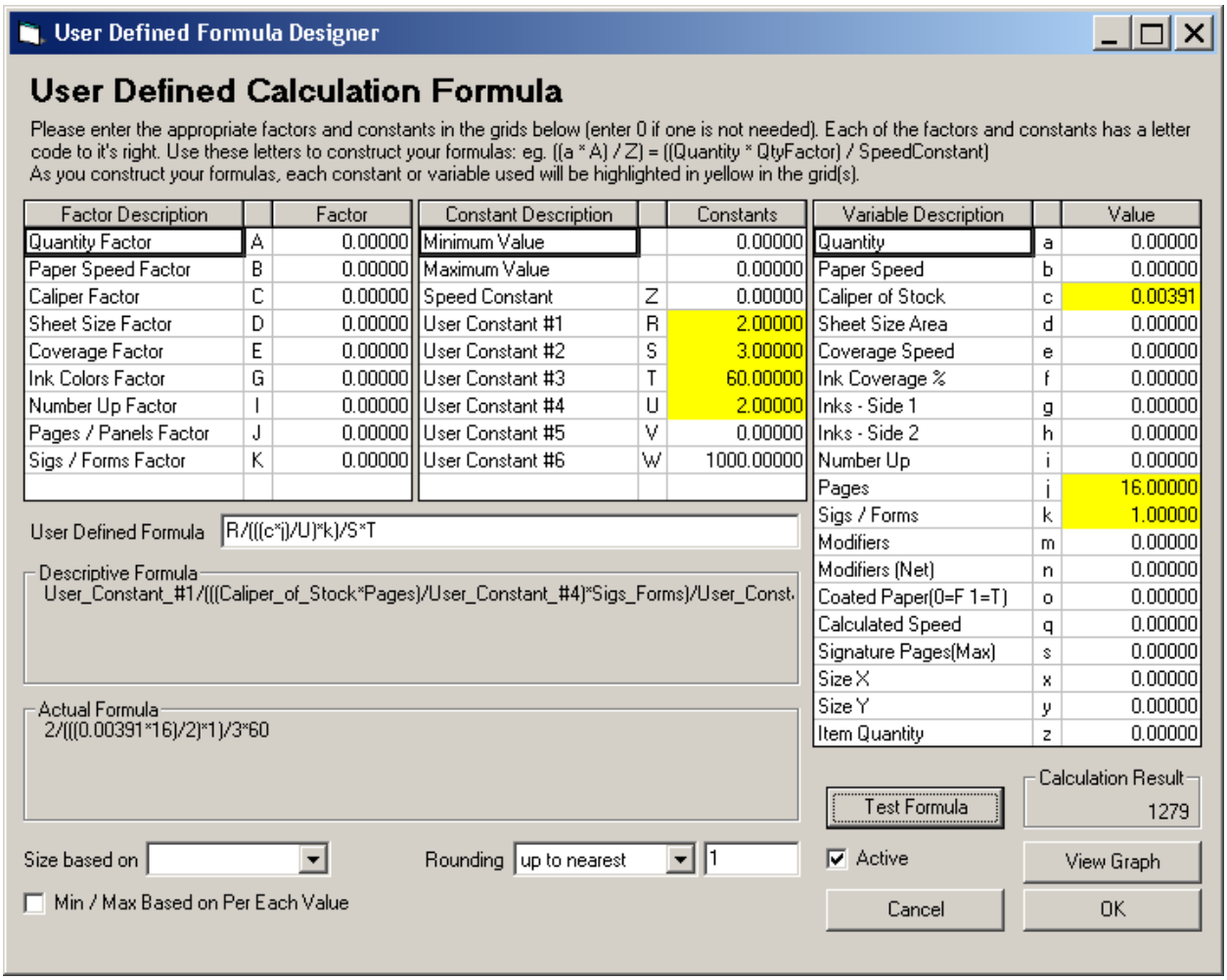
2. Set the Run Type as **Imp.s/Hour** and enter the Hourly Rate.



3. Use the formula below to determine a Run Rate for the number of sigs per hour based on a lift value.

This example uses "R" as a 2" lift value, "S" as drilling 3 minutes per lift, "T" as 60 min per hour, and “U” to divide number of pages into number of sheets. "c" uses a caliper of 0.00391 (50# offset), “j” is number of pages per signature, and “k” is number of signatures. The formula returns number of signatures per hour based on lift height, caliper, number of minutes per lift, page count, and number of signatures. Run qty + any overs are then divided by signatures per hour to determine total hours which are multiplied by the hourly rate to give a total cost.

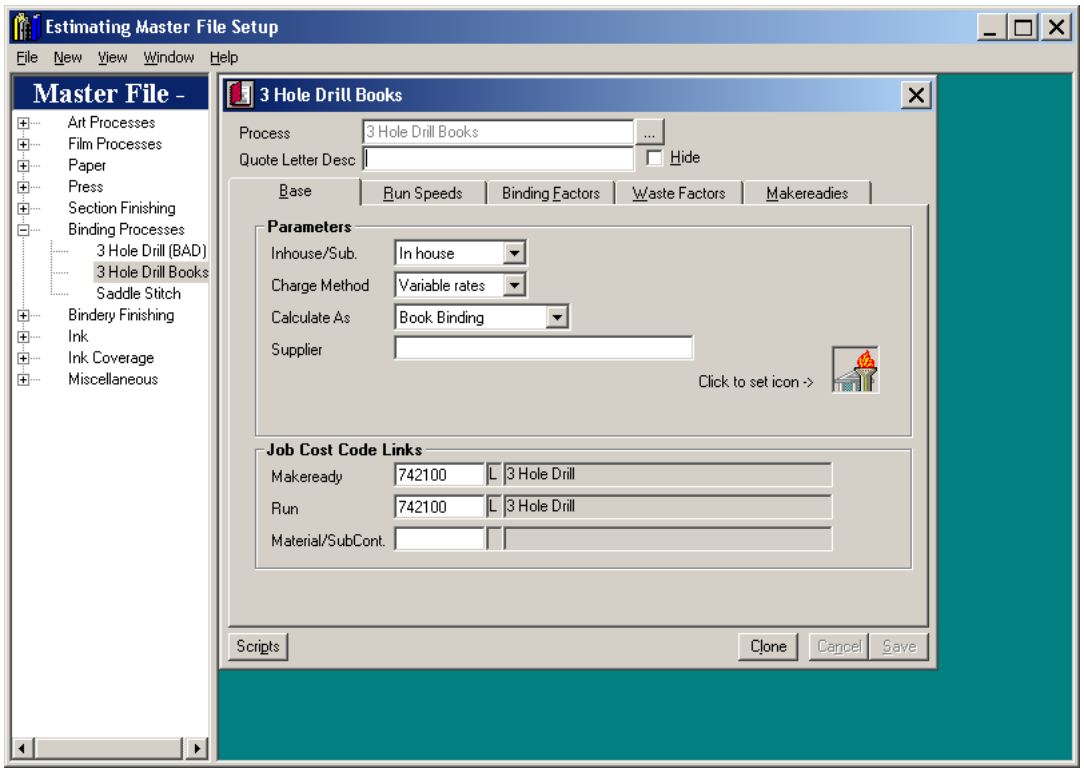
This example shows drilling 1,279 16-page signatures of 50# Offset per hour.



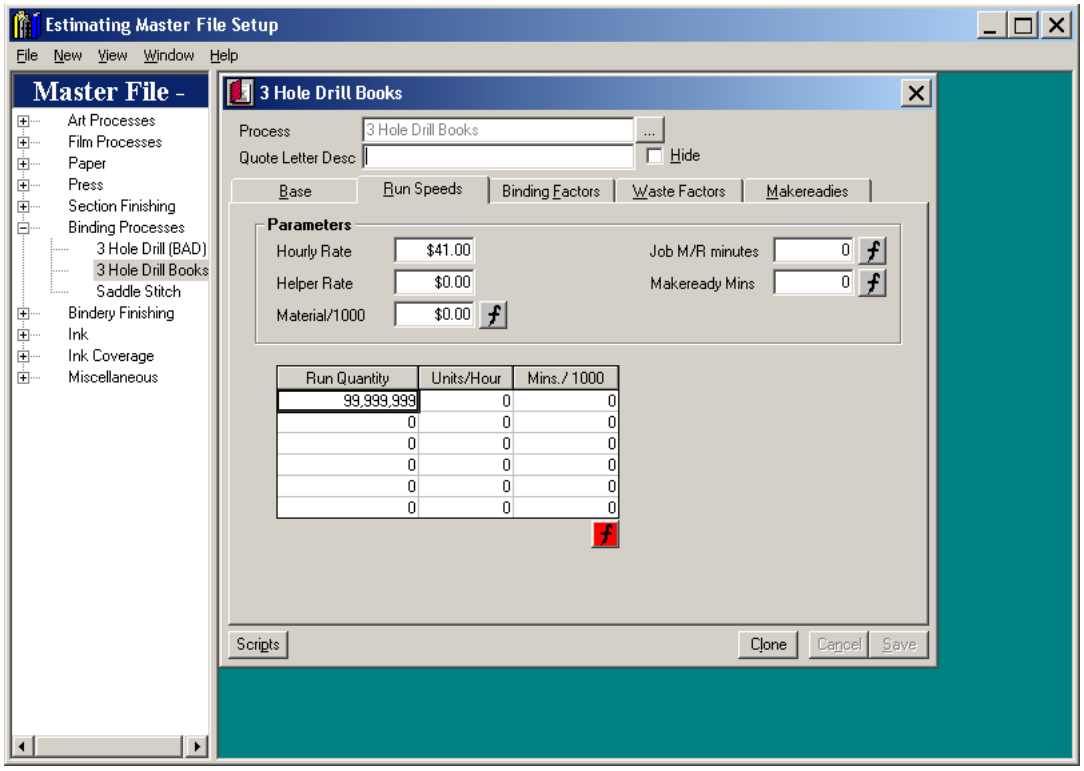
Remember to select the **Active** check box and then click **OK**. Then click **Save** on the main tab for this process.

Drilling Books

1. Set up a Binding Process that uses **Book Binding** as the Calculate As Method.



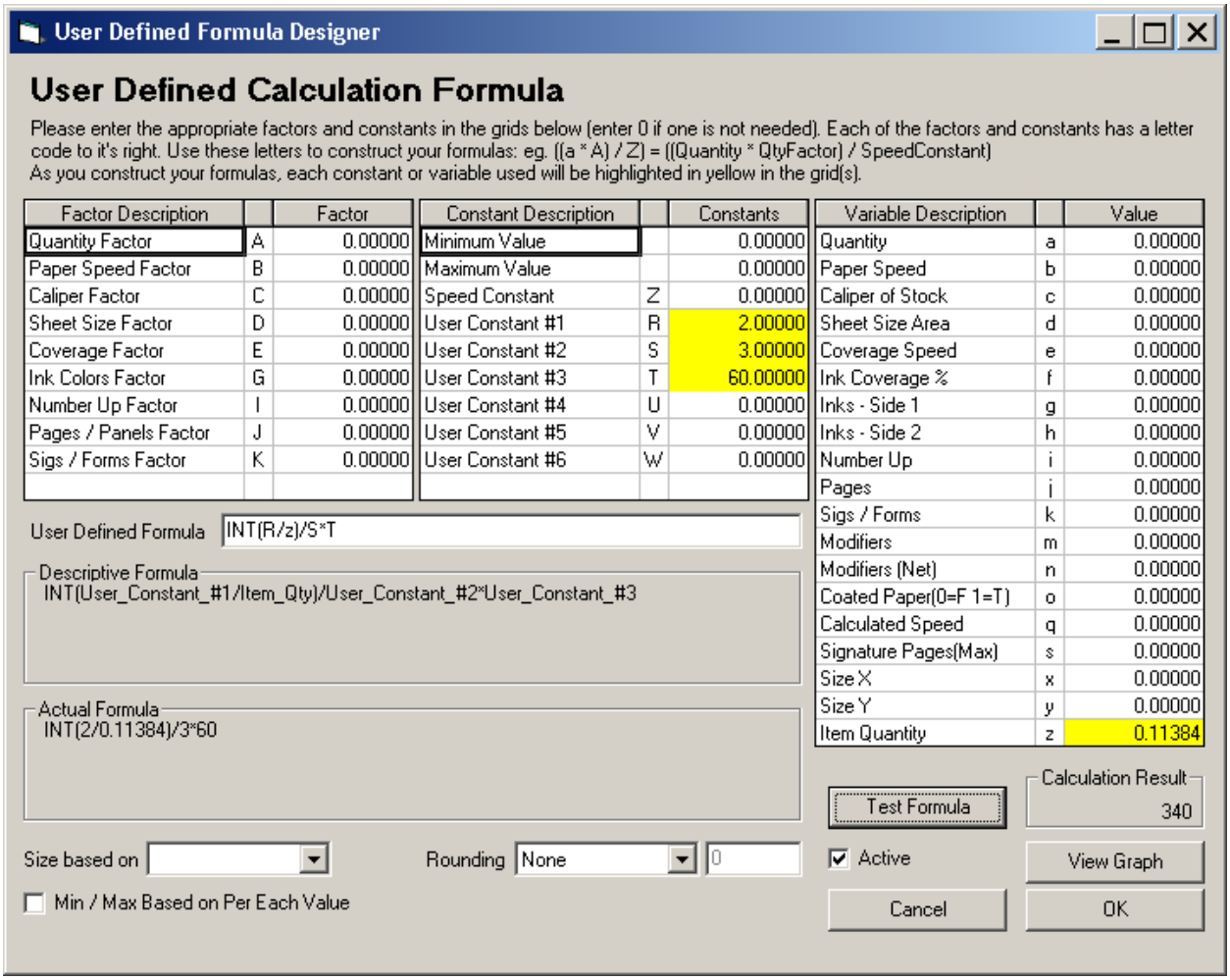
2. Set the Run Quantity to 99,999,999 and enter the Hourly Rate.



3. Use the formula below to determine a Run Rate for the number of books per hour based on a lift value.

This example uses "R" as a 2" lift value, "S" as drilling 3 minutes per lift, and "T" as 60 min per hour. "z" uses an item quantity of 0.11384 (book caliper). The formula returns number of books per hour based on lift height, book caliper, and number of minutes per lift. Run qty + any overs are then divided by books per hour to determine total hours which are multiplied by the hourly rate to give a total cost.

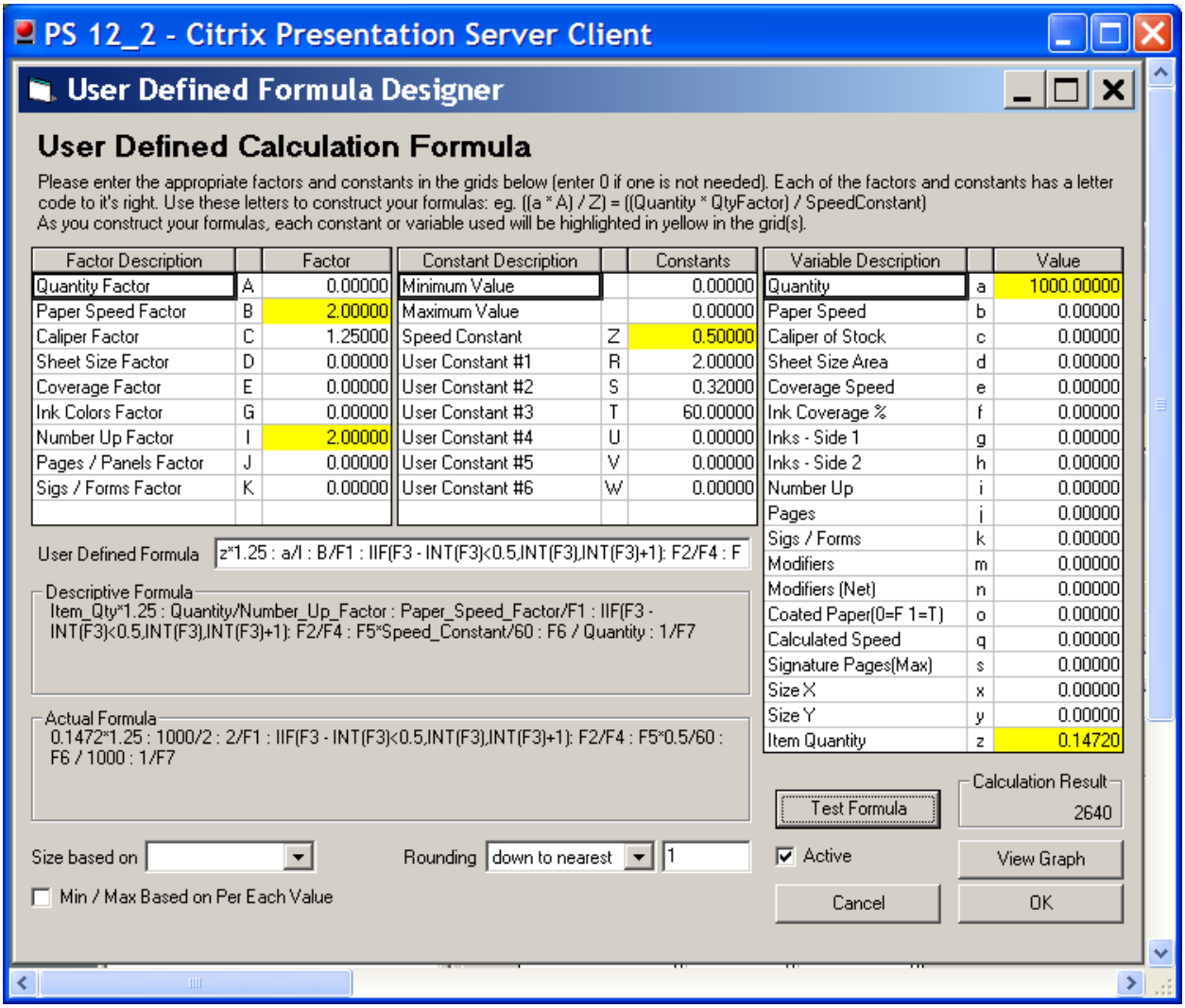
This example shows drilling 340 books per hour.



Remember to select the **Active** check box and then click **OK**. Then click **Save** on the main tab for this process.

UDF for Cutting 2up Books

Formula for Run Speed



Formula Constants

B = 2 = Max Lift Size in Inches

C = 1.25 = Additional Bulk Factor (Used in the below formula…forgot to apply to above formula)

I = 2 = Number Books Up

Z = 0.5 = Time Per Lift

Variables Passed from Estimating Program

a = 1000 = Estimate Quantity

z = 0.1472 = Booklet Bulk

UDF

z*C : a/I : B/F1 : IIF(F3 - INT(F3)<0.5,INT(F3),INT(F3)+1): F2/F4 : F5*Z/60 : F6 / a : 1/F7

F1 : F2: F3 : F4 : F5 : F6 : F7 :

Result

F1 = z*C = Per book Bulk Factor = .184

F2 = a/I = Number of 2 up books = 500

F3 = B/F1 = Number of 2 up books per lift = 10.86956

F4 = IIF(F3 - INT(F3)<0.5,INT(F3),INT(F3)+1) = Rounded number of 2 up books per lift = 11

F5 = F2/F4 = Number of lifts = 45.45454545

F6 = F5*Z/60 = Time for cutting = 0.3787878

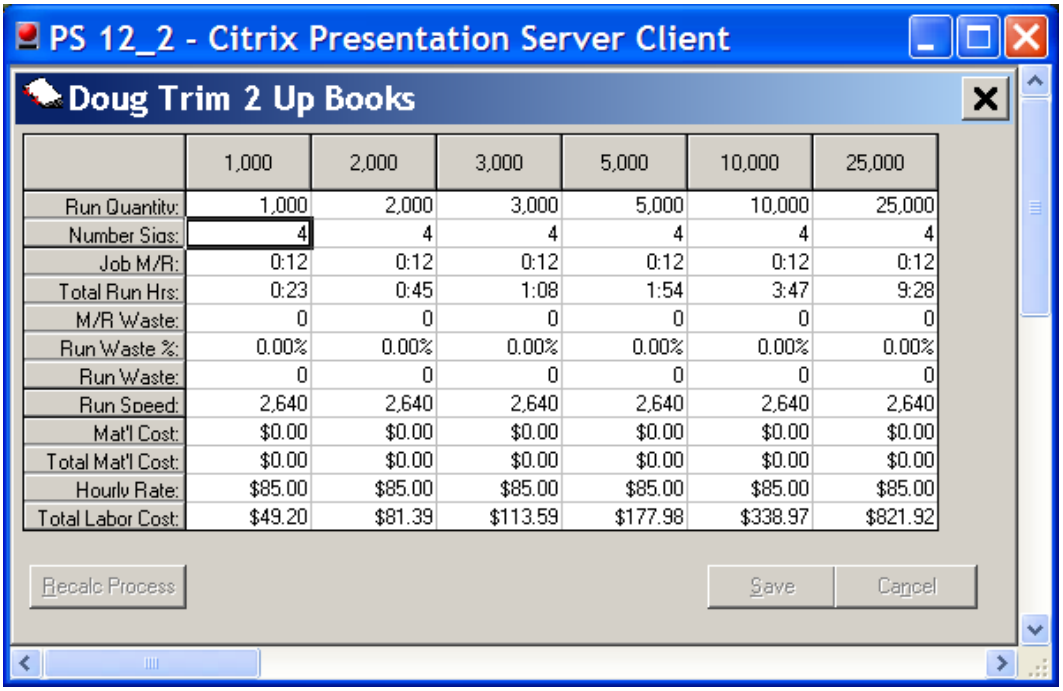
F7 = F6 / a = Time per 1 up book = 0.000378788

F8 = 1/F7 Number of books per hour = 2639.999155

2639.999155 Rounded to the Nearest 1 = 2640

User Defined Formula returns a Speed of 2640

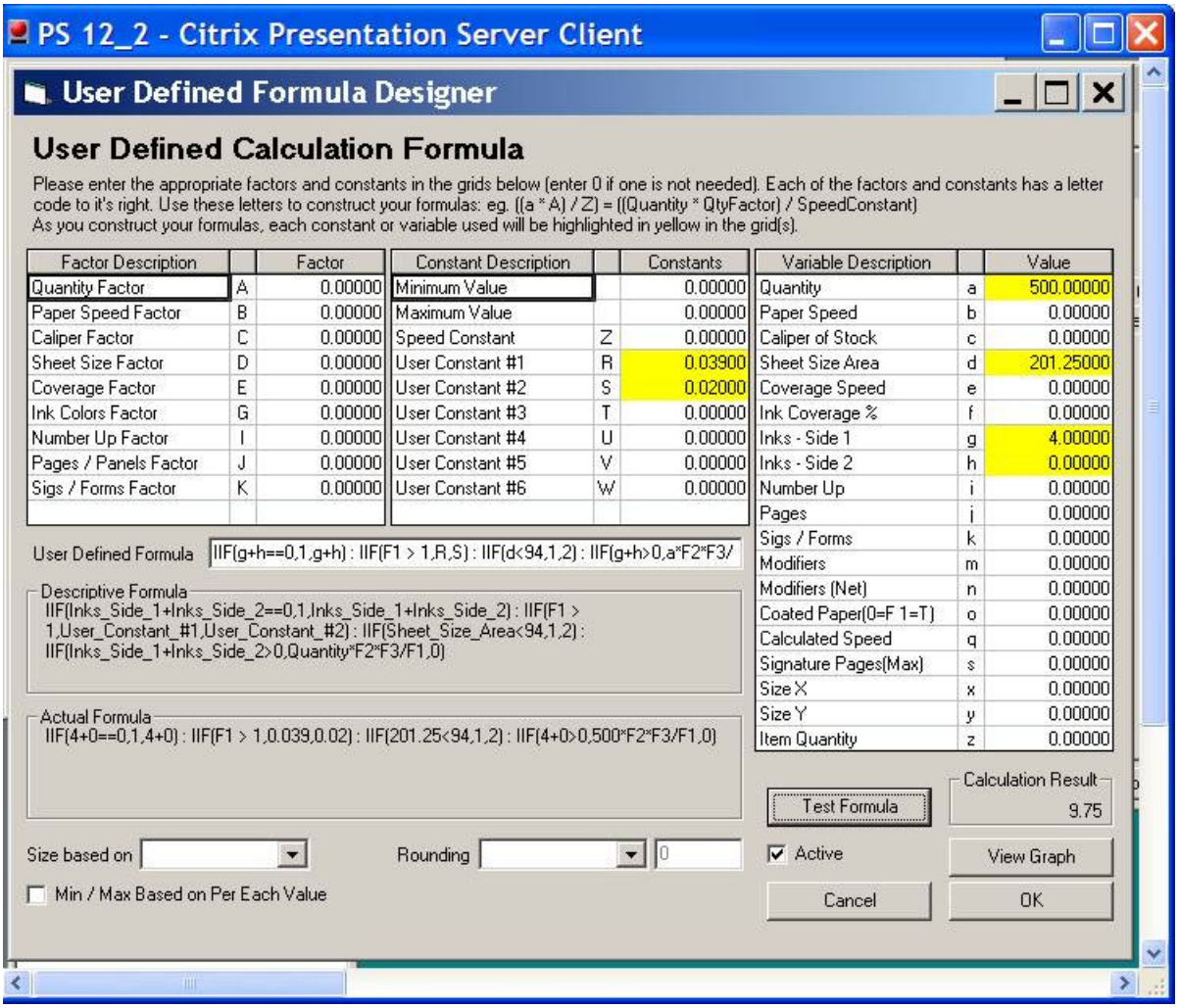
Result in Estimate



	1,000	2,000	3,000	5,000	10,000	25,000
Run Quantity:	1,000	2,000	3,000	5,000	10,000	25,000
Number Sigs:	4	4	4	4	4	4
Job M/R:	0:12	0:12	0:12	0:12	0:12	0:12
Total Run Hrs:	0:23	0:45	1:08	1:54	3:47	9:28
M/R Waste:	0	0	0	0	0	0
Run Waste %:	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Run Waste:	0	0	0	0	0	0
Run Speed:	2,640	2,640	2,640	2,640	2,640	2,640
Mat'l Cost:	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Mat'l Cost:	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Hourly Rate:	$85.00	$85.00	$85.00	$85.00	$85.00	$85.00
Total Labor Cost:	$49.20	$81.39	$113.59	$177.98	$338.97	$821.92

UDF For Digital Press Click Charges

Formula for Plate Material Costs



Formula Constants

R = 0.03900 = Click Cost for 2, 3, or 4 Color

S = 0.02000 = Click Cost for 1 Color

Variables Passed from Estimating Program

a = 500 = Number of press sheets

g = Number of colors on Front

h = Number of colors on Back

d = Square inch area of PRESS SHEET = 11.5 x 17.5 = 201.25

UDF

IIF(g+h==0,1,g+h) : IIF(F1 > 1,R,S) : IIF(d<94,1,2) : IIF(g+h>0,a*F2*F3/F1,0)

F1 : F2 : F3 : Result (IIF so if no colors the material price will always be 0)

Example: Based on a 4/4 job

Remember the program evaluates plate charge for each side. So when evaluating the Front Side only variable g will be populated with the colors on front. Variable h will always be 0 for front.

When evaluating the Back Side only variable h will be populated with the colors on back. Variable g will always be 0 on the back.

Front Calculations:

4+0==0, 1, 4+0

F1 = IIF(g+h==0,1,g+h) = 4

4 > 1, 0.039, 0.02

F2 = IIF(F1 > 1, R ,S) = 0.039

201.25 < 94, 1, 2

F3 = IIF(d < 94,1,2) = 2

4+0>0,500 * 0.039 * 2 / 4, 0

4+0>0,500 * 0.039 * 2 / 4, 0

Result = IIF(g+h>0, a * F2 * F3 / F1 ,0) = 9.75 per Plate (Color)

So since we have 4 colors on front the program will take $9.75 * 4 = $39.00

Back Calculations:

0+4==0, 1, 4+0

F1 = IIF(g+h==0,1,g+h) = 4

4 > 1, 0.039, 0.02

F2 = IIF(F1 > 1, R ,S) = 0.039

201.25 < 94, 1, 2

F3 = IIF(d < 94,1,2) = 2

0+4>0,500 * 0.039 * 2 / 4, 0

Result = IIF(g+h>0, a * F2 * F3 / F1 ,0) = 9.75 per Plate (Color)

So since we have 4 colors on Back the program will take $9.75 * 4 = $39.00

Front Price $39.00 + Back Price $39.00 = $78.00

Results in Estimating based on the above example