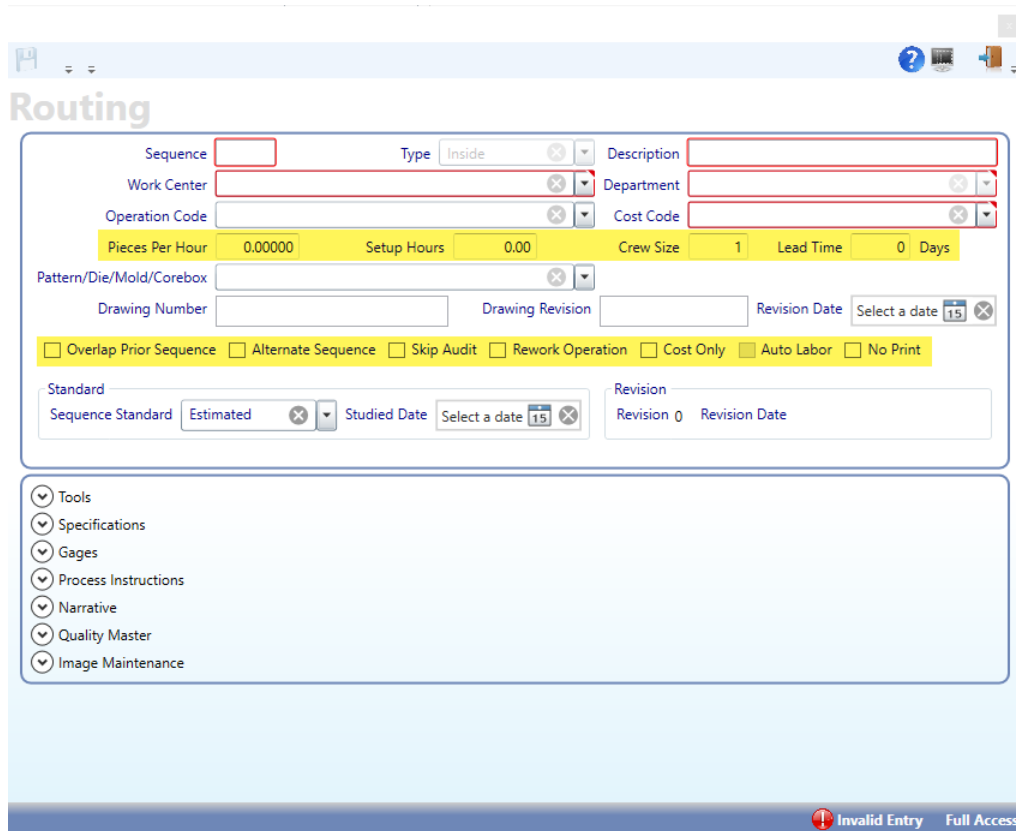


KnowledgeBase Article 2095

Routing Basics

When creating a Routing in Guardian, there are options as to how each routing sequence of operation will function. Guardian provides controls for each routing to determine costs, scheduling and functionality of the operation.

A screenshot of the 'Routing' form in the Guardian software. The form is titled 'Routing' in a large, bold, grey font. It contains several input fields and sections. At the top, there are fields for 'Sequence', 'Type' (set to 'Inside'), 'Description', 'Work Center', 'Department', 'Operation Code', and 'Cost Code'. Below these are fields for 'Pieces Per Hour' (0.00000), 'Setup Hours' (0.00), 'Crew Size' (1), and 'Lead Time' (0 Days). There is a section for 'Pattern/Die/Mold/Corebox' and 'Drawing Number'. A row of checkboxes includes 'Overlap Prior Sequence', 'Alternate Sequence', 'Skip Audit', 'Rework Operation', 'Cost Only', 'Auto Labor', and 'No Print'. Below this is a 'Standard' section with 'Sequence Standard' (set to 'Estimated') and 'Studied Date'. A 'Revision' section shows 'Revision 0' and 'Revision Date'. At the bottom left, there is a list of expandable sections: Tools, Specifications, Gages, Process Instructions, Narrative, Quality Master, and Image Maintenance. At the bottom right, there is a status bar with a red error icon and the text 'Invalid Entry Full Access'.

Costing and Scheduling

1. **Pieces per Hour:** May be set to express the time it takes to complete this operation, dependent upon Switch 105 #4, as:
 - a. Pieces per Hour
 - b. Hours per Piece
 - c. Minutes per Piece

Guardian calculates the time as "Hours per Piece" and uses this field, in conjunction with the Cost Code, for costing and scheduling.

To determine the Standard Cost for this operation, Guardian uses the "Cost Code" (comprised of the Direct Labor Cost as well as the Fixed and Variable Overhead costs) multiplied by the Hours per Piece.

2. **Setup Hours:** Setup Hours indicate the time, in hours, it takes to setup this operation. Switch 226 #4 determines if Setup Hours are included in the Cost Rollup. When used, the calculation takes the Direct Labor Cost from the Cost Code, multiplied by the Setup Hours, and divides it by the Cost Lot Size from the Part Master. In addition, the Fixed and Variable Overhead costs are both multiplied by the Setup Hours to calculate the total cost of this operation.
3. **Crew Size:** The Crew Size is used for Scheduling purposes to determine when the Work Center has enough employees scheduled to run based on the Work Center Schedule. If the Work Center Calendar does not have enough employees indicated, the operation cannot be scheduled.
4. **Lead Time:** Lead Times are indicated in Days only and are primarily useful when the Standards are not known for this part on this operation. Switch 106 #4 identifies the sequence to use the Standard by Hours, the Lead Time in Days, or both for Scheduling purposes. Ideally, both the Standard Hours (for those operations known) and the Lead Time (for operations such as Outside Processes) would be used to provide the most accurate results for scheduling.

Routing Options

1. **Overlap Prior Sequence:** Allows the system to schedule this sequence and the previous sequence to overlap. The Start Date of this sequence will overlap the previous sequence's schedule based on the standards to avoid starving the sequence of parts.
For example: To Schedule Sequence 0020 as an Overlap to Sequence 0010...the Standards are used to determine the start date of Sequence 0020 based on the standard rate for Sequence 0010 to have produced enough parts for Sequence 0020 to commence with sufficient parts feeding it to complete without waiting for parts from Sequence 0010.
2. **Alternate Sequence:** Alternate Sequences do not become part of a Work Order's Routing unless *invoked* on a specific Work Order. Alternate Sequences are not included in the Standard Cost of the part.
For example: A machining operation that is typically completed in-house may alternatively be sent to an outside supplier.
3. **Skip Audit:** Skip Audit sequences are *not* included when calculating the part's Standard Cost. Skip Audit sequences allow users the option to log labor and report good and scrap pieces. Good Quantities recorded at this sequence will be ignored when determining the available quantity at the subsequent sequence. Scrap Quantities will be recorded and *will* be utilized in the available quantity calculation at the subsequent sequence.

Skip Audit has two conditions:

- a. Reporting Labor is Optional and will show as a variance to the Standard Cost
- b. When reporting Labor, Switches 115 #7 and 115 #8 are ignored
115 #7: "Allow edits on prior Sequence"
115 #8: "Allow Quantity edits on prior Sequence"

For example: An inspection operation is performed, but not on the full work order quantity.

4. **Rework Operation:** The Rework Operation is intended to be used in the scenario when reworking the part is an expected step in the process. The expected quantity to be reworked is unknown, therefore Switch 115 #7 and 8 (indicated above in paragraph 3b) are ignored. Good Quantities recorded at this sequence will be ignored when determining the available quantity at the subsequent sequence. Scrap Quantities will be recorded and *will* be utilized in the available quantity calculation at the subsequent sequence. Rework operations are included in the Standard Cost and are scheduled as a regular operation.

For example: A welding operation will need to be performed on the majority of the parts on a given Work Order. Only those parts worked on need be reported.

5. **Cost Only:** Cost Only operations are intended to be used on sequences that are impractical for users to log labor and report pieces. Users are not able to log into this sequence and bill of material components cannot be tied to a Cost Only sequence. The full work order quantity of pieces is intended to go through this operation, therefore it is scheduled and costed as a regular sequence. When a user reports pieces at a subsequent *non*-Cost Only sequence, the system will automatically post those pieces, via Auto Labor, to the Cost Only sequence for the Standard Number of Hours. Auto Labor is set when Cost Only is selected.

For example: A tumble blast operation where any given number of pieces from various Work Orders may be loaded into the tumble blaster – making it impractical for the user to accurately report time and pieces against this Work Order.

6. **Auto Labor:** Auto Labor is always on for Cost Only sequences. It may also be enabled for Skip and Rework sequences. When a user reports pieces at a subsequent sequence, the system will automatically post those pieces to the Auto Labor sequence for the Standard Number of Hours.
7. **No Print:** This Sequence does not print on the Process Sheet.