

Availability:  
**Unrestricted**

Master Document: Process Flow Diagram

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Approved by:  
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**Local Edition:**

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Language:

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Author:

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Approved by :      Date: (YYYY-MM-DD)

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Most recent change history:

Revision	Description of Change
A to B	Updated page one to reflect changes to the layout of a global standard + a minor amendment at the beginning of section 7.

Changes in relation to previous issue are written with red, alternatively for figures and tables with a red frame around.

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**Process Flow Diagram**

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**0 INTRODUCTION**

This Global Standard addresses the requirements for a Process Flow Diagram when it is included in PPAP/PSW submission.

**1 SCOPE**

A guideline for the creation and use of the Process Flow Diagram as it pertains to the PPAP submission package.

**2 RESPONSIBILITY**

The process engineer (or industrial engineer) is responsible for creating the entire process flow diagram for processes he/she is responsible for. The product team leader is responsible for ensuring that a process flow diagram exists for the entire value stream.

**3 DEFINITIONS**

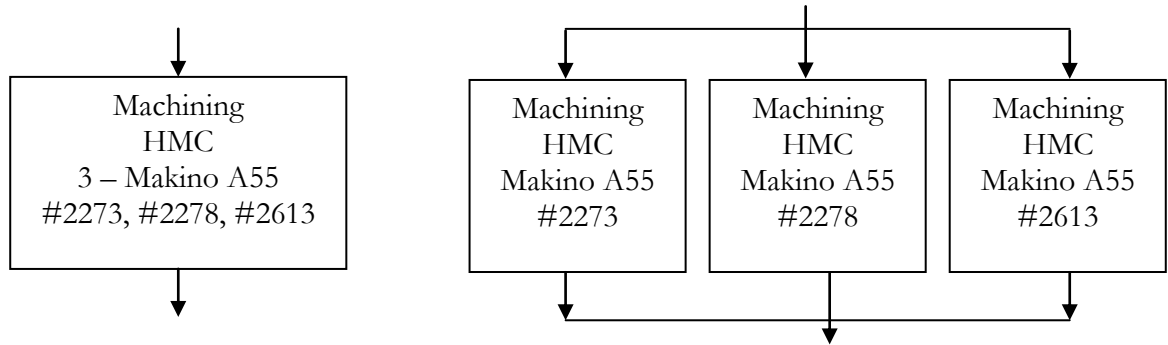
**Process Flow Diagram** – As per the AIAG APQP Manual, a process flow diagram is a schematic representation of the current or proposed process flow. It can be used to analyze sources of variations of machines, materials, methods, and manpower from the beginning to the end of the product realization process. It is used to emphasize the impact of sources of variation on the process. The flow diagram helps to analyze the total process rather than individual steps in the process. The flow chart helps the product quality planning team to focus on the process when conducting the PFMEA and designing the control plan.

**4 GENERAL GUIDELINES**

1. **Material flows** of product through the entire production process must be shown. This is “door to door” from Incoming inventory to Finished goods inventory and includes the pick, pack, and ship process.
2. **Process flows** that lead to a finished product must be shown.
  - i. Processes performed on material, parts, or assemblies supplied to the process flow as finished goods should not be shown on the Process Flow Diagram. These processes should have their own PSWs and subsequent Process Flow Diagrams.
  - ii. Processes performed on material, parts, or assemblies considered part of the process flow must be shown on the Process Flow Diagram.
3. **Rework loops** should be shown if they are “off line” from the normal process flow.
4. The Process Flow Diagram is under change control and must be updated for a PPAP or PSW submission if there has been a change to the process or material flow.
5. The diagram must be labeled in a manner that describes the products it applies to. The product family, a list of part numbers or a combination of the product attributes and product family are examples of diagram labels that can be used.
6. The shapes used to define material locations, internal processes, external processes, etc must be consistent throughout the diagram.

**Process Flow Diagram**

7. If there are multiple process flows (including the case of multiple suppliers or sub-suppliers) or multiple assets (test stands, machine centers, fixtures, etc.) they should be shown on the diagram. Specifically how this is depicted (one symbol per flow or one symbol for multiple flows with text designating the specifics) will be left up to the facilities. The requirement is that each process flow or asset be specifically identified in the process flow diagram. For example, either of the following depictions would satisfy the requirement:



8. Use the examples in the appendices as a definition of the detail level required on the process flow diagram. A product level example and a component level example are shown in Appendices A and B.

**CHANGE HISTORY:**

Date	Old/New Rev.	Description of Change
2010-07-16	A / B	Updated page one to reflect changes to the layout of a global standard + a minor amendment to beginning of section 7.

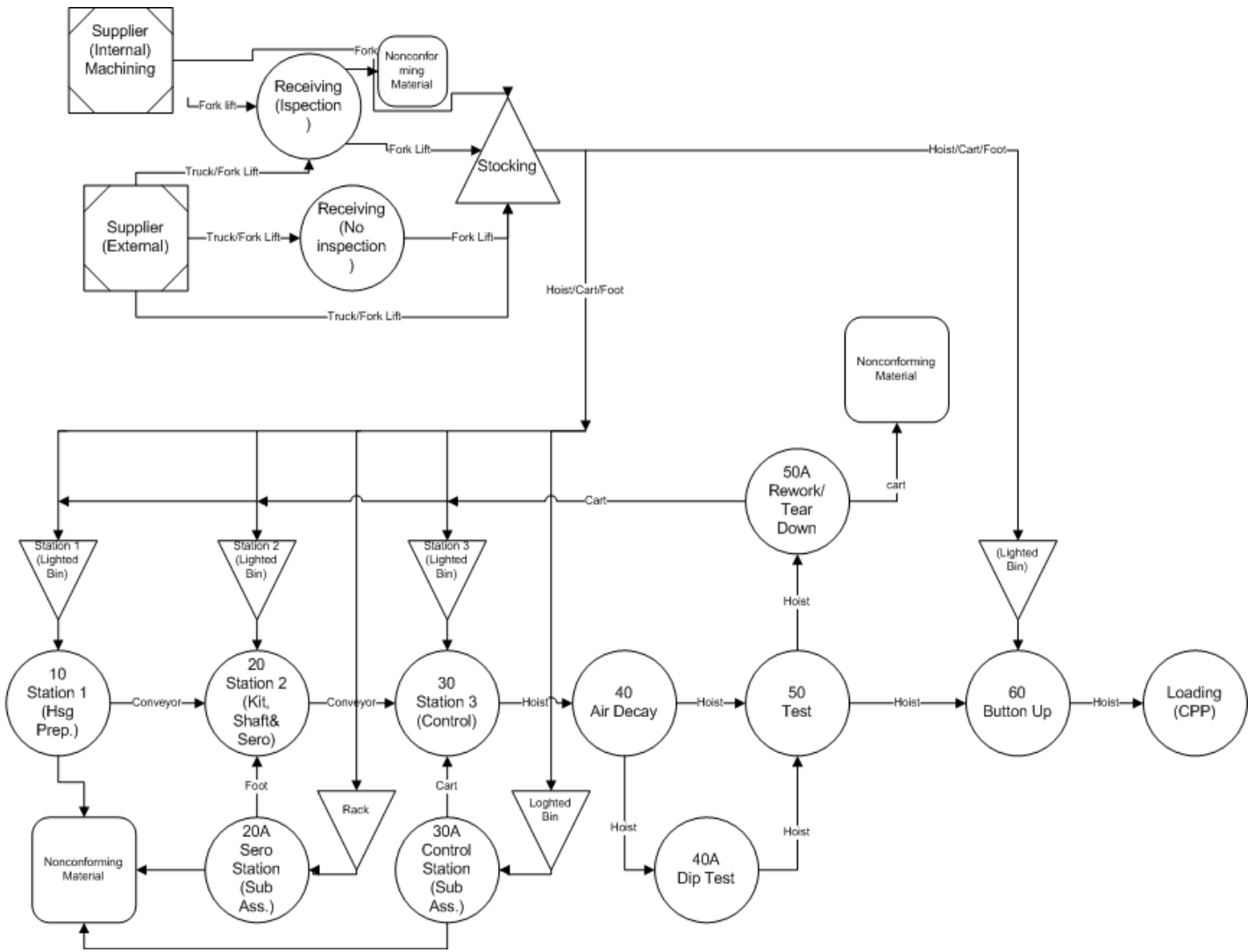
**Process Flow Diagram**

**Appendix A- Product Level Example**

**S42 Tandem Pump Assembly Process Flow**  
**Model Numbers: 4525\*\*\***  
**Pump Size: 41cc and 51cc**

**RECEIVING PROCESS**

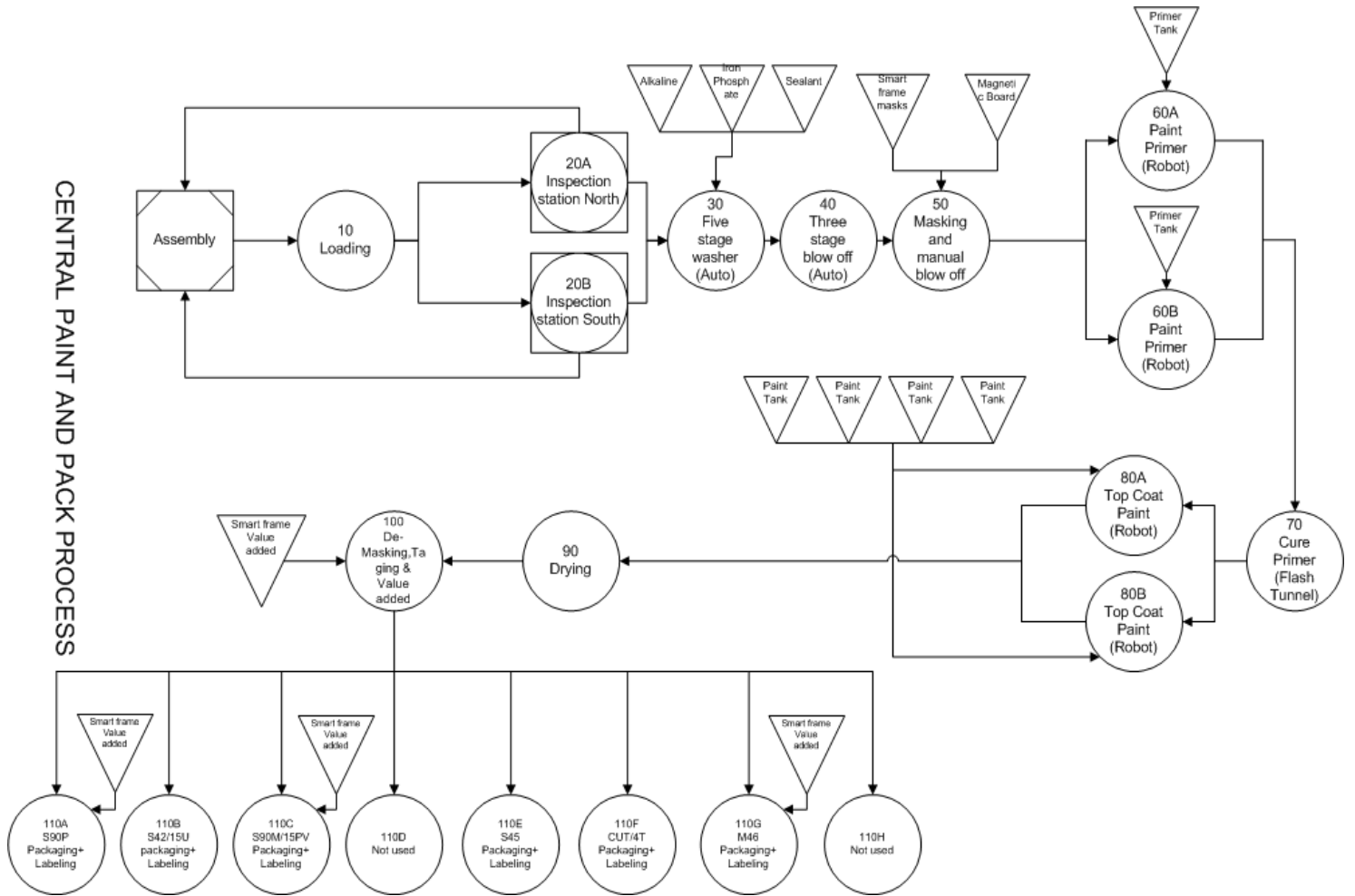
**ASSEMBLY PROCESS**



**Process Flow Diagram**

**Appendix A- Product Level Example (Continued)**

**S42 Tandem Pump Assembly Process Flow**  
**Model Numbers: 4525\*\*\***  
**Pump Size: 41cc and 51cc**

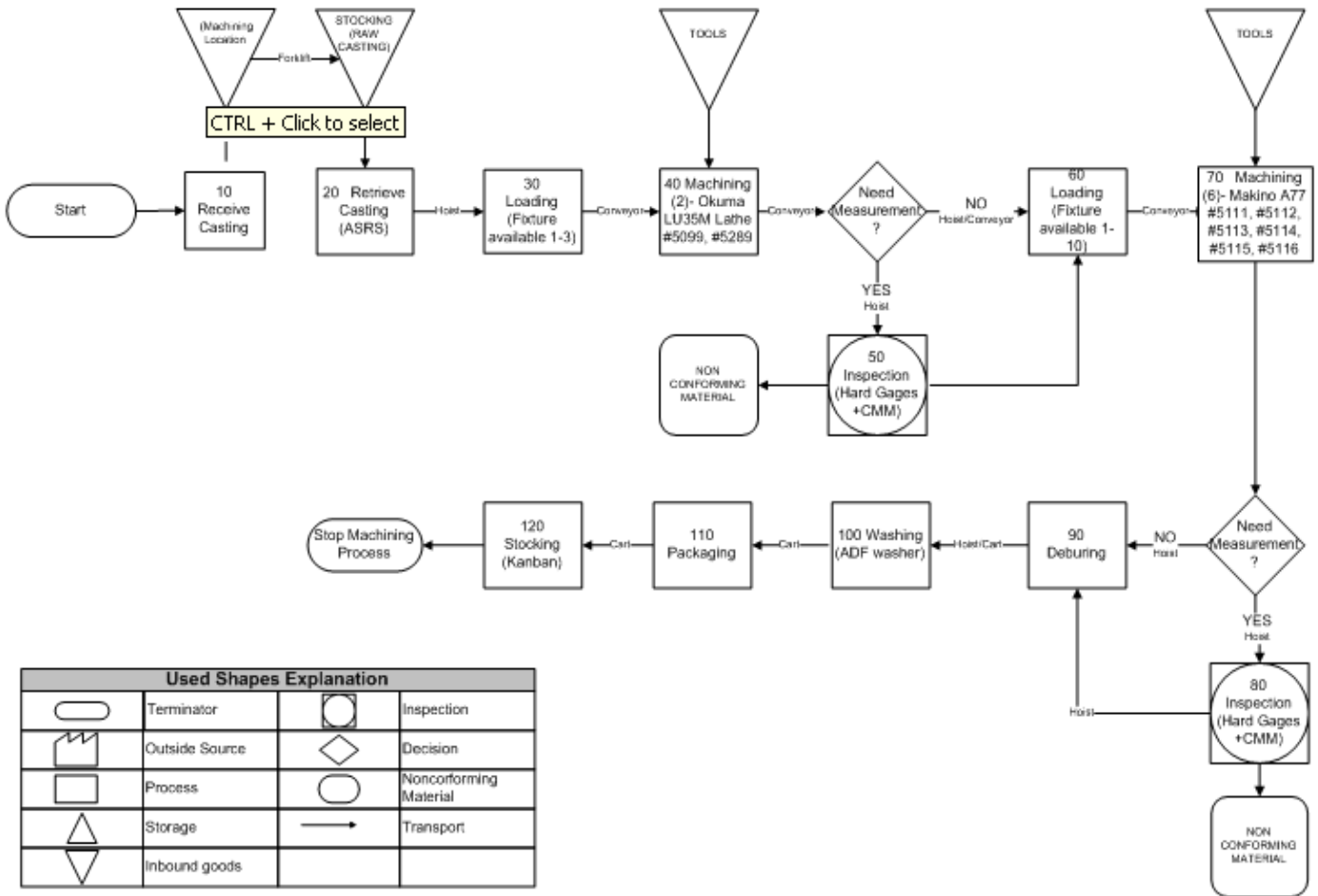


**Process Flow Diagram**

**Appendix B - Component Example**

**S42 Housing Process Flow  
Single and Tandem Pump  
Housings**

MACHINING PART PROCESS FLOW DIAGRAM



Used Shapes Explanation			
	Terminator		Inspection
	Outside Source		Decision
	Process		Nonconforming Material
	Storage		Transport
	Inbound goods		