LeanTPS™ | Chapter 5

JIDOKA

Protecting Quality During Execution



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About this chapter

Jidoka connects recognition of abnormality with appropriate protection and a required competent response. This chapter examines the operating references, stopping mechanisms, Andon, error-proofing, leadership responsibility, recovery, and learning that make this relationship dependable. It distinguishes equipment readiness, incomplete work, suspect product, and the evidence authorizing continuation.

The opening supplies the references needed for independent reading. Read after Chapters 1–4, the chapter develops protection during execution within the management responsibilities, workplace conditions, repeatable method, and observation of waste already established. Worked machining, assembly, and information-release illustrations connect these responsibilities in complete studies.

The experience behind the teaching

My teaching draws on training at Toyota Industries Corporation in Takahama, Japan, and 13 years at Toyota BT Raymond. My experience includes North American TPS working-group participation, Jishuken, Toyota Business Practices, and training with Sadao “Sam” Nomura beginning in 2006. Retained training material and the source notes distinguish published Toyota descriptions from my Lean TPS interpretation.

Figure credits

The response diagrams and timing illustration are original teaching models. The Takahama image is retained in the author’s teaching collection; its original photographer and date are not established by the supplied material. Numerical worked examples are constructed illustrations rather than historical plant results.

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Extract from Lean TPS: The Thinking People System - A System to Prevent Failure (2026 Edition).
Complete-book PDF ISBN: 978-1-0699261-1-1.
The ISBN identifies the complete book; this chapter is sold separately.

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CHAPTER 5

Jidoka: Protecting Quality During Execution

5.0 Jidoka Within the System of Governed Work

Jidoka connects the recognition of abnormality with the ability to protect affected work and obtain a competent response. A machine may detect a condition and stop automatically. An employee may recognize a concern, call for assistance, and interrupt work according to the applicable arrangement. In both situations, protection depends on what happens after recognition. The organization needs a clear status for affected material, a person responsible for response, and evidence supporting any restart or release.

Chapter 4 examined how direct observation reveals waste and the conditions that create unnecessary work. Chapter 5 examines how the organization protects execution when the required method or operating conditions cannot be maintained. Recognizing waste does not authorize the removal of a protective check or buffer before its function is understood. Jidoka connects recognition of abnormality with appropriate protection and a competent response. A stop can expose an improvement question, and an improvement can make abnormality easier to detect or recovery more dependable. People may need to investigate during containment, and a permanent countermeasure may require further controlled trials. The sequence follows the requirements of the concern rather than a rule that postpones all investigation until production has resumed.

Toyota identifies Jidoka and Just In Time as the two pillars of the Toyota Production System (TPS). Its published explanation connects Jidoka with recognition of abnormality, automatic or employee-initiated stopping, prevention of defective output, and removal of the need to watch machines continuously. Toyota also emphasizes improving the manual method and developing people who can think and improve. These relationships give the chapter its practical scope. [1]

I use Quality governance in Lean TPS to examine the responsibilities that make those relationships dependable. Governance concerns the conditions of execution, authority to protect the work, access to support, and the decisions governing recovery and change. This vocabulary is my interpretation of the management responsibilities around TPS. It does not describe an additional official Toyota pillar or reduce the whole production system to stopping.

5.0.1 The Operating References for an Independent Reader

An operating reference identifies what the work requires. A product specification can define an acceptable dimension. An approved drawing identifies a configuration. An equipment instruction can define a setting or verification. A material arrangement identifies the component and quantity to use. These references need to agree at the point of work. A correct instruction cannot protect Quality when the available material belongs to another revision or when the equipment condition prevents the instruction from being performed.

Standardized Work supplies a shared reference for a repeatable operator method. Its classical elements are Takt Time, work sequence, and standard in-process stock. Takt Time relates available production time to customer demand in the same period. Work sequence identifies the operator’s order of activities. Standard in-process stock identifies the minimum stock needed to repeat that sequence under its stated conditions. These elements do not replace product specifications, essential checks, equipment instructions, or the controls required for a particular hazard.

Observed cycle time describes measured duration. A cycle that takes longer than the demand reference can indicate a workload or support problem, but the timing difference alone does not identify a defect or prescribe one physical stopping action. The work arrangement must identify what cannot safely or correctly proceed, where assistance is needed, and how incomplete work is prevented from passing the relevant boundary. Timing evidence helps the team understand that situation.

5S Thinking concerns the workplace conditions surrounding execution. Necessary materials, tools, access, quantities, and readiness help people recognize whether the intended method remains usable. These conditions can support the detection of missing or incorrect items. An orderly workplace still needs suitable instructions and competent response. The