

**STANDARDIZED
WORK**

4TH SESSION

STANDARDIZED WORK AND WORK STANDARDS - SESSION 4

AIM	(1) Standardized Work As A Basis For Continuous Improvement (2) Practice Using Standardized Work Forms (3) Reconfirm Premise Of Standardized Work & Necessity of Work Standards
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TITLES AND CONTENTS

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I	Open the Training Session	(1) Review Main Points of Session 3 (2) Main Focus Of Session 4		
II	Creating Standardized Work	(1) Standardized Work Combination Table (2) Standardized Work Chart (3) Relationship of Work Standards & Standardized Work		
III	Close The Training Session	(1) Summary Of Session 4 (2) Preparation For Next Session		

Things to Prepare

1	Participant Manual and Transparencies
2	Overhead Projector, Screen, Pointer
3	Standardized Work Forms
4	Work Standard Forms
5	
6	

Items to Distribute

1	Standardized Work Combo Table
2	Standardized Work Chart
3	
4	
5	

Standardized Work and Work Standards - Session 4

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Standardized Work and Work Standards
Session 4

I. Open the Training Session

- (1) Review Main Points of Session 3
- (2) Main Focus of Session 4

II. Creating Standardized Work

- (1) Standardized Work Combination Table
- (2) Standardized Work Instruction Sheet
- (3) Standardized Work Chart
- (4) Relationship Of Work Standards & Standardized Work

III. Closing The Training Session

- (1) Summary Of Session 4
- (2) Preparation For Next Session

I. Open The Training Session

Opening Remarks & Greetings

- Welcome the participants to session 4 of Standardized Work Training
- Create an informal atmosphere. Put the audience at ease. Remind people that attendance is recorded but no tests will be given.
- Introduce yourself and conduct participant introductions if necessary.
- Thank people for attending and remind them to be on time to all sessions.
- Remember to encourage participation so that the participants will benefit from the class.

Review of Session 3

Show Slide 4 - 1 “Main Points Of Session 3”

Review with the participants the major points:

- Conditions For Establishing Effective Standardized Work
- 3 Elements Of Standardized Work
- Process Capacity Sheet
- Basics Of Time Measurement

Inform the audience that you will be covering the following topics in this session:

- Standardized Work Combination Table
- Standardized Work Chart

- In addition to studying the above two forms we will also be completing some practice problems.

II. Creating Standardized Work

In the previous session we covered the basics and characteristics of Standardized Work. Standardized work is one of the methods for supplying quality products at a low price to customers.

On the manufacturing floor man, machine, material, and method combine to make up the environment of how we produce. This background is an ever changing environment where it is necessary to continually investigate and standardize operations in order to achieve maximum efficiency.

Leaders need to understand all types and possibilities of standardization on the plant floor. Where applicable we need to implement work standards, and where possible achieve standardized work.

The broadest definition of Standardized Work is “a standardized method of achieving efficient production, without waste, based upon human motion”. As you may recall, the primary difference between Standardized Work and Work Standards is that Standardized Work has 3 elements (takt time, SWIP, & Work Sequence) and focuses on all aspects of motion, not just the value adding ones. Work standards have no relation to takt time.

The Team Leader is responsible for ensuring that Standardized Work is established in all their respective work areas. There are many benefits to Standardized Work, among them are stabilization and improvement of safety, quality, productivity, and elimination of unnecessary materials in the work area. These all contribute to the elimination of waste and reduction of cost.

Standardized work is just one of the tools a company can use in manufacturing operations. Production employees need to follow and improve upon standardized work to ensure maximum benefits. When used properly Standardized Work is a tool to ensure smooth operations on the plant floor, identify wasteful activities, and discover problems.

Today we will continue our study of Standardized Work by moving onto a particular document called Standardized Work Combination Tables.

Standardized Work Combination Tables

Now we will start our study of Standardized Work Combination Tables.

- Distribute the Standardized Work Combination Tables.
- Read out loud each column to provide a good understanding of the format.

Definition & Role Of Standardized Work

The Standardized Work Combination Table is a tool that uses takt time as a basis for work allocation and to establish the most efficient sequence of work.

Furthermore, it provides us with an excellent opportunity to distinguish between “human work” and “machine work” and discover problems related to the combination of these items.

Standardized Work Combination Tables help us to discover problems such as line unbalance, assembly difficulties, and other items by breaking down jobs into the elements that make it up operation by operation.

Instructions For Creating Standardized Work Combination Tables

Now I will explain how to properly fill out standardized work combination tables.

Show Slide 4 - 2 “Standardized Work Combination Table: Blank”

- Explain that this is the form used in Toyota as a Standardized Work Combination Table. Hand out blank copies to the participants.

Show Slide 4 - 3 “Standardized Work Combination Table: Sample”

Using the provided sample problem explain how to fill out the form.

- Table entry should be made in the order presented in Slide 4 - 3.
- Explain clearly how to correctly fill out items 1 - 10 (explained below)
- As the participants are filling out the table, walk around and check their understanding. Provide guidance until everyone completes the table.

1. Plant Location / Product / Area / Process - Copy these from the Process Capacity Sheet.
2. Date & By - Enter the date of preparation and name of preparer.
3. Takt Time - Calculate and enter takt time. Normally this is calculated on a monthly basis.

$$\text{Takt Time} = \frac{\text{Operational Time Per Shift}}{\text{Required Production Quantity Per Shift}}$$

4. Draw a Red Vertical to indicate where takt time finishes on the time graph.
5. Shift & Volume - Enter average production amount per shift for the next month.
6. Major Op. Steps - Enter the work element name. Since this name involves human movement, enter it in the form "ACTION OBJECT." For example, "Set part on fixture." If machinery is involved, enter the machine number.
7. Time - Copy in the manual work and automatic feed times from the Production Capacity Sheet. Actually measure the walking time and enter them on the sheet. If the time range has been determined, enter the total in the "TOTAL" column.
8. Graph Work Time - While organizing the work sequence, draw in the manual work time (solid line), and walking time (wavy line) for the entire operations. Next draw in the automatic feed time (broken line).
9. QC CK - Enter the symbol for Quality Checks performed at a specific sequence.
10. Work Sequence - Enter the numbers for the work sequence.

Exercise in Preparing A Standardized Work Combination Table

Next we will complete a practice exercise problem.

- Distribute Practice Exercise.
- Explain: “The manufacturing process used in this exercise is the same as for creating the Process Capacity Sheet.”
- Explain: “Use the same data as used for the Process Capacity Sheet”.
- Have the class fill out items 1 - 10 (Explained on previous page)
- Check Progress. Give guidance when necessary.
- When finished, give the correct answers. Explain them.

Show Slide 4 - 4 “Standardized Work Combination Table: Answers”.

Standardized Work Chart

Next we will study the form of standardized work called the standardized work chart.

- Hand out the Standardized Work Chart to the audience
- Read the headings and information contained in the chart

Definition & Role Of Standardized Work Chart

The standardized work chart include important information summarized off of the other standardized work form. In addition to showing the work area in graphic detail, the three elements of standardized work; takt time, work sequence, and standard work in process are included.

The purpose of the standardized work chart is to serve as a visual tool for leaders and managers so that the status of the work area can be confirmed with ease. Additionally this for serves as a basis for continuous improvement, basic management, and as a simple instructional reference.

The standardized work chart functions as a visual control tool in the work site. By continually checking the work site and the standardized work chart, leaders and managers can discover problems that might otherwise go unnoticed. Team members can use the standardized work chart to make sure they know the contents of their job, especially with respect to the three elements of standardized work.

Instructions for Filling in the Standardized Work Chart

Show Slide 4 - 5 “Standardized Work Chart: Blank”

- Explain the basic layout of the form. Distribute copies.

Show Slide 4 - 6 “Standardized Work Chart: Sample”

- Explain to the class that they will now fill out a Standardized Work Chart based upon the forms they have created from the Exercise problem.
 - Explain step by step (as indicated below) how to fill out the chart.
 - Confirm the comprehension of the class as you progress.
1. Area / Process - Enter the area and process description as taken from the Standardized Work Combination Table, for each team member.
 2. Plant / Product - Enter plant location and product name as taken from Standardized Work Combination Table.
 3. Takt Time - Enter takt time from Standardized Work Combination Table.
 4. Cycle Time - Enter the time required for each team member to complete one full cycle of the work range (total of manual work time, walking time and waiting time), he/she is responsible for, from the Standardized Work Combination Table.
 5. Work Area Layout - Enter the machines, work tables, pallets, etc. The layout should be drawn with ratios that are close to those of the actual work site. However, to make the layout easy to view, the dimensional ratios need not always be so strict. The range of equipment entered should only be the work range associated with each team member's work contents. Enter the machine number if there is one. For equipment that has the lowest production capacity in the work range, enter hatching to distinguish it.
 6. Sketch Sequence - Indicate the sequence in which the team member performs the work by placing numbers on the work area layout based on the Standardized Work Combination Table. Connect the sequence numbers with a solid line. Use a dashed line with arrow only for the return from the last work to the first work task.
 7. Major Operational Steps - Enter sequence number and description of major operational steps the team members perform. The description must match the sequence shown on layout. Enter manual time, automatic time, wait time and walk time from Standardized Work Combination Table.

8. Standard Work-In-Process (SWIP) - Enter the Standard Work-In-Process symbol in the layout diagram. The entry location is where a processed item stops after machine processing and conveyance has been completed. For SWIP greater than one piece, draw SWIP symbol followed by "X" and quantity.
9. Quality Checks - Enter the quality check symbols in the processes that require a quality check. Quality checks are entered on the layout and in the "QC CK" column next to "Major Operational Steps" column.
10. Safety Precautions - Enter a cross symbol for processes that require operator safety precautions. As a general rule, enter it for automatic machines.
11. Approvals - Team Leader and Mfg. Eng. will review, sign and date.

Show Slide 4 - 7 "Standardized Work Chart: Answer"

- Explain the contents of the form.
- Answer any questions that the class may have.

Posting the Standardized Work Chart

Since the Standardized Work Chart is primarily a visual control tool for the supervisor (as well as a form of operator instructions) it should be posted in the applicable processes. The posting location should be near the first process at the work area, and should be placed in a location where it can be easily seen from outside the line.

SUMMARY OF STANDARDIZED WORK & WORK STANDARDS

Up to this point we have studied two main categories of standardization; standardized work and work standards. Now I'd like to review some of the key differences of the forms.

Differences between the two types of forms

Question: What are the differences between work standards and standardized work?

What types of forms do they have in their work sites.

Definition & Role Of Standardized Work

Standardized work is a tool used to standardize the most efficient method of operation in an area based upon human movement. There are three fundamental elements of standardized work: takt time, work sequence, and standard work in process. The forms used in standardized work combine to identify the most efficient use of man, machine, and material in an area to improve performance in safety, quality, cost, etc.

Standardized work forms a basis for continuous improvement. Without some type of basis for comparison there can be no continuous improvement. Normally standardized work functions to serve as a tool for visual control in a work area.

Standardized work often relies upon information provided in work standards. Work standards are created machine by machine, tool by tool, part by part, etc. These forms provide vital information pertaining to work conditions, work elements, control methods, and quality.

Definition & Role Of Work Standards

Work standards form the basis for the manufacturing process. As such, they normally do not function to highlight non-value activities, serve as a tool for visual control, or as a basis for continuous improvement.

Work standards outline the basic methods, work conditions, parameters, control methods, quality plans, etc. that make up the whole manufacturing process. Combined these documents function to describe the best method we know to operate.

An important thing about work standards is that they are set so that we can produce safely and efficiently, with the required quality, and at a low cost. Thus work standards are among the most important documents in all of manufacturing activities. Leaders must strive to make sure team members understand the importance of following work standards.

The subject of work standards are essentially all items that related to production matters. Broadly they can be divided into the following three categories:

- | | |
|-----------------------|---|
| Process Conditions: | These are also commonly called production engineering conditions and include such items as equipment, materials tooling, fixtures, oils, cutting conditions, etc. |
| Control Conditions: | This area includes such vital items as the quality plan, quality checks & standards, gage standards, pressure, feed, speed, voltage, & current settings. |
| Operation Conditions: | The type of standards included here are documents such as work procedures, work instructions. |

III. Closing The Training Session

Today we discussed the methods for establishing various forms of standardized work, their respective definition and role.

The different forms of standardized work each have their own respective purpose and necessity. It is up to leaders in the work site to understand which type is necessary for their area and to implement them as required.

Show Slide 4 - 8 “Summary Of Main Points In Session 4”

Standardized work needs to be driven by the Team Leaders in their respective work areas. Let's try to understand them correctly and apply them practically to our areas of management.

*Question: What is the purpose of the Standardized Work Combination Table?
What is the purpose of the Process Capacity Sheet?
What is the purpose of the Standardized Work Chart?*

Standardized work is a big contributor to the establishment of the Toyota Production System. Proper development and implementation of it will lead to greater sharing of knowledge and techniques with the company.

As leaders, it is important to secure and maintain the commitment of our team members to follow standardization in the work area. With respect to work standards and standardized work, we must lead by setting a good example, and providing good explanations.

Today this concludes our discussion of standardized work. Now we must focus on building upon our knowledge by developing more skill in correctly implementing these forms. This will contribute to our ability to conduct continuous improvement activities as well.