

Standardised Work Overview & Documents

Standard Operations

Definition

Best combination of worker and machine to achieve output with minimum labour, space, inventory and equipment.

Objectives

- To establish and clarify the guidelines for manufacturing Quality, Quantity, Manpower, Inventory, and Safety
- Provides a tool for Kaizen

Where there is no standard there can be no KAIZEN

Standard Operations

- Takt time/ Cycle time
- Work sequence
- Standard WIP

Takt Time

Takt is a German word



It describes the conductor's
baton

It is the principal that all activity within a business is
synchronised by a pulse, set by the customer
demand

How To Calculate Takt Time

Takt time relates the customer demand to the time available.

$$\text{Takt} = \frac{\text{Production Time Available}}{\text{Customer Demand}}$$

Time is deducted for:

- Lunch and tea breaks
- Team briefing times
- TPM breaks
- Clean down time

$$\begin{aligned} \text{E.g. } 8\text{hrs} \times 60 &= 480 \text{ minutes} \\ \text{Time Available} &= 480 - 20 \text{ mins breaks} - 10 \text{ mins TPM} \\ &= \mathbf{450\text{mins}} \end{aligned}$$

How To Calculate Takt Time

If the customer demand is 500 units per week;

$$\begin{aligned}\text{Demand} &= 500 / 5 \\ &= 100 \text{ products a day}\end{aligned}$$

$$\text{Takt Time} = \frac{\text{Time Available}}{\text{Customer Demand}}$$

$$= \frac{450 \text{ mins}}{100}$$

$$= 4.5 \text{ mins or } 270 \text{ secs}$$

Takt, Cycle, Target Cycle and Lead Time

| | | |
|--------------------------|---|---|
| Takt Time | = | The pace at which the customer requires products |
| Target Cycle Time | = | The pace at which we will produce to ensure we meet the customer requirements |
| Cycle Time | = | The time at which a process cycles |
| Lead Time | = | The total production lead time from product start to finish |

Don't get them confused!!

Standard Operations

Operator Cycle time

The total time required for a worker to complete one cycle of an operation. Includes manual operations, walking, inspecting, unloading/ loading machines, gauging.

Does not include waiting for machine auto cycle to finish

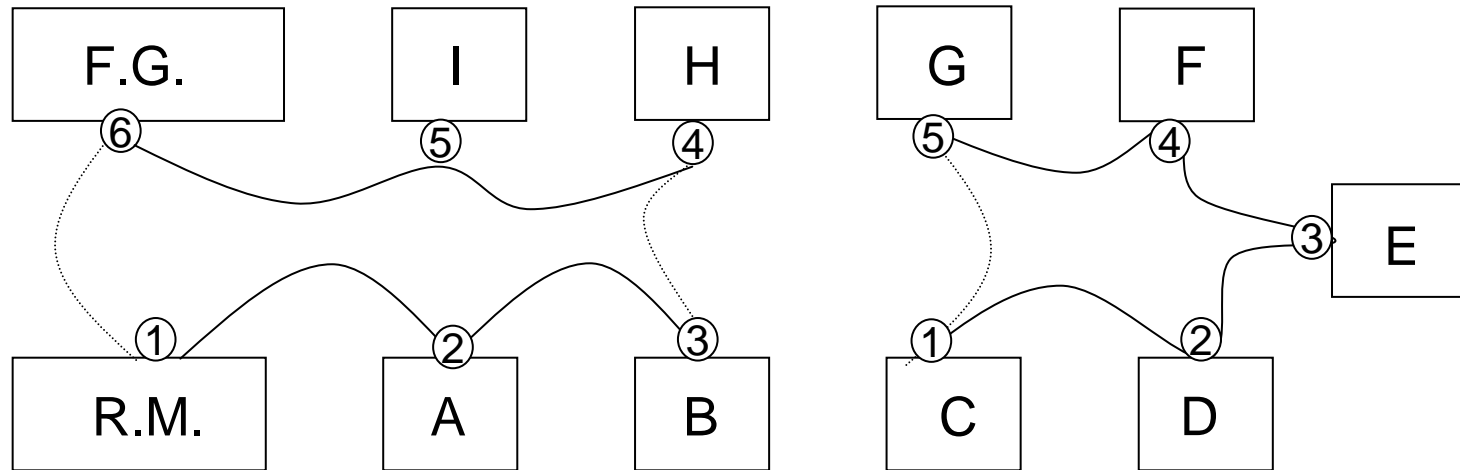
Machine cycle time

The total time for a machine to finish one complete machining cycle, including loading and unloading time

Cycle times must be separated between work done by a machine without human involvement and work that requires humans and machines working together.

Work Sequence

- Sequence of activities that each worker performs to complete one cycle
- Does not necessarily represent the part routing
- Requires multi-skilled workers

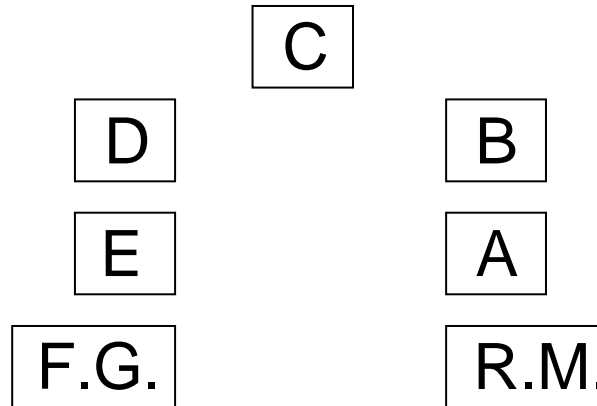


Standard in Process Stock

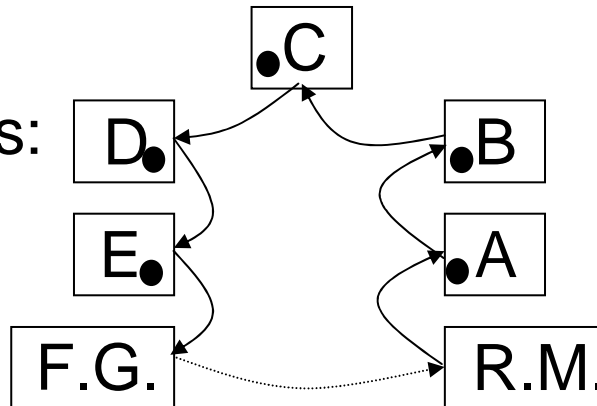
- Specified minimum number of pieces of inventory required to conduct the work sequence in demand
 - Automatic operations require standard in process stock to enable the worker to separated from the automatic cycle
 - No standard in process stock is required at manual operations

Standard in Process stock

All manual operations:
SIPS = 0



All automatic operations:
SIPS = 5



Lean Manufacturing

Tools for Standard Operations

Tools for Standard Operations and Kaizen

Time observation forms

- To observe the operations and break into elements
- To establish best/ repeatable elapsed time per element

Process capacity table

- To determine if machines have enough capacity
- To determine the level of man power in the cell

Standard work combination sheets

- To determine best combination of worker/ machine
- One SWCS/ operator- posted in the cell

Standard work layout

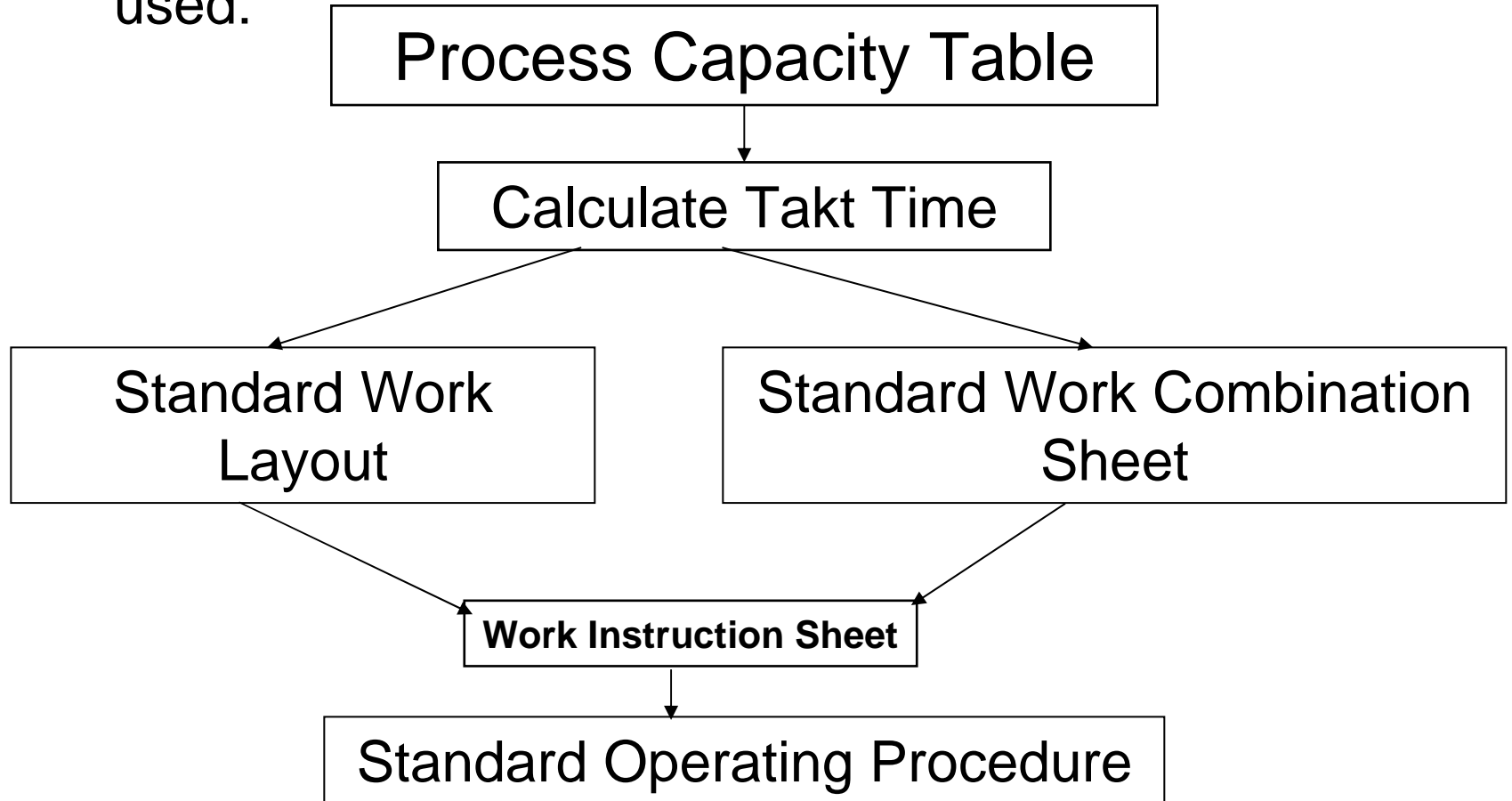
- To train new operators
- To record actual layout and flow
- One SWL/ operator- posted in the cell

Work Instruction Sheet

- To train new operators
- To standardise the “knack”

Standard Work Documents

Order in which the documentation should be used:



Process Capacity Table

| | | |
|-------------|--|-------------|
| Date: | Part No.: | Page: of |
| Supervisor: | Part name: Annualised volume:.....parts | Max output: |

| Op No. | Process description | M/c No. | Base time | | | | | Tool change time | | | Quality check | | | Total time Per part | Total Capacity Per hour | comments |
|--------|---------------------|---------|-----------|-----------|----------|--------------------|----------|-------------------|----------------|--------------|----------------|---------------|----------------|---------------------|-------------------------|----------|
| | | | Man. Time | Auto Time | % Avail. | Expected Auto time | M/C C.T. | Pieces Per change | Time to change | Time Per pc. | Freq. of check | Time to check | Time per piece | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | | | | |
|---|--|---|---|--------------------------------------|
| What is the number of working days per yeardays (1) | Average working hours per day within this zonehours/ day (2) | Number of working hours per year hours per year (3) = (1) x (2) | Minimum output per hour required Parts per hour (annualised volume+defects) no. of working hours per year | Zone capacityParts per hour |
|---|--|---|---|--------------------------------------|

Process Capacity Table Calculations

$$\text{Total capacity} = \frac{\text{Net operating time}}{(\text{Mach. Cycle time} + \text{Toolset up Time per Piece} + \text{Quality Check per Piece})}$$

Machine cycle time =

Manual time and Automatic time

Machine Cycle Time per piece =

$$\frac{\text{Time to set up}}{\text{Number of pieces per set up}}$$

Quality Check Time Per Piece =

$$\frac{\text{Inspect Time per piece}}{\text{Frequency of check}}$$

Process Capacity Table

Date: _____ Part No.: _____ Page: _____ of _____

Supervisor: _____ Part name: _____ Max output: _____
 Annualised volume: 71700 parts

| Op No. | Process description | M/c No. | Base time | | | | | Tool change time | | | Quality check | | | Total time Per part | Total Capacity Per hour | comments |
|--------|---------------------|---------|-----------|-----------|----------|--------------------|----------|-------------------|----------------|--------------|----------------|---------------|----------------|---------------------|-------------------------|----------|
| | | | Man. Time | Auto Time | % Avail. | Expected Auto time | M/C C.T. | Pieces Per change | Time to change | Time Per pc. | Freq. of check | Time to check | Time per piece | | | |
| 10 | Turning | | 15 | 77 | 85 | 90.6 | 105.6 | 2500 | 3600 | 1.44 | 50 | 480 | 9.6 | 116.64 | 30.86 | |
| 20 | Milling | | 16 | 55 | 85 | 64.7 | 80.7 | 1750 | 900 | 0.51 | 50 | 600 | 12 | 93.21 | 38.62 | |
| 30 | Rough bore | | 15 | 42 | 85 | 49.4 | 64.4 | 250 | 240 | 0.96 | 100 | 60 | 0.6 | 65.96 | 54.58 | |
| 40 | Finished bore | | 18 | 76 | 95 | 80 | 98 | 2500 | 600 | 0.24 | 50 | 180 | 3.6 | 101.84 | 35.35 | |
| 50 | Driller | | 16 | 57 | 85 | 67.1 | 83.1 | 2500 | 2700 | 1.08 | 100 | 300 | 3 | 87.18 | 41.29 | |
| 60 | Bore and tap | | 17 | 61 | 85 | 71.8 | 88.8 | 2500 | 3600 | 1.44 | 50 | 900 | 18 | 108.24 | 33.26 | |
| 70 | Mill and tap | | 18 | 113 | 85 | 132.9 | 150.9 | 250 | 1200 | 4.8 | 100 | 900 | 9 | 164.70 | 21.86 | |
| 80 | Bore | | 19 | 92 | 85 | 108.2 | 127.2 | 250 | 300 | 1.2 | 100 | 180 | 1.8 | 130.20 | 27.65 | |
| 90 | Bush press | | 11 | 10 | 100 | 10 | 21 | 0 | 0 | 0 | 250 | 180 | 0.72 | 21.72 | 165.75 | |
| 100 | Wash | | 5 | 27 | 100 | 27 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32.00 | 112.50 | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | | | | |
|--|--|--|---|---|
| What is the number of working days per year 239 days (1) | Average working hours per day within this zone 13.44 .hours/ day (2) | Number of working hours per year 3212 hours per year (3) = (1) x (2) | Minimum output per hour required 22.32 Parts per hour (annualised volume+defects) no. of working hours per year | Zone capacity 21.86 Parts per hour |
|--|--|--|---|---|

Process Capacity Table Example

Exercise 1

| | OPERATOR | AUTO | | |
|---|-----------|-----------|------------|-----------|
| | CYCLE | CYCLE | NO. PIECES | TIME TO |
| ROUTING | TIME | TIME | PER CHANGE | CHANGE |
| | (SECONDS) | (SECONDS) | | (MINUTES) |
| LATHE | 6 | 26 | 200 | 50 |
| GRINDING | 6 | 30 | 50 | 10 |
| SLOT KEYWAYS | 5 | 18 | 100 | 60 |
| INSPECT | 7 | | | |
| | | | | |
| OTHER | | | | |
| All walk times between operations = 2 seconds | | | | |
| Pick up RM & put down FG = 2 seconds each | | | | |
| Net operating time = 460 minutes / shift | | | | |
| One shift operation | | | | |
| Customer demand = 690 pieces / shift | | | | |

Process Capacity Table

Date: _____ Part No.: Abc-123 Page:1 of 1
 Supervisor: John Smed Part name:shaft Max output:
 Annualised volume: 690 parts 762

| Op No. | Process description | M/c No. | Base time | | | | | Tool change time | | | Quality check | | | Total time Per part | Total Capacity Per hour | comments |
|--------|---------------------|---------|-----------|-----------|----------|--------------------|----------|-------------------|----------------|--------------|----------------|---------------|----------------|---------------------|-------------------------|----------|
| | | | Man. Time | Auto Time | % Avail. | Expected Auto time | M/C C.T. | Pieces Per change | Time to change | Time Per pc. | Freq. of check | Time to check | Time per piece | | | |
| 1 | PU RM | | 2 | | N/a | N/a | 2 | | | | | | | | | |
| 2 | Lathe turning | L23 | 6 | 26 | 100 | 26 | 32 | 200 | 50 | 0.25 | | | | 32.25 | 111.63 | |
| 3 | Grinding | M43 | 6 | 30 | 100 | 30 | 36 | 50 | 10 | 0.2 | | | | 36.20 | 99.45 | |
| 4 | Slot keyway | M9 | 5 | 18 | 100 | 18 | 23 | 100 | 60 | 0.6 | | | | 23.60 | 152.54 | |
| 5 | Inspect | | 7 | | N/a | 7 | 7 | | | | | | | | | |
| 6 | PD FG | | 2 | | N/a | 2 | 2 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | | | | |
|--|--|--|---|-------------------------------------|
| What is the number of working days per yeardays (1) | Average working hours per day within this zone7.67.....hours/ day (2) | Number of working hours per year hours per year (3) = (1) x (2) | Minimum output per hour required90..... Parts per hour (annualised volume+defects) no. of working hours per year | Zone capacity ...99 .Parts per hour |
|--|--|--|---|-------------------------------------|

Process Capacity Table

Clearly there is a bottle-neck situation, action needs to be taken to ensure that the customer is supplied with the required parts

There needs to be a 2 point action plan ;

- (1) Short term - run the relevant processes through lunch breaks and use overtime
- (2) Medium term - machine base kaizen to reduce the process time to ensure demand is met

Process Capacity Table

When all the capacities have been calculated it is vital to identify the “bottle-necks” within the cell.

The bottle-neck process is any process within the cell that is not able to produce to the customers requirement

This means that if any figure in the “capacity” column is less than or equal to the maximum output per day figure, then this is a **BOTTLE-NECK PROCESS**

Standard Work Documents

STANDARD WORK COMBINATION SHEET

The standardised work combination table is a simple graphical based picture showing the work sequence for a worker and the times to complete each process

The purpose of the chart is to :-

- Identify the work sequence for the worker
- Identify the time for each element that they are doing
- Act as a foundation for Kaizen

Standard Work Documents

STANDARD WORK COMBINATION SHEET

In order to complete the Standard Work Combination Chart, we therefore need to know which operations will be carried out by which worker.

This is done through work balance

STANDARD WORK COMBINATION SHEET

| | | | | |
|----------------|------------------|---|---|--|
| Part No. _____ | Time unit: _____ | QTY/ SHIFT _____ SHIFT TIME _____ TAKT TIME _____ | MANUAL _____ AUTO CYCLE _____ WALKING _____ | DATE: _____ COMPLETED BY _____ CELL/AREA _____ |
|----------------|------------------|---|---|--|

| Op No | Description | M/C | Man | Walk | Auto | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | |
|-------|-------------|-----|-----|------|------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | </ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Standard Work Documents

STANDARD WORK COMBINATION SHEET

Manual work is shown as a solid line



Automatic processing is shown by a dotted line



Walking time is shown by a wavy line




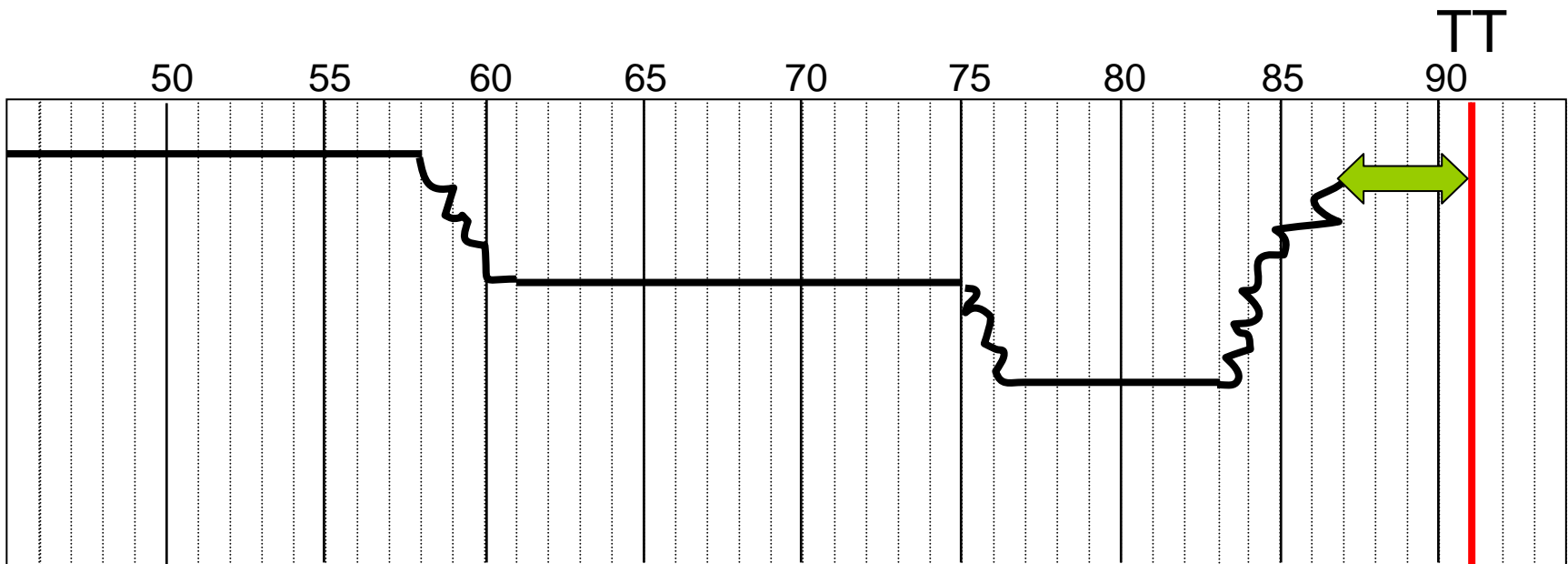
TAKT TIME is shown by a vertical **RED** line from top to

The bottom of the graph (write TT in red at the top of the line)

If any waiting time occurs indicate by using double ended arrows

Standard Work Documents

If the total manual cycle is shorter than TAKT time use the waiting symbol  to show the gap between when the cycle finishes and the red TAKT line.



Standard Work Documents

If the situation occurs where the total Manual Cycle Time
Is greater than the TAKT time, the following actions must happen:

Short term - put in extra manning to reduce the Total Manual
Time to below TAKT TIME

Medium Term – Kaizen the process to reduce the Total Manual
Time below TAKT TIME

Standard Work Documents

Standard work layout




This a very concise document designed to give a pictorial view of the production process (cell/ Jig). The purpose of this document is:

- **Identify the physical shop-floor layout of the cell**
- **Identify which processes need quality checks and where they occur**
- **Identify where any safety precautions are**
- **Identify where and how many standard in process stock are required to run the process**

Standard work layout

| | | |
|--------------------|-------|-----------------------|
| Operation sequence | From: | Cell/ Area |
| | To: | Description: Part No. |

Scale:

| | | | | | |
|--|--|---|-------------|-----------|------------------|
| Quality check  | Safety precaution  | Std in process stock  | Qty of SIPS | Takt Time | Cycle time (PPH) |
|--|--|---|-------------|-----------|------------------|

| | | | | | |
|-----------------|------|-----------------|------|-----------------|------|
| Name / position | Date | Name / position | Date | Name / position | Date |
|-----------------|------|-----------------|------|-----------------|------|

Standard work layout

Operation sequence

From: ASSEMBLY OF HUB

Cell/ Area HUB LINE

To: DESPATCH

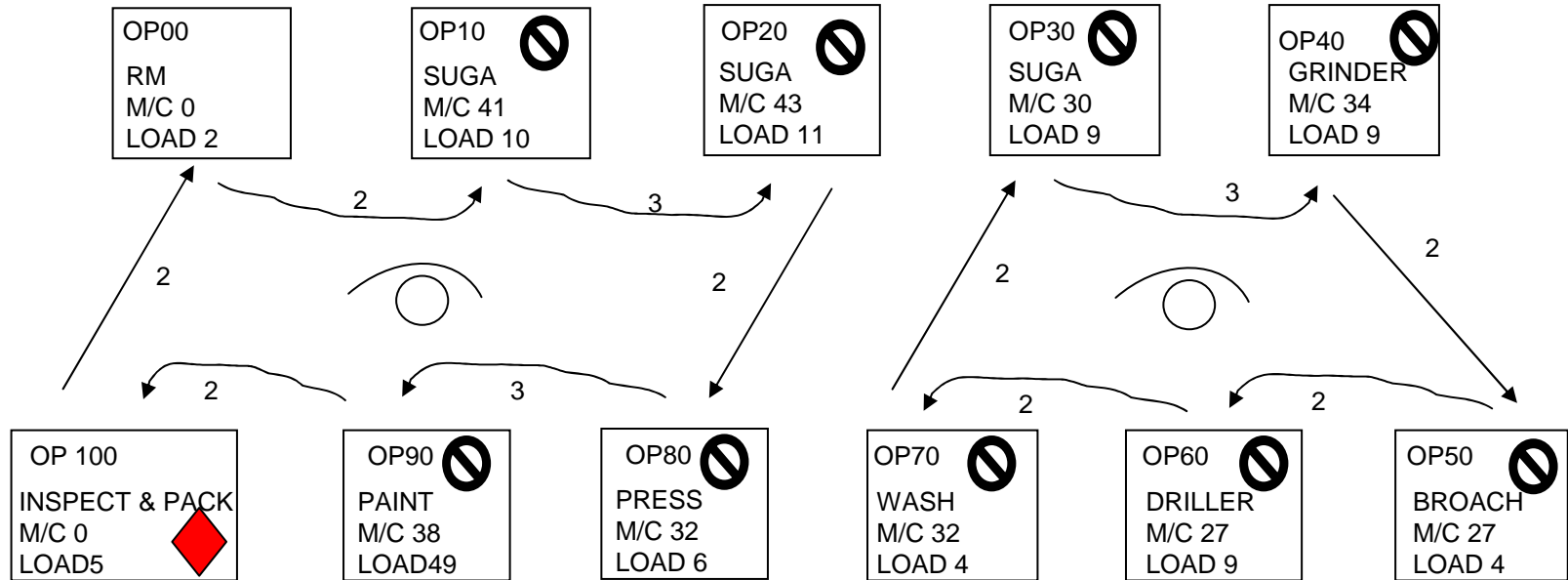
Description: HUB

Part No. TOYO234



PPE MUST BE WORN AT ALL TIMES

Scale:



| | | | | | |
|-------------------|-----------------------|--------------------------|------------------|--------------------|---------------------------|
| Quality check | Safety precaution | Std in process stock | Qty of SIPS 9 | Takt Time 60.57 | Cycle time (PPH) 59.43 |
| Name / position | Date | Name / position | Date | Name / position | Date |

Time Observations After Kaizen

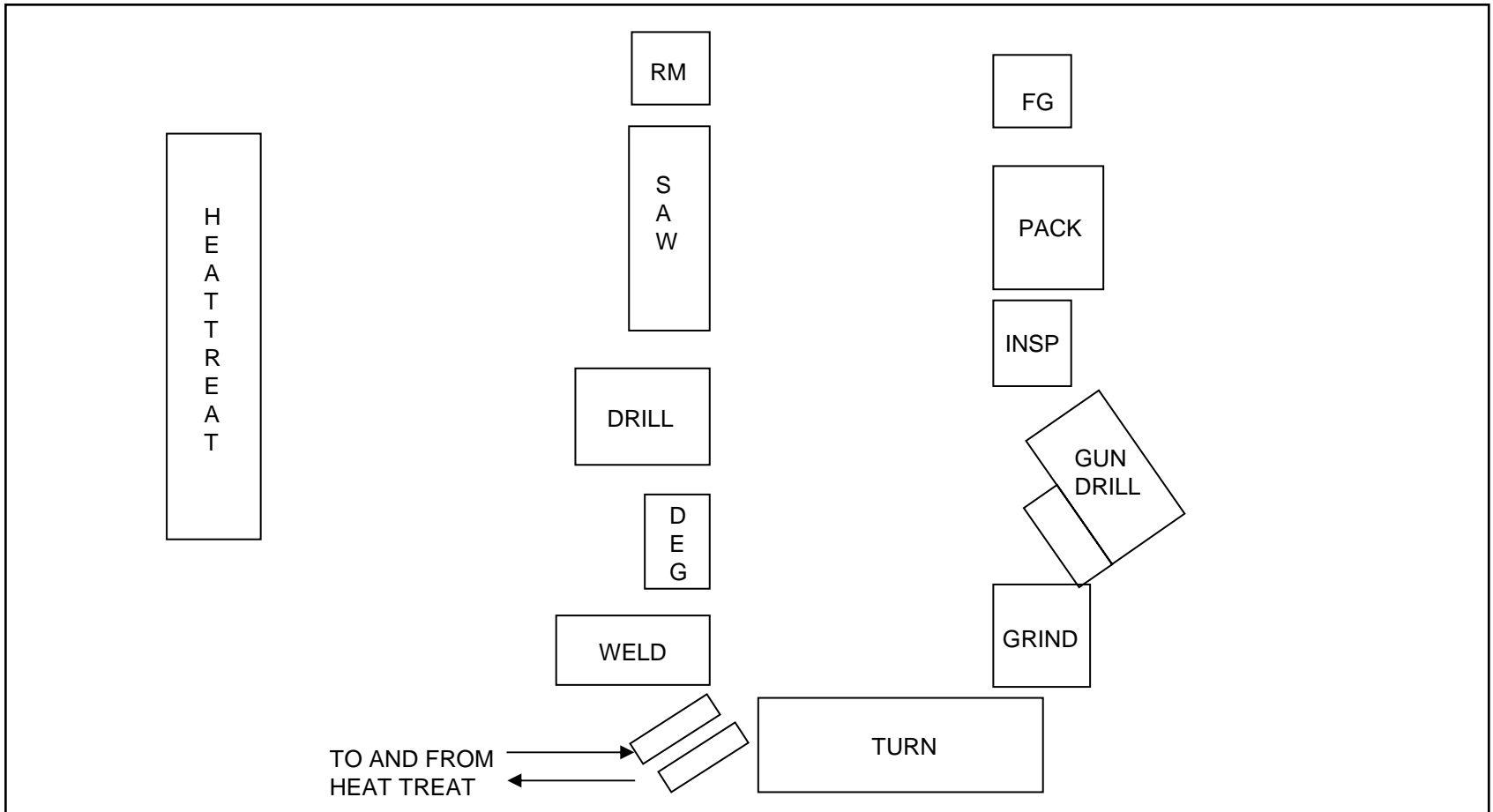
Exercise 1

| PRODUCT: | Welded piston | | |
|--|---------------|------------------|--------------|
| Times below are in seconds | | | |
| <u>Routing</u> | <u>Manual</u> | <u>Automatic</u> | <u>Total</u> |
| Saw | 8 | 9 | 17 |
| Drill | 8 | 34 | 42 |
| Degrease | 7 | | 7 |
| Weld | 7 | 14 | 21 |
| PU & PD for heat treat | 2 | | |
| Treat | 2 | | |
| Turn | 12 | 16 | 28 |
| Grind | 8 | 13 | 21 |
| Gun drill | 11 | 22 | 33 |
| Inspect | 18 | | 18 |
| Pack | 30 | | 30 |
| <u>Other</u> | | | |
| All work time = 2 seconds between operations | | | |
| Pick up (PU) raw material = 1 second | | | |
| Put down (PU) finished goods = 1 second | | | |
| Net operating time = 456 minutes per shift | | | |
| (2 x 10 minute breaks + 4 minute clean up) | | | |
| Requirements = 380 units per shift | | | |
| | | | |

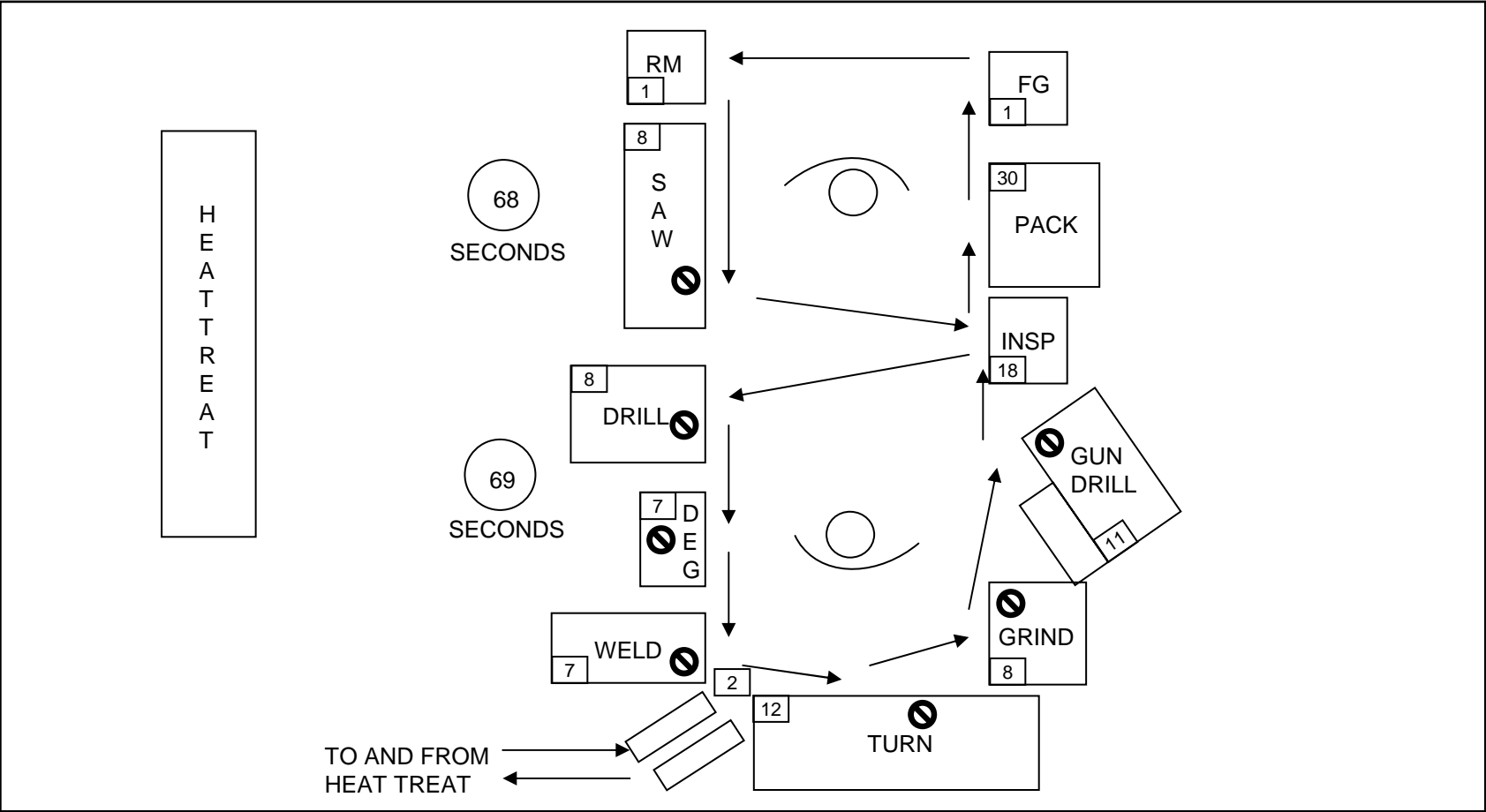
Determine:

1. Takt time & manning requirements
2. Standard work layout
3. Standard work combination sheet

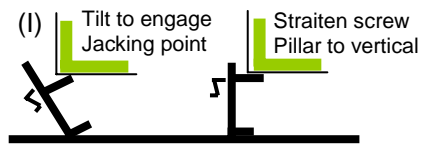
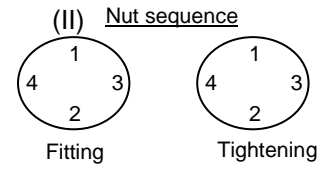
New Layout for Example 1



New Layout for Example 1



| | | | | | | | | |
|----|---------------------------------------|--------|---------|-------------------------------|-----------------------|--|-----------------|---------------------|
| NO | REVISION | DATE | INITIAL | WORK INSTRUCTION SHEET | | | ZONE: ROAD SIDE | SHEET...1 .OF.....1 |
| 1 | Reformatted | 1/1/00 | MJM | | | | DEPT: TRAFFIC | DATE: 29/10/2000 |
| 2 | Include reference to tighten sequence | 6/7/00 | MJM | OPERATION NO. | OPERATION DESCRIPTION | PREPARED BY: J. T. RIPPAR | | |
| | | | | 10 | WHEEL CHANGE ON CAR | AUTHORISATION: A SHIFT: J.T. RIPPAR B SHIFT: S. TODD | | |

| NO | MAIN OPERATING STEPS | Q | S | E | KEY POINTS | EXPLANATION/ EXAMPLES/ DIAGRAMS |
|----|---|---|---|---|---|--|
| 1 | Collect tools and spare wheel from boot | x | x | | <ul style="list-style-type: none"> ensure hand brake is on press spare to ensure inflated carry tools on wheel | <ul style="list-style-type: none"> Keeps jacked body stable Saves time |
| 2 | Remove hub cap, jack up car and remove nuts and wheel using brace | | x | | <ul style="list-style-type: none"> Slacken nuts 2 turns before raising car Engage jack as drawing(I) Raise wheel 2 inches clear of ground Place nuts in wheel cap | <ul style="list-style-type: none"> Easier when wheel won't turn prevents losing them |
| 3 | Fit spare wheel to hub, lower car and tighten nuts | x | | x | <ul style="list-style-type: none"> Use both hands to fit nuts Fit bevelled end of nut to hub Tighten in sequence shown(II) | <ul style="list-style-type: none"> Saves time  <p>(I) Tilt to engage Jacking point Straiten screw Pillar to vertical</p> |
| 4 | Replace hubcap on hub, tools and wheel in boot and close the boot | x | | x | <ul style="list-style-type: none"> Centralise caps over clips before pushing on Clip spare in wheel well | <ul style="list-style-type: none"> Ensure even stops cap falling off Prevents wheel moving  <p>(II) Nut sequence</p> <p>Fitting: 1 (top), 2 (bottom), 3 (right), 4 (left)</p> <p>Tightening: 1 (top), 2 (bottom), 3 (right), 4 (left)</p> |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | | | |
|--|---------------------------------|-----------------|--|
| P.P.E. | JIGS/ TOOLS | REQUIRED CHECKS | TRAINING COMMENTS |
| Cotton gloves Stores number: 299387 | Car jack Box brace & 'T' bar | | Walking sequence needs emphasising Standard time usually achieved at 20 cycle |

TEAM:
LINE:

KAIZEN RESULTS SUMMARY

| IMPROVEMENT MEASURE | BEFORE KAIZEN | KAIZEN OBJECTIVE (% Improvement) | ACTUAL ACHIEVEMENT | % IMPROVEMENT |
|----------------------------|----------------------|---|---------------------------|----------------------|
| Quantity/ day | | | | |
| Operators/ day | | | | |
| Cycle time (PPH) | | | | |
| WIP Inventory | | | | |
| Floor space | | | | |
| Quality – reject rate | | | | |
| Set-up time | | | | |
| Productivity | | | | |