Standard Work

Learning Objectives

At the conclusion of this review, supervisors should be able to:

- **Define standard work.**
- **Discuss the elements and methods of standard work.**
- **Be familiar with some documents for standard work.**

What is Standard Work?

By Standard Work we mean tasks are laid out in such a manner that *any assigned supervisor, lead or operator, with a proper workstation and proper tools will complete the work required in the same amount of time, with the same quality, without risk to health or safety*.

Who Uses Standard Work?

- Pit Crews
- Athletic Teams
- Airline Pilots
- Surgeons
- Military
- Hotels
- Telemarketers
- Everyone!

We all develop standard work in our every day life:

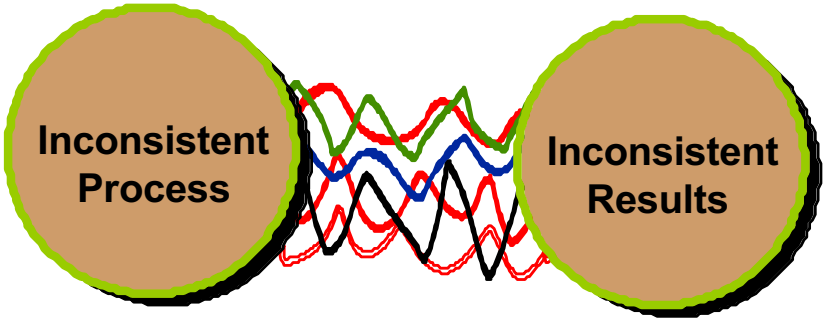
As Mark was walking down the dock to his fishing boat, his arm hit his phone, which was attached to his belt; the phone came off, hit the dock and fell into the water.

After that event Mark quickly developed his standard work:
Before entering the gate to the boat docks he removes his phone from his belt and places the phone in his pocket.

Standard Work Paradigm

Old Paradigm

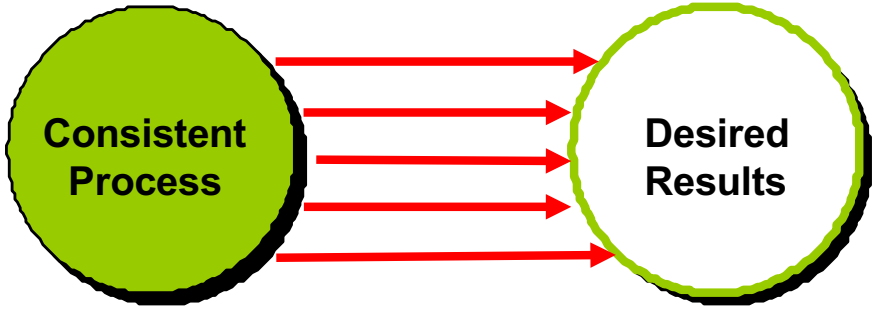
"I don't care how you get the job done, just do it."



Traditional Culture = People do whatever they can to get results

New Paradigm

Everyone does the job according to an agreed upon methodology



***CI Culture = People use a consistent process to get results**

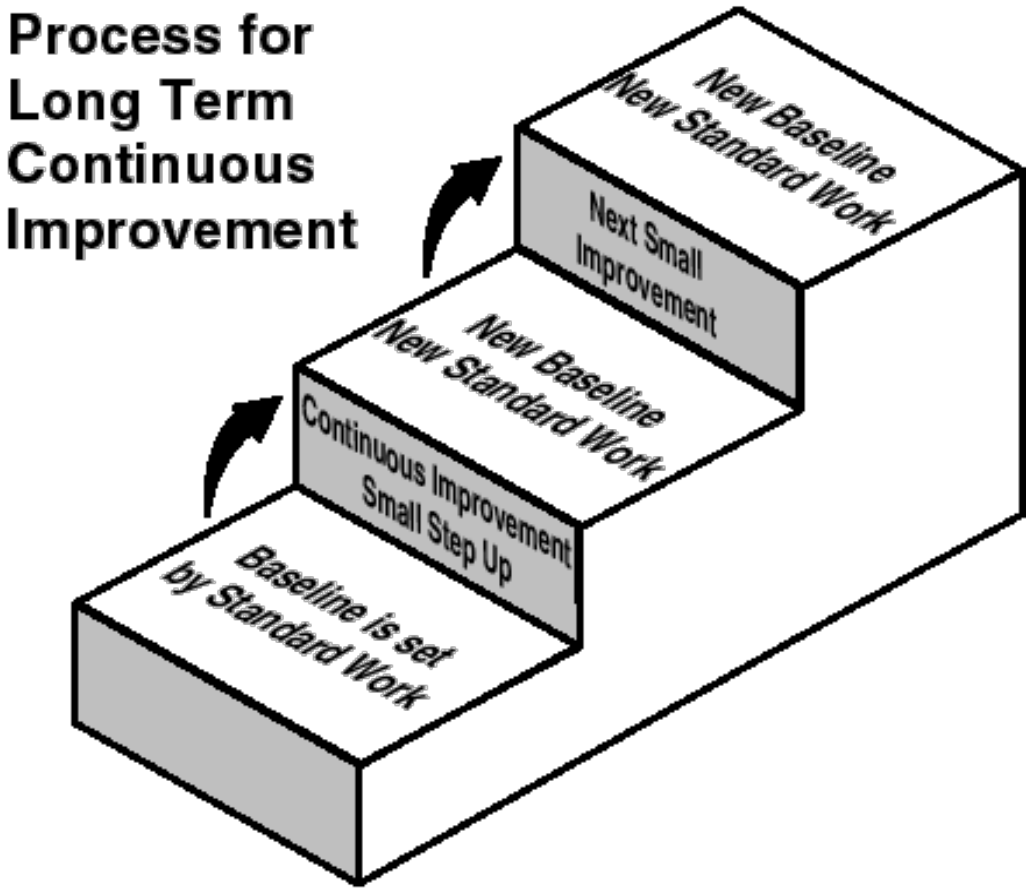
*Continuous Improvement

Why use Standard Work?

Standardized Work is the one ***BEST*** combination of people and machines needed to complete a task using the ***minimum*** amount of time, materials, equipment and space while providing consistent performance of quality.

- Supports the ***Value Stream Flow*** by reducing variation in how work is performed (worker consistency) and variation in ***Value Stream Performance*** (management consistency)
- Eliminates waste while increasing quality and decreasing costs
- Encourages employee involvement increasing safety and is the tool for training!
- Stabilizes working conditions, improving productivity by defining what is normal and provides a foundation for a continuous improvement culture

Foundation for Continuous Improvement



Standard Work

- Standard Work is necessary for flow and focuses on consistent value to the customer
- Standard Work is not easy to create or sustain - “50% of CI work is creating standard work”
- Standard Work is developed through education and leadership requiring a ‘Long Term’ vision

When work is highly defined and standardized, tracking the processes becomes easy.

Standardization of work is *clearly mapping* procedures

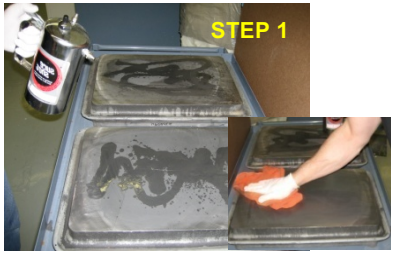
Three Levels of Standard Work

- **Process -** Standard work at the process level provides all the information required to complete the process.

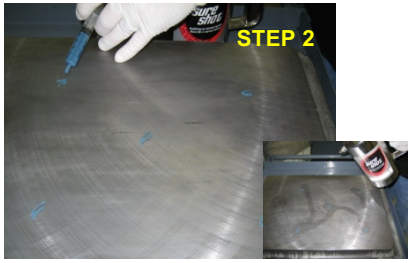
- **Management**
- **Abnormal**

Standard Work at the Process Level

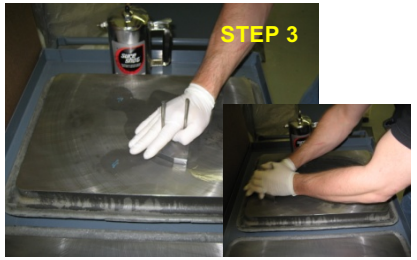
Standard Work at the Process Level



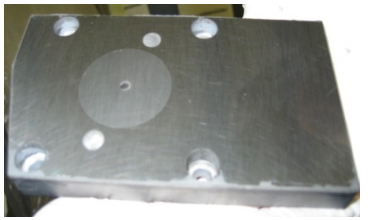
Spray the plate with Naphtha and scrub the
Plate with a shop rag *(use separate rags for each plate).*



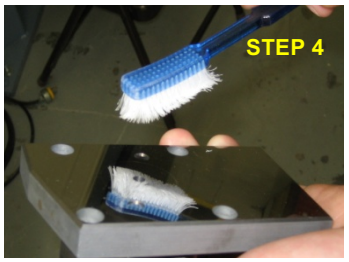
Charge the plate with diamond compound *(blue compound is 15 micron)*; wet the plate with Naphtha *(use 15 micron lapping plate only when large scratches are present).*



Spread the paste then lap the tooling in a figure 8 motion *(Do not hold the tooling by the guide rods).*



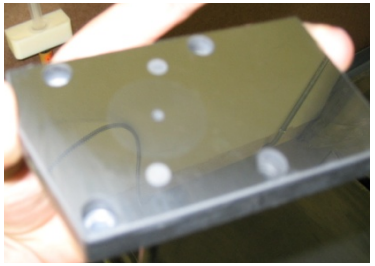
Desired 15 micron finish.



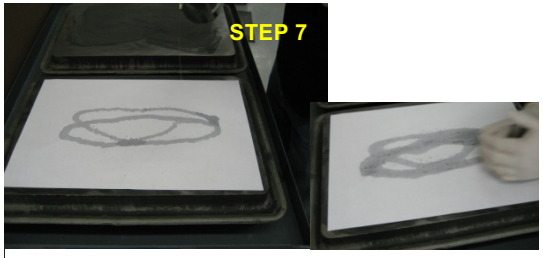
Clean the tooling with methanol and a tooth brush to remove all debris and compound.

Dry tooling with compressed air

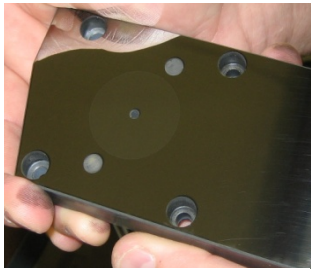
Charge the plate with diamond compound *(orange compound is 6 micron)*; wet the plate with Naphtha; Spread the past then lap the tooling in a Figure 8 motion *(Do not hold tooling by the guide rods).*



Desired 6 micron finish.



Place 11x17 paper on 6 micron lapping plate. Wet with Naphtha. Lap the tooling in a figure 8 motion.



Desired final finish.

Major scratches require 15 micron lapping; follow steps 1-7.

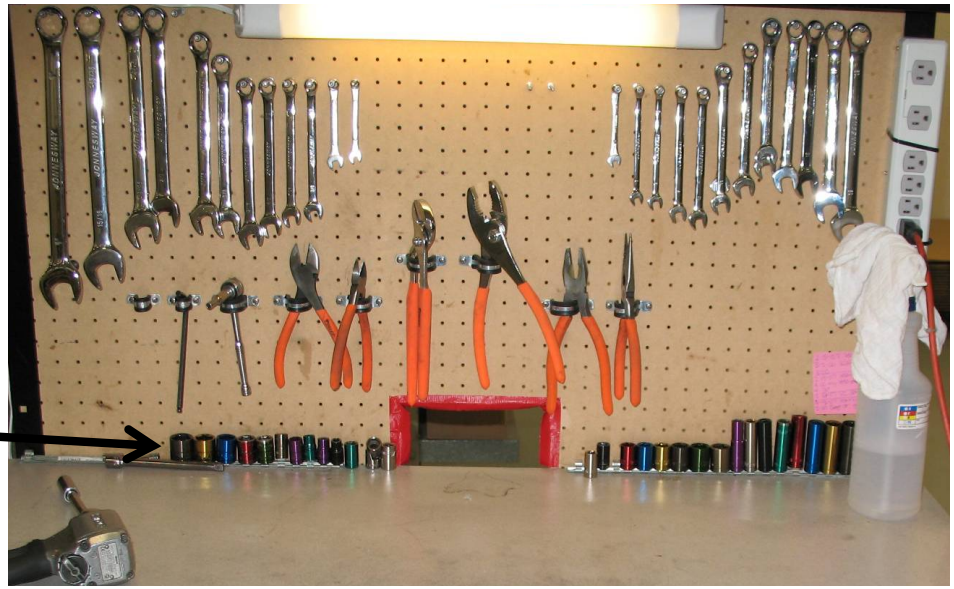
Minor scratches do not require 15 micron lapping; follow steps 1 & 6-7.

FRIT VS: LAPPING DATE: APPROVED:

Standard Work at the Process Level

Step by Step visual instructions that define the assembly process and provide the most efficient sequence build.

Sockets are color coded to make sure the correct tool is used according to the work instructions.



Standard Work at the Process Level

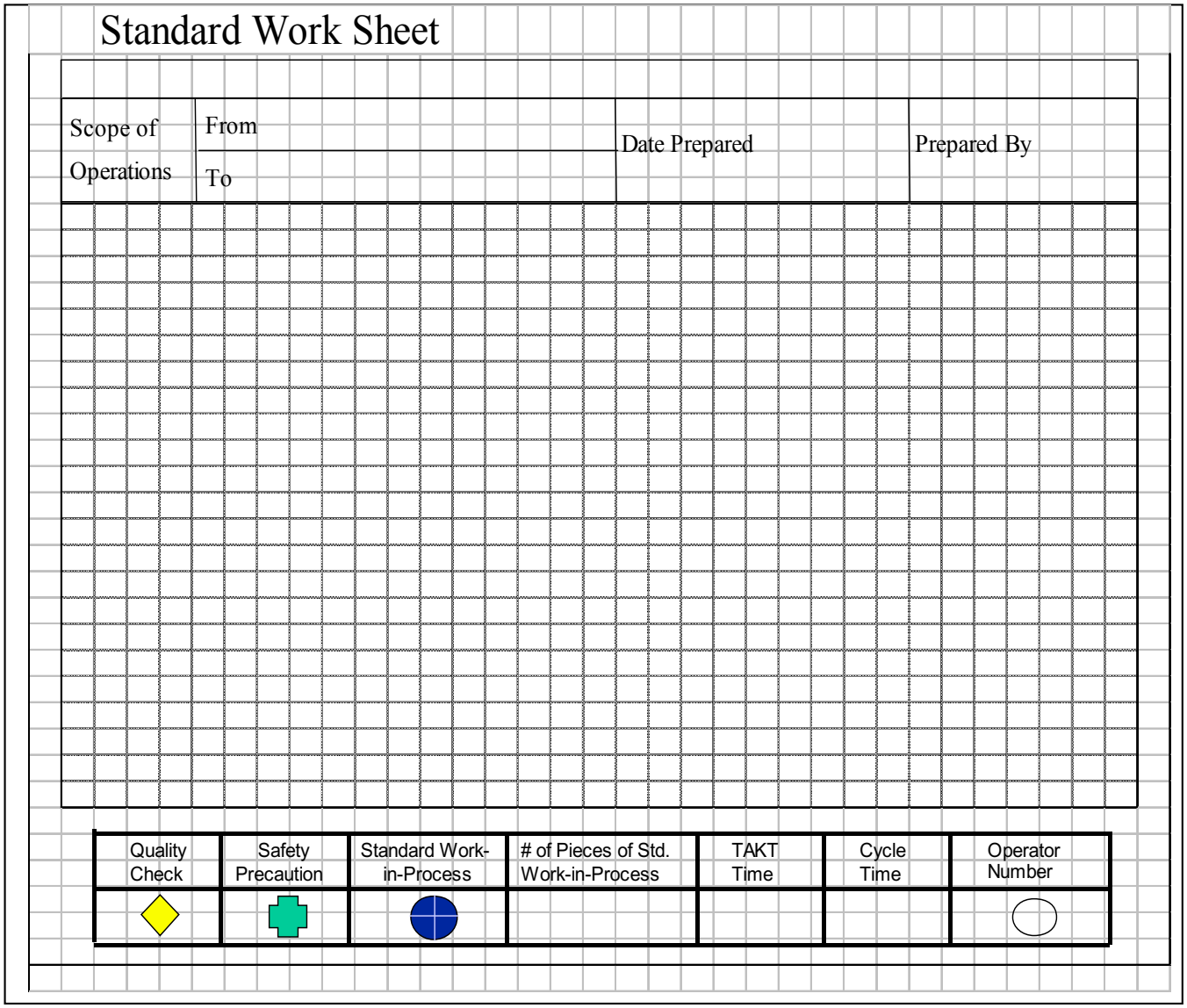
Visual instructions for kanban cards; purchasing agent picks up the cards each day to place the order

Kanban Card

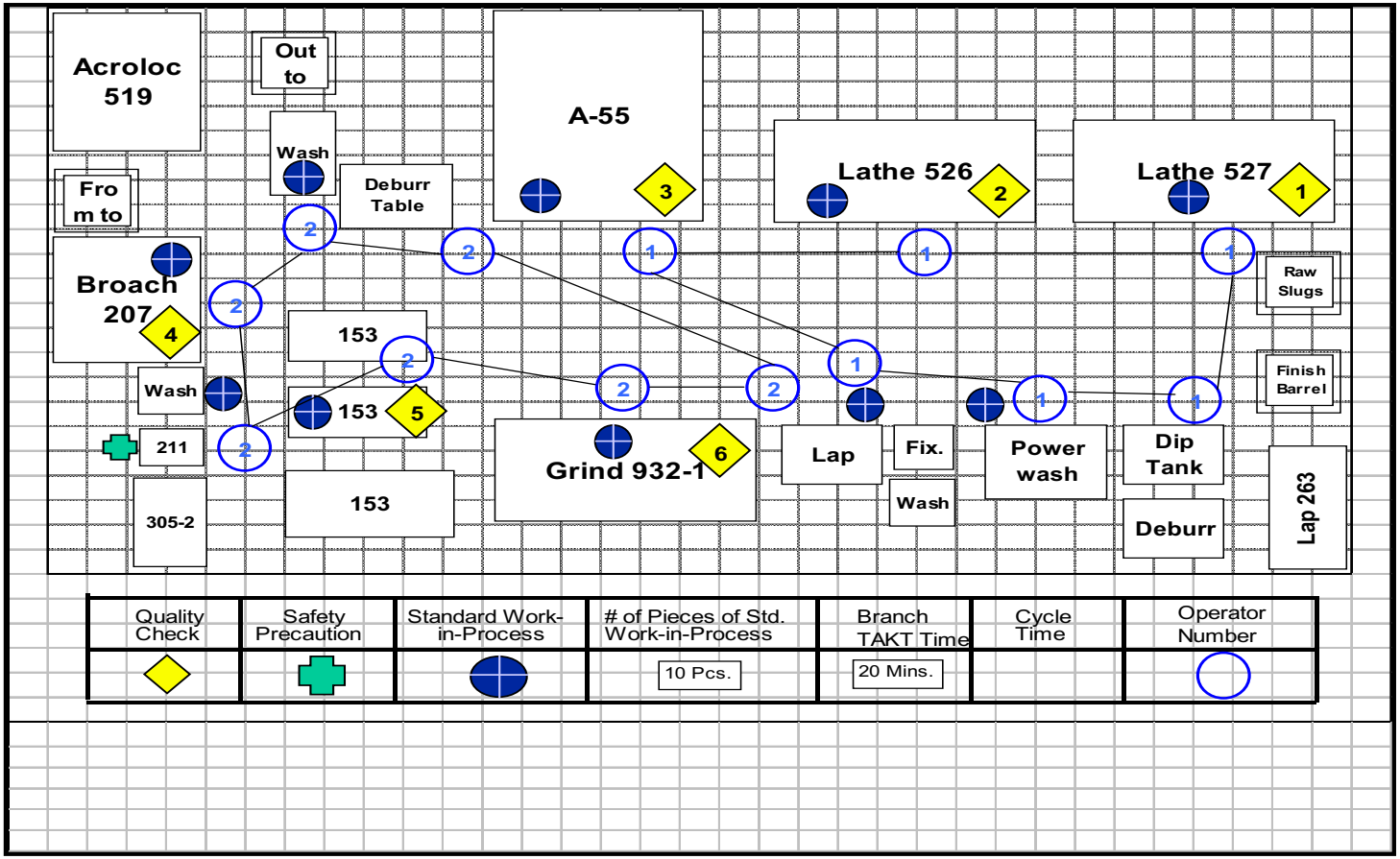
Visual Std Wrk instructions; explaining what to do with the kanban card when you reach the divider

Cycle Stock
Buffer Stock
Safety Stock

Standardized Work Sheet



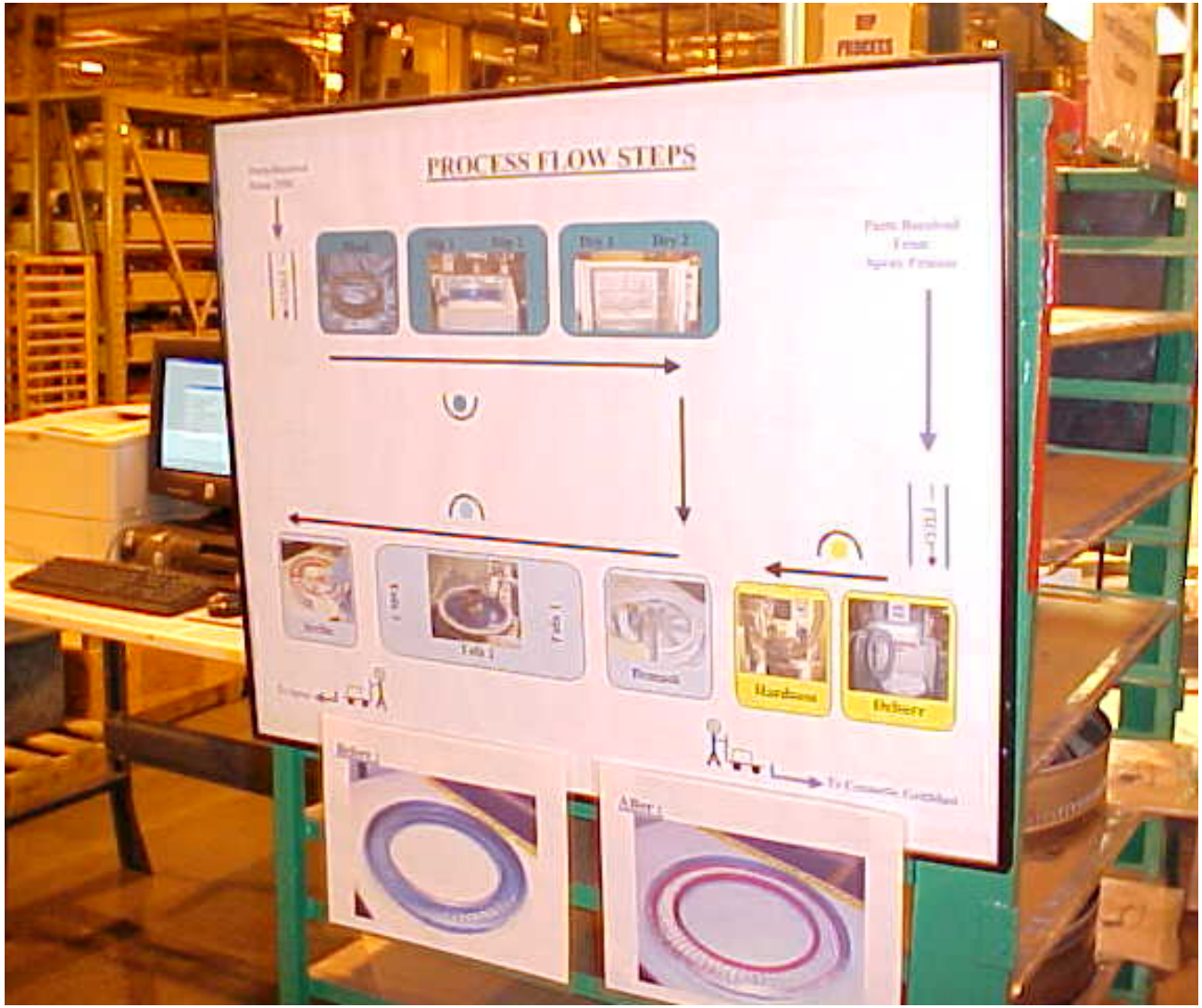
Standardized Work Sheet



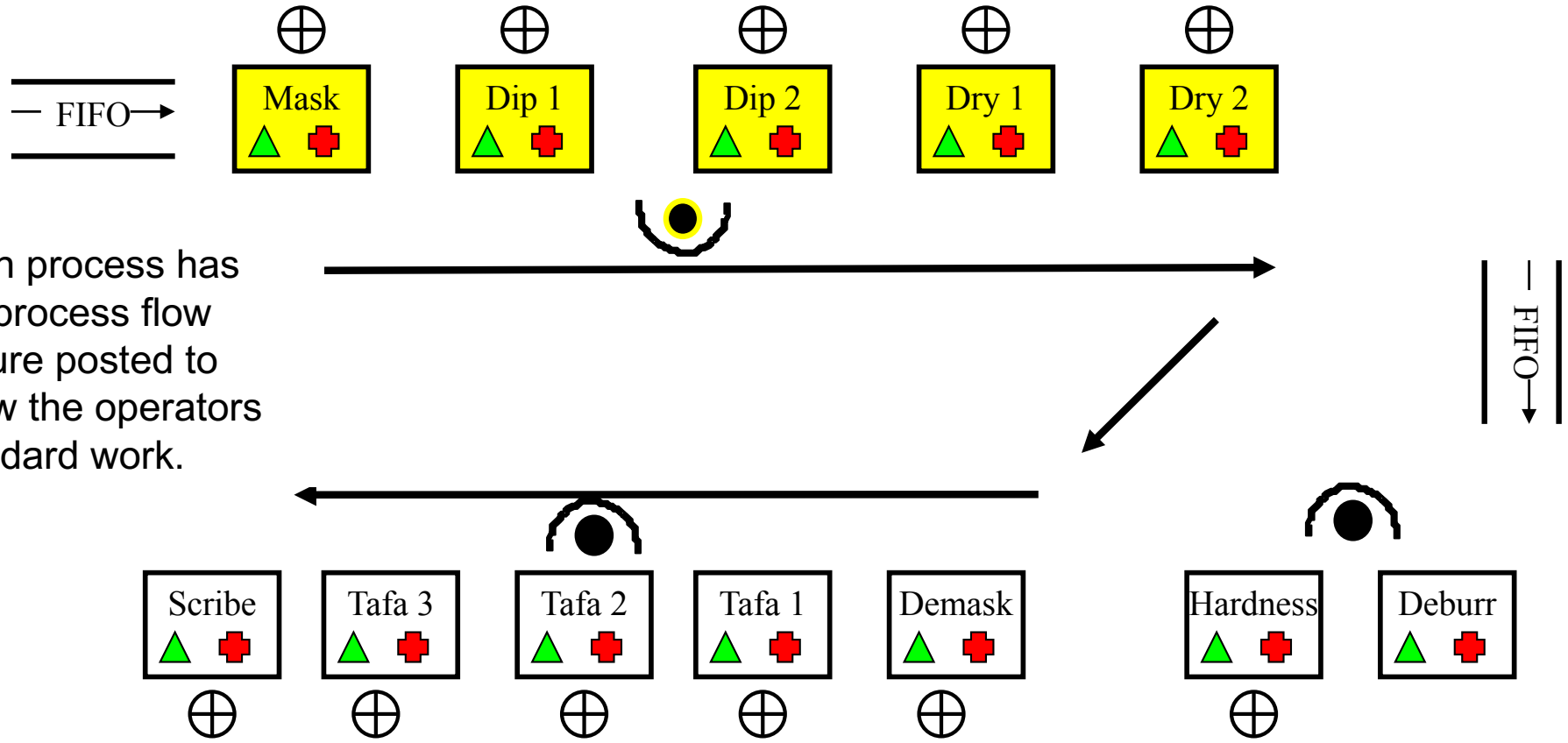
This standard work sheet provides the "dance steps" (sequence of processes) of the production process.

Standardized Work

Show Process Flow posted at the entrance of the cell. Pictures below the layout show state of part before and after cell processes



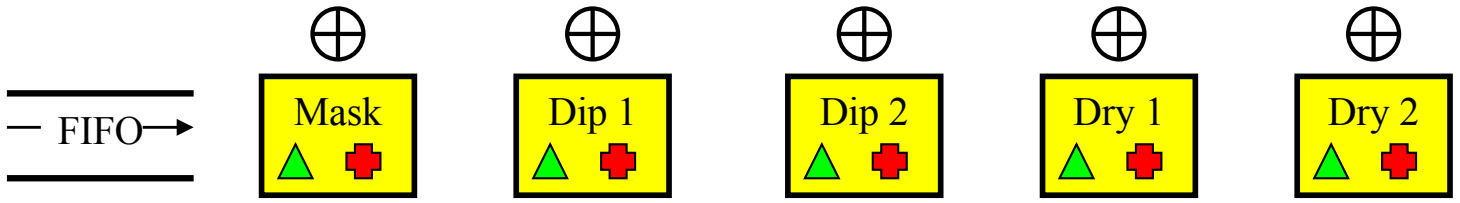
Standardized Work



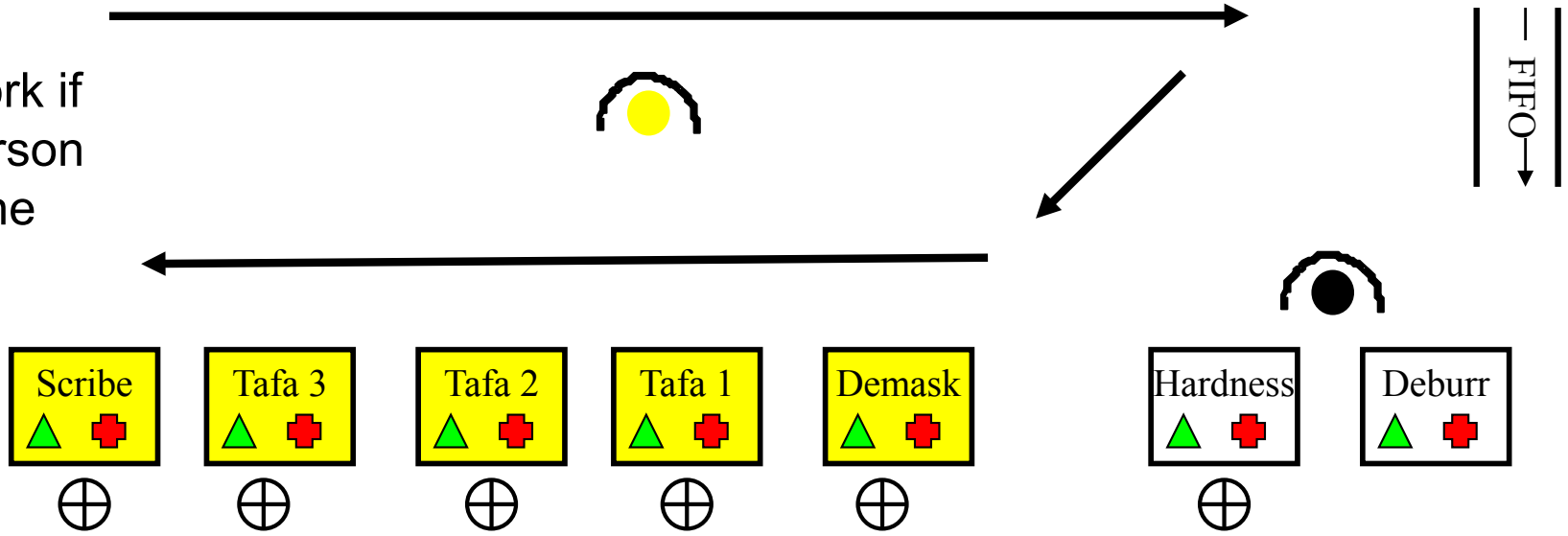
Each process has the process flow picture posted to show the operators standard work.

Quality Check	Safety Precaution	SWIP	# Pieces SWIP	TAKT Time	Cycle Time	# Of Operators
▲	✚	⊕	5	See Production Control Board	50 m	1

Standardized Work



Example of standard work if only one person is working the cell.



Quality Check	Safety Precaution	SWIP	# Pieces SWIP	TAKT Time	Cycle Time	# Of Operators
▲	✚	⊕	10	See Production Control Board	98 m	2

Benefits of Standard Work Being Visual

Group discussion – What are the benefits of visual Method Sheets to communicate standard work?

Prepare examples of good visual Method Sheets.

Discuss places visual Method Sheets may be used but are not currently in use.

Standard Work In Process

SWIP is the minimum amount of product necessary for the cell to produce product to obtain Takt.

Example:

-Machine #1 - Lathe

-Machine #2 - Brazing machine

-Machine #3 - Lathe

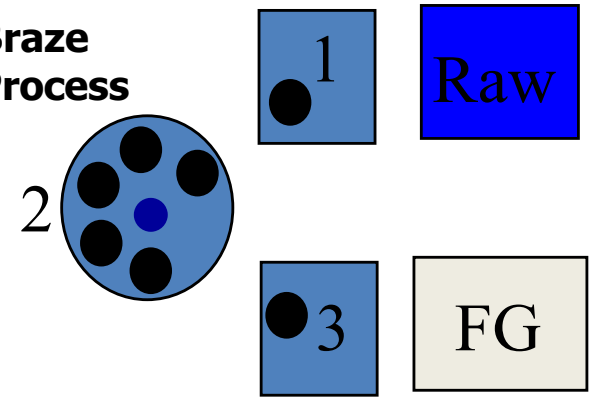
Calculation: For SWIP

Process Time in machine #2 = 280 Seconds/unit

Planned Cycle time = 57 Seconds

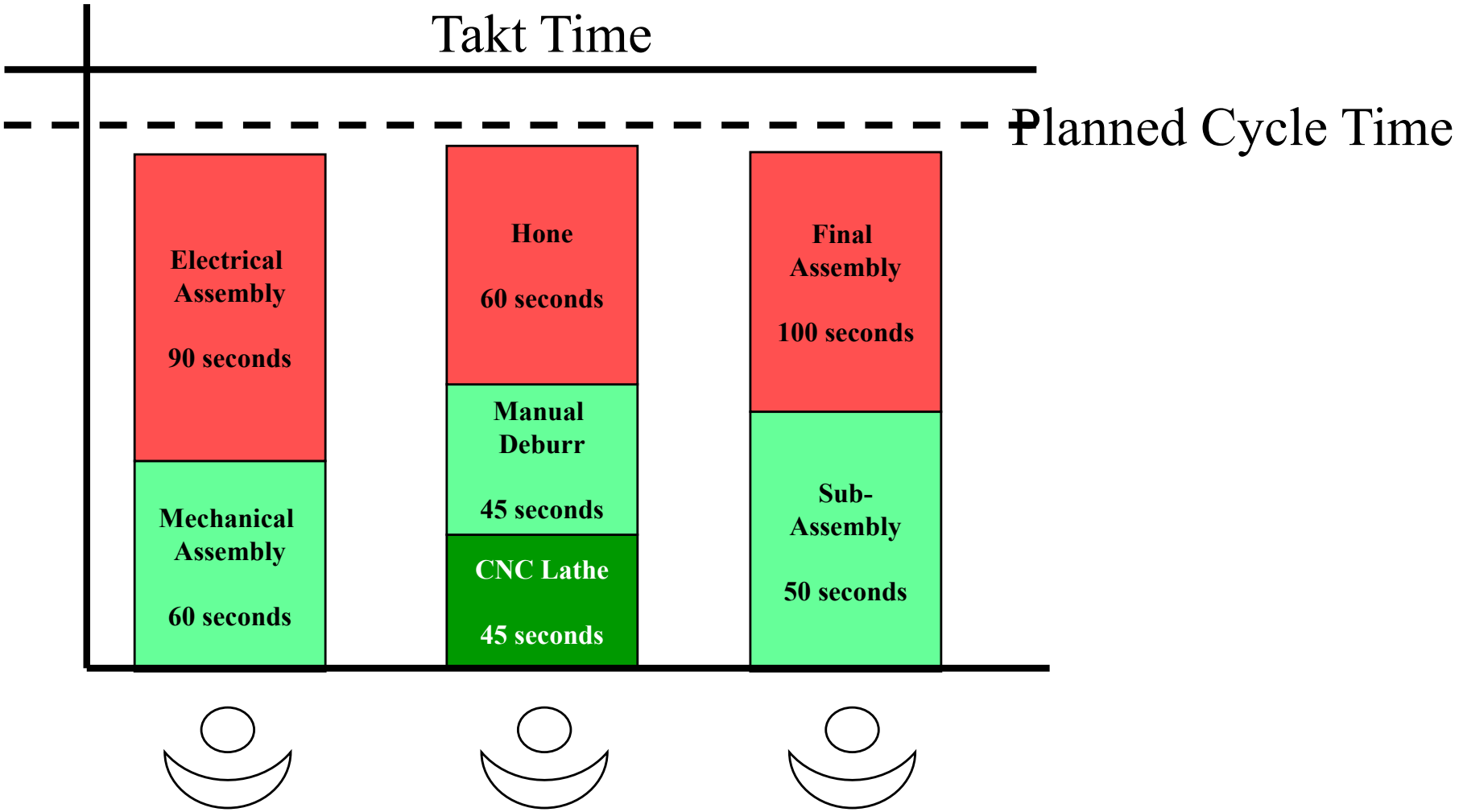
SWIP= Braze PT/PCT = 5 Units

Total SWIP= 7 Units



Balanced Standard Work

Process cells balance work between operators to optimize performance and avoid overproduction



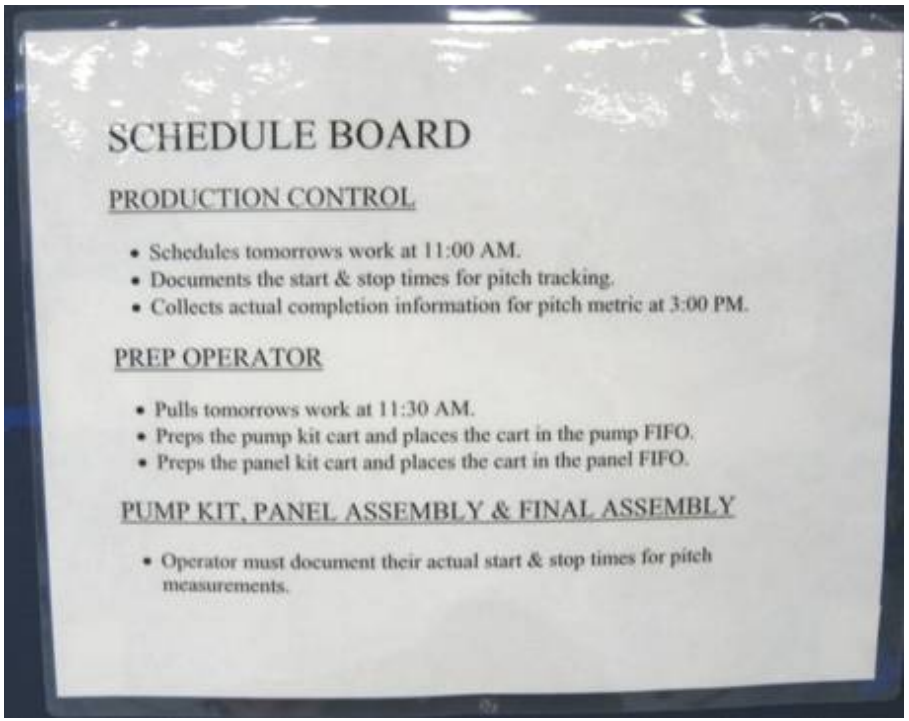
Standard Work for Management

Standard work at the management level provides all the information required to *manage* the operation of the value stream at both the individual process level and across the value stream.

Examples:

- Standard work for how the pacemaker is scheduled.
- Standard work for how kanban signals are scheduled at the fulfillment
- Standard work for how a FIFO operates.
- Standard work for Value Stream Walks.
- Standard work for Continuous Improvement Activities.

Standard Work for Management



SCHEDULE BOARD

PRODUCTION CONTROL

- Schedules tomorrows work at 11:00 AM.
- Documents the start & stop times for pitch tracking.
- Collects actual completion information for pitch metric at 3:00 PM.

PREP OPERATOR

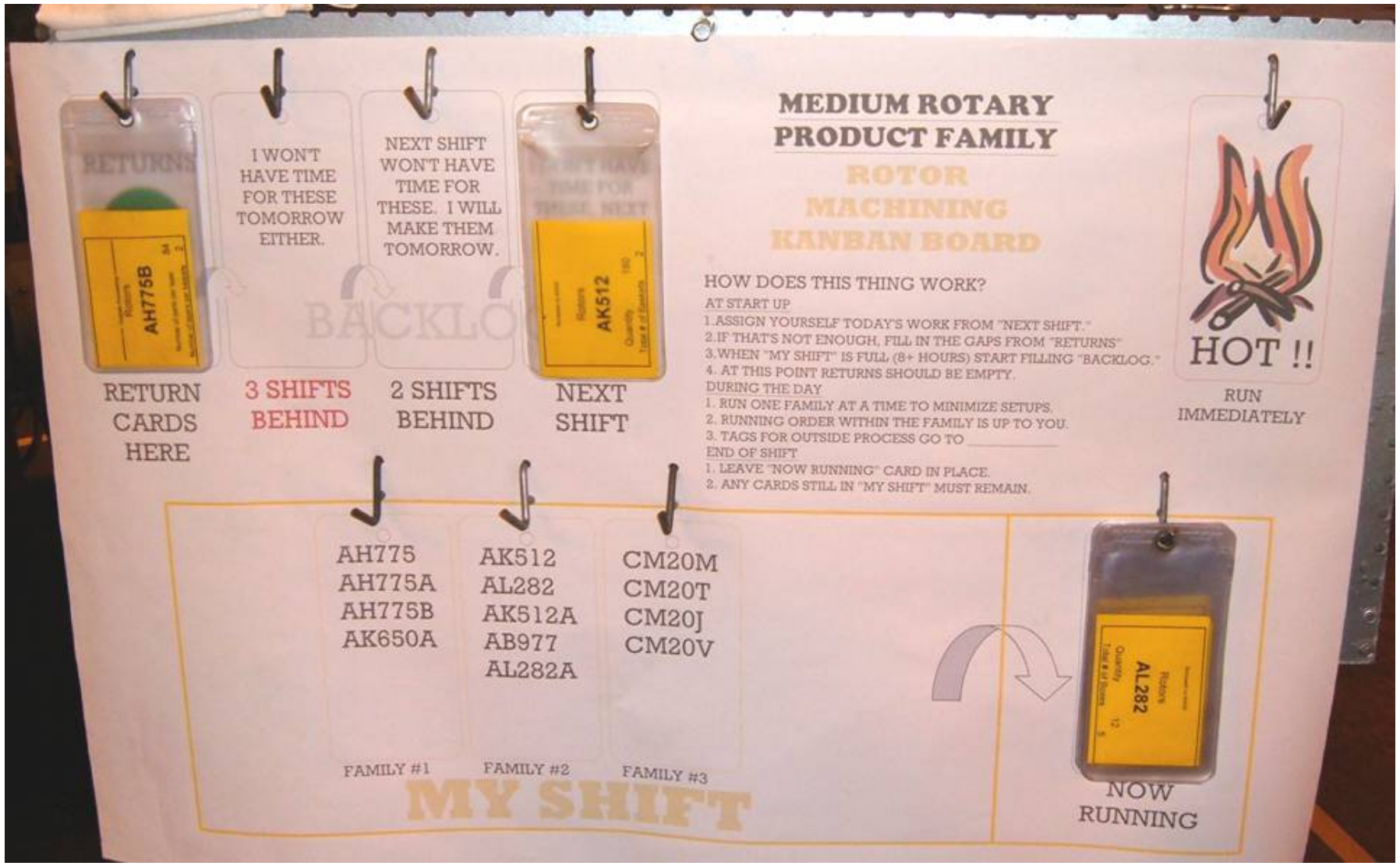
- Pulls tomorrows work at 11:30 AM.
- Preps the pump kit cart and places the cart in the pump FIFO.
- Preps the panel kit cart and places the cart in the panel FIFO.

PUMP KIT, PANEL ASSEMBLY & FINAL ASSEMBLY

- Operator must document their actual start & stop times for pitch measurements.

Standard work for the schedule /pitch board.

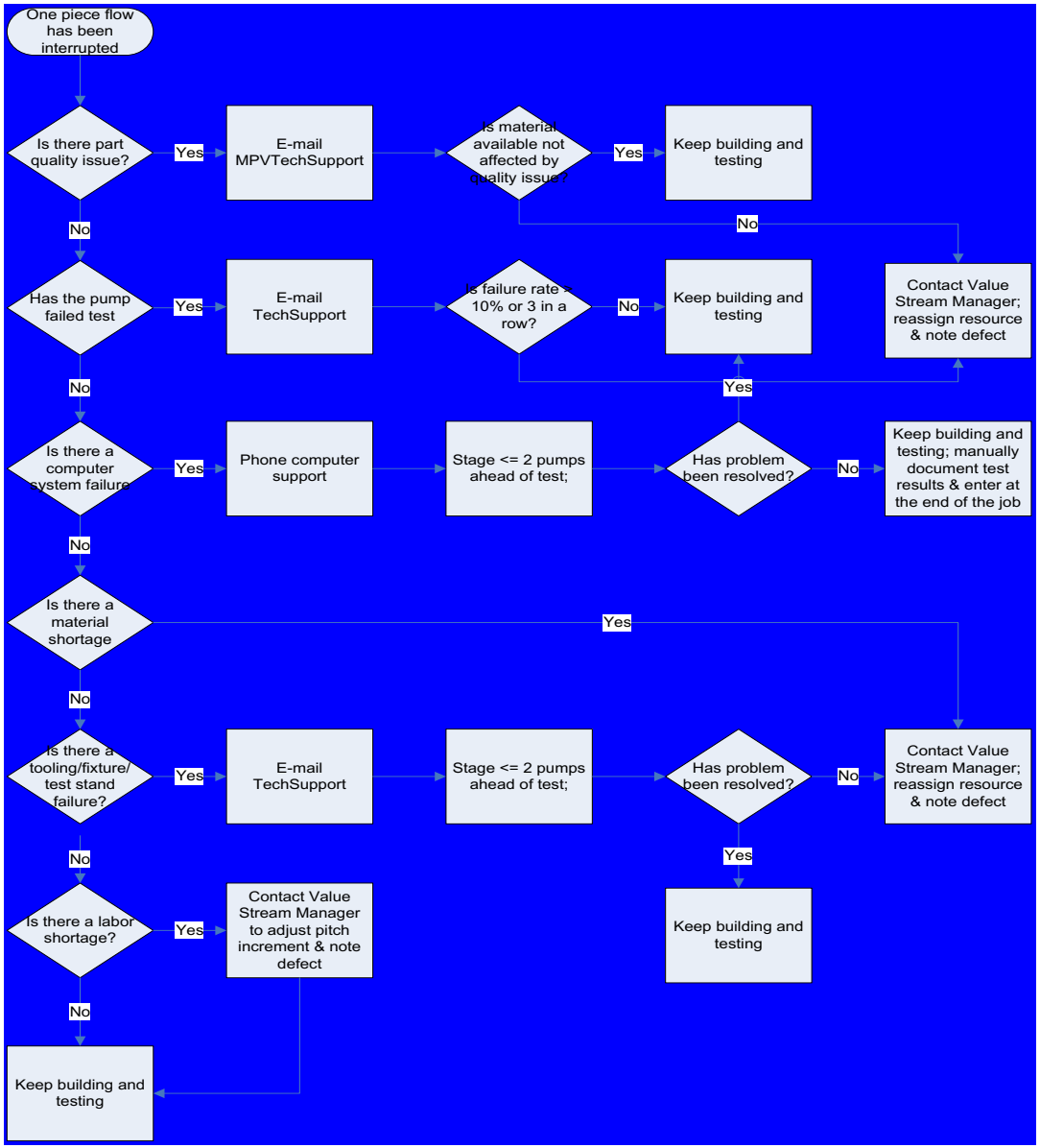
Standard Work for Management



Standard Work for the Abnormal

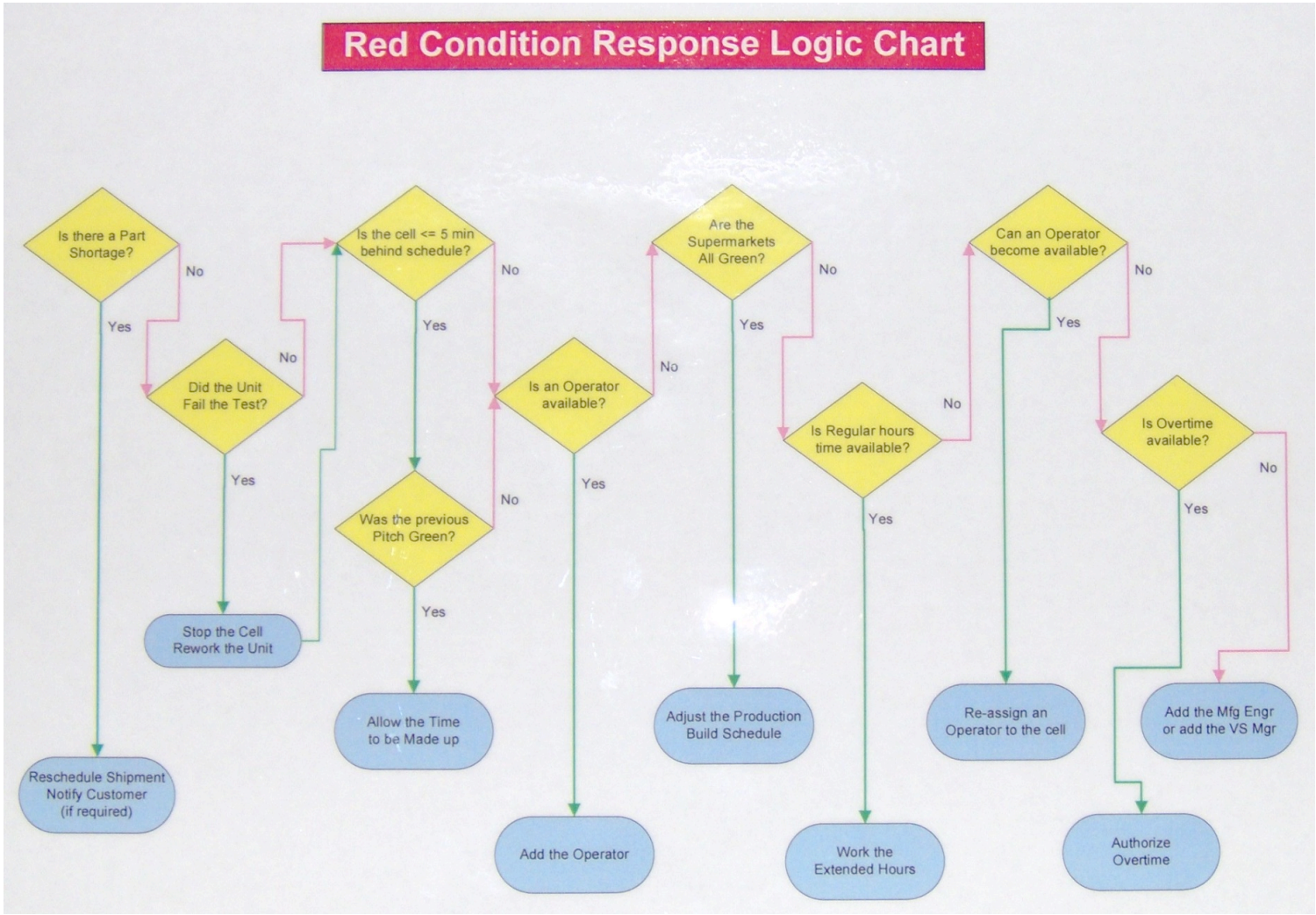
Standard work for the abnormal provides each and every employee the information to fix flow when it breaks down.

Standard Work for Abnormal Conditions

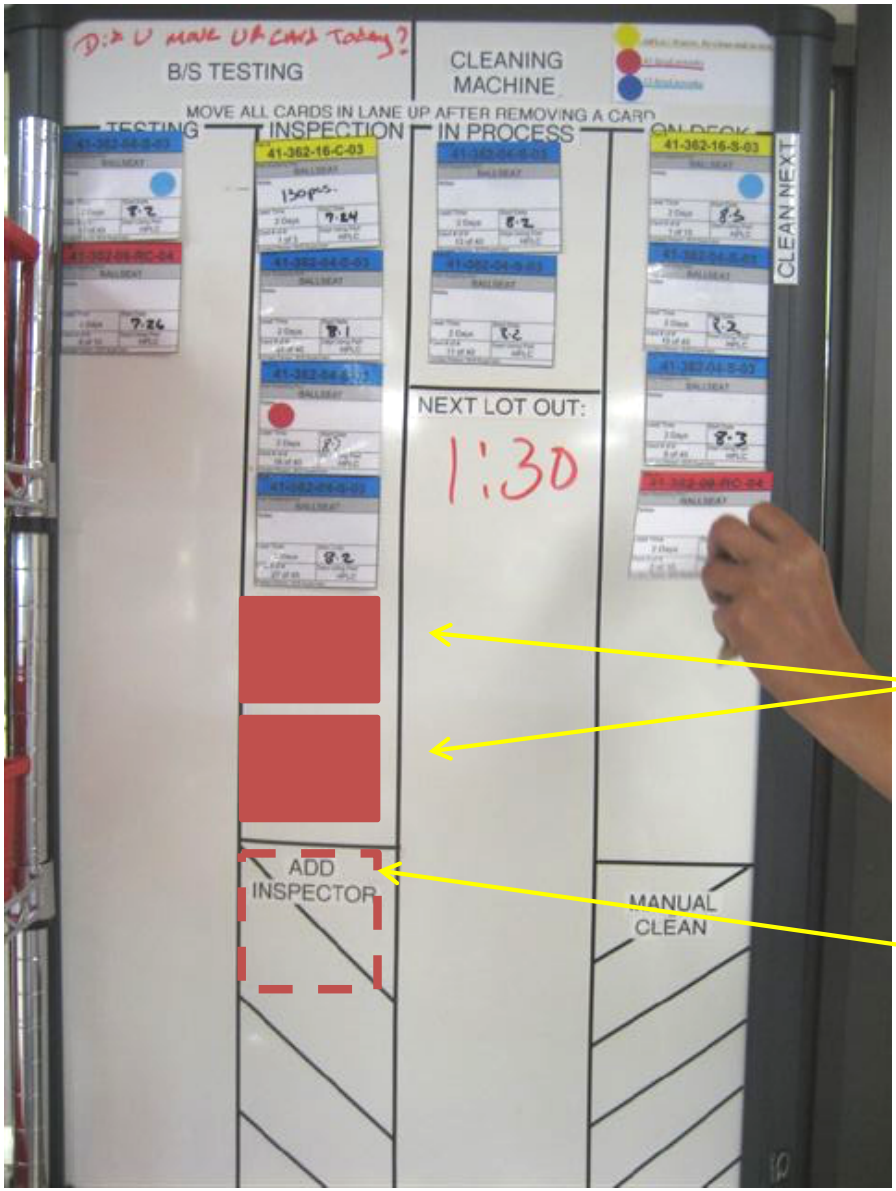


Standard Work for the Abnormal

The Pitch Board logic chart provides a standard and automatic format for decision making



Standard Work for the Abnormal



Test & Cleaning (Machine) FIFO

As kanban cards arrive they are paced in the appropriate FIFO

When the cards exceed the inspectors threshold everyone can see an additional inspector is required

Standard Work for the Abnormal

This chart along with the color coded FIFO tells what the standard work should be for this area

Green	**3 Wagons or less.** * Run to Support Standard Work. * Parts will be completed within 16 hours
Yellow	**4 to 5 wagons.** * Support will determine best course of action to move back into GREEN. * Investigate bottleneck in Process. * Readjust flow for customer demand and takt time. * Extend hrs. of support not to exceed one hr. per day can be worked without Mgmt. approval. * Parts to be completed within 24 hours.
Red	**6 or more wagons.** * Cell / Working Leader will determine best course of action to move back into YELLOW. * Investigate bottleneck in Process. * Readjust flow for customer demand and takt time. * Notify Management of overload position. * Extend hours of support, increase manpower, or source work to other areas.

Standardized Work Combination Sheet

Used to:

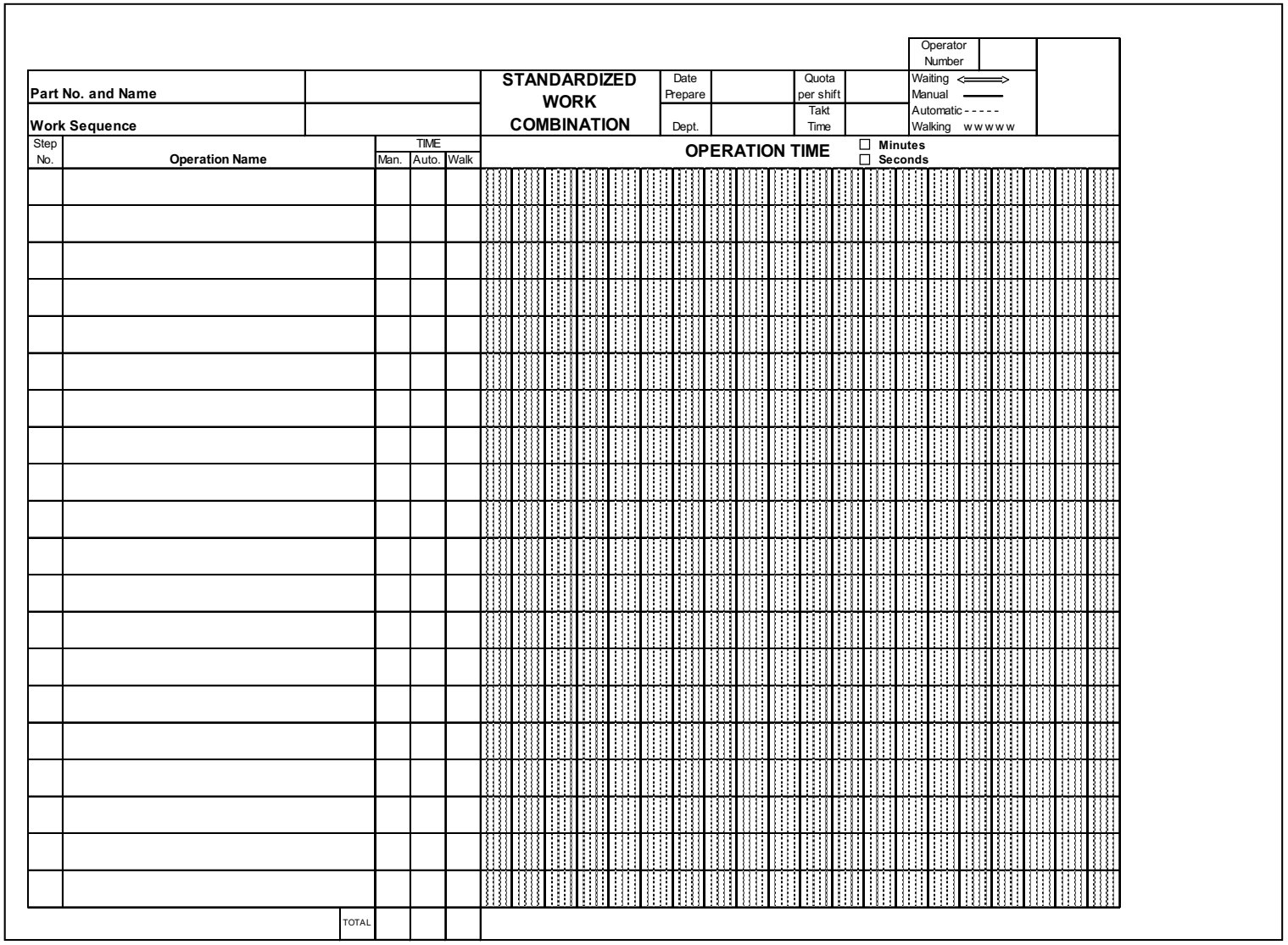
Visually display the best combination of operator and machine.

Provide adherence to Standardized Work in the cell.

Train operators.

Displays the sequence of steps for an operator.

Standardized Work Combination Sheet



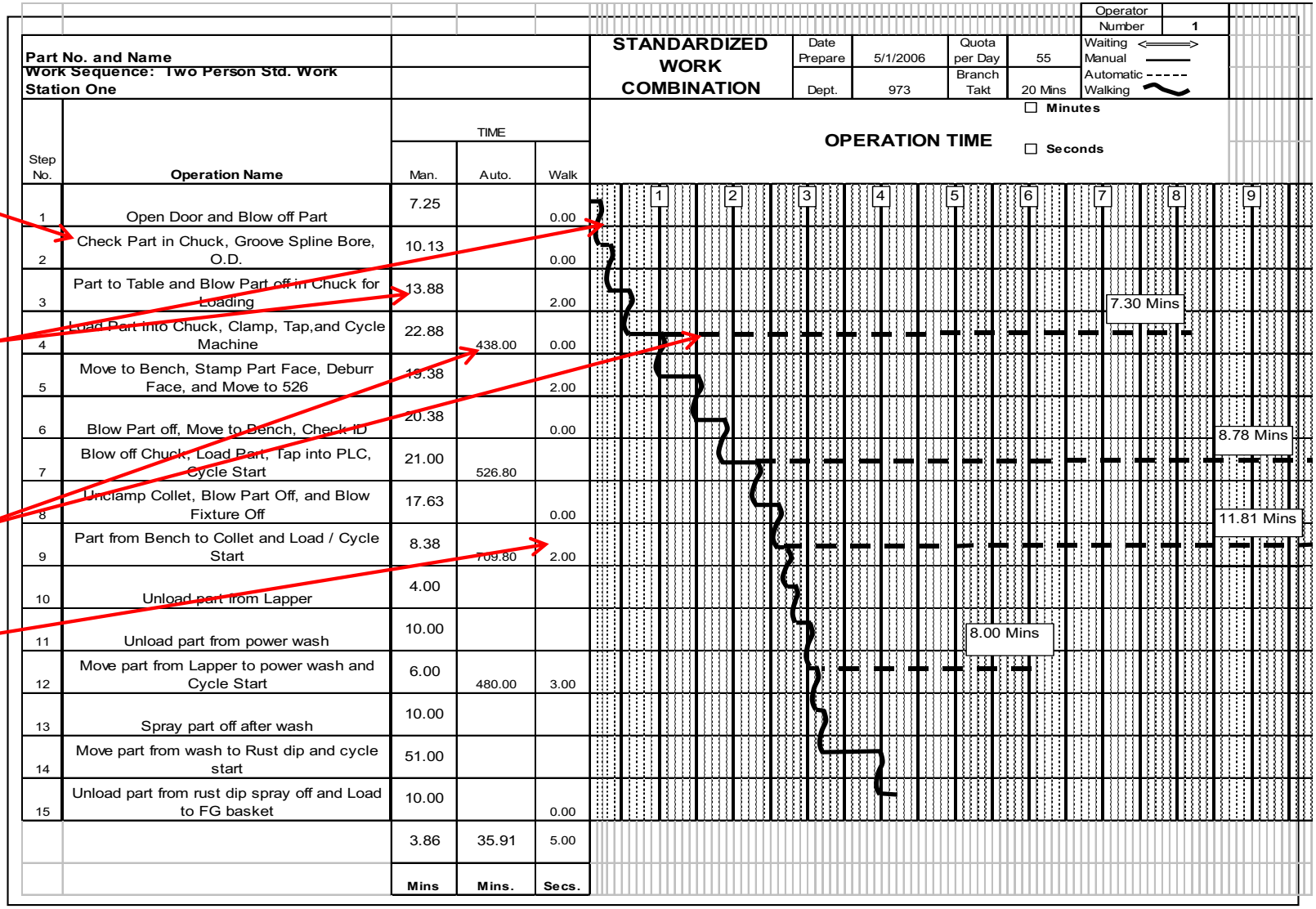
Standardized Work Combination Sheet

Process description

Manual process time (operator time)

Automatic/machine process time

Walk time



Part No. and Name

Work Sequence: Two Person Std. Work Station One

STANDARDIZED WORK COMBINATION

Date Prepare: 5/1/2006 | Quota per Day: 55 | Dept.: 973 | Branch Takt: 20 Mins

Operator Number: 1

Waiting | Manual | Automatic | Walking

OPERATION TIME — Minutes / Seconds

Step No.	Operation Name	TIME Man.	Auto.	Walk
1	Open Door and Blow off Part	7.25		0.00
2	Check Part in Chuck, Groove Spline Bore, O.D.	10.13		0.00
3	Part to Table and Blow Part off in Chuck for Loading	13.88		2.00
4	Load Part into Chuck, Clamp, Tap,and Cycle Machine	22.88	438.00	0.00
5	Move to Bench, Stamp Part Face, Deburr Face, and Move to 526	19.38		2.00
6	Blow Part off, Move to Bench, Check ID	20.38		0.00
7	Blow off Chuck, Load Part, Tap into PLC, Cycle Start	21.00	526.80	
8	Unclamp Collet, Blow Part Off, and Blow Fixture Off	17.63		0.00
9	Part from Bench to Collet and Load / Cycle Start	8.38	709.80	2.00
10	Unload part from Lapper	4.00		
11	Unload part from power wash	10.00		
12	Move part from Lapper to power wash and Cycle Start	6.00	480.00	3.00
13	Spray part off after wash	10.00		
14	Move part from wash to Rust dip and cycle start	51.00		
15	Unload part from rust dip spray off and Load to FG basket	10.00		0.00
		3.86	35.91	5.00
		Mins	Mins.	Secs.

7.30 Mins

8.78 Mins

11.81 Mins

8.00 Mins

Provides the sequence of operations and the standard time each step should take.

Standardized Work Combination Sheet

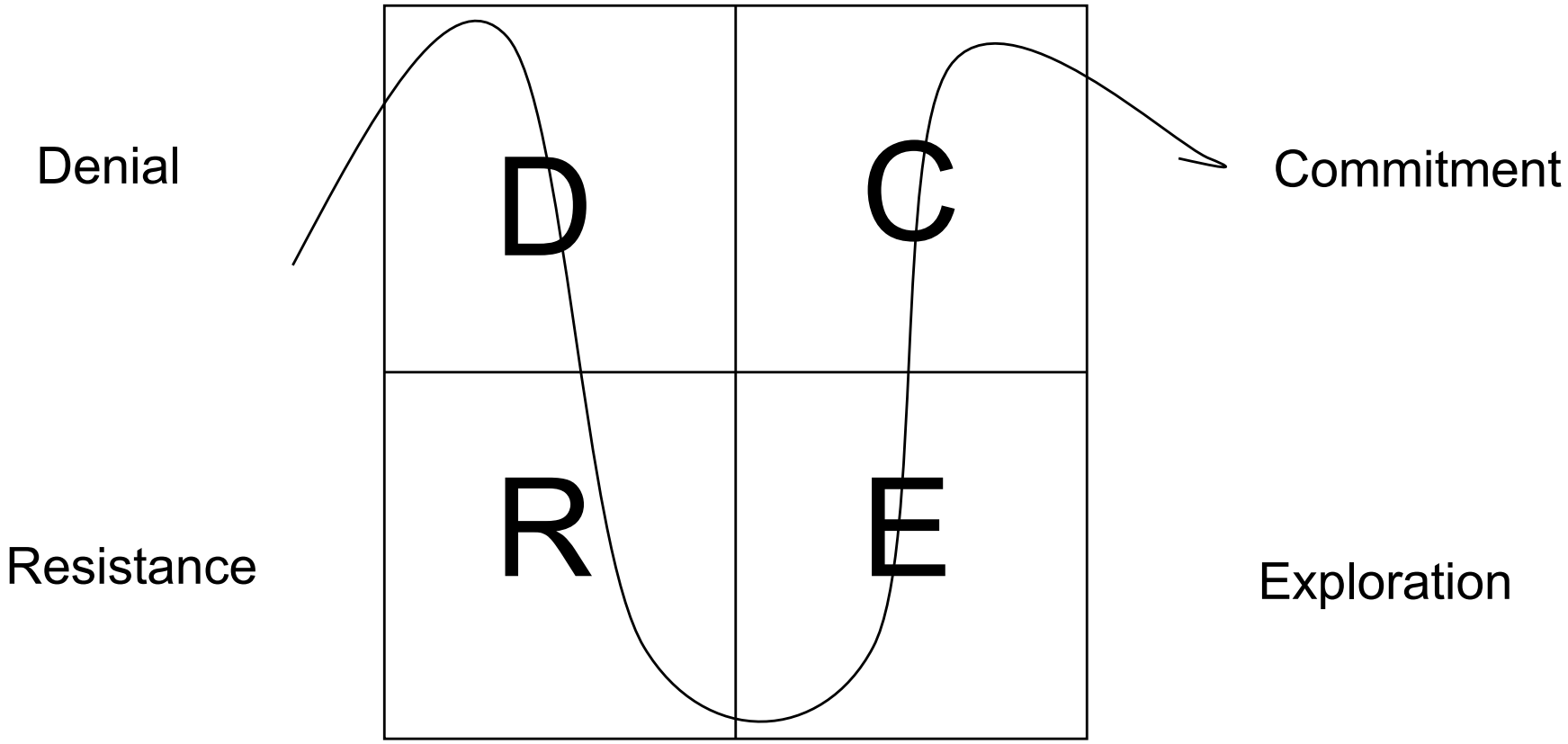
- Critical skill is learning to describe work in terms of both work content and key points.
- Work content and element descriptions tell how to do the job in simple and easy to understand steps
  - A fixed amount of work, a complete task.
  - It should have a defined start and stop
  - Something you can teach
  - Should always be performed the same way
  - Usually take the form of a Verb / Object
    - Attach 55 Muffler
    - Pack into Size 8 box using inserts
    - Install XY Bracket

Standardized Work Combination Sheet

- Key points describe factors such as special motions, special information, safe technique, etc. as additional information required to do job to quality, safety, productivity, and cost expectations.
- Tells how by conveying important information on safety, quality, technique, and cost
  - How to use wrench properly for technique and safety
  - How parts fit together (top aligns with blue line on body)
  - How far to hold paint gun from item
  - How to attach labels so they “stick”

Does Standard Work Require Change?

Change Model



Change Requires Leadership

Clear direction

Focused goals and rationale thinking

Willingness to let people make mistakes

Express their feelings openly

Make honest mistakes without blame or reprisals

Get credit for their ideas, work and successes

Drive the process and methodology for creating standard work, not the solutions.

Next Steps…

- Create and post the standardized work documents so that it is VISIBLE to the operators and managers
- Standardized Work needs to be revisited and updated regularly.
  - Manager owned
  - Benchmark for improvements
  - Audit adherence – make part of management standard work to have Value Stream management audit randomly selected standard work daily.
- Use the Operator Loading Chart to identify future Continuous Improvement activities in the cell.

Last Point

If you don't create standard work for your people… they will, and each will create their own standard work!