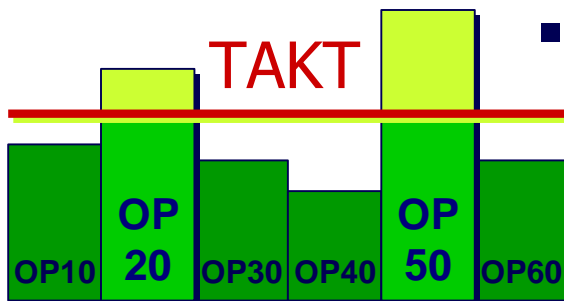


# BALANCE AND FLOW OVERVIEW

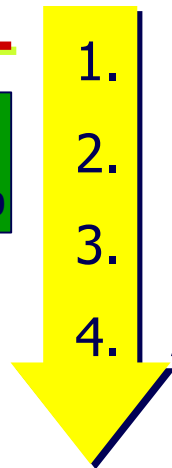
## ■ OPERATIONAL DEFINITION.

- Optimum Flow is achieved by Grouping Tasks "At, or Below" TAKT Time.
- When Actual Work Content cannot be Grouped "At or Below" TAKT Time Targets to create Balance = **IMBALANCE**.



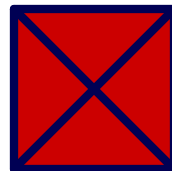
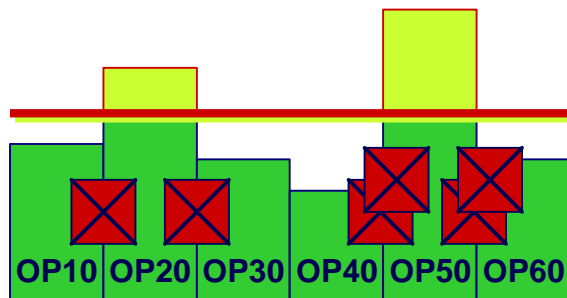
- Resolve Imbalances :

1. Eliminate Work Content. – **NVA.**
2. Move Work from one Operation to the Next.
3. Inventory Investment. – **IPK's.**
4. Additional Resources. – **\$\$\$\$\$.**

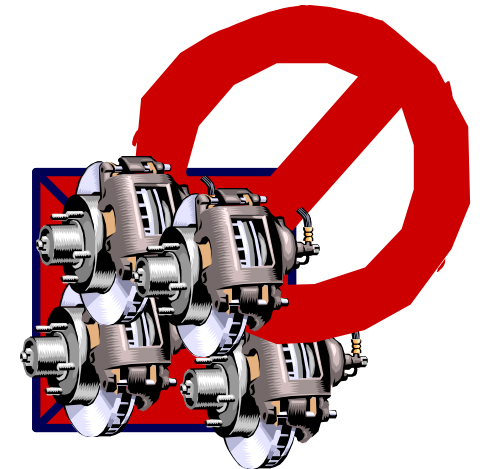
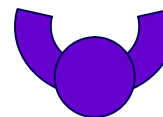
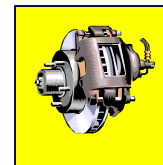


# IN-PROCESS KANBAN – IPK's OVERVIEW

- Resolving Imbalance.
- ... Inventory Investment.
- Supported with Calculations.
- Visual Signal to Work or Move.
- First In – First Out Management.



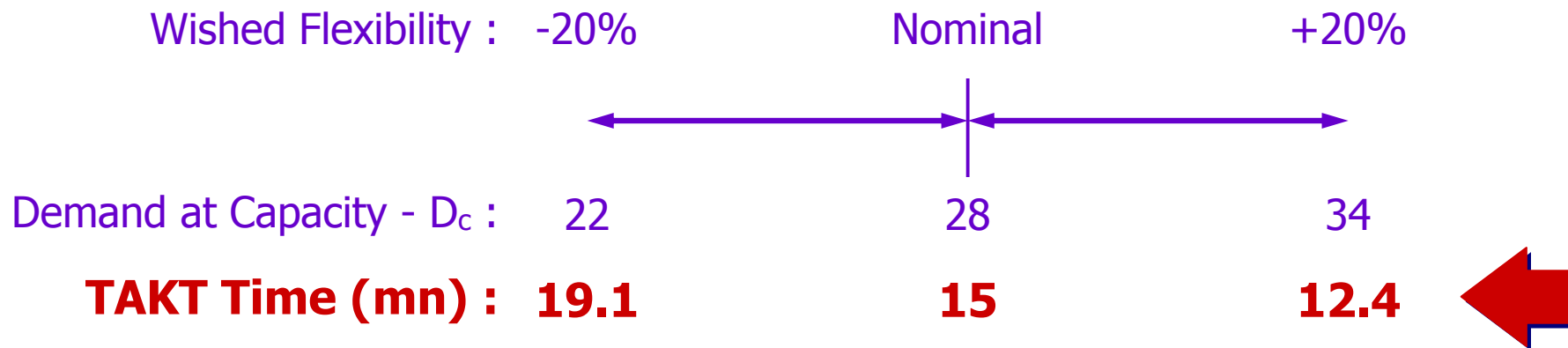
OP110



**#IPK = 1!...**

# BALANCE AND FLEXIBILITY

## TAKT TIME



Effective Work Time per Shift (mn) : 420

Number of Shift(s) : 1

Nominal  $D_c$  : 28

Low  $D_c$  : 22

High  $D_c$  : 34

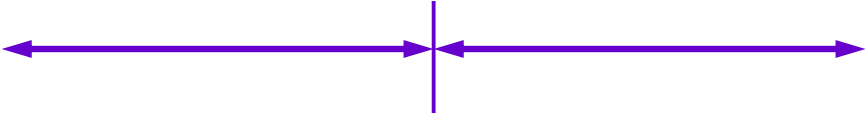


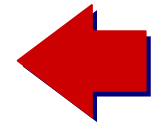
TAKT Time (mn) = 15

TAKT Time (mn) = 19.1

TAKT Time (mn) = 12.4

# BALANCE AND FLEXIBILITY RESOURCES CALCULATION

	Wished Flexibility : -20%	Nominal	+20%
			
Demand at Capacity - $D_c$ :	22	28	34
TAKT Time (mn) :	19.1	15	12.4
#OP – Theoretical :	2.84	3.61	4.37
<b>#OP – Effective :</b>	<b>3</b>	<b>4</b>	<b>5</b>



Total Time from SOE's (mn) : 54.2

# Operations : #OP ( $D_c$ ) =  $54.2 / 15 = 3.61$  ???

#OP ( $D_c-20\%$ ) =  $54.2 / 19.1 = 2.84$

#OP ( $D_c+20\%$ ) =  $54.2 / 12.4 = 4.37$

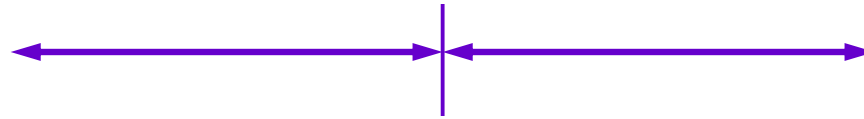
# BALANCE AND FLEXIBILITY

## CORRECTED CAPACITY

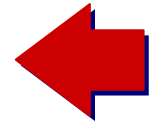
Wished Flexibility : -20%

Nominal

+20%



Demand at Capacity - $D_c$ :	22	28	34
TAKT Time (mn) :	19.1	15	12.4
#OP – Theoretical :	2.84	3.61	4.37
#OP – Effective :	3	4	5
<b>Corrected Capacity :</b>	<b>23</b>	<b>30</b>	<b>38</b>



Total Time from SOE's (mn) : 54.2

Effective Work Time per Shift (mn) : 420

#OP – Theoretical : 4

Capacity / Day =  $420 \times 4 / 54.2 = 30$

#OP – Theoretical : 3

Capacity / Day =  $420 \times 3 / 54.2 = 23$

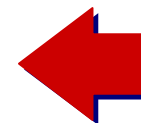
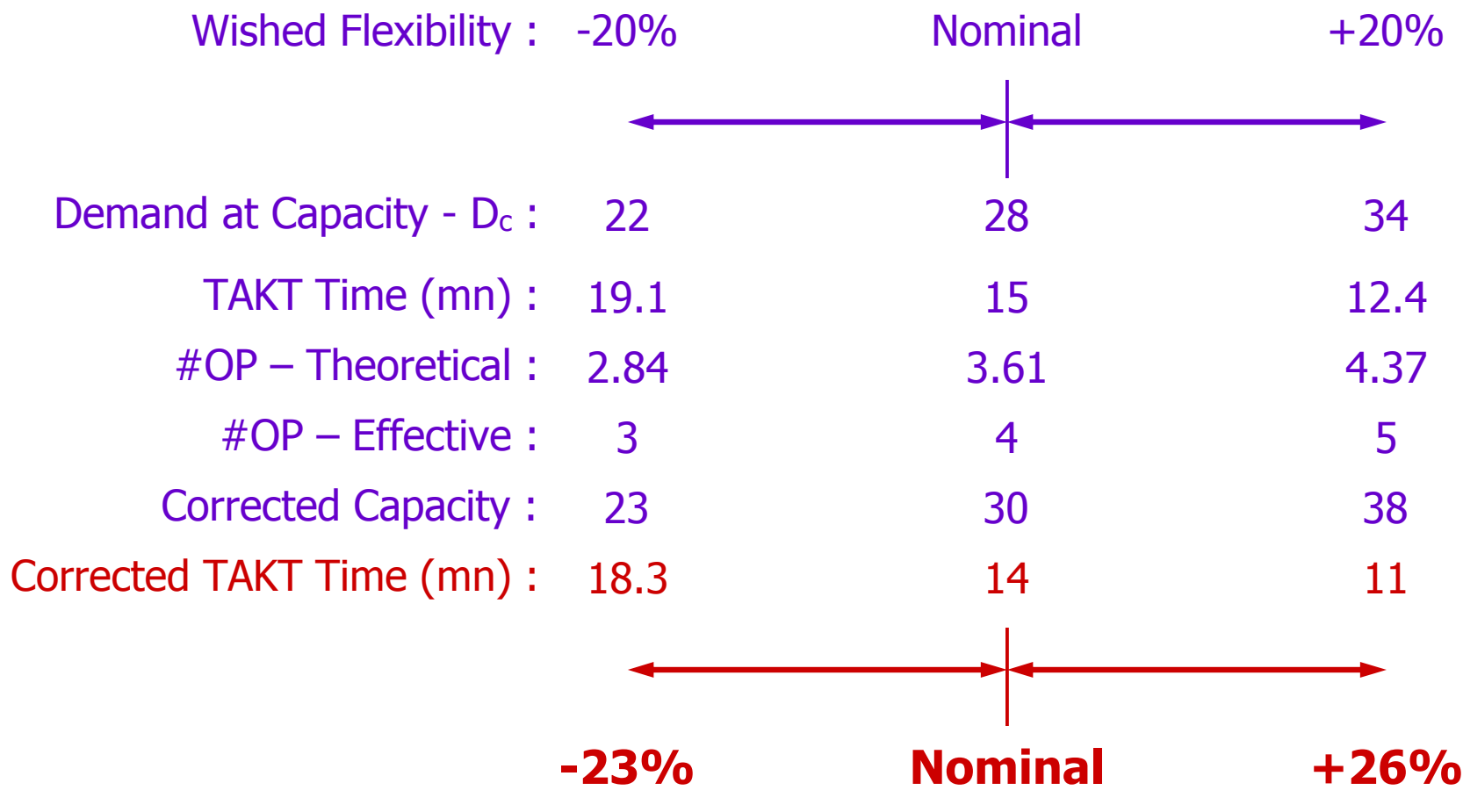
#OP – Theoretical : 5

Capacity / Day =  $420 \times 5 / 54.2 = 38$

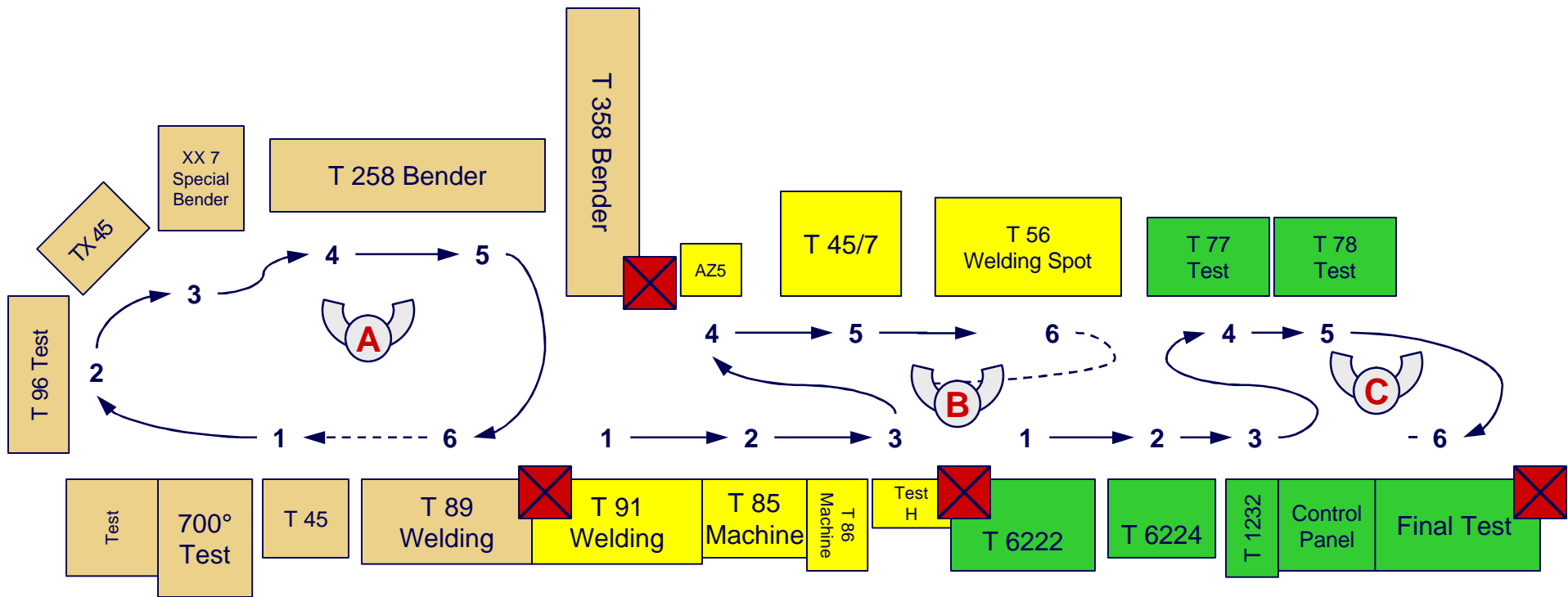


# BALANCE AND FLEXIBILITY

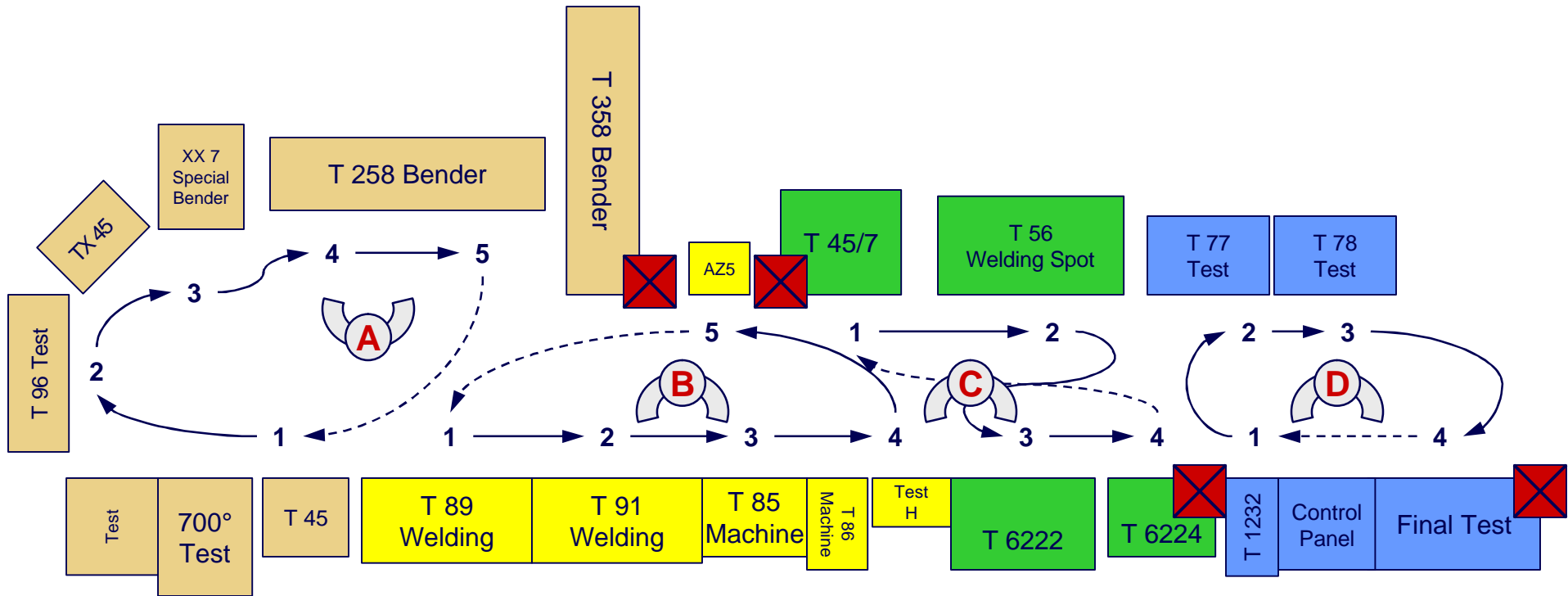
## CORRECTED FLEXIBILITY



# BALANCE AND FLEXIBILITY LOW CAPACITY DEFINITION

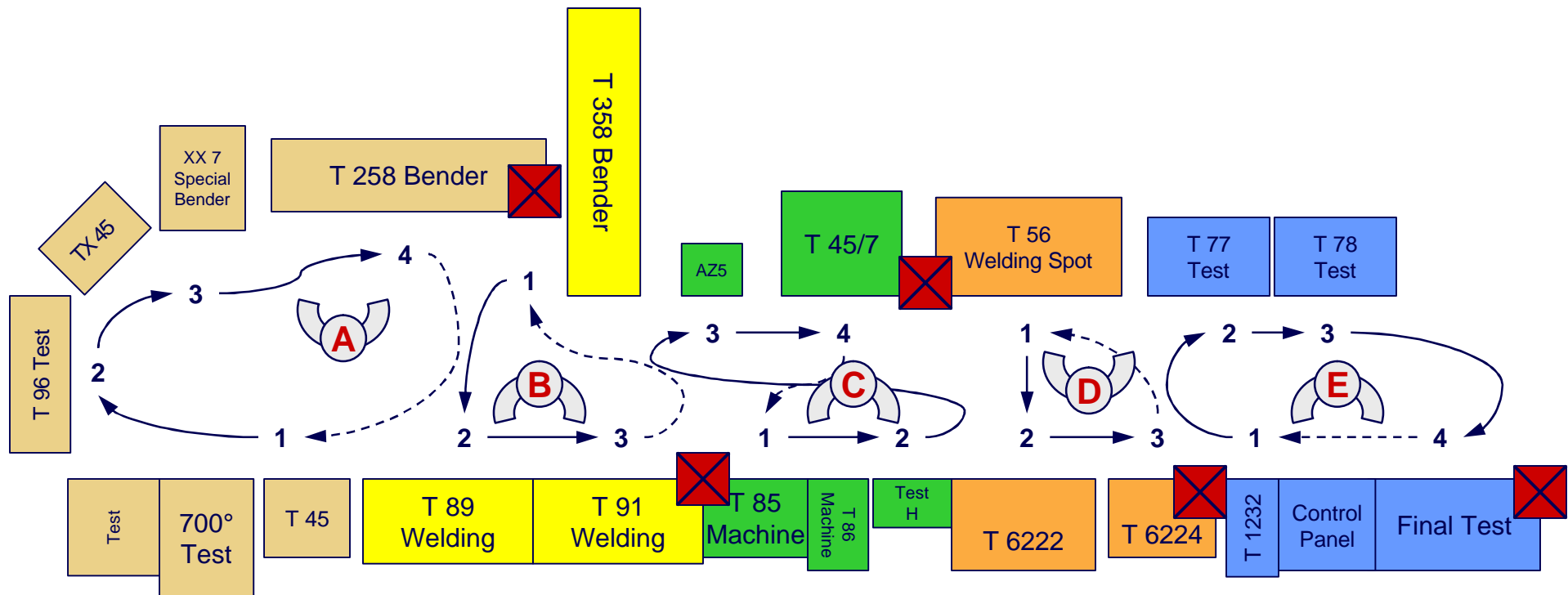


# BALANCE AND FLEXIBILITY NOMINAL CAPACITY DEFINITION





# BALANCE AND FLEXIBILITY HIGH CAPACITY DEFINITION



# BALANCE AND FLEXIBILITY

## FLEXIBLE PRODUCTION SYSTEM

- #OP based on Customer Demands.

