CHAPTER: 7

ALLOWANCE

Allowance

- ***Allowances in time study*** *can be defined as the extra* ***time*** *figures which are to be added to the* ***basic time*** *of an operation to account for personnel desires, delays, fatigue of operators, any special situation and the policies of the firm or organization.*
- The basic time, however, forms only a part of the standard time which has to be established for the job or operation.
- Certain allowances must be added before the standard time can be derived.
- These allowances are considered or provided to compensate the worker or operator for the production interruptions that may occur due to his personnel legitimate needs or the factors beyond his controls.
- For example the delay may occur due to operators personnel needs such as drinking water, taking tea, going to toilet etc.,
- unavoidable delays like waiting for tools, materials or equipment, maintenance of machine and periodic inspection of parts/materials.
- The fundamental purpose of allowances is to add enough time to the basic time of the production in order to enable the average worker to meet the standard while performing at a normal pace

Reasons: for Allowance

- **Individual factors:**
- A thin, alert and active worker requires a smaller allowance to recover from fatigue than an inept, dull and obese worker.
- In the similar manner, every worker conducts his work according to the Learning Curve which is unique for everyone.
- **Nature of work:**
- Allowances calculated or determined for light or medium work are not acceptable for operation involving very hard work and which is done under very difficult conditions.
- For example, the work involving more eye movement, more physical work (by hands or by legs) or more mental work needs greater allowances than that of light easy and work involving very less physical work or movements.
- **Environmental factors:**
- While determining the relaxation allowance, certain factors like heat, humidity, vibration, dust, light intensity, noise level etc. have to be taken into account.
- These are called the environmental factors and these factors are of seasonal nature.
- These factors are more significant for workers conducting the work under open air or where the environmental factors affect the work such as work in a construction company or in shipyards.

Type of Allowances:

1. Relaxation Allowance:

- *Relaxation allowance is an addition to the basic time intended to provide the worker with the opportunity to recover from the physiological and psychological effects of carrying out specified work under specified conditions and to allow attention to personal needs.*
- Relaxation allowances are given as percentages of the basic time
- The amount of the allowance will depend on the nature of the job.
- Relaxation allowance is the most essential part of the time added to the basic time.
- Other allowances like contingency allowances, policy allowances or other special allowances are applied under certain conditions only.
- Relaxation allowances are added so as to allow the worker or operator to recover from fatigue.

- *Fatigue may be defined as a physical and/or mental weariness, real or imagined, existing in a person and adversely affecting his ability to perform work.*
- The effects of fatigue can be lessened by rest pauses during which the body recovers from its exertion or by slowing down the rate of working and thus reducing the consumption of energy.
- Relaxation allowances are added element by element to their basic times so as to obtain the work value of each element separately.
- After that, the element standard times are added so as to obtain the standard time for the job or operations.
- Allowances for climatic conditions are applied to the working shift rather than to element or the jobs.

Calculation of Relaxation Allowances

- The relaxation allowance has two components: **A PERSONAL NEEDS ALLOWANCE**, and **A FATIGUE ALLOWANCE.**

1. **Personal Needs Allowance:** provides for the necessity to go away from the workplace to attend to personal needs such as washing, going to the toilet and getting a drink.

- Women require longer personal needs allowances than men.
- The allowance is made as a constant percentage, common figures being 5 per cent. for men and 7 per cent. for women.

2. **Fatigue Allowance** always contains a constant basic allowance, and may have in addition a variable component of a size depending on how fatiguing the element is assessed to be.

- The constant portion of the fatigue allowance (the minimum or basic fatigue allowance) is that considered to be adequate for a worker who carries out the job while seated, who is engaged on light work in good working conditions, and who is called upon to make only normal use of hands, legs and senses.
- A common figure is 4 per cent., for both men and women.
- The variable addition is given only when the working conditions for the element are severe and cannot be improved.
- It is based on factors which vary according to the working conditions, and is often different in amount for men and women.
- There are also differences in the allowances considered appropriate by different authorities.

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- For the purposes of calculation, the relaxation allowance may thus be seen to be made up of
- A constant allowance, always given, as a basic minimum allowance;
- A variable addition, sometimes made, depending on the circumstances of the job.
- If the figures quoted above are adopted, the constant basic minimum allowance becomes
  - 9 per cent. for men (5 per cent. for personal needs plus 4 per cent. basic fatigue allowance), and
  - 11 per cent. for women (7per cent. for personal needs plus 4 per cent. basic fatigue allowance)

Rest Pauses

- workers who works in a piecework there are a few who are very energetic and keen to earn extra money who take little or no rest, but they are above average in strength or stamina.
- The average worker for whom the time standards are set needs adequate rest if he is going to keep up his rate of working.
- Operators should be provided with a rest to minimize fatigue
- A common method of dealing with pauses is to allow a ten to 15 minutes' break at mid-morning and mid-afternoon,
- There is evidence to show that properly organized rest pauses are beneficial for the following reasons:
- Rest pauses increase the amount of work which can be done in a day without unduly tiring the worker.
- Workers like them as they break up the monotony of the day.
- Rest pauses decrease the variation in the operative's performance throughout the day and tend to maintain the level nearer the optimum.
- Rest pauses reduce the amount of time off taken by workers during working hours.

Figure: Example Of A System Of Rest Allowances Given As Percentages Of Basic Times

1. *CONSTANT ALLOWANCES:*

	Men	Women
Personal Needs Allowance	5	7
Basic Fatigue Allowance	4	4
	9	11

2. *VARIABLE ADDITIONS TO BASIC FATIGUE ALLOWANCE*

	Men	Women
A. Standiug Allowance	2	4
B. Abnormal Position Allowance		
Slightly awkward	0	1
Awkward (bending)	2	3
Very awkward (lying, stretching up)	7	7
C. Weightlifting or Use of Force *(lifting, pulling or pushing)*		
Weight lifted or force exerted (in kg)		
2.5	0	1
5	1	2
7.5	2	3
10	3	4
12.5	4	6
15	6	9
17.5	8	12
20	10	15
22.5	12	18
25	14	—
30	19	—
40	33	—
50	58	—
D. Light Conditions[2]		
Slightly below recommended value	0	0
Well below	2	2
Quite inadequate	5	5

	Men	Women
E. Air Conditions *(excluding climatic factors)*		
Well ventilated, or fresh air	0	0
Badly ventilated, but no toxic or injurious fumes	5	5
Work close to furnaces[3], etc.	5–15 per cent.	
F. Visual Strain		
Fairly fine work	0	0
Fine or exacting	2	2
Very fine or very exacting	5	5
G. Aural Strain		
Continuous	0	0
Intermittent, loud	2	2
Intermittent, very loud / High-pitched, loud	5	5
H. Mental Strain		
Fairly complex process	1	1
Complex or wide span of attention	4	4
Very complex	8	8
I. Monotony: Mental		
Low	0	0
Medium	1	1
High	4	4
J. Monotony: Physical		
Rather tedious	0	0
Tedious	2	1
Very tedious	5	2

2. A Contingency Allowance

- A contingency allowance is a small allowance of time which may be included in a standard time to meet legitimate and expected items of work or delays, the precise measurement of which is uneconomical because of their infrequent or irregular occurrence.
- The allowance provides for small unavoidable delays as well as for occasional and minor extra work
- Contingency allowances are always very small, and it is usual to express them as a percentage of the total repetitive basic minutes in the job.
- Contingency allowances should not be greater than 5 per cent.
- It should never be taken as the loosening factor
- This allowances should only be given in cases where the study man is absolutely satisfied that the contingencies cannot be eliminated and that they are justified
- It may be necessary to give contingency allowances as a matter of course in enterprises where the shop work is not well organized.

3. OTHER ALLOWANCES

- It is sometimes necessary to incorporate allowances other than contingency and relaxation allowances in the compilation of standard times.
- These allowances are made when setting times for operations concerned with the working of machines,
- There are some other and special allowances which are to be added for certain conditions.
- These allowances are provided for certain reasons and for come specific period of time.
- This other allowances are categorized as:

1. Special Allowances and

2. Policy Allowances:

1. Special Allowances:

- As the name suggests, these allowances are added for some special conditions.
- Most of these allowances are temporary and are taken out as soon as conditions normalize.
- **These include the following:**

(a) Start up, shut down, and tooling:

- These allowances are given per work period.
- These allowances compensate for the time loss during cleaning and tooling periods and the shut down at the end of the work period.

(b) Setup and change over:

- These types of allowances are provided when a new type of product is started.
- There include the time taken in set up of machine.
- Dismantling the previous work piece or tool for new set up is also included in it as the worker is forced to be idle when the new set up is mounted or the previous one is being withdrawn.
- These allowances are withdrawn as soon as the production starts completely.

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(c) Rejection reworks and excess work:

- A rejection allowance is provided to compensate for rejection of work.
- This product rejection is inherent in much process because of come uncontrollable factors.
- Reworks also present this similar picture. So, these allowances are added for certain conditions when the work is not being done under standard conditions and some excess work results.

(d) Learning, training and implementation:

- These allowances are given to the trainees before they acquire full ability to perform a task within the actual standard time.
- Some of the workers are engaged in implant training of new operatives and thus some of their production time is lost in this process.
- Thus, at this stage, training allowances are added.
- Third is the implementation allowance, which is given to the workers when they are encouraged to work on some new processes.
- It is provided to achieve the whole hearted co-operation from the workers to new methods or processes without any fear of loss of their earning.
- All the above mentioned allowances are temporary in nature.

2. Policy Allowances:

- Policy allowance is not a part of time study.
- It can be permanent or temporary in nature.
- It is applied according to the policy of the firm in which the time standard is to be applied.
- Policy allowance is given to honor the wage agreements that are made by the employers with the trade unions.
- **A policy allowance can be defined as follows:**
- “It is an increment (other than the bonus increment) applied to the standard time to achieve a satisfactory level of earnings for a particular level of performance under the exceptional circumstances.”
- A policy allowance can be added as a temporary factor to compensate for any imperfections in the functioning of a firm, But, in this situation, it should be withdrawn as soon as the condition normalizes So, the policy allowances should be added with due caution and under well defined circumstances.

6. STANDARD TIME

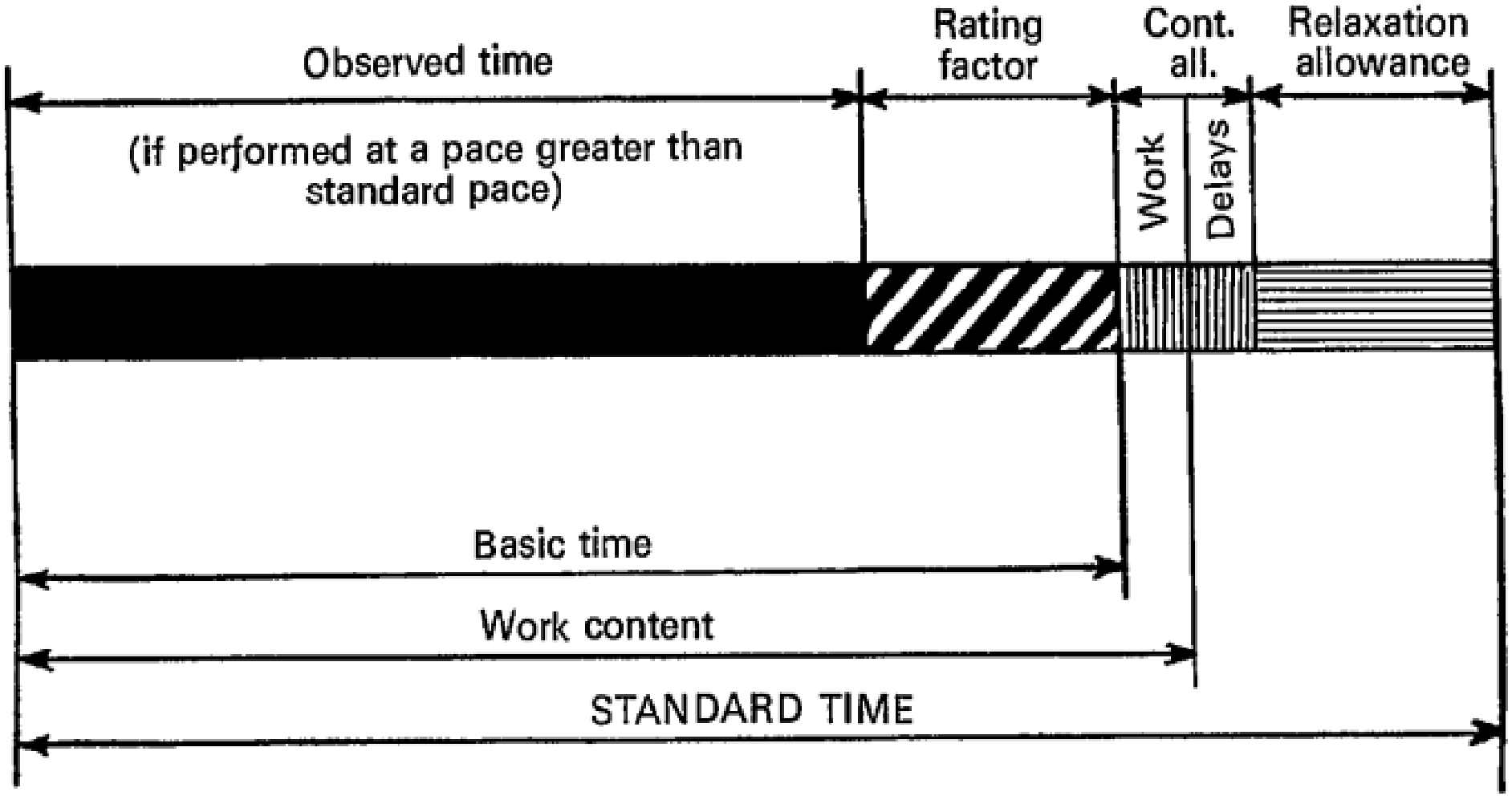

Illustration:

The following operation break down are develop to prepare collar and the time study man had recorded the time taken and the rating for a particular worker. The data including the observed time and the rating of the employee are provided in the table. depending on this data please calculate the standard time for each element of the collar preparation.

S.No	Element description	Observed time (watch reading) in second	Rating	Basic time in second	Extension in second	Allowance		Standard time In second
						Relaxation allowance 11% In second	Contingency allowance 3% In second	
1	Make Collar	15	80					
2	Topstitch Collar	20		24				
3	Hem Collar Band	10					0.33	
4	Attach Collar Band to Collar							
5	Turn and Topstitch Collar Band							
6	Buttonhole Collar Band							

Solution

- Basic Time

$$B.T = \frac{\text{Observed Time x Observed Rating}}{\text{Standard Rating}}$$

- Extension

$$\text{Observed time x } \frac{\text{Observed Rating} - 100}{100}$$

- Standard Time

$$\textit{Standard Time} = \textit{Basic Time} + \textit{Relaxation Allowance} + \textit{Contingence Allowance}$$

- Relaxation Allowance = B.T * 11%
- *Contingence Allowance* = B.T * 3%

Illustration: the following operation break down are develop to prepare collar and the time study man had recorded the time taken and the rating for a particular worker. The data including the observed time and the rating of the employee are provided in the table. depending on this data please calculate the standard time for each element of the collar preparation.

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						Relaxation allowance 11% In second	Contingency allowance 3% In second	
1	Make Collar	15	80	12	3	1.32	0.36	13.68
2	Topstitch Collar	20	120	24	-4	2.64	0.72	27.36
3	Hem Collar Band	10	110	11	-1	1.21	0.33	12.54
4	Attach Collar Band to Collar							
5	Turn and Topstitch Collar Band							
6	Buttonhole Collar Band							

Quiz 20minute

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3	Hem Collar Band	10	110	11	-1	1.21	0.33	12.54
4	Attach Collar Band to Collar	25				2.475		
5	Turn and Topstitch Collar Band	30	100					
6	Buttonhole Collar Band	10		12.5				

S.No	Element description	Observed time (watch reading) in second	Rating	Basic time in second	Extension in second	Allowance		Standard time In second
						Relaxation allowance 11% In second	Contingency allowance 3% In second	
1	Make Collar	15	80	12	-3	1.32	0.36	13.68
2	Topstitch Collar	20	120	24	4	2.64	0.72	27.36
3	Hem Collar Band	10	110	11	1	1.21	0.33	12.54
4	Attach Collar Band to Collar	25	90	22.5	-2.5	2.475	0.675	25.65
5	Turn and Topstitch Collar Band	30	100	30	0	3.3	0.9	34.2
6	Buttonhole Collar Band	10	125	12.5	2.5	1.375	0.375	14.25
7	Total preparation time	110		112		12.32	3.36	127.68