



GOVERNMENT OF PAKISTAN

NATIONAL OCCUPATION SKILL STANDARD

FOR

BENCH FITTER



NATIONAL TRAINING BOARD

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PAKISTAN NATIONAL OCCUPATIONAL SKILL STANDARD

For

TEXTILE FITTER (Spinning)

1. General

1.1 The Occupational Skill Standard referred to relates specifically to workers at craft level and is directly related to the skills, equipment, tools and materials in common use in Pakistan at the present time.

1.2 This Occupational Skill Standard is divided into three grades or levels. These are;—

1.2.1	The Basic Level	Grade III
1.2.2	The Intermediate Level	Grade II
1.2.3	The Advance Level	Grade I

(Note: The Basic and Intermediate Levels of this standard have been given priority considerations setting aside for future development the requirements under The Advance Level).

1.3 The Basic Level relates to the level of knowledge and skills expected from craftsman who have undergone training for Bench Fitter (Mechanical) conducted by a training institution of equivalent standard or from those who already have to their credit at least 4 years of recognized "On-the-job" experience.

1.4 The Advance Level is based on the highest level of knowledge and skills expected from a craftsman in Bench Fitting (mechanical) trade.

1.5 The Intermediate level falls approximately midway between the advance level and the basic level.

1.6 The Occupational Skill Standard will be subject to a periodic review and modification to be responsive to the changing technology and to the requirements of the industry.

1.7 Persons who are wishing to be certified as competent in any of the three grades should undertake a trade test to be designed to show by oral and/or written examination and by practical demonstration that they are in possession of the knowledge and skill set out in this standard.

1.8 The emphasis in all certification tests will be on objectivity and the requirements of the industry.

2. BASIC LEVEL (Grade III) BENCH FITTER

S. No.	Knowledge Requirements
2.1	Arithmetic equivalent to that acquired in the middle standard level of education or arithmetic related to the work of a grade III Bench fitter.
2.2	Housekeeping, personal safety and safety precautions in the use of Tools, materials and equipment.
2.3	Working knowledge of various tools and equipment generally used in a bench fitter shop.
2.4	Simple measuring using a steel rule and inside and outside calipers.
2.5	Basic knowledge of surface finish.
2.6	Reading and interpretation of sketches & mechanical drawings of simple machine parts.
2.7	Recognition of metals commonly used in a workshop.
2.8	Identification of various types of the threads.
2.9	Types of files and their applications.
2.10	Procedure for marking-out a work piece to given dimensions.
2.11	Introduction to Power saw machine, power drill and pedestal grinding machine.
2.12	Use of tables for the selection of drill tapping sizes.
2.13	Selection of cutting speeds for drilling of various materials.

S. No.	Skill Requirements
2.14	Must be able to :- Flat Filling: Ability to work to a tolerance of $\pm 0.2\text{mm}$ and a surface texture up to $\pm 0.05\text{mm}$.
2.15	Measuring: Ability to use and read steel rules, inside & outside calipers, vernier caliper & micrometer.
2.16	Marking: Marking of simple work piece using marking tools.
2.17	Square & angular filing: Ability to work to tolerance up to $\pm 0.2\text{mm}$ and 1mm .

S. No.	Skill Requirements
2.18	<p>Drilling: The drilling of holes to the appropriate tapping size for threads by reference to tables. Counter sinking and spot facing.</p>
2.19	<p>Reaming: Reaming of holes by hand.</p>
2.20	<p>Hand threading: Tapping of holes by hands and use of stocks and dies for external threads.</p>
2.21	<p>Sawing: Sawing of holes by hand.</p>
2.22	<p>Stretching: Stretching by hand hammering.</p>
2.23	<p>Riveting: Riveting by hammer and snaps.</p>
2.24	<p>Off-hand grinding: Ability to sharpen drills, punches chisels etc.</p>
2.25	<p>Chipping: Cross, flat and groove chiseling.</p>
2.26	<p>Bending: Cold and hot bending using simple fixtures.</p>
2.27	<p>Scrapping: Ability to use flat scraper accurately up to 0.05mm.</p>
2.28	<p>Machines: Ability to operate Power saw machine, power drill & pedestal grinding machine.</p>
2.29	<p>Workshop project: Marking of simple workpiece from the given working drawing using hand tools and the ability to assemble different parts (already prepared) of a project.</p>

3. INTERMEDIATE LEVEL (Grade II) TEXTILE FITTER (Spinning)

S. No.	Knowledge requirements
3.1	Mathematics related to the work of a grade II Bench Fitter (mechanical).
3.2	Working principle of vernier caliper and micrometer.
3.3	Reading and interpretation of sketches and mechanical drawings of limited complexity.
3.4	Types of lubricants and different method of lubrication of machinery e.g. grease, cop, oil ring, wick, Pressure, etc.
3.5	An understanding of general characteristics of metals commonly used in the workshop.
3.6	Elementary heat treatment of metals.
3.7	Locking methods.
3.8	Knowledge of limits and fits.
3.9	Knowledge of various types of bearings.
3.10	Elementary knowledge of static balancing.

S. No.	Skill Requirements
	Must be able to:-
3.11	Flat Filling: Ability to work to a tolerance of $\pm 0.05\text{mm}$ and a surface texture up to $\pm 0.02\text{mm}$.
3.12	Measuring: Ability to use and read micrometer, Dial indicator, protectors and various gauges.
3.13	Marking-off: Marking-off work pieces working from a given drawing using vernier height gauge.
3.14	Filing and scraping: Filing and scraping of a flat surface of at least 16 to 25 high spots/ 25^2mm .

S. No.	Skill Requirements
3.15	Fitting: Slide fitting, push fitting and force fitting.
3.16 3.17	Off-Hand grinding: Ability to grind fitter cutting tools, drills etc. Tapper Planning and use of dowels.
3.18 3.19 3.20 3.21	Fitting: Fitting tapper and parallel keys. Fitting and extracting bushes and bearings to and from housing. Fitting and extracting pulleys to and from shafts. Removal of broken studs and bolts from machine parts.
3.22 3.23	Machine Fitting: Alignment of shaft bearings, couplings and machinery with in the highest practicable limits of accuracy. Simple practice in static balancing.
3.23	Workshop Projects: Making of mechanical parts from given drawing using precision tools & equipment & the ability of assembling and fit the parts of a project.

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