Pratham 5.0 3D Printer – User Manual

1. Machine Overview

The Pratham 5.0 is an industrial-grade FDM 3D printer with a 500 × 500 × 500 mm build volume, supporting multiple filaments such as ABS, PLA, TPU, PETG, ASA, HIPS, and composite materials. It features a direct drive extruder, silicone heated bed, auto bed leveling, filament sensor, and power failure recovery, making it suitable for prototyping, educational use, small-batch production, and hobbyist projects.

Key Features: - Industrial-grade durability and precision - Large print volume for big prototypes and parts - Fast heating bed (120°C in 30 seconds) - Advanced electronics and 7-inch touchscreen - Safety features: filament sensor and power failure recovery

2. Safety Guidelines

- Wear safety glasses and gloves during operation.
- Ensure proper ventilation to avoid inhaling heated filament fumes.
- Do not leave the printer unattended while printing.
- Keep the print area clean and free of obstructions.
- Store filament in a dry place to prevent moisture absorption.

3. Installation & Setup

1. Unbox the printer carefully and place it on a stable surface.
2. Attach the filament spool holder and connect the power cable.
3. Load the filament into the extruder until it reaches the hotend.
4. Install the slicing software (Simplify3D, Cura, etc.) and connect the printer via USB or Wi-Fi.
5. Use the auto bed leveling feature to calibrate the print bed.
6. Run a test print to ensure proper setup.

4. Basic Operation

1. Power on the printer.
2. Home all axes using the touchscreen interface.
3. Load or select the print file (STL/GCODE) via software or SD card.
4. Set printing parameters: filament type, layer height, print speed, bed and nozzle temperatures.
5. Start the print and monitor for proper extrusion and adhesion.
6. Upon completion, remove the printed part carefully.

5. Maintenance

- Clean the print bed and extruder nozzle regularly.
- Inspect belts, motors, and moving parts periodically.

- Keep the filament dry and free from dust.
- Update firmware and slicing software as needed.
- Lubricate mechanical parts occasionally for smooth operation.

6. Troubleshooting

Issue	Possible Cause	Solution
Print not adhering	Bed not leveled	Recalibrate auto bed leveling
Clogged nozzle	Filament debris or moisture	Clean nozzle and dry filament
Layer shifting	Loose belts or motors	Tighten belts and check motor connections
Poor print quality	Incorrect temperature or speed	Adjust settings in software
Power failure	Resume function disabled	Enable power recovery before printing

7. Operational Area

- Prototyping and functional models
- Educational projects and research
- Small-batch production and tooling
- Hobbyist and DIY projects
- Prints on ABS, PLA, TPU, PETG, ASA, HIPS, and composite filaments