ONTARIO COUNCIL FOR TECHNOLOGY EDUCATION

STANDARD OPERATING PROCEDURES DOCUMENT

TIRE MACHINE

Scope and Responsibilities

This standard operating procedure (SOP) applies to all personnel who operate and instruct on the safe operation and use the tire machine. In a school setting this includes,

- **Administrators/Teachers**: Ensure operators are trained and the SOP is followed
- **Students/Teachers/Operators**: Follow the owner/operators manual, industry recommendations, this SOP, guarding is in place, and wear the appropriate personal protective equipment (PPE)

SAFETY IS A PRIORITY ! DO NOT use this machine unless you have received instruction in its safe use and operation and have been given permission by your teacher.

To ensure the safe and efficient operation of the tire machine, this machine requires:

Personal Protective Equipment (PPE)

- CSA-approved safety glasses or face shield
- Hearing protection (when noise levels are high in the shop or when bead blast inflating)
- Proper attire, close-fitting clothing and/or protective shop coat or coverall
- Closed-toed footwear (CSA Safety footwear is required on Co-Op placements in industry)

Pre-Operational Checks

- **Always refer to the manufacturer's manual**
- Perform visual inspection of tire machine prior to use, including any electrical cords for damaged prongs, cracked insulation, exposed wire, damage, and wear (Damaged equipment must be locked out)
- Repair or replace worn or malfunctioning equipment immediately
- Ensure air lines and power connections are secure and undamaged
- Check hoses for cracks or leaks that could cause air loss or failure
- Confirm tire inflation gauges and pressure limiters are functional and calibrated
- Verify the bead breaker, mounting head, and clamps operate smoothly without obstruction
- Ensure the work area is clean and free of obstructions, trip hazards and other materials
- Be mindful of pinch points - Never place hands close to tire bead, bead breaker, or rim clamp
- Confirm the tire to be changed is completely deflated before mounting/demounting or service
- Inspect rims and tires for cracks, corrosion, or defects and remove damaged parts.

This SOP provides a general guideline for operating a tire machine. Always refer to the manufacturer's manual, industry best practices, and specific workplace safety protocols for detailed instructions. IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR or SUPERVISOR.

Operational Steps

1. Preparation
    - Make sure you have been authorized to use this tire machine - you have received training, passed the test, have demonstrated the safe use of this tire machine and have a safety passport signed
    - You are “shop ready” – trained, proper clothing, wearing required PPE, confine hair, etc.
    - Perform a visual inspection to confirm the tire machine is suitable for operation
    - Refer to the manufacturer’s guidelines to make any adjustments, install mounting adaptors, cones, and prepare the machine
    - Verify tire and rim compatibility, and inspect parts for damage
    - All guards are in place and secured properly
    - Never override or defeat a safety device
    - Take note of foot pedals and controls and ensure that operate as designed
    - Deflate the tire completely by removing the valve stem before tire removal
2. Mounting / Demounting
    - Use the bead breaker and proper tools for bead breaking to loosen the tire bead
    - Raise the wheel assembly and clamp the wheel securely on the turntable
    - Use the mounting/demounting tool, machine arms, and turntable to remove the tire
    - Lubricate the tire bead and rim before mounting
    - Mount the new tire using the machine’s arm and tools
    - Never stand in the trajectory of the inflation path, use a safety cage (if available)
    - Inflate tire carefully, never exceeding 40 psi, and inspect bead seating to ensure it is properly seated on the rim
    - Install valve stem and inflate to manufacturer’s recommended pressure
3. Shutting Down the Machine
    - Turn off power and release clamps carefully
    - Remove the tire and inspect for proper installation and any damage
    - Clean the machine and work area

Post-Operational Checks

- Inspect the tire machine for wear or damage
- Clean and wipe down machine surfaces to prevent corrosion or debris buildup.
- Inspect air lines, hoses, and fittings for any damage or signs of wear
- Store tools and accessories properly
- Verify all safety guards and covers remain in place and are undamaged
- Remove and properly dispose of damaged rims, tires, or components
- Log any maintenance needs or malfunctions experienced during operation
- Report any issues or maintenance needs to the supervisor/instructor

Common Problems of Operation

- Machine does not power up
- Difficulty in seating tire beads correctly, leading to inflation failure or unsafe mounting
- Air leaks from hoses, fittings, or damaged valve stems
- Clamping mechanism failing to hold rim securely or unevenly applying force
- Excessive machine vibration or noise
- Operator entanglement risks caused by loose clothing or unsecured hair/jewellery
- Failure of pressure limiting devices (overinflation hazards)
- Mounting arm misalignment

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Safety Precautions

- Keep hands and body parts away from the bead breaker and rim clamp during operation
- Wear personal protective equipment (P.P.E) such as CSA approved safety glasses, safety goggles, and face shields, and proper clothing
- Wear protective hair covering to contain long hair
- Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewellery that may get caught in moving parts
- Check for damaged parts before the use of the tool. Components, parts, accessories, or guards that are damaged should be properly repaired or replaced. (Damaged and malfunctioning equipment must be locked out)
- Review and understand all instructions and safety warnings before use
- Do not modify or remove any manufacturer-installed safety devices or guards
- Only operate within the machine's specified tire and rim size limits
- Ensure tires are fully deflated before starting mounting/dismounting process
- Use a safety cage for inflating tires with locking rings
- Dispose of bent, cracked, or corroded wheels and rims properly
- Keep work area clean and well lit
- Maintain a stable non-slip footing and your balance at all times
- Follow manufacture instructions for periodic service and maintenance (i.e.: lubricating and changing accessories)
- Use recommended accessories. Consult the owner's manual for recommended accessories
- Only operate the tire machine after you have received instruction and permission from the teacher
- Be aware of the positions of the foot pedals, on/off switches, and emergency STOP buttons in the shop
- Consider the placement of the tire machine in the shop so that bystanders are not walking by the user and coincidentally creating a hazard

Common Injuries Sustained

- Eye injuries from flying debris or bead explosion during inflation.
- Hand and finger crush injuries from pinch points in clamping or mounting.
- Cuts, lacerations, abrasions or punctures from sharp tire beads, belts, rims, or tools
- Hearing damage from prolonged exposure to noisy equipment.
- Back injuries from improper lifting
- Blunt force/foot injuries from dropped tires or tools
- Entanglement of loose sleeves, long hair, etc.

Maintenance

- Always refer to the manufacturer's manual
- Disconnect from power and lock out tag out when servicing or repairing machinery
- Inspect the electrical cords for damage, cracked insulation, fraying, etc.
- Regularly check and repair or replace damaged or worn equipment immediately
- Clean and lubricate the machine as required
- Keep a maintenance log for the machine

Work Zones

- Typically, in front of the machine approximately 1 meter (3 feet) and 1 m (3 feet) to the right
- Consider marking the floor designating operator work zone(s) or area (ie.: yellow paint or tape)
- Only the operator shall be in the work zone while the machine is in use

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Additional Information can be found at,
Ontario Council for Technology Education SAFEdocs and ToolSAFE Videos: OCTE
Canadian Center for Health and Safety Tire Precautions
Workplace Safety and Prevention Services Tire Changer Equipment Safety Tips
Government of Ontario Alert Tire Machines
Coats The Importance of Safety When Using a Tire Changer
Hofmann Equipment How to Use a Tire Machine: A Step-by-Step Guide for Safe Operation

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