

---

# Propane Cylinder Exchange for Internal Combustion Forklifts

## 1.0 Objective & Intent

This SOP defines the mandatory safety procedures for exchanging propane (LPG) cylinders on internal combustion forklifts in a cabinet and millwork manufacturing facility. The primary objective is to eliminate the risk of fire, explosion, and asphyxiation during cylinder exchange by enforcing strict lockout, leak detection, and handling protocols. Compliance with WorkSafeBC OHS Regulation Part 12 (Tools, Machinery and Equipment) and Part 31 (Fire Prevention) is mandatory.

## 2.0 Operational Scope

This procedure applies to all maintenance personnel, forklift operators, and warehouse staff authorized to exchange propane cylinders on any internal combustion forklift operating within the facility. It covers the exchange of standard 33 lb and 43 lb propane cylinders. This SOP does not cover bulk propane tank filling or cylinder storage beyond the immediate exchange area.

## 3.0 Hazard Identification & Mandatory PPE

- Fire and Explosion: Propane is highly flammable; any leak near an ignition source can cause a flash fire or explosion.
- Asphyxiation: Propane is heavier than air and can accumulate in low areas, displacing oxygen.
- Cold Burns: Liquid propane contacting skin can cause severe frostbite.
- Crush and Pinch Hazards: Cylinders are heavy (up to 70 lbs) and can cause hand or foot injuries if dropped or mishandled.
- CSA-Approved Steel Toed Boots with puncture-resistant soles
- ANSI Z87.1-Approved Safety Glasses with side shields
- Leather or Nitrile-Insulated Work Gloves (to protect against cold burns and cuts)
- High-Visibility Safety Vest (when working in traffic areas)
- Hard Hat (if overhead hazards exist)

## 4.0 Required Safety Equipment & Tools

- Lockout/Tagout (LOTO) Kit with personal padlock and hasp
- Propane leak detection solution (soap and water mixture in spray bottle) or electronic gas detector
- Fire extinguisher (Class B:C rated, minimum 10 lb) within 25 feet of exchange area
- Cylinder cart or hand truck rated for propane cylinder weight
- Cylinder storage rack or designated exchange cage (secured upright, away from heat sources)
- Spill response kit (for propane liquid contact, includes absorbent pads and gloves)
- Signage: 'No Smoking – Propane Exchange Area' posted at the exchange station

## 5.0 Step-by-Step Safety Procedure

1. Verify the exchange area is well-ventilated, free of ignition sources (pilot lights, open flames, electrical sparks), and that a Class B:C fire extinguisher is immediately accessible. Post 'No Smoking' signs if not already present.
2. Perform a pre-exchange inspection of the new cylinder: check for dents, rust, damaged valve, missing collar, or expired hydrostatic test date (must be within 5 years). Reject any cylinder that fails visual inspection.
3. Shut off the forklift engine and engage the parking brake. Turn the forklift key to the 'Off' position and remove the key. Place the key in your pocket or a lockbox to prevent accidental startup.
4. Close the service valve on the existing propane cylinder by turning the handwheel fully clockwise (tighten by hand only, do not use tools). Wait 30 seconds for residual gas in the line to dissipate.
5. Disconnect the fuel line coupling by pressing the quick-disconnect release collar and pulling the connector straight off. Cap the open end of the fuel line immediately with the provided dust cap to prevent debris ingress.
6. Remove the empty cylinder from the forklift mounting bracket using a cylinder cart. Secure the empty cylinder upright in the designated storage rack. Do not lay cylinders on their side.
7. Place the new, inspected cylinder onto the forklift mounting bracket, ensuring it is oriented with the valve facing away from the operator. Tighten the hold-down strap or bracket securely so the cylinder cannot shift during operation.
8. Remove the dust cap from the fuel line and connect the coupling to the new cylinder's service valve. Push firmly until the collar snaps into place. Gently tug the coupling to verify a secure connection.
9. Open the service valve slowly (counterclockwise) one full turn. Immediately spray the leak detection solution onto the valve stem, coupling connection, and the relief valve. Watch for bubbles indicating a leak. If bubbles appear, close the valve, disconnect, and replace the cylinder. Do not proceed until a leak-free connection is confirmed.
10. After confirming no leaks, open the service valve fully (counterclockwise until it stops). Start the forklift engine and allow it to idle for 30 seconds. Verify the engine runs smoothly with no gas odor. If you smell propane, shut off the engine immediately, close the cylinder valve, and evacuate the area. Report the issue to your supervisor.

**Regulatory Disclaimer:** This document is a generic safety template provided for educational and informational purposes only. It does not constitute professional engineering, legal, or regulatory compliance advice. The end-user assumes all liability for validating all safety protocols against specific machinery manufacturer manuals and local occupational health and safety regulations (e.g., WorkSafeBC, CSA standards) before deployment.