

LESSON PACKET

Oxy-Acetylene Torch Setup, Adjustment & Flame Control

TMM Academics – Sealed System Training

Lesson Overview

This lesson explains how to safely set up and use an oxy-acetylene torch for brazing applications. Students will learn how to read regulators, adjust gas pressures, control flame characteristics, and avoid common mistakes that lead to overheating, contamination, or damage to the system.

◆ Section 1: Understanding the Oxy-Acetylene Torch

An oxy-acetylene torch uses two gases: acetylene (fuel) and oxygen.

Unlike a turbo torch, this setup allows the technician to control both the size of the flame and the ratio of oxygen to fuel. This provides more precision but also requires more adjustment.

Key Point:

More control also means more responsibility — improper adjustment can quickly damage components.

◆ Section 2: Reading the Regulators

Each regulator has two gauges:

- One shows tank pressure
- One shows output (working) pressure

Understanding these readings is critical to setting up the torch correctly and maintaining consistent performance.

◆ Section 3: Opening the Tanks Properly

When opening gas tanks:

- Use the correct wrench or key
- Do not use pliers or tools with teeth
- Open only 1–2 turns

Over-opening is unnecessary and can damage components or create unsafe conditions.

◆ Section 4: Setting Proper Gas Pressures

Typical starting points for pressure settings:

- Acetylene → ~5 PSI
- Oxygen → ~10–15 PSI

These values are adjusted slightly depending on the torch and desired flame.

Key Point:

Pressure settings affect flame stability, heat output, and control.

◆ Section 5: Lighting the Torch

To light the torch:

- Slightly open both valves
- Use a striker (never a lighter)
- Adjust flame immediately after ignition

Proper lighting prevents flashback and unsafe flame conditions.

◆ Section 6: Flame Adjustment

The correct flame should be:

- Controlled

- Quiet (not loud or aggressive)
- Clean (no black soot)

Too much acetylene creates a yellow, sooty flame. Too much oxygen creates a loud, harsh flame.

◆ **Section 7: Effects of Improper Flame**

Improper flame adjustment can cause:

- Black soot contamination
- Damage to customer property
- Poor brazing results

Soot can permanently stain surfaces and is difficult to remove.

◆ **Section 8: Heat Control and Pipe Damage**

Oxy-acetylene torches produce very high heat.

If not controlled properly, they can:

- Burn through tubing
- Overheat components
- Damage surrounding materials

Even a short period of excessive heat can destroy tubing.

Key Point:

Too much heat is one of the biggest risks when using this torch.

◆ **Section 9: Solder Movement and Heat Direction**

Solder follows heat.

By applying heat in a specific location, the technician can control where the solder flows. This allows proper filling of the joint without over-applying material.

◆ **Section 10: Shutting Down the Torch**

Proper shutdown sequence:

1. Turn off acetylene first
2. Then turn off oxygen

This prevents backfire or popping inside the torch.

◆ **Section 11: Torch Tip Selection**

Different torch tips are used for different applications:

- Small tips → precision work
- Larger tips → larger tubing
- Specialty tips (wishbone) → heat multiple sides

Choosing the correct tip improves efficiency and reduces brazing time.

◆ **Section 12: Safety in the Field**

When using a torch:

- Keep flame away from surfaces
- Avoid pointing flame toward floors or panels
- Be aware of surroundings

Improper torch positioning can damage floors, cabinets, or appliance panels.

◆ **Section 13: Comparing Torch Types**

While oxy-acetylene provides control, it is less forgiving than a turbo torch.

Many technicians prefer turbo torches for everyday work because they are simpler and easier to manage.

◆ Section 14: Practice and Skill Development

Proper torch use requires practice.

Technicians should practice:

- Flame adjustment
- Heat control
- Different materials

Experience is the key to mastering torch operation.



Review Questions

Multiple Choice

1. What is the purpose of the regulator?
 - A. Increase heat
 - B. Control gas pressure
 - C. Store gas
 - D. Cool the flame

2. What happens if too much acetylene is used?
 - A. Flame becomes blue
 - B. Flame produces soot
 - C. Flame becomes cooler
 - D. Pressure drops

3. What is the correct shutdown sequence?
 - A. Oxygen first
 - B. Both at same time
 - C. Acetylene first
 - D. Depends on torch

4. Why is flame adjustment important?
 - A. Improve appearance

- B. Reduce cost
 - C. Control heat and prevent damage
 - D. Increase pressure
-

Short Answer

- 5. Why should tanks only be opened 1–2 turns?
 - 6. What happens if too much heat is applied to tubing?
-

Scenario-Based

- 7. A technician is brazing and the flame becomes yellow with black soot forming. What is the cause and what problem can it create?
-



Answer Key

- 1. B – Control gas pressure
- 2. B – Flame produces soot
- 3. C – Acetylene first
- 4. C – Control heat and prevent damage
- 5. To prevent damage and allow safe, controlled operation
- 6. It can burn through the tubing or damage components
- 7. Too much acetylene (not enough oxygen), causing soot that can contaminate surfaces and the system