

1. PROCEDURE OVERVIEW

Prior to strength testing, concrete cores, and some cylinders, must be trimmed and ground to the appropriate length for testing. The lapidary saw is used to trim the samples to a rough length. After trimming, the samples are ground to the final length for testing.

1.1. Student Responsibilities:

- Read and understand the requirements of this procedure
- Provide concrete samples for cutting
- Clean-up of the machine after use

1.2. Staff Responsibilities:

- Read and understand the requirements of this procedure
- Assist students as needed
- Service the saw as needed

2. EQUIPMENT AND TOOLS

- Lapidary Slab Saw

3. MATERIALS

- Concrete Samples (Cylinders, Cores, or Both)
- Lapidary Cutting Oil

4. PERSONAL PROTECTIVE EQUIPMENT

- Safety glasses
- Safety Shoes
- Gloves

5. DETAILED PROCEDURE

5.1. Identify specimens to be trimmed and mark the cut locations.

After specimens are trimmed in the lapidary saw, they are typically ground to the finished length using the end-grinding machine. The end grinding process typically removes about $\frac{1}{16}$ in. from each end of the specimen. Make sure to saw the samples accordingly.

**TRIMMING THE ENDS OF CONCRETE
CYLINDERS AND CORES**

5.2. Prepare the saw for cutting.

Some of these steps may not need to be performed every time the saw is used, but all items described in these steps should be checked to ensure proper and safe performance of the saw.

5.2.1. Unplug the saw.

5.2.2. Check the oil level within the sump of the saw and add oil if needed.

Observe the level of oil where it meets the saw blade. The level of the oil should be $\frac{1}{2}$ to $\frac{3}{4}$ in. above the lowest point of the saw blade. If oil is needed, add only enough to bring the oil level to the aforementioned level. Do not add water to the saw.

5.2.3. Check the range of motion of the moveable vise.

The vise is driven along rails as the cut proceeds. To slide the vise, pull and hold the yellow lever near the near right corner of the vise carriage. Slide the carriage over its entire travel to ensure that it is moving smoothly. Take care not to put excessive force on the chain that connects the carriage to the power switch when moving the carriage.

The motion of the vise carriage trips the automatic shot-off switch for the saw. Ensure that the vise will move far enough to complete the cut before tripping the power switch. The sample being cut must be allowed to completely overlap the saw blade. Typically, the range of motion is correct of a 4 in. diameter sample. If a larger sample is to be cut, the range of motion may need to be adjusted.

5.2.4. Level the saw and movable vise.

With the vise empty, place a small spirit level on the bed of the vise and slide the vise carriage along through its full range of travel. If the carriage is out of level, use a wrench to adjust the leveling feet as needed.

5.2.5. After confirming the switch is in the "Off" position, plug in the saw.

5.3. Place the specimen in the vise.

5.3.1. Wipe any residual cutting and oil from the clamping surfaces of the vise.

5.3.2. Using the yellow crank arm to the right side of the vise carriage, adjust the vise such that it will clear the saw blade without interference.

The location of the cut on the specimen should extend past the left edge of the vise by $\frac{3}{4}$ to 1 in.

TRIMMING THE ENDS OF CONCRETE CYLINDERS AND CORES

- 5.3.3. Loosely place the concrete specimen in the vice using neoprene pads between the vise jaws and the sample.

The far bulkhead of the vise is fixed in place; the near bulkhead is movable. To place the near bulkhead, loosen the setscrew and lift the bulkhead from the vise carriage. The location of the intended cut should be at least $\frac{3}{4}$ in. to the left of the left edge of the vise.

- 5.3.4. Level and secure the specimen.

Using a small spirit level parallel to the central axis of the sample and normal to the plane of the blade, level the sample in the vise. Once the specimen is level, tighten the vise securely. Check for looseness of the sample and re-tighten as needed.

- 5.3.5. Laterally align the cut location with the saw blade.

Using the yellow crank arm to the right side of the vise, adjust the position of the sample such that the cut location aligns with the saw blade. Also, confirm the vise itself will not interfere with the saw blade.

- 5.3.6. Longitudinally align the sample with the saw blade.

Using the release lever for the vise carriage, place the specimen such that it is approximately $\frac{1}{2}$ in. from the edge of the blade. When the sample is in place, release the lever to lock the carriage to the drive mechanism.

- 5.3.7. The release lever for the vise carriage may need to be secured to prevent slippage.

Under load, it has been observed that the release lever that allows the vise carriage to slide on its drive can come loose. To prevent this, you can use a short piece of wire to lash the lever in place for the duration of the cut. The problem becomes more prevalent when the machine is contaminated with excess concrete cuttings.

- 5.4. Perform the cut.

- 5.4.1. With the hood closed, turn the switch to the "On" position.

The saw will start immediately once the switch is activated.

- 5.4.2. Do not leave the saw unattended.

Listen for changes in operating noise. Sudden changes can indicate damaged material or a damaged blade. Often a bang can be heard just before the cut is complete as the

TRIMMING THE ENDS OF CONCRETE CYLINDERS AND CORES

thin slice of the sample falls into the sump area of the saw. Do not stop the saw after this sound as the saw needs to complete its cut through broken edge that remains after the slice breaks.

- 5.4.3. After the cut is completed, the saw will automatically shut off based on the limits of the range of motion set up per Article 5.2.3.
- 5.4.4. After the saw has completely stopped spinning and is no longer audible, open the hood and remove the sample and any pieces of the sample that may be in the sump area of the saw.
- 5.5. Unplug the saw.
- 5.6. After completing all cuts, clean all internal surfaces of the saw cabinet by scraping concrete cuttings into the sump.

All of the concrete-and-oil slurry must be swept into the sump area after each use of the saw. Wipe all slurry from the case, saw, feed mechanism, vise carriage, and all other surfaces. Forcing all slurry into the sump will improve and preserve the performance of the saw for the next user.

- 5.7. Close the hood.

6. SUPPORTING DOCUMENTS

None.

7. REFERENCED DOCUMENTS

- 7.1. *Lortone LS Instructions and Parts List, October 2009.*

8. RECORD OF REVISIONS

Revision	Date	Affected Pages	Description
0	2016-11-02	All	Initial Issue