
11 Equipment

Learning Outcomes:

- ☑ Know the types of equipment
- ☑ Understand where and how the equipment is used
- ☑ Be responsible for Quality Control

Basic Components

Pavement marking equipment comes in many shapes and sizes. All equipment manufacturers have their own configuration of basic components for a given application. A long-line paint truck manufactured by one company may look considerably different from the paint truck of a different manufacturer.

Although a specific machine is built to apply a specific type of material, all pavement marking equipment, except preformed tape applicators, will generally fall into one of the following categories: long-liners and hand-liners.

Long-liners are designed to produce long distance pavement markings. They are self-propelled and are equipped to carry relatively large quantities of material. Most are set up with more than one applicator or spray gun. Figure 11.1 shows a typical long liner. Hand-liners, which are much smaller than long-liners, are designed for operators to walk behind. They can only carry a limited quantity of material. The need for walk-behind applicators may be stated in the contract documents. Figure 11.2 illustrates a typical walk-behind applicator.



Figure 11.1
Typical long-line application truck

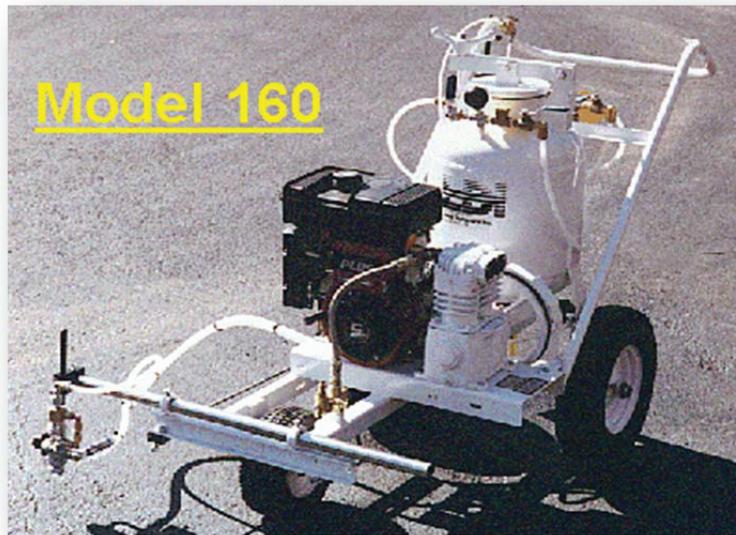


Figure 11.2
A typical walk-behind applicator

Long-liners vary somewhat from the specific systems they incorporate based on the type of pavement marking material they are designed to apply (paint, epoxy, thermoplastic, etc.). However, the following components can be found on all long-liners:

- Air compressor (airless applicators included)
- Material holding tank (with mechanical agitators)
- Reflective bead tank (pressurized)
- Cleaning system (cannot be in-line system)
- Material heating system (if necessary)
- Material applicators (spray guns, etc.)
- Reflective bead guns
- Control system (spray gun control, skip timer, etc.)
- Counter system (for measuring distance and/or material)
- Guidance aid (some means for the operator to line up with the road or with existing markings)

Pre-stripe Inspection

The following is the recommended procedure for the engineer prior to beginning work on the project:

- The engineer or designee will become familiar with the equipment by walking around it with the operator. They should discuss how the machine is set up and how it operates. During this discussion, the engineer or designee should be assured that everything is in working order. The preceding checklist may be used as a guide for this procedure.
- The contractor shall apply a sample marking for inspection. While this is taking place, the engineer or designee will ensure that the contractor is taking quality control test samples for thickness and width of material, and reflective bead application rate (according to government agency specifications). The results of the quality control tests shall be reviewed and discussed with the contractor.
- Before proceeding with the work, the engineer or designee will inspect the marking and test panels for quality, clean edges, even bead distribution, proper bead depth, required width, and general appearance. This is discussed in detail in the appropriate chapter in this manual.

If any problems or inconsistencies are discovered, DO NOT PROCEED WITH THE WORK!

Quality Control

Clear communication and cooperation yields positive inspector/contractor interaction and helps ensure quality. This is essential regardless of the type of work. Discuss any problems with the contractor's certified quality control technician and stay informed of the adjustments the contractor makes to correct them. The following guidelines will ensure proper quality:

- Once the work is in progress, the engineer and contractor's quality control technician shall periodically stop, get out of the truck, and inspect the line.
- Continuous close attention to the appearance of the line is the best way to ensure quality work.
- Generally, inspection of the actual marking is the best tool for determining equipment problems.
- Proper width does not ensure even edges.
- Proper material thickness does not ensure adhesion.
- Proper bead application rate does not ensure either retention or proper embedment.
- To ensure quality, the pavement markings must be inspected closely.

Typically, the contractor's certified quality control technician is required to make the quality control checks according to the government agency's specifications. The purpose behind any quality control plan is to ensure quality. Whenever there are any doubts about the quality of the work, they MUST be investigated.

Deficiencies may or may not be due to equipment problems. When everything is working properly, pavement markings can be compared to an orchestra; all the components must work together. Material properties, weather conditions, and operator skill can all affect the quality of the final marking. Diagnosing the cause or combination of causes for a given problem can be very difficult. Engineers and inspectors who are knowledgeable about pavement marking equipment are better able to identify equipment problems.

As always, it is the responsibility of the contractor to solve the problem. However, this should never be misconstrued to lead the engineer away from helping to identify problems. In other words, although the engineer cannot tell the contractor how to fix a problem, knowledgeable engineers can and should be considered a valuable tool for the contractor, always keeping in mind that quality is the main goal.

References

See Appendix A for the following:

VDOT Road & Bridge Specification Book
Section 512

Knowledge Check Chapter 11

1. A long-line paint truck manufactured by one company should look exactly the same as that of a different manufacturer.
 - a) True
 - b) False

2. Which item mentioned below is a component for a long-line truck?
 - a) cleaner system
 - b) reflective bead tank
 - c) counter system
 - d) all of the above

3. The inspector should be knowledgeable with the pavement marking equipment to help identify problems.
 - a) True
 - b) False

4. Clear communication and cooperation between the inspector and contractor helps ensure quality.
 - a) True
 - b) False

5. One must inspect pavement markings “close up” to ensure quality.
 - a) True
 - b) False