

Calibration of Spreaders

Crews should vary chemical spread rates as winter weather and road conditions change. Therefore, they must calibrate their spreaders, and record the rates for reference during storms. This article describes how to calibrate spreaders without automatic controls.

A calibration chart, such as shown below, enables easy record-keeping. From it, crews can prepare rate cards to use during storms. The UNH T² Center can provide table calibration charts.

Spreader Calibration Procedure

Spreader calibration provides the amount of salt discharged per lane mile for each control setting. The rate remains the same for all speeds. Different materials spread at different rates at the same setting. Crews must calibrate spreaders with the material they will use.

Crews with hopper-type spreaders must calibrate for specific gate openings. They should calibrate each spreader individually; even the same models can vary widely at the same setting. Also, they must calibrate for each control setting.

Crews will need the following equipment.

1. Scale for weighing.
2. Canvas or bucket/collection device.
3. Chalk, crayon or other marker.
4. Watch with a second hand.

The following are the calibration steps:

1. Warm the truck's hydraulic oil to its normal operating temperature with the spreader system running.
2. Put a partial load of material on the truck.

3. Mark the shaft end of the auger or conveyor.
4. Dump material on the auger or conveyor.
5. Rev the truck engine to its operating RPM.
6. Count the number of shaft revolutions per minute at each spreader control setting, and record.
7. Collect material for one revolution and weigh it, deducting the weight of the container. (For greater accuracy, collect salt for several revolutions and divide by this number of turns to get the weight for one revolution.) This can be accomplished at idle or very low engine RPM.
8. Multiply the shaft RPM (Column A of the Calibration Chart) by the discharge per revolution (Column B) to get the discharge rate in pounds per minute (Column C)
9. Multiply the discharge rate (Column C) by the minutes to travel one mile at various truck speeds to get pounds discharged per mile.

For example, for 30 Shaft RPM and 4 lbs. discharged: $30 \times 4 = 120$ lbs/min. At 20 mph, the truck will cover 1 mile in 3 minutes: $120 \text{ lbs/min} \times 3.00 \text{ min.} = 360$ lbs/lane mile.

Calibrating Automatic Controls

Automatic controls vary the spread rate for various truck speeds. Factory calibration cards show the spread rate for each control setting. After some operation, many need calibration. The UNH T² Center can provide instructions to calibrate these spreaders.

Source:
The Salt Institute Calibration Instructions:
<http://www.saltinstitute.org/snowfighting/6-calib.html>

Calibration Chart									
Discharge By Gate Openings				POUNDS DISCHARGED PER LANE MILE					
	A	B	C						
Control Setting	Shaft RPM (Loaded)	Discharge Per Revolution (Lbs)	Discharge Rate A x B (Lbs/Min)	5 mph C x 12.00 (Lbs/LM)	10 mph C x 6.00 (Lbs/LM)	15 mph C x 4.00 (Lbs/LM)	20 mph C x 3.00 (Lbs/LM)	25 mph C x 2.40 (Lbs/LM)	30 mph C x 2.00 (Lbs/LM)
1									
2									