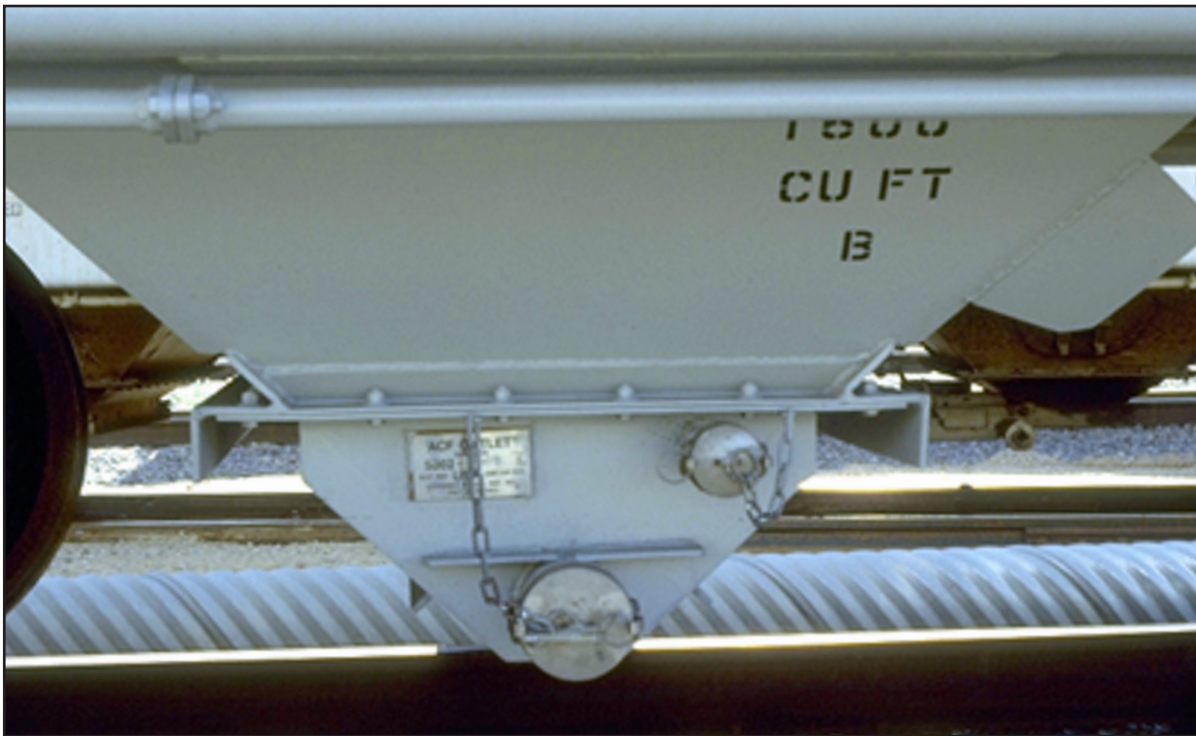


# SPARGER SYSTEMS

## SERVICE BULLETIN



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## SPARGER SYSTEMS

### For Slurry or Solution Unloading of Center Flow® Cars

The versatility of the Center Flow® car allows it to be equipped with Sparger unloading features. Sparger cars make it possible to ship bulk commodities dry and unload at a destination in slurry or solution form by introducing a solvent directly into the car.



### This System Has Decided Advantages

Ordinarily, many commodities are shipped in slurry or solution form. Here the shipper has to pay unnecessary transportation charges on the solvent (usually water).

By shipping dry and eliminating the solvent, more commodity can be loaded into a car. Hence, fewer cars are needed for a move and fewer cars have to be unloaded, resulting in freight and labor-saving benefits.

If the commodity is shipped dry, in box cars or standard covered hopper cars, a handling expense is entailed in moving the commodity to the plant storage, where it then must be mixed prior to processing.

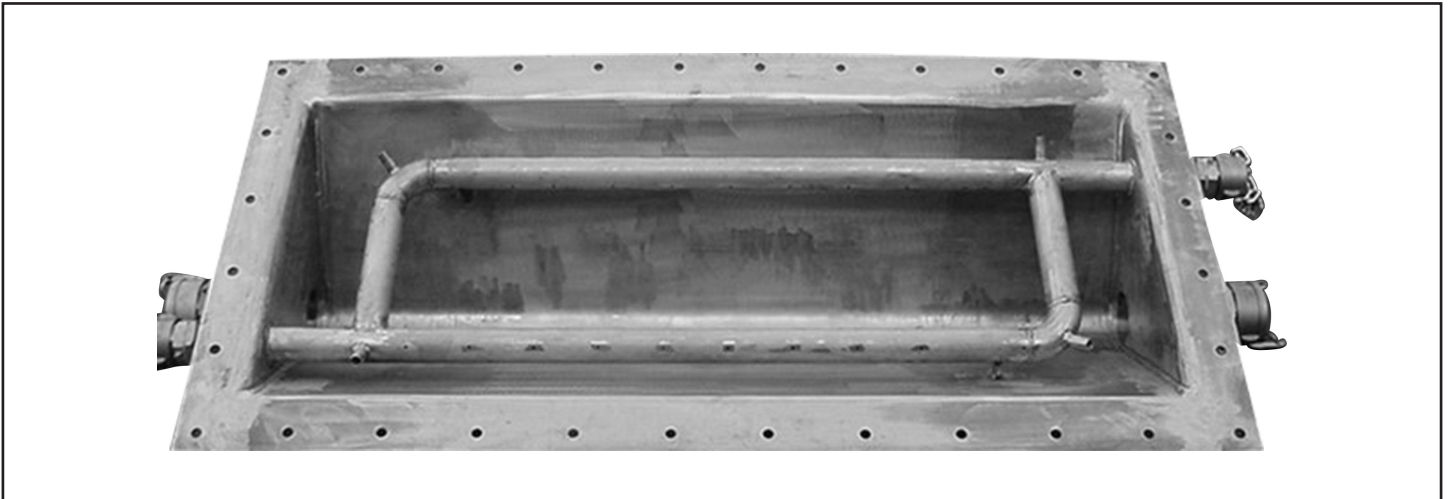
Center Flow® covered hopper sparger cars usually can utilize plant sparger-unloading facilities. Some of the more common commodities currently being transported in Center Flow® sparger cars are potassium chloride, sodium chlorate, potassium phosphate, urea, sodium borate, sodium nitrate, silico-aluminate pigment and sodium sulfite.



## Sparger Outlet Loop

A key component in the system is the sparger loop. This is a closed circuit of piping at the base of each compartment that is connected to an inlet line on either side of the compartment. The loop has sprinkler-type holes at intervals so that jets of solvent may be introduced to soak and agitate the commodity. In some unloading situations the solvent also is introduced through the drain line.

The basic sparger loop can be modified to suit the needs of a particular lading or a specific unloading situation.

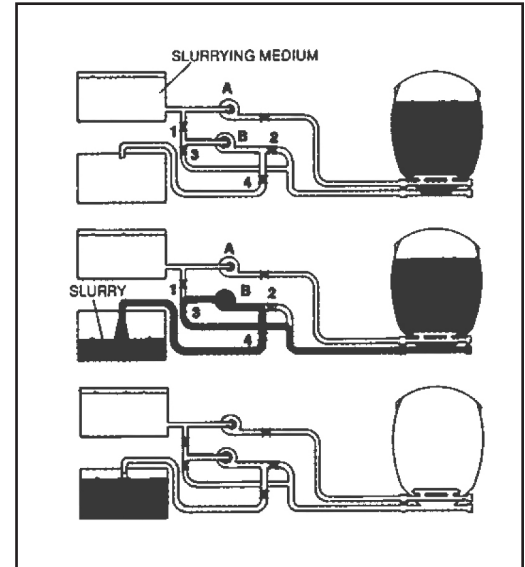


## CAR UNLOADING METHODS

### Slurry Unloading

The simplest and most widely used method of Sparger car unloading is when no specific concentration of slurry is required. Here, the solvent is introduced slowly through the sparger loop until the commodity is thoroughly wetted down. The velocity of the incoming solvent is then increased to a high rate. The drain line is opened to permit the slurry to discharge to the plant storage tanks or directly to process, usually in as heavy a form as can be pumped and handled by the lines. A basic hookup for this type of unloading is illustrated below:

- (a) Hook up, open valves 1 and 2, close valves 3 and 4. Start system to introduce slurring medium through pumps A and B until it breaks above dry lading.
- (b) Close valves 1 and 2 and open valves 3 and 4. Slurry is now pumped through B to storage (or process) while A continues to inject slurring medium.
- (c) After car is empty, continue operation (b) for about two minutes to wash out residue.

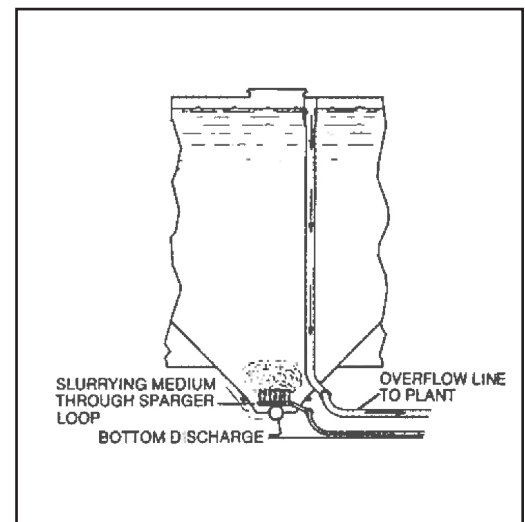


### Solution Unloading

Where a specific concentration is required, the car must be equipped with a standpipe recirculation system to mix the solution thoroughly to the proper concentration prior to unloading.

In solution unloading, the commodity is completely dissolved by the solvent to form a concentrated solution. In this system, the solvent is introduced through the sparger loop (at a predetermined rate) until the solution breaks the surface of the lading in the compartment. The delivery rate of the solvent is then adjusted so that the proper concentration of solution flows from an overflow pipe into the system. When periodic specific gravity readings indicate that the overflowing solution no longer is in the desired concentration, the solvent inlet line is closed and the car compartment is drained to the plant's depleted solvent storage tanks.

The principles of these slurry and solution unloading systems have been explained in their basic forms. Your representative can give you full information and discuss the feasibility of transporting your commodities in Center Flow® sparger cars. Pipe sizes and connection arrangements can be customized to meet your specific unloading requirement.



## Pre-trip Inspection

### Secure the Outlet Prior to Loading

The 5002 Sparger outlet is equipped with sparger and drain line quick disconnect caps. Secure the sparger and drain line quick connect caps on both ends of the outlet prior to loading. Cable seals may be applied through the rings of the drain line camlock handles.



### Preparing an Empty Car.

After flushing any residual commodity from the outlet, secure the sparger and drain line outlet caps.

The AAR requires all outlets be closed and secured before an empty covered hopper car is routed back to a loading facility. This simple action will prevent damage and costly replacement or repairs to the outlets.