Weighing Feed With Front End Loaders

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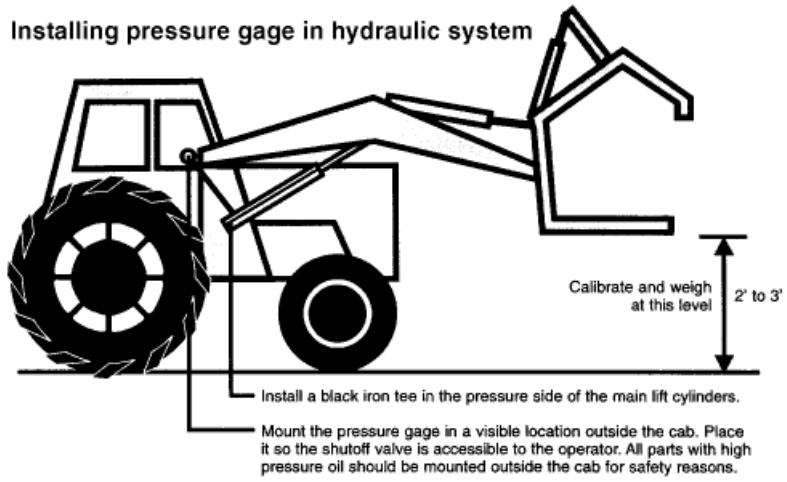
Weighing feed is basic to feeding livestock a balanced ration, which is essential to animal performance, animal health, and even optimal response to vaccinations or treatments, resulting in reduced animal health care costs. Knowing the amount of feed livestock are receiving is also necessary in determining feed conversion rates and feed costs.

However, many producers don't know the quantity of feed given to their livestock because they don't have a scale.

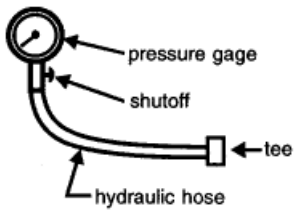
Feed can be weighed with a front end loader if a calibrated pressure gage is installed in the hydraulic system of the loader. This system will provide an approximate weight of feed or hay given to livestock and not exact weight, but it is still much better than guessing at the amount fed.



Materials

Materials can be purchased from hydraulic equipment supplier.

1 -- 3000 psi pressure gage (use one with a large face as it will be easier to read)
1 -- shut off valve
1 -- 3' to 5' of 3/8" or 1/2" hydraulic hose (2500 psi or higher rating)
1 -- black iron tee in hydraulic line
Hose clamps or plastic ties as needed



The pressure gage must be installed in the pressure side of the loader lift cylinders. The two cylinders should be connected in parallel. The tee can be installed anywhere in this line. Lower the loader so there is no pressure on the lift cylinders.

Be sure all pressure is removed from the hydraulic system before opening a hydraulic line!

The shutoff is installed to allow the pressure gage to be "disconnected" from the hydraulic system. This eliminates surging or bouncing of the gage needle when it isn't being used and will lengthen the life of the gage. The shutoff needs to be installed directly to the gage and in a visible and accessible location. Install the gage, shut-off valve and all hose outside the cab to reduce the hazard of a high pressure oil leak, which can cause serious injury to the tractor operator.

A suggestion is to install the gage outside the tractor cab window, drill a hole through a sheet metal part of the cab, and insert the valve handle through the opening. An extension on the valve handle will probably be needed so it will reach through the cab insulation and can be easily operated.

An alternative to a manual controlled valve is an electrically operated valve that can be purchased at a hydraulic equipment supplier.

Installation

To install a gage, lower the bucket to remove all pressure from the hydraulic system. Find a threaded connection in the hydraulic supply line on the pressure side of the cylinder. Install the tee. (A special tee with a slip joint may be needed but should be available at a hydraulic equipment supplier; check what type of connection is needed before you go to the supplier.)

Be sure to use pipe joint compound on all connections to reduce leaks. Do not use Teflon tape. Connect the new hydraulic hose to the tee and the shutoff to the other end of the hydraulic hose. Be sure there is enough hose to allow loader movement. Hold the hose upright and pour oil into the hose to the top of the shutoff. This will help remove air from the line. Turn on the pressure gage.

Calibration

The gage will indicate pressure in psi but **does not** indicate weight on the bucket. This requires calibration. Probably the easiest thing to use is 50-pound bags of feed or salt blocks. Set the loader on a level spot with the bucket about 2 to 3 feet off the ground. Calibration needs to be done at the same height that will be used to weigh feed.

Start by placing a zero on the face of the gage where the needle indicates with an empty bucket. The needle will indicate a pressure and be above 0 on the gage because the weight of the empty loader is creating a pressure on the system. For weighing feed, this is 0 pounds of weight. Then add 100 to 200 pounds of weight and mark the face of the gage. It would be best to put permanent marks on the gage with paint. Make the marks as narrow as possible to give more accuracy in reading. Add more weight and mark the gage. Repeat until you get marks up to 1500 to 2000 pounds. The maximum will depend on the size of the loader and the load that will be weighed.

Weighing Feed

With a load of feed in the loader bucket, lift it to the proper height, stop, open the shutoff valve and take a reading. The weight will be indicated by the marks on the face of the gage. This method can only be used with a loader that is on relatively level ground and the bucket about 2 to 3 feet off the ground. This is how it was calibrated. Close the shutoff valve when weighing is finished to protect the gage.

> ***NOTE:***This system will give only an approximate weigh. If a big round bale is extending beyond the front edge of the loader, the weight may not be indicating properly. If you are normally weighing bales that extend out front, add an extension to the bucket and calibrate at that point.

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