6 STEPS in ADJUSTING MOLDBOARD PLOWS

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ADJUSTING A PLOW

is fairly simple, once you familiarize yourself with the adjustments provided on your plow and know how to use them. Your owner’s manual or an implement dealer can tell you where these adjustments are and how to work them.

When you are doing the job, make all the adjustments that are needed. Your plow won’t work much better if you make one without making the others.

This circular sets forth six steps by which a mounted or pull-type plow can be adjusted for maximum efficiency. To be effective, the steps must be followed in the order they are presented.

Before taking these steps, be sure that your plow is in good condition. A plow cannot be expected to respond to adjustment if it has damaged or badly worn parts. It doesn’t take much to make a plow behave like a balky mule—a worn colter bearing, a sprung frog or beam, or a damaged plowshare. Before you begin to make the adjustments then, here are a few things to check:

1. Plowshares. These have to be sharp but not unduly hooked at the points. The best way to sharpen a plowshare is simply to make its shape as nearly like that of a new share as possible. A common mistake is to give the share too much side suck or to start the down suck too close to the point. The down suck should start about $3\frac{1}{2}$ inches from the point and there should be no appreciable side suck.

Don’t expect to work too many acres with throw-away shares that are dull. Both conventional and throw-away shares should be hard-surfaced only by an expert. When done poorly, the plow can’t function properly.

2. Colters and colter bearings. Colter bearings wear rapidly and consequently need to be tightened from time to time. A worn colter or a loose colter bearing usually causes poor trash coverage or a ragged furrow wall. Proper lubrication helps to reduce wear of the colter bearings.

Since one side of a colter bearing wears faster than the other, each colter should be reversed occasionally. This helps to wear both sides evenly and to keep the colters running straight.

3. Frogs. A frog may become sprung when the plow strikes a solid object such as a rock or stump. Indications of a sprung frog are a sudden increase in draft, trouble in keeping the plow at a constant depth, or a poor fit between the top of the plowshare and the bottom edge of the moldboard.

4. Beams. A sprung beam causes the plow to act as if it had a sprung frog. When this happens, suspect a frog first, since a frog is much more likely to spring than a beam. If replacing a frog on the bottom that appears sprung doesn’t help, have your dealer check for a sprung beam.

5. Frame, hitch, and wheels. If there is looseness because of worn parts, adjustments can only be poorly made. Replace worn parts, particularly those in the hitch and wheels, and keep bolts tight.
STEP 1: Have tractor wheels properly spaced

There is a wheel spacing for each tractor that is hitched to a plow, whether mounted or pull-type, which results in a minimum side draft and the most satisfactory plowing. Since this setting varies with each model, consult your owner's manual or ask your dealer just what this setting should be for your plow.

STEP 2: Adjust colters

Improper colter adjustment affects almost all other adjustments. Colters, therefore, have to be set before the plow is put in the ground, even though slight adjustments may have to be made afterward. The best procedure is to set the colters for average conditions. Fig. 1 shows the proper adjustment of the plain rolling colter. The adjustment is the same for the notched rolling colter. Be sure to set all the colters alike.

STEP 3: Establish working depth and level the plow

In making this adjustment and those that follow, be sure the plow is running in its own furrow and not in a furrow made by another plow.

You are now ready to start plowing. Select the depth at which you want to plow and adjust accordingly. Fig. 2 shows how to measure behind each furrow to make sure the plow is running level. If the plow is running level, each of the bottoms will be plowing at the same depth. This measurement should be taken in two or three places to compensate for any irregularities in the field. Pull-type plows are usually leveled by a lever; mounted plows by a hand crank or hydraulic cylinder. Make one complete round in the field after you have the plow running level and at proper depth before proceeding with the following adjustments.

The depth of the colter should be slightly more than half the depth of plowing. For a clean furrow wall, there should be a \( \frac{3}{4} \)-inch spacing between the colter and landside. (Fig. 1)
To check whether the plow is running level, measure behind the landside of each bottom to see if they are all plowing at the same depth. (Fig. 2)

**STEP 4: Adjust vertical hitch**

Adjustment of the vertical hitch determines the amount of landside clearance, the ease with which the plow enters the ground, and the draft of the plow. On pull-type plows, the main hitch bar should extend downward from the hitch of the tractor. Fig. 3 shows the correct vertical alignment for the hitch on two-, three-, and four-bottom pull-type plows.

If the tractor hitch is too low or the hitch on the plow is too high, the plow may skid on its "nose." This will be indicated by too much clearance under the landside of the back bottom. If the hitch is too high on the tractor or too low on the plow, the plow may have difficulty getting into the ground. This also may be indicated by the tail wheel (if your plow has one) or rear landside bearing hard on the bottom of the furrow. Fig. 4 shows how you can check for proper clearance. You should be able to push only the tip of your finger under the back of the landside on the rear bottom.

Mounted plows have an adjustment for changing the pitch of the plow to give it the right amount of down suck and rear landside clearance. Mounted plows that have a tail wheel should have the same landside clearance as pull-type plows; mounted plows without a tail wheel should have just a slight amount of pressure between the end of the landside and the furrow bottom.

**STEP 5: Adjust horizontal hitch**

The front bottom of your plow should turn a furrow slice equal in width to the size of the bottoms. This is the distance measured from the shin of the front moldboard to the furrow wall from the round previously made in the field (Fig. 5). Whether the plow is mounted or
The principle of the vertical hitch adjustment is the same for any pull-type plow, regardless of how many bottoms it has. The main hitch bar should be moved up or down to coincide with the line of draft as shown above. (Fig. 3)

For proper clearance, there should be only a fingertip’s space between the rear landside and furrow bottom. If the plow has a tail wheel, use it to help get this clearance. (Fig. 4)

To check the width of cut of the front bottom, measure from the shin of the moldboard to the furrow wall from the previous round. Distance should be 14 inches for a 14-inch bottom. (Fig. 5)
pull-type, a tolerance of one-half inch either way is close enough.

On a pull-type plow, adjust the main hitch bar so that the front bottom cuts the proper amount. Typical hitches for two-, three-, and four-bottom plows are shown in Fig. 6. Try to keep the main hitch bar as nearly parallel to the furrow wall as possible, even if you have to hitch one hole off-center in the tractor drawbar.

The cross arm of the hitch should be used to make minor corrections.

Proper adjustment of the horizontal hitch on a pull-type plow, whether with two, three, four, or more bottoms, will result in the front bottom cutting the proper width of cut as shown in Fig. 5. In making this adjustment, keep the main hitch bar parallel to the line of draft as shown above. (Fig. 6)
As viewed from the rear of the plow, turning this arm to the left decreases the width of cut; turning it to the right increases the width of cut (Fig. 7). Always check the width of cut at plowing speed, as the width of land a plow bottom turns varies with plowing speed.

Mounted plows differ in the way they can be adjusted for width of cut. With some types, this adjustment can be made only by changing the rear-wheel spacing of the tractor. With other types, the entire plow can also be shifted sideways or the amount of side suck on the bottoms changed.

When the horizontal hitch is properly made, the clearance between the rear landside and furrow wall will be nearly correct. If your plow has a tail wheel, you may have to make a further adjustment so that the clearance is as shown in Fig. 8—a fingertip's width between the rear landside and the furrow wall.

If correct clearance is obtained, there is less wear on the landside and the plow pulls easier. Plows with a slip heel on the rear landside should be adjusted so that there is a slight amount of pressure on the side as well as on the bottom of the slip heel.

**STEP 6: Adjust colters for trash coverage**

With all other adjustments made, the colters that were adjusted to average conditions before may need slight readjusting now. In loose soil such as disked stalk or bean ground, you may need to move the colters as much as an inch away from the shin of the moldboard in order to leave a clean furrow wall. If you have trouble in getting the bottoms to scour, it may help to move the colters toward the front of the plow. If the ground is hard, you can make the plow pull easier by raising the colters 1 to 1 ½ inches and moving them back toward the moldboards.

Combination rolling colters and jointers plus some #9 wire in heavy trash do a very satisfactory job of coverage. The purpose of a jointer
is to skin the trash or sod layer off the top of the furrow slice and roll it under ahead of the slice. If the jointer is set too deep, it lifts the trash too high and the trash is not covered. The proper adjustment of a jointer in relation to the rolling colter is shown in Fig. 9.

Special colters are available for turning under trash. The one-piece, concave-type colter is adjusted in the same way as a rolling colter, except that it is turned to roll the trash well ahead and under the furrow slice. Another type of colter has two disks—one large and one small. The large disk should be set in the same way as a plain rolling colter, and the small disk should be set so as to act as a jointer: it should go only deep enough to skin off the sod layer and at such an angle that it rolls the trash layer.

**Trouble shooting**

As you go through these six steps, you may notice some of the following troubles. You can correct them either by rechecking adjustments or by replacing or repairing parts.

1. **Ridding of furrows.** This may be caused by the plow failing to run level, by the first bottom cutting too much, by a sprung frog or beam.

2. **Poor trash coverage.** This may be caused by loose colter bearings, dull colters, or by improper adjustment of colters and jointers.

3. **Plow pulls hard.** This may be caused by landsides bearing too hard on the furrow, by colters set too deep, by dull shares, or by a sprung frog or beam.

4. **Difficulty in scouring.** New plows have a varnish on the moldboards, shares, and colters to protect them from rust. This varnish has to be removed before plowing is started. To do this, varnish or paint remover is recommended. Scouring is easier with an old plow, if plowing can be started in a dry or sandy field and at a shallower depth and faster rate than normal. But don’t expect any plow to scour in wet or sticky soil. If you have wet or sticky soil, investigate the use of slatted moldboards—they scour easier.

5. **Crumbling of the furrow wall.** When this happens, the colters and bottoms are probably not scouring. If they are, move the colters either down or away from the moldboard until the crumbling stops.