

POSITION CONTROL DEVICE FOR A FERGUSON 20 OR 30: how to fabricate one

By Jeff Miller

Position control on the Ferguson System became standard on the Ferguson TO-35 and later models with the "Quadramatic Control." TO-30 and earlier models do not have built in position control. Harry Ferguson initially viewed tractors as tillage machines in which draft control is ideal. However, draft control does not work with non-ground engaging implements where the top link is in tension. Cranes, blades, mowers, and carry-boxes are a few of the many implements where controlling the height from the ground, or position is desirable.

Using non-ground engaging implements on early Ferguson tractors can be frustrating as there is no true neutral position on the quadrant control. You can often get it close but invariably the pump pressure is a little high or low compared to the implement weight. This means the lift arms may drift up or down over time. Position control works by making a "feed-back" loop to the quadrant control lever. The proximity of the right lift arm and the quadrant control lever offers an ideal place to create this "feed-back" loop.

How Position Control works:

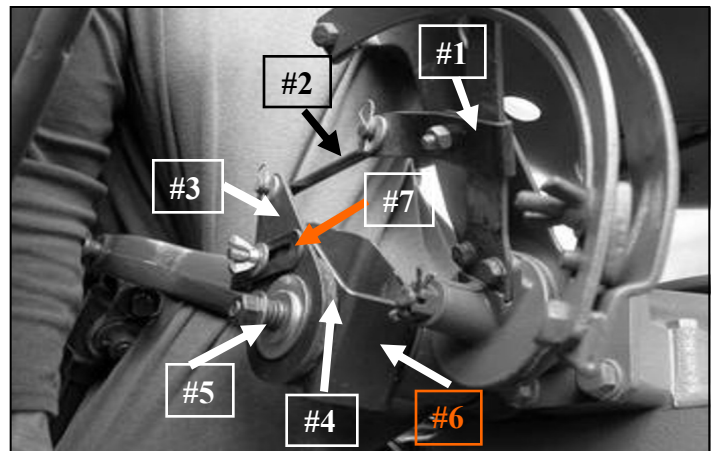
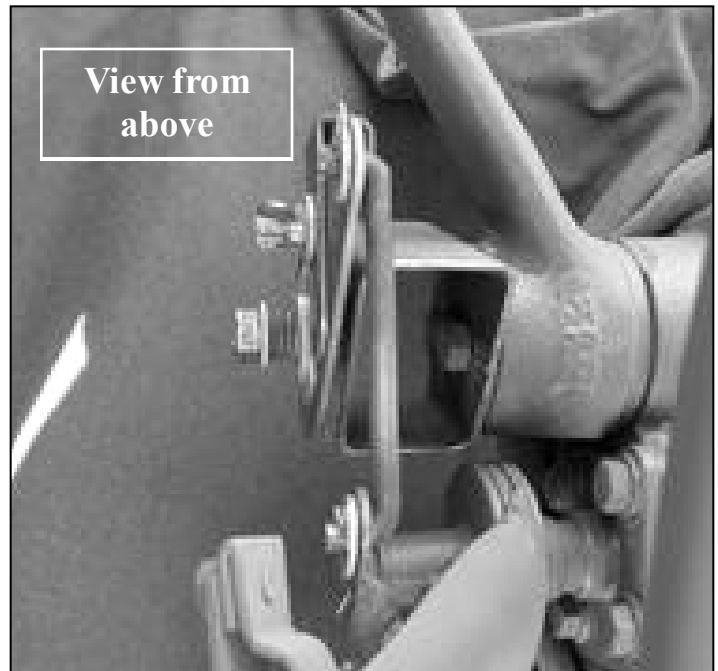
To raise an implement, the quadrant control lever is pulled counter-clockwise (CCW) looking from the tractor's right side. The lift arms rotate in a clockwise (CW) direction raising the implement. To lower an implement you push the quadrant control lever forward in a CW rotation. The lift arms then rotate in a CCW direction, lowering the implement. By hard-linking the quadrant control lever and the lift arm together we can take advantage of the opposite directional rotation of these two parts to create position control.

When the lift arm and the quadrant control lever are hard-linked together, the following results: if the lift arms drift up (CW rotation) the quadrant control lever is pushed forward commanding the lift to lower; likewise, if the lift drifts down (CCW rotation) the quadrant control lever is pulled back commanding the lift to rise. Thus, position control is achieved as the lift is automatically commanded to return to its originally set position.

There are several after-market devices available that provide position control. However, it is quite easy to make your own position control with little time or cost. The position control design presented here has been posted on the Internet in recent years and works as described above.

This position control is made from a short piece of box-channel, steel bar and stock sheet metal. Each piece can be cut with a hacksaw and bent as needed in a vice. There are seven main pieces:

- 1) A U-shaped quadrant control lever clip that slips over the quadrant control lever and is held fast by a single bolt. There is a slight twist made in the free end to align the clip with the rest of the position control.
- 2) A tie rod made from 5/16" bar stock that is bent at a right angle on both ends with a small hole drilled



through each end to receive a retaining clip. This connects the lift to the quadrant control.

- 3) A teardrop-shaped cam that allows mounted implements to be set a varying heights above the ground.
- 4) A cork friction disk made from 1/8" cork gasket material and cut to a 3" diameter. The friction disk is glued to the offset box.
- 5) A compression spring and bolt used to adjust the force required to move the cam relative to the offset box. The correct adjustment allows the operator to move the cam with the control lever, but the cam does not move if the lift arm drifts from the preset position.
- 6) An offset box that provides clearance to insert the two lift arm retaining bolts.
- 7) An optional position stop that facilitates a return to a preset position.

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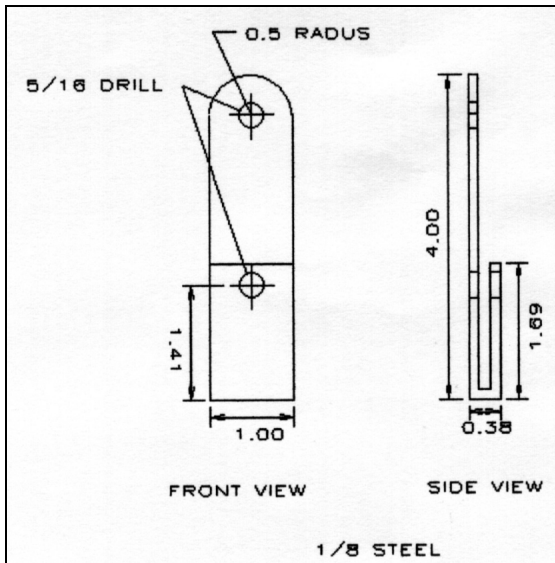
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There is nothing sacred about the dimensions shown on the next page. If you have a different thickness sheet metal available use it, although anything below .063" may be too thin. If you cannot bend the tie rod, substitute two strips of sheet metal 1" wide x 4½" long and use 5/16"

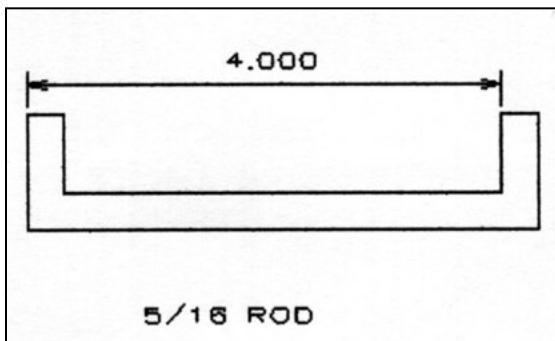
bolts to sandwich them around the cam and lever clip. When the position control is not needed simply disconnect the tie rod. I hope you decide to make one of these position control devices. If you have questions, please feel to e-mail me at <TE20Ferguson@aol.com>.

Jeff Miller is a lead design engineer with General Electric Aviation and has played a leadership role in FENA.

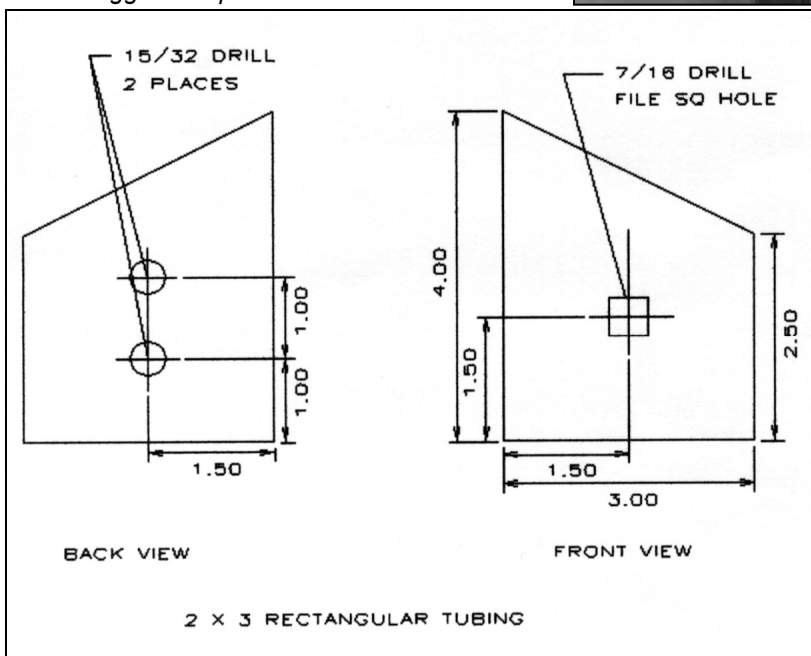
Phill Christiansen published the basic design in the Autumn 2003 N-Newsletter, Published by N-News, LLC, Corinth, VT.



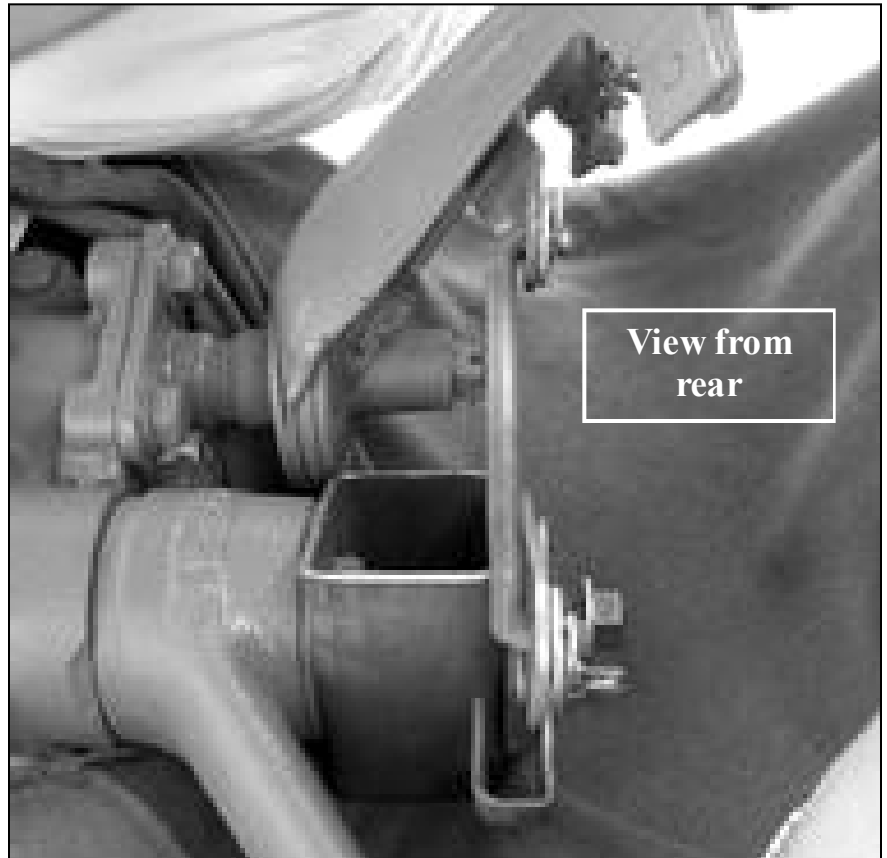
Suggested specifications for part #1.



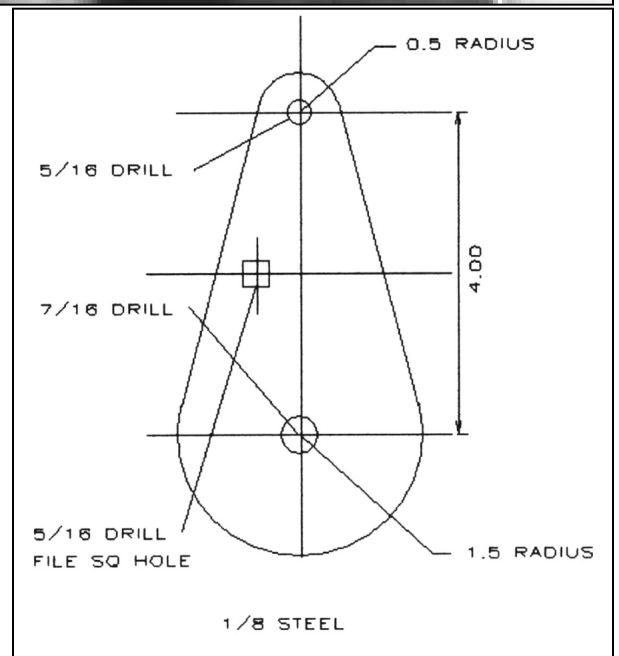
Suggested specifications for Part #2.



Suggested specifications for Part #3.



View from rear



Suggested specifications for Part #6.