



ASSISTED STEERING ADJUSTMENT INSTRUCTIONS

Whiteman ride-on trowel steering has always been designed to be adjustable for operator comfort and control. The patented Assisted Steering is no different. It is fully adjustable in many ways. Like all Whiteman ride-on trowels, it can be adjusted for quick response with very little movement, or slower response with very low effort. However, it can also be adjusted to help the operator steer the unit. Following are step-by-step instructions on how to adjust the steering to suit the operator.

The instructions are divided into two sections. The first section will describe how to adjust the steering for either quicker response or less effort. The second section will describe how to completely reset the steering as if the unit were being assembled from scratch.

First, some basics need to be discussed. Mechanical steering is based on a series of levers. As with any lever system, the closer the fulcrum is to the load, the easier it is to lift the load, but the penalty for easy lifting is that the load isn't lifted as high. Therefore, due to the physics involved in mechanical steering, the easier the steering, the slower the response and vice versa. Another way to say this is that when the steering is adjusted for maximum response, it will require more force to move the handles. When the steering is adjusted for minimum force at the handles, the response will be slower. (Simple physics)

Therefore, the level of response and comfort required by the operator must be determined prior to adjusting the steering. These instructions are primarily written toward minimal steering effort, which is generally how most operators want it. However, at the appropriate places in these instructions, it will be noted how to adjust for quicker response.

As with all maintenance operations, any worn or damaged components should be replaced prior to final adjustments.

ADJUSTMENT FOR OPERATOR PREFERENCE ONLY

This section should be used to adjust the steering effort and/or responsiveness only. To adjust the spring cylinders follow the instructions in the next section.

This adjustment requires two people – one to hold the handles, and another to adjust the rod ends.

First determine the desired steering adjustment. Would the operator like to reduce the amount of force required? If so, move the rod end set to the next easier setting. Would the operator like quicker response? If so, move the rod end set to the next higher responsive setting. Fig. 1

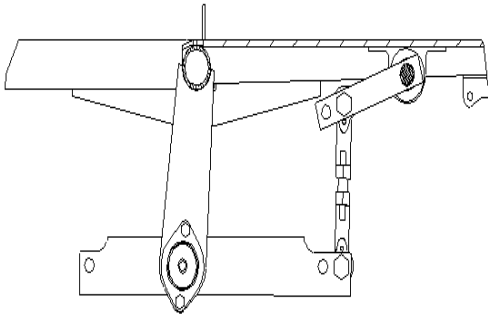


Fig. 1a
Easiest Steering
(slowest response)

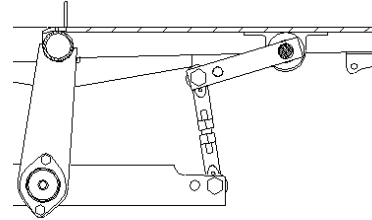


Fig. 1b
Medium Steering

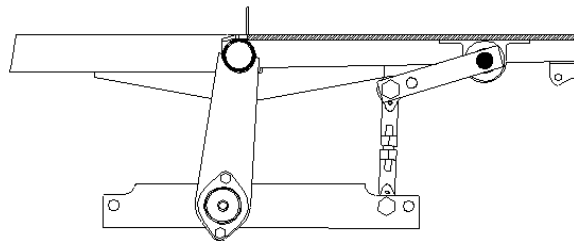
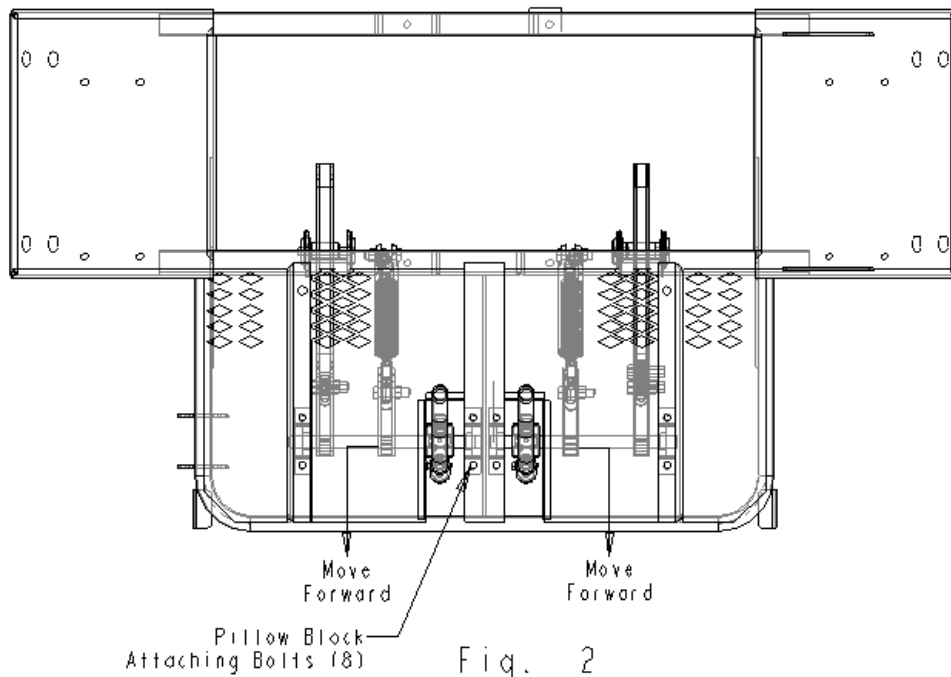


Fig. 1c
Quickest Response
(highest effort)

Carefully and slowly move the handle to the neutral position. The neutral position will be indicated by the fact that the bolts will easily slide out of the rod ends. Hold the handle in this position. **Caution: the handles are spring loaded and will “snap” forward or rearward with no warning.** *Tip: It may be advantageous to take a measurement from the seat plate to the top of the handle so that its neutral position can be reset if it accidentally moves out of position.* Remove the bolts and washers from the vertical rod end set. Move the rod end set to the appropriate position (most operators prefer the furthest forward holes for easiest steering. Fig. 1 and insert one of the washers and attaching bolts into the upper lever. Adjust the center distance between the rod ends so that the lower rod end aligns to the appropriate bolt hole in the lower lever. Insert the other washer and bolt into the rod end set and tighten both bolts and the jam nuts. Perform this step to the other handle.

This section should be used whenever any spring cylinder components are replaced. It should also be used from time to time as the steering components wear (every 1000 hours or so), or when the other adjustments do not satisfy the operator(s).

Loosen the bolts that hold the pillow block bearings in place and slide the steering shafts forward as far as possible. Fig. 2 Tighten the bolts.



Lock the handles in the neutral position, or have someone hold them in the neutral position. Remove the two rod end sets that connect the steering shafts to the steering levers below. Note the location of the flat washers. **CAUTION: the handles are spring loaded and will “snap” forward or rearward with no warning.** Carefully allow the handles to move as far forward as possible. Remove the bolt from the rear of the spring cylinder, and allow the cylinder to drop away from the rod end connected to the frame. Remove the remaining bolt and washer at the front of the cylinder and remove the cylinder.

Move the rod end sets that connect the steering shafts to the steering levers, into the desired holes, and install the washers and bolts (most operators prefer the furthest forward holes for easiest steering). Fig. 1 With the machine sitting flat, loosen one jam nut on each set of rod ends and adjust the distance between the rod ends so that the handles angle slightly toward the rear (about one inch at the top). Fig. 3 Adjust both handles to the same position. Do not tighten the bolts at this time.

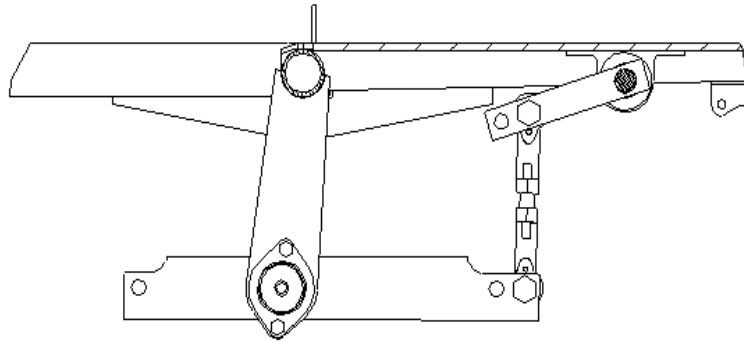


Fig. 1a
Easiest Steering
(slowest response)

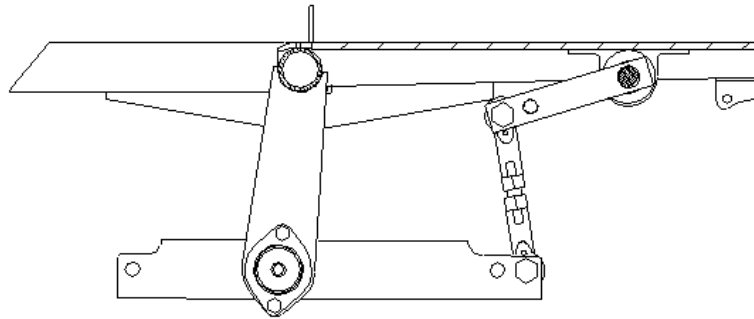


Fig. 1b
Medium Steering

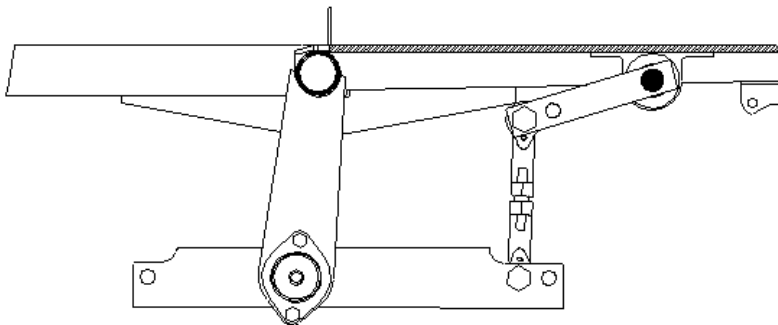


Fig. 1c
Quickest Response
(highest effort)

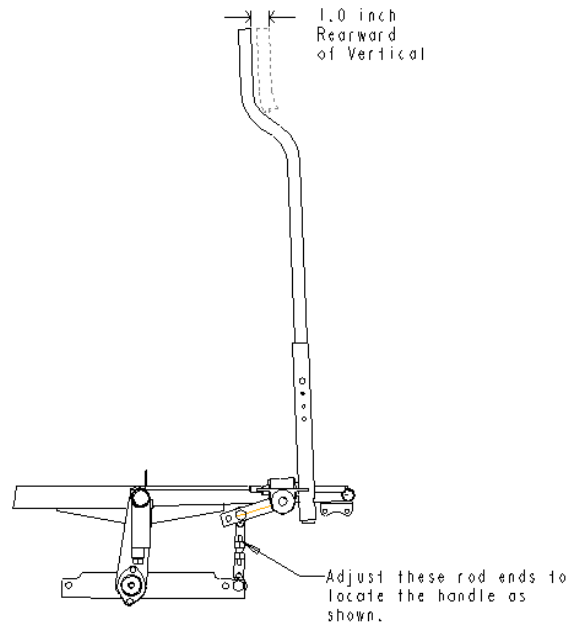


Fig. 3

With the machine remaining flat, adjust the rod end that hangs down from the frame boss so that it is directly in line with the center axis of the lever on the steering shaft to which the spring cylinder connects. Fig. 4 A tool can be procured to aid in this adjustment. It is Whiteman p/n 20147. To use the tool, attach it to the steering shaft lever using two of the bolts that retained the spring cylinder. Fig. 5 it's not necessary to use the nuts, just insert the bolts through the holes and let the tool hang from them. Then adjust the rod end on the frame so that its hole lines up with the slot in the tool. In some instances the amount of adjustment may not be adequate to exactly align the rod end with the center axis. In these cases adjust the rod end as close to the ideal position as possible. **CAUTION: Always maintain at least 5 full threads of engagement of the rod end into the boss on the frame.** *Tip: It is better to adjust the rod end to hang too low than too high, as this will provide more aid for the operator while steering forward.* Perform this step to the other handle.

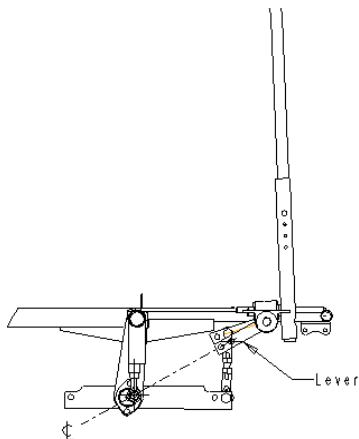


Fig. 4
Align Rod End Hole
With Centerline of Lever
(see Fig. 5 for use of tool)

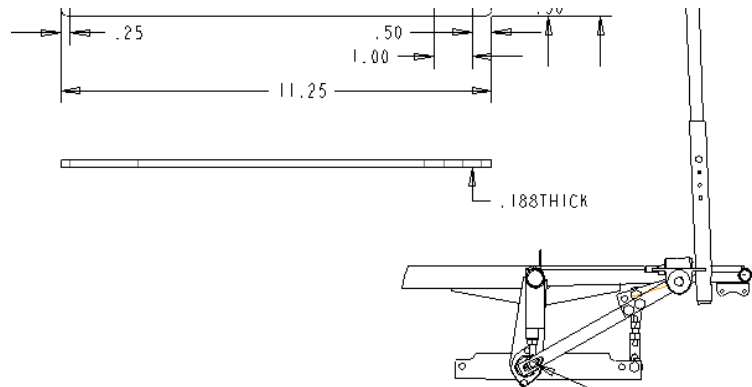


Fig. 5
Adjust the rod end up or down to align the hole in the rod end with the slot in the tool

With the spring cylinder still out of the machine, loosen the jam nut next to the rod end on the spring cylinder assembly. **Do not loosen the nut that compresses the spring.** Loosen the rod end one or two turns. If the rod end is frozen on the screw it must be dislodged so it can be adjusted. If necessary remove the spring and bolt from the cylinder housing by removing the snap ring and pulling the spring and bolt out. It will not be necessary to separate the spring from the bolt. Then use the head of the bolt to unscrew it from the rod end. Apply water resistant grease to the spring and reassemble the spring cylinder. Reinstall the cylinder assembly, washer, and bolt into the upper steering shaft only. Leave the cylinder hanging from the steering shaft. Perform this step to the other handle.

Remove one of the bolts that retain the rod ends adjusted in step 3 so that the handle is free to move. Pull the handle as far forward as possible. Fig. 6 with the handle held in this position, adjusts the length of the spring cylinder assembly so that it is as long as possible. To adjust the length, loosen the jam nut that jams against the forward rod end. Then spin the cylinder to back it out of the rod end. The cylinder should be as long as possible so that the rear bolt will just barely be able to go through the cylinder and rod end. Once the adjustment is complete retighten the jam nut, rear retaining bolt and nut. Perform this step to the other handle

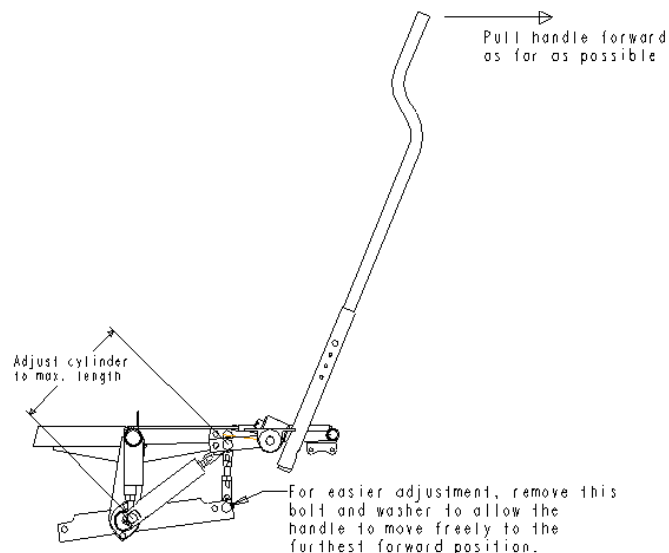


Fig. 6

Carefully move the handle to the neutral position. **CAUTION: The handles are spring loaded and will “snap” forward or rearward with no warning.** Hold the handle in the neutral position – this may require another person. Move the handle slightly, as required, to replace the rod ends, washers, and bolts that connect the steering shaft to the lower lever. Tighten all fasteners. Perform this step to the other handle.