

Surface Grinder Idler Arm

Date	@December 5, 2023
Date Created	@December 5, 2023 7:42 PM
Status	Doing

Surface Grinder Idler Arm Assembly Plans by Salem Straub

This assembly is for converting a surface grinding machine from using precision stone wheels to abrasive belts. These plans reference photos are for a specific machine. However they give a solid enough design that can be easily modified to fit a variety of machines.

Buy/Make List

- Tracking Wheel (6" crowned aluminum tracking wheel)
- Pipe Appropriate for Mounting (To spindle housing)
- Tension Spring (Strong spring approx. 4 1/2" long)
- 1/2" Threaded Shaft (For the tracking wheel)
- 3/8" Threaded Rod with Handle (For tracking adjustment)
- Nuts, Bolts, Washers for Spindle Mount (1/2"x2")
- Nut, Bolt, Washer for Tracking Mechanism Pivot (1/2"x2-1/2")
- Nut for Tracking Adjustment Locking (3/8")

Cut List

- 12"x2"x1/4" (2) Idler Arm Receiver
- 12"x1-1/2"x1/4" (2) Idler Arm Receiver
- 2"x1"x1/4" (2) Clamp Ears
- 3"x2"x1/4" (2) Tracking Mechanism Ears

- 4"X1-1/2"X1/2" Tracking Mechanism Plate
- 1-1/2"X1-1/2"X1/4" Idler Arm End Cap
- 1-1/2" Square Tubing ~30" (Will be trimmed to fit based on tensioning needs)

Reference Photos

Idler Arm Receiver. A box fabricated from bar stock to fit the inner square tube just right. Paper shims are used to ensure the arm fits well but still has enough room to slide freely.



Surface Grinder Idler Arm

The welds on the receiver do not need to be large (about 1" is enough) as it is a guide component and warpage would be detrimental to the fitment. Remove the arm while still hot and lightly grind on the sides if need be until it slides freely.



Surface Grinder Idler Arm



Surface Grinder Idler Arm

The assembly should be placed so that the contact wheel is in line with the idler wheel. In this case there is a round spindle housing right behind the contact wheel. Measure the outside diameter of the housing to make sure you get the appropriate sized pipe. In this situation some robust tabs should be added to clamp to said housing. Taking 1/2" out of the pipe allows it to clamp nicely.



Surface Grinder Idler Arm





The receiver is then attached to the mounting ring. These welds need to be strong. The receiver is placed offset to be nearly flush with the face side of the clamp nearest to the operator. This will help get the idler more in line with the contact wheel.





Surface Grinder Idler Arm



Surface Grinder Idler Arm



Top of idler arm tracking assembly. Match drill for pivot bolt, drill pivot hole in arm top, bolt ears to frame with paper shim on one side. Ears are chamfered for weld on top as shown.





Pivot assembly detail. 1/2" threaded shaft plug welded in one end, 3/8" threaded hole in other end for adjustment screw. Pivot ears welded to tracking plate. Remove the paper shim for a nice fit.





Spring should be strong to maintain proper tension. Approx. 4-1/2" long.



Mock assembly for determining appropriate length of the idler arm. Use a belt to help determine the correct length.





Once the idler arm is trimmed to length weld cap to end to push on the spring. Spring can also be shortened if need be. Another option is to add shims inside of the receiver arm to adjust tension.



Enjoy!