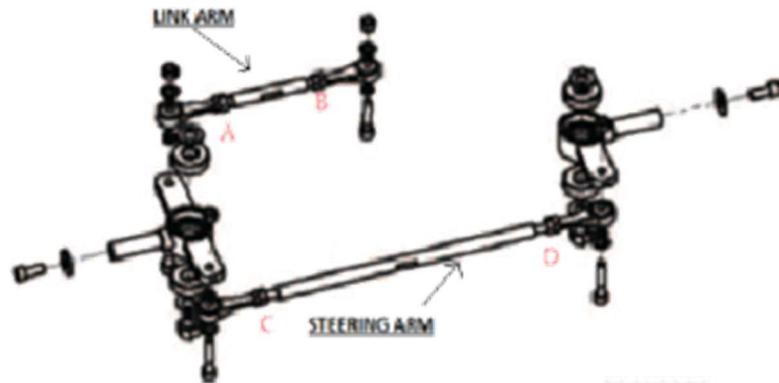


# Dealer Service Bulletin # DSB124

## Steering, Tiller & Wheel Alignments (Improved Turning Circle)

### Applicable Models

- Avenger



**IMPORTANT:** Ensure that the Locknut for each Tie Rod Ball joint aka “ Tie Rod end “ is tightened securely , and double checked, before releasing scooter for operation. Note also that the each arm has 2 Tie Rod ball joints, one having a normal right hand thread, and the other having a left hand thread.

Before the turning circle is adjusted, please ensure the wheel alignment is correct. This is done by ensuring that both front wheels are aligned with the rear wheels when the steering is straight. Both front wheels should be facing forward and not have one of them pointing inwards or outwards (out of alignment). If you find that they are not perfectly straight, then you need to adjust by loosening the locknuts on the steering arm in (Fig 2, C & D) remembering one is left hand thread and the other is right had thread. Once loosened then rotate the steering arm with your hand until you get both front wheels straight and then retighten the locknuts.

Now for the turning circle adjustment. Firstly, loosen the 2x locknuts (Fig 2, A & B) remembering you have one left hand and one right hand thread. Once loosened turn the link arm by hand (this may only require 1-2 rotations of the link arm) until you have the desired (increased) turning angle, which means the front wheels will now be pointing further outward when the steering is turning to full lock on both LHS and RHS. When you are happy with the angle retighten the locknuts.

You will now notice that when the front wheels are straight and aligned with the rear wheels that the tiller delta handle is no longer straight when you are sitting on the scooter.

To re-centre this you must unscrew and lift the dashboard, you will then see the delta handle adjusting mechanism and the wedge bolt (shown in Fig 3 and Fig 4). Then unlock to delta handle with by releasing the red lever over the right-hand side, this will allow you to move the delta handle up and down.

Fig 2



### Tiller Steer Centering

The Tiller steering centre is adjusted by loosening the Tiller Stem Wedge-bolt, allowing the Tiller Delta Handle and upper Dashboard assembly to turn independently of the steering shaft., then rotating the upper assembly until parallel with the travel direction of the front wheels. The Stem Wedge-Bolt is then tightened. The Tiller Stem wedge bolt assembly is located inside the Upper Tiller area, approximately level with the Upper Boot, see Fig 4 & 5. Please note that the Wedge-Bolt is extremely tight and great force is required to loosen. Take precautions not to round or strip the bolt head, and not to injure your hand when the bolt releases. The Wedge-Bolt must be returned to equally tight when alignment is complete.

Access to the Wedge Bolt is gained by extending or detaching the Delta Handle Angle adjust mechanism, Pictured in Fig 3. The mechanism consists of a Toothed Rack and Upper Barrel (A) and a Locking Barrel (B). Tiller Delta angle is adjusted by the action of the rack sliding in (Down) and out (U) of the locking barrel where it is held in place by a pin, that is actuated by the Red adjustment lever on the RHS of the Tiller Column. As shown in Fig 4, the Wedge-Bolt is beneath the Tooth Rack. If using 3/8" and 1/2" drive socket's, the Rack will need to be completely withdrawn from the locking barrel.

As complete withdrawal of the Rack is required, the end stop screw on the bottom face of the toothed Rack (below the Locking Barrel ( B ) ) must be removed ( Circled in Fig 3 ). The End Stop screw threads into the bottom face of the toothed rack. Access to the end stop screw is gained by lifting the upper Tiller Boot and taking care not to drop the screw into the Tiller Body when removed with an Allen key (See Fig 5 )

Fig 3 (Delta Handle Angle adjust mechanism, Partially Raised )

Fig 4

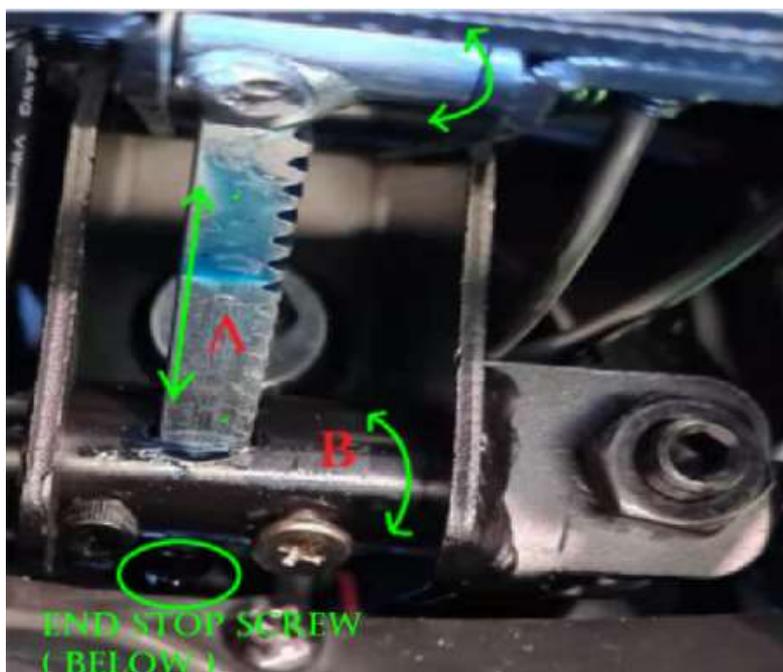


Fig 5



Tiller Steering Centering summary

- a. Remove the Tiller top cover including PCB as a complete dashboard unit
- b. Release the red handle to Lower the Delta handle to it's lowest position
- c. Remove the End Stop Screw, (taking care not to drop) we recommend a ball end Allen key
- d. Release the Red Delta handle Adjust lever
- e. Raise the Delta Handle to it's highest elevation
- f. Moving the Delta Handle Upwards until the Rack pops out of the lock barrel & push aside
- g. Loosen the Wedge Bolt Head using a Socket and Uni joint
- h. Rotate the Tiller Upper assembly inline with direction of travel
- i. Very Firmly Tighten the Wedge Bolt
- j. Lower the Delta handle, Guiding the Rack into it's slot, Turning the Lock barrel to align the slot's top and bottom holes, to the Rack.
- k. Push the Rack all the way through y pushing down on the Delta Handle (This will require manipulation of the Lock Barrel by turning it, plus jiggling the rack to keep it aligned, or it will jam and not pass into the slot) and re-install the End Stop Screw. Take care not to drop the screw.
- l. Re-install the Dashboard assembly