

MPA 22.1	Setting Slack Adjusters
Revision Number	20-1
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Procedure for setting slack adjusters

AT ALL TIMES STANDARD SAFETY EQUIPMENT SHOULD BE WORN ON THE MANUFACTURING FLOOR- SAFETY SHOES, GLOVES, EAR PROTECTION AND EYE PROTECTION.

The procedures and guidelines set out in the health and safety manual should be followed at all times.

A slack adjuster connects the brake chamber to the axle camshaft.

There are two main types:

- 1. Manual slack adjusters**
- 2. Automatic slack adjuster**

The gap between brake linings and brake drum needs to be maintained at a constant distance. Manual slacks need to be manually adjusted as the brake lining wears down to ensure sufficient braking force. If this gap becomes too big, brake reaction time and stopping distance are extended. Automatic slacks maintain a constant gap between brake lining and brake drum.

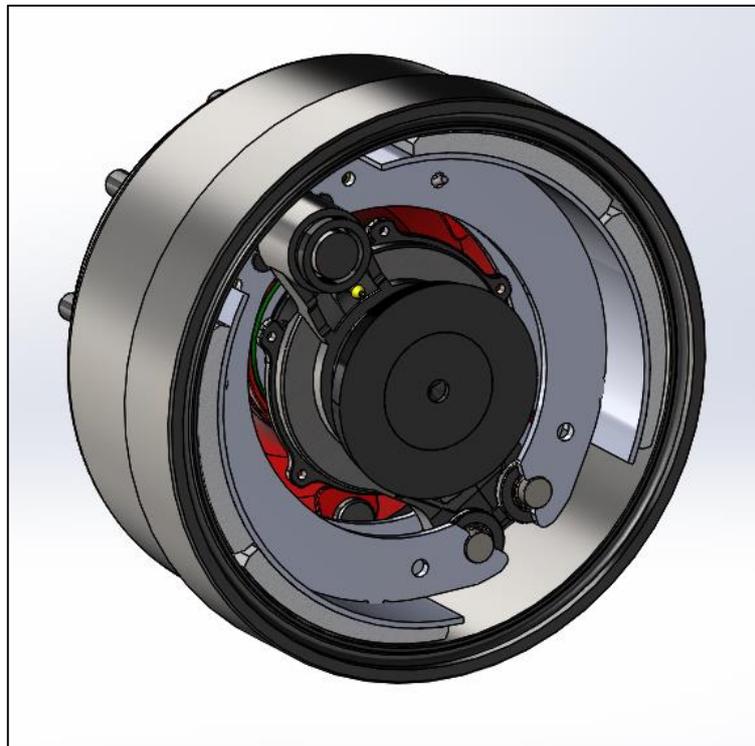


Figure 1. Distance between brake lining and brake drum shown above

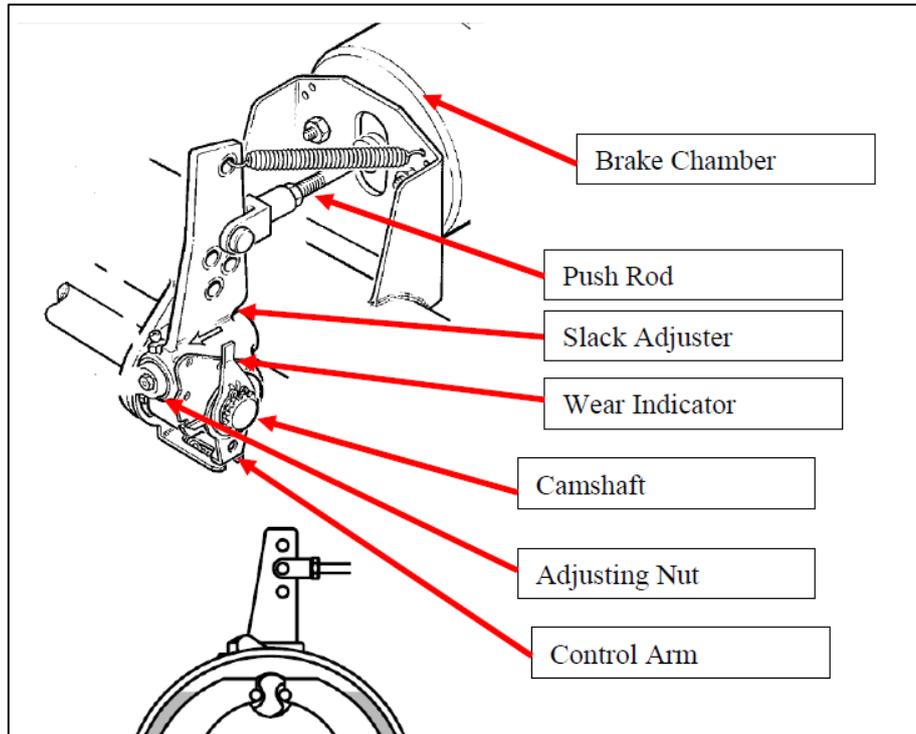


Figure 2. Description of brake and slack adjuster components

Types of slack adjusters

1. Manual Slack Adjuster

Can be fitted to both fixed and steer axles. No control arm required.



Figure 3. Manual slack adjuster shown fitted to axle.

2. Automatic Slack Adjusters

Can be fitted to both fixed and steer axles. Control arm required.

I. Fixed Axle – automatic slack adjuster

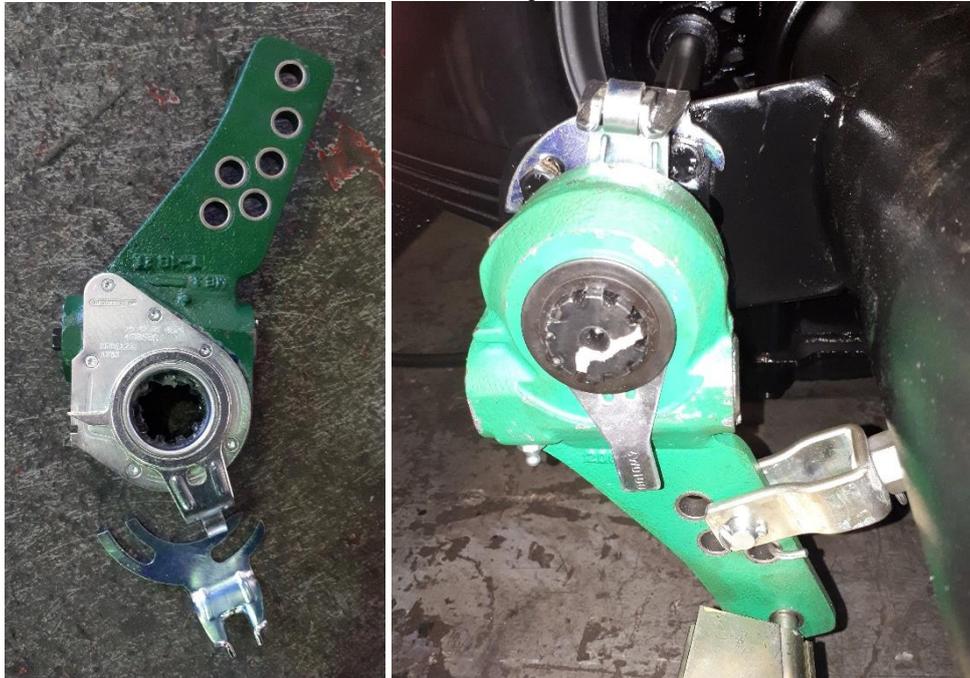


Figure 4. Straight automatic slack adjuster shown fitted to axle with control arm in place.

II. Steer Axle – automatic slack adjuster

Two types are available:

- i. Straight
- ii. Offset



Figure 5. Straight automatic slack adjuster shown fitted to axle with “L” control arm.



Figure 6. Offset automatic slack adjuster shown fitted to axle with “L” control arm.

Offset automatic slack adjusters operate the same as straight autoslacks. Using an offset autoslack offers extra clearance when fitting large flotation tyres.

The control arm is vitally important for automatic slack adjusters. Without the control arm receiver (“L” shaped bracket or slotted slider) the automatic slack will not operate effectively. **The automatic slack adjuster does not operate like a manual slack without the control arm receiver.**

Ensure the automatic slack adjuster is firing in the direction indicated by the arrow on the casting. The adjusting nut should always be facing outwards as well for ease of access.

Lever length options

All slack adjusters come with a range of lever lengths. The larger the lever length; the larger the braking force. Shown below are the lever length options on the slack adjusters Granning Axles stock:

1. Manual Slack Adjuster:

Lever lengths: 127mm, 152mm, 178mm, 203mm.

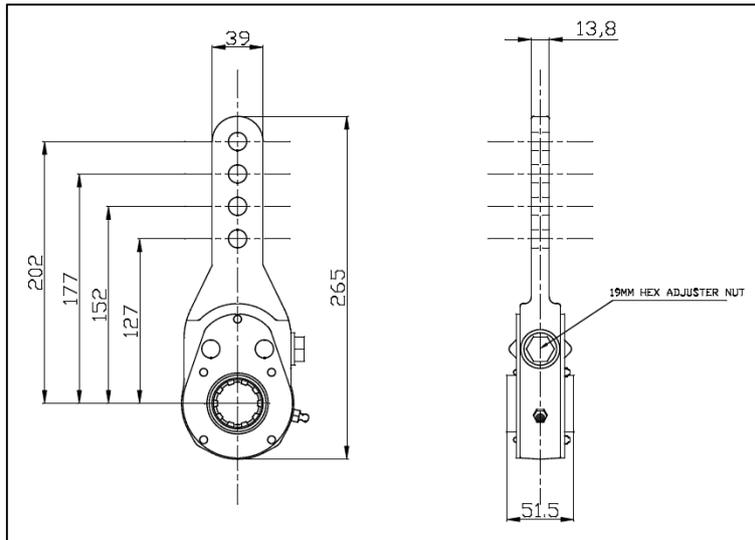


Figure 7. Granning manual slack lever length options

2. Automatic Slack Adjuster – Fixed Axle:

Lever lengths: 115mm, 127mm, 140mm, 152mm, 178mm, 205mm.

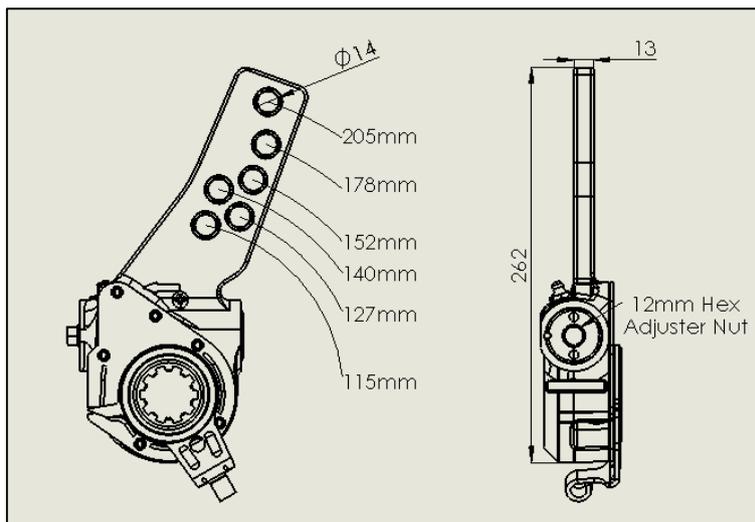


Figure 8. Automatic slack adjuster lever length options.

NOTE: 203mm and 205mm lever length options are typically left available for fitting a “coathanger” for a mechanical handbrake and/or the return spring.

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3. Automatic Slack Adjuster – Steer Axle:
Straight slack lever lengths: 127mm, 152mm, 178mm, 205mm.

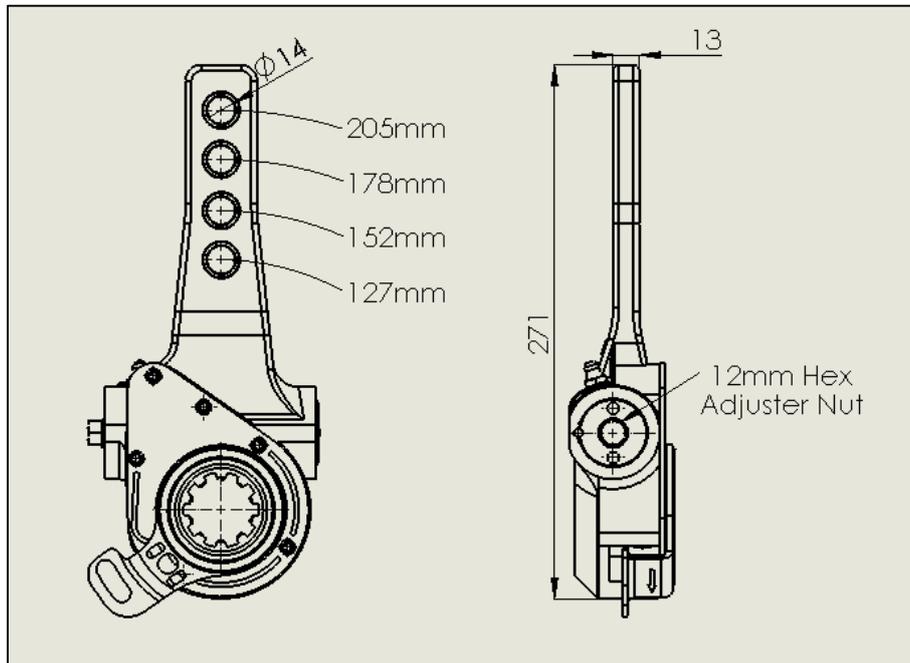


Figure 9. Straight Automatic slack adjuster lever length options.

Offset slack lever lengths: 152mm, 178mm, 205mm.

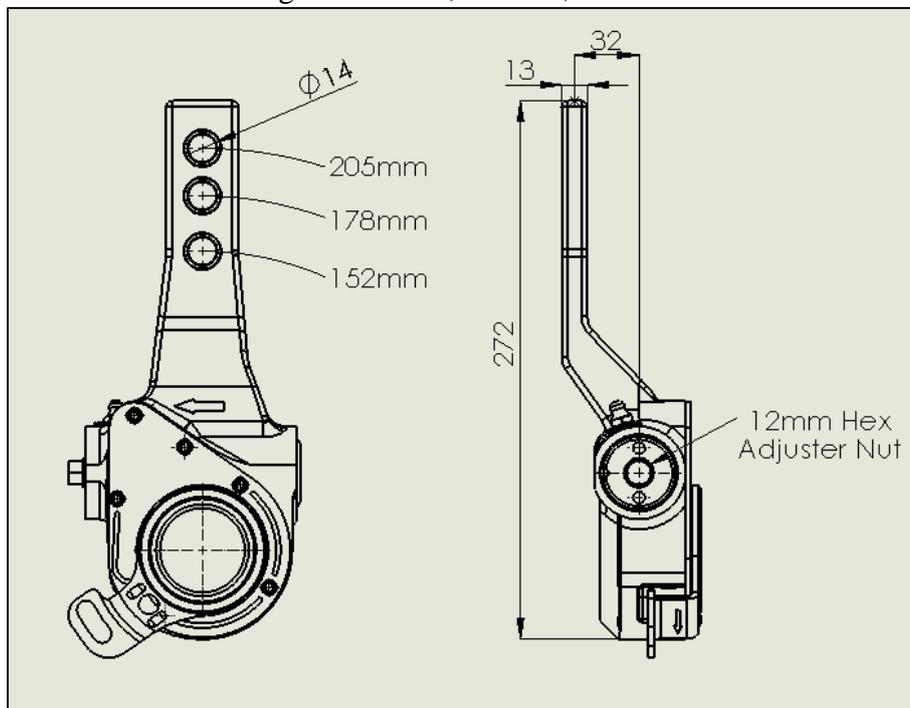


Figure 10. Offset Automatic slack adjuster lever length options.

Mounting a Manual Slack Adjuster

1. The axle should be bare; no slack adjuster or brake chamber mounted.

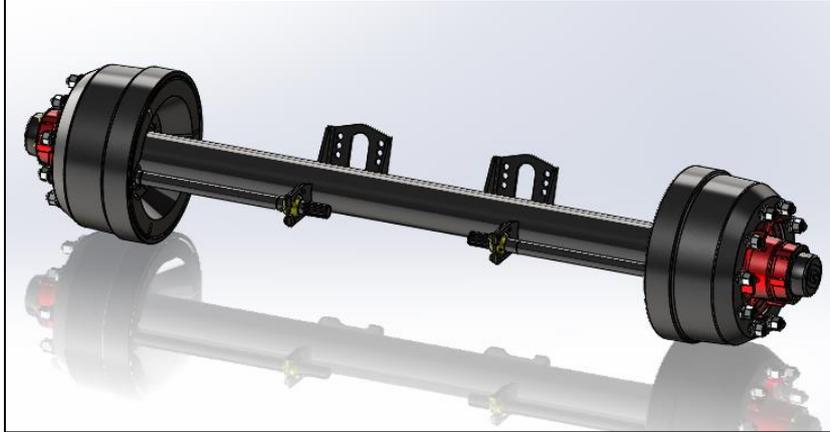


Figure 11. 420 x 180 brake axle shown with no chambers of slack adjuster mounted.

2. Obtain the brake chamber you intend to fit. Refer to MPS3 for instructions on brake chamber push rod cut length and correct hole mounting in the air chamber brake (ACB).
3. Mount the brake chamber and tighten the mounting nuts.
210Nm when fitting brake chambers supplied by Granning.
 - I. If fitting service (T20, T24 etc.) or combination brake chambers (AIR/HYD; T20/25mm, T20/30mm etc.) there is no need to supply air to the brake chamber during slack adjuster mounting.
 - II. If fitting Parking Brake chambers (T24/30, T30/30 etc.), air needs to be supplied to the parking brake element to ensure the piston is in its fully released position.

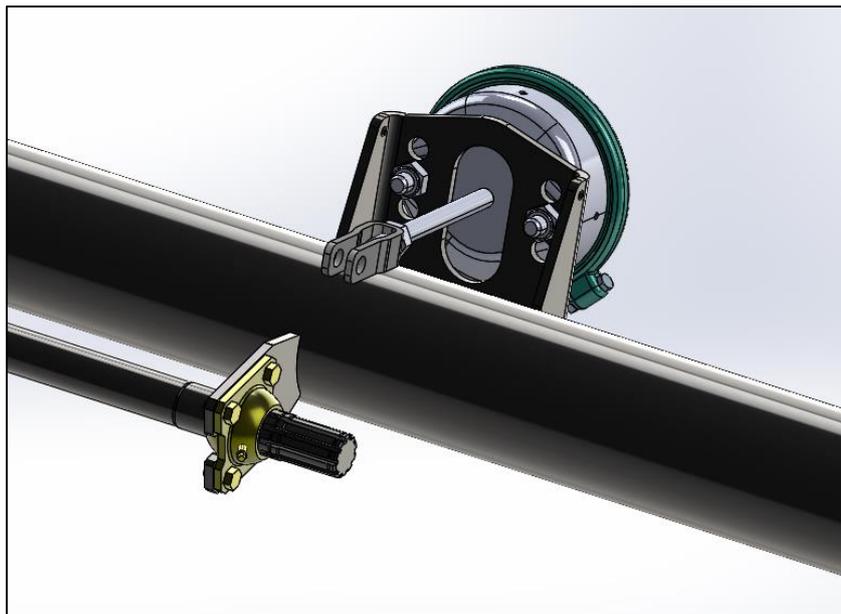


Figure 12. Brake chamber mounted in correct hole as per MPS3 and push rod cut to correct length with clevis head tightened.

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4. Clean the splines of the camshaft. Remove any paint or dirt. Use a wire brush or rag to do so.
5. Lightly grease the camshaft splines and fit the manual slack by hand. Do not use a hammer to fit the manual slack adjuster.
6. Fit the camshaft circlip and washer.

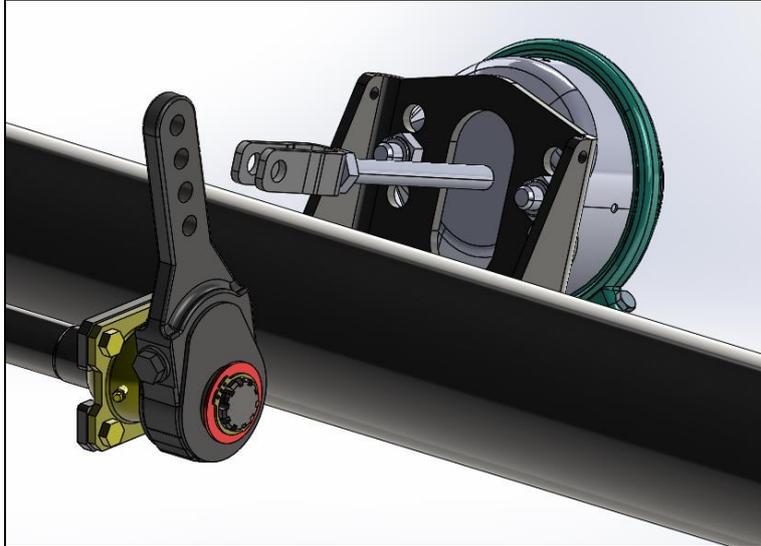


Figure 13. Manual slack, camshaft washer, and circlip fitted.

7. Use a 19mm spanner and turn the adjusting nut on the slack adjuster to wind the slack into the clevis head until the holes line up. The pushrod can be moved up or pushed down 3° in order for the clevis head and slack adjuster holes to line up.
8. Lightly grease and insert the clevis head pin. The split pin should be on the axle centre side. The pin should rotate freely by hand. Fit the split pin.



Figure 14. Clevis head pin and split washer fitted.

9. The brakes can now be set. Use a 19mm spanner and turn the adjusting nut clockwise on the slack until the brake drum no longer rotates. Do not use an airgun for this.
10. To back off the slack adjuster and release the brakes, turn the adjusting nut $\frac{1}{2}$ turn anti-clockwise. Check that the drum rotates freely.
11. Fit the return spring between top hole of slack adjuster and $\text{\O}8\text{mm}$ hole on the air chamber bracket (ACB). The return spring aids in releasing the brakes.



Figure 15. Return spring fitted.

12. Supply air to the brake chamber to test the brakes. The push rod should travelling roughly 25mm (1").

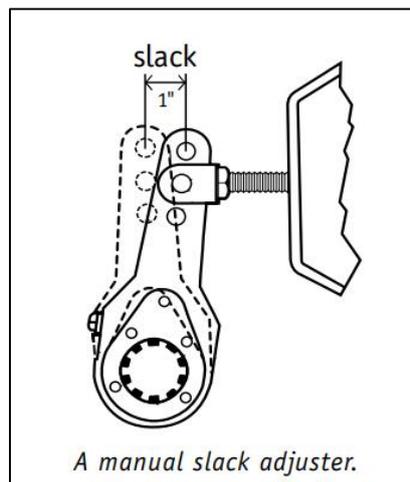


Figure 16. Max travel of a manual slack adjuster.

NOTE: If the brake chamber is travelling more than $\frac{2}{3}$ of its max stroke ($\sim 80\text{mm}$ = max stroke), the slack adjuster needs to be adjusted. Repeat steps 9 – 11 as outlined above.

Mounting an Automatic Slack Adjuster – Fixed Axle

Click the link below to see an example of an automatic slack being fitted to a fixed axle or follow the steps as outlined below.

<https://www.youtube.com/watch?v=iiAVqy-EVVI>

1. Follow steps 1-4 as outlined above for manual slack fitting.
2. Loosen and remove the two bolts fixing the spherical bearing to the cam support bracket.

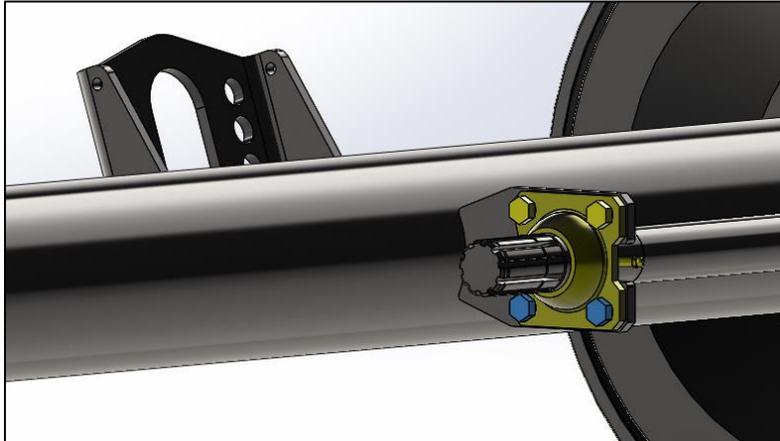


Figure 17: Bolts to be loosened.

3. Fit the slotted control arm and refit the bolts. Do not tighten the bolts yet.

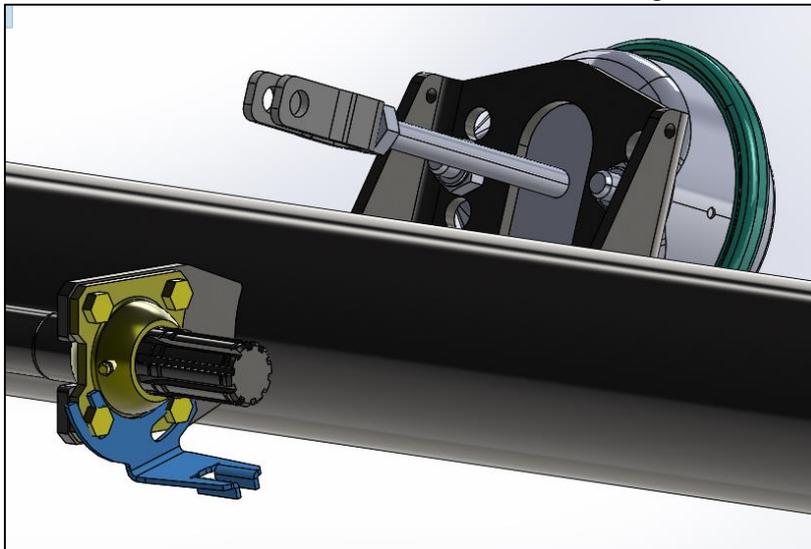


Figure 18: Slotted control arm receiver loosely fitted.

4. Lightly grease the camshaft splines.
5. Obtain the straight automatic slack and fit it to the camshaft. The slotted control arm should allow the automatic slack receiver fit.

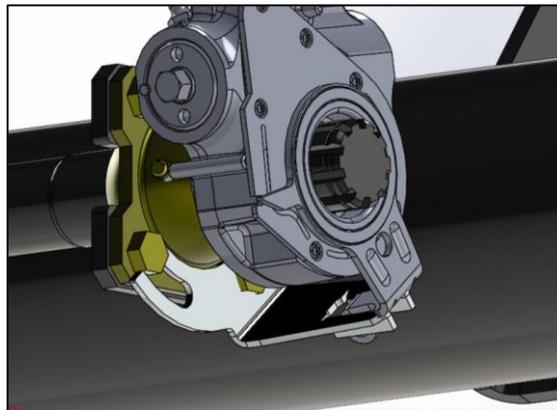
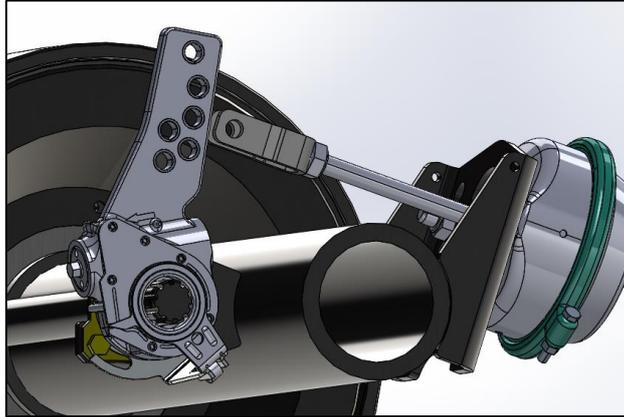


Figure 19: Automatic slack adjuster and slotted control arm loosely fitted.

6. Use a 12mm spanner and wind the automatic slack adjuster until it lines up with the brake chamber clevis head. Do not use an air gun for this.
7. Lightly grease the clevis head pin and fit in place. Ensure the split pin for the clevis head pin is closest to the centre of the axle. The pin should rotate freely.
8. Fit a wear indicator (if necessary), washer, and circlip.
9. Rotate the slotted control arm by hand as far as possible in the direction of the arrow on the automatic slack. Do not hammer the control arm. The indicator on the control arm should now be aligned with the notch on the cover plate.

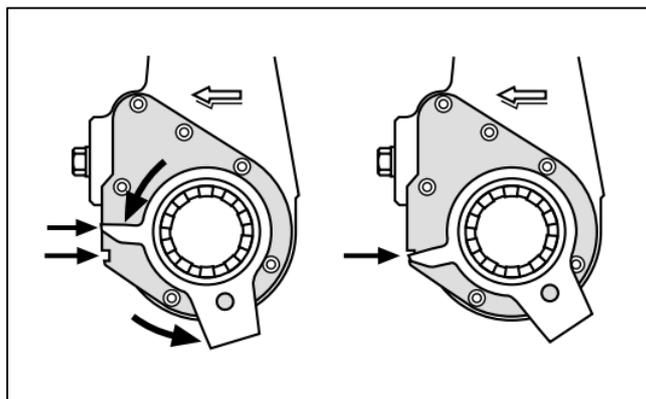


Figure 20: Final position of the indicator on the automatic slack.

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10. Without moving the slotted control arm receiver, tighten the two bolts on the cam support bracket to fix the slotted control arm receiver in place.
11. The brakes can now be set. Use a 12mm spanner and turn the adjusting nut clockwise on the automatic slack until the brake drum no longer rotates. Do not use an airgun for this.
12. To back off the slack adjuster and release the brakes, turn the adjusting nut $\frac{3}{4}$ of a turn anti-clockwise. Check that the drum rotates freely. You will hear a loud clicking noise while doing this.
13. Fit the return spring between top hole of slack adjuster and $\text{\O}8\text{mm}$ hole on the air chamber bracket (ACB). The return spring aids in releasing the brakes.



Figure 21: Brake chamber, automatic slack adjuster, wear indicator, ad return spring fitted to axle.

14. The function of the automatic slack adjuster can now be tested. Leave a ring spanner on the adjusting nut and apply the brakes 5 times. The slack adjuster is working when the hexagon nut rotates clockwise on the return stroke.

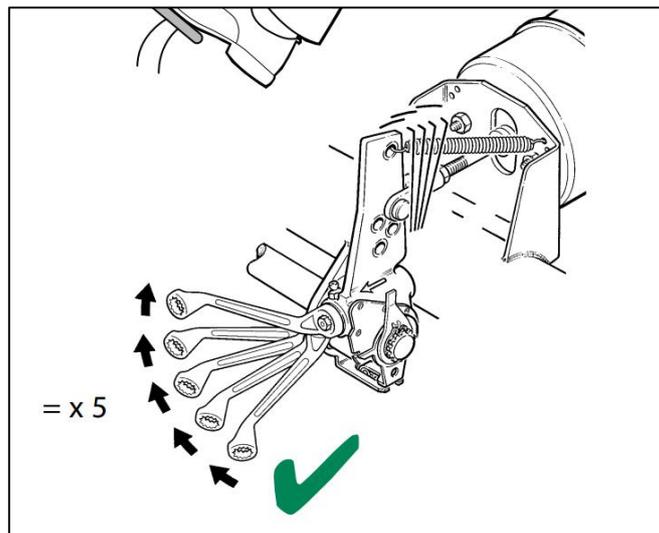


Figure 22: Function of the automatic slack adjuster shown by the spanner rotating clockwise on return stroke.

Mounting an Automatic Slack Adjuster – Steer Axle

Mounting an automatic slack adjuster to a steer axle is slightly different to a fixed axle. The control arm receiver in this case is a threaded “L” shaped bracket welded in place to the camshaft support boss.

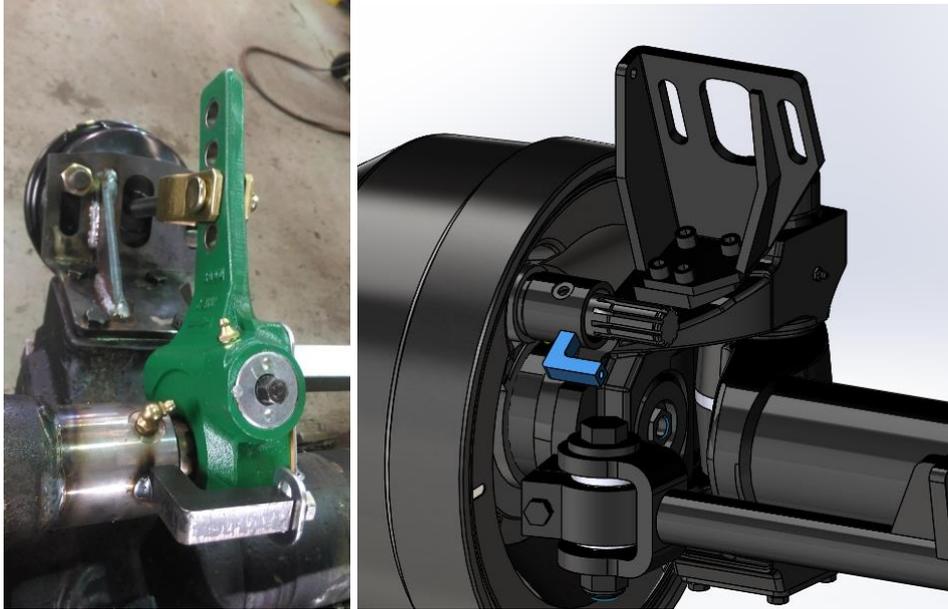


Figure 23: Threaded “L” shaped control arm receiver shown welded to camshaft support bracket.

1. Follow steps 1-4 as outlined above for manual slack fitting. Don't fully tighten the brake chamber in place.
2. Loosely grease the camshaft splines.
3. Fit the offset or straight automatic slack adjuster onto the camshaft splines. Ensure the slack adjuster is going to be firing in the correct direction as per the arrow on the casting.
4. Use a 12mm spanner and wind the automatic slack adjuster until it lines up with the brake chamber clevis head. Do not use an air gun for this.

Adjust the position of the brake chamber in the steer axle ACB until it lines up with the lever length hole. Fully tighten the brake chamber mounting nuts to 210Nm.

5. Lightly grease the clevis head pin and fit in place. Ensure the split pin for the clevis head pin is closest to the centre of the axle. The pin should rotate freely.
6. Fit the camshaft washer and circlip.
7. Rotate the control arm by hand as far as possible in the direction of the arrow on the automatic slack. Do not hammer the control arm. The slotted hole in the control arm should now line up with the threaded hole on the “L” shaped bracket.

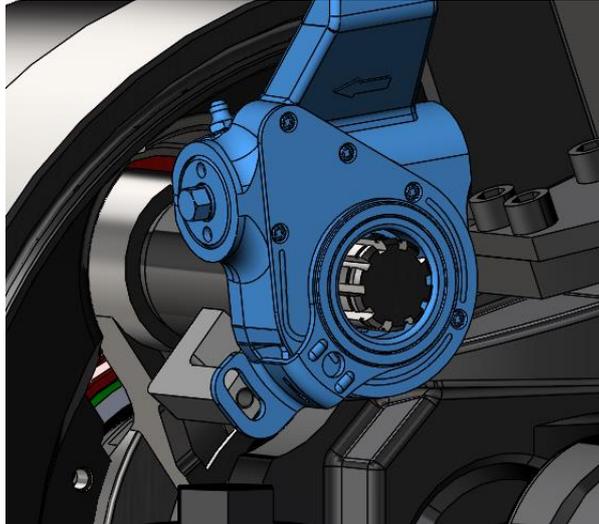


Figure 24: Threaded “L” shaped control arm receiver and slotted control arm lining up.

8. Without moving the control arm, insert the M8 bolt and spring washer and in into the “L” shaped bracket.
9. If there is a small gap between the “L” shaped bracket and control arm, loosen the 4 mounting bolt on the air chamber bracket and move it left or right as needed and tighten back in place.

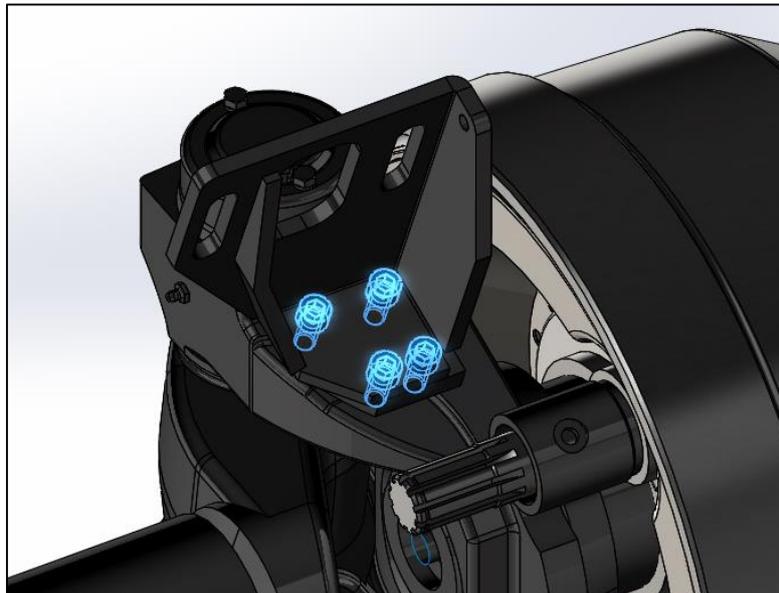


Figure 25: ACB mounting bolts

10. Now that the “L” shaped bracket and control faces are touching tighten the M8 bolt in place.
11. The brakes can now be set. Use a 12mm spanner and turn the adjusting nut clockwise on the automatic slack until the brake drum no longer rotates. Do not use an airgun for this.

12. To back off the slack adjuster and release the brakes, turn the adjusting nut $\frac{3}{4}$ of a turn anti-clockwise. Check that the drum rotates freely. You will hear a loud clicking noise while doing this.
13. Fit the return spring between top hole of slack adjuster and $\text{\O}8\text{mm}$ hole on the air chamber bracket (ACB). The return spring aids in releasing the brakes.
14. The function of the automatic slack adjuster can now be tested. Leave a ring spanner on the adjusting nut and apply the brakes 5 times. The slack adjuster is working when the hexagon nut rotates clockwise on the return stroke. See figure 22 above as an example.



Figure 26: Service brake chamber mounted with a straight autoslack at 178mm lever length.