



Engineering Bulletin	Date: 9/10/2019
Product: Draft Gears	Prepared by: ES
Regarding: Stuck Draft Gear Procedure Manual	

Stuck Draft Gear Procedure Manual

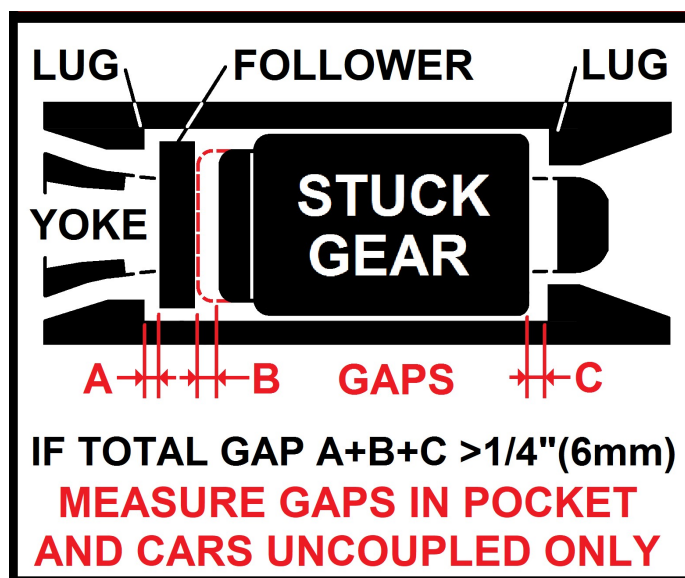
Derived from AAR Manual of Standards and Recommended Practices Book – B-II, RP-101-83, Pages 57 – 98

MINER ENTERPRISES, INC.
630-232-3000
Technical Services
Direct line - 630-232-3050



Never remove a stuck draft gear from a yoke and follower assembly!

IF A DRAFT GEAR IS SUSPECTED TO BE IN STUCK CONDITION, IMMEDIATELY NOTIFY THE SUPERVISOR IN CHARGE OF SAFETY.



The system must be uncoupled when checking gaps.

**A draft gear is stuck if the gaps add to over 1/4" (6mm) as shown.
Properly contain and label the assembly per the following guidelines.**

This document does not supersede any relevant AAR instructions or guidelines. Miner Enterprises assumes no liability for injury due to failure to adhere to recommended practices. Does not apply to new pre-shortened draft gears.

1.0 SCOPE

The following procedure applies to any stuck draft gear by Miner. This procedure outlines the handling methods recommended when cars are determined to have a stuck draft gear, by visual inspection or as noted. This document does not apply to new gears which are shipped with pre-shortening inserts that gag the gears short by about 1/2".

2.0 IDENTIFYING A STUCK DRAFT GEAR

To avoid personal injury when performing inspection or repairs on rail cars, always make certain the car is uncoupled in a protected location, with “blue flag” protection and/or track lockouts where applicable, with the wheels chocked on all trucks in each direction, and that the proper safety equipment is worn following all applicable OSHA and/or FRA guidelines.

⚠ DANGER Stuck draft gears are extremely dangerous! Keep away from coupler and clear of draft system components. Never attempt to physically check free slack if gear is suspected of being stuck (see 2.2.2).

2.1 Recommended Inspection

2.1.1 If gears are suspected of being in a stuck condition, use extreme caution and verify by visual inspection of gear system per 2.2 below before deferring to standard inspection guidelines.

2.1.2 This procedure is for stuck draft gear conditions, and designed to serve as a supplement to the AAR guidelines in the *AAR Manual of Standards and Recommended Practices* for the inspection of draft gear components.

2.2 Indications of a Stuck Draft Gear

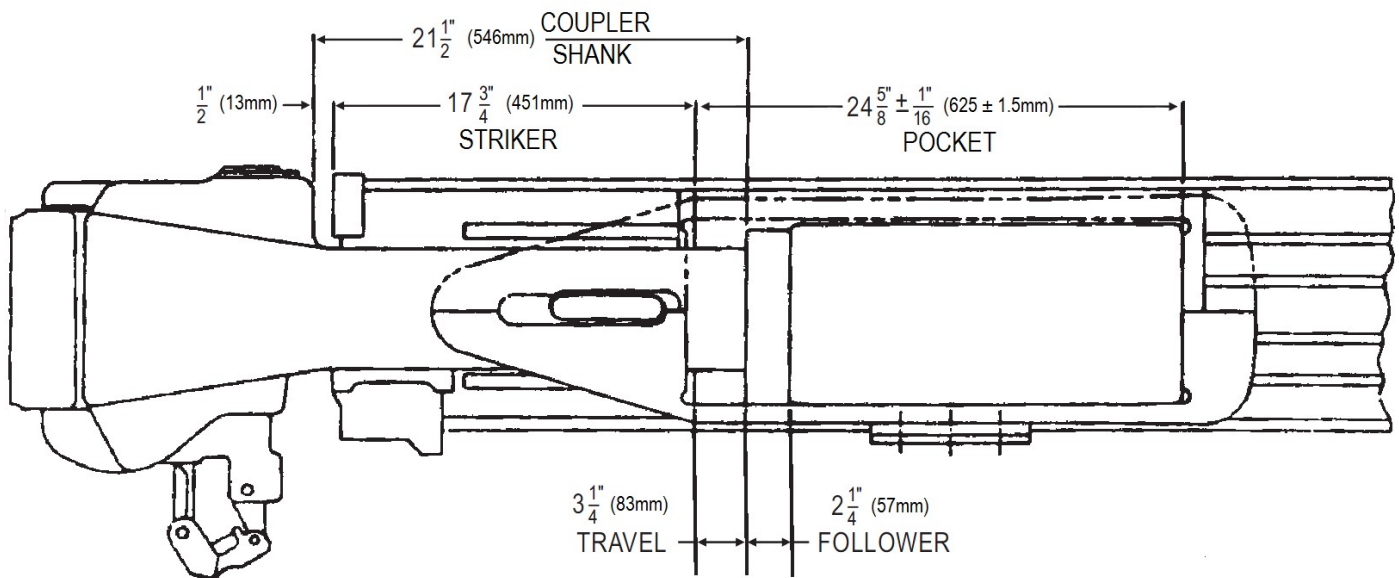
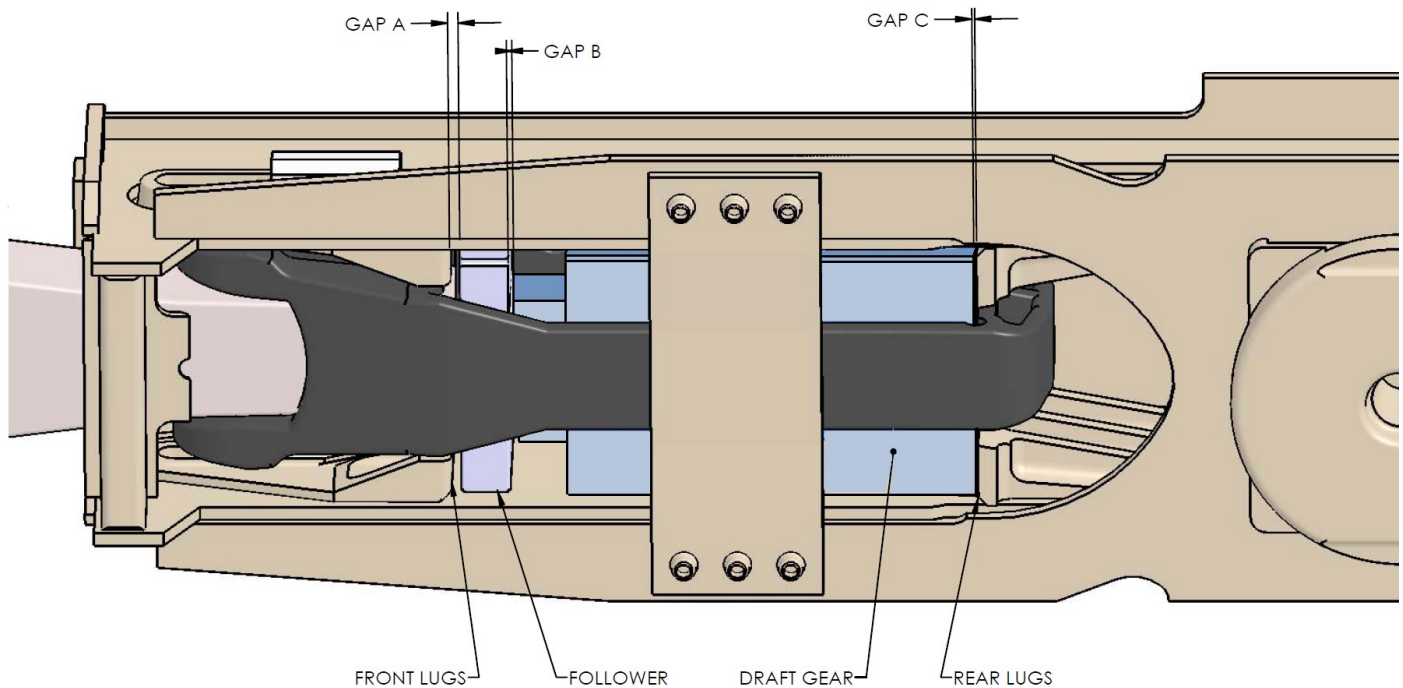


Figure 2.2.1: Side View of Coupler and Pocket

2.2.1 Free slack exceeding 1 in. (25mm) is an indication of a worn or defective coupler shank, coupler yoke connection, yoke, draft gear, follower, or car pocket. Slack is defined as the difference in distance between coupler striking horn and striking casting. Excess slack may be an indication of a stuck draft gear that could cause personally injury. Never attempt to physically check free slack on the coupler without visually verifying that the draft gear is not stuck. If excess slack is suspected, perform visual inspection first as outlined in section 2.2.2 below.



IF GAPS A+B+C EXCEED 1/4-in. (6mm) GEAR COULD BE STUCK

Figure 2.2.2: Bottom View of Gear-Sill-Yoke Assembly

2.2.2 To avoid personal injury, a visual inspection should be made of the draft gear system to determine if the draft gear is in a "stuck" condition or if any other unsafe or abnormal condition is evident. If an abnormal condition is present, proceed with extreme caution. "Stuck" gear is a term used to describe a condition where abnormal friction or unseen broken parts prevent the components of the friction clutch, still under high force, from returning to their normal fully released position and filling out the draft gear pocket. This inspection applies only to draft gear systems that are not coupled. Certain gaps can be present as shown, if the car is coupled. See Figure 2.2.2. GAP A is the distance between the follower and front lugs. GAP B is the distance between the wedge of the draft gear and the follower. GAP C is the distance between the rear lugs and the back of the draft gear housing. Any total longitudinal gap (GAP A + GAP B + GAP C) in excess of 1/4 in. (6mm) between the gear, follower, and the car pocket should be viewed with great caution:



A stuck gear is dangerous because the slightest vibration could cause the gear to suddenly release, forcibly propelling the friction components and the follower plate and coupler outward. If a draft gear is determined to be stuck, immediately report this condition to the supervisor in charge of safety. For additional assistance contact Miner Enterprises Technical Services at 630-232-3000.

2.2.3 An additional scenario where the gaps could be present as outlined in 2.2.1 or 2.2.2 is in the case of a completely worn out draft gear. If the clutch components are loose (and not wedged into a fixed position) the gear can be removed and replaced per the AAR guidelines.



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3.0 STUCK DRAFT GEAR PROCEDURE

Miner recommends securing the movable parts of a stuck draft gear while still in the yoke, so that they cannot release unexpectedly, and disposing of the entire assembly properly. If the draft gear is determined to be in a "stuck" condition, follow the procedure outlined below.

3.1 Safety Precautions

3.1.1 Appropriate personal protective equipment must be worn per your employer's policy, including protection for the eyes and ears, to protect from possible injury.

3.1.2 Before working on draft system, make certain that the car is in a protected location, with "blue flag" protection and/or track lockouts where applicable.

3.1.3 Do not stand or work directly in front of coupler.

3.1.4 Chock the wheels at the end of the car not being worked on.

3.1.5 Your safety is important to Miner. Please follow all safety measures provided by your employer, equipment instructions, all applicable OSHA and/or FRA guidelines, and proceed with extreme caution. Refer to Miner form TS-101 for Operating Instructions for Draft Gear Removal Jack if using Miner removal jack equipment.

3.2 Securing and Removal Procedure

3.2.1 If the car has two yoke support plates, remove the front plate only.

3.2.2 Inspect the yoke and follower for soundness.

3.2.3 Securely weld the follower and then draft gear housing to the lower yoke strap using strong intermittent welds (see Figure 3.2.3a). If the yoke strap is broken, suitable bar stock should be selected and welded to both the follower and draft gear housing or yoke to securely contain the draft gear (see Figure 3.2.3b).



Weld near the clutch area of the housing last, after follower and back of gear are securely welded to yoke. Temperature change near the friction components can cause the clutch components to release suddenly.

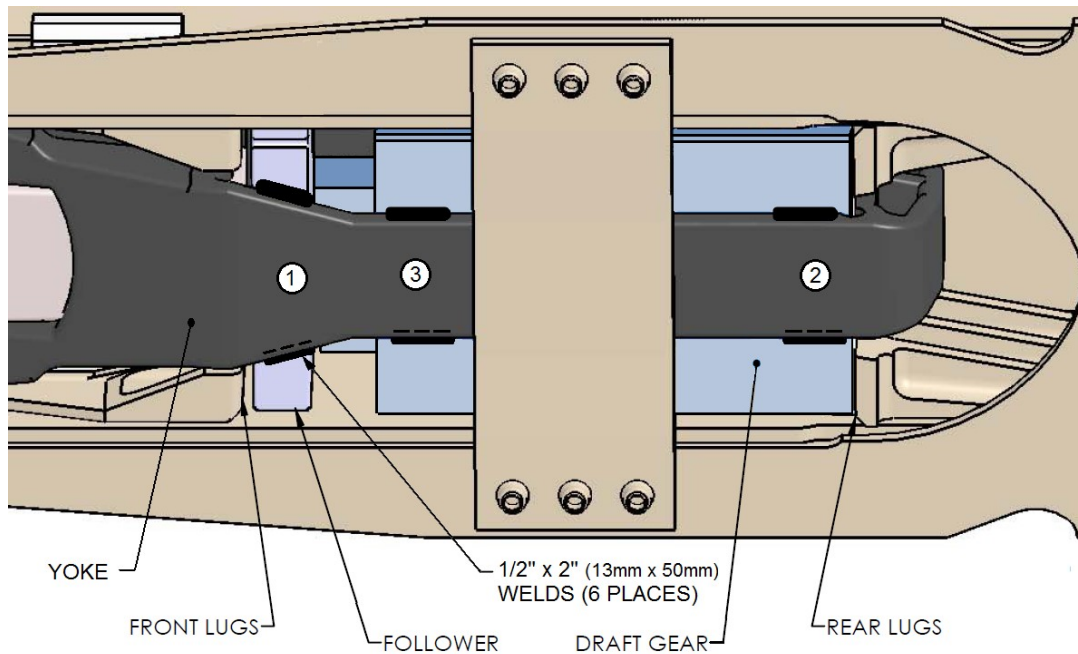


Figure 3.2.3a: Welding Yoke to Gear and Follower

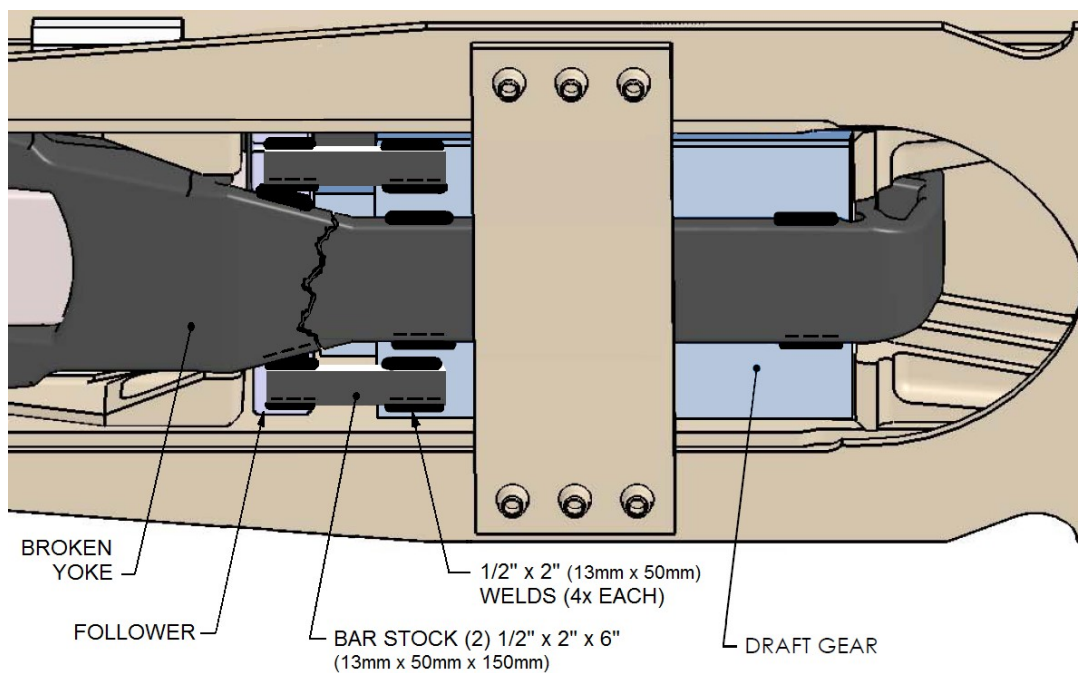


Figure 3.2.3b: Broken Yoke

3.2.4 The coupler can now be removed.

3.2.5 Disconnect the brake rigging from the truck to be rolled out. Jack the car and roll the truck clear of the working area (chock the wheels to prevent unwanted movement).



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3.2.6 DO NOT remove the yoke support plate until a lift table or lowering device is placed under the yoke and draft gear, and the yoke strap is supported securely. Draft gears should always be lowered, never dropped.

3.2.7 Determine if the key slot is broken or if the yoke will interfere with the coupler carrier as it is lowered.

3.2.8 Position lift-table or other lowering device under the yoke support plate, and use blocking as required to securely support the yoke away from the support plate.

3.2.9 Remove yoke support plate rivets or bolts.

3.2.10 Slowly lower the yoke and gear assembly to the ground as one unit following AAR standard removal procedures for draft gear / yoke assemblies.

3.2.11 Add a steel spacer block behind draft gear housing to firmly restrict expansion of gear (Fill gap between yoke butt and draft gear rear wall). Add additional shims or filler blocks to take up any longitudinal space. Weld movable parts to the yoke and securely restrain the draft gear from expanding. See Figure 3.2.11 for suggested weld locations and restraining details.

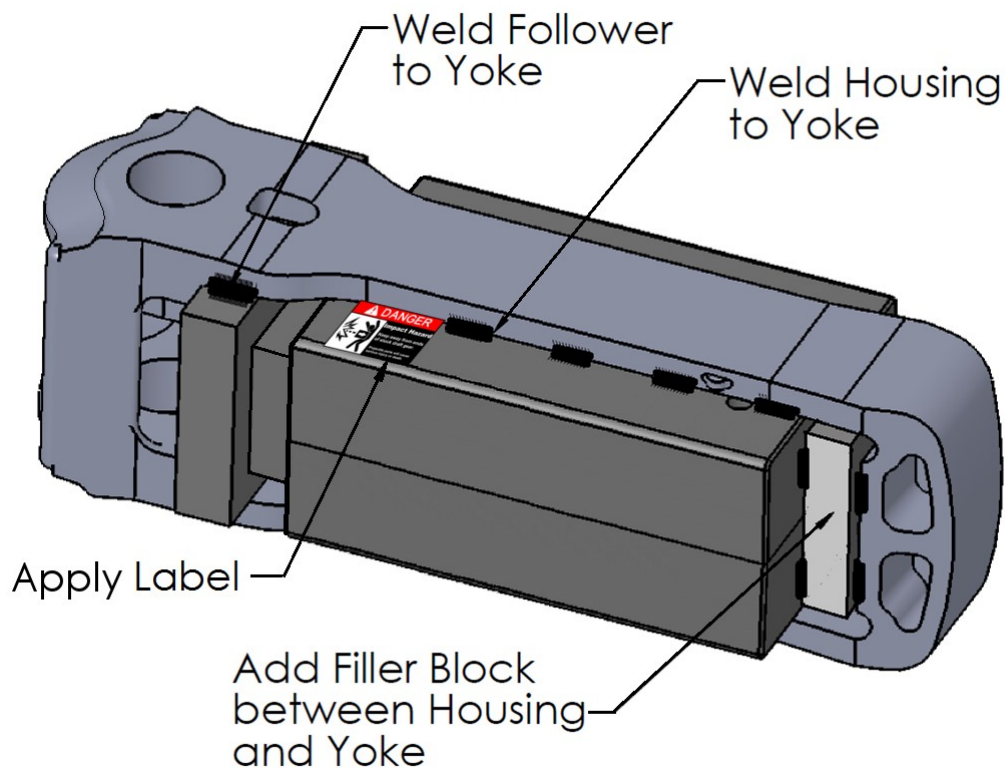


Figure 3.2.11: Weld Locations



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3.2.12 If any of the spring pads in an open style gear appear to be bulging out of the open side of the draft gear, a containment strap or plate at least 1/8" thick must be welded across the opening, after completing 3.2.11, to prevent the possibility of the springs suddenly bursting out of the housing.

3.2.13 Any severe cracks or severe damage should also be handled cautiously. Similar containment straps or plates as designated in 3.2.12 should be employed to secure the draft gear after containing per 3.2.11.

3.2.14 Print out copies of the Danger Label, figure 3.2.14, and apply as shown in figure 3.2.11 following OSHA standards. Insure that the label is readable and adequately attached.

3.2.15 Only after the draft gear is firmly secured to the yoke and containment components with the front and back of the draft gear solidly supported and secure, and the gear is labeled as shown in figure 3.2.11, should the gear be considered safe for transport or proper disposal.

3.3 Stuck Gears Not Contained In a Yoke



Stuck gears not contained in a yoke present a different situation not covered by this manual. Please be advised that the gears are dangerous in this condition, and will remain so until sufficiently restrained. Miner requires that stuck draft gears never be removed from a draft gear yoke and follower assembly. Contact your employer's chief safety representative immediately. Contact Miner for Miner draft gear issues or draft gear OEM for instructions.



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Figure 3.2.14 “Danger Label” for printing per section 3.2.14