



# Fire Protection Training

Procedures Handbook 4300

MOBILE EQUIPMENT

**TOPIC:** How to Adjust S-Cam Air Brakes - Type 30/30 Prop or Engine with Assistant

**TIME FRAME:** 15 Minutes

**LEVEL OF INSTRUCTION:** Level II

**BEHAVIORAL OBJECTIVE:**

*Condition:* An engine and assistant with an S-Cam Type 30/30 air brake system chocked or on jack stands, or an S-Cam air brake adjustment prop, an air supply, a helmet and goggles, a  $\frac{9}{16}$ " box end wrench, a ruler, a marking device and a creeper

*Behavior:* The student will properly adjust an S-Cam Type 30/30 air brake system

*Standard:* With a minimum of 70% accuracy within 1 minute and 20 seconds according to the job breakdown

**MATERIALS NEEDED:**

- One (1) Brake prop or engine with S-Cam Air Brakes type 30/30
- One (1) Score sheet per student
- One (1) Stop watch
- One (1)  $\frac{9}{16}$ " Box End wrench
- One (1) Ruler
- One (1) Marking device
- One (1) Compressed air supply (if prop is used)
- One (1) Compressed air hose (if prop is used)
- One (1) Assistant (if engine is used)
- One (1) Helmet (if engine is used)
- One (1) Pair of safety goggles (if engine is used)
- Two (2) chock blocks (if engine is used)
- One (1) Creeper



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## **REFERENCES:**

- CDF, Mobile Equipment Management Procedures Handbook, (6700)
- CDF, Fix-N-Fax #52, (May 1989)
- CDF, Fix-N-Fax #53, (December 1985)
- CDF, Vehicle Maintenance Procedure and Record, (Pamphlet 6805)

## **PREPARATION:**

Operators of CDF vehicles are responsible for the maintenance and slack adjustment of air brake systems on any equipment they operate or drive. Brake adjustment is critical since it is impossible to force the brake lining to touch the brake drum if the push rod is not properly adjusted. The efficiency of the brake system decreases appreciably as the length of the push rod stroke approaches maximum stroke length. Prior to moving a vehicle the driver alone is responsible for ensuring that the braking system is in operating condition.



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TYPE 30/30 PROP OR ENGINE WITH  
ASSISTANT

## OPERATIONS

## KEY POINTS

- | OPERATIONS                 | KEY POINTS  |
|----------------------------|---|
| 1. Position vehicles       | 1a. On level ground<br>b. On smooth surface or<br>c. On jack stands   |
| 2. Set chock blocks        | 2a. As per CDF policy<br>b. Use gloves<br>c. Attach cable<br>d. To anchoring eye<br>e. Skip this step for vehicle on jack stand |
| 3. Don helmet and goggles  |   |
| 4. Release spring brake    | 4a. Instruct assistant in cab or<br>b. Push control knob to release brakes on prop  |
| 5. Mark push rod           | 5a. Using marking device<br>b. At point where push rod enters brake pod<br>c. At backing plate hole                             |
| 6. Apply spring brake      | 6a. Instruct assistant in cab<br>or<br>b. Pull control knob to apply on prop  |
| 7. Measure push rod travel | 7a. Distance from<br>1) Backing plate hole<br>2) To mark previously made on push rod  |

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OPERATIONS	KEY POINTS
8. Release spring brake	8a. Instruct assistant in cab or b. Push control knob in to release brakes
9. Depress locking sleeve	9a. With $\frac{9}{16}$ " box end wrench b. Maintaining pressure throughout adjustment c. To disengage sleeve
10. Turn adjusting nut	10a. To shorten push rod throw b. Clockwise or counter clockwise until: 1) Until adjusting nut no longer moves for vehicles resting on the ground or 2) Brakes drag on vehicles on jack stand
11. Back off adjusting nut	11a. Turn adjusting nut in opposite direction 1) $\frac{1}{4}$ turn for vehicles resting on ground or 2) Until brake drums rub lightly when wheels spin (for vehicles on jack stand only)
12. Release pressure on locking sleeve	12a. Remove $\frac{9}{16}$ " wrench b. May have to turn adjusting nut slightly back and forth until sleeve slides out fully
13. Apply spring brake	13a. Instruct assistant in cab or



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14. Verify adjustment

- b. Pull control knob out
- 14a. Measuring length of push rod travel
  - 1) Maximum throw  $1 \frac{1}{2}$
  - 2) Minimum throw  $\frac{3}{4}$
- b. If not properly adjusted repeat steps 8-10 in order to obtain desired throw range

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***APPLICATION:***

Student to practice until proficient.

***EVALUATION:***

A performance examination.

***ASSIGNMENT:***

To be determined by instructor(s).