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MANUAL PREVIEW

International Harvester

Service Manual

E-200, 412 & 412B

Elevating Scraper

Chassis Only

Service Manual

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IH-S-E200 LATE

INTERNATIONAL
MODELS E-200 AND 412 ELEVATING PAY scrapers
INDEX

This manual is divided into major sections covering various components of the Elevating PAY scraper. These sections are also indexed by title with thumb index tabs as shown below and to the right. To use this manual, grasp the right-hand side of book between thumb and fingers. Bend book back and find the pages containing the corresponding section index tab. Section identification is also contained in the upper corner of each page.

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Model E-200

CE-106923

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Model 412

CE-106922

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GENERAL INFORMATION

Section 1

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GENERAL DATA

MODEL E-200

MODEL 412

AIR COMPRESSOR:

Model	Tu-Flo 300	Tu-Flo 300
Capacity @ 1250 rpm	4 cu. ft. per minute	4 cu. ft. per minute

STEERING HYDRAULIC SYSTEM: Refer to SECTION 8

Refer to SECTION 8

SCRAPER HYDRAULIC SYSTEM: Refer to SECTION 9

Refer to SECTION 9

ELEVATOR LOADING SYSTEM:

Actuation	Hydraulic motor driven chain drive loader	Hydraulic motor driven chain drive loader
Gear box ratio	26.7:1	26.7:1
Chain drive loader:		
Width of flights	5-1/2 inches	5-1/2 inches
Length of flights	5 ft. 1 in.	5 ft. 1 in.
No. of flights	14	16
Drive sprocket teeth	14	14
Chain speed	204 ft. per min.	
(low speed forward & reverse)		189 ft. per min.
(high speed forward)		227 ft. per min.

ELECTRICAL SYSTEM:

Ground	Negative	Negative
Voltage	24	24
Batteries	(4) 6-volt	(4) 6-volt

TIRE EQUIPMENT (Tubeless):

Drive and trailed:		
Standard	18:00 x 25-12 ply	18:00 x 25-16 ply
Wide base (optional)	23.5 x 25-12 ply	23.5 x 25-16 ply

WEIGHT (Pounds):

Tractor only	11,844	11,894
Scraper	18,080	18,580
Total empty	29,924	30,474
Distribution (net):		
Drive axle	18,665	18,785
Trailed axle	11,259	11,689
Distribution (gross) payload:		
Drive axle	26,835	27,885
Trailed axle	26,889	28,789
Rated gross weight	53,724	56,674

BRAKES

Section 5

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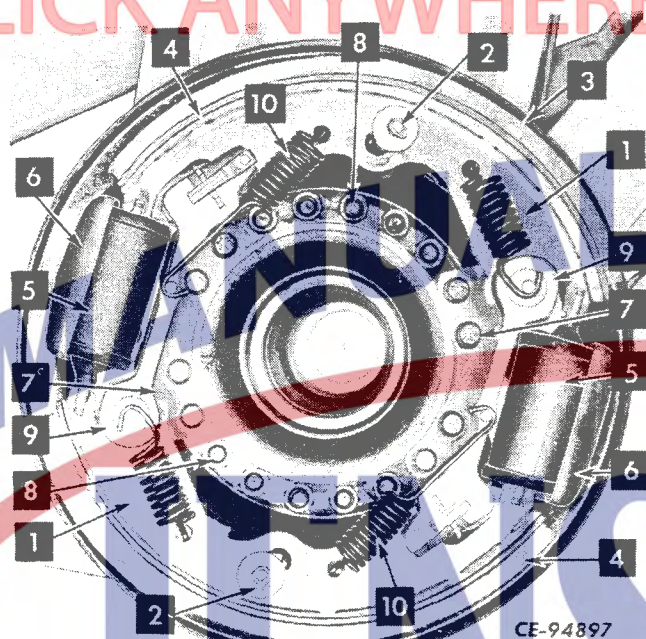


Figure 5-1
Hydraulic Brake Assembly

1. Brake shoe return spring (short).
2. Lock ring.
3. Brake backing plate.
4. Shoe and lining.
5. Wheel cylinder.
6. Wheel cylinder guard.
7. Bolt (12 point).
8. Bolt (hex-hd).
9. Anchor support.
10. Brake shoe return spring (long).

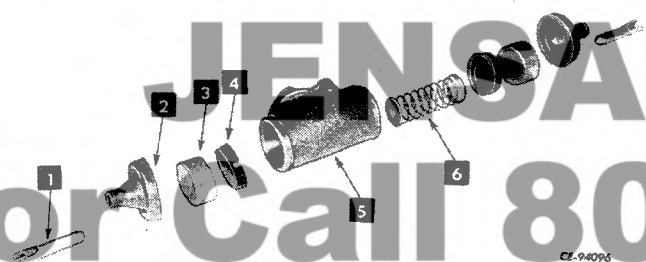


Figure 5-2
Wheel Cylinder (Exploded View)

1. Plunger.
2. Boot.
3. Plunger.
4. Cup.
5. Cylinder.
6. Spring.

b. Pry the boot (2) from the end grooves of the wheel cylinder.

c. Remove the boot with plunger rods (1), plunger (3), cups (4) and spring (6) from the cylinder (5) and install a wheel cylinder parts replacement kit.

INSPECTION AND REPAIR

1. Check the tension of the brake return spring (1 and 10, Figure 5-1). Refer to SPECIFICATIONS for spring test data. Replace with new spring if necessary.

2. Examine the brake shoe and lining assembly. If the shoe is cracked or the linings are glazed, grease soaked or worn to within 1/16 inch of the shoe, the entire shoe and lining assembly must be replaced.

3. Inspect the anchor pins for wear or gouging. Inspect the anchor support for wear (Figure 5-3). If replacement of the anchor support is necessary, remove the four 12 point bolts (7, Figure 5-1) securing the support to the axle.

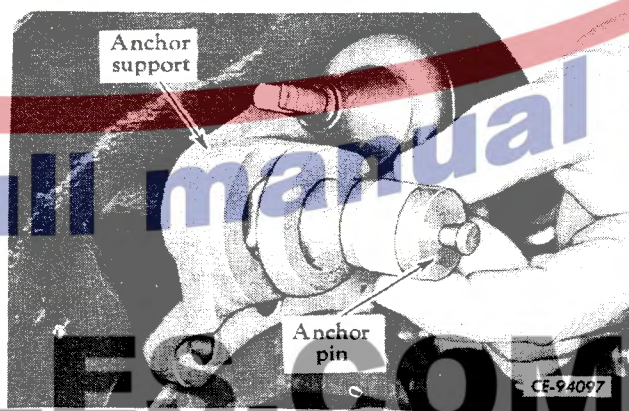


Figure 5-3
Brake Anchor Pin and Anchor Support

4. Remove the adjusting screw guide and spring. Turn the adjusting wheel until the adjusting screw comes free (Figure 5-4). Remove the adjusting screw and wheel. Inspect the adjusting screw for wear or gouging, replace as necessary. Inspect the adjusting wheel, if the inner tangs are bent, worn or missing, replace the adjusting wheel.

REMOVAL

CAUTION: BEFORE CYLINDER REMOVAL, LOWER THE BOWL TO THE GROUND.

NOTE: Disconnect hydraulic lines must be capped with the correct size plastic cap. If caps are not available, use tape or rubber stoppers. Openings must never be plugged with rags.

1. Operate the ejector control lever to move the floor back and the ejector gate forward. This will move the cross beam up. Block the cross beam in this "up" position.
2. With the engine shut down, attach a hoist to the ejector cylinder, at approximately the end of the housing near the housing eye. Remove any slack from the hoist to place a slight tension on the hydraulic cylinder.



Figure 9-105
Ejector Cylinder Cross Beam Mounting

1. Cross beam.
2. Lubrication fitting.
3. Supply hose (rod end).
4. Ejector cylinder.
5. Pin attaching cap screw.
6. Supply hose (piston end).
7. Cylinder mounting pin.

3. Remove the hex-hd. cap screw and Stover nut securing the cylinder mounting pin to the cross beam bracket (Figure 9-105). Drive the pin out. Be careful not to allow the pin to fall which would cause damage to the lubrication fitting at the other end of the pin. Lower the cylinder to rest on the frame.

4. Lay planking across the guide rails (Figure 9-105) to receive the cylinder when it is lowered. Attach a hoist to the ejector cylinder piston rod as close to the eye as possible. Remove hoist slack to apply a slight tension.

5. Remove the hex-hd. cap screw and Stover nut securing the cylinder mounting pin to the ejector lever and drive out the pin. Be careful not to allow the pin to fall which could cause damage to the lubrication fitting at the other end of the pin. Lower the cylinder to rest on the planking and remove hoist.

(Continued on next page.)



Figure 9-106
Ejector Cylinder Ejector Lever Mounting

1. Roller guide channel.
2. Ejector cylinder piston rod.
3. Ejector lever.
4. Cylinder mounting pin.
5. Lubrication fitting.

b. **CONCENTRATED CONTACT AT TOE**--If contact pattern indicates "Not Enough Backlash" (Figure 12-40 - Pattern "B"), loosen bearing adjuster on the ring gear side and tighten the adjuster on the drive pinion side equal amounts. This will move the ring gear away from the drive pinion. If pattern is not correct, continue to move the bearing adjusters (the same amount of notches) until proper lengthwise contact pattern is obtained.

NOTE: This may change the profile contact pattern to some extent and an adjustment of the pinion may be required.

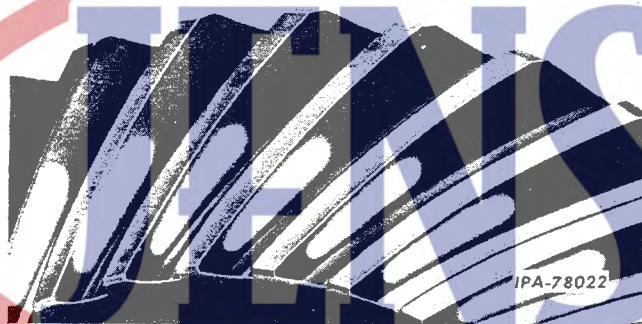


Figure 12-39
Pattern "A" - Correct Tooth Contact



Figure 12-40
Pattern "B" - Concentrated Contact at Toe

c. **CONCENTRATED CONTACT AT HEEL**--If tooth contact pattern indicates "Too Much Backlash" (Figure 12-41 - Pattern "C"), loosen bearing adjuster on the drive pinion side and tighten the adjuster on the ring gear side equal amounts. This will move the ring gear toward

the drive pinion. Recheck tooth contact pattern. If pattern is not corrected, continue to turn bearing adjuster equal amounts until proper lengthwise contact pattern is obtained.

NOTE: This may change the profile contact pattern to some extent and an adjustment of the pinion may be required.

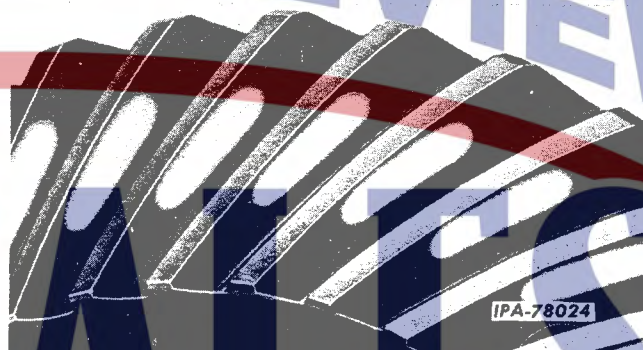


Figure 12-41
Pattern "C" - Concentrated Contact at Heel

d. **PROFILE CONTACT HIGH**--Figure 12-42 - Pattern "D" illustrates the drive pinion being out too far. Remove the necessary amount of shims from the bearing cage to move the drive pinion toward the ring gear. Then move ring gear away from the drive pinion to obtain correct lengthwise contact pattern.

NOTE: When the drive pinion position is changed, the adjustment may affect lengthwise tooth contact. If necessary, readjust backlash for proper lengthwise tooth contact and recheck tooth contact pattern.



Figure 12-42
Pattern "D" - Profile Contact High

CHAIN



Figure 16-22
Idler Roller



Figure 16-23
Adjuster Shaft Bolts

1. Adjuster shaft bolts.
2. Adjuster shaft.
3. Traction wheel.
4. Elevator frame.
5. Adjuster shaft plate.

TENSIONING

NOTE: As the PAY scraper is operated, the elevator chains will stretch in use, requiring readjustment. Chains that become too loose could jump the driving sprockets resulting in damage and downtime.

Bolt Type Adjustment

1. Loosen the bolts and nuts used to attach each adjuster shaft to the elevator frame (Figure 16-23).
2. Back the adjusting bolt (Figure 16-24) out to move the adjuster shaft downward for increased chain tension.
3. Adjust the tension of the chain to the dimension shown in Figure 16-25 in the area of maximum chain sag. Tighten the adjusting bolt locking nut (Figure 16-24).

NOTE: If the adjuster shafts are at their full adjustment and the chain tension is less than required (due to a stretched chain), it will be necessary to reduce the length of each chain to reposition the adjuster shaft within the range of adjustment. Refer to "ADJUSTING CHAIN LENGTH" for procedure.

4. Remove the adjuster shaft attaching bolts individually from the adjuster shaft. Apply Loctite to the bolt threads, reinstall and torque to 280 ft. lbs. See Section 1.



Figure 16-24
Adjusting Bolt

PINION AND BEVEL GEAR REDUCER



Figure 16-66
Riveting Fixture Tool

REASSEMBLY

(Refer to Figure 16-59)

NOTE: Prelubricate all parts of the assembly.

Pinion and Cage

1. If removed, press the rear pinion straight roller bearing (17) on the pinion gear (18). Be sure the bearing is fully seated on the shoulder.
2. Stake the pinion gear shaft with a blunt point punch in six equidistant places (Figure 16-67). It is suggested that for locating punch positions for staking, the end of the pinion be painted with Prussian Blue and a circle be scribed on end of pinion about 1/8 inch in from the pinion circumference. When staking the bearing be careful to make the depth of the indentations of stake points uniform. Otherwise the bearing might be damaged. Deep punch or stake marks are not necessary. Apply the staking operation at opposite sides of the pinion end until all stake points are obtained.
3. If removed, press on the inner tapered roller bearing cone (19) (Figure 16-68).
4. Install the bearing spacer (15), using the same one as found at removal or one of the same thickness. Refer to "SPECIFICATIONS" for the range of spacers available.

Use a micrometer to determine the spacer thickness (Figure 16-69). The bearing spacer controls the amount of bearing preloading.



Figure 16-67
Staking Pinion Straight Roller Bearing

5. If removed, install the two tapered roller bearing cups (8) into the cage (4).
6. Temporarily install the cage on the bevel drive pinion. Place the outer tapered roller bearing cone (20) on the bevel drive pinion and install the input flange (24) and nut and washer (14). It is not necessary to install the cage cork seal (16) or the oil seal retainer (23) at this time.

(Continued on next page.)



Figure 16-68
Installing Bearing Cone