



# **O p e r a t o r ' s M a n u a l**

## **Model**

### ***HARDER Dump Box Spreader***

#### **INDEX**

Pg. 2	Hydraulic Requirements
Pg. 2	Safety
Pg. 3	Safety Decals
Pg. 4	Model Identification
Pg. 5	Installation of Spreader in Dump Box
Pg. 6	Operation Recommendations
Pg. 7	Chain Tension Adjustment
Pg. 9	Lubrication
Pg. 10	Off-Season Storage
Pg. 10	Troubleshooting

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## Hydraulic Requirements

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Hydraulic System: capable of providing continuous, dedicated 18-22 gpm @ 2100 psi

Line Size: (one) 1/2" Pressure Line with 1/2" Quick Coupler  
(one) 3/4" Pressure Line with 3/4" Quick Coupler  
(one) 1" Return Line with 1" Quick Coupler

Quick Couplers: We recommend Quick Coupler Male ends be installed at termination of hydraulic piping at rear crossmember of truck and Quick Coupler Female ends be installed on hoses connected to hydraulic motors on the Spreader Unit.

Flow Control: We recommend a cab-mounted dual flow control valve rated 10-30 gpm to individually control Delivery Chain Conveyor and Spinner Disc rotation speed.

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## Safety

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Do not operate this **HARDER** Dump Box Spreader until you have read and understood all safety and operation procedures. Contact your dealer for further explanation and/or demonstration if you do not understand any part of this Operator's Manual.

To avoid possible injury:

- a. Keep well away from turning Spinner Disc, Conveyor Chain or Shafts, and any moving machinery.
- b. Do not place fingers or body limbs in or near moving machinery.
- c. Do not wear loose clothing when operating machinery.
- d. Wear approved safety glasses when observing dispersion pattern of Spinner Disc of any spreading unit.
- e. When operating this or any spreading unit from cab of truck, operator must concern him/herself with safety of any nearby pedestrian(s).

A Spinner Disc/Arm Subassembly Latch lever is located on the right side of the Drive Frame. The Latch lever, when moved from its "at rest" position, will pull a pin which secures the Spinner Disc/Arm Subassembly into one of three positions. If the Spinner Disc/Arm Subassembly is secured in one of the travel (up) positions, the Spinner Disc/Arm Subassembly should be held and lowered manually upon operation of the Latch lever. This will avoid possible injury as a result of the unrestrained fall (rapid drop) of the Spinner Disc/Arm Subassembly to the work (down) position.

LOCKOUT/TAGOUT procedures should be considered when servicing this unit.

Disconnect all hydraulic lines from this unit before servicing begins.

When going inside the Dump Box to service components of the Spreader unit, CONFINED SPACE procedures should be considered.

Do not lift or push on the Model **E** Drive Frame. When moving the **HARDER** Dump Box Spreader, use the Lift Rings provided. Be aware that the unit is “nose-heavy” when suspended from the near-midpoint Lift Rings. Never stand under any machine being lifted.

Keep hands and fingers away from possible pinch points.

To avoid slips and falls, do not stand on the unit. Do not use the unit as a ladder or work platform.

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## Safety Decals

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Take note of the following Safety Decals  
on the Model E  
**HARDER** Dump Box Spreader



E1.41

E1.42

E1.43



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## Model Identification

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An identification nameplate was secured to your **HARDER** Dump Box Spreader at the time of its manufacture. It is located at the right rear corner of the Drive Frame and looks as the picture above. This **HARDER** Dump Box Spreader was sold through the following **HARDER** sales representative:

Please refer to the Model and Serial Number when contacting your **HARDER** dealer for service information and replacement parts.

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# Installation of Spreader in Dump Box

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## SLIDING THE SPREADER INTO THE DUMP BOX

**HARDER** Dump Box Spreaders are equipped with two pairs of Lift Rings. Do not lift on the Drive Frame itself. Use the Lift Rings provided.

One pair of Lift Rings is positioned near the midpoint of the Main Frame Subassembly cut slightly off-center so the Spreader is slightly nose-heavy. To slide the **HARDER** Dump Box Spreader into the Dump Box, first attach the lifting device to the near-midpoint Lift Rings. Raising the Spreader, guide it through the Tailgate opening until the lifting devices contact the Tailgate surface. The nose-heavy condition of the Spreader usually stabilizes the position of the Spreader and allows removal of the lifting device.

Reattach the lifting device to the second set of Lift Rings located just ahead of the Drive Frame. The Spreader can now be pushed further through the Tailgate opening until the Mounting Ears align. Slide the Mounting Pin through the aligned holes and secure it with the Hairpin Clip.

## ADJUSTING THE HEIGHT OF THE SPINNER DISC SUBASSEMBLY

When adjusting the height of the Spinner Disc Subassembly, first park the truck in a level area. Lower the Spinner Disc/Arm Assembly from a Travel (up) Position to the Work (down) Position. Remove the Mounting Bolt from the telescoping Upper Lower Spinner Arm connection and adjust the height of the Lower Spinner Arm Subassembly such that when the Dump Box is in the raised position, the Spinner Disc and its hydraulic motor are several inches above the pavement surface.

The Drop Distance from Delivery Chain Conveyor to Spinner Disc should be as much as possible while still allowing space under Spinner Motor when **BUMPING THE LOAD**. Having the Lower Spinner Arm Subassembly adjusted low enough to facilitate foldup to the Travel (up) Position should also be considered.

## FINAL STEPS

Connect the hydraulic hoses and test operate the **HARDER** Dump Box Spreader. Make sure the direction of Spinner Disc rotation is such that salt/sand material is delivered to the center of the road.

Always chain the Tailgate to a maximum opening of 10 inches to preclude cramping the Main Frame Subassembly in the Tailgate opening.

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## Operation Recommendations

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CAUTION: TO PREVENT POSSIBLE INJURY  
STAY CLEAR OF ALL MOVING MACHINERY!

### INITIAL STARTUP AND LOADING

After the **HARDER** Dump Box Spreader has been properly installed, we recommend the unit be test run in the empty Dump Box. Once proper operation is proved salt/sand material to be spread can be loaded into the Dump Box. We recommend that the Delivery Chain and Spinner be allowed to run slowly whenever material to be spread is being loaded into the Dump Box.

We suggest “working” or “mixing” the stockpile before loading the truck to minimize lumps. The **HARDER** Dump Box Spreader is not designed to break up lumps that become lodged against the Tailgate Door. The **HARDER** Dump Box Spreader does, however, allow opening of the Tailgate so that any lumps remaining in the Dump Box after a “run”, can be dumped upon return to the stockpile.

### ADJUSTING DISPERSION PATTERN

The quantity of material spread and the direction of the dispersion can be controlled by adjusting the following:

- ✓ Delivery Chain Conveyor Speed
- ✓ Opening Height of Tailgate Door
- ✓ Deflector Panel Position
- ✓ Spinner Disc Rotation Speed
- ✓ Drop Distance from Conveyor to Spinner Disc
- ✓ Spinner Skirt Attachment Position (Angle)

The delivery rate of the Delivery Chain Conveyor and Spinner Disc Rotation Speed is usually controlled by a cab-mounted dual flow control valve (not supplied by **HARDER**). The Opening Height of Tailgate Door, Deflector Panel Position, Drop Distance from Conveyor to Spinner Disc and the Spinner Skirt Angle are adjusted by the end user to meet his individual needs. Guidance in making these specific adjustments is readily available from your **HARDER** Dump Box Spreader dealer.

### “BUMPING THE LOAD”

After the Dump Box is loaded with the salt/sand material to be spread and the Delivery Chain Drive Motor (hydraulic) is energized, the salt/sand material begins to be conveyed away to the Spinner Assembly.

After some time, most of the contents of the Dump Box have been conveyed away and the Delivery Chain is no longer buried in the salt/sand material. There is still a quantity of material alongside both sides of the **HARDER** unit, tapering up toward the top of the Dump Box walls.

The driver of the truck then pulls off the road to a level surface and stops the truck. He/she raises the Dump Box causing the salt/sand material to flow to the back of Box, once again covering the conveyor. We call this process BUMPING THE LOAD.

BUMPING THE LOAD might be repeated 2 or 3 times during the course of a “run”. There will still be a small amount of material near the Tailgate which will not make it onto the conveyor. Even though this small amount of material remains, more material will have been spread by the Dump Box with the **HARDER** Spreader than could have been spread by a Hopper-type Spreader installed on the same size truck. Reason: The Dump Box will hold more material --- and at a lower center of gravity.

Raising the Dump Box *all the way up* with a *full load* may compress the rear suspension and cause damage to the Spinner Disc/Arm Subassemblies. BUMPING THE LOAD should never be done while the truck is moving. Rather, it should be done on a level spot, preferably off the highway and where there are no power lines, bridges, or other low clearances. Avoid raising the Dump Box while stopped on the crown of the road to prevent damage to the Spinner Disc/Arm Subassemblies.

When the conveyor becomes uncovered, the operator may elect to *not* BUMPING THE LOAD but rather return for a refill at the stockpile. Leaving some of the load in the Dump Box will provide low center of gravity “traction” weight. Any portion of the load which remains in the front of the Dump Box helps stabilize the truck when performing plowing operations.

#### AT THE END OF THE RUN

Upon completion of spreading operations and return to the stockpile, we recommend that the remaining load be dumped. First, raise the Spinner Disc/Arm Subassembly from the Work (down) Position to a Travel (up) Position. Make sure Latch Assembly Pin is engaged. With the Tailgate chained to 10 inches maximum opening open and unlatched, raise the Dump Box. As the Dump Box is raised, material flows out of the Tailgate opening. The rear of the Conveyor Main Frame is automatically elevated several inches above the Dump Box floor allowing material trapped under the Spreader to slide out the Tailgate opening.

Many owners wash the top and undersides of their **HARDER** Dump Box Spreader and wash out their Dump Boxes with a water hose at the completion of spreading operations. This cleanup procedure is easy when the Dump Box is in its raised, Tailgate unlatched, position.

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## Chain Tension Adjustment

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It is recommended that Chain Tension be adjusted when there is sand (material to be spread) laying on the floor of the conveyor, between chain links, etc. This provides a condition most like that which will be encountered during operation.

Chain Tension is increased when the Drive Frame subassembly is forced to move (along the rails of the Main Frame Subassembly) away from the Idler Shaft Subassembly End of the unit. This operation is accomplished by pumping grease into each of the two Grease Cylinders mounted either side of the Drive Frame Subassembly. Pump grease into the grease fittings provided on each Grease Cylinder.

Grease Cylinders should be greased alternately, in small amounts so that pressure is applied to both sides uniformly.

Grease Cylinders should be pressurized such that the Delivery Chain Web is adjusted to be tight enough to prevent “doubling-over” underneath Drive Sprockets. A Chain Web that is too loose will “double-over” causing chain breakage and unit failure.

Do not over-tighten Chain Web. A Chain Web that is over-tightened will cause premature wear to Sprockets, Gearbox and Chain.

After some time in operation, the Chain Web will stretch, and a pitch (link each side) of chain will have to be removed.

To remove tension from the Chain Web, back out (turn counter-clockwise) the venting plugs located adjacent to the grease fittings on each of the two Grease Cylinders. These plugs will vent the grease pressure before they become free of interlocking threads.

Grease Cylinder Pistons can be retracted as follows:

- 1<sup>st</sup> Make sure venting plugs are completely removed from their tapped holes in the cylinder body.
- 2<sup>nd</sup> Remove the cap from the air valve fitting located at the other (piston) end of the Grease Cylinder.
- 3<sup>rd</sup> Place a rag over the vent plug fitting hole to contain exiting grease.
- 4<sup>th</sup> With a tire valve filling attachment on the end of a shop air hose, and with pressure adjusted to 20 psi or less, pressurize the air valve fitting mentioned in “2<sup>nd</sup>” above.



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## Lubrication

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New **HARDER** Dump Box Spreader Units are lubricated at the time of manufacture. Lubrication Points will require occasional relubrication with a frequency dependent on duration and severity of use. We suggest the following Lubrication Schedule:

- Lubrication Point: Headshaft Flange Bearing Units  
Method: With Grease Gun through Grease Fitting on Cast Housing, one short pump while Head Shaft is turning in Bearings.  
Frequency: Twice per Season  
Lubricant: Kendall L-426 Grease (or equivalent)
  
- Lubrication Point: Gear Box Gear Case  
Method: Remove Vent Plug and Level Plug and Add Lubricant through Vent Plug hole until it can be observed starting to run out open Level Plug hole. Check Vent Plug to make sure vent is maintained. (Plugged vents make seals leak)  
Reinstall both plugs.  
Frequency: Once per season  
Lubricant: Kendall 3 Star 80-90-140 Weight Gear Lube (or equivalent)
  
- Lubrication Point: Gear Box Gear Case  
Method: Remove Vent Plug and Drain Plug and Drain Lubricant. (Changing Gear Oil removes any accumulated moisture from Gear Box) Replace Drain Plug and Remove Level Plug. Add lubricant through Vent Plug hole until it can be observed starting to run out open Level Plug hole. Reinstall both plugs.  
Frequency: Once every Two Seasons  
Lubricant: Kendall 3 Star 80-90-140 Weight Gear Lube (or equivalent)
  
- Lubrication Point: Gear Box Input Shaft Bearings  
Method: With Grease Gun through each of Two Grease Fittings on side of Gear Case, one short pump each.  
Frequency: Once per Season  
Lubricant: Kendall L-426 Grease (or equivalent)
  
- Lubrication Point: Grease Cylinder Piston Shafts  
Method: Brush Grease on Shaft Surface as protection against corrosion  
Frequency: Several times per Season  
Lubricant: Kendall L-426 Grease (or equivalent)

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## Off Season Storage

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High-pressure wash unit throughout. Remove Idler Shaft Cover to ensure washout. Rinse with a salt neutralizer solution.

Check remaining stroke available on Grease Cylinders (3 inches max. available) It may be time to remove a Chain Link or two to facilitate adjustment next season.

Check for wear and replace components as may be necessary. The Idler Sprockets and Idler Shaft, because they are operating in the most abrasive location of the entire unit, may show wear.

Remove tension from chain by retracting Grease Cylinder Pistons as described under the “Chain Tension Adjustment” section of this Manual.

Check Gearbox lubricant level. Check for plugged vent.

Consider repainting.

Some end users apply a mixture of Fuel Oil and used Crankcase Oil to the Chain Web using a knapsack sprayer before storing the unit.

Clean and apply Anti-Seize to female quick-couplers of hydraulic hoses.

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## Troubleshooting

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**PROBLEM:** Chain “doubles-over” under Drive Sprockets; Chain breaks.\*

**LIKELY CAUSE:** Chain Tension is too loose.

**PROBLEM:** Chain won’t move.

**LIKELY CAUSE:** Foreign material (pieces of steel, wood or anything that could possibly get into stockpile) caught in chain.

**PROBLEM:** Spinner Disc won’t turn.\*

**LIKELY CAUSE:** Stone, foreign material caught between Spinner Disc and Lower SpinnerArm.

**PROBLEM:** Lack of (hydraulic) power or speed.

**LIKELY CAUSE:** Failed Quick Coupler restricting or cutting off flow of hydraulic oil.

-or-

Flow control failure because a piece of rubber from inside hydraulic hose “flaked-off” and lodged.

\*The two most common problems encountered “out on the road”.