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SYMPTOM	CAUSE	SOLUTION
CHAINS:		
Chains come off.	Misaligned sprockets.	Align sprockets and tighten set screws in the keyed sprockets and bearings.
	Misaligned idler.	Straighten idler.
		If the shaft moves after installation, drill detents in the shaft for the bearing set screws.
	Bent or damaged sprocket.	Replace the sprocket.
	Loose shaft bearings.	Tighten flangettes.
	Rusty or dirty chain.	Remove from the drill and soak overnight in light oil or silicone lubricant or apply WD-40.
	Overload in one of the boxes.	Increase the size of the driven sprocket when compared to the one that drives it. For Example: the sprocket that drives the agitator in the fluffy box may have to be increased in size, in relation to the sprocket that drives it. An overloaded sprocket then overloads the chain and causes it to walk off the sprockets.
ROLL PINS:		
Breaking roll pins in the speed changer and sprockets.	Agitator is catching the picker wheels.	Bend agitator so it does not catch on picker wheel.
	Rusty and worn sprockets.	Straighten and apply silicone lubricant.
	Picker wheels catching debris in the seed.	Clean the seed before using.
	Picker wheel shaft rubbing on transition.	Loosen fluffy seed box and rotate it. Align the shaft and retighten the seed box. Check **bearing support** (part #10316) for alignment.
	Binding chain.	Align the sprockets. Start with the drive wheel chain and work toward the seed boxes. Re-align and tighten each chain and its idlers.
	Overfilled seed box or seed settling.	Remove seed when transporting drill or stir seed in box prior to seeding. **Leave a 2" empty space at the top of the fluffy box for the seed to churn.**

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Breaking roll pins in the speed changer and sprockets.	Binding idlers.	Clean and lubricate the steel bushings of each idler. Be sure the idler is on the correct side of each chain. The idlers must be on the slack or non-drive side of the chain.
	High torque load.	Slow down when planting. **DO NOT** seed at speeds greater than 4-5 m.p.h., even on the best sites. Reduce the amount of seed in the boxes. Check the sprocket ratio. To reduce the torque load on the chains, sprockets, and other drive parts, allow a small drive sprocket to drive a larger driven sprocket. **In particular, the agitator sprockets must be larger than the sprockets that drive them.**
	Fertilizer in box.	**DO NOT apply fertilizer with this equipment.**
CLUTCH:		
Clutch will not function.	Worn clutch bushings.	Replace **bushings** (part #1121).
	Clutch shaft key (part #1110) missing.	Replace.
	Lever in **clutch housing** (part #1119) is stuck.	Tap lightly with hammer and apply silicone lubricant.
	Roller dog of clutch housing is contacting the detents in the clutch hub.	Grind a small amount off the corner of the three machined bosses on the **clutch hub** (part #1120).
	Clutch tripper assembly is loose or positioned wrong.	Tighten the clutch tripper assembly bolts.
	Shaft collar has moved.	Loosen set screw, reposition, and retighten.
Clutch not getting grease.	Zirk will not take grease.	Replace zirk.
	Bronze bushing in clutch has rotated so that grease holes do not align.	Rotate the bushing.

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SYMPTOM	CAUSE	SOLUTION
Clutch will not disengage.	The tripper rod is too long or too short.	Rod length, clevis to clevis, on slide style floats is 13 1/4"
	Bronze bushing worn.	Replace.
	Bosses on inside of clutch housing worn (part #1120).	Replace.
	Clutch tripper collar (part #1037CLX1) is loose.	Position and retighten.
DISCS:		
Loose Discs	Worn bearings.	Service and replace.
	Incorrect number of **spacers** (part #1100 or #M15226).	Add or remove spacers until disc blades just make contact at closest point. A piece of paper should barely slide between the two blades.
	Loose rivets.	Replace and reset the rivets.
	Stretched or broken bearing case.	Replace with new case and bearing.
	Disc bolts lack Loctite.	Clean threads and apply medium strength (blue) Loctite.
	Drill was backed up with the planters in the down position.	**DO NOT back up the drill** when the planters are in contact with the ground!
Short double disc bearing life.	**Disc bolts** worn (part #K500M or K501M).	Replace if shoulder diameter of the bolt is smaller than 0.615".
	Missing **dust cap** (part #5095)	Replace the cap.
	Incorrect grease.	Use synthetic grease type **JT-6** (part #9991) or equivalent.
	Loose **disc bolt** (part #K500M & #K501M)	Apply Loctite when installing.

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SYMPTOM	CAUSE	SOLUTION
Short double disc bearing life (part #JD85206) .	Worn **disc bolt** (part #K500M & #K501M).	Replace if diameter is smaller than 0.615 inches.
	Missing **spacer** (part #1100 or #M15226)	Replace the spacer.
	Broken **case** (part #M1677655)	Replace the case.
	Loose rivets in disc blade.	Replace rivets.
	Bent depth band.	Straighten or replace the depth band.
Discs wobble.	Buildup of mud on depth bands backside between blade and depth band.	Install **depth band scrapers**
	Bent depth bands.	Straighten or replace the depth bands.
	Worn or loose bearings.	Replace the **bearing** (part #JD85206).
	Bent or cracked blade.	Replace the blade.
	Loose disc bolt. The K500M bolt has right-hand threads and the K501M has left-hand threads. The shoulder diameter of the bolt should be no smaller than 0.615 inches; otherwise it should be replaced.	When reinstalling the disc bolts, it is important to clean both the bolt threads and the threads in the boot casting with solvent (such as toluene or ether). Apply a medium strength #242 Loctite to the boot threads before installing the bolt into the boot casting.
	Defective inside scraper assembly.	Replace with new **assembly** (part #AM11828)
Discs not turning.	Bent disc guard.	Replace **disc guard** (part #38880)
	Scrapers are adjusted too tight (either inside or outside).	Loosen scraper nuts.

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SYMPTOM	CAUSE	SOLUTION
Discs not turning.	Drill was rolled backward when it was in the down or working position. This would cause dirt to jam between the disc blades.	Using extreme care! Hold one disc blade at a time with a vise grip, while turning its matching blade to remove the dirt between each assembly.
	Insufficient space between double discs.	Add **spacers** (part #1100 or #M15226) as needed.
	Dirt behind the depth bands.	Remove the depth band, clean, and reinstall. Service the scrapers.
Disc opener does not track.	Loose or bent assembly. The **lift bracket** (part #10321) may be bent. The flex knuckle may have walked or moved from its original position.	Align the lift brackets on 7-1/2" centers. Replace bent brackets as needed.
	The rubber cords may have deteriorated. Look for cracking or softness on the ends of cords.	Soft rubber cords should be replaced.
Boot (shoe) failure.	Casting breakage.	Replace and slow down on rocky sites.
	Loose subassemblies.	Check for loose, worn-out **disc assemblies** (part #125456C) daily and **replace**. Check for loose and worn Connex **bushing** (part #10252).
SCRAPERS:		
	Bent depth band.	Straighten or replace the depth band.
Short Scraper Life	"Ears" form on scrapers.	Break off "ears" daily with pliers.
	Excessive wear.	Reduce spring preload by backing off the nuts. This will reduce the friction of the scraper against the disc blade.
	Lost scraper assemblies.	Use **locking flanged nuts** (part #N14-FNL & part #FN516-FNL) on the scraper assemblies or apply Loctite to the installed parts.

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SYMPTOM	CAUSE	SOLUTION
PRESS WHEELS:		
Press wheel springs fail.	Press wheels support too much weight.	Lower the front of the drill at the tongue clevis.
Press wheel tires come off the rims.	Excessive load on press wheel tires.	Raise the drill on sharp turns. Slow down on rocky sites. Lower the front of the drill to reduce forces on the press wheels. Change the tongue clevis position.
	Press wheel rim is bent.	Straighten rim or replace press wheel. Use drag chains in rocky conditions.
	Axle bolt tightens into the **"h" frame** (part #10251) which locks the press wheel bearing and prevents the press wheel from turning. This results in the self-destruction of the press wheel and tire.	Refer to "Set-Up & Preparation Section" for correct procedure to install the axle bolts and machinery bushings. Failure to follow correct procedure will result in continued press wheel failure. Increase frequency of application of WD-40.
SEED BOXES:		
	Dirt or rust on the exposed fluted feed or cut-off rolls.	Clean and lubricate with a dry silicone based lubricant.
Fluted-feed roll shifter levers on the small seed or cool season/grain box difficult to move.	Locked in torque on either feed shaft.	Turn feed shafts back and forth with a wrench while moving handle left and right.
	Bent roll pins on the shaft.	Replace as needed.
	Seed jammed in flutes.	Drop cup gates and clean with air hose.

SYMPTOM	CAUSE	SOLUTION
SEED BOXES (Con't):		
	Seed cup gates are jammed with debris.	Move gate levers up and down and clean debris from the gate area with an air hose.
Fluted-feed roll shifter levers on the small seed or cool season/grain box difficult to move.	Coated seed and its dust not cleaned after use from either the small seed or cool season/grain box.	First, try to remove seed from each cup with an air hose. Second, try to clean cups with high-pressure washer. When all else fails, remove the two bolts retaining each cup and one roll pin from each unit. This will allow you to move the cup aside to clean material from each flute and feed roll.
	Fertilizer applied from either cool season/grain or small seed box.	**Never apply fertilizer** from drill unless it is equipped with a fertilizer box attachment. Follow procedure in above item for cleaning coated seed from seed boxes.
	Missing **spring** (part #TS-72M).	
	Coupler alignment.	Small seed box **coupler** (part #1010) not in alignment with seed box shaft. Loosen drive end bearing and end box bolts. Align coupler with box shaft and retighten bolts and bearing.
Irregular quantities of seed coming from seed boxes.	Small seed box emptying unevenly.	Seed cups may have moved because of loose mounting bolts. Reposition and retighten.
	Feed roll flutes may be plugged.	Clean.
	Coated seed may have plugged cup.	Clean.
	Seed hoses may be kinked or plugged with debris.	Clean.
	Cool season/grain box emptying unevenly.	Seed cups may have moved because of loose mounting bolts. Reposition and retighten.
	Bridging of uncleaned seed.	Use only clean seed.
	Fluffy seed box emptying unevenly.	Tighten agitators.
		Tighten picker wheels.
		Clean transitions, seed hoses, and boot castings.
		Check and replace seed gaskets and seed gasket plates.

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SYMPTOM	CAUSE	SOLUTION
Irregular quantities of seed coming from seed boxes.	Small seed box **coupler** (part #1010) moved.	Reposition and tighten.
Clogging of seed passages.	Dirty seed.	Use only clean seed.
		Dirty cool season mixes may be planted from the fluffy seed box. A dirty fluffy seed mix may sometimes be handled by lowering the output ratio of the warm season speed changer.
	Wet seed.	If the drill is left with seed in it overnight, it must be put into a shed or covered with a tarp. The picker wheels are less likely to handle stems and awns if the seed gets wet or moist as they will bend and then snap back, rather than break in two as they pass through the picker wheels.
	Bent seed hose.	On rough sites, one or more seed hoses may become bent for a short distance. This allows the seed to buildup and then is released in a "slug". This may result in a plugged seedway passage.
	Storage litter.	During storage, a buildup of cobwebs and mice nests will plug hoses. Remove and clean all hoses before use.
<u>FLUFFY SEED BOX:</u> **Too little seed from the fluffy seed box.**	Wrong setting of the speed changer.	When standing at the tongue looking at the drill, the lowest output is when the speed changer chain is to the **far right**. Each step to the left increases the output.
	Restriction in the seed box.	If seed gaskets and retainer plates are in place, **remove them**.
		Use only commercially cleaned seed. Hand collected seed should be cleaned.
	Wrong sprocket.	Reduce the size of jackshaft sprocket (the end above the ground wheel). OEM is 26 tooth.
	Restriction in the seed passageway.	Clean the seed hose.
		Clean the transition.
		Clean the dirt from between the discs and within the boot casting.

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SYMPTOM	CAUSE	SOLUTION
FLUFFY SEED BOX:		
Too much seed from the fluffy seed box.	Excessive seed feed rate.	Add seed gaskets and retainer plates to fluffy seed box.
	Wrong setting of speed changer.	Move chain right.
	Wrong sprocket.	Increase the size of the jack shaft sprocket (the end above the ground wheel). OEM is 26 tooth.
		Increase the clutch sprocket size. OEM is 30 tooth.
		Increase the picker wheel shaft sprocket size. OEM is 30 tooth.
	Seed too fine.	Use a different seed box. Place seed in the cool season/grain seed box.
		Add inert filler, such as ground corncobs, cottonseed hulls, bran, rice hulls etc.
		Add seed gaskets and retainer plates.
		Place tape on the bottom of the box to restrict the slot next to the picker wheels.
		Remove chain to the agitators in the fluffy box.
COOL SEASON/GRAIN BOX:		
Too little seed from the cool seed box.	Plugged seedway passage.	Straighten kinked hose.
		Remove debris from the seed hose.
	Brown double spout seed cup.	Lower the gate for larger size seeds.Clean the flutes.Adjust flutes to the maximum open position.
	Dirty seed.	Clean the seed or try using the fluffy seed box.
Too much seed from the cool season box.	Excessive seed feed rate.	
	Double sprocket on end of box is too small.	Change the double sprocket. Use **double sprocket** (part #3095X1 in place of part #3095X).

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SYMPTOM	CAUSE	SOLUTION
SMALL SEED BOX:		
Too little seed from the small seed box.	Plugged seedway passage.	Clean cup assembly.
		Clean seed hose.
		Clean seed.
		Use only dry seed.
		Check hose for collapse.
		Adjust flutes to the maximum open position.
		Check for loose cup that may have moved to a more closed position.
Too much seed from the small seed box.	Excessive seed feed rate.	Adjust flute opening to a smaller or more closed position.
		Increase the size of the sprocket on the end of the small seed box. OEM is 20 tooth.
MAIN FRAME:		
Main frame or axle breakage.	Many possible causes.	Slow down when seeding on slopes and ditch banks.
		Correct preload on axle nut.
		DO NOT tow drill at posted highway speeds. **TOW AT A SPEED OF 20 MPH OR LESS.**
		Service wheel bearings (i.e. check and repack) on a regular basis.
		Check wheel lug nuts for tightness. Torque wheel lug nuts to 130-135 Foot Lbs.
HYDRAULICS		
OTG hydraulic failure	Improper hose connection to hydraulic cylinders.	See Parts Catalog – Hydraulic Assemblies.
	Improper hose connection to tractor hydraulics.	See Parts Catalog – Hydraulic Assemblies.

SYMPTOM	CAUSE	SOLUTION
HYDRAULICS (Con't):		
OTG hydraulic failure	Incorrect quick disconnects on either tractor or drill.	Check compatibility as many disconnect brands do not interconnect. Also, different models of the same brand **do not** always interconnect. Relieve pressure from the tractor hydraulics before attempting to connect to the drill. It may be necessary to relieve hydraulic pressure (without disconnecting hydraulic fitting) prior to connecting the hydraulic quick disconnects.
	Dirty or damaged hydraulic quick disconnects.	Keep all hydraulic quick disconnect fittings clean and covered when not in use. Wipe clean before connecting and **do not** pound or hammer on the "ball fitting" on the "male" disconnect to relieve pressure on the line. Be aware of hydraulic pressure. Use extreme caution when working with hydraulic fluids.
	Damaged, frayed, or bent hydraulic hoses.	Hydraulic hoses that are routed between the drill from the front tower to the rear of the drill must be covered with **hose guard** (part #42221). This will protect and prevent hose damage in areas where they come in contact with the drill frame parts.
	Hydraulic system is air-locked.	Follow procedures outlined in the Maintenance and Service Section of this manual.
NO- TILL:		
No-till units do not penetrate.	Insufficient weight transfer to no-till units.	Change draw bar position on the tractor.
		Check for loose or worn disc blades or no-till blades.

SYMPTOM	CAUSE	SOLUTION
NO- TILL (Con't): **No-till units do not penetrate.**		Change style and size of no-till blades. Lower shanks of no-till assemblies.
	Insufficient weight transfer to no-till units.	
	Excessive field speed for field conditions.	Reduce ground speed.
	Seedbed requirements **do not** match equipment.	Sod seeding will require the 13-1/2" notched no-till blade. Fields with loose residue cover, such as winter wheat or corn residue may require the 18" notched blade. The larger blade will help prevent "snow plowing" the litter. In soybean/ intermediate and bare ground use either the 24 or 13 wave flat blades. Drilling along ditches, roadsides, swales, and other site specific conditions may require a narrower drill to allow the majority of disc openers to contact the ground at all times.
No-till planting units are not tracking.	Disc openers are out of alignment.	Straighten **lift bracket** (part #10321), if bent. Check alignment from back of drill. Rubber torsion knuckle may have moved left or right. Loosen the four **retaining bolts** (part #B38-1.25) and carefully move the knuckle back into position.
	No-till units are out of alignment.	**Clamp plates** (part #4211 or #5211) are not equally spaced. **Clamp plates** (part #4211 or #5211) may be broken or twisted. Inspect and replace as needed. **Shanks** (part #42201X, #4220X1, and #52201X) are bent or twisted. **Caution! Shanks** (part #52201X are made from spring steel and will not straighten. If bent, **they must be replaced**.

SYMPTOM	CAUSE	SOLUTION
ACRE METER: **Acre meter tallying incorrectly.**	Double tracking or leaving too wide a space between rows on each trip across the field.	Leave the same amount of space between each seeded strip as the furrow opener spacing on the drill.
	Land area contains more or less area than assumed.	Double-check the **"facts"**.
	One or more sprockets between the ground wheel and the acre meter have been changed.	If sprocket combination has been changed from the OEM standard, then calculate the area covered. **See procedure on Page** 30-31.
	Circle drilling with the drive wheel on the outside of the turn will give a false reading from the acre meter.	
	Output reduction feature in use.	Acre meter will read 45% of actual acres planted. Multiply acre meter reading by 2 for actual acres planted.