HAYBUSTER

3107
AIR DRILL

OPERATOR'S MANUAL

WARRANTY

Haybuster Mfg. Inc., warrants to the original purchaser for one year from purchase date that this product will be free from defects in material and workmanship when used as intended and under normal maintenance and operating conditions. This warranty is limited to the replacement of any defective part or parts returned to our factory in Jamestown, N.D., within thirty (30) days of failure.

This warranty shall become void if in Haybuster Mfg. Inc's., judgment the machine has been subject to misuse, negligence, alterations, damaged by accident or lack of required normal maintenance, or if the product has been used for a purpose for which it was not designed.

All claims for warranty must be made through the dealer which originally sold the product and all warranty adjustments must be made through same.

This warranty does not apply to tires or bearings or any other trade accessories not manufactured by Haybuster Mfg. Inc. Buyer must rely solely on the existing warranty, if any, of these respective manufacturers.

Haybuster Mfg. Inc., shall **not** be held liable for damages of any kind, direct, contingent, or consequential to property under this warranty. Haybuster Mfg. Inc., cannot be held liable for any damages resulting from causes beyond its control. Haybuster Mfg. Inc., shall **not** be held liable under this warranty for loss of crops, or rental costs or any expense or loss for labor or supplies.

Haybuster Mfg. Inc., reserves the right to make changes in materials and/or designs of this product at any time without notice.

This warranty is void if Haybuster Mfg. Inc., does not receive a valid warranty registration card at its office in Jamestown, N.D., within 10 days from date of original purchase.

All other warranties made with respect to this product, either expressed or implied, are hereby disclaimed by Haybuster Mfg. Inc.

SAFETY INSTRUCTIONS

The safety of the operator is of great importance to those at Haybuster Manufacturing Company. We have provided decals, shields, and other safety features for your protection. In addition, we ask you to be a careful operator who will properly use and service your Haybuster equipment.

WARNING: BEFORE ATTEMPTING TO OPERATE THIS MACHINE, CAREFULLY READ ALL INSTRUCTIONS CONTAINED IN THIS MANUAL.

Before Operating:

1. Be sure all safety shields and covers are securely in place.

2. Read all warning and instructional decals placed on this machine.

3. Allow only responsible, properly instructed individuals to operate this machine. Carefully supervise inexperienced operators.

4. Make no modifications to this equipment unless specifically requested or recommended by Haybuster Manufacturing Co.

5. Tighten or replace any loose or cracked bolts, hoses or fittings.

6. The towing vehicle must be of equal or greater weight than the implement for adequate braking capacity.

During Operation:

1. Exercise extreme caution when operating the implement on steep slopes or grades.

2. Be sure all spectators are clear of the area where the implement is in operation or whenraised and lowered. Never allow anyone under the wings while folding or unfolding the implement. Insert the safety pins as soon as the wings are folded and do not remove them until just prior to unfolding.

3. Be sure the tractor operator is the only person riding the tractor. Allow no one to ride the drill at any time.

4. Loose clothing, necklaces and similar items are more easily caught in moving parts. Avoid the use of these items and keep long hair confined.

5. Never work under the implement when the implement is lifted up unless the safety stops are in place on the hydraulic cylinders.

6. Watch out for and avoid any object or situation that might interfere with the proper operation of this machine.

During Service and Maintainence:

1. Before working on or near the implement for any reason including servicing, lubricating, cleaning, inspecting, or filling:
   A. Shut off tractor engine.
   B. Set parking brake.
   C. Remove key from ignition.
   D. If working under implement or detaching from tractor, install safety stops on hydraulic cylinders.

2. If disconnecting the tank cart from the cultivator:
   A. Lower the cultivator to the ground and use the jack on the cultivator hitch to support the hitch. Failure to support the rear of the cultivator by lowering it to the ground will result in the cultivator hitch, whipping upwards suddenly once the hitch pin is removed.
   B. Relieve all hydraulic pressure from hoses before seperating the hydraulic lines.

3. When replacing any parts on your implement, be sure to use only Haybuster authorized parts.

4 Relieve all pressure in the hydraulic system before disconnecting the lines or performing other work on the system. Make sure all connections are tight and the hoses are in good condition before applying pressure to the system.

5. Hydraulic fluid escaping under pressure can be invisible and have enough force to penetrate the skin. When searching for a suspected leak, use a piece of wood or cardboard rather than your hands to locate the leak. If injured, seek medical attention immediately to prevent serious infection or reaction.

6. Be careful when using a hoist or other lifting devices. Use only devices that have adequate lifting capacity and be sure the chain or cable is securely attached.

When Transporting on Public Roads:

1. Use good judgement and drive carefully, especially over rough or uneven roads.

2. Be sure tractor brakes are properly adjusted and foot pedals locked together.

3. Check your state laws regarding the use of lights, slow moving vehicle emblems, safety chains and other possible requirements.

4. When preparing implement for transport, always use safety pins to secure wings when in raised position, and safety stops must be used on the hydraulic cylinders.

5. Do not tow implement at speeds exceeding 20 mph.

WARNING: FAILURE TO COMPLY WITH ANY OF THE SAFETY INSTRUCTIONS ON THE PRECEDING PAGES OR THOSE TO FOLLOW WITHIN THIS MANUAL MAY RESULT IN SEVERE INJURY OR DEATH!

This airdrill is not to be used for any purpose other than that for which it is intended as explained in the operator's manual, advertising materials and other pertinent written materials prepared by Haybuster Manufacturing Co.

Safety decals located on the machine contain important and useful information that will help you operate your equipment safely.

To assure that all decals remain in place and remain in good condition, follow the instructions given below:

1. Keep decals clean. Use soap and water-not mineral spirits, adhesive cleaners or other cleaners that will damage the decal.

2. Replace any damaged or missing decals. When attaching decals, surface temperature of the metal must be at least 40 degrees F.. The metal must also be clean and dry.

3. When replacing a machine component to which a decal is attached, be sure to also replace the decal.

4. Replacement decals can be purchased from your Haybuster dealer.

INTRODUCTION TO THE 3107 AIRDRILL

The 3107 airdrill is a combination field cultivator and press drill with the press wheels attached to the opener disks to provide superior depth control. The field cultivator is intended to be a secondary tillage implement.

The cultivator shanks are spaced 9 1/2 inches apart and are equipped with 12 inch sweeps. The under frame clearance is 21 inches. A single bar, spring tooth harrow smooths the cultivated soil prior to the seed openers. The hydraulic cylinders on the cultivator are the master and slave cylinder type and depth is controlled with stop collars.

The seed runs are spaced 7 inches apart and are staggered 5 1/2 inches front to rear to allow soil and residue to pass easily. A 2" x 13" rubber tired packer wheel is attached directly to each seed run, and each is individually adjustable to control seeding depth.

The seed is metered through an infinitely variable mechanism and dropped into 6 primary delivery tubes. Air transports the seed and fertilizer to the manifolds, where it is divided and dropped to the individual seed runs.

An electric monitor is provided to track the vital functions. A fan tachometer indicates the fan speed in revolutions per minute. Indicator lights verify that the feed shafts are turning. Indicator lights also tell you if your seed or fertilizer bins need refilling soon.

SPECIFICATIONS

Overall length	38.3 feet
Seeding width	31.5 feet
Row spacing	7.0 inches
Shank spacing	9.4 inches
Under frame clearance	21.0 inches
Sweeps	12.0 inches
Disc dia.	14.0 inches
Weight (empty)	approx. 14,500 pounds
Seed tank height	89.0 inches
Hopper capacity	120.0 bushel
	Split approx. 60% seed and 40% fert.
	or 120 bushel seed only.
Transport width	19.0 feet
Transport height	13.3 feet
Center section tires	11L x 15 (4)
Wing section tires	9.5L x 15 (2)
	20.5 x 10 (2)
Seed tank tires	19.5L x 16.1 (2)
Depth control press wheels	2" x 13" rubber

STANDARD EQUIPMENT

Hydraulic driven fan	Single bar harrow
Master and slave cylinders on cultivator hydraulic lift	
Shaft monitor	Low bin indicator
Fan tachometer	Acre counter

CONNECTING THE HYDRAULICS TO THE TRACTOR

Consult the operator's manual for the tractor you will be using on the 3107 airdrill to determine if it has a closed center or an open center hydraulic system. A closed center hydraulic system is preferred.

CLOSED CENTER HYDRAULICS.

Find the red flow control valve on the 3107 airdrill, located to the left side of the fan and slightly below the fan motor. At the rear of the valve block, locate the screw marked "BYPASS". (See fig. 1) Use an allen wrench to remove the cover. Turn the screw found under the cover, in (clockwise) until it bottoms out tight. Replace the cover and tighten. Connect the hydraulic hoses to the tractor and adjust the tractor flow control to maximum flow setting. Control the fan speed using the flow control knob on the front of the 3107 valve block.

OPEN CENTER HYDRAULICS.

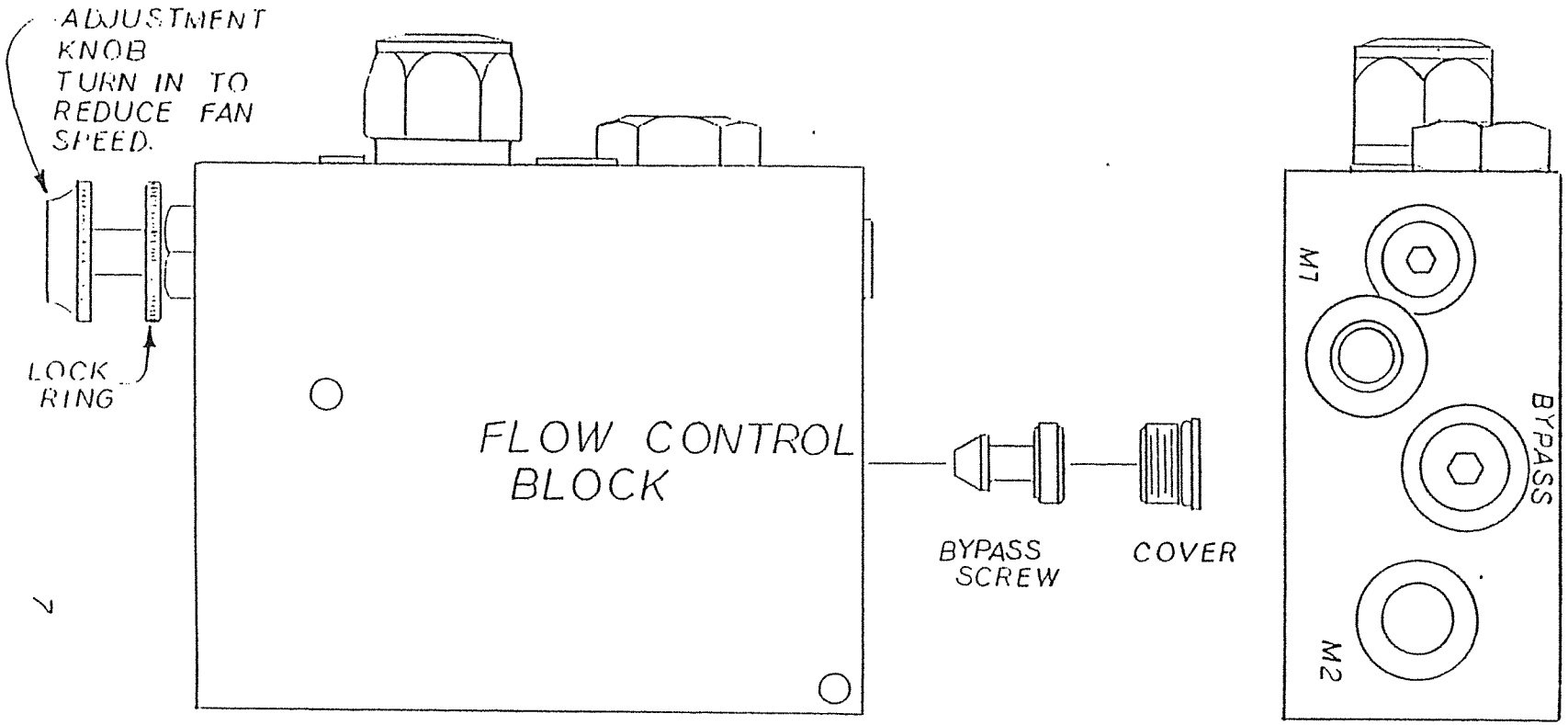
Find the red flow control valve on the 3107 airdrill, located to the left side of the fan and slightly below the fan motor. At the rear of the valve block, locate the screw marked "BYPASS". (See fig. 1) Use an allen wrench to remove the cover. Turn the screw found under the cover, out (counter-clockwise) until the screw is out tight against the stop. Replace the cover and tighten. Connect the hydraulic hoses to the tractor and control the fan speed using the flow control knob on the front of the 3107 valve block.

Open center hydraulic systems require some modification to prevent fan speed drop when raising and lowering the cultivator/drill. The simplest method to reduce fan speed drop is to install 1/8" dia. flow restrictors in hoses 1 & 2 as identified on page 8. This method may reduce the speed of raising and lowering and also may cause additional heating of the hydraulic oil when the cultivator/drill is raised and lowered frequently. Consult your tractor operators manual for maximum allowable hydraulic oil temperature.

A better, but more costly, method to prevent fan speed drop is to have a gear type flow divider, or a priority valve, installed on your tractor. The output from the flow divider should go directly through the on-off valve on the tractor, to the fan, to guarantee a consistent flow of 14 gpm to the fan. The balance of the flow will be available to raise and lower the cultivator/drill. Contact your tractor dealer to have this equipment installed on your tractor.

ORBIT MOTOR CASE DRAIN.

Maximum allowable pressure on the fan orbit motor case drain hose is 20 psi. This hose should be connected directly to the tractor hydraulic reservoir to keep case drain pressure at a minimum. Exceeding 20 psi may result in failure of the shaft seal on the fan orbit motor.



FOR CLOSED CENTER:

SCREW BYPASS SCREW IN UNTIL IT BOTTOMS OUT TIGHT.

FOR OPEN CENTER:

SCREW BYPASS SCREW OUT UNTIL TIGHT.

FIG. 1

CONNECTING THE HYDRAULICS TO THE TRACTOR

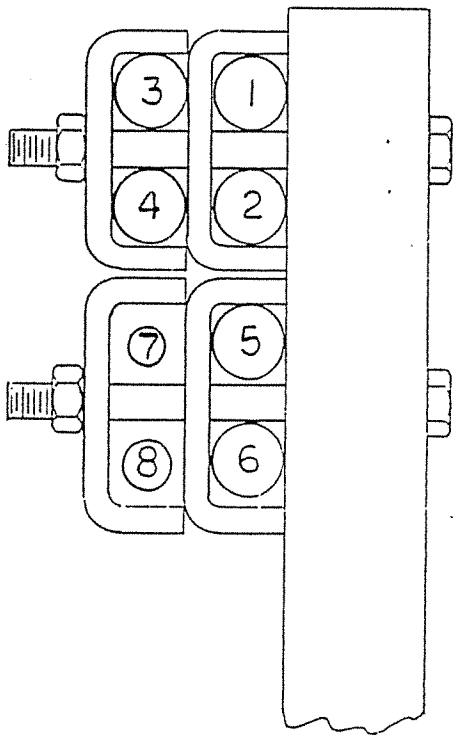


FIG. 2

1 - Pressurize to raise cultivator.
2 - Pressurize to lower cultivator.

3 - Pressurize to fold wings.
4 - Pressurize to unfold wings.

5 - Pressurize to power fan.
6 - Fan return.

7 - Monitor wiring harness.
8 - Fan case drain.

MASTER AND SLAVE CYLINDER START UP PROCEDURE.

Inspect the hydraulic plumbing on the cultivator/drill to verify that the hoses are connected in "series". (The hose from the rod end of the cylinder on the center section should connect to the fixed end of the cylinder on the wing section.)

With the tractor idling, operate the tractor hydraulics to extend the cylinders. Remove the transport locks from the rods of all the cylinders. Store the transport locks from the center section on the loops welded on the beam above the fixed end of the cylinders. (The locks from the wing cylinders are used only for shipping or when replacing a hydraulic hose. They are not necessary for transport safety once the hydraulic cylinders are charged with oil.) Keep the valve open until all four cylinders are fully extended. Hold the valve open for 4 or 5 minutes, forcing oil through the bypass ports in the cylinders, to purge air from the entire system. Keep tractor engine at idle speed while purging air from the system, as excessive engine speed may cause oil to overheat and could damage tractor hydraulic components. Retract and extend cylinders to check that all cylinders extend evenly and in phase with each other. Check hydraulic plumbing for leaks.

WARNING: Hydraulic fluid escaping under pressure can be invisible and have enough force to penetrate the skin. When searching for a suspected leak, use a piece of wood or cardboard rather than your hands to locate the leak. If injured, seek medical attention immediately to prevent serious infection or reaction.

It is normal for cylinders to become somewhat unbalanced after a few hours in the field. Re-phase the cylinders by raising the cultivator/drill fully, and holding the lever open for 30 seconds to a minute. Be sure to have the tractor engine idling while re-phasing. Frequent need for re-phasing may indicate air in the hydraulic system or the need to replace the seals in the hydraulic cylinders.

MOUNTING AND OPERATION OF THE MONITOR

1. Mount the control box in a convenient place in the tractor cab. The monitor must be connected to 12 volt negative ground. Connect the red, power lead to the positive terminal on the battery or tractor switch. Connect the black lead to the negative terminal or the tractor frame.

2. Connect the sensor lead to the coupler on the drill hitch.

3. The 3-position switch on the panel of the monitor is off at the center position. The down position is automatic and the up position is manual. In the down (auto.) position, a sensor located on the cultivator will automatically start the seed and fertilizer flow when the cultivator is lowered, and stop the flow when the cultivator is raised. Moving the switch on the panel to the up (manual) position, will bypass the automatic sensor on the cultivator and provide continuous seed and fertilizer flow until the switch is turned off, or forward motion of the airdrill is ceased. This feature is helpful when seeding through low spots, for example. The cultivator may be partially raised but with the panel switch in "manual", the low spot may be sown without tilling it.

4. The green lights on the panel will blink on and off to indicate that the feed shafts are turning. If either one stops blinking a pin is sheared on the feed wheel shaft. Use a 3/16" x 3" cotter key as a replacement shear pin. If both lights stop blinking, a chain may have jumped off, a key may have sheared on one of the drive shafts, or the electric clutch may not be engaging. If the problem is traced to the clutch, check to see that the sensor on the cultivator is lined up with the magnet. Also verify that all wiring is intact and making contact. Check to see that both feed shafts are turning freely with no binding. If everything appears all right at this point, test the voltage available at the clutch by disconnecting the electic leads to the clutch and measuring voltage with a voltmeter. Voltage available should be between 11 and 14 volts.

5. The amber lights indicate seed or fertilizer in the hopper. When a light goes out, the bin indicated is low and should be refilled soon.

6. The fan tachometer gives fan speed in revolutions per minute. Use 4000 rpm as a starting point and increase speed to eliminate plugging, or decrease speed to reduce seed coat damage due to excessive speed. DO NOT EXCEED 5000 RPM or the tachometer will be damaged.

7. Clearance between all sensors and sensor magnets should be 1/8". The sensor on the cultivator should be adjusted vertically so it lines up with the sensor magnet when the cultivator is lowered to the correct tillage depth. (Adjust depth first!)

TRANSPORTING

Raise the cultivator/drill fully and remove any stroke control collars from the center section hydraulic cylinders. Place the red transport locks over the rods on the center section hydraulic cylinders. Pin the locks in place.

Raise the wings fully and use the transport lock pins to secure the wings in the folded position. AVOID WALKING UNDER THE WINGS, ESPECIALLY PRIOR TO INSTALLING THE TRANSPORT LOCK PINS. If the wings do not pull in far enough to insert the transport lock pins, adjust the large bolts, located under the wing fold cylinders, until the lock pins can be inserted easily.

DO NOT EXCEED 20 MPH WHEN TRANSPORTING THE 3107 AIRDRILL. SWAY MAY OCCUR AT ANY TIME AND CAUSE LOSS OF CONTROL. DRIVE WITHIN YOUR ABILITY!!!

To unfold wings, reverse the above procedure. Stay clear of wings especially after removing the transport lock pins. Extend the cylinders FULLY, after the wings are unfolded to allow the wings to float up and down on uneven terrain.

FEED WHEEL ADJUSTMENT

The feed wheels should be centered behind the feed slots on the grain and fertilizer tank. 1/4" clearance should exist between the lugs on the feed wheels and the inside, front of the metering hopper. 1/4" feed wheel clearance must be used for all materials being metered unless specified on the seed chart. It is necessary to increase this clearance to 3/8" when metering large seeds such as soybeans to reduce cracking of the seed coat.

Begin by loosening and removing the drive chain on the left hand side of the tank. The bearings for the feed wheel shaft are bolted to a seal plate which, in turn, is bolted to the sides of the tank. (See fig. 3) At the top and bottom of this seal plate exists a horizontal slot. Loosen the nuts that extend through this slot, which holds the seal plate in position. DO NOT LOOSEN THE BEARINGS FROM THE SEAL PLATES! If the bearing is loosened from the seal plate, be certain that the shaft turns freely in the close fitting hole in the seal plate after the bearing is re-tightened. Access to the seed tank feed wheels is gained by opening the large trap door at the rear of the tank. Remove the feed wheel cover. 2- 1/4" and 2- 3/8" "L" shaped gages are included with the drill. Place a 3/8" shim on each, end seed wheel and push the seed wheel shaft forward until the 3/8" shim is slightly pinched between the seed wheels and the front, interior tank wall. (see fig. 4). Re-tighten the seal plates to hold the seed wheel shaft in position. Remove the 3/8" gages and replace the seed wheel cover. Close and securely latch the trap door. Re-install and tighten the drive chain. Repeat the procedure above using the 1/4" gages when readjusting the feed wheels for smaller seeds.

USING ENTIRE TANK FOR SEED

When using the entire tank for seed, open the 4" x 59" door found inside the tank on the center divider. Easiest access to the door is through the large trap door on the rear of the tank. Loosen the three latch bars and fold divider door down against tank wall. Retighten the latch bars so they will not be lost. Close and latch the large trap door. Remove the drive shield from the left end of the tank. Remove the 3/16" x 3" cotter key from the feed shaft drive sprocket on the fertilizer tank. The sprocket has a bushing inside of it that will allow the sprocket to "free wheel" without turning the feed shaft. Replace the drive shield. Close the fertilizer metering gates by turning the fertilizer rate adjustment screw until the indicator plate reads "0". Both hoppers may now be used for seed with a total hopper capacity of 120 bushels.

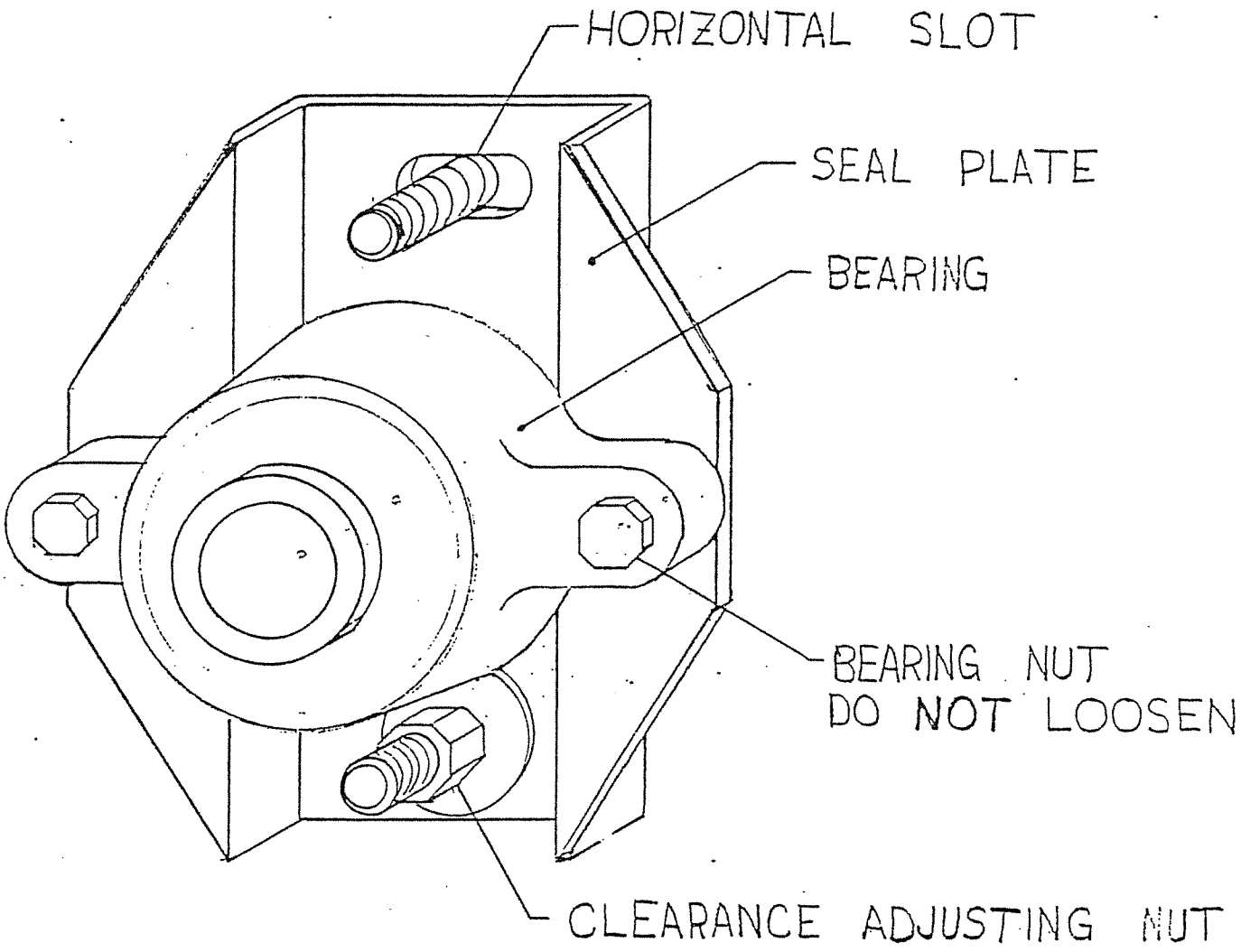

HORIZONTAL SLOT
SEAL PLATE
BEARING
BEARING NUT
DO NOT LOOSEN
CLEARANCE ADJUSTING NUT

FIG. 3

CLEAN-OUT OF THE METERING SYSTEM.

Plan ahead so the amount of seed or fertilizer remaining in the tank is minimized. If you wish to save the grain or fertilizer, park the tank over clean concrete or place a tarp under the tank.

Remove the fertilizer cups by pushing in and turning the wing type fasteners counter-clockwise. (The seed cups may remain in place.) The clean-out doors are found at the very bottom of the seed and fertilizer metering hoppers. They are 4" wide and 59" long. Open the three latches found at the bottom edge of each clean-out door. Most of the grain or fertilizer will slide out without further assistance. Wipe out remaining material with a rag or brush, and remove any fertilizer buildup. Wash the hoppers with clean water at the end of the season. Close and relatch the clean-out doors. Reattach the fertilizer cups by placing in position, pushing in on wing type fasteners, and turning clockwise until latched.

The large door on the rear of the grain hopper is for servicing the feed wheels without having to climb down from the top of the tank. DO NOT OPEN WHEN THE TANK IS LOADED WITH GRAIN!

CALIBRATING THE FEED RATE ADJUSTMENT SYSTEM.

Remove the seed and fertilizer cups so the metering slots are visable. Turn the adjusting crank (DO NOT FORCE!!) until the bottom of the gates, line up with the top of the metering slots. (see fig. 5) The pointer should line up with 15 1/2 on the indicator plate. (see fig. 6) Correct if necessary. If any gates do not align with the top of the slot, correct by loosening the jam nut and adjusting the gate adjustment turnbuckle. CAREFULLY align the gate with the top of the slot and re-tighten the jam nut.

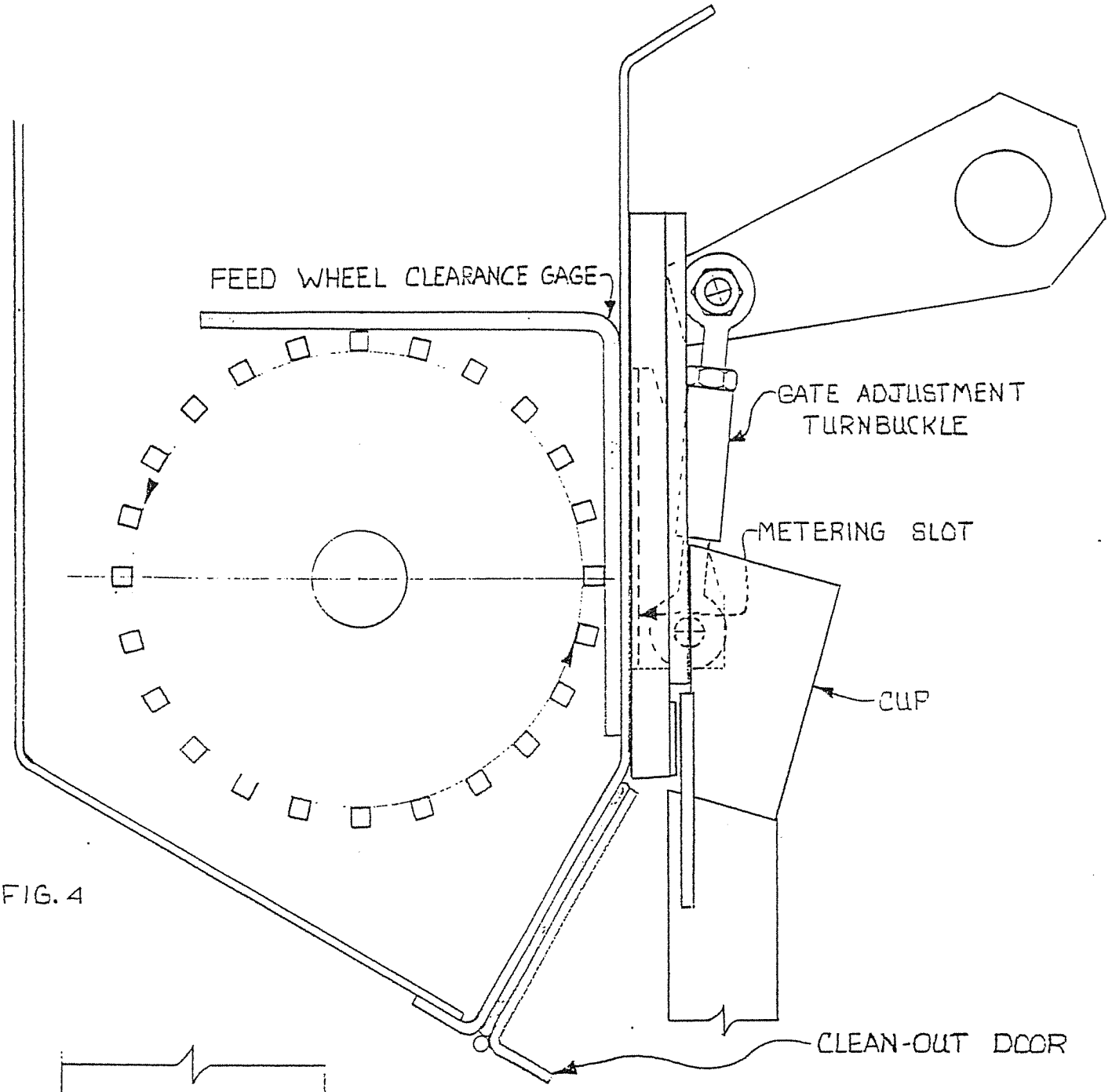


FIG. 4

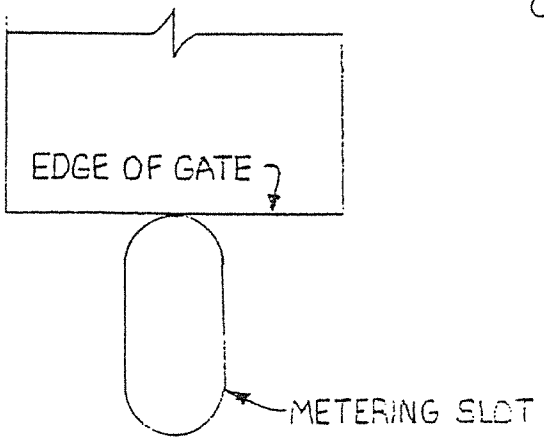


FIG. 5

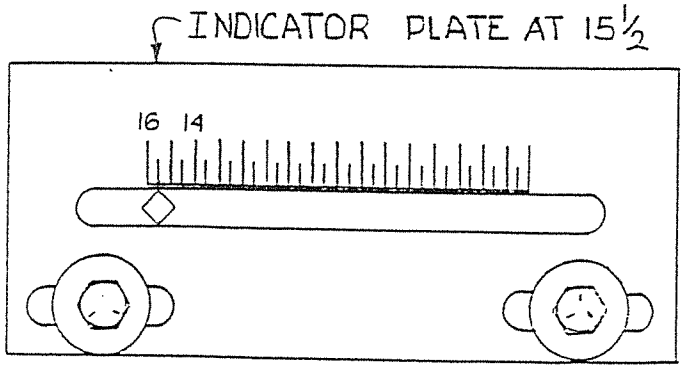


FIG. 6

SETTING AND CHECKING THE FEED RATE

The rates shown on the charts serve only as a starting point. Due to variations in seed size and density the actual rates may vary from the chart. The following method may be used to determine a proper setting for your particular seed or fertilizer.

Setting and checking the feed rate using wheat as an example:

1. You desire to seed wheat at a rate of 90 lbs. per acre.
2. The feed wheels should be set at 1/4" spacing as described on page 12. This adjustment should be verified before putting seed in tank.
3. The seed rate chart shows 89 lbs./acre when the pointer is at #5. Set the pointer at this location. (see page 15 for illustration of the pointer.)
4. Make sure the feed wheel cover is in place and fill grain tank.
5. Seed far enough so grain begins to flow from metering slots.

CHECKING FEED RATE

1. Measure a distance of 691 feet (1/2 acre) and mark with stakes. Remove one hose from a run and attach a cloth bag to collect the seed. (The fertilizer must be turned off for this test.)
2. Operate the drill at the intended planting speed and collect a seed sample for the entire length of the test track, marked out in step 1.
3. Weigh the sample in ounces (subtract the weight of the sample container).
4. Use the following formula to determine lbs. per acre:

Ounces of sample x 6.75 = Pounds per acre

EXAMPLE:

Sample + container weighs	15.0 ounces
Subtract weight of container	- 1.8 ounces
Weight of sample only	13.2 ounces

13.2 ounces x 6.75 = 89.1 pounds per acre.

5. To calibrate a seed not shown on the chart or a seed mixture, compare with the chart to find a similar seed. Use the similar seed as a guideline to obtain a trial setting. Test as shown above and reset as necessary.

6. The same method may be used to verify fertilizer rates. Remember to turn off the seed when checking fertilizer rate.

HAYBUSTER

SERIES
SPACING 7 inch
MODLE NO 3107

CHART FOR DRILLING GRAIN IN POUNDS PER ACRE

POINTER SETTING

WHEEL SPACE		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16
OATS	1/4"				7	12	18	27	35	48	60	71	79	87	96	101	112	120	125	134	140	146	149	153						
WHEAT	1/4"	4	12	25	40	58	74	89	104	118	130	141	153	164	175	184	193	203	211	220	228	238	246	250	254	259				
FLAX	1/4"	3	11	21	36	48	63	76	91	103	113	123	138	148	159															
BARLEY	1/4"		8	20	34	49	67	77	93	106	117	127	139	150	160	169	179	189	197	206	216	224	231	237	244	247	250			
SUNFLOWERS	1/4"			6	12	18	25	33	43	53	61	68	75	82	87	93	98	102	107	110	114	119	123	127	130					
RAPE (CANOLA)	1/4"	9	18	31	49	63	75	87	101	114	126	137	149	159	169	177	184	189												
SOYBEANS	3/8"			17	28	43	57	70	84	98	113	124	133	144	152	161	171	179	191	195	204	212	221	228	240	244	251	254		
18-46-0		6	16	27	45	65	80	93	111	127	140	152	166	178	185	198	207	217	225	233	242	250	259	264						

LUBRICATION

Grease the pivot bushings on the cultivator lift assembly every 10 HOURS of operation. 2 zerks are found on each wing wheel assembly, and 4 zerks are found on the center section lift assembly.

Lubricate the drive chains with a graphite spray lubricant every 40 HOURS of operation. More frequent lubrication may be required if operated in severely dusty conditions.

Wheel bearings should be inspected, adjusted, and repacked with grease, ANNUALLY.

All bearings found on the tank drive should be greased ANNUALLY.

Do not allow any grease or other lubricants to come in contact with the electric clutch. Slippage and overheating may result.

DEPTH ADJUSTMENT

Adjust tillage depth by placing equal stroke control collars on the hydraulic cylinders on the CENTER SECTION ONLY!

Level the cultivator front to rear by adjusting the hitch block between the cultivator and the seed tank cart.

WARNING!!! The cultivator is "back heavy" and the HITCH WILL WHIP UP WHEN UNPINNED!!

To prevent this condition, lower the cultivator/drill to the ground and use the jack on the cultivator hitch to remove ALL tension from the adjusting pins. Adjust the hitch block and REPIN BEFORE RAISING THE CULTIVATOR/DRILL.

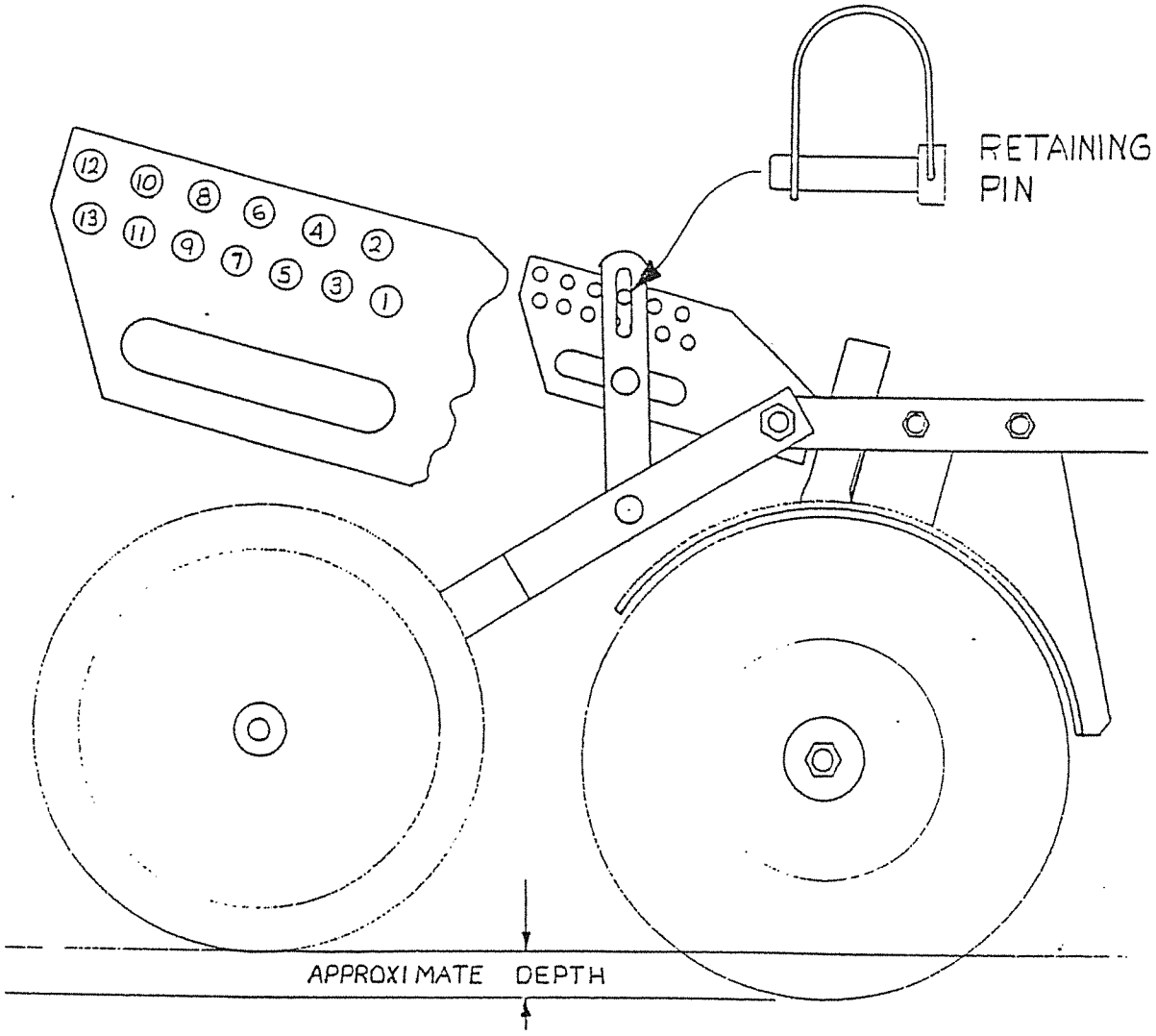
Level the wings by adjusting the block found at the lower end of the wing cylinder. Loosen the two mounting bolts and use the adjusting bolt to force the block. Moving it forward raises the wing and to the rear lowers the wing. Re-tighten mounting bolts.

The purpose of the stabilizer wheel is to eliminate the twisting force on the wing caused by the seed opener springs lifting upwards on the rear of the cultivator frame. Adjust the stabilizer wheel so that some of the weight of the wing is carried on it except when crossing field depressions such as wash-outs. Place the adjusting pin in an appropriate hole on the adjusting plate so the pin is above the stabilizer wheel beam.

Adjust the tool bars so the run frame will be approximately parallel to the ground when the discs are at the proper seeding depth. (see page 21). This allows 4 inches of down travel and 10 inches of up travel on the seed runs so they may follow uneven terrain and raise to clear obstructions. Adjust the tool bars by loosening the bottom jam nut and slightly loosening the top jam nut on the tool bar adjusting cranks. When raising the tool bars, leave the machine down in the ground so the opener spring pressure will ease the force required to turn the adjusting cranks. When lowering the toolbars, raise the machine fully so gravity will ease the force required to turn the adjusting cranks. Keep the threads fully greased to prevent rust and seizure of the threads. Always keep the toolbars parallel to the cultivator frame. Retighten both jam nuts on all adjusting cranks.

Adjust the retaining pin on the press wheel frame to obtain the desired seeding depth. Use the chart on page 20 as a staring point. Actual seed depth will vary depending on soil conditions, run spring setting, and volume of loose soil flowing behind the packer wheels.

Adjust the run springs to obtain the desired packing force on the packer wheels. Use the chart on page 21 as a guide.

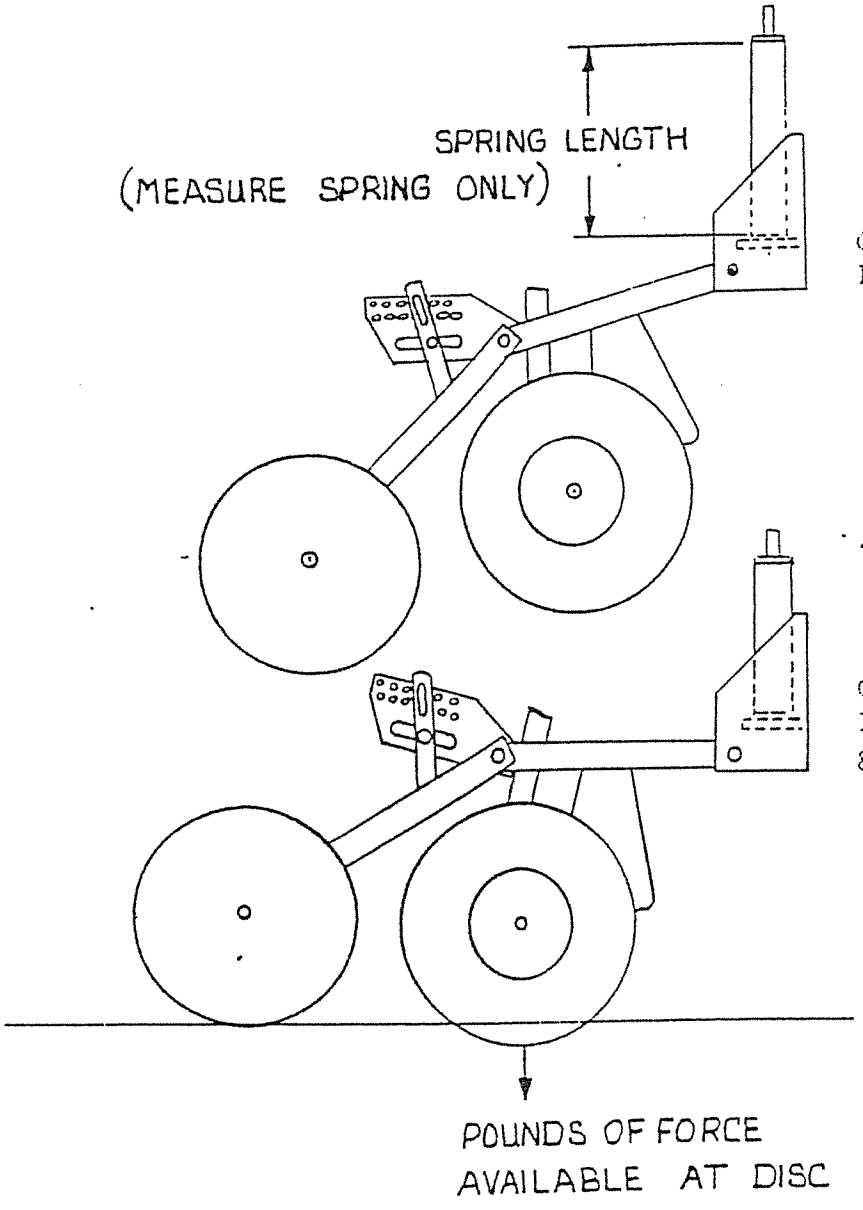


RETAINING PIN IN HOLE NUMBER:	GIVES APPROXIMATE SEED DEPTH OF:
1	1/8"
2	1/4"
3	3/8"
4	5/8"
5	7/8"
6	1 1/4"
7	1 1/2"
8	1 7/8"
9	2 1/4"
10	2 3/4"
11	3 1/8"
12	3 5/8"
13	3 7/8"

Actual seed depth will vary depending on soil conditions, run spring setting, and volume of loose soil flowing behind the packer wheels.

RUN SPRING ADJUSTMENT

SPRING LENGTH	POUNDS AT DISC
12 1/2"	70
12 "	80
11 1/2"	90
11 "	100
10 1/2"	115



Cultivator/drill raised.
Run in relaxed position.

Cultivator lowered.
Run frame parallel to
ground when seeding.

Excess force not required for disk penetration is transferred to the packer wheel for soil firming.

DURATECH

formerly

HAYBUSTER

3107
AIR DRILL
PARTS BOOK

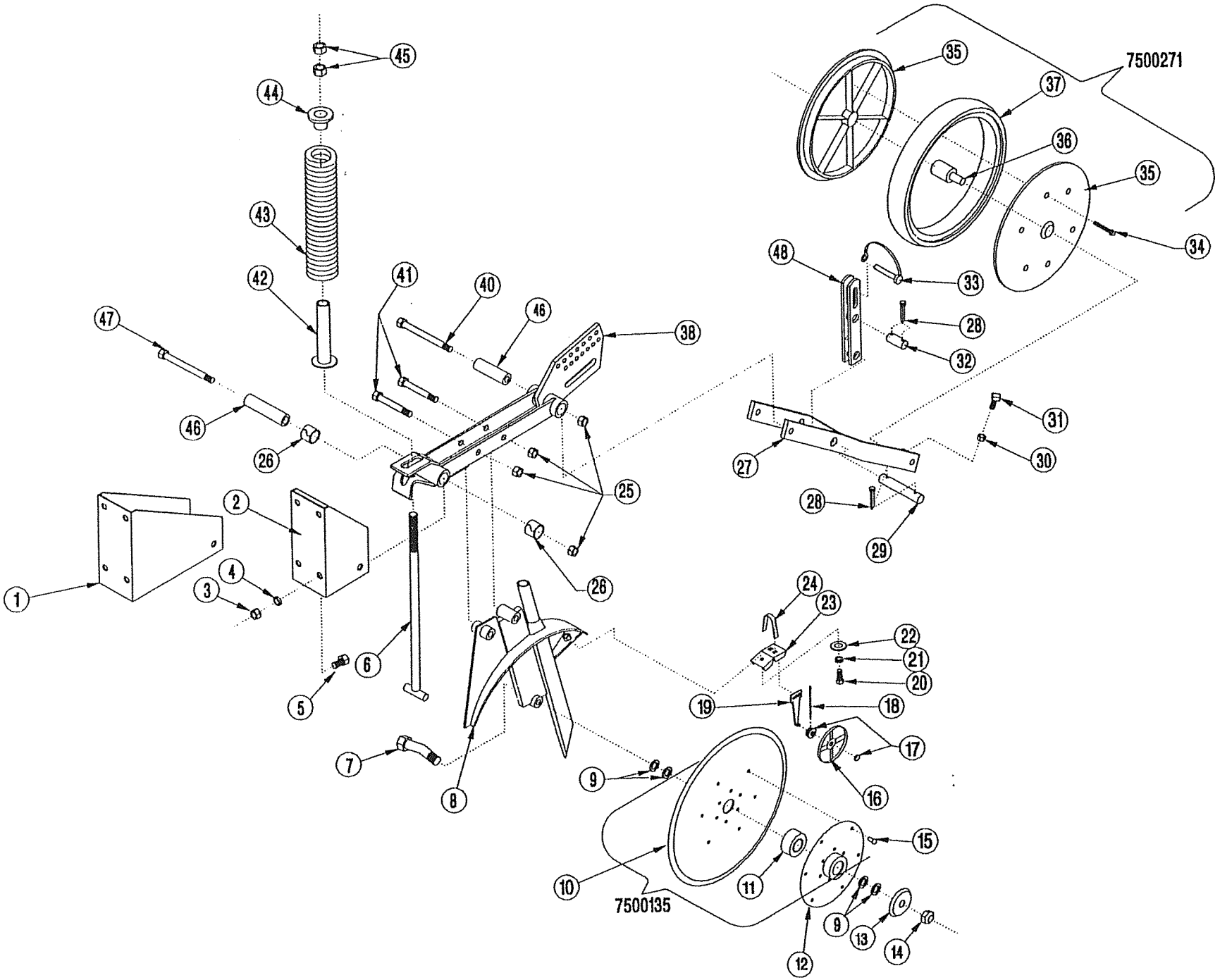
NO. 91

DuraTech Industries International Inc., PO Box 1940, Jamestown, ND 58402-1940

RUN ASSEMBLY

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	8400499	1	RUN FRONT FRAME (LONG)
2	8400500	1	RUN FRONT FRAME (SHORT)
3	4900001	4	1/2" HEX NUT
4	5000004	4	1/2" LOCK WASHER
5	4800018	4	1/2" X 1 1/4" HEX BOLT
6	8400047	1	SPRING ROD
7	4800036	1	5/8" X 3-5/8" BENT BOLT
8	8400501	1	RUN BOOT
9	5000009		1" OD SHIM WASHER "AS NEEDED"
10	7500010	2	DISK 14" 12 RIVET/MISC.
11	2000028	2	5/8" BEARING
12	8400093	2	DISK BRG. CAGE-RD
13	7400258	2	DUST CAP
14	4900012	1	5/8" CRIMPLOCK NUT
15	4800039	24	1/4" X 1/2" RIVET
16	7500135	2	WHEEL SCRAPER
17	7500157	2	NYLON BEARING (SCRAPER WHEEL)
18	4800381	2	1/6" X 1-1/2" COTTER PIN
19	7500553	2	SCRAPER WHEEL ARM (STRAIGHT)
20	4800013	1	5/16"X1" HEX BOLT
21	5000022	1	5/16" LOCK WASHER
22	5000023	1	5/16" FLAT WASHER
23	7500155	1	MOUNTING CLIP (SCRAPER)
24	7500156	1	SPRING (SCRAPER)
25	4900014	4	1/2" CRIMPLOCK NUT
26	7500476	2	1"OD X 3/4"ID X 1" CONNEX BUSHING
27	8400502	1	PACKER WHEEL FRAME
28	4800050	4	3/16" X 1-1/2" COTTER KEY
29	8400503	1	PRESS WHEEL PIVOT PIN
30	4900236	1	3/8" JAM NUT
31	4800250	1	3/8"X3/4" SQ. HEAD SET SCREW
32	8400504	1	PRESS WHEEL ADJ. PIN
33	4800365	1	3/8"X1-1/2"CLEVIS PIN WITH U WIRE
34	4800280	6	1/4"X1-3/4" WHIZ LOCK FLANGE SCR.
35	2800028	2	WHEEL HALVES
36	2000039	1	WATER PUMP BEARING (GROOVE TYPE)
37	2600015	1	TIRE
38	8400505	1	RUN
40	4800041	1	1/2" X 5" HEX BOLT
41	4800068	2	1/2" X 3" HEX BOLT
42	8400025	1	SPRING GUIDE (LONG)
43	6100063	1	SPRING2-9/32"ODX12-1/2".313 WIRE
44	8400026	1	SPRING GUIDE (SHORT)

45	4900005	2	5/8" HEX NUT
46	7500478	2	3/4"ODX.510"IDX3.505" HARDENED
47	4800141	1	1/2" X 4-1/2" HEX BOLT
48	8400507	1	DEPTH ADJUSTMENT BRACKET
49	8400475	1	COMPLETE WHEEL SCRAPER

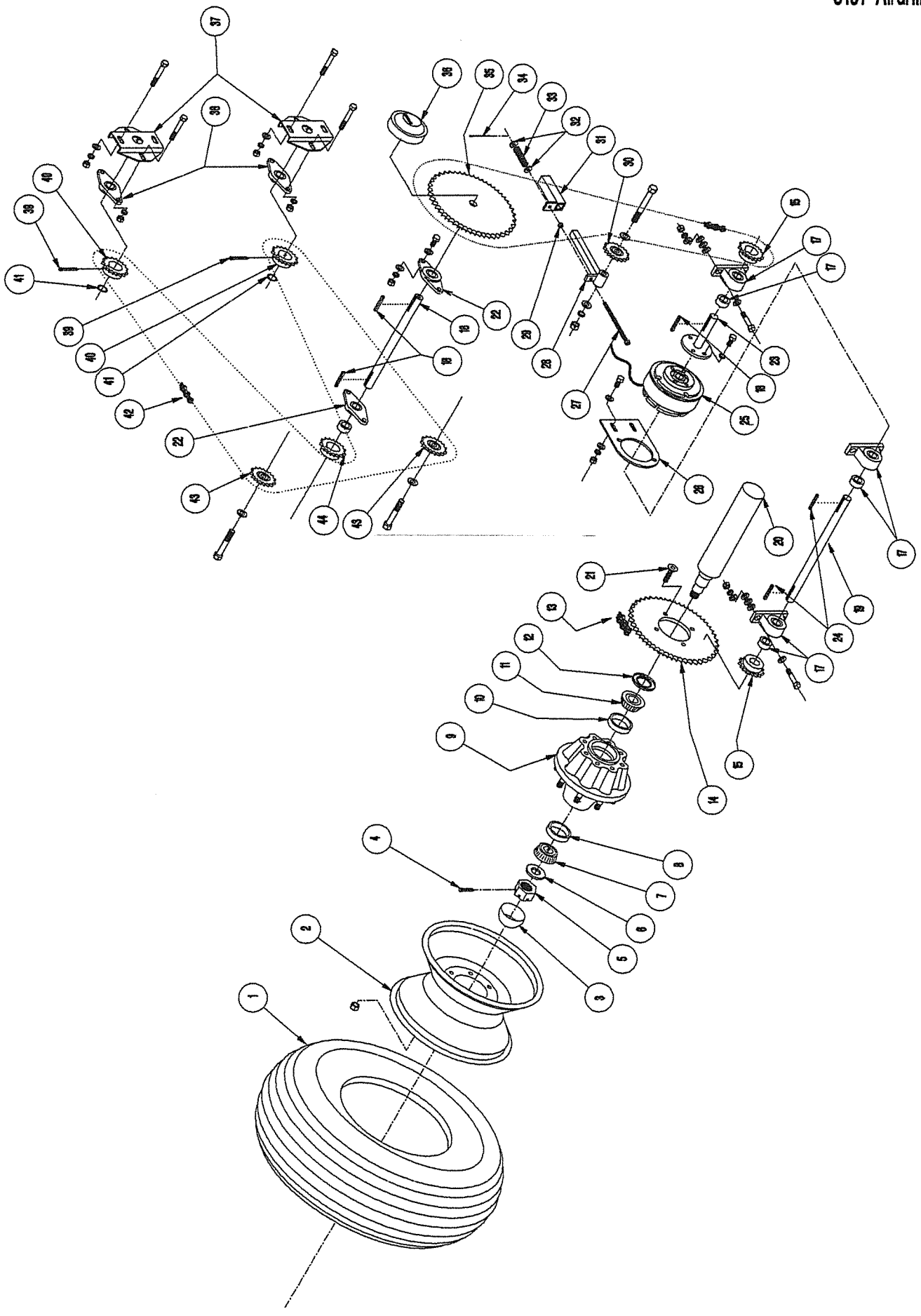


Run
3107 Airdrill

Drive

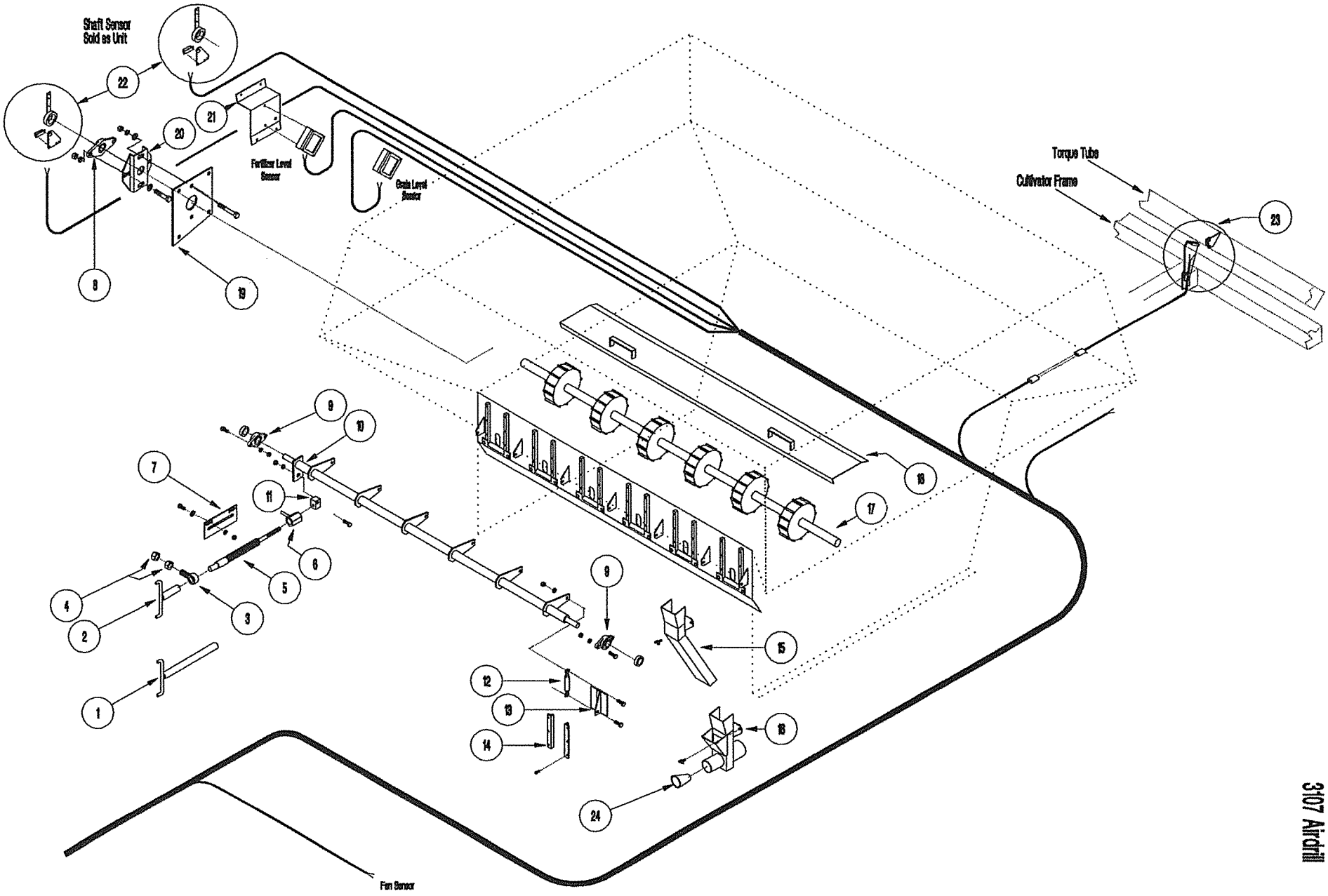
Item	Part Number	Qty	Description
1	2600037	2	19L x 16.1 Implement tire
2	2600632	2	16 x 16.1 8-bolt wheel
3	2900130	2	Dust cap
4	4800103	2	1/4" x 3" cotter key
5	4900036	2	1 1/4" castle nut
6	5000065	2	Washer
7	2900125	2	Outer cone
8	2900126	2	Outer cup
9	2900109	1	8-bolt hub w/brake mount
10	2900127	2	Inner cup
11	2900128	2	Inner cone
12	2900131	2	Grease seal
13	1100066	3	17 links 60P double chain
	1100064	3	Double chain connector link
14	1000184	1	48 tooth 60P sprocket
15	1000176	2	13 tooth 60P 1" Bore hardended
16	8400528	1	Acre counter drive shaft
17	2000053	3	1" pillow block bearing w/brg.
18	6200010	4	1/4" x 1" square key
19	8400455	1	Clutch drive shaft
20	3000031	2	spindle
21	4800229	4	1/2"NF x 1 1/4" c/sink bolts
22	2000310	2	1" bore 2-bolt flange bearing
23	8400512	1	Clutch shaft
24	6200017	1	1/4" x 3" square key
25	7500556	1	Electric clutch PITTS 13418
26	8400513	1	Electric clutch mount
27	8400516	1	3/8" x 9 1/2" Redi rod with welded nut.
28	8400514	1	Idler adjustment bar
29	4900002	1	3/8" nut
30	1000185	1	15 tooth 60P 1/2" bore idler
31	8400514	1	Idler tube
32	5000001	2	3/8" flat washer
33	6100012	1	spring 1 1/4" ID
34	4800157	1	3/16" x 2" cotter key
35	1000184	1	45 tooth 60P 1" bore sprocket
36	7500480	1	Acre counter
37	8400515	4	Bearing bracket
38	2000301	4	1 1/4" 2-hole flange bearing
39	4800157	2	3/16" x 2"
40	8400559	2	18 tooth 50P special with 1 1/4" oilite bushing.
41	2000054	4	1 1/4" snap ring
42	1100058	1	50P drive chain
43	1000039	2	18 tooth 50P 1/2" bore idler
44	1000175	1	18 tooth 50P 1" bore

Drive
3107 Airdrill



Tank

Item	Part Number	Qty	Description
1	8400517	1	Calibration Handle
2	8400518	1	Calibration Handle
3	8400556	1	3/4" male rod end
4	4900057	2	3/4" NF Jam Nut
5	7500472	2	Calibration screw
6	7500475	2	Pointer nut
7	8400519	2	Calibration plate
8	2000301	4	1 1/4" 2-hole flange bearing
9	2000313	4	3/4" 2-hole flange bearing
10	8400520	2	Calibration slide shaft
11	8400521	2	Calibration block
12	8400553	12	Turnbuckle complete
13	8400522	12	Calibration slide
14	8400557	24	Seed gate hold down
15	8400523	6	Upper seed cup
16	8400524	6	Lower seed cup
17	8400525	2	Metering shaft
18	8400526	2	Feed wheel cover
19	8400527	2	Bearing plate
20	8400515	4	Bearing bracket
21	8400529	1	Sensor bracket
22	8400554	2	Shaft sensor complete
23	8400555	2	Sensor on/off w/bracket
24	8400506	6	Venturi Insert

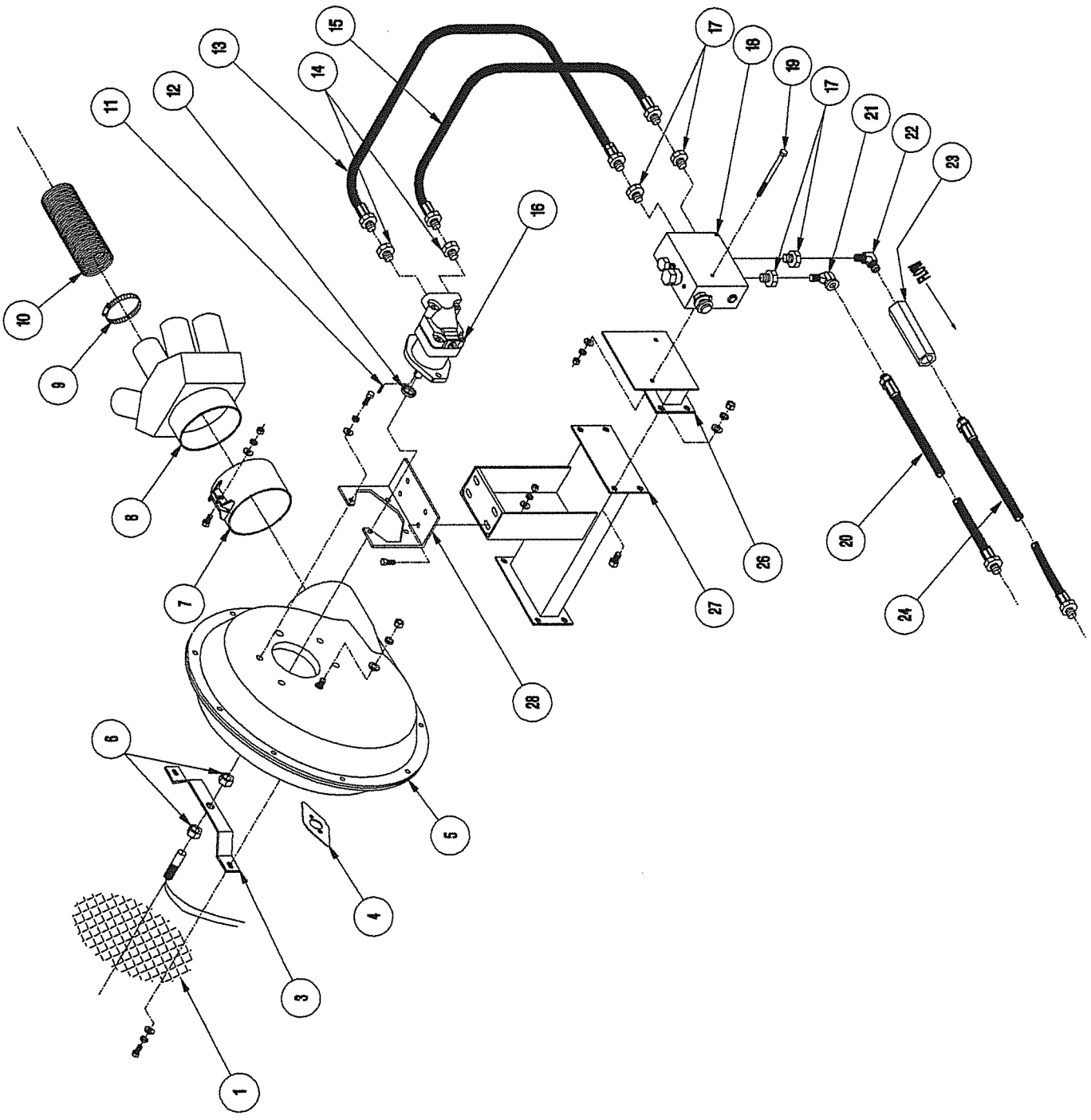


Tank
3107 Airdrill

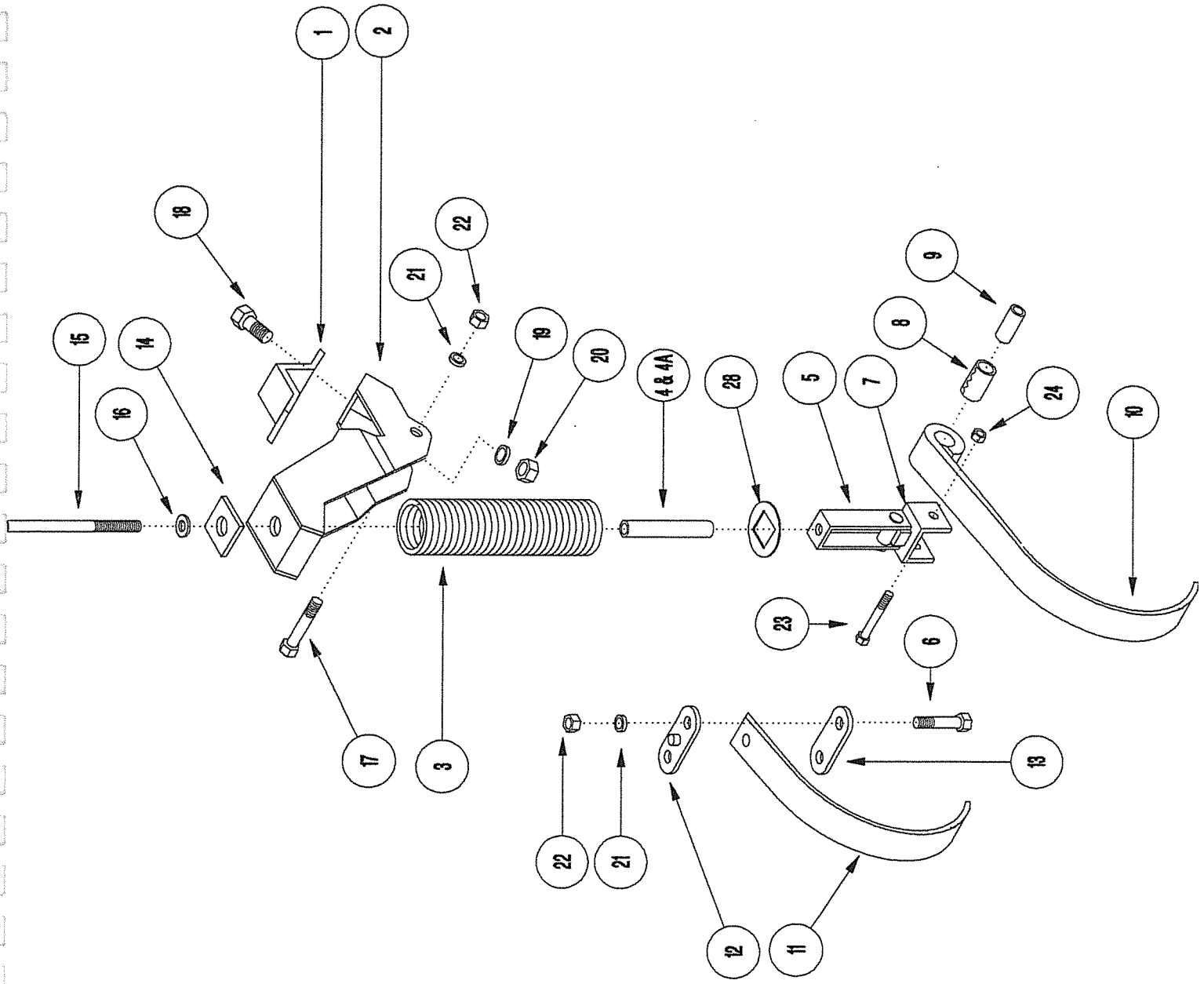
Air System

Item	Part Number	Qty	Description
1	8400538	1	Fan intake screen
3	8400508	1	Sensor mount
4	8400509	1	Sensor trigger
5	7500173	1	Fan
6	4900057	2	3/4" NF Jam Nut
7	8400511	1	Manifold clamp
8	8400510	1	Manifold
9	7500544	6	Hose clamps
10	7500524	6	2 1/2" Hose
11	6200010	1	1/4" x 1" sq key
12	2001016	1	Orbit motor seal
13	3700075	1	1/2" x 30" hose
14	3800047	2	1-1/16" O-ring to 1/2" pipe
15	3700075	1	1/2" x 30" hose
16	3900012	1	Orbit motor
17	3800087	4	7/8" O-ring to 1/2" pipe adapter
18	4000074	1	Flow control valve
19	4800170	2	5/16" x 3 1/2" grade 5 bolt
20	3700093	1	1/2" x 144" hose
21	3800008	1	1/2" 90 street elbow
22	3800085	1	1/2" male-male elbow
23	3800188	1	1/2" check valve
24	3700123	1	1/2" x 40" hose

Air System
3107 Airdrill



Shank
3107 Airdrill



Shank Assembly

Item	Part Number	Qty	Description
1	8400344	1	Shank W-clamp
2	8400347	1	Shank frame
3	6100058	1	Spring
4	8400360	1	Shank trip spacer tube
**4A	8900922	1	Spacer tube (Rebuild kit)
5	8400366	1	Spring adjustment channel
*6	4800070	2	1/2" x 2 1/2" grade 5 bolt
7	8400365	1	Shank spring mount
8	7500470	1	Spring bushing
9	7500471	1	Bushing
10	7500469	1	Shank
*11	7500479	1	Shank reinforcement (option)
*12	8400370	1	Shank reinforcement clamp w/peg
*13	8400369	1	Shank reinforcement clamp
**14	8900923	1	Shank repair plate (welding req)
15	4800262	1	1/2" x 7 1/2" grade 5 bolt
16	5000004	1	1/2" flat washer
17	4800068	1	1/2" x 3" grade 5 bolt
18	4800079	2	5/8" x 2 1/2" grade 5 bolt
19	5000003	2	5/8" lock washer
20	4900005	2	5/8" hex nut
*21	5000006	3	1/2" lock washer} Order 2/shank
*22	4900001	3	1/2" hex nut } in rebuild kit
23	4800156	1	3/8" x 3" grade 5 bolt
24	4900023	1	3/8" lock nut
25	4800384	1	Plow bolt 7/16" x 1 1/2"
*26	4800385	1	Plow bolt 7/16" x 2"
27	7500473	1	Sweep "Nichols 47C12B"
28	5000090	1	Shank Washer 2.5" O.D. X 1 9/32" SQ I.D. 14 GA.

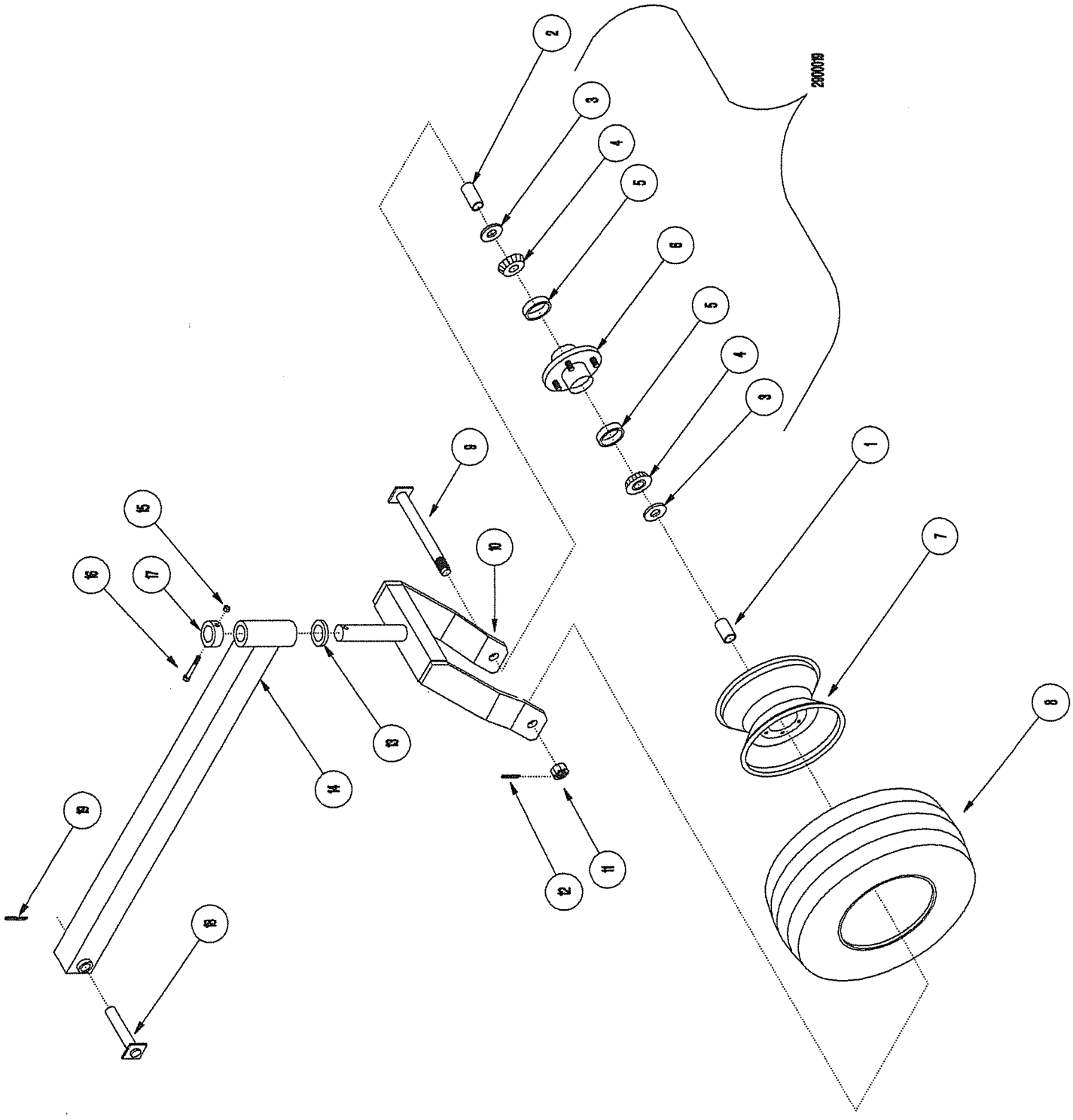
* Order marked items to reinforce shank.
** Order marked items to rebuild shank top frame.

NOTE: Quantities are listed for 1 shank.

Stabilizer Wheel

Item	Part Number	Qty	Description
1	8400410	2	2-7/32" spacer
2	8400409	2	2-23/32" spacer
3	2900031	4	Grease seal
4	2900032	4	Cone
5	2900033	4	Cup
6	2900137	2	Hub
6A	2900019	2	Hub complete w/bearings
7	2600631	2	Wheel
8	2600026	2	20.5 x 10 tire
9	3000037	2	Pin
10	8400539	2	Stabilizer wheel fork
11	4900020	2	1" NF castle nut
12	4800157	2	3/16" x 2" cotter key
13	8400540	2	King pin bottom spacer
14	8400541	2	Stabilizer wheel frame
15	4900023	2	3/8" lock nut
16	4800156	2	3/8" x 3" grade 5 bolt
17	8400542	2	King pin collar
18	8400543	2	Stabilizer wheel frame pin
19	4800103	2	1/4" x 2" cotter key

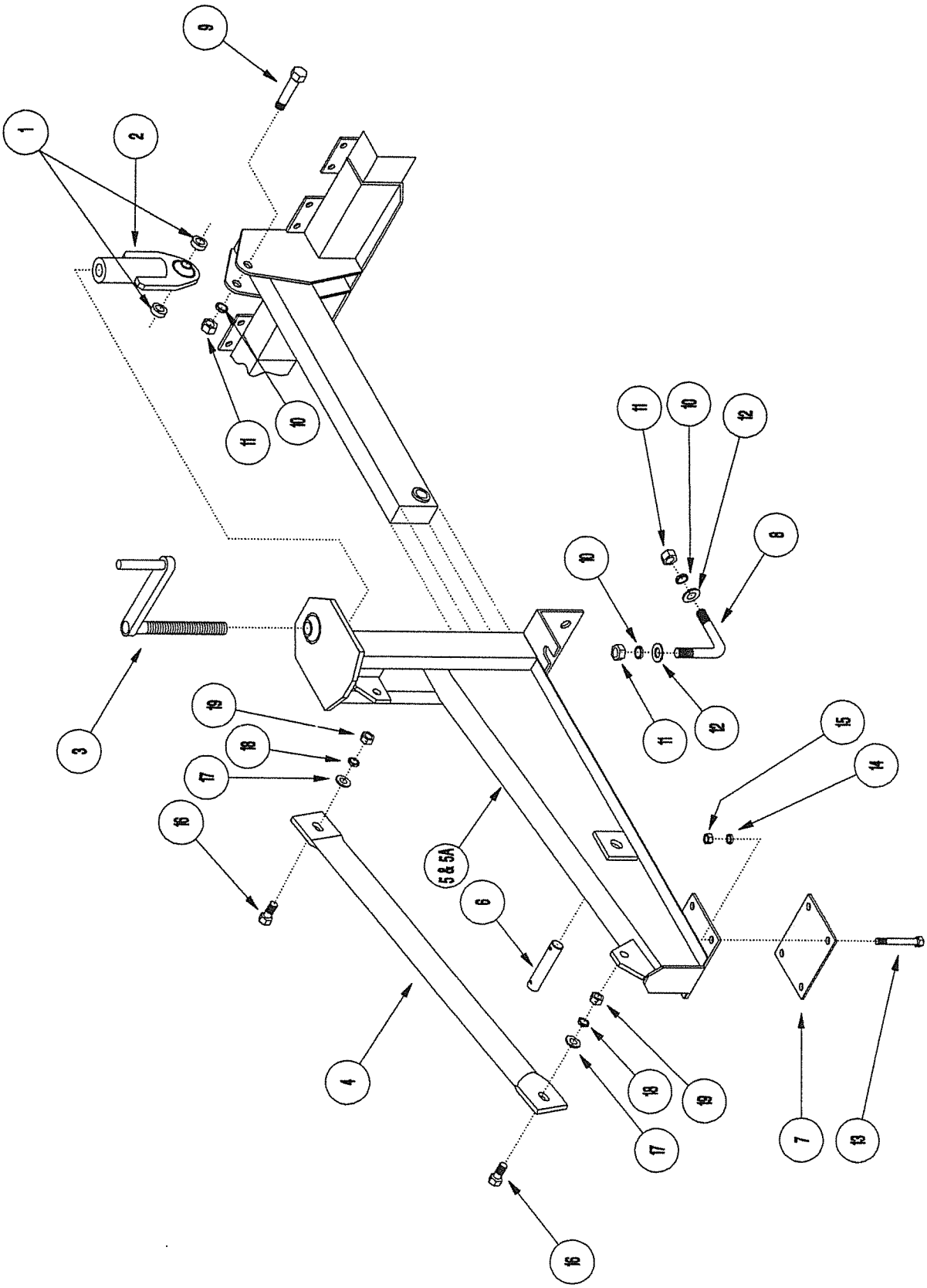
Stabilizer Wheel
3107 Airdrill



Toolbar

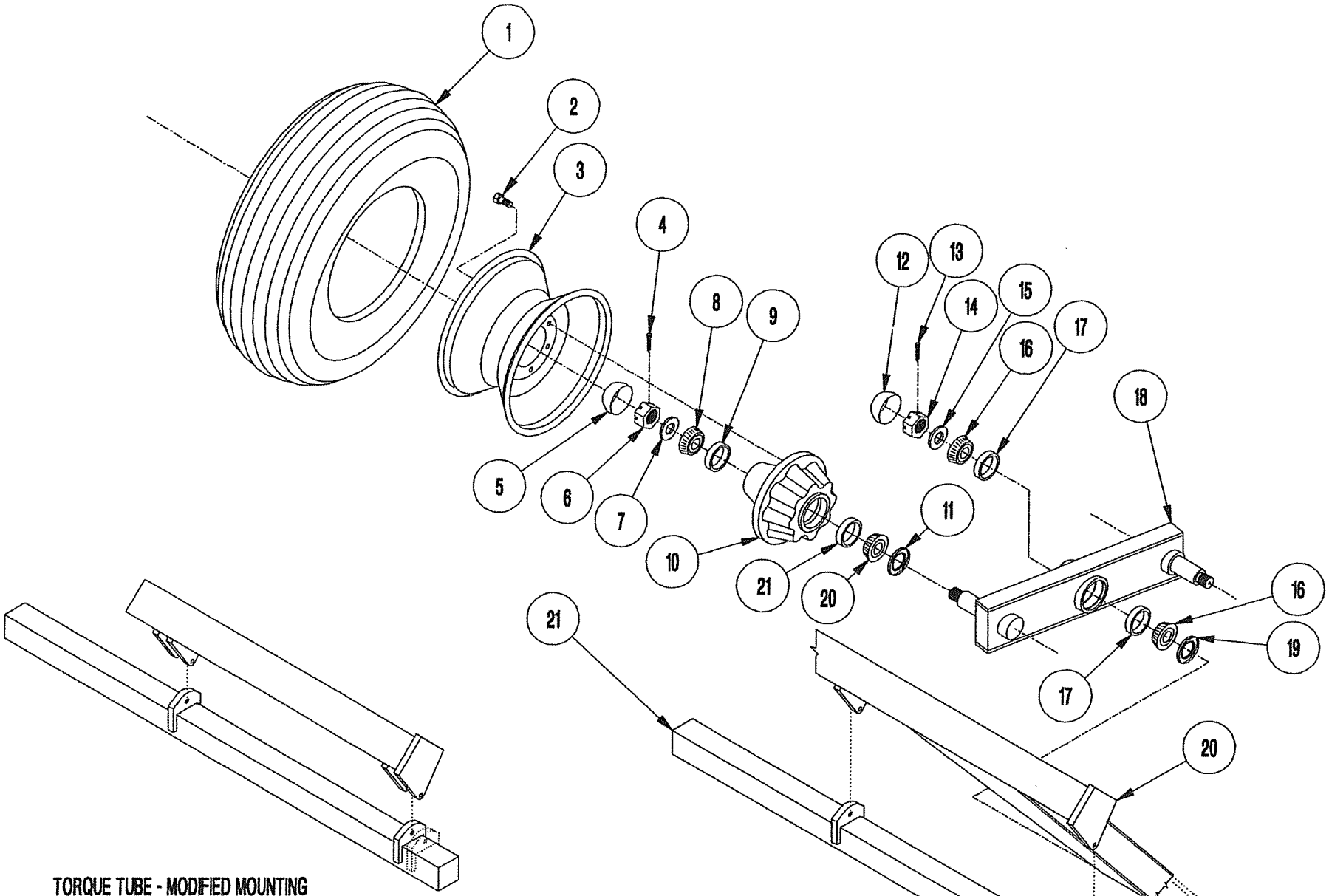
Item	Part Number	Qty	Description
1	8400530	12	Spacer Bushing
2	8400531	6	Toolbar adjustment nut
3	8400532	6	Toolbar adjustment handle
4	8400533	6	Brace
5	8400534	4	Adjustment frame
5A	8400535	2	Center section adjustment frame
6	8400536	6	Pin
7	8400537	4	Mounting pad
8	4800183	12	3/4" L-bolt
9	4800011	6	3/4" x 3 1/2" grade 5 bolt
10	5000012	6	3/4" lock washer
11	4900004	30	3/4" nut
12	5000005	24	3/4" flat washer
13	4800141	24	1/2" x 4 1/2" grade 5 bolt
14	5000006	24	1/2" lock washer
15	4900001	24	1/2" hex nut
16	4800106	12	5/8" x 1 1/2" grade 5 bolt
17	5000002	12	5/8" flat washer
18	5000003	12	5/8" lock washer
19	4900005	12	5/8" hex nut

Toolbar
3107 Airdrill



Walking Beam

Item	Part Number	Qty	Descripiton
1	2600023	4	11L x 15 tire
2	2600608	24	Wheel bolt
3	2600624	4	15 x 10 wheel
4	3000005	4	Key
5	2900013	4	Dust cap
6	4900054	4	Spindle nut
7	5500055	4	Washer
8	2900018	4	Outer cone
9	2900004	4	Outer cup
10	2900068	4	Hub
10A	2900069	4	Hub complete
11	2900008	4	Grease seal
12	2900124	2	Dust cap
13	4800157	2	3/16" x 2" cotter key
14	4900036	2	Castle nut
15	5000069	2	2 1/8"OD x 1 3/8"ID washer
16	2900029	4	Outer cone
17	2900028	4	Outer cup
18	8400552	2	Walking beam
19	2900118	2	Grease seal
20	2900015	4	Inner cone
21	2900016	4	Inner cup

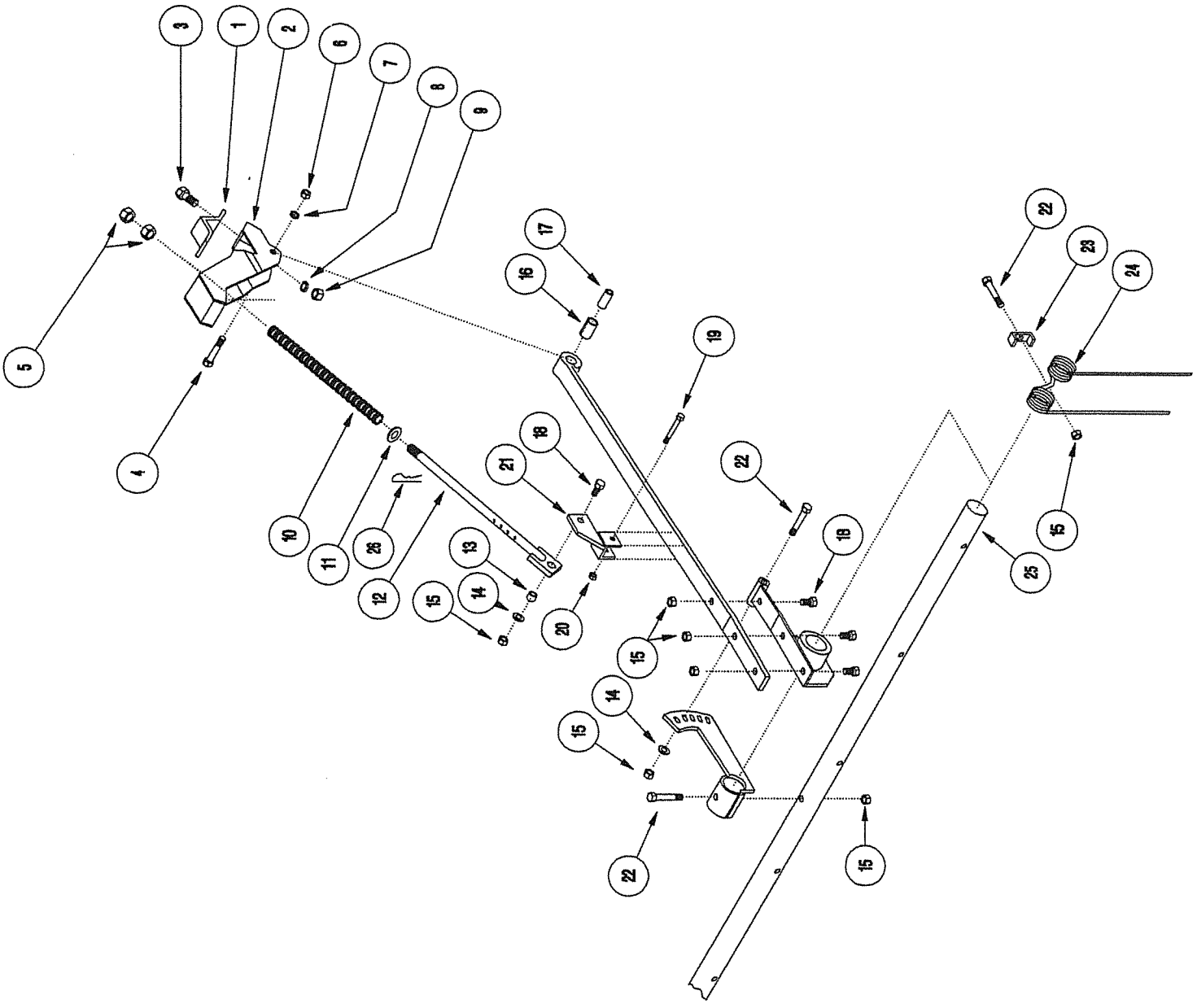


Walking Beam
3107 Airdrill

Harrow

Item	Part Number	Qty	Description
1	8400344	6	Harrow W-clamp
2	8400544	6	Harrow mounting frame
3	4800079	6	5/8" x 2 1/2" grade 5 bolt
4	4800068	6	1/2" x 3" grade 5 bolt
5	4900047	12	5/8" jam nut
6	4900001	6	1/2" hex nut
7	5000006	6	1/2" lock washer
8	5000003	6	5/8" lock washer
9	4900005	6	5/8" hex nut
10	6100057	6	Down pressure spring
11	5000002	6	5/8" flat washer
12	8400545	6	Down pressure rod
13	8400546	6	Rod mount bushing
14	5000006	6	1/2" lock washer
15	4900014	57	1/2" lock nut
16	7500470	6	Spring bushing
17	7500471	6	Bushing
18	4800114	6	1/2" x 2" grade 5 bolt
19	4800156	6	3/8" x 3" grade 5 bolt
20	4900023	6	3/8" lock nut
21	8400547	6	Spring rod mounting bracket
22	4800135	51	1/2" x 3 1/2" grade 5 bolt
23	8400548	27	Harrow spring clamp
24	6100018	27	Harrow spring
25	8400549	3	Harrow bar

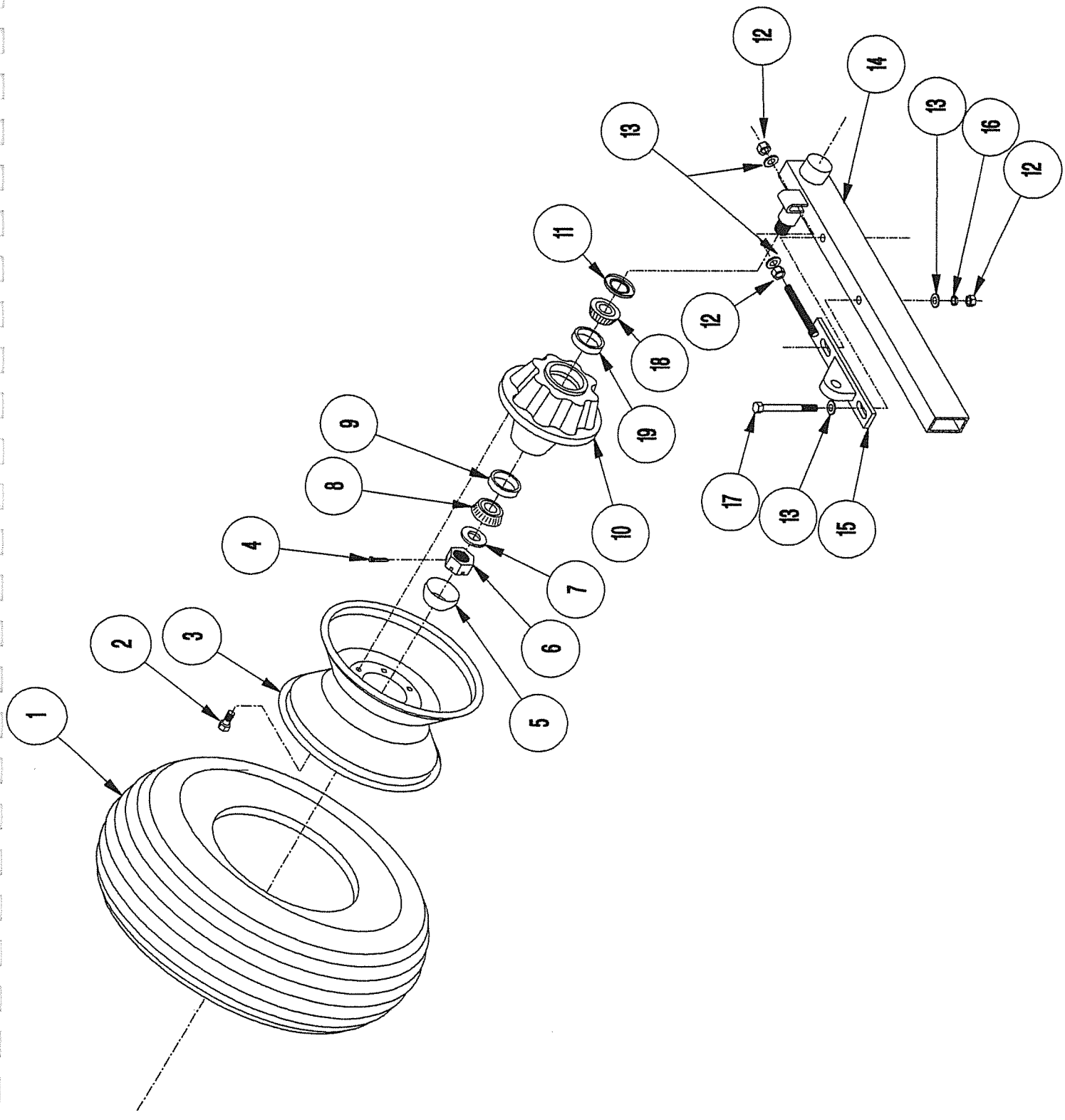
Harrow
3107 Airdrill



Wing Wheel

Item	Part Number	Qty	Description
1	2600009	2	9.5L x 15 tire
2	2600608	12	1/2" x 1 1/2" wheel bolt
3	2600612	12	15" x 8" wheel
4	3000005	2	Key
5	2900013	2	Dust cap
6	4900054	2	Nut
7	5500055	2	Washer
8	2900018	2	Outer cone
9	2900004	2	Outer cup
10	2900068	2	Hub
10A	2900069	2	Hub complete w/bearings
11	2900008	2	Grease seal
12	4900005	12	5/8" hex nut
13	5000002	12	5/8" flat washer
14	8400550	2	Wing wheel frame
15	8400551	2	Lower cylinder mount
16	5000003	4	5/8" lock washer
17	4800218	4	5/8" x 5 1/2" grade 5 bolt 18
18	2900015	2	Inner cone
19	2900016	2	Inner cup

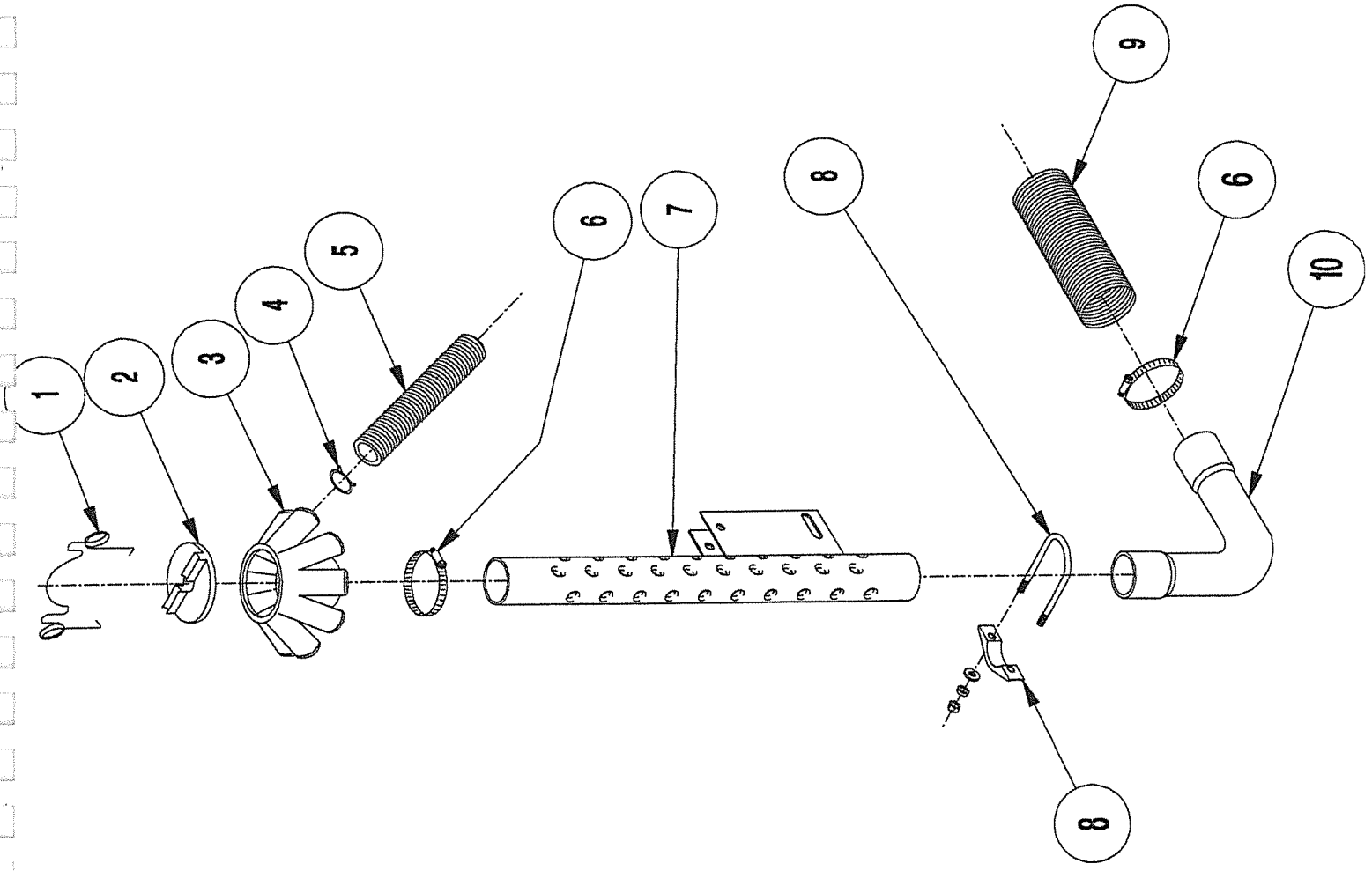
Wing Wheel
3107 Airdrill



Manifold Pipe

Item	Part Number	Qty.	Description
1.	7500557	6	Formed Wire Cover Retainer
2.	7500558	6	Aluminum Manifold Cover
3.	7500559	6	9-Port Aliminum Manifold
4.	7500560	108	Corbin A-26 Clamps
5.	7500089		1 1/2" I.D. Gray Hose
6.	7500544	42	Screw Type Hose Clamp
7.	8400558	6	Manifold Pipe
8.	4800383	6	2 1/2" U-Bolt Clamp
9.	7500524		2 1/2" I.D. Blue Hose
10.	3800246	6	2 1/2" 90 Degree Elbows

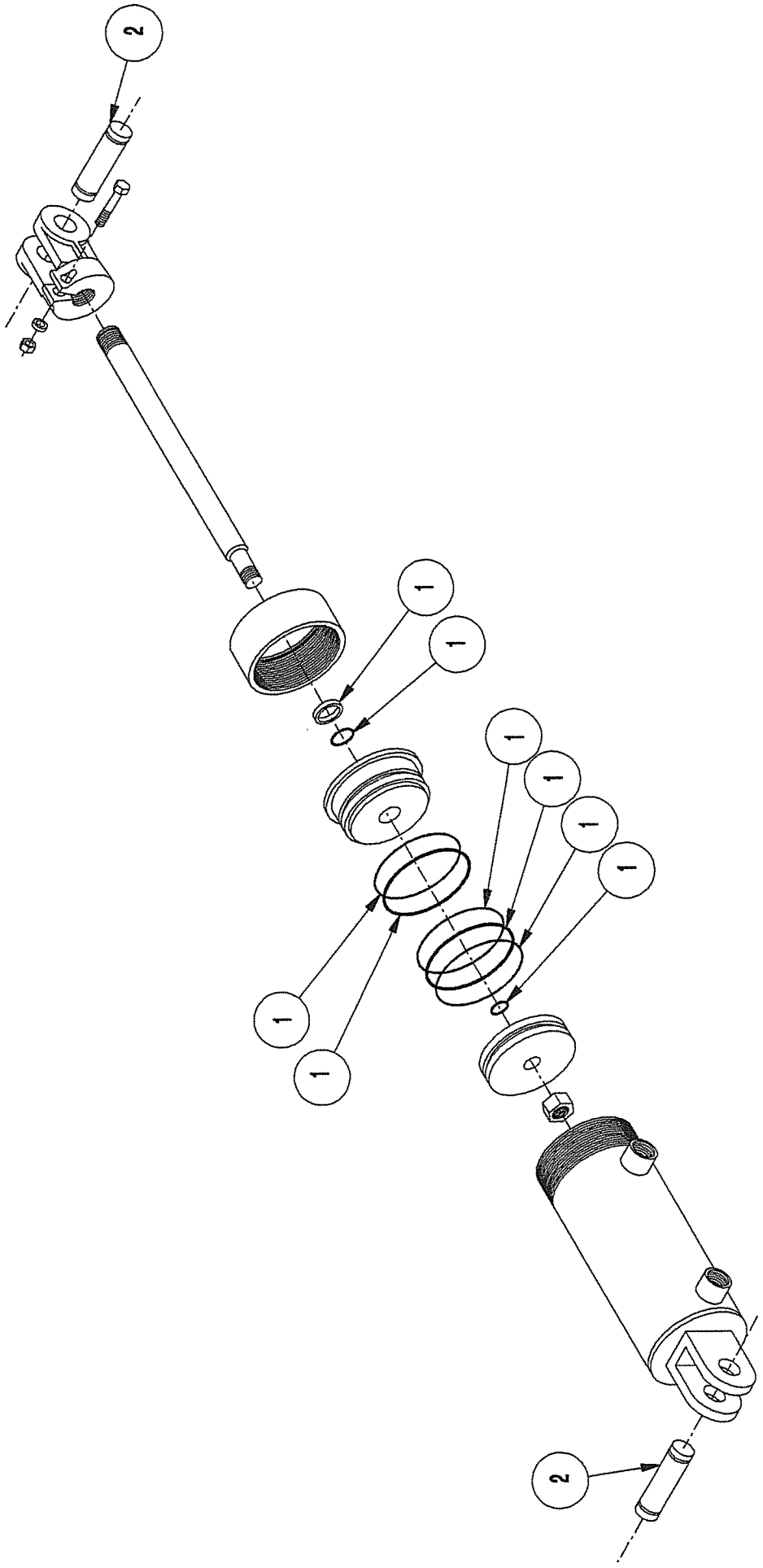
Manifold Pipe
3107 Airdrill



Hydraulic Cylinder
Master
4" I.D. X 8" STROKE

Item	Part Number	Qty.	Description
1.	4100091	1	Seal Kit
2.	4100087	1	1" X 3 1/2" Cylinder Pin Std.
3.	4100067	1	Complete Cylinder

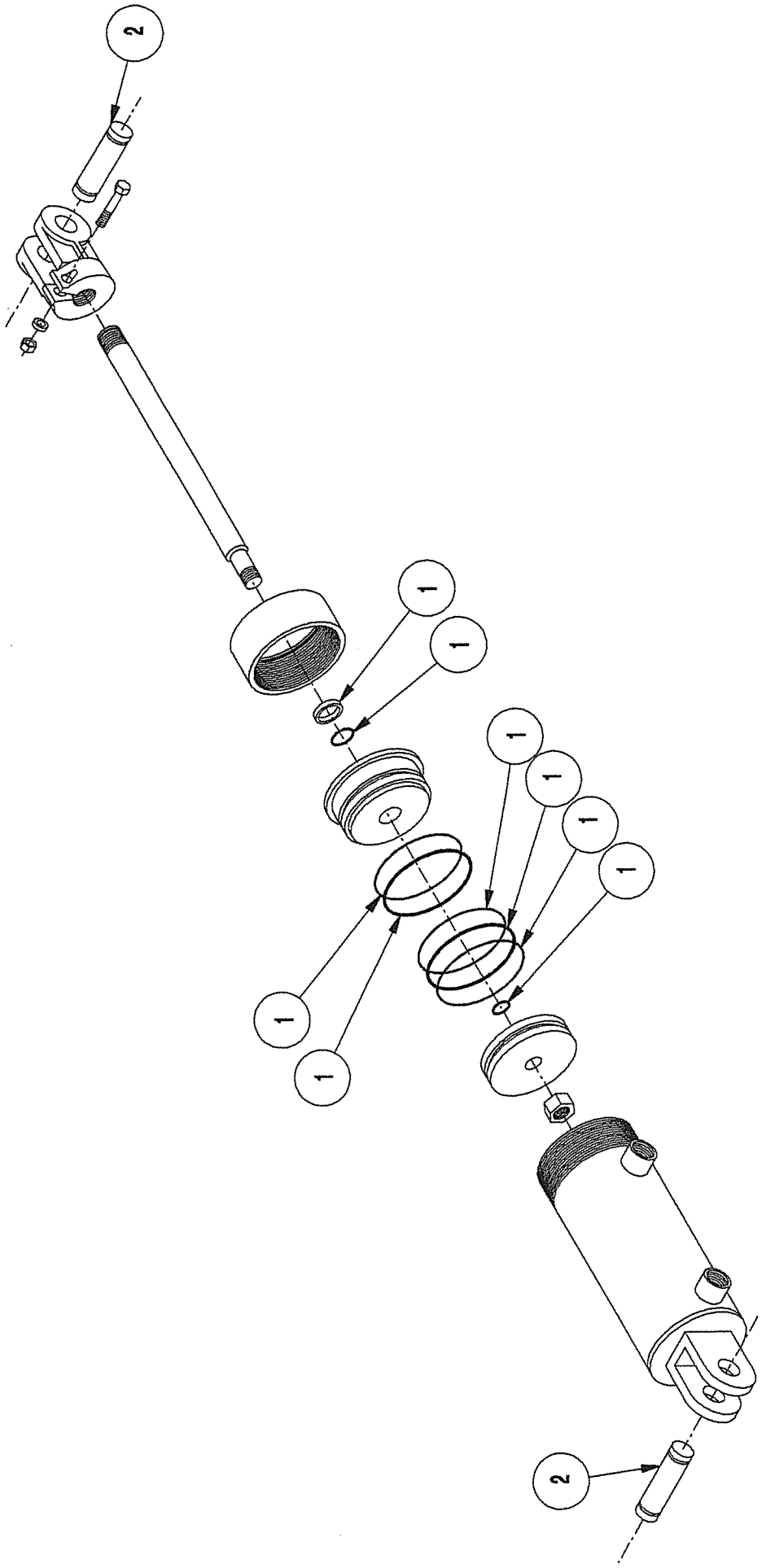
Hydraulic Cylinder
4" I.D. X 8" STROKE
3107 Airdrill



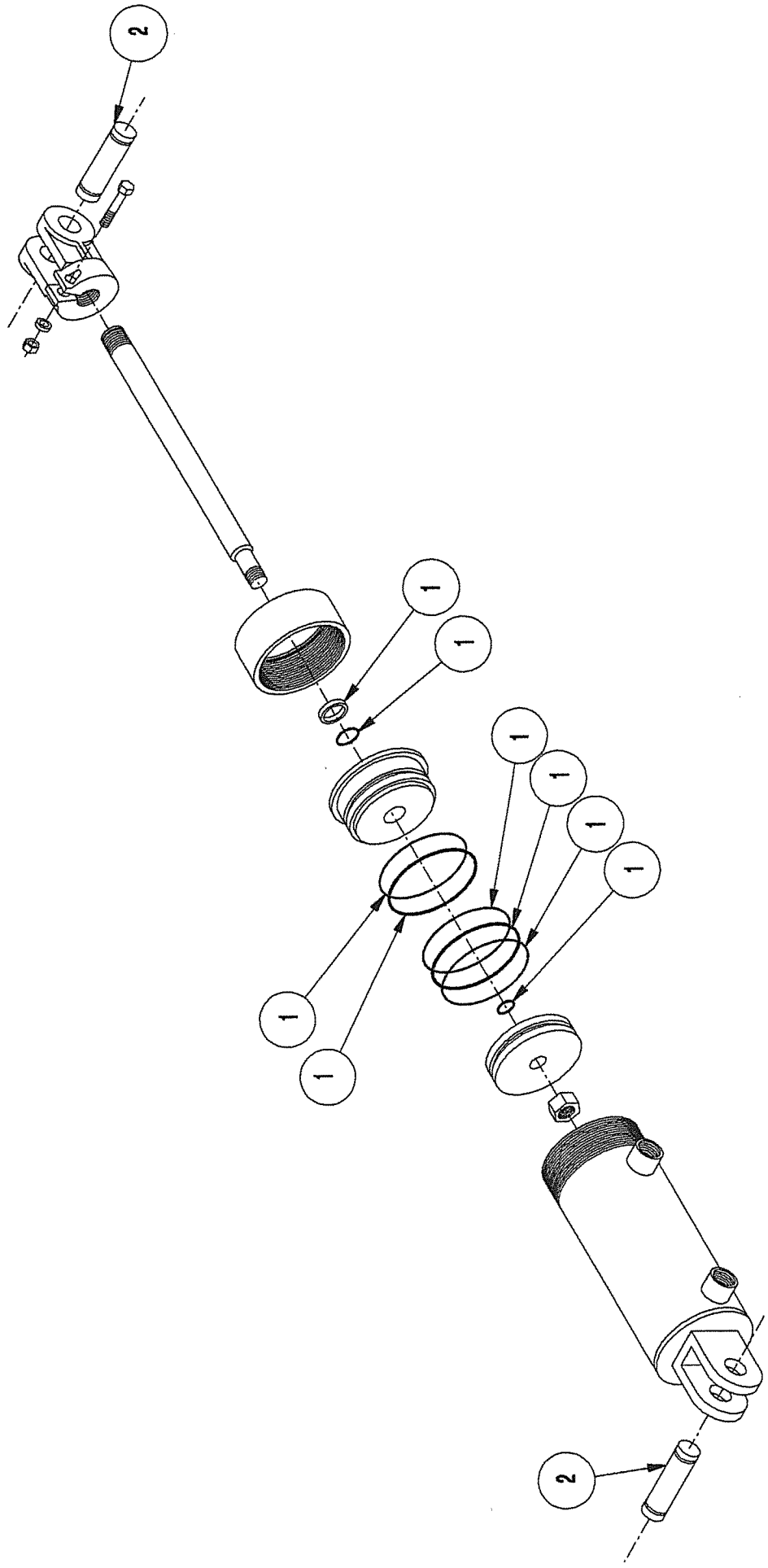
Hydraulic Cylinder
Slave
3.75 I.D. X 8" STROKE

Item	Part Number	Qty.	Description
1.	4100090	1	Seal Kit
2.	4100087	1	1" X 3 1/2" Cylinder Pin Std.
3.	4100068	1	Complete Cylinder

Hydraulic Cylinder
3.75" I.D. X 8" STROKE
3107 Airdrill



Hydraulic Cylinder
4" I.D. X 36" STROKE
3107 Airdrill

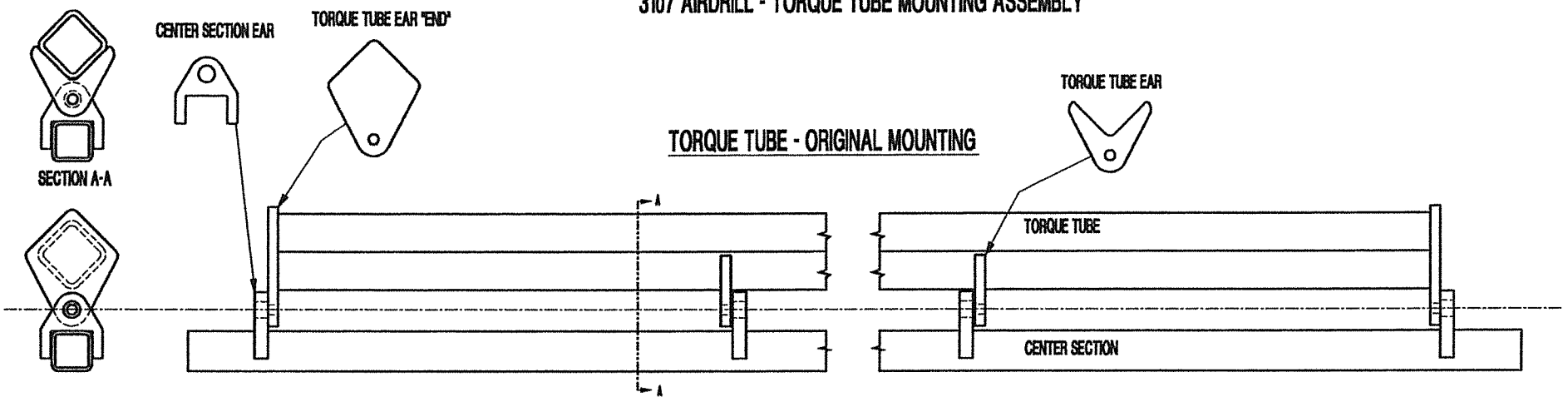


Hydraulic Cylinder

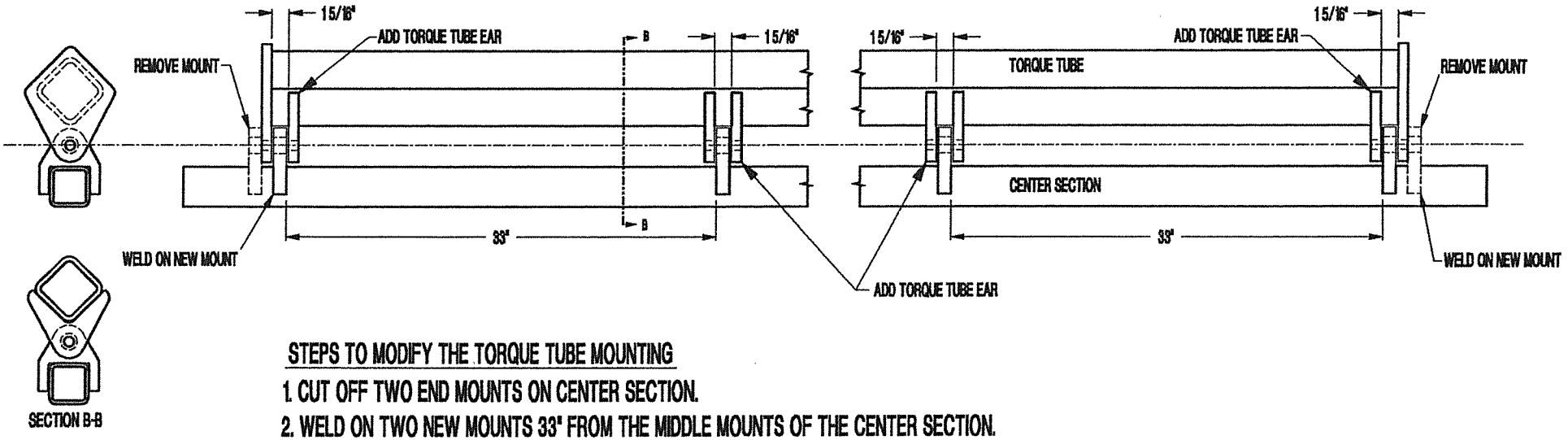
4" I.D. X 36" STROKE

Item	Part Number	Qty.	Description
1.	4100066	1	Seal Kit
2.	4100087	1	1" X 3 1/2" Cylinder Pin Std.
3.	4100076	1	Complete Cylinder

3107 AIRDRILL - TORQUE TUBE MOUNTING ASSEMBLY



TORQUE TUBE - ORIGINAL MOUNTING



TORQUE TUBE - MODIFIED MOUNTING

STEPS TO MODIFY THE TORQUE TUBE MOUNTING

1. CUT OFF TWO END MOUNTS ON CENTER SECTION.
2. WELD ON TWO NEW MOUNTS 33" FROM THE MIDDLE MOUNTS OF THE CENTER SECTION.
3. WELD ON FOUR NEW TORQUE TUBE EARS 1 5/16" FROM ORIGINAL TORQUE TUBE EARS AS SHOWN IN FIGURE.