



SUPPLEMENT TO MAIN INSTRUCTION BOOK

4M and 6M H. P. (HYDRAULIC PNEUMATIC) UNIDRILLS



June 1998

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SPECIFICATIONS

Moore Unidrill 4m HP.

- Width of work 4m
- Transport Width. 3m
- Seedbox capacity 1500L (Roger)
- Row width 16.6 cm
- No of Rows 24
- Horsepower required 120 H.P.
- Weight 3400 kg.
- Transport Height 3.5 m
- Tyres Vredestein 19.0 / 45 -17

Options:

- Tungsten carbide tipped seed coulters
- Bogie axles complete scrapers
(For extreme wet / cloddy / stony / trashy conditions)
- 460 mm discs
- Pneumatic tyres in lieu of cast press wheels
- Hydraulic brakes
- Air brakes
- 500 / 50 - 17 tyres in lieu of 19.0 / 45 - 17.
- Electric double divertor valves to reduce hydraulic ports needed on tractor

Note:

If the electric double divertor valve is fitted on your drill it will alter the operating of the drill in later sections. Care should be taken.

ADDITIONAL GENERAL SAFETY RULES (SUPPLEMENT TO MAIN INSTRUCTION BOOK)

1. Additional care must be taken with H.P. Drills due to the increased transport height. Good driving sense in avoiding low obstacles especially overhead power lines and cables, bridges, trees and other factors which may effect transport and use of H.P. Drills.
2. General Safety Rules, 18, 19, and 20 from main Instruction Book, pages 4-5 should be especially adhered to when using H.P. Drills.
3. Always unfold H.P. Drills in raised position with transport pins engaged.
4. Always transport H.P. Drills with hopper empty, and do not exceed 30km/h.
5. Never operate boutmarkers unless area is clear.

HITCHING

1. Attach tractor to drill using pick up hitch or clevis.
2. Attach all hydraulic services to tractor spools. Blue to Lift and Red to return.
3. For Accord Drills attach hydraulic fan drive to tractor spools as described in Accord D.V. Instruction Book.
4. For Roger Drills, with PTO hydraulic system, fit the pump onto the tractor PTO shaft, with the air breather uppermost. Attach it so it is secure and level with PTO shaft, and above all, safe!.
5. Connect all other drill electric and lighting cables.

TRANSPORT

Road to Work.

1. Ensure that the drill is in an open and clear area.
2. Ensure the manual divertor valve is set from rear axle to wings, when the drill is fully on the transport wheels.
3. Extend the depth control ram to its maximum.
4. Operate the hydraulics to unfold the wings. Care should be taken to ensure that both wings do not unfold at the same time. Ensure that the tractor hydraulic flowrate from the spool valve is set to minimum.
5. **Pressure** the wings down.
6. Operate hydraulics to raise drill from transport position and remove axle transport pins.
7. Change the manual divertor valve from wings back to rear axle.
8. Machine is ready for work.

Work to Road.

1. Change manual divertor valve to rear axle.
2. Ensure hopper is empty, and both markers are raised.
3. Raise drill to transport position and insert transport pins
4. Lower drill onto transport pins.
5. Fully extend depth control ram and change manual divertor to wings.
6. Operate the hydraulics to fold the wings. Care should be taken to ensure that both wings do not fully fold at the same time. Ensure that the tractor hydraulic flow rate from the spool valve is set to minimum.
7. Ensure that the drill is clear of all obstacles when folding wings.
8. The drill is now ready to transport

Depth Control

The depth control is controlled from the tractor cab, by operation of the spool valve.

As previously mentioned in the transport section, the depth control is controlled direct from the spool. The spool flow rate should be reduced to its minimum.

Now you are ready to set the depth.

There is a colour scale on the depth control ram, which is clearly visible from the tractor, this is to give guidance. Not only for setting but also returning to the same place, time and again.

To prevent the ram from creeping one way or the other when in work or in transport, they are fitted with Double Pilot Operated Check Valves.

It is recommended that when starting to drill the depth should be set and checked after a number of metres and adjusted to suit.

Because it is hydraulically operated it may be adjusted on the move, hence when in changeable conditions it is often required to exert more pressure when going from light into heavy soils.

ROGER SEEDBOX FAN UNIT

Hydraulically Driven Fan

1. The oil flow required for the fan speed (2800 rpm) is about 26 litres / min
2. The use of the fan requires the connection on a double acting spool valve.
3. The hoses are equipped with a quick release coupling
4. The pressure hose is identified by a cap fitted with a chain. A one way valve is located on the oil return hose in order to avoid damage to the hydraulic motor.
5. A flow control valve is used to adjust the fan speed. To increase fan speed, move the lever to the higher numbers on the scale (1-10). To decrease the fan speed, move the lever the lower end of the scale (10-1).
6. If the tractor used is fitted with a variable flow pump and integrated control valve (closed circuit) the flow valve, located on the drill, must be completely open and the tractor's valve must be used to adjust the fan speed.

Use of the Hydraulically Driven Fan

1. Wait until the fan has reached its working speed before starting to drill.
2. The maximum fan speed is 3500 rpm. Beyond this speed damage is probable.
3. By using the flow control valve it is possible to adjust the fan speed and therefor the air flow from the fan according to the type of seed being used.

Rape & Small Seeds.	1800 -2000 Rpm.
Wheat & Barley, in dry soil	2000 - 2200 Rpm
Peas & Beans	2200 - 2800 Rpm.

Be aware to set the fan speed accordingly to avoid blowing the seed back out of the soil, (especially in dry conditions).

4. Check the fan speed by using the multifunction control box.

Hydraulic Driven PTO System

Specification:

Tank Capacity	39 Litres		
Pump / Gearbox	3.8 : 1 @ 540 RPM 2.0 : 1 @ 1000 RPM		
Pump	Lamborghini M L P D / L 220 C	19.5 cc.	
Max Flow From Pump	40 Litres / Min @ 39 Litres / Min @	540 RPM 1000 RPM	
Motor @ Fan	11cc if Lamborghini M L U S - L 211C 9.5cc if Crary Fan		
Theoretical RPM at 40 Litres / Minute	Lamborghini Crary	3636 rpm 4210 rpm	80% Efficiency 2908 rpm 3368 rpm

Fan Speed

Before setting fan speed, run system at half throttle to warm oil and gradually increase to full throttle. On cold mornings it may take 15 minutes before target fan speed is reached. To set speed alter the flow control unit next to the reservoir, if speed is too low even though flow control is at maximum, adjust pressure relief valve to increase the system pressure until speed is achieved

Conversely if the fan speed is unstable reduce the system pressure until the speed becomes stable.

CHECKING COULTERS.

Each time the drill is refilled check for blocked coulters, this will minimise the risk of any miss-drilling. .

Note: Under no circumstances should the drill be reversed with the coulters in the ground.

ROGER HOPPER CALIBRATION

Introduction.

Due to the wide variation in operating conditions it is not possible to make specific statements regarding performance or machine set up and therefore no liability can be accepted for loss or damage due to the following guidelines or any error or omission.

SAFETY

- Beware of rotating fan parts - never place hands near inlet or outlet of fan.
- Never place hands over suspected oil leaks.
- Never place hands on or near rotating feed rollers or shafts.
- Never enter hopper when drill is in motion - agitator shafts rotating under guards.

Set up and calibration

There are three basic settings, which must be adjusted prior to a calibration test.

- 1) Feed flap position
- 2) Variator setting 0 - 90
- 3) Seed wheel - fine or standard.

SETTING 1.

Spring loaded flaps one below each fluted metering roller allow the sowing of a wide range of seed sizes, with a single adjustment to positively control the flow of small to large seeds past the rollers without causing bruising. Should any foreign objects enter the hopper e.g.. stones then the flap will retract to allow the stone to pass through without causing damage. The flaps are adjusted by a single lever situated at the right-hand end of the hopper, each notch in the lever bracket is numbered 1-6 (7). See the seed calibration charts for the guideline flap setting, Position 1 is for small seeds e.g. rape etc where the flap is almost touching the roller and position 6 is for large seeds for example beans. The operator must set the flaps to best suit the seed being used.

SETTING 2.

The variator can be thought of as an infinitely variable gearbox within its lower 0 rpm and upper limit. The sliding scale is split into increments from 0-90 the number being purely for reference.

Refer to the seed calibration charts in main manual. Each seed type has the approximate output in Kg/Ha for a particular setting on the variator. Choose the desired seed rate and therefore variator setting and adjust variator slide accordingly.

SETTING 3.

White plastic blanking covers are used to disengage standard seedwheel, these are easily put on/taken off, when flaps are in position 6.

Attention: This is only the start of calibration test. The actual sowing rate must be checked prior to drilling.

Calibration test.

The following step by step procedure should be adopted to accurately test the sowing rate.

1. Release the two black plastic lock screws above each venturi unit by turning anti-clockwise slightly until locks can be slid upwards, then retighten.
2. push both venturi units forward to clear the air box inlets.
3. Position calibration trays underneath feed rollers.
4. Ensure the drill is not in tramline mode so that all the rollers turn.
5. Wind calibration handle to prime rollers, once all flutes are full empty trays and reposition.
6. Turn handle the required number of turns for the width of drill according to the chart below.

Drill width (M)	No. Turns of Handle.
4	32.00

7. Weigh the seed collected from both trays in Kg using an accurate set of scales. The amount collected is equivalent to 1/50 th of a hectare.
Sowing rate (Kg/Ha) = Weight collected (Kg) x 50
8. If the result is different to the target weight then adjust variator and repeat process.

Calibration charts are the same as those in main manual.

MAINTENANCE

Cleaning machine (Seedhopper).

External

Avoid high pressure water directly at moving parts and electrical components, it is advised to avoid getting water into the airboxes and metering units.

Internal

Slide the venturi units out of the way and place seed trays under rollers (as calibration), drop the feed flaps out of the way by moving lever past position 6 on scale. This will allow any grain left in tank free passage past rollers. The inside of hopper/metering units and air boxes should be cleaned out regularly with high pressure air **not** water. To clean air boxes remove end caps and blow through.

Lubrication

The servicing period given are considered suitable for average working conditions in normal working hours and must be adjusted to suit abnormal conditions. Regular servicing is essential to the performance of the machine.

Weekly Servicing.

Agitator shaft - one grease point at each end.

Drive Chains - grease and check tension.

Variator - check oil level, top up if necessary with ATF DEXTRON 11 or equivalent.

Post Seasonal Maintenance.

Drive chains - remove and soak in oil bath

Moving parts - Oil all moving parts

Nuts/Bolts - Coat exposed threads with grease.

Overall - Clean machine, remove any traces of seed from metering and delivery system, especially the airboxes. Half an hour cleaning now will save a lot of trouble next season removing chitted seeds from airbox.

Replace Oil in Variator.

Note: Replacement control panels are expensive!!

If possible remove the RDS control panel from tractor and place it in a warm dry room, away from possible damage whilst out of use.

Maintenance (Additional to main Instruction Book)

Grease every 20 hours - Drawbar pivots
Wing pivots
Folding ram pivots

with standard agricultural grease.

For Roger Seedbox:-

1. Check PTO gearbox for signs of leaks (other than breather).
2. Check PTO adapter for correct alignment.
3. Check all hoses for leaks.
4. Check seed delivery hoses for blockages/kinks.
5. Check oil level in PTO gearbox use E.P.90 or equivalent to top up.
6. Check oil level in reservoir, level should be 1/4 to 1/2 way up on sight glass when cold , use Azolla ZS 32 or equivalent to top up or refill reservoir.

Pre Season Service.

1. Drain and flush PTO to reservoir.
2. Replace return line filter.
3. Remove inspection cover and check condition of bottom strainer. If necessary replace .
4. Refill reservoir with grade 32 or 34 hydraulic oil (approx. 65 litres/refill).
5. Drain and refill PTO gearbox using EP 90 or equivalent to level plug.
6. Ensure airbox is free from germinated seeds/water and other possible blockages.
7. Carry out any procedures not completed at end of season.

PROBLEM SOLVING

FAN UNIT

PROBLEM	CAUSE	CURE
Fan motor will not start	PRV set too low-system unable to overcome start up torque	Increase relief pressure 1/2 turn = Approx. 15bar
	Anti cavitation valve leaking	Check and clean
	Anti cavitation valve wrong way round	Ensure flow is from return to pressure
	Bearing support failing	Check and replace
Back pressure gauge reads high or broken (spool system)	Oil is restricted in returning to the tractor	Ensure free return passage of oil to the tractor
Filter head gauge reads high (PTO system)	Oil filter in top of reservoir requires replacing	Change oil filter
Required fan speed cannot be achieved (PTO system)	Oil in reservoir is not at operating temperature	Wait until oil is at working temp. In cold weather fans need to be run to oil up before commencing drilling
	Fan flow control valve is set too slow / fast	Set flow control valve
	Relief valve is set too high / low	Adjust relief settings up or down to match requirements (try to set fan speed on flow control initially)
	Tap under reservoir is partially closed (pump cavitating)	Open tap
	Reservoir level very low (pump cavitating)	Fill reservoir
	Oil filter requires replacing (look at back pressure gauge)	Fit new oil filter
	Incorrect grade of oil	Ensure grade 32 or equivalent is used
	Fan speed sensor has been adjusted too far from magnet	Reset position of sensor
	Incorrect pump/gearbox combination	Ensure correct combination
	Key sheared on spline coupling in either motor or pump.	Strip and replace key

Required fan speed cannot be achieved (Spool system)	Oil is not at operating temperature	Wait until oil is at working temp. On cold mornings fan needs to be run to warm up before commencing drilling.
	Flow control on tractor Spool is set too High/low	Adjust as necessary
	Fan speed control valve is set too slow/fast	Set flow control valve. In most cases the drill flow control valve should be on maximum.
	Return line restricted see back pressure gauge.	
	Fan speed sensor has been adjusted too far from magnet.	Reset position of sensor
	Tractor is not capable of delivering 40 lt/min	
	Key sheared on spline coupling in motor.	Strip and replace key

**FAN UNIT
PROBLEM**

PROBLEM	CAUSE	CURE
System running hot PTO	Reservoir level low	Fill reservoir
	Relief valve setting too low correct PTO RPM achieved at lower than operating RPM	Increase relief setting Run tractor at rated PTO speed
	540 RPM Kit being used on 1000 RPM tractor	Change PTO speed or obtain correct pump/gearbox
	Filter requires replacing (see back pressure gauge)	Fit new filter
	Bottom strainer blocking	Remove and clean
	High ambient temp.	
System running hot spool	Tractor delivering excess of 40 L min.	Choke down flow rate at tractor.
	In line flow control valve fitted in pressure line (where fitted) generating heat	

Pressure line surging PTO	Pump cavitating	Check return lines for restriction Check oil level In reservoir Check fittings on suction side of system.
	Flow control and PRV fighting	Check bottom tank strainer reduce system relief
Pressure line surging spool	Flow control on fan fighting with flow control on tractor	Open flow control on drill to maximum and adjust speed at tractor.
	Tractor pump cavitating	Check oil level ensure return flow is connected correctly
Fan speed drops when lift circuit is activated (spool system)	Fan motor not in priority spool	Use priority or motor spool where available to run fan motor .
	Check valve loop in lift circuit	Partially close tap
Fan speed drops as flow temperature rises	Motor and pump failing due to previous over heating or contamination.	Test circuit for pressure and replace suspect unit
Gearbox hot	Excess movement on shaft	Ensure top bolt is supporting gearbox , if adapter is fitted Use only bolt on type not quick release type
Rattling noise from fan as it increases or decreases in speed	Anti cavation valve operating	System normal

TRAMLINES

PROBLEM	CAUSE	CURE
Drill tramlines on more than one bout - RDS	Panel set for asymmetric use	Refer to RDS section one in manual
Tramline rollers do not turn	Tramline cylinder not pressurised	Operate boutmarker circuit
	RDS panel tramlining-activating solenoid valve	Advance bout
	Solenoid valve stuck open preventing tramline ram from maintaining pressure	Check and clean replace if necessary
	Air in system	Bleed system

Tramline rollers continue to tramline bout down	Residual pressure in system	Place system into float once markers are completely
	Solenoid valve not activated	Ensure tramline bout is correct
	Solenoid valve failed	Check and clean replace if necessary
	Return spring on tramline ram broken	Fit new spring
	Sliding collar out of adjustment / failing to catch drive spring	Slide arm and collar along tramlining shaft to adjust
	System re-pressurised by lift circuit	Ensure lift system is run in float, and not activated during tramline bout

**HOPPER
PROBLEM**

CAUSE

CURE

Seed loss between bottom airbox and sliding tray	Misalignment within slots	Readjust to remove excess (may require slot size increasing)
Seed loss through unused air outlet	Corresponding shut off flap not down	Drop shut off flap to unused roller
	Adverse air currents within airbox affecting certain outlets	Swap hose to leaking outlet and shut previously used
Sliding trays difficult to move	Air box units set to high	Adjust within slots as necessary
Fluted rollers damaged	Feed flap setting too low- especially apparent on beans	Increase flap setting to prevent crushing of seed

CALIBRATION

PROBLEM

CAUSE

CURE

Seed rate too high / low

Incorrect number of turns
Used during calibration

Refer to calibration charts

Wrong calibration chart

Check and reset

Seed flap set wrong

Check and reset

Tramline rollers rotating/not
rotating

Check for correct operation
see tramline section

Metering wheel blocked

Unblock

Metering driveline failing

Check for broken chains

Variator slipped from set
Position

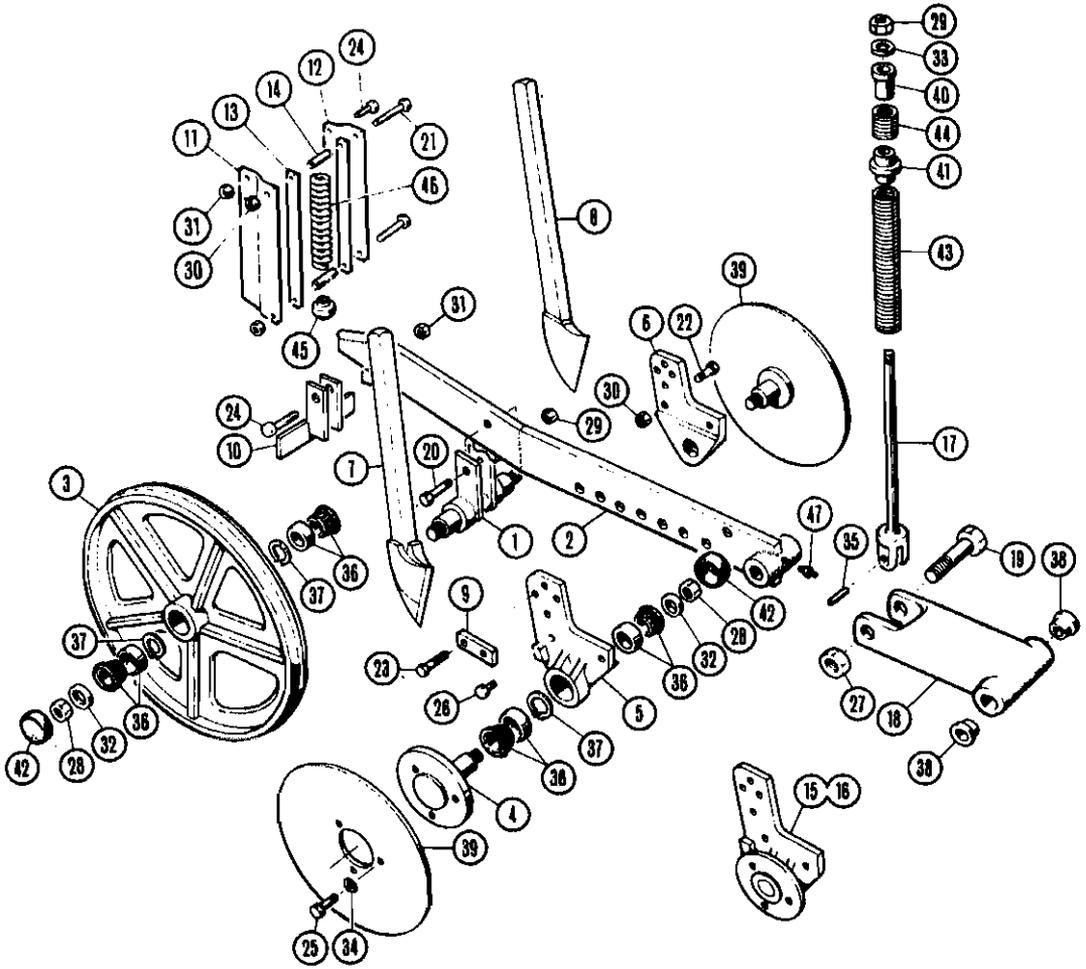
Re-calibrate and lock off

Incorrect Gear or not properly
Engaged

Engage correct gear firmly

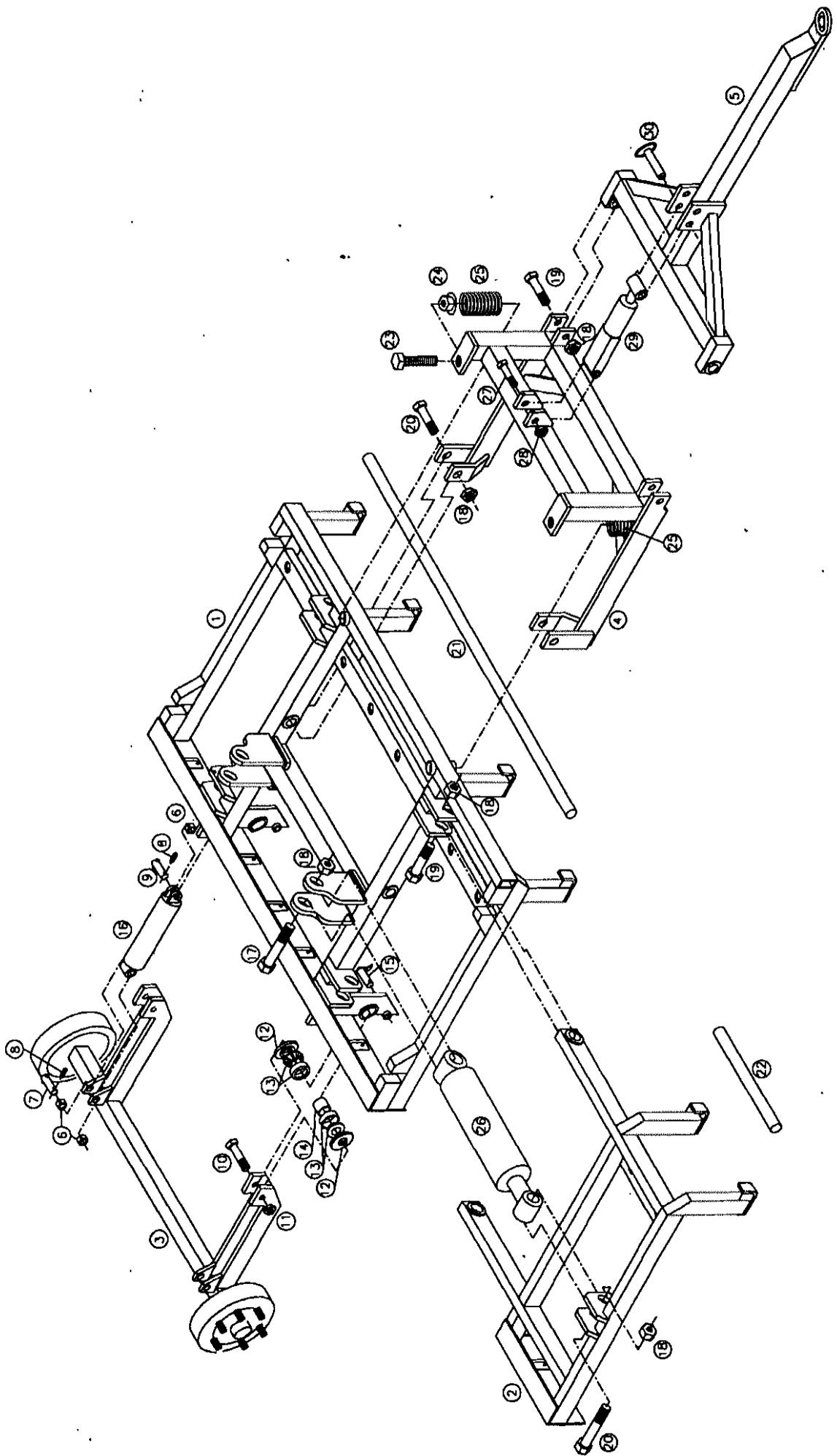
SUPPLEMENT TO MAIN PARTS LISTS

NOTE: When Ordering Parts State the Size and age of Drill and the Serial Number if possible.



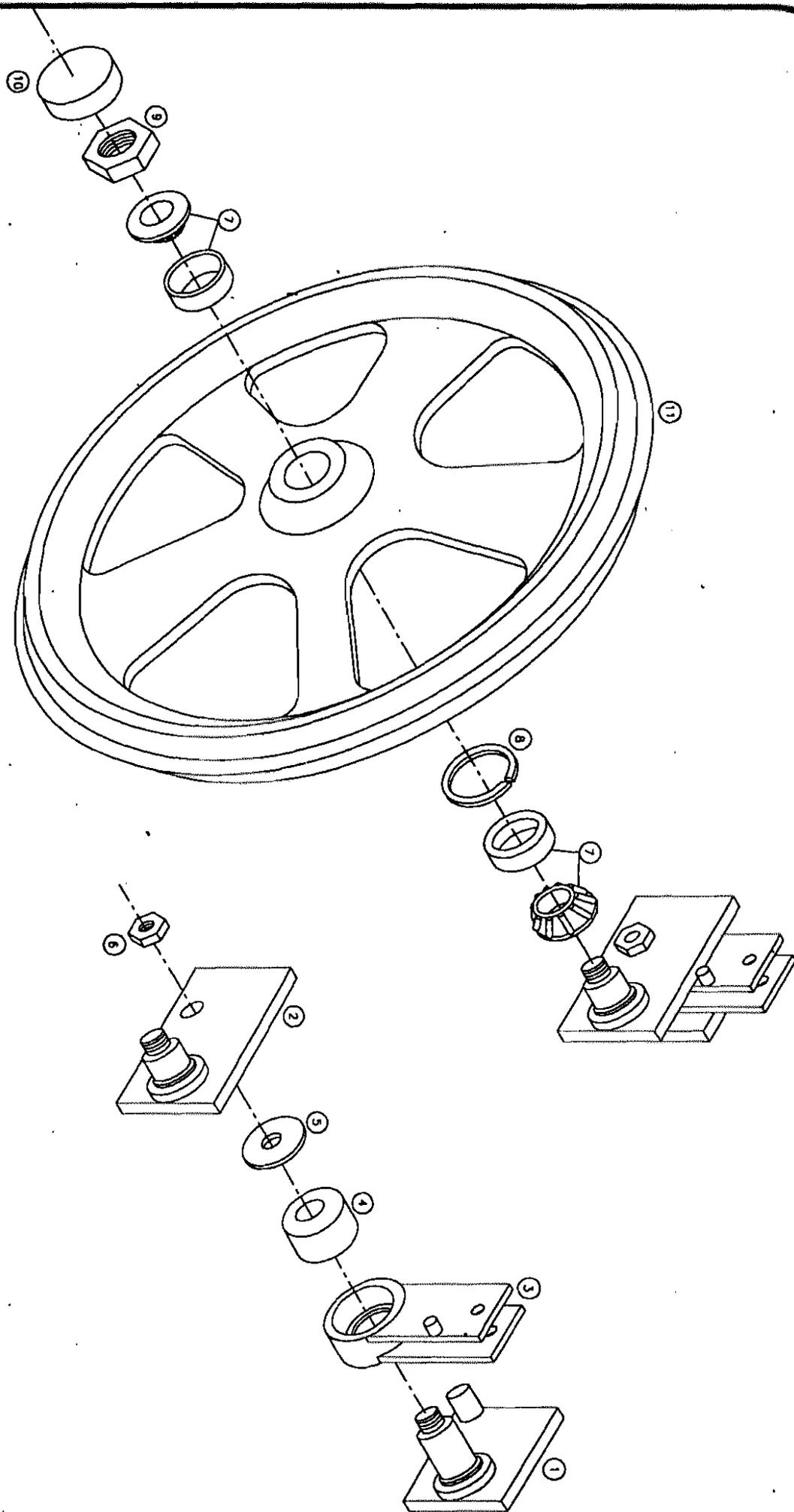
DRAGARM SEEDING UNIT

ITEM	PART NO.	DESCRIPTION
1	201 - 0234	Dragarm Axle Unit
	201 - 1000	Dragarm Axle Unit Grassland
2	220 - 1034	Dragarm Mounting Bar
3	203 - 1034	Press Wheel
4	204 - 1234	Disc Hub
5	205 - 34	Disc Mounting Bracket - R.H.
	205 - 12	Disc Mounting Bracket - R.H. Grassland
6	206 - 34	Disc Mounting Bracket - L.H.
	206 - 12	Disc Mounting Bracket - L.H. Grassland
7	207 - 1234	Seed Tube Coulter - R.H. 25mm
	207 - 1234 T	Seed Tube Coulter - R.H. 25mm Tungsten
	207 - 1234 L	Seed Tube Coulter - R.H. 30mm
	207 - 1234 LT	Seed Tube Coulter - R.H. 30 mm Tungsten
8	208 - 1234	Seed Tube Coulter - L.H. 25mm
	208 - 1234 T	Seed Tube Coulter - L.H. 25mm Tungsten
	208 - 1234 L	Seed Tube Coulter - L.H. 30mm
	208 - 1234 LT	Seed Tube coulter - L.H. 30mm Tungsten
9	209 - 1234 L	Seed Tube Retaining Plate
10	210 - 0034	Press Wheel Scraper
	210 - 1000	Press Wheel Scraper Grassland
11	211 - 1234	Dragarm Guide Plate - R.H.
12	212 - 1234	Dragarm Guide Plate - L.H.
13	213 - 1234	Guide Plate Bar
14	214 - 1234	Guide Plate Distance Piece
15	215 - 34	Disc Bearing Replacement Unit - R.H.
	215 - 12	Disc Bearing Replacement Unit - R.H. Grassland
16	216 - 34	Disc Bearing Replacement Unit - L.H.
	216 - 12	Disc Bearing Replacement Unit - L.H. Grassland
17	221 - 1234	Front Spring Arm
18	132 - 1034	Pivot Arm Unit
19	A 103	1" x 4 ³ / ₄ " UNC Bolt
20	A 107	M16 x 55 Bolt
21	A 110	M12 x 75 Bolt
22	A 111	M12 x 55 Bolt
23	A 113	M10 x 70 Bolt
24	A 114	M10 x 50 Bolt
25	A 120	³ / ₈ " x ³ / ₄ " UNF Setscrew
26	A 122	M10 x 20 Setscrew
27	A 130	1" UNC Locknut
28	A 132	³ / ₄ " UNF Locknut
29	A 137	M16 Locknut
30	A 138	M12 Locknut
31	A 139	M10 Locknut
32	A 145	M20 x 35 H.D. Washer
33	A 146	M16 x 32 H.D. Washer
34	A 148	³ / ₈ " Spring Washer
35	A 149	¹ / ₂ " x 1 ³ / ₄ " Spirol Pin
36	A 157	1" Timken Taper Roller Bearing
37	A 158	1" Tinken Circlip
38	A 159	Oilite Bush
39	A 160	Seed Disc Coulter 16"
	A 160 L	Seed Disc coulter 18"
40	A 180	Spring Retaining Bush
41	A 181	Spring Locating Bush
42	A 182	Dust Cap - Small
43	A 186	Front Spring - Lower
44	A 187	Front Spring - Upper
45	A 188	Rear Spring Bush
46	A 189	Rear Spring - H.D.
47	A 190	Grease Nipple



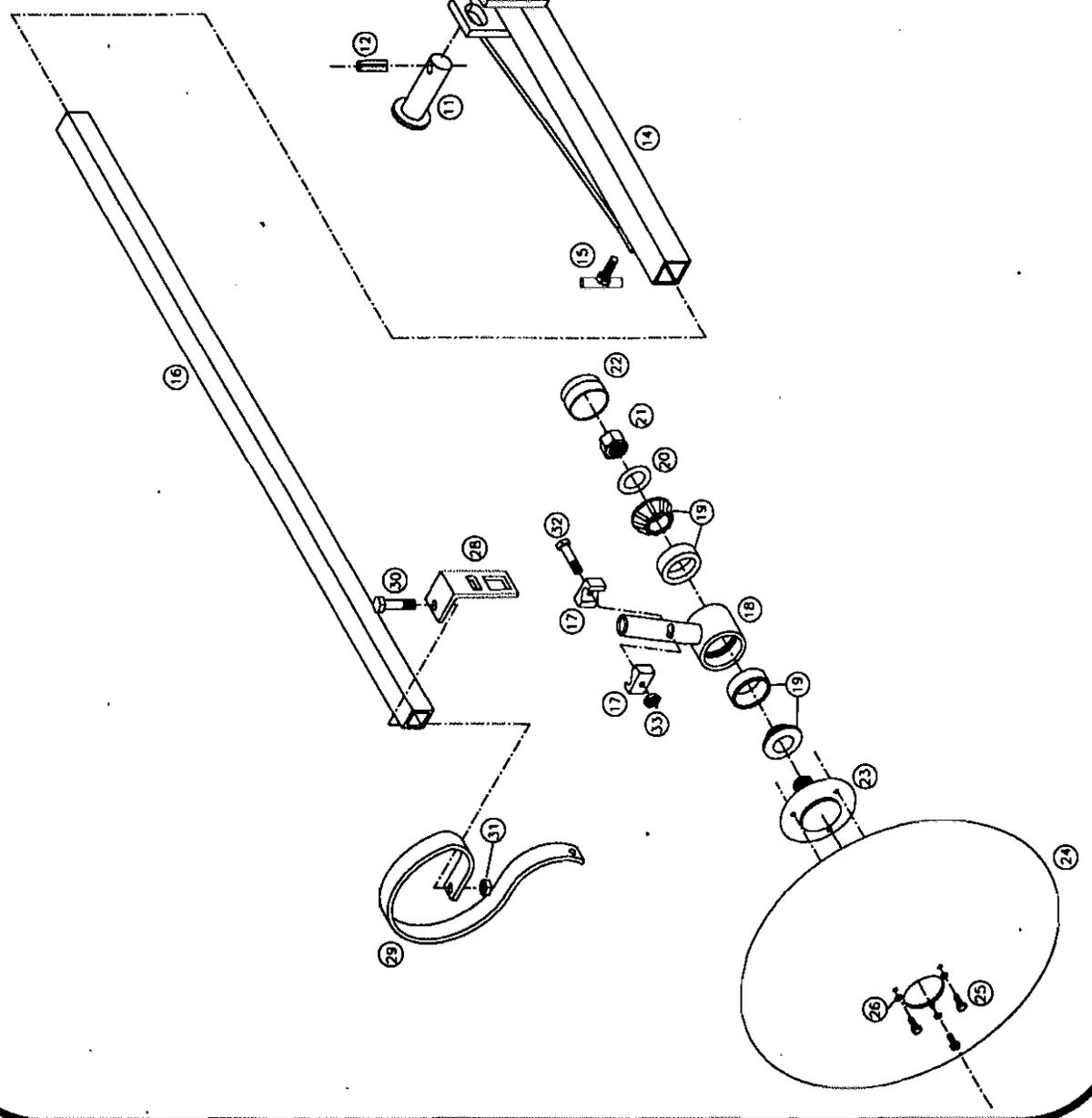
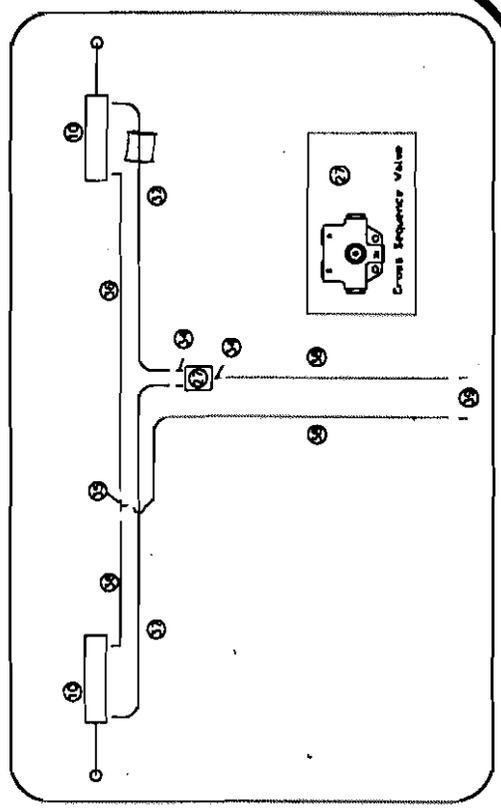
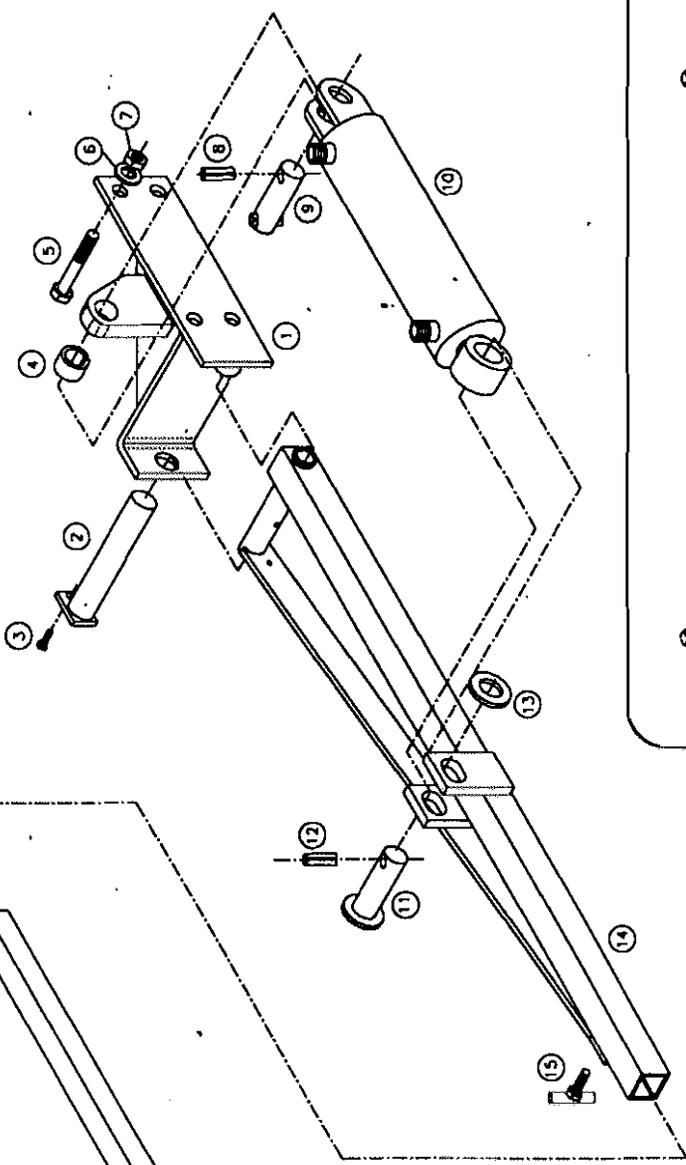
**4m H.P.
COMPLETE FRAME**

ITEM	PART NO.	DESCRIPTION
1	110-5	Centre Frame
2	110-8	4m HP Wing
3	126-04	Axle Unit
4	120-5	C Frame
5	121-5	Drawbar
6	A199	1 1/4"x 1"x 1" Tension Bush
7	126-46	Axle to Ram Pin
8	A153	M8 x 40 Roll Pin
9	128-46	Axle Ram to Frame Pin
10	A101	1"x 6" UNC Bolt
11	A130	1" UNC Locknut
12	130-1234	Pivot Collar - axle unit
13	A156	1 3/8" Taper Roller Bearing
14	131-1234	Pivot Bush - axle unit
15	125-1234	Transport Pin
16	GAC806	Rear Axle Ram
17	115-5J	Centre Frame Wing Ram
18	A128	1 1/2" UNC Nyloc
19	115-5K	Wing Pivot / C Frame Pivot
20	115-8E	Wing Wing Ram Pin
21	141-5	Front Pivot Bar for Centre Frame
22	141-8	Front Pivot Bar for Wing
23	120-5M	Spring Pressure Adjusting Bolt
24	120-5N	Spring Pressure Adjusting Nut
25	A185	Depth Control Springs
26	GAC047N	Wing Folding Ram
27	A117	1 1/4"x 7 1/2" UNC Bolt
28	A129	1 1/4" UNC Nyloc Nut
29	123-34H	Depth Control Ram
30	A154	1 1/4"x 8" Drawbar Pin



NEW BOGGIE UNIT.

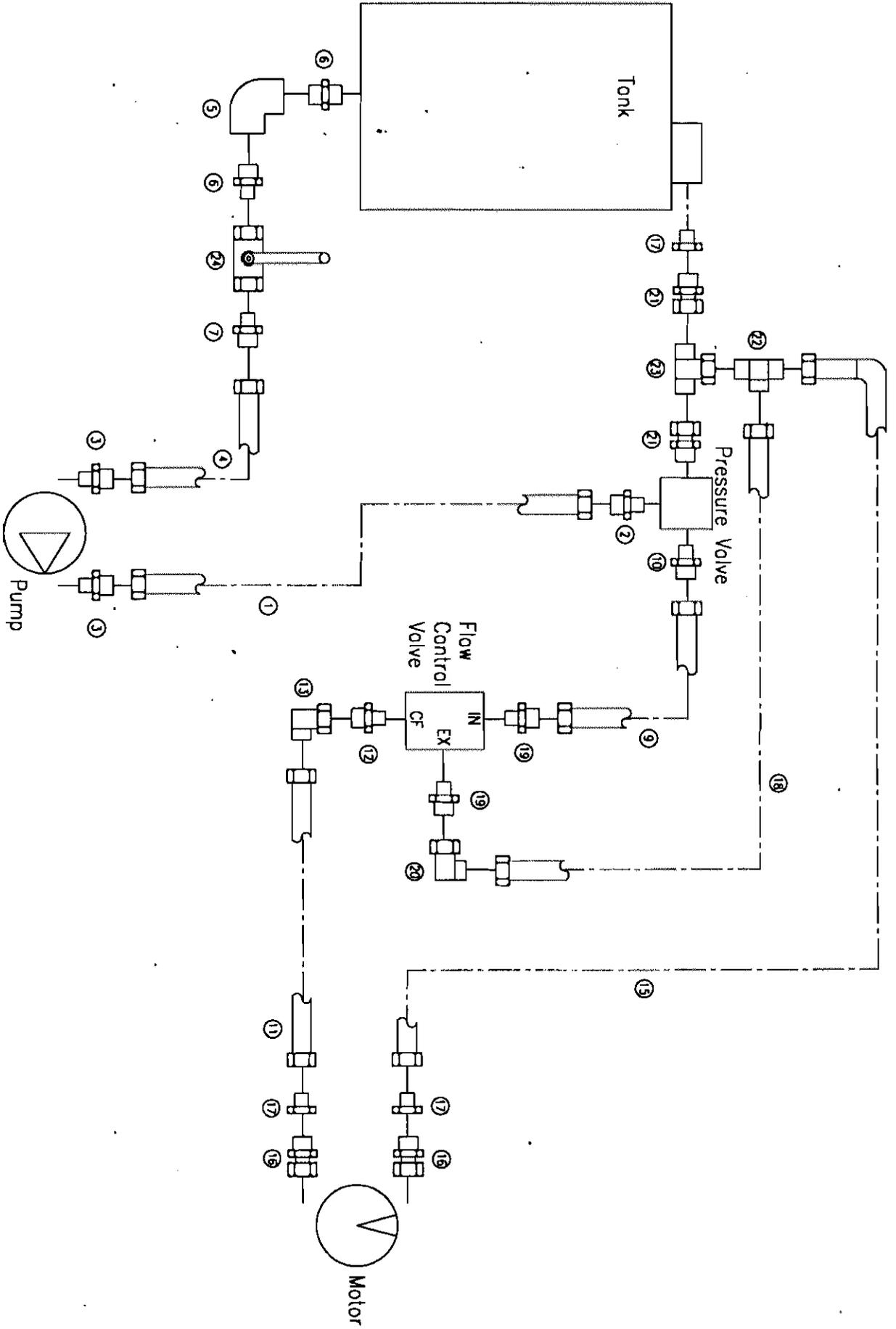
ITEM	PART NO.	DESCRIPTION
1	201-42N	Short Side(N)
2	201-41N	Long Side(N)
3	201-43	Boggie Boss
4	A151	30mm Uni-Pack Bearing
5	201-4E	Spacer
6	A130	1" UNC Binx Nut
7	A157	1" Timken Taper Roller Bearing
8	A158	1" Timken Circlip
9	A132	3/4" UNF Trilock
10	A153	Dust Cap - Small
11	203-1034N	Press Wheel - New



New 4m H.P. HYDRAULIC SYSTEM

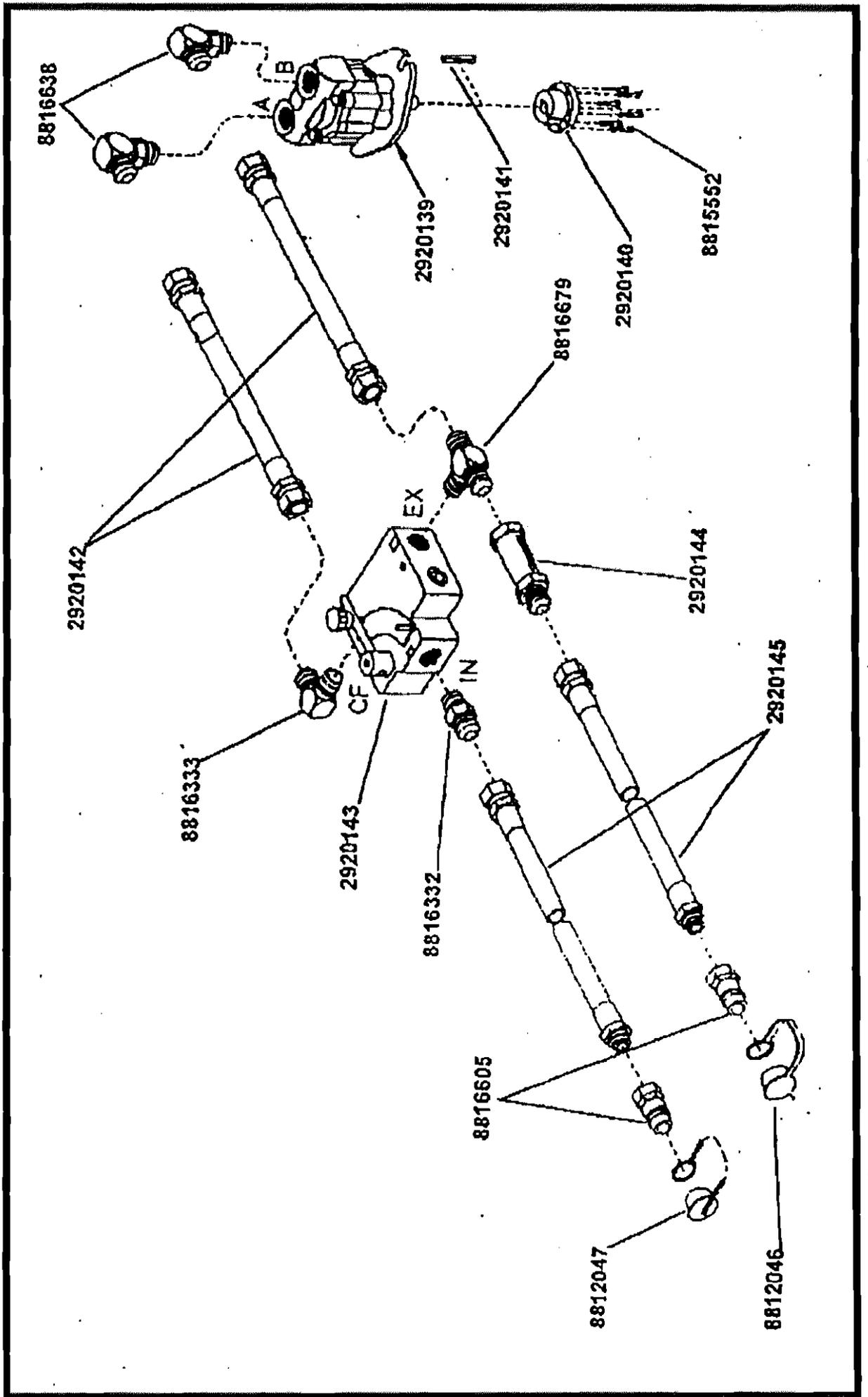
ITEM	PART NO.	DESCRIPTION
1	Rear axle ram to rear axle ram (hose)
2	Rear axle to manual divertor valve (hose)
3	Wing ram to pilot operated check valve (hose)
4	Wings to manual divertor valve (hose)
5	Wing ram to wing ram (hose)
6	Depth control ram to pilot operated check valve (hose)
7	Left marker ram to tee (hose)
8	Right marker ram to tee (hose)
9	Left marker ram to cross sequence valve (hose)
10	Right marker ram to cross sequence valve (hose)
11	Drill to tractor (hose)
12	Depth control to tractor
13	3/8" F/M/M tee
14	3/8" M - 3/8" M straight
15	3/8" F - 3/8" F ninety degree
16	3/8" M/M/M tee
17	3/4" JIC - 3/8" BSP M/M straight
18	3/8" F - 3/8" M straight
19	1/2" BSP probe
20	GAC806	Rear axle ram
21	GAD047N	Wing ram
22	GAC099	Marker ram
23	I23-34H	Depth control ram
24	S683901	Cross sequence valve
25	Manual divertor valve
26	Double pilot operated check valve

NOTE: This hydraulic system may vary from machine to machine, as previously stated you may have some optional extras. e.g. Electric Double Divertor valve, etc.



ROGER SEEDBOX PTO DRIVE KIT.

Part No.	Description
1	Hydraulic hose
2	Male - Male Union
3	Male - Male Union
4	Hydraulic hose
5	90dg Union Cast Iron
6	Cast Iron double Union
7	Male - Male Union
8	Male - Male Union
9	Hydraulic Hose
10	Male - Male Union
11	Hydraulic hose
12	Male - Male Union
13	90dg Union
14	Male - Male Union
15	Hydraulic hose
16	Female - Male Union
17	Female - Male Union
18	Hydraulic Hose
19	Male - Male Union
20	90dg Union
21	Female - Male Union
22	Male - Male - Male Tee
23	Female - Male - Male Tee
24	Tank Tap



ROGER SEEDBOX HYDRAULIC KIT.

PART NO.	DESCRIPTION
2912641	Hydraulic Kit
8816638	90dg. Union
2920139	Hydraulic Motor
2920141	Key
2920140	Conic Hub
8815552	Screw 9/16"
2920142	Hose
8816333	90dg. Union
2920134	Variable Flow Control Valve
8816679	T-Piece Union
8816332	Union
2920144	One Way Valve
2920145	Hose
8816605	Coupling
8812047	Cap and Chain
8812046	Plastic Cap