

W 400 - W 600

UNIDRILL-W

PLEASE READ CAREFULLY BEFORE USING THE MACHINE

August 1999

System
Moore

33 Kirk Road, Ballymoney, Co. Antrim,
Northern Ireland BT53 6PP.
Tel: (028) 2766 4444
Fax: (028) 2766 5696

Dear Customer

Thank you for purchasing a MOORE UNIDRILL and for showing confidence in our product.

For effective use, and to benefit from all the features of our drill, we recommend that you read this document very carefully.

From your experience, please do not hesitate to inform us of your comments and suggestions, which will always be useful to us in improving our products.

We wish you success with your drill.

Assuring you of our best attention at all times.

Sam Moore
Managing Director



33 Kirk Road, Ballymoney, Co. Antrim, N. Ireland
Tel: Ballymoney (012656 64444) Fax : (012656 65696)



Moore Uni Drill Limited
33 Kirk Road , Ballymoney,
Co. Antrim , N. Ireland, BT53 6PP
Tel : (0044) 12656 64444
Fax (0044) 12656 65696

Machine Width : _____

Serial Number : _____

Customer Name : _____

Address : _____

Tel: _____

Mobile No : _____

E. mail : _____

Post Code : _____

I HAVE RECEIVED THE ABOVE MACHINE IN AN ACCEPTIBLE
CONDITION AND TO THE CORRECT SPECIFICATION.

I HAVE RECEIVED AND READ THE OWNERS MANUAL FOR
SAFE AND CORRECT OPERATION OF MACHINE.

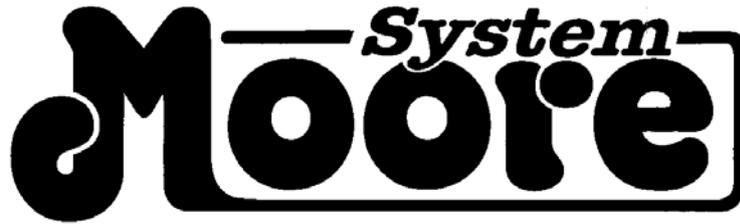
I WISH TO REGISTER MY MACHINE FOR WARRANTY.

SIGNED :- _____

CUSTOMER

DATE : - _____

1. To be completed , detached and returned to Moore Uni Drill within 14 days of customer receipt / purchase.
2. It is essential that all details be completed.
3. Failure to complete and return this form will prevent claim settlement.



DECLARATION OF CONFORMITY

Moore Uni Drill Limited,

Of 33 Kirk Road, Ballymoney, Co. Antrim, N. Ireland. BT53 6PP

hereby declare that

Model

Serial No

Date

conforms with the following Directives and Regulations, and has been certified accordingly.

**The supply of Machinery (Safety) Regulations 1992
(S.I. 1992/ 3073)**

**The Provision and Use of Work Equipment Regulations 1992
(S.I. 1992/2932)**

Certified on behalf of Moore Uni Drill Limited

James A O' Kane

Technical Director

Warranty

In this warranty Moore Uni-Drill is referred to as the Company.

1. Subject to the provisions of this warranty the Company warrants each new machine sold by it to be sold free from any defect in material or workmanship.
2. If the machine or part thereof supplied by the Company is not in accordance with the warranty given in clause 1 the Company will at its option;-
 - (a) Make good the machine at the Company's expense, or
 - (b) make an allowance to the purchaser against the purchase price, or
 - (c) accept the return of the machine and at the buyer's option either
 - (i) repay or allow to the buyer the invoice thereof, or
 - (ii) replace the machine as soon as reasonable practicable.
3. This warranty shall not oblige the Company to make any repayment in respect of loss of profit or other consequential loss or contingent liability of the Purchaser alleged to arise from any defect in the machine or impose any liability on the company other than that contained in clause 2.
4. Any claim under this warranty must be notified to the Company in writing specifying the matters complained of within 12 months from the date of receipt by the Purchaser or his nominee of the machine.
5. Any claim under this warranty must be made by the original purchaser of the machine and is not assignable to any third party.
6. If the purchaser hires out the machine to any third party the warranty shall apply only to matters notified to the Company within 90 days of the date of delivery and clause 4 shall be read as if the period of 90 days were substituted for the period of 12 months.
7. **The Warranty will cease to apply if:-**
 - (a) **any parts not made, supplied or approved in writing by the Company are fitted to the machine, or**
 - (b) **any repair is carried out to the machine other than by or with the express written approval of the company, or**
 - (c) **any alterations not expressly authorised by the Company in writing are made to the machine, or**
 - (d) **the machine is damaged by accident, or**
 - (e) **the machine is abused or overloaded or used for a purpose or load beyond its design capabilities.**
8. Any dispute as to whether the goods are sold free from any defect in workmanship or materials shall be referred to a single arbitrator to be agreed between the company and the buyer.

CONTENTS

SPECIFICATIONS

ADDITIONAL GENERAL SAFETY RULES

HITCHING

TRANSPORT

DEPTH CONTROL

STANDARD CONTROL SYSTEM

HEAD LAND CONTROL SYSTEM

ROGER SEEDBOX, FAN UNIT

FAN SPEED

CHECKING COULTERS

ROGER HOPPER CALIBRATION

CALIBRATION TEST

MAINTENANCE OF SEEDHOPPER

MAINTENANCE (Additional to main instruction book)

PROBLEM SOLVING

SUPPLEMENT TO MAIN PARTS LIST

SPECIFICATIONS

Moore Unidrill 4m HP

• .	Width of work	4m
• .	Transport Width.	3m
• .	Seedbox capacity	1600L (Roger)
• .	Row width	16.6 cm
• .	No of Rows	24
• .	Horsepower required	120 H.P
• .	Weight	3400 kg
• .	Transport Height	3.5 m
• .	Tyres	500 x 50 x 17

Options:

- Bogie axles
(For extreme wet / cloddy / stony / trashy conditions)
- Stepped Pneumatic Tyres
- Hydraulic brakes
- Air brakes
- **Head Land Control** system

SPECIFICATIONS

Moore Unidrill **6m HP**

• .	Width of work	6m
• .	Transport Width.	3m
• .	Seedbox capacity	2200L
• .	Row width	16.6 cm
• .	No of Rows	36
• .	Horsepower required	160 H.P
• .	Weight	5100 kg
• .	Transport Height	4.5 m
• .	Tyres	550 x 45 x 22.5

Options:

- Bogie axles
(For extreme wet / cloddy / stony / trashy conditions)
- Stepped pneumatic tyres
- Hydraulic brakes
- Air brakes
- **Head Land Control system**

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.  Always unfold H.P. Drills in raised position with transport pins engaged and **mechanical wing locks dis – engaged** trying to unfold wings whilst transport locks are still engaged can damage main frame.
3. Always transport H.P. Drills with hopper empty, and do not exceed 25km/h.
4.  Never operate bout markers unless area is clear.

HITCHING

1. Attach tractor to drill using pick up hitch or clevis.
 2. Attach the pipes of the hydraulic fan to the tractors priority valve (if fitted) a cap fitted with a chain identifies the pressure hose.
-  The return hose must have unrestricted return access to hydraulic tank (i.e 'dump valve'), otherwise damage may occur . If in doubt refer to your tractor supplier.
3. Attach the hoses for the Head Land Control (HLC) system, Must be fitted to double acting spool.
 4. Connect HLC hand grip onto the spool lever that is being used to run HLC system.
 5. Connect HLC hand grip cable to the cable from the HLC control box.
 6. Connect the other cable from the HLC control box to the tractors standard 12V power source.
 7. Connect the cable from the tram – lining system to the tractors 12V Supply.
 8. Connect lighting cables and braking hoses to the appropriate places.

TRANSPORT

Road to Work.

1.  Ensure that the drill is in an open and clear area.
2. Lift the drill fully and insert the transport pins on the axle unit, Figure A



Figure A

3. Extend the depth control ram to its maximum.
4. Change the manual divertor valve from the marker to the wings ;

Lever towards the rear engages the wings, see Figure B



Figure B

Lever toward the front engages the markers, see figure C



Figure C

5.  Dis – engage the wing locks as shown in figure D



Figure D

6. Operate the hydraulics to unfold the wings.
7. **Pressure** the wings down, i.e allow time to purge air from the system.
8. Change the manual diverter valve from wings back to the markers.
9. Operate hydraulics to raise drill from transport position and remove axle transport pins.
10. Machine is ready for work.

 Note : it is advisable during the working day to check that the centre section is drilling at the same depth as the wings, if not repressurise the wings from time to time. This means that the manual diverter valve must be put back from markers to wings and vice versa.

Work to Road

1. Ensure the drill is clear of all obstacles when folding the wings.
2. Change manual diverter valve to wings and engage mechanical wing locks.
3. Ensure hopper is empty, and both markers are raised.
4. Raise drill to transport position and insert transport pins.
5. Lower drill onto transport pins.
6. Fully extend depth control ram.
7. Operate the hydraulics to fold the wings.
8. The drill is now ready to transport.



Note When transporting drill always press button 5 on Head Land Control Joystick to de – activate electro – hydraulic system

See also Head Land Control

Standard Head Land System

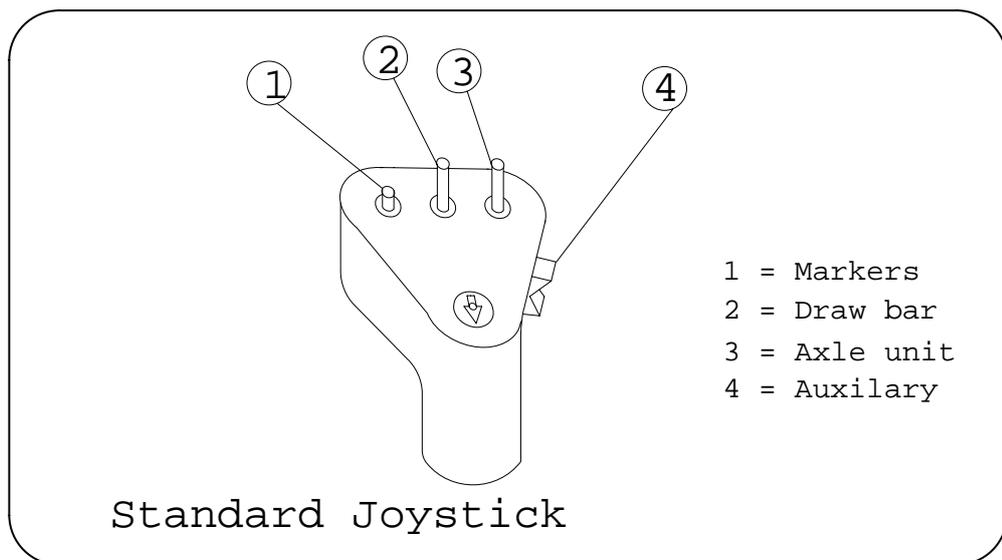


Figure D

Shown in Figure D is a schematic sketch of the standard hand grip.

The system uses a single double acting service to provide individual or sequenced control over all functions of the drill. The operation is as follows:- press a button to move a cylinder and simultaneously operate the tractors double acting control valve to and fro' to achieve the desired cylinder movement.

Press Button 1 and this will operate the markers,

Press Button 2 and this will adjust the hydraulic draw bar,

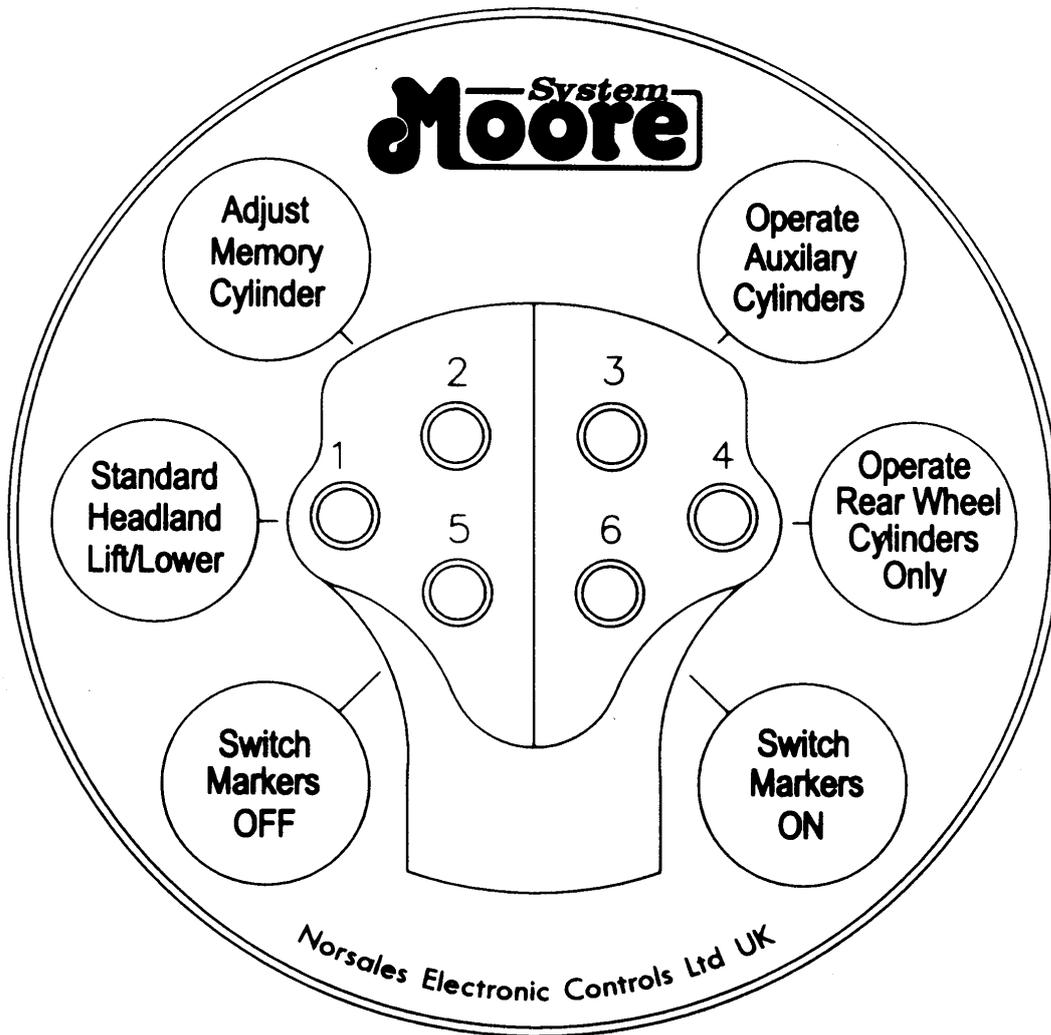
Press Button 3 and this will operate the axle unit,

Press Button 4 and this will operate the auxiliary function i.e levelling board.

☞ With this system, functions can be “locked on” to help automate a head land turn, i.e. push buttons 2 and 3 forward to lock them on, then when going to do a head land turn, press button one and pull the spool lever, this will bring in the markers, raise the draw bar and lower the axle unit.

☞ Whilst drilling, you may want to bring in a marker, without lifting the drill switch off buttons 2 and 3, and just press button one to bring in the markers.

Head Land Control



The system uses a single double acting service from the tractor to provide individual or sequenced control over all functions of the drill. The operation is as follows :- press a button to operate a sequence or move a cylinder and simultaneously operate the tractors double acting control valve **to** and **fro'** to achieve the desired cylinder movement.

The sequence for each button is listed below :-

Press button 1 – standard head land turn - operates the markers first and ensures the rear axle moves before the draw bar, thus dis – engaging the drive wheel.

Press button 2 – adjusts the memory cylinders internal stop position; this is best done on the ground. This controls drill depth.

Press button 3 – operates an auxiliary function where fitted, e.g levelling board.

Press button 4 – operates the rear wheels only.

Press button 5 – turns the markers “off”. Therefore over – riding the markers when doing head lands.

Press button 6 - switches the markers back “on”.

Pulling the spool and not using any button operates the markers only. **Be careful not to pull the spool lever in transport as either:**

The wings will be activated ,

The markers will be activated ,



Additional safety can be gained by pressing button 5 before road transport, this will disengage the electro – hydraulic system, unless one of the other buttons is pressed.

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. Now you are ready to set the depth.

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

There is a colour scale on the depth control ram, which is clearly visible from the tractor; this is to give guidance. When the correct depth has been achieved, use the stroke control segments to maintain this depth through out drilling. (On machines without HLC)

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.

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 , and vice versa.

Memory cylinder

Using the same procedure as above, you can set the depth by using the button marked Memory Cylinder Adjust on the Head Land Control Hand Grip, this will maintain your drilling depth. Should you need to adjust the drill through variable soils, always use this button.

See also **Head Land Control system**

W SEEDBOX FAN UNIT

Hydraulically Driven Fan

1. The maximum 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 motor valve (see tractor dealer) or single acting spool with dump facility to tank.
3. The hoses are equipped with a quick release coupling, the return must be unrestricted as previously mentioned.
4. A cap fitted with a chain identifies the pressure hose. 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 the flow valve, located on the drill, must be completely open and the tractor's valve must be used to adjust the fan speed. This uses less tractor oil.

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.

This is only a guide

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.

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.



Read instruction manual fully before operation .

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 ,

Always Dis – engage mechanical transport locks before folding ,

In wetter conditions, firm seed beds, which have hazed on top, and plenty of forward speed, will keep the Uni – Drill going when lesser drill have stopped.

W 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

Tramlinging

On W600 drills, 2 rows per wheel track are knocked out, on W400 drills this can be either 1 or 2 rows per track, by swapping seed pipes with spare peg wheels.

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.

A single lever situated at the right-hand end of the hopper adjusts the flaps; 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

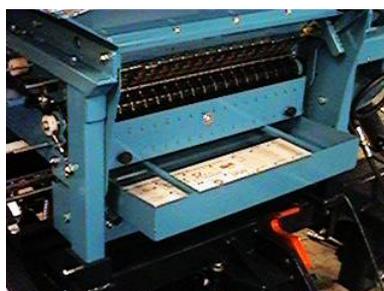
White plastic blanking covers are used to disengage standard seedwheel; these are easily put on/taken off, when flaps are in position 6.

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 pegs 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	37 .5
6	25 .0

7. Weigh the seed collected from both trays in Kg using an accurate set of scales. The amount collected is equivalent to 1/40 th of a hectare.
Sowing rate (Kg/Ha) = Weight collected (Kg) x 40.

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.

Half width shut off

The left hand side of the drill (whilst facing forward in tractor seat) can be shut off for drilling around the perimeter of the field and beginning the correct tramlining sequence. The procedure is as follows, pull the blue lever, which is pointed to below and place the R clip in the second hole which is un – covered.



The seed box can be very easily cleaned out, by pulling the two red levers, which will empty the seed box via two tubes. This is best done when the machine is folded and fully lowered on the ground.

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.

- These should be kept open during the winter to help prevent damage from vermin

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 air-boxes. Half an hour cleaning now will save a lot of trouble next season removing chitted seeds from air-box.

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.

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

With standard agricultural grease.

PROBLEM SOLVING

FAN UNIT

PROBLEM	CAUSE	CURE
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
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 25 lt/min	
	Key sheared on spline coupling in motor.	Strip and replace key

FAN UNIT

PROBLEM	CAUSE	CURE
System running hot spool	Tractor delivering excess of 25 L min.	Choke down flow rate at tractor.
	In line flow control valve fitted in pressure line (where fitted) generating heat	
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

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 not activating Linak actuators	Advance bout
Tramline rollers continue to tramline all bout	RDS Pod Mis-function	Check using circuit tester
	Linak actuator failed	Check circuit using tester
	Sliding collar out of adjustment / failing to catch drive spring	Slide arm and collar along tramlining shaft to adjust

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
Peg 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

Head Land Control

Shown below in figure is the diagram shown on the front of the head land control processor box.



- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <input type="radio"/> Processor Status <input type="radio"/> Spare <input type="radio"/> Spare <input type="radio"/> Spare <input type="radio"/> Spare | <ul style="list-style-type: none"> Valve 1 <input type="radio"/> Marker Cylinder/s Valve 2 <input type="radio"/> Memory Cylinder Valve 3 <input type="radio"/> Auxiliary Cylinder Valve 4 <input type="radio"/> Rear Wheel Cyls |
| <ul style="list-style-type: none"> Button 5 <input type="radio"/> Markers Off (1) Button 6 <input type="radio"/> Markers On (1) <input type="radio"/> Spare <input type="radio"/> Spare | <ul style="list-style-type: none"> Button 1 <input type="radio"/> Std. Lift Lower (2+7) Button 2 <input type="radio"/> Memory Cyl. (1+3) Button 3 <input type="radio"/> Auxiliary Cyl. (1+4) Button 4 <input type="radio"/> Rear Wheels (1+2) |
| <ul style="list-style-type: none"> <input type="radio"/> Spare <input type="radio"/> Spare <input type="radio"/> Spare <input type="radio"/> Spare | <ul style="list-style-type: none"> Valve 7 <input type="radio"/> Line Lock Valve <input type="radio"/> Spare <input type="radio"/> Spare <input type="radio"/> Spare |



The principle of this series of lights is to show the sequence of events. Should the system ever fail to work , it is easy to determine were the fault lies. On the panel there is a light for each button on the HLC joystick , and also a light for each valve.

When the button is pressed in the tractor, the corrosponding light on the processor box should light up and also the valves which the button operates,

For example Press button one and ;

On the control panel button 1 should light, and valves 2 + 7 will also be alight ,

Should button 1 not be alight, the fault lies between the tractor and control box.

Should button 1 be alight , and valves 2 + 7 not alight , then the fault lies within the control box.

Should the control box be malfunctioning disconnect the power source, and reconnect to reset the sequence. You will also need to reset the time delay between the rear axle and draw bar this is done holding button 6 down, and pressing the desired button for the length of delay you require, i.e

button 1 = 1 second,
button 2 = 2 seconds etc, button 5 = 5 seconds.

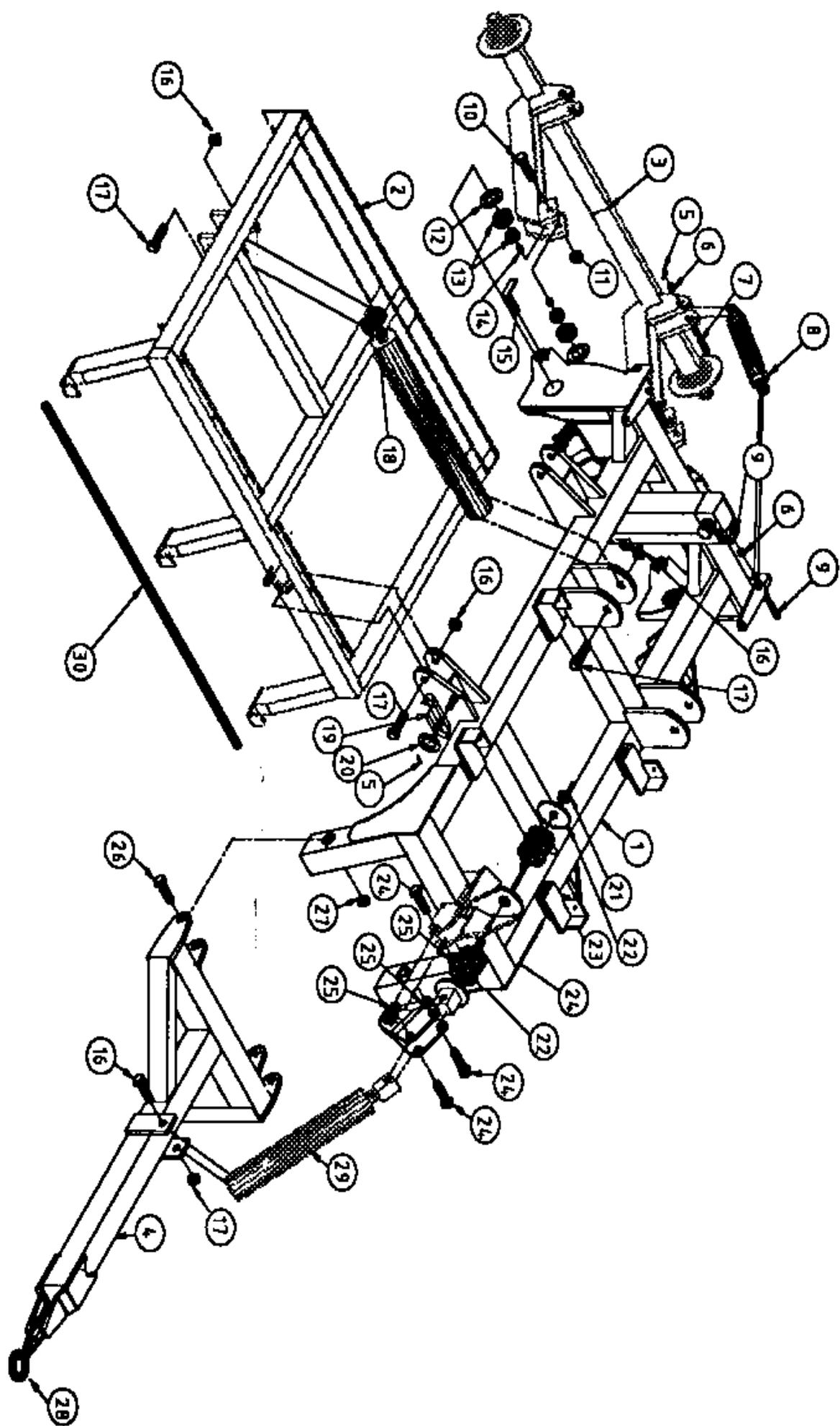
You must hold the desired button, simultaneously with button 6, for 1 second to set a new time delay.



If welding has to be carried out to the machine remove the control box from the machine.

SUPPLEMENT TO MAIN PARTS LISTS

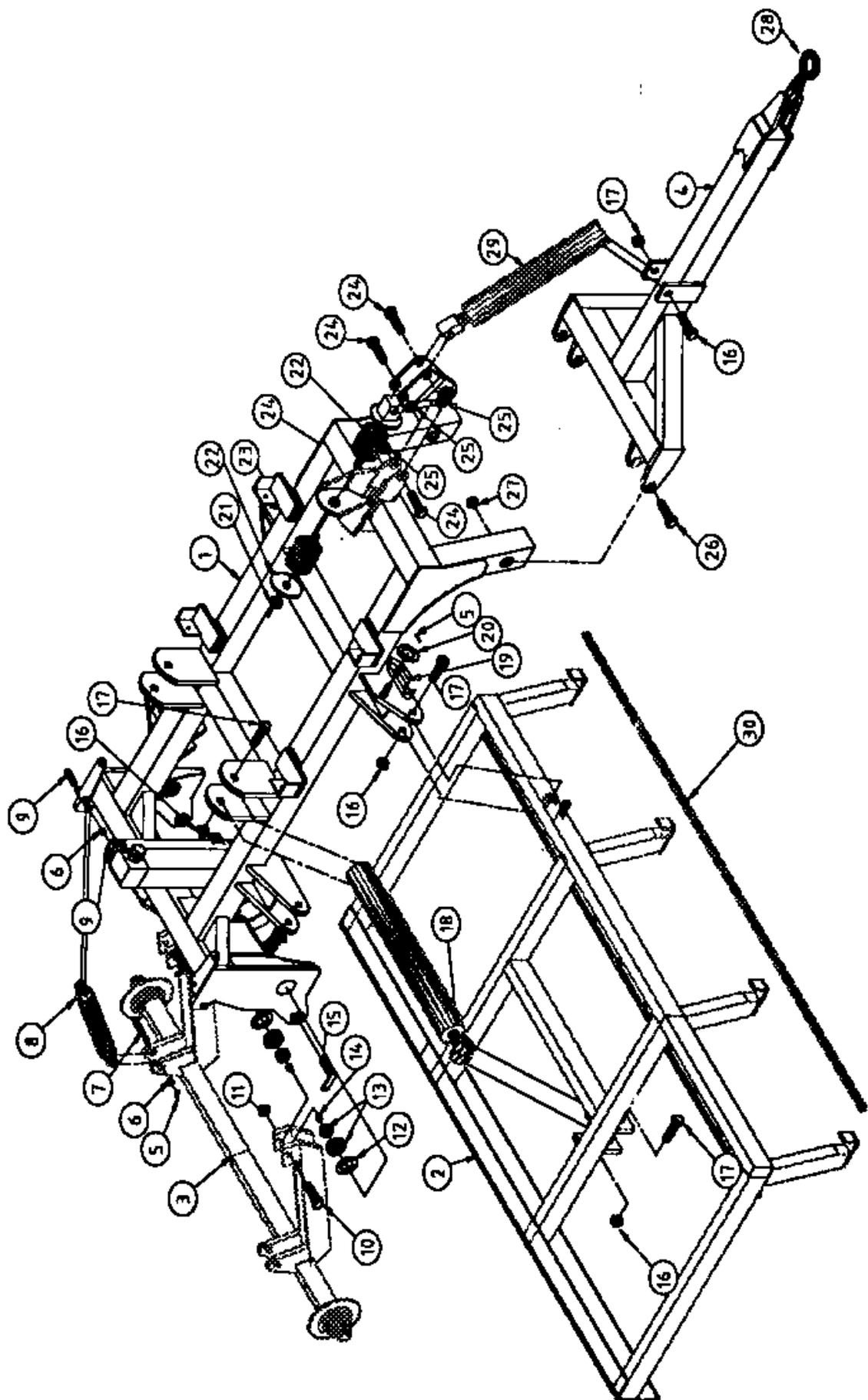
NOTE: When Ordering Parts State the Size and age of Drill and the Serial Number if possible.



W 400

Complete Main Frame

ITEM	PART NO.	DESCRIPTION
1	422 – 0004	4m H. P. Chassis
2	421 – 0004	4m HP Wing
3	126 – 04	Axle Unit
4	424 – 0004	Draw Bar
5	A153	M8 x 40 Roll Pin
6	A199	1 1/4" x 1" Tension Bush
7	126 – 46	Axle to Ram Pin
8	BAC 358	Rear Axle Ram
9	128 – 46	Ram to Chassis Pin
10	A101	1" x 6" UNC Bolt
11	A130	1" UNC Lock Nut
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	115 – 5J	1 1/4" UNC Nylock
17	A117	1 1/4" x 7 1/2" UNC Bolt
18	BAC 808	Wing Ram
19	422 – 11	Wing Lock Profile
20		1 1/4" washer
21		Spring Unit Collar
22	MU 10 – 17	Depth Control Springs
23		Spring Pressure Adjusting Bolt
24		1 1/4" x 5" UNC Bolt
25	A129	1 1/4" UNC Nut
26		1 1/4" x 8" UNC Bolt
27	A07 – 942	Swivel Hitch
28	BAC 093	Depth Control Ram
29	141 -8	Front Pivot Bar

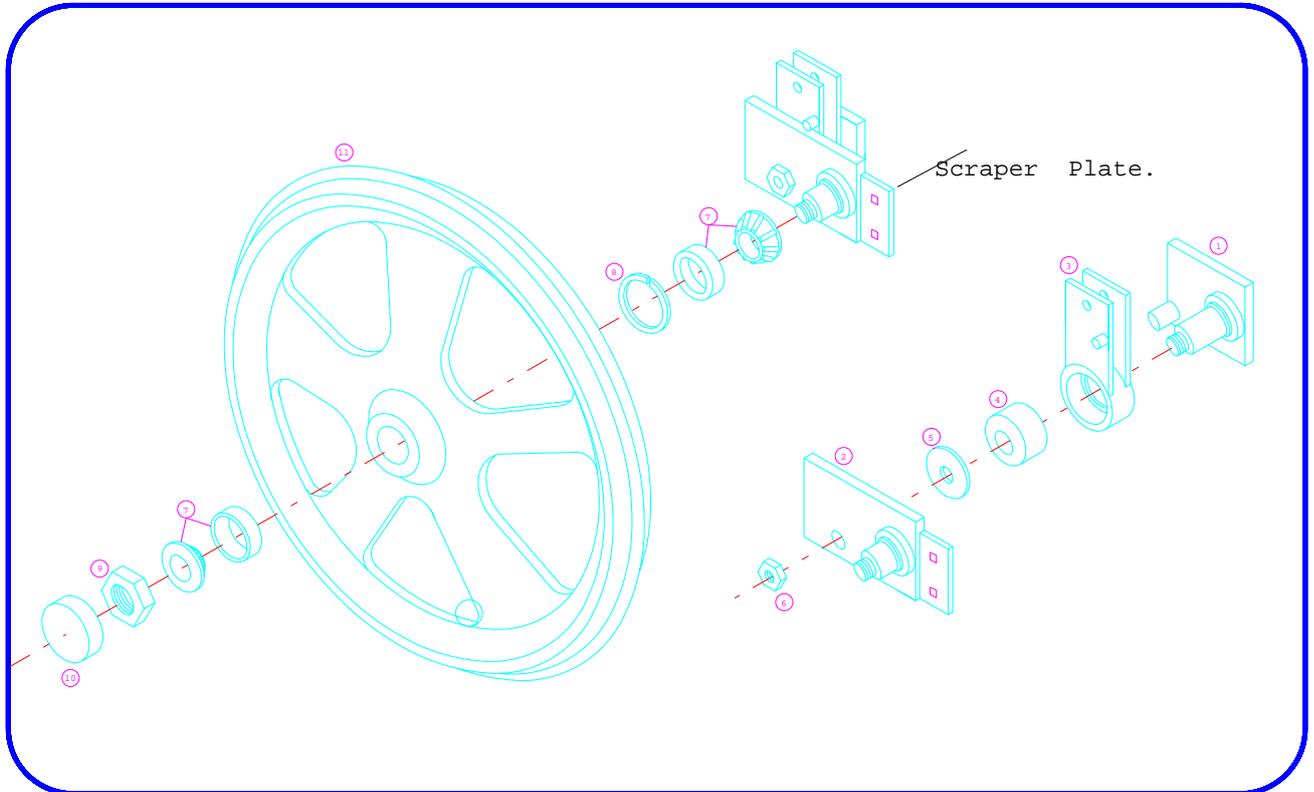


W 600

Main Frame

ITEM	PART NO.	DESCRIPTION
1	622 – 0004	6m H. P. Chassis
2	621 – 0004	6m HP Wing
3	126 – 04	Axle Unit
4	624 – 0004	Draw Bar
5	A153	M8 x 40 Roll Pin
6	A199	1 1/4" x 1" Tension Bush
7	126 – 46	Axle to Ram Pin
8	BAC 358	Rear Axle Ram
9	128 – 46	Ram to Chassis Pin
10	A101	1" x 6" UNC Bolt
11	A130	1" UNC Lock Nut
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	115 – 5J	1 1/4" UNC Nylock
17	A117	1 1/4" x 7 1/2" UNC Bolt
18	BAC 806	Wing Ram
19	622 – 11	Wing Lock Profile
20		1 1/4" washer
21		Spring Unit Collar
22	MU10 – 17	Depth Control Springs
23	623 – 11	Spring Pressure Adjusting Bolt
24		1 1/4" x 5" UNC Bolt
25	A129	1 1/4" UNC Nut
26		1 1/4" x 8" UNC Bolt
27	07 942	Swivel Hitch
28	BAC 093M	Depth Control Ram
29	161 – 18	Front Pivot Bar

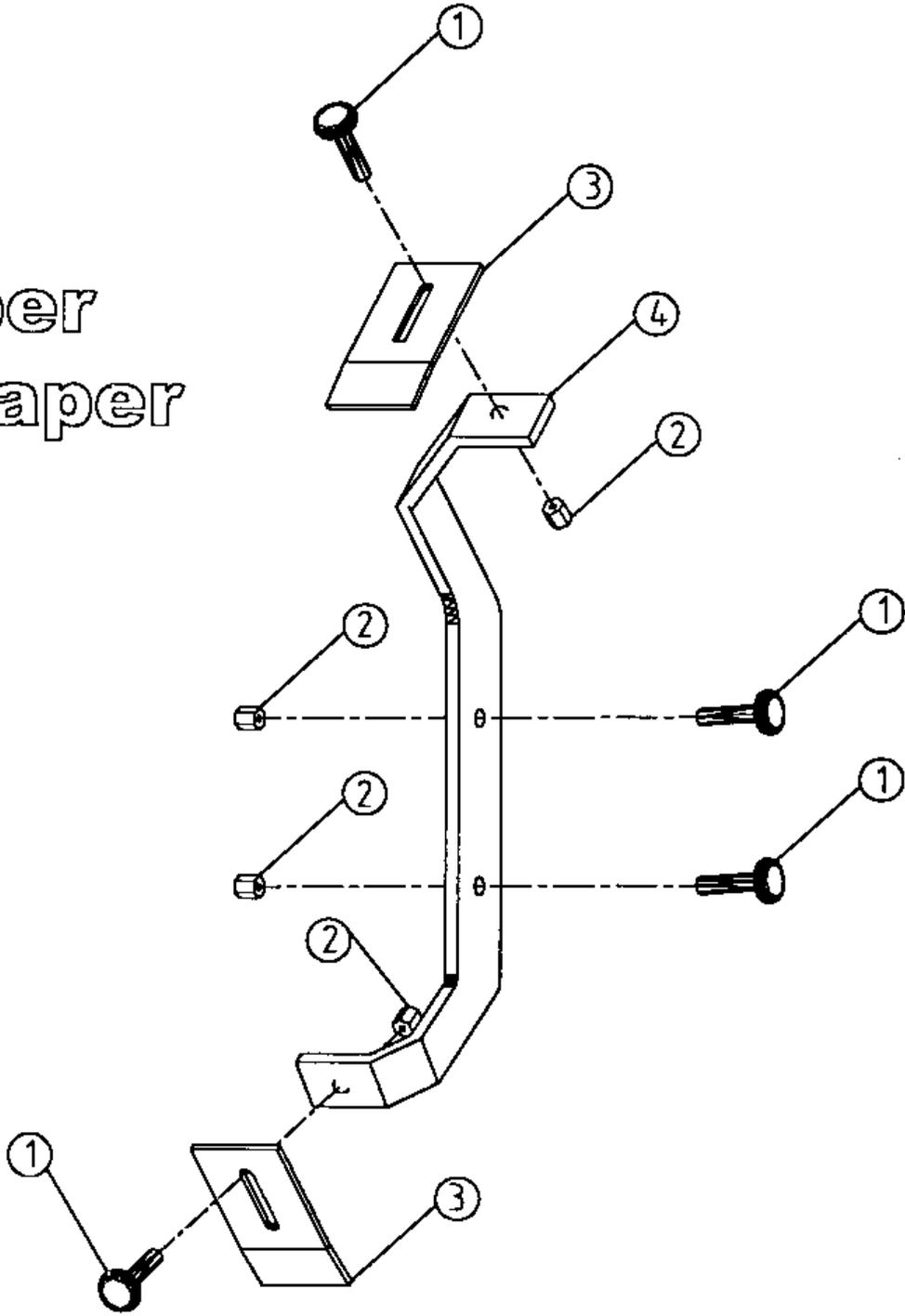
New Boggie Unit



NEW BOGGIE UNIT.

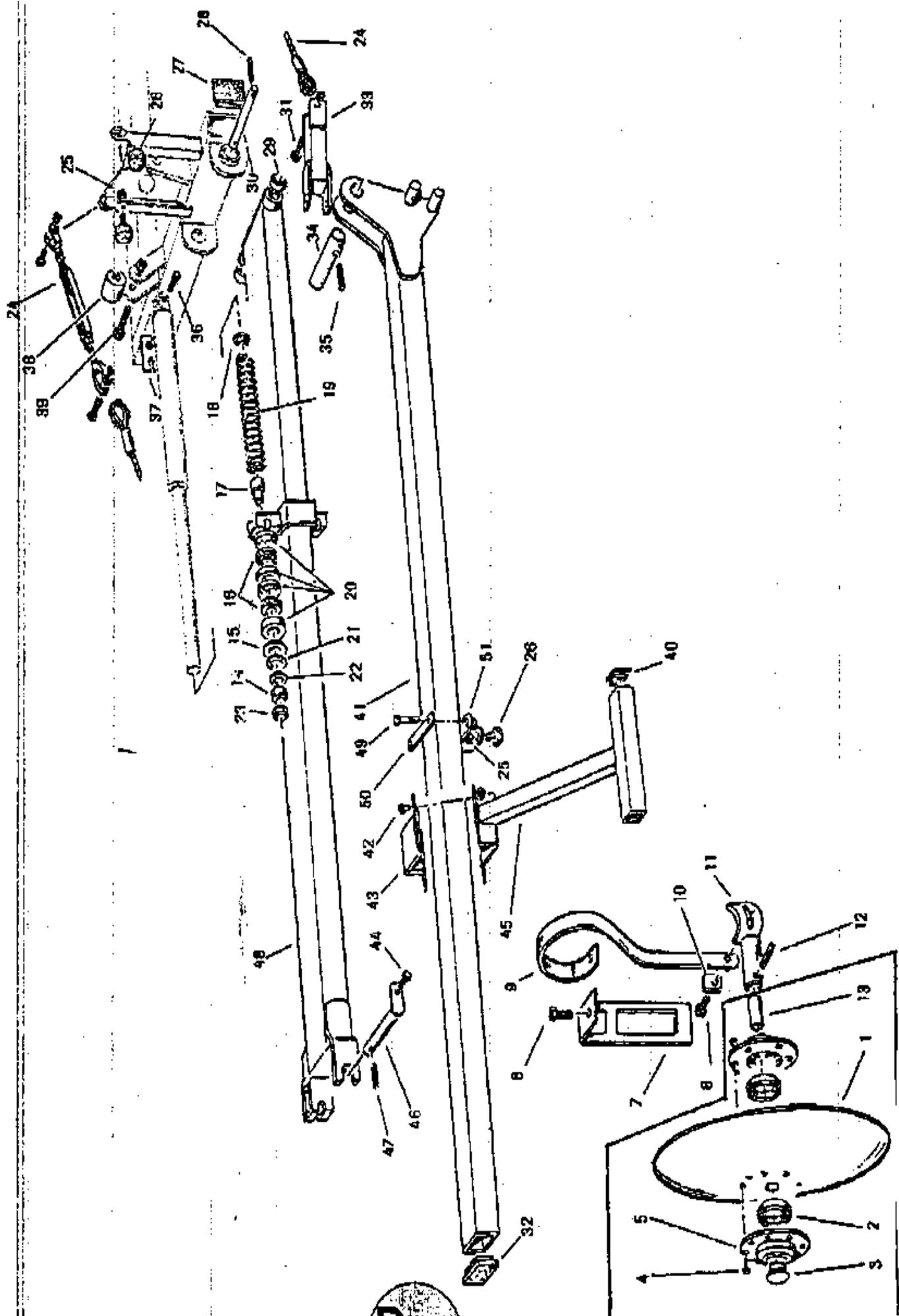
ITEM	PART NO.	DESCRIPTION
1	201-42N	Short Side(N)
2	201-41N	Long Side(N)
3	201-43	Boggie Boss
4	A151	30mm Uni-Pack Bearing
5	201-4E	Spacer
6	A130	1" UNC Binx Nut
7	A157	1" Timken Bearing
8	A158	1" Timken Circlip
9	A132	3/4" UNF Trilock
10	A153	Dust Cap – Small
11	203-1034N	Press Wheel - Hex

Super Scraper



Bogie Scraper Complete

ITEM	PART NO.	DESCRIPTION
1	A138	M12 x 30 Cap Head
2	A127	M12 Nylock
3	A204	Scraper plate
4	A281	Scraper Bracket

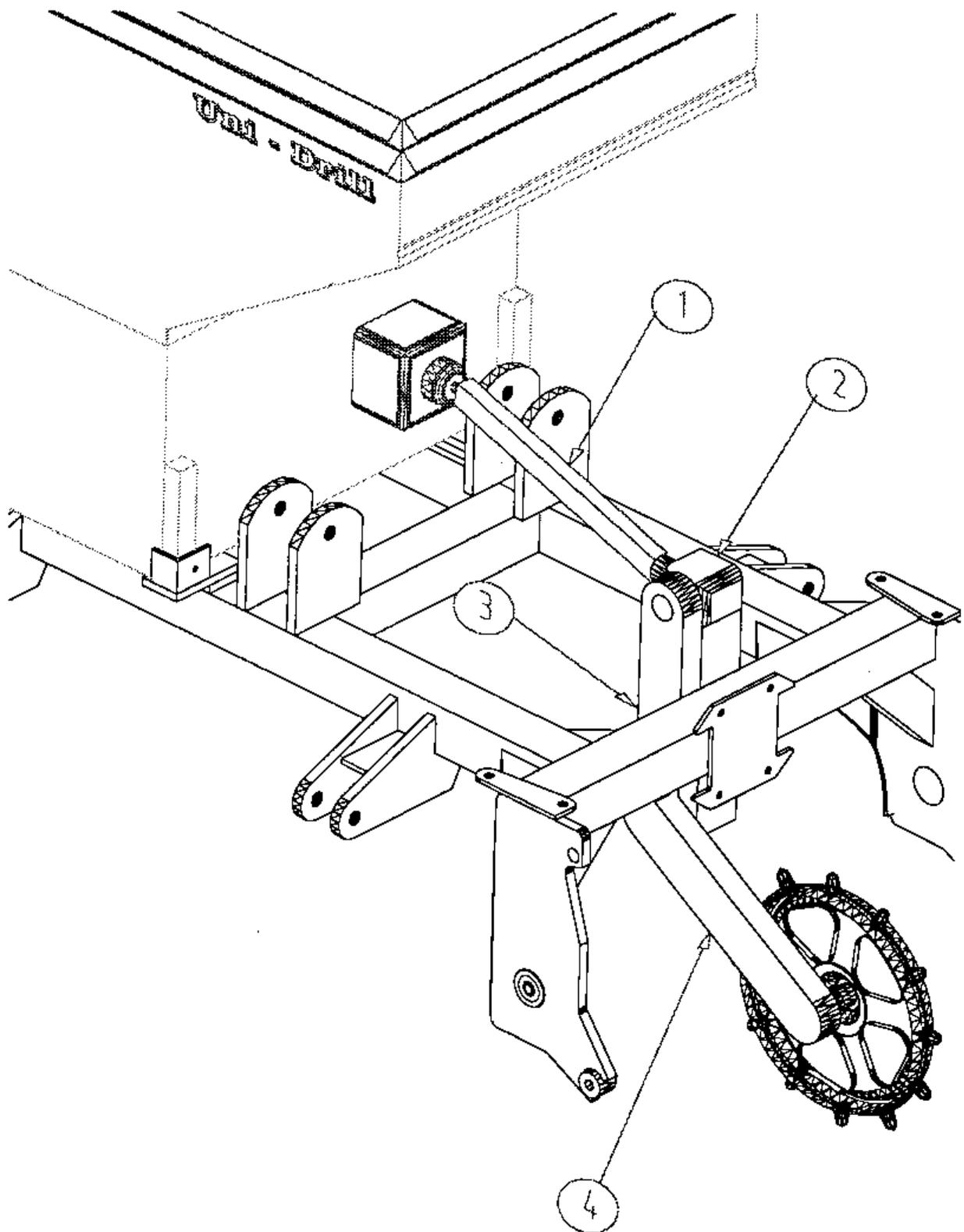


SPI SOLO MARKER COMPLETE

ITEM	PART NO.	DESCRIPTION
1	S980 102	Dished Disc
2	S711 000	Bearing 6204 2 RS
3	S415 717	End Cap GPN 910
4	S551 666	Bolt H6 * 16 Zn
	S571 406	Nut H6 Zn
5	S908 360	Dished disc Hub
6	S554 250	Bolt CHc12 x 55
	S571 462	Nut H12 Zn
7	S916 049	Marker holder
8	S552 125	Bolt H10 x 70 Zn
9	S980 003	Spring tine
10	S963 025	Packer washer
11	S914 011	Disc axle bracket
12	S590 307	Roll pin 6 * 35
13	S921 017	Dished Disc Axle
14	S571 216	Nut H16 Zn
15	S573 166	Washer M16 N Zn
16	S981 801	Damping mechanism
17	S964 064	Guide Bar
18	S985 009	Spring collar
19	S981 302	Compression spring
20	S573 905	Damper washers
21	S573 170	Washer M20 N Zn
22	S573 166	Washer M16 N Zn
23	S571 366	Lock nut Hm16
24	S720 174	Retractor cable complete
25		Nut H6
26	S793 704	Rubber Buffer
27	S720 158	End cap 80 x 80
28		Roll pin 6 x 35
29	S415 722	Bushen 100 * 50
30	S992 324	Main Marker axle

SPI SOLO MARKER COMPLETE

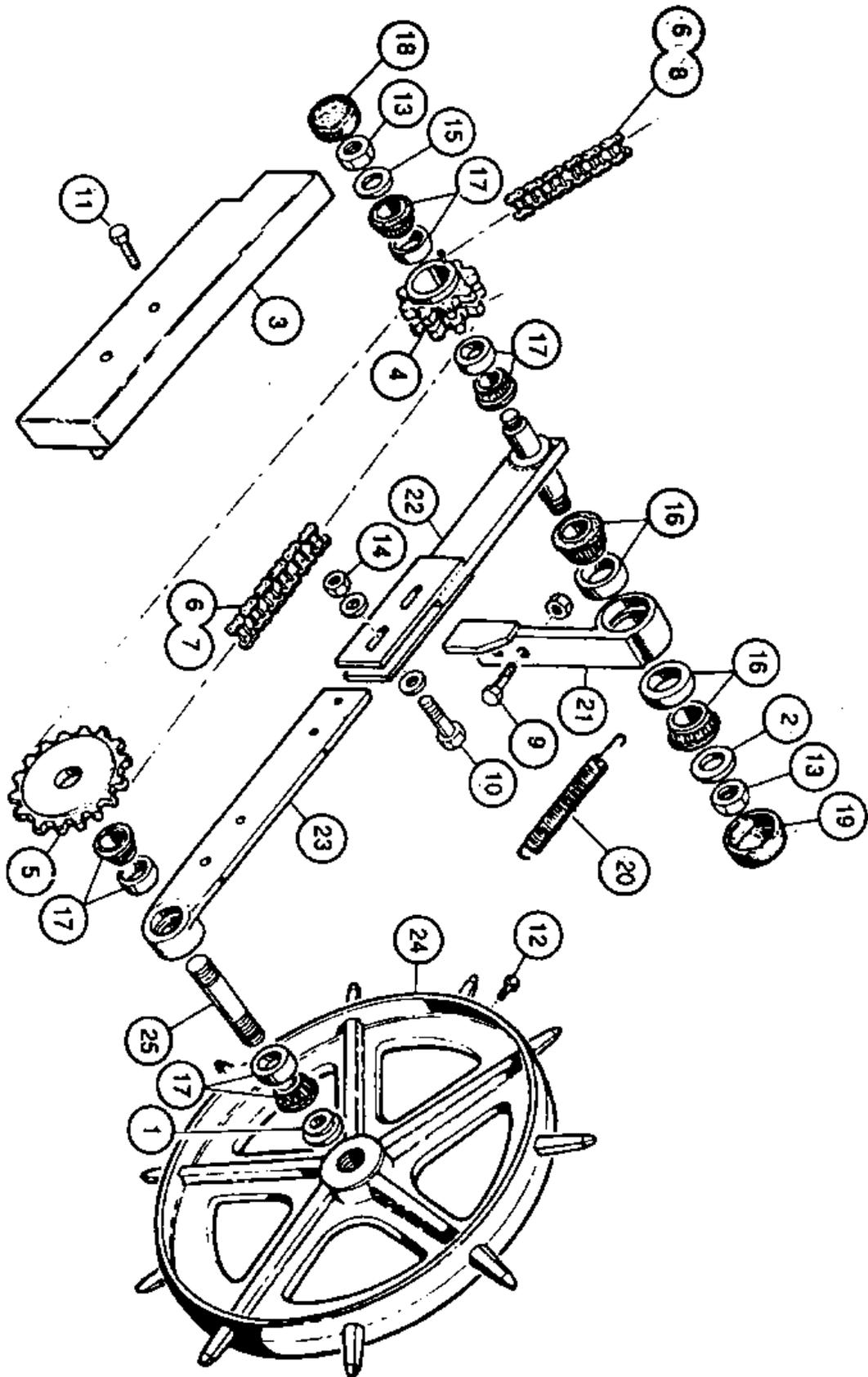
ITEM	PART NO.	DESCRIPTION
31	S554 250	Bolt CHc12 x 55
	S571 462	Nut H12 Zn
32	S415 722	End Cap 100 x 50
33	S1 091 517	Cable swivel bracket
34	S992 323	Cable Swivel Pin
35		Roll pin 6 x 35
36	S554 250	Bolt CHc12 x 55
	S571 462	Nut H12 Zn
37	S962 071	Pin Lock
38	S998 149	Nylon roller
39	S554 250	Bolt CHc12 x 55
	S571 462	Nut H12 Zn
40	S720 175	End cap 40 x 40
41	S1 091 516	Secondary Marker Arm
42	S571 462	Nut H12 Zn
	S720 175	End cap 40 x 40
43	S996 319	Support Bracket
44	S554 250	Bolt CHc12 x 55
45	S1 091 403	Disc Support Arm
46	S914 001	Elbow Pin
47		Roll pin 6 x 35
48	S1 091 515	Main Marker Arm
49	S554 250	Bolt CHc12 x 55
	S571 462	Nut H12 Zn
50	S996 321	Buffer Support Bracket
51	S1 091 542	Bottom Buffer Bracket
52	SPIs 001	Marker Ram



STALKER WHEEL COMPLETE

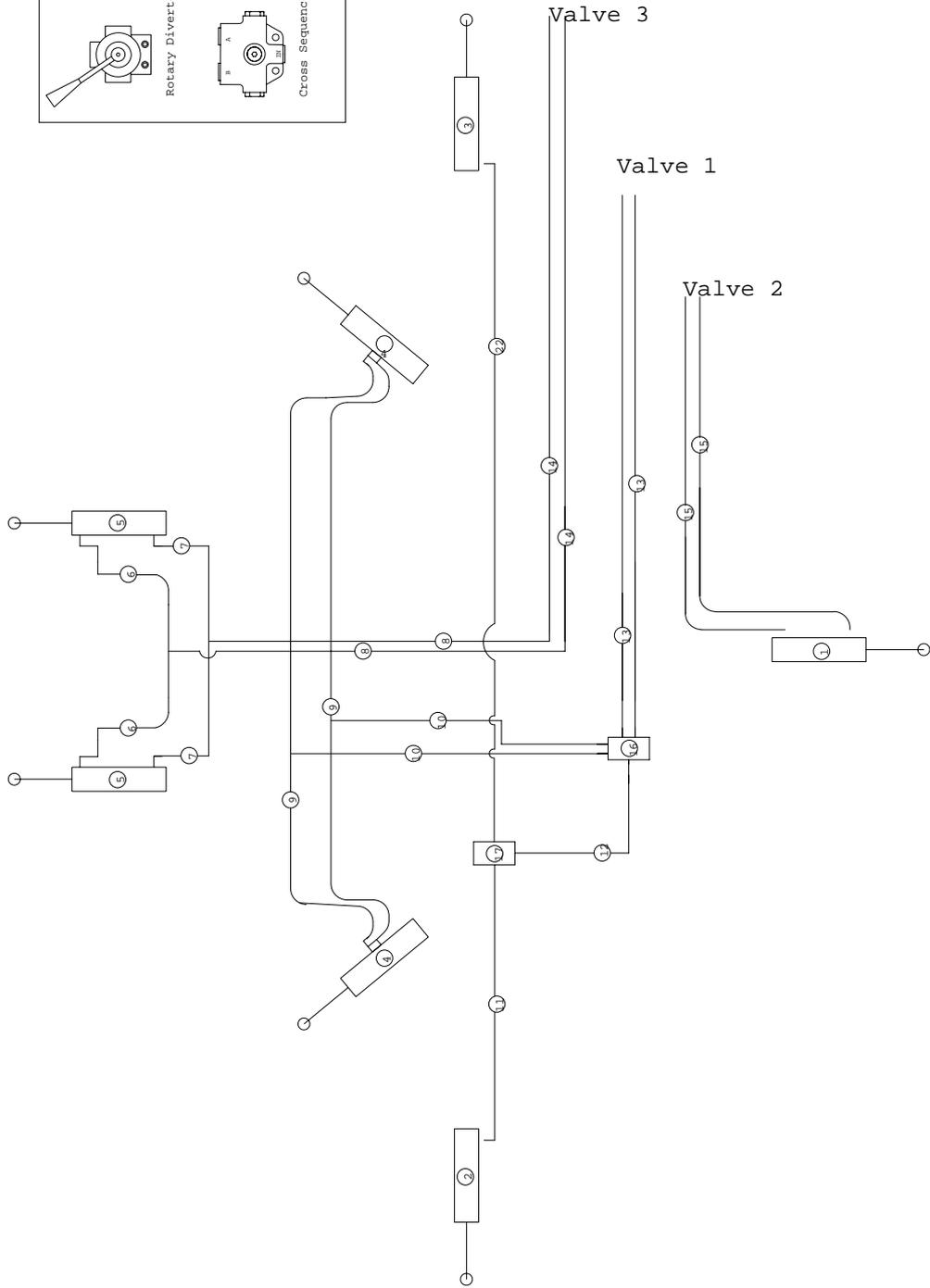
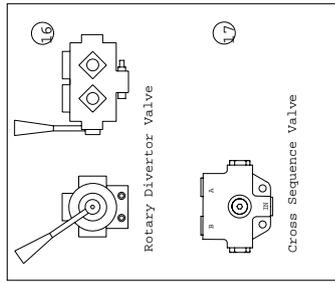
ITEM	PART NO.	DESCRIPTION
1	Drive Shaft	-
2	Angle Gear Box	-
3	Chain Guard Upper	-
4	Chain Guard Lower	-

DRIVE WHEEL LOWER COMPLETE



Seed Box Drive Unit

ITEM	PART NO.	DESCRIPTION
1	318 - 1034	Drive Wheel Spacer
2	319 - 1234	Pivot Bkt Washer
3	340 - 1034	Chainguard – lower
4	343 - 1034	18T Double Drive Sprocket
5	344 - 1034	20 T Drive Sprocket - Lower
6	348 - 1034	Connecting Link
7	346 - 1034	134l. Drive Chain – Lower
8	347 - 1034	114l. Drive Chain – Upper
9	A 106	M20 x 70 Bolt
10	A 111	M12 x 55 Bolt
11	A 115	M12 x 80 Bolt
12	A 1121	M10 x 40 Set screw
13	A 132	¾” UNF Locknut
14	A138	M12 Locknut
15	A 145	M20 x 32 H.D. Washer
16	A 1561	3/8” T.T.R. Bearing
17	A 157	1” T.T.R. Bearing
18	A 182	Dust cap – Small
19	A 183	Dust cap Large
20	A 493	Tension Spring
21	313 - 0034	Support Arm – Pivot Bkt.
22	314 – 1234W	D.W. Support Arm – Upper
23	315 – 1234W	D.W. Support Arm – Lower
24	316 - 1234	Drive Wheel
25	317 - 1234	Drive Wheel – Axle

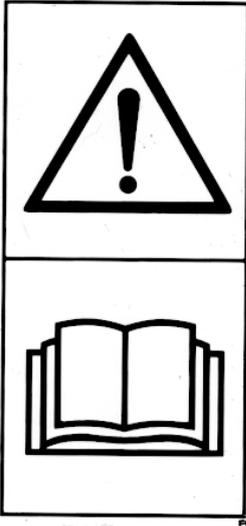


Hydraulic Circuit Layout

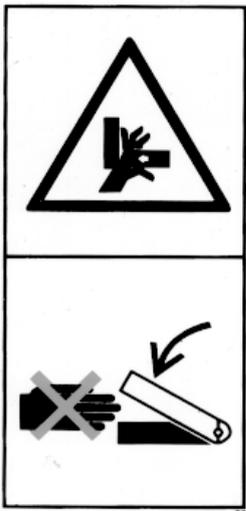
W400 & 600 Hydraulic System

Item	Part No	Description
1	BAC 093	Draw bar cylinder
2	SPIs 001	Marker Ram
3	SPIs 001	Marker Ram
4	BAC 808	Wing Ram
5	BAC 358	Axle Ram
6	Whk1	Axle hoses long
7	Whk2	Axle hoses short
8	Whk3	Steel pipe axle
9	Whk4	Wing hoses
10	Whk5	Steel pipe wings
11	S8304-AA	Marker to cross sequence hose
12	Whk7	Cross sequence to change over valve hose
13	Whk8	Change over to valve hose
14	Whk9	Axle to valve hose
15	Whk10	Draw bar to valve hose
16	S 683901	Manual divertor valve
17	-	Cross sequence valve

Explanation of Safety Stickers



Carefully read operators manual before handling the machine. Observe instructions and safety rules when operating.



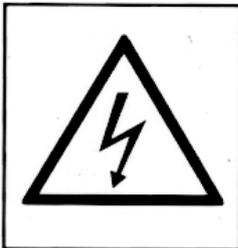
Never reach into the danger area as long parts may move.



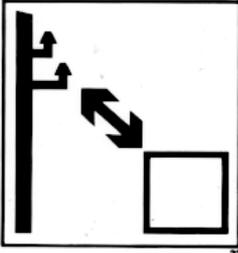
Never reach into rotating auger.



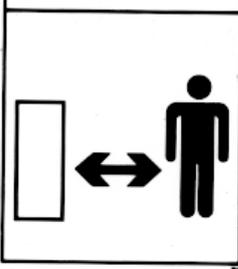
Do not ride on platform or ladder.



Keep sufficient distance away from electrical power lines.

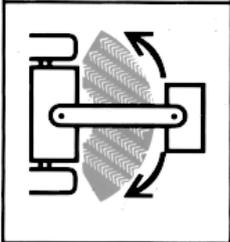


Stay clear of swinging area of implements.





Insert Safety lock before getting in hazardous area.



Stay clear of articulation area while engine is running.



Stay clear of swinging area of implements.

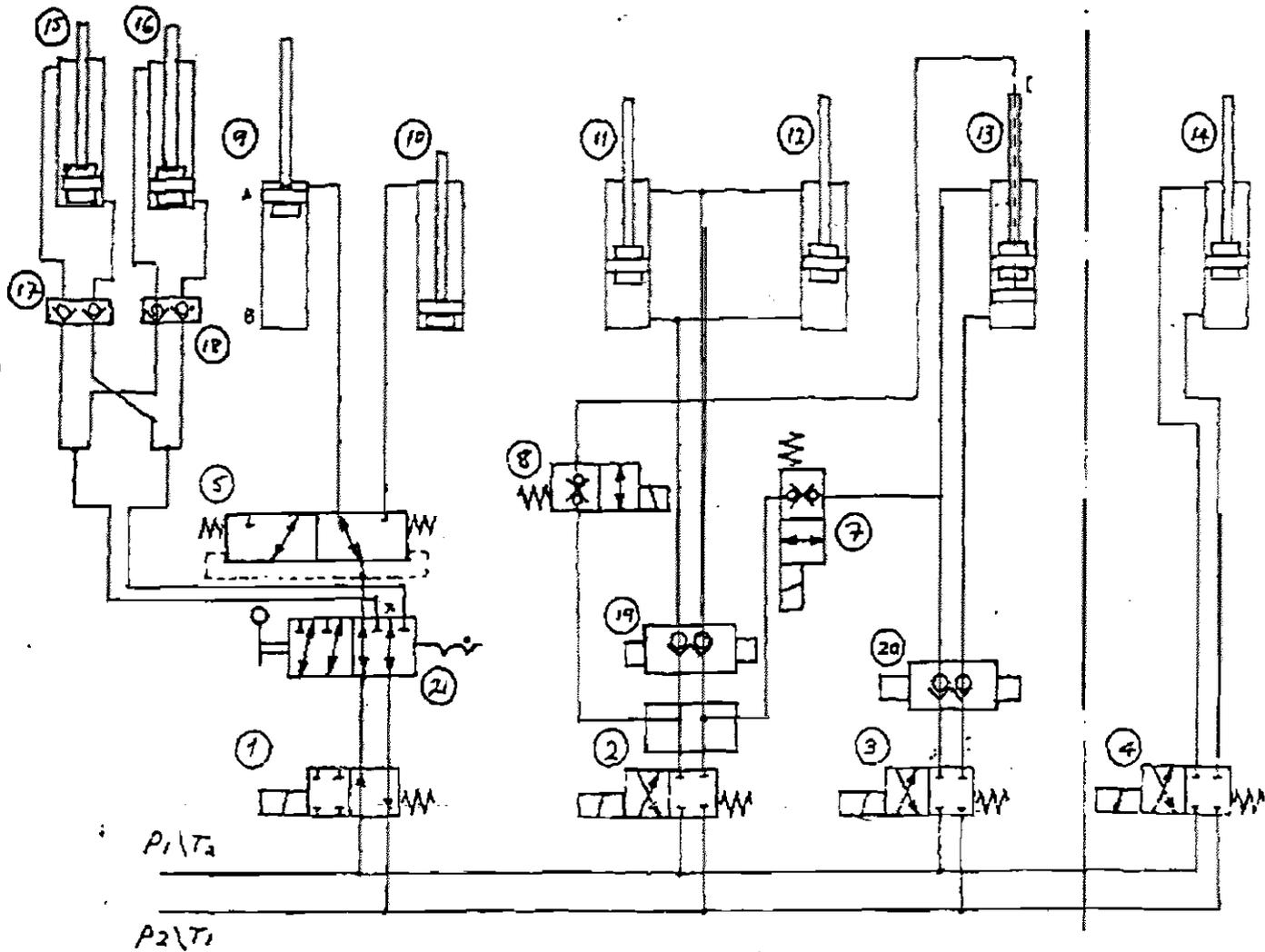
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Fax: 01302 330444
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Legend:

1. Master control valve
2. Wheels control valve
3. Memory cylinder adjustment valve
4. Auxiliary cylinder control valve
5. Cross manual sequence valve
6. not used
7. Line lock - memory cyl. annulus
8. Line lock - memory cyl. fill bore
9. LH marker cylinder (SA or DA)
10. RH marker cylinder (SA or DA)
11. Wheel cylinder 1 (DA)
12. Wheel cylinder 2 (DA)
13. Memory cyl. drawbar (DA)
14. Auxiliary cylinder (DA)
15. Wing fold cylinder 1 (DA)
16. Wing fold cylinder 2 (DA)
17. Over centre valve
18. Over centre valve
19. Over centre valve
20. Over centre valve
21. Manual double diverter valve



NO.	DESCRIPTION	DATE	BY	CHKD	DATE

Moore Uni-Drill System 3 (basic joystick - 8 buttons)
hydraulic circuit to show main features of a catp and cartridge valve
assembly

DRAWN	TRACED	CHECKED	APPROVED	DATE	SCALE
PWP	.	PWP	PWP	15/07/1999	none

DRAWING No. 098005/3 issue 1