John Berends Implements Pty Ltd

AGRICULTURAL ENGINEERS

OPERATOR'S MANUAL

PARTS LIST

RM 80 TRAILING OFFSET DISC CULTIVATOR

PRODUCT NO.

0850/0860/0870	20 Plate with 24" x 5mm/24" x 6mm/26" x 6mm Discs
0851/0861/0871	24 Plate with 24" x 5mm/24" x 6mm/26" x 6mm Discs
0852/0862/0872	28 Plate with 24" x 5mm/24" x 6mm/26" x 6mm Discs
0853/0863/0873	32 Plate with 24" x 5mm/24" x 6mm/26" x 6mm Discs

130 FRANKSTON-DANDENONG RD, DANDENONG SOUTH, VIC. 3175 AUSTRALIA
(ABN 79 007 035 369)
PHONE (03) 9791 2494 FAX NO. (03) 9794 5568
berends@johnberendsimplements.com.au www.johnberendsimplements.com.au

TABLE OF CONTENTS

Page No.

SAFETY

Farm machinery is dangerous if operated incorrectly so please read this manual in its entirety prior to operating the machine.

No operator, however experienced in farm machinery operation, should attempt to use any machine they have not been competently trained to use. Your local Department of Agriculture can help you with training, as can most Occupational Health and Safety offices, Agricultural schools and colleges and farm equipment dealerships.

All instructions relating to tractor safety as per the tractor operators manual should be followed. When making any machine adjustments, stop the tractor engine first and wait for all moving parts to stop. Maintain the tractor to ensure it remains safe to use. Do not operate faulty or damaged equipment.

Extreme caution should be taken when fitting equipment to the tractor's three point linkage. Avoid standing between the implement and the tractor when coupling machinery.

All machines should be mounted and retained correctly. All guards must be kept in place and correctly maintained. P.T.O. shafts must be correctly attached and secured to both the tractor and the machine. Decals must be visible and legible at all times. Keep well clear of all moving parts.

Keep all people and animals at a safe distance from all moving parts. Children must not be allowed to operate this equipment and all passengers must have the same level of protection as the operator.

Wear protective clothing where appropriate.

Never operate when tired (not alert) or in poorly lit areas and stay alert for humps and other hidden hazards. Remove all timber, rocks and foreign objects prior to operation.

Avoid operating the machine in wet conditions.

Exercise extreme caution when changing direction on hills. Avoid sudden movement, sudden breaking, high speeds, rough terrain and steep slopes.

If machine starts to vibrate, stop tractor, turn off engine and investigate.

 After striking a foreign object or if there are doubts about the performance of the machine, stop the tractor as described and check if machine is making excessive noise.

 Extreme caution must be taken when working in public areas (roadsides etc). It is recommended that flaps and chains are fitted to slashers when operating in public areas. These are available as optional extras. Rear flaps are compulsory in public areas.

 Watch overhead clearance and beware of underground pipes and cables.

 Where fitted, hydraulic hoses and fittings must be maintained so as to prevent damage.

 Do not modify this equipment in anyway, or use it for any other purpose than it was designed to do.

 Never work under unsupported machines or adjust unsupported machines. Do not enter the danger zone where a load being carried by a machine could fall on you, for example a round bale from a bale fork, a log from a carryall or material from a rear end loader.

These instructions should be used in conjunction with any local regulations regarding safety ie OHS.

Maintenance is essential for safe operation. Ensure maintenance is carried out regularly by people qualified to do so. This is of particular importance on P.T.O. drive machines where driven parts can fly off at high speed if wearing parts are not properly maintained.

FAILURE TO FOLLOW THESE INSTRUCTIONS AND PROCEDURES MAY RESULT IN EQUIPMENT MALFUNCTION, OR DAMAGE, SERIOUS INJURY OR EVEN DEATH.

INTRODUCTION:
This manual was developed specifically for the machine you have purchased. The information within is to assist you in preparing, operating and maintaining your machine. Please read and understand the contents of the manual completely before attempting to operate your machine, paying special attention to all safety details. With our policy of continuous improvement, products and specifications may change without notice and without incurring the obligation to install such changes on any unit previously delivered.

RM80 Trailing Offset Disc Cultivators

Gibbins Rawling have been making ploughs since 1878 - over 100 years of experience! The RM 80 offset disc cultivating plough is designed for extremely tough Australian conditions. It is similar to the RM75 with the main difference being in the greater number of bearings and shorter axles in the disc gang assemblies. It is an ideal disc for both primary and secondary tillage on 75 H.P. to 165 H.P. tractors. The gang bolt axles are made from 40mm square high tensile steel and all bearings are greaseable. Fitted with 610mm x 5mm (24" x 3/16"), 610mm x 6mm (24" x ¼") or 660 x 6mm (26" x ¼") scalloped discs. Single pressure screw can be adjusted to transfer weight to the rear of the cultivator, resulting in even disc penetration. Easy gang adjustment provides a perfect level finish. Hydraulic ram and hoses for wheel lift are standard. Fully adjustable drawbar and pronged scrapers are standard on the RM80 with options of formed scrapers for heavy soils.

MACHINE SPECIFICATIONS

	20 Plate	24 Plate	28 Plate	32 Plate
Approx. weight	1700kg	1970kg	2190kg	2510kg
No. Bearings	8	12	12	16
Cutting Width	2.3m (7'6")	2.74m (9')	3.2m(10'6")	3.66m (12')
No. Axles	4	6	6	8

WARRANTY

John Berends Implements P/L warrants each new product sold to be free from defects in material and workmanship, under normal use and service, as outlined in the operators manual, for a period of 12 months.

This warranty is void if any damage to the machine has been caused by misuse or non genuine parts have been used or any repairs have been made by any persons other than authorised dealer service personnel.

The manufacturer/dealer is not obligated to any transportation charges incurred in the repair or replacement of parts.

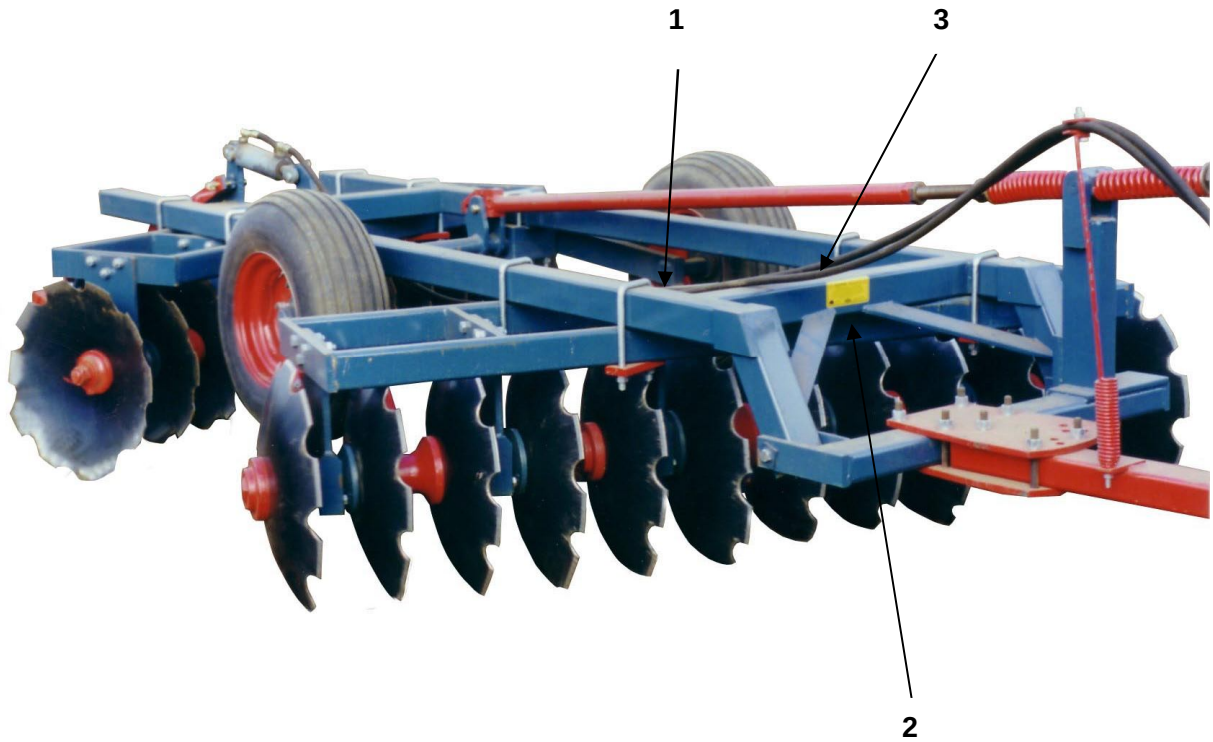
This warranty does not exclude any condition or warranty implied by the Trade Practices Act 1974 or any other legislation which implies any condition which cannot be excluded.

Safety Features

1. SERIAL NUMBER (Decal – inside frame)

2. WARNING DECAL

3. BERENDS DECAL (Top of frame)



MACHINE ASSEMBLY

GANG ASEMBLY

CAUTION: Due to the size and awkward nature of the trailing discs it is important that all components are adequately supported.

As there are a number of sizes of discs available, refer to the attached set-up sheet on the back page in this manual. It provides approximate measurements to suit your discs. Adjustments may need to be made to suit different ground conditions.
Both gangs are different so distinguish which is the front and which is the back prior to assembly. The scrapers are mounted at the rear of each gang.

FRONT GANG:

Position the front gang under the main frame in the approximate position it will be secured in.

Starting with the left hand side (direction of travel), place the front “U” bolt (Pt 3375) over the main frame side-members, with the thread pointing down. The left hand side front “U” bolt will be located in front of the main frames’ front cross member. Bring the two frames together and placing the clamp plate (Pt 3381) under the gang frame, secure with nuts and spring washers. The front “U” bolt on the right hand side should be placed behind the main frames’ cross member and the clamp plate secured with nuts and spring washers. Secure the back two “U” bolts on the front gang in their appropriate positions, making sure that threads always point downwards.

REAR GANG:

When attaching the rear gang, the simplest way may be to reverse the main frame and front gang over the rear gang. Alternatively, lift the back of the main frame up and support it whilst rolling the rear gang into position. Starting with the right hand side, place the rear “U” bolt approximately 225mm behind the main frame cross member and using the clamp plate secure the frames with nuts and spring washers. On the left hand side of the rear gang, the rear “U” bolt should be 610mm from the same cross member and secure using the clamp plates and nuts and spring washers provided.

DRAWBAR ASSEMBLY

Generally the drawbar runs in the right hand half of the pull bar. For initial set up, position the drawbar approximately 280mm from the right hand side of the pull bar. Tighten the drawbar plates (Pt 3388) securely with the four bolts, nuts and spring washers provided. The height adjustment of the drawbar must be set so it is pulling fairly straight when in the ground. Therefore the front gang is neither lifting out of the ground nor dipping into the ground. The correct setting and adjustment may be made to the drawbar by connecting it to either the bottom or top of the tractor connecting point. Additional height adjustment can be obtained by turning the drawbar upside down and connecting it at either the top or bottom of the tractor connecting point. This should only be done if the adjustment has run out on the tension springs. Should the discs not be travelling straight it may require the drawbar to be repositioned along the pull bar until the optimum setting is achieved. The parking jack (optional) can be used to raise the tractor end of the drawbar. If possible allow the tractor drawbar to float by removing bars or stabiliser chains which will allow the discs to track straight.

WHEEL ASSEMBLY

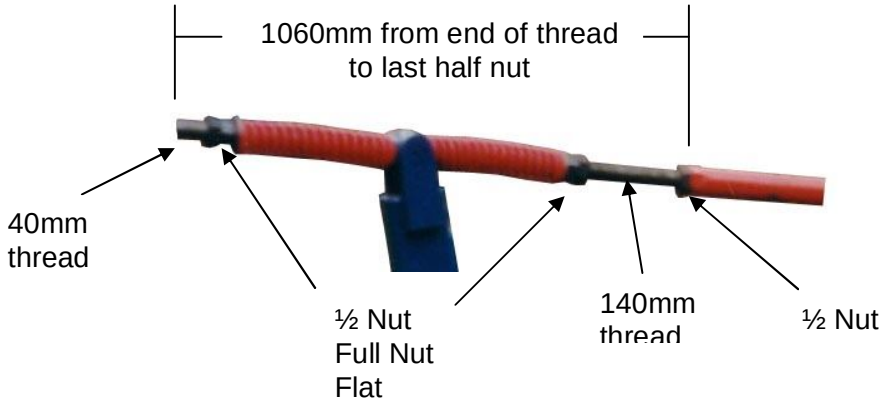
Position the axle (less the wheels) underneath the main frame between the two gangs. The two arms of the axle should be facing forward with the main shaft at the rear. The axle lug (transport lug), which later connects to the hydraulic ram, should be on the right side of the machine when facing the direction of travel. This axle lug will line up with the opposing transport lug on the main frame of the plough. Attached to the underside of the main frame are locating mounts for the axle blocks. There are two pair of axle blocks (Pt 3376) provided, one pair for each side of the axle. Lift the axle up so it is hanging just below the locating mounts.

CAUTION: As the axle is fairly heavy it is advised that a lifting device is used (eg crane or lifting jib) to position the axle. The axle must be sufficiently supported when attaching it to the main frame to prevent it from falling on the person assembling the machine.

Place one of the axle blocks in each of the locating mounts and lift the axle up so as to hold the block in position. Position the other two axle blocks underneath the axle and hold them in place using the U-bolts (Pt 3375) provided.
Note: The axle blocks have a recessed semi-circular section, which should be positioned facing the outside of the main frame (where the axle is welded to the arms).
The U-bolts should face downwards as they do in the gang set-up. Secure all four U-bolts using the spring washers and nuts provided. Ensure the wheel blocks are still positioned in the main frame locating mounts.
Fit the flotation tyres (Pt 3373) to the two hubs (PT 3365) and secure with wheel nuts (Pt 3374) provided. For easy maintenance it is best to have the tyre valves facing outwards. Ensure the tyres are inflated to the recommended pressure of 45-60PSI

PRESSURE SCREW BAR

Screw the main threaded rod into the main hollow bar and position the first set of nuts/washer as shown on the right hand side of the diagram below. Place first spring along the shaft and from the rear of the machine, slide the entire bar (threaded rod end) through the hexagon knuckle on the vertical mast of the draw bar. The pressure screw bar should then be connected to the wheelkit axle using in the pin/clip provided. It is suggested that the slotted hole position be used to begin with. Slide on the second spring and screw on the last set of nuts/washer. The spring tension should be set up so that the machine is kept stable during cultivation. For initial set-up refer to the measurements below.



HYDRAULIC RAM AND HOSES

Attach the main body section of the hydraulic cylinder to the bottom hole of the transport lug on the main frame. Connect the extending rod end of the cylinder to the bottom hole of the transport lug located on the wheel axle. Secure with clevis pins and clips. Attach the hydraulic hoses to the ram and fit couplings to the other end of the hoses. Keep the hoses well clear of the gangs. This is achieved by elevating the hoses using the hose spring (Pt 3389) and clamps (Pt 3390) which are attached to the drawbar. It may be necessary to secure the hoses to the main frame further using plastic ties provided. Connect the hoses to the remote hydraulics of the tractor.
Note: The transport bar is usually used when no hydraulics are available. For example: towing the discs with a utility. If the transport bar (Pt 3360) is being used, the hydraulic cylinder may need to be connected with the ports facing the ground. The side port on the hydraulic cylinder may also need to be used to prevent the bar interfering with the hydraulics.

OPERATION

Once all safety procedures have been followed, start the tractor and raise the disc cultivator off the ground using the hydraulics.

TRANSPORT

Use the transport bar provided at all times when transporting over long distances. This prevents the hydraulic ram from being damaged. The transport bar is connected to the upper hole of the transport lug on the main frame and the upper hole of the transport hole on the wheel axle. Secure using the pins provided. Remember to remove the transport bar before using the ram. The bar may remain connected to the rear hole and be flipped backwards when not in use. By doing this, it is clear of the ram's movements and always handy when required.

Turning

When turning with the implement whilst cultivating, always turn into the vee of the gangs (to the right). Otherwise if turning away from the vee of the gang (to the left) the discs are to be raised clear of the ground until the turn is completed. If this is not done, excessive strain may be placed on the tractor and discs, eventually causing damage.

Stopping

Lower the cultivator, stop the tractor engine (removing the ignition key) and apply the park brake. Ensure that the cultivator is well supported when not in use. If detaching the drawbar, use the parking jack to hold the drawbar in place

CAUTION: When the cultivator is on the ground, yet not linked to the tractor, it may be unstable. Ensure the machine is prevented from rolling backward or forward.

Levelling the machine

The only positive way to ensure the machine is level, is to work through the ground at the desired depth. Whilst the discs are still in the ground, check the penetration at each end of the gang frames. Should the machine require levelling because the discs are lifting out or digging into the ground, the best suggested method of adjusting is to raise the machine clear of the ground and adjust the tension springs as required. If one side is digging in more than the other

it may be necessary to shift both gangs across so as to transfer the weight away from the side dipping in.

Wheel set-up

There are a couple of points regarding the setting of the wheel for depth. If the wheels are right in the air whilst cultivating, all the weight of the frame bears on the gang frames. If the plough is digging in one side the gangs would need to be adjusted so that the weight of the frame is on the side which is not digging in. This can only be done within the bounds of the amount of offset of the machine to the tractor. On the converse side, if the machine is being carried on the wheels, the frame can be moved so that it carries the side digging in more and stops it diving in. Remember to always set the wheels at the same position. Setting at ground level works better than right in the air. If you don't set the wheels at the same position each run your setting is different and it make it difficult to work out what your other changes are doing. If the tractor has a float position then this can be used to keep wheel depth constant.

Tractor behaviour

Should the tractor pull any way but straight, after the machine has been set correctly in a level position, then the reason can always be contributed to the amount of drag set up by the discs passing through the ground. This drag can vary to a great extent because of the condition of the soil eg. wet, dry, sand, clay. As it would be impossible to give an answer to all these situations, due to the large variation in soil, we will provide the following example:
The machine, when set up correctly, is found to be pulling the tractor badly to the left hand side. The correction method used in this instance was to slide the draw bar to the extreme right hand side of the pull bar, resulting in the desired tracking of the tractor. A tractors incorrect pulling behaviour would be due to an uneven working pressure on the discs and by trying the following methods there will be a solution, which will correct the tractor's direction so it will maintain a straight line to the direction of travel.

a) Check the gangs are set at the correct angles **or** try an alternate angle (refer (d)) bearing in mind the closer you have the gangs at 90° to the frame the lesser the penetration.
b) Place the draw bar in different positions along the pull bar and vary the angle with each setting until the optimum is achieved
c) Evenly adjust springs either up or back along the pressure screw. This step is used to transfer more work to either the front or rear gangs, by digging the discs deeper into the ground, thus increasing the drag on one or the other gang. When this work is shared evenly between the two gangs, the tractor will cut straight and true. To increase the work load of the front gangs, fit the pressure screw in the hole position on the wheelkit axle (see next section).
d) If you do not wish your machine to have an uneven penetration, e.g. back gang cutting deeper than the front gang or vice-versa, as described in (c), then the drag is also affected by the angle of the disc. The greater the angle, the greater the drag, the less the angle, the less the drag and penetration. So adjusting the angles is another alternative.

Increasing penetration

As mentioned above (c), greater penetration by the front gang can be achieved by running the pressure screw in the hole position (rather than the slotted position). When the wheels are lifted off the ground there will be a transfer of weight from the tractor to the front gang. The higher the lift the more pressure is created and the greater the front disc penetration. However this can also affect how true the machine runs and therefore other alterations may need to be made (see above). Always set the wheels at the same position to ensure each job cuts the same depth.

MAINTENANCE

When doing any type of maintenance on this machine, always follow the safety steps described in this manual. Use only authorised genuine parts for replacement.
The cultivator must be adequately supported under its body (Make certain it cannot fall).

Bolts, Nuts and Bronze Bushes
Keep all bolts tight, in particular gang bolts. All bronze bushes should be checked each season as they are a wearing part and may need replacing.

Gang Bolts
Don't forget to keep the gang bolts tight with regular checks, particularly when the machine is new (when the machine is new friction will cause the disc and spacers to wear in). The gang bolt is vulnerable to damage or breakage if not in tension and damage caused because of loose gang bolts would void warranty.

Cast Axle Bearings
Don't lubricate cast axle bearing blocks (this will cause a type of graphite "abrasive paste" which will cause expensive wear to the high tensile axle.
NOTE: Bearing blocks (Pt 3376) are in matching halves and can be turned over or replaced if wear occurs.

Lubrication
Lubrication plays a very important part in extending the life of wearing parts.

1) Threaded rod - should be kept covered with a smear of grease to keep nuts and thread corrosion FREE.
2) Wheel hubs - are pre-packed with grease and should only need attention at the end of each season, unless dusty conditions cause seals to break down. Force wheel bearing grease between rollers cone and cage, using hand method or grease packing equipment. Add grease in wheel hub between hub between caps and fill hub cap.

Wheel Bearing Adjustment
Tighten adjusting nut while rotating or oscillating wheel until the wheel binds slightly. Back off castellated type nuts between 1/6 to ¼ turn. Wheel should now turn freely, having between .001" and .010" end play. Lock with split pin securely at this position.

Disc Bearings
These are a flanged greaseable bearing and should be kept adequately lubricated. The seal inside is designed to allow purging of the grease as long as a normal steady force with a hand pump gun is applied. A general guideline is every 8-10 hours, perhaps at the end of the days work. Two to three pumps should be sufficient to prevent moisture ingress and therefore possible corrosion . Ensure that foreign objects are not allowed to wrap around the bearings. If they are not removed they may work their way into the bearing and cause failure.

Wheel kit

Check tyre pressure is between 45 and 60 psi. Wheel must run freely on axle and yoke must be lubricated.
Note: Bearings are replaceable if necessary.

SPARE PARTS

ORDER SPARE PARTS THROUGH YOUR ORIGINAL SUPPLIER OR YOUR LOCAL JOHN BERENDS IMPLEMENTS DEALER.

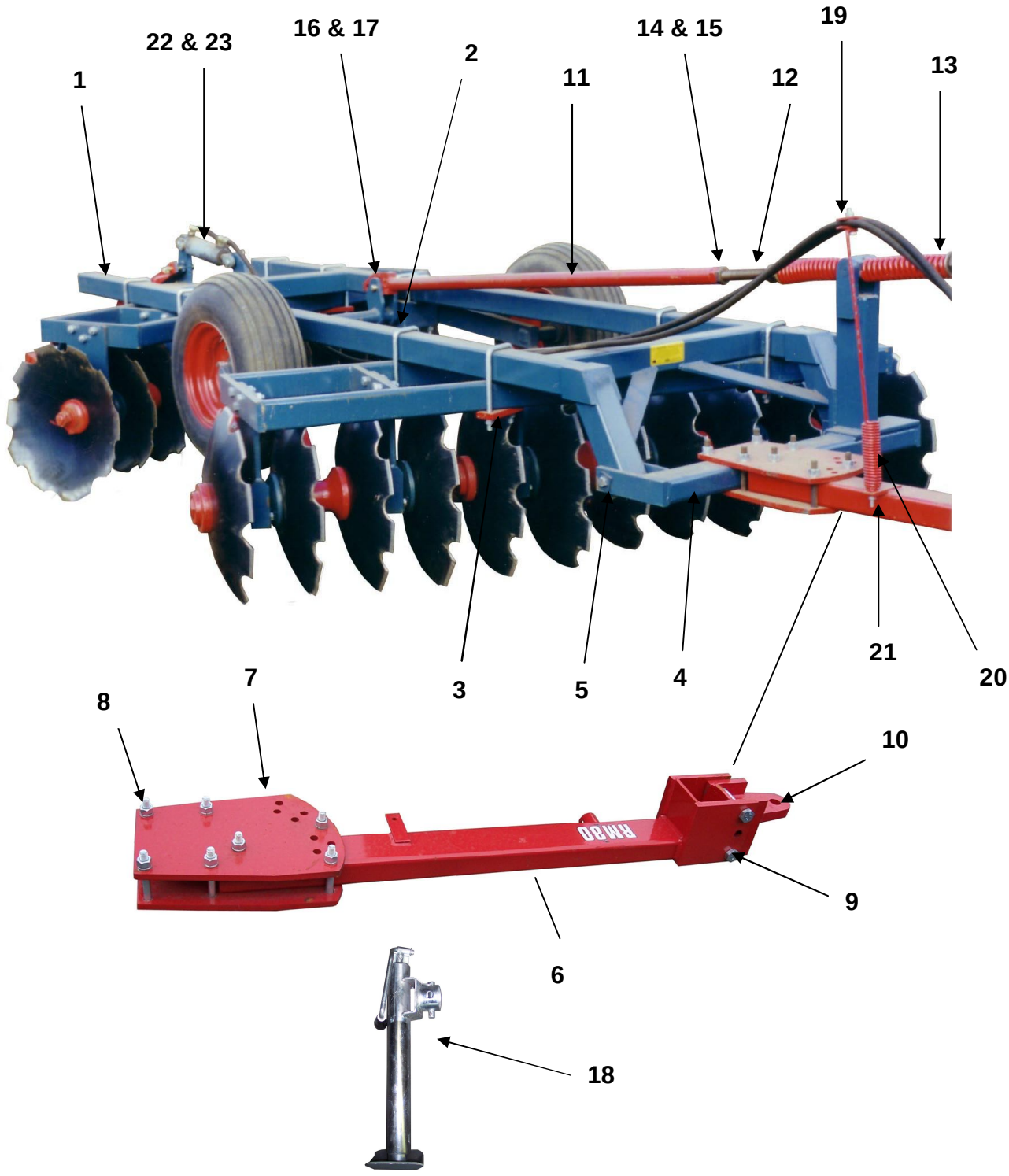
Always quote the machine serial number or product number, spare part number and its part name as stated in the operator's manual.

Glossary of terms
c/w = Complete with
sw = Spring Washer
n.s.s. = Not serviced separately
a.r. = As required
fw = Flat Washer

RM 80 Top Frame

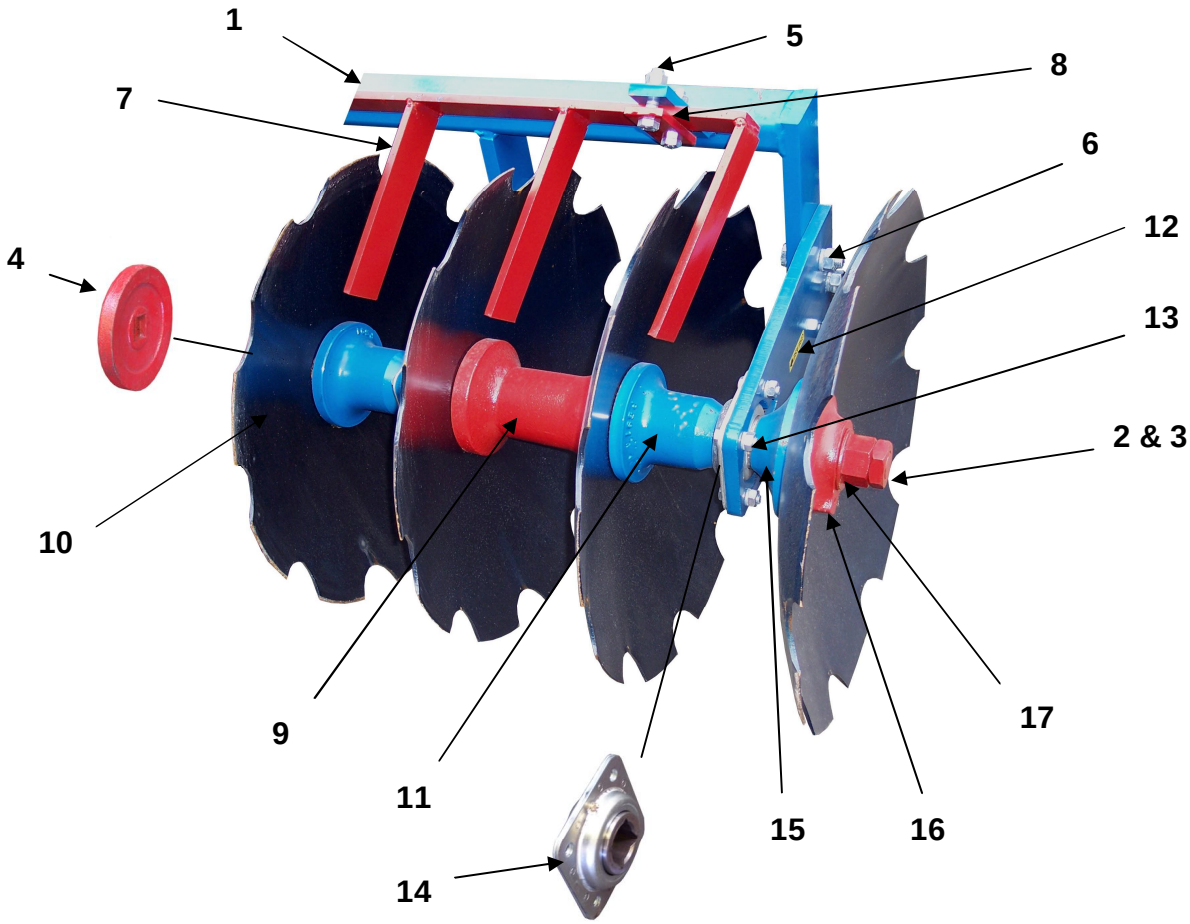
Key No	Part No	Quantity	Description
1	1564	1	Main Frame
2	3375	8	'U' bolt for gangs c/w nut/sw
3	3381	8	RM.19 Plate suit 'U' bolt
4	1559	1	Front cross bar
5	3387	2	Bush
	3386	4	Square washer
	1879	2	Bolt/nut/sw
6	1558	1	Drawbar (no plates/bolts)
7	1557	2	Draw bar plates
8	1879	7	Bolt/nut/sw
9	3398	2	Drawbar tongue bolt/nut/sw
10	3397	1	Drawbar tongue
11	1556	1	Pressure screw bar (pipe end)
12	1640	2	Spring
13	1555	1	Pressure screw bar (threaded rod)
14	3346	1	Plain washer
15	3345	2	Locknut
16	3361	1	Pin for pressure screw bar
17	1940	1	Linch pin
18	3399	1	Jack
19	3390	1	Clamp for spring
20	3389	1	C.9 Spring
21	3392	1	Retaining bolt suit spring
22	1577	1	Hydraulic cylinder (inc. clevis pins)
23	1578	1 pair	Hydraulic hoses & fittings suit RM80

RM 80 Top Frame



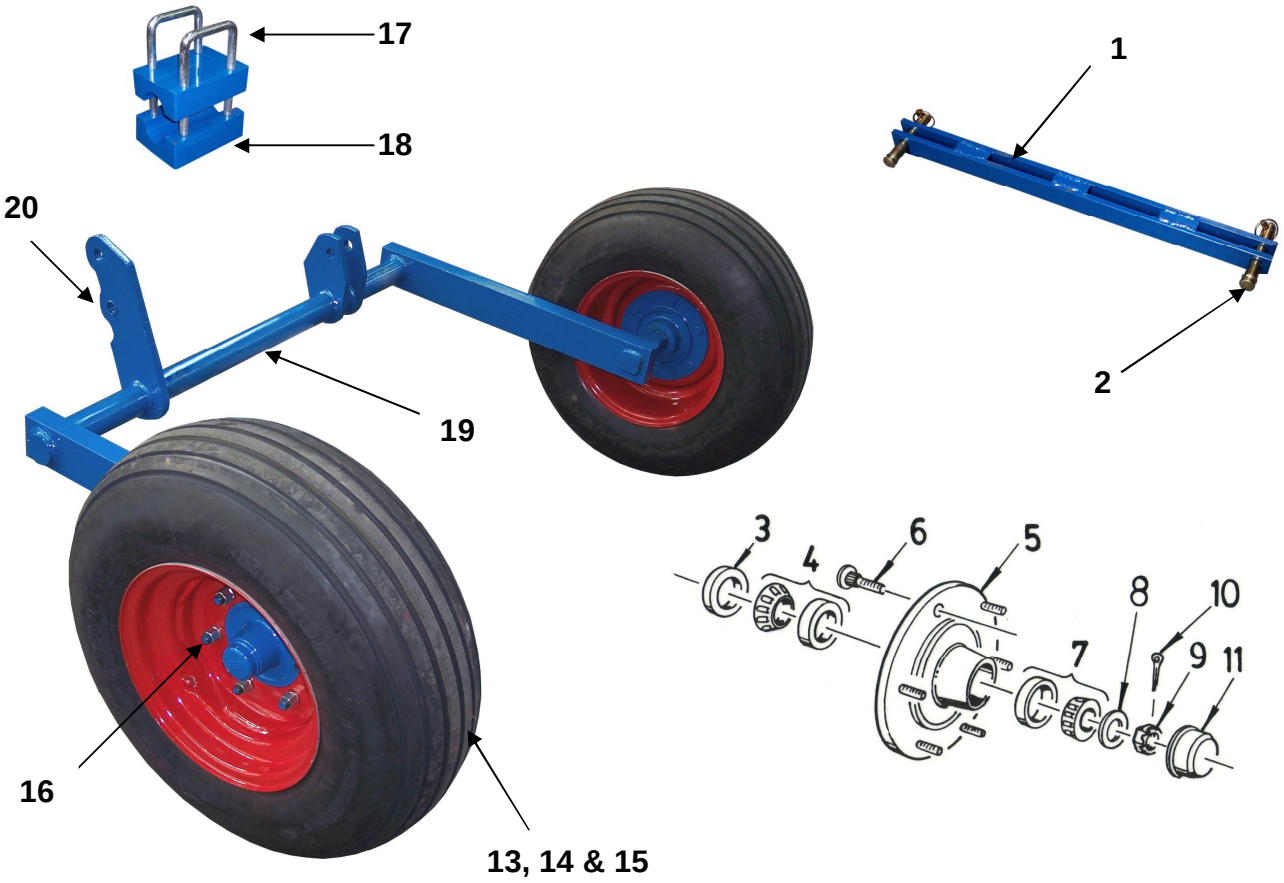
RM 80 Gang Assembly

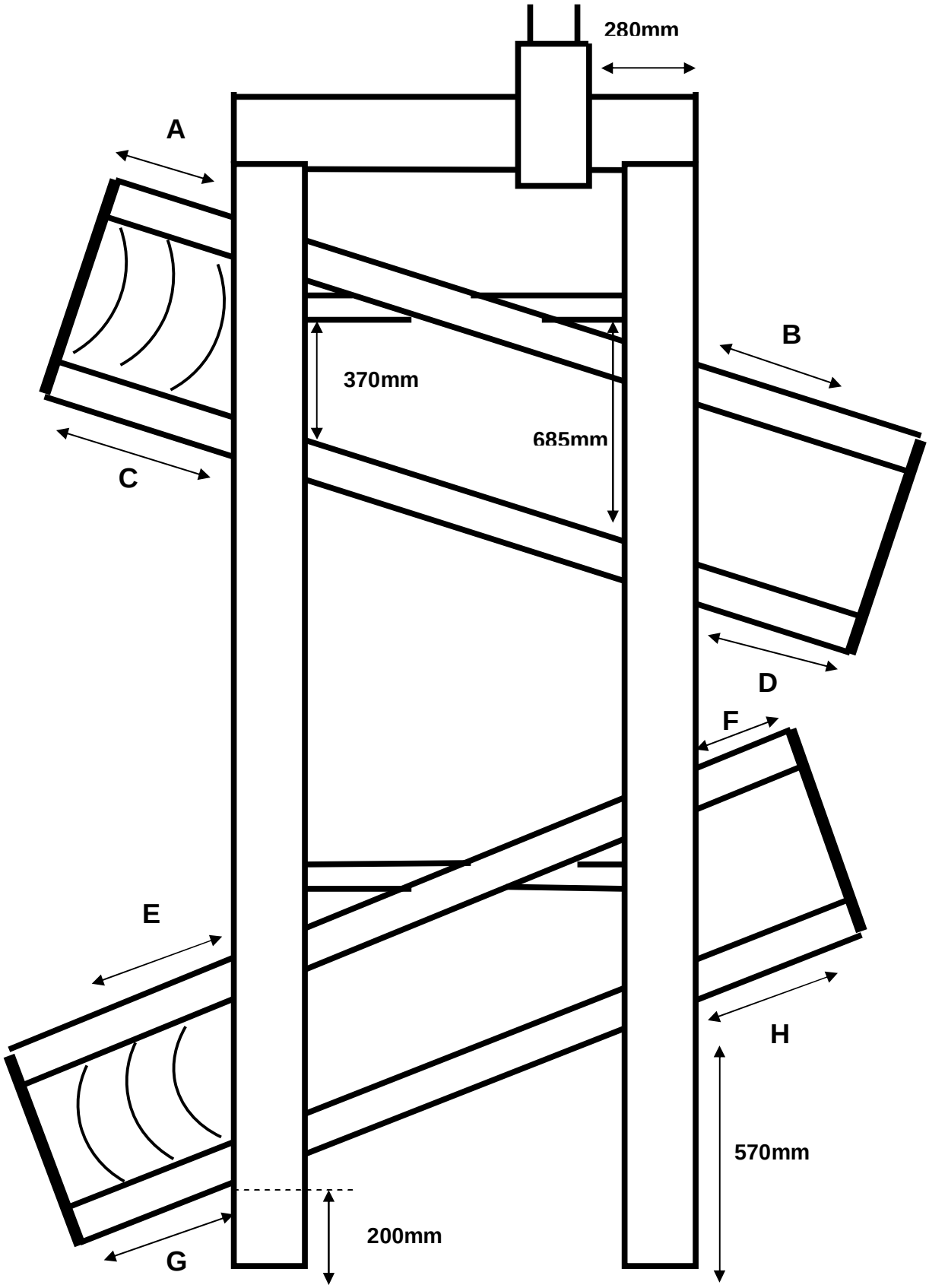
Key No	Part No	Quantity	Description
1	1581		Gang Frame
2	3332	ar	C.163 – 3 disc gang bolt axle
	3333	ar	C.164 – 4 disc gang bolt axle
	3334	ar	C.165 – 5 disc gang bolt axle
3	3345	1 per axle	Half lock nut (hexagon)
	1593	1 per axle	Full nut (hexagon)
4	0576	ar	P.594 Head washer
5	1955	ar	Bolt/nut/sw suit scraper clamp
6	3340	ar	Bolt/nut/sw suit hanger bracket
7	1591	ar	Scraper - state length
8	3341	ar	Scraper clamp
9	0568	ar	P.592 Disc spacer spool
10		ar	Disc - refer disc list
11	0572	ar	P.591 Bearing spacer spool
12	3342	ar	Hanger bracket
13	3343	ar	Bearing bolt/nut/sw
14	0585	ar	Flanged disc bearing complete
15	0570	ar	P.590 Bearing spacer spool
16	0574	ar	P.593 End washer (nut end)
17	3346	1 per axle	Plain washer



RM 80 Wheel Assembly

Key No	Part No	Quantity	Description
1	3360	1	Transport bar
2	3361	2	Pin suit transport bar
	1940	2	Linch pin
3	3362	2	Seal suit FAD hub
4	3363	2	Inner bearing & cup suit FAD hub
5	3365	2	Hub, FAD
6	3364	12	Stud suit FAD hub
7	3366	2	Outer bearing & cup suit FAD hub
8	3367	2	Flat washer
9	3369	2	Castellated nut
10	3368	2	Split pin
11	3370	2	Hub cap
13	3371	2	6 stud rim
14	3372	2	Tube
15	3373	2	Tyre
16	3374	12	Wheel nut
17	3375	4	'U' Bolt
18	3376	4	P.552 Wheel blocks
19	1569	1	Main axle
20	3377	1	Bronze bush





Model	A	B	C	D	E	F	G	H
20 PLATE	115mm	610mm	305mm	420mm	535mm	180mm	330mm	380mm
24 PLATE	350mm	845mm	540mm	655mm	770mm	415mm	565mm	615mm
28 PLATE	585mm	1080mm	775mm	890mm	1005mm	650mm	800mm	850mm
32 PLATE	820mm	1315mm	1010mm	1125mm	1240mm	885mm	1035mm	1085mm