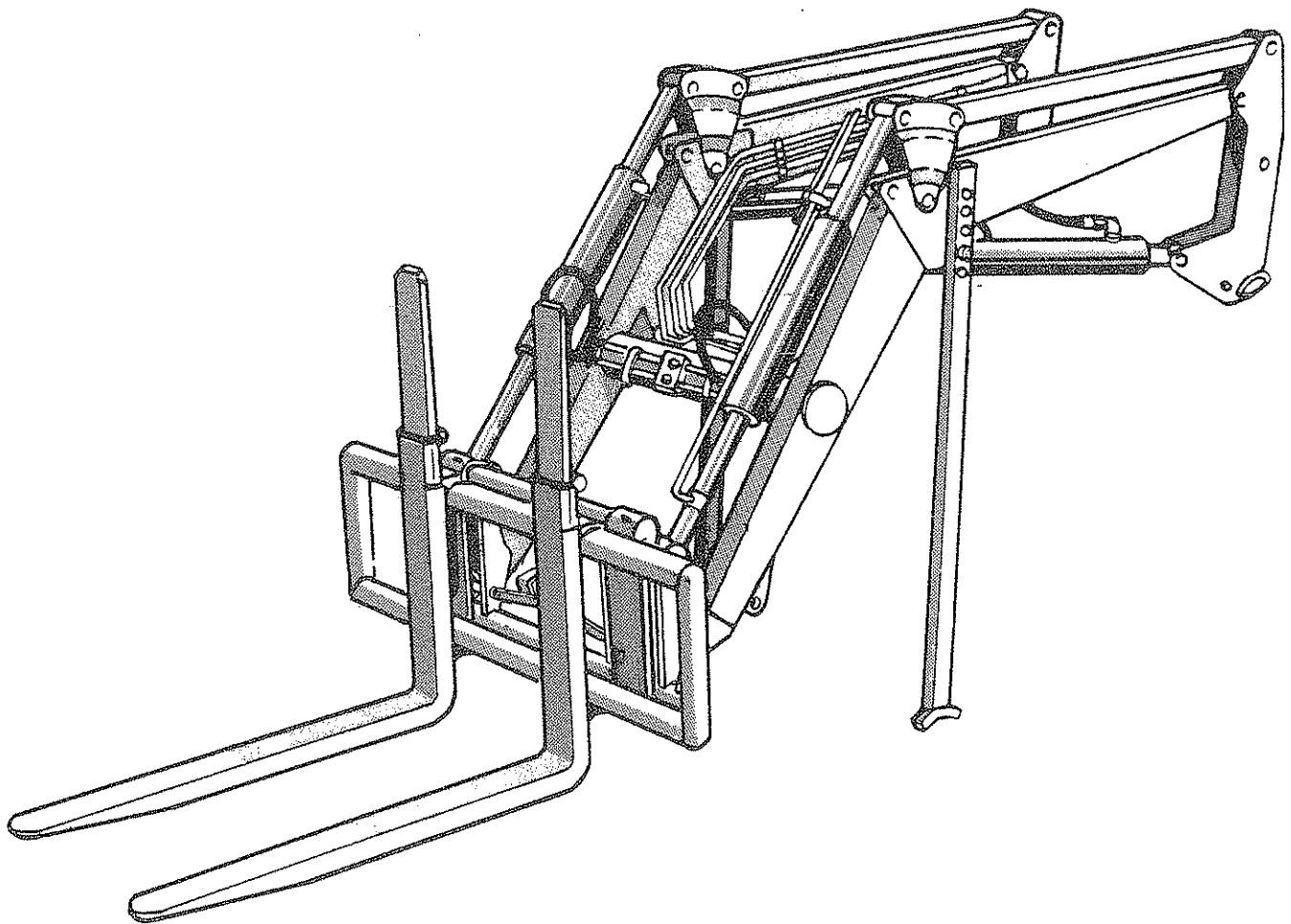


FORELODA 055

Operator & Spares manual



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FOR YOUR NOTES

GENERAL INFORMATION

Read this manual before fitting or operating the machine. Whenever any doubt exists contact your dealer or the McConnel Service Department for assistance.

Use only McConnel spare parts on McConnel equipment and machines. This manual includes an illustrated spare parts breakdown and the interpretation which precedes it should be read before ordering replacement components.

DEFINITIONS

The following definitions apply throughout this manual :-

<p><u>WARNING</u></p> <p>An operating procedure, technique etc., which can result in personal injury or loss of life if not observed carefully.</p>

CAUTION: An operating procedure, technique etc., which can result in the damage of either machine or equipment if not observed carefully.

NOTE: An operating procedure, technique etc., which is considered essential to emphasize.

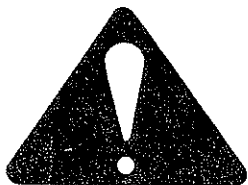
Left and Right Hand

This term is applicable to the machine when fitted to the tractor and viewed from the rear. This also applies to tractor references.

Record the serial number of your machine on this page and always quote this number when ordering spares. Whenever information concerning the machine is requested remember to also state the type of tractor to which it is fitted.		
MACHINE SERIAL NUMBER		INSTALLATION DATE:
MODEL DETAILS		
DEALER'S NAME		
DEALER'S TELEPHONE NUMBER		

LIMITATIONS

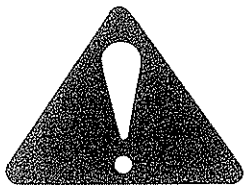
The McConnel Warranty specifically excludes any hydraulic pump and controls supplied with the machine if they are used to power equipment other than the McConnel machine for which they were supplied. Prior confirmation and warranty cover that the pump is suitable for any other purposes must be obtained from the hydraulic component manufacturers.



WARNING

SAFETY PRECAUTIONS

- ALWAYS ...
- ... Read both the loader and the tractor instruction book thoroughly before attempting to operate the loader.
 - ... Add recommended wheel ballast or rear weight to provide good stability.
 - ... Set the tractors wheels to the widest recommended setting to increase stability.
 - ... Operate the loader only from the operators seat.
 - ... Move and turn the tractor at low speeds.
 - ... Carry the loader arms at a low position during transport.
 - ... Exercise caution when operating the loader with a raised loaded bucket or fork.
 - ... Avoid deeply rutted or soft underwheel conditions for loader operation.
 - ... Take extreme care when working on inclines.
 - ... Familiarise your self with the position of any potential overhead obstruction i.e. electric cables.
 - ... Stop the loader arms gradually when lowering or lifting.
 - ... Take care when travelling on the highway.
 - ... Lower loader arms, stop engine and lock brakes before leaving the seat.
 - ... Make sure all parked loaders on stands are on a hard level surface.
 - ... Keep onlookers at a safe distance.
 - ... Replace operational or safety decals if they become lost or illegible.
 - ... Ensure that the locking pins are engaged in the implement carrier after changing an implement.
 - ... Ensure that an implement is fitted when removing the loader from the tractor
 - ... Check that stabiliser bars are properly adjusted or that check chains are tight if linkage mounted ballast is used.



WARNING

SAFETY PRECAUTIONS

- NEVER ... Permit inexperienced personnel to operate the machine without supervision.
- ... Lift or carry anybody on the loader or in the bucket or attachment.
- ... Never allow anyone to stand, walk, or work under a raised loader bucket or attachment unless it is securely blocked or otherwise supported in position.
- ... Grasp control levers when mounting the machine.
- ... Exceed the loaders maximum lift capacity.
- ... Handle the type of material that may roll back down the loader arms onto the operator e.g. logs, posts, tree trunks, bales, oil drums, etc.
- ... Lift the load higher than is necessary.
- ... Operate the loader on a tractor that is not equipped with a roll-over protection.
- ... Interfere with factory set hydraulic calibrations as they are carefully calculated and any increase could cause a breakage which may result in injury.
- ... Unless completely unavoidable make any checks or adjustments with the tractor engine running.

FITTING

TRACTOR SELECTION

To meet the requirements needed to operate the 055 loader it is recommended that the tractor is in the 50 HP – 70 HP range

TRACTOR PREPARATION

Rear Wheel Ballast

The rear wheels of the tractor must be properly ballasted to give the best possible operating stability. This can be achieved by using any or a combination of the following methods depending on the type of work to be done and the terrain.

1. A rear mounted implement e.g. backhoe.
2. Linkage mounted ballast box – available from F. W. McConnel or weight carrying bar.
3. Rear wheel weights
4. Liquid ballasting of the rear wheels.

For maximum weights allowed and fitting procedures refer to the tractors handbook.

Do not add any weight to the front of the tractor.

Tractor Wheel Widths

Set out the tractor wheel widths to their maximum to increase stability.

Front Tyre Selection

Radial ply tyres are considered insufficiently robust for loader use. For the correct specification and operating pressures refer to the tractor handbook or a tyre specialist.

LOADER SIDE FRAMES

Refer to the loose leaf instruction sheet and fit the loader side frames to the tractor. The sheet should be retained for subsequent ordering of any side frame spare parts.

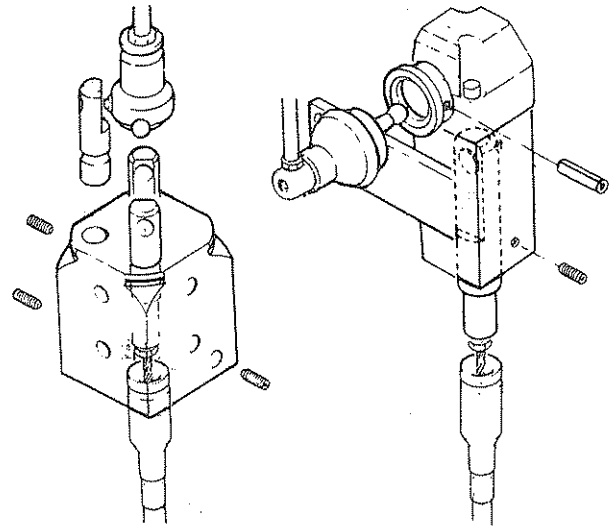
HYDRAULIC KIT

The fitting of the hydraulic kit to the tractor is carried out in conjunction with instructions contained in the loose leaf specific hydraulic fittings which refer to a particular tractor. This loose leaf, which will give an overall idea of how the controls fit in the cab together with the approximate line to be taken by the cables should be retained for subsequent ordering of spare parts.

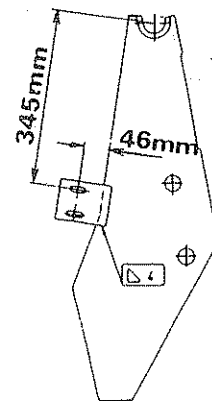
Refer to the loose leaf and connect the supply and return hoses to the tractor. This is often made easier if one or both rear wheels is removed.

Separate the valve from the control unit. This is done at the the control unit end by loosening the M5 grubscrew which retain the cable actuators and the rocker pivot. This will allow the rocker pivot to be withdrawn from the block and the operating spindles to be freed from their pivots thus enabling the cable ends complete with the spindles to be pulled down and out of the control block.

Similarly the cable and spindle has to be freed from the third service control block if supplied. Remove the lever pivot and withdraw the lever from the pivot box. Unscrew the grubscrew, the cable and spindle can now be withdrawn.



The hydraulic valve is bolted to the bracket on the right hand side frame or alternatively to the loose bracket supplied, which first has to be welded into position on the side frame as shown. Ensure that when mounted the valve block does not interfere with any part of the tractor cab.



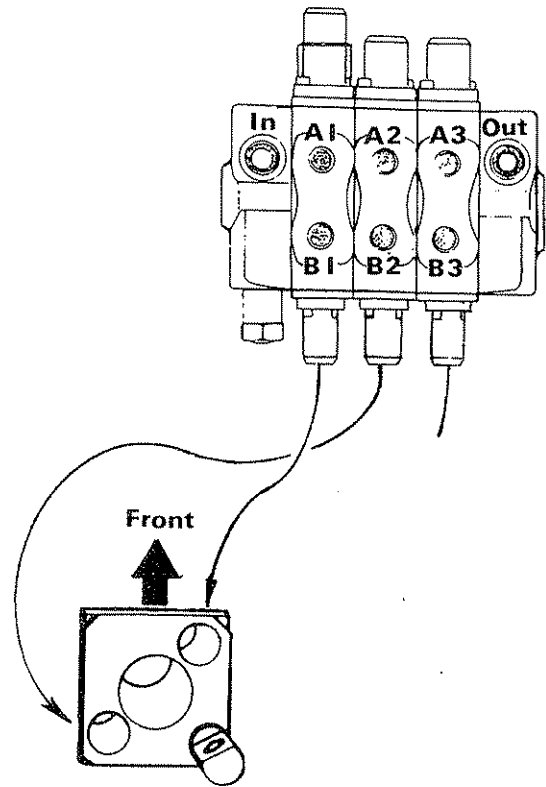
Mount the control unit in the cab in a convenient location ensuring that the lever rocker pivot is positioned at the rear right corner. Bear in mind the following restrictions and suggestions.

It is prohibited to drill holes for mounting the control unit or for access of cables in any structural member of the cab. When fitted the control handle must be capable of being operated without coming into contact with its surroundings or interfering in any way with the full operation of any other handles or controls.

When selecting the mounting position of the control unit consider that tight bends in the cable will reduce their operational life. The cable run should be as straight as possible with any bends having a minimum radius of 8"

The cable ends can be fed up through a convenient hole and re-assembled together with the control block and lever. It may be necessary to drill two 22 mm (7/8") dia holes to accommodate them, if this is so, you are reminded that it is not allowed to drill a structural member of the cab. When re-assembling the cables the one that is closest to the main relief valve is connected up through the hole in the front right corner of the control block.

Connect up the supply and return hoses to the control valve at the parts marked 'in' and 'out' respectively.



ATTACHMENT TO TRACTOR

During initial fitting, it will be easier if the jib is lifted into position and secured with the use of overhead lifting tackle. Subsequently re-attachment is a simple drive in manoeuvre.

Connect up the lift and implement ram hoses to the valve in the following manner -

- Lift base - port B1
- Lift gland -port A1
- Implement base -port B2
- Implement gland -port A2

The hoses from the third service facility, if fitted, should be connected to ports A3 and B3 to suit the operators own 'sensing' preferences.

It is possible to couple the loader up directly to the tractor spool valve. Additional hoses and couplings will be required and the tractors hydraulic pressure must be regulated so as to not exceed 2500 psi (175 Bar)

Clean the ram rods

Start the tractor and operate the machine throughout its range of movements, checking that all hoses are not stretched, kinked, pinched or chafed. In addition, check that 'in cab' hoses or cables do not obstruct the movement of any pedals or levers.

Check the oil in the tractors hydraulic reservoir and top up if necessary from the recommended list in the tractors handbook.

OPERATION

SAFETY

Before commencing operation read this manual carefully paying particular attention to aspects relating to safety. THEY ARE THERE FOR YOUR OWN GOOD.

OPERATIONAL CHECKS

On new machines check the tightness of all fasteners and hydraulic connections after the first two hours of work and periodically thereafter.

PARALLEL LINKAGE LOADERS

In common with all parallel linkage loaders the geometry will allow the implement to be forced against the stops during a 'lift down' motion. This will prevent further lowering of the jib but a sudden fall will occur if the implement ram is subsequently re-positioned.

An anti cavitation valve has been fitted to the SD6 control valve to minimise this phenomenon but to prevent the likelihood of it happening carry out the following :-

Be especially alert during 'lift down' movements and always release the control lever as soon as the implement comes into contact with the mechanical stop.

Keep the engine speed high during lowering of the loader to allow the lift rams to refill with oil

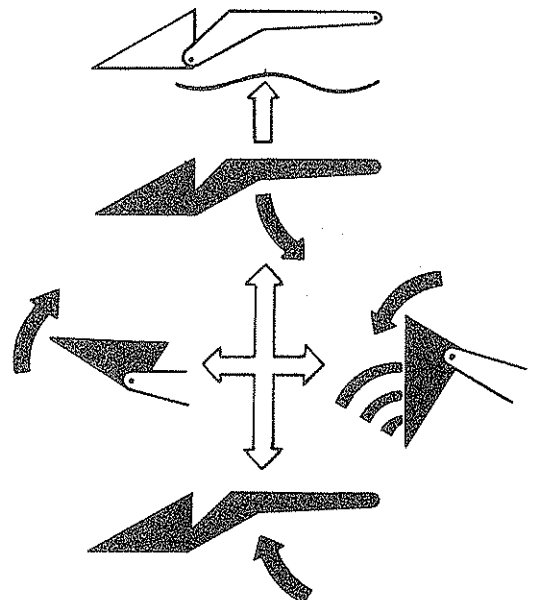
MACHINE CONTROLS

The two main controls for the jib and the implement are operated by a single joystick control lever which operates on a + axis for single service selection or a x axis for dual service operation. Pushing the lever forward and to the right will lower the jib and discharge the implement respectively and vice-versa. Pushing the lever on through the normal selection point for 'jib lower' will engage it in the jib float detent. When float requirement is no longer required it will have to be manually de-selected.

A third service, available as an optional extra, is operated independently with a single lever.

Before commencing work select a clear unobstructed site and operate the machine without load until the controls and the 'feel' of the machine are familiar. This is a wise precaution for all operators and a must for the inexperienced.

Never try to force the levers beyond their normal limit of travel - this will not increase operating speed and might well damage the cables.



IMPLEMENT COUPLING

To attach the implement, tilt the carrier frame forward some 10° to 15°, drive forward and position the frame under the hooks at the rear of the implement. Lift the implement clear of the ground and select 'crowd back' until the implement is resting solidly against the carriage. Using the latch lever, locate the locking pins thus securing the implement in position.

To uncouple, the above procedure must be reversed.

WARNING

Always check that locking pins are fully engaged before commencing work.

Always if possible leave the implement on level ground. This will make the task of re-connecting very much easier.

Caution. Equipment designed by other manufacturers could cause extensive damage to the loader. Never fit such equipment without first checking with F. W. McConnel that it is suitable.

BUCKET POSITION INDICATOR

To assist in operation a bucket position indicator is provided. Setting is carried out by placing the bucket in the position the operator requires indicated and adjusting the shorter of the indicator rods until the top of both is level. By painting marks on the sliding rod, several bucket positions may be shown.

THIRD SERVICE KIT - Optional extra

The machine can be converted to include a third service facility should the implement require one.

It is necessary to order Part No. 11 87 345 - jib pipes etc., a valve seal kit, Part No. 86 99 204 and the valve slice and control unit the part No. of which is dependent upon the tractor fitted.

The existing valve has to be dismantled and the third slice added adjacent to the outlet section. When re-assembling refer to the service instructions.

OPERATIONAL TIPS

General

Familiarise yourself with the positions of any likely obstructions e.g. electric cables.

Keep onlookers at a safe distance.

Do not carry people on the loader or in a bucket.

Do not attempt to handle large unstable objects such as bales, logs, oil drums etc. with implements that are not made specifically for this purpose as there is a possibility they may roll back down the arms into the cab or onto the operator.

Choose an appropriate gear so that control of the operation does not rely on over revving the tractor engine or slipping the clutch.

Avoid uneven loading of the implement.

Be especially careful when operation with an implement that is wider than the tractor.

When travelling on the highway place the implement at the safest possible attitude taking into account stability, visibility and the potential danger to third parties.

When stopped place the implement on the ground and switch off the tractor engine

DRIVE SLOWLY - CARRY LOW - AVOID UNEVEN SURFACES

WARNING

To avoid the possibility of flashover in the vicinity of high voltage overhead power lines never work closer than 1.5 metres minimum. If in any doubt consult the local electricity board or leave officer for advice on a safe plan of working.

Filling the Bucket

Approach and enter the pile with a level bucket. This can be determined easily from the operators seat by the position of the bucket level indicator rod. It will be helpful, when bucket level is determined, to mark the rod with tape or paint for easier subsequent recognition.

For most effective filling, drive straight into the pile. For easier filling or if the pile is resistant, enter the spoil, loosen by raising the bucket about 6", lower the bucket and continue forward.

To break out spoil material, select 'lift' and 'bucket crowd' simultaneously - this decreases the resistance to bucket lift and minimises the breaking out effort required.

NOTE: Do not be concerned if the bucket is not completely filled during each pass. Time and maximum productivity are sacrificed by making two or more attempts to fill the bucket on each pass.

Operating with boom float

During hard surface operations keep the bucket level and select the float position for lift control. This will permit the bucket to float freely on the working surface and prevent the excessive wear to the bucket lip taking place which occurs when hydraulic down pressure is applied.

The float will also prevent the mixing of surface material with stockpile material and reduce the chance of surface gouging when removing snow or other material.

Carrying the Load

Do not exceed 3 mph when travelling with a loaded bucket. For average conditions position the bucket just below level of the tractor hood. This will give good visibility ahead and also just in front of the tractor tyres and is the ideal carrying position whether the bucket is loaded or empty.

When working on sloping, soft, rutted or uneven ground, stability becomes vitally important and the bucket should be carried as low as possible when either empty or full.

When using the loader on sloping ground, approach the work moving directly uphill, fill the bucket and then reverse slowly downhill. Avoid if possible moving across slopes even if it means the work takes considerably longer.

WARNING

Operating a loader on hillsides is dangerous and is not recommended.

WARNING

When operating on adverse underwheel conditions e.g. slopes or rutted uneven ground, carry the bucket as low as possible.

Dumping the Bucket

On the final approach to the dump area, raise the boom to the minimum height required to clear any obstructions and complete the approach slowly. Select 'bucket open' and dump the load only when stationary. Crowd the bucket before reversing and lower the boom to carrying height as soon as possible.

Lowering a Laden Bucket

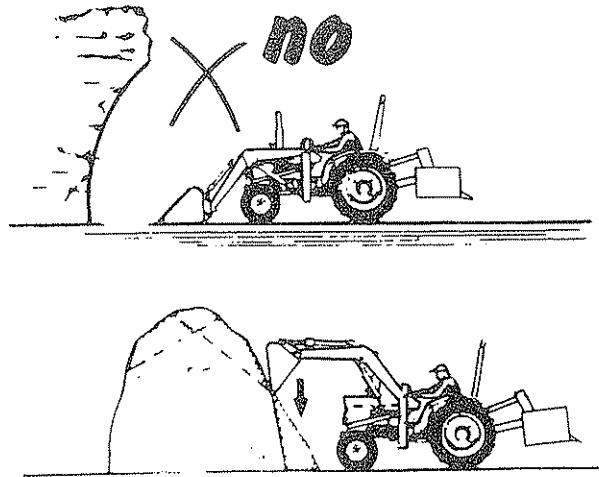
Always lower a heavy load slowly. Stopping a laden bucket suddenly after it has gained downward momentum may cause damage to the loader or even the tractor.

Backgrading

In soft conditions or when working continuously in a confined area, the work surface can be kept free of ruts and holes by backgrading occasionally. This should be done with a full bucket in a slightly crowded position. The lift control should be held down to put the full weight of the bucket on the ground.

Loading from a bank or large heap.

Do not undercut a bank or large heap, dirt slides can be dangerous. First break down the pile by side cutting or use the bucket to pull down the top and sides until the heap is reduced to a manageable height.



Backfilling

Essentially a bulldozing operation. Approach the spoil with the bucket level.

Note - Do not place the bucket in the open position for this operation as it will impose severe shock loads on the loader and the tractor.

Operate at right angles to the work and take as large a bite of the spoil as the tractor can manage without stalling.

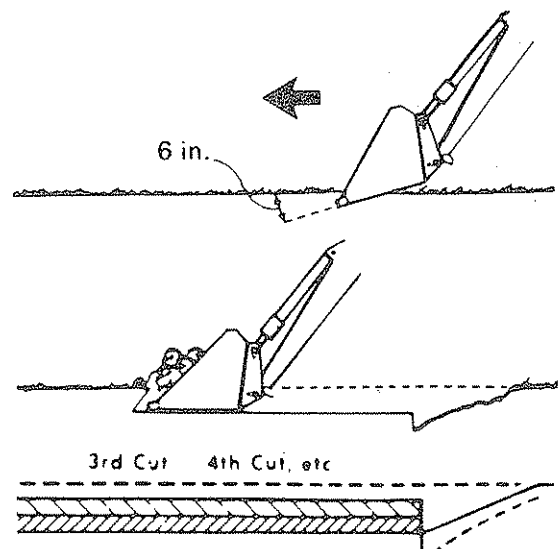
Leave any dirt which spills from the sides of the bucket for one final clear up.

Peeling and Scraping

Position the bucket with the lip angled slightly forward. Travel forward with lift down selected and make a short six to eight feet angled cut and break out cleanly.

With the bucket level start a cut at the breakout notch approximately two inches deep. Maintain depth by feathering the controls and take extra care when the tractors tyres enter the notch.

Make additional passes until the desired depth is reached.



REMOVAL OF LOADER FROM TRACTOR

Choose a hard level site for removing the loader and always carry out the procedure with an implement fitted.

Lower the loader and position the implement such that the implement leading edge touches the ground whilst the rear end is about 8" (200mm) above ground.

Fix the parking legs in the lowest possible position.

Remove the lock pins from the bottom of each frame post.

Close the lift rams about 2" (50mm). This will cause the implement to become level with the ground and the loader pillar to lift away from the frame posts leaving it standing on the implement and its parking legs.

Stop the tractor engine and release pressure from the jib hydraulic lines by pushing the control lever into all positions.

Release the quick release self seal couplings and fit dust caps and plugs.

Start tractor and reverse away from the loader slowly.

RE-ATTACHMENT OF LOADER

To re-attach the loader the procedure for the previous paragraph is reversed. The dust caps are colour coded to facilitate re-connecting the hoses.

STORAGE

If the machine is to be left standing for an extended period of time lightly coat the exposed portions of the ram rods with grease. Subsequently this grease will become contaminated with dust and grit must be wiped off before the rams are next moved.

Grease the locking latch mechanism and any bright areas on the implement or loader.

Make sure that hydraulic dust caps and plugs are in place.

MAINTENANCE

LUBRICATION

Grease daily the following points :-

- Jib pivot
- Carriage pivot
- Lift ram base pivot
- Implement ram pivots
- Implement crank pivots
- Parallel link pivots
- Parallel crank pivot.

In addition, grease the carriage locking pin mechanism as required.

FASTENERS

Taking into account the amount and type of work done, check periodically that all bolts and nuts are tight, pins are secure and hydraulic connections are not leaking.

HYDRAULIC CONTROL VALVE

Of the slice type construction, the valvoil SD6 hydraulic control valve comprises two or three double acting sections, the lift section of which is equipped with an anti cavitation valve.

Servicing and overhaul of the valve is restricted to the renewal of 'O' rings and seals or to the replacement of complete units or sections.

On reassembly always replace components from where they came and use new 'O' rings and seals.

Before commencing, wash off the valve thoroughly and ensure that any bench work is carried out in as clean as possible an environment.

Section renewal or adding of third service

To carry out either of these operations, it is necessary to remove the complete valve assembly from the machine leaving the valve mounting plate in situ on the loader pillar. Mark each section to identify for correct re-assembly before releasing the tie rod nuts. Ensure all section faces are clean and 'O' rings are correctly positioned in their grooves and held in place by a light smear of grease.

The plugs located between the service ports which are check valve housings should not be disturbed. One of the assembly tie rods passes through them.

If adding a third service, for re-assembly, the third slice is placed adjacent to the 'Outlet' section.

Replace the three nuts of the tie rods finger tight and then place the valve assembly horizontally on a flat surface to align the sections before finally tightening the nuts evenly to a torque of 25 lbs/ft. Uneven or overtightening may distort the sections sufficiently to cause the spools to stick when at operating temperatures.

When re-mounting the valve onto its mounting plate, again do not overtighten as sticking spools may occur.

Routine maintenance of the valve as follows, can be carried out with the valve in situ.

Renewal of Spool 'O' Rings

The spool 'O' rings, which are housed in grooves within the spool bore are easily damaged unless the following procedure is carried out.

Dismantle the cable end from the valve

Undo the retaining screws and remove the spring centering cap or the float detent assembly. For the implement or third service sections, the centering spring assembly should be unscrewed from the spool end.

Gently rotate and move the spool towards the cable end just sufficiently to expose the 'O' ring at the spring end. Remove the 'C' ring. Do not replace it at this stage.

Note : If the spool is moved too far, it can slice fragments off the 'O' ring at the lever end which, if undetected, can subsequently circulate within the valve block and cause further trouble.

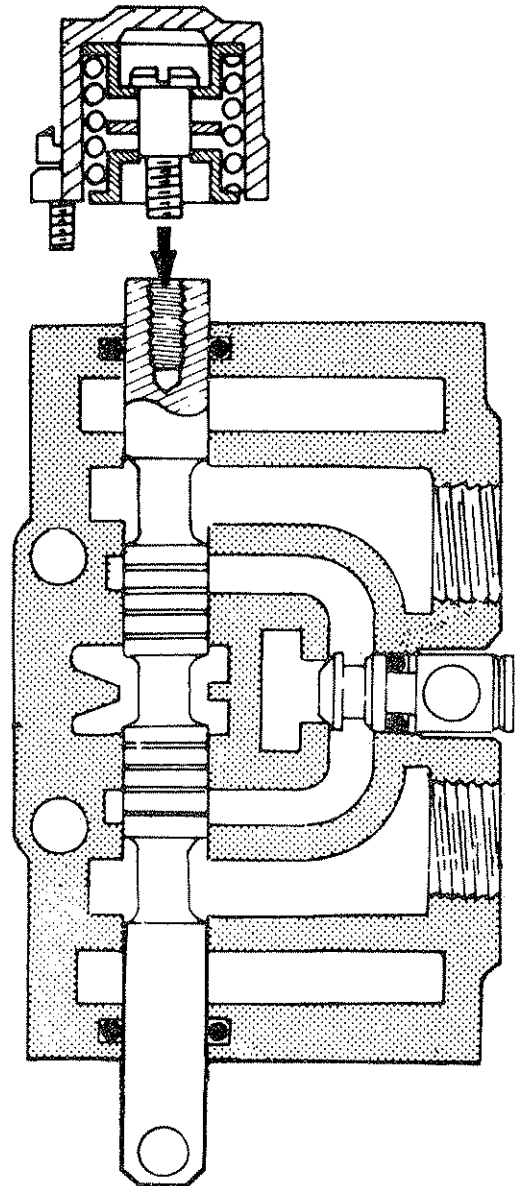
Move the spool down through the spring end to expose the 'C' ring within the bore at the lever end. Remove and renew this 'O' ring.

Simultaneously gently rotate and move the spool towards the cable end until the 'O' ring at the spring end is again exposed. Fit new 'O' ring and move the spool back to its central position.

For implement and third service sections, replace the centering spring assembly to spool end. Remove any traces of oil from the screw threads - assemble using "Loctite screwlock".

Refit the spring caps or the float detent assembly.

Refit the cable ends to the valve - for correct setting, refer to cable maintenance.



Jib Float Detent Assembly

A malfunction is highly unlikely - however, should the control lever slip out of the 'float detent' position after selection check that the springs and detent balls situated under the hexagons on the side of the body are seated correctly and are free to move.

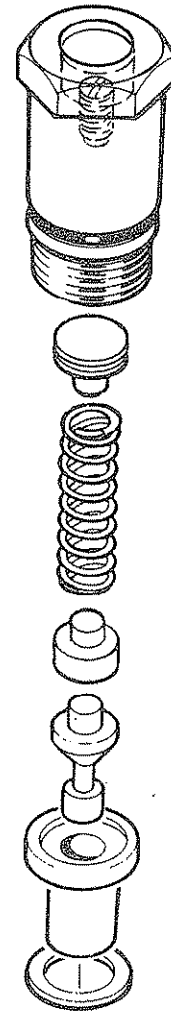
Main Relief Valve

The main relief valve is pressure set at the factory and is non-adjustable.

Servicing is restricted to dismantling, cleaning and replacing the 'O' ring and this can be carried out without disturbing the pressure setting.

A sticking relief valve will probably cause overheating and/or loss of power. To gain access, undo the large hexagon housing – the relief valve components can now be withdrawn. If difficulty is experienced in extracting the seat, remove the blanking plug from the opposite end of the gallery and drive out with a soft brass drift. Take care not to damage the sealing washer positioned between the seat and the locating shoulder in the valve section.

Blow out the valve with compressed air and examine the components for damage. These components are specially hardened steel and should only display a seating witness – any further damage will require the complete valve to be replaced.

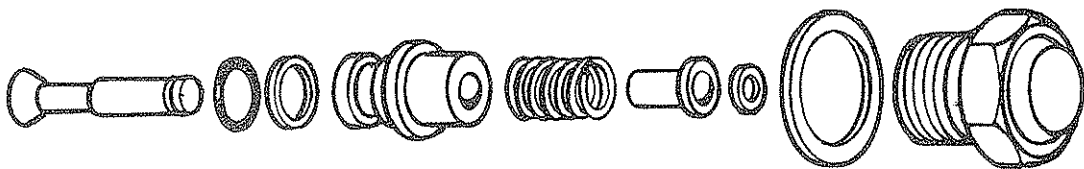


Copper sealing washer

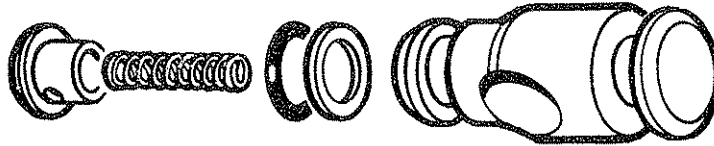
CAUTION: Under no circumstances be tempted to add shims into the valve housing in a misguided attempt to increase the power of the machine. This could damage the tractor, the loader and may cause personal injury.

On replacing the valve, and plug, if removed always use new 'O' rings

Anti-Cavitation Valve.



Situated in the lower end of the 'lift' section, the anti-cavitation valve ensures that the lift ram is full of oil during all the stages of operation thus preventing any inadvertent drop of the loader jib. A sticking valve can be suspected should the jib make any sudden or unexpected movements. Undo the domed hexagon nut. The valve cartridge can now be extracted, dismantled and washed free of contaminant. Inspect the valve components for damage, if any is found a complete new valve assembly is required. On re-assembly, use new seals and check that the cartridge seat slides freely in its housing before re-positioning into its gallery in the control valve slice.



Check Valves

A spring loaded check valve is located in each spool section between the service ports. This valve prevents the interaction of services and momentary load drop on selection.

Malfunctioning is most unlikely, but contaminant can prevent free movement or re-seating. To remove the check valve it will be necessary to dismantle the tie rod which passes through the valve body which can now be withdrawn revealing the spring and poppet. Wash free of contaminant and check for free movement of the poppet within its housing. Examine the poppet face for damage and renew if necessary. Re-assemble in the reverse order using a new 'O' ring and back up ring coated with a light smear of grease on the valve body. Finally tighten the tie rod nuts to 25 lbs/ft. Do not overtighten, which could cause binding the spools of the valve assembly.

CABLES

The cables operate on a push/pull system with the spool centering spring always returning the spool to the neutral position when the handle is released. The exception to this is that 'float detent' has to be manually de-selected.

Care should be taken during installation and operation to ensure that the cables are not trapped or kinked.

Attaching cables to the valve and setting.

Unscrew the locknut and sleeve and slide up the cable to allow access to fix the cable clevis to the spool end.

Re-position the locknut and sleeve and screw lightly into position on the valve face. Do not fully tighten.

Rotate the sleeve until the joystick handle is upright and central and the third service handle is parallel to the control block. This allows an equal amount of travel in both positions.

Lock in position and fully tighten down the cable flange.

No routine adjustment of the cables are necessary as they do not stretch but any abrasion or damage to the outer casing should be sealed with plastic insulation tape to prevent moisture penetrating the cable.

CAUTION :- On no account should any attempt be made to lubricate the cables which are assembled with a special lubricant during manufacture.

HYDRAULIC RAMS

General Information

Whenever possible, the ram should be removed from the machine and thoroughly cleaned off before dismantling on a clean work bench.

When using a bench vice, do not apply excessive pressure to the ram cylinder – use soft metal jaws when grasping the ram rod.

Remove scores and nicks on the ram rod by using a fine oil stone – do not use a file or emery cloth.

To Dismantle :-

Lift Ram – Ensure oil is drained from the ram –

Remove the visible external circlip retaining the gland housing. Push the gland housing into the ram cylinder until the face is clear of the 'O' ring and the spring wire internal circlip in the ram barrel. If thumb pressure is not enough, it is permissible to drive in the gland housing using a soft hammer and wooden drift.

Extract the 'O' ring and circlip. Withdraw the ram rod and piston from the cylinder and with it the gland housing. If tight, do not be tempted to place a metal bar through the rod eye and hammer it out.

Remove the guide ring from the split collet. Separate the collet – the piston and gland housing can now be withdrawn from the rod.

Implement Ram – Ensure oil is drained from the ram.

Follow procedure for lift ram as outlined previously.

The second gland housing, situated at the base end of the cylinder is removed by unscrewing the two M6 grub screws. Using a specially constructed wooden hook, it can then be withdrawn from the cylinder. Alternatively, the cylinder is inverted and the mouth banged downwards onto a block of wood until the gland housing can be extracted with the hands.

Changing Seals :-

Having taken the trouble to dismantle the ram, use the opportunity to replace all seals.

Gland Seals :-

Ensure that seals are replaced in the same position and attitude from which they came.

Piston Seals :-

Remove split members of the piston seal and then, using a soft lever which will not scratch the piston lift the remaining seal components from the piston. Replace with new seals in the reverse order. Do not forget the rod 'O' ring situated in a groove in the bore of the piston. Lubricate all new gland and piston seals thoroughly prior to re-assembly of the rams.

Re-Assembly

Lift Ram :-

Slide the gland housing and its seals carefully onto the ram rod making sure the wiper seal face is towards the rod eye.

Slide the piston onto the rod until it abuts against the shoulder and lock in position by assembling the split collet and its guide ring.

Feed the piston and gland assembly into the ram cylinder and push the gland in until the outer face clears the groove in the cylinder bore. It is permissible to drive it in with a soft hammer and wooden drift. Fit the wire spring circlip in position and insert the cylinder mouth 'O' ring. Using the piston, draw the gland housing out until the nose protrudes through the 'O' ring and the shoulder abuts against the wire circlip.

Secure in position by fitting the external circlip in the groove on the outer diameter of the gland housing nose.

Implement Ram :-

Push the base end gland housing c/w its seals, flat face first into the ram cylinder to a depth of about 3 ins.

Assemble the rod eye end gland housing and the piston onto the rod as the lift ram, except that in this application the piston abuts against a two piece snapping.

Feed the rod end into the cylinder and carefully through the base end gland housing.

Push on in using the piston to carry the gland housing to the bottom of the cylinder where it can be locked in position with the two M6 grubscrews.

Fitting and securing the rod eye end gland housing is as previously described for the lift ram.

HYDRAULIC HOSES

The condition of all hoses should be carefully checked during routine service of the machine. Hoses that have been chafed or damaged on the outer casing should be securely wrapped with waterproof adhesive tape to stop the metal braid from rusting. Hoses that have suffered damage to the metal braid should be changed at the earliest opportunity.

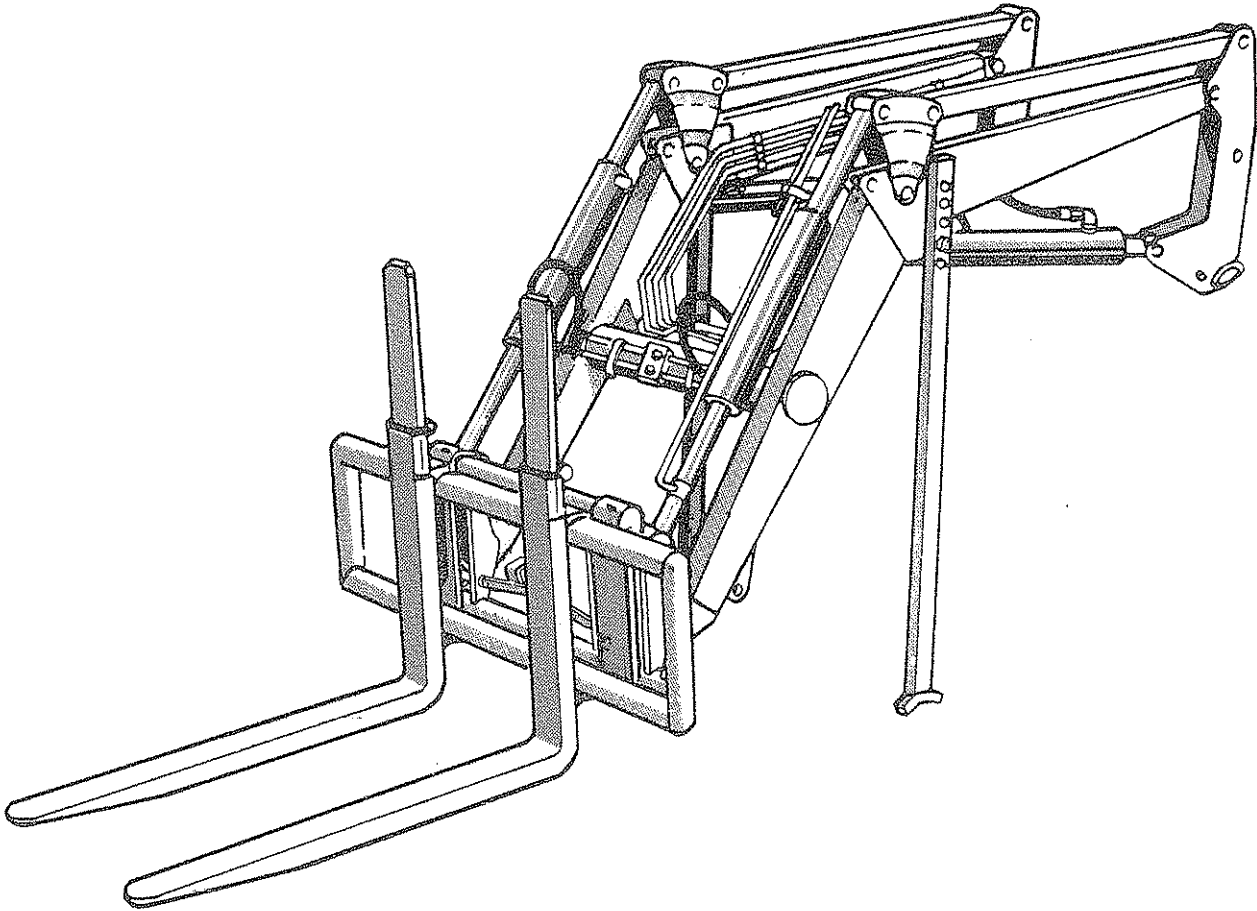
Hose replacement

Replace one hose at a time to avoid the risk of wrong connections. When the hose is screwed to an additional fitting or union, use a second spanner on the union to avoid breaking both seals.

Do not use jointing compound on the threads.

Avoid twisting the hose. Adjust the hose line to ensure freedom from rubbing or trapping before tightening hose end connections.

SPARE PARTS MANUAL



FOR BEST PERFORMANCE....

USE ONLY McCONNEL SPARE PARTS

To be assured of the latest design improvements purchase your genuine replacements from the original equipment manufacturer F.W.McConnel Ltd. through your local dealer or stockist.

Always quote machine type and serial number as well as the part number.

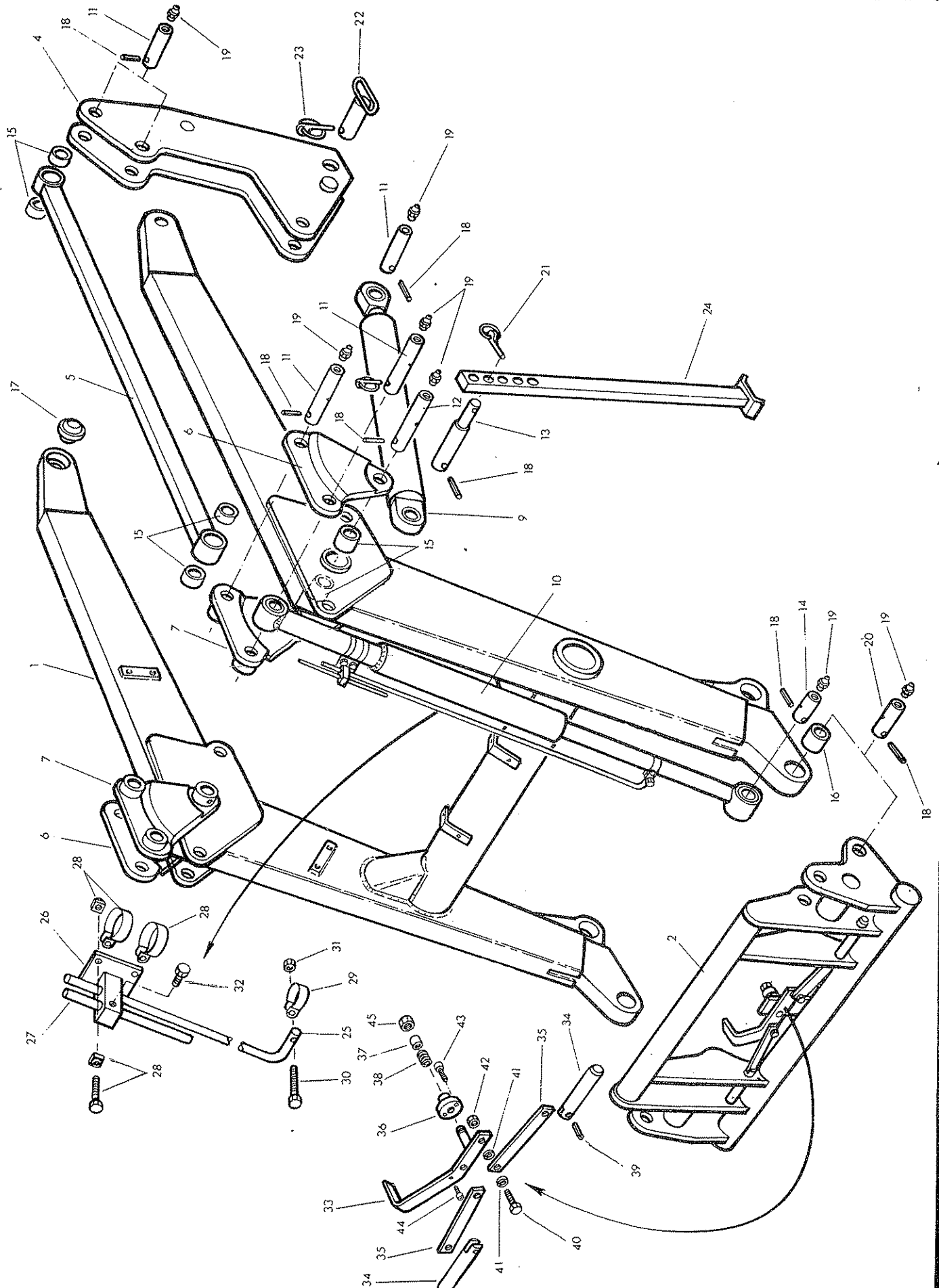
Design improvement may have altered some of the parts listed in this manual - The latest part will always be supplied when it is interchangeable with an earlier one.

Model 055

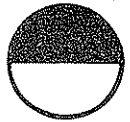
JIB, PILLAR & CARRIAGE

MCGONEL

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Telex: 35313



Model.

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Ref	Part No.	Qty	Description	
055 LOADER				
1	G381 2690	1	Jib	
2	G381 2775	1	Implement carrier	
3	G381 2692	1	Loader post R-hand - not illustrated	
4	G381 2693	1	Loader post L-hand	
5	G381 2696	2	Parallel link	
6	G381 2702	2	Parallel crank - outer	
7	G381 2701	2	Parallel crank - inner	
8	G381 2942	1	Lift ram assembly R-hand - not illustrated	} See Page 32
9	G381 2943	1	Lift ram assembly L-hand	
10	G381 2941	2	Implement ram - See page 30	
11	G381 2706	10	Pin \emptyset 30 x 90 long	
12	G381 2707	2	Pin \emptyset 30 x 117 long	
13	G381 2709	2	Pin - stepped \emptyset 30/25 x 136 long	
14	G381 2710	2	Pin \emptyset 30 x 100 long	
15	G240 0303	12	Bush	
16	G381 2104	2	Bush	
17	G381 2712	2	Jib pivot bearing	
18	04 25 840	2	Spring dowel	
19	09 01 121	2	Greaser 1/8" BSP straight	
20	G381 2708	2	Pin \emptyset 30 x 80 long	
21	04 31 406	2	Linch pin \emptyset 6	
22	G240 0277	2	Handled pin	
23	04 31 411	2	Linch pin \emptyset 11	
24	G240 0278	2	Parking leg	
25	G381 2716	1	Indicator rod	
26	G381 2717	1	Rod guide	
27	G381 2718	1	Rod - fixed	
28	G381 2719	2	Pipe clip c/w nuts and bolts	
29	G381 2745	1	Pipe clip	
30	93 13 083	1	Bolt M6 x 40	
31	91 13 003	1	Plain nut M6	
32	93 13 013	1	Setscrew M6 x 10	
33	G381 2720	1	Latch lever	
34	G240 0311	2	Latch pin	
35	G381 2721	2	Link rod	
36	G381 2722	1	Spring casing	
37	G381 2723	1	Spacer	
38	G240 0288	1	Spring	
39	04 25 820	2	Spring dowel \emptyset 8 x 20	
40	93 13 064	2	Setscrew M8 x 30	
41	91 00 104	4	Plain washer \emptyset 8	
42	91 43 004	2	Self locking nut M8	
43	93 43 014	1	Capscrew M8 x 10	
44	93 43 043	2	Capscrew M6 x 20	
45	91 43 006	1	Self locking nut M12	

SUB ASSEMBLY

G381 2113 1 Implement latch assy. Comprises items 33 - 45

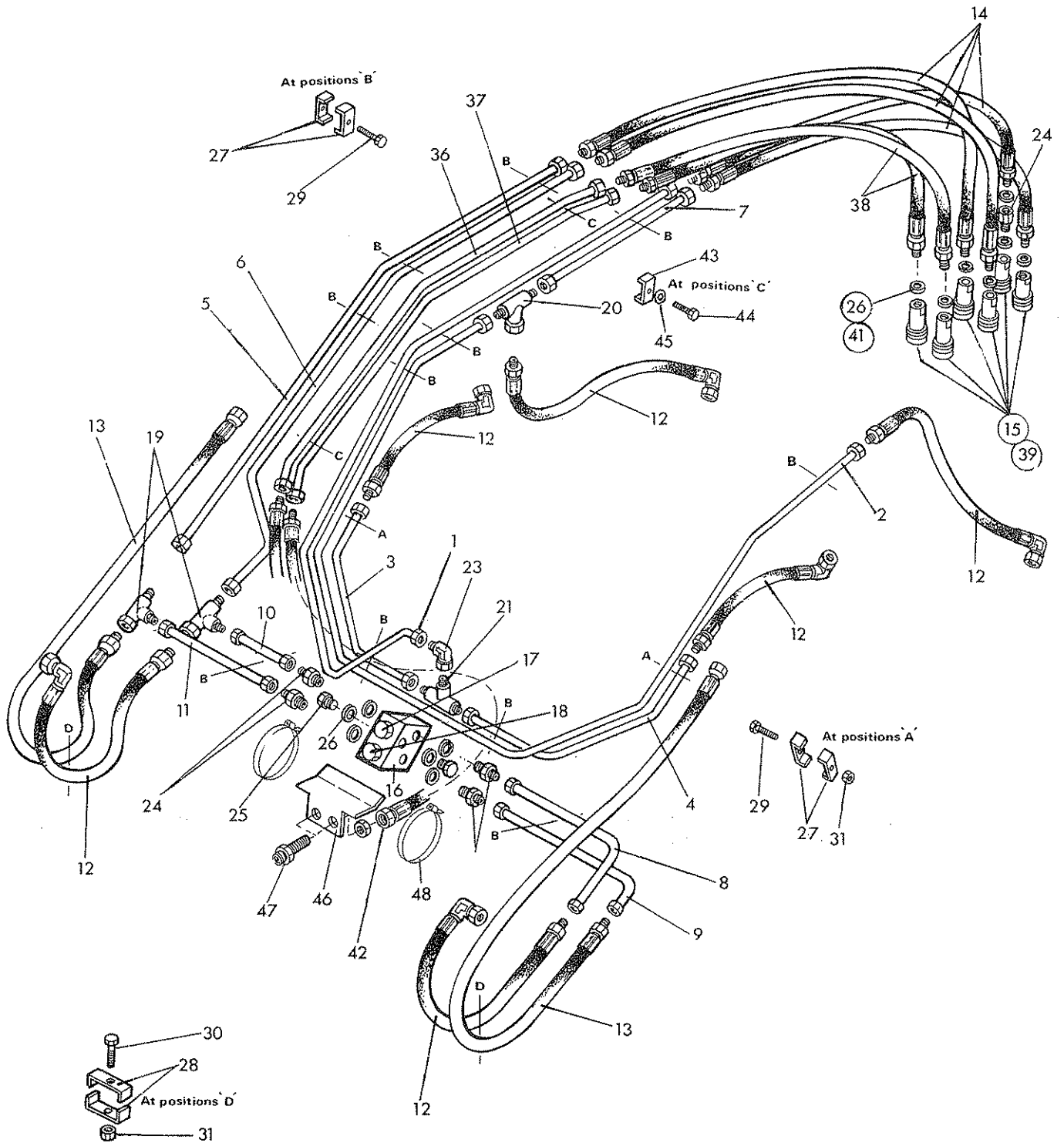
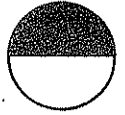
Model

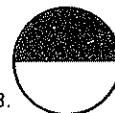
055

JIB HYDRAULIC PIPE
INSTALLATION

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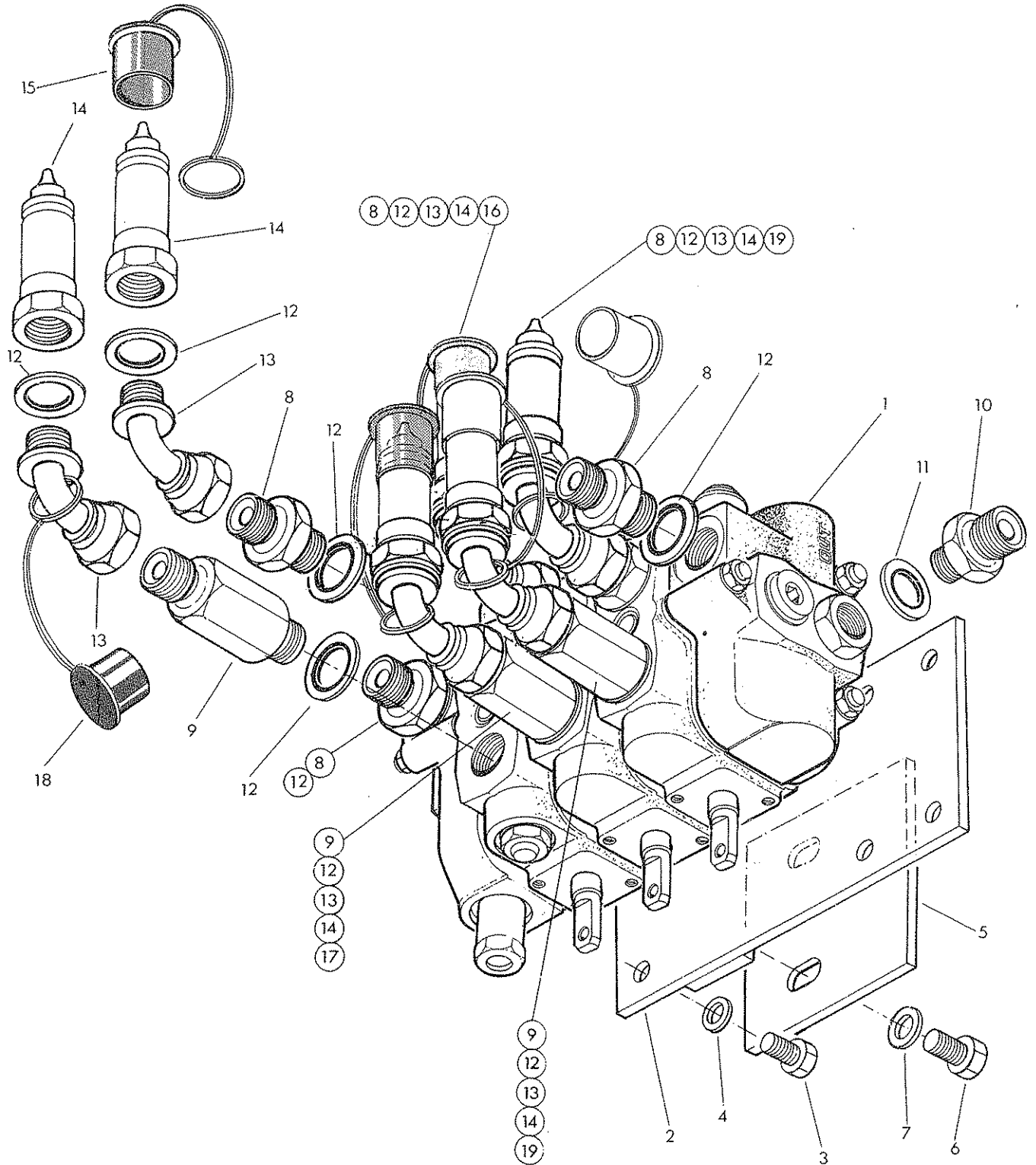
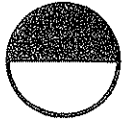
Ref.	Part No.	Qty.	Description
HYDRAULIC INSTALLATION 055 LOADER			
1	G381-2731	1	Pipe
2	G381-2732	1	Pipe
3	G381-2737	1	Pipe
4	G381-2738	1	Pipe
5	G381-2721	1	Pipe
6	G381-2730	1	Pipe
7	G381-2735	1	Pipe
8	G381-2743	1	Pipe
9	G381-2744	1	Pipe
10	G381-2741	1	Pipe
11	G381-2742	1	Pipe
12	G381-2624	6	Hose 3/8 BSP 90° F-M18 x 1.5st M x 500 long
13	G381-2725	2	Hose 3/8 BSP st F-M18 x 1.5st M x 900 long
14	G381-2729	4	Hose 1/2 BSP St M-M18 x 1.5st M x 1100 long
15	85 90 084	4	Quick release coupling -Female half
16	G241-0269	1	Relief valve block
17	G241-0281	1	Relief valve - 206Bar
18	G241-0280	1	Relief valve - 172 Bar
19	G381-2728	2	'T' piece M18 x 1.5 M-F-M
20	G381-2736	1	'T' piece M18 x 1.5 M-M-F
21	G381-2740	1	'T' piece M18 x 1.5 M-M-M
22	G381-2366	4	Adaptor 1/2 BSP-M18 x 1.5 MM
23	G381-2678	1	Elbow 90° M18 x 1.5 M-F
24	G241-0274	1	Restrictor Ø 4
25	G241-0268	2	Plug
26	86 50 104	10	Bonded seal 1/2 BSP
27	G381-2724	26	Pipe clamp
28	G381-2726	4	Hose clamp
29	93 13 053	13	Setscrew M6 x 25
30	93 13 083	2	Setscrew M6 x 40
31	91 43 003	4	Self locking nut
32	G241-0279	1	Dust plug - green-not illustrated
33	G241-0278	1	Dust plug - red " "
34	G241-0276	1	Dust plug - yellow " "
35	G241-0277	1	Dust plug - blue "' "
OPTIONAL EXTRA			
11-87-345 THIRD SERVICE PIPE KIT			
36	G381-2797	1	Upper Pipe
37	G381-2798	1	Lower Pipe
38	G381-2729	2	Hose 1/2" BSP M18 x 1.5M.M. x 1100 lg
39	85-90-084	2	Self seal coupling F
40	80 02 109	2	Dust plug -not illustrated
41	86 50 104	2	Bonded Seal 1/2" BSP
42	G381-2997	2	Hose 3/8 BSP-M18 x 23" lg
43	11 30 057	2	Pipe Clamp
44	93 13 083	2	Setscrew - M6 x 40 long
45	91 00 103	2	Plain washer Ø 6
46	G381-2996	1	Coupling Bracket
47	G381-2998	2	1/2-3/8 BSP bulkhead adaptor c/w nut
48	G381-2622	2	Jubilee Clip

Model. All

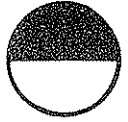
CONTROL VALVE AND FITTINGS

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Telex: 35313

REF	PART NO.	QTY		DESCRIPTION	
		2bk	3bk		
CONTROL VALVE C/W FITTINGS					
1				Control valve basic - see page 26	
2	G381-255C	1	1	Valve mounting plate	
3	93-13-034	4	4	Setscrew M8 x 16	
4	91-00-204	4	4	Spring washer \varnothing 8	
*5	G381-2342	1	1	Loader pillar mounting plate	
6	93-13-035	2	2	Setscrew M10 x 16	
7	91-00-105	2	2	Plain washer \varnothing 10	
8	85-81-110	4	5	Union $\frac{1}{2}$ " BSP M.M	
9	85-81-234	2	3	Extended union $\frac{1}{2}$ " BSP M-M	
10	85-81-110	1	1	Union $\frac{1}{2}$ " BSP M-M	
11	86-50-104	1	1	Bonded seal $\frac{1}{2}$ " BSP	} pressure carry over if fitted.
12	86-50-104	10	14	Bonded seal $\frac{1}{2}$ " BSP	
13	85-81-215	4	6	Swept elbow $\frac{1}{2}$ " BSP MF	
14	85-90-074	4	6	Self Seal coupling - Male half	
15	G241-0454	1	1	Dust cap - Blue	
16	G241-0455	1	1	Dust cap - Green	
17	G241-0456	1	1	Dust cap - Red	
18	G241-0431	1	1	Dust cap - Yellow	
19	80-02-108		2	Dust cap - Black	- third service

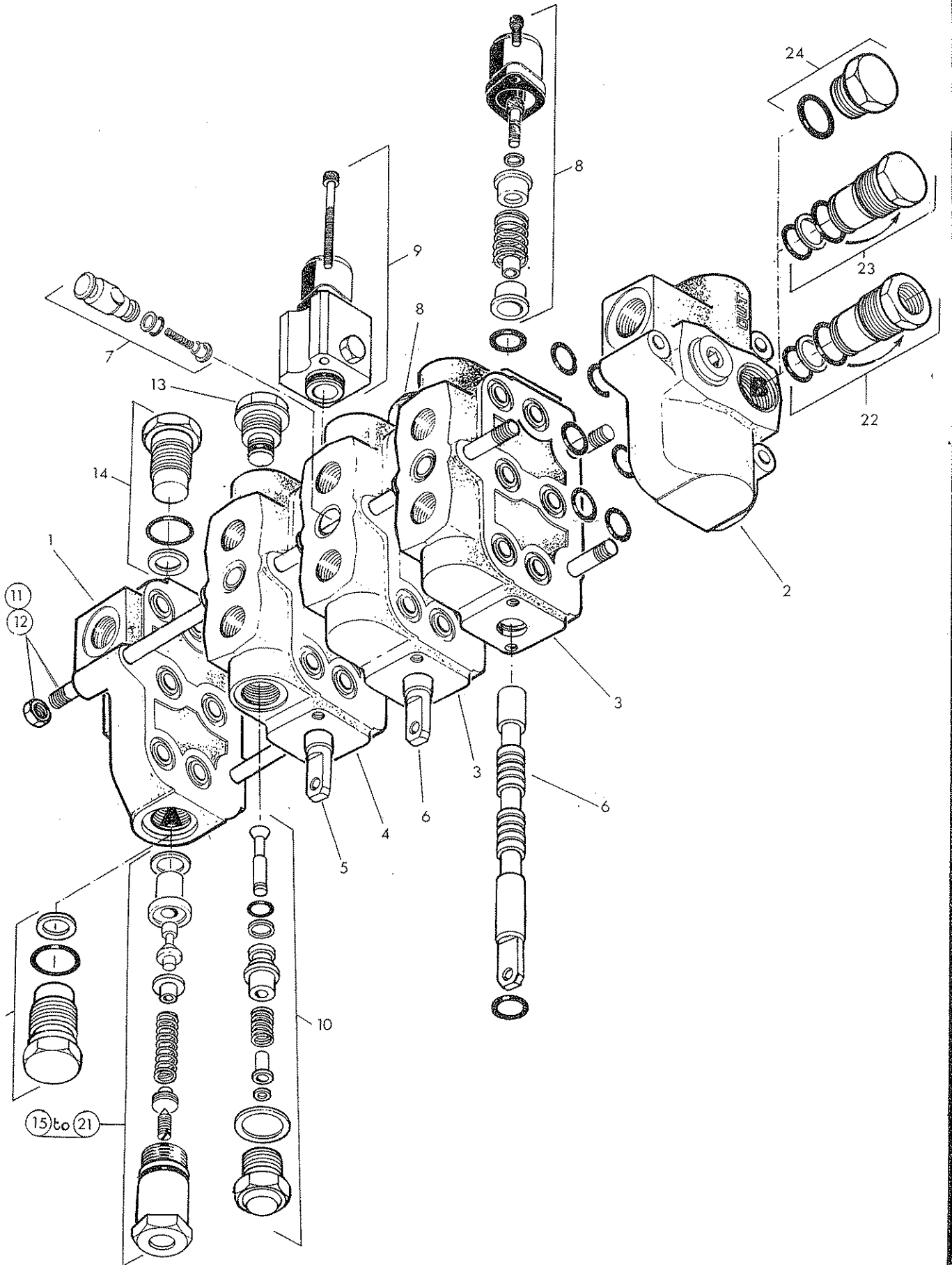
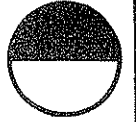
* Assembly note - Supplied with all machines but may be discarded where loader pillar has weld on mounting plate.

Model. All

CONTROL VALVE - Basic

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Model.

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Telephone: Ludlow (0584) 3131
Telex: 35313

REF	PART NO.	QTY 2bk	QTY 3bk	DESCRIPTION
HYDRAULIC CONTROL VALVE - BASIC				
1	81-28-024	1	1	Inlet Section
2	81-28-042	1	1	Outlet Section
3	81-28-061	1	2	Valve block - implement & 3rd service
4	81-28-059	1	1	Valve block - Lift
5	81-28-060	1	1	Valve spool - Lift
6	81-28-062	1	2	Valve spool - implement & 3rd service
7	81-28-023	2	3	Check valve
8	81-30-134	1	2	Spring centring Kit
9	81-30-084	1	1	Float detent Kit
10	81-28-053	1	1	Anti cavitation valve
11	81-28-056	1		Tie bolt kit 2 bank
12	81-28-057		1	Tie bolt kit 3 bank.
13	81-28-051	1	1	Outlet blanking plug c/w seals
14	81-30-056	1	1	Blanking plug and sealing washer

Variables at Position 'A'

15	G381-2537	1	1	Relief Valve assembly 2000 psi (140 Bar)
16	G381-2538	1	1	Relief Valve assembly 2150 psi (150 Bar)
17	G381-2539	1	1	Relief valve assembly 2300 psi (160 Bar)
18	G381-2540	1	1	Relief valve assembly 2450 psi (170 Bar)
19	G381-2541	1	1	Relief valve assembly 2600 psi (180 Bar)
20	G381-2542	1	1	Relief valve assembly 2750 psi (190 Bar)
21	81-30-056	1	1	Relief valve blanking plug and seal

Variables at Position 'B'

22	G381-2529	1	1	Pressure carry over adaptor c/w seals
23	G381-2531	1	1	'Closed' centre blanking plug c/w seals
24	G381-2530	1	1	Open centre blanking plug c/w seals

86-99-204

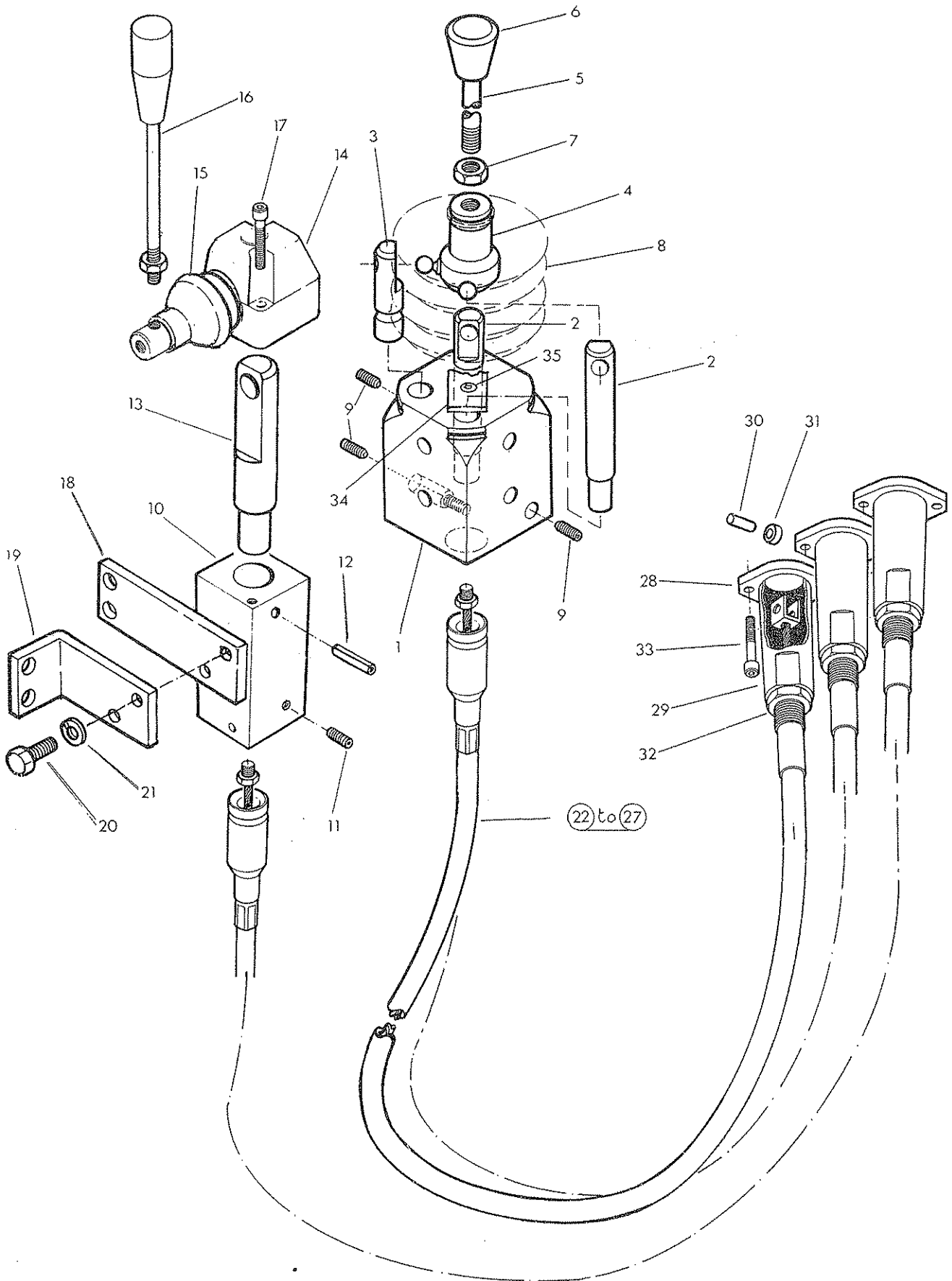
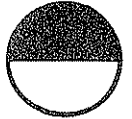
VALVE SEAL KIT

Model. All

CONTROL UNITS AND
CABLES

MCCOMEL

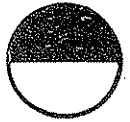
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Model.

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REF PART NO. QTY DESCRIPTION

CONTROL UNITS AND CABLES

G381-2523 CONTROL UNIT - Lift and implement

1	G241-0620	1	Control block
2	G241 0622	2	Spindle
3	G241-0624	1	Rocker Pivot
4	G241-0621	1	Lever
5	G241-0626	1	Handle
6	G381-2514	1	Knob
7	91-33-005	1	Locknut N110
8	G381-2524	1	Weather gaiter
9	G*01-0137	3	Grubscrew M5 x 12

G381-2519 CONTROL UNIT - Third Service

10	G241-0625	1	Control block
11	G101-0137	1	Grubscrew M5 x 12
12	04-25-540	1	Spring dowel ϕ 5 x 40
13	81-30-053	1	Spindle
14	81-30-107	1	Lever pivot box c/w gaiter
15	81-30-106	1	Weather gaiter
16	G381-2511	1	Handle c/w knob and locknut
17	92-43-082	2	Capscrew M5 x 40
<input checked="" type="checkbox"/> 18	G381-2547	1	Mounting Bracket
<input checked="" type="checkbox"/> 19	G381-2642	1	Mounting Bracket
20	93-13-044	2	Setscrew M8 x 20
21	91-00-204	2	Spring Washer ϕ 8

Installation note

These items are alternatives to suit different mounting installations.

CABLES

22	G241-0632		Cable assembly 2.75 M c/w flange etc
23	G241-0630		Cable assembly 2.5M c/w flange etc.
24	G241-0631		Cable assembly 2.25 M c/w flange etc.
* 25	80-17-003		Cable assembly 2.0 M c/w flange etc.
26	G241-0628		Cable assembly 1.75 M c/w flange etc.
27	G241-0627		Cable assembly 1.5 M c/w flange etc.

Items 28 to 32 inclusive are common to all 'Bowden cable assemblies

28	81-25-050	1	Flange
29	71-15-162	1	Sleeve
30	71-15-160	1	Pin
31	71-15-158	1	Spacer
32	01-31-006	1	Thin locknut 5/8 UNF
33	93-43-032	2	Socket headed capscrew M5 x 16

* Spares Note

An alternative cable assembly may be fitted depending on supply availability. The complete assembly is interchangeable and thus retains the same part number. Individual cable components are not interchangeable, thus before ordering spares the cable must be correctly identified.

The cable listed above is manufactured by 'BOWDEN' and in BLACK.

The alternative cable manufactured by "TELEFLEX MORSE" is RED and consists of -

28	81-25-050	1	Flange
29	81-25-049	1	Sleeve
30	80-17-005	1	Pin
31	80-17-004	1	Spacer
32	91-00-016	1	Thin locknut M16 x 1.5 pitch.

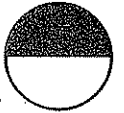
34	G381-2855	1	Guide plate
35	93 53 022	1	C/sunk s/screw M5 x 12

Model

O55

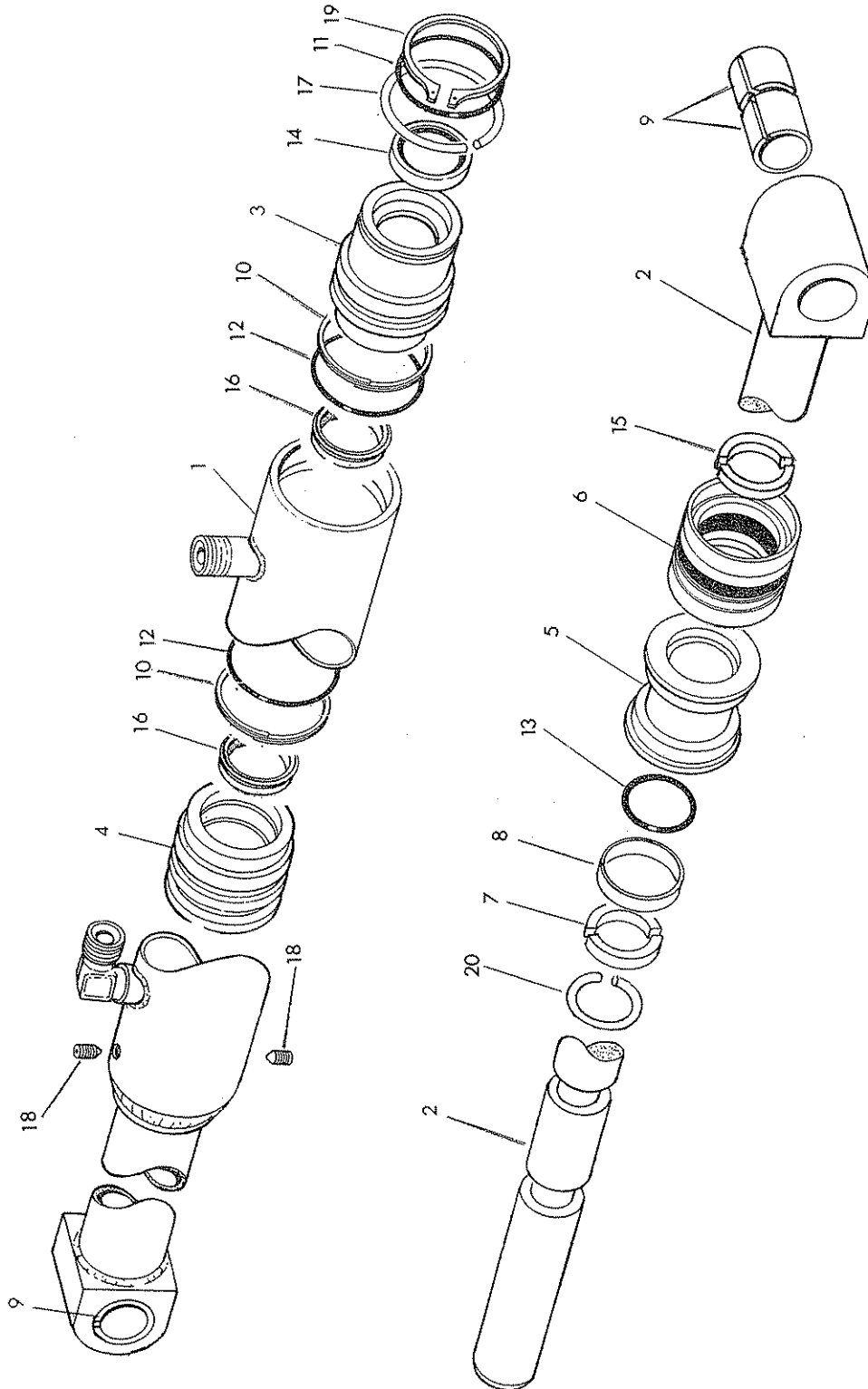
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IMPLEMENT RAM

FROM BUILD NO 100 000



For rams pre serial No 100,000 see page 38

Model

055

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**IMPLEMENT RAM**

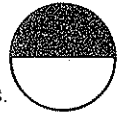
FROM BUILD NO. 100 000

Ref.	Part No.	Qty.	Description
	G381-2941		IMPLEMENT RAM
1	G381-2966	1	Barrel
2	G381-2967	1	Piston rod
3	G381-2968	1	Gland housing
4	G381-2969	1	Gland housing
5	G381-2970	1	Piston
6	G381-2971	1	Stop ring
7	G381-2971	1	Stop ring
8	G381-2973	1	Rod guide
9	G381-2953	4	Bush
10	G381-2957	2	Anti ext. ring
11	G381-2954	1	'O' ring
12	G381-2955	2	'O' ring
13	G381-2956	1	'O' ring
14	G381-2958	1	Wiper seal
15	G381-2959	1	Piston seal
16	G381-2960	2	Rod seal
17	G381-2962	1	Circlip
18	G381-2974	2	Grubscrew
19	G381-2963	1	Circlip
20	G381-2975	1	Circlip
	G381-2946		SEAL KIT

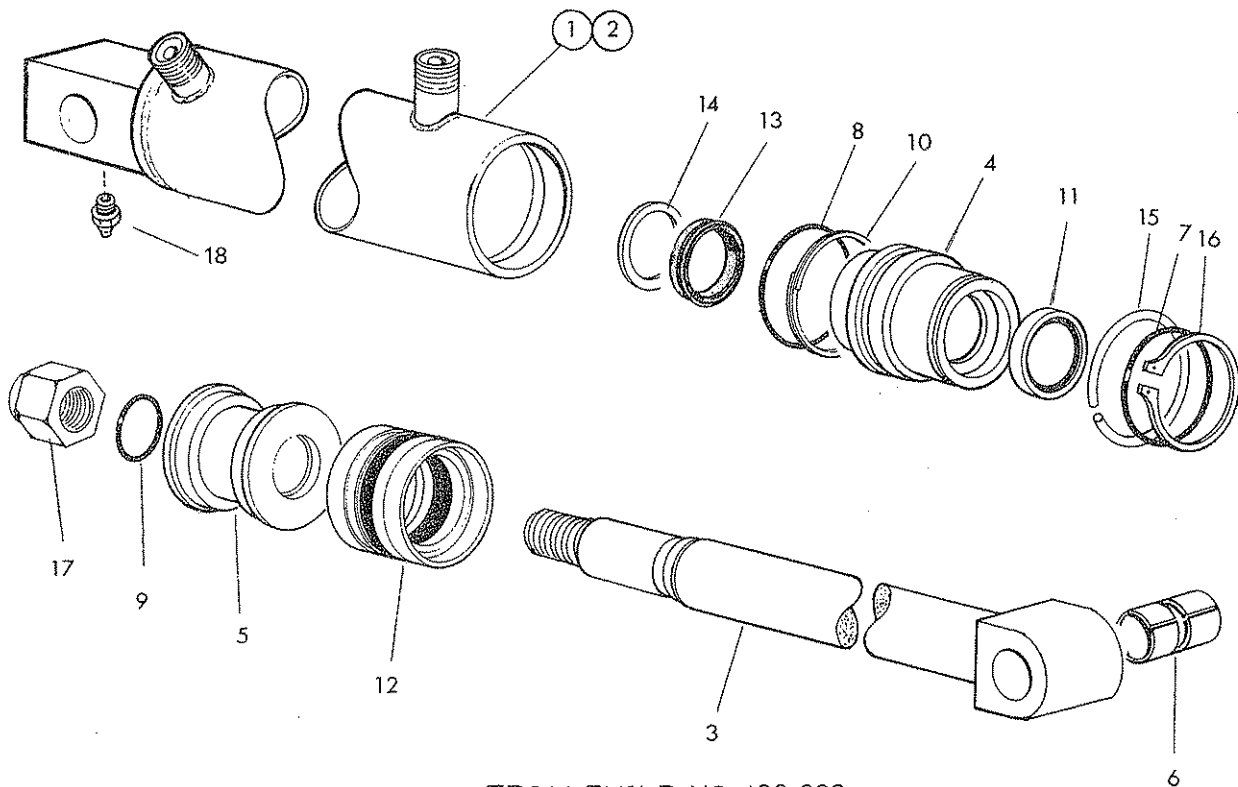
Model 055

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LIFT RAM



FROM BUILD NO 100 000

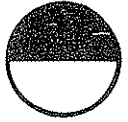
Ref.	Part No.	Qty.	Description
	G381-2943		LIFT RAM ASSEMBLY - L.Hand
1	G381-2949	1	Ram Barrel L.Hand
	G381-2942		LIFT RAM ASSEMBLY - R.Hand
2	G381-2948	1	Ram barrel R. Hand

The following items are common to both lift ram assemblies.

3	G381-2950	1	Piston rod
4	G381-2951	1	Gland housing
5	G381-2952	1	Piston
6	G381-2953	2	Bush
7	G381-2954	1	O ring
8	G381-2955	1	O ring
9	G381-2956	1	O ring
10	G381-2957	1	Anti-extrusion ring
11	G381-2958	1	Wiper seal
12	G381-2959	1	Piston seal
13	G381-2960	1	Rod seal
14	G381-2961	1	Seal
15	G381-2962	1	Circlip
16	G381-2963	1	Circlip
17	G381-2964	1	Nut
18	G381-2965	1	Greaser

G381-2947 SEAL KIT

For rams pre serial No 100,000 see page 40

Model.**McCONEL**Registered office: Temeside Works,
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Telephone: Ludlow (0584) 3131
Telex: 35313**BUCKETS - General**

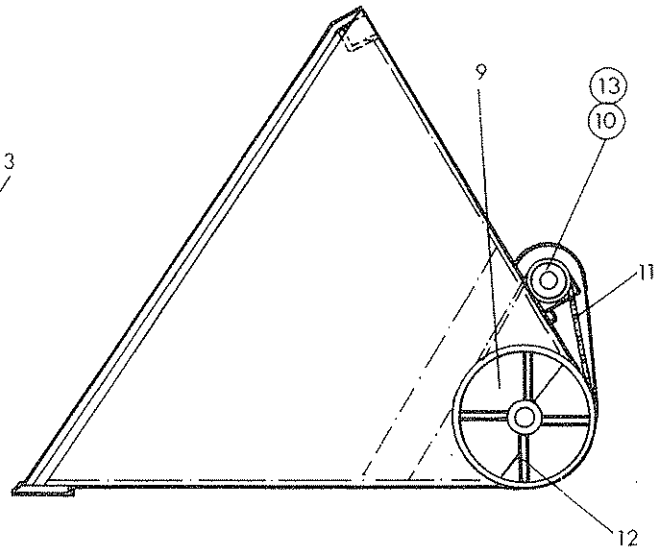
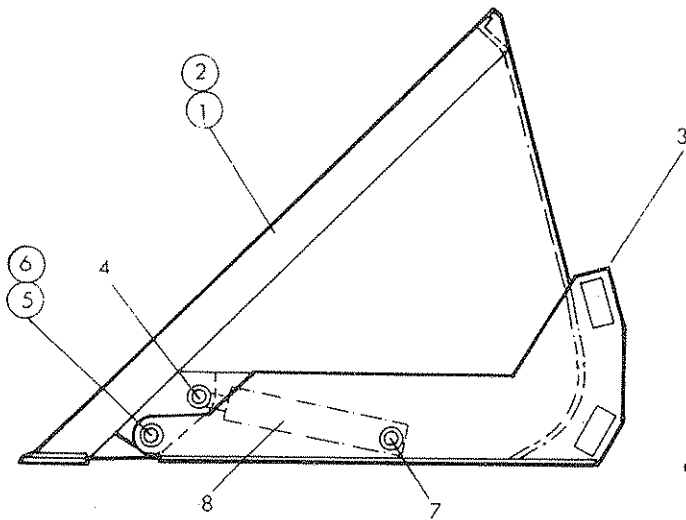
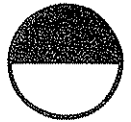
Part No.	Qty	Description
11 87 258		38" DIGGING BUCKET
G381 0665	1	Weld on cutting edge L. Hand
G381 0666	1	Weld on cutting edge R. Hand
11 87 259		48" DIGGING BUCKET
G381 0246	1	Weld on cutting edge
11 87 322		48" DIGGING BUCKET with TEETH
10 11 11	6	Tooth
G101 0114	12	Plough bolt 3/8 BSW
01 44 003	12	Self locking nut 3/8 BSW
11 87 260		58" DIGGING BUCKET
G381 0206	2	Weld on cutting edge
11 87 308		58" DIGGING BUCKET with TEETH
10 11 11	8	Tooth
G101 0114	16	Plough bolt 3/8 BSW
01 44 003	16	Self Locking nut 3/8 BSW
11 87 253		65" BEET BUCKET
347 11	3	Skid Pads
93 13 056	6	Setscrew M12 x 25
91 00 206	6	Spring washer Ø 12
347 3 1	20	Weld on tine points
11 87 277		71" CONTRACTORS BUCKET
G381 0691	1	Cutting Blade
G101 0117	12	Ploughbolt 5/8 UNC x 1 7/8 long
01 42 006	12	Self locking nut 5/8 UNC
11 87 302		71" LIGHT MATERIALS BUCKET
G381 0762	2	Weld on blade
11 87 330		75" SLURRY BUCKET
G381 2823	1	Weld on blade
11 87 331		75" POTATO BUCKET
G381 2823	1	Weld on blade
11 87 261		79" BULK MATERIALS BUCKET
G381 0611	1	Weld on blade
11 87 328	1	80" SALT BUCKET
G381 2824	1	Weld on blade
11 87 254		80" BEET BUCKET
347 11	3	Skid Pads
93 13 056	6	Setscrew M12 x 25
91 00 206	6	Spring washer Ø 12
347 3 1	22	Weld on tine points

Model.

BUCKETS - Specialised

MCCONEL

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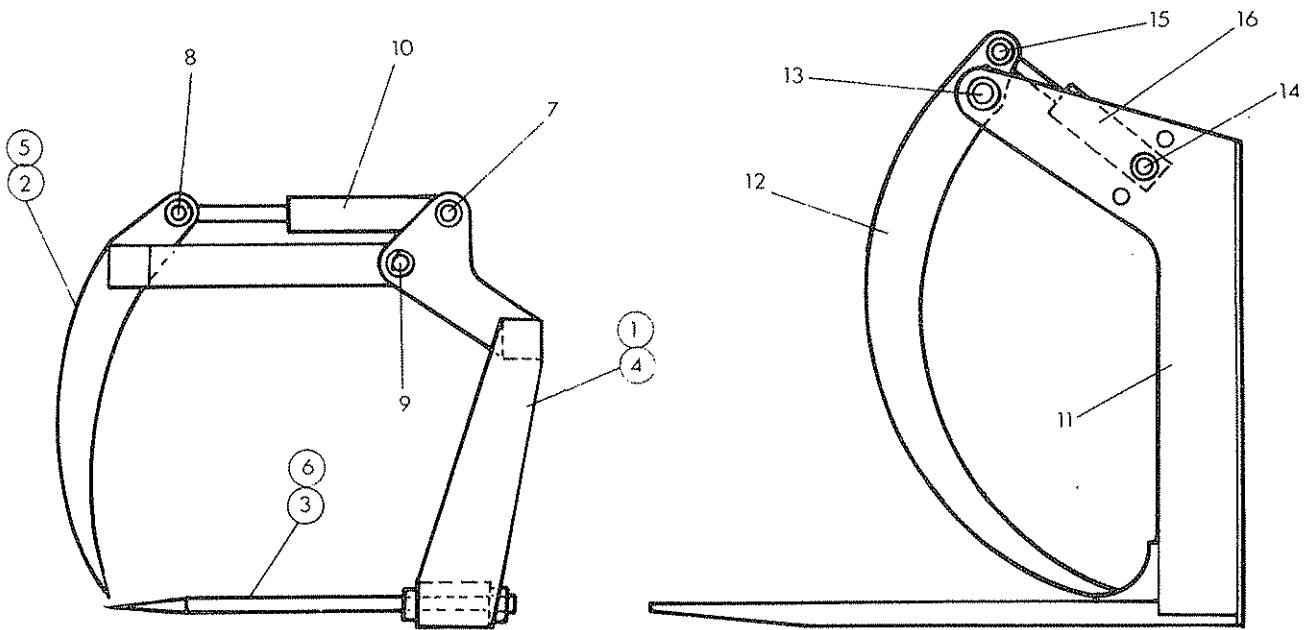
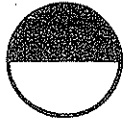
Ref	Part No.	Qty.	Description
1	11 87 332 11 87 334	1	72" HI TIP BULK BUCKET Bucket Shell
2	11 87 333 11 87 335	1	72" HI TIP BEET BUCKET Bucket Shell
Items 3-8 inclusive are common to both Hi - Tip buckets.			
3	G381 2825	1	Cradle frame
4	G381 2827	2	Pivot pin - ramrod
5	G381 2828	2	Pivot pin - bucket
6	G381 2830	2	Bush - bucket pivot
7	G381 2829	2	Pivot pin - ram base
8	G381 2826	2	Ram
	G381 2844		RAM SEAL KIT
	11 87 336		AUGER FEED BUCKET
9	G381 2831	1	Auger
10	G381 2832	1	Hydraulic Motor
11	G381 2833	1	Chain
12	G381 2834	1	Cutter
13	G381 2835	1	Upper sprocket
14	G381 2836	1	Lower Sprocket - not illustrated
	G381 2854		HYDRAULIC MOTOR SEAL KIT
	380 154 136		5/8 CU YD DOUBLE 4 MULTI PURPOSE BUCKET See separate booklet for spares

Model.

GRABS

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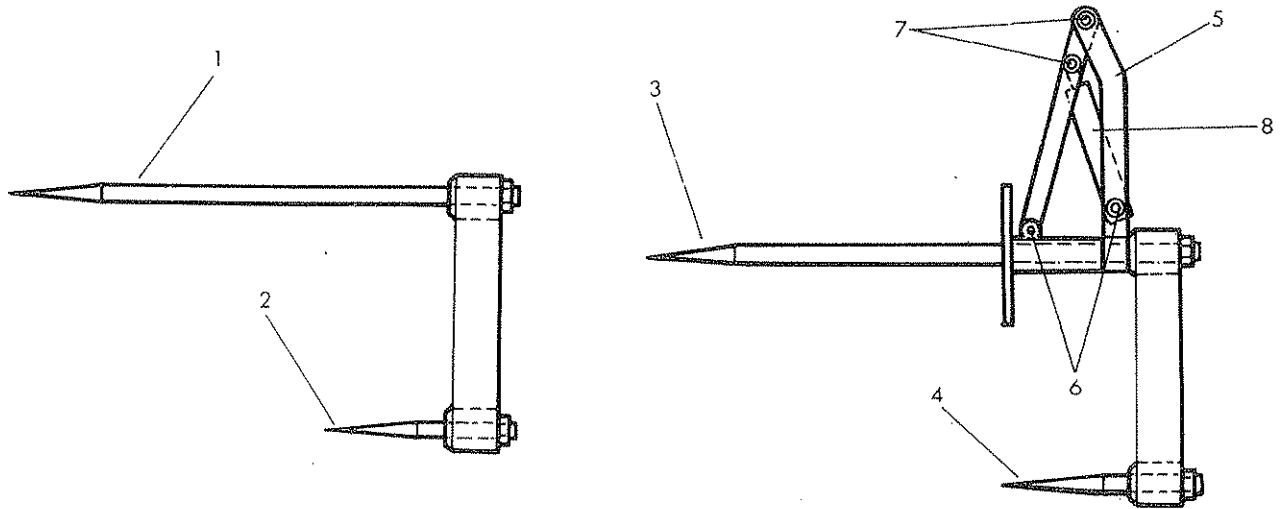
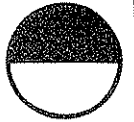
Ref	Part No	Qty	Description
	11 87 337		45" SILAGE GRAB
1	G381 2845	1	frame
2	G381 2846	1	Grab
3	G381 2848	6	tine c/w nut
	11 87 257		55" SILAGE GRAB
4	G381 2852	1	frame
5	G381 2853	1	Grab
6	G381 2848	7	Tine c/w nuts
Items 7 - 10 inclusive are common to both silage grabs			
7	G381 2849	2	Pivot pin - ram base
8	G381 2851	2	Pivot pin - ram rod
9	G381 2850	2	Pivot pin - clamp
10	G381 2847	2	Ram
	G381 2844		RAM SEAL KIT
	11 87 338		LOG GRAB
11	G381 2837	1	Frame
12	G381 2838	4	Grab
13	G381 2840	2	Pivot pin - grab
14	G381 2841	2	Pivot pin - ram base
15	G381 2842	2	Pivot pin - ram rod
16	G381 2839	2	Ram
	G381 2843		RAM SEAL KIT

Model.

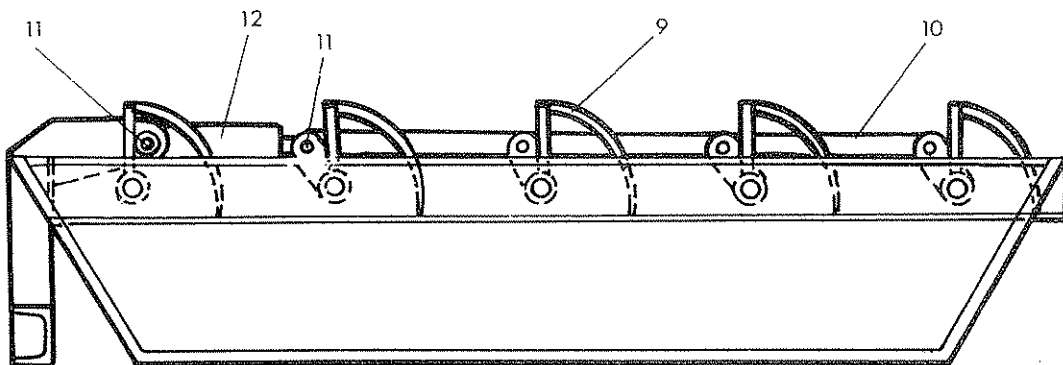
BALE HANDLING

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Ref	Part No.	Qty.	Description
	11 87 264		ROUND BALE SPIKE
1	G381 2805	1	Main tine c/w nut
2	G381 2806	1	Stabiliser tine c/w nut
	11 87 340		ROUND BALE SPIKE c/w PUSH OFF
3	G381 2807	1	Main tine c/w nut
4	G381 2808	1	Stabiliser tine
5	G381 2809	1	Push off linkage
6	G381 2810	2	Pivot pin - ram base and slider
7	G381 2812	2	Pivot pin - ram rod and linkage pivot
8	G381 2811	1	Ram
	G381 2813		RAM SEAL KIT



	11 87 341		FLAT 8 BALE GRAB
9	G381 2815	To Suit	Claw - weld on
10	G381 2817	1	link arm
11	G381 2816	4	Pivot pin
12	G381 2814	1	Ram
	G381 2818		RAM SEAL KIT

Model.

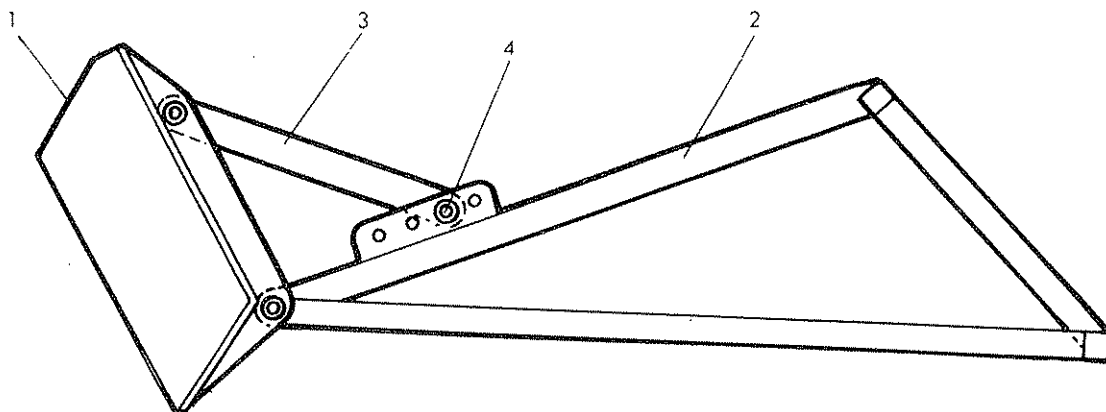
MISCELLANEOUS

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Part No	Qty	Description
MISCELLANEOUS		
11 87 251		39" MANURE FORK
G381 2097	6	Bottom tine c/w nuts
G381 0199	2	Side tine
03 12 053	2	Setscrew 3/8 UNC x 5/8 long
11 87 252		53" MANURE FORK
G381 2097	8	Bottom tine c/w nuts
G381 0199	2	Side tine
03 12 053	2	Setscrew 3/8 UNC x 5/8 long
11 87 269		BULK BAG LIFTER
11 87 270		CRANING JIB
G381 0332	1	Jib
380 97	1	Hook
320 7	1	Pin
04 31 217	1	Linch Pin
11 87 271		68" DOZER BLADE - non angling



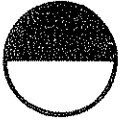
Ref	Part No	Qty	Description
	11 87 343		78" GRAIN PUSHER
1	G381 2819	1	Blade
2	G381 2820	1	Frame
3	G381 2821	2	Angling link
4	G381 2822	2	Link pin

Model. O55

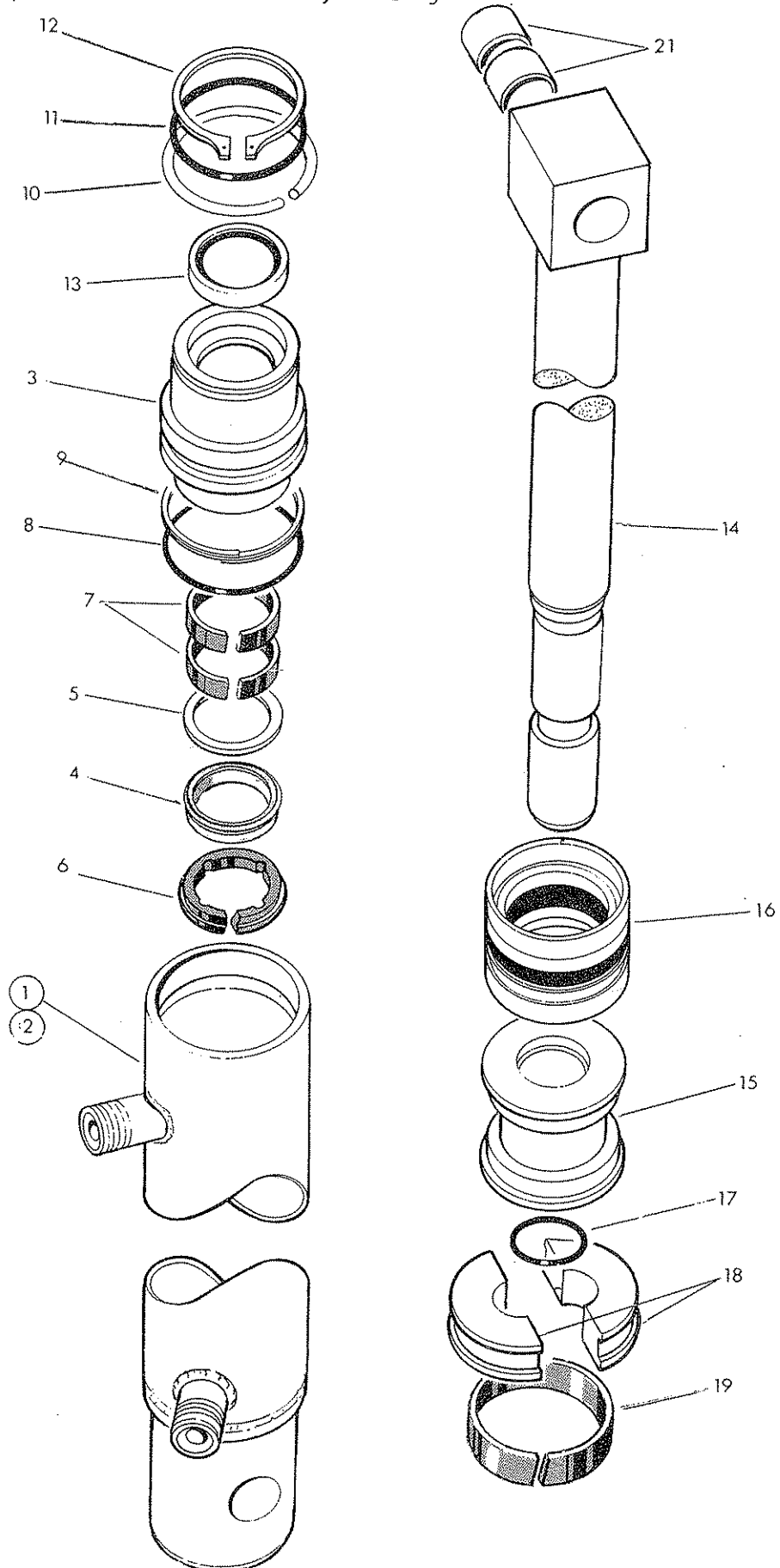
LIFT RAM

McCONEL

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For machines prior to Serial No 100,000 only



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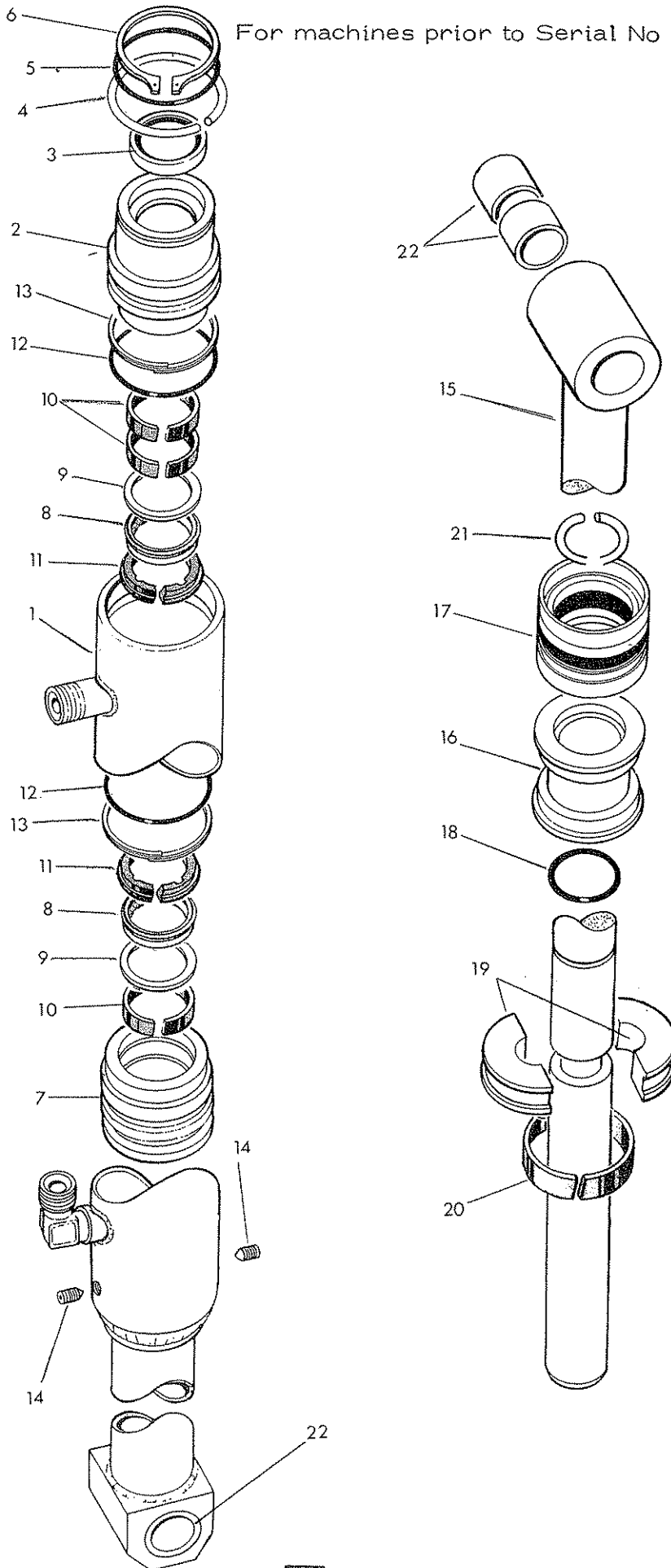
Ref .	Part No.	Qty.	Description.
	G381-2778		LIFT RAM ASSEMBLY - L. Hand
1	G381-2757	1	Ram Barrel L. Hand
	G381-2777		LIFT RAM ASSEMBLY - R Hand.
2	G381-2756	1	Ram barrel R Hand - not illustrated

The following items are common to both lift ram assemblies.

3	G381-2782	1	Gland Housing
4	G381-2768	1	Gland Seal
5	G381-2769	1	Back up ring
6	G381-2771	1	Plastic internal circlip
7	G381-2766	1	Rod guide
8	G381-2784	1	'O' ring
9	G381-2785	1	Anti extrusion ring
10	G381-2781	1	Internal circlip - sprung wire
11	G381-2783	1	'O' ring
12	G381-2780	1	External circlip
13	G381-2765	1	Wiper Seal
14	G381-2779	1	Ram Rod
15	G381-2788	1	Piston
16	G381-2789	1	Piston Seal - 5 piece
17	87-00-779	1	'O' ring
18	G381-2791	1	Split collet
19	G381-2790	1	Piston guide ring
20	G381-2762	1	Greaser
21	G240-0303	2	Bush - rod end
	G381-2792		SEAL KIT.



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Ref.	Part No.	Qty.	Description.
	G381-2776		IMPLEMENT RAM
1	G381-2794	1	Ram barrel
2	G381-2782	1	Gland housing - red end
3	G381-2765	1	Wiper Seal
4	G381-2781	1	Internal circlip - sprung wire
5	G381-2783	1	'O' ring
6	G381-2780	1	External circlip
7	G381-2795	1	Gland housing - base end
8	G381-2768	2	Gland seal
9	G381-2769	2	Back up ring
10	G381-2766	3	Rod Guide
11	G381-2771	2	Plastic internal circlip
12	G381-2784	2	'O' ring
13	G381-2785	2	Anti extrusion ring
14	93-00-110	2	Grub screw M6 x 6
15	G381-2793	1	Ram rod
16	G381-2788	1	Pistern
17	G381-2789	1	Pistern seal - 5 piece
18	87-00-779	1	'O' ring
19	G381 2791	1	Split collet
20	G381-2790	1	Pistern guide ring
21	G381-2772	1	Snap ring - 2 piece
22	G240-0303	4	Bush
	G381-2774		SEAL KIT



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