

**SPARE PARTS MANUAL  
FOR**

**POWER  
ARM 6**



*Handwritten notes:*  
Work  
M. Miller  
Le...





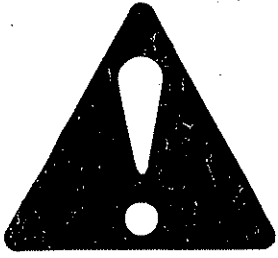
SAFETY PRECAUTIONS

NEVER

- ... Permit inexperienced personnel to operate machine without supervision.
- ... Lift the machine on the tractor linkage unless the main arm is centralized.
- ... Stand near the digger feet when the machine is raised on the tractor linkage.
- ... Stand under a raised load.
- ... Grasp Hy-fi operating lever when mounting machine.

ALWAYS

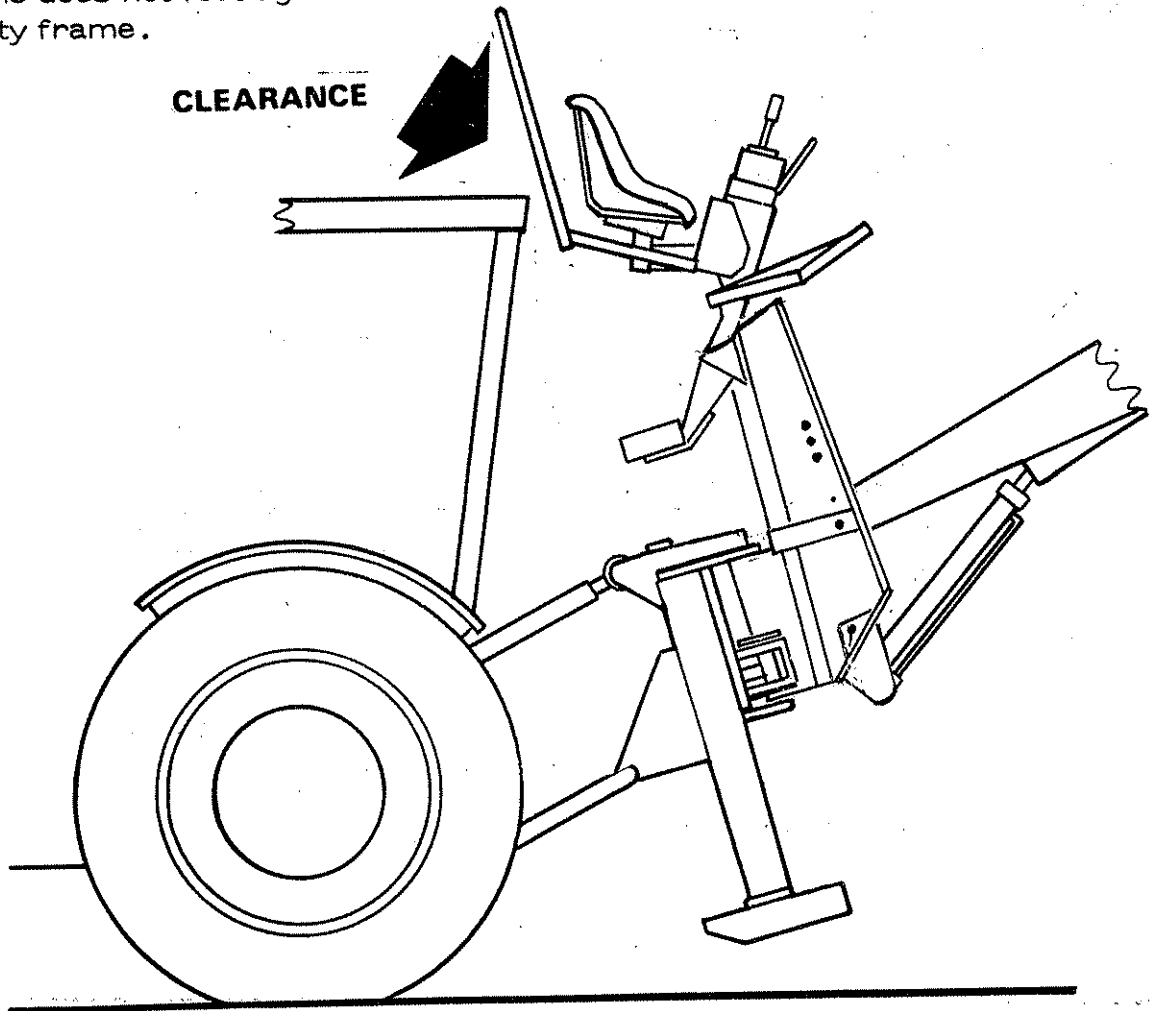
- ... Adjust tractor wheel widths for maximum stability and add front end weight as required.
- ... Adjust legs to level machine on uneven surfaces.
- ... When loading if possible grab material from the side of the machine and discharge to the rear.
- ... Reverse straight up a steep bank.
- ... Make sure that no hoses are trapped, pinched or chafed when the machine is operated.
- ... Lower the machine to the ground on the hydraulic linkage when not in use.
- ... In transport, centralize the main arm and secure the slewing column with the transport lock, particularly on public highways.
- ... Use the Hy-fi grab rail as a hand hold when getting on or off the machine.
- ... Re-check cab clearance after making any alterations or adjustments to the tractor linkage.
- ... Use at least one stabilizer bar.



# **WARNING**

**FAILURE TO OBSERVE THE FOLLOWING PRECAUTIONS  
COULD RESULT IN A FATAL INJURY TO THE OPERATOR.**

Before attempting to use the machine from the operators seat, fully raise the machine on the tractors hydraulic linkage and check that the cab clearance frame does not foul against the cab roof or rear cross-member of the tractor safety frame.



If after adjustment of the top link, the clearance frame still fouls any part of the tractor cab structure then the machine must not be used on that tractor.

Note: On some models of safety cab the roof section and support can be removed without violating the cab safety certificate. Check with your tractor dealer that this can be done if necessary to obtain clearance.

## Section 2.

### FITTING INSTRUCTIONS

#### 1. Tractor Preparation

##### (a) Ballast

For increased stability wheels should be spaced out as far as is practicable and additional front end weight added to tractor.

##### (b) Top Hitch

It is advisable wherever possible to attach the tractor top link to a fixed or 'dead' pin position on the tractor. The 'draft control' rocker should be locked and/or the tractor hydraulic controls should be positioned to 'ZERO DRAFT' to prevent operation of the draft control mechanism while working.

##### (c) Linkage Pins

Cat.I pins only are fitted. Sleeves for conversion to Cat.II are supplied, wired to machine.

##### (d) Drop Arms

To avoid need for frequent adjustment of the linkage levelling box when working on uneven ground, set the tractor drop arms to 'float' position when possible.

#### 2. Fitting Power Arm to tractor

##### WARNING

The lifting sling and packing straps should not be removed until the machine has been attached to the tractor.

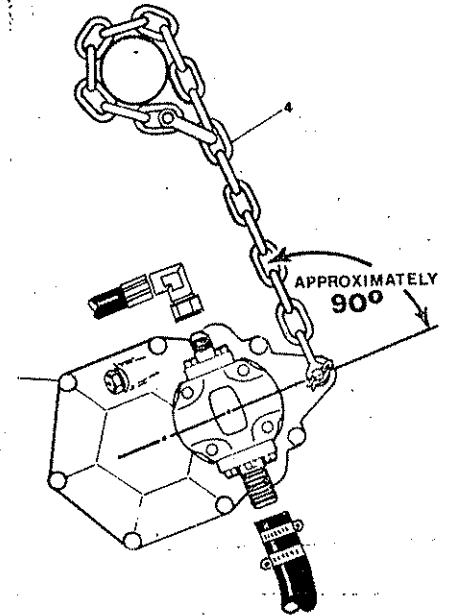
- (a) Cut free all packing wire, set independent weight transfer lever (I.W.T.) to transport position and lower weight transfer arms to full extent.
- (b) Prepare linkage pins for Cat.I or Cat.II as required.
- (c) Connect tractor draft links to linkage pins using an adjustable stabilizer bar when stabilizer chains are not fitted.

Note: For shipment purposes, the adjustable legs are fully retracted and therefore it may sometimes be difficult to lower the draft links sufficiently. Standing the machine on a stout piece of timber can facilitate assembly.

- (d) Install top link with reference to advice given in 'Tractor Preparation'.

- (e) Fit hydraulic pump unit to tractors p.t.o. shaft ensuring locking collar is correctly engaged. Secure torque chain around the top link as shown in diagram.

- (f) Connect pressure hose with the 90° fitting to the output side of the pump and the large bore suction hose to the inlet port. Secure suction hose with two clips at each end. Do not use jointing compound. Prime suction hose before connection to the reservoir.
- (g) Engage p.t.o. drive and allow pump to work under no load for 10- 15 minutes with engine at high idle before proceeding.



- (h) Remove lifting sling and packing strips and by operating the control levers extend and fit the lift ram and reach ram rod pins in this order.

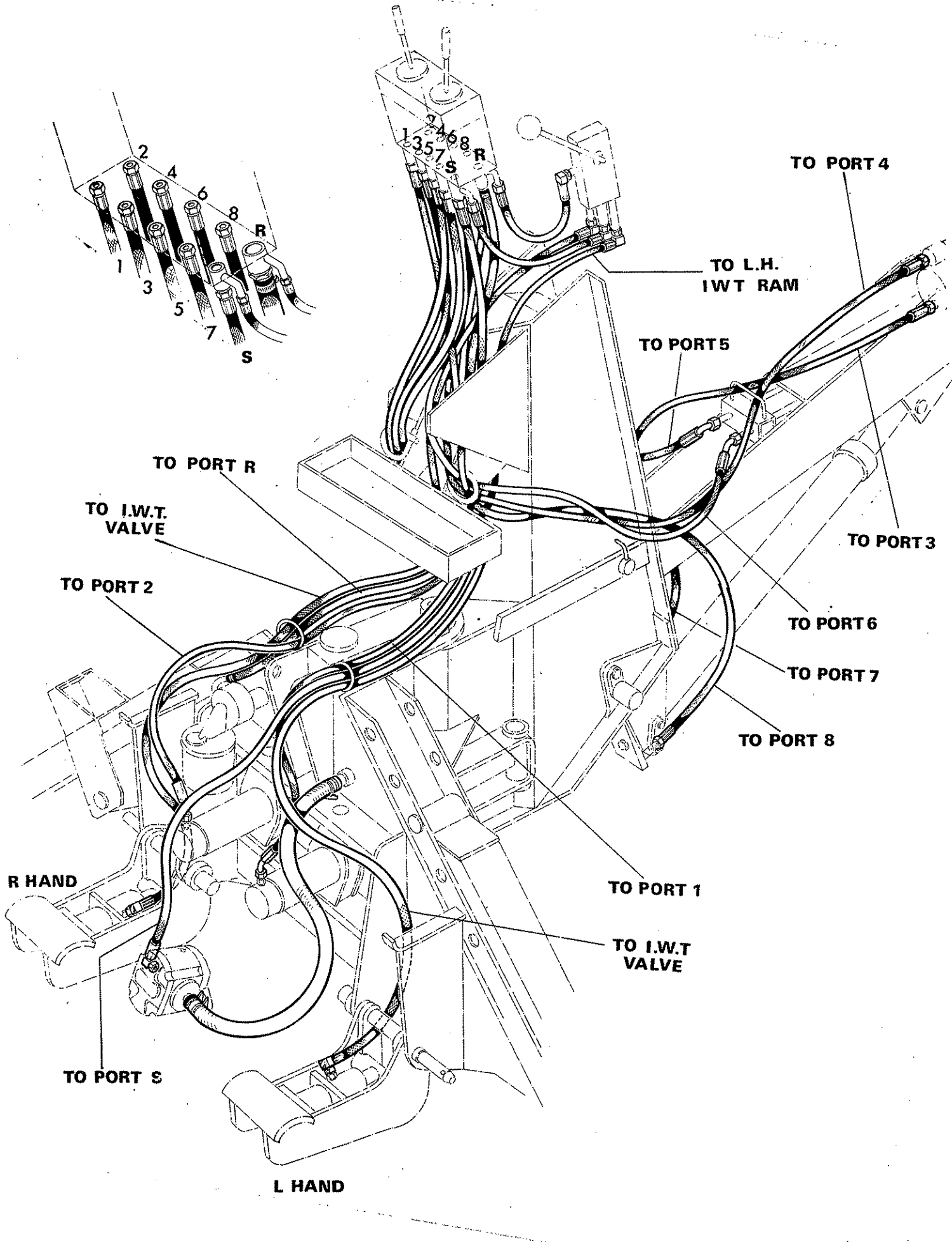
### 3. Functional Check

- (a) Operate machine throughout its work cycle to bleed all air out of the system and check that no hoses are being frayed, trapped, stretched or kinked in any way.
- (b) Check levers for correct operation. They are colour ringed to match the colour bands on the rams.
- (c) Operate the tractor hydraulic lift lever and fully raise the power arm on the tractor linkage. The cab clearance frame must not foul against the cab roof or rear cross member of the tractors safety frame. Adjustment of the top link will affect the clearance. This only applies when a tractor is fitted with a cab or safety frame.
- (d) Close reach and main arms to transport position and check that the oil level is visible in the sight tube - the reservoir should not be over-filled. (See maintenance instructions)
- (e) Every effort is made during manufacture and assembly to ensure that dirt and swarf are not allowed to contaminate the hydraulic system.

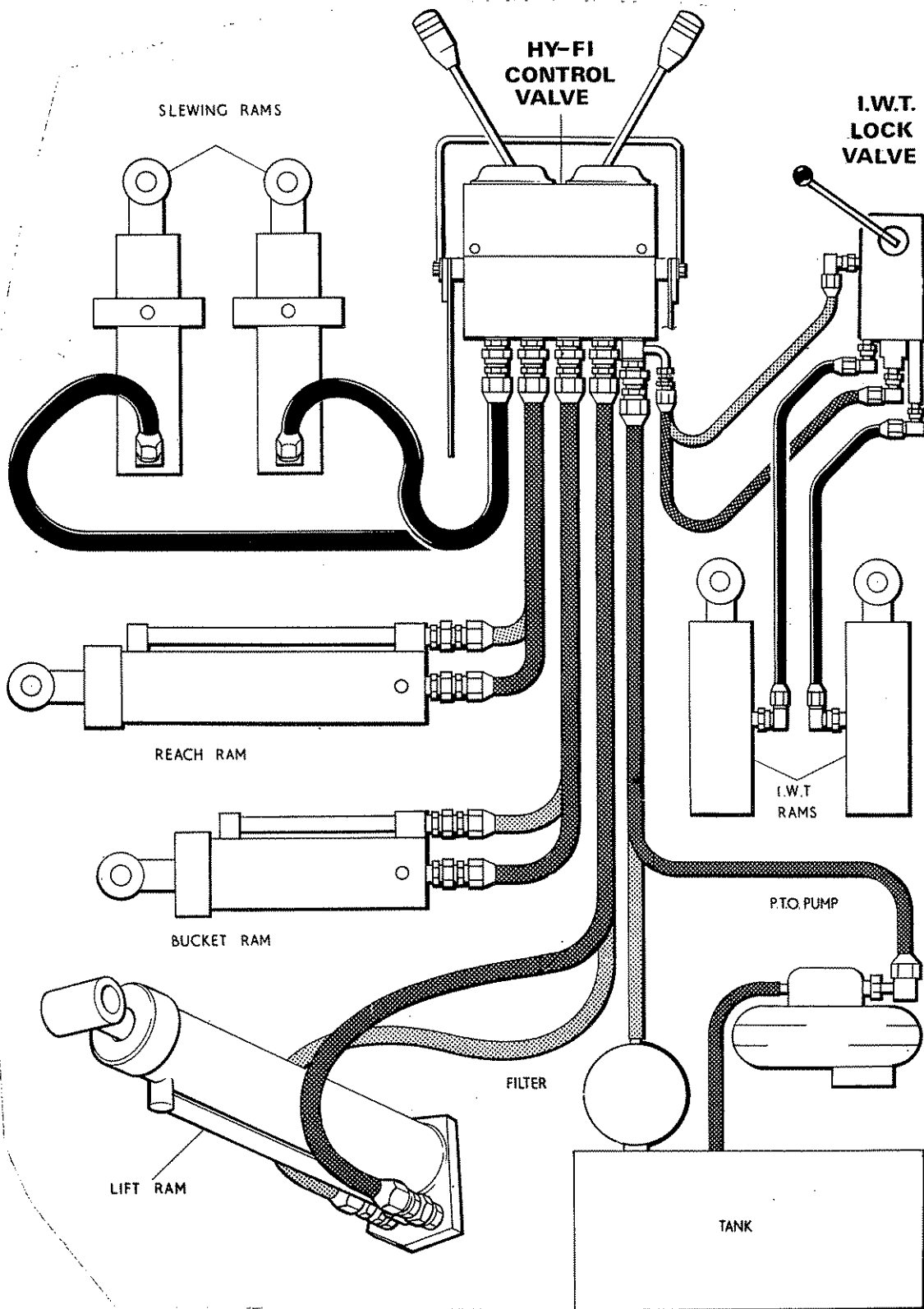
Operational life will be greatly increased if after initial assembly the pump is allowed to work under no load for about thirty minutes at fast engine idle so that the full flow oil filter can trap any rubbish circulating in the system.

- (f) Raise machine off ground and centralize behind tractor before effectively tightening up check chains or stabilizer bar to prevent side-sway. This also ensures that when the IWT arms are operated, their pads centrally engage the underside of the tractor draft links. Ensure that the P.T.O. pump, hoses etc. are not endangered by operation of the tractor three point linkage and in particular the pressure hose from the pump cannot be trapped between the IWT pad and the underside of the tractors draft link.
- (g) From time to time especially during the first few hours of operation, check the hose clips on the suction hose at both ends and re-tighten. Any leakage of air into the system on the suction side will cause the oil to foam. If allowed to continue unchecked, the reservoir will 'boil over' through the filler cap. Aeration also causes a spongy action, overheating and rapid wear.

**HOSE INSTALLATION PA 6/12 DIGGER**



# POWER ARM 6 HYDRAULIC CIRCUIT





### Section 3

#### OPERATION

##### 1. Tractor Setting

- (a) Position machine on site and lower to ground. Leave 'Position Control' or quadrant lever in the 'lowered' position and select 'zero' or 'minimum' draft if tractor is so equipped.
- (b) Do not isolate the linkage as this prevents correct operation of the IWT mechanism.
- (c) Set IWT lever to the 'work' position.
- (d) Set tractor engine RPM to give approximately 300 RPM at the PTO shaft. Excessive engine speed will not give a higher work speed, and will only overheat the oil.

##### 2. Hy-fi

###### (a) 'Fail-safe'

The 2/4S Hy-fi control valve locks all rams safely unless the pump is operating. The arm can only be lowered under power and the machine is completely safe when off the tractor and will not collapse or topple over should any levers be moved by accident.

###### (b) Colour Code

Coloured rings around the lever handles match the coloured bands around the rams that they operate - check with the diagram on the Hy-fi cover that the rams operate correctly; if not, always make the hose change over at the ram end.

Caution. Arm and bucket should be on the ground before loosening any hoses.

##### 3. Instant Weight Transfer (I.W.T.)

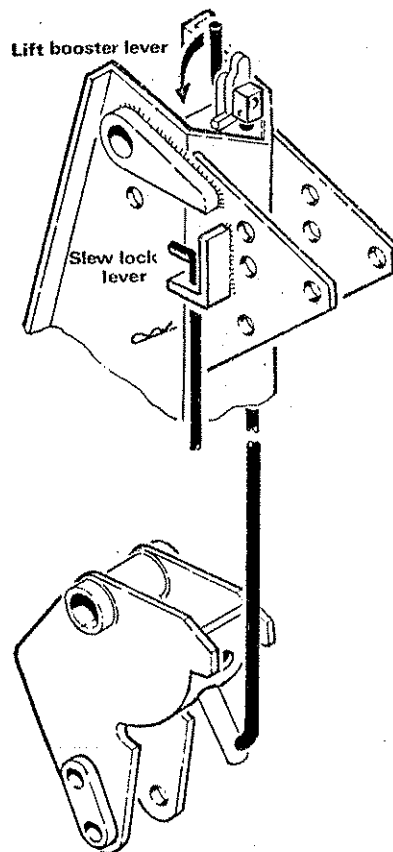
With IWT lever in the 'work' position, movement of any lever of the Hy-fi will pressurise the IWT rams, lifting up the arms to contact the underside of the tractor's draft links. Tractor backend weight is thus transferred to the machine's feet for stability. Any sinkage of the machine's feet is automatically adjusted by further movement of the IWT arms.

Before the machine can be lifted off the ground, pressure in the IWT rams has to be released by moving the lever to 'transport' position.

Caution. Never attempt to lift machine with the tractor hydraulic linkage with the control lever in the 'work' position. Oil trapped in the IWT rams cannot escape and the tremendous pressure developed by the mechanical leverage effect could burst the rams - this problem is greater with tractors that are fitted with assisted linkage rams and high hydraulic system pressures. Because of the possible dangers of IWT collapse when under load, no locked line relief valve can be fitted.

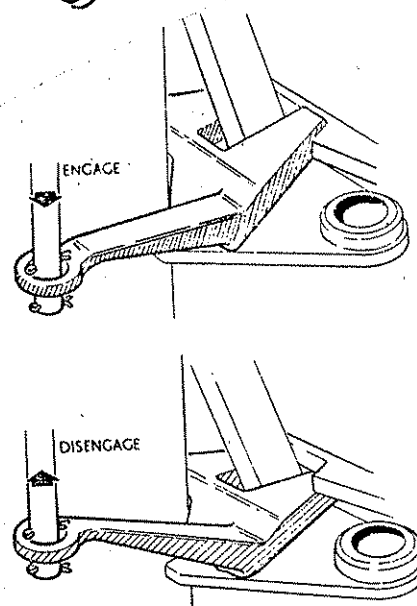
#### 4. Lift Booster

Located at the base of the slewing column, the lift booster can be adjusted to allow the lift ram to be operated from two positions to give either maximum height or maximum depth. Before making any adjustment, the bucket should be placed on the ground to take weight off the arm enabling the plunger lever to be operated. Moving the lift ram lever repositions the booster. Make sure that the plunger is completely engaged in the booster before continuing work. If the lift booster lever is allowed to remain free, a 'floating' action of the bucket can be obtained to grade the bottom of a trench.



#### 5. Slew Lock

Locking lever is mounted through a bracket on the slew column. To engage slew lock for transport, centralize slew column, press down locking lever and fit spring cotter through the lever beneath the bracket. To disengage, the lever is held up and rotated over the bracket and held in place by the spring cotter.



#### 6. Adjustable Legs

Leg setting can be altered to give maximum digging depth, loading height, or reach over wire. After any alteration, adjust top link to bring machine vertical. For all 'Slew Loading' operations, set the feet to maximum width for increased stability. For trenching across slopes, or other work with unequal leg settings, adjust the tractor linkage levelling to avoid excessive load on drop links.

#### 7. 'A' Frame

After any leg adjustment the A frame should be rechecked and the top link adjusted to give a vertical position. A sloping A frame will give an irregular or stepped ditch bottom and can also give complaint to loss of power when slewing i.e. the arm has to constantly traverse in an uphill motion.

**WARNING**  
After making any adjustment to the legs or top link re-check cab clearance

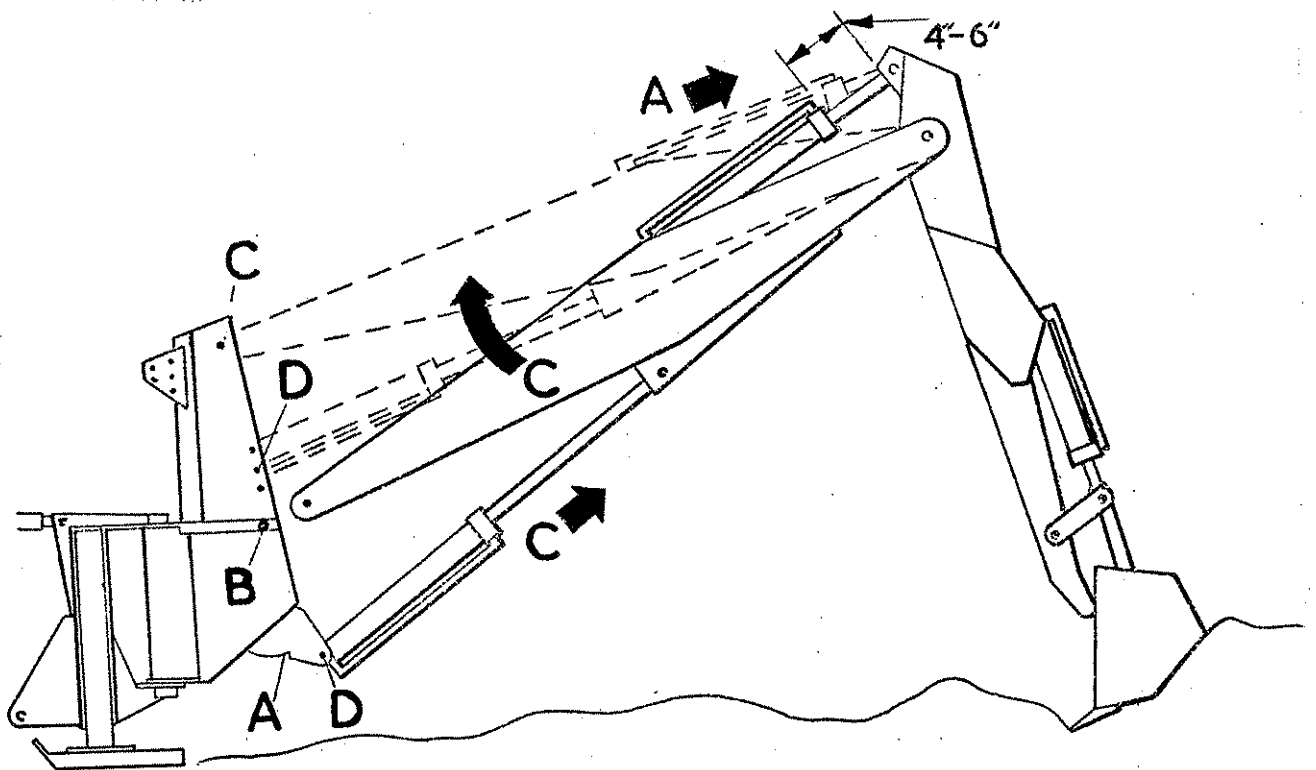
## 8. High/Low Arm Change

The main arm has two alternative pivot positions on the slewing column. Changeover from 'low' to 'high' position should be carried out in the following order. Sequence A to D in the diagram.

- (a) Lock lift booster in the maximum height position.  
N.B. If the long drop arm is fitted, the lift ram should be fitted to the upper pair of holes in the lift booster.
- (b) Extend reach ram 4" - 6" and dig bucket teeth into ground to act as an anchor.
- (c) Operate the lift ram sufficiently to take the weight off the main arm and drive out the arm pivot pin.
- (d) Continuing to operate the lift ram, carefully extend it to enable the main arm to clear the slewing column.
- (e) Using both reach and lift rams, relocate the main arm in the high pivot position and refit the pivot pin.
- (f) Drive out the pin from the base end of the lift ram and retract ram before relocating in any one of the three pin positions in the slew column. The lowest position will have the greatest power and the highest position will give the greatest reach.

Note 1. No provision is made for operation of the lift booster when main arm is in high pivot position.

Note 2. To change from 'high' to 'low', reverse the above instructions - shifting ram first and the arm second.



## 9. Changing Buckets

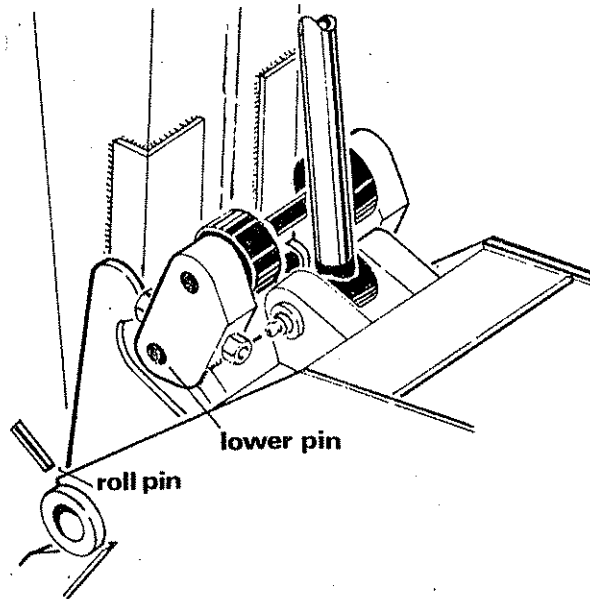
The standard machine is supplied with a dipper arm having widespread bucket pivots for use with all ditch digging and cleaning buckets. A hammer and parallel punch are the only tools required for changing buckets. With the bucket resting on the ground, remove rod end pin before driving out roll pins and bucket pivot pins. On reassembly, make sure that the bucket pivot bushes are not dislodged.

## 10. Trenching Buckets 5½" and 11"

A shorter dipper arm is required to give more power for trenching purposes, and this has a single narrow boss end. Reference to the illustration on Page 29 will assist in assembly.

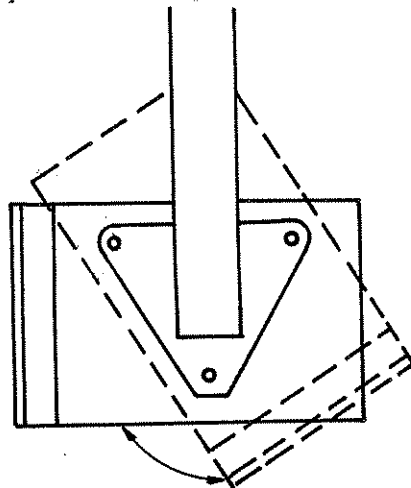
The following points should be noted:

- (a) Ram rod pivot pin should be removed and ram closed down to avoid damage to rod before removing bucket.
- (b) To avoid damage, the correct bucket pivot pin must be fitted and secured with two roll pins through the bucket bosses.
- (c) The slave link and radius arms are not required.
- (d) When fitting ejector latch (item 20), the lower pin (item 24) passes through the lugs on the dipper arm; the ejector rollers are fitted to the upper pin.
- (e) The heads of the latch spring bolts should contact the ejector plate.
- (f) The latch springs should be just unloaded when the latch is disengaged.



## 11. Foot Adjustment

Bolt holes in the feet are equi-distant apart to allow the foot to be turned through 120°. This can be particularly beneficial when trenching in hard ground to prevent the machine from 'backsliding'.



## 12. Digger Conversion to Grab Loader

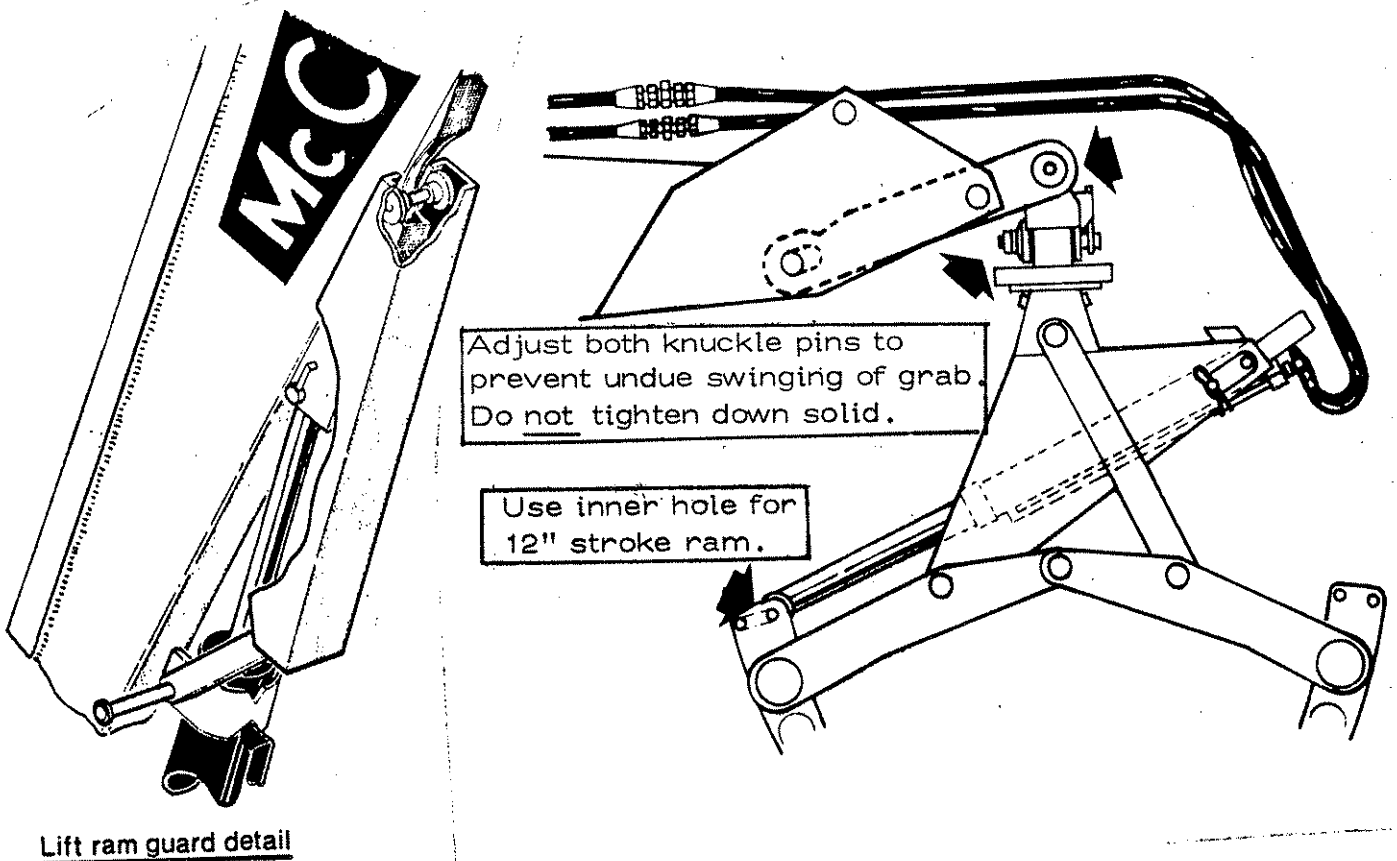
There are two methods of attaching the grab to the 6/12 armhead:

- (a) Using KC knuckle slotted into upper drop arm.  
This gives maximum power but reach and height are limited.
- (b) Using KD knuckle fitted to narrow dipper arm.  
This gives a greater reach and height with a slight loss of lifting power.

Note Neither KC nor KD knuckle will fit the wide ditcher arm.

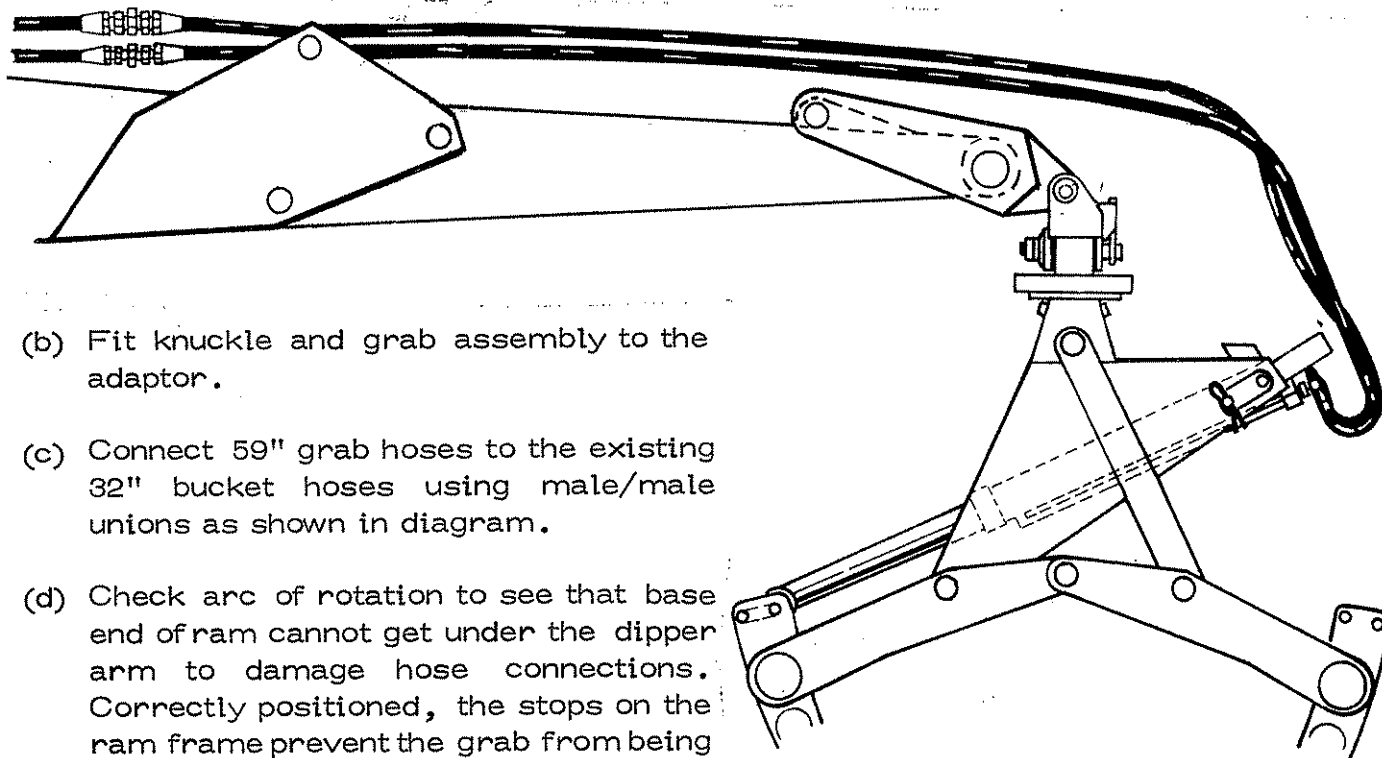
### KC knuckle

- (a) Remove lower half of dipper arm and relocate bucket ram in grab frame with gland pipe facing down.
- (b) Fit the extension arm into the jaws of the upper dipper arm.
- (c) Fit knuckle and grab assembly to the extension arm.
- (d) Connect grab hoses to the existing bucket hoses using male/male unions, grab ram connections being made as shown in diagram.
- (e) Check arc of rotation to see that base end of ram cannot get under the dipper arm to damage hose connections. Correctly positioned, the stops on the ram frame and swivel plate prevent the grab from being completely rotated.



## KD Knuckle

- (a) Slot the adaptor knuckle over the narrow dipper arm boss and secure with the special pins and spring cotters.



- (b) Fit knuckle and grab assembly to the adaptor.
- (c) Connect 59" grab hoses to the existing 32" bucket hoses using male/male unions as shown in diagram.
- (d) Check arc of rotation to see that base end of ram cannot get under the dipper arm to damage hose connections. Correctly positioned, the stops on the ram frame prevent the grab from being completely rotated.

## Fitting 14E Loader Armhead to PA6 Digger

Hoses. In all circumstances it will be necessary to lengthen the Lift, Reach, and Bucket ram hoses to reach the forward control position of the Hy-Fi. Leave the Lift, Reach and Bucket ram hoses connected to the Hy-Fi and couple their opposite ends using the unions (72 13 004) to the straight ends of the 63" long extension hoses provided in the loader kit. The 5/8" bore low pressure return hose must also be extended with the 24" length of hose provided.

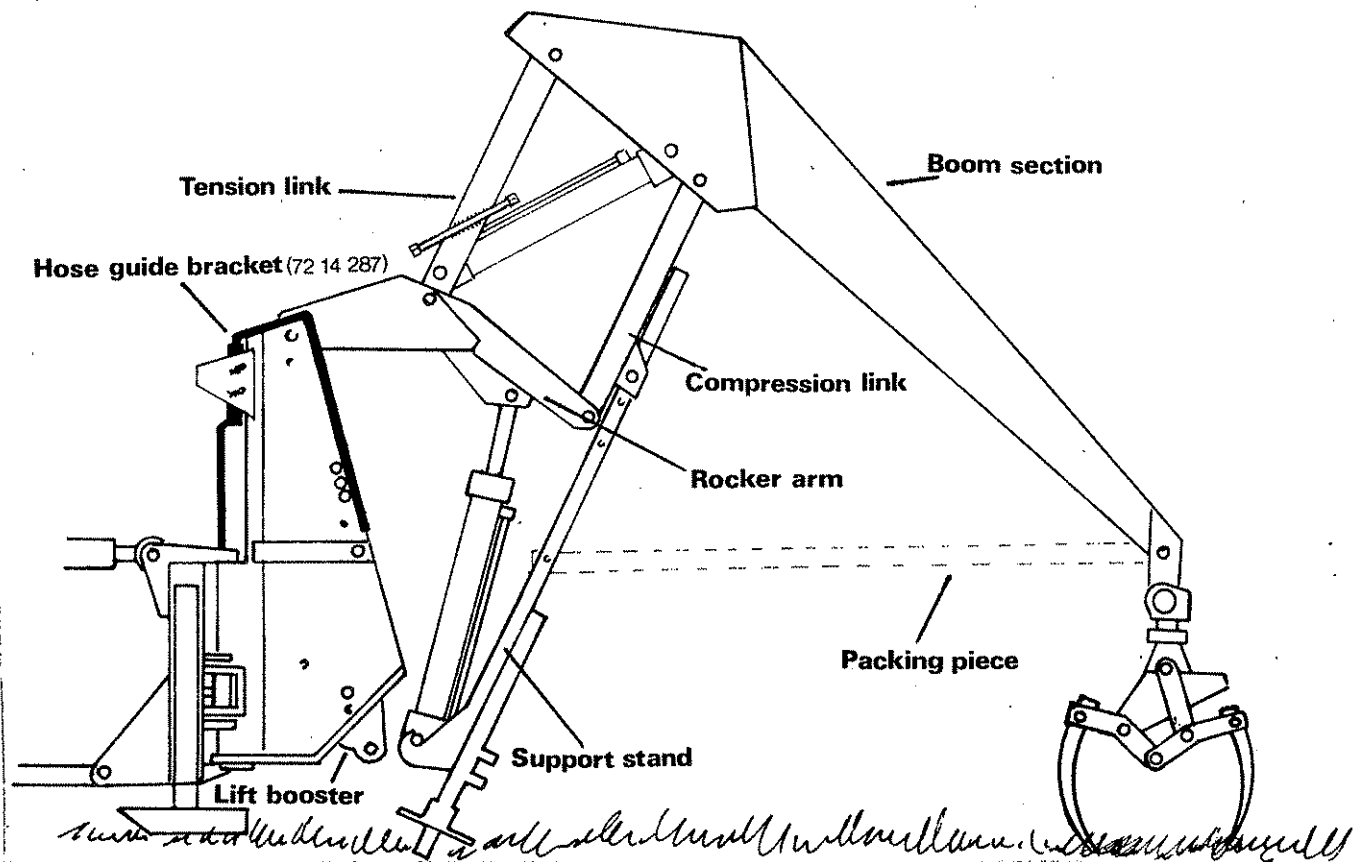
There are two slight differences in procedure concerning the Reach ram hoses depending on the following circumstances.

- (a) PA6 digger supplied when it is known that a 14E armhead is to be fitted.

Disconnect the 63" long reach ram hose from the junction bracket on the main arm and couple on the extension hose.

- (b) When a 14E armhead is subsequently supplied for a previously delivered PA6 digger.

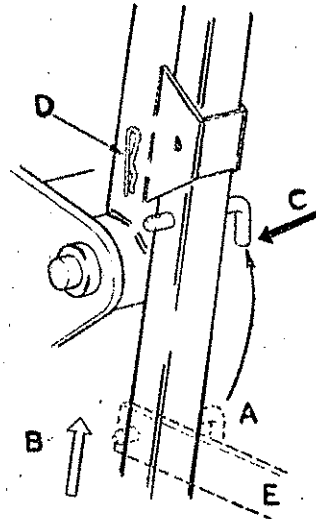
The reach ram hoses 100" long should be removed completely and replaced by the additional two 63" long hoses provided. The two extension hoses should then be coupled as detailed in the first paragraph.



### METHOD

1. Disconnect the hoses from the reach, lift, bucket and low pressure return line and connect up extension hoses as previously described.
2. Remove complete main arm, dipper arm and bucket.
3. Remove the PA6 console, seat and platform assembly.

4. Fit the tip-over seat in place of the existing tractor seat and install the Hy-fi control unit to the mounting bracket which sockets onto the taper wedge of the seat assembly.
5. The loader arm is packed for despatch on the stand required for fitting, removal and storage. Cut free the packing wire and remove the packing strip on the arm.
6. Fit the grab to the swivel assembly and instal the bucket ram to the grab and connect both hoses.
7. Following the lettered sequence, remove stand pin at A raise the loader B about 12" before re-engaging pin in the upper hole C of the stand pillar and immediately beneath the retaining slot in the compression link. Secure with spring cotter D. Packing piece E is no longer required.
8. Reverse Power Arm up to the loader and adjust the stand centre bolt to line up the rocker with the slewing column.
9. Fit rod end of lift ram to rocker and secure.
10. Transfer the base end of the lift ram from the lift booster to locate into the hooks on the stand using the ram base pin.
11. Operate lift ram which will raise the loader, sliding it up the stand pillar.
12. Engage and secure the rocker arm into the armhead pivot position on the slew column. Ensure that lift ram hoses pass to either side of the slewing column.
13. Lock the lift booster into the 'high lift' position and fit the safety pin through the hole in the column. Failure to do so could result in damage to the lift ram. Install lift ram to booster and secure.
14. Fit reach ram to tension link and boom, and connect up hoses.
15. Connect up hoses to bucket line rigid pipes on tension link.
16. Fit the hose guard bracket onto the top of the slewing column and secure with both pins as detailed in sketch.
17. Raise complete arm and remove stand.

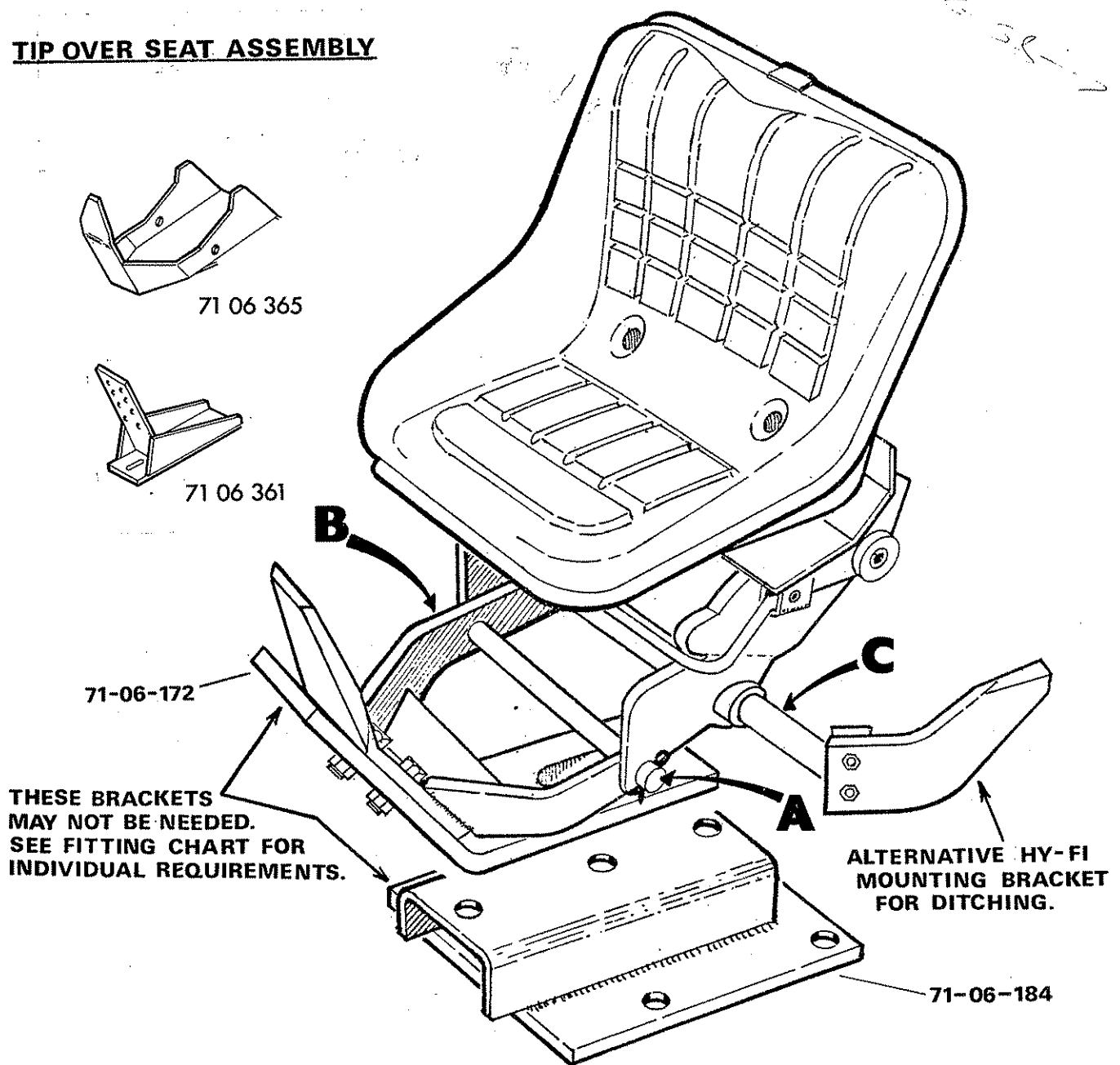


#### CAUTION

After assembly, the machine should be operated slowly through all movements, carefully checking that hoses are not trapped, kinked, stretched or frayed before being put into full operational use.



## TIP OVER SEAT ASSEMBLY



The seat assembly 71 06 340 is fitted as above in conjunction with mounting brackets except in the following cases where modifications have to be made.

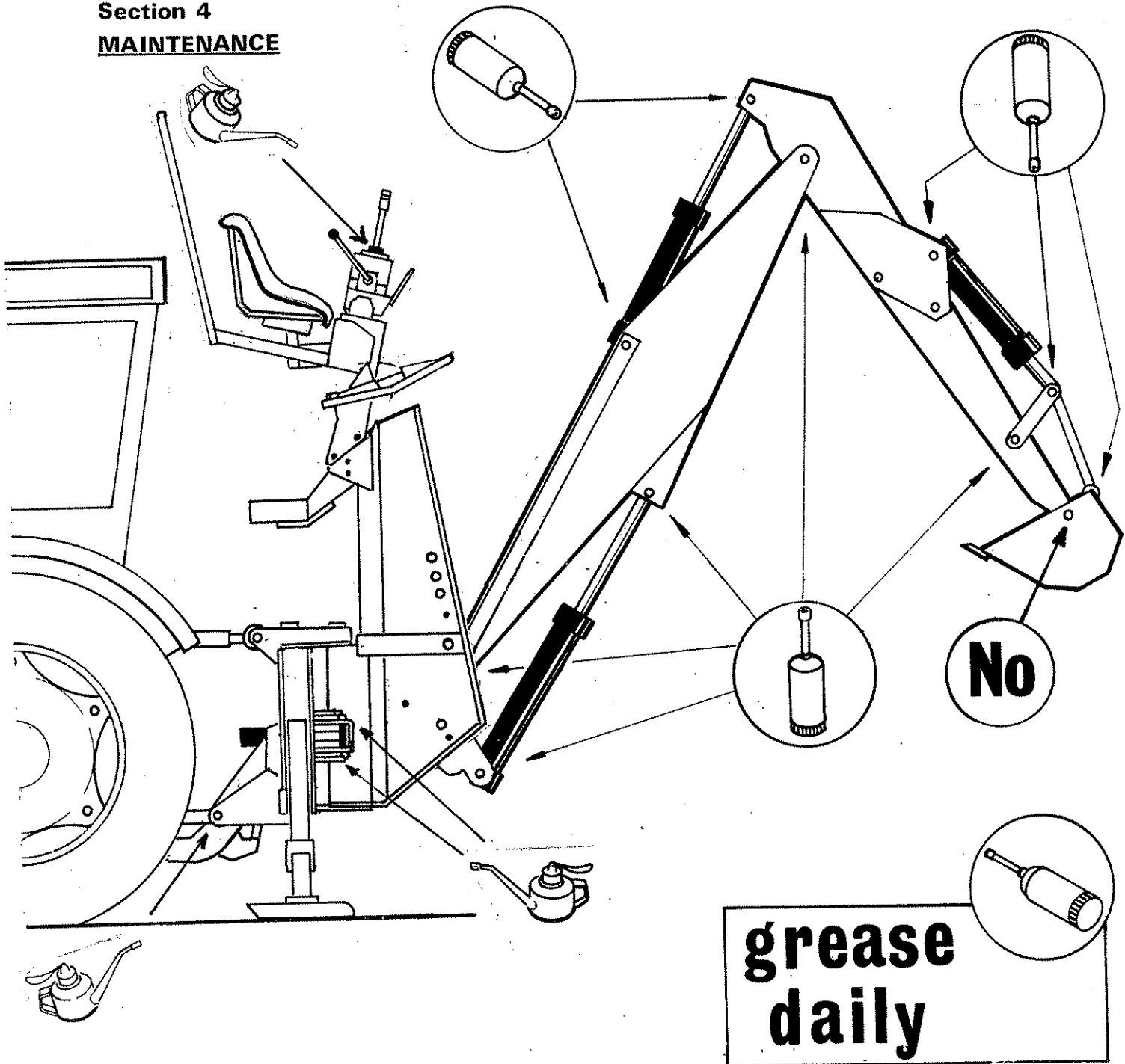
1. All Zetor Tractors.  
Remove pin 'A' discard bracket 'B' remount the seat through the holes in the Zetor attachment brackets.
2. International 2400, 2500, 454, 474, 574, 674, Same Leone.  
Remove Hy-Fi swivel mounting assembly 'C' and reassemble in cross tube on the attachment pillar.
3. International B250, 275, 414, B434, 354, 444, 614, 634.  
Remove pin 'A' locate attachment bracket inside bracket 'B', refit pin 'A'.

### SUSPENSION UNIT

A suspension unit 71 06 374 is available, which bolts directly onto tractors having a flat mounting base marked \* no mounting brackets are necessary. This unit also bolts to the tip-up seat after the following modifications to the seat have been made.

- 1) For small tractors - remove pin 'A', discard bracket 'B' and replace with bracket 71 06 365.
- 2) For large tractors - bolt bracket 71 06 361 to bracket 'B'.

**Section 4**  
**MAINTENANCE**



1. Lubrication

Refer to diagram and grease daily points arrowed; also apply oil daily to slew bushes and pivots.

Do not grease or oil the bucket pivot pins. They are surface hardened to resist wear.

Oil once weekly the IWT arm and reaction bracket pivots.

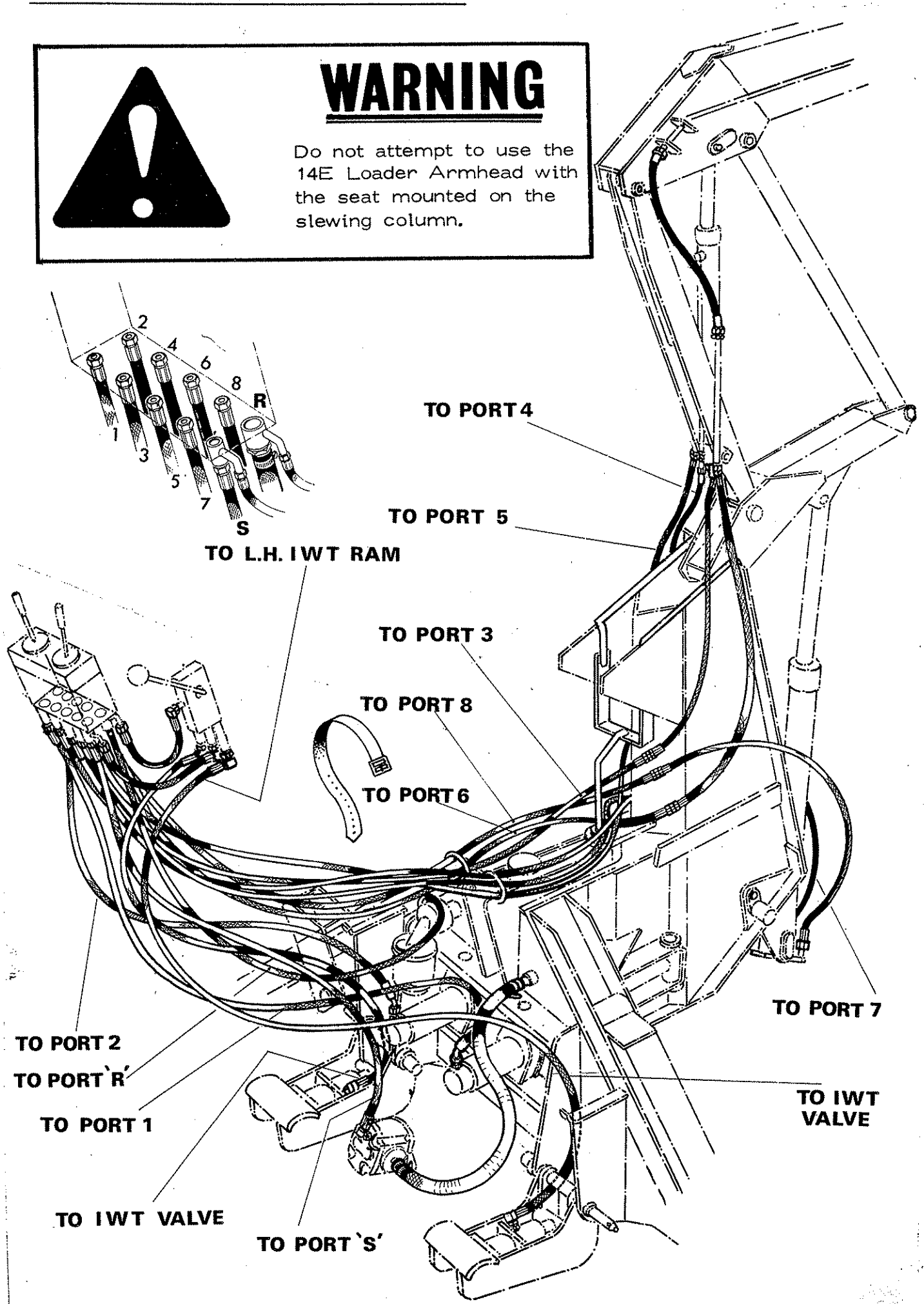
The control lever pivots also require oil occasionally - These can be reached by collapsing the rubber dust boots on the Hy-fi.

**HOSE INSTALLATION PA6 14E LOADER**



**WARNING**

Do not attempt to use the 14E Loader Armhead with the seat mounted on the slewing column.



## 2. Oil Reservoir

All machines destined for the home market have 9 gallons (41 litres) of SAE 20W/30 Universal oil installed at the factory. Use of any good quality 'multigrade' or 'universal' type oil of the same viscosity is satisfactory when topping up. The system is designed to use this type of oil and specialized hydraulic oils are not required. Do not fill higher than half-way up the sight tube.

Although the oil does not wear out, it will in time become contaminated due to condensation etc.

Recommended oil change is every 1000 hours or two years, whichever occurs first.

CAUTION. Do not use a vegetable based oil.

Contamination can be reduced by:-

- (a) Carrying out all maintenance in clean and dust free surroundings.
- (b) Cleaning off around the reservoir filler cap before removal.
- (c) Using clean containers.
- (d) Regular servicing of the filter.

## 3. Oil Filter

A full flow automotive type oil filter is situated in the return line from the Hy-fi to the reservoir. The filter element (part no. 71.03.102) should be replaced after the first 50 hours working and thereafter at 250 hour intervals. Do not overtighten the centre retaining bolt.

If the filter element is neglected and allowed to become choked, then a by-pass type ball valve will lift off its seat allowing unfiltered oil and accumulated rubbish to circulate in the system.

Remember that poor maintenance will reduce the efficiency and operational life of all hydraulic components.

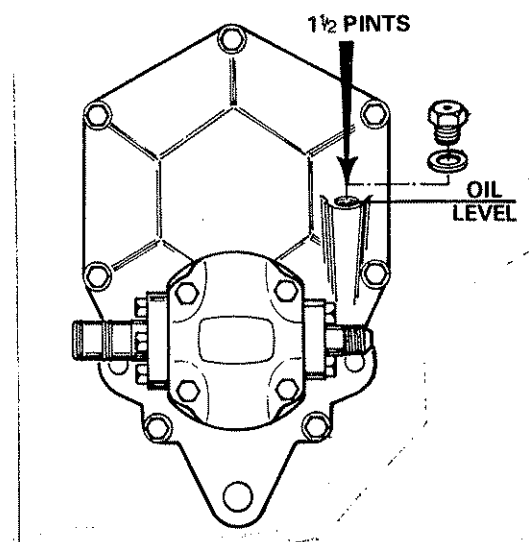
## 4. PTO Gearbox/Pump Assembly

The gearbox holds approximately  $1\frac{1}{2}$  pints of EP.90 gear oil which should be changed every 1000 hours.

The oil level should be checked when carrying out routine maintenance on the machine and preferably when the machine has been at rest for some time. Release the torque chain to allow the filler plug to adopt a vertical position.

If it appears that the gearbox is overfilled then leakage from the hydraulic pump past the shaft seal can be suspected.

A leaking shaft seal can result in the gearbox filling right up and forcing oil past the PTO shaft seal.



## 5. Hose Replacement

- (a) Replace one hose at a time to avoid the risk of wrong connections.
- (b) Where the hose is screwed to an additional fitting or adaptor, use a second spanner on the flats of the union to prevent breaking both seals.
- (c) Do not use jointing compound on the threads.
- (d) Avoid twisting the hose and ensure that hose is not trapped or chafed during machine operation.

## 6. Replacing ram seals - General notes

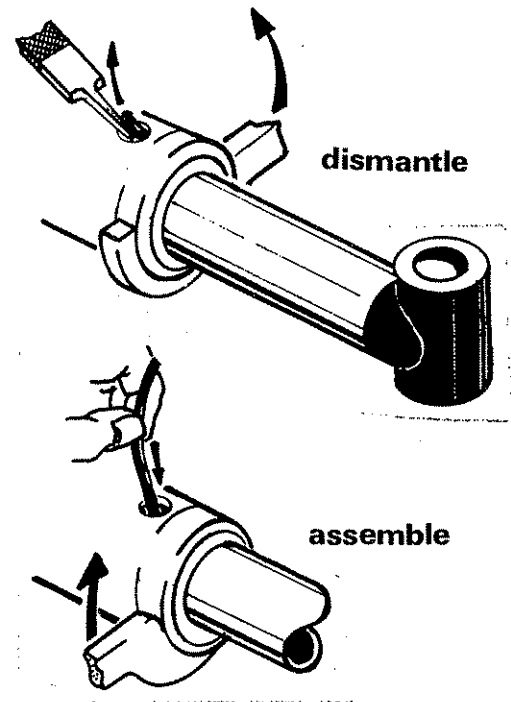
Wherever possible the ram should be removed from the machine and cleaned off before dismantling on a clean work bench.

When using a 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.

### (a) Slew Rams

With ram cylinder gripped in vice rotate head bush with C type spanner to expose tail of locking wire. Pry up with file tang or similar tool and counter rotate to wind the wire completely out of the groove. The complete head bush can now be withdrawn from the cylinder to expose the seal and bronze liner.



### (b) Lift, Reach & Bucket Rams

Unscrew gland nut and withdraw complete rod assembly.

Remove locking wire from groove of ram nut and unscrew.

Remove piston, piston seals and gland housing.

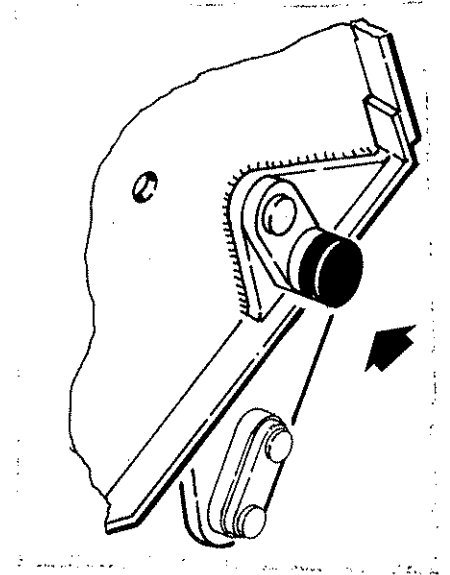
Renew all seals including the 'O' Ring behind piston.

Do not overtighten ram nut. The piston seals should be capable of being rotated.

Tighten gland nut securely - If the gland nut has any tendency to become unscrewed, retighten and centre pop the thread joint.

## 7. Bump Stops

At the end of its travel, rubber slewing buffers cushion the slewing column against the A frame. It is most important that these are renewed when the rubber shows signs of breaking up, otherwise damage to the slew mechanism and fracturing of the A frame which acts as the oil reservoir could result.



## 8. Bucket Teeth

- (a) Keep all bolts tight.
- (b) Keep teeth straight and sharp for good penetration.
- (c) Remove any bent teeth before attempting to straighten them.

## 9. Storage

No stand is required as the machine is perfectly stable with its bucket or grab on the ground. For long term storage, fully open the bucket and extend the dipper arm. Free the lift booster and shorten the exposed length of lift ram rod as far as possible – coat the exposed portions of all ram rods with grease.

Note Wipe off all this grease before operating when putting the machine back into service, as it will have become contaminated with dust and grit which will harm the seals.

Check the complete machine over for damaged or worn parts, and in particular all pivot pins and bushes. Order the correct spares from your dealer. The use of wrong or incorrectly fitted pins will cause rapid wear of more expensive components.

## MASSEY FERGUSON TRACTORS

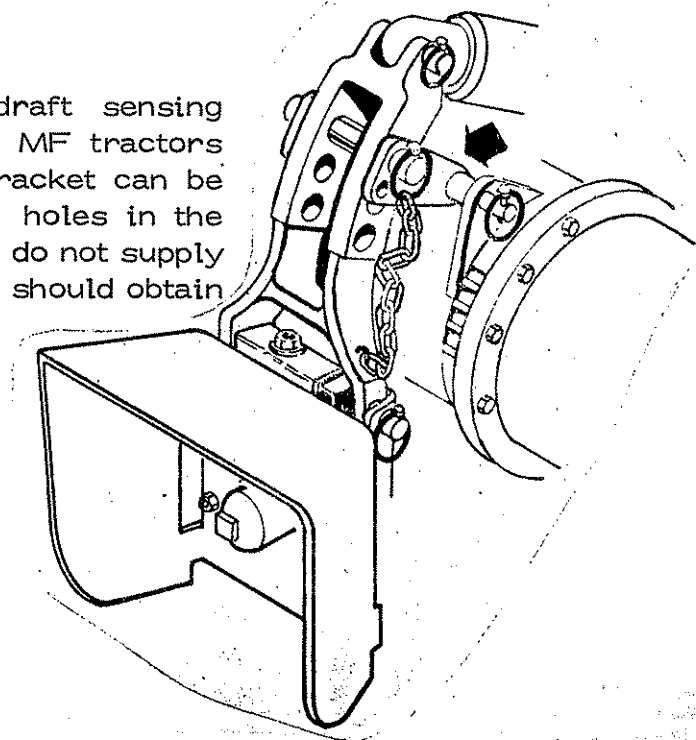
### Top hitch lock

A special bracket which locks the draft sensing mechanism is now available to fit most MF tractors except the 35 and 135 models. The bracket can be inverted to fit tractors with  $\frac{3}{4}$ " or 1" holes in the draft rocker. F. W. McConnel Limited do not supply a longer draft rocker pin and customers should obtain a suitable pin from their local dealer.

Top hitch lock 2 off required  
Part Number 71 03 315

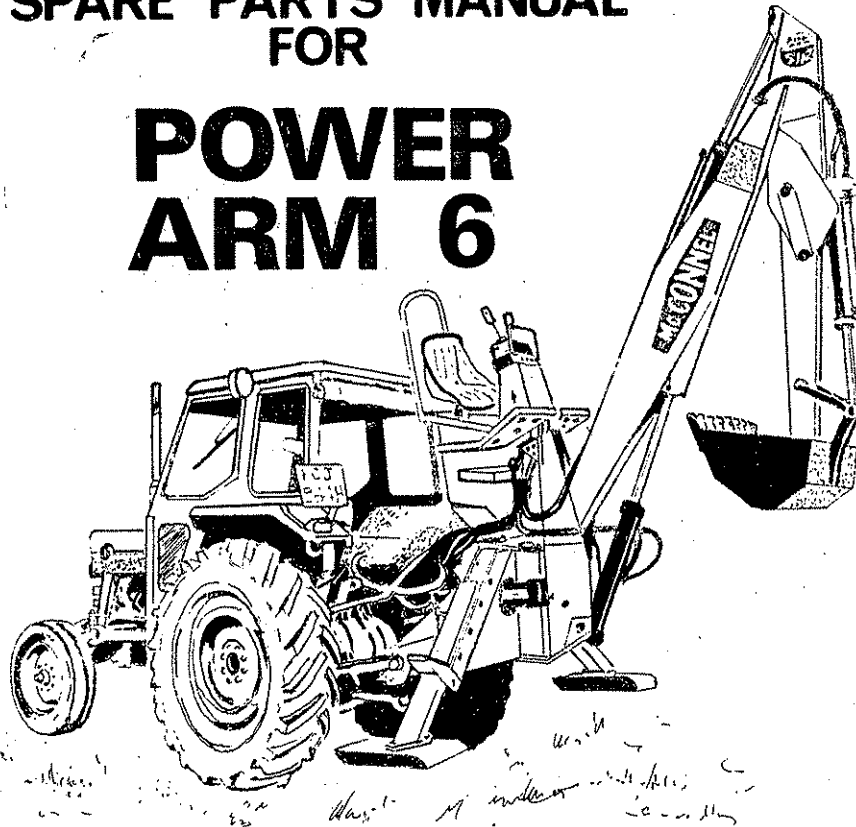
For 35 and 135 models use:-

Bracket 68 02 280. 2 off required.



# SPARE PARTS MANUAL FOR

# POWER ARM 6



## 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. McConnell Ltd. through your local dealer or stockist.

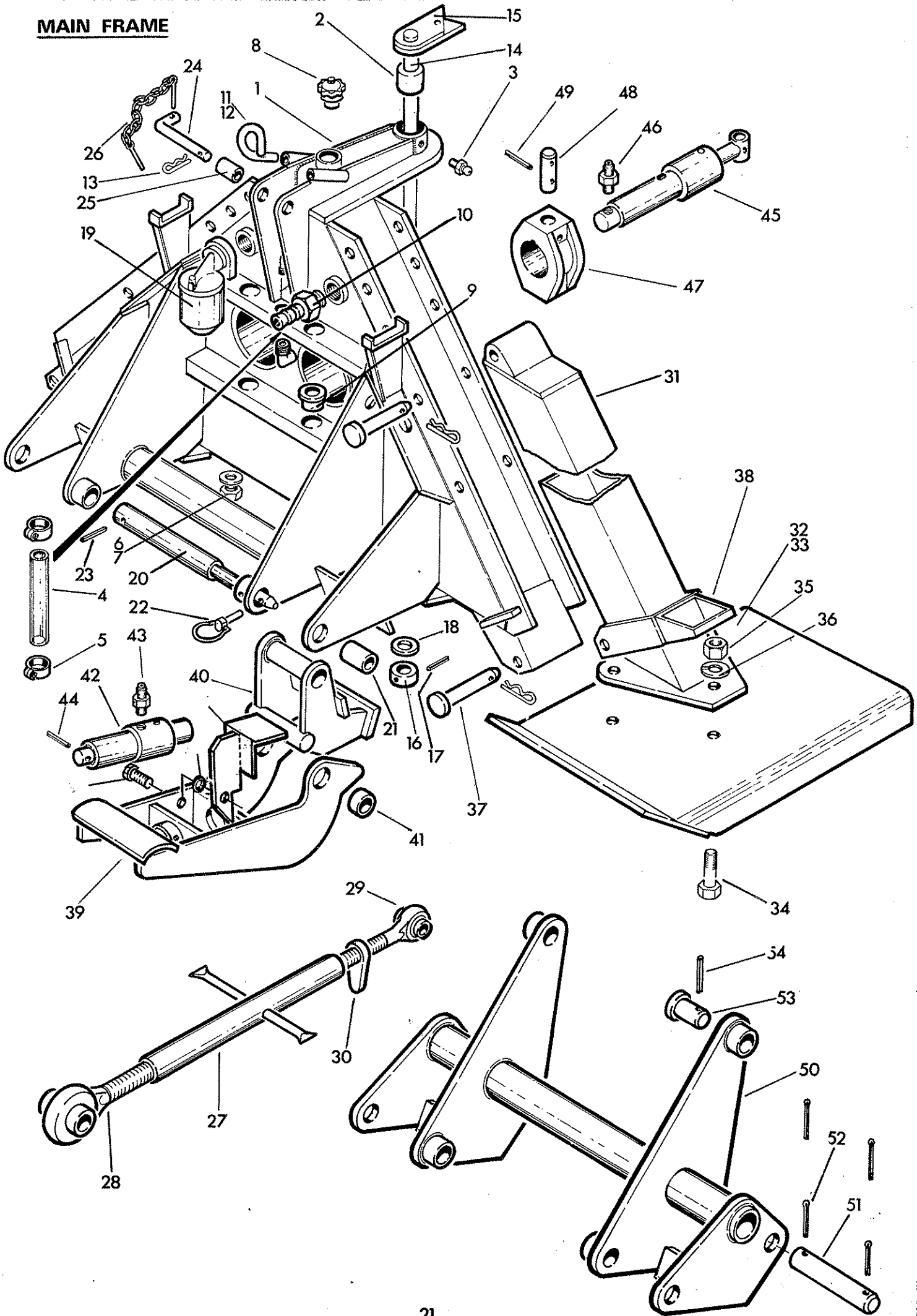
Always quote machine type and serial number as well as the part number.

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.

### THE DOT SYSTEM

Many spares are supplied as Assemblies or as Sub assemblies and to help the customer determine the composition of an Assembly the Dot System is used. The Main Assembly will not show a dot preceding its description and is printed in BLOCK CAPITALS. Subsequent listed parts are preceded by one or more dots until the next major assembly is reached. An increase in the number of preceding dots indicates that the item is an associated part of the preceding item. Whenever the number of dots are decreased by one this indicates the termination of an assembly. A constantly recurring item such as spring cotter, greaser etc., will sometimes be listed once only at the end of an assembly.

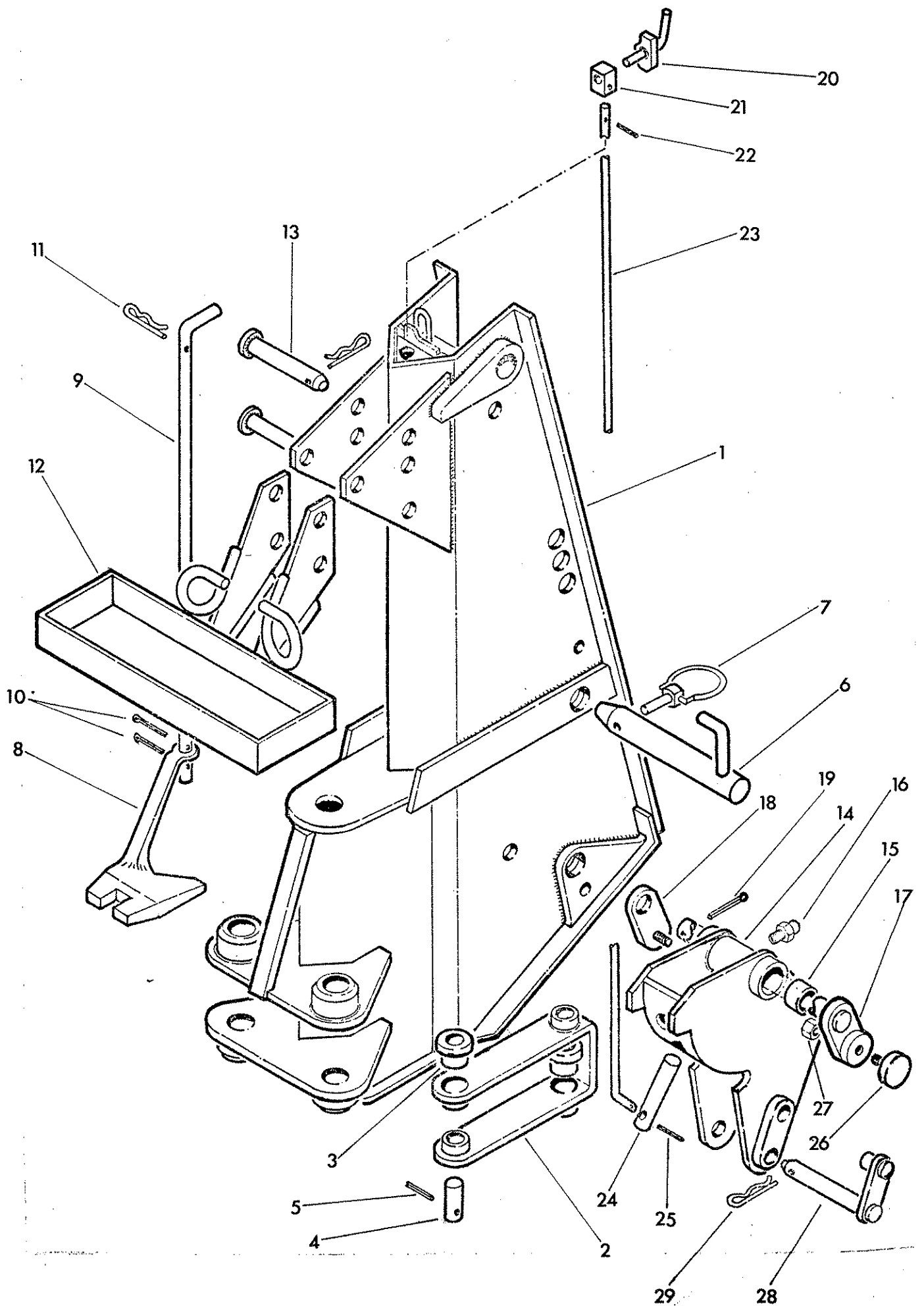
**MAIN FRAME**





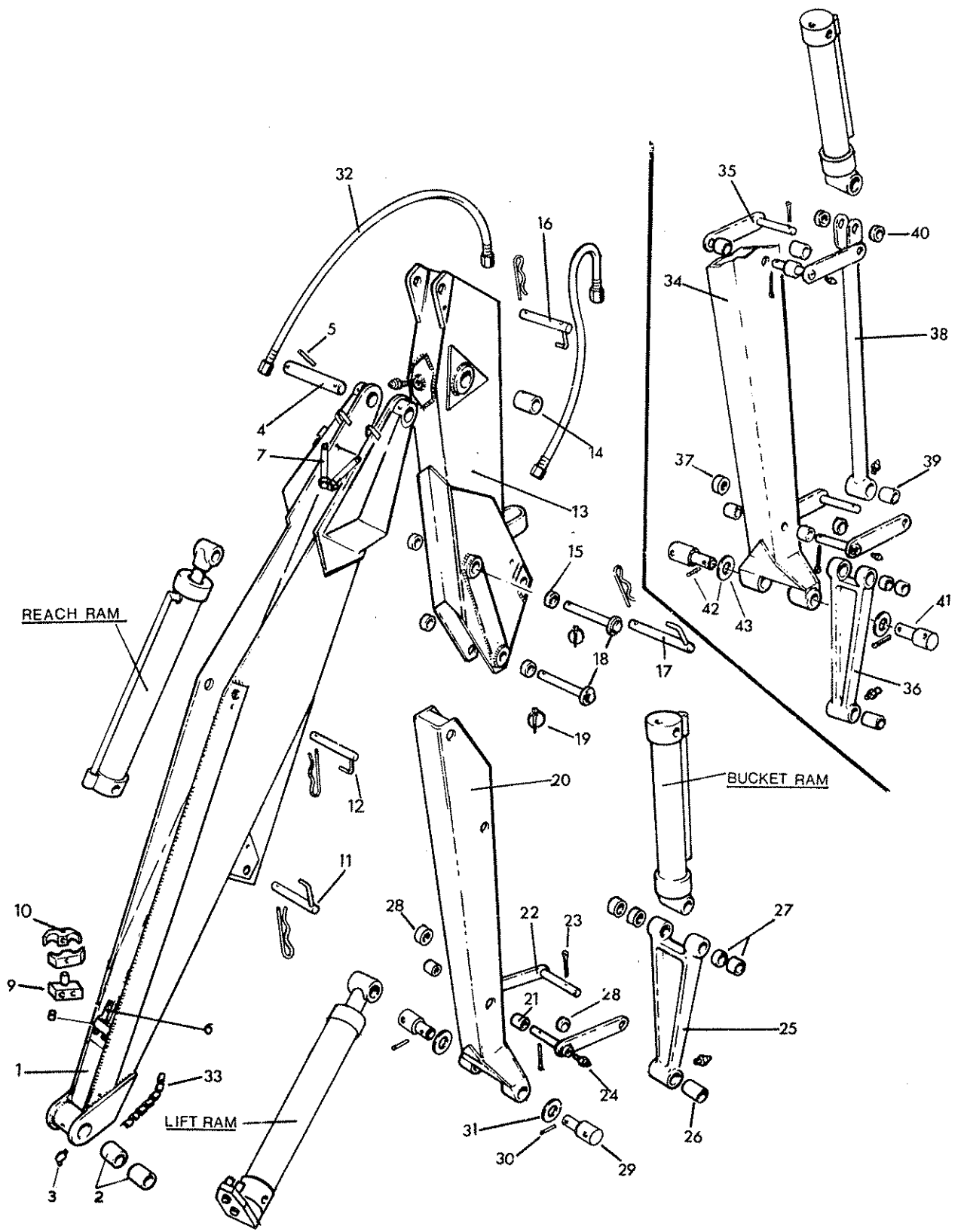
Ref.	Part No	Qty	Description
1	71 03 502	1	MAIN FRAME c/w bushes etc. (Integral Extension)
2	71 03 094	2	. Bush Use 71 03 306 Main Frame
3	09 01 121	2	. Greaser for separate linkage extension assy.
4	85 05 007	1	. Oil sight tube
5	09 04 204	2	. Hose clip
6	60 01 124	1	. Drain plug c/w washer
7	86 54 104	1	.. Washer
8	71 03 089	1	. Filler cap
9	71 02 173	4	. Bush, slew link
10	71 03 072	1	. Suction connection
11	71 02 203	1	. Hose guide, left hand, c/w spring cotter
12	71 02 204	1	. Hose guide, right hand, c/w spring cotter
13	04 31 105	2	.. Spring cotter
14	71 03 034	1	KING PIN c/w collar etc
15	71 03 035	1	. Locking tail
16	71 03 036	1	. Collar
17	04 22 632	1	. 2" x 3/8" spring dowel
18	60 01 136	1	Thrust washer
19	71 03 290	1	FILTER ASSEMBLY complete comprising:-
	71 03 291	1	. Filter assembly c/w element
	71 03 102	1	.. Filter element
	71 03 292	1	. Filter mounting block c/w locknut
	71 03 104	1	.. Locknut
	71 03 100	1	. Gasket
	03 11 104	2	. 1/4" x 7/16" setscrew
	01 00 204	2	. 7/16" spring washer
20	71 03 018	2	LINKAGE PIN c/w sleeve etc
21	14 67 063	2	. Sleeve Cat II
22	04 31 217	2	. Linch pin
23	04 22 632	2	. 2" x 3/8" spring dowel
24	14 67 049	1	TOP HITCH PIN c/w sleeve & chain
25	14 67 063	1	. Sleeve
26	09 02 106	1	. Attachment chain c/w split pin
27	71 02 602	1	LONG TOP LINK assembly
	71 02 217	1	. Link tube
28	71 02 218	1	. Ball end Cat II
29	71 02 219	1	. Ball end Cat I
30	71 02 214	1	. Locking collar
	71 03 257	1	ADJUSTABLE LEG ASSEMBLY comprising:-
31	71 01 272	2	. Adjustable leg
32	71 03 258	1	. Left foot c/w bolts, nuts & washers
33	71 03 259	1	. Right foot c/w bolts, nuts & washers
34	02 16 126	6	.. 1/2" x 5/8" UNC Bolt
35	01 16 006	6	.. 5/8" UNC nut
36	01 00 206	6	.. Spring washer
37	71 01 042	4	. Leg hinge pin c/w spring cotter
38	71 01 041	2	. Leg strap
			INSTANT WEIGHT TRANSFER ASSy comprising:-
39	71 03 266	2	. Lift arm
40	71 03 057	2	. Reaction bracket
41	60 12 032	4	. Bush
42	71 03 267	2	. I W T Ram assembly
43	71 03 063	2	.. Union JIC
44	04 21 824		.. 1/2" x 1/4" spring dowel
45	71 03 270	2	SLEW RAM ASSEMBLY comprising:- (See ram section)
46	71 03 061	2	. Double Male Union
47	71 02 507	2	. Trunnion c/w pivot pin
48	71 02 177	4	.. Pivot pin c/w spring dowels
49	04 22 528	4	... 1 3/4" x 5/16" spring dowel
			Some early main frames do not incorporate linkage extension in which case use:-
50	71 03 401	1	LINKAGE EXTENSION FRAME c/w PINS
51	71 03 223	2	. Pin, long c/w split pin
52	05 03 145	2	.. 1 3/4" x 3/16" split pin
53	71 03 222	2	. Pin, short c/w spring dowel
54	04 22 634	2	.. Spring dowel

# SLEWING COLUMN & LIFT BOOSTER ASSEMBLY



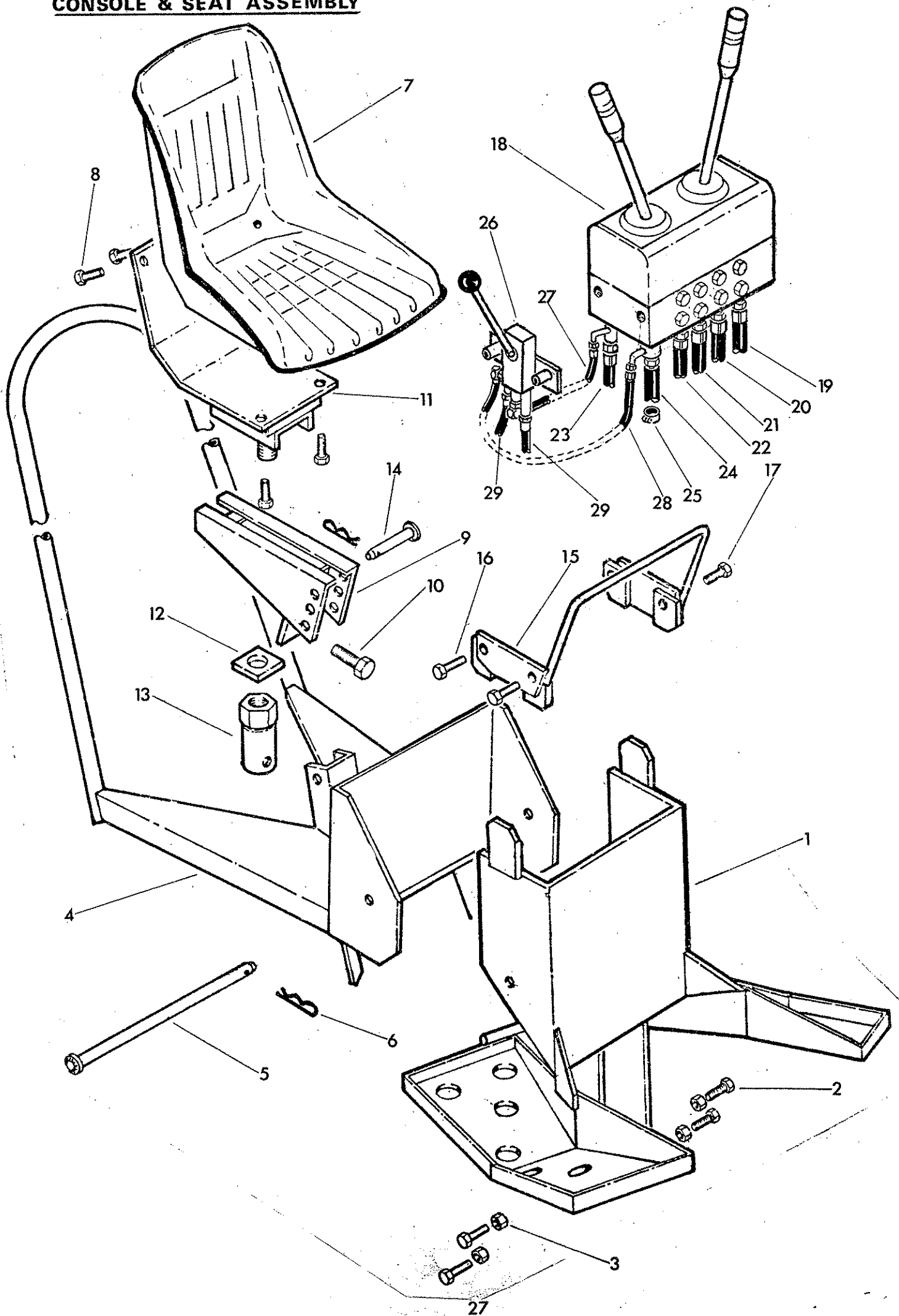
Ref	Part No.	Qty	Description
1	71 03 503	1	SLEWING COLUMN
2	71 02 172	2	Slew link c/w bushes
3	71 02 173	8	.Bush for slew link
4	71 02 174	4	Slew link pivot pin c/w spring dowel
5	04 22 528	4	.1 $\frac{3}{4}$ " x 5/16" spring dowel
6	71 03 037	1	Main arm pivot pin c/w linch pin
7	04 31 217	1	.Linch pin
8	71 03 044	1	Transport Lock
9	71 03 134	1	Operating rod c/w split pins & Spring cotter
10	05 03 095	2	.1.1/8" x 3/16" split pin
11	04 31 105	1	.Spring cotter
12	71 03 505	1	Mounting step c/w pins
13	60 09 015	2	.Pin c/w spring cotter
14	71 03 256	1	LIFT BOOSTER c/w bushes and greaser
15	60 12 032	2	.Steel bush
16	09 01 121	1	.Greaser
17	71 03 039	1	Lift booster pin c/w tail and split pin
18	71 03 040	1	.Tail
19	05 03 165	1	.2" x 3/16" split pin
20	71 03 130	1	Operating lever assembly
21	71 03 133	1	Cam block c/w spring dowel
22	04 21 816	1	.Spring dowel
23	71 03 042	1	Operating rod
24	71 03 043	1	Plunger c/w spring dowel
25	04 22 528	1	.Spring dowel
26	71 03 046	2	Slewing buffer c/w nut
27	91 00 012	2	.Tuf-lock nut 3/8" BSF
28	71 03 038	1	Lift ram base pivot pin c/w spring cotter
29	04 31 105	1	.Spring cotter

**MAIN ARM AND DIPPER ARM ASSEMBLY.**



<u>Ref. No.</u>	<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>
	72 13 263	1	MAIN ARM ASSEMBLY comprising:-
1	72 13 264	1	. Main arm complete with Bushes and Greaser
2	71 01 134	2	.. Steel Bush
3	09 01 124	1	.. Greaser
4	71 06 135	1	. Reach Arm Pivot Pin c/w Spirol Pin
5	04 42 632	2	.. 2" x 3/8" Spirol Pin
6	72 13 001	2	. Rigid Pipe
7	72 13 013	2	. 45° JIC Union - Rigid Pipe
8	72 13 003	2	. Straight JIC Union Rigid Pipe
	72 12 017	1	. Hose Bracket Assy. complete comprising:-
9	72 12 020	1	.. Hose Bracket with 3/8" UNF Nut
10	60 12 026	2	.. Pipe Clamp - double
11	71 05 051	1	. Rod End Pin c/w Spring Cotter
12	72 12 019	1	. Ram Base Pin c/w Spring Cotter
	72 13 266	1	UPPER DIPPER ARM ASSEMBLY comprising:-
13	72 13 267	1	. Dipper Arm Upper c/w Bushes and Greaser
14	71 01 134	2	.. Steel Bush
15	70 12 037	4	.. Joint Pin Bush
16	71 05 051	1	. Rod End Pin c/w Spring Cotter
17	71 05 033	1	. Ram Base Pin c/w Spring Cotter
18	71 05 136	2	. Arm Joint Pin c/w Linch Pin
19	04 31 217	2	.. Linch Pin
	72 12 257		DIPPER ARM ASSEMBLY WIDE comprising:-
20	71 05 311	1	. Dipper Arm c/w Bushes
21	70 12 037	2	.. Bush
22	71 05 088	2	. Radius Arm Pin c/w Split Pin and Greaser
23	05 03 165	2	.. Split Pin
24	09 01 121	2	.. Greaser
25	71 05 315	1	. Slave Link c/w Bushes and Greaser
26	71 05 050	1	.. Steel Bush
27	70 12 037	4	.. Steel Bush
28	71 05 089	2	. Sleeve
29	72 13 022	2	. Bucket Pivot Pin c/w Spirol Pin
30	04 42 628	1	.. 1½" x 3/8" Spirol Pin
31	72 12 006	2	. Bucket Washer
32	85 11 328	2	. Flexible Hose JIC 32" Long
33	72 13 005	2	Armour Cable 6" Long
	72 12 264	1	LONG DIPPER ARM assy. WIDE comprising:-
34	72 12 265	1	. Long Dipper Arm c/w Bushes
35	71 05 088	4	. Radius Arm Pin c/w Split Pin and Greaser
36	71 05 315	1	. Slave Link c/w Bushes and Greaser
37	71 05 089	6	. Sleeve
38	72 12 267	1	. Slave Link Long c/w Bushes and Greaser
39	71 05 050	1	.. Steel Bush
40	70 12 037	2	.. Steel Bush
41	72 13 022	2	. Bucket Pivot Pin c/w Spirol Pin
42	04 42 628	2	.. 3/8" x 1½" Spirol Pin
43	72 12 006	2	.. Bucket Washer
	71 03 300	1	LIFT RAM ASSEMBLY complete
	71 03 301	1	REACH RAM complete
	71 03 302	1	BUCKET RAM complete

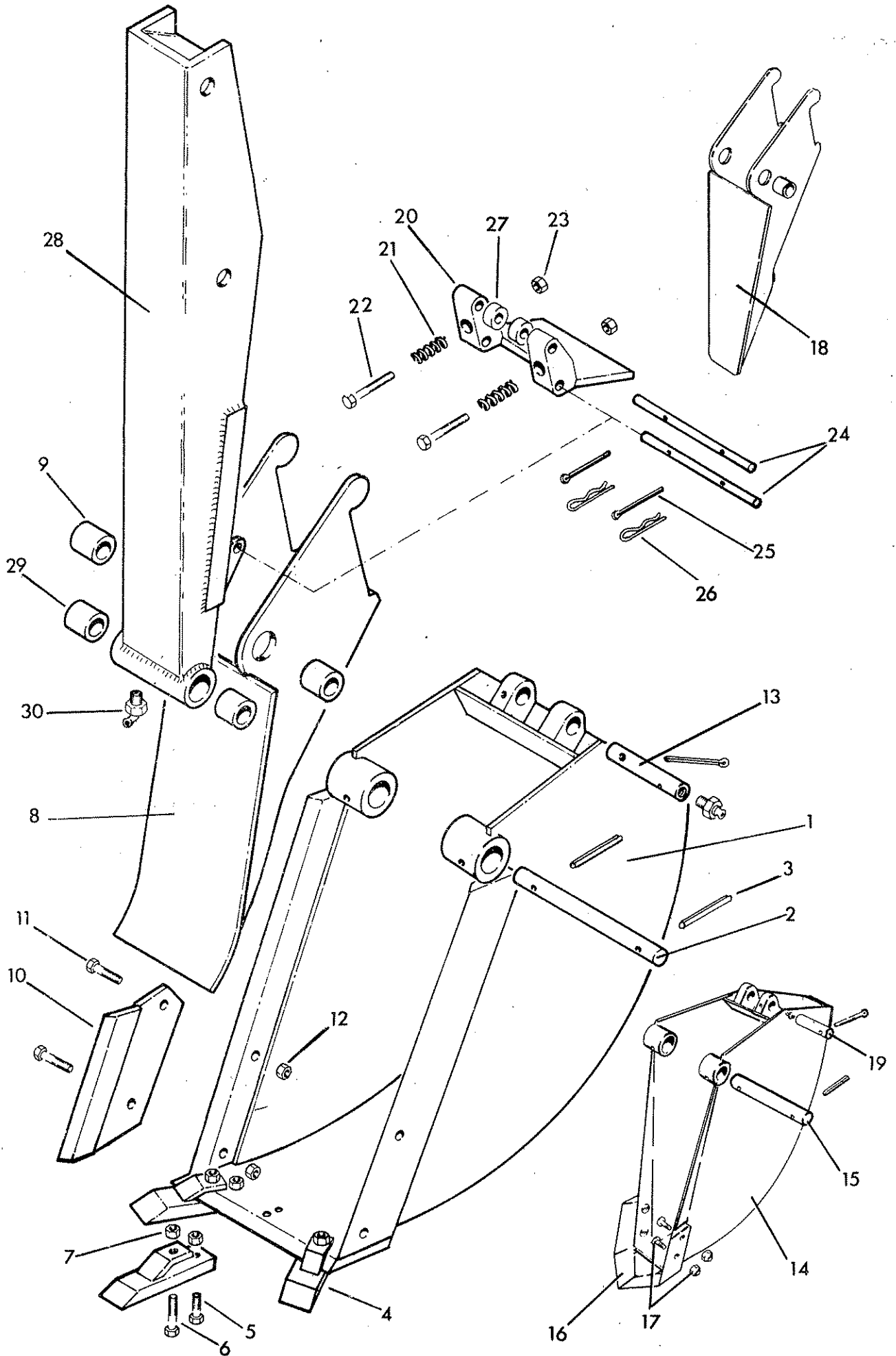
# CONSOLE & SEAT ASSEMBLY



Ref	Part No	Qty	Description
	71 03 506	1	CONSOLE ASSEMBLY
1	71 02 626	1	. Footboard pillar c/w mounting bolts
2	03 11 146	4	.. 1 $\frac{3}{4}$ " x 5/8" UNF bolt
3	01 41 006	4	.. 5/8" UNF Aeronut
4	71 02 628	1	. Seat support assembly c/w integral clearance frame
	71 02 629	1	. Alternative seat support assembly without clearance frame
5	71 03 054	1	. Support pin c/w spring cotter
6	04 31 105	1	.. Spring cotter
	71 03 273	1	. Seat assembly
7	71 06 352	1	.. Seat pan
8	71 06 181	4	... Set screws
9	71 03 276	1	.. Seat bracket
10	03 11 166	1	... 5/8" UNF Setscrew
11	71 03 110	1	.. Seat support
12	71 03 114	1	.. Clamp plate
13	71 03 065	1	.. Seat clamp
14	71 01 065	1	.. Pivot pin c/w spring cotter
15	71 02 198	1	. Valve socket
16	02 12 203	2	. Bolt 2 $\frac{1}{2}$ " x 3/8" UNC
17	03 12 083	2	. Bolt 1" x 3/8" UNC
18	81 14 401	1	2/4S HY-FI CONTROL VALVE O/centre
19	85 41 638	2	Slew ram hose 63" long. JIC Straight/135 $^{\circ}$ connections
20	85 11 028	2	Reach ram hose 100" long. JIC Straight/Straight
21	85 41 638	2	Bucket ram hose 63" long. JIC Straight/135 $^{\circ}$
22	85 11 768	2	Lift ram hose 76" long. JIC Straight/Straight
23	85 31 948	1	Supply hose 94" long. JIC Straight/90 $^{\circ}$
24	85 95 052	1	Return hose 52" long 5/8" bore, low pressure
25	09 04 204	2	Hose clip
26	81 16 300	1	IWT LOCK VALVE
27	85 34 186	1	Supply hose 18" long. JIC 3/16" bore straight/90 $^{\circ}$
28	85 34 186	1	Return hose 18" long. JIC 3/16" bore straight/90 $^{\circ}$
29	85 34 856	2	IWT Ram hose 85" long. JIC 3/16" bore straight/90 $^{\circ}$

Note. The I W T Lock Valve is serviced as a service exchange item only.

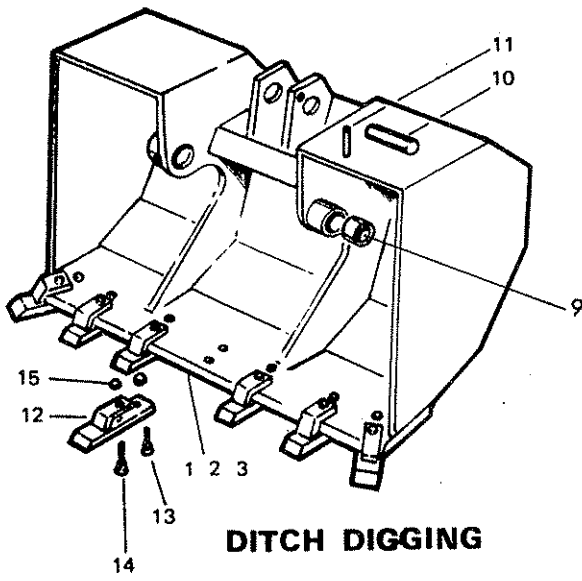
# TRENCHER BUCKETS



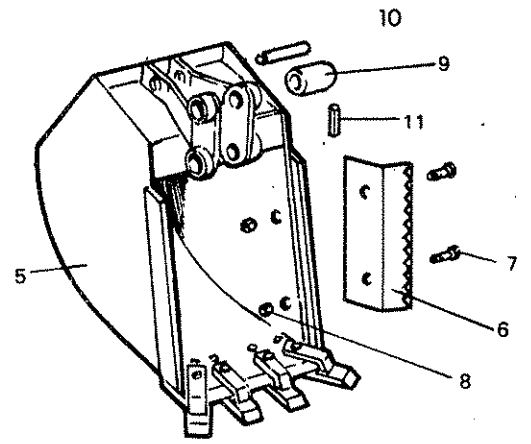


Ref	Part No	Qty	Description
	70 12 317	1	11" TRENCHER BUCKET c/w dipper Arm
	70 12 316	1	5½" TRENCHER BUCKET c/w dipper Arm
	70 12 290	1	11" TRENCHER BUCKET complete comprising:-
1	70 12 291	1	. Bucket welded assembly
2	70 12 061	1	. Bucket pivot pin c/w roll pins
3	04 22 632	2	.. Roll pin 3/8" x 2"
4	60 12 073	3	. Bucket tine c/w bolts and nuts
5	60 12 074	3	.. Tine bolt
6	60 12 034	3	.. Tine bolt long
7	01 12 004	6	.. Plain nut 7/16" UNC
8	70 12 294	1	. Ejector Plate
9	60 12 032	2	. Ejector pivot bush
10	70 12 072	2	. Cheek plate c/w bolts and nuts
11	02 11 134	4	.. Bolt 1.5/8" x 7/16" UNF
12	01 41 004	4	.. Aeronut 7/16" UNF
13	60 12 025	1	. Rod pivot pin c/w split pin and greaser
	70 12 258	1	5½" TRENCHER BUCKET complete comprising:-
14	70 12 259	1	. Bucket welded assembly
15	70 12 036	1	. Bucket pivot pin c/w roll pin
16	70 12 263	1	. Vee shoe c/w bolts and nuts
17	70 12 030	4	.. Shoe bolts and nuts
18	70 12 261	1	. Ejector plate
19	60 12 025	1	. Rod pivot pin c/w split pin and greaser
	72 12 258	1	DIPPER ARM NARROW ASSY c/w Ejec/Latch
28	71 05 321	1	. Dipper Arm c/w bushes & greaser
29	60 12 032	2	.. Bucket Pivot Bush
30	09 01 124	1	.. Angled Greaser
	70 12 040	1	. Ejector latch assembly comprising:-
20	70 12 039	1	.. Ejector latch
21	60 00 110	2	.. Spring
22	02 11 183	2	.. Bolt 2¼" x 3/8" UNF
23	01 61 003	2	.. Nyloc Nut 3/8" UNF
24	70 12 041	2	.. Latch pivot pin
25	05 03 085	2	.. Split pin 1" x 3/16"
26	72 12 016	2	.. Ejector roller
27	04 31 105	2	.. Spring cotter

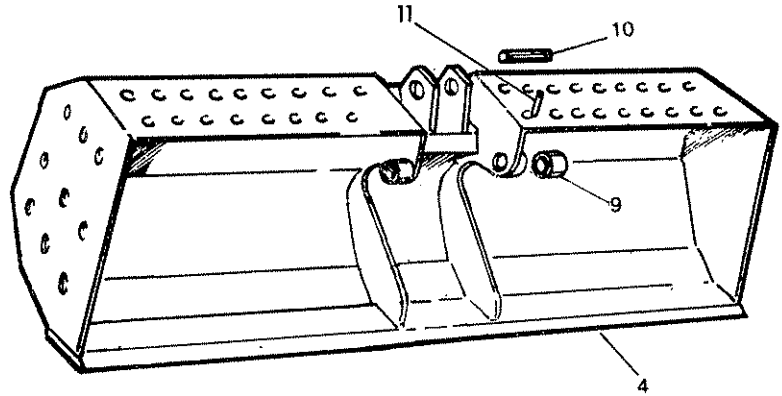
**DIGGING AND DITCHING BUCKETS.**



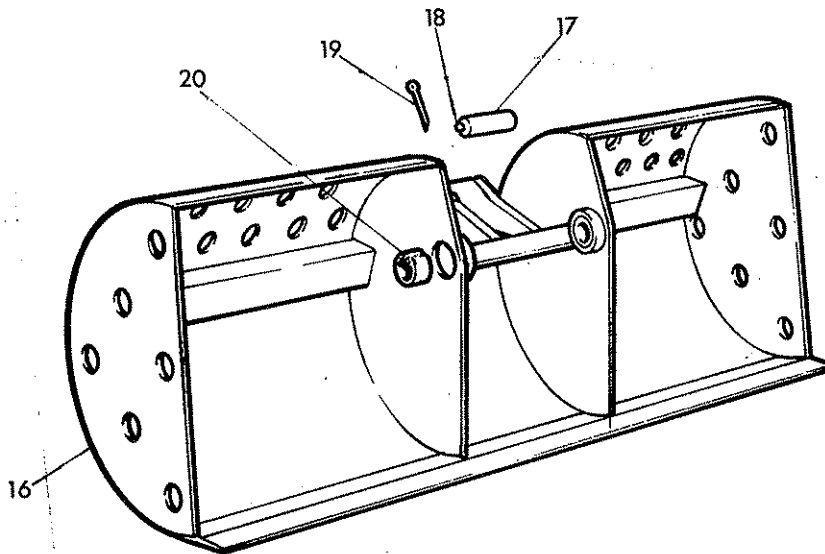
**DITCH DIGGING**



**TRENCHING (Heavy duty)**



**DITCH CLEANING**



**DITCH CLEANING**

DIGGING & DITCH CLEANING BUCKETS

Ref.	Part No.	Qty	Description
1	72 13 271	1	24" (Heavy Duty) Bucket complete
2	72 13 272	1	30" (Heavy Duty) Bucket complete
3	72 12 280	1	36" (Heavy Duty) Bucket complete
4	72 13 279	1	60" (Light Ditch) Bucket complete
5	72 13 288	1	18"/20" (Heavy Duty) Bucket complete
6	70 12 072	2	. Cheek Plate c/w Bolts & Nuts (optional extra)
7	02 11 134	4	.. 1.5/8" x 7/16" UNF Hex. Bolt
8	01 41 004	4	.. 7/16" UNF Aeronut

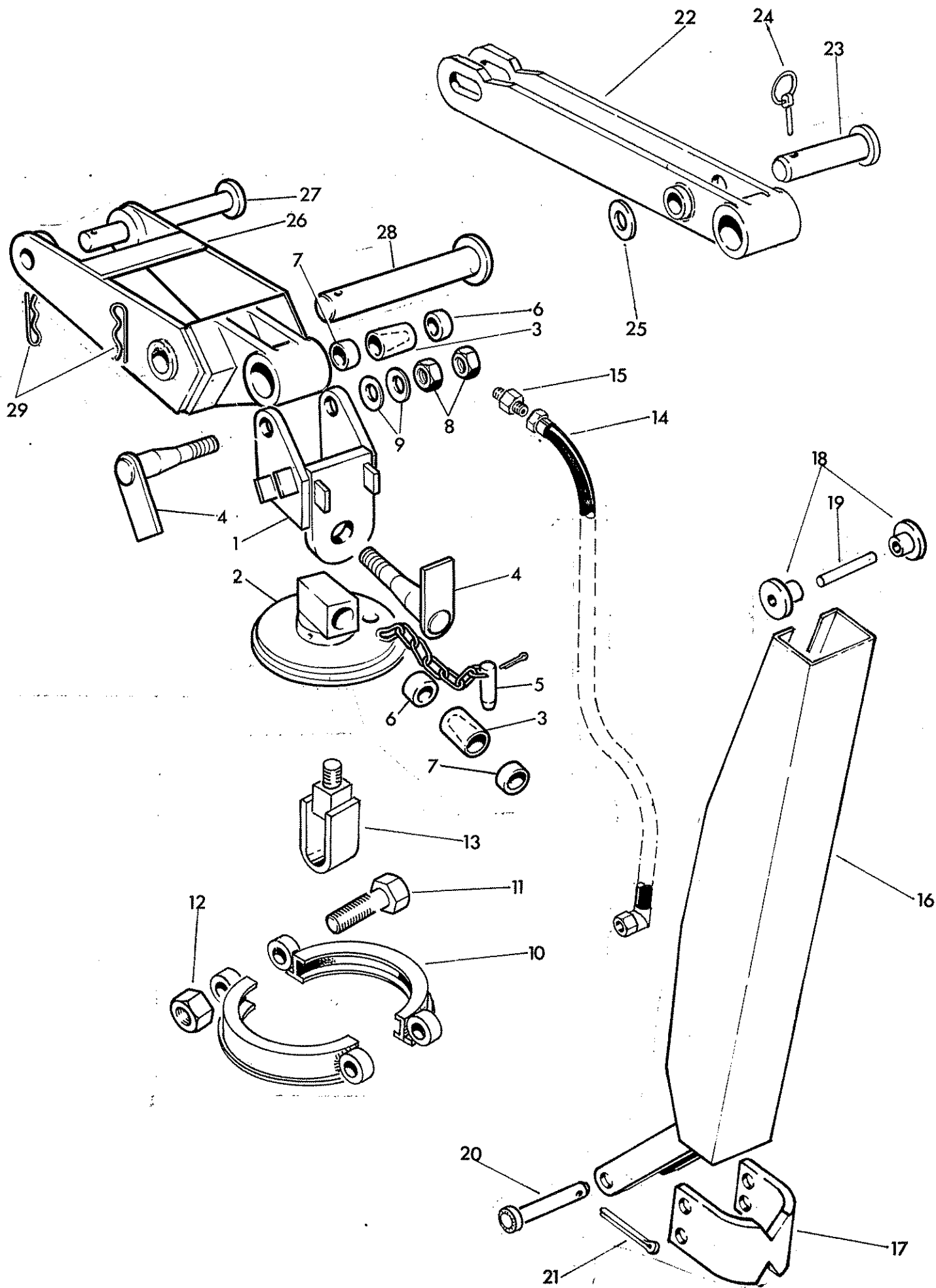
THE FOLLOWING PARTS ARE COMMON TO ALL DEEP PROFILE BUCKETS

9	72 13 023	2	. Bucket Pivot Bush
		4	For 18" - 20" only
10	72 13 021	1	. Rod Pivot Pin
11	04 22 824	1	. 1½" x ½" dia. Spring Dowel

THE FOLLOWING ARE VARIABLE QUANTITIES OF  
TINES AND BOLTS REQUIRED FOR EACH BUCKET

		24"	30"	36"	18/20"	
12	60 12 073	6	8	9	4	. Bucket Tine c/w Bolts & Nuts
13	60 12 034	6	8	9	4	.. Tine Bolt (Short) c/w Nut
14	60 12 074	6	8	9	4	... Tine Bolt (Long) c/w Nut
15	01 12 004	12	16	18	8	... 7/16" UNC Nut
16	70 12 278	1	48" Ditch Cleaning Bucket Assembly			
17	60 12 051	1	. Rod pivot pin complete with split pin			
18	09 01 021	1	.. Grease nipple			
19	05 03 246	1	.. 3" x ¼" Split pin			
20	60 12 032	2	. Bucket Pivot bush			

**CONVERSION TO GRAB**



Ref	Part No	Qty	Description
	72 13 260	1	K D. KNUCKLE EXTENSION ASSEMBLY
	72 12 261	1	K C. KNUCKLE EXTENSION ASSEMBLY

The following parts are common to both assemblies:-

	71 05 302	1	. Grab suspension swivel assembly
1	71 05 303	1	.. Universal jaw
2	71 05 324	1	.. Swivel plate
3	71 05 071	2	.. Friction sleeve
4	71 05 072	2	.. Swivel pin
5	71 05 076	1	.. Locating pin
6	73 12 072	2	.. Bush
7	70 12 037	4	.. Spring steel bush
8	01 31 006	4	.. Locknut 5/8" UNF
9	70 14 027	4	.. Spring disc
10	71 05 326	2	.. Split clamp
11	02 11 186	2	.. Bolt 2 1/4" x 5/8" UNF
12	01 51 006	2	.. Aeronut 5/8" UNF
13	73 12 073	1	. Safety strap .(Required for GCM grab only)
14	85 31 598	2	. JIC Hydraulic hose 59" long
15	72 13 004	2	. JIC 3/4" Double male union
	71 03 298	1	. Lift ram guard assembly
16	71 03 297	1	.. Lift ram guard
17	71 03 210	1	.. Ram hood
18	71 03 211	2	.. Roller
19	71 03 212	1	.. Roller spindle
20	71 03 213	1	.. Pin c/w split pin
21	05 03 083	1	... Split pin 1" x 1/8"

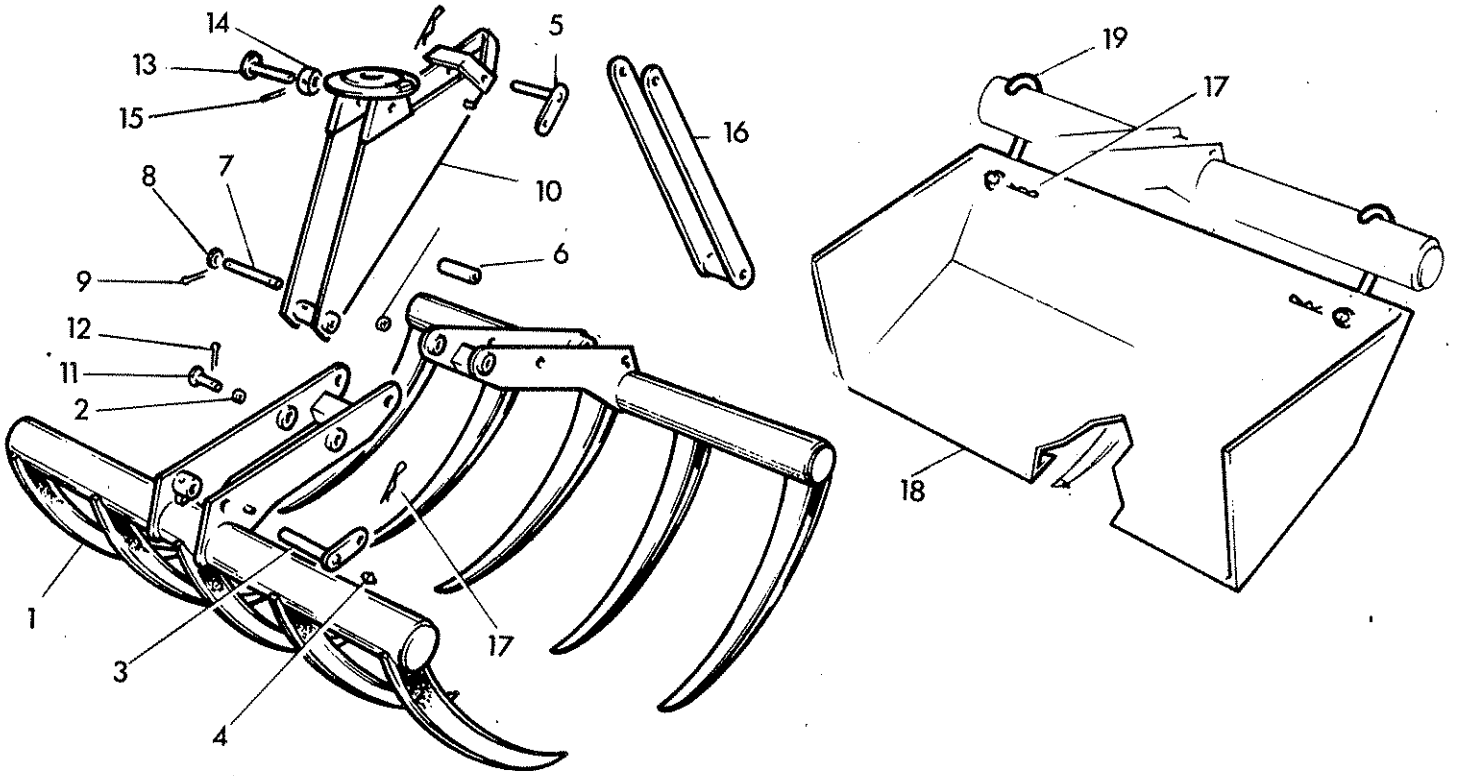
The following parts used on K C knuckle assembly only:-

22	72 12 262	1	. Extension arm
23	72 12 007	1	. Extension arm pin c/w linch pin
24	04 31 217	1	.. Linch pin
25	72 12 008	1	. Spacer

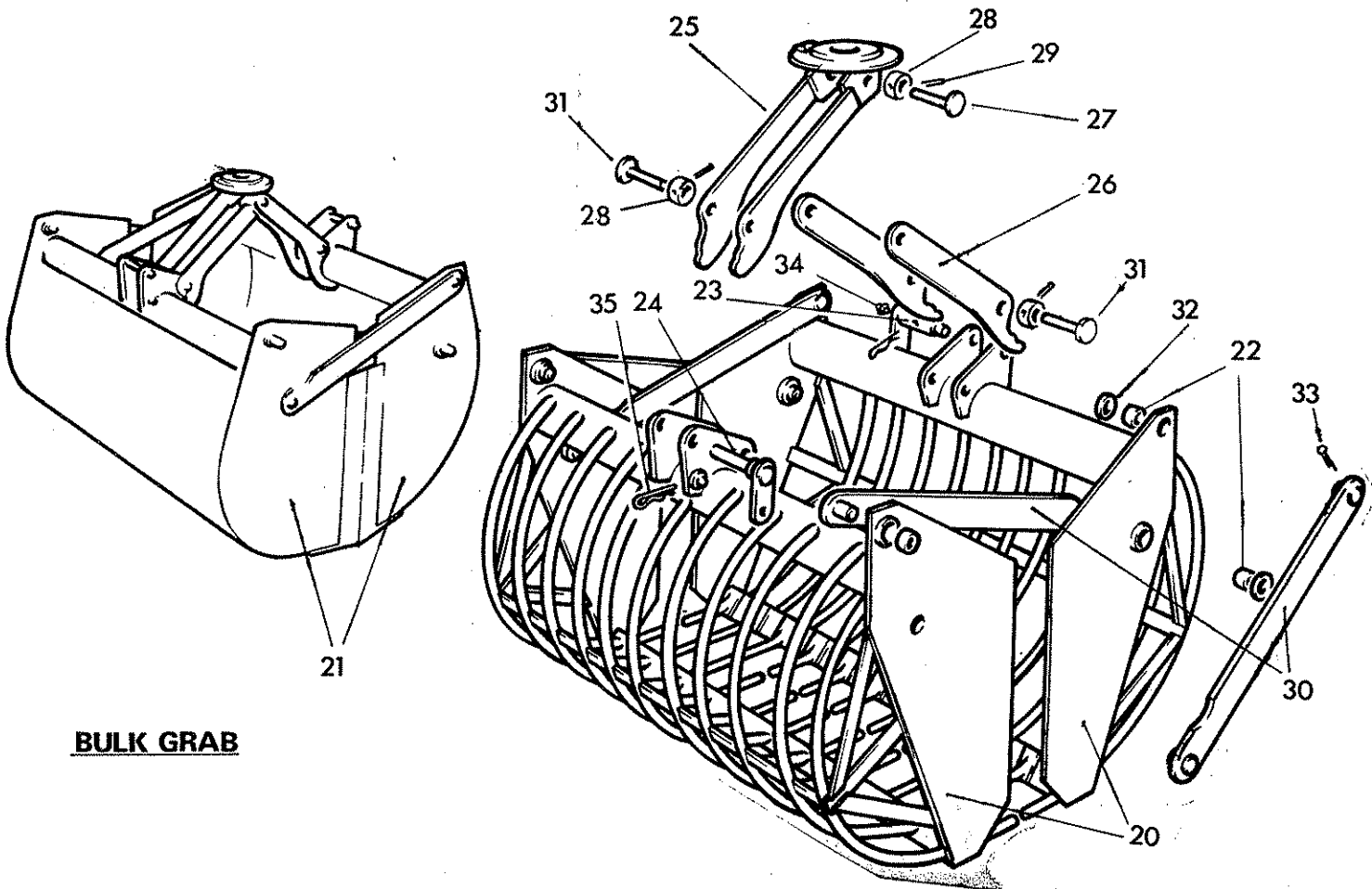
The following parts used on K D knuckle assembly only:-

26	72 13 261	1	. Adaptor knuckle
27	72 13 010	1	. Pin c/w spring cotter
28	72 13 011	1	. Pin c/w spring cotter
29	04 31 105	2	. Spring cotter

### MANURE GRAB



### BEET GRAB



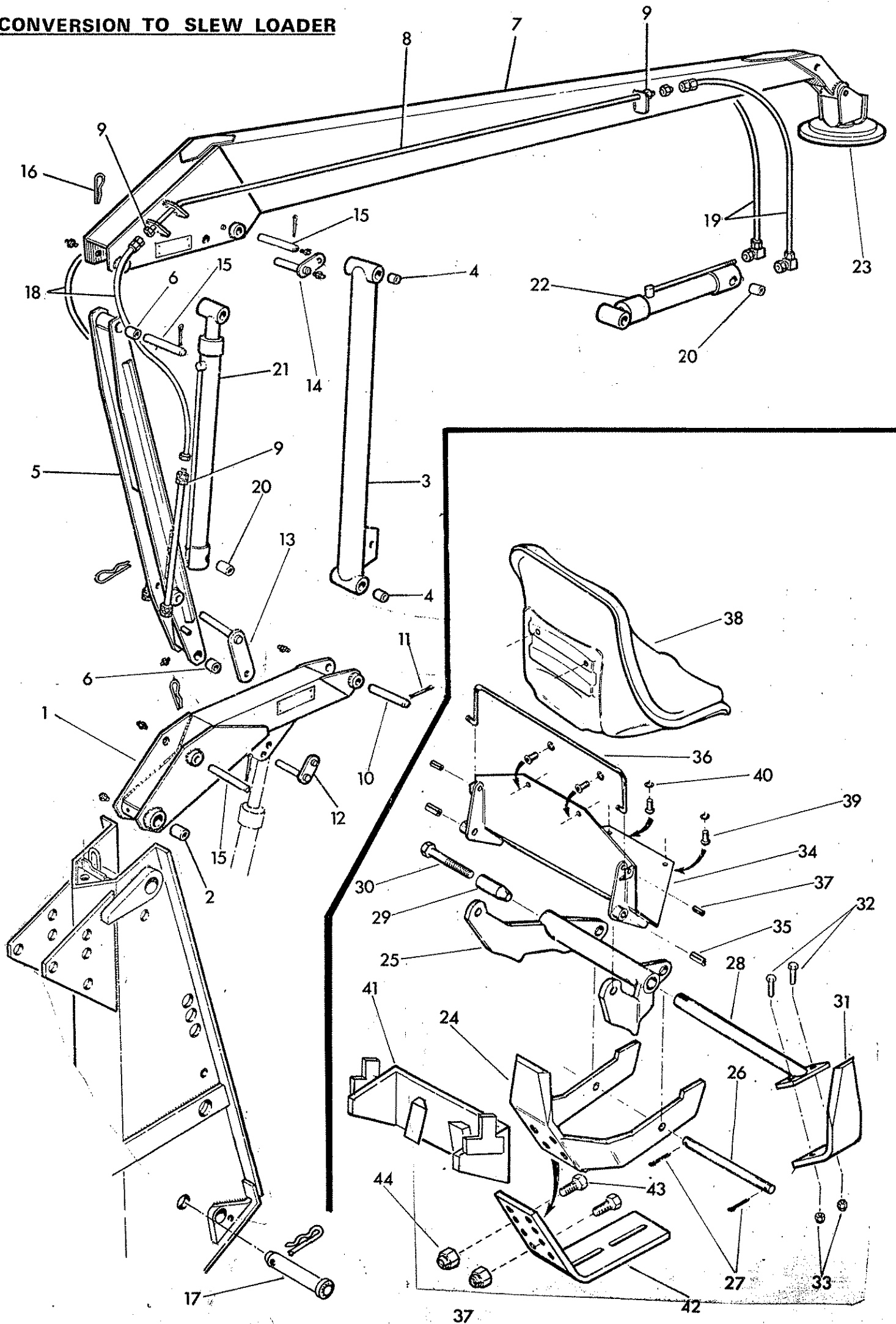
### BULK GRAB

Ref	Part No	Qty	Description
	72 14 300		G.C.M. ASSEMBLY (Grab Compact Manure)
1	72 14 301	2	. Tine Bar complete with bushes
2	72 14 060	10	.. Grab pivot bush
3	72 14 071	1	. Rod end pin c/w greaser
4	09 01 121	1	.. Greaser
5	72 14 064	1	. Ram pivot pin c/w spring cotter
6	72 14 062	1	. Distance piece
7	72 14 063	1	. Joint pin c/w washers and split pin
8	70 14 048	2	.. Washer 1"
9	05 03 125	2	.. Split pin 3/16" x 1½"
10	72 14 302	1	. Suspension frame
11	72 14 066	4	. Pivot pin c/w split pin
12	05 03 165	4	.. Split pin 3/16" x 2"
13	72 14 065	1	. Suspension link pin, collar and dowel
14	72 14 068	1	.. Collar
15	04 21 628	1	.. Dowel 3/16" x 1¾"
16	72 14 061	1	. Suspension link
17	04 31 105	4	. Spring cotter
18	70 14 287	2	Tine plate c/w hook & cotter (optional extra)
19	70 14 071	2	. Attachment hook
	70 14 268	1	G.B.R. (Grab Beet Roots) GRAB comprising:-
20	70 14 269	2	. Beet grab halves c/w bushes
	72 14 305	1	G.B.L. (Grab Bulk Lime) GRAB comprising:-
21	72 14 306	2	. Bulk grab halves c/w bushes

The following parts are common to both grabs

22	71 01 083	8	.. Bush
23	70 14 042	1	. Ram pin base end c/w spring cotter
24	70 14 043	1	. Ram pin rod end c/w greaser & spring cotter
25	70 14 315	1	. Suspension frame
26	70 14 316	1	. Suspension link
27	70 14 087	1	. Suspension link pin c/w collar & spring dowel
28	70 14 074	1	.. Collar
29	04 21 624	1	.. Spring dowel 1½" x 3/16"
30	72 14 069	4	. Cross link
31	70 14 088	2	. Suspension link pin (lower) c/w collar & spring dowel
32	70 14 048	8	. Special washer
33	05 03 125	8	. Split pin 1½" x 3/16"
34	09 01 121	1	. Greaser
35	04 31 105	2	. Spring cotter
	72 14 048	1	Collar. Note. This is fitted to grab ram rod when it is known that beet grab is to be fitted. Base end of ram painted white for identification.

# CONVERSION TO SLEW LOADER

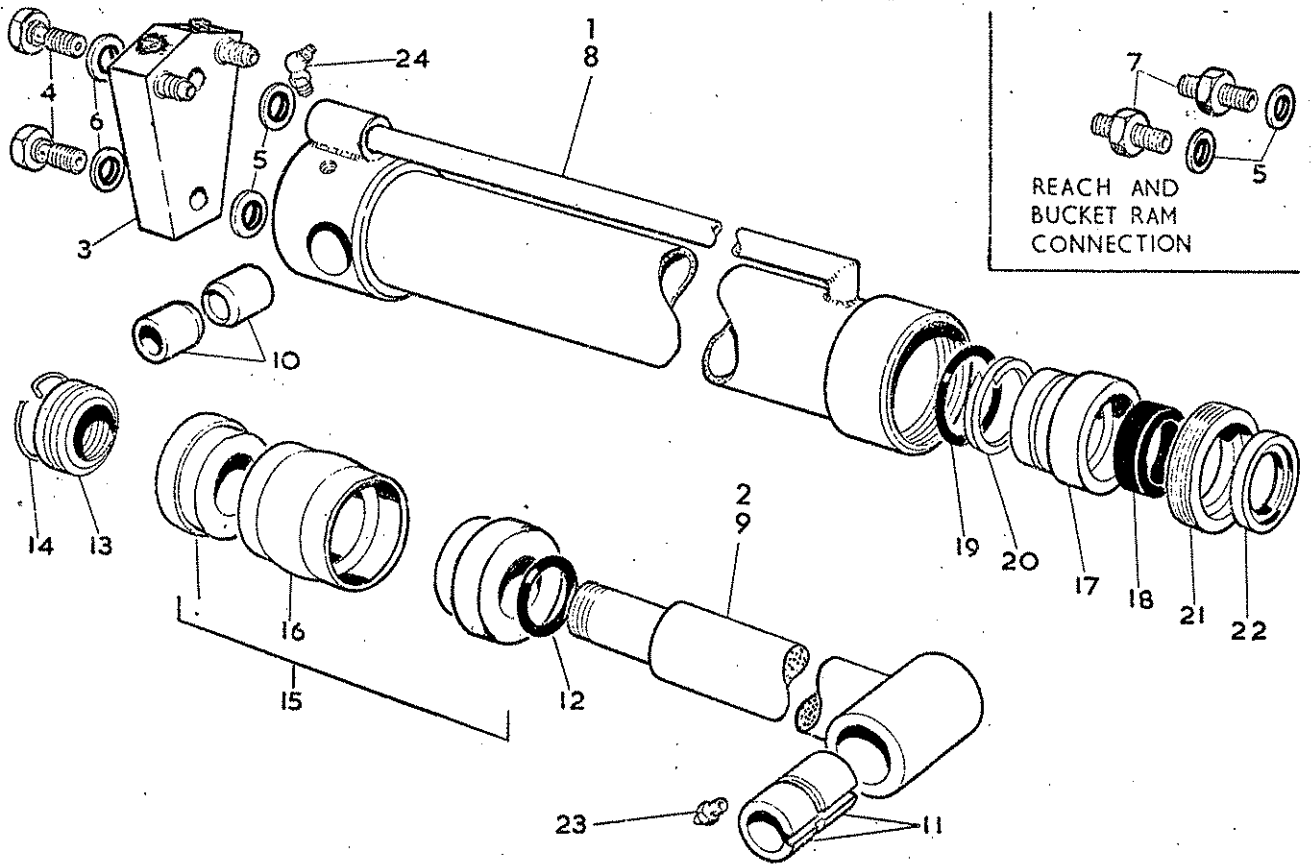




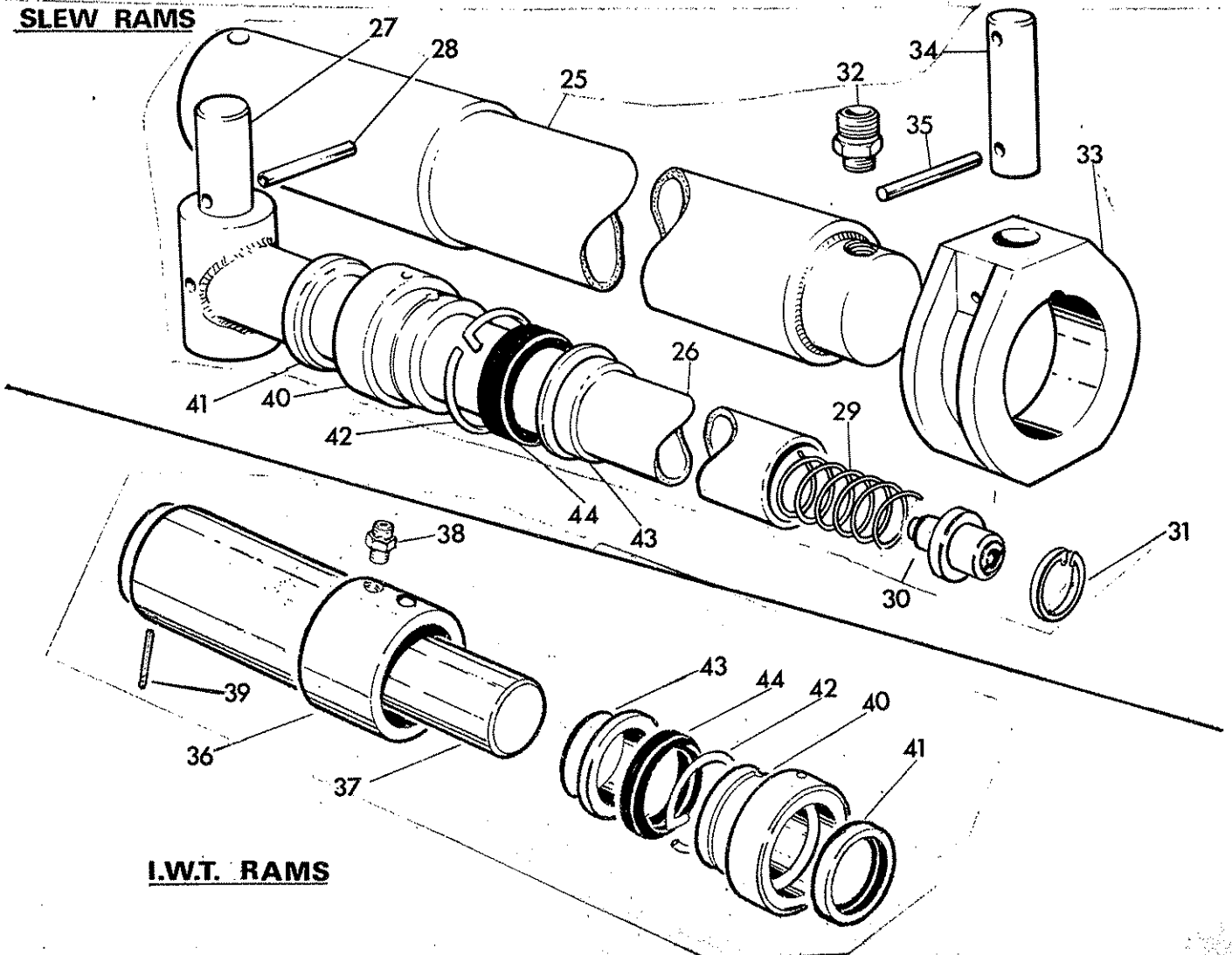
14E ARMHEAD

Ref	Part No	Qty	Description
	72 14 250	1	14E LOADER ARM ASSEMBLY comprising:-
1	72 14 251	1	. Rocker Arm c/w bushes and greaser
2	71 01 034	2	.. Bush
3	70 14 253	1	. Compression Link c/w bushes
4	68 03 010	4	.. Bush
5	70 14 254	1	. Tension Link c/w bushes & greaser
6	68 03 010	4	.. Bush
7	70 14 300	1	. Main Boom c/w steel pipes
8	72 13 001	2	.. Steel Pipe
9	72 13 003	8	. JIC Pipe End fittings
10	70 14 018	1	. Link Pin c/w split pin & greaser
11	05 03 166	1	.. 2" x 1/4" split pin
12	72 14 001	1	. Lift Ram Rod Pin c/w spring cotter
13	70 14 015	1	. Ram Base Pin c/w spring cotter
14	70 14 019	1	. Reach Ram Rod Pin c/w greaser & spring cotter
15	70 14 083	3	. Link Top Pin c/w spring dowel & greaser
16	04 25 736	3	.. Spring Dowel
17	72 14 008	1	. Safety Pin c/w spring cotter (fits into slew column to prevent lift booster being used in lower position)
18	85 11 328	2	. Hydraulic hose 32" long JIC
19	85 31 598	2	. Hydraulic hose 59" long JIC
20	71 01 058	4	. Bush
21	71 03 301		. Reach Ram Assembly
22	71 03 302		. Bucket Ram Assembly
23	71 05 302		. Grab Suspension Swivel Assembly
	09 01 020	6	Grease nipples 1/8" BSP straight
	04 31 105	4	Spring Cotter
	72 14 289	1	FORWARD CONTROL SET for PA6/14 comprising:-
	71 06 340	1	. Tip-up seat assembly
24	71 06 341	1	.. Pivot Body
25	71 06 343	1	.. Swinging Link
26	71 06 182	1	.. Pivot Pin
27	05 03 125	2	.. 1/4" x 3/16" split pin
28	71 06 176	1	.. Control unit swivel
29	71 06 177	1	.. Taper wedge
30	02 11 325	1	.. 4" x 1/2" UNF bolt
31	71 06 178	1	.. Side pillar
32	02 11 103	2	.. 1/2" x 3/8" UNF bolt
33	01 41 003	2	.. 3/8" UNF locknut
34	71 06 353	1	.. Seat adaptor plate
35	04 22 816	2	.. 1" x 1/2" spring dowel
36	71 06 180	1	.. Latch
37	04 21 8	2	.. 3/4" x 1/4" spring dowel
38	71 06 352	1	.. Bostram Seat c/w screws & washers
39	71 06 181	4	... 1/2" x 5/16" UNC setscrew
40	01 00 102	4	... 5/16" washer
41	72 14 286	1	. Control valve mounting bracket
	85 41 638	6	. Hydraulic hose 63" long
	72 13 004	6	. Union double end 3/4" JIC
	72 14 287	1	. Hose guide bracket c/w pins
	60 12 026	4	. Pipe clamp
	02 11 123	2	. 1/2" x 3/8" UNF bolt
	01 61 003	2	. 3/8" UNF Nyloc Nut
	71 02 208	2	. Plastic clips
	85 95 024	1	. Return hose 24" long
	72 14 085	1	. Connection
	09 04 204	2	.. Hose clip
			Clamps reach and lift ram hoses together.
			Couples to existing return hose
			When converting from digger to loader armhead the following items are also required -
	72 13 252	1	Pipe bracket (replaces 72 12 017)
	85 41 638	2	Hydraulic hose 63" long
	85 11 328	2	Hydraulic hose 32" long
	72 13 003	4	JIC end fitting
	70 14 999	1	LOADER SUPPORT STAND (not illustrated)
	71 06 189	1	MOUNTING BRACKET (optional extra for fitting control valve to mudwing)
42	71 06 172	1	ADAPTOR BRACKET
43	02 11 106	2	1/4" x 5/8" UNF bolt
44	01 41 006	2	5/8" UNF Locknut
			See fitting chart for requirement. Page 15.

**DIGGING RAMS**



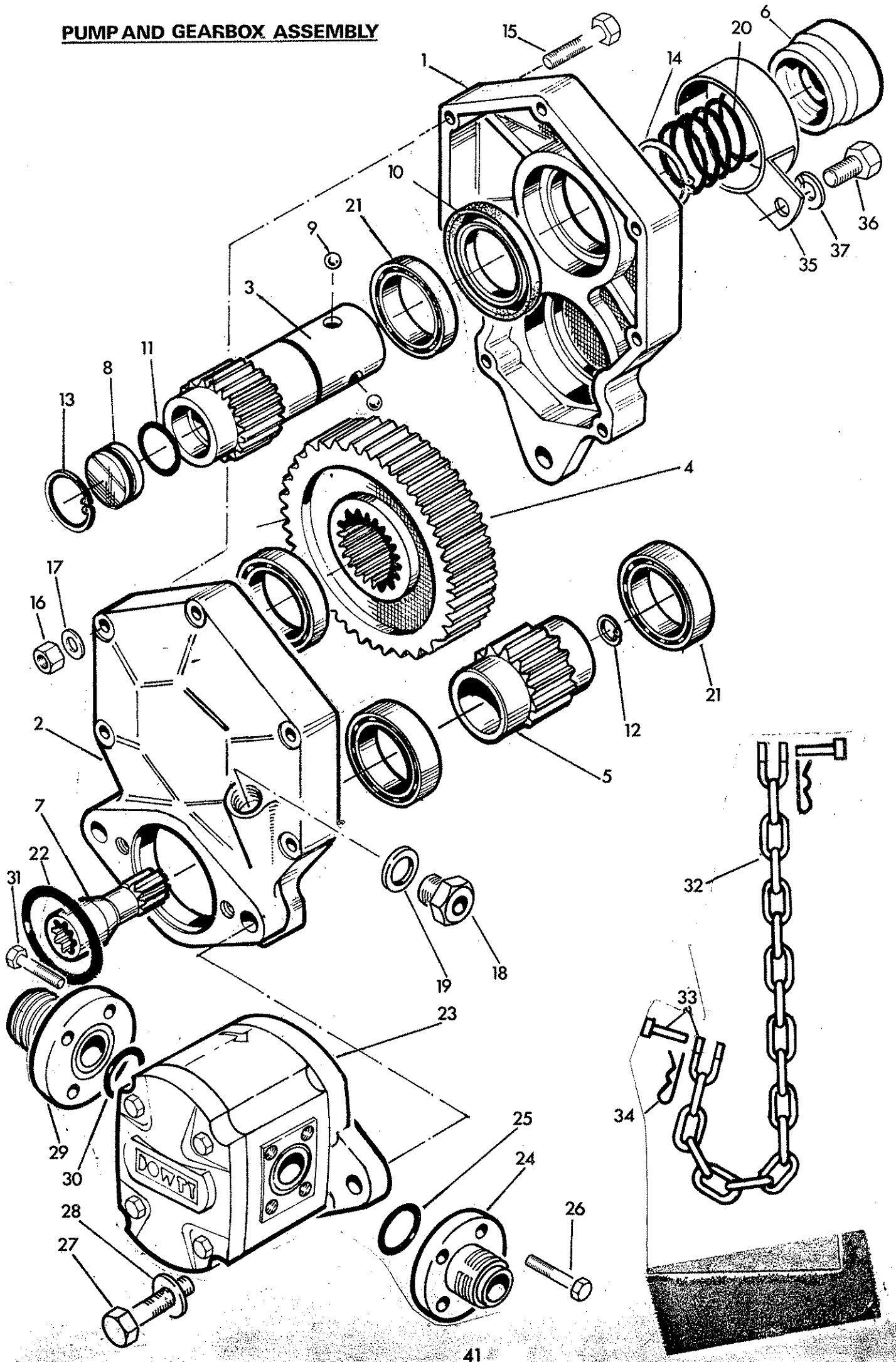
**SLEW RAMS**



**I.W.T. RAMS**

Ref	Part No	Qty	Description
	71 03 300	1	LIFT RAM COMPLETE comprising:-
	71 03 303	1	.Ram assembly comprising:-
1	71 03 304	1	..Ram cylinder
2	71 01 095	1	..Ram rod c/w bush, 'O' ring, nut & greaser
3	71 03 305	1	.Ram base connection
4	71 01 079	2	.Banjo bolt
5	86 50 103	2	.3/8" bonded seal
6	86 50 104	2	.1/2" bonded seal
	71 03 301	1	REACH RAM COMPLETE comprising:-
	71 03 303	1	.Ram assembly comprising:-
1	71 03 304	1	..Ram cylinder
2	71 01 095	1	..Ram rod c/w bush, 'O' ring, nut & greaser
5	86 50 103	2	.3/8" bonded seal
7	71 03 062	2	.JIC union
	71 03 302	1	BUCKET RAM COMPLETE comprising:-
	72 12 271	1	.Ram assembly comprising:-
8	72 12 272	1	..Ram cylinder
9	72 12 004	1	..Ram rod c/w bush, 'O' ring and nut
10	71 01 158	2	..Sleeve
5	86 50 103	2	.3/8" bonded seal
7	71 03 062	2	. JIC Union
	The following parts are common to all three rams:-		
11	71 05 050	1	...Bush - rod end
12	86 00 119	1	... 'O' ring for piston rod
13	71 01 096	1	...Piston nut c/w locking ring
14	71 01 152	1	...Locking ring
15	71 01 097	1	..Piston assembly c/w seal
16	86 35 131	1	...Piston seal
17	71 01 099	1	..Gland housing c/w seal and 'O' ring
18	86 22 127	1	...Gland seal
19	86 00 304	1	... 'O' ring
20	86 09 304	1	... Anti extrusion ring
21	71 01 100	1	.Gland nut c/w wiper
22	86 40 328	1	...Piston rod wiper
23	09 01 121	1	..Greaser (straight)
24	09 01 124	1	..Greaser (angular)
	86 99 102		SEAL KIT FOR ALL 2 1/4" Bore Rams
	71 03 270	2	SLEW RAM COMPLETE each comprising:-
25	71 03 271	1	.Ram cylinder
26	71 03 272	1	.Ram rod c/w pit pins and cushion assembly
27	71 02 176	1	..Rod pivot pin c/w spring dowel
28	04 22 528	1	... 1 1/4" x 5/16" spring dowel
29	71 03 078	1	..Spring
30	71 03 095	1	..Cushion assembly
31	64 12 119	1	..Circlip
32	71 03 061	1	.Double male union BSP/JIC
33	71 02 507	1	.Ram trunnion c/w pivot pin
34	71 02 177	1	..Pivot pin c/w spring dowel
35	04 22 528	1	... 1 1/4" x 5/16" spring dowel
	71 03 267	2	1 W T. RAM COMPLETE each comprising:-
36	71 03 268	1	.Ram cylinder
37	71 03 058	1	.Ram rod
38	71 03 063	1	.JIC union
39	04 21 284	1	. 1 1/2" x 1/4" spring dowel
	The following parts are common to both rams:-		
40	71 01 029	1	..Ram head bush c/w wiper seal
41	86 40 230	1	...Rod wiper seal
42	71 01 030	1	..Locking wire
43	71 01 031	1	..Bronze insert
44	86 12 132	1	..Gland seal
45	86 99 103		SEAL KIT

# PUMP AND GEARBOX ASSEMBLY



Ref	Part No	Qty	Description
	80 13 270	1	GEARBOX/SMALL DOWTY PUMP ASSEMBLY consisting of:-
	80 13 260	1	. Gearbox Assembly, comprising:-
1	80 13 261	1	.. Case (Input side)
2	80 13 262	1	.. Case (Output side)
3	80 13 263	1	.. Take-off shaft
4	80 13 264	1	.. Gear, 51 teeth
5	80 13 029	1	.. Gear, 16 teeth
6	80 13 030	1	.. Ball retainer
7	80 13 001	1	.. Pump coupling (small pump) 11TM-9TF
8	80 13 031	1	.. Bung
9	09 05 116	3	.. Ball, ½" dia.
10	86 29 116	1	.. Oil Seal
11	86 00 409	1	.. 'O' ring
12	04 16 110	1	.. Circlip
13	04 16 124	1	.. Circlip
14	04 06 250	1	.. Circlip
15	02 11 242	7	.. Bolt, 3" x 5/16" UNF
16	01 11 002	7	.. Nut, 5/16" UNF
17	01 00 202	7	.. Spring washer, 5/16" dia.
18	80 13 033	1	.. Breather valve assembly
19	01 00 903	1	.. Fibre washer
20	80 13 032	1	.. Ball retaining spring
21	06 03 650	4	.. Ball bearing assembly
22	86 00 435	1	.. 'O' ring
23	82 01 480	1	. Hydraulic pump, Dowty 1P3044/C/SSFB
24	80 05 021	1	. Pressure connection, c/w 'O' ring, Setscrews
25	86 00 405	1	.. 'O' ring
26	03 12 082	4	.. Setscrew, 1" x 5/16" UNC
27	03 12 084	2	. Setscrew, 1" x 7/16" UNC
28	01 00 204	2	. Spring washer, 7/16" dia.
29	80 05 009	1	. Suction connection, c/w 'O' ring, Setscrews
30	86 00 405	1	.. 'O' ring
31	03 12 082	4	.. Setscrew, 1" x 5/16" UNC
32	09 02 330	1	. Chain
33	60 00 087	2	. Shackle assembly
34	04 31 105	2	. Spring cotter
35	80 13 266	1	. PTO Guard
36	03 11 066	1	.. Screw 5/8" UNF x ¾" long
37	01 00 206	1	.. Spring washer 5/8" dia.
	85 00 850	1	SUCTION HOSE 1" Bore, 50" long.
	09 04 106	4	Hose Clip

### HIGH RATIO GEARBOX

#### Important Note

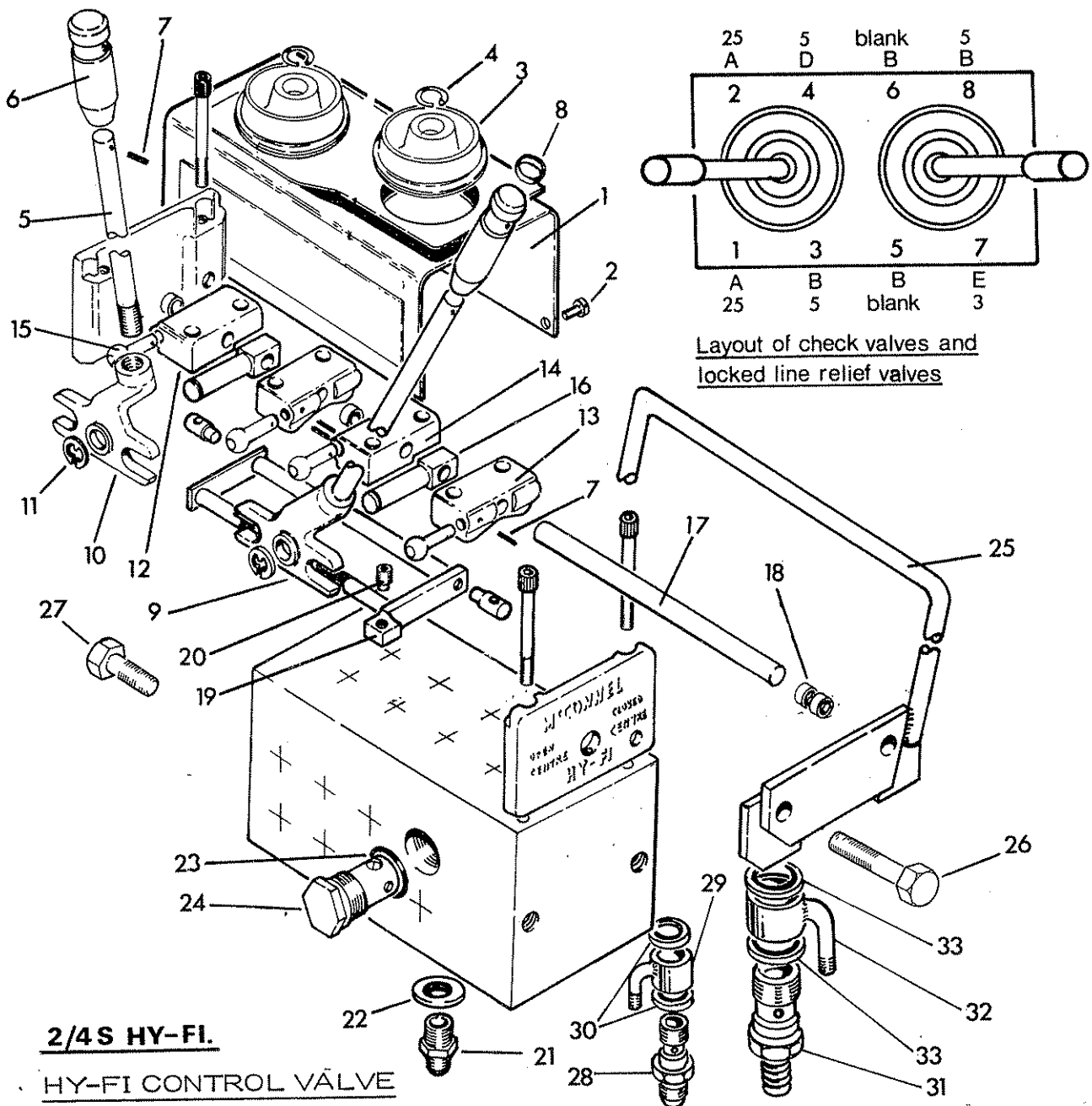
To give an increased oil flow at a lower tractor engine speed with a resultant saving in fuel costs a high ratio gearbox was introduced in April 1975 from machine serial number 32AD18.

This gearbox is readily identified with the figure '2100' stamped on the front face of the housing. It uses a 13 spline coupling to the pump.

Refer to illustration opposite and parts list below when ordering spares:-

Ref	Part No	Qty	Description
	80 13 271	1	GEARBOX HIGH RATIO C/W PUMP ASSEMBLY
	80 13 290	1	. Gearbox Assembly comprising:-
1	80 13 291	1	.. Case input side
2	80 13 292	1	.. Case output side
3	80 13 263	1	.. Take-off shaft
4	80 13 294	1	.. Gear 77 teeth
5	80 13 293	1	.. Gear 18 teeth (output shaft)
7	80 13 043	1	.. Splined adaptor coupling 9t x 13t
12	04 16 112	1	.. Circlip internal 3/4"
21	06 03 650	2	.. Bearing (take-off shaft)
22	06 04 640	2	.. Bearing (output shaft)

Note: All other components are common to the 1100 Series Gearbox Part Number 80 13 260.



**2/4S HY-FI.**

**HY-FI CONTROL VALVE**

The 2/4S model control valve as used on the PA5 and PA6 is a precision instrument and as such should only be stripped by qualified technicians. However, a certain amount of servicing can be carried out by the owner/operator. The Hy-Fi consists of an aluminium block into which is fitted two rows of capsules on each side. The block is sectioned and stamped with a series of numbers. The top row of capsules are check valves each of which is identified with a code letter stamped on its face. Although all these check valves may look alike, each has a different operation to perform, so on no account whatever should one be transposed with another of different coding. The lower rows of capsules contain locked line relief valves and these too should not be interchanged. Refer to the diagram for the correct layout.

**Nylon Rockers**

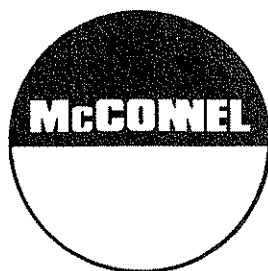
In extreme cases these can become so badly worn as to limit spindle movement. To renew rockers the four allen headed cap screws beneath the metal shroud should be removed. The whole rocker assembly can then be lifted off. Do not start tractor or engage pump at this time or the cut off needle will be ejected. Liberally coat the underside of the rockers with grease on reassembly and re-adjust the tappet clearance between the allen headed grub screw and the cut off needle to 1/32" when the bar is raised by hand.

2/4S HY-FI

Ref	Part No.	Qty	Description
	81 14 401	1	2/4S HY-FI control chest
1	81 14 255	1	. Cover complete with labels
2	81 14 057	4	. Self tapping screw
3	81 14 028	2	. Boot large
4	04 05 108	2	. Wire ring clip
5	81 14 075	2	. Lever
6	81 14 053	2	. Handle
7	04 20 812	2	. Roll pin
8	81 14 063	1	. Black ring
	81 14 062	1	. Red ring
	81 14 060	1	. Yellow ring
	81 14 061	1	. Green ring
9	81 14 073	1	. Lever bracket. Right Hand.
10	81 14 074	1	. Lever bracket. Left Hand.
11	81 14 058	2	. Circlip
12	81 14 055	2	. Rocker L Hand complete with ball and pin.
13	81 14 054	2	. Rocker R Hand complete with ball and pin.
14	81 14 033	4	. Rocker only
15	81 14 034	4	. Ball end
16	81 14 030	2	. Lever pivot
17	81 14 029	1	. Rocker Shaft
18	81 14 031	4	. Spacer
19	81 14 035	1	. Cut off lever
20	81 14 056	1	. Socket screw (cut off adjustment)
21	71 03 062		Union 3/8" BSP x 3/4" JIC
22	86 50 103		Bonded seal 3/8"
23	86 00 402		'O' Ring
24	81 14 150		A type
	81 14 149		B type
	81 14 153		D type
	81 14 154		E type
			Check Valve Assembly
25	71 02 198	1	Hy-Fi mounting handle
26	02 12 203	2	Bolt 2 1/2" x 3/8" UNC
27	03 12 083	2	Bolt 1" x 3/8" UNC
28	81 14 067	1	Banjo bolt
29	81 14 065	1	Banjo
30	86 50 103	2	Bonded seal 3/8" BSP
31	81 14 068	1	Banjo bolt
32	81 14 066	1	Banjo
33	86 50 218	2	Bonded seal 1.1/8" dia,







McConnel Limited, Temeside Works, Ludlow, Shropshire SY8 1JL. England.  
Telephone: 01584 873131. Facsimile: 01584 876463. [www.mcconnel.com](http://www.mcconnel.com)