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INSTRUCTION AND SPARE PARTS MANUAL

TU 20-9



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INTRODUCTION

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:

WARNING

An operating procedure, technique etc., which can result in personal injury or loss of life if not observed carefully.

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 emphasise.

Left and Right-Hand

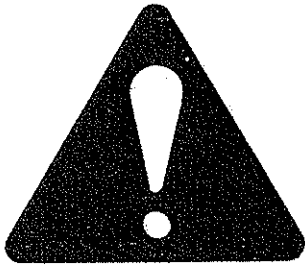
This term is applicable to the machine when fitted to the tractor and viewed from the rear. This also applies to tractor references.

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	
DEALERS NAME	
DEALERS TELEPHONE NUMBER	

SECTION 1

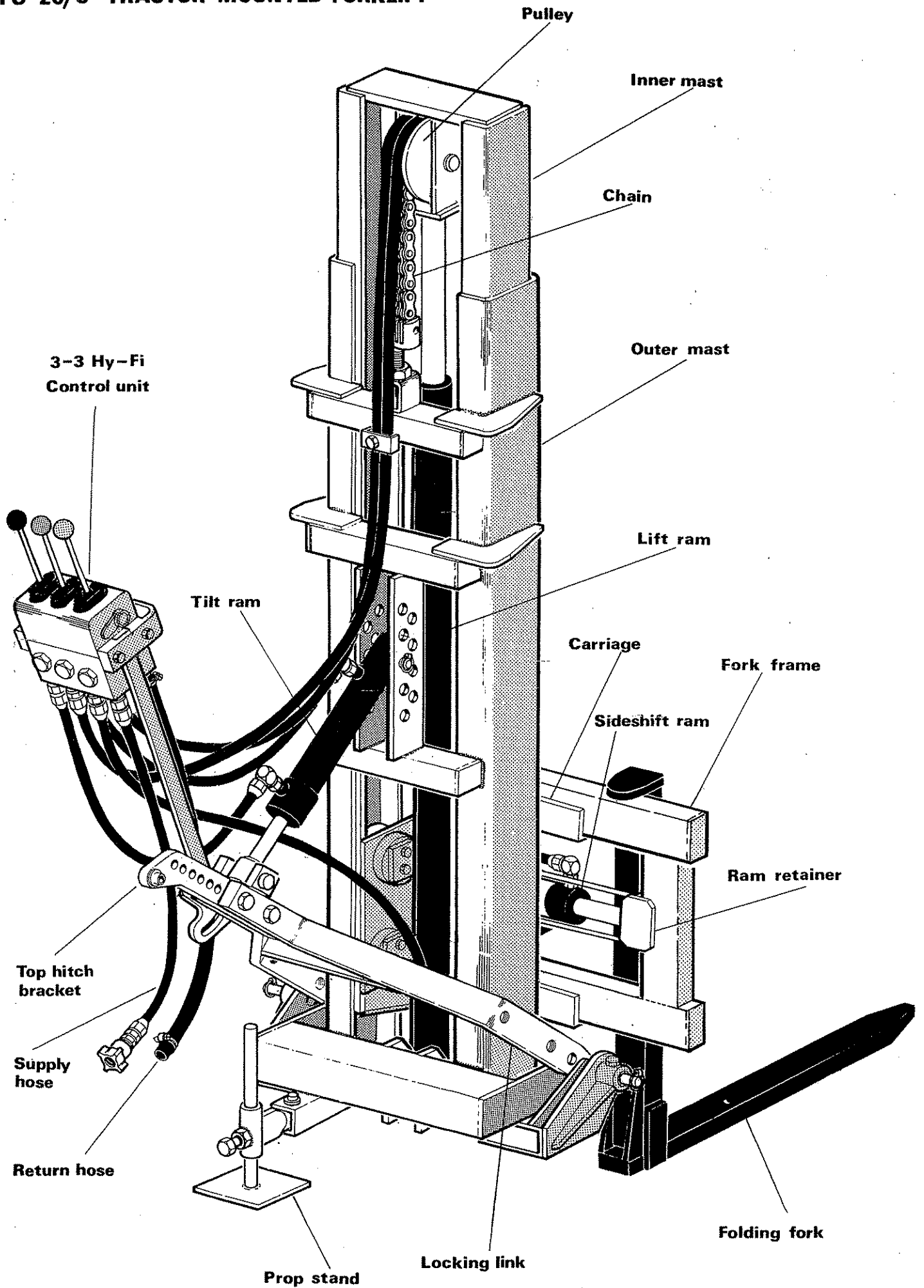
SAFETY PRECAUTIONS



WARNING

- NEVER ... permit inexperienced personnel to operate the machine without supervision.
- ... stand under or behind loaded forks.
- ... exceed the maximum recommended load.
- ... exceed three tons laden weight when towing with the automatic or clevis trailer hitch.
- ALWAYS ... check very carefully that the fork lift can be mounted and operated through its full range of movement when fitted to a tractor with safety cab.
Some types of safety cab render it impossible to fit a fork lift to the tractor.
- ... remember it is illegal to modify the structure of a safety cab to operate a fork lift.
- ... ensure tractor and machine are adjusted for maximum stability.
- ... travel with the load at minimum height (with allowance for uneven surfaces) and with mast tilted towards the tractor.
- ... lower the lift forks and stop tractor engine before carrying out any adjustments or maintenance.
- ... ensure that the lift forks are fully extended under the pallet and that the load is not carried on the tip of the forks.
- ... remove TU 20 from the tractor on firm level ground and ensure that the fork locking pin is positioned to secure the forks at right angles to the mast.
- ... check for overhead obstruction prior to working the machine.
- ... check for any difference in pallet sizes, obstacles etc. and ensure that lift forks do not engage adjacent pallets or other obstructions.
- ... ensure that all hoses are not strained, pinched or chafed.
- ... keep tight all bolts and nuts and check security of mounting pins.

TU 20/9 TRACTOR MOUNTED FORKLIFT



SECTION 2

FITTING

The TU20 is designed to fit easily onto the three point linkage of a large variety of tractors and to lift one ton (1016 Kg) to a height of nine feet.(2.8m)

Check that you have received all components and that they are undamaged by transit.

TRACTOR SELECTION

The tractor selected must be capable of maintaining a minimum of 2000 psi (137.9 bars) and be equipped with linkage isolation.

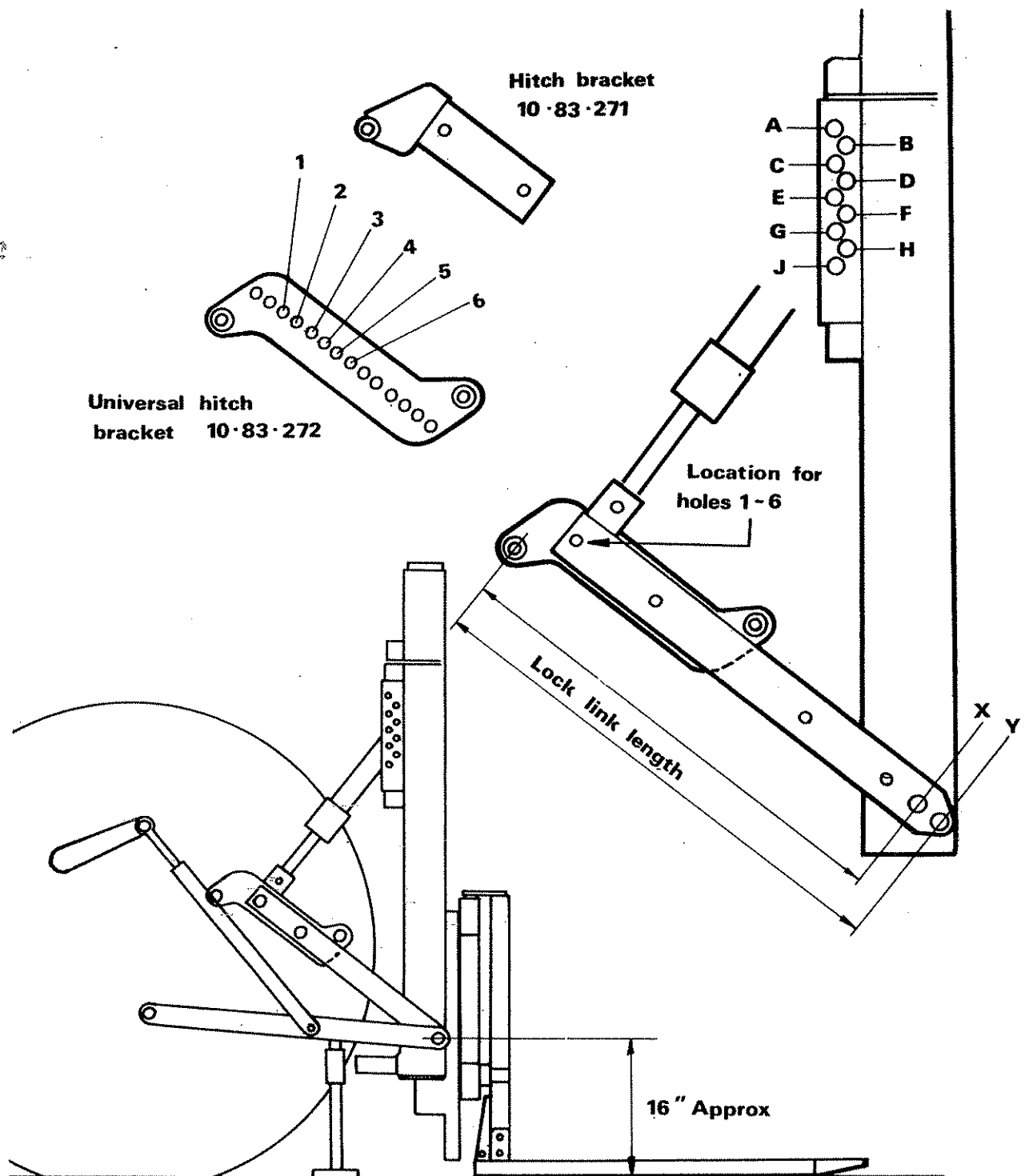
TRACTOR PREPARATION

Fit the tractor supply and return connections and top-up hydraulic oil level if necessary.

Fit front weights and adjust rear wheel width to specifications given in Section 3 – tractor stability.

ATTACHMENT OF FORK LIFT TO TRACTOR

1. Check the lock link length setting and that the correct top hitch bracket is in use.
2. Check the correct category linkage pins are fitted to the mast to correspond with the tractor lower link ball ends.
3. Lock the forks in working position, stand mast upright, and stabilise by ballasting the forks and extending the parking leg.
4. Fit the lock link and the tilt ram to the mast and to each other checking that the correct holes are used in all cases.
5. Attach valve mounting arm and valve to lock link and secure in the highest position.
6. Reverse tractor close to the mast and connect all hoses.
7. Close tilt ram.
8. Connect lower link ball ends to the mast and raise the links until they are approximately sixteen inches (400 mm) above the ground.
9. Connect top hitch bracket to the appropriate point on the tractor by manipulation of the tilt ram length and/or the height of the lower link ball ends.
10. Position the valve mounting arm to suit the tractor and secure. The arm may be bent if required.
11. Isolate the internal hydraulics on tractor.
12. Slowly raise forks to full height and move mast through the full range of movement checking carefully that it does not foul the cab and that the mast tilts 10° towards the tractor and 5° away from it. It may be necessary to vary slightly the lock link length and/or the tilt ram point of connection to achieve the best working conditions.
13. Check hoses for pinch, chafing or kinks.
14. Fit parking leg in the stowed position (ie . horizontal).



REMOVAL

Select a firm level site.

1. Lower forks to the ground.
2. Stabilise by lowering parking leg.
3. Disconnect lower link ball ends and the top hitch bracket.
4. Disconnect the supply and return hoses.

The tractor can now be driven away as the fork lift is free standing.

Tractor Model	Top hitch bracket	Hitch Pin	Supply Conn.	Return Conn.	Isolating valve	Lock-link location	Tilt ram location	Optional lock for draft	Top hole location
Dexta & S/Dexta Ford 2000 3000	10 83 271 " "	11 51 810 " "	85 90 023 " "	80 02 083 " "	- - -	- X - X - X	G G G	- - -	Dead Pin " " "
3600 non Ford 'Q' cab 3600 Ford 'Q' cab	10 83 271 " "	11 51 810 Cannot be fitted.	85 90 023	80 02 083	-	- X	G	-	" " "
N/Major S/Major	10 83 272 " "	- -	" "	" "	81 03 250 -	6 - X 2 - Y	F D	Lock draft rocker	Dead Pin
4000 4100 4600	10 83 272 " "	- - -	85 90 023 " "	80 02 083 " "	- - -	2 - Y 5 - X 5 - X	F F F	Lock draft rocker	
5000	10 83 272	-	85 90 023	80 02 083	-	3 - Y	F		Use bottom hole in draft rocker
5600 " 2 speed pto	10 83 272	-	85 90 023	80 02 083	-	5 - Y	G		Middle hole in draft rocker
6600 Ditto 2 speed pto	10 83 272	-	85 90 023	80 02 284	-	5 - Y	G		Middle hole in draft rocker
7000 Ditto 2 speed pto	10 83 272	-	85 90 023	80 02 083	-	5 - Y	G		Middle hole in draft rocker
7600 Ditto 2 speed pto	10 83 272	-	85 90 023	80 02 284	-	5 - Y	G		Middle hole in draft rocker
6700 Ditto 2 speed pto	10 83 272	-	60 00 112	86 02 284	-	5 - Y	G		Middle hole in draft rocker
7700 Ditto 2 speed pto	10 83 272	-	60 00 112	80 02 284	-	5 - Y	G		Middle hole in draft rocker

Tractor model: LEYLAND/NUFFIELD

Tractor Model	Top hitch bracket	Hitch Pin	Supply Conn.	Return Conn.	Isolating Valve	Lock-link location	Tilt ram location	Optional lock for draft.	Top hole location.
Leyland	1083272		85 90 023	80 02 083	-	6 - y	A	Top hitch bracket	-
344	(lug upwards)		"	"	-	"	"	68 02 277	-
384	"		"	"	-	"	"	"	-
253	"		"	"	-	"	"	"	-
245	"		"	"	-	"	"	"	-
255	"		"	"	-	"	"	"	-
260	"		"	"	-	"	"	"	-
270	"		"	"	-	"	"	"	-
262	"		"	"	-	"	"	"	-
272	"		"	"	-	"	"	"	-
285	1083272		85 90 023	80 02 083	-	1 - y	C	-	Use bottom hole in draft rocker.
485	"		"	"	-	"	"	-	
2100	"		"	"	-	"	"	-	
4100	"		"	"	-	"	"	-	

Tractor model: MASSEY FERGUSON

Tractor Model	Top hitch bracket	Hitch Pin	Supply Conn.	Return Conn.	Isolating valve	Lock-link location	Tilt ram location	Optional lock for draft	Top hole location
35 135 & 20	10 83 271 "	- -	85 90 023 "	80 02 127 "	81 02 260 "	- x - x	G "	- -	- -
65 165 165 HC 175 178 148 165 168 185 188	10 83 272 " " " " " " " " " "	- - - - - - - - - -	85 90 023 " " " " " " " " " "	80 02 127 " " " " " " " " " "	81 02 260 " " " " " " " " " "	3 - y " 6 - y " " 3 - y 6 - y " 5 - y "	E " " G " E G " H "	71 03 314 " " " " " " " " " "	Use lowest hole in draft rocker " " " " " " " " "
1080 595	Special top hitch bracket	- -	85 90 023 "	80 02 282 "	- -	- -	- -	- -	- -
550 565 575 590	10 83 272 " "	- - - -	85 90 023 " " "	80 02 282 " " "	81 02 260 " " "	- 6 - x 6 - x 6 - y	- F G F	71 03 314 " " "	Use lowest hole in draft rocker " " "

Tractor Model: INTERNATIONAL HARVESTER

Tractor Model	Top hitch bracket.	Hitch Pin	Supply Conn.	Return Conn.	Isolating valve	Lock-link location	Tilt ram location	Optional lock for draft	Top hole location
B275	10 83 272	-	85 90 023	80 02 136	-	1 - x	D	Vari-Touch machines use 71 03 090	-
276	"	-	"	"	-	"	"		-
414	"	-	"	"	-	"	"		-
434	"	-	"	"	-	"	"		-
444	"	-	"	"	-	"	"		-
354	"	-	"	"	-	"	"		-
374	"	-	"	"	-	"	"		-
B250	10 83 272	-	85 90 023	80 02 136	-	6 - y	D	-	Dead pin
454	10 83 272	-	85 90 023	80 02 121 or 80 02 283	-	1 - x	C	68 02 102	-
474	10 83 272	-	85 90 023	"	-	4 - y	B	68 02 102	-
475	"	-	"	"	-	"	"	"	-
574	"	-	"	"	-	"	"	"	-
674	"	-	"	"	-	5 - y	D	"	-
2400	"	-	"	"	-	4 - y	B	"	-
2500	"	-	"	"	-	"	"	"	-
523	10 83 272	-	85 90 023	80 02 134	-	3 - y	J	Lock draft control rocker	-
624	"	-	"	"	-	"	"		-
614	10 83 272	-	85 90 023	80 02 134	-	5 - y	C	-	Dead pin
634	"	-	"	"	-	"	"	-	"
946	10 83 272	-	85 90 023	80 02 134	-			-	Dead pin
1046	"	-	"	"	-			-	"

Tractor Model	Top hitch bracket	Hitch Pin	Supply Conn.	Return Conn.	Isolating valve	Lock-link location	Tilt ram location	Op. lock for draft	Top hole location
1020, 1120 1130, 1630	10 83 272	10 88 018	80 02 146	80 02 027	-	4 - y	D	-	Dead pin
2020, 2120, 2030, 2130	10 83 272	10 88 018	80 02 146	80 02 027	-	5 - y	D	-	Dead pin
3120, 3130	Special hitch bracket	10 88 018	80 02 146	80 02 027	-	7 - y	D	-	Dead pin
4010, 4020	10 83 272	18 40 009	80 02 146		-	5 - x	F	-	Dead pin

Tractor model: ZETOR & URSUS

Tractor Model	Top hitch bracket.	Hitch Pin	Supply Conn.	Return Conn.	Isolating valve	Lock-link location	Tilt ram location	Optional lock for draft.	Top hole position.
5711	Special		85 90 023	80 02 079	-	3 - x	E	-	Heavy draft position.
5718	bracket req'd		"	"	-	"	"	-	"
5745	"		"	"	-	"	"	-	"
5748	"		"	"	-	"	"	-	"
6711	"		"	"	-	"	"	-	"
6718	"		"	"	-	"	"	-	"
6745	"		"	"	-	"	"	-	"
6748	"		"	"	-	"	"	-	"
8011	10 83 272		85 90 023	80 02 280	-	6 - y	C	-	Top fixed hole.
8045	"		"	"	-	"	"	-	"
12011	"		"	"	-	"	"	-	"
12045	"		"	"	-	"	"	-	"
<u>Ursus</u>	"		"	"	-	"	"	-	"
C-385	"		"	"	-	"	"	-	"
C-385/4	"		"	"	-	"	"	-	"
C-1204	"		"	"	-	"	"	-	"

Tractor Model	Top hitch bracket	Hitch pin	Supply Conn.	Return Conn.	Isolating valve	Lock-link location	Tilt ram location	Optional lock for draft	Top hole location.
450	10 83 272	-	85 90 023	80 02 071	-	3 - x	J	-	Use bottom draft hole
540	10 83 272	-	85 90 023	80 02 071	-	3 - y	J	-	Use bottom draft hole
640	Special hitch bracket reqd	-	85 90 023	80 02 071	-	7 - y	J	-	Use bottom draft hole
780 880	10 83 272	-	85 90 023	80 02 071	-	6 - y	B	-	Upper fixed hole
850	10 83 272	-	85 90 023	80 02 029	-	5 - y	D	-	Top fixed hole
1000	10 83 272	-	85 90 023	80 02 029	-	6 - y	C	-	Middle fixed hole

Tractor Model: SAME

Tractor Model	Top Hitch Bracket.	Hitch Pin.	Supply Conn.	Return Conn.	Isolating Valve	Locklink Location	Tilt Ram Location	Optional lock for draft.	Top hole location
Same Leone 70	10 83 272		85 90 023	80 02 122	-	6 - x	C		Dead pin hole.
Same Saturno 80	10 83 272		85 90 023	80 02 122	-	6 - x	B		Use bottom dead pin hole.

SECTION 3 OPERATION

Before starting work, the operator should understand the Safety Precautions printed in Section I of this manual.

No liability will be accepted by the manufacturer for damage to the tractor, the fork lift, or for any injury caused by the mis-use or abuse of the machine.

The fork lift is capable of lifting 2240 lbs (1016 Kg) to a height of nine feet (2.8m) with the load centre at a maximum of twenty-four inches (610 mm) from the fork heel.

OPERATING STABILITY

For operation at moderate speed on a hard level surface the recommended minimum rear wheel spacing and front ballast is as follows:-

<u>Tractor</u>	<u>Front Weight</u>	<u>Min. Wheel Spacing</u>
Below 50 HP	1000 lbs (454 Kg)	60" (1524 mm)
Above 50 HP	600 lbs (272 Kg)	60" (1524 mm)

FORK WIDTH ADJUSTMENT.

The lift forks can be adjusted laterally from 15½" (394 mm) to 43" (1093 mm). Adjustments must be carried out with the machine fitted to the tractor and the carriage assembly raised.

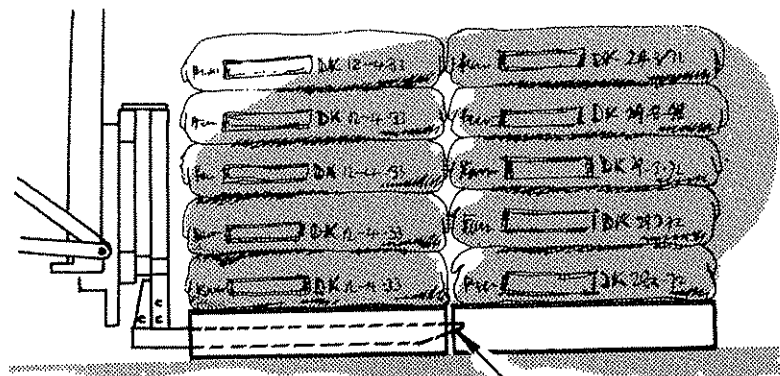
1. Remove the fork lower peg retaining pins.
2. Disengage fork lower pegs from carriage frame by pressure applied to the fork heel.
3. Raise fork thus disengaging top peg from carriage frame.
4. Reposition the fork in selected hole by reversing the above procedure.

CAUTION:

Ensure each fork is positioned in corresponding locations equi-distant from the frame centre.

OPERATING PRECAUTIONS

When lifting a load, drive the forks under the pallet and check that they do not engage adjacent pallets or any other obstructions.



Before raising the load check that there are no overhead obstructions, especially if operating inside a building.

When transporting, carry the load at a minimum height making allowances for uneven surfaces and with the mast tilted towards the tractor.

The fork lift is equipped with either a clevis or automatic hitch and by extracting the fork locking pin, folding the forks upwards, and re-locking, a trailer with a maximum of three tons laden weight, can be towed without removing the fork lift.

SECTION 4

MAINTENANCE

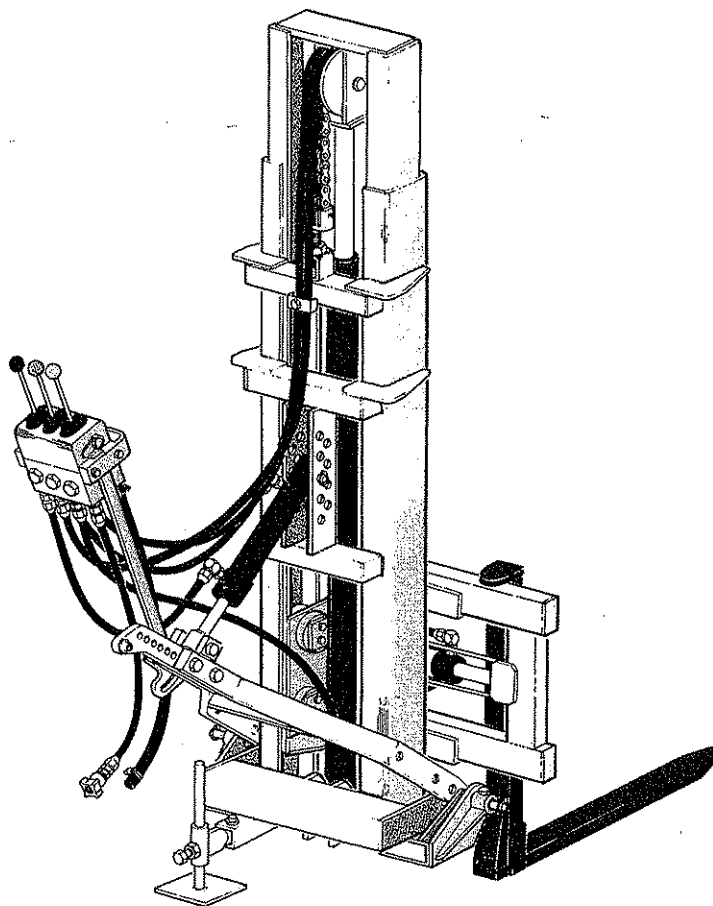
LUBRICATION

- Daily : Oil the balance chain pulley.
- Weekly : Oil the trailer auto-hitch latch.
Grease the mast sliding surfaces.
Grease the balance chain.
Grease side shift slides.

STORAGE

Prior to storing your TU20 lubricate all the above points and in addition grease the exposed parts of the ram piston rods especially where they pass through the wiper seal.

SPARE PARTS MANUAL



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.

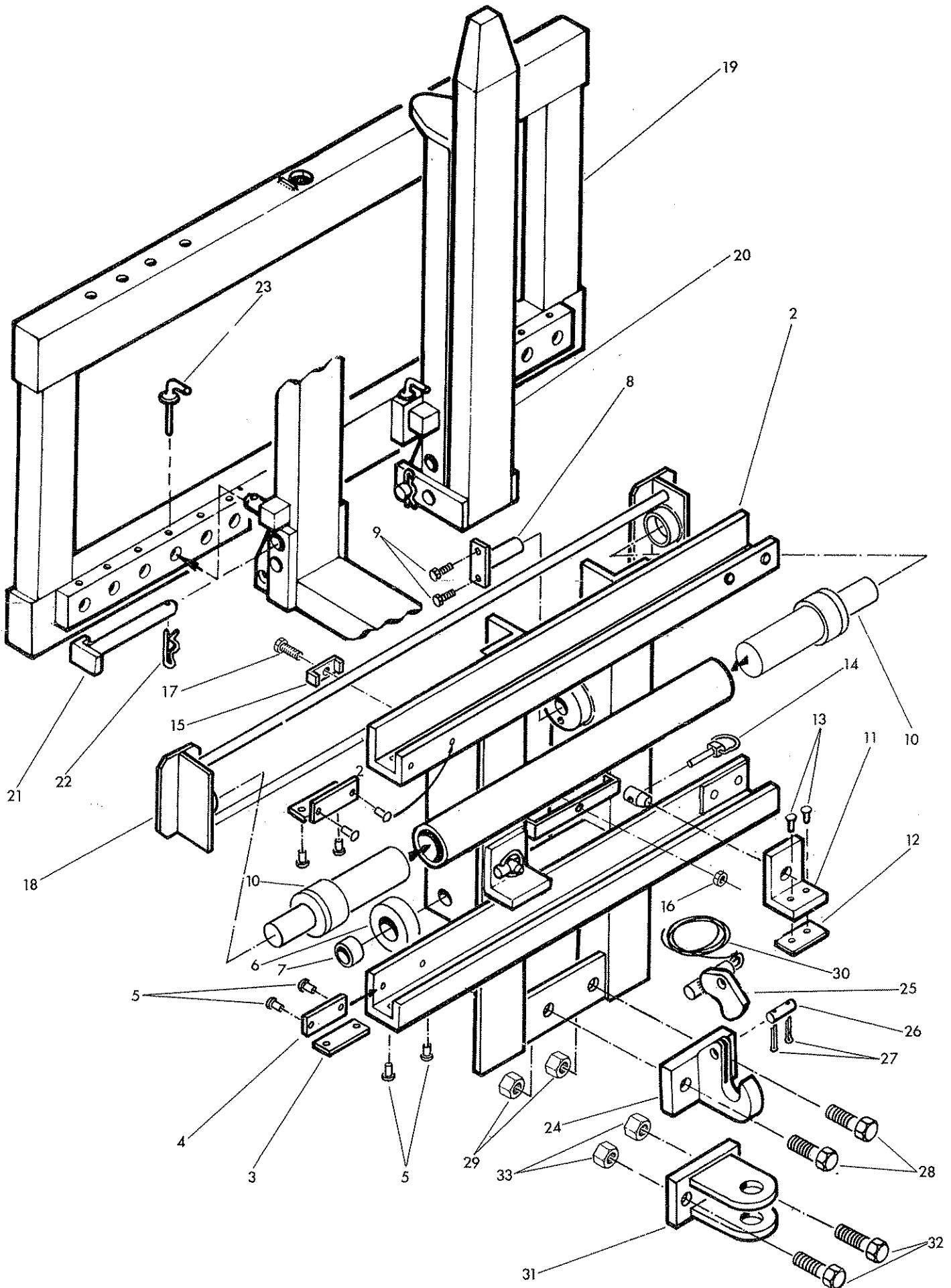
Design improvement may have altered some of the parts listed in this manual - The latest part will always be supplied when it is interchangeable with an earlier one.

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.

Ref	Part No	Qty	Description
			TU 20/9 MAST ASSEMBLY
1	10 88 262	1	.Outer mast
2	10 88 261	1	.Inner mast
3	10 83 263	1	.Lift ram assembly (see page17)
4	10 83 268	1	.Tilt ram assembly (see page18)
5	10 83 265	1	.Locking link female end
6	10 83 272	1	.Locking link male end universal
7	10 83 271	1	.Locking link male end
8	02 11 326	2	.Bolt 5/8" UNF x 4" long
9	01 61 006	2	.Self locking nut 5/8" UNF
10	10 83 068	2	.Locking link pivot pin
11	04 31 105	2	.Spring cotter
12	10 88 281	1	.Valve mounting arm
13	10 83 029	1	.Pulley c/w bush
14	10 83 030	1	..Bush
15	10 83 031	1	.Pulley pivot pin c/w setscrew
16	03 11 031	1	..Setscrew 1/4" UNF x 3/8" long
	10 88 001	1	.Chain assembly c/w end links, pins, nuts etc.
17	10 83 035	2	..End link c/w nuts
18	01 63 006	1	...Self locking nut 5/8" BSF
19	01 13 006	1	...Lock nut 5/8" BSF
20	10 83 036	2	..Connecting pin c/w split pin
21	05 03 041	2	..Split pin 1/16" dia. x 1/2" long
22	10 83 080	1	.Tilt ram base end pin c/w circlip
23	04 04 114	1	..Circlip
24	04 31 217	1	.Linch pin
25	10 83 079	1	.Tilt ram rod end pivot pin
26	04 31 217	1	.Linch pin
27	10 83 061	1	.Prop arm c/w pin and setscrew
28	10 83 064	1	..Pin c/w spring cotter
29	04 31 105	1	...Spring cotter
30	03 11 085	1	..Setscrew 1/2" UNF x 1" long
31	10 83 057	1	.Prop
32	10 83 056	2	.Category 1 mounting pin c/w nut and bolt
33	02 11 202	1	..Bolt 5/16" UNF x 2½" long
34	01 11 002	1	..Nut 5/16" UNF
35	10 83 055	2	.Category 2 mounting pin c/w nut and bolt
36	02 11 202	1	..Bolt 5/16" UNF x 2½" long
37	01 11 002	1	..Nut 5/16" UNF
38	04 31 217	2	.Linch pin
39	10 75 113	1	.Hose clip
40	03 11 101	1	.Setscrew 1/4" UNF x 1¼"
41	01 41 001	1	.Aeronut 1/4" UNF
42	10 88 017	2	.Valve mounting arm spacer

TU 20/9 FORK FRAME & CARRIAGE

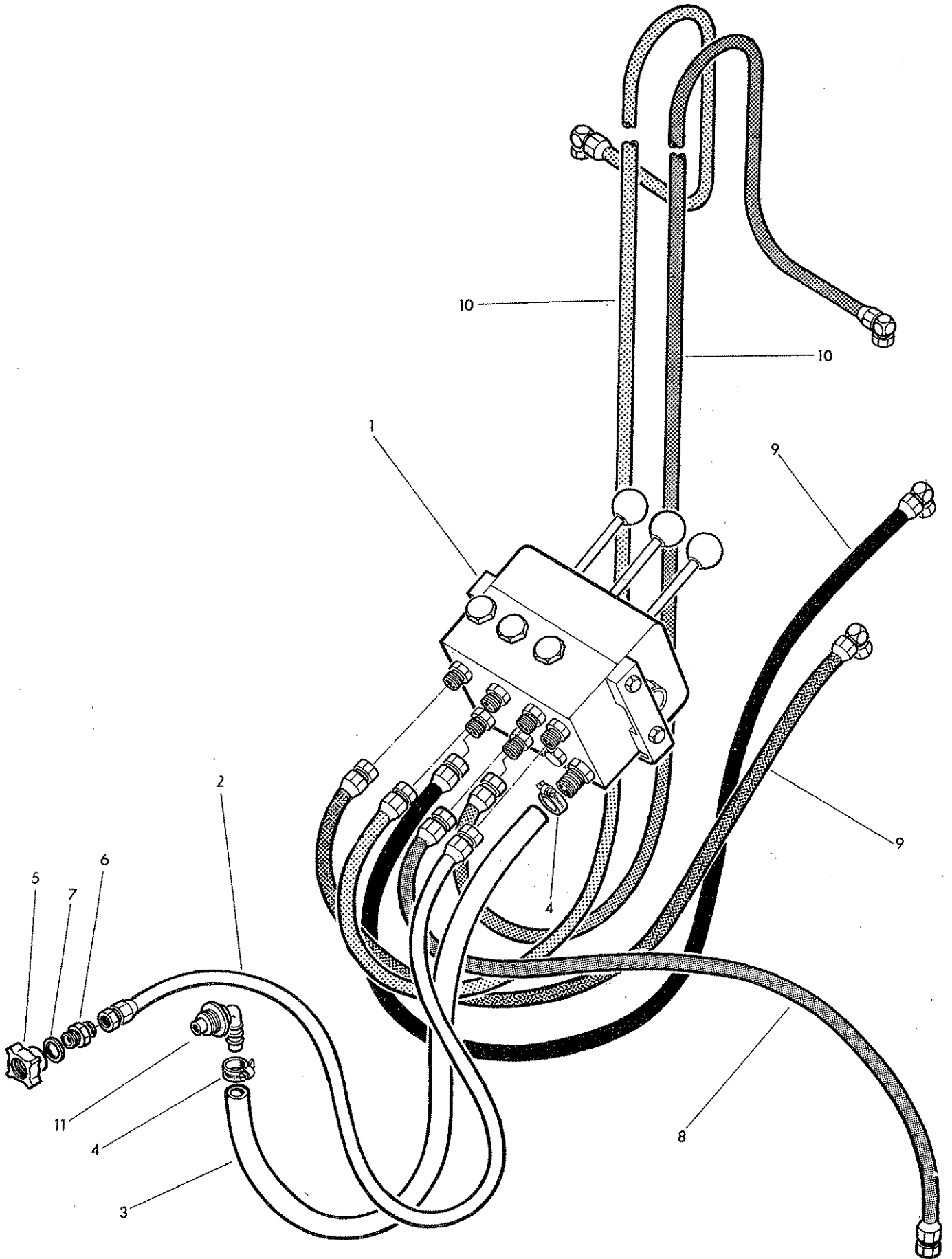


Ref	Part No	Qty	Description
			CARRIAGE AND FORK FRAME
1	10 88 270	1	.Carriage c/w liners
2	10 88 263	1	..Carriage
3	10 75 040	4	..Bottom liner
4	10 75 041	4	..Side liner
5	10 75 047	16	..Rivets
6	10 83 037	4	.Roller c/w bush
7	10 83 039	1	..Bush
8	10 83 040	4	.Carriage roller pin
9	03 00 029	8	.Setscrew 1/4" UNF x 1"
10	10 88 276	2	.Sideshift ram assembly (see page19)
11	10 75 045	2	.Angle stop
12	10 75 042	2	.Top liner c/w rivets
13	10 75 047	2	..Top liner countersunk rivets 1/4" \emptyset x 3/4" long
14	04 31 217	2	.Linch pin
15	10 75 113	1	.Sideshift hose clip
16	01 41 001	1	.Aeronut 1/4" UNF
17	03 11 101	1	.Setscrew 1/4" UNF x 1 1/4"
18	10 75 066	1	.Sideshift ram retainer
19	10 75 192	1	.Fork frame
20	10 75 195	2	.Hinged fork assembly 42"
21	10 75 064	2	.Fork 'locking pin' c/w spring cotter
22	04 31 105	1	..Spring cotter
23	10 75 186	2	.Fork locating pin

OPTIONAL EXTRAS

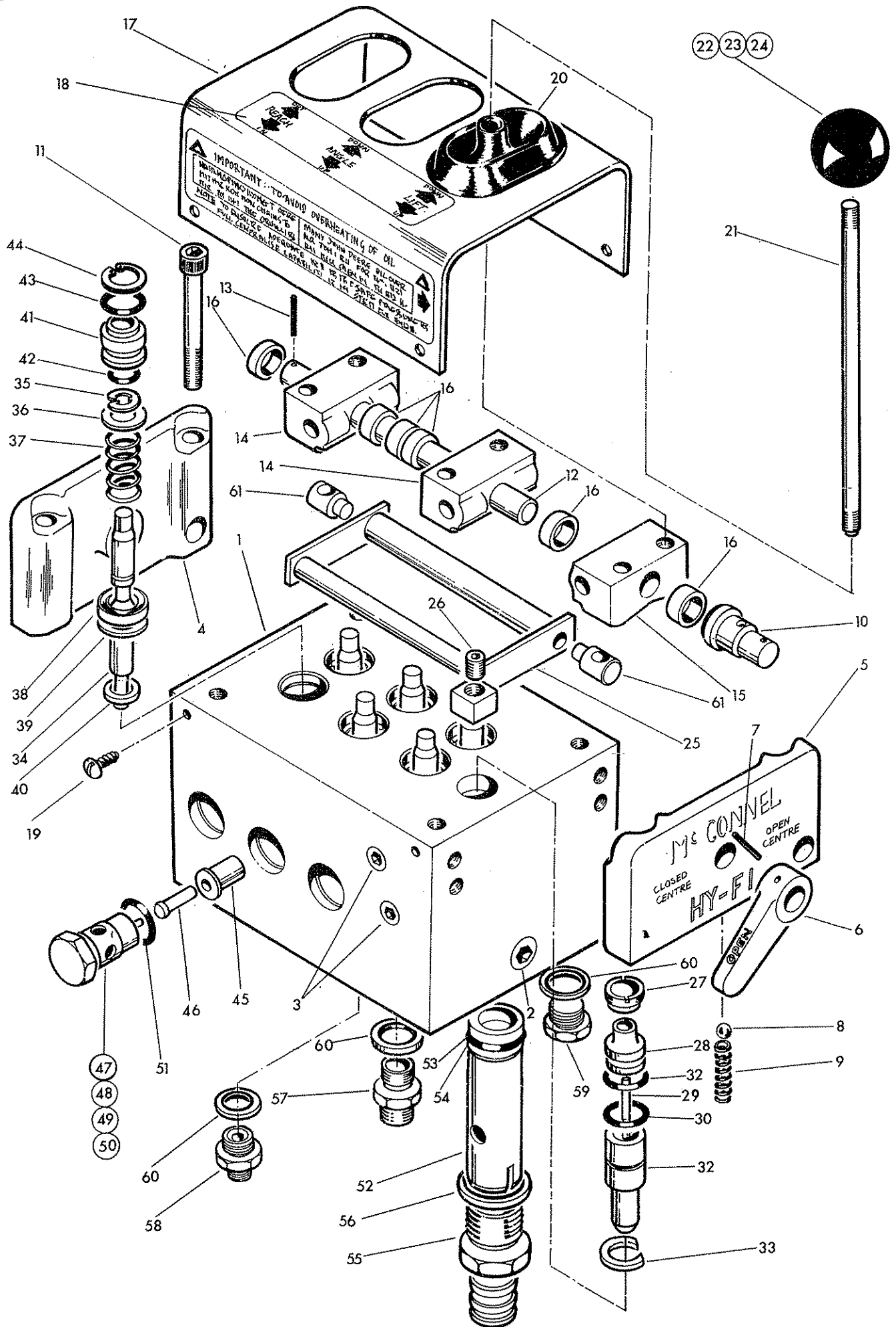
	10 75 263	2	HINGED FORK ASSEMBLY 48"
	10 83 274	1	AUTOMATIC PICK-UP HITCH
24	10 75 173	1	.Pick-up hitch hook
25	10 83 086	1	.Hitch locking plate
26	10 75 117	1	.Locking plate pin c/w split pin
27	05 03 103	2	..Split pin 1/8" diameter x 1 1/4" long
28	02 11 207	2	.Bolt 3/4" UNF x 2 1/2" long
29	01 61 007	2	.Self locking nut 3/4" UNF
30	10 83 085	1	.Nylon pull cord
	10 83 275	1	CLEVIS HITCH
31	10 83 089	1	.Hitch jaws
32	02 11 207	2	.Bolt 3/4" UNF x 2 1/2" long
33	01 61 007	2	.Self locking nut 3/4" UNF

TU 20/9 HYDRAULIC INSTALLATION



Ref	Part No	Qty	Description
	10 87 277	1	HYDRAULIC INSTALLATION TU 20/9
1	81 19 406	1	.3-3 Hy-Fi assembly (see page15)
2	85 11 233	1	.3/8" BSP supply hose
3	85 95 070	1	5/8" bore return hose
4	09 04 204	2	.Hose clip
	80 02 006	1	.Supply hose connection assembly
5	85 90 023	1	.Female self seal coupling
6	60 00 113	1	..3/8" BSP male/male union
7	86 50 103	1	..3/8" BSP bonded seal
8	85 11 243	1	.3/8" BSP hose 42" long
9	85 31 241	2	.3/8" BSP hose 36" long
10	85 01 031	2	.1/4" BSP hose 155" long
11		1	.Return connection. (To suit tractor)
<u>OPTIONAL EXTRA</u>			
	10 83 014		HY-FI HOSE EXTENSION SET
	85 26 012	2	.1/4" BSP hose 33" long
	85 21 013	3	.3/8" BSP hose 33" long
			} not illustrated
	80 01 267	1	SEAT BASE HY-FI MOUNTING
	71 06 189	1	MUDWING HY-FI MOUNTING

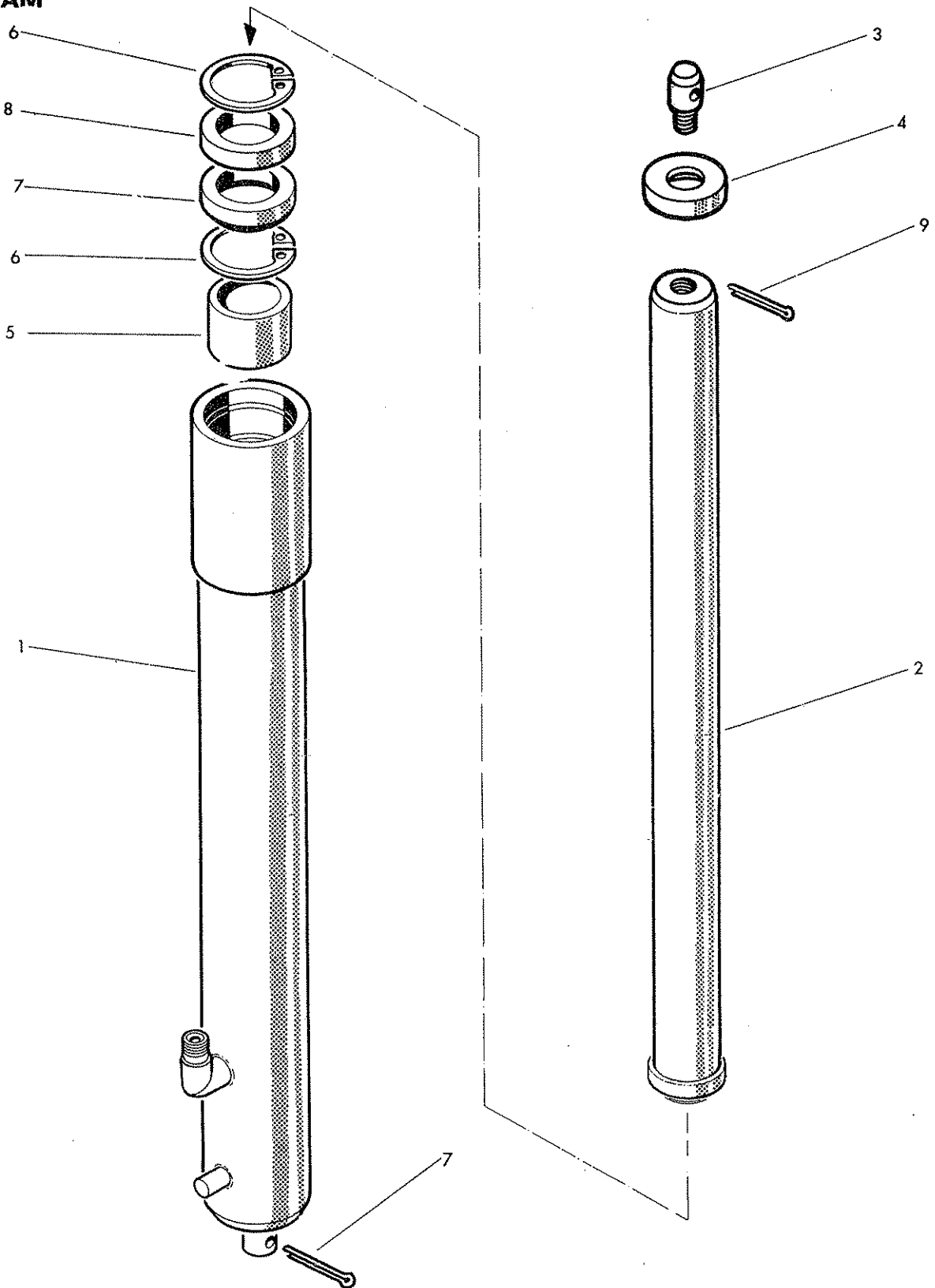
3-3 HY-FI CONTROL UNIT



Ref	Part No	Qty	Description
	81 19 406		3-3 HY-FI ASSEMBLY COMPLETE
1	81 19 301	1	.Body
2	81 14 016	1	.Taper plug 5/8" BSP
3	85 82 042	4	.Taper plug 1/4" BSP
4	81 14 252	1	.End plate, left hand
5	81 18 251	1	.End plate, right hand
6	81 02 010	1	.Flip lever
7	04 21 516	1	.Spring dowel 5/32" Ø x 1" long
8	09 05 108	1	.Steel ball 1/4" dia
9	81 14 009	1	.Spring
10	18 18 002	1	.Cam sleeve
11	02 42 203	4	.Capscrew hex socket 3/8" UNC x 2½"
12	81 19 014	1	.Rocker shaft
13	04 20 816	1	.Spring dowel 1/8"Ø x 1"
14	81 19 016	2	.Rocker
15	81 17 006	1	.Rocker
16	81 14 031	6	.Spacer
17	81 19 012	1	.Cover
18	10 88 013	1	.Label
19	81 14 057	4	.Cover screw
20	81 17 001	3	.Dust boot
21	81 19 015	3	.Lever
22	09 03 112	1	.Red knob
23	09 03 113	1	.Green knob
24	09 03 114	1	.Yellow knob
25	81 19 013	1	.Cut off lever
26	81 14 056	1	.Cut off grub screw
27	81 14 069	1	.Ring nut
	81 14 032	1	.Cut off insert assy c/w needle etc
28	81 14 019	1	..Cut off bobbin
29	81 14 013	1	..Cut off needle
30	86 00 103	1	..'O' ring
31	86 00 111	1	..'O' ring
32	81 14 006	1	.Cut off piston assembly
33	81 14 078	1	..Piston ring
34	81 14 001	6	.Spindle
35	81 14 058	6	..Circlip
36	81 14 081	6	.Flat washer
37	81 14 003	6	.Conical spring
38	81 06 022	6	.Cup seal
39	81 14 004	6	.Back up ring
40	81 14 005	6	.Lower seal
41	81 14 002	6	.Inner bobbin c/w circlip and 'O' rings
42	86 00 110	1	..'O' ring
43	86 00 401	1	..'O' ring
44	81 14 077	1	..Circlip
45	81 14 047	6	.Actuator (large)
46	81 14 050	6	.Actuator (small)
47	81 14 083	3	.Check valve type H (ports 1, 3 & 4)
48	81 14 153	1	.Check valve type D (port 2)
49	81 14 154	1	.Check valve type E (port 5)
50	81 14 149	1	.Check valve type B (port 6)
51	86 00 402	6	. 'O' ring
52	81 09 105	1	.Main relief valve (2100 psi)
53	86 00 113	1	..'O' ring
54	81 14 079	1	..Back up ring
55	81 14 015	1	.Return connection
56	86 50 218	1	.Bonded seal 1 1/8"
57	60 00 113	4	.3/8" BSP - 3/8" BSP union
58	85 81 145	2	.3/8" BSP - 1/4" BSP union (side shift ports)
59	80 13 001	1	.Plug 3/8" BSP (service port 6)
60	86 50 103	7	.Bonded seal 3/8" BSP
61	16 88 279	1	.Hy-Fi mounting bracket
62	02 12 103	4	.Bolt 3/8" UNC x 1 1/4"
63	01 00 203	4	.Spring washer Ø 3/8"
64	81 14 036	2	.Fulcrum pin

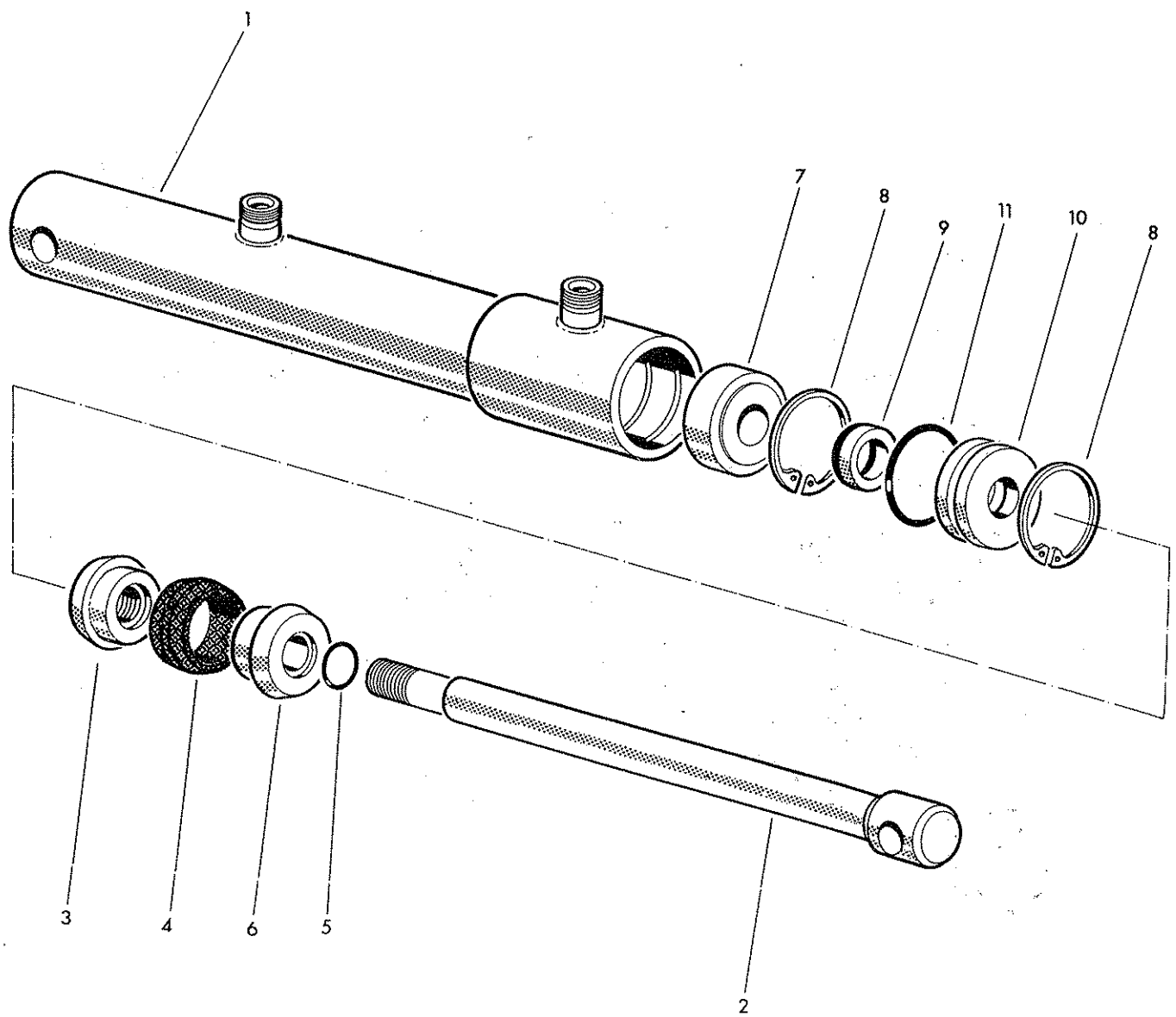
} not illustrated

LIFT RAM



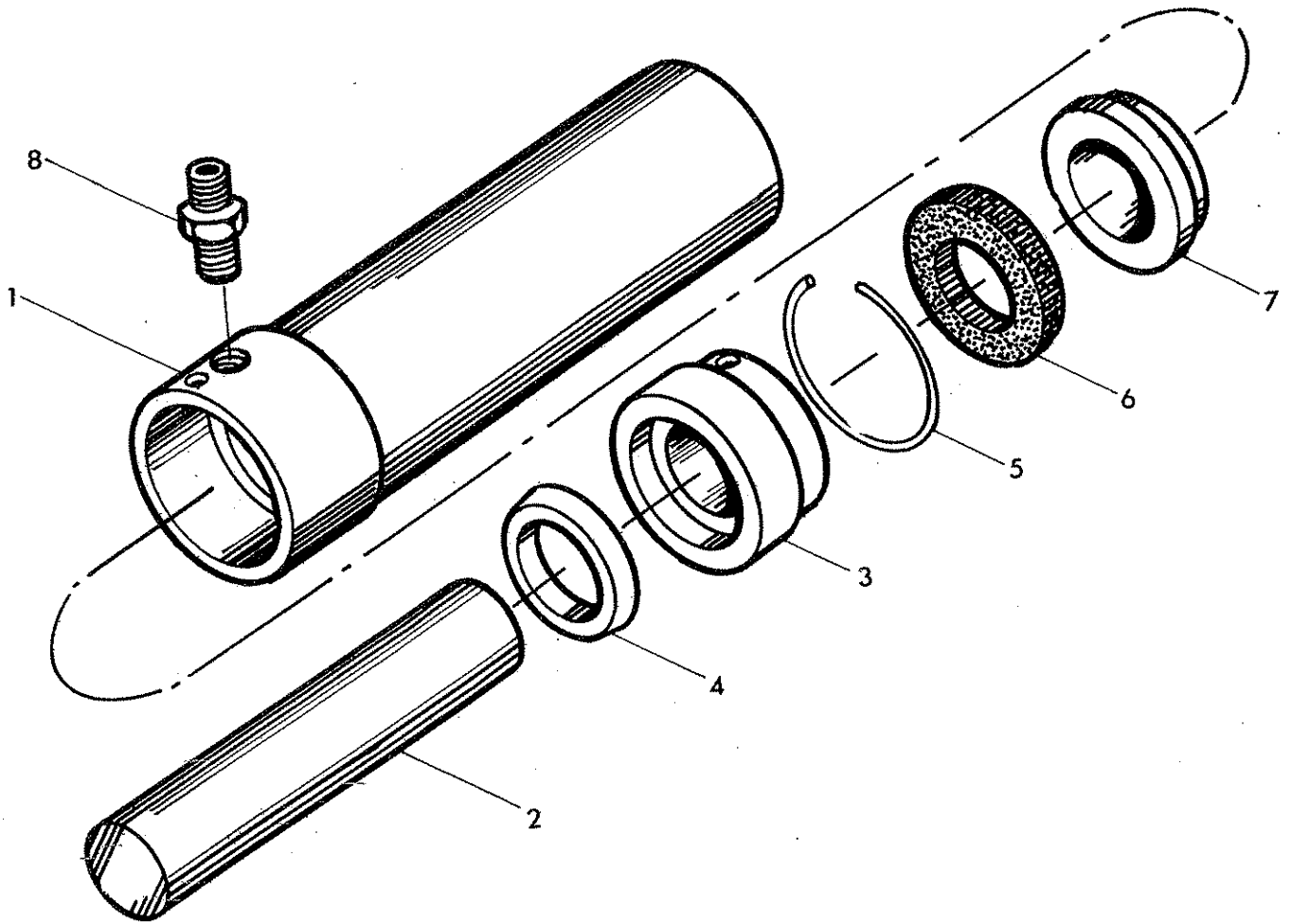
	10 88 274				
1	10 88 273	1		LIFT RAM ASSY	
	10 88 271	1		.Ram barrel	
2	10 88 275	1		.Ram rod assembly comprising	
3	10 83 049	1		..Ram rod	
4	10.88 010	1		..Ram rod top	
5	10 83 044	1		..Ram rod spacer	
6	04 16 148	2		.Ram rod guide	
7	86 12 134	1		.Internal circlip	
8	10 83 043	1		.Seal	
9	05 03 125	2		.Seal retainer	
				.Split pin \varnothing 3/16" x 1 1/2" long	

TILT RAM



Ref	Part No	Qty	Description
	10 83 268		TU20 TILT RAM ASSEMBLY
1	10 83 269	1	.Ram barrel
2	10 83 078	1	.Ram rod
3	10 83 072	1	.Seal carrier nut
4	86 35 129	1	.Seal
5	86 00 114	1	.'O' ring
6	10 83 071	1	.Seal carrier
7	10 83 069	1	.Ram rod guide
8	04 16 261	2	.Internal circlip
9	86 12 121	1	.Seal
10	10 83 070	1	.Seal carrier
11	86 00 423	1	.'O' ring

SIDESHIFT RAM



Ref	Part No	Qty	Description
	10 88 276	2	SIDESHIFT RAM ASSEMBLY
1	10 75 251	1	.Ram cylinder
2	10 75 069	1	.Ram rod
3	71 01 029	1	.Head bush c/w wiper
4	86 40 230	1	..Oil seal wiper
5	71 01 030	1	.Locking wire
6	86 12 132	1	.Gland seal
7	71 01 031	1	.Insert
8	85 81 153	1	.Union



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