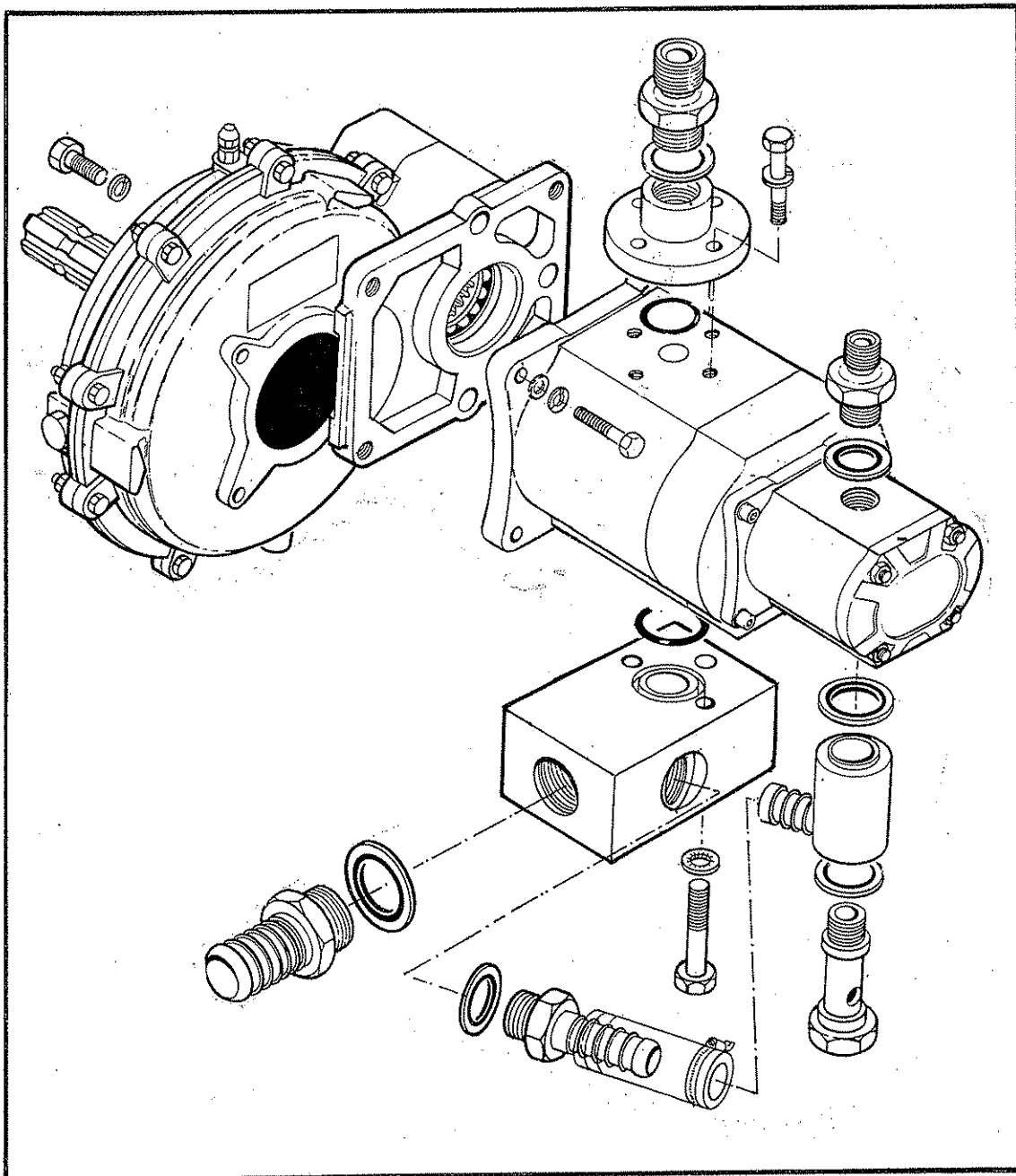


# MAG 450

## Pièces détachées



**MCCORMICK**

# **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 **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.

**FOR NOTES**

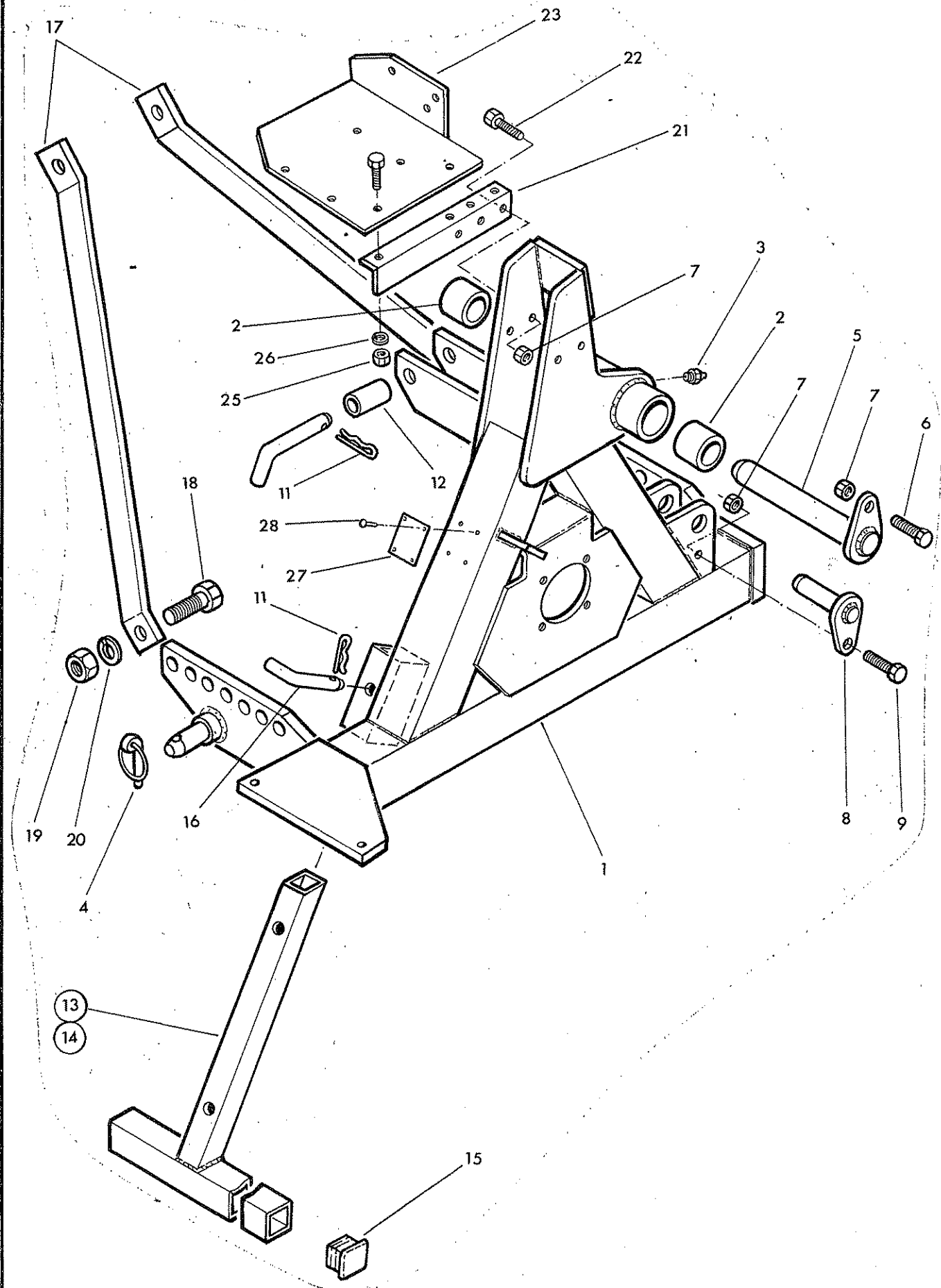
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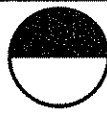
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MAIN FRAME



**MCCORMEL**



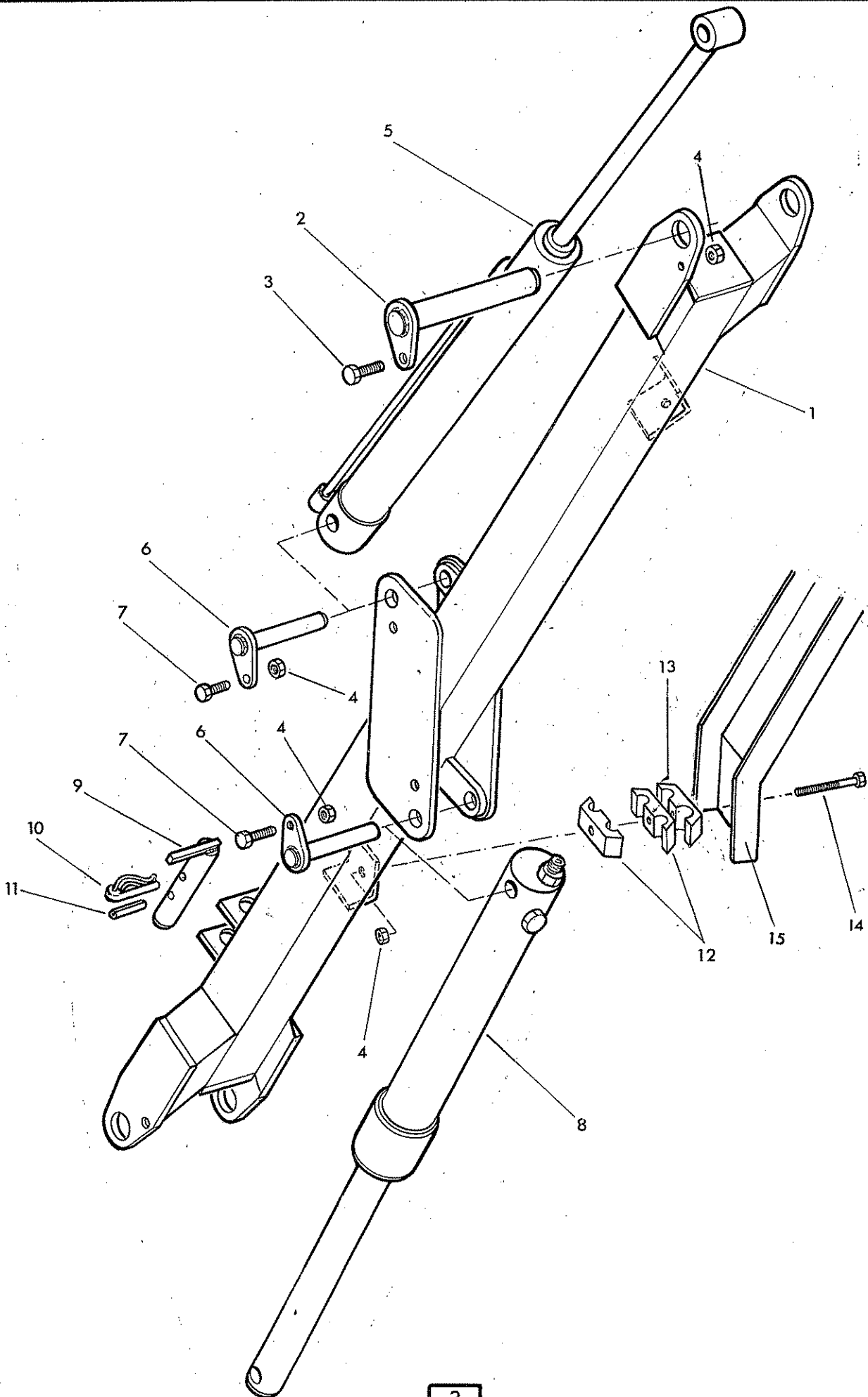


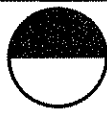
Ref.	Part No.	Qty.	Description
<b>MAIN FRAME AND FITTINGS</b>			
1	71 98 250	1	Main frame
2	72 12 023	2	Bush
3	09 01 121	1	Greaser
4	04 31 217	2	Linch pin
5	71 93 033	1	Pivot pin - Main arm
6	93 13 075	1	Setscrew
7	91 43 005	4	Self locking nut
8	71 98 014	1	Pivot pin - Lift ram rod
9	93 13 065	1	Setscrew
10	71 92 026	1	Pin - Top link
11	04 31 105	2	Spring cotter
12	14 67 063	1	Sleeve
13	71 98 046	1	Stand leg - L. hand
14	71 98 016	1	Stand leg - R. hand
15	71 91 108	2	Bung
16	71 92 023	2	Pin - Stand leg
17	71 91 322	2	Stabiliser
18	93 13 118	2	Setscrew
19	91 13 008	2	Nut
20	91 00 208	2	Spring washer
21	71 91 076	1	Valve mounting bracket
22	92 13 055	2	Bolt
23	71 91 079	1	Valve mounting plate
24	93 13 044	2	Setscrew
25	91 13 004	2	Nut
26	91 00 204	2	Spring washer
27	12 90 055	1	Serial No. plate
28	71 03 230	4	Pop rivet
29	71 14 289	1	P.T.O. drive shaft - not illustrated

MAIN ARM



McCOMEL





Ref.	Part No.	Qty.	Description
<b>MAIN ARM AND FITTINGS</b>			
1	71 98 264	1	Main arm
2	71 91 033	1	Pivot pin - Dipper arm
3	93 13 075	1	Setscrew
4	91 43 005	5	Self locking nut
5	71 98 266	1	Reach ram
6	71 91 038	2	Pivot pin - Reach ram base ,lift ram base
7	93 13 055	2	Setscrew
8	71 98 043	1	Lift ram
9	71 98 017	1	Transport lock pin
10	04 31 216	1	Linch pin
11	04 28 140	1	Spring dowel dia
12	71 90 148	2	Hose clamp
13*	71 93 063	1	Hose clamp
14	92 13 225	1	Bolt
15	71 98 342	1	Hose cover

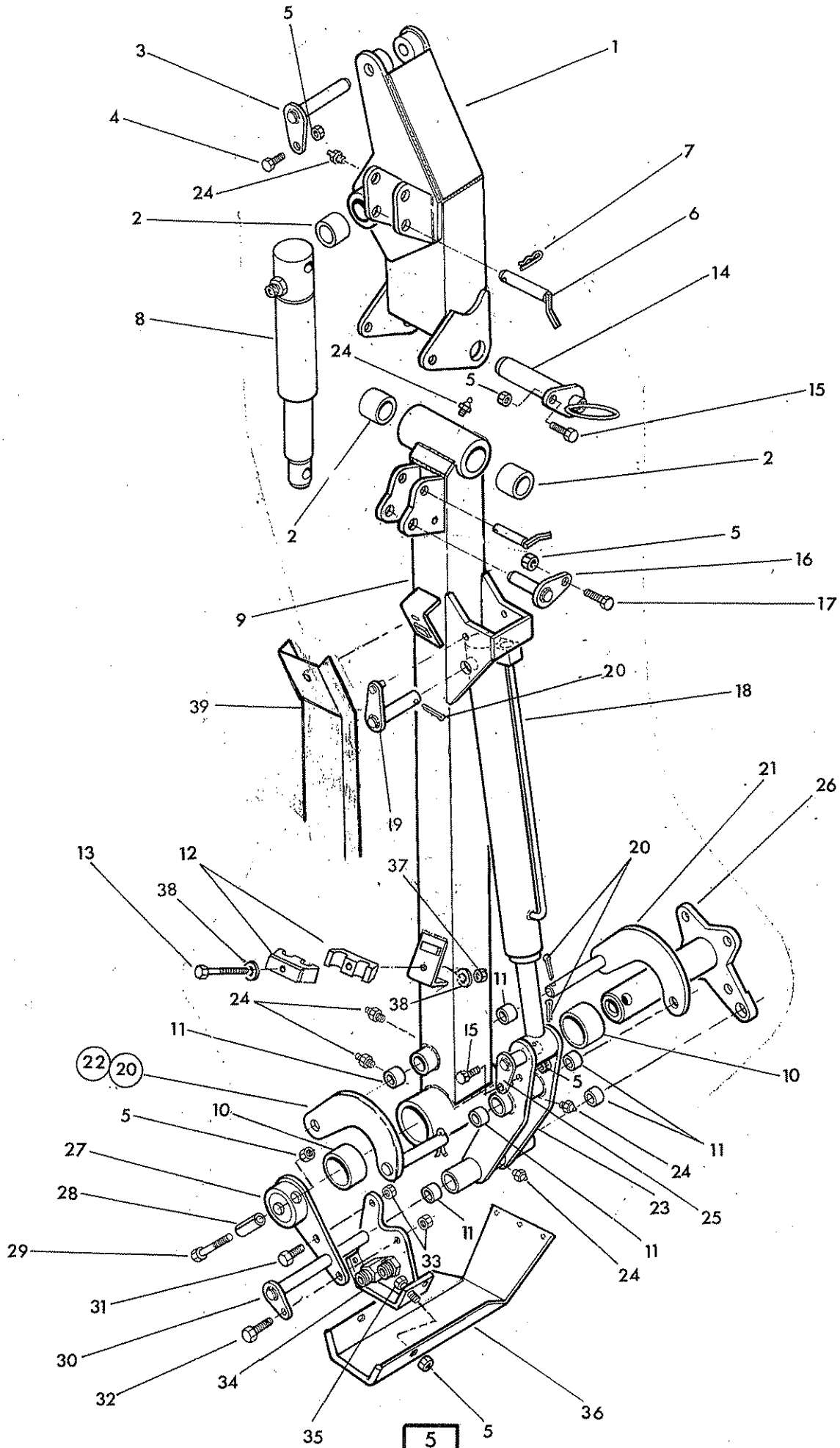
**\* Assembly note - One clamp half is used at each hose clamping location**



DIPPER ARM



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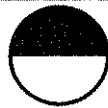


Ref. Part No. Qty. Description

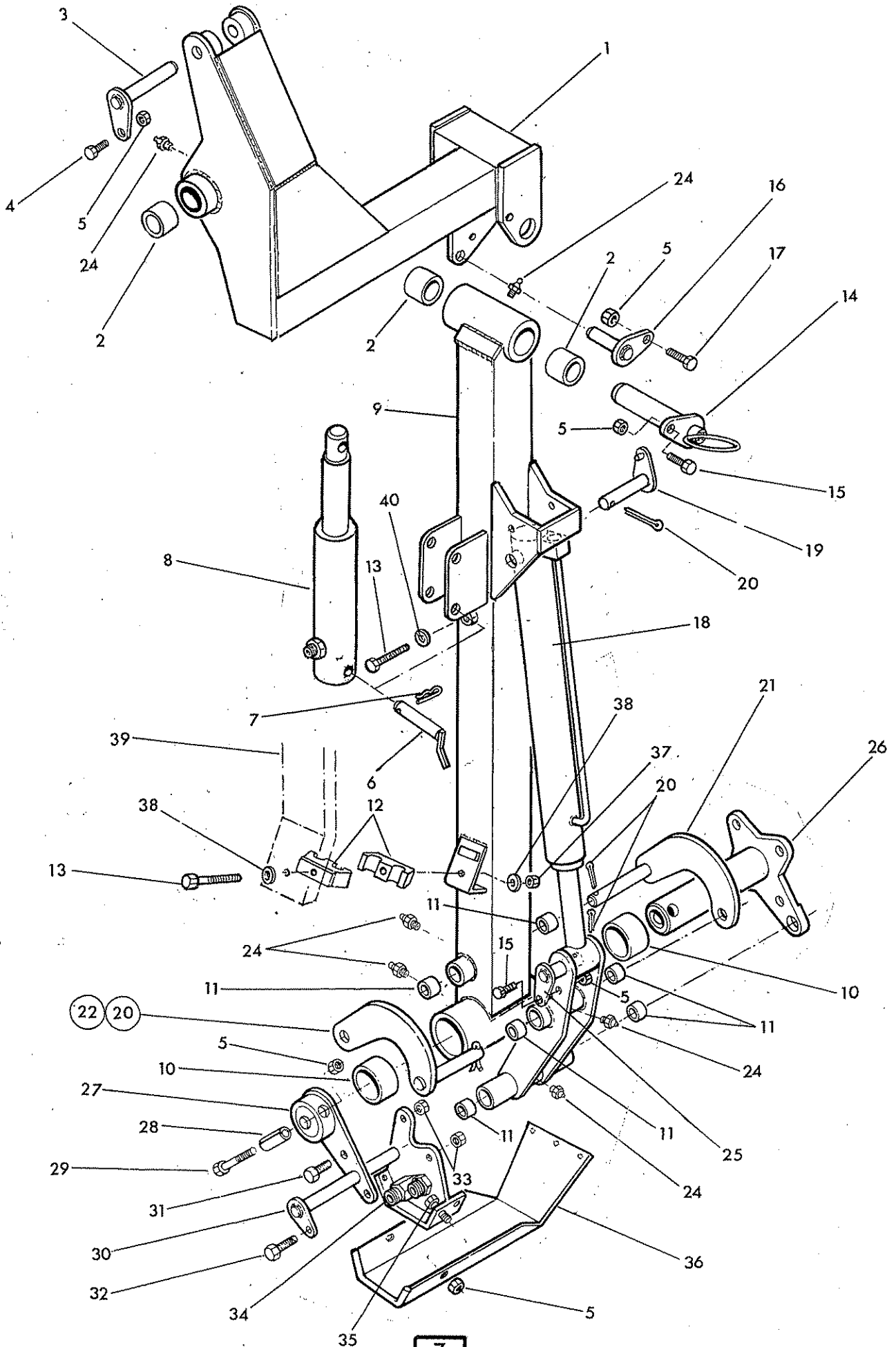
## DIPPER ARM AND ANGLING MECHANISM

1	71-98-258	1	Dipper arm - upper
2	72-13-023	4	Bush
3	71-91-038	1	Pivot pin - Reach ram rod
4	93-13-055	1	Setscrew M10 x 25
5	91-43-005	7	Self locking nut
6	71-91-036	1	Pivot pin - B/away ram base
7	04-31-105	2	Spring cotter
8	71-98-292	1	Breakaway ram
9	71-98-265	1	Dipper arm - lower
10	71-36-035	2	Bush
11	41690-01	6	Bush
12	71-98-077	2	Hose clamp
13	92-13-134	2	Bolt M8 x 65
14	71-98-015	1	Pivot pin - Dipper lower
15	93-13-075	2	Setscrew M10 x 35
16	71-91-037	1	Pivot pin - B/away ram rod
17	93-13-065	1	Setscrew M10 x 30
18	75-60-344	1	Angle ram
19	71-92-024	1	Pivot pin - Angle ram base
20	95-01-406	4	Split pin
21	74-50-251	1	Radius arm
22	74-50-250	1	Radius arm
23	71-92-309	1	Slave link
24	09-01-121	6	Greaser 1/8" BSP straight
25	41693-01	1	Pivot pin Angle ram rod
26	71-92-308	1	Head pivot tube
27	71-92-316	1	Jaw plate
28	04-23-548	1	Spring dowel
29	92-13-185	1	Bolt M10 x 90
30	71-92-009	1	Pivot pin - Slave link
31	02-11-126	1	Bolt 5/8" UNF x 1 1/2" long
32	02-11-146	1	Bolt 5/8" UNF x 1 3/4" long
33	01-46-006	2	Self locking nut 5/8" UNF
34	71-92-321	1	Hose junction bracket
35	93-13-045	2	Setscrew M10 x 20
36	71-93-375	1	Hose tray
37	91-13-004	2	Self locking nut M8
38	91-00-104	4	Plain washer dia 8
39	71-98-335	1	Hose cover
40	71-98-363	1	Transport lock pin

DIPPER ARM - Midcut model



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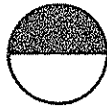


Ref. Part No. Qty Description

## DIPPER ARM AND ANGLING MECHANISM M MODEL

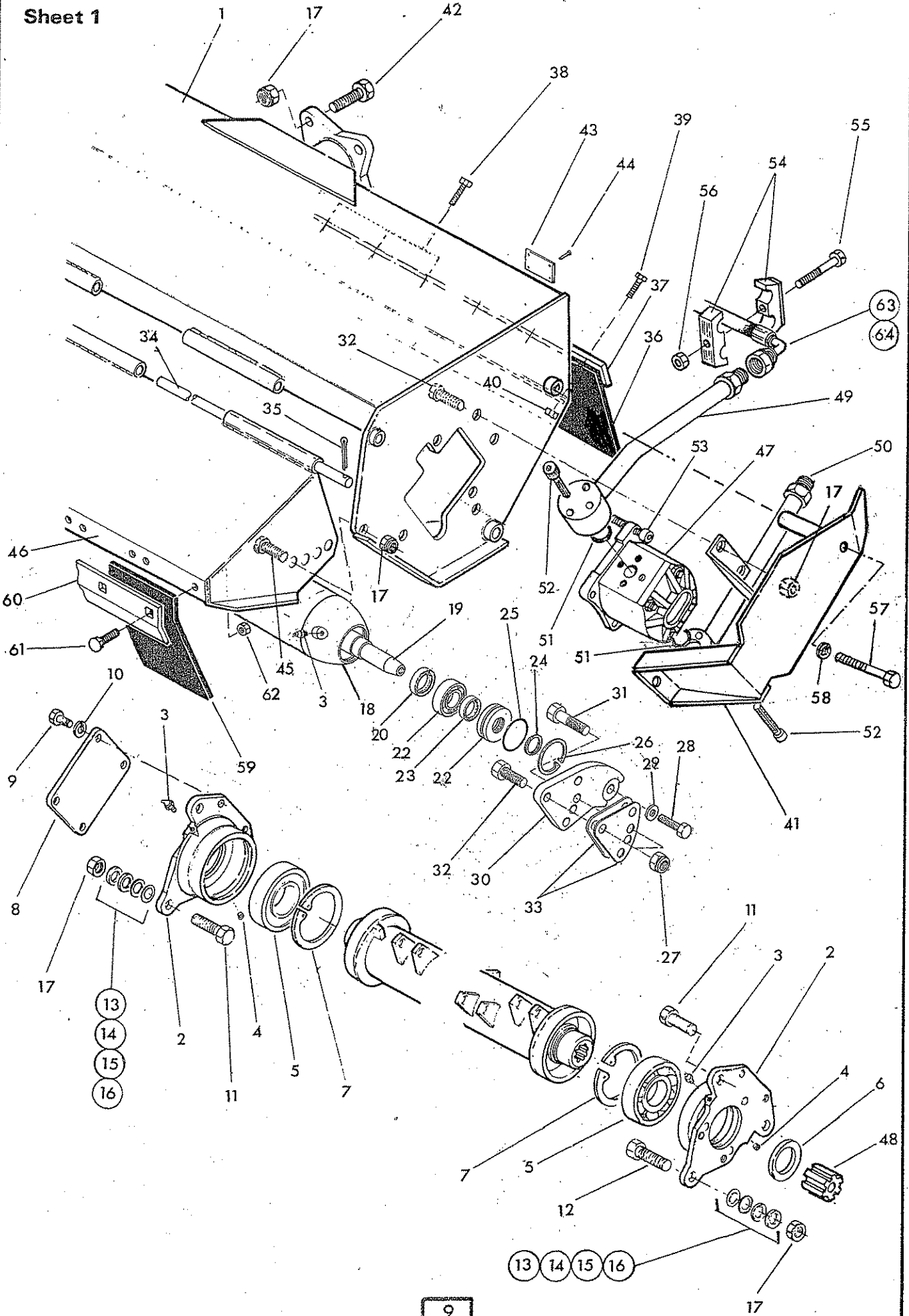
1	71 98 321	1	Dipper arm - upper
2	72 13 023	4	Bush
3	71 91 038	1	Pivot pin - Reach ram rod
4	93 13 055	1	Setscrew M10 x 25
5	91 43 005	2	Self locking nut
6	71 91 036	1	Pivot pin - B/away ram base
7	04 31 105	1	Spring cotter
8	71 98 292	1	Breakaway ram
9	71 98 322	1	Dipper arm - lower
10	71 36 035	2	Bush
11	41690.01	6	Bush
12	71 98 077	2	Hose clamp
13	92 13 134	2	Bolt M8 x 65
14	71 98 015	1	Pivot pin - Dipper lower
15	93 13 075	7	Setscrew M10 x 35
16	71 91 037	1	Pivot pin - B/away ram rod
17	93 13 065	1	Setscrew M10 x 30
18	75 60 344	1	Angle ram
19	71 92 024	1	Pivot pin - angle ram base
20	95 01 406	4	Split pin
21	74 50 251	1	Radius arm
22	74 50 250	1	Radius arm
23	71 92 309	1	Slave link
24	09 01 121	6	Greaser 1/8" BSP straight
25	41693.01	1	Pivot pin angle ram rod
26	71 92 308	1	Head pivcot tube
27	71 92 316	1	Jaw plate
28	04 23 548	1	Spring dowel
29	92 13 185	1	Bolt M10 x 90
30	71 92 009	1	Pivot pin - slave link
31	02 11 126	1	Bolt 5/8" UNF x 1 1/2" long
32	02 11 146	1	Bolt 5/8" UNF x 1 3/4" long
33	01 46 006	2	Self locking nut 5/8" UNF
34	71 92 321	1	Hose jujnction bracket
35	93 13 045	2	Setscrew M10 x 20
36	71 93 375	1	Hose tray
37	91 13 004	1	Self locking nut M8
38	91 00 104	2	Plain washer dia 8
39	71 98 316	1	Hose cover
40	91 00 204	1	Spring wsher dia 8

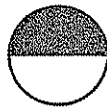
FLAIL CASING - Direct drive



W E L L

Sheet 1





Ref.	Part No.	Qty.	Description
<b>1.2 METRE DIRECT DRIVE FLAIL HEAD CASING AND ROLLER</b>			
1	71 92 388	1	Flail casing
2	71 90 261	2	Bearing housing
3	09 01 124	4	Greaser
4	85 82 041	2	Plug
5	06 00 018	2	Ball bearing
6	71-90 015	1	Motor locating washer
7	71 90 022	2	Internal circlip
8	71 90 444	1	Cover plate
9	93 13 045	4	Setscrew
10	91 00 205	4	Spring washer
11	03 11 126	5	Setscrew
12	03 11 146	1	Setscrew
13	81 21 044	as req	Shim
14	81 21 043	as req	Shim
15	71 91 099	as req	Shim
16	71 91 098	as req	Shim
17	01 41 006	14	Self locking nut
	42241.23	1	ROLLER ASSEMBLY
18	42241.11	1	Roller
19	42242.05	1	Axle
20	86 29 215	2	Seal
21	06 00 088	2	Bearing
22	42573.01	2	Seal carrier
23	86 29 216	2	Seal
24	04.12.117	2	Spring ring
25	86 00 422	2	O ring
26	04 11 262	2	Internal circlip
27	91 43 007	4	Self locking nut M16
28	93 00 149	1	Special screw M12x30 R hand
	93 00 150	1	Special screw M12x30 L hand
29	42503.02	2	Special washer
30	42246.05	1	Roller bracket R hand
	42246.04	1	Roller bracket L hand
31	92 13 117	2	Bolt M16x55
32	93 13 097	2	Setscrew M16x45
33	42257.03	as req	Shim 1.2mm
	42257.04	as req	Shim 2.0mm
34	71 91 116	1	Hood pivot pin
35	95 01 406	1	Split pin

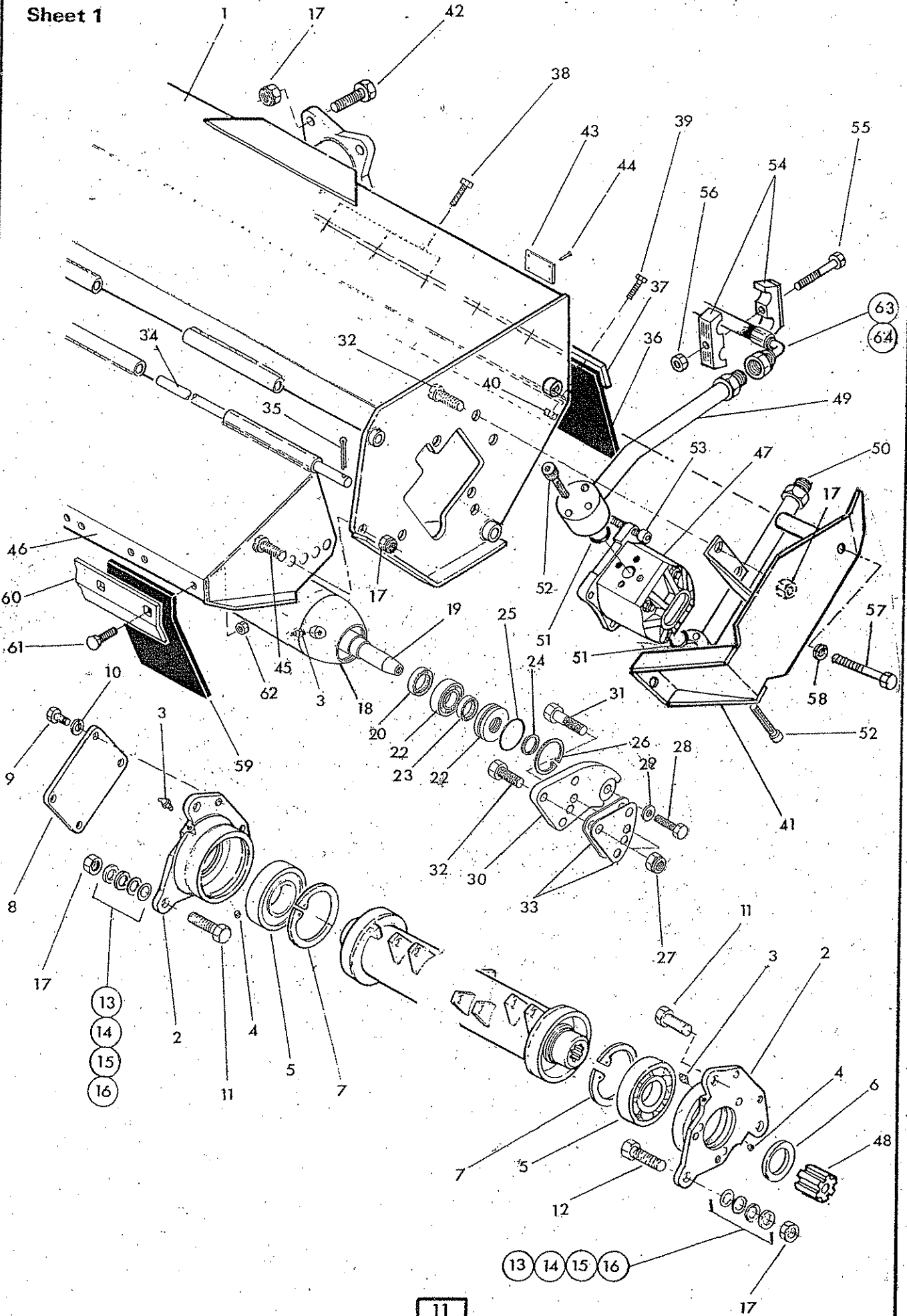
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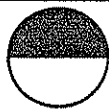
FLAIL CASING-Direct drive



**WILCOX**

Sheet 1

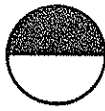




Ref.	Part No.	Qty.	Description
<b>1.2 METRE DIRECT DRIVE FLAIL HEAD CASING AND ROLLER - Continued</b>			
36	71 91 361	1	Rear flap
37	71 91 362	1	Clamp strip
38	93 13 075	3	Setscrew
39	93 13 055	7	Setscrew
40	91 43 005	10	Self locking nut
41	42282-02	1	Motor cover
42	02 11 186	4	Bolt
43	13 35 246	1	Serial No. plate
44	71 03 230	4	Pop rivet
45	03 11 106	4	Setscrew
46	71 91 352	1	Front hood
47	83 01 281	1	Hydraulic motor
48	71 90 573	1	Drive coupling
49	71 90 376	1	Rigid pipe - upper
50	71 90 377	1	Rigid pipe - lower
51	86 00 121	1	O ring
52	93 00 014	6	Capscrew
53	93 00 144	4	Capscrew
54	71 90 148	1	Hose clamp assembly
55	92 13 165	1	Bolt
56	91 43 005	1	Self locking nut M10
57	02 11 446	1	Bolt
58	01 00 206	1	Spring washer
	<b>72 90 375</b>	<b>1</b>	<b>FRONT FLAP KIT</b>
59	72 90 053	8	Front flap
60	71 90 304	1	Clamp
61	92 93 054	16	Bolt cup square
62	91 43 004	16	Self locking nut
<b>FLAIL HEADS WITH OUTBOARD MOTORS</b>			
63	85 38 015	2	Hose 3/4" BSP x 34" long
<b>FLAIL HEADS WITH INBOARD MOTORS</b>			
64	85 38 025	2	Hose 3/4" BSP x 42" long
	<b>86 99 236</b>		<b>SEAL KIT for hydraulic motor</b>

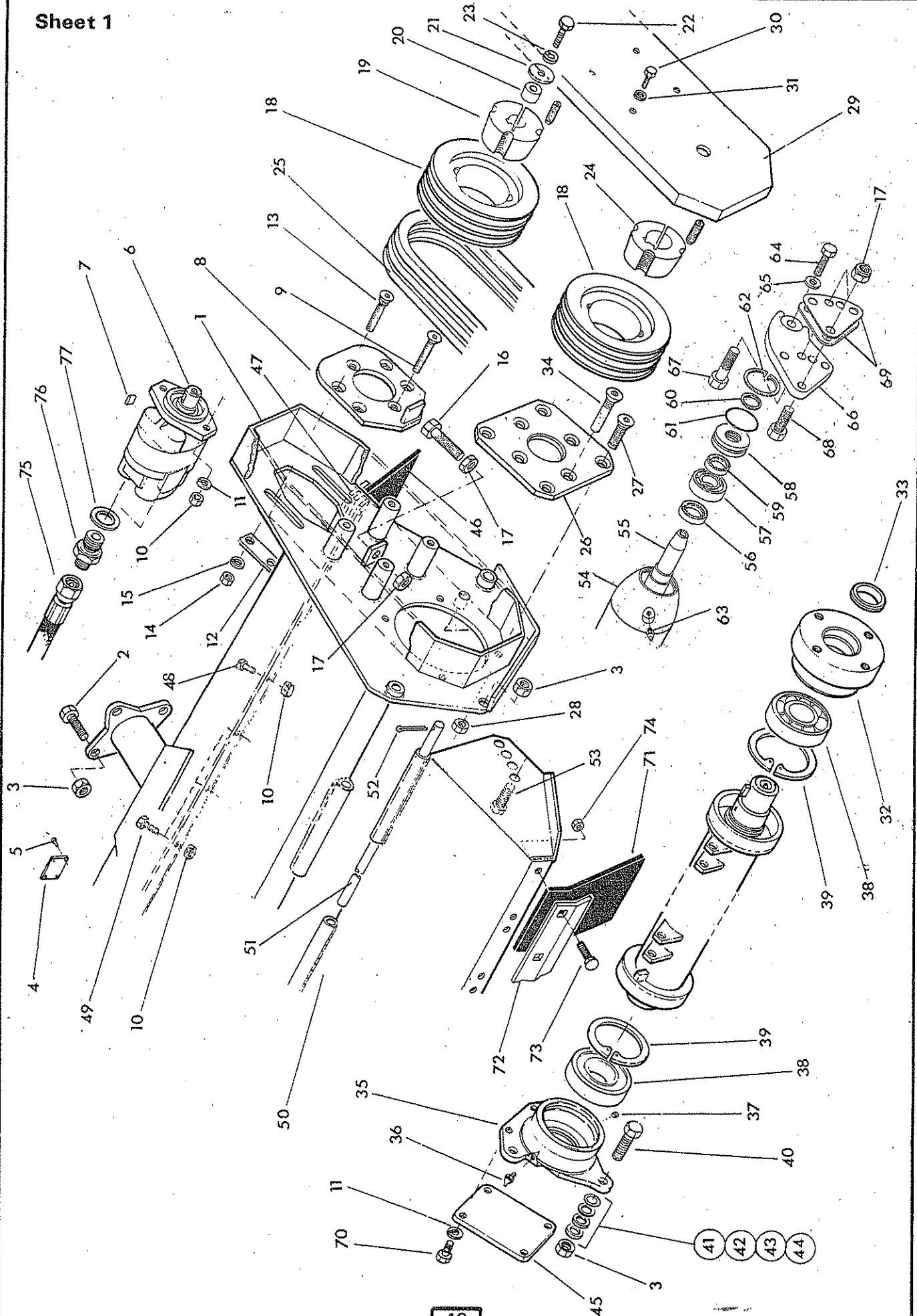


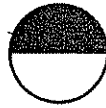
# FLAIL CASING - Belt drive



# WATSON

Sheet 1

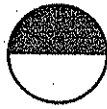




Ref.	Part No.	Qty.	Description
<b>1.2 METER BELT DRIVE FLAIL HEAD CASING &amp; ROLLER</b>			
1	71 98 274	1	Casing
2	02 11 186	4	Bolt
3	01 41 006	11	Self locking nut
4	13 35 246	1	Serial No. plate
5	71 03 230	4	Pop rivet
6	09-773-05	1	Hydraulic motor incl. key
7	83 01 034	1	Key
8	71 98 284	1	Motor mounting plate
9	93 53 085	2	Countersunk screw
10	91 43 005	12	Self locking nut
11	91 00 205	6	Spring washer
12	71 98-026	2	Clamp strip
13	60 12 034	4	Countersunk coach bolt
14	01 42 004	4	Self locking nut
15	01 00 204	4	Spring washer
16	93 13 207	1	Belt adjuster screw
17	91 43 007	4	Locknut
18	71 98 029	2	Pulley
19	05-424-07	1	Taper lock incl screws
20	71 98 034	1	Spacer
21	71 98 035	1	Washer
22	03 11 103	1	Setscrew
23	01 00 203	1	Spring washer
24	72 90 016	1	Taper lock incl. screws
25	71 98 030	3	Belt
26	71 98 283	1	Bearing housing mounting plate
27	03 51 105	4	Countersunk screw
28	01 41 005	4	Self locking nut
29	71 98 282	1	Belt cover
30	93 13 045	8	Setscrew
31	91 00 205	8	Spring washer
32	71 98 285	1	Bearing housing - drive end
33	86 29 198	1	Seal
34	03 51 125	4	Countersunk screw
35	71 90 261	1	Bearing housing - free end
36	09 01 124	1	Greaser
37	85 82 041	1	Plug
38	06 00 018	2	Bearing
39	71 90 022	2	Internal circlip
40	03 11 126	3	Setscrew

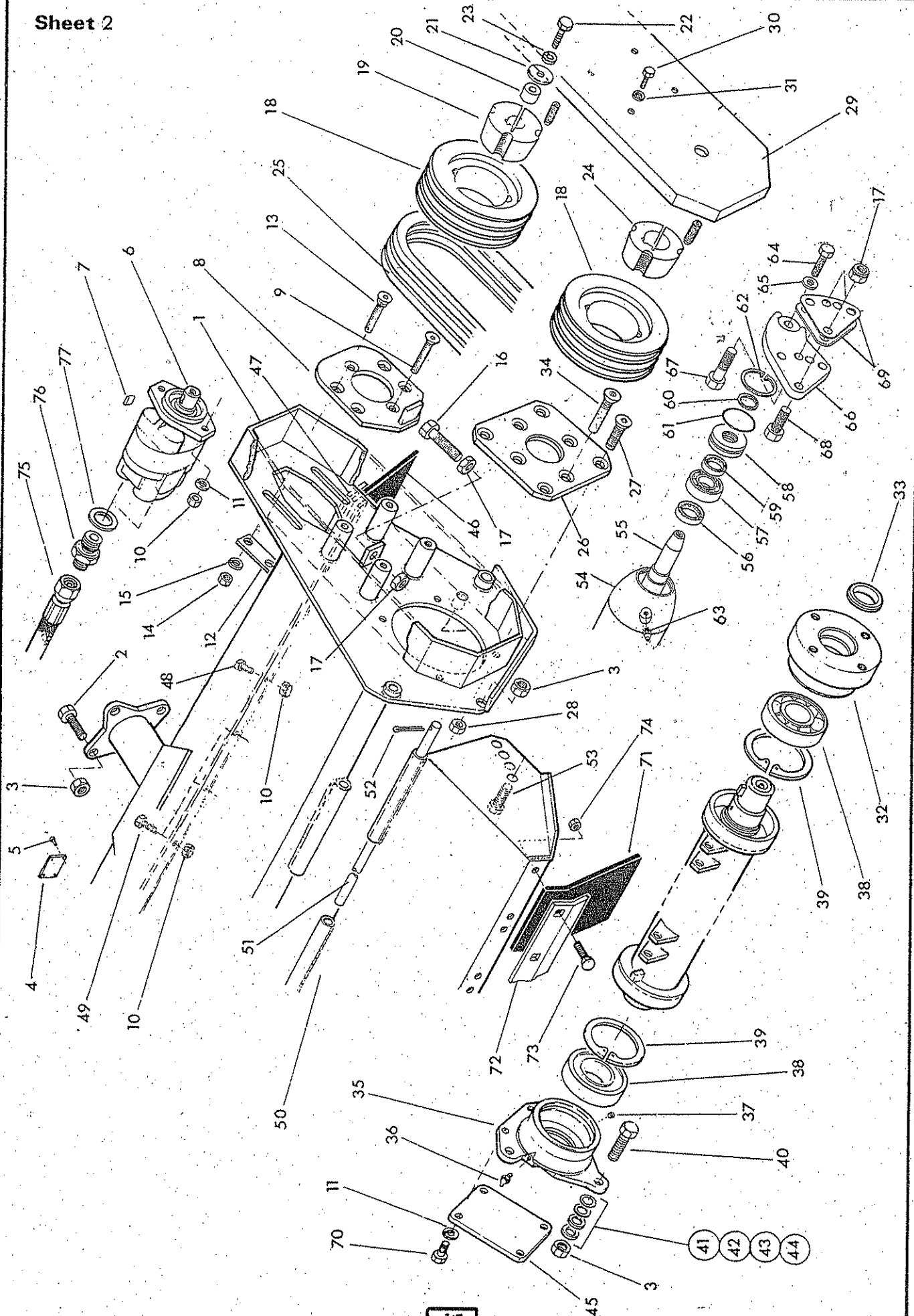
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FLAIL CASING - Belt drive



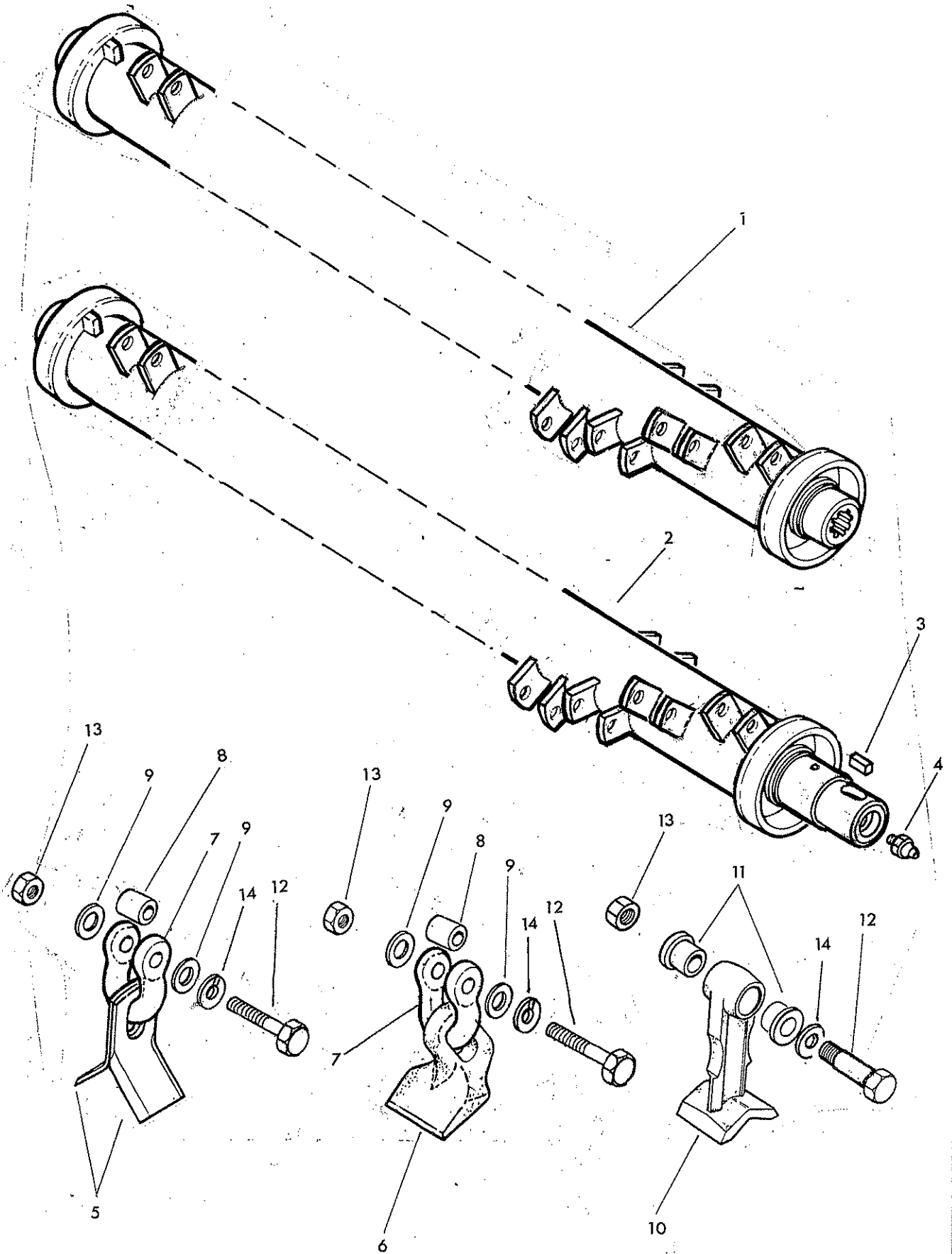
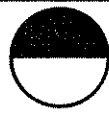
**WILSON**

Sheet 2



**McCORMEL**

Ref.	Part No.	Qty.	Description
<b>1.2METER BELT DRIVE FLAIL HEAD CASING AND ROLLER - Continued</b>			
41	81 24044	as reqd	Shim
42	81 21 043	as reqd	Shim
43	71 91 099	as reqd	Shim
44	71 91 098	as reqd	Shim
45	71 90 444	1	Cover plate
46	71 91.361	1	Rear flap
47	71 91.362	1	Clamp strip
48	93 13 065	7	Setscrew
49	93 13 075	3	Setscrew
50	71 91 352	1	Front hood
51	71.91 116	1	Hood pivot pin
52	95 01 406	2	Split pin dia
53	03 11 106	2	Setscrew
	42241.23	1	<b>ROLLER ASSEMBLY</b>
54	42241.11	1	Roller
55	42242.05	1	Axle
56	86 29 215	2	Seal
57	06 00 088	2	Bearing
58	42573.01	2	Seal carrier
59	86 29 216	2	Seal
60	04.12.117	2	Spring ring
61	86 00 422	2	O ring
62	04 11 262	2	Internal circlip
63	09 01 121	2	Greaser 1/8 BSP straight
64	93 00 149	1	Special screw M12x30 R hand
	93 00 150	1	Special screw M12x30 L hand
65	42503.02	2	Special washer
66	42246.05	1	Roller bracket R hand
	42246.04	1	Roller bracket L hand
67	92 13 117	2	Bolt M16x55
68	93 13 097	2	Setscrew M16x45
69	42257.03	as reqd	Shim 1.2mm
	42257.04	as reqd	Shim 2.0mm
70	93 13 045	4	Setscrew
	<b>72 90 375</b>		<b>FRONT FLAP KIT</b>
71	72 90 053	8	Front flap
72	71 90 304	1	Clamp strip
73	92 93 054	16	Dome headed coach bolt
74	91 43 005	16	Self locking nut
75	85 18 075	2	Hose 3/4" BSP x 29" long
76	85 81 136	2	Adaptor
77	86 50 106	2	Bonded washer
	<b>86 99 237</b>		<b>SEAL KIT for motor</b>





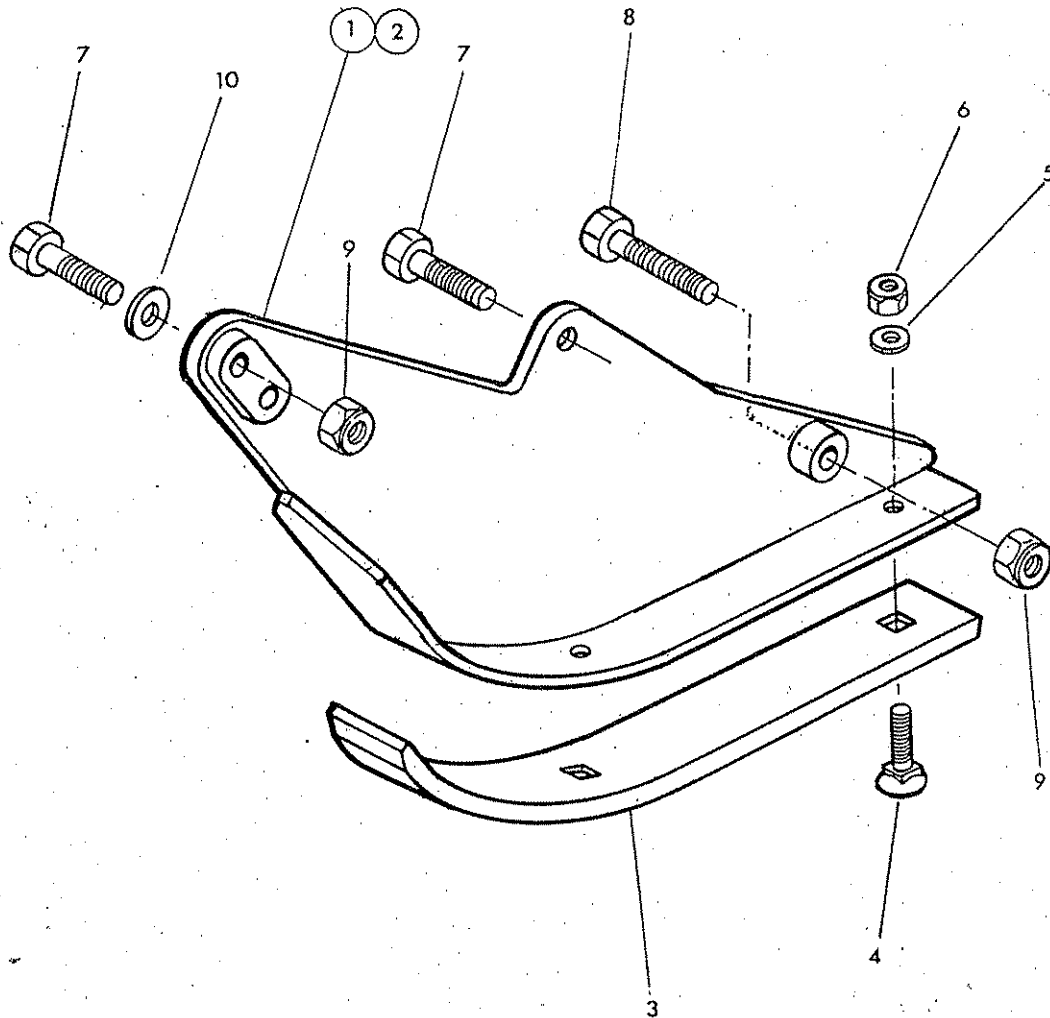
Ref. Part No. Qty. Description

## ROTORS AND FLAILS

1	71 98 346	1	Rotor- direct drive head
2	71 98 347	1	Rotor - belt drive head incl. key and greaser
3	72 90 017	1	Key
4	09 01 121	1	Greaser

The following flails are suitable for use with either rotor

5	71 90 166	48	Flail
6	71 90 462	24	Flail
7	05 895 01	24	Shackle
8	02 807 01	24	Spacer
9	05 281 04	48	Washer M16
10	71 98 344	48	Flail
11	71 98 087	48	Bush
12	05 775 10	24	Bolt - special M14 fine x 94 long
13	05 968 06	24	Nut M14 fine
14	91 00 207	24	Spring washer dia 16



Ref. Part No.

Qty. Description

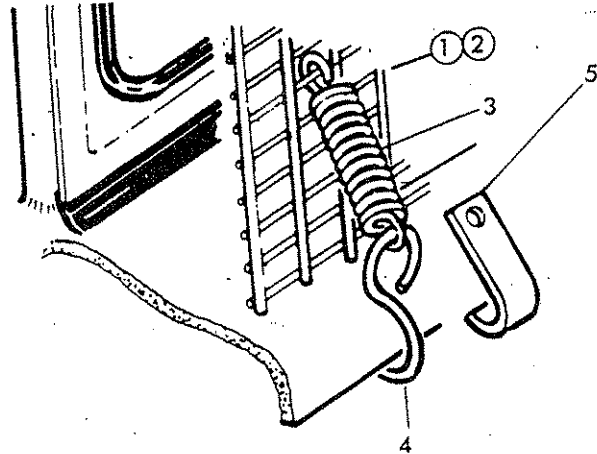
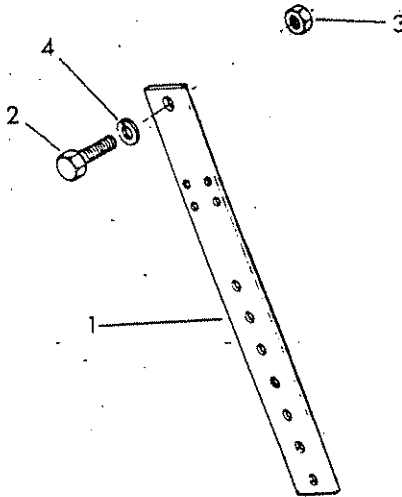
**SKID KIT - Option**

1	71 98 368	1	Skid - L.Hand
2	71 98 369	1	Skid - R.Hand - not illus.
3	72 90 391	2	Wear skid
4	60 12 034	6	Tine bolt 7/16 UNC
5	01 00 104	6	Plain washer 7/16 dia
6	01 42 004	6	Self locking nut 7/16 UNC
7	03 11 106	4	Set screw 5/8 UNF x 1 1/4" long
8	03 11 126	2	Set screw 5/8 UNF x 1 1/2" long
9	01 41 006	4	Self locking nut 5/8 UNF
10	01 00 106	2	Plain washer 5/8" dia

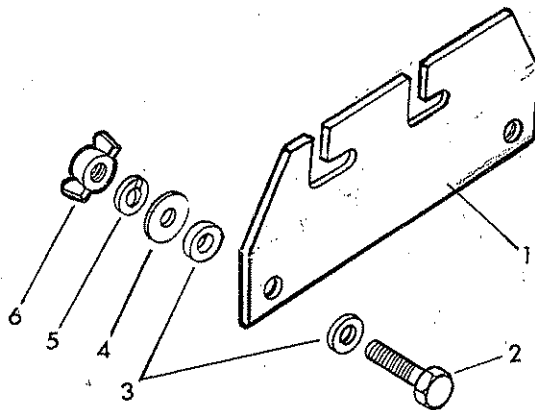
**CONTROL MOUNTING  
OPERATOR GUARD**



**McCORMEL**

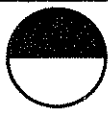


Ref.	Part No.	Qty.	Description
	<b>71-09-319</b>		<b>CONTROL MOUNTING ASSEMBLY</b>
1	71-09-146	1	Pillar including
2	93-11-086	1	Setscrew
3	01-11-006	1	Nut
4	01-00-206	1	Spring washer
	<b>73-13-324</b>		<b>CAB GUARD KIT</b>
1	73-13-049	1	Guard panel - large
2	73-13-050	1	Guard panel - small
3	60-01-064	12	Spring
4	60-01-065	6	Hook
5	73-13-051	6	Hook

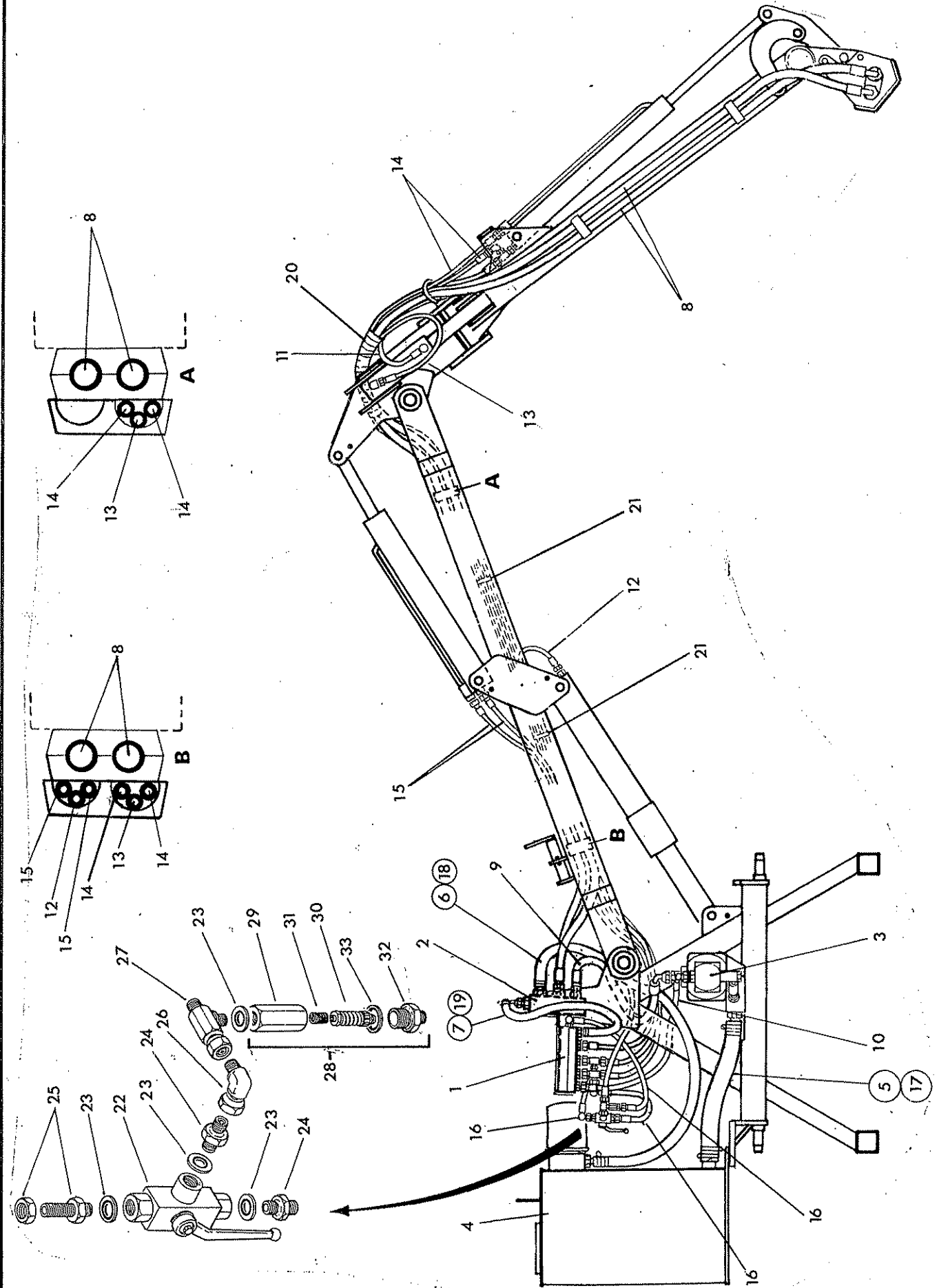


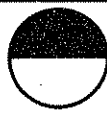
Ref	Part No	Qty	Description
			<b>CONTROL UNIT MOUNTING ASSY</b>
1	03.583.01	1	Bracket
2	93 13 094	2	Setscrew M8 x 45
3	03.152.01	4	Rubber washer
4	91 00 104	2	Plain washer dia 8
5	91 00 204	2	Spring washer dia 8
6	91 93 004		Wingnut M8



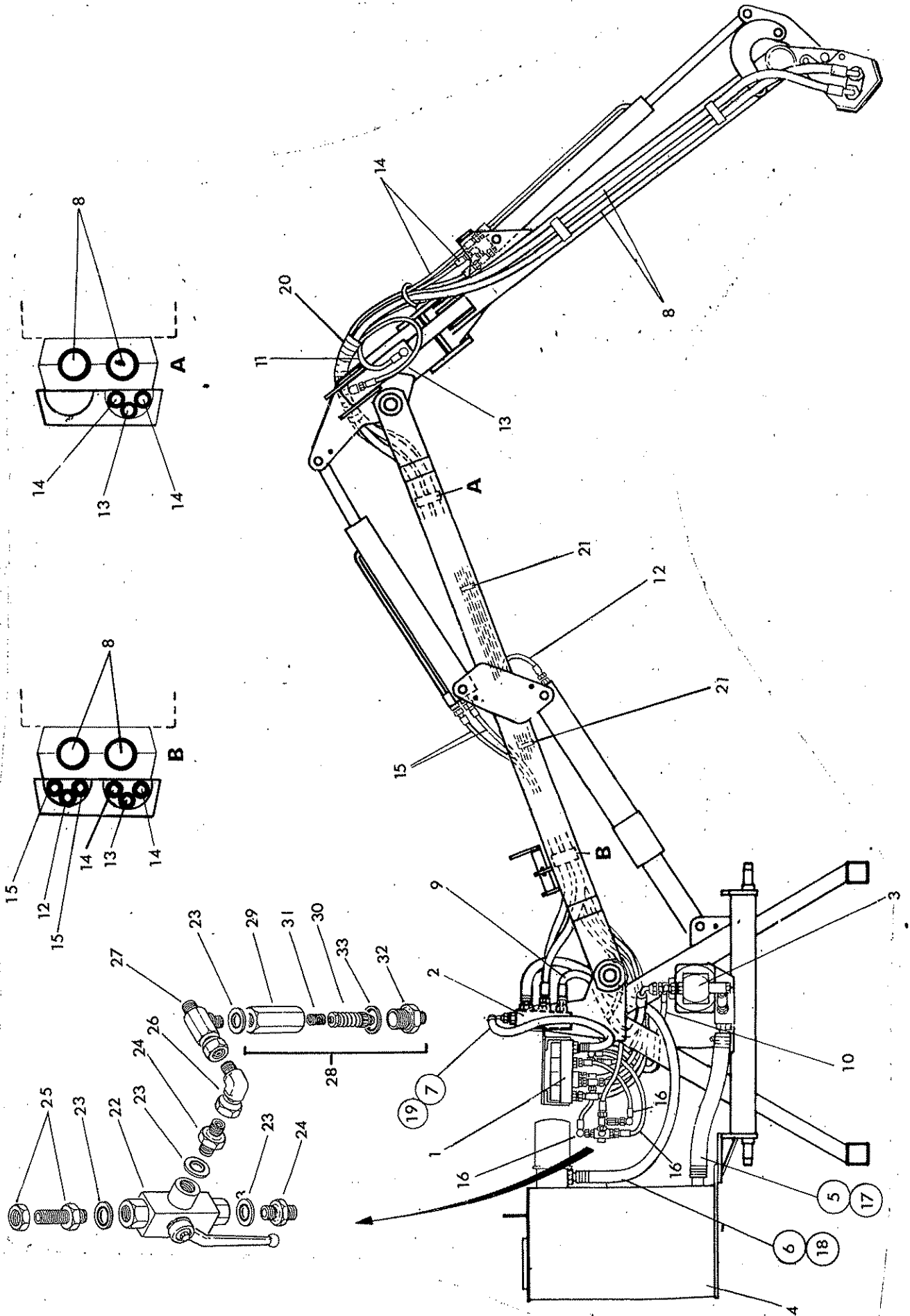


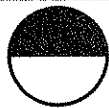
**McCONEL**





Ref. Part No.	Qty.	Description
<b>HYDRAULIC INSTALLATION - Cable machines</b>		
1	1	Control valve
2	1	Rotor control valve
3	1	Pump/gearbox
4	1	Tank
5	1	Hose x 27" long -suction 1 1/2" bore
6	1	Hose x 66" long -return to tank 1" bore
7	1	Hose x 27" long -control valve to rotor control valve
8	2	Hose 3/4" BSP x 203" long -flail motor
9	1	Hose 3/4" BSP x 41" long pump to rotor control valve
10	1	Hose 3/8" BSP x 40" long -pump to control valve
11	1	Hose 1/4" BSP x 34" long angle base T b/away gland
12	1	Hose 1/4" BSP x 82" long -lift ram
13	1	Hose 1/4" BSP x 144" long -breakaway base
14	2	Hose 1/4" BSP x 156" long- angle ram
15	2	Hose 1/4" BSP x 82" long -reach ram
16	3	Hose 1/4" BSP x 34" long
17	4	Hose clip - 1 1/2" bore
18	4	Hose clip - 1" bore
19	4	Hose clip - 5/8" bore
20	1	Hose armour
21	6	Hose tie
22	1	Diverter
23	4	Bonded seal 1/4 BSP
24	2	Union 1/4 BSP MM
25	1	Bulkhead union 1/4 BSP with locknut
26	1	Swivel elbow 1/4" BSP MF
27	1	Tee piece 1/4 BSP F MM
28	1	Lift service relief valve assy compr:-
29	1	Relief valve housing
30	1	Relief valve
31	1	Spring
32	1	Relief valve body
33	1	Bonded seal 1/2 BSP





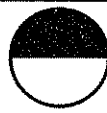
Ref. Part No.

Qty. Description

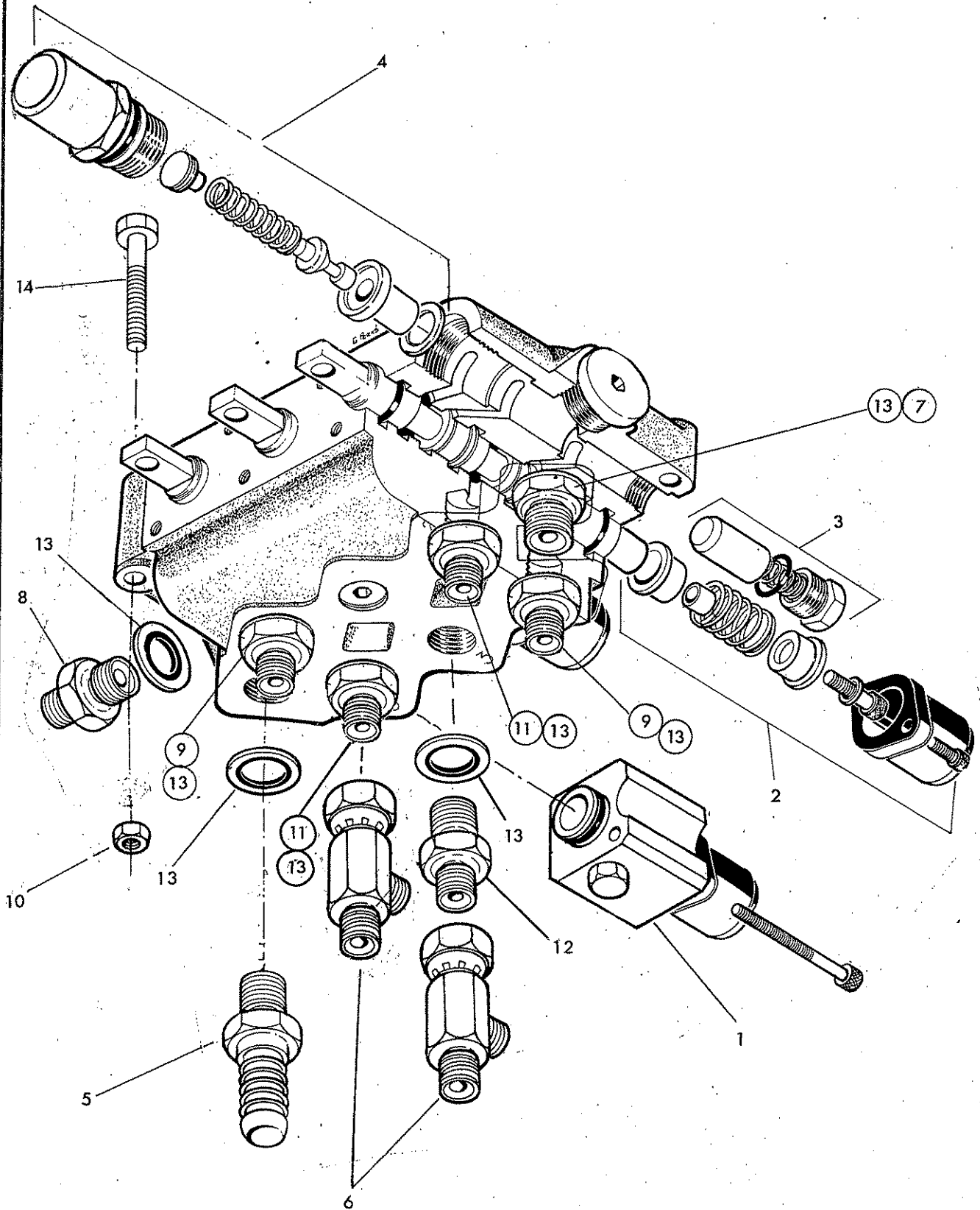
## HYDRAULIC INSTALLATION-Electric Machines

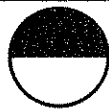
1		1	Control valve
2		1	Rotor control valve
3		1	Pump/gearbox
4		1	Tank
5	85-01-192	1	Hose x 27"long - suction 1 1/2" bore
6	85-00-866	1	Hose x 66"long - return to tank 1" bore
7	85-01-106	1	Hose x 27" long-control valve to rotor control valve
8	85-38-065	2	Hose 3/4" BSP x 203" long -flail motor
9	85-38-025	1	Hose 3/4"BSP x41"long pump to rotor control valve
10	85-31-403	1	Hose 3/8" BSPx 40"long -pump to control valve
11	85-35-082		Hose 1/4"BSP x34"long angle base T b/away gland
12	85-15-042	1	Hose 1/4" BSP x 82"long -lift ram
13	85-15-142	1	Hose 1/4" BSP x 144"long -breakaway base
14	85-15-012	2	Hose 1/4" BSP x 156"long -angle ram
15	85-15-042	2	Hose 1/4" BSP x 82" long -reach ram
16	85-35-082	3	Hose 1/4" BSP 34" long
17	09-04-107	4	Hose clip - 1 1/2" bore
18	09-04-106	4	Hose clip - 1" bore
19	09-04-204	4	Hose clip - 5/8" bore
20	71-93-026	1	Hose armour
21	71-35-084	6	Hose tie
22	41392.01	1	Diverter
23	86-50-102	4	Bonded seal 1/4 BSP
24	85-81-119	2	Union 1/4 BSP MM
25	71-05-153	1	Bulkhead union 1/4 BSP with locknut
26	85-81-190	1	Swivel elbow 1/4 BSP MF
27	85-81-254	1	Tee piece 1/4 BSP F MM
28	81-30-185	1	Lift service relief valve assy compr:-
29	81-30-156	1	Relief valve housing
30	81-30-029	1	Relief valve
31	81-16-011	1	Spring
32	81-30-083	1	Relief valve body
33	86-50-104	1	Bonded seal 1/2 BSP

ARM CONTROL VALVE - Cable



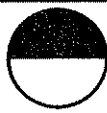
**McCormel**



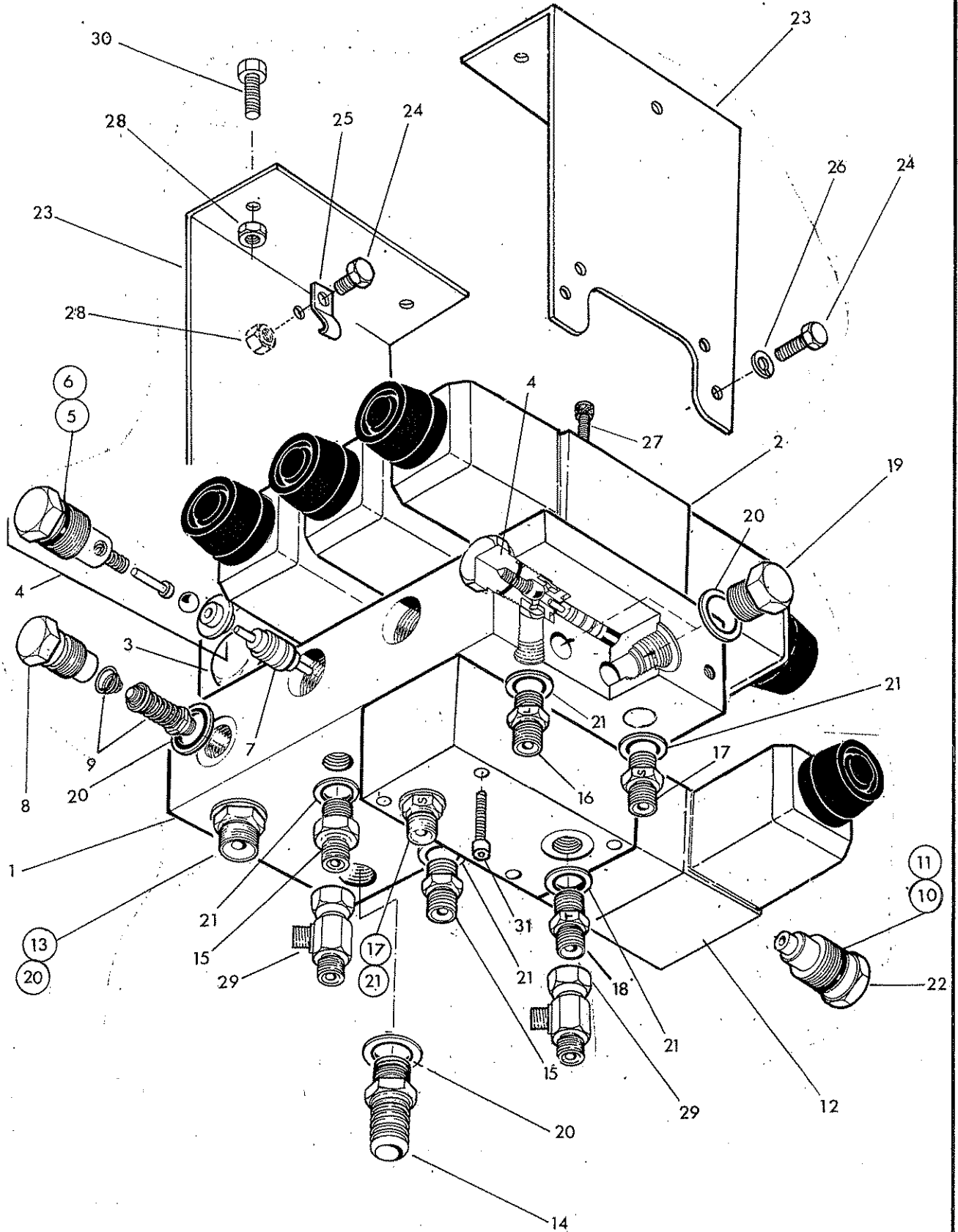


Ref.	Part No.	Qty.	Description
<b>ARM CONTROL VALVE ASSEMBLY- Cable</b>			
1	81-30-417	1	Valve including
	81-30-084	1	Centering spring and detent assy-angle
2	81-30-134	2	Centering spring assembly
3	81-30-022	1	Non return valve assembly
4	G381 2539	1	Relief valve assembly 2320 PSI (160 BAR)
5	81-25-008	1	Return connection
6	85-81-254	2	Tee
7	60-00-113	1	Union 3/8" BSP MM
8	85-81-115	1	Adaptor 3/8" BSP - 1/4" BSP MM
9	81-30-046	2	Restrictor union A
10	91-13-004	3	Self locking nut M8
11	81-30-066	2	Restrictor union M
12	81-30-048	1	Restrictor union C
13	86-50-103	8	Bonded seal
14	92-13-124	3	Bolt M8 x 60
<b>86-99-163</b>			<b>SEAL KIT</b>

ARM CONTROL VALVE - Electric



**McCormel**





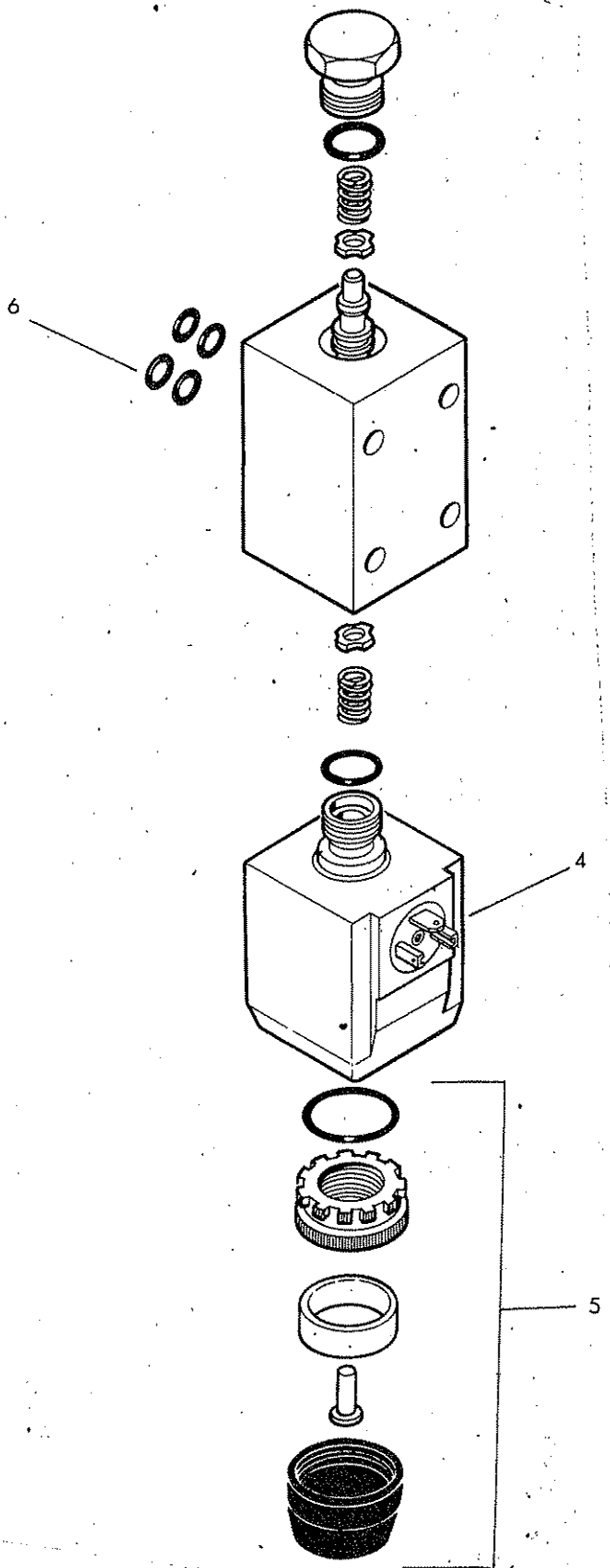
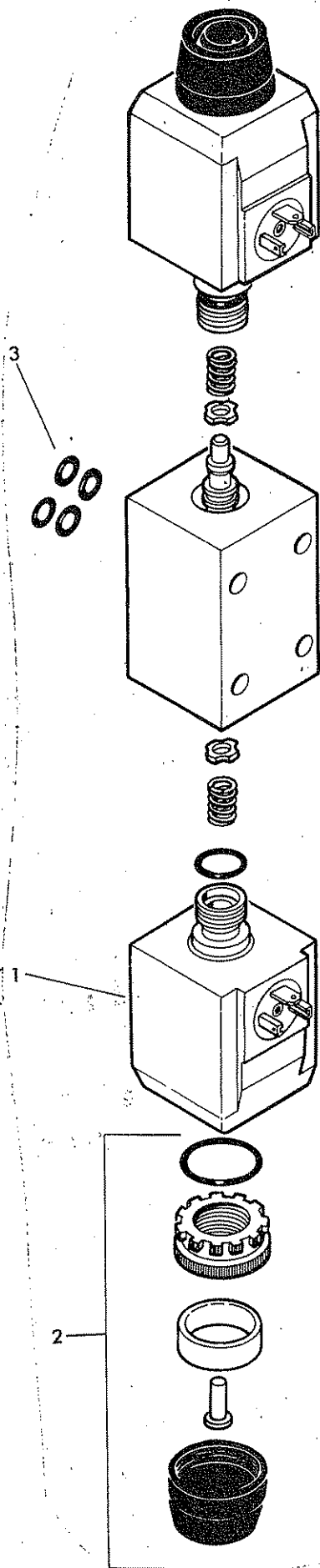
Ref.	Part No.	Qty.	Description
<b>ELECTRIC CONTROL VALVE</b>			
	81-30-318		Solenoid/manifold assembly compr:
1	81-30-321	1	Manifold block
2	81-30-455	3	Double solenoid valve
3	81-30-456	1	Single solenoid valve
4	81-30-090	5	Check valve assembly incl.
5	87-00-644	1	O ring
6	87-09-644	1	Anti extrusion ring
7	81-30-087	3	Actuator
8	81-30-032	1	Relief valve cap
9	81-30-124	1	Relief valve c/w spring
10	87-09-644	1	Anti extrusion ring
11	87-00-644	1	'O' ring
12		1	'Angle float valve - see later
13	60-00-113	1	Union 3/8 BSP-MM
14	81-25-008	1	Return connection
15	80-02-117	2	Union 1/4 BSP- 1/4" BSP M-M
16	81-30-038	2	Restrictor Union 'L' 1/4" BSP-MM
17	81-30-037	2	Restrictor Union 'S' 1/4" BSP M-M
18	81-30-103	1	Restrictor union T 1/4" BSP MM
19	80-03-001	2	Plug 3/8" BSP
20	86-50-103	5	Bonded seal 3/8" BSP
21	86-50-102	5	Bonded seal 1/4" BSP
22	81-30-078	1	Check valve gallery plug
23	71-98-050	2	Valve mounting bracket
24	93-13-034	5	Setscrew M8 x 16
25	71-09-151	1	Cable clamp
26	91-00-204	4	Spring washer dia 8
27	92-43-062	16	Capscrew, socket headed M5 x 35
28	91-43-004	1	Self locking nut M 10
29	85-81-254	2	Tee connector
30	93-43-044	4	Bolt M 8x20
31	92-43-082	4	Capscrew

### 86-99-197

### SEAL KIT

Switch box. See later







## 81-30-455

## DOUBLE SOLENOID VALVE

1	81-30-175	2	Coil
2	81-30-176	2	Manual override kit
3	86-00-107	4	'O' ring

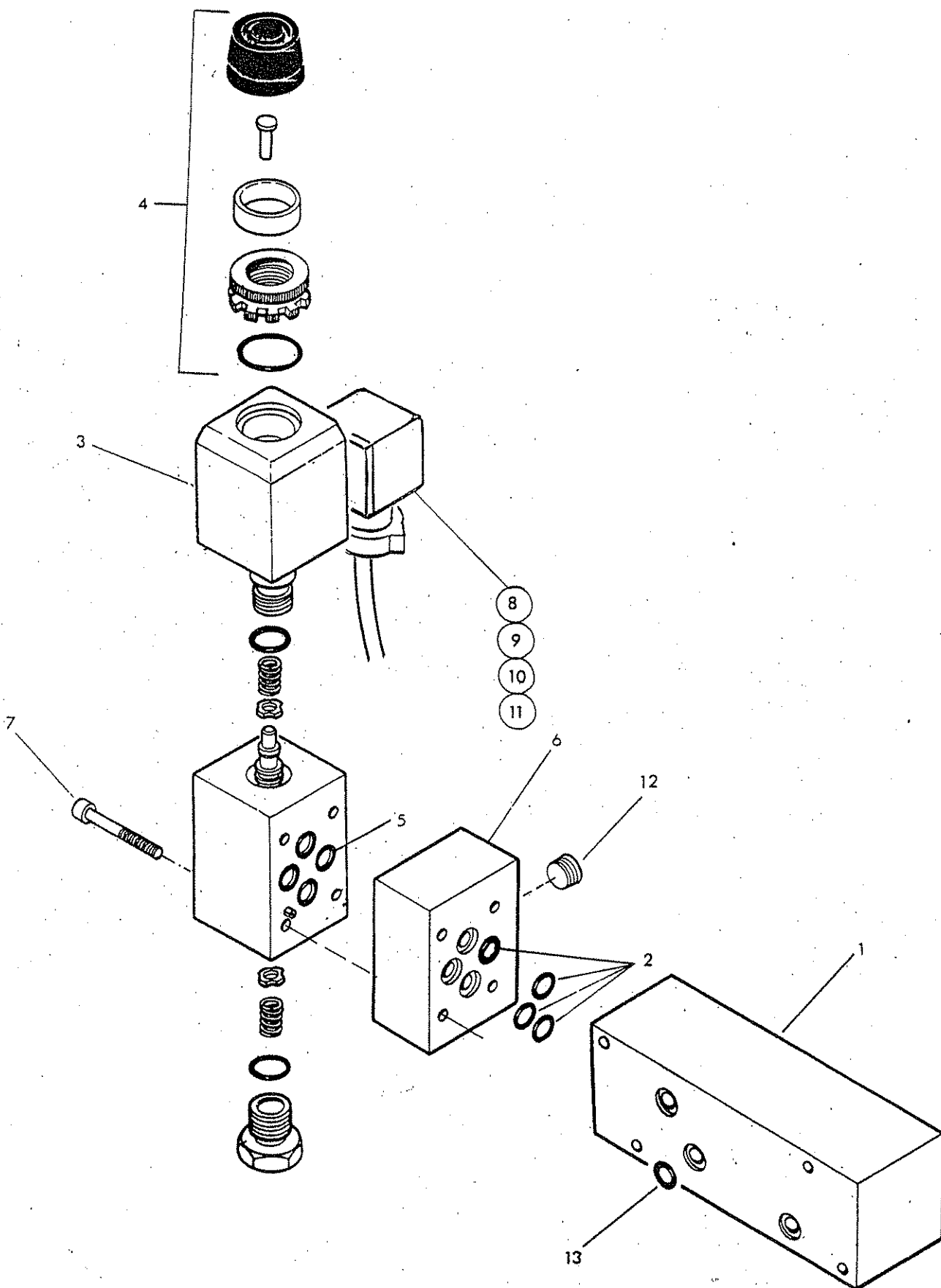
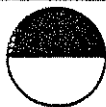
## 81-30-456

## SINGLE SOLENOID VALVE

4	81-30-175	1	Coil
5	81-30-176	1	Manual override kit
6	86-00-107	4	'O' ring

## 86-99-224

## SEAL KIT





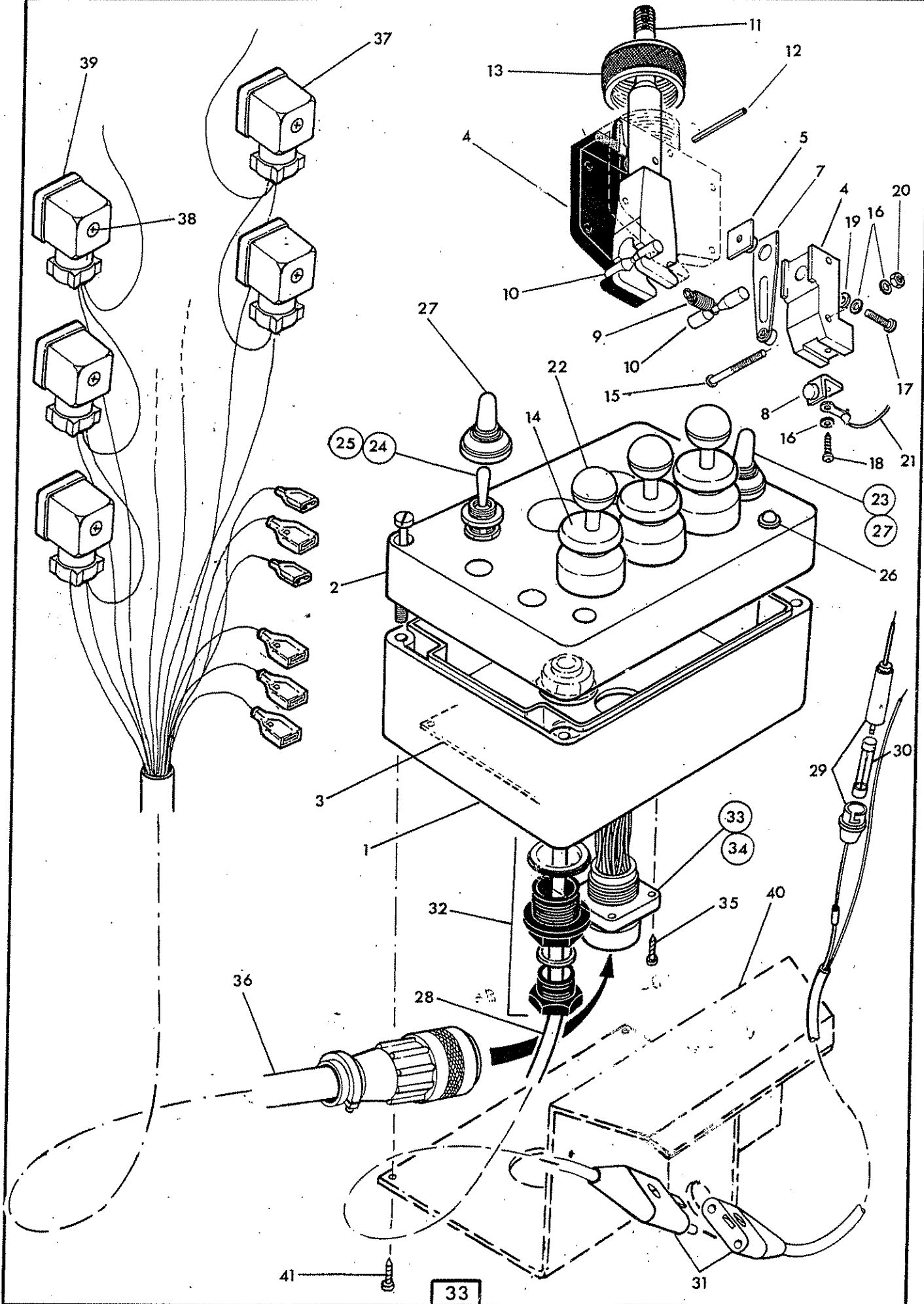
**WAGNER**

REF	PART NO.	QTY	DESCRIPTION
			ANGLE FLOAT VALVE
1	81 30 323	1	Float valve block
2	87 00 511	4	'O' ring
	81 30 457	1	Angle float solenoid incl:
3	81 30 175	2	Coil
4	81 30 176	1	Manual override kit
5	86 00 107	4	'O' ring
6	81 26 280	1	Bridging plate
7	92 43 102	4	Setscrew socket headed
8	84 02 338	1	Wiring harness incl. plug+gasket
9	07.835.04	1	Plug c/w screw + gasket
10	07.835.03	1	Screw
11	07.835.02	1	Gasket
12	85 82 041	1	Plug 1/8. BSP
13	87 00 511	3	'O' ring - ref only
	86 99 224		SOLENOID SEAL KIT

SWITCHBOX & LOOM.

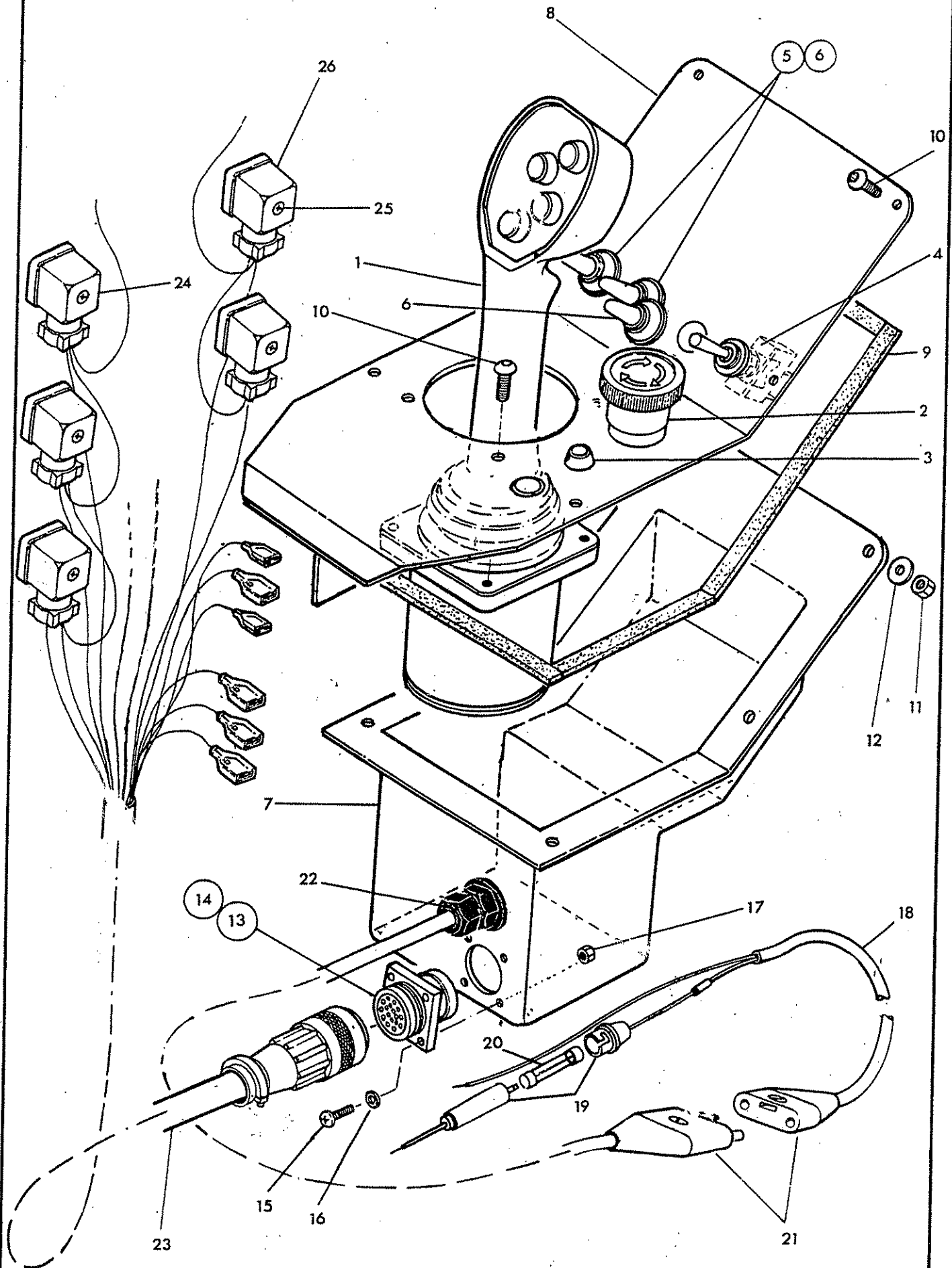


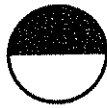
McCOMEL





Ref.	Part No.	Qty.	Description
	41845.01		MULTI 3 LEVER SWITCHBOX FOR GEAR HYDRAULIC MACHINES
1	41845.32	1	Box
2	41845.31	1	Lid c/w screws
3	41845.33	1	Circuit board
	84 02 122	3	Lever switch unit comprising:-
4	84 02 285	1	Switch body
5	84 02 106	2	Contact holder
6	84 02 109	2	Spring contact retainer
7	84 02 113	2	Spring contact
8	84 02 108	2	Fixed contact
9	84 02 101	1	Spring
10	84 02 111	2	Bar
11	84 02 256	1	Lever
12	04 25 320	1	Spring dowel dia 3 x 20
13	84 02 051	1	Bezel ring
14	84 02 022	1	Lever gaiter
15	92 00 006	4	Screw - posidrive panhead M3 x 25
16	91 00 400	8	External serrated washer dia 3
17	92 00 005	2	Screw posidrive pan head M3 x 12
18	84 02 119	2	Self tapping screw No.4 type B x10mm long
19	84 02 280	2	Plain washer dia 3
20	91 13 000	2	Nut plated M3
21	41845.34	3	Loom - lever switch
22	84 02 056	3	Knob - black
23	84 02 023	1	Switch - power on/off
24	84 02 197	1	Switch - Float
25	41845.37	1	Loom - Float switch
26	41845.38	1	L.E.D. and loom
27	84 02 024	2	Weather gaiter
28	84 02 340	1	Power harness incl.
29	84 02 114	1	Fuse holder
30		1	Fuse 20 amp
31	84 02 062	1	Plug and socket
32	84 02 042	1	Gland
33	84 02 189	1	Socket shell
34	84 02 192	14	Pin socket
35	28 00 203	4	Screw No.10 x 1/2" long
36	41844.02	1	Loom incl. connections
37	07.835.04	7	Plug incl. screw + gasket
38	07.835.03	1	Screw
39	07.835.02	1	Gasket
40	84 02 345	1	Mounting bracket
41	28 00 203	4	Self tapping screw No.10 x 1/2" long

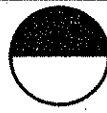




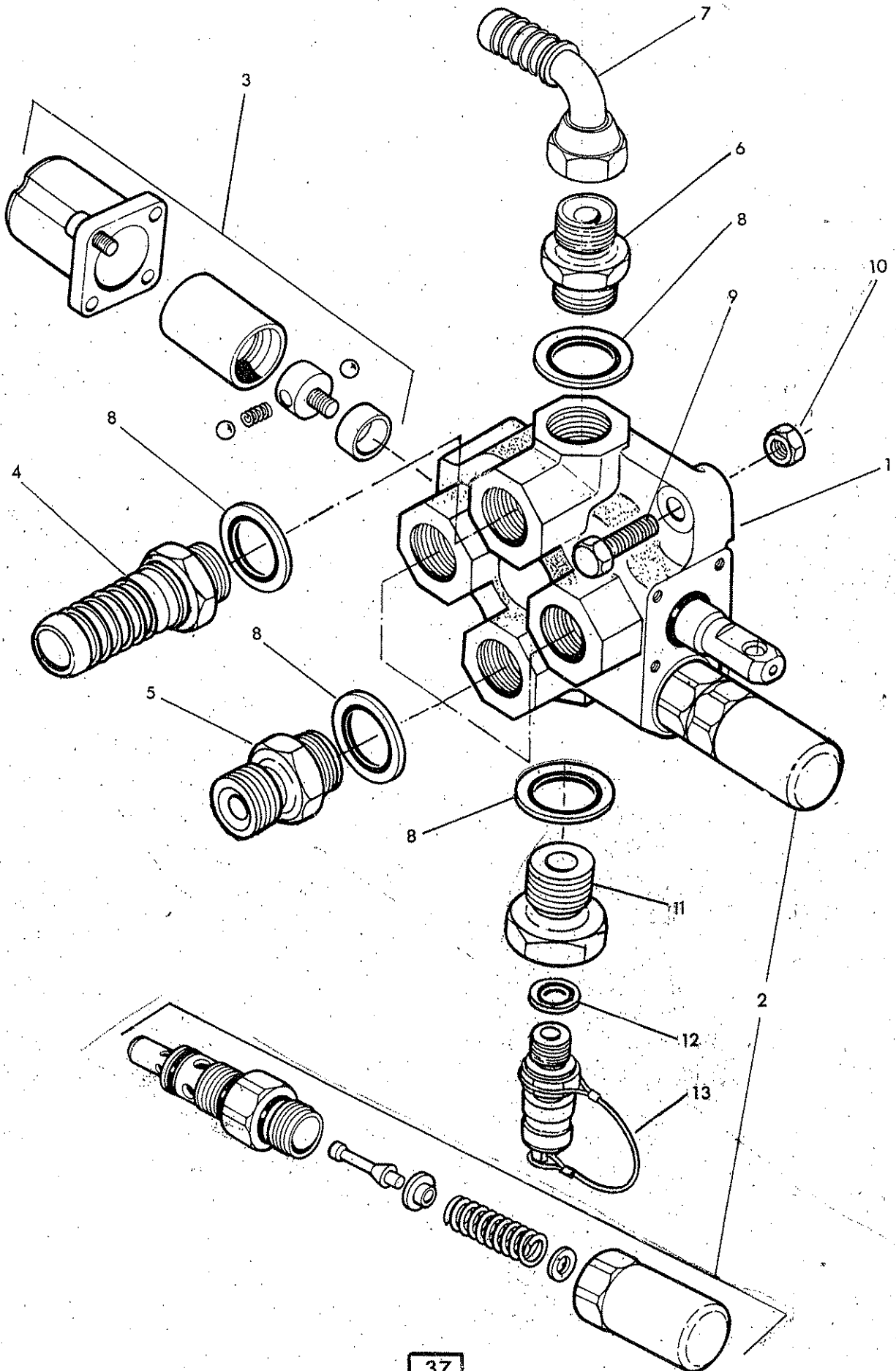
Ref.	Part No.	Qty.	Description
	41590.02		MONOLEVER 4 BUTTON CONTROL ASSY FOR GEAR HYDRAULICS
1	41590.32	1	Joystick incl. circuit board
2	84 02 184	1	Power on/emergency stop
3	84 02 174	1	L.E.D. main power on
4	84 02 182	1	Switch - slew/auto reset
5	84 02 023	2	Switch Lift and angle float
6	84 02 024	3	Weather cover
7	75 50 300	1	Cover pod
8	75 50 339	1	Top plate
9	72 90 052	1	Sealing strip -cut to suit
10	93 00 125	10	Screw - button head M6 x 16
11	91 43 003	6	Self locking nut M6
12	91 00 103	6	Washer dia 6
13	84 02 189	1	Socket shell
14	84 02 192	14	Female socket pin
15	92 00 007	4	Screw posidrive panhead M3 x 10
16	91 00 400	4	External serrated washer dia 3
17	91 00 013	4	Nut - plated M3
18	84 02 340	1	Power supply harness incl.
19	84 02 114	1	Fuse holder
20		1	Fuse 20 amp
21	84 02 062	1	Plug/socket
22	84 02 042	1	Gland
23	41844.02	1	Loom c/w plug incl.
24	07.835.04	7	Plug incl. screw + gasket
25	07.835.03	1	Screw
26	07.835.02	1	Gasket



ROTOR CONTROL VALVE



McCormel



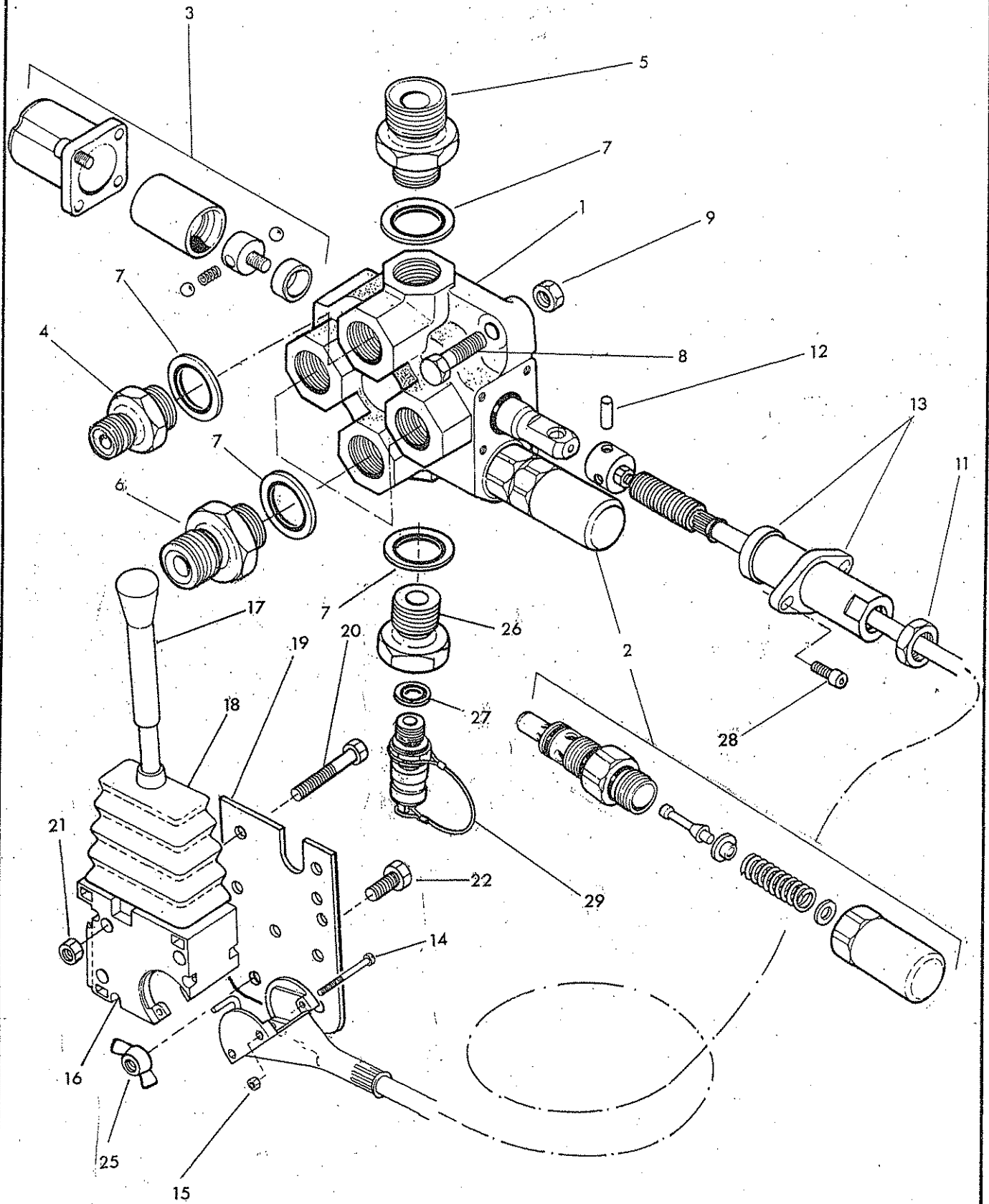


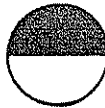
Ref.	Part No.	Qty.	Description
	<b>81 25 405</b>		<b>ROTOR CONTROL VALVE ASSEMBLY</b>
1	81 25 355	1	Rotor control valve
2	81 25 095	1	Relief valve
3	81 25 109	1	detent assembly
4	85 81 246	1	Adaptor
5	85 81 136	3	Adaptor
6	85 81 270	1	Adaptor
7	85 81 173	1	Elbow
8	86 50 106	5	Bonded seal
9	92 13 095	2	Bolt
10	91 43 005	2	Self locking nut
11	81 03 006	1	Adaptor 3/4 BSP M-1/4 BSR F
12	86 50 102	1	Bonded seal 1/4 BSP
13	81 31 008	1	Test connection 1/4 BSP
	<b>86 99 218</b>		<b>SEAL KIT</b>

# ROTOR CONTROL VALVE



# McCORMICK



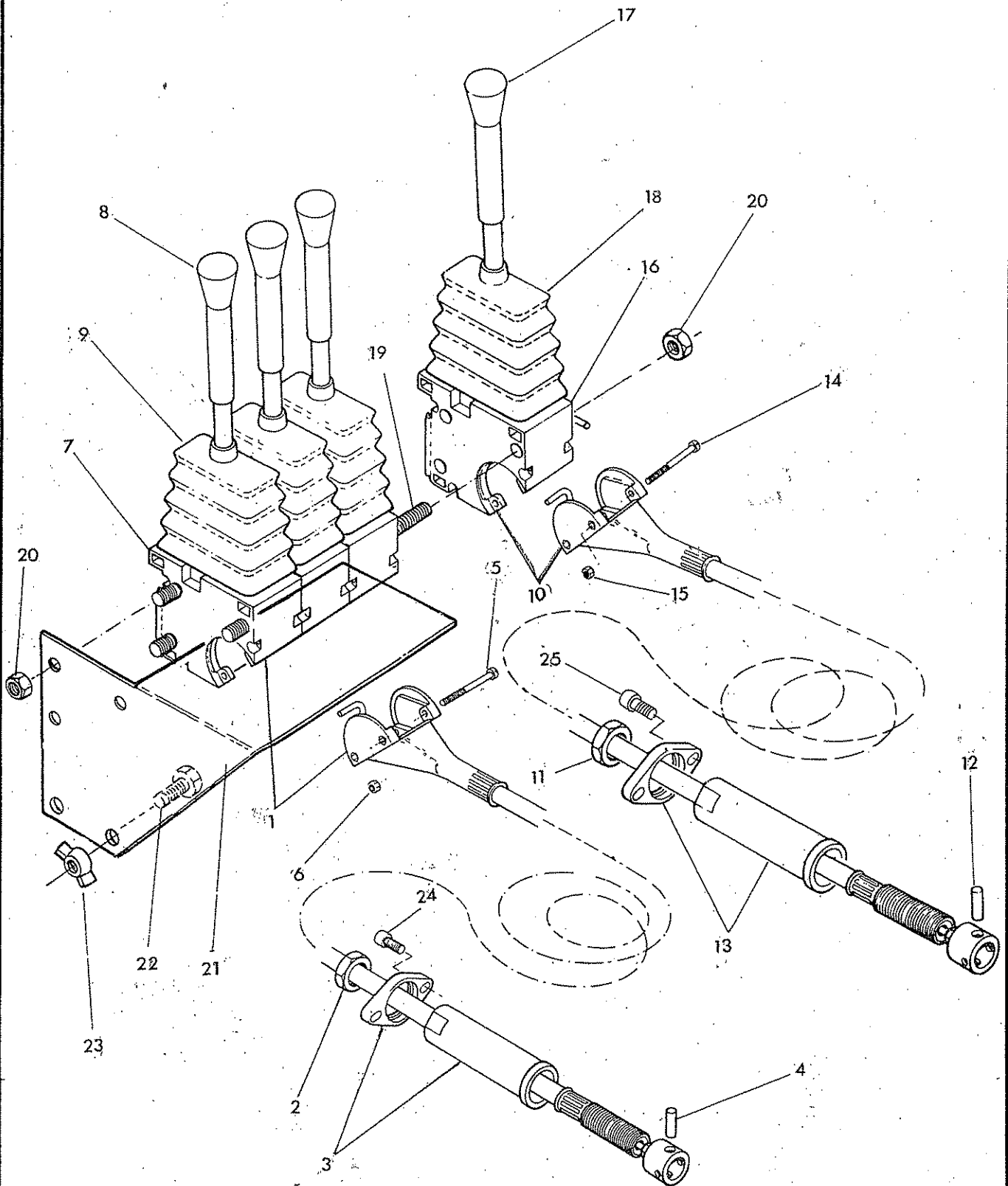
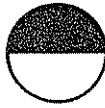


Ref	Part No	Qty	Description
<b>ROTOR CONTROL VALVE ASSEMBLY</b>			
1	81 25 355	1	Rotor control valve
2	81 25 095	1	Relief valve
3	81 25 109	1	Detent assembly
4	85 81 130	1	Adaptor 3/4 BSP x 1/2 BSP mm
5	80 02 086	4	Adaptor 3/4 BSP - 1 BSP
6	85 81 136	1	Union 3/4 BSP MM
7	86 50 106	6	Bonded seal 3/4 BSP
8	92 13 095	2	Bolt M10 x 40
9	91 43 005	2	Self locking nut M10
10	80 17 045	1	Lever & cable assembly-rotor control compr:-
11	80 17 014	1	Locknut
12	80 17 021	1	Pin
13	80 17 018	1	Flange and sleeve
14	93 73 081	2	Screw M4 x 40
15	91 13 001	2	Nut M4
		1	Lever assembly compr:-
16	80 17 024	1	Lever pivot box
17	09.968.99	1	Knob
18	80 17 026	1	Weather gaiter
19	76 50 282	1	Lever mounting plate
20	92 13 113	3	Bolt
21	91 43 003	3	Self locking nut
22	93 13 034	2	Setscrew
23	93 73 081	2	Screw M4 x 40
24	91 13 001	2	Nut M4
25	91 93 004	2	Wingnut
26	81 03 006	1	Adaptor 3/4 BSPM - 1/4 BSP F
27	86 50 102	1	Bonded seal 1/4 BSP
28	93 43 023	2	Capscrew M6 x 12 1/4 BSP
29	81 31 008	1	Test connection 1/4 BSP

86 99 218

SEAL KIT

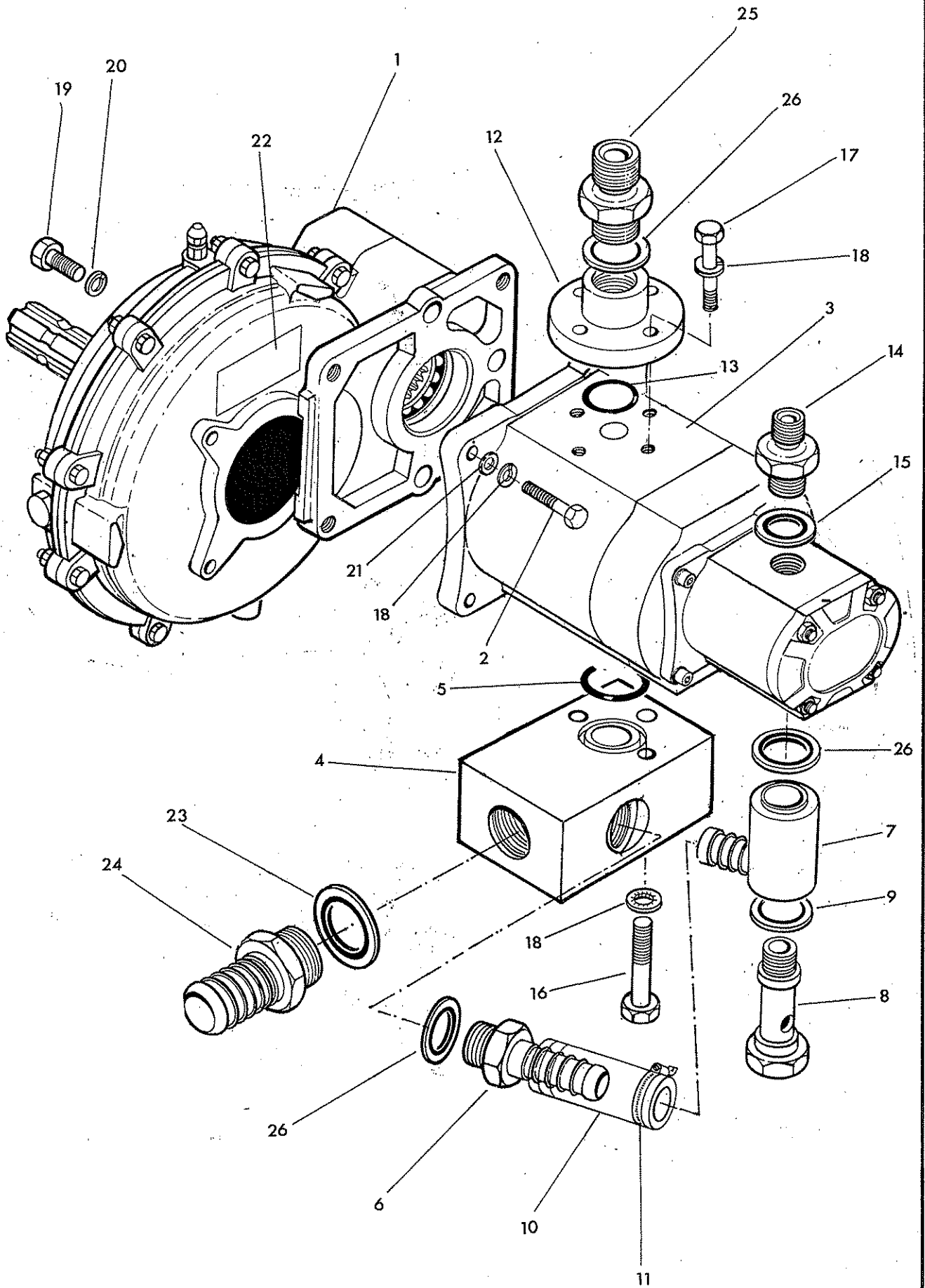
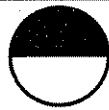
# LEVER CONTROLS

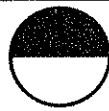




**MACDONALD**

REF	PART NO.	QTY	DESCRIPTION
			<b>CONTROL LEVERS AND CABLES</b>
	80 17 058	3	Lever and cable assy. lift, reach, & angle
2	80 17 014	1	Locknut
3	80 17 013	1	Flange and sleeve
4	80 17 016	1	Spool eye pin
5	93 73 081	2	Screw M4 x 40
6	91 13 001	2	Nut M4
		1	Lever assembly compr:-
7	80 17 022	1	Lever pivot box
8	80 17 027	1	Knob
9	80 17 026	1	Weather gaiter
10	80 17 045	1	Lever and cable assembly - Rotor control compr:-
11	80 17 014	1	Locknut
12	80 17 021	1	Pin
13	80 17 018	1	Flange and sleeve
14	93 73 081	2	Screw M4 x 40
15	91 13 001	2	Nut M4
		1	Lever assembly compr:-
16	80 17 024	1	Lever pivot box
17	09 968 99	1	Knob
18	80 17 026	1	Weather gaiter
19	04 282 70	3	Tie rod M6
20	91 43 003	3	Self locking nut M6
21	09 970 02	2	Mounting bracket
22	93 13 034	4	Setscrew M8 x 16
23	91 93 004	4	Wingnut M8
24	93 43 022	10	Capscrew M5 x 12
25	93 43 023	2	Capscrew M6 x 12



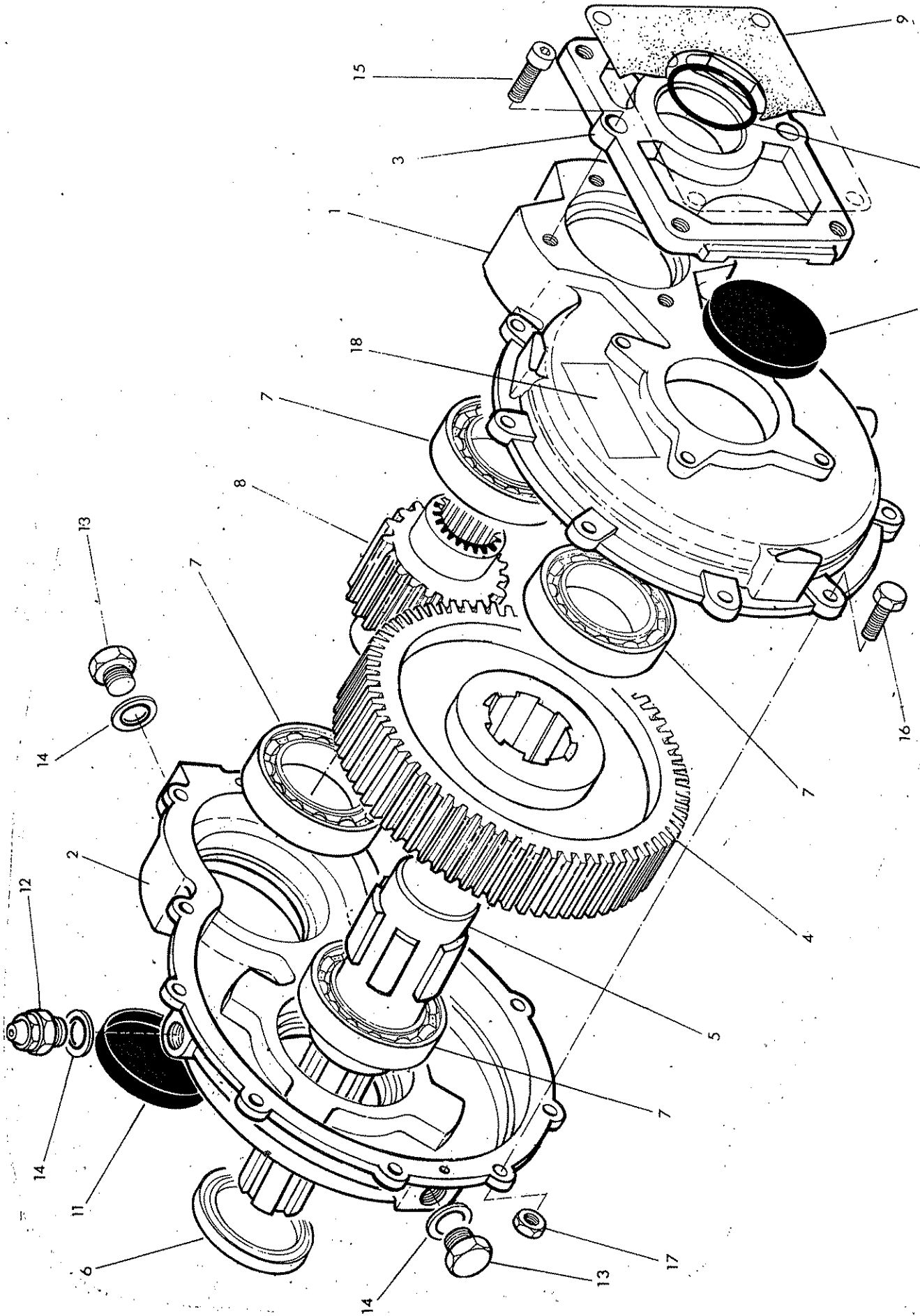


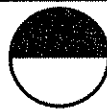
Ref.	Part No.	Qty.	Description
<b>GEARBOX / PUMP ASSEMBLY</b>			
1	86 13 444	1	Gearbox
2	92 13 094	4	Bolt
3	82 01 466	1	Tandem pump - compr:-
	82 01 684	1	Large pump
	82 01 677	1	Small pump
4	71 92 372	1	Suction block
5	86 00 122	1	'O' ring
6	85 81 301	1	Adaptor
7	80 13 096	1	Banjo
8	80 13 095	1	Banjo bolt
9	86 50 107	1	Bonded seal
10	85 01 213	1	Connecting hose
11	09 04 204	2	Hose clip
12	80 13 088	1	Pump flange
13	86 00 119	1	'O' ring
14	60 00 112	1	Adaptor
15	85 50 104	1	Bonded seal
16	92 13 144	3	Bolt
17	93 13 054	4	Setscrew
18	91 00 404	11	Shakeproof washer
19	93 13 056	4	Setscrew
20	91 00 206	4	Spring washer
21	91 00 104	7	Plain washer
22	12 90 054	1	Gearbox label
23	86 50 108	1	Bonded seal
24	85 81 260	1	Adaptor
25	85 81 136	1	Union
26	86 50 106	3	Bonded seal
	<b>86 99 231</b>		<b>PUMP SEAL KIT</b>





**MCCORMICK**



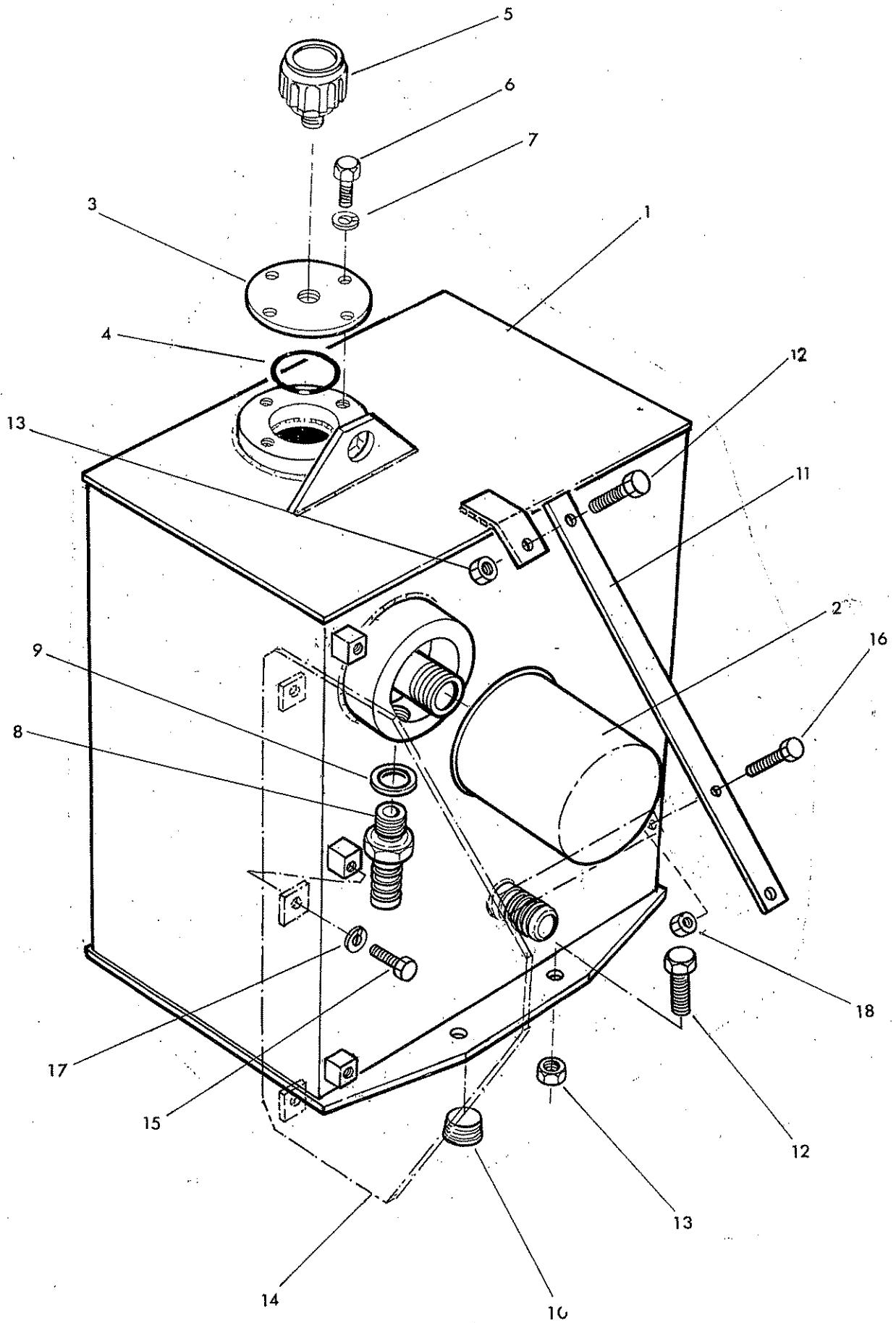


Ref	Part No	Qty	Description
	<b>80 13 444</b>		<b>GEARBOX</b>
1	80 13 100	1	Case - output side
2	80 13 101	1	Case - input side
3	80 13 102	1	Pump mounting flange
4	80 13 103	1	Gear
5	80 13 105	1	Shaft
6	86 29 196	1	Shaft seal
7	06 00 042	4	Bearing
8	80 13 104	1	Pinion
9	80 13 056	1	Gasket
10	86 00 523	1	'O' ring
11	80 13 106	2	End cover
12	80 13 107	1	Breather/adaptor
13	85 81 133	4	Plug
14	86 50 102	4	Bonded seal
15	93 43 045	3	Capscrew socket headed
16	92 13 064	10	Bolt
17	91 43 004	10	Self locking nut
18	12 90 054	1	Sticker

OIL TANK



**McCORMEL**



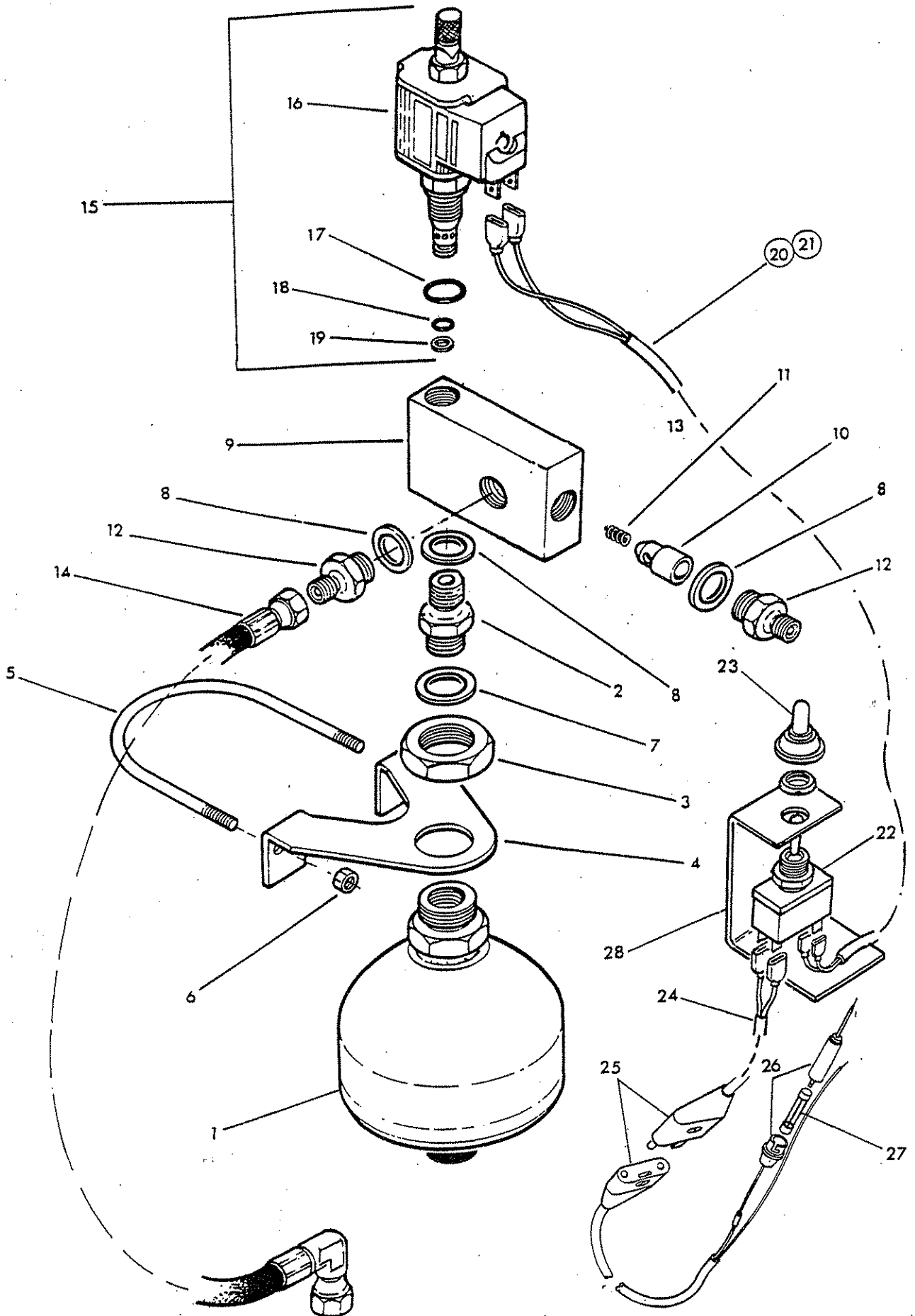


Ref	Part No.	Qty.	Description
<b>HYDRAULIC TANK ASSEMBLY</b>			
1	71 98 269	1	Tank
2	84 01 041	1	Filter
3	71 92 062	1	Cover
4	86 00 051	1	O ring
5	84 01 063	1	Breather
6	93 13 054	4	Setscrew
7	91 00 204	4	Spring washer
8	85 81 246	1	Adaptor
9	86 50 106	1	Bonded seal
10	85 81 203	1	Drain plug
11	71 98 020	1	Tank strap
12	93 13 076	4	Bolt
13	9143 006	4	Self locking nut
14	71 98 289	1	Cover plate
15	93 13 045	3	Setscrew
16	93 13 055	1	Setscrew
17	91 00 205	3	Spring washer
18	91 43 005	1	Self locking nut

LIFT FLOAT KIT



McCOMEL



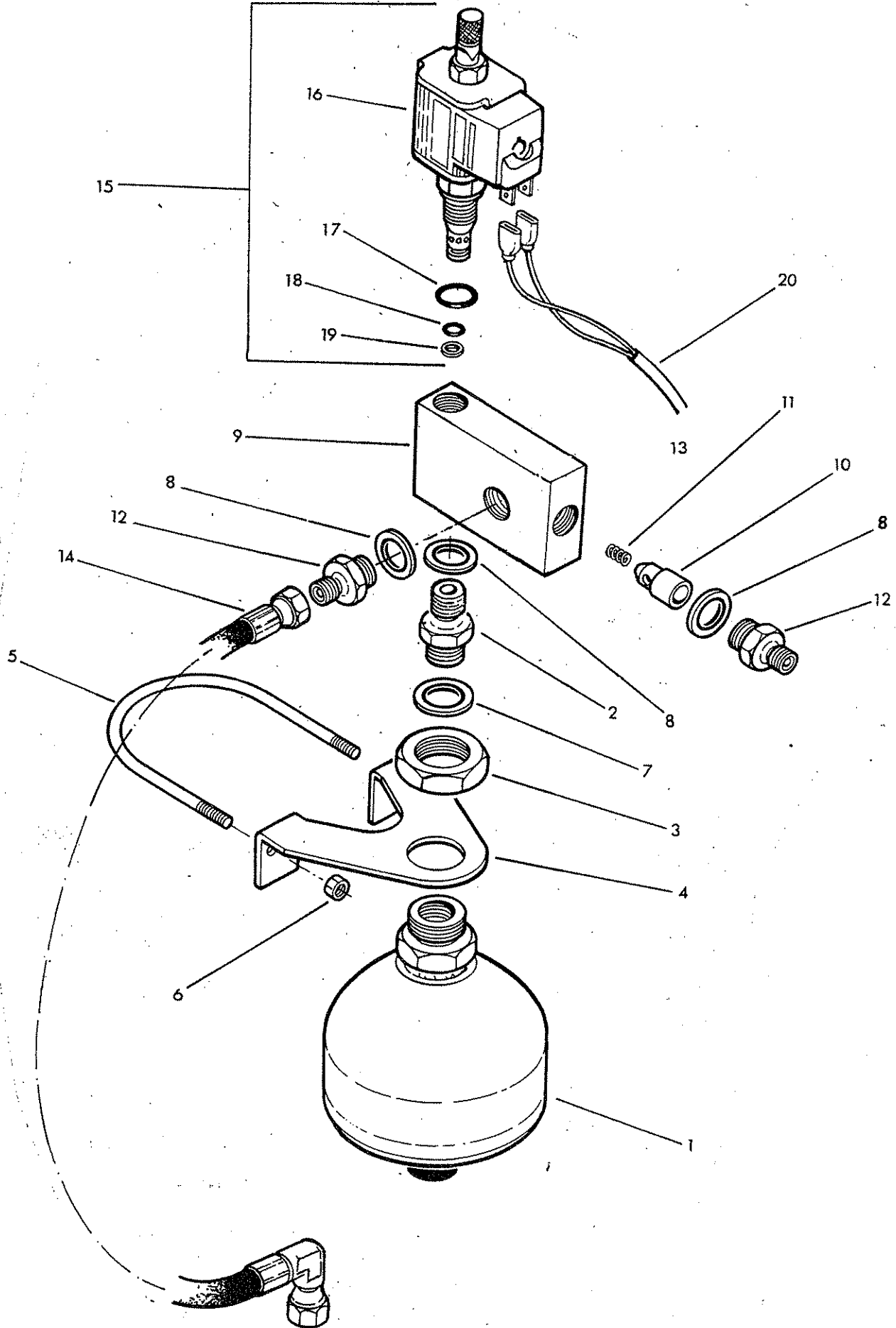


Ref.	Part No.	Qty.	Description
	81 26 295		LIFT FLOAT KIT - Quick response for cable controlled machines.
1	81 26 042	1	Accumulator
2	G241 0380	1	Adaptor M22
3	81 26 035	1	Bulkhead nut M33
4	81 26 286	1	Bracket
5	81 26 031	1	U bolt
6	91 43 004	2	Self locking nut M8
7	86 50 322	1	Bonded seal M22
8	86 50 103	3	Bonded seal 3/8" BSP
9	81 26 287	1	Control block
10	81 26 037	1	Response piston
11	81 16 011	1	Spring
12	85 81 115	2	Adaptor 3/8" BSP - 1/4" BSP
13	12 90 061	1	Operating sticker
14	85 35 012	1	Hose 1/4" BSP x 12" long SF-90F
15	81 30 183	1	Poppet valve including:-
16	81 30 184	1	Coil
17	87 00 017	1	'O' ring
18	87 00 511	1	'O' ring
19	87 09 511	1	Anti extrusion ring
20	84 02 194	1	Cable assy incl.
21	84 02 194/1	1	Cable
22	84 02 182	1	Switch
23	84 02 024	1	Switch cover
24	84 02 284	1	Supply harness incl.
25	84 02 062	1	Plug/Socket
26	84 02 114	1	Fuse holder
27	84 02 037	1	Fuse 10 amp
28	71 92 081	1	Switch mounting bracket

LIFT FLOAT KIT



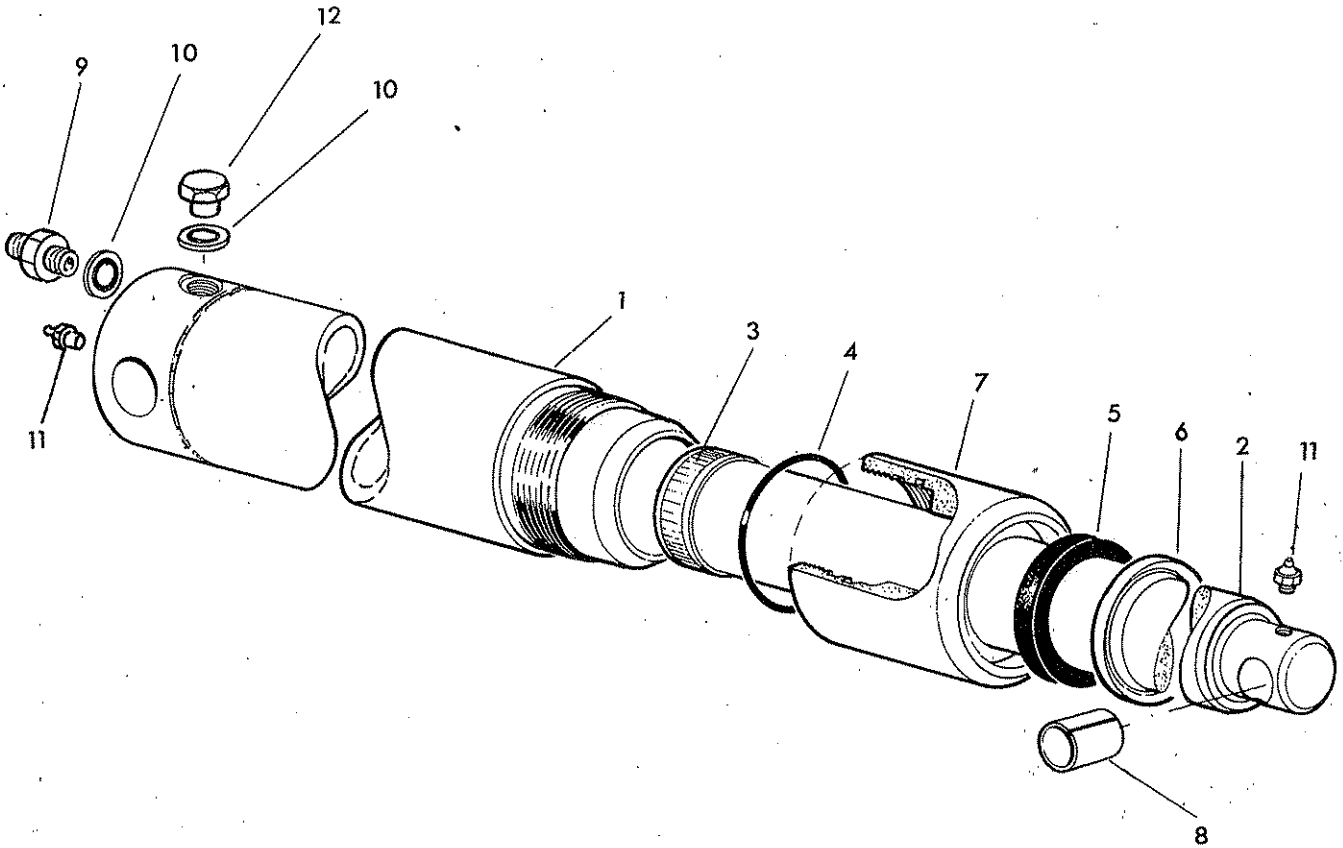
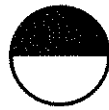
McCONEL



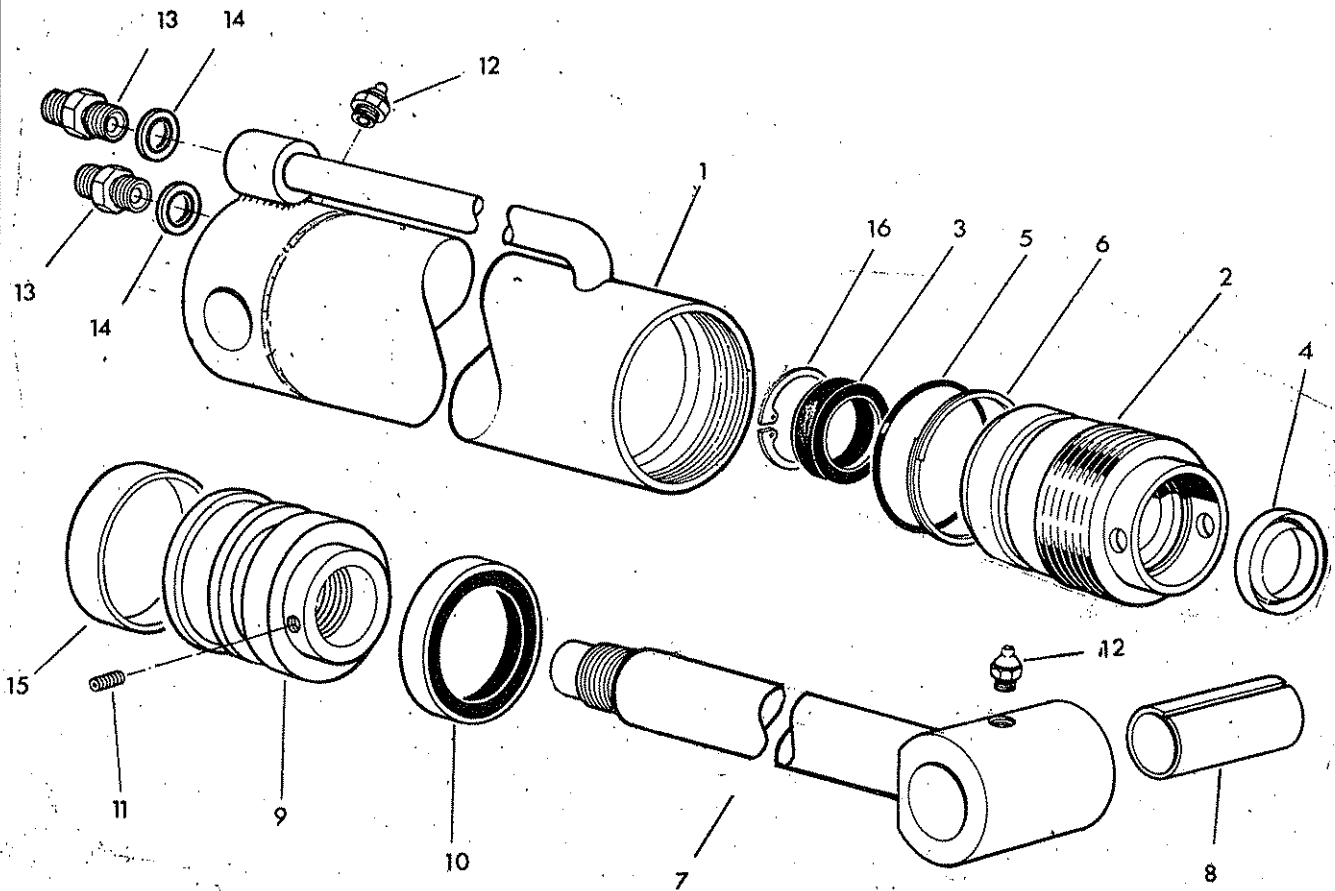
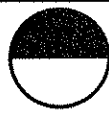


REF.	PART NO.	QTY.	DESCRIPTION
	81 26 294		LIFT FLOAT KIT - Quick response for electric controlled machines.
1	81 26 042	1	Accumulator
2	G241 0380	1	Adaptor M22
3	81 26 035	1	Bulkhead nut M33
4	81 26 286	1	Bracket
5	81 26 031	1	U bolt
6	91 43 004	2	Self locking nut M8
7	86 50 322	1	Bonded seal M22
8	86 50 103	3	Bonded seal 3/8" BSP
9	81 26 287	1	Control block
10	81 26 037	1	Response piston
11	81 16 011	1	Spring
12	85 81 115	2	Adaptor 3/8" BSP -1/4" BSP
13	12 90 061	1	Operating sticker
14	85 35 012	1	Hose 1/4" BSP x 18" long SF-90F
15	81 30 183	1	Poppet valve including:-
16	81 30 184	1	Coil
17	87 00 017	1	O ring
18	87 00 511	1	O ring
19	87 09 511	1	Anti extrusion ring
20	84 02 195	1	Cable





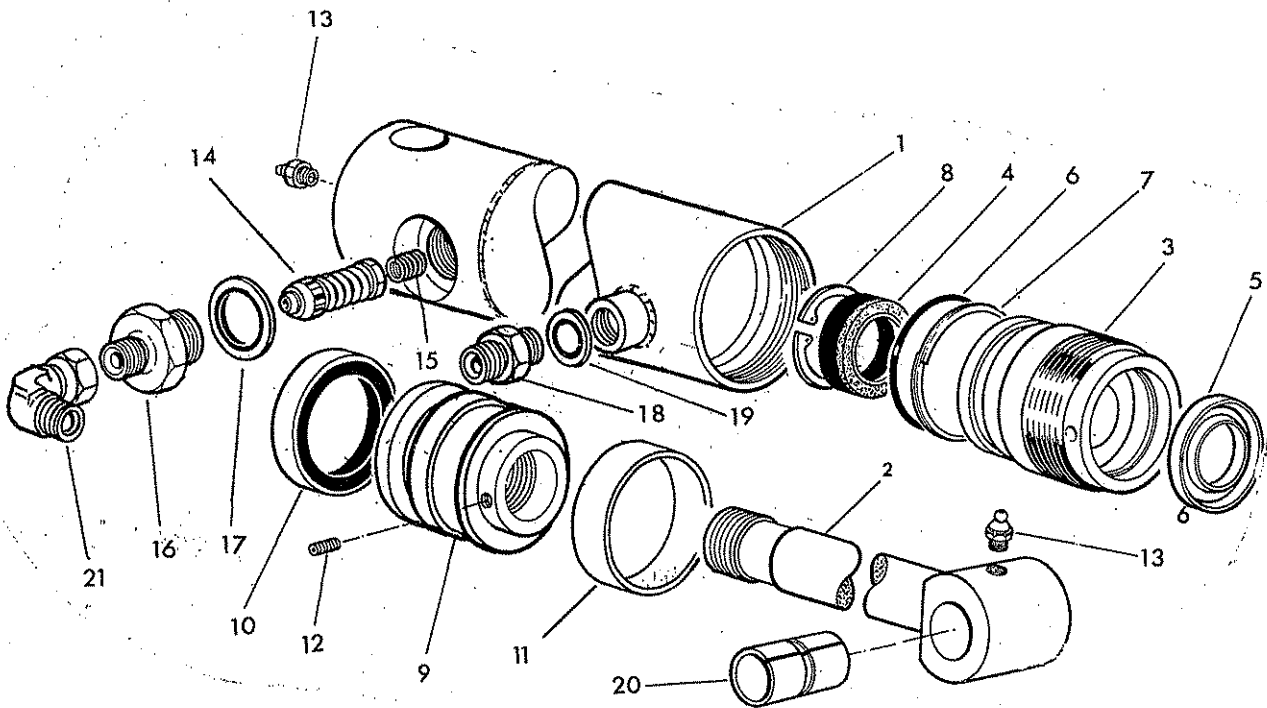
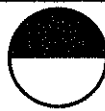
Ref.	Part No.	Qty.	Description
	<b>71-98 043</b>		<b>LIFT RAM ASSEMBLY</b>
	71 92 332	1	Ram assembly including:-
1	71 92 333	1	Ram cylinder
2	71 92 334	1	Ram rod
3	86 29 174	1	Wear ring
4	86 00 435	1	'O' ring
5	86 29 172	1	Rod seal
6	86 29 173	1	Rod wiper
7	71 92 033	1	Cylinder head
8	71 05 050	1	Rod bush
9	85 15 115	1	Adaptor
10	86 50 103	2	Bonded seal
11	09 01 121	2	Greaser
12	80 03 001	1	Plug
	<b>86-99-213</b>		<b>SEAL KIT</b>



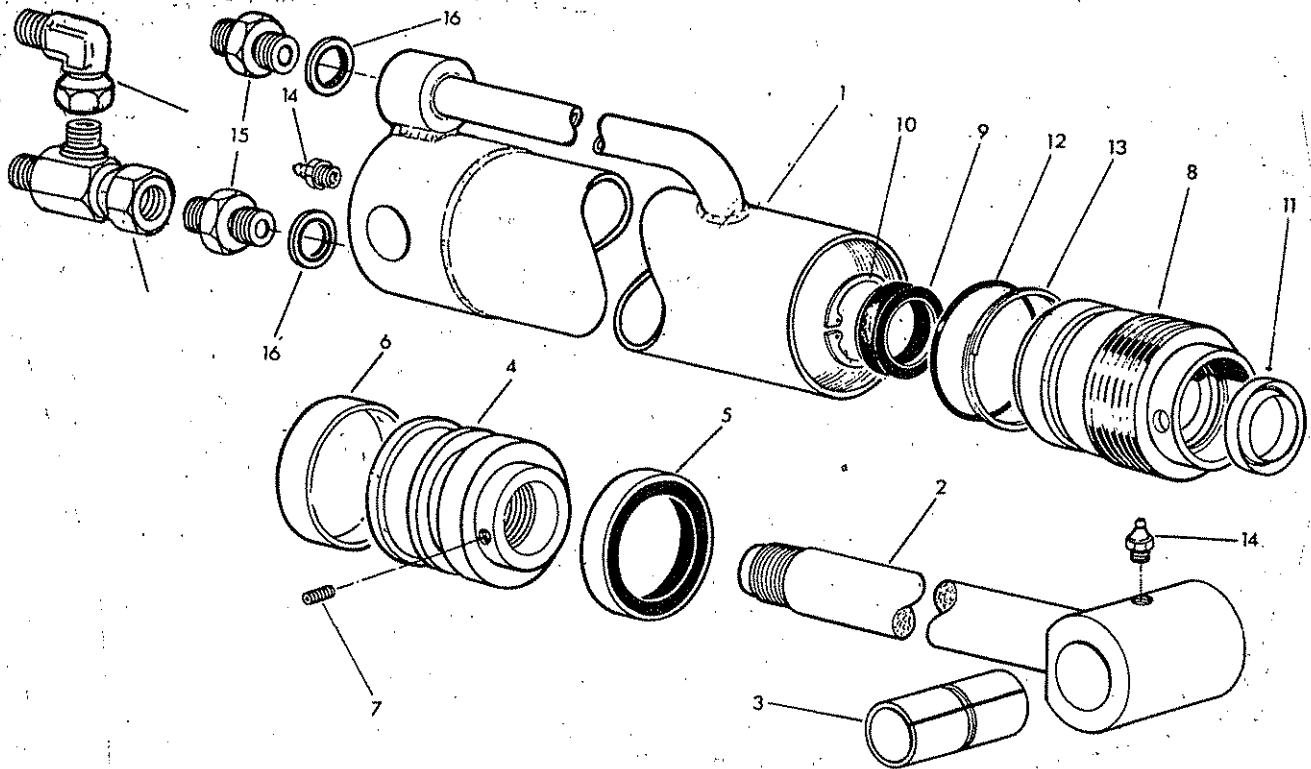
Ref.	Part No.	Qty.	Description
	<b>71 98 266</b>		<b>REACH RAM ASSEMBLY</b>
1	71 91 306	1	Ram barrel
2	71 36 312	1	Gland housing
3	86 29 148	1	Gland seal
4	86 29 149	1	Wiper seal
5	88 00 306	1	O ring
6	86 09 306	1	Anti extrusion ring
7	71 98 267	1	Piston rod
8	71 05 050	1	Bush
9	71 20 368	1	Piston
10	86 29 156	1	Piston seal
11	93 63 023	1	Grub screw
12	09 01 121	2	Greaser
13	85 15 115	2	Adaptor
14	86 50 103	1	Bonded seal
15	86 29 157	1	Guide ring
16	04 16 240	1	Internal circlip

**86 99 190**

**SEAL KIT**



Ref.	Part No.	Qty.	Description
	<b>71-98-357</b>		<b>BREAKAWAY/PARK RAM ASSY</b>
1	71-98-358	1	Ram barrel
2	71-98-361	1	Rod
3	71-35-291	1	Gland housing
4	86-29-148	1	Gland seal
5	86-29-149	1	Rod wiper seal
6	86-00-302	1	'O' ring
7	86-09-302	1	Anti extrusion ring
8	04-16-240	1	Internal circlip
9	75-60-095	1	Piston
10	86-29-187	1	Piston seal
11	86-29-188	1	Bearing ring
12	93-63-023	1	Grub screw M6 x 12
13	09-01-121	2	Greaser 1/8 BSP straight
14	81-30-189	1	Relief valve - 40 bar
15	81-16-011	1	Spring
16	81-30-083	1	Relief valve housing
17	86-50-104	1	Bonded seal 1/2 BSP
18	85-81-169	1	Union 1/4 BSP MM
19	86-50-102	1	Bonded seal 1/4 BSP
20	10-90-005	1	Bush
21	85-81-190	1	Swivel elbow 1/4 BSP MF



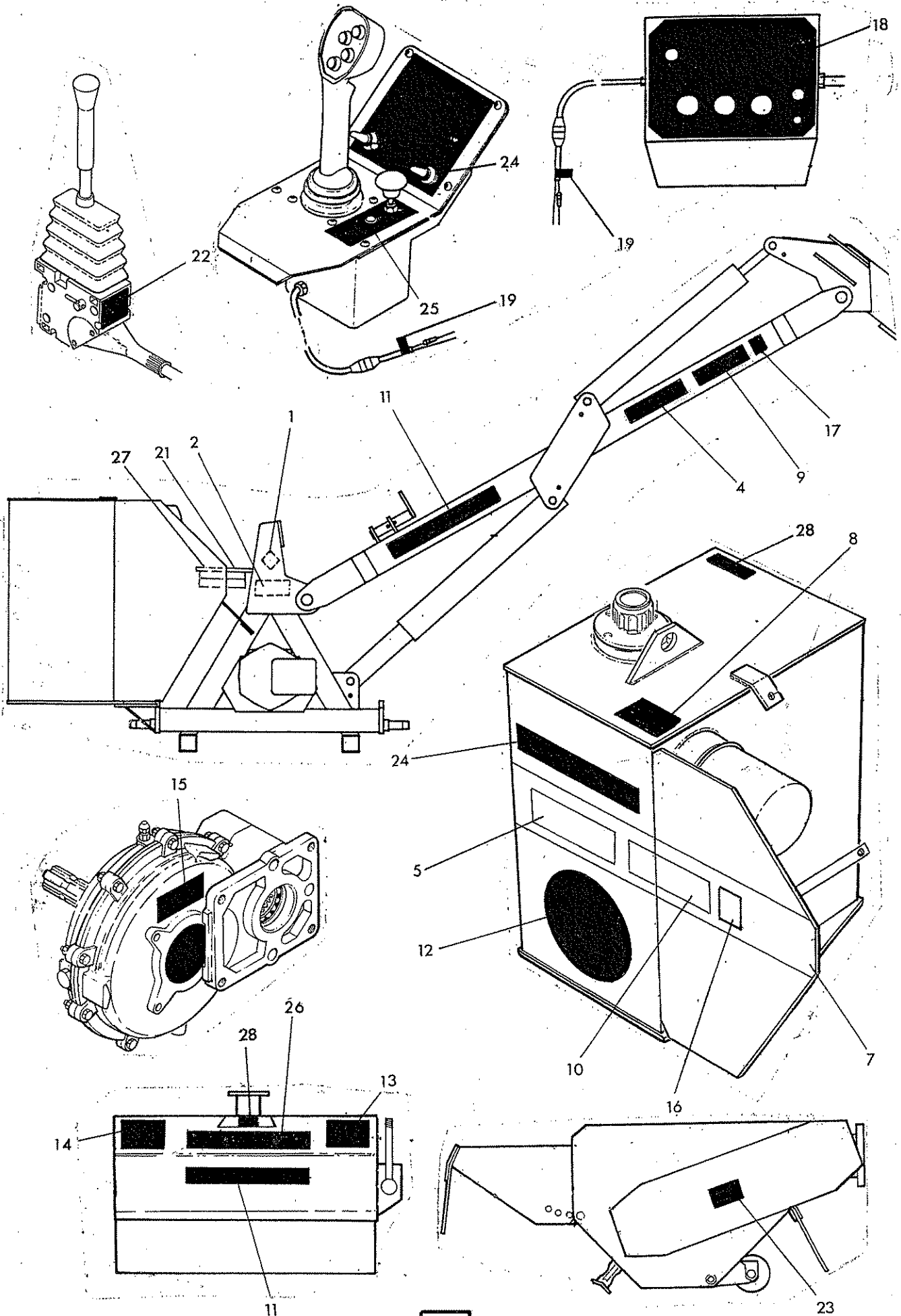
Ref.	Part No.	Qty.	Description
	<b>75-60-344</b>		<b>ANGLING RAM ASSEMBLY</b>
1	71-35-292	1	Cylinder
2	71-35-009	1	Rod
3	71-05-050	1	Bush
4	75-60-095	1	Piston
5	86-29-187	1	Piston seal
6	86-29-188	1	Bearing ring
7*	93-63-023	1	Grub screw socket head
8	71-35-291	1	Gland housing
9	86-29-148	1	Gland seal
10	04-16-240	1	Internal circlip
11	86-29-149	1	Wiper seal
12	86-00-302	1	'O' ring
13	86-09-302	1	Anti extrusion ring
14	09-01-121	2	Greaser
15	85-81-169	2	Union
16	86-50-102	2	Bonded seal
17	85-81-254	1	Tee piece 1/4 BSP F MM
18	85-81-190	1	Swivel elbow 1/4 BSP-MF

**86-99-188**

**SEAL KIT**

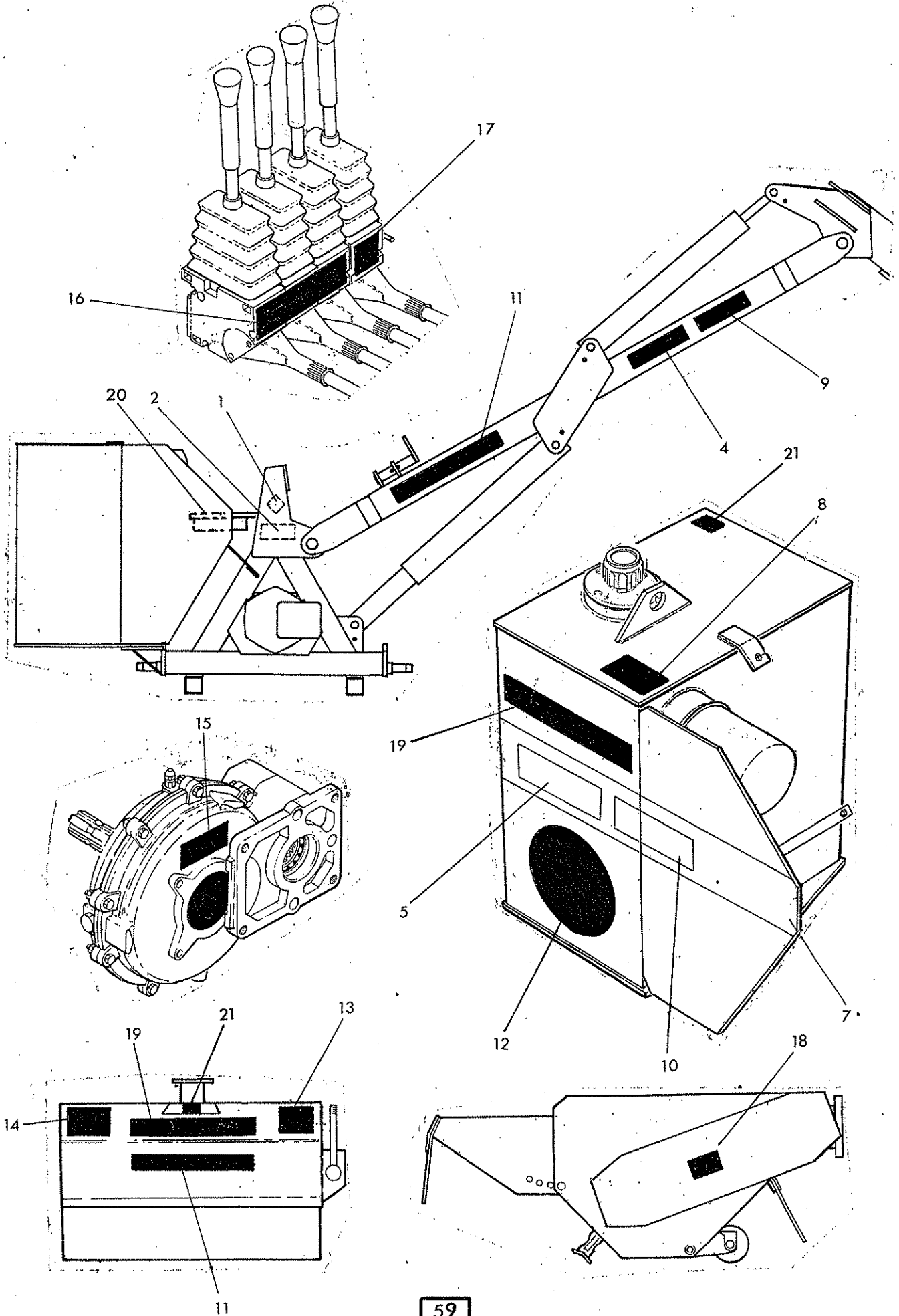
**\* Assembly note**

Tighten fully and centre punch edge of hole to secure.





Ref.	Part No.	Qty.	Description
<b>STICKERS - Electric machines</b>			
1	71 05 136	1	Read book first
2	12 90 331	1	Tighten check chains
3	12 90 074	1	Sling here symbol
4	12 90 411	2	Mag - black
5	12 90 412	1	Mag - yellow
6	12 90 352	1	Gen. warning - despatched loose
7	12 90 432	1	Tank stripe
8	12 90 474	1	Greasing
9	12 90 414	2	450 - black
10	12 90 417	1	450 - yellow
11	12 90 255	3	McConnel
12	12 90 365	1	McConnel roundel
13	12 90 377	1	Flail head instructions
14	12 90 341	1	Flail head guarding
15	12 90 054	1	Gearbox oil capacity
16	12 90 072	1	E - yellow
17	12 90 071	2	E - black
18	12 90 458	1	Switch box controls
19	12 90 038	1	Polarity warning
20	84 02 140	1	Connection warning
21	12 90 433	1	Solenoid connections
22	12 90 338	1	Rotor controls
23	12 90 070	1	Belt tension - belt drive heads only
24	12 90 451	1	Controls - joystick only
25	12 90 080	1	Power - joystick controls only
26	12 90 435	1	Agram
27	71 09 150	1	Park/work
28	12 90 499	2	43 hp





Ref.	Part No.	Qty.	Description
<b>STICKERS - Cable machines</b>			
1	71 05 136	1	Read book first
2	12 90 331	1	Tighten check chains
3	12 90 074	1	Sling here symbol
4	12 90 411	2	Mag - black
5	12 90 412	1	Mag - yellow
6	12 90 352	1	Gen. warning - despatched loose
7	12 90 432	1	Tank stripe
8	12 90 474	1	Greasing
9	12 90 414	2	450 - black
10	12 90 417	1	450 - yellow
11	12 90 255	3	McConnel
12	12 90 365	1	McConnel roundel
13	12 90 377	1	Flail head instructions
14	12 90 341	1	Flail head guarding
15	12 90 054	1	Gearbox oil capacity
16	12 90 354	1	Lever controls
17	12 90 338	1	Rotor controls
18	12 90 070	1	Belt tension - belt drive heads only
19	12 90 435	1	Agram
20	71 09 150	1	Park/work
21	12 90 499	2	43 hp









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