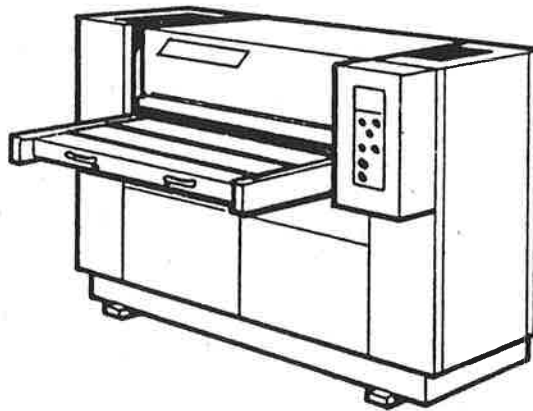


X168

**Samco-Strong  
Series 75  
Cutting Press**



**SERVICE MANUAL**

# **Samco-Strong Limited**

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# Section 1A

## Introduction

### INTRODUCTION

The Series 75 Hydraulic Cutting Press is a fast stroking, 2 pillar press which is hydraulically operated and electrically controlled.

The press base is a folded steel fabrication which supports the bed fabrication and incorporates the hydraulic oil tank.

The cutting power is provided by two cylinders which are integral with the head guide pillars which slide in bearings through the bed. The fixed piston rods are clamped in a cross head which is bolted to the bed fabrication with the press head connected to the tops of the pillars by trunnion pins and eccentric bushes.

The hydraulic oil pressure is provided by a pump driven by a 5.5 kw (7.5 HP) electric motor coupled to a flywheel. The motor pump unit is mounted directly on top of the oil tank underneath the bed of the press.

An automatic balancing mechanism ensures that the head remains parallel to the bed throughout the cutting and return strokes, the upper and lower limit positions being monitored by a linear potentiometer connected across the balancing valve.

The head limit positions are set by two rotary potentiometers on the control box.

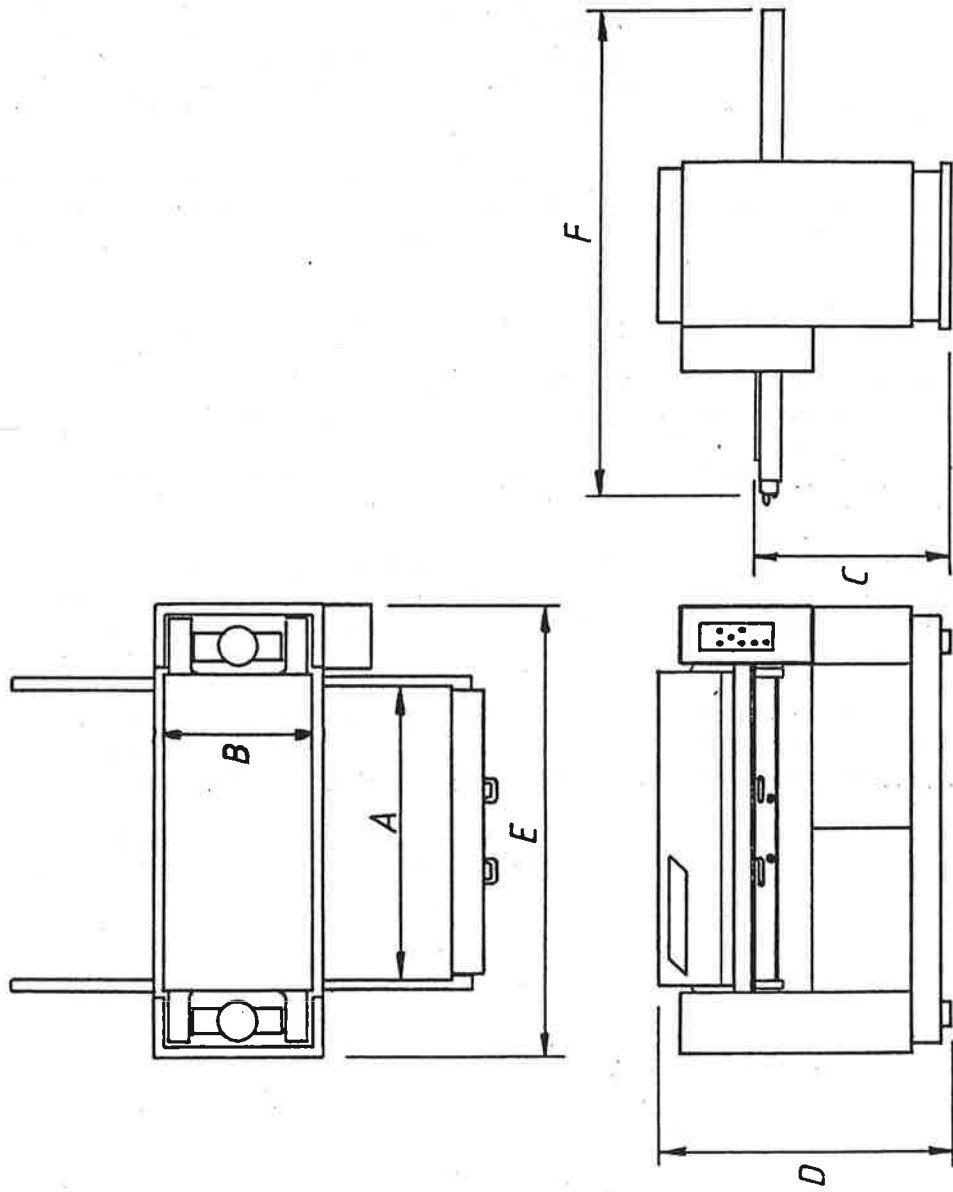
The electric control box is mounted on the right hand side guard and incorporates all the controls which are connected to the press by flexible conduits which terminate in two multipin plugs and sockets below the control box.

In its standard form the press is fitted with a manual work tray which carries a cutting matrix. The tray runs on spring loaded rollers which hold it clear of the bed until the cutting pressure is applied.

The Series 75 press can also be fitted with a range of manual and semi-automatic work feed systems which greatly increase its range of operation.

# Section 1

## Technical Data



TECHNICAL DATA

PRESS SIZE	1107	1108	1707	1708
Cutting Area (A x B)	1140 x 712mm (45 x 28")	1140 x 812mm (45 x 32")	1700 x 712mm (67 x 27")	1700 x x 812mm (67 x 32")
Tray Height (C)	963mm (38")	963mm (38")	963mm (38")	963mm (38")
Overall Height (Max) (D)	1510mm (60")	1510mm (60")	1510mm (60")	1510mm (60")
Overall Width (E)	1800mm (71")	1800mm (71")	2360mm (93")	2360mm (93")
Overall Depth (Tray out) (F)	2472mm (98")	2782mm (110")	2472mm (98")	2782mm (110")
Maximum Cutting Capacity	68 tonnes (75 US tons)	68 tonnes (75 US tons)	68 tonnes (75 US tons)	68 tonnes (75 US tons)
Downstroke Speed	34mm/sec (1.3"/sec)	34mm/sec (1.3"/sec)	34mm/sec (1.3"/sec)	34mm/sec (1.3"/sec)
Upstroke Speed	88mm/sec (3.5"/sec)	88mm/sec (3.5"/sec)	88mm/sec (3.5"/sec)	88mm/sec (3.5"/sec)
Max. Open Daylight	212mm (8.4")	212mm (8.4")	212mm (8.4")	212mm (8.4")
Min. Open Daylight	38mm (1.5")	38mm (1.5")	38mm (1.5")	38mm (1.5")
Stroke	174mm (6.9")	174mm (6.9")	174mm (6.9")	174mm (6.9")
Weight of Press	2540Kg (2.5 tons)		3230Kg (3.3 tons)	
Hydraulic Capacity	117 Litres (26 Imp Galls)	117 Litres ( 26 Imp Galls)	117 Litres (26 Imp Galls)	117 Litres (26 Imp Galls)
Motor Power	7½HP / 5½KW		7½HP / 5½KW	7½HP / 5½KW

# Section 1C

## Safety

### IMPORTANT

THESE INSTRUCTIONS ARE GIVEN PURSUANT TO SECTION 6 (10) OF THE HEALTH AND SAFETY AT WORK ACT 1974 AS AMENDED BY THE CONSUMER PROTECTION ACT 1987. ANY DEPARTURE FROM THESE INSTRUCTIONS MUST BE AUTHORISED IN WRITING BY THE BUSM PRODUCT SAFETY OFFICER; DEPARTURE NOT SO AUTHORISED SHALL BE AT THE SOLE RISK OF THE CUSTOMER.

NOTE: Keep this manual and these instructions with your important machine records. Make sure all personnel involved in the machine set-up, operation and service, read, understand and are instructed to follow the rules given.

### Machine Set-Up

- a). Move the machine only after reading the lifting instructions detailed in Installation section 1E.
- b). Make sure the machine is properly connected to the required electrical service by a competent electrician. Also make sure the machine is connected to an approved earthing system in accordance with all applicable National and local electrical codes (British Standards Code of Practice CP 1015; 1967 'Electric Equipment of Industrial Machines', Section 7, Electrical Protection, paragraph 701. Short circuit protection for mains supply).
- c). Before operating the machine, make sure all covers and guards are securely attached and that all operating personnel are thoroughly familiar with the instructions contained within this manual.

### Operating the Machine

- a). Make no attempt to use this machine for other than its intended purpose of die cutting sheet leather or man-made materials within the machine's cutting capacity.
- b). Operate the machine only with all guards, covers and safety devices securely attached and in proper working order.
- c). Keep only one die set or uniforme die in the machine at a time.
- d). ALWAYS KEEP HANDS OR FINGERS AWAY FROM UNDER THE CUTTING AREA OF THE HEAD. Always operate the machine with both hands on the two-hand control push buttons. The push buttons must be depressed simultaneously with one second to operate the cutting stroke, further cutting strokes can only be made by releasing the push buttons and then depressing the push buttons again. (Reference British Standards Code of Practice BS5304 - 1988 Section 8.2 - Two Hand Control Devices). The two hand control system is provided for your added protection, and no attempt must be made to alter or to otherwise defeat its purpose.



# Section 1C

## Safety

- g). Do not tamper with the setting of the pressure relief valve. This is a factory set for safe machine loading, and should only be adjusted by a trained serviceman.
- h). Ensure that the working clearance between the underside of the head and the top of the cutting die is at its maximum for normal cutting. This should be 6 mm where material thickness will allow but may need to be more for thin materials.
- j). Be sure the proper die height adjustment has been made when changing dies. Failure to do so can result in potential danger to the operator and damage to the dies and cutting matrix.

### Machine Service

- a). Use only qualified personnel for electrical or mechanical repairs or adjustments.
- b). Always disconnect the power from the machine before attempting repairs or entering enclosures for any reason unless it is necessary to have the power for testing.
- c). Be sure the electrical enclosure is never left open except as necessary for active service work.
- d). Do not leave the machine unattended with the covers removed or with the power switched on.
- e). Switch off the machine power when laying out work and see that no other person is in a position to violate this rule.
- f). Switch off the power supply before leaving the machine unattended. Also be sure to switch off the power connection in the event of a power failure.



# Section 1D

## Spare Parts Ordering

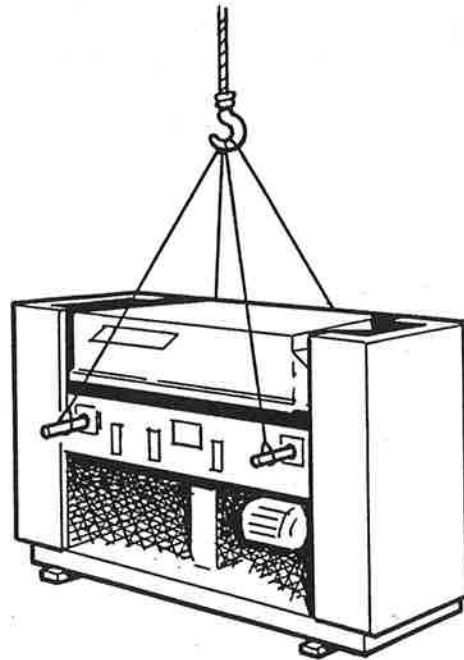
IMPORTANT:- When ordering spare parts, please quote the type of machine, the machine serial number (see information plate), the machine size, component description and part number plus quantity.

*Example :-*

<i>MACHINE/SIZE</i>	<i>SERIAL No.</i>	<i>COMPONENT</i>	<i>PART No.</i>	<i>QTY.</i>
<i>Series 75/1107</i>	<i>750002</i>	<i>Bed</i>	<i>SMP - 338</i>	<i>1</i>

# Section 1E

## Installation



**Fig. 1**

# Section 1E

## Installation

### Lifting the Press

Before lifting, all work handling devices i.e. work trays, table arms and associated parts must be removed from the press. In addition, the tray support roller assemblies, where fitted, must be removed from the bed of the machine. The machine can then be lifted by passing spreader bars through the holes provided in the head and slinging as illustrated, see fig. 1. The press may also be lifted by a fork lift truck with the lifting arms positioned under the head of the press. Before lifting this way, the head must be powered to its uppermost position and wedged in place with baulks of timber between the head and bed surfaces. The gap between head and bed surfaces at this position is 215mm. NOTE: IT IS HIGHLY DANGEROUS TO LIFT THE MACHINE WITH THE HEAD IN ANY OTHER POSITION.

Final position can be achieved using a crow-bar under the base and adjacent to the press feet.

Skates may be used to transport the machine only if used under the feet of the press. To position skates, lift as described above or by using "Toe-Jacks" under the machine bed after first removing the machine covers.

### Checking for Level

*X* Install the press on a level reinforced concrete floor capable of withstanding the dynamic load of the press. Using an 'engineers' level' placed on the bed of the press, level the press by inserting anti-vibration pads and/or metal shims on hardboard between the press feet and the floor. Check that the level of the hydraulic oil is visible in the sight glass of the integral tank. Machines for export are despatched dry and require 117 litres (26 gallons U.K.) of hydraulic oil (SHELL TELLUS 46 or its equivalent). Top up if necessary.

### Lubrication

Before operating the press it is important to lubricate the following main assemblies with the lubricants supplied with the tool kit part no. NWKL 12

*Mobil VACTRA 2  
can be replaced  
by Way Lub.*

1 litre can Mobil Vactra 2 (use in the grease gun). Using Mobil Vactra 2 gives 3 strokes of the grease gun to each of the four nipples on the head eccentric bush flanges and ten strokes of the grease gun to the pillar sleeve nipples.

Remove the front cover and lightly oil the balancing valve linkage with SHELL CARNEA 33.

*132.70*

IMPORTANT: DO NOT RUN THE HYDRAULIC POWER UNIT WITH NO OIL IN IT.

# Section 1E

## Installation

### Connecting the Electric Leads

Before connecting the electric leads, we recommend that you acquaint yourselves with the British Standards Publication, Code of Practice CP1051: 1967 'Electrical Equipment of Industrial Machines' in particular Section 7, Electrical protection, paragraph 701. Short-circuit protection for mains supply.

Mount the "MAINS ISOLATOR", not supplied by Samco Strong Ltd, on a wall or stanchion near to the supply point on the machine. Do NOT mount the mains isolator on the machine itself.

### Recommended Mains Isolator Rating

Supply Voltage 415/380 - 30 amp fused Isolator.

Supply Voltage 200/220 - 60 amp fused Isolator.

The Electrical Power Supply required for this machine is:-

3 Phase Mains Supply and EARTH

Voltage and Hertz (HZ) - see the information plate at the rear of the machine.

Motor Power 5½ K.W. (7½ H.P.)

### Fitting the Work Tray

To facilitate slinging, the four spring rollers may have to be removed. Refit using the socket head cap screws provided.

Bolt the work tray arms to the machined surfaces of the bed, adjacent to the lifting bar holes.

Place the work tray on the press bed with the two hand control fixing screw holes to the front.

Lift the two hand control enclosure into position with the rollers located in the front work tray arms. Secure the two hand control enclosure to the work tray with the countersunk head screws.

Attach the tray support rollers to the rear of the work tray and locate in the rear work tray arms.

Adjust the spring loaded rollers via the locknut (Item 6, Page 45) until the gap between the underside of the tray and the bed surface measures approx. 1/16" - 3/32" (1.6mm - 2.4mm)

When the work tray is loaded with the cutting die and material, it may be necessary to adjust the spring rollers to maintain this gap.

# Section 1E

## Installation

### Testing the Motor Rotation

Switch on the Mains Isolator and press the 'START' Button. Check that the motor rotates in the direction indicated by the arrow on the motor casting, (i.e. clockwise when viewed from the motor end). If not, stop the Motor, switch off the Mains Isolator, and reverse any two phase leads at the isolator switch, situated in the base of the electrical box.

### Check the Head and Bed Parallelism

During assembly the head and bed are set parallel within 0,08mm (0.003ins).

If during the cutting operation the cutting die cuts more deeply at one side than the other, and the cutting matrix is known to be of a uniform thickness, (check by turning cutting matrix around, and observe if deep cutting is effected) then the head is not descending parallel with the bed.

To check this accurately, first remove the cutting matrix then unplug the work tray multi-pin plug and remove the work tray assembly from the table arms. Re-connect multi-pin plug.

NOTE: To ensure that all backlash is taken up in the balancing valve linkage, place a block of hard rubber (450mm x 450mm 50mm thick) or use Load Pad SDC 3658 placed in the centre of the bed and set the press so that it just compresses the load pad.

Set the two height test blocks (Part Nos. SDC 4156, JT 2782, and SL 107ME) so that their extended length is approximately 6mm (0.250 ins) larger than the thickness of the load pad. Lightly tighten the plunger retaining screw. Place the two height block on the bed surface, centralised under the head, one each side near the pillars. Cycle the press and check the variation in height of the test blocks, if the difference is greater than 0,08mm (0.003 ins) then the balancing valve must be adjusted.

NOTE: If no test blocks are available use lead candles or a Plasticine sandwich between two metal discs.

# Section 2 A

Main Frame

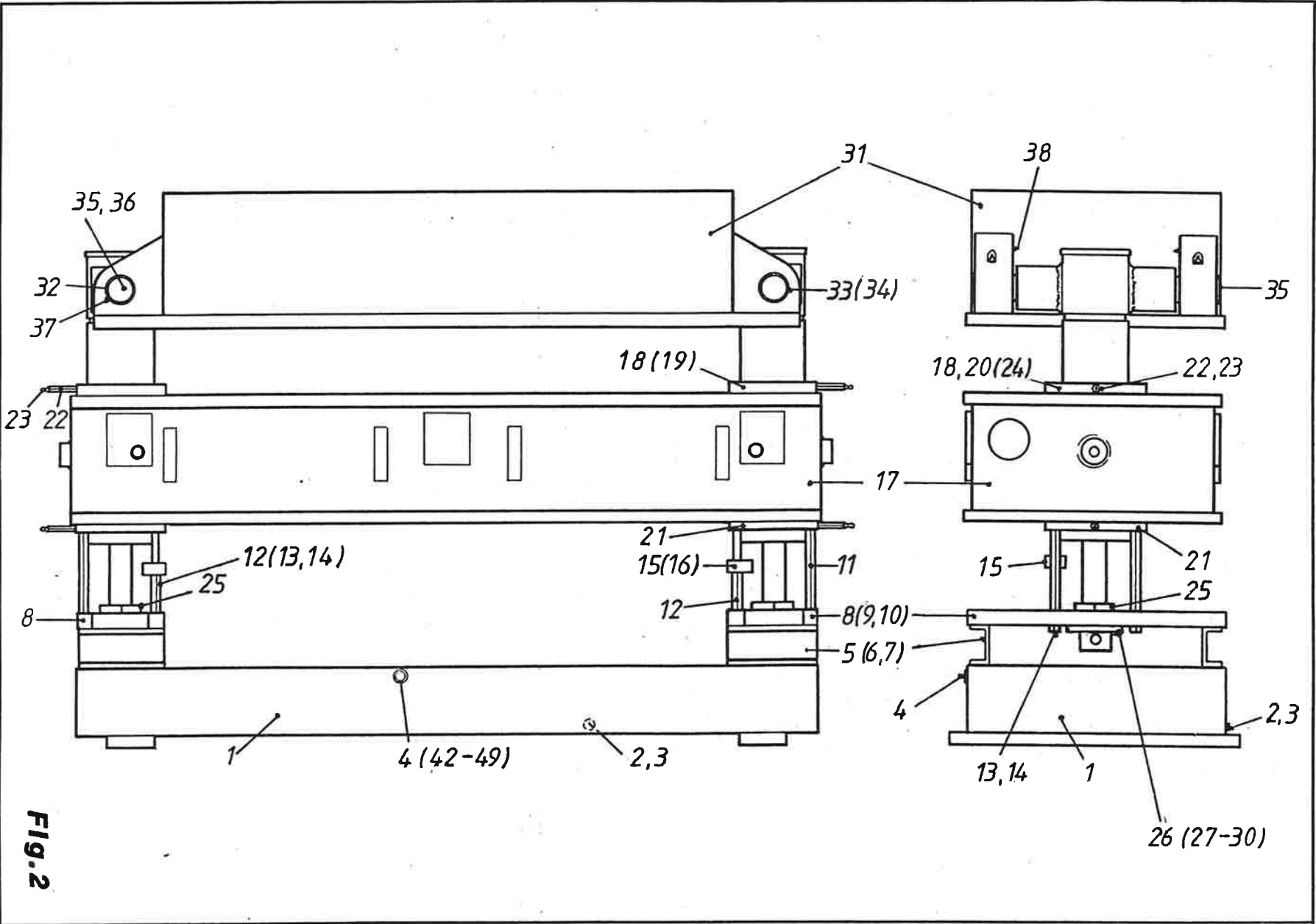


Fig. 2



# Section 2A

## Main Frame

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Base (1107)	L/SMP 337	1
	Base (1707 & 1708)	L/SMP 193	1
2	Drain Plug	ZH 2752	1
3	Sealing Washer	ZH 1477	1
↓ 4	Sight Glass	NWZH 100	1
5	Thrust Plate Support	D/SMP 192	4
6	Screw - Cap HD	SL 567ME	16
7	Spring Washer	WL 23ME	16
8	Thrust Plate	E/SMP 342	2
9	Screw-Cap HD	SL 595ME	8
10	Spring Washer	WL 25ME	8
11	Support Pillar	C/SMP 106	6
12	Support Pillar (Pivot Block)	C/SMP 107	2
13	Screw-Hex HD	SL 291ME	8
14	Washer	WL 10ME	8
15	Lever Pivot Block	C/SMP 121	2
16	Screw - Cap HD	SL 568ME	8
17	Bed (1107)	L/SMP 338	1
	Bed (1707)	L/SMP 339	1
	Bed (1708)	L/SMP 391	1
18	Top Cylinder Bush	E/SMP 104	2
19	Screw - Cap HD	SL 583 ME	8
20	Grease Retaining Sleeve	C/SMP 110	2
21	Bottom Cylinder Bush	E/SMP 105	2
22	Grease Nipple Extension	C/SMP 122	4
23	Grease Nipple	BUCP 88	4
24	Bed Bearing Wiper	C/SMP 123	2
25	Piston Rod Split Bush	D/SMP 239	2
26	Split Collar	D/SMP 240	2
27	Screw	SL 756ME	2
28	Washer	WL 7ME	2
29	Screw - Cap HD	SL 584ME	8
30	Washer	WL 8ME	8
31	Head (1107)	L/SMP 340	1
	Head (1707)	L/SMP 341	1
	Head (1708)	L/SMP 392	1



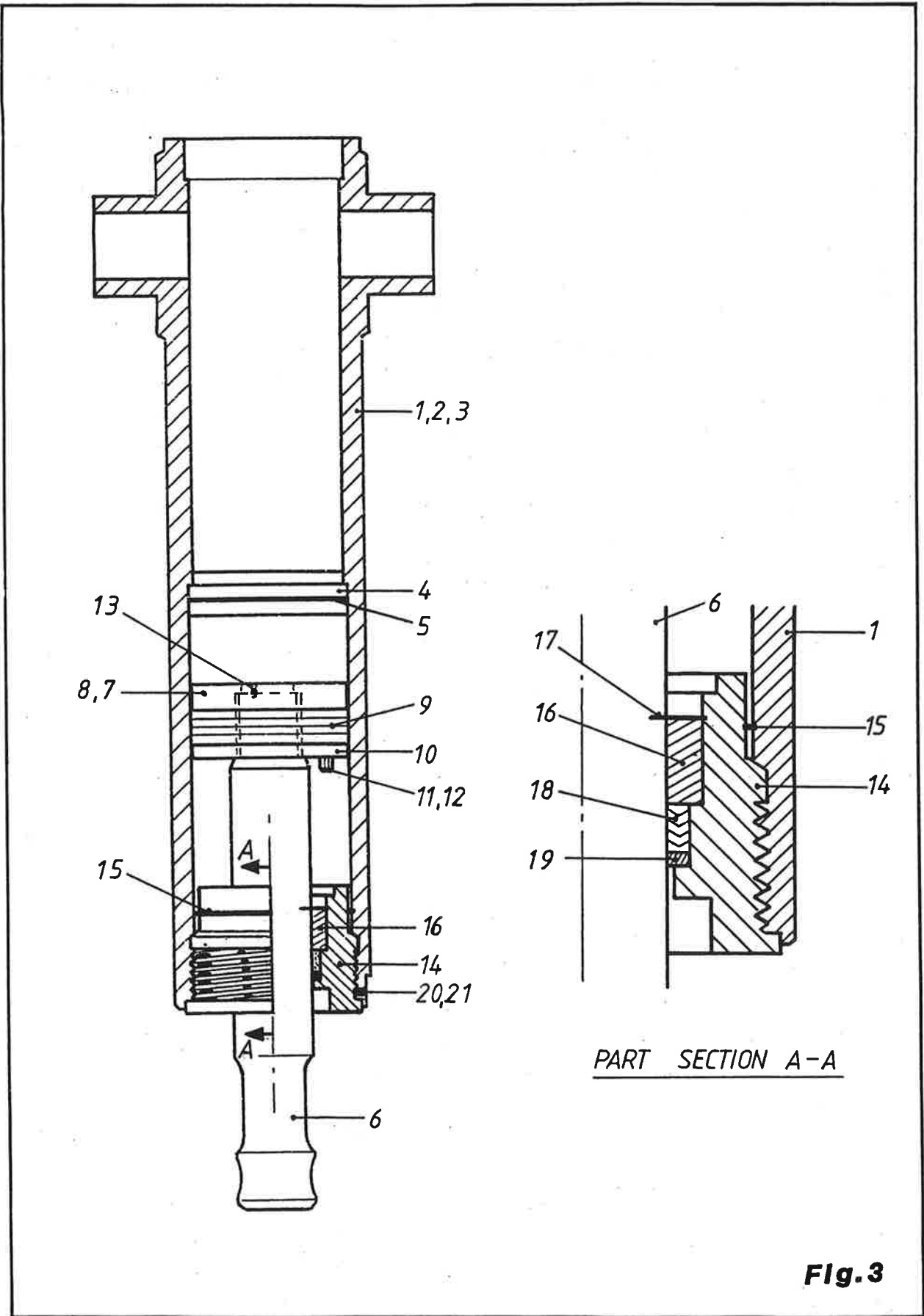
# Section 2A

## Main Frame

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
32	Head Trunnion Bush	D/SMP 344	2
33	Trunnion Bush Eccentric	D/SMP 345	2
34	Screw - Cap HD	SL 534ME	2
35	Trunnion Pin	D/SMP 343	2
36	Collar	C/SMP 346	2
37	Circlip	NWZH 2954	4
38	Grease Nipple	BUCP 88	4
39	Screw - Cap HD	SL 551ME	4
40	Screw - Cap HD	SL 552ME	2
41	Washer	WL 6ME	6
42	O-Ring for Manifold	ZH 2126	1
43	Screw - Cap HD for Manifold	SL 4759E	4
44	Washer	WL 1266E	4
45	Stud for Manifold	C/SMP 129	1
46	Nut	NL 9ME	1
47	Lock Nut	NL 18ME	2
48	Screw (Flow Control Valve)	NWSL 463	4
49	Washer	WL 22ME	4

# Section 3 A

## Cylinders



**Fig.3**

# Section 3A

## Cylinders

<i>Item</i>	<i>Description</i>	<i>Part No.</i>	<i>Quantity</i>
1-3	Cylinder	E/SMP 197	1
4	Cylinder Plug	D/SMP 115	1
5	O-Ring	NWZH 2955	1
6	Piston Rod	E/SMP 224	1
7	Plug	NWZH 2057	2
8	Piston	D/SMP 236	1
9	Seal	NWZH 2956	1
10	Seal Retainer	D/SMP 237	1
11	Screw (Loctite)	SL 569ME	6
12	Spring Washer	WL 23ME	6
13	Set Screw (Headless)	SL 89ME	1
14	Cylinder End Cap	E/SMP 223A	1
15	O-Ring	NWZH 2955	1
16	Bearing	C/SMP 238A	1
17	Circlip	NWZH 988	1
18	Rod Seal	NWZH 2957	1
19	Back-up Ring	C/SMP 886	1
20	Set Screw (Headless)	SL 107ME	1
21	Seating	WL 239E	1

# Section 4A

## Motor Drive

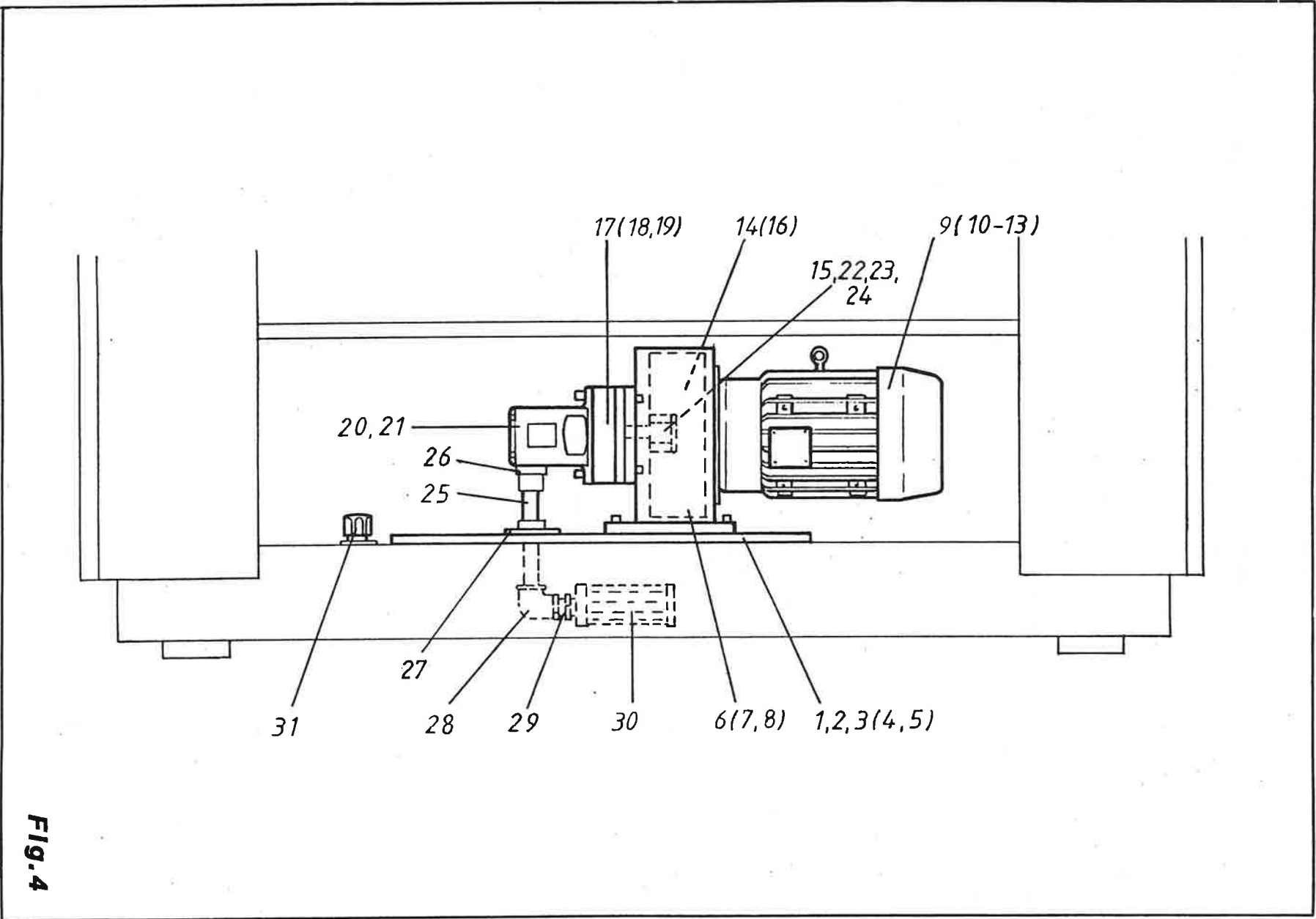


FIG. 4

# Section 4A

## Motor Drive

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Tank Top Plate	E/SMP 365	1
2	Sealing Strip (Long)	D/SMP 358	2
3	Sealing Strip (Short)	D/SMP 359	2
4	Screw - Cap HD	SL 553ME	24
5	Spring Washer	WL 22ME	28
6	Motor Bracket	E/SMP 360	1
7	Screw - Cap HD	SL 556ME	2
8	Screw - Cap HD	SL 554ME	2
9	Electric Motor	NWED 2503	1
10	Screw - C'SK HD	SL 497 ME	4
11	Washer	WL 8ME	10
12	Spring Washer	WL 24ME	4
13	Nut	NL 8ME	4
14	Flywheel	E/SMP 199	1
15	Locking Rod	C/SMP 135	1
16	Set Screw	SL 108ME	1
17	Mounting Plate	D/SMP 201	1
18	Dowel	PL 13ME	2
19	Screw - Cap HD	SL 580ME	4
20	Pump	NWZH 2958	1
21	Screw - Hex HD	SL 238ME	2
22	Coupling (including Spider & Keyway)	NWZH 2959	1
23	Screw - Cap HD	SL 537ME	6
24	Spring Washer	WL 21ME	6
25	Suction Pipe	D/SMP 202	1
26	Flange	NWZH 2960	1
27	Inlet Flange	NWZH 2961	1
28	Elbow	NWZH 2962	1
29	Nipple	NWZH 2963	1
30	Strainer	NWZH 1521	1
31	Filler	GSB 3225	2

# Section 5 A

## Flow Control Valve

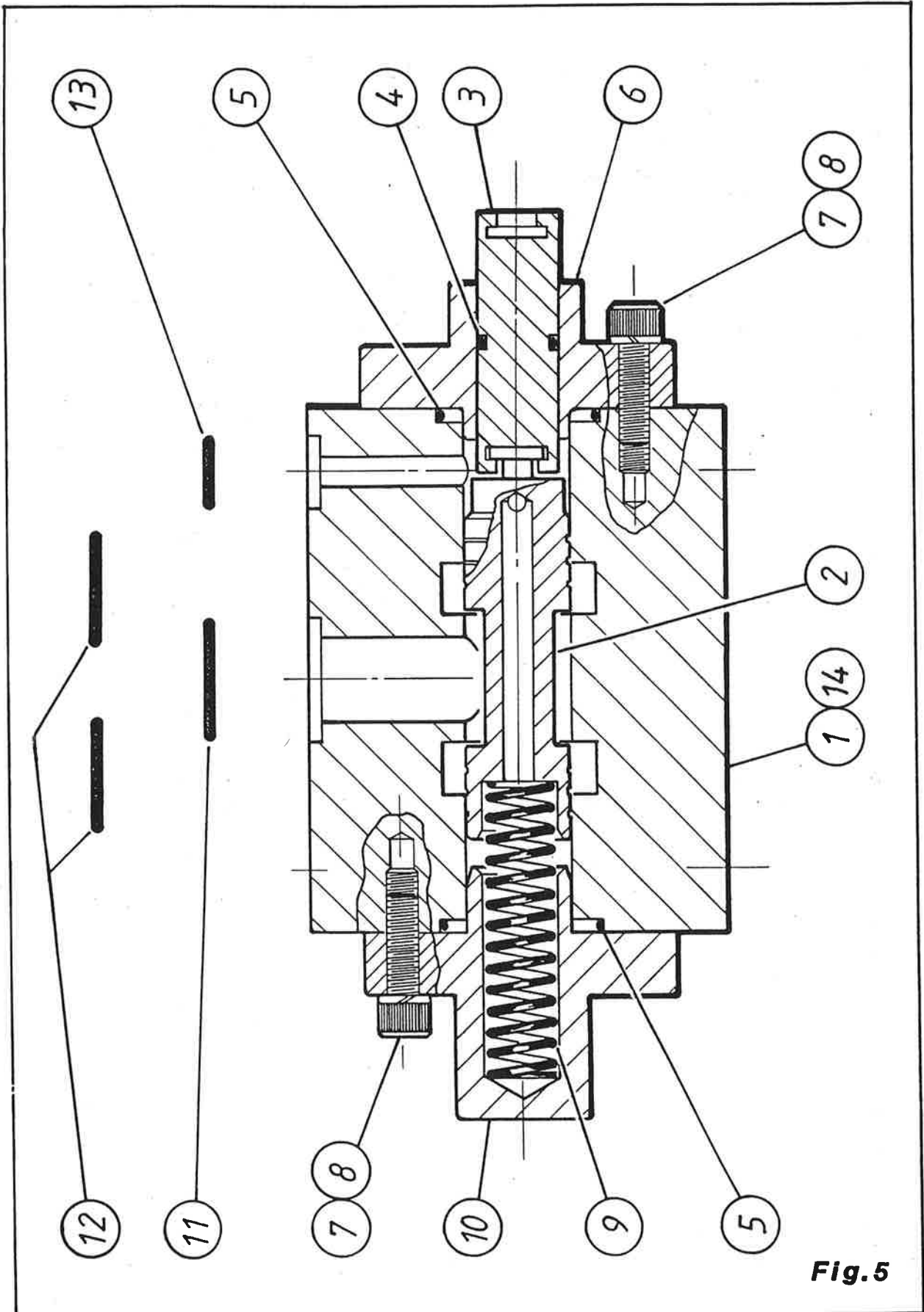


Fig. 5



# Section 5A

## Flow Control Valve

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Body	D/NWCP 8421	1
2	Spool	D/SMP 152	1
3	Operating Plunger	C/NWCP 7993	1
4	O-Ring (Plunger)	NWZH 2061	1
5	O-Ring (Cap)	•BUCP 199	2
6	End Cap	C/NWCP 7992A	1
7	Screw - Cap HD	SL 537ME	8
8	Spring Washer	WL 21ME	8
9	Spring	NWSPGL 86	1
10	End Cap	C/NWCP 7460	1
11	O-Ring	ZH 2120	1
12	O-Ring	ZH 2119	2
13	O-Ring	ZH 2114	1
14	Body Dowel	NWPL 164	2

NOTE: To order complete valve assembly, quote part no. UR 3007



# Section 5B

## Control Valve Linkage

<i>Item</i>	<i>Description</i>	<i>Part No.</i>	<i>Quantity</i>
1	Linkage Lever	C/SMP 137	2
2	Bush	C/SMP 137-1	2
3	Needle Bearing	NWBL 252	4
4	Shoulder Screw	NWSL 487	2
5	Washer	WL 9ME	2
6	CAM Follower	NWBL 114	2
7	Nut	NL 6ME	2
8	Washer	WL 6ME	2
9	Roller Guide	C/SMP 138	2
10	Screw	SL 552ME	4
11	Operating Rod Bracket	D/SMP 206	1
12	Oilite Bush	NWBL 272	2
13	Screw (Cap HD)	SL 554ME	2
14	Screw (Cap HD)	SL 553ME	2
15	Spring Washer	WL 22ME	4
16	Operating Rod	C/SMP 208	1
17	Adjusting Nut	C/NWCP 7996	1
18	Locknut	NL 16ME	1
19	Rod Trunnion	C/NWCP 7483	1
20	Selock Pin	NWPL 64	1
21	Lever	C/NWCP 7482	2
22	Bearing (Inner)	BUAL 1002	2
23	Bearing (Outer)	BUAL 110	4
24	Lever Trunnion	C/NWCP 7484	2
25	Washer	WL 7ME	4
26	Circlip	NWZH 1054	4
27	Switch	NWED 1586	1
28	Screw (Cap HD)	SL 516 ME	2
29	Retaining Plate	B/NWCP 7489	1
30	Bracket	C/SMP 207	1
31	Screw (Cap HD)	SL 537ME	2
32	Washer	WL 21ME	2
33	Connecting Rod-Short (1100 wide Machine)	C/SMP 347	1
	Connecting Rod-Short (1700 wide Machine)	C/SMP 210	



# Section 5B

## Control Valve Linkage

<i>Item</i>	<i>Description</i>	<i>Part No.</i>	<i>Quantity</i>
34	Connecting Rod - Long	C/SMP 209	1
35	Screw (Cap HD)	SL 570ME	2
36	Spacer	C/SMP 143	2
37	Collar	B/NWCP 7487	2
38	Selock Pin	NWPL 53	2
39	Spring	NWSPGL 94	4
40	Washer	WL 8ME	2
41	Linear Potentiometer	NWED 1727	1
42	Screw (Cap HD)	SL 525 ME	2
43	Collar	C/SMP 144	1
44	Set Screw	SL 70ME	1
45	Nut	NL 4ME	1
46	Washer	WL 37ME	1
47	Operating Arm	C/SMP 145	1
48	Operating Arm Block	C/SMP 146	1
49	Screw (Cap HD)	SL 538ME	2

# Section 5C

## Manifold and Valve Parts

#23

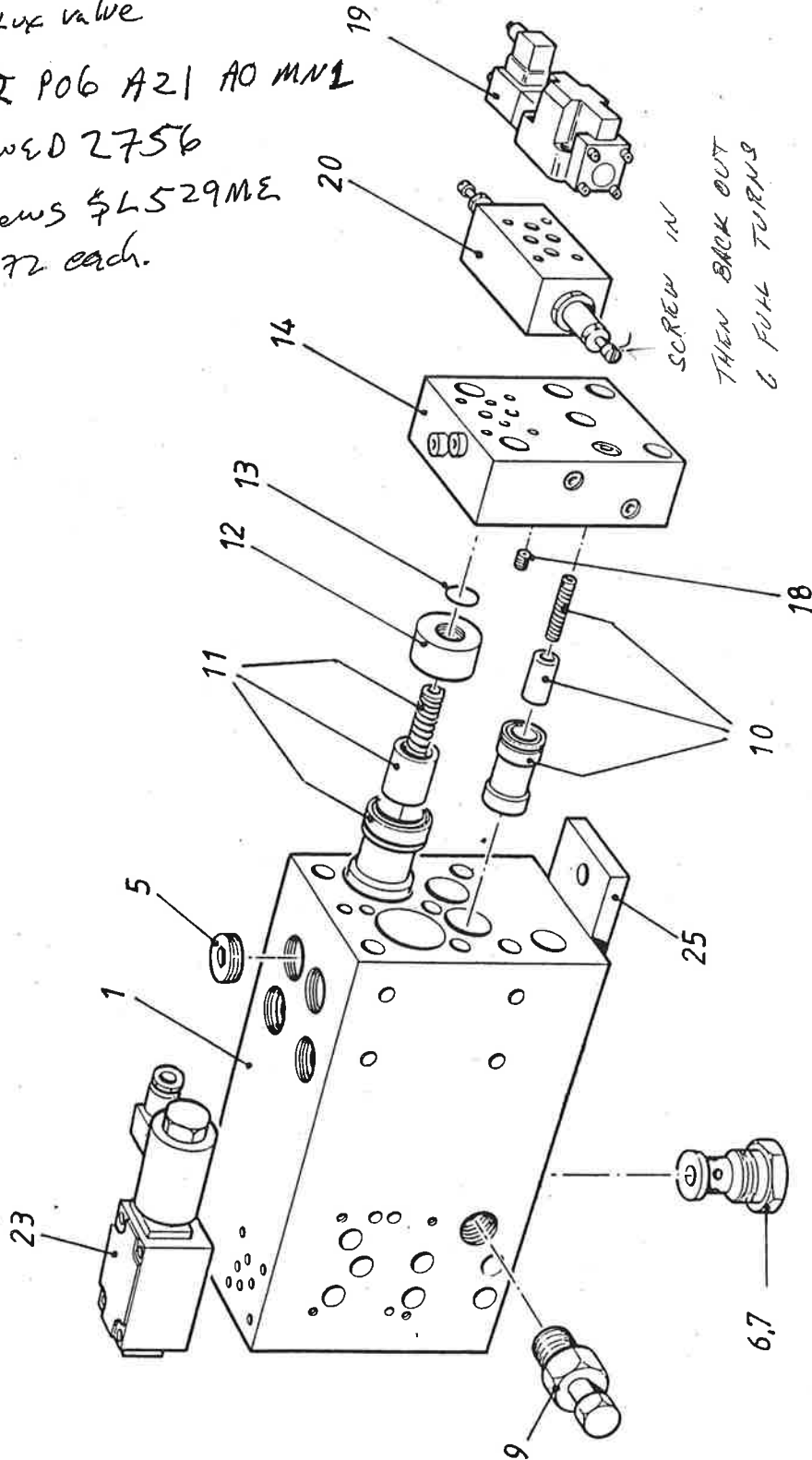
LUXEMBURG  
Hydraulic Systems

HydroLux valve

WE 42 P06 A21 AO MN1

PN NWED 2756

4 screws \$4529ME  
\$ .72 each.



SCREW IN  
THEN BACK OUT  
6 FULL TURNS

Hydraulic  
Denison  
5/8 stroke  
Denison  
2756  
2755

75055

Fig. 7

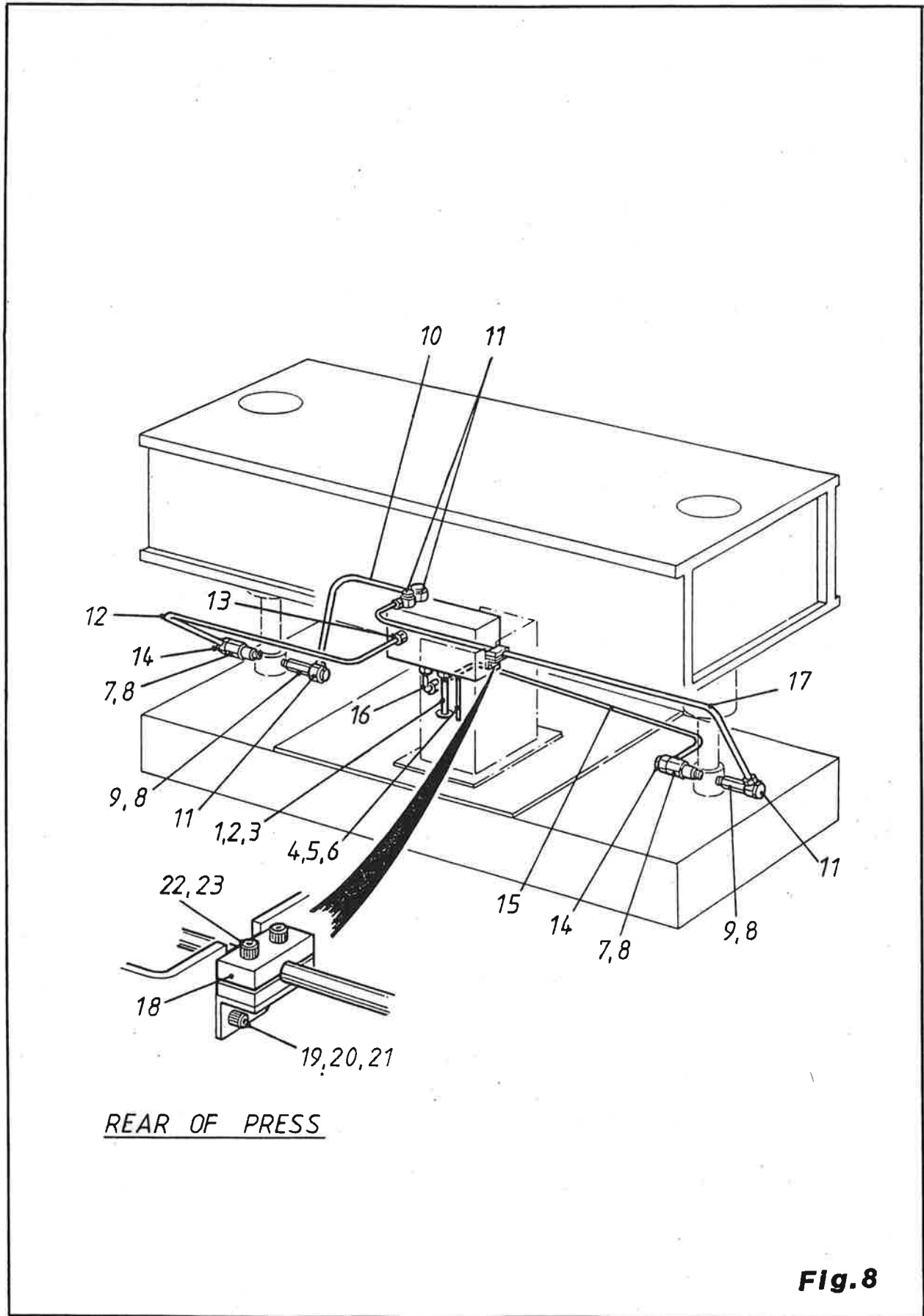
# Section 5C

## Manifold and Valve Parts

Item	Description	Part No.	Quantity
1	Manifold	L/SMP 203	1
2	Plug ( $\frac{1}{8}$ " )	NWZH 2062	5
3	Plug ( $\frac{1}{4}$ " )	NWZH 2056	2
4	Plug ( $\frac{3}{8}$ " )	NWZH 2057	8
5	Plug ( $\frac{1}{2}$ " )	NWZH 2967	2
6	Check Valve	NWZH 2964	1
7	Retainer	C/SMP 205	1
8	Sealing Washer	ZH 1478	1
9	Relief Valve	NWZH 2965	1
10	Valve Cartridge	NWZH 2968	2
11	Valve Cartridge	NWZH 2969	2
12	Spacer	C/SMP 127	2
13	'O' Ring	BUCP 214	2
14	Pilot Manifold	E/SMP 204	1
15	Screw-Cap HD	SL 582ME	7
16	Spring Washer	WL 24ME	7
17	'O' Ring	BUCP 213	2
18	Orifice Plug	C/SMP 520	4
19	Pilot Valve	NWED 2504	1
20	Restrictor Valve	NWZH 2970	1
21	Screw-Cap HD	NWSL 490	4
22	Spring Washer	WL 20ME	8
23	Unload Valve <sup>6500.00</sup>	NWED <del>2505</del> 2756	1
24	Screw-Cap HD	SL 532ME	4
25	Manifold Support Bracket	D/SMP 126	1
26	Screw-Cap HD	SL 553ME	3
27	Spring Washer	WL 22ME	3

# Section 6A

## Hydraulic Piping



**Fig.8**



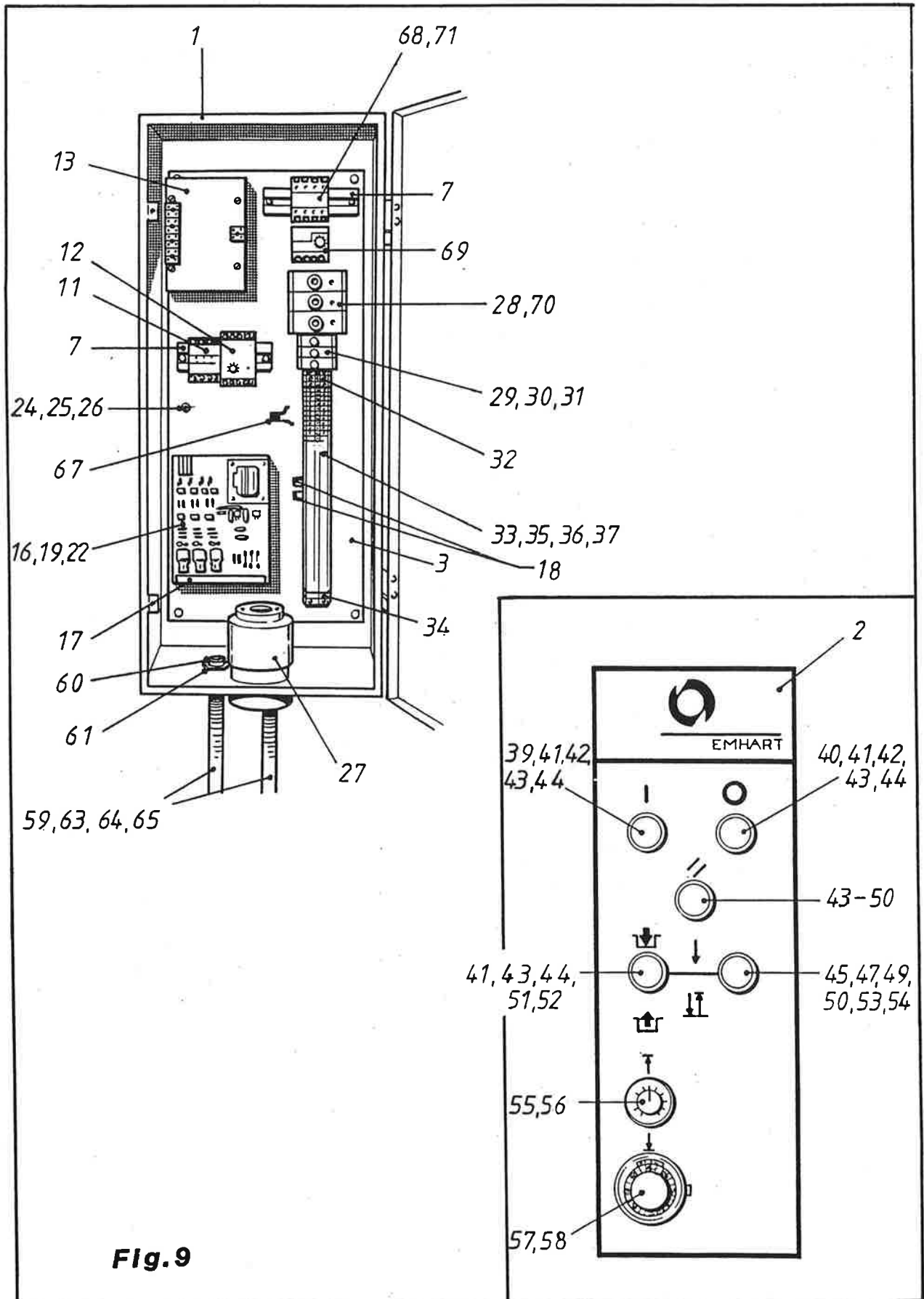
# Section 6A

## Hydraulic Piping

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Manifold Return Pipe	D/NWTH 207-1	1
2	Stud Coupling	NWZH 1694	1
3	Return Bush	NWZH 1497	1
4	Manifold Drain Pipe	C/NWCP 8030	1
5	Stud Coupling	NWZH 1693	1
6	Return Bush	NWZH 1499	1
7	Piston Rod Adaptor Large	C/SMP 153	2
8	Sealing Washer	ZH 1478	4
9	Piston Rod Adaptor Small	C/SMP 147	2
10	Pipe - RH Front - (1107)	D/SMP 367	
	Pipe - RH Front - (1707 & 1708)	D/SMP 211	1
11	Throttlefree Banjo	NWZH 2101	4
12	Pipe - RH Rear (1107)	D/SMP 368	
	Pipe - RH Rear (1707 & 1708)	D/SMP 212	1
13	Stud Coupling	NWZH 1744	1
14	Throttlefree Banjo	NWZH 2971	1
15	Pipe - LH Front	D/SMP 213	1
16	Swivel Elbow	NWZH 1699	1
17	Pipe - LH Rear	D/SMP 214	1
18	Pipe Clamp (Jaws only)	NWZH 1869	1
19	Screw - Cap HD	SL 572ME	2
20	Lock Nut	NL 16ME	2
21	Pipe Clamp Bracket	D/SMP 366	1
22	Screw - Cap HD	SL 552ME	2
23	Washer - Spring	WL 22ME	2

# Section 7A

## Electrical Enclosure



# Section 7A

## Electrical Enclosure

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Electrical Enclosure	E/SMP 217A	1
2	Label	D/SMP 173	1
3	Component Mounting Plate	E/SMP 219A	1
4	Screw Hex HD	SL 174ME	4
5	Washer	WL 5ME	8
6	Nut	NL 5ME	8
7	Rail	C/SMP 356-L1	2
8	Terminal Block Rail	C/NWCP 6160-L6	1
9	Screw Cap HD	SL 522ME	10
10	Washer	WL 4ME	10
11	Relay	NWED 1505	1
12	Timer	NWED 1490	1
13	Transformer	NWED 1615	1
14	Compression Terminal	ED 4263E-06/0	2
15	Insulation Sleeve	ED 4070E	35
16	Stroke Control PCB	NWED 2022	1
17	Receptacle - Edge Connector	NWED 2590	1
18	Resistor	RCFA - 680/J 250	2
19	Pillar	C/SMP 623	4
20	Washer	WL 3ME	4
21	Nut	NWNL 60	4
22	Terminal	NWED 2630	4
23	Screw	NWED 2640	4
24	Earth Stud - Brass	NWSL 150	1
25	Nut - Brass	NWNL 43	3
26	Washer - Brass	NWWL 6	2
27	Isolator	NWED 1979	1
28	Fused Terminal Block	NWED 1804	3
29	Fused Terminal Block	NWED 817	3
30	Fuse - 3 amp	NWED 818	2
31	Fuse - 6 amp	NWED 819	1
32	Terminal Block	NWED 924	3
33	Terminal Block	NWED 290	38
34	Terminal Block (Earth)	NWED 1683	2
35	Distance Bar	NWED 739	1



# Section 7A

## Electrical Enclosure

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
36	Sleeve	NWED 737	8
37	Screw	NWED 738	8
38	Tywrap Anchor Pad	ED 7657E	15
39	Push Button Cap (Green)	NWED 762	1
40	Push Button Cap (Red)	NWED 761	1
41	Coupling Flange	NWED 769	3
42	Actuator	NWED 767	2
43	Front Ring	NWED 768	4
44	Contact Block	NWED 770	4
45	Inscription Cap	NWED 1257	1
46	Illuminated Cap	NWED 2521	2
47	Lamp Flange	NWED 773	2
48	Lamp Sleeve	NWED 1250	1
49	Resistor	NWED 1491	2
50	Lamp	NWED 1492	2
51	Actuator (Latched)	NWED 1253	1
52	Push Button Cap (Yellow)	NWED 765	1
53	Sleeve	NWED 774	1
54	Lamp Lens (Yellow)	NWED 782	1
55	Potentiometer	NWED 1763	1
56	Knob	NWED 1762	1
57	Potentiometer	NWED 1978	1
58	Knob	GSB 2066	1
59	Flexible Conduit (0.15 m Long)	NWED 310 VAR	2
60	Straight Connector	NWED 1085	2
61	Nut	NWED 1123	2
62	Straight Connector	NWED 526	2
63	Plug Hood	NWED 1975	2
64	Female Insert	NWED 1976	1
65	Female Insert	NWED 1899	1
66	Crimp Contact	NWED 1977	24
67	Contact Suppressor	NWED 2573	1
68	Motor Starter (200 to 240 volts)	NWED 1980	1
	Motor Starter (380 to 460 volts)	NWED 1982	1
69	Overload (200 to 240 volts)	NWED 1981	1
	Overload (380 to 460 volts)	NWED 1983	1



# Section 7A

## Electrical Enclosure

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
70	Fuse 50A (200 to 240 Volts)	NWED 1808	3
	Fuse 25A (380 to 460 Volts)	NWED 1806	3
71	Aux Contact Block	NWED 1974	1





# Section 7B

## Misc. Electrics

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Junction Box	E/SMP 606	1
2	Blind Grommet (20 mm)	NWED 1118	2
3	Nut (20 mm)	NWED 1122	2
4	Screw Cap HD (M6 x 12L)	SL 535 ME	4
5	Washer (6 mm)	WL 5ME	4
6	Junction Box Bracket	D/SMP 607	2
7	Screw Cap HD (M8 x 25L)	SL 556ME	4
8	Washer (8 mm Spring)	WL 22ME	4
9	Terminal Block Rail	C/NWCP 6160-L7	1
10	Screw Cap HD (M5 x 10L)	SL 523ME	2
11	Nut (M5)	NL 4ME	2
12	Washer (5 mm)	WL 4ME	2
13	Terminal Block Earth	NWED 1683	1
14	Terminal Block	NWED 294	3
15	Terminal Block	NWED 290	22
16	Distance Bar	NWED 739	1
17	Distance Sleeve	NWED 737	6
18	Distance Screw	NWED 738	6
19	Washer (4 mm Spring)	WL 36ME	2
20	Plug Housing	NWED 614	1
21	Male Insert	NWED 1901	1
22	Screw Cap HD	SL 513ME	4
23	Nut	NL 3ME	4
24	Washer (4 mm Spring)	WL 36ME	4
25	Plug Housing	NWED 1970	1
26	Male Insert	NWED 1971	1
27	Crimp Contact	NWED 1972	24
28	Screw Cap HD	SL 502ME	4
29	Nut	NL 2ME	4
30	Washer	WL 35ME	4



# Section 7B

## Misc. Electricls

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
31	Flex Conduit 1/2 Bore (Motor to J.B.)	NWED 311 VAR	1
32	Reducing Bush 25 to 20 mm (Motor to J/B)	NWED 1141	1
33	Nut 25 mm (Motor to J/B)	NWED 1123	2
34	Elbow Connector 20 mm (Motor to J/B)	NWED 1089	1
35	Straight Connector 20 mm (Motor to J/B)	NWED 1084	1
36	Nut 20 mm (Motor to J/B)	NWED 1122	1
37	2 Hand Trip Housing	NWED 780	1
38	Female Insert	ED 5301E	1
39	Screw Cap HD (M3 x 10L)	SL 502ME	4
40	Washer (3 mm Spring)	WL 18ME	4
41	Flex Conduit 1/2" Bore (2 Hand Trip to J/B) (1.5 m Long)	NWED 311 VAR	1
42	Straight Connector PG16 (2 Hand Trip to J/B)	NWED 501	1
43	Elbow Connector 20 mm (2 Hand Trip to J/B)	NWED 1089	1
44	Nut 20 mm (2 Hand Trip to J/B)	NWED 1122	2
45	Cable 4 Core Screened (Pot VR1 to J/B)		0
46	Stuffing Gland 16 mm (pot VR1 to J/B)	NWED 1162	1
47	Nut 16 mm (Pot VR1 to J/B)	NWED 1121	1
48	Stuffing Gland 20 mm (1LS to J/B)	NWED 1163	1
49	Nut 16 mm	NWED 1122	1
50	Cable 3 Core 0.7 mm Squared PVC Covered (Sols A & B to J/B) (2 m Long)	NWED 658	1
51	Stuffing Gland 20 mm (Sols A & B to J/B)	NWED 1163	2
52	Nut 20 mm (Sols A & B to J/B)	NWED 1122	2
53	Heat Shrink Sleeveings RS Size 19/6	NWED 2574	1
54	In Line Compressible Connector	ED 9090E	9
55	Hanknut 10-32 UNF	NL 8045E	1
56	Screwed Rod (2BA x 1.1/2") CL2	NWSL 150	1
57	Brass Locknut (2BA)	NWNL 32	2
58	Washer	NWWL 6	2

# Section 8 A

## Two Hand Trip Enclosure

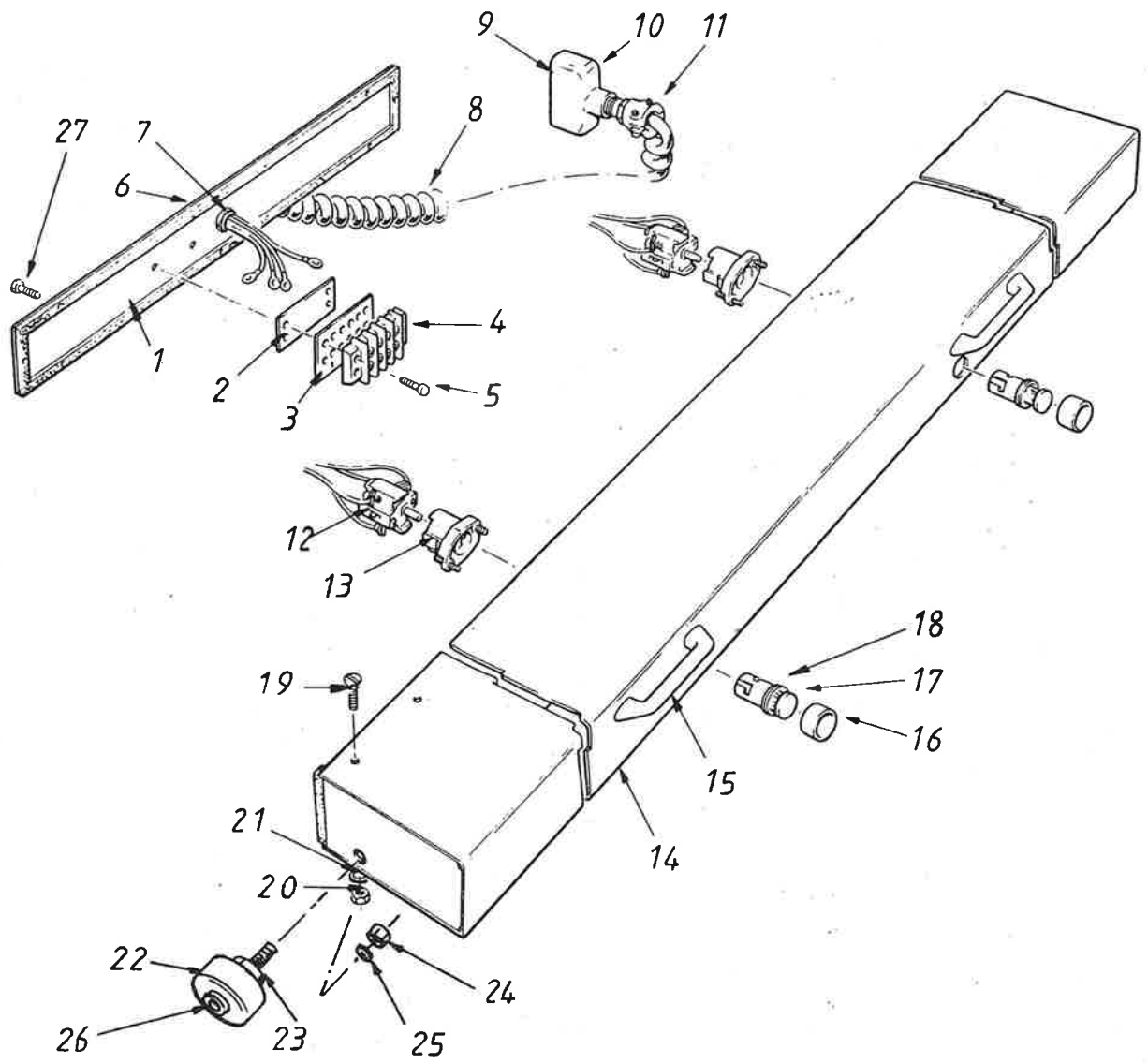


FIG. 10

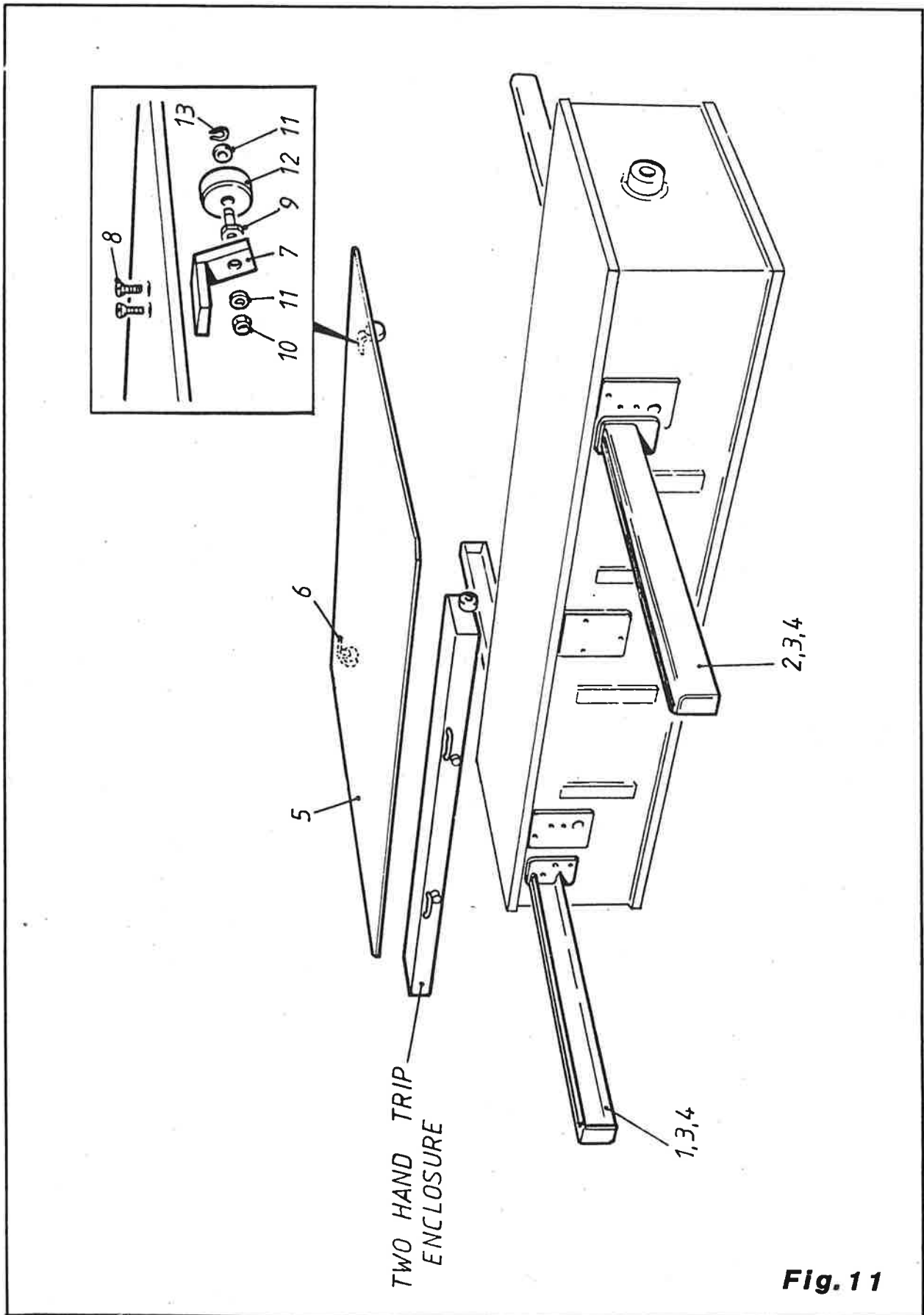
# Section 8A

## Two Hand Trip Enclosure

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Dustproof Cover	D/SMP 378	1
2	Insulating Strip	ED 4844E-4	1
3	Marker Strip	ED 4417E	1
4	Terminal Block	ED 4257E	1
5	Screw - Cap HD	SL 504ME	2
6	Lead Grip Gland	NWED 1163	1
7	Gland Nut	NWED 1122	1
8	Extension Lead (10")	ED 4864E-L1	1
9	Lead Plug	ED 6313E-A	1
10	Hood	NWED 610	1
11	Lead Grip Gland	NWED 1163	1
12	Push Button Contact Block	NWED 770	2
13	Push Button Flange	NWED 769	2
14	Two Hand Trip Bracket (1107)	E/SMP 384	1
	Two Hand Trip Bracket (1707 & 1708)	E/SMP 383	1
15	Handle	NWZH 360	2
16	Push Button Ring	NWED 768	2
17	Push Button	NWED 763	2
18	Actuator	NWED 767	2
19	Screw - C'sk HD	SL 470ME	9
20	Nut	NL 5ME	9
21	Washer	WL 5ME	9
22	Roller	C/SMP 384	2
23	Stud	C/SMP 390	2
24	Nut	NE 7ME	2
25	Washer	WL 7ME	2
26	Circlip	ZH 703M	2
27	Screw	SL 398ME	8

# Section 8 B

## Work tray and tray arms



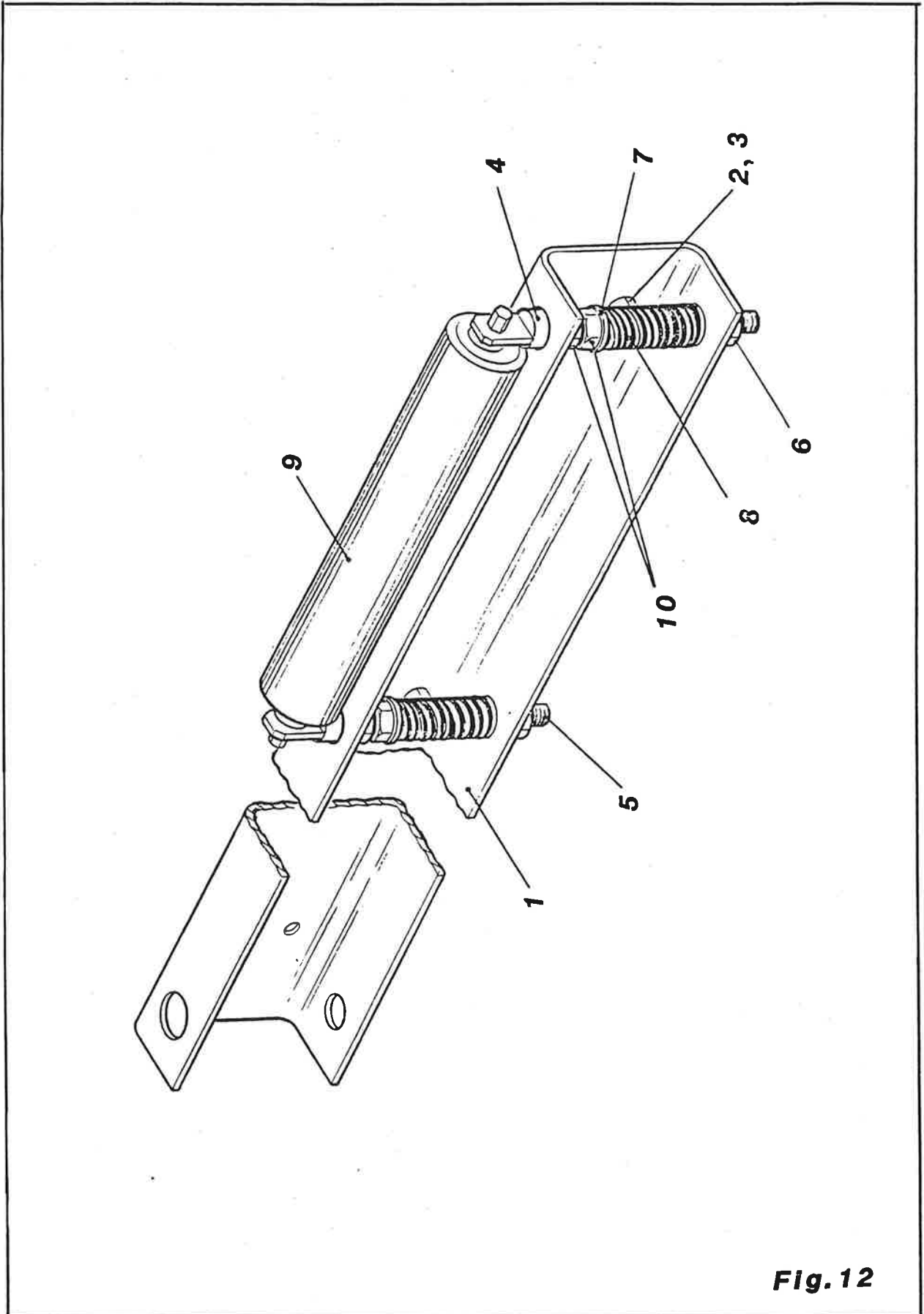
# Section 8B

## Work Tray & Tray Arms

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Tray Arm - LH (1107)	E/NWCP 979-2	2
	Tray Arm - LH (1707)	E/NWCP 978-2	2
	Tray Arm - LH (1708)	E/NWCP 978-3	2
2	Tray Arm - RH (1107)	E/NWCP 978-2	2
	Tray Arm - RH (1707)	E/NWCP 979-2	2
	Tray Arm - RH (1708)	E/NWCP 979-3	2
3	Screw - Cap HD	SL 567ME	12
4	Washer	WL 23ME	12
5	Work Tray (1107)	E/SMP 380	1
	Work Tray (1707)	E/SMP 381	1
	Work Tray (1708)	E/SMP 382	1
6	Tray Roller Bracket - LH	D/SMP 386	1
7	Tray Roller Bracket - RH	D/SMP 385	1
8	Screw - C'SK HD	SL 470ME	4
9	Roller Stud	C/SMP 390	2
10	Nut	NL 7ME	2
11	Washer	WL 7ME	8
12	Roller	C/SMP 389	2
13	Circlip	ZH 703M	2

# Section 8 C

## Sprung Roller Assembly



**Fig. 12**



# Section 8C

## Sprung Roller Assembly

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	Roller Brace (1107)	D/SMP 369	4
	Roller Brace (1707 & 1708)	D/NWCP 9359	4
2	Screw - Cap HD	SL 552ME	16(24)
3	Spring Washer	WL 22ME	16(24)
4	Roller Bracket	C/NWCP 9356	8(16)
5	Adjusting Screw	C/NWCP 9393A	8(16)
6	Nylock Nut	NWNL 76	8(16)
7	Spring Collar	C/NWCP 9357	16(32)
8	Compression Spring	NWSPGL 92	8(16)
9	Spring Roller (1107)	NWZH 2190	4
	Spring Roller (1707 & 1708)	NWZH 2203	8
10	Locknut	NL 16ME	16(32)

NOTE: QUANTITIES GIVEN IN BRACKETS ARE FOR 1707 AND 1708 MACHINES

# Section 9 A

## Covers and Guards

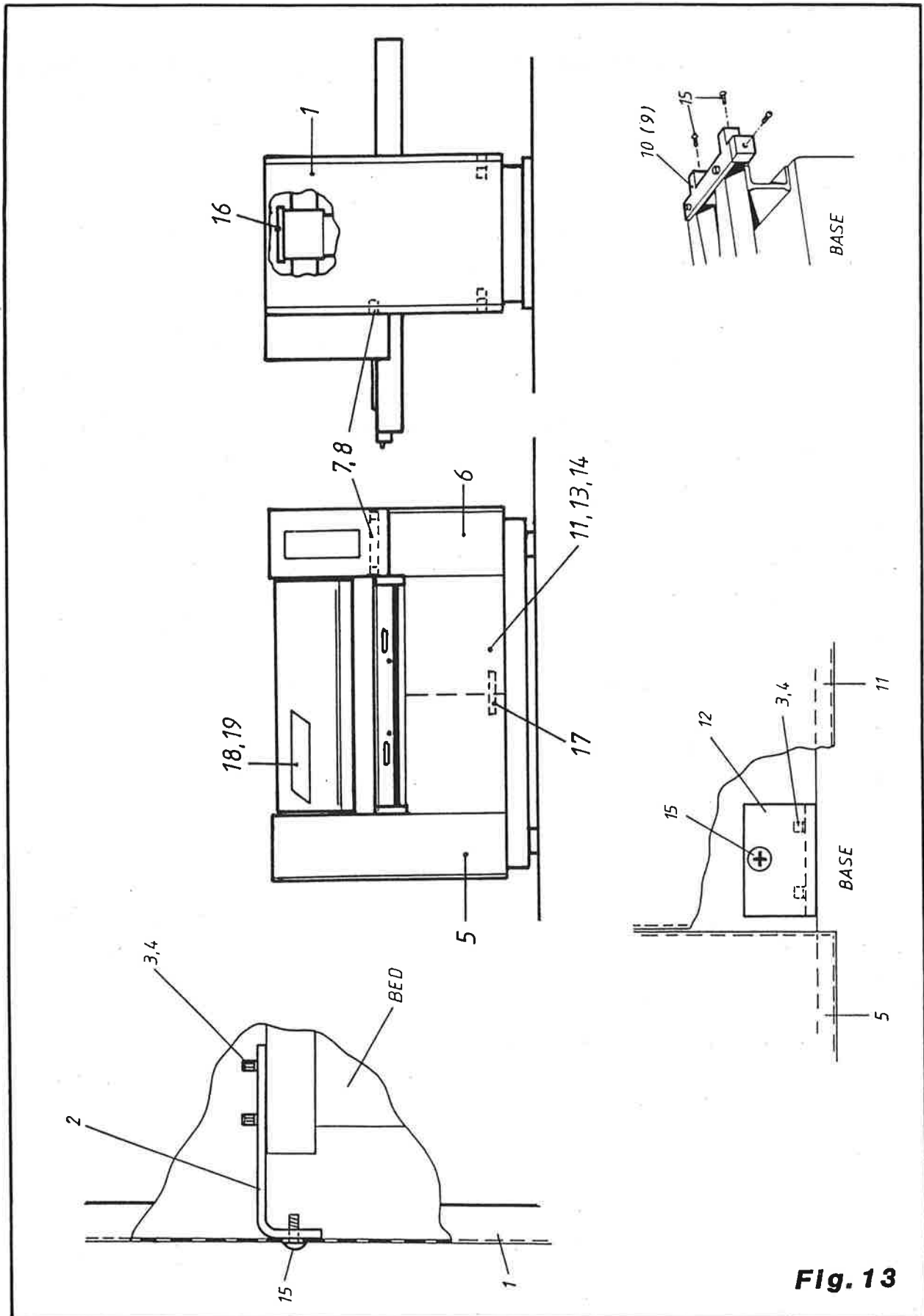


Fig. 13

# Section 9A

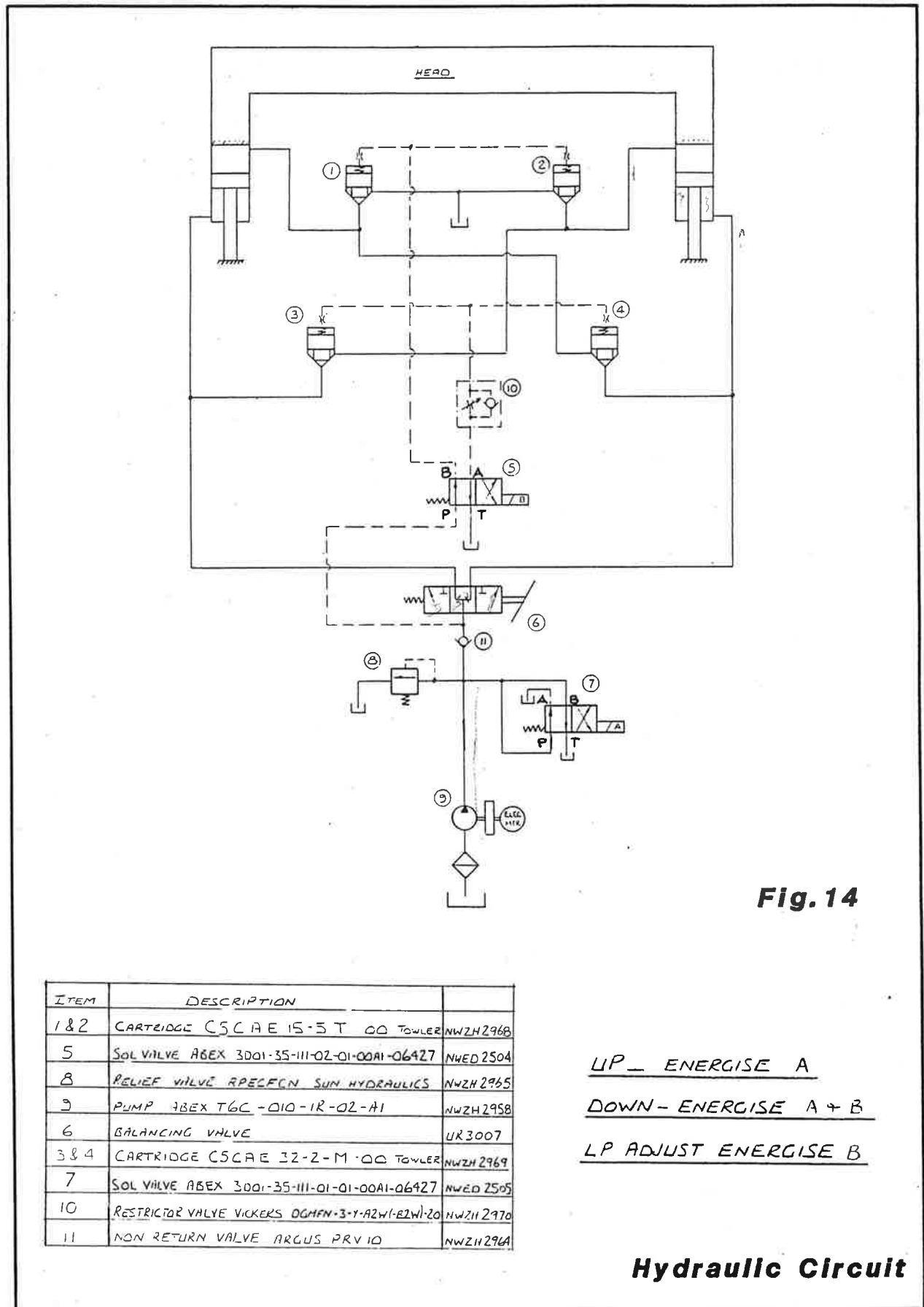
## Covers and Guards

<b>Item</b>	<b>Description</b>	<b>Part No.</b>	<b>Quantity</b>
1	End Cover	E/SMP 348	2
2	Bracket	C/SMP 165	4
3	Screw - Cap HD	SL 551ME	24
4	Spring Washer	WL 22ME	24
5	Side Cover	E/SMP 160	3
6	Side Cover (Control Box)	E/SMP 608	1
7	Fixing Block	C/SMP 350	1
8	Screw - Cap HD	SL 201ME	2
9	Side Cover Bracket (RH)	D/SMP 162	2
10	Side Cover Bracket (LH)	D/SMP 163	2
11	Bottom Cover (1107)	E/SMP 252	2
	Bottom Cover (1707 & 1708)	E/SMP 156	4
12	Bracket - Outer	C/SMP 351	4
13	Cover Post	C/SMP 159	14
14	Stud	C/SMP 221	14
15	Screw - Pan HD	SL 724ME	34(38)
16	Cylinder Top Cap	C/SMP 184	2
17	Bracket - Centre Front (1707 & 1708)	D/SMP 233	2
18	Name Plate	E/SMP 470	2
19	Screw	SL 694ME	12

NOTE: QUANTITIES GIVEN IN BRACKETS ARE FOR 1707 & 1708 MACHINES

# Section 10A

## Hydraulic System



**Fig. 14**

ITEM	DESCRIPTION	
1 & 2	CARTRIDGE C5CAE 15-3 T 00 TOWLER	NWZH2968
5	SOL VALVE ABEX 3D01-35-111-02-01-00A1-06427	NWED2504
8	RELIEF VALVE RPECFCN SUM HYDRAULICS	NWZH2965
9	PUMP ABEX T6C -010-1R-02-A1	NWZH2958
6	BALANCING VALVE	UK3007
3 & 4	CARTRIDGE C5CAE 32-2-M 00 TOWLER	NWZH2969
7	SOL VALVE ABEX 3D01-35-111-01-01-00A1-06427	NWED 2505
10	RESTRICTOR VALVE VICKERS DGMFN-3-Y-A2W1-B2W1-20	NWZH2970
11	NON RETURN VALVE ARGUS PRV 10	NWZH296A

UP - ENERGISE A  
DOWN - ENERGISE A + B  
LP ADJUST ENERGISE B

**Hydraulic Circuit**

# Section 10A

## Hydraulic System

### Hydraulic Circuit Description

On switching on the hydraulic pump motor an oil supply will be established to the system. If the "adjust/operate" push button is in the "adjust" mode the machine will idle or alternatively, if the "operate" mode is selected the head will rise to the set upper limit and will again idle.

### Idling

When idling the oil supply passes to tank through solenoid valve 7 and the head is held in the raised position by the trapped oil in the system upstream of check valve 11.

### Downstroke

A downstroke is initiated by depression of the two-hand-trip buttons, both of which must be depressed within a 1 second period and held depressed throughout the whole of the downstroke. At this, solenoid A will energise preventing the oil passing freely to tank and simultaneously solenoid B (Solenoid Valve 5) will energise which directs pilot oil to cartridge valves 3 and 4, causing them to close and vents the pilot connections to cartridge valves 1 and 2, allowing them to open. The main oil supply then passes to the underside of the cylinders via the balancing valve 6 and the exhaust oil from the tops of the cylinders passes to tank through cartridge valves 1 and 2.

The spool of the balancing valve 6 is mechanically connected to the moving press cylinders and is arranged so that when the head is parallel to the bed the restrictions between the inlet and each outlet are both equal and minimal. Should there be a tendency for the head to move out of parallel then the spool of the balancing valve is moved simultaneously to a position where it will restrict the flow of oil to the leading cylinder and allow the oil to pass more freely to the cylinder which is lagging, thus effecting a correction to parallelism. The sensitivity of the balancing valve is such that if a spool movement of 0.2 mm or more is present it will completely block the flow of oil to the leading cylinder.

The normal pressure generated during the downstroke should not be in excess of 400 PSI (27.5 BAR) until the work is contacted, the pressure will then increase to that which is required to make the cut. The maximum pressure that can be generated is 4000 PSI (276 BAR) which is determined by the setting of the relief valve 8, if this pressure is reached the relief valve will open and the machine will stall preventing further downward movement of the head. Under normal operating conditions the downward movement of the head will continue until the lower limit is reached.

# Section 10A

## Hydraulic System

### Upstroke

On reaching the lower limit solenoid B (Solenoid Valve 5) will de-energise, solenoid A (Solenoid Valve 7) will remain energised. Pilot oil will then be directed to cartridge valves 1 and 2 causing them to close and the pilot connections to cartridge valves 3 and 4 will be vented to tank allowing them to open. The rate of opening of these valves is controlled by the setting of the restrictor valve 10 and is set to control the rate at which the pressurised oil is released from the cylinders. The main oil supply is then passed to the tops of the cylinders via balancing valve 6, and cartridge valves 3 and 4 and simultaneously to the bottoms of the cylinders by the common line from the balancing valve 6. As the area above the piston is greater than that below, the pressure will cause the head to rise, the oil which is expelled from the bottom of the cylinders joins with the supply oil and passes to the tops of the cylinders via cartridge valves 3 and 4. This causes the head to rise at high speed and the system is said to be "regenerative". The upward movement will continue until the upper limit is reached at which all valves will de-energise and the head will stop with the machine in the idling condition.

### Low Pressure Adjust

The low pressure adjust feature provides a means of lowering the press head onto the die without generation of pressure for the purpose of setting the lower limit. When "adjust" is selected on the "adjust/operate" push button and a downstroke initiated by the two-hand-trip, solenoid B (Solenoid Valve 5) only is energised this connects the pilot supply to cartridge valves 3 and 4 pilot connections to 1 and 2 allowing them to open. As solenoid valve 7 is directing the supply oil to tank the only pressure generated in the cylinder circuit is that generated by the weight of the press head and this is present in the supply lines connected to the tops of the cylinders only. Under these conditions all cartridge valves will open, the tops and bottoms of the cylinders will be connected via cartridge valves 3 and 4; the press head will descend with the excess oil which is generated by the introduction of the piston rods into the cylinder is passed to tank via cartridge valves 1 and 2.

# Section 10B

## Electrical System

### Electrical System

The reference letters and numbers in the text refer to components on the electrical schematic (NWES 8014) in the plastic wallet at the rear of the manual.

With the electrical box isolator switched ON, current is supplied to the transformer T1 via fuses 5 FU and 6 FU to 7 FU and 8 FU. The transformer T1 reduces the supply voltage to 110 volts AC to the control circuit supplied via fuse 9 FU.

To start the hydraulic pump motor, current flows along line 2 through the motor stop push button LPB to line 4. Depress the motor start push button 2PB which energises the motor start contactor 1M via line 5, the overload contact 1 O/L and line 3.

Contacts of 1M close between lines 204 and 207, lines 205 and 208, and lines 206 and 209 to provide current to the motor windings causing it to run up to speed.

Contacts of 1M also close between lines 4 and 5 latching in contactor 1M and between lines 2 and 2A energising the control circuit.

### Operate

With the press idling and the head at its upper limit setting, current flows through the Safety Switch ILS to line 7 energising 1TR timer. As the two hand control push buttons 4PB and 5PB, are not depressed lines 8 to 10 are closed, which closes the 1TR timer contacts. The adjust/operate latched push button 1SS is set to the OPERATE mode so that the 1SS contact will be closed between lines 11 and 13.

With the head at its upper limit setting line 7 to 15 is closed through RL1 and line 15 to 18 is closed through RL3, the lower limit relay. When the two hand control push buttons 4PB and 5PB are depressed (closing 4PB and 5PB contacts) current from line 18 passes through lines 16, 17, 20 1TR contact and 21 to energise 1CR relay. 1CR contacts close to energise solenoid A via line 11 and solenoid B via line 23. As the head closes relay RL1 energises but the feed is maintained to relay 1CR by 1CR contact closing between lines 7 and 15. The head moves downwards until relay RL3 de energises breaking the supply to relay 1CR. Solenoid B de energises but solenoid A remains energised by relay RL1 contact between lines 7 and 11.

The head moves upwards until the relay RL1 is de energised which removes the supply from Solenoid A which returns the press to the idle condition.

# Section 10B

## Electrical System

### Adjust

Select ADJUST on the latched push button ISS, line 11 to 13 is broken which isolator solenoid A, and the adjust lamp 2LT lights up via lines 18 and 19. Depress the two hand control push buttons simultaneously closing 4PB and 5PB contacts to energise relay 1CR and solenoid B. The press head descends under low pressure until the head contacts the cutting die which is resting on the cutting matrix. The lower limit is set by turning the lower limit potentiometer until relay RL3 de energises and lamp 2LT just goes out.

Unlatch the push button ISS which energises Solenoid A via RL1 contact, lines 11 and 13 to return the head to the upper limit.

### Two Hand Control Push Buttons Safety Sequence

If only one push button 4PB or 5PB is depressed the connection between lines 8 and 9 is broken, starting the ITR timer. After the pre-set time of one second has elapsed, its contacts open between lines 20 and 21 isolating relay 1CR. Therefore the push buttons must be depressed simultaneously and must be held depressed throughout the working stroke to energise the relay 1CR.

### Safety Switch

If servo safety switch 1LS is operated because the head has sunk out of level it isolates the control circuit. Control is regained by depressing the reset push button 3PB/Lt. A cutting cycle cannot be initiated whilst 3PB is depressed because the 3PB contact between lines 17 and 20 is open. The press head will level remaking 1LS and rise to the upper limit

### Automatic Head Reset

If the head sinks during idle it will automatically kick back up again as relay RL1 is energised and then de energised as the upper limit is reached.

### Electronic Stroke Reversal

The head position is continuously monitored by a linear potentiometer connected across the balancing linkage. The position of the head is indicated by the voltage at P which is compared with the voltage at L for the lower limit which is indicated by the de energisation of relay RL3 and with the voltage at N for the upper limit which is indicated by the de energisation of relay RL1.



# Section 10C

## Setting up Procedure

### SERIES 75 SETTING UP PROCEDURE

#### Pre-switch on Checks and settings.

1. Set the motor thermal overload, which is located inside the electrical enclosure to:

12 amps for 380 V supply

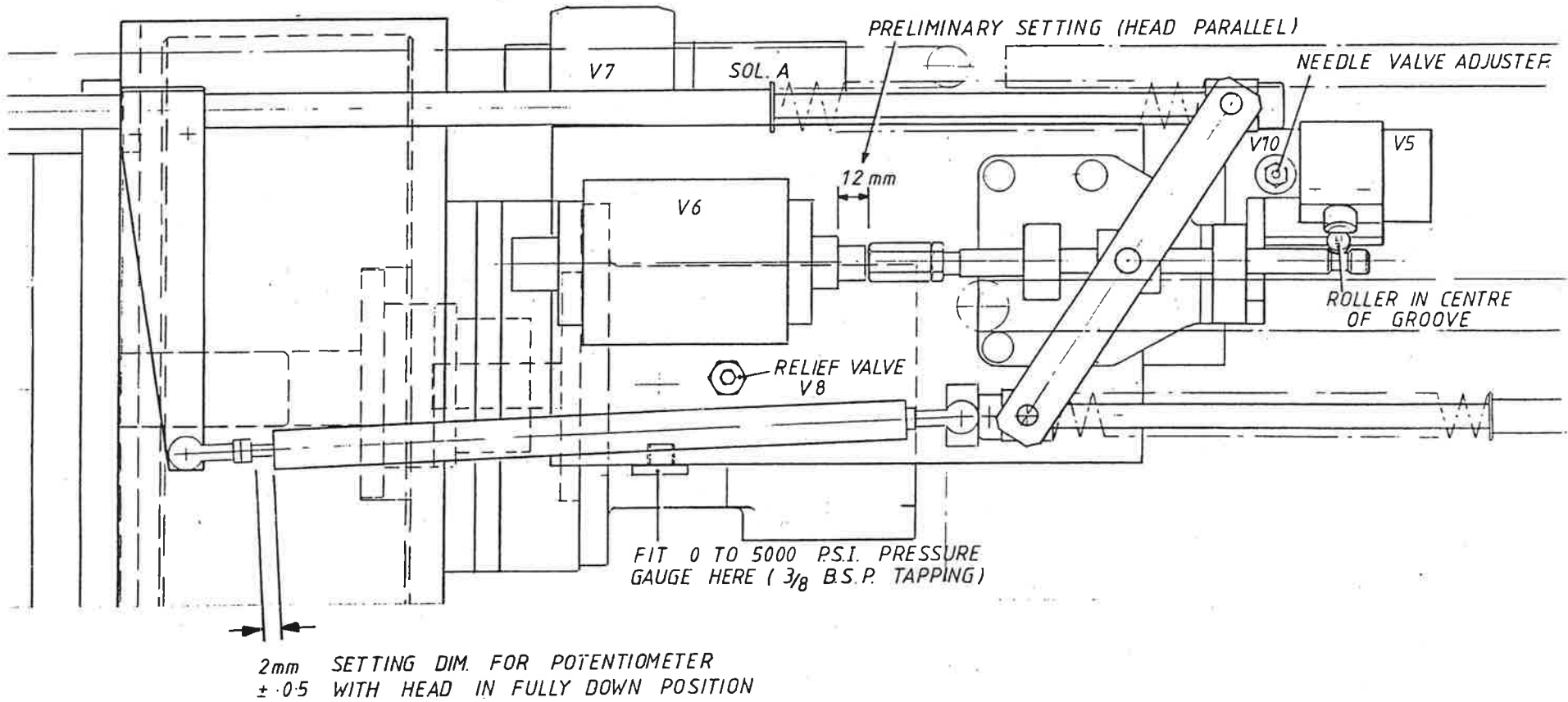
12 amps for 415 V supply

12 amps for 460 V supply

25 amps for 220 V supply

Also set the manual / auto reset feature to 'auto'.

2. Set the relief valve V8 which is located directly beneath the flow control valve - See fig. 15 to its minimum setting. To achieve this, release the lock nut and turn the adjusting screw anticlockwise until all internal spring pressure has been released.
3. Open needle valve setting V10, for location see fig. 15. To achieve this, release the locknut and screw the needle adjusting screw fully inwards (clockwise) then unscrew adjustment 5 full turns (anti-clockwise).
4. With the head in the fully down position set the flow control valve adjustment such that the ground spool extension projects 12 mm beyond the end cap of the valve, see fig. 15
5. Fit a 0 to 5000 PSI (0 to 340 BAR) pressure gauge in the 3/8" BSP tapping on the underside of the manifold, see fig. 15



**Fig. 15**

# Section 10C

## Setting-up Procedure

6. If the potentiometers VR1, VR2 and VR3, which are located on the printed circuit board inside the electrical enclosure, have not been pre-set by the board manufacturers then they must be pre-set to the following figures.

VR1 1100 ohms

VR2 1900 ohms

VR3 0 ohms

To achieve this the PCB must first be removed from the machine and the resistances trimmed with a ohm-meter, reading from the appropriate tracks on the rear of the PCB, see fig. 16. Locations AA to be used for the setting of VR1, BB for the setting of VR2 and CC for the setting of VR3. The board can then be replaced in the electrical enclosure. Ensure that code letters on Board and Edge connector match.

7. Set the upper limit potentiometer on the control panel to No.9 marked on the scale.
8. Set the lower limit potentiometer (10 Turn Type) to No. 2 marked on the scale.
9. Depress (latch in) the adjust operate button on the control panel.
10. Set safety switch such that the switch roller is positioned centrally in the neck down in the flow control valve operating rod and with the roller just clear of the bottom of the neck down.

# Section 10C

## Setting-up Procedure

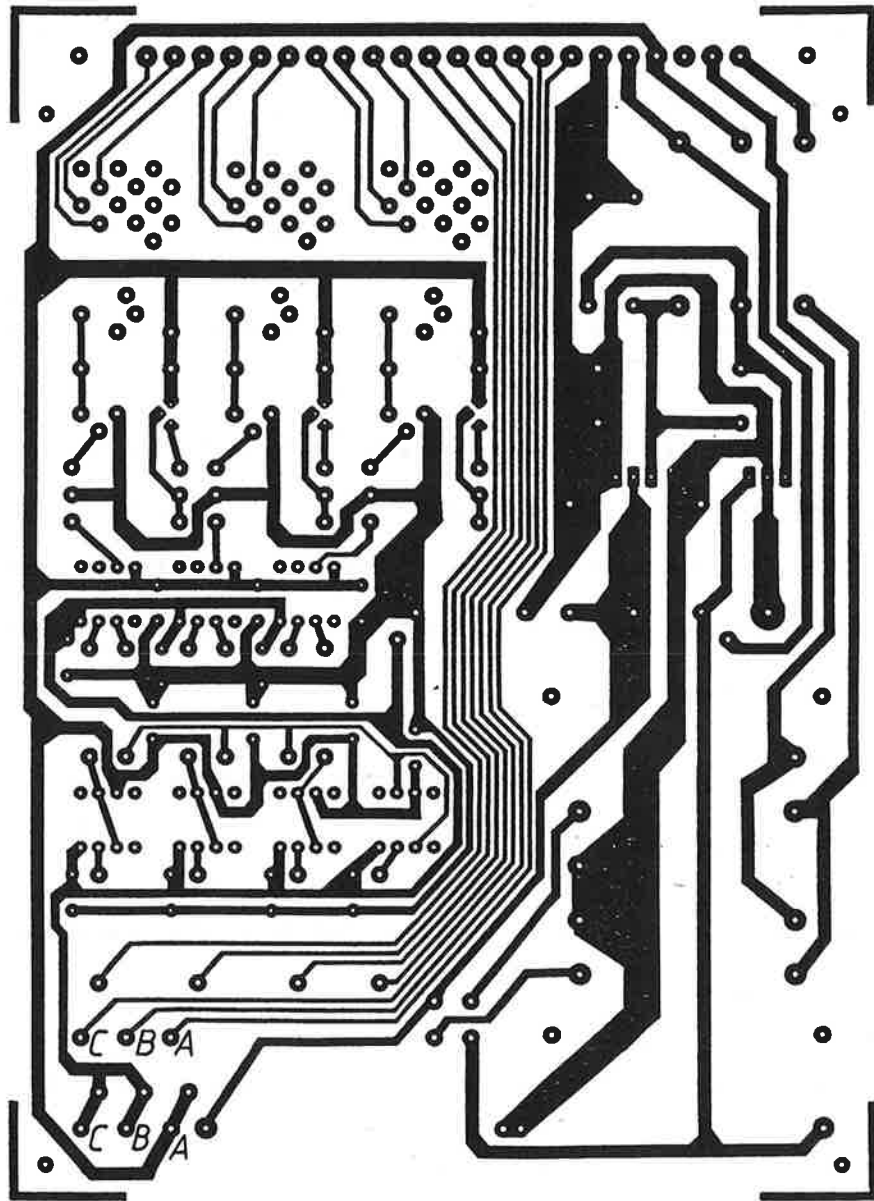


Fig. 16

# Section 10C

## Setting-up Procedure

11. To set the Linear Potentiometer, with the press head in its lower position connect the non-rod end of the potentiometer to the collar on the end of the RH valve operating rod and the rod end to the bracket mounted on the LH valve operating rod. Position the bracket on the LH rod such that the potentiometer rod is extended  $2 \text{ mm} \pm .5 \text{ mm}$  from the closed position and lock up all attachments. (See fig.15.)

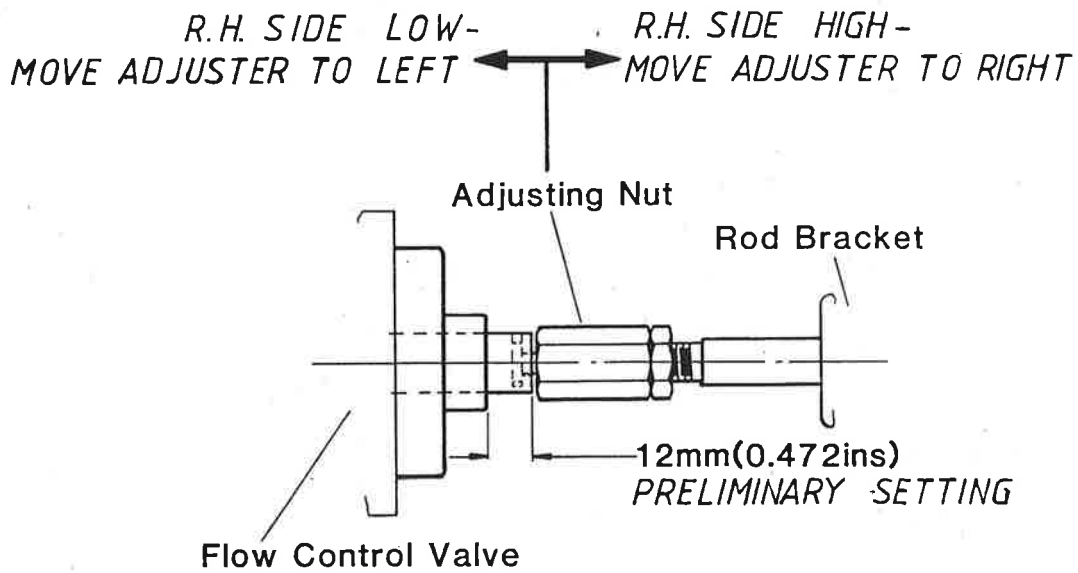
### Switch on Machine Isolator

12. Using the start and stop buttons on the control panel momentarily switch on the machine and check the direction of rotation of the electric motor. The top surface of the flywheel should run towards the front of the machine; if not reverse any 2 of the 3 phase supply connections to the machine.
13. With the motor running, depress to release the adjust operate button and the head should rise to the set upper limit. If this does not occur check that relay RLI is operated and that a supply is on solenoid A; if not check electrical circuitry. Re-positioning of the upper limit potentiometer setting may also establish a supply to sol. A.

If the head does not rise with a supply to sol. A gradually increase the setting of the relief valve V8 until the head rises; a slight increase in relief valve setting should be all that is necessary.

# Section 10C

## Setting-up Procedure



**Fig. 17**

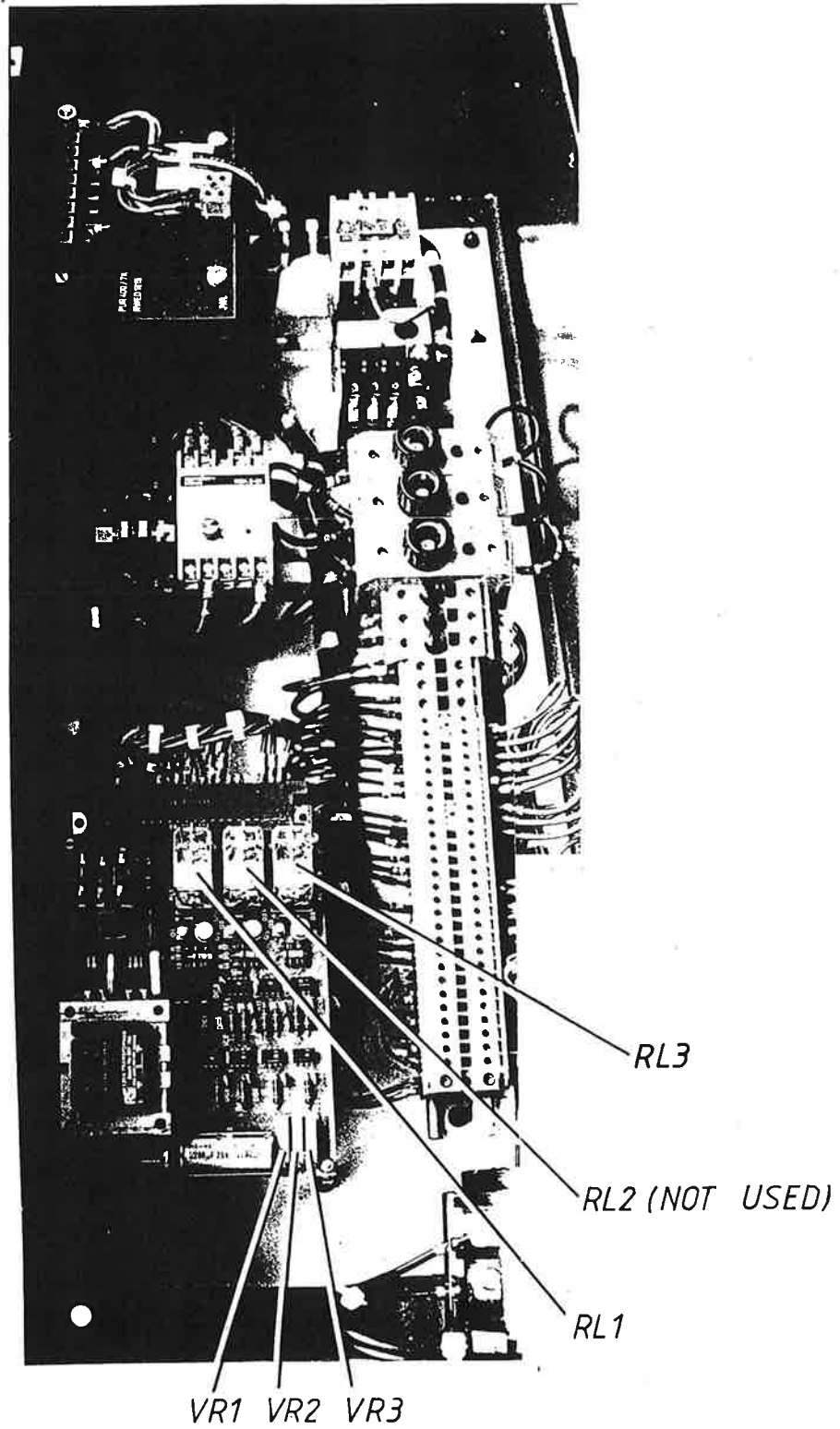
# Section 10C

## Setting-up Procedure

14. Cycle the machine a few times to expel air from the circuit adjusting the upper and lower limit potentiometer to give near full stroking.
15. To set the extreme upper limit first turn the upper limit potentiometer fully clockwise at which the head should rise to the new set position. If the machine tends to stall due to the pistons hitting the tops of the cylinders, back off the upper limit until the stall condition is released. Trim VR2 on the PCB such that the maximum daylight is 212mm with the upper limit potentiometer on the control panel is set to its maximum. It is important that during this procedure, the relief valve V8 is not set too high, otherwise a full stall may occur, stopping the motor and releasing the thermal overload. (See fig.18 )
16. To set the extreme lower limit position turn the lower limit potentiometer on the control panel to zero, push to latch-in the adjust operate button and operate the machine. The head should then descend either to its fully down position or to some position determined by the lower limit control. The trimmer potentiometer VR1 on the PCB should then be trimmed such that the closed daylight of the press is 38 mm with the lower limit potentiometer set to zero.
17. To set the main relief valve the machine should be momentarily stalled against a centrally positioned load pad and the relief valve set to give 4000 PSI (275 BAR) on the pressure gauge.

# Section 10C

## Setting-up Procedure



**Fig. 18**



# Section 10C

## Setting-up Procedure

18. To set head to bed parallelism position the load pad centrally in the cutting area and adjust the lower limit such that the pressure gauge reads between 1000 and 1200 (69 and 83 BAR) on press closure. Position two plunger blocks on the press bed on the extreme left and RH edges of the cutting area and trip the machine. The depressed heights of the two blocks should be the same within 0.15 mm, if not adjust the flow control valve linkage as follows: (See fig. 17)

If the RH cylinder is high the central pivot point of the linkage must be adjusted so that it is closer to the flow control valve. This is accomplished by releasing the 17 mm lock nut and moving the adjuster to the right. If the RH cylinder is low the adjuster must be moved to the left. Secure lock-nut after each adjustment and re-check parallelism.

19. To set the decompression needle valve V10, set the stroke control of the press to give a long stroke (in excess of 100 mm) and cycle the machine observing the pressure gauge. Screw in the needle valve adjustment on V10 until a pressure surge of approx. 1000 PSI (69 BAR) is observed when the head reverses direction at the bottom of the stroke. Note if the pressure surge is too high this will cause a significant reduction in flywheel and motor speed tending to stall the machine on upstroke. If the pressure surge is too low, a high decompression noise will be heard when the machine is cycled on load. Secure lock-nut after adjustment.

<b>Sequence</b>	<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Switch on Mains isolator and depress START button.	Motor Fails to start.	Fuses Blown.	(a) Check mains fuses 4FU, 5FU, 6FU. (b) Check control circuit fuses 7FU, 8FU. (c) Check control fuses 9FU. Replace as necessary.
		Thermal overload is open.	(a) Check overload rating (22 Amp for 220 Volt supply; 12 Amp for 380/460 Volt supply). (b) Wait two minutes for thermal control to cool and cuts reset. (c) If overload will not stay closed check motor windings.
		Faulty push button.	(a) Check push button function. (b) Replace push button unit.
Motor Starts.	Excessive noise.	Low oil level.	Check and replenish.
		Coupling damaged.	Check and repair.
		Pump faulty.	Check and replace.
	Head does not rise to upper limit.	Upper limit set too low.	Turn upper limit potentiometer clockwise to higher number.

<b>Sequence</b>	<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Motor Starts (Cont).	Head does not rise to upper limit (Cont).	Unloading valve faulty.	(a) Check supply to coil (solenoid A). (b) Check/replace coil. (c) Check spool return spring (valve 7).
		Adjust/Operate push button is set to ADJUST (lamp illuminated).	Release latch in push button to set OPERATE mode.
		Head out of parallelism exceeds 12mm (1/2"). (Reset lamp illuminated.)	Depress RESET push button to override the servo safety switch.
		Faulty relief valve.	Remove and check for open circuit. Replace if necessary.
		Faulty cartridge valve.	(a) Check spools for freedom of movement. (b) Check orifice plugs in cover plate for dirt.
		Potentiometer wiring fault.	(a) Check wiring to linear potentiometer. (b) Check wiring to upper limit potentiometer.

<b>Sequence</b>	<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Motor Starts (Cont).	Head does not rise to upper limit (Cont).	PCB fault.	(a) Check fuses 1FU, 2FU, 3FU. (b) Replace PCB.
	Head rises out of parallel.	Balancing mechanism sticking.	(a) Check balancing valve linkage. (b) Check for balancing valve spool for freedom of movement.
	Head rises above upper limit setting and motor stalls.	Faulty unloading valve.	(a) Remove plug from solenoid A and restart. (b) If motor stalls replace solenoid valve. OR (c) If motor runs check supply to solenoid valve.
		Check limit wiring fault.	Check upper limit potentiometer wiring.
		PCB fault.	(a) If PCB has been changed refer to Setting-up Instructions for trimming extreme upper limit. (b) Change PCB and retrim limits as detailed in the Setting-up Instructions.

<b>Sequence</b>	<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Head is on upper limit. Both two hand control push buttons are depressed.	Head fails to descend.	Head out of level.	Check head reset. (Lamp illuminated.)
		Upper and lower limits crossed over.	Upper limit set too low or lower limit set too high. Reset limits.
		Control circuit fault.	(a) Check ICR operation. (b) Check <del>1</del> TR operation. (c) Check RL1 operation. (d) Check RL3 operation.
	Head rises.	Downstroke valve faulty. (5)	(a) Check operation of solenoid B. (b) Check wiring to solenoid B. (c) Check valve mechanically.
Head descends.	Head out of parallel.	Balancing mechanism sticking.	(a) Check balancing valve linkage. (b) Check balancing valve spool for freedom of movement.
	Slowly, or with low cutting pressure.		Check adjust/operate button set to operate.

<b>Sequence</b>	<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
Head descends (Cont).	Cutting die fails to penetrate and machine stalls before reaching bottom limit.	Faulty relief valve.	Check relief valve setting. (Refer to setting up instructions.) Replace if faulty.
		Faulty pump.	Replace.
	Cutting die cuts unevenly.	Die is worn or damaged.	(a) Grind die. (b) Replace die.
		Cutting matrix worn or damaged.	(a) Change position of die. (b) Replace cutting matrix.
		Balancing valve setting is incorrect.	Readjust. (Refer to setting up instructions.)
Head reaches bottom of stroke.	Head fails to rise automatically or when two hand control push buttons are released.	Same causes and remedies as when head fails to rise after initial switch on.	

# Section 11

## Lubrication and Maintenance

### Lubrication and Maintenance

All machines are supplied with a tool kit No. NWKL 12 which contains:

1 Spanner	NWWRHL 38
1 Large Posi-drive Screwdriver	NWWRHL 44
1 Grease/Oil gun	NWZH 1608
1 Tin Vactra 2	AZX 1530-IL
1 Allen Key (4 AF)	WRHL 51
1 Allen Key (5 AF)	WRHL 52
1 Allen Key (6 AF)	WRHL 53
1 Allen Key (7 AF)	WRHL 54
1 Allen Key (8 AF)	WRHL 55
1 Allen Key (10 AF)	WRHL 56
1 Tool Roll	NWZH 1404

It is important to lubricate the main assemblies when the machine is installed and at subsequent times throughout the machine's life.

### Every Week

Using Mobil Vactra 2, give three strokes of the grease gun to each of the four nipples on the head eccentric bush flanges (1) and ten strokes of the grease gun to the pillar sleeve nipples (2).

### Every Month

- A. Using Shell Carnea 33 in the oil can, lubricate the Balancing Valve Linkage (3).
- B. Check the level of the Hydraulic Oil (4). Maintain level to within plus or minus  $\frac{1}{4}$ " (6 mm) of the level mark with Shell Tellus 46 or its equivalent.

### Every Three Months

- A. Check the level of the Hydraulic Oil (4), and top up if necessary.
- B. Inspect the Work Tray Rollers, front and back of the work tray. Clean off any accumulation of dust from Rollers (5) and the inside of the Work Tray Arms. Lubricate rollers with Shell Carnea 33.

### Every Six Months

Check the level of the Hydraulic Oil (4) and top up as necessary.

### Every Two Years

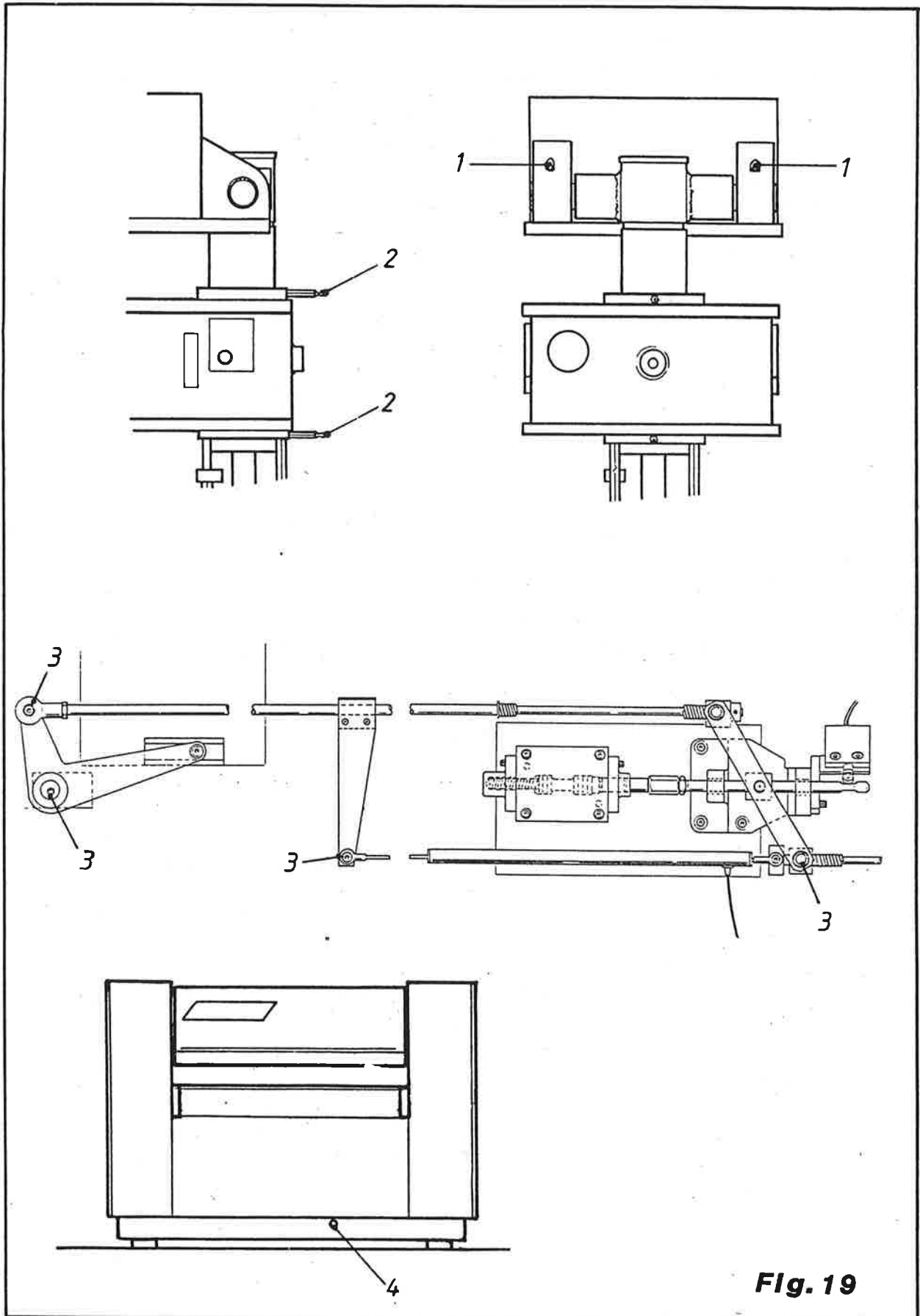
Replace the hydraulic oil

The maintenance schedule recommended above is based on the assumption that the press will be operated one shift per day.

**IMPORTANT:** Replace all covers and guards before operating the machine.

# Section 11

## Lubrication and Maintenance



**Fig. 19**



# SECTION 11B

## Ratchet Positive Stops

### Description

The positive stop assemblies are mounted on the press bed either side of the press pillars. (see fig. 20.A.1)

Two of the assemblies (R.H. Front and L.H. Rear) are spring loaded and are mounted above micro-switches which trip the stroke lower limit. The other two (L.H. Front and R.H. Rear) are non-switched assemblies.

The 2 stop screws (2) are fastened to the bed with cap head screws (3) and the 2 switched stop screws (5) are fixed by shoulder screws (6) via springs (7). The 4 stop nuts (1) are wound down onto the screws and prevented from turning freely by register blocks (10) using steel ball (13) held in tension by springs (14) and grub screw (15). Socket screws (12) act as plungers in switched stop screws (5) to trip micro-switches (8) mounted underneath the bed.

### Setting up the Positive Stops.

1. Assemble the positive stops (stop screws and stop nuts).
2. Place a .006" shim under the switch stop assemblies and using M6 x 35 socket screws, fasten them down hard to the bed (see fig. 20.A.2.).  
Note  
Do not use shoulder screws at this stage, use the straight screws from the fixed stops.
3. With the micro switches fastened in position under the bed, screw the plungers (12) down into the stop screws (5) until the micro switch is just actuated. To test for this, a multimeter should be connected across the contacts of the lower limit switch and set to Ohms resistance. Adjust the plunger until the needle just moves and then give it, say, another 5° turn.
4. The plungers are now set and must not be disturbed. The eslok patch will prevent the screw from turning. The screws holding down the stops should now be removed and the 4 stops can be fastened to the bed with their correct screws. (i.e. shoulder screws and springs for the switched assemblies).
5. Assemble and fit the register blocks and wind down all the stops to their lowest setting. Wind back the 2 switched positive stops, 1 full turn. (this enables fine adjustments in either direction to be made to the stops if required).
6. To check the settings of the positive stops, 4 friction setting blocks (SDC 4156, JT 2782 and SL 107 ME) and a suitable dial gauge to read their heights are required. To use the blocks, loosen the locking grubs screws, extend the central plunger until the overall height of the assembly is slightly greater than the height of the stops and re-tighten the screws.

# SECTION 11B

## Ratchet Positive Stops

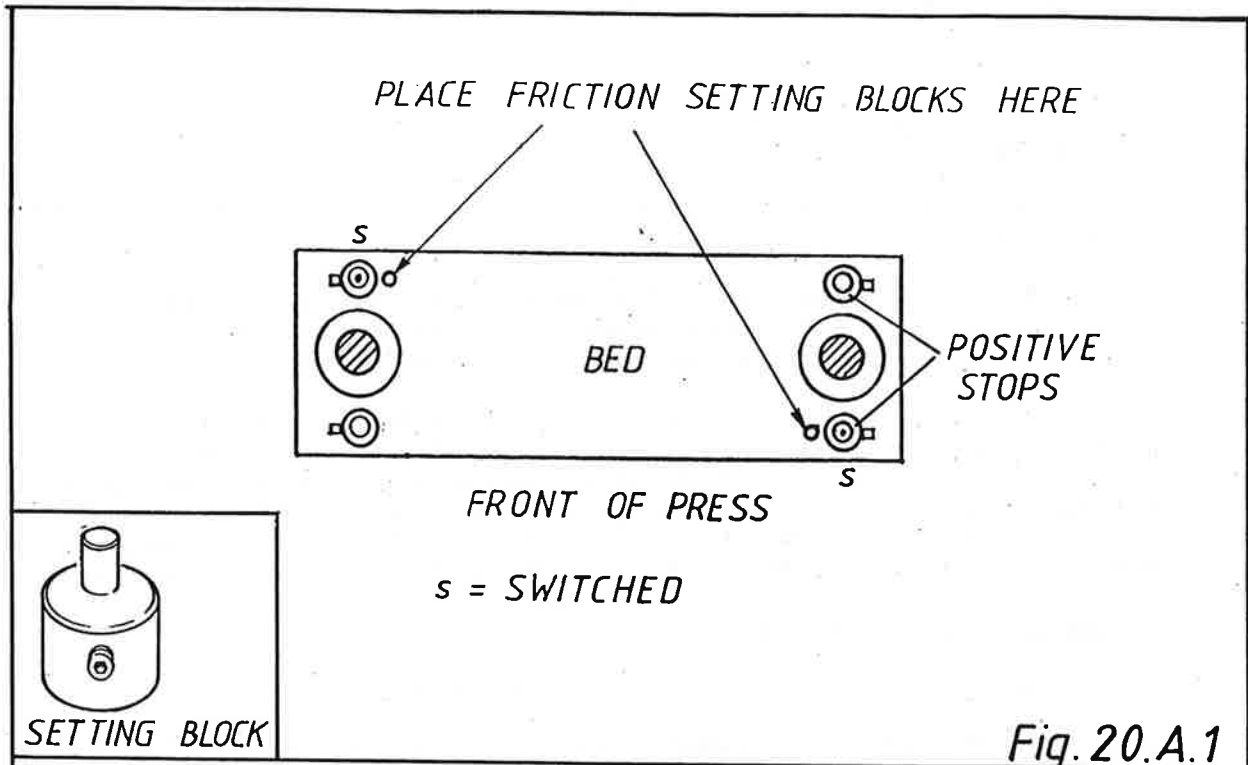


Fig. 20.A.1

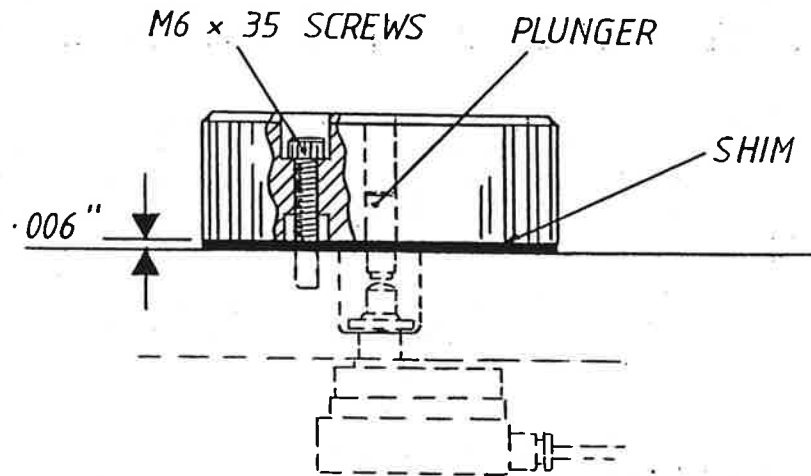
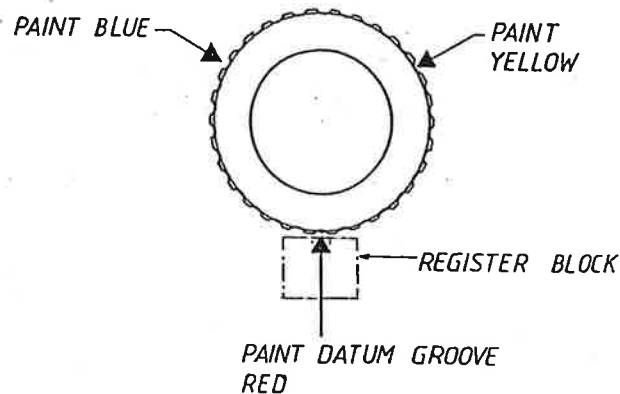


Fig. 20 A 2

# SECTION 11B

## Ratchet Positive Stops

7. Place 1 of the setting blocks (plunger uppermost) between head and bed next to the 2 switched stop assemblies and initiate a cutting stroke, see fig. 20.A1. Check the height of the blocks with a dial gauge. If the heights differ more than .003", set the gauge to 0 using one of the blocks as a datum and turn the ratchet stop on the other to achieve the same height. 1 click of the ratchet stop is equal to .004" height adjustment. Reset the setting blocks, try another cutting stroke and recheck the blocks. Repeat until blocks are within .003" of each other.
8. Bring down the head under low pressure onto the 2 switched stops and wind up the 2 remaining stops until they are tight up to the head. Depress "Operate" button to release the head.
9. Reset all 4 setting blocks, place them next to the 4 stops and initiate a cutting stroke. Check the heights of the 4 blocks on the dial gauge. If either of the 2 non-switched stops are reading more than .003" out on the dial gauges, adjust the stops as before and retest until all 4 readings agree.
10. When all setting blocks are within .003", the stops are set for parallelism and should be colour marked for guidance.
11. Mark the 4 indents engaged by the register block ball with red paint as a starting datum, for setting up the lower limit. The stop nuts should be marked with blue and yellow paint every 10th indent i.e. divided into 3 with coloured indents. These are marked red, blue and yellow clockwise on the stop nuts. (See fig. 20.A3 )
12. The stops are now set for parallelism, the lower limit can be set to the die as described in the Operators Manual.

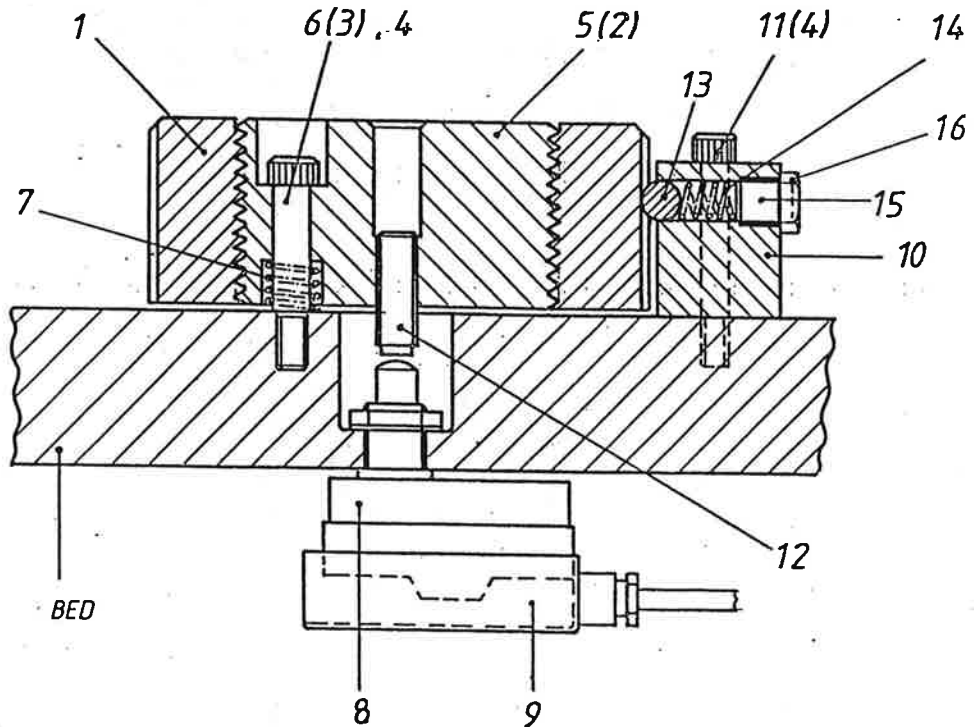
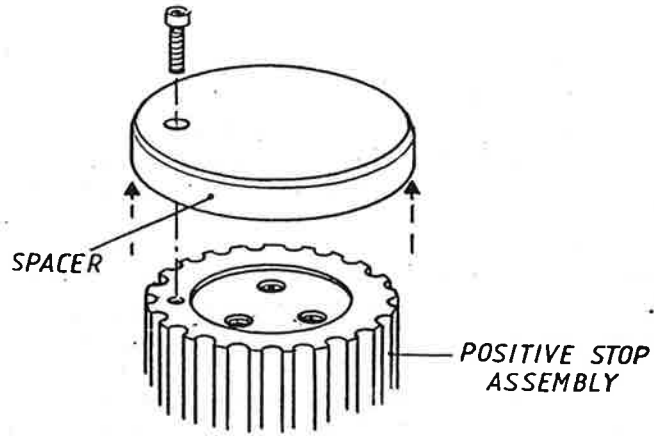


PLAN SHOWING COLOUR CODING  
OF POSITIVE STOP NUTS

Fig. 20.A.3

SECTION 11B.

Ratchet Positive Stops



Section Thro' Positive Stops.

SECTION 11B  
Ratchet Positive Stops

<i>Item</i>	<i>Description</i>	<i>Part No.</i>	<i>Quantity</i>
1	Stop 'Nut' (Bearer Range 36-51)	SMP186	4
2	Stop Screw	SMP187	2
3	Screw Cap HD	SL540ME	6
4	Washer	WL21ME	10
5	Stop Screw; Switched	SMP188	2
6	Shoulder Screw	B.O.	6
7	Spring	B.O.	6
8	Switch	B.O.	2
9	Terminal Enc.	NWED978	2
10	Register Block	SMP189	4
11	Screw	SL541ME	4
12	Screw Headless SKT Eslok Patch 6mm from Socket End	B.O.	2
13	Steel Ball	GR255	4
14	Spring	B.O.	4
15	Screw Headless SKT	SL98ME	4
16	Locknut	NL16ME	4

SPACERS AS REQUIRED

17	Screw Jack Spacer (Range 78-93)	SMP190-1	4
18	Screw Cap HD	SL542ME	4
4	Spring Washer	WL21ME	4
19	Screw Jack Spacer (Range 74-89)	SMP190-2	4
18	Screw Cap HD	SL541ME	4
4	Spring Washer	WL21ME	4
19	Screw Jack Spacer (Range 46-61)	SMP190-3	4
18	Screw Cap HD	SL534ME	4
4	Spring Washer	WL21ME	4

