

# INSTRUCTION MANUAL



**TC-75 Cutting Press**

September 1998



**SAMCO-STRONG LIMITED**

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# **SAMCO-STRONG LIMITED.**

Instruction manual.  
TC 75 Cutting Press.

## **Revisions.**

Issue no. 1.	Date : Feb 1994.	First release.
Issue no. 2.	Date : 1-6-1996.	Extended daylight info added.
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# **SAMCO-STRONG LIMITED.**

## **INSTRUCTION MANUAL FOR TC-75 BASIC CUTTING PRESS**

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- PART 3      STANDARD OPTION SUPPLEMENTS**

# **Samco-Strong Limited**

## **TC-75 Cutting Press**

### **PART 1**

#### **BASIC PRESS**

#### **OPERATING INSTRUCTIONS**

# **PART 1**

## **Contents**

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## Section 1

### Safety

#### IMPORTANT

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

NOTE: Keep this manual and these instructions with your 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.

#### 1.1 Setting-up Safety

1. Move the machine only after reading the lifting instructions detailed in Installation section of the Service Instruction.
2. Make sure the machine is properly connected to the required electrical supply 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.
3. 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.

#### 1.2 Operating Safety

1. 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.
2. Operate the machine only with all guards, covers and safety devices securely attached and in proper working order.
3. Keep only one die set or uniform die in the machine at a time.
4. ALWAYS KEEP HANDS AND FINGERS AWAY FROM UNDER THE CUTTING AREA OF THE HEAD.

## Section 1

### Safety (cont)

5. Do not tamper with the setting of the pressure relief valve. This is factory set for safe machine loading, and should only be adjusted by a trained service engineer.

#### 1.3 Service Safety

1. Use only Samco-Strong Ltd. approved personnel for electrical or mechanical repairs or adjustments.

2. Before starting maintenance procedures, ensure the machine is disconnected from the electrical and compressed-air supplies. If it becomes necessary to carry out maintenance while the machine is receiving power (for example, when investigating faults) such work must be authorised by suitably-qualified personnel.

3. Be sure the electrical enclosure is never left open except as necessary for active service work.

4. Do not leave the machine unattended with the covers removed.

5. Switch off the electrical and compressed-air supplies before leaving the machine unattended. Also be sure to switch these off in the event of a power failure.



## Section 2

### Press Controls

#### 2.1 Basic Press Controls

##### Isolator Switch

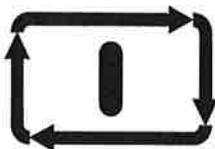
Position zero (0), Machine isolated from the electrical supply.

Position one (1), Electrical supply connected to the machine.

##### Motor 'Start' Push Button



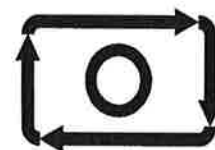
Energises the electrical control system, and starts the electric motor.



##### Motor 'Stop' Push Button



De-energises the electrical control system and stops the electric motor.



## Section 2

### Press Controls (cont)

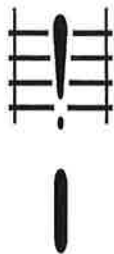
#### Re-set Push Button



When the machine has not been operated for a long period with the head in the idling condition, it is possible that the head will sink below the upper limit, and in certain circumstances may sink slightly out of parallel. If the out of parallelism exceeds 12 mm ( $\frac{1}{2}$ " ) the control safety switches will operate preventing the machine from operating after the START push button has been depressed. The associated lamp will illuminate. Depress the RE-SET push button and hold, the head will rise to the upper limit position correcting its 'out of parallelism' resuming normal machine operation until the lamp extinguishes. Release the push button.

NOTE: IF THE HEAD DOES NOT ASSUME A PARALLEL CONDITION IMMEDIATELY, ON DEPRESSION OF THE RESET BUTTON, BUT INCREASES ITS OUT OF PARALLELISM, THEN A FAULT EXISTS AND THE MACHINE REQUIRES CORRECTIVE SERVICE.

#### Emergency Stop / Guard Open



Whenever an "E" Stop is activated the associated lamp lights up. When the "E" Stop condition is cleared the lamp will extinguish.

If the machine is fitted with posi-stops or pivot guards the lamp will illuminate if either the posi-stop door is open or a pivot guard is opened.

## Section 2

### Press Controls (cont)

#### Adjust/Operate Setting Push Button

##### Adjust



Depress the push buttons to latch into position. Simplifies setting-up by operating the hydraulic system at low pressure.

##### Operate



Push and release for normal operation.

##### Indicator Lamp



Lights up when setting push button is on ADJUST to indicate the hydraulic system is at low pressure.

#### Lower Limit Dial



Adjusts the setting of the lower limit.



#### Upper Limit Dial



Adjusts the setting of the upper limit.



## Section 3

### BASIC PRESS START UP PROCEDURE

1. Switch on any air supply if fitted.
2. Check that all covers and guards are in place.
3. Switch on the Main Power supply Isolator.
4. Press the motor start button.
5. Depress the Adjust / operate push button and observe the head rising to the upper position.
6. Cycle the press several times to purge any air from the hydraulic system.
7. Ensure the hydraulic oil gauge shows the level midway up it's graduations.
8. The press is ready to be set in accordance with any instructions in the Standard Option / Special Application section.

## Section 4

### BASIC PRESS SHUT DOWN PROCEDURE

1. Remove all material and dies from the cutting area.
2. Press the Adjust / Operate push button and check the lamp has illuminated.
3. Position a suitable flat piece of material in the work area. This could be the cutting matrix or the work tray, if fitted. A suitable sheet of smooth wood would be acceptable.
4. Initiate the cycle to lower the press head. The head will come to rest on the support medium.
5. Press the motor stop button.
6. Switch off the mains isolator.

## Section 5

### BASIC PRESS SET-UP PROCEDURE

The set up procedure is the same for both normal and inverted cutting.

#### 5.1 Electronic Lower limit.

The lower limit needs to be adjusted every time there is a change of material, die or cutting pad within the machine.

1. Rotate the posi-stops (if fitted) to their lowest position.
2. Select low pressure adjust mode.
3. Turn the lower limit potentiometer to zero on the control panel.
4. Feed in position the cutting matrix under the head.
5. Initiate a head down stroke until the head comes to rest at the bottom of it's stroke.
6. Increase the setting on the lower limit potentiometer until the indicator light extinguishes.
7. Release the adjust/operate push button and the head will rise back to the upper limit.
8. Carry out a trial cut to check that a satisfactory cut will occur (say using a sheet of paper).
9. Adjust potentiometer if necessary. (decreasing the number increases the depth of cut)

#### 5.2 Upper Limit.

The upper limit may need to be adjusted occasionally to keep the open daylight of the machine to a minimum, so as to maximise both the efficiency of the machine and keep cycle time to a minimum.

1. Select low pressure adjust mode.
2. Turn the upper limit potentiometer to zero on the control panel.
3. Feed in position the cutting matrix under the head.
4. Initiate a head down stroke until the head comes to rest at the bottom of it's stroke.
5. Set-up the lower limit or posi-stops if required.
6. Release the adjust/operate push button and the head will attempt to rise back, but as the upper limit is at the same position as the lower limit the head will not move.
7. Increase the setting of the upper limit potentiometer until the rises to the required daylight position.

#### 5.3 Manual Posi-Stops.

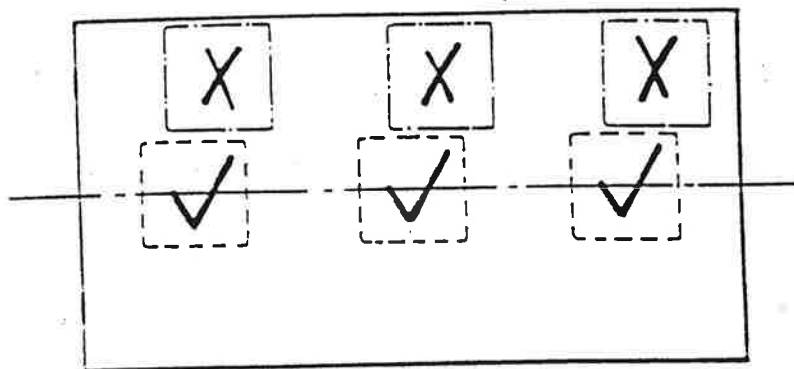
The TC 75 range of presses have been designed to be used with adjustable head posi-stops and manual versions are only fitted as a standard option.

See Standard Option Supplement for details.

## Section 6.

### GOOD CUTTING PRACTICE

1. Always position the work to be cut directly in the centre of the cutting area to avoid off centre loads in the press structure.
2. Do not allow the build up of waste material in the cutting area.
3. Always use sharp cutting knives.
4. Always re-set the lower limit when changing dies or materials to avoid driving the knife blades into the matrix and reducing the life of the matrix.
5. Always re-set the upper limit of the head to ensure correct clearance when the material is being positioned in the cutting area.
6. Use paper for establishing the initial lower limit setting to minimise fine adjusting time and risk of over cutting into the matrix.



## Section 7

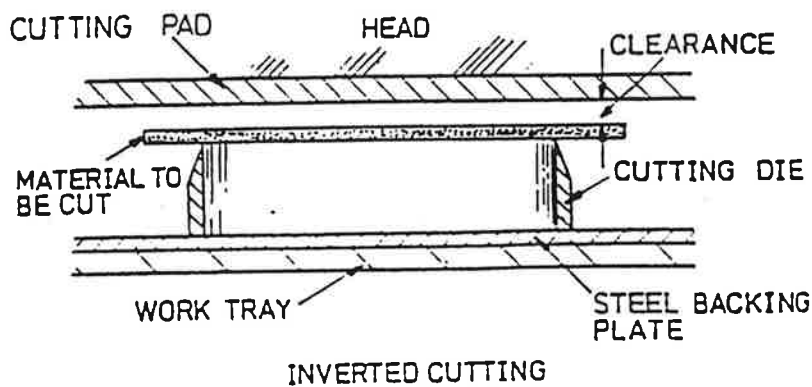
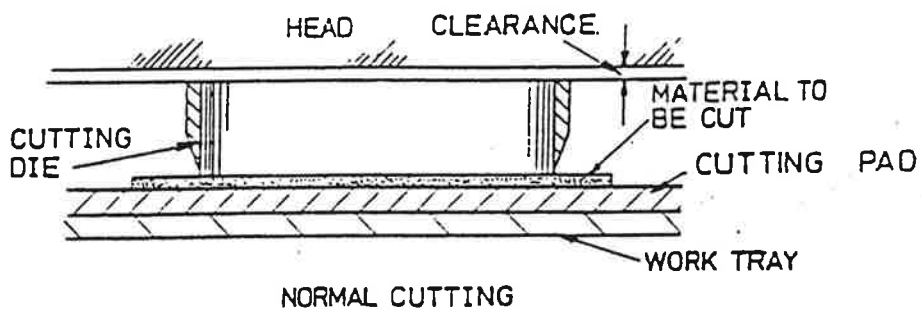
### TYPES OF CUTTING

#### 1. Normal Cutting

This type of cutting is carried out with the die mounted under the press head and the material feed onto the press bed via an independent medium such as a tray or cutting belt.

#### 2. Inverted Cutting

This method of cutting has the cutting matrix mounted under the head and the die placed 'blade up' on the press bed; the material is placed on the die prior to being located on the press bed.





## Section 8

### LUBRICATION AND MAINTENANCE

The following schedule is based on the use for a single shift per working day.  
For two and three shift operations, the recommended maintenance intervals should be reduced accordingly.  
If in doubt contact Samco for further information.

Bed pillar lubricant - ELF MULTI MoS2 (or equivalent).

Head bearing pin lubricant - ELF MULTI MoS2 (or equivalent).

Hydraulic oil - ELF ELFLONA 46 (or equivalent).

#### 8.1 Daily

1. Check the level of the hydraulic oil in the fluid level gauge on the filler neck of the tank and top up if necessary.

#### 8.2 Weekly

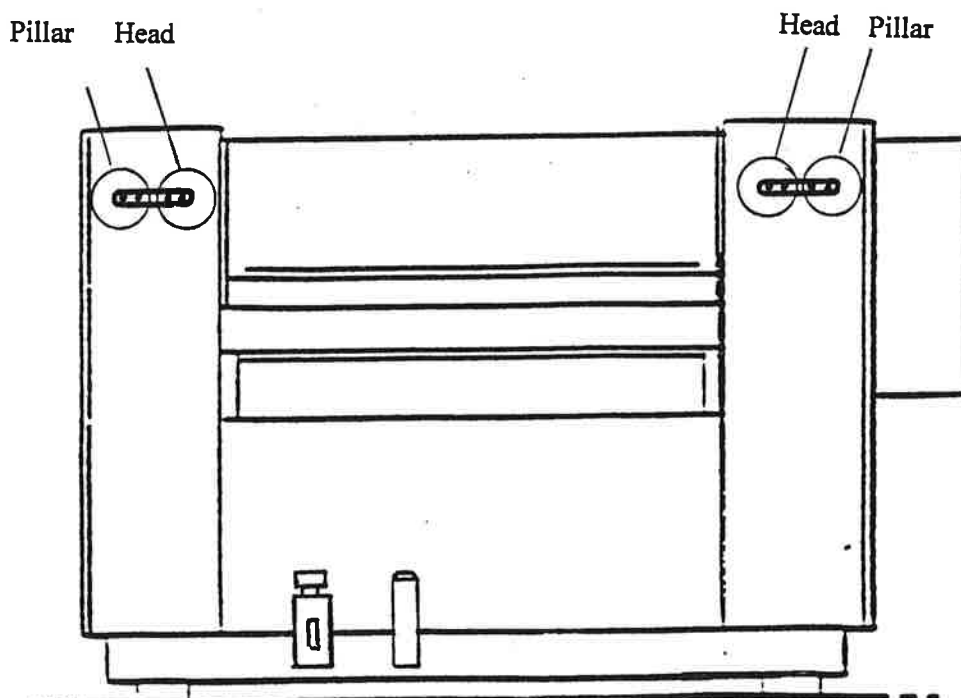
1. Using in the grease gun, give each of the four pillar nipples ten strokes of the grease gun.
2. Using in the grease gun, give each of the four bearing pin nipples three strokes of the grease gun.

The nipples are on the front of the machine on both blue side panels.

#### 8.3 24 Monthly

1. Change the contents of the hydraulic oil tank and the filter.
2. Replace the suction filter
3. Replace the oil filter element.

**IMPORTANT: DO NOT RUN THE HYDRAULIC POWER UNIT WITHOUT OIL IN.**



# **Samco-Strong Limited**

## **TC-75 Cutting Press**

### **PART 2**

#### **BASIC PRESS**

#### **SERVICE INSTRUCTIONS**

## PART 2

### Contents

#### Section 1 - General

- 1.1. INTRODUCTION
- 1.2. TECHNICAL DATA
- 1.3. SAFETY
- 1.4. SPARE PARTS ORDERING

#### Section 2 - Installation

#### Section 3 - General Assemblies and Parts Lists.

*For details see the Parts List Manual*

#### Section 4 - Description.

- 4.1. BASIC PRESS HYDRAULIC SYSTEM
- 4.2. BASIC PRESS ELECTRICAL SYSTEM
- 4.3. BASIC PRESS SETTING UP PROCEDURE
- 4.4. FAULT FINDING

## Section 1

### General

#### Introduction

The TC-75 Hydraulic Cutting presses are an extremely tough, reliable and easily maintained range of high tonnage twin pillar presses. They are hydraulically operated and electronically controlled.

The bed is a robust steel fabrication.

The triple area cylinder design allows fluid regeneration for increased performance.

The two hydraulic cylinders which provide the power for cutting are attached to the base thrust plates by their piston rods. The cylinder is connected to the press head by trunnion pins.

The head is of a similar construction to the bed. Tapped holes are provided in the front and rear faces of the head for attaching the Inverted Cutting Parts, Standard Option No. 1. (to order).

The hydro-mechanical servo flow control valve, meters flow to each cylinder, ensuring that the head remains parallel with the bed throughout the cutting stroke.

The Hydraulic oil pressure is provided by an integral power unit consisting of a 7.5 kW (10 HP) electric motor driving a hydraulic pump and a pressure relief valve. The pressure relief valve protects the press from being overloaded, it is set to ensure that the hydraulic pressure does not exceed the permitted maximum, it also off loads oil from the pump during the idling period.

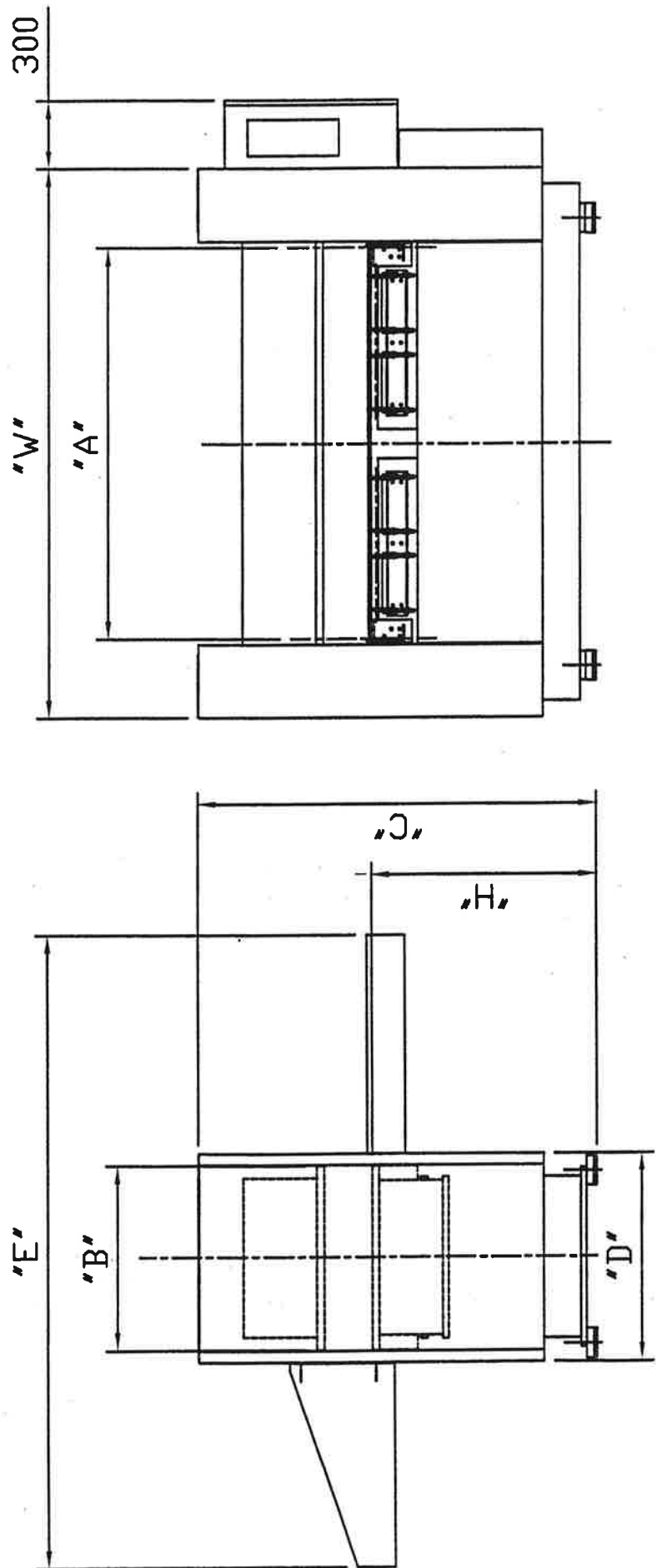
The stroke control unit controls the cutting stroke. The unit consists of adjustable upper and lower limit potentiometers. Each having graduated scales.

The electrical control enclosure is situated directly on the right hand side of the machine.

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

Section 1.

Technical Data.



BASIC PRESS OUTLINE

**SECTION 1.2****TC75 HYDRAULIC CUTTING PRESS TECHNICAL DATA**

		1108	1708
CUTTING WIDTH - mm (ins)	'A'	1148 (45.2)	1708 (67.2)
CUTTING DEPTH - mm (ins)	'B'	812 (32)	812 (32)
PRESS WIDTH - mm (ins)	'W'	1860 (73.2)	2400 (94.5)
PRESS DEPTH - mm (ins)	'D'	920 (36.2)	920 (36.2)
OVERALL DEPTH - mm (ins)	'E'	2800 (110.2)	2800 (110.2)
PRESS WEIGHT - TONNES (U.S TONS)		2.66 (3.0)	3.38 (3.8)
DYNAMIC LOAD PER FOOT - TONNES (US TONS)		2.0 (2.2)	2.54 (2.8)
		STANDARD	EXTENDED
PRESS HEIGHT - mm (ins)	'C'	1750 (68.9)	1750 (68.9)
BED HEIGHT - mm (ins)	'H'	995 (39.2)	1075 (42.3)
MAXIMUM OPEN DAYLIGHT - mm (ins)		212 (8.3)	292 (11.5)
MAXIMUM STROKE - mm (ins)		174 (6.8)	254 (10)
MAXIMUM CUTTING CAPACITY		68 TONNES (75 US TONS)	
DOWNSTROKE APPROACH SPEED		132 mm/SEC	
DOWNSTROKE CUTTING SPEED		38 mm/SEC	
UPSTROKE SPEED		102 mm/SEC	
MINIMUM OPEN DAYLIGHT		38 mm	
HYD POWER UNIT OIL CAPACITY		117 Litres (26UK Gallons) (31 US GALLONS)	
ELECTRIC MOTOR CAPACITY		7.5 KW (10 HP)	

## Section 1.

### 1.3 Safety

**IMPORTANT:** Read and understand the safety section in the Operators Section of this machine manual and then observe the additional maintenance safety points

#### 1.3.1 Machine Set-up

- a) Move the machine only after reading the lifting instructions detailed in the Installation section.
- b) Make sure the machine is properly connected to the required electrical service by a competent electrical engineer. Also make sure the machine is connected to an approved earthing system in accordance with all applicable National and local electrical codes for Industrial Machines.

#### 1.3.2 Operation of the Machine

- a) Do not set this press up 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) 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.
- d) Do not tamper with the setting of the pressure relief valves or cartridge valves, which are factory set by a trained engineer. This is factory set for safe machine loading, and should only be adjusted by a trained serviceman.

#### 1.3.3 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.

## Section 1.

### 1.4 Spare Parts Ordering

**IMPORTANT:** When ordering spare parts, please quote the type of machine, the machine serial number (see information plate), the machine size, the component description and part number plus quantity. The specification of the parts can be found in the Parts List Manual.

#### EXAMPLE

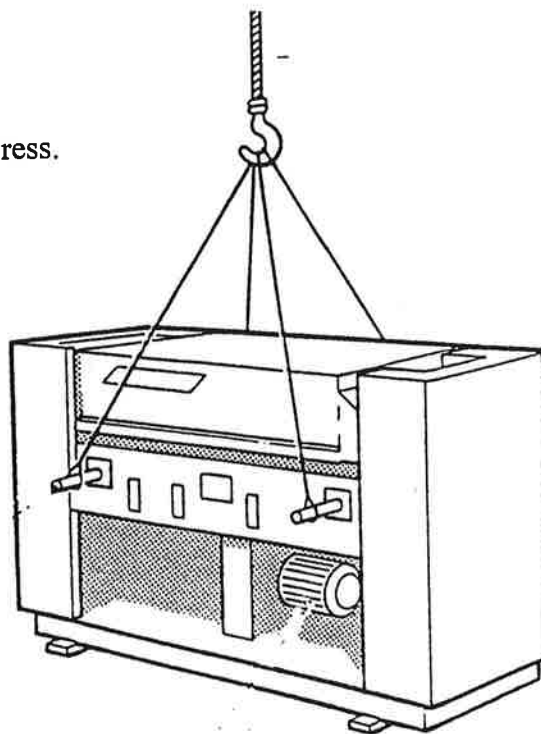
Machine	Size	Serial No.	Component	Part No.	Qty.
TC75	1708	750???	FUSE	NWEDxxxx	1



## Section 2

### Installation

#### 2.1. Lifting the Press.



Before lifting the Press, check the weight of the press by looking at the INFORMATION PLATE at the rear of the press. (See lifting drawing).

1. Before lifting the press all work handling devices (*tray arms, work trays etc*) and associated parts (*tray roller supports etc*) should be removed from the press.
2. The press can be lifted by passing spreader bars (*38mm dia (1 1/2")*) through the holes provided in the bed and slinging as illustrated above.

Alternatively the press can be lifted by a fork truck with the lifting arms positioned under the head. Before lifting this way the head must be in it's uppermost position and wedged in place using baulks of timber between the head and bed surfaces. The gap at this position is 212mm (8.33") on the standard machine and 292mm (11.5") on the extended daylight machine.

**IT IS EXTREMELY DANGEROUS TO USE A FORK TRUCK TO LIFT THE PRESS WITH THE HEAD IN ANY OTHER POSITION.**

3. Final positioning of the press can be achieved using a crow bar under the base and adjacent to the press feet.
4. Skates may be used for transportation only if placed under the feet of the press. To position skates, lift the press as previously described or using toe jacks under the bed after first removing the covers from the press.

#### 2.2. Checking for Level.

Install the press on a level re-inforced concrete floor capable of withstanding the dynamic load of the press.

Check that the press is level, using a precision engineers spirit level. Checks should be made on the bed surface from left to right and front to rear. Adjust feet as required until levelling is complete.

## Section 2.

### Installation (cont).

#### 2.3. Hydraulic Oil.

U.K. - Check that the level of the hydraulic oil is visible in the fluid level/temperature gauge on the power unit, top up the oil if necessary with pre-filtered Hydraulic oil only.

Export - Fill up tank with pre-filtered Hydraulic oil only.

Check that the level of the hydraulic oil is visible in the fluid level/temperature gauge on the power unit, top up the oil if necessary.

NOTE:- After initially cycling the press several times, it will be necessary to 'top up' the power unit due to the oil being distributed initially through an empty hydraulic system.

NEVER USE OIL STRAIGHT FROM THE BARREL.

#### 2.4. Removing the Protective Coating

All machines for EXPORT:-

Protective Coating - Anti-Moisturising spray. (Can be removed using paraffin).

NOTE Ensure that the immediate area around the machine is well ventilated while removing the protective coating with paraffin.

#### 2.5. Lubrication

Before operating the machine, it is important to lubricate the main assemblies as specified in the LUBRICATION AND MAINTENANCE section of the machine manual.

#### 2.6. Tool Kit.

See Unit List TK2 for details.

#### 2.7. Mounting the MAINS ISOLATOR

Mount the 'MAINS ISOLATOR' not supplied by Samco-Strong Limited on a wall or stanchion near to the supply point on the machine (Do not mount the mains isolator on the machine). The mains isolator must be installed to comply with all local safety regulations. If there is any doubt, contact Samco for guidance.

## Section 2.

### Installation (cont).

#### 2.8. Connecting the Electric Leads

- a) With the Mains Isolator switched OFF turn the electrical box isolator handle to the zero position on the dial.
- b) Using the key provided, unlock the two door latches to open the door. The electrical leads enter the box through the top of the right hand electrical enclosure.
- c) Connect the three phase leads to the isolator at the top of the box.
- d) Connect the earth lead to the stud at the centre of the top panel. Shut and lock the door, turn isolator handle to position one (1).
- e) Ensure isolator terminal shroud is replaced after connections made.

#### 2.9. Testing the Motor Rotation

Switch ON the electrical box isolator and depress the START button. Check that the motor rotates in the direction indicated by the arrow on the motor casing by observing the drive coupling rotation through the aperture in the bell housing. If the motor is rotating in the wrong direction, depress the STOP button, switch off the mains isolator, and reverse any two of the phase leads at the terminals 1, 3, or 5 in the electrical enclosure.

#### 2.10. Check the Head and Bed for Parallelism

During assembly the head and bed are set parallel to within 0.2 mm (0.008"). If it is necessary to re-set the parallelism refer to the Basic Press Setting-Up Procedure.

## Section 3.

### General Assemblies and Parts Lists

*For details see the Parts List Manual.*

## Section 4.

### 4.1 Basic Press Hydraulic System.

All reference letters and numbers to be read in conjunction with the Hydraulic circuit located in Part 5 of this manual.

#### 4.1.1. Press Functions.

##### 1. Idling.

This is the condition when the press is waiting at the top of it's stroke ready for operation.

##### 2. Downstroke - Rapid Approach.

This is the condition when the head approaches the bed at fast speed prior to cutting.

##### 3. Downstroke - Low Pressure Adjust.

This is the condition when the head approaches the bed at slow speed for setting up purposes.

##### 4. Downstroke - Cut.

This is the condition when the die is being forced through the material being cut.

##### 5. Upstroke.

This is the condition when the head returns from a cut stroke back to the upper limit.

## Section 4.

### 4.1.2. Hydraulic Circuit Component Function.

#### 1. Hydraulic Pump Unit. (Item 12)

This pump unit consists of a fixed displacement vane pump driven by 7.5 kW (10 HP) multi-wound electric motor and flywheel arrangement. Both the pump and motor are flange mounted to a bracket with the flywheel located between. The flywheel is used to aid the motor during cutting releasing it's stored energy as required. Dependant on electrical frequency the pumps displacement will vary.

#### 2. Main Relief Valve. (Item 10)

This valve is the safety valve for the system and protects the system from overloading. This is factory set at 276 Bar (4000 PSI) and should not be altered.

#### 3. Vent Valve. (Item 11)

This valve controls what pressure the system runs at depending on which function is required at the time, by switching the main relief valve (Item 10) in or out of the circuit.

- a. Idling & Low Pressure Adjust - The valve is de-energised and the system pressure is controlled by the vent pressure of the main relief valve (item 10).
- b. Cut stroke, Upstroke and Rapid Downstroke - Solenoid *Isol* is energised, closing off the vent line of the main relief valve (item 10) allowing full relief valve pressure to be raised.

#### 4. Pressure Reducing Valve. (Item 9)

This valve controls the pressure at which is applied to the pilot stages of the 2 directional control valves (items 5 & 6).

#### 5. Check Valve. (Item 8)

This valve locks oil in the each cylinder under idling, thus maintaining the head at the upper limit position.

#### 6. Directional Control Valves. (Items 5 & 6)

These valves change the direction of the oil flow from one side of the cylinder to the other.

- a. **Idling** - When the press is idling the directional control valves are positioned spring bias with all of the solenoids de-energised. All ports are connected together but due to the differential areas of the cylinder the head is parked at it's upper limit position as the load generated by head weight on the check valve (item 8) is greater than the load generated by the pump, thus locking oil in the lower cavity of each cylinder. The pump is off loaded at this time by the unloading valve (item 11).

## Section 4.

### 4.1.2. Hydraulic Circuit Component Function.

#### 6. Directional Control Valves. (Items 5 & 6) (cont)

**b. Downstroke (*adjust*)** - When a downstroke is initiated, solenoids *2asol* & *2bsol* are energised only and oil is directed to the tank from the top rod area of the cylinders by the valves, whilst the oil from the pump joins the oil from the upper annulus of the cylinders and is fed into the lower annulus area of the cylinders until the press comes to rest on the cutting matrix.

**c. Downstroke (*rapid*)** - When a downstroke is initiated, solenoids *2asol* & *2bsol* are energised at the same time as the vent valve solenoid *1sol* and oil is directed to the tank from the top rod area of the cylinders by the valves, whilst the oil from the pump joins the oil from the upper annulus of the cylinders and is fed into the lower annulus area of the cylinders until the press reaches the operator set slow down position.

**d. Downstroke (*cut*)** - When a position above 12mm ( $\frac{1}{2}$ " ) above the lower limit is reached the slowdown valve (item 14) is selected by energising solenoid *3sol* and oil from the upper annulus of the cylinders is fed back to tank causing the speed of the press head to slow down. If however the material is reached before the 12mm ( $\frac{1}{2}$ " ) position generating a significant amount of load the slow down is initiated by opening up the counterbalance valves (items 3&4). Both valves (items 5&6) are still energised at this point.

**e. Upstroke** - The upstroke is initiated from the lower limit switch, solenoids *2asol* & *2bsol* are de-energised. The oil is then re-directed from the lower annulus area of the cylinders combining with the oil from the pump and is fed to both the upper rod and upper annulus areas of the cylinder causing the head to rapidly rise. When the upper limit switch is reached the vent valve solenoid *1sol* is de-energised and the head stops.

#### 7. Balancing Valve. (Items 7)

Under normal operating conditions with the head running up and down in a parallel to the bed this valve is positioned centrally and have no effect on the system. However, if the head and bed become out of parallelism the valves spool is moved by the balancing linkage to correct the error until a parallel condition is obtained and the linkage re-centralises the valve spool. When the spool is moved, the leading cylinder are slowed down until the trailing cylinder catch up, and this achieved by restricting the pump flow to the leading cylinder.

#### 8. Check Valves. (Items 1 & 2)

These check valves open to allow oil to flow from the upper annulus to the lower annulus areas of the cylinders when the press head is travelling towards the bed. When the slow down feature is initiated the check valve closes.

## Section 4.

### 4.1.2. Hydraulic Circuit Component Function.

#### 10. Slowdown Valve. (Item 14)

This valves function is to provide a slow down facility for the press head just prior to the cut stroke by opening up the upper annulus areas of the cylinders to tank when the press head reaches a position 12mm ( $\frac{1}{2}$ " ) approximately above the lower limit position.



## Section 4.

### 4.1.3. Circuit Sequencing.

#### a. Idling.

All solenoids de-energised.

Oil from the pump is directed to tank through the main relief valve (item 10) at vented pressure.

Oil is trapped in cylinders by valve (item 8).

#### b. Downstroke - Rapid Approach.

Vent valve (item 11) solenoid *1sol* energised selects main relief valve (item 10) to it's full pressure setting.

Directional valves (items 5 & 6) solenoids *2asol* & *2bsol* are energised.

Oil flows from the pump through the check valve (item 8) and through the balancing valve (item 7) to the lower annulus area of the cylinder after combining with the oil from the upper annulus area of the cylinder which has flowed through check valve (item 1 or 2).

At the same time oil from the upper rod area of the cylinder is passed back to tank through the directional valves (items 5 & 6).

#### c. Downstroke - Cut.

Vent valve (item 11) solenoid *1sol* is still energised selects main relief valve (item 10) to it's full pressure setting.

Directional valves (items 5 & 6) solenoids *2asol* & *2bsol* are energised.

When the press head reaches a position 12mm ( $\frac{1}{2}$ " ) approximately above the lower limit position the slowdown valve (item 14) solenoid *3sol* is energised and oil from the upper annulus area of the cylinder is passed back to tank through the valve.

Oil flows from the pump through the check valve (item 8) and through the balancing valve (item 7) to the lower annulus area of the cylinder.

At the same time oil from the upper rod area of the cylinder is passed back to tank through the directional valves (items 5 & 6).

#### d. Upstroke.

Vent valve (item 11) solenoid *1sol* is still energised selects main relief valve (item 10) to it's full pressure setting.

Directional valves (items 5 & 6) solenoids *2asol* & *2bsol* are de-energised on the press head reaching the lower limit.

Slowdown valve (item 14) solenoid *3sol* is de-energised.

Oil flows from the pump through check valve (item 8) , balancing valve (item 7) and directional valves (items 5 & 6) into the upper rod and upper annulus areas of the cylinder after combining with the oil from the lower annulus side of the cylinder. The oil must pass through the check valve function of the counterbalance valve (items 3 & 4) to fill the upper annulus area of the cylinders. When the head reaches the upper limit all the solenoids are de-energised and the machine returns to the idling condition.

## Section 4.

### 4.1.3. Circuit Sequencing. (Cont)

#### e. Low Pressure Adjust.

Vent valve (item 11) solenoid *1sol* is de- energised leaving the main relief valve (item 10) set at it's vent pressure setting.

Directional valves (items 5 & 6) solenoids *2asol* & *2bsol* are energised.

Oil flows from the pump at low pressure through the check valve (item 8) and through the balancing valve (item 7) to the lower annulus area of the cylinder after combining with the oil from the upper annulus area of the cylinder which has flowed through check valve (item 1 or 2) until the press head comes to rest on the cutting matrix. The pressure generated in this function is approximately equal to the head weight.

At the same time oil from the upper rod area of the cylinder is passed back to tank through the directional valves (items 5 & 6).

## Section 4.

### 4.1.4. Valve Settings and Adjustments.

#### a. Main Relief Valve (item 10).

This valve is factory set to 276 Bar (4000 PSI) and should not be adjusted. If for any reason this valve should be suspected as not functioning properly then a replacement factory set valve should be fitted.

#### b. Pressure Reducing Valve (item 9).

This valve is set to suit each machine to attain optimum machine performance and normally will not require adjustment. Adjustment will only be required for the following reasons :-

1. Head will not rise to the upper limit - **Increase setting.**
2. Erratic head movement - **Decrease setting.**

Adjust sequence.

1. Set press stroke to maximum.
2. Undo locking nut. (15mm a/f spanner)
3. Back off adjusting screw (4mm a/f hex key) fully out.
4. Screw back adjusting screw  $\frac{1}{2}$  turn.
5. Select low pressure adjust and cycle press observing for a smooth machine operation throughout the machine's stroke.
6. Tighten locknut if smooth operation of the machine occurs. If not increase setting  $\frac{1}{4}$  turn until smooth operation occurs.
7. Operate machine to check that the machine still runs smoothly.

#### c. Counterbalance Valves (Items 3 & 4).

This valve is factory set to 210 Bar (3000 PSI) and should not be adjusted. If for any reason this valve should be suspected as not functioning properly then a replacement factory set valve should be fitted.

#### d. System bleeding of air.

To expel air from the system the machine will need to be cycled several times.

## Section 4.

### 4.2 BASIC PRESS ELECTRICAL SYSTEM

#### 4.2.1 Basic Electrical circuit Elements

##### a. Hydraulic Pump Motor Control

The Hydraulic pump motor is started using a standard Star/Delta Starting circuit. On initial startup the motor will run in Star configuration for approximately 5 - 10 seconds before switching into Delta, this allows the pump motor to run up to full speed at reduced current to prevent the mains electrical supply from being overloaded from potentially high start up current. If necessary the Star to Delta delay time is can be adjusted on the Star/Delta timer in the main electrical enclosure, this timer should not be set to less than approximately 5 seconds. Indicator lamps are fitted to signal that the mains supply is on, red lamp, and that the pump motor is running, green lamp, when the pump motor is running the power on lamp will extinguish.

##### b. Emergency Stop/Guard Monitoring Circuits

On presses fitted with emergency stop controls and guard interlock switches (*ie. pivoting guards, pneumatic lift guards, the positive stop access doors*) these items are monitored by a dual circuit safety device that will stop the machine from functioning should an error be detected in either of the two safety circuits. The state of these monitor units are indicated by LED's on the front of the units, the red LED signals that power is being supplied to the unit. The two green LED's show the state of the two safety circuits, to enable press operation both of these LED's should be illuminated. Additional monitoring units maybe fitted on machines that have additional guarding at the front and rear of the press.

##### c. Press Head Stroke Control

The stroke limits of the press head are controlled by and electronic stroke control board. This system monitors the voltage from a rectilinear potentiometer, which is fitted to the press balancing linkage, and compares this with the voltage from the upper and lower limit setting potentiometers.

When the voltage from the linear potentiometer matches that of the upper or lower limit potentiometers an associated relay on the stroke control board changes state signalling to the control circuit that the appropriate limit has been reached.

The relay that signals the upper limit is de-energised while the press head is above the upper limit and is energised when the head goes below this limit. The lower limit relay is energised while the head is above the set point and de-energises when the press head reaches it cutting position, as soon as the head rises above this point the lower limit relay is operated.

The voltage to the upper and lower limit potentiometers is 30VDC +/- 5% and the voltage to the linear potentiometer is 26VDC +/- 5%. The upper limit potentiometer is a single turn 10K linear potentiometer and the lower limit a 10 turn 10K linear potentiometer.

An alternative to using the electronic lower limit is the positive stops (*available as a standard option*) which provide a physical stop for the press head. These stop are fitted with two limit switches which are set to be operated just before the press head reaches the positive stops, both of these switches must be made to stop the press head downstroke.

## Section 4.

### 4.2.2. Electrical Drawings

Electrical schematics and panel layout drawings are supplied separately.

## Section 4.

### 4.3 Basic Press Setting-up Procedure.

#### 4.3.1. Setting the Head to Bed Parallelism.

To obtain the parallelism between the head and bed, five friction setting blocks (SDC 4156, JT 2782 and SL 107ME) and a suitable dial gauge to read their heights are required.

- a. Set the lower limit to 50 mm and adjust the setting blocks 5-10 mm above the press lower limit setting.
- b. Place a setting block at each corner of the bed and one in the centre of the bed.
- c. Cycle the press.
- d. Measure the heights of the five blocks noting their relative positions on the head.
- e. To level the press first check the parallelism between the left hand cylinder and the right hand cylinder to give an overall parallelism within 0.25 mm (0.010").

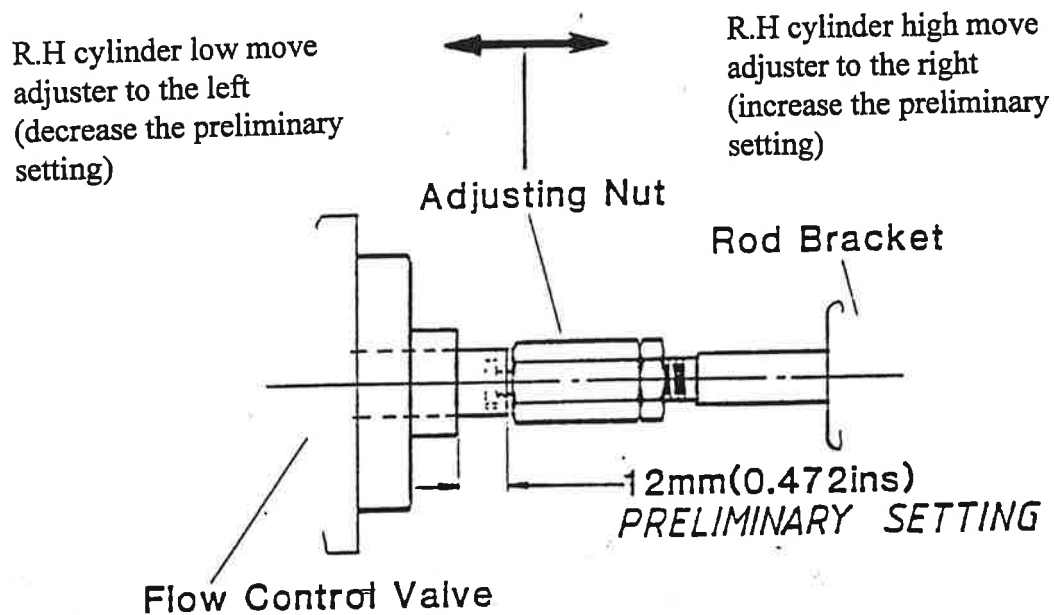
**EXAMPLE** If the left hand setting block is zero and the right hand setting block is 0.5mm (0.020 ") then the flow control valve adjusting nut must be adjusted towards the left hand cylinder.

- f. After adjustment cycle the press and re-check the parallelism, continue this procedure until the setting blocks are parallel within 0.25 mm (0.010").
- g. Finally tighten securely the flow control valves adjusting nuts, and locknuts. Cycle the press and check that the overall parallelism is within 0.25mm (0.010").

## Section 4.

### 4.3.1. Setting the Head to Bed Parallelism.

#### FLOW CONTROL VALVE



#### TYPICAL POSITIONING OF PLUNGER BLOCKS

Heights should be set the same to within 0.25mm (0.010").



## Section 4.

### 4.3.2. Setting the Upper and Lower Limits.

#### a. Upper Limit

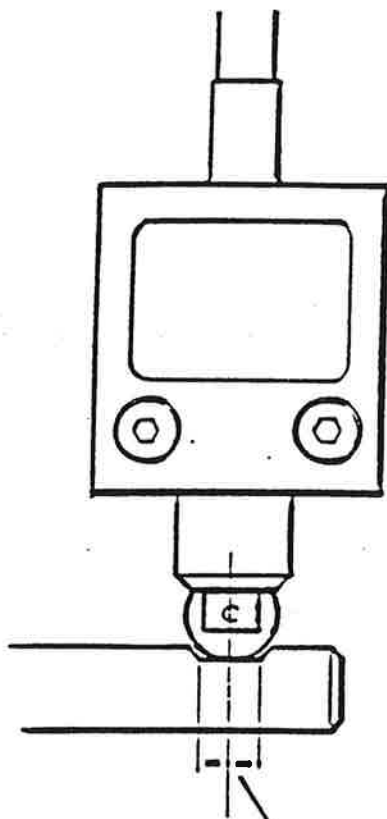
1. To set the extreme upper limit first turn the upper limit potentiometer fully clockwise at which the head should rise to the new set position. If the machine tends to stall, this is due to the cylinders pistons hitting the tops of the cylinders and the upper limit must be backed off until the stall condition is released.
2. Trim VR2 on the PCB such that the maximum daylight is 212mm with the upper limit potentiometer on the control panel set to its maximum. It is important that during this procedure, the relief valve is not set too high, otherwise a full stall may occur, stopping the motor and releasing the thermal overload.

#### b. Lower Limit

1. 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.
2. The trimmer potentiometer VR1 on the PCB should then be trimmed such that the closed daylight of the press is 38mm with the lower limit potentiometer set to zero.

### 4.3.3. Setting the Safety Switch SQ1.

1. Place four steel blocks identical height on the bed. Select the ADJUST mode, and then lower head onto the blocks.
2. Position the safety switch as shown in drawing.
3. Finally check the switch operation by momentarily depressing the switch roller during a cutting cycle which will halt the head movement temporarily.



**Adjust switch until the roller  
just touches the flat of  
the operating rod**

**Roller must be in centre of the flat**



## Section 4.

### 4.4 Fault finding.

Sequence	fault	Cause	Remedy
Switch on Electrical box indicator and depress the start push button	Motor fails to start	Faulty push button	a. Check push button function b. Replace push button unit
		Thermal overload is open	a. Check that overload rating is the same as stamped on the motor label b. Wait 2 minutes for thermal control to cool c. If overload will not stay closed check motor d. Check fuses in the mains isolator
		Starter not operating	a. Replace starter if the coil/s are faulty b. Main fuses blown - replace isolator.
Motor starts, adjust/operate push button set to operate	Head does not rise to upper limit	Adjust/operate push button is set to adjust	a. Set to Operate mode
		Head out of parallelism exceeds 12mm (½")	a. Depress RESET push button until press head resets at the upper limit
		Stroke control board faulty	a. Replace if necessary

## Section 4.

### 4.4 Fault finding.(cont)

Sequence	fault	Cause	Remedy
Motor starts Adjust/operate push button set to operate (cont)	Head does not rise to the upper limit (Cont)	Pressure reducing valve incorrectly set	a. Re-adjust setting see procedure Part 2 Section 4.1.4.
		Faulty solenoid coil	a. Check the operation of all solenoids b. Replace faulty solenoid valve. c. Down stroke Relay not energising.
		Control fuse blown	a. Replace the fuse
		Low oil level	a. Check oil level b. Top-up oil tank
		Balancing valves linkages are binding	a. Free linkage b. Lubricate linkage.

## Section 4.

### 4.4 Fault finding.(cont)

Sequence	Fault	Cause	Remedy
Head rises to upper limit and cut stroke push button(s) depressed	Head does not descend	Push button(s) faulty	a. Check push button(s) functions. b. Replace push button(s)
		Stroke control board faulty	a. Check function & replace if req'd
		Posi-stop switches faulty (if fitted)	a. Check switches function correctly & replace if necessary
		Down stroke relay faulty	a. Check function & replace if necessary
		Faulty solenoid coil	a. Check operation of all solenoids b. Replace faulty solenoid(s) c. Down stroke relay not energising check operation of timer
Head descends in adjust sequence	Cutting die fails to penetrate	Lower limit set too high	a. Decrease the lower limit setting see procedure Part 1 Section 5
		Pilot relief valve setting too low	a. Re-adjust to correct setting see procedure Part 2 Section 4.1.4.

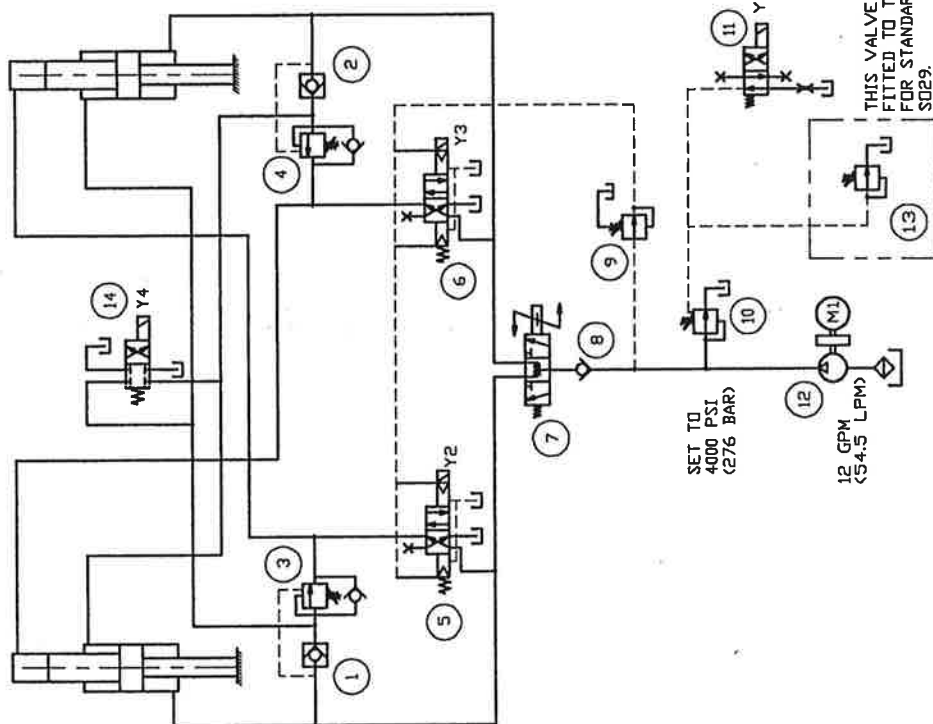
## Section 4.

### 4.4 Fault finding. (Cont)

Sequence	fault	Cause	Remedy
Head reaches the bottom of stroke	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 valves linkages binding or slack	a. Check linkage movements and lubricate
		Balancing valve setting-up incorrect	a. Check head to bed parallelism and adjust if necessary see procedure Part 2 Section 4.3.1.
	Press stalls when head reaches the bottom of stroke	Lower limit set too low	a. Reset lower limit see procedure Part 1 Section 5.
		Stroke control board faulty	a. Replace lower limit switch
		Posi-stop switches faulty (if fitted)	a. Check the switches function correctly & replace if necessary

NWFP-1302B

VALVE	DESCRIPTION
1 & 2	CHECK VALVE
3 & 4	COUNTERBALANCE VALVE
5 & 6	DIRECTIONAL VALVE
7	BALANCING VALVE
8	CHECK VALVE
9	REDUCING VALVE
10	RELIEF VALVE
11	UNLOAD VALVE
12	PUMP
13	RELIEF VALVE
14	DIRECTIONAL VALVE



RAPID APPROACH Y1, Y2 & Y3  
CUT Y1, Y2, Y3 & Y4  
UPSTROKE Y1  
ADJUST Y2 & Y3

Modifications

3RD. ANGLE PROJECTION		Material Spec:		Title: HYDRAULIC SCHEMATIC TC 75	
RELEASED		Drawing-No: NWFP-1302B		Sheet-No	
DATE	SIGNED	Used on: TC 75 RANGES		Scale:	
		Drg-Type: SCHEMATIC		Drawn-By: KO	
		Release: 1		Date: 16/07/97	
		Dimensions & Tolerances Whole MM $\pm 0.5$ MM 1Dec Place $\pm 0.2$ MM Angles $\pm 0.5^\circ$		Date:	
<p>IF IN DOUBT ASK 0116 261 0444</p> <p><b>SAMCO-STRONG Ltd.</b></p> <p>COPYRIGHT THIS DRAWING MUST NOT BE COPIED</p>					

# **Samco-Strong Limited**

**TC-75 Cutting Press**

**PART 3**

**VARIOUS**

**STANDARD OPTION SUPPLEMENTS**

## Contents

S.O. 0	Manual Work Tray
S.O. 1	Head Mounted Cutting Pad
S.O. 1A	Work Tray Steel Backing Plate
S.O. 6	Twin Tray
S.O. 7	Differential Daylight
S.O. 10	Single Manual Chase
S.O. 21P	Pneumatic Operated Power Trays
S.O. 26A	Totalising Batch Counter – Resettable
S.O. 26B	Pre-Settable Batch Counter
S.O. 33	Oiler Cooler
S.O. 34D	Ratchet Positive Stops
S.O. 36A	Head Mounted Adjustable Die Rails

## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 0 - Manual Work Tray**

#### **1. Overview**

This option consists of a work tray supported by low-friction spring-loaded rollers. It is pushed into and pulled out of the cutting area by the operator.

#### **2. Functional Description**

Depending on the arrangement of the items used in the cutting process, the work tray may hold the cutting matrix and/or cutting dies. It carries the material under the press head for components to be cut out or formed.

The work tray is guided by the tray arms while supported by the rollers. The head-stroke actuation buttons are next to the work-tray handles.

#### **3. Operator Instructions**

- 3.1 The operator loads the work tray.
- 3.2 The operator pushes the work tray under the press head and into the cutting area.
- 3.3 The cutting stroke is initiated by simultaneously depressing and holding the two-hand trip buttons. If any button is released, the head will return immediately to its upper limit.

#### **4. Limitations of Use**

- 4.1 Care should be taken when changing dies and the cutting matrix to ensure the machine's upper and lower limits are reset in the way described in the manual.
- 4.2 Cutting should never be performed directly on the work tray: a cutting pad should be used for head-mounted dies; die backing plates should be used when dies are placed on the work tray.

#### **5. Maintenance**

##### **5.1 Levelling**

The work tray is supported on spring-loaded rollers at each side of the press bed to give a working clearance of 3mm. The rollers are set to a fixed height and are adjustable:

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1. Undo the locknuts on the adjusting screws located at each side of the press bed.
2. Measure the clearance between the work tray and the bed at both sides.
3. Turn the adjusting screws until the work tray is level.
4. Re-check the clearance.
5. Tighten the locknuts.

## 5.2 Periodic Maintenance

The work tray should not require any maintenance apart from the occasional cleaning.

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## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 1 - Head Mounted Cutting Pad**

#### **1. Overview**

The cutting pad is fastened to the press head for inverted cutting.

#### **2. Functional Description**

Thick and thin cutting pads of differing material types are available :-

a. 25mm (1") thick cutting pads are fastened to the press head by fastening the pad to mounting plates which are in turn bolted to the press head.

b. 10mm (3/8") thick cutting pads are attached to a 3mm (1/8") steel backing plate using double sided adhesive tape. The plate is fastened to the press head by a number of retaining clips.

The tapped holes for the mounting plates or clips are already pre-drilled to the head.

#### **3. Operator Instructions**

The operator must continually check the pad for excessive wear or damage.

#### **4. Limitations Of Use**

4.1 Great care should be taken when changing dies and the cutting matrix to ensure that the machine's upper and lower limits are reset to the procedure stated in the main manual.

4.2 Die penetration into the pad should be kept to a minimum to increase cutting pad life.

4.3 Pad shifting devices are available to help extend the life of the pad by constantly moving the position of impact by the die on the pad.

#### **5. Maintenance Instructions**

##### 5.1 Inspection.

Daily - Inspect the cutting pad for excessive wear.

### 5.2 Procedure for the Removing of a 25mm Thick Cutting Pad.

- 5.2.1. Select adjust mode.
- 5.2.2. Set lower limit to zero and set the upper limit to about 25mm above the lower limit.
- 5.2.3. Remove the cutting die from the Work tray.
- 5.2.4. Position the Work tray under the press and operate the press until head comes to rest.
- 5.2.5. Remove the screws fastening the pad mounting plates to the front of the head.
- 5.2.6. Remove the screws fastening the pad mounting plates to the rear of the head.
- 5.2.7. Release the adjust button and the head will rise.
- 5.2.8. Remove the tray from the machine.
- 5.2.9. Remove the fastening screws holding the pad to its mounting plates and change the pad.

### 5.3 Procedure for Re-assembly of a 25mm Thick Cutting Pad.

- 5.3.1. Replace cutting pad complete with the mounting plates on to the tray.
- 5.3.2. Position the tray under the head.
- 5.3.3. Align pad mounting plate with the press head sides with great care.
- 5.3.4. Lever the pad assembly back in position, packing up each corner in turn.

*(Under no circumstances should the press head be lowered into position at this stage as mis-alignment in assembly could damage the mounting plates).*

- 5.3.6. Replace the mounting screws and tighten securely.
- 5.3.7. Reset the upper limit and release the adjust button and the head will rise clear of the tray.
- 5.3.8. Remove the tray from the machine and replace the cutting die to the tray.
- 5.3.9. Reset lower limit.

### 5.4 Procedure for the Removing of a 10mm Thick Cutting Pad.

- 5.4.1. Select adjust mode.
- 5.4.2. Set lower limit to zero and set the upper limit to about 25mm above the lower limit.
- 5.4.3. Remove the cutting die from the Work tray.
- 5.4.4. Position the Work tray under the press and operate the press until head comes to rest.
- 5.4.5. Remove the screws fastening the plate mounting clips to the front of the head.
- 5.4.6. Remove the screws fastening the plate mounting clips to the rear of the head.
- 5.4.7. Release the adjust button and the head will rise.
- 5.4.8. Remove the tray from the machine.
- 5.4.9. Remove the pad from its mounting plate and change the pad.

### 5.5 Procedure for Re-assembly of a 10mm Thick Cutting Pad.

- 5.5.1. Replace cutting pad complete with the mounting plate on to the tray.
- 5.5.2. Position the tray under the head.

## 5.5 Procedure for Re-assembly of a 10mm Thick Cutting Pad.(cont)

5.5.3. Select adjust mode.

5.5.4. Align pad mounting plate with the press head sides with great care.

5.5.5. Lever the pad assembly back in position, packing up each corner in turn.

*(Under no circumstances should the press head be lowered into position at this stage as mis-alignment in assembly could damage the mounting plates).*

5.5.6. Replace the mounting screws and tighten clips securely.

5.5.7. Reset the upper limit and release the adjust button and the head will rise clear of the tray.

5.5.8. Remove the tray from the machine and replace the cutting matrix to the tray.

5.5.9. Reset lower limit.

## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 1A - Work Tray Steel Backing Plate**

#### **1. Overview**

The Zintec steel backing plate function is to protect the work tray against damage.

#### **2. Functional Description**

The Zintec steel backing plate(s) must be sized approximately the same as the work tray.

It's function is to protect the work tray against damage caused by the dies whilst inverted cutting is performed.

Two or more plates may be required if the standard sheet size is exceeded.

#### **3. Operator Instructions**

3.1 The operator must ensure that the cutting die is placed centrally over the backing plate.

3.2 The operator must continually check the backing plate(s) for distortion and damage.

#### **4. Limitations Of Use**

The steel backing plate(s) should not be smaller than the cutting die and matrix.

#### **5. Maintenance Instructions**

Weekly - Inspect the tray backing plate(s) for distortion and damage.

## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 6 - Twin Tray**

#### **1. Overview**

Twin tray option is an adaption of the single tray option that allows two independent operators, one at the front and one at the rear of the machine, to use the same press to cut on.

Whilst the first operator is using the press to cut on the second operator can be loading/unloading components from their Work tray, hence increasing work rates and productivity.

#### **2. Functional Description**

2.1 Each Work tray is capable of using the full width of the head for cutting.

2.2 Each tray is interlocked so that the press cannot operate without one of the tray's being positioned at it's "tray out" position.

2.3 Fitted to each end of the press is an indicator beacon which informs the operator the status of the press.

#### **3. Operator Instructions**

3.1 When the operator sees the green light he can send in his work tray under the press head.

3.2 When the operator sees the red light the press is not ready for his work tray.

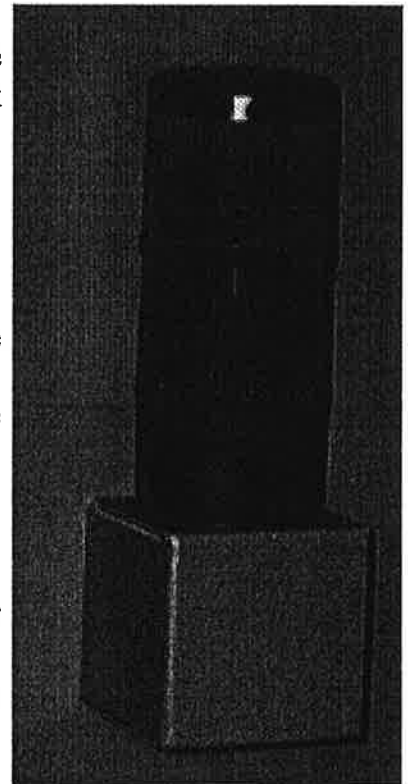
#### **4. Limitations Of Use**

4.1 Without using Differential Daylight Option (SO7) both cutting matrix's must be the same height.

4.2 When using twin trays it is recommended that Differential Daylight Option (SO7) should be used so that differences between the cutting matrix on each tray can be easily compensated for.

#### **5. Maintenance Instructions**

This option requires no maintenance.



## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 7 - Differential Daylight**

#### **1. Overview**

This option enables an operator working machine at the rear of a twin tray machine to be able to independently set the lower limit of the press to suit the die and the cutting matrix positioned on the tray or chase mechanism at his side of the press.

#### **2. Functional Description**

This option consists of a sets of controls mounted into the back face of the electrical enclosure on the TC range of presses or a control box mounted on the side cover of the machine on the FC range of presses.

These controls consist of an adjust button, adjust lamp and a lower limit potentiometer. On C.E. machines an "E" stop button may be fitted.

#### **3. Operator Instructions**

The set-up procedure for this option is the same as setting the lower limit of a basic press.

For TC ranges of presses see Part 1, Chapter 2, Section 2, of the main manual.

For FC 165 presses see Part 1, Section 5 of the main manual.

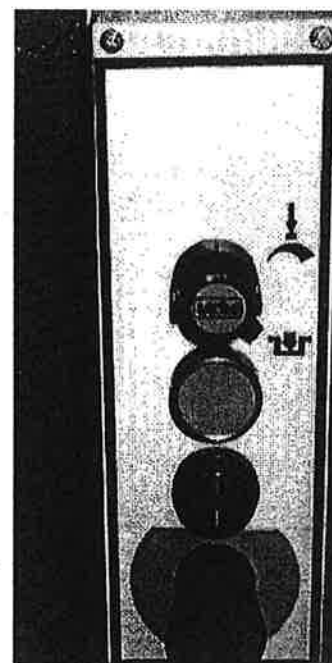
#### **4. Limitations Of Use**

This option is only required for twin tray and chase machine.

The upper limit must be set to suit the largest cutting matrix and is set on the main operator control station.

#### **5. Maintenance Instructions**

This option does not require any maintenance.



## STANDARD OPTION SUPPLEMENT

### SO10 SINGLE MANUAL CHASE

#### DESCRIPTION

The single manual chase is an alternative to a work tray and is normally used for holding wood rule forme dies for inverted cutting. It is of particular benefit in the manufacture of components which have punched holes, such as gaskets, since scrap material can fall through the open structure for collection in a container appropriately positioned beneath the chase.

The chase consists of a steel hollow section frame which carries two transverse sliding members for holding the die. It is supported on series of spring loaded rollers which carry the die into the press and which yield when load is applied.

To provide sufficient rigidity to the chase the height of the side members is inevitably greater than the height of most dies, therefore a bed backing plate is provided to make up the difference. This plate is 35mm (1.3") thick and results in the max. and min. daylight being reduced by 35mm.

#### OPERATIONS AND CONTROLS

A two hand trip, which is attached to the front surface of the work tray, is provided to comply with the current safety regulations. Both buttons must be depressed within 0.5secs. and held continuously during the press downstroke. If the buttons are released during the downward movement of the press head, the head will, without completing the cut stroke, return to its set upper limit. Both buttons must be released before another cycle can be started.

To ensure that the chase is fully "in" before tripping, a tray in limit switch is fitted which must be made before a down stroke can be initiated.

#### SETTINGS AND ADJUSTMENTS

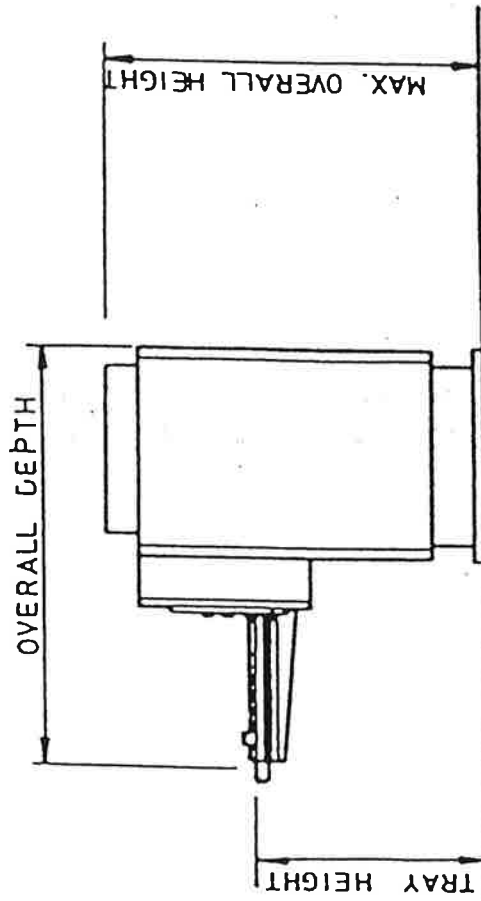
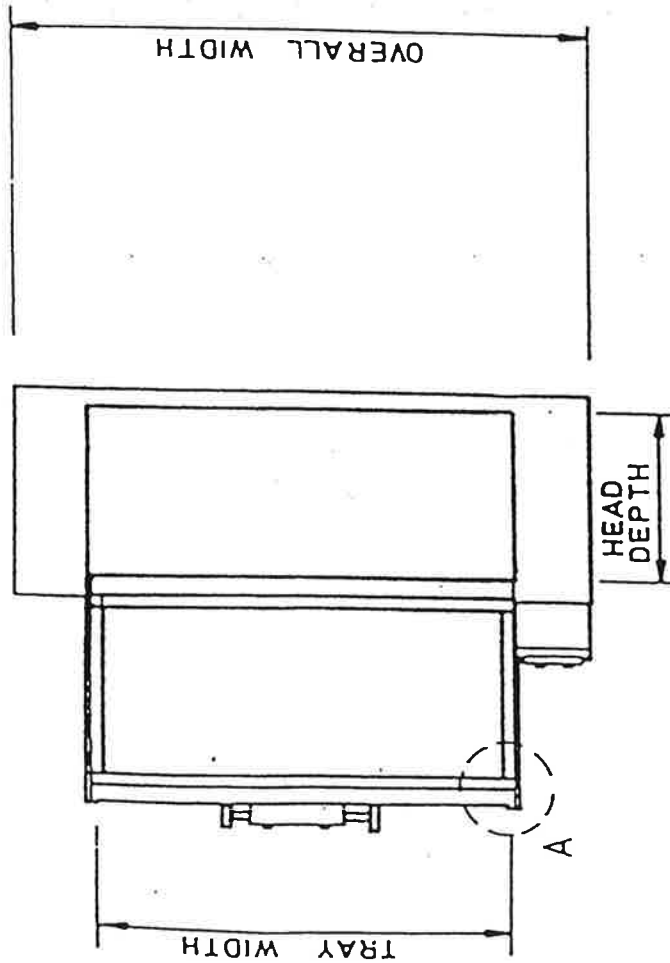
- 1) Set the tray in limit switch actuator screw such that the switch is just operated when the tray is fully in.
- 2) Adjust the spring tension on the tray roller assemblies to support the combined weight of the chase, the die and the material to be cut.

#### MAINTENANCE

Keep roller tracks and bed surface clear of debris.

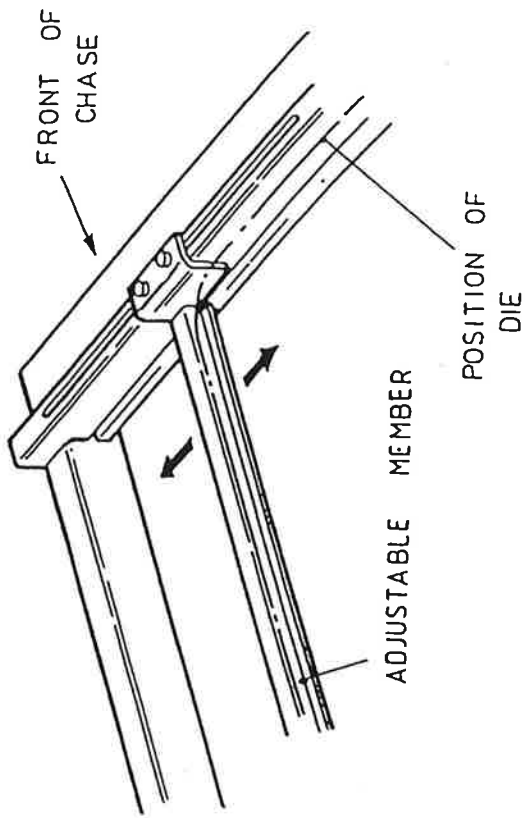
NOTE:- This option can be supplied with a power drive, see standard option No 21 (SO21) Owing to the differing safety regulations and the integration of the drive the mechanical construction is significantly altered when this option is fitted.





MACHINES	O/A DEPTH		MAX SIZE OF DIE BOARD	
	MM	INS	MM	INS
35-1505	1300	51.2	1398 x 558	55.0 x 22.0
75-1107	1722	67.8	1038 x 770	40.8 x 30.3
1707			1598 x 770	62.9 x 30.3
2007			1898 x 770	74.7 x 30.3
2207			2098 x 770	82.5 x 30.3
75-1108	1922	75.7	1038 x 870	40.8 x 34.2
1708			1598 x 870	62.9 x 34.2
2008			1898 x 870	74.7 x 34.2
2208			2098 x 870	82.5 x 34.2
115-1710	2396	94.3	1598 x 1108	62.9 x 43.6
2210			2098 x 1108	82.5 x 43.6
165-1709	2184	86.0	1598 x 998	62.9 x 39.3
2009			1898 x 998	74.7 x 39.3
2409			2298 x 998	90.5 x 39.3
165-1712	2744	108.0	1598 x 1278	62.9 x 50.3
2012			1898 x 1278	74.7 x 50.3
2412			2298 x 1278	90.5 x 50.3
165-1715	3344	131.6	1598 x 1578	62.9 x 62.1
2015			1898 x 1578	74.7 x 62.1
2415			2298 x 1578	90.5 x 62.1

PRESS FITTED WITH SINGLE CHASE (S.O.10.)



# DETAIL AT 'A'

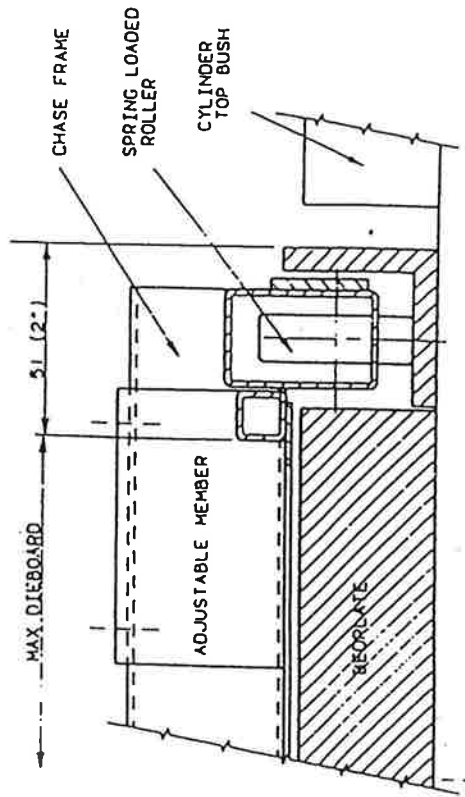
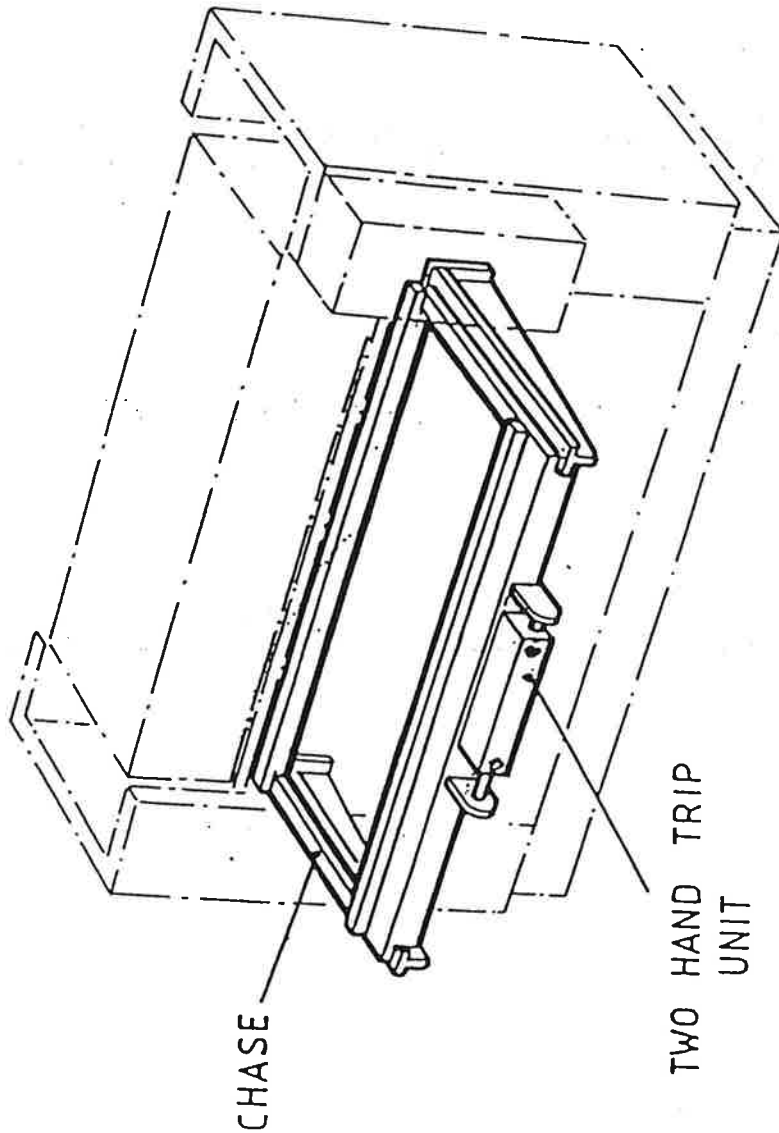


FIG 1-(SCRAP FRONT VIEW SHOWING INSIDE OF CHASE)



PRESS FITTED WITH SINGLE CHASE (S.O.10.)

## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 21P - Pneumatic Operated Power Trays**

#### **1. Overview**

A pneumatic power tray is physically similar to the manual tray variant but the power replaces the need for operator effort.

Operation of the system can be manual or automatic process producing a 'tray in, head stroke, tray out cycle'. This feature can be available as a single or twin tray operation.

The single pneumatic power tray can easily be fitted to it's equivalent manual tray design.

#### **2. Functional Description**

The tray is powered by a centre mounted pneumatic rodless cylinder.

On smaller size work trays they are supported by roller brackets and guided by tray arms and bed guides.

On larger size work trays they are rolled into the press across a supporting roller conveyor and guided by the conveyor structure and bed guides.

The cutting matrix or die is placed on the work tray as for the manual tray variant.

All variants of this option have no effect on the press cutting area.

##### **2.1 Twin Trays.**

The second tray can be used while the first tray is being unloaded and loaded to increase production.

The two trays are interlocked so that only one tray can be cycled at any one time and a beacon system indicates to the operator the status of the system. (Green light - "go". Red light - "wait".)

##### **2.2 Guarding Systems.**

If the machine is fitted with mechanical guards these are incorporated within the automatic mode sequence.

### 3. Operator Instructions

The two modes of operation are manual or automatic which is selected at time of order (both modes are not available on the same machine).

#### 3.1 Manual Mode.

Manual mode is the most basic system of operation requiring total operator input throughout the cutting sequence.

Sequence.

3.1.1. Load cutting matrix or die onto the Work tray.

3.1.2. Press and hold in the "tray in" button until the tray is in the required position under the press head.

3.1.3. Release the "tray in" button and depress the two-hand trip buttons together (within 0.5 sec.) and hold continuously (throughout the cutting cycle) and the press head descends and makes it's cut.

*Note: The press cutting limits will have previously been adjusted as described in the set-up section of the basic press manual.*

3.1.4. The press head rises, at which point the two-hand trip buttons can be released.

3.1.5. If further tray feeding is required then press and hold in the "tray in" button until the tray is re-positioned under the press head (repeat 3 & 4).

3.1.6. Press and release the "tray out" button and the work tray moves fully back to the "out" position.

3.1.7. The cycle is now complete and the cut material can be unloaded.

#### 3.2 Automatic.

Automatic mode requires minimal operator input throughout the cutting sequence.

Sequence.

3.2.1. Load cutting matrix or die onto the Work tray.

3.2.2. Press and release the "cycle start" button and the Work tray will travel fully forward until the tray is positioned under the press head.

3.2.3. When all the interlocks have been made a head stroke is automatically carried out.

*Note: The press cutting limits will have previously been adjusted as described in the set-up section of the basic press manual.*

3.2.4. After the cut stroke the head returns to it's upper limit.

3.2.5. Then the work tray moves fully back to the "out" position.

3.2.6. The cycle is now complete and the cut material can be unloaded.

### 3. Operator Instructions (cont)

#### 3.2 Automatic. (Cont)

If under any condition the "cycle stop" button is pressed the cycle will then stop automatically. When the "cycle start" button is then re-pressed the tray returns to it's out position.

#### 3.3 Twin Tray.

For details of beacon functioning and sequence see S.O.6 supplement.

#### CAUTION.

When starting the machine clear the power tray of dies and materials and operate both trays TWICE to purge the pneumatic system of any air locks.

The controls are set to optimise the tray movement when it is primed with compressed air. If the tray has stood unused between shifts or overnight, air may escape through natural leakage and an erratic initial movement may be observed. Air locks can be caused if the air supply has been disconnected and reconnected.

### 4. Limitations Of Use

4.1 Under no circumstances should heavy weights be placed on the work tray at any time.

4.2 Do not stand on the work tray.

4.3 Do not place tool boxes or tools on the work tray.

4.4 Work tray should be kept clear of waste material on cut components at all time.

4.5 Under no circumstances should the pressure setting be increased to other that stated in section 5.1.

4.6 Do not modify the cylinder speed to greater than that which gives smooth operation.

4.7 When starting the machine clear the power tray of dies and materials and operate both trays TWICE to purge the pneumatic system of any air locks.

### 5. Maintenance Instructions

#### 5.1. Settings.

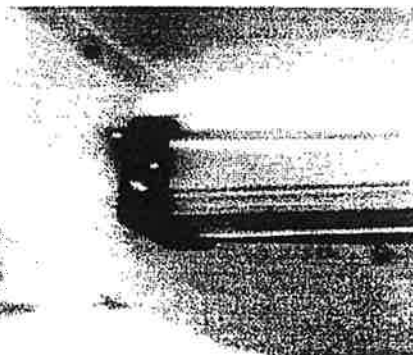
5.1.1. Air pressure - 4 Bar (60 psi).

5.1.2. Air type - Dry or lubricated dependant on the factory system.

#### 5.2. Adjustments.

5.2.1. Pressure is adjusted on the filter regulator unit on the front of the press.

5.2.2. Tray speed is controlled by the banjo restrictors located in each cylinder port.



## 5. Maintenance Instructions

### 5.2. Adjustments. (Cont)

5.2.3. Tray stopping speed is adjusted at the built in cushions on the cylinder end caps, with a screwdriver.

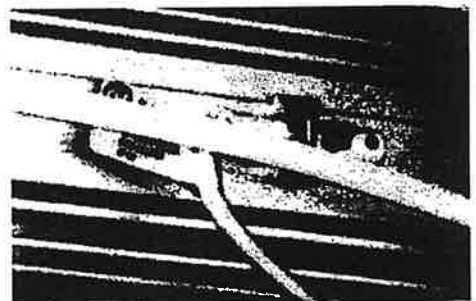
The speed of the tray and the speed of the stopping of the tray are not set to any specific figure but should be balanced to attain smooth operation of the mechanism and to ensure that no erratic movement of the cutting matrix occurs during the transferring of the matrix into and out of the press. The cushions should be set to obtain a controlled stop that will not transfer shock loads into the press structure.

### CAUTION.

When starting the machine clear the power tray of dies and materials and operate both trays TWICE to purge the pneumatic system of any air locks.

The controls are set to optimise the tray movement when it is primed with compressed air. If the tray has stood unused between shifts or overnight, air may escape through natural leakage and an erratic initial movement may be observed. Air locks can be caused if the air supply has been disconnected and reconnected.

5.2.4. On automatic systems only the position of the tray is sensed using a magnetic reed switch fitted to the rodless cylinder. On both the single and twin tray systems both the "tray in" and "tray out" positions will be sensed. When the cylinder has travelled to the cylinder's position(s) the L.E.D on the switch will illuminate indicating that the cylinder is in position. If the switch does not sense the cycle will not continue.



### 5.3. Maintenance.

The mechanism is designed to be maintenance free.

#### 5.3.1. Daily Checks.

##### A. Air service unit.

Ensure the pressure regulator is still set to 4 Bar (60 psi.)

If lubricated air is required, top up lubrication oil. (SHELL TELLUS 46 or equivalent).

Drain water collection bottle.

##### B. General.

Check and clean the all work surfaces.

### 5.4 Related Documents.

5.4.1 Single Tray Pneumatic Schematic. (NWPF-0873).

5.4.2 Twin Tray Pneumatic Schematic. (NWPF-0874).

## 6. Installation Instructions

6.1 Installation Procedure For a Single Through Tray.

6.2. Installation Procedure For a Twin Short Tray.

6.3. Installation Procedure For a Single or Twin Tray with Support Conveyor.

Which ever type of pneumatic power tray system is supplied the kit of parts received will have already been pre-assembled, tested and set up. Some minor adjustments may be required to the cushioning of the cylinder and speed of the work tray (see section 5.2).

### 6.1. Installation Procedure For a Single Through Tray.

6.1.1. Assemble both tray arms to the front of the machine using M10 capscrews and washers.

6.1.2. Assemble front infill panel to both tray arms using M8 csk screws with washers and nuts.

6.1.3. Assemble electrical conduit to the RH tray arm.

6.1.4. Attached to the conduit will be either 2 or 4 electrical boxes dependant on whether it is a manual (4) or automatic system (2).

6.1.5. To install each electrical box in turn remove the lid from the electrical box.

6.1.6. Note the orientation of the connector block and remove from the back of the switch.

6.1.7. Unscrew the lock nut from the switch and remove the switch from the box.

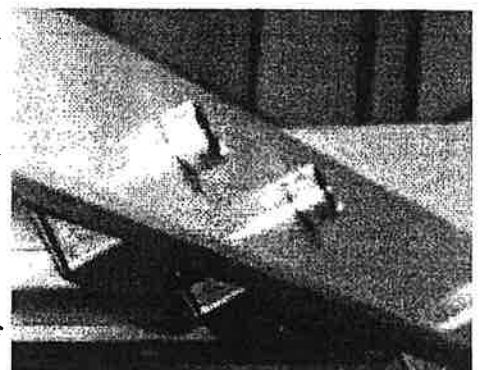
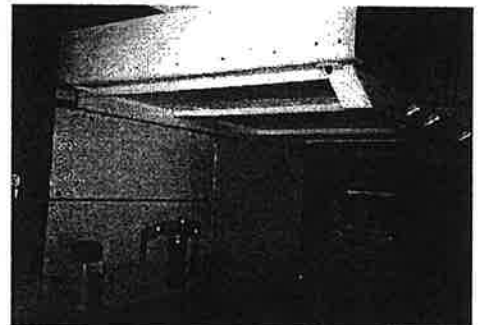
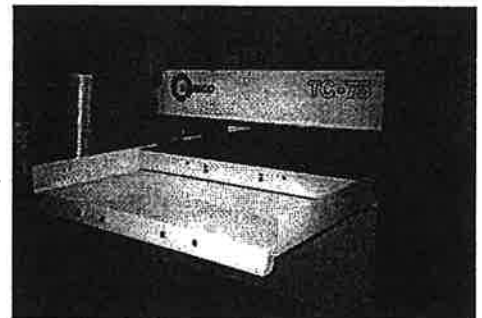
6.1.8. Position the box behind the infill panel and insert switch through both items.

6.1.9. Replace locknut and tighten.

6.1.10. Replace connector block in the correct orientation to the back of the switch.

6.1.11. Replace lid on electrical box and repeat for the remainder of the boxes.

Now go to the rear of the machine.



## 6.1. Installation Procedure For a Single Through Tray. (Cont)

6.1.12. Assemble side panels to the side covers using M8 capscrews and washers.

6.1.13. Assemble rodless cylinder and it's mounting plate to the bed using M8 capscrews and washers.

6.1.14. Assemble each infill panel in turn to the side panels using M8 capscrews and washers.

6.1.15. Assemble the cylinder support panel to rodless cylinder using M8 posi-drive screws and washers.

6.1.16. Assemble the cylinder support panel to infill panels using M8 posi-drive screws, washers and nuts.

6.1.17. Assemble support legs to infill panels and cylinder support panel using M8 posi-drive screws, washers and nuts.

6.1.18. Fasten the infill panels to the support spacer attached to the bed using M8 capscrews and washers.

6.1.19. Adjust feet on support legs to ensure that the infill trays are parallel with the bed.

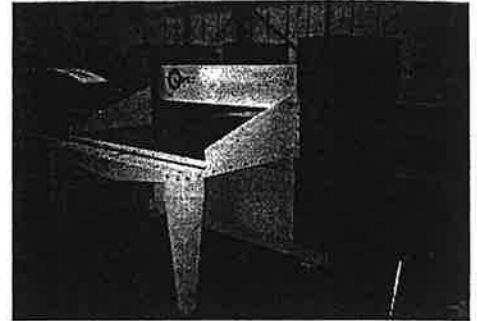
6.1.20. Connect up air pipes to cylinder port flow regulator banjos.

6.1.21. Position the rear roller bracket assembly onto the connecting bracket on the rodless cylinder.

6.1.22. Feed the work tray through the machine with counter-sink holes upper most and fasten to the rear roller bracket assembly using M8 csk head screws.

6.1.23. Returning to the front of the machine position the front roller bracket assembly under the work tray and fasten together using M6 csk head screws.

6.1.24. Position all "E" stop boxes where required.





## 6.2. Installation Procedure For a Twin Short Tray.

The procedure is the same for fitting both the front and rear work tray mechanisms.

6.2.1. Assemble side panels to the side covers using M8 capscrews and washers.

6.2.2. Assemble rodless cylinder and it's mounting plate to the bed using M8 capscrews and washers.

6.2.3. Assemble each infill panel in turn to the side panels using M8 capscrews and washers.

6.2.4. Assemble the cylinder support panel to rodless cylinder using M8 posi-drive screws and washers.

6.2.5. Assemble the cylinder support panel to infill panels using M8 posi-drive screws, washers and nuts.

6.2.6. Assemble support legs to infill panels and cylinder support panel using M8 posi-drive screws, washers and nuts.

6.2.7. Fasten the infill panels to the support spacer attached to the bed using M8 capscrews and washers.

6.2.8. Adjust feet on support legs to ensure that the infill trays are parallel with the bed.

6.2.9. Connect up air pipes to cylinder port flow regulator banjos.

6.2.10. Position the roller bracket assembly onto the connecting bracket on the rodless cylinder.

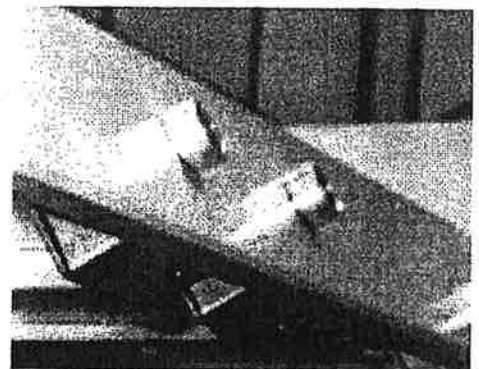
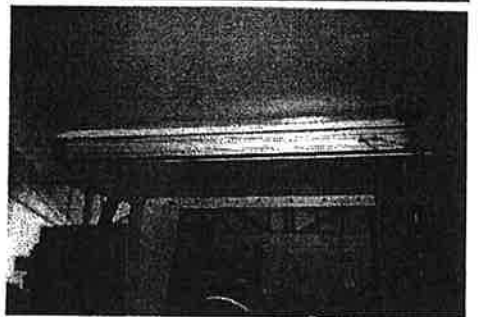
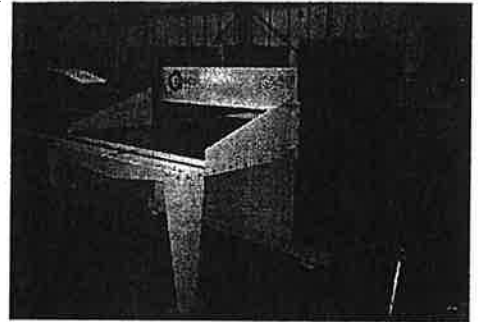
6.2.11. Position the work tray with counter-sink holes upper most and fasten to the roller bracket assembly using M8 csk head screws.

6.2.12. Assemble electrical conduit to the appropriate side frame.

6.2.13. Attached to the conduit will be either 2 or 4 electrical boxes dependant on whether it is a manual (4) or automatic system (2).

6.2.14. To install each electrical box in turn remove the lid from the electrical box.

6.2.15. Note the orientation of the connector block and remove from the back of the switch.



25th June 1997.

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## 6.2. Installation Procedure For a Twin Short Tray. (Cont)

- 6.2.16. Unscrew the lock nut from the switch and remove the switch from the box.
- 6.2.17. Position the box behind the infill panel and insert switch through both items.
- 6.2.18. Replace locknut and tighten.
- 6.2.19. Replace connector block in the correct orientation to the back of the switch.
- 6.2.20. Replace lid on electrical box and repeat for the remainder of the boxes.
- 6.2.21. Position all "E" stop boxes where required.

### 6.3. Installation Procedure For a Single or Twin Tray with Support Conveyor.

The procedure is the same for fitting both single or twin tray mechanisms.

6.3.1. Assemble conveyor adjusting blocks to bed plate using M6 capscrews and washers.

6.3.2. Assemble adjusting screws and nuts to conveyor mounting brackets on the conveyor assembly.

6.3.4. Loosen conveyor leg and pivot down in position perpendicular to the conveyor frame and retighten.

6.3.5. Position the left hand conveyor assembly and fasten to the bed plate using M8 capscrews and washers.

6.3.6. Assemble rodless cylinder assembly to the bed plate using M8 capscrew and washers.

6.3.7. Position the right hand conveyor assembly and fasten to the bed plate using M8 capscrews and washers.

6.3.8. Assemble the cylinder mounting plate positioned between the conveyor frames and the infill plates using M8 posi-drive screws, washers and nuts to fasten to the conveyor frame and M6 posi-drive screws, washers and nuts to fasten to the infill plates.

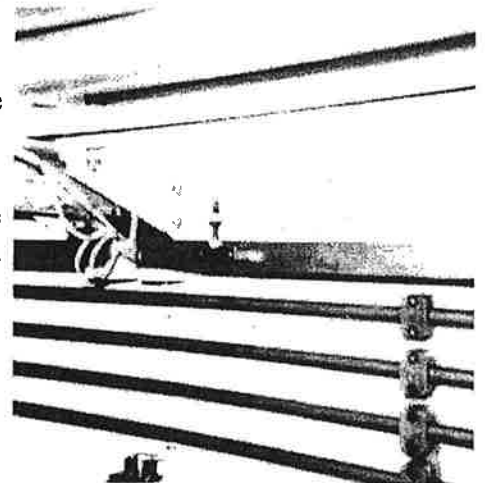
6.3.9. Assemble the cylinder mounting plate to the rodless cylinder using M8 posi-drive screws and washers.

6.3.10. Adjust feet on support legs of the conveyor in conjunction with the adjusting screws on the conveyor mounting brackets to ensure that the conveyors are parallel with the bed and the rollers are at the same height as the bed.

6.3.11. Connect up air pipes to cylinder port flow regulator banjos.

6.3.12. Position the work tray on the conveyor and connect the towing bracket pin on the cylinder into the towing block on the tray.

6.3.13. Assemble electrical conduit to the appropriate side frame.



### 6.3. Installation Procedure For a Single or Twin Tray with Support Conveyor. (Cont)

6.3.14. Attached to the conduit will be either 2 or 4 electrical boxes dependant on whether it is a manual (4) or automatic system (2).

6.3.15. To install each electrical box in turn remove the lid from the electrical box.

6.3.16. Note the orientation of the connector block and remove from the back of the switch.

6.3.17. Unscrew the lock nut from the switch and remove the switch from the box.

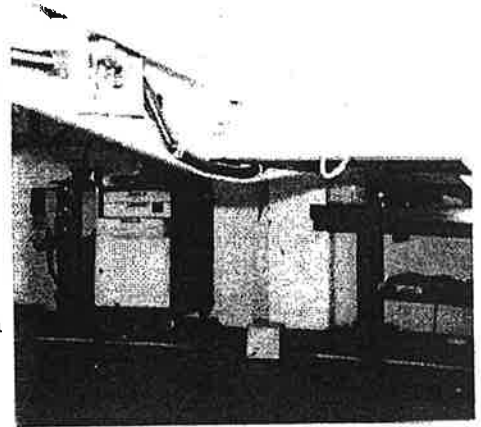
6.3.18. Position the box behind the cylinder mounting plate and insert switch through both items.

6.3.19. Replace locknut and tighten.

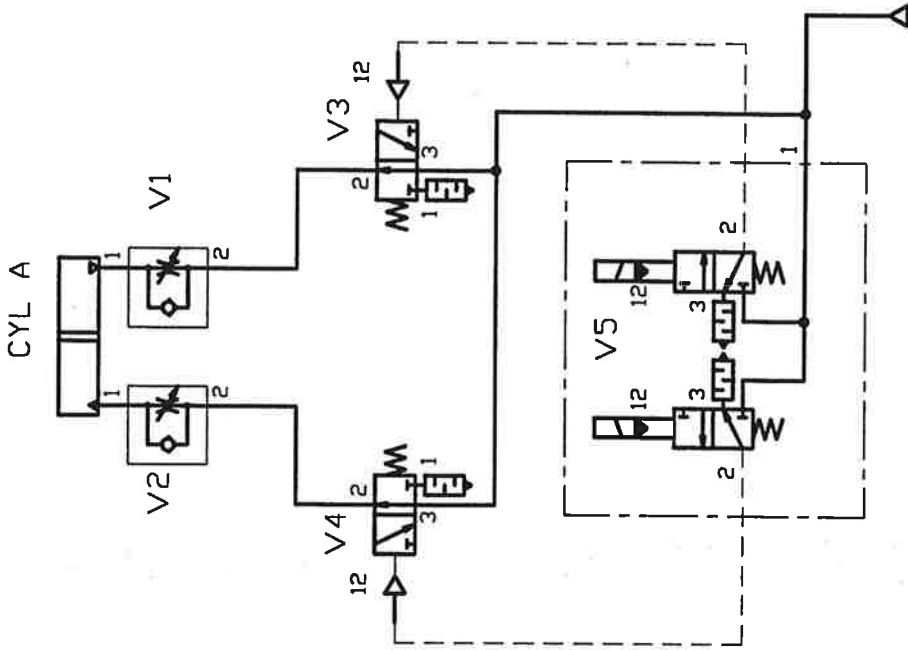
6.3.20. Replace connector block in the correct orientation to the back of the switch.

6.3.21. Replace lid on electrical box and repeat for the remainder of the boxes.

6.3.22. Position all "E" stop boxes where required.



REF	QTY	PART NUMBER
V1-V2	2	10K510628
V3-V4	2	03060102
V5	1	DM/49/131/T2
CYL A	1	M/46040/M/???



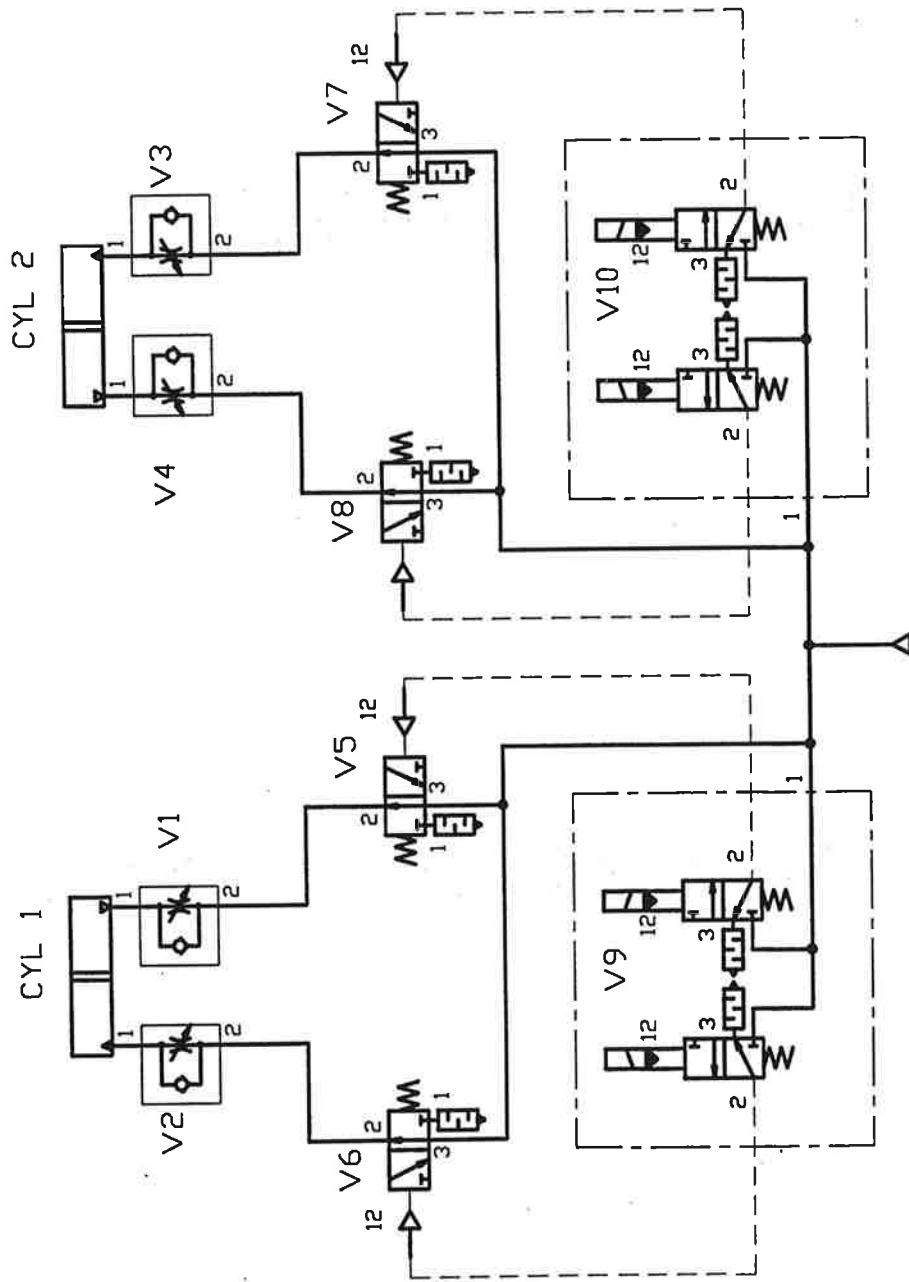
Modifications

3RD. ANGLE PROJECTION		Material Spec:	Title: PNEUMATIC SCHEMATIC SO21P SINGLE		
RELEASED		Protective Finish:	Drawing-No: NWFP-873		
DATE	SIGNED	Dimensions & Tolerances Whole MM $\pm 0.5$ MM 1Dec Place $\pm 0.2$ MM Angles $\pm 0.5^\circ$	Used on:	TC & FC RANGES	Sheet-No
			Drg-Type:	SCHEMATIC	Drawn-By: KO
			Release:	1	Chk-By: GAD
					Date: 22/05/97
					Date:


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REF	QTY	PART NUMBER
V1-V4	4	10K510628
V5-V8	4	03060102
V9-V10	2	DM/49/131/T2
CYL 1-2	2	M/46040/M/???



Modifications

3RD. ANGLE PROJECTION		Title: PNEUMATIC SCHEMATIC SO21P TWIN			
RELEASED		Drawing-No: NWFP-874			
DATE	SIGNED	Used on:	TC & FC RANGES	Sheet-No	Scale:
		Drg-Type:	SCHEMATIC	Drawn-By: KO	Date: 22/05/97
		Release:	1	Chk-By: GAD	Date:
		Protective Finish:			
		<u>Dimensions &amp; Tolerances</u> Whole MM $\pm 0.5$ MM 1Dec Place $\pm 0.2$ MM Angles $\pm 0.5^\circ$ .			
		 SAMCO-STRONG Ltd.			
		COPYRIGHT THIS DRAWING MUST NOT BE COPIED			

## **STANDARD OPTION SUPPLEMENT**

### **SO26A TOTALISING BATCH COUNTER - RESETTABLE**

#### ***DESCRIPTION***

This counter has a single row of 6 digits and a reset control.

For every press stroke the counter records an increase of one digit.

The reset button, when pressed, will return the digits to 6 zeros.

If it is desirable to prevent the reset being used, a small padlock can be accommodated by passing the hasp through the hole provided in the button.

## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 26B - Pre-settable Batch Counter**

#### **1. Overview**

The counter always counts the number of press head strokes and can also be used in the pre-set mode which allows a pre-set number of cuts to be completed before stopping an automatic machine or prevent any further two hand trip cuts being made.

#### **2. Functional Description**

2.1 The top row of 5 digits counts the number of head strokes and can be reset by pressing the reset button next to the row of digits.

2.2 The lower row of 5 digits are the pre-set side of the counter which can be set by the operator to any number of head strokes.

2.3 A selector switch is fitted to allow the pre-settable mode to be selected.

2.4 An indicator light is fitted to inform the operator that the pre-set batch has been completed.

#### **3. Operator Instructions**

When the press operates a head stroke the counter always operates irrespective of the selection mode of the counter.

##### **3.1 Count Only Mode.**

3.1.1 Ensure the selector switch is set to position 1.

3.1.2 Press the reset button to clear the number of cuts to 00000.

3.1.3 Operate the press and the number on the display will increase accordingly.

##### **3.2 Pre-set Mode.**

3.2.1 Ensure the selector switch is set to position 2.

3.2.2 Press the reset button to clear the number of cuts display to 00000.

3.2.3 With the reset depressed then the number of strokes required can be put in to the lower counter by pressing the appropriate buttons until the right number appears on the counter (ie. 50 cuts = 00050).

3.2.4 Operate the press and as the number of cuts on the counter increase, the number on the pre-set counter decreases accordingly.



3.2.5 When the pre-set counter becomes 00000 the light near the selector switch will illuminate and the will not be allowed to carry out any more head strokes.

3.2.6 To allow the press to continue more head strokes, either a new pre-set batch number has to be entered and the counter reset, or the selector switch has been selected to position 1.

#### **4. Limitations Of Use**

4.1 With twin trays it is recommended to fit two counters to give flexibility of individual operator batch monitoring.

#### **5. Maintenance Instructions**

This option requires no maintenance.

## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 33 - Oiler Cooler**

#### **1. Overview**

The oiler cooler option is normally fitted to a press which will be operating in extreme temperatures. It will also be fitted to a machine which operates at a cycle rate where the temperature of the oil is expected to exceed 60°C (140°F).

#### **2. Functional Description**

The oil cooler unit is normally fitted at the rear of the press on the TC range of presses or to the tank unit on the FC range of presses.

1. The oil cooler unit has an integral pump which draws the oil from the tank of the press.
2. The oil passes through the cooler matrix which has an electric motor driven fan.
3. The oil is then returned back into the tank.
4. A temperature sensing device is connected into the tank unit and monitors the oil temperature. This device triggers the starting and stopping of the oil cooler when the oil reaches the set temperature.
- 5 On the TC range a pressure filter is connected between the cooler and the tank.

#### **3. Operator Instructions**

The operator should monitor that the oil cooler works.

Located on the tank is a sight glass with temperature gauge located in it and if the temperature of the oil exceeds 60°C (140°F) then he should stop the press and send for maintenance.

#### **4. Limitations Of Use**

Presses should not operate when the oil temperature exceeds 60°C (140°F).

#### **5. Maintenance Instructions**

1. The temperature sensing device should be set to 49°C (120°F). This can be adjusted by turning the adjuster knob on the sensing device.

2. Weekly checks.

2.1 Check that the cooler trips in and out correctly.

2.2 If a filter is fitted to the return line from the oil cooler check that the filter indicator is not showing blocked.

## **6. Retrofit Oil Cooler for TC75 and TC115 Machines**

6.1. Items included in retrofit package for TC75 machines.

1. Mechanical and common electrical parts as listed on parts list UD1093.

2. Voltage conscious parts as detailed on parts list UD1069.

3. Copies of MBI and Parts Lists (UD1093 & UD1069).

4. Drawing SDD-9989 showing position of oil cooler and layout of pipe work.

5. Electrical schematic drawing NWES-8186 showing additional wiring.

6. Photographs of pre-assembled oil cooler.

6.2. Items included in retrofit package for TC115 machines.

1. Mechanical and common electrical parts as listed on parts list UD1098.

2. Voltage conscious parts as detailed on parts list UD1096.

3. Copies of MBI and Parts Lists (UD1093 & UD1096).

4. Drawing SDD-9989 showing position of oil cooler and layout of pipe work.

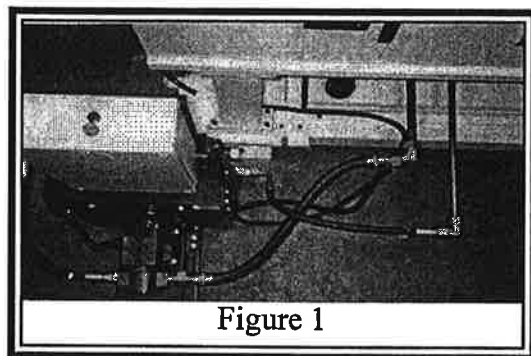
5. Electrical schematic drawing NWES-8197 showing additional wiring.

6. Photographs of pre-assembled oil cooler.

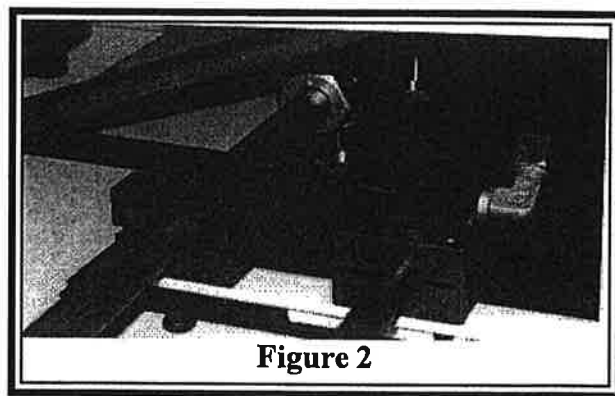
## 6. Retrofit Oil Cooler for TC75 and TC115 Machines

### 6.3. Mechanical Fitting

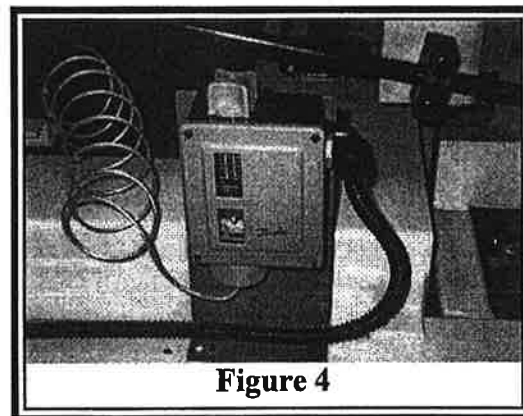
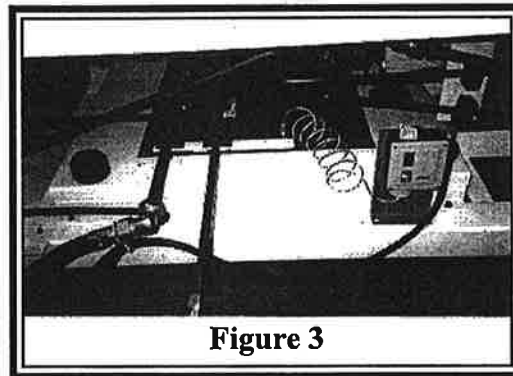
The oil cooler will have been assembled as much as is possible with all pipes connected and all hydraulic joints made, the cooler should be positioned to the right of the press (See Figure 1). The mechanical assembly requires the attaching of the return and suction lines to the appropriate points on the press as detailed below.



1. Remove the two front and two rear lower covers from the press to gain access to hydraulic tank.
2. (a) Remove the blanking plug from the slow down manifold on the front edge of the tank top plate.(TC75)  
(b) Remove the blanking plate from the front of tank. (TC115)
3. (a) Pass return pipe assembly (SMP3770 + fittings) through the press, from the rear of the machine, and attach the fitting to the tapped hole in the slow down manifold from where the blanking plug was removed.(TC75)  
(b) Pass return pipe assembly (SMP 4859 + fittings ) through the press from the rear of the machine , and attach to bulkhead fitting in tank. See figure 2. (TC115)
4. Fit the pipe clamp to the two holes in the rear of the support bracket on the tank top plate and secure the return pipe in place. (See figure 2)
5. Remove the blanking plate from the rear of the tank top plate and fit cooler supply flange and gasket so that the suction pipe exits the rear of the press. (See figure 2)



6. Attach the thermostat mounting plate to the base of the press at the rear, it will be necessary to drill and tap two M6 mounting holes (NOTE:- do not drill into the tank area of the base as this will contaminate the oil supply)
7. Run the thermostat probe alongside the return pipe to the front of the machine. (TC75)
8. Remove the blanking plug from the front right hand side of the tank top plate and replace with the thermostat probe and secure in place with the supplied fittings, ensuring that the probe is in the hydraulic oil. (TC75 and TC115 See figures 3&4)



9. Fit the suction line flexible hose (NWZH3831) between the suction outlet pipe and the oil cooler pump input.
10. Fit the return line hose (NWZH3819) between the return pipe and the outlet of the oil filter.

## **6. Retrofit Oil Cooler for TC75 and TC115 Machines**

### **6.4. Electrical Connections**

For ease of assembly the oil cooler starter wiring has been pre assembled and mounted in the electrical box fitted to the top of the oil cooler fan cover, external connections to the oil cooler motor and thermostat have also been pre-wired.

The thermostat wiring needs only to be routed along one of the oil cooler feed pipes before mounting the thermostat to the base of the machine. The only connection that needs to be made to the machine is for the mains power and control circuit supply which have been supplied in a conduit connected at the oil cooler enclosure and left with leads at the other end for connection to the press.

It will be necessary to drill a 20mm diameter hole in the bottom of the press electrical enclosure to accept the conduit. The three black 3 phase cables, wire Nos.201/202/203 should be connected to the output side of the press main isolator. The red 110vac supply, wire No.13, and the white control circuit neutral, wire N0.0, should be connected to the appropriate terminal blocks at the bottom of the enclosure.

### **6.5. System Checks and Settings**

When all connections have been made the direction of rotation of the cooler pump needs to be checked against the arrows on the side of the cooler. The cooler can be switched on by turning the thermostat temperature control to its minimum setting, do not allow the motor to run for more than a few seconds if the direction of rotation is incorrect, increasing the temperature setting will turn the cooler off. The direction of rotation can be changed by swapping over any two of the 3 phase supply lines, either at the isolator or in the oil cooler motor connection box.

Before switching the machine on the following items should be checked.

1. Oil cooler motor overload is set to 2.1 Amps.
2. Thermostat temperature is set to 120 Deg F (49 Deg C).
3. Thermostat differential is set to 5.
4. Check that all hydraulic fittings and connections are tight.

The front lower press covers can be re-fitted once the oil cooler assembly is complete and the system is working correctly. The rear press lower covers should be modified to suit, according to machine size.

## **6. Retrofit Oil Cooler for TC75 and TC115 Machines**

### **6.6. Oil Cooler Operation**

The oil cooler monitors the oil temperature all the time that the press pump motor is running and requires no intervention from the press operator. The oil cooler will switch on when the oil temperature exceeds 120 Deg F (49 Deg C) and switch off when the oil temperature has lowered to 110 Deg F (43 Deg C). The yellow indicator lamp on the oil cooler electrical enclosure gives a visual indication of the state of the oil cooler motor overload, if the light is on the overload has tripped and requires attention from a service engineer to determine the reason for the overload.

**SAMCO-STRONG STANDARD OPTION SUPPLEMENT****S.O. 34d - RATCHET POSITIVE STOPS****DESCRIPTION**

This positive stop option involves the use of four manually adjusted Ratchet stops, to obtain a particularly high level of parallelism and depth of cut accuracy. On TC75/115 Presses, they are fitted on the bed each side of the both cylinders.

Positive stops function by incorporating micro switches in two diagonally opposite stops. As soon as the descending Press head has closed both those switches, the stroke is reversed. The position of the switches is set so that, during the very short time it takes for the stroke reversal to happen, the head continues to descend until all four corners just contact the solid steel stops, thus ensuring exact parallelism and bottom stroke position.

With Ratchet Stops fitted, the closed daylight can be varied in increments of 0,1 mm (.004") from a minimum figure of 38 mm up to a maximum of 51mm. By adding Spacers of the appropriate thickness above the Stops, the closed daylight range can be shifted upwards. For TC75/115 Presses such spacers must be specified at the time of ordering.

The press also keeps the usual electronic stroke control, operated through a linear potentiometer. If the electronic stroke limit is set above the stops, the stroke control rules. If it is set below the positive stops, the stops rule.

**SETTING UP PROCEDURE (RATCHET STOPS)**

Before commencing the setting-up sequence, make sure all four stop nuts are wound down to their lowest position.

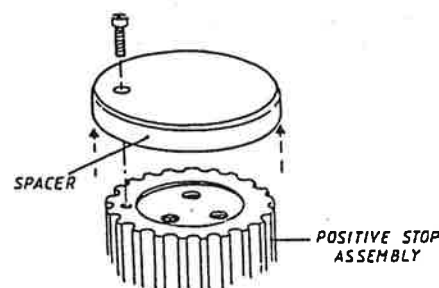
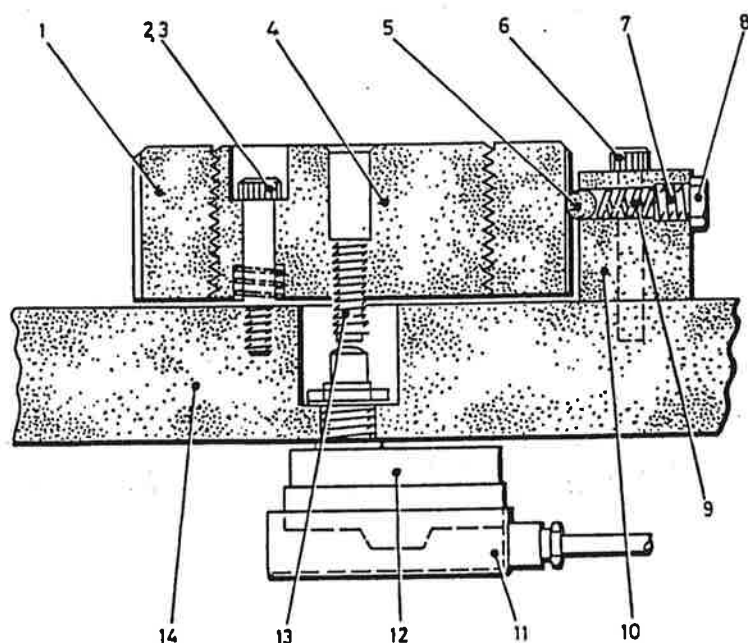
1. Withdraw the work tray and position the cutting pad so that when the tray is pushed into the cutting area, the centre of the cutting pad is beneath the centre of the head.
2. Place the cutting die in the centre of the cutting pad, cutting edge down.
3. Push the work tray into the cutting area so that the die is central under the head.
4. Release the small locking lever on the side of the lower limit control and turn the dial anti-clockwise until it reaches the zero position.
5. Press the Operate / Adjust button to the adjust position. The lamp indicates that the Press is now operating at reduced pressure.
6. Operate the Two Hand Trip buttons simultaneously and keep them depressed. The head will slowly descend and rest on the cutting die.



7. Release the Two Hand Trip buttons.
8. Wind up the four Ratchet Stops until the top faces are all tight up under the Press head. Access is provided via the hinged flap guards situated on the covers of the press.
9. Re-press the Operate / Adjust button to the operate position - The head will rise to the upper limit position.
10. Withdraw the work tray and remove the cutting die.
11. Look at each posi-stop individually, and assess which one is the highest, by observing the coloured marks on the ratchet flutes. **NOTE:** The stops are raised by turning clockwise.
12. Once the highest stop has been determined, the others should now be raised to a similar level, again using the coloured flutes for accuracy.
13. Check the lower limit by taking a trial stroke, cutting, say, a single sheet of paper. The paper should be cleanly cut but the blade should not cut too deeply into the cutting pad. If necessary, increase or decrease the posi-stop setting by turning the four stops equally by 1 or 2 clicks. (One click is equal to 0,1 mm [.004"] of height adjustment).

**NOTE:**

If after adjustment, the die is found not to be cutting at one corner, it is possible to lower the setting on that particular positive stop by 1 or 2 clicks **maximum**. Any more adjustment than this would have to be taken up on the die itself in the form of 'Make-ready'.



## **SAMCO-STRONG STANDARD OPTION SUPPLEMENT**

### **S.O. 36A - HEAD MOUNTED ADJUSTABLE DIE RAILS**

#### **1. Overview**

This option allows the cutting die to be mounted on the underside of the press head. The side edges of the die board are supported by rails that are pivotted at one end on slide rails which in turn are fixed to the rear edge of the press head. The other end of the rail is clamped to the edge of press head by means of hand screws. Adjustment allows unlimited lateral movement of die rails.

The idea of adjustable rails is to allow the use of variable width die boards.

It is recommended that two operators carry out the task.

#### **2. Operator Instructions**

- 2.1 Loosen hand screws at the front of the machine.
- 2.2 Remove any die that may be in position.
- 2.3 Check that the rails are free from waste material and dirt.
- 2.4 Insert die board into the rails and slide fully so that the die board is level with rear of press head.
- 2.5 Tighten hand screws securely.
- 2.6 Ensure all guards are closed.

#### **3. Maintenance Instructions**

No maintenance required.

## NOTES

## NOTES

# Machine Labels

## ...and what they mean



Check the machine is correctly set up before operating; follow the correct procedure when removing or replacing machine parts.

**See the Instruction Manual.**



This machine has a high earth leakage current. Ensure it is connected to the electrical supply in accordance with local wiring regulations.

**See the Instruction Manual.**



Action may be necessary to, prevent fire.

**See the Instruction Manual.**



Beware: this contains electrical devices.



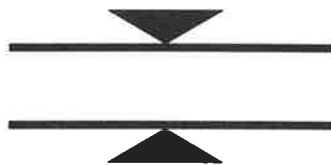
This terminal is for the connection of the external protective conductor (that is, the incoming mains earth).



This terminal is an earthing point for machine components.



To prevent damage, observe precautions for handling electrostatic-sensitive devices. Wear the anti-static wrist-strap when handling Circuit Boards.



At the start of the working session, the liquid level should be between the lines.