Compak Filler & Capper.

Operating
Installation
Maintenance
&
Parts Manual

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General Description

The "Compak Liquid Filling" system comprises of an infeed conveyor, standard length of 2 metre, an automatic sequential gravity filler, automatic cap unscrambler, discharge conveyor and semi automatic cap tightening device.

Designed and built in Great Britain to serve the food and beverage industries, the simplistic, reliable and safe system has gained wide acceptance within Europe, the Middle East and African countries.

Filler

This versatile filler is designed to handle square or rectangular glass and plastic containers with the minimum of moving parts. The pneumatic control system is inherently safe to use in wet environments.

Construction is of 316 quality stainless steel throughout or non corrosive thermo plastic resins being hygienic and easy to clean. The filling is via a number of fast fill vented valves dependant on container size with non-drip shut off.

Differing sizes of container may be accommodated by the change over of the filling hopper. This can be achieved in minutes due to pre dowelled locating lugs.

Typical fill rates on free running liquids are:-

One Litre - 38 containers per minute

Two Litre - 26 containers per minute

Sizes of one pint to five litres are presently being handled on the Compak.

Modular Construction

Interchangeability of parts is achieved by incorporating precision sheet metal (CNC) components manufactured by BS5750 approved suppliers.

Capper

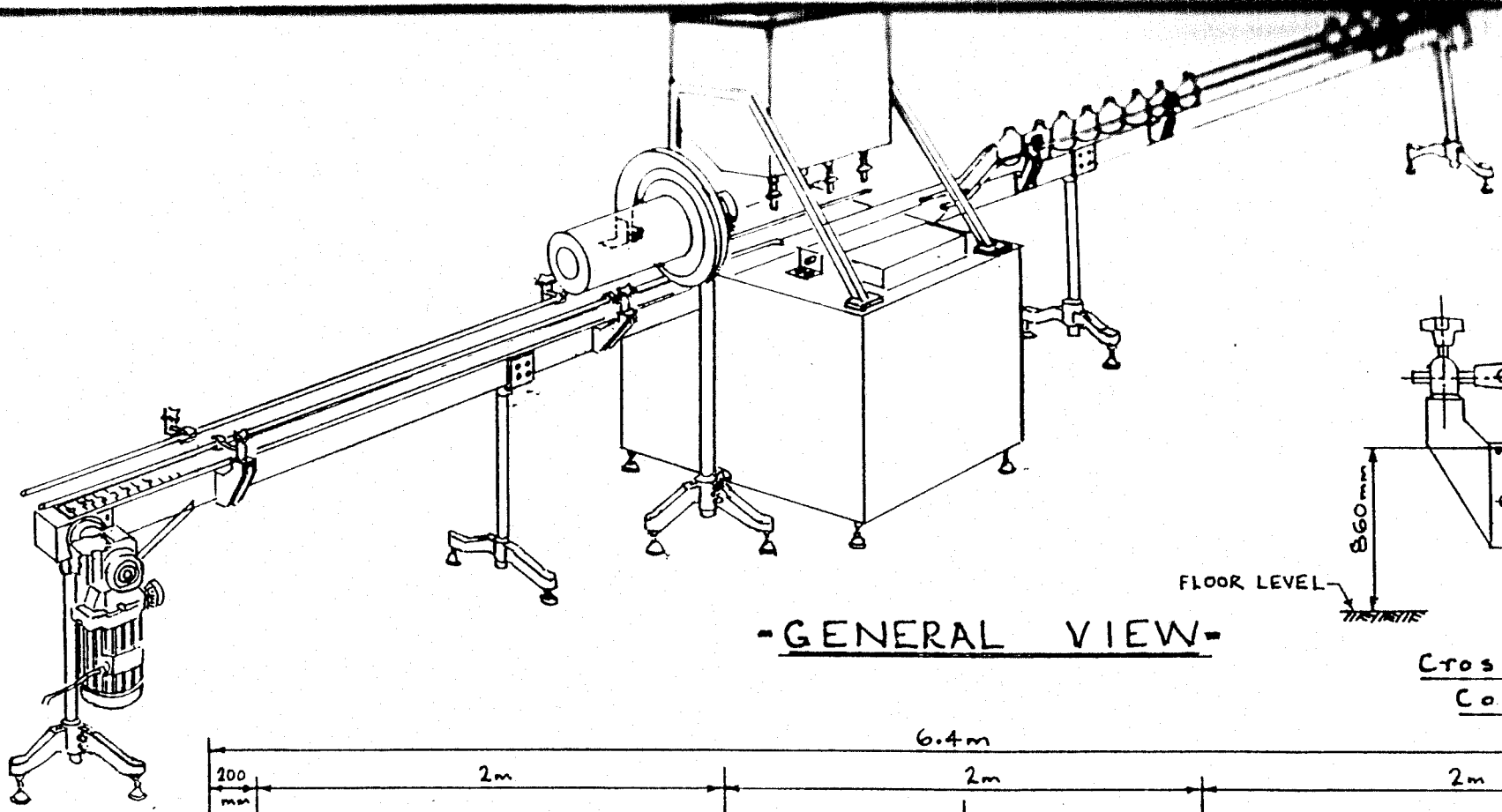
A stand alone rotary cap unscrambler is supplied as standard for plastic pilfer proof caps. other types of caps can be handled on request.

Unscrambled caps are presented through a stack type cap chute to the mouth of the bottle. A special "tamp" and pre tightening device locates the cap before proceeding down the discharge conveyor to the cap tightening device.

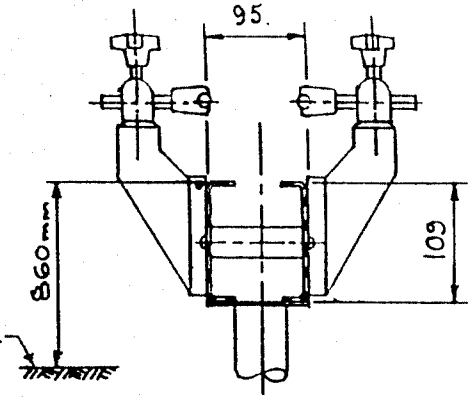
Cap Tightener

A semi automatic cap tightening device is supplied as standard. This is applied by the packing operator and applies a preset torque to the cap.

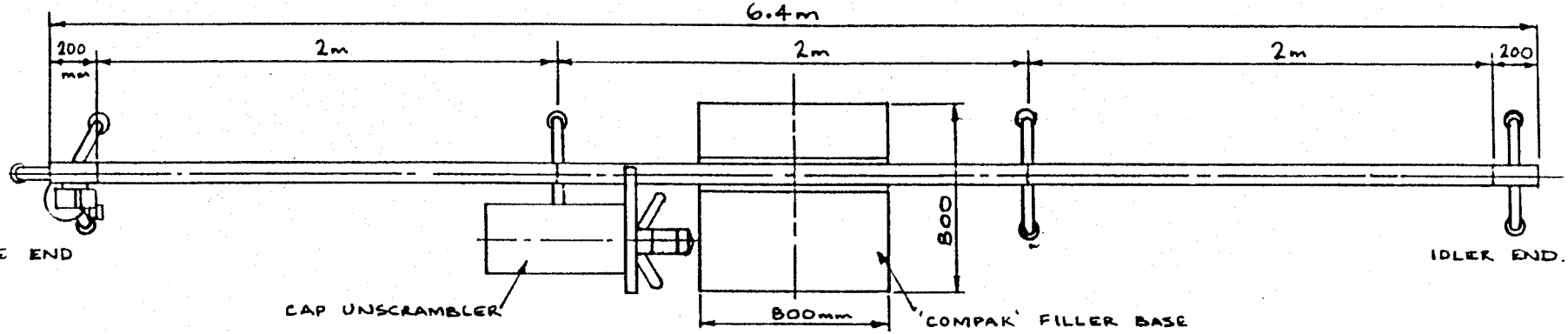
A fully automatic cap tightener is available extra, the details of which are outside the scope of this basic manual.



-GENERAL VIEW-



Cross - Section Conveyor



-PLAN VIEW-

GENERAL LAYOUT - "COMPAK" FILLER.

SCALES	CHARLES WAIT (PROCESS PLANT) LTD.	DRAWN	DRG Nº.
1:20 (A3 SIZE)	SOUTHPORT ENGLAND. Tel. 0704 211273 Fax. 0704 25875	DATE 14.06.94	94/48

Site Installation.

The following services are required:-

Electrical.

- Unscrambler - Bodine motor 220/240v single phase AC consumption 0.75A. 50 cycle.
- Conveyor Drive - Motor 0.55Kw 50 cycle AC 3 phase 380/420v consumption 1.7A. single phase 220/240v consumption 3.0/2.8A.

Compressed Air

For the Filling Machine a clean dry oil free compressed air supply is necessary. A 6mm air connection for the filler control requires 30 psi minimum. consumption up to 3.5 L/cycle of F.A.D.

For the hand held cap tightener a clean dry lubricated air supply is necessary. A 6mm air connection to the semi auto torquing tool requires 60 to 80 psi air. Consumption of 8 L/sec of F.A.D.

Please note: a refrigerated dryer should be used to separate moisture down to 40deg C dew point. If this is not available please consult us.

Product Line.

All product contact parts are 316 quality stainless steel on the Compak Filler. A 2" RJT male fitting is provided on the L.H. side of the fill hopper(viewed from the front).

Change Over Parts

Please note that if different tanks are provided to accommodate your range of bottles. the position of the infeed connection will vary. Different make up pieces are therefore required to accommodate these dimensional changes of product feed lines.

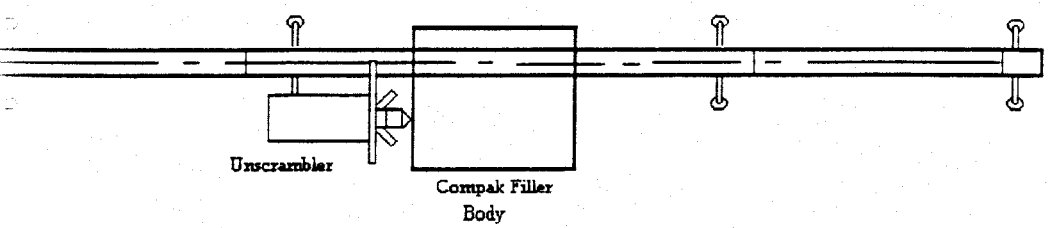
Compak Liquid Filler

Conveyors.

The filler, unscrambler and conveyors are provided with adjustable levelling pads which should be adjusted to accommodate floor unevenness. The filler hopper and conveyors should be checked with a spirit level and adjusted accordingly.

Alternative Layouts.

Additional conveyoring can be obtained from Charles Wait (Process Plant)Ltd to suit any type of layout. Shown Below are four common layouts.



Straight Line Layout

fig 2

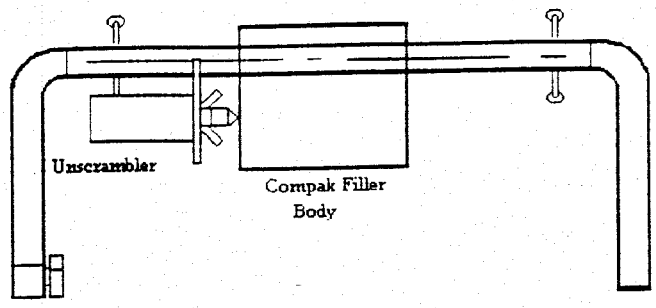


fig 3 **'U' Type Layout**

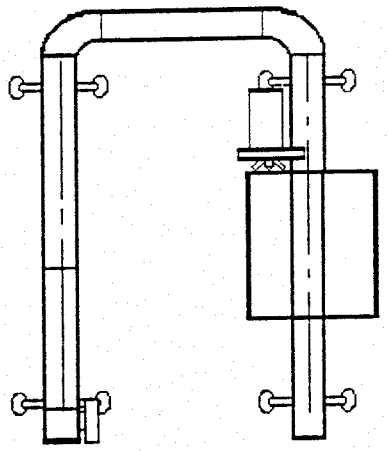


Fig 4 **Additional 'U' Layout**

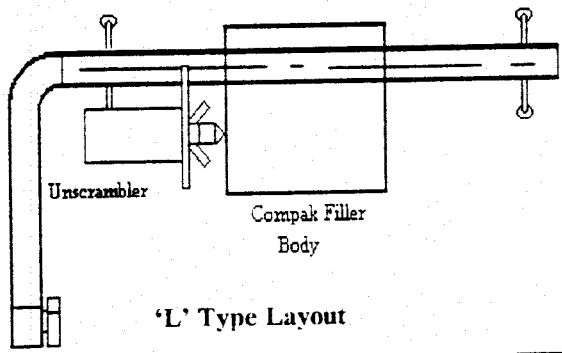


fig 5 **'L' Type Layout**

Commissioning.

At the time of ordering, sample bottles and caps must be supplied to enable pre delivery trials and adjustments to be carried out before release from the factory.

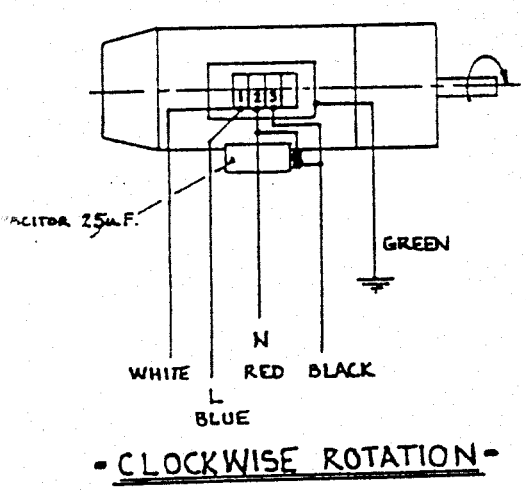
Following installation at site and providing all services are connected, given the clients product bottles and caps, skilled personnel from Charles Wait(Process Plant) Ltd will visit site and run the plant on production.

Should the clients bottles or caps vary from those supplied for evaluation during pre delivery trials, we reserve the right to charge for additional change parts or adjustments deemed necessary.

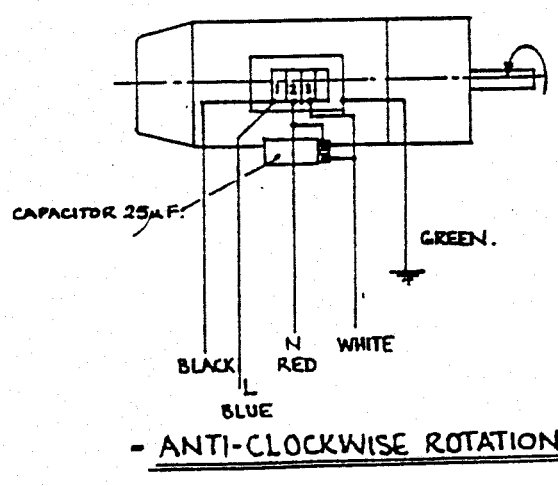
IMPORTANT

Unscrambler Motor Drive

Before running the Bodine motor must have the plastic transport plug removed.



- CLOCKWISE ROTATION -



- ANTI-CLOCKWISE ROTATION -

Parts Section

Spare Parts

We recommend Compak users carry a small stock of consumable spare parts. These can be provided against order by post or delivered at the same time that our service fitter/ technician is due to visit you.

Recommended spare parts are:-

Filling Valve

1	Diaphragm Rubber Bellows	SM3
3	Bottle Fill Height Adjustment Spacers	$^1/_8$" $^1/_4$" $^3/_8$"
3	Valve Seals(anti-drip)	IMS116

Hand Held Cap Tightener

1	Cap Tightener - Friction Pad
2	Cap Tightener - Pad Housing

Main Frame

ITEM No.	DESCRIPTION	PART No.
1	Fastening Knob	CP1002
2	Dowel	
3	Tank Support Frame	CP1002
4	Bottle Lift Ram	CP1009
5	Ram Plunger	CP1027
6	Cylinder Locknut	
7	Bottle Pusher	CP1006
8	Bottle Pusher Cylinder	C25DE100
9	Pusher Ram Adjustment Plate	CP1019
10	Knob Female	
11		
12	Bottle Lift Cylinder	C25DE080
13	Lateral Guide Bracket	CP1003
14	Bottle Lift Cylinder	C25DE080
15	Base Cabinet Sub Assembly	CP1000
16	Levelling Pad	
17		
18	Cabinet Door	CP1000
19	Bottle Infeed Sensor	

Main Frame

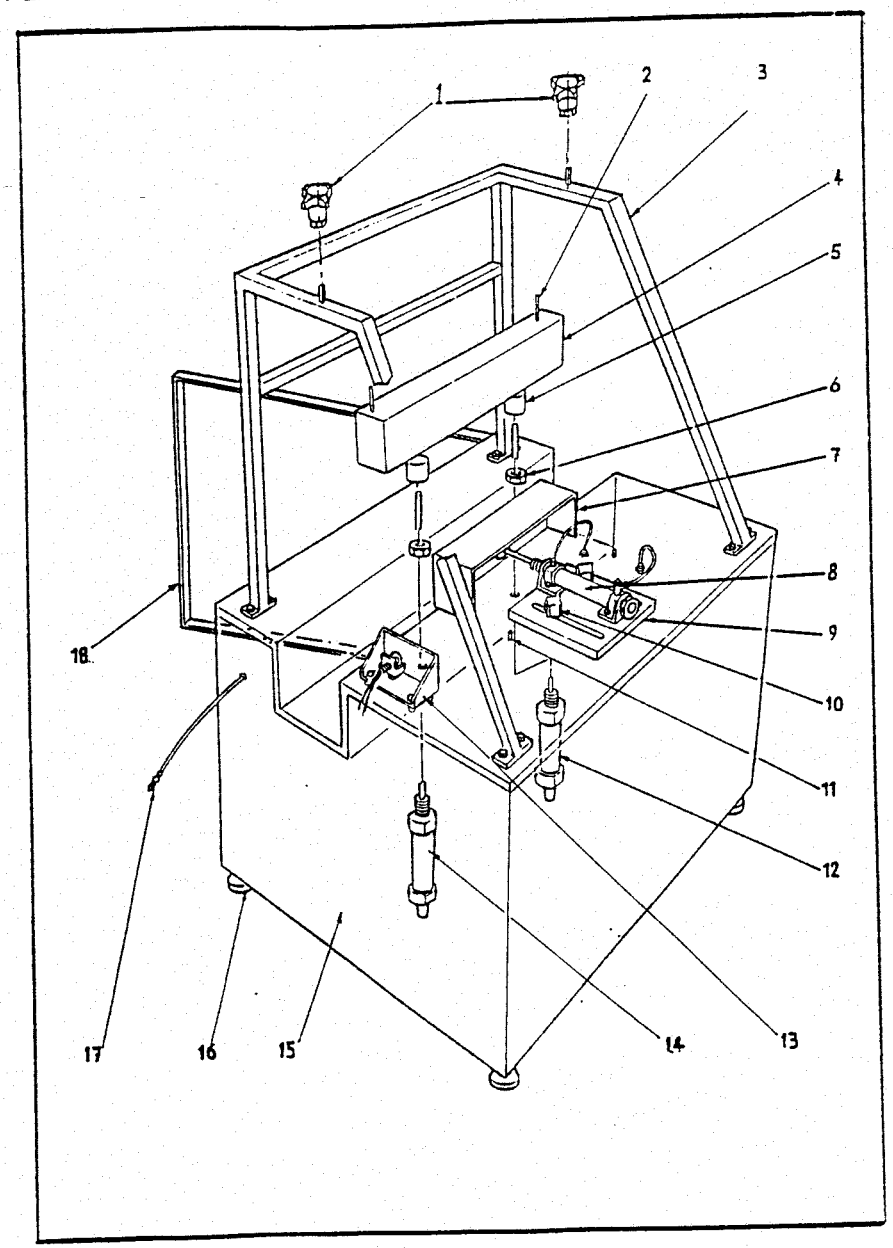
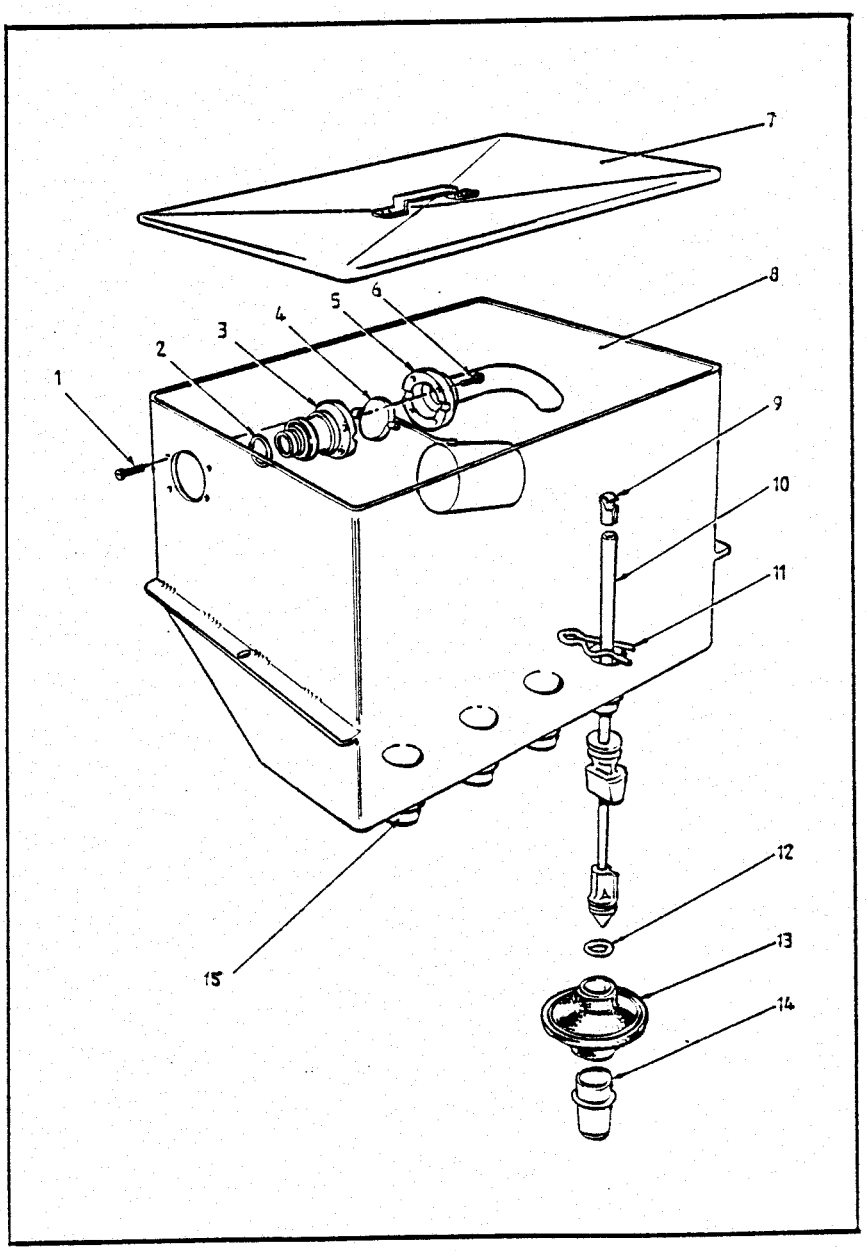


Fig 1 **Compak Filler Framework**

Filling Head Assembly

ITEM No.	DESCRIPTION	PART No.
1	Screw / Bolt	
2	Gasket	
3	Float Valve Sub Assembly	
4		CP1013 & 4
5		
6		
7	Lid	CP1007
8	Tank (14 Gallon Capacity)	CP1007
9	Vent Deflector	
10	Filling Tube	CP1028
11	Valve Clip	CP1020
12	'O' Ring	IMS 116
13	Diaphragm Rubber	SM30
14	Valve Tube	CP1016
15	Fill Height Spacer Rubbers 1/8" - 1/4" - 3/8"	
	See drawing in commissioning section (state size req'd)	

Filling Head Assembly



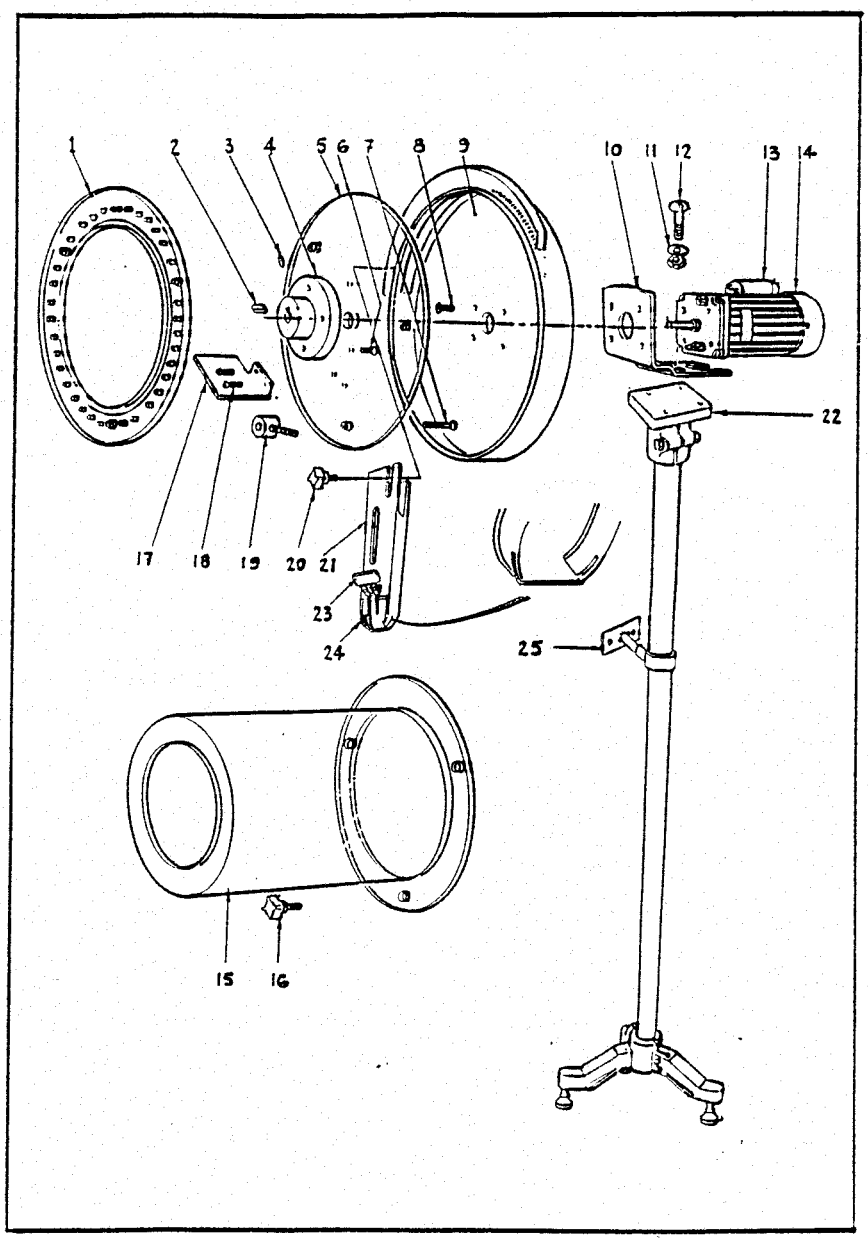
Compak Filler Head

Cap Sorter

ITEM No.	DESCRIPTION	PART No.
1	Cap sorter Ring	CP1510
2	Key	
3	Grub Screw	
4	Cap Sorter Lock Ring	CP1513
5	Cap Sorter Back Ring	CP1511
6/7/8	Screw - Countersunk	
9	Cap Sorter Body	CP1509
10	Motor Bracket	
11	Nuts & Washer	
12	Bolt	
13	Motor Starting Capacitor	
14	Bodine Motor	
15	Cap Hopper	CP1519
16	Knob	
17	Cap Sorter Paddle	CP1512
18	Screws	
19	Spacer Bush & Cap Deflector Spring	
20	Cap Chute Knob	
21	Cap Chute	CP1820
22	Cap Sorter Stand	
23	Cap Chute Guide Finger	
24	Cap Chute Spring	
25	Support Bracket	
26	Pre Tightener	
27	Pre Tightener Spring	
28	Pre Tightener Bracket	CP1029
29	Fasteners	
30	Support Foot	

Parts

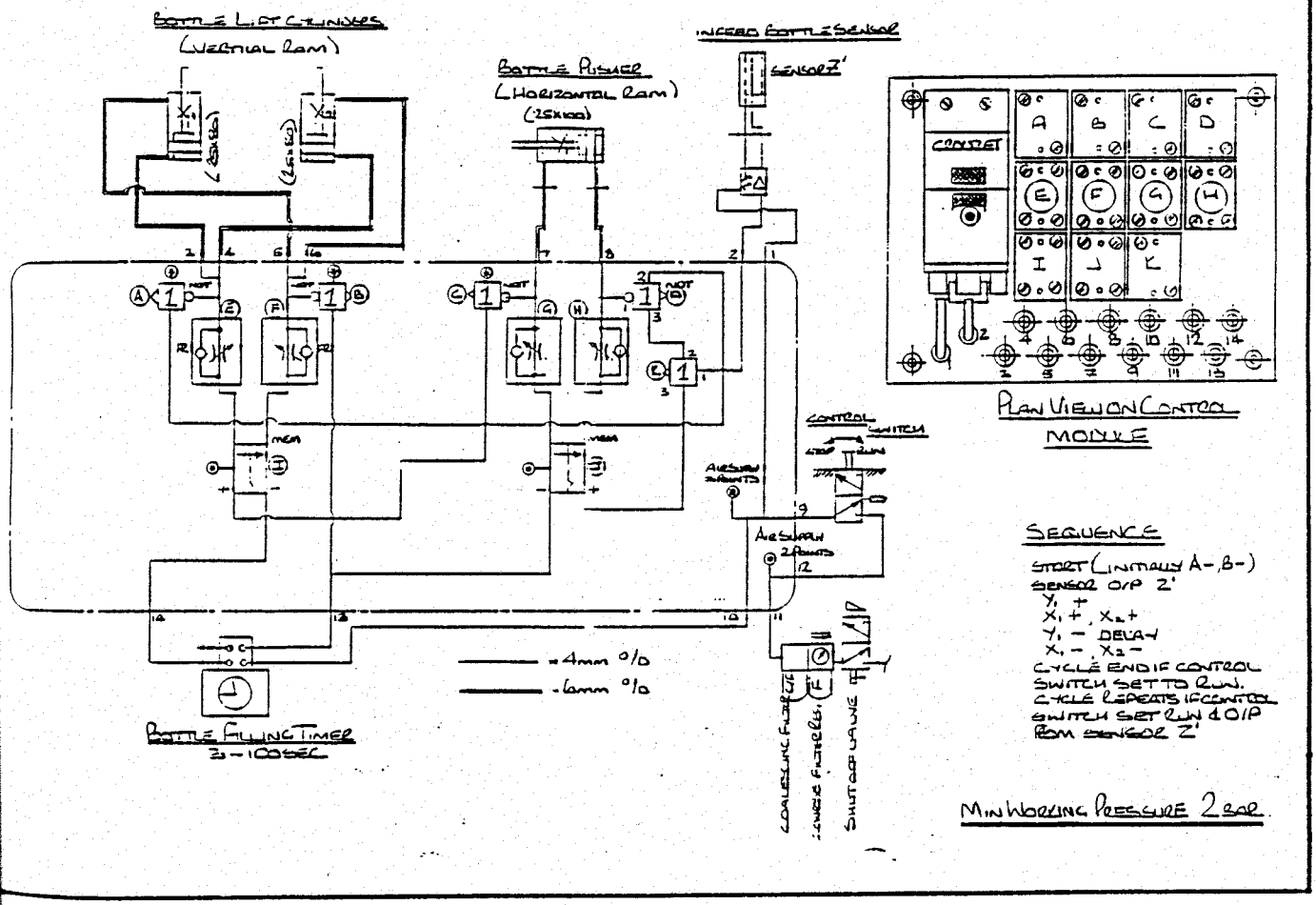
Cap Sorter Assembly



Compak Cap Sorter

Maintenance.

Pneumatic Control



Flow Diagram.

Pneumatic Sequence

SEQUENCE.

Set run (A-, B-)
Sensor 'X' Output
B+
A+
B- Delay (set timer 3 - 100 sec)
End. If set to 'stop'
(at any time in sequence)
Repeat if set to 'run' and there is a output from sensor 'X'

Refer to Pneumatic circuit drawing for the location of the logic units.

NOTE:

When working through the "logical sequence", in the case of green or red, when the table shows "yes" this means that the button of that colour has pressure behind it. When stating "no" there will be no pressure behind the button.

Pressure can be detected when finger pressure is applied to the button.

YES	Air Pressure Present
NO	No Air Pressure Present

LOGIC SEQUENCE.

Initial (A-, B-)

			NOT			Memory Flip - Flop		YES
	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	no	no	no	no	—	—	—	no
Red	no	no	no	no	no	—	—	no
1	—	—	—	—	—	no	yes	—
3	—	—	—	—	—	yes	no	—

2 Set run 'on'

	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	yes	no	yes	yes	no	—	—	no
Red	no	yes	no	no	yes	—	—	no
1	—	—	—	—	—	no	yes	—
3	—	—	—	—	—	yes	no	—

Cont. on next page

Sequence (Cont...)

Speed of cylinder are control by flow restricters E.F.G & H(thumb control switches)

E Controls - stroke of the vertical rams.

F Controls + stroke of the vertical rams.

G Controls + stroke of the horizontal rams.

H Controls - stroke of the horizontal rams.

Circuit requires at least 2 bar for control circuitry to operate correctly.

All components are sealed for life units and therefore do not require lubrication or maintenance.

Sequence

If the sensor Z is reading a bottle in position and also if the control switch is set to 'run' then the 'yes'(K) unit will then register an input and will therefore give an output to the memory unit (J) "plus side", this will then send the horizontal ram (Y) out.

When the ram achieves full stroke the not unit (C) will then give an output to the + side of the memory unit (I) which will then send the vertical rams (X_1 & X_2) out. When the rams are at maximum stroke the 'not' unit (B) will give an output which will reset the memory (J) back to -, sending the horizontal ram back. At the same time the pulse from the 'not' unit (B) will start a timer to ,introduce a delay of 3 to 100 seconds into the circuit.

After the delay the timer then gives an output which then resets the memory unit (I) back to -, sending the vertical rams back. At this point if the switch is set to 'stop' the cycle will stop, even if bottles are present. If set to 'run' then the cycle will begin again until either the control switch is set to 'stop' or no bottles are present.

Basically the cycle is as follows:-

START - Switch set to 'run'

output from sensor 'Z'

Y_1 +

X_1 +, X_2 - (at the same time)

Y_1 -, Delay

X_1 -, X_2 -, (at the same time)

Cycle ends if control switch is set to 'stop', cycle repeats if the switch is set to 'run' & there is an output from sensor 'Z'.

Pneumatic Sequence

Cont from previous page.....

3. Sensors 'X' Output

		NOT			Memory Flip - Flop		YES
	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	yes	no	yes	yes	no	—	—	yes
Red	yes	yes	no	no	yes	—	—	yes
1	—	—	—	—	—	no	yes	—
3	—	—	—	—	—	yes	no	—

4. B+

	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	yes	no	yes	yes	no	—	—	yes
Red	no	yes	no	no	yes	—	—	yes
1	—	—	—	—	—	no	no	—
3	—	—	—	—	—	yes	yes	—

5. A+

	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	yes	yes	yes	no	yes	—	—	no
Red	no	no	no	yes	no	—	—	no
1	—	—	—	—	—	yes	no	—
3	—	—	—	—	—	no	yes	—

6 B- (Timer Starts)

	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	no	yes	no	yes	yes	—	—	no
Red	no	no	yes	no	no	—	—	no
1	—	—	—	—	—	yes	yes	—
3	—	—	—	—	—	no	no	—

7. A-

	Ampl'	**A**	**B**	**C**	**D**	**I**	**J**	**K**
Green	no	yes	yes	yes	no	—	—	no
Red	no	no	no	no	no	—	—	no
1	—	—	—	—	—	no	yes	—
3	—	—	—	—	—	yes	no	—

8. Repeat if set to 'run' and there is an output to the sensor

Maintenance.

The Capper 'Torqueing Tool. (Air screw driver - semi automatic)

Daily remove the 4mm air supply pipe and add a small shot of light oil. A good quality sewing machine oil will suffice.

If this procedure is not regularly maintained the torqueing tool may be irreparably damaged.

Main Pneumatic Air Supply.

Daily blow down both filters, see below

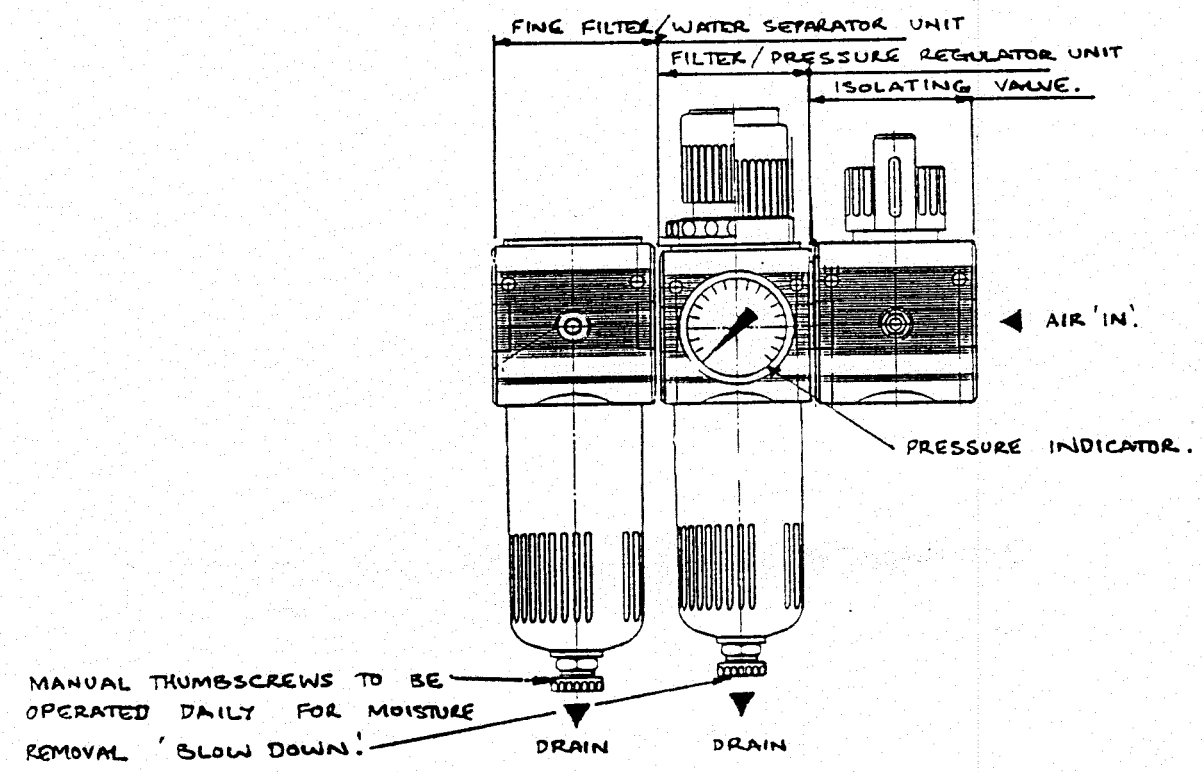


Fig 1

Filter Maintenance Diagram.

Lubrication

Pneumatics

As mentioned under the relevant section all pneumatic components are sealed for life units.

The pneumatic hand torqueing tool requires an application of light oil on a daily usage basis. alternatively a compressed air oil filter/lubricator unit can be installed in the air line.

Conveyor Drives

Providing these units are not installed in a hostile enviroment, oil changes are to be carried out every 18000 hours of operation.

Use Duckhams VG200

or

Mobil Glygoyle 30S

With an oil quantity (size 50) 0.6L.

The conveyor idler sprocket bearings are fitted with accessible grease nipples that should have grease applied on a weekly basis using a hand gun.

Slat Lubrication

This is not required with plastic bottles and perplas chain.

Trouble Shooting.

Trouble Shooting.

1. Failure to cycle.

a Possible inadequate air pressure take up to min of 50 p.s.i.

b Bottle presence sensor fails (Page B/2 fig 1 Item 19). This can be caused by no signal being transmitted from the sensor caused by water or contamination with product or dirt. Ensure the bottle sensor is protected from water jets during wash down.

Water in the sensor can cause failure to sense presence of bottles and continuous cycling of machine even when no bottles are present.

c Water in the amplifier can sometimes be cleared by reversing the 4mm nylon hoses on top of the amplifier with the air turned 'on'.

d Amplifier (Item L fig 5 B/9) on control board has a brass pressure adjusting screw on the bottom of the amplifier under connection 2. to increase the air pressure rotate clockwise.

2. Bottle Lift Ram.

Uneven motion of the bottle lift ram caused by :-

a Uneven lengths of pipes from control module at connections 3,4,5, & 6. These must be of equal length.

b Leaks the Compak has sealed for life cylinders. Leaks can be checked for by the use of soapy water.

3. Bottles Not Positioning Under Valves.

Reasons:-

a Incorrect size tank fitted for bottles in production.

b Back guide rail set incorrectly. This causes filled bottles at discharge causing the misplacement of infeed empties on the bottle lift ram.

c Miss-shaped bottles

d Infeed sensor bracket incorrectly set(alignment pins will show if the sensor bracket is correctly located).

e Bottle pusher ram incorrectly set (Adjustable brackets accessible under cover).

f Lift ram, cabinet and conveyors must be level.

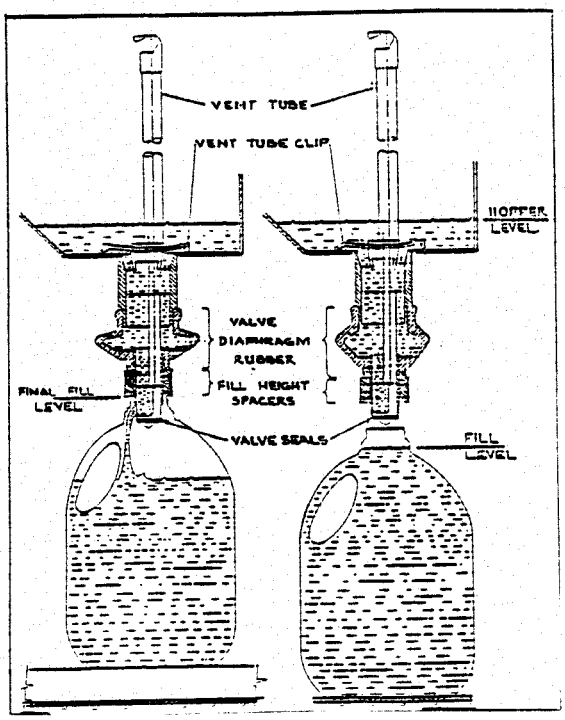
g Bent valves

h Bottle pusher ram forward speed too great.(see fig 5 Adjust H)

4. Fill Level.

Filling time is controlled by an adjustable Bosch or Kuhnke pneumatic timer located on the inside door of the base cabinet. Adjustment is graduated in seconds and repeats to the set point each cycle. Optimum filling is achieved by trial and error dependent on bottle shape, product and foam tendency.

Fill level in order to meet statutory requirements volumetrically or by weight is achieved by the use of space rubbers. the thinnest rubbers giving the finest fill height "tuning".



N.B. A typical plastic weight variation of upto 7gm can occur on a 4 pint

5. Pneumatic Operation. - Some simple faults highlighted.

a If the bottle lift ram stays in the "lift position" the "timer" may have failed to operate. Two reasons could be:-

i) Spool in valve below timer is seized.

ii) Return spring broken.

6. Speed Control Of Vertical & Horizontal Ram Motions.

Reference Fig 5.

Adjustable thumb wheel controllers are fitted to the pneumatic control board as follows:-

E Vertical Ram "UP"

F Vertical Ram "DOWN"

G Horizontal Ram "RETURN"

H Horizontal Ram "FORWARD"

The Capper.

Inadequate Cap Supply.

a Check the three springs are present (Item 19 fig 3).

b The drum rotates clockwise with the springs trailing.

c Check that the plastic back plate is level (i.e. flush) with the cap discharge opening. (Fig 3 item 5)

d Check that the caps are not jammed in the chute.

e Check for broken tear-off tabs and clear from the drum and sorter.

f Check the "tamp on springs" are set correctly (Item 24 Fig 3).

g Overfilling in the drum will result in damaged caps and restrict capping speed.

h Ensure that the caps pass through the sorter ring pins (see Item 1 Fig 3)

2. Caps presented the wrong way in Chute.

a Check for missing pins in sorter ring (Item 1 fig 3).

b Check that the correct caps are in use.

3. Cap Dispensing.

a Position cap chute centrally to bottle top ensuring that side rails are adjusted accordingly.

b Ensure bottom of cap chute is located 1/8" from the top of the bottle.

c Check caps are leaving the chute

PTO

The Capper.(continued)

If not leaving the chute correctly check:-

i) Adjust spring to hold back a full chute of caps i.e not too firmly held. (Item 14 Fig 3).

ii) Saw Cut at neck of cap chute (see enlarged detail on fig 3) should be flared out slightly to allow the presented cap to be smoothly discharged by the neck of the passing bottle.

d The 'Pre Tightener' should be preset to within 1/16" of the cap.

e Ensure that the serrated pre tightener grips the cap thumb serration's and is parallel with the conveyor.

NOTE

Due to continual improvement and investment the Company reserves the right to modify or alter any of the specifications mentioned in this manual without prior notification.

Supplied By:

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