

# CENTRAIR MK IV

## Air Operated Filling Machine

Read all instructions carefully before running the machine.

### Specifications:

**VOLUME RANGE:** 1 ml to 1300 ml.

Volume range is dependant upon pump size fitted.  
These are:-

Type	Maximum Capacity	Approximate Pump Inside Diameter
VVS	1-15 ml	10 mm
VS	80 ml	22 mm
Small	230 ml	35 mm
Medium	500 ml	50 mm
Large	790 ml	63 mm
Very Large	Up to 1300 ml	84 mm

**OUTPUT:** Up to 30 per minute.

**ACCURACY:**  $\pm 1\%$  down to half pump stroke.

**PNEUMATICS:** Martonair Standard Units.

**CONSUMPTION:** 6.4 cfm of air at 50 lbs inch<sup>-2</sup>.  
(0.18 m<sup>3</sup>min<sup>-1</sup> at 3.5 kg cm<sup>-2</sup>)

**PRESSURE:** 50-80 lbs inch<sup>-2</sup>.  
(3.5-5.62 kg m<sup>-2</sup>)

**DIMENSIONS (mm):** 1000(L)×370(W)×165(H)  
(Note: Height (H) is without hopper)

**WEIGHT:** 40 kg *without hopper*.  
(Hoppers from 2 kg to 10.5 kg)

### Packing Specifications:

	Case size	Gross weight	Nett weight
Centrair with Hopper:	110x60x75cms	100kg	50kg
Without Hopper:	119x51x28cms	60kg	40kg
Compressor:	135x46x100cms	136kg	95kg

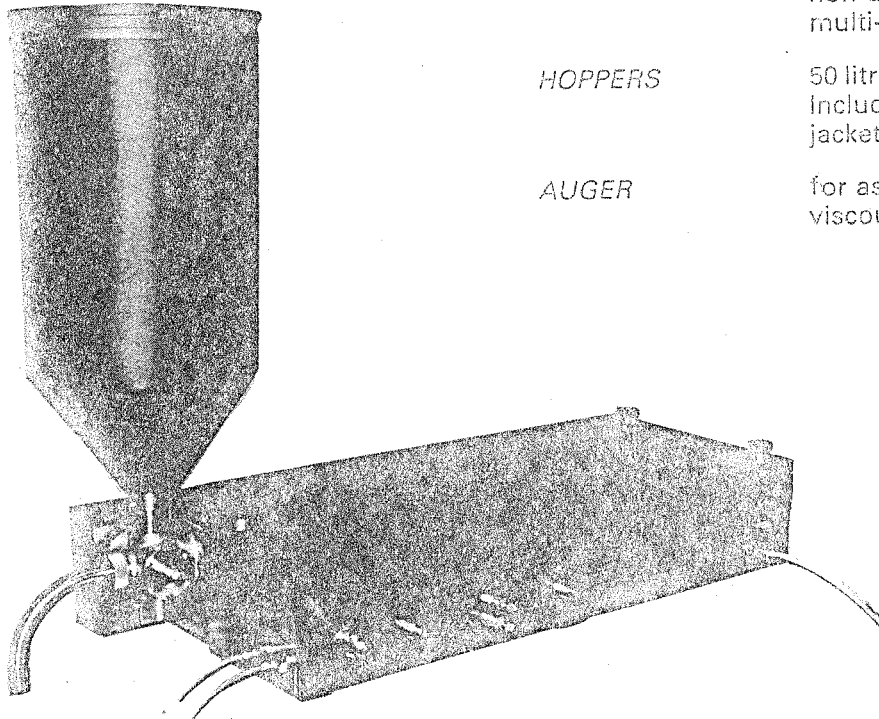
### Interchangeable Parts:

**LIQUID HEAD** complete with 3 interchangeable nozzles: 5 mm, 7 mm, 9 mm o.d.

**CREAM HEAD** wide range of nozzles available, with variety of diameters and special non-drip, bottom filling or multi-purpose types.

**HOPPERS** 50 litre, 20 litre, 6 litre.  
Including water heating jackets and heating mantles.

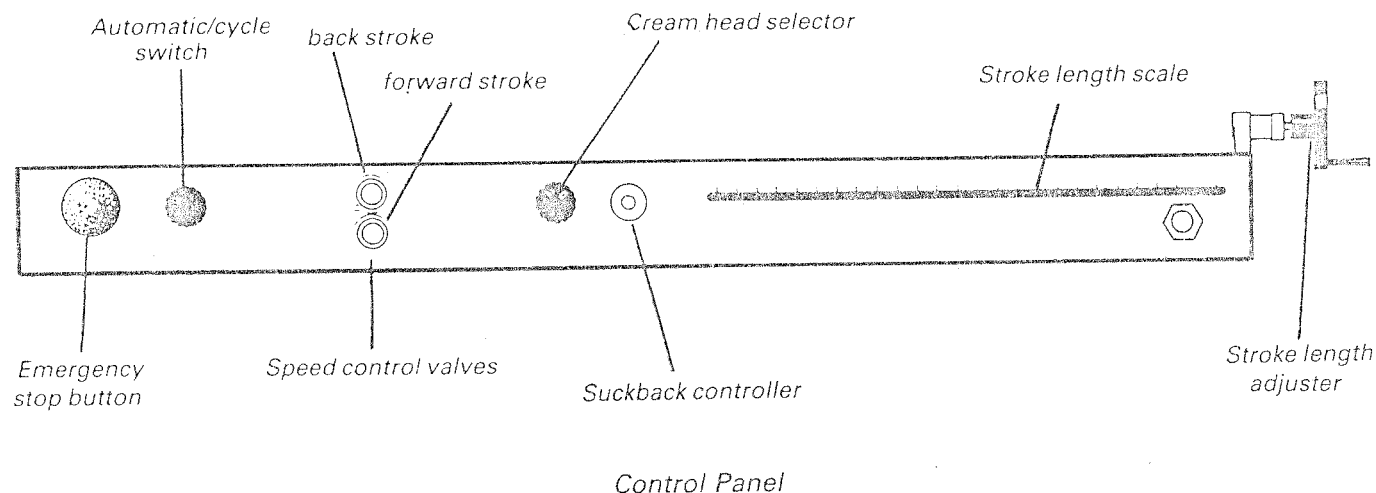
**AUGER** for assisting the flow of very viscous fluids.



## Operation of Filler

### Main Control Panel:

The controls of the Filler comprise:



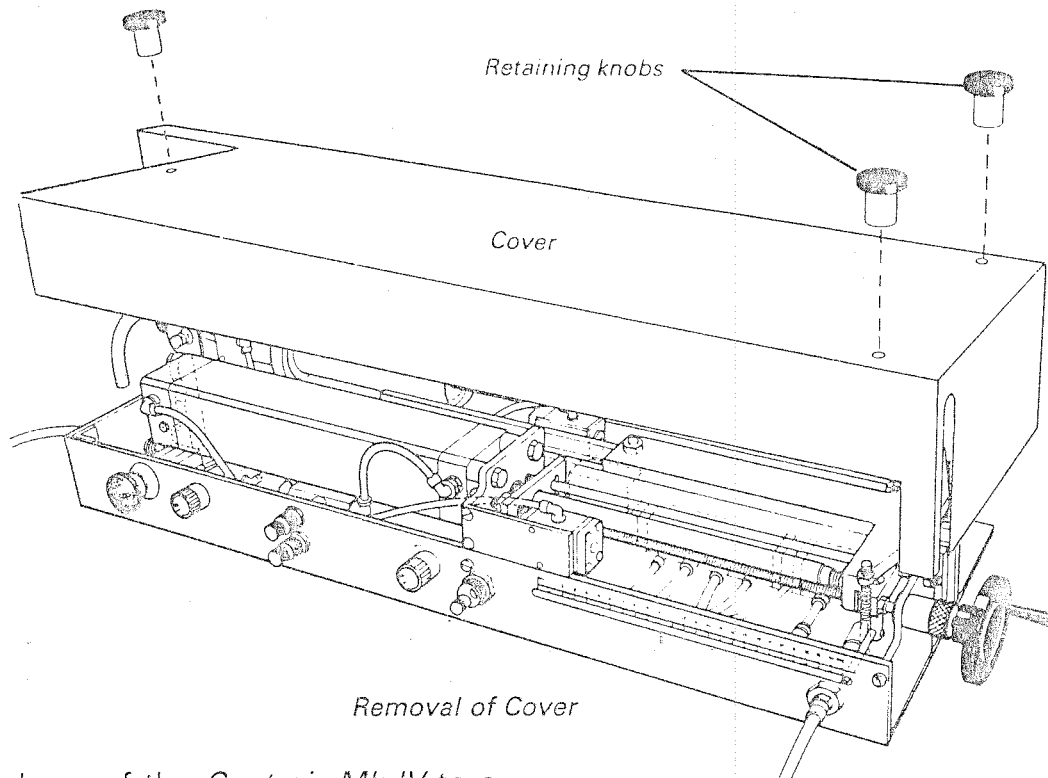
Control Panel

Control	Function
Emergency Stop button	Stops filler immediately and dumps air
Automatic/cycle switch	<ul style="list-style-type: none"> <li>- Automatic Allows continuous operation.</li> <li>- Cycle Allows one-cycle-and-stop operation when foot pedal depressed. Pedal to be released and depressed again for next cycle.</li> </ul>
Speed Control Valves	Adjust speed of backward or cylinder filling, stroke.
- Back stroke	
- Forward stroke	Adjusts speed of forward or container filling stroke.
Cream Head Selector	Turns cream head tapered valve on or off.
Stroke Length Adjuster	Alters stroke length of filling cylinder - hence volume of fill.
Footswitch	Commences fill cycle when depressed.

## Installation

Upon receipt of the *Centrair Mk IV*, check all components are present, and that no shipping damage has occurred.

UNSCREW the cover retaining knobs on top of the filler and remove the cover.



BOLT the base of the *Centrair Mk IV* to a suitable firm work table, using the holes provided in the base plate.

CONNECT the air supply.

### **!WARNING!**

Only clean LUBRICATED air must be used. Pass air through a filter/regulator/lubricator set.

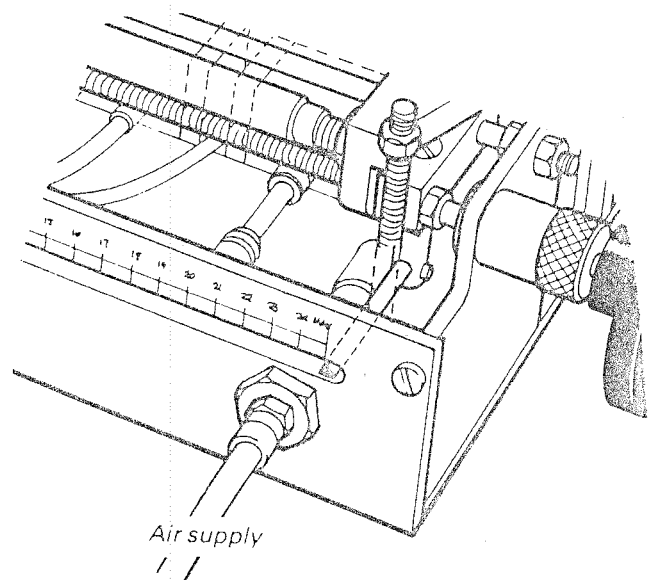
Working pressure = 50-80 psi  
(3.5-5.6 kg cm<sup>-2</sup>)

Note: Air supply connector is fitted with a nut and sleeve suitable for  $\frac{5}{16}$ " o.d. (8mm o.d./6mm i.d.) nylon tubing.

REPLACE the cover unit and tighten retaining knobs.

If liquid head fitted: attach feed tube to bulk container.

If cream head fitted: screw on hopper.



### **!WARNING!**

DO NOT OVERTIGHTEN. STAINLESS STEEL SCREW THREADS MAY JAM.

## Filling Heads

### *Cream Filling Head:*

TURN ON the cream head selector switch.

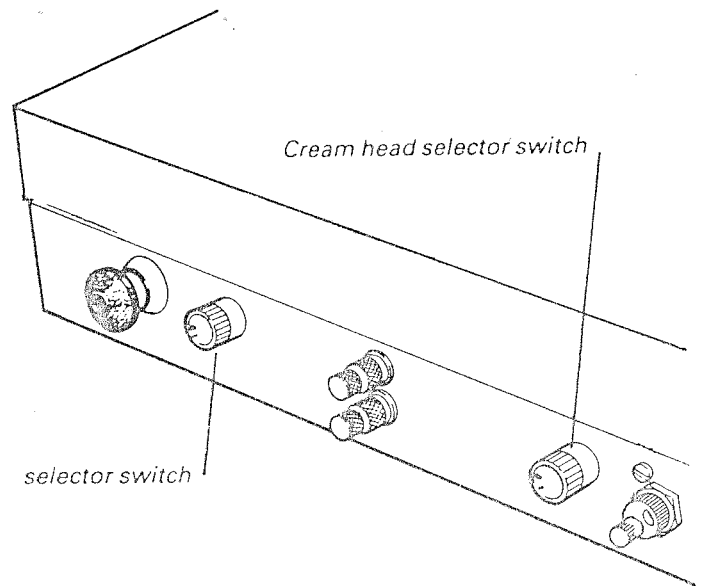
FILL the hopper.

SET mode selector to cycle position.

PLACE container under nozzle and,

PRESS footswitch.

CHECK filling - adjust if required.



*Cream Filling*

### *Liquid Filling Head:*

TURN OFF cream filling head selector.

CONNECT liquid head infeed pipe to bulk product tank.

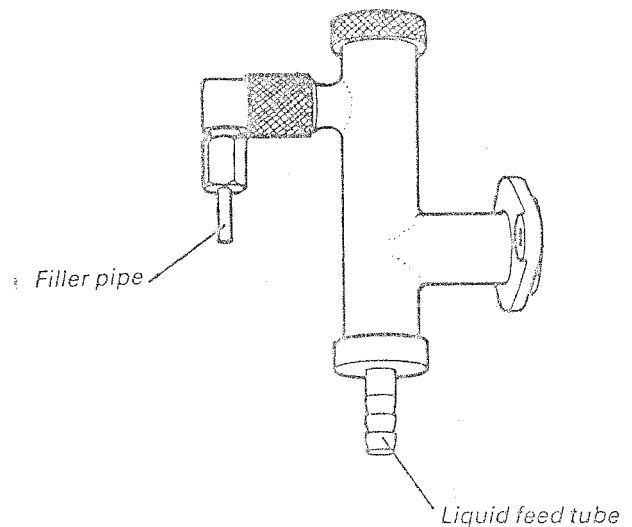
SET mode selector to cycle.

PLACE bottle under filling spout.

PRESS footswitch.

CHECK filling quantity/weight.

ADJUST fill volume if required.



*Liquid Filling Head*

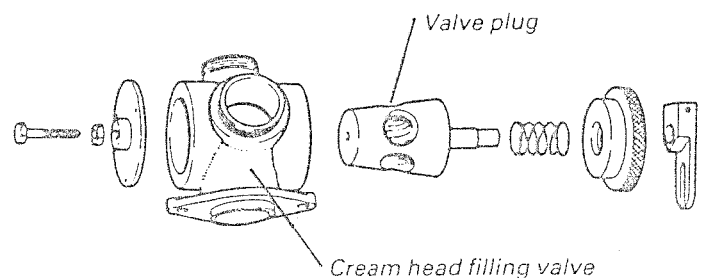
**!WARNING!**  
Keep product tank below level of filling head. SYSTEM MUST NOT BE PRESSURE/GRAVITY FED.

## Adjusting Cream Filling Head Valve

The cream filling head valve requires careful adjustment to ensure effective operation.

If the plug touches its seat - it can stick.

If the plug is too far from its seat- excess leakage can occur.



*Adjust Plug Valve*

## End of Fill Stroke Damper:

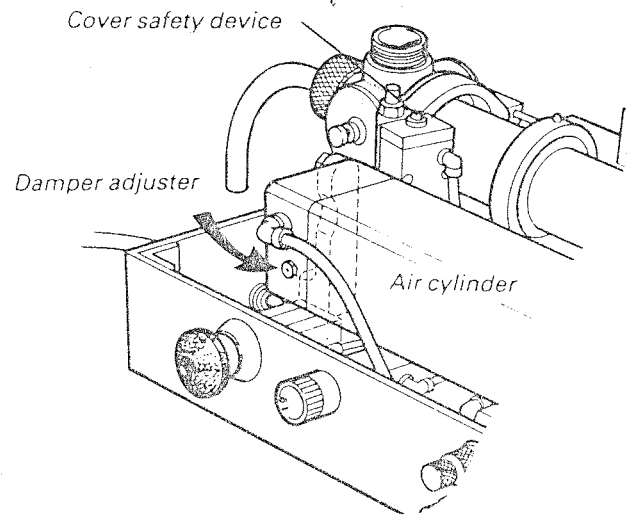
An additional control is fitted to the main filling cylinder. This adjusts the speed of the very last part of the cylinder stroke. It is thus particularly useful to slow down the last part of the filling cycle - i.e. prevents splashing/spillage when a narrow necked bottle is being filled.

To adjust:

REMOVE cover of filler.

USE small screwdriver supplied to adjust cylinder internal screw:

Clockwise -	increases damping effect.
Anti-clockwise -	decreases damping effect.



Fill Stroke Damper Adjustment

## Cover Safety Device

A safety switch is fitted to the main cover. When cover is removed the filler cannot be operated. **NEVER TAMPER WITH THE SAFETY SWITCH.**

## To Adjust Filling Volume

The filling volume is adjusted by varying the filling cycle length.

**!WARNING!**  
DO NOT ADJUST WHEN CYLINDER AT END STOP POSITION

Adjust as follows:-

PRESS foot pedal to start filling cycle.

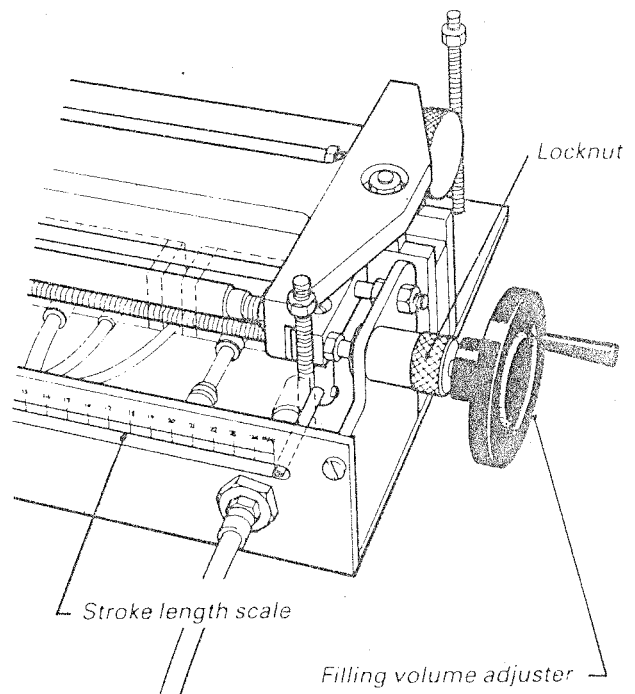
WHEN filling cylinder is in mid-cycle

PRESS Emergency Stop Button.

ADJUST filling cycle length as required.

RESET Emergency Stop.

Carry out two filling cycles and test product fill weight or volume. Repeat above adjustment if required.



Note: Once the correct setting has been obtained for a specific product/container, the filling stroke should be noted on the stroke length scale. This allows rapid resetting when changing product/containers.

## Filling Cylinder:

AFTER removing cream or liquid filling heads,

UNDO knurled securing nut at end of cylinder rod.

SLIDE complete cylinder unit out of filler.

UNSCREW end spacer of piston and remove:

- end spacer
- cup washers/piston seals
- centre spacer
- inner spacer.

CLEAN all parts thoroughly.

REASSEMBLE in reverse order.

Note: If fitting new cup washers/piston seals, fit one at a time, with concave side facing towards rod end. Insert in cylinder and slide up and down a few times. This compresses the seals slightly and makes it easier to assemble correctly in the back to back position.

If a different diameter cylinder is to be fitted - replace cylinder pump bracket spacer with new size unit.

The Cream Filling head and liquid filling head can now be readily dismantled for cleaning purposes. Refer to exploded views for correct assembly.

## Cream Filling Head

UNSCREW the side cap and remove the plug and lever arm complete.

Note: If lever arm has to be replaced or removed - always ensure that the position mark on shaft aligns with slot in the arm.

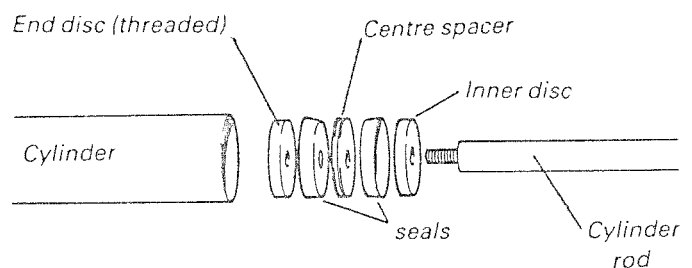
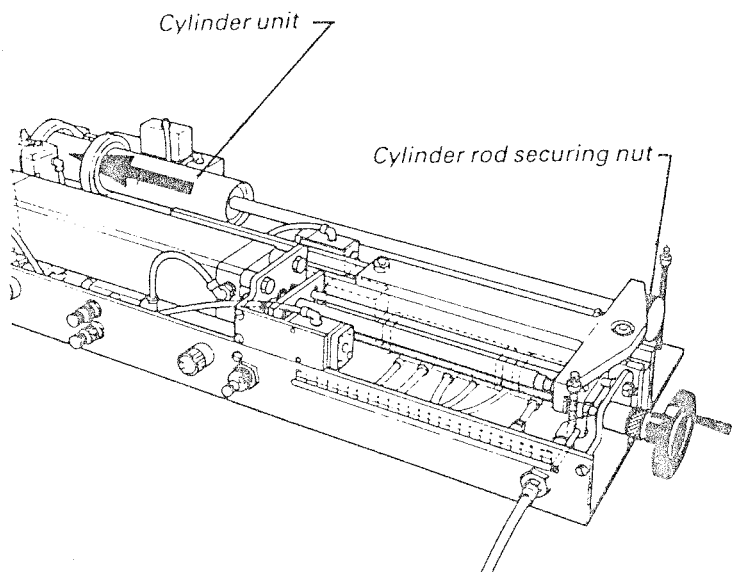
## Changing Pumps

Various capacity pumps are available. When replacing these or changing sizes of pump, please note the following:

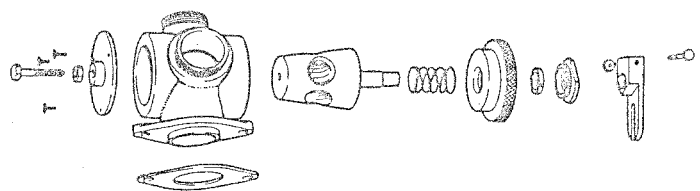
- Piston spacers may vary in number and style.
- Always fit the correct size of pump bracket spacer.

For 750 ml size - no spacer required.

For 1300 ml size - no spacer required but a special bracket will be needed.



Filling Cylinder



Cream Filling Head

To adjust the valve, proceed as follows:

REMOVE the Filler cover if possible. If hopper is in position, this operation can be done with cover in situ.

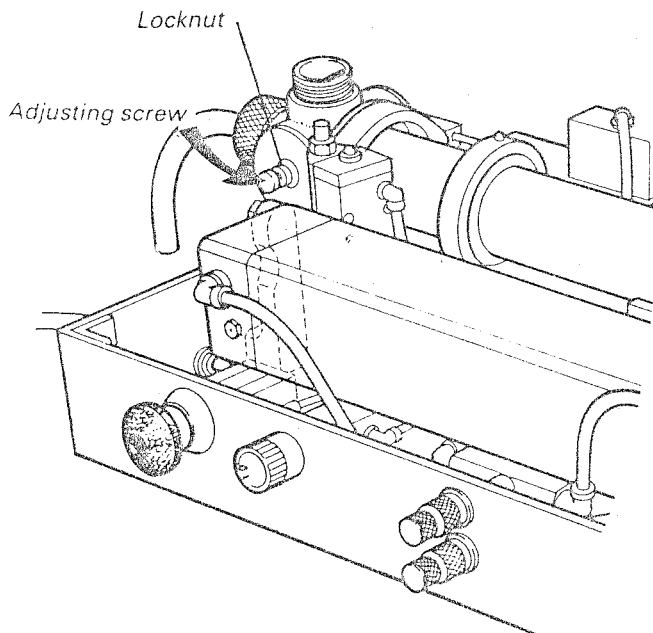
SLACKEN the locknut.

SLACKEN the adjusting screw until the valve stiffens as plug touches body.

TURN the adjusting screw back approximately one turn.

TIGHTEN locknut.

CHECK the valve is free to rotate.



*Cream Head Valve Adjustment*

## Shutting Down

Always run out as much of the product as possible before stopping the machine.  
Clean the machine by pumping through hot water or solvent - depending on the product being used.

To strip the machine for proper cleaning, proceed as follows:

### For Cream Head:

UNSCREW Hopper.

REMOVE Filler cover.

UNSCREW Filler nozzle.

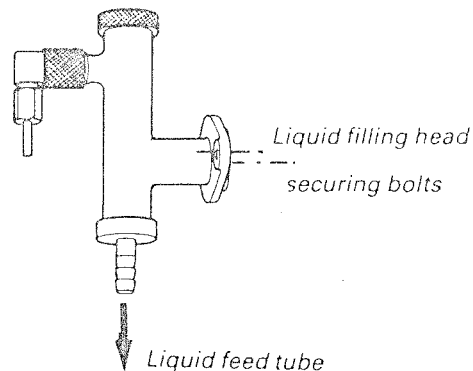
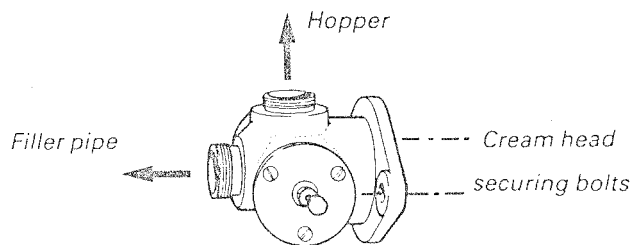
UNSCREW Cream head securing nuts.

SLIDE Cream filling head off, taking care of cut off link.

### For Liquid Head:

DISCONNECT Liquid feed tube.

UNSCREW Liquid filling head securing nuts.

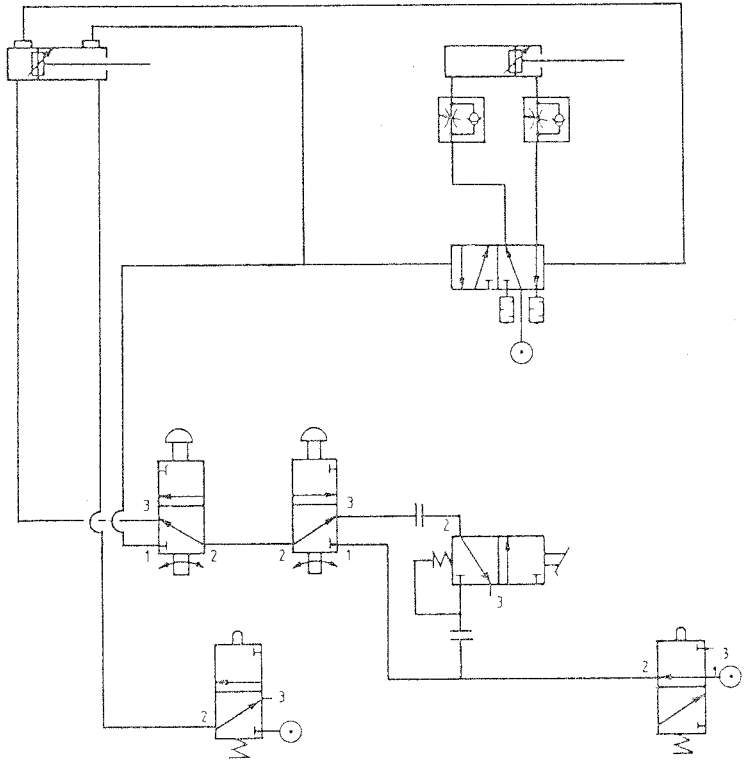
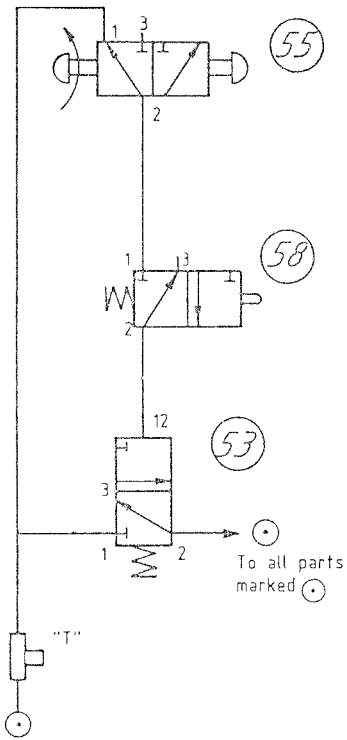


*Cream and Liquid Heads*

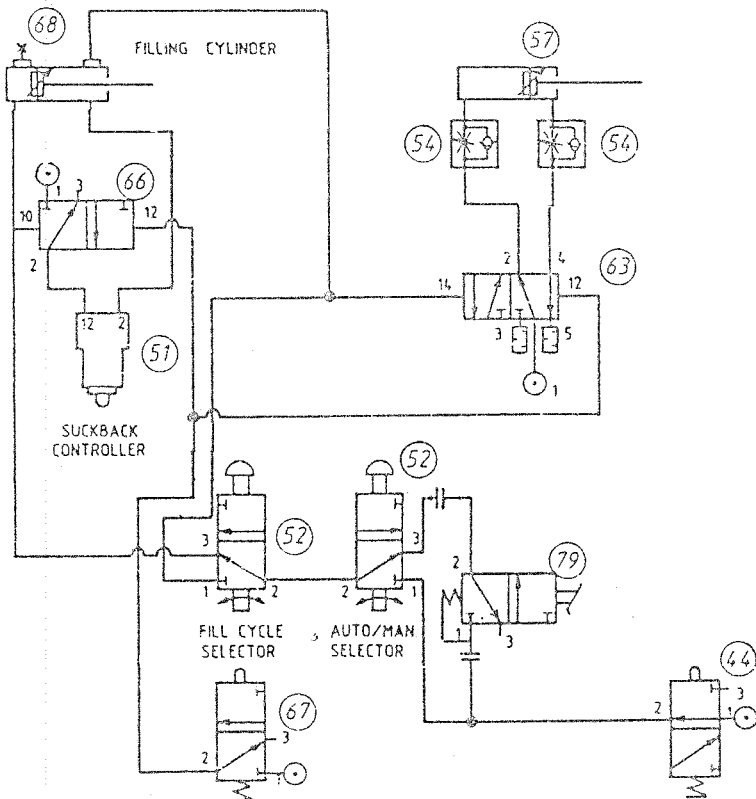
# Pneumatic Circuits

All the functions of the *Centrair Mk IV* are operated pneumatically. No maintenance of pneumatic items should be necessary, except for the regular inspection of joints, pipes, unions, etc. for leaks. Replace worn or damaged hoses as required.

## EMERGENCY STOP



STANDARD CIRCUIT  
(without suckback unit)



ALTERNATIVE CIRCUIT

The *Centrair Mk IV* is supplied with a suckback controller as an option. This requires a change to the pneumatic circuit - both circuits are summarised here.



## Maintenance

The *Centrair Mk IV* is constructed almost entirely of stainless steel. It is thus extremely easy to keep clean and hygienic.

The following simple maintenance routines will ensure a long and trouble free service life.

### Air Line Lube/Filter Unit

An air lubricator and filter unit should always be fitted in the air supply lines.

CHECK oil level and filter DAILY. Top up with Shell Tellus 27 (or equivalent).

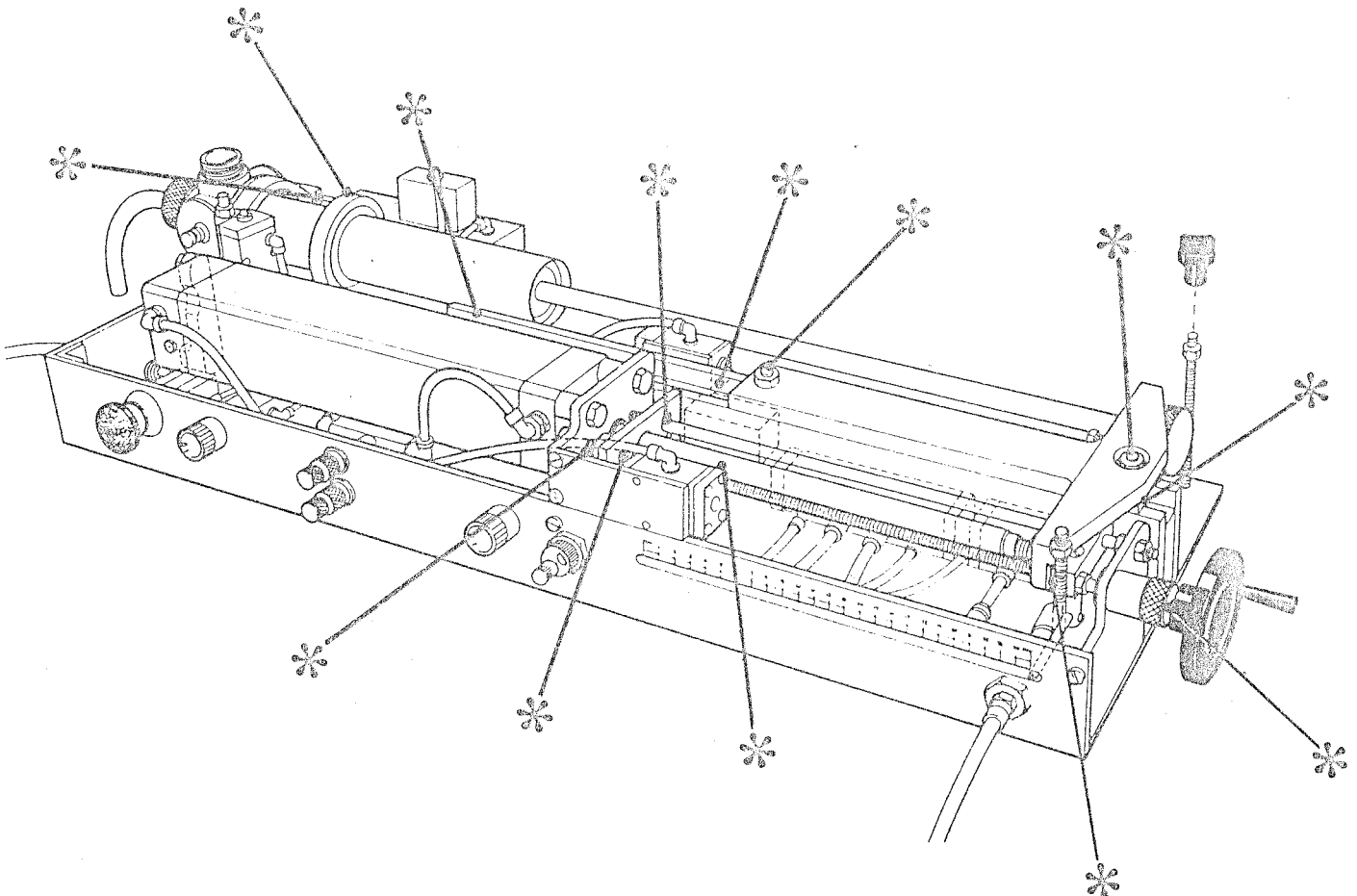
Note: If not available, liquid paraffin may be used although this may cause premature wear or corrosion if used for prolonged periods.

### Filler Unit

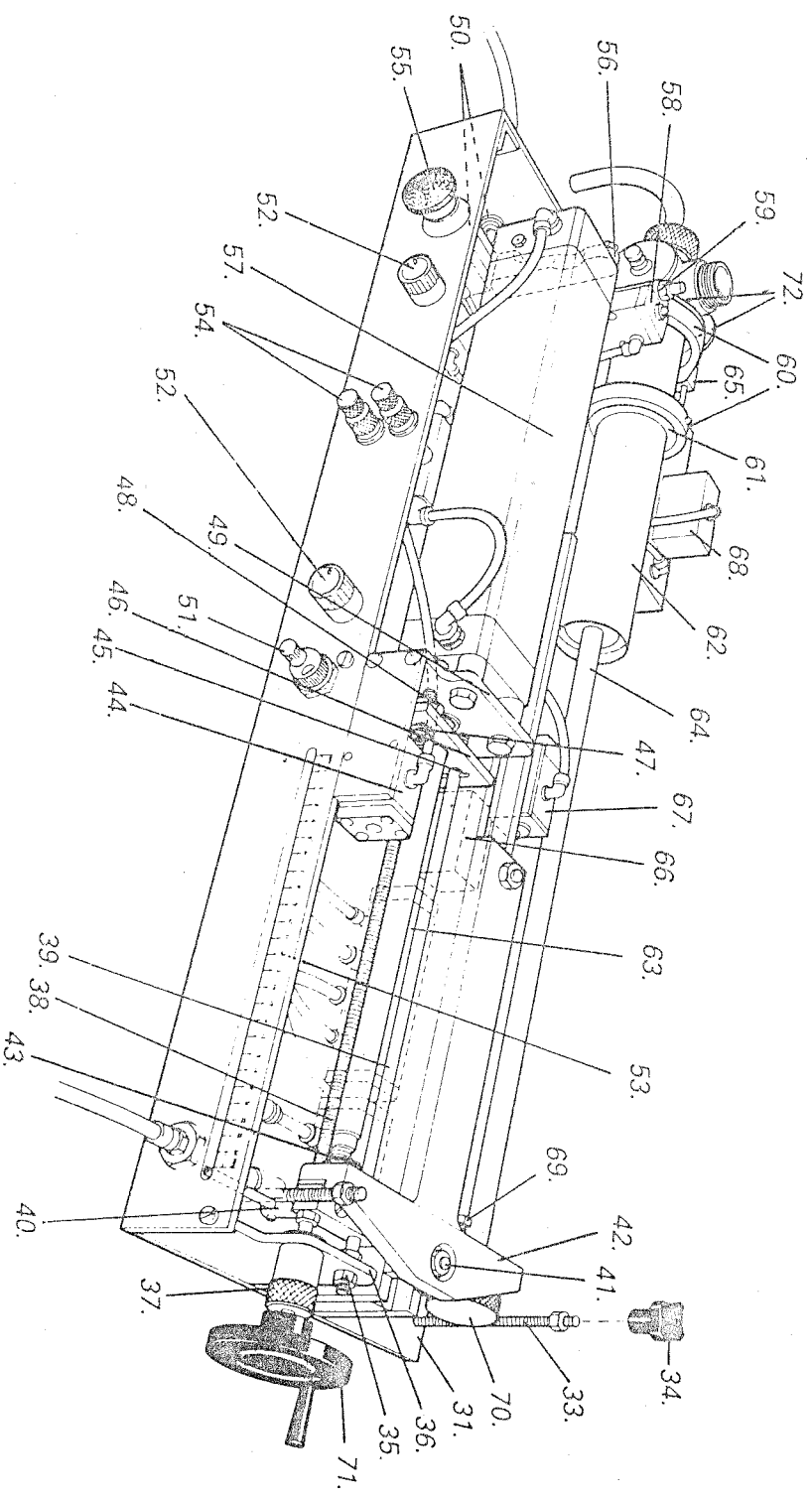
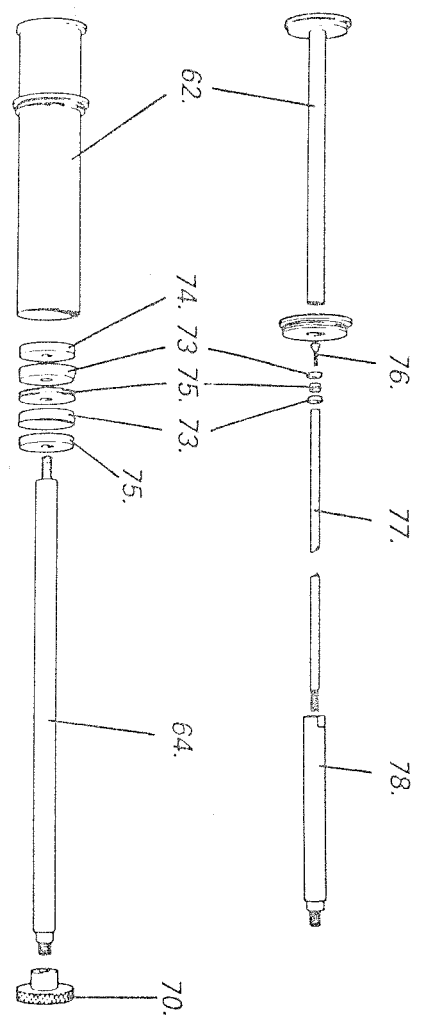
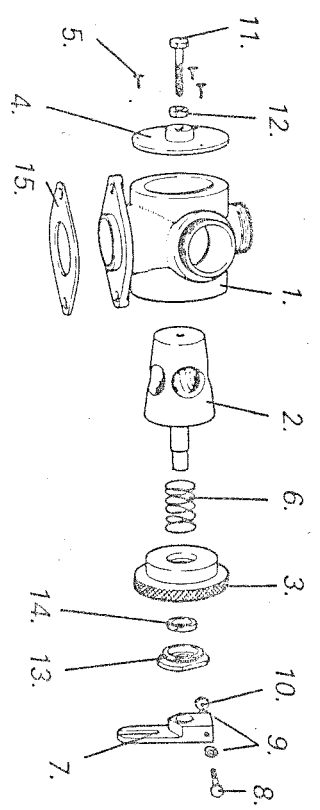
A number of points on the filler require the occasional application of a little light machine oil. These parts are marked \* on the lubrication diagram below:

ESSO	Teresso 43
Castrol	Hyspin AWS 32
Gulf	Hydrasil 41
Duckhams	Spindle Oil H1
Mobil	Gargoyle Almo No.1

**IMPORTANT:** Oils must be paraffinic based lubricant equivalents.



Lubrication Points



## Spare Parts

A full list of parts is included below.

Refer to the illustrations to assist in the correct identification of parts.

### Spare Parts Ordering Procedures

1. Always quote the full Serial Number of your machine.
2. Include a full description (from parts list) of the item required, together with the Part Item Number - refer to illustration and parts listings.
3. Clearly state the number of items required.
4. Include your full Company name and contact address.

### PARTS LIST

No.	Part	No.	Part
1.	Cream filling head body.	45.	Tension pivot pins.
3.	Side cap screwed.	46.	Valve operating plate.
4.	Side plate.	47.	Back stop nut.
5.	Side plate retaining screw.	48.	Front stop nut.
6.	Spring head for plug.	49.	Back main cylinder mounting plate complete.
7.	Cut off lever.	50.	Foot valve connectors.
8.	Cut off link retaining screw.	51.	Suckback controller (if fitted).
9.	Cut off link washers.	52.	Selector switch.
10.	Cut off link retaining nut.	53.	Inlet manifold.
11.	Plug adjusting screw.	54.	Speed control valves.
12.	Plug adjusting nut.	55.	Emergency stop button.
13.	Guard cap.	56.	Front main cylinder support bracket.
14.	PTFE packing gland.	57.	Main air cylinder.
15.	Head gasket.	58.	Cover switch.
16.	Liquid filling head body.	59.	Cover switch bracket.
17.	Lower ball valve body.	60.	Pump bracket.
18.	Not fitted.	61.	Pump bracket spacer.
19.	Not fitted.	62.	Filling pump.
20.	Bottom cap.	63.	Main cylinder control valve.
21.	Bottom washer.	64.	Piston rod.
22.	Flexible hose.	65.	Clevis complete with pin.
23.	Not fitted.	66.	Suckback control valve (if fitted).
24.	Top cap.	67.	Air valve in stroke.
25.	Top washer.	68.	Cut off cylinder.
26.	Nozzle locking nut.	69.	Filling stroke adjusting screw (Pre-set at works - <b>DO NOT ADJUST</b> ).
27.	Nozzle locking nut washer.	70.	Piston rod knob.
28.	Elbow.	71.	Handwheel.
29.	Small hex nut.	72.	Filling head mounting nuts.
30.	Jet (set of 3).	73.	Cup washers (state pump size).
31.	Mainframe.	74.	Cup washers lock nut.
32.	Cover (not shown).	75.	Set stainless steel spacers (state pump size).
33.	Cover support screw.	76.	VVS retaining screw.
34.	Cover support knob.	77.	VVS piston rod.
35.	Tie bar lock nut.	78.	VVS piston stub shaft.
36.	Outer support plate assembly.	79.	Footswitch (not shown).
37.	Locking ring assembly.	80.	Spring (2 off).
38.	Volume adjusting screw.	81.	Ball (2 off).
39.	Tie bar.	82.	Ball retainer, upper.
40.	Stroke setting bar & pointer complete.	83.	Ball retainer, lower.
41.	T.Bar bearing.		
42.	T.Bar.		
43.	Main cylinder lock nut.		
44.	Air valve out stroke.		

# Common Filling Problems

FAULT	PROBABLE CAUSE	SUGGESTED REMEDY
Cream Head Valve does not operate	Plug valve not correctly adjusted	Re-adjust plug valve
Cream Head Valve leaks	Plug valve not correctly adjusted	Readjust plug valve
Difficulty in adjusting stroke length	Attempting to adjust when in "parked" position (at end of stroke)	Only adjust when in mid-cycle position.
Product foaming	Too high speed filling of cylinder causing cavitation etc.	Reduce speed of back stroke or lengthen nozzle with tube and bottom fill
Splash Back	Too high a filling speed	Reduce speed of forward (fill) stroke
Air trapped in container	Fill speed too high	Slow down forward stroke speed.
	Poor container manipulation during filling process	Attempt better container manipulation during filling. If necessary, reduce forward stroke speed.
Liquid drips at end of fill cycle.	Nozzle too large	Fit smaller filling nozzle.

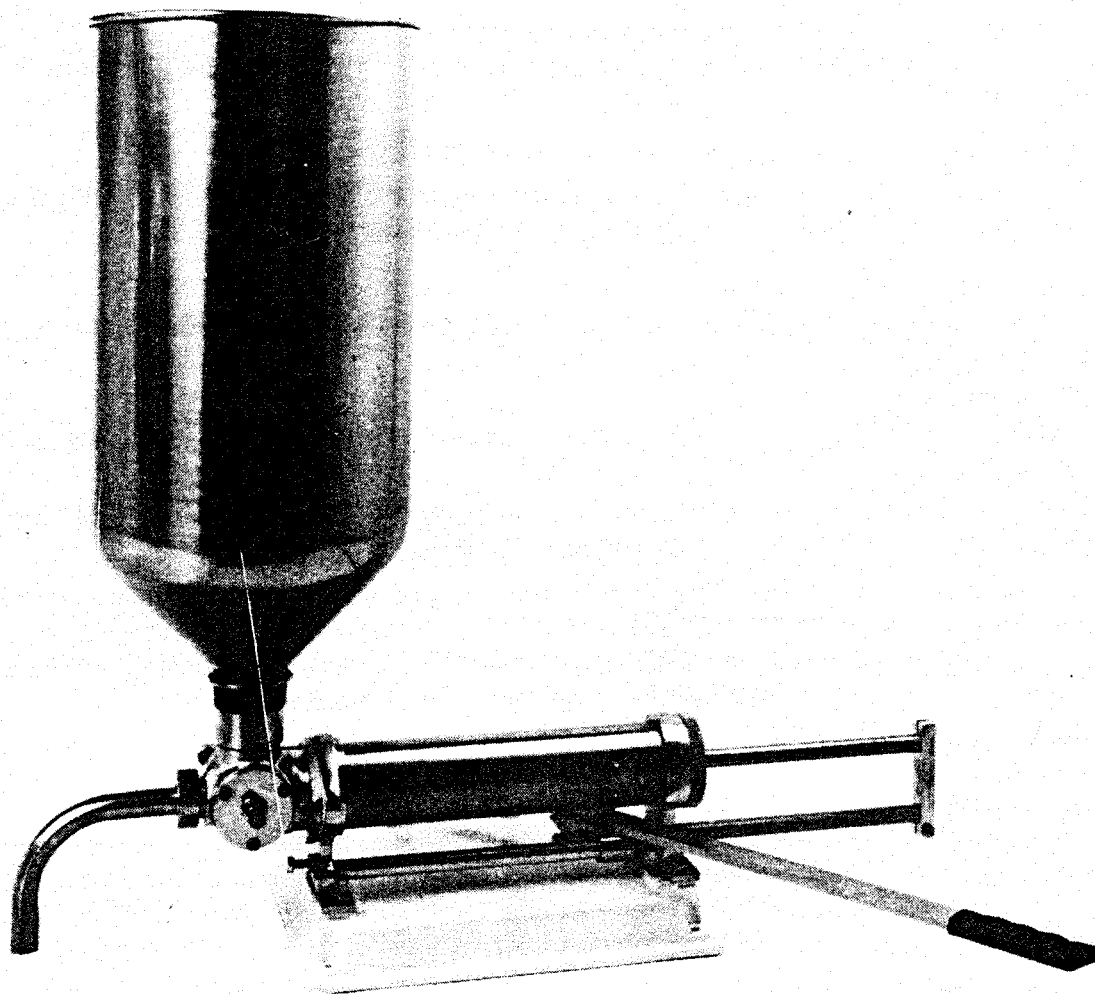
64 9 100  
 38 2 64  
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INSTALLATION AND OPERATING INSTRUCTIONS FOR:

# *Centrac Mark III*

HAND OPERATED FILLING MACHINE

READ ALL INSTRUCTIONS CAREFULLY BEFORE USING THE MACHINE



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ADELPHI MANUFACTURING CO LIMITED  
Olympus House, Mill Green Road, Haywards Heath, RH16 1XQ  
England Tel: 44 (0)1444 440091 Fax: 44 (0) 1444 440272

## INSTALLATION

Fix machine to a solid bench or worktop so that the Filling Nozzle will be clear of the bench.

### TO FIT PUMP

Select Pump for volume to be dispensed as follows:—

Pump	Dia. mm	Max. volume
V.S.	22	75 cc
Small	35	200 cc
Medium	50	400 cc
Large	63	650 cc

Assemble Piston Rod (part No. 41) with Cup Washers (49) and Spacers (50, 51 or 53) in the following sequence:—

Place back Spacer and back Washer on the Piston Rod and push the assembly into the rear of the Pump Cylinder until the Washer is level with the front of the Cylinder.

Place centre Spacer and front Washer on the Piston Rod and screw on front Spacer.

Draw the Piston Rod assembly into the Pump.

Additional Seals, 'O' Rings, are provided to fit to centre Spacer and should **only** be fitted when the Cup Washers are worn and moving freely (These are generally not required for viscous or abrasive products).

Place correct Piston Spacer Ring (47) into Piston Back Body (46).

Place Pump Assembly into Base Set with Pump Flange flush with Piston Front Body (58) and Piston Rod located in Clamp Block (42). Tighten bolt in Clamp Block. Tighten Lock Nut.

### TO FIT FILLING HEAD

Two Filling Heads are available. The Liquid Head for aqueous products and the Cream Head for viscous products.

#### THE LIQUID HEAD

Place Gasket on Flange and bolt to Piston Front Body. Fit Base Pivot for Liquid Head (38).

#### THE CREAM HEAD

Place Gasket on Flange and Bolt to Piston Front Body. Fit Base Slide for Cream Head (35). Fit Cut Off Link (15) to Cut Off Lever (7). Fit Hopper and Nozzle.

If, in operation, the (tapered) Cream Filling Head Plug (2) does not move freely in the Cream Filling Head Body (1), slacken Plug Adjusting Nut (12) and unscrew Plug Adjusting Screw until it is no longer in contact with the Cream Filling Head Plug. Then screw in until contact is made and continue for approx. half to one full turn thus lifting the Plug clear of the Body.

Tighten Plug Adjusting Nut.

### TO ADJUST VOLUME

Ensure the Machine is not drawing in air by slowly working Handle until material begins to come out of the Nozzle, or if filling collapsible tubes push a tube fully onto the Nozzle and make one complete back and forward stroke of the Handle. If volume dispensed is too small, move Stop Collar (48) to the rear. If too large, move Stop Collar forward. Continue until correct volume is dispensed.

For fine adjustment of volume the Fine Adjusting Screw (61) on the Front Piston Body below the Head can be used, by slackening the Lock Nut and screwing the Fine Adjusting Screw in or out as desired.

### TO CLEAN

Pump out as much as possible of product being filled then flush out with hot water or suitable solvent. If further cleaning is required reverse procedure for fitting Filling Head.

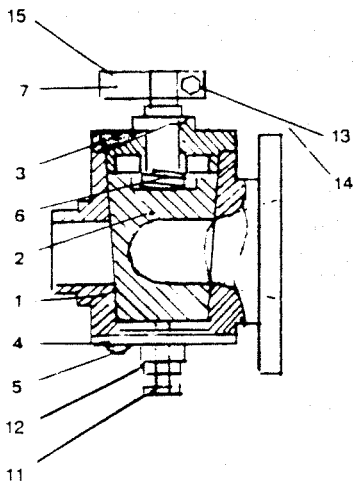
The Liquid Filling Head can be stripped by removing Top Cap (24) and Bottom Cap (20).

The Cream Filling Head can be stripped by removing Side Cap Screwed (3) and Side Plate (4).

Remove Pump strip and clean.

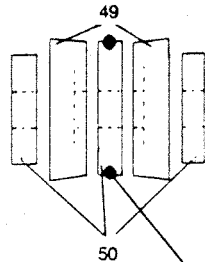
### MAINTENANCE

Keep all moving parts oiled regularly.



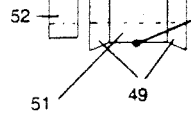
CREAM FILLING HEAD

SMALL  
MEDIUM  
LARGE  
PUMPS

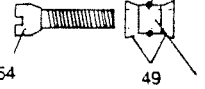


V.S. PUMP

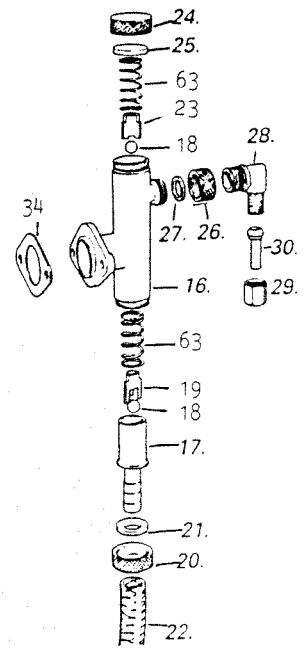
O RINGS  
STATE PUMP SIZE



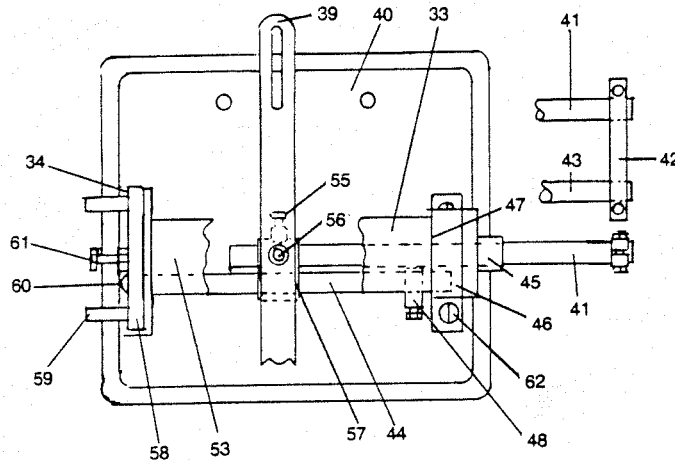
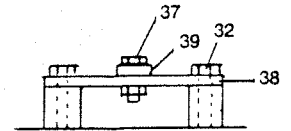
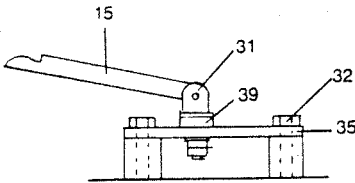
V.V.S. PUMP



CUP WASHER ASSEMBLIES



LIQUID FILLING HEAD



- 1. Cream Filling Head Body
- 2. Cream Filling Head Plug
- 3. Side Cap Screwed
- 4. Side Plate
- 5. Side Plate Retaining Screw
- 6. Spring for Head Plug
- 7. Cut off Lever
- 8. Cut off Link Retaining Screw
- 9. Cut off Link Washers
- 10. Cut off Link Retaining Nut
- 11. Plug Adjusting Nut
- 12. Plug Adjusting Screw
- 13. Cut off Lever Retaining Screw
- 14. Cut off Lever Retaining Nut
- 15. Cut off Link
- 16. Liquid Filling Head Body
- 17. Lower Ball Valve Body
- 18. Ball 0.5" s/s
- 19. Ball retainer lower s/s.
- 20. Bottom Cap
- 21. Bottom Washer
- 22. Hose
- 23. Ball retainer upper PIPE.

- 24. Top Cap
- 25. Top Washer
- 26. Large Nut
- 27. Large Nut Washer
- 28. Elbow
- 29. Small Hex Nut
- 30. Jets Set of 3
- 31. Base Slide Knuckle Assembly (for Each Head)
- 32. Pillar Set Screw
- 33. Filling Pump (State Size)
- 34. Head Gasket
- 35. Base Slide for Cream Head
- 37. Set Screw (Pivot) & Locknut for Liquid Head
- 38. Base Pivot for Liquid Head
- 39. Handle
- 40. Base Plate
- 41. Piston Rod
- 42. Clamp Block
- 43. Piston Pull Rod
- 44. Guide Rod
- 45. Piston End Cap
- 46. Piston Back Body
- 47. Piston Spacer Ring (State Pump Size)

- 48. Stop Collar
- 49. Cup Washers VVS
- 49. Cup Washers VS
- 49. Cup Washers Small
- 49. Cup Washers Medium
- 49. Cup Washers Large
- 50. Set S/S Spacers Small
- 50. Set S/S Spacers Medium
- 50. Set S/S Spacers Large
- 51. Spacer V.S. Pump Set
- 52. Retaining Nut V.S. Pump Set
- 53. Spacer V.V.S. Pump Set
- 54. Retaining Screw VVS Pump Set
- 55. Slide Block Retaining Screw
- 56. Handle Lever Retaining Screw
- 57. Lever Slide Block
- 58. Piston Front Body
- 59. Filling Head Studs
- 60. Guide Rod Screws
- 61. Fine Adjusting Screw c/w Locknut
- 62. Body Set Screws
- 63. Liquid head spring top and bottom.

# THE ADELPHI GROUP OF COMPANIES

*Manufacturers and Suppliers of:—*

CENTRAC AND CENTRAIR FILLING MACHINES

ACCURAMATIC ELECTRONIC FILLING MACHINES

CAPSULE FILLING MACHINES

HAND & SEMI AUTOMATIC TUBE CLOSING MACHINES  
FOR PLASTIC AND ALUMINIUM TUBES

AUTOMATIC AMPOULE FILLING MACHINES

LIQUID INSPECTION EQUIPMENT

BOTTLE WASHERS

LABORATORY & COMMERCIAL MIXERS, STIRRERS, HOMOGENISERS &  
EMULSIFIERS

STAINLESS STEEL TANKS & HOLLOWARE

SUPPOSITORY, PESSARY, PASTILLE & TRITURATE MOULDS

TABLET COUNTERS

GENERAL PHARMACEUTICAL EQUIPMENT

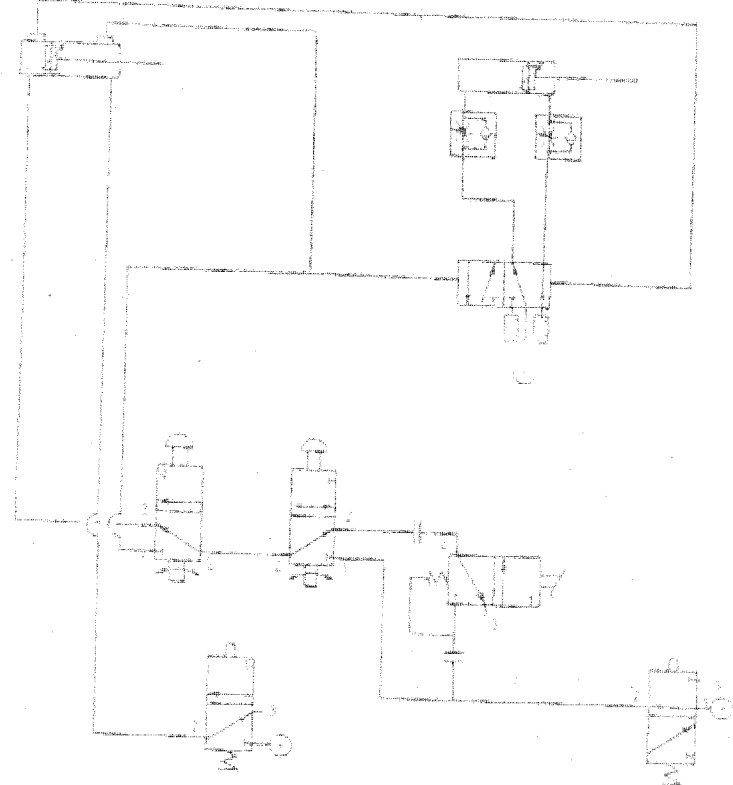
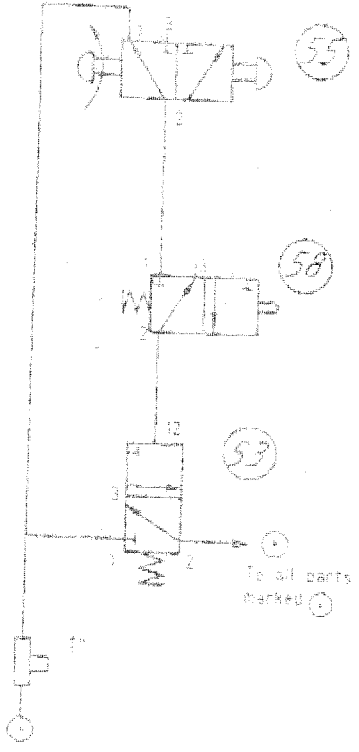
STOCKISTS OF COLLAPSIBLE ALUMINIUM TUBES, AMPOULES & VIALS



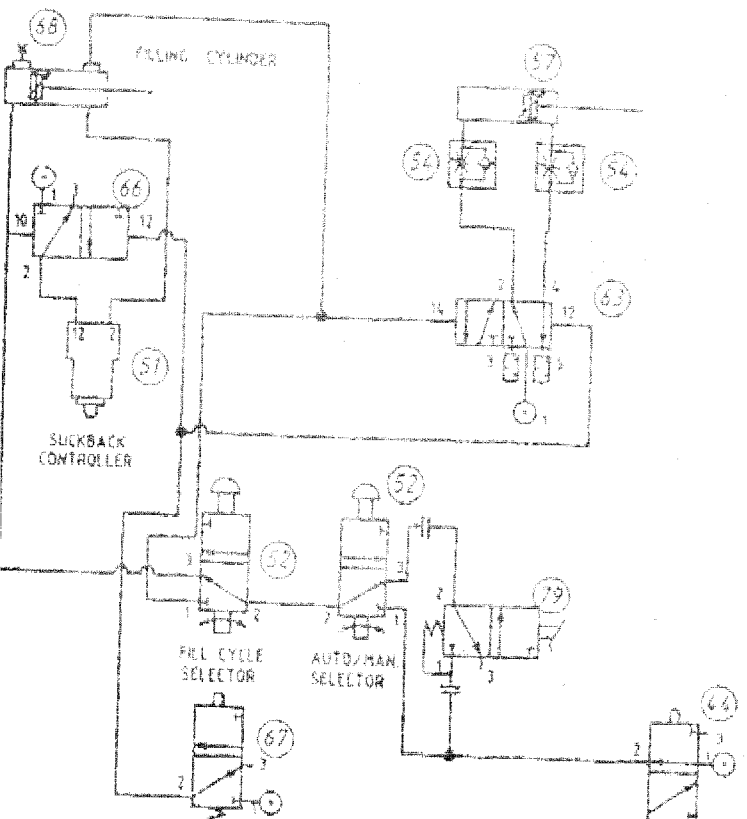
# Pneumatic Circuits

All the functions of the *Centrain Mk IV* are operated pneumatically. No maintenance of pneumatic items should be necessary, except for the regular inspection of joints, pipes, unions, etc. for leaks. Replace worn or damaged hoses as required.

EMERGENCY STOP



STANDARD CIRCUIT (without suckback unit)



The *Centrain Mk IV* is supplied with a suckback controller as an option. This requires a change to the pneumatic circuit - both circuits are summarised here.

