

# **WINGET**

## **OPERATION, MAINTENANCE & SPARE PARTS MANUAL**

### **KOEHRING 1.5 m<sup>3</sup>/2 Cu.yd CT TILTING MIXER**

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# **WINGET**

## **TILTING MIXER**

# **KOEHRING**

## **1.5 m<sup>3</sup> 2 Cu.Yd**

### **CT MIXER**

#### **MACHINE No 99 ONWARDS**

This manual is a reprint of the Winget publication No S84 last printed during August 1971 and is a direct copy of one of the remaining original manuals.

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## **Description & Operation**

## DESCRIPTION AND OPERATION INSTRUCTIONS

### GENERAL

The  $1\frac{1}{2}$  cu. metre (2 cu. yd.) C.T. MIXER is usually mounted in a Central Batching and Mixing Plant. It has a high efficiency mixing action and a clean and speedy discharge.

The mixer is of the type usually known as the open inclined axis mixer, in which charging and discharging are accomplished through the same opening. The drum has an inclination of  $15^{\circ}$  for the charge and mixing position and is moved pneumatically to  $60^{\circ}$  for discharging the batch.

Mixing is accomplished by means of three axial blades revolving in a constant direction. Abrasion resisting steel liners are fitted around the inner surfaces of the drum and a wearing ring on the open end. (All are replaceable.)

The drum is pivoted centrally on a spindle between two taper bearings and has a gear ring secured on the back end, driven by a 20 h.p. geared head motor unit which is mounted horizontally on the underside of the yoke turning the drum at 13 rpm.

### ERECTION PROCEDURE

Before moving the mixer the yoke and mainframe must be lashed together with the air cylinders in the closed position. There are four welded eyes positioned on the yoke allowing the mixer to be lifted safely on four points.

The mixer when positioned on its platform in the Central Batching Mixing Plant, should be bolted securely.

### PNEUMATIC CONTROLS FOR MIXING TILTING

The system consists of the following:-

- a) Two - 10" dia. x 25" stroke air cylinders.
- b)  $\frac{3}{4}$ " Bore - way control valve, double solenoid pilot automatic operated biased mid. position (Valve A).

## System Operation:-

### 1. Mixer in Charge Position:-

- a) Cylinders are retracted.
- b) Solenoid valve A de-energised spool in mid biased position.

### 2. Mixer to Discharge

- a) Signal from control desk energises solenoid A1 (Valve A) which extends cylinders.
- b) Exhausting air from top of cylinder ram through speed regulator of Valve "A".

### 3. To Return Mixer to Charge Position

- a) Signal from control desk energises solenoid A2 (Valve A) which retracts cylinders.
- b) Exhausting air from cylinders passes through regulator on Valve "A".

#### NOTE:

In the event of an electrical power failure on this solenoid system, the drum may be tilted in an emergency (provided sufficient air is in the compressor reservoir) by disconnecting and blanking the auxiliary air line to solenoid A.2.

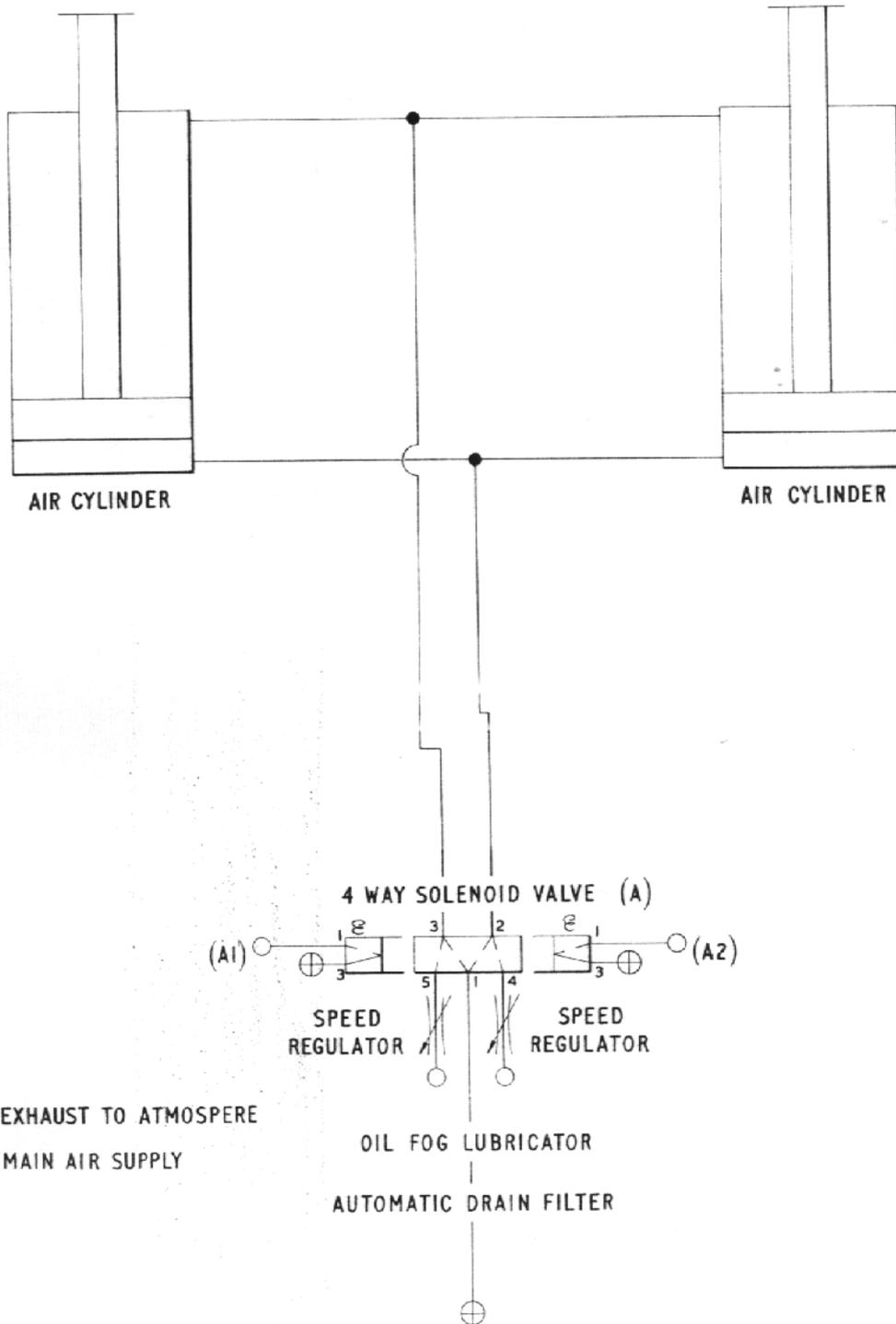


FIG.1 PNEUMATIC CIRCUIT FOR MIXER CONTROL

PRECAUTIONS  
BEFORE  
USING THE  
THE MIXER

Before the unit is started and the mixer operated the following items should be checked:-

- 1) Mixer position fixed securely.
- 2) The manufacturer's instructions on the operation of the geared head motor should be understood.
- 3) The oil level in the geared head motor is up to the level hose (when the geared head is in the horizontal position).
- 4) Check that the gears are clean and free from foreign bodies.
- 5) Air and electric lines secure.
- 6) Rear lashing removed.
- 7) Raise and lower the drum several times to ensure that the pneumatics are functioning correctly.

BREAKING IN  
PROCEDURE

Before placing your mixer into service it is recommended that the drum be charged with one cubic yard of  $1\frac{1}{2}$ " (38mm) aggregate and rotated for a period of not less than two hours. This procedure will not only ensure proper seating and running in of the gears and moving parts, but will polish the blades and drum so that concrete will have less tendency to adhere to these surfaces.

## MIXING

The mixing and control of good concrete is a problem with which every operator is concerned. No definite procedure can be given, as equipment and materials differ in every plant. It is essential that operators experiment with their mixing to obtain the best results.

Mixing and discharging times will be reduced to a minimum if the interior of the mixing drum is kept as clean as possible.

## CLEANING THE MIXER

At the end of each day's work or if the mixer is idle for a period of more than two hours, the mixer should be thoroughly washed, particular attention being given to the drum mouth and drum blades. Admit 15-20 gallons on water to the revolving drum with .75 ins. (19mm) aggregate for the final wash. This water must be discharged before the introduction of the next batch.

**Maintenance**

## MAINTENANCE INSTRUCTIONS

### GEARBOX

After running for 250 hours, thoroughly drain and clean out gearbox and re-fill. It is advisable to drain and re-fill with new oil every 1,000 hours.

Before filling gearbox move into a horizontal position. Remove drain filler and level plugs and flush out thoroughly then re-fill, using 20 pints of "SHELL MACOMA OIL R71"

The breather must always be kept clean.

REMOVING  
GEARBOX  
AND MOTOR

- i) Disconnect the electrical supply from the mixer by removing the fuses and the electrical connections from the motor at the starter switch. These should be clearly labelled to assist for easy reconnections.
- ii) Drain the oil from the gearbox into a clean container of suitable capacity by removing the plug from the underside of the box.
- iii) If the motor is released separately from the box, secure the motor to a pulley block allowing the pulley to take the weight of the motor when the nuts, bolts and spring washers which hold the motor to the gearbox are released. Lower the motor to the ground and block up.
- iv) In like manner secure the gearbox to the pulley, release the bolts, locknuts and washers and adjusting screws, lower the box to the ground, withdraw the motor pinion and key.

FITTING  
NEW MOTOR  
AND GEARBOX

- i) Carefully position motor on to the gearbox, meshing the motor pinion with its mating gear in the box and secure together.
- ii) Hoist up the gearbox and motor into position on the yoke assembly, ensuring correct alignment with drum gear and pinion. Secure in position.
- iii) Fill the gearbox with oil until oil flows from the level hole. Replace oil level plug and combined filter and breather plug.

REPLACEMENT  
OF WEARING  
PLATES.

To assist in the replacement of wearing plates, they have been divided into easily removable sections.

- i) Remove existing rivets, taking care not to damage the hole in the drum skin. Lift out the remaining wearing plate.
- ii) Clean the inner section of the drum taking the new wearing plate, align the new plate with the hole in the drum skin and re-rivet using round headed rivets.

REPLACEMENT  
OF WEARING  
RING.

A periodic check should be made of the wearing ring fitted on the mouth of the drum. This should never be allowed to wear completely away as this may cause damage to the drum ring.

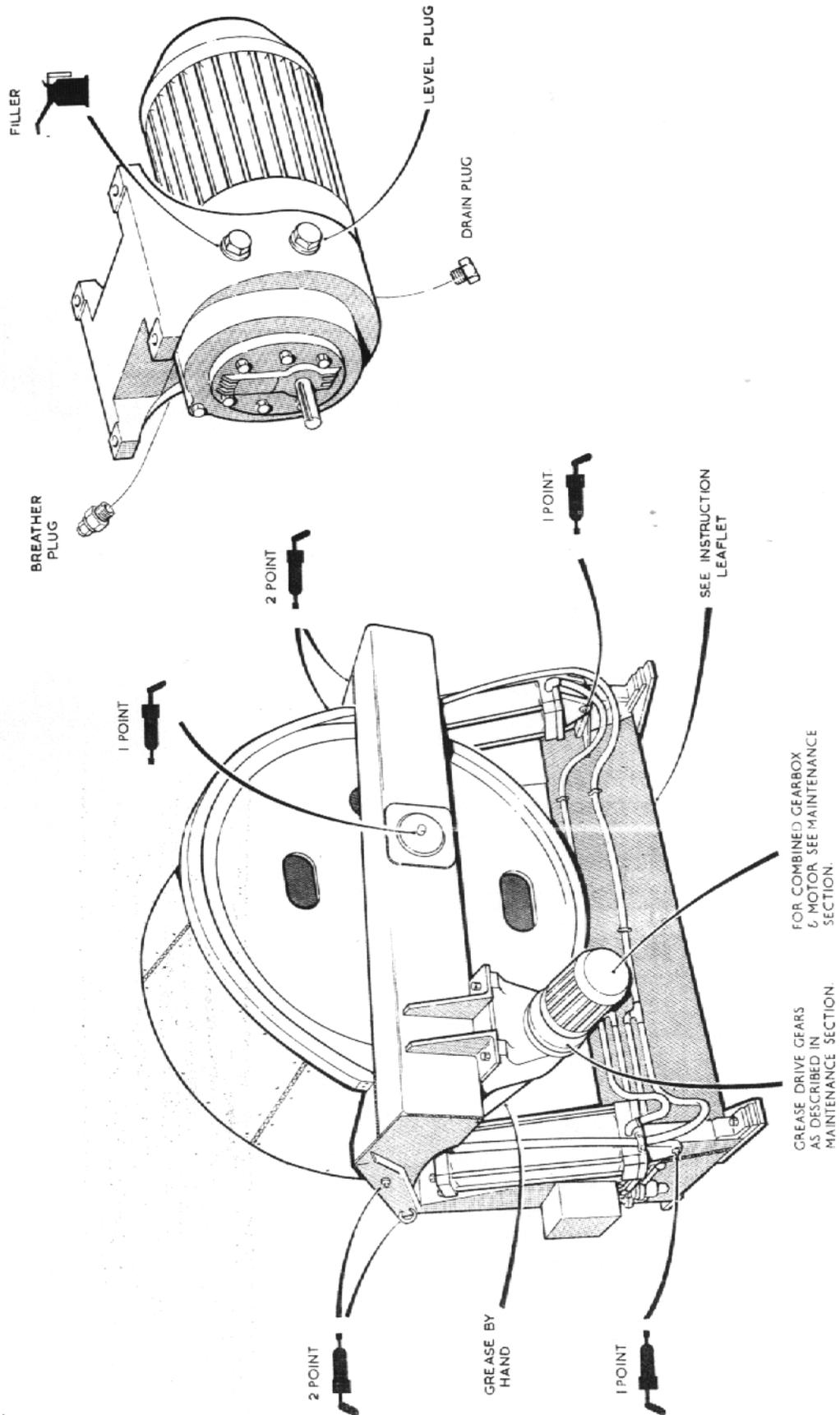
- i) Release the bolts and washers holding the wearing ring and lower to the ground.
- ii) Clean the mating surfaces of the new wearing plate and the drum ring. Lift into position and bolt together. Ensure that the thread end of the bolt is flush with the outer surface of the wearing ring.

REPLACEMENT  
OF BLADES

Badly worn blades should be renewed as follows :-

- i) Remove rivets from brackets holding blades in the drum and lift out.
- ii) New brackets should be bolted to the new blade.
- iii) Clean around the holes and the surface area of the drum. Taking the new blade rivet this into position.

Reference Nos. for these parts may be located in the Spares Section under the relevant group heading.



LUBRICATION DIAGRAM FIG.3

LUBRICATION MAINTENANCE.

<u>MACHINE.</u>	<u>LOCATION.</u>	<u>ACTION.</u>	<u>RECOMMENDED LUBRICANTS.</u>
<u>EVERY 24 HOURS.</u>			
Pneumatics	Lubricators	Check oil level and top up.	L.13
Mixer	Pivot points Main Bearings.	Grease Grease	L. 2 L. 2

<u>EVERY 250 HOURS.</u>			
Mixer	Gearbox	Check oil level and top up.	L. 24
Mixer	Drive Gears	Grease	L. 13
Drum Gear Ring.	Drum	Apply a good quality "open gear grease"	--

<u>EVERY 1000 HOURS.</u>			
Mixer	Gearbox	Drain, flush out and refill.	L. 24

LUBRICANT RECOMMENDATION.

In the following we list the lubricant specifications as recommended by various companies. These are intended as a guide only and should your site conditions be in any way abnormal your local supplier should be consulted.

<u>NO.</u>	<u>SHELL.</u>	<u>ESSO.</u>	<u>MOBIL.</u>	<u>CASTROL.</u>	<u>BP.</u>
L.2	Alvania Grease 2	Cazar K.2.	Mobilux Grease 2	Spheerol APT. 2	Energrease L52
L.13	Cardium Compound D	Surett N850	Dorcia 150	Grippa 60.S	Energol WRL
L.24	<b>MACOMA OIL R71</b>	<b>ESSO F1 REP157</b>		<b>DEV SOL GEAR EP90</b>	<b>ENERGOL GR 30EP</b>

NOTE : Manufacturers special lubricating instructions should be adhered to.

GENERAL MAINTENANCE.

EVERY 24 HOURS.

MIXER	Thoroughly clean the inside and outside of Mixer.
-------	---

EVERY 7 DAYS.

WEARING PLATES.	Check the condition of all wearing plates and drum wearing ring.
-----------------	--

**Spare**

TO FIND A SPARE PART.

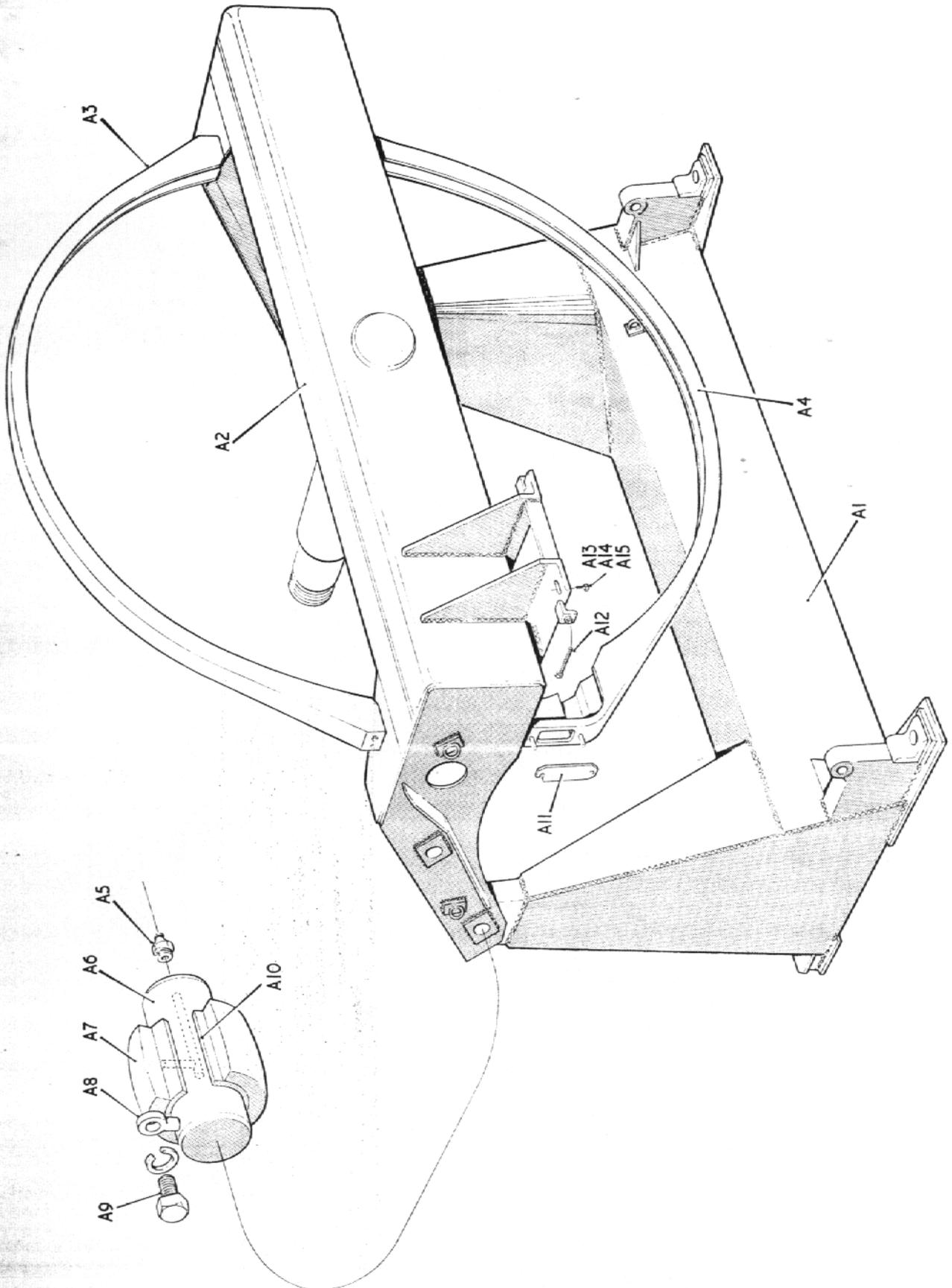
The assemblies have been divided into groups and given identification letters A.B C. etc. To identify a component, first find the relevant assembly in the list given on this page, this will give you a group letter and page number to turn to. On turning to this group the illustrations will enable you to identify the part you require and give you a reference number. Against this number in the Parts List will be found the DESCRIPTION and PART NUMBER information which we require.

SPARES ASSEMBLY GROUPS :

		<u>PAGE</u>
GROUP "A"	Mainframe	14
GROUP "B"	Mixing Drum	15
	Drum Bearing	15
GROUP "C"	Air System	16
	Air Cylinder	16
	Valves	16
GROUP "D"	Direct Drive	19

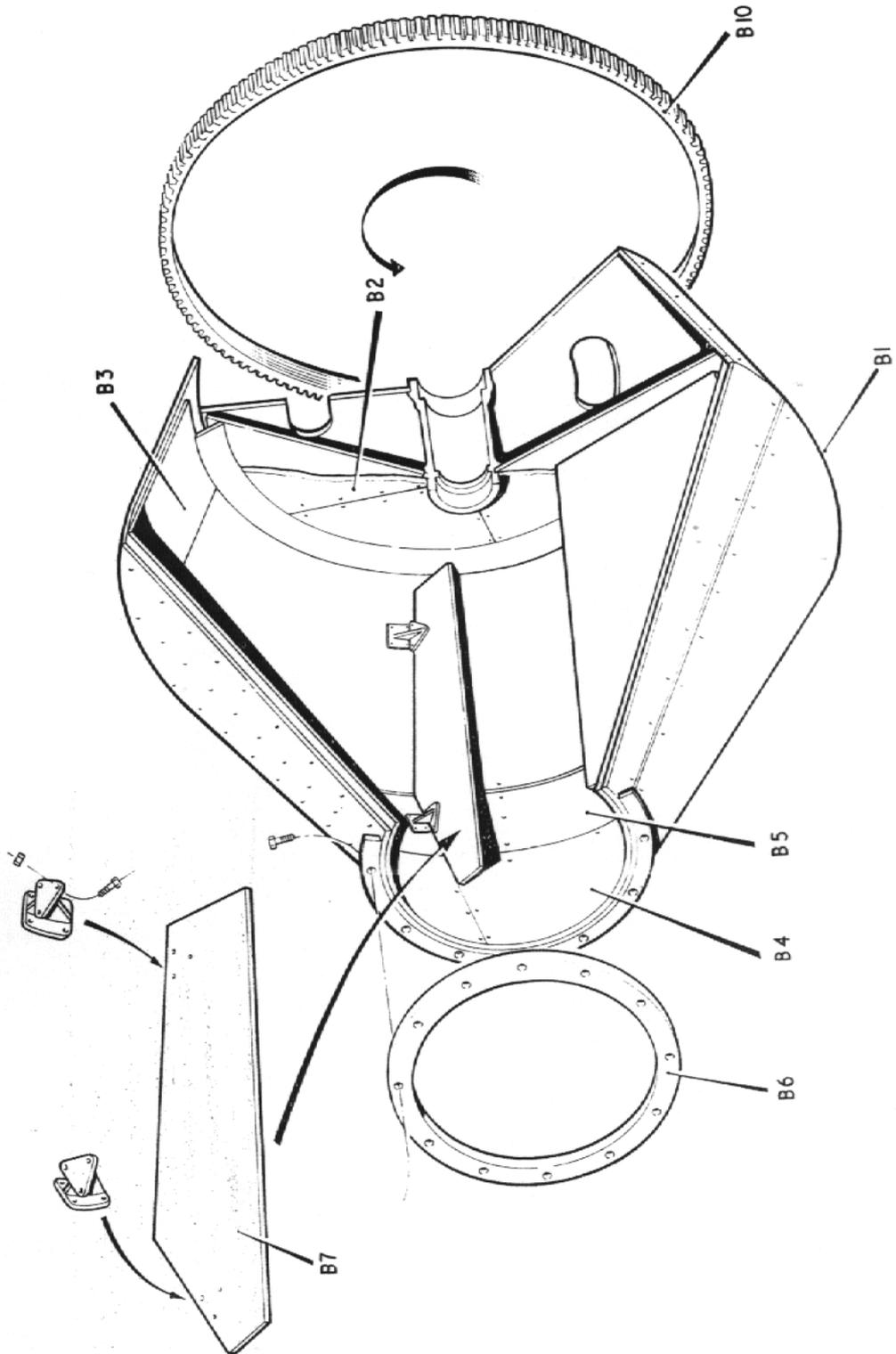
MAINFRAME

REF:NO.	NO:PER MACHINE	DESCRIPTION	PART NO:
A 1	1	Mainframe	5036924
A 2	1	Yoke Frame	5046755
A 3	1	Upper Gear Ring Guard complete with hex. head bolts, nuts & spring washers	5046753
A 4	1	Lower Gear Ring Guard complete with hex. head bolts, nuts & spring washers	5046754
A 5	2	Grease Nipple	3332023
A 6	2	One Hole Pin	5036975
A 7	2	Self Aligning Bushing	5036976
A 8	2	Eye Pin	5046073
A 9	2	Setscrews & spring washers	41830808
A 10	2	Bushes	5036978
A 11	1	Inspection Cover complete with hex. head bolts, nuts & spring washers	5031522
A 12	4	Motor Adjusting Bolts complete with locknuts	5046204
A 13	4	Hex. head bolts H.T.	460351436
A 14	8	Double chamfered nuts	3303514
A 15	4	Plain washers (BRT.M.S)	463314

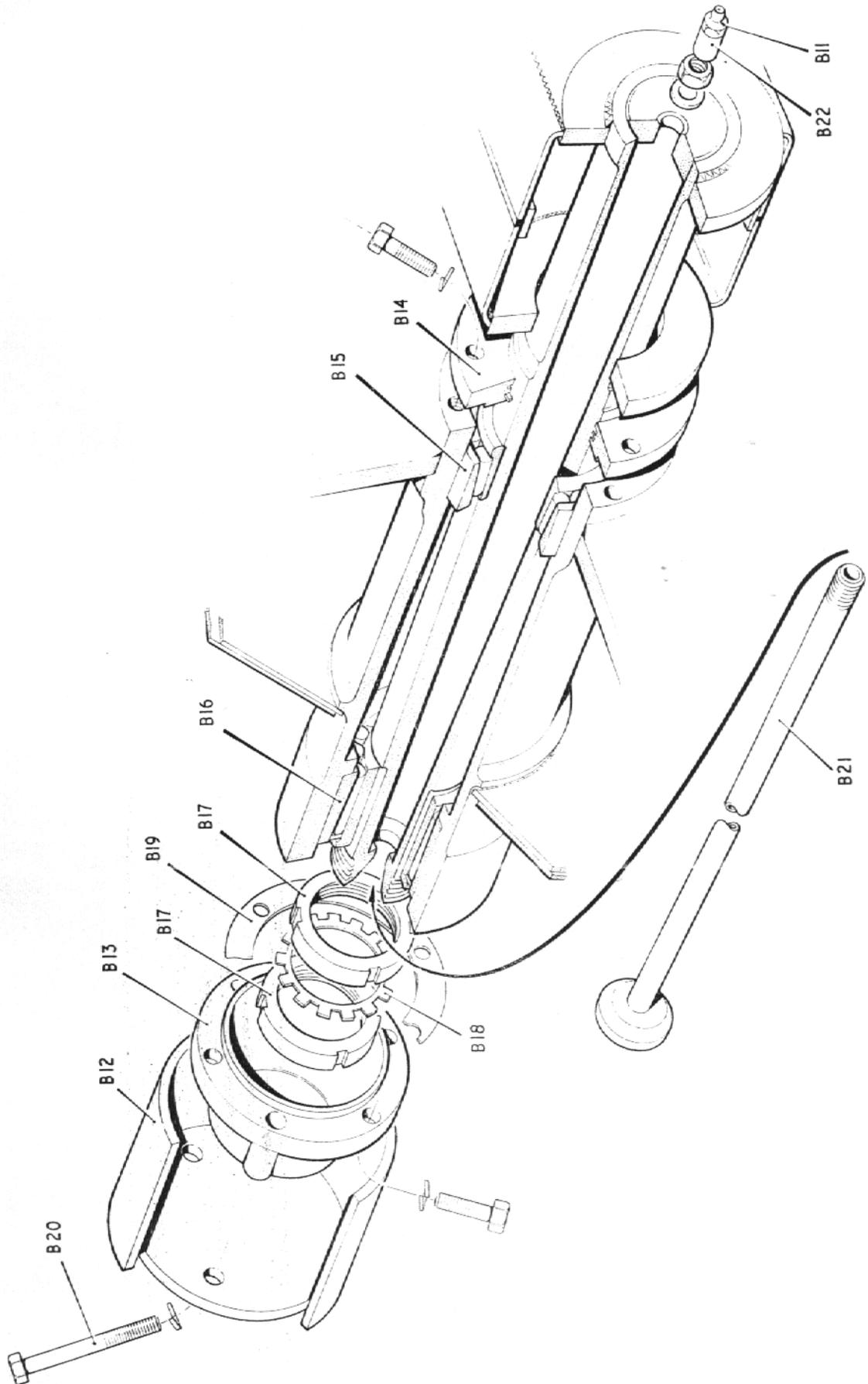


MIXING DRUM

REF:NO.	NO:PER MACHINE	DESCRIPTION	PART NO:
B 1	1	Drum Assembly	5046140
B 2	6	Reinforcing Cone Wearing Plates with round head rivets	5045517
B 3	6	Closed End Cone Wearing Plates com- plete with round head rivets	5045518
B 4	6	Front Charge End Cone Wearing Plates complete with round head rivets	5045519/2
B 5	6	Rear Charge End Cone Wearing Plates complete with round head rivets	5045519/1
B 6	1	Wearing Ring to Drum Mouth complete with hex. head setscrew with spring washers	5046068
B 7	3	Drum Blades complete with round head setscrews, philidas nuts & plain washers	5045793
B 8	3	Blade Bracket Charge End complete with round head rivets	5045794
B 9	3	Blade Bracket Closed End complete with round head rivets	5045795
B 10	1	Gear Ring	5046214
B 11	1	Grease Nipple	3332043
B 12	1	Wearing Cap	5036940
B 13	1	Cap for Drum Spindle complete with hex. head set bolt with spring washers	5036944
B 14	1	Seal Plate complete with set bolts & spring washers	5036942
B 15	1	Roller Bearing	119120168
B 16	1	Roller Bearing	119164134
B 17	2	Locknut	7261804
B 18	1	Lockwasher	466320
B 19	1	Gasket	5036943
B 20	3	Hex. head bolts with spring washers	4604840
B 21	1	Grease Pipe complete with plain washer & locknut	5036941
B 22	1	Socket	24190201



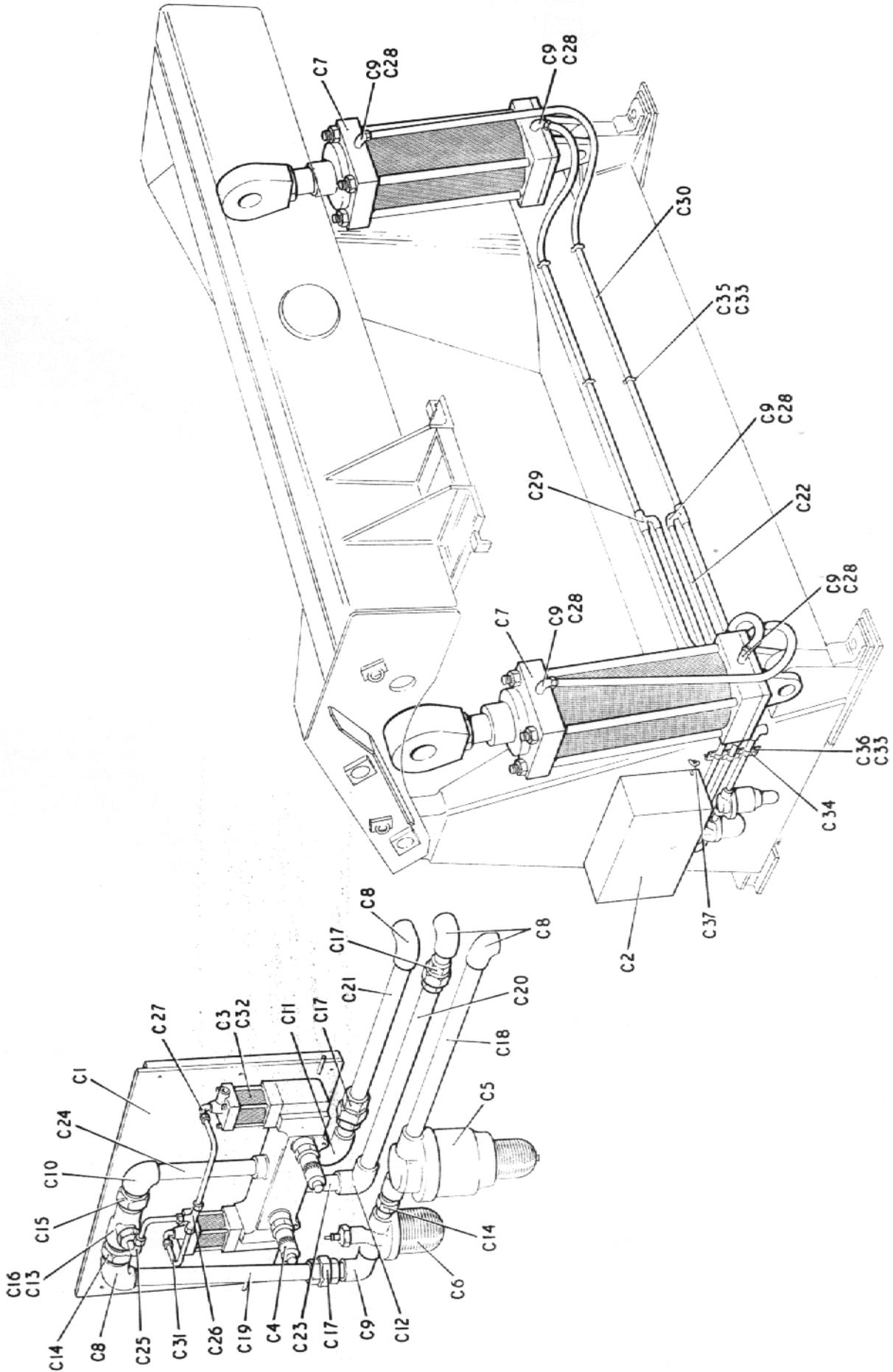
MIXING DRUM

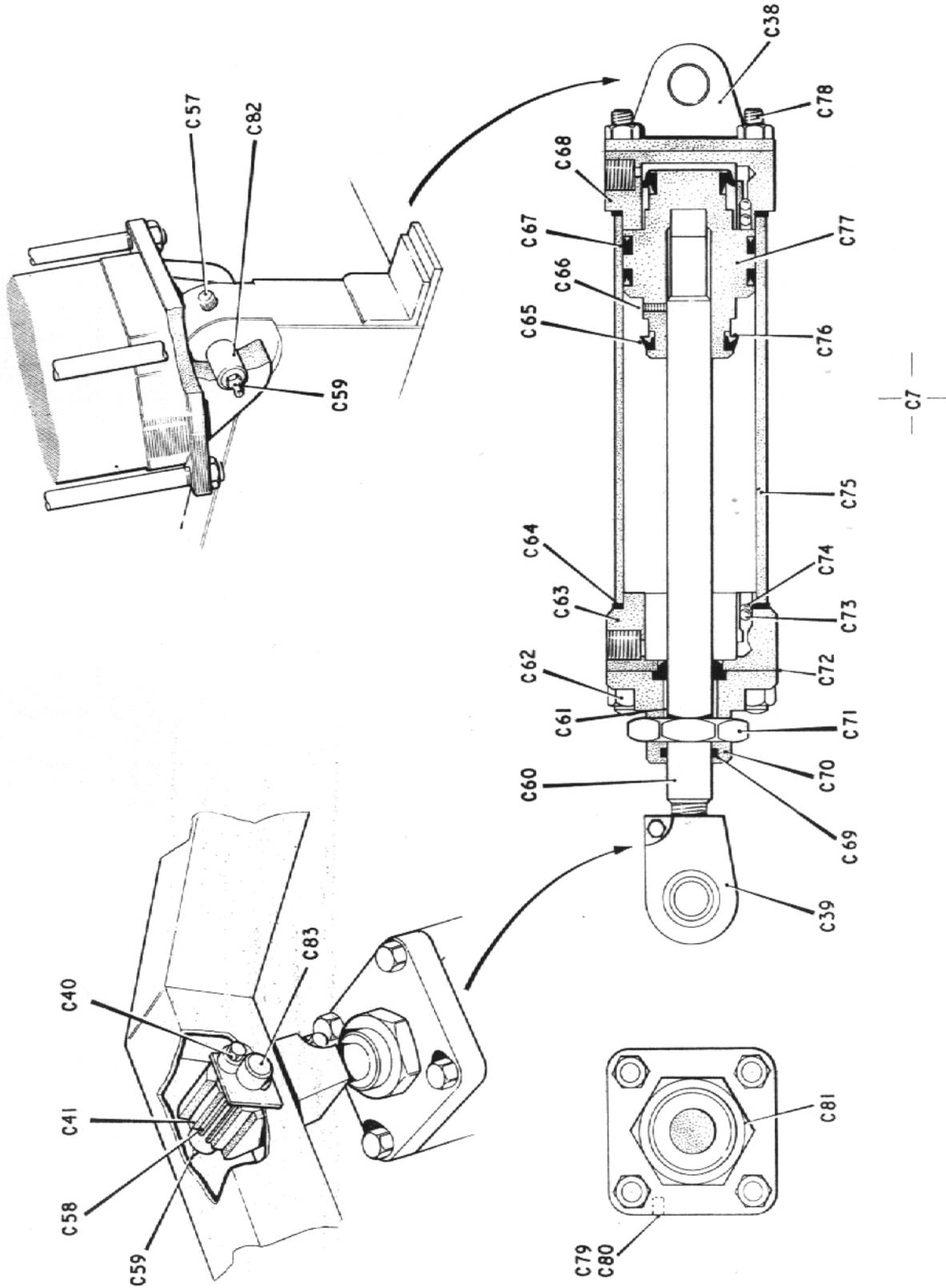


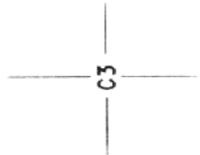
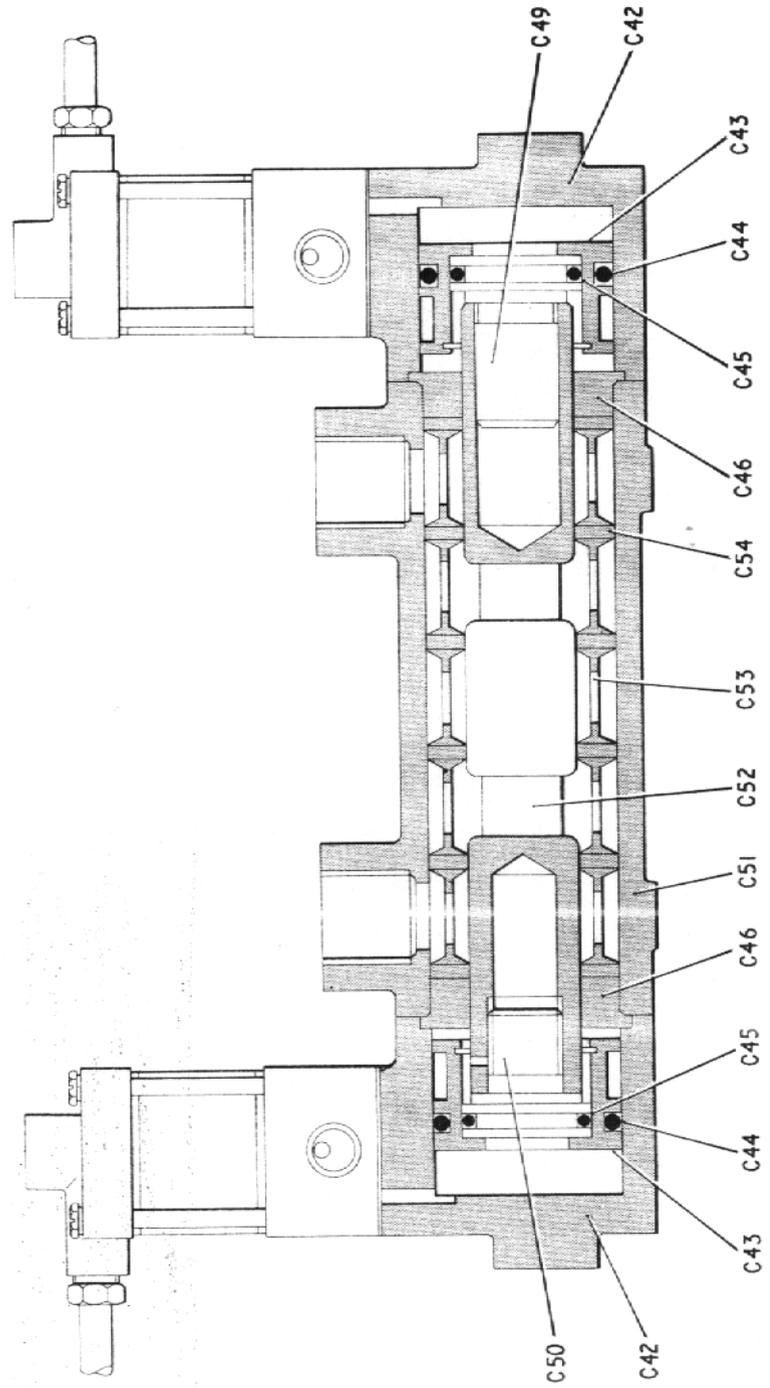
REF. NO.	NO. PER MACHINE	DESCRIPTION	PART NO.
C 1	1	Pneumatic Valve Control Panel complete with Hex. Head Setscrews	50-46900
C 2	1	Cover to control panel	50-46901
C 3	1	4 Way Solenoid valve	450-4138
C 4	2	Speed Regulator	383-206
C 5	1	Automatic Drain Filter	220-513
C 6	1	Oil Fog Lubricator	315-812
C 7	2	Air Cylinder	137-189
C 8	4	Elbow Galvd.	241-108
C 9	7	M/F Elbow Galvd.	240-708
C10	1	Elbow Galvd.	241-106
C11	1	Reducing M/F Elbow	240-9086
C12	1	Reducing Elbow	241-208/6/1
C13	1	Reducing Tee Galvd.	242-4086
C14	2	Hex. Nipple Galvd.	243.9082
C15	1	Hex. Nipple Galvd.	243-9062
C16	1	Hex. Bush Galvd.	240-5063
C17	3	M/F Straight Union Galvd.	244-7081
C18	1	Galvd. pipe 12" long	-
C 19	1	Galvd. pipe 11 $\frac{1}{2}$ " long	-
C20	1	Galvd. pipe 13 $\frac{1}{2}$ " long	-
C21	1	Galvd. pipe 10 $\frac{1}{2}$ " long	-
C22	2	Galvd. pipe 4'0" long	-
C23	1	Galvd. pipe 3" long	-
C24	1	Galvd. pipe 6" long	-
C25	1	Nylon Elbow	240-753
C26	1	Nylon Equal Tee	242-655
C27	2	Nylon Elbow	240-751
C28	8	Male Stud Coupling Nylon	137-344
C29	2	Tee Galvd.	242-2081
C30	1	Nylon Hose 25'0" Long	260-906/25

REF. NO.	NO. PER MACHINE	DESCRIPTION	PART NO.
C 31	1	Nylon Hose 2"Ø" Long	260-906/2
C 32	4	Sk. Hd. Capscrew complete with nut and Spring Washer.	403-555/56
C 33	36	Hex. Hd. Setscrew complete with spring washer	418-554/12
C 34	1	Angle Bar	-
C 35	16	Nylond Hose Clip	50-46896
C 36	6	Steel Pipe Clip	50-46897
C 37	2	Wing Nut and Plain Washer	335-154
<u>C 38 - C 41 ITEMS FOR TWO CYLINDERS</u>			
C 38	2	Trunnion	50-46107
C 39	2	Rod and complete with Hex. Head Bolt, nut, plain & Spring Washer	50-46106
C 40	2	Eye Pin with Hex Head Setscrew	50-46073
C 41	2	Self Aligning Bushings	50-22186
C 42	2	Ends (S.506138)	-
C 43	2	Cages (013933)	-
C 44	2	"O" Ring (SP.179)	-
C 45	2	"O" Ring (SP.102)	-
C 46	2	Bearing (010434)	-
C 47	4	Screws (SP.59) (not illustrated)	-
C 48	4	Screws (SP.305) (not illustrated)	-
C 49	1	Head (01394^)	-
C 50	1	Head (013932)	-
C 51	1	Body (1.010937)	-
C 52	1	Spool (M.010989)	-
C 53	5	Spacers (010437)	-
C 54	6	Seals (011575)	-
C 55	1	Name Plate (010957) (not illustrated)	-
C 56	4	Rivets (SP.35) (not illustrated)	-
<u>C 57 - C 83 ITEMS FOR TWO CYLINDERS</u>			
C 57	2	Cup Point Capscrews	404-20620
C 58	4	Bush	50-22196
C 59	4	Grease Nipple	333-2023
C 60	2	Piston Rods	10663

REF. NO.	NO. PER MACHINE	DESCRIPTION	PART NO.
C 61	2	Bearing Bush	1611/44
C 62	16	Tie Rod Nuts	1500/15
C 63	2	Front End Cover	10695
C 64	2	Gaskets	7811
C 65	2	Cushion Seals	DE.325
C 66	2	Locking Screws	1617/12
C 67	4	Piston Seals	MU.1000
C 68	2	Rear End Cover	10659
C 69	2	Wiper Seal	MRW225
C 70	2	Piston Rod Bearing	10661
C 71	2	Clamping Nut	-
C 72	2 sets	Piston Rod Packing	H225
C 73	2 sets	Balls	1593/12
C 74	2 sets	Pins	1584/40
C 75	2	Cylinder Barrels	10664
C 76	2	Retaining Rings	10666
C 77	2	Piston	10662
C 78	8	Tie Rods	10665
C 79	2	Adjusting Screws	10405
C 80	2	Cushion Adjusting Seals	R113
C 81	2	Bearing Screws	1536/2
C 82	2	Pivot Pins	50-36380
C 83	2	One hole Pins	50-22184







4-WAY SOLENOID VALVE

DIRECT DRIVE.

When ordering these spares please state manufacturer, H.P. and frame size of motor and also production unit frame number.

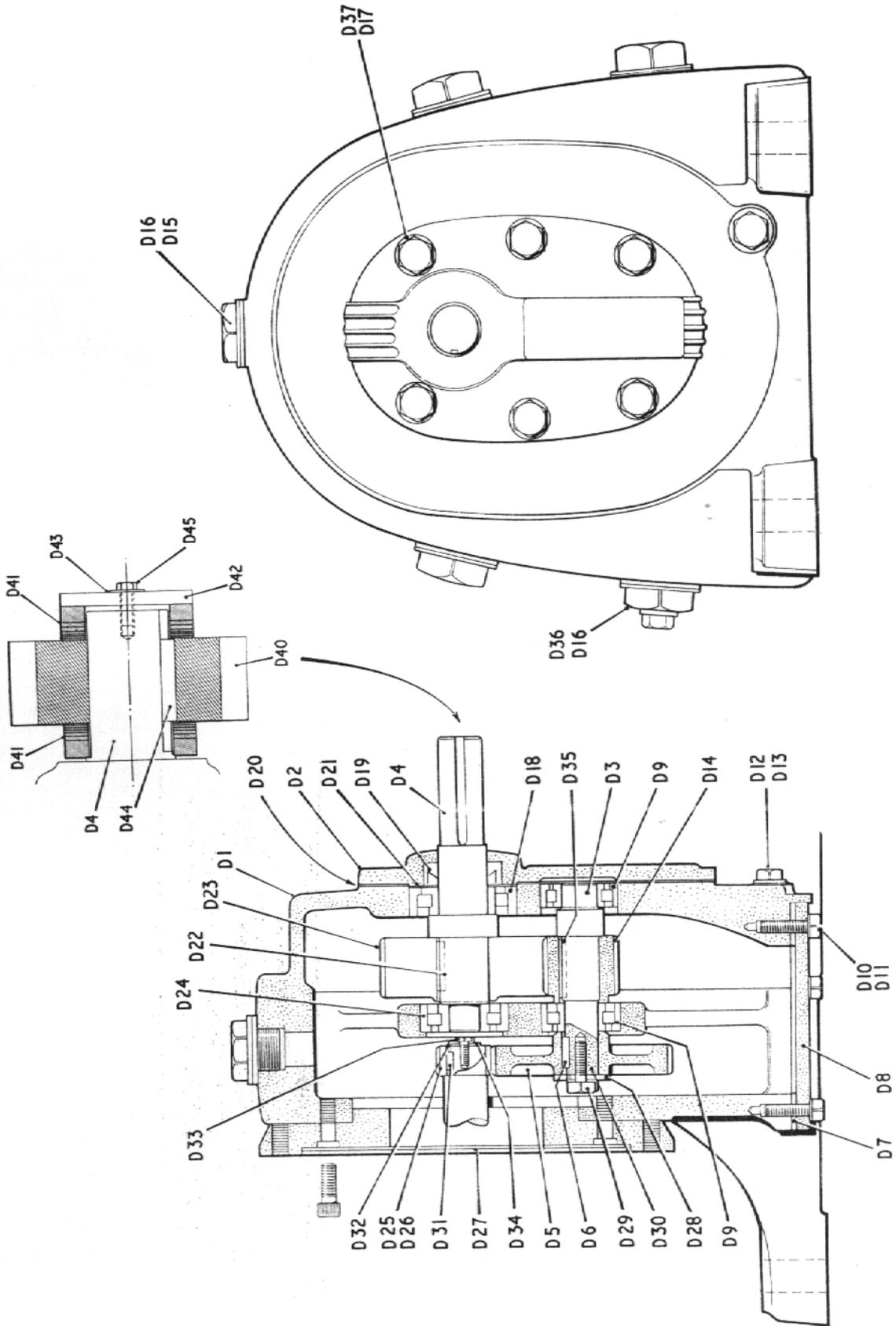
GROUP "D"

REF. NO.	NO. PER MACHINE	DESCRIPTION.	PART NO.
D 1	1	---	4/6936
D 2	1	---	2/6924
D 3	1	---	2/6928
D 4	1	Drive Shaft.	50-46751
D 5	1	---	2/6745.71
D 6	1	Key 7/16" x 9/32" x 1 1/2"	---
D 7	1	---	3/6932
D 8	1	---	3/6931
D 9	4	---	RM.13 1/2 L
D 10	11	---	1/2"BSFx1/2"
D 11	11	---	1/4"
D 12	1	---	No.3
D 13	1	1"O/D x 11/16" 1/D1 x 1/16"	---
D 14	1	---	2/7386.29
D 15	2	1 3/8"OD x 1.1/16"1/D x 1/16"	---
D 16	4	---	D6
D 17	6	---	3/8"
D 18	1	---	2/6925
D 19	1	---	W37427551 R4
D 20	1	---	2/6926
D 21	1	---	R.370L
D 22	1	11/16" x 15/32" x 2 7/8"	---
D 23	1	---	2/7385.58

DIRECT DRIVE (Cont.)GROUP "D"

REF. NO.	NO. PER MACHINE	DESCRIPTION	PART NO.
D 24	1	---	RL.17L
D 25	1	---	1/6746.16
D 26	1	5/16" x 7/32" x 1"	---
D 27	1	Adaptor Plate	2/10087
D 28	1	---	1/6763
D 29	1	---	1/6772
D 30	1	---	1/6762
D 31	1	5/16" x 7/32" x 1"	---
D 32	1	---	1/6764
D 33	1	---	1/6771
D 34	1	---	1/6765
D 35	1	7/16" x 9/32" x 3"	---
D 36	1	---	SA.1/35013
D 37	6	$\frac{3}{8}$ " BSF x 1"	---
D 38	6	---	$\frac{3}{8}$ "
D 39	1	Motor 1425 r.p.m. 20 H.P. Compton Parkinson (not illustrated)	---
D 40	1	Pinion-Drive	5046750
D 41	1 set	Shims-Drive	5046756
D 42	1	Drive Pinion Retaining Washer	5046757
D 43	1	Lockwasher	5046758
D 44	1	Key for Pinion	305114191
D 45	2	Hex. Hd. Setscrews complete with Spring Washers	418250608

IMPORTANT  
THICK SHIMS TO BE POSITIONED IMMEDIATELY  
BEHIND RETAINING WASHER



DIRECT DRIVE

# **Oil Fog Lubricators & Filters**

## OIL-FOG LUBRICATORS

Series 041E, 042E, S406E, X400E, Y400E,  
 $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", 1",  $1\frac{1}{4}$ " and  $1\frac{1}{2}$ " pipe sizes.  
 Series 039E, 040E,  $\frac{1}{4}$ ", and  $\frac{3}{8}$ " sizes.  
 Series 10-026, 2" size.

TRANSPARENT BOWL

Max. Pressure: 150 p.s.i. Max. Temp.: 120°F.

METAL BOWL

Max. Pressure: 250 p.s.i. (X400E, Y400E and 10-026, 150 p.s.i.) Max. Temp.: 175°F.

### INSTALLATION

Install close to component being served and downstream from filter and regulators. Arrows on collar visible through sight glass (1) indicate direction of air flow. To reverse direction of flow remove top plug (2) and drip gland (3) and turn venturi tube (4) 180° with screwdriver. (Series 10-026 unit is not reversible. Direction of flow left to right only). One lubricator recommended for two devices (max.). Keep valves, elbows, joints, to minimum between unit and devices being lubricated. Fill with oil through filler plug (5).

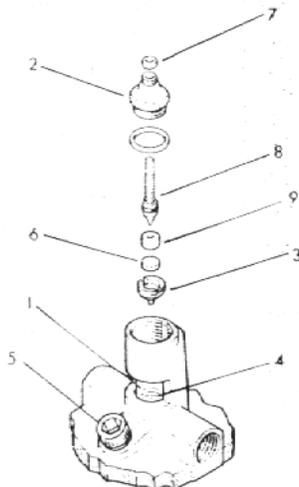
Note: If soluble or additive type oil (graphite or molybdenum disulphide) is used, remove felt disc (6), ensuring male cone of pressure disc (9) faces downwards on reassembly.

Lubricant Specification. Recommended list of oils is available. Preferably consult maker of device to be lubricated for correct oil. Compound oils containing soap, fillers, etc., are not recommended.

### OPERATION

To adjust, slacken knurled lock nut (7), close needle (8) fully, turn on air and open needle until required oil flow is seen through sight glass (approx: 1 drop of oil required per 10 c.f.m.). Tighten knurled lock nut after adjustment.

Note: Series 10-026 units are provided with a tamper-proof cap. This must be removed prior to adjustment. If venturi bushing is required, insert from inlet or outlet port and line up holes to receive stem of venturi tube. To clean plastic bowls wash in SOAPY WATER ONLY.



LUBRICATOR ADJUSTMENTS

### OLIELEVEL-SMEERAPPARATEN

behorende tot de series: 041E, 042E, S406E, X400E, Y400E, voor pijpmaten van  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", 1",  $1\frac{1}{4}$ " en  $1\frac{1}{2}$ ".

Series 039E, 040E voor de maten  $\frac{1}{4}$ " en  $\frac{3}{8}$ ".

Series 10-026 voor de maten 2".

DOORZICHTIG RESERVOIR

Max. druk: 10,5 kg/cm<sup>2</sup>. Max. temp.: 50°C.

METALEN RESERVOIR

Max. druk: 18 at (X400E, Y400E en 10-026, 10,5 at.)

Max. temp.: 80°C.

INSTALLATIE

Opstellen in nabijheid van te smeren apparatuur achter filters en reguleurs. De pijl op de kraag, zichtbaar door het kijkglas (1), geeft de richting van de luchtstroom aan. Om de luchtstroom om te keren moeten de bovenste plug (2) en de druppel gland (3) worden verwijderd; daarna de venturibus (4) 180° verdraaien met een schroevendraaier. (Serie 10-026: deze apparaten zijn niet omkeerbaar. Stromingsrichting alleen van links naar rechts.) Aanbevolen wordt per apparaat niet meer dan twee smeerpunten te bedienen. Beperk het aantal kleppen, bochten en verbindingen tussen het smeerapparaat en de smeerpunten tot een minimum. Olie vullen door opening van vulplug (5)—dit kan worden gedaan terwijl de luchtdruk 'aanstaat'. Opmerking: Indien een speciale mengolie of toevoeging wordt gebruikt, (grafiet of molybdeenbisulfide), moet het viltplaatje (6) worden verwijderd, er zorg voor dragend dat de conus van het drukplaatje (9) bij het monteren weer naar beneden wijst.

Specificatie smeermiddel. Er bestaat een lijst van aanbevolen oliesoorten. Het is raadzaam de fabrikant van het te smeren apparaat te raadplegen omtrent de juiste oliesoort. Compound olie die zeep of vulmiddelen e.d. bevat, dient te worden vermeden.

WERKING

Voor de juiste afstelling eerst kartelcontraeroer (7) losdraaien, naald (8) helemaal indraaien, luchttoevoer aanzetten, naald uitdraaien, tot de gewenste olielooft door het kijkglas wordt waargenomen. (Per 0,28 Nm<sup>3</sup>/min. is ongeveer 1 druppel olie nodig). Draai na deze instelling pakkingmoer aan (vroegere modellen) of draai kartelcontraeroer.

N.B. Serie 10-026. Deze apparaten zijn voorzien van een speciaal deksel om het openen door onbevoegden te voorkomen. Dit deksel moet worden verwijderd voor het afstellen. Indien venturibusjes vereist zijn, breng deze dan aan van in- of uitlaatpoort en zet de gaatjes in lijn voor steel van venturibusje. De plastic kolf mag ALLEEN GEREINIGD WORDEN MET ZEEPWATER.

### HUILEURS TYPE BROUILLARD D'HUILE

Séries 041E, 042E, S406E, X400E, Y400E, de  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", 1",  $1\frac{1}{4}$ " et  $1\frac{1}{2}$ ".

Séries 039E, 040E, de  $\frac{1}{4}$ " et  $\frac{3}{8}$ ".

Séries 10-026, de 2".

CUVE TRANSPARENTE

Pression max.: 10,5 kg/cm<sup>2</sup>.

Température max.: 50°C.

CUVE METALLIQUE

Pression max.: 18 kg/cm<sup>2</sup> (X400E, Y400E, et 10-026, 10,5 kg/cm<sup>2</sup>.)

Température max.: 80°C.

MONTAGE

Monter à proximité du dispositif à desservir et en aval du filtre et des régulateurs. Les flèches du venturi visibles à travers le verre compte-gouttes (1) indiquent le sens de circulation de l'air. Pour inverser le sens de circulation, enlever le bouchon supérieur (2) et le presse-étoupe compte-gouttes (3) et tourner le tube venturi (4) de 180° avec un tournevis. (Les modèles de la série 10-026 ne sont pas réversibles, l'écoulement se faisant uniquement de gauche à droite.) Un graisseur est recommandé pour un maximum de deux dispositifs à lubrifier. Réduire au minimum le nombre de robinets, coudes, joints, entre l'appareil et les dispositifs à lubrifier. Remplir d'huile par le bouchon de remplissage (5). Ce remplissage peut s'effectuer lorsque la conduite est sous pression. Nota: Si l'on emploie de l'huile soluble ou du type à additif (graphite ou bisulfure de molybdène), enlever le disque en feutre (6) en s'assurant que le cône mâle du grain de pression (9) est dirigé vers le bas au remontage.

Spécification des huiles. Nous pouvons fournir une liste des huiles recommandées. Consulter de préférence le fabricant du dispositif à lubrifier pour le grade correct d'huile à employer. Les huiles compound contenant des savons, charges, etc., ne sont pas recommandées.

FONCTIONNEMENT

Pour ajuster desserrer l'écrou de fixation moleté (7), fermer complètement le pointeau (8), admettre l'air et ouvrir le pointeau jusqu'à ce que le débit désiré paraisse au travers du verre compte-gouttes (environ 1 goutte d'huile pour chaque 0,28 m<sup>3</sup>/min). Resserrer l'écrou de fixation moleté après réglage.

Nota: Les modèles de la série 10-026 sont livrés avec un dispositif de sureté inviolable qu'il faut retirer avant de procéder au réglage. Si la pose d'un venturi est nécessaire, l'insérer à partir de l'orifice d'entrée ou de sortie, en veillant à faire correspondre les orifices destinés à recevoir la tige du tube. Pour laver les cuves en plastique, employer UNIQUEMENT DE L'EAU SAVONNEUSE.

## MANUAL AND AUTOMATIC- DRAIN FILTERS

Series F01,  $\frac{1}{4}$ " and  $\frac{3}{8}$ " sizes.  
Series F02,  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " and  $\frac{3}{4}$ " sizes.  
Series 30BE and 30CG,  $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ " and 1 $\frac{1}{2}$ " sizes.  
Series 12-063, 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " and 2" sizes.

TRANSPARENT BOWL  
Max. Pressure: 150 p.s.i. Max. Temp. 120°F.

METAL BOWL  
Max. Pressure: 250 p.s.i. Max. Temp. 175°F.

### INSTALLATION

Install near to components being served but upstream from regulators, air line lubricators, etc. The arrow on the body or port markings indicate direction of air flow. Connect a short straight drain pipe to the  $\frac{1}{8}$ " female pipe thread at the bottom of the Automatic-Drain Filters.

### OPERATION

On Automatic-Drain Filters no adjustments are necessary. On manual filters, drain bowl regularly—before moisture level reaches baffle. Clean filter elements and, on automatic-drain models, monel screen regularly. If required, automatic-drain models can be manually tripped by pushing a thin rod up through the bottom of the automatic-drain mechanism to completely purge the bowl.

To remove filter element, shut off air supply, bleed off pressure from unit and proceed as follows:

#### 12-063

Unscrew intermediate body, remove wing nut and detach louvre by twisting if necessary. Change filter element when necessary. Do not clean.

#### 30BE, 30CG

Remove clamp ring screw and nut and ease the latched clamp ring segments apart (rotate intermediate body slightly and force upwards to release lock). Do not use a lever to force the two halves apart. Unscrew the deflector assembly and extract the filter element.

#### F01, F02

Unscrew the bowl anti-clockwise. Unscrew the baffle and withdraw the element and filter shield from filter guide.

To clean filter element, wash in paraffin and blow out thoroughly with compressed air.

To clean plastic bowls wash in SOAPY WATER ONLY.

### HANDBEDIENDE EN AUTOMATISCHE AFTAPINRICHTINGEN

Serie F01, voor de maten  $\frac{1}{4}$ " en  $\frac{3}{8}$ "

Serie F02, voor de maten  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " en  $\frac{3}{4}$ "

Series 30BE en 30CG, voor de maten  $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ "

Serie 12-063, voor de maten 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ ", 2"

#### DOORZICHTIG RESERVOIR

Max. druk: 10,5 at. Max. temperatuur: 50°C

#### METALEN RESERVOIR

Max. druk: 18 at. Max. temperatuur: 80°C

#### INSTALLATIE

Te monteren in nabijheid van te bedienen apparaat maar vóór regulatoren, nevelsmeer-apparaten enz. De pijl op het huis of de poortmerktekens geven de juiste richting van de luchtstroom aan. Verbind een korte rechte afvoerpijp met de  $\frac{1}{8}$ " inwendige schoefdraad aan de onderkant van de filters met automatische afvoer.

#### BEDIENING

Automatisch—geen afstelling is nodig. Modellen met handafvoer, tap het reservoir regelmatig af voordat het vloeistof-niveau de keerplaat bereikt. Reinig het filterelement en—bij modellen met automatische afvoer—de monelmetalen zeef regelmatig. Desgewenst kunnen modellen met automatische afvoer met de hand worden uitgeschakeld door een dunne staaf door de onderkant van het automatische afvoermecanisme omhoog te duwen om het reservoir geheel te zuiveren.

Alvorens het filter te verwijderen, sluit de luchttoevoer af, laat de druk ontsnappen en voer de volgende werkzaamheden uit:

#### 12-063

Schroef het tussenstuk uit, verwijder de vleugelmoer en verwijder de schoepenring, desnoods wringen. Vernieuw zonodig de filterpatroon. Dit geldt niet voor een gesinterd bronzen filterpatroon, die moet worden schoongemaakt in petroleum en daarna doorgeblazen.

#### 30BE, 30CG

Alvorens te demonteren, luchttoevoer afsluiten; verwijder de klemringschoef en moer en haal de gekoppelde klemringonderdelen uit elkaar. Draai het tussenstuk een weinig (daarbij een opwaartse druk uitoefenend om vrij te maken). Gebruik geen hefboom om beide helften uiteen te wrikken. Schroef de schoepenring los en neem de filterpatroon uit.

#### F01, F02

Om het filterelement te verwijderen moet men de luchttoevoer afsluiten en het reservoir linksom losschroeven. Schroef de keerplaat los en neem het element en het filterscherm uit de filtergeleider. Reinig het filterelement in petroleum en blaas daarna goed met perslucht door. Een plastic kolf mag ALLEEN MET ZEEPWATER worden gereinigd.

### VIDANGE MANUELLE ET AUTOMATIQUE

Série F01, de  $\frac{1}{4}$ " et  $\frac{3}{8}$ "

Série F02, de  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " et  $\frac{3}{4}$ "

Séries 30BE et 30CG, de  $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ " et 1 $\frac{1}{2}$ "

Série 12-063, de 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " et 2"

#### CUVE TRANSPARENTE

Pression max.: 10,5 kg/cm<sup>2</sup>.

Température max.: 50°C.

#### CUVE METALLIQUE

Pression max.: 18 kg/cm<sup>2</sup>.

Température max.: 80°C.

#### MONTAGE

Monter à proximité des appareils à desservir mais en amont des régulateurs, huileurs de conduite d'air, etc. La flèche sur le corps de l'appareil ou les repères aux orifices indiquent le sens de la circulation d'air. Raccorder un tuyau de vidange court et droit au filetage intérieur de  $\frac{1}{8}$ " au bas des filtres à vidange automatique.

#### FONCTIONNEMENT

Automatique—aucun réglage à faire. Types à vidange manuelle, purger la cuve régulièrement—avant que le niveau des condensats atteigne la chicane. Nettoyer régulièrement l'élément filtrant et, sur les modèles à vidange automatique, l'écran en monel. Si besoin est, on peut actionner à la main les modèles à vidange automatique en introduisant une tige mince par le bas du mécanisme de vidange automatique et en la faisant remonter afin de purger complètement la cuve.

Pour démonter l'élément filtrant, fermer l'arrivée d'air, vider l'appareil de toute pression et procéder comme suit:

#### 12-063

Dévisser le corps intermédiaire, enlever l'écrou-papillon et détacher le déflecteur, en le tournant au besoin. Changer l'élément filtrant quand besoin est. Ne pas le nettoyer ni le laver (filtre en carton special).

#### 30BE, 30CG

Fermer l'air sous pression; enlever la vis et l'écrou du collier de serrage et séparer les segments de ce dernier (faire tourner légèrement le corps intermédiaire et forcer vers le haut pour dégager l'encliquetage des segments). Ne pas forcer avec un levier pour séparer les deux moitiés. Dévisser l'ensemble déflecteur et extraire l'élément filtrant.

#### F01, F02

Fermer l'air sous pression et dévisser la cuve dans le sens contraire aux aiguilles d'une montre. Dévisser la chicane et retirer l'élément et le protège-filtre du guide-filtre.

Pour nettoyer l'élément filtrant, le laver dans du pétrole et bien le souffler à l'air comprimé.

Pour laver les cuves en plastique, employer UNIQUEMENT DE L'EAU SAVONNEUSE.

## MANUELLER UND AUTOMATISCHER ABLAUSSMECHANISMUS

Serie F01, Rohranschluss  $R_{1\frac{1}{2}}$  und  $R_1$   
Serie F02, Rohranschluss  $R_{1\frac{1}{2}}$ ,  $R_{\frac{3}{4}}$ ,  $R_{\frac{1}{2}}$  und  $R_{\frac{1}{4}}$   
Serie 30BE und 30CG, Rohranschluss  $R_{1\frac{1}{2}}$ ,  $R_1$ ,  $R_{\frac{3}{4}}$   
und  $R_{\frac{1}{2}}$   
Serie 12-063, Rohranschluss  $R_{1\frac{1}{2}}$ ,  $R_1$  und  $R_2$   
Betriebsdruck:  
Bis 10,5 kp/cm<sup>2</sup> mit Kunststoffbehälter  
Bis 18 kp/cm<sup>2</sup> mit Metallbehälter  
Temperaturbereich:  
bis 50°C mit Kunststoffbehälter  
Bis 80°C mit Metallbehälter

## Einbau

Nahe der Verbrauchsstelle, jedoch vor allen Druckreglern, Nebelöfern usw. einbauen. Richtungspfeile auf dem Gehäuse oder an den Öffnungen zeigen die korrekte Richtung des Luftstromes an. Eine kurze gerade Ablaufleitung an das 3,2-mm-Rohrinnengewinde unten an Filtern mit automatischer Entwässerung anbringen.

## Betrieb

Automatische Modelle—keine Einstellungen notwendig. Modelle mit Handentwässerung, der Behälter ist regelmässig und bevor die Flüssigkeit bis zur Trennkappe reicht, zu entleeren. Filtereinsatz und—bei automatischen Modellen—Monelsieb sind regelmässig zu reinigen. Auf Wunsch können Modelle mit automatischer Entwässerung auch handbetätigt werden, indem man eine dünne Stange durch den Boden des Mechanismus zur automatischen Entwässerung schiebt, um den Behälter vollkommen zu reinigen.

Zum Ausbau des Filtereinsatzes, wird die Luft abgestellt und der Filter entlüftet, und wie folgt vorgehen:

### 12-063

Werden das Zwischenstück und die Flügelmutter ausgeschraubt und der Drällkörper abgenommen, wenn erforderlich, durch Verdrehen, Filtereinsatz, wenn nötig, erneuern. Nicht reinigen.

### 30BE, 30CG

Zum Zerlegen wird der Luftdruck abgestellt, die Klemmingschraube samt Mutter entfernt und die verspannten Segmente des Klemmrings durch leichtes Drehen des Zwischengehäuses und Aufwärtsdrücken zum Lösen der Sperre gelockert. Die beiden Hälften dürfen nicht durch Hebelwirkung voneinander getrennt werden. Der Drällkörper einschliesslich O-Ring und Dralling wird herausgeschraubt und der Filtereinsatz herausgenommen.

### F01, F02

Zum Ausbau des Filtereinsatzes wird die Druckluft abgestellt und der Behälter links herum abgeschraubt. Ablenkplatte ausschrauben und den Filtereinsatz und Filtersieb aus Filterführung herausnehmen.

Reinigen des Filtereinsatzes erfolgt durch Spülen in Paraffin, danach gründlich mit Druckluft ausblasen. Kunststoffbehälter NUR IN SEIFENLAUGE waschen.

## SPURGO MANUALE E AUTOMATICO

Serie F01, da  $\frac{1}{4}$ " e  $\frac{3}{8}$ "  
Serie F02, da  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " e  $\frac{3}{4}$ "  
Serie 30BE e 30CG, da  $\frac{1}{4}$ ",  $1"$ ,  $1\frac{1}{2}"$  e  $1\frac{3}{4}"$   
Serie 12-063, da  $1\frac{1}{2}"$ ,  $1\frac{3}{4}"$  e  $2"$

### CALOTTA TRASPARENTE

Pressione max.: 10,5 kg/cm<sup>2</sup>.  
Temperatura max.: 50°C.

### CALOTTA METALICA

Pressione max.: 18 kg/cm<sup>2</sup>.  
Temperatura max.: 80°C.

### MONTAGGIO

Montare il filtro in prossimità del componente da servire, a monte dei regolatori, dei lubrificatori della linea dell'aria, ecc. La freccia presente sul corpo o i contrassegni sulle aperture indicano la direzione del flusso d'aria. Collegare una sezione corta e dritta di tubo di scarico al filetto da  $\frac{1}{8}$ " situato al fondo dei filtri autoscaricanti.

## FUNZIONAMENTO

Modelli automatici—non occorrono regolazioni. Modelli a scarico manuale—scolare la calotta regolarmente—prima che la condensa di vaporizzazione raggiunga il livello del deflettore. Pulire l'elemento del filtro, per i modelli autoscaricanti, la reticella di monel regolarmente. Se necessario, i modelli autoscaricanti, possono venir fatti scattare a mano, spingendo un'astina sottile attraverso il fondo del meccanismo per lo scarico automatico, onde spurgare la calotta completamente.

Per smontare l'elemento del filtro, escludere l'alimentazione dell'aria e lasciar scaricare la pressione dal gruppo, e proseguire nel modo seguente:

### 12-063

Svitare il corpo intermedio, togliere il dado ad alette ed estrarre la protezione a persiana torcendola, se necessario. Non si pulisca, ma si sostituisca l'elemento quando necessario.

### 30BE, 30CG

Escludere la pressione dell'aria, togliere la vite ed il dado della ghiera, allentarne ed allontanarne i segmenti (far girare il corpo intermedio, leggermente e spingerlo in alto per liberarlo). Non si usi una leva per separare i due semicorpi. Smontare, svitandolo, il gruppo del deflettore suddetto ed estrarre l'elemento del filtro.

### F01, F02

Escludere la pressione dell'aria e svitare la calotta, girandola in senso antiorario. Svitare il deflettore indi togliere elemento e schermo del filtro dalla guida.

Lavare l'elemento del filtro in modo analogo ed asciugarlo accuratamente con un getto d'aria.

Lavare le calotte di plastica ESCLUSIVAMENTE CON ACQUA INSAPONATA.

## PURGA MANUALE E AUTOMATICA

Serie F01, de  $\frac{1}{4}$ " y  $\frac{3}{8}$ "  
Serie F02, de  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " y  $\frac{3}{4}$ "  
Serie 30BE y 30CG, de  $\frac{1}{4}$ ",  $1"$ ,  $1\frac{1}{2}"$  y  $1\frac{3}{4}"$   
Serie 12-063, de  $1\frac{1}{2}"$ ,  $1\frac{3}{4}"$  e  $2"$

### DEPOSITO TRASPARENTE

Presión máxima: 10,5 kg/cm<sup>2</sup>.  
Temperatura máxima: 50°C.

### DEPOSITO METALICO

Presión máxima: 18 kg/cm<sup>2</sup>.  
Temperatura máxima: 80°C.

### INSTALACION

Instalar cerca de los aparatos que se vayan a servir, pero antes de reguladores, lubricadores de tubería de aire comprimido, etc. La flecha grabada en el cuerpo o las marcas en las lumbreras indican el sentido de flujo del aire. Enrosca un tubo de purga corto y recto en la rosca hembra de  $\frac{1}{8}$ " que se encuentra en el fondo de los filtros de purga automática.

### OPERACION

Automática—no se necesitan ajustes. Versiones de purga manual, purgan el depósito regularmente—antes de que el nivel de humedad llegue al desviador. Limpiar regularmente el elemento filtrante y, en modelos automáticos, la pantalla de metal monel. En caso necesario, los modelos de purga automática se pueden inmovilizar introduciendo una varilla delgada desde el fondo del mecanismo de purga automática, a fin de purgar completamente el depósito.

Para desmontar el elemento filtrante, cerrar el suministro de aire, purgar la presión y proceder del modo siguiente:

### 12-063

Desenroscar el cuerpo intermedio, quitar la tuerca de palomilla y separar la repilla retorciéndola si es

preciso. Cambiar el elemento filtrante cuando sea necesario. No limpiarlo.

### 30BE, 30CG

Cerrar la presión de aire; quitar la tuerca y tornillo del anillo abrazadera y separar los segmentos unidos (girar el cuerpo intermedio ligeramente y forzar hacia arriba para soltar el cierre). No apalancar para separar ambas mitades. Desenroscar el conjunto del deflector y extraer el elemento filtrante.

### F01, F02

Cerrar la presión de aire y desenroscar el depósito dando vueltas hacia la izquierda. Desenroscar el deflector y separar de la guía el elemento y el protector del filtro.

Para limpiar el elemento filtrante, lavarlo con parafina y secarlo bien con aire comprimido.

Para lavar los depósitos, emplear ÚNICAMENTE AGUA JABONOSA.

## MANUELL OCH AUTOMATISK TOMNING

Typ F01, med  $\frac{1}{4}$ " eller  $\frac{3}{8}$ " anslutning.  
Typ F02, med  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " eller  $\frac{3}{4}$ " anslutning.  
Typ 30BE, och 30CG med  $\frac{1}{4}$ ",  $1"$ ,  $1\frac{1}{2}"$  eller  $1\frac{3}{4}"$  anslutning.  
Typ 12-063, med  $1\frac{1}{2}"$ ,  $1\frac{3}{4}"$  eller  $2"$  anslutning.  
GENOMSYNLIG BEHÅLLARE  
Max. tryck: 10,5 kg/cm<sup>2</sup>. Max. temperatur: 50°C.  
METALLBEHÅLLARE  
Max. tryck: 18 kg/cm<sup>2</sup>. Max. temperatur: 80°C.  
INSTALLATION

Filtret monteras nära intill den betjänade anläggningen men före eventuella regulatorer, luftsmörjapparater o.s.v. i ledningen. Pilen på huven eller markeringar på öppningarna visar luftströmnings riktning. Anslut ett kort, rakt avtappningsrör till den  $\frac{1}{8}$ " innergången nedtill på filter med automatisk avtappning.

### GRIFT

Automatisk—inga justeringar behövliga. Manuella avtappningstyper. Tom behållaren regelbundet och innan fuktighetsnivån når skiljeplaten. Rengör filterelementet och ifråga om automatiska modeller monelskärmen regelbundet. Vid behov kan automatiska modeller utlösas, genom att man skjuter upp en small stång genom botten på avtappningsmekanismen, så att behållaren tömms helt och hållet.

Vid borttagning av filterelementet: Då filterelementet skall avlägsnas, stäng av tryckluftstillförseln, avlufta aggregatet och förfar sedan på följande sätt

### 12-063

Skriva av mellanhuset, tag av vingmuttern och lösgör deflektorn genom att vid behov vrida den. Byt ut filterelementet vid behov. Rengör det inte.

### 30BE, 30CG

Skall tryckluften först stängas av. Tag bort fastringens skruv och mutter och skilj försiktigt fastringens bägge delar åt (vrid lätt på mellanhuset och tryck det uppåt för att lossa på fastringen). Använd inte någon hävstång för att skilja de båda halvorna åt. Skruva av deflektoraggregatet och drag ut filterelementet.

### F01, F02

Skall tryckluften stängas av, varefter behållaren skruvas loss moturs. Skruva bort skiljeplåten samt drag ut elementet och filterskärmen ur filterstyrningen.

Filterelementet rengörs genom att sköljas i fotogen och blåsas ut noga med tryckluft.

Behållaren av plast skall tvättas ENBART I TVÄLVATTEN.

# Instructions

## MICRO-FOG LUBRICATORS

Series 3041-L, 3041-LC, S3406-LC, X3400-LC, Y3400-LC, 1/4" to 1" pipe sizes.  
 Series 10AF-L and 3040-L, 1/4" and 3/8" sizes.  
 Max. Pressure: 150 p.s.i. Max. Temp.: 120°F.

### INSTALLATION

Install so that the air flows through unit in direction indicated by arrow on body. For maximum efficiency, install a filter and regulator immediately upstream of the lubricator. Fill with lubricant to oil level mark. **Lubricant Specification.** Recommended list of oils is available. Preferably consult maker of device to be lubricated for correct oil. Compound oils containing soap, fillers, etc. are not recommended.

### PERFORMANCE

Refer to appropriate Table for recommended min. and max. air flow.

Note: 'Vane Closed' refers to rotatable venturi plug (Fig 1) having arrow aligned with adjacent index mark A; 'Vane Open' is when arrow is at 'B'. Intermediate positions may be selected. Max. flow may be exceeded if pressure drop does not jeopardise function of system.

Approximately 1/20th of oil passing through sight dome (1 drop in 20) enters air line as 'micro-fog'.

### OPERATION

To replenish oil, shut off air and fill to level mark. To set on installation, remove dome clamp ring (1), sight dome and venturi locking washer, and adjust venturi plug so that arrow is positioned between the index marks 'A' and 'B' to suit AIR FLOW requirements of associated device being lubricated. 'A' = min. air flow; 'B' = max. air flow. This adjustment is not critical. Refit venturi locking washer, sight dome and clamp ring.

To adjust OIL FEED, turn on air supply and operate associated device; observe oil flow at sight dome and rotate oil feed adjusting screw (2) anti-clockwise to increase oil flow (or vice versa) as necessary. Refer to PERFORMANCE. If required rates of oil feed cannot be obtained, readjust venturi plug and then repeat oil feed adjustment.

Note: Rotation of venturi plug towards 'B' increases sensitivity of oil feed adjustment; rotation towards 'A' decreases sensitivity, but gives higher oil feed rates.

### 'LC' SERIES

The 'LC' series is fitted with a small jet air pump and constant level oil cup. Lubricator syphon tube draws oil from the oil cup which is kept full at all times by the pump.

To clean plastic bowls wash in SOAPY WATER ONLY.

Operating Pressure (p.s.i.)	AIR FLOW-cfm					
	1/4" Size		3/8" and 1/2" Sizes		3/4" and 1" Sizes	
	Vane closed A position (min.)	Vane open B position (max.)	Vane closed A position (min.)	Vane open B position (max.)	Vane closed A position (min.)	Vane open B position (max.)
10	1.7	18	1.7	40	1.7	95
20	2.6	24	2.6	56	2.6	135
30	3.2	28	3.2	66	3.2	160
40	3.7	32	3.7	74	3.7	183
50	4.1	34	4.1	81	4.1	205
60	4.4	36	4.4	88	4.4	220
70	4.8	38	4.8	94	4.8	238
80	5.2	40	5.2	100	5.2	252
90	5.4	42	5.4	108	5.4	268
100	5.7	44	5.7	113	5.7	280
110	6.0	46	6.0	120	6.0	295
120	6.2	48	6.2	125	6.2	302
130	6.3	50	6.3	130	6.3	322
140	6.5	52	6.5	134	6.5	335
150	6.7	54	6.7	139	6.7	345

1 p.s.i. = 0.07 Kg/cm2      1 cfm. = 28.32 litres/minute

Series 3041-L, 3041-LC, S3406-LC, X3400-LC and Y3400-LC.

Operating Pressure (p.s.i.)	cfm	
	Vane closed A position (min.)	Vane open B position (max.)
10	0.6	10.3
20	0.8	14
30	1.0	16.4
40	1.2	18.5
50	1.4	20.2
60	1.5	21.8
70	1.6	23.2
80	1.7	24.5
90	1.8	26
100	1.85	27.2
110	1.9	28.6
120	1.93	29.8
130	1.96	30.8
140	1.98	31.9
150	2.0	33

Series 10AF-L and 3040-L

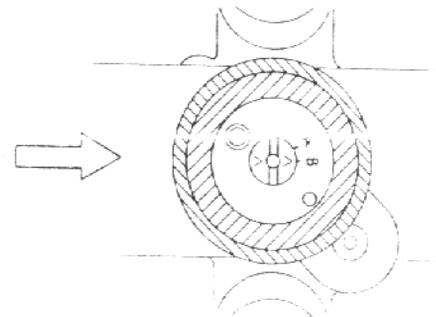


Fig. 1

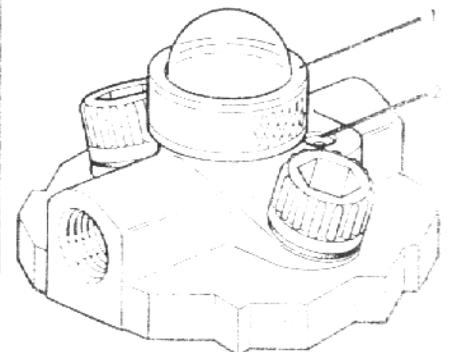


Fig. 2

The Norgren *Citation* Line  
offers a NEW STANDARD in Compressed Air Filtration

# Standard Filter

1/4" - 3/4" • WITH INTERCHANGEABLE  
MANUAL OR AUTOMATIC DRAIN

## SPECIFICATIONS

PIPE SIZES: 1/4", 3/8", 1/2", 3/4" B.S.P. Taper

BOWLS: 1/3 PT (0.20 litres) SAFETY CLEAR  
TRANSPARENT (STANDARD)  
METAL (OPTIONAL)

FILTER ELEMENTS:  
50 MICRON SINTERED BRONZE  
(STANDARD)  
5 AND 25 MICRON SINTERED BRONZE  
(OPTIONAL)

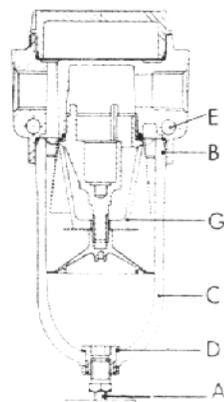
MAXIMUM PRESSURE:  
Transparent Bowl: 150 psi (10.5 Kg/cm<sup>2</sup>)  
Metal Bowl: 250 psi (18 Kg/cm<sup>2</sup>)

MAXIMUM TEMPERATURE:  
Transparent Bowl: 120°F (50°C)  
Metal Bowl: 175°F (80°C)

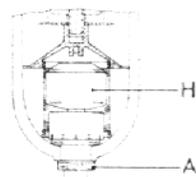
AUTOMATIC OR MANUAL DRAIN  
MOUNTING HOLES: 3/16" (7 mm)

## FEATURES

- A. Interchangeable automatic drain or manual drain.
- B. Threaded bowl is easily removed - no clamp ring.
- C. Safety-Clear, non shattering, transparent bowl.
- D. Plastic insert with draincock reduces internal stress.
- E. Built in mounting provision.
- F. This filter removes more water than any competitive filter on the market today.
- G. Large filter element minimises pressure drop.
- H. Automatic - Drain operates under FLOW and NO FLOW conditions.



Manual-Drain Models



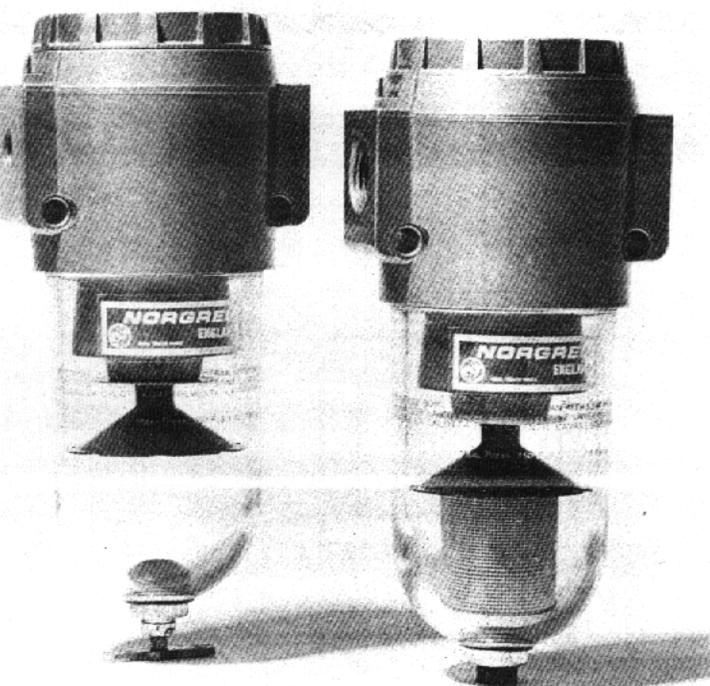
Automatic-Drain Models

## WHERE TO USE

The FO2 filter is designed for general application on air and non-corrosive gas systems where effective filtration is required.

# NORGREN

SHIPSTON-ON-STOUR, WARWICKSHIRE, ENGLAND



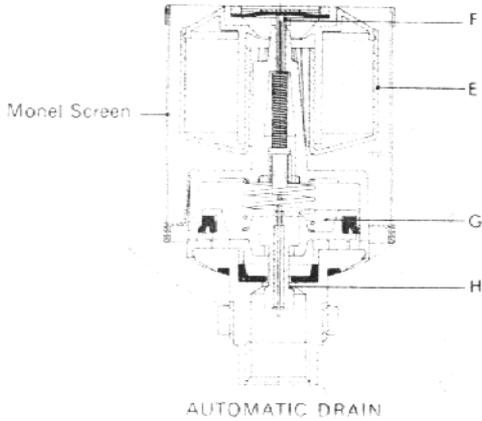
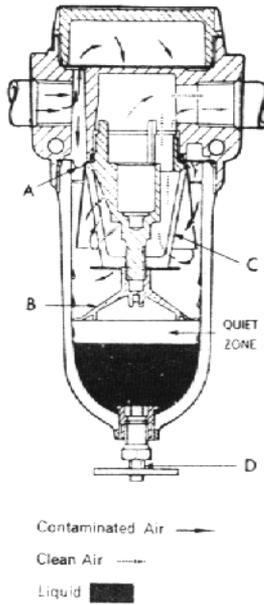
## OPERATION

Air flows through the directional louvres (A) forcing it into whirling flow pattern. Liquid particles are thrown against the inside wall of the bowl by centrifugal force. The liquid particles run down into the bottom of the bowl. The baffle (B) maintains a "quiet zone" in the lower part of the bowl to prevent air turbulence from picking up the liquid and returning it to the air stream. The air then passes through the filter element (C) to remove solid contaminants.

Liquid contaminants are drained by opening the manual drain-cock (D).

Alternatively, an automatic drain assembly, easily interchangeable with the manual drain, automatically dumps liquid as it collects. When the liquid level in the bowl reaches a predetermined height the float (E) opens a pilot valve (F). This admits air above the piston (G), thus causing the drain valve (H) to open. The liquid is expelled by air pressure to a drain where-upon the float closes the pilot valve and so the drain valve.

The mechanism is designed to open when no air pressure is in the line permitting overnight draining. It is a sealed unit.



## AUTO-DRAIN KITS

FO2 Filters can be quickly converted from manual to automatic-draining types. Order appropriate Auto-Drain Kit listed in accessories table and follow these easy assembly steps:—

- 1 Remove bowl, unscrew draincock and retaining ring and remove bowl insert.



- 2 Place automatic-drain mechanism in bowl.



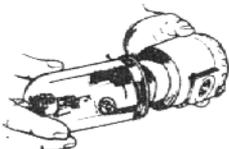
- 3 Screw up retaining ring on external thread of automatic-drain mechanism.



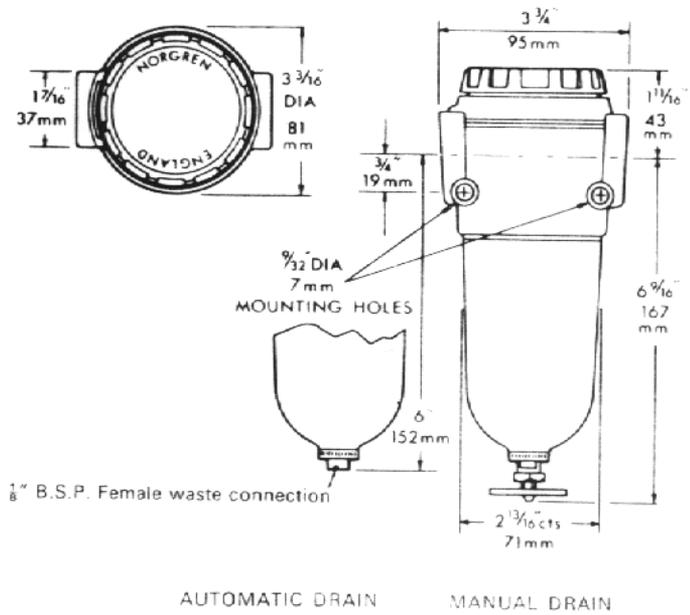
- 4 Position protective monel screen (open end upwards) and float.



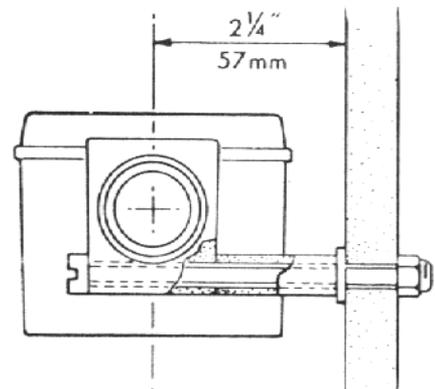
- 5 Screw back bowl into body.



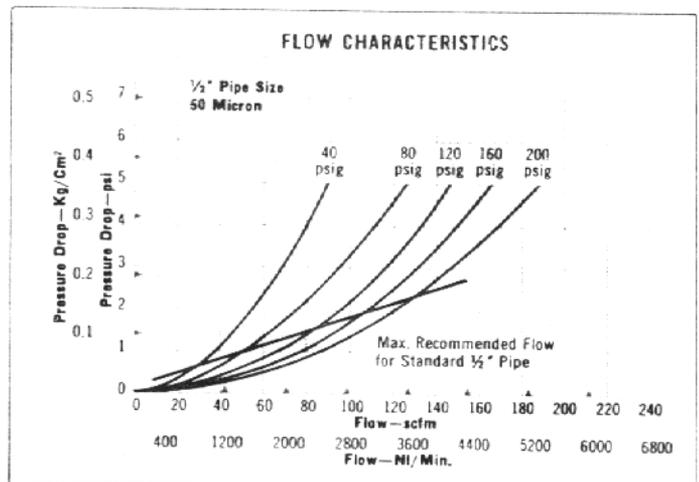
## DIMENSIONS



## MOUNTING DIMENSIONS



## PERFORMANCE CHARACTERISTICS



## ORDER TABLE

BOWL TYPE	DRAIN TYPE	†PIPE SIZE	STANDARD	OPTIONAL MODELS	
			FILTER ELEMENT		
			50-MICRON	25-MICRON	5-MICRON
SAFETY-CLEAR	AUTOMATIC	1/4"	<b>FO2-200-A3TB</b>	FO2-200-A2TB	FO2-200-A1TB
		3/8"	<b>FO2-300-A3TB</b>	FO2-300-A2TB	FO2-300-A1TB
		1/2"	<b>FO2-400-A3TB</b>	FO2-400-A2TB	FO2-400-A1TB
		*3/4"	<b>FO2-600-A3TB</b>	FO2-600-A2TB	FO2-400-A1TB
	MANUAL	1/4"	<b>FO2-200-M3TB</b>	FO2-200-M2TB	FO2-200-M1TB
		3/8"	<b>FO2-300-M3TB</b>	FO2-300-M2TB	FO2-300-M1TB
		1/2"	<b>FO2-400-M3TB</b>	FO2-400-M2TB	FO2-400-M1TB
		*3/4"	<b>FO2-600-M3TB</b>	FO2-600-M2TB	FO2-600-M1TB

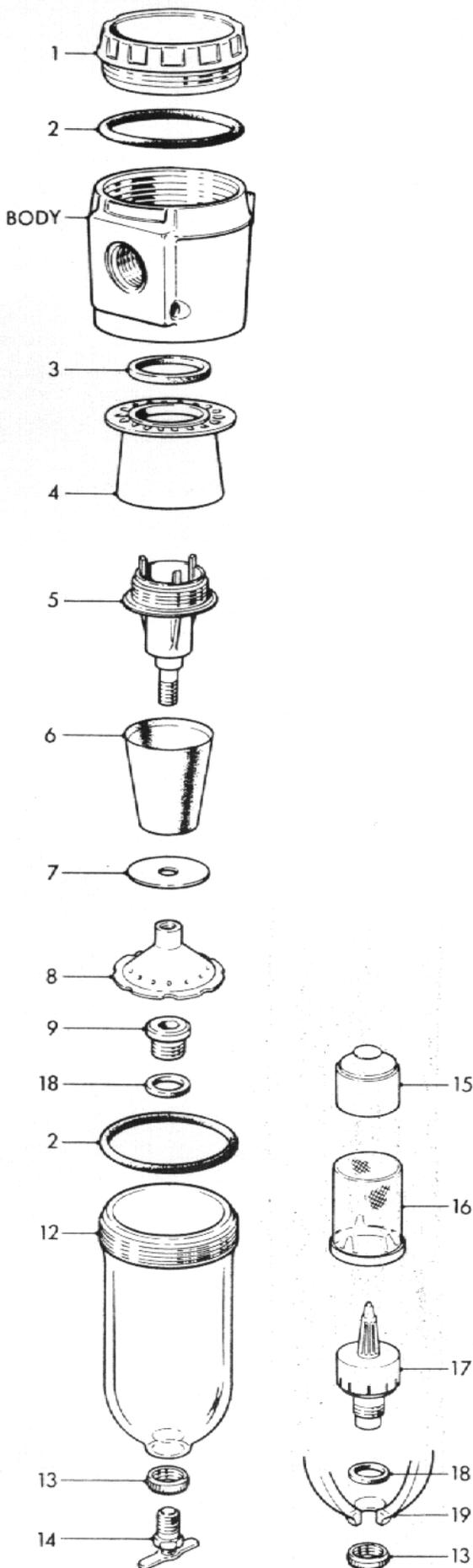
OPTIONAL MODELS					
BOWL TYPE	DRAIN TYPE	†PIPE SIZE	50-MICRON	25-MICRON	5-MICRON
METAL	AUTOMATIC	1/4"	FO2-200-A3MB	FO2-200-A2MB	FO2-200-A1MB
		3/8"	FO2-300-A3MB	FO2-300-A2MB	FO2-300-A1MB
		1/2"	FO2-400-A3MB	FO2-400-A2MB	FO2-400-A1MB
		*3/4"	FO2-600-A3MB	FO2-600-A2MB	FO2-600-A1MB
	MANUAL	1/4"	FO2-200-M3MB	FO2-200-M2MB	FO2-200-M1MB
		3/8"	FO2-300-M3MB	FO2-300-M2MB	FO2-300-M1MB
		1/2"	FO2-400-M3MB	FO2-400-M2MB	FO2-400-M1MB
		*3/4"	FO2-600-M3MB	FO2-600-M2MB	FO2-600-M1MB

\*3/4" Models are 1/2" units tapped 3/8" for use with 3/4" o.d. copper pipe fittings.

†Standard pipe threads are B.S.P. Taper.  
Alternative pipe threads B.S.P. Parallel and ANPT must be specified.

## ACCESSORIES

	<p><b>BOWL GUARD KIT</b> (includes special transparent bowl) Perforated metal gives positive protection yet allows visibility of bowl contents.</p>	<p>For Manual Drain Models 18-012-986 For Automatic-Drain Models 18-012-987</p>
	<p><b>MOUNTING KIT</b> Consists of metal and wood screws, spacer tubes, washers and self locking nuts. Fits built-in mounting holes.</p>	<p>18-026-999 (W 7)</p>
	<p><b>AUTO-DRAIN KITS</b> For simple conversion from manual to automatic-drain. For Transparent Bowl Models For Metal Bowl Models</p>	<p>3000-01 3000-99</p>



MANUAL DRAIN      AUTOMATIC DRAIN

**NORGREN**

SHIPSTON-ON-STOUR, WARWICKSHIRE, ENGLAND

EINC-101 7/68 ©

## MAINTENANCE

To remove the filter element, shut off air pressure and unscrew the bowl anti-clockwise (12, 19). Unscrew the baffle (8) and withdraw the element and filter shield (6, 7) from filter guide (5). To clean filter element, wash in paraffin and blow out thoroughly with compressed air. Keep filter clean for best performance and minimum pressure drop. Remove the monel screen (16) from the bowl of automatic-drain models and blow out with compressed air.

Clean TRANSPARENT BOWLS in soapy water. DO NOT USE SOLVENTS AS THEY WILL DESTROY THE BOWL.

To completely dis-assemble remove the filter guide, which retains the deflector assembly (4) by means of a  $\frac{1}{2}$ " open wrench.

After cleaning, inspect "O" rings and gaskets for nicks and cuts. On re-assembly ensure they are not twisted and slightly smear with silicone grease. Do not crush filter element by over-tightening baffle.

On automatic-drain models, the float assembly (15) is not attached and will drop out when the bowl is turned upside down. The automatic-drain assembly (17) can be removed by loosening the knurled retaining ring (13) and withdrawing the component from the bowl. The float and automatic-drain assemblies are not repairable items. Care should be taken on re-assembly to ensure that the monel screen is installed with the internal guides at the bottom of the bowl and also that the gasket (18) is in position on the bottom of the automatic-drain assembly.

## PARTS

**Gasket Kit** ..... FO2-4-GK

Comprises:

2	'O' Ring ( $2\frac{3}{4}$ " o.d.) set of 2	2315-38
3	Gasket, Filter Guide ( $1\frac{5}{8}$ " o.d.)	2382-05
18	Gasket ( $\frac{3}{4}$ " o.d.)	2811-01

**For Manual-Drain Models**

**Repair Kit** ..... FO2-4-100M

Comprises:

	Gasket Kit	FO2-4-GK
	Filter Element (50 micron)	2992-02
	Draincock	684-01

**For Automatic-Drain Models - Transparent Bowl**

**Repair Kit** ..... FO2-4-100A

Comprises:

	Gasket Kit	FO2-4-GK
6	Filter Element (50 micron)	2992-02
16	Monel Screen	2991-98

**Auto-Drain Kit** ..... 3000-01

Comprises:

15	Float	3003-50
17	Automatic-Drain Mechanism	3000-02
16	Monel Screen	2991-98
13	Retaining Ring	2797-01
18	Gasket ( $\frac{3}{4}$ " o.d.)	2811-01

**For Automatic-Drain Models - Metal Bowl**

**Repair Kit** ..... FO2-4-100AM

Comprises:

	Gasket Kit	FO2-4-GK
6	Filter Element (50 micron)	2992-02
16	Monel Screen	2991-99

**Auto-Drain Kit** ..... 3000-99

Comprises:

	Auto-Drain Kit	3000-01
16	with Monel Screen	2991-99
	substituted for Monel Screen	2991-98

**Further Replacement Parts**

1	Cap	2486-01
8	Baffle	2740-01
4	Deflector Assembly	2488-50
5	Filter Guide	2483-89
7	Filter Shield	3404-01
13	Retaining Ring	2797-01
6	Filter Element (50 micron)	2992-02
6	Filter Element (25 micron)	2992-03
6	Filter Element (5 micron)	2992-04

**For Manual-Drain Models**

12	Transparent Bowl Assembly including draincock	2487-51
	Metal Bowl Assembly including draincock	3047-50
9	Bowl Insert	2796-99
14	Draincock	684-01

**For Automatic-Drain Models**

19	Transparent Bowl	2487-58
	Metal Bowl	3047-01
15	Float	3003-50
17	Automatic-Drain Mechanism	3000-02
16	Monel Screen (transparent bowl)	2991-98
16	Monel Screen (metal bowl)	2991-99

WHEN ORDERING SPARES QUOTE MODEL NUMBER AND KIT OR PART DESCRIPTION

# 'E' Type Oil Fog Lubricators

$\frac{1}{4}$ " — 1" • 3 OZ.,  $\frac{1}{4}$  PT.,  $\frac{1}{3}$  PT. NOMINAL  
OIL CAPACITIES

## SPECIFICATIONS

PIPE SIZES:  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", 1" B.S.P.T.

OIL RESERVOIRS: NOMINAL CAPACITIES  
3 oz. (0.10 litres),  
 $\frac{1}{4}$  pt. (0.15 litres),  
 $\frac{1}{3}$  pt. (0.20 litres)

SAFETY CLEAR TRANSPARENT BOWLS

$\frac{1}{4}$  pt. (0.15 litres),  
 $\frac{1}{3}$  pt. (0.20 litres),

METAL BOWLS (Optional)

MAXIMUM PRESSURE: TRANSPARENT BOWL,  
150 p.s.i. (10.5 kg/cm<sup>2</sup>)  
METAL BOWL,  
250 p.s.i. (18 kg/cm<sup>2</sup>)

MAXIMUM TEMPERATURE:

TRANSPARENT BOWL,  
120°F (50°C)  
METAL BOWL,  
175°F (80°C)

MINIMUM OPERATING AIR FLOW  
AT 80 p.s.i. (5.6 kg/cm<sup>2</sup>)

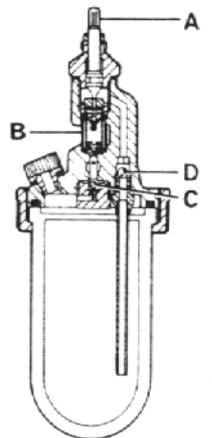
$\frac{1}{4}$ " : 4.5 CFM (127 litres/min)  
 $\frac{3}{8}$ " : 6 CFM (170 litres/min)  
 $\frac{1}{2}$ " : 12 CFM (340 litres/min)  
 $\frac{3}{4}$ " : 18 CFM (510 litres/min)  
1" : 33 CFM (850 litres/min)

MAXIMUM OPERATING AIR FLOW: ABOVE MAXIMUM  
RECOMMENDED FLOW FOR PIPE SIZE.  
AIR FLOW: NORMALLY SUPPLIED FOR LEFT TO  
RIGHT AIR FLOWS \*

\* Reversible — simple adjustment permits lubricators to be  
used for air flow in either direction.

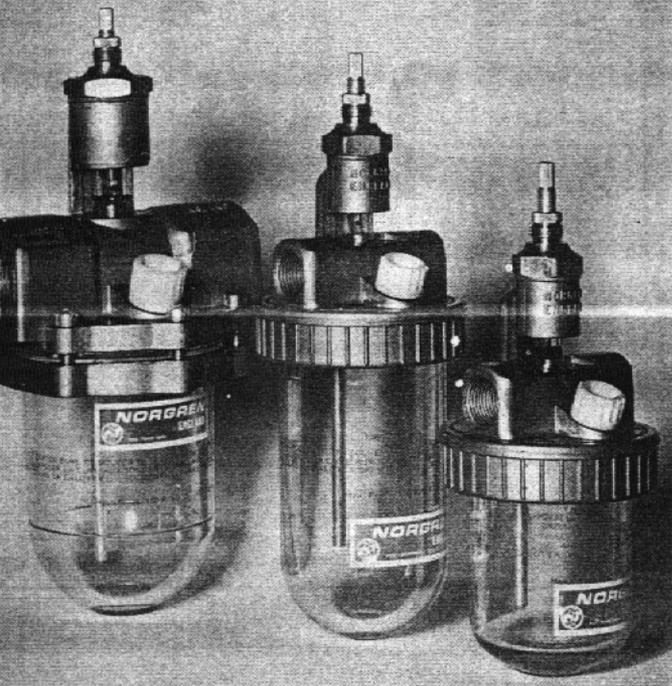
## FEATURES

- A Easily set — thumbscrew allows precise adjustment of oil feed rate.
- B Sight tube for visible oil feed. Every drop of oil seen enters the air stream.
- C Check valve — can be refilled without shutting off air supply.
- D Non-return valve in syphon tube ensures immediate lubrication when used intermittently.
- E Easy maintenance.



# NORGREN

SHIPSTON-ON-STOUR, WARWICKSHIRE, ENGLAND



## WHERE TO USE

### Tests prove air tools operate over 20 times longer when lubricated properly

Designed to provide lubrication for air tools, air cylinders, and other air operated equipment. One lubricator should not normally serve more than two tools.

If the tool operates over a widely varying range of air flows, use a Constant Density Lubricator. Micro-Fog Lubricators are recommended where there are lengthy complex piping systems or multiple points of lubrication.

## WHY LUBRICATE AIR TOOLS?

The proper lubrication of pneumatic tools and cylinders prevents friction damage and rust corrosion, thereby increasing their working life substantially. Lubrication reduces down-time, lowers maintenance and replacement costs.

Actual comparative tests using a control group of like air-powered tools with and without lubrication have shown that the tools with lubrication will last 20 times as long as the air tools without any lubrication.

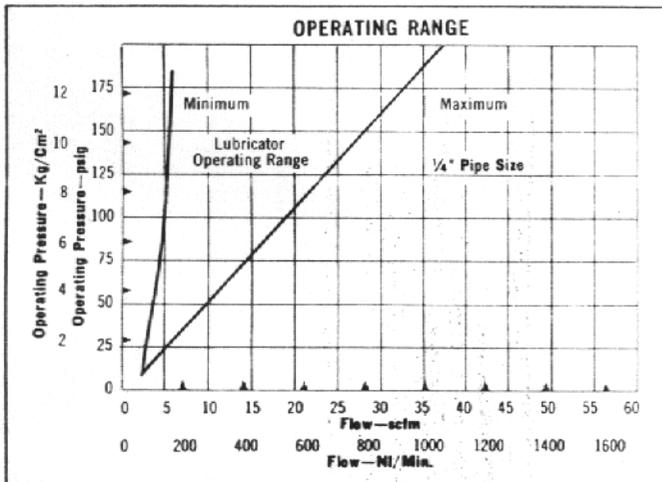
For flexibility of installation, most 'E' Type Oil Fog Lubricators can be easily adjusted for either left-to-right or right-to-left air flow.

An oil feed adjustment conveniently located on top of the lubricator controls the rate of oil feed through the sight feed glass. You know the lubricator is functioning and how much oil is going into the air stream.

Adjustment can be made from one drop per minute to a full stream of oil.

Whether on intermittent or continuous operation, the lubricator will provide properly lubricated air whenever the air is flowing.

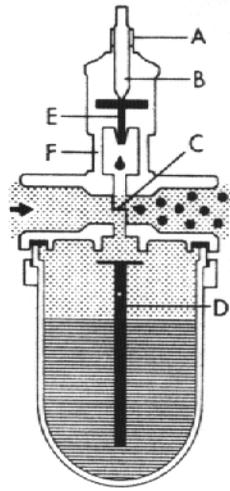
## TYPICAL PERFORMANCE CHARACTERISTICS



## OPERATION

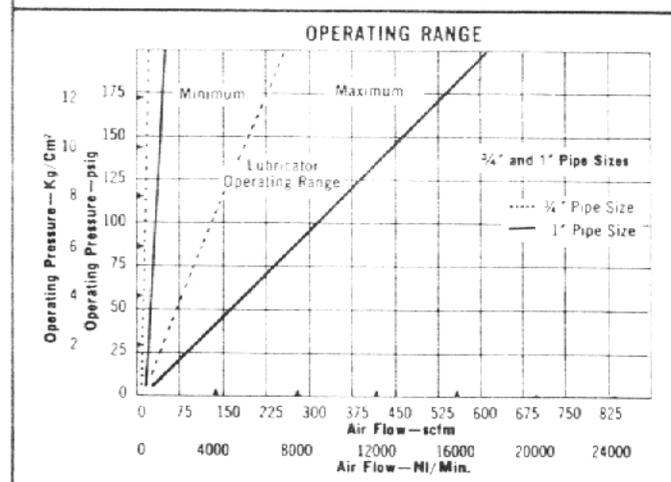
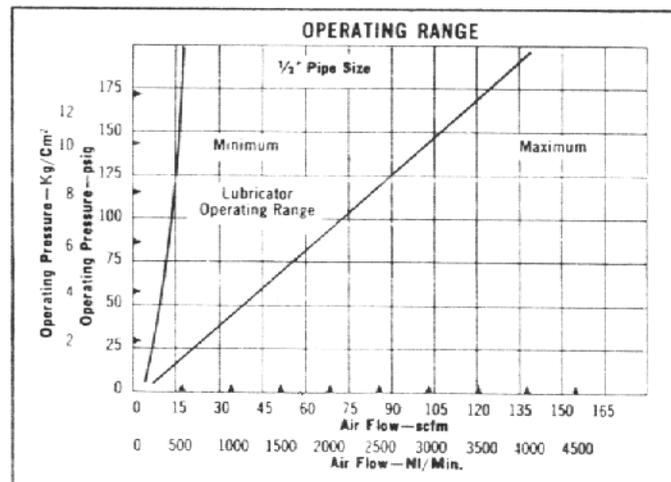
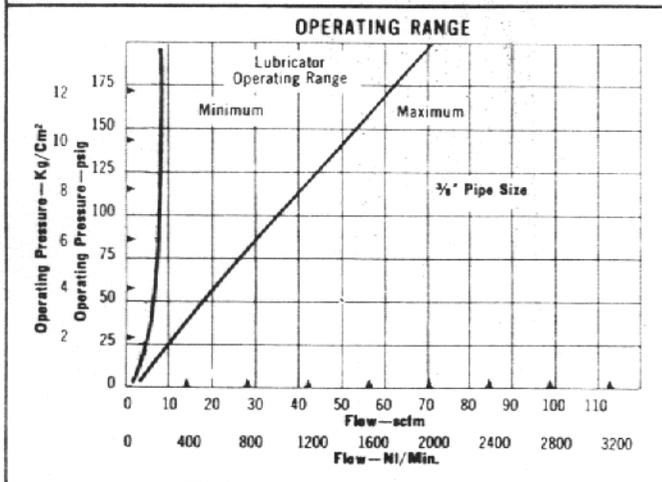
To adjust, slacken knurled lock nut (A), close needle (B) fully, turn on air and open needle until required oil flow is seen through sight glass (approx: 1 drop of oil required per 10 c.f.m.). Tighten knurled lock nut after adjustment.

Air enters the lubricator as indicated. Air flowing through the lubricator causes a suction as it passes through the venturi section (C). Thus, oil is caused to flow up the syphon tube (D) to the chamber above the drip gland. Here the flow of oil is controlled by a needle valve and permitted to drip at the desired rate of feed from the drip gland (E), through the sight feed chamber (F) and into the air line. As oil enters the air stream, it is atomized into an air-borne oil fog which is carried to the pneumatic device.

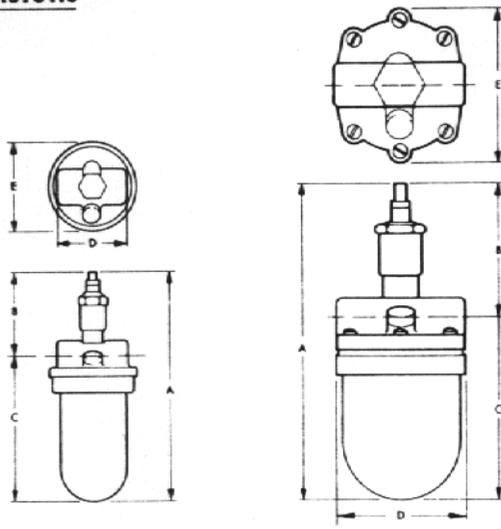


The check valve ball and spring permits the reservoir to be refilled without shutting off the air supply.

## INTERNATIONAL PNEUMATIC SYMBOL



## DIMENSIONS



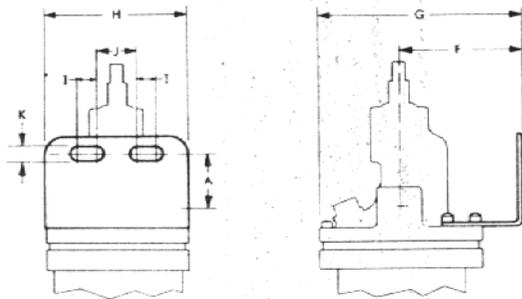
3 OZ. & 1/4 PT. SIZES

1/2 PT. SIZE

Nominal Oil Capacity	Pipe Size	DIMENSIONS — Inches and Millimetres				
		A*	B	C*	D	E
3 oz.	1/4", 3/8"	6 1/2	2 1/2	3 1/8	2 1/8	2 1/2
		161	71	90	59	73
1/4 pt.	1/4", 3/8"	7 1/2	2 1/2	4 1/2	2 1/8	2 1/2
		197	71	125	59	73
1/2 pt.	1/4", 3/8", 1/2"	8 1/2	3 1/2	4 1/2	3 1/2	3 1/2
		213	94	119	86	97
	3/4", 1"	8 1/2	3 1/2	4 1/2	4	3 1/2
		223	98	125	102	97

\* For Series S0-41E and S0-42E, add 1/4" (3 mm) to dimensions A and C.  
For Series S0-40E add 1/8" (5 mm) to dimensions A and C.

## MOUNTING DIMENSIONS



Nominal Oil Capacity	Pipe Size	DIMENSIONS — Inches and Millimetres						
		A	F	G	H	I	J	K
3 oz., 1/4 pt.	1/4", 3/8"	1 1/2	1 1/2	3 1/2	2 1/2	1 1/2	1 1/2	1 1/2
		16	46	84	63	13	22	7
1/2 pt.	1/4", 3/8", 1/2"	1 1/2	2 1/2	4 1/2	3 1/2	1 1/2	1 1/2	1 1/2
		37	57	106	83	16	32	7
	3/4", 1"	1 1/2	2 1/2	4 1/2	3 1/2	1 1/2	1 1/2	1 1/2
		30	57	106	83	16	32	7

## ORDER TABLE

Nominal Bowl Capacity	*Pipe Size B.S.P.T.	Standard Models	Optional Models
		Transparent Bowl	Metal Bowl
3 oz.	1/4"	0-39-2E	—
	3/8"	0-39-3E	—
1/4 pt.	1/4"	0-40-2E	S0-40-2E
	3/8"	0-40-3E	S0-40-3E
1/2 pt.	1/4"	0-41-2E	S0-41-2E
	3/8"	0-41-3E	S0-41-3E
	1/2"	0-41-4E	S0-41-4E
	3/4"	0-42-6E	S0-42-6E
	1"	0-42-8E	S0-42-8E

\* Alternative pipe threads B.S.P.P. and A.N.P.T. must be specified.

## ACCESSORIES

 <p><b>Mounting Brackets</b> For use on any vertical surface. Heavy gauge steel. Screws included</p>	<p>For Series 0-39E, 0-40E, S0-40E 1/4" size 3/8" size</p> <p>For Series 0-41E, 0-42E, S0-41E, S0-42E All sizes</p>	<p>18-001-999 (W-62) 18-001-998 (W-63)</p> <p>18-001-017 (W-2)</p>
 <p><b>Syphon Tube Filter</b> 200 Mesh Monel screen ensures delivery of clean oil.</p>	For all models	1788-01
 <p><b>Draincock</b> Models available with draincock fitted to bowl.</p>	For all models	Specify
 <p><b>Tamper-proof Cap</b> Prevents unauthorised adjustment of lubricator setting. Hexagon cap screws down over Top Plug Assembly.</p>	For all models	2131-99
 <p><b>Bowl Guard</b> (with modified clamp ring and special bowl). Expanded metal cage gives positive protection yet allows visibility of bowl contents.</p>	For Series 0-40E For Series 0-41E, 0-42E	18-012-993 18-012-997
 <p><b>Streamline Wyes</b> Improve efficiency of fog delivery.</p>	Inlet 1/4" B.S.P., 2 outlets 1/4" B.S.P. Inlet 1/4" A.N.P., 2 outlets 1/4" A.N.P.	18-006-987 18-006-016
 <p><b>Aerosol Distributor</b> Simplifies piping arrangement.</p>	Inlet 1/4" B.S.P., 8 outlets, 1/4" B.S.P. Outlets not required are plugged—specify.	18-005-002 (A1-B)
 <p><b>Venturi Bushings</b> Reduce venturi section for low air flow applications.</p>	For 1/4" Pipe Size. Minimum Flow at 80 p.s.i. (5.6 kg/cm <sup>2</sup> ) 2.2 cfm (62 litres/min)	3 oz., 1/4 pt. 1643-01 1/2 pt. 1506-01

## RAPID CYCLE MODELS

These models are designed to provide oil for rapid-cycle applications such as welding machines. Consult Factory for full details.

## NORGREN COMPATIBLE PRODUCTS

Norgren also offers similar lubricators with 1 qt., 1 1/2 gal., and 5 gal., nominal oil capacities as well as compatible filters and regulators.

## MAINTENANCE

To dismantle, shut off air, remove clamp ring (23, 24) and detach bowl (22); unscrew check valve seat (17) and syphon tube (19) to remove balls (15, 18) and spring (16). Unscrew top plug (2) and drip gland (7) and push venturi tube (11) and sight tube (9) out of top of body. TO CLEAN THE TRANSPARENT BOWL, WASH IN SOAPY WATER, DO NOT USE SOLVENTS AS THEY WILL DESTROY THE BOWL. Clean parts with paraffin and blow out with air. On re-assembly smear rubber parts with silicon grease.

Hold sight glass while firmly tightening drip gland. Male cone of pressure disc(5) must face downwards. Tighten clamp ring firmly. If venturi bushing is fitted, insert from inlet or outlet port and line up holes to receive stem of venturi tube.

(1) If oil fails to flow, ensure lubricator is correct size for task (see Performance characteristics). Check air flow direction corresponds with arrows on venturi tube. Thoroughly clean all oil passages with paraffin and compressed air. Examine check valve ball and seat for foreign matter. Check sight tube for hairline cracks. If oil still fails to flow, examine check valve seat to ensure seat still slightly spoilt.

(2) If oil or air leaks around sight glass tube, tighten drip gland. If this fails to stop leak inspect sight tube washers (8, 10).

## PARTS

### FOR 3 OZ. AND 1/2 PT. MODELS

GASKET KIT	040E-GK
Comprises:	
19a Gasket, Syphon Tube	1802-01
12a Gasket, Filler Plug	1955-01
3 Gasket, Top Plug	1188-01
6 Felt Disc	1006-01
10 Lower Sealing Washer	1189-01
8 Upper Sealing Washer	1190-01
20 'O' Ring (2 1/2" o.d.)	131-01
4a 'O' Ring (1 1/2" o.d.)	705-01
- Packing (Pre 1966)	1214-99

REPAIR KIT	040E-100
Comprises:	
Gasket Kit	040E-GK
16 Check Valve Spring	998-01
12 Filler Plug Assembly	1186-02
4 Needle Assembly (includes 'O' Ring)	1202-92
5 Pressure Disc	1005-01
15,18 Stainless Steel Ball (2 off)	1004-01
9 Sight Glass Tube	1179-01

FURTHER REPLACEMENT PARTS	
22 Bowl, Transparent (0-39)	0-73
22 Bowl, Transparent (0-40)	278-94
- Bowl, Transparent with draincock (0-39E) alternative	0-30
- Bowl, Transparent with draincock (0-40E) alternative	278-96
22 Bowl, Metal (S0-40E)	588-99
- Bowl, Metal with draincock (S0-40E) alternative	588-97
23 Clamp Ring	1994-02
17 Check Valve Seat	999-01
7 Drip Gland	1181-01
12 Filler Plug Assembly	1186-02
- Needle (early models)	1184-99
- Needle Assembly (includes 'O' Ring)	1202-92
1,2,4 Top Plug Assembly, complete	18-004-990
1 Knurled Locknut	619-96
11 Reversible Venturi Tube	1140-01
9 Sight Glass Tube (metal bowl units)	1179-01
9 Sight Plastic Tube (transparent bowl units)	1179-99
19 Syphon Tube Assembly (0-39E) inc. gasket	231-99
19 Syphon Tube Assembly (0-40E) inc. gasket	1819-01

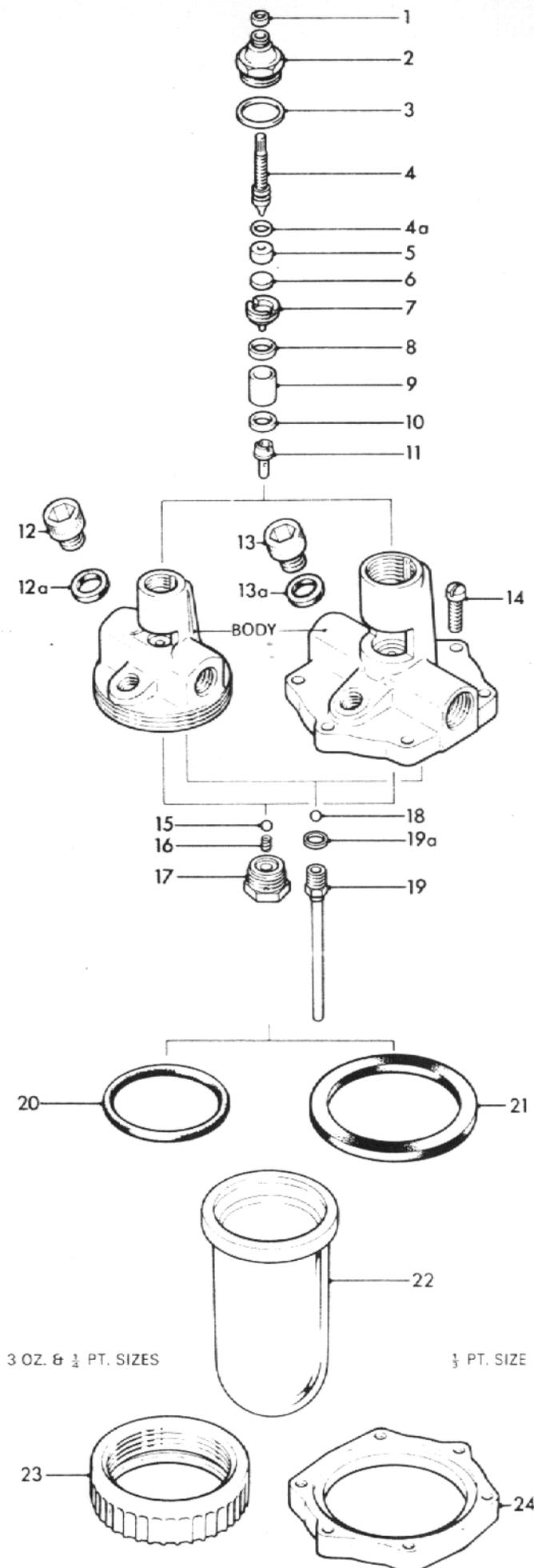
### FOR 1/2 PT. MODELS

GASKET KIT	042E-GK
Comprises:	
19a Gasket, Syphon Tube	1802-01
3 Gasket, Top Plug	1280-01
13a Gasket, Filler Plug	1956-01
21 Gasket, Bowl	1029-01
10 Lower Sealing Washer	1210-01
8 Upper Sealing Washer	1212-01
- Packing (Pre 1966)	1214-99
6 Felt Disc	1006-01
4a 'O' Ring (1 1/2" o.d.)	705-01

REPAIR KIT	042E-100
Comprises:	
Gasket Kit	042E-GK
16 Check Valve Spring	998-01
13 Filler Plug Assembly	1206-02
4 Needle Assembly (includes 'O' Ring)	1202-92
5 Pressure Disc	1005-01
15,18 Stainless Steel Balls (2 off)	1004-01
14 Screws (set of six)	1031-91
9 Sight Glass Tube	1196-01

FURTHER REPLACEMENT PARTS	
17 Check Valve Seat	999-01
7 Drip Gland	1197-01
13 Filler Plug Assembly	1206-02
11 Reversible Venturi Tube (1/2", 3/4", 1")	1433-01
11 Reversible Venturi Tube (1/2", 1")	1434-01
9 Sight Glass Tube (metal bowl units)	1196-01
9 Sight Plastic Tube (transparent bowl units)	1196-99
- Needle (early models)	1202-99
4 Needle Assembly (includes 'O' Ring)	1202-92
1,2,4 Top Plug Assembly Complete	18-004-991
1 Knurled Locknut	619-96
22 Bowl, Transparent	216-77
- Bowl, Transparent with Draincock (alternative)	216-16
22 Bowl, Metal	2101-98
- Bowl, Metal with Draincock (alternative)	2101-91
24 Clamp Ring	1018-02
19 Syphon Tube Assembly, inc. Gasket	1819-01

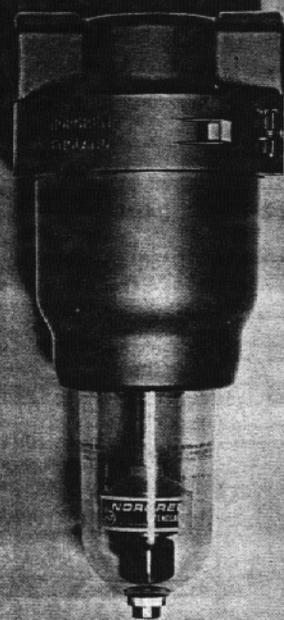
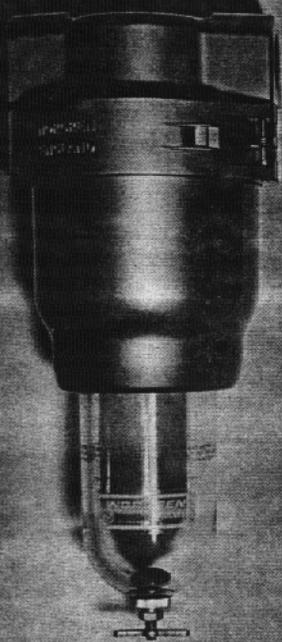
WHEN ORDERING SPARES, QUOTE MODEL NUMBER AND KIT OR PART DESCRIPTION



**C.A. NORGREN LTD**

SHIPSTON-ON-STOUR, WARWICKSHIRE, ENGLAND

EINC-301a 2/69



Types 30BE and 30CG

EINC -102a  
February 1969

# General Purpose Filters

**3/4" - 1 1/2" PIPE SIZES • MANUAL OR AUTOMATIC DRAIN**

## SPECIFICATIONS

PIPE SIZES: 3/4", 1", 1 1/4", 1 1/2" B.S.P. Taper.

BOWLS: SAFETY CLEAR TRANSPARENT (STANDARD)  
METAL (OPTIONAL)

FILTER ELEMENTS:

64 MICRON SINTERED BRONZE (STANDARD)  
25, 10 and 5 MICRON SINTERED BRONZE OR  
74 MICRON MONEL WIRE SCREEN (OPTIONAL)

MAXIMUM PRESSURE:

Transparent Bowl 150 psi (10.5 Kg/cm<sup>2</sup>)  
Metal Bowl 250 psi (18 Kg/cm<sup>2</sup>)

MINIMUM OPERATING PRESSURE FOR AUTO-  
MATIC MODELS: 5 psi (0.35 Kg/cm<sup>2</sup>)

MAXIMUM TEMPERATURE:

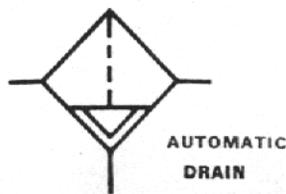
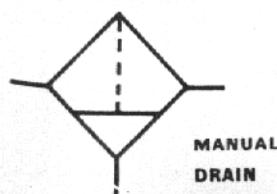
Transparent Bowl 120°F (50°C)  
Metal Bowl 175°F (80°C)

AUTOMATIC OR MANUAL DRAIN

## WHERE TO USE

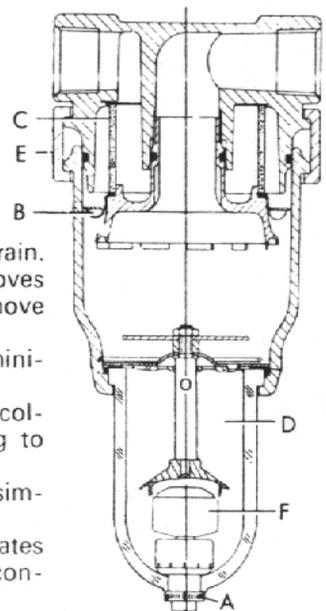
General application filters for larger air flows.

## INTERNATIONAL PNEUMATIC SYMBOLS



## FEATURES

- A.** Manual or Automatic-Drain.
- B.** Directional louvre improves centrifugal action to remove moisture and oil emulsions.
- C.** Large filter element minimises pressure drop.
- D.** Quiet Zone prevents collected liquids from returning to air line.
- E.** Hinged clamp ring for simplified maintenance.
- F.** Automatic-Drain operates under Flow or No Flow conditions.



## COMPATIBLE PRODUCTS

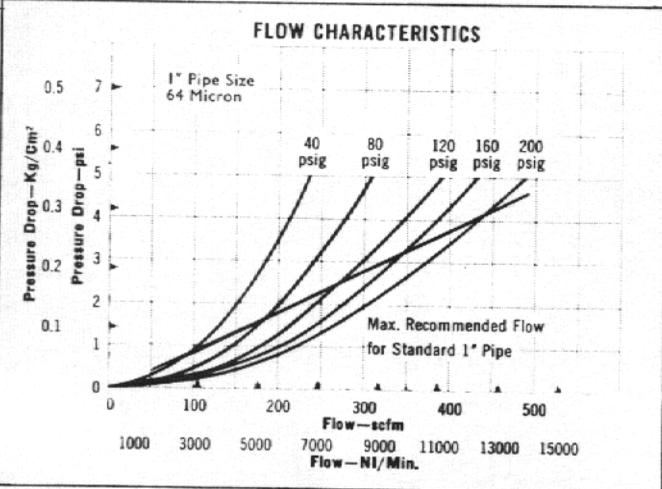
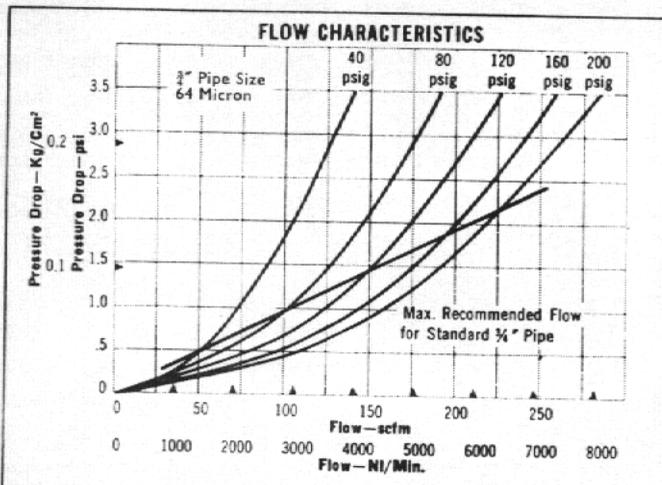
Norgren also catalogue pressure regulators and lubricators in these pipe sizes.

**NORGREN**

SHIPSTON-ON-STOUR, WARWICKSHIRE, ENGLAND



# TYPICAL PERFORMANCE CHARACTERISTICS



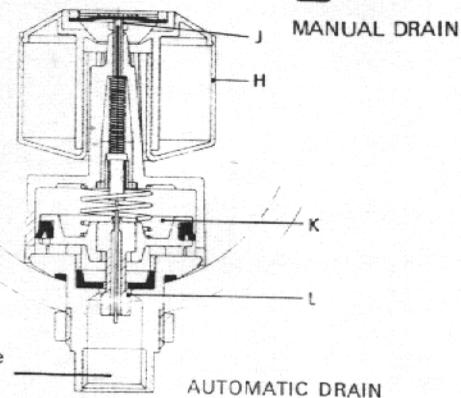
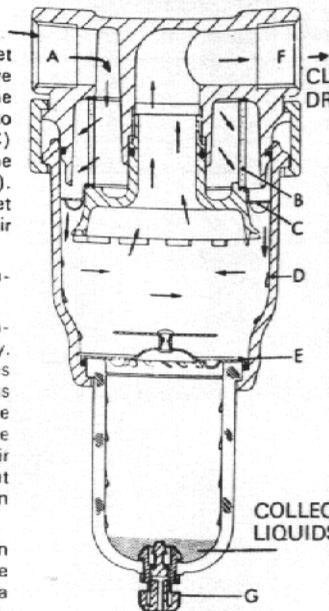
## OPERATION

The air enters the filter through the inlet port (A) and is first filtered to remove solids, passing from inside to outside the filter element (B). It is then directed into a centrifugal flow pattern by louvres (C) which forces the liquid particles to the inside wall of the intermediate body (D). From here liquids run down into the quiet zone underneath the baffle (E). Clean air leaves the outlet port (F).

When draincock (G) is opened, accumulated liquids are blown out of the bowl.

Alternatively an automatic-drain assembly dumps collected liquids automatically. When the liquid level in the bowl reaches a predetermined height the float (H) opens a pilot valve (J). This admits air above the piston (K) thus causing the drain valve (L) to open. The liquid is expelled by air pressure to a drain whereupon the float closes the pilot valve and so the drain valve.

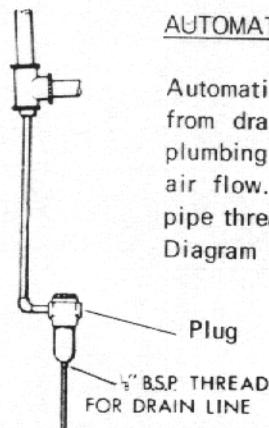
The mechanism is designed to open when no air pressure is in the line permitting overnight draining. It is a sealed unit.



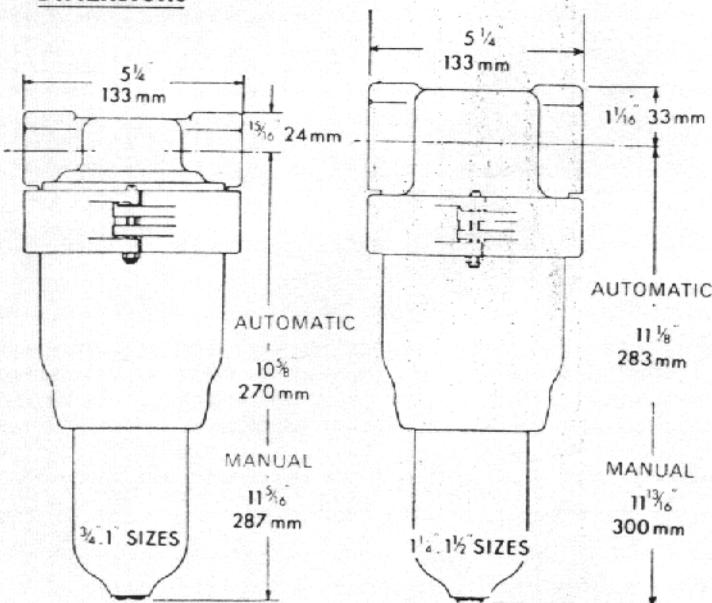
## DEAD END SERVICE

### AUTOMATIC DRAIN MODELS

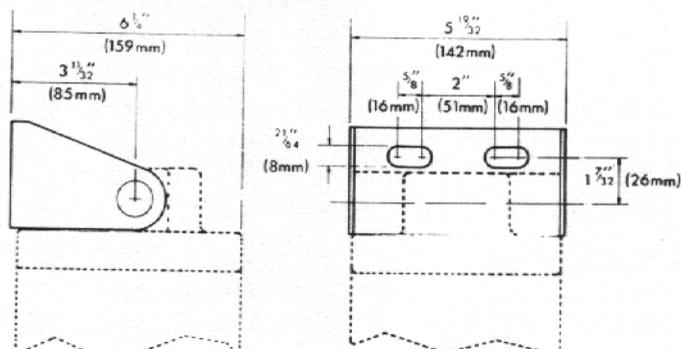
Automatically dump collected fluids from drain legs or other dead end plumbing installations. Requires no air flow. Equipped with 1/4 inch female pipe thread for attaching a drain line. Diagram shows typical installation.



## DIMENSIONS



## MOUNTING DIMENSIONS



3/4" and 1" SIZES

## ORDER TABLE

BOWL TYPE	DRAIN TYPE	*PIPE SIZE	STANDARD	OPTIONAL MODELS				
			FILTER ELEMENT					
			64-MICRON	25-MICRON	10-MICRON	5-MICRON	74-MICRON	
TRANSPARENT	MANUAL	¾"	30BE-6	30BE-6 (25)	30BE-6 (10)	30BE-6 (5)	30BE-6 (74)	
		1"	30BE-8	30BE-8 (25)	30BE-8 (10)	30BE-8 (5)	30BE-8 (74)	
		1½"	30BE-10	30BE-10 (25)	30BE-10 (10)	30BE-10 (5)	30BE-10 (74)	
		†1½"	30BE-12	30BE-12 (25)	30BE-12 (10)	30BE-12 (5)	30BE-12 (74)	
	AUTOMATIC	¾"	30CG-6	30CG-6 (25)	30CG-6 (10)	30CG-6 (5)	30CG-6 (74)	
		1"	30CG-8	30CG-8 (25)	30CG-8 (10)	30CG-8 (5)	30CG-8 (74)	
		1½"	30CG-10	30CG-10 (25)	30CG-10 (10)	30CG-10 (5)	30CG-10 (74)	
		†1½"	30CG-12	30CG-12 (25)	30CG-12 (10)	30CG-12 (5)	30CG-12 (74)	

OPTIONAL MODELS							
BOWL TYPE	DRAIN TYPE	*PIPE SIZE	FILTER ELEMENT				
			64-MICRON	25-MICRON	10-MICRON	5-MICRON	74-MICRON
METAL	MANUAL	¾"	30BE-N6	30BE-N6 (25)	30BE-N6 (10)	30BE-N6 (5)	30BE-N6 (74)
		1"	30BE-N8	30BE-N8 (25)	30BE-N8 (10)	30BE-N8 (5)	30BE-N8 (74)
		1½"	30BE-N10	30BE-N10 (25)	30BE-N10 (10)	30BE-N10 (5)	30BE-N10 (74)
		†1½"	30BE-N12	30BE-N12 (25)	30BE-N12 (10)	30BE-N12 (5)	30BE-N12 (74)
	AUTOMATIC	¾"	3CG-N6	3CG-N6 (25)	3CG-N6 (10)	3CG-N6 (5)	3CG-N6 (74)
		1"	30CG-N8	30CG-N8 (25)	30CG-N8 (10)	30CG-N8 (5)	30CG-N8 (74)
		1½"	30CG-N10	30CG-N10 (25)	30CG-N10 (10)	30CG-N10 (5)	30CG-N10 (74)
		†1½"	30CG-N12	30CG-N12 (25)	30CG-N12 (10)	30CG-N12 (5)	30CG-N12 (74)

† 1½" Models are 1½" units tapped 1½" for use with 1½" o.d. copper pipe fittings.

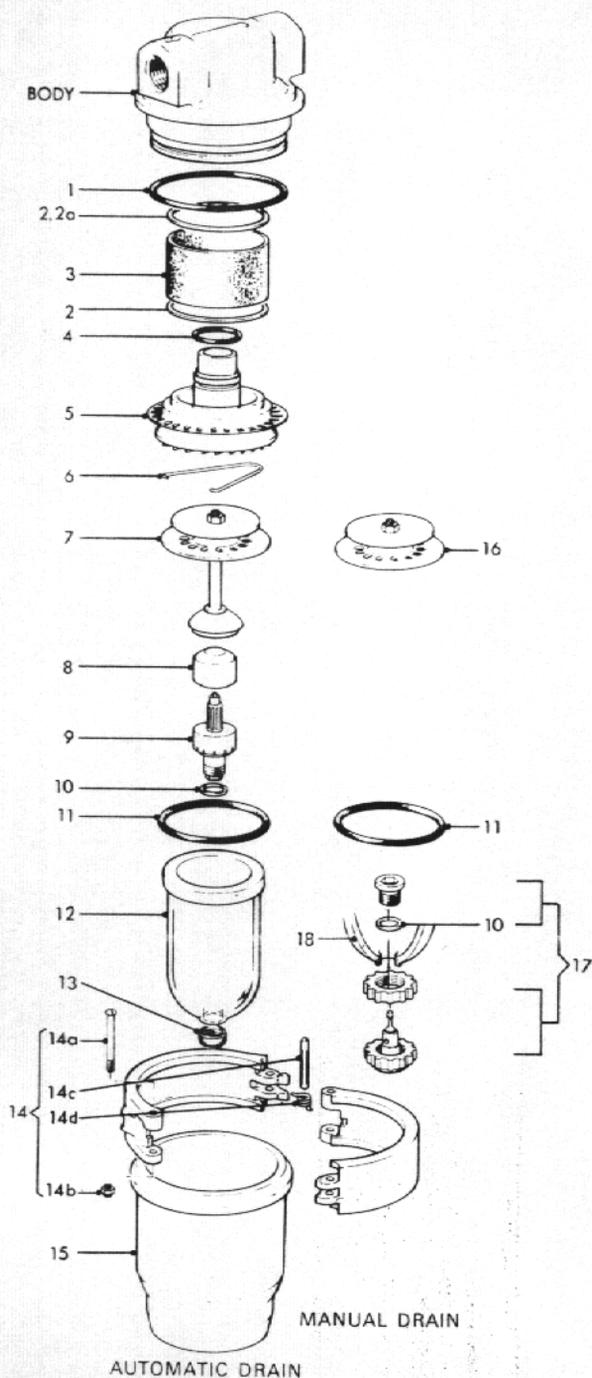
... for air flows reaching the maximum for 1½" pipe order Series 12-063.

\* Standard pipe threads are B.S.P. Taper.

Alternative pipe threads B.S.P. Parallel and A.N.P.T. must be specified.

## ACCESSORIES

 <p><b>Mounting Bracket</b> For use on any vertical surface</p>	<p>For ¾" size 18-001-033 (W-86) For 1" size 18-001-034 (W-88)</p>
 <p><b>Bowl Guard Kit</b> (includes special intermediate body) Expanded metal cage gives positive protection yet allows visibility of bowl contents.</p>	<p>All Models 18-012-995</p>
<p><b>Conversion Kits</b> Convert manual-drain filters to automatic-drain types.</p>	<p>For Transparent Bowl Types 3600-01 For Metal Bowl Types 3600-99</p>



Note: Gaskets 2, 2a are used with sintered bronze elements only.

## MAINTENANCE

To remove filter element (3), shut off air pressure; detach nut and screw securing the clamp ring (14). Rotate intermediate body (15) slightly and force upwards to release clamp ring lock. Do not use a lever to force the two halves apart. Remove intermediate body and bowl. Unscrew deflector assembly (5).

To detach bowl (12, 18) remove snap ring (6) and baffle assembly (7, 16).

On automatic-drain models remove float (8), and unscrew the knurled retaining ring (13) to free the automatic-drain mechanism (9).

To clean filter element, wash in paraffin and blow out thoroughly with compressed air. Keep filter clean to ensure best performance and minimum pressure drop.

Clean TRANSPARENT BOWLS in soapy water. DO NOT USE SOLVENTS AS THEY WILL DESTROY THE BOWL.

The float and automatic-drain assemblies are not repairable items. Care should be taken on re-assembly to ensure that the gasket (10) is in position on the bottom of the automatic-drain assembly.

When re-assembling complete unit, ensure that gaskets, 'O' rings and snap ring are properly located. Apply silicone grease to 'O' rings and grooves. Do not crush filter element by over-tightening deflector assembly.

## PARTS

### For all Models

<b>Gasket Kit</b> .....	30CG-GK
Comprises:	
2 Gasket (3 $\frac{1}{8}$ " o.d.) (2 off) .....	814-01
2a Gasket (2 $\frac{3}{32}$ " o.d.) (For 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " sizes) .....	814-99
1 'O' Ring (4 $\frac{1}{8}$ " o.d.) .....	1922-01
4 'O' Ring (1 $\frac{3}{8}$ " o.d.) .....	1982-01
11 'O' Ring (3 $\frac{1}{4}$ " o.d.) .....	1941-01
10 Gasket (3 $\frac{1}{4}$ " o.d.) .....	2811-01
14a Clamp Ring Screw .....	1977-01
14b Nut .....	00-74

### Repair Kits for Automatic-Drain Models

#### For $\frac{3}{4}$ " and 1" sizes

<b>Repair Kit</b> .....	30CG-8-120
Comprises:	
Gasket Kit .....	30CG-GK
3 Filter Element, 64 micron .....	793-01
6 Snap Ring .....	813-01
13 Retaining Ring .....	2797-01

#### For 1 $\frac{1}{4}$ " and 1 $\frac{1}{2}$ " sizes

<b>Repair Kit</b> .....	30CG-12-120
Comprises:	
Repair Kit .....	30CG-8-120
3 With filter element .....	793-99
3 Replacing filter element .....	793-01

### Repair Kits for Manual-Drain Models

#### For $\frac{3}{4}$ " and 1" sizes

<b>Repair Kit</b> .....	30BE-8-100
Comprises:	
Repair Kit .....	30CG-8-120
17 Drain Cock Assembly Kit .....	684-84

#### For 1 $\frac{1}{4}$ " and 1 $\frac{1}{2}$ " sizes

<b>Repair Kit</b> .....	30BE-12-100
Comprises:	
Repair Kit .....	30CG-12-120
17 Drain Cock Assembly Kit .....	684-84

### Further Replacement Parts

14 Clamp Ring Assembly .....	729-99
14c Swivel Pin .....	1975-01
14d Spring .....	431-01
5 Deflector Assembly (including 809-01 louvre and 1982-01 'O' Ring) ..	810-99
15 Intermediate Body (including 1941-01 'O' Ring) .....	808-98
7 Baffle Assembly	
Automatic Types .....	799-94
16 Baffle Assembly	
Manual Types .....	799-02
12 Transparent Bowl } Automatic Types	603-98
12 Metal Bowl } .....	601-92
18 Transparent Bowl with Draincock } Manual	603-07
18 Metal Bowl with Draincock } Drain	601-98
17 Drain Cock } Types	
Assembly Kit .....	684-84
13 Retaining Ring .....	2797-01
9 Automatic-Drain Mechanism (incl Gasket) .....	3000-03
8 Float .....	3003-50

### Filter Elements

#### For $\frac{3}{4}$ " and 1" units

3 Filter Element, 50/64 micron .....	793-01
3 Filter Element, 25 micron .....	793-02
3 Filter Element, 5 micron .....	00-89
3 Monel Screen, 74 micron .....	795-01

#### For 1 $\frac{1}{4}$ " and 1 $\frac{1}{2}$ " units

3 Filter Element, 50/64 micron .....	793-99
3 Filter Element, 25 micron .....	793-98
3 Filter Element, 5 micron .....	793-96
3 Monel Screen, 74 micron .....	795-99

WHEN ORDERING SPARES QUOTE MODEL NUMBER AND KIT OR PART DESCRIPTION

**C. A. NORNGREN LTD**  
SHIPSTON-ON-STOUR, WARWICKSHIRE, ENGLAND

**KOEHRING  
CORPORATION  
780N WATER STREET  
MILWAUKEE  
WISCONSIN 53202  
USA  
TEL 4142732300**