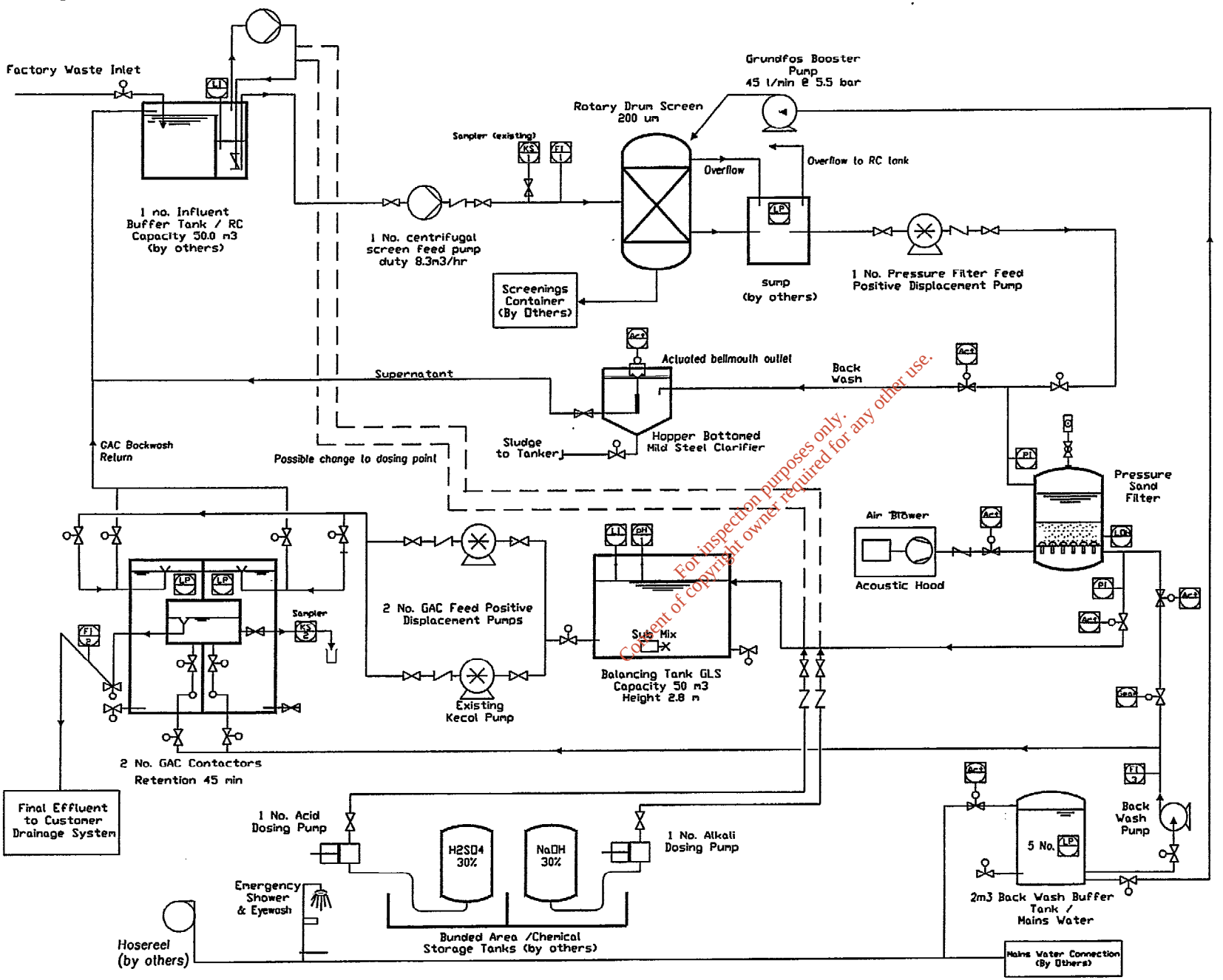
The Sola Treatment Works is to be provided for the treatment of the industrial wastewater issued from the plant. The effluent contains a high level of toxicity and as a result of this the EPA has imposed certain parameters on the wastewaters produced at the plant as follows:

Max. daily effluent discharge:	200 m^3
Max. effluent temperature:	25°C
Max. effluent $B.O.D._5$ conc.:	200 mg/l
Max. daily $B.O.D._5$ load:	10 kg
Max. daily C.O.D. conc.:	500 mg/l
Max. effluent S.S.:	30.0 mg/l
Max. daily S.S. load:	1.5 kg
pH:	6.0-10.0 (Control Range 5-7)
Toxicity:	10 TU

The objective is to achieve at least 80-85% of the E.P.A effluent parameters, with the new plant.

The Scheme uses the following processes: Balancing, Screening, Pressure Sand filtration, pH correction, Balancing, GAC contact.

The chemicals to be used in the plant are: 30% Sulphuric Acid, 30% Caustic(NaOH).



Legend:

Act – Actuated Valve
FI – Flowmeter
KS – Automatic Sampler
LP – Level Probe
LOH – LOH Indicator
LI – Ultrasonic Level

Air relief valve

Ball Valve

Rev	Description	Date	By	Chk

REVISIONS

Approved:	Signed:	Date:
Approved: MATT KELLY PROJECT MANAGER	Signed:	Date:
Approved: PAUL MURPHY DESIGN MANAGER	Signed:	Date:
Drawn By: CATHERINE DERBY DESIGN ENGINEER	Signed:	Date:

Date Of Issue: 4-2-99

Drawing Status:

Do Not Scale – If In Doubt Please Ask

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Client: SOLA ADC LENSES, Waterford Industrial Estate, Waterford

Consultant:

Project: EFFLUENT TREATMENT PLANT

Title: P & I Diagram

Contract No. 492

Scale: NTS

Drawing No. 492/100

Rev. B

3.4 Maintenance Checks and Procedures

Daily

1. Check daily or more regularly, if found to be necessary, the priming chamber on each pump is operating satisfactorily
2. Check operation of raw water pumps. Review owner's manuals for inspection operating and regular maintenance requirements. These manuals should already exist on site.
3 Check that there is no overflowing of the equalisation tank

Monthly

1. Check for deposits of sludge and particles in sump. If excessive, wait until there is a planned shut down for the entire plant and close inlet valves on gravity main to the sump. Drain down sump as much as possible. Arrange for the sump to be decontaminated and a Permit to Work issued before entering the sump
2 Remove any deposits of sludge, plastic particles, etc. from floors and sidewalls before setting back into service. Replace all guards and covers before going back into service.

Yearly

1. Pump out and physically clean pump.
2. Check over pump support beams and fixings.
3 Check and calibrate raw effluent quality monitoring equipment.
4 Check fixings on flooring assembly.
5 Confirm flow rate from each pump could be as high as 28 m^3/hr

3.5 EQUIPMENT SUPPLIERS

Raw Water Pump

Manufacturer

Gilkes.
Canal Iron Works ,
Kendal,
Cumbria,
England LA9 7BZ.

Telephone No 01539 732110
Fax No 01539 720028

Source : USF Bowen Water
Kilkenny

SOLA RECOMMENDED SPARES LIST

18/01/00

SOLA ADC Spares List

Function	Model	Supplier	Description	Part Ref	Qty		Selling Price		Total
Filter Backwash Pump	LM80-200/187	Grundfos	Shaft Seal	485278		1	£ 70.60	£	70.60
			Impeller	485057		1	£ 79.92	£	79.92
Screen Washwater Pump	CR2-110	Grundfos	Internals	405109		1	£ 261.09	£	261.09
			Shaft Seal	985167		1	£ 53.28	£	53.28
Balance Tank mixer	RW 3021	ABS	Mechanical Seal	11110095		1	£ 114.56	£	114.56
			Seal Kit	61195044		1	£ 162.51	£	162.51
Blower		Aerzen	Air Filter Element	GR47		2	£ 37.46	£	74.93
			Shaft Seal Ring	153336		1	£ 43.71	£	43.71
			Shaft Seal Sleeve	153323		1	£ 37.46	£	37.46
			Set Of Vee Belts	N/A		1	£ 37.46	£	37.46
Chemical Dosing Pumps	A965 - 362 s1	FMI	Overhaul Kit	RPM-362		2	£ 51.95	£	103.90
Screen Feed Pump	S40	Process	Mechanical Seal			1	£ 139.87	£	139.87
			Gasket Set			1	£ 53.28	£	53.28
Refridgerated Sampler		CSL	Outlet Hose Silicone	16 x 21mm	3m		£ 23.98	£	23.98
			Membrane Kit Compressor			1	£ 83.92	£	83.92
			Gasket Kit Sample Chamber			1	£ 25.31	£	25.31
Pressure Sand Filter Feed Pump	MA 0060-1	Kecol	Mechanical Seal	NOV-23-0060-1-CCE		1	£ 370.31	£	370.31
			Transmissions Shaft	NOV-12-0060-CT		1	£ 556.80	£	556.80
			Rotor - SS	NOV-11-0060-1-A		1	£ 249.10	£	249.10
			Stator	NOV-31-0060-1-NBR		1	£ 199.81	£	199.81
GAC Contactor Feed Pump	MC 0060-1	Kecol	Mechanical Seal	NOV-23-0060-1-CCE		1	£ 370.31	£	370.31
			Transmissions Shaft	NOV-12-0060-CT		1	£ 556.80	£	556.80
			Rotor - SS	NOV-11-0060-1-C		1	£ 189.15	£	189.15
			Stator	NOV-31-0060-1-NBR		1	£ 199.81	£	199.81
								£	4,057.89

1 Off 1

WASTE WATER TREATMENT PLANT (WWTP) PROCESS CHECKS

WEEK NO.

	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY			WEEKEND		
DATE																		
Shift	N/S	D/S	E/S	N/S	D/S	E/S	N/S	D/S	E/S	N/S	D/S	E/S	N/S	D/S	E/S	N/S	D/S	E/S
Time																		
PH (Inlet)																		
PH (Outlet)																		
Inlet sump level (m)																		
Balance tank level (m)																		
Inlet rate (m3/h)																		
Outlet rate (m3/h)																		
Control panel ok																		
Balance tank mixer on																		
Sand filter pressure <2 bar																		
Sampler running																		
Carbon backwash																		
SIGNED																		
Acid + Caustic bulk tank check (weekly)												**SIGNED**						

CALIBRATION OF HAND HELD PH METER

DATE	SERIAL NUMBER	PH BUFFER 7	PH BUFFER 4	SIGNED

SOLA ADC LENSES LTD
EMISSION TO SEWER SW1

Surface Water Discharge MHCC1

Week No:	
Start Date:	
Finish Date:	
Licence No:	62

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	TOTALS
Date:								
Emission to Sewer (SW1)								
Temp. of Effluent SW1								
Quantity discharged to drain from balance tank. (Litres)								
pH/@25°C								
*Qty. from Sip pit to balance tank. (Litres)								
pH @ 25°C								
Surface Water Discharge (MHCC-1)								
pH (Weekly)								
Temperature (Weekly)								
Visual Inspection (Daily)								
Conductivity (Weekly)								
Signature:								
COMMENTS								

*Volume of SIP Pit = 6000L

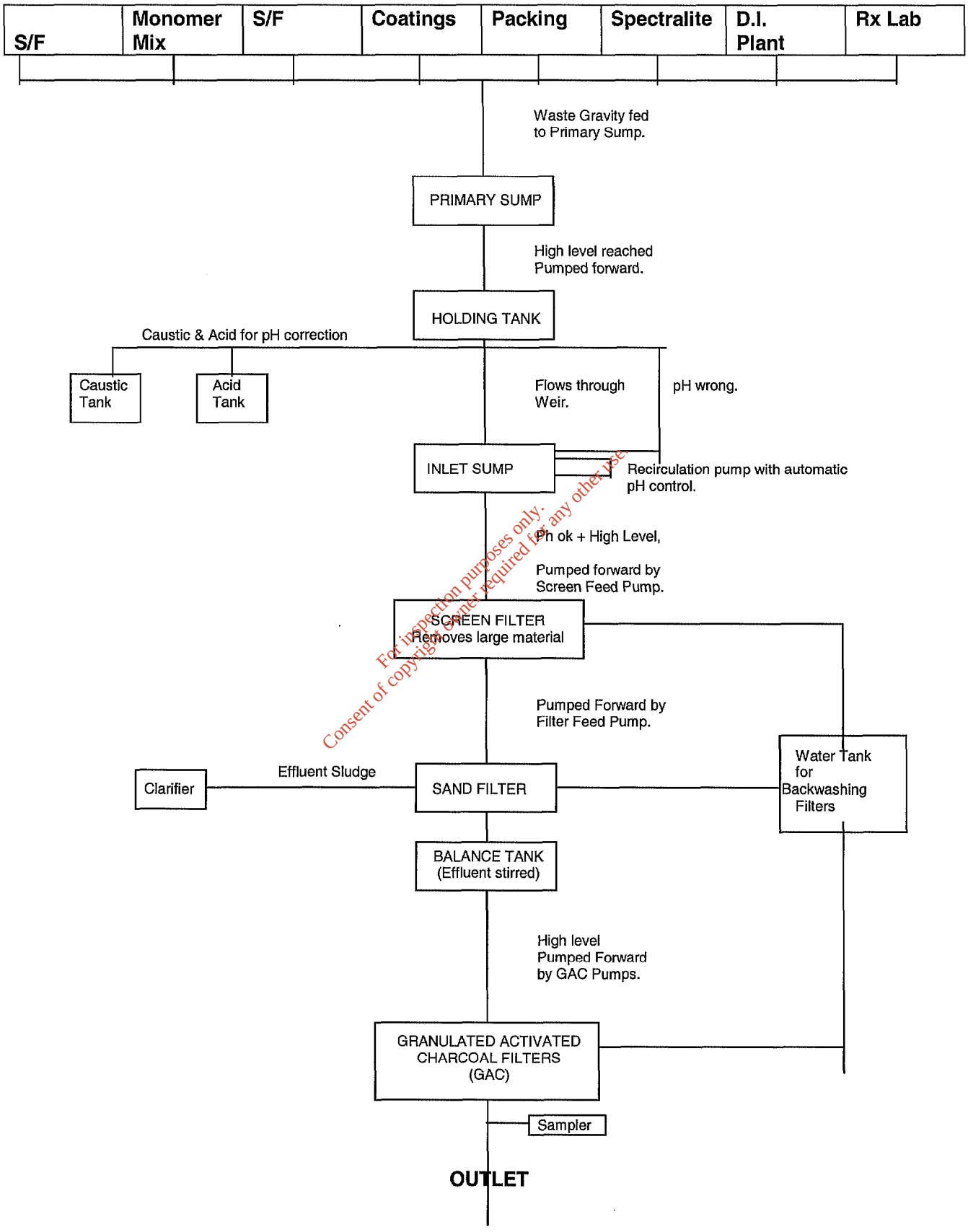
MISC: **SIGNED:**

MODIFICATIONS TO THIS DOCUMENT MAY OCCUR AFTER THIS DATE OF PRINTING 8-Feb-05
DO NOT PHOTOCOPY THIS SHEET
CIRCULATION ON THIS PROCEDURE: MASTER, Pat Morris, SIP Area

EFFLUENT TREATMENT PLANT

Sec 2I

Ref 1 (TS-025) rev 2, 29.04.04



5.0 RESULTS

Tables 5.1 to 5.5 present the results of the monitoring carried out at the Sola ADC Lenses Ltd., facility.

TABLE 5.1: SAMPLING PARAMETERS FOR TOTAL PARTICULATES			
Stack Reference Code	Parameter	Date Sampled	Time Sampled
1	Total Particulates	09/06/2004	12:30-13:01

TABLE 5.2: SAMPLING PARAMETERS FOR TA LUFT ORGANICS			
Stack Reference Code	Parameter	Date Sampled	Time Sampled
Semi Finish Casting Filling	TA Luft Organics Class I, II and III	09/06/2004	12.03 – 15.02
Semi Finish Casting OSI	TA Luft Organics Class I, II and III	09/06/2004	12.02 – 15.01
46	TA Luft Organics Class I, II and III	09/06/2004	13.01 – 12.30

TABLE 5.3: VOLUMETRIC FLOWS AND TEMPERATURES			
Stack Reference Code	Temperature (°C)	Vol Flow (Nm^3/hr)	***Limit Value*** ***(m^3/hr)***
1	30	3052	-
Semi Finish Casting Filling			-
Semi Finish Casting OSI			-
46			***1***

TABLE 5.4: RESULTS OF TOTAL PARTICULATE EMISSIONS			
Stack Reference Code	Conc. (mg/Nm^3)	Mass flow (kg/hr)	***Mass Flow Limit*** ***(kg/hr)***
1	<0.31	$<9.5 \times 10^{-4}$	-

6.0 COMMENT

Tables 5.1 to 5.5 present the results of the recent monitoring programme carried out at the Sola ADC Lenses Ltd. plant, including the relevant Licence limit values for volumetric flow and mass emission values.

Schedule 1(i) of Sola ADC Lenses Ltd., Integrated Pollution Control licence only stipulates limits for Stack References 46 and 1. However, for the purposes of comment, the VOC results from non-licenced emission points, the Semi Finish Casting Filling and OSI areas are also compared to the T.A. Luft 1986 guidelines.

Integrated Pollution Control Licence Register No. 62, Emission Point Reference No. 1, Plant 2:
Emission point 1 was monitored for particulate matter. No dust was detected at a concentration greater than 0.31mg/Nm^3.

Integrated Pollution Control Licence Register No. 62, Emission Point Reference No. 46:
A significant amount of acetonitrile was detected in the emissions from emission point 46. As a result the total TA Luft Class III emissions significantly exceed the licence emission limit value.

Non-licenced emission points, the Semi Finish Casting Filling and OSI stacks:
As previously mentioned, in the absence of Integrated Pollution Control Licence emission limit values for the above stacks, the results are compared to the T.A. Luft 1986 guidelines. As these guidelines have been updated comparisons have also been made with the latest 2002 TA Luft guideline limits.

For both emission points no Acrolein (TA Luft Class I) was detected at concentrations greater than the method limit of detection. Only low levels of Toluene (TA Luft Class II) and in the case of the Semi Finish Casting OSI area, acetone (TA Luft Class III) were detected in the emissions from these points.

In summary, aside from the quantity of TA Luft Class III emissions from emission point 46, the results demonstrate that the recommended TA Luft emission limit values (1986 and 2000 limits) are not being exceeded for all of the stacks monitored.

SIZES 400-1000

MEDIUM DUTY
The 400 to 1,000 range of envelope filters is designed to cater for the medium size dust problem, usually involving a ducted system. The unit size, i.e. 400 etc, designates the square footage of filtration cloth in that particular unit.
To cater for the wide range of air volumes and system pressures encountered in ducted systems we can offer a variety of fan options, or the units can be supplied without fans for multiple banking and separate fan applications. Our engineers are at hand to select the correct fan for your particular requirement.

FILTER MEDIA
The filtration of air is achieved by using a high efficiency cloth in a multi pocket envelope form with standard units being supplied in cotton material. Other medias are available for greater efficiency or special applications.

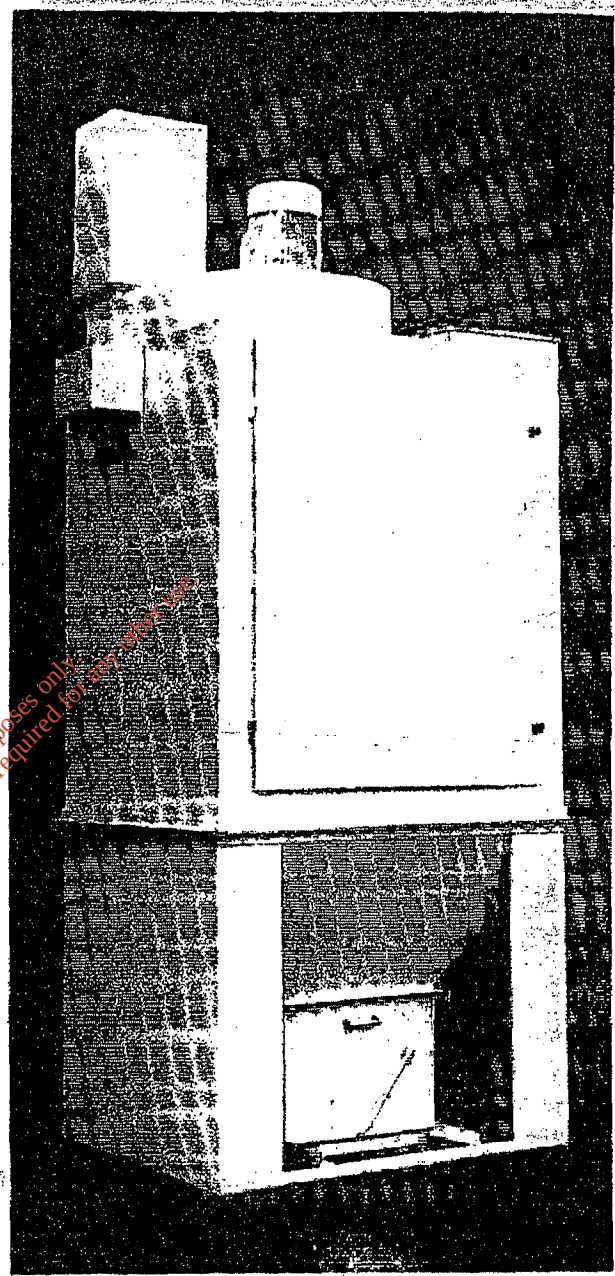
FABRIC CLEANING
For cleaning of the units, each filter is supplied complete with an electro-mechanical shaking device which raps the filter element thoroughly after the main fan switches off. This is dealt with automatically by a control panel supplied free issue with each unit wired 3 phase 50 cycles supply.

FANS
The fan impellors are of the backward curved plate type and are mounted direct onto the motor shaft on top of the unit. This allows easy access for wiring and servicing and in the event of fire keeps the motor out of the air-stream and gives greater protection. All motors are totally enclosed fan cooled and flange mounted.

DUST DISPOSAL
Each unit is complete with a valley type hopper to channel the shaken dust into a square type bin having a quick release system at the base. This is released after shaking down and taken away for emptying at intervals according to the dust loading.

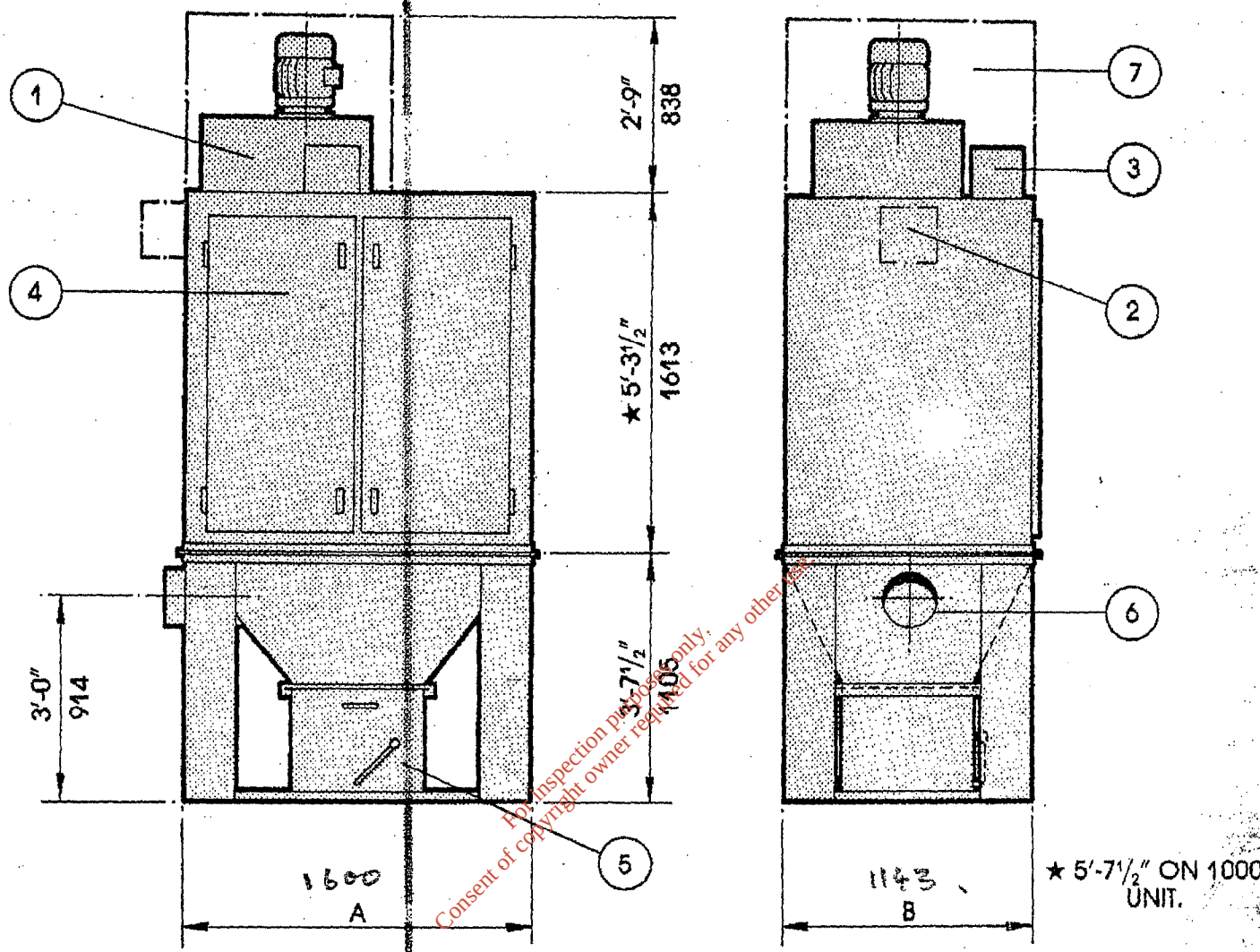
CONSTRUCTION
The casings of all units are robustly constructed from heavy gauge sheet in welded panel form with stiffening sections where required. The unit door is of the quick release type to allow easy access for filter changing.

FINISH
Black mild steel etch primed and finished with one coat of hammer finish.



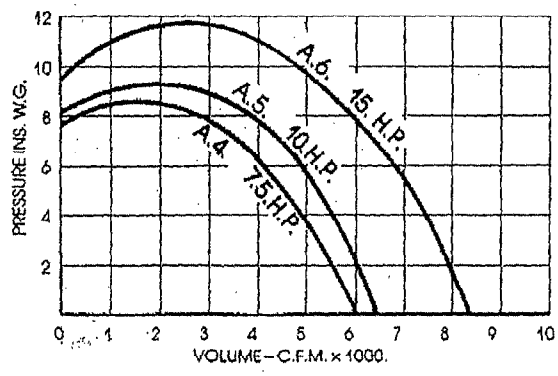
SIZE 400 UNIT WITH EXPLOSION DOOR AND SILENCER.

OPTIONS
Silencers are offered as an extra item if required for areas where noise must be kept to a minimum.
Flange Mounting units are offered for silo mounting where required.
Explosion Relief features including anti spark fans, earthed filter elements, reinforced construction and blast relief doors are available for hazardous applications.
Manometer which provide visual indication of the pressure drop across the filter where it is essential to monitor filter efficiency.



KEY
1 - FAN UNIT.
2 - FILTER BAG SHAKER (400-500).
3 - FILTER BAG SHAKER (600-1000).
4 - ACCESS DOOR.
5 - DUSTBIN.
6 - AIR INLET.
7 - SILENCER/WEATHER COWL.

FAN PERFORMANCE CURVES.



UNIT	A		B		BIN CAPACITY	UNIT WEIGHT
400	4'6"	1371	3'9"	1143	6 CU. FT.	800 LBS.
500	5'3"	1600	3'9"	1143	6 CU. FT.	910 LBS.
600	5'3"	1600	4'3"	1295	2×3.75 CU. FT.	990 LBS.
700	6'3"	1905	4'3"	1295	2×3.75 CU. FT.	1050 LBS.
800	7'0"	2134	4'0"	1219	2×6 CU. FT.	1300 LBS.
900	8'0"	2438	4'0"	1219	2×6 CU. FT.	1380 LBS.
1000	8'0"	2438	4'0"	1219	2×6 CU. FT.	1450 LBS.

600 TO 1000 SIZES HAVE TWIN HOPPERS & BINS

Placeholder

This page has been inserted to indicate that content has been extracted from this location in the document and has been stored in a separate file. (This is due to file size issues.)

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Application Form-Drawing-7

Licence: P0062-02