Office of
Environmental
Enforcement

Headquarters, PO Box 3000,
Johnstown Castle Estate
County Wexford, Ireland

Ceanncheathrú, Bosca Poist 3000,
Eastát Chaisleán Bhaile Sheáin
Contae Loch Garman, Éire

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E: info@epa.ie
W: www.epa.ie

Lo Call: 1890 33 55 99

Mr. Tony Horgan
Gearagh
Kildinan
Co. Cork

17/08/2007

Re: Glenville Treatment Plant – **PAE2007/253**

Dear Mr. Horgan

I enclose for your information copy of a report received from Cork County Council in response to the issues raised in your complaint concerning the above referenced matter.

As previously indicated by the Agency, it is the responsibility of the relevant local authority, Cork County Council in this instance, to ensure that activities within its functional area, other than those licensed by the Agency, do not cause environmental pollution. Therefore, Cork County Council is responsible for those matters such as those described in your correspondence. As such, future concerns in relation to this matter should continue to be addressed, preferably in writing, to Cork County Council, as it is the responsible authority in the first instance.

Trusting that this information is of assistance to you.

Yours sincerely,

Dr. Suzanne Monaghan
Public Authority Enforcement
Office of Environmental Enforcement

CC: Environmental Complaint Coordinator, Cork County Council

ComplainantReport.doc

Comhairle Chontae Chorcaí
Cork County Council

Glashaboy Waterworks,
Richmond,
Glanmire,
Co. Cork.

Tel. No: (021) 4821433 / 4821581
Fax No: (021) 4821813

Web: http://www.corkcoco.com/

Dr. Suzanne Monaghan,
Environmental Protection Agency,
Office of Environmental Enforcement,
Headquarters, PO Box 3000,
Johnstown Castle Estate,
County Wexford.

13th August 2007.

RE: Glenville Sewage Treatment Plant – PAE 2007/253 & PAE 2007/138

Dear Dr. Monaghan,

I refer to the above and to your site inspection on 10th July 2007 and to your subsequent report dated 17th July 2007 with recommendations.

In relation to the recommendations raised in the report:

(i) Consulting Engineers are at present carrying out an assessment of the assimilative capacity of the Owenbawn Stream and their report is awaited concerning the existing situation and any remediative action necessary. The Consulting Engineers are also in the process of reviewing the options for any interim improvements of the existing plant that may be necessary. A report on the above is expected within four to six weeks.
In relation to the design of the permanent upgrade of the plant Cork County Council are at present going through the process required for the selection and appointment of a Consulting Engineer and it is expected that a Consultant will be appointed in October 2007. The revised application for Serviced Land Initiative funding will be submitted to the Department of Environment Heritage and Local Government during August 2007.

(ii) Contact has been made with Mr. Tony Horgan complainant informing him of the situation. Mr. Coleman O'Driscoll complainant is on holidays.

(iii) There is a complaints desk at the Environmental Dept of Cork Co. Council where complaints are recorded in numerical order. Any complaint relevant to this office is sent to this office where it is filed, investigated and dealt with. A system is being established in this office in line with the National Complaints procedure where any complaint by phone or otherwise is logged, given a number and processed.

(iv) Contact has been made with the Training Dept. of Cork Co. Council in relation to provision of training concerning the Odour and Noise Regulations (S. I. No.787 of 2005).

(v) A plant maintenance regime is in place.

Also as discussed previously:

A Sewage Curator has always visited the plant every day and any faults that are noticed are immediately reported so that remedial corrective action can be instigated. The Curator also carries out routine maintenance of the plant.

The following actions have been taken:

- There was a problem with the motor to the gearbox and also with the coupling at the Rotating Biological Contactor in March 2007. This was repaired in March.
  A spare motor and gearbox has been purchased and is stored on site in the event of a future problem. Spare couplings have also been obtained.

- A leak was subsequently discovered in the wall of the final humus tank. This was repaired immediately.

- The sewage treatment plant has been further desludged.

- The area adjacent to the outfall to the stream has been cleaned and re-stoned and new outlet pipe installed.

- The issue of the foul sewage entering the stream via the stormwater pipe from the adjacent housing estate has been resolved.

If you have any further queries concerning the above please do not hesitate to contact me.

Yours faithfully,

_____
DAVID O'KEEFFE
SENIOR EXECUTIVE ENGINEER

cc. Nicholas Bond Cork Co. Co.

Office of
Environmental
Enforcement

Headquarters, PO Box 3000,
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Mr. Nicholas Bond
Environmental Complaints Coordinator
Cork County Council
Inniscarra
Co. Cork

05/07/2007

Re: Glenville Treatment Plant – PAE2007/253

Dear Mr. Bond

The Agency acknowledges receipt of your achievement report dated 13/08/2007 in relation to the Section 63(3)(a) Advice and Recommendations issued by the Agency on 17/07/2007.

The Agency requests that Consulting Engineers report on the assessment of the assimilative capacity of the Owenbawn Stream be submitted to the Agency as soon as it becomes available.

The EPA person dealing with this file is Dr. Suzanne Monaghan to whom all correspondence and queries in relation to the matter should be addressed.

Please use the reference number above in all future communications with the OEE regarding this matter.

Yours sincerely.

Dr. Suzanne Monaghan
Public Authority Enforcement
Office of Environmental Enforcement

CC: Mr. David O'Keeffe, Senior Executive Engineer, Cork County Council

S.63(3)(a) – Advice/Recommendations

Office of
Environmental
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Mr. Martin Riordan
County Manager
Cork County Council
Inniscarra
Co. Cork

26/06/2007 **By Registered Post**

Section 63(2) of the Environmental Protection Agency Acts 1992 and 2003*

Proposal to Carry Out Assessment

Re: Glenville Treatment Plant– PAE2007/253

Dear Mr. Riordan,

The Agency hereby gives notice that it intends to assess the performance by Cork County Council of its statutory functions relating to environmental protection under: the Urban Waste Water Treatment Regulations, 2001 and the European Communities (Waste Water Treatment)(Prevention of Odours and Noise) Regulations, 2005 with particular reference to the management of the waste water treatment plant at Glenville, Co. Cork. The Agency received a complaint concerning the management of Glenville waste water treatment plant on 05/06/2007 and requested a report from Cork County Council on 11/06/2007. This report was received by the Agency on 26/06/2007 and was subsequently reviewed.

For the purposes of conducting this assessment, the Agency hereby requests the attendance of senior personnel responsible for the management of waste water treatment plants at a Site Inspection at Glenville Treatment Plant. Cork County Council shall contact the undersigned on receipt of this notification to arrange a mutually convenient date and time. County Council officials should be in a position to provide details at this meeting of the management of Glenville treatment plant and to be able to explain what actions are being taken to ensure that the relevant regulations are being implemented correctly.

Please note that compliance with Section 63(2) is obligatory and that failure to comply constitutes an offence under Section 63(8) of the EPA Acts 1992 and 2003 and may lead to prosecution and/or further action by the Agency.

The EPA person dealing with this file is Suzanne Monaghan (Tel: 053-9170795, e-mail: s.monaghan@epa.ie) to whom all correspondence and queries in relation to the matter should be addressed.

Please use the reference number above in all future communications with the OEE regarding this matter.

Yours sincerely,

Mr. Gerard O'Leary
Programme Manager
Public Authority Enforcement
Office of Environmental Enforcement

*Section 63 of the EPA Act 1992 as amended by Section 13 of the Protection of the Environment Act 2003.

CC: Mr. David O'Keefe, Senior Executive Engineer
Mr. Nicholas Bond, Environmental Complaint Coordinator

S72/07

epa
Office of
Environmental
Enforcement

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Mr. Nicholas Bond
Environmental Complaints Coordinator
Cork County Council
Inniscarra
Co. Cork

11/06/2007

Re: Glenville Treatment Plant– PAE2007/253.

Dear Mr. Bond,

The Agency has received a complaint concerning overflows from Glenville Treatment Plant, Co Cork. A copy of same is enclosed for your attention and action.

It is advisable that Cork County Council takes all steps to investigate and resolve this issue, utilising all appropriate enforcement action as necessary. Your Council is also requested to directly contact the complainant in relation to this matter and to advise the complainant that Cork County Council is investigating and dealing with the complaint.

It would be appreciated if Cork County Council would provide a report to the Agency on the outcome of its investigations into this matter by 09/07/2007.

The EPA person dealing with this file is Suzanne Monaghan to whom all correspondence and queries in relation to the matter should be addressed.

Please use the reference number above in all future communications with the OEE regarding this matter.

Yours sincerely,

Dr. Suzanne Monaghan
Public Authority Enforcement
Office of Environmental Enforcement

Office of Environmental Enforcement

COMPLAINT FORM C3

CONCERNING LOCAL AUTHORITY ENVIRONMENTAL PROTECTION RESPONSIBILITIES

If you have a query or complaint about general environmental pollution matters or about facilities under the control of local authorities, you should always contact the relevant local authority in the first instance, preferably in writing. Always keep a copy of any correspondence between yourself and a local authority and details of phone calls. If a local authority has failed to respond to your complaint and the environmental pollution problem persists, please fill out this form and submit the relevant details to:

Environmental Complaints Unit
Office of Environmental Enforcement
Environmental Protection Agency
P.O. Box 3000
Johnstown Castle Estate
Co. Wexford

The OEE will, generally, only investigate complaints relating to local authority functions where there is clear evidence that the local authority has been made aware of the complaint and been given an opportunity to deal with and resolve the issue. It is therefore important that you provide the OEE with details of your contacts with the relevant local authorities. You should note that information submitted may be forwarded to the relevant Local Authorities for the purposes of investigation. Moreover, information submitted to the OEE is also subject to the provisions of the Freedom of Information Act 1997.

Having completed this form, please also send copies of any correspondence or other supporting information such as photographs and maps to the above address.

Please complete this form in **BLOCK LETTERS**.

1. Your Name: TONY HORGAN
2. Address: GEARRAGH,
KILDINAN,
Co. CORK,
3. Telephone Number: 025 36577 / 087 9484272
4. Fax: _____
5. E-mail address: _____

Office of Environmental Enforcement

COMPLAINT FORM C3

6. The name of the relevant Local Authority: Cork County Council.

7. Name and Address of the industry, site, facility or individual to which the complaint relates:
This Complaint Concerns Glenville Suirage Treatment Plant.
Glenville Co. Cork.

8. Fullest possible account of facts giving rise to the complaint (INCLUDING TIME, DATE AND DURATION OF OCCURRENCE). The description should be as specific as possible and concentrate on the facts surrounding the issue being complained about:
About a month ago one of our club members was Walking along the road and he found this awful smell of suirage and as Glenville suirage plant is located Very Close to the road he decided to investige the suirage plant and to his horror he saw 12" Concrete pipe leading from the over flow tanks of suirage tank Carrying raw suirage straight into the stream which is tributty of the river Bride
Our Club is Glenville and Kildiman Trout Angler

9. Details of the approaches already made to the local authority (attach copies of correspondence):
We have Contacted Cork County Council on Several Occasions, but it's like putting the fox in charge of the Chickens

epa Office of Environmental Enforcement

COMPLAINT FORM C3

One of our club member has met with a pollution officers and he said it was very bad. We have taken samples and got them tested and the result are very bad.

10. Have you contacted the OEE previously in relation to this complaint? If Yes, provide details of most recent contact.

We did not contact because we did know where the pollution was coming from, but this must be pouliting our river for a long time because competions there was trout return

11. Details of any approaches that you already made to other authorities (e.g. Department of the Environment, Heritage and Local Government, Fisheries Board, European Commission):

our other Club members has met with fister officers and pollution officers but nothing has happed. What I like to do is set up a meeting between your pollution officers and our club members, and exchange pitcures, samples result, and any other information you requse

12. Details of any court or other legal actions that you have already taken in relation to the issue being complained about.

We feel this very big serious matter and should get top priority and Court proceeding should be not ruled out, our drinking water is coming out of the river bridk

13. Date and Signature of complainant:

28-5-07
DATE

Tony Horgan
SIGNATURE

Chairman of Glenville and Kildinan Trout Anglers

C.1 OPERATIONAL INFORMATION REQUIREMENTS

The WWTP serving the Glenville Agglomeration consists of a package rotating biological contactor treatment system. This provides primary and secondary treatment. The primary treatment is achieved by settlement. The secondary treatment is achieved by intermittent aeration of the settled waste water by means of a rotating biological contactor. Activated sludge is returned from the humus tank to the primary settlement tank as part of the treatment process.

The WWTP has a design capacity of approximately 300PE. The Operating & Maintenance Manual associated with the WWTP can be seen at Attachment C.1.

C.1.1 Storm Water Overflows

There are no storm water overflows within the WWW serving the Glenville Agglomeration.

C.1.2 Pumping Stations

There is 1 no. pumping station within the WWW serving the Glenville Agglomeration. A combined sewer serves Bridge View Terrance. This sewer drains to the pumping station. Separated sewerage serves the Glendule Housing Estate. The foul sewer serving Glendule Housing Estate drains to the pumping station. The pumping pumps sewage to the gravity collection system serving Glenville which in turn drains to the WWTP.

There is 1 no. duty pump and 1 no. standby pump in the pumping station. Both have a capacity of approximately 1m3/hr. The pumping station is inspected routinely and maintained as required. The wet well has a storage capacity of approximately 6m3. This is equivalent to 2 to 6 days of storage, depending on weather conditions.

There is an emergency gravity overflow from the pumping station to the Owenbawn River. This overflow consists of a piped section and an open channel. This overflow is the only secondary discharge from the WWW serving the Glenville Agglomeration. A drawing showing the location of where the secondary discharge enters the Owenbawn River can be seen at Attachment B.4.

The frequency and duration of activation of emergency overflows to receiving water is unknown. However, it is known that overflows from the pumping station are very infrequent and short in duration.

BUTLER · MANUFACTURING · SERVICES · LTD.
MANUFACTURERS OF SEWAGE TREATMENT PLANTS

Strokestown Road, Longford, Ireland.
Tel: (043) 26100, 26258. Fax: (043) 26258.
Tel. Int: + 353 43 26100/26258

CORK COUNTY COUNCIL

GLENVILLE

SEWAGE TREATMENT PLANT

OPERATING & MAINTENANCE MANUAL

KEVIN SUGRUE
Glenville is/ is totally
in your area.

21/3/95

Directors: J. BUTLER, B.E. · J.P. BUTLER · M.P. BUTLER, B.Comm., H.D.E.
Co. Reg. No.: 110833. V.A.T. Reg. No.: IE 4779477L
Bankers: Bank of Ireland, Longford.

WARNING

BMS Aerotor is fitted with timber wedges to prevent shifting of the Rotors during transit.

Please remove the wedges on site before installing the plant.

All Rotors are fitted with plugs. The plugs should be opened, turned down and the rotors allowed to drain before transporting the plant.

All plugs should be closed before filling the plant.

The Outlet end of the Aerotor has a 'Dividing Box' for splitting the flow between the Outlet and Recirculation Pipes. Both 'Handstops' covering these pipes should be open before operating the Aerotor.

INTRODUCTION

The BMS Treatment Plant is a three stage system comprising of Primary Settlement, Biological Treatment and Final Clarification. The design concept is based upon considerable experience that has been accumulated in the field of water pollution control.

Provided that the simple maintenance procedures detailed in this manual are carried out, the plant will give trouble free service over a long period of time.

The plant will operate most efficiently if attention is paid to the following points:

1. Ensure that the influent to the plant does not exceed the maximum design load.

2. Avoid admitting strong acids, alkalis, oils, grease and chemicals into the sewage system. This may occur when strong oxidising disinfectants are used particularly in kitchen and sanitary facilities. Normal amounts used in wash-down will be accepted but gross discharges of undiluted disinfectants will adversely affect the plant.

3. Prevent any explosive material or slow decomposing material from entering the installation.

RESPONSIBILITY:

The owner of the Sewage Plant is entirely responsible for the Operation and performance of the plant.

GENERAL NOTE

RE: USAGE OF CLEANSING CHEMICALS IN TOILETS, KITCHENS ETC. IN PREMISES TREATED BY A BMS AEROTOR SYSTEM

The following observations should be noted to all relevant operatives.

1) No chemical or cleanser should be used with a pH greater than 7.5 or lower than 5.5. Any use of more acidic or caustic compounds should be pre-diluted to within the 5.5 to 7.5 pH range. Consult your suppliers.

2) No. chemical/cleanser etc. should be used that claims 'enzyme', grease breakdown or emulsifying properties.

3) Products that cleanse with a physical action e.g. scouring pads, powders etc. should be favoured.

4) All compounds should be used as sparingly as possible.

5) All disinfectants should be diluted before use as per manufacturer's instructions.

6) Avoid: Bleaches, Harsh Detergents, Acidic and Caustic based products!

GREASE TRAPS FOR SEWAGE TREATMENT SYSTEMS

Under Normal Circumstances, such as Wholly Domestic Duties, Fat Trapping is not considered necessary as fat wastage from households is minimal. Although fats are discharged, the small quantities involved will degrade with no adverse effects.

Where Industrial, Semi-Industrial, or Central Catering Kitchen Discharges are included, often Spent Fats and Oils are disposed of in higher quantities. Where no Fat Traps are installed, these fats will be trapped in the Primary Tank of the System. They will degrade as Fatty Acids, thus acidifying the Incoming Waters. When acidified, the natural process of Anaerobic Bacterial Digestion is interrupted in mid-cycle and, as a result, the Discharges from the Primary Tank are Acid and Septic, and contain Hydrogen Sulphide to a greater or lesser extent. Consequently, dependant on the malfunction of the Primary Process, a percentage of the Oxidation Stage will be used in converting Septic Material to an Aerobic Stage before the required BOD Oxidation takes place.

High Ammonia Levels will also be produced in the Primary Tank, which will retard activity, or Carbonacious BOD Oxidixing Bacteria, and, again, the Final Discharge Quality is affected.

Where there is a likelihood of Excess Fat Discharges, a Fat Trap must be installed directly at the Exit to the Kitchen. It should be noted that NO Foul Sewage should be allowed to pass through the Fat Trap.

EFFLUENT TREATMENT PLANT

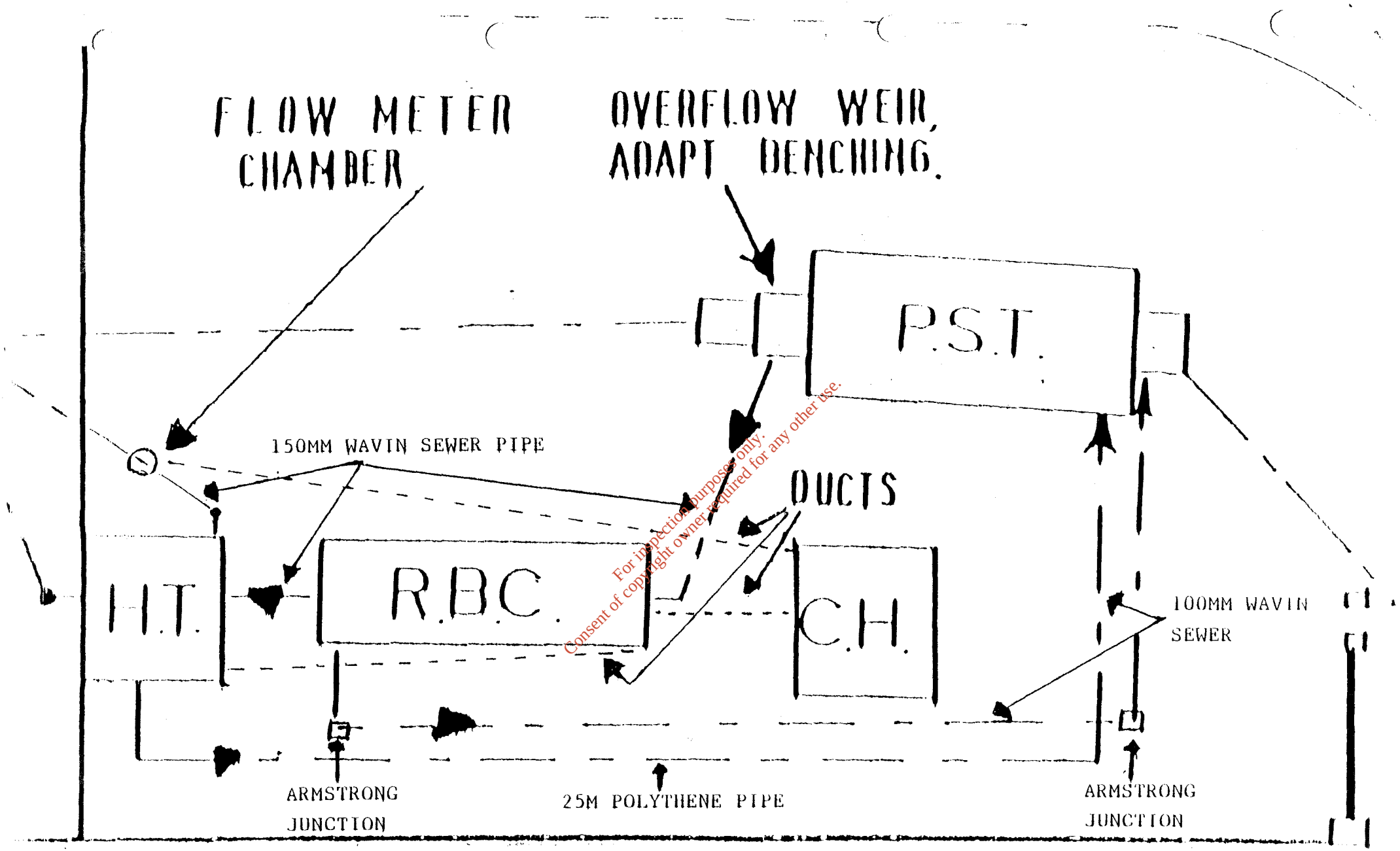
The Treatment Plant consists of the following:

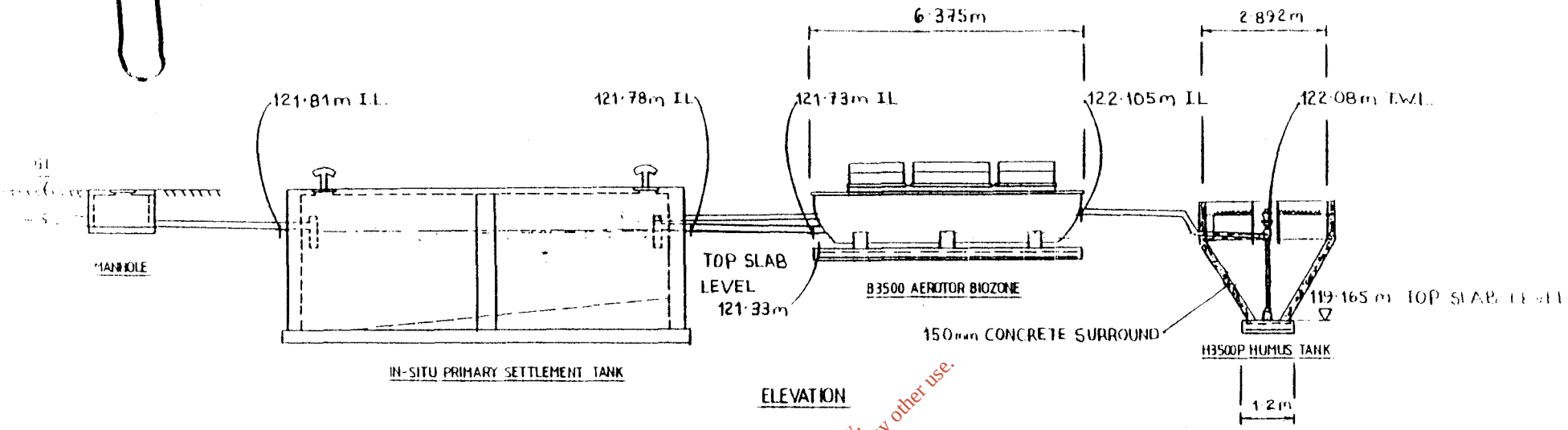
Primary Settlement Tank
1 No. Aerotor Biozone
Humus Tank

Raw effluent flows into the Primary Settlement Tank.

Settled liquid from the Primary Settlement Tank flows into the Aerotor Biozone. At the outlet from the Biozone the flow is split, part flows into the Humus Tank and the remainder is recirculated back to the Primary Tank. The volume recirculated is controlled by means of handstops in the outlet compartment.

Final effluent from the Humus Tank discharges through the outlet pipe while settled sludge is returned to the Primary Settlement Tank.





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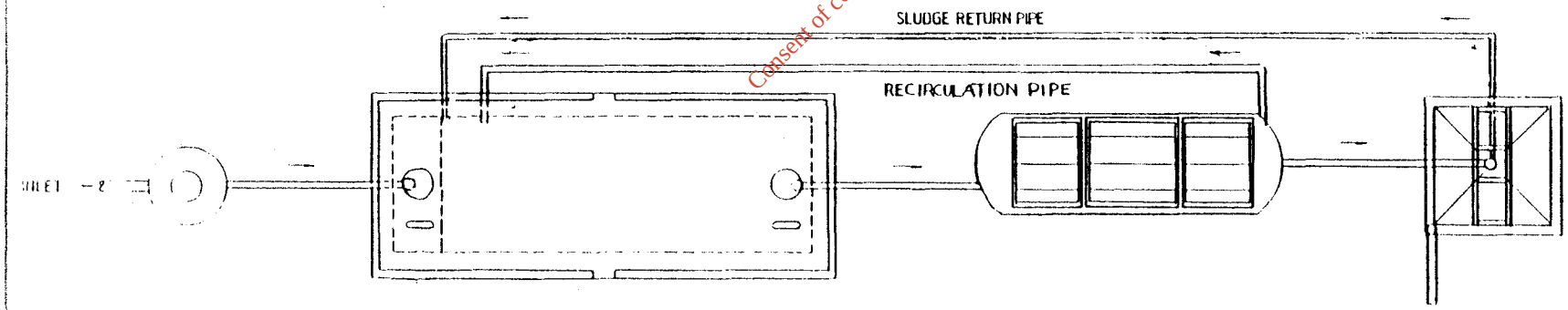


PLAN

CHECKED

APPROVED

0 .25 1m

SCALE 1:100

Company
BUTLER MANUFACTURING SERVICES LTD.

Title
TYPICAL B3500 INSTALLATION RT 91

BUTLER · MANUFACTURING · SERVICES · LTD.

B.M.S. BIOZONE

SPECIFICATION

OUTLINE DESCRIPTION

1. BIOZONE:

A B.M.S. biozone consists of B.M.S. rotors, mounted in a G.R.P. tank and driven by a SEW Eurodrive motor at 4 to 6 revs./min. The first rotor acts like a pump taking in effluent through holes in its circumference and ejecting it through holes near the hub. There is a net head gain of approximately 400 mm which enables the B.M.S. plant to recirculate a proportion of the effluent to the primary tank thus activating the primary tank effluent. The design of the B.M.S. rotor is such that not only does it provide a large surface area for contact to the effluent but it also actively aerates the effluent.

The second and third rotors act in a similar way to the first but there is no head gain. Access for the effluent into these rotors is measured and controlled by their construction, so that there is at all times a bouyant force acting upwards thus relieving the pressure on the bearings. This can be viewed as an additional safety factor.

2. TANK:

The biozone tank is made entirely from G.R.P. in accordance with B.S. 4994. It is designed so that it can be placed free-standing or buried when full or empty. The bulkheads are strong enough to take the weight of the rotors and effluent pressure even when one compartment is full and the adjoining compartment is empty.

3. ROTORS:

The rotors consist of sets of G.R.P. vanes bonded together. Each set of vanes is approximately 100 mm wide. The entire rotor structure is similar to a honey-comb giving strength and rigidity. G.R.P. is ideally suited to this application and it is very strong and resistant to any of the corrosive effects which exist in domestic effluent. It also provides very good adhesive surface for the biomass to cling to, preventing it from shearing off as the effluent passes over it.

4. SHAFT AND HUBS:

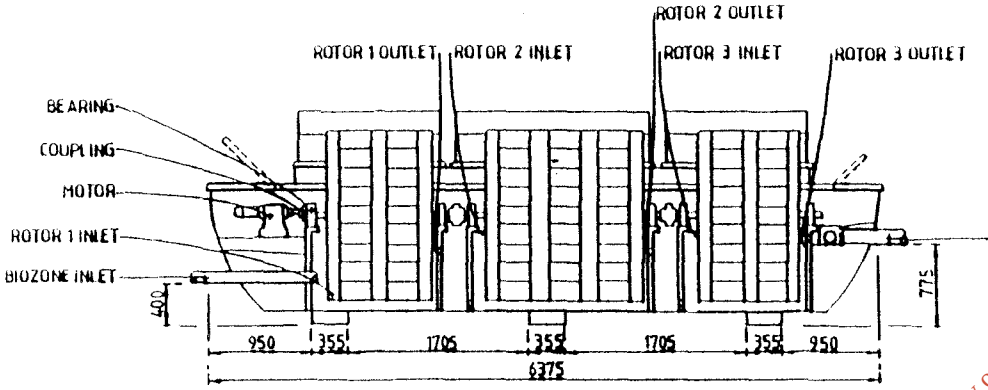
These are professionally designed to guard against corrosion and metal fatigue. The shaft size depends on the size of the biozone. The grade of steel used is EN 8, 080 M40 properties of which are defined in B.S. 970. The G.R.P. rotor is bonded onto a hollow section which hubs connect to the shaft. The hubs and exposed areas of the shaft are coated with Plasmet ZF corrosion protection which is very hard wearing.

5. BEARINGS:

Spherical roller bearings are used in the B.M.S. biozones. They are self-aligning. The bearings are housed in special plummer blocks with double lipped rubber seals which prevents infiltration and a special 'water resistant' grease is recommended.

6. COUPLINGS:

¾" pitch, 17 tooth chain couplings are used. These are very simple yet effective couplings. A grease cover is also included. This guards the coupling against corrosion as well as ensuring good lubrication.



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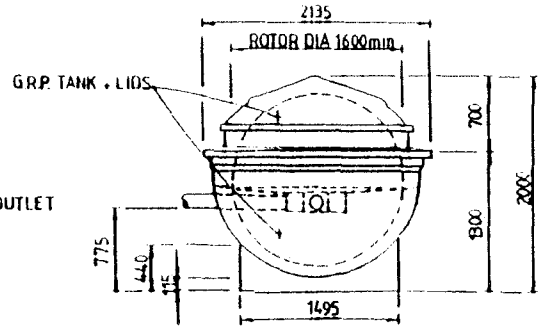
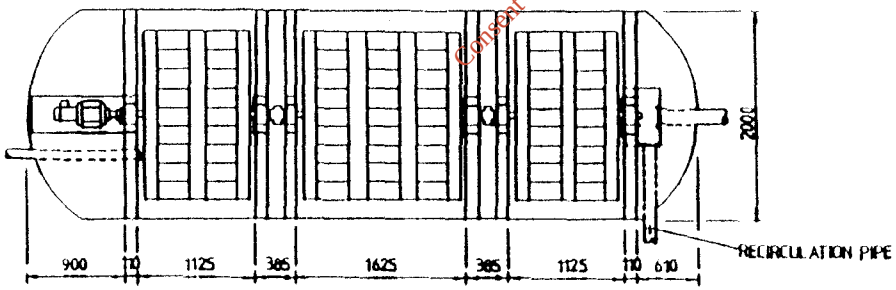


END VIEW



PLAN

NOTE:-

ALL DIMENSIONS ARE IN (mm)

SCALE 1:50

0 0·5 1m

Company

BUTLER MANUFACTURING SERVICES LTD

Title

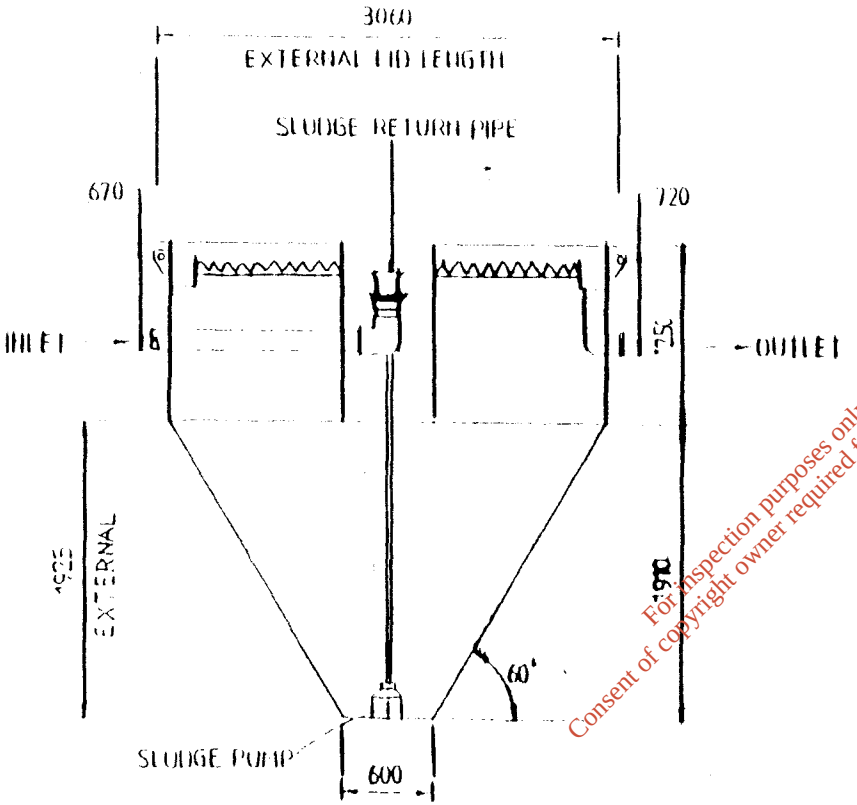
BMS AEROTOR BIOZONE

MODEL B3500

SPECIFICATION

250 P.E. B.M.S. BIOZONE

ITEM	QUANTITY	DESCRIPTION
A. TANK:	1	All G.R.P. designed in accordance with B.S. 4994.
B. ROTOR:	3	All G.R.P. providing a contact surface area of 875 m² plus a nett lift of 400 mm making it possible to recirculate activated effluent.
C. MOTOR:	1	Sew Eurodrive single helical geared motor. Direct drive to the gearbox power rating of 2.1 KW.
D. SHAFT & HUBS	3	Shaft diameter 60 mm, material EN8 hubs made of mild steel with diameter of 150 mm. All exposed parts (i.e. not coated with G.R.P.) are protected by Plasmet ZF coating known for its toughness and long life protection.
E. COUPLINGS:	3	¾" pitch chain couplings with grease covers.
F. BEARINGS & PLUMMER BLOCKS:	6	SKF spherical roller bearings with SNH housings incorporating double lip rubber seals.



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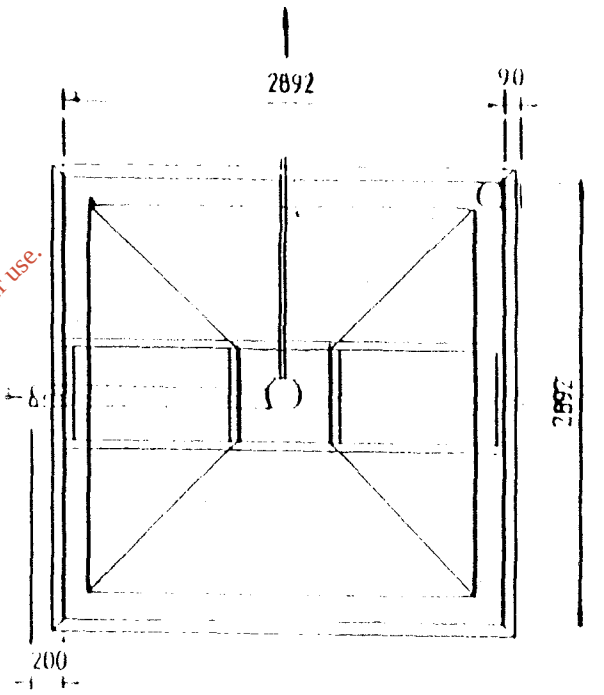


PLAN

NOTE:
ALL DIMENSIONS IN (mm)

SCALE 1:50

Company
BUTLER MANUFACTURING SERVICES LTD

Title
1135 OP HUMUS TANK

MAINTENANCE

"A Sewage Treatment Plant fulfills its purpose only if it is operated properly and regularly serviced by specialist personnel".

Although the BMS system, in common with RBC's, requires far less routine maintenance and supervision than most other plants, it is crucial that the following basic routine is followed:

1) DAILY:

It is not normally necessary to check a BMS plant on a daily basis unless it does not have an automatic restart on the controls and a power outage is suspected.

Another reason may be to alter re-circulation rates to suit very changeable daily loads.

2) WEEKLY:

It is recommended that a BMS system is inspected weekly and the following points attended to:

a) Inspect PS Tank for blockages, plastics etc. and remove

b) Inspect Aerotor and note biomass growth, recirculation and any malodour

c) Inspect Humus Tank and note visual appearance of final effluent and absence (or otherwise) of sludge build up. Clean decanting channe

The above task should take approx. 15 minutes.

3) MONTHLY: <u>WARNING</u>:- Aerotor <u>MUST</u> be <u>SWITCHED OFF</u> during Monthly Maintenance Procedures

As 2 above plus:

a) Check motor for overheating (by touch) and remove dust etc. from air fins

b) Grease all bearing through nipples

c) Grease all chain couplings through casing nipples

d) Check oil level in gearbox and top up if necessary

e) Check sludge return system from Humus Tank for function

f) Apply light lubricating oil in small quantities to locks and hinges

The above should take approx 1 - 2 hours depending on plant size.

4) QUARTERLY: Section 3 Warning Applies

As 2 & 3 above plus:

a) Unless advised otherwise in maintenance manual arrange for full desludging of Primary Settlement Tank

Time taken depends on tanker size etc.

5) ANNUALY: Section 3 Warning Applies

As 2, 3 & 4 above plus:

a) Drain gearbox oil and replace. Also check holding down bolts

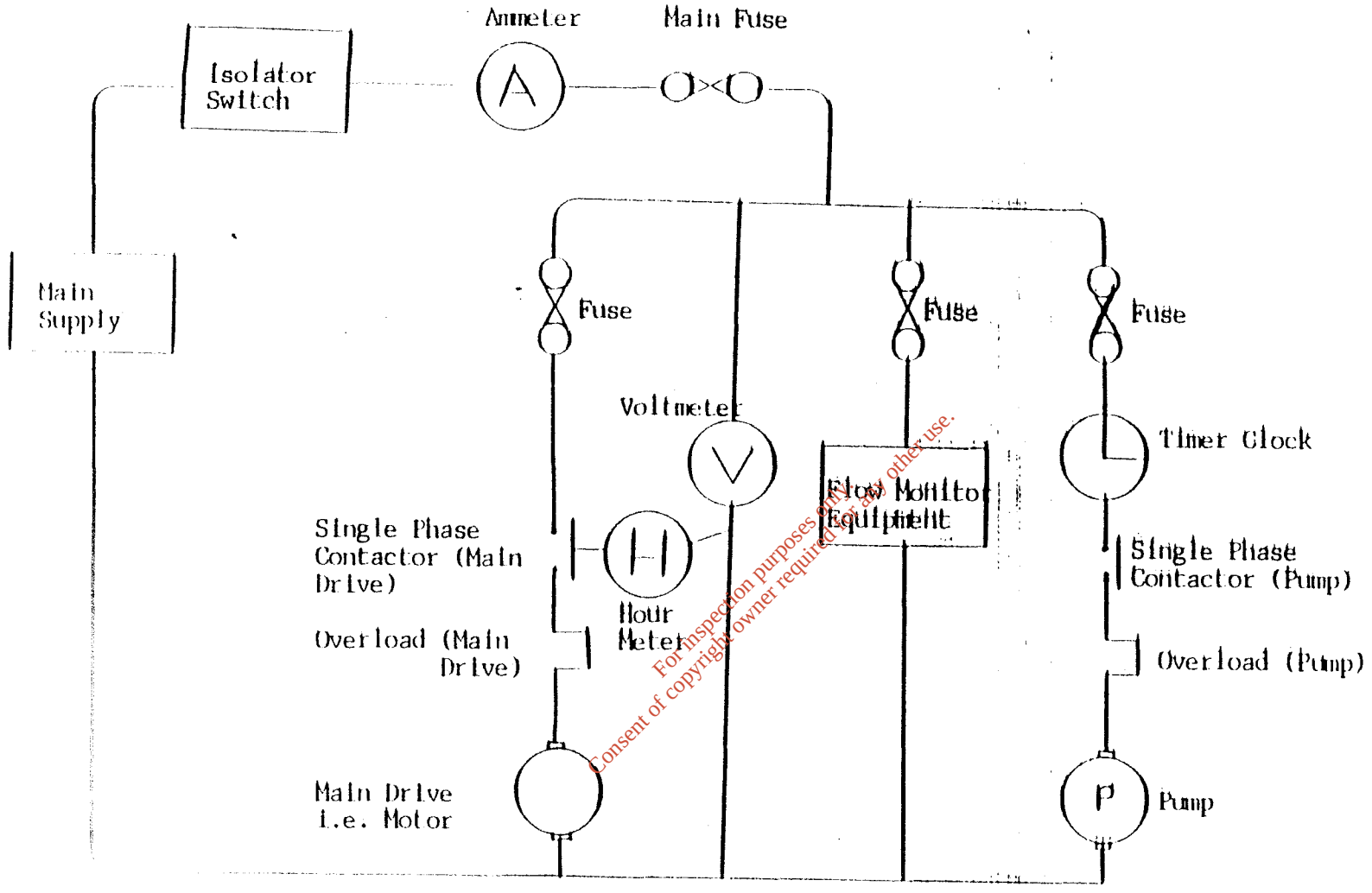
b) Touch up all exposed EN8 and drive plate support with the specified protection paint

c) Check shaft for wear and alignment

d) Check bearings for wear by removing plummer block tops and check holding down bolts for tightness

e) Check chain couplings and sprockets by removing casings

f) Check all GRP tankage and lids for damage and repair if necessary



CONTROL PANEL FOR RT 91 (GLENVILLE, CO. CORK)

GLENVILLE CO. CORK

SEWAGE TREATMENT PLANT

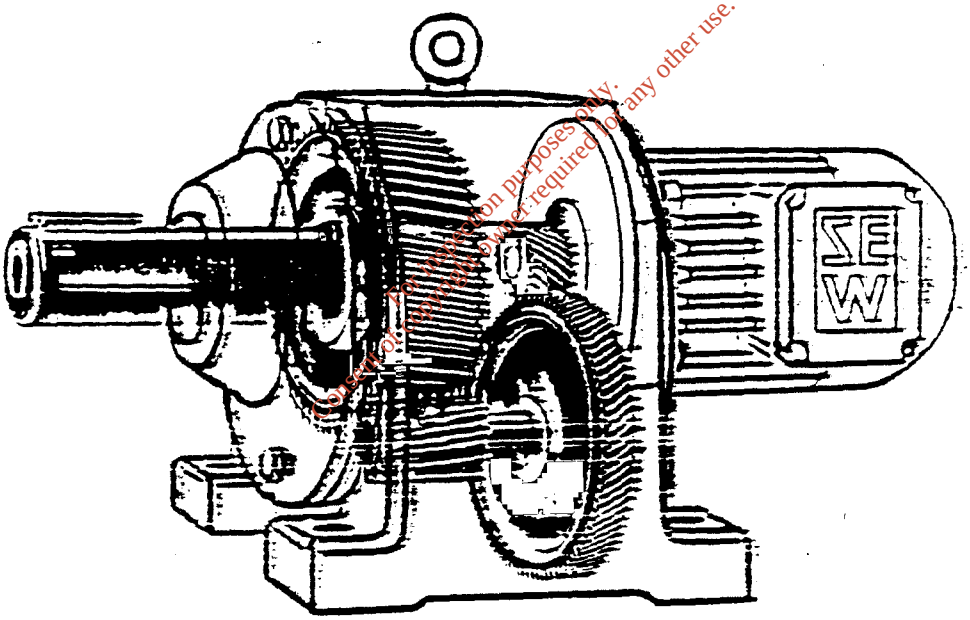
CONTROL PANEL

Terminals No. 1 & 2 Main Supply

Terminals No. 3 & 4 Aerotor Motor

Terminals No. 5 & 6 Sludge Return Pump

Terminals No. 7 & 8 Flow Monitor



3. Commissioning

3.1 Initial checks

The following checks should be carried out before the geared motor is operated for the first time:

a) The line voltage and frequency should agree with the motor nameplate data and the motor is to be connected in the appropriate STAR or DELTA connection.

b) The oil level in the gear unit is prescribed: checked by means of the oil level plug (oil level refer to mounting positions section 2.1). With gear units filled with synthetic oil and extended storage additive, the oil level must be reduced to the correct level due to the overfill ex works.

c) Ensure the drive mechanism is not blocked in any manner.

d) The electro-mechanical brake on a brake motor, on the output of a variable speed drive VARIBLOC® or following an incorporated centrifugal coupling (LT/LM...B) can be released by energising the brake coil.

e) Check that the direction of rotation of the drive is correct. Note that with the various possible alternative gear units the direction of rotation of the motor is in some cases reversed at the output side.

1-stage gear unit: opposite direction of rotation to the motor
2-stage gear unit: same direction of rotation as the motor
3-stage gear unit: opposite direction of rotation to the motor
VARIBLOC® – VU: opposite direction of rotation to the motor
VARIBLOC® – VZ: same direction of rotation as the motor
VARIMOT® – D: same direction of rotation as the motor

Clockwise rotation of the motor means clockwise rotation of the motor shaft looking at the output shaft end. An ***AC squirrel-cage motor rotates clockwise*** if the phase sequence is R/S/T (L1/L2/L3) at the motor terminals U1/V1/W1. A ***DC shunt motor rotates clockwise*** if the motor terminals C 2 (armature) and F 1 (field) have positive polarity and C 1 (armature) and F 2 (field) have negative polarity.

The permissible loading of a geared motor in operation may be checked for example by the current consumption in a phase of the AC squirrel-cage motor (clip-on ammeter).

3.2 Running-in period

For ***helical-worm gear units*** the following applies: these gear units require a running-in period (4 hrs. up to max. 24 hrs) during which the efficiency improves. Helical-worm geared motors which require the rated power or rated torque when in use should therefore be driven at a reduced power during this initial period in order to prevent excessive heating or, if this is not feasible, should be selected with a somewhat higher output.

The following guideline values apply:

Number of starts of the worm	1	2	3/5/6
Power reduction during running-in period	30%	15%	10%

If the helical-worm gear unit is operated in both directions during use, a separate running-in period applies to each direction of rotation.

3.3 Ambient and operating conditions

Various housing temperature rises (measured at the hexagon socket of the oil drain plug) may be quoted as permissible for gear units. The following operating conditions have a material influence on the rise in temperature that comes about:

1. Ambient temperature.
2. High input speed (≧ 2800 rpm) in combination with an unfavourable mounting position and a low gear ratio.
3. External cooling conditions.
4. Operating period and load factor.

Mineral oils are suitable for gear housing temperatures (absolute values) up to 70° C. These oils age considerably more quickly above these temperatures.

Synthetic oils should be used for gear housing temperatures up to 100° C, and at temperatures of 90° C and above the gear unit should be equipped with special oil seals.

4. Maintenance

4.1 Lubrication of gear units and motor bearings Lubrication table / Lubricant filling quantity

For ***gear units*** it is important to check the oil level regularly. The lubricant should be changed at the following intervals:

Mineral oils and greases: Every 10000 operating hours or every two years (for housing temperatures ≦ 70° C, measured close to the oil drain plug)
Temperature increases of up to respectively 15° C lowers the lubricant change interval by half from the original specified guidance time
— up to 85° C still approximately 5000 h
— up to 100° C still approximately 2500 h

Synthetic oils: Every 20000 operating hours or every four years (for housing temperatures ≦ 100° C, measured close to the oil drain plug)

On worm gear units, the first oil change should take place at the latest after 100 hours of operation. After that the normal lubrication change intervals apply.

Under particularly severe operating conditions (e.g. high humidity, aggressive environment, large temperature fluctuations or high ambient temperature) shorter oil change intervals are necessary.

Gear unit types S, SF, SA, SAF31 are filled for the life of the unit with synthetic lubricants at the factory.

Gear unit types R, RF302 and 32 are filled with grease as standard. The grease can be changed by removing the gear unit cover. After removing the old grease mechanically it is necessary to clean the interior with a solvent (cold), before refilling with new grease.

With the exception of R, RF302 and 32 gear unit types, other gear unit types should only in exceptional cases and in consultation with SEW be operated filled with grease, because of the less favourable lubrication and cooling effect.

The grease packings of ***bearings of motors and gear units*** should also be changed after approx. 10000 operating hours. The bearing should be cleaned before being packed with new grease. The amount of grease on motors and input bearings of gear units should occupy about 1/3 of the free bearing space. On the bearings of the output shafts and pinion shafts (Parts List Ltd. No. 5) the amount of grease should occupy about 2/3 of the bearing space between bearing elements. Repeated grease changes over the working life of the bearings should be carried out only after carefully checking that the dismantled and cleaned bearings are in a satisfactory state.

Warning: *The synthetic lubricants listed in the lubrication table must not be mixed with one another or with mineral lubricants.*

SEW must be consulted on lubricants suitable for temperature ranges not shown in the lubrication table (e.g. -40° C to +40° C).

The amounts of oil specified in the "Lubricant filling quantity" table (for guideline values, see footnote at the bottom of the table) apply to individual gear units. On multi-stage gear units R..R.. with mounting positions B3, B5 and B35 the final gear units should have a somewhat larger oil filling quantity due to the low speeds and the associated poorer lubrication. (Refer to the foot note 1 of the table "Lubricant filling quantity").

Maintenance

Lubrication table

SEW EURODRIVE

Application	Type of lubricant	Ambient temperature range °C	Kin. visc. at 40° C (cSt) mm 2/s	ARAL	BP	Esso	Mobil	Shell	Texaco
Helical gear units, helical geared motors Helical-bevel gear units, helical-bevel geared motors	Oil	−40 to 0	242 to 198	ARAL Degol BG 220	BP Energol GR-XP 220	SPARTAN EP 220	Mobilgear 630	Shell Omala Oil 220	Meropa 220
		−25 to −15	165 to 90	ARAL Degol BG 100	BP Energol GR-XP 100	SPARTAN EP 150	Mobilgear 629	Shell Omala Oil 100	Meropa 150
		−10 to −30	74.8 to 13.5	ARAL Degol BG 46	BP Energol GR-XP 68	ESSO AUTOMATIC TRANSMISSION FLUID	Mobil D.T.E. 15	Shell Tellus Oil T 32	Meropa 68
		−20 to −45	16.5 to 13.5	–	BP Bartran HV 15	UNIVIS J 13	Mobil D.T.E. 11	Shell Tellus Oil T 15	Aircraft Hydraulic Oil 15
	Grease *	−40 to −15		Aralub FDP 00	BP Energrease HT - EP 00	FIBRAX EP 370	Mobilplex 44	Shell Grease S 3655	Multifak EP 0
Helical-worm gear units, helical-worm geared motors	Oil	−40 to 0	748 to 612	ARAL Degol BG 680	BP Energol GR-XP 680	SPARTAN EP 680	Mobilgear 636	Shell Omala Oil 680	Meropa 680
		−25 to −10	242 to 198	ARAL Degol BG 220	BP Energol GR-XP 220	SPARTAN EP 200	Mobilgear 630	Shell Omala Oil 220	Meropa 220
		−10 to −20	165 to 90	ARAL Degol BG 100	BP Energol GR-XP 100	SPARTAN EP 150	Mobil D.T.E. 18	Shell Omala Oil 100	Meropa 100
		−20 to −45	16.5 to 13.5	–	BP Bartran HV 15	UNIVIS J 13	Mobil D.T.E. 11	Shell Tellus Oil T 15	Aircraft Hydraulic Oil 15
	Grease *	−40 to −15		Aralub FDP 00	BP Energrease HT - EP 00	FIBRAX EP 370	Mobilplex 44	Shell Grease S 3655	Multifak EP 0
General	Synthetic Oil	R, F, K −60...−25 S gear unit +25...−25	242 to 198	ARAL Degol GS 220	BP Energol SG - XP 220	–	Mobil Glygoyle 30	Shell Tivela Oil WB	–
		S gear unit −60 to 0	506 to 414	–	BP Energol SG - XP 460	–	Mobil Glygoyle 60	Shell Tivela Oil SD	–
	Synthetic Grease *	−60 to −25		–	–	GEAR GREASE S 420	Glygoyle Grease 00	Shell Tivela Compound A	–
Hydr. Coupling	Oil	≧ 0	approx. 40	ARAL Degol BG 32	BP Energol HLP 32	NUTO H 32	Mobil D.T.E. 25	Shell Tellus Oil T 32	Rando Oil 32
		< 0	approx. 14	ARAL Vitam GF 10	BP Energol HLP 15	NUTO H 15	Mobil D.T.E. 21	Shell Tellus Oil T 15	Rando Oil 10
Bearings of gear units and motors	Grease	−60 to −30		Aralub HL 3	BP Energrease LS 3	ESSO Universal Grease Beacon 2	Mobilux EP 2 (Gear unit)	Shell Alvania Grease R 3 (Motor)	Glissando FT 3
	Synthetic Grease	−60 to −40					Mobiltemp. SHC 100 (Gear unit)		
		−60 to −100				ESSO Unirex N 3 (Motor)			
		−30 to −45						Aero Shell Grease 16 (Motor)	

▼ = Lubricant filling supplied in Germany

* = Only to be used in exceptional cases after consultation with SEW

Maintenance
Lubricant filling quantity

SEW EURODRIVE

Helical gear units[1)]
approx. quantity (l) per mounting position

Size	Mounting positions IM..									
	B3/B35[1)]	B5[1)]	B5 II	B6/B65	B7/B75	B8/B85	V1	V3	V5	V6
R, RF302/32						Grease 0.3 kg				
R, RF40	0.3	0.3	–	0.6	0.7	0.6	1	1	1	1
R, RF42/43	0.3	0.3	–	0.6	0.6	0.6	1	0.9	1.1	0.9
R, RF, RUF62/63	0.6	0.5	–	1.2	1.3	1.1	2	1.9	2.2	1.9
R, RF60	0.6	0.6	–	1.6	1.5	1.1	2	1.9	2	2.1
RX, RXF61	0.8	0.4	0.7	0.4	0.5	0.7	0.6	0.5	0.9	0.5
R, RF702/703	1.3	1.2	–	2.1	2.3	2.1	3.7	3.5	3.7	3.6
R, RF, RUF72/73	1.3	1.2	–	2.1	2.3	2.1	3.7	3.5	3.7	3.6
RX, RXF71	1.6	0.8	1.4	1	1.0	1.6	1.2	0.9	2	1
R, RF802/803	2.9	2.6	–	4.6	4.8	4.1	8	7.5	8	7.6
R, RF, RUF82/83	2.9	2.6	–	4.6	4.8	4.1	8	7.5	8	7.6
RX, RXF81	2.5	1.3	2.5	1.6	1.6	2.7	2.2	1.5	3.1	1.8
R, RF902/903	4.8	4.3	–	7.6	8.3	7.5	13	12.3	13.5	12.7
R, RF, RUF92/93	4.8	4.3	–	7.6	8.3	7.5	13	12.3	13.5	12.7
R, RF, RUF102/103	8.7	8	–	11.6	12.6	11.2	20.5	18.7	21.5	20
RX, RXF101	8.2	3.5	8	4.1	4	7.7	4.5	3.6	8.5	4.1
R, RF, RUF132/133	10.2	9.5	–	19	20	19	31.5	32	32.5	33
R, RF, RUF142/143	15	12.5	–	29	31	28.5	48	49.5	51.5	52
R, RF, RUF152	19.7	18	–	44.5	49.5	43	80	80	75.5	80
R, RF, RUF163	31.5	28	–	51	52	49	79	81.5	86.5	88.5

Shaft Mounted Helical Gear Units
approx. quantity (l) per mounting position

Size	Mounting positions					
	H1	H2	H3	H4	H5	H6
FA, FAF40	1.5	1	1.7	1.4	1.9	2.1
FA, FAF60	3.1	2.9	3.6	3.1	4.4	3.9
FA, FAF70	7	4.4	6.9	6	8.3	7.7
FA, FAF80	11.3	7.2	12	10.1	14	13.6
FA, FAF90	19.1	13	22.3	17.5	24	26
FA, FAF100	35	21	33.5	29.5	46	44.5

Helical-Bevel Gear Units
approx. quantity (l) per mounting position

Size	Mounting positions IM..													
	B3, H1 B5 I	B3 I B6 II	B5	B5 II	B5 III	B6	B8	V1 V1 I	V5	V6	H2	H3	H4	H5, H6
K, KF, KA46	0.6	1.2	1.2	1.8	1.4	1.2	1.5	1.3	1.5	1.5	1.4	1.8	1.2	1.3
K, KF, KA66	0.9	3.2	2.4	3.3	2.8	2.3	2.6	3.1	3	3.1	2.5	3	2.2	3
K, KF, KA76	1.9	5.8	4.2	6.2	5	4.1	4.8	6.3	6.1	6.2	4.5	5.7	4.1	6
K, KF, KA86	2.6	9.1	7.3	9.8	8.6	7.1	8.3	10	9.6	9.6	7.9	9	7.1	9.3
K, KF, KA96	5.4	18.7	14.2	19.7	16.4	14.1	16	20	19.5	19.5	15.4	18.5	14	19.5
K, KF, KA106	8.9	32	23.5	33.5	28	23	27	33	32	32	26	31.5	23	32
K, KF, KA126	13.7	54	39	54.5	48	40	48	56	57.5	58	48	52.5	41.5	57.5
K, KF, KA156	26.5	92	67	93.5	82	64	76.5	100	98	98	79	92	67	100
K, KH166	31	118	–	118	–	–	–	95	–	–	–	–	–	–
K, KH186	57	194	–	194	–	–	–	155	–	–	–	–	–	–

Helical-Worm Gear Units
approx. quantity (l) per mounting position

Size	Mounting positions IM..														
	B3 B6 I	B3 I B6 II	B5	B5 I	B5 II	B5 III	B6 B8 I	B8	$V1_A$ $V1I_B$	$V1_B$ $V1I_A$	V5 V5 I	H1	H2	H3	H4	H5 H6
S, SF, SA31	0.25	0.25	0.35	0.35	0.35	0.35	0.25	0.25	0.35	0.35	0.25	0.25	0.25	0.25	0.25	0.25
S, SF, SA42	0.2	1	0.8	0.4	1.2	0.8	1.1	0.6	0.8	0.6	0.6	0.4	0.8	1.1	0.75	0.7
S, SF, SA52	0.3	1.6	1	0.45	1.7	1.2	1.6	1.1	1.1	0.8	0.9	0.45	1.1	1.1	1	0.9
S, SF, SA62	0.6	2.8	2.3	0.9	4	2.3	2.6	1.6	2.3	2.1	1.6	0.9	2.3	3.1	2.1	2
S, SF, SA72	1.1	5	4	1.5	7.4	4.8	5.3	3.3	4.4	4	3.1	1.5	4	6.1	3.5	3.6
S, SF, SA82	2.1	10	8.3	3.3	10.8	8	10.8	8	8.8	8.7	6.6	3.3	8.7	10.1	8	8.1
S, SF, SA92	3.8	19.5	12.5	6.5	22.5	13.6	20.5	11	11.7	10.5	10.5	6.5	12.5	20.1	11.6	12.3

[1)] Lubricants, see corresponding table.
For multi-stage gear units having mounting positions B3, B5 or B6/B8 the larger gear unit is to be provided with the oil filling for B7.

Note: The above filling amounts are guideline values dependent on the gear ratio.
For calculating weights, to a first approximation 1 l = 1 kg.

Geared motors and Gearboxes

Operating Instructions
N 1002

General Instructions

These instructions are intended to help you commission S.E.W. Eurodrive products in such a manner as to ensure the correct performance and long trouble free operation of the drive unit.

In the unlikely event of a warranty claim, non-compliance with these instructions could result in your claim being invalidated.

Before despatch the drive unit was thoroughly tested and checked. However, before installing the drive it is essential to check and ensure that no damage has occurred in transit. If damage is apparent then the carrier must be advised immediately of a possible claim and we should also be advised, thereby enabling us to quickly assist you by replacing or repairing the drive unit.

No specialised knowledge is required to commission most S.E.W. Eurodrive products but it is essential to comply with all appropriate safety regulations and recommendations.

Lubricants

All geared motors and complete gear boxes are despatched with the correct grade and quantity of lubricating oil (or synthetic grease where appropriate) suitable for the mounting position specified at the time of ordering. This does not apply to gearheads supplied to customers who subsequently mount their own prime movers.

The recommended lubricants are shown on our lubrication schedule.

If the drive unit is not installed immediately then it is essential that it be stored under cover in a dry location, and preferably in a position similar to its intended mounting position.

Fitting of Ancillaries

When fitting such items as couplings, gear wheels or chain sprockets it should be noted that all S.E.W. Eurodrive products having output shafts up to 50mm diameter have a tolerance conforming to ISOk6 and larger shafts to ISOm6. The bore tolerance on all shaft mounted units conform to ISOH7. At the time of despatch the output shaft extensions are coated with an anti corrosive compound which should be carefully removed by use of a suitable solvent.

CAUTION: Care must be taken to ensure that the solvent does not damage the adjacent oil seal or bearing.

All output shafts have a tapped hole, centrally disposed in the end, conforming to DIN 332. This is provided to enable coupling gear wheels etc., to be easily fitted and thereby protect the output shafts bearing from damage which might otherwise occur due to the use of a hammer.

If the component which is to be mounted on the shaft is heated to approximately 80°C then assembly is greatly facilitated.

To prevent the output shaft and bearings from being subjected to excessive loads, the maximum recommended overhung load, shown in our catalogue, should not be exceeded. The published figures assume the load to act at the mid-point of the shaft extension. Our technical department should be consulted in all cases where there is a possibility that the applied load may exceed the recommended figure given, or where combined radial and axial loads are likely to be encountered. In such cases the exact operating conditions must be clearly stated including speed, direction or rotation, position, magnitude and direction of the external and axial loads intended to be applied.

Installation and Commissioning

The gear unit should be mounted on a level, firm, vibration free support and should be accurately aligned with the driven unit. Particular care should be taken where power is being transmitted by gear wheels or chains. The gear case must not be subjected to stress due to mounting, i.e. being mounted on an uneven base plate.

Since the mounting position of the gear unit determines the positioning of the oil level plug, oil drain plug and breather plug, as well as the amount of lubricating oil, it is essential that the mounting position be clearly indicated when ordering to ensure correct lubricant level. Adequate lubrication and air venting is only guaranteed if the unit is mounted in the specified mounting position.

If the unit is to be mounted in a position other than that originally specified then the amount of lubricant and the breather and level plug positions must be changed in accordance with the data sheet and mounting position sheet shown in the catalogue. If in doubt refer to our technical department.

For transit purposes units are supplied unvented, i.e. an ordinary plug replaces the breather plug. The breather plug is placed in a small bag attached to the gear unit. After final installation it is essential to remove the blanking plug and install the breather plug in the correct position. In addition it is recommended that the oil level be checked by removing the oil level plug, the correct oil level being that when the surface of the oil is level with the lowest point of the tapped hole. The exception to the above comments being the units of the size R30, R32 and S30 which remain totally enclosed and may be mounted in any mounting position.

Care should be taken at all times to ensure adequate ventilation of the motor.

Electrical connections

All motors should be connected to the supply by a duly qualified or authorised person. The size and type of wire should be in accordance with current regulations. The current rating of the motor will be found on the motor data plate and the motor should be connected in accordance with the appropriate circuit diagram which is always supplied with the motor when new.

Before replacing the terminal box cover any cable entry holes not being utilised should be blanked with a suitable plug and care should be exercised to ensure that the terminal box cover seals correctly.

Maintenance

All S.E.W. Eurodrive gear units require only the minimum of maintenance which is essentially confined to the regular checking of the lubricant level. Oil changes are recommended at intervals of 10,000 operating hours or alternatively every two years. If however, a synthetic lubricant is being used then this period can be extended to 20,000 operating hours or alternatively every four years. In applications where arduous operating conditions exist, such as high humidity, corrosive environment or large temperature variations then it is recommended that the lubricant should be changed at more frequent intervals.

The gear units of the size S30, SF30, R30, RF30, R32, RF32 are sealed and the lubricant will normally last the lifetime of the gear unit.

Grease-packed bearings should be cleaned and re-greased every 10,000 hours, care being taken to ensure that only one third of the free volume of the bearing is filled with grease in order to avoid overheating of the bearing.

To ensure adequate cooling deposits of dirt and dust on the surfaces of the units should be removed at frequent intervals. Particular attention should be paid to the motor by removing all deposits from between the motor cooling fins and also from the air intake area of the fan guard.

NOTE: Alternative lubricants

When the recommended lubricant is not available it is permissible to use a lubricant having similar characteristics but we do not recommend that lubricants of different brands be mixed. Under no circumstances should synthetic lubricants be mixed with one another or with one having a mineral base.

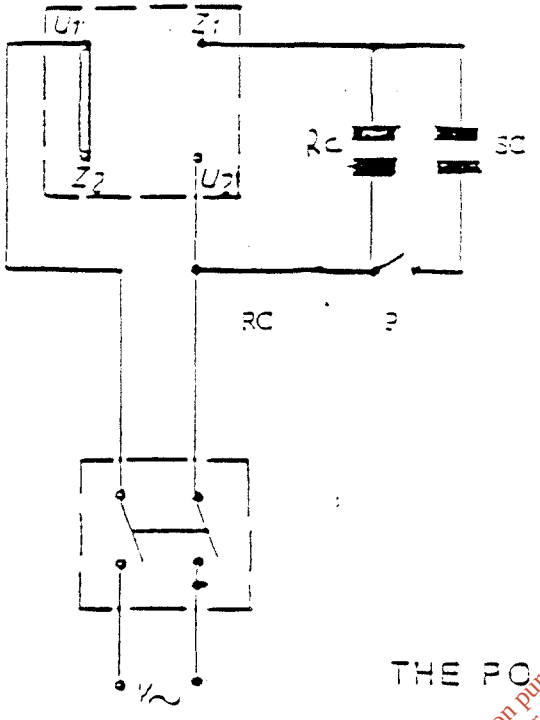
SEW-EURODRIVE P.O. BOX No. 1 BECKBRIDGE INDUSTRIAL ESTATE, NORMANTON WEST YORKSHIRE

SINGLE PHASE MOTORS

WITH CAPACITORS AND POSISTOR SWITCH

DATA SHEET
UK 09 76215 E

ET
SINGLE PHASE



$U_1 \cdot U_2$ – MAIN PHASE
$Z_1 \cdot Z_2$ – AUXILIARY PHASE
SC – START CAPACITOR
RC – RUN CAPACITOR
P – POSISTOR SWITCH

TO REVERSE MOTOR POLARITY

CHANGE THE LINK FROM U1 - Z2
TO U1 - Z1
CHANGE THE CAPACITOR CONNECTIONS
FROM Z1 TO Z2

THE POSISTOR

The POSISTOR is a semiconductor with no moving parts. The principle of operation is that in its quiescent state it has a resistance of about 15 ohms, but when current passes this rises to a very high value as the internal temperature rises. A POSISTOR can be used to replace the conventional centrifugal switch in a motor with the following advantages.

1. It can be mounted inside or outside the motor so simplifying replacement and repair.
2. No spark is produced and so no radio interference occurs.

3. POSISTORS are to be used as follows. One posistor for 0.15 – 0.75KW motors. Two posistors for 0.75 – 1.5KW motors. Three posistors for 2.2KW motors. POSISTORS must be connected in parallel.
4. Since the POSISTOR represents a series resistor in the auxiliary winding it is sometimes possible to reduce the value of the starting capacitor and possibly the winding wire gauge.
5. Failure is less likely to result in a burnt out auxiliary winding than with a conventional switch.

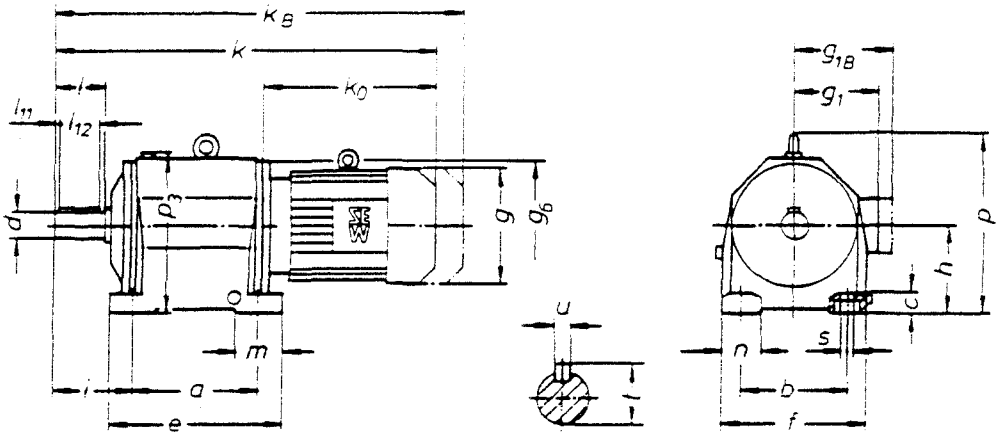
WARNING: Until the POSISTOR has had from 10 to 60 seconds to cool its resistance will remain high and if a restart is attempted the start capacitor will be out of circuit.

Technical Data.

Resistance at 25°C 15 ohms + 30%
Maximum intermittent voltage 300 V
Maximum continuous voltage 250 V
Maximum current 7 amps

Power consumption 3.2 Watts

04 088 18



Typ Si		a / b	c	e	f	g	g_1	g_{1B}	g_6	h	k	k_B	k_0	m	n	p / p_3	s	d / l	l_{11} / l_{12}	t / u
	DT80..	310				145	121	127			671	735	231			431		60	10	64
	DT90..					197	155	161			691	776	251							
	DT100..						163	169			742	827	302							
2	DV112M					221	176	182			777	857	337							
3	DV132S										822	902	382							
R92	DV132M		55	365	340				300	225 -0.5	842	954	402	100	90		22			
	DV132ML					275	230	230			902	1014	462							
	DV160M																			
	DV160L										950	1106	510							
	DV180..					331	253	253			1022	1178	582							
	DV200..	250				394	285	285			1069	1225	629			386		120	100	18
	DT100..	370				197	163	169			807	892	295			500		70	15	74,5
	DV112M					221	176	182			843	923	331							
	DV132S										888	968	376							
	DV132M										908	1020	396							
2	DV132ML		65	440	400	275	230	230	350	250 -0.5	968	1080	456	125	110		26			
3	DV160M																			
	DV160L										1016	1172	504							
	DV180..					331	253	253			1088	1244	576							
	DV200..					394	285	285			1135	1291	623			437		140	110	30
	DV225..	290					289	289			1217	1373	705							
	DV132S	410				221	176	182			969	1049	369			564		90	15	95
	DV132M										989	1101	389							
	DV132ML					275	230	230			1049	1161	449							
	DV160M																			
...32	DV160L		70	490	450				400	265	1097	1253	497	130	110		33			
R133	DV180..					331	253	253			1169	1325	569							
	DV200..						285	285			1216	1372	616							
	DV225..					394	289	289			1296	1454	698							
	D250..	340				480	345	-			1383	-	793			482		170	140	35

...o Hinweise zu den Maßblättern in der Ka...geinführung beachten.

Please refer to the notes appertaining to dimension sheets in the catalogue's introduction.

Voir remarques concernant les feuilles de cotes dans les pages d'introduction du present catalogue.

SKF

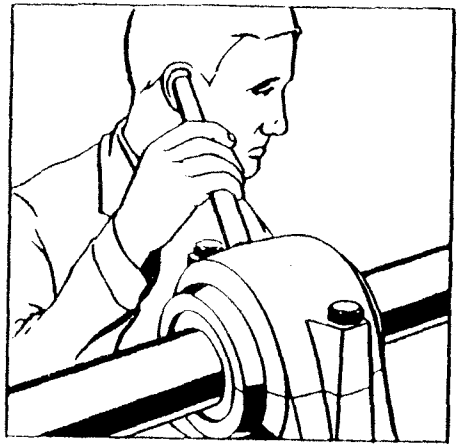
Bearing maintenance

What to look for during operation

Bearings mounted in machines where a stoppage would have serious consequences should be checked regularly.

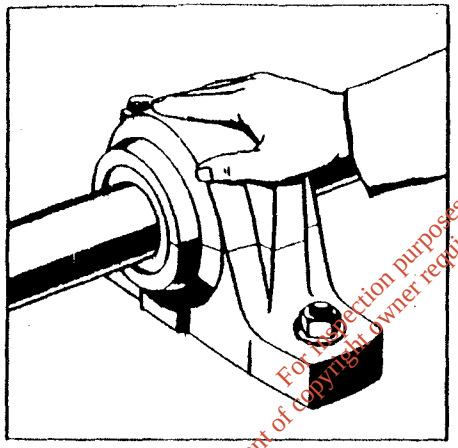
Listen
Feel
Look
Lubricate

Listen



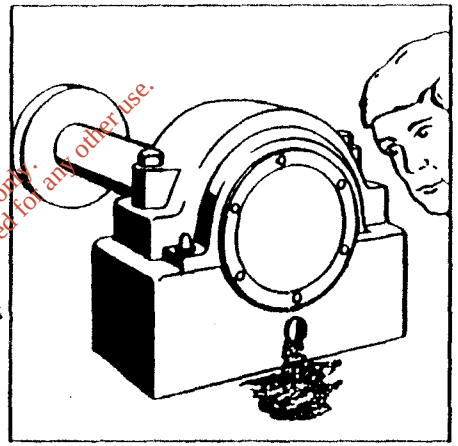
Place one end of a wooden listening rod, screwdriver or similar object against the bearing housing as close to the bearing as possible. Place the ear against the other end and listen. If all is well, a soft purring sound will be heard. A damaged bearing gives out a loud noise, often irregular and rumbling.

Feel



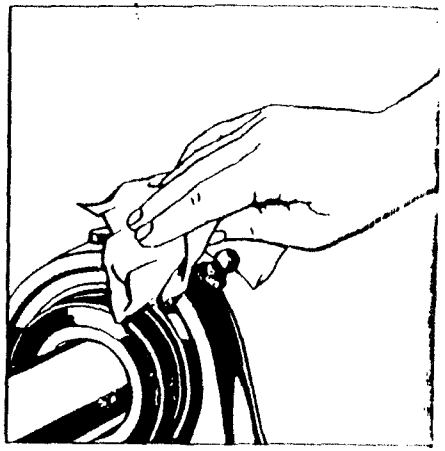
Check the temperature of the bearing arrangement by using a thermometer, for instance an SKF digital thermometer 729117, or often simply by placing a hand on the bearing housing. If the temperature seems unusually high or suddenly changes it is an indication that something is wrong. The reason may be insufficient or excess lubricant, impurities, overloading, bearing damage, insufficient clearance, pinching, high friction in the seals or heat supplied by an external source. Remember, however, that immediately after relubrication there will be a natural rise in temperature which may persist for one or two days.

Look



Ensure that lubricant does not escape through defective seals or insufficiently tightened plugs. Impurities generally discolour the lubricant, making it darker. Check the condition of the seals near the bearings to ensure that they will not, for example, permit hot or corrosive liquids and gases to penetrate the bearing arrangement. Any automatic lubricating devices should also be checked to see that they function correctly.

Lubricate



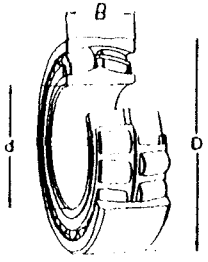
Grease lubrication

Relubricate the bearing arrangements according to the instructions provided by the machine manufacturer

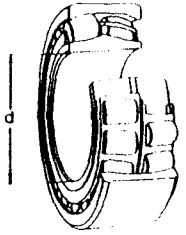
Wipe lubricating nipples clean before fresh grease is injected. If the bearing housing is not provided with nipples, requisite relubrication should be carried out during a planned stoppage of the machine. The housing cap or end cover must be removed, the used grease taken out and fresh grease added.

Even where nipples are fitted on the housing, the used grease should be removed and replaced with fresh from time to time.

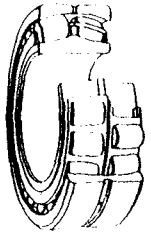
Spherical roller bearings
d 20–80 mm



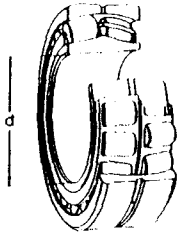
Cylindrical bore



Tapered bore



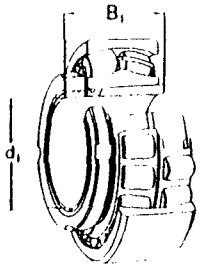
Cylindrical bore; with W33 feature



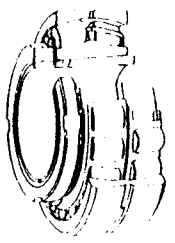
Tapered bore; with W33 feature

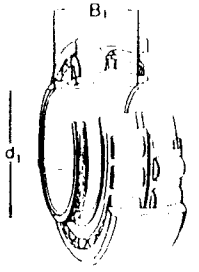
Principal dimensions			Basic load ratings dynamic	static	Limiting speeds Lubrication grease	oil	Mass	Designations Bearings with cylindrical bore	tapered bore
d	D	B	C	C_0					
mm			N		r/min		kg	–	
20	52	15	30 500	33 500	8 500	11 000	0,16	21304 CC	–
25	52	18	35 700	39 700	8 500	11 000	0,18	22205 CC	–
	62	17	41 400	44 200	6 700	8 500	0,25	21305 CC	–
30	62	20	48 900	55 200	7 500	9 500	0,28	22206 CC	–
	72	19	55 200	65 300	6 000	7 500	0,38	21306 CC	–
35	72	23	67 300	79 100	6 300	8 000	0,43	22207 CC	22207 CCK
	80	21	65 600	76 400	5 300	6 700	0,51	21307 CC	–
40	80	23	73 600	87 400	6 000	7 500	0,52	22208 CC	22208 CCK
	90	23	82 800	101 000	4 500	5 600	0,71	21308 CC	21308 CCK
	90	33	115 000	135 000	4 500	5 600	1,00	22308 CC	22308 CCK
45	85	23	77 100	93 800	5 300	6 700	0,56	22209 CC	22209 CCK
	100	25	101 000	121 000	4 300	5 300	0,95	21309 CC	21309 CCK
	100	36	138 000	175 000	3 800	4 800	1,35	22309 CC	22309 CCK
50	90	23	84 500	105 000	5 000	6 300	0,60	22210 CC	22210 CCK
	110	27	120 000	150 000	3 800	4 800	1,20	21310 CC	21310 CCK
	110	40	176 000	221 000	3 400	4 300	1,85	22310 CC	22310 CCK
55	100	25	99 500	123 000	4 500	5 600	0,82	22211 CC	22211 CCK
	120	29	138 000	171 000	3 400	4 300	1,60	21311 CC	21311 CCK
	120	43	199 000	252 000	3 200	4 000	2,35	22311 CC	22311 CCK
60	110	28	122 000	153 000	4 000	5 000	1,10	22212 CC	22212 CCK
	130	31	161 000	210 000	3 000	3 800	1,95	21312 CC	21312 CCK
	130	46	235 000	305 000	3 000	3 800	2,95	22312 CC	22312 CCK
65	120	31	148 000	191 000	3 800	4 800	1,45	22213 CC	22213 CCK
	140	33	184 000	247 000	2 800	3 600	2,45	21313 CC	21313 CCK
	140	48	253 000	331 000	2 600	3 400	3,55	22313 CC	22313 CCK
70	125	31	148 000	191 000	3 600	4 500	1,55	22214 CC	22214 CCK
	150	35	207 000	276 000	2 600	3 400	3,00	21314 CC	21314 CCK
	150	51	311 000	419 000	2 400	3 200	4,55	22314 CC/W33	22314 CCK/W33
75	130	31	158 000	213 000	3 400	4 300	1,65	22215 CC	22215 CCK
	160	37	235 000	313 000	2 400	3 200	3,55	21315 CC	21315 CCK
	160	55	345 000	469 000	2 200	3 000	5,25	22315 CC/W33	22315 CCK/W33
80	140	33	176 000	234 000	3 200	4 000	2,05	22216 CC	22216 CCK
	170	39	258 000	350 000	2 200	3 000	4,20	21316 CC	21316 CCK
	170	58	374 000	506 000	2 000	2 800	6,20	22316 CC/W33	22316 CCK/W33

Spherical roller bearings with tapered bore, with adapter or withdrawal sleeve

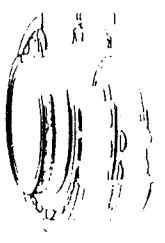


Adapter sleeve


Adapter sleeve



Withdrawal sleeve


Withdrawal sleeve

Bearing designation	Appropriate adapter sleeve, type H Dimensions d_1	B_1	Mass	Designation	HE Bore d_1	Designation	HA Bore d_1	Designation	HS Bore d_1	Designation	Appropriate withdrawal sleeve Dimensions d_1	B_1	Mass	Designation
	mm		kg	–	in	–	in	–	in	–	mm		kg	
22207 CCK	30	35	0,13	H 307	–	–	1 3/16	HA 307	1 1/8	HS 307	–	–	–	–
22208 CCK	35	36	0,19	H 308	1 1/4	HE 308	–	–	1 3/8	HS 308	35	29	0,090	AH 308
21308 CCK		36	0,19	H 308		HE 308	–	–		HS 308		29	0,090	AH 308
22308 CCK		46	0,22	H 2308		HE 2308	–	–	–	–		40	0,13	AH 2308
22209 CCK	40	39	0,25	H 309	1 1/2	HE 309	1 7/8	HA 309			40	31	0,11	AH 309
21309 CCK		39	0,25	H 309		HE 309		HA 309	–	–		31	0,11	AH 309
22309 CCK		50	0,28	H 2309		HE 2309		HA 2309	–	–		41	0,16	AH 2309
22210 CCK	45	42	0,30	H 310	1 3/4	HE 310	1 11/16	HA 310	1 5/8	HS 310	45	35	0,14	AHX 310
21310 CCK		42	0,30	H 310		HE 310		HA 310		HS 310		35	0,14	AHX 310
22310 CCK		55	0,36	H 2310		HE 2310		HA 2310	–	–		50	0,21	AHX 2310
22211 CCK	50	45	0,39	H 311	2	HE 311	1 15/16	HA 311	–	–	50	37	0,16	AHX 311
21311 CCK		45	0,39	H 311		HE 311		HA 311	–	–		37	0,16	AHX 311
22311 CCK		59	0,42	H 2311		HE 2311		HA 2311	–	–		54	0,25	AHX 2311
22212 CCK	55	47	0,39	H 312	–	–	–	–	2 1/8	HS 312	55	40	0,19	AHX 312
21312 CCK		47	0,39	H 312	–	–	–	–		HS 312		40	0,19	AHX 312
22312 CCK		62	0,48	H 2312	–	–	–	–	–	–		58	0,30	AHX 2312
22213 CCK	60	50	0,46	H 313	2 1/4	HE 313	2 3/16	HA 313	–	–	60	42	0,25	AH 313
21313 CCK		50	0,46	H 313		HE 313		HA 313	–	–		42	0,25	AH 313
22313 CCK		65	0,55	H 2313		HE 2313		HA 2313	–	–		61	0,40	AH 2313
22214 CCK	60	52	0,72	H 314	–	–	–	–	–	–	65	43	0,28	AH 314
21314 CCK		52	0,72	H 314	–	–	–	–	–	–		43	0,28	AH 314
22314 CCK/W33		69	0,90	H 2314	–	–	–	–	–	–		64	0,47	AHX 2314
22215 CCK	65	55	0,83	H 315	2 1/2	HE 315	2 7/16	HA 315	–	–	70	45	0,31	AH 315
21315 CCK		55	0,83	H 315		HE 315		HA 315	–	–		45	0,31	AH 315
22315 CCK/W33		73	1,05	H 2315		HE 2315		HA 2315	–	–		68	0,53	AHX 2315
22216 CCK	70	59	1,00	H 316	2 3/4	HE 316	2 11/16	HA 316	–	–	75	48	0,37	AH 316
21316 CCK		59	1,00	H 316		HE 316		HA 316	–	–		48	0,37	AH 316
22316 CCK/W33		78	1,30	H 2316		HE 2316		HA 2316	–	–		71	0,60	AHX 2316

Lubrication instructions

A correctly lubricated rolling bearing will not become worn as the lubricant will prevent metallic contact between the various bearing components. Where the machine manufacturer indicates the type of lubricant to be used and period of relubrication these instructions should be followed. If, however, instructions are not available, the following recommendations may prove useful.

All rolling bearings can, as a rule, be lubricated either with grease or oil. Spherical roller thrust bearings must normally be lubricated with oil, grease being permitted only where operating speeds are very low. Sealed or shielded bearings are "lubricated-for-life", i.e. they are filled with grease before leaving the factory and do not require relubrication.

The choice of lubricant is primarily determined by the operating temperature and speed of the bearing. Under normal operating conditions grease can usually be used. It is more easily retained in the bearing arrangement than oil and also serves to protect the bearing against moisture and impurities. Oil lubrication is generally recommended where speeds or temperatures are high, when heat is to be conducted away from the bearing, or where adjacent machine components are oil lubricated. Limiting speeds for grease and oil lubrication for individual bearings are given in the bearing tables.

Always store lubricants in clean, sealed containers in a dry store.

SKF will, upon request, suggest suitable greases or oils. Details of the SKF range of lubricants may be found on pages 48 and 49.

Grease lubrication

Types of grease

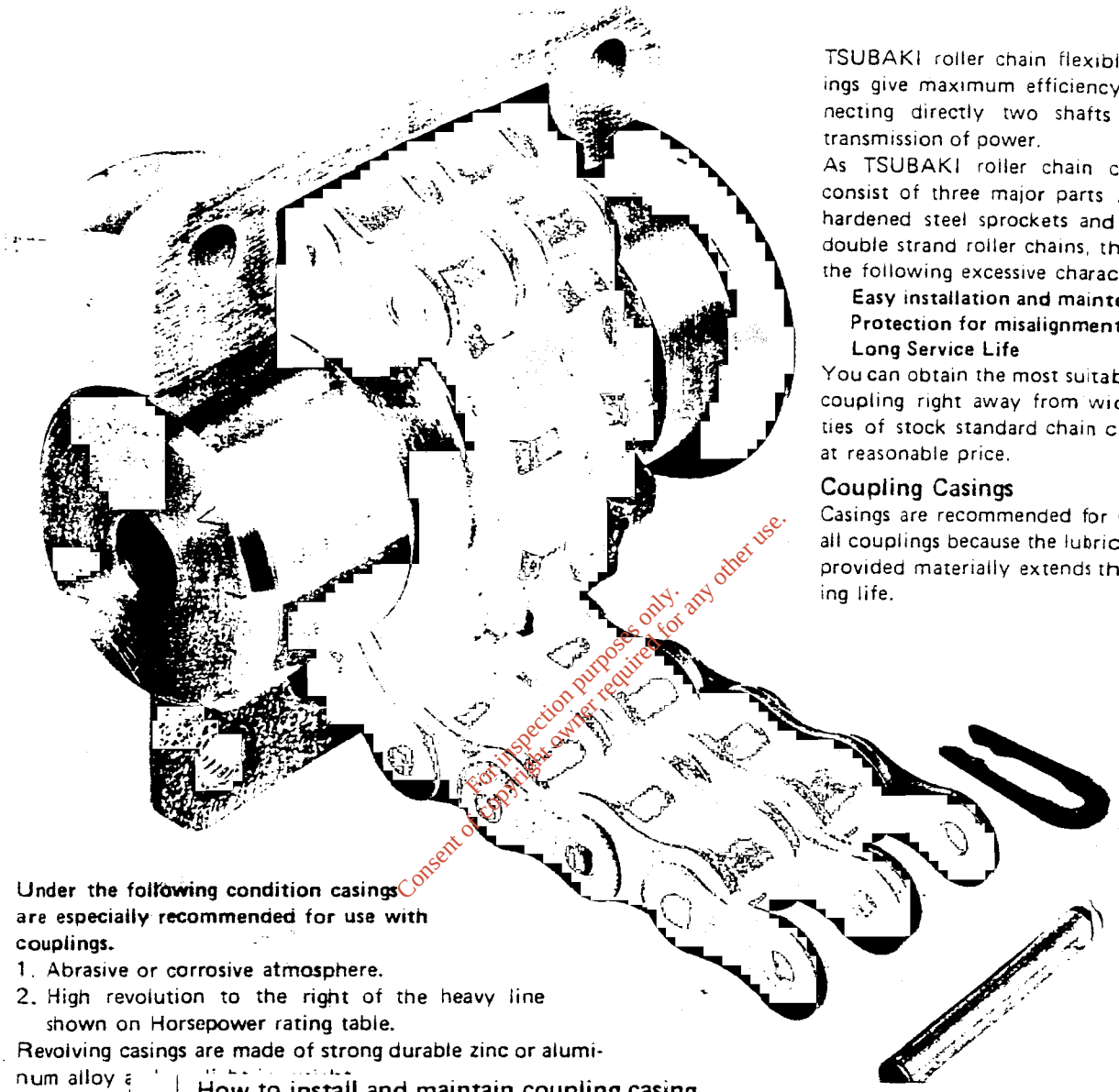
Lubricating greases are oils which contain thickeners, generally in the form of metallic soaps. When selecting a suitable grease it is necessary to consider the consistency, operating temperature range and rust-inhibiting properties. Consistency is classified according to the National Lubricating Grease Institute (NLGI) scale. Generally speaking, metallic soap base greases of consistency 1, 2 or 3 may be used for rolling bearings.

The upper temperature limit for calcium base greases is approximately +60 °C. Calcium base greases containing additions of lead soaps are particularly suitable for "wet" bearing arrangements, for example, the wire section of a paper-making machine. Certain calcium/lead base greases provide protection against salt water.

Sodium base greases are available for the temperature range −30 to +80 °C and provide protection against corrosion in that they absorb any moisture and form an emulsion with it. However, if the amount of moisture absorbed becomes excessive, the lubricating properties will deteriorate and there is a risk that the grease will run out of the arrangement.

Lithium base greases may generally be used at temperatures of −30 to +110 °C and they are resistant to water. If moisture can enter the bearing arrangement, the grease should also contain a rust inhibitor. Lithium base greases with lead soap additives provide relatively good lubrication even where free water can penetrate.

TSUBAKI ROLLER CHAIN FLEXIBLE COUPLINGS



TSUBAKI roller chain flexible coupl-ings give maximum efficiency in con-necting directly two shafts for the transmission of power.

As TSUBAKI roller chain couplings consist of three major parts . . . two hardened steel sprockets and one RS double strand roller chains, they offer the following excessive characteristics.

Easy installation and maintenance
Protection for misalignment
Long Service Life

You can obtain the most suitable chain coupling right away from wide varie-ties of stock standard chain couplings at reasonable price.

Coupling Casings

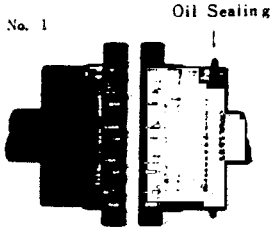
Casings are recommended for use with all couplings because the lubrication so provided materially extends the coupl-ing life.

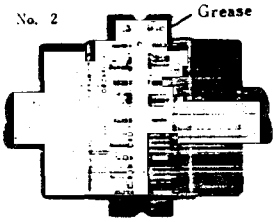
Under the following condition casings are especially recommended for use with couplings.

1. Abrasive or corrosive atmosphere.
2. High revolution to the right of the heavy line shown on Horsepower rating table.

Revolving casings are made of strong durable zinc or alumi-num alloy a

How to install and maintain coupling casing



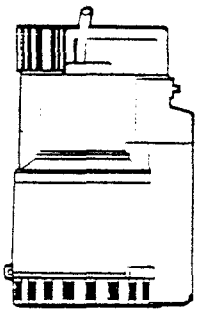


1. Place the ring of oil sealing on either hub of coupling sprockets. – see illustration No.1.
2. Mount the coupling sprockets accurately according to the installation n for the chain coupling.
3. Before wrapping the chain on the coupling sprockets, fill the grease in space between the faces of coupling sprockets. – see the illustration No.2
4. Fill the grease sufficiently in the casing.
5. Inserting the gasket into the conjunction parts of the halves of casi mount the casing on the coupling and tighten it by the setscrews.
6. Refill the grease according to the following table.

More than half of maximum revolution	1,000 hours	2,000 hours
Less than half of maximum revolution	2,000 hours	4,000 hours

Part. No. 1597 230

Installation and Operating Instructions



Robusta 100 TS*
200 TS

Drainage Pumps

CONTENTS

1 Description
1.1 General data
1.2 Applications
1.3 Name-plate, technical data
1.3.1 Dimensions
1.3.2 Discharge line connection

2 Operating and commissioning
2.1 Transport and usage
2.1.1 Application under special conditions
2.2 Installation example
2.3 Electrical connection
2.4 Automatic level control

3 Maintenance
3.1 General maintenance hints
3.2 Cleaning the inlet screen
3.3 Cleaning the level control

*NOTE The Robusta 100 TS varies from the Robusta 200 TS only in the hydraulic section and discharge data. See also Fig. 5.

1 **Description**

1.1 **General data**

Important instructions which effect the technical reliability or the operational safety have had particular attention drawn to them.

CARE Applies to working or operating conditions which must be precisely adhered to in order to avoid danger to personnel.

ATTENTION Refers to working or operating procedures which must be exactly adhered to in order to avoid damage or destruction of the pump.

NOTE Applies to technical comments to which the user should pay particular attention.

The illustrations, e.g. (3/2), indicate the Fig. No. by means of the first digit, while the second digit indicates the location in this illustration.

.2 Applications

The drainage pumps of the ROBUSTA range are effective quality products suitable for the following applications:

- Pumping of clear water
- Pumping of rain water
- Pumping of waste-water with a maximum solids content of 0.5 %, and a maximum solids size of 10 mm.
- Textiles, paper, leaves, etc. cannot be pumped.

CARE These pumps should not be used for the pumping of faecal matter, or for the pumping of flammable or explosive liquids or liquids containing gases.

1.3 Name-plate, technical data

We strongly recommend that the data on the pump name-plate be written in to the name plate illustration Fig. 1, so that the technical data as well as the Purchase Invoice are readily available.

NOTE In the case of any queries, the pump type, item number, and serial number should be given.

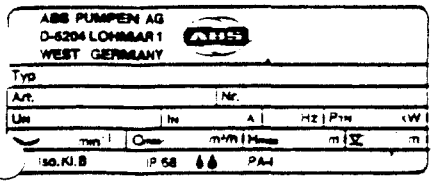


Fig. 1 Name-plate

	Pump Type	
	Item No.	
	Pump No.	
U_N	Bemessungsspannung	V
I_N	Nennstrom	A
	Frequenz	Hz
P_{1N}	Leistungsaufnahme	kW
	Drehzahl	min^{-1}
Q_{max}	max. Förderstrom	m^3/h
H_{max}	max. Förderhöhe	m
Σ_{max}	max. Tauchtiefe	m
KL.B	Isolationsklasse B	120°C
IP 68	Schutzart	
	druckwasserdicht	
PA-H	Prüfnummer Institut für Bautechnik Berlin	

1.3.1 Dimensions

Dimensions in mm

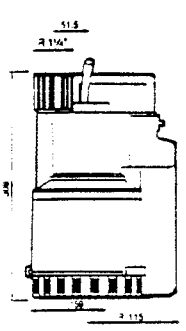


Fig. 2 Dimensions

1.3.2 Discharge line connection

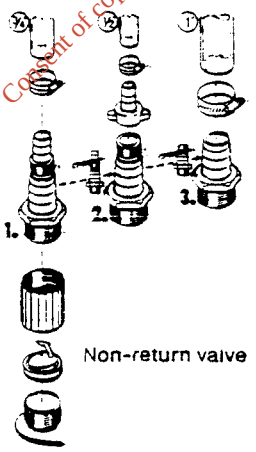


Fig. 3 Discharge line connection

2 Operating and commissioning

2.1 Transport and usage

ATTENTION The pump should never be raised by the cable.

For transport purposes the handle (5/1) should be used. If necessary, the pump may be suspended by a rope or chain attached to the handle.

The power supply cable to the pump should be installed in such a manner that it cannot be caught up in the suction inlet.

2.1.1 Application under special conditions

In the case of use on muddy or sandy ground then the pump should be operated suspended in the medium, or be placed on a large base plate.

ATTENTION Fluids containing sand or other abrasive particles reduce the life of the hydraulic parts and the shaft seal.

In the case of air temperatures below 0° C the pump must be run continuously or remain always underneath the water surface.

ATTENTION The pump should be removed if there is a danger of the liquid freezing completely.

The oil chamber has been filled at the works with an oil which does not damage the environment (WHITEREX 408 or PARALIQ 12). A regular oil change is not necessary.

2.2 Installation example

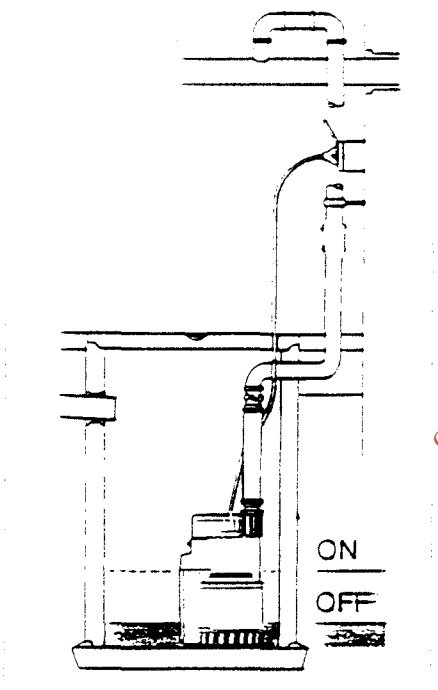


Fig. 4 Application example using a single pump

2.3 Electrical connection

Before operating the pump have an expert check that one of the electrical safety devices is present. Earthing, Neutral connection. Earth leakage circuit breaker, etc. must conform to the regulations of your Local Electricity Supply Board, and must be in perfect working order.

The mains voltage should be the same as the voltage given on the name-plate of the pump. In the case of pumps used with a plug, a socket with earth connection should be provided above possible flood level. In the case of pumps supplied without a plug, the power leads and the pump cable should be connected to the control unit by a qualified person in accordance with the local regulations.

The unit should be protected by a correctly dimensioned slow-blow fuse. We recommend the use of an overload relay.

In the case of usage in swimming pools, garden ponds and their protective areas, the Regulations VDE 0100 Section 702 or other local regulations should be strictly complied with.

If you have any doubts consult an electrical expert.

2.4 Automatic Level Control

The TS-version is supplied ready for automatic operation and fitted with an automatic level control. For automatic operation the switch on the side (5/2) is set to "AUTO".

The TS-automatic level control switches the pump on and off at pre-set switching levels. The lowest switching off point is chosen so that the pump is switched off before it begins to suck in air.

In the case of Twin Pumping Stations with a control unit and additional KS-float switches, the selector switch of the pump should be set to "HAND", and the selector switch on the control unit should be set to "AUTOMATIC".

3 Maintenance

NOTE The maintenance hints given here are not instructions for DIY repairs. Repair work on these pumps requires specialized knowledge.

3.1 General maintenance hints

ABS pumps are proven quality products which are subject to a careful final inspection before leaving the factory. Lubricated-for-life ball-bearings together with monitoring devices ensure optimum availability of the pump. The pump should, however, be installed and used as per the operating instructions.

Should nevertheless a fault arise, do not improvise, but ask your ABS Service for assistance. That applies particularly in the case of repeated switching off of the pump by the overload relay in the control unit or by the thermal sensor of the thermo control system.

For a long operating life we recommend regular checks and care. The ABS service organization will be glad to assist you in individual cases, and will help you solve your pumping problems.

NOTE Defective pumps should be returned unopened to an authorized Repair Workshop. ABS Pumps does not accept any warranty claims unless original ABS spare parts have been used in any repair work.

3.2 Cleaning the inlet screen

CARE Before beginning any cleaning work ensure that the pump is fully disconnected from the mains, and that it cannot be inadvertently switched back on.

If there are leaves or fibrous matter in the medium being pumped we recommend that the inlet screen be cleaned from time to time.

- Inlet screen (5/5) is opened by turning it to the left out of the bayonet connection and then removed.
- The cleaned screen (5/5) is placed on the pump (5/1) and locked by turning to the right.

3.3 Cleaning the level control

CARE Before beginning any cleaning work ensure that the pump is fully disconnected from the mains, and that it cannot be inadvertently switched back on.

- Withdraw the float housing (5/3) to the right from the pump (5/1).
- Remove float (5/4). Clean all parts.
- Replace the float with its rounded flat edges facing into the float housing (5/3).
- Replace the float housing (5/3) on the pump housing (5/1).

CARE When pressing on the float housing it is necessary that the change-over switch "HAND–AUTOMATIC" be in the lower position.

- Press the selector switch upwards and check the pump at setting "HAND".

NOTE Should damage occur due to the customer cleaning the pump himself, ABS Pumps does not accept any responsibility for this damage, (pump or consequential damage). For this reason we recommend that ABS Service Centres be used.

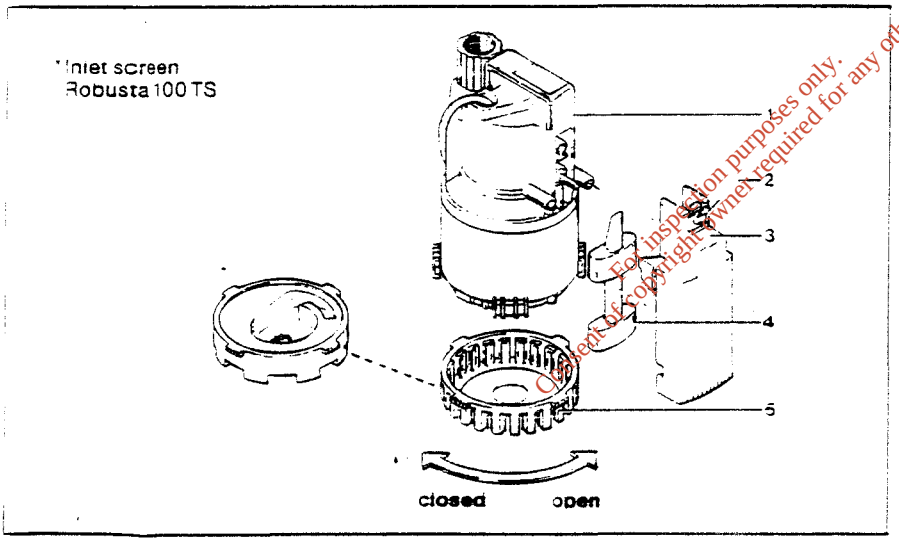


Fig. 5 Automatic level control, dismantled.

Installation, maintenance and guarantee service by:

Bed.-Anl. 310066/12/87

Bedienungsanleitung
Mode d'emploi
Operating instructions

SYN 166 h
SUL 186 h
MEM 196 h
TM 176 h

THEBEN-WERK
Zeitautomatik GmbH
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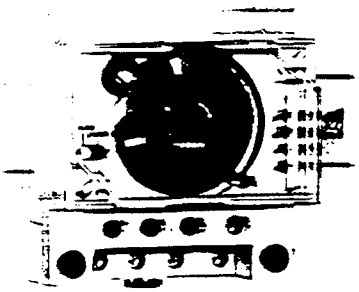
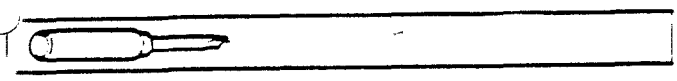
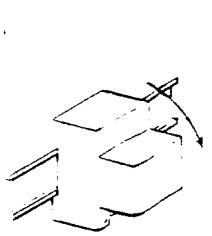
D-7452 Haigerloch 1
Telefon (07474) 692-0
Telegramme: Theben
Telex: 767414
Telefax: (07474) 692150

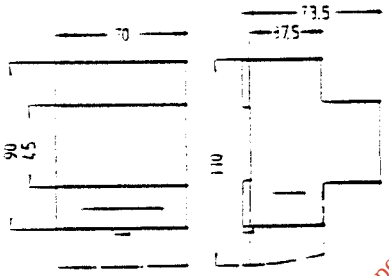
Theben

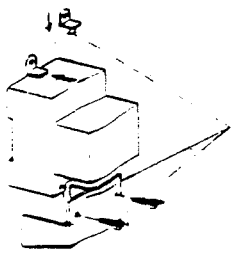
Printed in W.-Germany



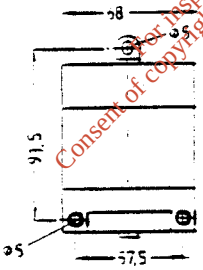


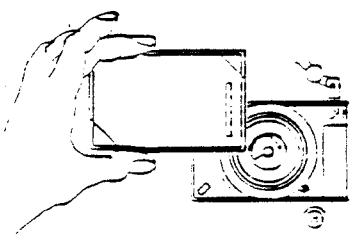




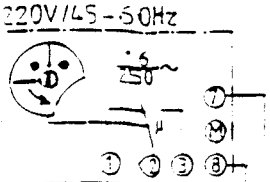


Nr. 907 0 063





Synchron
220V/50 Hz
Quartz R = 100h (Accu)
220V/45-60Hz



Quarzwerk läuft bei angelegter Spannung nach wenigen Minuten von selbst an.
Die volle Gangreserve wird nach ca. 3 Tagen erreicht.

A la mise sous tension, le mouvement à quartz démarre de lui-même au bout de quelques minutes. La réserve de marche pleine sera obtenue après 3 jours de branchement sur le secteur.

The quartz movement starts automatically after a few minutes by an applied voltage. The full power reserve is built up after about 3 days.

Funcionamiento por cuarzo, se pone en marcha después de pocos minutos con la tensión conectada. La carga completa de la reserva de marcha se adquiere después de 3 días aprox. conectado a la red.

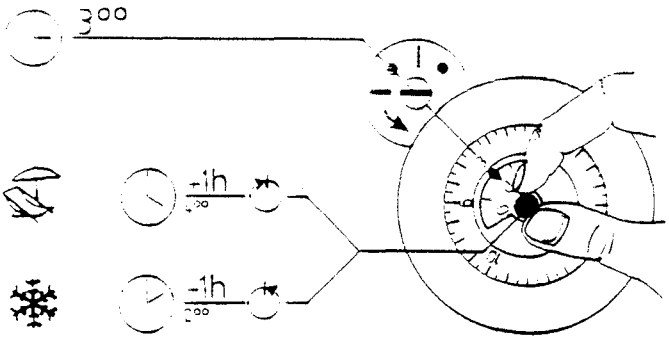
Il movimento al quarzo incomincia a funzionare automaticamente dopo pochi minuti dall'collegamento a rete.
La riserva di marcia completa si ottiene dopo 3 giorni.

Het quartzuurwerk loopt na aansluiting op de netspanning na enkele minuten aan.
De volle gangreserve wordt na ca. 3 dagen bereikt.

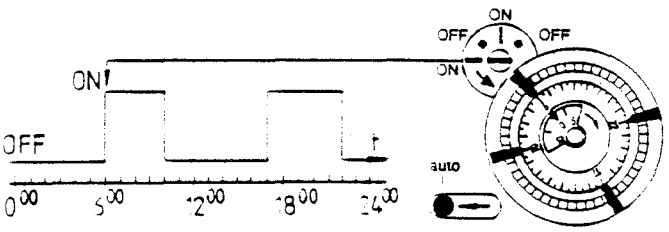
Quartsverk startar efter få minuters tillslutning. Total gångreserve nås efter ca. 3 dagars drift.

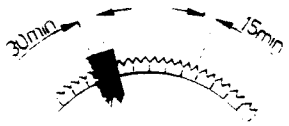
Quarzurverk: startar inom några minuter efter ansluten spänning.
Full gångreserv erhålles efter ca. 3 dygns gångtid.

Kvartsikoneisto aynnistyy muutaman minuutin kuluttua verkkoon liitännän jälkeen. Täysmaaraonen varakäyntiaika saavutetaan kesken ensin otetun käynnistä noin 3 päivää.



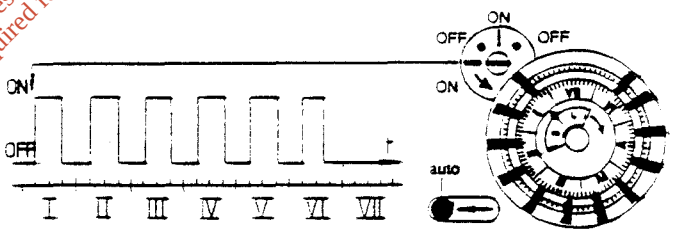
24 h Programm

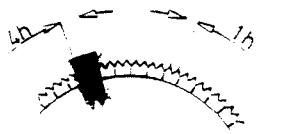




3.43.260 3.43.261

7 d Programm





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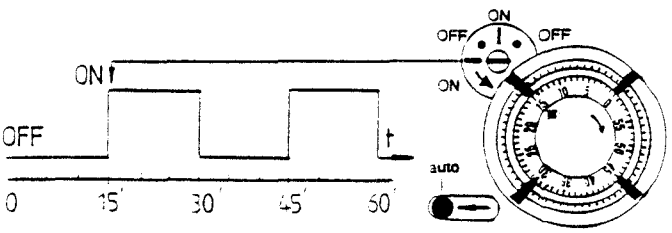
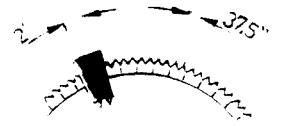
60' Programm





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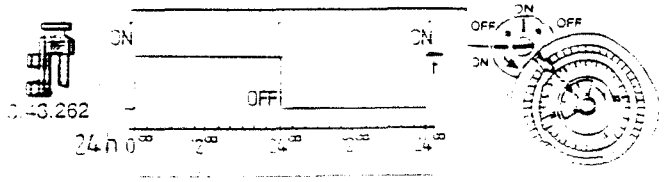
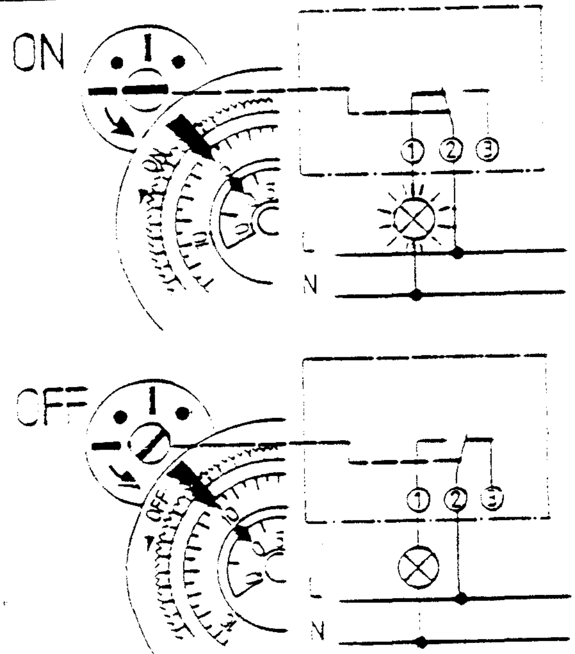
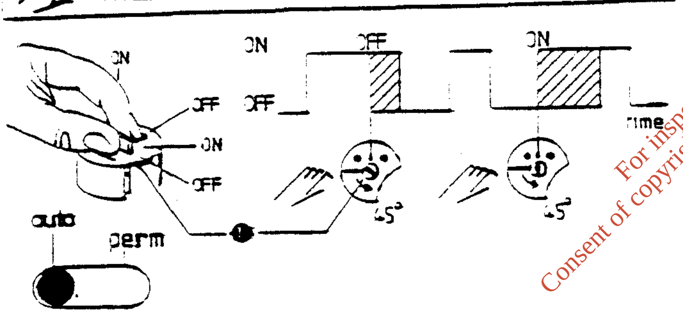
(Programm Order Nr. 3.43.262)



Programm



manual



(D) Handschaltung EIN/AUS (Schaltungsvorwahl)
Schaltachse ❶ in Pfeilrichtung um eine Raste drehen EIN oder AUS. Die Handschaltung wird automatisch mit dem nächsten entgegengesetzten Befehl des Automatikprogramms aufgehoben.

(F) Commande manuelle Marche/Arrêt (Commande d'anticipation)
À l'aide d'un tournevis tourner la commande manuelle ❶ dans le sens de la flèche. MARCHE ou ARRET. L'instruction suivante, contraire au programme en cours, met à fin l'anticipation. Le programme reprend son cycle normal.

(GB) Manual Control ON/OFF (Override Control)
Turn the control axis ❶ in direction of arrow by one notch: ON or OFF. The manual control ist automatically annuled by the following counteracting command of the automatic program sequence.

(E) Accionamiento manual CONECTADO/DESCONECTADO (programacion del interruptor)
Girar una posicion del eje de programacion ❶ en el sentido indicado por la flecha CONECTADO DESCONECTADO. La programacion se anulara automaticamente con la proxima orden contraria del programa automatico.

(P) Comando Manual Ligado/Desligado (Pre-selecção)
Com uma chave de parafusos, rodar o eixo do comutador ❶ no sentido da flecha, para seleccionar as posições Ligado ou Desligado. O comando manual será automaticamente desligado quando da proxima ordem em contrario a existente do programa automatico.

(I) Comando Manual Marcia/Arresto (Comando di preselezione)
Con un cacciavite selezionare il comando manuale ❶ girando nel senso della freccia Marcia Arresto. Il comando manuale viene automaticamente annullato con la seguente manovra di comando automatico.

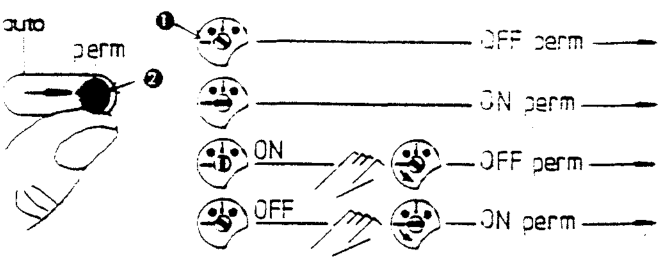
(NL) Handbediening IN/UIT (voorkeurschakeling)
Draai de draaiknop ❶ in de richting van de pijl op IN of UIT. De handbediening wordt automatisch gestoord door het eerstvolgende tegengestelde bevel van het programma, waarna het programma zijn normale cyclus vervolgt.

(DK) Manuel IND/UD (koblingsforvalg)
Drej koblingsindikatoren ❶ eet trin i pilens retning, IND eller UD. Den manuelle kobling, IND/UD, ophæves automatisk af den efterfølgende, modsat rettede, programmerede kobling.

(S) Manuell koppling PÅ/AV (förhandskoppling)
Vrid kopplingsaxeln ❶ i pilens riktning till PÅ eller AV. Den manuella kopplingen avbryts automatiskt vid nästa koppling.

(SF) Käsiohjaus PÄÄLLÄ/POIS (esivalitsin)
Kääntökytkintä ❶ yksi pykälä nuolen suuntaan joko PÄÄLLÄ tai POIS. Käsiohjaus poistuu automaattisesti seuraavasta automatiikan antamasta vastakkaisesta komennosta.

permanent ON/OFF



(D) Dauerschaltung EIN/AUS
Handhebel ❷ auf »perm« = Dauerschaltung stellen, dann durch Drehen der Schaltachse ❶ in Pfeilrichtung die gewünschte Dauerschaltung EIN oder AUS wählen. Durch Umschaltung des Handhebels ❷ auf »Auto« = Automatik wird die Dauerschaltung wieder beendet. Der momentane Schaltzustand bleibt jedoch bis zum nächsten entgegengesetzten Befehl des Automatikprogramms bestehen. Sofortige Korrektur ist durch Handschaltung (Schaltungsvorwahl) möglich.

(F) Commande permanente Marche/Arrêt
Commutateur ❷ en position »perm« = État de contact permanent. Tourner ensuite la commande manuelle ❶ dans le sens de la flèche pour sélectionner l'état du contact permanent désiré MARCHE ou ARRET. Commutateur ❷ en position »Auto« = Automatique. Le cycle automatique se rétablit dans la position du contact de l'état permanent. Utilisez la commande manuelle ❶ pour modifier l'état du contact MARCHE ou ARRET.

(GB) Permanent Control ON/OFF
Set the hand lever ❷ to »perm« = permanent control; turning the control axis ❶ in direction of arrow, the required permanent control ON or OFF can now be adjusted. Turning the hand lever to »Auto« = Automatic Control, the permanent control ist erminated. The actual switch position ist maintained until the next counteracting command of the automatic program sequence ist triggered. An immediate correction can be carried out by means of the manual control (override control).

(E) Accionamiento permanente CONECTADO/DISCONECTADO
Posicionar el mando manual ❷ en »Perm« = accionamiento permanente y elegir la correspondiente posición CON/DESCON girando el eje de programación ❶. Cambiando la posición del mando manual ❷ a AUTO = Automatico, se anula la conexión permanente. No obstante, se mantiene la actual función hasta la proxima orden contraria del programa automatico. La corrección inmediata se efectua por modio del accionamiento manual (programacion del interruptor).

(P) Comando permanente Ligado/Desligado
Colocar o manipulo ❷ em »perm« = Comando permanente; rodando o eixo do comutador ❶ no sentido da flecha, seleccionar a desejada posicão Ligado ou Desligado do comando permanente. Comutando o manipulo ❷ para a posicão »Auto« = Automatico, o comando permanente e desligado. O estado de ligacão permanece no entanto momentaneamente até a proxima ordem contraria a existente do programa automatico. Uma correção imediata e possivel por via do Comando Manual.

(I) Comando Permanente Marcia/Arresto
Levetta in posizione ❷ »perm« = comando permanente. Girare successivamente il comando manuale ❶ nel senso della freccia per selezionare il comando permanente desiderato Marcia o Arresto. Levetta ❷ in posizione auto = Automatico, il ciclo automatico ritorna nella posizione di comando permanente. Utilizzare il comando manuale ❶ per modificare il comando Marcia o Arresto.

(NL) Continu schakeling IN/UIT
Zet omschakelknop ❷ op »perm« (d. i. continu schakeling), waarna met de draaiknop ❶ draaiend in de richting van de pijl, de gewenste stand IN of UIT gekozen wordt. Door het omzetten van de omschakelknop ❷ op »auto« (d. i. automatische schakeling) wordt de continu schakeling weer opgeheven. De ingenomen schakelstand blijft echter gehandhaafd tot het eerstvolgende tegengestelde bevel van het programma. Eventuele correcties kunnen direct uitgevoerd worden met behulp van de handbediening (voorkeurschakeling).

(DK) permanent IND/UD
Auto/perm omskifteren ❷ i stilling »perm«, herefter vælges den ønskede konstantkobling IND eller UD ved at dreje koblingsindikatoren ❶ i pilens retning. Når omskifteren føres tilbage i stilling »auto« = automatik ophæves konstantkoblingen. Den momentane koblingsstilstand forbliver dog uændret indtil næste modsatrettede kobling. Omgående korrektur er mulig ved anvendelse af knap ❶ (koblingsforvalg).

(S) Permanent koppling PÅ/AV
Ställ spaken ❷ på »perm« = Permanent koppling, därefter genom att vrida kopplingsaxeln ❶ i pilens riktning, kan AV eller På väljas. Genom att vrida spaken ❷ till »auto« = Automatisk koppling, avbryts den permanenta kopplingen. Den nuvarande kopplingsläget kvarstår ända tills nästa koppling. Omedelbar korrektur är möjlig genom den manuella kopplingen (förhandskoppling).

(SF) Pakko-ohjaus PÄÄLLÄ/POIS
Siirrä vipu ❷ asentoon »perm« = pakko-ohjaus. Kääntämällä kytkintä ❶ nuolen suuntaan voidaan valita haluttu kytkentä PÄÄLLÄ tai POIS. Siirtämällä vipu ❷ asentoon »auto« = automatiikka, pakko-ohjaus päättyy. Kytkentätila säilyy kuitenkin vielä seuraavaan automatiikan antamaan vastakkaiskomentoon asti. Tarvittaessa välitön korjaus voidaan kuitenkin suorittaa käsiohjauksella, kytkin ❶.

Service

(A) SIBLIK ELEKTRIK GES.M.B.H., Wewgasse 6, Postf. 330, 1031 Wien, Tel. 0222-7566840, Tlx. 131341 (sibl).

(CH) TEMPOLEC S. A., 39, Route de Bienne, 3530 Thun, Tel.: 071-59.00.39-59.06.02, Tlx.: 51298 (tempol).

(CH) WISAR WYSER + ANLIKER, Grünhaldenstr. 41, Postf., 8052 Zürich, Tel.: 01-301.22.33, Tlx.: 54044 (wisar).

(DK) BENNIKE + WANDER A/S, Håndværkerbyen 43, DK-2670 Greve Strand, Tlf.: 02-908000, Tlx.: 33833 (bewaen).

(E) GUIJARRO HERMANOS S.L., Espoz 6, Madrid-28013, Tel.: (01) 241.99.17, Tlx.: 47787 (ghsl).

(F) THEBEN S.A.R.L., 32 — 38 rue Bernard-Zone Industrielle des Vignes, 93012 Bobigny Cedex, Tel. (01) 48.44.71.71, Tlx.: 212470 F.

(GB) SMITHS INDUSTRIES ENVIRONMENTAL CONTROLS COMPANY, Waterloo Road, Cricklewood, London NW 2 7 UR, Tel.: 01 — 450-8944, Tlx.: 923017

(I) THEBEN ITALIA S.R.L., Via Ciro Menotti 11, I-20129 Milano, Tel. (02) 7386141-2-3-4, Telex 314296

(N) AS DAN..., P. O. Box 219, ... Lillestrøm, Tlf: (06) 815133, Tlx: 76... 27

(NL) ... B.V., P. O. Box 21, ... AA Schiedam, Tel. 010—4730122, Tlx: 23...37 (litho).

(P) ... FERNANDES ..., Av. Gomes Pereira ..., 1500 Lisboa, Tel. (01) 1709887, Tlx 18... (neves).

(S) ... W. OLSSON ..., ...gatan 10, ...912 Stockholm-Solna, ...

(SF) ... ALVELO ..., Box 125, ...katu 3, ... Helsinki 18, Telefon ...59877, Tlx: ...67

- TROUBLESHOOTING

Firstly, it can be said that most BMS plants operate continuously and successfully to the satisfaction of their operators. Nevertheless, as with any dynamic system, problems can and do arise from time to time. The purpose of this Chapter is to help the operator diagnose and hopefully rectify the most common problems. For ease of reference the Chapter is split into two sections:

Section I - Mechanical/Electrical Problems
Section II - Process Problems

SECTION I - MECHANICAL/ELECTRICAL PROBLEMS

	SYMPTON	POSSIBLE CAUSE	CHECK/REMEDY
A.	Rotor(s) & Shaft Not Turning	Isolator Switch Off	Switch On
B.	Ditto	Power Cut	Restore Power
C.	Ditto	Previous Power Outage and no automatic restart	Restart switch manually
D.	Ditto	Motor Fault	Consult Electrician
E.	Ditto	Gearbox Fault	Consult Electrician or Fitter
A.	Shaft Turning, Rotor Static	Chain Coupling Fault	Consult Fitter
B.	Ditto	Shaft Key Steel Absent	Consult Fitter
5A.	Rotors turning with grinding noise	Unlubricated Gearbox	Consult Fitter
B.	Ditto	Unlubricated Bearings	Consult Fitter
A.	Rotors turning intermittant noise	Physical Obstacle	Check for foreign objects in Biozone
B.	Ditto	Ungreased Coupling	Consult Fitter

	SYMPTON	POSSIBLE CAUSE	CHECK, REMEDY
[illegible]	Rotors run for short period only	Faulty Power Supply	Consult Electrician
6A.	Motor Overheating	Insufficient Ventilation	Check Air Fins and Air Supply
6B.	Ditto	Incorrect Motor Size	Check with BMS or Agents
7.	Shaft Wearing at Bearings	Unlubricated Bearings	Consult Fitter
8.	Hinges Stiff	Lacking Oil	Apply lubricating oil
9.	Locks Stiff	Lacking Oil	Apply lubricating oil
10.	Rotors rubbing against outlet trays	Longitudinal shift of rotors (normally occurs in transit)	Consult Fitter
11.	Rotors jamming against loose timbers	Failure to remove transit chocks	Remove transit chocks

SECTION II - PROCESS PROBLEMS

SYMPTON	POSSIBLE CAUSE	CHECK/REMEDY
A. Rotor turning but high water level in first rotor compartment	Rotor turning wrong direction	Reverse motor polarity
B. Ditto	Excessive/Storm Flow	If continuous seek cause upstream
C. Ditto	Excessive Recirculation	Regulate recirculation to less flow
D. Ditto	Blockage in system after Aerotor	Remove blockage
1. Excessive foaming around rotors	System newly commissioned	Should subside gradually
A. Lack of Biomass growth on rotors	Inhibiting factor in influent	Check Ph oil and grease etc.
B. Ditto	System only just commissioned	Wait 3 - 4 weeks
C. Ditto	Low nutrient value in influent	Probably implies low BOD in final effluent also
4A. Biomass stripping on rotors	Rotors stopped for period (long enough to dry on upper side)	Ensure continuous rotation
4B. Ditto	Rapid change in influent chemical composition	Investigate source

	SYMPTON	POSSIBLE CAUSE	CHECK/REMEDY
A.	Grey biomass growth on first rotor	Generally normally acceptable 1st stage growth	Don't worry
A.	Grey biomass growth on all rotors	System biologically overloaded	Check incoming BOD/Aerotor sizing
B.	Ditto	Excess septicity in Primary Tank	Desludge Primary Tank
C.	Ditto	Grease/Oils present in influent	Ensure effective grease trapping upstream
A.	Malodour Present	Sludge Storage period exceeded	Desludge
B.	Ditto	Excess septicity due to prolonged retention in PST (low flow)	Reduce PST capacity or ventilate and increase recirculation
C.	Ditto	Adverse chemical present in influent	Identify and eliminate source
D.	Ditto	Biozone stopped for period and restarted	Should dissipate within 24 hrs
E.	Ditto	System biologically overloaded	Check incoming BOD/Aerotor sizing
F.	Ditto	Lack of Ventilation to rotors	Check area around lids to ensure free air flow

SYMPTON	POSSIBLE CAUSE	CHECK/REMEDY
A. Poor quality Final Effluent (presuming correct mechanical function)	System biologically overloaded	Check incoming BOD/Aerator sizing
B. Ditto	Adverse chemical/Ph balance in influent	Identify and eliminate
C. Ditto	Final Settlement Tank needs desludging	Desludge and introduce auto-desludging
D. Ditto	Final Settlement Tank not settling solids	Re-design Humus Tank (eg. Hopper Bottom)
E. Ditto	Excess suspended solids in final effluent	Consider Saran or similar screens
F. Ditto	System hydraulically over loaded	Identify and eliminate excess flow or re-size works accordingl
G. Ditto	Sample taken soon after first commission or restart	Wait for adequate biomass growth

C.2 OUTFALL DESIGN & CONSTRUCTION

The outfall associated with the primary discharge point serving the Glenville Agglomeration is a direct discharge to the Owenbawn River. Details relating to the primary discharge point can be seen at Attachment B.3. These details include reference and location.

The outfall associated with the primary discharge point is constructed from a 225mm diameter uPVC sewer pipe. The only known design criteria associated with the outfall are basic hydraulic capacity criteria.

The outfall associated with only secondary discharge point serving the Glenville Agglomeration is a direct discharge to the Owenbawn River. Details relating to the secondary discharge point can be seen at Attachment B.4. These details include reference and location.

The outfall associated with the secondary discharge point is constructed from 150mm diameter concrete sewer pipe draining to an open channel which in turn discharges directly to the Owenbawn River. The only known design criteria associated with the outfall are basic hydraulic capacity criteria.

There are no storm overflow points serving the Glenville Agglomeration.

Waste Water Discharge Licence Applications

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Discharge Point

Cork County Council > Glenville > SW-2

Discharge Point Details | Emissions to surface/ground waters | Dangerous Substance Emissions | Monitoring Points

Discharge Point Details

Emission To:	Surface Water	Flow rate of receiving waters (Dry Weather Flow) (m^3/sec)	0.550118399
Emission Point Reference Number	SW-2	Flow rate of receiving waters (95% Flow) (m^3/sec)	0.087218438
Water Body	River Water Body		
Local Authority Ref No.		Volume to be emitted (Normal / Day) (m^3)	
Source of Emission	Foul Pumping Station Overflov	Volume to be emitted (Maximum / Day) (m^3)	
Location	Glenville	Volume to be emitted (Maximum Rate / Hour) (m^3)	
Easting (6 digits)	171440	Volume to be emitted (Dry Weather Flow) (m^3/sec)	
Northing (6 digits)	089491		
	Verified using GPS	Periods of Emission (Minutes per Hour)	
Name of receiving waters	Owenbawn River	Periods of Emission (Hours per Day)	
River Basin District	South Western RBD	Periods of Emission (Days per Year)	
Designation of receiving waters	"Good" (ref. F.1)		
		Frequency of Discharge (days / annum):	
		Quantity of Waste Water Discharged (m^3/annum):	

Additional Comments (e.g. commentary on zero flow or other information deemed of value)

The frequency, duration and quantity of discharge are unknown.
This pumping station is inspected routinely and maintained as required.

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Discharge Point

Cork County Council > Glenville > SW-1

Discharge Point Details | Emissions to surface/ground waters | Dangerous Substance Emissions | Monitoring Points

Discharge Point Details

Emission To:	Surface Water	Flow rate of receiving waters (Dry Weather Flow) (m³/sec)	0.550118399
Emission Point Reference Number	SW-1	Flow rate of receiving waters (95% Flow) (m³/sec)	0.087218438
Water Body	River Water Body		
Local Authority Ref No.		Volume to be emitted (Normal / Day) (m³)	122
Source of Emission	Waste Water Treatment Plant	Volume to be emitted (Maximum / Day) (m³)	729
Location	Glenville	Volume to be emitted (Maximum Rate / Hour) (m³)	30
Easting (6 digits)	170996	Volume to be emitted (Dry Weather Flow) (m³/sec)	0.08
Northing (6 digits)	87592		
	☑ Verified using GPS	Periods of Emission (Minutes per Hour)	60
Name of receiving waters	Owenbawn River	Periods of Emission (Hours per Day)	24
River Basin District	South Western RBD	Periods of Emission (Days per Year)	365
Designation of receiving waters	"Good" (ref. F.1)		
		Frequency of Discharge (days / annum):	365
		Quantity of Waste Water Discharged (m³/annum):	133043

Additional Comments (e.g. commentary on zero flow or other information deemed of value)

```
All volumes to be emitted above are estimated based on the following:
1/. Per Capita Contributory Rate = 225 ltr/head/day;
2/. Normal Flow = 1DWF;
3/. Maximum Flow = 6DWF;
4/. Annual Discharge = 3DWF.
```

Save | Cancel

Primary Discharge Point:			
Estimated PE =	540		
Estimated DWF Flow/Head =	225	ltr/day	
DWF Volume to be Emitted =	122	m3/day	
DWF Volume to be Emitted =	0.08	m3/s	
6DWF Volume to be Emitted =	729	m3/day	
6DWF Volume to be Emitted =	30	m3/hr	
Quantity Discharged =	133,043	m3/yr	(3DWF)
Secondary Discharge Point:			
Bridge View Terrace:			
Estimated PE =	40		
Estimated DWF Flow/Head =	225	ltr/day	
DWF Volume to be Emitted =	9	m3/day	
DWF Volume to be Emitted =	0.01	m3/s	
6DWF Volume to be Emitted =	54	m3/day	
6DWF Volume to be Emitted =	2	m3/hr	
Quantity Discharged =	9,855	m3/yr	(3DWF)
Glendule Estate:			
Estimated PE =	56		
Estimated DWF Flow/Head =	225	ltr/day	
DWF Volume to be Emitted =	13	m3/day	
DWF Volume to be Emitted =	0.01	m3/s	
6DWF Volume to be Emitted =	13	m3/day	
6DWF Volume to be Emitted =	0	m3/hr	
Quantity Discharged =	4,599	m3/yr	(1DWF)
Bridge View & Glendule Combined:			
Estimated PE =	96		
Estimated DWF Flow/Head =	225	ltr/day	
DWF Volume to be Emitted =	22	m3/day	
DWF Volume to be Emitted =	0.02	m3/s	
6DWF Volume to be Emitted =	67	m3/day	
6DWF Volume to be Emitted =	2	m3/hr	
Quantity Discharged =	14,454	m3/yr	(1DWF)

D.2 TABULAR DATA ON DISCHARGE POINTS

PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING
Point Code Provide label ID's	Point Type (e.g., Primary/ Secondary/ Storm Water Overflow)	Local Authority Name (e.g., Donegal County Council)	Receiving Water Body Type (e.g., River, Lake, Groundwater, Transitional, Coastal)	Receiving Water Body Name (e.g., River Suir)	Protected Area Type (e.g., SAC, candidate SAC, NHA, SPA etc.)	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference
SW01Glnvl	Primary	Cork County Council	River	Owenbawn	SAC	170996	087592
SW02Glnvl	Secondary	Cork County Council	River	Owenbawn	SAC	171440	089491

Waste Water Discharge Licence Applications

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Discharge Point

Cork County Council > Glenville > SW-1

Discharge Point Details | Emissions to surface/ground waters | Dangerous Substance Emissions | Monitoring Points

Discharge Point Details

Emission To:	Surface Water	Flow rate of receiving waters (Dry Weather Flow) (m³/sec)	0.550118399
Emission Point Reference Number	SW-1	Flow rate of receiving waters (95% Flow) (m³/sec)	0.087218438
Water Body	River Water Body		
Local Authority Ref No.		Volume to be emitted (Normal / Day) (m³)	122
Source of Emission	Waste Water Treatment Plant	Volume to be emitted (Maximum / Day) (m³)	729
Location	Glenville	Volume to be emitted (Maximum Rate / Hour) (m³)	30
Easting (6 digits)	170996	Volume to be emitted (Dry Weather Flow) (m³/sec)	0.08
Northing (6 digits)	87592		
	☑ Verified using GPS	Periods of Emission (Minutes per Hour)	60
Name of receiving waters	Owenbawn River	Periods of Emission (Hours per Day)	24
River Basin District	South Western RBD	Periods of Emission (Days per Year)	365
Designation of receiving waters	"Good" (ref. F.1)		
		Frequency of Discharge (days / annum):	365
		Quantity of Waste Water Discharged (m³/annum):	133043

Additional Comments (e.g. commentary on zero flow or other information deemed of value)

```
All volumes to be emitted above are estimated based on the following:
1/. Per Capita Contributory Rate = 225 ltr/head/day;
2/. Normal Flow = 1DWF;
3/. Maximum Flow = 6DWF;
4/. Annual Discharge = 3DWF.
```

Save Cancel

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Discharge Point

Cork County Council > Glenville > SW-2

Discharge Point Details | Emissions to surface/ground waters | Dangerous Substance Emissions | Monitoring Points

Discharge Point Details

Emission To:	Surface Water	Flow rate of receiving waters (Dry Weather Flow) (m³/sec)	0.550118399
Emission Point Reference Number	SW-2	Flow rate of receiving waters (95% Flow) (m³/sec)	0.087218438
Water Body	River Water Body		
Local Authority Ref No.		Volume to be emitted (Normal / Day) (m³)	
Source of Emission	Foul Pumping Station Overflov	Volume to be emitted (Maximum / Day) (m³)	
Location	Glenville	Volume to be emitted (Maximum Rate / Hour) (m³)	
Easting (6 digits)	171440	Volume to be emitted (Dry Weather Flow) (m³/sec)	
Northing (6 digits)	089491		
	☑ Verified using GPS	Periods of Emission (Minutes per Hour)	
Name of receiving waters	Owenbawn River	Periods of Emission (Hours per Day)	
River Basin District	South Western RBD	Periods of Emission (Days per Year)	
Designation of receiving waters	"Good" (ref. F.1)		
		Frequency of Discharge (days / annum):	
		Quantity of Waste Water Discharged (m³/annum):	

Additional Comments (e.g. commentary on zero flow or other information deemed of value)

The frequency, duration and quantity of discharge are unknown.
This pumping station is inspected routinely and maintained as required.

Save | Cancel

Waste Water Discharge Licence Applications

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Monitoring Point

Cork County Council > Glenville > SW-1 > aSW-1u: Edit Monitoring Point

Monitoring Point Details | Monitoring Details | Monitoring Test Details | Dangerous Substar

Monitoring Point Details

Monitoring Point	aSW-1u
Monitoring Location	Upstream of discharge
Easting (6 digits)	170788
Northing (6 digits)	087732
Verified Using GPS	☑

Save Cancel

Waste Water Discharge Licence Applications

Licence Issues: Office of Climate, Licensing and Resource Use
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Monitoring Point

Cork County Council > Glenville > SW-1 > aSW-1d: Edit Monitoring Point

Monitoring Point Details | Monitoring Details | Monitoring Test Details | Dangerous Substar

Monitoring Point Details

Monitoring Point	aSW-1d
Monitoring Location	Downstream of discharge
Easting (6 digits)	171575
Northing (6 digits)	087734
Verified Using GPS	☑

Save Cancel

Monitoring Point

Cork County Council > Glenville > SW-1 > aSW-1a: Edit Monitoring Point

Monitoring Point Details | Monitoring Details | Monitoring Test Details | Dangerous Substance Monitoring D

Monitoring Point Details

Monitoring Point	aSW-1a
Monitoring Location	Ambient
Easting (6 digits)	170966
Northing (6 digits)	087613
Verified Using GPS	☑

Save Cancel

Waste Water Discharge Licence Applications

Licence Issues: Office of Climate, Licensing and Resource Use
Tel: 053 9160600

Technical Support: Cora Systems
Tel: 071 9616943

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Monitoring Point

Cork County Council > Glenville > SW-2 > aSW-2d: Edit Monitoring Point

Monitoring Point Details | Monitoring Details | Monitoring Test Details | Dangerous Substance Monitoring Details | Dangerous Substance Test Deta

Monitoring Point Details

Monitoring Point	aSW-2d
Monitoring Location	Downstream of discharge
Easting (6 digits)	171575
Northing (6 digits)	087734
Verified Using GPS	☑

Cancel

E.3 TABULAR DATA ON MONITORING & SAMPLING POINTS

PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
Point Code Provide label ID's assigned in section E of application	Point Type (e.g., Primary, Secondary, Storm Water Overflow)	Monitoring Type M = Monitoring S = Sampling	6E-digit GPS Irish National Grid Reference	6N-digit GPS Irish National Grid Reference	Y = GPS used N = GPS not used
aSW01a	Primary	M	170966	087613	Y
aSW01u	Primary	M	170788	087732	Y
aSW01d	Primary	M	171575	87734	Y
aSW02d	Secondary	M	171575	87734	Y