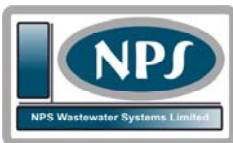
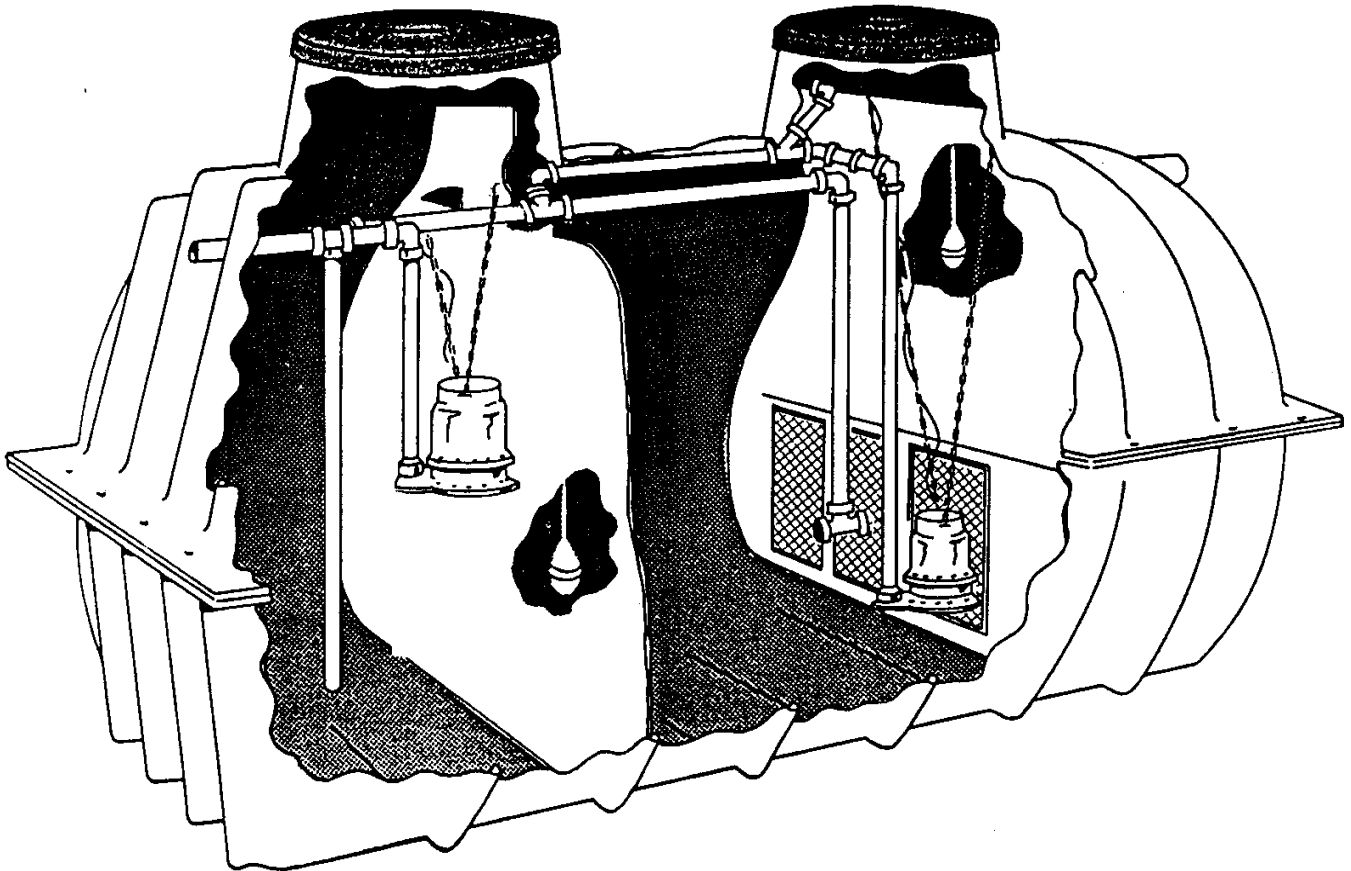


OWNERS MANUAL

CA SERIES PLANTS



NPS WASTEWATER SYSTEMS LTD.

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Revision R



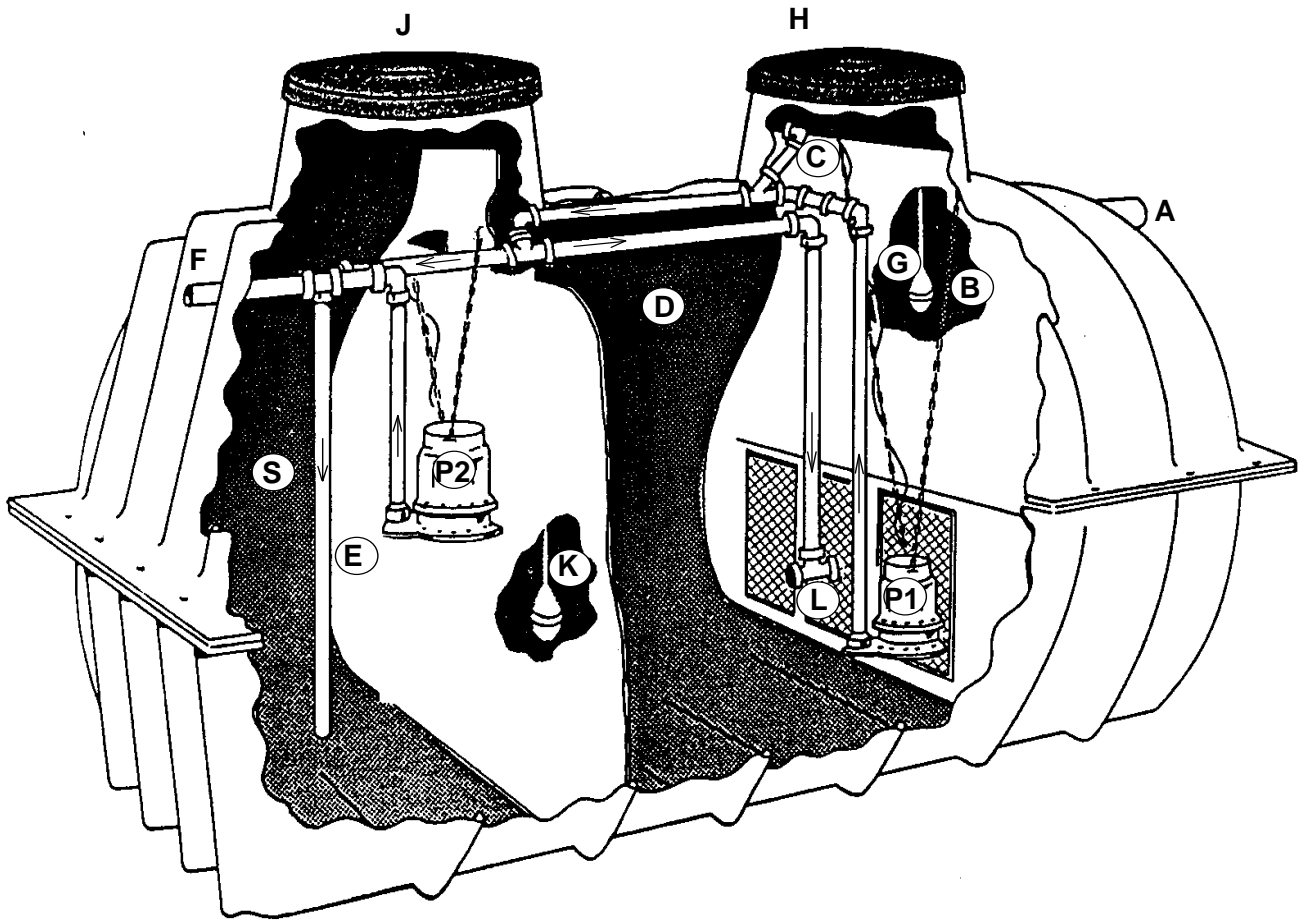
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ATTENTION: To keep the package treatment plant running at optimum performance, we advise everyone in the home to be aware of the Do’s and Don’t’s on page 5 of this manual.





PROCESS DESCRIPTION

Sewage from source flows through entry pipe (A) to comminution chamber (B). Aeration pump (P1) operates under control of a timer in the control panel, drawing mixed liquor through the bottom and out through air nozzle venturi assembly at (C). Air supply is pulled into tank through pipe at (H). Discharge from "tee" (L) is directed toward screen and ensuing turbulence causes material in chamber to abrade and come apart, after which mixed solution passes into main aeration chamber (D). Also, some of the discharge from (L) is directed into the main aeration chamber (D).

Transfer pipe (E) directs approximately 25% of (P1) pump flow to settling chambers (S). All power to pumps (P1) and (P2) comes from junction box at (J). A remotely located control panel activates an alarm unit within the home if the liquid level rises too high in tank to trip level switch (G), or if the circuit breaker in the control panel trips due to an electrical or pump failure or overload.

Pump (P2) discharges a fixed amount of treated - settled effluent at programmed time intervals.

Float level sensor (K) prevents (P2) pump from discharging too much water from settling chamber during periods of low flow and thereby retains necessary biological mix in aeration section for best treatment.

Discharge is via PVC fitting (F)\



The NPS Batch-Treat System

The NPS Batch-Treat System

The NPS Batch-Treat System has 5 biological treatment zones:

- (A) Solids Retention zone to hold sewage until it is broken down for treatment. A screen holds back large particles.
- (B) Aeration zone, to supply oxygen to the aerobic organisms. The Aeration Pump (P1) mixes oxygen with sheared solids, uses liquid force through the screen to break down solids in zone (A), and flushes out the clarifier (C).
- (C) Settling Clarifier, where suspended solids settle out of the final effluent.
- (D) Effluent Discharge zone, that is pumped to the disposal field by (P2), after the settling period.
- (E) The Reserve Volume zone acts as a buffer to absorb large inflows of sewage without affecting the Batch-Treat process.

NOISE AND ODOR FREE

The aerobic Batch-Treat process functions in an enclosed and liquid environment. The highly efficient oxygen transfer and mixing in the NPS aeration system ensures that the plant and effluent are essentially odor-free. The only mechanical operation is submersible pumps and, under water, these pumps are almost inaudible. Unlike other types of treatment systems, there are no dead areas in the NPS plant to accumulate sludge or exposed biomass to cause odors and provide a breeding bed for insects.

HIGHER OPERATING TEMPERATURES

NPS systems retain heat from the incoming sewage, aerobic bacteria activity, and heat generated by the submersible pumps. Higher temperature increases enzyme and biological activity that increases the efficiency of the Batch-Treat process. NPS systems operate efficiently in sub-zero temperatures. The plant effluent has a high dissolved oxygen content, and does not freeze, except in extreme conditions.

PEAK LOAD RESERVE

The *Reserve Volume* zone in NPS systems acts as a buffer to absorb large sewage liquid inflows with minimal effect on the process. This volume retention and the Batch-Treat process cycle creates a longer liquid retention period than other processes. The batch discharge cycle of over 3 hours also gives the disposal field a rest between cycles.

LOW SLUDGE BUILD-UP

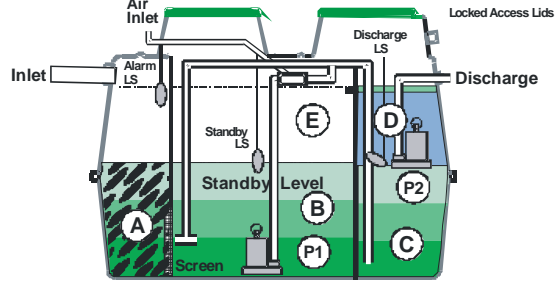
Many treatment systems create a high sludge build-up in their tanks that must be pumped out regularly to prevent odors. The NPS system continuously returns sludge to the Aeration zone for further aeration and biological breakdown. This results in extremely low sludge deposits that are mostly biological ash and insoluble particles. With normal sewage loading, an NPS plant will require less frequent pump-outs than plants using other processes.

COMPLETELY AUTOMATIC, MINIMAL MAINTENANCE

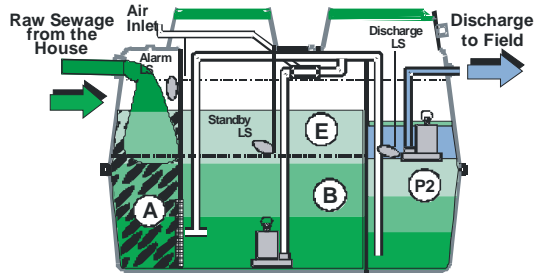
All NPS Batch-Treat systems are completely automatic and require no regular supervision while operating. The controller can be adjusted to compensate for the installation loading and inflow peaks. The NPS Batch-Treat system is the only system that detects an overload and activates an alarm. The only maintenance required is a periodic check and clean-down by your serviceman.

CORROSION-PROOF CONSTRUCTION, EASY INSTALLATION

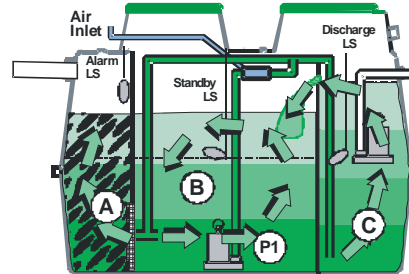
The NPS CA Series Batch-Treat plants for single homes to small apartment blocks are built of fiberglass, and can be buried to lid level. Hatch covers are locked and no fences or sheds are necessary.



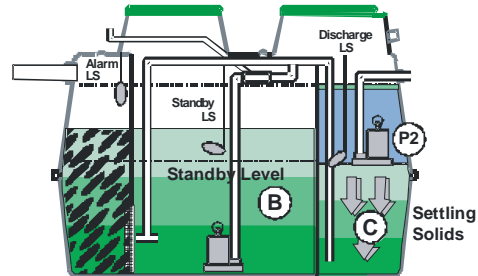
STANDBY CYCLE When there is no sewage flow into the plant, the plant automatically shuts off by a level switch in the Aeration zone (B). A timer activates the aeration pump (P1) to periodically mix the liquid in the zones and keep the aerobic organisms alive. This conserves energy.



SEWAGE INFLOW enters the solids zone (A). Liquid in the Aeration zone (B) rises in the Reserve Volume buffer zone (E). The Standby Level Switch enables the control timer to activate the discharge pump (P2) and a batch of treated effluent is discharged to the field.



AERATION CYCLE with pump (P1) mixes oxygen into the plant liquid to stimulate the aerobic organisms. A nozzle pumps the aerated liquid into the Solids zone (A) and Aeration zone (B). Settled solids are also flushed out of the Clarifier zone (C) over a weir back into the Aeration zone.



SETTLING CYCLE in the Clarifier (C) settles out the solids in the effluent batch. After a settling time set by the controller, the Discharge pump (P2) sends a treated batch to the disposal field. The Aeration Cycle then comes on and fills and flushes the Clarifier. These cycles are repeated until the level in the Aeration zone (B) reaches Standby. The discharge is disabled and the plant waits for more sewage influent.



OPERATING TIPS

TIPS ON OPERATING A PACKAGE SEWAGE TREATMENT PLANT

Dear Homeowner:

Congratulations on your purchase of a Package Sewage Treatment Plant. We are sure you will find this mode of sewage treatment and disposal a wise choice and hope these few tips will prove helpful in keeping your plant running smoothly and trouble-free.

1. Your Package Sewage Treatment Plant is designed to decompose organic material using oxygen and the bacteria normally present in domestic sewage. Non-biodegradable material such as diapers, sanitary napkins, rubber goods, cigarette filters or butts, hair, etc. should be disposed of in the garbage and not flushed down the toilet. If these materials enter the sewage treatment plant, they may cause an interruption in the treatment process and necessitate frequent cleaning of plant components and result in unnecessary service expense.
2. The bacteria used to decompose domestic sewage are sensitive, particularly to strong chemicals. High strength chemicals, such as acid or caustic cleansers, gasoline, oil, turpentine, or those chemicals used for developing photographs, should never be disposed of in the sewers. The use of disinfectants and chlorine bleaches in laundering should be kept to normal domestic use. In cities and towns these harmful chemicals are diluted to safe concentrations by the large flows through municipal plants, but at on site treatment plants the effects of these chemicals will become apparent. Automatic flush disinfectants are particularly harmful to all forms of biological sewage treatment and should not be used.
3. Excessive use of detergents can cause foaming and odour problems in plants. When laundering clothes, please initially follow the washing machine or detergent manufactures' recommendations regarding the quantity of detergents required. As most waters in B.C. are fairly soft, the quantity of detergent required may often be reduced without adversely affecting the quality of the wash, and with resulting savings for homeowner. Use of low-suds, biodegradable detergents is recommended.
4. Your Package Sewage Treatment Plant is designed to handle a certain amount of fat and grease as part of normal domestic loading. However, these fats and grease take a huge amount of oxygen and a very long time to decompose. For this reason, never intentionally dispose of large amounts grease,(i.e. the old grease from a deep fryer) into the sewer lines. Such large amounts of waste grease should be put in a glass jar or an old milk jug and placed into the garbage.
5. The practice in winter months of leaving a tap running to avoid pipes from freezing will only result in poor treatment and an overloaded plant. Your co-operation with respect to the above points should ensure trouble-free operation of your Package Treatment Sewage Plant.



Treatment system Do's and Don'ts

1. Do know where your tank and field are. Do not drive, build or plant trees and shrubs over either one.
2. Do use a low suds, phosphate free liquid detergent for laundry, dishes, etc. and use as little as possible.
3. **Never pour grease, fat or oil down the drains**, as it will clog the treatment plant and cause the trash tank to need pumping more often.
4. Do install hair traps in all drains.
5. Don't put non-degradeables down sinks or toilets. No rubber, plastic, cigarettes, coffee grounds, sanitary products, etc.
6. **If the alarm sounds, STOP running water.** You may have over-loaded the system with too much water volume. If after four hours the alarm is still on, then call your registered maintenance provider for help.
7. Your treatment plant should be relatively odor free but might have a mild earthy loam smell. If you detect a strong sewage odor **Do** contact your registered maintenance provider.
8. The use of bleach in small amounts will not harm your treatment plant but **Never use caustic drain cleaners or commercial tank additives** as they will cause bio die off and possible damage to the plant it's self. **Never wash paint into the system!**
9. Don't discharge water softening devices or garburators into the system.
10. Do divert roof, patio and driveway runoff away from the tank and drain field



FEATURES

Pumps

Pumps are iron body, heavy duty oil filled submersibles with built in thermal overload protection. The pumps are protected by a circuit breaker in the control panel. Pump clogging will cause a breaker trip and operate the alarm.

High Level Alarm Switch

This level switch is located inside the solids retention area behind the screen. This provides a means of detecting excessively high liquid flows into the plant, screen clogging due to aeration pump failure or obstruction in transfer lines.

Control System

A separate weatherproof control box containing the control system is provided with each plant. The control package is usually shipped separately from the plant directly to the Service Agent. On field installation, care should be taken to ensure that the control box is shielded from excessive heat sources such as direct radiation from the sun.

The CA process cycle consists of:

- (a) Discharge period based on time
- (b) Aeration period based on time (adjustable).
- (c) Settling period based on time .

Discharge Pump Vertical Lift Capacity (Head)

The standard discharge pump for all CA models has a pump head capacity of 20 feet at the discharge outlet of the plant. Optional high head discharge pumps are available, and can be provided to suit all applications as an optional extra.

Remote Alarm

All models are supplied with a remote alarm which operates in conjunction with the plant control system. The plant control system will signal the remote alarm to give an alarm on:

- a. Power failure to plant
- b. Unusual high liquid levels.
- c. Plugged pump or mechanical failure.

The Alarm is equipped with a green light which indicates power "On" for normal operation. On an alarm signal there is both a visual red warning light and an audio buzzer.

The audible buzzer can be switched off by the customer but the red alarm light can only be turned off through correction of the problem. The alarm is an indoor type, and must be powered by a different circuit than the treatment plant. It should be located where it will be easily audible to the homeowner.



INSTALLATION

Tank Installation:

The tank should be installed in a level position, and ensure that the Hatch Lids are above grade, to provide ease of access for servicing. If it is necessary to have the top of the plant below grade, a crib should be constructed to keep the lids free of dirt etc., and steps should be taken to prevent groundwater infiltration. If the plant is installed in an area with a high water table, a concrete base slab may be required to prevent the plant from floating. Use of bedding sand around the tank body is advisable to prevent rocks or sharp objects from damaging the tank.

Control Panel Installation:

The control panel should be installed outside of the dwelling near the plant. An outside wall of the residence or a post near the plant would be acceptable.

The Alarm and the CA treatment plant control panel must be on separate circuit breakers to ensure power to the alarm circuit when power is interrupted to the plant. The alarm has its own integral transformer and supplies 12V. AC control voltage to the plant control panel.

START-UP

START-UP IS NORMALLY DONE BY AN NPS SERVICE REPRESENTATIVE, AND IS INCLUDED IN THE PRICE OF THE PLANT

Positioning Pumps and Piping

The pumps will be installed by an NPS Representative.
The plant should be approximately 1/2 full of liquid so that the pumps can be operated for testing purposes.

Alarm Sensing and Operation

The internal remote alarm control sensing circuit operates on the following alarm conditions:

- (a) Power failure
 1. Main power breaker tripped.
 2. Control panel breaker tripped.

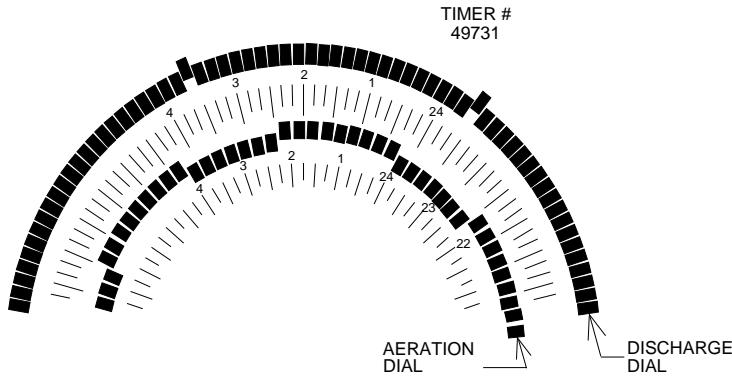
- (b) High level
 1. Unusually high loads.
 2. Failed or plugged aeration and/or transfer piping.
 3. Control panel failure.
 4. Failed or plugged discharge or aeration pump.
 5. Ground water infiltration
 6. Running toilet or fixture.



STANDARD TIMER SETTINGS CA5W, CA7W

TIMER SETUP This Plant is designed to process 6 batches per 24 hour period.

1. Set Discharge (outer dial) first by pulling out 1 tab every 4 hours around the entire dial, starting at the third tab in the clockwise direction from 24. (See Diagram).
2. Set the timer tabs per the following diagram. Note that the inner dial is not oriented exactly as shown (i.e. hour 12 on the outer dial is adjacent to hour 24 on the inner dial). When finished, there should be 7 tabs left in between each set of 9 tabs pulled out on the Aeration dial. (See Diagram).



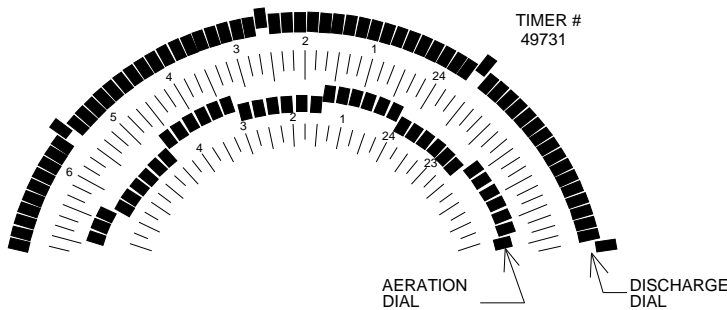
Cycle times

Aeration Time	140 min.
Settling Time	70 min.
Discharge Time	<u>13 min.</u>
	223 min.
Margin between functions	<u>17 min.</u>
Total Cycle Time	240 min.

STANDARD TIMER SETTINGS CA10W

TIMER SETUP This Plant is designed to process 8 batches per 24 hour period.

1. Set Discharge (outer dial) first by pulling out 1 tab every 3 hours around the entire dial, starting at the third tab in the clockwise direction from 24. (See Diagram).
2. Set timer tabs per the following diagram. Note that the inner dial is not oriented exactly as shown (i.e. hour 12 on the outer dial is adjacent to hour 24 on the inner dial). When finished, there should be 6 tabs left in between each set of 6 tabs pulled out on the Aeration dial. (See Diagram).



Cycle Times

Aeration Time	90 min.
Settling Time	70 min.
Discharge Time	<u>10 min.</u>
	170 min.
Margin between functions	<u>10 min.</u>
Total Cycle Time	180 min.



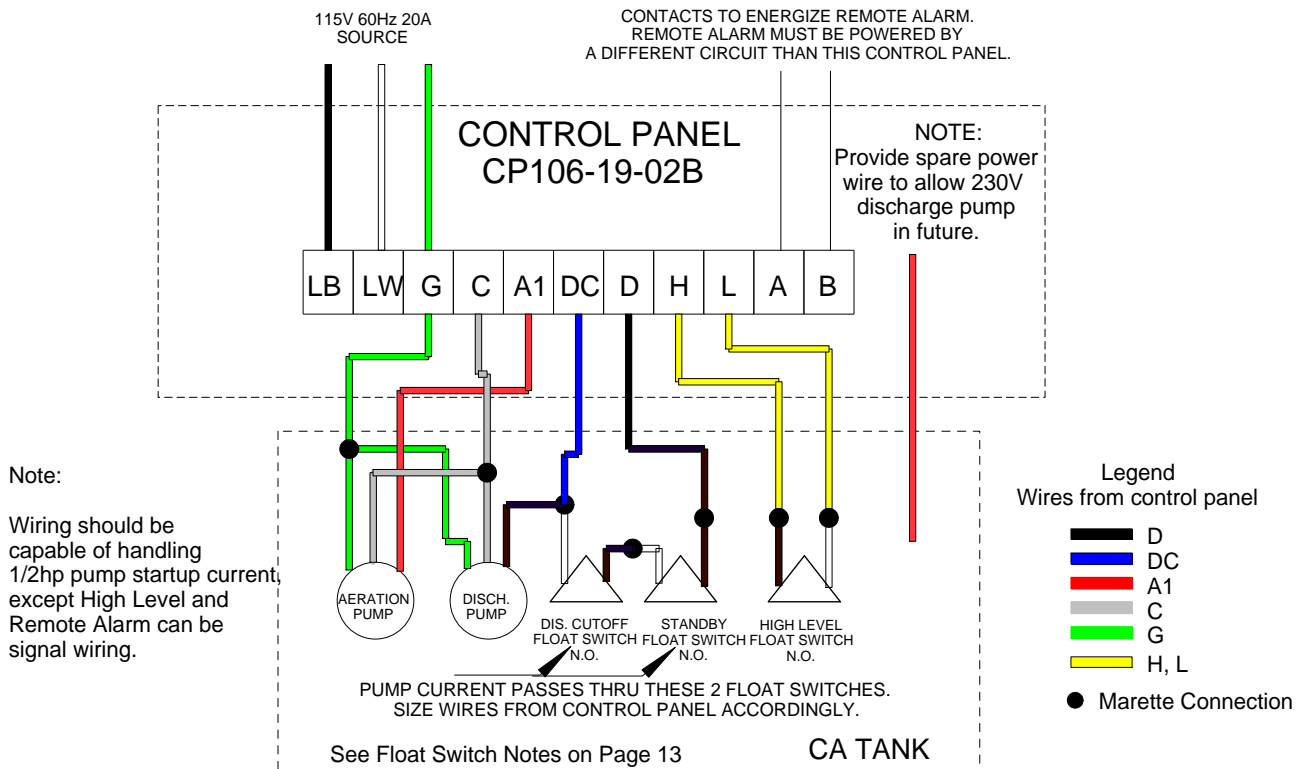
INSTALLATION INSTRUCTIONS (ELECTRICAL)

1. The external electrical connections required to operate a CA5W or CA10W are shown below. For pump and pump level switch wiring use 12 gauge wire. For alarm level switch wiring use 18 or 16 gauge wire. Please leave extra wire at the control panel so that the chassis may be removed from the enclosure for servicing with the wires connected.
2. On all CA5W and CA10W plants, a single junction box serves for two pumps and three float switches.
3. The plant junction box and control box should be watertight. For this reason, junction boxes have liquid-tight strain relief fittings to seal the cable connections into the junction box. The control box should be punched for the appropriate size liquid tight fittings. i.e. power supply in, wiring to plant junction box, and leads to remote alarm.
4. When electrical connections inside the plant junction box are completed, the junction box cap should be tightly screwed down to keep water out in the event of flooding due to plant malfunction.
5. Electrical connections at the control panel and in the plant junction box are shown on the attached wiring diagram. A labeled terminal strip on the control panel makes connections easy to follow.

Notes:

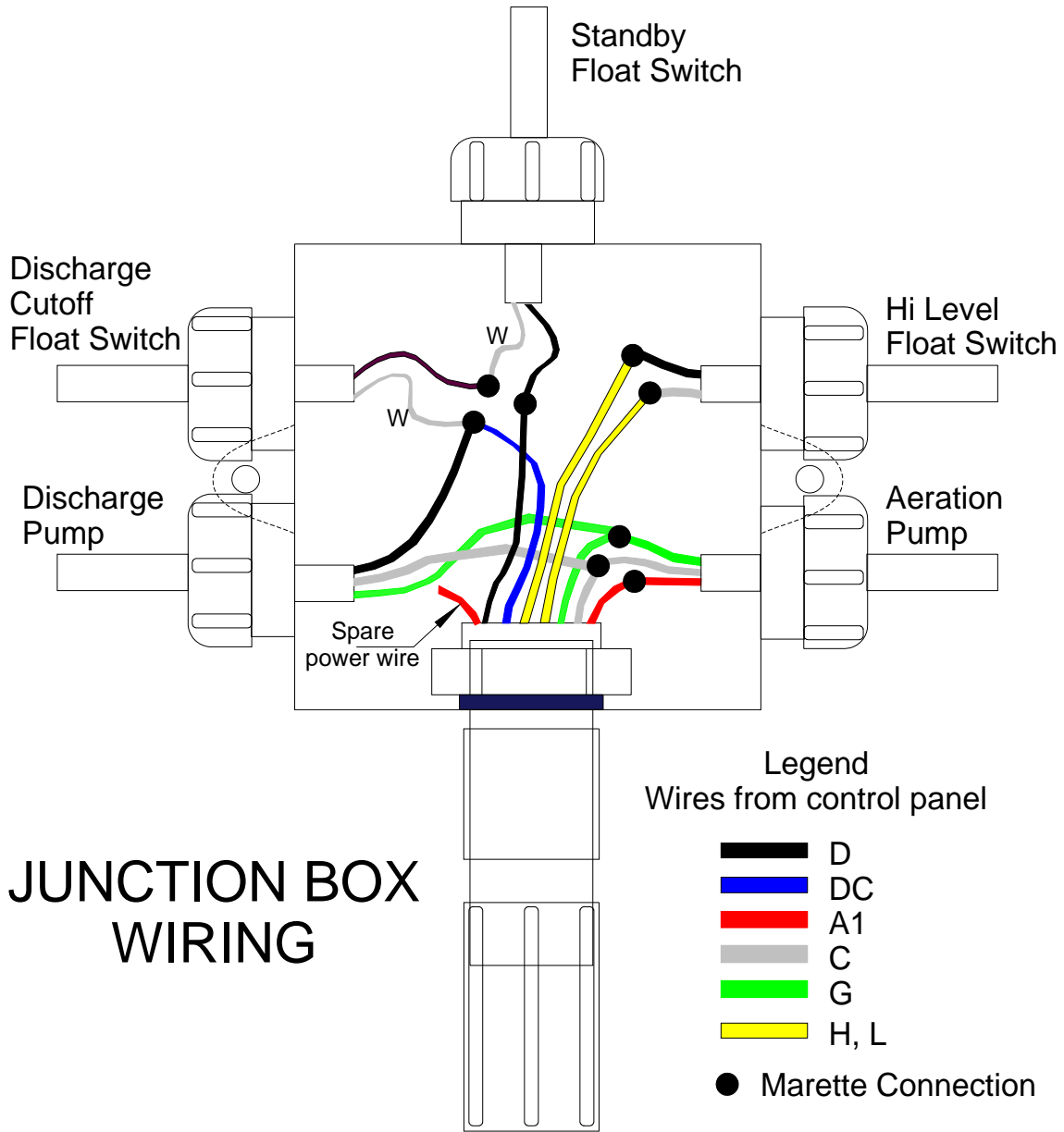
1. THE CONTROL PANEL SHOULD BE MOUNTED ON AN OUTSIDE WALL NEAR THE PLANT SO THAT SERVICING OF THE PLANT WILL NOT REQUIRE ENTRY INTO THE BUILDING.
2. MAKE SURE THAT THE AIR INLET ON THE TANK IS CLEAR, AND MUFFLER INSTALLED IF REQUIRED. USE 2" ABS OR PVC PIPING TO EXTEND THE AIR LINE AS REQUIRED, AND INSTALL THE MUFFLER AT THE END OF THE EXTENDED LINE.

CONTROL PANEL WIRING 120V Discharge Pump



SYSTEM WIRING





JUNCTION BOX WIRING 120V Discharge Pump



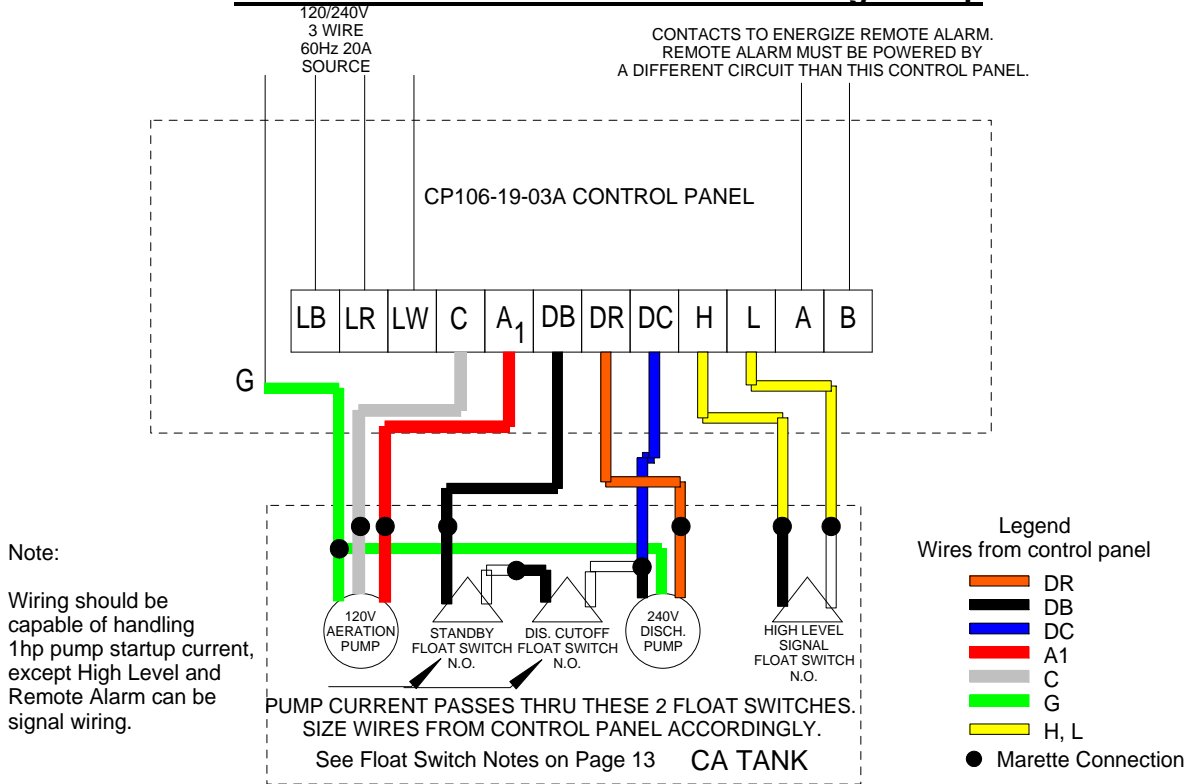
INSTALLATION INSTRUCTIONS (ELECTRICAL)

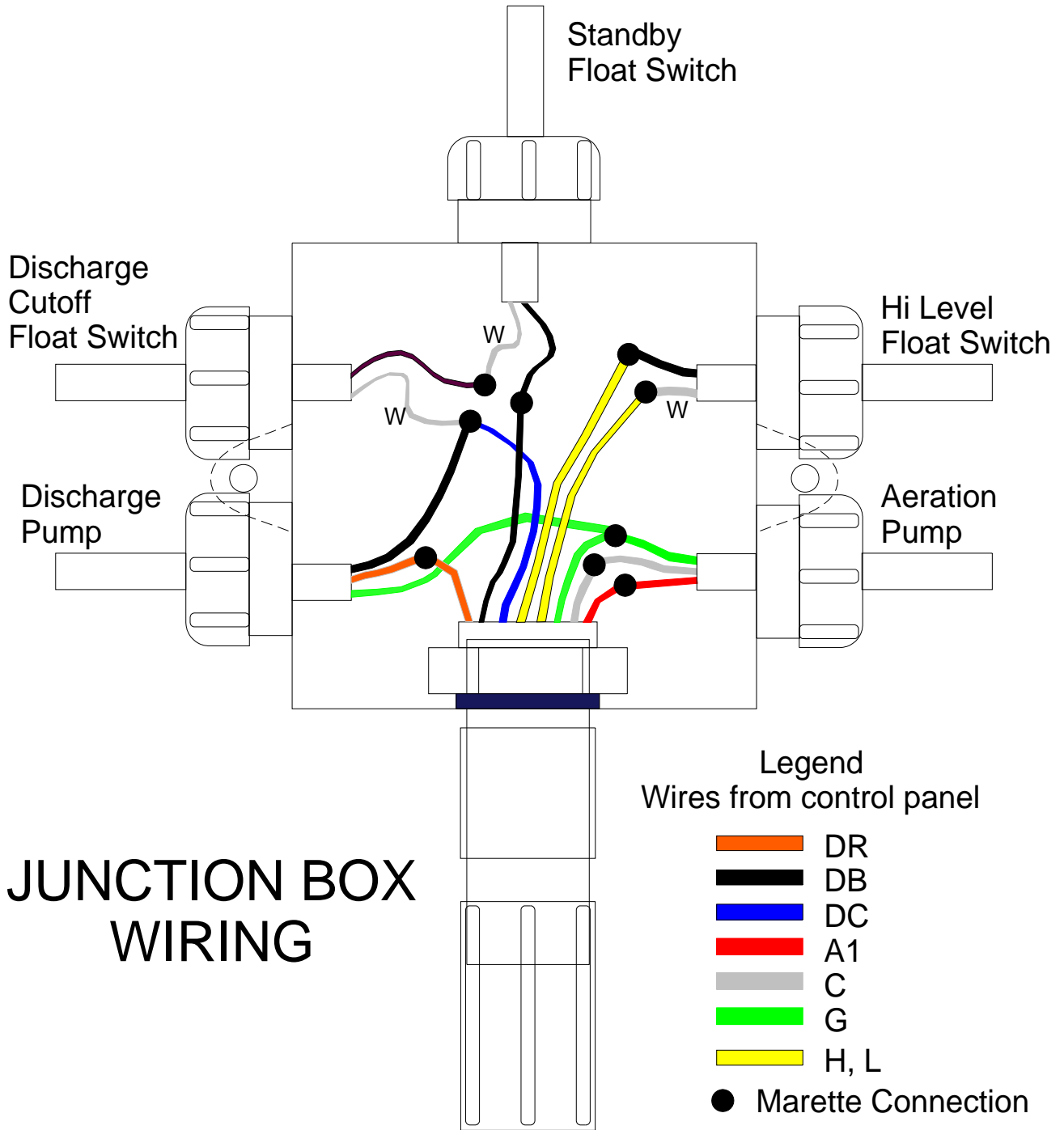
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2. MAKE SURE THAT THE AIR INLET ON THE TANK IS CLEAR, AND MUFFLER INSTALLED IF REQUIRED. USE 2" ABS OR PVC PIPING TO EXTEND THE AIR LINE AS REQUIRED, AND INSTALL THE MUFFLER AT THE END OF THE EXTENDED LINE.

CONTROL PANEL WIRING 230V Discharge Pump





JUNCTION BOX WIRING 230V Discharge Pump



FLOAT SWITCH OPERATION

THE DISCHARGE PUMP IN THE CA5-7-10 SYSTEMS IS CONTROLLED BY TWO FLOAT SWITCHES, AND THE TIME CLOCK. There is also a manual toggle switch on the control panel to test the discharge pump, regardless of the state of the two float switches.

Standby Float Switch:

The standby float switch ensures that the discharge pump does not operate during the discharge time if the liquid level in the main aeration chamber is at standby level. This ensures that the system will not pump down below the standby level and provides sufficient amount of liquid for proper aeration pump operation.

Discharge Cutoff Float switch:

The discharge cutoff float switch is used to ensure a constant batch size. It and the pump are positioned in the discharge chamber so that a defined batch size is pumped out during the discharge time period, and then the pump is idled during the rest of the discharge time period set on the control panel clock. The pump is positioned such that the float switch stops the discharge before the liquid level drops to the intake level of the pump.

NOTE: PUMP CURRENT RUNS THROUGH BOTH FLOAT SWITCHES, SO THEIR ELECTRICAL RATINGS AND THE RATING OF THE ASSOCIATED WIRING SHOULD ALLOW FOR THIS.

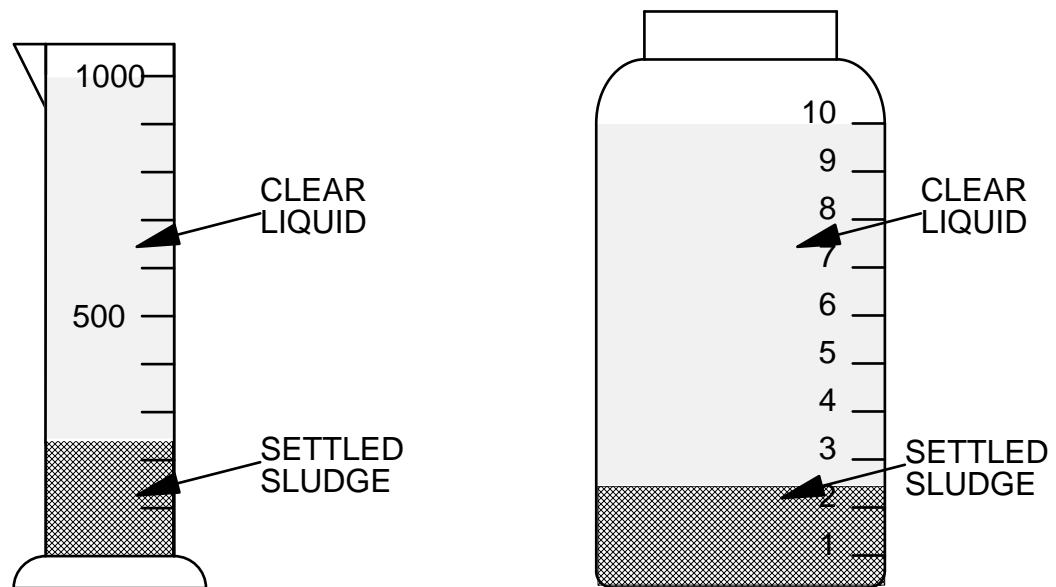
High Level Float Switch:

The high level float switch hangs in the normally open position. If it is closed, a high liquid level condition exists, and an alarm will sound.



SLUDGE VOLUME MEASUREMENT

The sludge volume reading is a good indicator for determining plant pump-out frequency. If the sludge volume has been steadily increasing over 3 or 4 successive sampling periods, and is in the range of 25-30%, a pump-out should be considered. If the previous readings of sludge volume were relatively low, it is possible that the current reading indicates just a temporary condition in the plant, and the plant should be monitored to see if it decreases over the next few months.



TO MEASURE SLUDGE VOLUME:

Either use a calibrated beaker, or calibrate a glass or plastic jar into 10 equal volume divisions (such as 10 - 1/4 cup divisions).

Ensure that the plant has been in the aeration mode for at least 5 minutes, and that the contents are homogeneous (well stirred). Fill the measuring container to the 100% mark (1000 in (a) or 100 in (b) in the 2 examples above) with mixed liquor from the clarifier (discharge) end of the plant.

After 30 minutes, the sludge volume can be determined by noting the separation layer between the settled sludge and the supernatant (clear liquid). In the examples above, the sludge volume would be 25%.

SPECIFICATIONS

		CA5W	CA7W	CA10W
Capacity	l/Gal per day	1,816/400	3,405/750	4,540/1,000
Plant Length		7'-10"	11'-3"	11'-3"
Width		5'-8"	5'-8"	5'-8"
Height		5'-8"	5'-8"	5'-8"
Inlet Height		4'-4"	4'-4"	4'-4"
Discharge Height		51 1/2"	51 1/2"	51 1/2"
Discharge Batches/day		6	6	8
Discharge Draw Down From bottom of weir		16"	16"	16"
Discharge Batch Size	l/Gal	304/67	568/125	568/125
Total Tank Volume	l/Gal	3,405/750	5,493/1,210	5,493/1,210
Standby Volume	l/Gal	1,498/330	2,679/590	2,679/590
Reserve (at standby) Volume	l/Gal	1,271/280	1,703/375	1,703/375
Power Supply (20A Max)		115V	115V	115V
Operating Weight	Lbs.	3,850	7,100	7,100
Flooded Weight	Lbs.	8,050	13,300	13,300
Shipping Weight	Lbs.	550	1,200	1,200
Power Consumption Approx.	KwHr	8.75	12	12

WARRANTY

NPS Wastewater Systems Ltd. warrants the CA series of Batch Treatment Plants to be free from defects in material or workmanship for a period of 1 year from date of installation. The FRP tank is warranted for a period of 5 years from date of installation



CA Series Maintenance Plan

The BC Health Act, Sewerage System Regulation requires Type 2 treatment systems to be regularly inspected by a Registered Onsite Wastewater Practitioner. Contact your service representative for the recommended frequency of service inspections in your area.

Owner/operator

Address:

Registered Service Provider:

NPS Model No.: Discharge per day:
Inspection(s) per year

Inspection and Maintenance:

The procedures for a standard service inspection and maintenance of a CA Series Treatment Plant are as follows:

- 1) Wash treatment plant, clean clarifier chamber, anti siphon valve, and filter screen.
- 2) Test and record pump amperages and performance.
- 3) Test line voltage, control head logic, alarm system, and relay performance.
- 4) Inspect all piping, hoses, wiring, junction boxes and level float switches.
- 5) Remove foreign objects that could adversely effect the operation of the plant or field.
- 6) Inspection of pressure distribution field 6 months after startup, then yearly.
- 7) Test biology - measuring or noting where necessary:
 - a) Sludge volume
 - b) ph
 - c) colour and odour
 - d) B.O.D.
 - e) Percent of suspended solids
- 8) Record flow rate and note signs of high water and or high suds events.
- 9) Maintain permanent records of service visits and repairs to the treatment plant.
- 10) Advise the operator of any problems with the plant operation and discuss further with the operator any necessary repairs or alterations.



CA5/7/10 Parts List

<i>Item</i>	<i>Description</i>
Aeration Pump, CA5W, CA7W	Monarch WS30
Aeration Pump ropes	APR
Aeration Pump, CA10W	Barnes 2SE51
Aeration Pump chains	2SE51 chains
Discharge Pump	Monarch WS30
Discharge Pump ropes	DPR
Muffler	NPS SM1
Control Panel	CP106-19-02
Screw down lid	20-RISL
Lid Screws	#10 X 1-1/2" HEX HEAD 18-8 SS SCREW
Rope Hooks	NPS RH1
Remote Alarm	SJE/1011423
Float Switch – wide angle normally open	SJE/10PMDWOP
Float Switch weight	SJE/1002230
Heyco strain relief	SR6P-4

Note: Discharge pump type may vary, depending on discharge requirements.



SUMP & SEWAGE SUBMERSIBLE EFFLUENT PUMPS

WS - EFFL.

Water Systems

Sump and Sewage

Lawn and Sprinkler

Electric Motor Driven

Engine Driven

Frame Mount

Hand Pumps

Irrigation and Industrial



WS30M



WS SERIES SUBMERSIBLE EFFLUENT PUMPS

Ideal for liquid effluent pumping applications, as well as light commercial applications with up to 11/16" diameter solids.

CONSTRUCTION - Motor and pump housing is Cast Iron Class 30.

CORD - Power cord sealed at motor housing. WS50, WS50H and WS100H uses SJOW. WS30 uses SJTW.

IMPELLER - Cast Iron Class 30. Solids handling non-clog impeller. Two vanes on the WS50, WS50H and WS100H. Three vanes on the WS30.

SEAL - Mechanical carbon/ceramic type 6, 5/8 rotary.

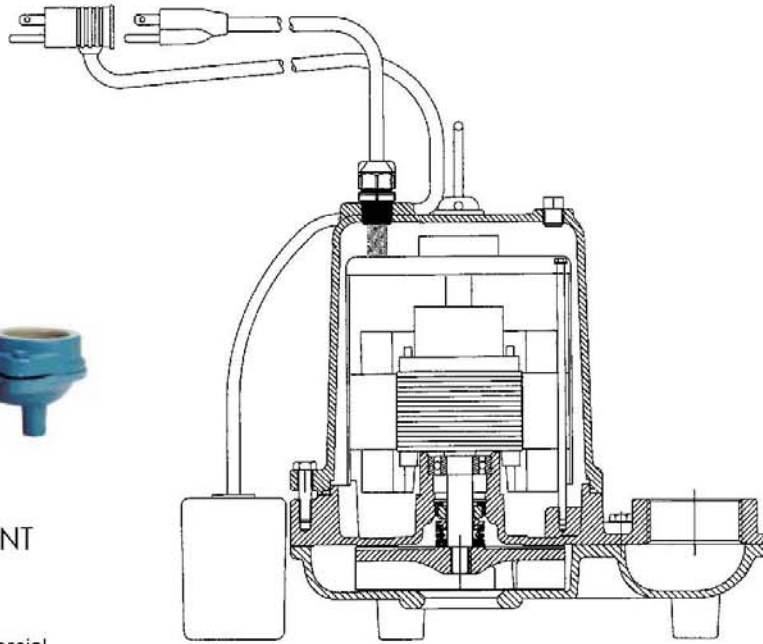
SHAFT - Motor shaft is 416 stainless steel.

MOTOR - Oil filled chamber with automatic overload protection, double ball bearing. Capacitor Start designed for hi-torque and is thermally protected with automatic reset (single phase only).

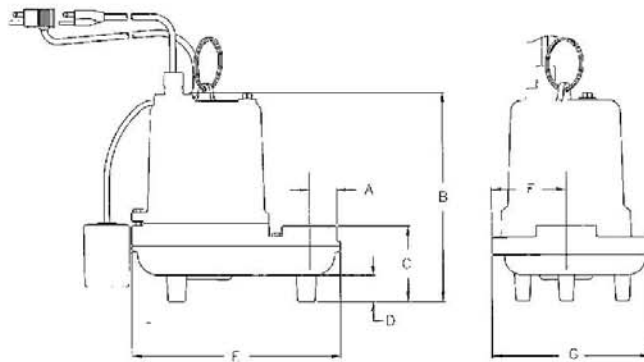
SWITCH - Mercury Free float switch for automatic on-off operation; piggyback style WS30. SJE pump master used on WS50, WS50H & WS100H models.

DISCHARGE - 2" NPT. Adaptor kit for 3" NPT available.

FASTENERS - Stainless steel fasteners throughout, for serviceability.



Dimensions

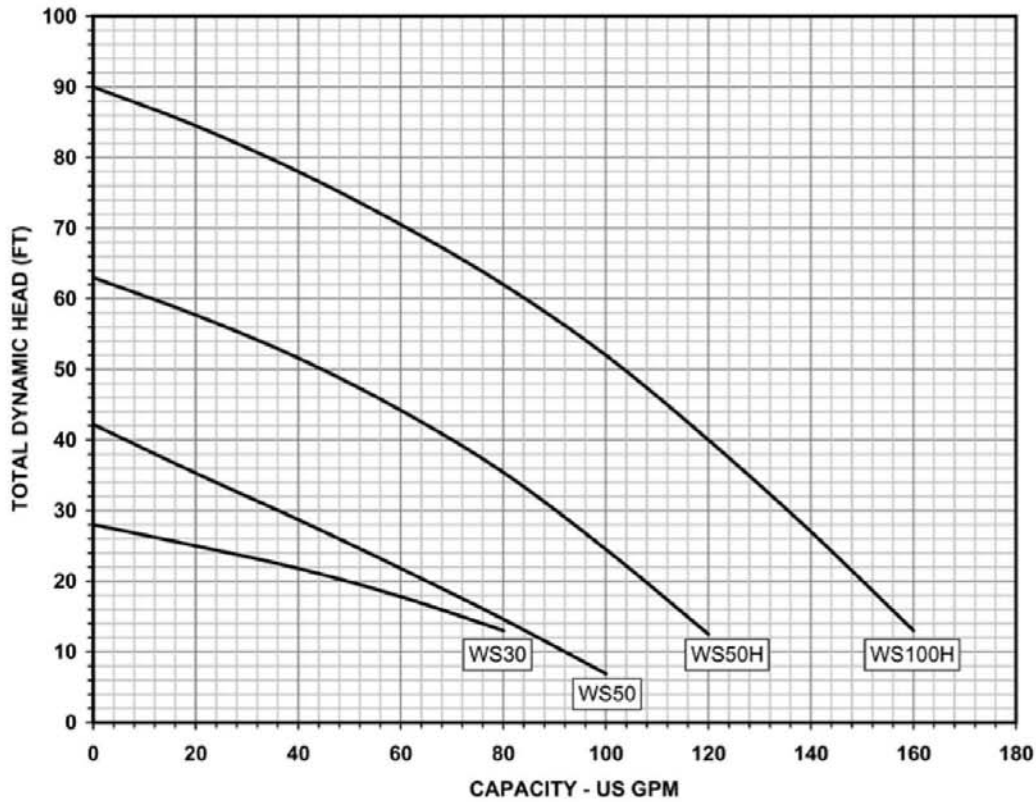


Model	A	B	C	D	E	F	G
WS30	1.75	11.25	3.75	1	12.25	4.86	9.38
WS50	1.75	13.75	3.75	1	12.25	4.68	9.38
WS50H	1.75	13.75	3.75	1	12.25	4.68	9.38
WS100H	1.75	13.75	3.75	1	12.25	4.68	9.38

*Dimensions measured in inches



SUMP & SEWAGE SUBMERSIBLE EFFLUENT PUMPS



Model No.	RPM	Total Head in Feet					Shut-Off Head (ft.)
		5	10	15	20	25	
		Capacities in U.S. GPM					
WS30	1750	105	90	70	45	15	28
WS50	3450	105	92	80	64	50	42

Model No.	RPM	Total Head in Feet									Shut-Off Head (ft.)
		10	20	30	40	50	60	70	80	90	
		Capacities in U.S. GPM									
WS50H	3450	115	98	78	57	30	0	-	-	-	63
WS100H	3450	150	140	128	115	97	76	53	27	0	90

SUBMERSIBLE EFFLUENT PUMPS - AUTOMATIC AND MANUAL									
Model No.	Order No.	HP	Volts	SFA	Phase	Solids Handling	Ship Wt. (lbs.)	Switch	Cord Length
WS30M	620010	1/3	115 V	10.4	1	11/16"	51	Manual	20'
WS30AM	620000	1/3	115 V	10.4	1	11/16"	53	Automatic	20'
WS50M-20	620231	1/2	115V	11.6	1	3/4"	55	Manual	20'
WS50AM-20	620233	1/2	115V	11.6	1	3/4"	57	Automatic	20'
WS50M-12-20	620251	1/2	208-230V	9.7	1	3/4"	56	Manual	20'
WS50AM-12-20	620253	1/2	208-230V	9.7	1	3/4"	58	Automatic	20'

HIGH HEAD SUBMERSIBLE EFFLUENT PUMPS - AUTOMATIC AND MANUAL									
Model No.	Order No.	HP	Volts	SFA	Phase	Solids Handling	Ship Wt. (lbs.)	Switch	Cord Length
WS50HM-20	620218	1/2	115 V	15.0	1	3/4"	56	Manual	20'
WS50HAM-20	620219	1/2	115 V	15.0	1	3/4"	58	Automatic	20'
WS50HM-12-20	620220	1/2	208-230V	9.7	1	3/4"	56	Manual	20'
WS50HAM-12-20	620221	1/2	208-230V	9.7	1	3/4"	58	Automatic	20'
WS100HM-12-20	620222	1	208-230V	13.6	1	3/4"	57	Manual	20'
WS100HAM-12-20	620223	1	208-230V	13.6	1	3/4"	59	Automatic	20'
WS100HM-32	620207	1	208-230V	6.2	3	3/4"	62	Manual	30'
WS100HM-34	620206	1	460 V	3.1	3	3/4"	62	Manual	30'

30' cord length models are available, please contact factory.

WS - EFFL.

Water Systems

Sump and Sewage

Lawn and Sprinkler

Electric Motor Driven

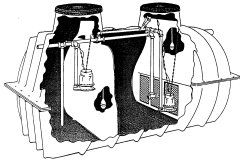
Engine Driven

Frame Mount

Hand Pumps

Irrigation and Industrial





IMPORTANT:
CONTROL PANEL MUST BE MOUNTED ON EXTERIOR WALL OR POST ADJACENT TO TREATMENT PLANT TO ALLOW SERVICING WITHOUT ENTRY INTO A BUILDING OR RESIDENCE. PROTECT FROM DIRECT SUNLIGHT.

MAKE SURE THAT THE AIR INLET ON THE TANK IS CLEAR, AND MUFFLER INSTALLED IF REQUIRED. USE 2" ABS OR PVC PIPING TO EXTEND THE AIR LINE AS REQUIRED, AND INSTALL THE MUFFLER AT THE END OF THE EXTENDED LINE.



CA5W/CA7W/CA10W Digital CONTROL PANEL

CP106-19-05



Digital Control Panel Description:

The NPS CA series control panel consists of the following components:

- Microprocessor control system circuit board with LCD display and pushbutton function switches.
- Power transformer
- Power relays for Aeration and Discharge pumps
- Alarm relay
- LCD batch counter
- Main circuit breaker
- Indicator lamps for Aeration and Discharge
- Toggle switch to operate the discharge pump regardless of float switch position in the tank.

Normal Operation:

The normal sequence of operation is Settling, Discharge, Aeration. The control panel will ship from the factory with default values for the times for these three functions.

Pushbutton Switch Operation:

ACTION PUSHBUTTON SWITCH:

Pressing this switch will enable the following functions:

- Advance
- Increase
- Decrease
- Default
- Vacation
- Normal

Each time this switch is pressed, the unit will advance to the next function. This sequence will be repeated each time the switch is pressed going back to the Advance function if the Action switch is pressed while in the Normal function. If the Set pushbutton is not pressed within about four seconds, the unit will revert to normal time operation.

SET PUSHBUTTON SWITCH: RELEASE THE ACTION SWITCH BEFORE PRESSING THIS ONE.

Pressing this switch will cause the function selected with the Action switch to occur. For example, if the function "Increase" has been selected, the time for the current mode (Settling, Aeration, or Discharge) will be increased by one minute. If the "Default" action has been selected, the factory time settings for the three modes (Settling, Aeration, or Discharge) will be reset to the factory times.



Function Description:

Advance: When in the advance function, each time the set button is pressed, the control will advance to the next function. The sequence is Settling-Discharge-Aeration-Settling etc. After about 4 seconds, the current function mode will be activated.

Increase: When in the increase function, the total time for the current function will be increased by one minute each time the set button is pressed.

Decrease: When in the decrease function, the total time for the current function will be decreased by one minute each time the set button is pressed.

These time values will be stored in non-volatile memory, which means that even if the power to the control is interrupted, the unit will operate with these new time values.

Default: If the Set pushbutton is pressed while in the Default function, the times for the 3 modes (Settling, Discharge, Aeration) will be restored to factory settings.

Vacation: If the Set pushbutton is pressed while in the Vacation function, the control will be put in the vacation mode. This causes the aeration pump to be energized for 35 minutes at the start and at the end of the preset aeration time. The pump will be off between these two times. This function is used to reduce the power consumption of the plant when there is no influent to deal with – when no one is in the residence.

Normal: If the Set pushbutton is pressed while in the Normal function, the control will be placed back in the Normal mode (aeration pump will be energized for the full aeration time).

CA5W, CA7W Timing

Aeration Time	140 min.
Settling Time	90 min.
Discharge Time	<u>10 min.</u>
Total Cycle Time	240 min

6 cycles per day

CA10W Timing

Aeration Time	90 min.
Settling Time	80 min.
Discharge Time	<u>10 min.</u>
Total Cycle Time	180 min.

8 cycles per day



