Hydromatic HSE Series Self-Cleaning Raw Water Strainers
Installation, Operation, and Maintenance

The Concept: For as long as raw water strainers have been used to filter debris from raw water flow to engines and equipment, there has been the need to periodically shut down the system for filter basket cleaning. Hydromatic raw water strainers eliminate this task by periodically performing a 30-second self-cleaning cycle during which a powerful macerator grinds and discharges accumulated debris and discharges it overboard.

Hydromatic can serve as a sea-chest by providing filtered water to multiple consumers, such as main engines, A/C units, generators, water-makers, and refrigeration units. Plumbing and maintenance are simplified, and installation time and materials cost are reduced.

Installation Considerations: Two installation plumbing scenarios are possible - below waterline discharge or above waterline discharge. Either installation will function well; but more stringent installation parameters must be met for an above waterline discharge installation.

Below Waterline Discharge (Figure-1): Hydromatic must be installed below the waterline. A dedicated 1" full-flow seacock (GROCO BV-1000 or FBV-1000) must be installed for the discharge of macerated debris.

Above Waterline Discharge (Figure-2): Hydromatic must be installed below the waterline. An in-line check valve is required (same size as the water supply line) in the A/C raw water line to ensure that the A/C water supply line is not drained by the greater flow to other consumers, or by the discharge from Hydromatic.

FIGURE-1

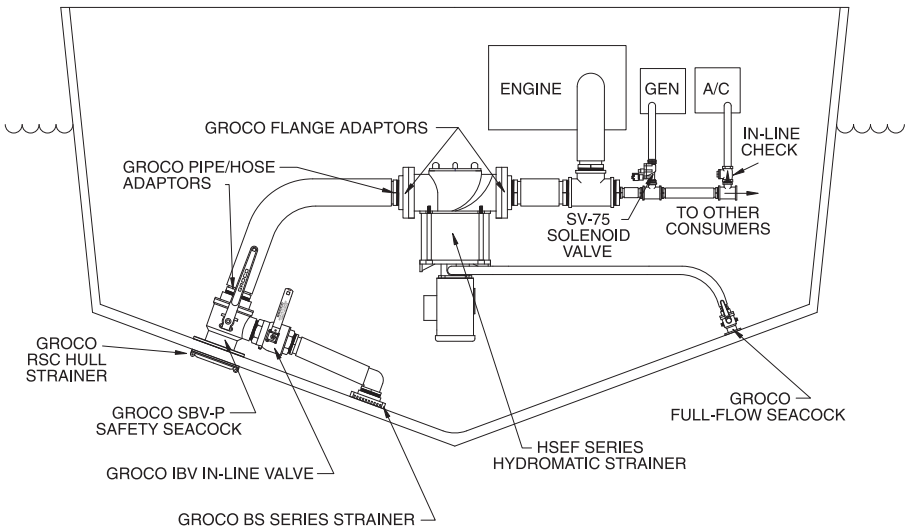
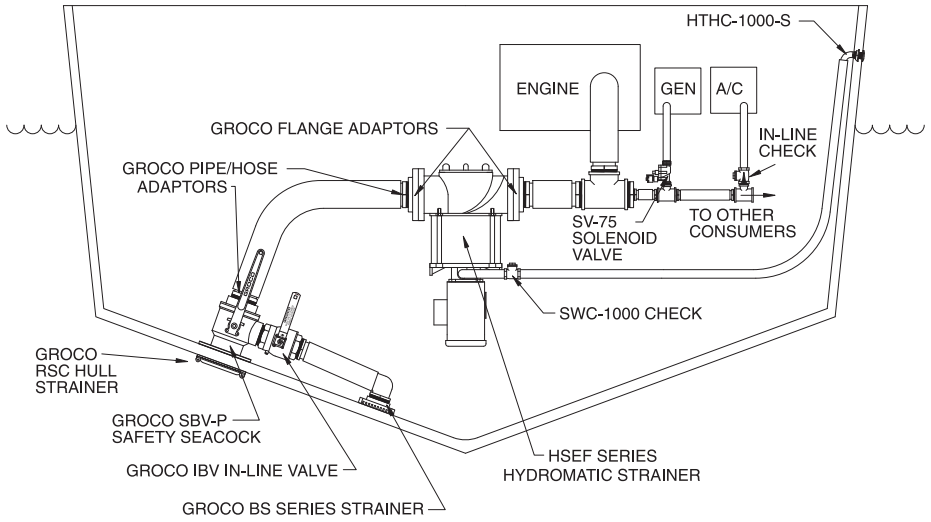


FIGURE-2



General Strainer Installation Notes:

* Install Hydromatic below the waterline, at or near the vessel centerline. Vessel movement will change waterline location.
* Install a large low-pressure hull strainer (GROCO RSC) over the inlet thru-hull fitting to reduce the possibility of large debris (plastic bag or a large leaf) blocking the water supply to Hydromatic.
* A solenoid valve is required (not supplied) between Hydromatic and the generator raw water pump. GROCO SV-75 (3/4")(specify voltage) or SV-100 (1")(specify voltage) may be ordered. Check GROCO for availability of larger sizes. The solenoid valve closes when the generator is not in use, thus preventing generator flooding.
* Avoid sharp hose bends and sags, and keep hose runs at minimum length.
* Hydromatic may be oriented horizon-tally or vertically, but the inlet must remain below waterline at all times.
* Double-clamp hose connections.

Plumbing:

Use full-flow seacocks and fittings through-out the installation. GROCO offers full flow seacocks from 3/4" through 5" sizes. Bronze flange adaptors (4", 5" and 6" flange to NPT) are also offered to simplify plumbing connections.

Operator Panel Installation:

Choose a location that will enable you to monitor and adjust system operation, probably at the helm. The panel fits into a 2-11/16" high x 3-7/8" wide wall cutout. Do not fasten the panel to the wall at this time.

Control Box Installation:

Install the Control Box (gray water-tight enclosure) near the strainer/pump unit, above bilge water level. A 10-foot cable is provided, already connected to the motor. Secure the power pack to a bulkhead by removing its cover and using four (4) stainless steel wood screws to fasten the enclosure through the same holes that hold the enclosure cover in place. Leave the cover off until power connections have been made.

ELECTRICAL CONNECTIONS

General Note:

Turn off AC and DC power before installing or servicing Hydromatic.

* Hydromatic is shipped with the Control Box TEMPORARILY fastened to the motor mount bracket. If you want to permanently mount the control box to the motor, fasten a plate the motor bracket that will accept mounting screws from the control box. The control box is supplied with a 10-foot cable to allow for remote mounting.
* Run the ring connector end of the 100-foot cable from the Hydromatic location to the operator panel location.
* Make operator panel connections in accordance with the schematic (Figures-4, 5, 6, 7, 8 or 9) showing the "consumer" option you have selected.

There are four possible "Consumer" options for Hydromatic operation. IMPORTANT: Choose only one.

Option-1. (Figure-4) Cleaning cycle determined by timer only.

Option-2. Cleaning cycle determined by operation of DC consumer only (engine or generator)

Method-A (Figure-5): Consumer detect signal from switched DC (-) source

Method-B (Figure-6): Consumer detect signal from switched DC (+) source

Option-3. (Figure-7) Cleaning cycle determined by operation of AC consumer only (air conditioner)

Option-4. Cleaning cycle determined by operation of either AC and/or DC consumer, whichever is operating

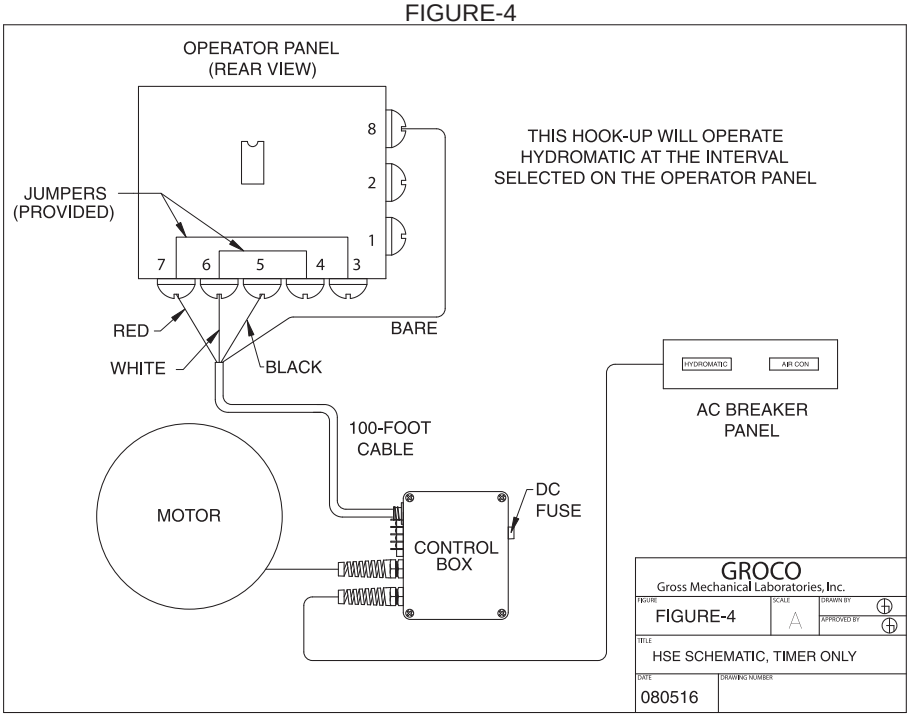
Method-A (Figure-8): DC consumer detect from DC (-)

Method-B (Figure-9): DC consumer detect from DC (+)

OPTION-1 (FIGURE-4):

* Jumpers are provided on the operator panel pcb between terminals 7 & 3, and between terminals 6 & 4. With both jumpers installed cleaning cycles will occur at the longest illuminated interval showing on the touchpad. Choose a 5, 15, 30 or 60-minute interval.
* Plug the connectorized end of the 100-foot cable to the control box.

FIGURE-4



115VAC Power Connection:

HSE 115VAC requires a dedicated 15-amp circuit breaker. Turn off power at the breaker before making power connections.

Run 12-gauge 3-conductor insulated cable to the Control Box. Remove the Control Box cover and feed the cable through the strain relief flexible connector. Use #6 ring terminals for 12-gauge wire to connect power to the terminal block as follows:

Green = Ground, Position 4

Black = Line, Position 5

White = Neutral, Position 6

Replace and secure cover.

230VAC Power Connection:

HSE 230VAC requires a dedicated 10-amp circuit breaker. Turn off power at the breaker before making power connections.

Run 12-gauge 3-conductor insulated cable to the Control Box. Remove the Control Box cover and feed the cable through the strain relief flexible connector. Use #6 ring terminals for 12-gauge wire to connect power to the terminal block as follows:

Green = Ground, Position 4

Black = Line A, Position 5

White = Line B, Position 6

Replace and secure cover.

Option-2, Method-A (Figure-5):

* Identify a NO (normally open) switched DC (-) output, such as an oil pressure sender or fuel pump input. With 18-gauge (or larger) marine grade stranded copper wire, make a connection between this signal and operator panel Terminal-4.
* Jumpers are provided on the operator panel pcb between terminals 7 & 3, and between terminals 6 & 4. Remove the jumper between 6 & 4. With only the 7-3 jumper installed cleaning cycles will occur at the longest illuminated interval showing on the touchpad, but only when the connected DC consumer (engine or generator) is operating. Choose a 5, 15, 30 or 60-minute interval.
* Plug the connectorized end of the 100-foot cable to the control box.

Option-2, Method-B (Figure-6):

* Identify a NO (normally open) switched DC (+) output, such as an oil pressure sender or fuel pump input. With 18-gauge (or larger) marine grade stranded copper wire, make a connection between this signal and operator panel Terminal-3.
* Jumpers are provided on the operator panel pcb between terminals 7 & 3, and between terminals 6 & 4. Remove the jumper between 7 & 3. With only the 6-4 jumper installed cleaning cycles will occur at the longest illuminated interval showing on the touchpad, but only when the connected DC consumer (engine or generator) is operating. Choose a 5, 15, 30 or 60-minute interval.
* Plug the connectorized end of the 100-foot cable to the control box.

Option-3 (Figure-7):

* Identify the switched AC input to the air conditioner motor. With 18-gauge (or larger) marine grade stranded copper wire, make a connection between this input (line and neutral) and operator panel Terminals-1 and 2.
* Jumpers are provided on the operator panel pcb between terminals 7 & 3, and between terminals 6 & 4. Remove both jumpers. Cleaning cycles will occur at the longest illuminated interval showing on the touchpad, but only when the connected AC consumer (air conditioner) is operating. Choose a 5, 15, 30 or 60-minute interval.
* Plug the connectorized end of the 100-foot cable to the control box

FIGURE-5

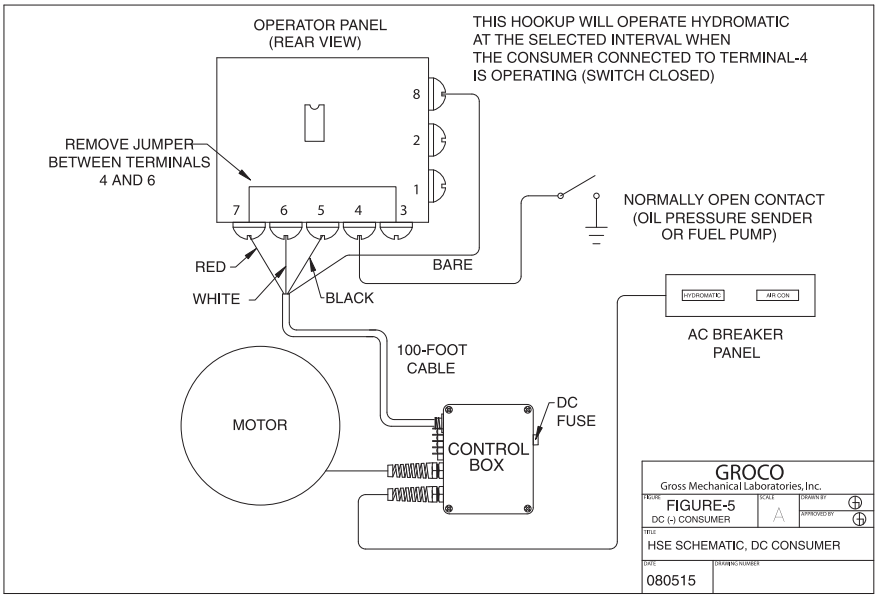


FIGURE-6

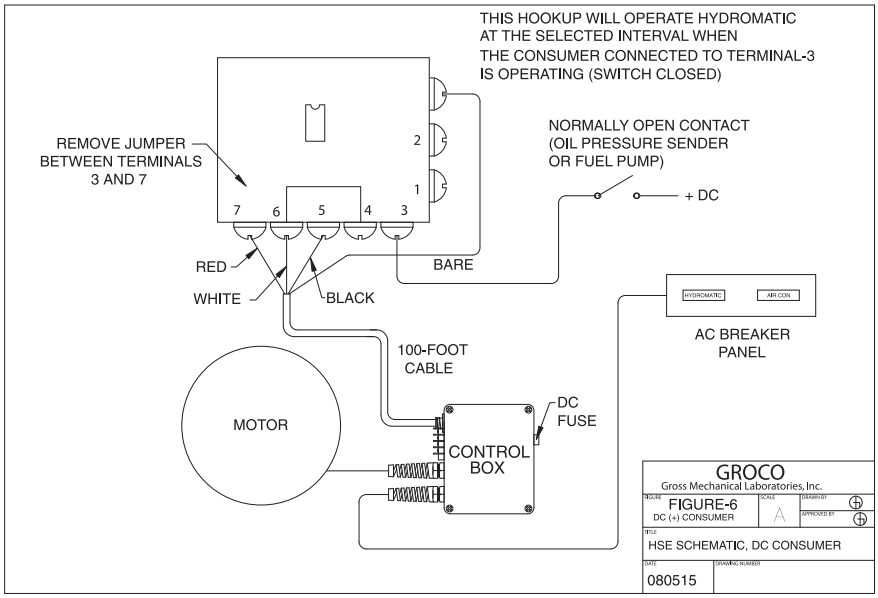
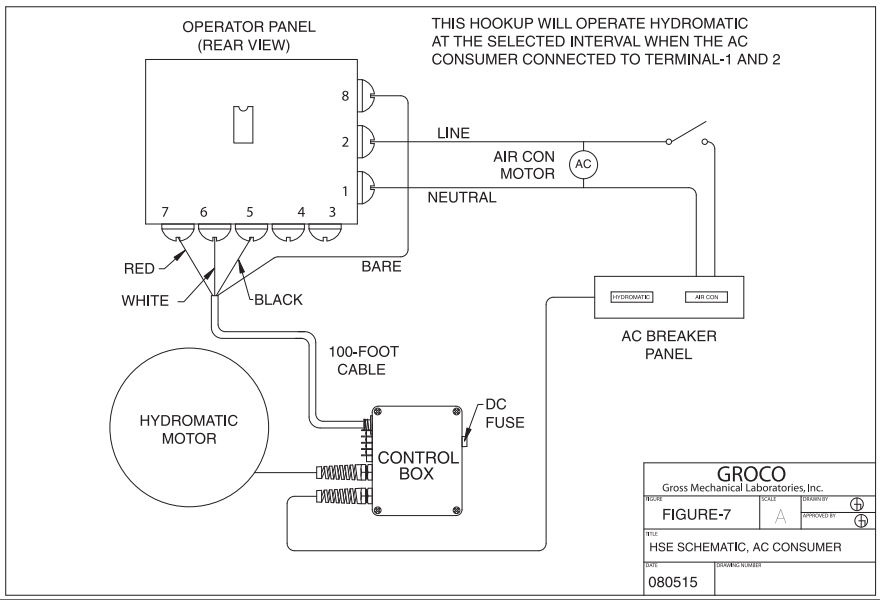


FIGURE-7

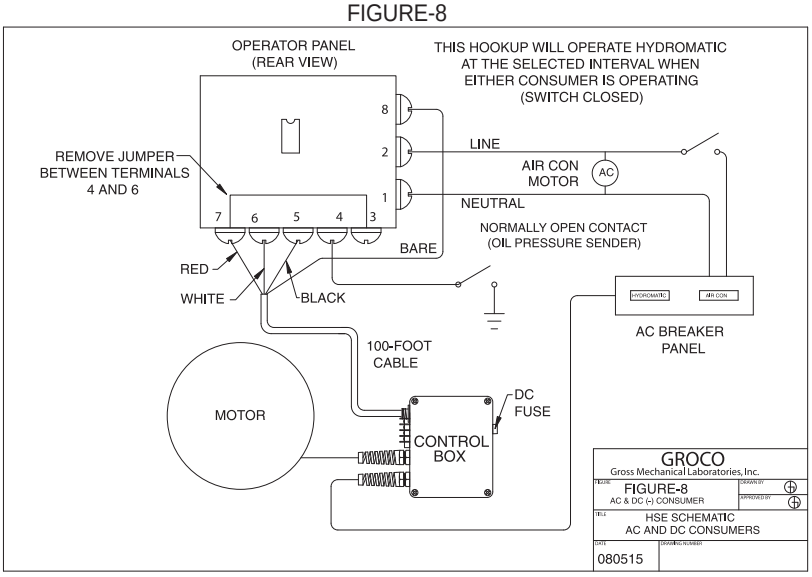


Option-4, Method-A (Figure-8):

* Make AC consumer and DC consumer operator panel connections in accordance with Figure-8.
* Identify a NO (normally open) switched DC (-) output (i.e., oil pressure sender). With 18-gauge (or larger) marine grade stranded copper wire, make a connection between this signal and operator panel Terminal-4.
* Jumpers are provided on the operator panel pcb between terminals 7 & 3, and terminals 6 & 4.

  Remove the jumper between 6 & 4. With only the 3-7 jumper installed cleaning cycles will occur at the longest illuminated interval showing on the touchpad, but only when one of the connected AC or DC consumers (engine, generator or air conditioner) is operating. Choose a 5, 15, 30 or 60-minute interval.
* Plug the connectorized end of the 100-foot cable to the control box.

FIGURE-8

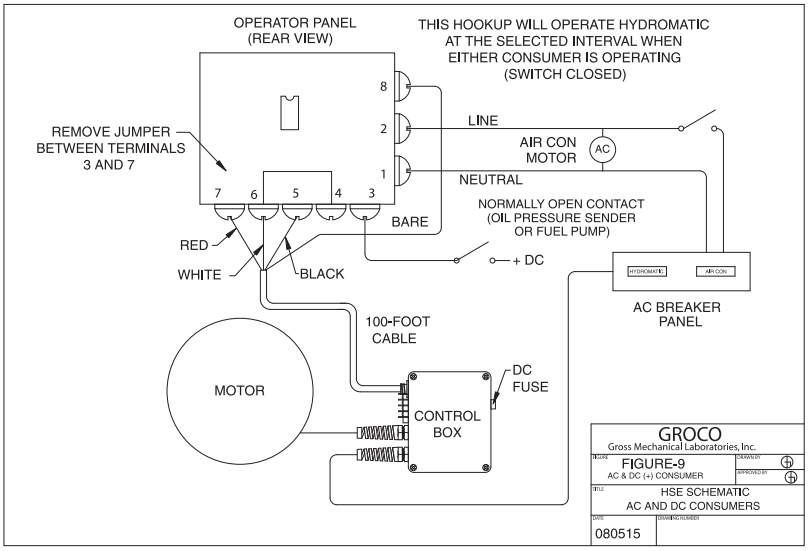


Option-4, Method-B (Figure-9):

* Make AC consumer and DC consumer operator panel connections in accordance with Figure-9.
* Identify a NO (normally open) switched DC (+) output such as an oil pressure sender. With 18-gauge (or larger) marine grade stranded copper wire, make a connection between this signal and operator panel Terminal-3.
* Jumpers are provided on the operator panel pcb between terminals 7 & 3, and terminals 6 & 4.

  Remove the jumper between 7 & 3. With only the 4-6 jumper installed cleaning cycles will occur at the longest illuminated interval showing on the touch-pad, but only when one of the connected AC or DC consumers (engine, generator or air conditioner) is operating. Choose a 5, 15, 30 or 60-minute interval.
* Plug the connectorized end of the 100-foot cable to the control box.

FIGURE-9



OPERATION

The operator panel has two control buttons, "CLEAN" and "SET", and several indicator lamps. Their functions are as follows:

Button	Lamp	Function
Clean		Initiates a 30-second cleaning cycle if power is on
Set		Permits the selection of cleaning cycle interval Select a 5, 15, 30 or 60-minute interval
	Cleaning	Indicates that a cleaning cycle is in process
	Consumer	Indicates that one or more consumers is in operation
	Interval	Indicates the current interval selection
	None	Indicates that the unit is off

* Each time power is applied, Hydromatic conducts a self-test routine, after which 30-second cleaning cycles will be repeated at the interval you have selected. To select an interval, press the SET button until the desired interval is displayed.
* A cleaning cycle may be commanded at any time by pressing the CLEAN button.
* On the side of the Control Box is a terminal block. If you wish to override the cleaning interval indicated by the operator panel to command a one-time clean cycle, connect a momentary switch to the terminal block. Actuating the momentary switch will perform the same function as pressing the CLEAN button on the operator panel.

MAINTENANCE

Turn off AC and DC power before servicing. Close inlet and discharge seacocks.

* No regular maintenance is required, though occasional inspection of the filter basket is recommended.
* To inspect the filter basket, disconnect power and unscrew the cover.
* The four cutters secured to the impeller are not intended to be knife-sharp. With power to Hydromatic turned off, visually inspect them for wear; they should extend slightly above the impeller surface.
* To replace the shaft seal the impeller must be removed. Unscrew the impeller. (This is a left-hand thread).
* Install a new shaft seal carefully. The seal components are delicate and can be scratched; scratched components will not seal. Push seal components gently but firmly into place. First install the rubber cup with ceramic facing away from the motor; then install carbon with smooth surface facing ceramic. The spring tensions the assembly after the impeller is reinstalled.