



Operating Instructions & Parts Manual
for NSEP
HW 2600 & HW 3800
WASH SYSTEMS

North Star Engineered Products
28905 Glenwood Rd.
P.O. Box 1141
Perrysburg, OH 43552
419 726 2645 ph / 419 726 8583 fax

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- LIMITED WARRANTYERROR!

BOOKMARK NOT DEFINED.

9/04
Version 1.0

1.1 Note; legal provisions relating to the operating instructions

These operating instructions are subject to **copyright**, which is exercised by Glassline Corp. Copying these operating instructions, even in extract only, as well as **adding** or **removing pages**, is only allowed for purposes of maintaining & operating the wash system, not for any purposes detrimental to North Star Engineered Products Inc.

1. If **modifications** or **extensions** to the machine are necessary for the manufacturer, he will also supplement these operating instructions and make them available to the operator of the machine.

These operating instructions should be kept at the machine where they are accessible at all times.

These operating instructions were written on

08.04.

The version number is listed at the end of the table of contents.

They are valid for NSEP HW 2600 and 3800 wash systems.

1.2 Foreword to the operating instructions

These operating instructions are intended to enable you to familiarize yourself with the machine, including the observance of all the safety notes as well as their functions, to achieve optimum use of the machine.

The operating instructions provide you with information as to how to correctly operate the machine.

Note: Where there are existing national specifications, these operating instructions should be supplemented by the operator by adding instructions on accident prevention and environmental protection.

The operating instructions must be constantly available where the machine is used. The operating instructions should be read by all persons who have to work with or on the machine.

- **Operation:** including setting up, trouble-shooting during operation, removing production waste, disposing of process materials
- **Maintenance:** servicing, inspections, maintenance
- **Transportation:** security in transportation

Warning: Special attention should be paid to the listed symbols in these operating instructions since they are used in the text to reinforce visually the notes on risks.

Note for
necessary
for functioning

Note on
safety

Note on electrical
engineering risks

Risk of
injury



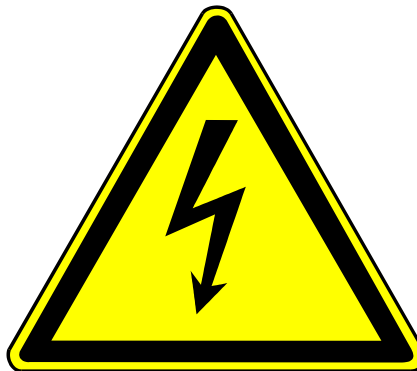
2 Manufacturer's notes on residual risks

Although we meet a high safety standard in designing and manufacturing the machine, **there remain** the following **residual risk factors**:

1. damage to the electrical lines (externally at the socket or at the machine) as a result of external influences;
2. failure of the protective equipment;
3. improper use of the machine;



4. cleaning the machine without protective clothing;
5. cleaning agents remaining in the foodstuffs area as a result of faulty cleaning work;



6. contamination of the immediate environment of the machine as a result of fats, water, cleaning agents, foodstuffs, etc.;
7. operating errors resulting from the use of unqualified and untrained personnel;
8. contamination of the machine, e.g. foodstuff residues.

2.1 Manufacturer-specific safety notes

So as to keep the *risks* as *low* as possible, take the *following measures*:

1. Check the electrical power lines for damage daily before beginning production.
2. Ensure that the machine is used only as intended, i.e. for washing salad, vegetables and fruit.
3. The machine must be shut down completely for cleaning: i.e. switch off the wash system and remove the plug.



4. After cleaning with proper cleaning agents; the machine must be thoroughly rinsed with water to ensure that no residues remain.
5. The area around the machine should be kept clean.
6. Provide your employees with training as specified, and verify their qualifications at regular intervals;

2.2 Safety notes

2.2.1 Warning notes and symbols

The operating instructions include the following words and symbols for particularly important information:

Note: information in respect of the economic use of the system/machine;

Warning: special information, requirements and prohibitions in respect of accident prevention;

Risk: information, requirements and prohibitions in respect of the prevention of personal injury and of large-scale material damage.

2.2.2 Basics; intended use

The machine has been constructed to the state of the art and in accordance with the recognized safety regulations.

Use the machine only when it is in technically perfect condition, and only as it is intended to be used, with consideration for safety and risks, paying attention to the operating instructions. Faults which might impair safety must be remedied at once

The machine should be used solely for washing salad, vegetables and fruit. Any other use, or a use which extends beyond this, such as washing metal parts, is deemed to be not as intended. The manufacturer or supplier is not liable for any damage which thus results. Risk is borne solely by the user. Use as intended includes also paying attention to the operating instructions and to observing the inspection and maintenance conditions.

2.2.3 Organizational measures

The operating instructions must constantly be kept accessible where the machine is being used (in a tool compartment or a specially provided container).

In addition to the operating instructions, attention should also be paid to the statutory and other binding regulations on accident prevention and on environmental protection, as well as to instructing the personnel.

Duties of this kind may also concern e.g. dealing with hazardous materials or making available / wearing protective equipment.

Before beginning work, the personnel who are employed in working on the machine must have read and understood the operating instructions, in particular the Safety notes chapter. It is too late to wait until actually working on the machine. This applies in particular to those persons who work on it only occasionally, e.g. in setting up and maintaining the machine.

The personnel should be checked from time to time as regards awareness of safety and risks at work, paying attention to the operating instructions.

Use protective equipment in so far as it is necessary or required by regulations.

(E.g.. Manufacturer-specific safety notes on setting up the machine as well as on maintaining the machine.)

Pay attention to all the safety and risk notes on the machine.

All the safety and risk notes must be kept in a legible condition at the machine.

In the event of the machine or its behavior changing in any way which is relevant to safety, shut down the machine immediately and report the faults to the responsible office / person. Do not make any modifications without the manufacturer's permission, especially those which might affect the safety regulations. This applies also to installing and setting safety equipment and valves as well as for welding on load-bearing parts.

Replacement parts must meet the manufacturers technical requirements. This is always guaranteed in the case of original replacement parts.

Observe the specified intervals or intervals indicated in the operating instructions for recurring tests/inspections.

(E.g.. manufacturer's information on service intervals, replacement of parts.)

Workshop equipment which is appropriate to the work is absolutely necessary for carrying out maintenance measures.

2.2.4 Selection and qualification of personnel; basic duties

Work on / with the machine must be carried out only by reliable personnel. Observe the statutory minimum age.

Employ only trained or instructed personnel. Clearly specify responsibilities on the part of the personnel for operating, setting up, servicing and maintaining the machine.

Ensure that only the personnel who have been set to work on the machine do so.

Specify the responsibility of the main machine operator and allow him or her to reject the instructions of third parties which are contrary to safe practice.

Allow personnel who are to be trained or instructed or who are undergoing general training to work on the machine only under the constant supervision of an experienced person.



Work on the electrical equipment of the machine must be carried out only by qualified personnel, or by instructed persons under the management and supervision of qualified personnel.

2.2.5 Safety notes on operating conditions

For standard operation

Do not do anything which could impair safety.

Before beginning work, familiarize yourself with the working environment where the machine is being used. The working environment should be checked for obstructions in respect of working and moving.

Take measures which ensure that the machine is operated only in a safe operating condition. Operate the machine only if all protective equipment and safety-relevant equipment, e.g. removable protective equipment, emergency-off equipment is available and in operation.

Check the machine at least once per shift for externally visible damage or faults. Immediately report any noticeable changes (including that of operating behavior) to the responsible office/person. If appropriate, immediately shut down and secure the machine.

Immediately shut down and secure the machine in the event of any operating faults.

Have the faults corrected at once.

Start up the machine only from the operator's area.

It is not permissible to use instruments such as sticks or other objects to start up the machine.

Pay attention to switch-on and switch-off procedures, monitoring displays in accordance with the operating instructions.

Before switching on / starting up the machine, ensure that no one can be put at risk by the start of machine operation.

Before beginning work, check as to whether signal and lighting equipment is operational.

Do not do anything that impairs the stability of the machine.

2.2.6 Special work in connection with using the machine as well as maintenance work and trouble-shooting during operation; waste disposal

Observe the setting, servicing and inspection work and inspection times which are specified in the operating instructions, including the information on replacing parts and equipment parts. (E.g.. manufacturer's information on servicing intervals, replacing parts.) Only specialist personnel must carry out this work. Inform operating personnel before beginning special work or maintenance work. Name those who are to supervise.

Pay attention to switching on and off procedures in accordance with the operating instructions and the notes for maintenance work in the case of all work which affects the operation, production adaptation, resetting or adjustment of the machine or of its safety-relevant equipment as well as inspection, servicing and repair.

Allow plenty of space to safeguard the maintenance area, insofar as is necessary. In the case of servicing and repair work, the machine must be fully switched off and safeguarded against being switched on unexpectedly again. Lock the main switch and remove key as well as affixing a warning notice at the main switch.

Carry out servicing and maintenance work only if the machine is located on a surface which is even and capable of bearing the machine. When being replaced, individual parts and larger assemblies should be carefully fastened and secured to hoists in such a way that there is no risk. Use only suitable and technically proper hoists as well as load suspension equipment with sufficient bearing capability. Do not stand or work under suspended loads. Only experienced persons should be given the work of slinging loads and instructing crane drivers. The instructor must remain in view of the operator or be in verbal contact with him or her.

Clean the machine, here in particular connections, including screw connections, at the beginning of servicing or of repairs, of oil and maintenance fluids. Do not use any aggressive cleaning agents. Use lint-free cloths. Before cleaning the machine with water or other cleaning agents, cover or close all openings in which water or cleaning agents must not enter for safety or operating reasons. After the machine has been cleaned, the openings which have been covered or sealed must be completely cleared.

Always tighten screw connections which have been loosened in the course of servicing or maintenance. If it is necessary to disassemble safety equipment when setting up, servicing or repairing the machine, the safety equipment must be reassembled and checked immediately after the servicing and repair work has been completed. Ensure that process materials and replacement parts are disposed of in a safe and environmentally correct manner.

2.2.7 Notes on particular types of risk

Electrical energy

Only use fuses with proper voltage & current ratings.

Turn off the machine if there are any electrical faults.

Work on electrical systems or equipment **must be carried out only by qualified personnel.**

Power must be removed before any maintenance is performed on the machine.

The electrical equipment of a machine/system should be regularly inspected and tested. Faults, such as loose connections or scorched cables, must be corrected immediately.

3 Installation

3.1 Installation of the machine

The machine should be transported on it's pallet. The available securing equipment (belt connections between machine and pallet) should be removed only at the planned location. The lift truck which is to be used for transportation must be capable of safely lifting the 300kg machine.

When transporting and installing the machine, attention must be paid to the respective employees being equipped with safety boots (steel capped) and suitable working gloves.

Warning:

There is a high risk of injury at the time of installation.
For example, as a result of feet or hands being crushed.



The machine should be installed in accordance with the operating instructions.

When setting the machine, a spirit level is used and the screw feet adjusted as appropriate. It is recommended that the feet be adjusted so that the machine sits as close to the floor as possible.

4 Instructions on the correct operation of the machine

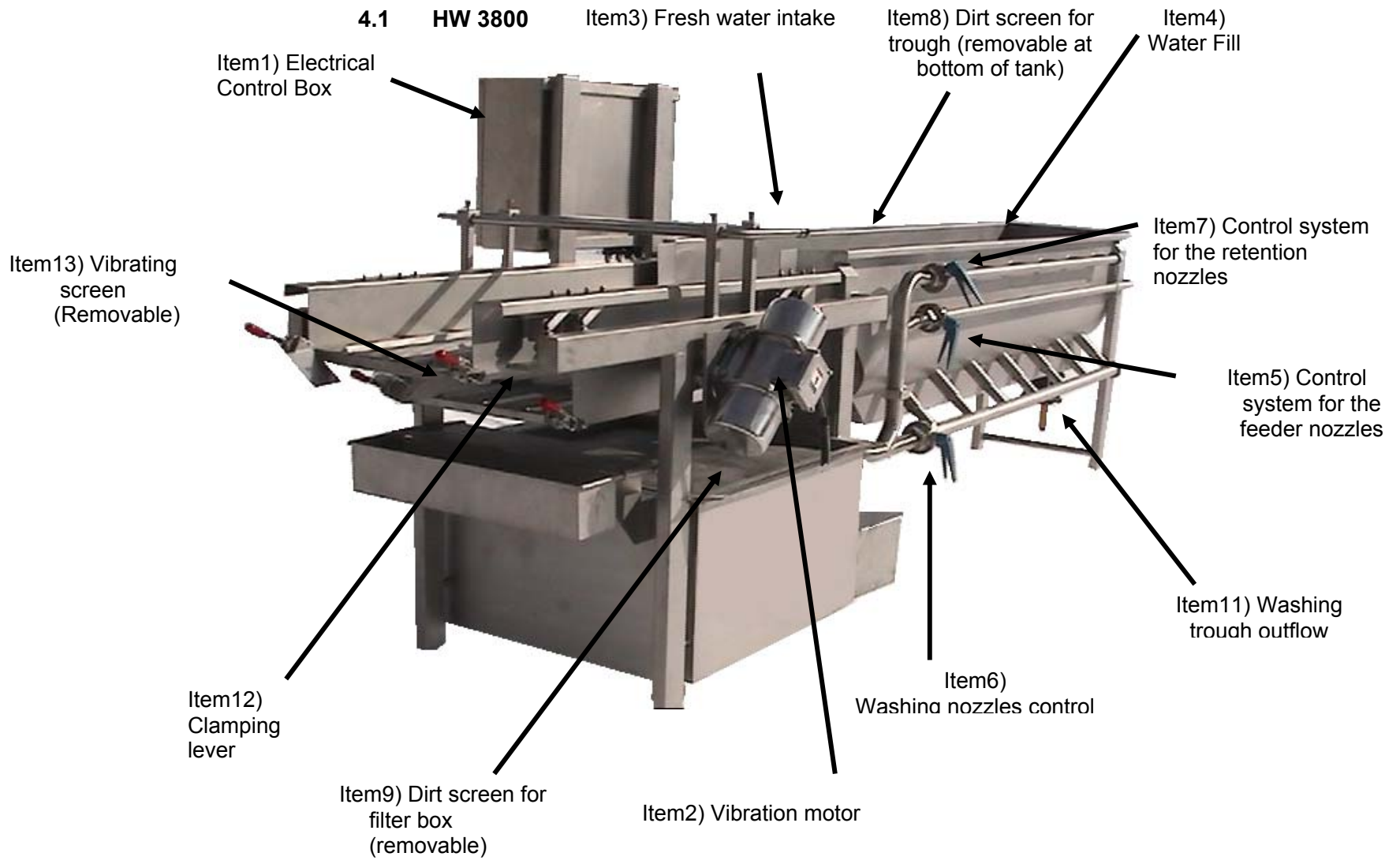
- 1.) Before the machine is started up, it is **absolutely necessary** to check that **no objects** (such as rags, tools, etc.), have been left in the machine.



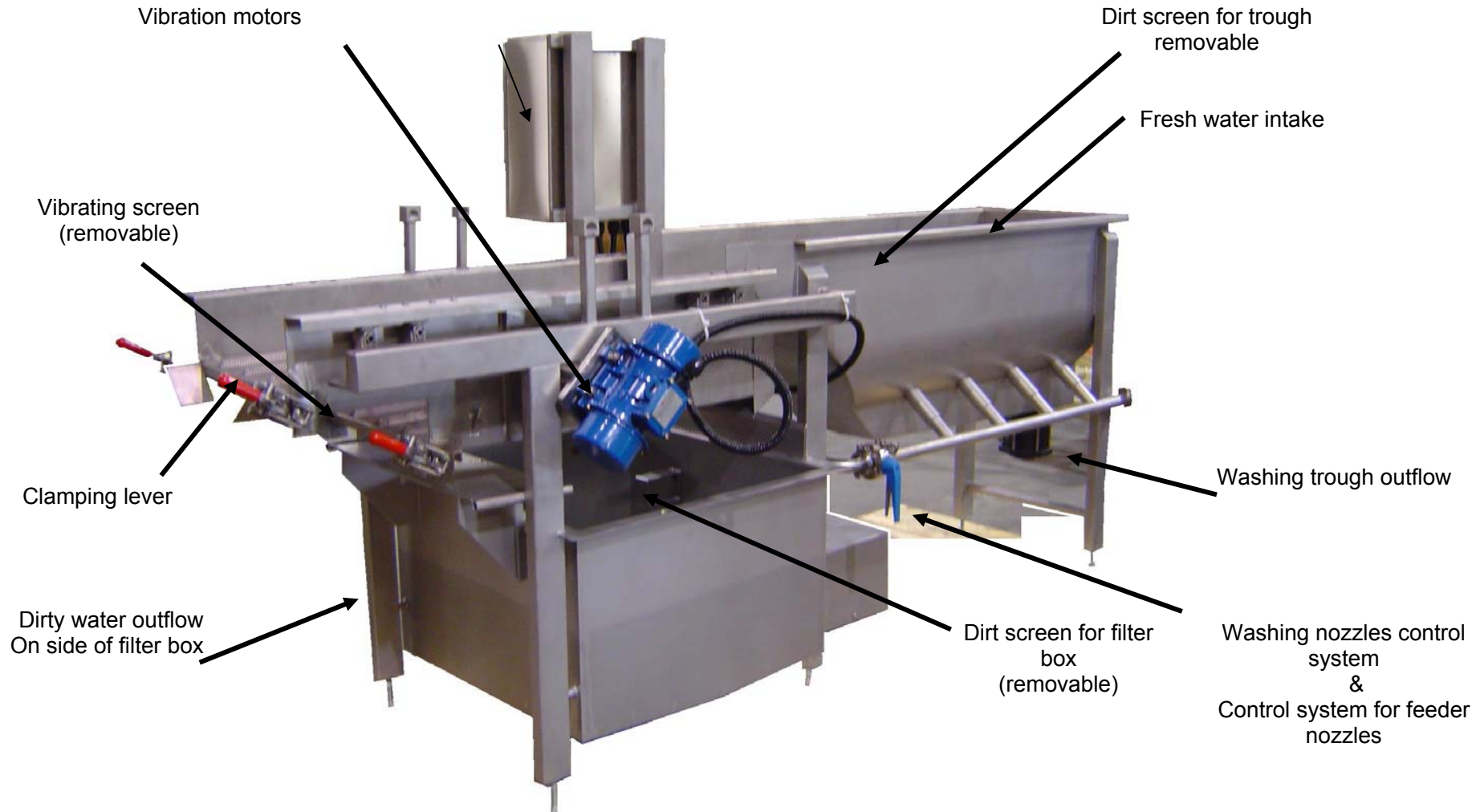
- 2.) Fill the machine with fresh water at the fresh water connection (**Fig. 3**) to the maximum height. The maximum height has been reached when the water begins to escape from the overflow pipe (**Fig. 10**).
- 3.) **Momentarily** start the pumps. Verify that the pump fan turns clockwise, looking into the fan housing. If not, reverse two of the incoming power wires. **NOTE:** Do not reverse the individual pump wires. During testing, all the pumps & vibrators were turning the in the correct direction, so if a change is required, all of them will need to be changed. This is best accomplished by reversing the incoming power wires.
- 4.) Now you can switch on your wash system (front panel disconnect), and begin the wash process (**Fig. 1**).
- a. Push the pump start button to start the pump(s). The pump(s) will start if there is sufficient water in the tank. There is a short delay time after the float switch is actuated, (6-7 seconds) so that the pump does not constantly turn on & off.
 - b. Push the vibration start button to start the vibrator motors.
 - c. Each start button has an individual stop button to end each function. The emergency stop button will end all functions.
- 5.) During the wash process, it is possible to change the water continuously via the refill nozzle (**Fig. 3**) so as to guarantee a regular regeneration of the washing water. After work has been completed, the wash trough (**Fig. 8**) and the filter basin (**Fig. 12**) should be emptied, and the pipeline systems cleaned.
- 6.) If your machine is equipped with a recirculating pump, (for use with a water chiller), a separate push button is provided. This pump is typically operated by a separate float switch, located near the overflow level. The flow from this pump typically is restricted so that the pump will run continuously. Another option is to use only the lower float switch, and enable the recirculating pump whenever the machine pump is running. To do this, jumper the lower float switch terminals to the upper switch terminals. The upper float switch is a redundancy in this case.



operating instructions

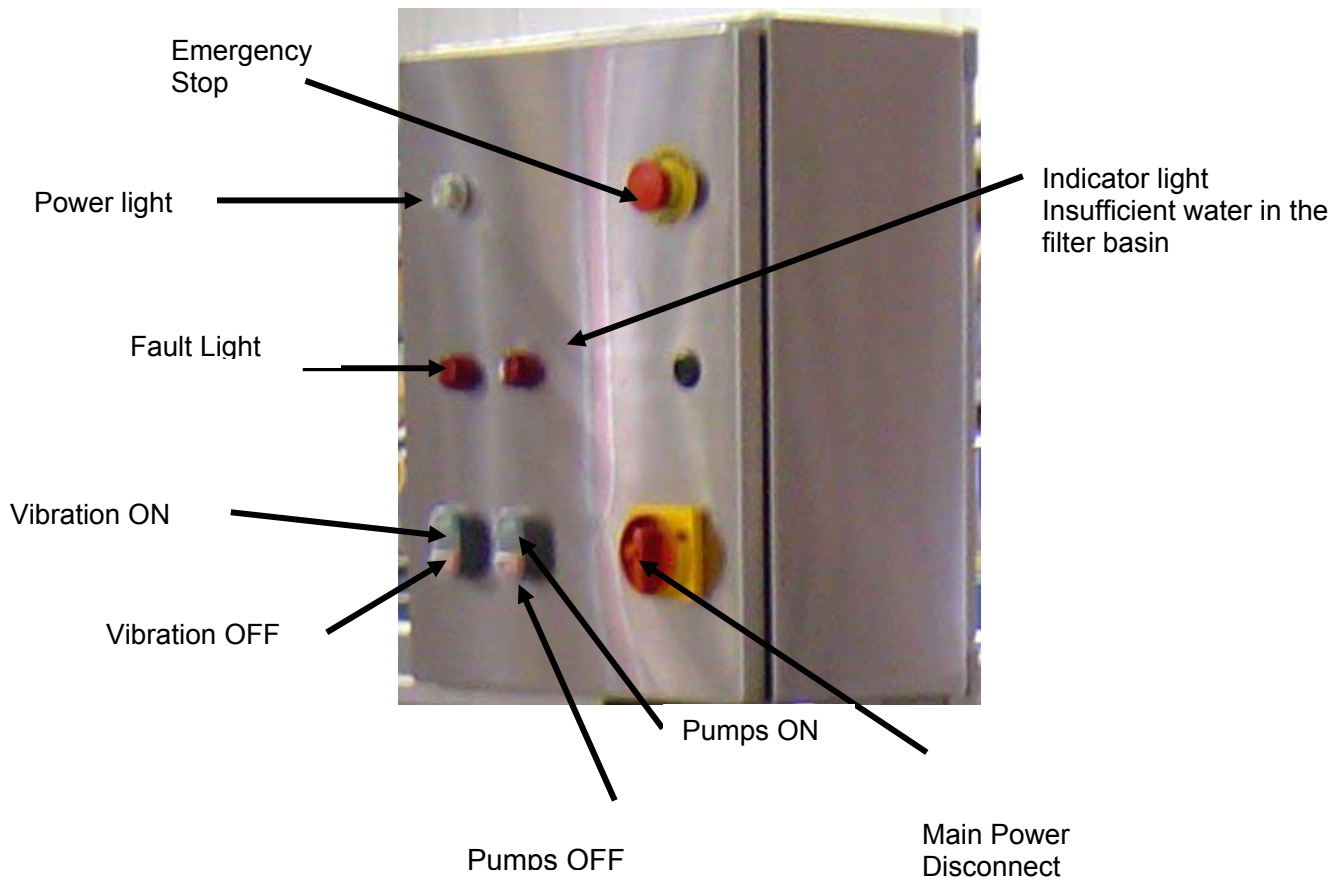


4.2 HW 2600



4.3 Electrical Control Box

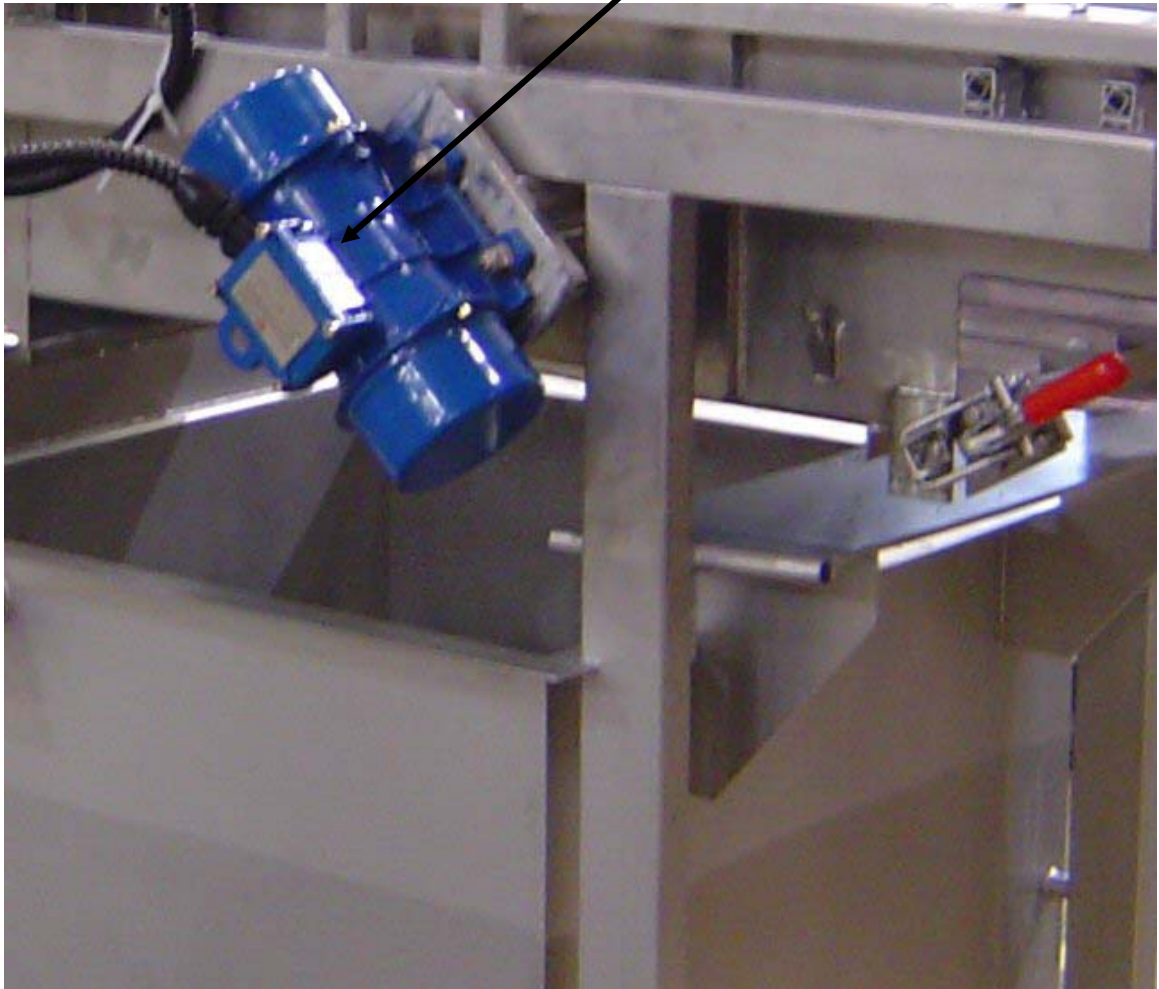
Fig. 1



4.4 Vibration motors

Fig. 2

Vibration motor



The vibration of the motors causes the excess water to be shaken off the product as it is transported down the shaker.

4.5 Fresh water intake for "spray pipe"

Fig. 3

Spray pipe for additional rinsing of the goods with fresh water



Fresh water connection

Continuous feeding of fresh water is recommended to ensure regular replacement of the wash water.

4.6 Tank Drain

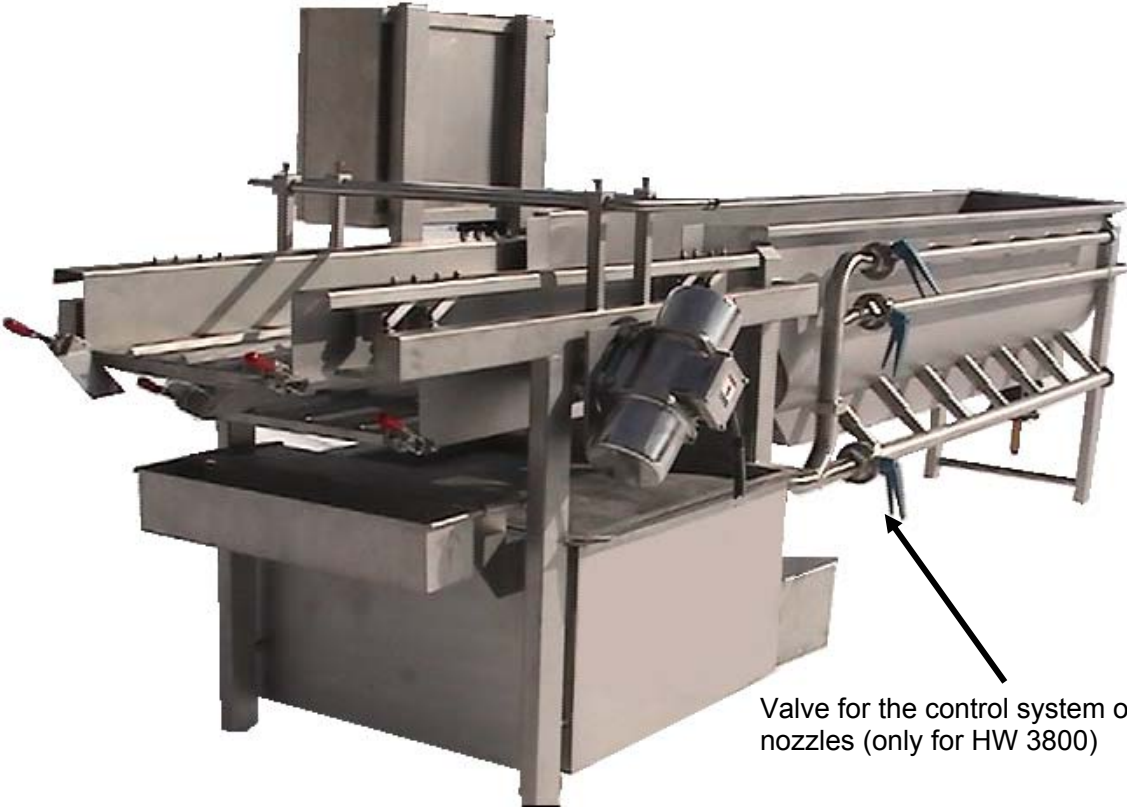
Fig. 4



Valve to empty tank

4.7 Control system for feeder nozzles

Fig. 5



Valve for the control system of the feeder nozzles (only for HW 3800)

Valve open ⇒ shorter dwell time
Valve closed ⇒ longer dwell time

4.8 Washing nozzle control system

Fig. 6

Valve for washing nozzle control system

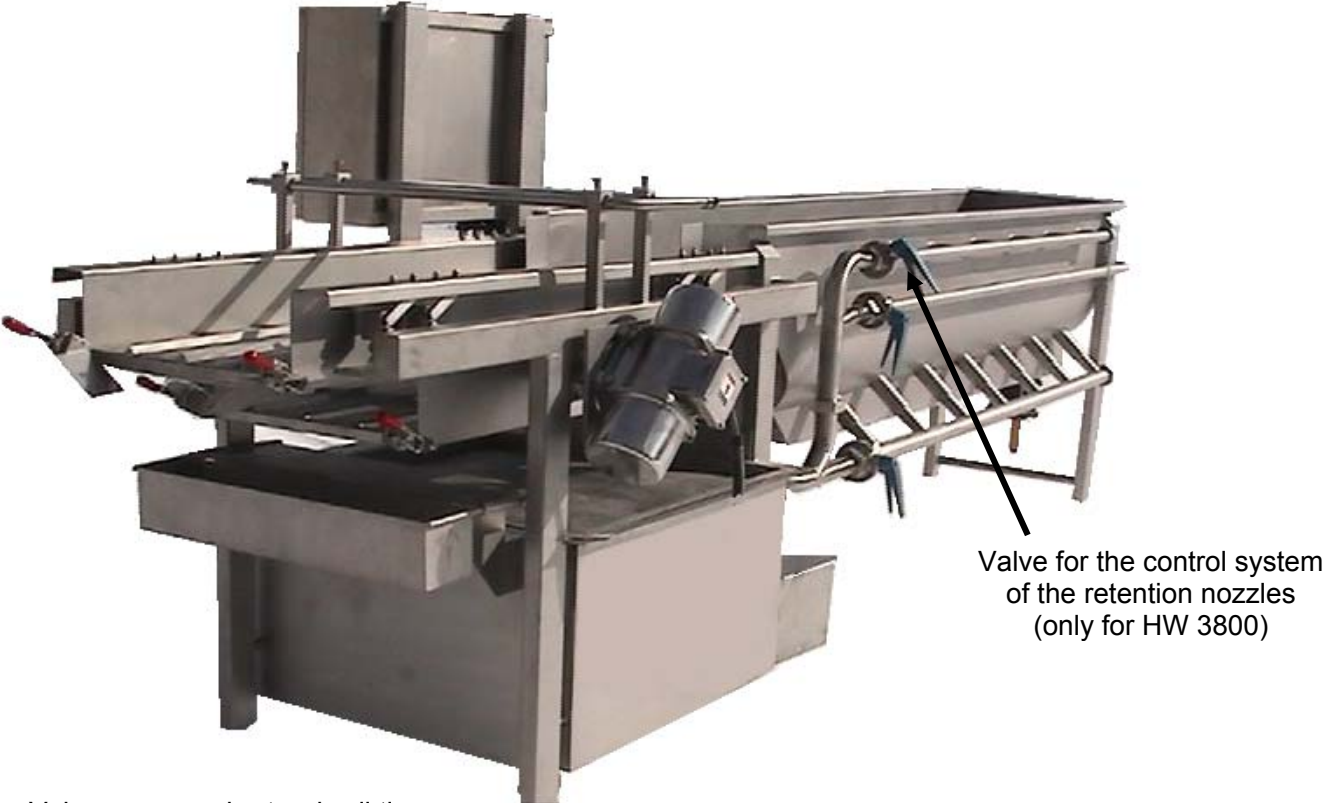
In the case of HW 2600, it is also the control system for the feeder nozzles



Valve open \Rightarrow intensive cleaning
Valve closed \Rightarrow less intensive cleaning

4.9 Control system for the retention nozzles

Fig. 7



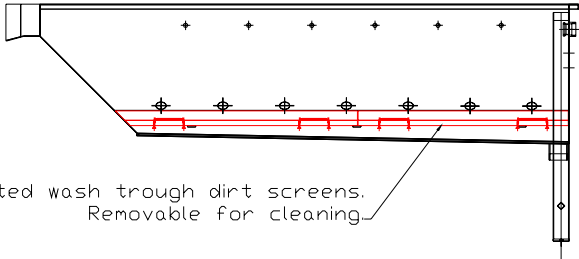
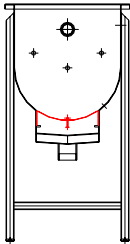
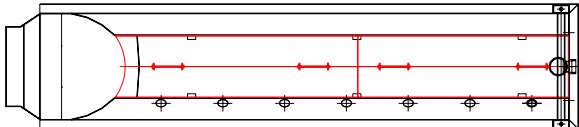
Valve open ⇒ shorter dwell time
Valve closed ⇒ longer dwell time

4.10 Washing trough dirt screen (removable)

Fig. 8

Dirt screen for cleaning
the washing trough.

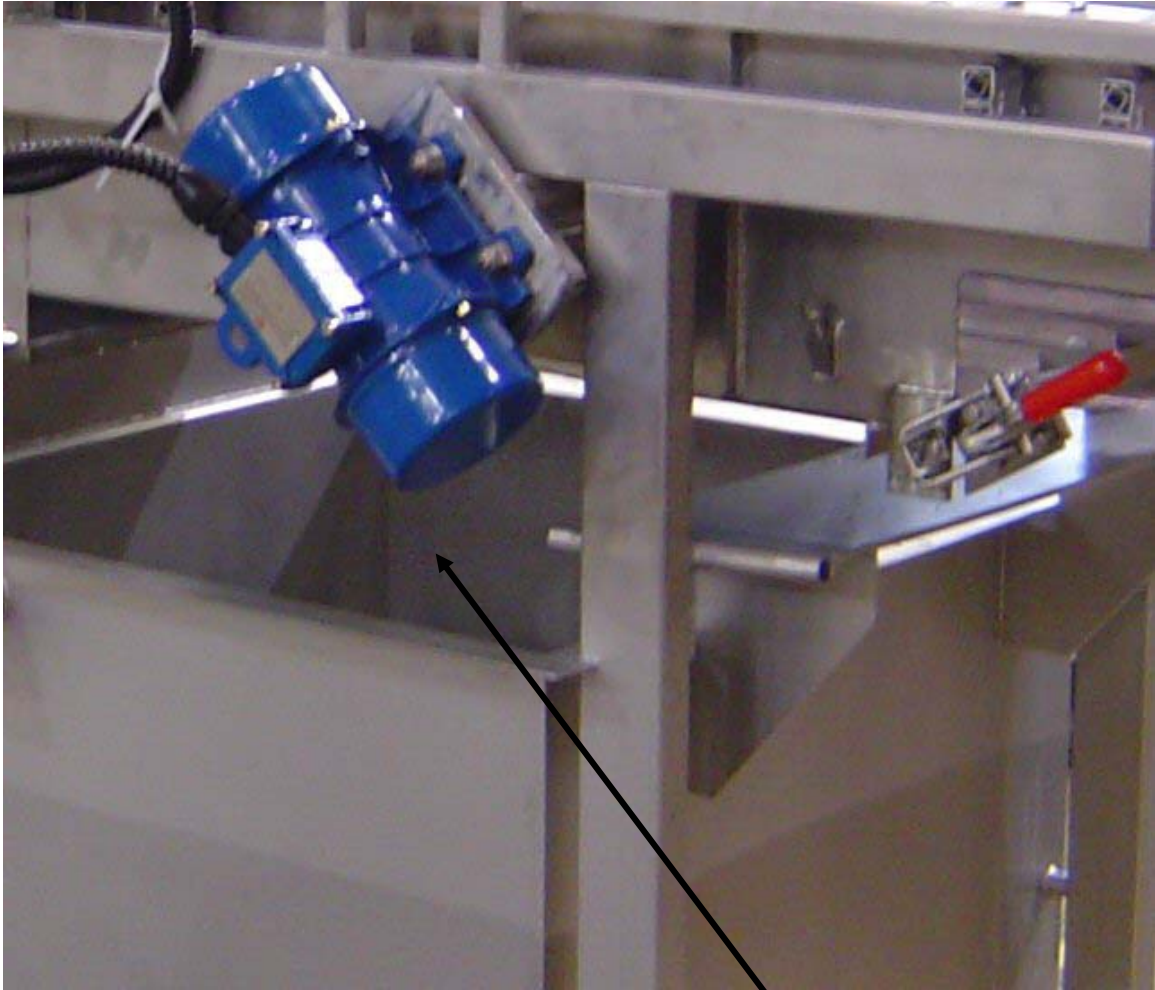
Tilt Slightly and then lift
out.



Perforated wash trough dirt screens.
Removable for cleaning.

4.11 Filter box dirt screen (removable)

Fig. 9

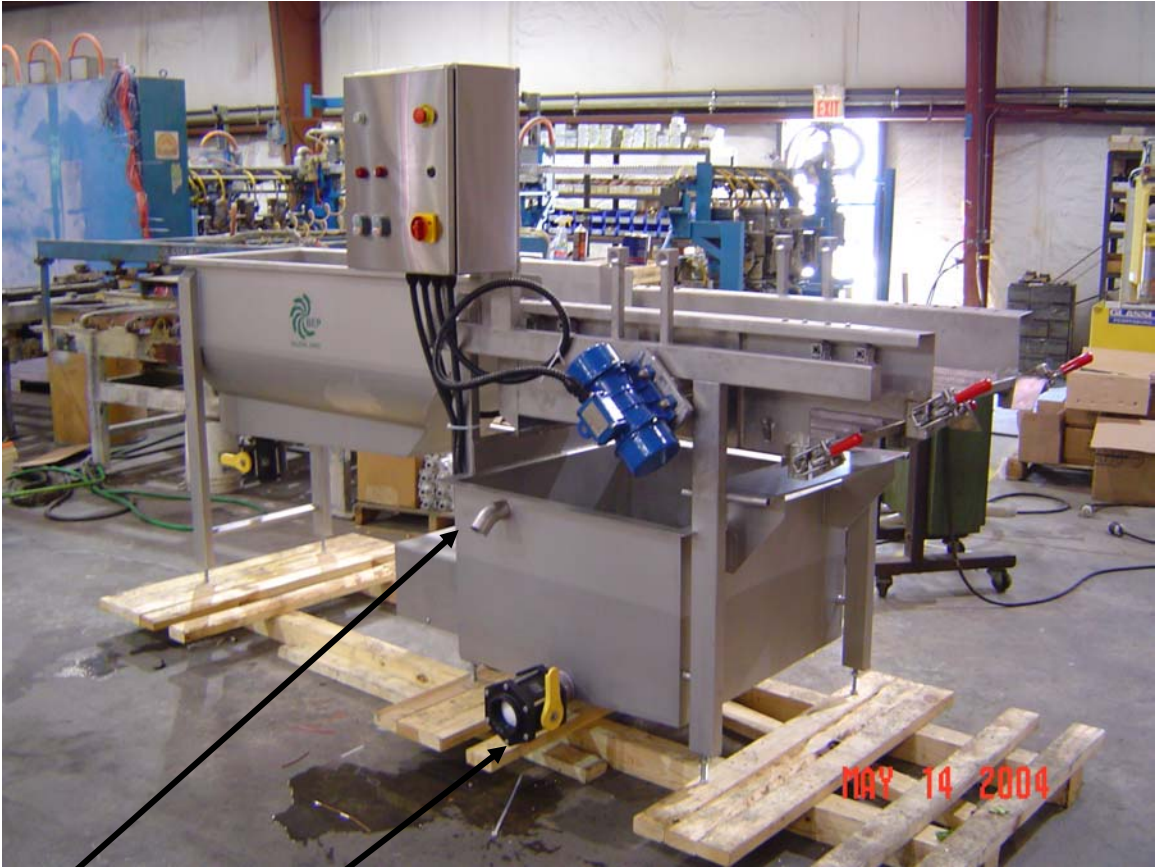


Dirt Screen

Dirt screen for cleaning the filter box.
Lift slightly and pull out.

4.12 Dirty water outflow

Fig. 10



Overflow pipe

Dirty water outflow at filter box.

4.13 Outflow cock for washing trough (underside)

Fig. 11

Dirty water outflow at washing trough



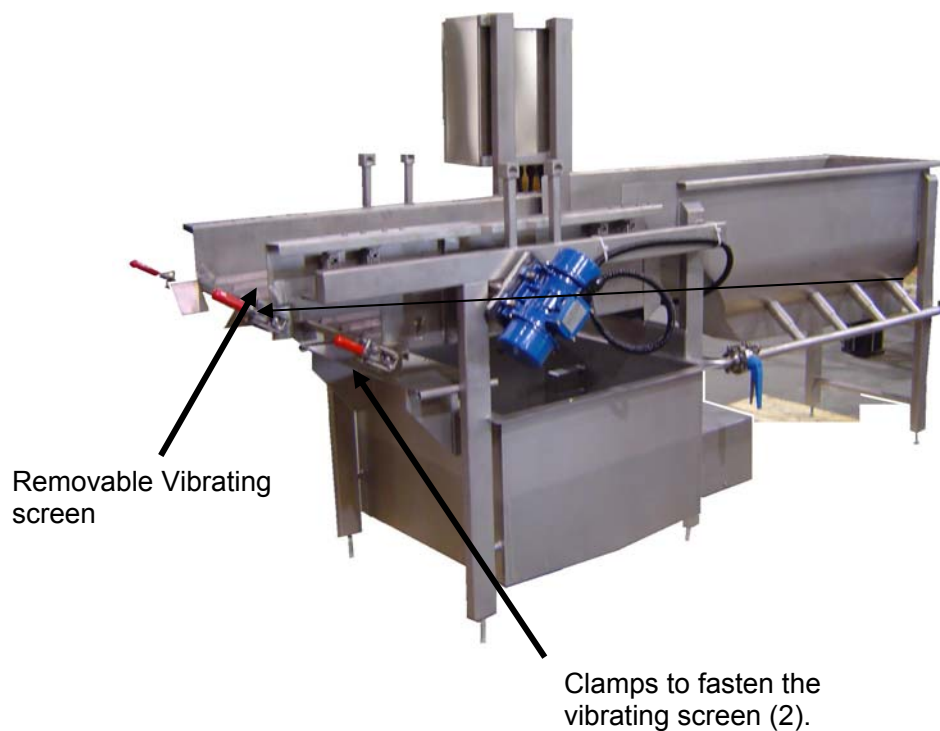
Fig. 12



If you open the outlet valve, you can drain the trough after you have finished work. You can use a water hose to rinse out dirt residues from the trough via the opening at the outlet valve.

4.14 Clamp for vibrating screen

Fig. 13



4.15 Removable vibrating screen

The two orange clamps must first be loosened. The vibrating screen can now be pulled out.

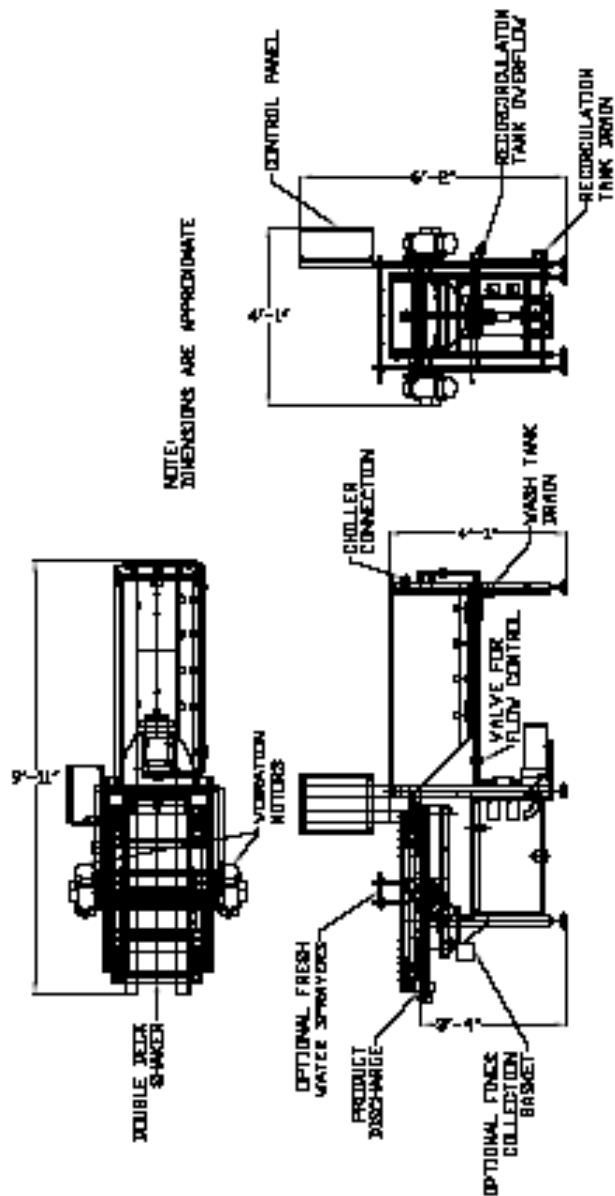
Assembly is carried out in the reverse sequence.

5 Cleaning and Maintenance

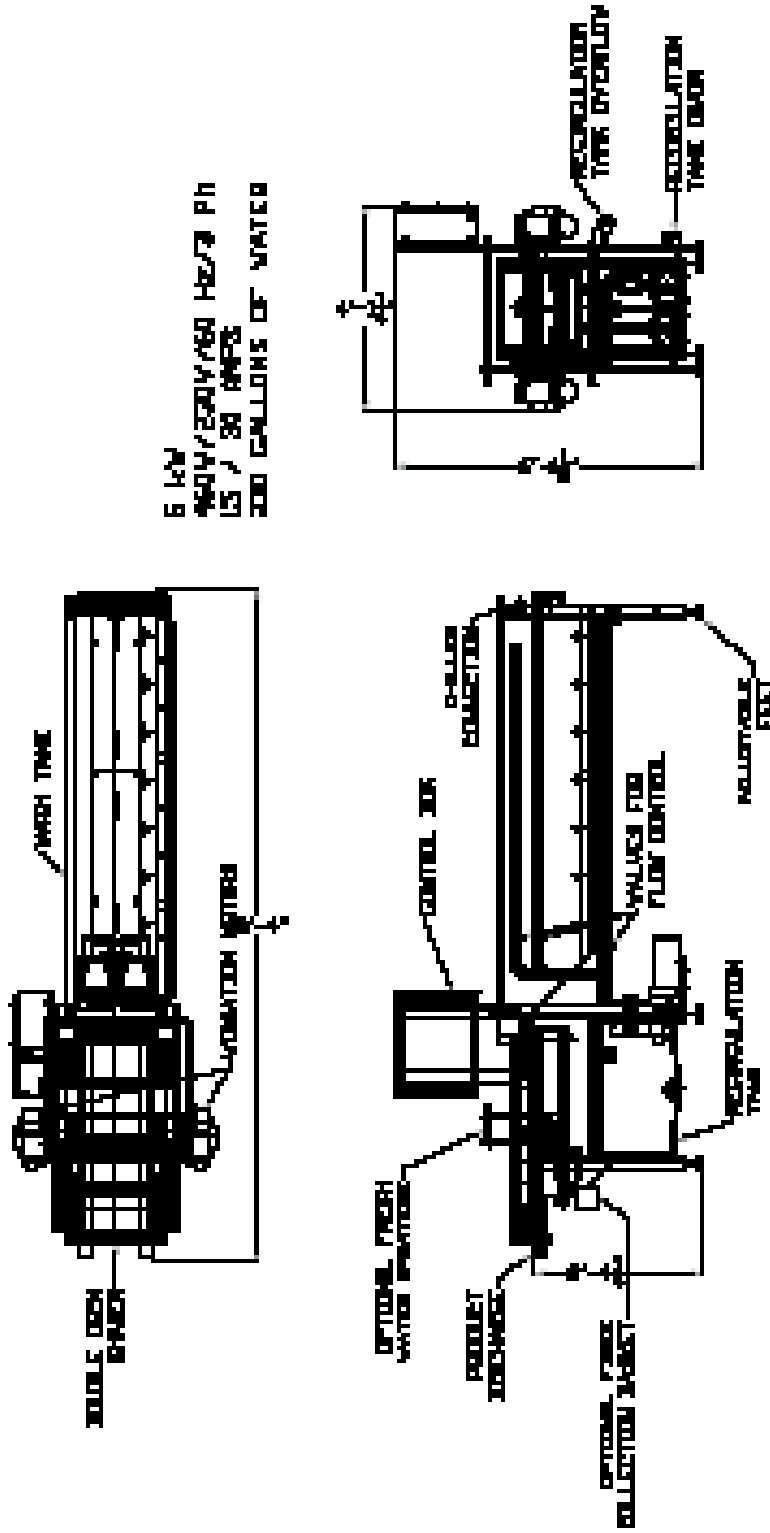
Please follow the cleaning and maintenance standards established by your company

6 Mechanical design of the HW 2600 & HW 3800

6.1 Layout of the HW 2600



6.2 Layout of the HW 3800



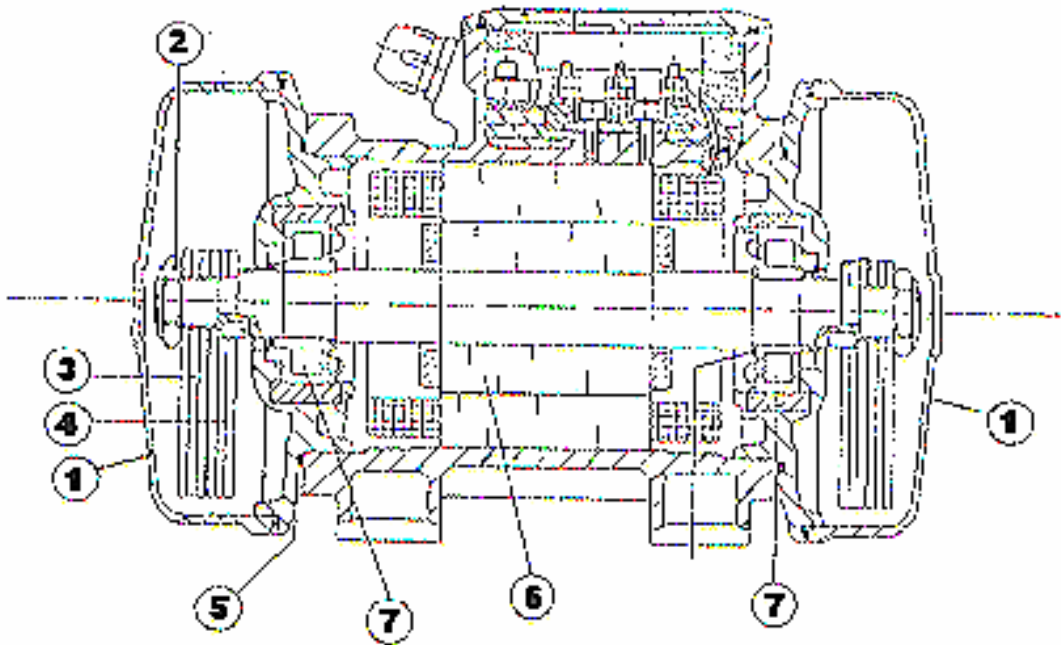
6.3 Servicing the vibration motors

The motors do not require any particular servicing or lubrication. However, all fastening and mounting devices for the motor should be checked from time to time.

Changing the bearings:

If you do not have the facilities for expertly changing the bearings, please send us the equipment. When bearing damage is remedied, the electrical system of the equipment is also subject to checking.

All servicing directives refer to use under normal conditions (e.g. within the temperature tolerances, operation at standard frequency, etc.)



- No.01 Unbalanced mass cover
- No.02 Lock nuts
- No.03 Unbalanced masses
- No.04 Unbalanced masses
- No.05 Bearing flange
- No.06 Rotor
- No.07 Layer

6.4 Setting the unbalanced mass unit on the vibration motor

Setting the unbalanced mass

All electrical external form vibrators in the NEA, NEG and NEH series have the facility for setting the unbalanced masses. Unless you have provided particular information, the equipment has been delivered with the standard setting (100%).

Why set the unbalanced masses?

Setting the unbalanced masses allows you to have a direct effect on the amplitude of vibration and the centrifugal force (increasing or decreasing it, since the distance of the center of gravity from the axis of revolution of the unbalanced masses is changed).

Setting the unbalanced masses

- remove unbalanced mass covers on both sides
- remove lock nuts (Fig.1) or screws (Fig.2)
- make the appropriate adjustment to the blades or the cast unbalanced masses (e.g.. Table 4.2.1 and 4.2.2.)
- tighten lock nuts or screws
- fasten unbalanced mass covers.

Table (punched unbalanced mass)

<u>Degree of adjustment</u>	<u>Centrifugal force in %</u>
0	100
20	90
40	91
60	87
80	76
100	61
120	50
140	31
160	17
180	0

Table (clamped unbalanced mass)

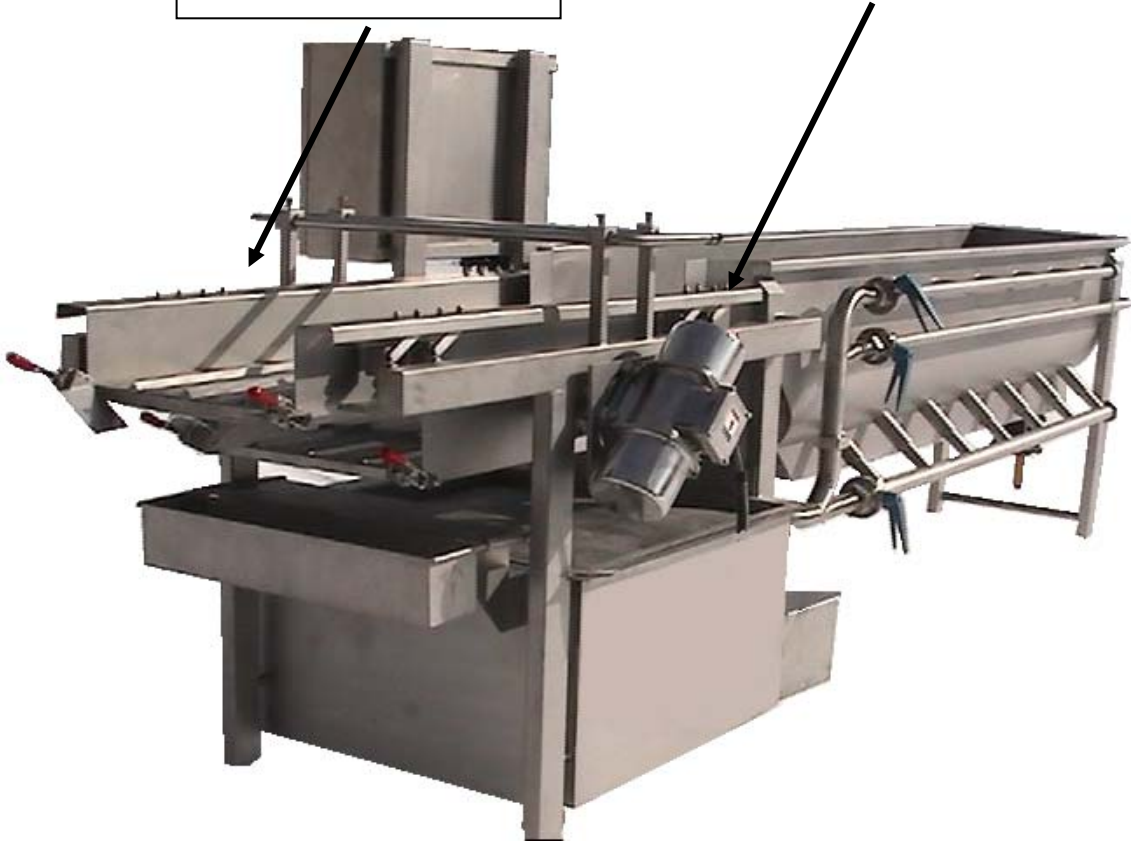
<u>Degree of adjustment</u>	<u>Centrifugal force in %</u>
0	100
30	97
60	87
90	70
120	60
150	25
180	0

6.5 Vibration Motor Direction

Fig. 14

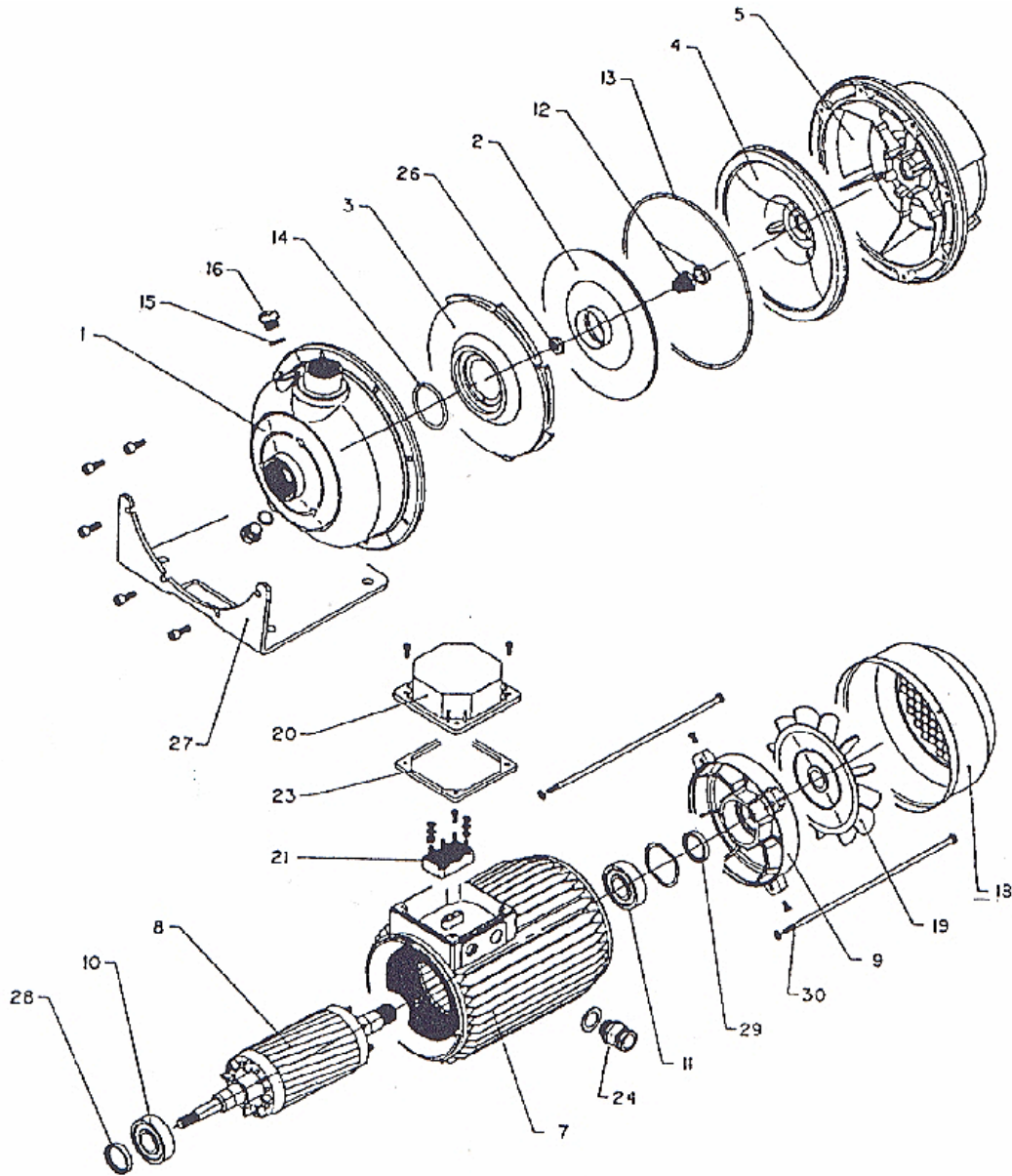
Vibration motor rotates CCW as viewed from above motor.

Vibration motor rotates CW as viewed from above motor.



The rotation of the motors should be “into” the deck at the top of the stroke.
See diagram above.

6.6 Description of pump parts



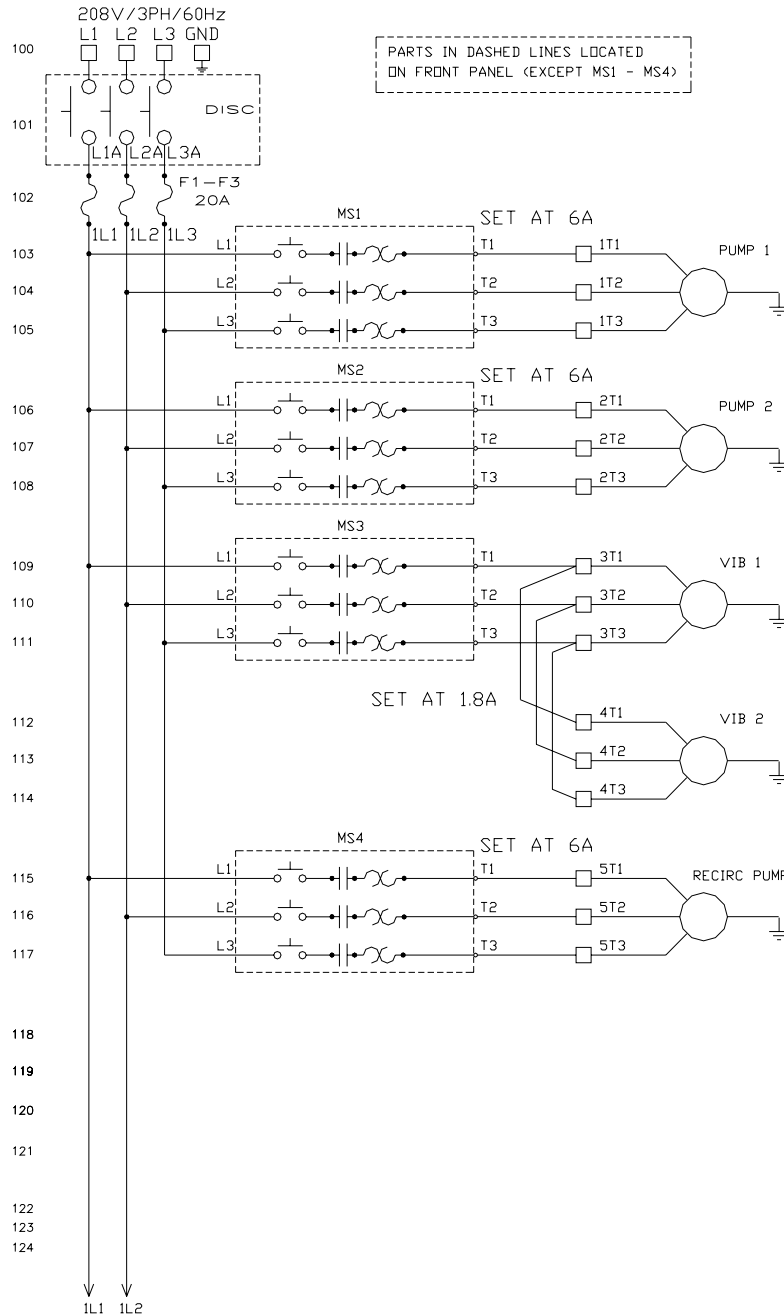
- Item01 Pump housing
- Item02 Running wheel
- Item03 Diffuser
- Item04 Housing cover
- Item05 Fitting key
- Item07 Motor housing with stator
- Item08 Shaft and rotor
- Item09 Motor cover on fan side
- Item10 Bearing on pump side
- Item11 Bearing on fan side

- Item12 Floating ring seal
- Item13 "O" ring
- Item14 "O" ring
- Item15 "O" ring
- Item16 Filling and emptying plug
- Item19 Fan
- Item20 Terminal box cover
- Item21 Motor terminal board
- Item23 Terminal box seal
- Item24 Cable entry

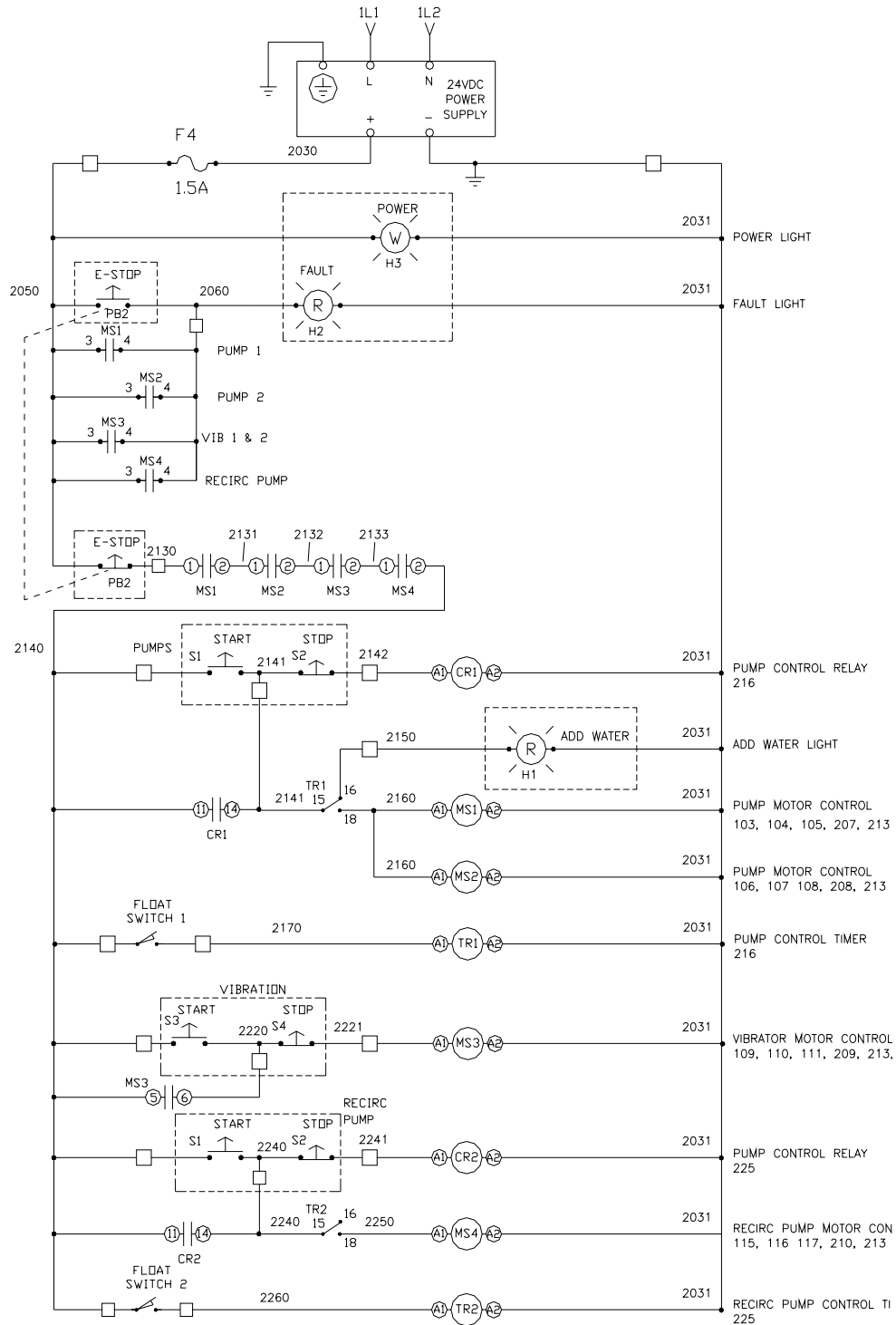
- Item26 Running wheel nut
- Item27 Support foot
- Item28 Sealing ring
- Item29 Sealing ring
- Item30 Connecting rod

7 Electrical & Mechanical design of the HW 3800

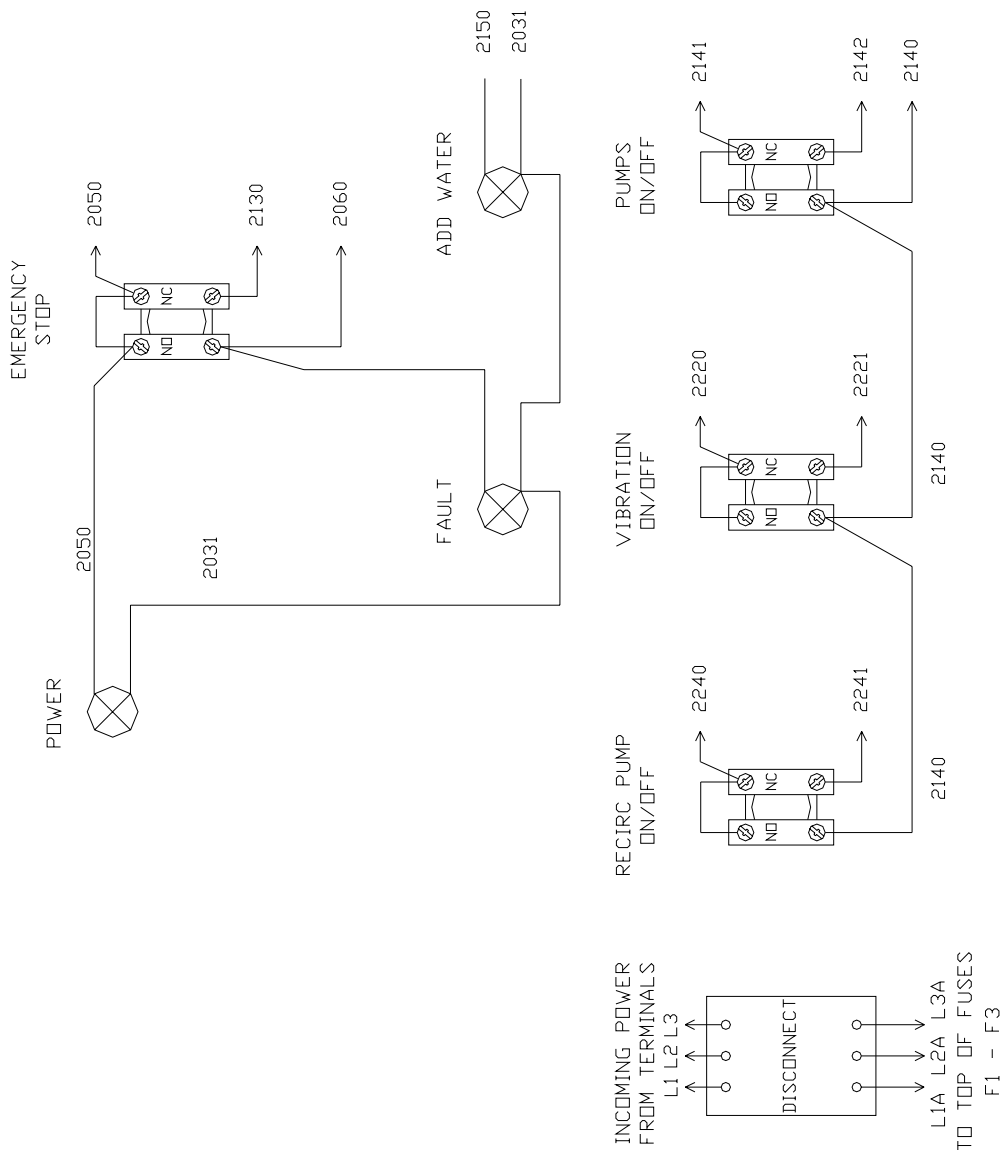
7.1 HW 3800 circuit diagram Sheet 1



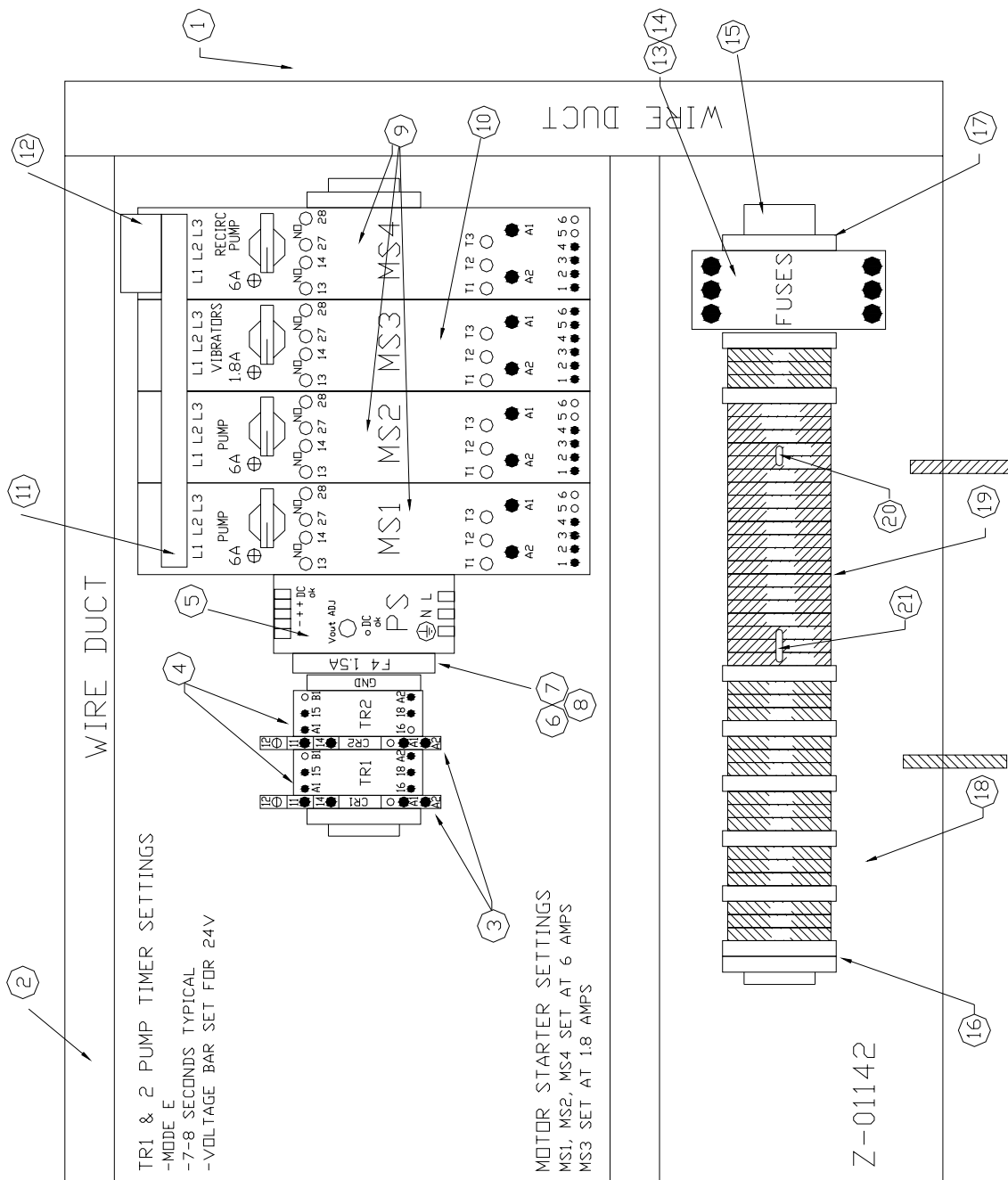
7.2 HW 3800 circuit diagram Sheet 2



7.3 3800 Panel Assembly Sheet 1

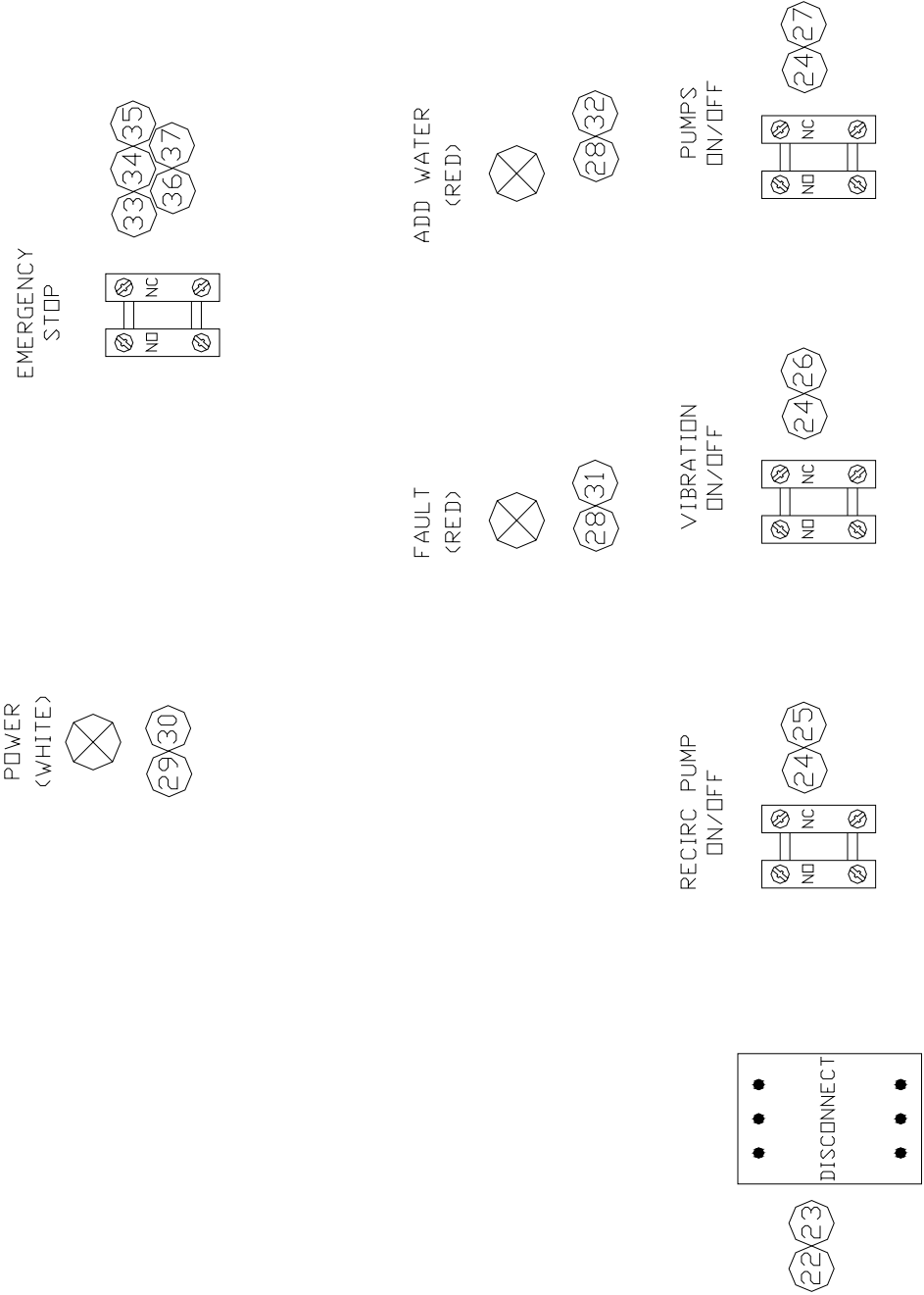


7.5 3800 Panel Parts Sheet 1



3800 Panel parts Sheet 1

7.6 3800 Panel Parts Sheet 2



7.7 3800 Panel Parts Sheet 3

BILL OF MATERIALS		BILL OF MATERIALS		REF	QTY	BILL OF MATERIALS		BOCK P/N
REF	QTY	DESCRIPTION	BOCK P/N	REF	QTY	DESCRIPTION	BOCK P/N	
1	1	ENCLOSURE & PANEL	HW0096	21	1	3 TERMINAL BRIDGE BAR	20236	
2	1	WIRE DUCT	20313	22	1	DISCONNECT SW OPER	20212	
3	2	RELAY	20304	23	1	DISCONNECT SW	20213	
4	2	TIMER	HW0055	24	3	SWITCH ASSY	20149	
5	1	POWER SUPPLY	20211	25	1	RECIRC PUMP LABEL	20322	
6	1	FUSE TERMINAL	37961	26	1	VIBRATION LABEL	20309	
7	1	FUSE TERM END PIECE	38106	27	1	PUMPS LABEL	20305	
8	1	FUSE	37951	28	2	RED PILOT LIGHT	HW0052	
9	3	MOTOR STARTER (PUMP)	HW0099	29	1	WHITE PILOT LIGHT	HW0053	
10	1	MOTOR STARTER (VIB)	HW0124	30	1	POWER LABEL	20306	
11	1	4 POS'N BUSBAR	HW0044	31	1	FAULT LABEL	20307	
12	1	SUPPLY BLOCK	HW0046	32	1	ADD WATER LABEL	20308	
13	1	3 POLE FUSE HOLDER	20216	33	1	EMERG STOP BUTTON	FP35-072	
14	3	FUSE, 25A CLASS CC	20345	34	1	MOUNTING CLIP	FP35-253	
15	30"	DIN RAIL	1	35	1	N.O. TERM BLOCK	38101	
16	9	GROUND TERMINALS	37958	36	1	N.C. TERM BLOCK	FP35-066	
17	4	END CLAMP	37960	37	1	E-STOP LABEL	20241	
18	18	TERMINAL	37956	38	1		1	
19	20	TERMINAL	20327	39	1		1	
20	1	2 TERMINAL BRIDGE BAR	20235	40	1		1	

7.8 3800 Purchased Parts

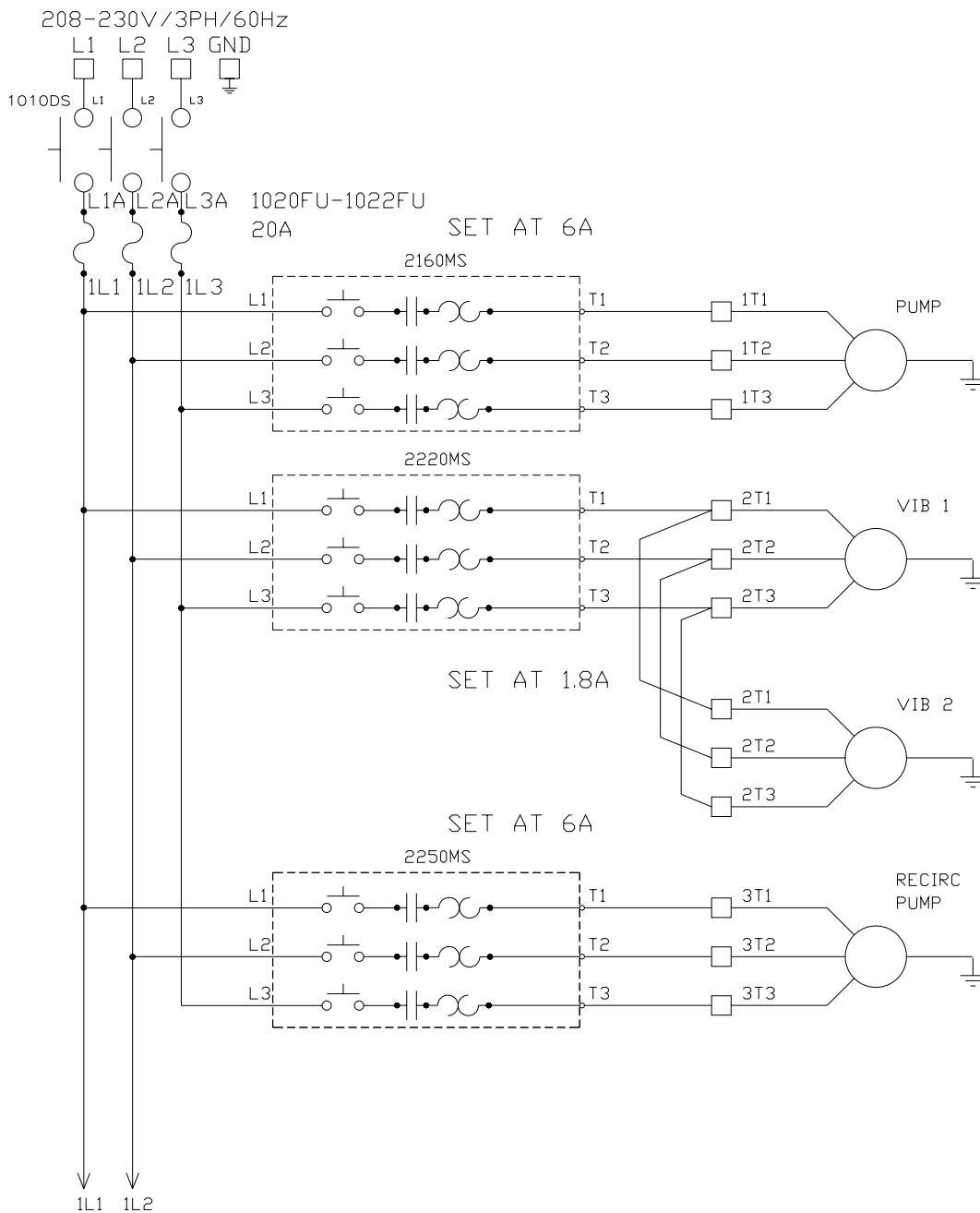
PURCHASED PARTS FOR THE HW3800			
NORTH STAR #	DESCRIPTION	QUAN.	WHERE USED
	Tubing and Fitting Assembly	1	Manifold
	Bottom Manifold	1	Manifold
	Pump Manifold	1	Manifold
	F' Manifold	1	Manifold
	Upper Manifold	1	Manifold
	Center Tubing	1	Manifold
	Back Manifold	1	Manifold
	1 1/2" B-Fly Valve	2	Manifold
	2" B-Fly Valve	1	Manifold
	1 1/2" Gasket (Teflon for hex nut)	5	Manifold
	2" Gasket (Teflon for hex nut)	3	Manifold
	1 1/2" Hex Blind Cap	4	Manifold
	2" Hex Blind Cap	2	Manifold
HWNOZZ1	Upper Spray Nozzles	9	
HW0011	2" 90 Degree Elbow	2	Pump Inlet
HW0010	2" Plain Tube Ferrule	2	Pump Inlet
HW0009	2" Gasket (Teflon)	4	Pump Inlet
HW0008	2" Hex Union Nut	2	Pump Inlet
HW0007	Adaptor - 2" MPT to Threads	2	Pump Inlet
	Adaptor - 1 1/2" MPT to Kwik-Clamp	2	Pump Outlet
	1 1/2" Check Valve (Clamp Ends)	2	Pump Outlet
	1 1/2" Gasket (Teflon for Clamp)	4	Pump Outlet
	1 1/2" Kwik-Clamp	4	Pump Outlet
HW0003	3" 90 Degree Elbow	1	Recirc. Tank Overflow
45833	Float Switch	2	Recirc. Tank
41528	Gould Pumps	2	
HW0025	Shaker Motors	2	
35144	Rasta Isolators	12	
HW0026	3" FTP x FTP Banjo Ball Valve	2	Tank Drains
HW0028	3/4" FTP x FTP SS Ball Valve	1	Sprayer Bar
153260-2	Fresh Water Sprayers	6	
HW0030	Sprayer Clamp	6	
HW0031	Sprayer Cap	6	
HW0032	Sprayer Tip	6	
HW0034	Clamp, Over-Center	4	Shaker Inserts

HW 2600 & HW 3800 operating instructions

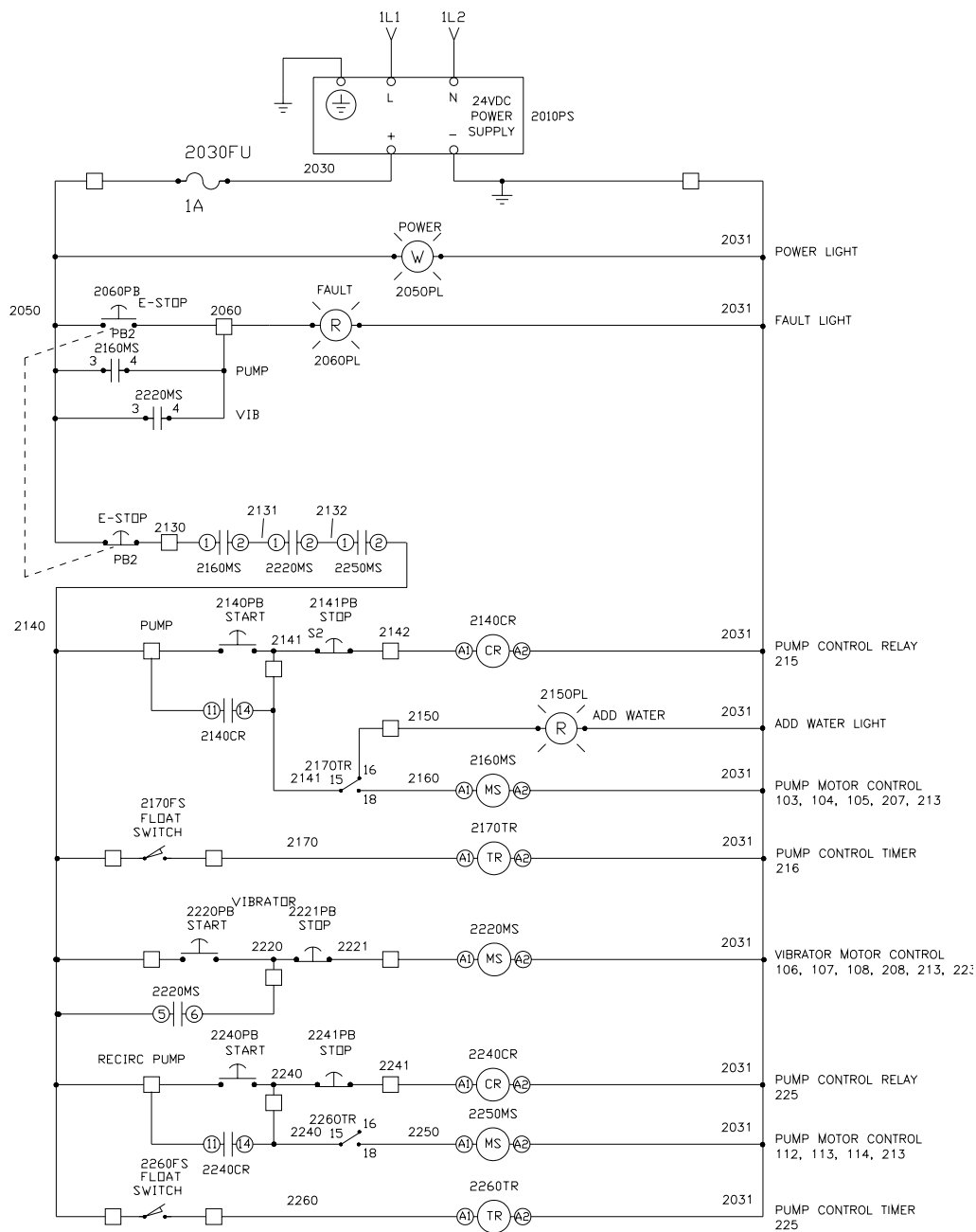
HW0035	Feet, Adjustable	6	
	Fresh Water Sprayer Pipes	1	
	Float Switch Coupler	2	
	Spray Pipe Knob	4	Sprayer Mounts

8 Electrical & Mechanical design of the HW 2600

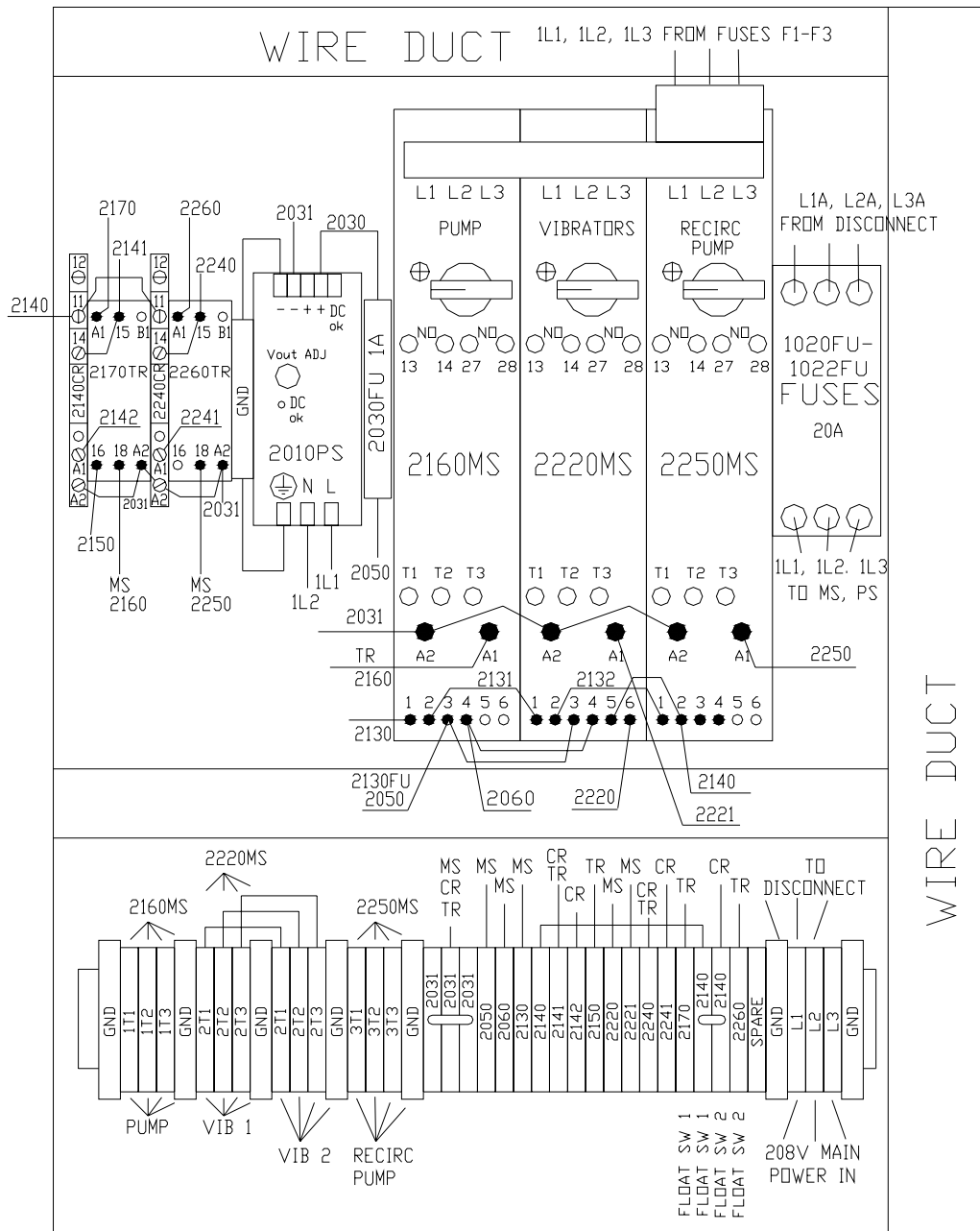
8.1 HW 2600 circuit diagram Sheet 1



8.2 HW 2600 circuit diagram Sheet 2



8.3 HW 2600 Panel Assembly Sheet 1



1

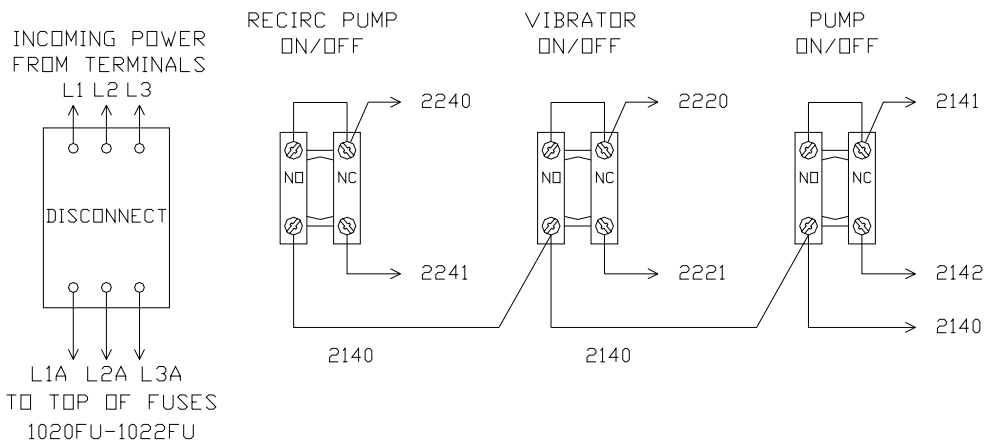
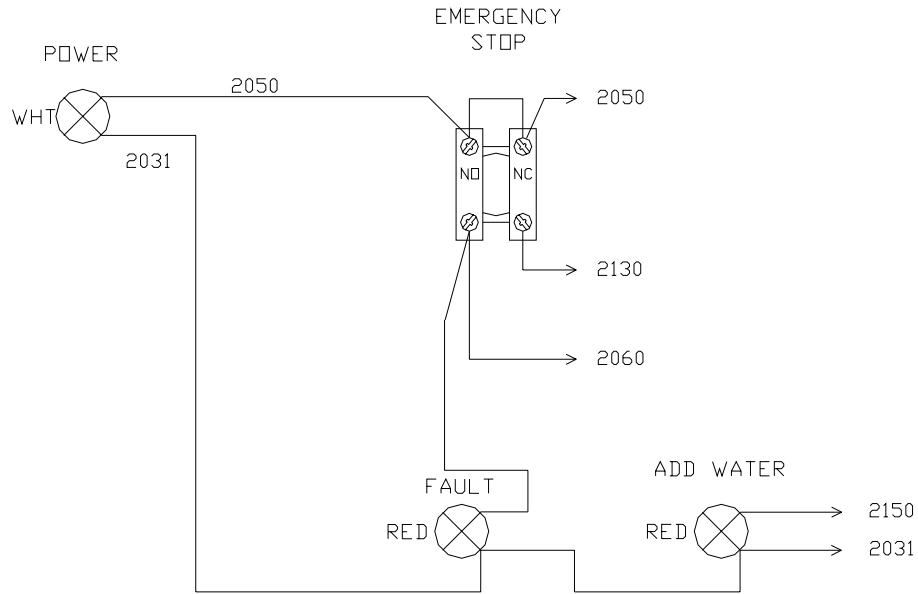
8.4 HW 2600 Panel Assembly Sheet 2

STARTER SETTINGS

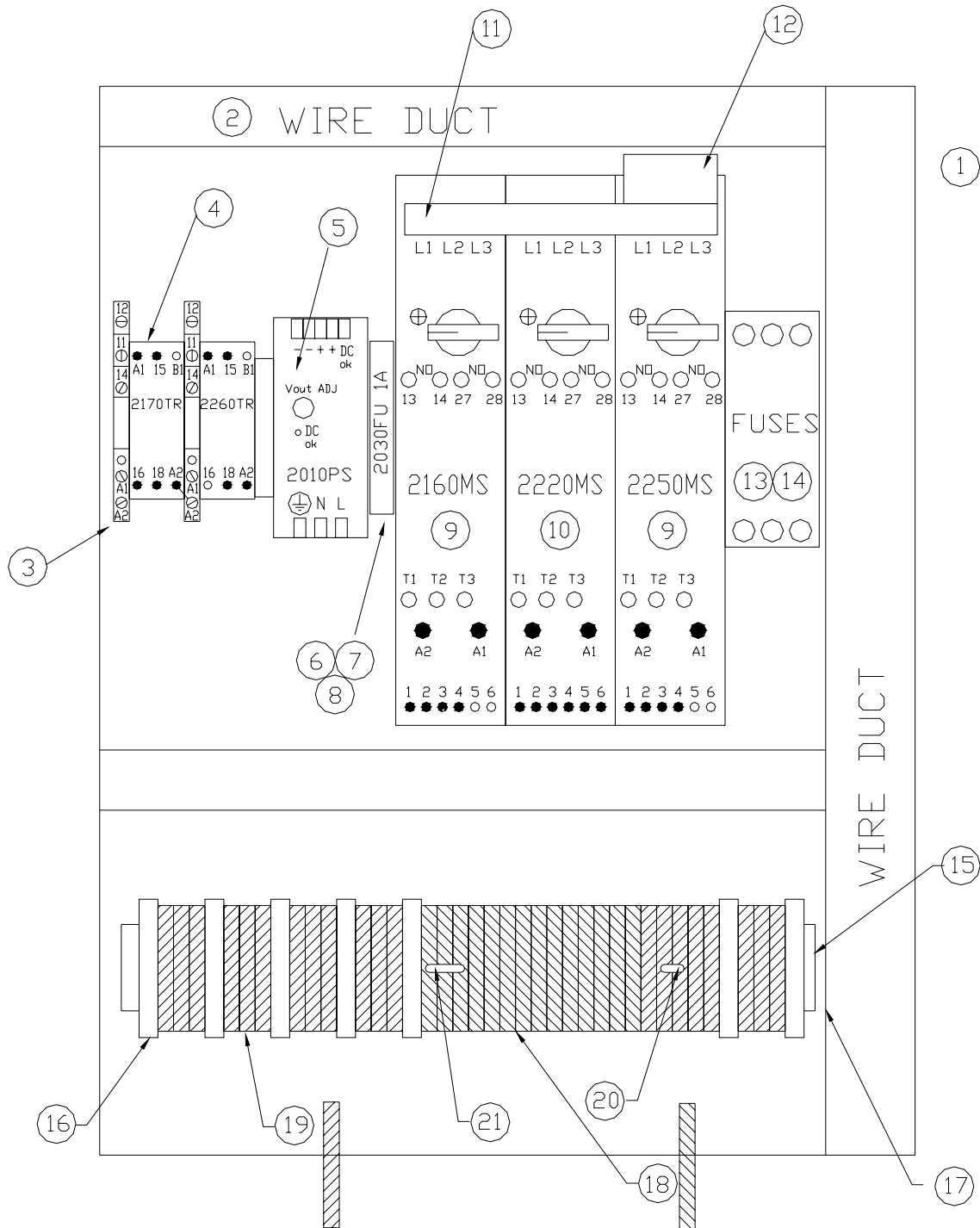
SET MS1 AT 6.0A
 SET MS2 AT 1.8A
 SET MS3 AT 6.0A

TR1 & TR2 PUMP TIMER SETTINGS

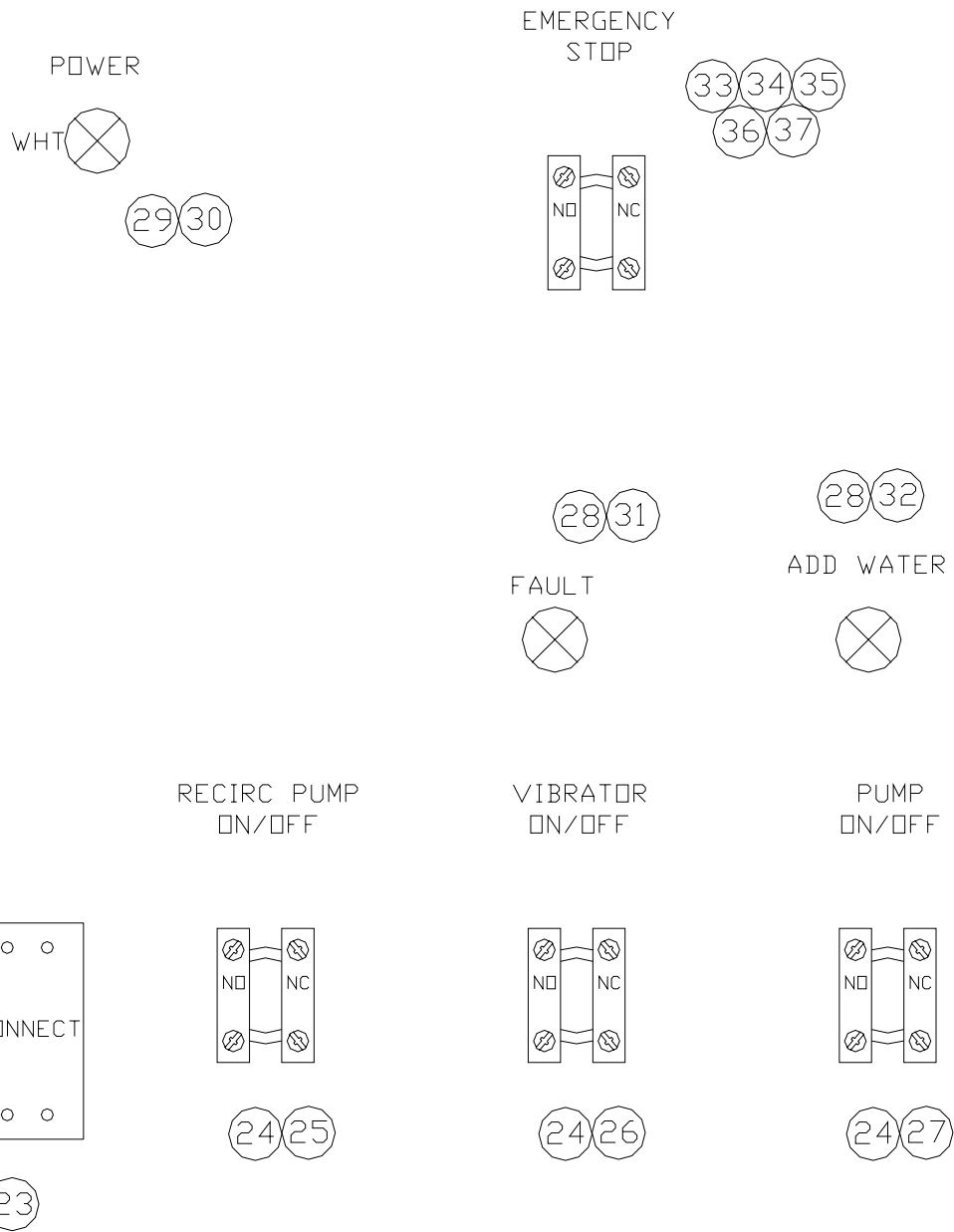
MODE E
 7-8 SECONDS
 VOLTAGE BAR SET FOR 24V



8.5 2600 Panel Parts Sheet 1



8.6 2600 Panel Parts Sheet 2



8.7 2600 Panel Parts Sheet 3

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	BOCK P/N
1	1	ENCLOSURE & PANEL	HW0097
2	1	WIRE DUCT	20313
3	2	RELAY	20304
4	2	TIMER	HW0055
5	1	POWER SUPPLY	20211
6	1	FUSE TERMINAL	37961
7	1	FUSE TERM END PIECE	38106
8	1	FUSE	37951
9	3	MOTOR STARTER (PUMP)	HW0099
10	1	MOTOR STARTER (VIB)	HW0124
11	1	3 POS'N BUSBAR	HW0098
12	1	SUPPLY BLOCK	HW0046
13	1	3 POLE FUSE HOLDER	20328
14	3	FUSE, 20A CLASS CC	20343
15	30"	DIN RAIL	1
16	8	GROUND TERMINALS	37958
17	4	END CLAMP	37960
18	14	TERMINAL	37956
19	20	TERMINAL	20327
20	1	2 TERMINAL BRIDGE BAR	20235
21	1	3 TERMINAL BRIDGE BAR	20236
22	1	DISCONNECT SW OPER	20212
23	1	DISCONNECT SW	20213
24	3	SWITCH ASSY	20149
25	1	RECIRC PUMP LABEL	20322
26	1	VIBRATION LABEL	20309
27	1	PUMP LABEL	20202
28	2	RED PILOT LIGHT	HW0052
29	1	WHITE PILOT LIGHT	HW0053
30	1	POWER LABEL	20306
31	1	FAULT LABEL	20307
32	1	ADD WATER LABEL	20308
33	1	EMERG STOP BUTTON	FP35-072
34	1	MOUNTING CLIP	FP35-253
35	1	N.O. TERM BLOCK	38101
36	1	N.C. TERM BLOCK	FP35-066
37	1	E-STOP LABEL	20241

8.8 2600 Purchased Parts

HW2600 Purchased Parts

North Star #	Description	Quantity	Where Used
	Tubing and Fitting Assembly	1	
	Pump Manifold	1	Manifold
	Sprayer Manifold	1	Manifold
	Back Manifold	1	Manifold
	1 1/2" KC B-Fly Valve	1	Manifold
	1 1/2" Gasket (KC Teflon)	7	Manifold
	1 1/2" Clamp	7	Manifold
	1 1/2" KC Caps	3	Manifold
	Adaptor – 1 1/2" MPT to KC	1	Pump Outlet
	1 1/2" KC Check Valve	1	Pump Outlet
	1 1/2" Gasket (KC Teflon)	2	Pump Outlet
	1 1/2" Kwik-Clamp	2	Pump Outlet
	2" 90 Degree Elbow	1	Pump Inlet
	2" Plain Tube Ferrule	1	Pump Inlet
	2" Gasket (Teflon for Hex Nut)	1	Pump Inlet
	Adaptor – 2" MPT to Threads	1	Pump Inlet
	3" 90 Degree Elbow	1	Recirc Tank Overflow
	Fresh Water Sprayer Pipes	1	

Service Information:

Service Contact Information

Check the following points before contacting us:

Unplug the machine from the mains (remove incoming power).

Now test as to whether:

1. Is there any external mechanical damage to the machine and if so, where?
2. Is the electrical cable damaged?
3. Have any electrical parts overheated?
4. Has water splashed into the electrical control box (open it to check)?
5. Has an attempt been made to wash products for which the machine is not intended? (e.g. metallic parts)
6. Have extraneous objects entered the working area of the machine (knives, forks, spoons, jewelry, etc.)?

Contact us, providing us with your information on the preceding questions. You can contact us using the following telephone and fax numbers:

Tel.: 419-726-2645

Fax: 419-726-8583