



SYSTEMS

AUTOMATED DIARY EQUIPMENT

MODELS 12 & 32 H.F. PIPELINE WASHERS

The Models 12 & 32 H.F. Pipeline Washers are designed to automatically clean or sanitize dairy farm pipelines.

**HOLDREN BROTHERS, INC.
P.O. BOX 458, WEST LIBERTY, OHIO 43357**

SPECIFICATIONS

- Model 12 — Warm water pre-rinse.
 - Model 32 H.F. — Warm water pre-rinse.
 - Electrical Requirements: Power supply — 110-120 VAC, 60 HZ, single phase, 5 amp.
 - Water Supply: Maximum Pressure — 60 psi.
Maximum Temperature — 180°F.
 - Dimensions: 11¼" high, 12" wide, 6" deep (without jars).
17½" high, 12" wide, 6" deep (with jars).
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FEATURES

- Wall mounting of control panel keeps components away from the corrosive environment near the wash vat.
 - The Models 12 & 32 H.F. are internally fused for added safety.
 - One piece manifold directs water without problems of leaking hoses.
 - Cabinet, fluid and electrical systems are specifically designed for ease of maintenance.
 - The chemical jars feature a translucent coating which provides a non-slip surface for ease in handling and lets the operator see how much chemical is in each jar at any time.
 - The fully programmable cam timer makes it easy to tailor the Model 2 or 12 to the requirements of each dairyman's operation.
 - Model 32 H.F. has all the above, plus increased gpm for fast fills.
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BENEFITS

- Pressure sensitive water level monitor assures constant gallonage regardless of water supply fluctuations.
 - Assures uniform cleaning results at each wash.
 - Fully-automated system eliminates detergent product waste, and water and energy over-use.
 - Saves time in the milkhouse — you can leave when the milking is done.
 - Timer assembly, switches, and motor can be replaced individually — no need to replace entire unit.
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ACCESSORIES

- Model 6 Diverter Valve Assembly.
- Model 7 Drain Valve, 2", normally open, standard.
- Model 8 Drain Valve, 2", normally closed, special.
- Model 9 Drain Valve, 1½".
- Model 13 Drain Valve, automatic vacuum type.
- Relay Kit — Isolates 220 magnetic starter voltage on the vacuum pump from the cabinet.

INSTALLATION

- A.) Use the wall anchors and screws provided to mount the Model 2 or 12 in the milkhouse. Consider the following points **before** mounting the panel:
 - 1.) The wash vat should be within reach of the 10 ft. of pressure switch hose and 10 ft. of water fill hose that is provided. (See INSTALLATION DIAGRAM.)
 - 2.) Due to the adverse effects of moisture in some situations, avoid mounting the control panel above the wash vat if at all possible.
 - 3.) A grounded and fused 120 VAC, 60 Hz, 15 ampere receptacle must be accessible.
 - 4.) The panel must be within 3 ft. of hot and cold water outlets.
- B.) Connect the hot and cold water hoses (supplied) to the appropriate fittings on the panel. Hose gaskets are provided.
- C.) Install the anti-siphon hose bracket as follows: (SEE INSTALLATION DIAGRAM.)
 - 1.) Near the center of one end of the wash vat, drill a 3/16" diameter hole through the lip of the wash vat. Using the hardware provided attach the bracket to the lip of the wash vat.
 - 2.) The 1" I.D. plastic pipe and adapter should hang straight down into the wash vat with the adapter spud protruding upward through the small hole in the anti-siphon hose bracket. Attach the small hose (from the pressure switch) to the adapter spud and secure with a hose clamp (provided).
 - 3.) Connect 1/2" I.D. plastic discharge hose from the control panel to the metal spud beside the small hose on the bracket using the other hose clamp (provided).
 - 4.) Secure the hoses with the wire-ties (provided).
 - 5.) The length of the 1" I.D. plastic pipe determines how much water the Model 2 or 12 will put in the wash vat. As a rule of thumb, the Models 2 & 12 will fill the wash vat to a level 2-1/2" above the bottom of the 1" I.D. pipe. A desirable approach to adjusting the water fill level in the wash vat would be as follows:
 - 1.) Determine where on the 1" I.D. plastic pipe the minimum water level should be.
 - 2.) Measure at least 2-1/2" **down** the pipe and mark this spot.
 - 3.) Cut the pipe at the spot you marked.
 - 4.) Test the water fill. If the water level is too low, trim a little more off the 1" I.D. plastic pipe and test the water fill again. Continue retrimming the pipe until the required fill level is attained.
- D.) Connect external devices to the terminal board (TB2) inside the Model 2 or 12 as follows:
 - 1.) Terminal #1 is connected to cabinet ground.
 - 2.) Terminal #2 is the control power for the vacuum pump magnetic starter coil.
 - 3.) Terminal #3 is the neutral for the vacuum pump, diverter or drain valve, and the air injector.

INSTALLATION (continued)

- 4.) Terminal #4 is the control power for the diverter valve. (OPTIONAL)
 - 5.) Terminal #5 is the control power for the air injector. (IF DESIRED)
 - 6.) Terminal #6 is the control power for the drain valve. (OPTIONAL)
- E.) Set the MILK/OFF/WASH switch to the "OFF" position.
- F.) Turn the adjustable cam timer knob (on the right side of the cabinet) to the "OFF" position.
- G.) Adjustable cam timer programming: (See sample program diagram.)

The water fill cycles on this unit are controlled by a pressure switch. Therefore, it is important that the sequence of operations as shown on the sample program diagram be followed closely.

The longest space between slots in the cams corresponds to the zero point on the sample program diagram. And the cam numbers on the left hand side of the sample program diagram correspond to the numbers on the switch bank directly above the cams. Remember: Follow the start/stop relationship between the cams as shown on the sample program diagram. The raised segment on the sheet represents the same length of segments (in minutes) on the cam bank. The spaces between slots in the cams represent 1 minute each (except as noted above).

The approximate time values for each segment are listed below:

GREEN:	6 minutes
CLEAR:	4 minutes
RED:	2 minutes
BLACK:	1 minute

- 1.) The segments are installed by pushing the small pins on each segment into the cam slots. The segments can be installed in either direction, are interchangeable, and can easily be cut to any length with diagonal cutting pliers.
- 2.) To remove a segment, **pry on either end and lift out; do not try to pry from the sides of a segment.**

INSTALLATION (continued)

H.) Cam timer knob set-up:

- 1.) Mark the adjustable cam timer knob with the colored 1 minute segments provided with the unit. The last line of the sample program diagram illustrates the normal placement of the four colors of segments on the edge of the timer knob. Note that every time the #2 cam turns on, (ie....every time the micro switch encounters a segment or group of segments) a new cleaning cycle begins. Therefore, if the #2 cam first turns on at minute 1, the black (prerinse) 1 minute segment should be inserted on the timer knob just opposite the arrow on the cabinet when the #2 micro switch lever is resting on the segment at minute 1.
- 2.) If the second time the #2 cam turns on is at minute 10, the blue (wash) one minute segment should be inserted on the timer knob just opposite the arrow on the cabinet when the #2 micro switch lever is resting on the segment at minute 10.

****NOTE****

(If the above example was followed properly, there will be eight (8) spaces between the black and the blue segment.)

- 3.) If the third time the #2 cam turns on is at minute 25, the red (acid) one minute segment should be inserted on the timer knob just opposite the arrow on the cabinet when the #2 micro switch lever is resting on the segment at minute 25.
 - 4.) Because the sanitize cycle on this unit is also the acid rinse cycle, we will show this by placing the yellow (sanitize) one minute cam segment beside the red cam segment at minute 26.
- I.) Run and secure the electrical cord to a convenient 120 VAC grounded and fused outlet. (Wire ties are provided.)

CAUTION: Be certain the grounded outlet is wired properly:
BLACK - on the brass or gold screw.
WHITE - on the silver screw.
GREEN - on the green screw.

OPERATION

A.) To Milk:

- 1.) Put the MILK/OFF/WASH switch in the "MILK" position.

B.) To Wash Pipeline:

- 1.) Dispense correct quantity of non-foaming detergent into the "DETERGENT" jar. Screw the jar into the detergent position on the panel.
- 2.) Dispense correct quantity of non-foaming acid-detergent into the "ACID" jar. Screw the jar into the acid position on the panel.
- 3.) Set the MILK/OFF/WASH selectro switch to "WASH". Turn the adjustable cam timer knob, from the OFF position, clockwise, until water begins to flow. The Model 2 or 12 will proceed to clean the pipeline and stop automatically.

C.) To Sanitize Pipeline:

- 1.) Dispense correct quantity of sanitizer into the empty "ACID" jar. Screw the jar into the acid position on the panel.
- 2.) Set the MILK/OFF/WASH selector switch to "OFF". Turn the adjustable cam timer knob to the beginning of the second prerinse (on cam #3). Turn the MILK/OFF/WASH selector switch to the "WASH" position. The Model 2 or 12 will now sanitize the pipeline and stop automatically.

NOTE: The beginning of the sanitize cycle **is** the beginning of the second prerinse. Use a yellow cam segment on the adjustable cam timer knob to mark where the sanitize cycle begins. (See part "H" of INSTALLATION for further instructions.)

CAUTION: If a 220 VAC magnetic starter controls the vacuum pump, voltage may be present in the control panel even though the unit is unplugged or the breaker is off.

TROUBLESHOOTING GUIDE

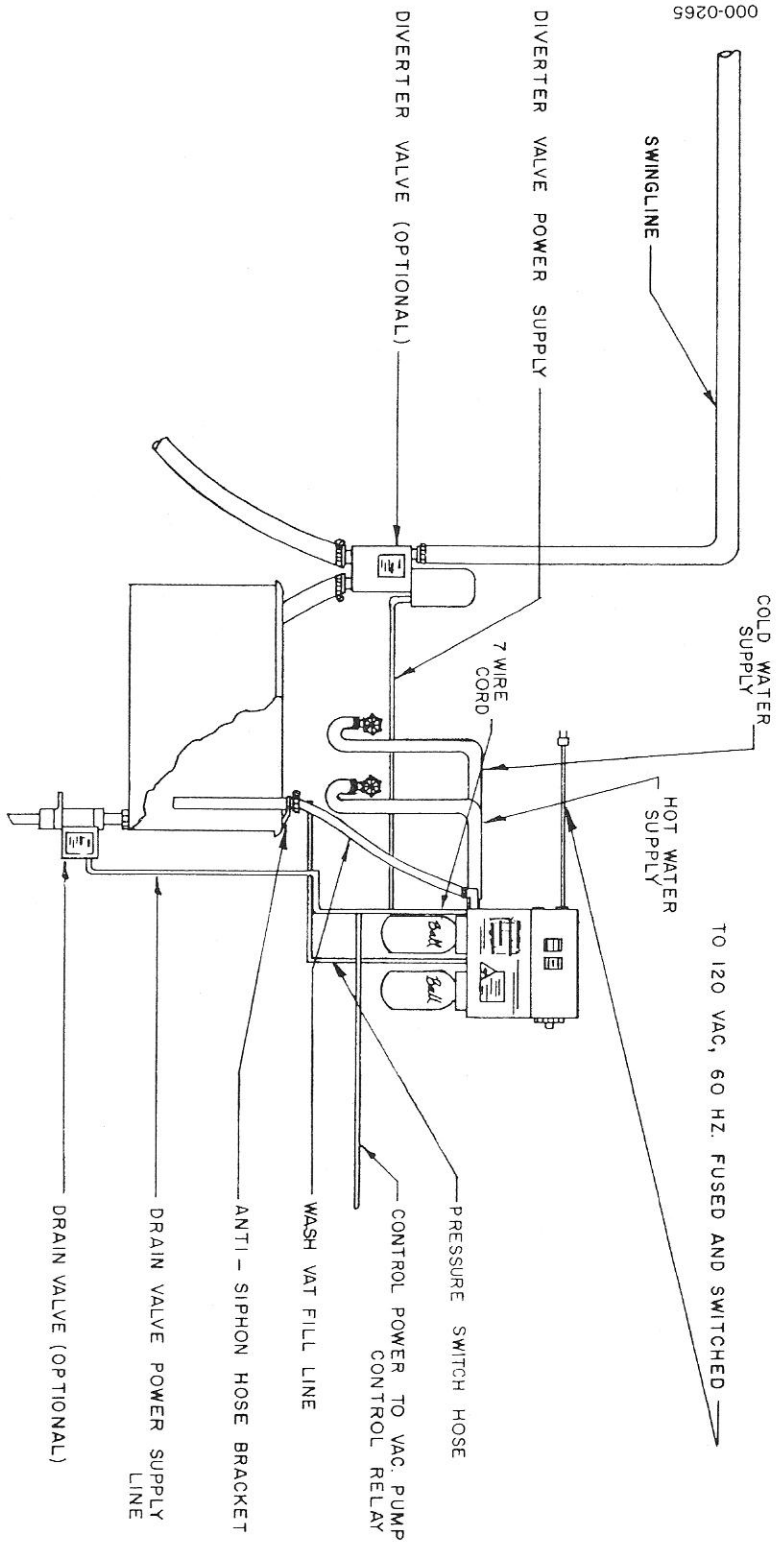
TROUBLE	COULD BE. . .	WHAT TO DO
System does not come on.	No 120 VAC power.	Check power source.
	Fuse in cabinet.	Check fuse and replace as necessary.
	MILK-OFF-WASH switch defective or not in wash position.	Check and replace as necessary.
	Adjustable Cam Timer defective.	Check and repair or replace as necessary.
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System comes on but does not cycle through the program.	Pressure Switch.	Disconnect power; jumper C (common) to NO (normally open) on the pressure switch, connect power. If unit now cycles (cams turn) the pressure switch is faulty, check and repair as necessary.
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System operates normally except that one or more of the solenoid valves leak or won't shut off.	Disconnect power, if leaks stop or water shuts off, the problem is electrical. If the valves still leak or water still runs, the valve is stuck or has foreign matter in it.	*Check and repair electrical system as necessary. Disassemble and clean valves.
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Liquid leaks out around outside of chemical jars.	Jar loose.	Tighten jar.
	Loose screws on jar adapter.	Tighten screws.
	Jar o-ring faulty or missing.	Check and replace as necessary.
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TROUBLESHOOTING GUIDE (continued)

TROUBLE	COULD BE. . .	WHAT TO DO
Water comes into chemical jars and overflows wash vat.	Water level probe in wash vat not in proper position.	Check and adjust.
	Pressure switch is stuck closed.	Check and replace pressure switch as necessary.
	Hose from water level probe loose or leaking air.	Check and adjust or replace as necessary. Check all hose connections from water to pressure switch for air leaks.
	Solenoid valve stuck open.	*Check and clean valve.

*For easiest access to solenoid valves, remove the two front screws holding the manifold in place and let the manifold "hinge" down on the rear screws.

000-0265



MODELS 12 & 32 H.F.
INSTALLATION DIAGRAM

CAM NO.	MINUTES →
	0
	10
	20
	30
	40
	50 52.8

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■ BLACK (WASH) ■ BLACK (ACID) ■ YELLOW (SANITIZE)
 (PREINSE) (POSTINSE)

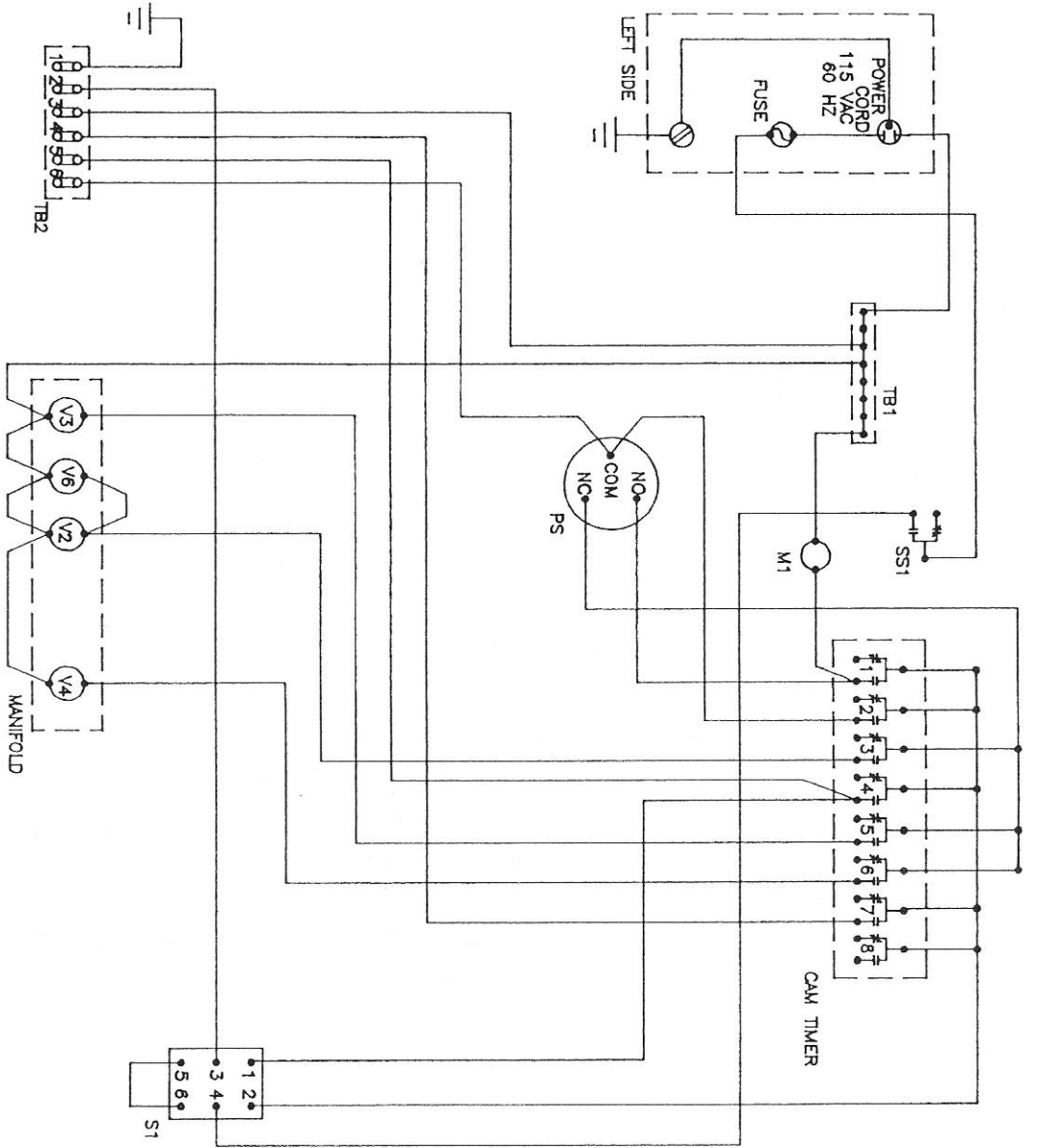
BLUE
(WASH)

■ BLACK
(STRINSE)

RED
(ACID)

YELLLOW

(YELLOW)
(SANITIZE)



WIRING DIAGRAM
MODEL 12 (8000-0773)
MODEL 32 HF (8000-1477)

CAM TIMER

1. TIMER MOTOR
2. DRAIN VALVE/PRESSURE SWITCH
3. WARM WATER (PRERINSE)
4. VACUUM PUMP
5. HOT WATER (DETERGENT)
6. COLD WATER (ACID/SANITIZE)
7. DIVERTER
8. BLANK

EXTERNAL CONNECTIONS (TB2)

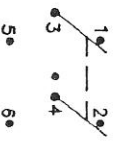
1. CABINET GROUND
2. VACUUM PUMP
3. NEUTRAL
4. DIVERTER
5. AIR INJECTION
6. DRAIN VALVE

VALVES

- V2 COLD WATER (PRERINSE)
- V3 HOT WATER (DETERGENT)
- V4 COLD WATER (ACID/SANITIZE)
- V6 HOT WATER (PRERINSE)

MISCELLANEOUS

- M1 TIMER MOTOR
- PS PRESSURE SWITCH
- FUSE BUSSMAN NO. MTH 5 (OR EQUAL)
- TB1 NEUTRAL TERMINAL BOARD
- S1 MILK/OFF/WASH SWITCH
- DPDT 3 POS. ROCKER SWITCH



SS1 SAFETY SWITCH

