

Laboratory Homogenizer

Models 15M & 31M

Troubleshooting Guide

Attached is an easy-to-follow trouble-shooting guide for the 15M or 31M laboratory homogenizer.

It will help you decide when a problem requires a simple adjustment, regular maintenance or Factory replacement or assistance.

PROBLEM	CAUSE	REMEDY
Start switch in ON position, motor turning, but homogenizer will not pump or will only pump intermittently.	Air lock in cylinder block (7).	Bleed air out through vent valve (8A) or slowly turn handwheel (55) until starts pumping. NOTE: Do not put any excessive pressure on handwheel, if unit does not begin to pump after handwheel is turned to its stopping point. Excessive pressure on handwheel in the absence of product flow will result in damage to homogenizing valve assembly. You may also be able to prime the homogenizer by covering the end of the discharge tube (5), until flow is established.
	Pump valve (64) stuck in OPEN position.	Disassemble and check pump valve (64) to ensure free vertical travel of ball valve. Check for obstruction, product build-up, etc.
	Pump valve seat (63) worn.	Inspect seat (63) for wear. Replace or re-cut, if necessary.
	Feed tank (66) blocked or empty.	Check for product and/or blockage from tank (66) to homogenizer.
Homogenizer is pumping product but is unable to obtain desired homogenizing pressure.	Worn homogenizing valve (58) and/or seat (60).	Disassemble homogenizing valve assembly, inspect valve (58) and seat (60) for wear. See pg. 7, "Wear Pattern Sheet."
	Packing failure. Note: Is packing (73) leaking?	Tighten packing gland nut (78) while machine is running (NOT under pressure). If still leaking, remove packing assembly (78, 74, 73, 72). Inspect packing (73). If worn, replace all 4 pieces. Insert packing adjusting ring (74). See pg. 8, "Plunger Packing Assembly", for proper method of measuring wear on adjusting ring.
	Homogenizing valve (58) binding in valve body (62), because of product build-up or a burr on valve (58) or body (62).	Remove valve (58) and inspect for any product build-up or a burr. Remove any burrs with emery cloth. Also check body (62) for burrs.

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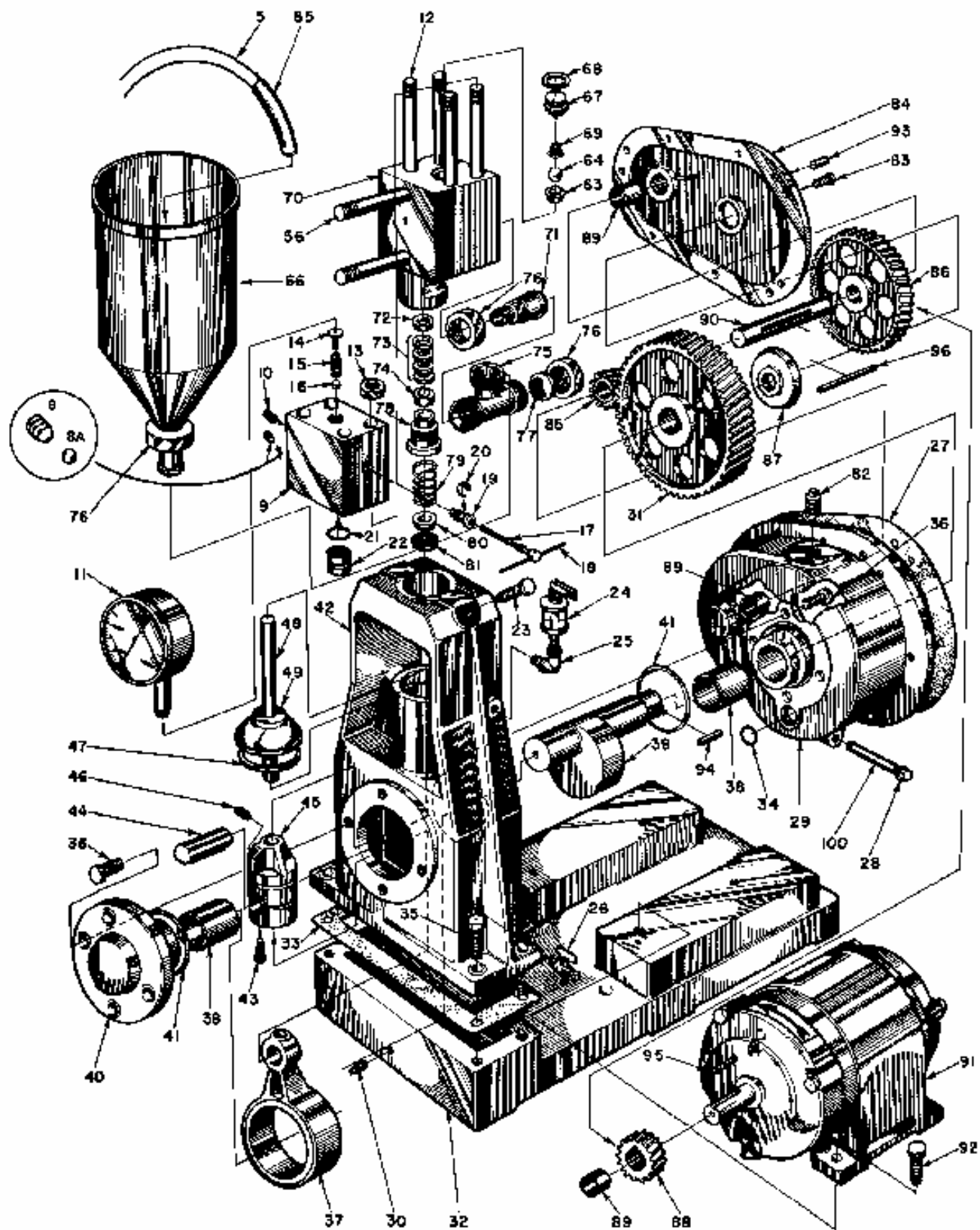
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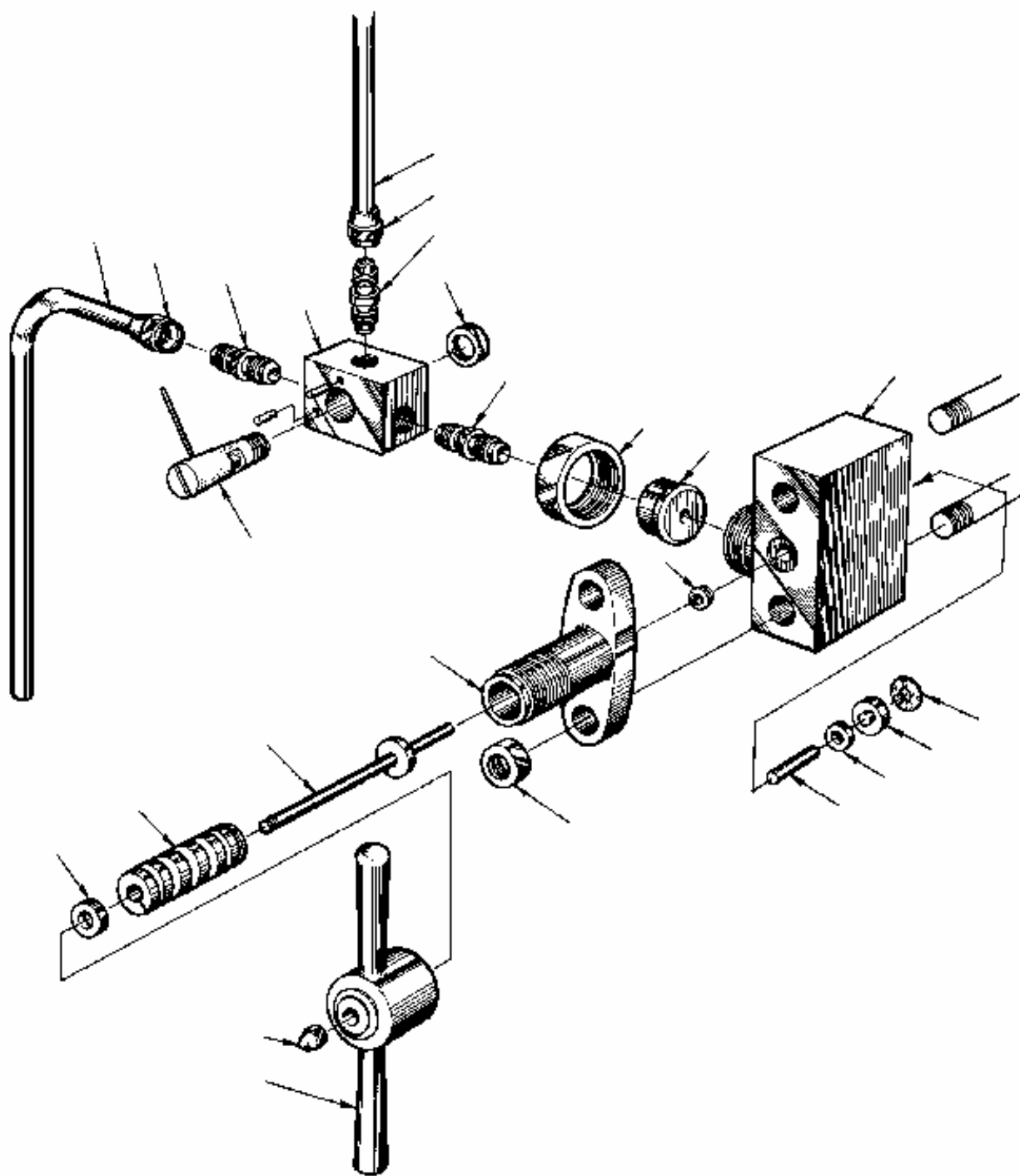
PROBLEM	CAUSE	REMEDY
Homogenizer pumping product (cont.)...	Valve rod (510) binding inside handwheel support (53).	Disassembly handwheel assembly. Thoroughly clean valve rod (51), support (3) and handwheel (55). Dirt and rust may be polished off with fine emery cloth. Also check valve rod (51) to ensure that it is not bent at either end, preventing free travel of rod (51) through support (53) and valve body (62).
	Dampener body (9) has lost grease.	Re-service dampener body (9) with proper grease. See pg. 9, "Servicing of Dampener Block".
	Gauge defective.	If steps above are completed and gauge still not reading pressure, replace gauge.
Capacity low or varies.	Pump valve (64) and/or seat may be worn.	Check pump valve (64) and seat (63) for wear. Replace or regrind if necessary.
	Motor (91) not up to speed.	Check motor (91) with tachometer and check amperage draw against nameplate on motor.
Machine leaking product under pressure.	Worn packing (73) or worn gaskets (61, 107 or 68).	Tighten packing adjusting screw (78) or replace worn gaskets. Packing (73) may need to be replaced.
Machine labors or slows down under pressure	Overload on machine, possible because of defective gauge (11).	Check servicing of dampener body (9). See pg. 9, "Servicing of Dampener".
	Electrical wiring incorrect.	Have electrician check for correct voltage and wiring.
Growling sound from drive end.	Worn gears in gearbox or dirty and/or insufficient oil.	Check oil level and quality of oil. Replace, if needed.
Gauge (11) does not return to "0" with needle valve (17) turned out.	Gauge needs recalibration.	If reading is slightly off of "0", gauge may be recalibrated using instructions on back of gauge (non-liquid-filled gauge only).

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1. Carefully unpack and examine your shipment. Any damage claims should be filed with the carrier immediately.
2. Remove the nuts and bolts on the four-inch clamp assembly (3). Remove the four-inch clamp gasket (2), the adapter plate (1) and the dampener screen (5).
3. Examine Figure 1. Assemble the bladder (8) onto the boss of the adapter plate (1). Note that this is a tight fit. The best assembly procedure is to fold back the "beaded" open end of the bladder and hold the bladder against the boss of the adapter plate. Then unfold the bladder bead over the boss, making sure that the bladder is evenly secured over the boss.
4. After installing the shock absorber valve O-ring (7), install the shock absorber valve assembly (6) snugly onto the adapter plate.
5. Lubricate the outside of the end of the bladder, which is affixed to the adapter plate, with a suitable lubricant. Then, slide the bladder adapter plate assembly into the dampener screen (5). There should be a snug fit between the open end of the screen and the bladder.
6. Stand the dampener housing (4) on end. Place the four-inch clamp gasket (2) on the dampener housing ferrule. Insert the dampener screen into the dampener housing and center the supporting ring in the gasket. Assemble the clamp sub-assembly over the ferrule. Assemble the bolts and nuts and tighten.

INSTALLATION

The dampener assembly should be installed as close as possible to the discharge of the homogenizer or pump. The product flow must enter the end of the dampener housing and discharge out the side.

CAUTION: When used with product line pressures in excess of 200 psig, a Tri-Clover 13-MHP high pressure clamp must be used. Do not use high pressure clamps of other manufacture, as they are not compatible with the dampener ferrules and serious damage or injury could result.

!WARNING!

**DO NOT EXCEED 300 PSIG LINE PRESSURE UNDER ANY CONDITION.
CONTACT FACTORY FOR SPECIAL MATERIALS.**

OPERATION

1. Install an air line with a pressure-reducing valve and a tire-inflating chuck (available at auto supply stores) in close proximity to the dampener location.
2. Charge the bladder, using shop air, unless the product liquid is a hydrocarbon. If the liquid is a hydrocarbon, do not use oxygen or air for the gas pre-charge, because of the possibility of a diesel-type combustion in the event of a bladder rupture. Use nitrogen or another inert gas, instead. There are two good ways to determine the pre-charge pressure for systems operating at a single discharge pressure. In order of practicality they are:
 - a. pre-charge to 60% of the system pressure but do not exceed 100 psig. If 100 psig is exceeded, the bladder will have a tendency to extrude through the screen when the liquid pressure is absent.
 - b. pre-charge bladder to 100 psig. Then, while operating the system, gradually decrease the pre-charge pressure, until the system noise and vibration are at a minimum. This means stopping the flow and discharge pressure at intervals and checking the pre-charge pressure to be sure that it does not drop lower than one-third of the discharge pressure.

For systems operating with two discharge pressures, adjust the pre-charge pressure, as described below:

Example: For a High-Temperature-Short-time (HTST) pasteurizing system with a 125 psig discharge processing pressure and a 50 psig Clean-In-Place (CIP) processing pressure, use a 40-45 psig air pre-charge pressure. The rationale is that the pre-charge pressure must be at least a little less than the CIP pressure of 50 psig for cleaning purposes and to provide some dampening during CIP. Also, the pre-charge pressure should be no less than one-third of the processing pressure of 125 psig.

Note: the gas volume of the dampener is 188 cubic inches when charged.

3. Because minor air leakage could occur from the valve, be sure to install the stem cap.
4. Check the bladder pressure once a week and recharge as needed.

CAUTION: Do not connect a permanent air line to the dampener or attempt to check the pressure during operation. The bladder pressure during operation will be the same as the backpressure in the system.

DISASSEMBLY

To prevent injury, release all air pressure from the bladder before disassembling the unit. Then, proceed in the reverse order shown in the assembly instructions.

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