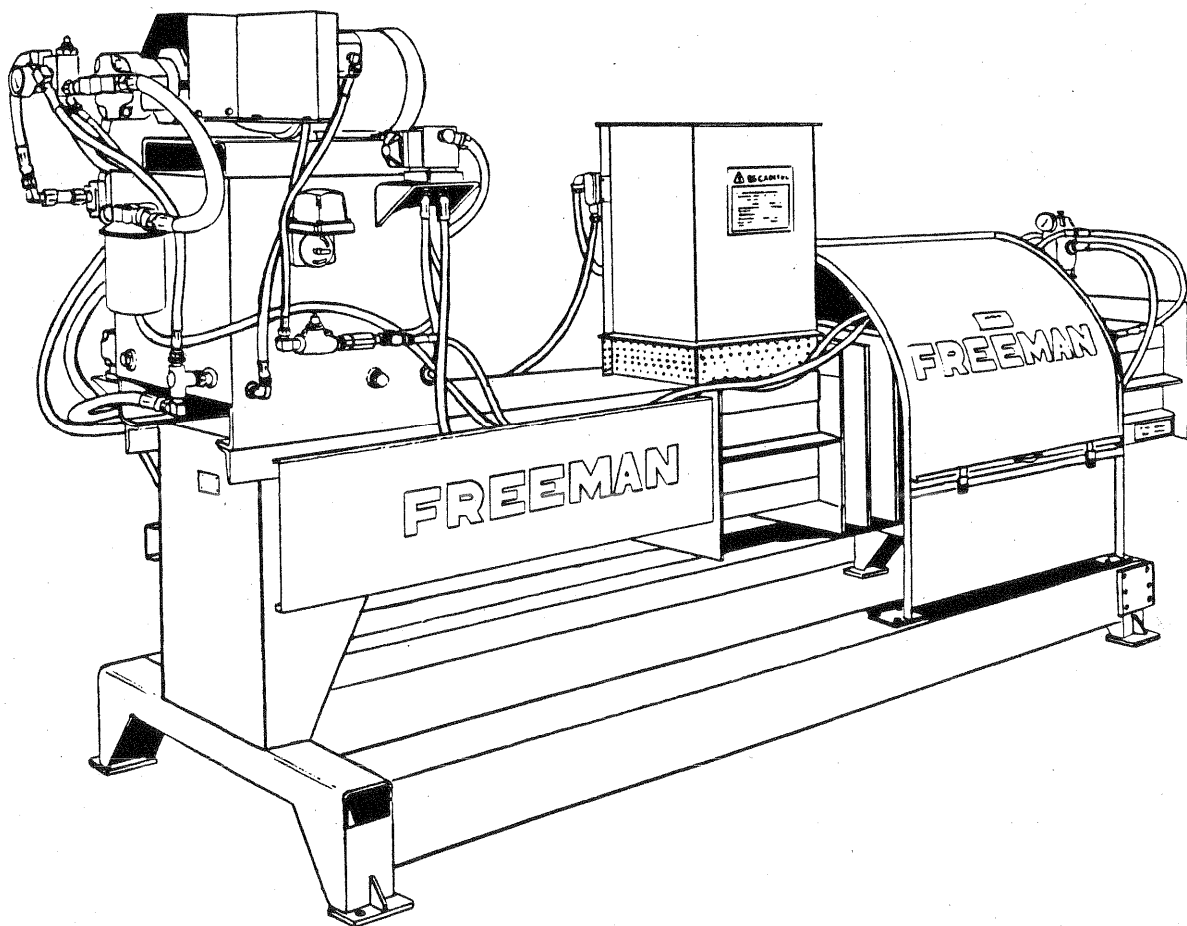


FREEMAN

HYDRAULIC MOISTURE EXTRACTOR

OPERATOR'S MANUAL



manufactured and distributed by



J. A. FREEMAN & SON, INC.



PORTLAND, OREGON

PB0000WEOM

FREEMAN MOISTURE EXTRACTOR

Owners Manual

J.A.FREEMAN & SON, INC.

2034 N.W. 27th. Avenue * Portland, Oregon 97210

TO OUR CUSTOMER

Your decision to buy a Freeman Moisture Extractor was a wise decision. Freeman equipment is a solid investment. Dollar per dollar, ton per ton, Freeman equipment brings down costs and brings up profits. Freeman equipment has satisfied and will continue to satisfy their owners all over the world for years to come.

At J.A. Freeman & Son, safety is not just a word it is a rule. Safety to the operator is of great concern to Freeman engineers. Special care has been taken while designing your Moisture Extractor to make it safe and efficient to operate.

We recommend that you carefully read this entire manual before operating your Moisture Extractor. Also, time spent becoming fully acquainted with its performance features, adjustments, and maintenance schedules will be repaid in a long and satisfactory life of the product.

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WARRANTY

J.A. Freeman & Son, Inc. guarantees all new equipment manufactured by them to be free from defects in material and workmanship for 90 days or part thereof from factory shipping date. The obligation under this warranty is limited to the replacement or repair at our Portland, Oregon Factory or at a point designated by us of such parts that appear to us upon inspection, to have been defective in material and workmanship.

J.A. Freeman & Son, Inc. obligation under this warranty is limited to repairing or replacing at its option, any part that in J. A. Freeman & Son, Inc. judgement is defective when returned to the factory.

The provisions of this warranty shall not apply to any equipment which has been subject to misuse, negligence, alteration or accident, or which shall have been repaired with parts other than those obtainable through J.A. Freeman & Son, Inc.

Except for as set forth, J.A. Freeman & Son, Inc. shall not be liable for injuries or damages of any kind or nature, direct, consequential, or contingent, to person or property. This warranty does not extend to loss of product, loss because of delay or loss incurred for labor, supplies, substitute machinery, rental or for any other reason.

J.A. Freeman & Son, Inc. makes no warranties whatever in respect to items not manufactured by J.A., Freeman & Son, Inc. inasmuch as they are usually warranted by their respective manufactures.

NOTE: J.A. Freeman & Son, Inc. reserves the right to make improvements in design or changes in specifications without notice at any time, and without incurring any obligation to owners of units previously sold.

MOISTURE EXTRACTOR IDENTIFICATION

Each Freeman Moisture Extractor is identified by a means of a model number and a serial number. As a further identification, power units are provided with specification and serial numbers by their respective manufactures.

To ensure prompt, efficient service when ordering parts or requesting repairs, record the proper numbers in the spaces provided.

MOISTURE EXTRACTOR MODEL NUMBER	_____
Front, below oil tank.	
MOISTURE EXTRACTOR SERIAL NUMBER	_____
Front, below oil tank.	
MOISTURE EXTRACTOR POWER UNIT	
Motor Brand	_____
Serial Number	_____
Specifications	_____
HYDRAULIC	
Pump Brand	_____
Model	_____

INSTALLATION

The motor end is the front end of the Moisture Extractor. The sides are described as lefthand and right hand as viewed from behind while facing the extraction chamber.

Positioning The Moisture Extractor

Before proceeding with the installation, be sure the Water Extractor is located in the desired position.

Anchor the mounting feet to a firm level surface. Use shims as needed to avoid twisting the frame.

The discharge end of the Moisture Extractor must be situated in such a way so that there is no push effect on the material once it leaves the chamber. Any material coming out of the chamber must fall free.

Feed System Application

The type of feed system that is used to provide the Moisture Extractor with material is up to the person or persons installing it. It is very important that the type of feed system used is safe to help prevent personal injury.

Connecting Electricity To The Power Unit

Power for the motor must be supplied through an external motor branch circuit disconnect and magnetic starter incorporating a motor overload disconnect device. The motor branch circuit disconnect should be provided with overcurrent preventing devices near the maximum allowed by National Electric Code Table 430-152. Motor overload disconnects should be set for the full load current rating of the motor. The supply conductors should be correctly sized to prevent the motor from stalling due to momentary overloads during machine operation.

Special motors require individual attention when selecting conductor sizes. The following may be used as a guide for minimum proper conductor size for short wire runs when using motors supplied as standard on Freeman Moisture Extractors.

The 7.5 horsepower motor operating at 230 volts is rated for 20 amps full load and requires #10 copper wire.

The 7.5 horsepower motor operating at 460 volts is rated for 10 amps full load and requires #14 copper wire.

The 10 horsepower motor operating at 230 volts is rated for 26 amps full load and requires #8 copper wire.

The 10 horsepower motor operating at 460 volts is rated 13 amps full load and requires #12 copper wire.

The 15 horsepower motor operating at 230 volts is rated 40 amps full load and requires #6 copper wire.

The 15 horsepower motor operating at 460 volts is rated 20 amps full load and requires #10 copper wire.

Connect the motor leads for the voltage to be applied. Connect the two wires coming from the control transformer within the control box to two of the motor supply leads. Connect the control transformer to operate on the voltage to be applied.

Install the proper fuses in the control transformer primary leads as follows:

50VA TRANSFORMER:

Use KTK or FNQ 6/10 when connected to 230 volt.

Use KTK 3/10 when connected to 460 volt.

Use FNM or FNQ 2 1/4 fuses in the control transformer secondary side.

150VA TRANSFORMER ON EITHER 230V OR 460V:

Use FNQ 1 Primary Fuse.

Use FNM 2 Secondary Fuse.

INITIAL START-UP

When checking motor rotation, follow this procedure or serious pump damage may occur. Read all steps before beginning.

1. Be sure the reservoir is filled with oil to within approximately 3" from the inside top of the tank, and replace the shipping plug with the breather/filler cap provided.
2. Move the CONTROL CIRCUIT toggle switch, "A", Fig.1, downward to "OFF".
Only jog the motor to determine rotation. DO NOT LET THE MOTOR RUN! The proper direction of rotation is counter-clockwise while facing the shaft end of the motor. When proper rotation has been achieved, continue jogging the motor until both hydraulic pumps are primed. The larger, directly driven pump may be considered primed when oil lines "A", Fig. 02 is slightly loosened and oil comes out. Be sure to retighten the fittings.
3. The small, belt-driven pump may be considered primed when movement can be detected from the cylinder assembly mounted on the rear of the machine or there is a change in the pressure on the gauge "C", Fig.3, mounted on the cylinder.
4. Repriming should be unnecessary unless the pump loses its charge of oil. This may occur if the filter is changed, oil lines are broken or removed, or level in the tank becomes too low.

Use one of the following types of oil:

Anti-wear hydraulic oil, 150-215 SSU @ 100 F
Automatic transmission oil
10-40 SAE engine oil

MOISTURE EXTRACTOR ADJUSTMENT

The end of the Moisture Extractor on which the pump is installed is to be considered the front. Reference to left hand and right hand is considered standing from the rear of the machine.

Adjusting Unloader Valve Pressure

The proper pressure setting of the unloader valve varies depending on the nature of the material being processed through the Moisture Extractor. For extracting moisture out of paper waste it is good to start with 1200 p.s.i. By adhering to the following instructions the relief valve can be set to the desired pressure.

1. With main power on and the CONTROL CIRCUIT switch "A", Fig.1, in the "OFF" position and the ANTI PLUG switch "B", Fig.1, in the "OFF" position. Wait until the restriction cylinders are fully retracted in the up position.

2. Loosen the lock nut on the unloader valve "B", Fig.03. Then turn the adjustment cap screw clockwise until it is as far down as possible. The result of this step is that the unloader valve will be set at its maximum pressure.

3. Remove the protective cap at "B", Fig.02 from the main system relief valve. Install an allen wrench into the adjustment screw.

4. With a blunt object about 1/2" diameter, stall the plunger by depressing the manual operator on the rear side of the double solenoid valve at "B", Fig.04. The main pressure gauge "C", Fig.2, will read 3500 p.s.i. Turn the allen wrench counter-clockwise until the main system pressure gauge is set at the pressure desired on the unloader valve. For initial start-up set it at 1200 p.s.i.

Note: Do not depress the manual operator for more than 10 seconds at a time

Note: If the double solenoid valve will not return to neutral when released, depress the opposite side at "A", Fig.04 to center it.

5. Readjust the unloader valve "B", Fig.03, it requires two people to do this. One person needs to be at the unloader valve and one person needs to be at the double solenoid valve. With the manual operator on the double solenoid valve depressed at "B", Fig.04, and the plunger is stalled, turn cap screw "B", Fig.03 on the unloader valve counter-clockwise until the pressure reading on

gauge "C", Fig 03 begins to drop.

Again: Do not depress the manual operator for more than 10 seconds at a time.

Remember: Turning the screw clockwise increases the unloading pressure, turning the screw counter-clockwise decreases the unloading pressure.

6. Secure the lock nut on the unloader valve at "B", Fig.03.

7. With the double solenoid valve depressed at "B", Fig.04, readjust the adjustment screw at "B", Fig.02 on the main system relief valve by turning the allen wrench clockwise until pressure gauge "C", Fig.02 has returned to 3500 p.s.i. Never adjust over 3500 p.s.i. or serious pump damage may occur.

Remember: Do not depress the manual operator on the double solenoid valve for more than 10 seconds at a time.

8. Reinstall protective cap at "B", Fig.02.

Plunger Frequency Cycle Adjustment

Inside the feed chute is an automatic level detector that is activated when a small amount of material accumulates around the tip of the detector probe. When the detector is activated it energizes the panel relay which in turn cycles the plunger.

Large volumes of material falling into the feed chute past the level detector probe will frequently energize the level detector. To prevent a plunger cycle from starting falsely, before the chute is full, adjust the time delay frequency.

To arrive at the correct frequency for your particular conditions, adjust the time delay operate switch (TDOS), inside the control box. The TDOS has setting points of 1 through 6. This translates to 1 being approximately .1 second of delay and 6 being approximately a 10 second delay. It is recommended under normal conditions that the plunger have a delay time of 2 seconds from the time the automatic level detector is activated and the plunger begins to cycle. This means that the switch would be set between 2 and 3.

Plunger Speed Adjustment

The speed at which the plunger travels can be regulated with the flow control valve (FCV) mounted on the front of the oil tank. The plunger speed may be regulated to accommodate the material being processed. The following guidelines will help you properly adjust the FCV to the required speed.

1. If the FCV is set too high thus causing the plunger to run at maximum speed. There may be some loss of material through the drain holes in the chamber.

2. If the FCV is set too low, the Moisture Extractor may not keep up with production demand.

3. If the FCV is set too low it can cause excessive hydraulic oil heating. This is because the oil is being restricted and bypassed under pressure.

Adjusting Static Pressure

The static pressure pump keeps pressure on the restriction cylinders to control the water extraction process. It is located on top of the oil tank and is powered by the V-belt running off the motor. The static pressure is adjusted by turning the adjustment screw on the static pressure relief valve, "B", Fig.05. By adhering to the following steps the static pressure can be adjusted.

1. Remove the protective cap and loosen the lock nut on top of the static pressure relief valve.

2. Read the tension control pressure on gauge "C", Fig.3, when the plunger is on the pressure stroke of its cycle and there is material coming out of the rear end of the chamber.

3. Adjust the static pressure relief valve, when the tension rail cylinders are retracted and are motionless, to 1 1/2 times the pressure reading of step 2 above. The adjustment is made with the adjustment screw on top of the static pressure relief valve "B", Fig.05.

WE-3R HYDRAULIC PRESSURE SETTINGS

MAIN SYSTEM RELIEF VALVE	3500 PSI
HI - LO UNLOADER VALVE	1000
RESTRICTION CONTROL STATIC RELIEF	600
RESTRICTION CONTROL UNLOADER	2000
PRESSURE SWITCH	2500

* * * * * P R O C E D U R E * * * * *

1. Reduce main system relief setting by several turns of the adjusting screw. Stall plunger and set to 1000 PSI.
2. Connect AMP probe to one of the motor power leads. Note the AMP reading while motor is running with zero pressure showing on the main system pressure gage.
3. With plunger stalled, increase Hi-Lo unloader setting to obtain highest motor current draw. Note this AMP reading and subtract the reading obtained in Step 2.
4. With plunger stalled, reduce Hi-Lo unloader setting just enough to cause the AMP reading to drop by one-half the difference obtained in Step 3. Lock the Hi-Lo unloader adjusting screw.
5. With "anti-plug" switch in "off" position, adjust restriction control static relief to 600 PSI when restrictor rail has completely closed. Lock the adjusting screw.
6. Stall plunger and increase main system relief setting to 2500 PSI.
7. Connect voltmeter to anti-plug solenoid valve leads. This is the valve with only one solenoid coil. (115VAC)

8. Stall plunger. If voltmeter reads 115 VAC, increase pressure switch setting until meter reads zero, then slowly decrease setting until meter reads 115 VAC. If with plunger stalled, voltmeter reads zero, slowly decrease pressure switch setting until meter reads 115 VAC.

9. Stall plunger and set main system relief to 2000 PSI.

10. With plunger stalled, increase restriction control unloader setting until 600 PSI shows on restriction control pressure gauge.

11. With plunger stalled, reduce restriction control unloader setting just until its pressure gauge begins to drop from the 600 PSI reading. Lock the adjusting screw.

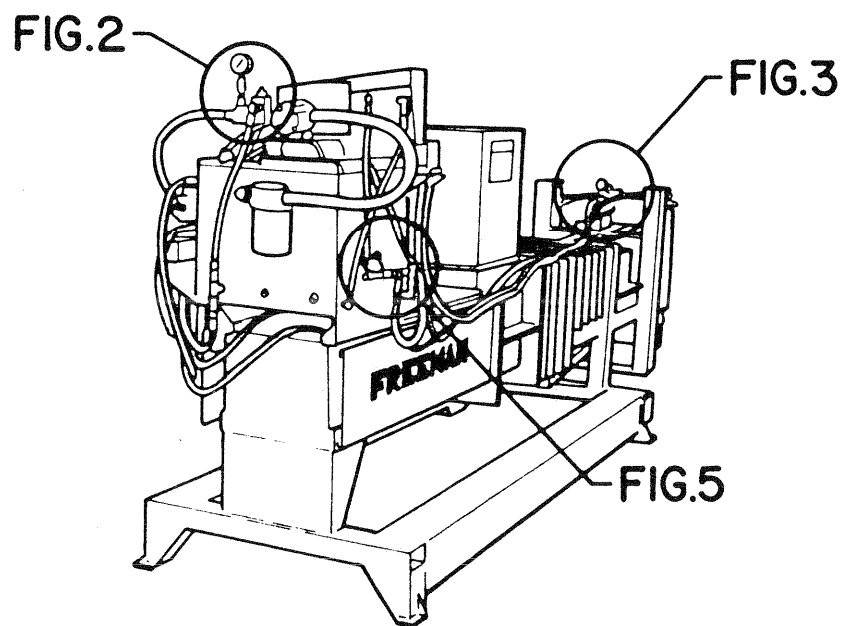
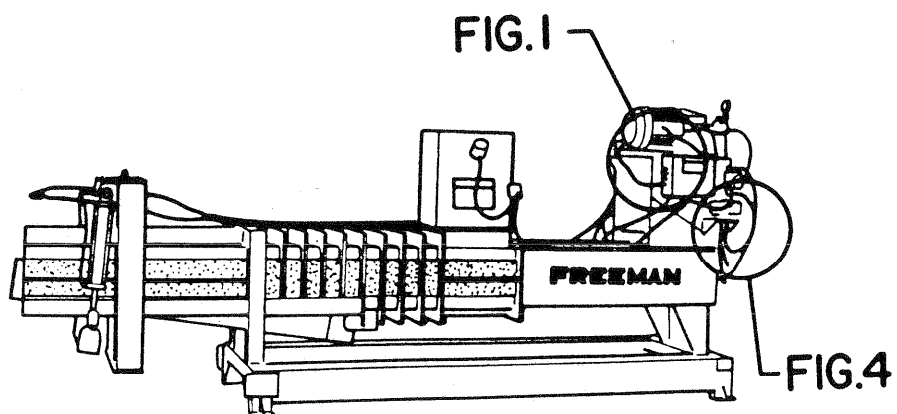
12. Stall plunger and set main system relief to 3500 PSI. Lock the adjusting screw.

UNPLUGGING THE MOISTURE EXTRACTOR

Plugging would normally be the result of improper high pressure adjustment on the unloader valve and/or static pressure valve. If plugging should occur adhere to the following directions.

1. Move the ANTI PLUG switch to the "ON" position "B", Fig.01.
2. Allow 20 seconds, or how ever long it takes the plunger to complete the stroke, and then move the ANTI PLUG switch to the "OFF" position.
3. If steps 1 and 2 do not unplug the Moisture Extractor, proceed with the following steps:
 - a. Move the CONTROL CIRCUIT "A", Fig.1, switch to the "ON" position and wait until the restriction cylinders are fully extended.
 - b. Move the CONTROL CIRCUIT switch to the "OFF" position.
 - c. With a blunt object about 1/2" diameter, depress and hold the manual operator on the rear side of the double solenoid valve "B", Fig.04 located on the right hand side of the machine until the plunger has retracted approximately 6 inches.
 - d. Move the CONTROL CIRCUIT switch to the "ON" position.
 - e. It may be necessary to allow some more material into the chamber before manually cycling.
 - f. If after repeating steps a. through d. several times, the Moisture Extractor remains plugged. It will be necessary to physically remove the plugged material from the chamber.

WARNING: Be sure all power is OFF before physically unplugging.



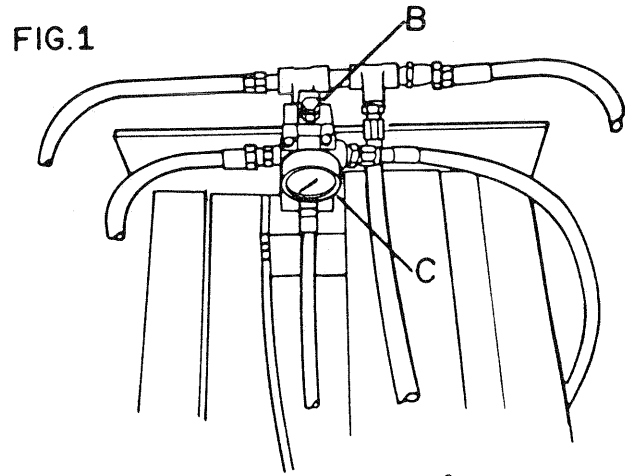
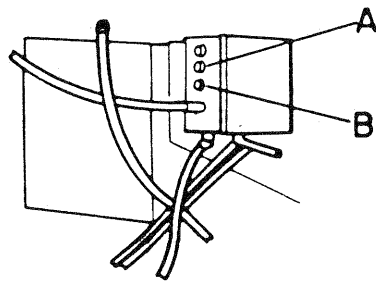


FIG. 1

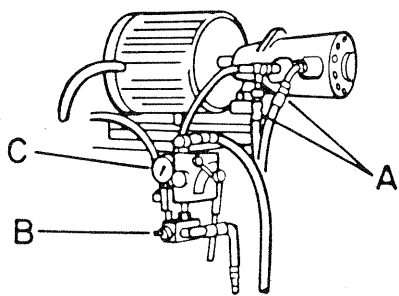


FIG. 2

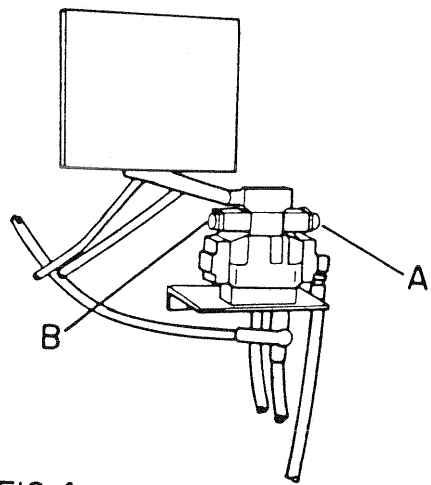


FIG. 4

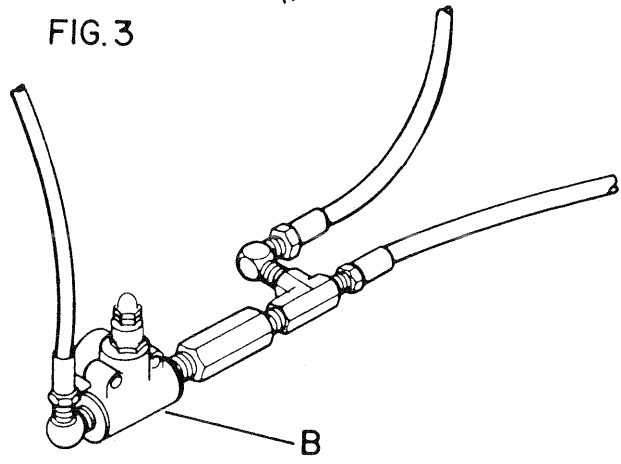


FIG. 3

FIG. 5