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User's Manual

Goldfish Fat Extraction Apparatus

Models

3500100

To receive important product updates,
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Please read the User's Manual before operating the equipment.

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Warranty

Labconco Corporation provides a warranty to the original buyer for the repair or replacement of parts and reasonable labor as a result of normal and proper use of the equipment with compatible chemicals. Broken glassware and maintenance items, such as filters, gaskets, light bulbs, finishes and lubrication are not warranted. Excluded from warranty are products with improper installation, erratic electrical or utility supply, unauthorized repair and products used with incompatible chemicals.

The warranty for the Goldfish Fat Extraction Apparatus will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner. Warranty is non-transferable and only applies to the owner (organization) of record.

Buyer is exclusively responsible for the set-up, installation, verification, decontamination or calibration of equipment. This limited warranty covers parts and labor, but not transportation and insurance charges. If the failure is determined to be covered under this warranty, the dealer or Labconco Corporation will authorize repair or replacement of all defective parts to restore the unit to operation. Repairs may be completed by 3rd party service agents approved by Labconco Corporation. Labconco Corporation reserves the rights to limit this warranty based on a service agent's travel, working hours, the site's entry restrictions and unobstructed access to serviceable components of the product.

Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This warranty is exclusive and in lieu of all other warranties whether oral, or implied.

Returned or Damaged Goods

Do not return goods without the prior authorization from Labconco. Unauthorized returns will not be accepted. If your shipment was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damages.

The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

Limitation of Liability

The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state, or local regulations. All users of this equipment are required to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

Contacting Labconco Corporation

If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:30 a.m. and 5:30 p.m., Central Standard Time.

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Chapter 1: Introduction

Components Shipped

Carefully check the contents of the carton for damage that might have occurred in transit. Do not discard the carton or packing material until all components have been checked against the following component list and the equipment has been installed and tested.

As shipped, the carton should contain the following:

Part Number	Description
35001	Goldfish Fat Extraction Apparatus
35051	Beakers, 100 cc (12)
35049	Sample Tubes (6)
35048	Reclaiming Tubes (6)
35050	Extraction Thimbles (6)
35052	Condenser Gaskets (6)
35191	Wave Washer – Beaker Seal (6)
35054	Ring, Beaker Retainer (6)
35185	Assembly, Heater Cover (6)
35181	Instruction Manual (this document)

General Description

The Labconco Goldfish Fat Extraction Apparatus is designed for single or multiple fat extractions according to the methods prescribed in the Association of Official Analytical Chemists (AOAC) or other technical methods involved with the use of a continuous extractor.

These units operate on a continuous type extraction principle; however, the refluxing time normally required by the Soxhlet Extraction Method is usually reduced through the design principles incorporated in the Goldfish Extractors.

The following instructions outline the features, installation and maintenance of the Goldfish Extractor. This manual should be kept handy so that questions of use or service can be answered.

Component Identification

Refer to Figure 1 for the specific location of these components.

1. **Manifold Assembly.** This assembly is located at the top of the apparatus and provides an even flow and distribution of water to the condenser heads. Water exits through the water control valve, located on the upper left hand portion of the unit. And flows through the manifold assembly, depositing cool water in the condenser head system.
2. **Pressure Release Valve.** These valves are located at the top of the manifold above each of the condensers. It provides an escape for excess gaseous pressure which may build up in the condenser. The valves automatically reset themselves to assure a closed system of extraction.
3. **Condenser Head System.** These cylindrical shaped condensers located above each heater provide an essential part of the extraction process. The solvent vapor rises from the boiling solvent and reaches a point inside the condenser head coming into contact with metal cone shaped surface which is cooled by water. The vapors condense and drip through the sample held in the ceramic thimble, extracting the fat from the sample.
4. **Heater System.** Each 100 watt adjustable spring loaded heater provides an even distribution of heat through the use of coiled heater wires embedded in a ceramic material. The variable heat control switch located at the front of the unit provides a variety of settings.

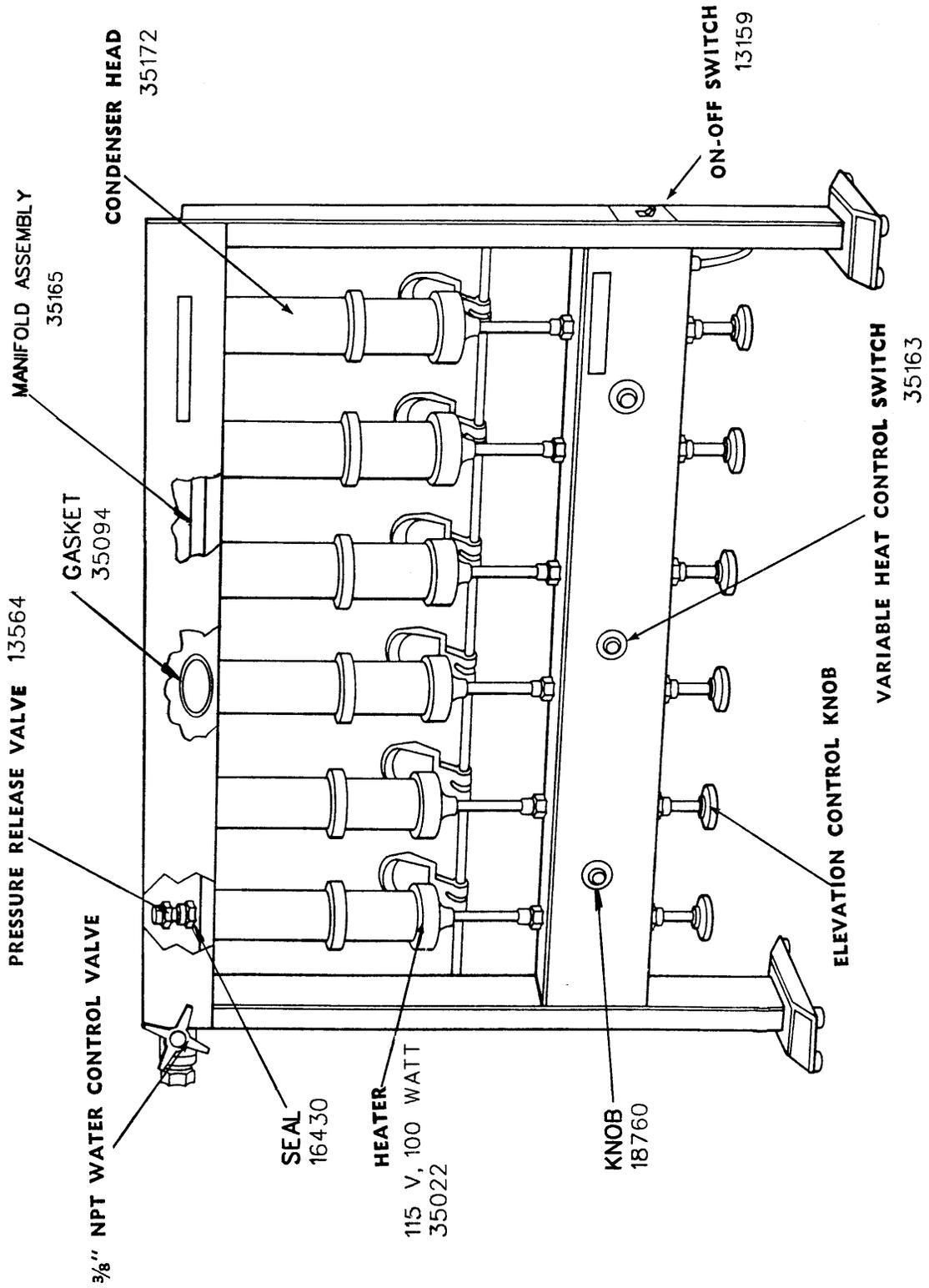


Figure 1

Chapter 2: Installation

Preparation

The Goldfish Extractor is shipped complete and fully assembled. The operating parts shipped with the unit will be installed after the unit has been located in the laboratory area.

Location

Choose a location in the laboratory which has a convenient 115 volt A.C. outlet, an unrestricted 3/8" NPT cold water supply and drain facilities of at least 3/4" NPT. **Caution:** The Goldfish Extractor should be operated inside an explosion proof hood with proper airflow to handle the extremely flammable solvents that are used during the Goldfish Extractor's normal operation.

Utility Connections

- (1) Once the unit has been placed in its final location, connect the cold water supply to the 3/8" NPT control valve water fitting on the upper left.
- (2) Connect the 3/8" NPT control valve on the upper right to an open drain of sufficient size (3/4" IPS or larger) to accommodate the cooling water. Cooling water should be a minimum of .75 gal/min or 2.8L/min for flow (55 °F (13 °C) or less is preferable).
- (3) Plug the unit into an electrical outlet.

Initial Start-Up and Check Out

Turn main power and variable heat control switches on. Make sure all heating elements heat properly. Wait two to three minutes.

Gasket Assembly

Remove contents of the operating parts package which should be taped to the unit. Assemble the gasket, wave washer, retaining ring and glassware according to assembly drawing instructions as shown in Appendix A. Hand tighten the retaining rings to achieve vapor seal.

Turn water on and make sure there is an even flow leaving the unit.

Chapter 3: Normal Operation & Routine Maintenance

Summary of Operation

The Labconco extractor reduces extraction time from 16 hours to about four hours through its efficient refluxing system. The operation is carried out by using a Pyrex[®] beaker as the solvent chamber. The procedure involves placing the samples between the boiling solvent and a cold surface. As boiling continues, the solvent vaporizes, condenses on the cold surface and washes back through the samples to the boiling solvent below.

Procedures

The following section provides a general outline of steps necessary to operate a routine extraction on the Labconco Goldfish Fat Extractor. Actual test methods, sample preparation, solvent choices, etc. are determined by official methods of the A.O.A.C. and should be referred to in all cases.¹

- (1) Turn on cold water supply. Check visual flow at the drain area. Water flow will be adjusted later after system is operating to obtain normal reflux rate. Heater and water flow rates may be adjusted to vary reflux rates according to the operator's preference.
- (2) Prepare sample(s) per standard method for the product under examination. See assembly drawing in Appendix A.
- (3) Place required quantity of sample in the extraction thimbles. Filter paper or fritted glass thimbles may be substituted according to operator preference.
- (4) Place thimble containing sample into Pyrex sample tube.
- (5) Insert sample tube assembly into clip from the front. Push upward until bulb of sample container meets holding clip.

¹ For more information, see "Official Methods of Analysis" of the Association of Official Analytical Chemists.

- (6) Place solvent of proper type and quantity into beaker. A quantity of 25 to 35 ml of solvent is normally sufficient for an estimate 3 to 4 hours of refluxing.
- (7) Assemble beaker to retainer ring with the wave washer inserted and twist to lock securely in place. After beaker is locked in place, pull down elevation control knob and twist $\frac{1}{4}$ turn to the left. Raise control knob to “catch” position and again twist $\frac{1}{4}$ turn to the left. Slowly allow heater to rise against bottom of flask. DO NOT let go of knob until heater is in position against beaker.
- (8) Select heat rate required using panel control switch(es). Control is provided for full range of power with the “HIGH” position providing both heaters with approximately 100 watts each. Control position “5” provides approximately 35 watts each.
- (9) Turn the main power switch, located on the right side, to the ON position. Switches on the panel each control two heaters.

NOTE: If only one extraction is being made, the adjacent (or companion) heater, operating on the same panel switch, should be loaded with a beaker of solvent or water to “load” the heater and increase its service life.

- (10) Pre-heating the heaters for about 8 to 10 minutes prior to starting samples will reduce waiting time for start of refluxing.
- (11) Water flow rate through the condenser head system can be regulated to provide a wide range of reflux rates, when used alone or in combination with heater control selections.

NOTE: If water flow rate is reduced too much, solvent will be lost in the beakers. A condenser without flow rate will permit solvent to escape through the pressure relief valves.

- (12) When extraction is completed, place heater covers on heaters to prevent solvent from coming into contact with the hot heater. Remove sample tubes, replace with reclaiming tubes and remove heater covers. Heat transfers solvent into the reclaiming tube, leaving oil in the beaker.
- (13) Drying of the extract is accomplished efficiently with a special swing beaker holder (one holder behind each heater assembly) which inclines the beaker at a slight angle in the warm air above the heater assembly. When all but the last few milliliters of solvent is evaporated, the beaker is placed in a drying oven, weighted and compared to the tare weight of the beaker. Weight difference is the amount of extracted material.

- (14) Heater covers are provided to prevent solvent from coming into contact with the hot heater. Use covers when removing or attaching beakers to condenser heads.
- (15) The Labconco Fat Extractors are suitable for carrying out the indirect Method of Fat Extraction (also known as “Crude Fat Extraction”). This procedure requires the determination of moisture, followed by extraction of the dried material, with the loss reported as the ether extract.

Official methods should be referred to for specific test procedure of the indirect method in all cases.

Maintenance

All of the parts contained in the operating parts package are routine maintenance items. It is suggested that additional supplies of these items be kept in stock. Items such as gaskets or beakers occasionally wear out or break and need to be replaced. You may order these through your local laboratory apparatus dealer or by contacting Labconco Corporation. Be sure to specify the Labconco part number when ordering. If contacting Labconco directly, please furnish the name of the dealer from whom you purchased the equipment.

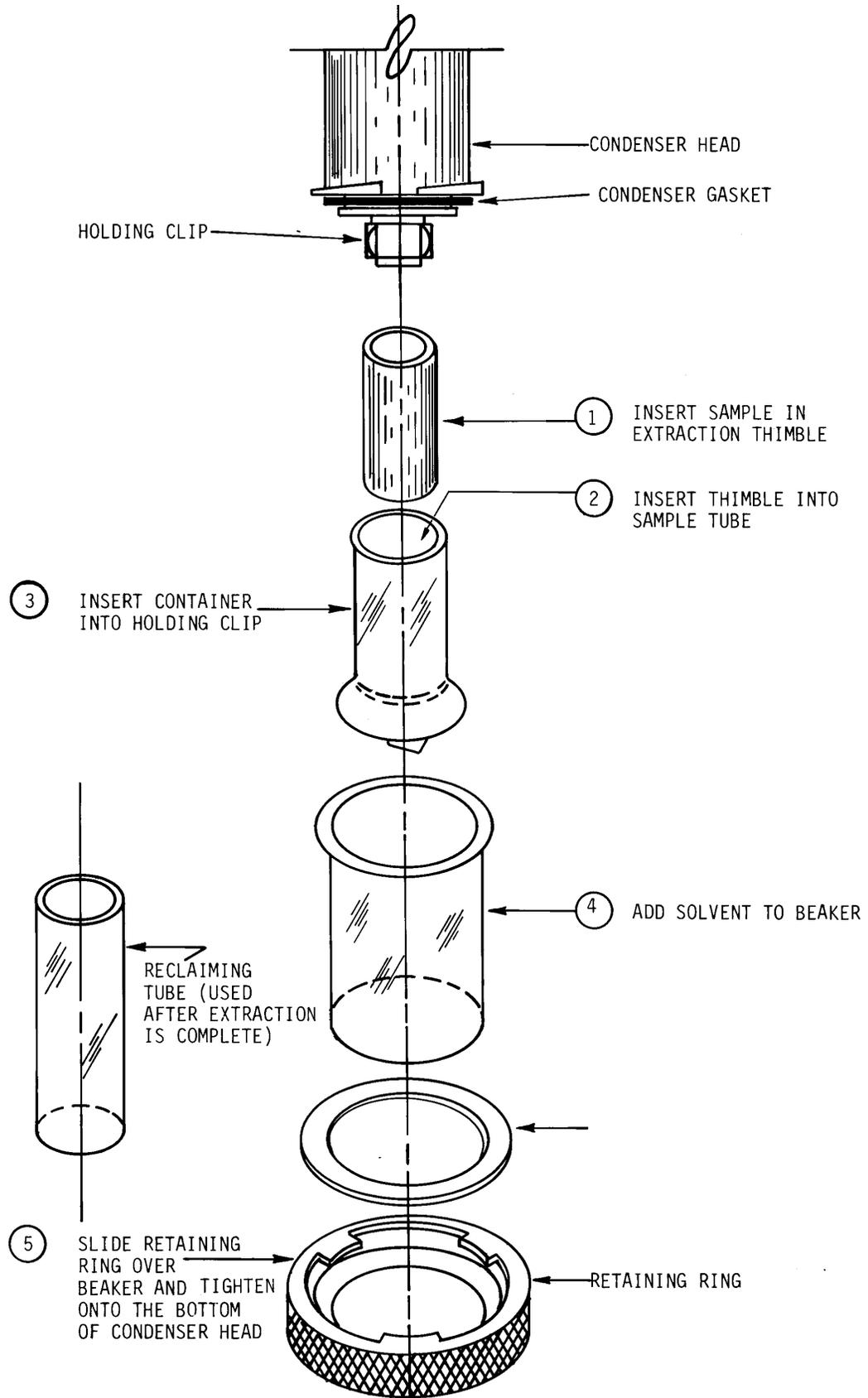
Appendix A: Replacement Parts

PART #	QTY	DESCRIPTION
12726	1	Pilot light
13516	1	Valve, needle, water
13159	1	Switch, mercury, toggle single pole, 115 volt, 15 amp
13564	1	Valve, pressure relief
35094	1	Gasket, outer condenser shell
30139	1	Wire, No. 18, stranded nickel with braided glass cover for heater harness and lead, 15' length
35167		Wiring harness – 6 unit
35022	1	Heating element, 115 volt, 110 watt
35163	1	Switch, infinite control
35046*	Pkg. of 6	Beaker, glass (Pyrex), tall form, 5' high
35053	Pkg. of 6	Beaker, glass (Pyrex), 100 cc, 3 1/4" high
35054		Ring, beaker
35059	Pkg. of 6	Extraction thimble, 22 x 80 mm
35061	Pkg. of 6	Sample tube container (thimble holder), glass (Pyrex)
35062	Pkg. of 6	Reclaiming tube, glass (Pyrex)
35160	Pkg. of 6	Gasket, condenser, upper
35067*	1	Sample tube container (thimble holder), stainless steel
35185	1	Heater cover
35191	6 Req'd.	Wave washer – Beaker seal
35120		Spring, compression heater push rod
35172		Condenser assembly

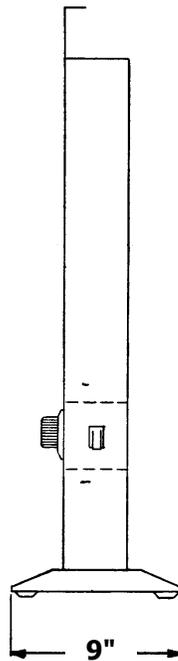
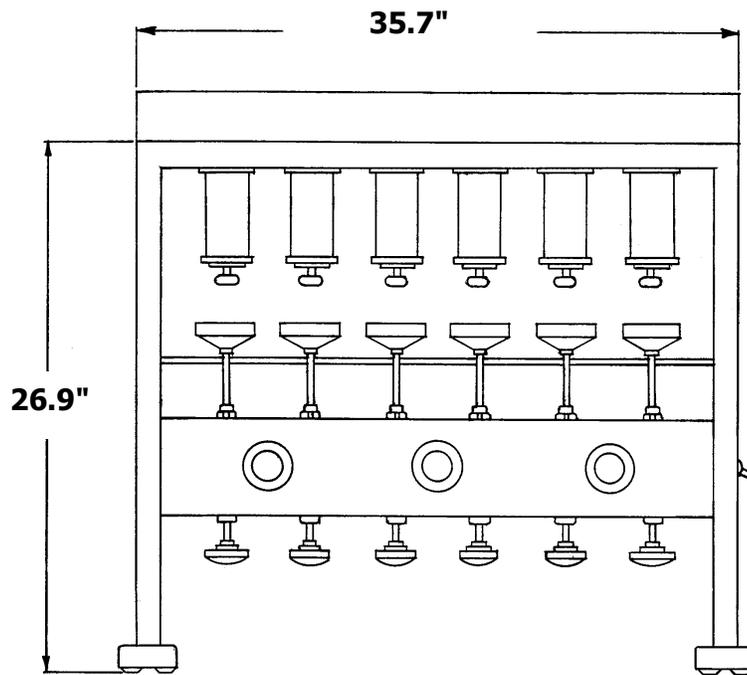
*Not furnished as standard equipment, but offered as an accessory.

Note: When ordering replacement parts, specify the Labconco equipment serial number.

Appendix A: Replacement Parts



Appendix B: Dimensions

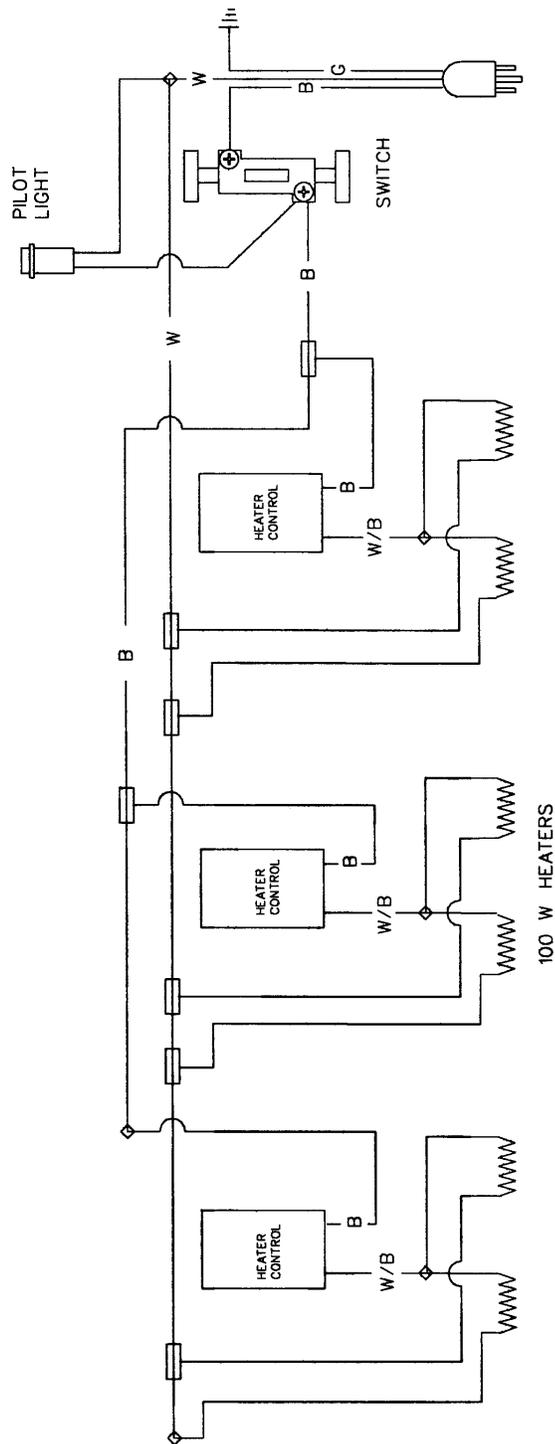


Appendix C: Specifications

6-unit Goldfish Fat Extractor Model No. 35001 operates on 115 volts, 50/60 Hz, (max.) at 5.2 amps. It is shipped complete with power cord and grounded (3 wire) plug. Standard features are as follows:

1. Main power on-off.
2. Full range variable heat control switch. Each switch controls two heaters.
3. All stainless steel (Type 304) condenser assembly.
4. Pressure relief valves for each condenser.

Appendix D: Wiring Diagram



WIRING DIAGRAM