For more information, please contact us:

ExpotechUSA
10700 Rockley Road
Houston, Texas 77099
USA

281-496-0900 [voice]
281-496-0400 [fax]

E-mail: sales@expotechusa.com

Website: www.ExpotechUSA.com
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Thank you for displaying confidence in us by selecting a Labconco Goldfisch Fat Extraction Apparatus. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that the new Labconco Goldfisch Fat Extraction Apparatus meets our high standards of quality and performance.

**IMPORTANT NOTICE**

This manual should be read carefully by all the end users in order to become familiar with the operation of the Goldfisch Fat Extraction Apparatus. Recommendations are made within the manual to help you obtain maximum performance and life from your product.

We have included sections on initial set up, operation and maintenance to provide you with all the tools necessary to achieve maximum performance.
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:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>35001</td>
<td>Goldfisch Fat Extraction Apparatus</td>
</tr>
<tr>
<td>35051</td>
<td>Beakers, 100 cc (12)</td>
</tr>
<tr>
<td>35049</td>
<td>Sample Tubes (6)</td>
</tr>
<tr>
<td>35048</td>
<td>Reclaiming Tubes (6)</td>
</tr>
<tr>
<td>35050</td>
<td>Extraction Thimbles (6)</td>
</tr>
<tr>
<td>35052</td>
<td>Condenser Gaskets (6)</td>
</tr>
<tr>
<td>35191</td>
<td>Wave Washer – Beaker Seal (6)</td>
</tr>
<tr>
<td>35054</td>
<td>Ring, Beaker Retainer (6)</td>
</tr>
<tr>
<td>35185</td>
<td>Assembly, Heater Cover (6)</td>
</tr>
<tr>
<td>35181</td>
<td>Instruction Manual (this document)</td>
</tr>
</tbody>
</table>
INTRODUCTION

General Description

The Labconco Goldfisch 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 Goldfisch Extractors.

The following instructions outline the features, installation and maintenance of the Goldfisch 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 enters 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.
INTRODUCTION

Figure 1
INSTALLATION

Preparation

The Goldfisch 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 Goldfisch Extractor should be operated inside an explosion proof hood with proper airflow to handle the extremely flammable solvents that are used during the Goldfisch Extractor’s normal operation.

Utility Connections

(1) Once the unit has been placed in its final location, connect the 3/8" NPT control valve on upper left side of the unit to cold water supply. This valve regulates the flow of water through the condenser heads.

(2) Connect the 3/4" NPT water outlet on the upper right side of the unit to an open drain of at least 3/4" NPT.

(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 on page 9. Hand tighten the retaining rings to achieve vapor seal.

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

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 Goldfisch 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 on page 9.

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.

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 ¼ turn to the left. Raise control knob to “catch” position and again twist ¼ 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.

¹ For more information, see “Official Methods of Analysis” of the Association of Official Analytical Chemists.
NORMAL OPERATION

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.

(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.
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.
# REPLACEMENT PARTS

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

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

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

- **CONDE$$ER** 35172
- **CONDE$$ER GASKET** 35160 PKG. OF 6 ORTHANE OR 35186 (1 EACH) CORK
- **HOLDING CLIP**
- **THIMBLE** 35059 – PKG. OF 6
  - Insert Sample in Extraction Thimble
  - Insert Thimble into Sample Tube
  - Insert Container into Holding Clip
  - Add Solvent to Beaker
  - Slide Retaining Ring over Beaker and Tighten onto the Bottom of Condenser Head
  - Reclaiming Tube (used after extraction is complete)
- **SAMPLE TUBE** 35061 – PKG. OF 6
  - **BEAKER** 35053 – PKG. OF 6
  - **RECLAIMING TUBE** 35062 – PKG. OF 6
  - **WAVE WASHER** 3519100 – 6 REQUIRED
- **CONDENSER GASKET** 35160 PKG. OF 6 ORTHANE OR 35186 (1 EACH) CORK

RECLAIMING TUBE
6-unit Goldfisch 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, non-spark mercury switch.
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.
We are committed to providing our customers with quality equipment and service after the sale. Part of this objective involves keeping you informed of changes and new product additions. We, therefore, request that you take a moment to fill out the product registration card so we may know your location as well as some of the reasons that prompted you to purchase our product.

Labconco provides a warranty on all parts and factory workmanship. The warranty includes areas of defective material and workmanship, provided such defect results from normal and proper use of the equipment.

The warranty for all Labconco products will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner, except the following:

- Purifier® Delta™ Series Biological Safety Cabinets, which carry a three-year warranty from date of installation or four years from date of shipment from Labconco, whichever is sooner.
- Carts carry a lifetime warranty.
- Glassware is not warranted from breakage when dropped or mishandled.

This limited warranty covers parts and labor, but not transportation and insurance charges. In the event of a warranty claim, contact Labconco Corporation or the dealer who sold you the product. If the cause is determined to be a manufacturing fault, the dealer or Labconco Corporation will repair or replace all defective parts to restore the unit to operation. Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This statement may be altered by a specific published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments. Lamps and filters are not covered by this warranty. Damage due to corrosion or accidental breakage is also not covered.

**WARNING:** 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 urged 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.
If a shipment is received in visibly damaged condition, be certain to make a notation on the delivering carrier’s receipt and have their agent confirm the damage on your receipt. Otherwise, the damage claim may be refused.

If concealed damage or pilferage is discovered, notify the carrier immediately and retain the entire shipment intact for inspection. Interstate Commerce Commission rules require that the claim be filed with the carrier within 15 days after delivery.

**NOTE: Do not return goods.** Goods returned without prior authorization will not be accepted. Labconco Corporation and its dealers are not responsible for shipping damage. Claims must be filed directly with the freight carrier by the recipient. If authorization has been received to return this product, by accepting this approval, the user assumes all responsibility and liability for biological and chemical decontamination and cleansing. Labconco reserves the right to refuse delivery of any products which do not appear to have been properly cleaned and/or decontaminated prior to return.
For more information, please contact us:

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