



Reg. No 0015

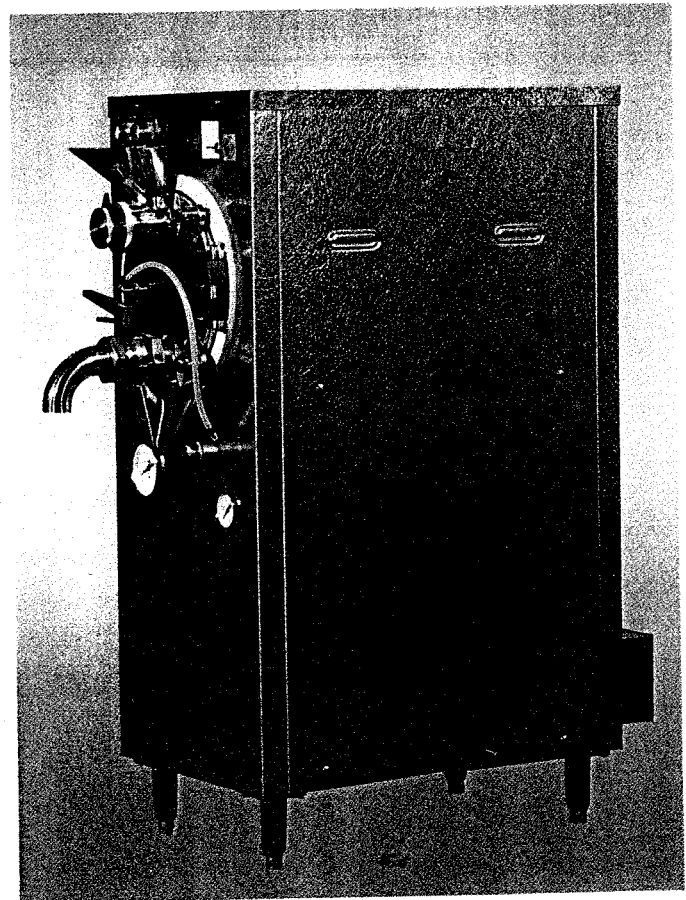
GIUSTI

MIXING WITH THE WORLD'S BEST COMPANIES

"THE PHF" PRESSURE HORIZONTAL FREEZER

- Robust construction from stainless steel
- Polished surface looks good year after year
- Easy to clean and maintain - removable side panels
- Easy to operate - button controls with front mix inlet and discharge nozzle
- 27 litre batch in 12 to 15 minutes. Maximum output of 135 LPH/30 GPH
- Variable overrun 50% to 120% achieved by easily adjustable air pressure and mixing time within the cylinder
- Variable freezer pressure 0 to 25 PSI gives exceptionally smooth finished texture
- Direct expansion freezing using R 22 refrigerant
- Suitable for speciality mixes with fruit, nuts etc.

MACHINERY WORLD



- Integral condenser can be water or air cooled
- Fitted with air pressure control and relief valve

T. GIUSTI LTD

RIXON ROAD, WELLINGBOROUGH, NORTHAMPTONSHIRE NN8 4BA, ENGLAND.
TELEPHONE: (0)1933 229933 FAX: (0)1933 272363

TRUST WORKS, DERRY STREET, BURTON-ON-TRENT, STAFFS, DE14 2LH

REGISTERED IN ENGLAND 322670

VAT NO: 558 5549

CLEANING ALL FREEZERS

- (1) First wash freezer sleeve with clean cold water, discharge by opening valve provided at bottom of freezer.
- (2) Scrub freezer, sleeve, door and beaters with luke warm water to which has been added a suitable detergent and again empty. This will remove fat.
- (3) Wash with cold water and chemical steriliser (sodium hyperchlorite, quartenary ammonium compounds, or similar proprietary chemical).
- (4) Rinse with cold water.
- (5) Should freezer have been standing for some period, sterilise before using, in fact, it is advisable to clean freezer and sterilise immediately when freezing finishes and again when starting.
- (6) Scrapers and splash ring should be washed and steam sterilised, if possible, away from the freezer.

Pay particular attention, with vertical freezers, to the mix drain pipe when cleaning and sterilising, and to the non-return air valve on Pressure Freezers.

The electric mains supply to the compressor motor must always be switched on when the freezer is being cleaned, especially when warm water is employed. Direct expansion freezers are not designed to be sterilised by steam. It is doubtful whether sterile conditions can be caused by its use. All reputable brands of sterilisers in the sodium hyperchlorite and quartenary ammonium groups can be used if the makers printed instructions are carefully obeyed.

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SUGGESTED SPARES FOR PHF

			£
1 - AIR TUBE SPRING PR4/9	640018		4.00
1 - PR14/11 SCRAPER BOLT	640002		3.00
1 - JW 111014 SINGLE LIP SEAL	815083	080632/5.	26.00
1 - PR15 DOOR SEAL	640005		45.00
1 - 17047 O RING FOR INLET	816072		7.00
1 - 17047 O RING FOR OUTLET	816072		7.00
1 - 17047 O RING FOR DRIVE GLAND SEAL	816072		7.00
1 - 17017 O RING (AIR TUBE SEAL)	816270		2.00
1 - FR3/10D NYLOTRON STUDS	642004		2.00
1 - 3/8 DIA NYLON BALLS	624037		1.00
1 - NYLOTRON DOOR BUSH PR12/6	086364		30.00

LATEST SET OF 7 COMPRISES OF:

1 - PR4/6 SCRAPER	640044		21.00
4 - PR4/7 SCRAPER	640045		22.00
1 - PR14/15 SCRAPER	640003		30.00
1 PR7/20 SCRAPER	640001		36.00

EARLIER SET OF 8 COMPRISES OF:

1 - PR4/6 SCRAPER	640044	086050/x	21.00
4 - PR4/7 SCRAPER	640045	086061/x	22.00
1 - PR4/8 SCRAPER	732314	090704	33.00
1 - PR7/19 SCRAPER	640046	086150	24.00
1 - PR7/20 SCRAPER	640001	086158.	36.00

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NOTES ON INSTALLING AND OPERATING THE GIUSTI FREEZER

The GIUSTI FREEZER operates with a semi-flooded cylinder fed by a thermostatic expansion valve.

To obtain best freezing time the expansion valve must be set correctly. The valve is set before the freezer leaves the factory and any further adjustment should be undertaken by a competent refrigeration engineer. Adjustment should only be made when the machine is working under full load.

Ample refrigeration at all times is essential for satisfactory operation. Ascertain that sufficient liquid refrigerant is present in the circuit.

When coolers, hardening rooms or cabinets are operated from the same condensing unit, make sure that liquid and suction stop valves to these units are closed while the freezer is working.

COMBINED UNIT

All freezers are thoroughly tested for mechanical and refrigerating efficiency before leaving the factory. The cylinder of the freezer is cleaned and dehydrated and a small charge of Freon is left in the expansion chamber when inlet and suction are sealed. A certain amount of gas pressure can be expected when breaking seals.

The most efficient production can be expected from the freezer when operated in conjunction with a condensing unit having the correct expansion rate for the Freezer being used.

These are:	VF 9	5,000 - 6,000	btu/hr	at 0°F	Freon 12
	VF 25	18,000 - 20,000	btu/hr	at 0°F	Freon 12
	PHF	16,000 - 18,000	btu/hr	at 0°F	Freon 12
	PHFHF	18,000 - 20,000	btu/hr	at minus 22°F	Freon 22 or 502

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OPERATING THE PRESSURE FREEZERStarting

- (1) Make sure that the freezer is clean. Charge barrel with water. Run beaters for one minute. Drain water and preferably ease open the door to remove any residue of water below the outlet cock.

Leave any small quantity of water adhering to the surface in the freezer as any attempt to wipe with a rag may contaminate the freezer and the small quantity of water remaining is of no consequence.

- (2) Unscrew open the filling valve at the top of the freezer door and load the barrel from the mix hopper by letting 3 - 3½ gallons of mix flow into the cylinder. For low overrun 4 - 4½ gallons of mix can be added.
- (3) Close the filling valve tightly.
- (4) Switch on beaters - slow speed.
- (5) Switch on refrigeration.
- (6) Switch on air pump if high overrun is required.
- (7) When experimenting, start with a low air pressure 5lbs p.s.i. and increase slowly until pressure intended to give approximately 100% overrun is reached. This should be in the neighbourhood of 15lbs p.s.i. on the pressure gauge. Once the correct air pressure has been decided, lock the air control valve and this will be sent for all following batches.
- (8) Allow the ice cream to freeze until the ampmeter indicates 7 - 7½ amps for machines operating on 380 - 440 v or 9 - 10 amps on machines operating on 220 - 240v. Here again the consistency of the ice cream relative to the amperes taken by the motor can be found by trial and error. The type of mix used has considerable bearing on the motor loading.
- (9) An electrical timer is fitted to switch off the compressor after a pre-determined period. This should be set at approximately 8 minutes and must be adjusted by the customer to suit his product preferably after the 2nd or 3rd batch.
- (10) When it has been decided that the ice cream is of the correct consistency stop refrigeration and allow refrigerating compressor to stop by means of the low pressure cut-out. This generally requires one to one and a half minutes.

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OPERATING THE PRESSURE FREEZER (continued)

- (11) Air compressor required to assist with rapid discharge of frozen ice cream.
- (12) Open outlet cock and discharge the barrel using high speed on Beater. Do not open top filling valve until the pressure in the barrel has been fully released through the outlet cock, preferably always open the filling valve whilst the discharge cock is open, before recharging the barrel with mix do not forget to close the outlet cock.
- (13) The machine is now ready for another batch and the cycle should recommence.

WARNING When Air Compressor is switched off the pressure gauge will return to zero pressure BUT THE BARREL WILL STILL BE UNDER PRESSURE UNTIL THE OUTLET VALVE IS OPENED.

IRREGULAR AIR PRESSURE

Check the non-return valve marked '9' fitted into the door of the freezer by completely dismantling. This valve prevents air and mix leaking back to the air compressor, in fact, once pressure has been pumped into the barrel, the air pressure remains in the barrel even if pump is shut off.

Unscrew and clean the seating of the regulating valve as this acts as a pressure relief valve by letting air escape from tube when the required pressure has been attained in the barrel. If the valve is screwed inwards more pressure will be required to open relief valve and allow the air to escape, and therefore working pressure in the barrel will be higher.

Finally, there is a small valve in the head of the air compressor which is set to open at about 25lbs per square inch, and this is a safety valve which prevents excessive pressure should the adjusting valve be screwed in too hard. Check at what pressure the valve opens, adjust if necessary.

Make sure that there is no particle of foreign matter underneath the seating of any of these valve which will of course upset the operation.

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WARNING

The freezer door must not be opened until beaters are stopped.

DON'TS

Don't service the compressor before switching off main switch.

Don't open the door and attempt to remove beaters while they are turning.

Don't tamper with auto switches or expansion valve without being firmly convinced they need adjustment.

Under no circumstances must the high speed on the beater be switched on during the freezing period.

ADDING FRUIT ETC.

When fruit or nuts etc. are being incorporated it is suggested that these should be added to the liquid mix prior to pouring into the inlet funnel.

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LAYING UP THE FREEZER

Between seasons, when the freezer is going to be out of use, the following procedure should be adopted:-

- (1) Relieve the tension on the vee belt drive to the freezer motor by slackening off the spring on the motor mounting plate.
- (2) Paint the exposed portions of pulleys and protect the motor and switch against dampness.
- (3) Pump medium motor grease into the driving shaft bearings until clean grease is visible at the bearings.
- (4) Call in the refrigeration engineer to shut down the condensing unit in accordance with the manufacturers instructions.
- (5) Wipe the outside of the cylinder covering free of any mix or fat which may have splashed on it or vermin may be attracted.
- (6) Clean and thoroughly dry the cylinder and beater/scrapper assembly, including the mix outlet pipe and cover all surfaces with an anti-corrosive medium. Lanolin, s.o.s. Sosal or vaseline. This anti-corrosive treatment is particularly important in seaside areas.

T. GIUSTI & SON LIMITED carry a full range of spare parts for the freezer in addition to a well equipped Service Department which can carry out complete overhauls during the close season.

IMPORTANT WARNING!

Panels are fitted to protect rotating parts. If these panels are removed the equipment should be immobilised by disconnecting from the electric supply.

INSTALLATION

Freezer mechanism can be easily exposed by removing side panels.

INSTALLING EQUIPMENT

- (1) The freezer is protected to prevent damage in transit. If the crate arrives damaged, you should sign as damaged and notify us and the carrier at once. Also notify our Service Department of damaged parts so that they may be replaced. (No claims can be entertained after three days following delivery).
- (2) When uncrating and placing the freezer in position be careful not to scratch or dent the panels, as the Company cannot be responsible for damage done in this manner.
- (3) The floor or counter must be strong enough to withstand the weight of the freezer and prevent vibration.
- (4) Before placing the freezer be sure all requirements of the local Health Department have been complied with.
- (5) Avoid placing the freezer near any hot water liners or radiators.

When locating freezers with remote condensing units we suggest that the unit be placed directly below the freezer or next to it, in order to provide the shortest run of copper tubing.

Check electrical specifications.

All wiring must be in accordance with local code requirements. We recommend that all motors have their own fused isolating switch placed on the same floor as near the unit as possible. (This is in addition to the starter provided on freezer). Be sure switches are in 'OFF' position before fusing and that all switches on freezer are also in 'OFF' position.

Where the compressor is installed in a remote position it is advisable to install a pilot tell-tale lamp near the freezer so that the Operator can tell when the Compressor has stopped running.

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- (1) Check cabinet and see that it is level both across and lengthwise.
- (2) Before starting freezer motor, revolve beater/scraper several times by hand to be sure everything is free. Then remove beater arm from cylinder and check rotation.

The rotation of driving shaft looking into the freezer cylinder must be clockwise. This is very important, as otherwise the scraper will not function.
- (3) Refrigerant line connections are flared unless otherwise required.
- (4) All flare nuts, joints and fittings to gauge must be positively leak tight. A great deal of trouble caused by moisture getting into the system is traceable to gauges, fittings, connections and frosted nuts undried on removal.
- (5) Torch test every connection. They were tight when the freezer left the factory, but vibration in shipment may cause them to loosen. If any leaks are found, tighten immediately before the compressor is started.
- (6) Check water-cooling conditions, amount of refrigerant and for the pressure of air in the system. Among other things, excessive head pressure can be caused by too much refrigerant or the pressure of air in the system, they are very similar in effect.
- (7) Check frost-back on the freezer suction line. The frost-back should nearly reach Compressor. If the frost-back is not correct, the liquid refrigerant in system may not be sufficient or the expansion valve may require re-setting.
- (8) Be sure no frost or ice has built up in the freezer cylinder during testing, before running beaters.
- (9) The Compressor should be set to cut out automatically at a suction pressure 2 to 3 lbs below that maintained by the thermostatic expansion valve.
- (10) The phail of the thermostatic Expansion Valve must make good contact with the suction line.
- (11) The foregoing is based on Freon 12 refrigerant. Amend as necessary if any other refrigerant is used.

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DIRT OR SCALE IN THE SYSTEM

It is possible, however much care is taken, that dirt and other residue is present in the refrigerant circuit. Such residue, which may occur in the compressor, in the condenser, in the handling of pipe lines during connecting or in the freezer itself, may restrict the compressor filter, the dryer or the expansion valve strainer.

This can be rectified by cleaning the filters and strainer. In general any scale or residue in the freezer itself will accumulate in the condensing unit suction strainer and any similar residue in compressor will be trapped by the expansion valve filter.

Such cases cause symptoms similar to those experienced with moisture in the system, in that the expansion valve will clog at the orifice and cease to function.

MAINTENANCE OF THE FREEZER

The GIUSTI FREEZERS are made from finest materials and with careful use will give years of trouble-free service. The cover and side panels are easy to clean and should be wiped frequently with a clean damp cloth.

The driving shaft of stainless steel is supported by heavy duty bearings, fitted with grease nipples. Grease caps are used on Horizontal machines. Make a point of giving the nipples two shots of grease every week. Use tasteless Vaseline.

SCRAPER/BEATER ASSEMBLY

Beaters of Horizontal Freezers are located by a spigot in centre of door. Check this for wear and replace as necessary. Boss is retained by a left hand screw. Do not drop beater arm carrying the scrapers into a washing trough containing other articles which may come in contact with, and destroy the keen edge of the scraper blades. Use stiff brush to clean between the blades and the beater arm. Bolts should be checked periodically for tightness.

Wear can be expected on the blades, particularly when the freezer is new until they have been bedded down. If the blades lose their keen edge, the ice cream will tend to build up on the cylinder wall. This increases the freezing time because the ice cream forms an insulation. Keep the blades sharp.

POSSIBLE SOURCES OF TROUBLE AND REMEDIESMOISTURE IN SYSTEM

Most serious of all service calls, unquestionably, is moisture in the refrigerant system. Serious as it may be moisture can be isolated from the system and removed without damage to the equipment. All equipment leaving the factory of Giusti has been dehydrated. When remote installations are being made, a dryer should be installed in the liquid line near the receiver of the condensing unit. This will absorb any moisture that may have entered the system during the installation and should be left in position in the system until all moisture is eliminated.

If, for any reason, moisture has entered the circuit, following is a procedure which, in our opinion, will remedy the most stubborn cases:-

A leak at any point in the low side of the equipment will admit air, causing high head pressure resulting in short cycling, due to operation of high pressure safety cut-out, also ice formation in freezer expansion valve. A pressure operated water valve will not close under these conditions. (An electric stop valve is not affected in this manner).

After installing gauges, purge system of air to restore pressure to normal. Check every connection with a leak-detector torch. It would be advisable to check the high side at the same time. Check all flare nuts for tightness. If leak is located and it is found necessary to replace a part, or re-flare a refrigerant line, the system must be pumped down entirely. Allow one pound of pressure in the low side to be present before opening connection. It is very important that the dryer in the system be refilled before putting the equipment back into operation.

Assuming the leak has been satisfactorily repaired, purge, to be certain the system has not admitted more air during repairs.

If freezer expansion valve continues to indicate the pressure of moisture, it may be necessary to install a second dryer in the suction line. Moisture, if any, that has collected in the freezer cylinder will be absorbed by this dryer.

It is quite possible to have a leak in the low side of the system that will admit air when equipment is operating under a minus pressure, but will not leak when the system is under pressure.

DESCRIPTION	POSSIBLE SOURCE	REMEDY
Freezer noisy	Freezer on uneven surface	Check freezer is firm and level across and lengthwise.
-do-	Bearings loose or worn.	Grease frequently, replace.
Compressor	Motor pulley loose on shaft.	Tighten set screws
-do-	Copper tubing or water pipes vibrate	Tape copper tubing securely. Strap water pipes.
-do-	Compressor or freezer belts loose and flapping	Tighten - replace if worn.
Water valve does not shut off during off cycle of compressor	High head pressure resulting from restricted water supply or air in system	Check source of water supply for restriction and temperature Purge air from system. (LOCATE) AND REPAIR LCWSIDE LEAK.
-do-	Accumulation of sediment in water valve	Remove and clean strainer or replace.
-do-	Overcharge of refrigerant	Remove sufficient refrigerant to restore head pressure to normal.
Compressor starts and stops frequently.	Expansion valve set too lean.	Adjust expansion valve so that return line has correct frost back.
-do-	Restricted liquid line	Examine filter, dryer and expansion valve strainers. Clean or replace.
-do-	High head pressure, operating motor switch.	Check water supply- air in system or over-charge of refrigerant.
-do-	Compressor discharge or suction valve leaking.	Lap in valves or replace
-do-	Low pressure control not adjusted correctly.	Reset control. Average setting in 15lb. Cut out 18".

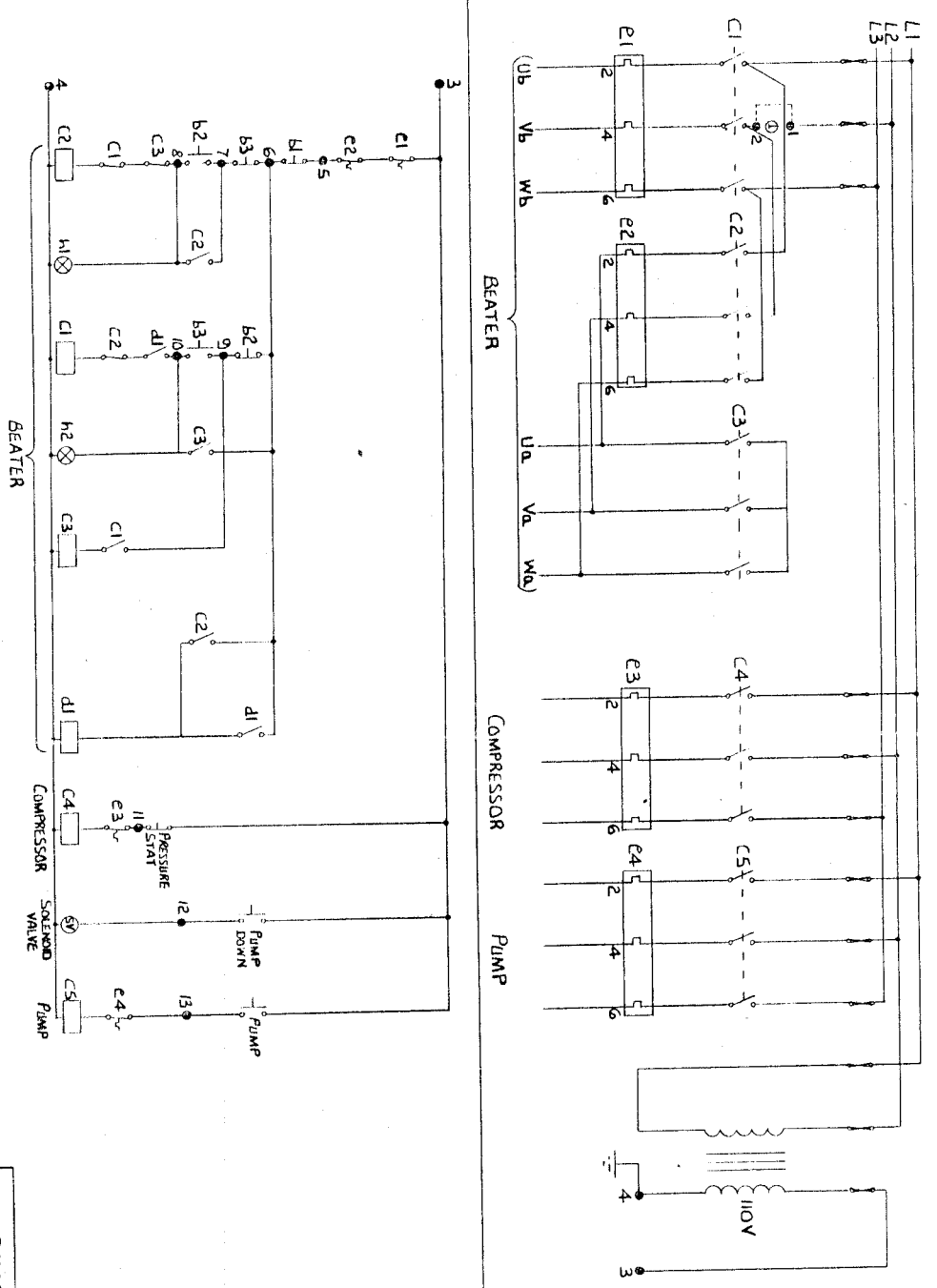
DESCRIPTION	POSSIBLE SOURCE	REMEDY
Ice cream does not freeze fast enough	Expansion valve adjusted improperly.	Adjust freezer expansion valve so that return line frosts back correctly.
-do-	Shortage of refrigerant.	Find the leak. Test amount of refrigerant by opening the freezer hand valve. If freezing cylinder frosts over completely in less than 3 minutes you can be reasonably sure the supply is sufficient. To eliminate the possibility of overcharging the system, pump down until all the gas is condensed and stored in the receiver.
-do-	Compressor or mixer	Check both sets of belts for proper tension.
-do-	Temperature of mix too high. Mix not balanced or processed correctly.	Mix temperature should not exceed 38°F when entering freezer.
-do-	Compressor inefficient	Inspect water supply and temperature. Note head pressure for leaking discharge and suction valves.
-do-	Restricted filter dryer or expansion valve strainer.	Remove these devices and clean them if possible or replace. Refill dryer.
-do-	Scraper knives dull or not fitted to scrape wall evenly.	Dress and sharpen knives check for correct alignment. Return to factory for sharpening. Obtain a replacement set.
-do-	Operator freezes ice cream to a too heavy consistency.	It is unnecessary to freeze ice cream for a longer period than is required.

DESCRIPTION	POSSIBLE SOURCE	REMEDY
Compressor runs continuously.	Low pressure control set at too low vacuum.	Cut out point recommended is 18".
-do-	Compressor belts slipping.	Increase tension
-do-	Compressor valve leaking.	Lap in valves or replace.
-do-	Shortage or refrigerant.	Charge unit not to exceed number of pounds shown on name plate.

DO NOT SWITCH OFF COMPRESSOR UNLESS PLANT IS SHUT DOWN FOR WINTER SEASON.

THE LOW PRESSURE CUT-OUT WILL NORMALLY STOP COMPRESSOR WHEN PLANT IS NOT IN USE, BUT WILL START COMPRESSOR IN THE EVENT OF PRESSURE INCREASE IN FREEZER CYLINDER.

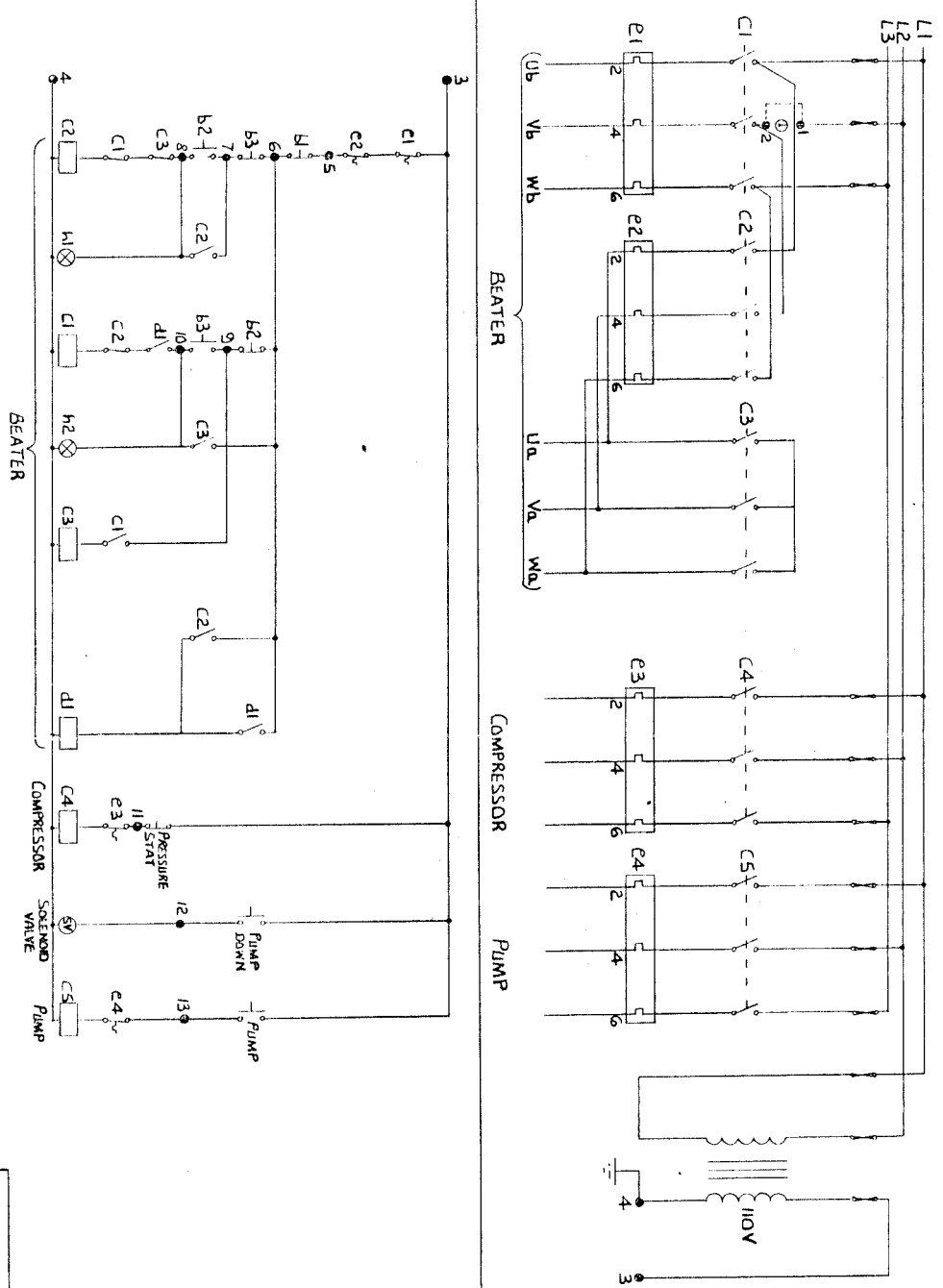
ET 779



Circuit Diagram For Gusti PHF-HF
(SML 803)

T. GIUSTI & SON LTD.	
J:	SCALE:
DATE: 18/2/81	DRN BY: TV
DRG. No. EC 115	

ET 778



CIRCUIT DIAGRAM FOR GIUSTI PHF-HF
(SML 80)

T. GIUSTI & SON LTD.	
J:	SCALE:
DATE: 18/2/81	DRN BY: T.V
DRG. No. EC 115	