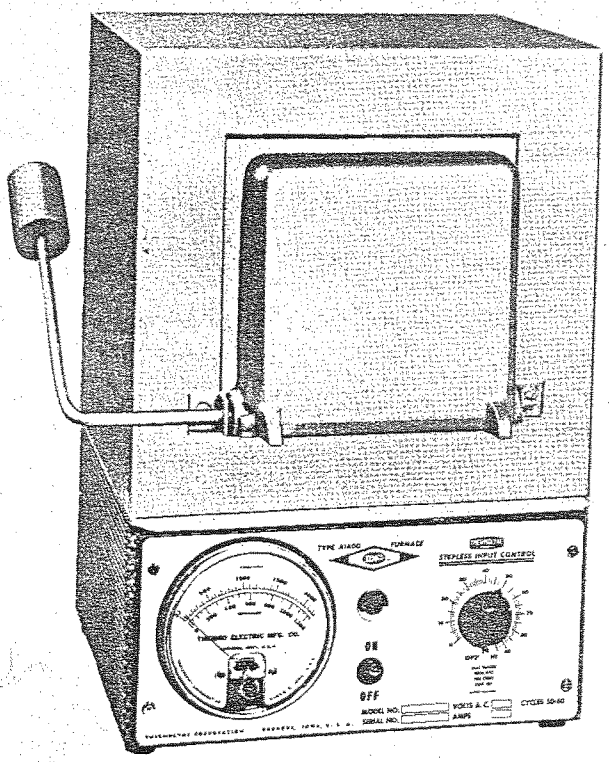
THERMOLYNE CORPORATION
DUBUQUE, IOWA, U. S. A.

Makers of ® *and* ® *Products*

ELECTRIC FURNACE TYPE 1400



CONVENIENT FURNACE FOR LABORATORY AND PLANT

SPECIFICATIONS AND PRICES

Chamber size:
4 7/8" wide, 4¼" high, 6" deep

Overall size:
9¾" wide, 14½" high, 11" deep

Weight:
Net, 27 lbs.
Shipping, 33 lbs.

Maximum operating temperatures:
Continuous: 1650°F (899°C)
Intermittent: 1900°F (1038°C)

Model Number	Volts 50/60 cycle	Amps	Max watts	PRICE
F-A1410M	230	6.1	1400	$98.50
F-A1415M	115	12.2	1400	98.50

A 208 volt model is available at slight extra cost.

CHECK THESE FEATURES:

STURDY FABRICATION

Furnace case of heavy gauge steel, rigidly formed and braced, securely welded -- Lower control section of perforated steel to assure good ventilation for proper cooling of all control and operating components.

SCIENTIFICALLY INSULATED

2¼" of properly proportioned layers of fire-brick and high grade back-up insulation are utilized for fast heat-up, efficient use of power, and steady chamber temperatures.

PROTECTED HEATING ELEMENTS

Best grade of nickel-chromium alloy embedded in a refractory plate. Refractory prevents shifting and sagging of coils. Protects from nicks, chemical attack, and shock. Plate is quickly and easily changed if necessary without dismantling the furnace.

DEPENDABLE TEMPERATURE INDICATION

Chamber temperature is sensed by a thermocouple and indicated by an accurate, double scale pyrometer. The pyrometer is calibrated in 50° increments.

COUNTER-BALANCED DOOR

Opens easily to form handy work loading shelf -- Effectively seals the chamber for minimum heat loss.

BUILT-IN CONTROLLER

A unique electrothermally operated manually adjusted percentage timer input controller provides infinitely variable stepless control of temperature without wasted power. The operator can select and hold any percentage of rated input between 5% and 100% of time on, thus he can stabilize his furnace chamber temperature at any point between a nominal 350°F (177°C) and maximum. The control automatically compensates for wide variations in supply line voltage and ambient temperature to hold level working temperatures.

Furnished with a 3 wire cord and 3 prong plug. Where 2 wire service is in use an inexpensive grounding adapter may be secured from local sources.

All prices on this page are FAIR TRADE MINIMUM prices, FOB shipping point, subject to change without notice.

BULLETIN NO. F-144
Printed in U. S. A.

INSTRUCTIONS FOR INSTALLATION AND OPERATION
TYPE 1400 TEMCO FURNACES

MODEL	VOLTS
F-1415T	115
F-1410T	230

GENERAL

Your furnace has been thoroughly tested at the factory, and when properly used and cared for, will give long trouble-free performance.

Type 1400 TEMCO furnace is for operation on alternating current only and one voltage only. Check the voltage stamped on the control panel to see if it should be connected to a 115-volt or 230-volt AC power supply.

115 volt units draw 14.3 amperes, 230 volt units draw 7.2 amperes. Power consumption is 1500 watts. Especially heavy wiring should not be required unless the electric line to which the furnace is connected happens to be overloaded. Except on highest heat setting, the heating element draws current only intermittently.

Type 1400 TEMCO furnace is complete with pyrometer and stepless temperature control. Also provided is UL-approved 3-wire cord and plug for use where grounded systems are required; tag on cord indicates how plug may be modified for 2-wire service if so desired.

HEATING ELEMENT

The heating element completely lines the sides and top of the chamber. It consists of a single, sectionalized refractory plate, in which an element of the highest quality nickel-chromium wire is embedded. It is characteristic of metallic heating elements generally that their life decreases at an increasing rate as operating temperatures increase.

FOR MAXIMUM ELEMENT LIFE THE OPERATOR IS CAUTIONED NOT TO OPERATE THE FURNACE ABOVE 1900°F AND TO HOLD TEMPERATURES ABOVE 1650°F TO AS SHORT A TIME AS POSSIBLE.

A durable hearth plate constitutes the floor of the heating chamber; it is made of the same refractory material from which the element is made.

Embedded heating elements for these furnaces are made by skilled and careful workmen using only the best of materials. They are tested and inspected numerous times in the process of manufacture and are as nearly perfect as is humanly possible. After the furnace is in the hands of the user, its treatment and care are beyond the control of the manufacturer and seller and, therefore, no responsibility is assumed for the length of the life of the heating element. Many users keep an extra embedded heating element on hand to avoid the delay and inconvenience of obtaining a replacement when a burnout occurs.

Before putting furnace into operation, check to make sure that element connections on bottom of furnace are tight. It is advisable to do this from time to time in order to prevent arcing at the leads due to loose connections.

Care should be taken when loading the furnace to avoid spilling or splashing fluxes, hardening compounds, sulphur compounds or strong acids which may penetrate to the element and cause early failure. Also avoid overloading the furnace -- allow room for circulation of heat throughout the chamber. A massive object in direct contact with a large area of the muffle unit can cause a hot spot and shorten element life.

DESCRIPTION OF CONTROLS

The control in your furnace is a percentage timer. It turns the power to the heating element on and off in a cycle that depends on the dial setting. The approximate percentage of time that the current is "on" over each cycle is indicated on the control dial. The higher the setting, the larger the percentage and, as a result, the higher the temperature. At "MIN", the power is on only approximately 5% of the time; at "MAX", 100%.

THE MARKINGS ON THE CONTROL DIAL DO NOT INDICATE OR REFER TO TEMPERATURES BUT ARE REFERENCE MARKS ONLY. They indicate the approximate percentage of time that the current is on over each "off-on" cycle. For example, at "60", power is on 60% of the time and off 40%.

OPERATION

Warm-Up: It is always necessary to warm up the controls for approximately two minutes at dial setting between "30" and "50" under the following conditions:

1. Immediately after turning furnace on.
2. When turning from "MAX" to any other dial setting.

In line with the statements under "DESCRIPTION OF CONTROLS", when the control pointer is set at the "Min." position, the heating element draws current only a small portion of the time and the lowest possible temperature will be maintained. When set at the "Max." position, the heating element draws current all of the time and the furnace will heat rapidly to the maximum temperature.

Intermediate settings will result in corresponding intermediate temperatures.

Normally the pointer is set at the "Max." position and as the temperature approaches the desired point the pointer is turned back so that the temperature will level off and hold where it is wanted; it is important to keep in mind the above remarks regarding warm-up in this connection. After a little experience the operator will be able to "spot" the pointer positions for temperatures he frequently uses and he may want to mark them on the control dial.

It is not advisable to place loads directly on the floor of this furnace because this removes the load from the center of the heat zone and does not allow free circulation of heated air all around the load. We recommend the use of our hearth tray, Part No. PHX1, for spacing loads to be heated off the floor of the furnace. These hearth trays should be considered expendable and spares kept on hand. These hearth trays are available from your regular laboratory supply dealer or from the manufacturer.

REPLACEMENT PARTS

Users should be able to obtain replacement parts from their supplier and they are always available from the manufacturer's stock. When ordering refer to your illustrated parts list.

THERMOLYNE CORPORATION

2555 Kerper Blvd.

Dubuque, Iowa

IMPORTANT: See Attached Addendum Sheet.

ADDENDUM SHEET

INVERTING THE HEATING ELEMENT
IN TYPE 1400 TEMCO FURNACE

Special care has been taken to design a heating element that will provide both a satisfactory heat environment and at the same time give good life. Because accidental spillage of harmful material can cause speedy burnout, there is no heating element in the floor of the chamber. The two sides and top heating surfaces will provide a satisfactory heat environment for most applications. In certain applications, however, such as PBI determinations, it has been found that more suitable distribution of heat can be obtained if the heating element is inverted. Should the user decide to invert the element, he should exercise due caution to keep spillage from the bottom element slab. The procedure to follow in inverting the element is as follows:

1. Lay furnace on side. Disconnect thermocouple leads from pyrometer terminals and pull out of control section through hole.

2. With furnace erect, take off back plate by removing screws that hold it to furnace case. At the same time pull out thermocouple from back insulation block.

3. Gently push out insulation block by reaching inside chamber.

4. Note where element leads enter bottom section and lay furnace on side again.

5. Disconnect element leads from terminals on ceiling of control section.

6. Straighten out leads and force them through holes, taking care not to damage element refractory.

7. With furnace standing again, pull element and hearth plate out of chamber.

8. Invert element and insert, with hearth plate on top, into chamber with leads protruding from rear of furnace.

9. Pass leads through holes opening into control section.

10. Lay furnace on side and, pulling leads taut so that they are flush against edges of element, secure them to terminals.

11. Clip off excess length and make sure that portion of each lead that is in control section is covered with glass sleeving provided.

12. While the furnace is still on side, reattach thermocouple leads to pyrometer.

13. Put insulation block back in place and reattach backplate with thermocouple in place.

NOTE: The above procedure applies specifically to Type 1400 Furnaces (Models F-1415T and F-1410T).
It also applies, with obvious modification, to Models CEA, RCA and RCEH.

PARTS PRICE LIST TYPE 1400 FURNACE

MODEL F-1410T

Part No.	Description	List Price Ea.
EL48X2	Embedded heating element plate, single unit	$ 19.00
CN5X2	Control Unit Assembly, located on inside right bottom of control section	27.00
RSX4	Rheostat	11.00
RYX6	Relay, located at back of control section	15.25
MEX1	Pyrometer, Model 350	29.25
CVX1	Cover for pyrometer, clear plastic (Cover only)	2.50
CVX6	Cover for pyrometer, black w/glass insert (cover only)	3.20
SWX12	On-Off toggle switch	3.75
DR3X1A	Door assembly	8.80
HN4X1	Door handle	1.20
CW3X1	Counterweight, for door handle	1.20
TC48X1A	Thermocouple, 14 ga., Chromel-Alumel	6.00
PH48X1	Hearth plate	3.50
PLX11A	Pilot light socket with lamp	2.90
PLX1	Pilot light, bulb	.50
KBX3	Knob only (black)	.60
CRX10	Heater cord and plug	3.20
FTX1	Rubber foot (4 req'd)	.10
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut	.20
JSX3	Insulator bushing, Porcelain (2 req'd)	.10
JSX19	Insulator bushing, Steatite (square, 2 req'd)	.10
JN48X5A	Back insulation plate	3.50
PHX1	Hearth tray, (4"W x 3¼"L x ½"H)	2.40
	Reinsulate furnace (must return to factory)	23.90

MODEL F-1415T

EL48X1	Embedded heating element plate, single unit	19.00
CN5X1	Control Unit Assembly, located on inside right bottom of control section	27.00
RSX2	Rheostat	11.00
RYX5	Relay, located at back of control section	15.25
MEX1	Pyrometer, Model 350	29.25
CVX1	Cover for pyrometer, clear plastic (cover only)	2.50
CVX6	Cover for pyrometer, black w/glass insert (cover only)	3.20
SWX12	On-Off toggle switch	3.75
DR3X1A	Door assembly	8.80
HN4X1	Door handle	1.20
CW3X1	Counterweight, for door handle	1.20
TC48X1A	Thermocouple, 14 ga. Chromel-Alumel	6.00
PH48X1	Hearth plate	3.50
PLX11A	Pilot light socket with lamp	2.90
PLX1	Pilot light, bulb	.50
KBX3	Knob only (black)	.60
CRX25	Heater cord and plug	3.20
FTX1	Rubber foot (4 req'd)	.10
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut	.20

INSTRUCTIONS FOR INSTALLATION AND OPERATION

TYPE 1400 TEMCO FURNACES

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1400 Furnace Instructions (con't)

Before putting furnace into operation, check to make sure that element connections on bottom of furnace are tight. It is advisable to do this from time to time in order to prevent arcing at the leads due to loose connections.

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REPLACEMENT PARTS

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THERMOLYNE CORPORATION
2555 Kerper Boulevard
Dubuque, Iowa 52001

IMPORTANT: See attached adendum sheet.

ADDENDUM SHEET

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1. Lay furnace on side. Discounnect thermocouple leads from pyrometer terminals and pull out of control section through hole.

2. With furnace erect, take off back plate by removing screws that hold it to furnace case. At the same time pull out thermocouple from back insulation block.

3. Gently push out insulation block by reaching inside chamber.

4. Note where element leads enter bottom section and lay furnace on side again.

5. Disconnect element leads from terminals on ceiling of control section.

6. Straighten out leads and force them through holes, taking care not to damage element refractory.

7. With furnace standing again, pull element and hearth plate out of chamber.

8. Invert element and insert, with hearth plate on top, into chamber with leads protruding from rear of furnace.

9. Pass leads through holes opening into control section.

10. Lay furnace on side and, pulling leads taut so that they are flush against edges of element, secure them to terminals.

11. Clip off excess length and make sure that portion of each lead that is in control section is covered with glass sleeving provided.

12. While the furnace is still on side, re-attach thermocouple leads to pyrometer.

13. Put insulation block back in place and re-attach back plate with thermocouple in place.

NOTE: The above procedure applies specifically to Type 1400 Furnaces (Models F-1415T and F-1410T). It also applies, with obvious modification, to Models CEA, RECE and RCEH.

PARTS PRICE LIST TYPE 1400 FURNACE

MODEL F-1410T

Part No.	Description
EL48X2	Embedded heating element plate, single unit
CN5X2	Control Unit Assembly, located on inside right bottom of control section
RSX4	Rheostat
RYX6	Relay, located at back of control section
MEX1	Pyrometer, Model 350
CVX1	Cover for pyrometer, clear plastic (cover only)
CVX6	Cover for pyrometer, black w/glass insert (cover only)
SWX12	On-Off toggle switch
DR3X1A	Door assembly
HN4X1	Door handle
CW3X1	Counterweight, for door handle
TC48X1A	Thermocouple, 14 ga., Chromel-Alumel
PH48X1	Hearth plate
PLX11A	Pilot light socket with lamp
PLX1	Pilot light, bulb
KBX3	Knob only (black)
CRX10	Heater cord and plug
FTX1	Rubber foot (4 req'd)
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut
JSX3	Insulator bushing, Porcelain (2 req'd)
JSX19	Insulator bushing, Steatite (square, 2 req'd)
JN48X5A	Back insulation plate
PHX1	Hearth tray, (4"W x $3\frac{1}{4}$"L x $\frac{1}{2}$"H)
	Reinsulate furnace (must return to factory)

MODEL F-1415T

EL48X1	Embedded heating element plate, single unit
CN5X1	Control Unit Assembly, located on inside right bottom of control section
RSX2	Rheostat
RYX5	Relay, located at back of control section
MEX1	Pyrometer, Modal 350
CVX1	Cover for pyrometer, clear plastic (cover only)
CVX6	Cover for pyrometer, black w/glass insert (cover only)
SWX12	On-Off toggle switch
DR3X1A	Door assembly
HN4X1	Door handle
CW3X1	Counterweight, for door handle
TC48X1A	Thermocouple, 14 ga. Chromel-Alumel
PH48X1	Hearth plate
PLX11A	Pilot light socket with lamp
PLX1	Pilot light, bulb
KBX3	Knob only (black)
CRX25	Heater cord and plug
FTX1	Rubber foot (4 req'd)
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut

PARTS PRICE LIST TYPE 1400 FURNACE

MODEL F-1410T

Part No.	Description	List Price Ea.
EL48X2	Embedded heating element plate, single unit	$ 19.00
CN5X2	Control Unit Assembly, located on inside right bottom of control section	27.00
RSX4	Rheostat	11.00
RYX6	Relay, located at back of control section	15.25
MEX1	Pyrometer, Model 350	29.25
CVX1	Cover for pyrometer, clear plastic (Cover only)	2.50
CVX6	Cover for pyrometer, black w/glass insert (cover only)	3.20
SWX12	On-Off toggle switch	3.75
DR3X1A	Door assembly	8.80
HN4X1	Door handle	1.20
CW3X1	Counterweight, for door handle	1.20
TC48X1A	Thermocouple, 14 ga., Chromel-Alumel	6.00
PH48X1	Hearth plate	3.50
PLX11A	Pilot light socket with lamp	2.90
PLX1	Pilot light, bulb	.50
KBX3	Knob only (black)	.60
CRX10	Heater cord and plug	3.20
FTX1	Rubber foot (4 req'd)	.10
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut	.20
JSX3	Insulator bushing, Porcelain (2 req'd)	.10
JSX19	Insulator bushing, Steatite (square, 2 req'd)	.10
JN48X5A	Back insulation plate	3.50
PHX1	Hearth tray, (4"W x 3¼"L x ½"H)	2.40
	Reinsulate furnace (must return to factory)	23.90

MODEL F-1415T

EL48X1	Embedded heating element plate, single unit	19.00
CN5X1	Control Unit Assembly, located on inside right bottom of control section	27.00
RSX2	Rheostat	11.00
RYX5	Relay, located at back of control section	15.25
MEX1	Pyrometer, Model 350	29.25
CVX1	Cover for pyrometer, clear plastic (cover only)	2.50
CVX6	Cover for pyrometer, black w/glass insert (cover only)	3.20
SWX12	On-Off toggle switch	3.75
DR3X1A	Door assembly	8.80
HN4X1	Door handle	1.20
CW3X1	Counterweight, for door handle	1.20
TC48X1A	Thermocouple, 14 ga. Chromel-Alumel	6.00
PH48X1	Hearth plate	3.50
PLX11A	Pilot light socket with lamp	2.90
PLX1	Pilot light, bulb	.50
KBX3	Knob only (black)	.60
CRX25	Heater cord and plug	3.20
FTX1	Rubber foot (4 req'd)	.10
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut	.20

PARTS PRICE LIST TYPE LOCO FURNACE

MODEL F-1410T

PART NO.	DESCRIPTION	LIST PRICE EACH
EL48X2	Embedded heating element plate, single unit	$ 11.50
CN5X2A	Control Unit Assembly, located on inside right bottom of control section	17.00
RSX4	Rheostat	7.00
RYX6	Relay, located at back of control section	9.75
MEX1	Pyrometer, Model 350	19.00
CVX1	Cover for pyrometer, clear plastic (cover only)	1.75
CVX6	Cover for pyrometer, black w/glass insert (cover only)	1.75
SWX12	On-Off toggle switch	4.00
DR3X1A	Door assembly	6.50
HN4X1	Door handle	.50
CW3X1	Counterweight, for door handle	.75
TC48X1A	Thermocouple, 14 ga. Chromel-Alumel	3.25
PH48X1	Hearth plate	2.50
PLX11A	Pilot light socket with lamp	1.85
PLX1	Pilot light, bulb	.35
KBX3	Knob only (black)	.30
CRX10	Heater cord and plug	1.65
FTX1	Rubber foot (4 req'd)	.05
JSX6	Insulator bushing, Bakelite (2 req'd) with FNX18 nut	.10
JSX3	Insulator bushing, Porcelain (2 req'd)	.05
JSX19	Insulator bushing, Cleavite (square, 2 req'd)	.05
[illegible]48X5A	Back insulation plate	2.50
[illegible]	Hearth tray, (4" W x 3 1/4"Lx 1/2" H)	1.50
	Reinsulate furnace (must return to factory)	16.80

MODEL F-1415T

EL48X1	Embedded heating element plate, single unit	11.50
CN5X1A	Control Unit Assembly, located on inside right bottom of control section	17.00
RSX2	Rheostat	7.00
RYX5	Relay, located at back of control section	9.75
MEX1	Pyrometer, Model 350	19.00
CVX1	Cover for pyrometer, clear plastic (cover only)	1.75
CVX6	Cover for pyrometer, black w/glass insert (cover only)	1.75
SWX12	On/Off toggle switch	4.00
DR3X1A	Door assembly	6.50
HN4X1	Door handle	.50
CW3X1	Counterweight, for door handle	.75
TC48X1A	Thermocouple, 14 ga. Chromel/Alumel	3.25
PH48X1	Hearth plate	2.50
PLX11A	Pilot light socket with lamp	1.85
PLX1	Pilot light, bulb	.35
KBX3	Knob only (black)	.30
CRX25	Heater cord and plug	1.65
[illegible]1/FTX/	Rubber foot (4 required)	.05
JSX6	Insulator bushing, Bakelite (2 required) with FNX18 Nut	.10

MODEL F-1415 (Cont'd)

Part No.	Description	List Price Ea.
JSX3	Insulator bushing, Porcelain (2 required)	.05
JSX19	Insulator bushing, Steatite (square, 2 required)	.05
JN48X5A	Back insulation plate	2.50
PHX1	Hearth tray, (4"Wx3 1/4"Lx1/2"H)	1.50
	Reinsulate furnace (must return to factory)	17.50

MODEL F-1418T (208 Volts)

EL48X3	Embedded heating element plate, single unit	13.50
CN5X2A	Control unit assembly, located on inside right bottom of control section	17.00

All other parts are common to MODEL F-1410T.

Parts should be ordered from dealer where furnace
wa was purchased. If part is not in dealer's stock, it may be ordered from

THERMOLYNE CORPORATION
2555 KERPER BOULEVARD
D U B U Q U E, IOWA

When ordering, please give model and serial numbers. Prices F.O.B. shipping point, subject to change without notice.

FORM LT48PL1060
Revised June 1962
ck

Model F-1415T

EL48X1	Embedded heating element plate, single unit
CN5X1A2	Control unit assembly, located on inside right bottom of control section
RVX150	Rheostat, variable resistor connected to control knob
RYX5	Relay, located at back of control section
MEX1	Pyrometer, Model 350
CVX1	Cover for pyrometer, clear plastic (cover only)
CVX6	Cover for pyrometer, black with glass insert (cover only)
SWX12	On-Off toggle switch
DR3X1A	Door assembly
DR3X1	Door only
HN4X1	Door handle
CW3X1	Counterweight, for door handle
TC48X1A	Thermocouple, 14 ga. Chrome1/Alume1
PH48X1	Hearth plate
CEX60A	Pilot light for socket less lamp
LMX1	Pilot light
DL48X1A	Dial plate assembly
KBX3	Knob only (black)
CRX25	Heater cord and plug
FTX1	Rubber foot (4 required)
JSX6	Insulator bushing, Bakelite (2 required)
JSX3	Insulator bushing, Procelain (2 required)
JSX19	Insulator bushing, Steatite (square, 2 required)
PT48X3	Back insulation plate
PHX1	Reinsulate furnace (must return to factory)

Model F-1415T

EL48X3	Embedded heating element plate, single unit
CN5X2A3	Control unit assembly, located on inside right bottom of control section

All other parts are common to model F-1410T.

Parts should be ordered from dealer where furnace was purchased. If part is not in dealer's stock, it may be ordered from THERMOLYNE CORPORATION. 465 Huff Street, Dubuque, Iowa. When ordering, please give model and serial numbers. Prices, F.O.B. shipping point, subject to change without notice.

Form LT48PL1060

PARTS, TYPE 1400 FURNACE

Model F-1410T

Part No.	Description
EL48X2	Embedded heating element plate, single unit
CN5X2A2	Control unit assembly, located on inside right bottom of control section
RVX220	Rheostat, variable resistor connected to control knob
RYX6	Relay, located at back of control section
MEX1	Pyrometer, Model 350
CVX1	Cover for pyrometer, clear plastic (cover only)
CVX6	Cover for pyrometer, black with glass insert (cover only)
SWX12	On-Off toggle switch
DR3X1A	Door assembly
DR3X1	Door only
HN4X1	Door handle
CW3X1	Counterweight, for door handle
TC48X1A	Thermocouple, 14 ga. Chrome1/Alume1
PH48X1	Hearth plate
CEX60A	Pilot light for socket less lamp
LMX1	Pilot light
DL48X1A	Dial plate assembly
KBX3	Knob only (black)
CRX10	Heater cord and plug
FTX1	Rubber foot (4 required)
JSX6	Insulator bushing, Bakelite (2 required)
JSX3	Insulator bushing, Procelain (2 required)
JSX19	Insulator bushing, Steatite (square, 2 required)
PT48X3	Back insulation plate
PHX1	Reinsulate furnace (must return to factory)