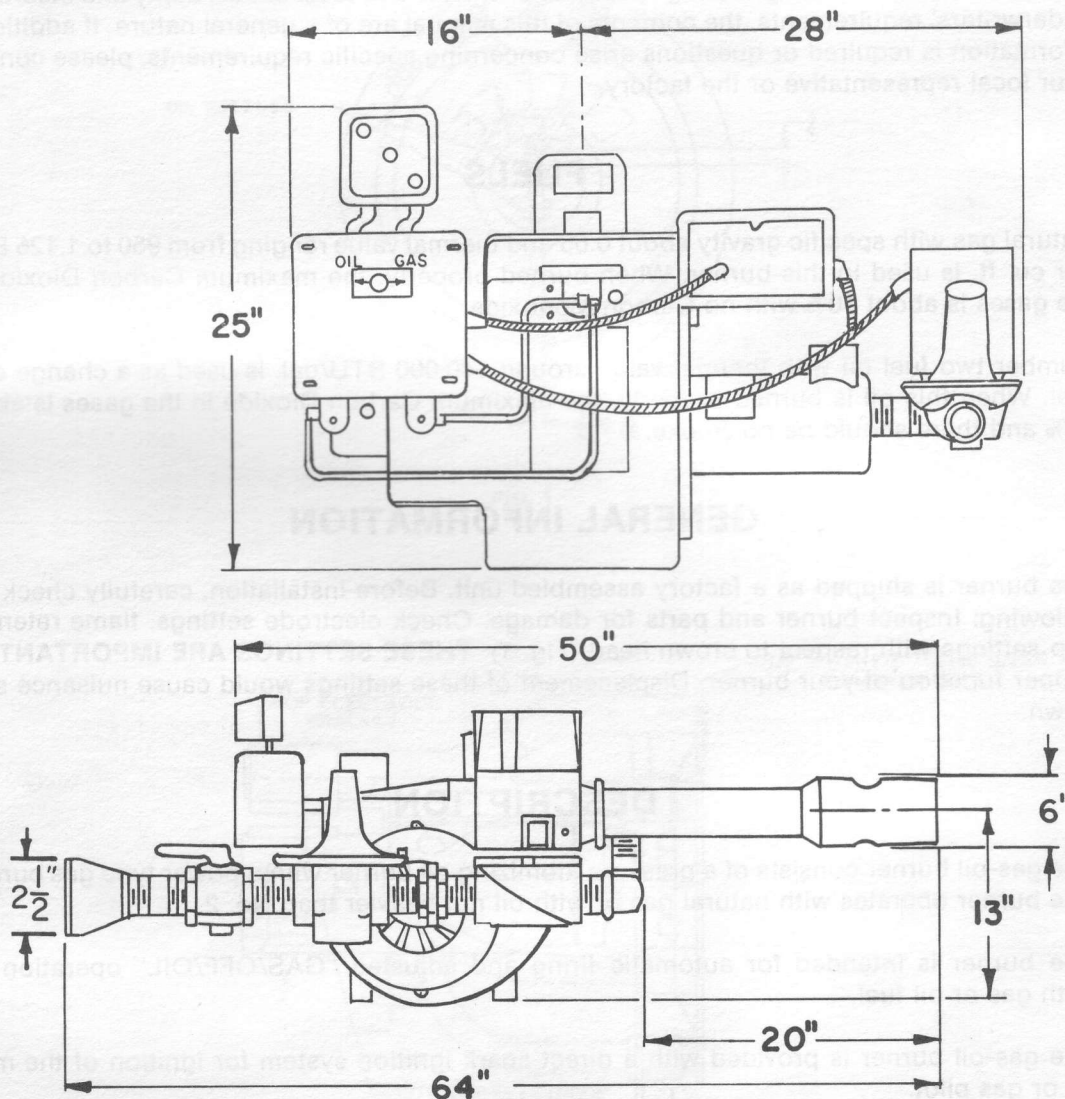


ERTLI AMERICAN COMBINATION GAS-OIL BURNER

MODEL GC-25

700,000 - 2,500,000 B.T.U.H. NAT. GAS

5.0 - 16 G.P.H. NO. 2 OIL



ERTLI AMERICAN

PHONE: N. Y. C. (212) 895-2196; (516) 543-4600. Outside N. Y. State Toll Free (800) 645-4504

ABC SUNRAY CORP., 85 AUSTIN BLVD., COMMACK, N.Y. 11725

INTRODUCTION

- 1.1 This manual has been prepared to assist in the installation, operation and maintenance of your burner. Before installation, start-up or operation of the burner, read this manual carefully.
- 1.2 Due to the variation in engineering specifications, state and local codes, utility and insurance underwriters' requirements, the contents of this manual are of a general nature. If additional information is required or questions arise concerning specific requirements, please contact your local representative or the factory.

FUELS

- 2.
- 2.1 Natural gas with specific gravity about 0.65 and thermal value ranging from 950 to 1,125 BTU per cu. ft. is used in this burner. When burned properly, the maximum Carbon Dioxide in the gases is about 10% with no Carbon Monoxide.
- 2.2 Number two fuel oil with thermal value around 140,000 BTU/gal. is used as a change over fuel. When this oil is burned properly, the maximum Carbon Dioxide in the gases is about 13% and there should be no smoke.

GENERAL INFORMATION

- 3.
- 3.1 The burner is shipped as a factory assembled unit. Before installation, carefully check the following: Inspect burner and parts for damage. Check electrode settings, flame retention cup settings with respect to crown head (Fig. 1). **THESE SETTINGS ARE IMPORTANT** for proper function of your burner. Displacement of these settings would cause nuisance shut down.

DESCRIPTION

- 4.
- 4.1 The gas-oil burner consists of a pressure atomizing oil burner with a power type gas burner. The burner operates with natural gas or with oil not heavier than No. 2.
- 4.2 The burner is intended for automatic firing and adjusted "GAS/OFF/OIL" operation for both gas or oil fuel.
- 4.3 The gas-oil burner is provided with a direct spark ignition system for ignition of the main oil or gas pilot.

"GC-25" SERIES BURNER SPECIFICATIONS

THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT FURTHER NOTICE

BURNER MODEL	END CONE DIM. "A"	GPH RANGE NO. 2 OIL	BTU INPUT RANGE NATURAL GAS	MOTOR	TRANS-FORMER	PUMP	CONTROL
GC-25	5.5"	5.00 to 16.00	700,000-2,500,000	1 HP 3450 RPM 3 PH 60 Hz	12,000 VOLTS	WEBSTER OR SUND-STRAND	UVM-3H OR R4140 (OPTIONAL)

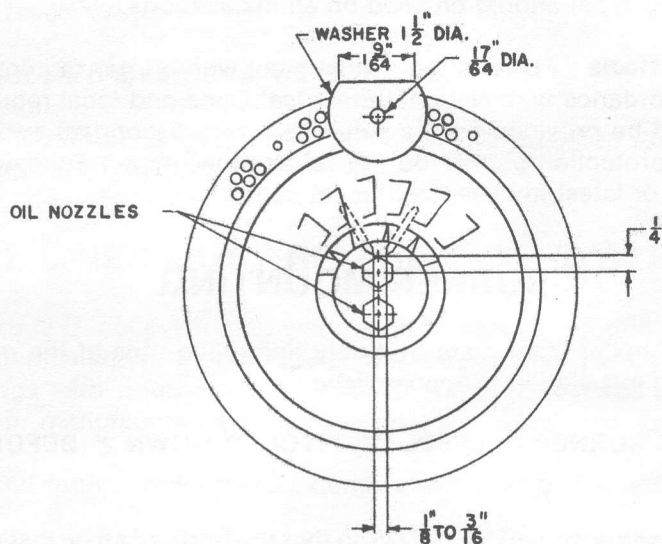


FIG. 1

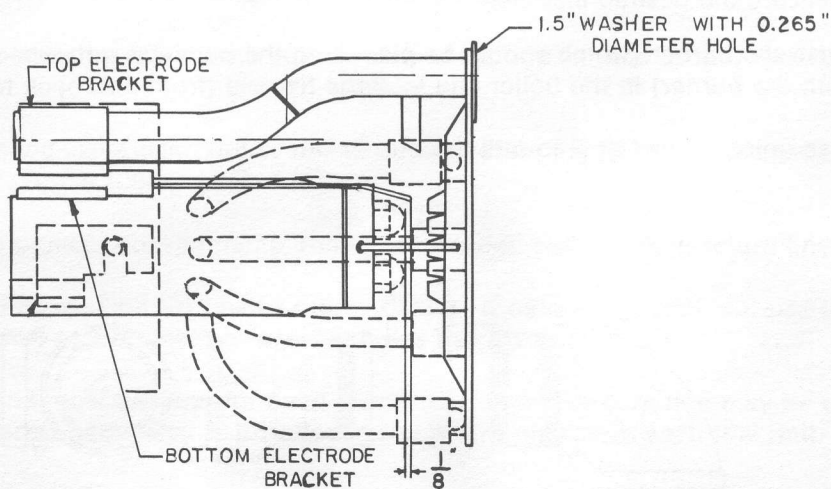


FIG. 2

5.

MARKING

- 5.1 A combination U.L. label includes the specific model number with its range of fuel inputs, and with other pertinent information, is fastened at the back of the housing.

6.

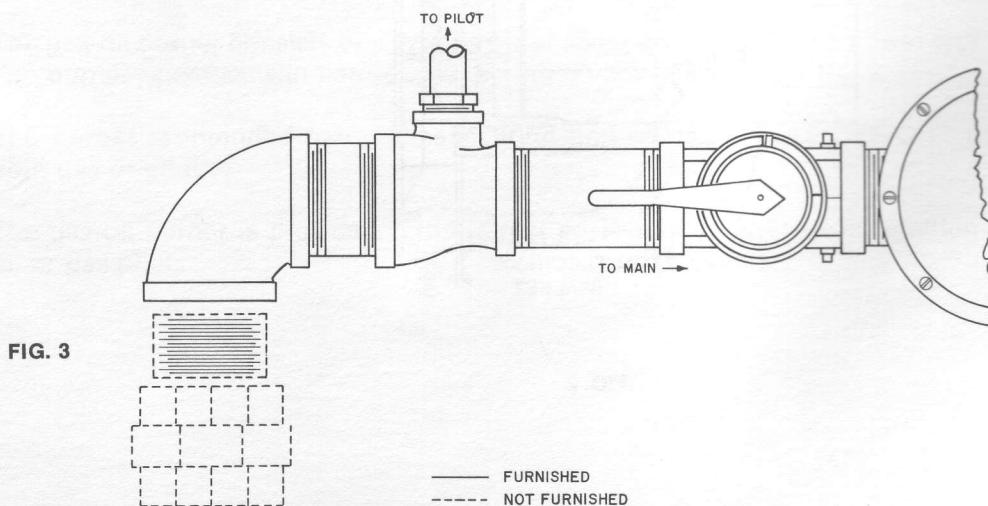
NOTE: BEFORE INSTALLING BURNER, CAREFULLY CHECK THE FOLLOWING:

- 6.1 **Combustion Air Supply** - Boiler Room in which burner is located must be provided with an adequate fresh air supply to assure proper combustion. The ventilation opening should not be less than 1.0 sq. inches of free opening per 1,000 BTU of burner input.
- 6.2 **Stack and Breeching** - Should be size recommended by boiler manufacturer. A barometric damper (double acting type) should be used on all installations.
- 6.3 **Electrical Connections** - Power supply must meet with burner requirements. All wiring must be done in accordance with National Electrical Code and local requirements. Burner electric power should be provided from a separate fused disconnect switch located in the Boiler Room. (Fuse protection should be the "slow blow" type.) Follow National Electric Code ANSI C1-1978 or latest in absence of local codes.

7.

BURNER MOUNTING

- 7.1 Attach burner to the boiler front plate by firmly tightening nuts of the mounting studs or clamps so that a rigid installation is accomplished.
- 7.2 **NOTE: MAKE SURE BURNER IS LEVEL OR PITCHED DOWN 2° BEFORE TIGHTENING CLAMPS.**
- 7.3 The swinging flange was designed for GC-25 so that the burner can be installed and removed from the boiler.
- 7.3 (a) Pull the front part of the flange out (so that it is suspended in mid air). (Refer to last page)
- (b) Attach the front part of the flange to the boiler tightly.
- (c) Measure the desired insertion.
- (d) Push the burner (which should be placed on the pedestal with wheels which was furnished with the burner) in the boiler and lock the flanges (front and back together).
- 7.4 Gas union - See Fig. 3 to pull the burner out of the boiler.



WIRING

8.1 All burners are pre-wired at the factory as far as practical. Study burner and separate field wiring diagrams for complete wiring information before making any connections. The burner must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code ANSI C-1978 or latest.

TANK

9.1 All oil storage tanks must be U.L. approved and installed according to National Board of Fire Underwriters or local ordinances whichever has precedence.

9.2 All pipe connections on underground buried tanks must have swing joints except the sounding well (stick well).

9.3 The fill line must pitch toward tank 1/4" per ft.

9.4 The vent line should not be less than 1-1/4" I.P.S. and equipped with an approved vent cap. Pitch toward tank 1/4" per ft.

OIL LINES MUST BE TWO PIPE SYSTEM ONLY

10.1 Use correct size O.D. copper tubing with flared fittings for suction and return lines to avoid underground connections. If local regulations require rigid pipe, use black steel pipe and malleable fittings with double swing joints to prevent breakage in case the tank settles. (Consult pump manufacturer's specifications for sizes and iron pipe substitutions.)

10.2 Both suction and return lines should extend to within 4" of the tank bottom.

10.3 Slip fittings should be used on the tank for copper suction and return lines. Double-tapped bushings can be used with black steel pipe. However, a bushing welded to the dip tube is preferred.

10.4 Install, in section line at outside wall, an approved hand valve and spring loaded ball check. When the tank is vaulted and the bottom of tank is on same level as the burner, install a vertical check valve as close to the top of the tank as practical.

10.5 If bottom of tank is above the level of the burner, an anti-syphon valve is usually required at the highest point.

10.6 Install an approved hand valve close to the burner pump, before the filter, and connect from filter to pump with a copper tube pigtail.

10.7 Install a copper tube pigtail between pump and spring-loaded ball check in return line.

10.8 Avoid fastening suction and return lines to floor beams. If necessary to do so, use loose fitting hangers with soft rubber lining to prevent noise transmission.

10.9 A separate suction line must be used for each burner. A common return line may be used, provided a spring-loaded ball check is installed in the return pipe from each fuel unit.

10.10 **NOTE:** If the burner is used as a gas burner for extended time, it is advisable to disconnect oil pump coupling. But, remember to connect the coupling when oil is fired!

FILTER

11.

- 11.1 Use large filters on suction line.

GAS PIPING TO BURNER

12.

- 12.1 A separate gas service supply pipe should always be run from the gas meter to the burner. Use black steel pipe and malleable (not cast iron) pipe fittings. Use a suitable pipe dope on all male threads and rigidly support entire gas line with straps and hangers.
- 12.2 Consult local utility for correct pipe size. A union must be installed at 90° and to the gas manifold as shown in the photograph for easy service (refer to Service Section). Follow the standard chart given below. Manual main shut off valve must be installed external to the jack where regulations require, and installation must comply with all applicable codes. This insures easy disconnect of gas lines from the burner. A drip leg must be installed at the inlet of the gas connection to the unit. Piping must be supported independently from the burner.
- 12.3 Before burner is started, check piping for leaks. Attach a 20" manometer to the valve. Turn off Main Shutoff Valve. Turn on gas at meter. Open valve, read manometer, then turn off gas at meter. If manometer reading changes in 10 minutes elapsed time, check each pipe joint from meter to burner with a soap suds solution to locate gas leak. Tighten and repeat procedure until manometer reading remains unchanged. Follow the local standards for leak tests.

TABLE 1

Maximum Capacity of Pipe in Cubic Feet of Gas per Hour for Gas Pressures of 0.5 Psig or Less
and a Pressure Drop of 0.3 Inch Water Column
Add 3 ft. of Pipe Length for each Elbow or Fitting (Based on a 0.60 Specific Gravity Gas)

Nominal Iron Pipe Size, Inches	Internal Diameter, Inches	Equivalent Length of Pipe, Feet						
		20	40	60	80	100	150	200
1½	1.610	1,100	760	610	530	460	380	320
2	2.067	2,100	1,450	1,150	990	870	710	610
2½	2.469	3,300	2,300	1,850	1,600	1,400	1,130	980
3	3.068	5,900	4,100	3,250	2,800	2,500	2,000	1,700
4	4.026	12,000	8,300	6,800	5,800	5,100	4,100	3,500

MINIMUM INCOMING GAS PRESSURE SHOULD NOT BE LESS THAN 5" W.C. WHEN THE BURNER IS ON HIGH-FIRE GAS

14.

SERVICING AND FIRING ASSEMBLY REMOVAL, ADJUSTMENTS AND A CHANGE OF NOZZLE

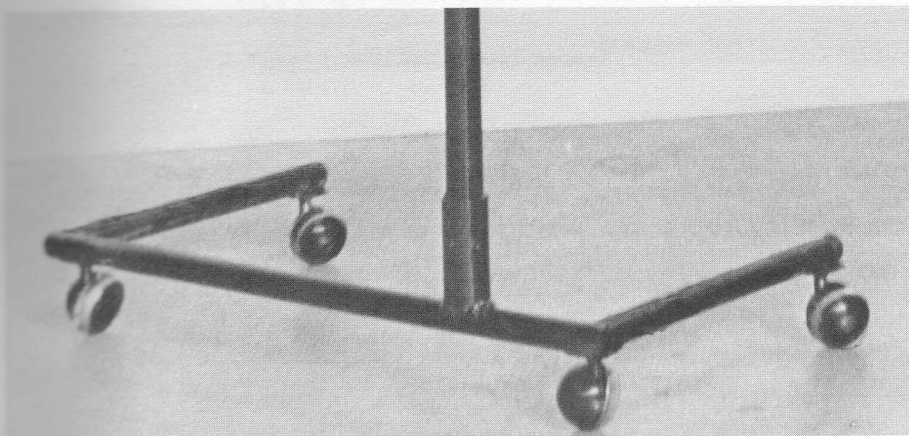
- 14.1 To remove the firing assembly or to change the nozzles, the burner must be removed from the boiler.
- 14.2 **CAUTION:** Any rigid connections, like oil pipe line, the electrical conduit or gas pipe must be disconnected from the burner to allow the burner to be removed easily from the boiler.

14.3

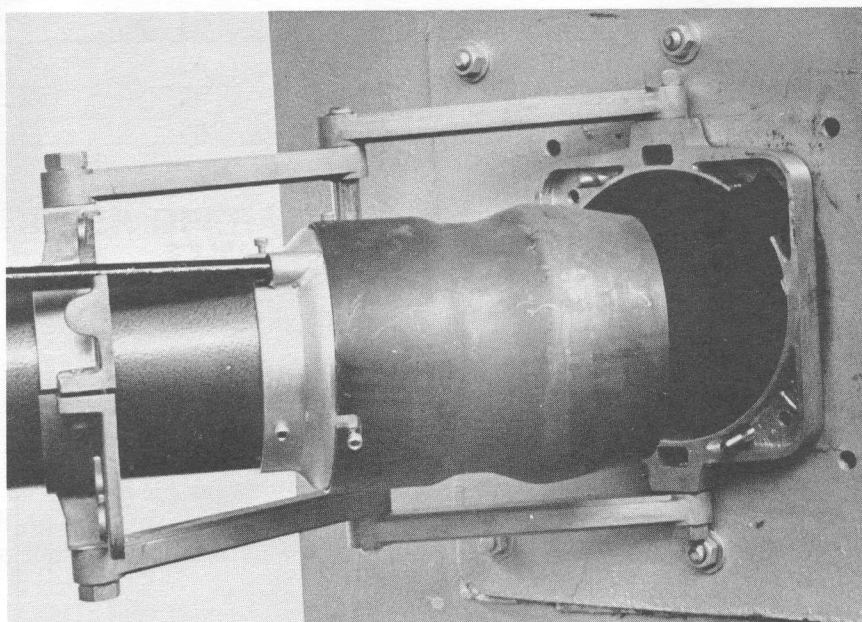
"DANGER - Risk of Fire or Injury - Disconnect Fuel and Electrical Power Supply Lines Before Removing Burner from Firing Position".

14.4

To service the burner, the unit is provided with pedestal with wheels as well as swing-in flange.



**PEDESTAL
FIG. 4**



**SWING-IN FLANGE
FIG. 5**

Disconnect the power to the unit.

(Ref. Gas Piping - Fig. 3)

For gas pipe line, the union should be used as shown apart from drip leg, etc. This union installation is important for servicing. Please follow the marking on the burner.

14.5

Pull the burner slowly out of the boiler.

14.6

Remove the outer head of the blast tube.

14.7

(If the nozzle has to be changed, the assembly need not be taken out of the burner).

14.7 (a)

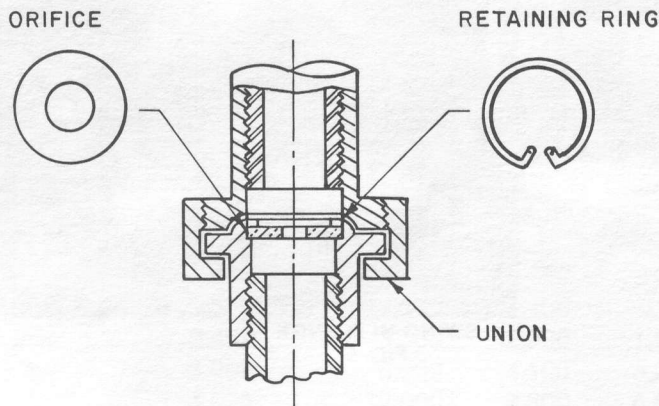
To replace the nozzles:

- 1) Remove the two 6-32 screws from the pilot washer attached on top of the flame head (Ref. Fig. 1).
- 2) Remove the washer.
- 3) Loosen the screw which holds the flame retention disc.
- 4) Remove the flame retention disc.
- 5) Replace nozzle(s)

NOTE: Minimum low fire is 5 G.P.H. and any ratios can be achieved to fire maximum of total 16 G.P.H. Gas input should be equivalent to oil input.

- 14.8 **NOTE:** Top nozzle is for low fire and high fire, bottom nozzle is for high only.
- 14.9 If the firing assembly has to be removed:
- 1) Disconnect the ignition electrodes.
 - 2) Disconnect the compression nuts for low and high fire oil lines.
 - 3) Take out the knob for firing head adjuster.
 - 4) Remove top screw which holds item #31 on blast tube.
 - 5) Pull the whole head out from the front of the burner.
- 14.10 Follow steps 14.1 to 14.9 in reverse to re-assemble the whole unit.
- 14.11 **CAUTION:** Make sure all connections are tight and done in right manner before re-starting the burner.
- 14.12 Select the right gas orifice size for the gas size to match the oil side in BTU's (Refer Table 2).

TABLE 2



ORIFICE SPUD	APPROX. BTUH-RATING NAT. GAS AT 3.5" WC MAINFOLD PRESSURE
5/8	930,000
41/64	990,000
21/32	1,050,000
43/64	1,110,000
11/16	1,180,000
45/64	1,280,000
47/64	1,400,000
3/4	1,500,000
25/32	1,600,000
13/16	1,700,000
53/64	1,800,000
55/64	1,900,000
7/8	2,000,000
57/64	2,100,000
59/64	2,200,000
15/16	2,300,000
61/64	2,400,000
1.0	2,500,000

THE ORIFICE IS POSITIONED INTO THE UNION ON THE MANIFOLD AND RETAINED IN POSITION BY MEANS OF RETAINING RING.

THE EXTERNAL DIAMETER OF THE ORIFICE GOES WITH THE INTERNAL DIAMETER OF THE UNION USED FOR THE APPLICATION. THE PLAY BETWEEN ORIFICE AND UNION IS ABOUT .0312 INCH.

THE INTERNAL OPENING OF THE ORIFICE, THE ACTUAL PASSAGE FOR THE GAS IS SIZED IN ACCORDANCE WITH THE INPUT RATING.

NOTES:

1. ORIFICE MATERIAL: BRASS 3/32" THICKNESS.
2. RETENTION RING MAT: STEEL BAR 1/16" o PLATED.
3. UNION 2" BLACK PIPE.

15. Now burner is ready for installation. Follow minimum combustion area for conversion given below. Refer Table 3.

TABLE 3

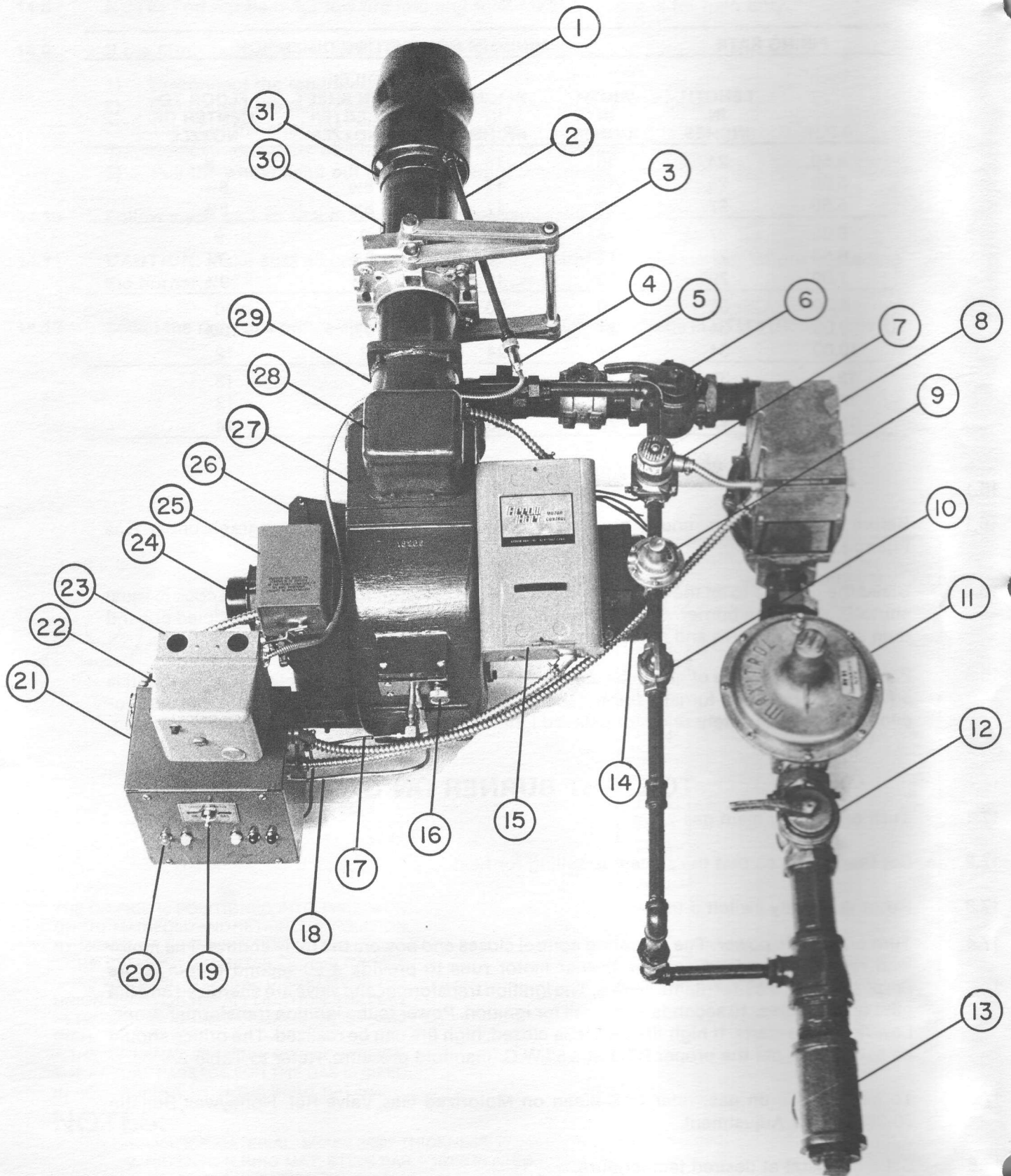
FIRING RATE		MINIMUM COMBUSTION DIMENSION			
G.P.H.	LENGTH IN INCHES	WIDTH IN INCHES	HEIGHT IN INCHES	BOILER CROWN SHEET TO CENTER OF NOZZLE	FLOOR TO CENTER OF NOZZLE
4.50	24	16	16	8	8
5.00	25	17	17	8½	8½
5.50	27	17	17	8½	8½
6.00	27	18	18	9	9
6.50	27	19	19	9½	9½
7.00	29	19	19	9½	9½
8.00	32	20	20	10	10
9.00	34	21	21	10½	10½
10.00	34	24	24	12	12
12.00	35	26	26	13	13
14.00	40	26	26	13	13
16.00	43	28	28	14	14

BURNER OPERATION

- 16.1 Before starting burner, check gas supply lines for leaks...(see last paragraph under Gas Piping.)
- 16.2 Bleed the gas line to let the air out. This can be done by opening side nut on "A" cock manual shutoff valve of the burner. Carefully watch the gas meter until about 1 cu. ft. is bled out and then shut off the valve and reconnect.
- 16.3 Procedure for the type of gas to be used is shown on the instruction plate on the burner. It is advisable to open the furnace firing door (or flame observation door) during the entire procedure to provide safety relief for delayed ignition, should unforeseen difficulties be present.

TO LIGHT BURNER ON GAS

- 17.1 Turn on manual main gas valve.
- 17.2 Set thermostat so that the system is calling for heat.
- 17.3 Reset the safety switch if tripped.
- 17.4 Turn on electric power. The operating control closes and powers the relay control. The motor lead relay is energized and the burner motor runs to provide a 90-second prepurge. As prepurge ends, trail-for-flame begins. The ignition transformer and valve are energized and the pilot burner lights. 10 seconds is the trail for ignition. Power to the ignition transformer drops. Low fire flame starts. If high fire switch is closed, high fire can be realized. The orifice should be selected to get the proper BTU at 3.5" W.C. manifold pressure. Refer to Table 2.
- 17.5 To get low fire on gas, refer to Bulletin on Motorized Gas Valve Ref. Honeywell Bulletin 60-2099-5, Air Adjustment.
- 17.6 Set thermostat at desired temperature.
- 17.7 If the burner is shut down for maintenance purposes, also turn off electric power and the manual main gas valve.



MODEL GC-25

GC-25

PARTS NUMBERS

ITEM #	PART NUMBER	DESCRIPTION	QUANTITY
1	16371651	Flame Tube	1
2	TA10096	Side Tube Scanner	1
3	10870164	Swinging Flange	1
4	EA10072	Ultra Violet Scanner	1
5	SA11108	Adjustable Orifice (optional)	1
6	TA10062	Leak Test Valve	1
7	EA10131	Pilot Valve Solenoid Type	1
8	EA10257	Main Gas Valve Motorized	1
	EA10258	Main Gas Valve Body 2" Female N.P.T.	1
9	AA10219	Pilot Pressure Regulator	1
10	TA10050	Pilot Gas Shutoff Valve	1
11	AA10224	Main Pressure Regulator	1
12	TA10062	2" Gas Shutoff Valve	1
13	TA10127	2½" 90° Elbow	1
14	MA10055	1 HP Motor 3PH 3450RPM Hi-Voltage	1
	FA40042	Blower Wheel 8½"D x 5"W x ⅝"D Hub Bore (reinforced) (not shown)	1
	GA46042	5"L x ⅝" Bore x 7/16" Bore, 2" coupling (not shown)	1
15	EA41312	3 PH GE Mag. Starter	1
	EA41314	K398A Heaters (not shown)	
16	16271894	Fire Adjusting Knob	1
17	TA10130	Low Fire Copper Tubing	1
18	TA10129	High Fire Copper Tubing	1
19	EA10260	Arrow Hart 4PDT Change Over Switch	1
20		Lights (See wiring diagram for their functions.) (optional)	
21	SA11115	"J" Box	1
	EA41321	DPDT Relay for UVM Control (not shown)	3
	EA41321	DPDT Relay for R4140 Control (not shown)	2
22	EA41277	Safety Relay	1
	EA10219	90-10 Timing Card (not shown) or R4140 Control (optional)	1
23	EA41275	Control Base for Safety Relay	1
24	PA46758	Oil Pump Assembly	1
25	EA10259	M436 Motor Actuator	1
26	320-493-1	Air Shutter Assembly	1
27	CC46002	Housing Assembly	
28	MA10054	Ignition Transformer	1
29	CB46029	Transition Tube Casting	1
30	16870414	Firing Assembly	1
31	16370433	Flame Tube Neck	1
	EA41220	Solenoid Instantaneous Oil Valve (not shown)	2
	16771655	Burner Head (not shown)	
	AB46502	Left Electrode (not shown)	1
	AB46503	Right Electrode (not shown)	1
	KB10632	Burner Head Adjuster Assembly (not shown)	1

18.

TO LIGHT BURNER ON OIL

18.1 Turn the switch to oil side.

18.2 Follow the same procedure as for gas.

19.

SEQUENCE OF OPERATION

19.1 The power is turned on. The motor starts.

19.2 The air flow switch is closed due to air caused by the blower wheel.

19.3 There would be a 90 second prepurge. Within that 90 seconds, nothing else is functional except the motor.

19.4 UVM-3H: After 90 seconds, 5 seconds of mandatory ignition, which within that time, the side scanner picks up the flame signal (ultra violet rays).

19.5 The burner is now in operation and will stay until the power to the burner is cut off. See Bulletin C-400 Fireye for more information on the control and the scanner.

19.6 If the high fire switch selector is chosen, the burner will move to high fire by first opening the air shutter to high fire and then at the same time, the burner will go to high fire. The internal SPDT auxiliary switch of the M436 can be adjusted to operate at any point between 5 and 70 degrees of motor stroke (Ref. Honeywell Bulletin No. 60-2119-3).

19.7 On gas mode, the spark ignition will light the pilot and the pilot will stay on for all operation until the burner is shut off.

19.8 On oil mode, spark ignition will start low fire at 100 PSI pump pressure and high fire rate is achieved by means of a second nozzle.

20.

ADJUSTING COMBUSTION AIR

20.1 Open the air shutter slightly, but be prepared to open it further. The flame should be blue for gas and bright white for oil. (Flue gas analysis for gas side should indicate 8% to 10% CO₂, with no trace of CO (Carbon Monoxide) indicated at 0.02" W.C. draft over fire for normal operations (Note: Burner can be adjusted for pressurized firing while for oil 10% to 12% CO₂ with no smoke on test paper). Flue gas analysis should be conducted with proper instruments. After proper air adjustments, tighten the lock nuts. A qualified serviceman for gas as well as for oil should do the installation and adjustment of shutters.

21.

CONTROL

21.1 UVM-3H with UV scanner is used in this burner. For more specific information on the control, refer to Bulletin C400878 of Fireye Division of Electronic Corporation of America. Flame signal at test jacks should be 5 to 6 D.C. volts. For further reference, please check parallel and schematic wiring diagrams page 16 and 17.

21.2 For programming control, refer R4140 - Honeywell control sequence.

21.3 Flame Signal Testing

A) Manually open the main fuel valve.

B) Set the test meter on the DC dial and insert the meter leads into test jacks.

C) Initiate a normal start-up.

D) When flame is established, the test meter reading should be normal. If not, check position of sight tube and recheck the operation from 21.3 (A) to 21.3 (C).

22.

TO CHECK SAFETY-LOCKOUT

22.1 Shut off the main fuel.

22.2 Reset the manual safety switch.

22.3 Turn on electric power.

22.4 After 90 seconds of prepurge, there would be ignition noise for 10 seconds only. The burner should go on safety and lockout should occur.

23.

TROUBLE CHECK LIST

	Trouble	Possible Cause	Remedy
23.1	Power on, but burner fails to start.	1. Fuse might have blown out.	1. Install a new fuse.
23.2	Burner starts, but does not light.	1. Check the flame signal, if it is weak.	1. Reposition sight tube in the burner head.
		2. On gas side, check for minimum input pressure.	2. Adjust 5.0" W.C. minimum input.
		3. Air flow switch might not be working.	3. Check the continuity on air flow switch when burner motor is on. If there is no continuity, change the switch.
		4. No signal, but for 10 seconds flame appeared.	4. Change UV scanner.
23.3	Nuisance shut down.	1. Check Troubles 23.1 and 23.2.	
		2. Check electrode gap.	2. Reset electrode gap.
		3. If the crown head is not straight, gas tube can block scanner tube.	3. Straighten the crown head.

24.

MAINTENANCE

24.1 Lubricate burner motor twice yearly with 4 drops of #10 S.A.E. motor oil. The complete heating system should be cleaned, adjusted and checked by a serviceman before the start of each heating season.

OPERATING INSTRUCTIONS

Date

TO START BURNER: ON OIL (with main burner switch off)

- 25.1 Check oil level in storage tank.
- 25.2 Open all oil valves.
- 25.3 Check water level in boiler.
- 25.4 Check fuse or breaker.
- 25.5 Set thermostat above room temperature.
- 25.6 Open fire door and turn on main switch.

TO STOP BURNER:

- 26.1 Turn off main switch.

IF BURNER FAILS TO OPERATE:

- 27.1 Open fire door.
 - 27.2 Recheck items 25.1 to 25.6
 - 27.3 Reset button on primary safety control.
 - 27.4 Press manual reset on motor.
- If burner still does not start, call service.

STARTING BURNER AFTER FLAME FAILURE:

- 28.1 Open fire door.
- 28.2 Do not attempt to start if chamber is hot or if there are fumes or oil in chamber.
- 28.3 If item 28.2 is satisfactory, reset primary safety control, BUT DO NOT RESET MORE THAN TWICE.

TO STOP BURNER FOR PROLONGED PERIODS:

- 29.1 Turn off main switch, remove fuse, close oil line valves and fill oil tank to prevent condensation.

WHEN SERVICE OR REPAIRS ARE REQUIRED

Call
Day Telephone Night Telephone
Always give the following information:
Burner Model Serial No.
Date Installed

DATA

CO₂ in Stack Smoke Spot No.
Air Shutter Setting Room Temp.° F.
Stack Temp.° F. Stack Draft
Net Stack Temp.° F. ... Nozzle Installed GPH Low
Overfire Draft Spray Angles High
(—0.02" W.C.)
Orifice size for gas

CO (Carbon Monoxide)
(should be less than 400 PPM)

Flame signal D.C. volts

..... cu. ft. of gas per hour x 1000 = ... BTUH

FOR YOUR SAFETY

If you smell gas:

1. Open windows.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately call your gas supplier.
5. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

CAUTION

DO NOT use gasoline, crankcase oil or any oil containing gasoline.

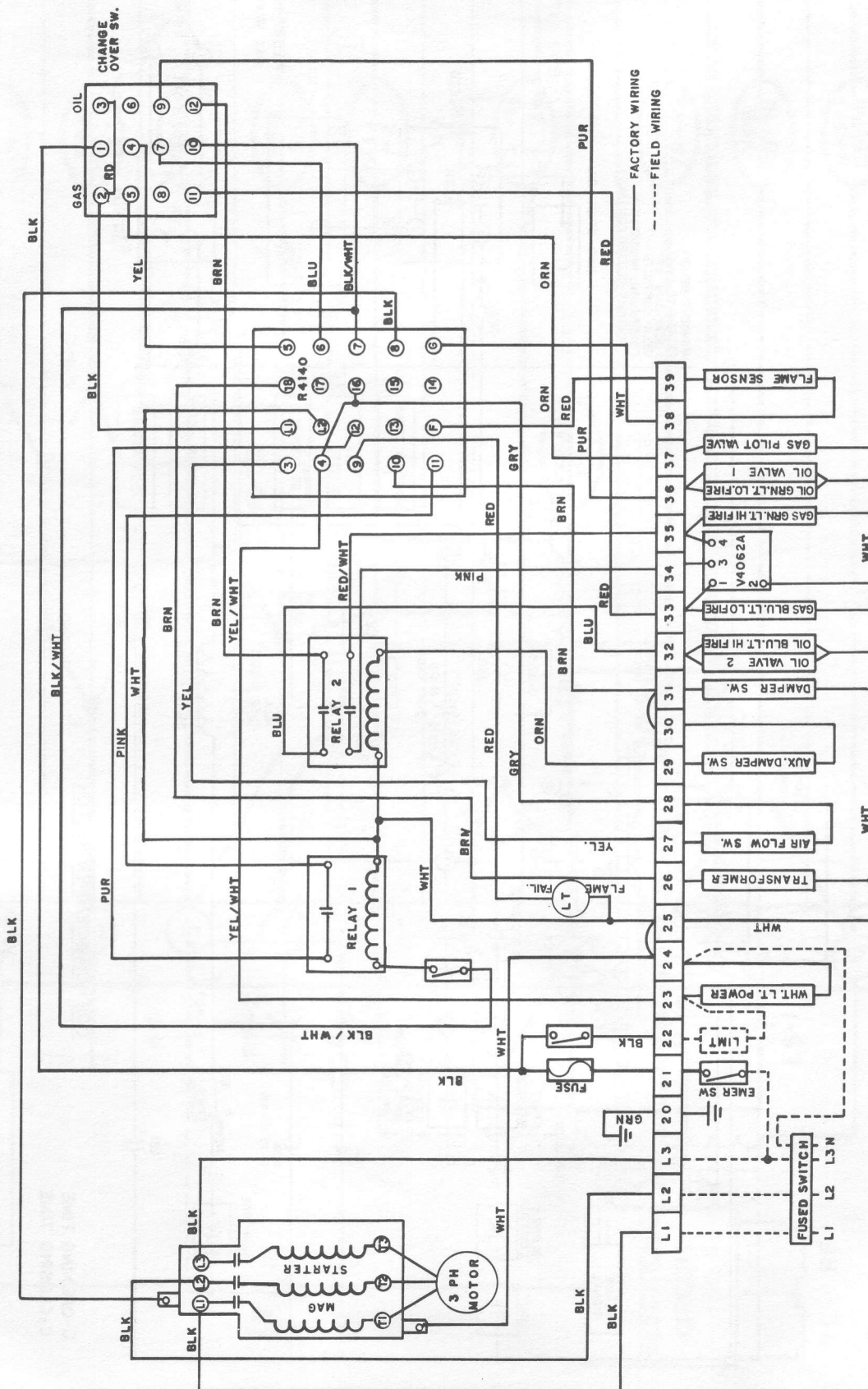
DO NOT incinerate garbage or refuse in this unit.

DO NOT tamper with burner or controls—CALL YOUR SERVICE MAN.

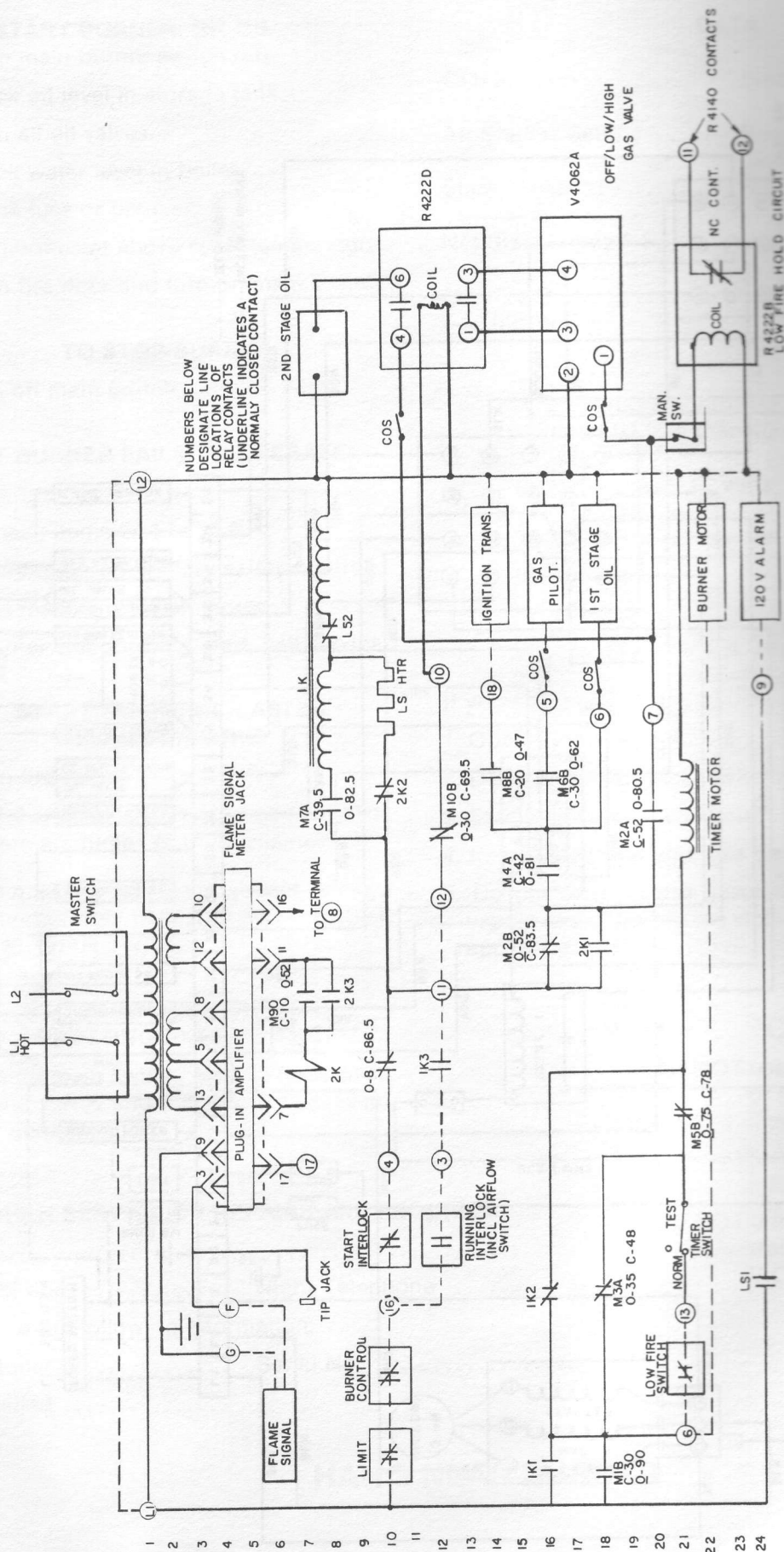
HANG NEAR BURNER

FIELD WIRING DIAGRAM R4140

DA46582-2



FIELD WIRING DIAGRAM R4140



COS = CHANGE OVER SWITCH

Q-OPENING TIME	C-CLOSING TIME
0.00	0.00
0.01	0.01
0.02	0.02
0.03	0.03
0.04	0.04
0.05	0.05
0.06	0.06
0.07	0.07
0.08	0.08
0.09	0.09
0.10	0.10
0.11	0.11
0.12	0.12
0.13	0.13
0.14	0.14
0.15	0.15
0.16	0.16
0.17	0.17
0.18	0.18
0.19	0.19
0.20	0.20
0.21	0.21
0.22	0.22
0.23	0.23
0.24	0.24
0.25	0.25
0.26	0.26
0.27	0.27
0.28	0.28
0.29	0.29
0.30	0.30
0.31	0.31
0.32	0.32
0.33	0.33
0.34	0.34
0.35	0.35
0.36	0.36
0.37	0.37
0.38	0.38
0.39	0.39
0.40	0.40
0.41	0.41
0.42	0.42
0.43	0.43
0.44	0.44
0.45	0.45
0.46	0.46
0.47	0.47
0.48	0.48
0.49	0.49
0.50	0.50
0.51	0.51
0.52	0.52
0.53	0.53
0.54	0.54
0.55	0.55
0.56	0.56
0.57	0.57
0.58	0.58
0.59	0.59
0.60	0.60
0.61	0.61
0.62	0.62
0.63	0.63
0.64	0.64
0.65	0.65
0.66	0.66
0.67	0.67
0.68	0.68
0.69	0.69
0.70	0.70
0.71	0.71
0.72	0.72
0.73	0.73
0.74	0.74
0.75	0.75
0.76	0.76
0.77	0.77
0.78	0.78
0.79	0.79
0.80	0.80
0.81	0.81
0.82	0.82
0.83	0.83
0.84	0.84
0.85	0.85
0.86	0.86
0.87	0.87
0.88	0.88
0.89	0.89
0.90	0.90
0.91	0.91
0.92	0.92
0.93	0.93
0.94	0.94
0.95	0.95
0.96	0.96
0.97	0.97
0.98	0.98
0.99	0.99
1.00	1.00

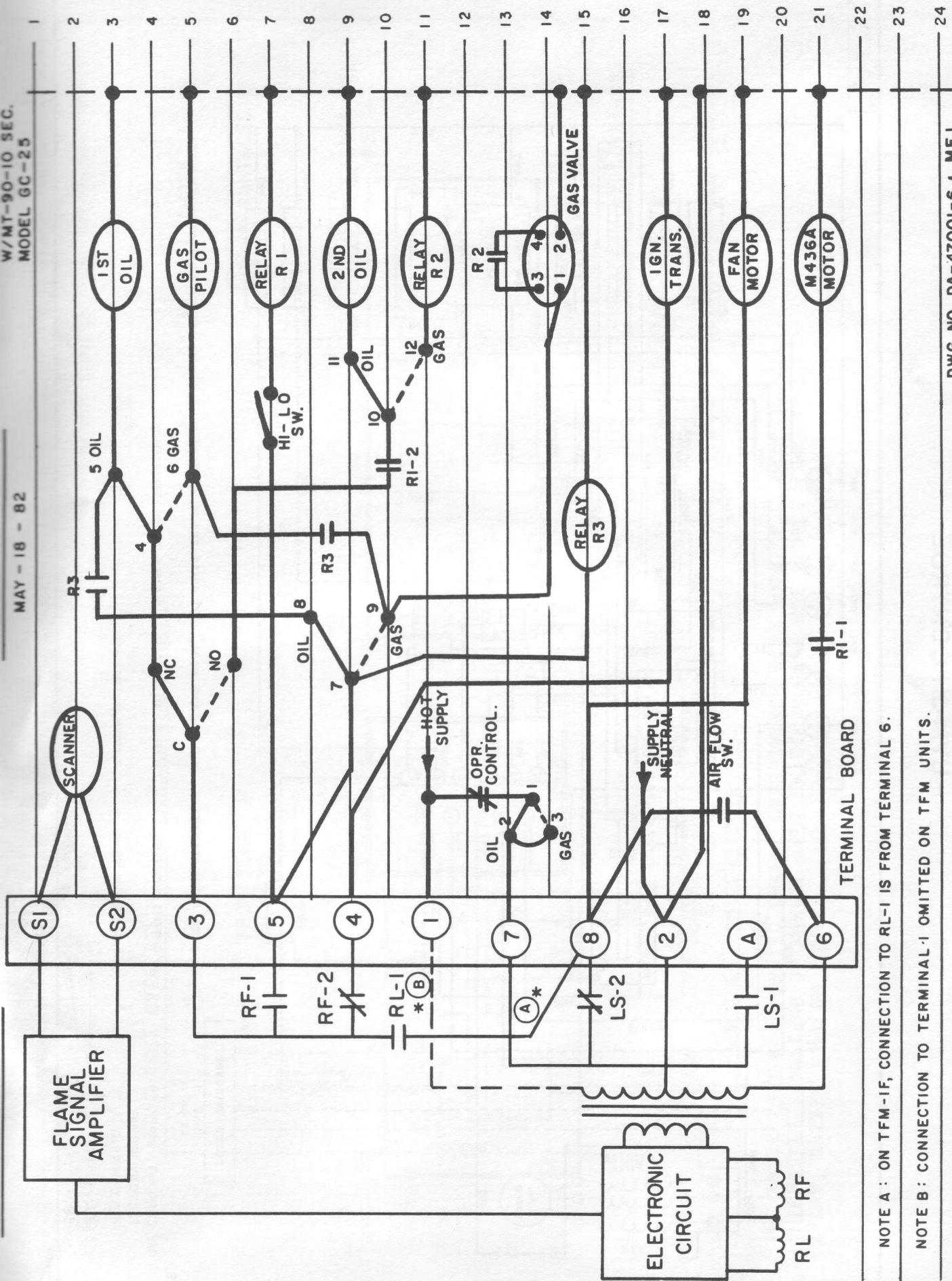
DA46582/3 HONEYWELL DIAGRAM
DA46582/2 ABC/SUNRAY DIAGRAM WITH R410L CONTROL

CONTROL CIRCUIT

FIELD WIRING

MAY - 18 - 82

U.V.M.-3H CONTROL
W/MT-90-10 SEC.
MODEL GC-25



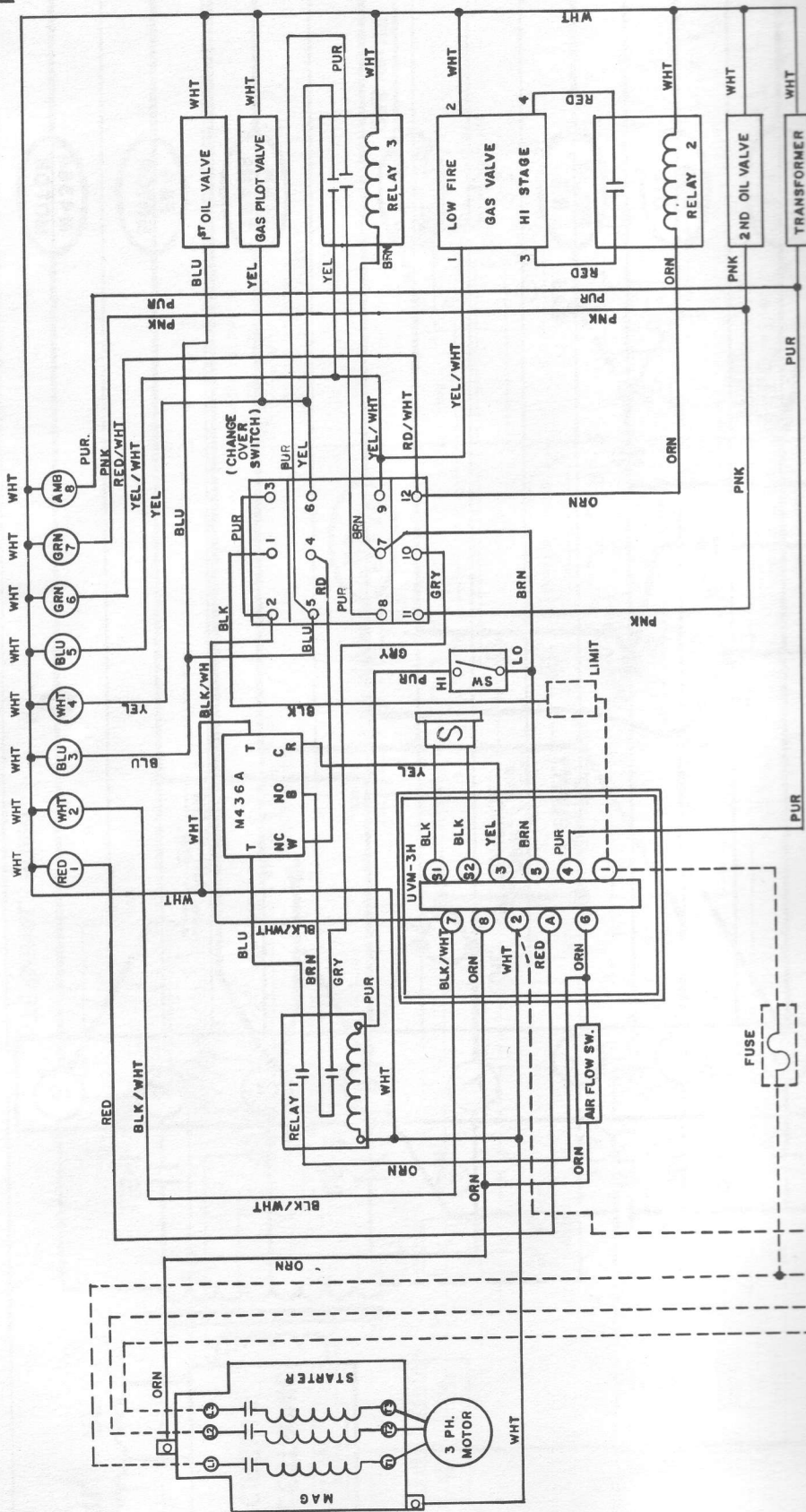
NOTE A : ON TFM-1F, CONNECTION TO RL-1 IS FROM TERMINAL 6.

NOTE B : CONNECTION TO TERMINAL 1 OMITTED ON TFM UNITS.

DWG NO. DA-47001-6-1 MFJ

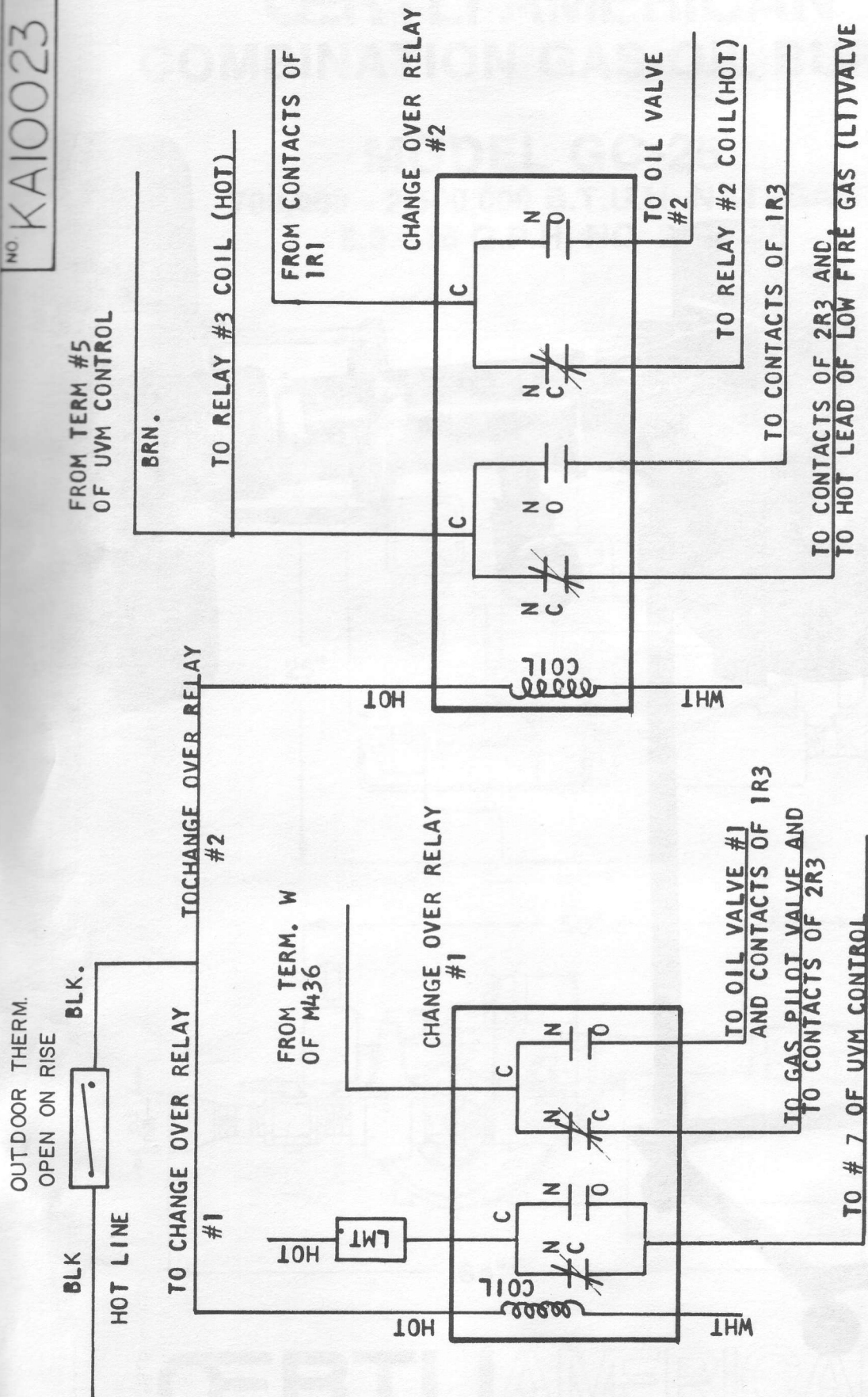
FIELD WIRING DIAGRAM FOR UVM-3H CONTROL

NO DA47001-6

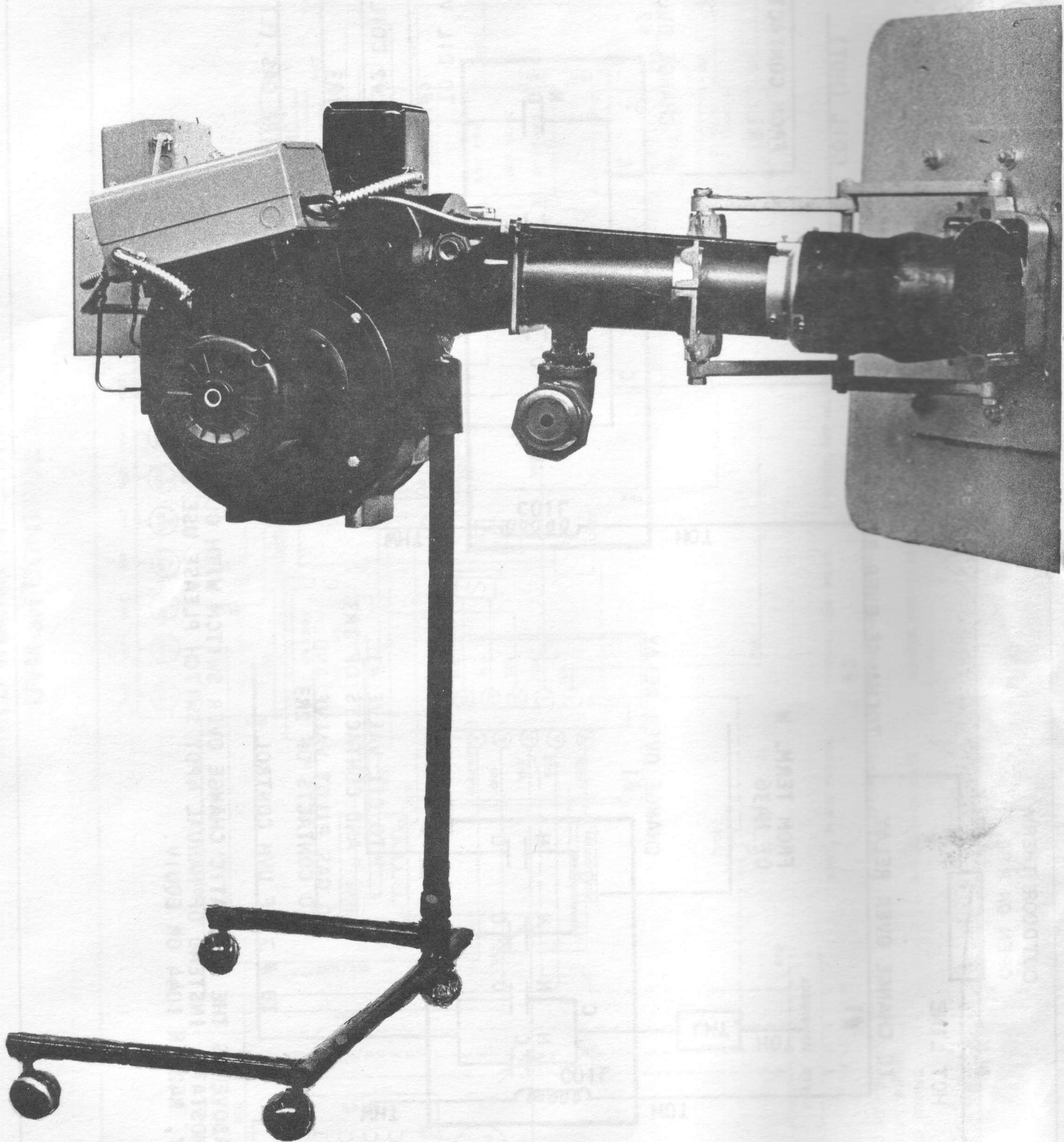


SUGGESTED AUTOMATIC CHANGE OVER SYSTEM

NO KA10023



THE ABOVE IS THE AUTOMATIC CHANGE OVER SWITCH WITH OUTSIDE THERMOSTAT. INSTEAD OF MANUAL 4PDT SWITCH PLEASE USE 2 DPDT RELAY, R4222N 1044 OR EQUIV.



**PEDESTAL AND SWING-IN FLANGE
MOUNT FOR EASY SERVICING.**