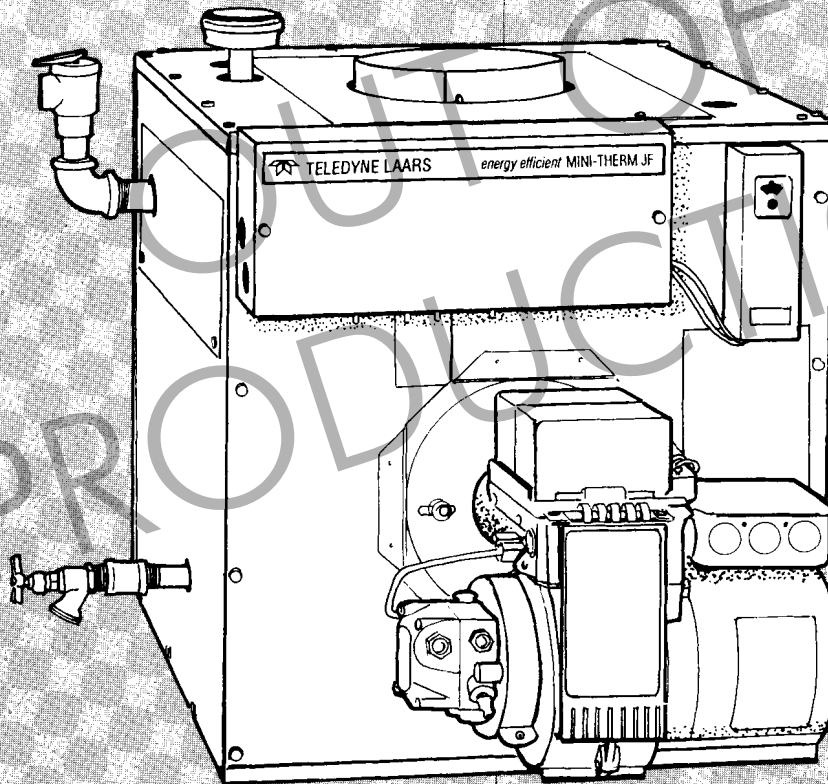


Installation and Operating Instructions for
**Model JF Residential Mini-Therm
Oil-Fired Hydronic Boiler**



These instructions are to be stored in the pocket provided on the boiler.

IMPORTANT WARNING:

Read these instructions before installation - Failure to comply may void warranty.

FOR YOUR SAFETY - Do not store or use gasoline or other flammable liquids or vapors in the vicinity of this or any other appliance. Do not store any chemicals in the vicinity of this boiler or any other appliance.

CAUTION: Use #2 fuel oil only. Do not use gasoline, crankcase drainings or any other containing gasoline. Never burn garbage or paper in this unit, and never leave combustible material near your boiler. Do not tamper with the unit or controls.

OUT OF
PRODUCTION

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Section 1 General Information

IMPORTANT WARNING: *The Type JF hydronic boiler must be installed in accordance with the procedures outlined in this manual. Warranty does not apply to boilers not installed or operated in accordance with these procedures. The installation must conform to the requirements of local codes.*

Where required by the authority having jurisdiction, the installation must conform to American Society of Mechanical Engineers Safety Code for Controls and Safety Devices for Automatically Fired Boilers, No. CSD-1; and in Canada, CSA standard B139 installation code for oil burning equipment. Any modifications of the boiler, its controls, wiring or burner unit may void the Teledyne Laars warranty. If field conditions require modifications, consult factory.

1A. Introduction

This manual supplies information on the application, installation and operation of Teledyne Laars Model JF hydronic boilers. It is strongly recommended that all application and installation procedures be reviewed completely before proceeding with an installation. Experience has shown that improper installation or system design, rather than faulty equipment, is the cause of most operating problems.

Servicing of the boiler by unqualified individuals can be ineffective and is potentially hazardous. When service is necessary, it **must** be done by a qualified service person who is familiar with oil-fired equipment.

1B. Warranty

Every boiler is subjected to complete pressure test in accordance with ASME specifications, before it leaves the Teledyne Laars factory. In addition, the Model JF Boiler is covered by a limited written warranty furnished with each unit.

Warranty claims must be made to an authorized Teledyne Laars representative or to the factory. Claims must include serial and model number, installation date and name of installer. Shipping costs are not included in warranty coverage.

There are occasions when certain items are shipped in accessory packages. Be sure you receive the number of packages shown on your packing slip. Inspect for concealed damage immediately upon

receipt and advise carrier of any shortage or damage. Claims should be filed with delivering carrier. The carrier, **not** the shipper, is responsible for a shortage of items and any damage to shipment whether visible or concealed.

1C. Engineering Assistance

Consult the factory or distributor regarding any questions or problems which arise in the specifications, installation or operation of Teledyne Laars equipment. An experienced engineering staff is ready to assist in assuring the proper performance and application of Teledyne Laars products.

Section 2 Installation

2A. Placement of Boiler:

Locate the boiler to provide clearance for inspection and service. **Table 1** indicates necessary clearances to adjacent surfaces.

Left Side	1"
Right Side	6"
Rear	1"
Front*	1"
Top	24"
Flue	6"
Floor	non-combustible
Hot Water Pipes	per code

*Front may be 1" from door of closet if door has prescribed openings, and at least 24" service access when door is open.

The boiler may be installed in a closet if door at the front of unit is provided with two openings, each with 130 square inches of free area. Top opening must be 6 inches below closet ceiling. Bottom opening must be 6" above closet floor.

The boiler **must** be installed on a non-combustible floor. However, it may be installed on a combustible floor if provided with a special base assembly available from Teledyne Laars (**Figure 1**). See the boiler rating plate for the part number of the base assembly.

Do not install the boiler on carpeting.

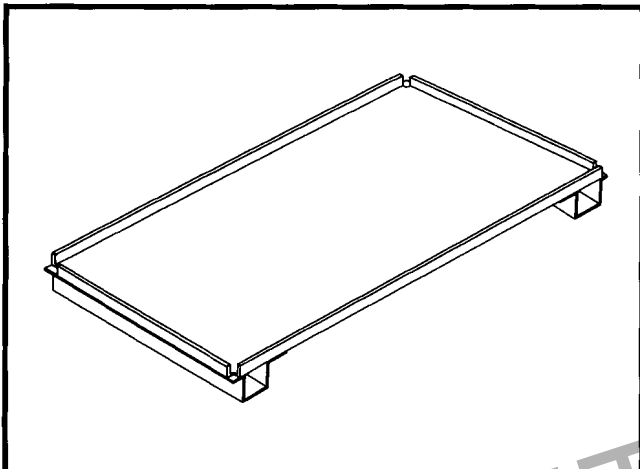


Figure 1 - Special Base for Combustible Floors

An alternate method for installing the boiler on other than non-combustible floors is shown in **Figure 2**. The floor under the boiler must be protected with hollow masonry not less than 4" thick and covered with sheet metal of not less than 24 Ga. Such masonry must be laid with ends unsealed and joints matched in such a way as to provide a free circulation of air from side to side through the masonry. In the U.S. placement of boiler on other than non-combustible floors is possible when the installation complies with the American Insurance Code.

NOTE: When boiler is installed in a garage, the bottom of the boiler must be at least 18" above the floor.

2B. Fuel Storage and Piping

Storage Tank: Consult local fire and building codes for acceptable fuel storage methods in your area.

Fuel Line: A single pipe system of not less than 3/8" OD copper is recommended when fuel storage level is not below the fuel unit. A two pipe system of not less than 3/8" OD copper is recommended when lowest fuel level is below but not more than 8 feet below fuel unit.

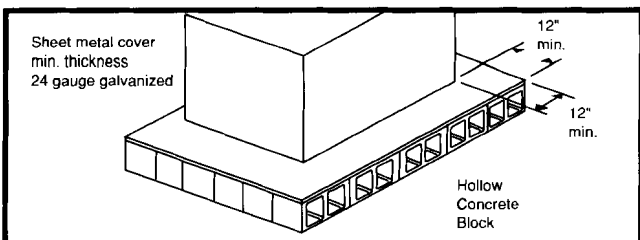


Figure 2 - Non-Combustible Floor Installaton

Important - refer to burner (pump) instructions for detailed fuel line and pump usage information. All installations must conform to local and national codes.

2C. Combustion Air Supply

1. The boiler system must be located to provide air for proper combustion and ventilation for the surrounding area.
2. Boiler rooms should be provided with two permanent air supply openings, one beginning within 12 inches of the ceiling and one beginning within 12 inches of the floor (see **Figure 3**, and **Table 2**).
3. In Canada refer to the National Standard CAN1-B149 1 or 2 which differs from **Table 2**, shown below.

Outside Air: When combustion air is supplied directly through an outside wall, each opening shall have a minimum free area of one square inch per 4,000 BTU per hour input of the total input rating of all appliances in the enclosure.

Table 2 - Minimum Recommended Air Supply to Boiler Room - 2 Openings Required		
Net Free Area in Square Inches - Each Opening		
Model	Outside Air	Inside Air
JF-75	27	105
JF-90	32	126
JF-125	44	175

*Area indicated is for each of two openings, one at floor level and one at the ceiling.

Net Free Area - Check louver manufacturers for net free area of louver. Correct screen resistance to net free area if screen is used.

Important: Check your local codes for all requirements relating to combustion air. Canadian requirements differ from this table.

Inside Air: When combustion air is supplied from inside the building, each opening shall have a minimum free area of one square inch per 1,000 BTU per hour input of the total input rating of all appliances in the enclosure. In no case should those openings be less than 105 square inches each.

Any equipment which exhausts air from the boiler room will deplete the combustion air supply or reverse the draft action of the venting system, drawing flue

products into the boiler room, and causing sooting of the heat exchanger. Additional make-up air must be supplied to compensate for exhaust.

WARNING: The information contained in **Figure 4** should not be used when exhaust fans or blowers of any type are used. Installations such as these should be engineered by competent personnel, following good engineering practices.

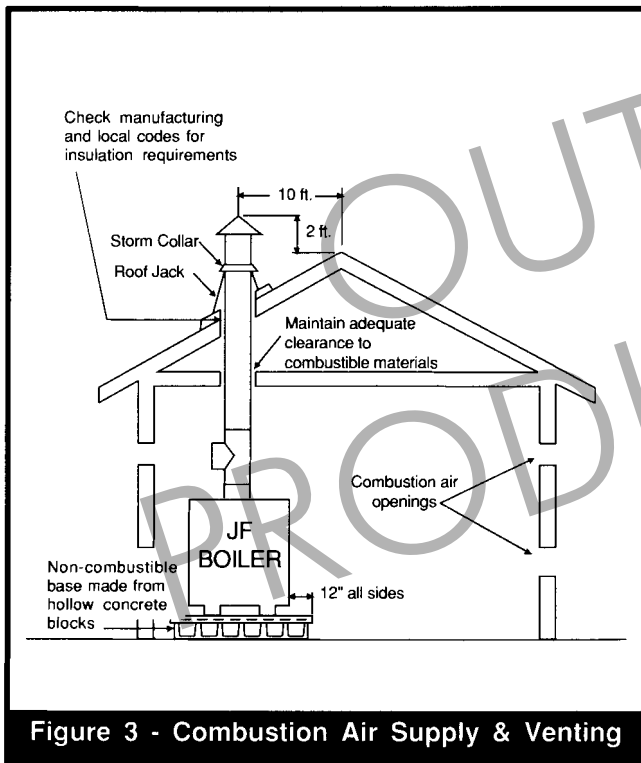


Figure 3 - Combustion Air Supply & Venting

The boiler must be completely isolated and protected from any source of corrosive chemical fumes; like the ones given off by trichlorethylene, perchlorethylene, chlorine, etc.

If a blower or fan is necessary to provide adequate combustion air for the boiler, a suitable draft switch or equivalent must be used and wired into the boiler control circuit so that the boiler cannot come on unless blower is operating.

2D. Venting

The model JF boiler has high operating efficiency, therefore good venting practice is very important. "Cold" chimneys must be avoided--especially in areas with severe winters. In general, chimneys or vent piping should be run through "warm" spaces, and special liners or exterior insulation may be appropriate in some cases. Massive, cold chimneys may exhibit condensation and corrosion.

The Applications volume of the ASHRAE Handbook provides technical insight.

Barometric Damper (Barometric draft control) must be installed in the vent pipe between the boiler and chimney. **Figure 4** illustrates approaches which may be appropriate.

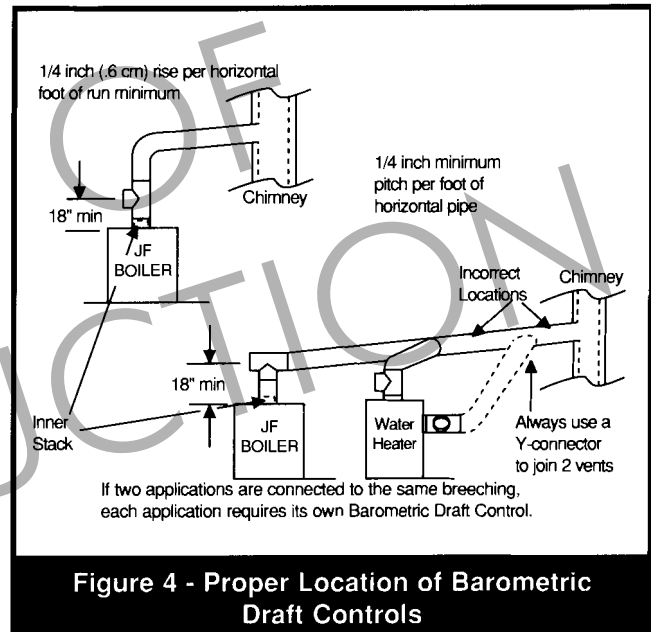


Figure 4 - Proper Location of Barometric Draft Controls

Inadequate chimney action may require use of a draft inducer. In any event, draft just below the barometric damper should be 0.01" to 0.02" W.C.

Chimneys should terminate at least 24" above any part of the building structure which is within 10 feet of the chimney. See **Figure 3**.

Vent pipe must be full sized and have at least a 1/4" rise per foot of horizontal run. Avoid long horizontal runs or excessive use of pipe fittings which will effect natural draft. Observe local codes.

2E. Piping of System to Boiler

1. **Figure 5** shows a typical plumbing hook-up. Be sure to provide unions and gate valves at inlet and outlet of boiler so it can be readily isolated for service. Check all local applicable plumbing, heating and building safety codes before proceeding. If local codes require changes in the piping arrangement, contact your Teledyne Laars representative or the factory.
2. A pressure relief valve is furnished with each boiler. The outlet of the relief valve must be

pipled to an open drain.

3. Install manual and/or automatic air venting devices at high points in the system to eliminate any trapped air.
4. The weight of all piping should be supported by suitable hangers or floor stands and **NOT** by the boiler.
5. Pump - Like all modern low volume boilers, Type JF boilers must have adequate water flow during operation. System pumps and piping size should be selected to provide a water temperature rise of 20°F. **Table 3** provides pressure drop data for the model JF boiler. In sizing a pump for the system, piping and baseboard unit pressure drop must be added to these values.

The boiler should be electrically interlocked to the pump so that it will not fire unless there is water flow. This is accomplished when the pump is wired per **Figure 11**.

6. Compression Tank - An adequately sized compression tank with suitable air charger and tank drain must be provided. The size of the tank depends on the total volume of water in the system and the location of the tank in the system. Refer to the ASHRAE Handbook, Systems Volume, or other engineering publications for information on application of compression tanks. Inadequate water flow will void the boiler warranty. Air-charged diaphragm-type tanks with automatic make-up water control are available from Teledyne Laars. These tanks will provide "HOT" system pressures of approximately 25 psig and will automatically provide make-up water when system pressure falls below 12 psig. Order compression tank package A-668 for heating systems with less than 20 gallons and compression tank package A-669 for heating systems with 20 to 45 gallons of water. The smaller tank package can be used with most JF boiler installations. Typical compression tank installations are shown in **Figure 5**.

7. A **low water cutoff** device is required if the boiler is installed above the radiation level.

Table 3 - Pressure Drop Through Boiler

Model	Rise, Deg. F.					
	15		20		25	
	GPM	Ft.	GPM	Ft.	GPM	Ft.
JF-75	11.9	1.4	8.9	1.0	7.1	0.8
JF-90	14.3	1.8	10.7	1.1	8.6	0.9
JF-125	20.0	2.8	15.0	1.5	12.0	1.2

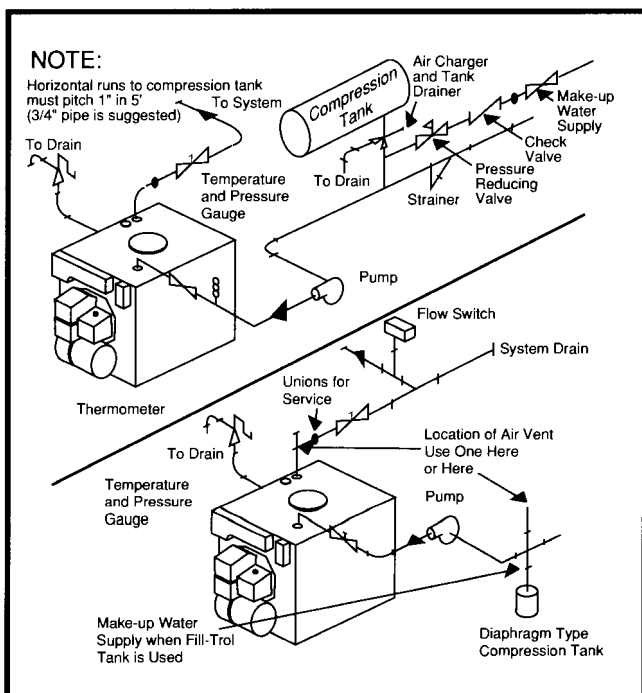


Figure 5 - Typical Compression Tank Installation

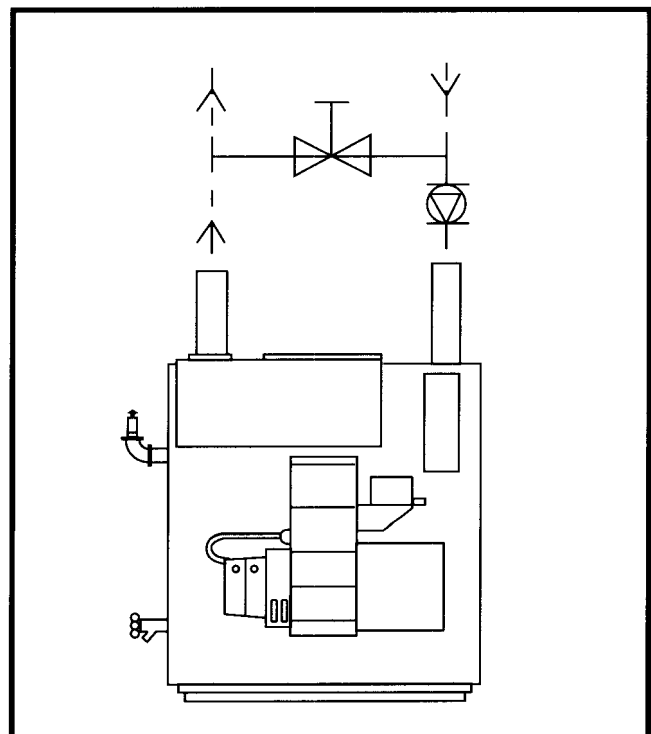


Figure 6 - By-Pass Piping

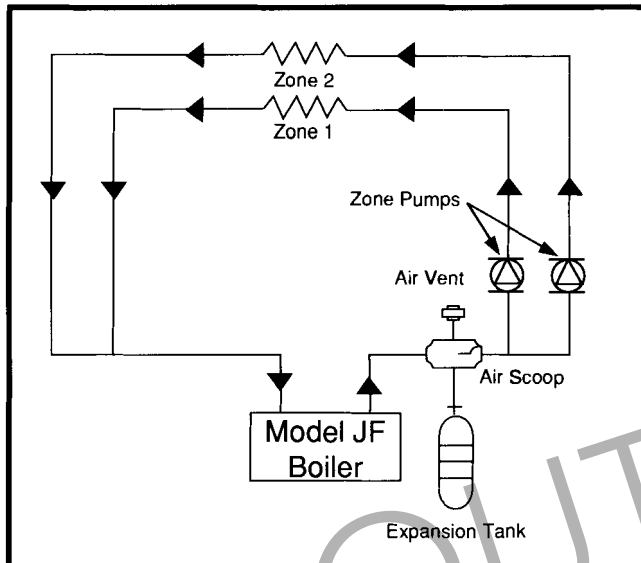


Figure 7 - Zoned Piping System Utilizing Zone Pumps

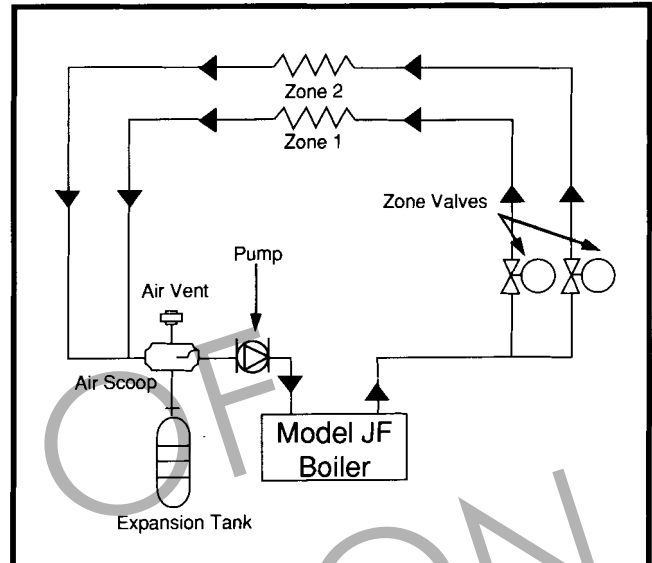


Figure 8 - Zoned Piping System Utilizing Individual Zone Valves

8. In systems having high water volume or low operating temperature, a bypass line can sometimes be used to advantage. The bypass line, shown in **Figure 6**, allows a portion of the heated water to temper the cold return water from the system, thus avoiding condensation. **It must be used with caution**, however, because excessive bypass can cause the boiler to shut down on its over temperature control even when the building is not getting enough heat. It is a good idea to remove the handle of a bypass valve once it is properly adjusted. Do not exceed temperature rise across boiler; see **Table 3** for maximum recommended temperature rise.

A bypass line has also been used to compensate for low system water flow. In such cases, the bypass line allows the water to keep moving through the heat exchanger, helping to prevent flashing. It provides no heat dissipation, however, and it cannot fully compensate for poor piping practice; see **Table 3** for maximum recommended temperature rise.

9. Multiple zone systems, with zone valves and zone pumps, are shown in **Figures 7 and 8**. A primary-secondary pumping arrangement is illustrated in **Figure 9**. In a primary-secondary system the pump can be sized for the boiler alone (see **Table 3**), since the other pump(s) handle external piping resistance.

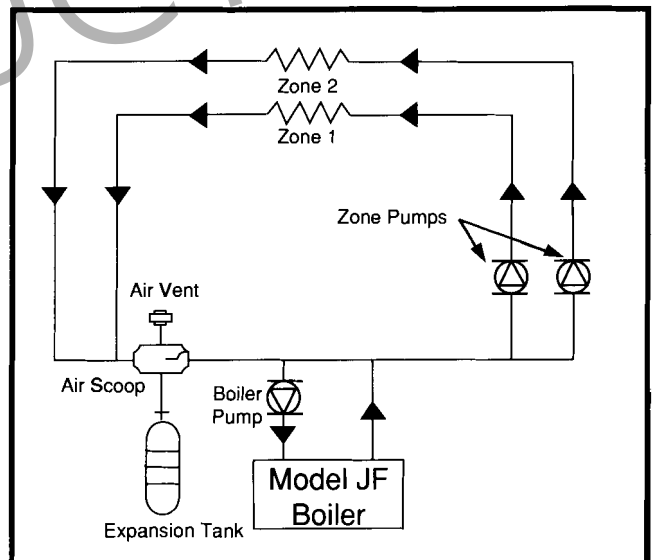


Figure 9 - Zoned Piping System Utilizing Primary-Secondary Pumping

2F. Warning Regarding Chilled Water Systems

When used in connection with a refrigeration system, the boiler must be provided with appropriate valves to prevent chilled water from entering the boiler.

The piping of a boiler having heating coils located in air handling units where they may be exposed to refrigerated air circulation must be provided with flow control valves or other automatic means to prevent

gravity circulation of the boiler water during the cooling cycle.

2 Antifreeze Protection

Use only antifreeze formulations (such as propylene glycol) which are expressly made for hydronic systems. **Do not use automotive types (ethylene glycol).** Use of antifreeze will alter system sizing and characteristics of system accessories. Consult factory representative for details or assistance.

NOTE: Complete drainage of boiler requires removal of pipe plugs on the sides of boiler.

2H. Electrical Wiring

WARNING: The boiler must be electrically grounded in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code, ANSI/NFPA 70 in the U.S., and C21.2 in Canada. Do not rely on the water piping to ground the metal parts of the boiler. Plastic pipe or dielectric unions may isolate the boiler electrically. Service and maintenance personnel who work on or around the boiler may be standing on wet floors and could be electrocuted by an ungrounded boiler.

Provide disconnecting means of sufficient rating at or within sight of the boiler. Wire the boiler and pump as shown in Figures 10 and 11. This will ensure that the pump is energized whenever the burners are on. The pump control is suitable for pumps of 3/4 horsepower or less.

1. Check boiler wiring and pump for correct voltage and frequency.
2. Wire boiler and pump exactly as shown in the wiring diagram supplied with boiler (Figures 10 and 11).

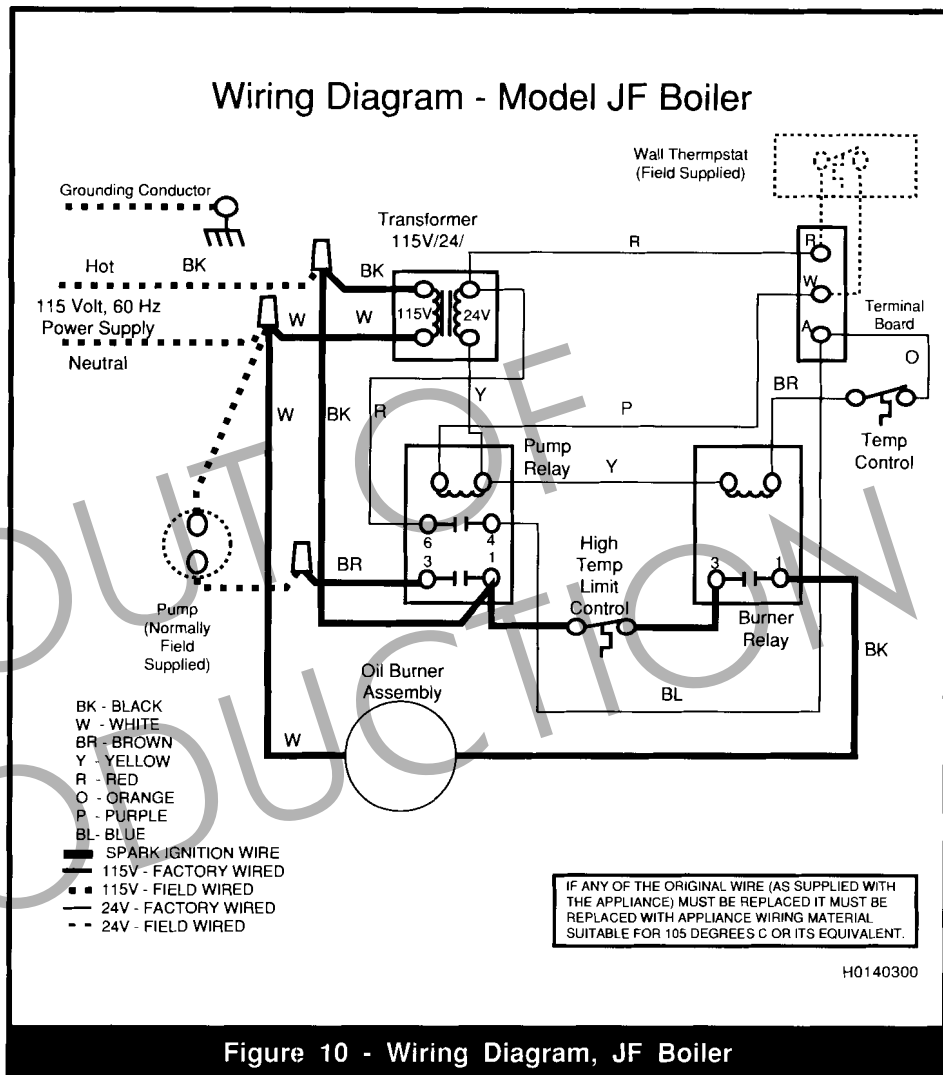


Figure 10 - Wiring Diagram, JF Boiler

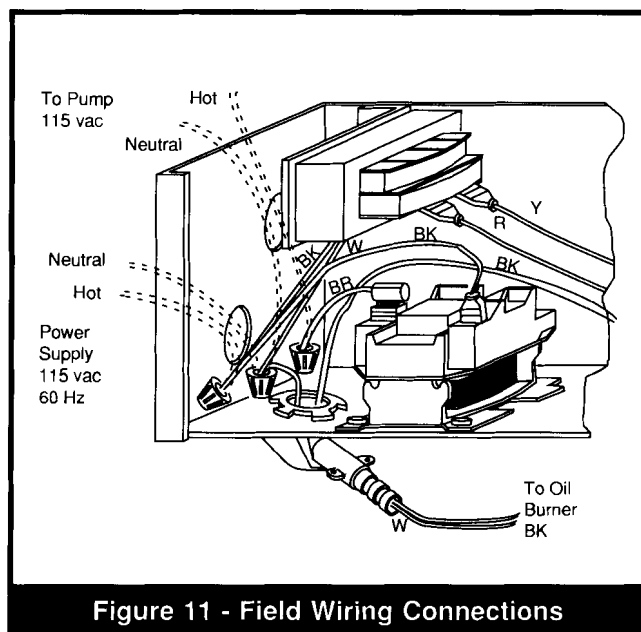


Figure 11 - Field Wiring Connections

3. Field installed electrical safety devices and all field installed operating controllers (valves, end switches, draft switches, relays, timers, outdoor temperature reset devices) can be connected to the boiler wiring in the wall thermostat circuit.
4. For single zone applications, the wall thermostat heat anticipator should be set at 0.8 amperes. For other applications thermostat current should be determined and heat anticipators must be set appropriately.

Section 3 **Operating Instructions**

3A. Filling and Starting System

1. Close all air vents and open make-up water valve. Allow system to fill slowly.
2. Adjust water pressure to provide a minimum of 12 psig at the highest point in the heating loop. If a diaphragm type compression tank is used, it should be normally pressurized to 12 psig when the system is cold.
3. Close all gate valves. Purge one circuit at a time as follows:
 - a. Open **one** circuit drain valve and let water run to drain for at least 5 minutes. Be certain there are no air bubbles in the flow before closing drain valve.
 - b. Repeat this procedure for each circuit.
 - c. Open all gate valves only after all circuits have been purged as above.
4. Run system circulating pump for a minimum of 30 minutes with the boiler shut off.
5. Open all strainers in the circulating system and check for debris.
6. Recheck all air vents as described in (3) above.
7. If the system has a standard compression tank (without diaphragm), bleed the tank to provide a "cold" water level at about 1/3 to 1/2 of tank volume.
8. Start up boiler according to procedure

described in Section 3B and 3C. Operate the entire system, including pump, boiler and radiation units, for one hour.

9. Recheck the water level in the expansion tank. If the water level exceeds 1/2 of the volume of the expansion tank, open tank drainer and drain to that level.
10. Shut down entire system and vent all radiation units and high points in system piping.
11. Close make-up water valve and check strainer in pressure reducing valve for sediment or debris from the makeup water line. Reopen makeup water valve.
12. Within 3 days of start up, recheck all air vents and expansion tanks described in Steps 1 through 11.

3B. Oil Burner Start-Up and Adjustment

Consult the burner manufacturer's installation and operating instructions prior to start up of boiler. DO NOT FIRE BOILER WITHOUT WATER CIRCULATING THROUGH IT. The oil burner should be started by a qualified oil service person only.

1. Shut off electrical power.
2. Check for oil in tank and that oil line valves are open.
3. Check oil burner initial air adjustment.
4. Set thermostat well above room temperature.
5. Turn power on.
6. Be certain system pump will operate properly by calling for heat at the wall thermostat with manual oil valve **off**. The pump should run immediately on the call for heat.
7. Lower wall thermostat to eliminate call for heat, and turn manual oil valve to **on**. Raise wall thermostat to call for heat. Boiler oil burner will come on. If burner does not start immediately, push reset button. Check for oil accumulation in combustion chamber if reset button is pushed over three (3) times. Remove oil before proceeding.
8. Vent fuel unit per burner instructions. Ignition will be instantaneous with closing the vent plug.
9. Check combustion products. The boiler

should operate at about 12- % CO₂ and zero smoke. Refer to burner instructions.

3C. Final Check

1. System is filled with water and vented of all air.
2. Air is vented from oil unit and piping. No oil leaks.
3. Draft, CO₂ (or O₂) and smoke set to required specifications with suitable instruments.
4. Operating and limit controls function properly.
5. Thermostat anticipator properly set and thermostat cycles boiler.
6. Water is flowing evenly in all zones. Boiler has adequate flow-temperature differential between inlet and outlet of operating boiler is not more than 25 degrees F.
7. These instructions given to owner and displayed near boiler.

3D. To Shut Down System

To shut down boiler, lower wall thermostat to eliminate call for heat and turn "OFF" electrical disconnect switch. Always keep the manual fuel valve shut off if the boiler is shut down for an extended period of time.

NOTE: Complete drainage of boiler requires removal of pipe plugs on the sides of boiler.

3E. Maintenance

1. Cleaning the Heat Exchanger

CAUTION: Black carbon soot on a dirty heat exchanger can, under certain conditions, be ignited by a random spark or open flame. To prevent this unlikely occurrence, dampen the soot deposits with a wet brush before servicing or cleaning the heat exchanger.

Check for fouling on the external surfaces of the heat exchanger every six months. **Note:** After installation and first start-up, check the heat exchanger for fouling after the following periods of operation:

24 hours	30 days
7 days	90 days

Then once every six months thereafter. Fouling on the external surfaces of the heat exchanger is caused by incomplete combustion and is a sign of combustion air

and/or venting problems. As soon as any fouling is observed, the cause of the fouling should be corrected and the heat exchanger cleaned as follows:

- a. Disconnect the electrical power supply to the boiler.
- b. Remove the three nuts holding the oil burner assembly flange to the front panel.
- c. Remove burner assembly.
- d. Remove the left and right cover plates (Items #45 & #51).
- e. Remove the top cover (Item #52), the fiberglass insulation (Item #36), and flue collector (Item #54).
- f. Remove the five (5) flue baffles from the heat exchanger (Item #41).
- g. Vacuum and brush heat exchanger until clean.
- h. Reassemble all components in reverse order.

2. Periodic Maintenance

The oil burner should be maintained as specified in the manufacturer's literature which accompanies the burner.

The following items should be checked at least twice yearly:

- wiring
- oil piping
- heat exchanger for sooting. Desoot as required before operating boiler.
- safety controls
- combustion

3F. Electrical Trouble Shooting

If the boiler is inoperative the electrical system may be checked easily using the procedure outlined below (See **Figure 11, Wiring Diagram**). A volt ohmmeter is required.

1. Verify that the 115 VAC supply is reaching the boiler. Test across the black wire on the pump relay and the white wire on the transformer.
2. If OK, check for 24 VAC output from the transformer across the red & yellow wires. If no output, the transformer may be defective. If OK leave one test lead on the yellow wire terminal.

3. Check the 2 amp fuse. Replace if necessary.
4. Check from "W" on the terminal board to the yellow transformer wire. A 24 volt reading indicates that the wall thermostat is calling for heat. If there is no reading and thermostat is set high enough to call for heat, the thermostat or the connections may be defective.
5. Check for 24 volts from terminal "4" on the pump relay to the yellow transformer wire. If there is no reading, either the pump relay or the purple jumper wire and the connections are defective.

3G. High Voltage Tests

1. Check for 115 volts between the white power supply line and the black wire from the high

temperature limit control to Terminal 3 on the burner relay. If no voltage appears and the water outlet temperature is below 240° F, the high limit control should be replaced.

2. Leave the test lead on the white 115 volt supply lead and move the other test lead to the output terminal on the burner relay, Terminal #1. If there is no output the burner relay should be replaced.
3. If voltage appears at Terminal #1 as above but the burner does not function, refer to the oil burner instructions.
4. Check for 115 volts between the white lead as above, and Terminal #3 on the pump relay if voltage is present and the pump does not run, the pump or the pump wiring may be defective.

Table 4 - Parts List
Models JF-75, JF-90 and JF-125 Oil-Fired Hydronic Boilers

Key Description	Model	Laars#	Key Description	Model	Laars#
OIL BURNERS			WATER SYSTEM Cont.		
1. "Carlin" Burner	All	L2001300	21. Close Nipple--1/2 N.P.T. x 1-1/8 BL	All	P0013900
"Riello-M3" Burner	JF-75, JF 90	L2001400	22. Coupling 1/2-BL	All	P0005200
"Riello-M5" Burner	JF-125	L2001500	23. Nipple	All	P0014300
2. Nozzle	JF-75	L2004000	24. Nipple--3/4 x CL-BL	All	P0014100
0.60 x 60°R			25. Elbow, BL	All	P0072400
Nozzle	JF-90	L2003000	26. Carriage Bolts (16 Required)	All	F0039900
0.75 x 60°R			27. Hex Nuts (16 Required)- 1/2-13 Hex	All	F0004000
Nozzle	JF-125	L2005000	28. Washer (16 Required)- 1" O.D. x 9/16" I.D.	All	F0011400
1.00 x 60°R					
3. Nut, Hex-5/16-18	All	F0019400			
ELECTRICAL SYSTEM			FIREBOX COMPONENTS		
4. Relay DPST, 24V Coil	All	E0088400	36. Insulation, Fiberglass	All	T0002000
5. Relay SPST, 24V Coil	All	E0098300	37. Insulation	All	T0023400
6. Transformer	All	E0086100	38. Front Refractory	All	T0023101
7. Control Box Cover	All	10469400	39. Rear Refractory	All	T0023102
8. Temperature Controller	All	E0088100	40. Combustion Chamber Refractory	All	T0023200
9. Spacer	All	F0035500			
10. Hi-Limit Switch (230°F)	All	E0088500	JACKET COMPONENTS		
11. Hi-Limit Cover	All	10526500	41. Baffle (5 Required)	All	10516900
12. Well	All	E2058300	42. Tile Cover (2 Required)	All	10517100
WATER SYSTEM			43. Heat Shield	All	10517000
14. Pressure Relief Valve-- 30 PSIG	All	A0069000	44. Back Panel	All	10516202
15. Pressure & Temperature Gauge	All	A0000100	45. Cover Plate (left)	All	10516303
16. Tube & Bar Assembly (Heat Exchanger)	All	10519100	46. Left Side Panel	All	10516900
17. "O" Rings (12 required)	All	S0063400	47. Base Weldment	All	10517200
18. Inlet Header	All	105182-0219	48. Front panel Weldment	All	10517400
19. Outlet Header	All	10518201	49. Flame Port Cover	All	10522600
20. Drain Valve 1/2 MIP x 3/4 Male Hose	All	P0066600	50. Right Side Panel	All	10517000
			51. Cover Plate (right)	All	10516304
			52. Top Cover Frame	All	10516401
			53. Top Cover	All	10516402
			54. Flue Collector	All	10516700
			55. Threaded Screws	All	F0020700

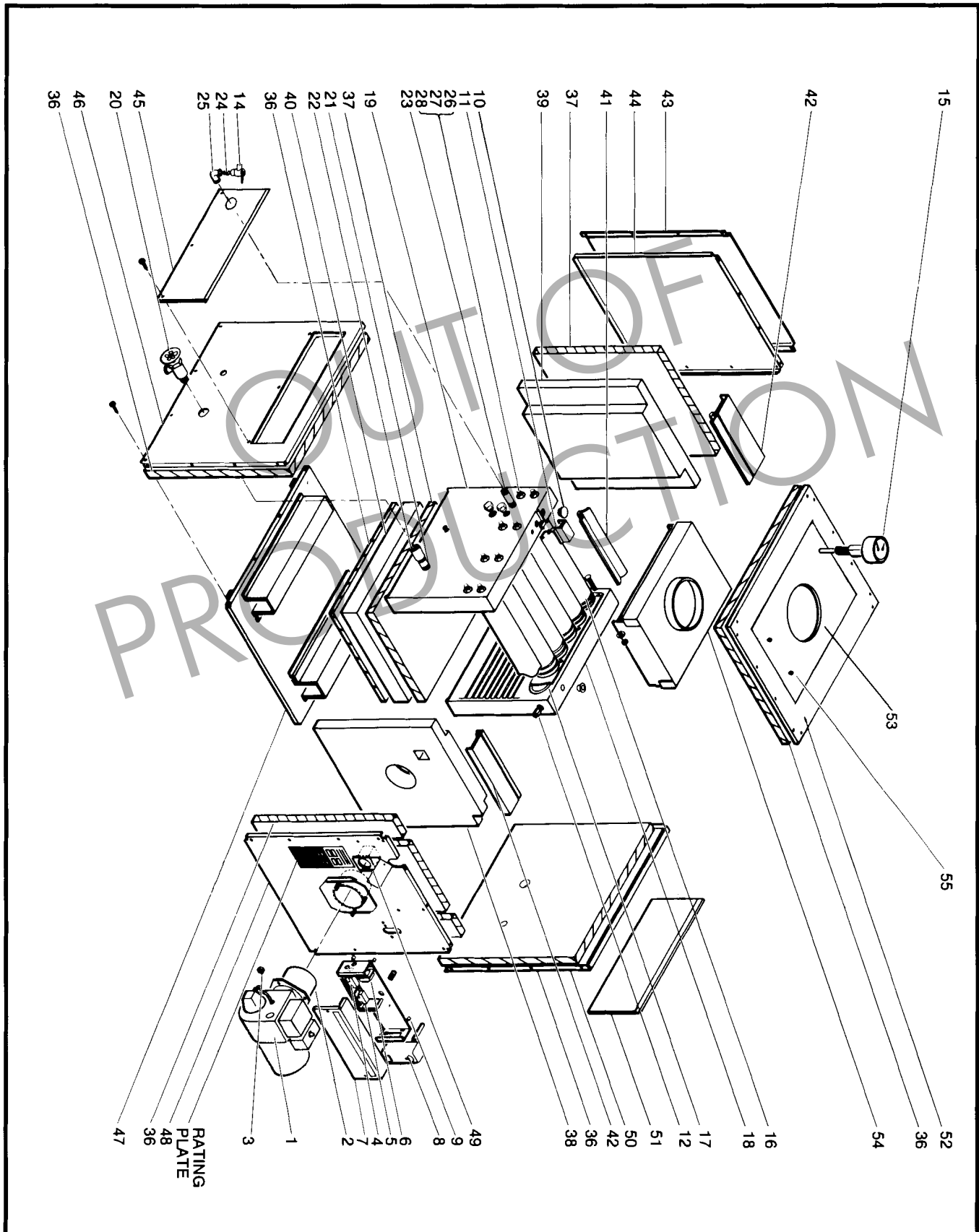


Figure 12 - Oil-Fired Hydronic Boiler
Exploded View

OUT OF
PRODUCTION

Teledyne Laars Warranty

Residential Oil-Fired Hydronic Boilers, Model JF

This Teledyne Laars product is
backed by this warranty
to assure your complete satisfaction.

FIRST YEAR-LIMITED WARRANTY FOR JF HYDRONIC BOILERS: Teledyne Laars warrants that its JF Boiler (including the circulating pump and compression tank only if furnished by Teledyne Laars) is free from defects in material and workmanship for one year from date of purchase.

SECOND THROUGH TENTH YEARS-LIMITED WARRANTY FOR JF HYDRONIC BOILERS: Teledyne Laars warrants that the complete heat exchanger of its JF Boiler is free from defects in material and workmanship for the second through the fifth year following date of purchase.

ELEVENTH THROUGH TWENTIETH YEARS-LIMITED WARRANTY FOR JF HYDRONIC BOILERS: The complete heat exchanger of the JF Boiler is covered by Teledyne Laars Pro-Rated Limited Warranty for defects in materials and workmanship from the Eleventh through the Twentieth year. Commencing with the eleventh year you will be charged 1/20th of Teledyne Laars' suggested parts list price, **at the time the warranty claim is made**, for each month or portion thereof, for replacement heat exchanger parts.

This warranty applies only to the boiler and does not include connections, attachments and other products or materials furnished by the installer. This warranty applies only to the first purchaser at retail and excludes any damage caused by relocation to or installation in a new installation site. This warranty does not cover any defects caused by failure to follow the Installation and Operating Instructions or Operating and Maintenance Instructions furnished with the boiler. These instructions are also available by writing the Teledyne Laars factory. The liability of Teledyne Laars shall not exceed the

repair or replacement of defective parts and shall not include transportation to or from the factory, field labor, and consequential or incidental damages. Ship inoperative parts, with serial number and purchase date, transportation prepaid, directly to one of the addresses below, Attention Customer Service Manager. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow the exclusion or limitation of incidental damages, so the above limitation or exclusion may not apply to you.



20 Industrial Way, Rochester, NH 03867 • (603) 335-6300
480 S. Service Road West, Oakville, Ontario, Canada L6K 2H4 • (416) 844-8233
6000 Condor Drive, Moorpark, CA 93021 • (805) 529-2000



20 Industrial Way, Rochester, NH 03867 • (603) 335-6300 FAX (603) 335-3355
 480 S. Service Road West, Oakville, Ontario, Canada L6K 2H4 • (416) 844-8233 FAX (416) 844-2635
 6000 Condor Drive, Moorpark, CA 93021 • (805) 529-2000 FAX (805) 529-5934

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