



WGO GOLD OIL WATER BOILER RATINGS (1)

BOILER MODEL NUMBER	I=B=R BURNER CAPACITY GPH (3)	DOE HEATING CAPACITY (4) MBH (2)	NET I=B=R RATINGS (5)	DOE SEASONAL EFFICIENCY % AFUE	MINIMUM I=B=R CHIMNEY		ROUND FLUE OUTLET SIZE IN (7)	BOILER WATER CONTENT GAL	DRAFT LOSS THRU BOILER IN W.C. (8)
					RECT IN	ROUND IN			
*-WGO-2	0.70	86	75	86.4	8 x 8	6	15	11.0	.010
*-WGO-3	0.95	115	100	85.3	8 x 8	6	15	14.9	.020
*-WGO-4	1.20	145	126	85.0	8 x 8	6	15	13.4	.010
*-WGO-5	1.45	175	152	85.0	8 x 8	7	15	15.9	.015
*-WGO-6	1.75	212	184	85.0	8 x 8	7	15	18.4	.015
**-WGO-7	2.00	242	210	85.0	8 x 8	7	15	20.8	.015
***-WGO-8	2.30	266 (6)	231	—	8 x 12	7	20	23.3	.025
***-WGO-9	2.55	295 (6)	257	—	8 x 12	7	20	25.8	.030

* Substitute "P" for completely assembled packaged boiler (WGO-2 through WGO-6 only).
Substitute "B" for boiler-burner unit.

Substitute "A" for boiler only for use with approved burners as listed with I=B=R.

** Available only as an A/B unit.

(1) WGO boiler designed with convertible vertical and horizontal flue outlet.

(2) MBH refers to thousands of Btu per hour.

(3) Based on 140,000 Btu/gal.

(4) Based on standard test procedures prescribed by the United States Department of Energy at combustion condition of 13.5% CO₂ and -0.02" W.C. draft. Net I=B=R ratings are based on net installed radiation of sufficient quantity for the requirements of the building and nothing need be added for normal piping and pick-up. Water ratings are based on a piping and pick-up allowance of 1.15. An additional allowance should be made for unusual piping and pick-up loads. Consult local Weil-McLain Sales Office.

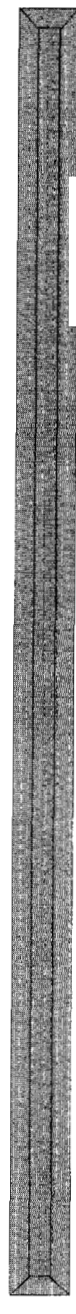
(5) Net I=B=R ratings are based on net installed radiation of sufficient quantity for the requirements of the building and nothing need be added for normal piping and pick-up. Water ratings are based on a piping and pick-up allowance of 1.15. An additional allowance should be made for unusual piping and pick-up loads. Consult local Weil-McLain Sales Office.

(6) I=B=R gross output

(7) See page 12 for minimum breeching diameter.

(8) Listed draft losses are for factory-shipped settings.

WEIL-McLAIN



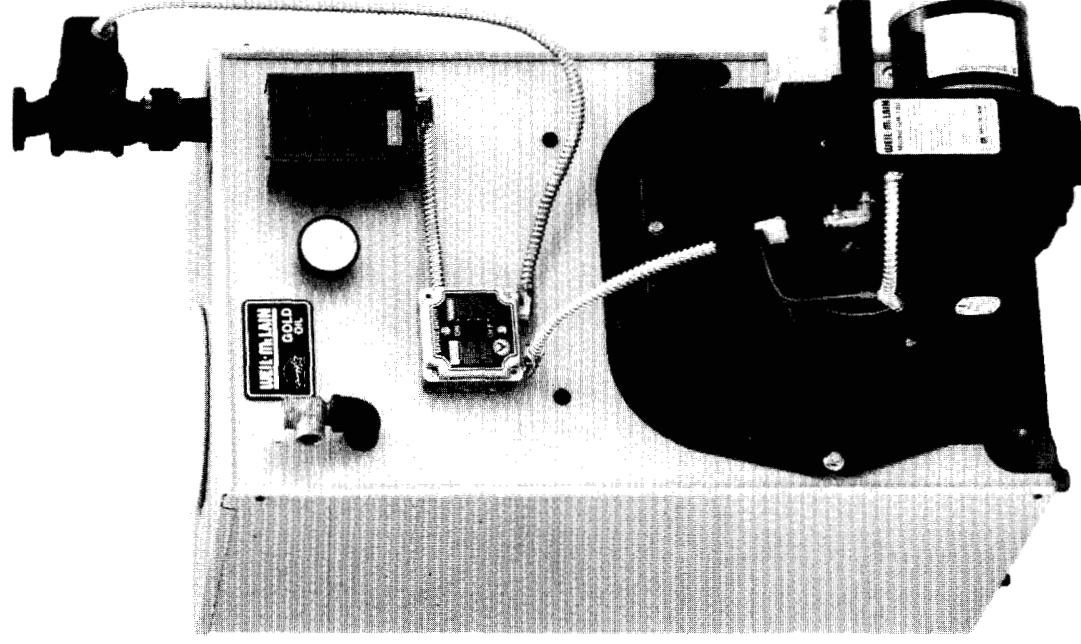
WGO SERIES 3 OIL-FIRED NATURAL DRAFT WATER BOILER

This Manual
Includes:

Installation

Start-Up

Boiler Parts



Note

Installer: • Make sure this is the correct manual for the boiler. Verify boiler model on rating label.
• Leave all documentation received with boiler and burner with unit for future reference.

User: Boiler and burner must be installed and serviced by qualified service technician.



As an ENERGY STAR Partner, Weil-McLain has determined that this product meets the ENERGY STAR guidelines for energy efficiency.



WEIL-McLAIN
A United Dominion Company

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WARNING Read all instructions before installing. Failure to follow all instructions in proper order can cause severe personal injury, death or substantial property damage.

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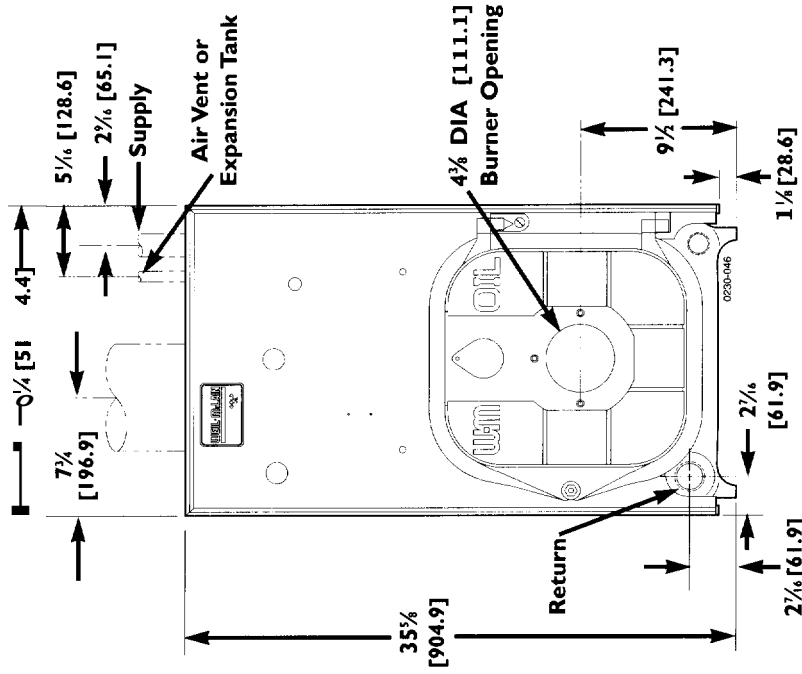
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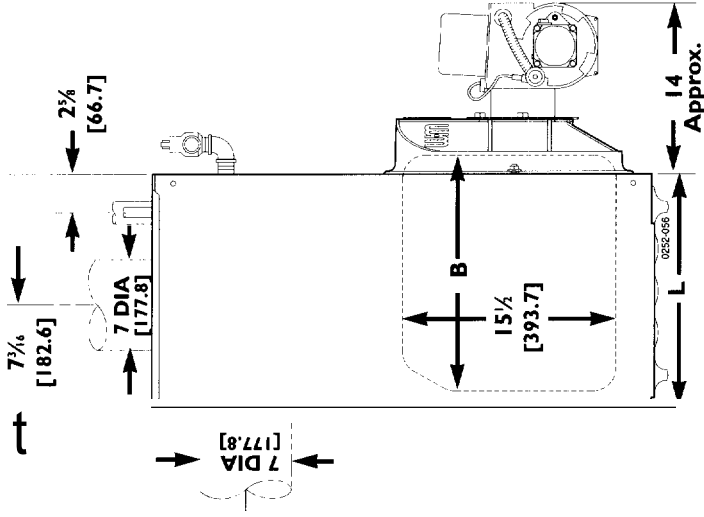
RatingsBack Cover

DIMENSIONS - in.		
BOILER MODEL NUMBER	B	L
WGO-2	10½	13¾
WGO-3	13½	16¾
WGO-4	13½	16¾
WGO-5	16¾	20
WGO-6	20	23¾
WGO-7	23¾	26¾
WGO-8	26¾	29¾
WGO-9	29¾	32½



WGO Front

DIMENSIONS - mm.		
BOILER MODEL NUMBER	B	L
WGO-2	266.7	349.2
WGO-3	342.9	428.7
WGO-4	345.9	428.7
WGO-5	428.7	508.0
WGO-6	508	587.2
WGO-7	587.2	666.7
WGO-8	666.7	746.2
WGO-9	746.2	825.5



WGO Side with Burner

NOTICE Repair parts must be purchased through Weil-McLain for the specific boiler as indicated in the list below. Results from using modified or other manufactured parts will not be covered by warranty and may damage boiler or impair operation.

Fig. No.	Description	Weil-McLain Part Number
A	Regular Front Section	316-700-250
B	Wide Intermediate Section (WGO-3) 7010	316-700-075
B	Regular Intermediate Section 7015	316-700-065
C	Intermediate Section w/Draw Rod Lugs 7016	316-700-070
D	Back Section w/7" Flue, Supply & 2" Return 7017	316-700-265
E	Section Replacement Kit (For 1 Joint, includes Seals, Rope, Adhesive and Collector Hood Hardware) Front or Back Section	386-700-852
	Section Repl. Kit (For 2 Joints, includes Seals, Rope and Adhesive) Intermediate Section	386-700-851
	Section Assembly Complete, For WGO-2	386-700-650
	Section Assembly Complete, For WGO-3	386-700-651
	Section Assembly Complete, For WGO-4	386-700-652
	Section Assembly Complete, For WGO-5	386-700-653
	Section Assembly Complete, For WGO-6	386-700-654
	Section Assembly Complete, For WGO-7	386-700-655
	Section Assembly Complete, For WGO-8	386-700-656
	Section Assembly Complete, For WGO-9	386-700-657
F	Collector Hood Kit For WGO-2*	386-700-336
F	Collector Hood Kit For WGO-3*	386-700-337
F	Collector Hood Kit For WGO-4*	386-700-337
F	Collector Hood Kit For WGO-5*	386-700-338
F	Collector Hood Kit For WGO-6*	386-700-339
F	Collector Hood Kit For WGO-7*	450-020-170
F	Collector Hood Kit For WGO-8*	450-020-172
F	Collector Hood Kit For WGO-9*	450-020-160
G	Tie Rod 1/2 x 5/2 (V/GC-7, 8, 9)	560-234-464
G	Tie Rod 1/2 x 10 3/4 (WGO-2 & 7)	560-234-491
G	Tie Rod 1/2 x 12 (V/GC-7)	560-234-492
G	Tie Rod 1/2 x 4 (V/GC-3, 4, 8, 9)	560-234-470
G	Tie Rod 1/2 x 15 (V/GC-9)	560-234-495
G	Tie Rod 1/2 x 17 (V/GC-5)	560-234-472
G	Tie Rod 1/2 x 20 (V/GC-6)	560-234-534
G	Tie Rod 1/2 x 23 1/4 (WGO-7)	560-234-538
G	Tie Rod 1/2 x 26 3/8 (WGO-8)	560-234-542
G	Tie Rod 1/2 x 29 1/2 (WGO-9)	560-234-497
H	Combustion Chamber Kit (Rear & Frt. Ref., Door Ref. Blanket, Rope, Blanket & Water Glass)	386-700-355
J	Burner Mounting Floor Assembly (Door, Obs. Port, Rope, Ins. & Pins)	386-700-358
J	Burner Mounting Floor 7070	330-054-302
K	Door Hinge 7054	330-054-300
L	Door Refractory	386-700-359
M	Door Refractory Blanket	591-222-115
N	Observation Port Shutters	460-039-867
P	Door Seal Rope 5'	590-735-105
Q	3/8" Glass Rope For Collector Hood (7' For Largest Size Hood)	590-735-109
R	Flue Cap Assembly (Cap, Strap, Rope & Screws)	386-700-344
	Flue Brush 23D	591-706-214

* Includes flue cap assembly, caps and hardware for installation.

Provide air for combustion and ventilation:

WARNING

- Adequate combustion and ventilation air:
- Assures proper combustion.
- Reduces risk of severe personal injury or death from possible flue gas leakage and carbon monoxide emissions.

Do not install exhaust fan in boiler room.

Older buildings with single-pane windows, minimal weather-stripping and no vapor barrier often provide enough natural infiltration and ventilation without dedicated openings.

New construction or remodeled buildings are most often built tighter. Windows and doors are weather-stripped, vapor barriers are used and openings in walls are caulked. As a result, such tight construction is unlikely to allow proper natural air infiltration and ventilation.

Follow state, provincial or local codes when sizing adequate combustion and ventilation air openings. In absence of codes, use the following guidelines when boiler is in a confined room (defined by NFPA 31 as less than 7200 cubic feet per 1 GPH input of all appliances in area. A room 8 ft. high x 33.5 ft. x 33.5 ft. is 7200 cu. ft.):

Provide two permanent openings — one within 12 inches of ceiling, one within 12 inches of floor. Minimum height or length dimension of each rectangular opening should be at least 3 inches.

When inside air is used — each opening must freely connect with areas having adequate infiltration from outside. Each opening should be at least 140 sq. in. per 1 GPH input (1 sq. in. per 1000 Btu input) of all fuel-burning appliances plus requirements for any equipment that can pull air from room (including clothes dryer and fireplace).

When outside air is used — connect each opening directly or by ducts to the outdoors or to crawl or attic space that freely connects with outdoors. Size per below:

- Through outside wall or vertical ducts — at least 15 sq. in. per 1 GPH input (1 sq. in. per 4000 Btu input) of all fuel-burning appliances plus requirements for equipment that can pull air from room (including clothes dryer and fireplace).

- Through horizontal ducts — at least 70 sq. in. per 1 GPH boiler input (1 sq. in. per 2000 Btu input) of all fuel-burning appliances plus requirements for any equipment that can pull air from room (including clothes dryer and fireplace).
- Where ducts are used, they should have same cross-sectional area as free area of openings to which they connect. Compensate for louver, grille or screen blockage when calculating free air openings. Refer to their manufacturer's instructions for details. If unknown, use:
 - Wood louvers, which provide 20-25% free air.
 - Metal louvers or grilles, which provide 60-75% free air.

Lock louvers in open position or interlock with equipment to prove open before boiler operation.

Lay a foundation, if needed:

Boiler may be installed on non-carpeted combustible flooring.

For residential garage installation, install boiler so burner is at least 18 inches above floor to avoid contact with gasoline fumes.

A level concrete or masonry foundation is required when:

- Floor could possibly become flooded.
- Non-level conditions exist.

Solid concrete blocks can be used to create a pad.

BOILER FOUNDATION SIZE TABLE

BOILER MODEL	LENGTH INCHES	WIDTH INCHES	MIN. HEIGHT INCHES
WGO-2	14	22	2
WGO-3	17	22	2
WGO-4	17	22	2
WGO-5	20	22	2
WGO-6	23	22	2
WGO-7	26	22	2
WGO-8	29	22	2
WGO-9	32	22	2

P Go to page 6 to install boiler

B **A** Go to page 8 to install boiler

WARNING To provide close clearances as described in pages 26 and 27, Close Clearance Kit, W-M Part No. 386-500-050, must be obtained and installed as described below. Failure to use kit or install as described can result in a fire hazard, causing severe personal injury, death or substantial property damage.

Close clearance installation:

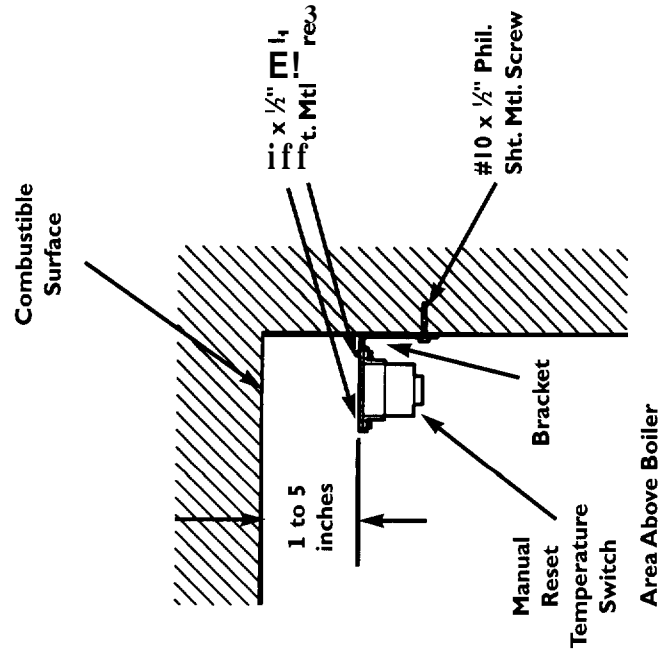
Substitute these instructions for corresponding material in manual. All other procedures and practices must remain the same.

Recommended service and minimum clearances shown on page 4 should be used where possible. Where closer clearances are required:

- Top of boiler – If less than 24" available, provide removable surface to allow for cleaning boiler flueways.
- Right or left side – Minimum 2 inches.
- Front – Minimum 2 inches from burner.
- Doublewall flue pipe to combustible surface – as listed in Table on page 27 and FIGURES 19 through 21.

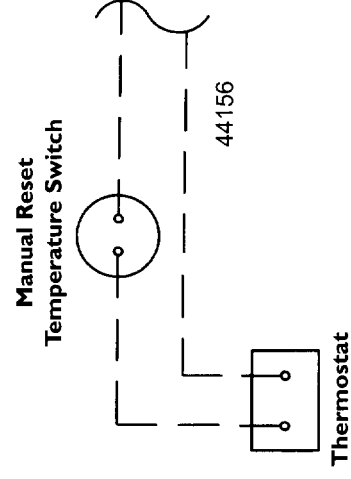
NOTICE

Jacket cap must be in place on boiler to avoid requiring an 18" minimum clearance from back or top of boiler to combustible material. Flue pipe clearances must take precedence over jacket clearances.

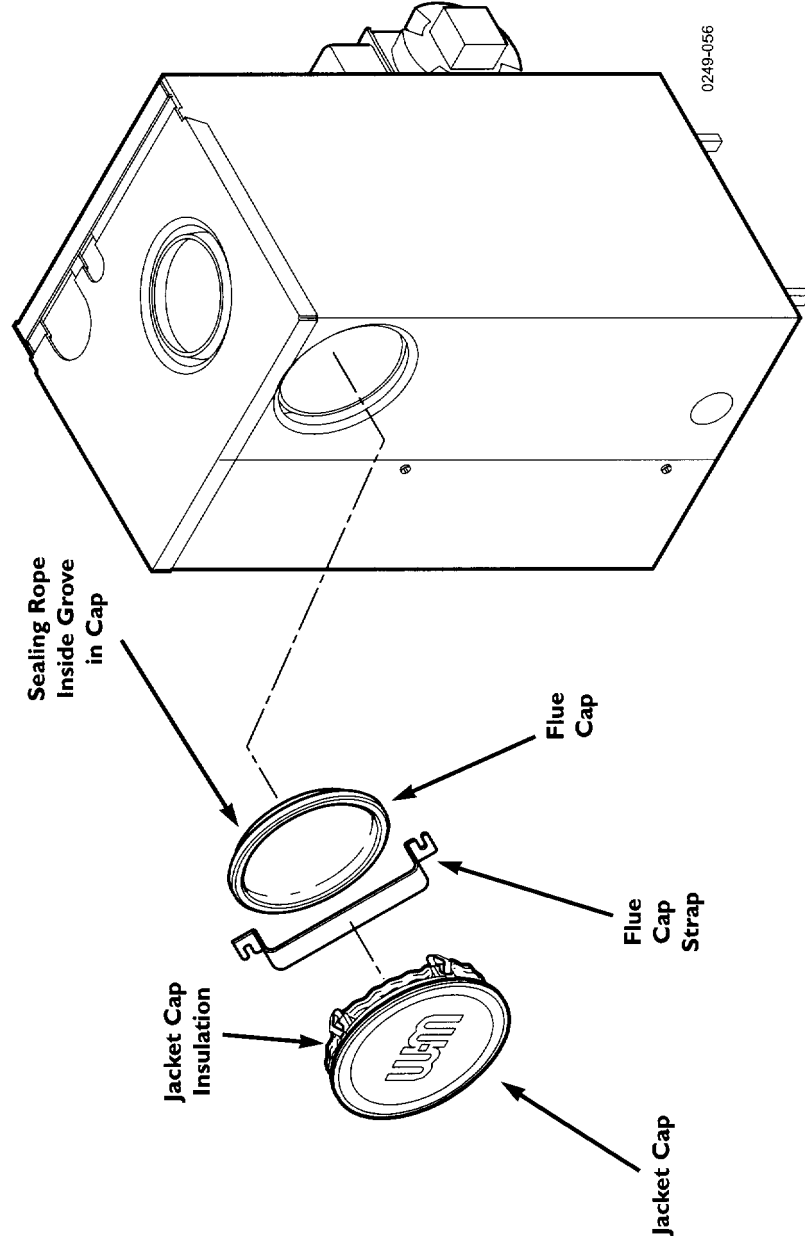


Manual Reset Temperature Switch Location
FIGURE 17

1. Install boiler using clearances described at left.
2. Install barometric control 18-20 inches from boiler in breeching.
3. Attach manual reset temperature switch near upper surface of enclosed area. See FIGURE 17.
4. Wire switch in series with thermostat. See FIGURE 18.
5. Provide two combustion/ventilation openings when installing in confined space. Size opening 140 sq. in. (1000 Btu) per 1 GPH input. Locate openings near top and bottom of enclosed space.



Manual Reset Temperature Switch Wiring
FIGURE 18



Change From Back Flue Outlet to Top Flue Outlet (Optional)
FIGURE 2

Check off steps as completed:

- 1. Boiler and heat distribution units filled with water?
- 2. Automatic air vent, if used, opened one full turn?
- 3. Air purged from system? Piping checked for leaks?
- 4. Air purged from oil piping? Piping checked for leaks?
- 5. Flue cap in place and tightened? Burner door closed, sealed and nut tight? Burner plugged in and service switch on?

WARNING

Obtain gas-tight seal to prevent possible flue gas leakage and carbon monoxide emissions, leading to severe personal injury or death.

- 6. Proper draft and burner flame? Final adjustment made with combustion test equipment?
- 7. Test limit control: While burner is operating, move indicator on limit control below actual boiler water temperature. Burner should go off while circulator continues to operate. Raise setting on limit control above water temperature and burner should re-ignite.

- 8. Test additional field-installed controls: If boiler has a low water cutoff, additional high limit or other controls, test for operation as outlined by manufacturer. Burner should be operating and should go off when controls are tested. When controls are restored, burner should re-ignite.
- 9. Limit control set to system temperature requirements (max. 220°F)?
- 10. For multiple zones, flow adjusted to distribute heat in all zones?
- 11. Thermostat heat anticipator setting (if available) set properly? Refer to "Connect wiring," page 19.
- 12. Boiler cycled with thermostat? Raise to highest setting and verify boiler goes through normal start-up cycle. Lower to lowest setting and verify boiler goes off.
- 13. Observed several operating cycles for proper operation?
- 14. Set room thermostat(s) to desired room temperature?
- 15. Completed Installation and Service Certificate below?
- 16. Reviewed Maintenance and Service Manual with owner or maintenance person and instructed person to keep for future reference?
- 17. Returned all instructions provided with boiler to its envelope and placed with boiler for future reference?

Installation and Service Certificate

Date Installed: _____ Installation instructions have been followed.

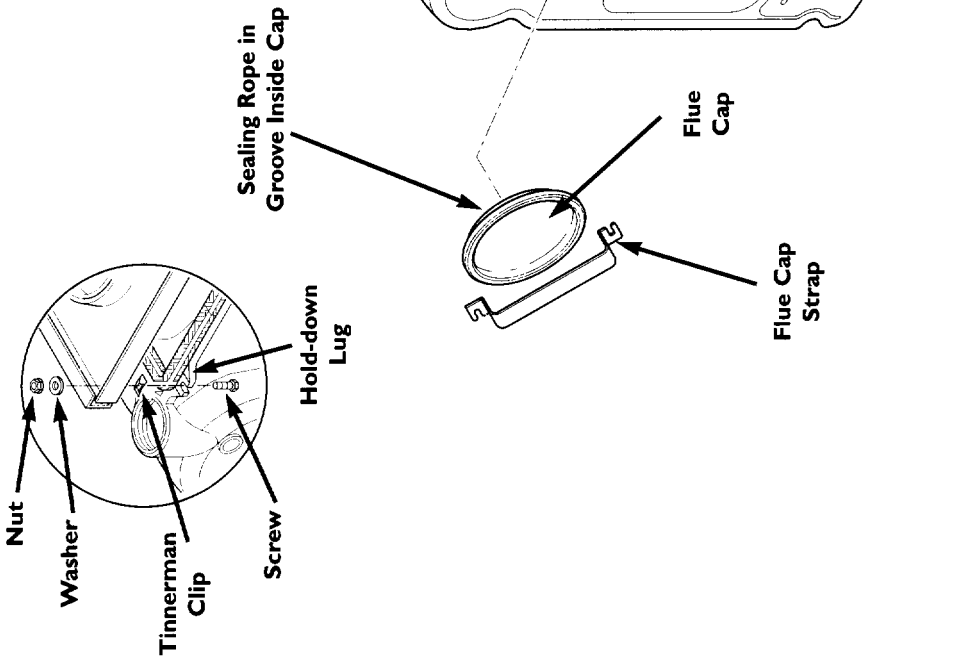
Boiler Model Number: _____ Series: _____ Check-out procedure has been performed.

C Num _____ A form ifi

Measured Btu or GPH Input: _____ Information received and left with owner/maintenance person.

Installer: _____ (Company) _____ (Address) _____ (Home)

- 3. **B&A-WGO-7, 8 & 9** — install flue collector hood (see FIGURE 3):
 - WARNING** Obtain gas-tight seal to prevent possible flue gas leakage and carbon monoxide emissions, leading to severe personal injury or death.
 - a. Thread tinnerman clip on screw so that clip fits snugly in notch of hold-down lug. Screw must not turn.
 - b. Remove paper on sealing rope. Starting at back section near flue collar, position sealing rope around top of block with adhesive side to sections. Do not stretch rope. Make sure rope ends meet. Trim excess rope.
 - c. Position flue collector hood on top of boiler sections and over screws and clips as shown in FIGURE 3.



- d. Install washers and nuts. Tighten nuts until collector hood makes contact with tinnerman clip.
- e. **Back flue outlet boiler** — Position flue cap and strap over opening in flue collector hood. Make sure rope in cap is in place and in good condition. Tighten strap to hood with screws provided.
- Top flue outlet boiler** — Position flue cap and strap over opening in back section. Make sure rope in cap is in place and in good condition. Tighten strap to boiler with screws provided in section. Install remaining screws in holes in flue collector hood.

- 4 Check level. Shim legs, if needed.

Change From Back Flue Outlet to Top Flue Outlet (Optional)
FIGURE 3

General oil piping requirements:

- Location and installation of oil tanks, oil piping and burners must follow:
 - NFPA 31, Standard for the Installation of Oil-Burning Equipment.
 - In Canada, CSA B139, Installation of Oil-Burning Equipment.
 - Local codes and regulations.
 - Information provided with burner and fuel pump.
- If any part of fuel oil tank is above level of burner, an anti-siphon device must be used to prevent flow of oil in case of oil line break.
- Support oil lines as required by codes.
- Make tank connections with swing joints or copper tubing to prevent breaking in case the tank settles. Make swing joints so they will tighten as tank settles. Non-hardening pipe joint compounds should be used on all threads.

WARNING Do not use Teflon tape as an oil pipe sealant. It can cause valves to fail, creating hazards. Do not use compression fittings.

- Underground pipe must be run in a casing to prevent oil leaking into ground or under floor. Check local codes for information.

Oil piping connection at burner:

See FIGURE 16 for recommended connection at burner, allowing burner mounting door to swing open completely for servicing.

Install burner (also refer to instructions packed with burner):

NOTICE

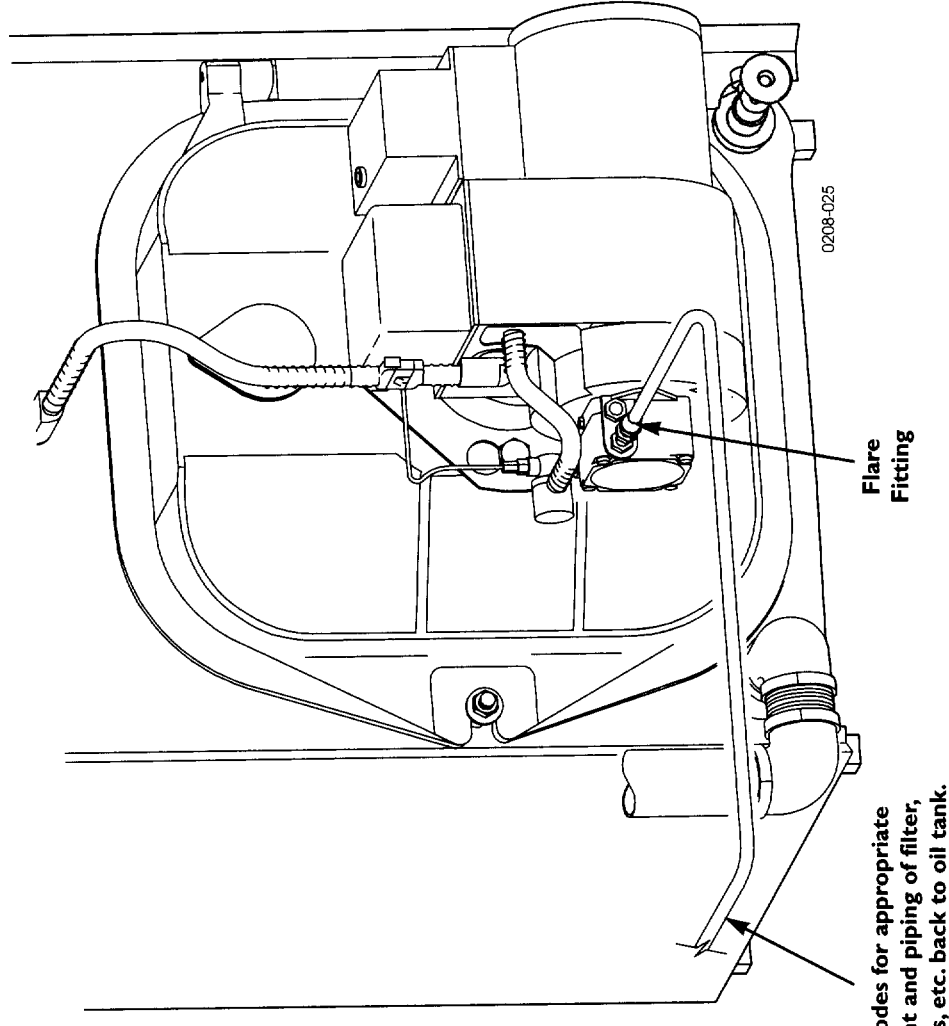
Burners designed for use with Weil-McLain 68 boilers **must not** be used on GOLD Oil boilers. Contact individual burner manufacturers for GOLD Oil applications.

For **B-WGO** boiler:

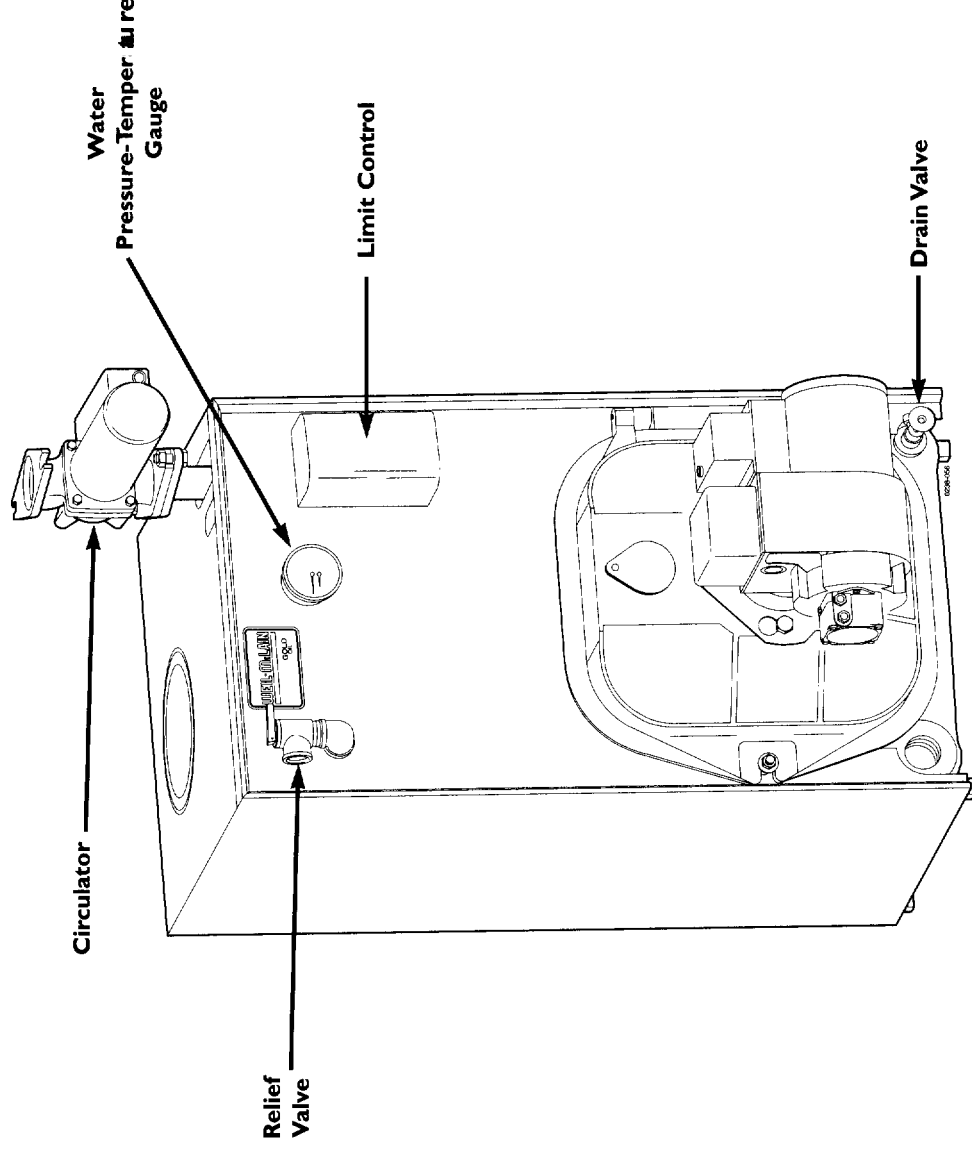
1. Place gasket over end of burner air tube.
2. Secure burner on burner door with three mounting bolts. Tighten mounting bolts.
3. Open door to verify burner position. End of air tube should be flush to 1/8" recessed from inside wall of burner door refractory. Check for secure placement of insulation on target wall, chamber floor and burner mounting door. Securely close door with nut.
4. Affix CP number label on burner.

For **A-WGO** boiler:

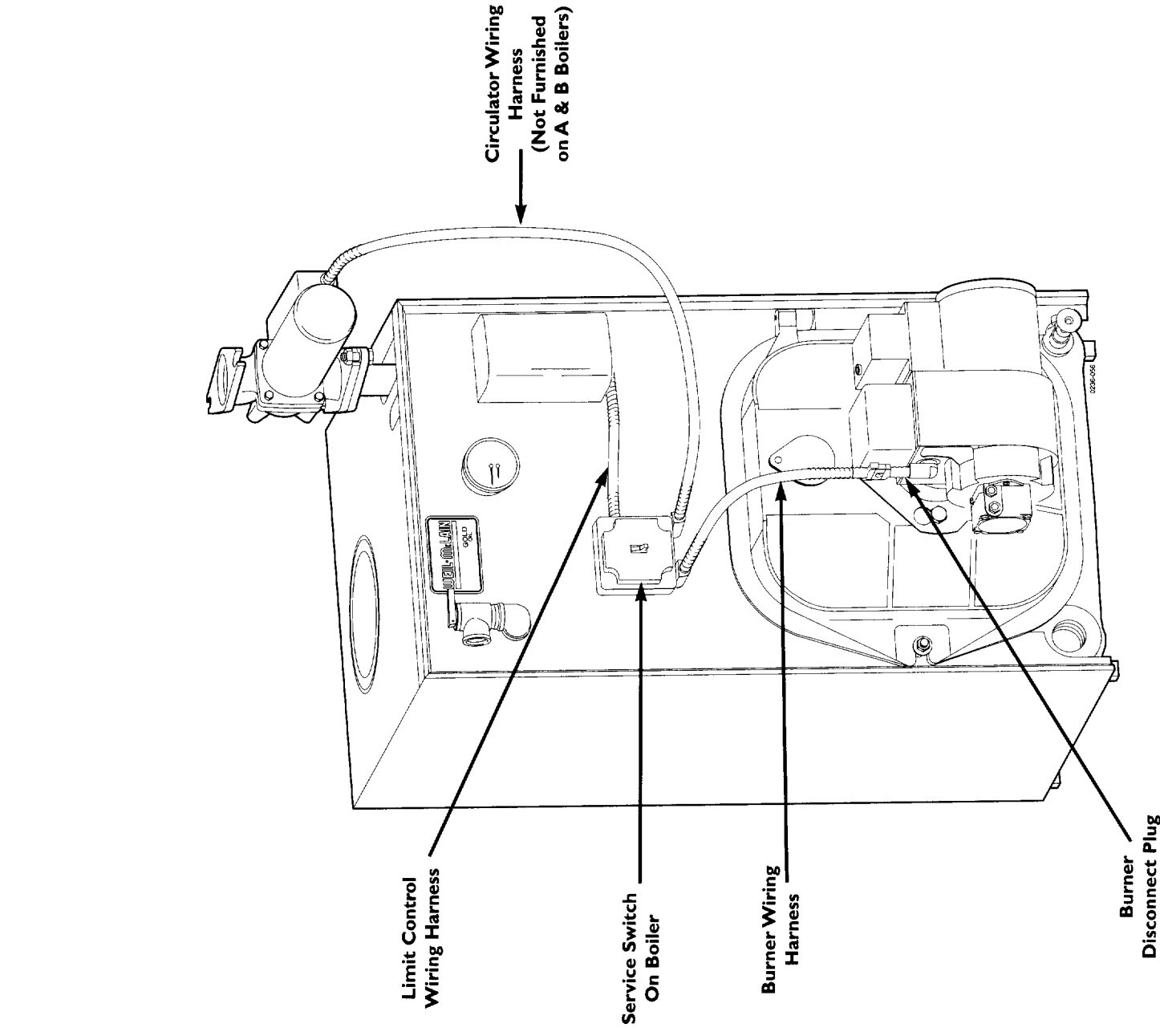
1. Secure universal mounting flange and gasket to burner mounting door. Use three bolts provided.
2. Secure burner on flange with three bolts.
3. Position burner so end of air tube is level to 1/8" tilt downward. Open door to verify burner position. End of air tube should be flush to 1/8" recessed from inside wall of burner door refractory. Check for secure placement of insulation on target wall, chamber floor and burner mounting door. Securely close door with nut.



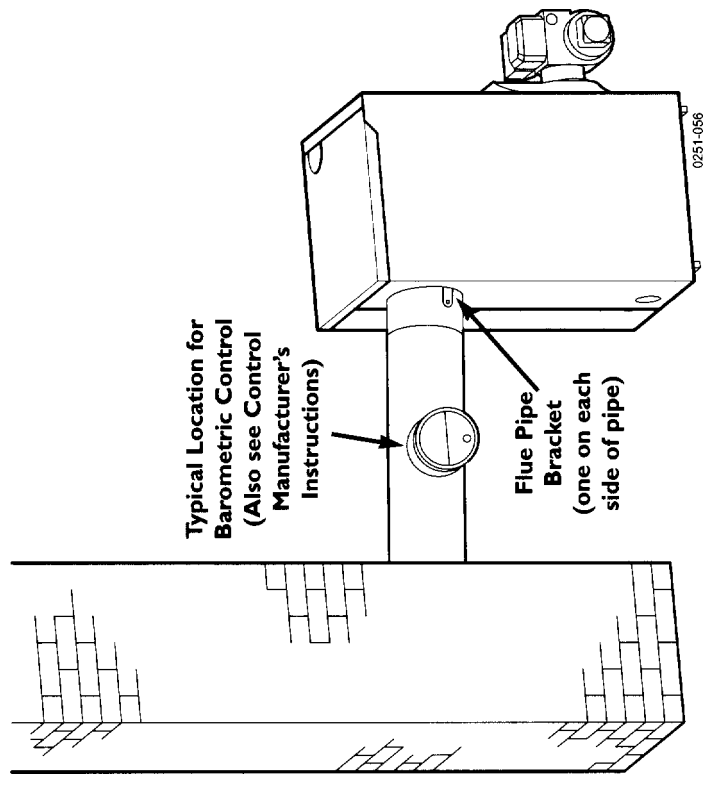
Recommended Oil Piping Connection to Burner
FIGURE 16



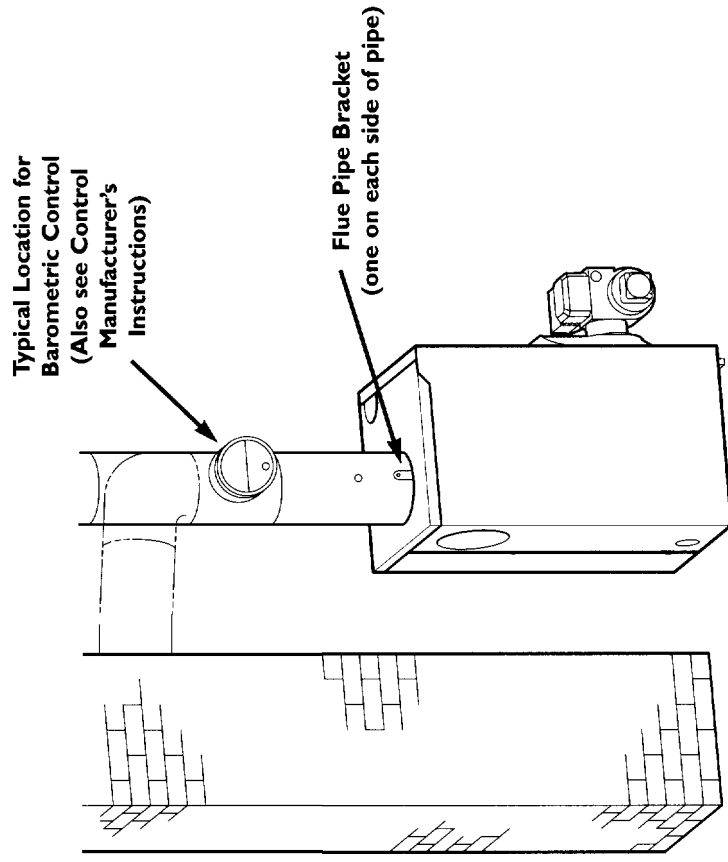
Water Boiler Controls
FIGURE 5



Boiler Wiring for Forced Hot Water
FIGURE 15



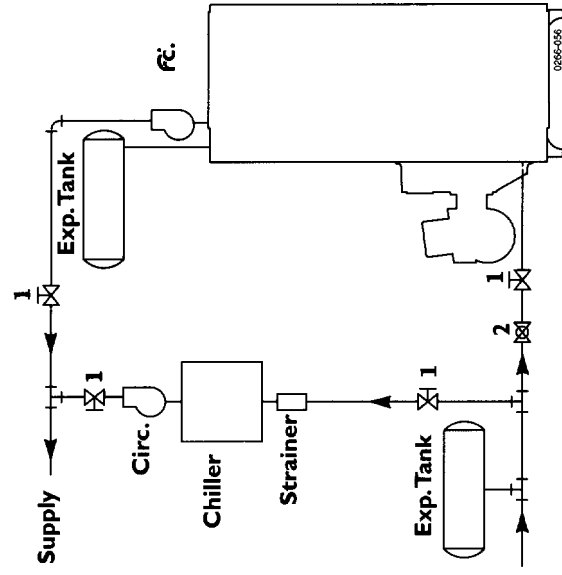
Back Outlet Breeching Connection
FIGURE 6



Top Outlet Breeching Connection
FIGURE 7

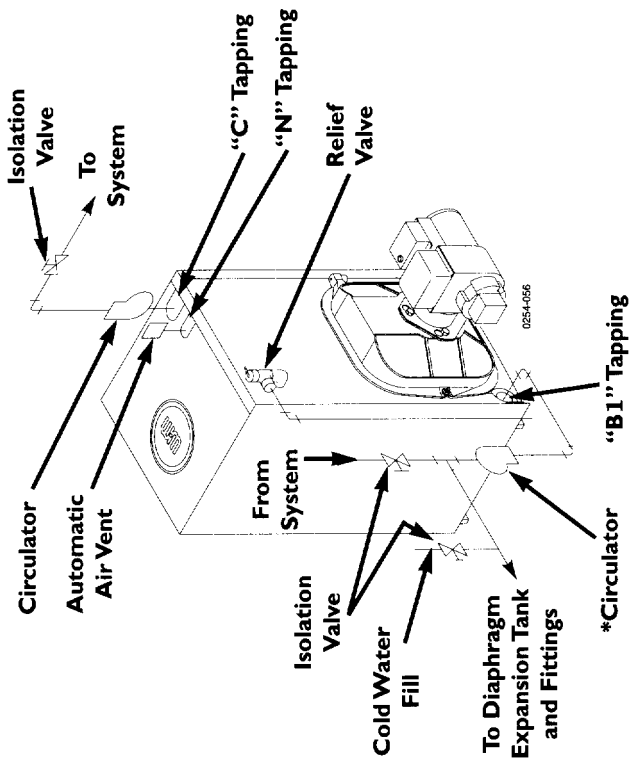
Use with refrigeration systems:

- Install boiler so that chilled medium is piped in parallel with heating boiler. Use appropriate valves to prevent chilled medium from entering boiler. Consult I=B=R Installation and Piping Guides.
- If boiler is connected to heating coils located in air handling units where they can be exposed to refrigerated air, use flow control valves or other automatic means to prevent gravity circulation during cooling cycle.



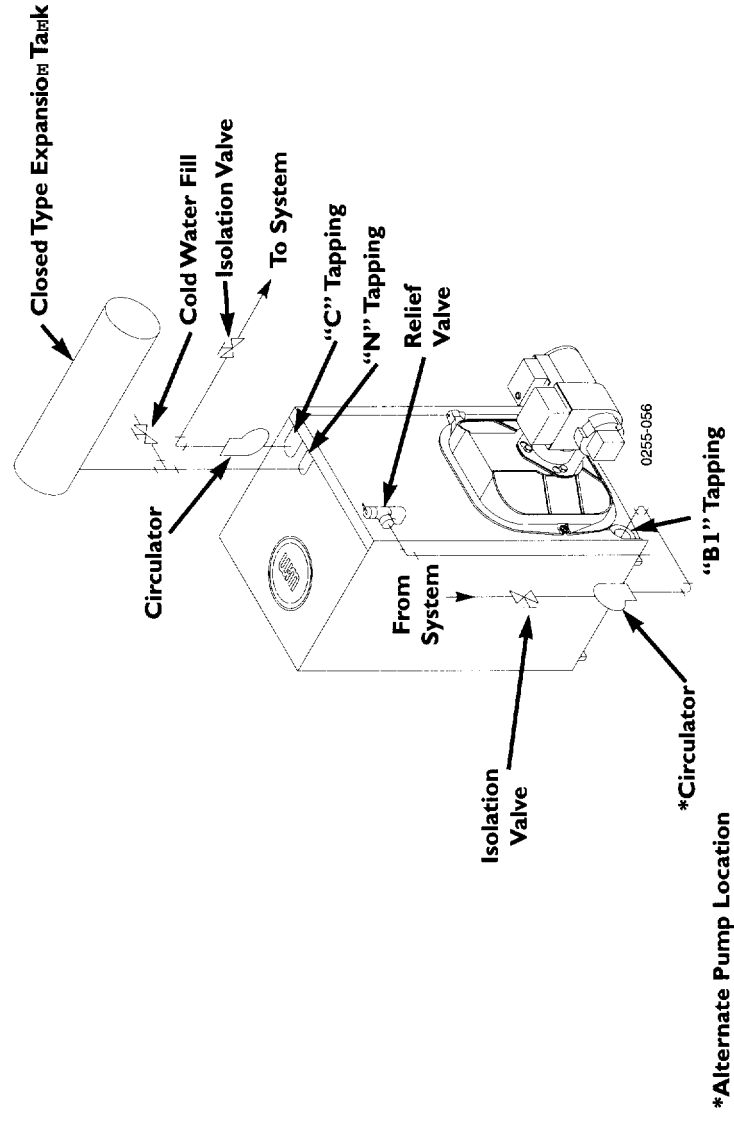
- 1 Isolation valve
- 2 Balancing valve

Use with Refrigeration System
FIGURE 14



*Alternate Pump Location

Piping with DIAPHRAGM Expansion Tank
FIGURE 8



Piping with CLOSED Expansion Tank
FIGURE 9