

# Buderus

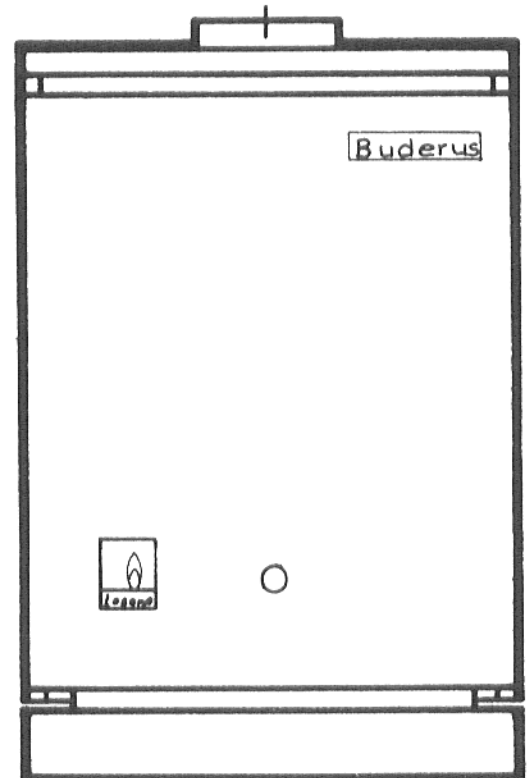
## Cast Iron Gas Fired Boiler "Loganagas" 04.(32,35)

---

### INSTALLATION AND SERVICE INSTRUCTIONS

#### IMPORTANT

Read this manual carefully  
before lighting burners!



#### CAUTION

The Owner's Manual is included in this booklet which must be left with the owner. Review this information with the owner and be sure he receives all instructions.

**CONTENTS****PAGE**

|   |                  |
|---|------------------|
| Introduction-----                                   | 2                |
| General Instructions-----                           | 3 u. 4           |
| Technical Data-----                                 | 5                |
| Variable Dimensions-----                            | 6                |
| Gas Settings and Burner Details-----                | 7                |
| Boiler Location-----                                | 8 u. 9           |
| Assembly Draft Hood-----                            | 10               |
| Water Connections-----                              | 11, 12 u. 13     |
| Gas Supply Piping-----                              | 13 u. 14         |
| Vent Connection-----                                | 15 u. 16         |
| Jacket Assembly-----                                | 17               |
| Startup-----  | 19, 19, 20 u. 21 |
| Check and Adjust Burner Input-----                  | 22 u. 23         |
| Electrical Supply-----                              | 24               |
| Instructions for Servicing and Cleaning Boiler----- | 25               |
| Wiring Diagramms-----                               | 26, 27, 28 u. 29 |
| Replacement of Honeywell Pilot Assembly-----        | 30               |
| Troubleshooting and Service Guide-----              | 31               |
| Parts List-----                                     | 32, 33, 34 u. 35 |

**INTRODUCTION**

This manual is prepared to assist the contractor in installing and servicing of BUDERUS Cast iron 04.(32,35) boilers.

Where queries exist concerning boilers already delivered, then the boiler model reference and boiler serial number must be quoted. Part identification is provided at the rear of this manual. If further information is required please contact BUDERUS area representative.

The 04.(32,35) boilers are gas fired, natural draft, open vented central heating units which cover a range of heat outputs from 39,700\* Btu/h to 446,960 Btu/h.

The boilers are floor mounted and intended for heating residential or commercial premises. They may be used in conjunction with an indirect storage heater for domestic hot water production.

The boilers are fitted with aspirating multi-bar burners and have integral draft hood which can be connected to an open-vent system.

It is essential that a pump is fitted in the circulation system which must be kept in operation at all times when a boiler is in use.

---

All models are for use with natural gas. Models 04.(32,35)-10 through-71 may use liquified petroleum gases.

---

\*For boilers 04.(32,35)-10 through-'55 the output rating was determined during factory tests and have not been validated by A.G.A.

## GENERAL INSTRUCTIONS

The 04.(32,35) boiler is design certified by the American Gas Association for use with natural gas. Models 04.(32,35)-10 through 71 may also use liquified petroleum gases.

**NOTE:** The installation must comply with the requirements of Section IV of the ASME Boiler and Pressure Vessel Code, the local utilities and any additional national, state, insurance, or local code requirements having jurisdiction. Boilers must be installed in accordance with our instructions so as not to void our warranty.

The boiler is designed for hot water operation only.

Max. working pressure is 4 $\frac{1}{2}$  psi

Max. working temperature is 230 °F.

The installation must conform to the requirements of the authority having jurisdiction, or in the absence of such requirements, to the National Fuel Gas Code, ANS Z223.1-1984.

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-I.

### CHIMNEY AND VENT

The flue pipe diameter must be not less than shown in dimension table (page 6, Size D). It should pitch upward at least 1/4" per foot to the chimney connection. The end of the pipe must not project beyond inside surface of chimney flue. The chimney must be of proper size and height for rating of the boiler to be attached to it. It should be clean and any dirt accumulation removed from bottom. Minimum distance from surface of flue pipe to combustible material shall be six inches.

### AIR SUPPLY

Sufficient clean air must be available to the boiler room at all times. For installation in an enclosed utility or boiler room without an outside wall, a minimum of 1 square inch opening for each 1,000 Btu per hour of boiler input with not less than a 100 square inch opening should be provided.

In confined areas without good ventilation, openings directly to the outside with a minimum free area of 1 square inch for each 4,000 Btu per hour of boiler input should be provided. For additional combustion air information, refer to the National Fuel Gas ANS Z223.1-1984.

### READ INSTRUCTIONS CAREFULLY

Proper installation and adjustment of the burners and control equipment is necessary for the most safe and efficient operating of the gas boiler. The ratings shown on the rating and instruction plate mounted on the front bulkhead behind the front door should not be exceeded.

Read this book carefully and also the instructions on the instruction plate, before attempting to light the burners.

## BOILER LOCATION

Boiler is for indoor installation only. Boiler sizes 10 to 71 may be installed in alcoves, boiler of larger sizes (79 to 110) must be installed in a space larger in comparison to the size of the boiler.

Locate the boiler as close as possible to the chimney, on a level foundation.

The boiler must not be installed on carpeting.

Allow at least 33-1/2 inches in front for removal and servicing of burners. See chart on page 6 for clearance required for controls and jacket assembly.

The minimum clearance between the side and back jacket panels or draft hood and any adjacent combustible building structure must not be less than 12 inches to the right side of the boiler, 12 inches to the left side of the boiler and 14 inches to the back of the boiler, for boilers 10 through 71, and 24 inches to the side and back of the boiler for sizes 79 through 110.

A minimum clearance of one inch shall be provided between all hot water pipes and combustible construction.

A minimum of two inches shall be provided between the vent pipe and any adjacent combustible wall. This applies when the pipe penetrates the rear wall or ceiling as well.

## TECHNICAL DATA

| <u>WATER CONNECTIONS</u>             | <u>NPT</u> |
|--------------------------------------|------------|
| KV Heating Supply                    | 1-1/2"     |
| KR Heating Return                    | 1-1/2"     |
| SR Cold feed and expansion           | 1-1/4"     |
| SV Pressure relief valve connection  | 1-1/4"     |
| EL Heating water drain (either hand) | 1/2"       |

**NOTE:**

**Connections must be made as illustrated in Figure 3.**

**IMPORTANT**

When planning the layout of the boiler room, allowance should be made for:

1. Clearance for burner withdrawal at the front of the boiler. See Fig.4.
2. R.H. and L.H. clearance for easy boiler assembly and servicing (12 inches\*) minimum for single boiler installation.
3. Clearance at the rear for pipework and flue
4. Sufficient clearance for servicing, on all sides of the boiler.

\* 24 inches for size 79 through 110

Ratings

| Model/<br>Size | Input Rating |
|----------------|--------------|
|                | Btu/h        |
| 04.(32,35)-10  | 52 900       |
| 04.(32,35)-12  | 61 800       |
| 04.(32,35)-15  | 81 500       |
| 04.(32,35)-18  | 94 900       |
| 04.(32,35)-23  | 121 000      |
| 04.(32,35)-27  | 141 000      |
| 04.(32,35)-31  | 162 000      |
| 04.(32,35)-35  | 183 000      |
| 04.(32,35)-39  | 203 000      |
| 04.(32,35)-43  | 224 000      |
| 04.(32,35)-47  | 244 000      |
| 04.(32,35)-55  | 285 000      |
| 04.(32,35)-63  | 326 000      |
| 04.(32,35)-71  | 369 000      |
| 04. 32, -79    | 409 000      |
| 04. 32, -87    | 450 000      |
| 04. 32, -100   | 519 000      |
| 04. 32, -110   | 558 700      |

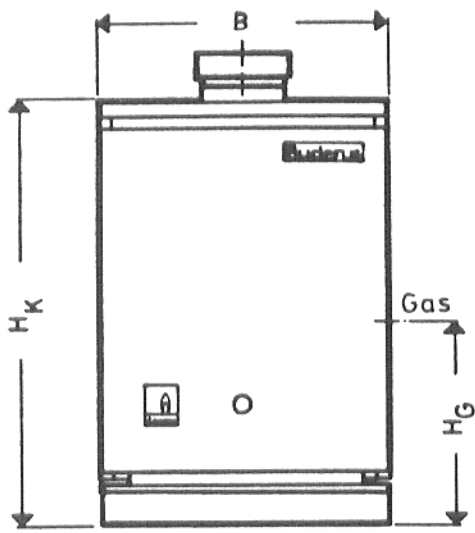


Fig. 1

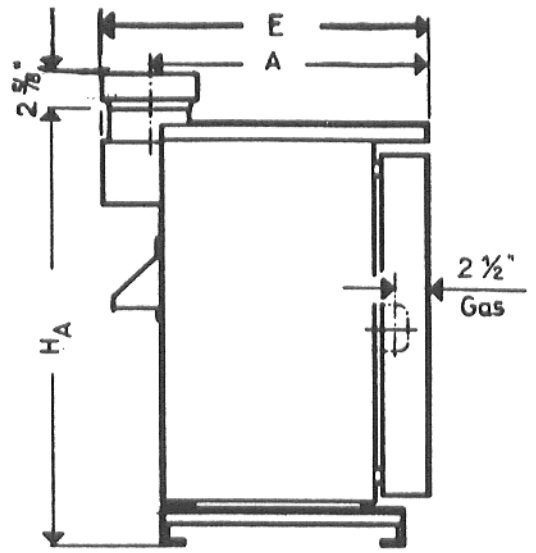


Fig. 2

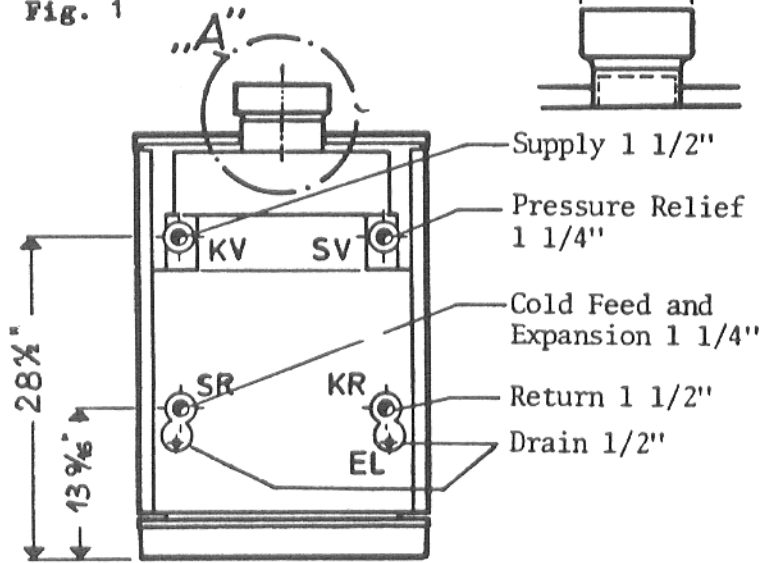
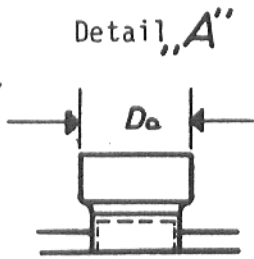


Fig. 3

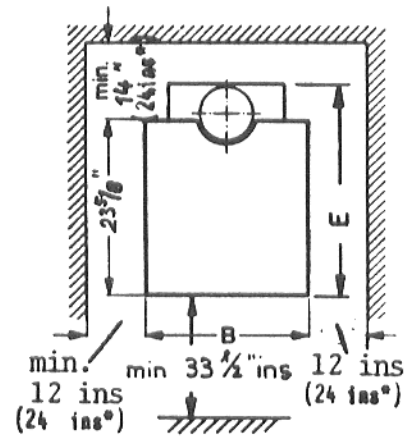


Fig. 4

(\*for size 79 through 110)

VARIABLE DIMENSIONS

| Model / Size  | Overall height<br>$H_A$<br>ins | Overall depth<br>E<br>ins | Jacket width<br>B<br>ins | Jacket height<br>$H_K$<br>ins | Flue centre<br>A<br>ins | Flue diam.<br>$D_o$<br>ins | G.I. height<br>$H_G$<br>ins |
|---------------|--------------------------------|---------------------------|--------------------------|-------------------------------|-------------------------|----------------------------|-----------------------------|
| 04.(32,35)-10 | 38 5/8                         | 26 3/4                    | 15                       | 37 5/16                       | 24 1/16                 | 5                          | 17 3/4                      |
| 04.(32,35)-12 | 38 5/8                         | 26 3/4                    | 15                       | 37 5/16                       | 24 1/16                 | 5                          | 17 3/4                      |
| 04.(32,35)-15 | 38 5/8                         | 26 3/4                    | 15                       | 37 5/16                       | 24 1/16                 | 5                          | 17 3/4                      |
| 04.(32,35)-18 | 38 5/8                         | 26 3/4                    | 15                       | 37 5/16                       | 23 11/16                | 5                          | 17 3/4                      |
| 04.(32,35)-23 | 38 5/8                         | 26 3/4                    | 15                       | 37 5/16                       | 23 11/16                | 5                          | 17 3/4                      |
| 04.(32,35)-27 | 38 5/8                         | 27 5/16                   | 18 1/2                   | 37 5/16                       | 23 7/8                  | 6                          | 17 3/4                      |
| 04.(32,35)-31 | 38 5/8                         | 27 5/16                   | 18 1/2                   | 37 5/16                       | 23 7/8                  | 6                          | 17 3/4                      |
| 04.(32,35)-35 | 38 5/8                         | 28 1/2                    | 22                       | 37 5/16                       | 24 1/2                  | 7                          | 17 3/4                      |
| 04.(32,35)-39 | 38 5/8                         | 28 1/2                    | 22                       | 37 5/16                       | 24 1/2                  | 7                          | 17 3/4                      |
| 04.(32,35)-43 | 38 5/8                         | 28 1/2                    | 25 1/2                   | 37 5/16                       | 24 1/2                  | 7                          | 17 3/4                      |
| 04.(32,35)-47 | 38 5/8                         | 28 1/2                    | 25 1/2                   | 37 5/16                       | 24 1/2                  | 7                          | 17 3/4                      |
| 04.(32,35)-55 | 41                             | 29 1/2                    | 27 1/2                   | 39 5/8                        | 25 1/16                 | 8                          | 17 3/4                      |
| 04.(32,35)-63 | 41                             | 29 1/2                    | 31 1/8                   | 39 5/8                        | 25 1/16                 | 8                          | 23 1/4                      |
| 04.(32,35)-71 | 41                             | 30 1/2                    | 34 5/8                   | 39 5/8                        | 25 3/8                  | 9                          | 23 1/4                      |
| 04.32 -79     | 41                             | 30 1/2                    | 38 3/16                  | 39 5/8                        | 25 3/8                  | 9                          | 23 1/4                      |
| 04.32 -87     | 41                             | 30 1/2                    | 41 3/4                   | 39 5/8                        | 25 9/16                 | 9                          | 23 1/4                      |
| 04.32 -100    | 41                             | 31 1/2                    | 45 1/4                   | 39 5/8                        | 26 1/16                 | 10                         | 23 1/4                      |
| 04.32 -110    | 41                             | 32 1/2                    | 48 13/16                 | 39 5/8                        | 26 9/16                 | 12                         | 23 1/4                      |

GAS SETTINGS AND BURNER DETAILS

| Model/<br>Size | MANIFOLD PRESSURE<br>NATURAL/PROPANE<br>(IN/W.C.: | ORIFICE MARKING<br>NATURAL/PROPANE<br>(MM) |                   | NO. OF<br>BURNERS | NO. OF GAS<br>CONTROL<br>VALVES AND<br>PILOT BURNERS | GAS INLET<br>CONNECTION<br>NPT |
|----------------|---|--|-------------------|-------------------|--|--------------------------------|
|                |   | 0 -<br>2000 ft                             | 2000 -<br>4500 ft |                   |  |                                |
| 04.(32,35)-10  | 4.1/10.0  | 350/220                                    | 320/210           | 1                 | 1  | 3/4                            |
| 04.(32,35)-12  | 4.8/10.0  | 370/240                                    | 340/225           | 1                 | 1  | 3/4                            |
| 04.(32,35)-15  | 4.5/10.0  | 430/270                                    | 400/250           | 1                 | 1  | 3/4                            |
| 04.(32,35)-18  | 4.6/10.0  | 460/290                                    | 430/270           | 1                 | 1  | 3/4                            |
| 04.(32,35)-23  | 4.4/10.0  | 370/235                                    | 340/220           | 2                 | 1  | 3/4                            |
| 04.(32,35)-27  | 4.6/10.0  | 400/250                                    | 370/235           | 2                 | 1  | 3/4                            |
| 04.(32,35)-31  | 4.4/10.0  | 430/270                                    | 400/250           | 2                 | 1  | 3/4                            |
| 04.(32,35)-35  | 4.5/10.0  | 370/235                                    | 340/220           | 3                 | 1  | 3/4                            |
| 04.(32,35)-39  | 4.2/10.0  | 400/250                                    | 370/235           | 3                 | 1  | 3/4                            |
| 04.(32,35)-43  | 4.6/10.0  | 350/230                                    | 320/210           | 4                 | 1  | 3/4                            |
| 04.(32,35)-47  | 4.5/10.0  | 370/240                                    | 340/225           | 4                 | 1  | 3/4                            |
| 04./32,35)-55  | 4.7/10.0  | 400/260                                    | 370/240           | 4                 | 1  | 3/4                            |
| 04.(32,35)-63  | 3.9/10.0  | 400/250                                    | 370/235           | 5                 | 2  | 1-1/4                          |
| 04.(32,35)-71  | 5.0/10.0  | 400/260                                    | 370/240           | 5                 | 2  | 1-1/4                          |
| 04.32 -79      | 4.3/N/A   | 400/N/A                                    | N/A               | 6                 | 2  | 1-1/4                          |
| 04.32 -87      | 5.0/N/A   | 370/N/A                                    | N/A               | 7                 | 2  | 1-1/4                          |
| 04.32 -100     | 5.0/N/A   | 400/N/A                                    | N/A               | 7                 | 2  | 1-1/4                          |
| 04.32 -110     | 4.5/N/A   | 400/N/A                                    | N/A               | 8                 | 2  | 1-1/4                          |

BOILER WATER CONTENT AND DRY WEIGHT

| Model/<br>Size | Boiler Water<br>Content | Dry<br>Weight |
|----------------|-------------------------|---------------|
|                | US Gal                  | lbs           |
| 04.(32,35)-10  | 3                       | 242           |
| 04.(32,35)-12  | 3                       | 242           |
| 04.(32,35)-15  | 3                       | 247           |
| 04.(32,35)-18  | 4                       | 309           |
| 04.(32,35)-23  | 4                       | 309           |
| 04.(32,35)-27  | 5                       | 381           |
| 04.(32,35)-31  | 5                       | 381           |
| 04.(32,35)-35  | 6                       | 381           |
| 04.(32,35)-39  | 6                       | 452           |
| 04.(32,35)-43  | 7                       | 536           |
| 04.(32,35)-47  | 7                       | 536           |
| 04./32,35)-55  | 8                       | 639           |
| 04.(32,35)-63  | 9                       | 725           |
| 04.(32,35)-71  | 10                      | 800           |
| 04.32 -79      | 11                      | 877           |
| 04.32 -87      | 12                      | 961           |
| 04.32 -100     | 13                      | 1038          |
| 04.32 -110     | 15                      | 1111          |

HYDRAULIC RESISTANCE

| Hydraulic Resistance at<br>20 °F Difference |
|---|
| ins WG                                      |
| 2,0   |
| 2,5   |
| 4,3   |
| 6,2   |
| 10,4  |
| 12,0  |
| 16,1  |
| 16,5  |
| 22,1  |
| 20,1  |
| 25,3  |
| 28,9  |
| 32,1  |
| 33,7  |
| 44,1  |
| 50,2  |
| 54,2  |
| 60,2  |

NOTE

With 04.32/10 to /55 boilers the gas supply pipework must pass through the cut out in the right hand side of the front door. The gas supply pipework can be arranged to left or right with 04.32/63 to /110.

## BOILER LOCATION

Boiler is for indoor installation only. Boiler sizes 10 to 71 may be installed in alcoves, boilers of larger sizes(79 to 110) must be installed in a space larger in comparison to the size of the boiler.

### Boiler Foundation

Locate the boiler on a level foundation. The weight of the boiler when it is full of water is substantial; ensure that a solid base foundation is established prior to installing the appliance. The boiler must not be installed on carpeting.

### Packing

04.(32,35)-10 up to 47 boilers are delivered completely assembled with boiler jacket and insulation in position. Each unit is palletised and protected by a cardboard.

04.(32,35)-55 up to 110 boilers are supplied with the sections assembled and palletised but with the boiler jacket and insulation packed separately for site assembly.

### Unpacking parts before assembly

Unpack all boxes and cartons and check all parts received against packing slips. Every boiler is carefully inspected and tested before shipment from the factory and is delivered to the carrier in good condition. In case of damage or shortage, notify your carrier agent promptly. Examine all packing material carefully before discarding.

### Boiler transport

Deliver boiler in crate to site  
Undo bending straps  
Lift off cardboard box  
Take-off front and top panels  
Slide boiler to right or left hand side. Before doing so, take off the lateral wooden boards.  
Lift boiler under bottom plate. Place pipes under boiler and transport boiler to exact location.

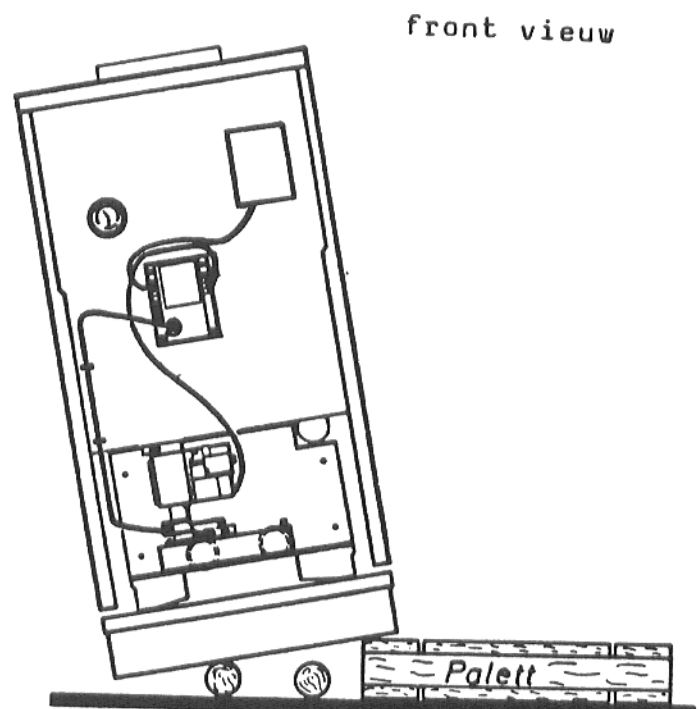


Fig. 5

5. Maneuver the boiler to its final location.

Important

1. Protect the sheet metal work, gas pipework, burner and controls at all times.
2. Never lift the boiler by any of these components.

## ASSEMBLY DRAFT HOOD

04(32.35)-55 to 110 boilers are supplied with draft hood, flue hood cover, baffle plate and shield plate unassembled. These items should be assembled as indicated below. Boiler size 10 to 47 the draft hood is assembled at the factory.

### Boiler viewed from the rear

Attach draft hood (1) onto the back of flue hood (2) using the self tapping screws (3) provided. Place the baffle plate (4) on top of the flue-ways (5) to cover the front of the boiler. Fit the flue hood cover (6) using the wing nuts (7) provided, to the top of the flue hood (2). Position flue adapter (9) on smoke hood (1).

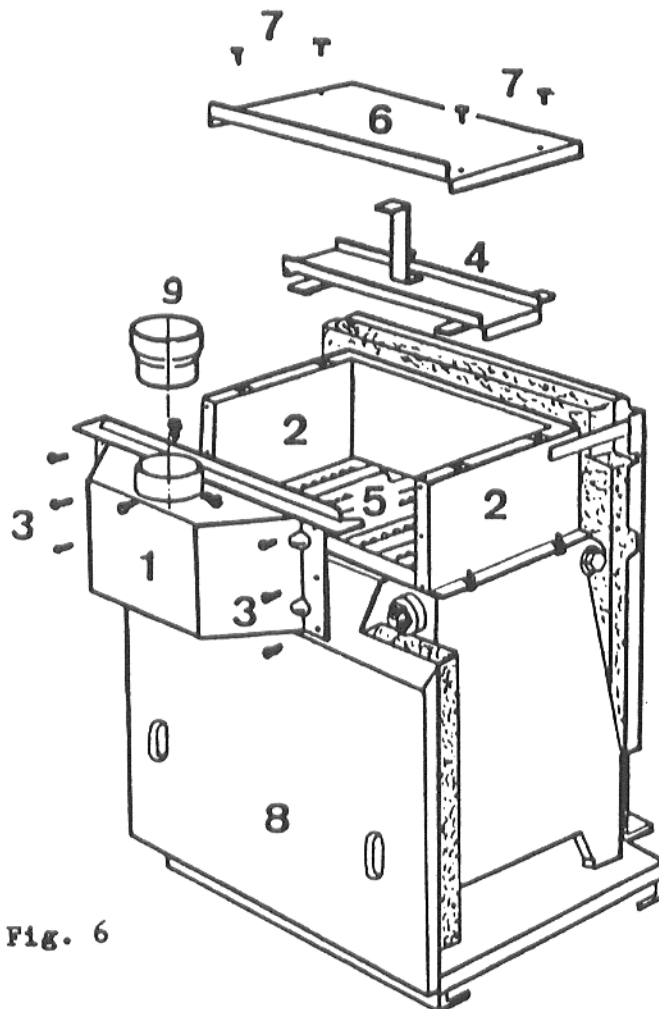


Fig. 6

## WATER CONNECTIONS

### Pressure relief valve

Pressure relief valve is supplied with the boiler.

Be sure the pressure relief valve is installed in the proper tapping as indicated below:

The relief valve outlet should be piped near to the floor, close to a drain when available. Do not pipe the relief valve discharge to any area where freezing temperatures could occur.

Refer to Figure 3 for installation.

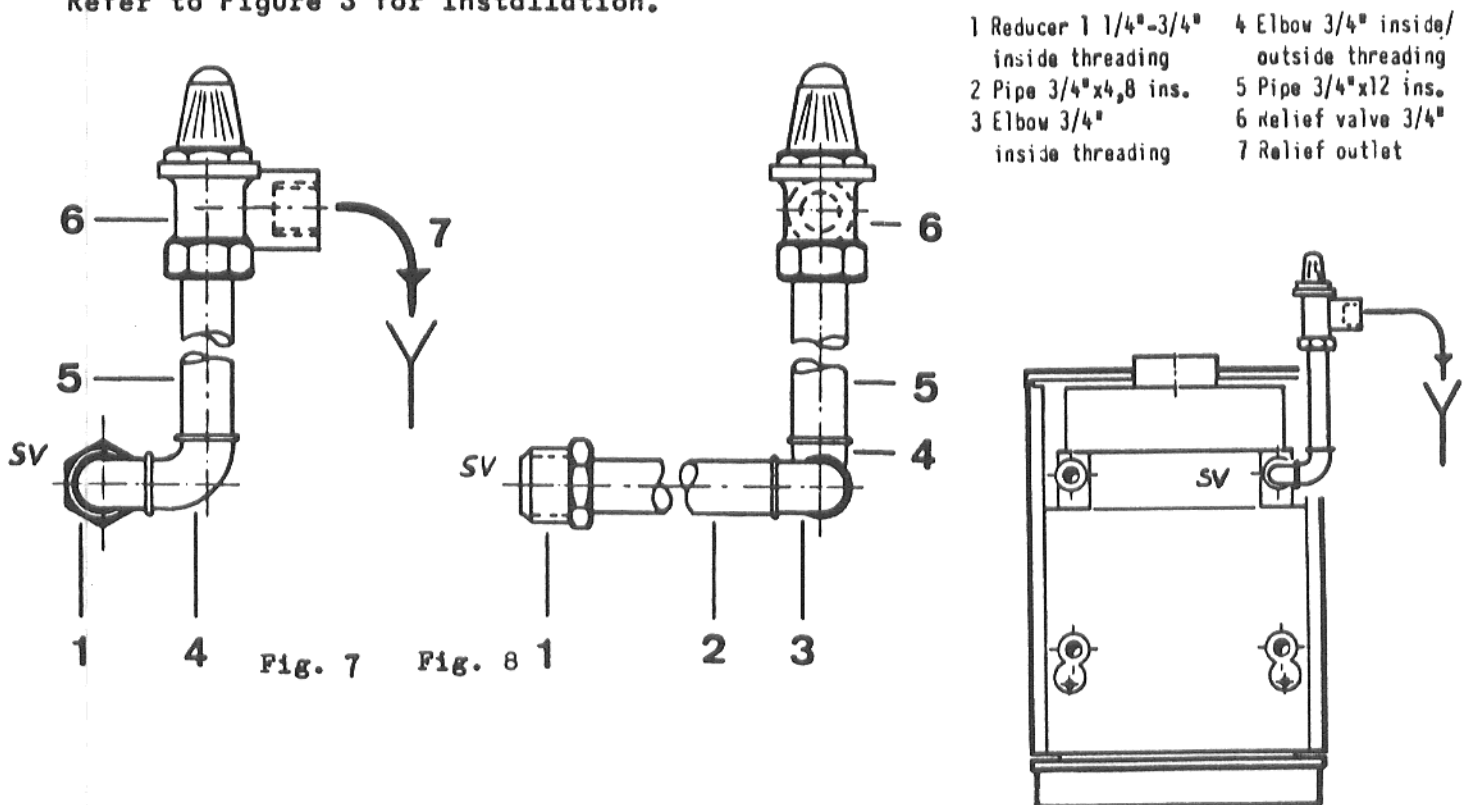


Fig. 9

## WATER CONNECTIONS

Connections must be made as illustrated in Figure 9.

Plug all unused tapings.

### HYDROSTATIC PRESSURE TEST OF BOILER

The individual sections and the complete boiler have been pressure tested at the factory; however, the boiler should be visually checked at the joints to ensure that no leaks occur.

### WATER CIRCULATION SYSTEM

#### General

It is essential that the water circulation system incorporate a pump, which must be in operation at all times when the boiler is in operation. The use of horizontal pipe runs should be avoided wherever possible in order to prevent air collecting in the system. If horizontal runs are unavoidable the pipe should rise upwards in the direction away from the boiler.

The boiler and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig.

The boiler must be isolated from the gas piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig.

The boiler and its gas connection must be leak tested before placing the boiler in operation.

The gas supply should be installed in accordance with the American National Standard Z223.1-1984 National Fuel Gas Code.

Connect the gas meter to the gas control. Where the gas connection size is smaller than the calculated pipe size reduce the gas supply piping only at the inlet to the gas valve. A drip leg must be installed at the inlet of the gas connection to the boiler. The local utility may require that the drip leg be extended all the way to the floor. We strongly recommend a manual main shut-off gas valve which should be located in the gas supply piping according to the local utility requirements. The gas supply piping must be supported by external hangers; not by the boiler or its accessories. Refer to figures on page 14.

When turning on gas supply do not omit test for gas leaks as described on page 19. This test must be conducted before placing the boiler in operation.

Safe lighting and other performance criteria were met with the gas manifold and control assembly provided on the boiler when the boiler underwent tests specified in Z21.13a-1983.

#### ELECTRICAL SUPPLY

An external 120 VAC power supply must be available at or near the boiler location. Provisions are made in the boiler jacket for using flexible or semi-rigid conduit. A supply cord is not to be employed to feed electrical power to this boiler.

This appliance 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 Codes, ANSI/NFPA No. 70-1984

A hot water boiler installed above radiation level must be provided with a low water cutoff device either as a part of the boiler or at the time of boiler installation.

At least once per year, the low water cutoff device must be inspected for proper operation. The instructions provided with the device shall be consulted for the proper procedure. Float type devices must be flushed out at least yearly to ensure smooth operation.

### Isolating Valves

To facilitate servicing, isolating valves should be fitted on each side of a circulating pump, radiators, etc.

The boiler when used in connection with a refrigeration system, must be installed so the chilled medium is piped in parallel with the boiler with appropriate valves to prevent the chilled medium from entering the boiler.

The boiler piping system of a hot water heating boiler connected to heating coils located in air handling units where they may be exposed to refrigerated air circulation must be equipped with flow control valves or other automatic means to prevent gravity circulation of the boiler water during the cooling cycle.

### Frost Protection

Consideration should be given to fitting a frost thermostat which should be set to operate at a temperature of approximately 39°F.

### Water Treatment

The need for water treatment will depend upon the chemical analysis of the water and the operating conditions. As with all efficient low water content boilers, particular attention is required in hard water areas.

### SIZE GAS SUPPLY PIPING

The gas supply piping must be sized to provide the proper inlet gas pressure when the boiler is operating at the indicated rated input. For natural gas, the inlet gas pressure to the manual main shut-off gas valve (if supplied) should be 7" to 10.5 inches water column.

For L.P. gases, the inlet gas pressure to the manual main shut-off gas valve (if supplied) should be 11" to 14" water column.

Determine the measured length piping from the gas meter to the boiler. Add to the measured length the additional length for each elbow or tee. Refer to the Pipe Delivery Schedule Table and determine the pipe size.

PIPE DELIVERY SCHEDULE TABLE

| Pipe Delivery Schedule                         |   |        |        |      |        |  |                                   |
|--|---|--------|--------|------|--------|--|-----------------------------------|
| * Adjusted Length of Gas Supply Piping in Feet | o) Capacity of Pipe Sizes in Cubic Feet of Gas per Hour |        |        |      |        | Additional Length of Pipe to Be Added for Each Elbow or Tee Bend in Piping |                                   |
|  | 1"  | 1 1/4" | 1 1/2" | 2"   | 2 1/2" | Pipe Size in Inches  | Additional Length of Pipe in Feet |
| 10'  | 520   | 1050   | 1600   | 3050 | 4800   | 1"   | 2.2'                              |
| 20'  | 350   | 730    | 1100   | 2100 | 3300   | 1 1/4"   | 2.9'                              |
| 30'  | 285   | 590    | 890    | 1650 | 2700   | 1 1/2"   | 3.3'                              |
| 40'  | 245   | 500    | 760    | 1450 | 2300   | 2"   | 4.3'                              |
| 50'  | 215   | 440    | 670    | 1270 | 2000   | 2 1/2"   | 5.1'                              |
| 75'  | 175   | 360    | 545    | 1020 | 1650   | -  | -                                 |
| 100'   | 150   | 305    | 460    | 870  | 1400   | -  | -                                 |
| 150'   | 120   | 250    | 380    | 710  | 1130   | -  | -                                 |

9) Include measured length of gas supply and allowance in feet for number and size of fittings.

o) Flow capacity determined from Dr. Pole's Formula: Specific Gravity=0.60; Pressure Loss=0.30" W.C.

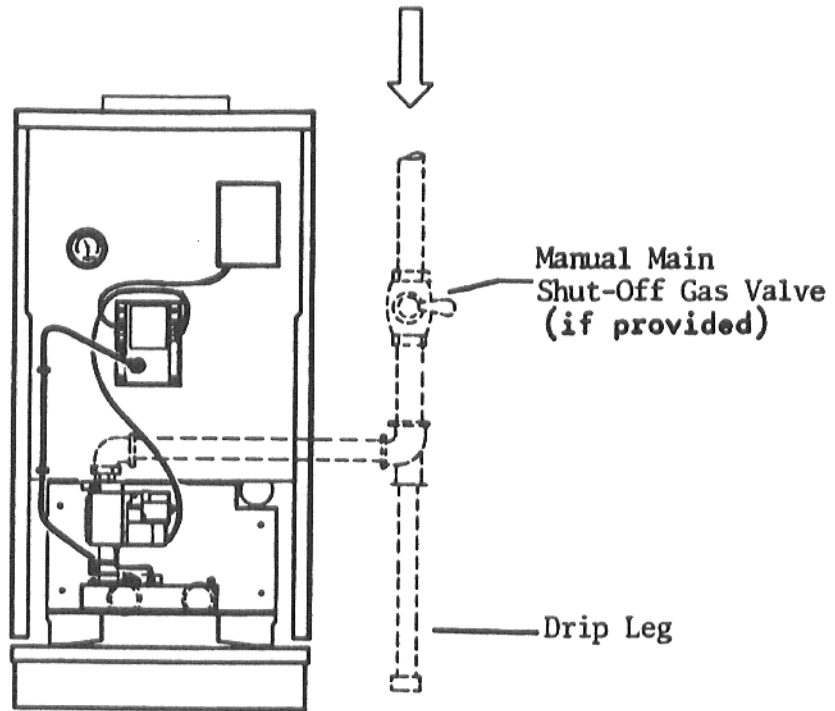


Fig. 10

Boiler, Size 10 to 55  
(One Burner Assembly)

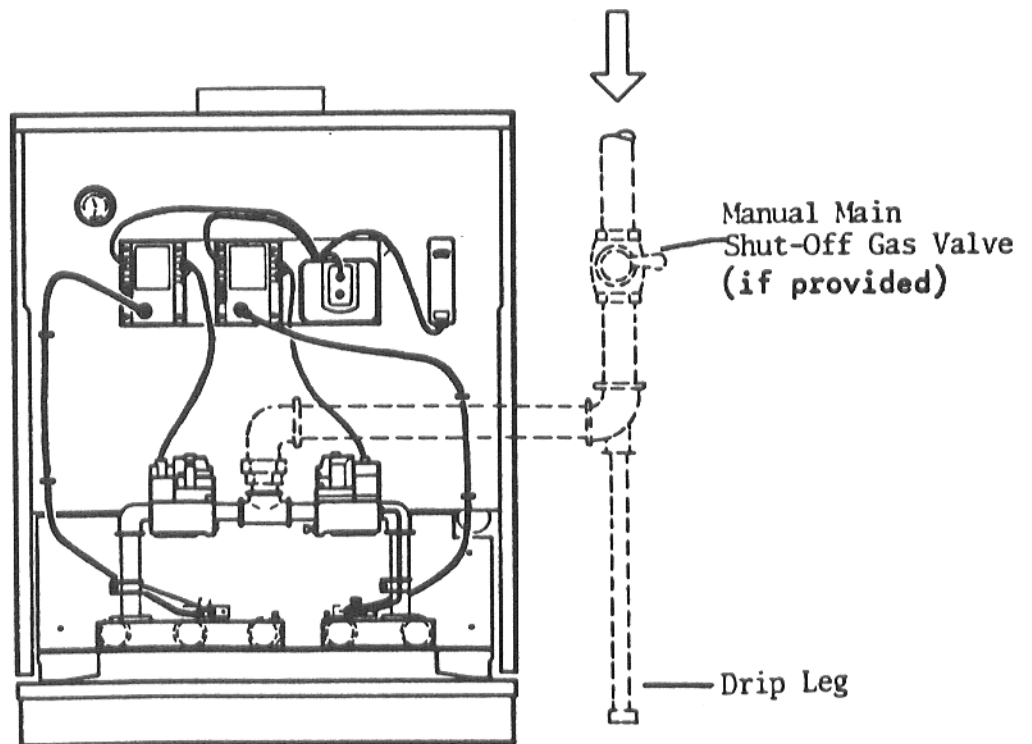


Fig. 11

Boiler, Size 63 to 110  
(Two Burner Assemblies)

Note: pilot regulators, auto pilot gas valves and main test firing valves for boilers sizes 79-110 only

VENT CONNECTION (also refer to CHIMNEY AND VENT, Page 3)

The draft hood is incorporated at the rear of the boiler. A separate draft diverter is not required.

Fit the vent pipe on to the integral draft hood as indicated below.

Connect from the draft hood outlet to the chimney or vent with full-sized (same diameter as draft hood outlet) breeching. Where the installation permits, vertical venting of the combustion gases to the outside from the draft hood outlet will afford best performance at lowest total cost. Where the boiler must be connected to a chimney or remote vent the horizontal breeching should slope upward at least 1/4 inch per lineal foot toward the chimney or vent. A vertical height of 3 feet to 5 feet of breeching before any elbow or horizontal breeching is recommended to reduce chances of flue gas spillage at the draft hood. Long horizontal breechings, excessive numbers of elbows or tees, or other obstructions which restrict the flow of combustion gases should be avoided.

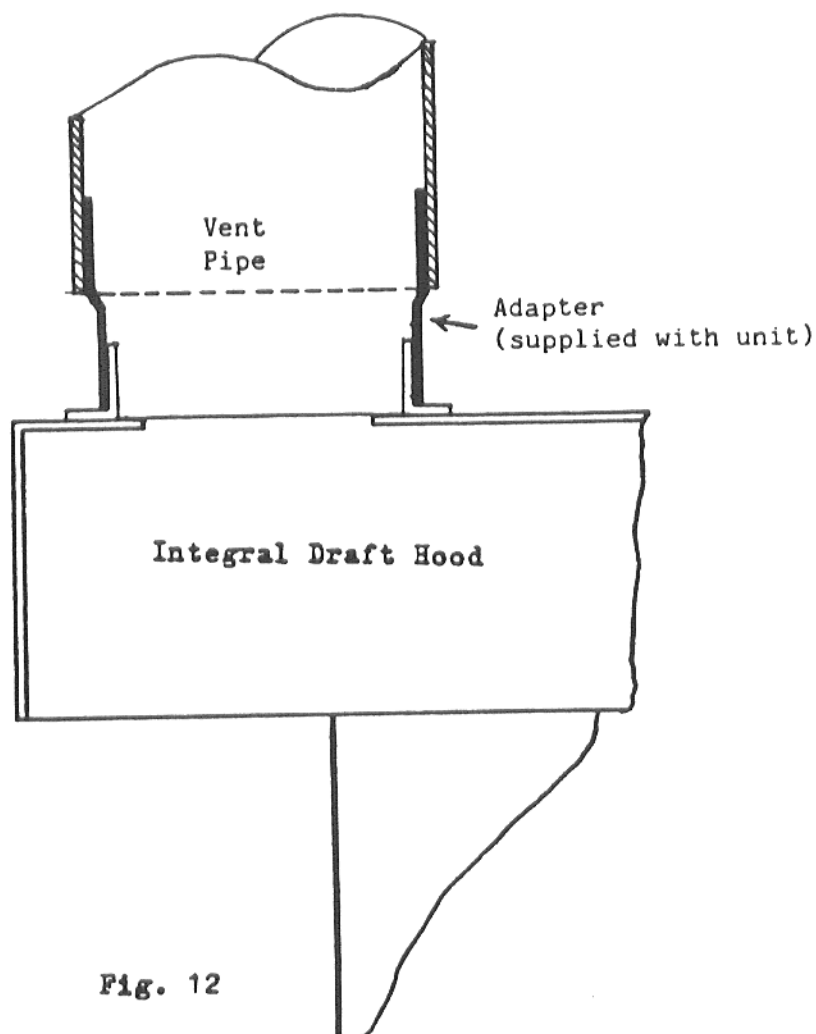


Fig. 12

It is essential that at least 40 inches of vent (including pipe and chimney) corresponding to 0,02 in WG (min. chimney draft) be fitted.

The weight of the vent pipes must not be carried by the draft hood but supported from the ceiling, roof or adjacent wall.

#### DISCONNECTION OF VENT

Facilities should be made for disconnecting the vent pipe from the boiler for inspection and cleaning by means of a split socket. Bends should be fitted with removable covers where appropriate for inspection and cleaning purposes.

#### CONDENSATION

Prevention of condensation within the vent should be an important factor in the design of the vent system. In order to minimize condensation the use of double walled vent pipe or insulation is recommended for new installations.

## JACKET ASSEMBLY

Jackets of 04.(32,35)-10 to 47 boilers are factory assembled.

With 04.(32,35)-55 to 110 boilers, remove the jacket and insulation from the cardboard carton and assemble as indicated below.

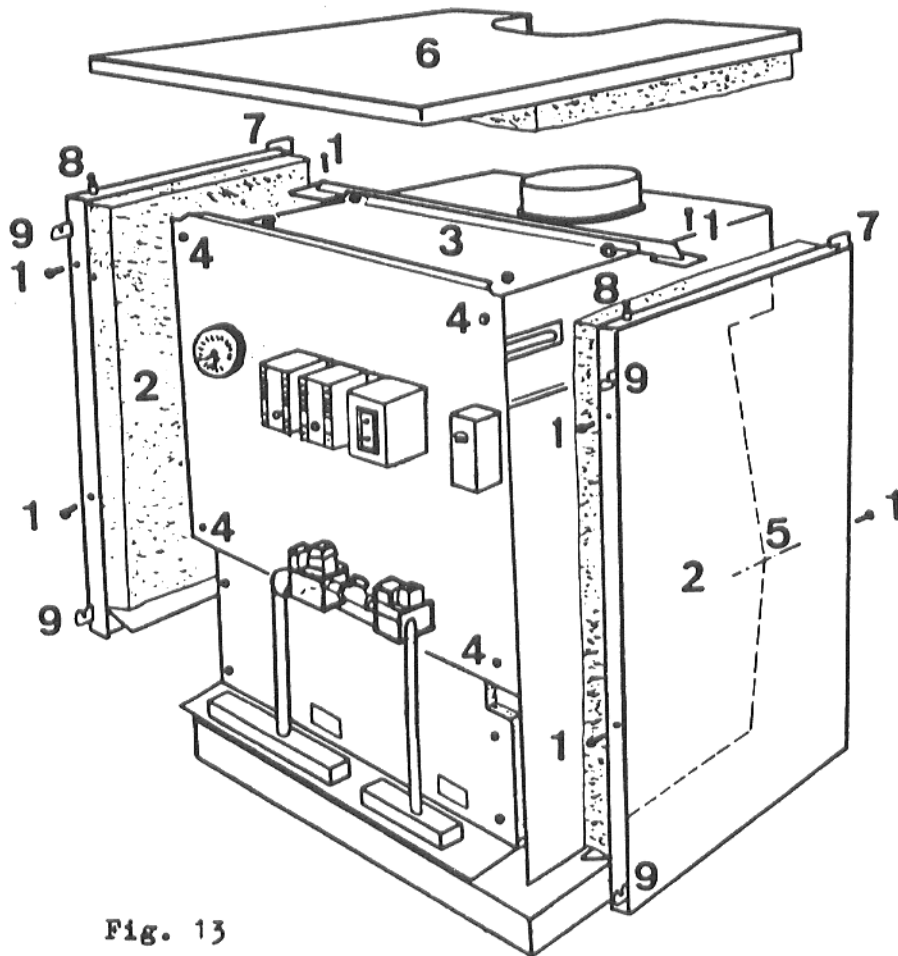


Fig. 13

Position side panels (2) on the top cross member (3) and screw panels to front bulkhead (4) using the self tapping screws (1) provided. Align panels and screw to cross member and rear bulkhead (5).

Attach top panel (6) to hooks (7) at the top of the side panels and locate on pins (8) at the front.

The front door is placed on to the hooks (9) projecting from the edges of the side panels.

## Reference Honeywell Model VR800 ("Loganagas 04.35")

### BEFORE STARTING THE BOILER

1. Be sure the boiler of heating systems is filled with water to proper level.
2. In starting a new installation or if gas lines have been disconnected, air must be purged from the gas piping.
3. Turn off the power supply.
4. Turn on gas supply and purge air from gas line.
5. Before starting system, turn thermostat to its lowest setting.
6. Turn gas control knob clockwise to OFF. Do not attempt to relight pilot or start burner until combustion chamber has been thoroughly purged of possible gas accumulation. Wait at least 5 minutes for all unburned gas to vent.

### TO START BOILER (LIGHTING INSTRUCTIONS)

NOTE: In the event of failure of any component, the system containing the failed component will not operate or will go into safety lockout. The system is completely self-checking on every call for heat each component must be functioning properly to permit operation. If system does not perform as outlined after completing CHECKOUT, refer to SERVICE to determine cause.

1. Turn on main manual shut off valve to boiler, if provided.
2. Turn on the power supply.
3. Turn gas control knob counterclockwise to the "pilot" position. Depress the control knob and apply a lighted match to the pilot burner. After the pilot is lit, continue to depress the control knob for 30 seconds. When released, the pilot should remain lit.
4. Turn the control knob counterclockwise to the "On" position.
5. Set thermostat above room temperature to call for heat.
6. Main gas valve should open and main burners ignite after gas reaches burner ports.
7. Repeat procedure for each gas control system, if boiler is equipped with more than one.
8. Set thermostat to desired temperature.

NOTE: It may be necessary to try ignition 2 or 3 times in order to purge any air from the pilot line. If problems occur with start up, refer to troubleshooting guide.

### TO SHUT DOWN BOILER

#### A. TEMPORARILY SHUT DOWN

1. Turn gas control knob clockwise to "pilot" position.
2. Set thermostat to its lowest setting.

#### B. EMERGENCY SHUT DOWN

1. Turn gas control knob clockwise to "Off" position.
2. Turn off main manual shut-off valve to boiler, if provided.
3. Turn off the power supply.
4. Set thermostat to its lowest setting.

### SAFETY SHUT OFF CHECKOUT PROCEDURE

Turn gas valve knob clockwise to the "OFF" position. Within 180 seconds an audible click will be heard. This is the safety shut off valve closing.

If you do not hear this click, do not attempt to relight boiler. Contact your local Buderus service representative for replacement information.

## Reference Honeywell Modell VR8440P ("Loganagas 04.32")

### BEFORE STARTING THE BOILER

1. Be sure the boiler of heating system is filled with water to proper level.
2. In starting a new installation or if gas lines have been disconnected, air must be purged from the gas piping.
3. Turn off the power supply.
4. Turn on gas supply and purge air from gas line.
5. Before starting system, turn thermostat to its lowest setting.
6. Turn gas control knob clockwise to OFF. Do not attempt to relight pilot or start burner until combustion chamber has been thoroughly purged of possible gas accumulation. Wait at least 5 minutes for all unburned gas to vent.

### TO START BOILER (LIGHTING INSTRUCTIONS)

**NOTE:** In the event of failure of any component, the system containing the failed component will not operate or will go into safety lockout. The system is completely self-checking on every call for heat each component must be functioning properly to permit operation. If system does not perform as outlined after completing CHECKOUT, refer to SERVICE to determine cause.

1. Turn on main manual shut off valve to boiler, if provided.
2. Turn on the power supply.
3. Turn gas control knob counterclockwise completely. Depress knob and continue to turn counterclockwise until you reach the ON position.
4. Set thermostat above room temperature to call for heat.
  - Spark should turn on and pilot gas valve should open at once.
  - Spark ignition should cut off when pilot flame is established.
  - Main gas valve should open and main burner ignites after gas reaches burner ports.
5. Repeat steps 3 and 4 for second control, if unit employs two separate controls.
6. Set thermostat to desired temperature.

**NOTE:** It may be necessary to try ignition 2 or 3 times in order to purge any air from the pilot line. If problems occur with start up, refer to troubleshooting guide.

### TO SHUT DOWN BOILER (TEMPORARILY OR EMERGENCY)

1. Turn gas control knob clockwise to "OFF".
2. Turn off power supply.
3. Turn off main manual shut-off valve, if provided.
4. Turn thermostat to its lowest setting.

### SAFETY SHUT CHECKOUT PROCEDURE

With the boiler in operation, remove the orange colored ignition cable from the gray colored ignition module. Within 8 seconds, the main burners will be extinguished. This indicates proper operation of the flame sensing safety circuit. If the main burners continue to operate when this cable is removed, shut the power supply to the boiler, and refer to "Operation and Checkout" procedure on page 10 of the owners manual which accompanies this boiler.

## Safety Shutoff Checkout Procedure

With the boiler in operation remove the orange colored ignition cable from the gray colored ignition module. Within .8 second, the main burners will be extinguished. This indicates proper operation of the flame sensing safety circuit. If the main burners continue to operate when this cable is removed, shut the power supply to the boiler off, and refer to "Operation and Checkout" procedure on page 8 of the owners manual which accompanies this boiler.

THE BOILER SHOULD NEVER BE SHUTDOWN IF FREEZING CONDITIONS ARE EXPECTED.

### IMPORTANT

1. This appliance must be grounded.
2. Do not obstruct air vents, ducts, grilles or other openings in the boiler room and ensure the free passage of ventilation and combustion air to the boiler.
3. Keep area surrounding boiler free and clear from combustible materials, gasoline and other flammable liquids.

### WATER TREATMENT

Where necessary water treatment should be carried out whenever the system is drained and refilled.

### MAINTENANCE

At least once a year a periodic inspection of the boiler by a qualified service agency is necessary. On this occasion boiler has to be checked as described in INSTALLATION AND SERVICE INSTRUCTIONS, paragraphs SERVICE, CLEANING, and CHECKOUT.

All flue product carrying areas of the boiler, its vent system, and main and pilot burners shall be examined for continued safe operation. Particular attention shall be given to deterioration from corrosion or other sources.

### TEST FOR GAS LEAKS

---

#### WARNING

#### DO NOT OMIT THIS TEST

With main burner in operation, paint pipe joints, pilot gas tubing connections, and valve gasket lines with rich soap and water solution. Bubbles indicate gas leakage. To stop leak, tighten joints and screws or replace the gasket. Never use an open flame to check for gas leaks.

---

Caution: Since some leak detection solutions, including soap and water may cause corrosion or stress cracking, the gas piping should be rinsed with clear clean water after testing, unless it has been determined that the leak test solution is non-corrosive.

Illustration for Honeywell VR 8440 P  
("Loganagas" 04.32)

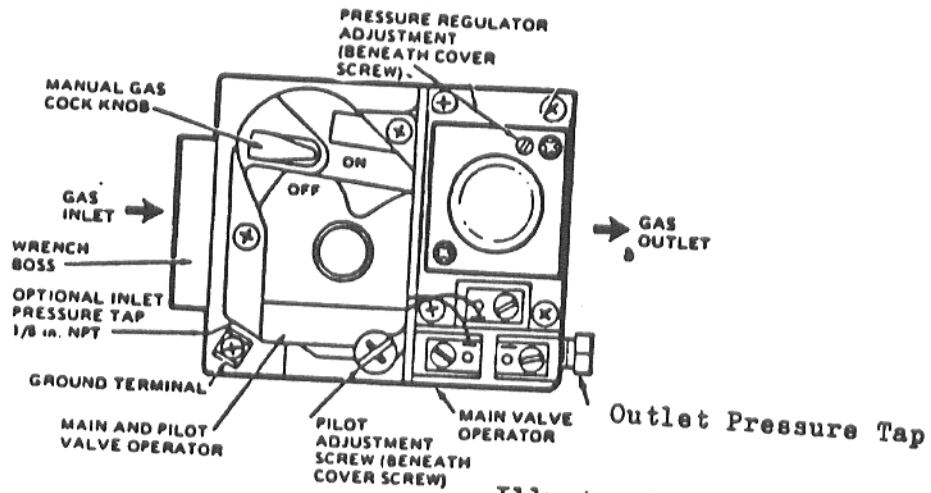


Fig. 14

Illustration for Honeywell VR 8440 P  
 ("Loganagas 04.32)

Illustration for Honeywell VR 800  
("Loganagas" 04.35)

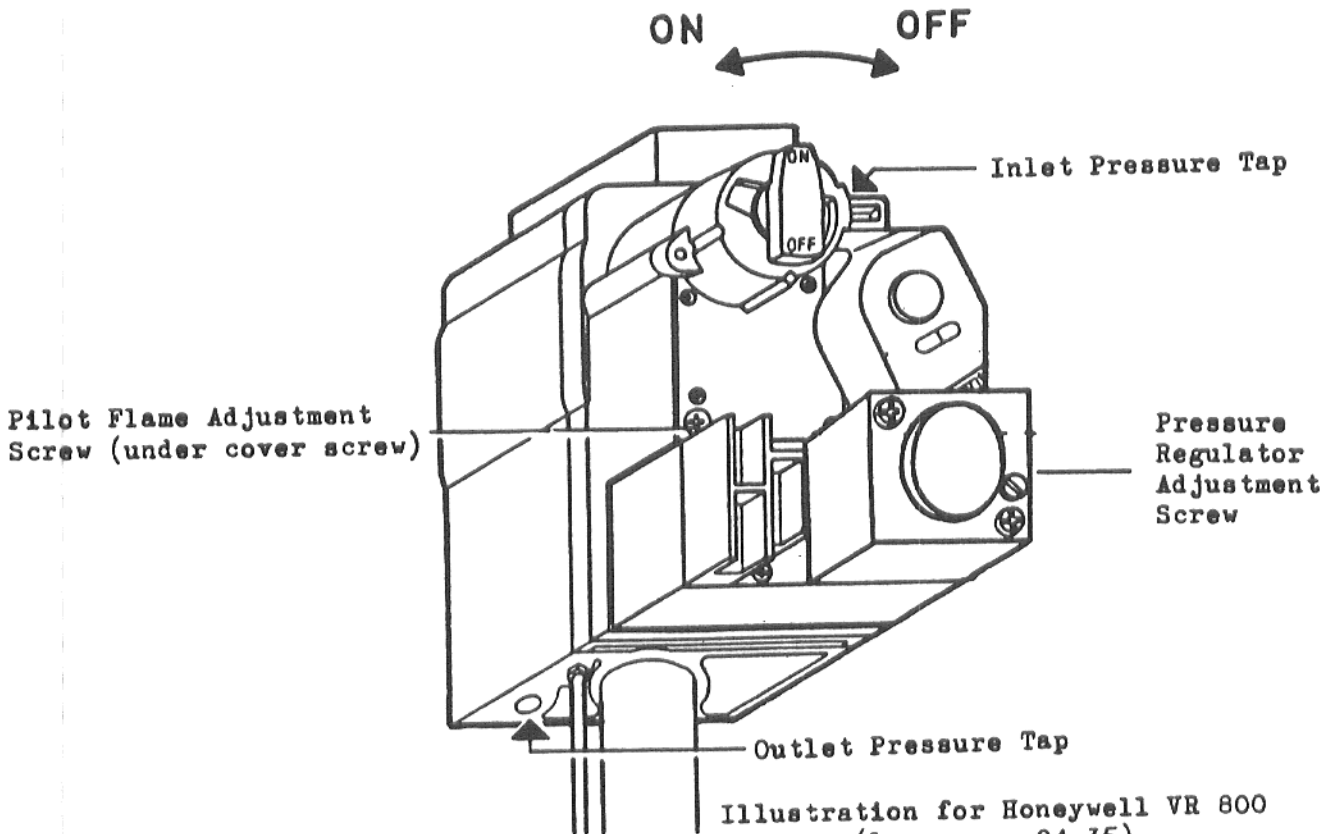


Fig. 15

Illustration for Honeywell VR 800  
 ("Loganagas 04.35)

## CHECK AND ADJUST BURNER INPUT

On page 7 of this manual, a chart entitled "Gas Settings and Burner Details" gives information regarding correct manifold pressures and orifice sizes for all boiler models. Each boiler is equipped from the factory with the correct orifice, to achieve the proper input. The only variable item to be considered in determining the proper input rating is the gas supply pressure and the manifold pressure.

### IMPORTANT

It is imperative that you do not exceed the input rating listed on the chart on page 5 of this manual. The American Gas Association has certified the design of these boilers only at the input rates listed in this manual. This certification should be considered void if these input rates are exceeded.

Refer to page 22 of this manual for the location of the inlet pressure taps for the VR 8440 P Honeywell control. Ensure that the main gas supply to the boiler is shut off before removing this pressure tap.

refer to page 22 of this manual for the location of pressure taps and method of connecting the manometer to the boiler manifold(s).

When you have completed the check of the manifold pressure, re-check all pressure tap plugs for gas leaks, as directed on page 19 of this manual.

Refer to the rough illustration below for an approximation of how the pilot and main burner flames should appear. The flame characteristic should be checked periodically to help ensure continued safe and efficient operation. If the flames are noisy or show an appreciable amount of "lifting" above the surface of the burner, then the gas pressure and/or orifice size may be too large. If the flames are primarily yellow in color, and are soft and lazy; then an inadequate gas pressure is likely, or the burner opening may be blocked. For further cleaning and service procedures, refer to the Owners Information Manual.

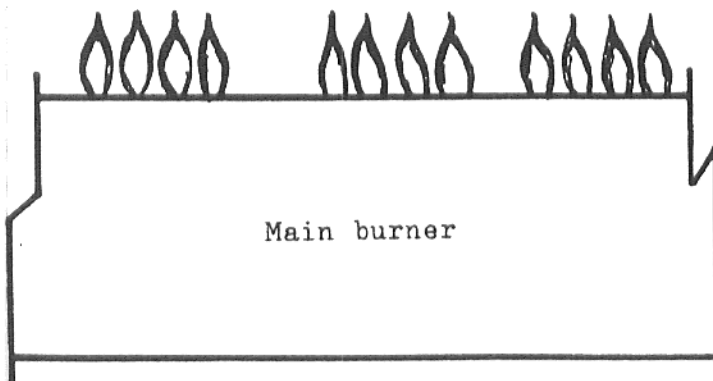


Fig. 16

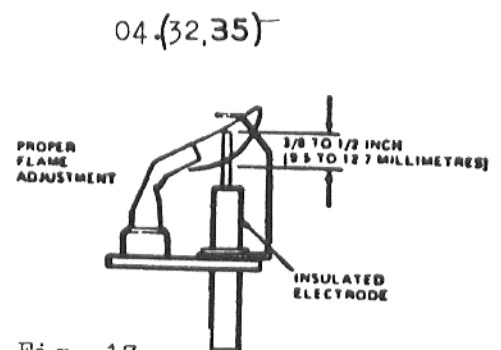
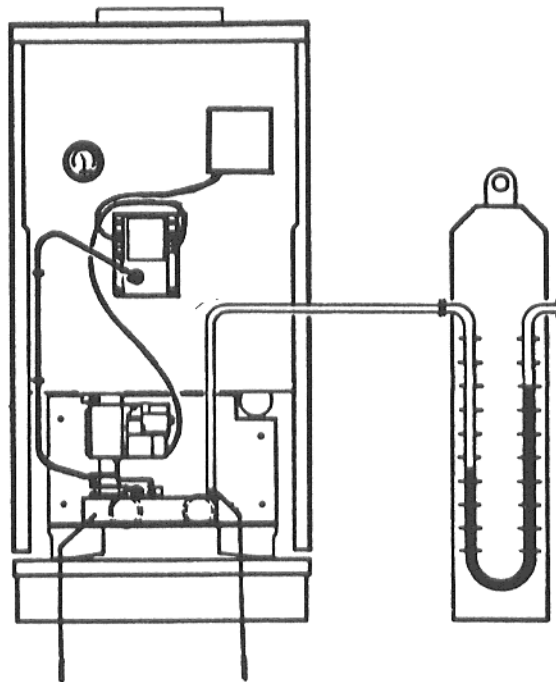


Fig. 17

Boiler  
Size 10 to 55  
(One burner  
Assembly)

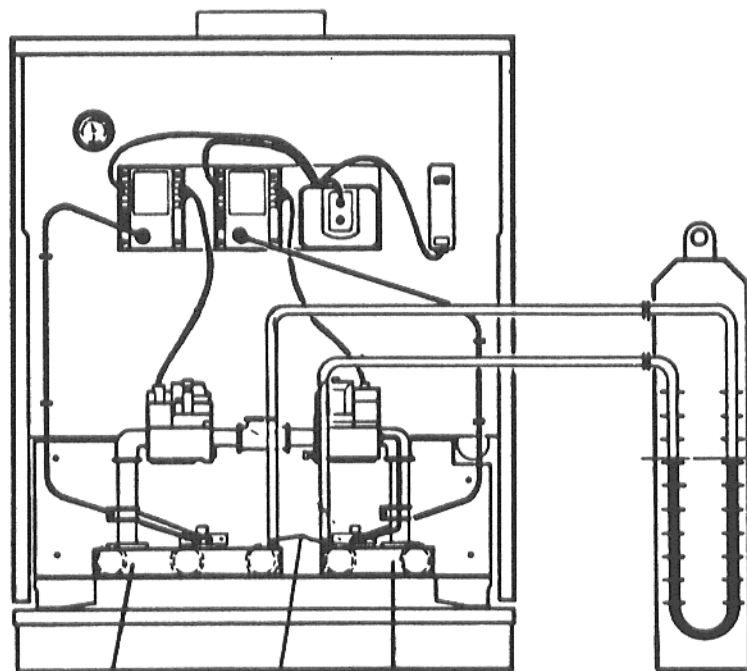


Pressure Gauge  
(U-Pipe)

Fig. 18

Manifold      Pressure Test  
                  Tapping

Boiler  
Size 63 to 110  
(Two Burner  
Assemblies)



$\Delta p \cdot 0$

Pressure Gauge  
(U-Pipe)

Fig. 19

Manifold 1      Pressure Test  
                  Tappings      Manifold 2

## ELECTRICAL SUPPLY

External wiring must be in accordance with the regulations and any local regulations which apply.

The method of connection to the main electricity supply should facilitate complete electrical isolation of the boilers. The supply should only serve the boiler with a separate supply for the circulating pumps.

A method of connection should be provided adjacent to the boilers in a readily accessible position.

Wiring diagrams for the (04.(32,35); range of boilers are shown at the rear of this manual.

## A MEANS OF INSULATION MUST ALWAYS BE PROVIDED

## MAINTENANCE

At least once a year a periodic inspection of the boiler by a qualified service agency is necessary. On this occasion boiler has to be checked as described at the following page, entitled "Instructions for servicing and cleaning the boiler".

All flue product carrying areas of the boiler, its vent system, and main and pilot burners shall be examined for continued safe operation. Particular attention shall be given to deterioration from corrosion or other sources.

## INSTRUCTIONS FOR SERVICING AND CLEANING BOILER

Servicing should be carried out by a fully trained gas service man.

It is advisable to clean any dirt or corrosion from the heating surfaces of the boiler at least once a year to maintain highest efficiency.

1. Turn main manual shut-off valve to closed position.
2. Switch OFF the electricity supply to the boiler.
3. Remove the front door.
4. Release the gas supply pipe union from the gas control.
5. Pull cable(s) off the control module(s).
6. Remove the four nuts holding the combustion chamber access door and carefully slide out the complete burner unit.
7. Lift up boiler top cover at the front and unhook at the rear.
8. Unscrew the wing nuts holding the vent hood cover and remove it.
9. Remove baffle plate lying on top of the vent ways, notice its orientation to facilitate re-installation.
10. Using the brush provided with the boiler, sweep through the flue-ways.
11. Replace baffle plate, vent hood cover, and boiler top cover.
12. Brush or vacuum the deposits from combustion chamber at the bottom of the boiler.
13. To clean the burners, use soft bristle brush or a clean cloth.
14. Inspect the pilot burner and electrodes for damage or wear.
15. Ensure that the main burner ports are clean.
16. Inspect the ceramic fibre insulation on the combustion chamber access door and replace if damaged.
17. Replace burner assembly into boiler combustion chamber, reversing the order followed during initial disassembly. Ensure that all four securing nuts and lock washers are in place and tightened securely. Re-connect the gas supply to the boiler, and refer to installation and service instructions for the procedure to follow, to check for gas leaks in the connections.
18. Inspect the external electrical wiring and thermostat capillaries for damage and reconnect (observe matching colours marking).
19. Check that all nuts and fittings have been replaced and are tight.

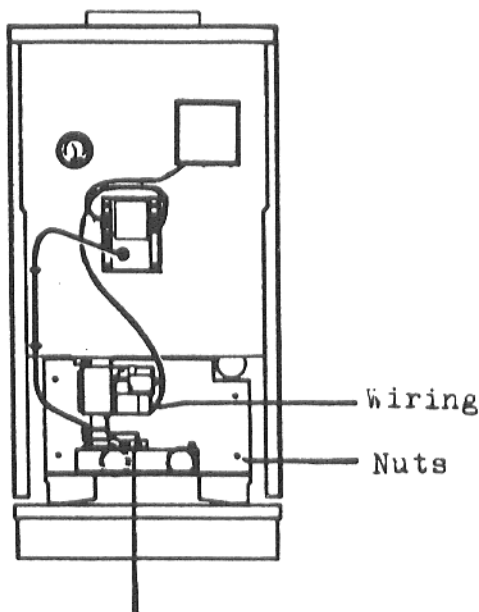


Fig. 20

Pilot Burner  
incl. Cabling

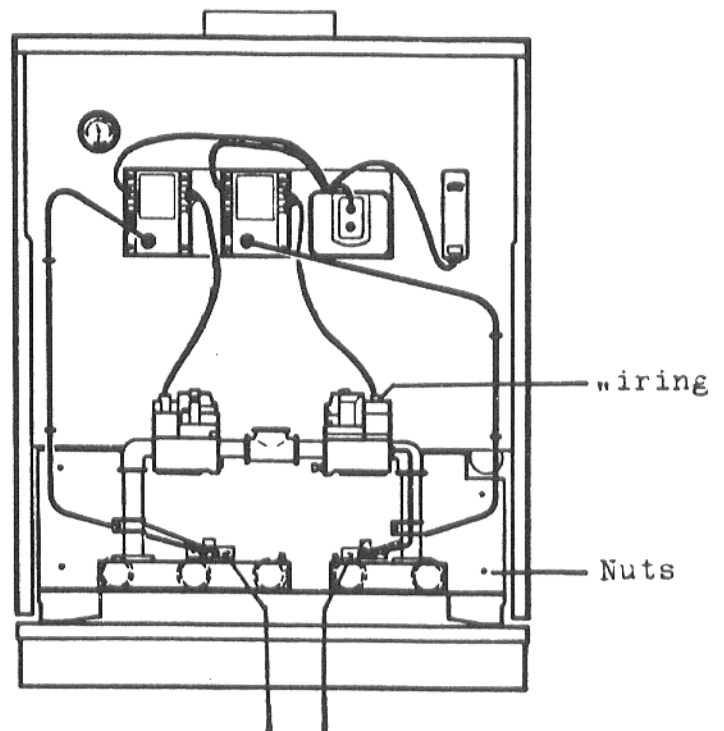
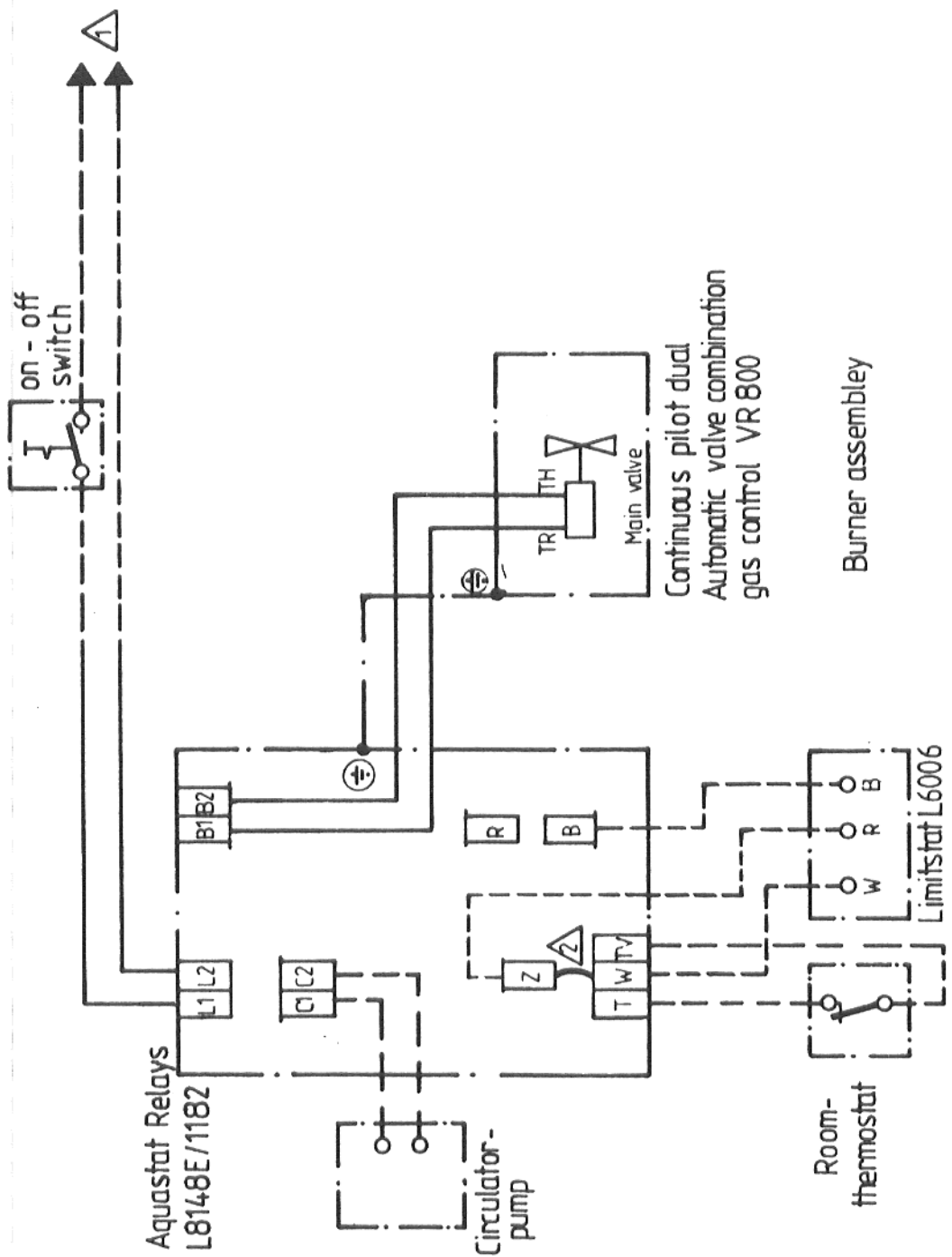


Fig. 21

Pilot Burner  
incl. Cabling



⚠ Power supply disconnect means and overload protection provided as required

⚠ Remove jumper when adding L 6006 low limit control to system

Wiring diagram gas boiler 04.33 model 10 to 55  
 Wiring diagram gas boiler 04.35 model 10 to 55

**Buderus**

Standing pilot

Zg.Nr.

R03-00-601-1346 (4)

Schaltplan

GAW 016...0501

Sach Nr

5000966

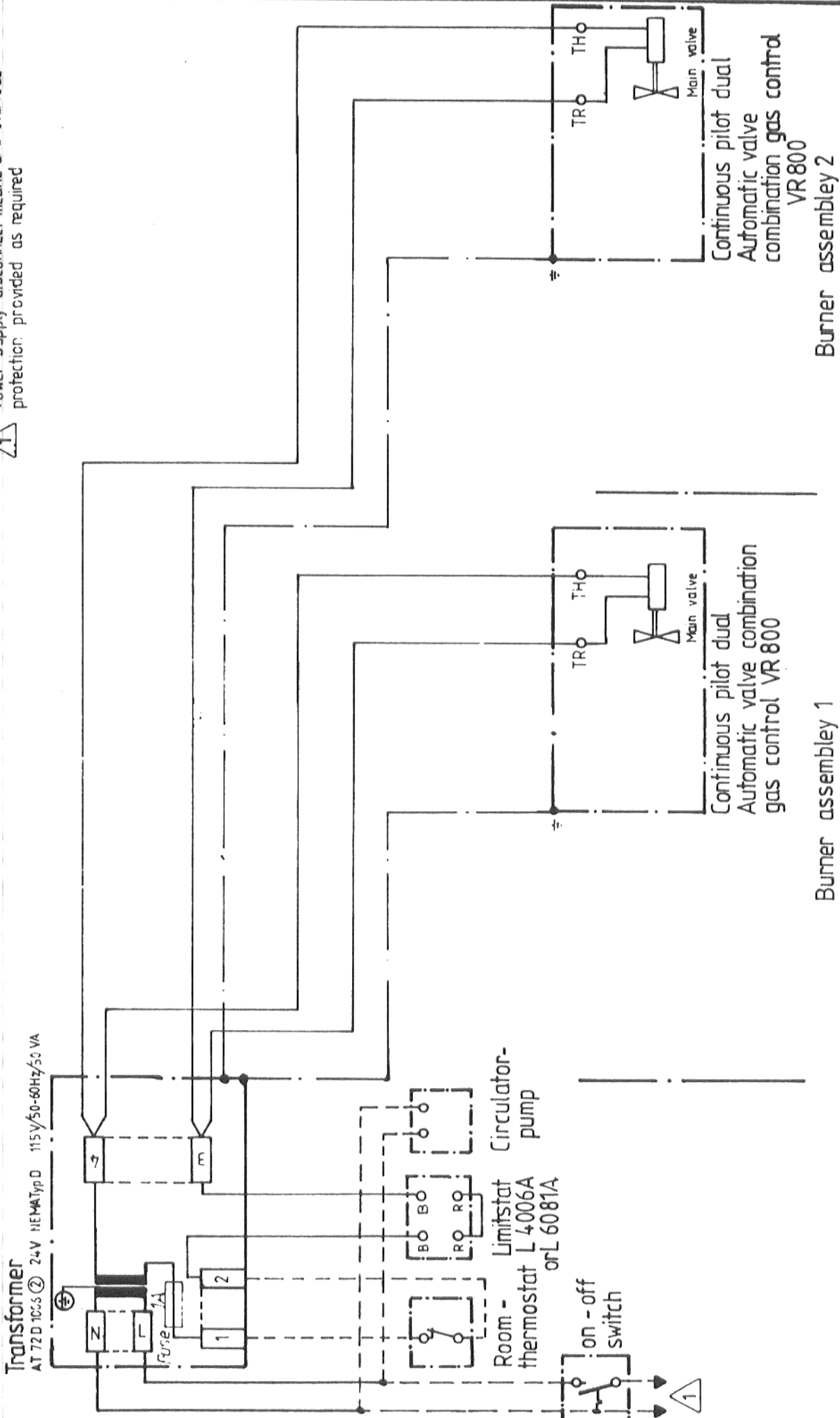
Anderung

1012-1014.01

Ausgabe

6/86

**⚠** Power supply disconnect means and overload protection provided as required



Wiring diagram gas-boiler 04.33 model 63to71

Zg.Nr R03-00-601-1070 (4) Schnittplan GAW012.501

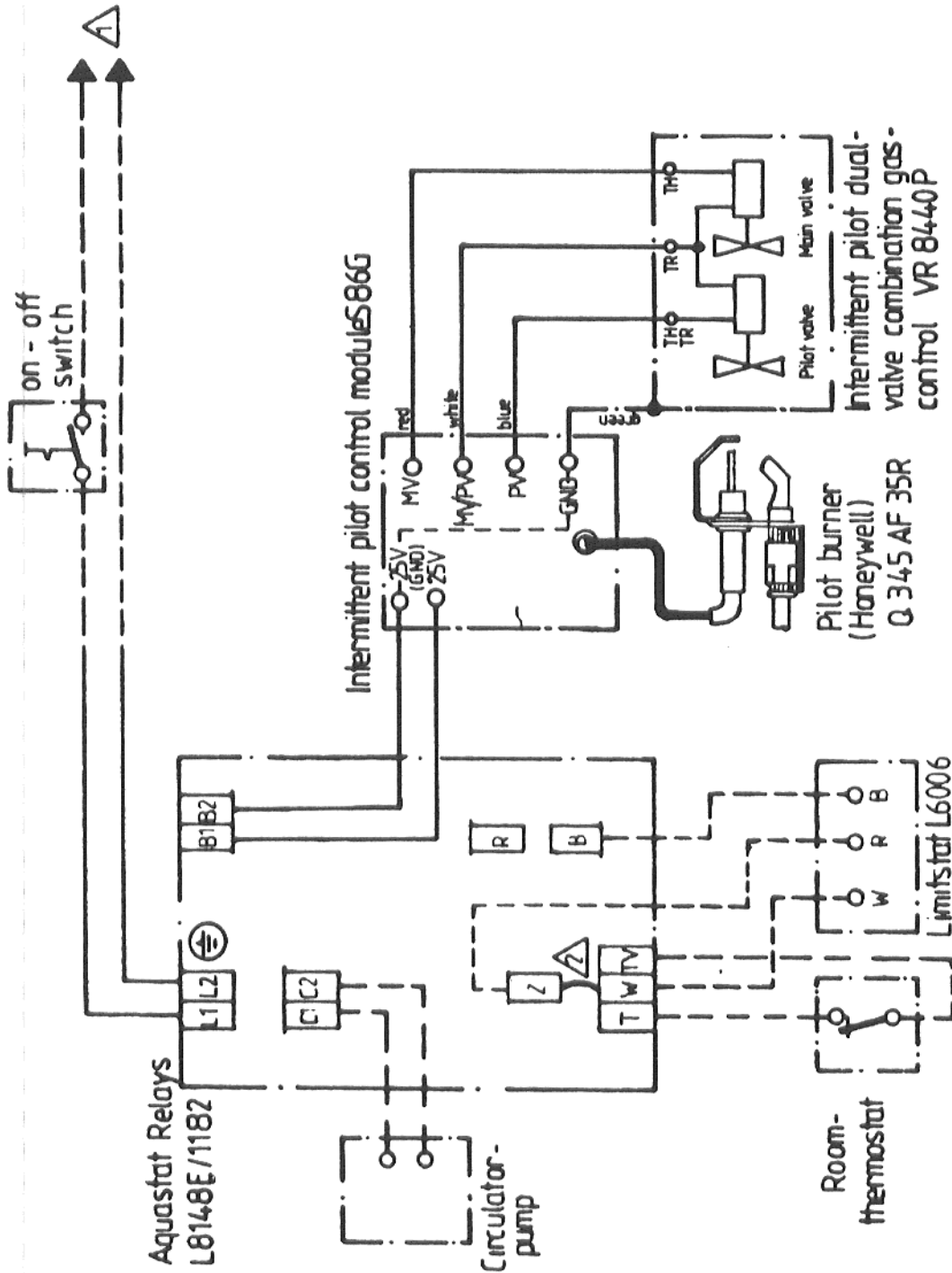
Standing pilot

sch. Nr. 5000773

Änderung 174.17

Ausgabe 1/84

**Buderus**



Power supply disconnect means and overload protection provided as required

Remove jumper when adding L6006 low limit control to system

**Buderus**

Wiring diagram gas boiler 04.32 model 10 to 55  
Wiring diagram gas boiler 04.34 model 10 to 55

Intermittent pilot

Zg.Nr

R03-00-601-1348 (4)

Änderung

5000968

1012-1014.01

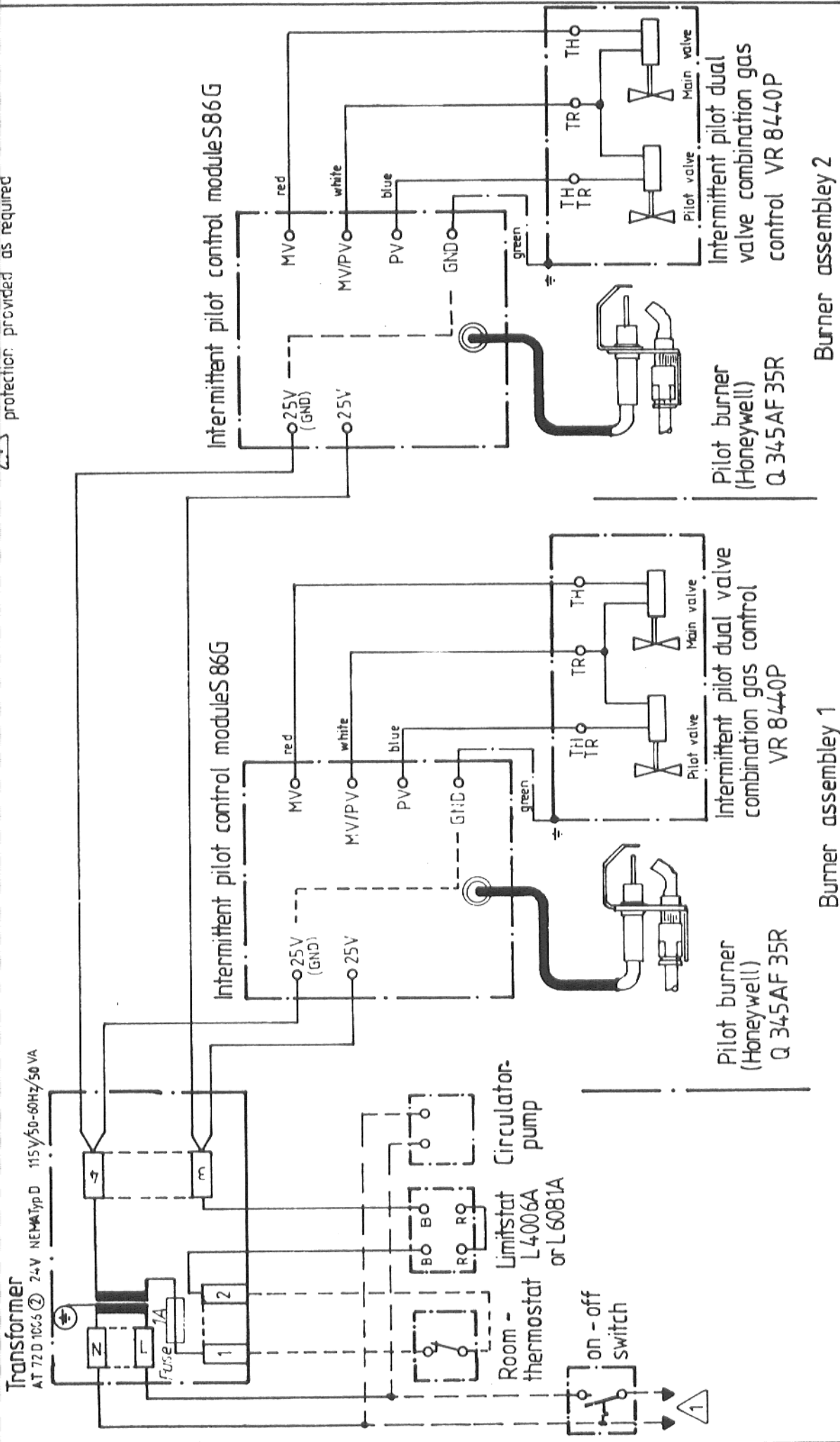
Schaltplan

GAW 018...0501

Ausgabe

6/86

⚠ Power supply disconnect means and overload protection provided as required



Burner assembly 1

Burner assembly 2

|                |  |                          |                        |
|----------------|--|--------------------------|------------------------|
| <b>Buderus</b> | Wiring diagram gas-boiler 04.34-model 63 to 71 | Zg.Nr R03-00-601-871 (4) | Schnittplan GAW010.501 |
|                | Intermittent pilot                             | h Nr. 5000711            | Änderung 174.17        |
|                |  |                          | Ausgabe 2/83           |

## REPLACEMENT OF PARTS ON HONEYWELL PILOT ASSEMBLY

### FITTING A COMPLETE PILOT ASSEMBLY

1. Disconnect H.T. cable from the end of the electrode (04.32 series) or disconnect thermocouple from the combination gas control (04.35 series).
2. Loosen the compression fittings holding the pilot gas pipeline at both ends then remove the compression fittings from pipework.
3. Remove the two screws holding the pilot assembly plate to the burner carrier plate. Reassemble the replacement pilot assembly in reverse order and start up the boiler. Use bracket and orifice of faulty pilot. Do not omit gas leak test, refer to installation and service instructions.

### FITTING A HONEYWELL PILOT ORIFICE

1. Remove pilot burner explained above.
2. Pull out assembly, then carefully push out the old, damaged orifice and insert new one.
3. Reassemble in reverse order and start up the boiler. Do not omit gas leak test, page 8.

### FITTING INSULATION TO BURNER CARRIER PLATE

1. Remove the complete burner unit as indicated in "Servicing of Boiler", page 6.
2. Remove the damaged insulation and scrape the surface of the metal clean.
3. Apply appropriate adhesive preferably furnace cement, available from the dealer who you purchased the replacement insulation from, to the combustion chamber access door and press new insulation into position.
4. Reassemble in reverse order and start up the boiler. Do not omit gas leak test, page 8.

### FITTING OF MAIN BURNER ORIFICES

Use original BUDERUS orifices only.

1. Carefully unscrew the orifice and remove the fibre gasket.
2. Clean the orifice.

DO NOT DAMAGE OR ENLARGE THE ORIFICE HOLE, UNDER ANY CIRCUMSTANCE!

3. Check that any replacement is the correct size. Refer to page 8.
4. Reassemble in reverse and start up the boiler.

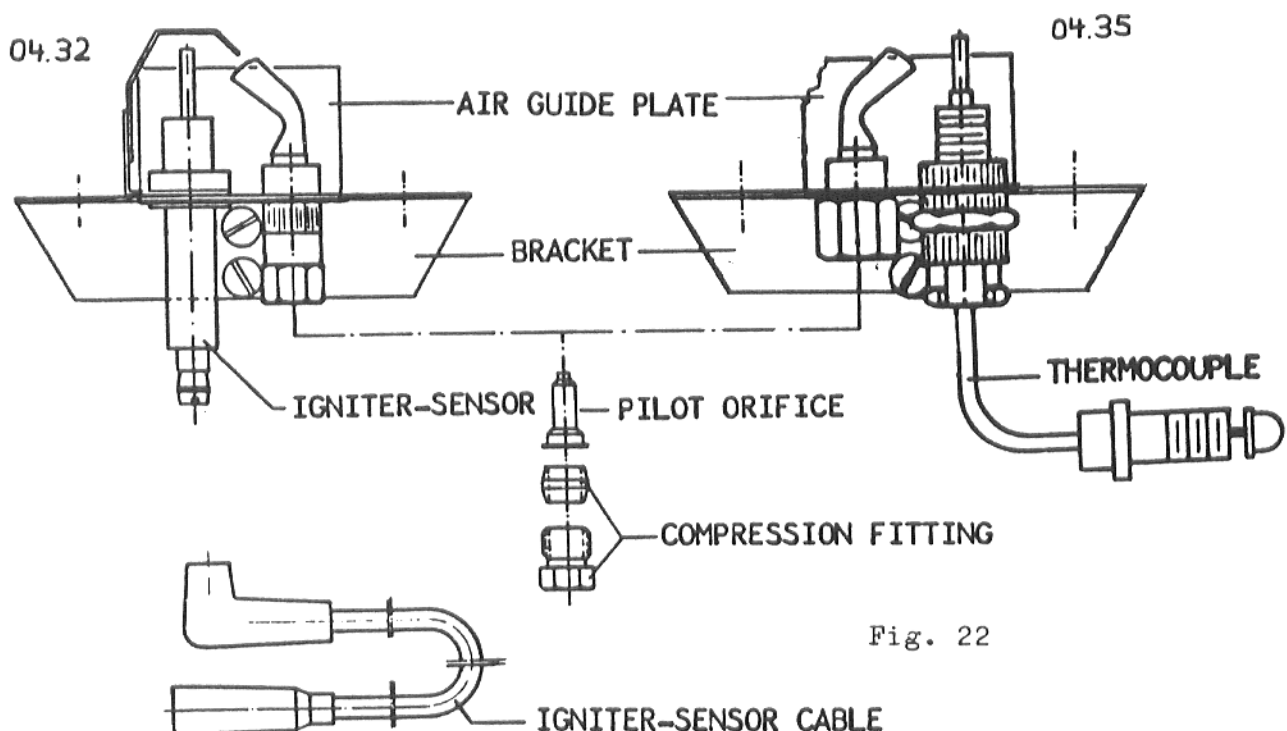


Fig. 22

## TROUBLESHOOTING AND SERVICE

### GENERAL

#### MAIN BURNER PRODUCES SMOKE

- |                                    |   |
|------------------------------------|---|
| 1. Inadequate air for combustion   | Check air supply into boiler room is adequate - refer to "Air Supply", page 3, Installation and Service Instructions. |
| 2. Primary air supply restricted   | Clean burners and primary air opening - refer to "Cleaning" page 24.  |
| 3. Main burner orifices wrong size | Replace with correct size - refer to table on page 7, Installation and Service Instructions.                          |

#### INSUFFICIENT HEAT OUTPUT

- |                                    |  |
|------------------------------------|--|
| 1. Inlet gas pressure inadequate   | Check gas pressure setting - refer to tables on page 7, 22 and 23 Installation and Service Instructions. |
| 2. Main burner orifices blocked    | Check orifices - refer to page 7, Installation and Service Instructions.                                 |
| 3. Main burner orifices wrong size | Replace with correct size - refer to table on page 7 "Installation and Service Instructions".            |

#### S 86 INTERMITTENT PILOT SYSTEM TROUBLESHOOTING

##### IMPORTANT

1. Always de-energize the system for at least 1 minute before recycling for further test.
2. If performance of any component is found to be unsatisfactory, be sure to review the general installation requirements (starting on page 3, Installation and Service Instructions), before replacing.
3. The following service procedures are only basic Intermittent Pilot system. On all installations, refer to the appliance manufacturer's service instructions for the specific installation.
4. The electronic S86 control module cannot be repaired. If troubleshooting procedure indicates a malfunction in the S86, the S86 control module must be replaced.
5. Intermittent Pilot system should be serviced only by trained and experienced personnel.

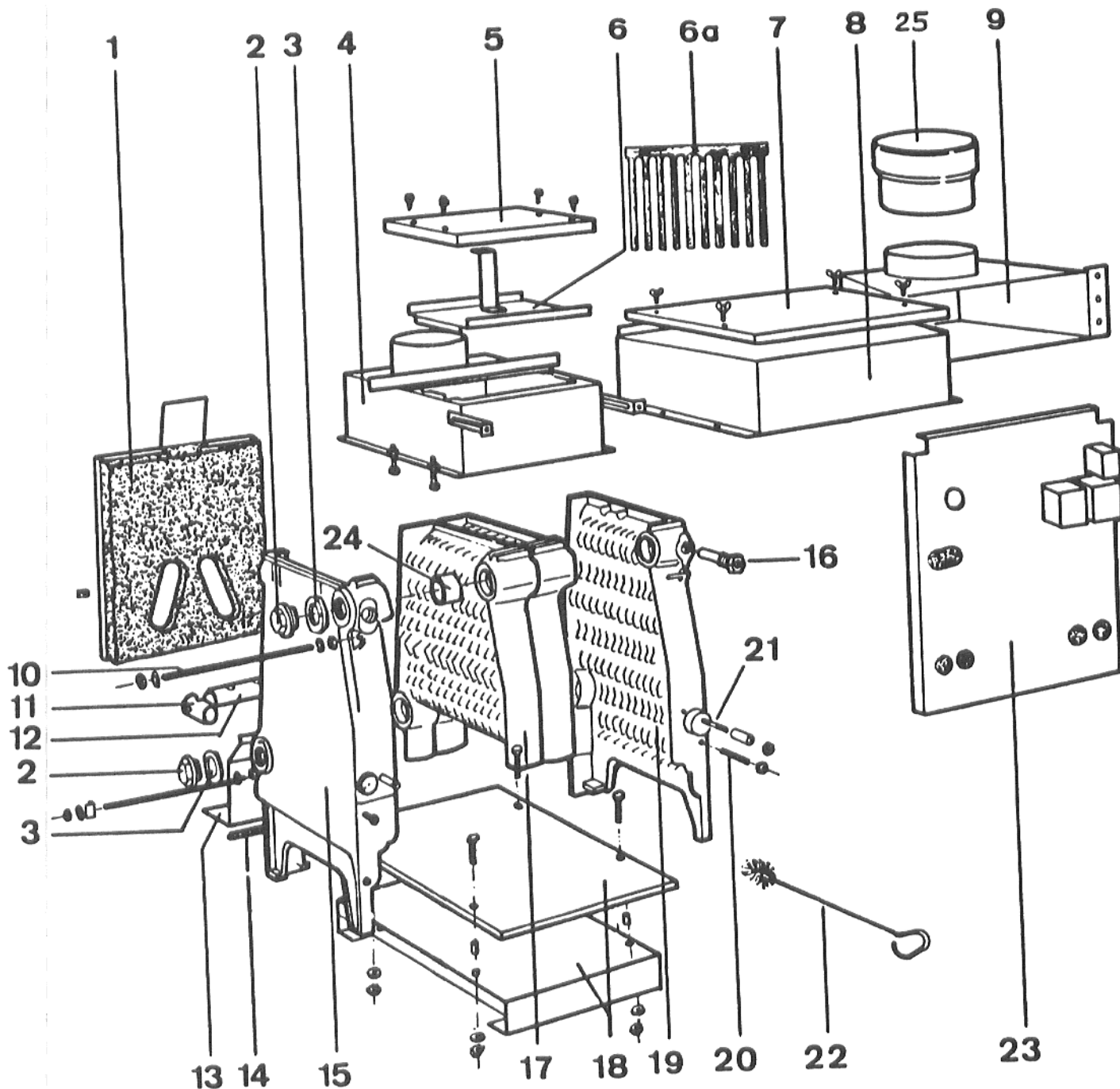


Fig. 23

PARTS LIST

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1 Rear Bulkhead</li> <li>2 Plug</li> <li>3 Gasket</li> <li>4 Draft Hood for Boiler Size 10 up to 47</li> <li>5 Draft Hood Cover for Boiler Size 10 up to 47</li> <li>6 Baffle Plate (on all sizes except 39)</li> <li>6a Baffle Fork (cast iron) - for size 15 only</li> <li>7 Draft Hood Cover for Boiler Size 55 up to 110</li> <li>8 Flue Collector for Boiler Size 55 up to 110</li> <li>9 Draft Hood for Boiler Size 55 up to 110</li> <li>10 Tie Bar</li> <li>11 Connecting Piece for Inlet Water Distributing Pipe for Boiler Size 27 up to 110</li> </ul> | <ul style="list-style-type: none"> <li>12 Inlet Water Distributing Pipe for Boiler Size 27 up to 110</li> <li>13 Shield Plate</li> <li>14 Sealing Rope</li> <li>15 Left End Section</li> <li>16 Sensor Pocket</li> <li>17 Middle Section</li> <li>18 Non Combustible Base</li> <li>19 Right End Section</li> <li>20 Stud</li> <li>21 Stud</li> <li>22 Cleaning Brush</li> <li>23 Front Bulkhead</li> <li>24 Conical Nippel</li> <li><b>25 Flue Adapter</b></li> </ul> |
|--|---|

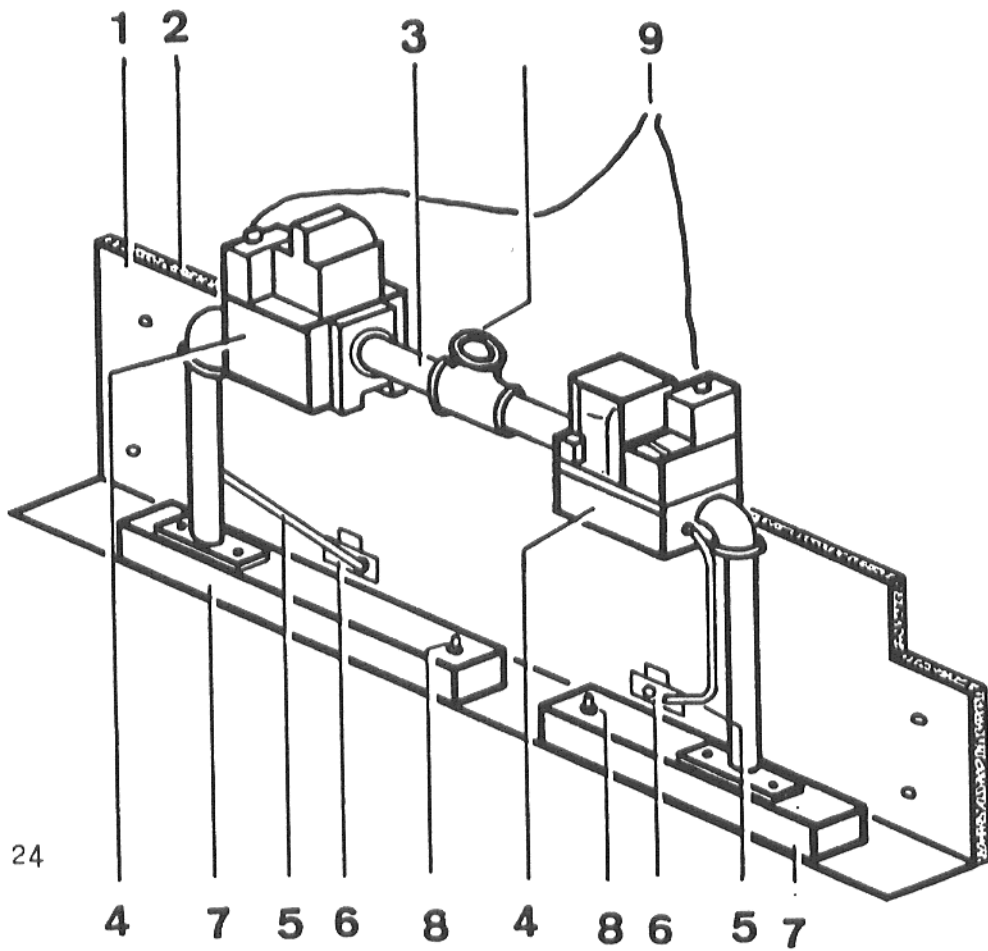
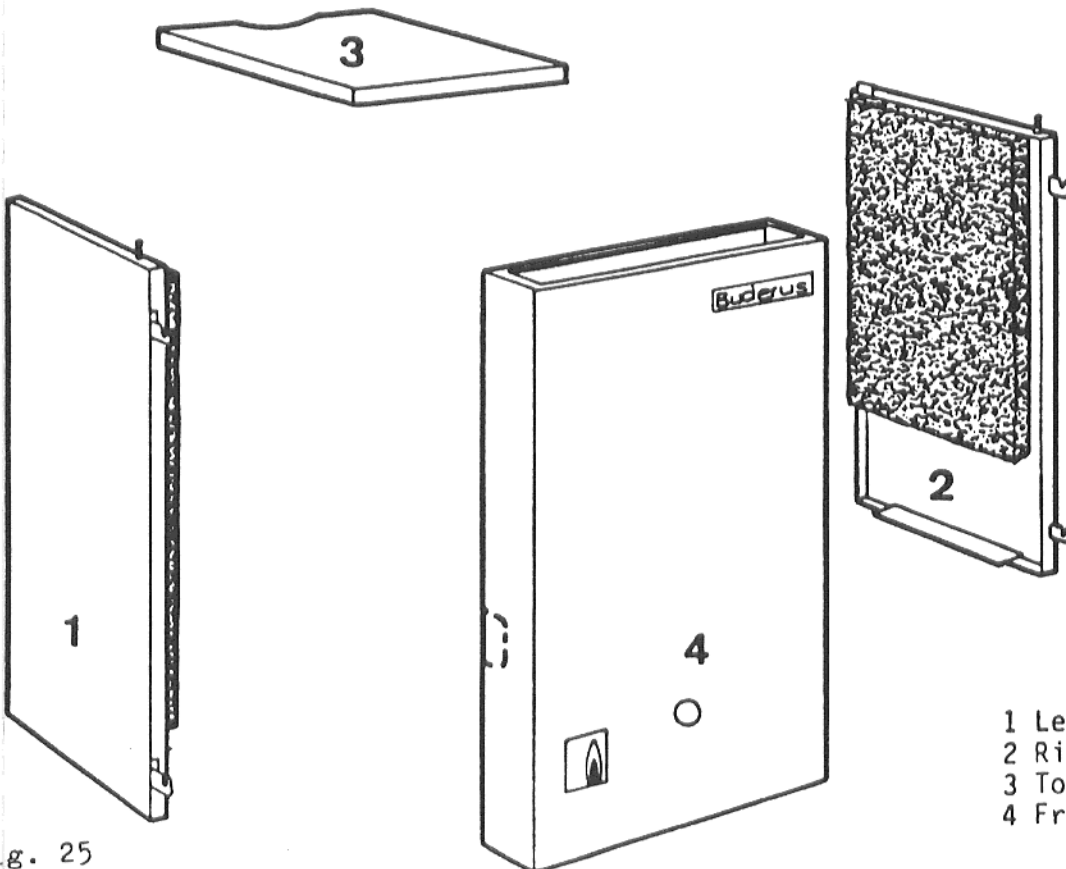


Fig. 24

- |                                     |                            |                         |
|-------------------------------------|----------------------------|-------------------------|
| 1 Combustion Chamber<br>Access Door | 4 Gas Combination<br>Valve | 7 Manifold              |
| 2 Insulating                        | 5 Pilot Tubing             | 8 Pressure Test<br>Plug |
| 3 Gas Piping                        | 6 Pilot Burner             | 9 Ignition Cable        |



- |                    |
|--------------------|
| 1 Left Side Panel  |
| 2 Right Side Panel |
| 3 Top Panel        |
| 4 Front Door       |

Fig. 25

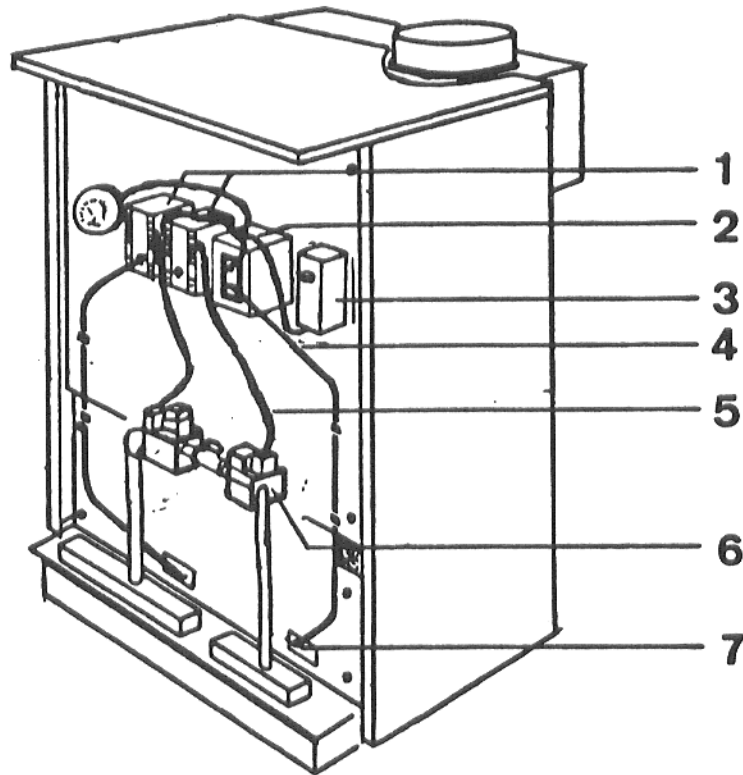


Fig. 26

- 1 Intermittent Pilot Control Module(s) 386
- 2 Transformer
- 3 High/Limit Control
- 4 Igniter-Sensor Cable
- 5 Connecting Cable Module - Control Valve
- 6 Combination Gas Control, VR 844CP,  
with 1.2" step open regulator.
- 7 Pilot Burner

REPLACEMENT PARTS FOR THE ENTIRE BOILER ARE AVAILABLE FROM THE FACTORY,  
OR YOUR LOCALSERVICE ORGANIZATION.

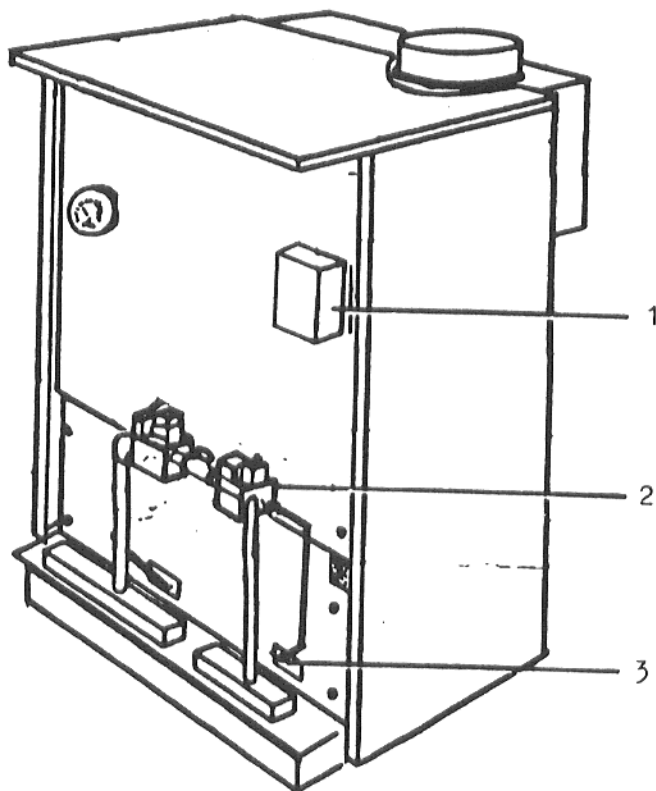


Fig. 27

- (1) High/Limit Control  
(Aquastat, Limitstat)
- (2) Combination Gas Control,  
VR 800
- (3) Pilot Burner

REPLACEMENT PARTS FOR THE ENTIRE BOILER ARE AVAILABLE FROM THE FACTORY,  
OR YOUR LOCALSERVICE ORGANIZATION.

ADDRESSES

---

IMPORTER:

CONTRACTOR:

MANUFACTURER: Buderus P.O. Box 1220 6330 Wetzlar  
German Federal Republic

Edition: August 1986

**Subject to modifications!**