The wide range of models available is able to satisfy the needs of an ever more demanding and diverse market. The range of gas burners includes single-stage burners, two-stage...P, pneumatic modulating...PN, pneumatic modulating low NOx emissions (class III)...LX, pneumatic modulating low emissions with inverter...LX V, electronic modulating...ME, electronic modulating with low pollution emissions with proportional gas valve...LX PN ME, available with inverter in the V version.
**FLAME MODULATION**

It was decided to combine a new type of pneumatic modulation using "GARC" (constant gas-air ratio) valves with the particular type of combustion head offering emissions well below the most restrictive limits of current regulations.

This new system is much more efficient and easier to use than the mechanical modulation widely used in burners and whose best use requires great experience. Adjustment is limited to selecting the required air/gas ratio (that determines the percentage of excess oxygen), and adjusting this ratio only to burner maximum and minimum capacity; the innumerable intermediate stages are self-regulating thanks to the particular characteristics of these valves.

The burner becomes much "leaner" in no longer requiring the servomotor system, the lever mechanisms or the shutter valves usually used with normal modulators, and the quantity of gas introduced in the combustion chamber depends only on the amount of air that will increase and decreased thanks to a simple air shutter. The system is also defined as "dynamic", i.e. self-regulating if the conditions (gas and air flowrates and pressures) change for any reason, and is thus safer while requiring less maintenance.

**ADVANTAGES OF THE GARC SYSTEM:**

**VERY HIGH MODULATION RATIOS**

High modulation ratios ensure very small fluctuations in the controlled value (T° of the water or steam pressure), optimizing running economy, comfort, and burner and heat generator life.

**O₂ IN FUMES CONSTANT**

The constant gas-air ratio assures constant residual oxygen levels in the fumes, always offering high boiler efficiencies for boilers, and above all condensing boilers.

**EASY USE AND MAINTENANCE**

The GARC system makes intervention on the burner quick and easy, adjusting two screws and reducing adjustment times by 75% compared with a conventional mechanically-adjusted modulating burner.
Traditional modulation systems (mechanical modulation) used in standard burners have a mechanical connection between the servomotors and the adjustment parts which use rods, drive levers and joints. This creates mechanical play and hysteresis in the combustion air/fuel calibration system, which creates imprecision for the combustion adjustment, especially at the minimum loads. This combustion adjustment imprecision translates as loss of efficiency in terms of energy yield.

With electronic modulation, there is absolutely no mechanical play and hysteresis as the servomotors are connected directly to the adjustment devices, without drive levers or rods. This guarantees optimal combustion values at all the load points.

The correct position of the servomotors (stepping mode, with precision to one tenth of a degree) is guaranteed by the electronic cam, the new microprocessor “flame control”, which is used to command and monitor all the burner functions. The electronic cam has a built-in gas seal control. The PID temperature/pressure load adjuster is an optional for the BGN series and standard for GI series burners.

The Me series burners comply with the ever increasingly demanding requirements of a market which requires combustion systems with high energy efficiency, considerable technological content and cost cuts for installation and maintenance. The creation of these Me series burners is confirmation that the technology used is continuously being developed, with increasing precision, reliability and duration over time. At the same time, costs are continuously being reduced, making use of these burners more convenient.

**BURNER OPERATING DISPLAY WITH PROGRAMMING KEYPAD**

Used to display the operating sequence of the position of the air servomotor and servomotor command. Burner operating time and number of successful start-ups. Also indicates the quality of the flame detected. If the burner is blocked, an error code will be displayed for immediate recognition of the cause of the block. You can display the fuel consumption using a pulse signal coming from the gas flow measurer. Simple programming keypad for burner calibration. These functions are password-protected.

**ELECTRONIC CAM**


**SERVOMOTORS FOR AIR AND FUEL ADJUSTMENT**

The air and gas flows are adjusted using stepping mode servomotors with precision to one tenth of a degree. The considerable precision of the adjustments makes it possible to maintain the combustion at optimal values at all the load points.
**... LX EXECUTION**

**Low pollutant emissions**

To reduce noxious NOx emissions into the atmosphere, combustion with greatly restricted excess air is required, as well as, and especially, flame temperatures that are as low as possible. Baltur has designed and developed special combustion heads that recycle an exact quantity of exhaust gases according to the flow of gas/air that the burner must supply, while ensuring stable and "clean" combustion with excess air that is much below normal levels. With this type of combustion head, very low polluting NOx and CO emissions are obtained, in accordance with "class III" of EU regulation EN676. The "LX" series of burners have thus come into being, a real contribution to improving the environment we live in.

**APPLICATIONS**

LX range burners offer very high performance with low emissions, a wide operating range, high levels of applied technology and, above all, flexible use. In fact, in addition to producing very low harmful emissions, LX range burners are also outstanding modulating burners and can therefore be used for any application requiring a multi-stage gas-fired burner. To obtain the low NOx emissions declared, the burner must be combined with suitable boilers: three-pass, condensing and any direct exhaust generator with thermal load not higher than 1.8 MW/m².

**OPERATION**

LX range burners are manufactured exclusively in two-stage progressive and modulating versions. With two-stage progressive output use, the burner goes from min. to max. (and vice versa) without stopping in intermediate stages, controlled by a thermostat or pressure switch according to the type of system. In this way the burner goes smoothly from one power level to another. However, the burner is mainly used in the modulating version, which means it can be used as a true multi-stage burner. With the use of the RWF 40 electronic control, already foreseeable as standard, or with an external PLC type control system, LX range burners no longer work on just two single power "steps" but with countless flame stages, punctually adjusting to the system's precise heat requirements.

**MODULATION**

For this type of burner, electronic modulation M E is used in combination with a pneumatic gas train, thus bringing together the advantages of the M E version and those of the PN version.

**... V EXECUTION**

**Frequency converter (inverter)**

Energy costs and the pollution associated with its production require increasing attention to consumption. It therefore becomes necessary to produce systems that are increasingly more efficient. Today, non-dissipating control systems that reduce losses to minimum, are preferred. In fact, the fan of a burner in conventional configuration always absorbs a part of the electrical power supplied by the fan motor. Moreover, in such a configuration the fan always runs at top speed, thus generating maximum noise at every operating power. These limits can be exceeded by installing a static frequency converter inside the control panel, and which varies the fan rpm with the change in burner power. The frequency converter receives the signal that regulates the rpm directly from the combustion air actuator, regulating the flowrate according to actual requirements, for better energy management. The air shutters remain on the burner and carry out an air flow and dynamic air pressure fine adjustment function at the combustion head, above all during transients. Use of the frequency converter offers considerable savings in electrical power costs for feeding the fan, with peaks of 70 % at min. burner power and a weighted annual reduction in the order of 30-40 %.

The second big advantage offered by inverter for regulating fan speed (rpm) is the very high reduction in the sound pressure level at partial burner loads, with peaks that can reach 30 % at min. burner power with respect to the standard solution with air flow control exclusively entrusted to the shutters and fan at nominal motor rpm. Other advantages regarding the use of the frequency converter are:

- **Power factor close to 1** at any speed. Therefore possible power factor improvements are not necessary.
- **Reduction in starting currents**: the frequency converter enables gradual starting of the motor. Y/∆ starts or soft starters become unnecessary.
- **Lower mechanical stress**: the absence of sudden starts considerably reduces stress to the system, with benefits in terms of maintenance on the mechanical parts.

The excellent performance for cost obtained using the frequency converter is self-evident.
Product range

The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:

a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;
b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.

SINGLE-STAGE GAS BURNERS

The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:

a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;
b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.

NOTES:
1) Equipped with air shutoff device.
3) Soundproof lid on burner are intake.
*) Net calorific value of natural gas: Hi = 35.80 MJ/m³ ≈ 8550 kcal/m³, at reference conditions of 0°C, 1013 mbar.
**) Maximum gas inlet pressure at pressure regulator in CE version, at train for EXP version.

<table>
<thead>
<tr>
<th>Model</th>
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<th>Capacity</th>
<th>Pressure natural gas</th>
<th>Electric supply</th>
<th>Motor kW</th>
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Frequency 50 Hz

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Frequency 60 Hz
**BTG... Series**

**TECHNICAL AND FUNCTIONAL CHARACTERISTICS**
- Gas-fired burner.
- Single stage operation (on/off).
- Ability to operate with any type of combustion chamber.
- Air-gas mixing at blast-pipe.
- Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
- Exhaust gas recycling blast-pipe able to achieve very low pollutant emissions, particularly with regard to nitrous oxides (NOx) (class II for BTG 15 and class III for BTG 20 according to EN 676 norm).
- Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
- Manual air flow adjustment.
- Possibility to choose gas train with valve tightness control.
- Equipped with one 7-pole connector, one flange and one insulating seal for boiler fastening.

**CONSTRUCTION CHARACTERISTICS**
- The burner consists of:
  - Light aluminium alloy fan part.
  - High performance centrifugal fan.
  - Combustion air inlet with device to adjust the air flow; automatically closing air gate.
  - Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
  - Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
  - Monophase electric motor to run fan.
  - Air pressure switch to ensure the presence of combustion air.
  - Gas train complete with operation and safety valve, minimum pressure switch, pressure regulator and gas filter.
  - Automatic control and command equipment for the burner, compliant with European standard EN298.
  - Flame detection by ionisation electrode.
  - 7-pole outlet for burner electrical and thermostat connections.
  - Prepared for microamperometer connection with ionisation cable.
  - Electrical protection rating IP40.
  - Sound-proof plastic protective cover.

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**SPARKGAS 35**

**TECHNICAL AND FUNCTIONAL CHARACTERISTICS**
- Gas burner.
- Single stage operation (on/off).
- Ability to operate with any type of combustion chamber.
- Air-gas mixing at blast-pipe.
- Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
- Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
- Manual air flow adjustment.
- Possibility to choose gas train with valve tightness control.
- Equipped with one 7-pole connector, one flange and one insulating seal for boiler fastening.
- On request: longer blast tube, device for air gate closure during pause to avoid loss of heat up flue.

**CONSTRUCTION CHARACTERISTICS**
- The burner consists of:
  - Light aluminium alloy fan part.
  - High performance centrifugal fan.
  - Combustion air intake with air flow adjustment device.
  - Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
  - Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
  - Monophase electric motor to run fan.
  - Device made from sound-absorbing material to reduce fan noise.
  - Air pressure switch to ensure the presence of combustion air.
  - Gas train complete with operation and safety valve, minimum pressure switch,

Conform to:
- Gas Directive 90/396/CEE
- E.M.C. Directive 89/336/CEE
- L.V. Directive 73/23/CEE
Reference standard: EN676
Characteristics

- Pressure regulator and gas filter.
- Automatic control and command equipment for the burner, compliant with European standard EN298.
- Flame detection by ionisation electrode.
- Start/stop switch (except the W version).
- 7-pole outlet for burner electrical and thermostat connections.
- Electrical protection rating IP40.
- Sound-proof plastic protective cover (except the W version).

TECHNICAL AND FUNCTIONAL CHARACTERISTICS

- Gas-fired burner CE certified according to standard EN676.
- Single stage operation (on/off).
- Gas ignition/regulation by means of two-stage operation valve for the CE execution or one-stage valve for the non-CE execution.
- Suitable for operation with any type of combustion chamber, according to standard EN 303.
- Partial combustion gas recirculation blast-pipe with low NOx emissions (class II).
- High ventilation efficiency, low electrical input, low noise.
- Hinge opening on both sides for easy access to the combustion head when burner is installed.
- Air capacity adjustment with manually regulated damper.
- Electrical panel that connects by 4 and 7 pole plugs/sockets (standard accessories).
- Electrical panel with protection rating of IP 55.
- Sliding boiler coupling flange to adapt to head protrusion of the various types of boilers.

CONSTRUCTION CHARACTERISTICS

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy.
- Fan driven by light alloy three-phase electric motor.
- Combustion air input with sound insulation and designed for optimal air damper opening linearity.
- Light die-cast aluminium alloy electrical panel.
- Printed circuit electrical connections.
- Control panel with display diagram for working mode with indication lights, start/stop switch and burner unblocking button.
- Electronic control box compliant with standard EN298, with running faults detection.
- Ionizer electrode flame detection.
- Gas train with safety valve and two-stage working valve, minimum pressure switch, pressure regulator and filter.
- Intelligent connectors for burner/train (error proof).

TBG 55

TECHNICAL AND FUNCTIONAL CHARACTERISTICS

- Gas-fired burner CE certified according to standard EN676.
- Single stage operation (on/off).
- Gas ignition/regulation by means of two-stage operation valve for the CE execution or one-stage valve for the non-CE execution.
- Suitable for operation with any type of combustion chamber, according to standard EN 303.
- Partial combustion gas recirculation blast-pipe with low NOx emissions (class II).
- High ventilation efficiency, low electrical input, low noise.
- Hinge opening on both sides for easy access to the combustion head when burner is installed.
- Air capacity adjustment with manually regulated damper.
- Electrical panel that connects by 4 and 7 pole plugs/sockets (standard accessories).
- Electrical panel with protection rating of IP 55.
- Sliding boiler coupling flange to adapt to head protrusion of the various types of boilers.

CONSTRUCTION CHARACTERISTICS

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy.
- Fan driven by light alloy three-phase electric motor.
- Combustion air input with sound insulation and designed for optimal air damper opening linearity.
- Light die-cast aluminium alloy electrical panel.
- Printed circuit electrical connections.
- Control panel with display diagram for working mode with indication lights, start/stop switch and burner unblocking button.
- Electronic control box compliant with standard EN298, with running faults detection.
- Ionizer electrode flame detection.
- Gas train with safety valve and two-stage working valve, minimum pressure switch, pressure regulator and filter.
- Intelligent connectors for burner/train (error proof).

Conform to:
- Gas Directive 90/396/CEE
- E.M.C. Directive 89/336/CEE
- L.V. Directive 73/23/CEE
- Reference standard: EN676
BTG... - SPARKGAS...

**BTG - SPARKGAS**

Legend

2. Air pressure switch.
3. Operating valve.
4. On request valve tightness control.
5. Gas pressure regulator.
7. Minimum pressure switch.
8. Gas filter.

Carried out by the installing technician:

10. Ball valve.

**TBG 55**

Legend

1. Air adjustment servomotor.
2. Air pressure switch.
3. Two-stage operating valve.
4. Minimum pressure switch.
5. Safety valve.
7. Gas filter.

Carried out by the installing technician:

8. Anti-vibration joint.
DIAGRAM FOR THE CONNECTION OF A BURNER TO THE GAS MAINS AT AVERAGE PRESSURE (BT 8531/1)

1. Central reduction and measurement unit.
2. Stop-cock.
4. Pressure reducer.
5. Flow meter.
6. Discharge into the atmosphere with flame trap net.
7. Possible automatic bleed valve (must discharge externally in suitable place).
10. Reduction unit or pressure regulator/stabiliser (suited to the specific case).
11. Anti-vibration joint.
12. Flange coupling.

D Distance between stabiliser (or regulator/stabiliser) and gas valve at least 1.5 - 2 m.

GENERAL DIAGRAM FOR THE CONNECTION OF MORE BURNERS TO THE GAS MAINS AT AVERAGE PRESSURE (BT 8530/1)

Legend
1. Central reduction and measurement unit.
2. Stop-cock.
4. Pressure reducer.
5. Flow meter.
6. Discharge into the atmosphere with flame trap net.
7. Possible automatic bleed valve (must discharge externally in suitable place).
10. Reduction unit or pressure regulator/stabiliser (suited to the specific case).
11. Anti-vibration joint.
12. Flange coupling.

D Distance between stabiliser (or regulator/stabiliser) and gas valve at least 1.5 - 2 m.
The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:

a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;

b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.
### Product range

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<th>Capacity *)</th>
<th>Pressure natural gas</th>
<th>Power supply electric</th>
<th>Motor kW</th>
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### Frequency 60 Hz

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### Notes:

1) Equipped with air shutoff device.

3) Soundproof lid on burner are intake.

4) Equipped with automatic air shutoff device.

*) Net calorific value of natural gas:

\[ H_i = 35.80 \text{ MJ/m}^3 = 8550 \text{ kcal/m}^3, \]

at reference conditions of 0°C, 1013 mbar.

**) Maximum gas inlet pressure at pressure regulator in CE version, at gas train for EXP version.

*) Net calorific value of natural gas:

\[ H_i = 35.80 \text{ MJ/m}^3 = 8550 \text{ kcal/m}^3, \]

at reference conditions of 0°C, 1013 mbar.
### Model Specifications

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<th>Dimension B₆ (mm)</th>
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### Package Dimensions

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<th>Weights (kg)</th>
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CONSTRUCTION CHARACTERISTICS
The burner consists of:
• Light aluminium alloy fan part.
• High performance centrifugal fan.
• Combustion air inlet with device to adjust the air flow; automatically closing air gate
• Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
• Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
• Monophase electric motor to run fan.
• Air pressure switch to ensure the presence of combustion air.
• Gas train complete with operation and safety valve, minimum pressure switch, pressure regulator and gas filter.
• Automatic control and command equipment for the burner, compliant with European standard EN298.
• Flame detection by ionisation electrode.
• 7-pole outlet for burner electrical and thermostat connections, and 4-pole outlet for second stage control.
• Prepared for microamperometer connection with ionisation cable.
• Electrical protection rating IP40.
• Sound-proof plastic protective cover.

TECHNICAL AND FUNCTIONAL CHARACTERISTICS
• Gas burner.
• Two-stage operation (high/low flame).
• Ability to operate with any type of combustion chamber.
• Air-gas mixing at blast-pipe.
• Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
• Exhaust gas recycling blast-pipe able to achieve very low pollutant emissions, particularly with regard to nitrous oxides (NOx) (class III for BTG 20P and class II for BTG 28P according to EN 676 norm).
• Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
• Air flow regulation for first and second stage by means of electric servomotor with pause closure of gate to prevent any heat dispersion to flue.
• Possibility to chose gas train with valve tightness control.
• Equipped with one 4 and 7-pole connector, one flange and one insulating seal for boiler fastening.
• On request: longer blast tube.

BTG...P Series

SPARKGAS 35P
Characteristics

Conform to:
- Gas Directive 90/396/CEE
- E.M.C. Directive 89/336/CEE
- L.V. Directive 73/23/CEE

Reference standard: EN676

• Air damper closing when burner does not work.
• Electrical panel that connects by 4 and 7 pole plugs/sockets (standard accessories).
• Electrical panel with protection rating of IP 55.
• Sliding boiler coupling flange to adapt to head protrusion of the various types of boilers.

CONSTRUCTION CHARACTERISTICS
The burner consists of:
- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy.
- Fan driven by light alloy three-phase electric motor.
- Combustion air input with sound insulation and designed for optimal air damper opening linearity.
- Light die-cast aluminium alloy electrical panel.
- Printed circuit electrical connections.
- Control panel with display diagram for working mode with indication lights, start/stop switch, 1st and 2nd stage selector and burner unblocking button.
- Electronic control box compliant with standard EN298, with running faults detection.
- Ionizer electrode flame detection.
- Gas train with safety and 1st and 2nd stage operation valve, minimum pressure switch, pressure regulator and filter.
- Intelligent connectors for burner/train (error proof).

TECHNICAL AND FUNCTIONAL CHARACTERISTICS
- Gas-fired burner CE certified according to standard EN676.
- Two-stage operation (high/low flame).
- Gas adjustment by two-stage operation valve.
- Suitable for operation with any type of combustion chamber, according to standard EN 303.
- Partial combustion gas recirculation blast-pipe with low NOx emissions (class II).
- High ventilation efficiency, low electrical input, low noise.
- Hinge opening on both sides for easy access to the combustion head when burner is installed.
- Air capacity adjustment with linear opening controlled by electric servo motor.

TBG...P Series
**FUNCTIONAL DIAGRAM**

- Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
- Three-phase electric motor to run fan.
- Air pressure switch to ensure the presence of combustion air.
- Gas train complete with operation and safety valve, valves tightness control, minimum pressure switch, pressure regulator and gas filter.
- Automatic control and command equipment for the burner, compliant with European standard EN298.
- Flame detection by ionisation electrode.
- Synoptic control panel with led of operation and block, unlocking switch, 1st/2nd stage selector, operation and block indicator.
- 7 poles plug for the auxiliary feeding and for the thermostatic connection, 4 poles plug to control the second stage operation.
- Electrical protection rating IP40.

**TECHNICAL AND FUNCTIONAL CHARACTERISTICS**

- Gas burner.
- Two-stage operation (high/low flame).
- Ability to operate with any type of combustion chamber.
- Air-gas mixing at blast-pipe.
- Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
- Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
- Air flow regulation for first and second stage by means of electric servomotor with pause closure of gate to prevent any heat dispersion to flue.
- Valves tightness control device compliant with European standard EN676.
- Equipped with one flange and one insulating seal for boiler fastening.

**CONSTRUCTION CHARACTERISTICS**
The burner consists of:

- Light aluminium alloy fan part.
- High performance centrifugal fan.
- Combustion air intake with air flow adjustment device.
- Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
COLLEGAMENTO AL CIRCUITO DI ALIMENTAZIONE BT8530/1, BT8531/1

1. Air adjustment servomotor.
2. Air pressure switch.
3. Two-stage operating valve.
6. Valve seal control device on request for burners with lower than 1200 kW power output over 1200 kW.
7. Minimum pressure switch.
8. Maximum pressure switch.
10. Gas pressure regulator.
13. Ball valve.

Carried out by the installing technician:

NOTE
The type of train depends on the burner model and the gas pressure available. Refer to the current technical list.
TWO-STAGE PROGRESSIVE/MODULATING
GAS BURNERS
WITH PNEUMATIC REGULATION

The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:

a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;

b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.

NOTES:

4) Equipped with automatic air shutoff device.

*) Net calorific value of natural gas: Hi = 35.80 MJ/m³ = 8550 kcal/m³, at reference conditions of 0°C, 1013 mbar.

**) Maximum gas inlet pressure at pressure regulator in CE version, at gas train for EXP version.
### Dimensions

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Characteristics

TECHNICAL AND FUNCTIONAL CHARACTERISTICS

- Gas-fired burner CE certified according to standard EN676.
- Two-stage progressive/modulating operation.
- Gas adjustment by pneumatic air/gas ratio operation valve.
- Suitable for operation with any type of combustion chamber, according to standard EN 303.
- Partial combustion gas recirculation blast-pipe with low NOx emissions (class II).
- High ventilation efficiency, low electrical input, low noise.
- Hinge opening on both sides for easy access to the combustion head when burner is installed.
- Air capacity adjustment with linear opening controlled by electric servo motor.
- Air damper closing when burner does not work.
- Electrical panel that connects by 4 and 7 pole plugs/sockets (standard accessories).
- Electrical panel with protection rating of IP 55.
- Sliding boiler coupling flange to adapt to head protrusion of the various types of boilers.
- Modulation ratio 1:3.

CONSTRUCTION CHARACTERISTICS

The burner consists of:

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy (TBG 150 PN with forward curving vanes).
- Fan driven by light alloy three-phase electric motor.
- Combustion air input with sound insulation and designed for optimal air damper opening linearity.
- Light die-cast aluminium alloy electrical panel.
- Printed circuit electrical connections.
- Control panel with display diagram for working mode with indication lights, start/stop switch, automatic/manual mode selector, minimum/maximum selector and burner unblocking button; possibility to install RWF 40 electronic modulator.
- Electronic control box compliant with standard EN298, with running faults detection.
- Ionizer electrode flame detection.
- Gas train with safety valve and pneumatic air/gas ratio valve, minimum pressure switch, pressure regulator and gas filter.
- Intelligent connectors for burner/train (error proof).

Gas Directive 90/396/CEE
E.M.C. Directive 89/336/CEE
L.V. Directive 73/23/CEE
Reference standard: EN676

TBG...PN Series

AMBIDEXTROUS HINGE

for easy combustion head access with burner installed.
Functional diagram

Legend
1. Air adjustment servomotor.
2. Air pressure switch.
3. Maximum pressure switch.
4. Operating valve.
5. Valve tightness control.
6. Pneumatically adjusted pressure regulator.
7. Safety valve.
8. Minimum pressure switch.

Carried out by the installing technician:
10. Anti-vibration joint.
11. Ball valve.
TWO-STAGE PROGRESSIVE/MODULATING GAS BURNERS
WITH LOW POLLUTANT EMISSIONS

CLASSES DEFINED ACCORDING TO STANDARD EN 676: 2000

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OTHER REFERENCE STANDARDS AND REGULATIONS:

AUSTRIA:
- FAV, for burners > 50 kW, NOx emissions limit: 120 mg/kWh
- 15 AB, for domestic burners, NOx emissions limit: 108 mg/kWh

BELGIUM:
- Vlarem II, NOx emissions limit: 100 mg/kWh

GERMANY:
- TA Luft 1/2, NOx emissions limit: 120 mg/kWh

SWITZERLAND:
- LRV 92, NOx emissions limit: 80 mg/kWh

OTHER REFERENCE STANDARDS AND REGULATIONS:

AUSTRIA:
- FAV, for burners > 50 kW, NOx emissions limit: 120 mg/kWh
- 15 AB, for domestic burners, NOx emissions limit: 108 mg/kWh

BELGIUM:
- Vlarem II, NOx emissions limit: 100 mg/kWh

GERMANY:
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CLASS DEFINED ACCORDING TO STANDARD EN 676: 2000

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<th>Class</th>
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The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:

a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;

b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.

**NOTES:**
1. Equipped with air shutoff device.
2. Soundproof lid on burner are intake.
3. Equipped with automatic air shutoff device.
4. For the modulating mode, complete the burner with the automatic RWF 40 regulator and the modulation kit.
5. *Net calorific value of natural gas: Hi = 35.80 MJ/m³ = 8550 kcal/m³, at reference conditions of 0°C, 1013 mbar.*
6. **Maximum gas inlet pressure at pressure regulator in CE version, at gas train for EXP version.**
**BTG 20LX**

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**SPARKGAS 30LX**

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### Dimensions

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**BTG 20 LX**

**TECHNICAL AND FUNCTIONAL CHARACTERISTICS**

- Gas burner.
- Two-stage progressive output operation.
- Ability to operate with output modulation by means of automatic RW F40 regulator mounted on the control panel (to be ordered separately with the modulation kit).
- Ability to operate with any type of combustion chamber.
- Air-gas mixing at blast-pipe.
- Exhaust gas recycling blast-pipe able to achieve very low pollutant emissions, particularly with regard to nitrous oxides (NOx).
- Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
- Minimum and maximum air flow regulation for first and second stage by means of electric servomotor with pause closure of gate to prevent any heat dispersion to flue.
- A valve tightness control can be fitted on the burner.
- Equipped with one flange and one insulating seal for boiler fastening, one 4-pole connector and one 7-pole connector.

**CONSTRUCTION CHARACTERISTICS**

The burner consists of:

- Light aluminium alloy fan part.
- High performance centrifugal fan.
- Combustion air intake with automatic closure air flow regulation butterfly gate.
- Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
- Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
- Flame viewer.
- Monophase electric motor to run fan.
- Air pressure switch to ensure the presence of combustion air.
- Monoblock modulating gas train complete with operation and safety valve, minimum pressure switch, pressure regulator and gas filter.
- Automatic control and command equipment for the burner, compliant with European standard EN298.
- Flame detection by ionisation electrode.
- 7-pole outlet for burner electrical and thermostat connections, and 4-pole outlet for second stage control or for the connection of the capacity electronic regulator.
- Prepared for microamperometer connection with ionisation cable.
- Electrical protection rating IP40.
- Sound-proof plastic protective cover.

**SPARKGAS 30 LX**

**TECHNICAL AND FUNCTIONAL CHARACTERISTICS**

- Low NOx and CO emissions gas burner compliant with European standard EN676 "Classe III".
- Two-stage progressive output operation.
- Ability to operate with output modulation by means of automatic RW F40 regulator mounted on the control panel (to be ordered separately with the modulation kit).
- Ability to operate with any type of combustion chamber.
- Air-gas mixing at blast-pipe.
- Exhaust gas recycling blast-pipe able to achieve very low pollutant emissions, particularly with regard to nitrous oxides (NOx).
- Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
- Minimum and maximum air flow regulation for first and second stage by means of electric servomotor with pause closure of gate to prevent any heat dispersion to flue.
- Fan speed adjustment in relation to changes in burner demand provided by means of inverter, to obtain a significant reduction in noise levels and electricity consumption (version V only).
- Possibility to chose gas train with valve tightness control.
- Equipped with one flange and one insulating seal for boiler fastening.

**CONSTRUCTION CHARACTERISTICS**

The burner consists of:

- Light aluminium alloy fan part.
- High performance centrifugal fan.
- Combustion air intake with air flow adjustment device.
- Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
Characteristics

Conform to:
Gas Directive 90/396/CEE
E.M.C. Directive 89/336/CEE
L.V. Directive 73/23/CEE
Reference standard: EN676

Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
Monophase electric motor to run fan (controlled electronically by means of a motor speed controller in "V" execution).
Device made from sound-absorbing material to reduce fan noise.
Air pressure switch to ensure the presence of combustion air.
Monoblock modulating gas train complete with operation and safety valve, minimum pressure switch, pressure regulator and gas filter.
Automatic control and command equipment for the burner, compliant with European standard EN298.
Flame detection by ionisation electrode.
On-board terminal box and separate control panel comprising stop/go switch, automatic/manual and minimum/maximum selector, operation and block indicator.
Terminal block for the electrical and thermostatic connections to the burner and to control the second stage of working or for the connection of the electronic output regulator.
Prepared for microamperometer connection with ionisation cable.
Electrical protection rating IP40.

Partially combustion gas recirculation blast-pipe with low NOx emissions (class III).
High ventilation efficiency, low electrical input, low noise.
Hinge opening on both sides for easy access to the combustion head when burner is installed.
Air flow adjustment by means of linear opening damper, which is controlled by an electronic stepper servomotor.
Adjustment of fan speed (rpm) with change in burner demand by means of motor speed controller, to obtain a considerable reduction in noise and electricity consumption (V version only).
Air damper closing when burner does not work.
Electrical panel that connects by 4 and 7 pole plugs/sockets (standard accessories).
Electrical panel with protection rating of IP 55.
Sliding boiler coupling flange to adapt to head protrusion of the various types of boilers.
1:4 High turndown ratio.

CONSTRUCTION CHARACTERISTICS
The burner consists of:
Light die-cast aluminium alloy casing.
Centrifugal fan with backward curving vanes in light aluminium alloy.
Fan driven by light alloy three-phase electric motor.
Air inlet equipped with sound-proofing material and designed for optimal air damper opening linearity.
Light die-cast aluminium alloy electrical panel.
"V" execution: the fan electrical motor is controlled electronically by the motor speed controller.
Control panel with display diagram for working mode with indication lights, start/stop switch, burner shut-off selector, possibility to install RWF 40 electronic modulator.
Electronic control box compliant with standard EN298, with microprocessor, integrated valves' seal control; suitable for eBus connection.
The burner consists of:
• Light aluminium alloy fan part.
• High performance centrifugal fan.
• Combustion air intake with air flow adjustment device.
• Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
• Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
• Three-phase electric motor to run fan (controlled electronically by means of a motor speed controller in “V” execution).
• Air pressure switch to ensure the presence of combustion air.
• Monoblock modulating gas train complete with operation and safety valve, valve tightness control, minimum pressure switch, pressure regulator and gas filter.

TECHNICAL AND FUNCTIONAL CHARACTERISTICS
• Low NOx and CO emissions gas burner compliant with European standard EN676 “Classe III”.
• Two-stage progressive output operation.
• Ability to operate with output modulation by means of automatic RWF40 regulator mounted on the control panel (to be ordered separately with the modulation kit).
• Ability to operate with any type of combustion chamber.
• Air-gas mixing at blast-pipe.
• Exhaust gas recycling blast-pipe able to achieve very low pollutant emissions, particularly with regard to nitrous oxides (NOx).
• Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
• Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
• Minimum and maximum air flow regulation for first and second stage by means of electric servomotor with pause closure of gate to prevent any heat dispersion to flue.
• Fan speed adjustment in relation to changes in burner demand provided by means of inverter, to obtain a significant reduction in noise levels and electricity consumption (version V only).
• Valves tightness control device compliant with European standard EN676.
• Equipped with one flange and one insulating seal for boiler fastening.

CONSTRUCTION CHARACTERISTICS
The burner consists of:
• Light aluminium alloy fan part.
• High performance centrifugal fan.
• Combustion air intake with air flow adjustment device.
• Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
• Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
• Three-phase electric motor to run fan (controlled electronically by means of a motor speed controller in “V” execution).
• Air pressure switch to ensure the presence of combustion air.
• Monoblock modulating gas train complete with operation and safety valve, valve tightness control, minimum pressure switch, pressure regulator and gas filter.

• Automatic control and command equipment for the burner, compliant with European standard EN298.
• Flame detection by ionisation electrode.
• On-board terminal box and separate control panel comprising stop/go switch, automatic/manual and minimum/maximum selector, operation and block indicator.
• Terminal block for the electrical and thermostatic connections to the burner and to control the second stage of working or for the connection of the electronic output regulator.
• Electrical protection rating IP40.

Conform to:
Gas Directive 90/396/CEE
E.M.C. Directive 89/336/CEE
L.V. Directive 73/23/CEE
Reference standard: EN676

Characteristics

BGN... LX Series
Functional diagram

Legend

1. Air adjustment servomotor.
2. Air pressure switch.
3. Pneumatically adjusted pressure regulator.
4. Operating gas valve.
5. Valve tightness control.
6. Pneumatically adjusted pressure regulator.
7. Safety valve.
8. Minimum pressure switch.

Carried out by the installing technician:
10. Anti-vibration joint.
11. Ball valve.
The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:
a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;
b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.

**TWO-STAGE PROGRESSIVE/MODULATING GAS BURNERS**

**WITH ELECTRONIC CAM**

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**Product range**

The diagrams are intended as mere guidelines and are based on test boilers complying with current regulations. In reality, variations may occur, due to the following factors:
a) the ability of the burner to overcome the excess pressure generated upon lighting (not strictly linked to that applying during normal operation) which tends to vary from one boiler to another;
b) high thermal load in furnace (ratio between thermal power of furnace and relevant volume - kcal/h/m³) which may prevent the burner fan from exploiting the entire operating range.
### Product range

#### Frequency 50 Hz

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**NOTES:**

4) Equipped with automatic air shutoff device.
5) For the modulating mode, complete the burner with the automatic RWF 40 regulator and the modulation kit.

*) Net calorific value of natural gas: $H_i = 35.80 \text{ MJ/m}^3 = 8550 \text{ kcal/m}^3$, at reference conditions of $0^\circ\text{C}, 1013 \text{ mbar}$.

**) Maximum gas inlet pressure at pressure regulator in CE version, at gas train for EXP version.
Dimensions

BTG ...M E

TBG ...M E
### Model Package dimensions Weights

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### Model Package dimensions Weights

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BTG...ME Series

TECHNICAL AND FUNCTIONAL CHARACTERISTICS

• Gas burner.
• Two-stage progressive output operation.
• Ability to operate with output modulation by means of automatic RWF40 regulator mounted on the control panel (to be ordered separately with the modulation kit).
• Ability to operate with any type of combustion chamber.
• Air-gas mixing at blast-pipe.
• Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
• Combustion head at partial recycle of combusting gas which allow to achieve low NOx emissions (Class II for BTG 15 ME and class III for BTG 20 ME of the European norm EN267).
• Capacity regulation of the combusting air with automatic closing gate during pause to avoid heat losses at the chimney.
• Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
• With valve tightness control.
• Equipped with one flange and one insulating seal for boiler fastening, one 4-pole connector and one 7-pole connector.

CONSTRUCTION CHARACTERISTICS

The burner consists of:
• Light aluminium alloy fan part.
• High performance centrifugal fan.
• Air intake with butterfly gate for the regulation of the air combusting flow rate.
• Sliding boiler coupling flange to adapt the head protrusion to the various types of boilers.
• Adjustable blast-pipe with stainless steel nozzle and deflector disk in steel.
• Flame viewer.
• Monophase electric motor to run fan.
• Air pressure switch to ensure the presence of combustion air.
• Regulation of the air combusting flow rate by means of an electric pitch-pitch servomotor.
• Gas train made up of a butterfly valve controlled by an electric pitch-pitch servomotor, by a monoblock valve which include an operating and safety valve, min.pressure switch, valve tightness control, pressure regulator and gas filter.
• Electronic control box compliant with standard EN298, with microprocessor (electronic cam), integrated valves' tightness control; suitable for eBus connection. Display for operating sequence, modulation percentage, and error code in the event of a lockout.
• Flame presence check by ionisation electrode with connector for milliammeter.
• 7-pole outlet for burner electrical and thermostat connections, and 4-pole outlet for second stage control. or of the capacity electronic regulator.
• Electrical protection rating IP40.
• Sound-proof plastic protective cover.

TBG...ME Series

TECHNICAL AND FUNCTIONAL CHARACTERISTICS

• Gas-fired burner CE certified according to standard EN676.
• Two-stage progressive/modulating operation.
• Gas adjustment by throttle valve controlled by electronically controlled step servomotor.
• Suitable for operation with any type of combustion chamber, according to standard EN 303.
• Partial combustion gas recirculation blast-pipe with low NOx emissions (class II).
• High ventilation efficiency, low electrical input, low noise.
• Hinge opening on both sides for easy access to the combustion head when burner is installed.
• Air capacity adjustment by means of

Conform to:
Gas Directive 90/396/CEE
E.M.C. Directive 89/336/CEE
L.V. Directive 73/23/CEE
Reference standard: EN676
Characteristics

BGN...DSPGN ME Series

TECHNICAL AND FUNCTIONAL CHARACTERISTICS
- Gas burner.
- Two-stage progressive output operation.
- Ability to operate with output modulation by means of automatic RWF 40 regulator mounted on the control panel (to be ordered separately with the modulation kit).
- Ability to operate with any type of combustion chamber.
- Air-gas mixing at blast-pipe.
- Ability to obtain optimal combustion values by regulating combustion air and blast-pipe.
- Maintenance facilitated by the fact that the mixing unit can be removed without having to remove the burner from the boiler.
- Minimum and maximum air flow regulation for first and second stage by means of electric servomotor with pause closure of gate to prevent any heat dispersion to flue.
- Valves tightness control device compliant with European standard EN676.
- Equipped with one flange and one insulating seal for boiler fastening.
- 1:5 High turndown ratio.

CONSTRUCTION CHARACTERISTICS
- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy.
- Fan driven by light alloy three-phase electric motor.
- Combustion air input with sound insulation and designed for optimal air damper opening linearity.
- Light die-cast aluminium alloy electrical panel.
- Control panel with display diagram for working mode with indication lights, start/stop switch, burner shut-off selector and burner unblocking button; possibility to install RWF 40 electronic modulator.
- Electronic control box compliant with standard EN298, with microprocessor, integrated valves’ seal control; suitable for eBus connection.
- Working sequence and fault code display.
- Ionizer electrode flame detection.
- Gas train with safety and operation valve, minimum pressure switch, pressure regulator and gas filter.
- Intelligent connectors for burner/train (error proof).
- Linear opening damper using electronically controlled step servomotor.
- Air damper closing when burner does not work.
- Electrical panel that connects by 4 and 7 pole plugs/sockets (standard accessories).
- Electrical panel with protection rating of IP 55.
- Sliding boiler coupling flange to adapt to head protrusion of the various types of boilers.
- Steel nozzle and deflector disk in steel.
- Flame viewer.
- Three-phase electric motor to run fan.
- Air pressure switch to ensure the presence of combustion air.
- Electric servo step motors for simultaneous control of combustion air and fuel.
- Gas train complete with control, operating and safety valve, valve tightness control, minimum pressure switch, pressure regulator and gas filter.
- Burner automatic command and control equipment with microprocessor (electronic cam) in compliance with European standard EN298, with valve tightness control and eBus connection. Display for operating sequence, modulation percentage, and error code in the event of a lockout.
- Flame detection by ionisation electrode.
- Synoptic control panel with led of operation and block and burner off, block indicators, keyboard for electronic cam planification.
- 7 poles plug for the auxiliary feeding and for the thermostatic connection, presa a 4 poli per il collegamento del regolatore elettronico di potenza.
- Electrical protection rating IP40.

Conform to:
- Gas Directive 90/396/CEE
- E.M.C. Directive 89/336/CEE
- L.V. Directive 73/23/CEE
- Reference standard: EN676
Legend

1. Air adjustment servomotor.
2. Air pressure switch.
4. Air adjustment servomotor.
5. Operating gas valve.
7. Valve seal control device integrated in the control equipment.
8. Gas pressure regulator.
10. Gas filter.

Carried out by the installing technician:
11. Anti-vibration joint.
12. Ball valve.
In 1994 Baltur was one of the first companies in Italy to obtain System Quality certification according to the standard UNI EN ISO 9001. The adoption of total quality programmes formalised and gave concrete form to its philosophy of seeking value for the Customer through process and product quality management systems.

**PROCESS QUALITY**

All processes are codified according to procedures that ensure the quality of performance of the following: planning and design, purchases, production, checks and inspections, sales and after-sales services. In 2003 the ISO 9001:2000 management system (Vision 2000) was implemented, focusing attention still further on all the company processes.

**PRODUCT QUALITY**

Product quality is attested for individual products, in accordance with international regulations.

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**Certifications**

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Data reported in this brochure shall be considered as indicative; Baltur reserves the right to change them without previous notice.