

TBG SERIES

Gas burners



baltur

TBG SERIES

PRODUCT RANGE

SYMBOLS

TBG...
Single-stage (on-off) gas burners.

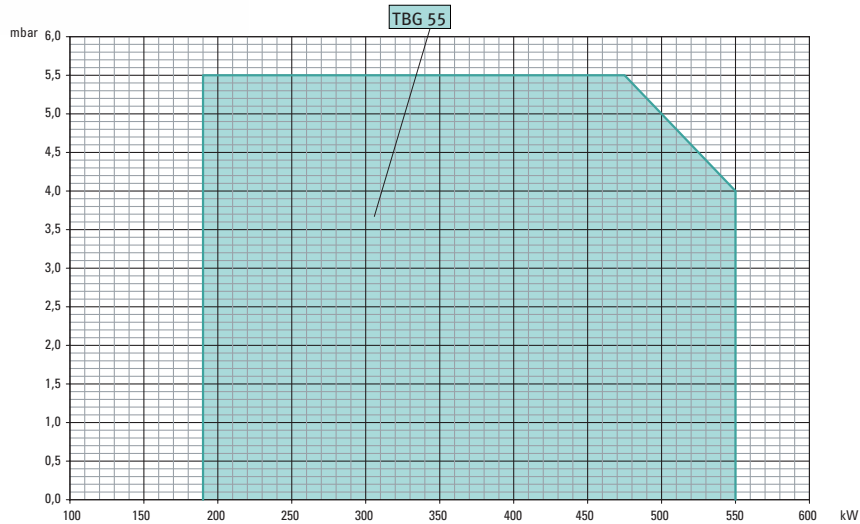
TBG...P
Two-stage gas burners.

TBG...PN
Two-stage progressive/modulating gas burners with pneumatic regulation.

TBG...ME
Two-stage progressive/modulating gas burners with electronic cam.

TBG...LX PN ME
Two-stage progressive/modulating low pollutant gas burners with pneumatic regulation and electronic cam.

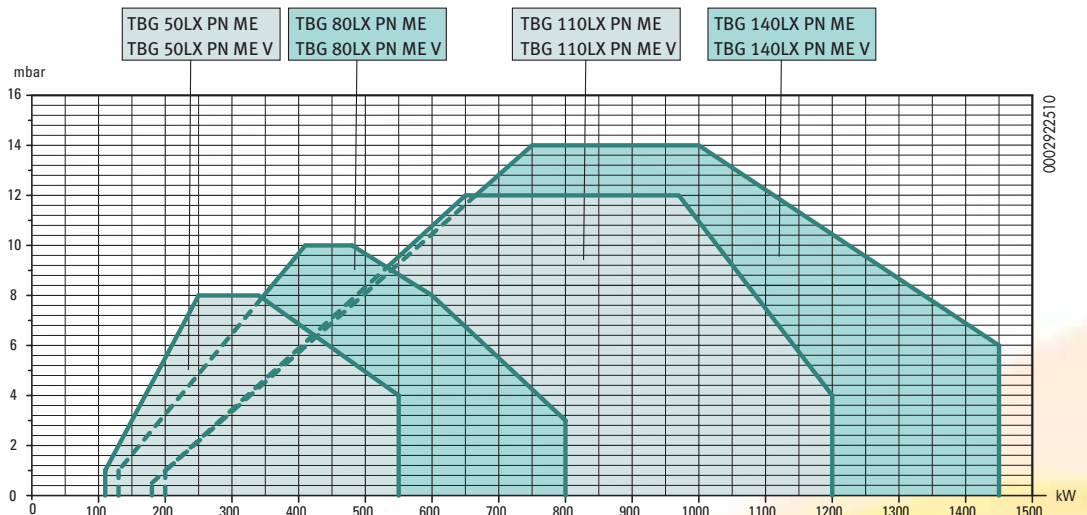
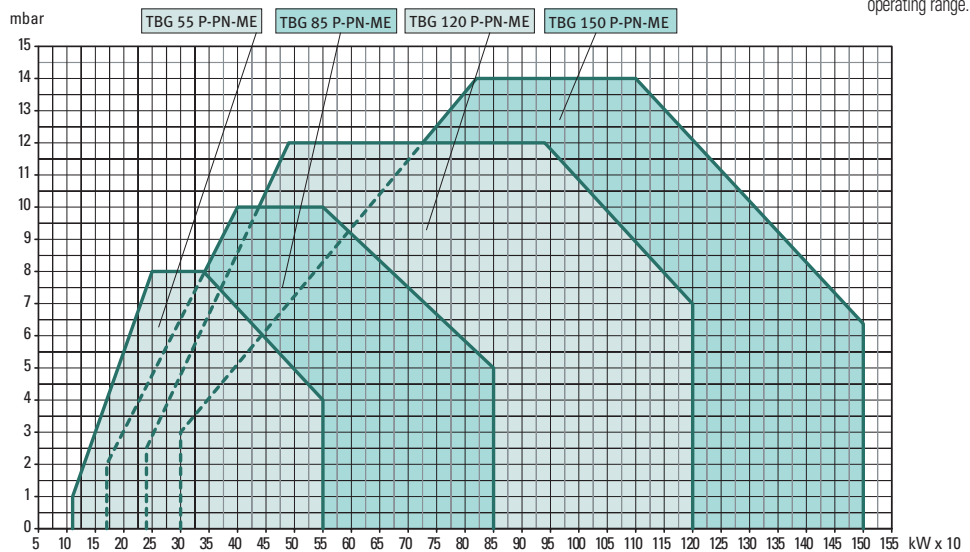
TBG...LX PN ME V
Two-stage progressive/modulating low pollutant gas burners with pneumatic regulation and electronic cam. Burner equipped with frequency converter (INVERTER).



The diagrams are purely illustrative and refer to tests using test boilers as per current standards and legislation.

In practice, there may be considerable differences due to the following factors:

- The capacity of the burner to exceed the overpressure when switched ON (not strictly related to the operating pressure) which varies from boiler to boiler.
- The considerable thermal load of the combustion chamber (ratio between the thermal power of the combustion chamber and the corresponding volume - kcal/h/m³) which means the burner fan might not be operating within the full operating range.



Single-stage gas burners - Low NOx emissions (class II)

Model	Part no.	Capacity *)		Heat output		Pressure natural gas **)		Power supply electric	Motor kW	Note
		min. m _n ³ /h	max. m _n ³ /h	min. kW	max. kW	CE mbar	EXP mbar			
TBG 55	17400010	19	55	190	550	360	360	3N AC 50Hz400V	0,55	

Two-stage gas burners - Low NOx emissions (class II)

Model	Part no.	Capacity *)		Heat output		Pressure natural gas **)		Power supply electric	Motor kW	Note
		min. m _n ³ /h	max. m _n ³ /h	min. kW	max. kW	CE mbar	EXP mbar			
TBG 55 P	17410010	11	55	110	550	360	360	3N AC 50Hz400V	0,55	1)
TBG 85 P	17480010	17	86	170	850	360	360	3N AC 50Hz400V	1,1	1)
TBG 120 P	17550010	24	121	240	1200	360	360	3N AC 50Hz400V	1,5	1)
TBG 150 P	17620010	30	151	300	1500	360	360	3N AC 50Hz400V	2,2	1)

Two-stage progressive/modulating gas burners with pneumatic regulation - Low NOx emissions (class II)

Model	Part no.	Capacity *)		Heat output		Pressure natural gas **)		Power supply electric	Motor kW	Note
		min. m _n ³ /h	max. m _n ³ /h	min. kW	max. kW	CE mbar	EXP mbar			
TBG 55 PN	17420010	11	55	110	550	360	360	3N AC 50Hz400V	0,55	1) - 2)
TBG 85 PN	17490010	17	86	170	850	600	600	3N AC 50Hz400V	1,1	1) - 2)
TBG 120 PN	17560010	24	121	240	1200	600	600	3N AC 50Hz400V	1,5	1) - 2)
TBG 150 PN	17630010	30	151	300	1500	700	700	3N AC 50Hz400V	2,2	1) - 2)

Two-stage progressive/modulating gas burners with electronic cam - Low NOx emissions (class II)

Model	Part no.	Capacity *)		Heat output		Pressure natural gas **)		Power supply electric	Motor kW	Note
		min. m _n ³ /h	max. m _n ³ /h	min. kW	max. kW	CE mbar	EXP mbar			
TBG 55 ME	17430010	11	55	110	550	500	500	3N AC 50Hz400V	0,55	1) - 2)
TBG 85 ME	17500010	17	86	170	850	500	500	3N AC 50Hz400V	1,1	1) - 2)
TBG 120 ME	17570010	24	121	240	1200	500	500	3N AC 50Hz400V	1,5	1) - 2)
TBG 150 ME	17640010	30	151	300	1500	500	500	3N AC 50Hz400V	2,2	1) - 2)

Two-stage progressive/modulating gas burners with pneumatic regulation and electronic cam - Low NOx emissions (class III)

Model	Part no.	Capacity *)		Heat output		Pressure natural gas **)		Power supply electric	Motor kW	Note
		min. m _n ³ /h	max. m _n ³ /h	min. kW	max. kW	CE mbar	EXP mbar			
TBG 50 LX PN ME	17440010	11	55	110	550	360	360	3N AC 50Hz400V	0,55	1) - 2)
TBG 80 LX PN ME	17510010	13	80	130	800	600	600	3N AC 50Hz400V	1,1	1) - 2)
TBG 110 LX PN ME	17580010	18	121	180	1200	600	600	3N AC 50Hz400V	1,5	1) - 2)
TBG 140 LX PN ME	17650010	20	146	200	1450	700	700	3N AC 50Hz400V	2,2	1) - 2)

Two-stage progressive/modulating gas burners with pneumatic regulation, electronic cam and Inverter - Low NOx emissions (class III)

Model	Part no.	Capacity *)		Heat output		Pressure natural gas **)		Power supply electric	Motor kW	Note
		min. m _n ³ /h	max. m _n ³ /h	min. kW	max. kW	CE mbar	EXP mbar			
TBG 50 LX PN ME V	17440015	11	55	110	550	360	360	3N AC 50Hz400V	0,55	1) - 2)
TBG 80 LX PN ME V	17510015	13	80	130	800	600	600	3N AC 50Hz400V	1,1	1) - 2)
TBG 110 LX PN ME V	17580015	18	121	180	1200	600	600	3N AC 50Hz400V	1,5	1) - 2)
TBG 140 LX PN ME V	17650015	20	146	200	1450	700	700	3N AC 50Hz400V	2,2	1) - 2)

TECHNICAL DATA

CLASSES DEFINED ACCORDING TO STANDARD EN 676: 2000

Class	NOx emissions in mg/kWh
1	170
2	120
3	80

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:

- Vlare 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

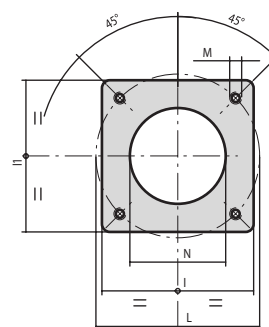
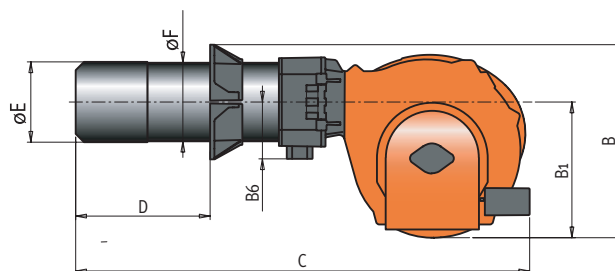
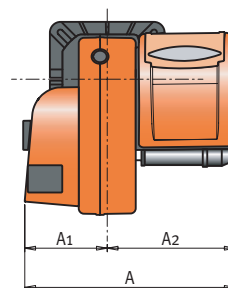
NOTES:

- 1) Equipped with automatic air shutoff device.
- 2) The modulating version is obtained by adding the automatic RWF40 regulator and relevant modulation kit to the burner.

*) Net calorific value of natural gas: Hi = 35,80 MJ/m³ = 8550 kcal/m³, at reference conditions of 0°C, 1013 mbar.

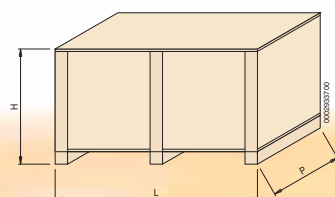
**) Maximum gas inlet pressure at pressure regulator in CE version, at gas train for EXP version.

Dimensions

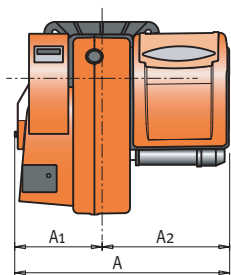


TBG 55
TBG...P
TBG...ME

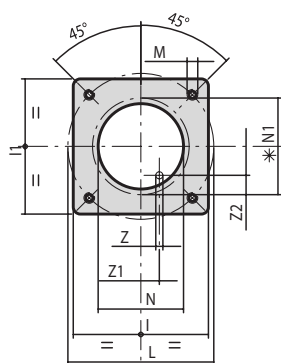
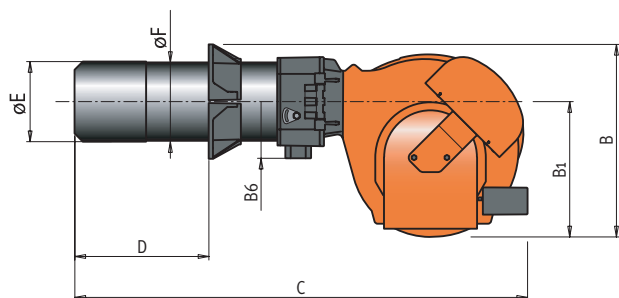
Model	A mm	A ₁ mm	A ₂ mm	B mm	B ₁ mm	B ₆ mm	C mm	D mm	E mm	F mm	I mm	I ₁ mm	L		M mm	N mm	Z mm	Z ₁ mm	Z ₂ mm
													min mm	max mm					
TBG 55	645	275	370	510	380	160	1230	175 ÷ 400	161	159	260	260	225	300	M12	170			
TBG 55 P	645	275	370	510	380	160	1230	175 ÷ 400	161	159	260	260	225	300	M12	170			
TBG 55 ME	610	240	370	510	380	200	1265	175 ÷ 400	161	159	260	260	225	300	M12	170			
TBG 85 P	645	275	370	520	380	160	1230	175 ÷ 400	180	178	280	280	250	325	M12	190			
TBG 85 ME	610	240	370	520	380	200	1265	175 ÷ 400	180	178	280	280	250	325	M12	190			
TBG 120 P	645	275	370	540	380	160	1280	200 ÷ 450	224	219	320	320	280	370	M12	235			
TBG 120 ME	610	240	370	540	380	200	1315	200 ÷ 450	224	219	320	320	280	370	M12	235			
TBG 150 P	645	275	370	540	380	160	1280	200 ÷ 450	240	219	320	320	280	370	M12	250			
TBG 150 ME	610	240	370	540	380	200	1315	200 ÷ 450	240	219	320	320	280	370	M12	250			



Model	Package dimensions			Weights kg
	L	P	H	
TBG 55	1080	770	700	75
TBG 55 P	1080	770	700	76
TBG 55 ME	1080	770	700	76
TBG 85 P	1080	770	700	78
TBG 85 ME	1080	770	700	78
TBG 120 P	1080	770	700	87
TBG 120 ME	1080	770	700	87
TBG 150 P	1080	770	700	91
TBG 150 ME	1080	770	700	91



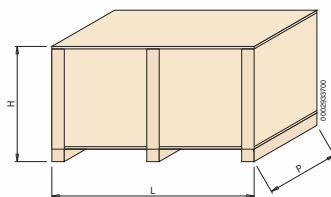
Dimensions



TBG... LX PN ME-V
TBG... PN

Model	A mm	A1 mm	A2 mm	B mm	B1 mm	B6 mm	C mm	D mm	E mm	F mm	I mm	I1 mm	L		M mm	N mm	Z mm	Z1 mm	Z2 mm
													min mm	max mm					
TBG 50 LX PN ME	645	275	370	510	380	160	1230	175 ÷ 400	161	159	260	260	225	300	M12	170	12	83,5	45
TBG 50 LX PN ME V	645	275	370	510	380	160	1230	175 ÷ 400	161	159	260	260	225	300	M12	170	12	83,5	45
TBG 55 PN	645	275	370	510	380	160	1230	175 ÷ 400	161	159	260	260	225	300	M12	170	12	83,5	45
TBG 80 LX PN ME	645	275	370	520	380	160	1230	175 ÷ 400	180	178	280	280	250	325	M12	190	12	92	50
TBG 80 LX PN ME V	645	275	370	520	380	160	1230	175 ÷ 400	180	178	280	280	250	325	M12	190	12	92	50
TBG 85 PN	645	275	370	520	380	160	1230	175 ÷ 400	180	178	280	280	250	325	M12	190	12	92	50
TBG 110 LX PN ME	645	275	370	540	380	160	1280	200 ÷ 450	224	219	320	320	280	370	M12	235	12	112,5	54
TBG 110 LX PN ME V	645	275	370	540	380	160	1280	200 ÷ 450	224	219	320	320	280	370	M12	235	12	112,5	54
TBG 120 PN	645	275	370	540	380	160	1280	200 ÷ 450	224	219	320	320	280	370	M12	235	12	112,5	54
TBG 140 LX PN ME	645	275	370	540	380	160	1280	200 ÷ 450	240	240	320	320	280	370	M12	250	12	112,5	54
TBG 140 LX PN ME V	645	275	370	540	380	160	1280	200 ÷ 450	240	240	320	320	280	370	M12	250	12	112,5	54
TBG 150 PN	645	275	370	540	380	160	1280	200 ÷ 450	240	219	320	320	280	370	M12	250	12	112,5	54

Model	Package dimensions			Weights kg
	L	P	H	
TBG 50 LX PN ME	1080	770	700	76
TBG 50 LX PN ME V	1080	770	700	79
TBG 55 PN	1080	770	700	76
TBG 80 LX PN ME	1080	770	700	78
TBG 80 LX PN ME V	1080	770	700	81
TBG 85 PN	1080	770	700	78
TBG 110 LX PN ME	1080	770	700	87
TBG 110 LX PN ME V	1080	770	700	90
TBG 120 PN	1080	770	700	87
TBG 140 LX PN ME	1080	770	700	91
TBG 140 LX PN ME V	1080	770	700	94
TBG 150 PN	1080	770	700	91



TBG SERIES

PLUS

Low NOx and CO emissions (Class II) LX Version Class III

Many different executions

Easy installation thanks to gas train positioning

Special hinging for easy maintenance

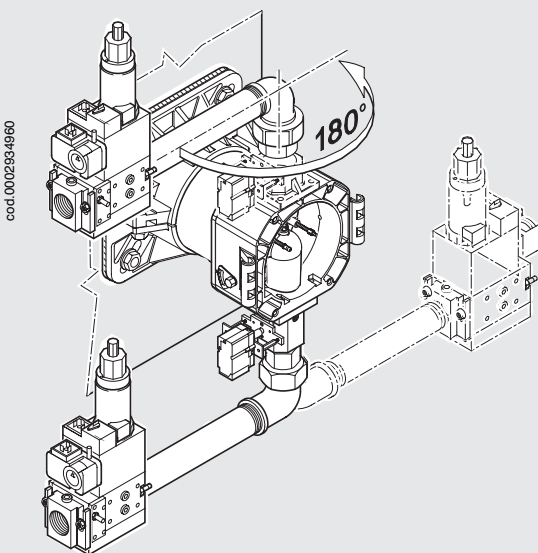
Electrical panel with display and IP55 protection rating

Very high modulation ratios: ME Version 1:5

Rpm (inverter) regulation version on request: LX PN ME V

Modern, distinctive and unique design

Rapid electrical connector with 7 + 4 pole plug



What distinguishes the TBG series is the great flexibility in its configuration so that it can be adapted to meet any specific system needs. There are single-stage versions, two-stage, two-stage progressive/modulating pneumatic and two stage progressive/modulating electronic versions. As regards polluting emissions, the TBG is class II according to the EN 676 standard. The class III LX version is available with electronic pneumatic regulation. Gas train positioning is also extremely flexible due to the special cuff which means that the gas train cannot only be attached to the left or the right but also above or below! Great care at the design stage has been put into the question of maintenance of the burner,

including:

the double-hinged cuff which means that the burner can be opened to the right or to the left, thus ensuring maximum accessibility to the combustion head without having to dismount the burner. Excellent safety, reliability, quiet running, great flame stability and a unique and distinctive design are the result of meticulous planning at each stage also with regard to the appearance of the equipment. The TBG series has been designed for use with hot water boilers and air heating generators.

The great robustness of the product, which uses no plastic parts, makes it ideal for use in industrial applications that involve steam boilers, hot water and thermal oil heaters.

TBG 55

TECHNICAL-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...P SERIES

TECHNICAL-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.
- 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.

Characteristics

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



Characteristics

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

CONSTRUCTION CHARACTERISTICS

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy (TBG 150 with forward 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, 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).

TBG...PN SERIES

TECHNICAL-FUNCTIONAL CHARACTERISTICS

- Gas-fired burner CE certified according to standard EN676.
- Progressive two-stage/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.

CONSTRUCTION CHARACTERISTICS

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy (TBG 150 with forward 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).

TBG...ME SERIES

TECHNICAL-FUNCTIONAL CHARACTERISTICS

- Gas-fired burner CE certified according to standard EN676.
- Progressive two-stage/modulating operation.
- Gas adjustment by throttle valve controlled by electronically controlled step servo motor.
- 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 linear opening damper using electronically controlled step 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.
- 1:5 High turndown ratio.

CONSTRUCTION CHARACTERISTICS

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy (TBG 150 with forward 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.
- 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' tightness 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).

- Possibility of power modulation operation by installing the automatic RWF 40 regulator (to be ordered separately with the suitable modulation kit) on the control panel.
- Suitable for operation with any type of combustion chamber, according to standard EN 303.
- Gas adjustment by means of pneumatic air/gas ratio operation valve.
- Partial 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 electronical steppy servomotor.
- Adjustment of fan speed (rpm) with change in burner demand by means of frequency converter, 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

- Light die-cast aluminium alloy casing.
- Centrifugal fan with backward curving vanes in light aluminium alloy (TBG 140 LX PN ME with forward vanes).
- 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 frequency converter.
- 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' tightness control; suitable for eBus connection.
- Working sequence and fault code display.
- Flame sensor with ionization electrode.
- Gas train with air/gas ratio safety valve, minimum pressure switch, pressure regulator and gas filter.
- Intelligent connectors for burner/train (error proof).

Characteristics

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

TBG..LX PN ME SERIES

TECHNICAL-FUNCTIONAL CHARACTERISTICS

- Low NOx and CO emissions gas burner compliant with "Class III" of European standard EN676.
- Progressive two-stage/modulating operation.

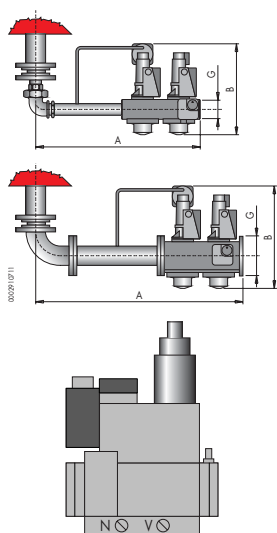
TBG... PN

SERIES

PNEUMATIC MODULATION

PLUS

- Low NOx and CO emissions (Class II)
- Dynamic modulation control and pneumatic feedback
- Good and constant oxygen levels
- Special hinging for easy maintenance
- Possibility of installing gas train at right or left, or top or bottom



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 decrease 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.

DYNAMIC MODULATION CONTROL: ensures constant performance and absolutely safe operation even if foreign objects block all or part of the air intake.

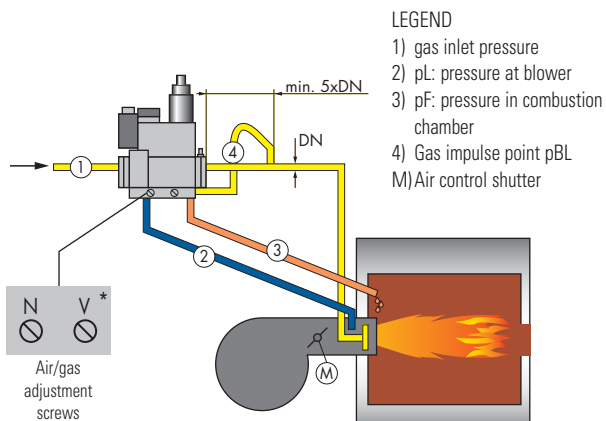
O₂ IN FUMES CONSTANT

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.

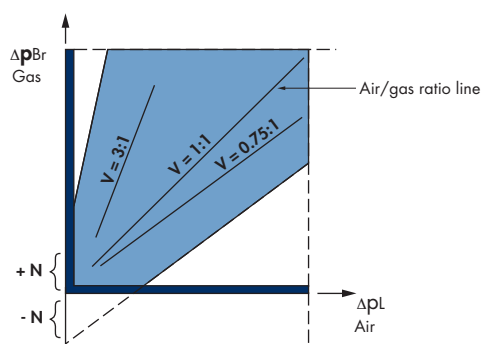
EASY USE AND MAINTENANCE

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.

PRESSURE LINE INSTALLATION



ADJUSTMENT RANGE



N = Regulates air-gas ratio at minimum capacity (origin of ratio line).
 V = Regulates air-gas ratio at maximum capacity (ratio line slope).
 By using the regulating screws N and V and the gas valve we can alter the air-gas ratio through a wide field to obtain the desired combustion parameters.

TBG... ME

SERIES

ELECTRONIC MODULATION

- Low NOx and CO emissions (Class II)
- No mechanical hysteresis during regulation
- Integrated valve tightness control
- Lock-off signalling and description
- Log of last 6 lock-offs
- High modulation ratios of 1:5
- Special hinging for easy maintenance
- Possibility of installing gas train at right or left, or top or bottom



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 tightness control. The PID temperature/pressure load adjuster is an optional for the BGN series and standard for GI series industrial burners. The combustion air/fuel ratio adjustment curve (with configurable working points) is programmed using a programming keypad with display. This curve is password-protected. The display can be used to display a whole series of information. For example, if the burner is blocked, an error code will be displayed for immediate recognition of the cause of the block and rapid solving of the problem. 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

Electronic programmer with microprocessor for commanding and monitoring the burner functions. Modulating functioning using a heat-regulator (on request). Built-in gas valve tightness control. Set up for remote release. Electrical connection using coded click-in pins to prevent cabling errors. Fitted with eBUS connection.



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.



TBG... LX PN ME SERIES

Low pollutant emissions

PLUS

Low NOx and CO emissions (Class III)

Dynamic modulation control and pneumatic feedback

Good and constant oxygen levels

Integrated valve tightness control

Lock-off signalling and description

Log of last 6 lock-offs

High modulation ratios of 1:4

Special hinging for easy maintenance

Possibility of installing gas train at right or left, or top or bottom



To reduce NOx emissions into the atmosphere, combustion with very limited excess air is required and also and especially as low a flame temperature as possible. Baltur has designed and developed special combustion heads with internal exhaust gases recycling; the amount of exhaust gases depends on the burner output and leads to stable and clean combustion with lower air excess than standard burners'. With this type of combustion head very low NOx and CO polluting emissions are achieved (according to class III of the European EN676 standard). Out of this work have come the "LX" burner series which represent a real contribution towards improving the environment in which we live.

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/m³.

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.

FLAME MODULATION

An ME electronic modulation system is used for this type of burner, with a pneumatic gas train that brings together the advantages of the ME and the PN versions.

TBG... LX PN ME V

SERIES

Frequency converter (inverter)

Low NOx and CO emissions (Class III)

Dynamic modulation control and pneumatic feedback

Good and constant oxygen levels

Integrated valve tightness control

Lock-off signalling and description

Log of last 6 lock-offs

High modulation ratios of 1:4

Special hinging for easy maintenance

Possibility of installing gas train at right or left, or top or bottom

With motor speed controller (Inverter)

PLUS

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 the same electrical power (with negligible variations) with the variations in burner operating power. The air flow is regulated exclusively by the air shutters which close as the power is reduced, limiting the air inlet section and therefore inducing a higher loss of load that in fact dissipates 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%

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

30-40%

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:

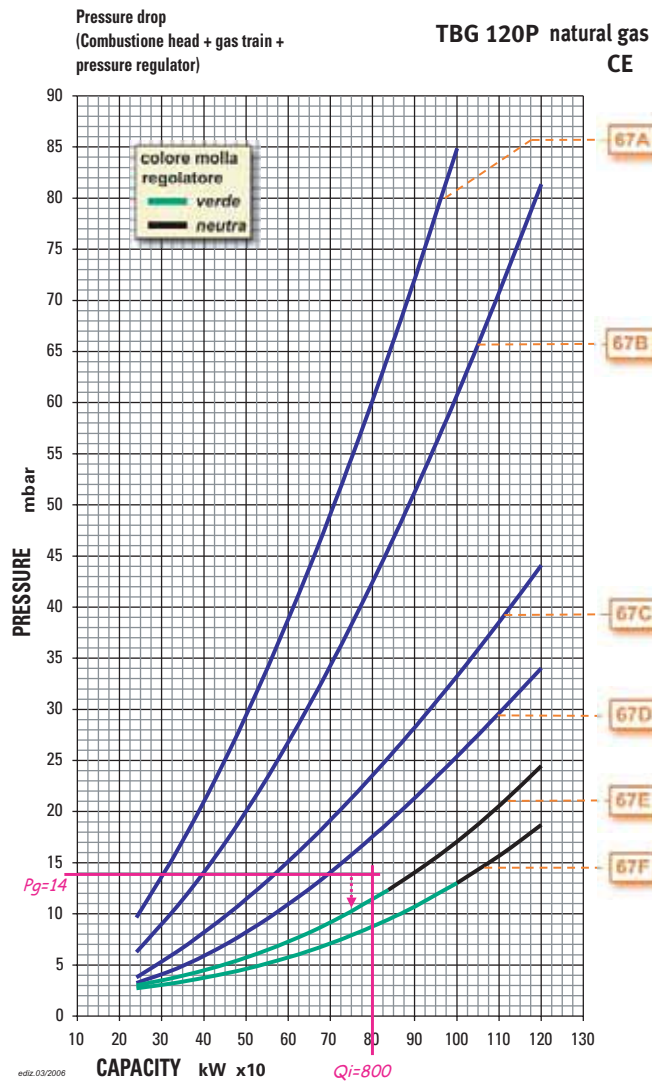
- **Power factor close to 1** at any speed. Therefore possible power factor improvements are not necessary.
- **Reduction in starting currents:** the frequency converter enables gradual starting of the motor. Y/Δ starts or soft starters become unnecessary.

- **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.



How to choose the gas train



The most suitable natural gas train to be combined with the burner can be chosen with the use of specific diagrams.

Firstly, it is necessary to identify:

- The burner output Q_i [kW] to be identified along the X-axis.
- The gas pressure available at the gas train P_g [mbar] to be identified along the Y-axis.

The gas pressure is obtained with the following formula: $P_g = P_a - P_c$

where:

- P_a = available mains gas pressure;
- P_c = pressure in heat generator combustion chamber.

The intersection of the two lines establishes the gas train work point.

The train characterized by the first curve below the point of intersection must be chosen.

EXAMPLE

- Burner = TBG 120P
 - $Q_i = 800$ kW
 - $P_a = 20$ mbar
 - $P_c = 6$ mbar
 - $P_g = 20 - 6 = 14$ mbar
- Choose the curve indicated 67E.

The code of the possible gas train adapter to be ordered is given in the BURNER/GAS TRAIN COMBINATION TABLE in correspondence with the burner TBG 120P and the REFERENCE CURVE 67E.

Note:

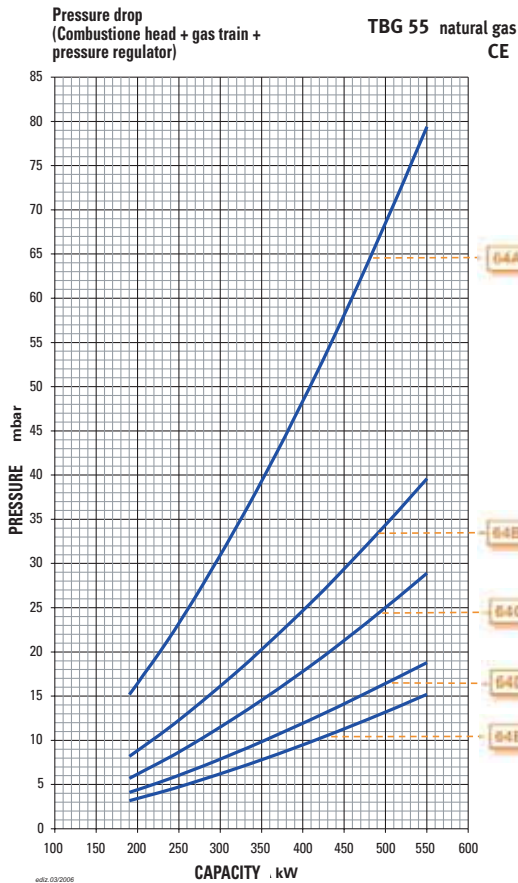
In the graphs the head loss curves have different colours.

The mono-colour BLUE curve represents a gas train with a monoblock valve.

The mono-colour ORANGE curve represents a gas train with a mono-valve or with separate valves without pressure regulator; this execution does not comply with EN676 regulation.

The multi-colour curve represents a gas train with separate valves and pressure regulator (this version complies with EN676 regulation). The coloured segments identify the colour of the spring with which the regulator should be used under those specific flow rate/pressure conditions. The pressure regulator is supplied with different-coloured springs (green, red and violet); these are used to replace the one already installed (neutral colour) at the time of installation if necessary.

TBG 55



Burner/gas train combination

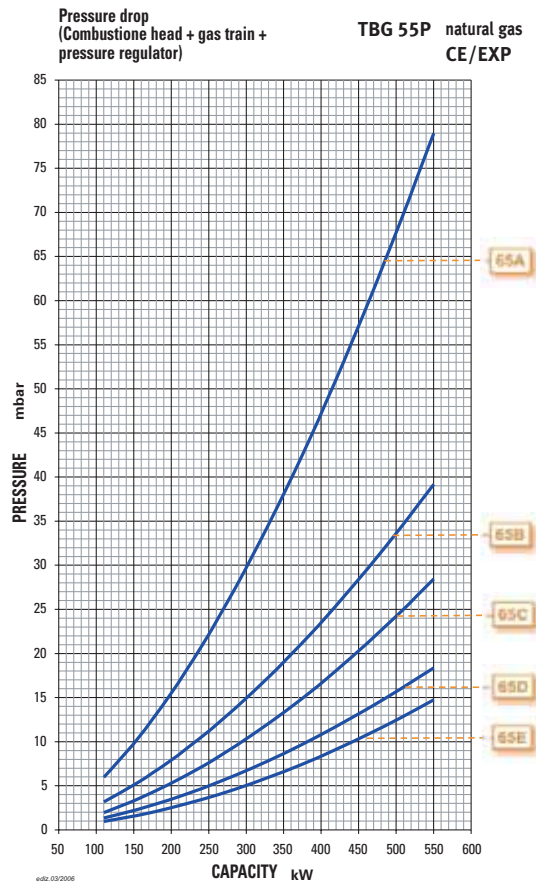
- NOTES:
- 5) Valve tightness control not required by standard EN 676.
- CTV) Gas train equipped with Valve Tightness Control. Add the special kit.
- **)) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 55	NATURAL GAS	CE	64A		360	19990510	Included	96000014	-	B2	
				CTV	360	19990510	Included	96000014	98000101	B2	5)
			64B		360	19990511	Included	96000032	-	B2	
				CTV	360	19990511	Included	96000032	98000101	B2	5)
			64C		360	19990512	Included	96000032	-	B2	
				CTV	360	19990512	Included	96000032	98000101	B2	5)
			64D		360	19990513	Included	96000007	-	B2	
		CTV		360	19990513	Included	96000007	98000101	B2	5)	
		EXP	64E		360	19990514	Included	-	-	B2	
				CTV	360	19990514	Included	-	98000101	B2	5)
			64J		200	19990471	-	96000007	-	ME4	

TBG 55 P

Burner/gas train combination



NOTES:

5) Valve tightness control not required by standard EN 676.

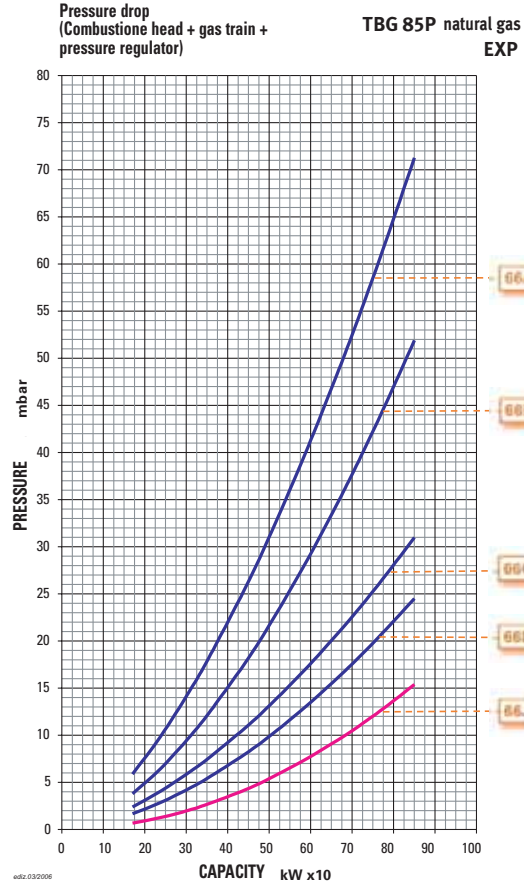
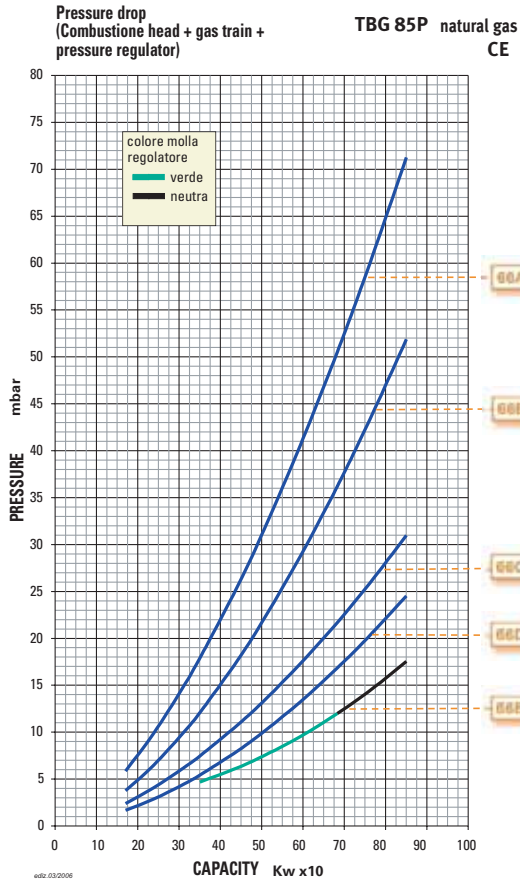
CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

***) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 55 P	NATURAL GAS	CE	65A		360	19990510	Included	96000014	–	B2	
				CTV	360	19990510	Included	96000014	98000101	B2	5)
			65B		360	19990511	Included	96000032	–	B2	5)
				CTV	360	19990511	Included	96000032	98000101	B2	5)
			65C		360	19990512	Included	96000032	–	B2	5)
				CTV	360	19990512	Included	96000032	98000101	B2	5)
			65D		360	19990513	Included	96000007	–	B2	5)
				CTV	360	19990513	Included	96000007	98000101	B2	5)
			65E		360	19990514	Included	–	–	B2	5)
				CTV	360	19990514	Included	–	98000101	B2	5)

TBG 85 P



Burner/gas train combination

NOTES:

5) Valve tightness control not required by standard EN 676.

CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

***) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 85 P	NATURAL GAS	CE	66A	CTV	360	19990511	Included	96000032	–	B2	
					360	19990511	Included	96000032	98000101	B2	5)
			66B	CTV	360	19990512	Included	96000032	–	B2	
					360	19990512	Included	96000032	98000101	B2	5)
			66C	CTV	360	19990513	Included	96000007	–	B2	
					360	19990513	Included	96000007	98000101	B2	5)
		66D	CTV	360	19990514	Included	–	–	B2		
				360	19990514	Included	–	98000101	B2	5)	
		66E	CTV	200	19990515	97390700	–	–	B8		
				200	19990515	97390700	–	98000102	B8	5)	
		EXP	66A	CTV	360	19990511	Included	96000032	–	BE2	
					360	19990511	Included	96000032	98000101	BE2	
66B	CTV		360	19990512	Included	96000032	–	BE2			
			360	19990512	Included	96000032	98000101	BE2			
66C	CTV		360	19990513	Included	96000007	–	BE2			
			360	19990513	Included	96000007	98000101	BE2			
66D	CTV	360	19990514	Included	–	–	BE2				
66J	CTV	200	19990515	–	–	–	BE8				
		200	19990515	–	–	98000102	BE8				

TBG 120 P

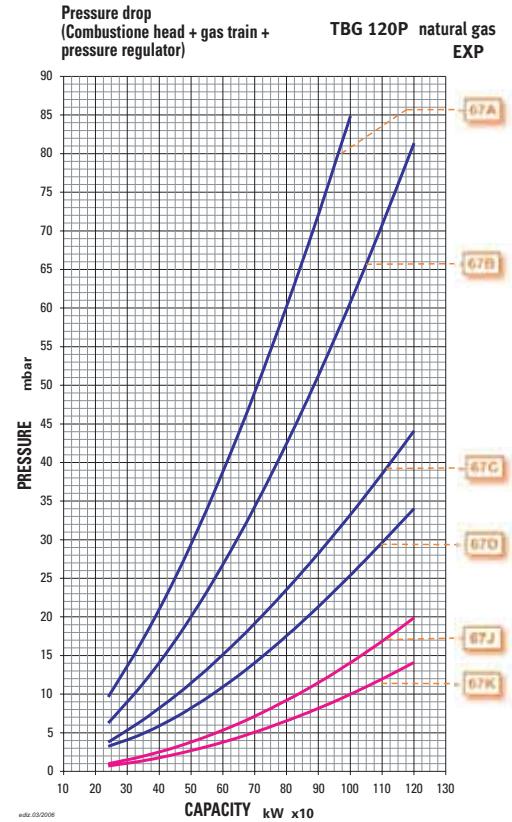
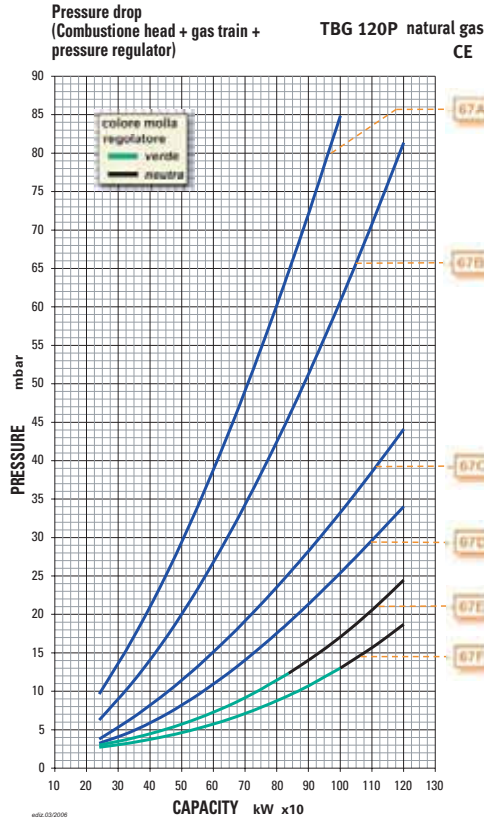
Burner/gas train combination

NOTES:

5) Valve tightness control not required by standard EN 676.

CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

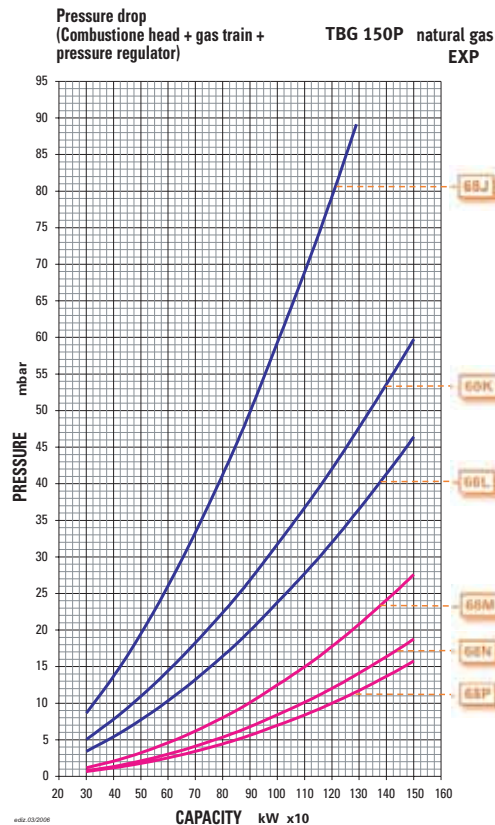
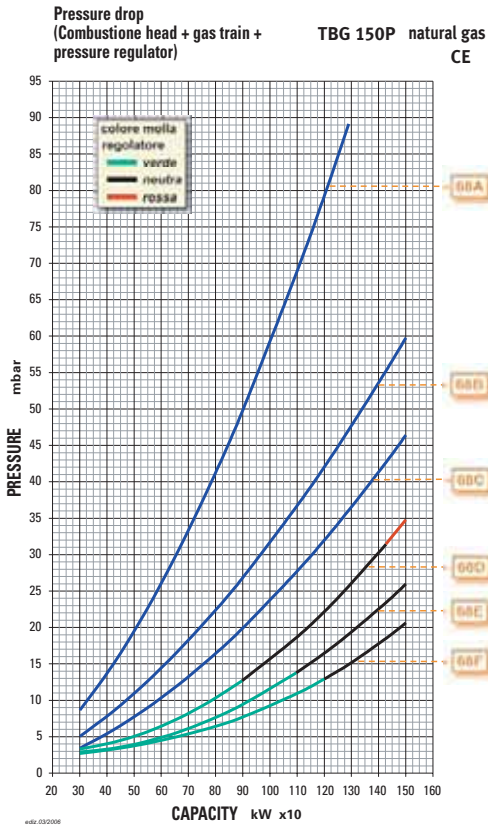
***) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.



BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 120 P	NATURAL GAS	CE	67A	CTV	360	19990511	Included	96000032	-	B2	
					360	19990511	Included	96000032	98000101	B2	5)
				CTV	360	19990512	Included	96000032	-	B2	5)
					360	19990513	Included	96000007	-	B2	5)
					360	19990513	Included	96000007	98000101	B2	5)
					360	19990514	Included	-	-	B2	5)
		EXP	CTV	200	19990515	97390700	-	-	B8		
				200	19990515	97390700	-	98000102	B8	5)	
			CTV	200	19990516	97390700	-	-	B8		
				200	19990516	97390700	-	98000101	B8	5)	
				360	19990511	Included	96000032	-	BE2		
				360	19990511	Included	96000032	98000101	BE2		
EXP	CTV	360	19990512	Included	96000032	-	BE2				
		360	19990512	Included	96000032	98000101	BE2				
	CTV	360	19990513	Included	96000007	-	BE2				
		360	19990513	Included	96000007	98000101	BE2				
		360	19990514	Included	-	-	BE2				
		360	19990514	Included	-	98000101	BE2				
EXP	CTV	200	19990515	-	-	-	BE8				
		200	19990515	-	-	98000102	BE8				
	CTV	200	19990516	-	-	-	BE8				
		200	19990516	-	-	98000101	BE8				

TBG 150 P



Burner/gas train combination

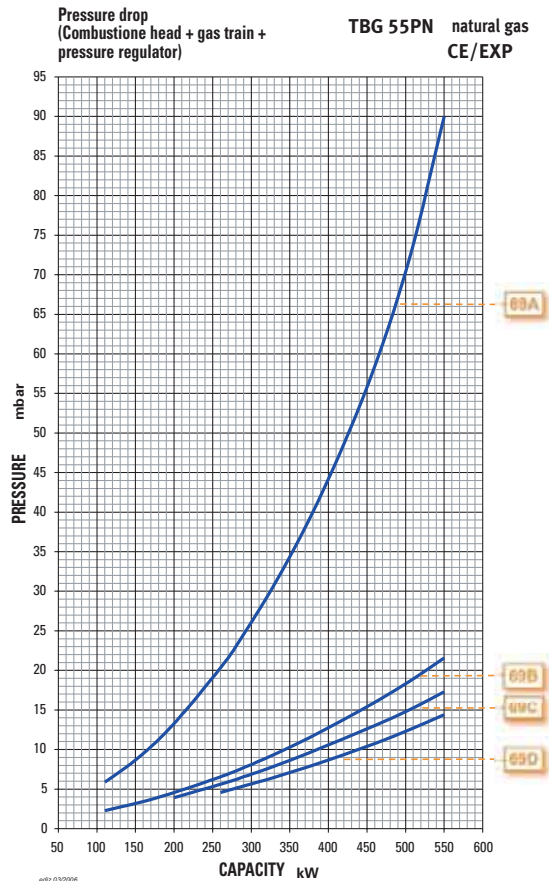
NOTES:
 CTV) Gas train equipped with Valve Tightness Control. Add the special kit.
 **) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes		
TBG 150 P	NATURAL GAS	CE	68A		360	19990512	Included	96000032	–	B2	Complete the gas train with the VPS.S02 kit part no. 98000101		
			68B		360	19990513	Included	96000007	–	B2	Complete the gas train with the VPS.S02 kit part no. 98000101		
			68C		360	19990514	Included	–	–	B2	Complete the gas train with the VPS.S02 kit part no. 98000101		
			68D		200	19990515	97390700	–	–	B8	Complete the gas train with the VPS.S02/1 kit part no. 98000102		
			68E		200	19990516	97390700	–	–	B8	Complete the gas train with the VPS.S02 kit part no. 98000101		
			68F		200	19990517	97390700	–	–	B8	Complete the gas train with the VPS.S02 kit part no. 98000101		
		EXP	68J	CTV		360	19990512	Included	96000032	–	98000101	BE2	
			68K	CTV		360	19990513	Included	96000007	–	98000101	BE2	
			68L	CTV		360	19990514	Included	–	–	98000101	BE2	
			68M	CTV		200	19990515	–	–	–	98000102	BE8	
			68N	CTV		200	19990516	–	–	–	98000101	BE8	
			68P	CTV		200	19990517	–	–	–	98000101	BE8	

TBG 55 PN

Burner/gas train combination



NOTES:

5) Valve tightness control not required by standard EN 676.

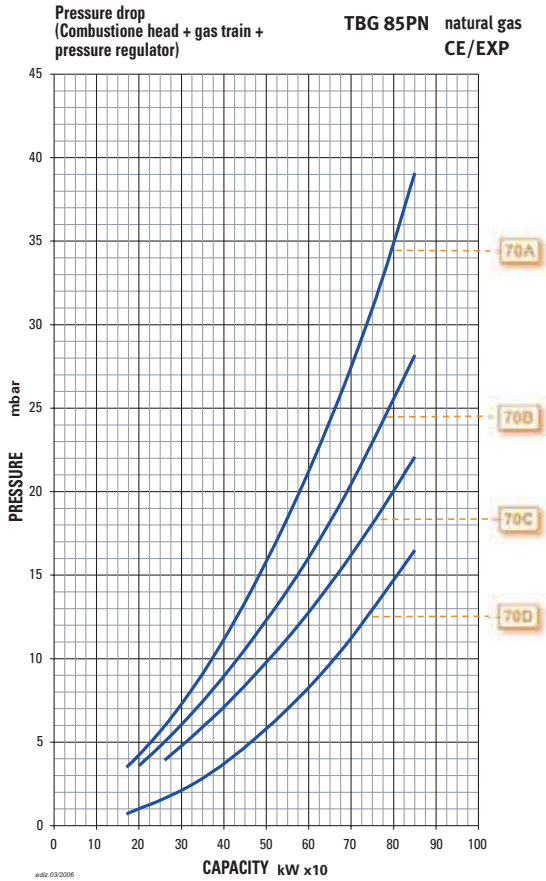
CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

***) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 55 PN	NATURAL GAS	CE/EXP	69A		100	19990440	Included	96000014	–	D3	
				CTV	100	19990440	Included	96000014	98000101	D3	5)
			69B		360	19990447	Included	96000014	–	D3	
				CTV	360	19990447	Included	96000014	98000101	D3	5)
			69C		100	19990441	Included	96000032	–	D3	
				CTV	100	19990441	Included	96000032	98000101	D3	5)
			69D		100	19990442	Included	96000007	–	D3	
				CTV	100	19990442	Included	96000007	98000101	D3	5)
			69D		100	19990443	Included	–	–	D3	
				CTV	100	19990443	Included	–	98000101	D3	5)

TBG 85 PN



Burner/gas train combination

NOTES:

5) Valve tightness control not required by standard EN 676.

CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

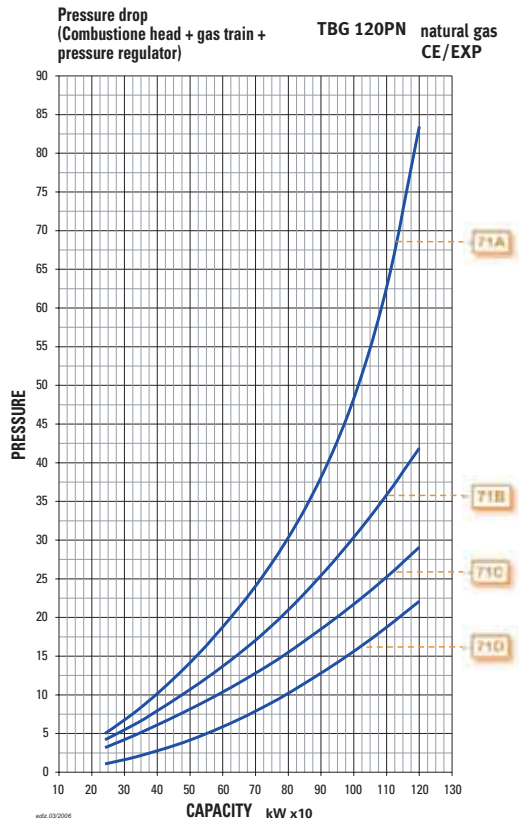
**) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 85 PN	NATURAL GAS	CE/EXP	70A		100	19990441	Included	96000032	–	D3	
					360	19990448	Included	96000032	–	D3	
				CTV	100	19990441	Included	96000032	98000101	D3	5)
				CTV	360	19990448	Included	96000032	98000101	D3	5)
			70B		100	19990442	Included	96000007	–	D3	
				CTV	100	19990442	Included	96000007	98000101	D3	5)
			70C		100	19990443	Included	–	–	D3	
				CTV	100	19990443	Included	–	98000101	D3	5)
			70D		600	19990530	Included	–	–	D3	
				CTV	600	19990530	Included	–	98000102	D3	5)

TBG 120 PN

Burner/gas train combination



NOTES:

5) Valve tightness control not required by standard EN 676.

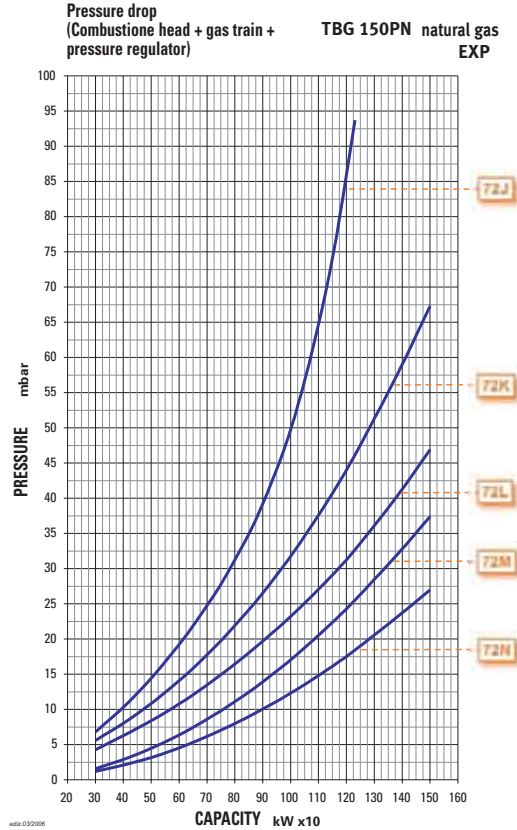
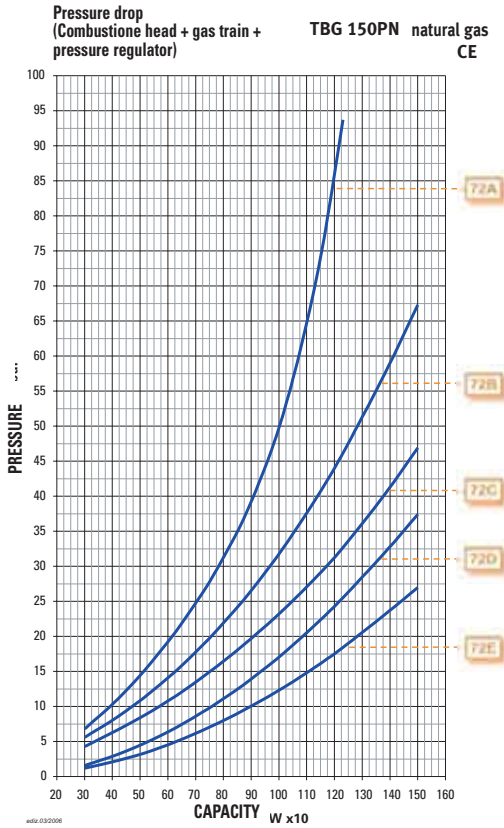
CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

**)) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 120 PN	NATURAL GAS	CE/EXP	71A	100	19990441	Included	96000032	–	D3		
				360	19990448	Included	96000032	–	D3		
				CTV	100	19990441	Included	96000032	98000101	D3	5)
				CTV	360	19990448	Included	96000032	98000101	D3	5)
			71B	100	19990442	Included	96000007	–	D3		
				CTV	100	19990442	Included	96000007	98000101	D3	5)
			71C	100	19990443	Included	–	–	D3		
				CTV	100	19990443	Included	–	98000101	D3	5)
			71D	600	19990530	Included	–	–	D3		
				CTV	600	19990530	Included	–	98000102	D3	5)

TBG 150 PN



Burner/gas train combination

NOTES:

5) Valve tightness control not required by standard EN 676.

CTV) Gas train equipped with Valve Tightness Control. Add the special kit.

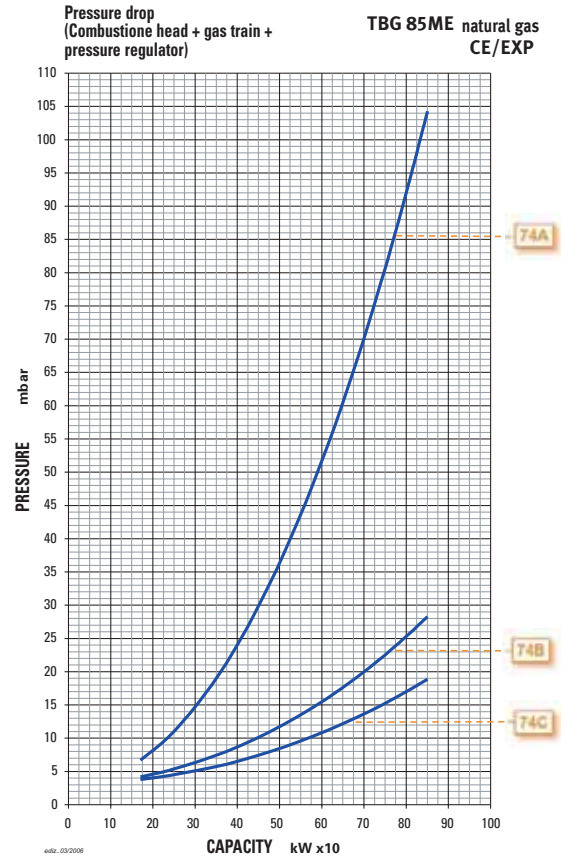
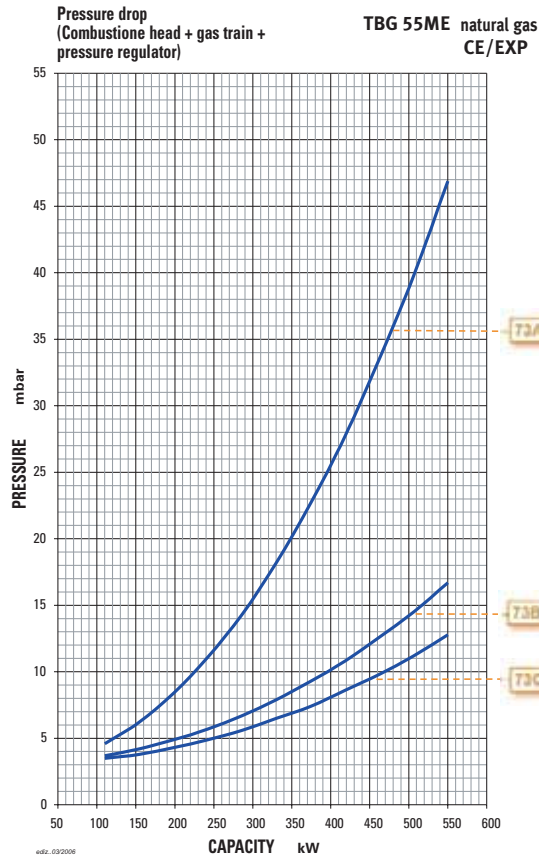
**) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	Execution	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes	
TBG 150 PN	NATURAL GAS	CE	72A		100	19990441	Included	96000032		D3		
					360	19990448	Included	96000032	98000101	D3		
			72B		100	19990442	Included	96000007	98000101	D3		
					360	19990449	Included	96000007	98000101	D3		
			72C		100	19990443	Included	-	-	D3		
		72D		600	19990530	Included	-	-	D3			
		72E		700	19990531	Included	-	-	D3			
		EXP	NATURAL GAS	72J		100	19990441	Included	96000032		DE3	
						360	19990448	Included	96000032	98000101	DE3	
				72K		100	19990442	Included	96000007	98000101	DE3	
	360				19990449	Included	96000007	98000101	DE3			
72L				100	19990443	Included	-	-	DE3			
				600	19990530	Included	-	-	98000101	DE3		
72M				100	19990443	Included	-	-	DE3			
				600	19990530	Included	-	-	98000102	DE3		
72N				700	19990531	Included	-	-	DE3			
				700	19990531	Included	-	-	98000101	DE3		

TBG 55 ME and TBG 85 ME

Burner/gas train combination



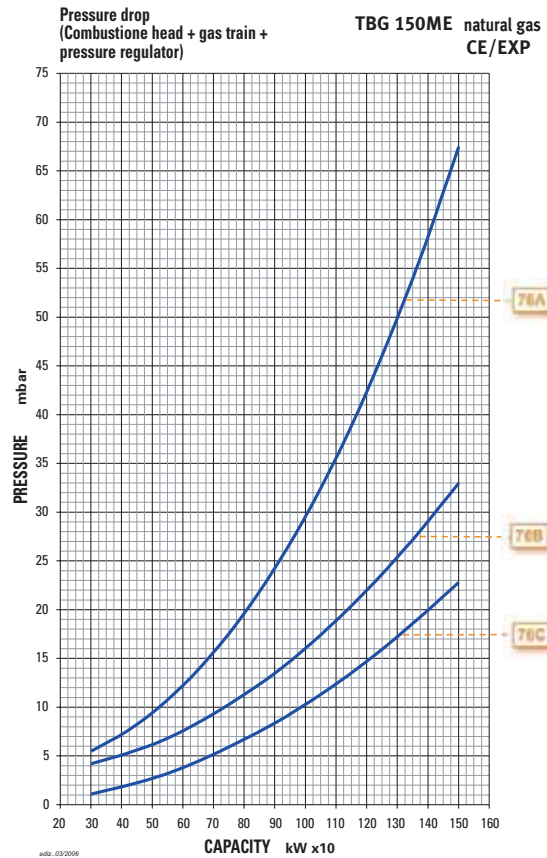
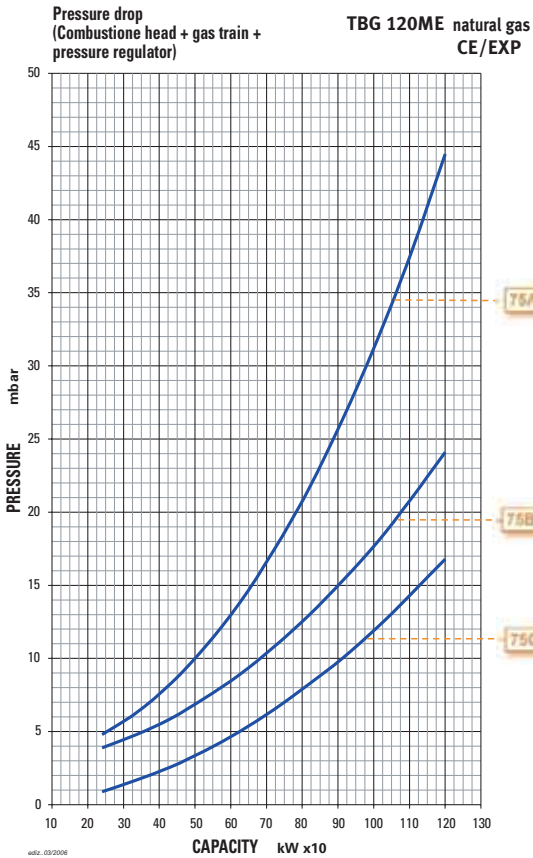
NOTES:

**) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 55 ME	NATURAL GAS	CE / EXP	73A	500	19990521	Included	96000008	Included	D2	
			73B	500	19990522	Included	96000007	Included	D2	
			73C	500	19990523	Included	-	Included	D2	
TBG 85 ME	NATURAL GAS	CE / EXP	74A	500	19990521	Included	96000008	Included	D2	
			74B	500	19990522	Included	96000007	Included	D2	
			74C	500	19990523	Included	-	Included	D2	

TBG 120 ME and TBG 150 ME



Burner/gas train combination

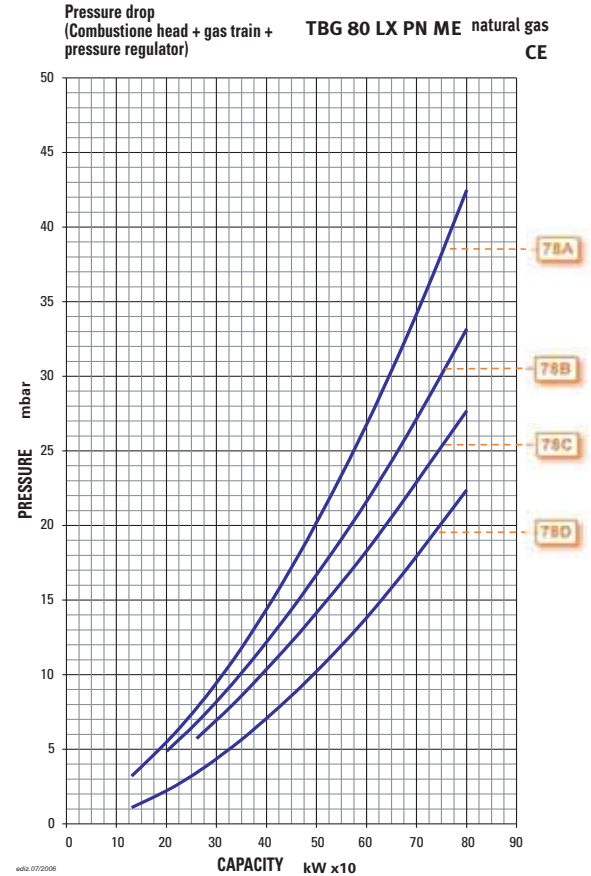
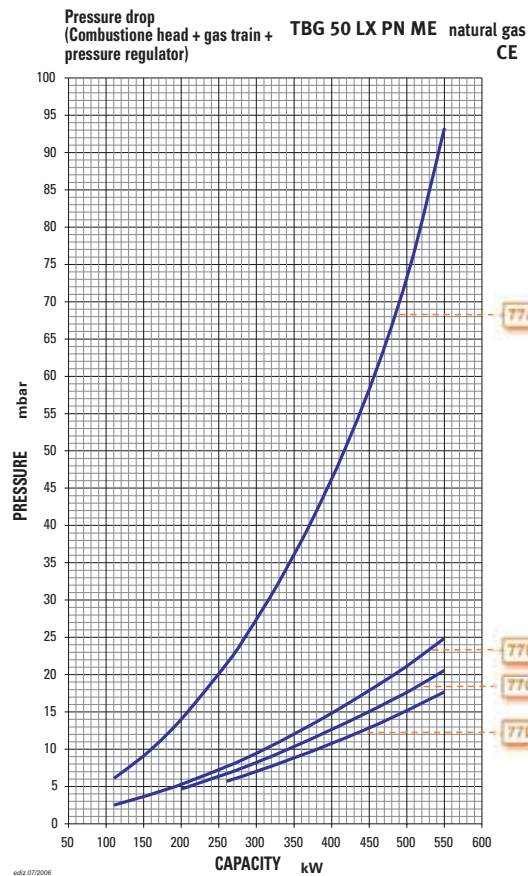
NOTES:
 **) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 120 ME	NATURAL GAS	CE / EXP	75A	500	19990522	Included	96000007	Included	D2	
			75B	500	19990523	Included	-	Included	D2	
			75C	500	19990525	Included	-	Included	D2	
TBG 150 ME	NATURAL GAS	CE / EXP	76A	500	19990522	Included	96000007	Included	D2	
			76B	500	19990523	Included	-	Included	D2	
			76C	500	19990525	Included	-	Included	D2	

TBG 50 LX PN ME and TBG 80 LX PN ME

Burner/gas train combination



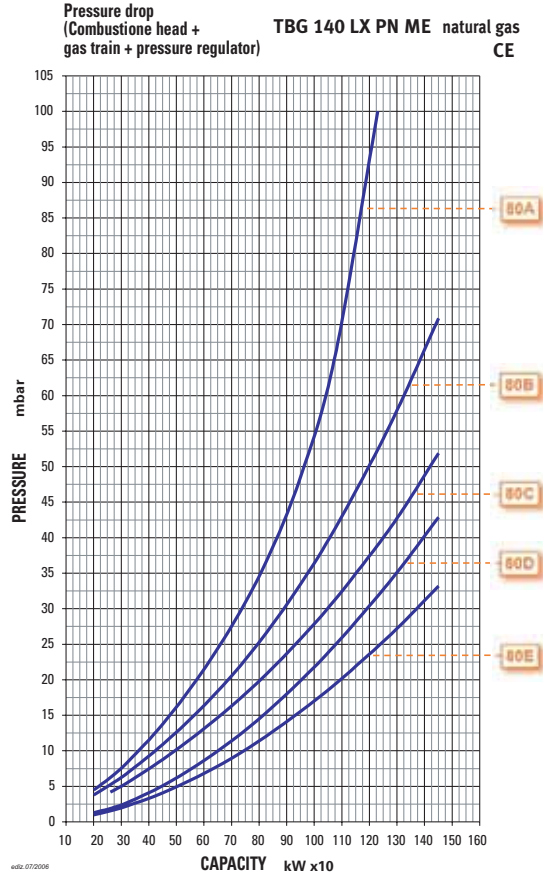
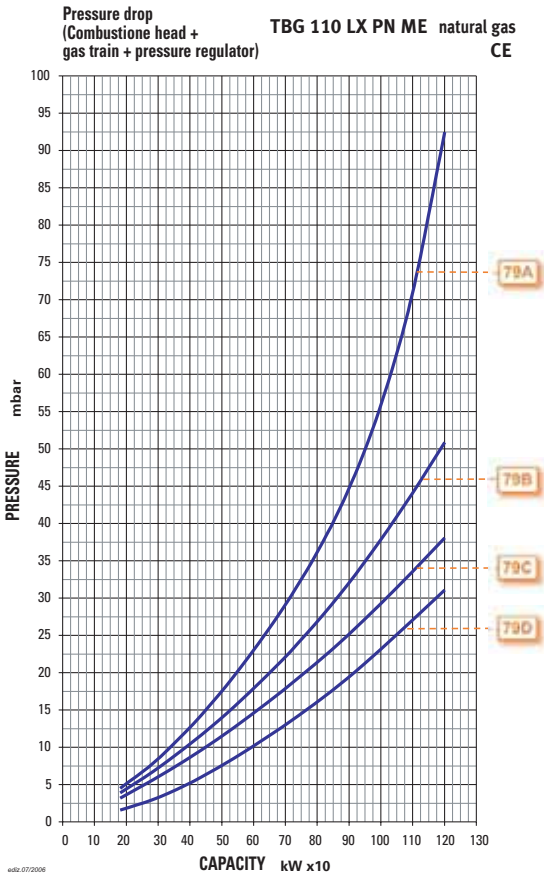
NOTES:

**) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

Burner model	Gas type	Version	Curve on graph	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 50 LX PN ME TBG 50 LX PN ME V	NATURAL GAS	CE / EXP	77A	100	19990487	Included	96000014	Included	D3	
			77B	360	19990494	Included	96000014	Included	D3	
			77C	100	19990488	Included	96000032	Included	D3	
			77D	100	19990489	Included	96000007	Included	D3	
TBG 80 LX PN ME TBG 80 LX PN ME V	NATURAL GAS	CE / EXP	78A	100	19990490	Included	–	Included	D3	
			78B	100	19990488	Included	96000032	Included	D3	
			78C	100	19990495	Included	96000032	Included	D3	
			78D	100	19990489	Included	96000007	Included	D3	
			78D	600	19990532	Included	–	Included	D3	

TBG 110 LX PN ME and TBG 140 LX PN ME



Burner/gas train combination

NOTES:
 **) Max. gas supply pressure at pressure regulator in CE version, and at gas train for EXP version.

BURNER/GAS TRAIN MATCH – CE gas train version complies with EN676, EXP gas train version is for extra-European markets

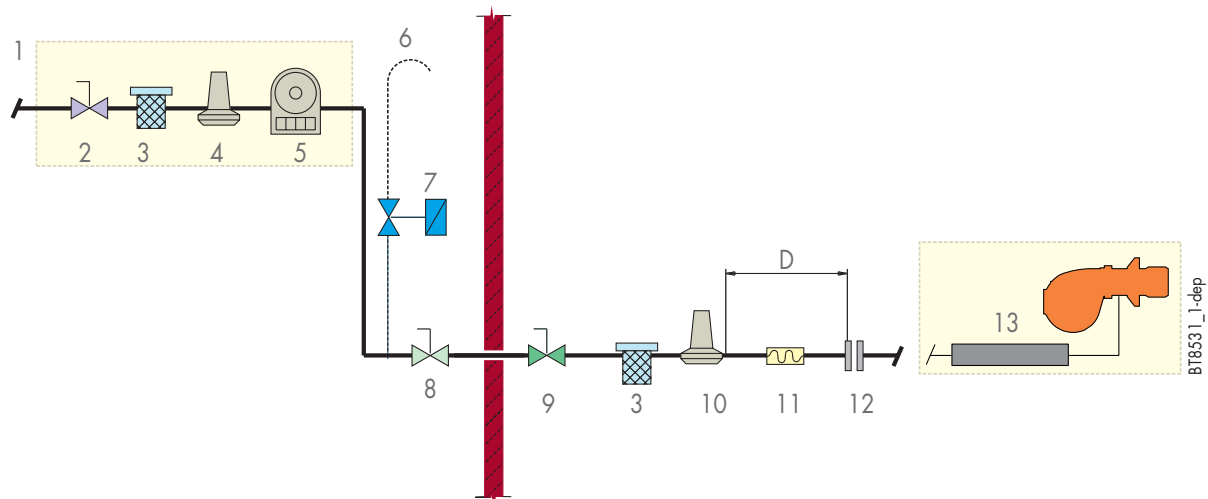
Burner model	Gas type	Version	Curve on graph	P.Max** mbar	Gas train Part no.	Regulator with incorporated filter Part no.	Burner/gas train adapter Part no.	Valve tightness control kit Part no.	Pic.	Notes
TBG 110 LX PN ME TBG 110 LX PN ME V	NATURAL GAS	CE / EXP	79A	100	19990488	Included	96000032	Included	D3	
			79B	360	19990495	Included	96000032	Included	D3	
			79C	100	19990489	Included	96000007	Included	D3	
			79D	100	19990490	Included	–	Included	D3	
			79D	600	19990532	Included	–	Included	D3	
TBG 140 LX PN ME TBG 140 LX PN ME V	NATURAL GAS	CE / EXP	80A	100	19990488	Included	96000032	Included	D3	
			80A	360	19990495	Included	96000032	Included	D3	
			80B	100	19990489	Included	96000007	Included	D3	
			80B	360	19990496	Included	96000007	Included	D3	
			80C	100	19990490	Included	–	Included	D3	
			80D	600	19990532	Included	–	Included	D3	
80E	700	19990533	Included	–	Included	D3				

Gas supply Connection circuit

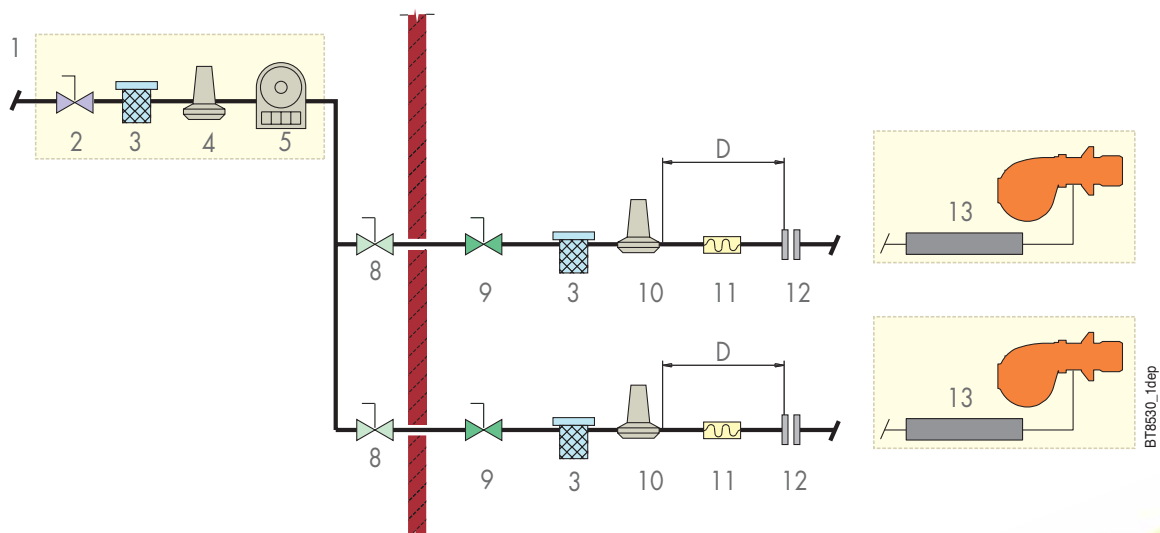
Legend

1 Central reduction and measurement unit	7 Possible automatic bleed valve (must discharge externally in suitable place)	11 Anti-vibration joint
2 Stop-cock	8 Emergency valve	12 Flange coupling
3 Gas filter	9 Ball valve	13 Gas train
4 Pressure reducer	10 Reduction unit or pressure regulator/stabiliser (suited to the specific case)	D Distance between stabiliser (or regulator/stabiliser) and gas valve at least 1,5 - 2 m
5 Flow meter		
6 Discharge into the atmosphere with flame trap net		

DIAGRAM FOR THE CONNECTION OF A BURNER TO THE GAS MAINS AT AVERAGE PRESSURE

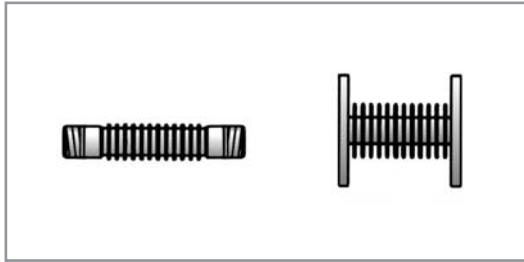


GENERAL DIAGRAM FOR THE CONNECTION OF MORE BURNERS TO THE GAS MAINS AT AVERAGE PRESSURE



Anti vibrating joint in stainless steel according to DIN 80631 standards.

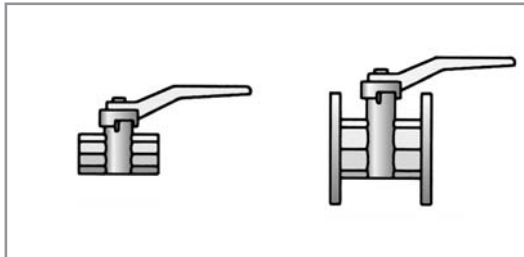
Part no.	Model	Gas connection
97039999	BTGA	3/4" MM
97049999	BTGA	1" MM
97059999	BTGA	1" 1/4 MM
97069999	BTGA	1" 1/2 MM
97079999	BTGA	2" MM
97089999	BTGA	DN 65 - PN 16
97099999	BTGA	DN 80 - PN 16
97109999	BTGA	DN 100 - PN 16



Gas supply
Accessories
for mains
connections

Ball valves

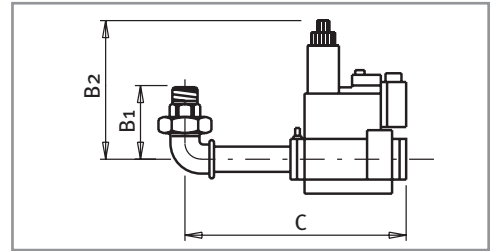
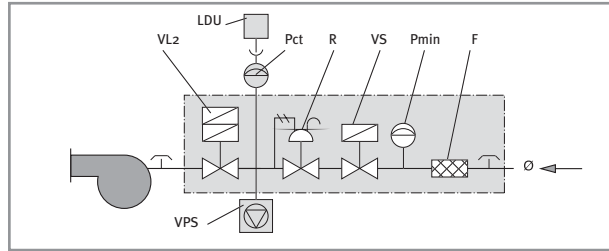
Part no.	Model	Gas connection
97699999	BTVS	3/4" FF
97709999	BTVS	1" FF
97719999	BTVS	1" 1/4 FF
97729999	BTVS	1" 1/2 FF
97739999	BTVS	2" FF
97749999	BTVS	DN 65-PN16
97759999	BTVS	DN 80-PN16
97769999	BTVS	DN 100-PN16





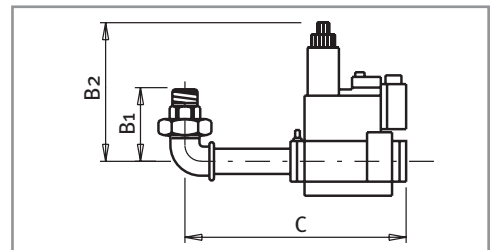
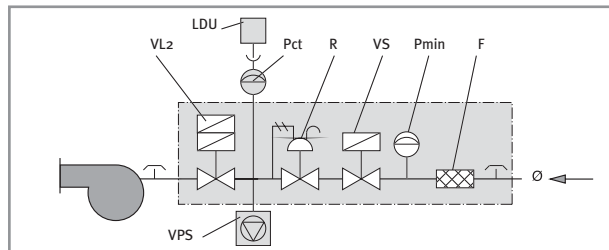
Gas train structure and composition

PICTURE B2



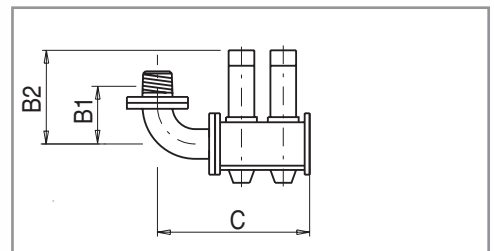
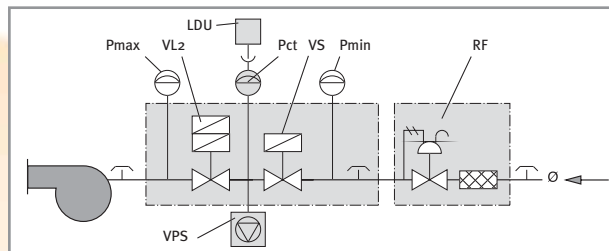
Gas train part no.	F	LDU	Pct	Pmin	Position				Ø	Gas train dimensions			Size of package mm L x P x H	Weight kg
					R	VL2	VPS	VS		B1	B2	C		
19990510 (MB... 407 - 3/4")	●			●	●	●	■	●	3/4"	72	210	365	310 x 210 x 350	5
19990511 (MB... 410 - 1")	●			●	●	●	■	●	1 1/4"	95	260	410	310 x 210 x 350	8
19990512 (MB... 412 - 1 1/4")	●			●	●	●	▲	●	1 1/4"	95	260	410	310 x 210 x 350	8
19990513 (MB... 415 - 1 1/2")	●			●	●	●	▲	●	1 1/2"	103	270	500	520 x 410 x 410	11
19990514 (MB... 420 - 2")	●			●	●	●	▲	●	2"	114	330	500	520 x 410 x 410	13

PICTURE B2



Gas train part no.	F	LDU	Pct	Pmin	Position				Ø	Gas train dimensions			Size of package mm L x P x H	Weight kg
					R	VL2	VPS	VS		B1	B2	C		
19990510 (MB... 407 - 3/4")	●			●	●	●	■	●	3/4"	72	210	365	310 x 210 x 350	5
19990511 (MB... 410 - 1")	●			●	●	●	■	●	1 1/4"	95	260	410	310 x 210 x 350	8
19990512 (MB... 412 - 1 1/4")	●			●	●	●	■	●	1 1/4"	95	260	410	310 x 210 x 350	8
19990513 (MB... 415 - 1 1/2")	●			●	●	●	■	●	1 1/2"	103	270	500	520 x 410 x 410	11
19990514 (MB... 420 - 2")	●			●	●	●	■	●	2"	114	330	500	520 x 410 x 410	13

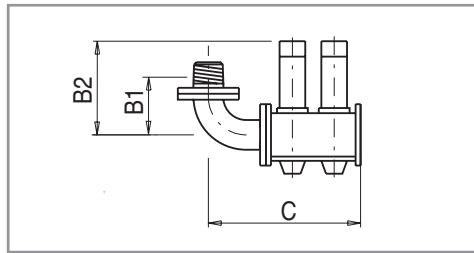
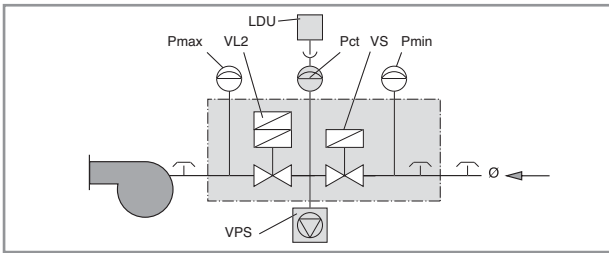
PICTURE B8



Gas train part no.	LDU	Pct	Pmax	Pmin	Position				Ø	Gas train dimensions			Size of package mm L x P x H	Weight kg
					RF	VL2	VPS	VS		B1	B2	C		
19990515 (VGD20.503 - 2")			●	●	DN65	●	▲	●	DN65	114	255	540	780 x 370 x 410	12
19990516 (VGD40.065 - 2 1/2")			●	●	DN65	●	▲	●	DN65	114	291	480	650 x 500 x 380	23
19990517 (VGD40.080 - 3")			●	●	DN80	●	▲	●	DN80	114	298	500	650 x 500 x 380	24

● As standard; ▲ As standard for burners with an output of more than 1200 kW, on request for burners with an output of less than 1200 kW; ■ On request.

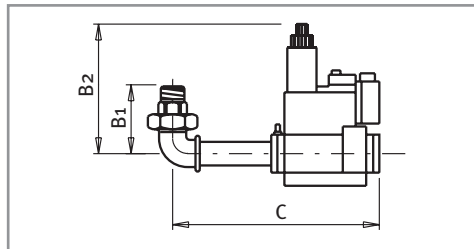
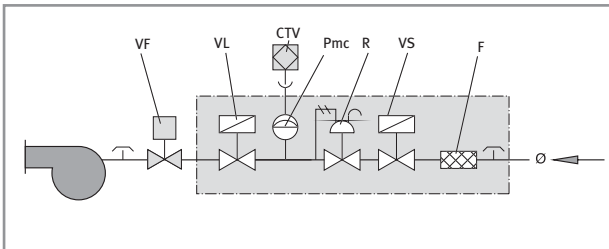
PICTURE BE8



Gas train structure and composition

Gas train part no.	LDU	Pct	Pmax	Pmin	Position RF	VL2	VPS	VS	∅	Gas train dimensions mm			Size of package mm L x P x H	Weight kg
										B1	B2	C		
19990515 (VGD20.503 - 2")			●	●		●	■	●	2"	114	255	540	780 x 370 x 410	12
19990516 (VGD40.065 - 2"1/2)			●	●		●	■	●	DN65	114	291	480	650 x 500 x 380	23
19990517 (VGD40.080 - 3")			●	●		●	■	●	DN80	114	298	500	650 x 500 x 380	24

PICTURE D2



Gas train part no.	CTV	F	Pmc	Position R	VF	VL	VS	∅	Gas train dimensions mm			Size of package mm L x P x H	Weight kg
									B1	B2	C		
19990521 (VCD125 - 1")	●	●	●	●	◆	●	●	1"	83	140	350	320 x 190 x 510	6
19990522 (VCD240 - 1"1/2)	●	●	●	●	◆	●	●	1"1/2	95	164	410	520 x 410 x 410	11
19990523 (VCD350 - 2")	●	●	●	●	◆	●	●	2"	114	174	460	520 x 410 x 410	18
19990525 (VGD40.065 - 2"1/2)	●	●	●	●	◆	●	●	DN65	114	318	1090	1380 x 430 x 710	26

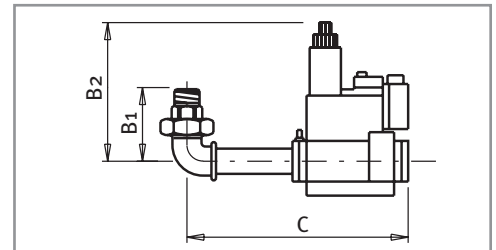
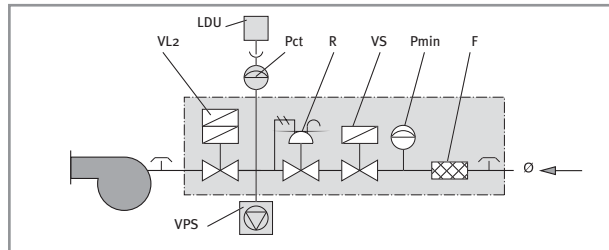
● As standard; ◆ Installed on the burners; ■ On request.

Legend

CTV Valve tightness control	RF Pressure regulator with filter	VLP Operating pilot valve
F Filter	RFP Pressure regulator with filter for pilot gas train	VP Pilot valve
LDU LDU valve tightness control	RM Manual flow rate regulator	VPS VPS valve tightness control
Pct Pressure switch for gas control	RP Pneumatic regulator	VS Safety valve
Pmax Maximum pressure switch	VF Regulator throttle valve	VSP Safety pilot valve
Pmc Minimum and control pressure switch gas leaks	VL Operating valve	∅ Gas train diameter
Pmin Minimum pressure switch	VL2 Two-stage operating valve	∅1 Main gas train diameter
R Pressure regulator		∅2 Pilot gas train diameter

Gas train structure and composition

PICTURE D3

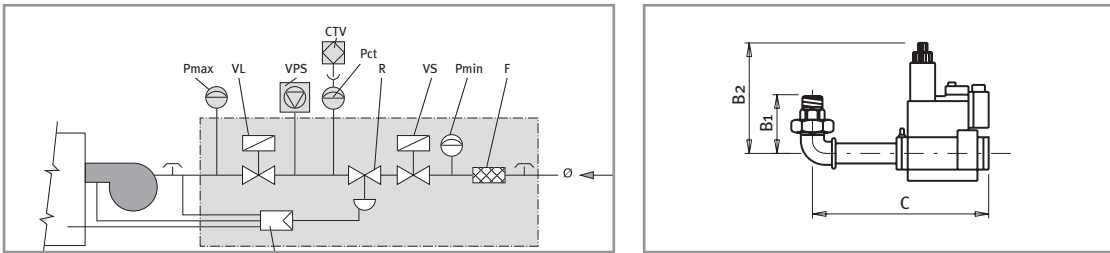


Gas train part no.	CTV	F	Pct	Pmax	Pmin	Position					ø	Gas train dimensions mm			Size of package mm L x P x H	Weight kg
						R	RP	VL	VPS	VS		B1	B2	C		
19990440 (MB... 407 - 3/4")		●			●	●	●	●	■	●	3/4"	72	160	354	400 x 300 x 280	6
19990441 (MB... 412 - 1"1/4)		●			●	●	●	●	▲	●	1"1/4	95	175	500	520 x 410 x 410	9
19990442 (MB... 415 - 1"1/2)		●			●	●	●	●	▲	●	1"1/2	103	185	643	650 x 500 x 380	12
19990443 (MB... 420 - 2")		●			●	●	●	●	▲	●	2"	114	225	711	650 x 500 x 380	13
19990447 (MB... 407 - 3/4")		●			●	●	●	●	■	●	3/4"	72	160	354	400 x 300 x 280	6
19990448 (MB... 412 - 1"1/4)		●			●	●	●	●	▲	●	1"1/4	95	175	500	520 x 410 x 410	9
19990449 (MB... 415 - 1"1/2)		●			●	●	●	●	▲	●	1"1/2	103	185	643	650 x 500 x 380	12
19990487 (MB... 407 - 3/4")	●	●	●		●	●	●	●	●	●	3/4"	72	160	354	400 x 300 x 280	6
19990488 (MB... 412 - 1"1/4)	●	●	●		●	●	●	●	●	●	1"1/4	95	175	500	520 x 410 x 410	9
19990489 (MB... 415 - 1"1/2)	●	●	●		●	●	●	●	●	●	1"1/2	103	185	643	650 x 500 x 380	12
19990490 (MB... 420 - 2")	●	●	●		●	●	●	●	●	●	2"	114	225	711	650 x 500 x 380	13
19990494 (MB... 407 - 3/4")	●	●	●		●	●	●	●	●	●	3/4"	72	160	354	400 x 300 x 280	6
19990495 (MB... 412 - 1"1/4)	●	●	●		●	●	●	●	●	●	1"1/4	95	175	500	520 x 410 x 410	9
19990496 (MB... 415 - 1"1/2)	●	●	●		●	●	●	●	●	●	1"1/2	103	185	643	650 x 500 x 380	12
19990530 (VGD20.503 - 2")		●			●	●	●	●	▲	●	2"	114	331	890	990 x 300 x 500	15
19990531 (VGD40.065 - 2"1/2)		●			●	●	●	●	▲	●	DN65	114	367	1090	1380 x 430 x 710	26
19990532 (VGD20.503 - 2")	●	●	●		●	●	●	●	●	●	2"	114	331	890	990 x 300 x 500	15
19990533 (VGD40.065 - 2"1/2)	●	●	●		●	●	●	●	●	●	DN65	114	367	1090	1380 x 430 x 710	26

● As standard; ▲ As standard for burners with an output of more than 1200 kW, on request for burners with an output of less than 1200 kW; ■ On request.



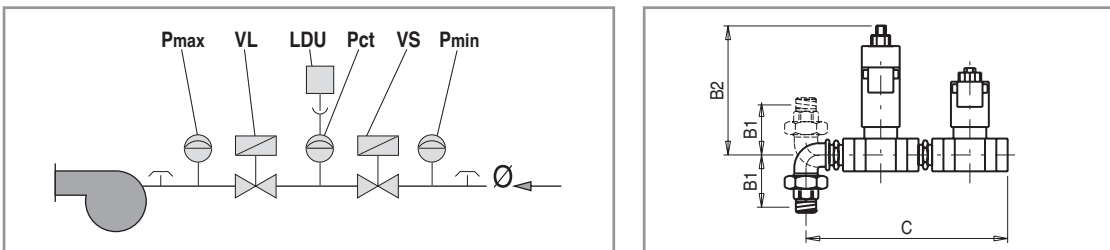
PICTURE DE₃



Gas train structure and composition

Gas train part no.	CTV	F	Pct	Pmax	Pmin	Position		VL	VPS	VS	ø	Gas train dimensions			Size of package mm L x P x H	Weight kg
						R	RP					B ₁	B ₂	C		
19990440 (MB... 407 - 3/4")	●				●	●	●	●	■	●	3/4"	72	160	354	400 x 300 x 280	6
19990441 (MB... 412 - 1"1/4)	●				●	●	●	●	■	●	1"1/4	95	175	500	520 x 410 x 410	9
19990442 (MB... 415 - 1"1/2)	●				●	●	●	●	■	●	1"1/2	103	185	643	650 x 500 x 380	12
19990443 (MB... 420 - 2")	●				●	●	●	●	■	●	2"	114	225	711	650 x 500 x 380	13
19990447 (MB... 407 - 3/4")	●				●	●	●	●	■	●	3/4"	72	160	354	400 x 300 x 280	6
19990448 (MB... 412 - 1"1/4)	●				●	●	●	●	■	●	1"1/4	95	175	500	520 x 410 x 410	9
19990449 (MB... 415 - 1"1/2)	●				●	●	●	●	■	●	1"1/2	103	185	643	650 x 500 x 380	12
19990530 (VGD20.503 - 2")	●				●	●	●	●	■	●	2"	114	331	890	990 x 300 x 500	15
19990531 (VGD40.065 - 2"1/2)	●				●	●	●	●	■	●	DN65	114	367	1090	1380 x 430 x 710	26

PICTURE ME₄



Gas train part no.	LDU	Pct	Pmax	Position		VL	VS	ø	Gas train dimensions			Size of package mm L x P x H	Weight kg
				Pmin					B ₁	B ₂	C		
19990471			●	●		1"1/2	1"1/2	1"1/2	103	205	390	520 x 410 x 410	12

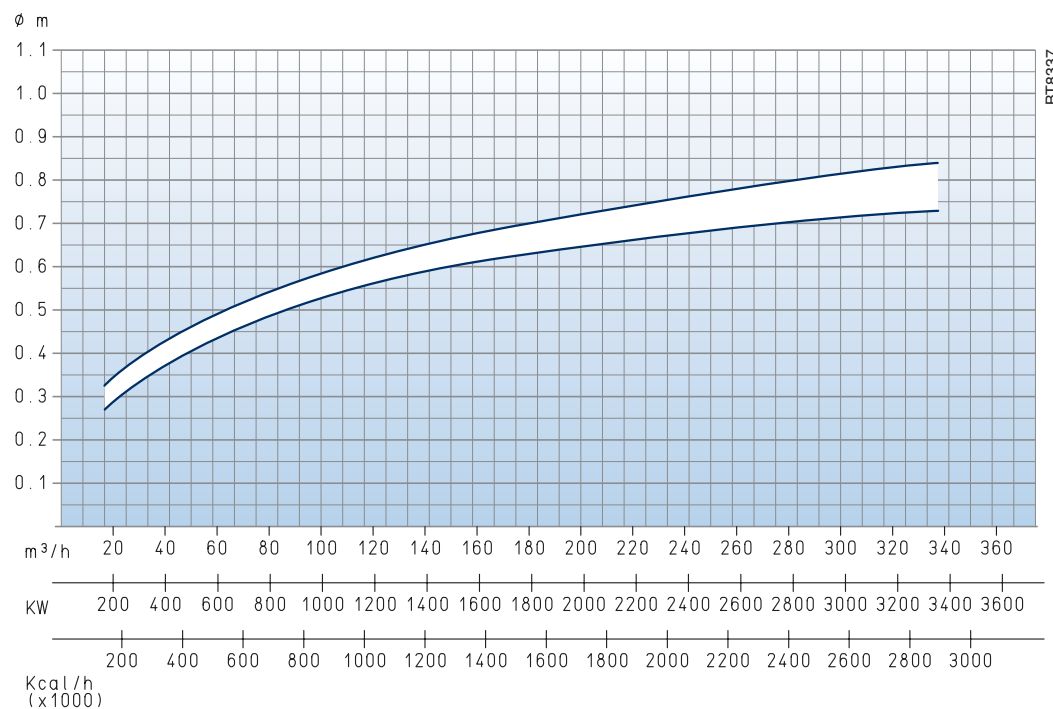
● As standard; ■ On request.

Legend

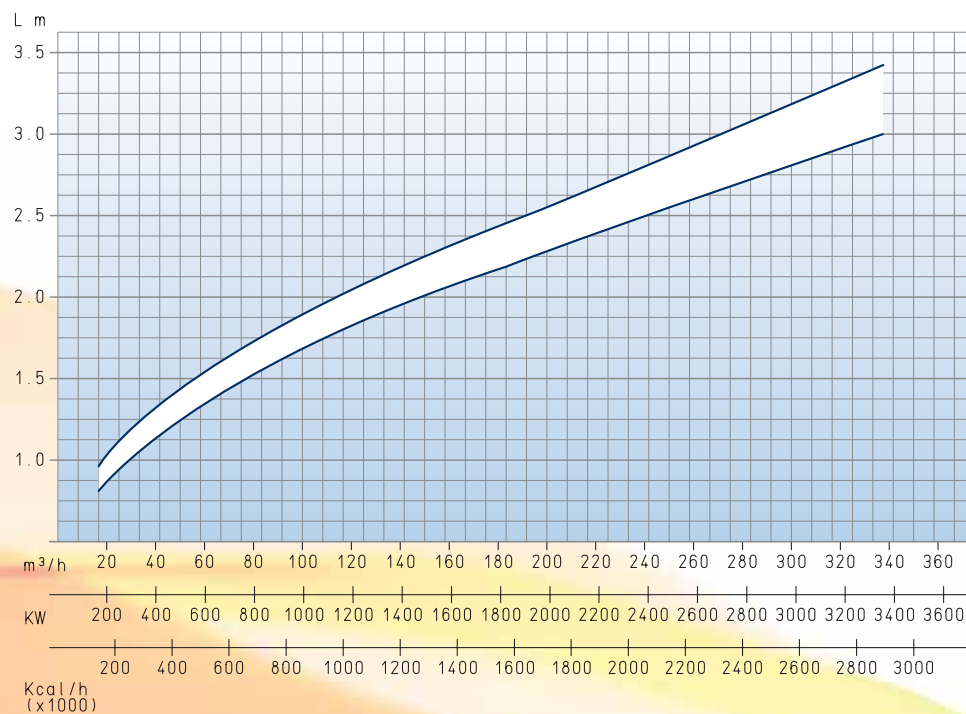
CTV Valve tightness control	RF Pressure regulator with filter	VLP Operating pilot valve
F Filter	RFP Pressure regulator with filter for pilot gas train	VP Pilot valve
LDU LDU valve tightness control	RM Manual flow rate regulator	VPS VPS valve tightness control
Pct Pressure switch for gas control	RP Pneumatic regulator	VS Safety valve
Pmax Maximum pressure switch	VF Regulator throttle valve	VSP Safety pilot valve
Pmc Minimum and control pressure switch gas leaks	VL Operating valve	ø Gas train diameter
Pmin Minimum pressure switch	VL2 Two-stage operating valve	ø1 Main gas train diameter
R Pressure regulator		ø2 Pilot gas train diameter

Flame

DIAMETER OF THE FLAME DEPENDING ON OF THE QUANTITY OF GASEOUS FUEL BURNT (INDICATIVE VALUES)



LENGTH OF THE FLAME DEPENDING ON THE QUANTITY OF GASEOUS FUEL BURNT (INDICATIVE VALUES)



By inserting the RWF40 kit and the modulating kit into the two progressive stage burners, these are transformed into modulating burners, that is, with the capacity to provide thermal power which can be varied continuously in accordance with the specific needs of the boiler.

Naturally, the thermal power level varies only within the "minimum" and "maximum" limits applying to the burner.

Selecting modulation kit components

With reference to parameter: temperature (°C) or pressure (bar), select the regulation range corresponding to the operating value of the boiler. When the value falls within two different setting ranges, select the lower of the two.

Example:

If the temperature of the water in the boiler is to be 100°C, choose the modulation kit corresponding to range 0÷130°C. If the pressure of the steam in the boiler is to be 8 bar, select the modulation kit in the regulation range 0÷10 bar.



Modulation kits

AUTOMATIC PROPORTIONAL MODULATION REGULATOR

Part no.	Model
98000053	Kit RWF 40

RWF 40 type electronic modulation regulator for all types of modulating range burners, used for boiler temperature or steam pressure adjustment.

TEMPERATURE MODULATION KIT

Part no.	Temperature	Type probe	Probe length	Male coupling
98000020	0 ÷ 130 °C	NI 1000	100 ¹⁾	R 1/2"
98000021	0 °C ÷ 500 °C	PT 1000	200 ¹⁾	G 1/2"
98000022	0 °C ÷ 1100 °C	Thermocouple	425 ¹⁾	R 1/2"

Supply:

To be ordered together with the burner when ordering, according to the power required for the application.



STEAM PRESSURE MODULATION KIT

Part no.	Steam Pressure	Male coupling
98000025	0 ÷ 1 bar	G 1/2"
98000030	0 ÷ 4 bar	G 1/2"
98000026	0 ÷ 10 bar	G 1/2"
98000027	0 ÷ 16 bar	G 1/2"
98000028	0 ÷ 25 bar	G 1/2"
98000029	0 ÷ 40 bar	G 1/2"

Notes

For different modulation valves, contact our Sales Department.

¹⁾ Different lengths by request.





Baltur S.p.A.

Via Ferrarese, 10

44042 Cento (Fe) - Italy

Tel. +39 051-6843711

Fax: +39 051-6857527/28

www.baltur.it

info@baltur.it

baltur

NUMERO VERDE
800 335533

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