

OIL, GAS AND DUAL FUEL

Monoblock Burners

CAPACITY 0.4 - 49.9 MMBtu/h



Low emission
combustion
technology

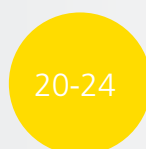
Table of contents

Oilon Burners	8		
Choosing the burner	9		
NOx emissions	10		
Oilon WiseDrive - High efficiency with advanced automation	11		
Oilon Selection Tool	13		
Type labeling	14		
WDx00i - Inbuilt Control System	15	WDx00 - Separate Control Cabinet	41
WiseDrive WDx00	16	WiseDrive WDx00	42
Cost savings using O2 control and variable speed drive (VSD)	18	Cost savings using O2 control and variable speed drive (VSD)	44
GP-50...90 M	20	FGR - Flue Gas Recirculation	45
Technical Data	20	GP-140...280 M, GP-140...280 M LN80	48
Dimensions	20	Technical Data	48
Working Diagram	21	Dimensions	48
GP-140...280 M, GP140...280 M	22	Working Diagram	49
Technical Data	22	GP-350/450 M, GP-320...450 M LN80	50
Dimensions	22	Technical Data	50
Working Diagram	23	Dimensions	50
Scope of Delivery GP-50...280	24	Working Diagram	51
Dual Fuel Burners		GP-600 M...700 M-III	52
Gas/Light Fuel Oil	25	Technical Data	52
GKP-50/90 MH	26	Dimensions	52
Technical Data	26	Working Diagram	53
Dimensions	26	GP-600 M/GP-700 M-III LN60, GP-600...700 M-III LN80	54
Working Diagram	27	Technical Data	54
GKP-140 MH...280 MH	28	Dimensions	54
Technical Data	28	Working Diagram	55
Dimensions	28	GP-1000/1200 M, GP-1000 M LN80	56
Working Diagrams	29	Technical Data	56
Scope of Delivery GKP-50...280	30	Dimensions	56
Light Fuel Oil Burners	31	Working Diagram	57
KP-140...280 M	32	Scope of Delivery GP-140...1200	58
Technical Data	32	Dual Fuel Burners	
Dimensions	32	Gas/Light Fuel Oil	59
Working Diagram	33	GKP-140 M...280 M, GKP-140/250 M LN80	60
Scope of Delivery KP-140...280	34	Technical Data	60
PI Diagrams	35	Dimensions	60
Combustion head and masonry dimensions	37	Working Diagram	61
Accessories WDx00i	38	Working Diagram	62
Packing	39	GKP-350/450 M, GKP-320/450 M LN80	64
		Technical Data	64
		Dimensions	64
		Working Diagram	65
		GKP-600 M...700 M-III	66
		Technical Data	66
		Dimensions	66
		Working Diagram	67
		GKP-600 M LN80/ GKP-700 M-III LN80	68

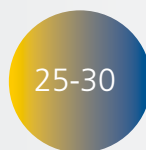
Technical Data	68
Dimensions	68
Working Diagram	69
GKP-1000/1200 M	70
Technical Data	70
Dimensions	70
Working Diagram	71
Scope of Delivery GKP-140...1200	72
Light Fuel Oil Burners	73
KP-350/450 M	74
Technical Data	74
Dimensions	74
Working Diagram	75
Scope of Delivery KP-350...450	76
PI Diagrams	77
Combustion head and masonry dimensions	80
Accessories	83
Accessories WDx00	84
Packing	86

<u>General for all burners</u>	87
<u>Flame dimensions for combustion head</u>	88
<u>Gas valves</u>	89
<u>Accessories</u>	89
<u>Example</u>	92
<u>Oilon customer service and webshop</u>	93
<u>Modern training facilities</u>	94
<u>Our Sales and Service Network</u>	95

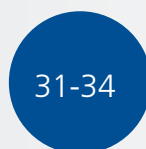
WDx00i Burners - Inbuilt Control System



Gas Burners
0.4 - 12.49 MMBtu/h



Dual Fuel Burners
Gas/Light Fuel Oil
0.4 - 12.49 MMBtu/h

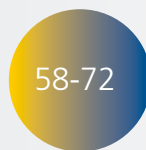


Light Fuel Oil Burners
14.6 - 91.7 MMBtu/h

WDx00 Burners - Separate Control Cabinet



Gas Burners
1.5 - 49.9 MMBtu/h



Dual Fuel Burners
Gas/Light Fuel Oil
2.1 - 49.9 MMBtu/h



Light Fuel Oil Burners
6.0 - 20.6 MMBtu/h

The art of clean combustion

Oilon is an international energy technology company whose products support sustainable development by directly and measurably reducing emissions. Oilon's goal is to promote sustainable development and set a good example in the fight against climate change. As a 60-year-old family business, we want to preserve the environment for future generations as well.

Oilon is a pioneer in low emission, high-class burner technology. Our selection of burners supports the transition to even cleaner and renewable fuels.

The excellent performance, reliability, and low emissions of Oilon burners are the result of decades of experience and long development. Depending on the solution, our burners can achieve the most stringent emission requirements in the world.

Additionally, we provide combustion solutions for hydrogen, biogases, bio-oils, and other renewable fuels. We have a wide-ranging experience in firing different liquid and gaseous fuels. Thanks to our global dealer network, local presence on five continents, and extensive product approval and certification, we can offer burners and combustion technology to different customers and a wide range of applications across the globe.

Oilon Burners



Oilon gas, oil and dual fuel burners are fully automatic, safe, and reliable. The burners are equipped with the latest digital technology.

Design

Oilon burners are designed for easy operation and maintenance without forgetting environmental friendliness and safety.

Applications

Oilon burners are suitable for various applications, such as hot water boilers, steam boilers, air heaters and different process applications.

Fuels

Oilon burners are suitable for various liquid and gaseous fuels such as light fuel oil, natural gas and LPG. Burners using other fuels are available on request.

Connectivity

Digital combustion management enables communication with external systems. Remote monitoring and diagnostics optimize operational efficiency.

Standards

Gas burners comply with the ANSI /UL 295.

Oil burners comply with the ANSI/UL 296.

Dual fuel burners comply with the ANSI/UL 2096.

Atomizing-type oil burners comply with the standard B140.2.1-10.

Gas-fired burners comply with standard CSA/CGA 3.4-1973 and dual fuel burners with all of these.

Burners are UL type tested.

Oilon burner is your choice!



Choosing the burner

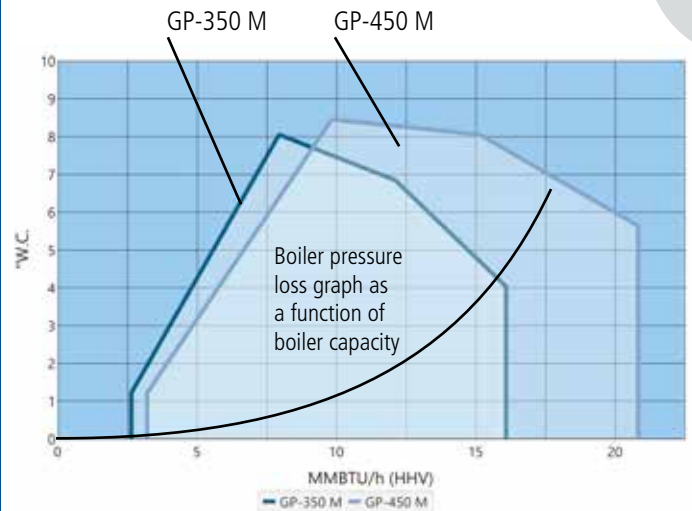
A. Procedure

1. Establish relevant boiler and application information
 - boiler capacity and efficiency, or required burner capacity
 - furnace back-pressure
 - fuel/fuels to be used
 - burner fuel inlet pressure
 - burner capacity regulation method
2. Calculate the burner capacity. Burner capacity = boiler capacity / efficiency
 Example: boiler capacity of 663 hp (6,500 kW), efficiency of 90 % → burner capacity = 22.176 MBtu/h (6,500 kW) / 0.9 = 24.636 MBtu/h (7,220 kW).
3. Gas burners: Required gas flow [ft³/h] = (burner capacity [MBtu/h]) / gas's calorific value [Btu/ft³]. Example: required burner capacity = 24.636 MBtu/h → required gas flow = 24.636 MBtu/h x 1,030 Btu/ft³ = 23.918 ft³/h, where 1,030 Btu/ft³ is the calorific value of natural gas.
 Oil burners: Calculate the required oil flow [lb/h]. Required oil flow [lb/h] = (burner capacity [MBtu/h]) / the oil's calorific value [Btu/lb]. Example: required burner capacity = 24.636 MBtu/h → required oil flow = (24.636 MBtu/h x 140,000 Btu/gal) = 176 gal/h, where 140,000 Btu/gal is the calorific value of light oil.
4. See relevant brochure for burner capacity/back pressure graphs: The graphs indicate the burner operating range. For example, the boiler back pressure with a burner capacity of 24.636 MBtu/h is 7.2 "WC. Looking at the adjoining graph, plot your burner capacity along the horizontal axis. On the vertical axis plot your boiler back-pressure. Where the two lines meet, defines the required burner type. The optimum burner is best chosen by ensuring that the plotted operating point is as close as possible to the right hand edge of the corresponding operating envelope. Different fuels and capacity regulation methods require separate graphs. The fuel calorific value is stated on the graphs.
5. Gas and dual fuel burner valve selection: Choose a large enough valve, using the gas valve selection table. Note that the values in the selection table apply when the furnace back pressure is 0 "WC. Therefore, you must subtract the furnace back pressure from the actual gas inlet pressure and choose the valve on the basis of the value thus obtained. The ratings shown in the table apply to natural gas.
 For example, when the gas inlet pressure of the burner is 40 "WC, boiler back pressure is 7 "WC, and required burner capacity is 24.636 MBtu/h, the effective pressure is 40 "WC - 7 "WC = 33 "WC. For the GP-700 M burner, for example, you should choose a valve allowing a minimum burner capacity of 24.636 MBtu/h with 33 "WC gas inlet pressure → in this case, valve ANSI 4".
6. Check that the outer dimensions of the burner, especially those of the combustion head, are suitable for the application; the length of the combustion head should be such that, when mounted, the combustion head is even with the furnace wall or about 0.4 to 0.8 inches inside the furnace (see 'Masonry' figure).
7. Check the flame dimensions in the flame dimension table. Please note that the flame must not come in to contact the walls of the furnace.
8. Accessory requirements must also be taken into consideration: gas pressure regulator, oil pumping unit, boiler thermostats/pressostats.

B. Equations and rules of thumb

1. Burner capacity = boiler capacity / 0.9 (when boiler efficiency is 90 %)
2. Steam boilers: 1 boiler horsepower = 34.5 lb/h steam
3. Light oil: 1 lb/h ≈ 20.0 MBtu/h burner capacity with calorific value 19,960 Btu/gal
 1 lb/h = 973,000 btu/h burner capacity with calorific value 139,000 Btu/gal
4. Natural gas: 1 ft³/h ≈ 1.030 MBtu/h burner capacity with calorific value 1,030 Btu/ft³
5. The amount of combustion air:
 - Gas burners: required amount of combustion air for each 34 MBtu/h of burner capacity is 13.5 ft³/h.
 1 ft³ of natural gas requires 11.3 ft³ of combustion air
 - Oil burners: required amount of combustion air for each gallon of oil burned [lb/h] is 49 ft³/h.
 1 gallon of light fuel oil requires 14.7 ft³ of combustion air.

An example of burner selection



The max. capacity of a hot water boiler is 14,000 MBtu/h, efficiency 0.9, and the corresponding burner capacity 14,000 MBtu/h / 0.9 = 15,555 MBtu/h. The graph indicates that a suitable gas burner for this capacity is the GP-450 M, as the pressure loss value for the boiler is located inside the area for the GP-450 M burner on the capacity/back pressure graph. The GP-350 M can also be used for this application, provided that the full boiler capacity is not required. Remember to take efficiency into account when relating the boiler pressure loss information to the burner capacity/back pressure graph.

NOx emissions

Nitrogen oxides (NOx) are compounds of nitrogen and oxygen, the most important of which are NO and NO2. Small amounts of nitrogen oxides also occur in nature, but the majority of them originate from human actions, mainly from logistics and energy production.

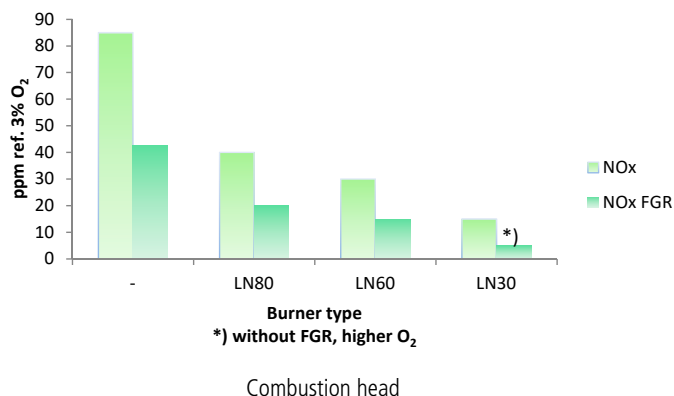
Nitrogen oxides form during all combustion processes, when the nitrogen present in the combustion air and/or fuel and the oxygen present in the combustion air, react at high temperatures.

Nitrogen oxides are harmful to humans and the environment in many ways. They are toxic and harmful to the respiratory system. Nitrogen oxides cause acidification and eutrophication of the environment, form ground-level ozone and harmful particulate emissions.

Increasingly stringent emission limits are being imposed all over the world to mitigate the adverse effects of nitrogen oxide emissions. The reduction of nitrogen oxides is the key priority in lowering emissions from traffic and energy production.

We are especially committed on reducing nitrous oxide (NOx) and particulate emissions. One of our most important goals when developing our products is to lower emission levels.

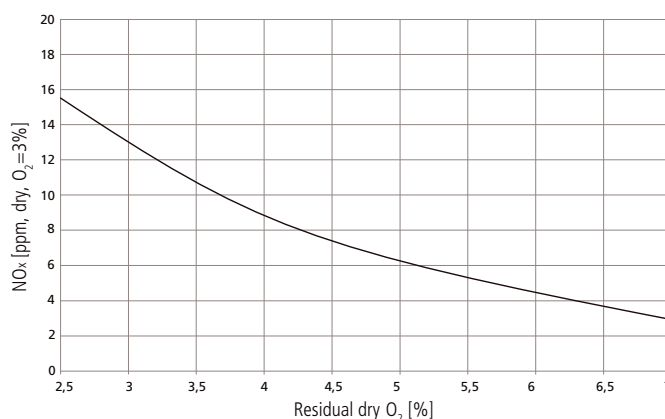
Effect of combustion head on NOx emissions, natural gas



Low NOx emissions are achieved by innovative gas and air distribution and staging in the combustion head.

NOx emissions are also reduced with the use of internal/external FGR in order to reduce flame peak temperatures and combustion reaction speed. Emission values depend on the furnace geometry, the furnace load and the temperature of the boiler medium. Low NOx levels are mainly achieved on standard 2 or 3-pass boilers.

NO_x EMISSION DIAGRAM



NO_x emissions and required residual O₂ will vary depending on furnace geometry and conditions

Oilon WiseDrive - High efficiency with advanced automation

Oilon WiseDrive is an electronic fuel/air ratio control system. In the WiseDrive system separate servomotors are installed for combustion air dampers, fuel regulator(s) and optionally for combustion head control to control air flow in the combustion head. The ratio between fuel, combustion air and combustion head air flow is adjusted electronically. The WiseDrive system also takes care of burner control and safety functions.



High efficiency

Electronic fuel/air ratio control improves combustion efficiency and lowers emissions. The greatest benefits are achieved in dual fuel burners where the combustion of both the main and reserve fuels can be adjusted optimally and the O₂ control is in use. Significant energy savings can also be achieved by using variable speed drive (VSD) in the combustion air fan.

A versatile system

Oilon WiseDrive system can be connected to external systems via fieldbus connection. Data regarding burner status and combustion process can be read remotely. Also remote control (start, stop, reset) and settings (capacity controller, fuel selection) can be performed via fieldbus.

WiseDrive includes control sequences, fuel/air ratio and capacity control as well as leak testing of gas valves and much more in a single package.

WiseDrive (WD), an electronic regulator for controlling the fuel/air ratio – an energy-efficient and environmentally friendly solution

Electronic fuel/air ratio control of the burner brings the benefits of lower flue gas emissions, decreased consumption of energy and improved technical characteristics of the burner, such as more accurate regulation.

CONTROL SYSTEMS	WD100i/WD100	WD200i/WD200
Operation principle	Electronic fuel/air	Electronic fuel/air
Control unit	Siemens LMV 51	Siemens LMV 52
Available for fuels	LFO (KP) GAS (GP) GAS/LFO (GKP)	LFO (KP) GAS (GP) GAS/LFO (GKP)
O ₂ control	Not available	Available*
VSD control	Not available	Standard
Control panel interface	Text display	Text display
External communication	Standard: Hardwired Modbus RTU Optional: Profibus Profinet	Standard: Hardwired Modbus RTU Optional: Profibus Profinet
Capacity control	Built in LMV51 4...20 mA output signal	Built in LMV52 4...20 mA output signal
FGR	Not available	Available**

*) Not available with inbuilt control system (50/90 burner series)

**) Not available with inbuilt control system

	Inbuilt control system		Separate Control Panel		
BURNER CONTROL SYSTEMS	WD100i	WD200i	WD100	WD200	
GP-50 M / GP-90 M	X	X	-	-	
GP-140 M...GP-280 M	X	X	X	X	
GP-350 M...GP-1200 M	-	-	X	X	
GP-140 M LN80...GP-1000 M LN80	-	-	X	X	
GP-600 M LN60 / GP-700 M-III LN60	-	-	X	X	*
GP-130 M LN30 / GP-250 M LN30	-	-	X	X	
GP-320 M LN30	-	-	X	X	**
GP-600 M LN30/GP-600 M-II LN30	-	-	X	X	
GKP-50 MH / GKP- 90 MH	X	X	-	-	
GKP-140 MH...GKP- 280 MH	X	X	-	-	
GKP-140 M...GKP-1200 M	-	-	X	X	
GKP-140 M LN80...GKP-700 M-III LN80	-	-	X	X	
KP-140 M...KP-280 M	X	-	-	-	
KP-350 M / KP-450 M	-	-	X	X	***

*) No stock model, longer delivery time

**) Coming to the market

***) Please, ask these model from Oilon Oy



Oilon Selection Tool

Oilon Selection Tool simplifies choosing the right product and optional accessories from our extensive range of products.

You can make quick selections and advanced system calculations with the user friendly software, available in several languages. Oilon Selection Tool allows you to access an extensive range of product information, calculation results, and enables you to form detailed technical specifications.

Oilon Selection Tool is continuously updated as new products, features, functionalities and improvements will be added. Automatic software updates ensure that you always have access to the latest features and product information.

Oilon Selection Tool can be downloaded from www.oilon.com and can be installed locally to your Windows, Mac or Linux computer.

Type labeling

GKP-700 M-II WD200 LN80 C2

Combustion head length (additional code):

-
C1
C2

NOx-emissions (additional code):

LN80 = 40 ppm (80mg/kWh)
LN60 = 30 ppm (60mg/kWh)
LN30 = 15 ppm (30mg/kWh)

Control system (additional code):

-
WDx00 = Siemens LMV5
WDx00i = Integrated Siemens LMV5

Burner capacity size categorization:

-
I
II
III

Method of control:

H = Two-stage
M = Modulating
MH = Modulating gas, two-stage oil

Burner frame size categorization:

50...1200

Fuel:

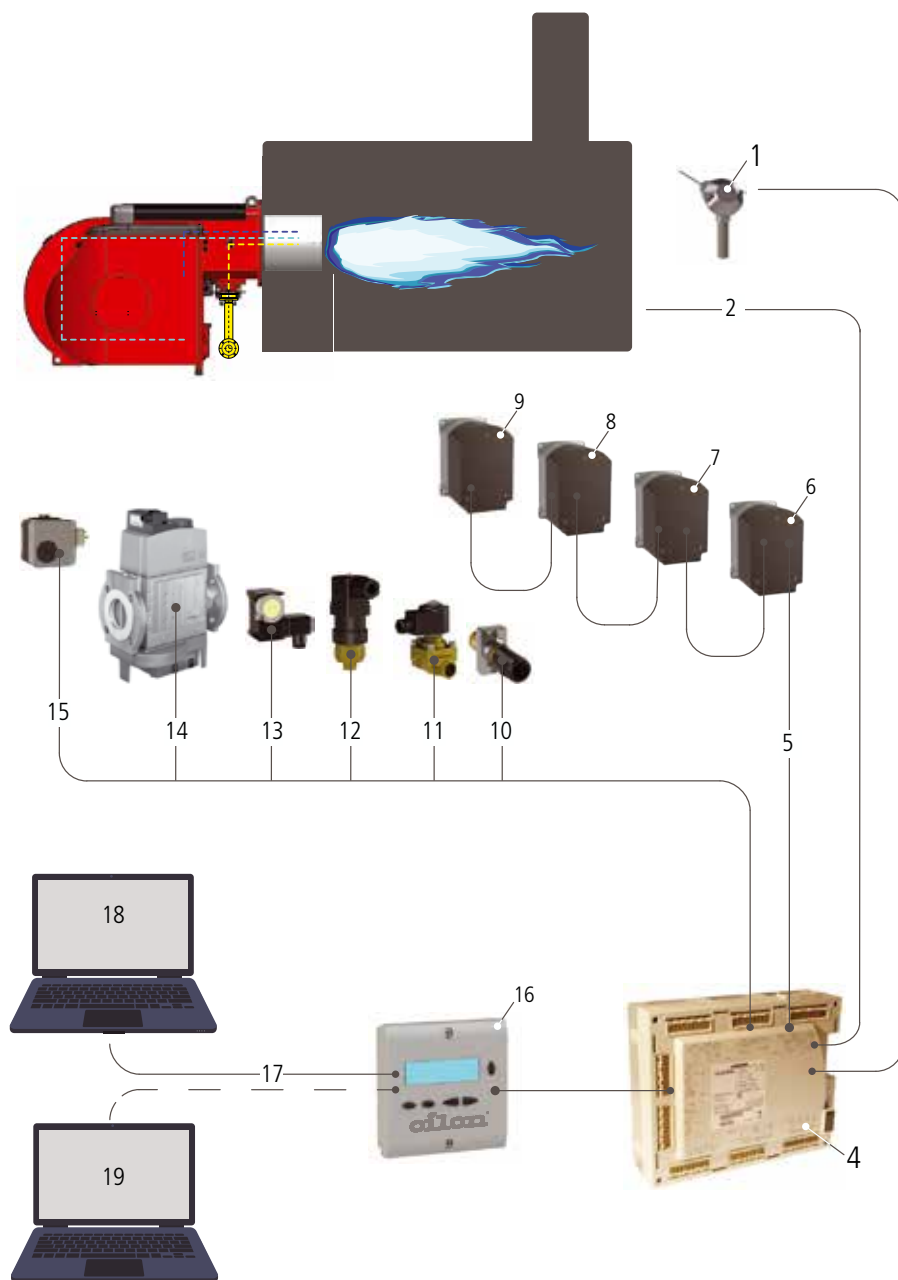
GP = Gas
GKP = Gas, light fuel oil
KP = Light fuel oil
RP = Heavy fuel oil
GRP = Gas, heavy fuel oil



**WDx00i - Inbuilt
Control System**

WiseDrive WDx00i

Example of Oilon WiseDrive WD100 Electronic fuel/air ratio control system

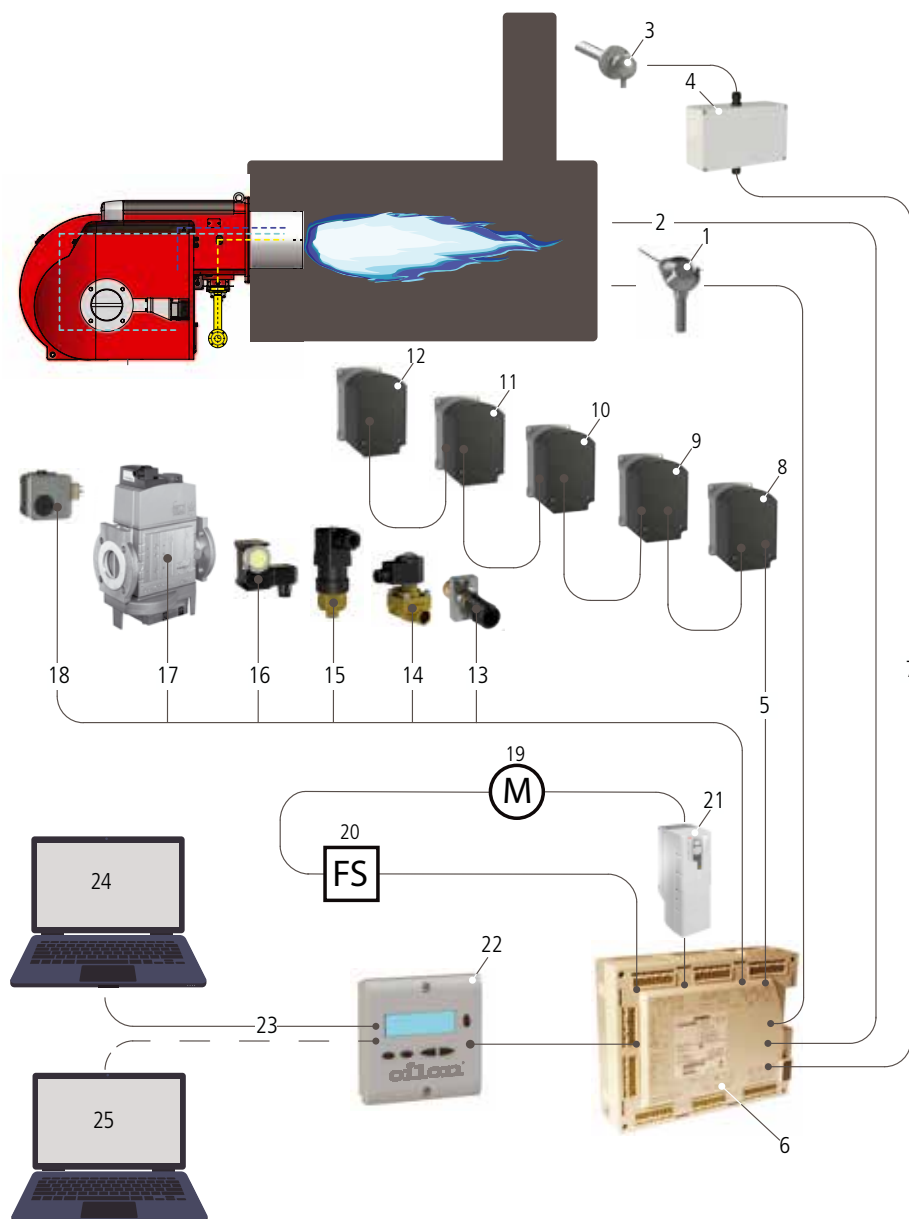


Examples of WiseDrive's functions:

- Control sequences and safety functions
- Fuel/air ratio control
- Combustion head control (option)
- Load control with inbuilt PID controller, control also by an external 4...20 mA signal
- Can be connected with external plant automation via bus. Modbus RTU as standard.
- Different access levels
- Input of parameters via text display operating panel or/and PC (check software and hardware requirements)

1. Boiler pressure/
Boiler temperature
2. Safety devices
3. CAN BUS
4. Control unit
5. CAN BUS - Servomotor
6. Gas damper
7. Air damper
8. Oil regulator
9. Combustion head regulator -
Gas/Oil flame plate positioning
10. Flame detector
11. Oil valves
12. Oil pressure switch
13. Gas pressure switch
14. Gas valves
15. Air pressure switch
16. User interface
17. MOD-BUS
18. Control room
19. Service computer

Example of Oilon WiseDrive WD200i Electronic fuel/air ratio control system with O₂ control and variable speed drive (VSD)



Examples of WiseDrive's functions

- Control sequences and safety functions
- Fuel/air ratio control
- Combustion head control (option)
- Load control with inbuilt PID controller, control also by an external 4...20 mA signal
- Can be connected with external plant automation via bus. Modbus RTU as standard.
- Different access levels
- Input of parameters via text display operating panel or/and PC (check software and hardware requirements)
- Fuel consumption reading (requires flow meter)
- Frequency converter control (requires rotation speed sensor)
- O₂ control (requires O₂ module and O₂ sensor)
- Flue gas temperature reading (requires temperature sensor)
- Combustion air temperature reading (requires temperature sensor)

- | | |
|---|--|
| 1. Boiler temperature | 13. Flame detector |
| 2. Safety devices | 14. Oil valves |
| 3. O ₂ sensor (option) | 15. Oil pressure switch |
| 4. O ₂ module | 16. Gas pressure switch |
| 5. CAN BUS | 17. Gas valves |
| 6. Control unit | 18. Air pressure switch |
| 7. CAN BUS - Servomotor | 19. Motor |
| 8. Gas damper | 20. Speed sensor |
| 9. Oil regulator | 21. Frequency converter for variable speed drive |
| 10. Combustion head regulation/
Gas/Oil flame disc positioning | 22. User interface |
| 11. Air damper | 23. MOD-BUS |
| 12. Flue gas damper, not available with inbuilt control system | 24. Control room |
| | 25. Service computer |

Cost savings using O₂ control and variable speed drive (VSD)

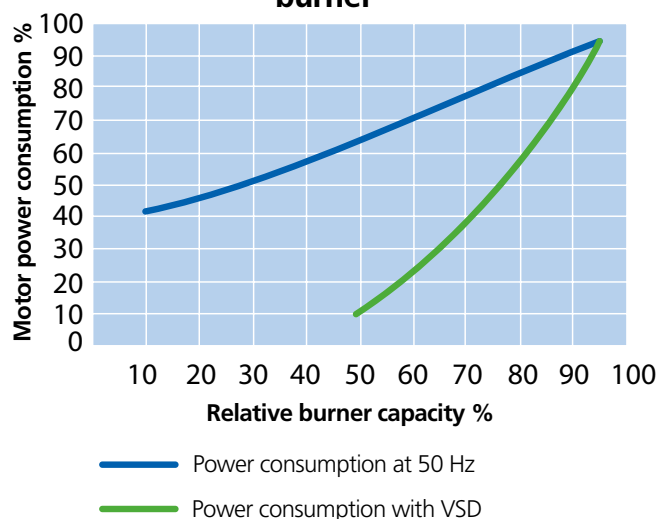
1. Effect of O₂ control on the combustion efficiency

In a traditional burner, the O₂ level of flue gases is usually adjusted to about 4 %. When using WD200, a 2 % O₂ level can be reached. Two percent reduction in O₂ level means 1 % rise in efficiency.

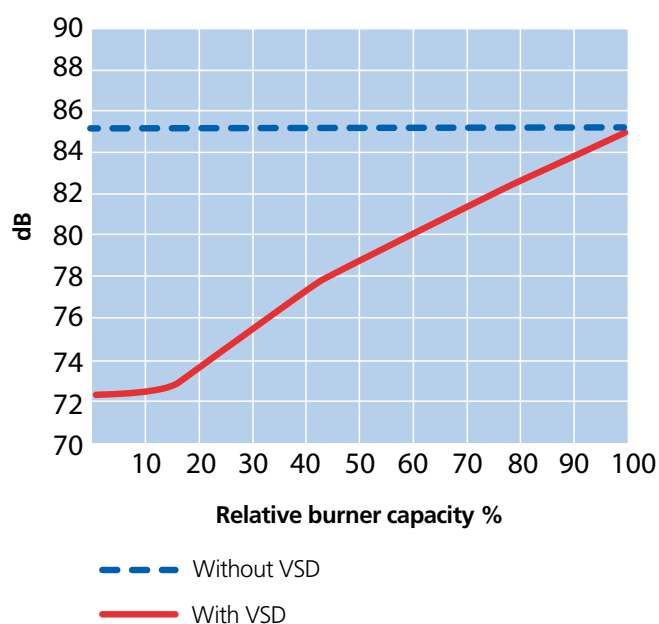
2. VSD in fan motor saves electricity consumption

3. When using O₂ control and VSD in fan motor the annual cost savings are largest.

Motor power consumption in 17 MMbh burner



Noise level with VSD and without VSD



Gas Burners

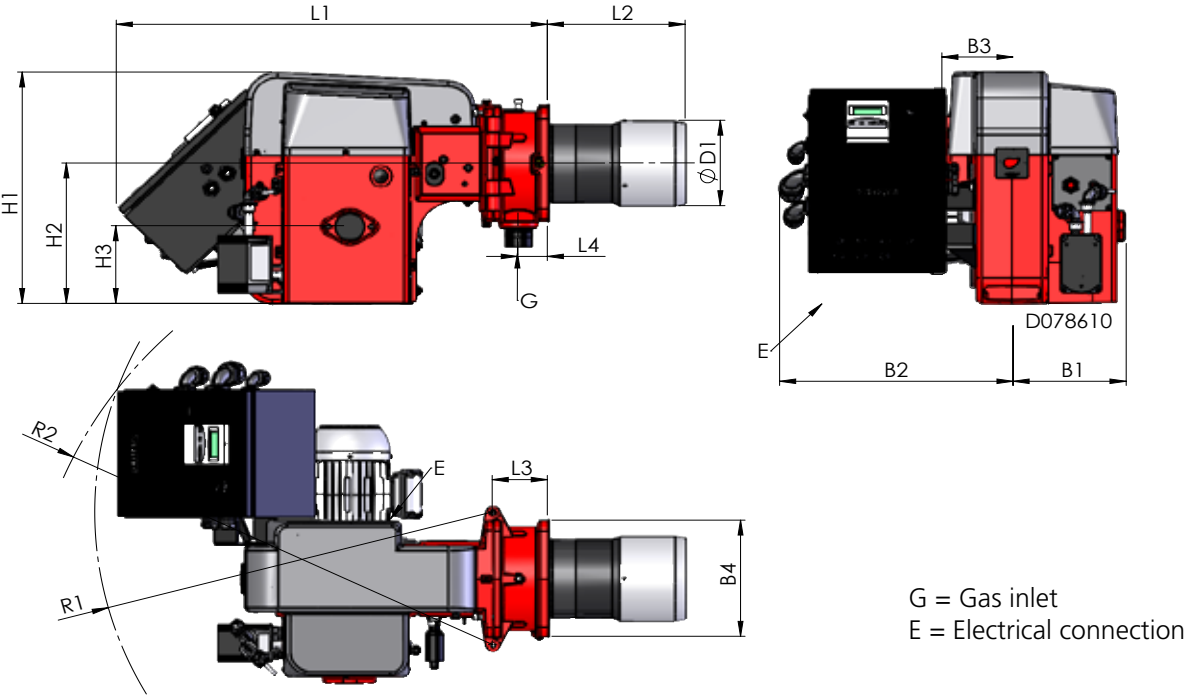
GP-50...90 M

Technical Data

BURNER	GP-50 M	GP-90 M
Capacity MMBtu/h	0.4 - 3.0	0.9 - 4.99
Burner motor		
3~ 208-600 V 60 Hz		
Output hp	1	3
Current A/460 V	1.5	3.8
Speed rpm	3510	3510
Control unit	WDx00i	WDx00i
Weight lb*	88	139

*) Only burner
Ratio level Gas 1:6 (100 – 16,6%)
Note! The weight varies according to delivery contents.

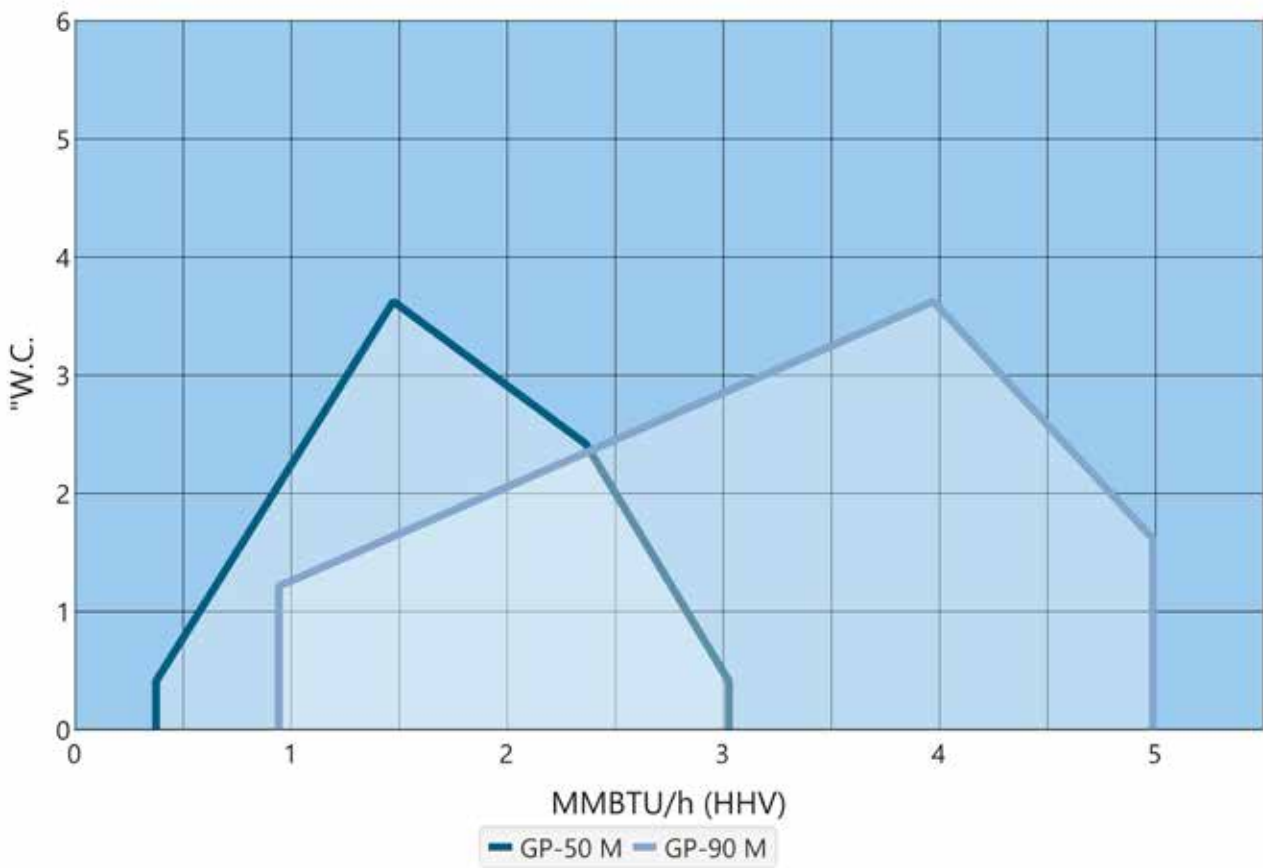
Dimensions



BURNER	L1	L2	L3	L4	H1	H2	H3	B1	B2	B3	B4	ØD1	R1	R2
GP-50 M	37.12	9.45	7.28	3.54	20.08	12.80	6.50	8.27	17.52	5.16	9.45	6.30	29.53	-
GP-90 M	37.12	11.81	4.72	2.56	21.46	12.99	7.17	9.69	18.50	6.10	10.71	7.87	34.06	39.76

Dimensions in inches.

Working Diagram



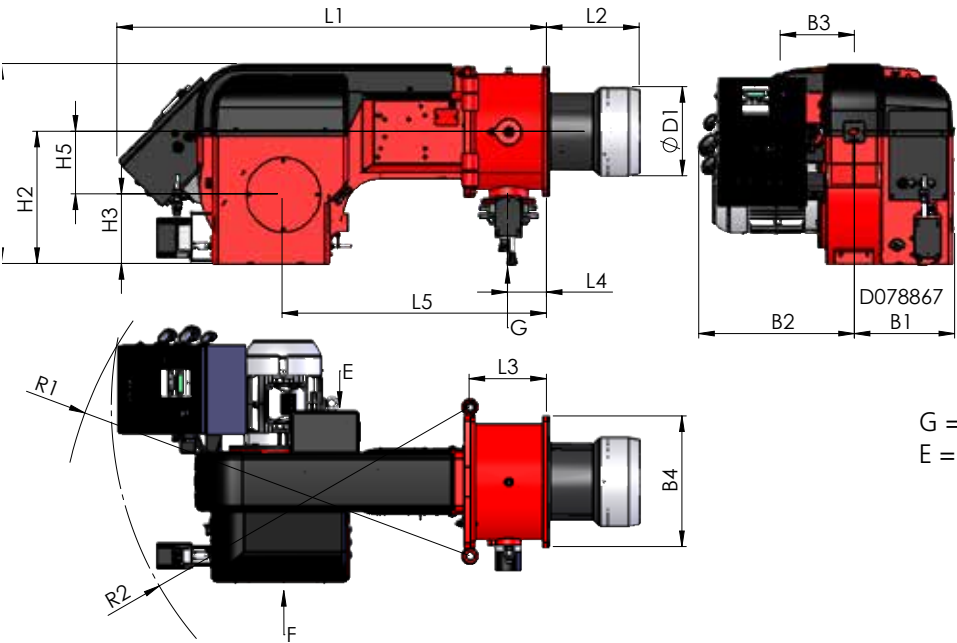
GP-140...280 M, GP140...280 M

Technical Data

BURNER	GP-140 M	GP-150 M	GP-250 M	GP-280 M
Capacity MMBtu/h	1.5 - 8.9	1.7 - 10.2	1.4 - 9.8	1.9 - 12.49
Burner motor 3~ 208-600 V 60 Hz				
Output hp	5.5	7.5	7.5	10
Current A/460 V	6.2	8.9	8.9	11.9
Speed rpm	3510	3510	3510	3510
Control unit	WDx00i	WDx00i	WDx00i	WDx00i
Weight lb*	267	287	353	463

*) Only burner
Ratio level Gas 1:6 (100 – 16,6%)
Note! The weight varies according to delivery contents.

Dimensions



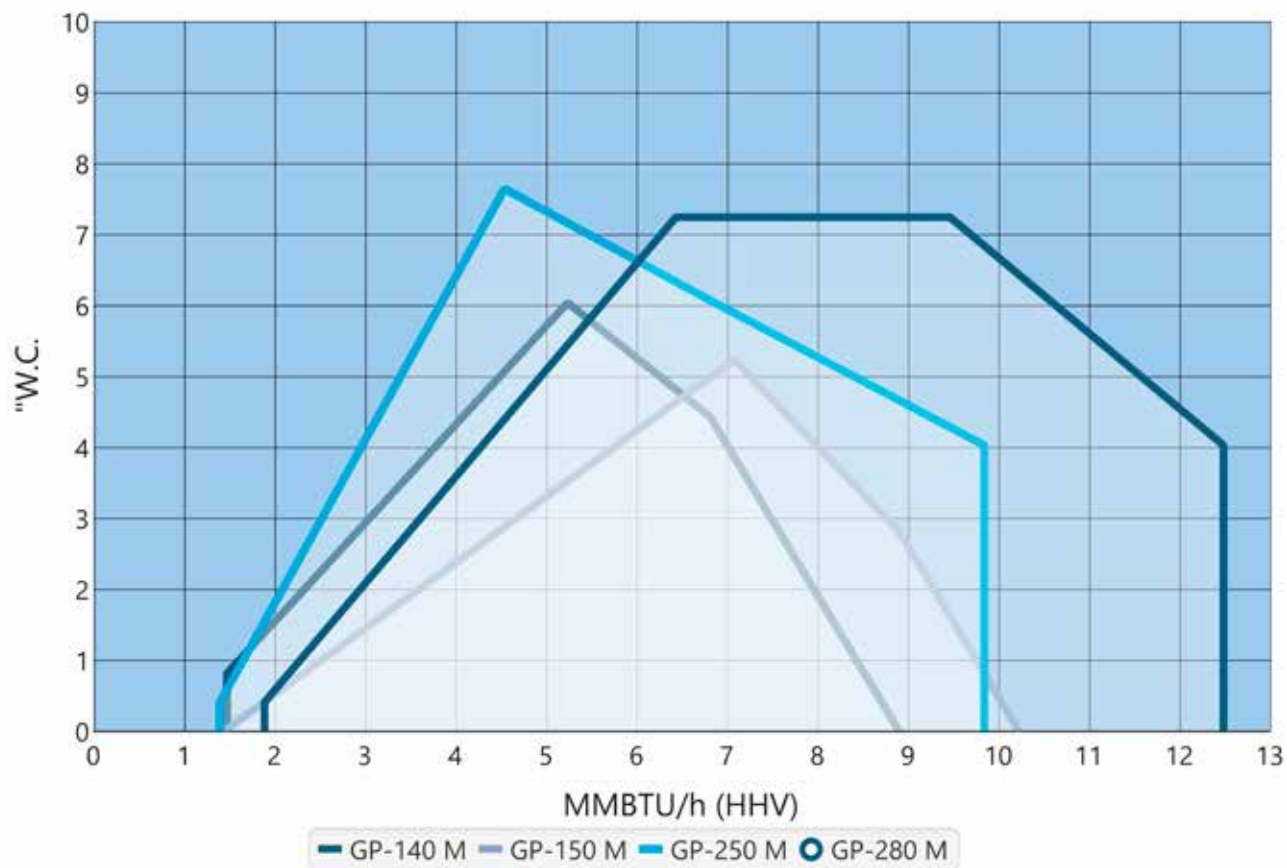
G = Gas inlet
E = Electrical connection

BURNER	L1	L2	L3	L4	L5
GP-140 M	54.72	8.66	10.24	5.08	34.65
GP-150 M	54.72	9.06	10.24	5.08	34.65
GP-250 M	57.09	11.81	10.24	5.12	35.04
GP-280 M	57.09	12.28	10.24	5.12	35.04

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GP-140 M	24.61	15.75	8.27	7.68	12.01	18.31	8.27	14.17	9.45	51.57	45.47
GP-150 M	24.61	15.75	8.27	7.68	12.01	18.90	8.27	14.17	10.63	51.57	45.47
GP-250 M	26.57	17.56	9.25	8.46	13.39	19.29	9.84	17.32	10.63	54.33	47.44
GP-280 M	26.57	17.56	9.25	8.46	13.39	19.29	9.84	17.32	11.81	54.33	47.44

Dimensions in inches.

Working Diagram



Scope of Delivery GP-50...280

	50/90	140...280
Hinge flange with limit switch	x	x
Burner flange gasket	x	x
WiseDrive (electronic ratio control)	x	x
Ignition transformer	x	x
Ignition cables and electrodes	x	x
Flame sensor		
- WDX00i/QRI (intermittent operations)	x	x
- WDX00/QRI (continuous operation)	-	x
- WDX00/QRI + ionization electrode, LN60 burners (continuous operation)	-	-
Inbuilt combustion air fan	x	x
Air damper with servomotor	x	x
Gas damper with servomotor	x	x
Gas nozzle	x	x
Connection for measuring the pressure in gas nozzle	x	x
Gas pressure switch, max.	x	x
Differential air pressure switch	x	x
Double solenoid valve for gas	x	x
Pressure switch for gas, min.	x	x
Pressure regulation valve for gas	x	x
Ignition gas valve and piping	-	x
Pressure switch for gas, min.	x	x
Automatic valve leak testing for gas	x	x
Manual	x	x

x Standard
o Option

Options

FRG equipment	-	x
Fan pressure gauge	x	x
VSD equipment	x	x
Extended combustion head*	x	x
Turbo combustion head for flame shaping	x	x
Ignition gas valve and piping**	x	-
Gas pressure gauge	-	x
LPG use	x	x

*) Not in LN80 and LN60 burners

**) Always in LN80 burners

Dual Fuel Burners **Gas/Light Fuel Oil**

GKP-50/90 MH

Technical Data

BURNER	GKP-50 MH	GKP-90 MH
Capacity, MMBtu/h gal/h	0.4 - 3.0 5.3 - 21.1	0.9 - 4.99 9.3 - 34.8
Burner motor 3~ 208-600 V 60 Hz		
Output hp	1	3
Current A/460 V	1.5	3.8
Speed rpm	3510	3510
Oil hose connection		
- suction	¾" NPT	½" NPT
- return	¾" NPT	½" NPT
Oil pump	AJ4	AJ6
Control unit	WDx00i	WDx00i
Weight lb*	97	143

*) Only burner

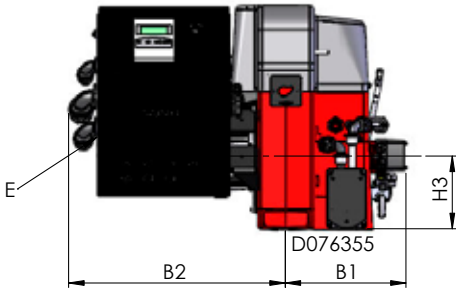
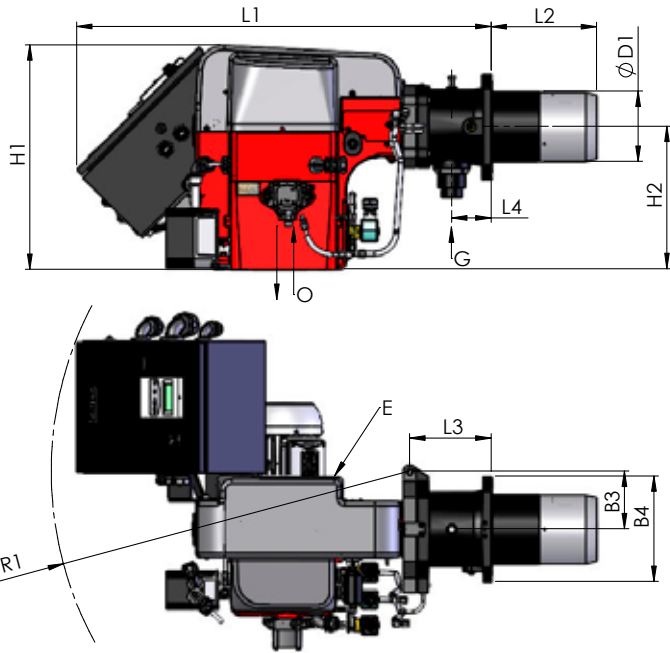
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:6 (100 - 16,6%)

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions

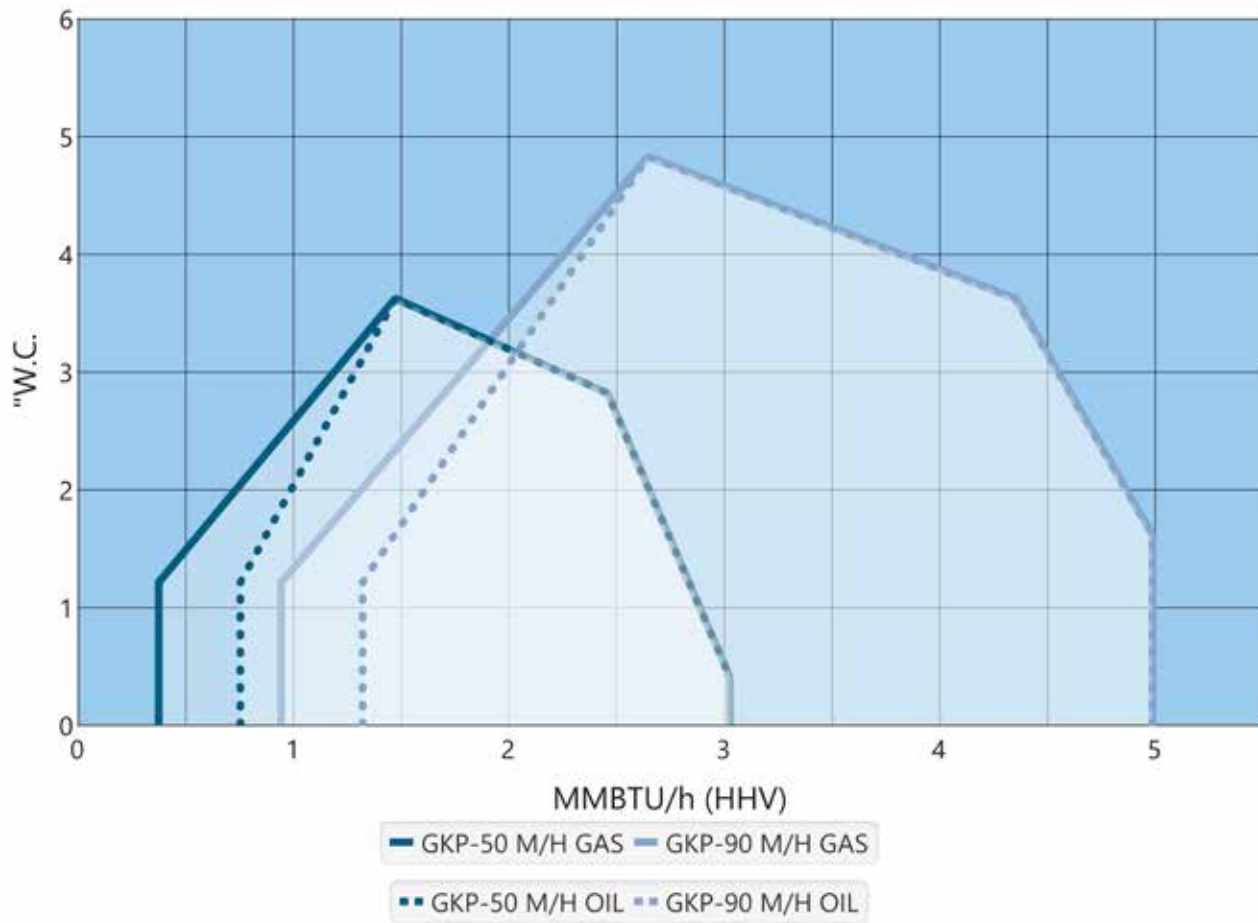


G = Gas inlet
O = Oil inlet/return
E = Electrical connection

BURNER	L1	L2	L3	L4	H1	H2	H3	B1	B2	B3	B4	ØD1	R1	R2
GKP-50 MH	37.12	9.45	7.28	3.54	20.08	12.80	6.50	10.83	17.52	5.16	9.45	6.30	32.09	-
GKP-90 MH	37.12	11.81	4.72	2.56	21.46	12.99	7.17	12.40	18.50	6.10	10.71	7.87	34.06	39.76

Dimensions in inches.

Working Diagram



GKP-140 MH...280 MH

Technical Data

BURNER	GKP-140 MH	GKP-150 MH	GKP-250 MH	GKP-280 MH
Capacity, MMBtu/h gal/h	1.5 - 8.89 14.6 - 62.2	1.7 - 10.2 17.4 - 70.5	1.9 - 9.8 17.1 - 68.4	1.9 - 12.49 23.6 - 87.0
Burner motor 3~ 208-600 V 60 Hz Output hp Current A/460 V Speed rpm	5.5 6.2 3510	7.5 8.9 3510	7.5 8.9 3510	10 11.9 3510
Oil pump - Motor 3~ 208-600 V 60 Hz Output hp Current A/460 V Speed rpm	J7 1 1.5 3510	J7 1 1.5 3510	J7 1 1.5 3510	TAR2 1 1.5 3510
Control unit	WDx00i	WDx00i	WDx00i	WDx00i
Oil hose connection - suction - return	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT
Weight lb*	357	362	595	613

*) Only burner

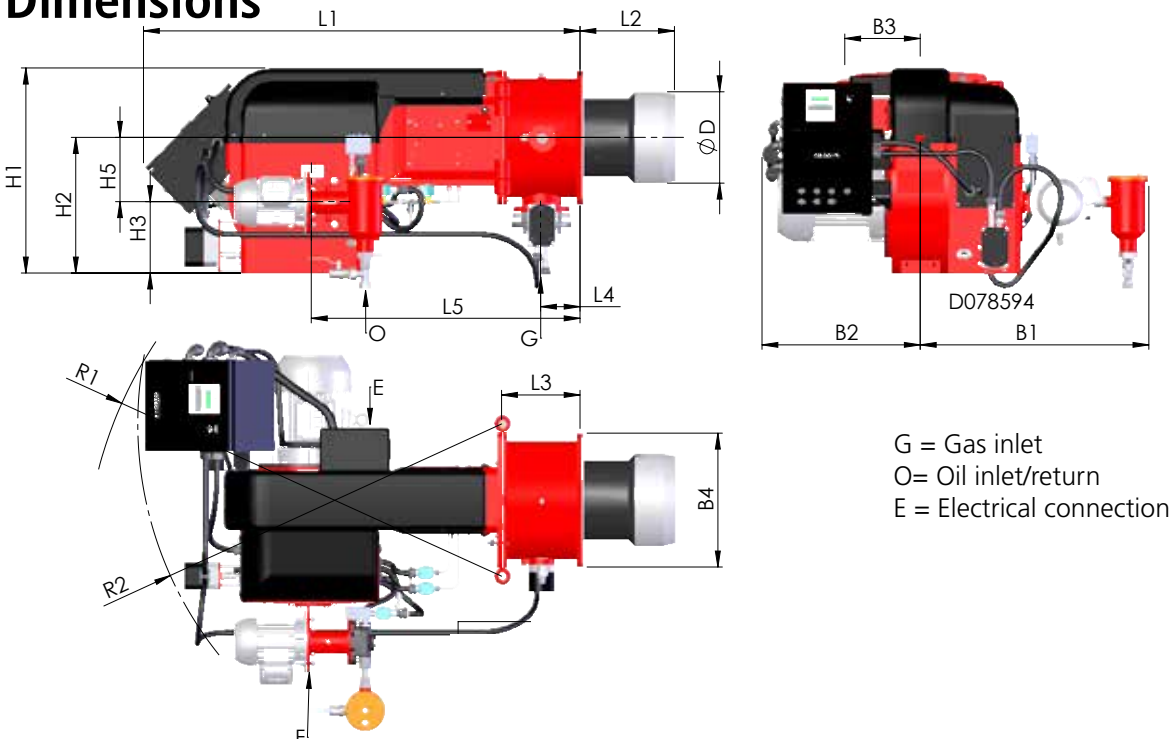
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:6 (100 - 16,6%)

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions



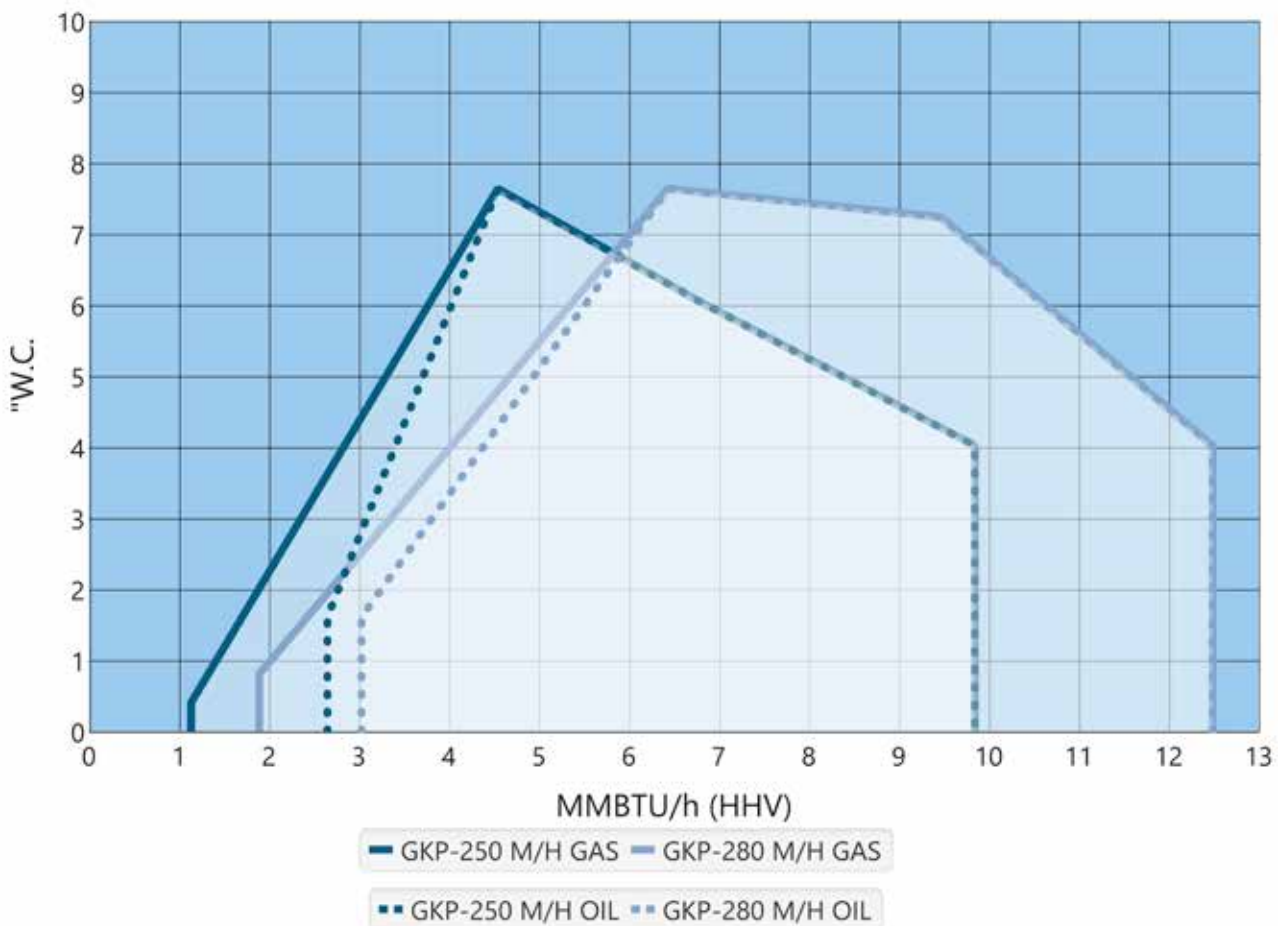
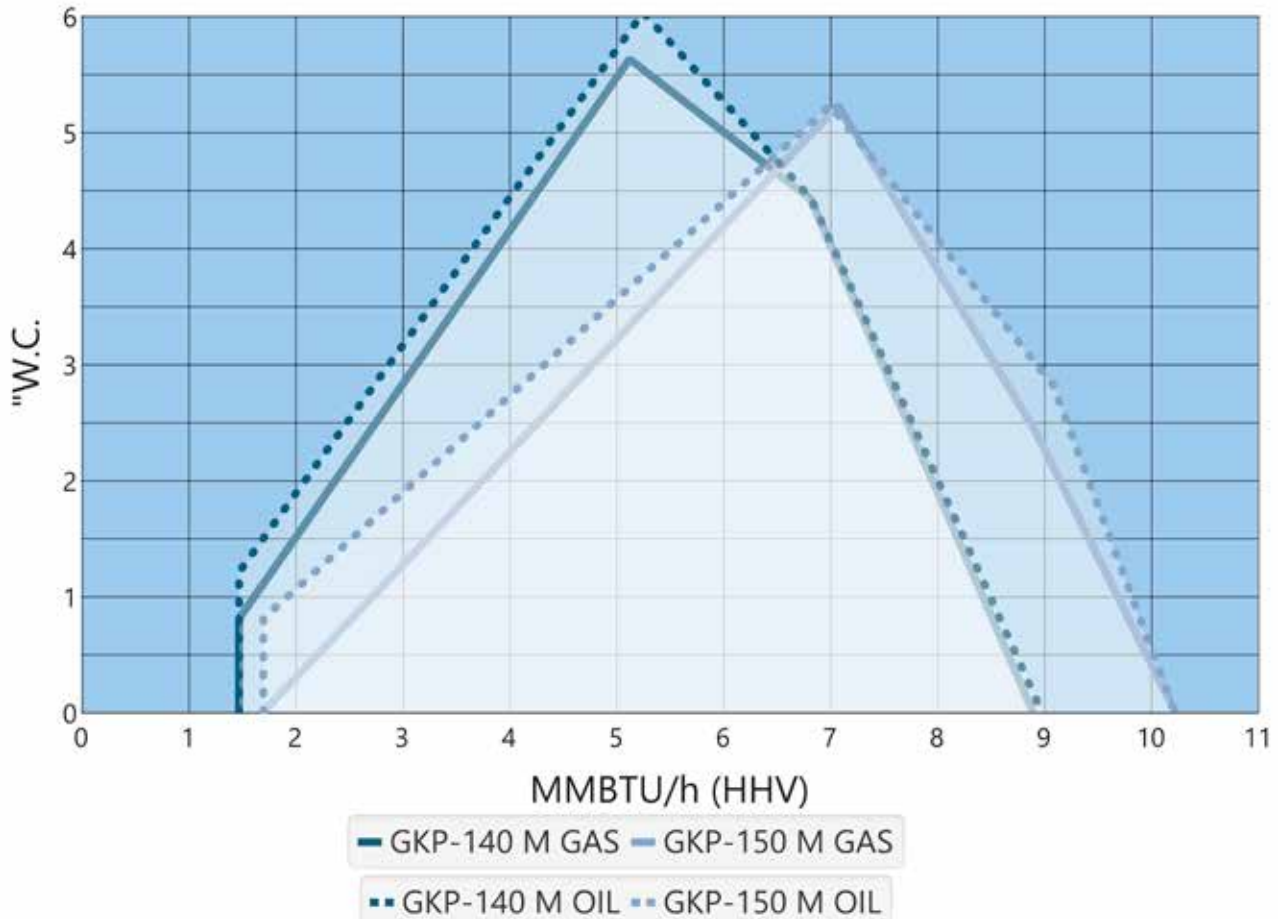
G = Gas inlet
O = Oil inlet/return
E = Electrical connection

BURNER	L1	L2	L3	L4	L5
GKP-140 MH	54.72	8.66	10.24	5.08	34.65
GKP-150 MH	54.72	9.06	10.24	5.08	34.65
GKP-250 MH	56.89	11.81	10.24	5.12	35.04
GKP-280 MH	56.89	12.28	10.24	5.12	35.04

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GKP-140 MH	24.61	15.75	8.27	7.68	28.43	20.28	8.27	14.17	9.45	51.57	45.47
GKP-150 MH	24.61	15.75	8.27	7.68	28.43	20.28	8.27	14.17	10.63	51.57	45.47
GKP-250 MH	26.57	17.56	9.25	8.46	29.69	20.67	9.84	17.32	10.63	54.33	47.44
GKP-280 MH	26.57	17.56	9.25	8.46	29.69	20.67	9.84	17.32	11.81	54.33	47.44

Dimensions in inches.

Working Diagrams



Scope of Delivery GKP-50...280

	50/90	140...280
Hinge flange with limit switch	x	x
Burner flange gasket	x	x
WiseDrive (electronic ratio control)*	x	x
Ignition transformer	x	x
Ignition cables and electrodes	x	x
Flame sensor, WDX00i/QRI	x	x
Inbuilt combustion air fan	x	x
Air damper with servomotor	x	x
Gas damper with servomotor	x	x
Gas nozzle	x	x
Connection for measuring the pressure in gas nozzle	x	x
Gas pressure switch, max.	x	x
Differential air pressure switch	x	x
Double solenoid valve for gas	x	x
Pressure switch for gas, min.	x	x
Automatic valve leak testing for gas	x	x
Pressure regulation valve for gas	x	x
Ignition gas valve and piping	-	x
Oil nozzle	x	x
Solenoid valves for oil	x	x
Oil pump with pressure regulation valve	x	x
Separate motor for oil pump	-	x
Pressure switch for return oil	-	x
2 oil hoses - 39.37 inches - 78.74 inches	x	x
Oil filter	x	x
Manual	x	x

x Standard

o Option

*) Check separate control panel (WDX00) price from accessories section

Options

FGR equipment	-	x
Fan pressure gauge	x	x
VSD equipment	x	x
Extented combustion head*	x	x
Turbo combustion head for flame shaping	x	x
Ignition gas valve and piping**	x	x
Gas pressure gauge	-	x
LPG use	x	x
Deaerator for oil	-	x
Pressure gauge for monitoring of inlet oil pressure	-	x
Pressure switch for monitoring of inlet oil pressure	-	x

*) Not in LN80 and LN60 burners

**) Always in LN80 burners

Light Fuel Oil Burners

KP-140...280 M

Technical Data

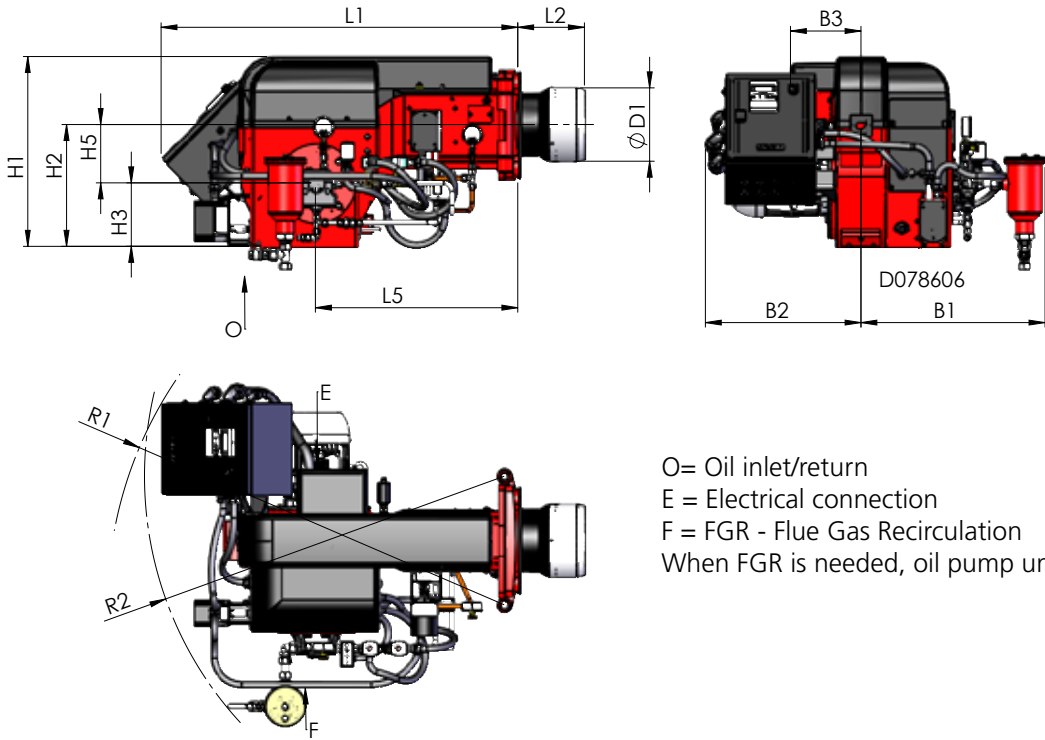
BURNER	KP-140 M	KP-150 M	KP-250 M	KP-280 M
Capacity, gal/h	14.6 - 62.2	17.4 - 74.6	17.1 - 68.4	23.6 - 91.7
Burner motor 3~ 208-600 V 60 Hz				
Output hp	5.5	7.5	10	10
Current A/460 V	6.7	8.9	11.9	11.9
Speed rpm	3510	3510	3510	3510
Oil hose connection - suction - return	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT
Oil pump	TAR2	TAR2	TAR3	TAR3
Control unit	WDx00i	WDx00i	WDx00i	WDx00i
Weight lb*	260	282	322	331

*) Only burner

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

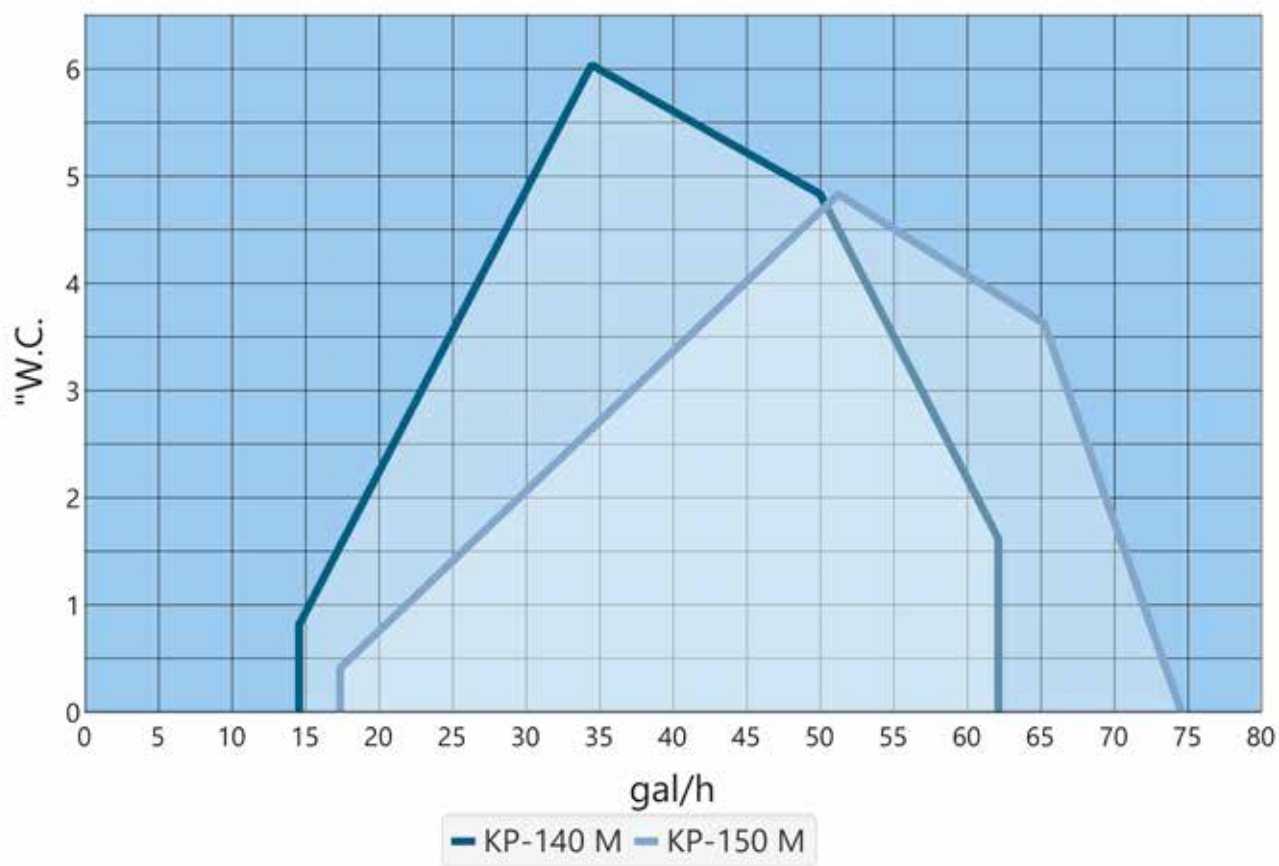
Dimensions



BURNER	L1	L2	L5	H1	H2	H3	H5	B1	B2	B3	ØD1	R1	R2
KP-140 M	46.46	8.66	26.30	24.61	15.75	8.27	7.68	23.94	18.90	8.27	9.45	51.57	46.73
KP-150 M	46.46	9.06	26.30	24.61	15.75	8.27	7.68	23.94	18.90	8.27	10.63	51.57	46.73
KP-250 M	48.43	11.81	26.57	26.57	17.56	9.25	8.46	25.59	19.29	9.84	10.63	54.33	49.02
KP-280 M	48.43	12.28	26.57	26.57	17.56	9.25	8.46	25.59	19.29	9.84	11.81	54.33	49.02

Dimensions in inches.

Working Diagram



Scope of Delivery KP-140...280

	140...280
Hinge flange with limit switch	x
Burner flange gasket	x
WiseDrive (electronic ratio control)	x
Ignition transformer	x
Ignition cables and electrodes	x
Flame sensor, WDX00/QRI (continuous operation)	x
Inbuilt combustion air fan	x
Air damper with servomotor	x
Oil nozzle	x
Solenoid valves for oil	x
Oil pump with pressure regulation valve	x
Oil regulating valve with servomotor	x
Separate motor for oil pump	x
Pressure gauge/gauges for oil	x
Pressure switch for return oil	x
2 oil hoses, 78.74 inches	x
Oil filter	x
Manual	x

x Standard
o Option

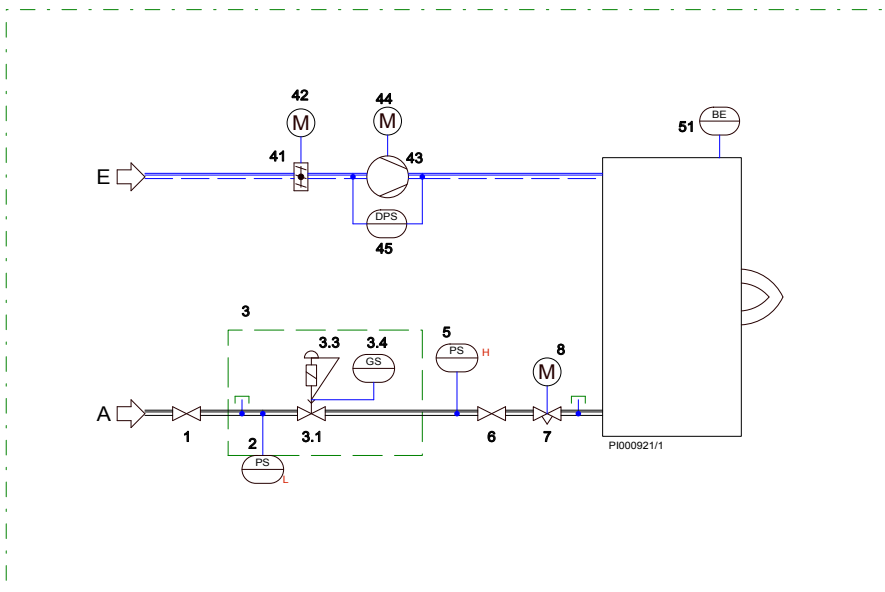
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Options

Fan pressure gauge	x
VSD equipment	x
Extended combustion head	x
Turbo combustion head for flame shaping	x
Deaerator for oil	x
Pressure gauge for monitoring of inlet oil pressure	x
Pressure switch for monitoring of inlet oil pressure	x
Oil pressure (nozzle and return) transmitter	x

PI Diagrams

GAS, VGG VALVE, M BURNERS



GAS PROCESS COMPONENTS

1. Manual shut-off valve
2. Pressure switch, low
3. Safety shut-off valve
- 3.1 Valve
- 3.2 Actuator
- 3.3 Actuator with pressure regulator
- 3.4 Proof of closure switch
4. Pressure switch
5. Pressure switch, high
6. Manual shut-off valve
7. Gas butterfly valve
8. Servomotor
9. Manual shut-off valve
10. Pressure regulator
11. Safety shut-off valve
12. Manual shut-off valve

OIL PROCESS COMPONENTS

21. Manual shut-off valve
22. Filter
23. Oil pump
- 23.1 Oil pump
- 23.2 Oil regulation valve
24. Electric motor
25. Pressure switch, low
26. Gauge valve
27. Pressure gauge
28. Safety shut-off valve
- 28.1 Proof of closure switch
29. Solenoid valve, ignition oil
30. Oil regulator valve
31. Servomotor
32. Pressure switch, high
33. Non-return valve
34. Shut-off valve

AIR PROCESS COMPONENTS

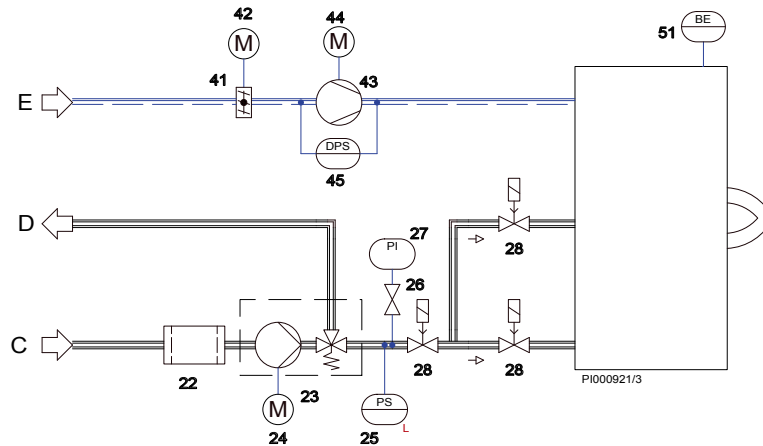
41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air, not for KP-models

OTHER COMPONENTS:

51. Flame detector

A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

LIGHT FUEL OIL, H BURNERS



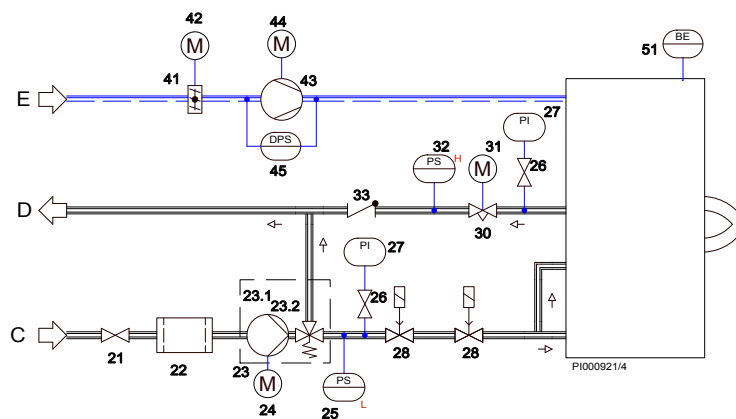
GAS PROCESS COMPONENTS

1. Manual shut-off valve
2. Pressure switch, low
3. Safety shut-off valve
- 3.1 Valve
- 3.2 Actuator
- 3.3 Actuator with pressure regulator
- 3.4 Proof of closure switch
4. Pressure switch
5. Pressure switch, high
6. Manual shut-off valve
7. Gas butterfly valve
8. Servomotor
9. Manual shut-off valve
10. Pressure regulator
11. Safety shut-off valve
12. Manual shut-off valve

OIL PROCESS COMPONENTS

21. Manual shut-off valve
22. Filter
23. Oil pump
- 23.1 Oil pump
- 23.2 Oil regulation valve
24. Electric motor
25. Pressure switch, low
26. Gauge valve, not for 50/90 models
27. Pressure gauge, not for 50/90 models
28. Safety shut-off valve
- 28.1 Proof of closure switch
29. Solenoid valve, ignition oil
30. Oil regulator valve
31. Servomotor
32. Pressure switch, high
33. Non-return valve
34. Shut-off valve

LIGHT FUEL OIL, 140...280 M BURNERS



AIR PROCESS COMPONENTS

41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air, not for KP-models

OTHER COMPONENTS:

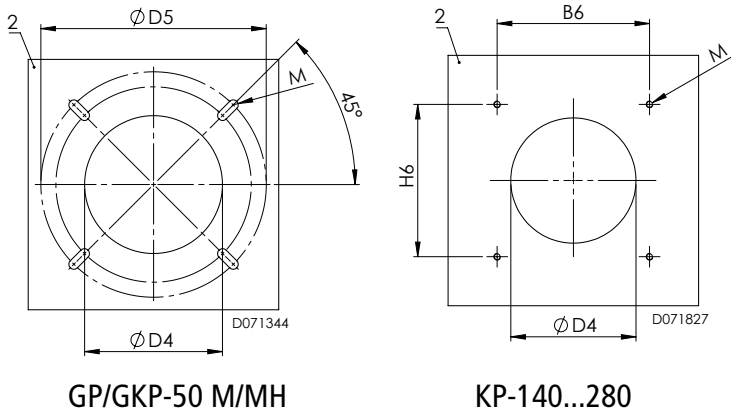
51. Flame detector

A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

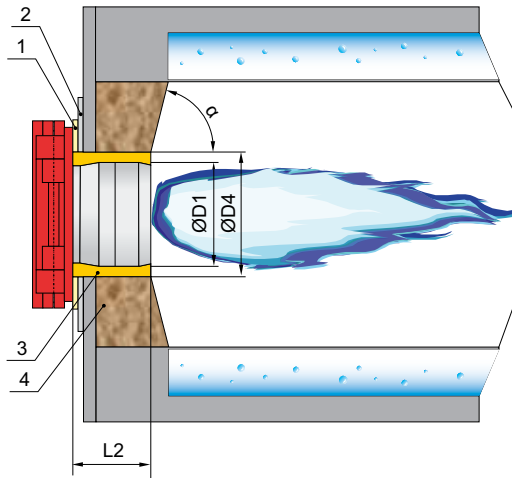
Combustion head and masonry dimensions

Standard combustion head mounting dimensions

Mounting plate



Burner mounting



BURNER SERIE	B6	H6	ØD4	ØD5	M	ØD1	L2	α
GP/GKP-50 M/MH	-	-	6.50	9.21 - 10.63	4xM10	6.30	9.45	60° - 90°
GP/GKP-90 M/MH	8.50	8.50	8.27	-	4xM10	7.87	11.81	60° - 90°
GP/GKP/KP-140 M/MH	10.83	10.83	10.63	-	4xM16	9.45	8.66	60° - 90°
GP/GKP/KP-150 M/MH	10.83	10.83	11.81	-	4xM16	10.63	9.06	60° - 90°
KP-250 M	14.37	14.37	11.81	-	4xM16	10.63	11.81	60° - 90°
GP/GKP-250 M/MH	14.37	14.37	11.81	-	4xM16	10.63	11.81	60° - 90°
KP-280 M	14.37	14.37	12.99	-	4xM16	11.81	12.28	60° - 90°
GP/GKP-280 M/MH	14.37	14.37	12.99	-	4xM16	11.81	12.28	60° - 90°

Dimensions in inches.

Accessories WDx00i (Burner mounted LMV-5x)

Pressure Transducers

- 0-30 PSI, 4-20mA, 1/4 " NPT, 7MF-421-030
- 0-150 PSI, 4-20mA, 1/4 " NPT, 7MF-421-150
- 0-200 PSI, 4-20mA, 1/4 " NPT, 7MF-421-200
- 0-300 PSI, 4-20mA, 1/4 " NPT, 7MF-421-300

Temperature Sensors

- Water temp., PT1000 RTD, 1/2 " NPT, 4" probe c/w well, 544-577-40
- Water temp., PT1000 RTD, 1/2 " NPT, 6" probe c/w well, 544-577-60
- Flue Gas, PT1000, -50-900F, 1/4 " x 10" SS probe 1/2 " NPT, QAM-P210
- Ambient temp sensor, Nickel, 1000 Ohm, 2-wire, -58-158F, QAC22

Electrical Components

- Siemens LMV52 upgrade for O2 trim, VSD, efficiency

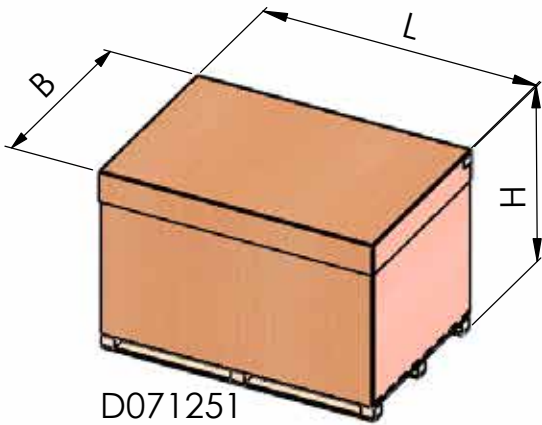
O2 Trim Components

- O2 MODULE PLL52
- O2 SENSOR
- 40-60 CM WELDLESS FLUE GAS COLLECTOR
- 20-40 CM WELDLESS FLUE GAS COLLECTOR
- CANBUS CABLE

Propane Adders

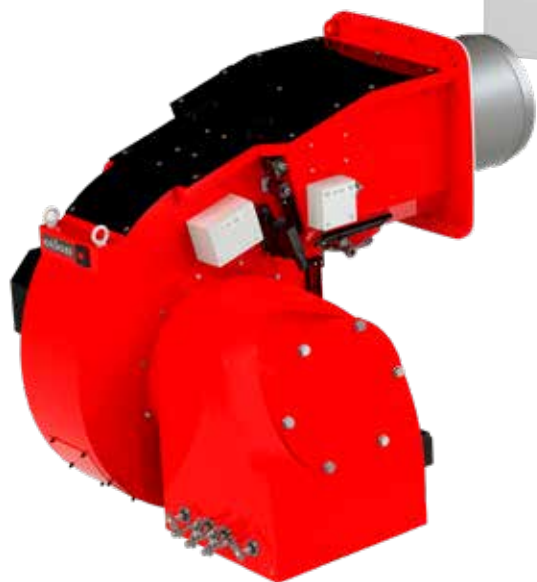
- Propane band LPG Band (50M)
- Propane band LPG Band (250-280)
- Biogas manifold drilling, composition to be check with Oilon sales

Packing



BURNER SERIE	Dimensions			Weight lb	Material standard
	L	B	H		
GP-50 M	57.9	45.3	34.6	11.0	Board
GP-90 M	57.9	45.3	34.6	15.4	Board
GP-140...280 M...	64.6	48.0	34.6	121.3	Board
GKP-50 MH	57.9	45.3	34.6	11.0	Board
GKP-90 MH	57.9	45.3	34.6	15.4	Board
GKP-140...280 M...	64.6	48.0	34.6	121.3	Board
KP-140...280 M...	57.9	45.3	34.6	103.6	Board

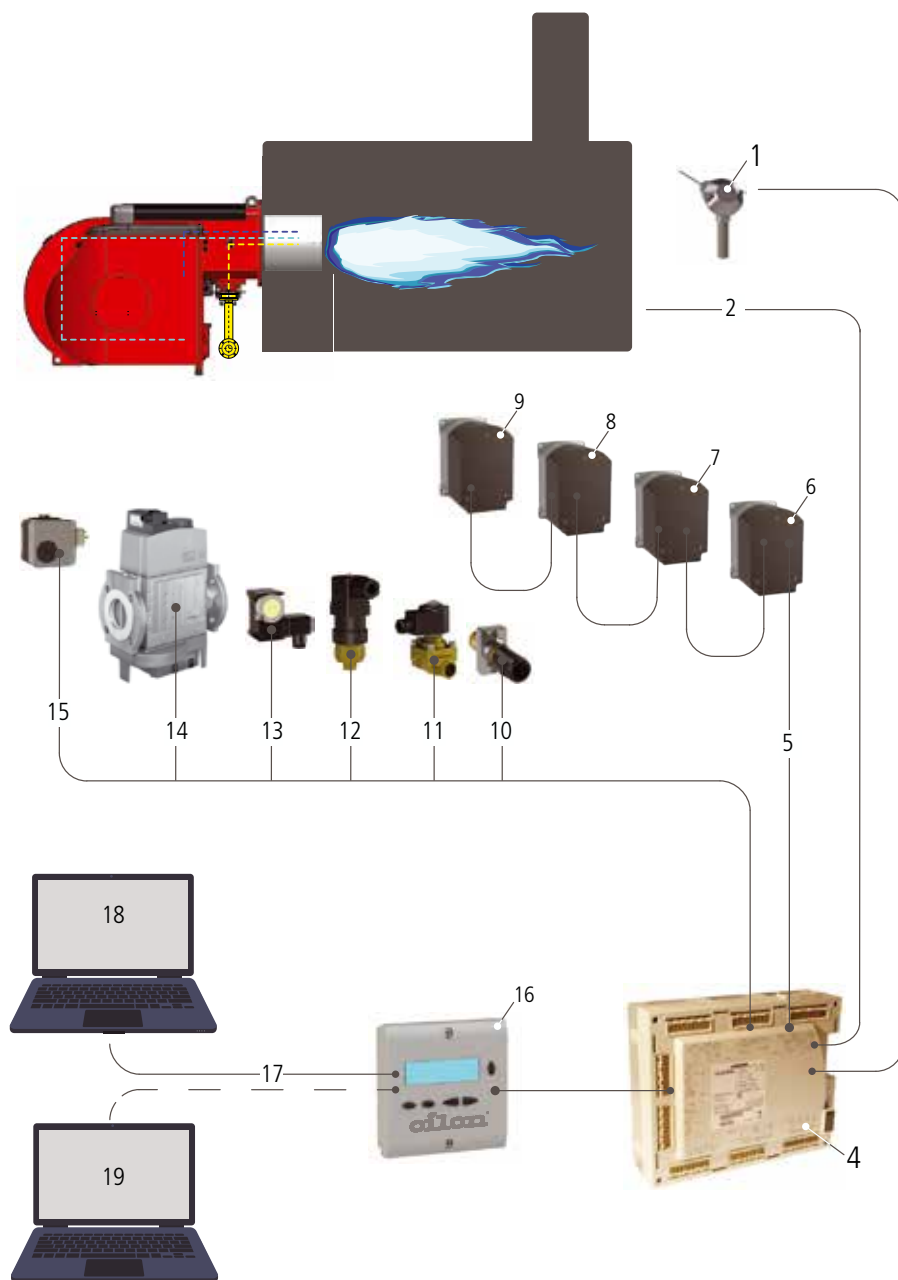
Dimensions in inches.



WDx00 - Separate Control Cabinet

WiseDrive WDx00

Example of Oilon WiseDrive WD100 Electronic fuel/air ratio control system

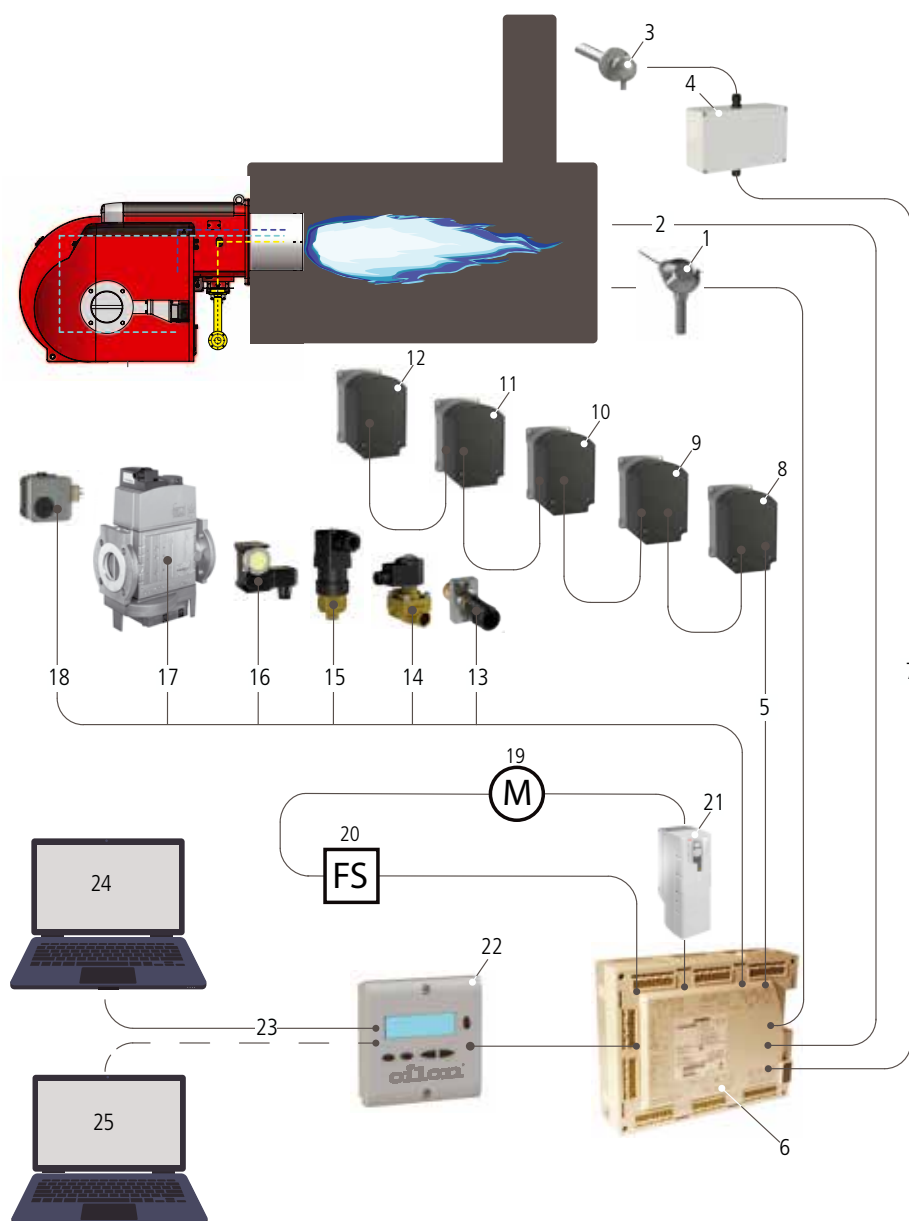


Examples of WiseDrive's functions:

- Control sequences and safety functions
- Fuel/air ratio control
- Combustion head control (option)
- Load control with inbuilt PID controller, control also by an external 4...20 mA signal
- Can be connected with external plant automation via bus. Modbus RTU as standard.
- Different access levels
- Input of parameters via text display operating panel or/and PC (check software and hardware requirements)

1. Boiler pressure/
Boiler temperature
2. Safety devices
3. CAN BUS
4. Control unit
5. CAN BUS - Servomotor
6. Gas damper
7. Air damper
8. Oil regulator
9. Combustion head regulator -
Gas/Oil flame plate positioning
10. Flame detector
11. Oil valves
12. Oil pressure switch
13. Gas pressure switch
14. Gas valves
15. Air pressure switch
16. User interface
17. MOD-BUS
18. Control room
19. Service computer

Example of Oilon WiseDrive WD200 Electronic fuel/air ratio control system with O₂ control and variable speed drive (VSD)



1. Boiler temperature
2. Safety devices
3. O₂ sensor (option)
4. O₂ module
5. CAN BUS
6. Control unit
7. CAN BUS - Servomotor
8. Gas damper
9. Oil regulator
10. Combustion head regulation/
Gas/Oil flame disc positioning
11. Air damper
12. Flue gas damper

13. Flame detector
14. Oil valves
15. Oil pressure switch
16. Gas pressure switch
17. Gas valves
18. Air pressure switch
19. Motor
20. Speed sensor
21. Frequency converter for variable speed drive
22. User interface
23. MOD-BUS
24. Control room
25. Service computer

Examples of WiseDrive's functions

- Control sequences and safety functions
- Fuel/air ratio control
- Combustion head control (option)
- Load control with inbuilt PID controller, control also by an external 4...20 mA signal
- Can be connected with external plant automation via bus. Modbus RTU as standard.
- Different access levels
- Input of parameters via text display operating panel or/and PC (check software and hardware requirements)
- Fuel consumption reading (requires flow meter)
- Frequency converter control (requires rotation speed sensor)
- O₂ control (requires O₂ module and O₂ sensor)
- Flue gas temperature reading (requires temperature sensor)
- Combustion air temperature reading (requires temperature sensor)

Cost savings using O₂ control and variable speed drive (VSD)

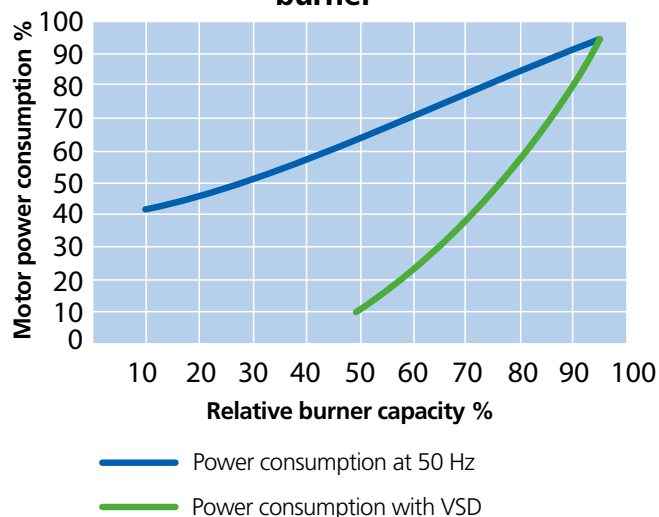
1. Effect of O₂ control on the combustion efficiency

In a traditional burner, the O₂ level of flue gases is usually adjusted to about 4 %. When using WD200, a 2 % O₂ level can be reached. Two percent reduction in O₂ level means 1 % rise in efficiency.

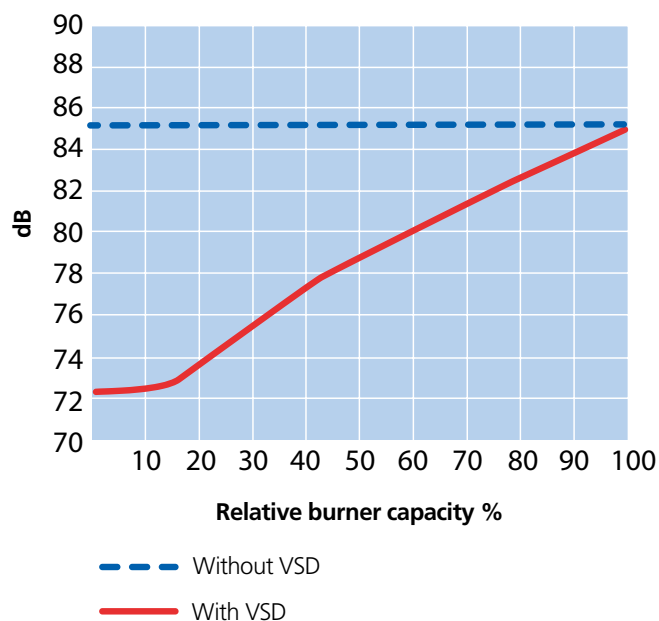
2. VSD in fan motor saves electricity consumption

3. When using O₂ control and VSD in fan motor the annual cost savings are largest.

Motor power consumption in 17 MMbh burner

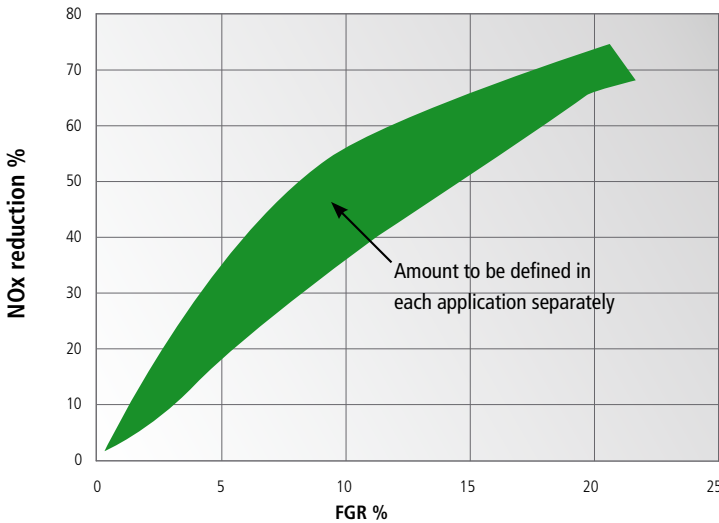


Noise level with VSD and without VSD



FGR - Flue Gas Recirculation

The effect of FGR in natural gas combustion

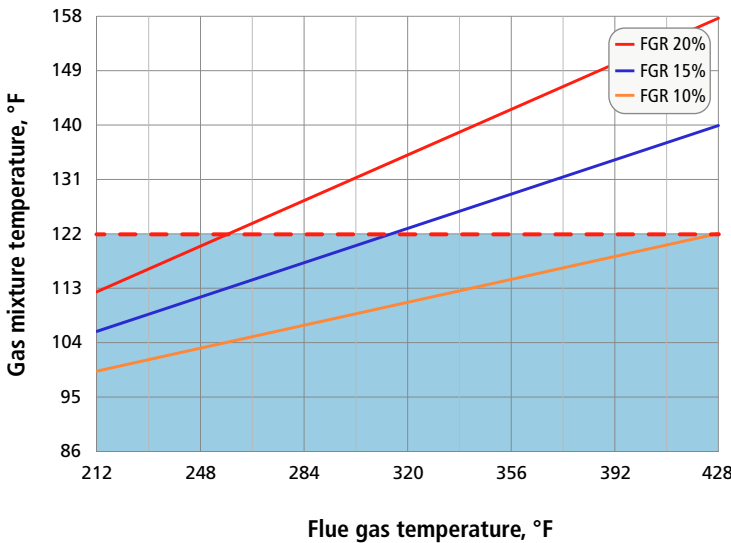


External Flue Gas Recirculation, FGR, is an effective low cost solution to achieve very low NO_x emissions with various fuels.

A certain proportion of flue gas is led back to the furnace through burner. This causes the flame peak temperatures to drop and combustion reactions to slow down, which reduces NO_x emissions.

Achievable reduction depends on many factors including burner type, boiler, combustion air temperature and the amount of recirculated flue gas, see relevant curve. When designing the assembly, it is important to notice the reduction of the burner maximum output caused by flue gas recirculation, depending on the FGR rate and flue gas temperature.

Gas mixture temperature in FGR, standard application

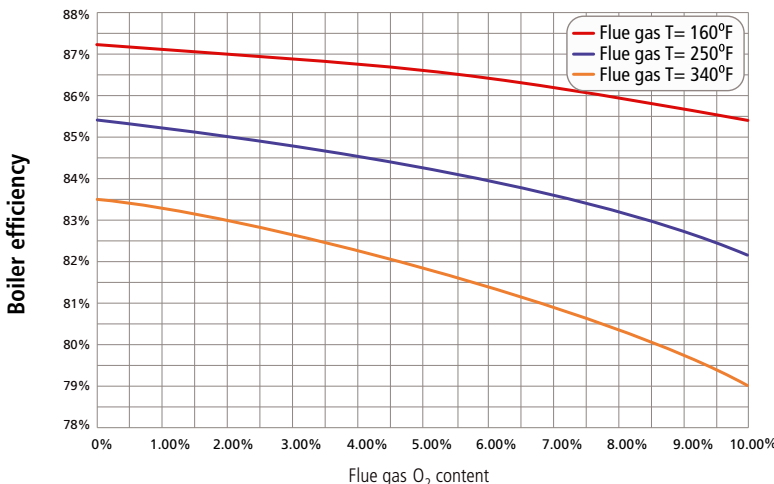


Flue gas recirculation is available as an option for a variety of new burners, or in many cases, as a retrofit to an existing burner.

Diagram valid for 187 °F combustion air

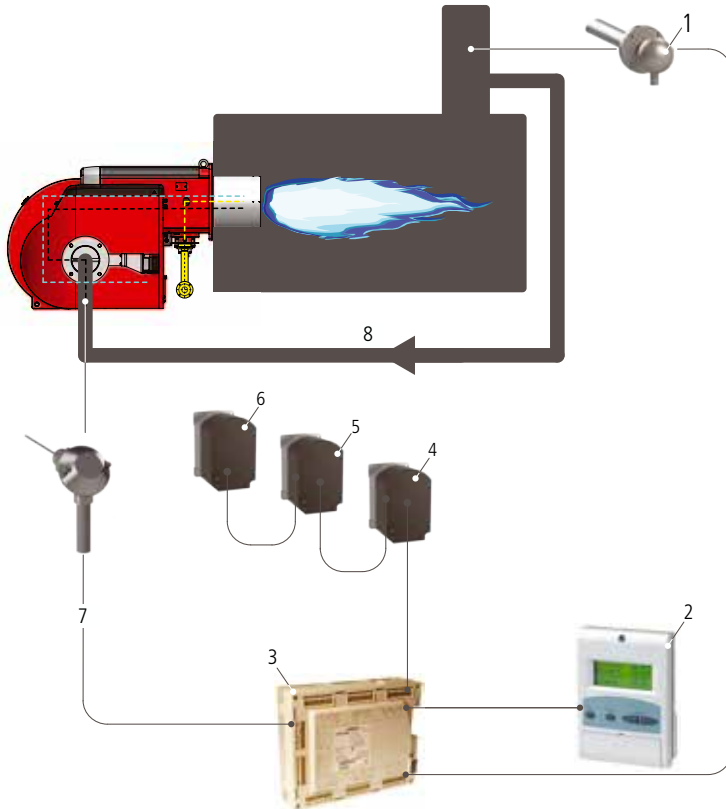
 Recommended working range

Boiler efficiency



NO_x emissions and required residual O₂ will vary depending on furnace geometry and conditions

Oilon burner FGR application



Example of application



Gas Burners

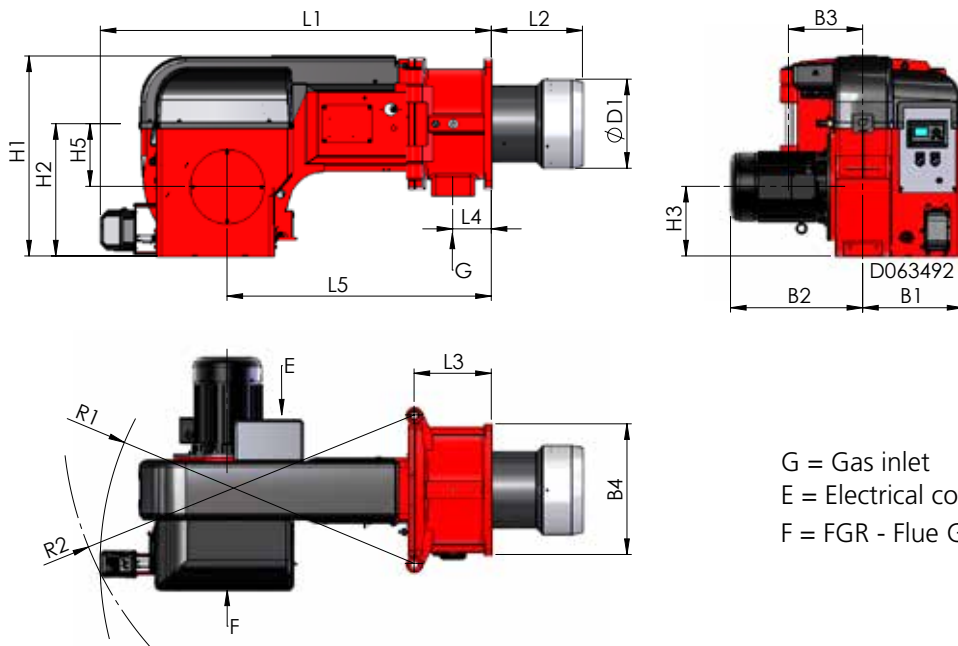
GP-140...280 M,GP-140...280 M LN80

Technical Data

BURNER	GP-140 M	GP-150 M	GP-250 M	GP-280 M	GP-140 M LN80	GP-250 M LN80	GP-280 M LN80
Capacity MMBtu/h	1.5 - 8.9	1.7 - 10.2	1.4 - 9.8	1.9 - 12.49	1.4 - 6.4	1.3 - 8.0	1.4 - 10.2
Burner motor 3~ 208-600 V 60 Hz							
Output hp	5.5	7.5	7.5	10	5.5	10	10
Current A/460 V	6.2	8.9	8.9	11.9	8.9	11.9	11.9
Speed rpm	3510	3510	3510	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00	WDx00	WDx00	WDx00
Weight lb*	267	287	353	463	276	364	474

*) Only burner
Ratio level Gas 1:6 (100 – 16,6%)
Note! The weight varies according to delivery contents.

Dimensions



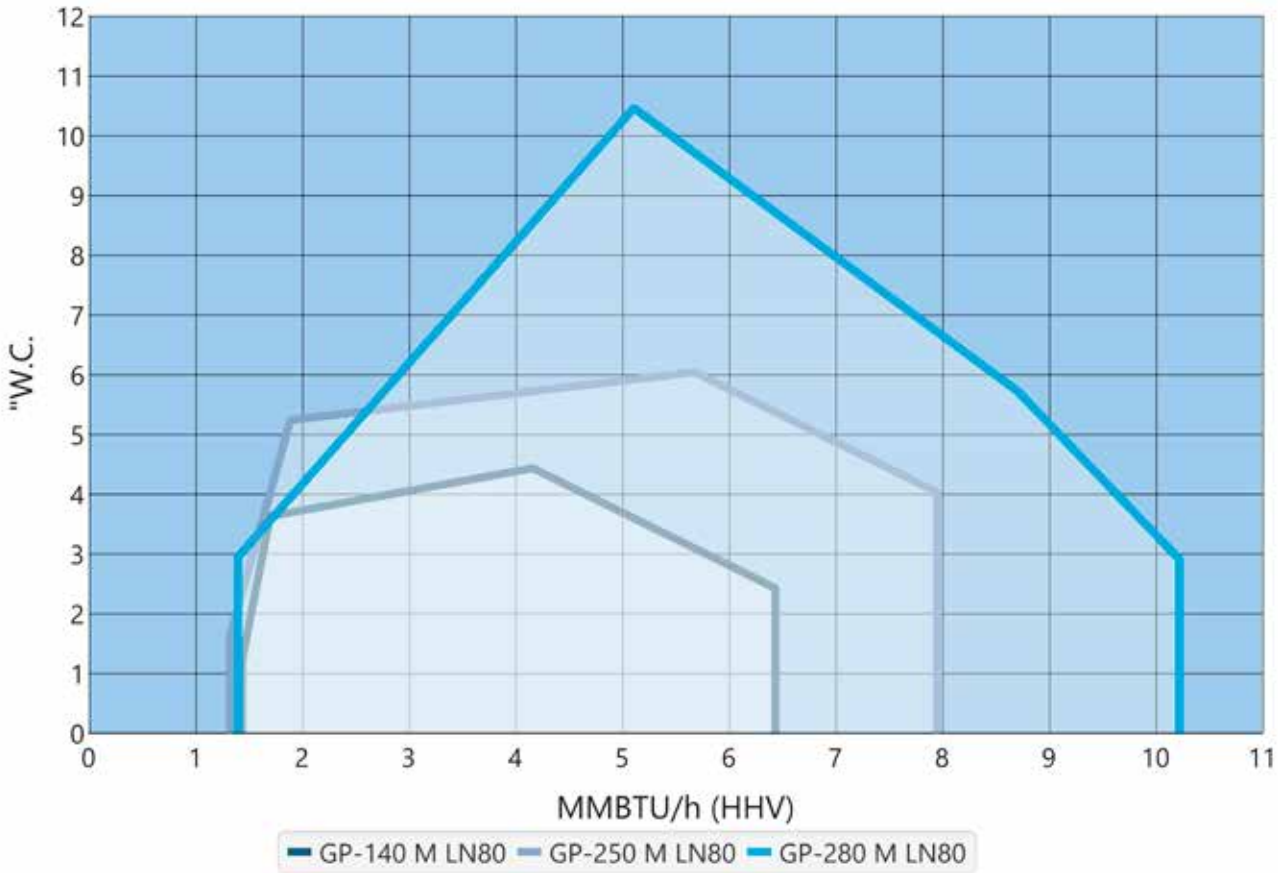
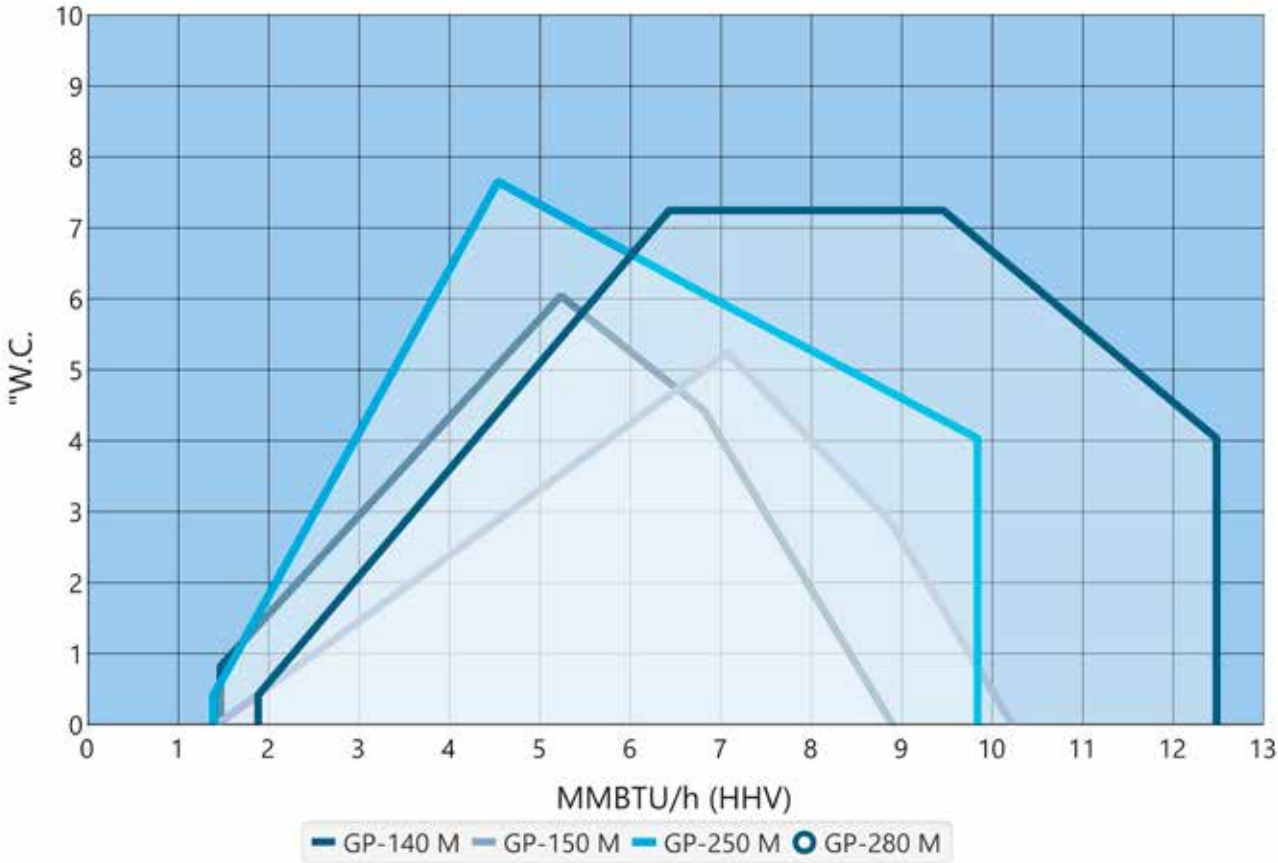
G = Gas inlet
E = Electrical connection
F = FGR - Flue Gas Recirculation

BURNER	L1	L2	L2		L3	L4	L5
			C1	C2			
GP-140 M	50.59	8.66	-	-	10.24	5.08	34.65
GP-150 M	50.59	9.06	-	-	10.24	5.08	34.65
GP-250 M	51.97	11.81	-	-	10.24	5.12	35.04
GP-280 M	51.97	12.28	-	-	10.24	5.12	35.04
GP-140 M LN80	50.59	16.93	-	-	10.24	5.08	34.65
GP-250 M LN80	51.97	-	16.54	21.65	10.24	5.12	35.04
GP-280 M LN80	51.97	-	16.54	21.65	10.24	5.12	35.04

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GP-140 M	24.61	15.75	8.27	7.68	12.01	16.93	8.27	14.17	9.45	41.34	45.28
GP-150 M	24.61	15.75	8.27	7.68	12.01	18.90	8.27	14.17	10.63	41.34	45.28
GP-250 M	26.57	17.56	9.25	8.46	13.39	19.29	9.84	17.32	10.63	43.31	47.24
GP-280 M	26.57	17.56	9.25	8.46	13.39	19.29	9.84	17.32	11.81	43.31	47.24
GP-140 M LN80	24.61	15.75	8.27	7.68	12.01	16.93	8.27	14.17	9.45	41.34	45.28
GP-250 M LN80	26.57	17.56	9.25	8.46	13.39	19.29	9.84	17.32	10.08	43.31	47.24
GP-280 M LN80	26.57	17.56	9.25	8.46	13.39	19.29	9.84	17.32	10.87	43.31	47.24

Dimensions in inches.

Working Diagram



GP-130/250 M LN30

Technical Data

BURNER	GP-130 M LN30	GP-250 M LN30
Capacity MMBtu/h	1.0 - 3.5	1.9 - 7.3
Burner motor 3~ 208-600 V 60 Hz		
Output hp	7.5	10
Current A/460 V	8.9	11.9
Speed rpm, max.*	3520	3520
Control unit	WDx00	WDx00
Weight lb**	340	423

*) Frequency converter mandatory

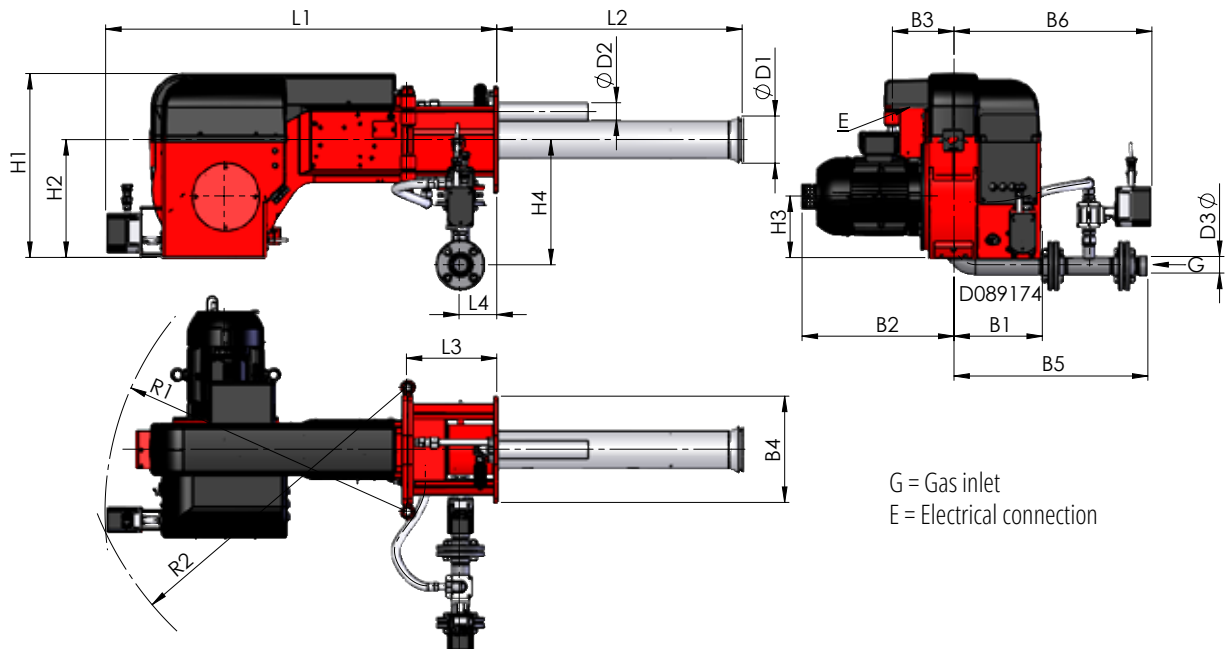
**) Only burner

Ratio level Gas GP-130 M LN30 1:3,5 (100 – 28,5%)

GP 250 M LN30 1:3,8 (100 – 26%)

Note! Weight varies according to the delivery contents.

Dimensions

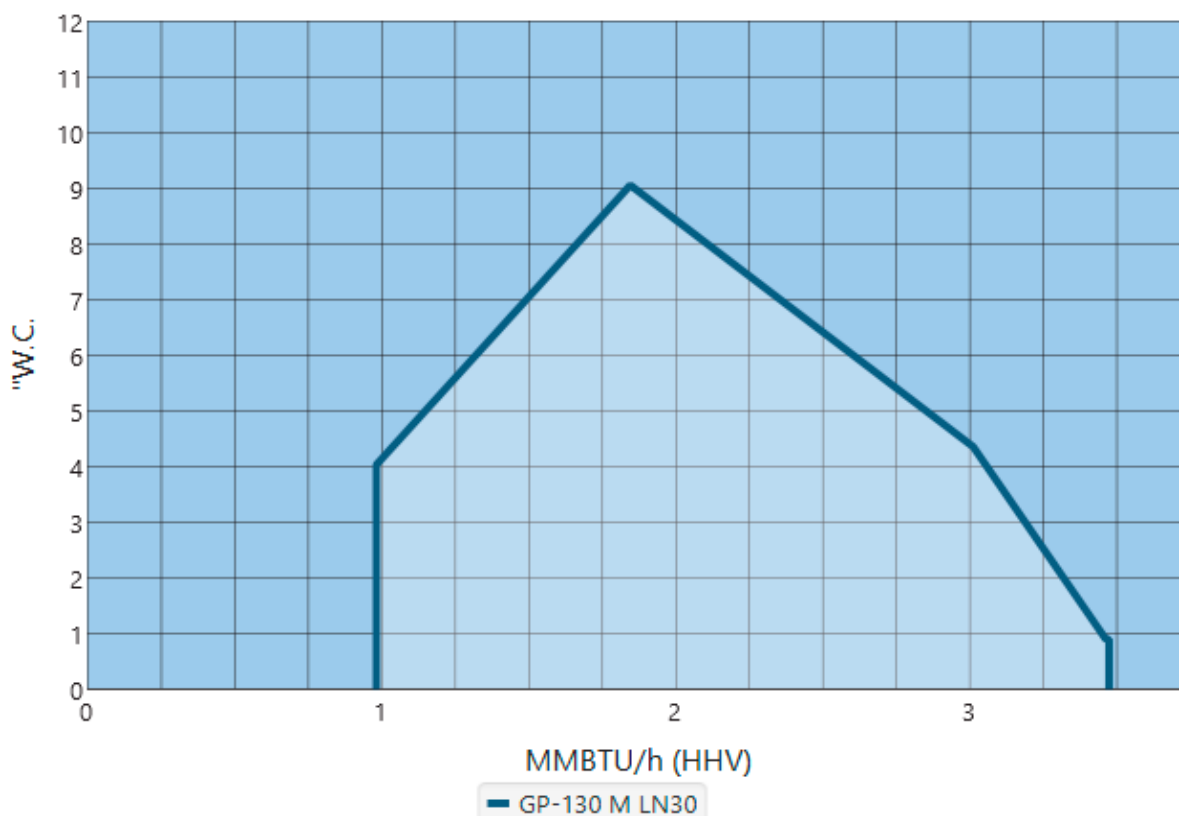


BURNER	L1	L2	L3	L4
GP-130 M LN30	52.56	32.76	12.13	5.08
GP-250 M LN30	56.02	41.14	14.49	9.69

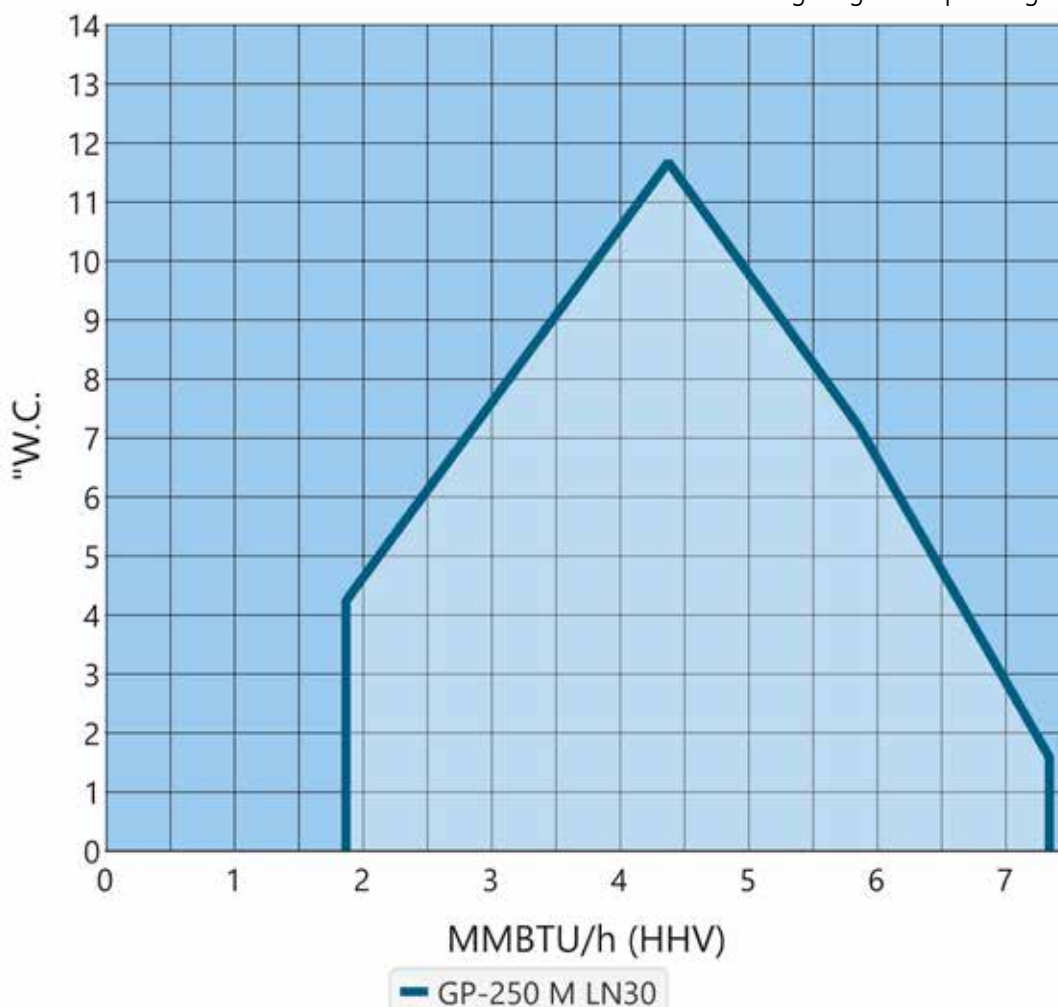
BURNER	H1	H2	H3	H4	B1	B2	B3	B4	B5	B6	ØD1	ØD2	ØD3	R1	R2
GP-130 M LN30	24.61	15.75	8.27	16.69	11.89	20.47	8.27	14.17	26.02	26.57	6.30	2.36	NPT 1"	41.34	45.28
GP-250 M LN30	26.57	17.56	9.25	22.40	13.31	20.87	9.84	17.32	24.21	21.77	8.07	2.36	NPT 3"	43.31	47.24

Dimensions in inches

Working Diagram



NO_x emissions, required residual O₂ and the working diagram will vary depending on furnace geometry and conditions. Please check Oilon Selection Tool from detailed working diagram depending on your application.



NO_x emissions, required residual O₂ and the working diagram will vary depending on furnace geometry and conditions. Please check Oilon Selection Tool from detailed working diagram depending on your application.

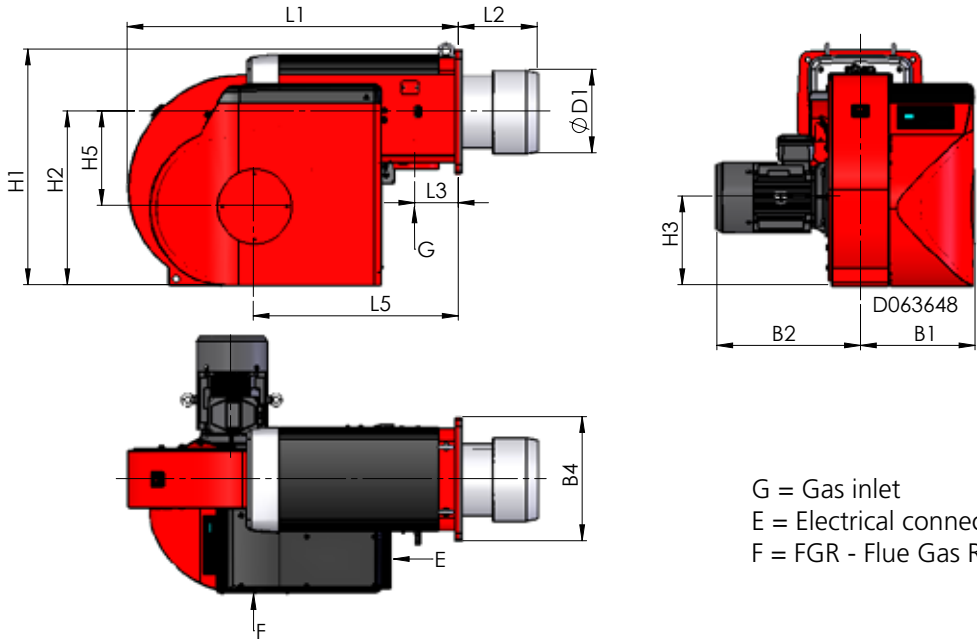
GP-350/450 M, GP-320...450 M LN80

Technical Data

BURNER	GP-350 M	GP-450 M	GP-320 M LN80	GP-350 M LN80	GP-450 M LN80
Capacity MMBtu/h	2.6 - 16.1	3.2 - 20.8	2.0 - 12.1	3.4 - 15.1	3.5 - 19.7
Burner motor 3~ 208-600 V 60 Hz					
Output hp	10	15	10	10	20
Current A/460 V	11.9	17	11.9	11.9	23.5
Speed rpm	3510	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00	WDx00
Weight lb*	705	992	705	717	1023

*) Only burner
Ratio level Gas 1:6 (100 – 16,6%)
Note! The weight varies according to delivery contents.

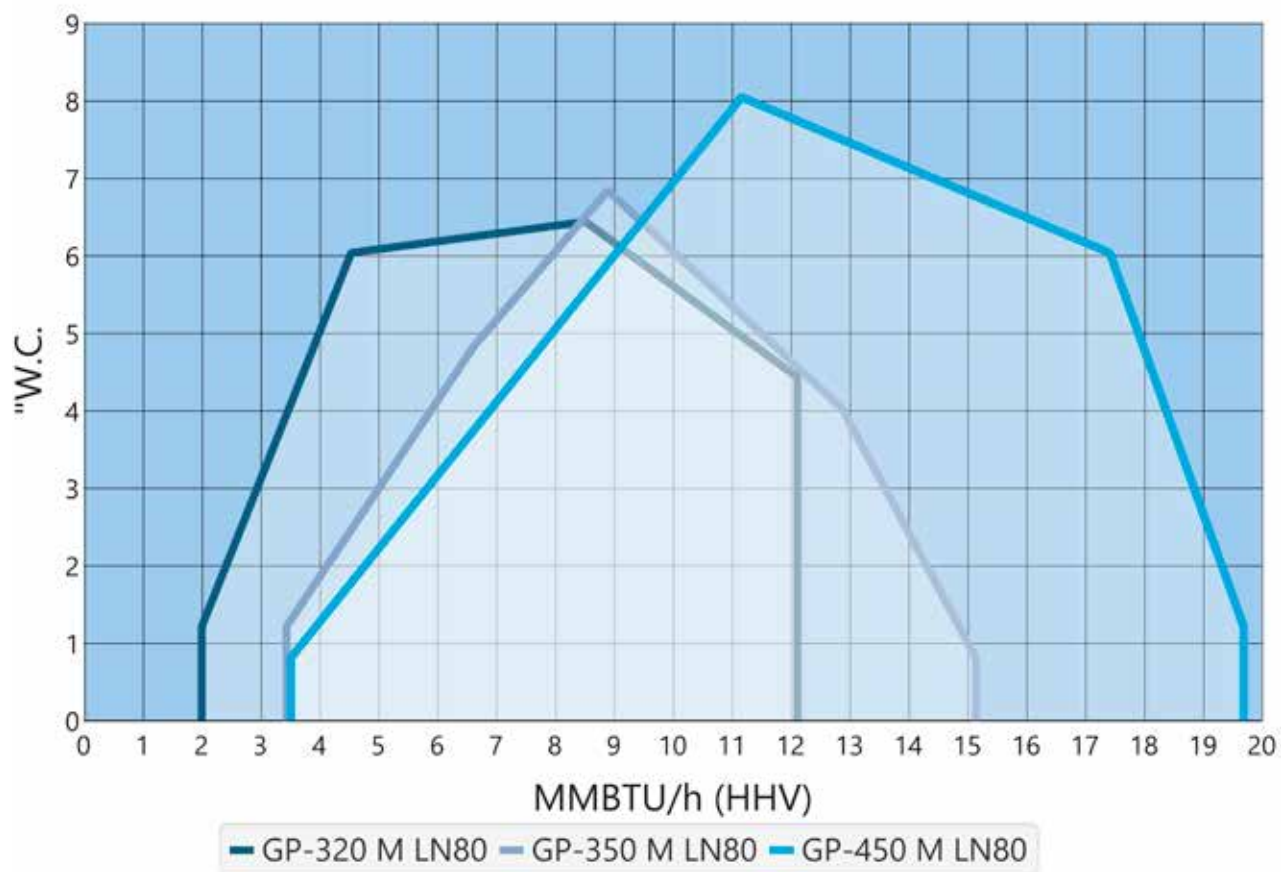
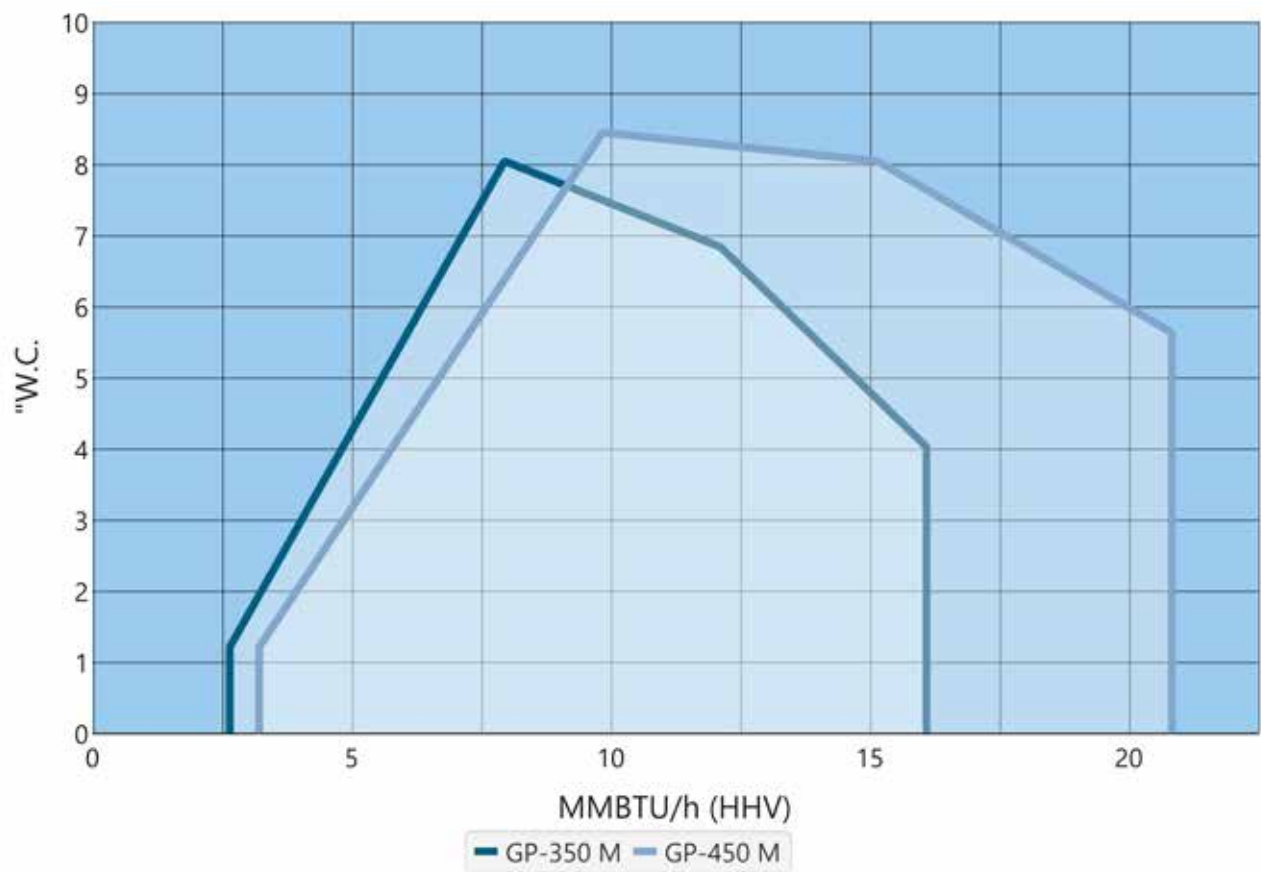
Dimensions



BURNER	L1	L2	L3	L5	H1	H2	H3	H5	B1	B2	B4	ØD1
GP-350 M	53.54	13.78	7.68	31.89	37.01	27.36	13.98	13.58	19.29	22.83	19.29	12.60
GP-450 M	57.87	13.78	7.68	35.83	41.34	30.31	15.55	16.54	20.08	25.59	21.65	14.57
GP-320 M LN80	53.54	19.69	7.68	31.89	37.01	27.36	13.98	13.58	19.29	19.29	19.29	11.89
GP-350 M LN80	53.54	18.90	7.68	31.89	37.01	27.36	13.98	13.58	19.29	22.83	19.29	12.76
GP-450 M LN80	57.87	18.90	7.68	35.83	41.34	30.31	15.55	16.54	20.08	25.59	21.65	12.76

Dimensions in inches.

Working Diagram



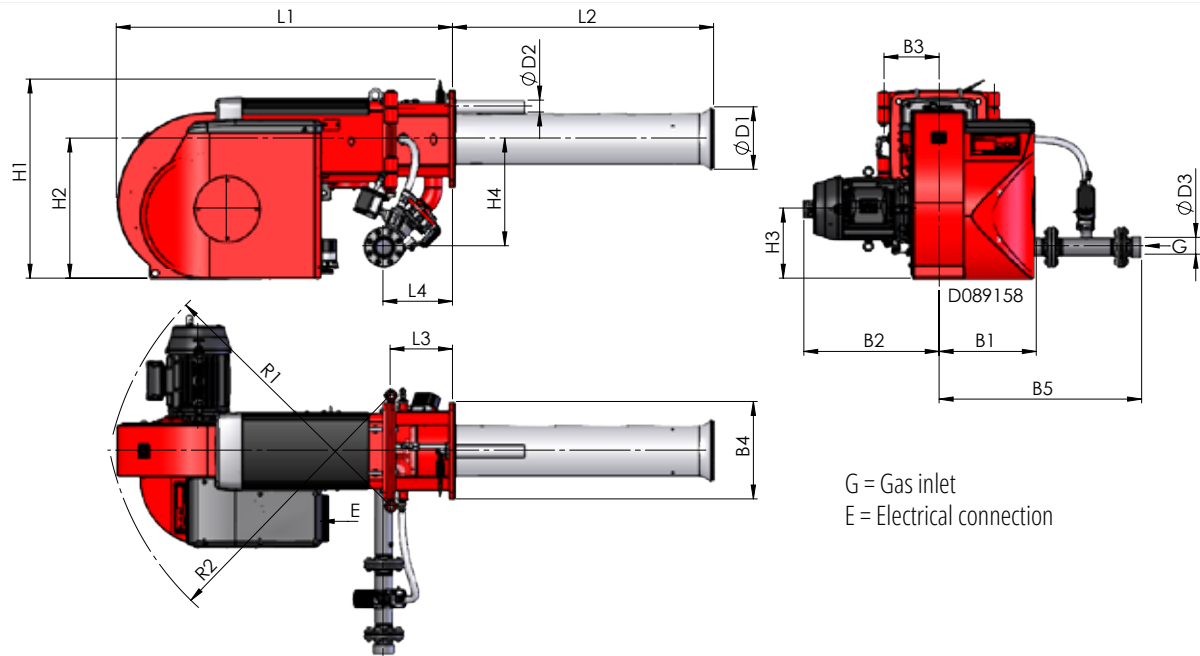
GP-320 M LN30

Technical Data

BURNER	GP-320 M LN30
Capacity MMBtu/h	2.5 - 11.9
Burner motor	
3~ 208-600 V 60 Hz	
Output hp	15
Current A/460 V	17
Speed rpm, max. *	3800
Control unit	WDx00
Weight lb**	1175

*) Frequency converter mandatory
**) Only burner
Ratio level Gas 1:4,7 (100 – 21%)
Note! Weight varies according to the delivery contents.

Dimensions

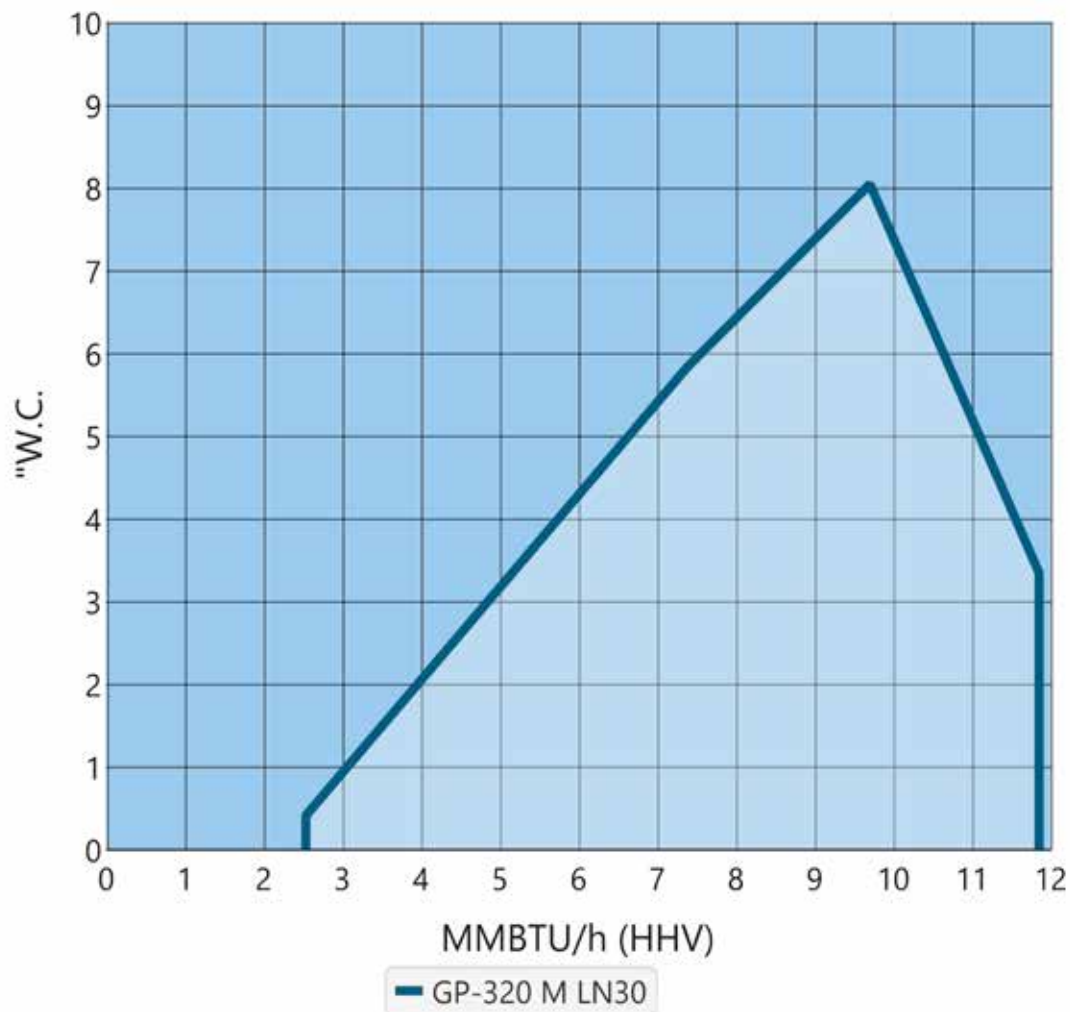


BURNER	L1	L2	L3	L4
GP-320 M LN30	66.73	51.77	12.36	13.78

BURNER	H1	H2	H3	H4	B1	B2	B3	B4	B5	ØD1	ØD2	ØD3	R1	R2
GP-320 M LN30	39.57	27.76	13.98	21.34	19.29	26.97	10.94	19.29	40.16	12.36	2.36	NPT 3"	56.69	56.69

Dimensions in inches.

Working Diagram



NO_x emissions, required residual O₂ and the working diagram will vary depending on furnace geometry and conditions. Please check Oilon Selection Tool from detailed working diagram depending on your application.

GP-600 M...700 M-III

Technical Data

BURNER	GP-600 M	GP-700 M	GP-700 M-II	GP-700 M-III
Capacity MMBtu/h	3.7 - 25.6	4.5 - 31.8	5.1 - 36.0	5.7 - 39.8
Burner motor 3~ 208-600 V 60 Hz				+ frequency converter
Output hp	20	25	30	40
Current A/460 V	23.5	31	35.8	45
Speed rpm	3510	3510	3510	2970*
Control unit	WDx00	WDx00	WDx00	WDx00
Weight lb**	1014	1179	1246	1488

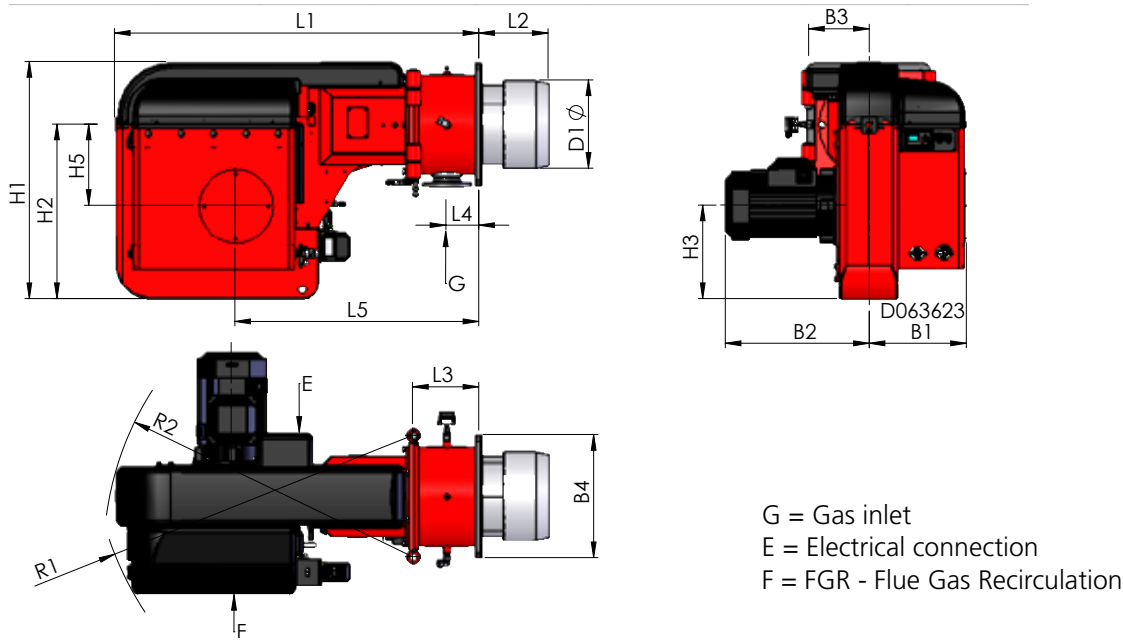
*) The frequency must be converted to 50 Hz

**) Only burner

Ratio level Gas 1:6 (100 – 16,6%)

Note! The weight varies according to delivery contents.

Dimensions

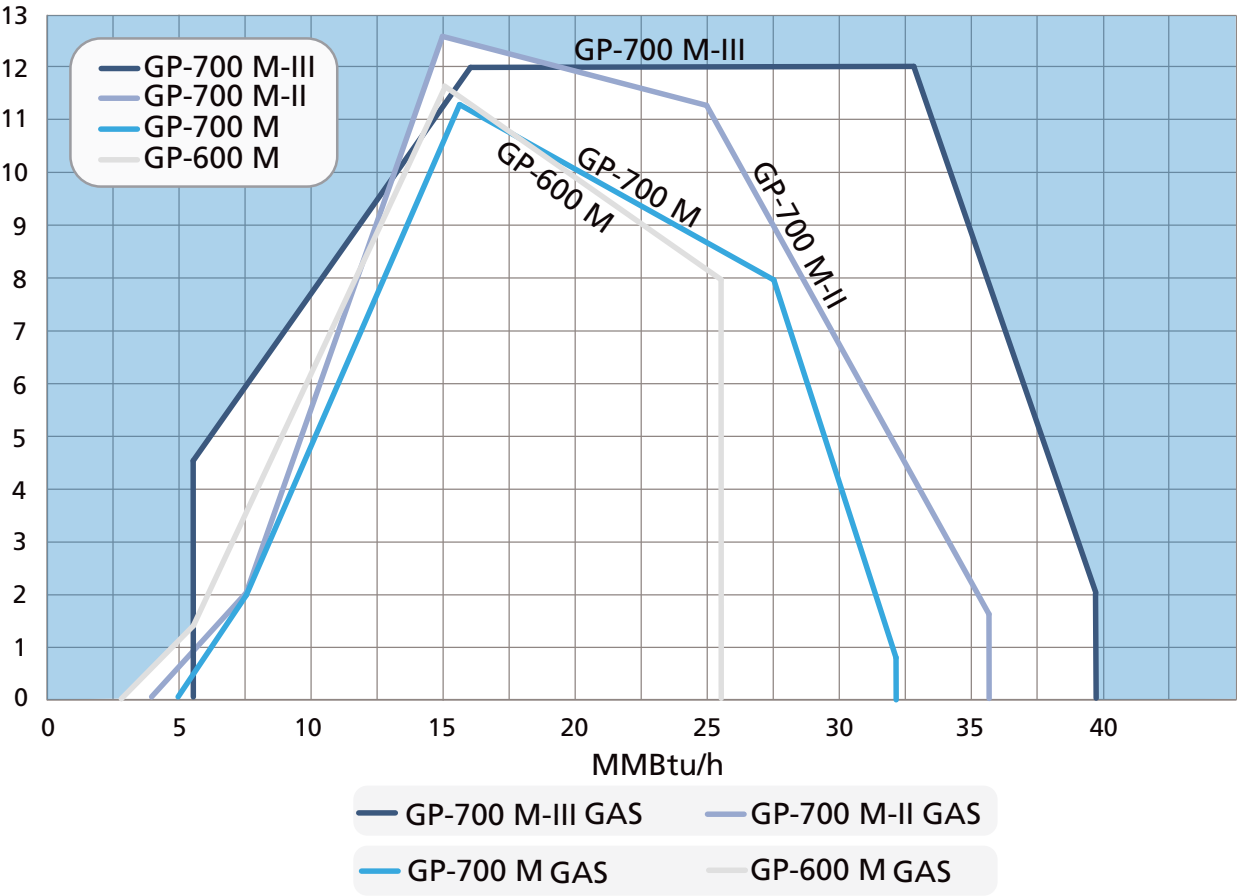


BURNER	L1	L2	L3	L4	L5
GP-600 M	64.96	12.20	11.61	5.71	42.91
GP-700 M	64.96	12.20	11.61	5.71	47.24
GP-700 M-II	64.96	12.20	11.61	5.71	47.24
GP-700 M-III	64.96	15.75	11.61	5.71	47.24

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GP-600 M	41.73	30.71	16.54	14.37	17.13	25.39	10.63	21.65	14.57	56.69	55.12
GP-700 M	41.73	30.71	16.54	13.19	19.29	27.56	10.63	21.65	15.55	57.48	55.12
GP-700 M-II	41.73	30.71	16.54	13.19	19.29	29.92	10.63	21.65	15.55	57.48	55.12
GP-700 M-III	41.73	30.71	16.54	13.19	19.29	33.27	10.63	21.65	16.73	57.48	55.12

Dimensions in inches.

Working Diagram



GP-600 M_700 M-III LN80

GP-600 M/GP-700 M-III LN60, GP-600...700 M-III LN80

Technical Data

BURNER	GP-600 M LN60	GP-700 M-III LN60	GP-600 M LN80	GP-700 M-II LN80	GP-700 M-III LN80
Capacity MMBtu/h	3.0 - 24.6	5.2 - 28.4	3.6 - 25.4	4.5 - 28.8	5.7 - 33.3
Burner motor 3~ 208-600 V 60 Hz		+ frequency converter			+ frequency converter
Output hp	25	40	20	30	40
Current A/460 V	34	52	26	38	45
Speed rpm	3510	2970*	3510	3510	2970*
Control unit	WDx00	WDx00	WDx00	WDx00	WDx00
Weight lb**	1069	1510	1025	1499	1543

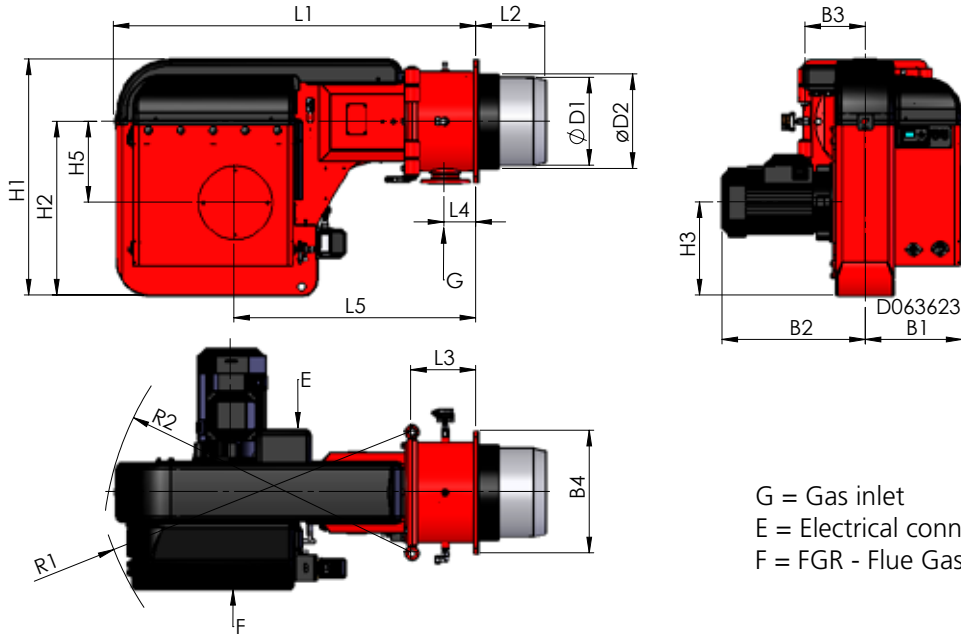
*) The frequency must be converted to 50 Hz

**) Only burner

Ratio level Gas 1:6 (100 – 16,6%)

Note! The weight varies according to delivery contents.

Dimensions



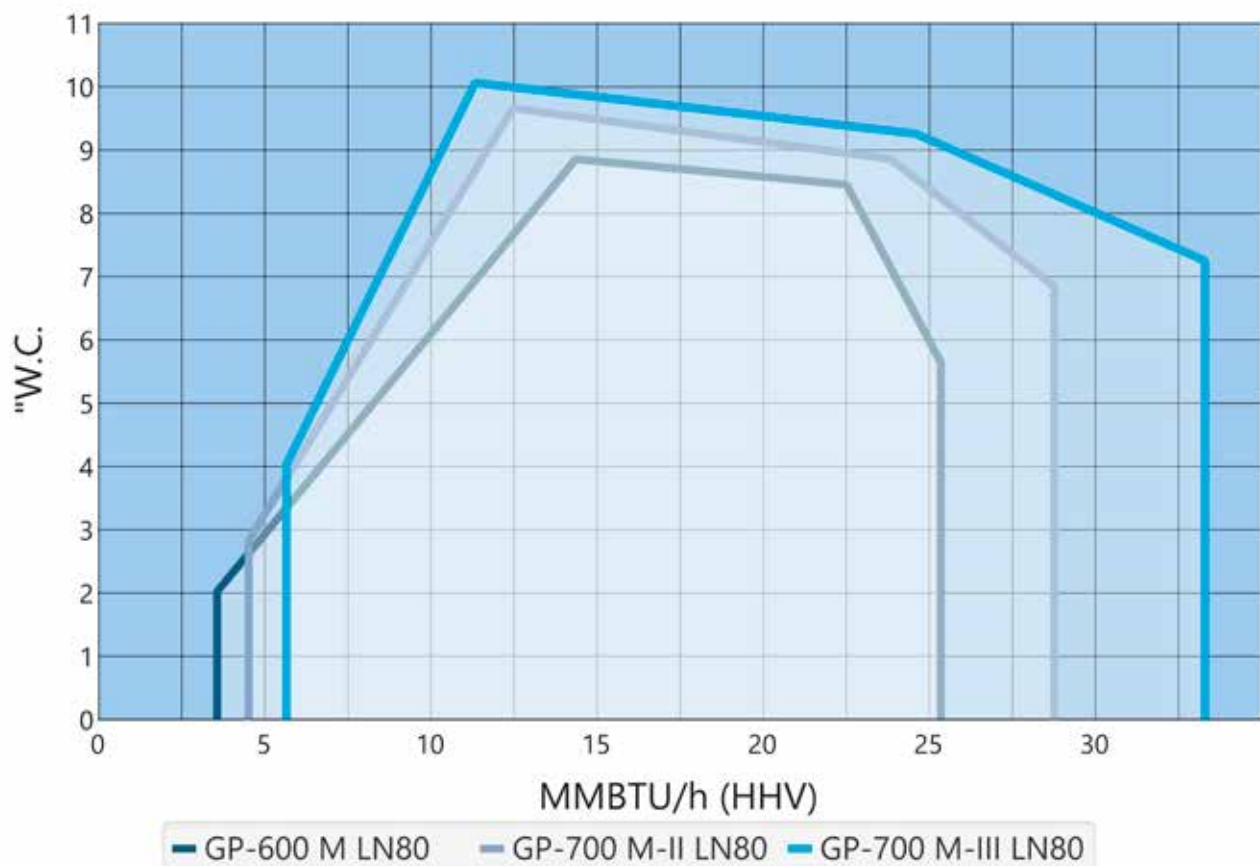
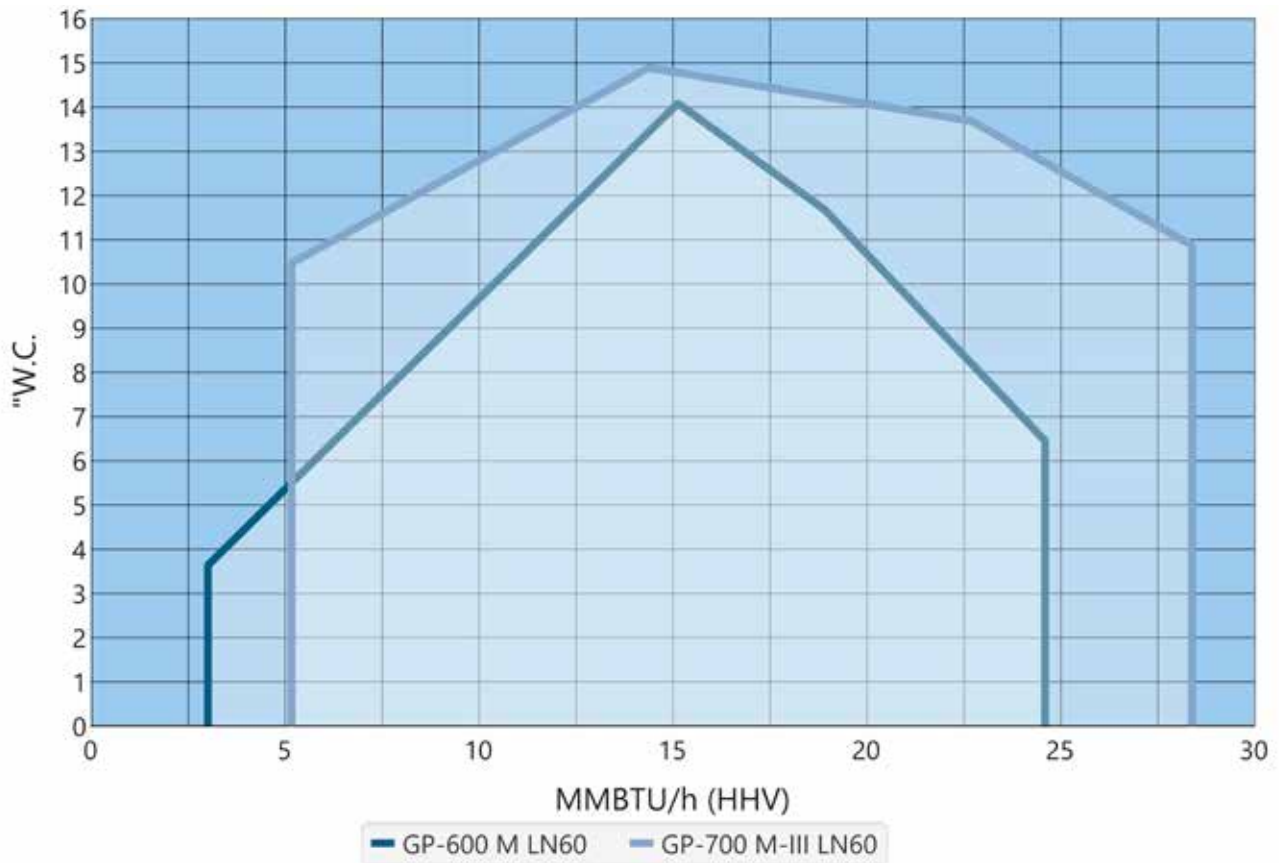
G = Gas inlet
E = Electrical connection
F = FGR - Flue Gas Recirculation

BURNER	L1	L2	L3	L4	L5
GP-600 M LN60	64.96	20.87	11.61	5.71	42.91
GP-700 M-III LN60	64.96	24.02	11.61	5.71	47.24
GP-600 M LN80	64.96	20.87	11.61	5.71	42.91
GP-700 M-II LN80	64.96	20.87	11.61	5.71	47.24
GP-700 M-III LN80	64.96	24.02	11.61	5.71	47.24

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	ØD2	R1	R2
GP-600 M LN60	41.73	30.71	16.54	14.37	17.13	25.39	10.63	21.65	16.06	-	56.69	55.12
GP-700 M-III LN60	41.73	30.71	16.54	13.19	19.29	33.27	10.63	21.65	17.52	-	57.48	55.12
GP-600 M LN80	41.73	30.71	16.54	14.37	17.13	25.39	10.63	21.65	15.12	-	56.69	55.12
GP-700 M-II LN80	41.73	30.71	16.54	13.19	19.29	29.92	10.63	21.65	15.98	-	57.48	55.12
GP-700 M-III LN80	41.73	30.71	16.54	13.19	19.29	33.27	10.63	21.65	15.98	-	57.48	55.12

Dimensions in inches.

Working Diagram



GP-600 M/GP-600 M-II LN30

Technical Data

BURNER	GP-600 M LN30	GP-600 M-II LN30
Capacity MMBtu/h	4.4 - 18.4	4.8 - 26.6
Burner motor 3~ 208-600 V 60 Hz		
Output hp	30	50
Current A/460 V	34	55.9
Speed rpm, max.*	3520	4100
Control unit	WDx00	WDx00
Weight lb**	1102	1455

*) Frequency converter mandatory

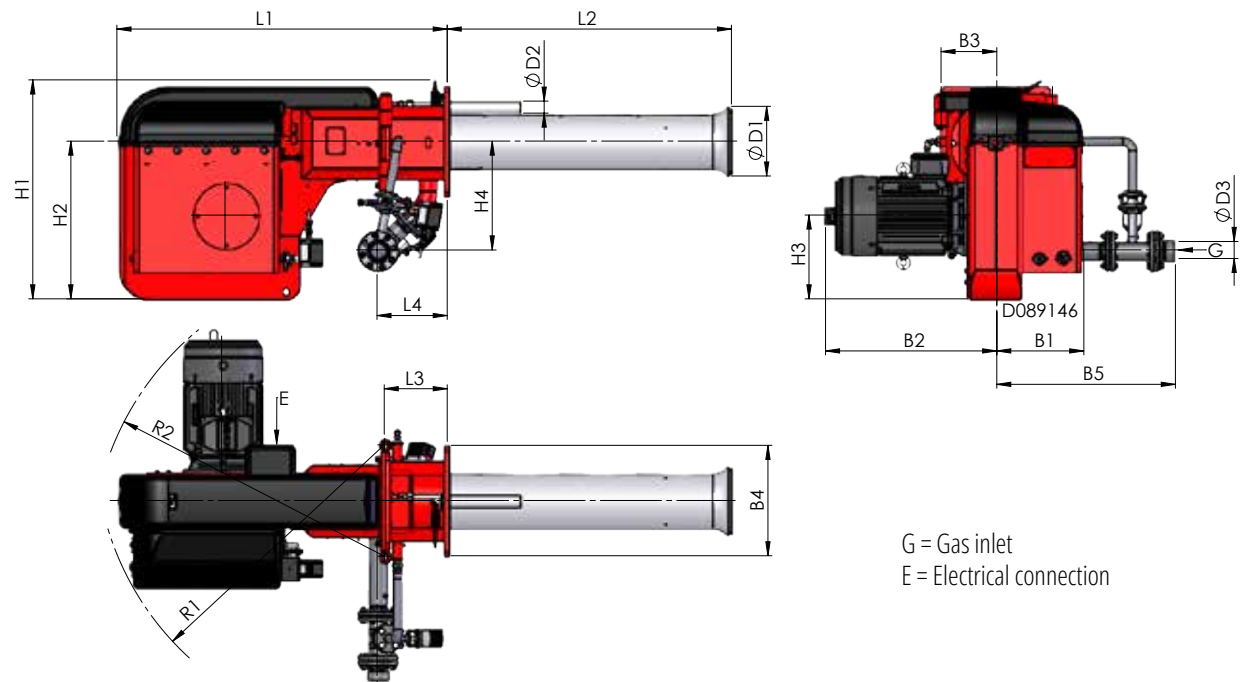
**) Only burner

Ratio level Gas GP-600 M LN30 1:4 (100 – 25 %)

GP 600 M-II LN30 1:5,4 (100 – 18 %)

Note! Weight varies according to the delivery contents.

Dimensions



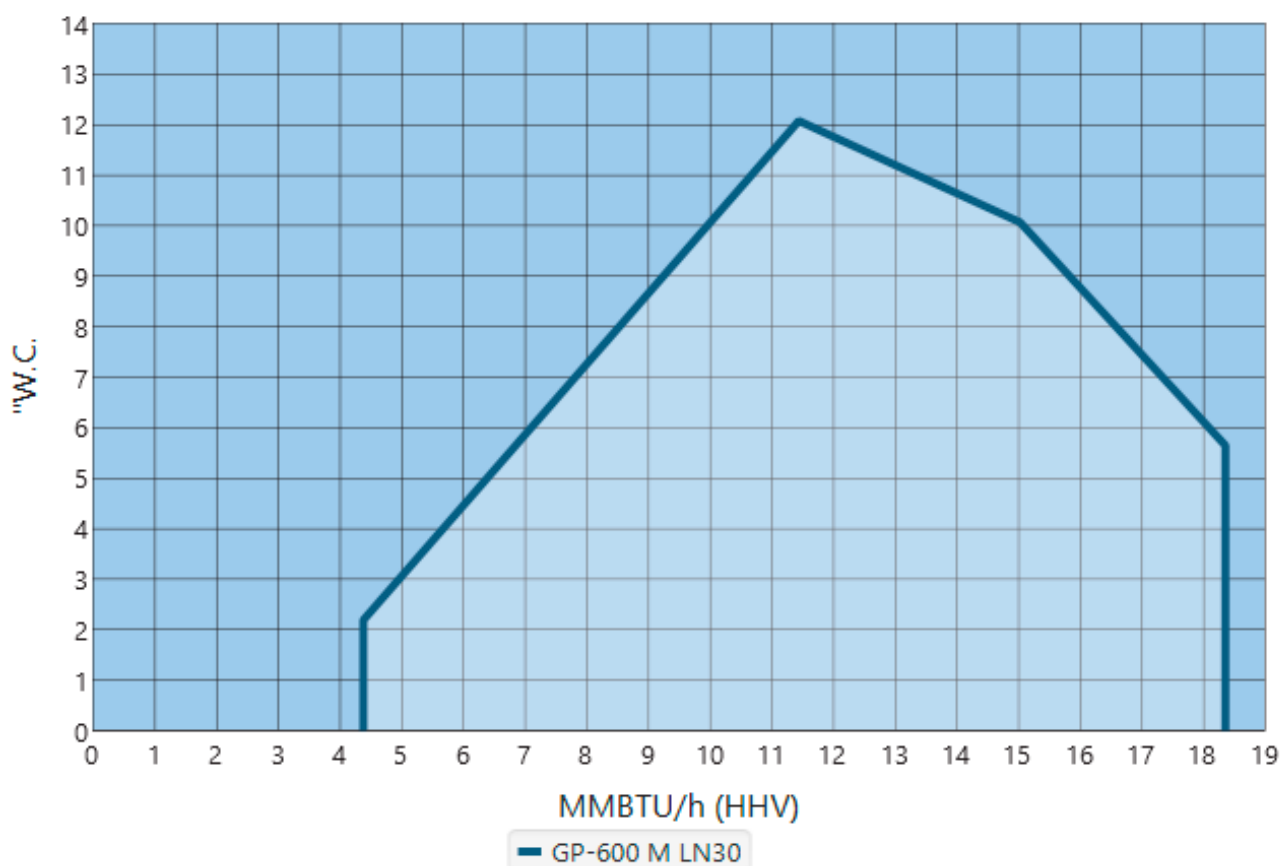
G = Gas inlet
E = Electrical connection

BURNER	L1	L2	L3	L4
GP-600 M LN30	64.80	55.79	12.36	13.78
GP-600 M-II LN30	64.80	55.79	12.36	13.78

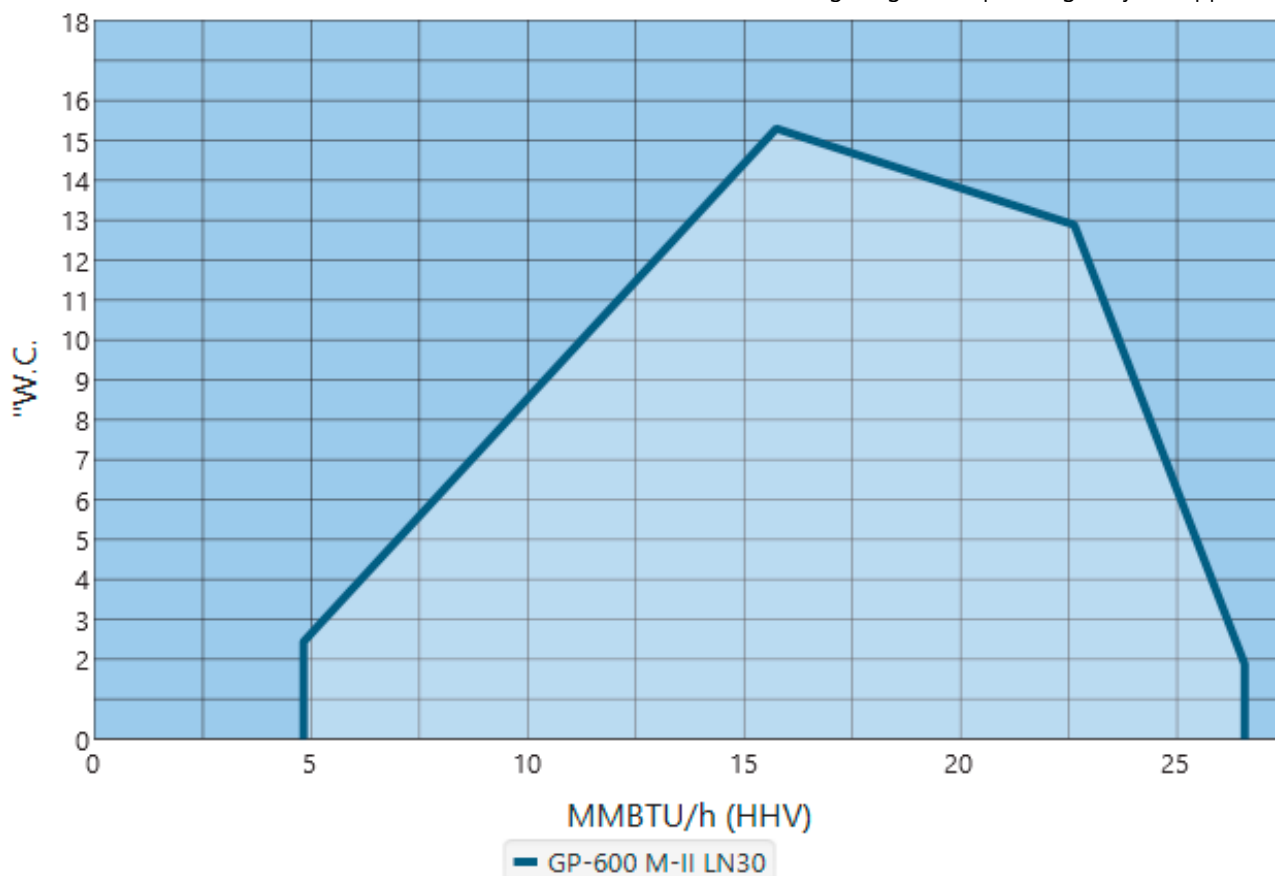
BURNER	H1	H2	H3	H4	B1	B2	B3	B4	B5	ØD1	ØD2	ØD3	R1	R2
GP-600 M LN30	42.91	30.94	16.46	21.34	17.09	29.72	10.94	21.65	35.04	13.66	2.36	NPT 3"	56.69	54.72
GP-600 M-II LN30	42.91	30.94	16.46	21.34	17.09	33.66	10.94	21.65	35.04	13.66	2.36	NPT 3"	56.69	57.48

Dimensions in inches.

Working Diagram



NO_x emissions, required residual O₂ and the working diagram will vary depending on furnace geometry and conditions. Please check Oilon Selection Tool from detailed working diagram depending on your application.



NO_x emissions, required residual O₂ and the working diagram will vary depending on furnace geometry and conditions. Please check Oilon Selection Tool from detailed working diagram depending on your application.

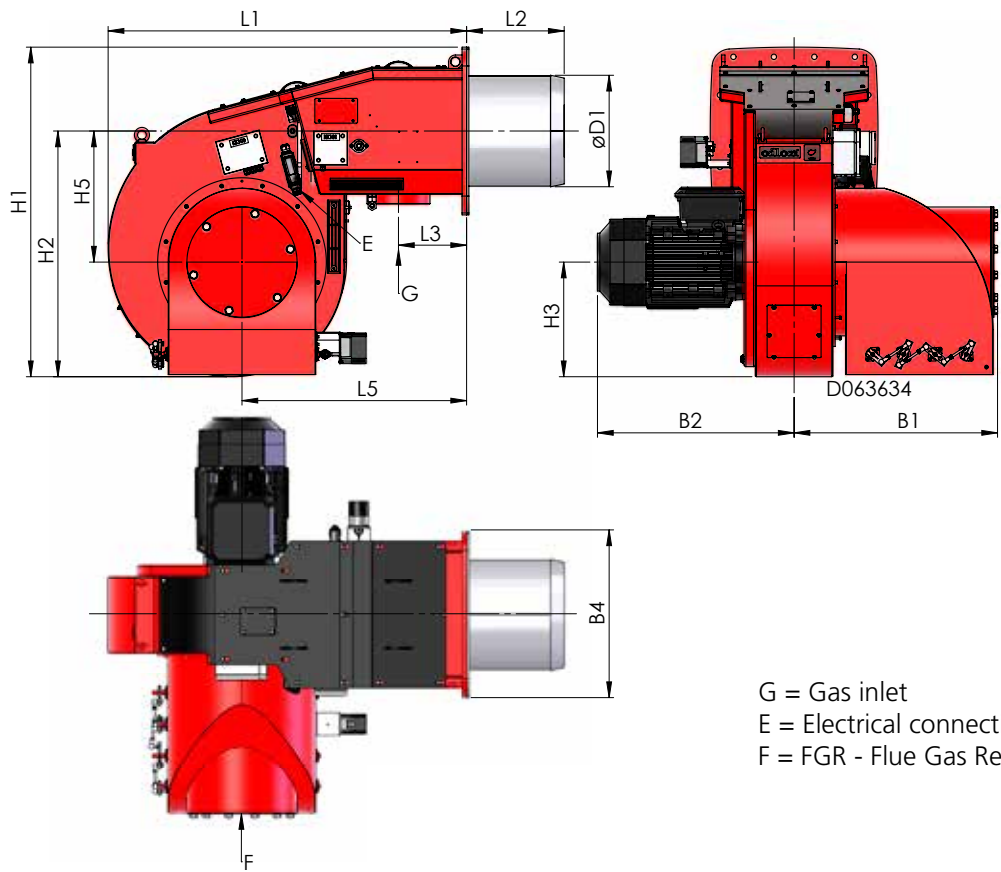
GP-1000/1200 M, GP-1000 M LN80

Technical Data

BURNER	GP-1000 M	GP-1200 M	GP-1000 M LN80
Capacity MMBtu/h	6.8 - 42.0	8.3 - 50.4	6.8 - 41.7
Burner motor 3~ 208-600 V 60 Hz	+ frequency converter	+ frequency converter	+ frequency converter
Output hp	50	60	50
Current A/460 V	55.9	66.7	55.9
Speed rpm*	2970	2970	2970
Control unit	WDx00	WDx00	WDx00
Weight lb**	1720	1830	1742

*) The frequency must be converted to 50 Hz
 **) Only burner
 Ratio level Gas 1:5 (100 – 20%)
 Note! The weight varies according to delivery contents.

Dimensions



BURNER	L1	L2	L3	L5	H1	H2	H3	H5	B1	B2	B4	ØD1
GP-1000 M	62.99	17.09	11.93	39.37	57.87	43.31	20.08	23.03	35.63	34.65	29.53	19.53
GP-1200 M	62.99	17.09	11.93	39.37	57.87	43.31	20.08	23.03	35.63	36.61	29.53	20.47
GP-1000 M LN80	62.99	25.59	11.93	39.37	57.87	43.31	20.08	23.03	35.63	34.65	29.53	17.87

Dimensions in inches.

Working Diagram



Scope of Delivery GP-140...1200

	140...280	320...450	500...700	1000...1200
Hinge flange with limit switch	x	-	x	-
Burner flange gasket	x	x	x	x
WiseDrive (electronic ratio control)	x	x	x	x
Ignition transformer	x	x	x	x
Ignition cables and electrodes	x	x	x	x
Flame sensor:				
- WDX00i/QRI (intermittent operation)	x	-	-	-
- WDX00/QRI (continuous operation)	x	x	x	x
- WDX00/QRI + ionization electrode, LN60 burners (continuous operation)	-	-	x	-
Inbuilt combustion air fan	x	x	x	x
Air damper with servomotor	x	x	x	x
Combustion head optimizer with servomotor, WDX00	-	-	x	-
Gas damper with servomotor	x	x	x	x
Gas nozzle	x	x	x	x
Connection for measuring the pressure in gas nozzle	x	x	x	x
Gas pressure switch, max.	x	x	x	x
Differential air pressure switch	x	x	x	x
Double solenoid valve for gas	x	x	x	x
Pressure switch for gas, min.	x	x	x	x
Automatic valve leak testing for gas	x	x	x	x
Pressure regulation valve for gas	x	x	x	x
Manual	x	x	x	x

x Standard

Options

FGR equipment	x	x	x	x
Fan pressure gauge	x	x	x	x
VSD equipment***	x	x	x	x
Extended combustion head*	x	x	x	-
Turbo combustion head for flame shaping	x	x	x	x
Ignition gas valve and piping**	-	-	-	-
Gas pressure gauge	x	x	x	x
LPG use	x	x	x	x

*) Not in LN80 and LN60 burners

**) Always in LN80 burners

***) Included in 700-M-III and 1000/1200 M

Dual Fuel Burners Gas/Light Fuel Oil

2.1 - 49.9 MMBtu/h

GKP-140 M...280 M, GKP-140...280 M LN80

Technical Data

BURNER	GKP-140 M	GKP-150 M	GKP-250 M	GKP-280 M	GKP-140 M LN80	GKP-250 M LN80	GKP-280 M LN80
Capacity MMBtu/h gal/h	1.5 - 8.9 14.6 - 62.2	1.7 - 10.2 17.4 - 70.5	1.4 - 9.8 17.1 - 68.4	1.9 - 12.49 23.6 - 87.0	1.4 - 6.4 9.9 - 44.4	1.3 - 8.0 21.1 - 55.0	1.4 - 10.2 20.8 - 86.1
Burner motor 3~ 208-600 V 60 Hz							
Output hp	5.5	7.5	7.5	10	5.5	10	10
Current A/460 V	6.2	8.9	8.9	11.9	6.2	11.9	11.9
Speed rpm	3510	3510	3510	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00	WDx00	WDx00	WDx
Oil hose connection - suction - return	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT	3/4" NPT 3/8" NPT
Oil pump - Motor 3~ 208-600 V 60 Hz	TAR2	TAR2	TAR3	TAR3	TAR2	TAR2	TAR2
Output hp	1	1	2	2	1	1	1
Current A/460 V	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Speed rpm	3510	3510	3510	3510	3510	3510	3510
Weight lb*	357	362	595	613	364	604	626

*) Only burner

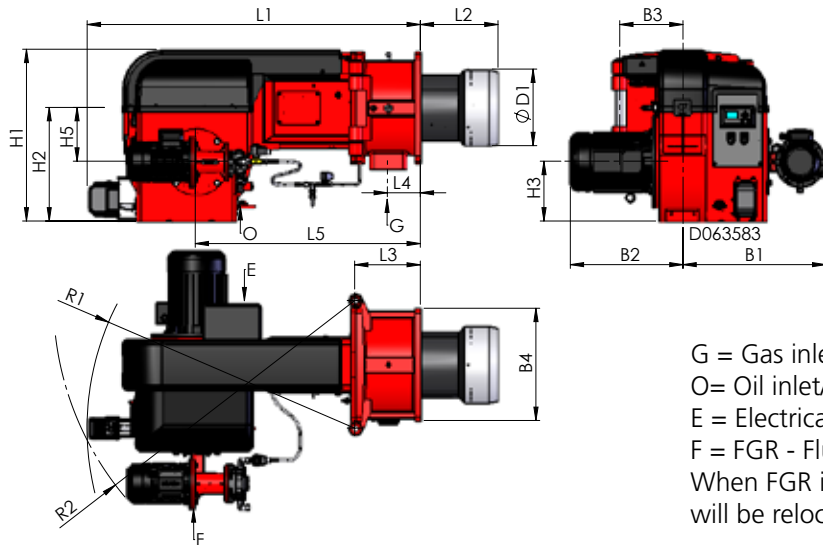
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:6 (100 - 16,6%)

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions



G = Gas inlet
O = Oil inlet/return
E = Electrical connection
F = FGR - Flue Gas Recirculation
When FGR is needed, oil pump unit will be relocated.

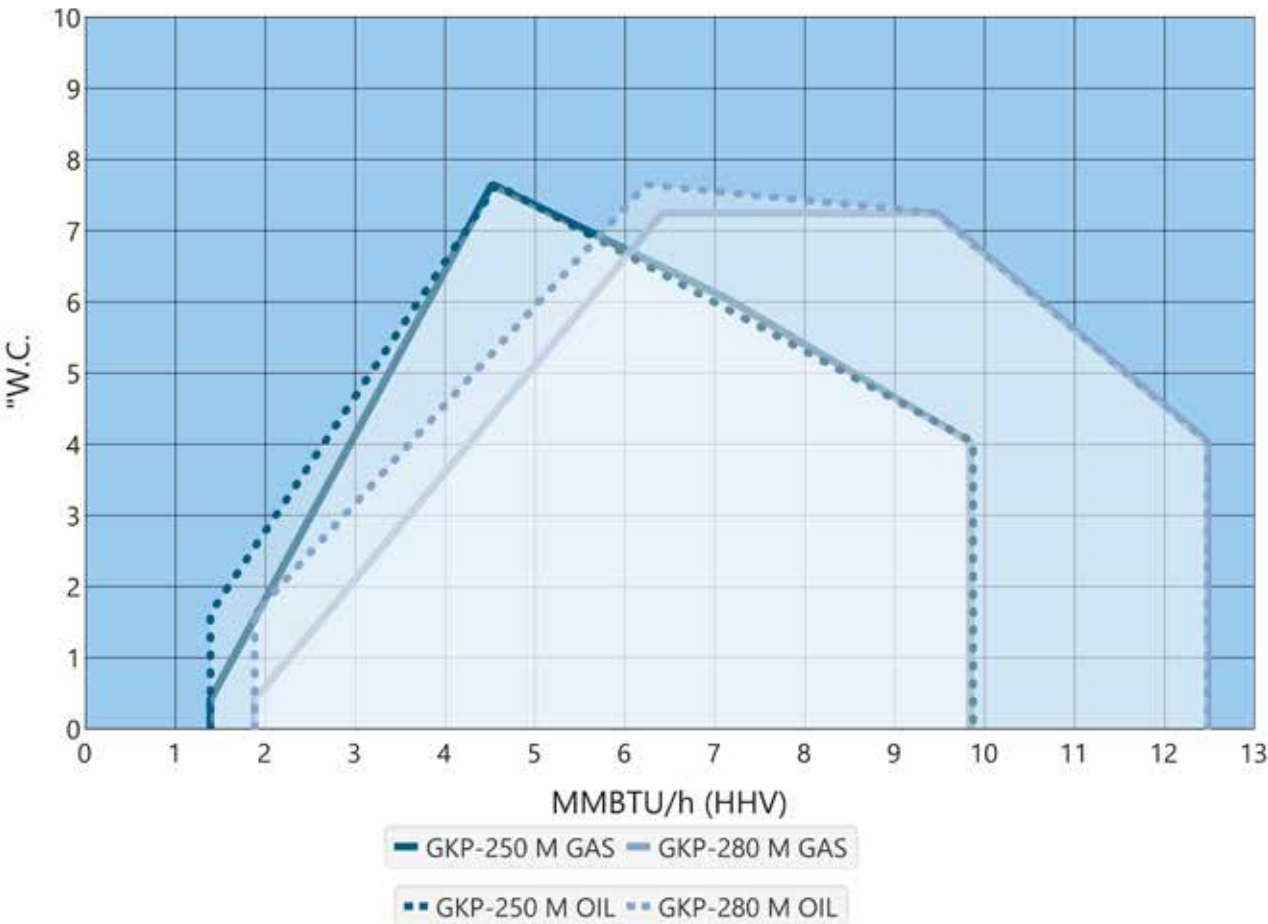
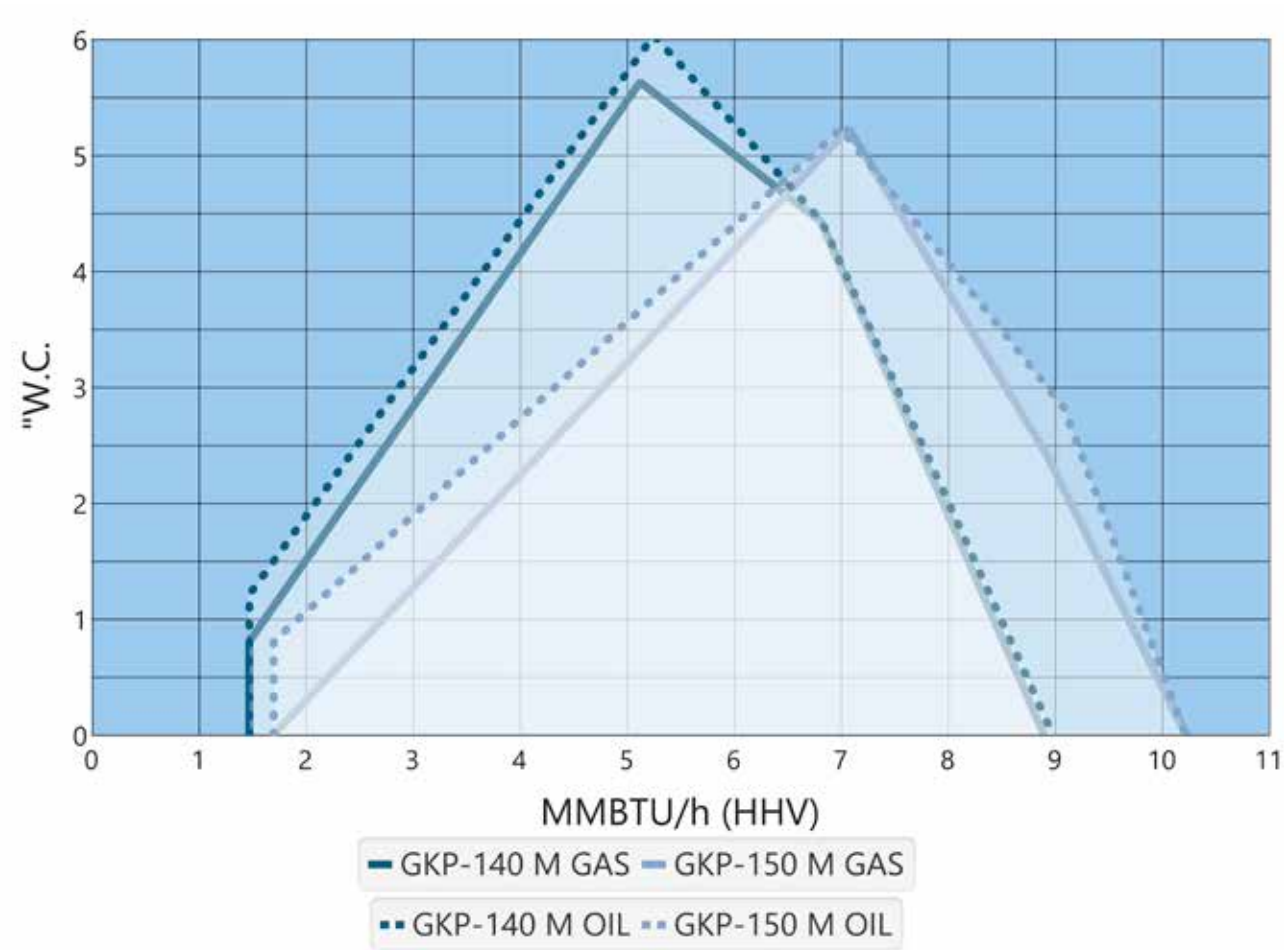
BURNER	L1	L2	L2		L3	L4	L5
			C1	C2			
GKP-140 M	50.59	8.66	-	-	10.24	5.08	34.65
GKP-150 M	50.59	9.06	-	-	10.24	5.08	34.65
GKP-250 M	51.97	11.81	-	-	10.24	5.12	35.04
GKP-280 M	51.97	12.28	-	-	10.24	5.12	35.04
GKP-140 M LN80	50.59	16.93	-	-	10.24	5.08	34.65
GKP-250 M LN80	51.97	-	16.54	21.65	10.24	5.12	35.04
GKP-280 M LN80	51.97	-	16.54	21.65	10.24	5.12	35.04

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GKP-140 M	24.61	15.75	8.27	7.68	22.44	22.44	8.27	14.17	9.45	41.34	45.28
GKP-150 M	24.61	15.75	8.27	7.68	22.44	22.44	8.27	14.17	10.63	41.34	45.28
GKP-250 M	26.57	17.56	9.25	8.46	23.82	23.82	9.84	17.32	10.63	43.31	47.24
GKP-280 M	26.57	17.56	9.25	8.46	23.82	23.82	9.84	17.32	11.81	43.31	47.24
GKP-140 M LN80	24.61	15.75	8.27	7.68	22.44	22.44	8.27	14.17	9.45	41.34	45.28
GKP-250 M LN80	26.57	17.56	9.25	8.46	23.82	23.82	9.84	17.32	10.08	43.31	47.24
GKP-280 M LN80	26.57	17.56	9.25	8.46	23.82	19.29	9.84	17.32	10.87	43.31	47.24

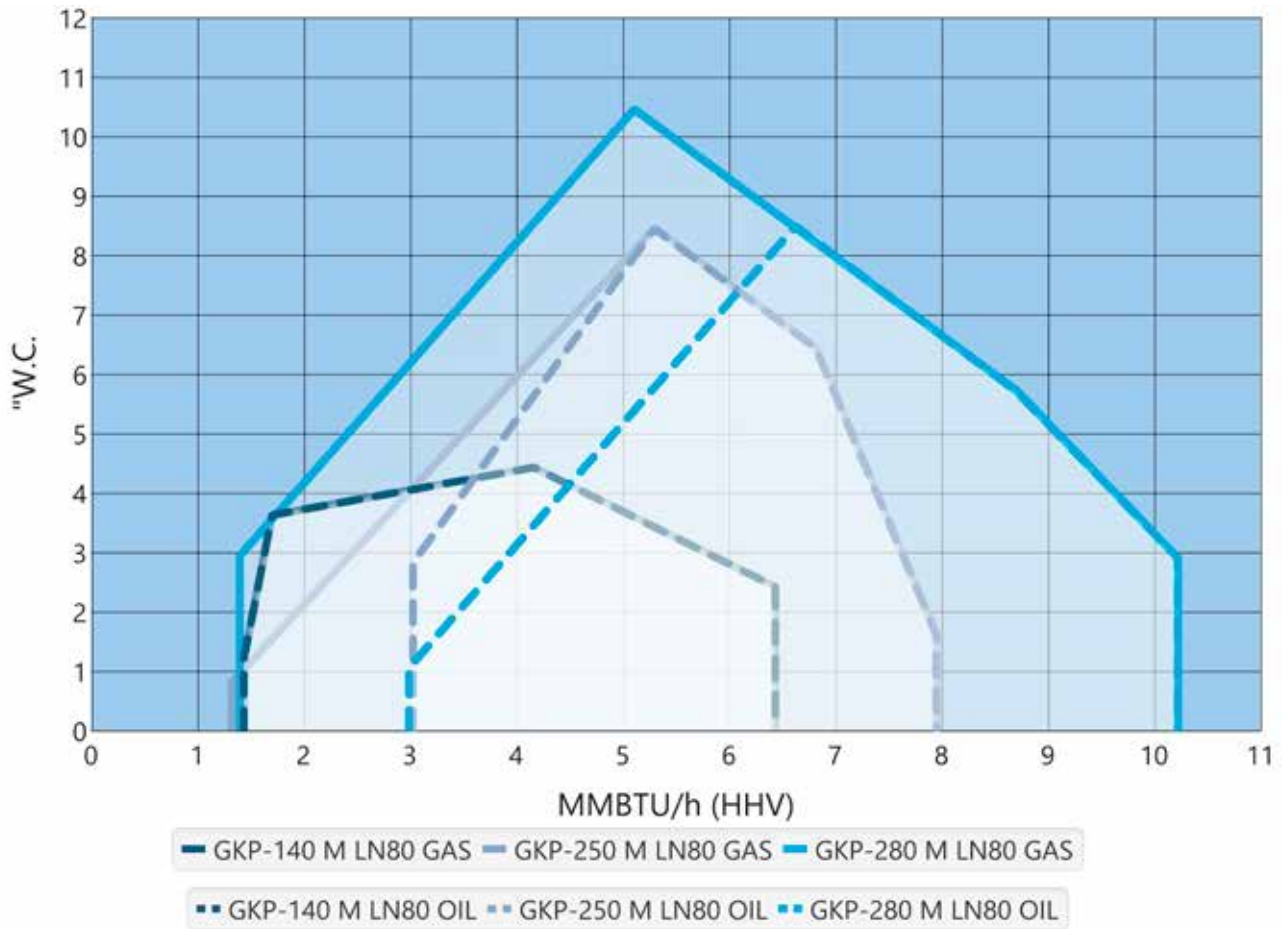
Dimensions in inches.

Oilon Monoblock 7.0/012024

Working Diagram



Working Diagram



GKP-350/450 M, GKP-320/450 M LN80

Technical Data

BURNER	GKP-350 M	GKP-450 M	GKP-320 M LN80	GKP-350 M LN80	GKP-450 M LN80
Capacity MMBtu/h gal/h	2.7 - 16.1 42.0 - 111.9	3.2 - 20.8 57.5 - 143.0	2.0 - 12.1 21.8 - 83.9	3.4 - 15.1 26.4 - 104.1	3.5 - 19.7 38.8 - 135.2
Burner motor 3~ 208-600 V 60 Hz					
Output hp	10	15	10	10	20
Current A/460 V	11.9	17.7	11.9	11.9	23.5
Speed rpm	3510	3510	3510	3510	3510
Oil hose connection					
- suction	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT
- return	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT
Oil pump					
- Motor					
3~ 208-600 V 60 Hz					
Output hp	2	2	2	2	2
Current A	2.8	2.8	2.8	2.8	2.8
Speed r/min	3510	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00	WDx00
Weight lb*	860	1113	871	871	1124

*) Only burner

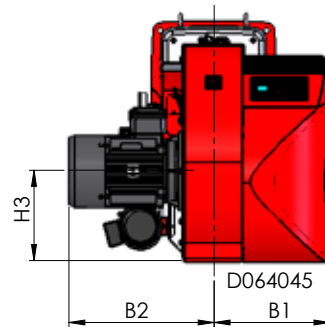
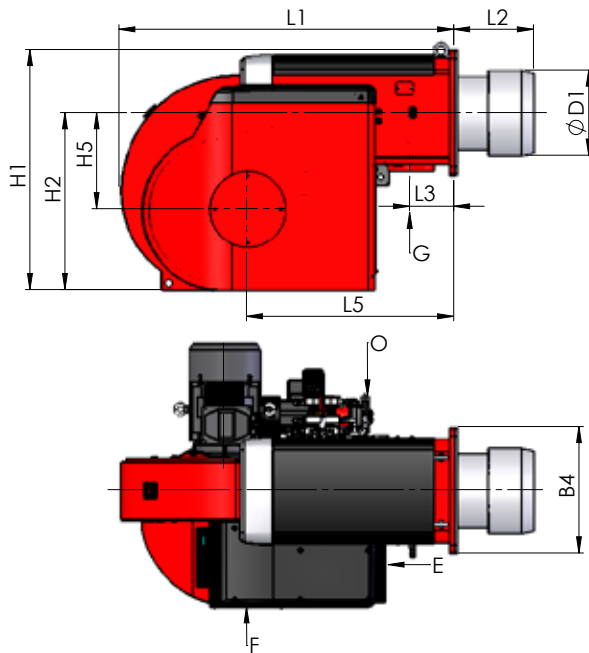
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:6 (100 - 16,6%)

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions



G = Gas inlet

O= Oil inlet/return

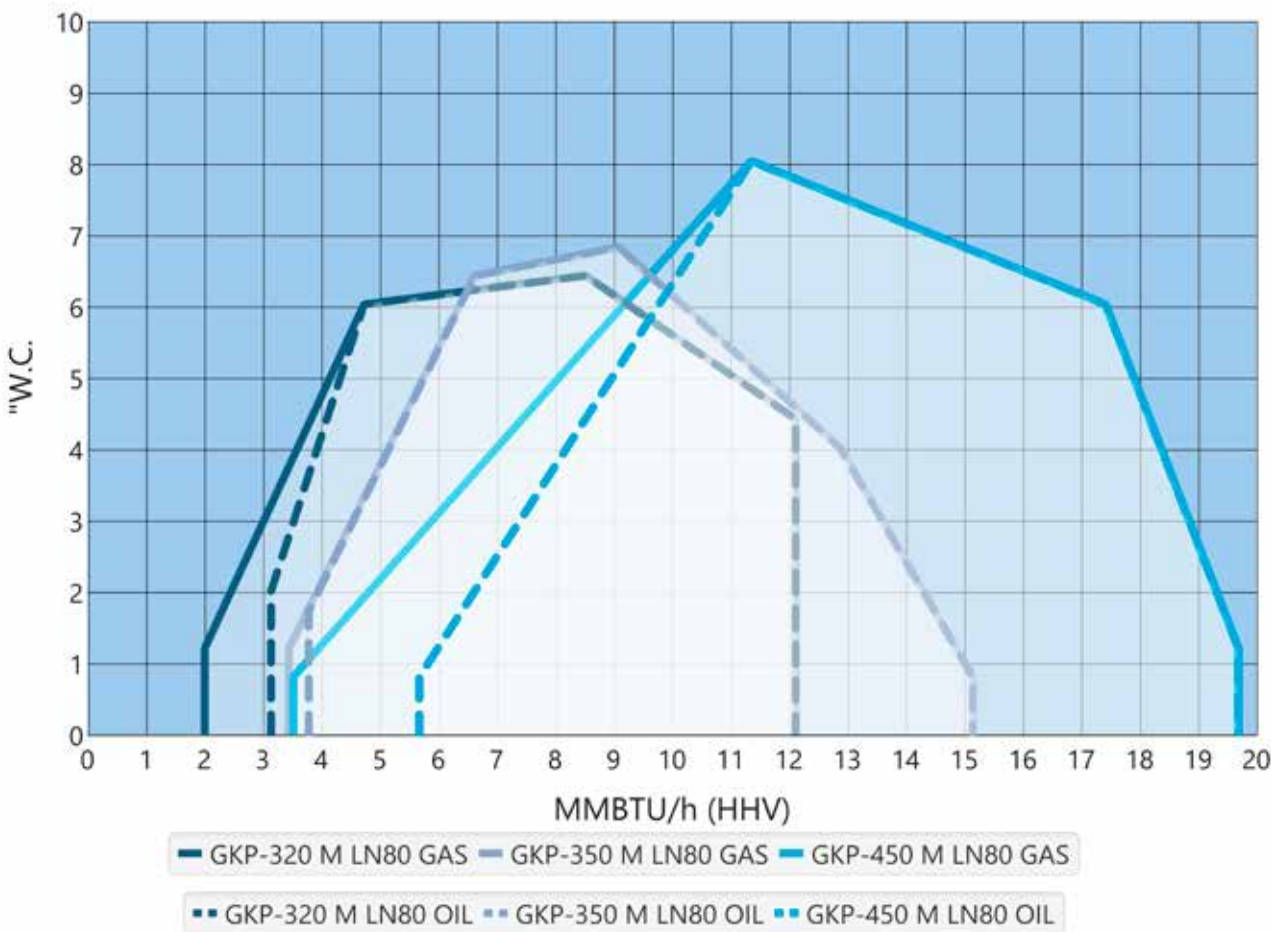
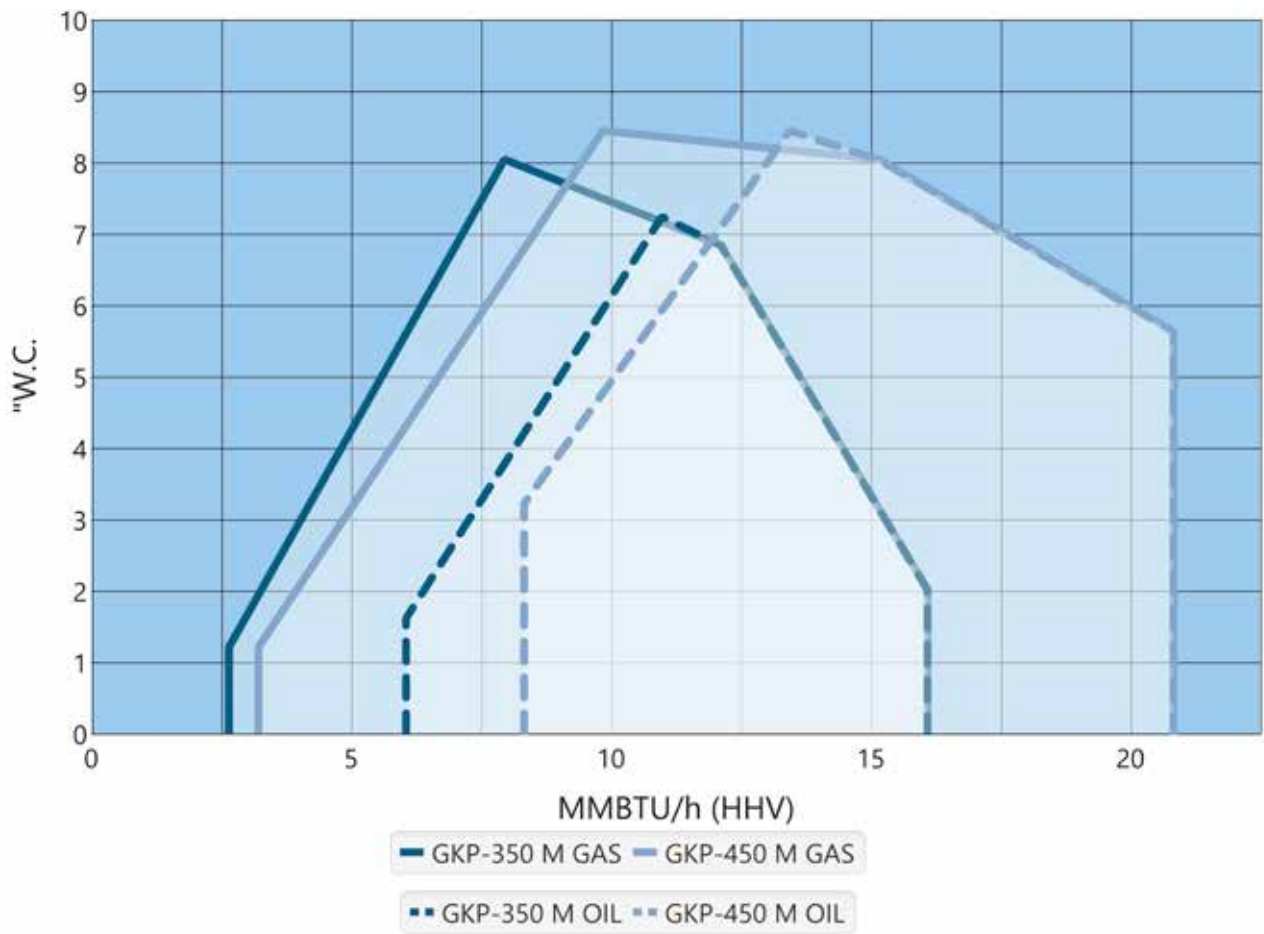
E = Electrical connection

F = FGR - Flue Gas Recirculation

BURNER	L1	L2	L3	L5	H1	H2	H3	H5	B1	B2	B4	ØD1
GKP-350 M	53.54	13.78	7.68	31.89	37.01	27.36	13.98	13.58	19.29	22.83	19.29	12.60
GKP-450 M	57.87	13.78	7.68	35.83	41.34	30.31	15.55	16.54	20.08	25.59	21.65	14.57
GKP-320 M LN80	53.54	19.69	7.68	31.89	37.01	27.36	13.98	13.58	19.29	22.83	19.29	11.89
GKP-350 M LN80	53.54	18.90	7.68	31.89	37.01	27.36	13.98	13.58	19.29	22.83	19.29	12.76
GKP-450 M LN80	57.87	18.90	7.68	35.83	41.34	30.31	15.55	16.54	20.08	25.59	21.65	12.76

Dimensions in inches.

Working Diagram



GKP-600 M...700 M-III

Technical Data

BURNER	GKP-600 M	GKP-700 M	GKP-700 M-II	GKP-700 M-III
Capacity MMBtu/h gal/h	3.7 - 25.6 37.3 - 177.1	4.5 - 31.8 52.8 - 220.7	5.1 - 36.0 55.9 - 255.2	5.7 - 39.8 71.5 - 269.8
Burner motor 3~ 208-600 V 60 Hz Output hp Current A/460 V Speed rpm	20 23.4 3510	25 31 3510	30 35.8 3510	+ frequency converter 40 45 2970*
Oil hose connection - suction - return	3/4" NPT 3/4" NPT	3/4" NPT 3/4" NPT	3/4" NPT 3/4" NPT	3/4" NPT 3/4" NPT
Oil pump - Motor 3~ 208-600 V 60 Hz Output hp Current A/460 V Speed rpm	TAR5 3 3.8 3510	T3 5.5 6.7 3510	T4 5.5 6.7 3510	T4 5.5 6.7 3510
Regulating valve	-	TV4001	TV4001	TV4001
Control unit	WDx00	WDx00	WDx00	WDx00
Weight lb**	1146	1246	1499	1510

*) The frequency must be converted to 50 Hz

**) Only burner

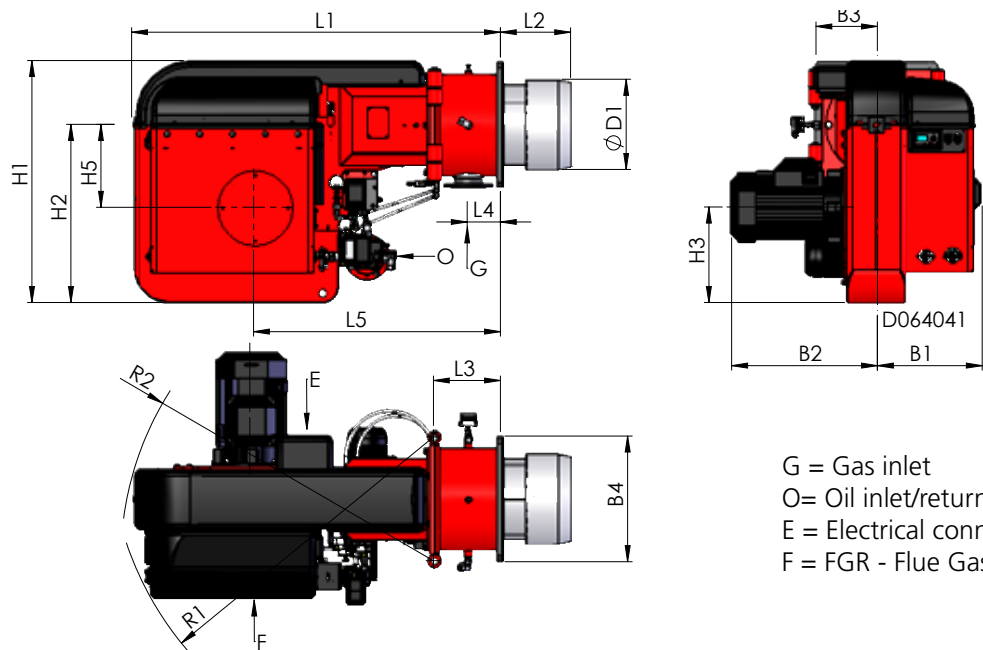
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:6 (100 - 16,6%)

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions



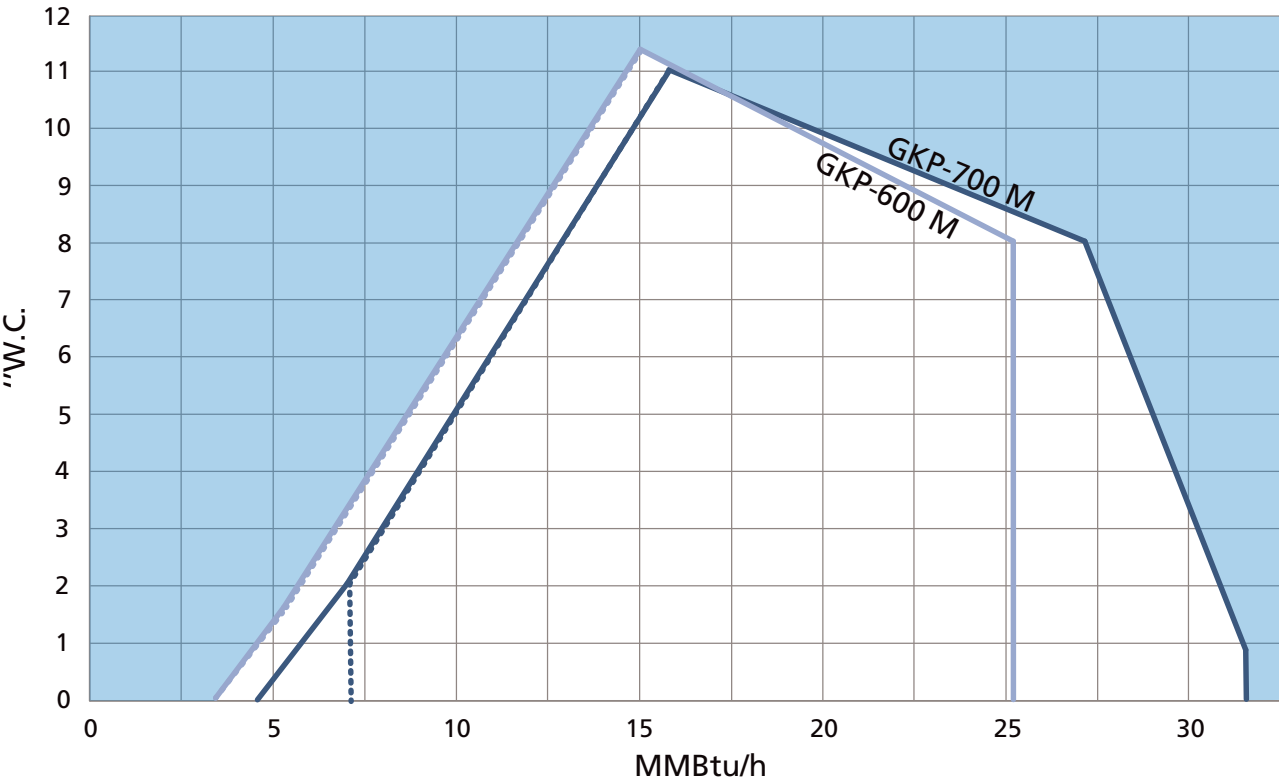
G = Gas inlet
O = Oil inlet/return
E = Electrical connection
F = FGR - Flue Gas Recirculation

BURNER	L1	L2	L3	L4	L5
GKP-600 M	64.96	12.20	11.61	5.71	42.91
GKP-700 M	64.96	12.20	11.61	5.71	47.24
GKP-700 M-II	64.96	12.20	11.61	5.71	47.24
GKP-700 M-III	64.96	15.75	11.61	5.71	47.24

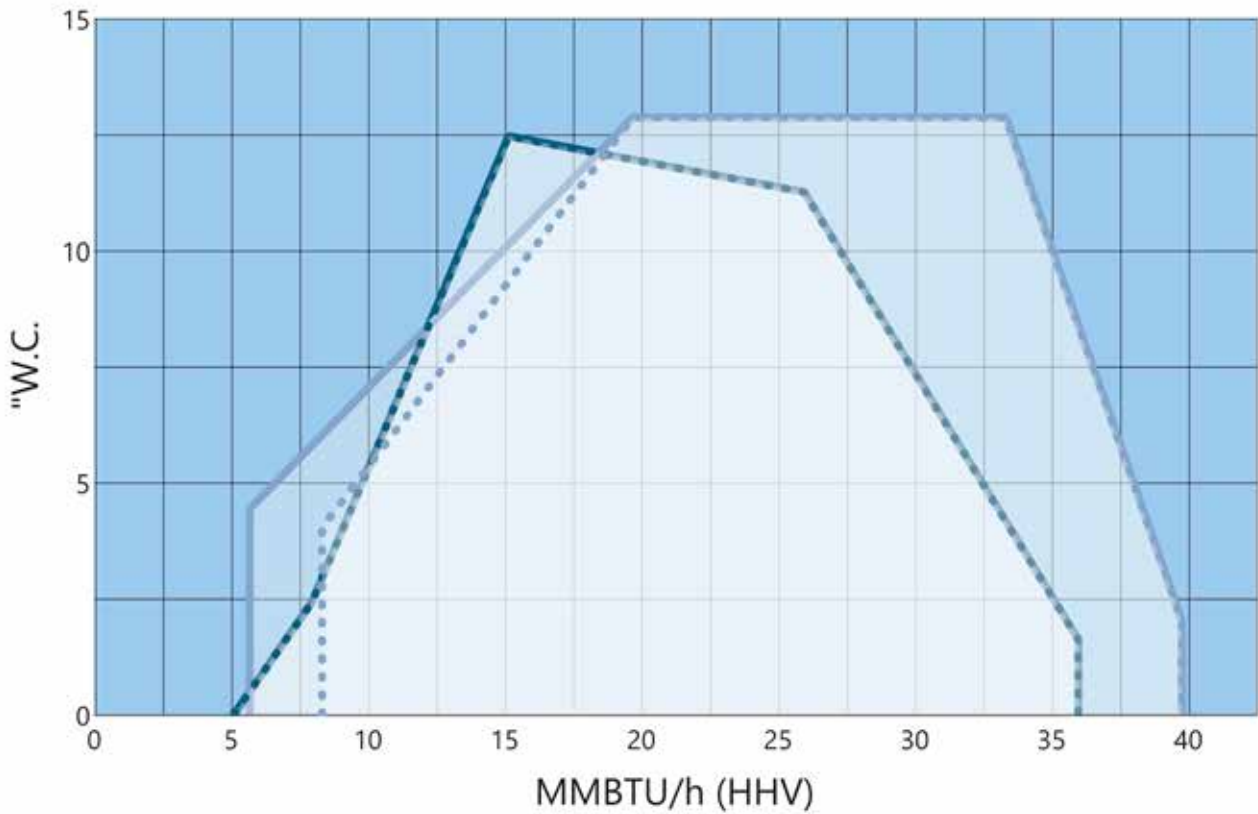
BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GKP-600 M	41.73	30.71	16.54	14.37	18.31	25.39	10.63	21.65	14.57	56.69	55.12
GKP-700 M	41.73	30.71	16.54	13.19	20.28	27.56	10.63	21.65	15.55	57.48	55.12
GKP-700 M-II	41.73	30.71	16.54	13.19	20.28	29.92	10.63	21.65	15.55	57.48	55.12
GKP-700 M-III	41.73	30.71	16.54	13.19	20.28	33.27	10.63	21.65	16.73	57.48	55.12

Dimensions in inches.

Working Diagram



— GKP-600 M GAS — GKP-700 M GAS
... GKP-600 M OIL ... GKP-700 M OIL



— GKP-700 M-II GAS — GKP-700 M-III GAS
... GKP-700 M-II OIL ... GKP-700 M-III OIL

GKP-600 M...700 M

GKP-600 M LN80/ GKP-700 M-III LN80

Technical Data

BURNER	GKP-600 M LN80	GKP-700 M-II LN80	GKP-700 M-III LN80
Capacity MMBtu/h	3.8 - 24.4	4.5 - 28.8	6.3 - 33.3
gal/h	40.4 - 175.6	31.1 - 198.9	43.5 - 230.6
Burner motor			+ frequency converter
3~ 208-600 V 60 Hz			
Output hp	20	30	40
Current A/460 V	23.4	34	45
Speed rpm	3510	3510	2970*
Oil hose connection			
- suction	3/4" NPT	3/4" NPT	3/4" NPT
- return	3/4" NPT	3/4" NPT	3/4" NPT
Oil pump	TAR5	T4	T4
- Motor			
3~ 208-600 V 60 Hz			
Output hp	3	5.5	5.5
Current A/460 V	3.8	6.7	6.7
Speed rpm	3510	3510	3510
Regulating valve	-	TV4001	TV4001
Control unit	WDx00	WDx00	WDx00
Weight lb**	1378	1731	1775

*) The frequency must be converted to 50 Hz

**) Only burner

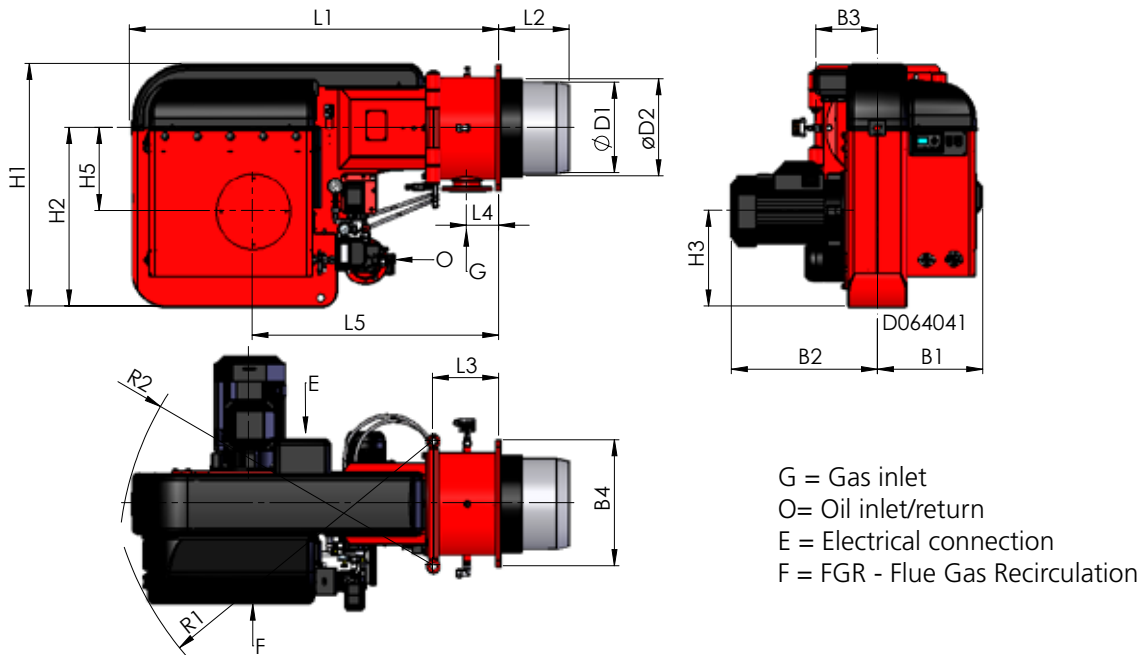
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:6 (100 - 16,6%)

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions

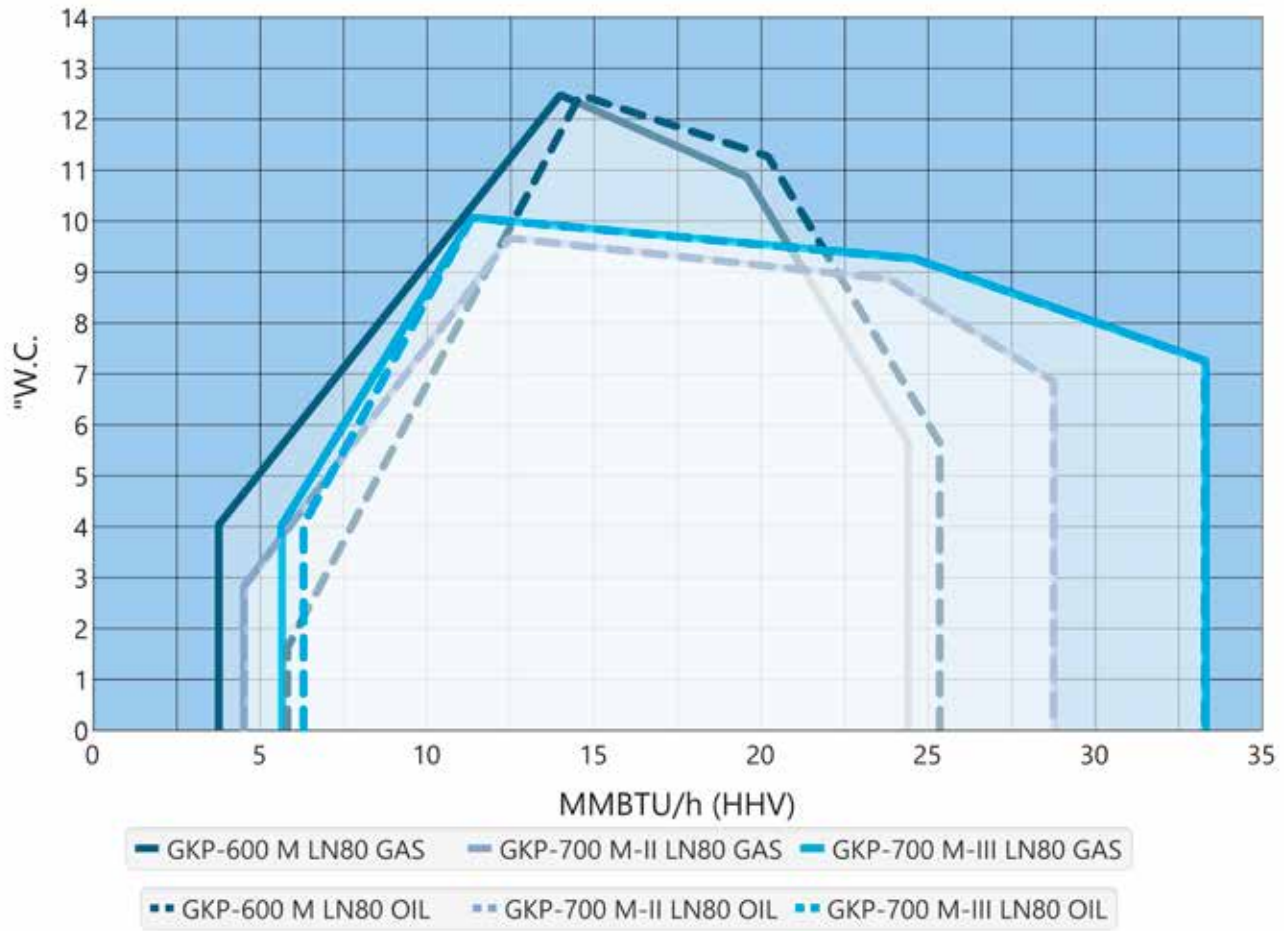


BURNER	L1	L2	L3	L4	L5
GKP-600 M LN80	64.96	20.87	11.61	5.71	42.91
GKP-700 M-II LN80	64.96	20.87	11.61	5.71	47.24
GKP-700 M-III LN80	64.96	24.02	11.61	5.71	47.24

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	ØD2	R1	R2
GKP-600 M LN80	41.73	30.71	16.54	14.37	18.31	25.39	10.63	21.65	15.12	-	56.69	55.12
GKP-700 M-II LN80	41.73	30.71	16.54	13.19	20.28	29.92	10.63	21.65	15.98	-	57.48	55.12
GKP-700 M-III LN80	41.73	30.71	16.54	13.19	20.28	33.27	10.63	21.65	15.98	-	57.48	55.12

Dimensions in inches.

Working Diagram



GKP-1000/1200 M

Technical Data

BURNER	GKP-1000 M	GKP-1200 M
Capacity MMBtu/h gal/h	6.8 - 42.0 47.2 - 290.6	8.3 - 50.4 57.5 - 348.1
Burner motor 3~ 208-600 V 60 Hz Output hp Current A/460 V Speed rpm*	+ frequency converter 50 55.9 2970	+ frequency converter 60 66.7 2970
Oil pipe connections	2 x Ø 22 mm	2 x Ø 22 mm
Control unit	WDx00	WDx00
Weight lb**	1720	1830

*) The frequency must be converted to 50 Hz

**) Only burner

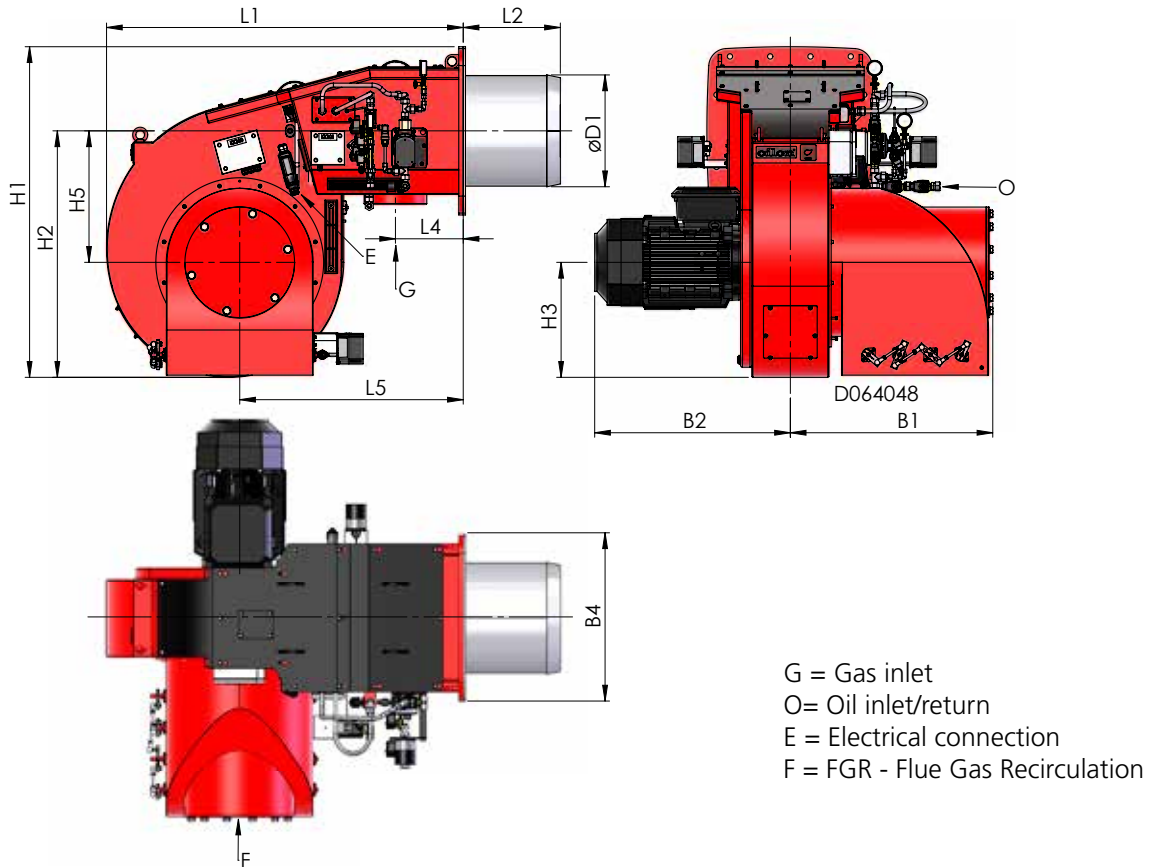
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:5 (100 - 20%)

Ratio level LFO 1:3 (100 - 33,3%)

Note! The weight varies according to delivery contents.

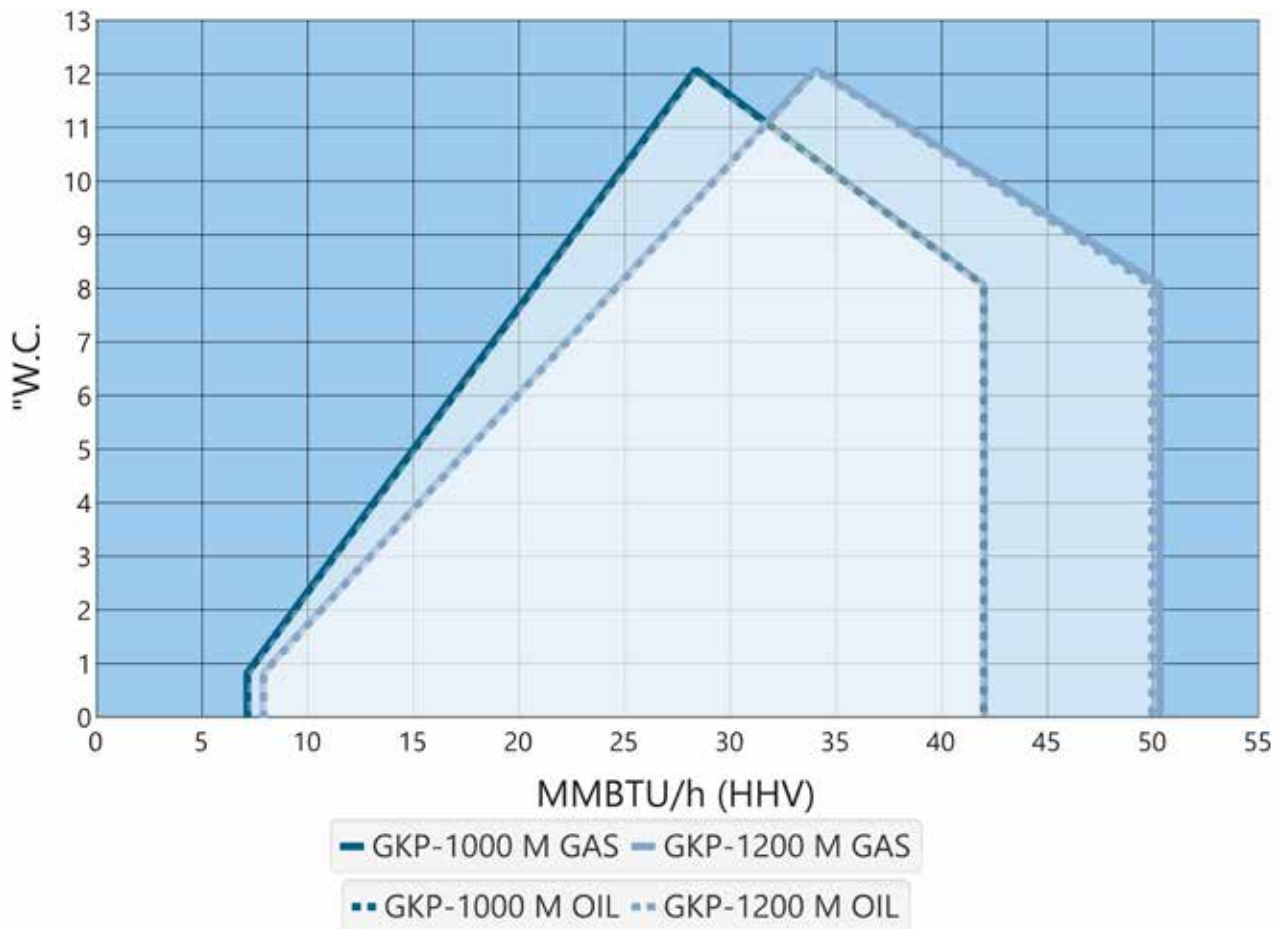
Dimensions



BURNER	L1	L2	L4	L5	H1	H2	H3	H5	B1	B2	B4	ØD1
GKP-1000 M	62.99	17.09	11.93	39.37	57.87	43.31	20.08	23.03	35.63	34.65	29.53	19.53
GKP-1200 M	62.99	17.09	11.93	39.37	57.87	43.31	20.08	23.03	35.63	36.61	29.53	20.47

Dimensions in inches.

Working Diagram



Scope of Delivery GKP-140...1200

	140...280	320...450	500...700	1000...1200
Hinge flange with limit switch	x	-	x	-
Burner flange gasket	x	x	x	x
WiseDrive (electronic ratio control)	x	x	x	x
Ignition transformer	x	x	x	x
Ignition cables and electrodes	x	x	x	x
Flame sensor, WDX00/QRI (continuous operation)	x	x	x	x
Inbuilt combustion air fan	x	x	x	x
Air damper with servomotor	x	x	x	x
Combustion head optimizer with servomotor, WDX00	-	-	x	x
Gas damper with servomotor	x	x	x	x
Gas nozzle	x	x	x	x
Connection for measuring the pressure in gas nozzle	x	x	x	x
Gas pressure switch, max.	x	x	x	x
Differential air pressure switch	x	x	x	x
Double solenoid valve for gas	x	x	x	x
Pressure switch for gas, min.	x	x	x	x
Automatic valve leak testing for gas	x	x	x	x
Oil nozzle	x	x	x	x
Solenoid valves for oil	x	x	x	x
Oil pump with pressure regulation valve	x	x	x	-
Oil regulating valve with servomotor	x	x	x	x
Separate motor for oil pump	x	x	x	-
Pressure gauge/gauges for oil	x	x	x	x
Pressure switch for return oil	x	x	x	x
2 oil hoses, 78.74 inches	x	x	x	-
Oil filter	x	x	x	-
Manual	x	x	x	x

x Standard

Options

FGR equipment	x	x	x	x
Fan pressure gauge	x	x	x	x
VSD equipment***	x	x	x	x
Extended combustion head	x	x	x	-
Turbo combustion head for flame shaping	x	x	x	x
Ignition gas valve and piping**	x	x	-	-
Gas pressure gauge	x	x	x	x
LPG use	x	x	x	x
Deaerator for oil	x	x	x	-
Pressure gauge for monitoring of inlet oil pressure	x	x	x	x
Pressure switch for monitoring of inlet oil pressure	x	x	x	x
Oil pressure (nozzle and return) transmitter	x	x	x	x

*) Not in LN80 and LN60 burners

**) Always in LN80 burners

***) Included in -700 M-II and 1000/1200 M

Light Fuel Oil Burners

KP-350/450 M

Technical Data

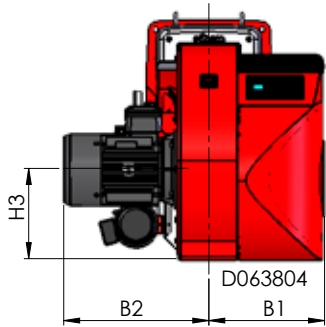
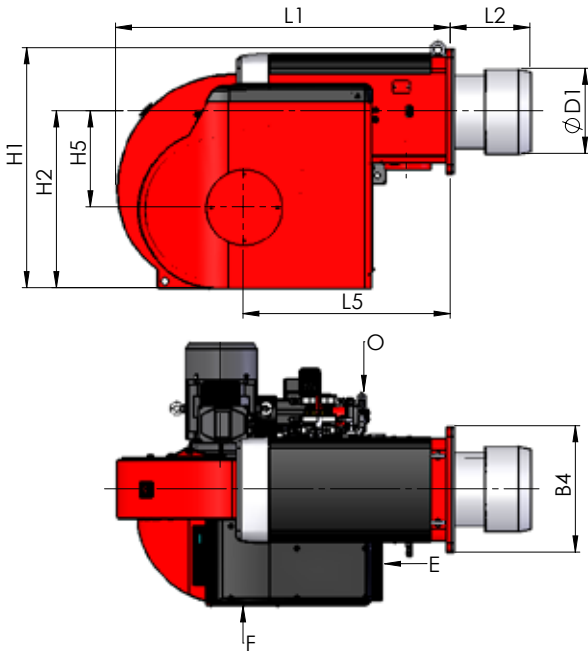
BURNER	KP-350 M	KP-450 M
Capacity gal/h	42.0 - 111.9	57.5 - 143.0
Burner motor		
3~ 208-600 V 60 Hz		
Output hp	10	15
Current A/460 V	11.9	17.7
Speed rpm	3510	3510
Oil hose connection		
- suction	3/4" NPT	3/4" NPT
- return	3/4" NPT	3/4" NPT
Oil pump		
- Motor		
3~ 208-600 V 60 Hz		
Output hp	2	2
Current A/460 V	2.8	2.8
Speed rpm	3510	3510
Control unit	WDx00	WDx00
Weight lb*	750	1036

*) Only burner

Ratio level LFO 1:2,5 (100 - 40%)

Note! The weight varies according to delivery contents.

Dimensions

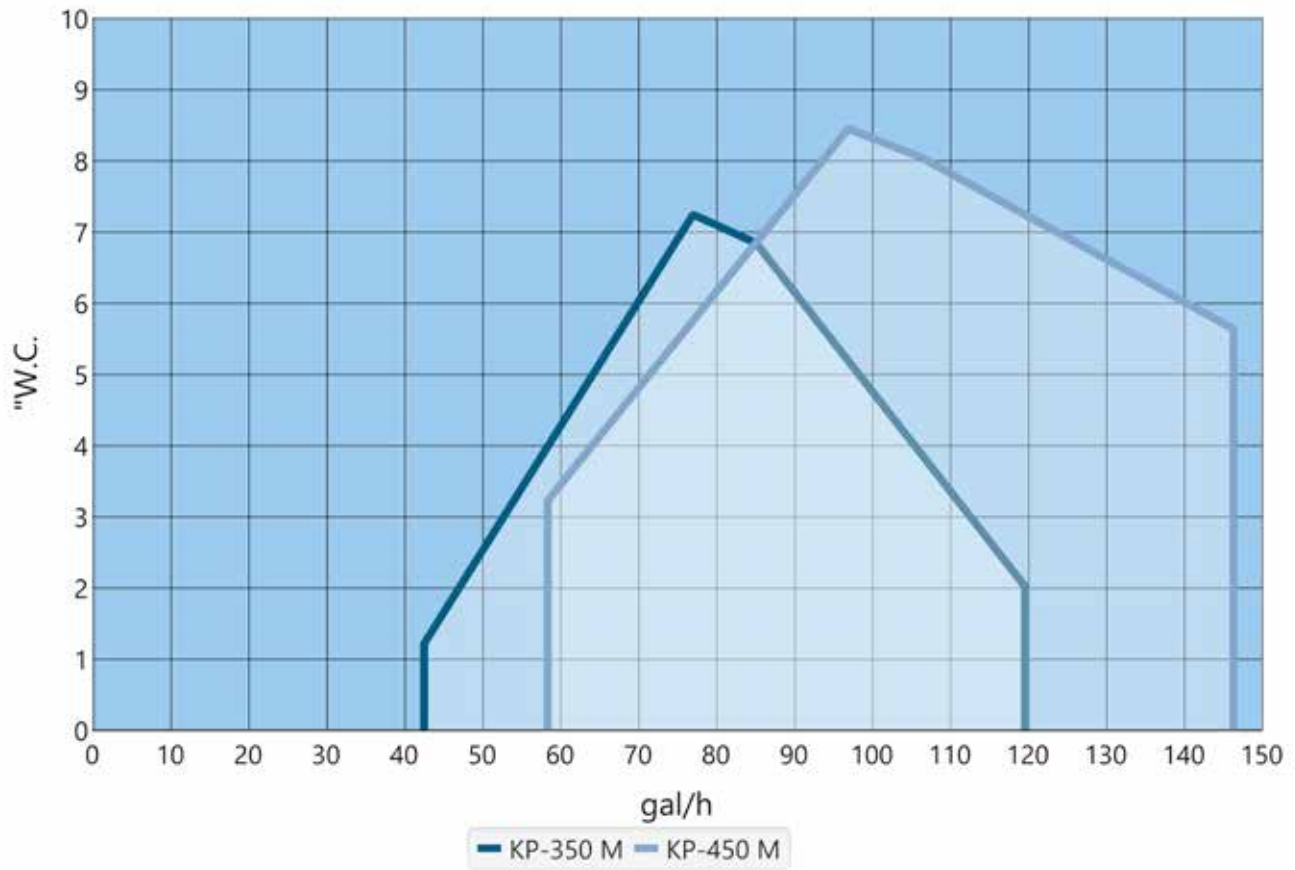


O= Oil inlet/return
E = Electrical connection
F = FGR - Flue Gas Recirculation

BURNER	L1	L2	L5	H1	H2	H3	H5	B1	B2	B4	ØD1
KP-350 M	53.54	13.78	31.89	37.01	27.36	13.98	13.58	19.29	20.87	19.29	12.60
KP-450 M	57.87	13.78	35.83	41.34	30.31	15.55	16.54	20.08	25.59	21.65	14.57

Dimensions in inches.

Working Diagram



Scope of Delivery KP-350/450

	350/450 M
Burner flange gasket	x
WiseDrive (electronic ratio control)	x
Ignition transformer	x
Ignition cables and electrodes	x
Flame sensor WDX00/QRI (continuous operation)	x
Inbuilt combustion air fan	x
Air damper with servomotor	x
Oil nozzle	x
Solenoid valves for oil	x
Oil pump with pressure regulation valve	x
Oil regulating valve with servomotor	x
Separate motor for oil pump	x
Pressure gauge/gauges for oil	x
Pressure switch for return oil	x
2 oil hoses, 78.74 inches	x
Oil filter	x
Manual	x

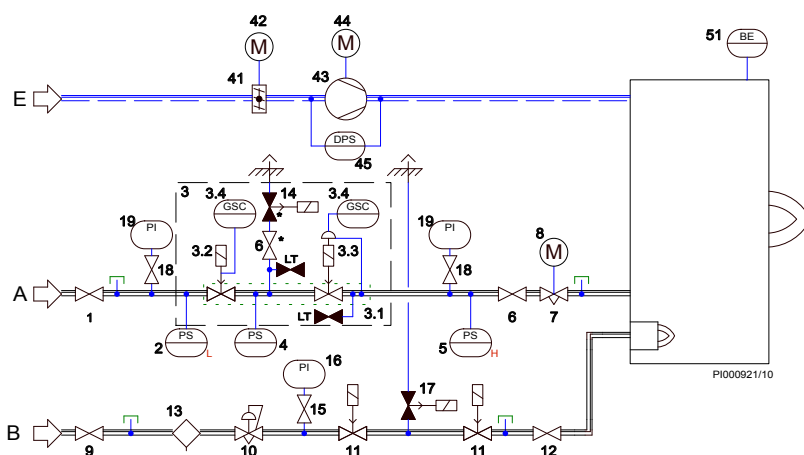
x Standard

Options

FGR equipment	x
Fan pressure gauge	x
VSD equipment	x
Extended combustion head	x
Turbo combustion head for flame shaping	x
Deaerator for oil	x
Pressure gauge for monitoring of inlet oil pressure	x
Pressure switch for monitoring of inlet oil pressure	x
Oil pressure (nozzle and return) transmitter	x

PI Diagrams

GAS, VGD VALVE, M BURNERS



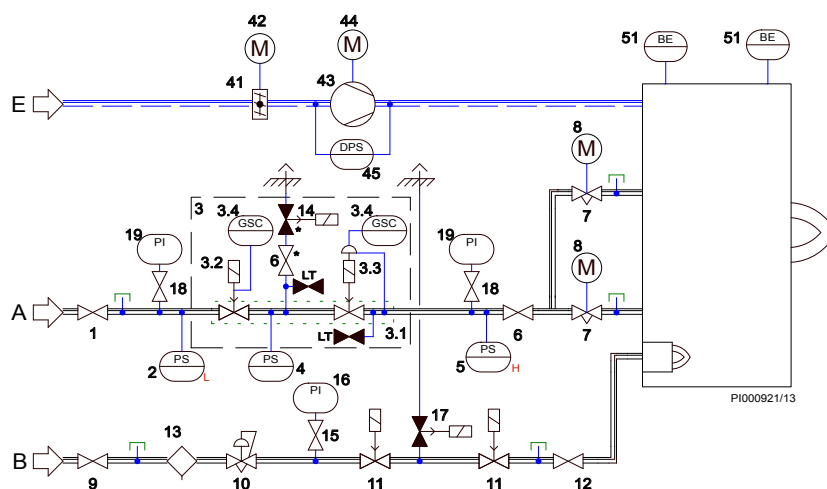
GAS PROCESS COMPONENTS

1. Manual shut-off valve
2. Pressure switch, low
3. Safety shut-off valve
- 3.1 Valve
- 3.2 Actuator
- 3.3 Actuator with pressure regulator
- 3.4 Proof of closure switch
4. Pressure switch
5. Pressure switch, high
6. Manual shut-off valve
7. Gas butterfly valve
8. Servomotor
9. Manual shut-off valve
10. Pressure regulator
11. Safety shut-off valve
12. Manual shut-off valve
13. Gas strainer
14. Automatic vent valve (NO)
15. Gauge valve (NFPA option)
16. Pressure gauge (NFPA option)
17. Automatic vent valve (NO) (NFPA option)
18. Gauge valve
19. Pressure gauge

* Alternative for valve proving system

A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

GAS, VGD VALVE, M LN 60 BURNERS



OIL PROCESS COMPONENTS

21. Manual shut-off valve
22. Filter
23. Oil pump
- 23.1 Oil pump
- 23.2 Oil regulation valve
24. Electric motor
25. Pressure switch, low
26. Gauge valve
27. Pressure gauge
28. Safety shut-off valve
- 28.1 Proof of closure switch
29. Solenoid valve, ignition oil
30. Oil regulator valve
31. Servomotor
32. Pressure switch, high
33. Non-return valve
34. Shut-off valve
35. Needle valve
36. Pressure gauge

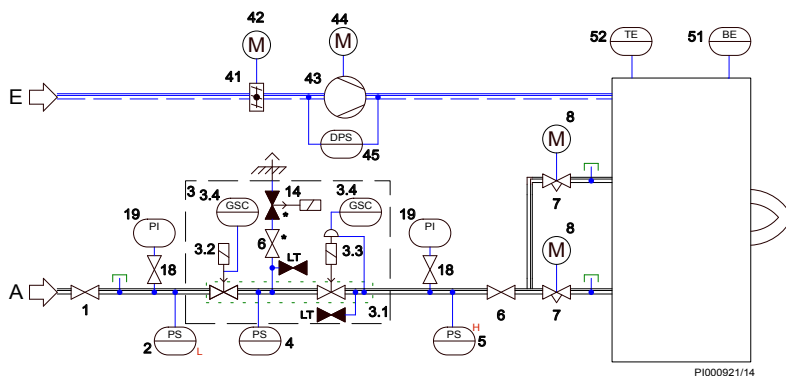
AIR PROCESS COMPONENTS

41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air

OTHER COMPONENTS

51. Flame detector
52. Back flame sensor

GAS, VGD VALVE, 130/250 M LN30 BURNERS



GAS PROCESS COMPONENTS

1. Manual shut-off valve
2. Pressure switch, low
3. Safety shut-off valve
- 3.1 Valve
- 3.2 Actuator
- 3.3 Actuator with pressure regulator
- 3.4 Proof of closure switch
4. Pressure switch
5. Pressure switch, high
6. Manual shut-off valve
7. Gas butterfly valve
8. Servomotor
9. Manual shut-off valve
10. Pressure regulator
11. Safety shut-off valve
12. Manual shut-off valve
13. Gas strainer
14. Automatic vent valve (NO)
15. Gauge valve (NFPA option)
16. Pressure gauge (NFPA option)
17. Automatic vent valve (NO) (NFPA option)
18. Gauge valve
19. Pressure gauge

* Alternative for valve proving system

A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

OIL PROCESS COMPONENTS

21. Manual shut-off valve
22. Filter
23. Oil pump
- 23.1 Oil pump
- 23.2 Oil regulation valve
24. Electric motor
25. Pressure switch, low
26. Gauge valve
27. Pressure gauge
28. Safety shut-off valve
- 28.1 Proof of closure switch
29. Solenoid valve, ignition oil
30. Oil regulator valve
31. Servomotor
32. Pressure switch, high
33. Non-return valve
34. Shut-off valve
35. Needle valve
36. Pressure gauge

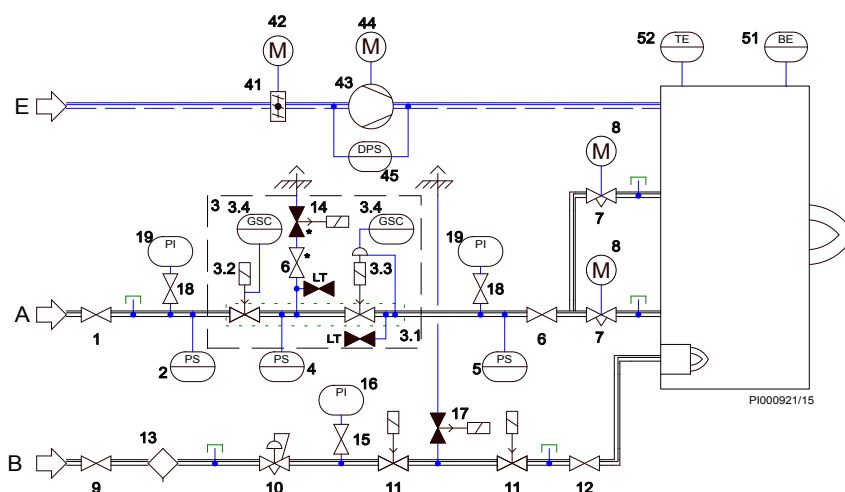
AIR PROCESS COMPONENTS

41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air

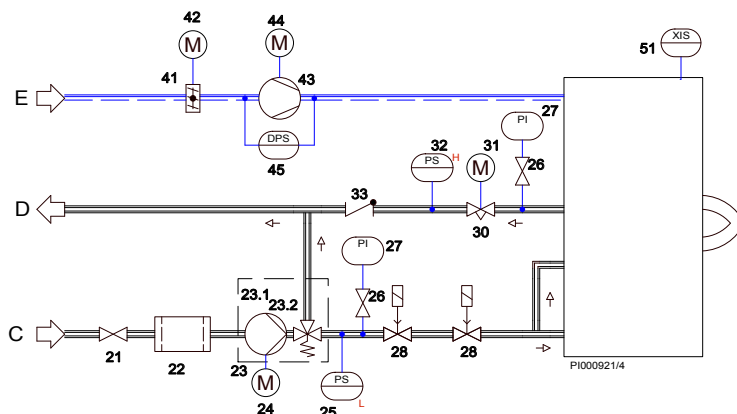
OTHER COMPONENTS

51. Flame detector
52. Back flame sensor

GAS, VGD VALVE, 320...600 M-II LN30 BURNERS



LIGHT FUEL OIL, 140...280 M BURNERS



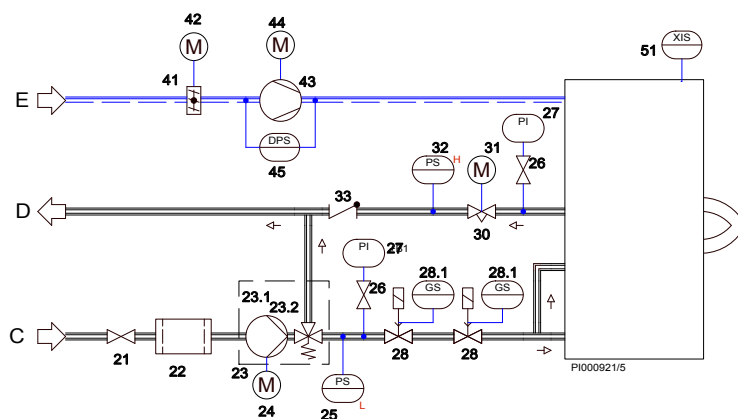
GAS PROCESS COMPONENTS

1. Manual shut-off valve
2. Pressure switch, low
3. Safety shut-off valve
- 3.1 Valve
- 3.2 Actuator
- 3.3 Actuator with pressure regulator
- 3.4 Proof of closure switch
4. Pressure switch
5. Pressure switch, high
6. Manual shut-off valve
7. Gas butterfly valve
8. Servomotor
9. Manual shut-off valve
10. Pressure regulator
11. Safety shut-off valve
12. Manual shut-off valve

OIL PROCESS COMPONENTS

21. Manual shut-off valve
22. Filter
23. Oil pump
- 23.1 Oil pump
- 23.2 Oil regulation valve
24. Electric motor
25. Pressure switch, low
26. Gauge valve
27. Pressure gauge
28. Safety shut-off valve
- 28.1 Proof of closure switch
29. Solenoid valve, ignition oil
30. Oil regulator valve
31. Servomotor
32. Pressure switch, high
33. Non-return valve
34. Shut-off valve

LIGHT FUEL OIL, 350...700 M BURNERS



AIR PROCESS COMPONENTS

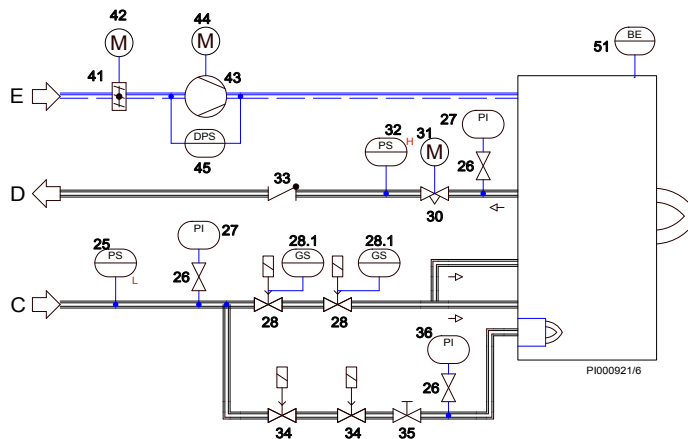
41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air, not for KP-models

OTHER COMPONENTS:

51. Flame detector

- A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

LIGHT FUEL OIL, 1000/1200 M BURNERS



GAS PROCESS COMPONENTS

1. Manual shut-off valve
2. Pressure switch, low
3. Safety shut-off valve
- 3.1 Valve
- 3.2 Actuator
- 3.3 Actuator with pressure regulator
- 3.4 Proof of closure switch
4. Pressure switch
5. Pressure switch, high
6. Manual shut-off valve
7. Gas butterfly valve
8. Servomotor
9. Manual shut-off valve
10. Pressure regulator
11. Safety shut-off valve
12. Manual shut-off valve

OIL PROCESS COMPONENTS

21. Manual shut-off valve
22. Filter
23. Oil pump
- 23.1 Oil pump
- 23.2 Oil regulation valve
24. Electric motor
25. Pressure switch, low
26. Gauge valve
27. Pressure gauge
28. Safety shut-off valve
- 28.1 Proof of closure switch
29. Solenoid valve, ignition oil
30. Oil regulator valve
31. Servomotor
32. Pressure switch, high
33. Non-return valve
34. Shut-off valve
35. Needle valve
36. Pressure gauge

AIR PROCESS COMPONENTS

41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air,
not for KP-models

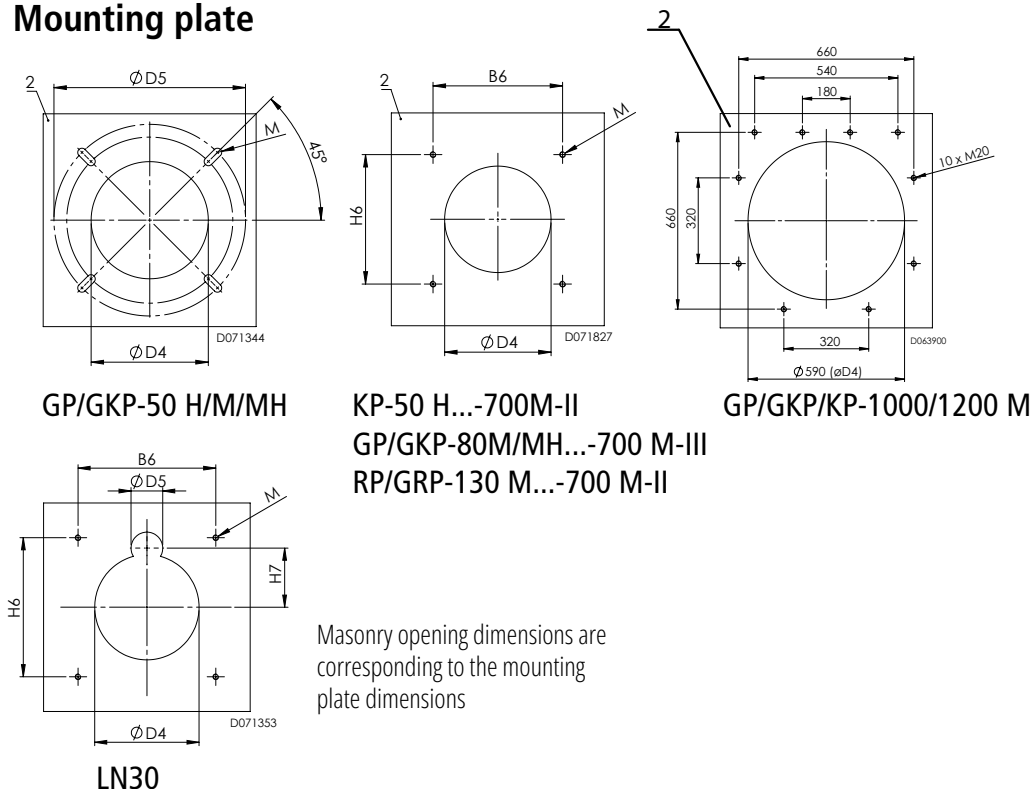
OTHER COMPONENTS:

51. Flame detector

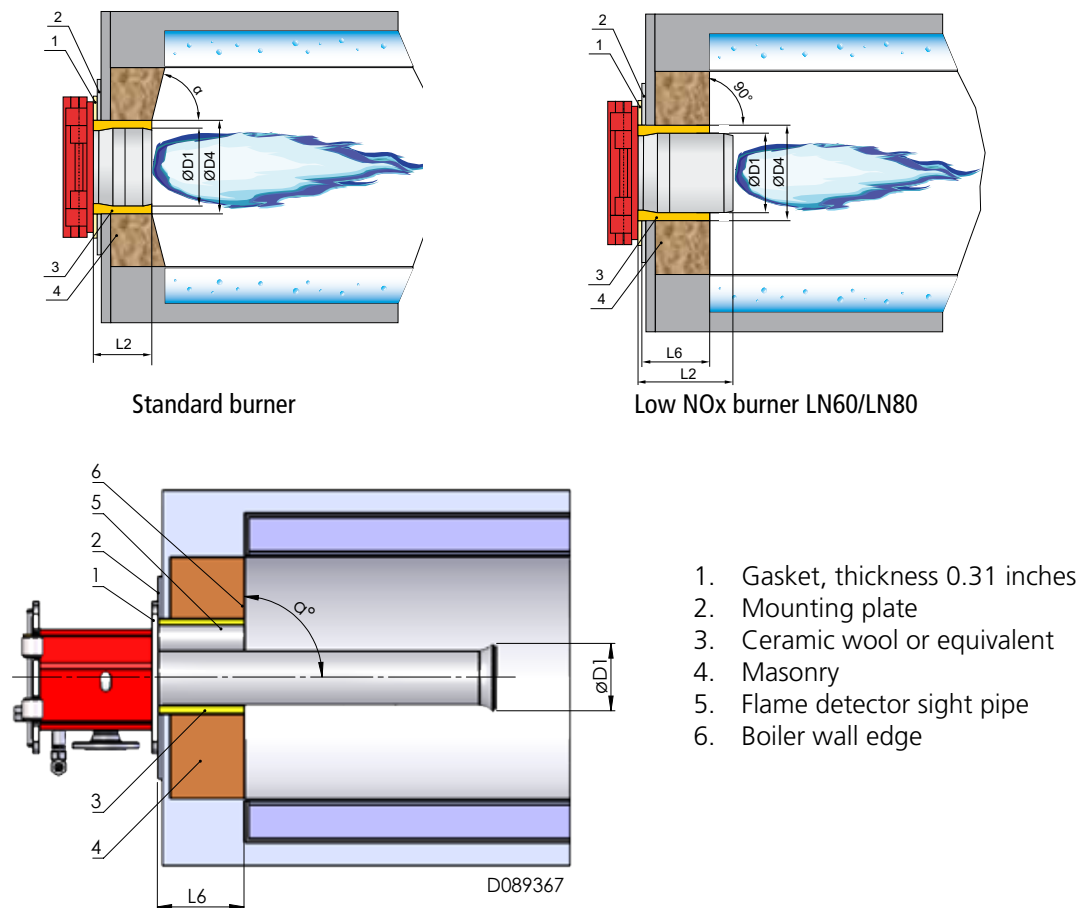
A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

Combustion head and masonry dimensions

Mounting plate



Burner mounting



Low NOx burner LN30

Masonry opening dimensions are corresponding to the mounting plate dimensions

Standard combustion head mounting dimensions

BURNER SERIE	B6	H6	ØD4	M	ØD1	L2	α
GP/GKP/KP-140 M/MH	10.83	10.83	10.63	4xM16	9.45	8.66	60° - 90°
GP/GKP/KP-150 M/MH	10.83	10.83	11.81	4xM16	10.63	9.06	60° - 90°
KP-250 M	14.37	14.37	11.81	4xM16	10.63	11.81	60° - 90°
GP/GKP-250 M/MH	14.37	14.37	11.81	4xM16	10.63	11.81	60° - 90°
KP-280 M	14.37	14.37	12.99	4xM16	11.81	12.28	60° - 90°
GP/GKP-280 M/MH	14.37	14.37	12.99	4xM16	11.81	12.28	60° - 90°
GP/GKP/KP-350 M	15.75	15.75	14.96	4xM20	12.60	13.78	60° - 90°
GP/GKP/KP-450 M	18.31	18.31	17.32	4xM20	14.57	13.78	60° - 90°
GP/GKP-600 M	18.31	18.31	17.32	4xM20	14.57	12.20	60° - 90°
KP-600 M	18.31	18.31	16.93	4xM20	14.57	11.22	60° - 90°
GP/GKP-700 M	18.31	18.31	17.91	4xM20	15.55	12.20	60° - 90°
KP-700 M	18.31	18.31	17.91	4xM20	15.55	12.20	60° - 90°
GP/GKP-700 M-II	18.31	18.31	17.91	4xM20	15.55	12.20	60° - 90°
KP-700 M-II	18.31	18.31	17.91	4xM20	15.55	12.20	60° - 90°
GP/GKP-700 M-III	18.31	18.31	18.90	4xM20	16.73	15.75	60° - 90°
GP/GKP-1000 M	See figure mounting plate 1000/1200				19.53	17.09	60° - 90°
GP/GKP-1200 M	See figure mounting plate 1000/1200				20.47	17.09	60° - 90°

Dimensions in inches.

Low NOx combustion head mounting dimensions, LN60/LN80

There are 1-2 combustion head length options (C1, C2) for each burner model. Choose correct combustion head length according to the boiler front wall thickness (L6). The front wall thicknesses are labeled in ranges with corresponding combustion head lengths (L2) in the table below.

BURNER SERIE	B6	H6	ØD4	M	ØD1	L2		L6	
						C1	C2	C1	C2
GP/GKP-140 M LN80	10.83	10.83	10.63	4xM16	9.45	-	16.93	-	9.44-14.96
GP/GKP-250 M LN80	14.37	14.37	11.42	4xM16	10.08	16.54	21.65	9.45-14.37	14.37-19.49
GP/GKP-280 M LN80	14.37	14.37	12.20	4xM16	10.87	16.54	21.65	9.45-14.37	14.37-19.49
GP/GKP-320 M LN80	15.75	15.75	14.17	4xM20	11.89	-	19.69	-	10.24-17.32
GP/GKP-350 M LN80	15.75	15.75	14.96	4xM20	12.76	-	18.90	-	10.24-17.32
GP/GKP-450 M LN80	18.31	18.31	14.96	4xM20	12.76	-	18.90	-	10.24-17.32
GP/GKP-600 M LN80	18.31	18.31	17.91	4xM20	15.12	-	20.87	-	10.24-17.32
GP/GKP-700 M-II LN80	18.31	18.31	17.91	4xM20	15.98	-	20.87	-	10.24-17.32
GP/GKP-700 M-III LN80	18.31	18.31	17.56	4xM20	15.98	-	24.02	-	11.42-21.06
GP-600 M LN60	18.31	18.31	16.54	4xM20	16.06	-	20.87	-	10.24-17.68
GP-700 M-III LN60	18.31	18.31	19.76	4xM20	16.54	-	24.02	-	11.42-20.55
GP-1000 LN80	See figure mounting plate 1000/1200				17.87	-	25.59	-	11.42-22.44

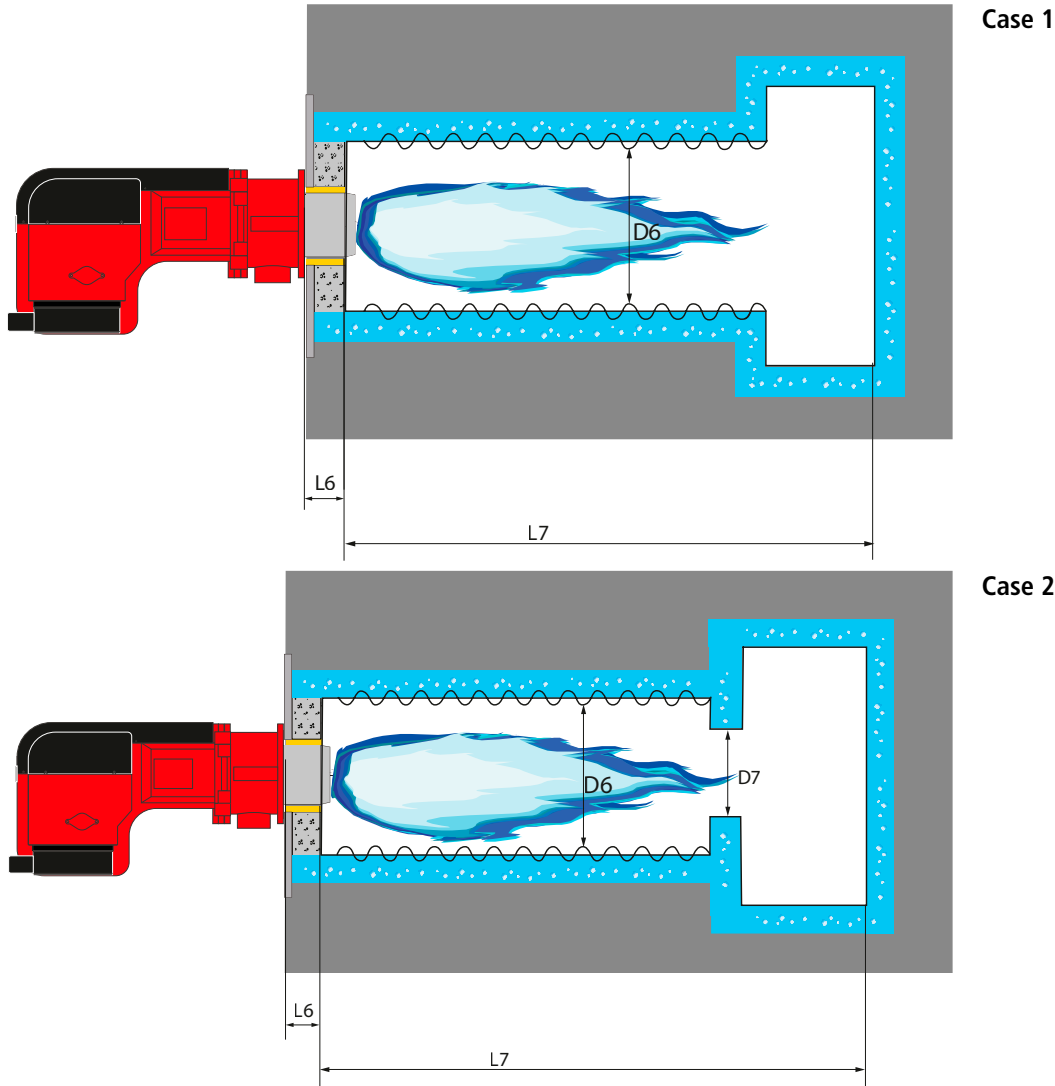
Dimensions in inches.

Low NOx combustion head mounting dimensions, LN30

BURNER SERIE	B6	H6	H7	ØD1	ØD4	ØD5	L6 max.	M	α
GP-130 M LN30	10,83	10,83	3,74	6,30	6,69	3,62	9,84	4xM16	90°
GP-250 M LN30	14,37	14,37	5,35	8,07	8,66	3,62	9,84	4xM16	90°
GP-320 M LN30	15,75	15,75	6,34	12,36	12,99	3,62	11,81	4xM20	90°
GP-600 M LN30	18,31	18,31	6,69	13,66	14,17	3,62	11,81	4xM20	90°
GP-600 M-II LN30	18,31	18,31	6,69	13,66	14,17	3,62	11,81	4xM20	90°

Dimensions in inches.

Combustion chamber dimensions for LN60 and LN80 burners



Minimum dimensions to meet 40 ppm emissions (LN80) and 30 ppm emissions (LN60).

BURNER SERIE	GP-600 M LN60	GP-700 M-III LN60	GP/GKP-140 M LN80	GP/GKP-250 M LN80	GP/GKP-280 M LN80	GP/GKP-320 M LN80	GP/GKP-350 M LN80	GP/GKP-450 M LN80	GP/GKP-600 M LN80	GP/GKP-700 M-II LN80	GP/GKP-700 M-III LN80	GP-1000 M LN80
D6 minimum *	43.1	46.7	26.7	29.4	31.4	34.9	37.3	38.4	45.1	47.1	49.4	53.7
D6 minimum **	45.1	48.6	28.2	31.4	33.3	36.9	39.2	40.8	47.8	49.8	52.5	57.3
L7 minimum ***	180.4	196.1	98.0	113.7	125.5	127.2	138.6	165.4	196.1	203.9	215.7	231.4

Dimensions in inches.

$D7 \text{ minimum} \geq D6 * 0.7$

L6 is an overall boiler front wall thickness, including refractory, steel front wall and a possible burner mounting plate.

* For hot water boiler (medium temperature max. +266 °F).

** For steam boiler (medium temperature max +410 °F).

*** May require longer furnace, if diameter is very wide.

Fuels: Natural gas

Combustion chamber dimensions for LN30 burners

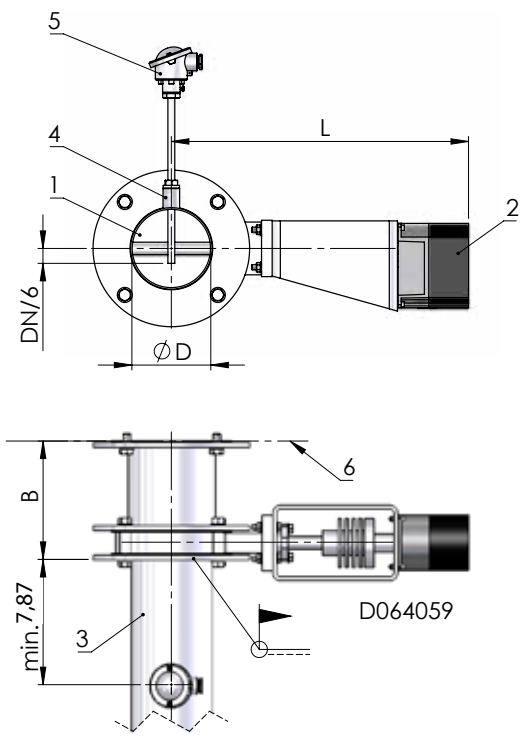
BURNER	GP-130 M LN30	GP-250 M LN30	GP-320 M LN30	GP-600 M LN30	GP-600 M-II LN30
Suitable furnace inner diameter, inches	17.72 - 27.56	25.59 - 38.98	32.48 - 51.18	36.02 - 62.99	43.31 - 75.59
Minimum furnace length, inches	84.65	98.43	118.11	137.80	165.35

The values in the table are indicative, the exact values should be checked in the Oilon Selection Tool.

Accessories

FGR - Butterfly valve dimension

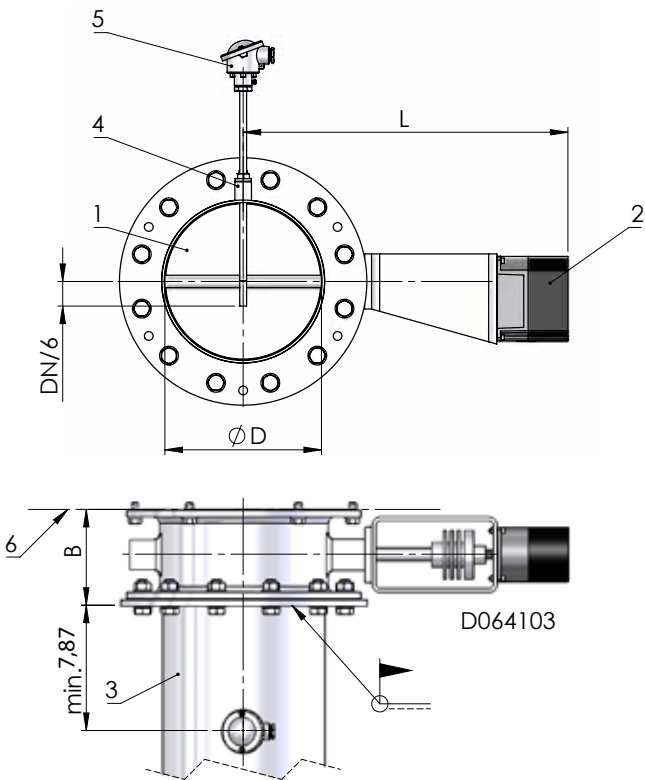
FGR max. temperature 482 °F



1. Butterfly valve FGR
2. Servomotor
3. FGR pipe, not included in the delivery
4. Sleeve 1/2", not included in the delivery
5. Temperature sensor
6. Burner

Burner	ØD	L	B
130...150	DN125 (NPS 5)	18.7	7.5
250...280	DN150 (NPS 6)	19.3	7.5
320...600	DN200 (NPS 8)	20.9	4.9

Dimensions in inches.



1. Butterfly valve FGR
2. Servomotor
3. FGR pipe, not included in the delivery
4. Sleeve 1/2", not included in the delivery
5. Temperature sensor
6. Burner

Burner	ØD	L	B
700	DN250 (NPS 10)	20.5	6.1
1000	DN300 (NPS 12)	21.9	7.2
1200	DN350 (NPS 14)	23.0	7.2

Accessories WDX00

Pressure Transducers	
-	0-30 PSI, 4-20mA, 1/4" NPT, 7MF-421-030
-	0-150 PSI, 4-20mA, 1/4" NPT, 7MF-421-150
-	0-200 PSI, 4-20mA, 1/4" NPT, 7MF-421-200
-	0-300 PSI, 4-20mA, 1/4" NPT, 7MF-421-300
Temperature Sensors	
-	Water temp., PT1000 RTD, 1/2" NPT, 4" probe c/w well, 544-577-40
-	Water temp., PT1000 RTD, 1/2" NPT, 6" probe c/w well, 544-577-60
-	Flue Gas, PT1000, -50-900F, 1/4" x 10" SS probe 1/2" NPT, QAM-P210
-	Ambient temp sensor, Nickel, 1000 Ohm, 2-wire, -58-158F, QAC22
Electrical Components	
-	Siemens LMV52 upgrade for O2 trim, VSD, efficiency
-	Quick connectors, military style, single fuel GP, 15 ft of black flex conduit pre-wired, burner to remote cabinet
-	Quick connectors, military style, dual fuel GKP, 15ft of black flex conduit pre-wired, burner to remote cabinet
-	A-B 194E 32A non-fused rotary disconnect switch
-	Emergency stop push button – panel mounted for 120V controls
-	NEMA 4 Cover for AZL on enclosure door
-	SQM45 NEMA 4 GASKET
-	SQM48 NEMA 4 GASKET
-	AGA66 NEMA 4 SKPx5...ACTUATOR
O2 Trim Components	
-	O2 MODULE PLL52
-	O2 SENSOR
-	40-60 CM WELDLESS FLUE GAS COLLECTOR
-	20-40 CM WELDLESS FLUE GAS COLLECTOR
-	CANBUS CABLE

Touchscreen Kits – TS-1000

- 6" TS-KT6XXX-XSX-XXXX - no draft control, no PLC, no Annunciation inputs
- 10" TS-KT0XXX-XSX-XXXX - no draft control, no PLC, no Annunciation inputs
- Note - above TS are basic, options such as PLC Annunciation, draft control, feedwater control, and gas meter require custom configuration and pricing
- Please consult factory for SCC Master Panel TS-2000 configuration & pricing

Communication Components

- TS-1050 Serial Communication kit – TS-5X-KT, RS232 to RS485
- TS-6000 Protocol converter, LMV-5-RS232 host, RS-485 field port, TS-PX2-X

Propane Adders

- Propane band LPG Band (50M)
- Propane band LPG Band (250-280)
- Biogas manifold drilling, composition to be check with Oilon sales

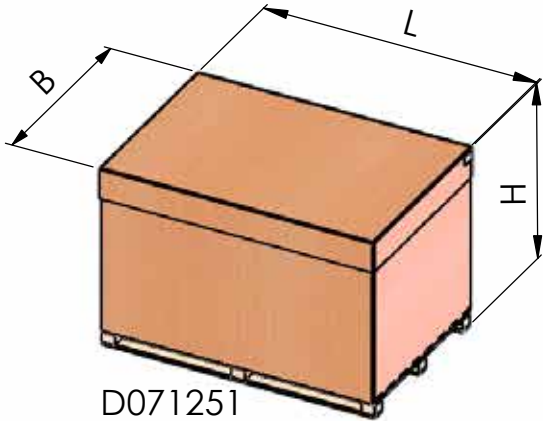
Gas Train Options

- CONSULT FACTORY FOR BIOGAS VRD GAS TRAINS

NFPA-85 (>12.5 MMBTU/h)

- 1 ½" gas strainer, cast iron
- 2" gas strainer, cast iron
- 2 ½" gas strainer, cast iron
- 3" gas strainer, cast iron
- 1/2" NPT NFPA-85 PILOT COMPLETE ASSEMBLY – INCLUDES NOV, GAUGE
- 3/4" NPT NFPA-85 PILOT – INCLUDES NOV, GAUGE
- 0-32" w.c. gas pressure gauge kit (PILOT OR MANIFOLD)
- 0-55" w.c. GAS PRESSURE GAUGE KIT
- 145PSIG (10Bar) oil inlet pressure gauge
- 1/2" NPT vent valve, normally open ASCO S262SH02N3DG5 - 120V
- 3/4" NPT Vent valve, normally open ASCO S262SH02N3EG5 - 120V
- 1" NPT Vent valve, normally open ASCO S262SH02N3FJ5 - 120V
- 1.25" NPT Vent valve, normally open ASCO S262SH02N3GJ7 - 120V
- 2.0" NPT Vent valve, normally open ASCO S262SH02N3JK4 - 120V
- 1.25" NPT Vent connection plate for VGD40.xxxU - Siemens AGA40.6580U
- 2.0" NPT Vent connection plate for VGD40.xxxU - Siemens AGA40.0100U
- 2.5" NPT Vent connection plate for VGD40.xxxU - Siemens AGA40.0150U
- TURBO COMBUSTION HEAD – TO REDUCE FLAME LENGTH
- EXTENDED COMBUSTION HEAD
- Consult factory for additional accessory requests

Packing

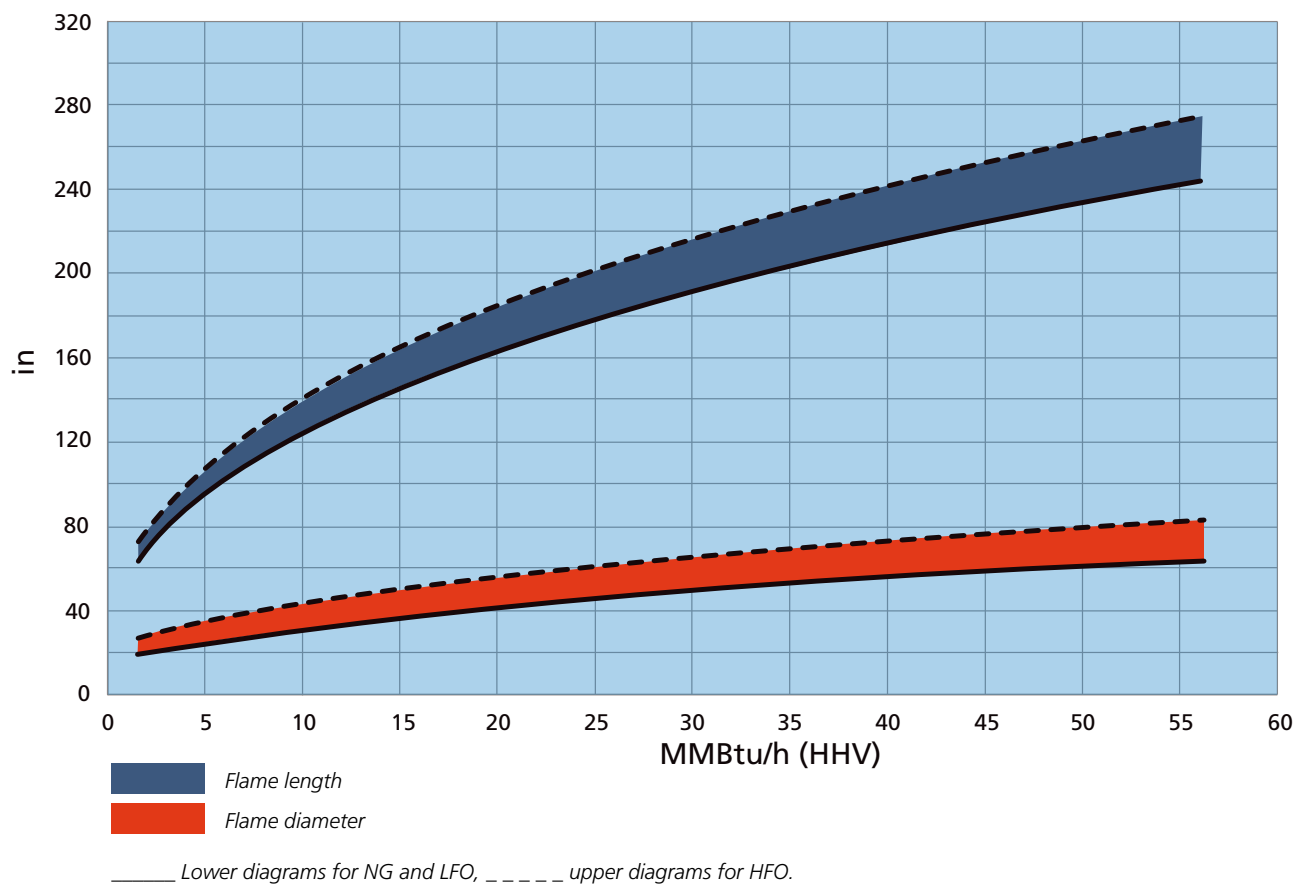


BURNER SERIE	Dimensions			Weight lb	Material standard
	L	B	H		
GP-350/450 M...	80.3	54.3	48.8	138.9	Board
GP-600 M...	80.3	54.3	48.8	138.9	Board
GP-700 M..700 M-III...	88.2	64.2	48.8	160.9	Board
GP-1000/1200 M...	85.8	73.6	72.0	529.1	Plywood
GKP-350/450 M...	64.6	48.0	34.6	121.3	Board
GKP-500/600 M...	80.3	54.3	48.8	138.9	Board
GKP-700 M..700 M-III...	88.2	64.2	48.8	160.9	Board
GKP-1000/1200 M...	85.8	73.6	72.0	529.1	Plywood
KP-350/450 M...	80.3	54.3	48.8	138.9	Board

Dimensions in inches.

General for all burners

Flame dimensions for combustion head



Flame dimensions Monoblock burners, standard combustion head

The diagram shows the flame dimension of an Oilon burner in a regular firetube boiler.

Gas valves

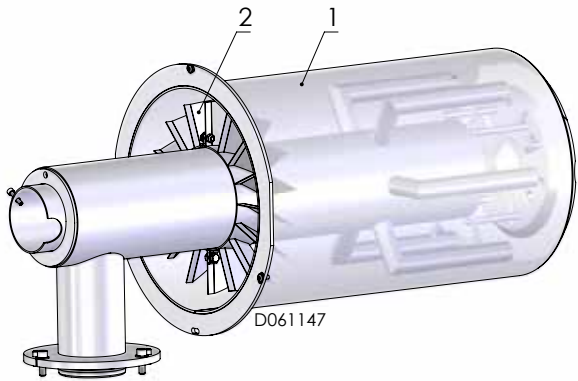
BURNER SERIES	Min. inlet gas pressure psi"	Max. inlet gas pressure psi"	Gas valve	
			Type	Size inch
GP/GKP-50/90 M/MH	0.73	7.25	VGG	2"
GP/GKP-140...280 M/MH	0.73	7.25	VDG	2" - 4"
GP/GKP-350/450 M	1.45	7.25	VDG	2" - 4"
GP/GKP-600...700 M-III	1.45	7.25	VDG	2.5"- 6"
GP/GKP-1000/1200 M	2.18	7.25	VDG	4" - 6"
GP/GKP-140...280 M LN80	0.73	7.25	VDG	2" - 6"
GP/GKP-320...450 M LN80	1.45	7.25	VDG	2" - 6"
GP/GKP-600 M...700 M-III LN80	1.45	7.25	VDG	2.5"- 6"
GP-1000 LN80	2.18	7.25	VDG	4" - 6"
GP-600 M/700 M-III LN60	7.25	8.70	VDG	2.5"- 6"
GP-130 M LN30	0.73	7.25	VDG	2" - 3"
GP-250/320 M LN30	1.45	7.25	VDG	2" - 6"
GP-600 M LN30	1.45	7.25	VDG	2" - 6"
GP-600 M-II LN30	2.90	7.25	VDG	2" - 6"

Accessories

92

Turbo combustion head for flame shaping

Example



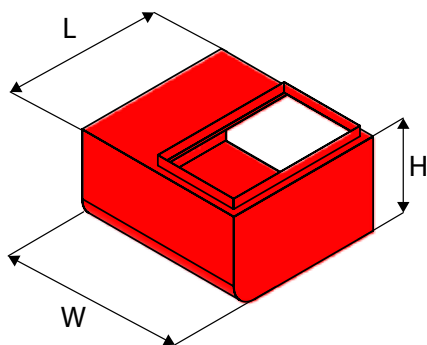
1. Combustion head
2. Turbo

Silencer

Air intake silencer

Construction

The silencer is made of steel plate lined with fire-proof dampening wool. The silencer is connected to the burner's suction side via a screw connection. The silencer reduces the high-pitched sound produced by the air flow.



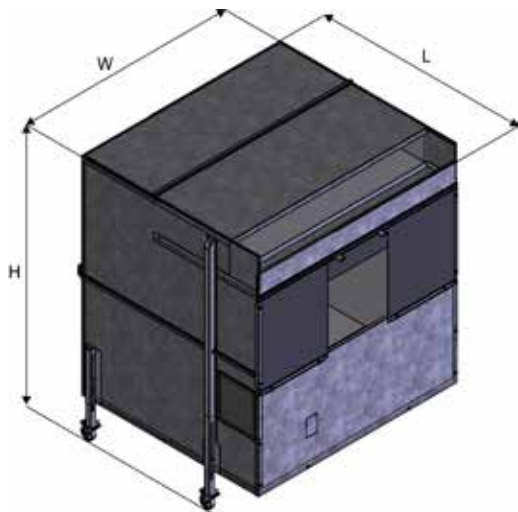
Burner	W	L	H
90	12.6	12.6	6.3
140/150	16.8	15.4	9.1
250/280	16.8	15.4	9.1
700	22.0	28.4	13.0
1000/1200	20.7	31.5	26.2

Dimensions in inches.

Hood silencer

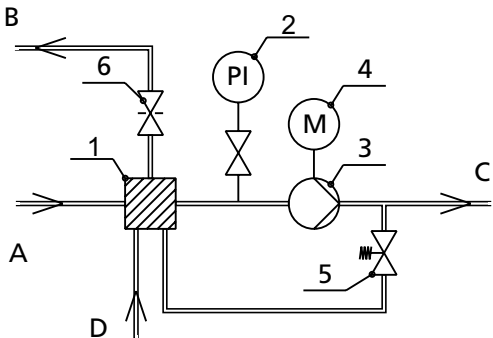
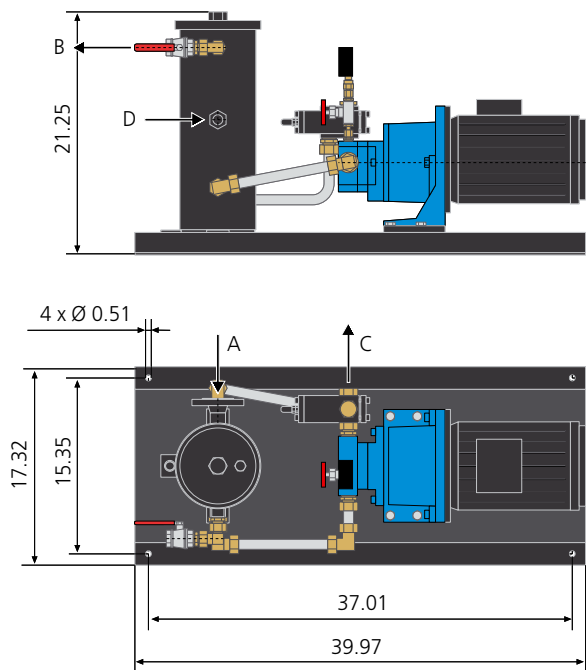
Construction

The silencer is made of steel plate lined with fireproof dampening wool. This wheel-equipped silencer isolates the burner from four sides. Silencer reduces the sounds produced when the burner operates. Delivered in plate parts.



Burner	W	L	H	
140...280	52.4	60.0	56.1	76.2
300...700	65.7	64.8	75.2	95.3
1000/1200	87.0	77.6	97.8	117.9

Booster unit



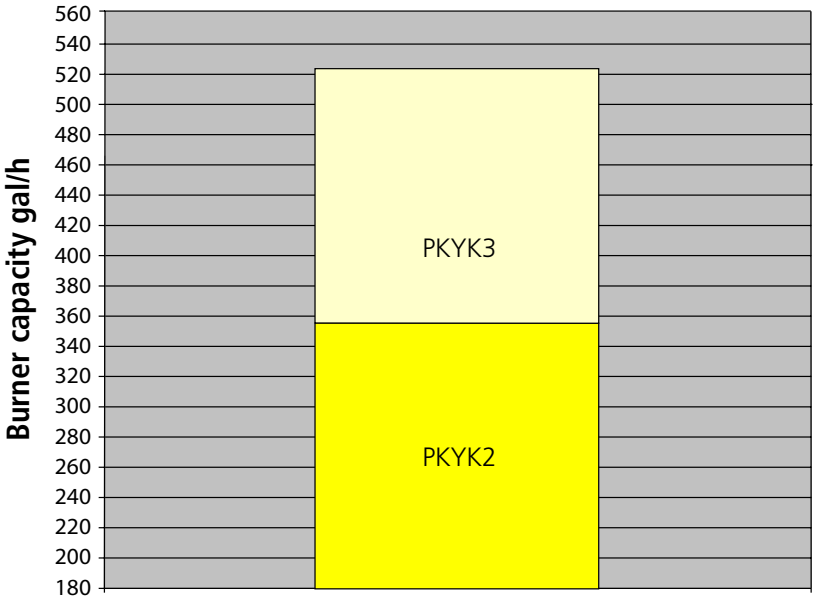
- 1 Oil filter
 - 2 Pressure gauge
 - 3 Oil pump
 - 4 Electric motor
 - 5 Pressure regulating valve
 - 6 Drilled ball valve
- A. Inlet to the booster unit NTP1, 400...2000 "WC 0.006...0.0019 in²/s
- B. Return from the booster unit R1/2"
- C. Inlet to the burner 0.8662 (Ø 22 mm)
- D. Return from the burner 0.8662 (Ø 22 mm)
- Dimensions in inches.

The booster unit is used for pumping light fuel oil with viscosity of 0.006...0.019 in²/s +20 °F. The oil coming to the booster unit must be filtered, max. filtration degree is 150 µm.

Booster unit	Motor 400 V/50 Hz		Oil pump	Pump output
	hp	r/min	Type	0.019 in ² /s 363 psi gal/h
PKYK 2	5.5	3000	T4 C	608
PKYK 3	5.5	3000	T5 C	890

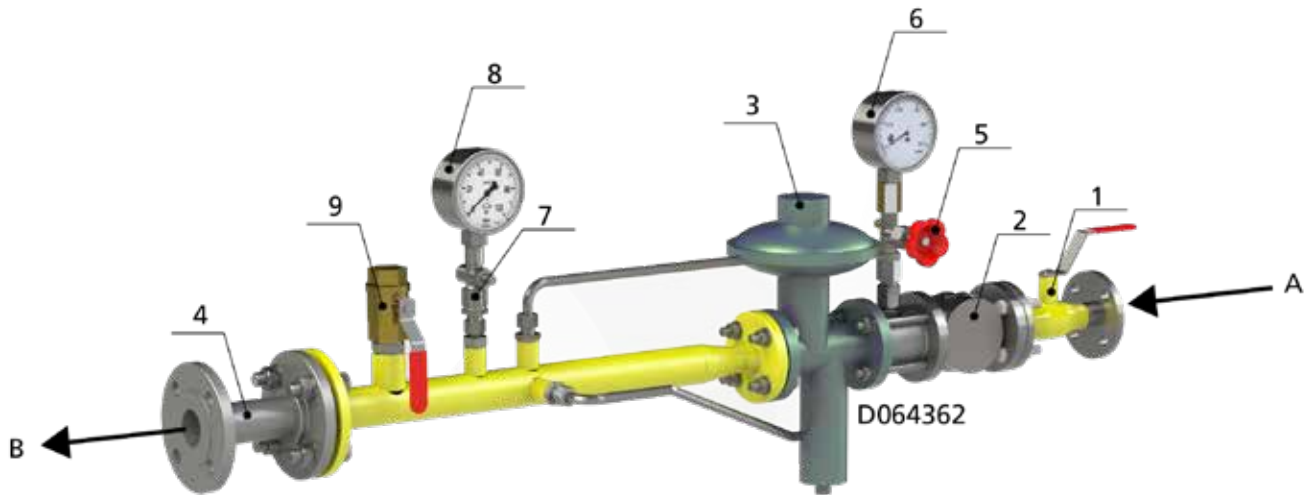
The output has been calculated using a density of 53 lb/ft³ for the light fuel oil.

Diagram 1
Selection of the booster unit for light fuel oil



Gas pressure control assembly

Example



1. Ball valve
2. Gas filter
3. Pressure regulator with safety shut-off valve and safety relief valve
4. Bellows compensator/gas hose
5. Pressure gauge valve
6. Pressure gauge, high pressure
7. Pressure gauge valve
8. Pressure gauge, low pressure
9. Ball valve, blow-off

- A Gas inlet
B Gas to burner

Oilon customer service and webshop



96

Commissioning and maintenance services

We have extensive expertise in burner technology and processes. We offer reliable commissioning, maintenance, and training services for all needs. With the help of our services, you can design a system that will meet environmental legislation and operate at optimal efficiency.

Technical support

The technical support service is for retailers, maintenance companies, and end clients. You can contact us with any questions about technical problems or warranty issues. We also design and implement updates for your burner systems with full expertise.

Spare part services

Our spare part services provide our clients with support throughout the equipment's lifecycle.

- spare part recommendations for both new and old systems
- spare parts for servicing and maintenance

Spare parts store

Maintenance companies and retailers can easily obtain spare parts directly from our online store. Contact our spare parts sales service and we will provide you with a password to access our spare parts store.

Please visit our spare parts store

<http://webshop.oilon.com>



Modern training facilities



We provide high level training on our products, and the goal of our product training is to improve the professional skills of installation and maintenance companies.

On theory lessons we provide important facts on the burner's operating environment and components. Practical exercises include burner adjustment and fault diagnostics, among many other things. We also underline the importance of low emission values for the environment.

Our Sales and Service Network



During our extensive years of operation, we have evolved from a small traditional burner manufacturer into a global well-known energy and environmental technology company.

Our strong commitment to research and development has resulted in growing staff know-how and a rapid increase in the product range.

We have production facilities and sales offices in Finland, USA, Brazil and China and resellers all over the world.

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