



Oil, Gas and Dual Fuel Monoblock Burners



Low Emission Combustion Technology

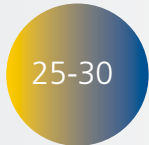
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Gas Burners
0.4 - 12.49 MMBtu/h



Dual Fuel Burners
Gas/Light Fuel Oil
0.8 - 12.49 MMBtu/h



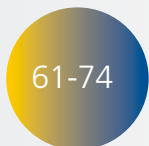
Light Fuel Oil Burners
0.8 - 12.49 MMBtu/h

WD3x Burners - Inbuilt Control System

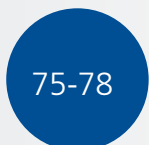
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Gas Burners
1.5 - 49.9 MMBtu/h



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



Light Fuel Oil Burners
6.0 - 20.6 MMBtu/h

WDX00 Burners - Separate Control Cabinet





For over half a century, we have developed and produced environmentally friendly and energy efficient combustion solutions for our customers.

During this time, the customer has always been at the center of our business. Perhaps this is the reason why we are known for our company slogan "Oilon-the warm way".



We are a family-owned technology company, founded in 1961. We are known for our combustion systems, industrial heat pumps and cooling units, ground source heat pumps and solar heat collectors.

We are a global company, with offices, production facilities and distributors around the world. Our headquarters is located in Lahti, Finland.



A modern Research and Development Centre, located in Lahti Finland, is equipped with the latest technology for running diverse combustion tests and collecting data. In addition to testing, we use computer modelling of combustion processes, using computational fluid dynamics (CFD).

We are especially committed to reducing nitrogen oxides (NO_x) and particulate emissions.

oilo

oilon[®] SERVICE
SERVICE - SUPPORT - SPAREPARTS
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Digital combustion control – optimal combustion efficiency

High quality components – Long lifecycle

Excellent price / quality ratio

Service friendly design – easy access to all components

Experience in special fuels

Global service network

Fully tested before delivery

Reliable and proven technology

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

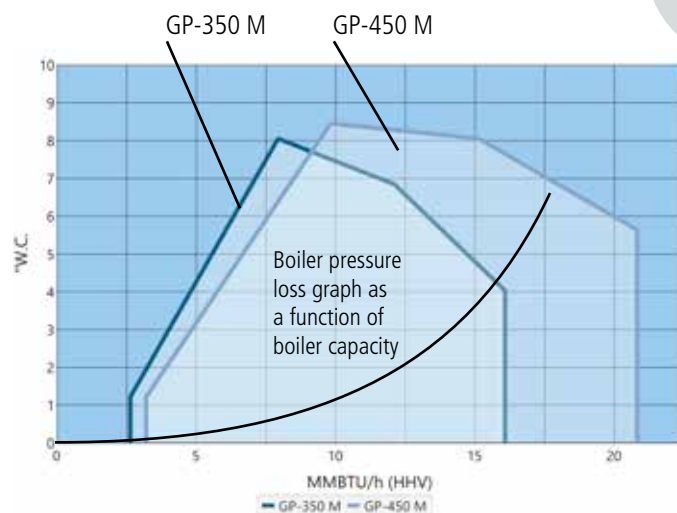
A. Procedure

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])/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])/ 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.

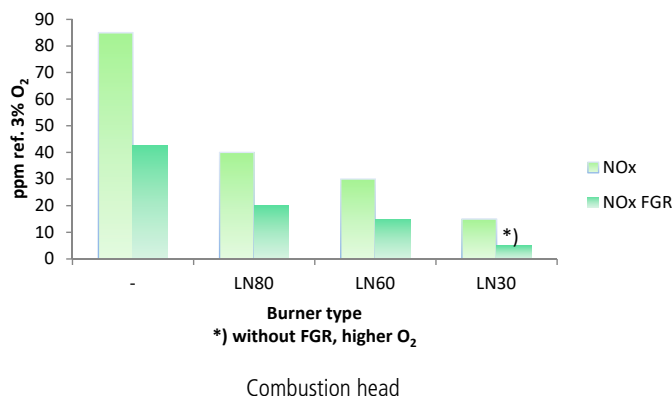
Nitrogen oxides form during all combustion processes, when the nitrogen present in the combustion air and/or fuel and the oxygen present in the combustion air, react at high temperatures.

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.

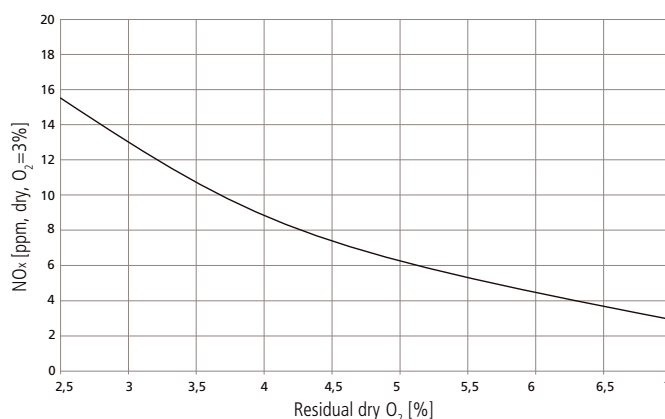
Effect of combustion head on NOx emissions, natural gas



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	WD33	WD34	WD100	WD200
Operation principle	Electronic fuel/air	Electronic fuel/air	Electronic fuel/air	Electronic fuel/air
Control unit	Lamtec BT330	Lamtec BT340	Siemens LMV 51	Siemens LMV 52
Available for fuels	LFO (KP) GAS (GP) -	LFO (KP) GAS (GP) GAS/LFO (GKP)	LFO (KP) GAS (GP) GAS/LFO (GKP)	LFO (KP) GAS (GP) GAS/LFO (GKP)
O ₂ control	Not available	Not available	Not available	Available
VSD control	Available	Available	Not available	Standard
Control panel interface	Symbol display	Symbol display	Text display	Text display
External communication	Hardwired + Modbus (Optional)	Hardwired + Modbus (Optional)	Hardwired + Modbus (Standard) Profibus (Optional)	Hardwired + Modbus (Standard) Profibus (Optional)
Capacity control	Lamtec LCM100 4...20 mA output signal	Lamtec LCM100 4...20 mA output signal	Built in LMV51 4...20 mA output signal	Built in LMV52 4...20 mA output signal
FGR	Not available	Not available	Not available	Available

BURNER CONTROL SYSTEMS	Inbuilt Control System		Separate Control Panel	
	WD33	WD34	WD100	WD200
GP-50 M / GP-90 M	X	-	-	-
GP-140 M...GP-280 M	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	-	-	-
GP-320 M LN30 / GP-350 M LN30	X	-	-	-
GKP-50 MH / GKP- 90 MH	-	X	-	-
GKP-140 MH...GKP- 280 MH	-	X	-	-
GKP-140 M...GKP-1200 M	-	-	X	X
GKP-140 M LN80...GKP-700 M-III LN80	-	-	X	X
KP-50 H / KP-90 H	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):

-
WD3x = Lamtec BT300
WDx00 = 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:

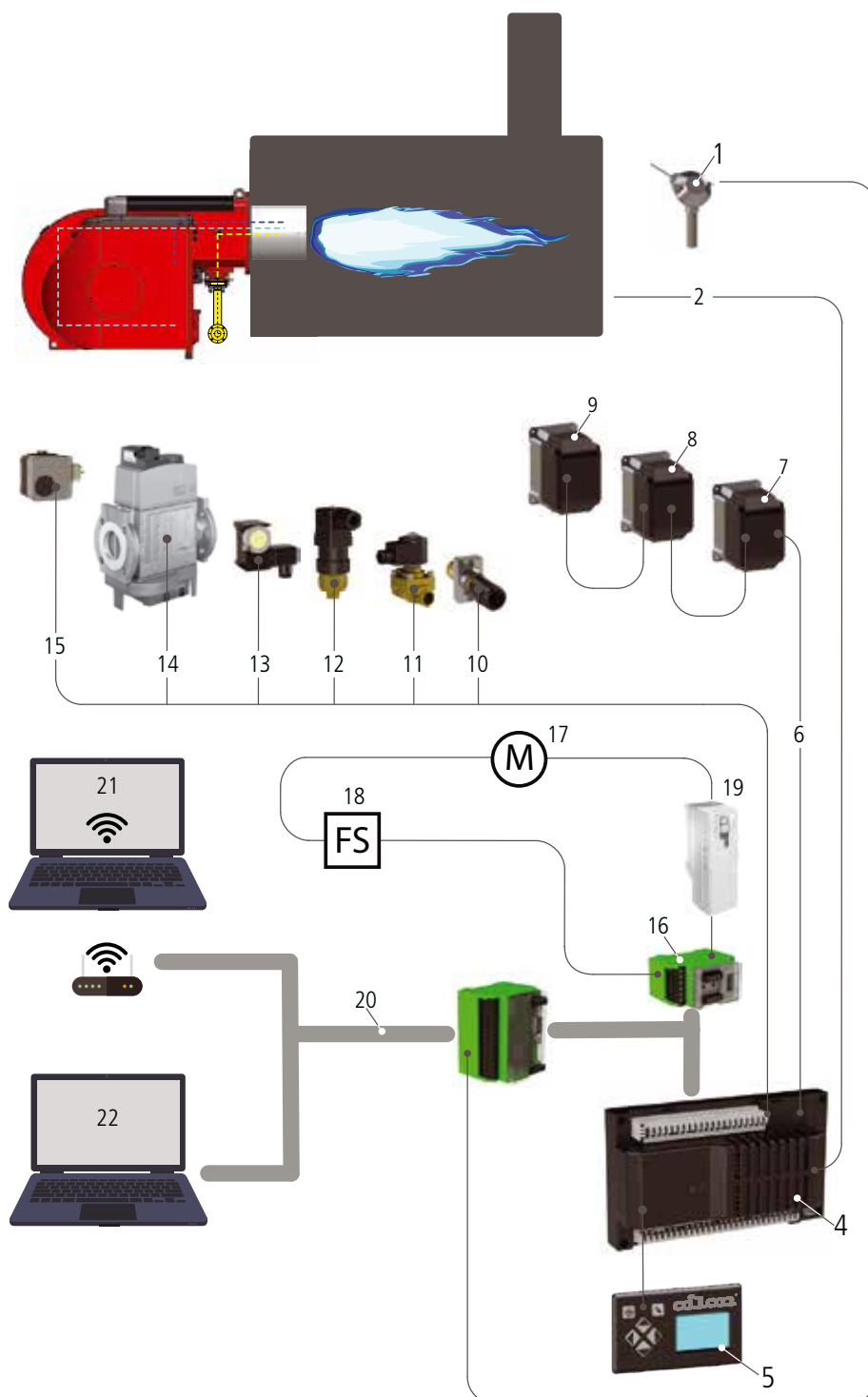
GP = Gas
GKP = Gas, light fuel oil
KP = Light fuel oil
RP = Heavy fuel oil
GRP = Gas, heavy fuel oil



**WD3x - Inbuilt
Control System**

Oilon WiseDrive WD3x

Example of Oilon WiseDrive WD34 + frequency converter



Examples of the WiseDrive's functions:

- Control sequences and safety functions
- Fuel/air ratio control
- Load control with inbuilt PID controller, control also by an external 4...20 mA signal
- Can be connected with external plant automation via bus (option)
- 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. User interface
6. CAN BUS - Servomotor
7. Gas damper
8. Air damper
9. Oil regulator
10. Flame detector
11. Oil valves
12. Oil pressure switch
13. Gas pressure switch
14. Gas valves
15. Air pressure switch
16. VSM100
17. Motor
18. Speed sensor
19. Frequency converter for
variable speed drive
20. SYSTEM-BUS
21. Remote Vision Control
22. Control System

Gas Burners

GP-50...90 M

Technical Data

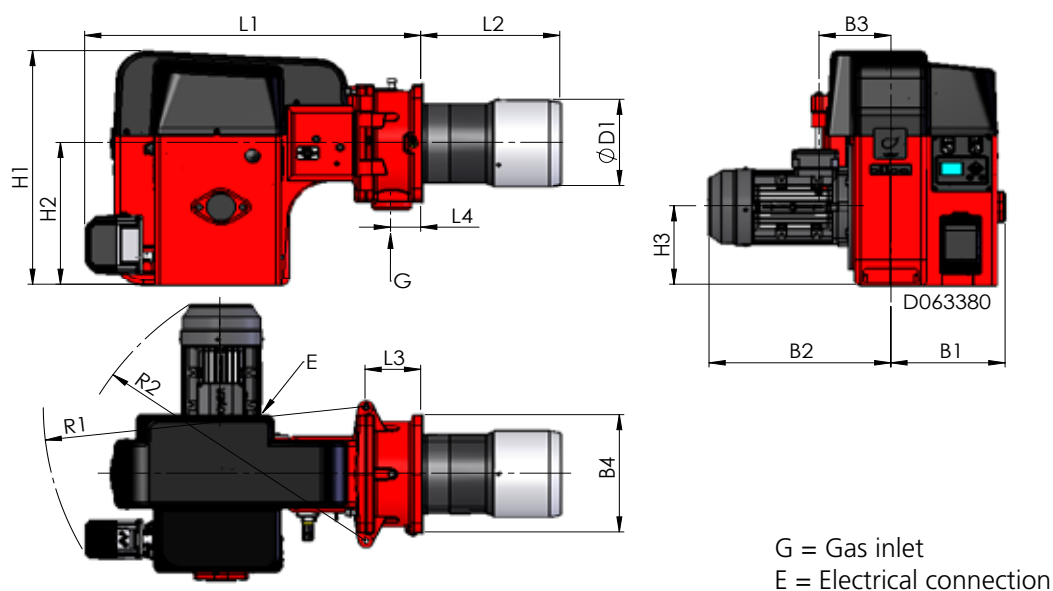
BURNER	GP-50 M	GP-90 M
Capacity MMBtu/h	0.4 - 3.0	0.9 - 4.99
Burner motor		
3~ 208-600 V 60 Hz		
Output hp	1	3
Current A/460 V	1.5	3.8
Speed rpm	3510	3510
Control unit	WD33	WD33
Weight lb*	88	139

*) Only burner

Ratio level Gas 1:6 (100 – 16,6%)

Note! The weight varies according to delivery contents.

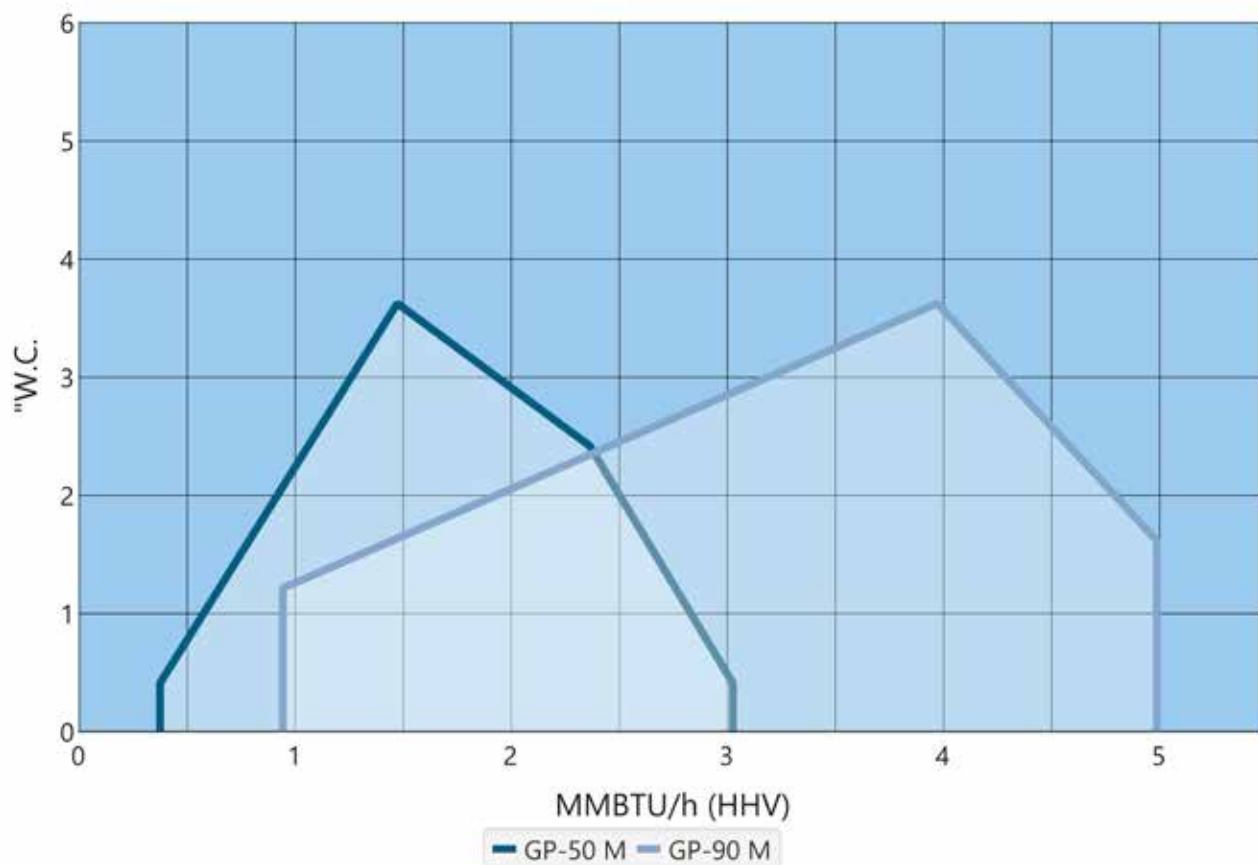
Dimensions



BURNER	L1	L2	L3	L4	H1	H2	H3	B1	B2	B3	B4	ØD1	R1	R2
GP-50 M	29.33	9.45	7.28	3.54	20.08	12.80	6.50	8.27	12.20	5.16	9.45	6.30	25.00	-
GP-90 M	28.54	11.81	4.72	2.56	21.46	12.99	7.17	9.69	15.55	6.10	10.71	7.87	27.36	26.18

Dimensions in inches.

Working Diagram



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

Technical Data

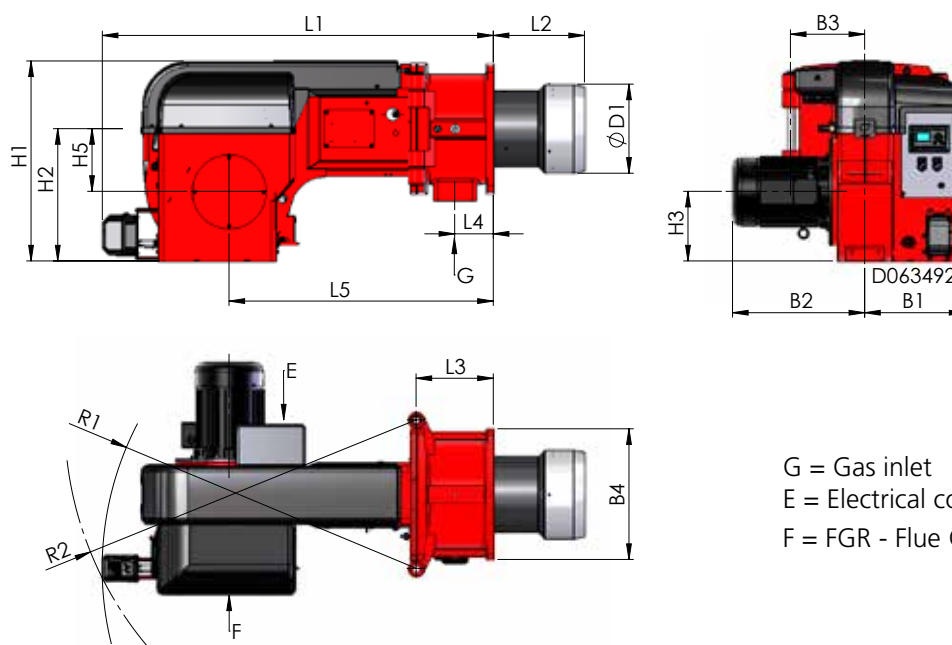
BURNER	GP-140 M	GP-150 M	GP-250 M	GP-280 M
Capacity MMBtu/h	1.5 - 8.9	1.7 - 10.2	1.4 - 9.8	1.9 - 12.49
Burner motor 3~ 208-600 V 60 Hz				
Output hp	5.5	7.5	7.5	10
Current A/460 V	6.2	8.9	8.9	11.9
Speed rpm	3510	3510	3510	3510
Control unit	WD33	WD33	WD33	WD33
Weight lb*	267	287	353	463

*) Only burner

Ratio level Gas 1:6 (100 – 16,6%)

Note! The weight varies according to delivery contents.

Dimensions



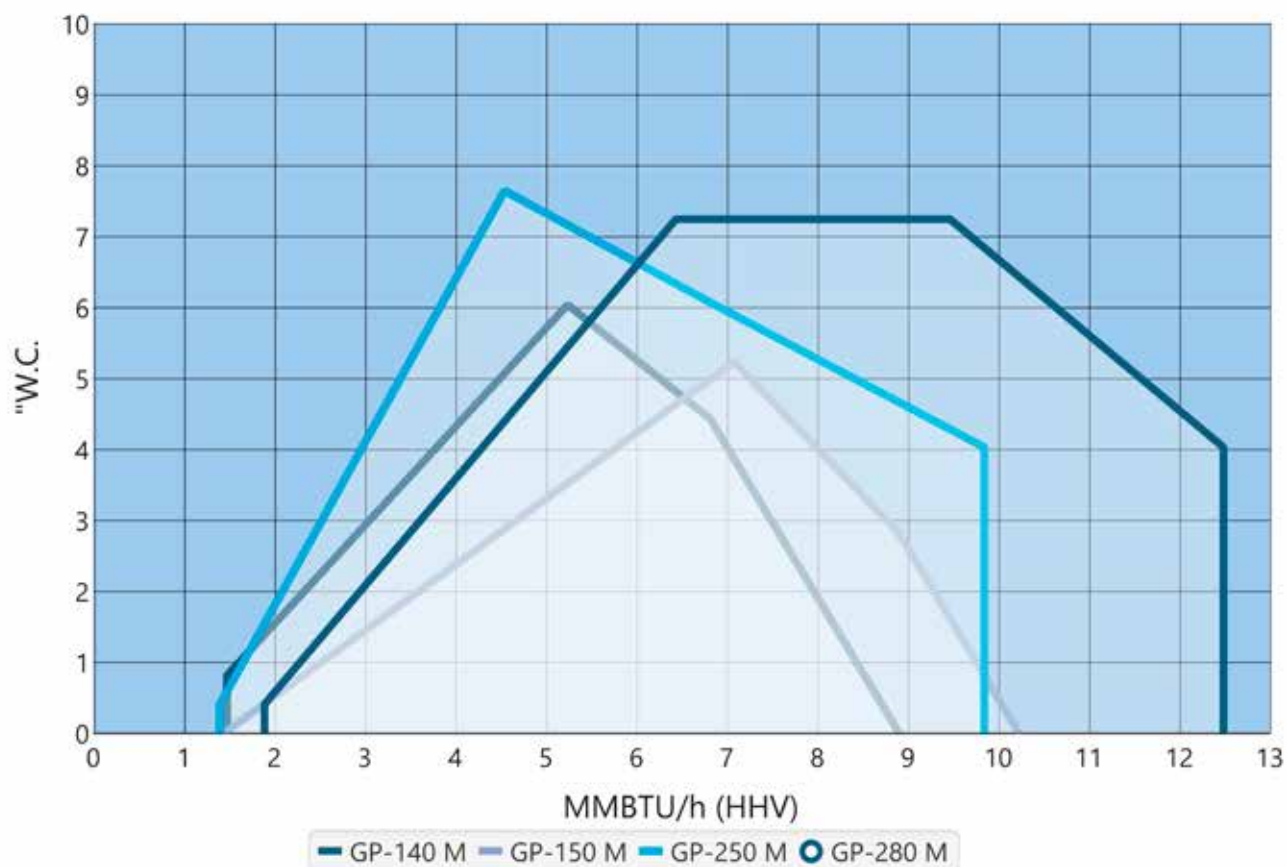
G = Gas inlet
E = Electrical connection
F = FGR - Flue Gas Recirculation

BURNER	L1	L2	L3	L4	L5
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

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

Dimensions in inches.

Working Diagram



GP-130/250 M LN30

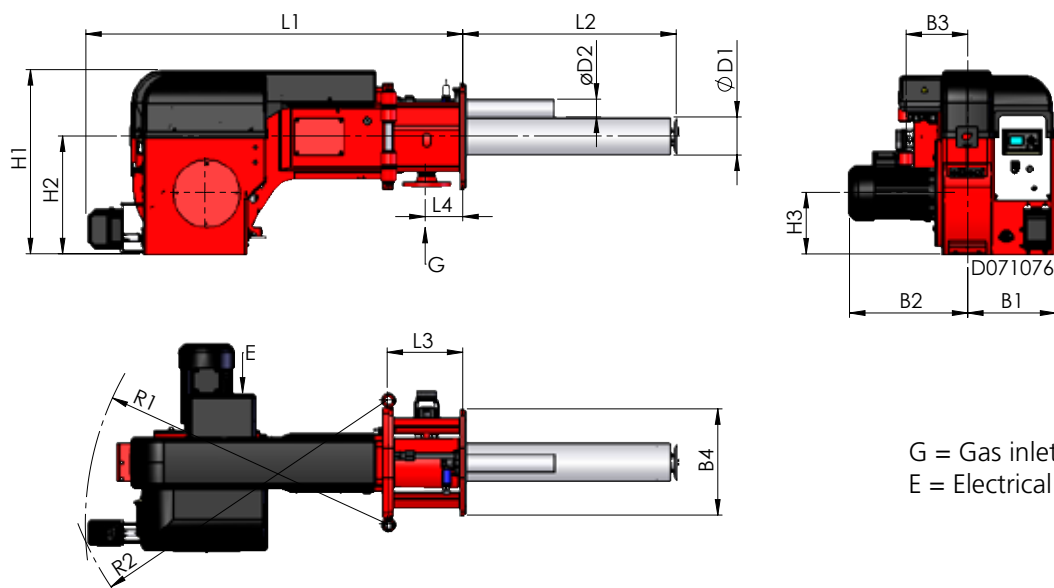
Technical Data

BURNER	GP-130 M LN30	GP-250 M LN30
Capacity MMBtu/h	1.0 - 3.4	1.5 - 6.8
Burner motor 3~ 208-600 V 60 Hz		
Output hp	5.5	7.5
Current A/460 V	6.2	8.9
Speed rpm	3510	3510
Control unit	WD33	WD33
Weight lb*	340	423

*) Only burner

Note! The weight varies according to delivery contents.

Dimensions



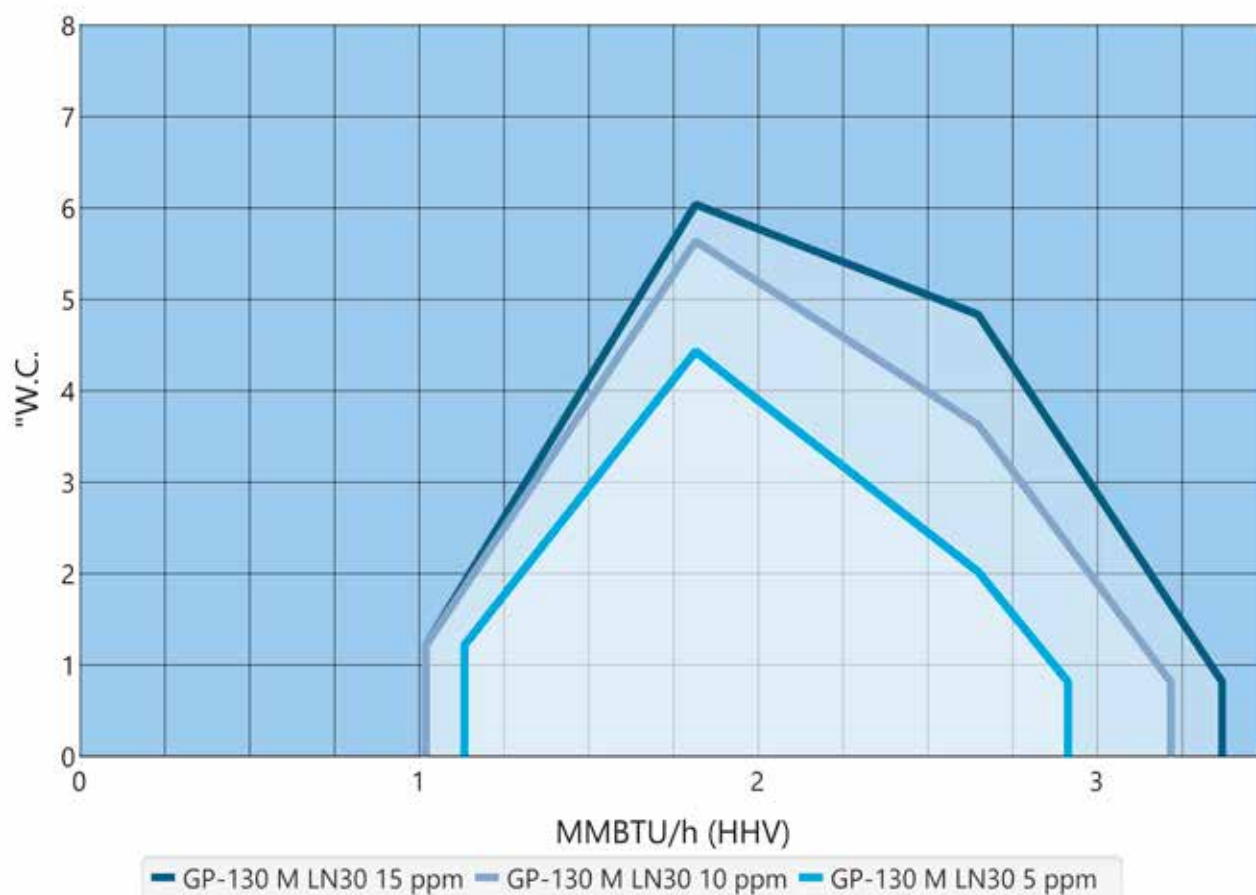
G = Gas inlet
E = Electrical connection

BURNER	L1	L2	L3	L4
GP-130 M LN30	50.59	28.66	10.16	5.08
GP-250 M LN30	51.97	35.83	10.16	5.08

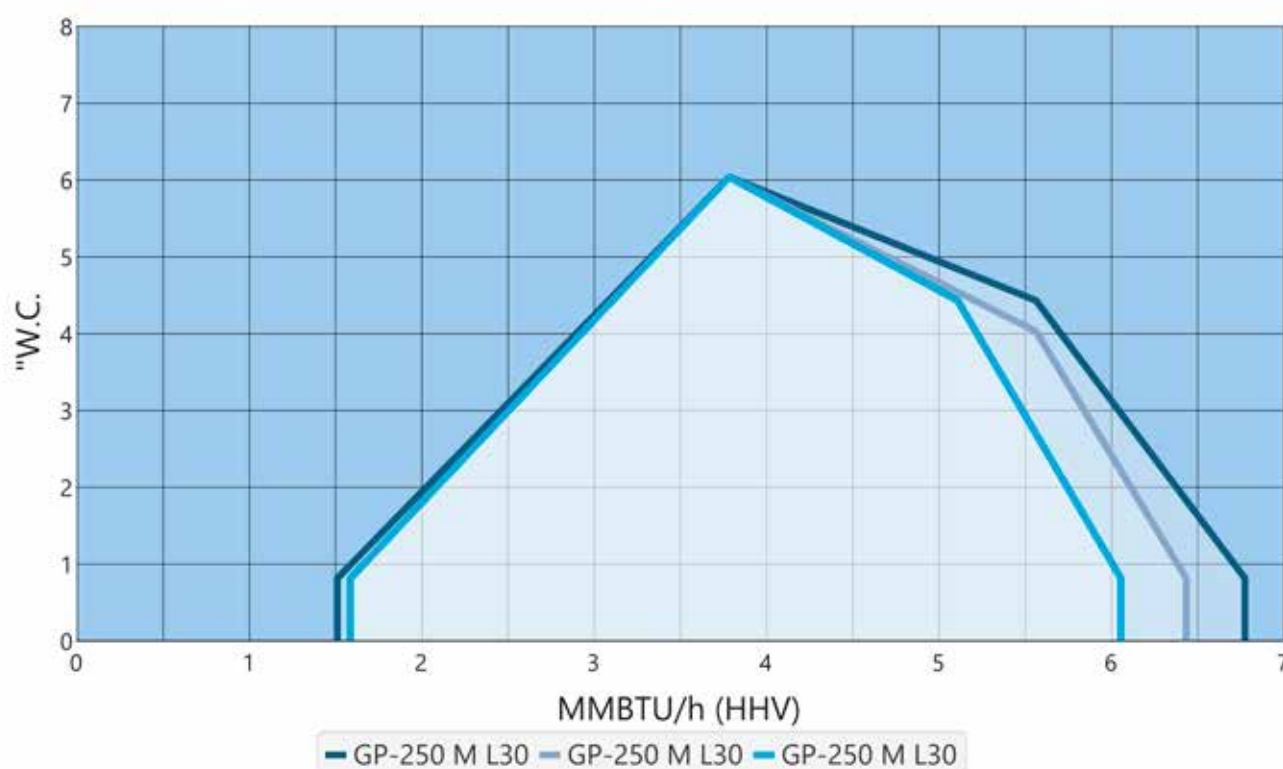
BURNER	H1	H2	H3	B1	B2	B3	B4	ØD1	ØD2	R1	R2
GP-130 M LN30	24.61	15.75	8.27	12.01	16.93	8.27	14.17	5.08	2.36	41.34	45.28
GP-250 M LN30	26.57	17.56	9.25	13.39	19.69	9.84	17.32	8.07	2.36	43.31	47.24

Dimensions in inches.

Working Diagram



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



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

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	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
Single solenoid valve for gas	x	-
Double solenoid valve for gas	o	x
Pressure switch for gas, min.	x	x
Pressure regulation valve for gas	x	x
Ignition gas valve*	o	x
LPG gas nozzle	o	o
Gas pressure gauge	o	o
Turbo combustion head	o	o
Fan motor speed sensor	o	o
Frequency converter	o	o
O ₂ control	-	-
Combustion head optimizer with servomotor	-	-
Pressure gauge for fan pressure	o	o
Manual	x	x

x Standard

o Option

*) 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	R 3/8"	R 1/2"
- return	R 3/8"	R 1/2"
Oil pump	AJ4	AJ6
Control unit	WD34	WD34
Weight lb*	97	143

*) Only burner

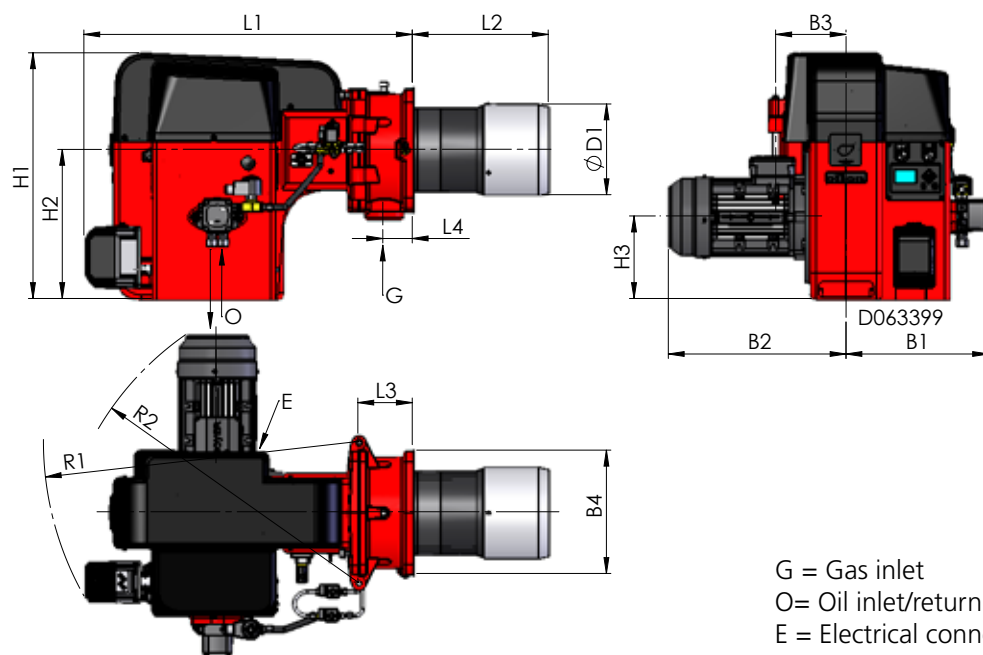
LFO: 1 gal/h = 140 MBtu/h

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

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

Note! The weight varies according to delivery contents.

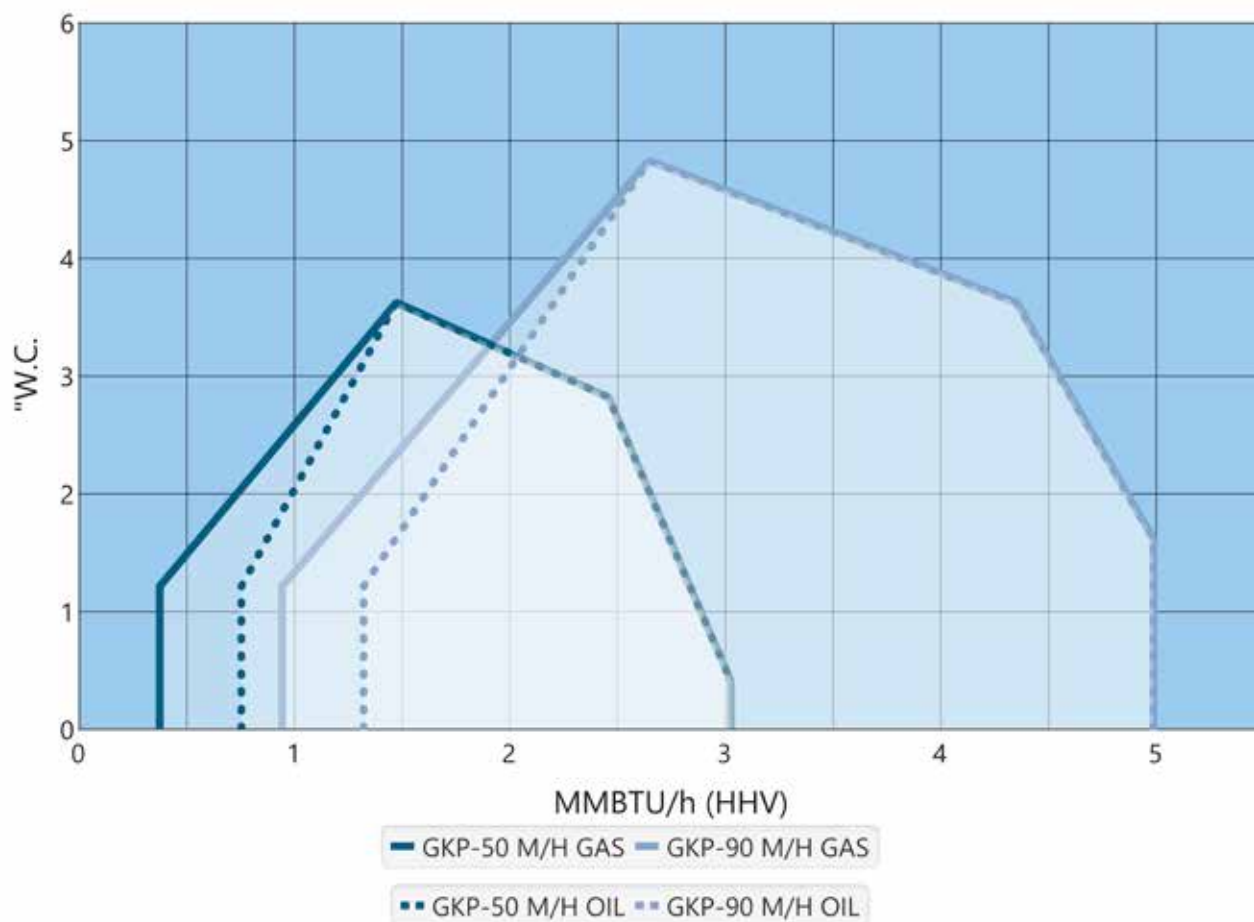
Dimensions



BURNER	L1	L2	L3	L4	H1	H2	H3	B1	B2	B3	B4	ØD1	R1	R2
GKP-50 MH	29.33	9.45	7.28	3.54	20.08	12.80	6.50	10.83	12.20	5.16	9.45	6.30	25.00	-
GKP-90 MH	28.54	11.81	4.72	2.56	21.46	12.99	7.17	12.40	15.55	6.10	10.71	7.87	27.36	26.18

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	WD34	WD34	WD34	WD34
Oil hose connection - suction - return	R ½" R ½"	R ½" R ½"	R ¾" R ½"	R ¾" R ½"
Weight lb*	357	362	595	613

*) Only burner

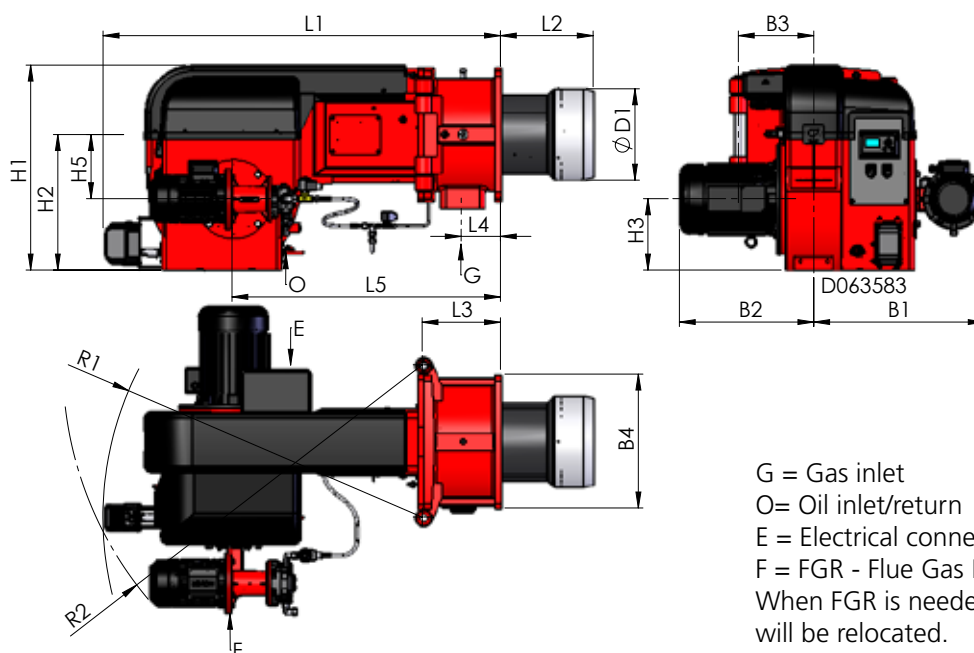
LFO: 1 gal/h = 140 MBtu/h

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

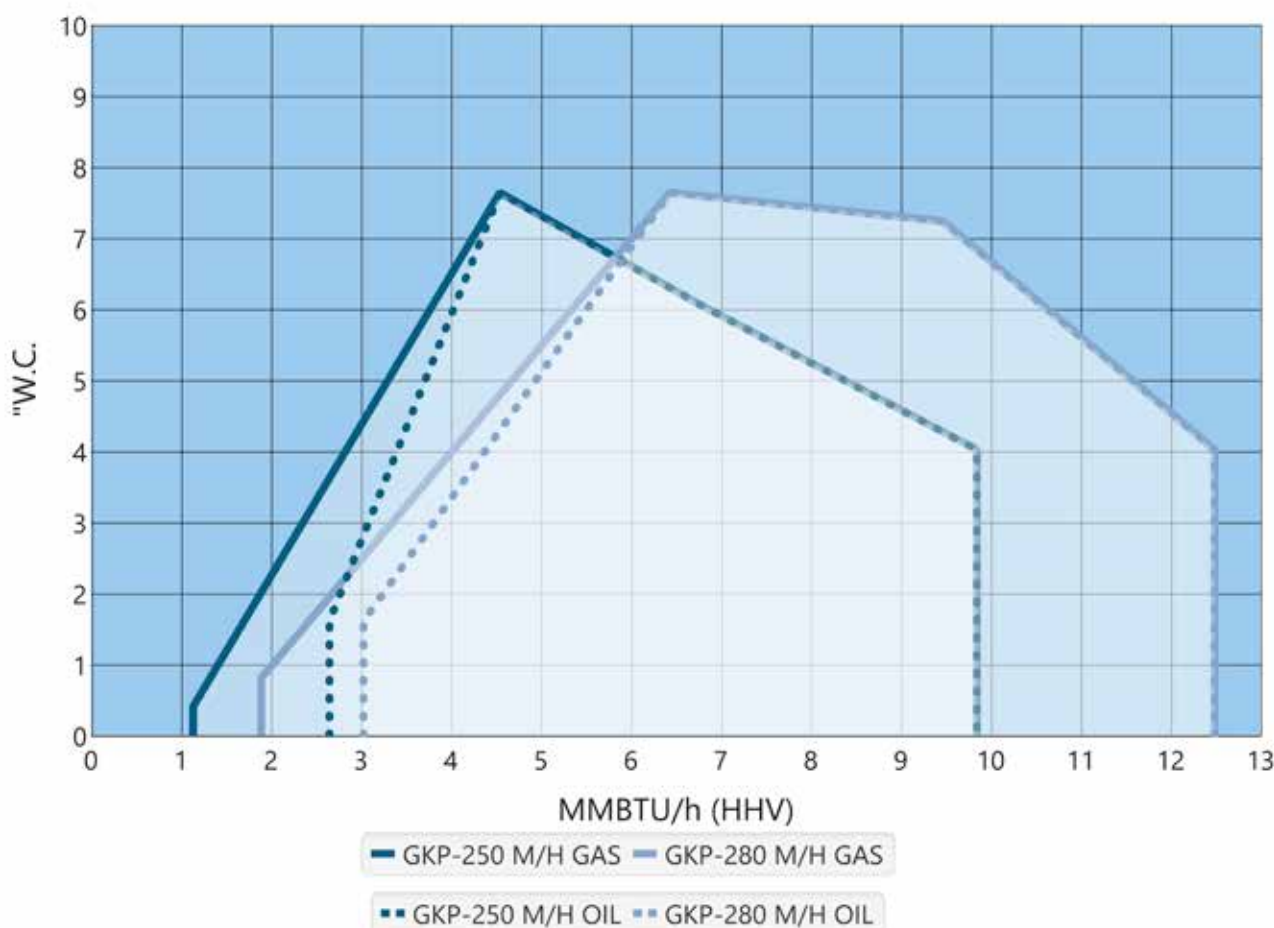
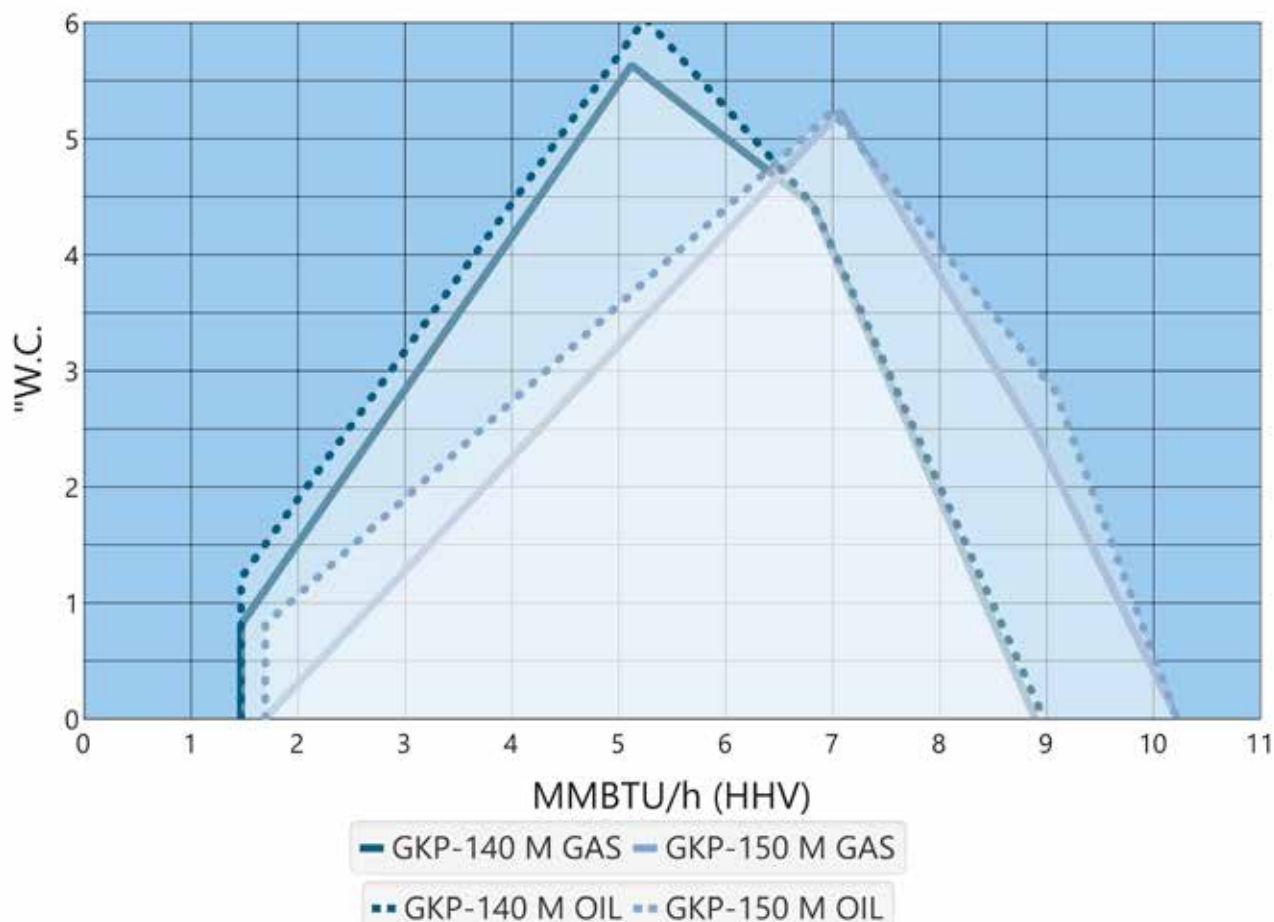


BURNER	L1	L2	L3	L4	L5
GKP-140 MH	50.59	8.66	10.24	5.08	34.65
GKP-150 MH	50.59	9.06	10.24	5.08	34.65
GKP-250 MH	51.97	11.81	10.24	5.12	35.04
GKP-280 MH	51.97	12.28	10.24	5.12	35.04

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GKP-140 MH	24.61	15.75	8.27	7.68	16.93	16.93	8.27	14.17	9.45	41.34	45.28
GKP-150 MH	24.61	15.75	8.27	7.68	16.93	18.90	8.27	14.17	10.63	41.34	45.28
GKP-250 MH	26.57	17.56	9.25	8.46	18.31	19.29	9.84	17.32	10.63	43.31	47.24
GKP-280 MH	26.57	17.56	9.25	8.46	18.31	19.29	9.84	17.32	11.81	43.31	47.24

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	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
Single solenoid valve for gas	x	-
Double solenoid valve for gas	o	x
Pressure switch for gas, min.	x	x
Pressure regulation valve for gas	x	x
Ignition gas valve*	-	x
Oil nozzle	x	x
Solenoid valves for oil	x	x
Oil pump with pressure regulation valve	x	x
Oil regulating valve with servomotor	-	x
Separate motor for oil pump	-	x
Pressure gauge/gauges for oil	o	x
Pressure switch for return oil	-	x
2 oil hoses, 78.7 inches	o	o
Oil filter	x	x
Deaerator	-	o
LPG gas nozzle	o	o
Gas pressure gauge	o	o
Turbo combustion head	o	o
Fan motor speed sensor	o	o
Frequency converter	o	o
O ₂ control	-	-
Pressure gauge for monitoring of inlet oil pressure	o	o
Pressure switch for monitoring of inlet oil pressure	o	o
Combustion head optimizer with servomotor	-	-
Pressure gauge for fan pressure	o	o
Manual	x	x

x Standard

o Option

*)Always in LN80 burners

Light Fuel Oil Burners

KP-50/90 H

Technical Data

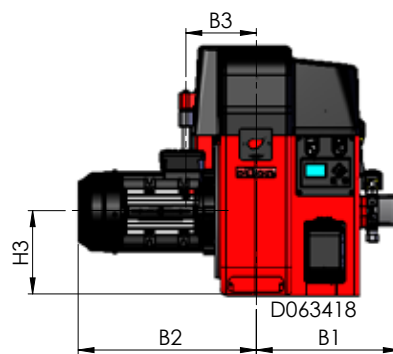
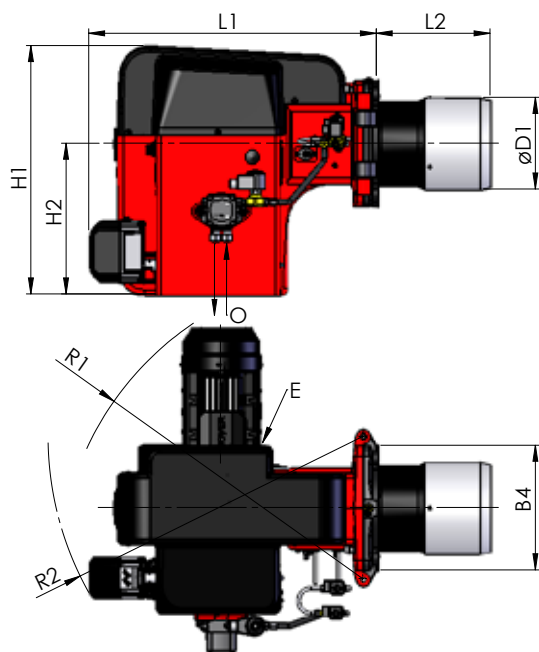
BURNER	KP-50 H	KP-90 H
Capacity, gal/h	5.3 - 21.8	9.3 - 40.4
Burner motor 3~ 208-600 V 60 Hz		
Output hp	1	2
Current A/460 V	1.5	5.3
Speed rpm	3510	3510
Oil hose connection		
- suction	R 3/8"	R 1/2"
- return	R 3/8"	R 1/2"
Oil pump	AJ4	AJ6
Control unit	WD33	WD33
Weight lb*	71	112

*) Only burner

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

Note! The weight varies according to delivery contents.

Dimensions

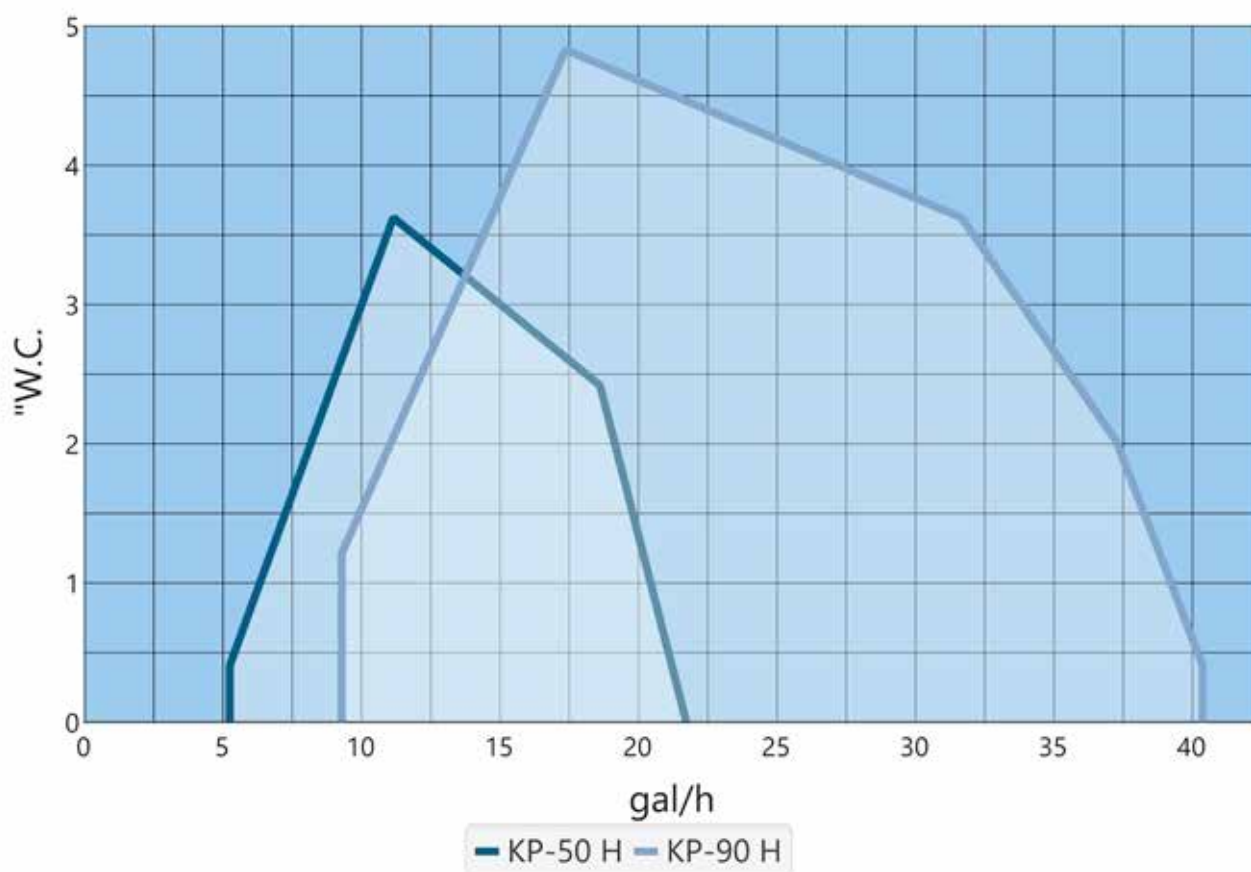


O= Oil inlet/return
E = Electrical connection

BURNER	L1	L2	H1	H2	H3	B1	B2	B3	B4	ØD1	R1	R2
KP-50 H	23.23	6.30	20.08	12.80	6.50	10.83	12.20	4.33	8.86	6.30	23.82	-
KP-90 H	25.00	9.84	21.46	12.99	7.28	12.40	15.55	6.10	10.71	7.87	26.18	27.36

Dimensions in inches.

Working Diagram



KP-140...280 M

Technical Data

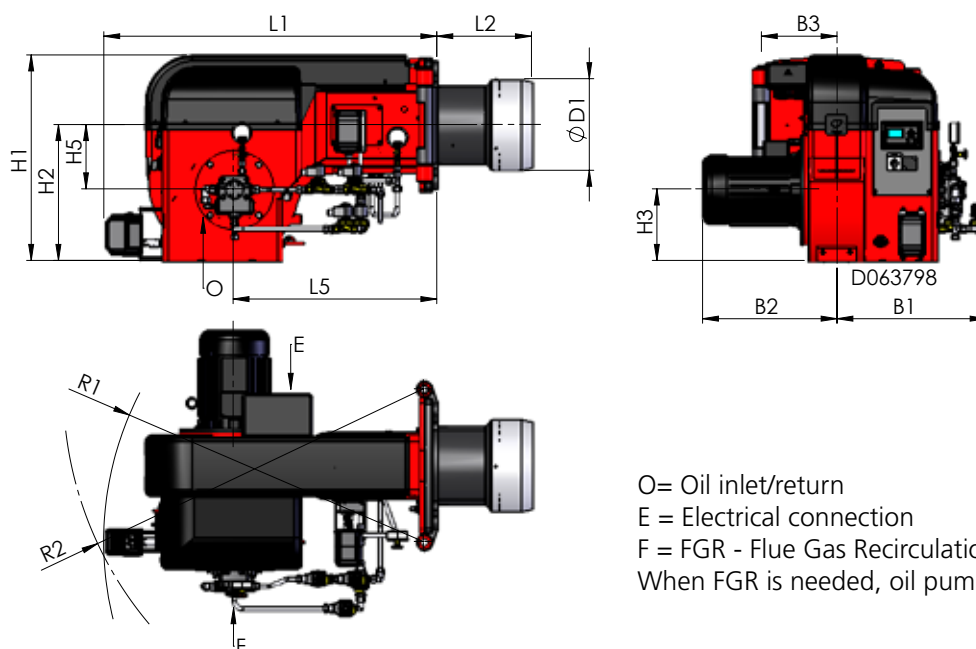
BURNER	KP-140 M	KP-150 M	KP-250 M	KP-280 M
Capacity, gal/h	14.6 - 62.2	17.4 - 74.6	17.1 - 68.4	23.6 - 91.7
Burner motor 3~ 208-600 V 60 Hz				
Output hp	5.5	7.5	10	10
Current A/460 V	6.7	8.9	11.9	11.9
Speed rpm	3510	3510	3510	3510
Oil hose connection - suction - return	R ½" R ½"	R ½" R ½"	R ¾" R ½"	R ¾" R ½"
Oil pump	TAR2	TAR2	TAR3	TAR3
Control unit	WD33	WD33	WD33	WD33
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

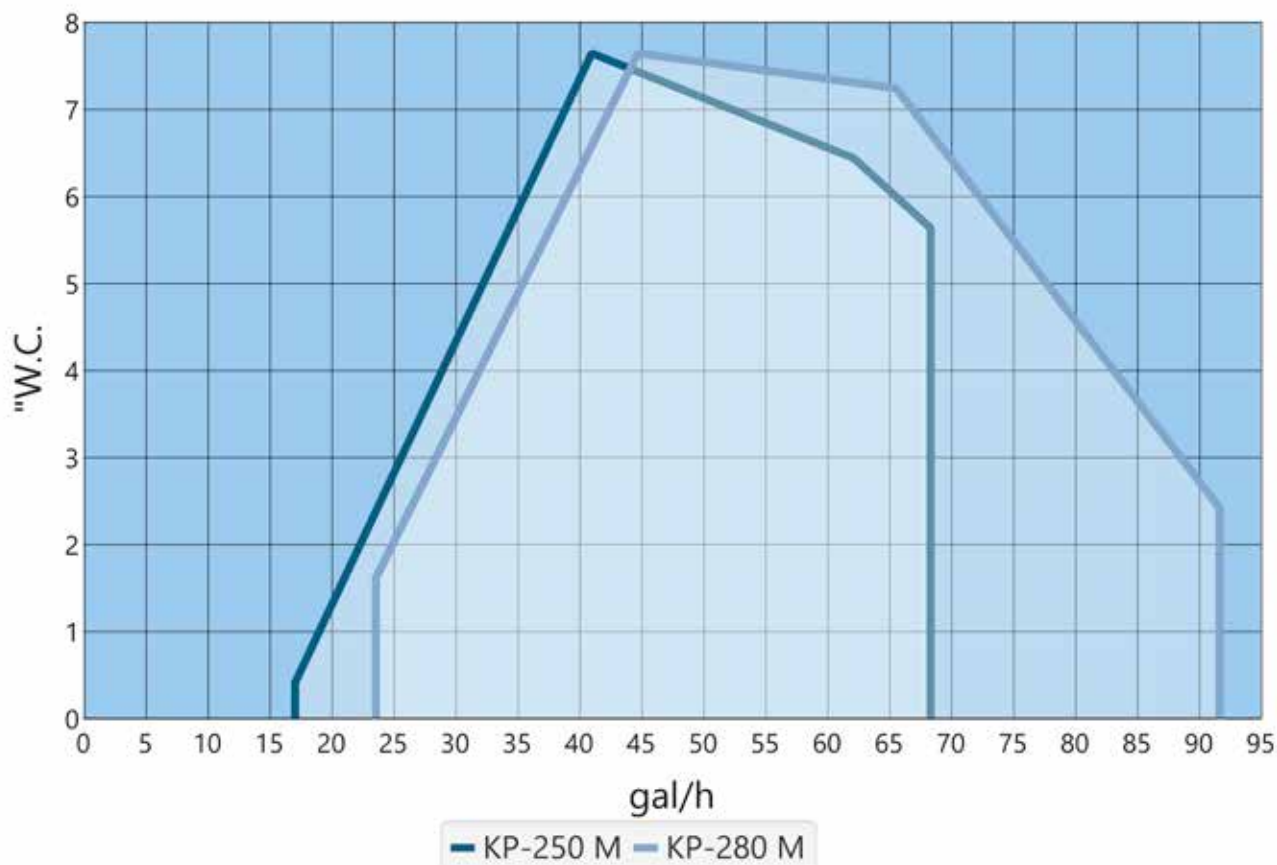
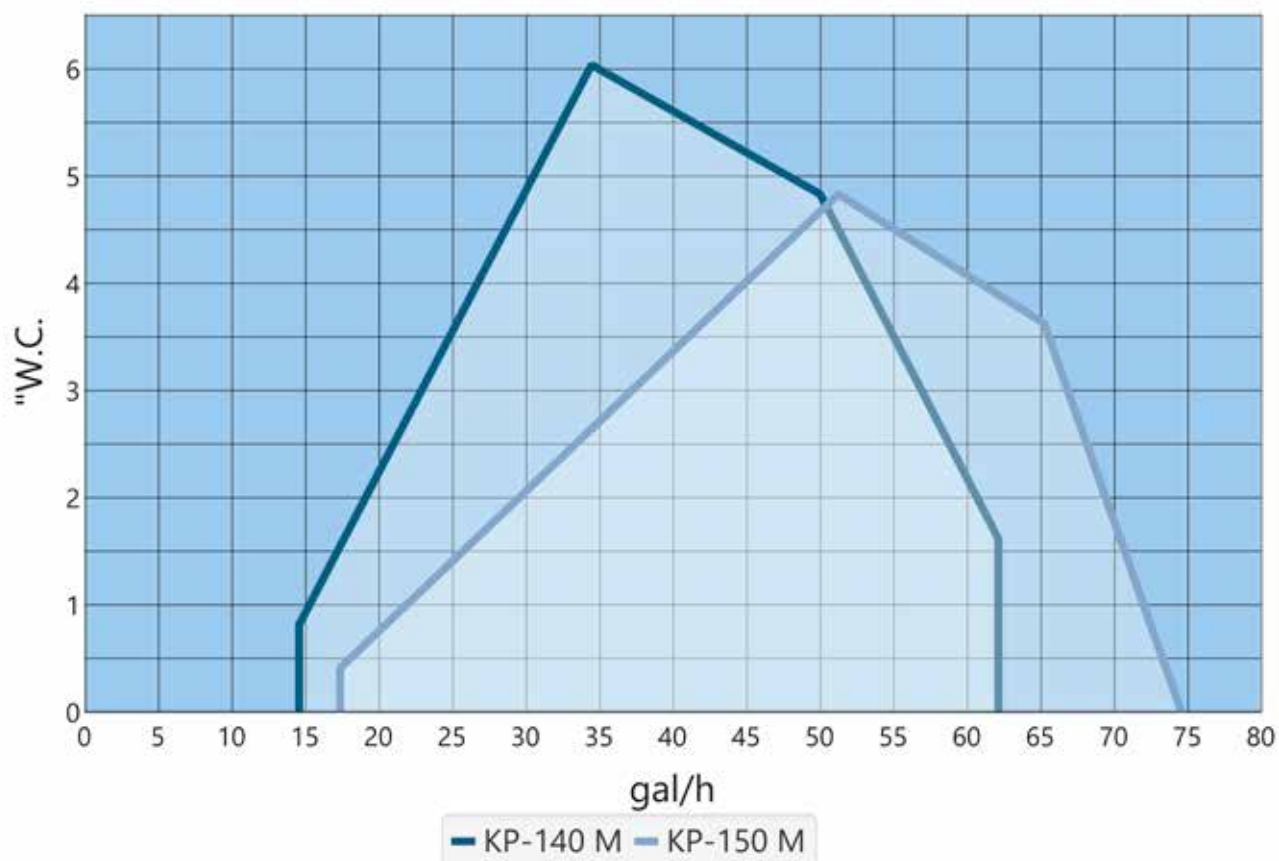


O= Oil inlet/return
E = Electrical connection
F = FGR - Flue Gas Recirculation
When FGR is needed, oil pump unit will be relocated.

BURNER	L1	L2	L5	H1	H2	H3	H5	B1	B2	B3	ØD1	R1	R2
KP-140 M	42.32	8.66	26.30	24.61	15.75	8.27	7.68	16.14	16.93	8.27	9.45	40.55	45.28
KP-150 M	42.32	9.06	26.30	24.61	15.75	8.27	7.68	16.14	18.90	8.27	10.63	40.55	45.28
KP-250 M	43.31	11.81	26.57	26.57	17.56	9.25	8.46	19.49	19.29	9.84	10.63	41.34	47.24
KP-280 M	43.31	12.28	26.57	26.57	17.56	9.25	8.46	19.49	19.29	9.84	11.81	41.34	47.24

Dimensions in inches.

Working Diagram



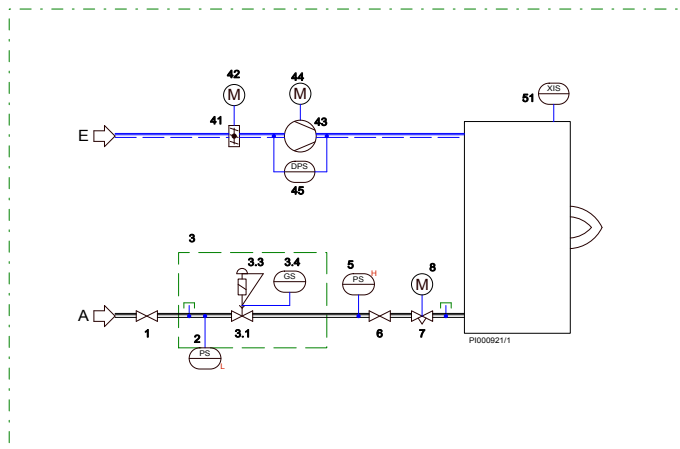
Scope of Delivery KP-50...280

	50/90	140...280
Hinge flange with limit switch	x	x
Burner flange gasket	x	x
WiseDrive (electronic ratio control)	-	x
Ignition transformer	x	x
Ignition cables and electrodes	x	x
Flame sensor	x	x
Inbuilt combustion air fan	x	x
Air damper with servomotor	x	x
Oil nozzle	x	x
Solenoid valves for oil	x	x
Oil pump with pressure regulation valve	x	x
Oil regulating valve with servomotor	-	x
Separate motor for oil pump	-	-
Pressure gauge/gauges for oil	o	x
Pressure switch for return oil	-	x
2 oil hoses, 78.7 inches	o	o
Oil filter	x	x
Deaerator	-	o
Turbo combustion head	o	o
Fan motor speed sensor	-	o
Frequency converter	-	o
O ₂ control	-	-
Pressure gauge for monitoring of inlet oil pressure	-	o
Pressure switch for monitoring of inlet oil pressure	-	o
Combustion head optimizer with servomotor	-	-
Pressure gauge for fan pressure	o	o
Manual	x	x

x Standard
o Option

PI Diagrams

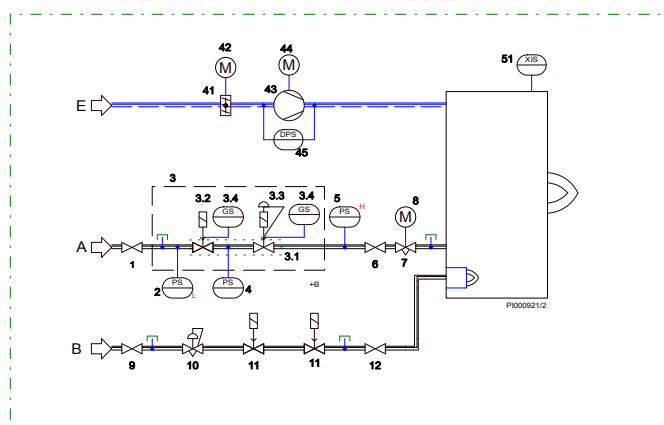
GAS, VGG VALVE, M BURNERS



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

GAS, VGD VALVE, M BURNERS



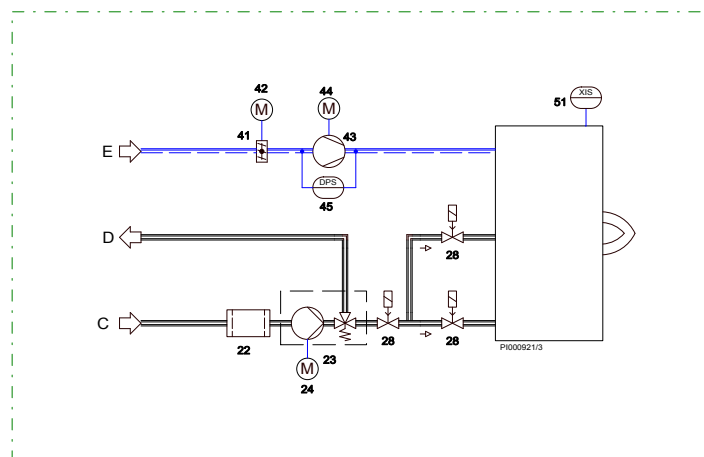
OIL PROCESS COMPONENTS

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
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

LIGHT FUEL OIL, H BURNERS

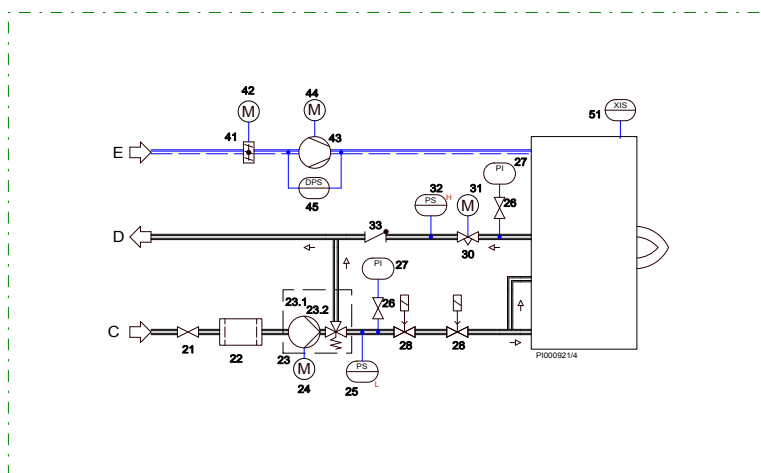


OTHER COMPONENTS

51. Flame detector

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

LIGHT FUEL OIL, 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
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

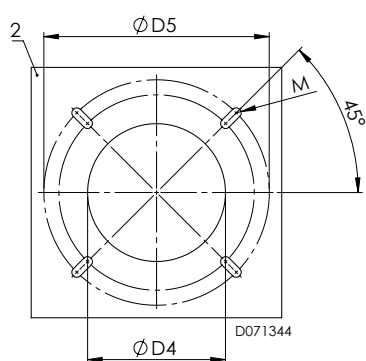
51. Flame detector

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

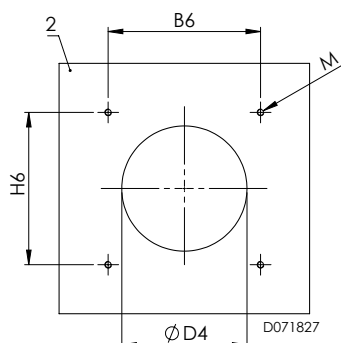
Combustion head and masonry dimensions

Standard combustion head mounting dimensions

Mounting plate

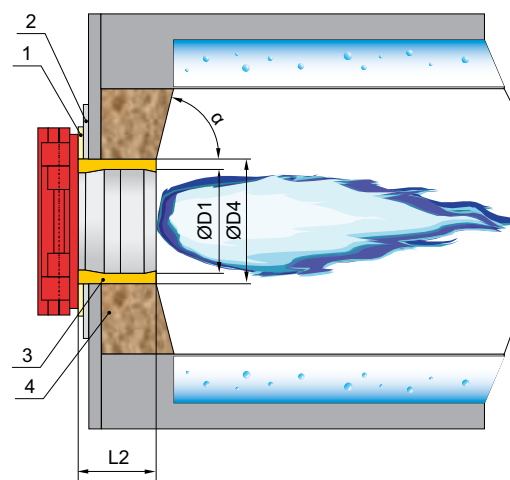


GP/GKP-50 M/MH



KP-50 H
90...280

Burner mounting

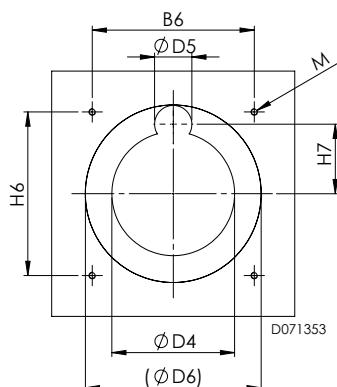


BURNER SERIE	B6	H6	ØD4	ØD5	M	ØD1	L2	α
KP-50 H	6.89	4.33	6.50	-	4xM10	6.30	6.30	60° - 90°
GP/GKP-50 M/MH	-	-	6.50	9.21 - 10.63	4xM10	6.30	9.45	60° - 90°
KP-90 H	8.50	8.50	8.27	-	4xM10	7.87	9.84	60° - 90°
GP/GKP/KP-90 M/MH	8.50	8.50	8.27	-	4xM10	7.87	11.81	60° - 90°
GP/GKP/KP-140 M/MH	10.83	10.83	10.63	-	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°

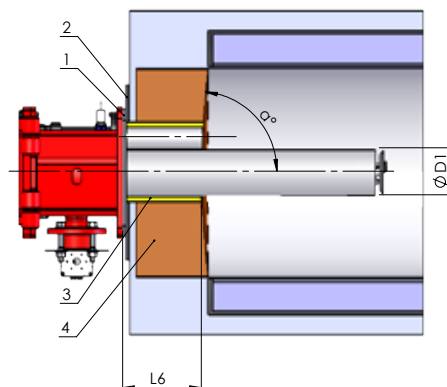
Dimensions in inches.

Low NOx combustion head mounting dimensions, LN30

Mounting plate



Burner mounting



1. Gasket, thickness 0.31 inches
2. Mounting plate
3. Ceramic wool or equivalent
4. Masonry

BURNER SERIE	B6	H6	H7	ØD1	ØD4	ØD5	ØD6	L6 max	M	α
GP-130 M LN30	10.83	10.83	3.74	5.08	6.30	3.62	11.02	11.81	4xM16	60° - 90°
GP-250 M LN30	14.37	14.37	5.35	8.07	9.29	3.62	13.07	11.81	4xM16	60° - 90°

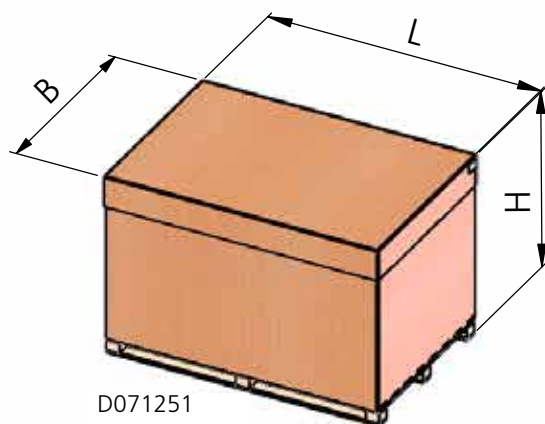
Dimensions in inches.

Accessories WD3x

Gas options Conversion Kit
Propane (LPG BAND)
Methane manifold drilling, composition to be check with Oilon sales
Variable speed option on blower motor
Lamtec Variable Speed Sensor installation package (incl. speed sensor, VSM and installation, testing, parametrization, drive)
Stepdown
110V to 208/220/460/575V Transformer mounted in motor starter box
Gas train option
1 1/2", 2" diaphragm pressure regulator to meet CSA 149.3 field approval (Dungs, Maxitrol)
- 1/4" NPT ball valve manifold pressure kit, 1 of 3
- pressure gauge 0-60" WC manifold pressure kit, 2 of 3
- 1/4" x 3" nipple manifold pressure kit, 3 of 3
1 1/2", 2", 2 1/2" Apollo manual closing valve UL
1 1/2", 2", 2 1/2" gas strainer, cast iron
1 1/2" CSA lubricated plug valve, 1 of 2
2" CSA lubricated plug valve, 1 of 2
Handle for CSA lubricated plug valves 1-1/2 and 2", 2 of 2
2 1/2" CSA lubricated plug valve, 1 of 2
Handle for CSA 2 1/2"...3" plug valve, 2 of 2
2 1/2" CSA lubricated plug valve, 1 of 2
Handle for CSA 2 1/2"...3" plug valve, 2 of 2
2", 2.5", 3", 4" VGD Standard Valve UL gas module for 140...280M WD3x, 110V, 2...5PSI, 1 pcs POC, SKP25 pressure regulator, min/max gas pressure switch
2" VGG Siemens single body NPT, 2-5PSI, 110V, complete with pressure switches
2" BIOGAS BUTTERFLY ASSEMBLY VRG10.050U (SCC) BUTTERFLY VALVE 1(3)
AGA93.1 assembly brackets 2(3)
2" VRD Siemens Bio gas double body NPT, 2-5PSI, 110V, complete with pressure switches, left handed 3(3)

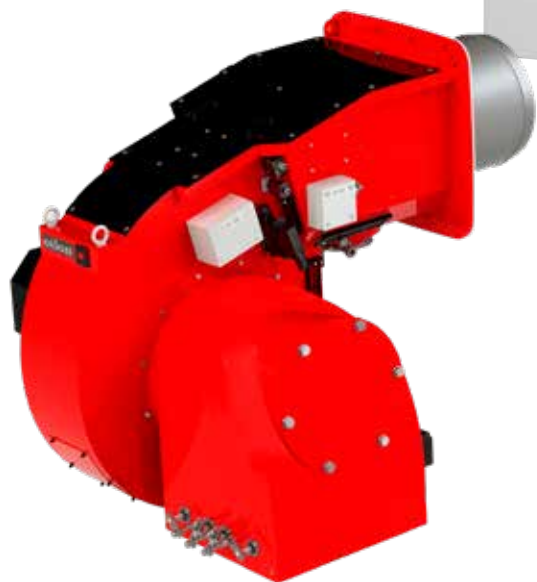
Temperature & Pressure Sensors	
Temp. Sen.	Water PT100, immersion type, 1/2 "NPT. Hot water boiler
Pres. sen.	0 - 15, 0 - 150, 0 - 300 PSI, 4-20mA, 1/4" NPT
Various Options	
10" Lamtec Touch Screen (Remote panel)	
LCM, PID pressure regulator for KP-50 and 90H, (needs 4...20mA sensor)	
RWF55.50A9 Pressure/Temp regulator option to be able to connect to Siemens TS-2000 master panels. Replaces Lamtec load controller. Installed in loose box.	
Profibus gateway communication module without cabinet	
BackNET gateway communication (Modbus+Backnet converter) without cabinet	
Cabinet and back plate 10"x 8" x 6 for communication modules	
ModBus gateway communication (Remote box)	
Emergency stop installed on burner	
Oilon-SCC FLMTTR-0.75-6.0KIT NG flow meter kit with display	
Lamtec software and cable	
Day/Night Switch	
Alarm horn switch installed	
Uline Shipping Boxes	
Size 50...90 plywood box for heavy duty shipping	
Power breaker with fuse	
SAFETY SWITCH 600V 30A, loose supply	
TUBE FUSE 10A/600VAC RK5 TD, loose supply	
De-aerator	
Oilon Plus one pipe system deaerator, NPT, UL model	
Platinum Series- Multi MOD Boiler Lead Lag System	
Multiple Boiler Staging Control / Lead Lag – Modulating 4..20mA signal	

Packing



BURNER SERIE	Dimensions			Weight lb	Material standard
	L	B	H		
GP-50 M	40.2	21.7	17.7	11.0	Board
GP-90 M	40.9	27.2	18.9	15.4	Board
GP-140...280 M...	64.6	48.0	34.6	121.3	Board
GKP-50 MH	40.2	21.7	17.7	11.0	Board
GKP-90 MH	40.9	27.2	18.9	15.4	Board
GKP-140...280 M...	64.6	48.0	34.6	121.3	Board
KP-50 H	31.9	21.7	17.7	11.0	Board
KP-90 H	40.9	27.2	18.9	15.4	Board
KP-140...280 M...	57.9	45.3	34.6	103.6	Board

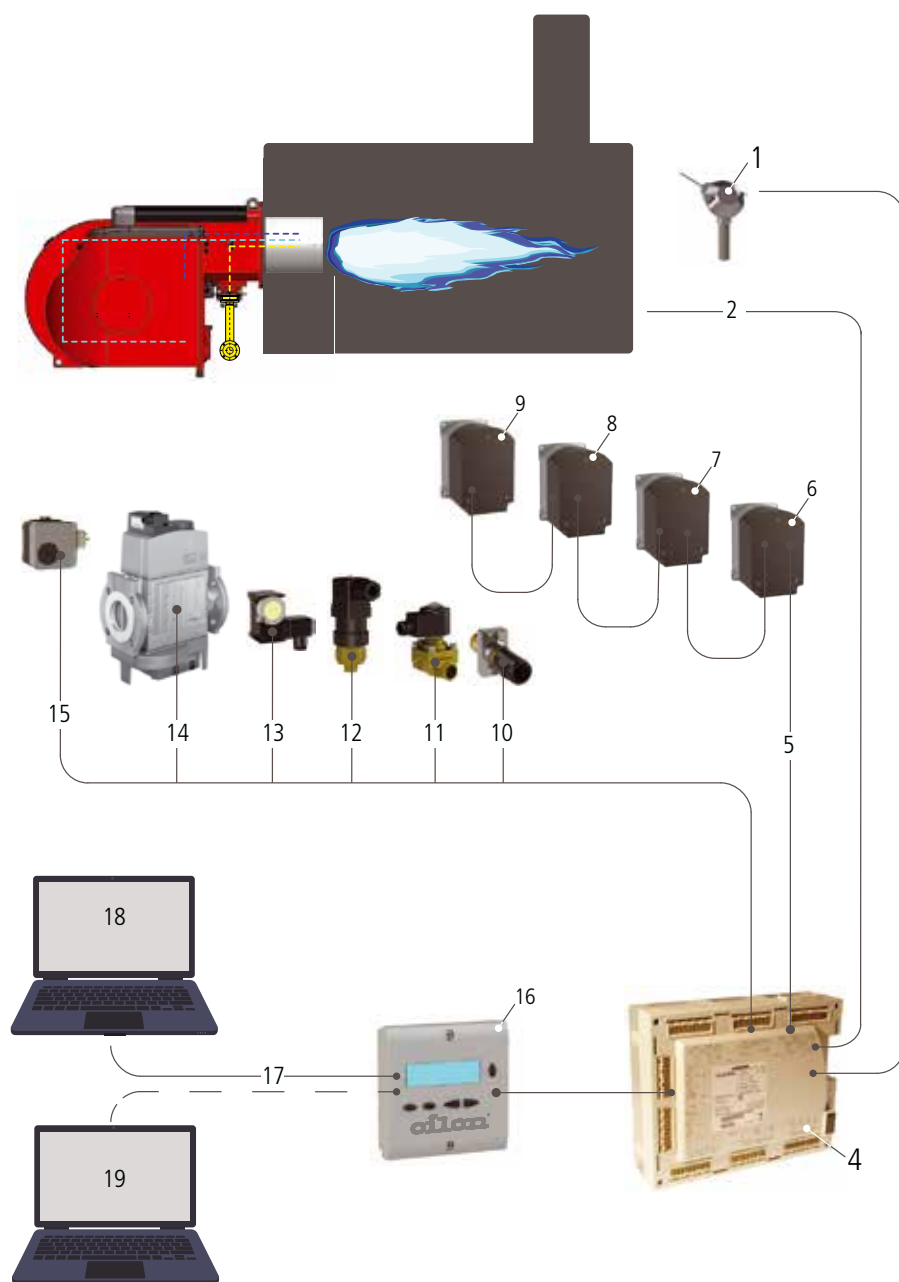
Dimensions in inches.



WDx00 - Separate Control Cabinet

WiseDrive WDx00

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

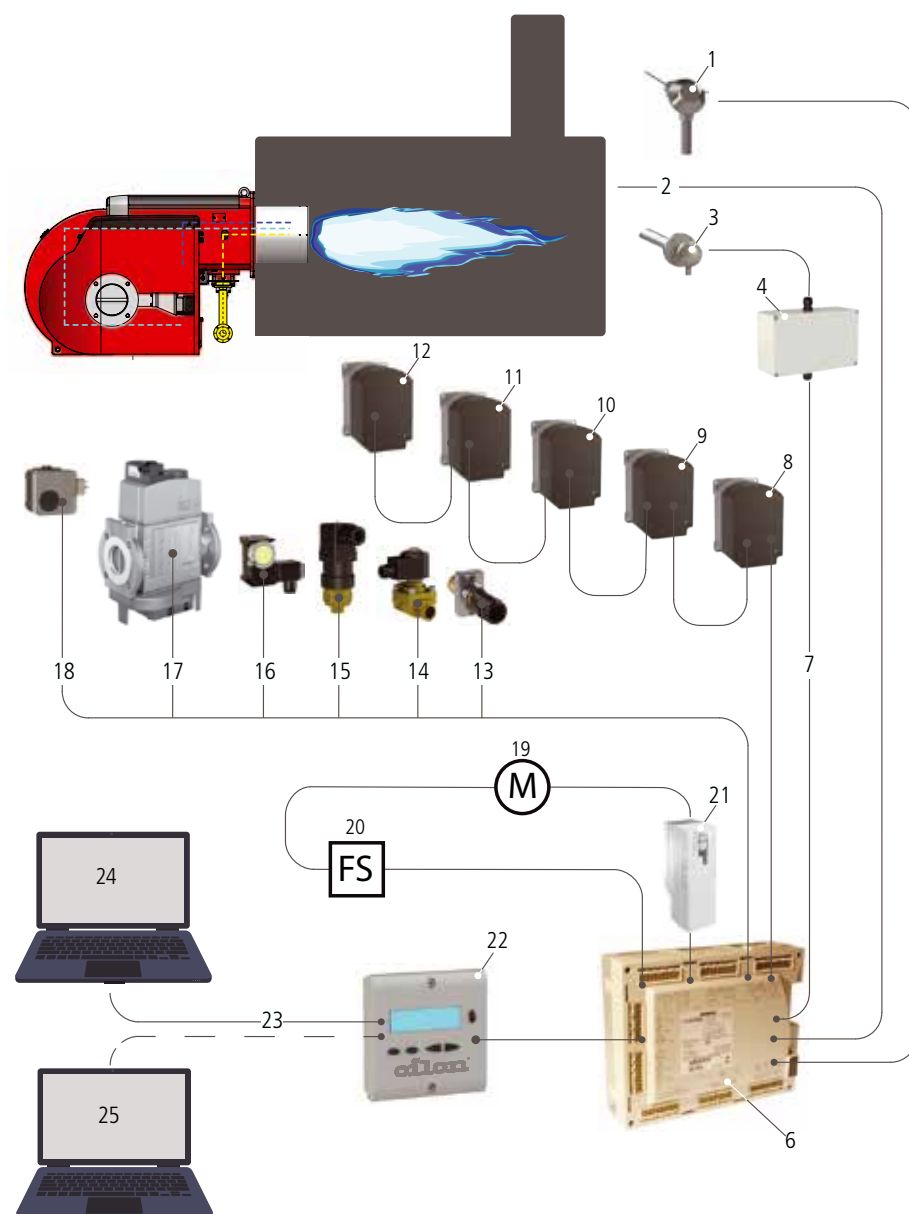


Examples of WiseDrive's functions:

- 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)



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 | 24. Control room |
| | 25. Service computer |

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

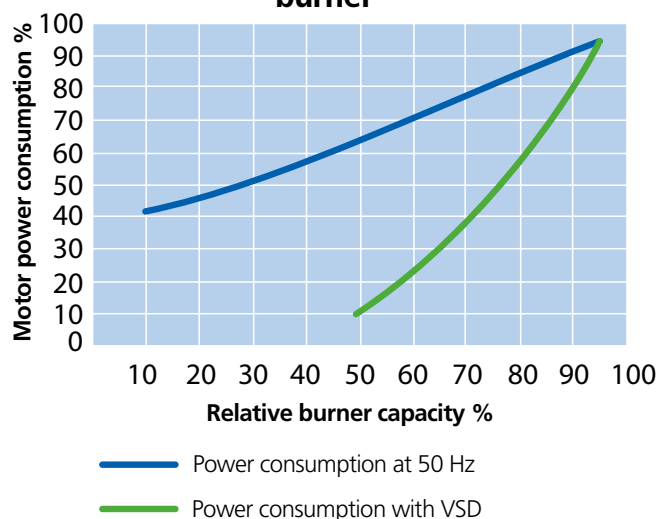
1. Effect of O₂ control on the combustion efficiency

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.

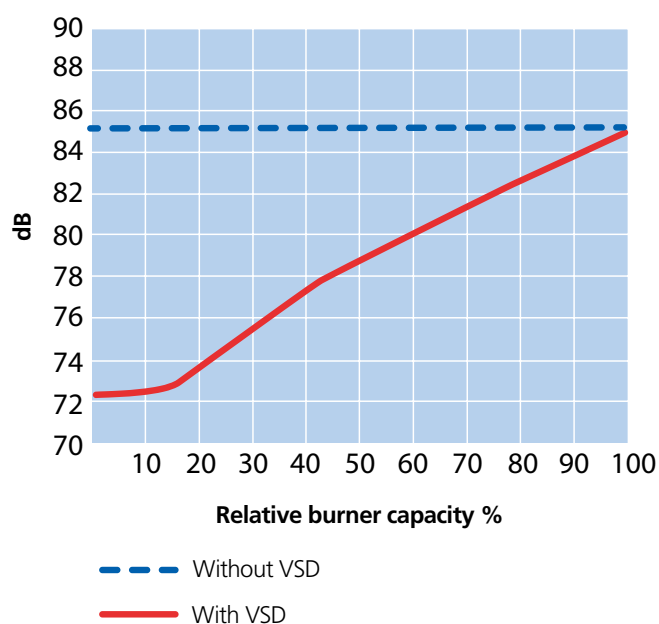
2. VSD in fan motor saves electricity consumption

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

Motor power consumption in 17 MMbh burner

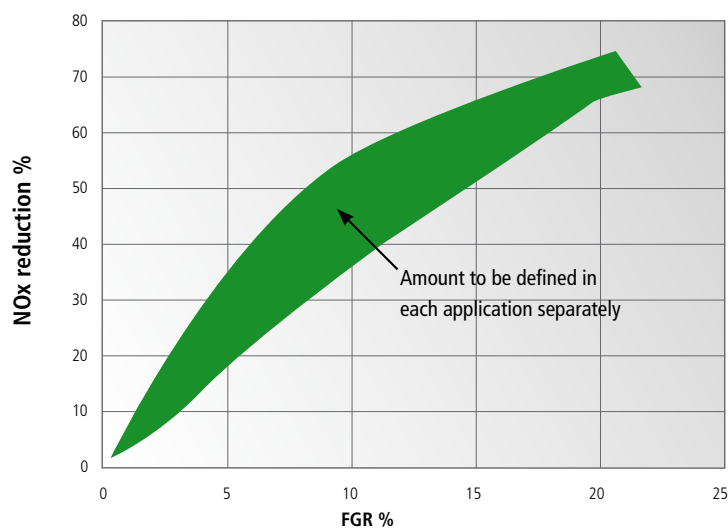


Noise level with VSD and without VSD



FGR - Flue Gas Recirculation

The effect of FGR in natural gas combustion

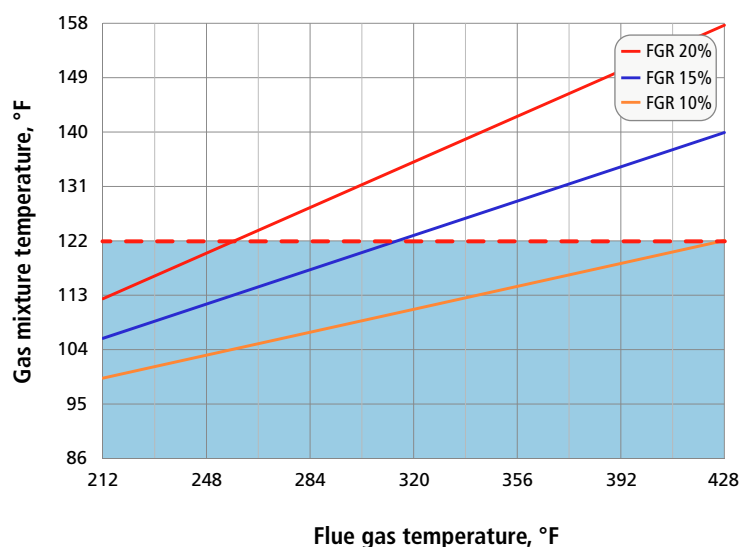


External Flue Gas Recirculation, FGR, is an effective low cost solution to achieve very low NO_x emissions with various fuels.

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

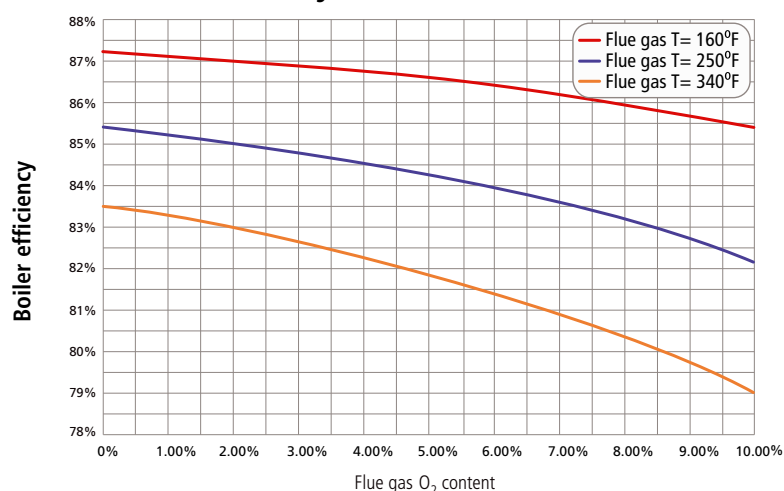


Flue gas recirculation is available as an option for a variety of new burners, or in many cases, as a retrofit to an existing burner.

Diagram valid for 187 °F combustion air

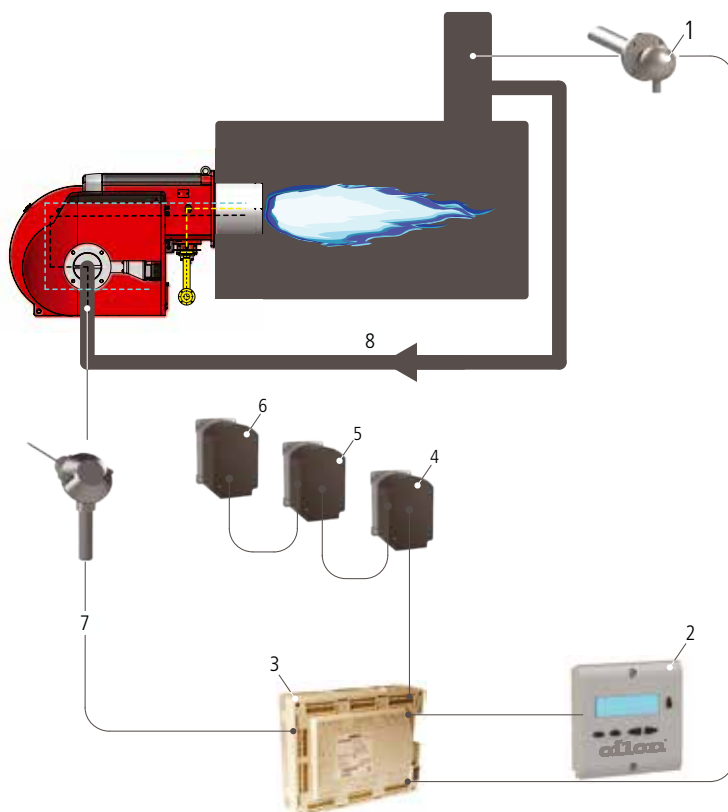
 Recommended working range

Boiler efficiency



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

Oilon burner FGR application



Minimum required components:

- WD200 burner control system
- Flue gas damper with servomotor
- Flue gas inlet adapter
- Recirculation pipe (in customer scope)

1. O₂ sensor (option)
2. User interface
3. Control Unit
4. Gas damper
5. Air damper
6. Flue gas damper
7. Temperature sensor
8. Recirculation pipe

Example of application



Gas Burners

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

Technical Data

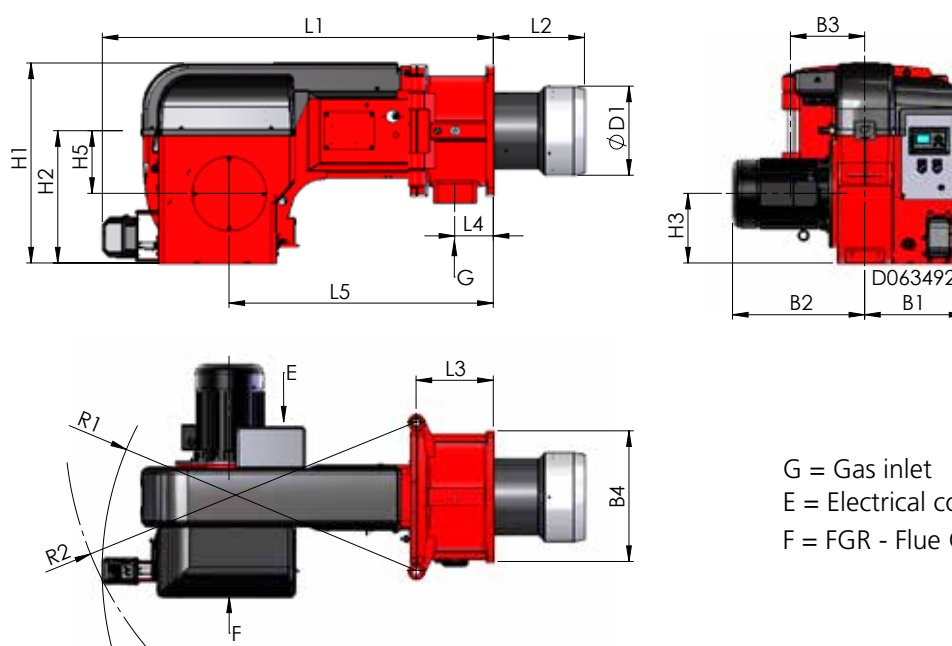
BURNER	GP-140 M	GP-150 M	GP-250 M	GP-280 M	GP-140 M LN80	GP-250 M LN80	GP-280 M LN80
Capacity MMBtu/h	1.5 - 8.9	1.7 - 10.2	1.4 - 9.8	1.9 - 12.49	1.4 - 6.4	1.3 - 8.0	1.7 - 9.5
Burnermotor 3~ 208-600 V 60 Hz							
Output hp	5.5	7.5	7.5	10	5.5	10	10
Current A/460 V	6.2	8.9	8.9	11.9	8.9	11.9	11.9
Speed 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



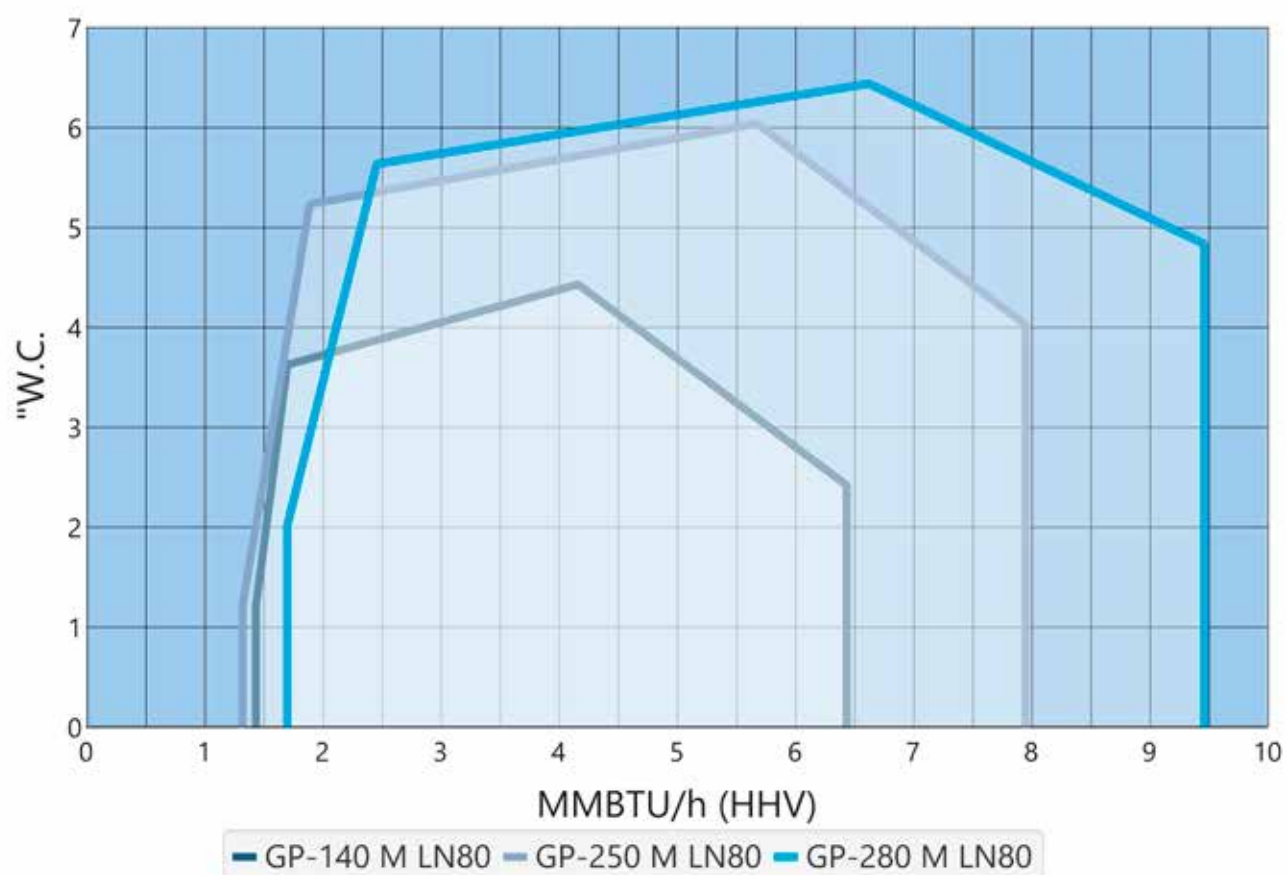
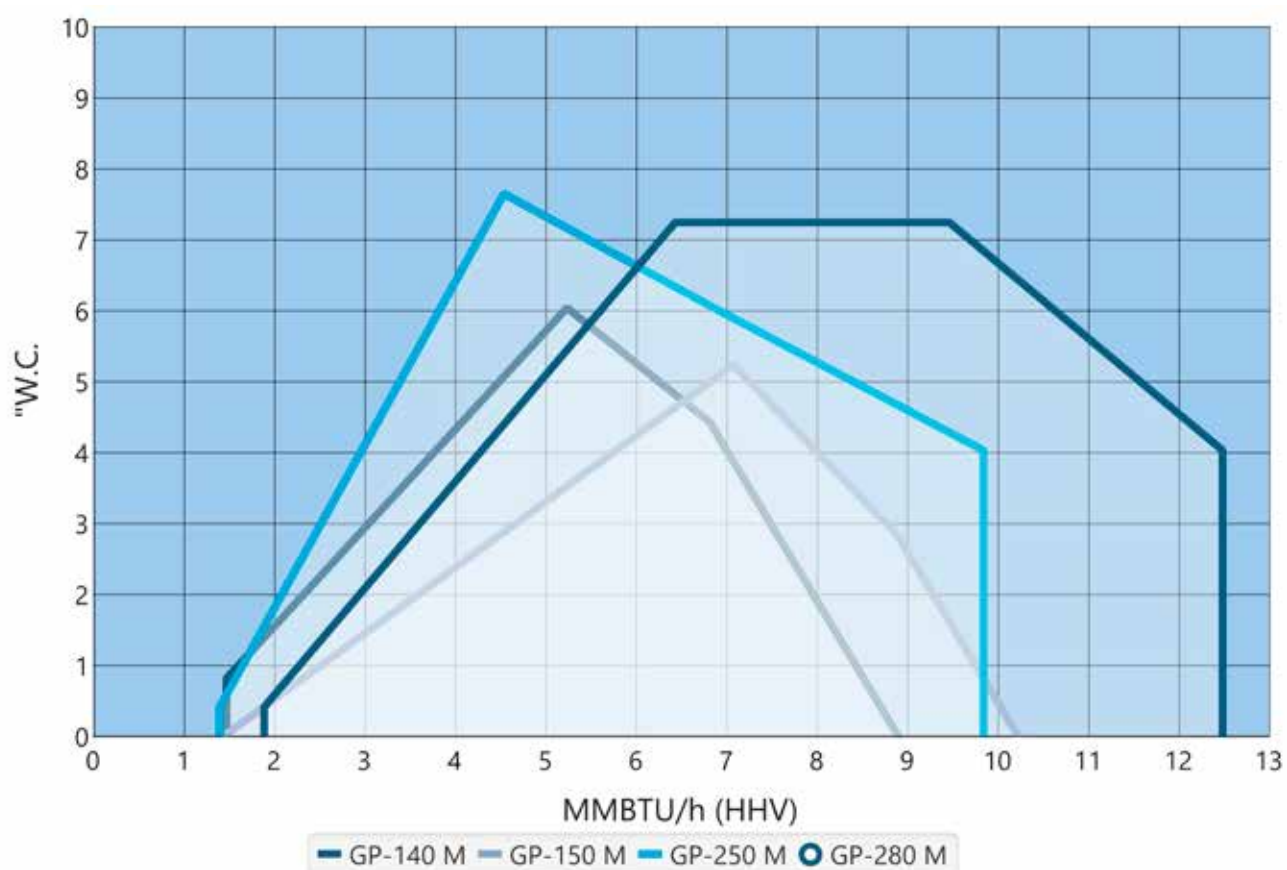
G = Gas inlet
E = Electrical connection
F = FGR - Flue Gas Recirculation

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

Technical Data

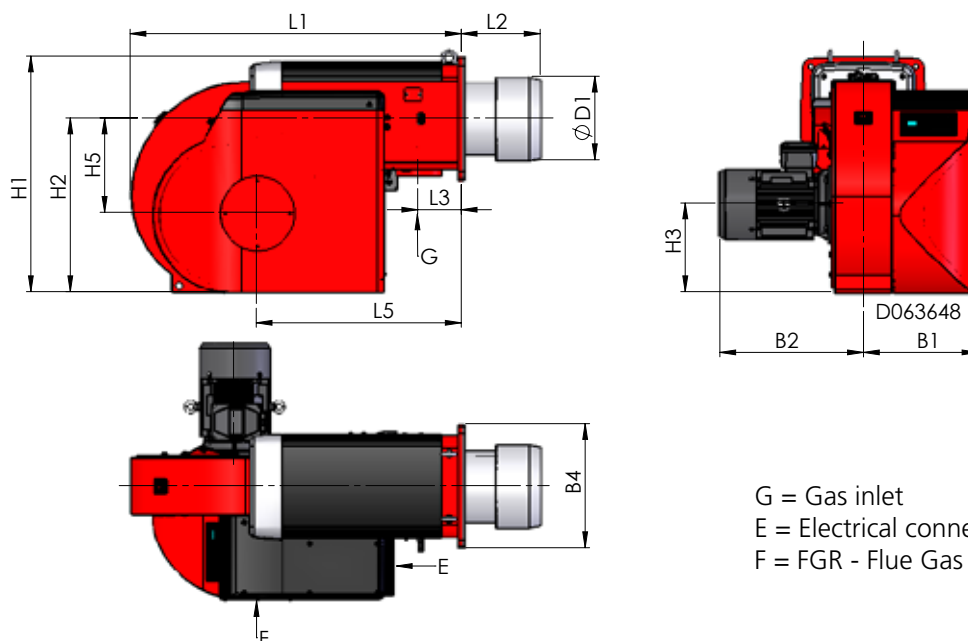
BURNER	GP-350 M	GP-450 M	GP-320 M LN80	GP-350 M LN80	GP-450 M LN80
Capacity MMBtu/h	2.6 - 16.1	3.2 - 20.8	2.0 - 12.1	3.4 - 15.1	3.5 - 19.7
Burner motor 3~ 208-600 V 60 Hz					
Output hp	10	15	10	10	20
Current A/460 V	11.9	17	11.9	11.9	23.5
Speed rpm	3510	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00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

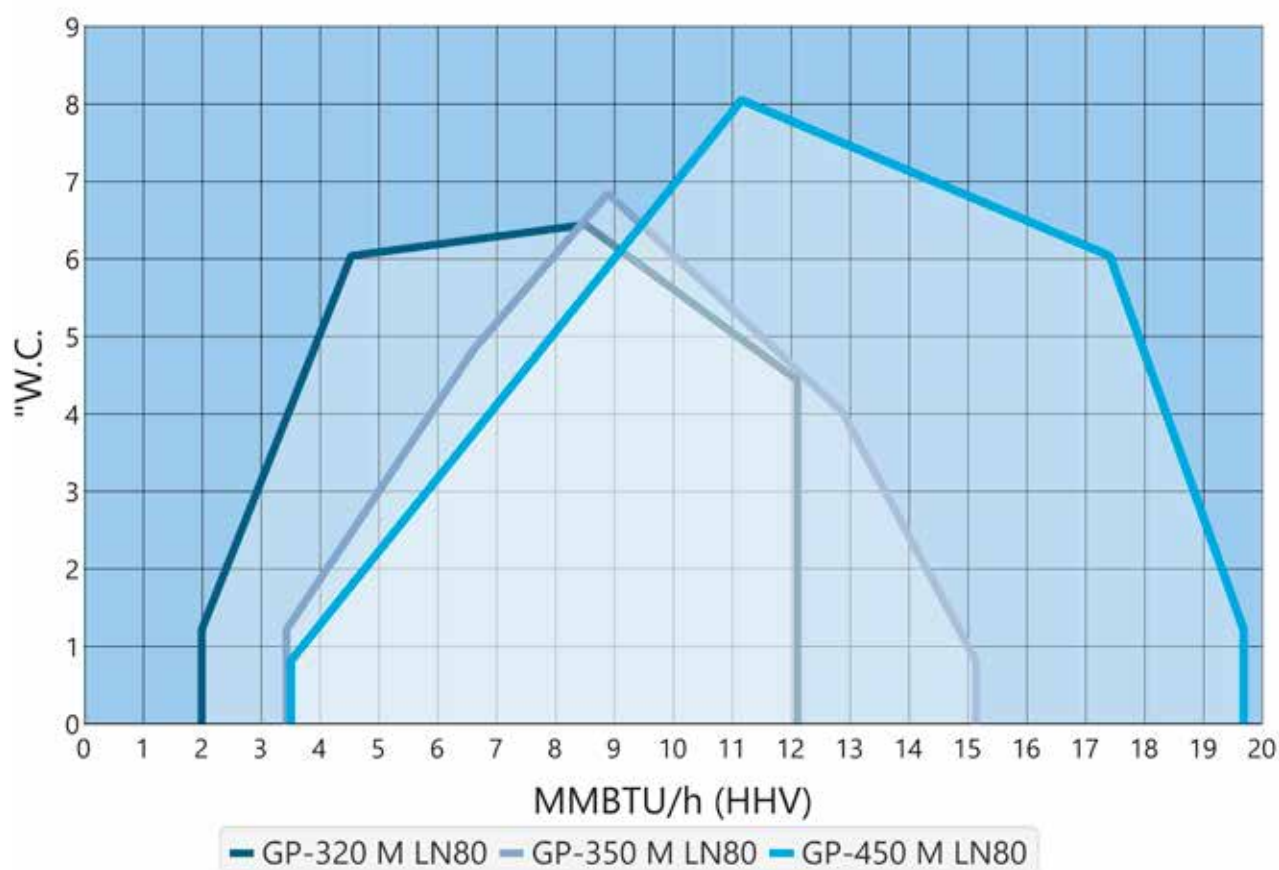
Dimensions



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-600 M...700 M-III

Technical Data

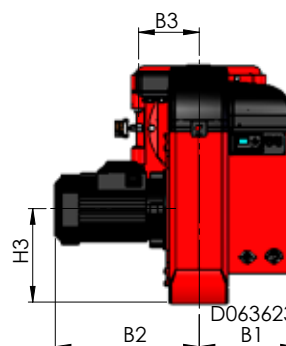
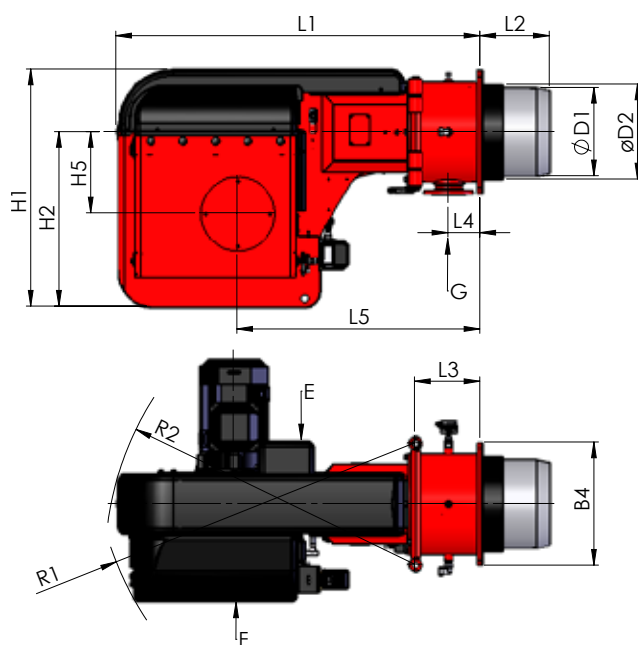
BURNER	GP-600 M	GP-700 M	GP-700 M-II	GP-700 M-III
Capacity MMBtu/h	3.7 - 25.6	4.5 - 31.8	5.1 - 36.0	5.7 - 39.8
Burner motor 3~ 208-600 V 60 Hz				
Output hp	20	25	30	40
Current A/460 V	23.5	31	35.8	45
Speed rpm	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00
Weight lb*	1014	1179	1246	1488

*) Only burner

Ratio level Gas 1:6 (100 – 16,6%)

Note! The weight varies according to delivery contents.

Dimensions



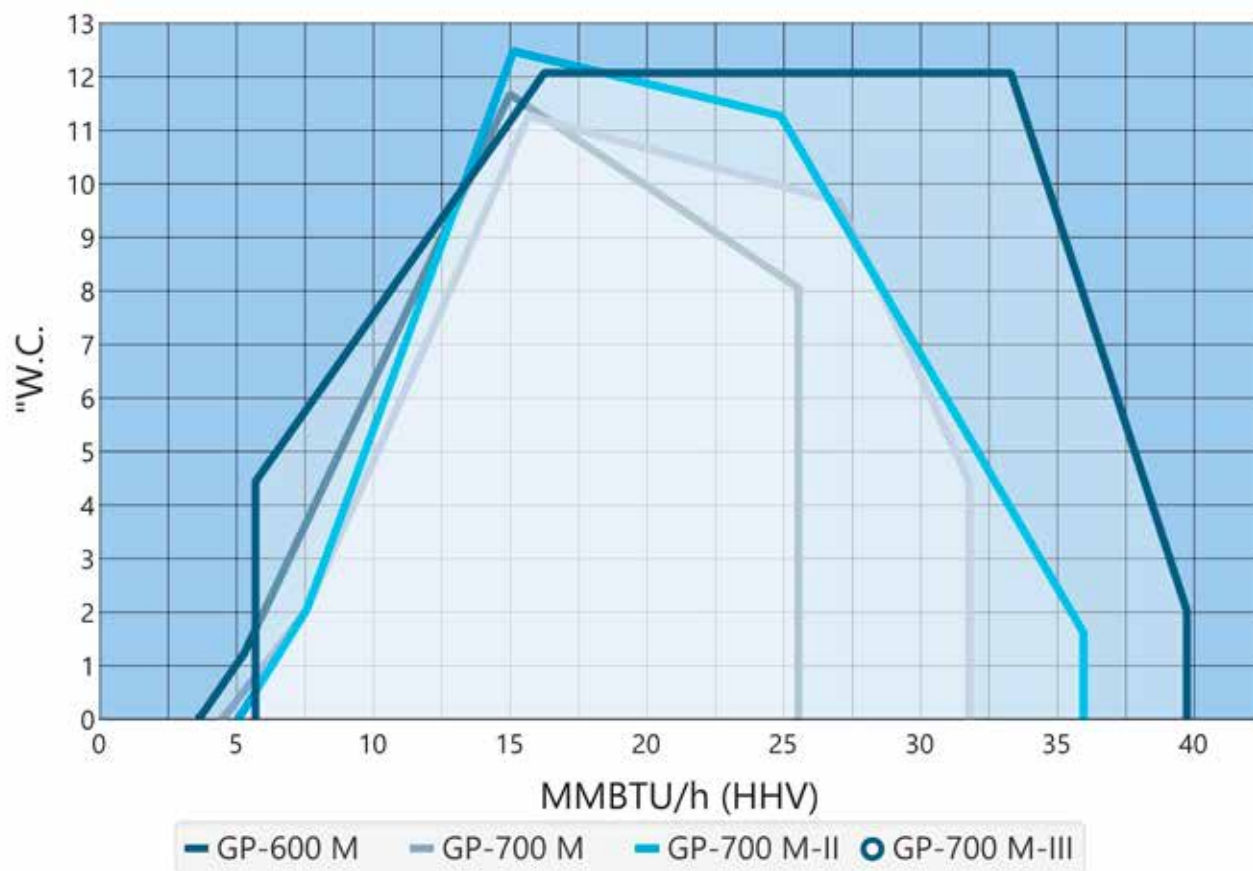
G = Gas inlet
E = Electrical connection
F = FGR - Flue Gas Recirculation

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

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	ØD2	R1	R2
GP-600 M	41.73	30.71	16.54	14.37	17.13	25.39	10.63	21.65	15.55	16.73	56.69	55.12
GP-700 M	41.73	30.71	16.54	14.37	19.29	27.56	10.63	21.65	15.55	16.73	57.48	55.12
GP-700 M-II	41.73	30.71	16.54	14.37	19.29	29.92	10.63	21.65	15.55	16.73	57.48	55.12
GP-700 M-III	41.73	30.71	16.54	14.37	19.29	33.27	10.63	21.65	16.73	-	57.48	55.12

Dimensions in inches.

Working Diagram



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

Technical Data

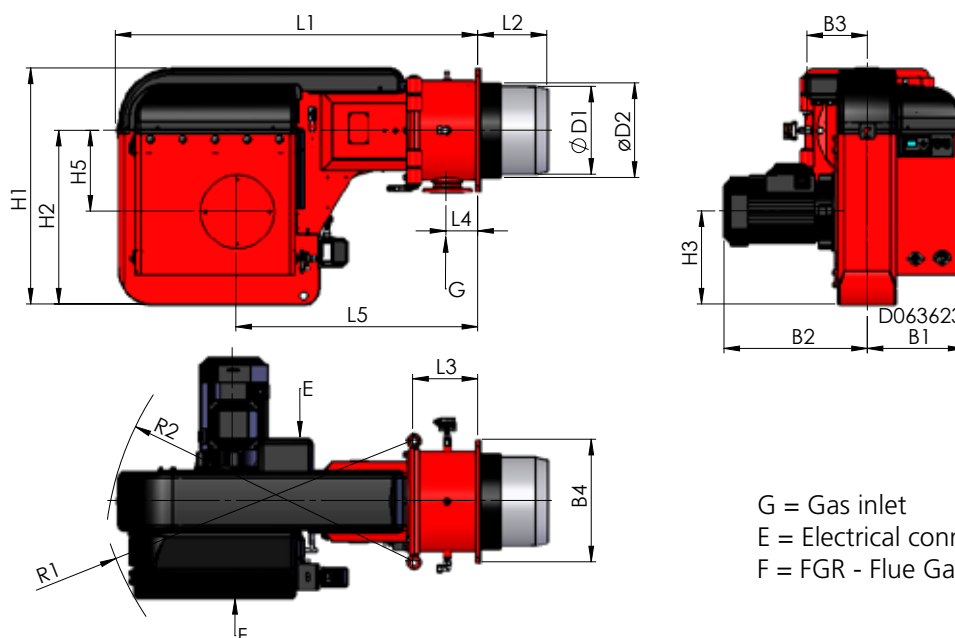
BURNER	GP-600 M LN60	GP-700 M-III LN60	GP-600 M LN80	GP-700 M-II LN80	GP-700 M-III LN80
Capacity MMBtu/h	3.0 - 24.6	5.2 - 28.4	3.6 - 25.4	4.5 - 28.8	5.7 - 33.3
Burner motor 3~ 208-600 V 60 Hz					
Output hp	25	40	20	30	40
Current A/460 V	34	52	26	38	45
Speed rpm	3510	3510	3510	3510	3510
Control unit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

*) Only burner

Ratio level Gas 1:6 (100 – 16,6%)

Note! The weight varies according to delivery contents.

Dimensions



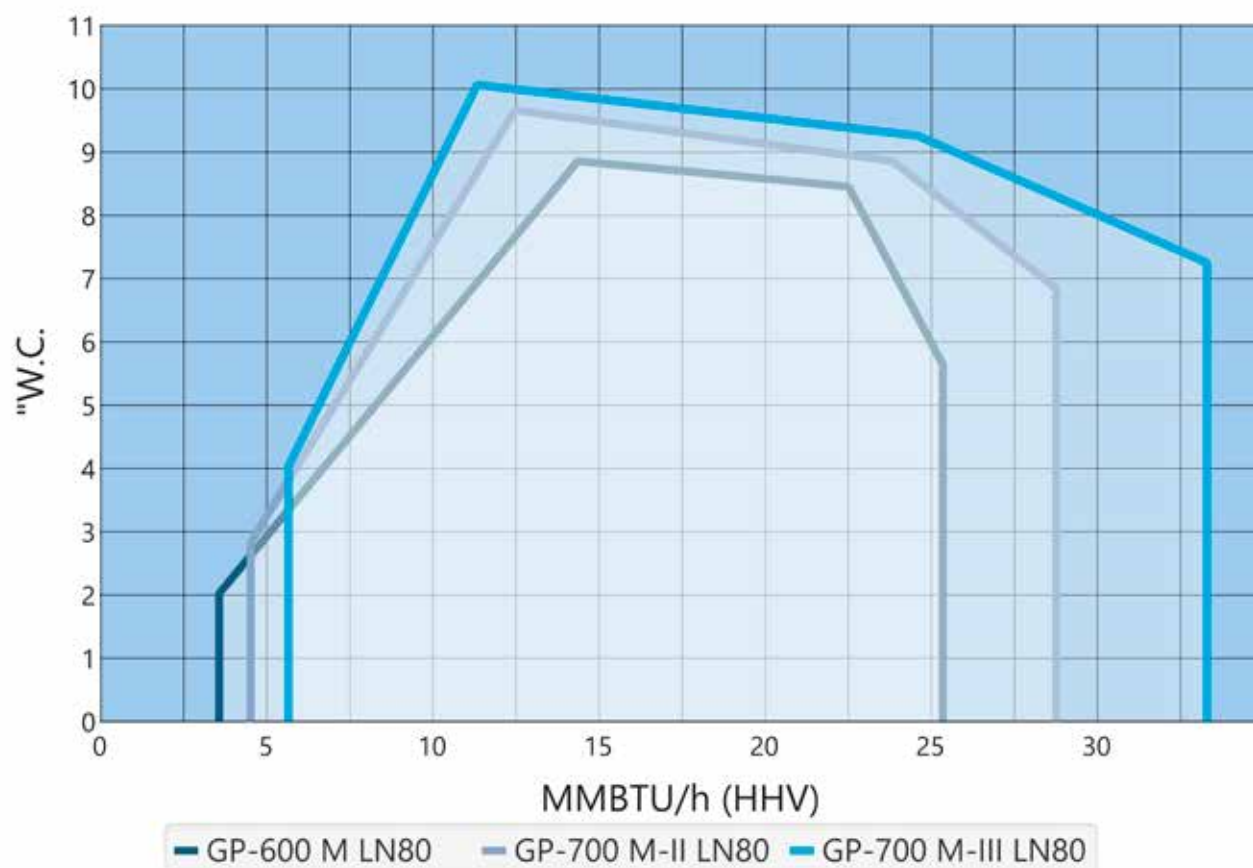
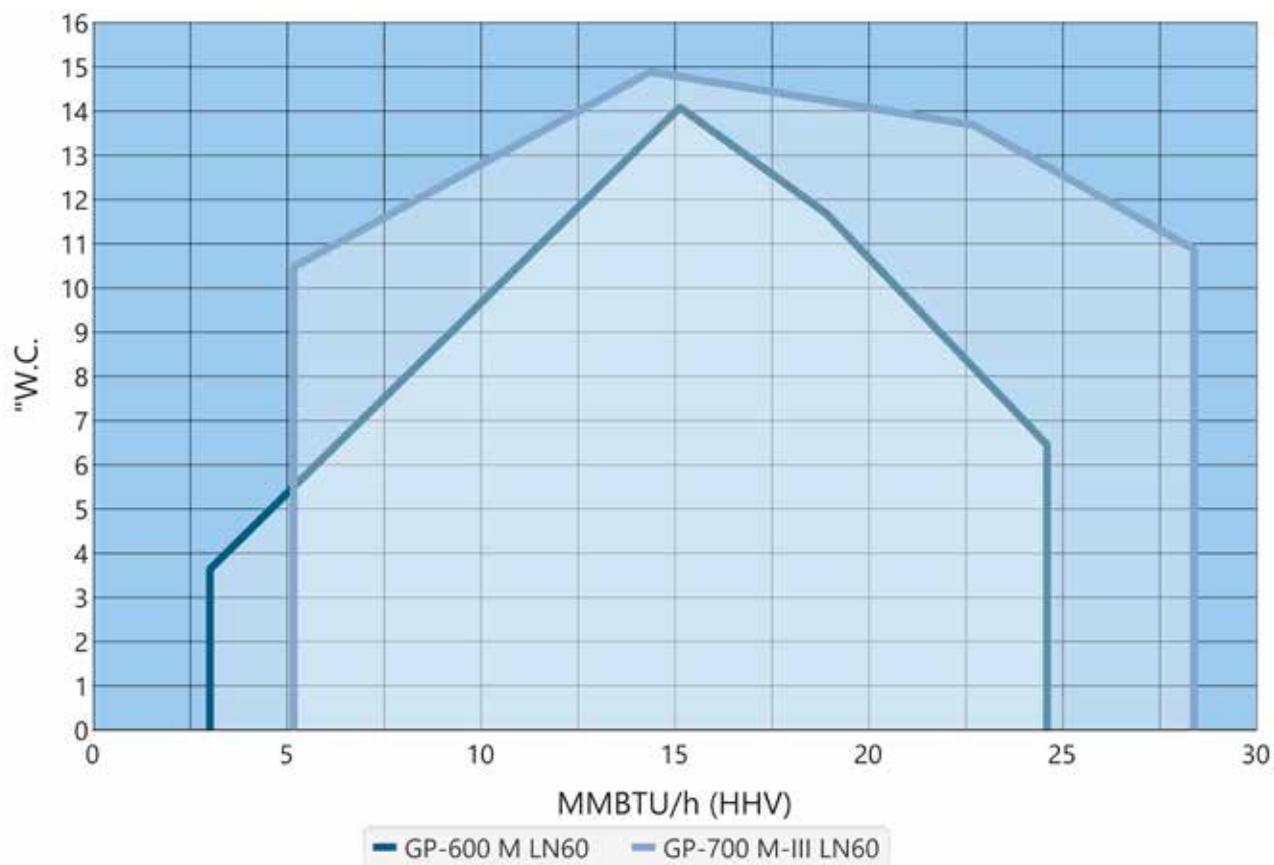
G = Gas inlet
E = Electrical connection
F = FGR - Flue Gas Recirculation

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	42.91
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	42.91
GP-700 M-III LN80	64.96	24.02	11.61	5.71	42.91

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	14.37	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	14.37	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	14.37	19.29	33.27	10.63	21.65	15.98	-	57.48	55.12

Dimensions in inches.

Working Diagram



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

Technical Data

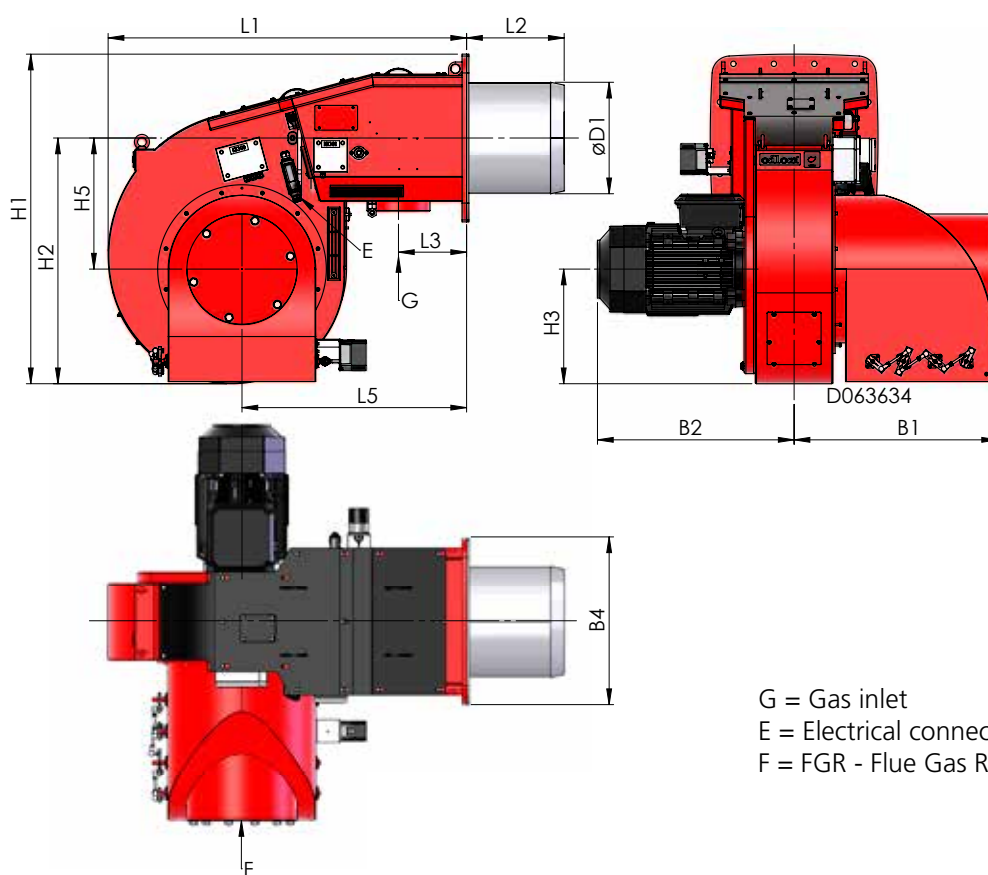
BURNER	GP-1000 M	GP-1200 M	GP-1000 M LN80
Capacity MMBtu/h	6.8 - 42.0	8.3 - 50.4	6.8 - 41.7
Burner motor 3~ 208-600 V 60 Hz			
Output hp	50	60	50
Current A/460 V	55.9	66.7	55.9
Speed rpm	3510	3510	3510
Control unit	WDx00	WDx00	WDx00
Weight lb*	1720	1830	1742

*) Only burner

Ratio level Gas 1:5 (100 – 20%)

Note! The weight varies according to delivery contents.

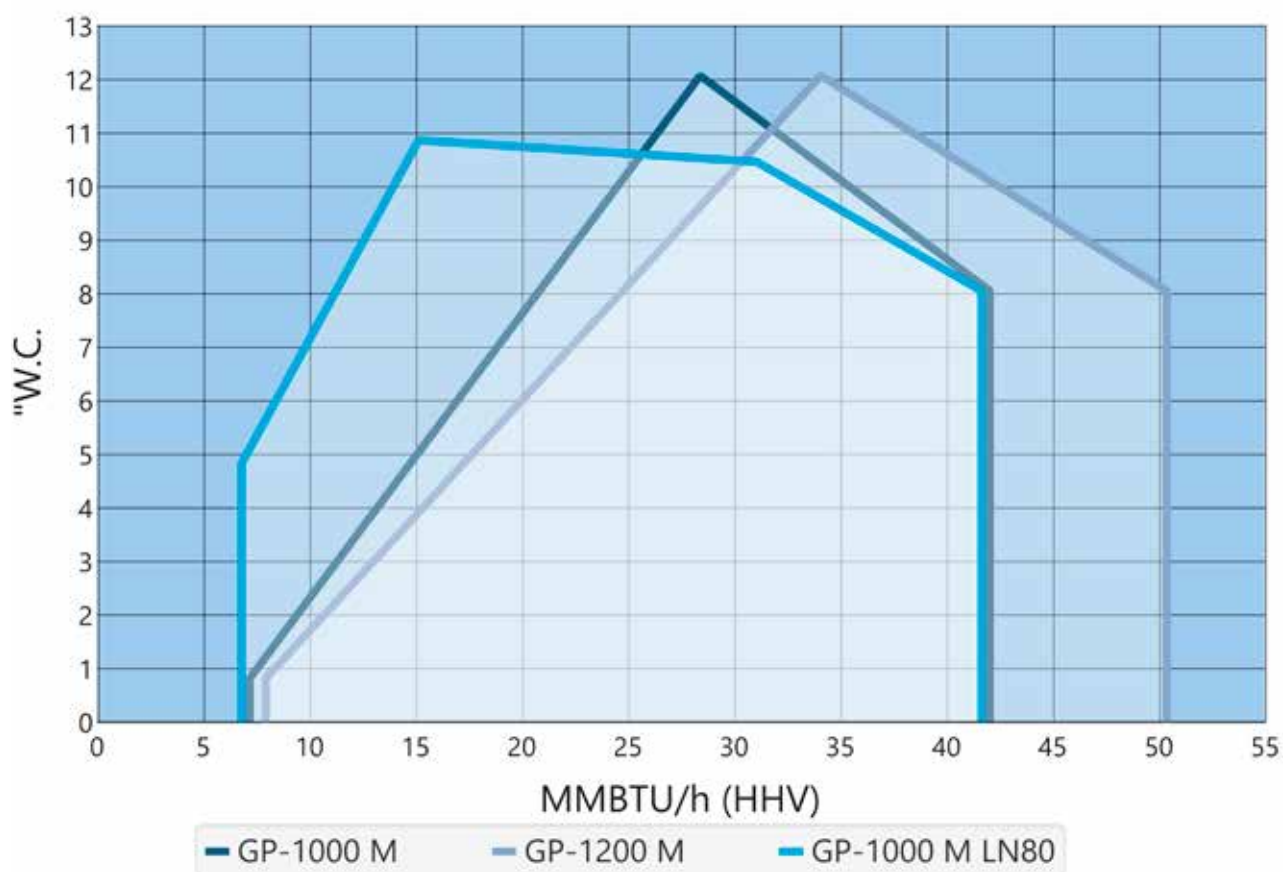
Dimensions



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	x	x	x	x
Inbuilt combustion air fan	x	x	x	x
Air damper with servomotor	x	x	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
Pressure regulation valve for gas	x	x	x	x
Ignition gas valve*	x	x	x	x
LPG gas nozzle	o	o	o	o
FGR	o	o	o	o
Gas pressure gauge	o	o	o	o
Turbo combustion head	o	o	o	o
Fan motor speed sensor	o	o	o	o
Frequency converter	o	o	o	o
O ₂ control	o	o	o	o
O ₂ +CO control	-	-	-	-
Combustion head optimizer with servomotor	-	-	o	-
Pressure gauge for fan pressure	o	o	o	o
Manual	x	x	x	x

x Standard
o Option

*) Always in LN80 burners



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

2.1 - 49.9 MMBtu/h

GKP-140 M...280 M, GKP-140/250 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
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 - 780 21.1 - 55.0
Burner motor 3~ 208-600 V 60 Hz						
Output hp	5.5	7.5	7.5	10	5.5	10
Current A/460 V	6.2	8.9	8.9	11.9	6.2	11.9
Speed rpm	3510	3510	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00	WDx00	WDx00
Oil hose connection - suction - return	R ½" R ½"	R ½" R ½"	R ¾" R ½"	R ¾" R ½"	R ½" R ½"	R ¾" R ½"
Oil pump - Motor 3~ 208-600 V 60 Hz	TAR2	TAR2	TAR3	TAR3	TAR2	TAR3
Output hp	2	2	2	2	2	2
Current A/460 V	2.8	2.8	2.8	2.8	2.8	2.8
Speed rpm	3510	3510	3510	3510	3510	3510
Weight lb*	357	362	595	613	364	604

*) Only burner

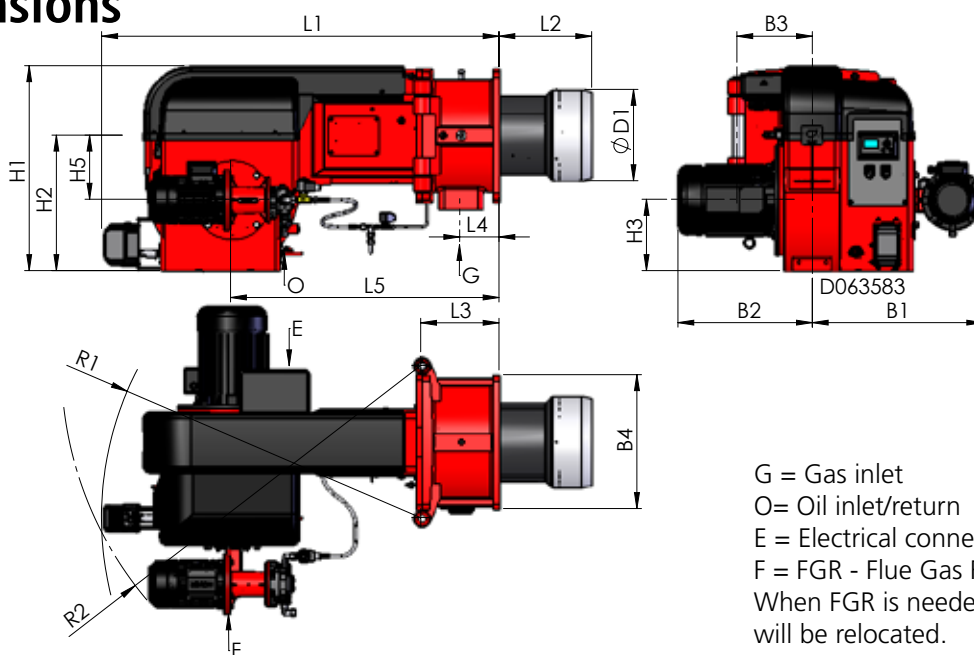
LFO: 1 gal/h = 140 MBtu/h

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

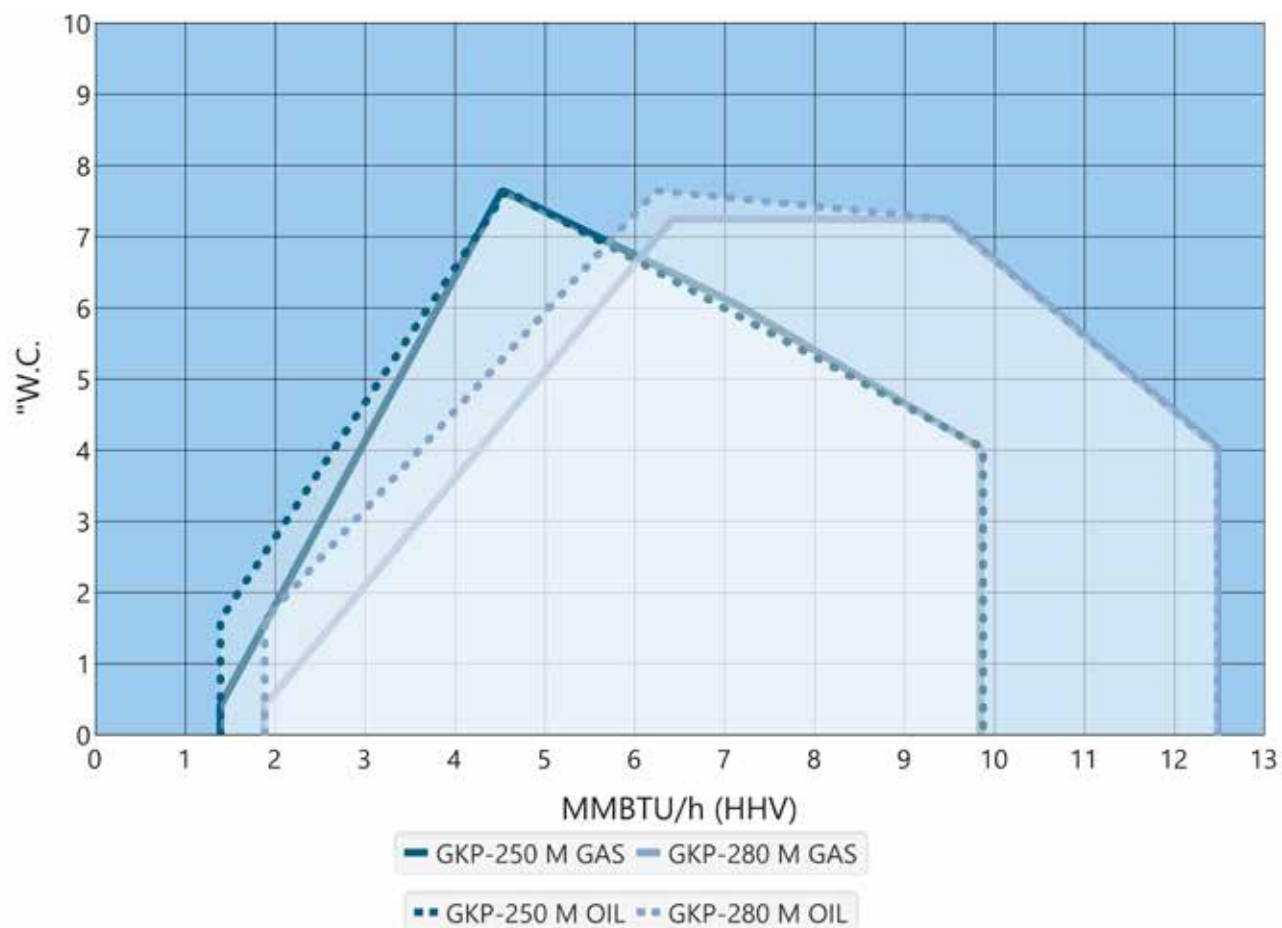
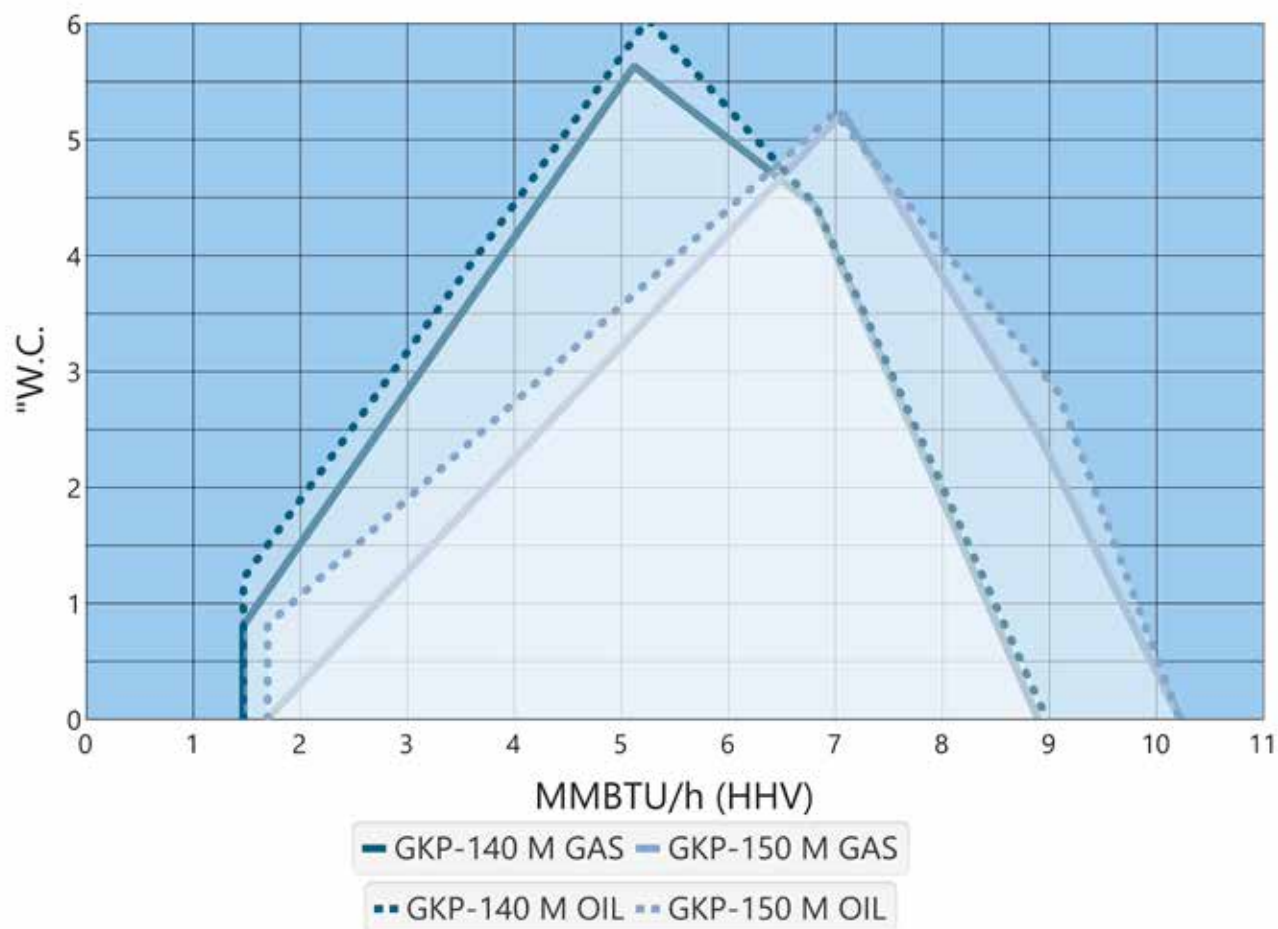
When FGR is needed, oil pump unit will be relocated.

BURNER	L1	L2	L2		L3	L4	L5
			C1	C2			
GKP-140 M	50.59	8.66	-	-	10.24	5.08	34.65
GKP-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

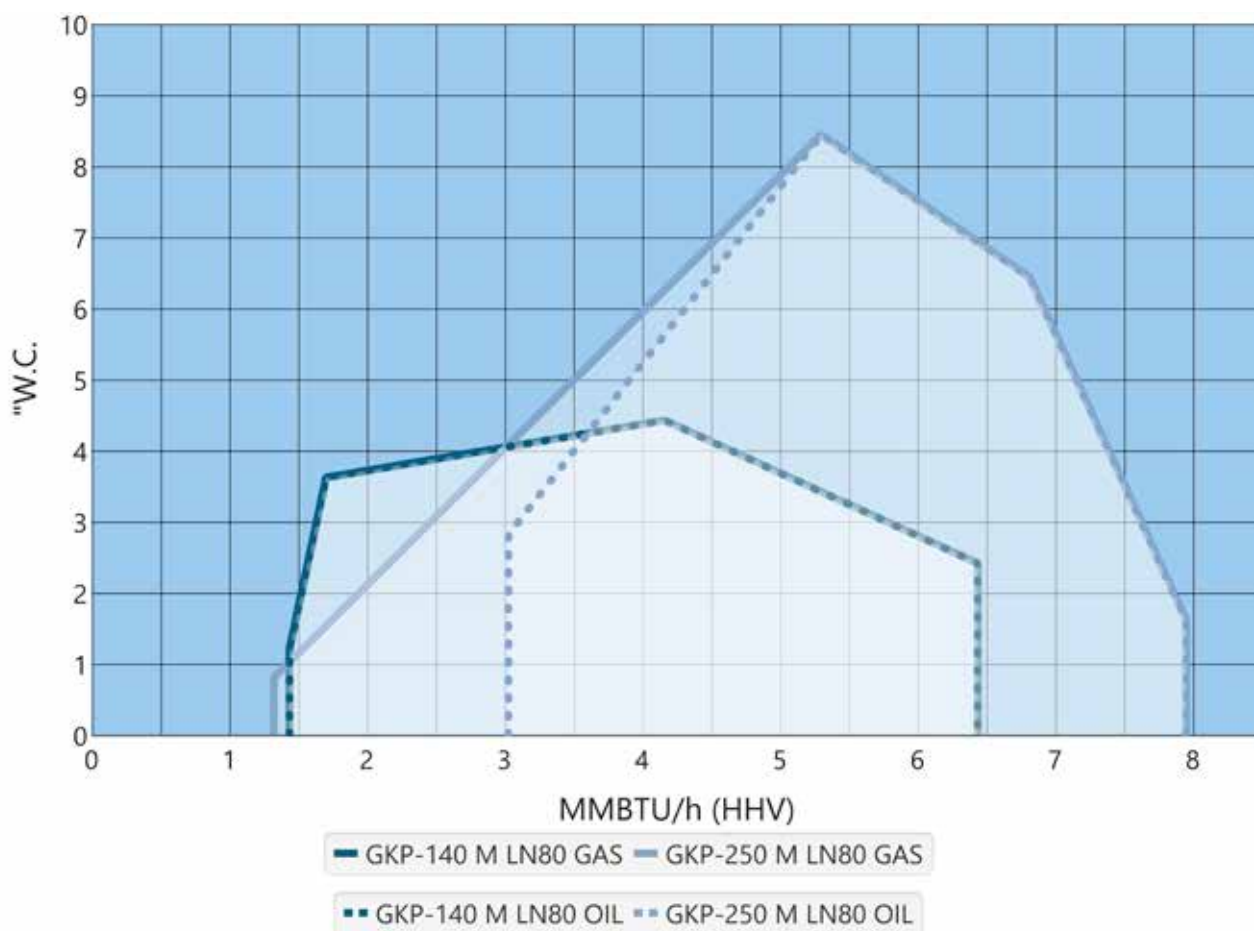
BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	R1	R2
GKP-140 M	24.61	15.75	8.27	7.68	16.93	16.93	8.27	14.17	9.45	41.34	45.28
GKP-250 M	26.57	17.56	9.25	8.46	18.31	19.29	9.84	17.32	10.63	43.31	47.24
GKP-280 M	26.57	17.56	9.25	8.46	18.31	19.29	9.84	17.32	11.81	43.31	47.24
GKP-140 M LN80	24.61	15.75	8.27	7.68	16.93	16.93	8.27	14.17	9.45	41.34	45.28
GKP-250 M LN80	26.57	17.56	9.25	8.46	18.31	19.29	9.84	17.32	10.08	43.31	47.24

Dimensions in inches.

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-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	3.5 - 19.7 38.8 - 135.2
Burner motor 3~ 208-600 V 60 Hz				
Output hp	10	15	10	20
Current A/460 V	11.9	17.7	11.9	23.5
Speed rpm	3510	3510	3510	3510
Oil hose connection				
- suction	R 1"	R 1"	R 1"	R 1"
- return	R 1"	R 1"	R 1"	R 1"
Oil pump	TAR4	TAR4	TAR4	TAR4
- Motor 3~ 208-600 V 60 Hz				
Output hp	2	2	2	2
Current A	2.8	2.8	2.8	2.8
Speed r/min	3510	3510	3510	3510
Control unit	WDx00	WDx00	WDx00	WDx00
Weight lb*	860	1113	871	1124

*) Only burner

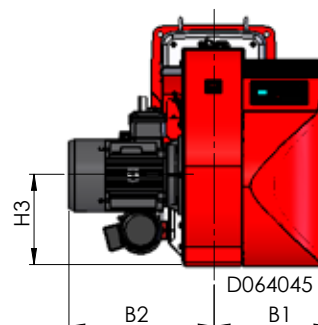
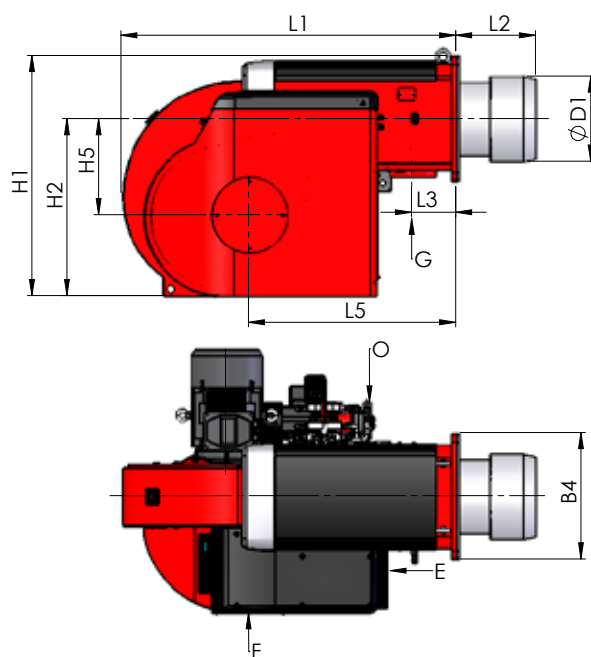
LFO: 1 gal/h = 140 MBtu/h

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

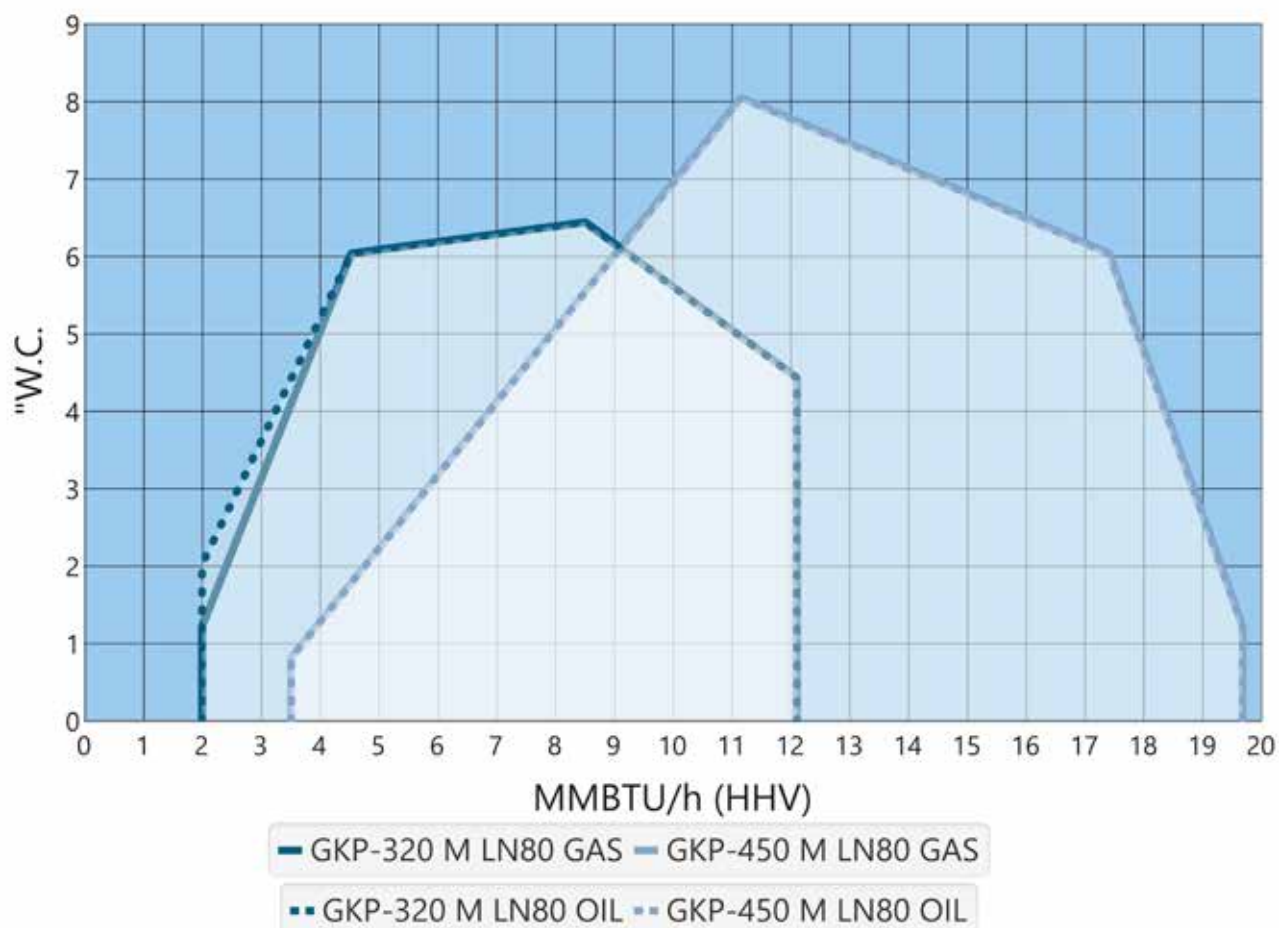
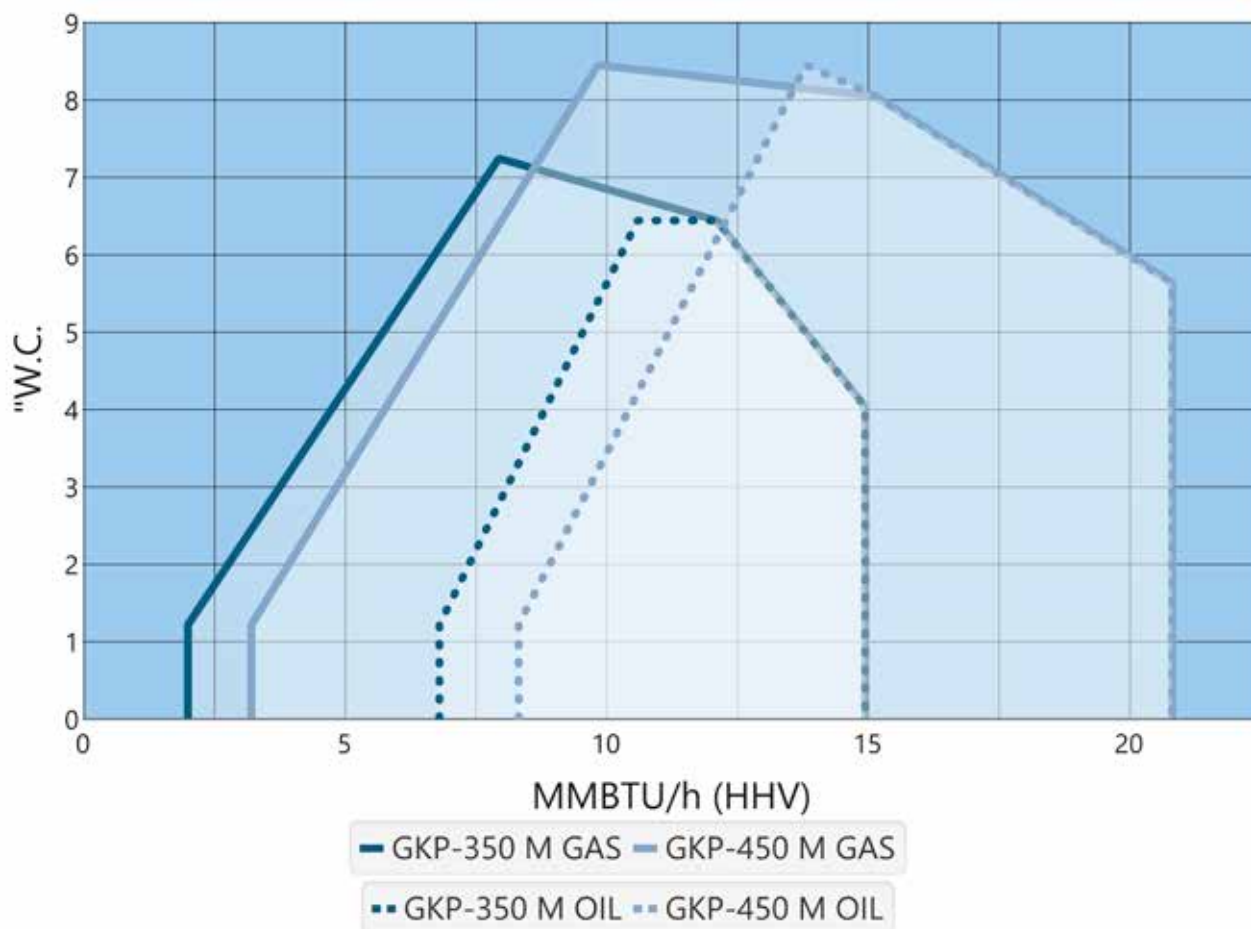


G = Gas inlet
O= Oil inlet/return
E = Electrical connection
F = FGR - Flue Gas Recirculation

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-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	40 45 3510
Oil hose connection - suction - return	R 1" R 1"	R 1" R 1"	R 1" R 1"	R 1" R 1"
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

*) Only burner

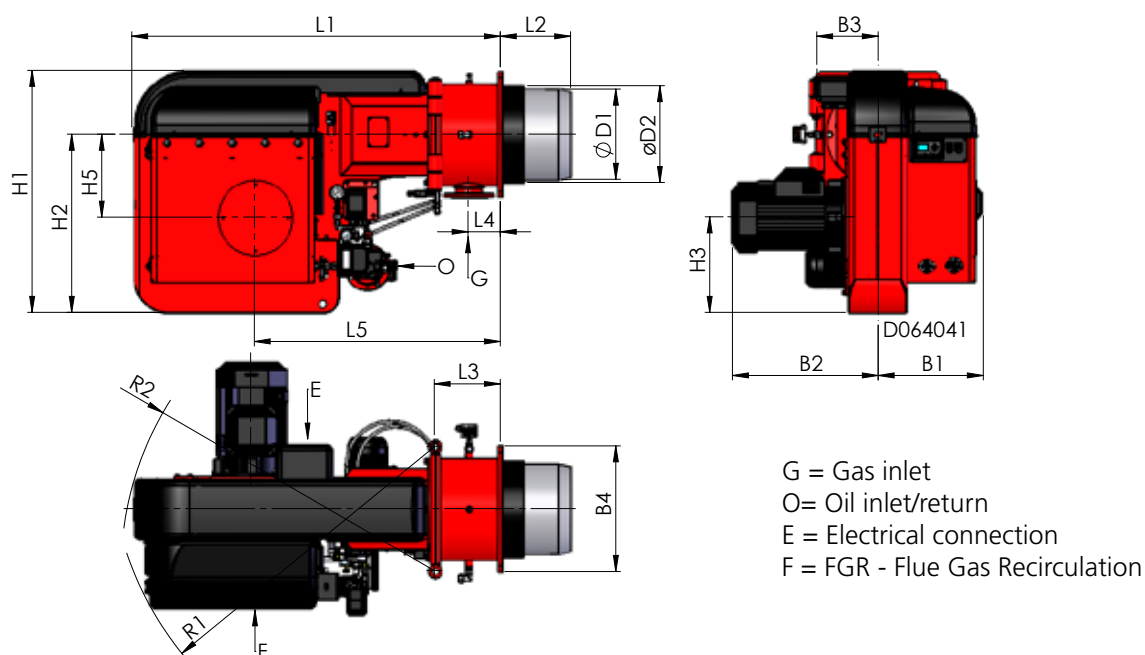
LFO: 1 gal/h = 140 MBtu/h

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

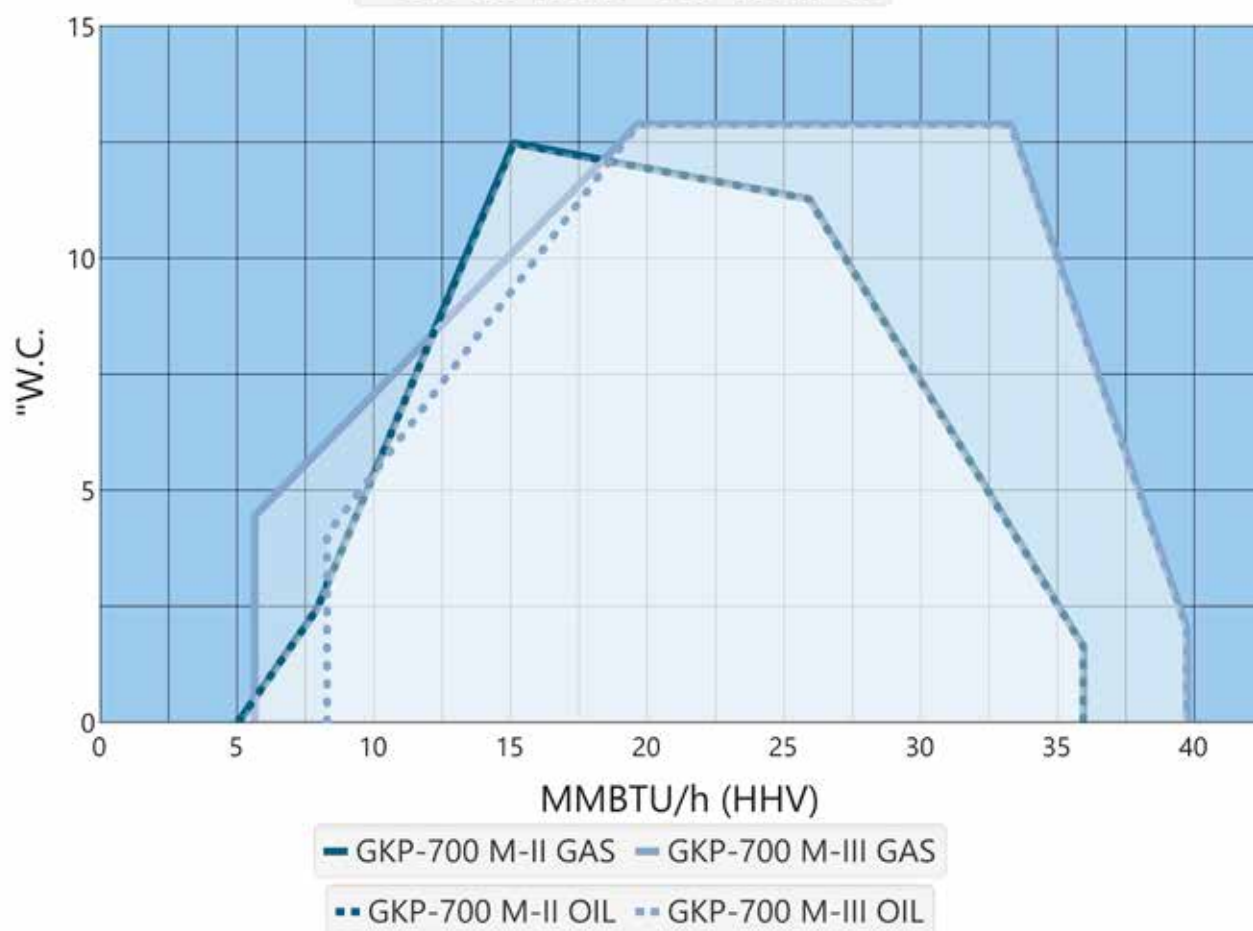
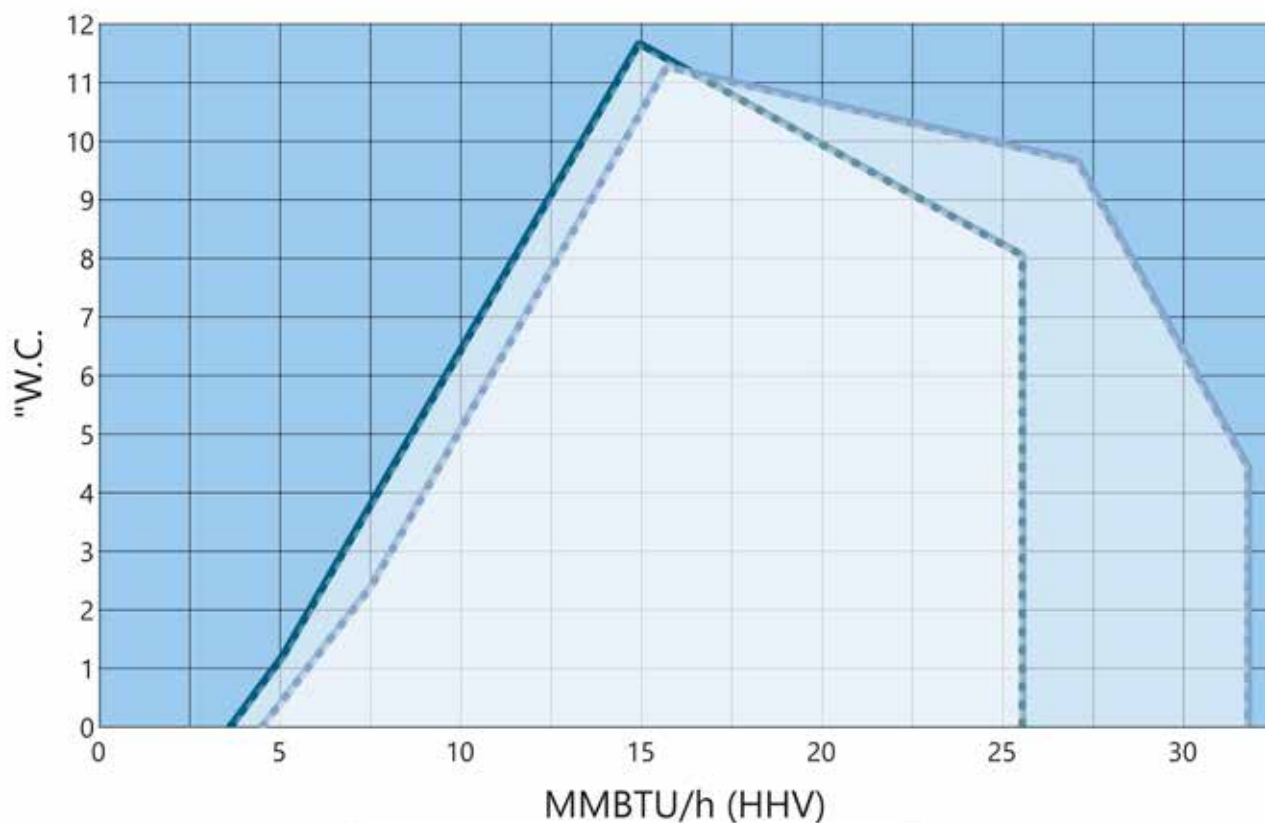


BURNER	L1	L2	L3	L4	L5
GKP-600 M	64.96	12.20	11.61	5.71	42.91
GKP-700 M	64.96	12.20	11.61	5.71	42.91
GKP-700 M-II	64.96	12.20	11.61	5.71	42.91
GKP-700 M-III	64.96	15.75	11.61	5.71	42.91

BURNER	H1	H2	H3	H5	B1	B2	B3	B4	ØD1	ØD2	R1	R2
GKP-600 M	41.73	30.71	16.54	14.37	18.31	25.39	10.63	21.65	15.55	16.73	56.69	55.12
GKP-700 M	41.73	30.71	16.54	14.37	20.28	27.56	10.63	21.65	15.55	16.73	57.48	55.12
GKP-700 M-II	41.73	30.71	16.54	14.37	20.28	29.92	10.63	21.65	15.55	16.73	57.48	55.12
GKP-700 M-III	41.73	30.71	16.54	14.37	20.28	33.27	10.63	21.65	16.73	-	57.48	55.12

Dimensions in inches.

Working Diagram



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 gal/h	3.8 - 24.4 40.4 - 175.6	4.5 - 28.8 31.1 - 198.9	6.3 - 33.3 43.5 - 230.6
Burner motor 3~ 208-600 V 60 Hz			
Output hp	20	30	40
Current A/460 V	23.4	34	45
Speed rpm	3510	3510	3510
Oil hose connection			
- suction	R 1"	R 1"	R 1"
- return	R 1"	R 1"	R 1"
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

*) Only burner

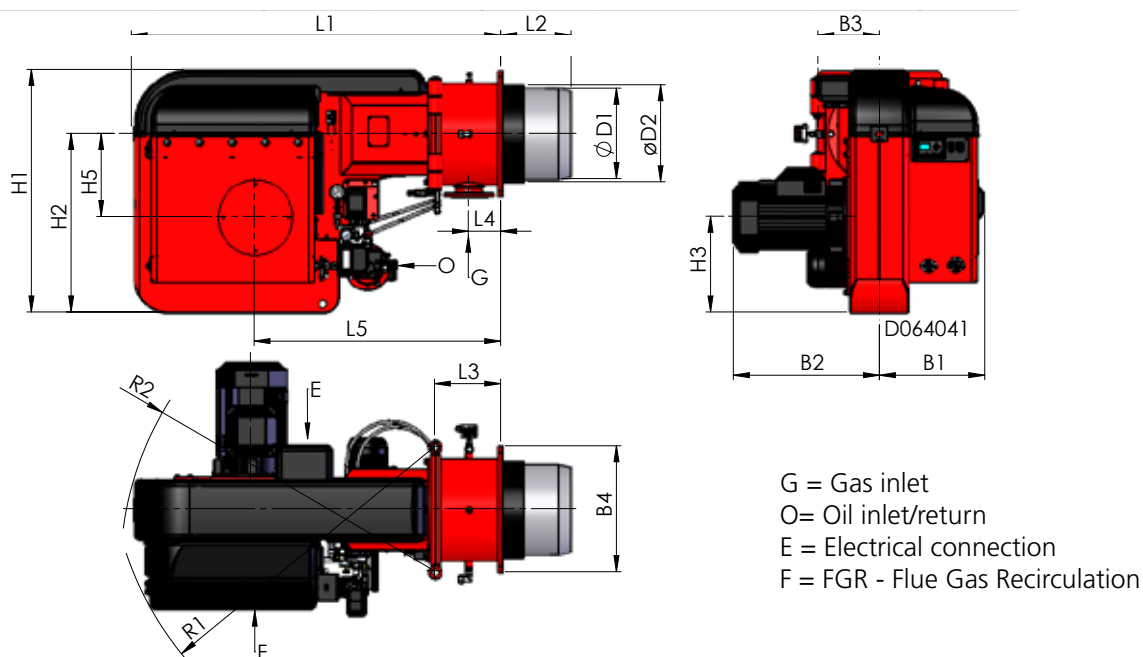
LFO: 1 gal/h = 140 MBtu/h

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

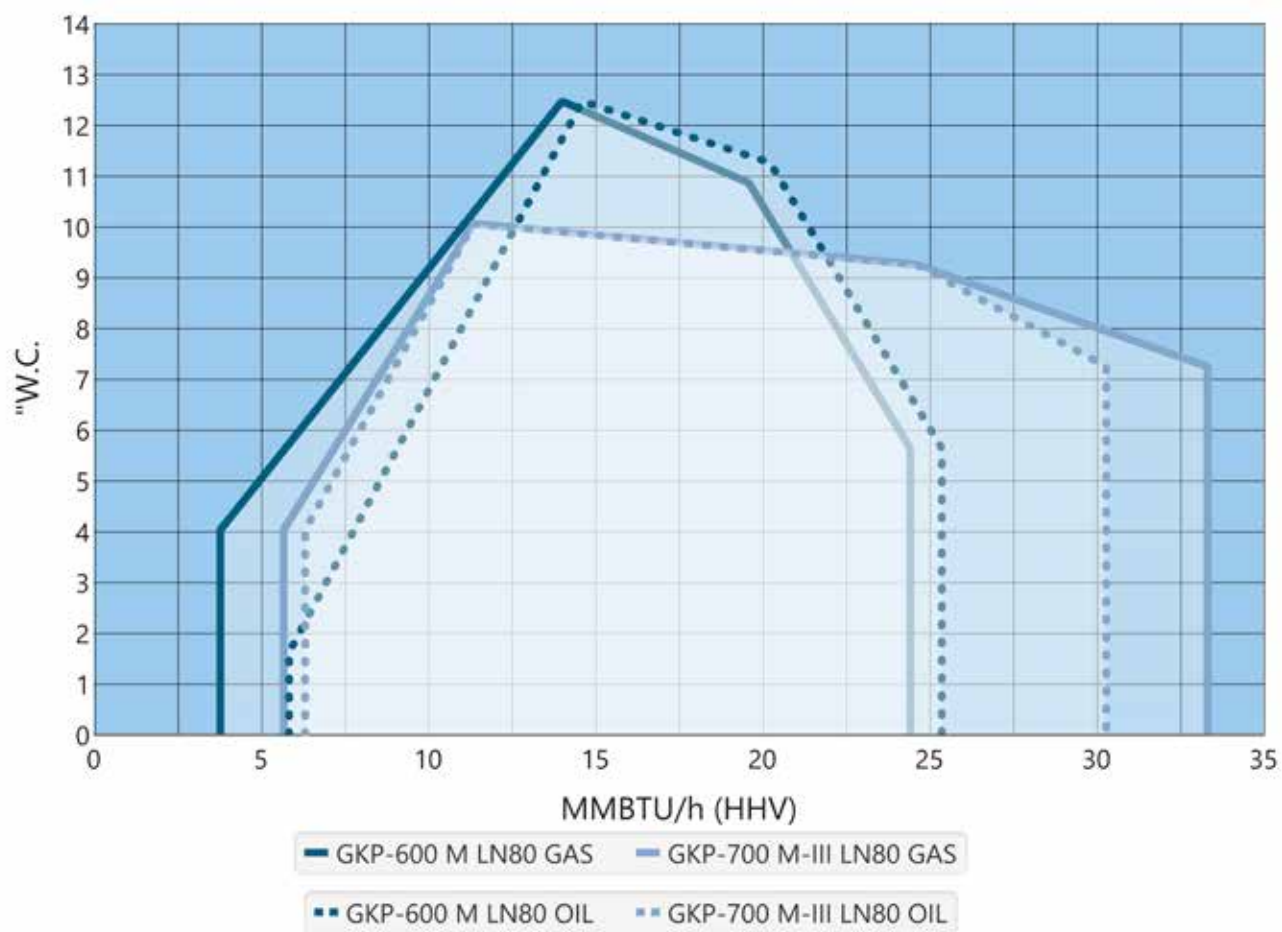


BURNER	L1	L2	L3	L4	L5
GKP-600 M LN80	64.96	20.87	11.61	5.71	42.91
GKP-700 M-II LN80	64.96	20.87	11.61	5.71	42.91
GKP-700 M-III LN80	64.96	24.02	11.61	5.71	42.91

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	14.37	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	14.37	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		50	60
Current A/460 V		55.9	66.7
Speed rpm		3510	3510
Oil pipe connections		2 x Ø 22	2 x Ø 22
Control unit		WDx00	WDx00
Weight lb*		1720	1830

*) Only burner

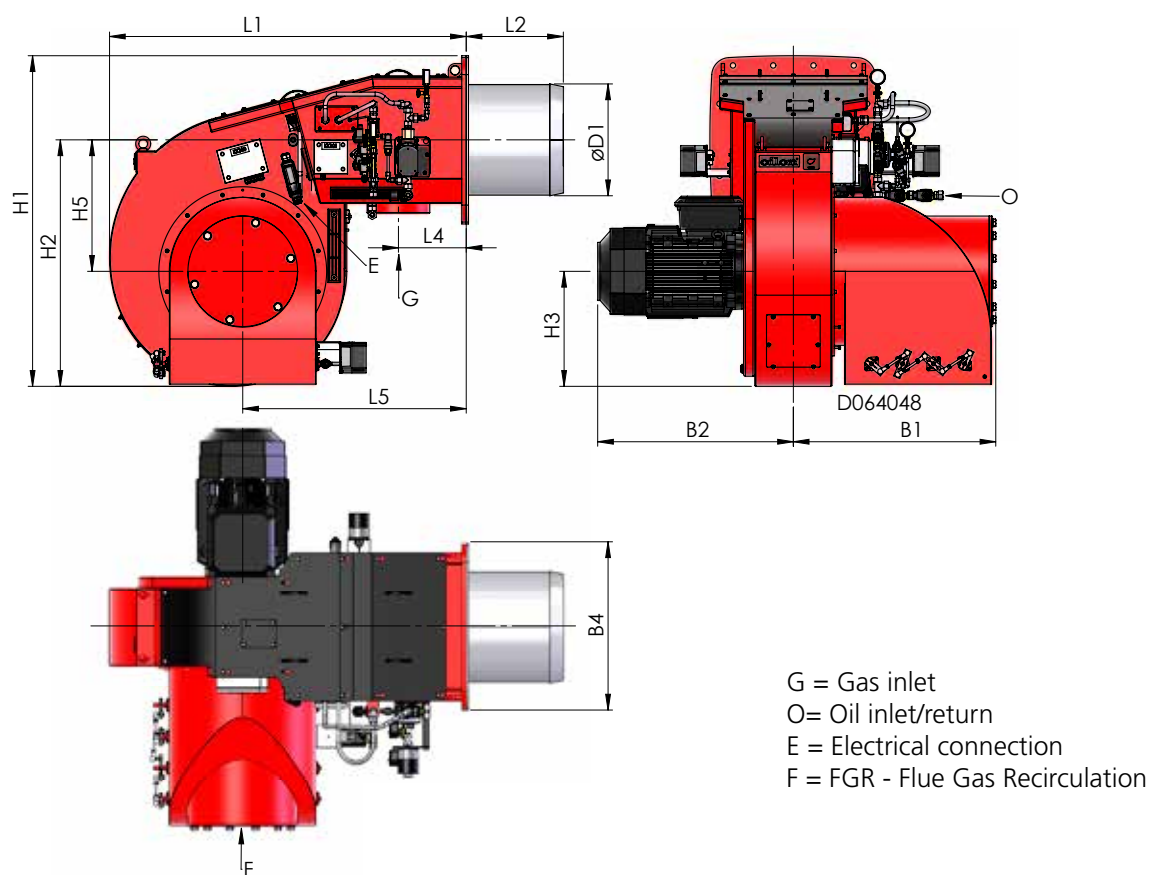
LFO: 1 gal/h = 140 MBtu/h

Ratio level Gas 1:5 (100 – 20%)

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

Note! The weight varies according to delivery contents.

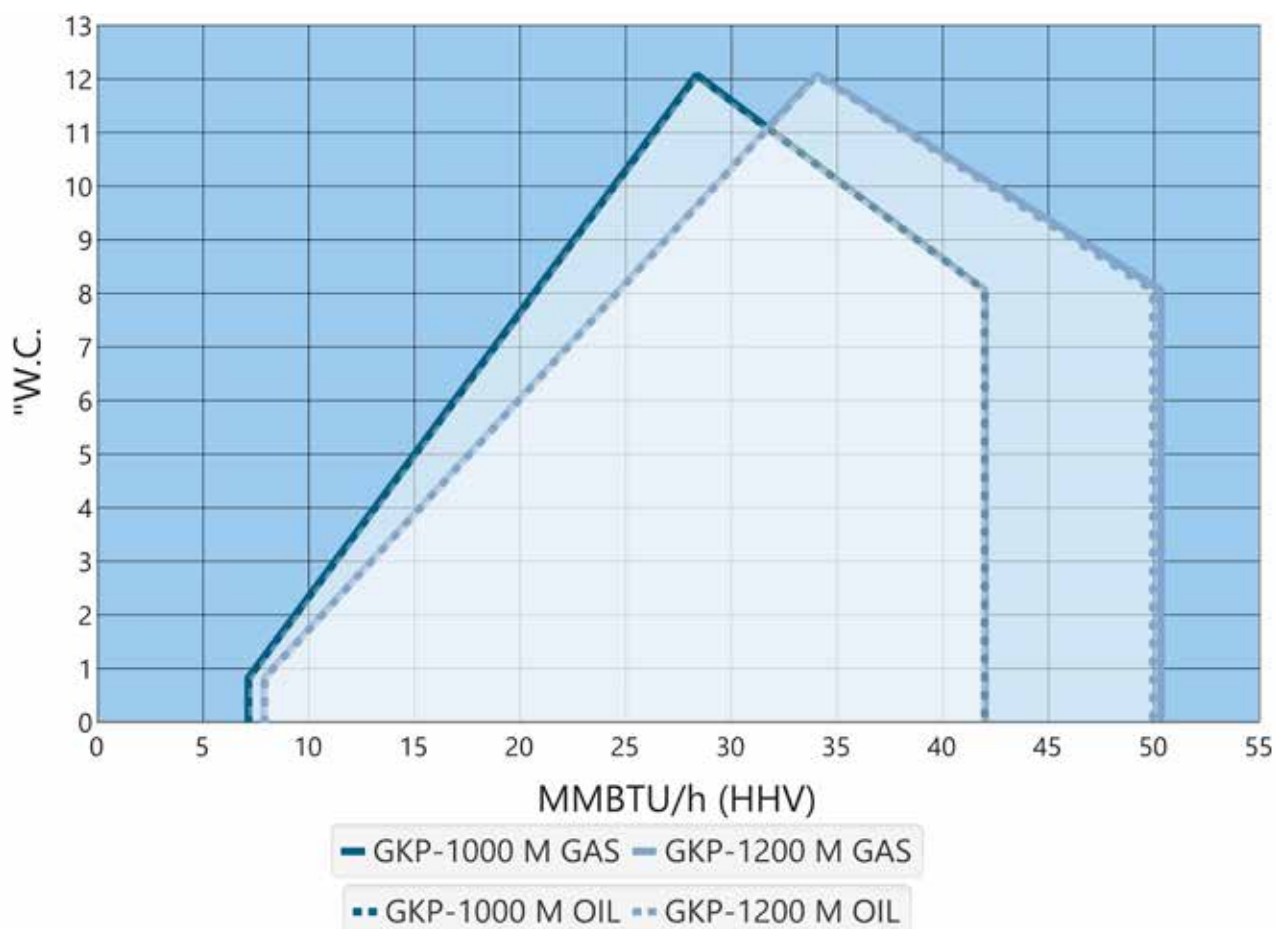
Dimensions



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	x	x	x	x
Inbuilt combustion air fan	x	x	x	x
Air damper with servomotor	x	x	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
Pressure regulation valve for gas	x	x	x	x
Ignition gas valve*	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	x
Pressure gauge/gauges for oil	x	x	x	x
Pressure switch for return oil	x	x	x	x
2 oil hoses, 78.7 inches	o	o	o	o
Oil filter	x	x	x	**
Deaerator	o	o	o	-
LPG gas nozzle	o	o	o	o
FGR	o	o	o	o
Gas pressure gauge	o	o	o	o
Turbo combustion head	o	o	o	o
Fan motor speed sensor	o	o	o	o
Frequency converter	o	o	o	o
O ₂ control	o	o	o	o
O ₂ +CO control	-	-	-	-
Pressure gauge for monitoring of inlet oil pressure	o	o	o	o
Pressure switch for monitoring of inlet oil pressure	o	o	o	o
Combustion head optimizer with servomotor	-	-	o	-
Pressure gauge for fan pressure	o	o	o	o
Manual	x	x	x	x

x Standard

o Option

*)Always in LN80 burners

**) Separate booster unit PKYK

Light Fuel Oil Burners

KP-350/450 M

Technical Data

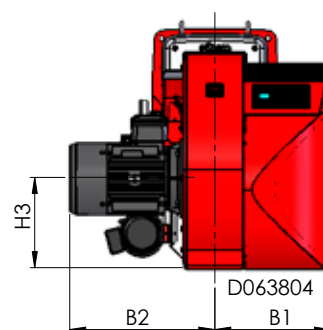
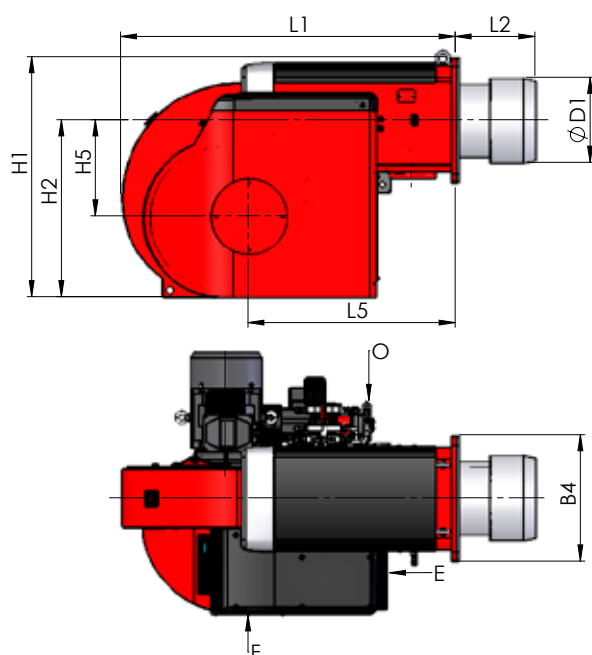
BURNER	KP-350 M	KP-450 M
Capacity gal/h	42.0 - 111.9	57.5 - 143.0
Burner motor 3~ 208-600 V 60 Hz		
Output hp	10	15
Current A/460 V	11.9	17.7
Speed rpm	3510	3510
Oil hose connection - suction - return	R 1" R 1"	R 1" R 1"
Oil pump - Motor 3~ 208-600 V 60 Hz		
Output hp	2	2
Current A/460 V	2.8	2.8
Speed 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

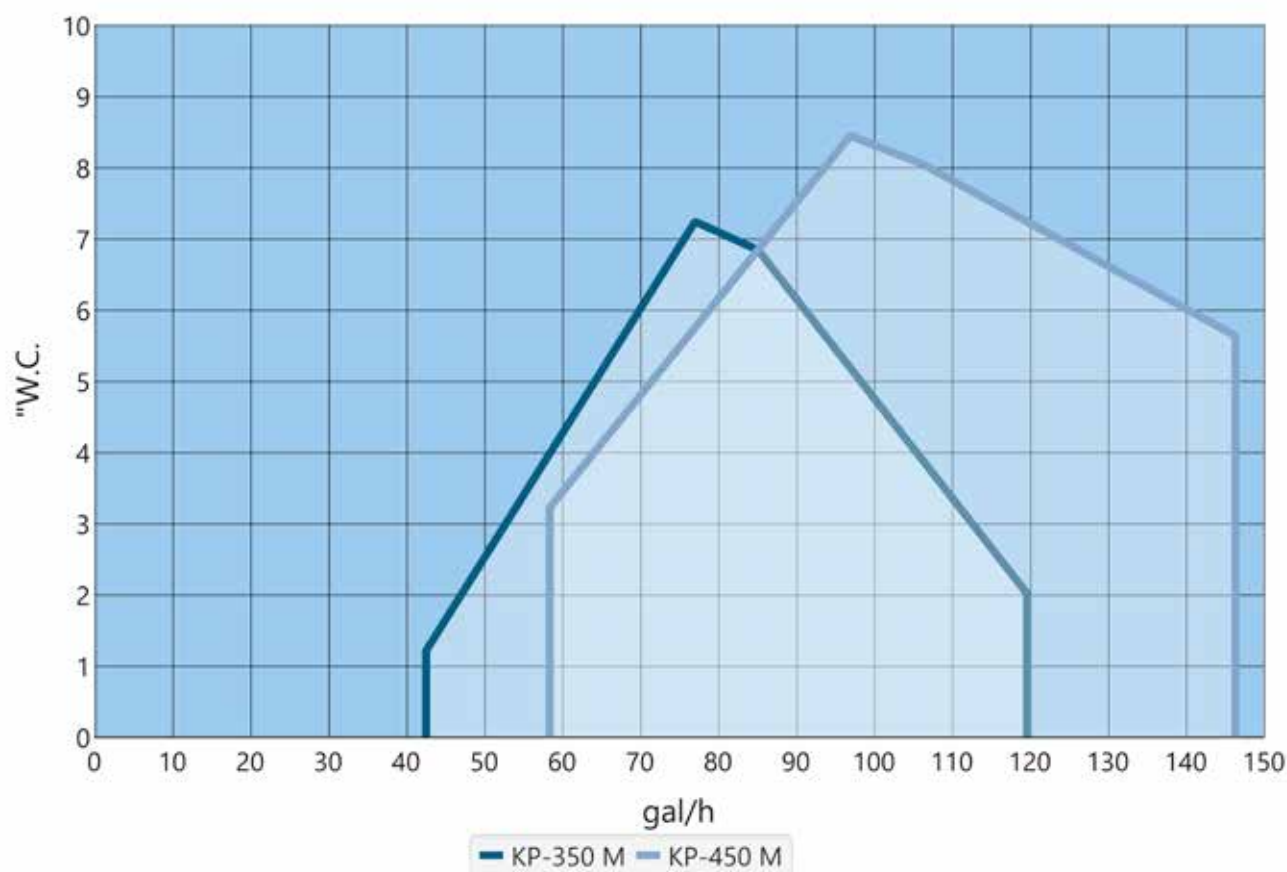
E = Electrical connection

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
Hinge flange with limit switch	-
Burner flange gasket	x
WiseDrive (electronic ratio control)	x
Ignition transformer	x
Ignition cables and electrodes	x
Flame sensor	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, 78.7 inches	x
Oil filter	x
Deaerator	o
FGR	o
Turbo combustion head	o
Fan motor speed sensor	o
Frequency converter	o
O ₂ control	o
O ₂ +CO control	-
Pressure gauge for monitoring of inlet oil pressure	o
Pressure switch for monitoring of inlet oil pressure	o
Combustion head optimizer with servomotor	-
Pressure gauge for fan pressure	o
Manual	x

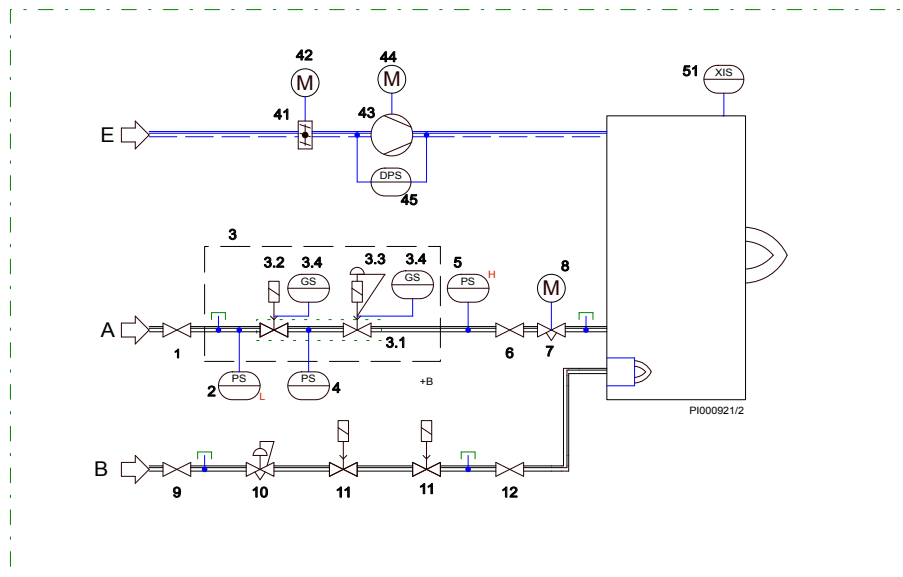
x Standard

o Option

*) Separate booster unit PKYK

PI Diagrams

GAS, VGD VALVE, M BURNERS



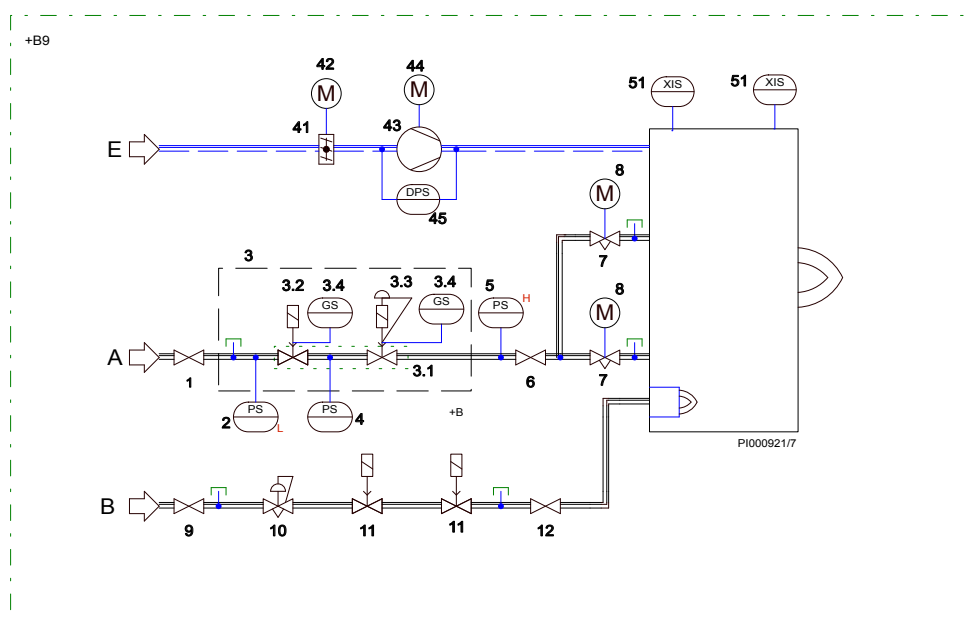
GAS PROCESS COMPONENTS

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

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

GAS, VGD VALVE, M LN 60 BURNERS



AIR PROCESS COMPONENTS

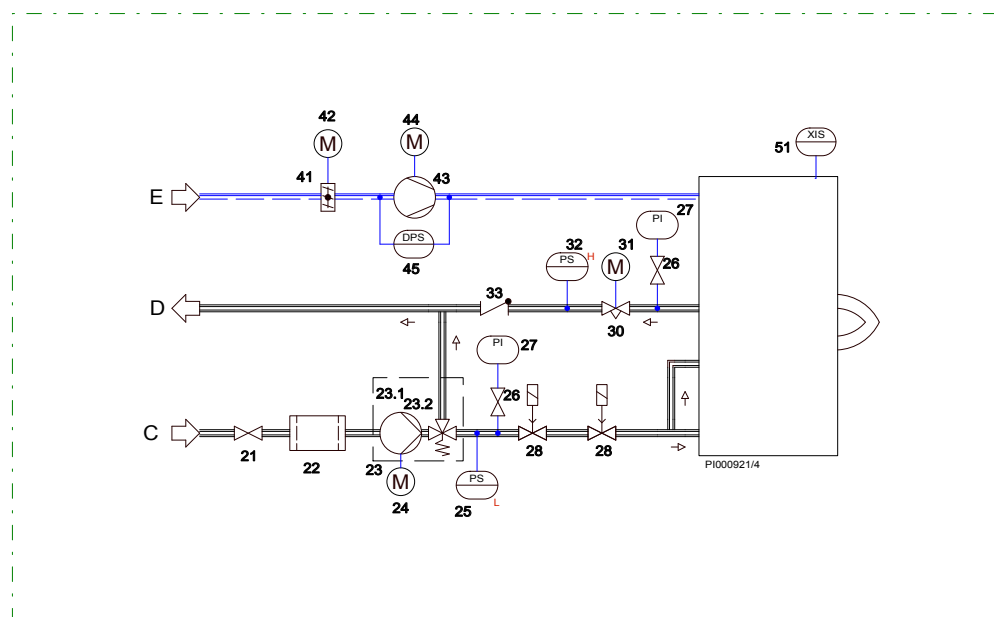
41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air, not for KP-models

OTHER COMPONENTS:

51. Flame detector

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

LIGHT FUEL OIL, 140...280 M BURNERS



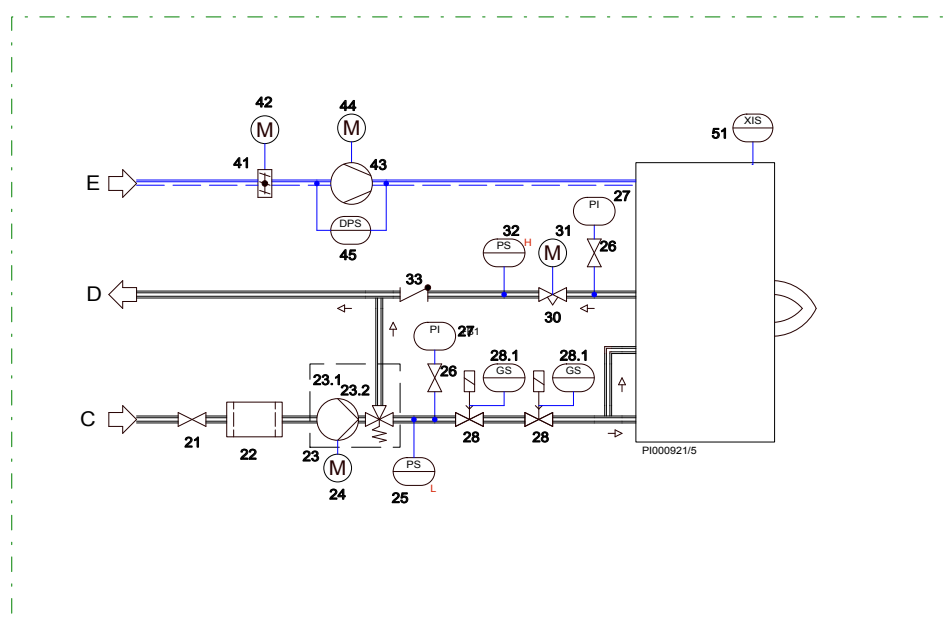
GAS PROCESS COMPONENTS

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

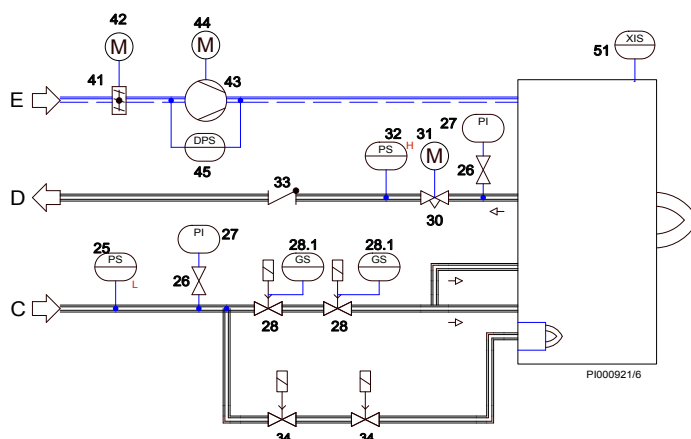
41. Air damper
42. Servomotor
43. Combustion air fan
44. Electric motor
45. Differential pressure switch for air, not for KP-models

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

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

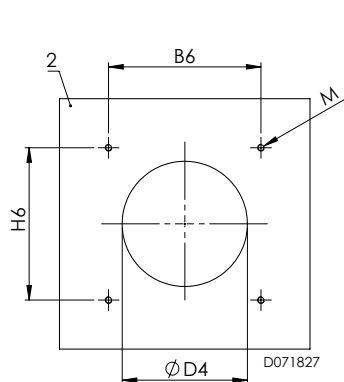
OTHER COMPONENTS:

51. Flame detector

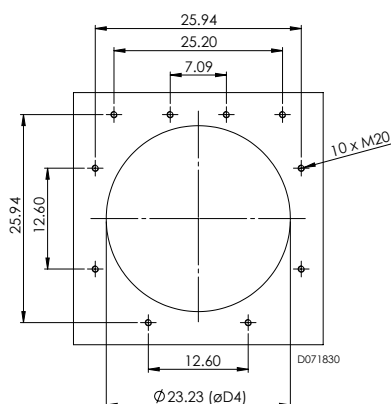
- A = Gas supply
B = Ignition gas supply
C = Oil supply
D = Oil return
E = Air supply

Combustion head and masonry dimensions

Mounting plate



140...-700 M-III

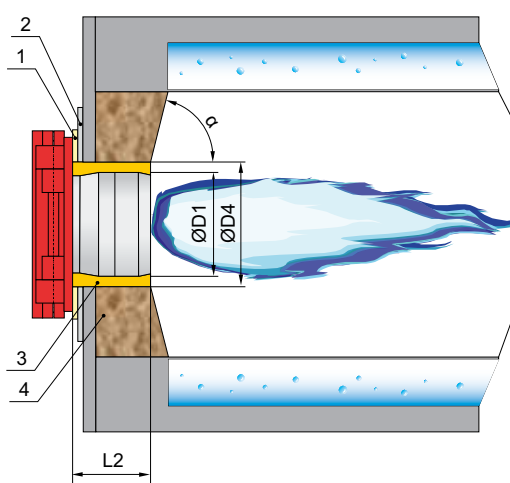


1000/1200

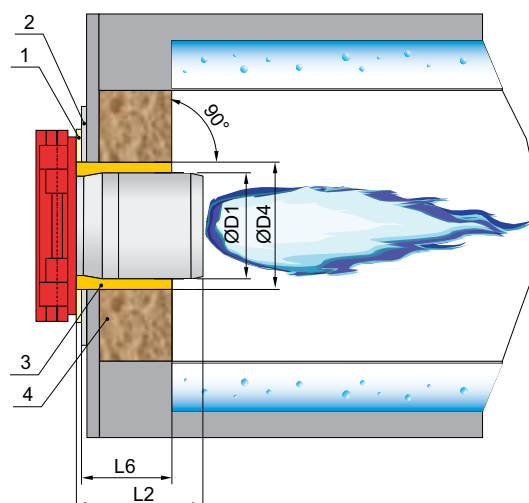
Dimensions in inches.

Burner mounting

Standard burner



Low NOx burner LN60/LN80



1. Gasket, thickness 0.31 inches
2. Mounting plate
3. Ceramic wool or equivalent
4. Masonry

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	17.91	4xM20	15.55	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.

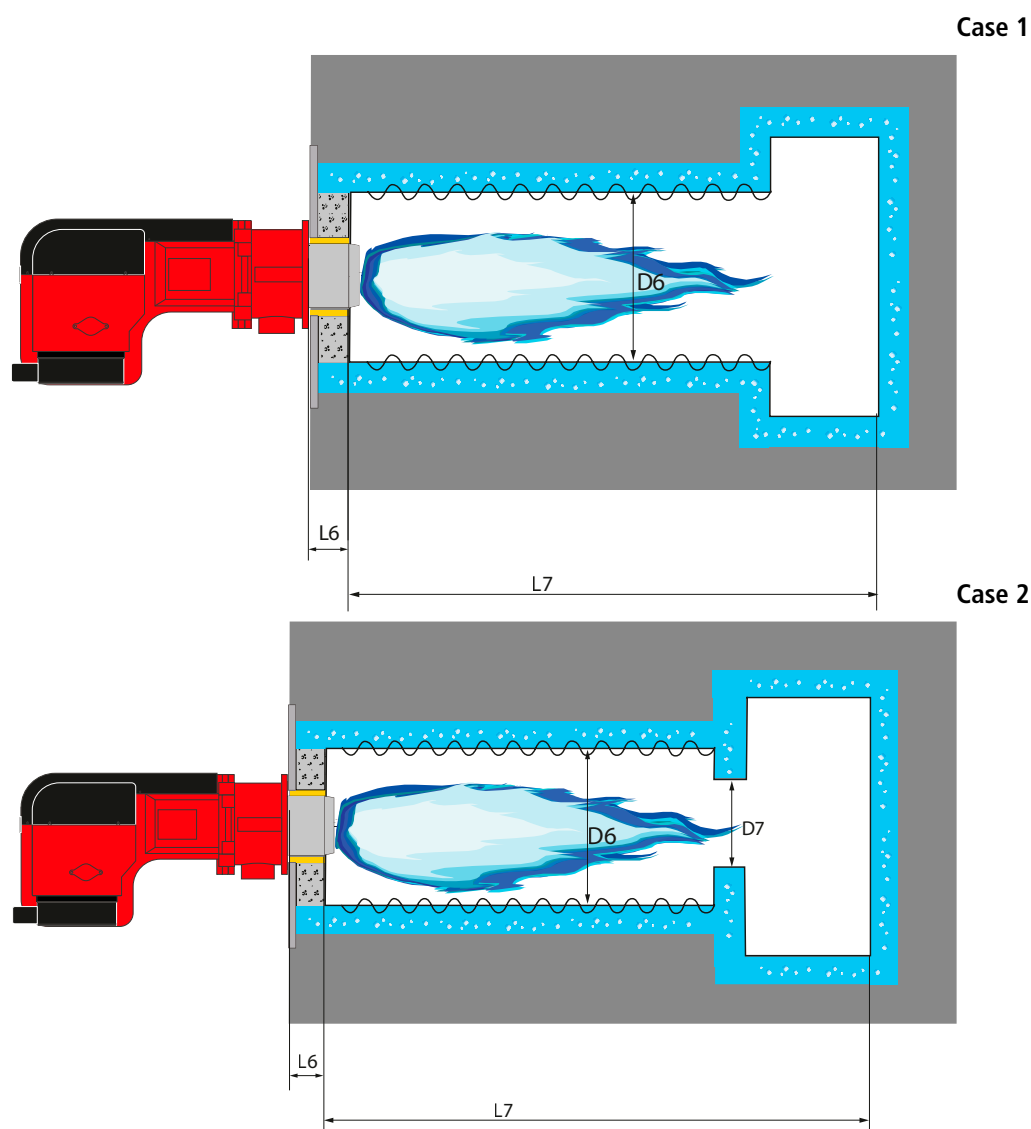
Low NOx combustion head mounting dimensions, LN60/LN80

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-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-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.

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-280 M LN80	GP/ GKP- 320 M LN80	GP/ GKP- 350 M LN80	GP-450 M LN80	GP/GKP- 600 M LN80	GP/GKP- 700 M-II LN80	GP-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	137.3	149.0	176.5	196.1	203.9	215.7	231.4

Dimensions in inches.

D7 minimum $\geq D6 \cdot 0.7$

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).

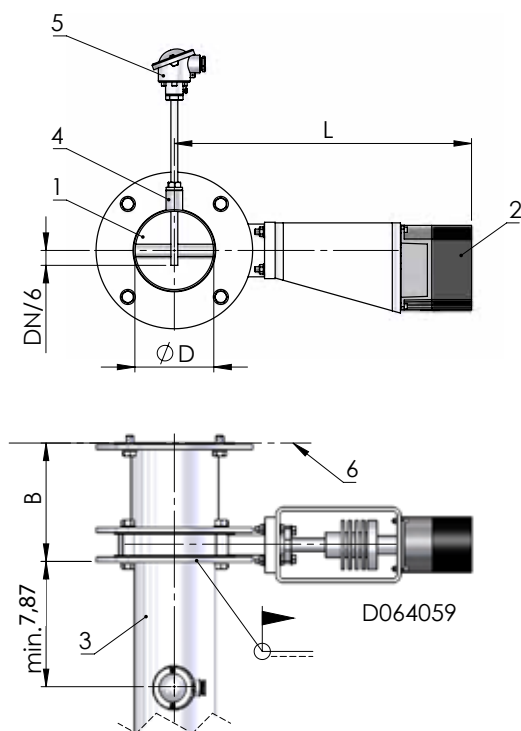
*** May require longer furnace, if diameter is very wide.

Fuels: Natural gas

Accessories

FGR - Butterfly valve dimension

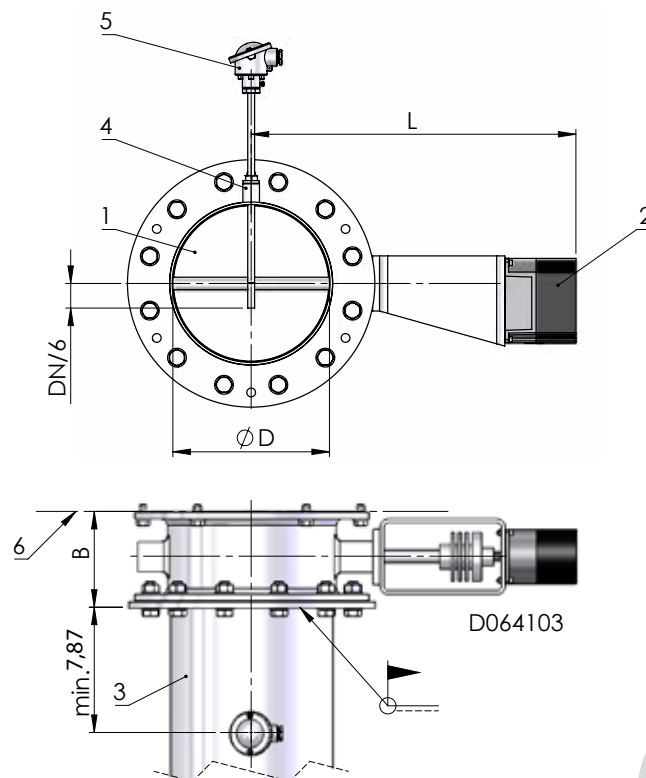
FGR max. temperature 482 °F



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

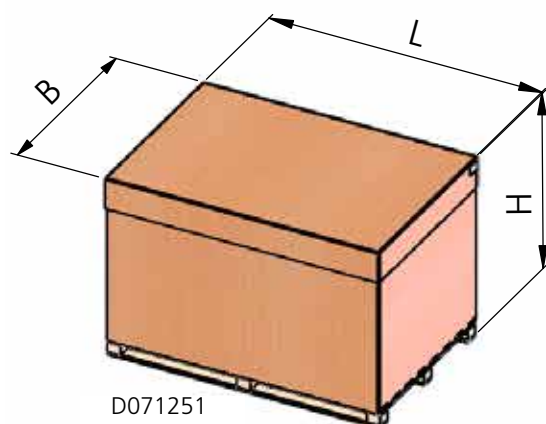
Accessories WDx00

Propane Adders
Propane (LPG BAND) 130...150, 250...280 SIZES
Methane manifold drilling, composition to be check with Oilon sales
Major Upgrade Options
GP/GKP LMV 52 UPGRADE (O2 Trim, VFD, Efficiency Calculation Capabilities)
Double Gas Train Cabinet Option (Enables Two Gas Train Use)
O2 Trim Kit (Requires LMV 52 UPGRADE Above) O2 electronic, UL 110V 1(4) Electronics
O2 Trim Kit (Requires LMV 52 UPGRADE Above), flue gas collector 2(4)
O2 Trim Kit (Requires LMV 52 UPGRADE Above) FLUE GAS COLLECTOR For big stacks 1 1/2ft -2ft length 2(4)
O2 Trim Kit (Requires LMV 52 UPGRADE Above), O2 sensor 3(4)
O2 Trim Kit (Requires LMV 52 UPGRADE) Additional Canbus Cable (35ft) 4(4)
GAS Flow Meter (Requires LMV 52 UPGRADE Above)
LMV BACnet Protocol Converter Installed in LMV Cabinet TS-PX2-X
Oil pilot line for GKP-130.....1200M burners, complete installed on burner. Standard burner uses NG/LPG as ignition fuel for both fuels.
Touchscreens
6" Touchscreen (Mounted On Our Remote Panel) TS-6XXS-XXX
10" Touchscreen (Mounted on our Remote panel) TS-0XXS-XXX
12" Touchscreen (Mounted on our Remote panel) TS-2XXS-XXX
PLC with 6 inch Touchscreen installed into NEMA12 cabinet TS-6X5S-2XX
PLC with 10 inch Touchscreen inst. into NEMA12 separate cabinet TS-0X5S-2XX
TS-5X-KT MODBUS communication kit between LMV5 and master panel
TS-PX5-X (Special) PROFIBUS CONVERTER
Power Breaker With Fuse
SAFETY SWITCH 600V 60A (Loose supply)
TUBE FUSE 600VAC, 3 Pcs. Needed (Loose supply)
Control Voltage Back Up
Control Voltage Back Up & Cleaning (UPS, AB 1609-B600N)

Gas Train Option
1 1/2", 2", 2.5", 3", 4", 6" Diaphragm Pressure regulator to meet CSA 149.3 (Dungs, Maxitrol)
- 1/4" NPT ball valve Manifold Pressure Kit 1 of 3 (CSA149.3)
- Pressure gauge Manifold Pressure Kit 2 of 3 (CSA149.3)
- 1/4" x 3" Nipple Manifold Pressure Kit 3 of 3 (CSA149.3)
1 1/4" Apollo Manual Closing Valve UL
1 1/2" Apollo Manual Closing Valve UL
2" Apollo Manual Closing Valve UL
2.5" Apollo Manual Closing Valve UL
3" Apollo Manual Closing Valve UL
4" ANSI FLANGE Apollo Manual Closing Valve UL
6" ANSI FLANGE Apollo Manual Closing Valve UL
1 1/2" CSA Lubricated Plug Valve 1 of 2
2" CSA Lubricated Plug Valve 1 of 2
Handle for CSA Lubricated Plug Valves 1-1/2" and 2" 2 of 2
2.5" CSA Lubricated Plug Valve 1 of 2
3" CSA Lubricated Plug Valve 1 of 2
Handle for CSA Lubricated Plug Valves 2.5" and 3" 2 of 2
4" CSA Lubricated Plug Valve
3 Way Valve for NG/LPG Pilot Operation
2", 2.5", 3", 4", 6" VGD Siemens double body NPT, 2-5PSI, 110V, complete with pressure switches, left handed, one manual closing included
2" VRD Siemens Bio gas double body NPT, 2-5PSI, 110V, complete with pressure switches, left handed
2.5" VRD Siemens Bio gas double body NPT, 2-5PSI, 110V, complete with pressure switches, RIGHT handed
3" VRD Siemens Bio gas double body NPT, 2-5PSI, 110V, complete with pressure switches, left handed
4" VRD Siemens Bio gas double body NPT, 2-5PSI, 110V, complete with pressure switches, left handed
"VA45.2-NF-200 2" "LMV servomotor with flow control valve for double gas application"
"VA45.2-NF-250 2.5" "LMV servomotor with flow control valve for double gas application"
"VA45.2-NF-300 3" "LMV servomotor with flow control valve for double gas application"
"VA45.2-NF-300 4" "LMV servomotor with flow control valve for double gas application"
1 1/2", 2", 2 1/2", 3" gas strainer, cast iron

Temperature & Pressure Sensors	
Temp. Sen. Flue gas PT1000 , 1/2 " NPT, no well , QAM P210	
Temp. Sen. Air temp, High temp 1200C, PT1000 , 1/2 " NPT, no well	
Temp. Sen. AmbientaI NI1000, Cabinet Mounted, LMV, QAC22	
Temp. Sen. Water PT1000 ,immersion type, 1/2 " NPT, 4" well, LMV	
Temp. Sen. Water PT1000 ,immersion type, 1/2 " NPT, 6" well, LMV	
Pres. Sen. 0 - 15, 0 - 150, 0 - 300 PSI 4-20mA, 1/4" NPT	
Draft control options	
P/N C07720C0-4121-001 Enclosed surface mount Draft Controller, Modulating, sequencing, adjustable start, post purge & full open pre-purge capability. For gas/oil, negative pressure, unit comes with an internal low draft safety switch. No flue gas monitoring. 1(4)	
P/N 31598 Siemens LMV 51/52 Relay interface kit, 2 pcs DPDT relay with 120 VAC coil, octal socket & surge suppressor. For use with 7720 unit 2(4)	
P/N 9141-0101-A-8 Linear Actuator, 30 second, 6 inch stroke, with adjustable start. 3(4)	
P/N 32020 Linkage kit (1 damper lever arm, 2 clevises for use with 9141 unit.) 4(4)	
TS-DPA-030D, DP pressure transducer with display, -3.00 to 3.00, needs also Siemens boiler touchscreen kit 1(4)	
1910-5, Differential Pressure Switch, 1.4-5.5" WC, needs also Siemens boiler touchscreen kit 2(4)	
SQM56.564R1A3, Damper Motor needs also Siemens boiler touchscreen kit 3 (4)	
CHE6SCA-E8RSA, 425 deg F, 3/8" SQ to 1/2" round set screw, 400 in-lb needs also Siemens boiler touchscreen kit 4(4)	
Various Options	
Quick Connecters Military Style (Single Fuel) GP/GKP/KP Models	
NEMA 4X Stainless steel cabinet upgrade including NEMA4 dust cover	
NEMA 4 Enclosure Upgrade (Including NEMA 4 Dust cover on AZL HMI)	
Day/Night Switch	
120VAC UPS, uninterruptible power supply installed in cabinet, battery back-up and electricity cleaning	
Alarm horn installed	
Control Panel Floor Rack to keep LMV panel	
Oilon-SCC FLMTR-0.75-6.0KIT NG flow meter kit with display	

Packing

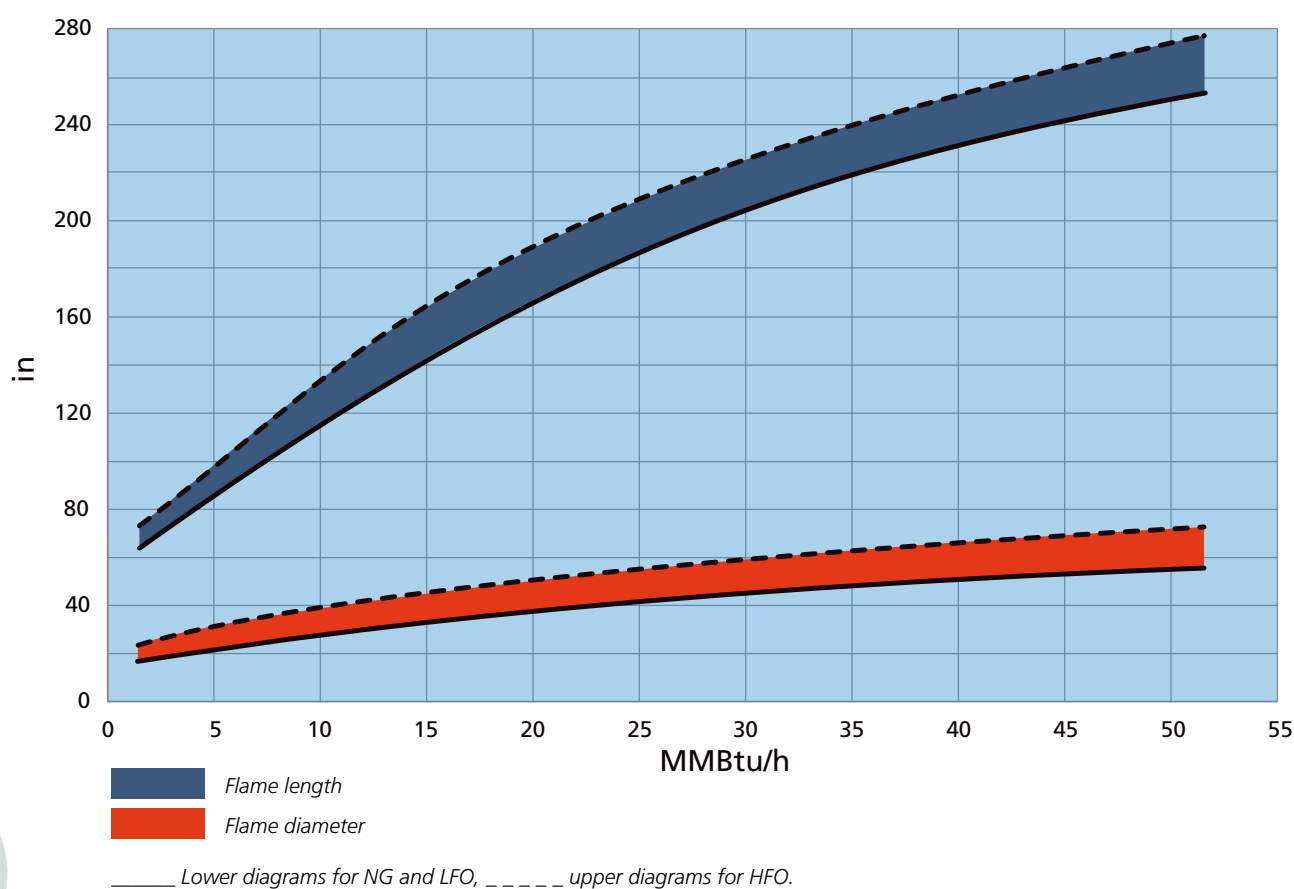


BURNER SERIE	Dimensions			Weight lb	Material standard
	L	B	H		
GP-350/450 M...	80.3	54.3	48.8	138.9	Board
GP-600 M...	80.3	54.3	48.8	138.9	Board
GP-700 M..700 M-III...	88.2	64.2	48.8	160.9	Board
GP-1000/1200 M...	85.8	73.6	72.0	529.1	Plywood
GKP-350/450 M...	64.6	48.0	34.6	121.3	Board
GKP-500/600 M...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

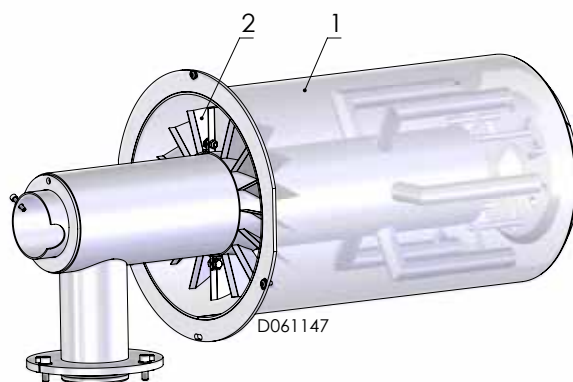
BURNER SERIE	Min. inlet gas pressure psi"	Max. inlet gas pressure psi"	Gas valve	
			Type	Size inch
GP/GKP-50/90 M/MH	1.45	7.25	VGG	2"
GP/GKP-140...280 M/MH	1.45	7.25	VGD	2" - 4"
GP/GKP-350/450 M	2.18	7.25	VGD	2" - 4"
GP/GKP-600...700 M-III	2.18	7.25	VGD	2.5"- 6"
GP/GKP-1000/1200 M	2.90	7.25	VGD	4" -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

Accessories

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Turbo combustion head for flame shaping

Example



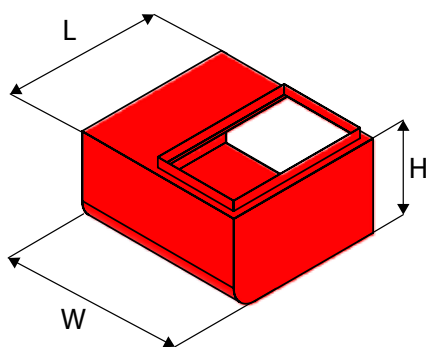
1. Combustion head
2. Turbo

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.

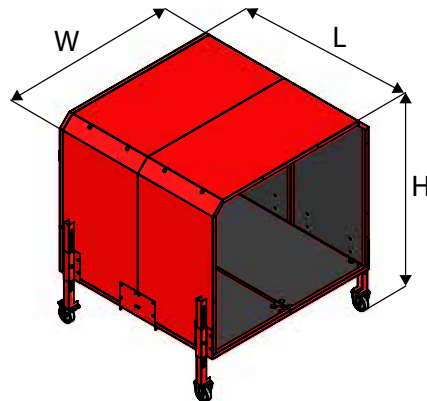


Burner	W	L	H
90	12.6	12.6	6.3
140/150	16.8	15.4	9.1
250/280	16.8	15.4	9.1
700	22.0	28.4	13.0
1000/1200	20.7	31.5	26.2

Hood silencer

Construction

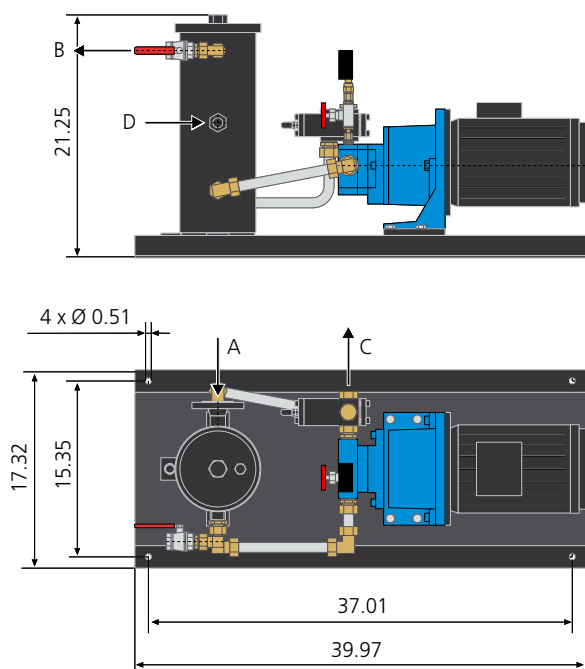
The silencer is made of steel plate lined with fireproof dampening wool. This wheel-equipped silencer isolates the burner from four sides. Silencer reduces the sounds produced when the burner operates. Delivered in plate parts.



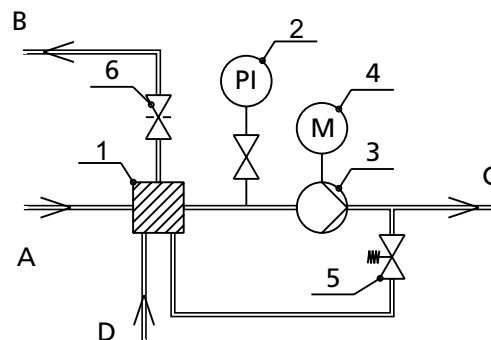
Burner	W	L	H
140/150	52.3	51.5	43.3
280...700	65.7	60.4	59.1
1000/1200	85.6	74.1	76.8

Dimensions in inches.

Booster unit



The booster unit is used for pumping light fuel oil with viscosity of $0.006...0.019 \text{ in}^2/\text{s}$ $+20^\circ\text{F}$. The oil coming to the booster unit must be filtered, max. filtration degree is $150 \mu\text{m}$.



- 1 Oil filter
- 2 Pressure gauge
- 3 Oil pump
- 4 Electric motor
- 5 Pressure regulating valve
- 6 Drilled ball valve

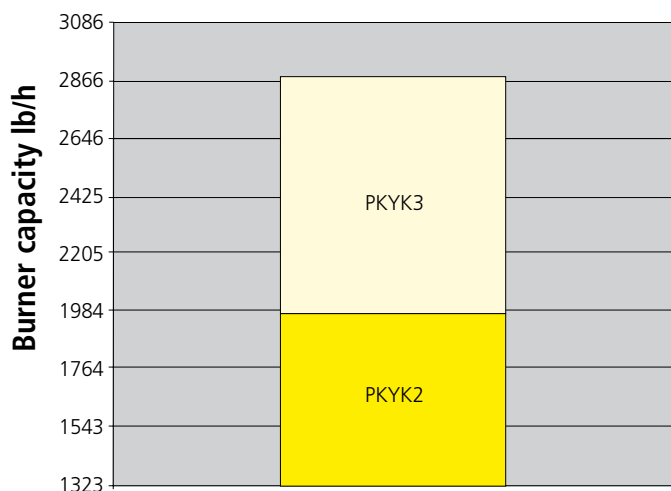
- A. Inlet to the booster unit NTP1, $400...2000 \text{ "WC}$ $0.006...0.0019 \text{ in}^2/\text{s}$
- B. Return from the booster unit R1/2"
- C. Inlet to the burner $0.8662 (\text{Ø } 22 \text{ mm})$
- D. Return from the burner $0.8662 (\text{Ø } 22 \text{ mm})$

Dimensions in inches.

Booster unit	Motor 400 V/50 Hz		Oil pump	Pump output
	hp	r/min	Type	$0.019 \text{ in}^2/\text{s}$ 363 psi lb/h
PKYK 2	5.5	3000	T4 C	4365
PKYK 3	5.5	3000	T5 C	6393

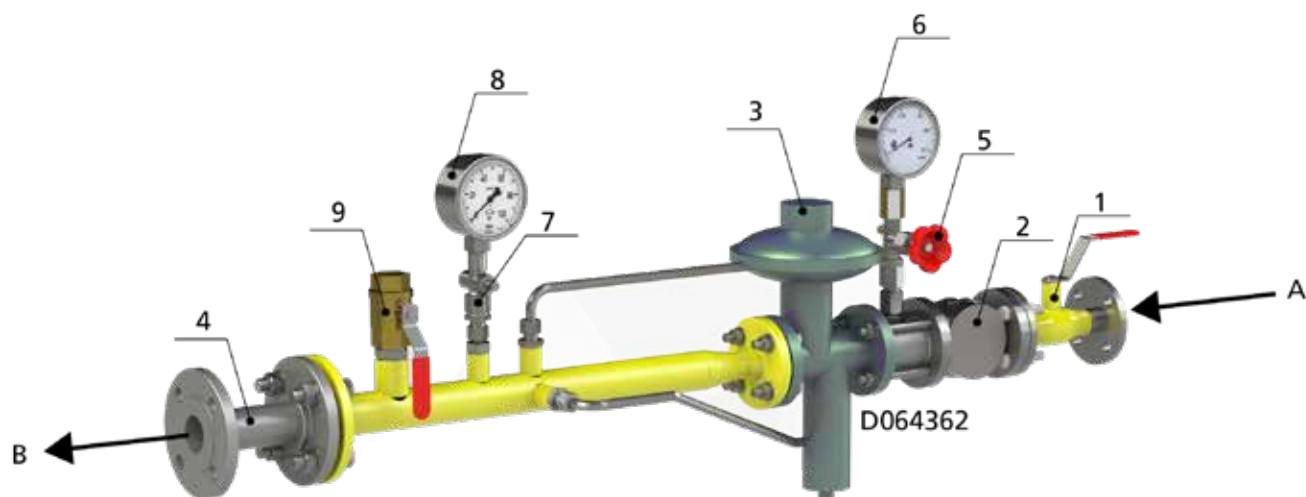
The output has been calculated using a density of $53 \text{ lb}/\text{ft}^3$ for the light fuel oil.

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



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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>



Energon- modern training facility



Energon, which opened in spring 2010, is a state-of-the-art research centre located in Metsä-Pietilä, Lahti.

Energon focuses on research regarding renewable energy and energy efficiency.

We are the main user of Energon and we use it mainly as a training facility.

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 an internationally 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, Russia, Brazil and China and resellers all over the world.