AUTOMATIC GAS BURNERS

- **APH-M** (WITH MECHANICAL COUPLING)
- **APH-ME** (WITH ELECTRONIC COUPLING)

The company PBS POWER EQUIPMENT, s.r.o. manufactures, installs and services monoblock and power burners which are employed for burning a wide range of fuels, and which can be used in power and heat production as well as in different technological processes.

DESCRIPTION OF BURNERS:

Burners APH-M (mechanical coupling fuel-air) and APH-ME (electronic coupling fuel-air) represent modern types of automatic gas burners designed to burn natural gas, propane-butane and low-heating gases. They are designed as monoblock, i.e. the fan and all the components are a part of the burner's main body. The operation is fully automatic, suitable for unattended control of boiler plants. Continuous control of the heat output, together with a low excess of air during the combustion, guaranty a high operation efficiency. Applied electronic components by renowned companies distinguish themselves by a high reliability and a long operating life.
The whole cycle of the burner, from the start over the output regulation to the shut-down, is controlled by a modern microprocessor controller MA (2, 3, 5) series or PBS6000, both equipped with the communication channel RS-485 enabling connecting of a remote control or a superior control system (PC). Modifications of the control software enable the use of special algorithms such as permanent venting during the shut-down. The use of the controllers further enables identifying, displaying and storing up to 100 last fault conditions into the memory, and closing of the burner's air suction during each operation shut-down. Thus the flue loss originated by a cold air flow through the appliance is being decreased. The controllers can be equipped with a touch screen. They can be positioned on the burner, on an independent stand or integrated into the switch board panel.

USE:

Gas burners serve as sources of heat for overpressure and underpressure appliances, particularly for steam, hot-water and warm-water boilers. They can, however, be also used for other appliances with a suitable space for combustion, where they will not be subjected to outer blazing heat (e.g. air heaters, dryers, steam generators, industrial and baking furnaces etc.). Their use for special technological purposes must be consulted with the manufacturer.

TECHNICAL SPECIFICATIONS:

- **Heat output 45 ÷ 11 000 kW**
- **Gaseous fuels (medium pressure, low pressure)**
- **Burners comply with technical requirements of ČSN EN 676 and other legislative regulations. The conformity with the product safety requirements was examined by a notified independent person (issued the type certificate).**

FUEL:

- **Natural gas**
- **Propane, propane - butane**
- **Low-heating gases (biogas, degasifying gas, ...)**

ADVANTAGES:

- **Highly efficient operation (low excess of air)**
- **High reliability and durability**
- **Safety (automatic checking of leakage of gas fittings and aerating of the appliance prior each start of the burner)**
- **Combustion of different kinds of fuel**
- **Use of modern technologies**
- **Easy to operate**
- **Fully automatic operation suitable for unattended control of boiler plants**
- **Continuous output regulation**
- **Professional warranty and after-warranty service**

STANDARD SCOPE OF SUPPLY:

- **Burner body with the cooling fan**
- **Microprocessor controller**
- **Diffuser and mixing head**
- **Gaseous fuel regulation fittings**
- **Combustion air suction regulation with the noise silencer**
- **Flame monitor**
- **Igniter**
- **Combustion air and fuel regulation servomotor(s)**
- **Air pressure manostat**
- **Valve battery**
  - **gas filter**
  - **electromagnetic twin valve DUNGS**
  - **2x (3x) gas pressure manostat (for the lower and upper limits and leakage check)**
  - **deaerating valve(for burners 25, 45, 90 series)**
- **Additional parts (controller stand, burner sealing, connecting bolts, ...)**
- **Technical documentation**

REGULATION:

The microprocessor controller in connection with a suitable appliance controller enables following kinds of heat output regulation:

- Continuous – a fluent change of heat output according to the instantaneous heat off-take
- Two-step (three position) MAX-MIN-OFF
- Manual operation – directly with buttons on the controller, resp. superior control system

EMISSIONS:

The burner's operation complies with the emission limits of CO, NO_x, SO_2 and TL within the whole output range. Average values of CO and NO_x are stated in the table below.

Burner variant	NO_X [$mg \cdot m^{-3}$]	CO [$mg \cdot m^{-3}$]
Standard	90 ÷ 120	< 20
Low-emission (LOW NO_X)	50 ÷ 90	< 50
With flue gas recirculation *	30 ÷ 70	< 20

* Burner's maximal heat outputs (characteristics) decrease of ca 15 %.

Burners with the electronic coupling can also be supplied with the regulation of residual oxygen in the flue gases optimizing the excess of the combustion air with consequent fuel savings.

ACCESSORIES TO ORDER:

- **Low-emission head to reduce NO_X**
- **Flue gas recirculation to reduce NO_X**
- **Frequency convertor**
- **PBS600 burner controller touch screen**
- **Oxygen sensor + interface – regulation of excess oxygen in flue gases**
- **Distance piece between the burner and the appliance**
- **Intensified burner design (outputs increased to higher overpressures)**
- **Additional mobile noise silencer**

OVERVIEW OF CERTIFIED TYPES:

Burner type	APH-M						
	02	04	10	16	25	45	90
PZ	▪	▪	▪	▪	▪	▪	▪
PZN	▪	▪	▪	▪	▪		
PZ / I						▪	▪
PP				▪	▪	▪	▪
PPN	▪	▪	▪	▪	▪	▪	
PK				▪	▪	▪	▪
PKN	▪	▪	▪	▪	▪	▪	
PZ / R			▪	▪	▪	▪	▪
PZN / R			▪	▪	▪		
PP / R				▪	▪	▪	▪
PPN / R			▪	▪	▪	▪	

Marking:

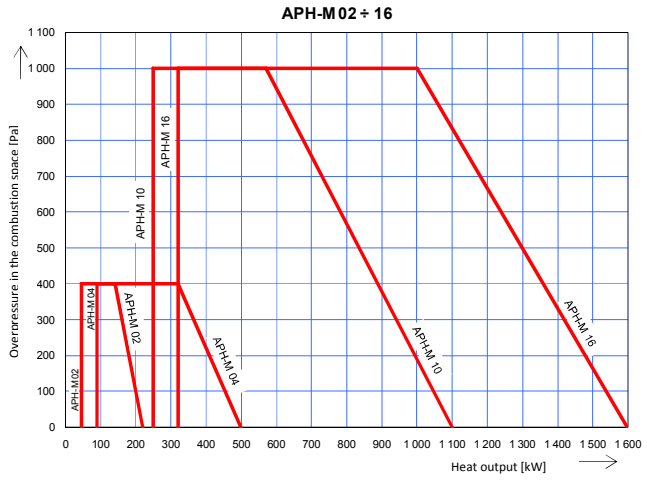
PZ - natural gas, medium-pressure
PZN - natural gas, low-pressure
PP - propane-butane, medium-pressure
PPN - propane-butane, low-pressure
PK - low-heating gas (biogas, degasifying gas), medium-pressure
PKN - low-heating gas (biogas, degasifying gas), low-pressure
I - Intensified design
R - version with outer flue gases recirculation

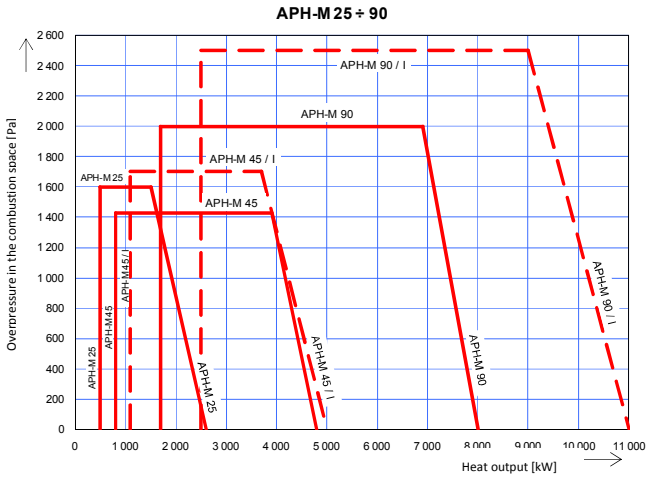
BASIC TECHNICAL PARAMETERS:

Burner type	Inlet over-pressure of fuel [kPa]	Heat output [kW]			Maximal over-pressure in combustion space [Pa]	Weight without valves [kg]	Connection of supply gas piping	El. input [kW]	Voltage supply
		Maximal to zero over-pressure	Maximal to max. over-pressure	Minimal					
APH-M 02 PZN	2	220	140	45	400	33	R 1"	0,5	3NPE ~ 50 Hz, 400 V / TN-S (L1, L2, L3, N, PE), possible grids TN-C, TT, IT Connect to a fused (characteristic „D") 3ph supply
APH-M 02 PPN	3	200	130	50			R 6/4"		
APH-M 02 PKN	1,5 ÷ 5								
APH-M 04 PZ	20 ÷ 50	500	320	90	400	39	R 1"	0,7	
APH-M 04 PZN	2						R 6/4"		
APH-M 04 PPN	3			100					
APH-M 04 PKN	1,5 ÷ 5						DN 50		
APH-M 10 PZ	20 ÷ 50	1100	570	250	1000	64	R 6/4" ÷ DN 50	0,9	
APH-M 10 PZN	2	900	530	230			DN 50		
APH-M 10 PPN	3			250					
APH-M 10 PKN	1,5 ÷ 5	800	500	230	800		DN 80		
APH-M 16 PZ	20 ÷ 50	1600	1000	320	1000	73	DN 50	1,4	
APH-M 16 PZN	2	1400		400	800		DN 80		
APH-M 16 PP	20	1500			900		DN 50		
APH-M 16 PPN	3	1400	950						
APH-M 16 PK	20 ÷ 50	1500	1000				DN 80		
APH-M 16 PKN	1,5 ÷ 5	1300		300	800		DN 80 ÷ DN 100		
APH-M 25 PZ	20 ÷ 50	2500	1500	500	1600	100	DN 80	2,6	
APH-M 25 PZN	2	2100	1700	580	650		DN 100		
APH-M 25 PP	20	2500	1500	550	1500		DN 50		
APH-M 45 PZ	20 ÷ 50	4800	3900	800	1430	205	DN 80 ÷ DN 100	6	
APH-M 45 PZ/I	20 ÷ 50	5000	3700	1100	1700	228		8	
APH-M 45 PP	20	4800	3900	1000	1400	205	DN 50 ÷ DN 80	6	
APH-M 90 PZ	20 ÷ 50	8000	6900	1700	2000	470	DN 80 ÷ DN 150	11	
APH-M 90 PP	20						DN 80 ÷ DN 100		
APH-M 90 PZ/I	40 ÷ 50	11000	9000	2500	2500	500 ÷ 580	DN 150	20 ÷ 35	

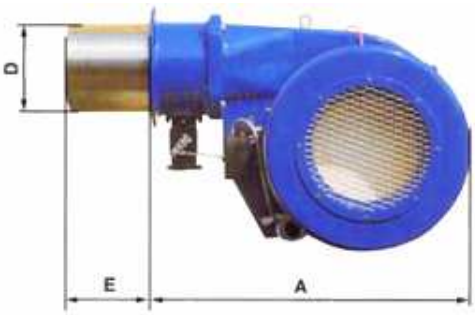
Note: basic technical parameters also apply to burners APH-ME series (lower el. input in case of use of the fan frequency converter)

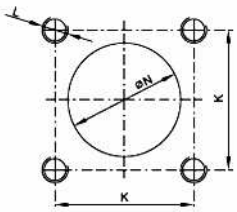
OUTPUT CHARACTERISTICS (valid for APH-M, APH-ME series):



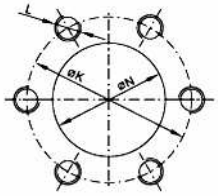


DIMENSIONS:

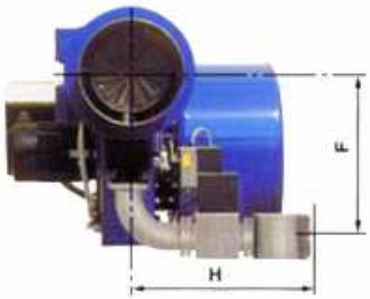


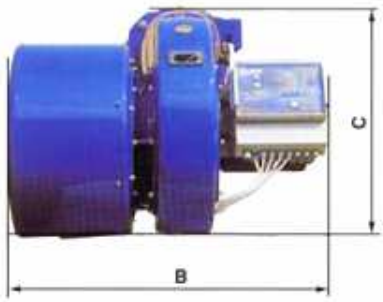


APH-M(E) 02 ÷ 45



APH-M(E) 90





Burner type	Dimension [mm]								
	A	B	C	D	E	F	H	K	L
APH-M 02 PZN	602	710	358	ø 126	150	299	500	130	4 x M10
APH-M 02 PPN, PKN							600		
APH-M 04	651	630	390	ø 156	240	309	550 ÷ 600	140	4 x M10
APH-M 10 PZ, PPN	801	790	512	ø 206	240	375	600	180	4 x M12
APH-M 10 PZN						345			
APH-M 10 PKN						406	900 ÷ 1039		
APH-M 16 PZ, PP, PPN	833	880	588	ø 250	300	395	600	216	4 x M12
APH-M 16 PZN, PKN						431	1039		
APH-M 16 PK						395	1039		
APH-M 25 PZ	953	880	711	ø 286	300	407	1000 ÷ 1039	254	4 x M16
APH-M 25 PZN						443	1039		
APH-M 25 PP						407	600		
APH-M 45 PZ, PZ/I, PP	1103	1040	839	ø 330	300	547	725 ÷ 1039	272	4 x M16
APH-M 90 PZ, PP	1516	1282	1166	ø 476	400	783	1039	ø 540	6 x M20

Note: dimensions also apply to burners APH-ME series

PBS POWER EQUIPMENT

PBS POWER EQUIPMENT, s.r.o.
Průmyslová 162
674 86 Třebíč
ČESKÁ REPUBLIKA
Tel.: +00420 568 504 320
Fax: +00420 568 504 642
E-mail: kpleha@pbstre.cz
www.pbspe.cz