

# VALUPAK®

## Packaged gas burners



- High turndown.
- Available in 6 sizes.
- Capacities: 2 kW -1124 kW (HHV).
- Stable and clean combustion.
- Suitable for UV scanner and flame rod.
- Natural gas and LPG.
- Low gas pressure requirements.
- Ease of installation and operation with low maintenance requirements.
- All metal construction.
- Multi voltage and frequency blower motors.

## Product description

The VALUPAK® is designed for process air heating applications.

A motorized gas control valve controls the heat output of the burner over the full operating range. The gas flows through the nozzle and then along the inside of the burner cone where combustion air is progressively and tangentially mixed with the gas. This results in a short, very stable flame and clean combustion.

Available VALUPAK® sizes

Capacity and selection data in kW										
Gross heating value = 10.9 kWh/m <sup>3</sup> (st), d = 0.6										
All figures are for balanced - 0 mbar - duct pressure [1]										
VALUPAK® size	60 [2]			150 [2]	300 [2]	600	800	1000		
Standard blower type	UHC102	UHC122	UMI300							
Maximum heat release [3] kW(HHV)	40	60	80	185	325	645	880	1124		
Minimum heat release kW(HHV)	2	2	3	4	9	18	18	18		
Turndown	20:1	30:1	27:1	46:1	36:1	36:1	49:1	62:1		
Gas Q max. m <sup>3</sup> (st)/h	3.7	5.5	7.3	17	30	59	81	103		
Gas Q min. m <sup>3</sup> (st)/h	0.18	0.18	0.28	0.37	0.80	1.65	1.65	1.65		
Max. combustion air volume m <sup>3</sup> (st)/h	48	64	98	180	311	780	1170	1170		
Gas pressure at test connection at maximum heat release mbar	5.4	9	18	2.5	1	2.2	1.7	3.3		
Blower motor 3x220-420x50 Hz kW	0.09			0.09	0.18	1.1	0.55	1.1		
Weight kg	n/a			12.5	16.5	40	47	50		
Flame length [4] mm	up to 400 (after sleeve)			500	1000	1100	1600	1800		

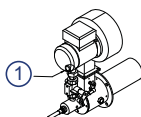
[1] Air pressure switches should be selected to have a setpoint ranging from (2-10) mbar-, with exception of the VALUPAK® 60 burner with a capacity of 40 kW or 60 kW: setpoint ranging from (0.4 - 3) mbar

[2] Single phase blower motor available.

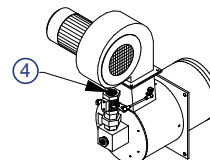
[3] Use of the standard round air inlet filter will cause a ± 15 % capacity reduction.

[4] When firing in open air. Firing in a cross flow shortens flame.

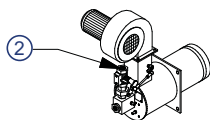
Protection: IP54



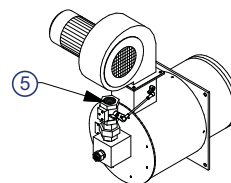
VALUPAK® 60



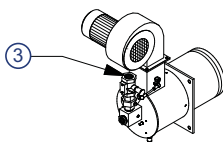
VALUPAK® 600



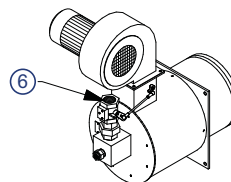
VALUPAK® 150



VALUPAK® 800



VALUPAK® 300

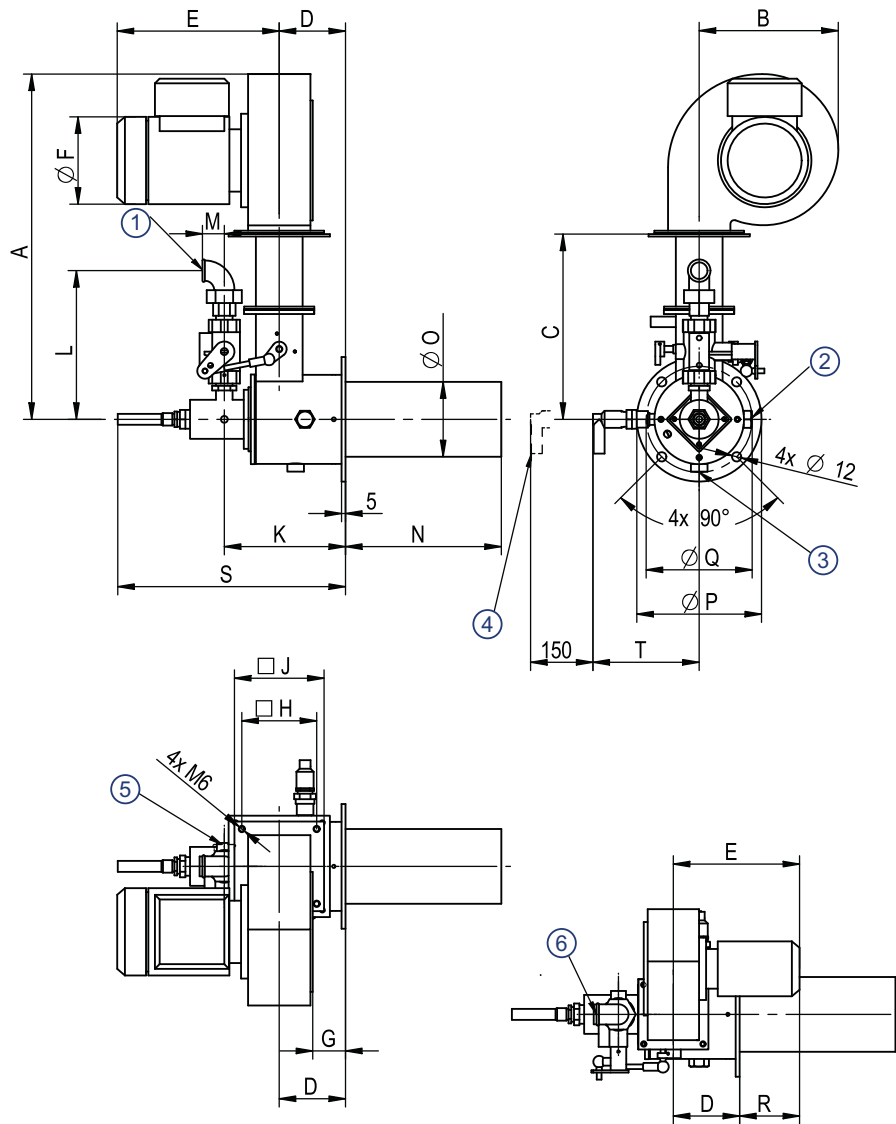


VALUPAK® 1000

- 1) Rp 1/2 gas inlet
- 2) Rp 3/4 gas inlet
- 3) Rp 1 gas inlet
- 4) Rp 1 1/4 gas inlet
- 5) Rp 1 1/2 gas inlet (Rp 1 1/4 for LPG)
- 6) Rp 1 1/2 gas inlet

### Dimensions and weights

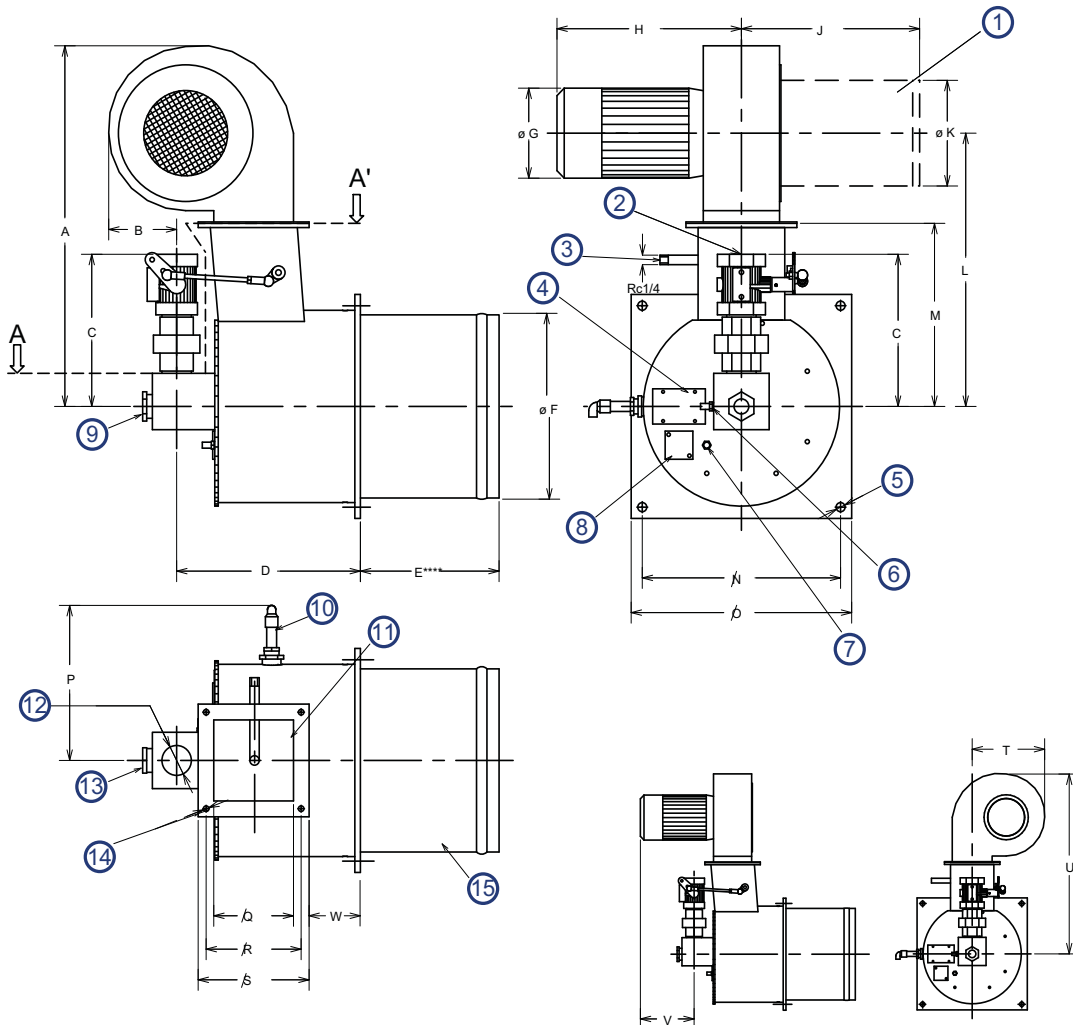
- 1) Gas inlet Rp1/2" with UHC122 & UM300 blower
- 2) Sight glass (alternative SI position)
- 3) Alternative SI position
- 4) Min.150 mm free space required for spark ignitor removal
- 5) Gas inlet Rp 1/2" with UHC102 blower
- 6) Alternative gas inlet position with UHC102 blower



VAL 60	Dimensions in mm unless stated otherwise																	
Blower	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	S	T
UHC102	302	135	140	85	162	71	40	76	90	155.5	191	28	200	96	160	136	297	136
UHC122	443	179	238		208	112	42	96	130									
UMI300	539	248	238		257	120	40.5	112	130									

### Dimensions and weights

- 1) Round air filter (optional)
  - 2) Gas inlet (Y)
  - 3) Air press. switch connection
  - 4) Name plate
  - 5) Burner mounting holes 4x  $\phi 13$
  - 6) Gas pressure test connection
  - 7) Air pressure test connection
  - 8) Observation port
  - 9) Rp1/2 flame detector connection
  - 10) Spark ignitor [1]
  - 11) Combustion air inlet
  - 12) Gas inlet (Z)
  - 13) Rp1/2 flame detector connection
  - 14) For size 150 & 300 = 4 x M6  
for size 600 & larger = 4 x M8
  - 15) Discharge sleeve
- [1] spark ignitor 90° rotated (counter-clockwise) when looking into flame direction) on VALUPAK® 300 burner



VALUPAK®		Dimensions in mm unless stated otherwise																						
Burner size	A	B	C	D	E [2]	F $\phi$	G $\phi$	H	J	K $\phi$	L	M	N	O	P	Q	R	S	T	U	V	W	Y Rp	Z Rp
150	435	86	184	238	200	160	110	208	215	120	323	230	184	214	177	74	96	115	178	435	116	89	3/4	3/4
300	455	84	198	237	200	213	120	226	230	130	344	235	226	264	190	94	112	130	186	455	126	70	1	1
600	547	137	216	273	200	263	144	293	282	170	401	260	286	318	225	115	147	170	248	547	182	77	1-1/4	1-1/4
800 [1]	562	112	237 [1]	372	200	314	144	293	282	170	446	305	340	374	208	115	147	170	248	592	157	150	1-1/2	1-1/2 [1]
1000	592	112	237	372	200	314	144	293	282	170	446	305	340	374	208	115	147	170	248	592	157	150	1-1/2	1-1/2

[1] For LPG C=241 and Z=Rp 1.1/4

[2] 300 mm optional available

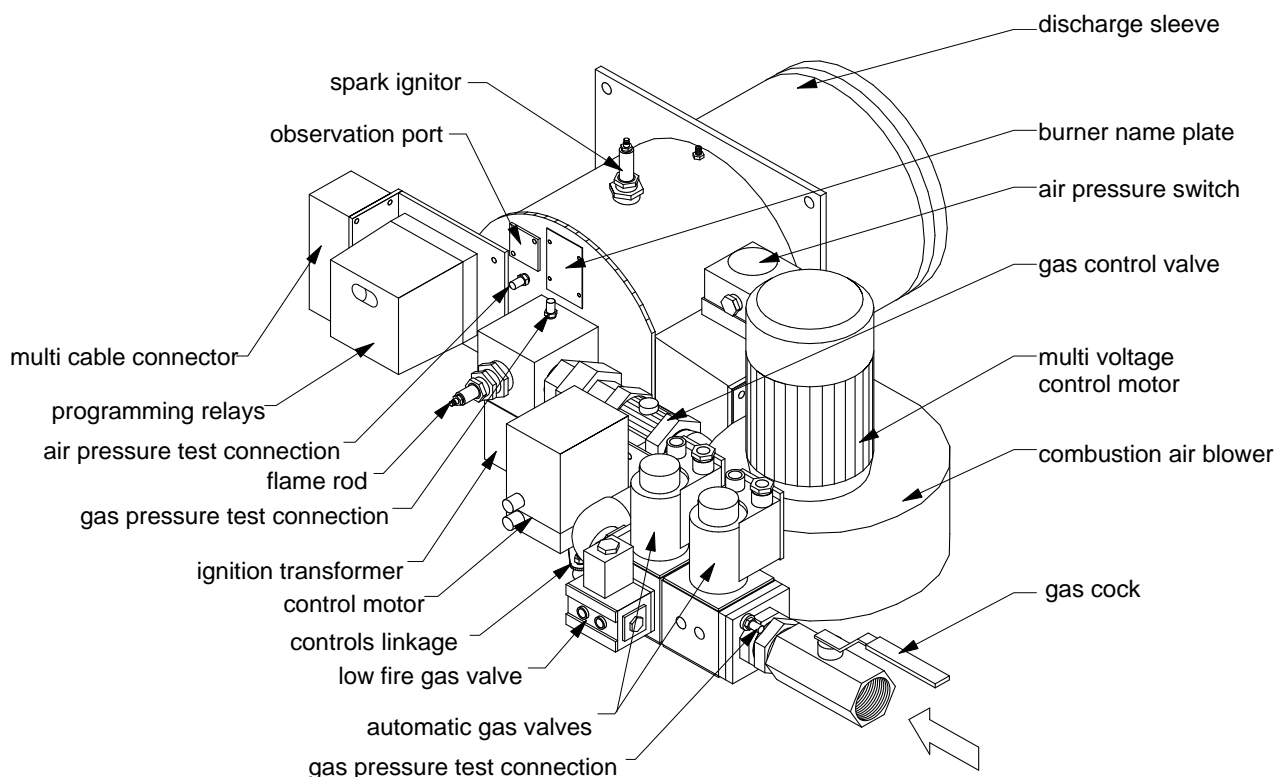
## Applications

Specifically designed for applications where burners are used under balanced pressure conditions such as in textile machines, printing machines and many other types of dryers.

## Options

- round air filter
- single phase motor for sizes 60, 150 and 300
- long discharge sleeve 300 mm
- control motor
- flame rod or UV scanner

### Application example MAXON VALUPAK® 600 burner (gas)



Read VALUPAK® instructions for complete information on VALUPAK® burners

## Specifications of MAXON VALUPAK® burners

Capacity data in kW									
Gross heating value = 10.9 kWh/m <sup>3</sup> (st), d = 0.6. All figures are for balanced - 0 mbar - duct pressure									
VALUPAK® size		60 [1]			150 [1]	300 [1]	600	800	1000
Standard blower type		UHC102	UHC122	UMI300					
Maximum heat release [2]	kW(Hs)	40	60	80	185	325	645	880	1124
Minimum heat release	kW(Hs)	2	2	3	4	9	18	18	18
Turndown		20:1	30:1	27:1	46:1	36:1	36:1	49:1	62:1
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Gas Q min.	m <sup>3</sup> (st)/h	0.18	0.18	0.28	0.37	0.80	1.65	1.65	1.65
Max. combustion air volume	m <sup>3</sup> (st)/h	48	64	98	180	311	780	1170	1170
Excess air at maximum heat release	(n)	1.17	1.17	1.17	1.07	1.05	1.33	1.45	1.13
Gas pressure at test connection									
at maximum heat release	mbar	5.4	9	18	2.5	1	2.2	1.7	3.3
Air diff. pressure at test connection									
at maximum heat release	mbar	2	3.3	6.3	2.7	3.4	7.5	4.3	4.3
at minimum heat release	mbar	0.3	0.2	0.3	0.3	0.4	0.6	0.1	0.1
Air diff. pressure at pressure switch									
at maximum heat release	mbar		n/a		2.3	3.1	4.2	3.4	7.4
at minimum heat release	mbar		n/a		2.7	4.3	5.3	6.5	8.0
Blower motor 3x220-420x50 Hz	kW		0.09		0.09	0.18	1.1	0.55	1.1
Weight	kg		n/a		12.5	16.5	40	47	50

[1] Single phase blower motor available.

[2] Use of the standard round air inlet filter will cause a ±15% capacity reduction.

## Installation and operating instructions

### Installation instructions

Instructions provided by the company or individual responsible for the manufacture and/or overall installation of a complete system incorporating MAXON burners take precedence over the installation and operating instructions provided by MAXON. If any of the instructions provided by MAXON are in conflict with local codes or regulations, please contact MAXON before initial start-up of equipment.



Read the combustion system manual carefully before initiating the start-up and adjustment procedure. Verify that all of the equipment associated with and necessary to the safe operation of the burner system has been installed correctly, that all pre-commissioning checks have been carried out successfully and that all safety related aspects of the installation are properly addressed.



Do not discard packing material until loose items are accounted for.  
To prevent damage in transit spark ignitor and linkage (if any) are shipped “loose”.

### Burner mounting

See sketch page 1-1.5-9. Burner may be mounted in any position suitable for automatic control motor and UV scanner. Burner will typically be installed through an oven wall or insulated air duct. Cut opening at least 25 mm larger in diameter than discharge sleeve to allow for sleeve expansion.

Additional burner support may be required in conjunction with a stiffener plate to support burner package weight (20-25 kg). Four 13 mm diameter holes into panels flange accept 10 mm stud bolts welded to panels or stiffener.



**IMPORTANT: seal welding of burner flange to stiffener plate at (A) may cause warpage of burner flange and require additional seal material to prevent leakage.**

For push-through systems, area (A, see drawing page 1-1.5-9) should be sealed with additional gasketing or high temperature packing, to prevent back flow of high temperature air. Fill area (B, see drawing page 1-1.5-9) with **no more than 50 mm** of high temperature packing (too little will overheat mounting, too much will overheat sleeve).

For pull-through systems, spacers may be installed on stud bolts and area (B, see drawing page 1-1.5-9) left empty to permit cooling air past the sleeve.

Four lock screws permit centering mixing cone within burner body and sleeve. They should be drawn up hand-tight, then backed out 180° to allow for cone expansion.

They must be rechecked after start-up and loosened if necessary to prevent deformation of cone. See start-up instruction for details.

**Tightening can lead to cone distortion and greatly reduced cone and discharge sleeve life.**

Discharge sleeve must be flush with, or extended beyond interior wall.

A viewing port should be provided for flame observation in such a position that burner flame can be fully seen.



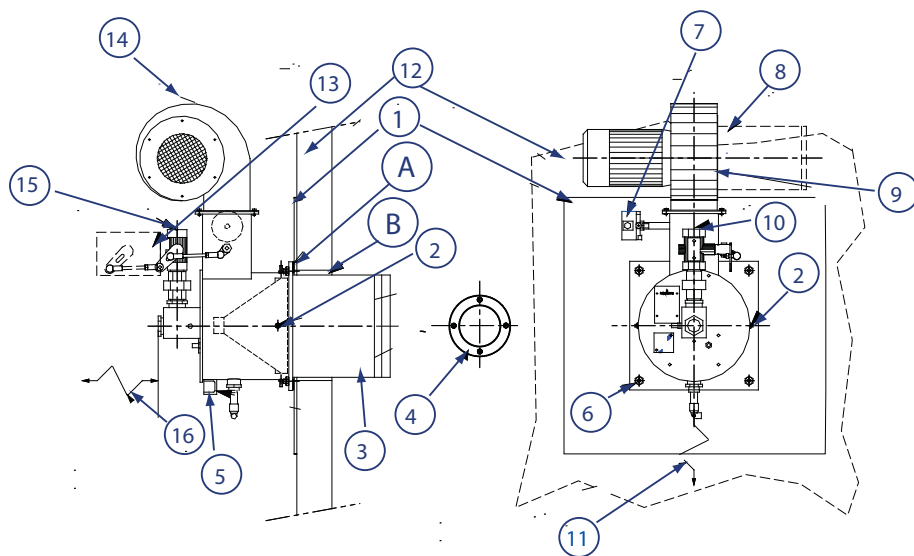
Installer must comply with all applicable codes and standards.  
Observe required space for parts removal.



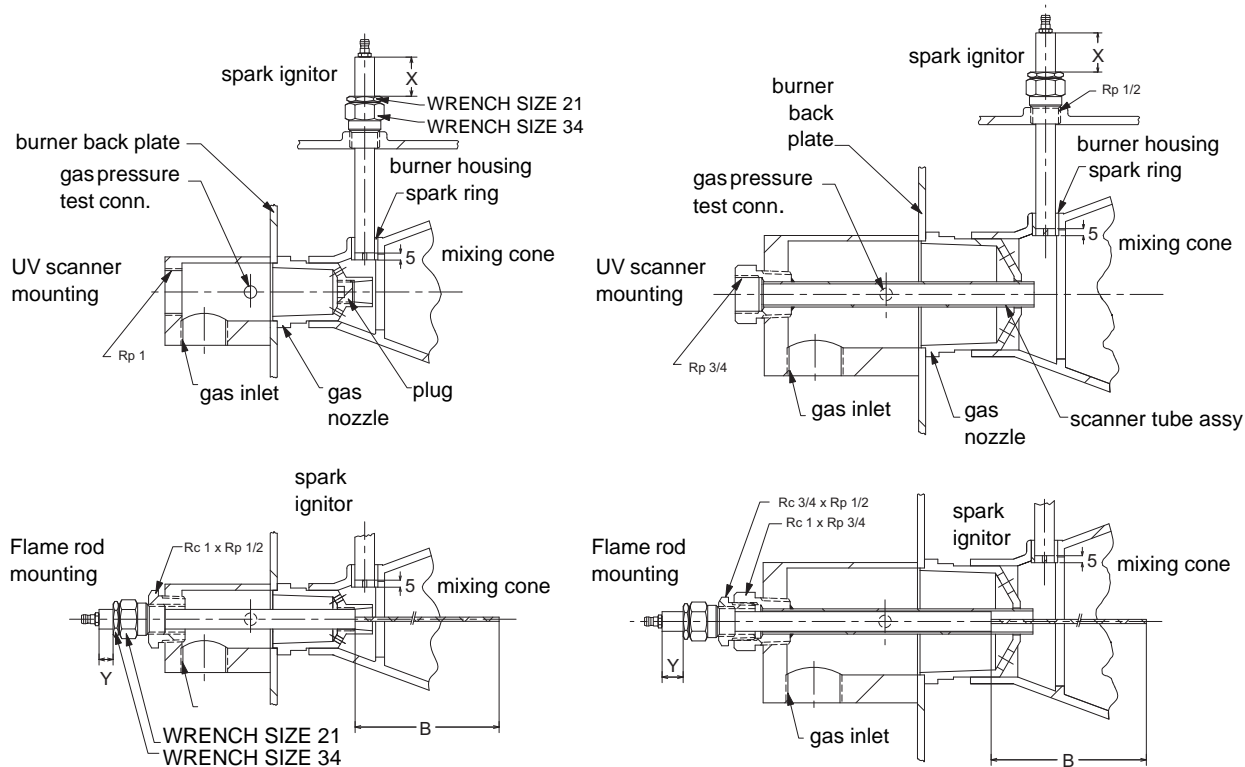
### Installation of flame scanner

Instead of a flame rod, a flame scanner can be applied to a VALUPAK® burner (with exception of VALUPAK® 60) for the purpose of flame detection with little modification. A 3/8" plug has to be installed in the nozzle center for the VALUPAK® 150, 300 and 600. For VALUPAK® 800 and 1000 no modification is required.

- 1) Stiffener plate
- 2) Lock screw
- 3) Discharge sleeve
- 4) Viewing port
- 5) Additional burner support
- 6) Stud bolt
- 7) Air pressure switch (option)
- 8) Air filter (option)
- 9) Air supply
- 10) Fuel supply
- 11) Space required for spark ignitor removal
- 12) Oven wall
- 13) Control motor (option)
- 14) Air supply
- 15) Fuel supply
- 16) Space required for flame rod/scanner removal

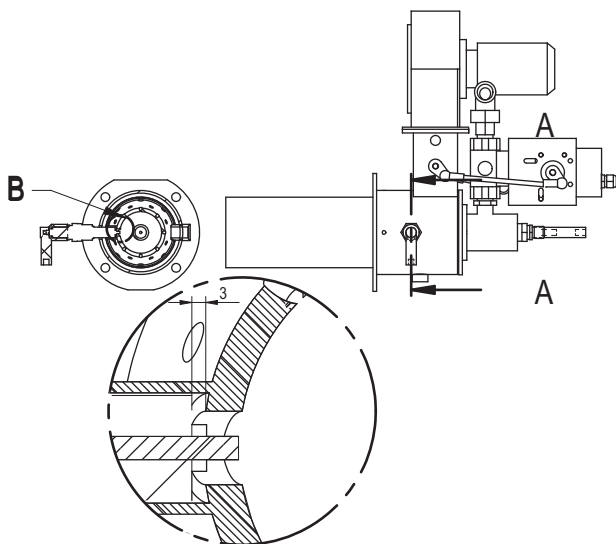


Flame rod or UV scanner arrangement with spark ignitor



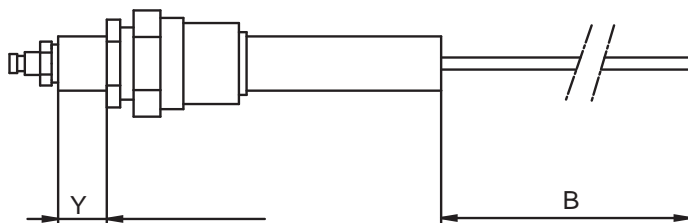
Dimensions in mm, unless stated otherwise			
MODEL VALUPAK®	SPARK IGNITOR	FLAME ROD	
	X	Y	B
VP 60		page 1-1.5-11	
VP 150	65	15	152
VP 300	42		
VP 600	40	40	203
VP 800	25	20	324
VP 1000			

**Spark ignitor arrangement for VALUPAK® 60**



The spark ignitor can be mounted in 3 different positions on the burner housing : left, right and bottom (if the air inlet is on top).  
Spark ignitor replacement : insert the spark ignitor through the collar into the burner. Insert the spark ignitor in the cone bushing until its ceramic touches the cone - then retract the spark ignitor 3 mm to establish proper gap.

**Flame rod arrangement for VALUPAK® 60**



Dimensions in mm, unless stated otherwise			
MODEL VALUPAK®	VP 60		
Blower type	UHC102	UHC122	UMI300
Maximum heat release in kW (Hs)	40	60	80
Dimension B	65	152	152
Adjustment dimension Y	50	50	50

The flame rod is located at the back of the burner, through the gas inlet block and gas nozzle. It is important that the flame rod is mounted gastight ! The recommended adjusting dimension shall be respected.

## Operating instructions

The operating instructions below are provided only as a guideline and are not intended to replace those provided by the manufacturer of a complete system of which the VALUPAK® burner is only a part. Where applicable, instructions provided by the system's manufacturer shall take precedence.

### Start

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1. Make sure trip release shut-off valve and main gas cock are all closed.
2. Make sure the burner firing rate control handle is at predetermined low fire "LO" position.
3. Start all circulating and exhaust fans.
4. Energize system control panel (if applicable).
5. Start burner blower motor.
6. Open main gas cock.
7. Press start button.
8. Main gas valve will open (only if all safety circuits are complete).

### Stop

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1. Push STOP button and
2. Main gas valve should automatically close.
3. De-energize system control panel and burner blower motor.
4. Close main gas cock.

## Start-up and adjustment instructions for VALUPAK® burners

Instructions provided by the company or individual responsible for the manufacture and/or overall installation of a complete system incorporating MAXON burners take precedence over the installation and operating instructions provided by MAXON. If any of the instructions provided by MAXON are in conflict with local codes or regulations, please contact MAXON before initial start-up of equipment.



Before initiating the following start-up and adjustment procedure, it is important that a check be made to verify that all of the equipment associated with and necessary to the safe operating of the VALUPAK® burner system has been installed and piped in accordance with the “General installation instructions”. If the burner system is part of an oven or other heating unit which has been purchased as a complete pre-piped and pre-wired package, it may be assumed that these instructions have already been carried out by the individual or company responsible for the overall installation.

Initial adjustment and light-off should be undertaken only by trained and experienced personnel familiar with combustion systems, with control/safety circuitry and with knowledge of the overall installation.

### To start-up a VALUPAK® burner for the first time

5. **Close main gas cock.**  
Check tightness of gas piping. Connect U-tube manometer to burner test connection on the burner gas nozzle inlet. Note burner type and required gas pressure (page 1-1.5-14).
6. **Establish correct blower direction of rotation of all fans.** See arrow on blower housings.
7. **Disconnect automatic control motor wiring to avoid unexpected motor travel.**  
Check that gas control valve is at low fire position (as supplied). For size 150 and 300 control motor rotation is counter clockwise when looking towards controls linkage going from low to high fire. For size 600, 800 and 1000 control motor runs clockwise from low to high.
8. **Bleed air from the fuel supply line.**  
Remove the cover from the gas pressure regulator and establish that regulator is at low end of control range.
9. **Check the adjustments of the flame rod and spark ignitor.** (See page 1-1.5-10 and the wiring).
10. **Start all machine air blowers.** Start burner with its start-stop switch. Motor of combustion air fan will be started shortly after, by means of the burner flame safeguard programming relay.
11. **Purge the combustion chamber,** purging any explosive vapors that may have accumulated prior to the start. The length of purge time required will usually be specified by insurance or approval agency having jurisdiction and depends on the total amount of fresh air and the volume of combustion space. A 5-fold refresh rate should be minimum. At the end of the purge time of the burner flame safeguard programming relay ignition is energized and the main gas valve will be energized shortly after.
12. **Because main gas cock** is closed the programmer will lock out requiring manual reset. Operation of programmer is correct.
13. **Check setting** of low and high gas pressure switches and combustion air pressure switch.
14. **Check burner control valve** at LO position.
15. **Slowly open main gas cock.** Reset burner relay and start burner.

16. After the burner flame safeguard programmer relay prepurge time ignition is energized and main gas valve opened. Flame should be established within safety time of programmer. If again flame failure, air could still be in gas supply line just before burner. Reset programmer and restart until low fire flame is established. Check gas supply pressure with information on page 1-1.5-14 and correct with adjusting screw of gas pressure regulator. Observe flame through observation port at rear of burner.
17. **Slowly bring burner to high fire position** and avoid maximum temperature of dryer. Check and correct gas pressure on burner test connection and adjust to value given on page 1-1.5-14. Close cover on pressure regulator and adjust all pressure switches.
  - High gas pressure switch at low fire.
  - Low gas pressure switch at high fire.
  - Air pressure switch at high fire by closing of air inlet until flame color start to change. Burner should trip by air pressure switch.
18. **Reconnect control motor wiring**, start burner and change several times between low and high fire position by changing temperature controller settings.
19. **Check all other safety devices** such as pressure switches, high temperature limits etc. and adjust these devices to their correct values.