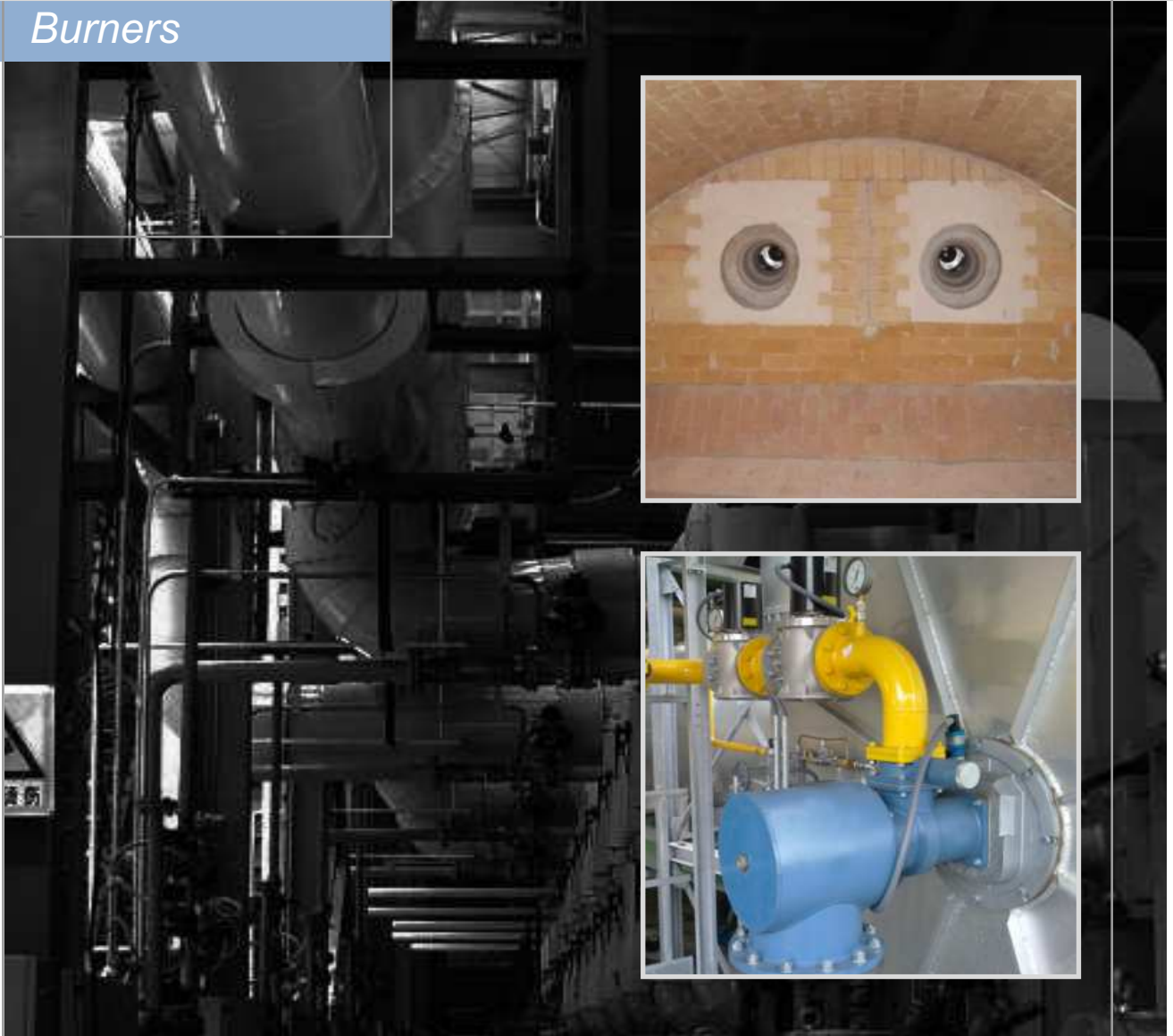


Burners



Long flame burners “Nozzle Mix”

NM - (E3501 rev. 08 - 22/05/2015)

GENERAL WARNINGS:



■ All installation, maintenance, ignition and setting must be performed by qualified staff, respecting the norms present at the time and place of the installation.

■ To avoid damage to people and things, it is essential to observe all the points indicated in this handbook. The reported indications do not exonerate the Client/User from observing general or specific laws concerning accidents and environmental safeguarding.

■ The operator must wear proper DPI clothing (shoes, helmets...) and respect the general safety, prevention and precaution norms.

■ To avoid the risks of burns or high voltage electrocution, the operator must avoid all contact with the burner and its control devices during the ignition phase and while it is running at high temperatures.

■ All ordinary and extraordinary maintenance must be performed when the system is stopped.

■ To assure correct and safe use of the combustion plant, it is of extreme importance that the contents of this document be brought to the attention of and be meticulously observed by all personnel in charge of controlling and working the devices.

■ The functioning of a combustion plant can be dangerous and cause injuries to persons or damage to equipment. Every burner must be provided with certified combustion safety and supervision devices.

■ The burner must be installed correctly to prevent any type of accidental/undesired heat transmission from the flame to the operator or the equipment.

■ The performances indicated in this technical document regarding the range of products are a result of experimental tests carried out at ESA-PYRONICS. The tests have been performed using ignition systems, flame detectors and supervisors developed by ESA-PYRONICS. The respect of the above mentioned functioning conditions cannot be guaranteed if equipment, which is not present in the ESA-PYRONICS catalogue, is used.

DISPOSAL:



To dispose of the product, abide by the local legislations regarding it.

GENERAL NOTES:



■ In accordance to the internal policy of constant quality improvement, ESA-PYRONICS reserves the right to modify the technical characteristics of the present document at any time and without warning.

■ It is possible to download technical sheets which have been updated to the latest revision from the **www.esapyronics.com** website.

■ The NM products have been designed, manufactured and tested according to the most correct construction practices and following the applicable requirements described in **UNI EN 746-2-2010** "Industrial heating process equipment - Part 2: Safety requirements for combustion and for the handling and processing of fuels". We emphasize that the burners described in this data sheet **are provided as independent units and are excluded from the scope of the Machine Directive 2006/42/EC** not having any mobile items that are not exclusively manual.

■ Certified in conformity with the **UNI EN ISO 9001** Norm by DNV GL.

CERTIFICATIONS:



The products conform to the requests for the Euroasia market (Russia, Belarus and Kazakhstan).

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The NM series identifies a family of “Nozzle Mix” gas burners. The combustion air flow, passing through the mixer body, drags the fuel gas inside the refractory block in which complete mixing takes place, thus combustion. The shape of the refractory block creates a particular very long stabilized flame.

APPLICATIONS

- Forging.
- Melting furnaces for frits.
- Billet reheating furnaces.
- Aluminum melting furnaces.
- Air heaters.
- Furnaces for heat treatment.
- Incinerators.
- Tempering and stress relief furnaces
- Brick kilns.
- Heating crucibles and ladles.
- Dryers.

CHARACTERISTICS

GENERAL:

- Functioning with preheated air up to: 500°C
- Functioning with various gas types.
- Potential: from 10Kw to 17MW
- Flow ratio for single nozzle models: 10:1
- Flow ratio for multi nozzle models until: 60:1
- Excellent flame stability.
- Support flange for refractory block provided with threaded holes for positioning of accessories like: pilot burner, flame detector (electrode or UV photocell), peep-sights.
- Separate air and gas inlets, mixing at discharge point, no flashback.

MATERIAL COMPOSITION:

- Mixing body: cast iron G25
- Plate: cast iron G25/Fe 360
- Air pipe: AISI304
- Refractory block: T. Max 1750°C



F3501103



F3501104

IGNITION AND DETECTION

Ignition of the Nm series burners must always be carried out at low fire by a PBC & PBST series pilot burner (data sheet E3280). After ignition, the pilot burner must be excluded from the main burner, therefore flame detection must take place via a photocell placed anticlockwise from the actual pilot burner.

For low power models direct ignition is allowed via DSE or WAND series electrodes (data sheet E5805 and E5806). In this case detection must occur via a UV-2 photocell (data sheet E7001).

Flame control devices are compulsory in all plants operating at temperatures lower than 750°C.

Single nozzle model	Ignition with pilot burner		Ignition with electrode	
	Ignition	Detection*	Ignition	Detection
101 NM	P42PBC-FR	UV-2 / WAND	14MM	UV-2
201 NM	P42PBC-FR	UV-2 / WAND	WAND / 201 NM	UV-2
301 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
601 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
1001 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
1501 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
2501 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
4001 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
6001 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
8001 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)

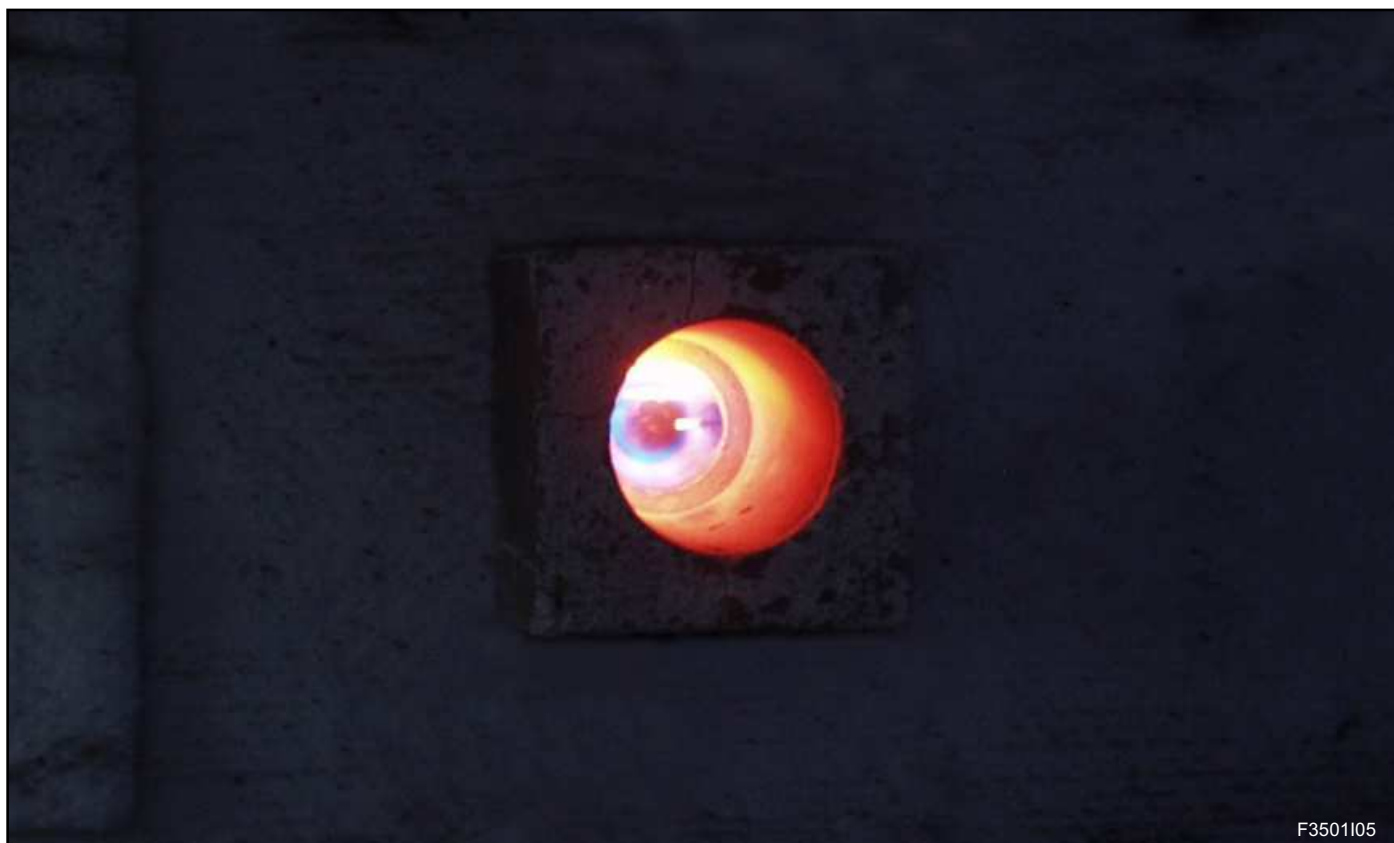
Multi nozzle model	Ignition with pilot burner		Ignition with electrode	
	Ignition	Detection*	Ignition	Detection
2002 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
3002 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
4004 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
6006 NM	P64PBST	UV-2 / 6EN-150	DSE - 1	UV-2
10004 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
12002 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
16002 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
18003 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
24003 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
32004 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)
48006 NM	P86PBST	UV-2 / 6EN-150	(not expected)	(not expected)

(*) In most cases, flame detection with photocell is recommended. In particular applications it is possible to use the continuous pilot burner with electrode detection

DESCRIPTION

The NM burners are nozzle-mix long flame burners. The particular shape of the refractory block ensures a tense and very stable flame. They are suitable for both ambient temperature air or preheated air. The modulating control with cold air involves the use of a motorized valve on the air side controlled by the signal coming from the tempera-

ture controller and a zero-governor on the gas side driven with the air pressure signal. The instrument is used for maintaining the ratio between the combustion air and gas throughout the operating range. In the case of adjustments with preheated air, the zero-governor is controlled by the pressure coming from a pressure regulator



double membrane, which generates a signal that is proportional to the variation of air flow. In this way the ratio of

the combustion gas-air is kept constant in all conditions combustion air potential and temperature.

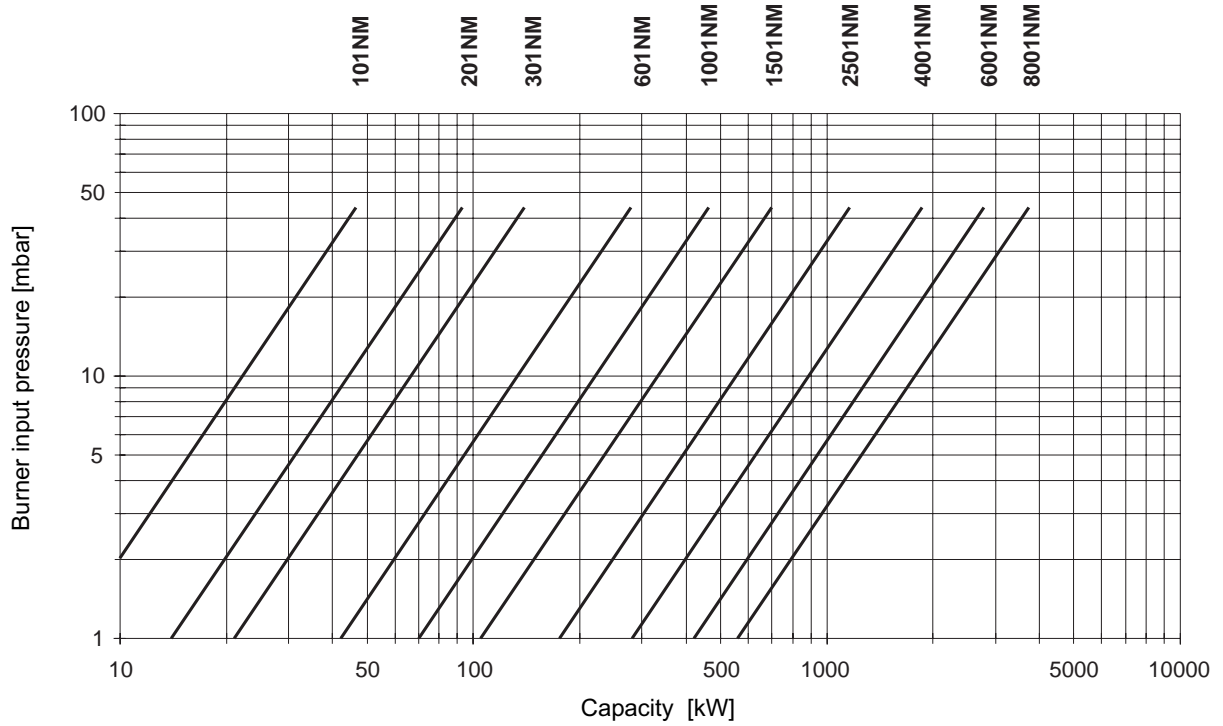
CAPACITY TABLE

Single nozzle model	Flame length [mm] ⁽¹⁾	Diameter of connection to the burner		Capacity [kW] depending on the combustion air pressure [mbar]								
		Air	Gas	2.2	4.4	8.8	13.2	17.6 ⁽²⁾	22	26.4	35.2	44 ⁽³⁾
101 NM	150÷200	3/4"	3/8"	9	13	18	22	25	28	31	35	39
201 NM	200÷300	1.1/4"	3/4"	18	25	35	43	50	56	61	71	79
301 NM	200÷500	1.1/2"	1"	26	37	53	65	75	83	92	105	118
601 NM	250÷850	2"	1.1/4"	53	94	105	129	150	167	183	209	236
1001 NM	300÷1000	3"	1.1/4"	88	125	174	217	249	279	303	349	394
1501 NM	600÷1250	3"	1.1/2"	142	187	249	324	374	423	461	523	598
2501 NM	760÷1500	4"	2.1/2"	219	311	441	538	623	697	762	881	983
4001 NM	1300÷2000	6"	3"	300	430	650	820	960	1080	1200	1400	1580
6001 NM	1500÷2500	8"	3"	400	650	950	1220	1410	1600	1760	2050	2280
8001 NM	1800÷3200	8"	3"	530	810	1260	1580	1880	2120	2320	2720	3020

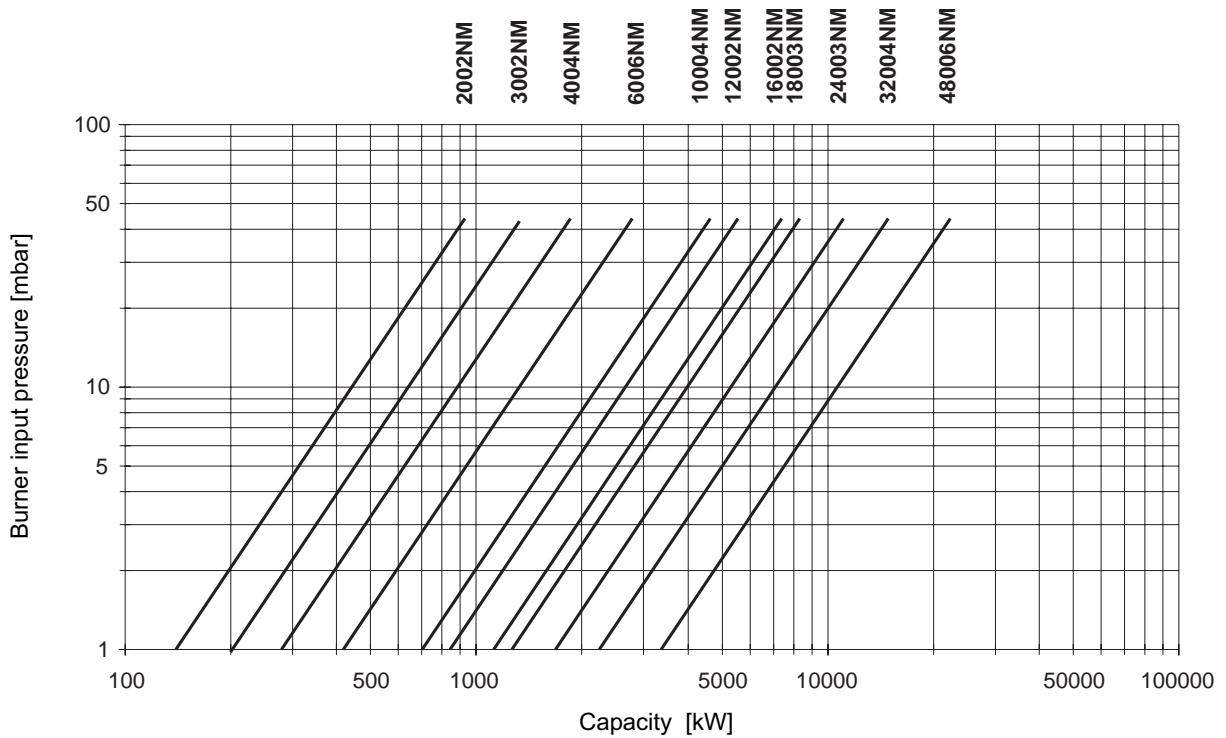
Multi nozzle model	Flame length [mm] ⁽¹⁾	Diameter of connection to the burner		Capacity [kW] depending on the combustion air pressure [mbar]								
		Air	Gas	2.2	4.4	8.8	13.2	17.6 ⁽¹⁾	22	26.4	35.2	44 ⁽³⁾
2002 NM	300÷1000	4"	2 x 1.1/4"	175	250	349	434	498	558	607	697	787
3002 NM	600÷1250	4"	2 x 1.1/2"	284	374	498	648	748	846	922	1046	1196
12002 NM	1500÷2500	10"	2 x 3"	800	1300	1900	2440	2820	3200	3520	4100	4560
16002 NM	1800÷3200	10"	2 x 3"	1060	1620	2520	3160	3760	4240	4640	5440	6040
18003 NM	1500÷2500	12"	3 x 3"	1200	1950	2850	3660	4230	4800	5280	6150	6840
24003 NM	1800÷3200	12"	3 x 3"	1590	2430	3780	4740	5640	6360	6960	8160	9060
4004 NM	300÷1000	6"	4 x 1.1/4"	350	500	697	867	996	1115	1214	1394	1574
10004 NM	760÷1500	10"	4 x 2.1/2"	877	1244	1765	2152	2492	2788	3050	3526	3934
32004 NM	1800÷3200	14"	4 x 3"	2120	3240	5040	6320	7520	8480	9280	10880	12080
6006 NM	300÷1000	8"	6 x 1.1/4"	525	750	1046	1301	1494	1673	1821	2091	2361
48006 NM	1800÷3200	20"	6 x 3"	3180	4860	7560	9480	11280	12720	13920	16320	18120

Notes: 1) Nominal maximum capacity range. 2) Flame dimensions are approximate, referred to burners feeded with CH₄, working at stoichiometric ratio, in free air. Values are included in a range: minimum value is referred to burner working at nominal capacity (1), higher value at maximum capacity (3).

CAPACITY CHART

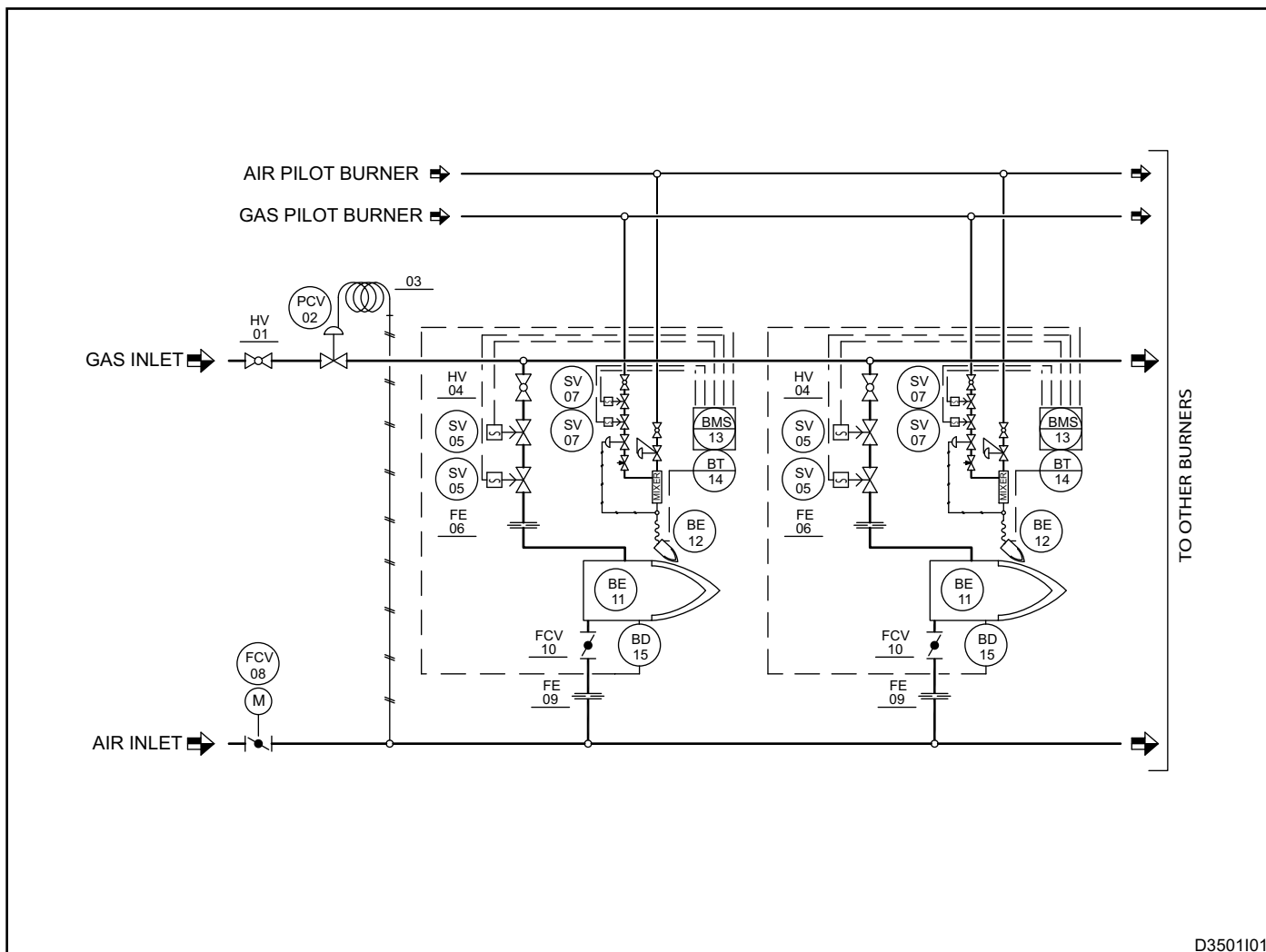


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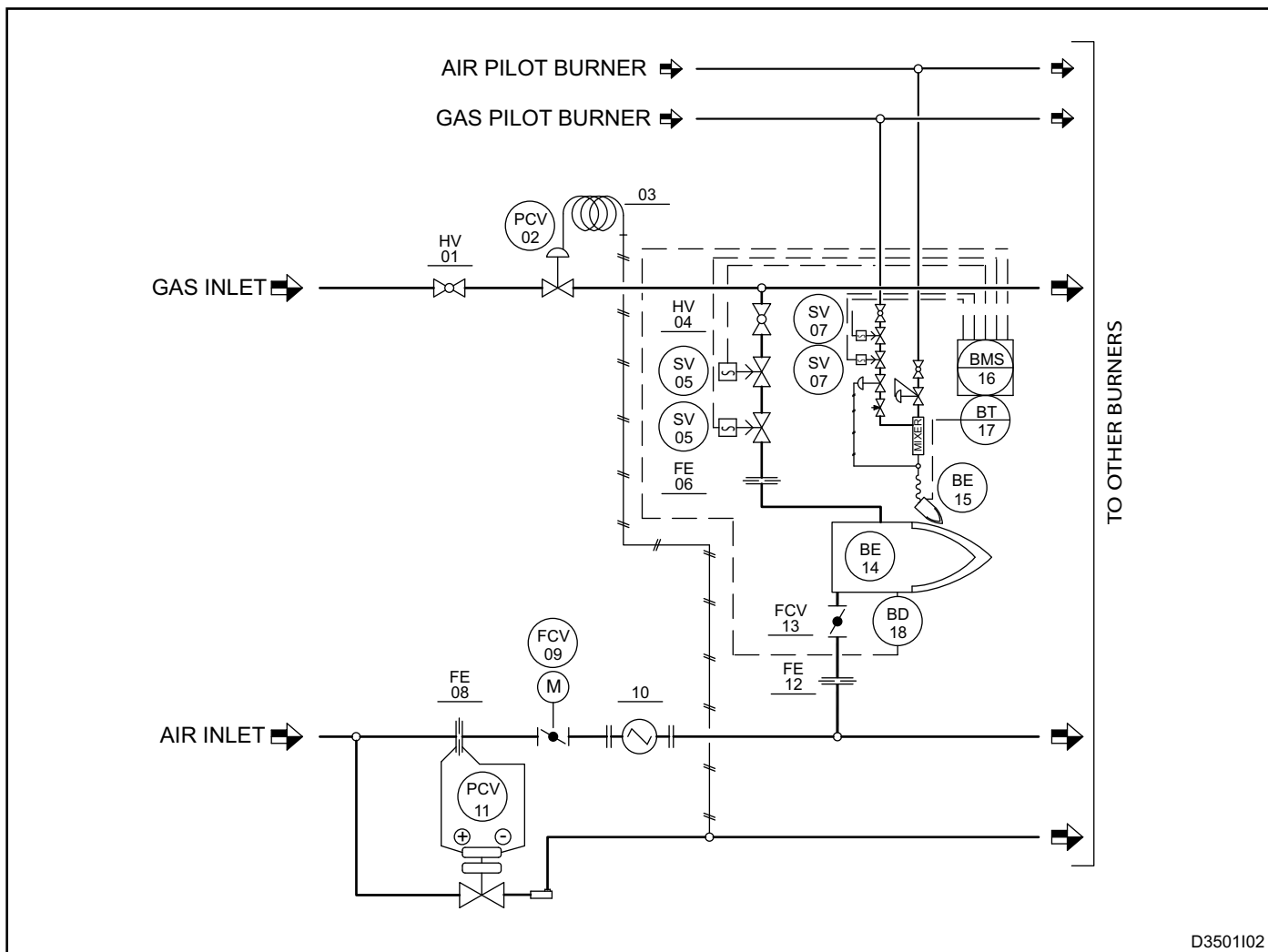
FLOW SCHEME - COLD AIR



D3501101

Pos.	Description	Included	Not included
HV 01	Gas interception main ball valve		X
PCV 02	Balanced modulator		X
03	Impulse line		X
HV 04	Gas interception ball valve to the single burners		X
SV 05	Main burner safety solenoid gas valve		X
FE 06	Δp gas orifice flow meter		X
SV 07	Pilot burner safety solenoid gas valve		X
FCV 08	Manual air regulation butterfly valve		X
FE 09	Δp air orifice flow meter		X
FCV 10	Manual air regulation butterfly valve		X
BE 11	Main burner	X	
BE 12	Pilot burner		X
BMS 13	Flame control device		X
BT 14	Ignition transformer		X
BD 15	Flame detection photocell		X

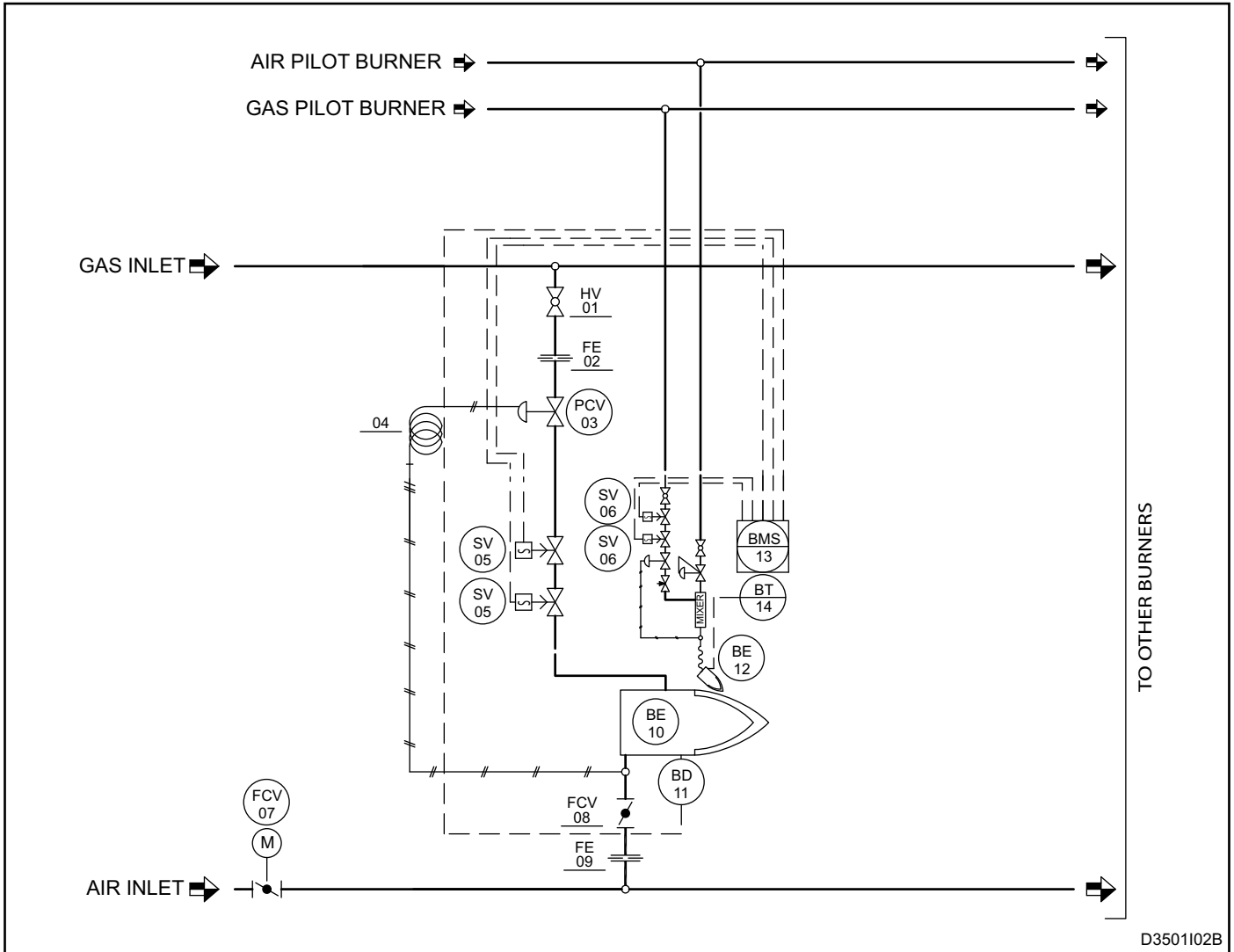
FLOW SCHEME - HOT AIR



D3501102

Pos.	Description	Included	Not included
HV 01	Gas interception main ball valve		X
PCV 02	Balanced modulator		X
03	Impulse line		X
HV 04	Gas interception ball valve to the single burners		X
SV 05	Main burner safety solenoid gas valve		X
FE 06	Single burner Δp gas orifice flow meter		X
SV 07	Pilot burner safety solenoid gas valve		X
FE 08	Single burner Δp air orifice flow meter		X
FCV 09	Air regulation servocommanded butterfly valve		X
10	Heat exchanger		X
PCV 11	Flow regulator		X
FE 12	Single burner Δp air orifice flow meter		X
FCV 13	Manual air regulation butterfly valve		X
BE 14	Main burner	X	
BE 15	Pilot burner		X
BMS 16	Flame control device		X
BT 17	Ignition transformer		X
BD 18	Flame detection photocell		X

FLOW SCHEME - SINGLE BURNER



D3501102B

Pos.	Description	Included	Not included
HV 01	Gas interception main ball valve		X
FE 02	Single burner Δp gas orifice flow meter		X
PCV 03	Balanced modulator		X
04	Impulse line		X
SV 05	Main burner safety solenoid gas valve		X
SV 06	Pilot burner safety solenoid gas valve		X
FCV 07	Air regulation servocommanded butterfly valve		X
FCV 08	Manual air regulation butterfly valve		X
FE 09	Single burner Δp air orifice flow meter		X
BE 10	Main burner	X	
BD 11	Flame detection photocell		X
BE 12	Pilot burner		X
BMS 13	Flame control device		X
BT 14	Ignition transformer		X

WARNINGS

- The NM burners are intended to be used in fixed installations. If mobile installations are necessary (bell furnaces etc...) possibility of damaging the burners due to the movement of the actual furnace, must be taken into consideration.
- Burner ignition must always be carried out at minimum power, then modulating towards the maximum. In this way ignition is made easier and output overpressure is reduced.
- Moving from minimum to maximum power and vice versa must be done gradually and not instantaneously.
- For all low temperature applications (up to 750°C), burner ignition and the fuel gas solenoid valve command must be performed by certified burner control devices.
- It is always necessary to use flexible joints in the presence of preheated air.
- To avoid possible damage to the burners, make to that the blower does not send them air that is polluted by combustion products, oils, solvents or other substances. To avoid these phenomena, if possible, install the suction duct outside the establishment and far from exhaust pipes.
- Check the correct connection of the feeding lines after installation. Before switching the burner on, check that the combustion air and fuel gas pressure values are correct.
- The burner can only function within the indicated power range. Working with excessive power could compromise the performance and life of the burner. In this case, the guarantee conditions automatically expire and ESA-PYRONICS will not be held responsible for any damage to property or persons.
- If there should be problems with other devices during the burner start-up phase, for the HT (high tension) cable connection to the ignition electrode use a connector with filter.
- Avoid burner ignition close to each other so as not to heat the ignition command system devices (solenoid valves and transformers). Prewash time lapse + first safety time lapse + min. of 5 sec. = time lapse between one ignition and another. (however, do not attempt more than 2 ignitions during a 30sec. time lapse).
- Make sure the power supply is TURNED OFF when intervening on the burner and its devices. In case of burner malfunctioning, follow the indications in the 'Maintenance' chapter of the present manual or contact ESA-PYRONICS assistance.
- Any modification or repair done by third parties can compromise the application safety and automatically cause the general warranty conditions to expire.

INSTALLATION

The burners of the series NM are generally installed on the wall. Roof top installation is not recommended; if necessary, specify when ordering.

The light obtained for the housing of the burner must have a free space around the block for the refractory ceramic fiber insulation (which is already provided with the burner). Refer to the OVERALL DIMENSIONS section.

it is compulsory to use of flexible and / or compensating hoses for connecting the air and gas lines. The air and gas inputs are fitted with flanges (welding or threaded) and can be freely rotated at 90 °.

We recommend the installation of the refractory block with holes for the pilot burner and flame detection photocell at the top.

Installation with the holes in the lower part could create problems for the pilot burner and / or the photocell caused

by dirt that may deposit inside this instrument.

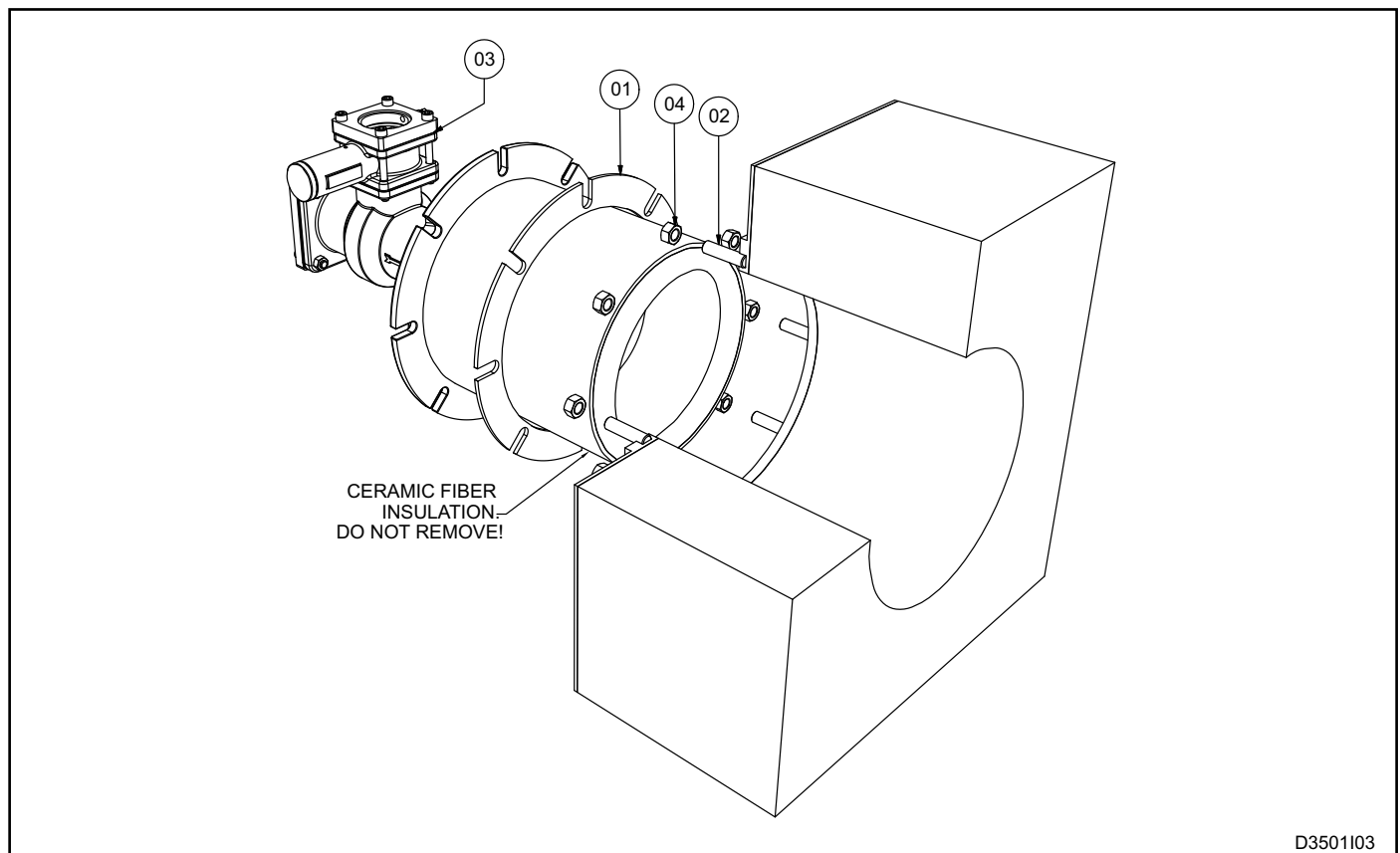
1 - Insert the refractory block gasket on the furnace wall. (**pos.01**)

2 - Lift the burner (**pos.03**) and secure it to the stud bolts (**pos.02**) with the nuts (**pos.04**), checking that during the insertion of the block when drilling, the ceramic insulation around the block does not get damaged and that the gasket is not moved or deformed.

3 - Tighten the fastening nuts to the wall furnace flange leaving them loose to allow the refractory block of the burner to float during heating.

4 - Connect the gas and air lines of the burner via the fixing flanges.

5 - Carry out the first heating process of the furnace following the appropriate drying curves of the refractory material.



6 - Once you reach the maximum working temperature, tighten the nuts completely.

7 - After the first firing, immediately repair any cracks or small damage. In general, the walls of the furnaces around the burners are regularly inspected and any cracks are repaired or patched. This prevents leakage of hot gas through these cracks which could end up damaging the metal parts of the furnace and burner

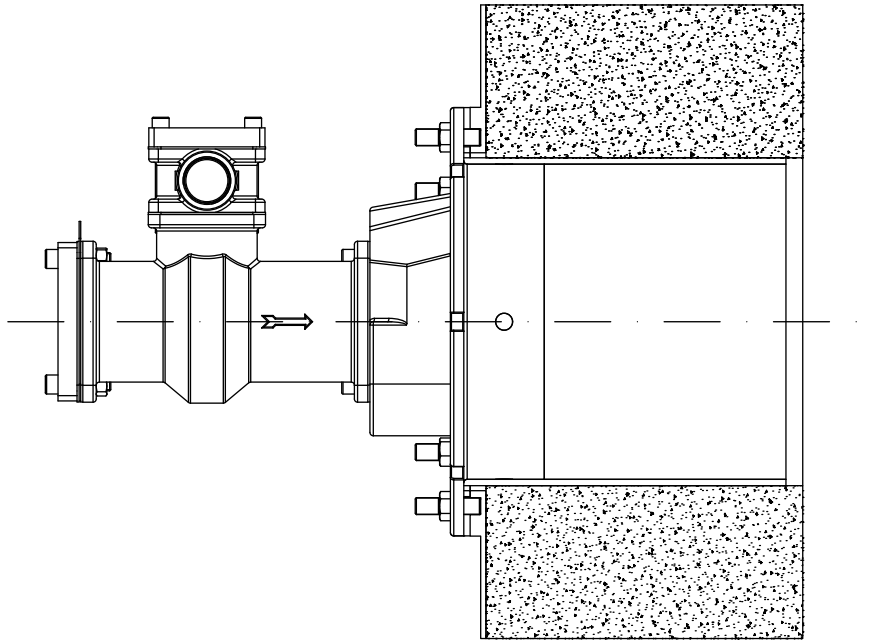
8 - In the case of use of blocks with metal jackets, these

must be suitably protected by the high temperature of the furnace

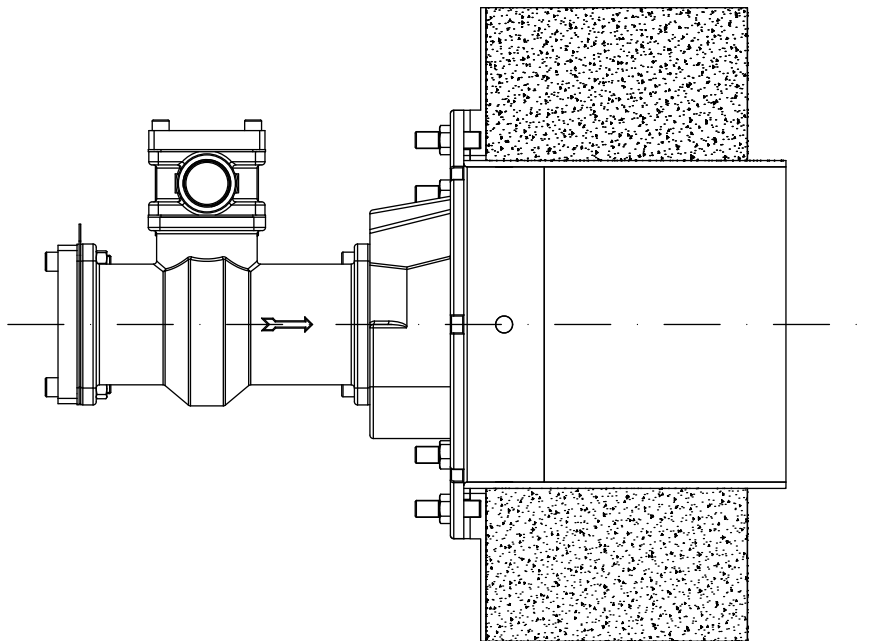
9 - The housing of the burner must be built with adequate burner support structures to prevent any collapsing of the refractory block. The refractory block must not protrude from the walls, if necessary provide suitable spacers to move back to its position with respect to the inner wall of the furnace.

INSTALLATION BOARD ON FURNACE WALL

CORRECT INSTALLATION



WRONG INSTALLATION



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START-UP - SETTING

The procedures indicated in the following chapter must be carried out by expert technicians. The non-observance of the instructions given can provoke dangerous conditions.

- 1** - Check that the combustion air pressure exiting the blower and the combustive fuel pressure are both within the allowed range.
- 2** - Adjust the working pressure and the safety device pressure of the combustion plant, whether there is one per burner or one for the whole plant i.e. gas pressure reduction gear, block valve, relief valve, pressure switches etc. Simulate the intervention of all the safety devices including the intervention of the safety over temperature, checking that the fuel safety block devices react properly.
- 3** - Place the air regulation valve in the maximum opening position and adjust the burner inlet pressure referring to the values indicated in the 'Burner Performances' chapter.
- 4** - Place the air regulation valve in the minimum opening position and adjust its opening to obtain (in burner inlet and ejector) the relative minimum power pressure.

5 - Activate the burner control device and attempt the pilot burner (*) ignition until it switches on. While attempting to ignite the burner, act on the gas adjustment valve and, starting from the totally closed position, open it gradually until the main burner ignites.

6 - Fully open the air regulation valve and adjust, via the gas adjustment valve, the maximum fuel capacity, checking the differential pressure created on the calibrated gas flange.

7 - Double check that, at minimum and maximum power, the burner inlet pressures correspond to the values in the 'Burner Performances' chapter. These values may differ depending on whether the burner is on or off.

8 - If necessary, with both burners running at the same power, analyze the combustion products in the chamber (where possible).

9 - Repeatedly attempt ignition at minimum burner power, with maximum amplitude, to check the ignition reliability and flame stability during the adjustment.

(*) For pilot burner ignition and setting, please refer to n. E3280 technical data sheet.

GENERAL MAINTENANCE PLAN

Operation	Type	Advised time	Notes
Pilot burner high tension electrode connector	O	annual	check the integrity of the outer plastic and oxidization of the internal connector and of the electrode terminal.
Pilot burner ignition electrode	O	annual	replace if the kantal terminal is worn.
Refractory block integrity	S	every semester	at every maintenance check with furnace turned off, from the inside, make sure there are no cracks in the refractory material. Any cracks must be filled with special refractory material or sealant.
Cleaning of the scanner slide	O	every semester	reduce to quarterly check in dusty environments.
Uv-scanner replacement	O	10.000 h. of functioning	in any case, every two years.
Gas side gasket replacement (*)	O	every two years	see note
Burner settings	O	annual	repeat all the steps in the "START-UP AND SETTINGS" chapter.

NOTES:

Key: O = ordinary / E = extraordinary

(*) it is advisable to replace the gaskets on the gas side every time the gas feeding line is dismantled and that high temperature gaskets are used.

ORDINARY MAINTENANCE

For correct dismantling and better maintenance of the NM burners, meticulously follow the instructions below with the plant turned off.

CLEANING OF UV-SCANNER WATCH GLASS

1 - Check that the burner control device is not connected.

2 - Disconnect power supply to the uv-scanner (**pos. 01**) and the cooling line (where present **pos. 07**).

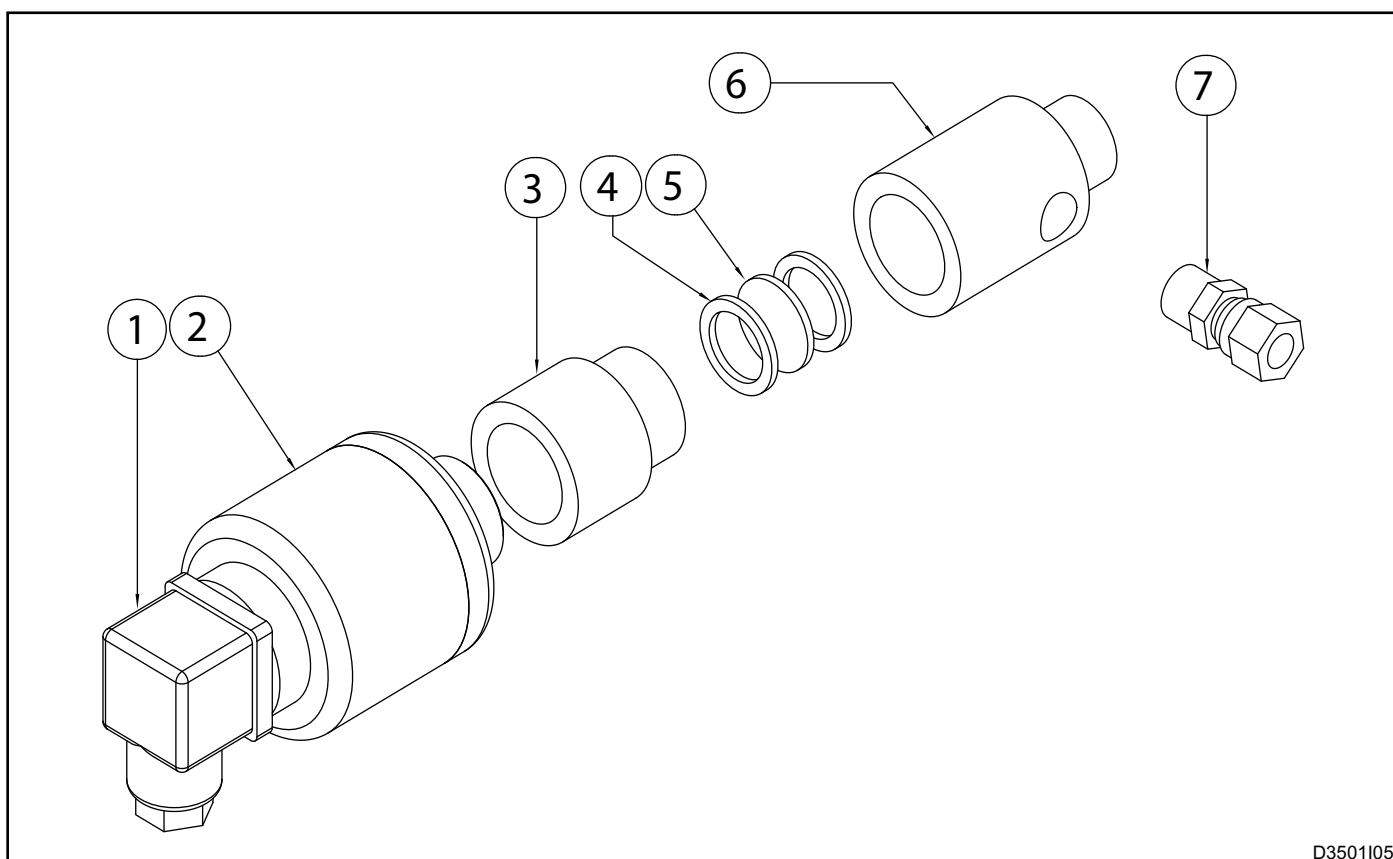
3 - Unscrew the aluminium pipe fitting (**pos. 06**) at the base of the gas collector, removing the uv-scanner with its spacer.

4 - Unscrew the aluminium fitting from the insulation teflon connector (**pos. 03**) and remove the quartz watch glass (**pos. 05**).

5 - Clean the quartz watch glass with a damp cloth and proceed to reassemble everything making sure that both the glass as well as the gaskets are put back in the correct positions (**pos. 04**) between the aluminium teflon spacer, before tightening.

6 - Restore the cooling hoses and power connection.

7 - Check the correct flame detection of the uv-scanner.



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EXTRAORDINARY MAINTENANCE

For correct dismantling and better maintenance of the NM burners, meticulously follow the instructions below with the plant turned off.

BURNER IN LOCKOUT

In burner lockout conditions refer to the indications of the burner control device as well as the relative manual to identify the cause. After this, the main cases have been indicated below:

■ **Illegal flame detection:** lockout due to illegal flame signal detection during the phases that precede the ignition or following the switching off. The causes could be due to the detection system (broken sensor or presence of humidity), or else in the gas drawn by the safety solenoid valve which allows the burner to remain on.

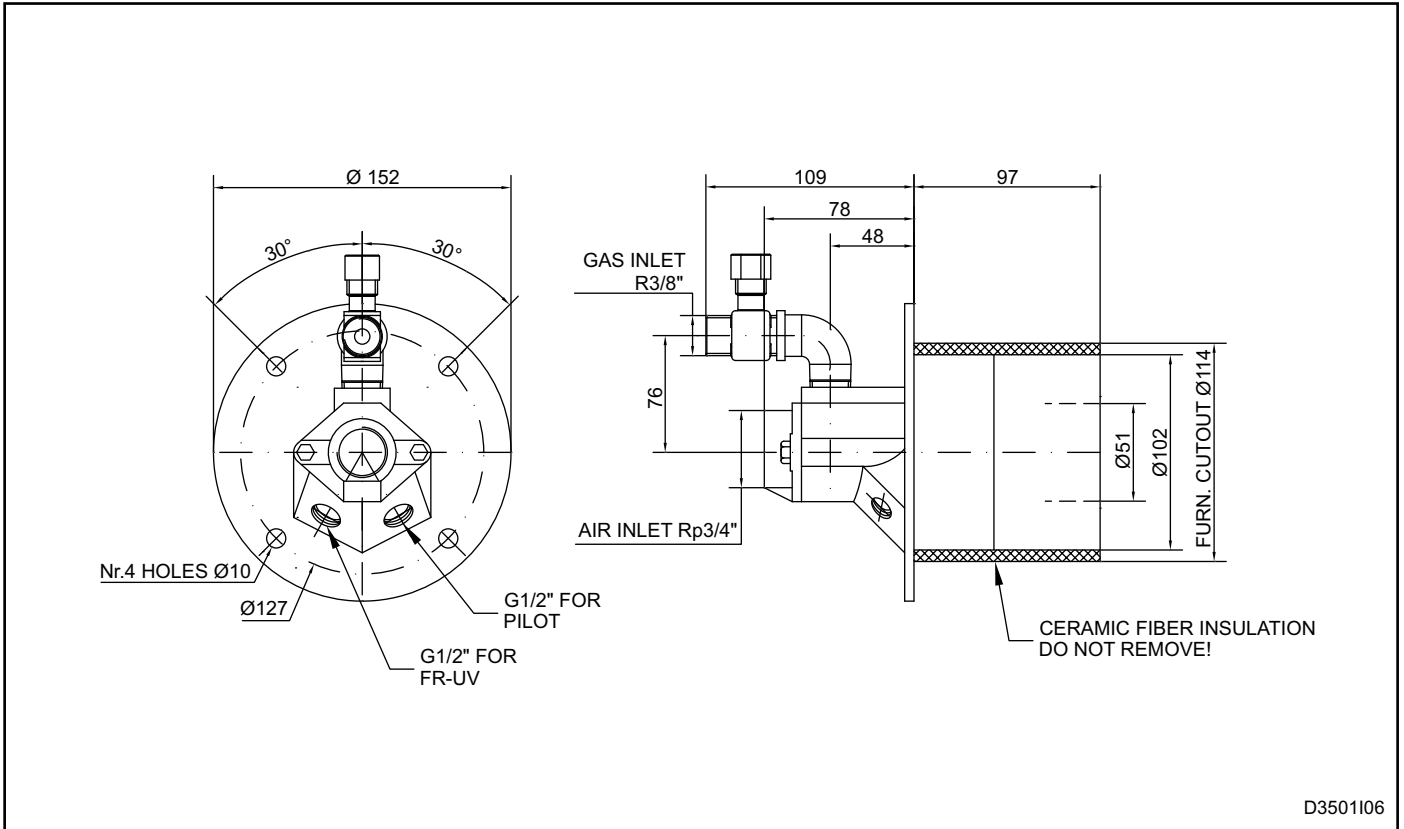
■ **Ignition failure:** lockout due to missing flame formation during start-up. The causes could be due to the ignition system (missing spark, broken electrodes or electrodes not in correct position), in bad regulation of the flow fuel or combustive agents or in the detection system (broken sensor or interrupted cables). Specifically, in the first two cases the flame does not trigger off, whilst in the last case, the flame forms but the burner control device is unable to detect it.

■ **Flame signal loss:** lockout due to flame signal loss during the normal functioning of the burner. The causes may be found in the regulation of the fuel flow or combustive agents (rapid flow variations, regulation out of allowed range) or in the detection system (broken, dirty or badly positioned sensors).

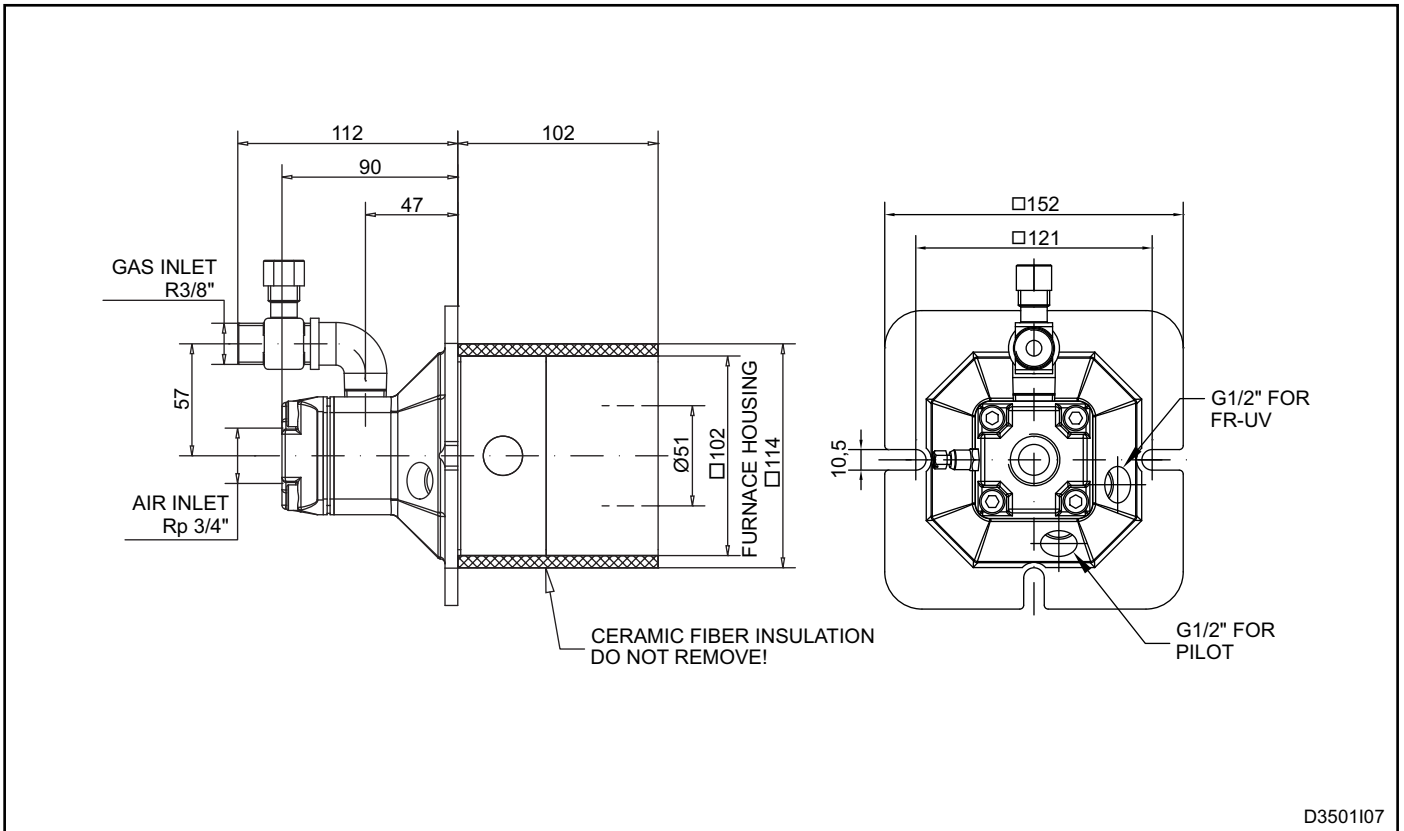
UV-SCANNER REPLACEMENT

- 1 - Check that the burner control device is not connected.
- 2 - Disconnect the electrical flow to the uv-scanner (**pos. 01**) and to the cooling line (where present).
- 3 - Unscrew the aluminum pipe fitting at the base of the gas collector (**pos. 02**), removing the uv-scanner with its spacer.
- 4 - Screw the new component back on, in the same position, after having checked the correct position of the watch glass insulation between the aluminum and teflon spacers.
- 5 - Restore the cooling pipes and the electrical connection.
- 6 - Check the correct uv-scanner flame detection.

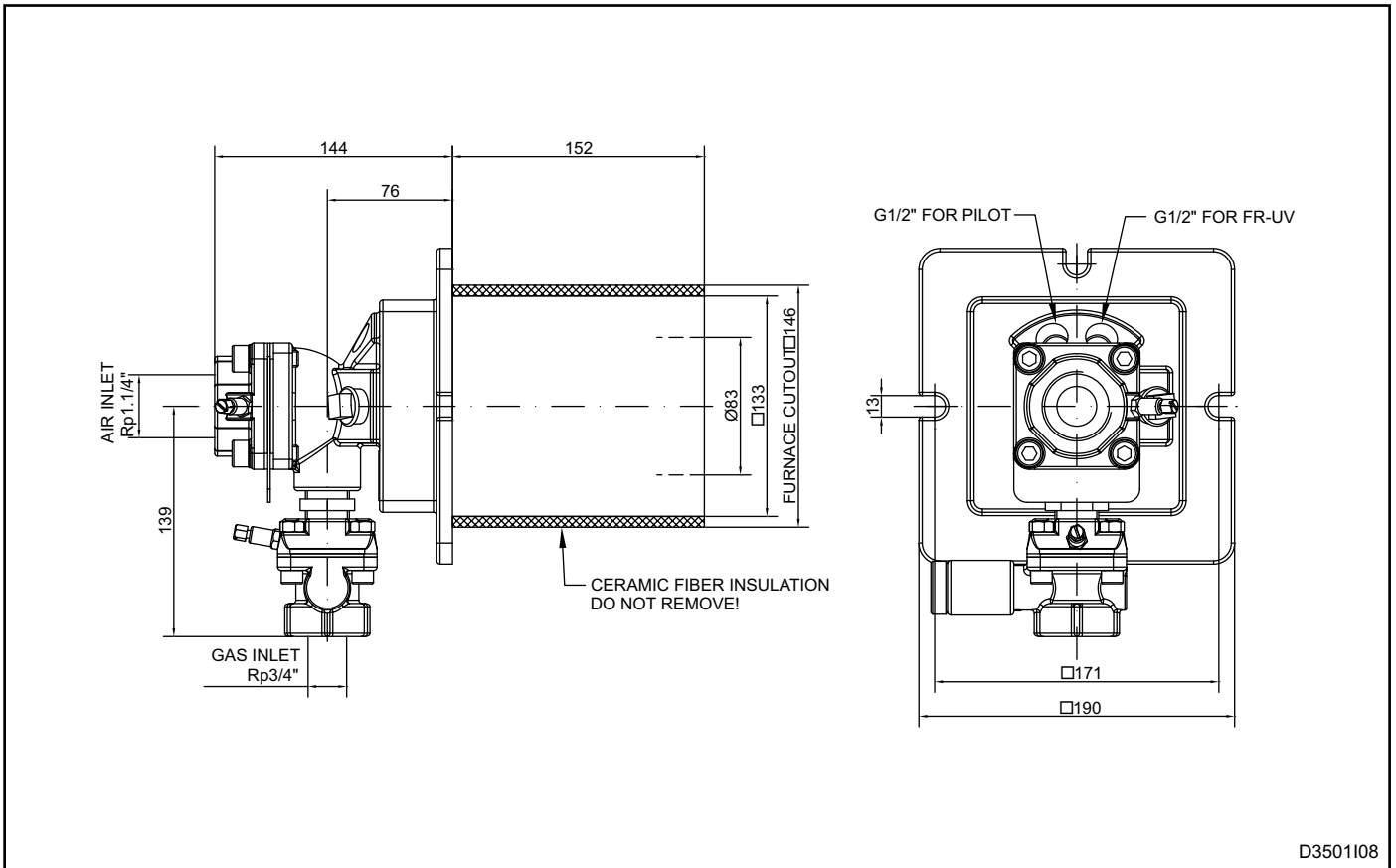
OVERALL DIMENSIONS - 101 NM-R



OVERALL DIMENSIONS - 101 NM-S

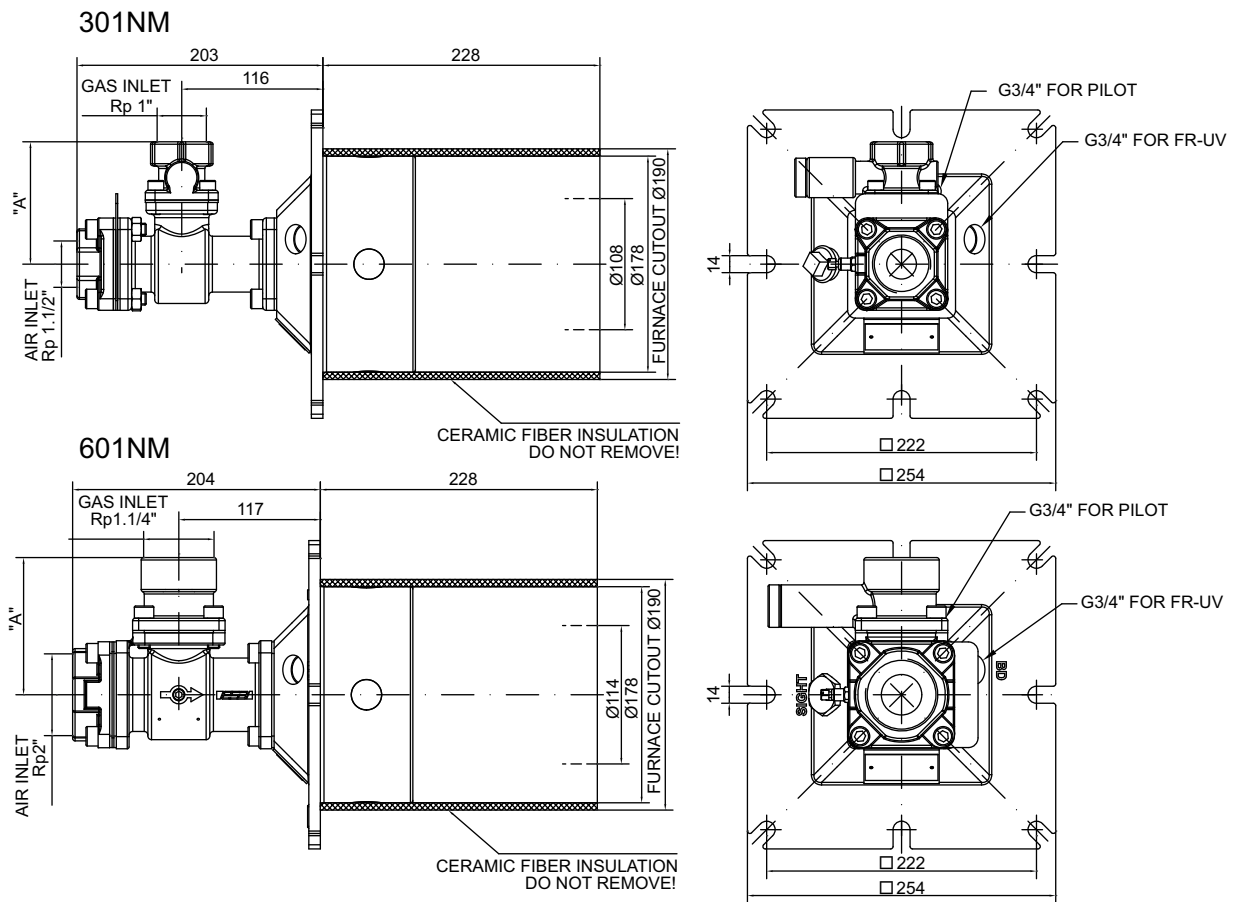


OVERALL DIMENSIONS - 201 NM-S



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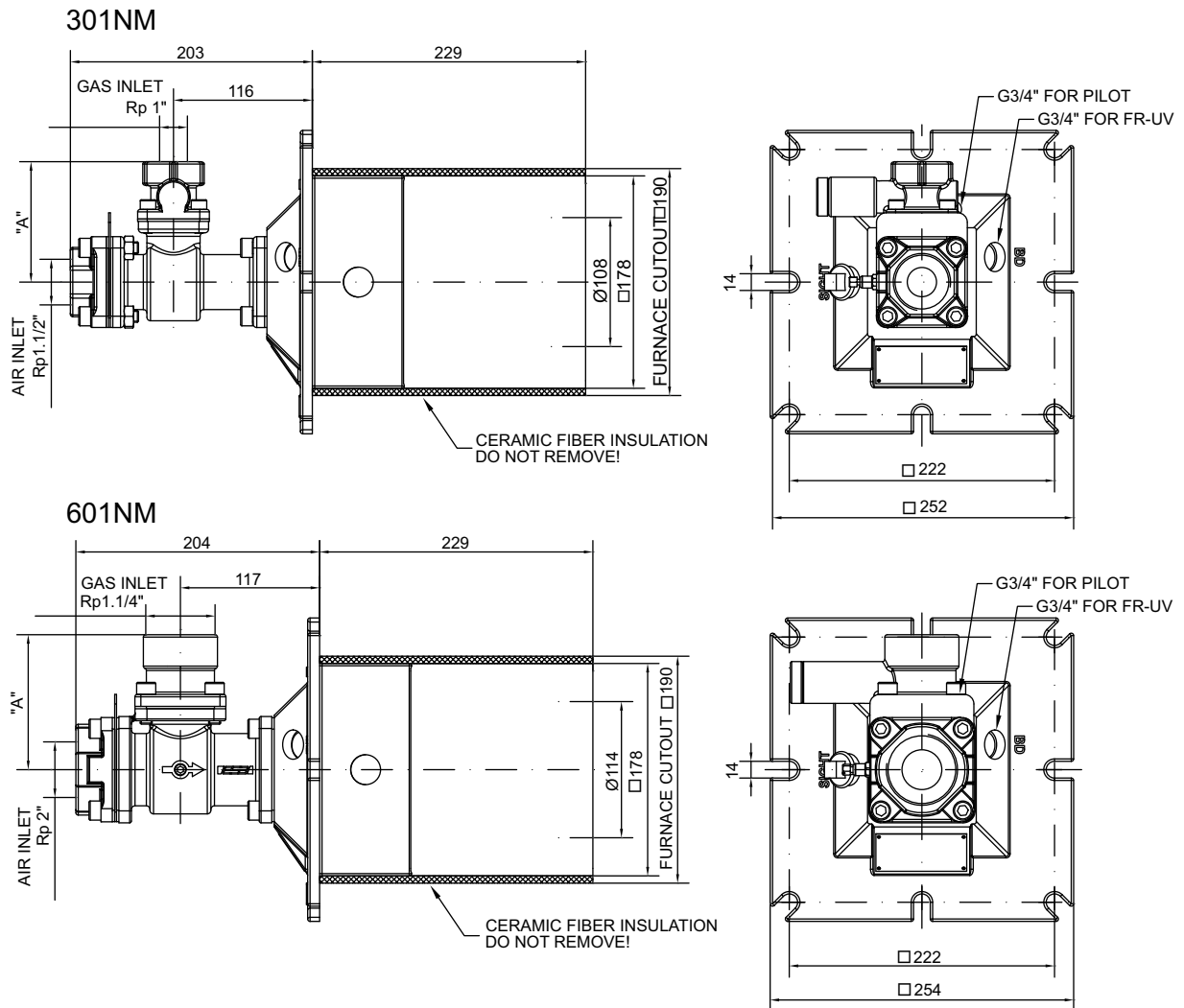
OVERALL DIMENSIONS - 301 NM-R / 601 NM-R



Model	A [mm]
301 NM-F-R	74
301 NM-GA-R	101
601 NM-F-R	83
601 NM-GA-R	113

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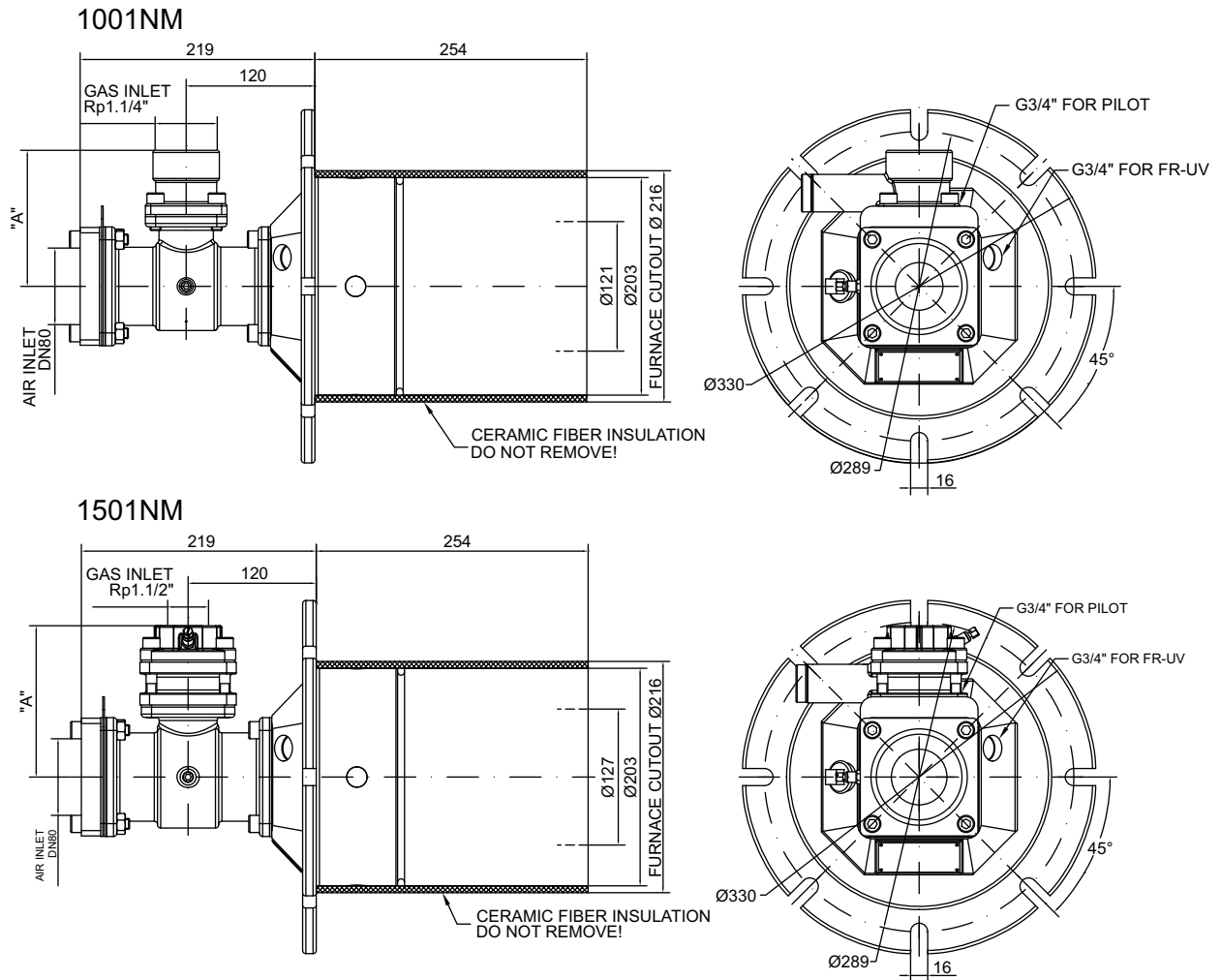
OVERALL DIMENSIONS - 301 NM-S / 601 NM-S



Model	A [mm]
301 NM-F-S	74
301 NM-GA-S	101
601 NM-F-S	83
601 NM-GA-S	113

D3501110

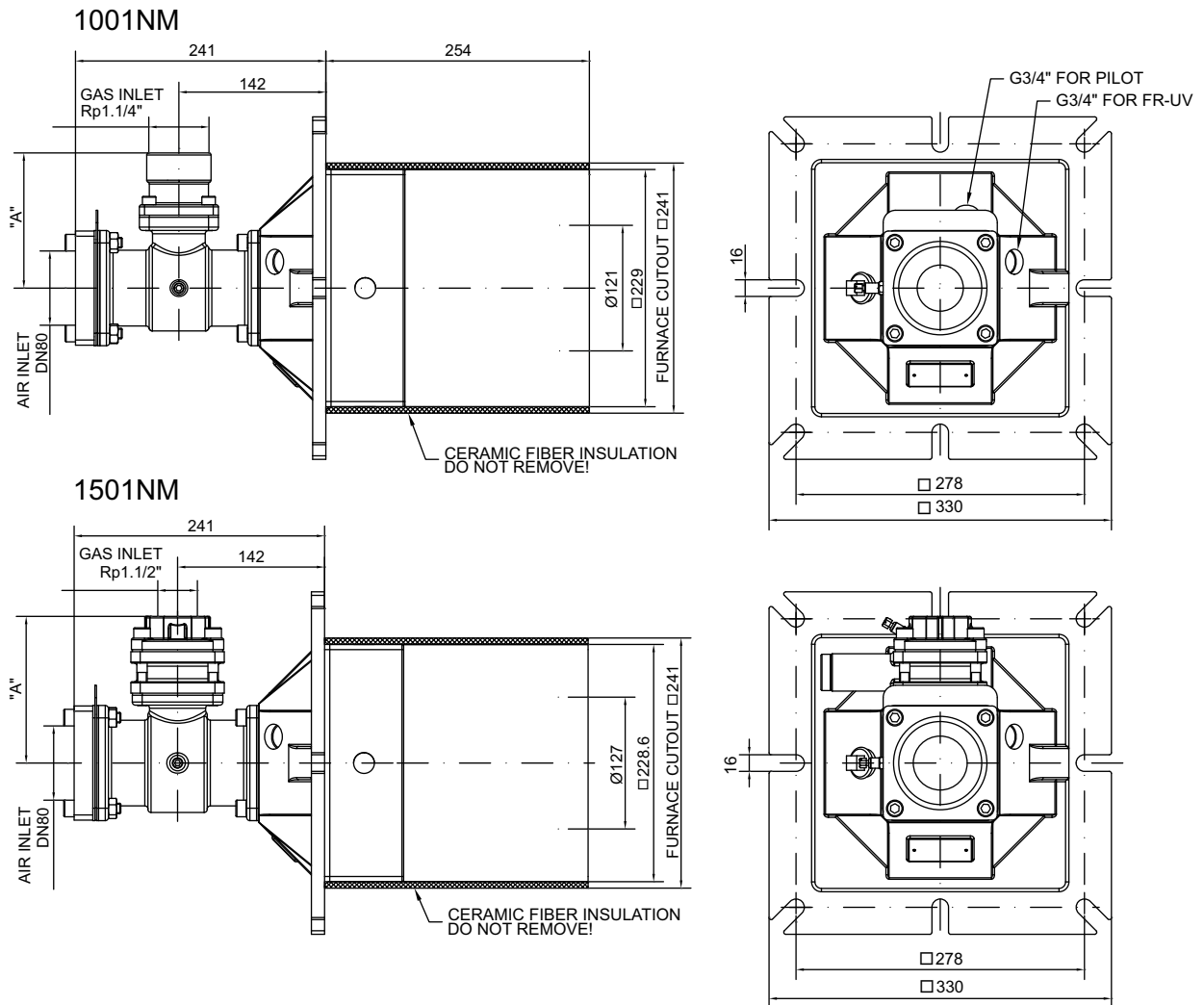
OVERALL DIMENSIONS - 1001 NM-R / 1501 NM-R



Model	A [mm]
1001 NM-F-R	97
1001 NM-GA-R	127
1501 NM-F-R	99
1501 NM-GA-R	141

D3501111

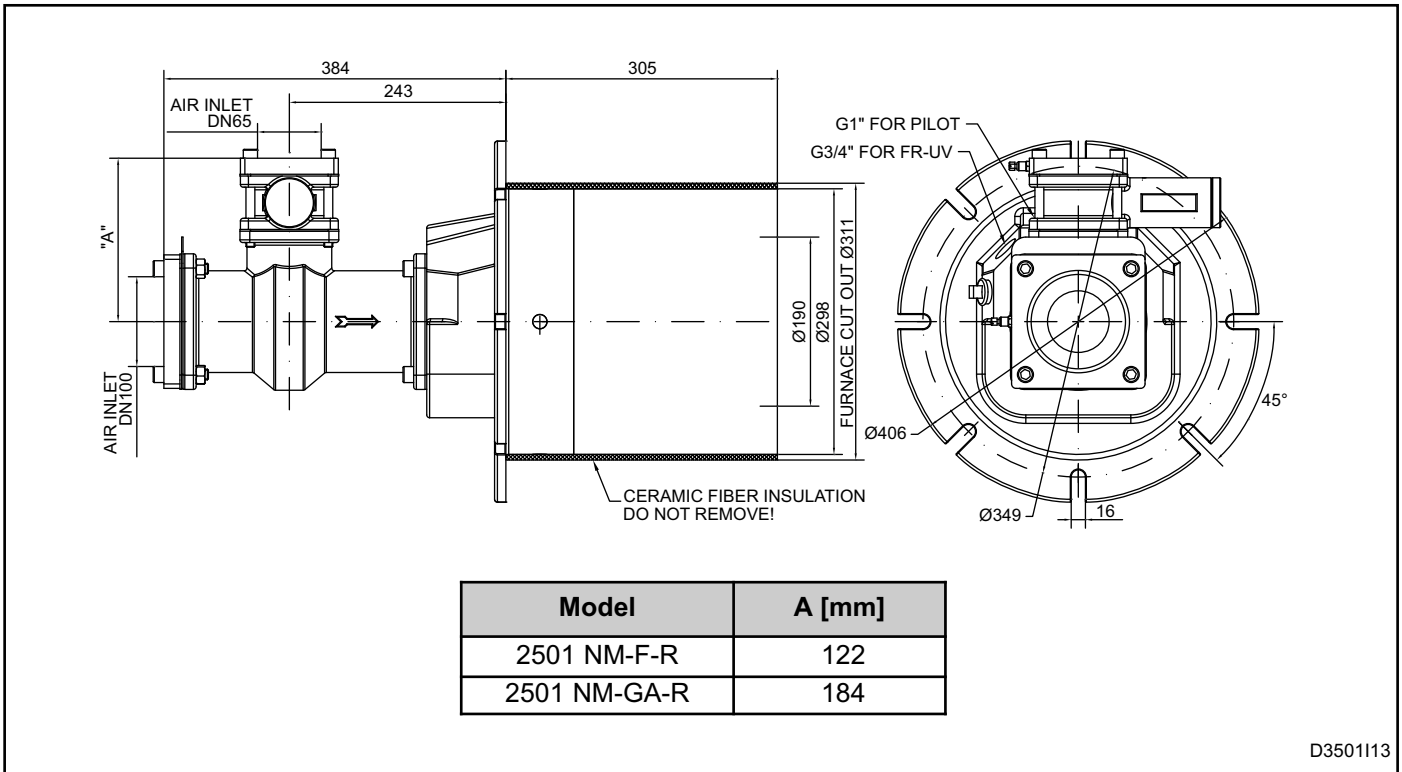
OVERALL DIMENSIONS - 1001NM-S / 1501NM-S



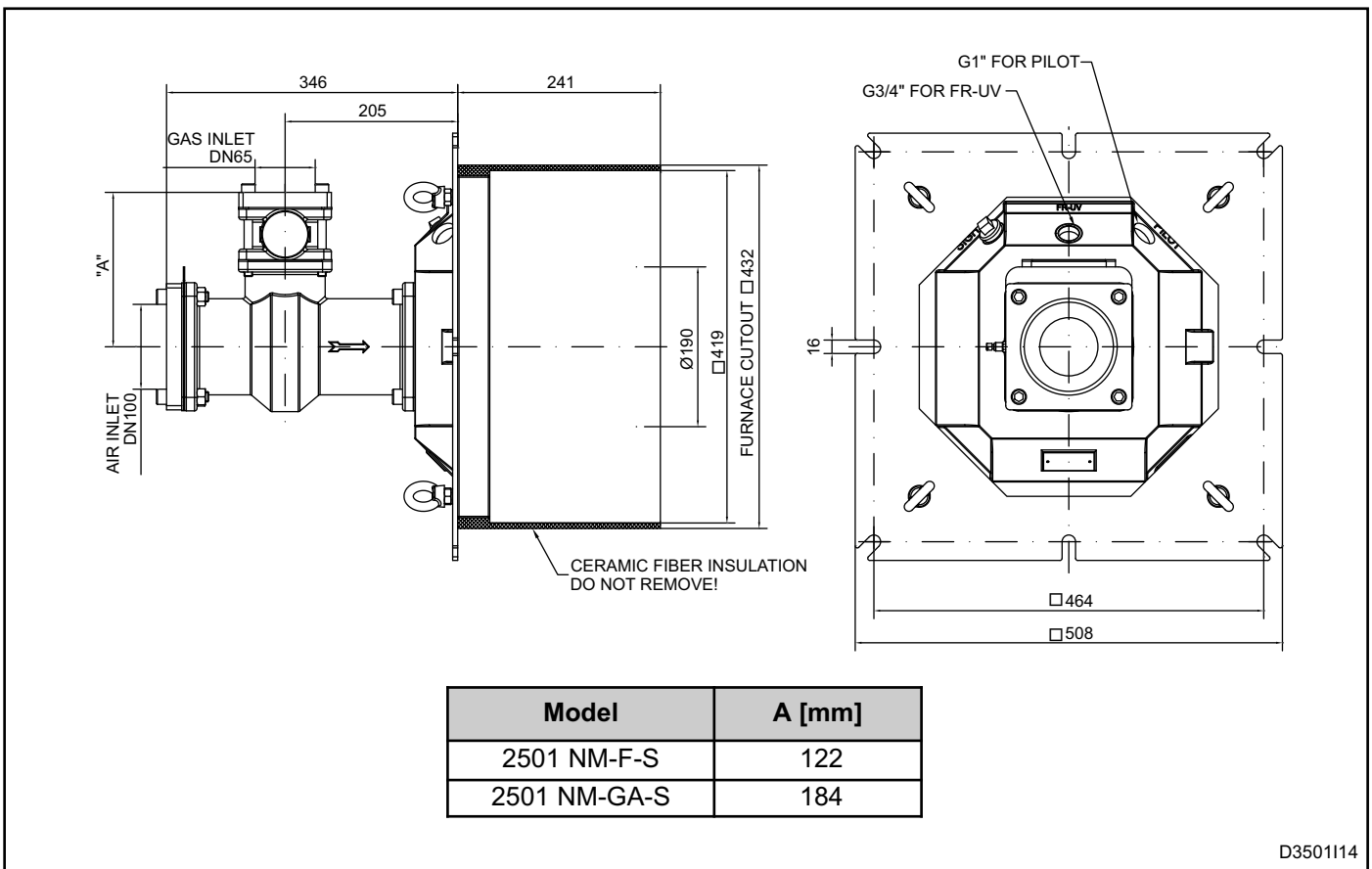
Model	A [mm]
1001 NM-F-S	97
1001 NM-GA-S	127
1501 NM-F-S	99
1501 NM-GA-S	141

D3501112

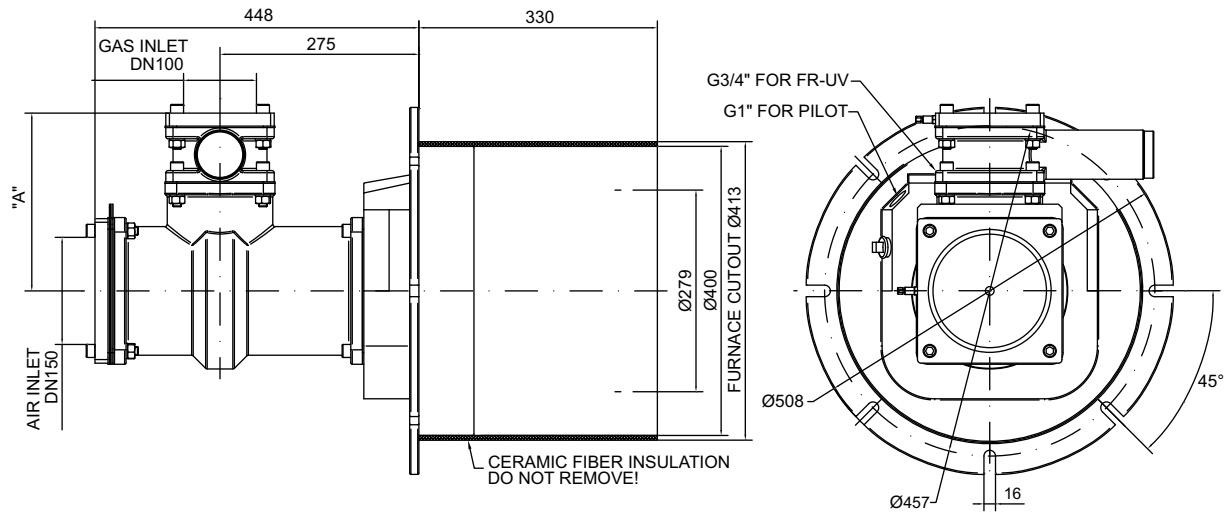
OVERALL DIMENSIONS - 2501 NM-R



OVERALL DIMENSIONS - 2501 NM-S



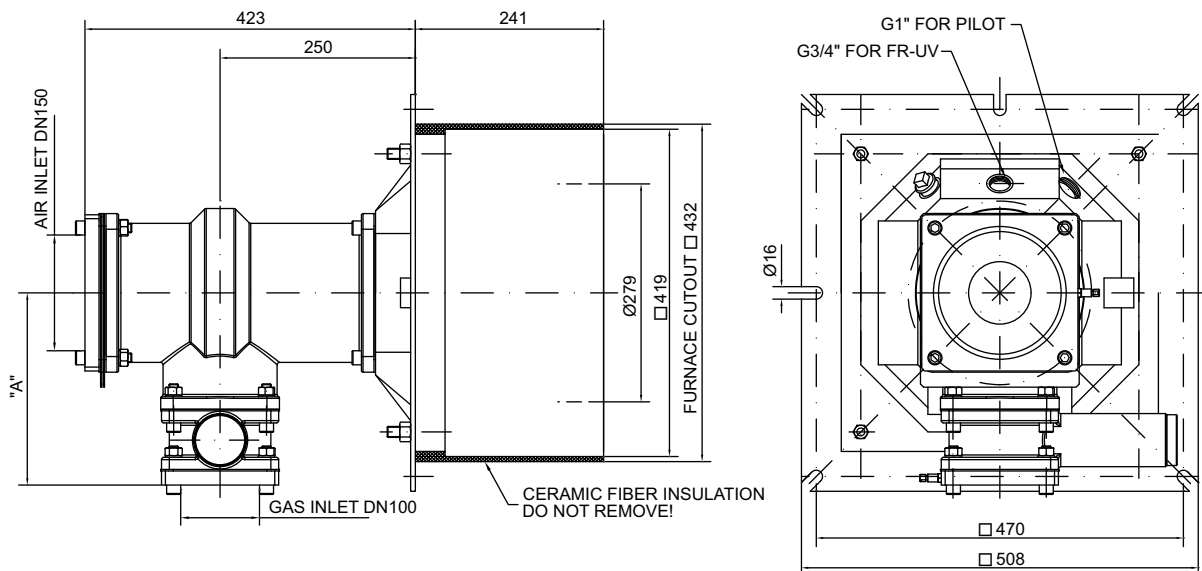
OVERALL DIMENSIONS - 4001 NM-R



Model	A [mm]
4001 NM-F-R	169
4001 NM-GA-R	246

D3501115

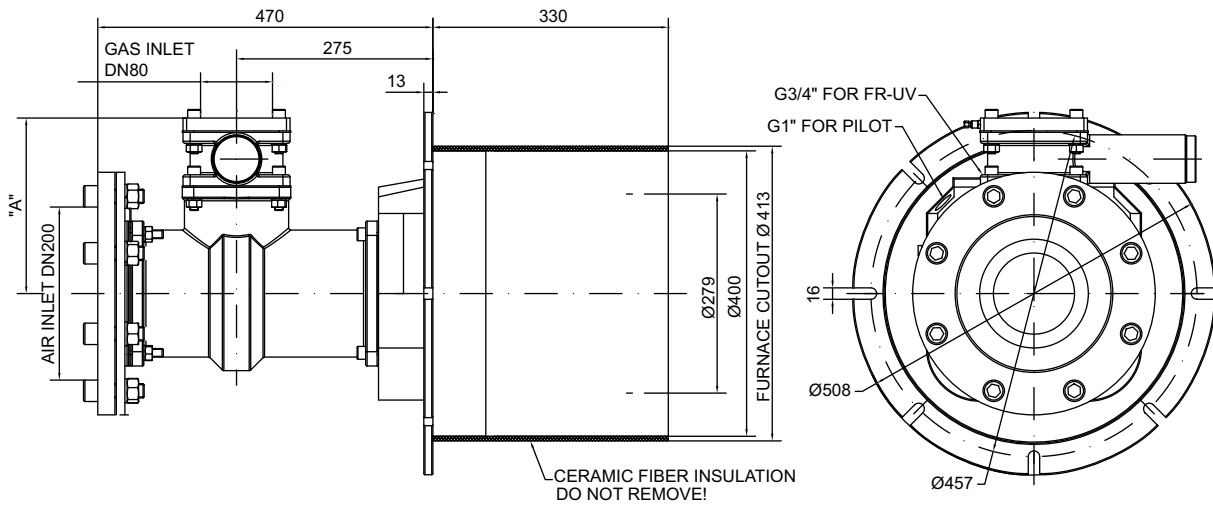
OVERALL DIMENSIONS - 4001 NM-S



Model	A [mm]
4001 NM-F-S	169
4001 NM-GA-S	246

D3501116

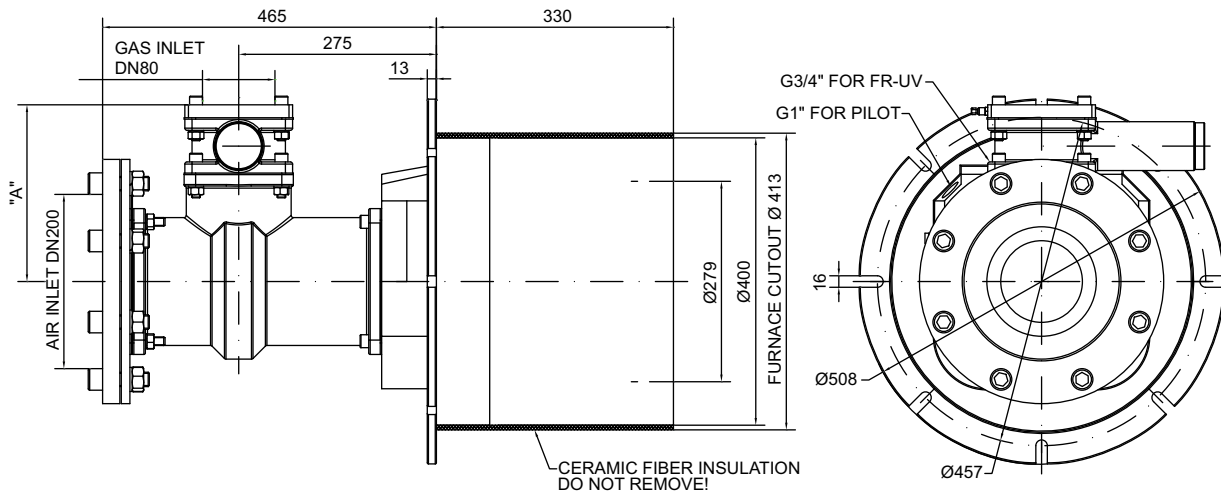
OVERALL DIMENSIONS - 6001 NM-R



Model	A [mm]
6001 NM-F-R	169
6001 NM-GA-R	246

D3501117

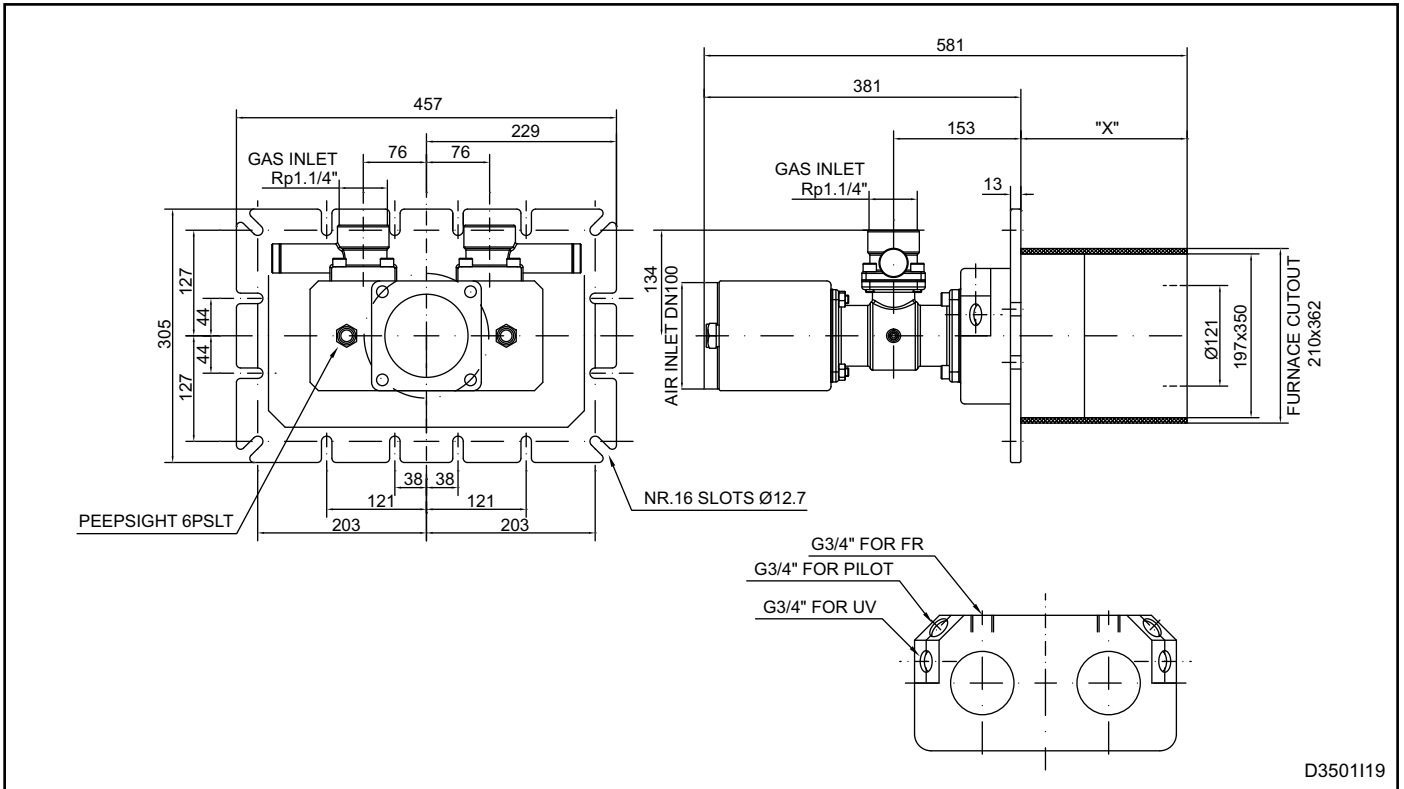
OVERALL DIMENSIONS - 8001 NM-R



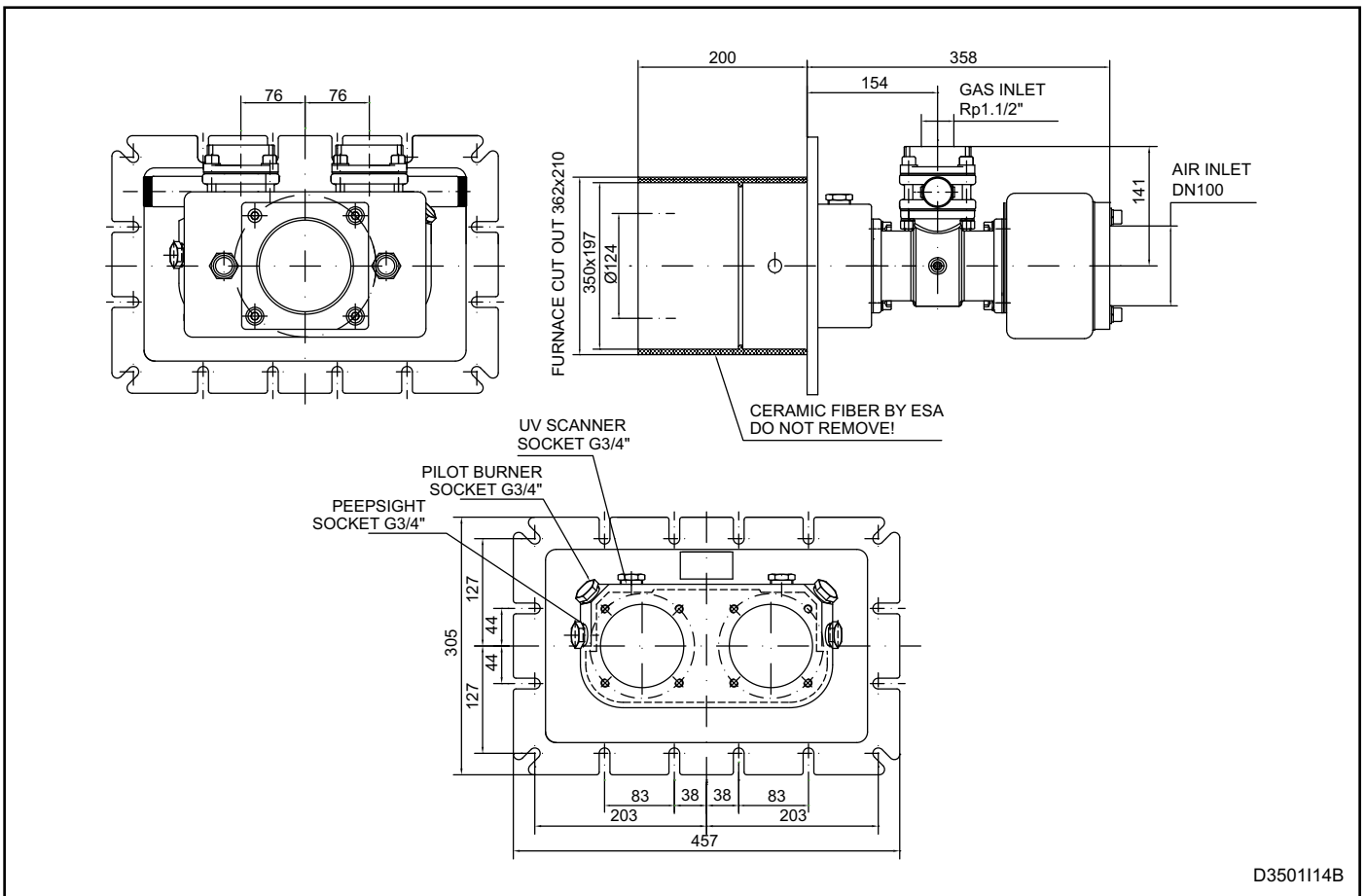
Model	A [mm]
8001 NM-F-R	169
8001 NM-GA-R	246

D3501118

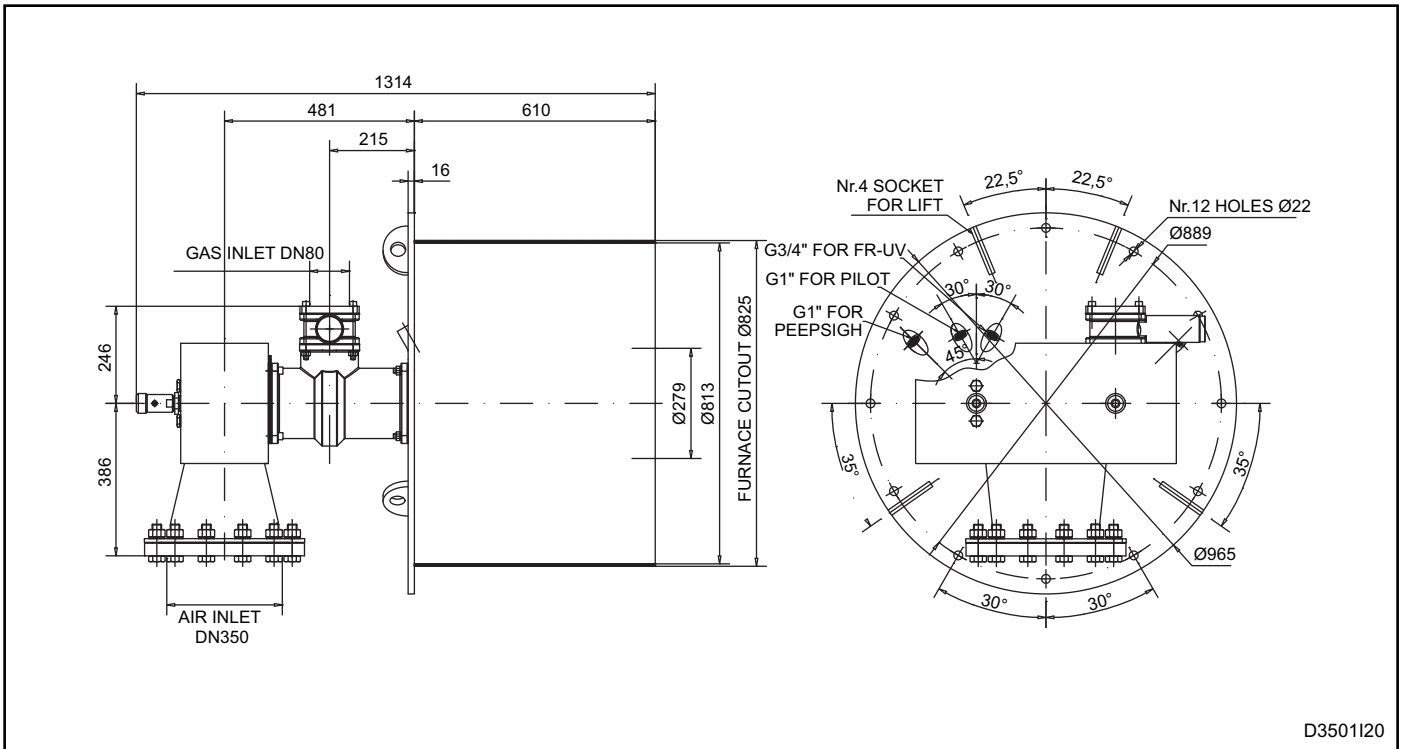
OVERALL DIMENSIONS - 2002 NM



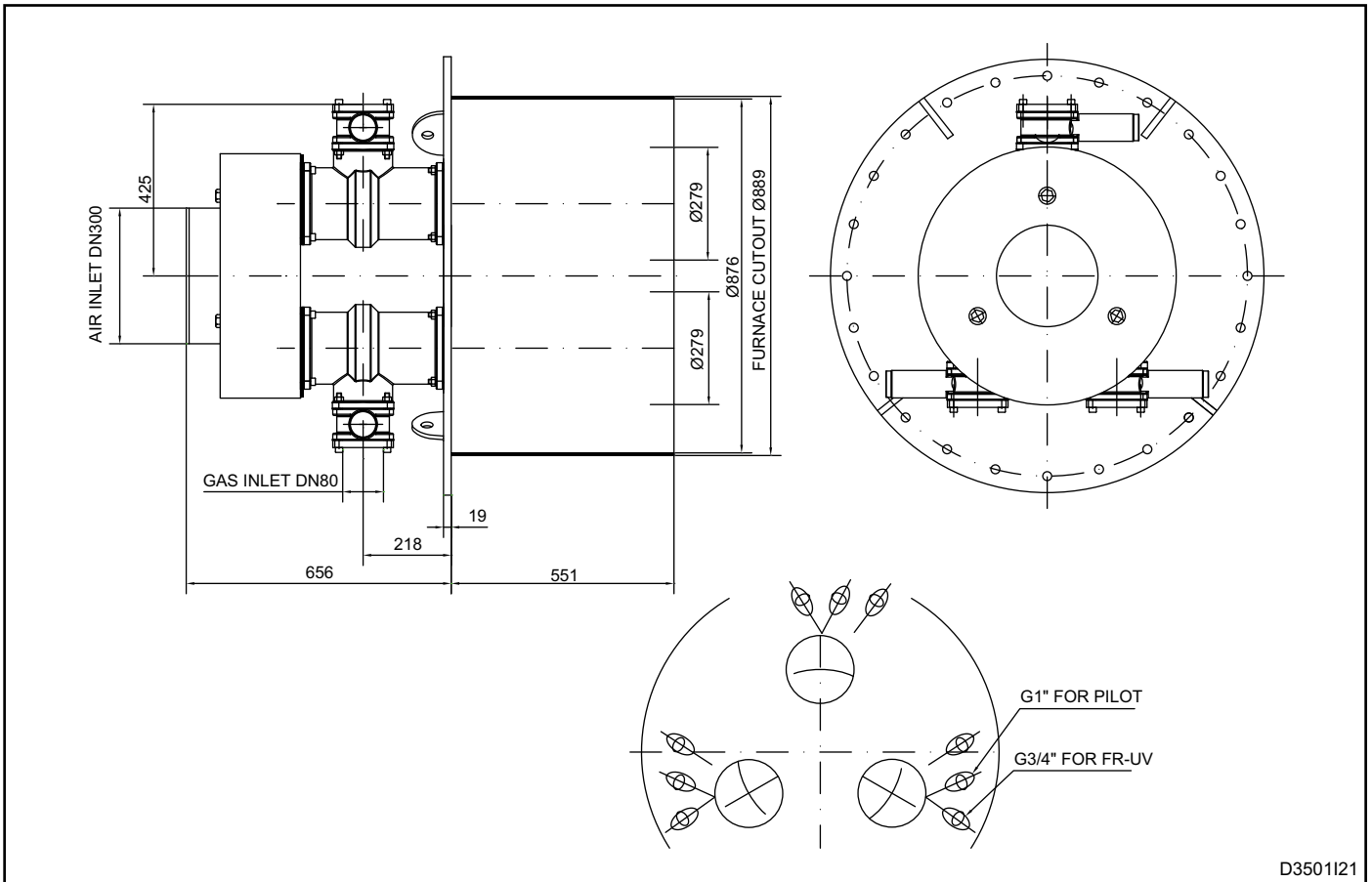
OVERALL DIMENSIONS - 3002 NM



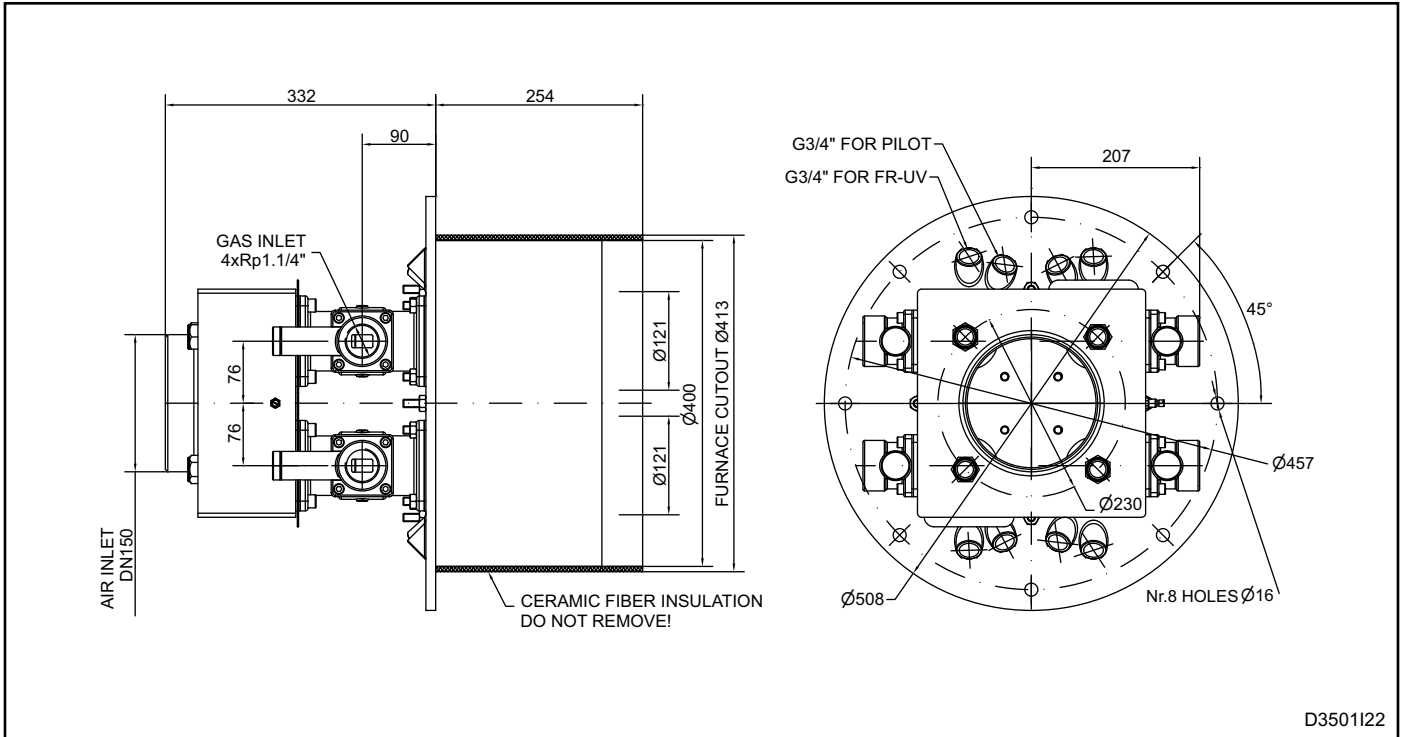
OVERALL DIMENSIONS - 12002 NM / 16002 NM



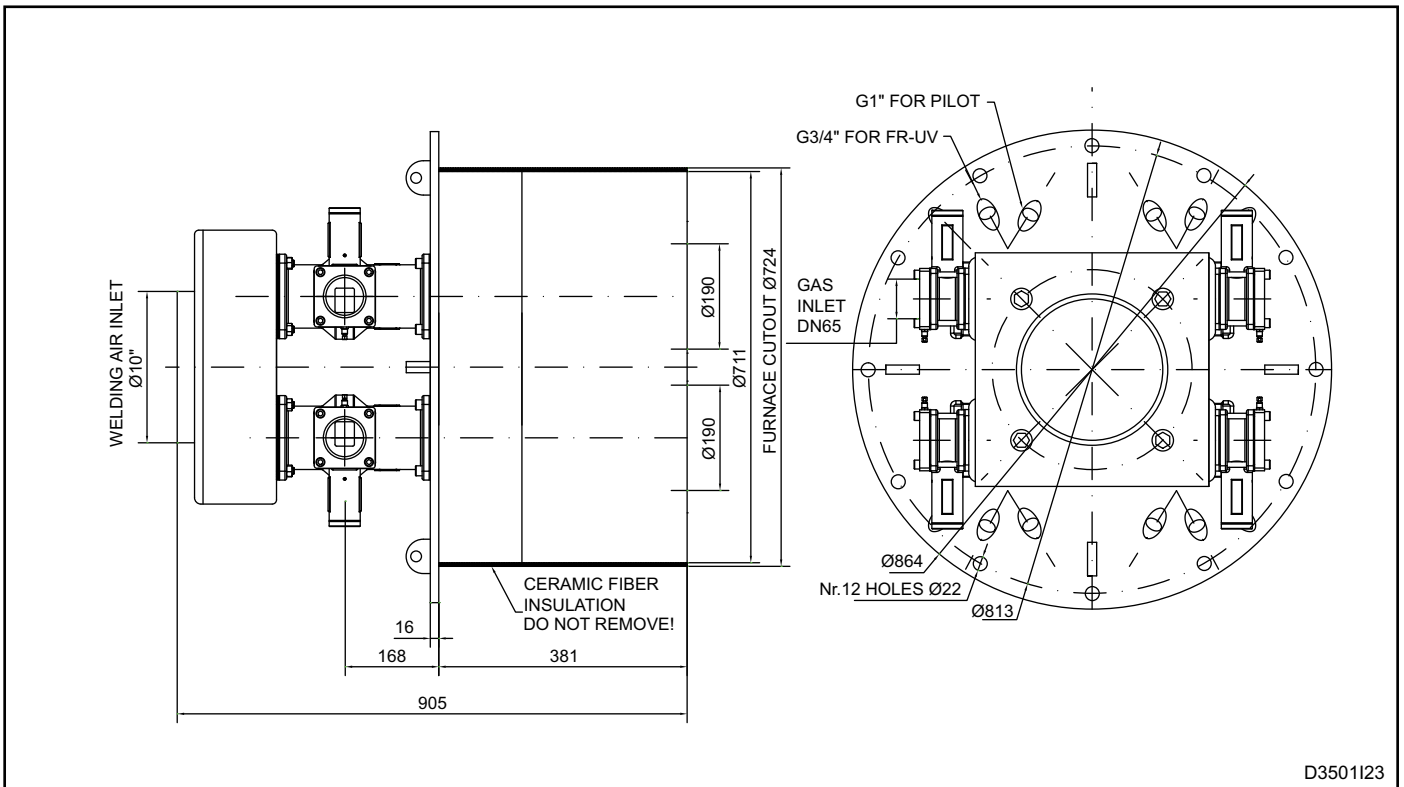
OVERALL DIMENSIONS - 18003 NM / 24003 NM



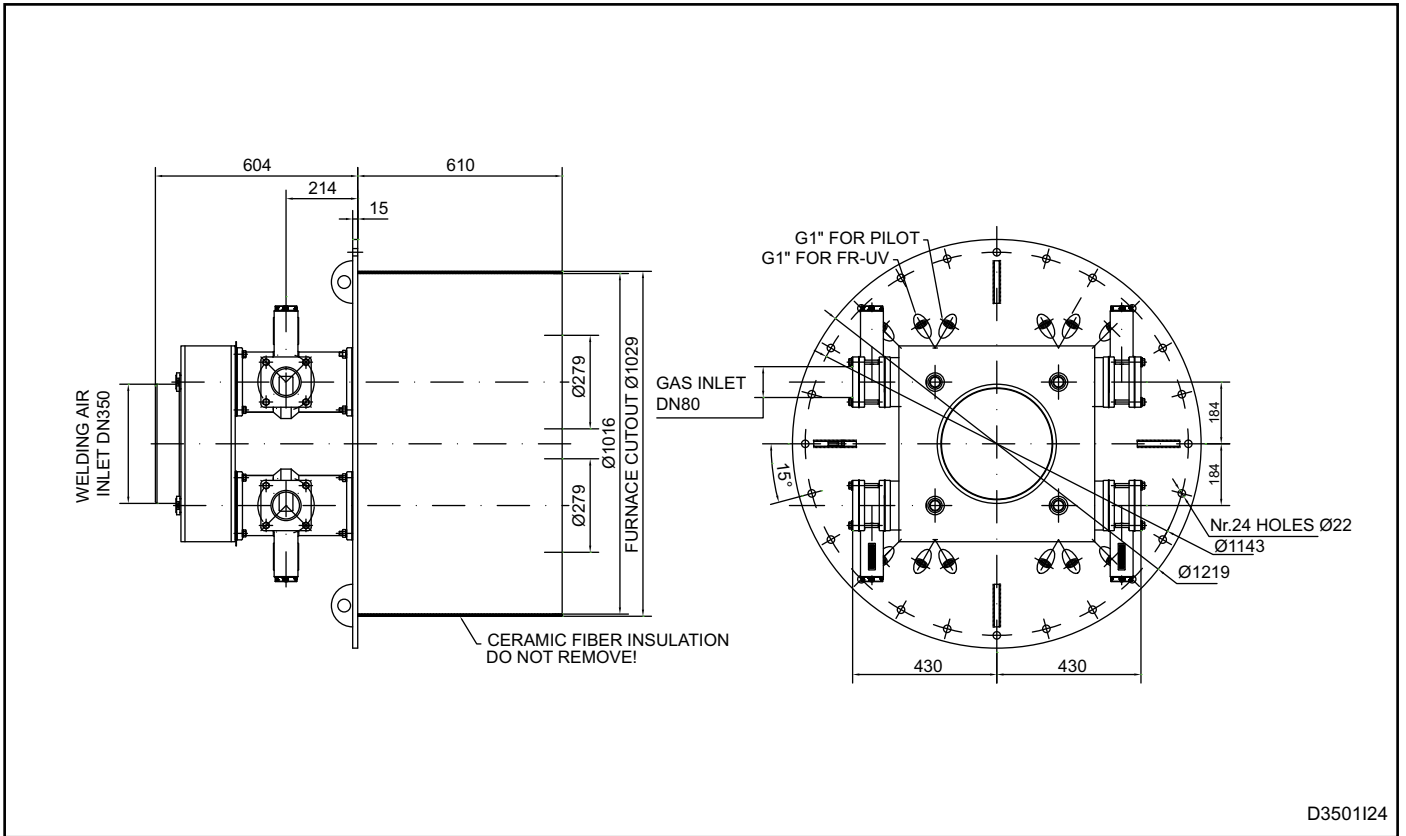
OVERALL DIMENSIONS - 4004 NM



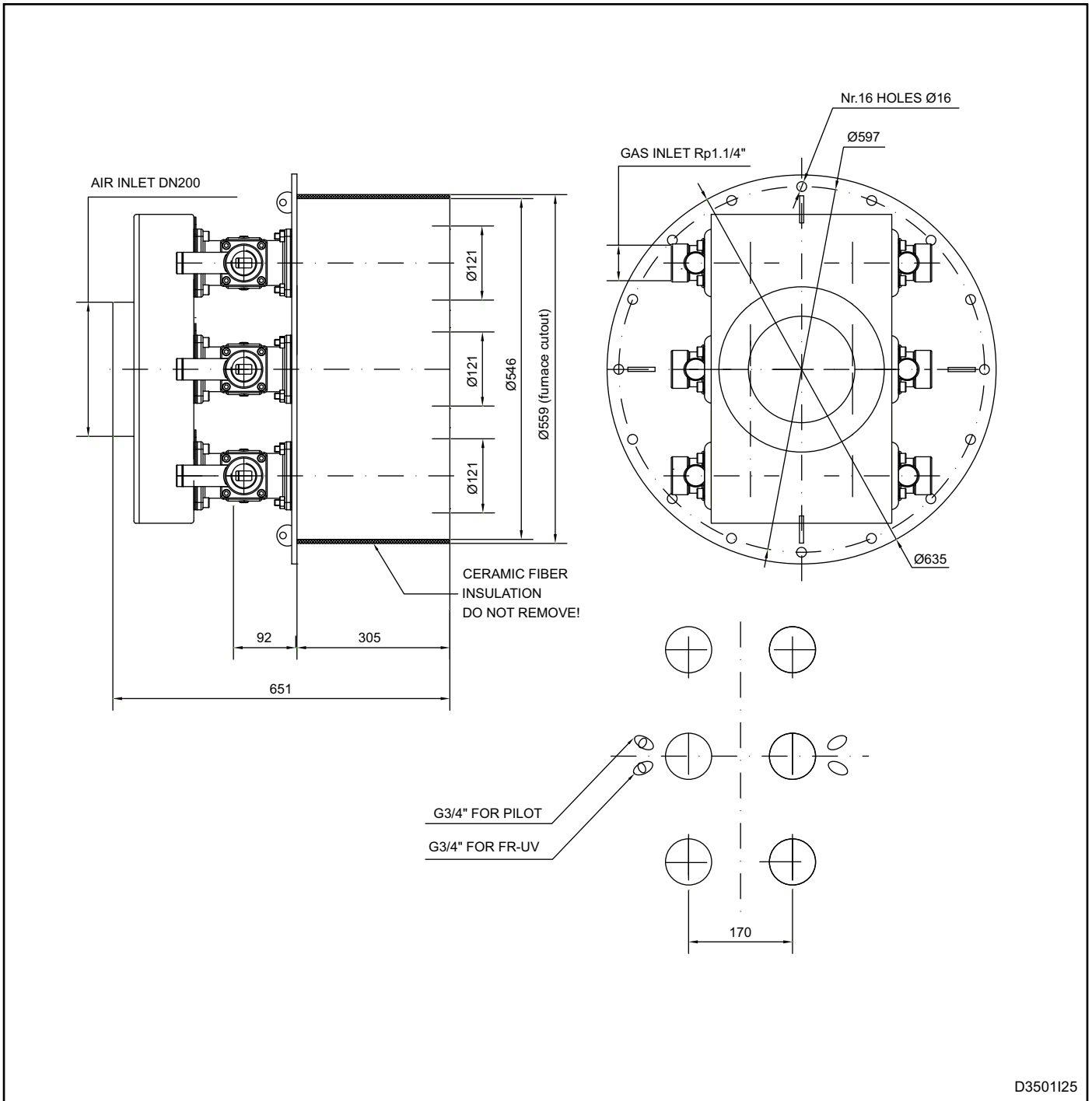
OVERALL DIMENSIONS - 10004 NM



OVERALL DIMENSIONS - 32004 NM

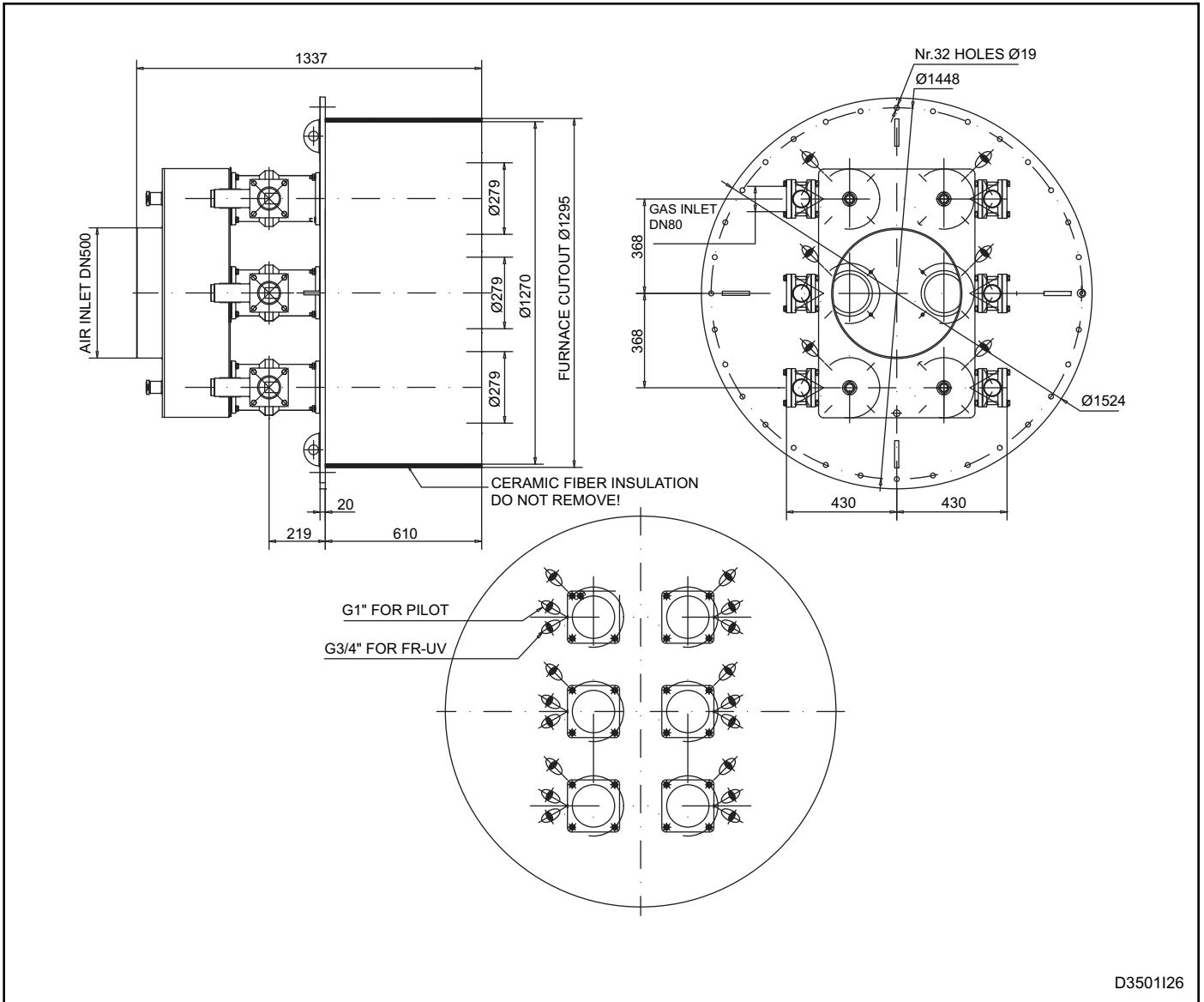


OVERALL DIMENSIONS - 6006 NM



D3501125

OVERALL DIMENSIONS - 48006 NM



D3501126

MASS TABLES

Single nozzle model	Round [Kg]	Square [Kg]
101 NM	6,1	5,3
201 NM	-	11,9
301 NM	19,5	24,8
601 NM	21	26
1001 NM	27,5	44
1501 NM	31,5	48
2501 NM	75	139
4001 NM	140	150
6001 NM	140	-
8001 NM	140	-

Multi nozzle model *	Round [Kg]	Rectangular [Kg]
2002 NM	-	85
3002 NM	-	95
4004 NM	137	-
6006 NM	237	-
10004 NM	401	-
12002 NM	845	-
16002 NM	845	-
18003 NM	890	-
24003 NM	904	-
32004 NM	1040	-
48006 NM	1327	-

* Special customized designs on request.

