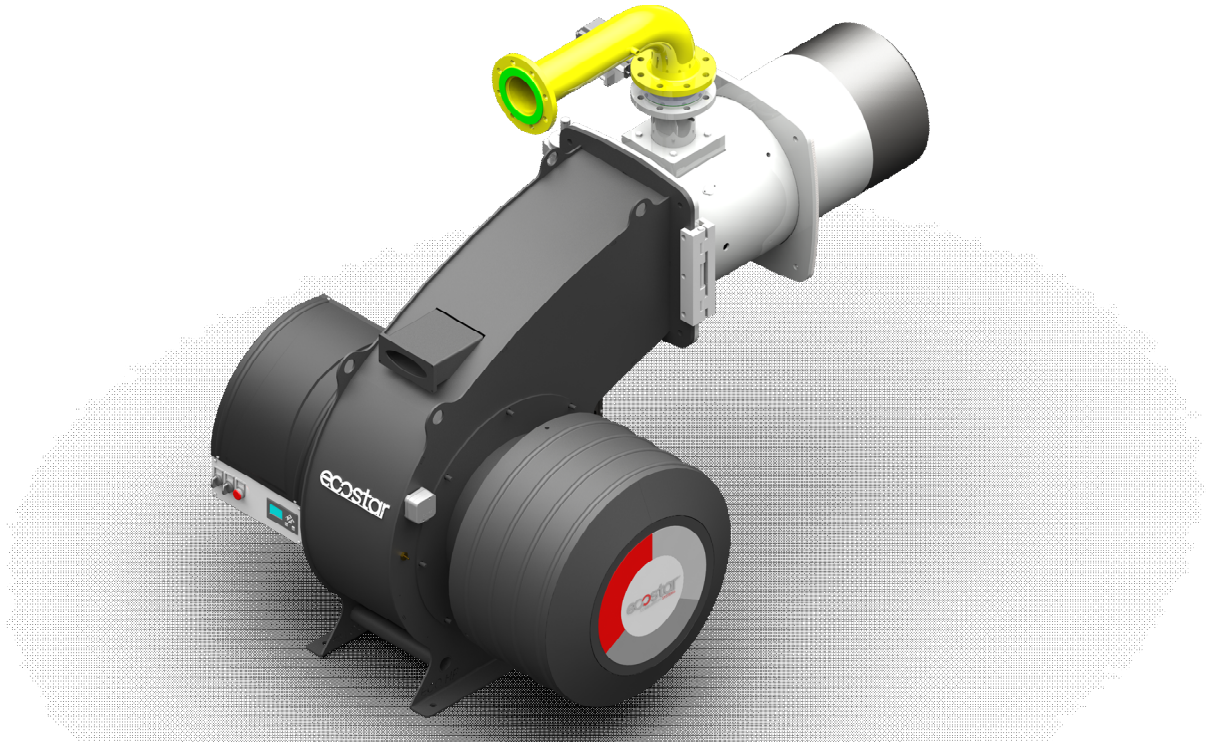


MONOBLOCK NG SERIES GAS BURNERS INSTALLATION, OPERATING AND MAINTENANCE MANUAL

MODULATING OPERATION



ECO 7000 HP
ECO 8000 HP
ECO 9000 HP
ECO 11000 HP
ECO 13000 HP
ECO 16000 HP
ECO 17000 HP
ECO 23000 HP
ECO 24000 HP

EAC



DEAR USER,

ECOSTAR ECO 7000 HP, ECO 8000 HP, ECO 9000 HP, ECO 11000 HP, ECO 13000 HP, ECO 16000 HP, ECO 17000 HP, ECO 23000 HP, ECO 24000 HP Gas burners are prepared and manufactured according to the latest technical developments and safety rules. It is easy to use for our customers.

We recommend that you read this manual and safety warnings thoroughly before the use of the device in order to ensure safe, cost effective and environmental-friendly use.

If you encounter any issue that is not explained clearly in this manual or you could not understand, please contact with our service department.

We thank you for choosing ECOSTAR brand.







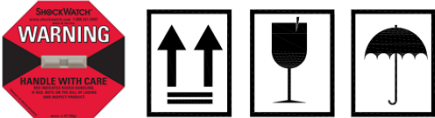
This Operating Manual is an integral part of the burner and must be maintained in a plastic dossier and hung at a clearly visible place in the burner room.

CONTENTS

1.	WARNINGS	3
1.1.	Warning Symbols and Descriptions	3
1.2.	General Safety Rules	4
2.	TERMS OF WARRANTY	6
2.1.	Out of Warranty Conditions	6
3.	BURNER'S GENERAL FEATURES	7
3.1.	Purpose of Use and Work Limits of Burners	7
3.2.	Code Key	7
3.3.	Burner Components	8
4.	GAS, FLUE GAS AND HEATING WATER SCHEMA	18
5.	TECHNICAL DATA	19
5.1.	Capacity Table	19
5.2.	Back Pressure and Gas Line Selection Table	20
5.3.	Burner Dimensions	23
5.4.	Gas Hood Pressure Loss Diagram	24
5.5.	Flame Length and Diameter	26
6.	INSTALLATION	27
6.1.	Burner Installation Picture	27
7.	COMMISSIONING	29
7.1.	Before Commissioning	29
7.2.	General Controls	29
7.3.	Combustion Adjustment	30
7.3.1.	Gas Adjustment	30
7.3.1.1.	VGD 40... Series Gas Valve	30
7.4.	Air pressure switch adjustment	30
7.5.	Photocell	30
7.6.	BT 300	31
7.6.1.	Operating Control and Displays	32
7.6.2.	Menu Functions	33
7.6.3.	BT300 Connecting Diagram	34
7.7.	Leakage Test for Main Gas Valves	35
7.8.	Servomotors	37
7.9.	Function Controls and Adjustments	38
7.10.	Final Checks	38
7.11.	Pilot Ignition System	39
7.12.	Emission Measurement	39
7.13.	Gas Pass Equipment Required in Gas Line	40
8.	MAINTENANCE	41
8.1.	Monthly Maintenance	41
8.2.	Seasonal Maintenance	41
9.	FAULT HISTORY	42
10.	PERIODICAL FLUE GAS MEASUREMENT REPORT	43
11.	AFTER-SALES SERVICES	44
12.	NOTES	45

1. WARNINGS

1.1. Warning Symbols and Descriptions

Symbols	Symbol Descriptions
	<p>Important information and useful hints.</p>
	<p>Warning of danger to life or property.</p>
	<p>Warning of electrical voltage.</p>
	<p>Product handling information.</p>
 <p>CLEAN THE GAS BURNER. CLEAN GAS LINE. ЧИСТАЯ ЛИНИЯ ГАЗ.</p>	<p>"Clean the gas line" warning on gas line.</p>
	<p>Electric motor direction of rotation</p>
	<p>Carry in an upright position. Fragile Item. Protect against water.</p>

1.2. General Safety Rules

- All personnel engaged in installation, disassembly, commissioning, operation, control, maintenance and repair should have received the necessary training, qualified and fully read and understood this manual.
- No changes that might damage the safety of the burner unit must be made by persons and/or organizations on the burner unit.
- All operation, commissioning and installation works (except for burning adjustment) should be carried out when the burner is not operating and after disconnecting the power supply. Noncompliance with these rules may lead to serious bodily injuries and even death by electrical shocks or uncontrolled flame formation.
- Repairs concerned with safety elements should be carried out only by the manufacturing company.
- The device should never be used by children, mentally handicapped and inexperienced persons.
- Children must not be allowed to play with the device.
- Keep the device away from explosive and flammable materials.
- Device must intake air, ventilation and air discharge holes must not be closed.



If you sense gas leakage;

- Shut down valves of all gas devices.
- Open all doors and windows.
- Do not turn on electric devices or do not turn them off if they are working.
- Do not use burner derived tools such as match and lighter.
- Inform the gas company.



Do not store any inflammable materials in boiler room.



Wear hearing protectors if there is noise in boiler room.



In case of fire or other emergency;

- Switch off the main switch
- Close the main fuel shut-off valve outside the plant.
- Take appropriate actions



The burner installation must be carried out in accordance with the instructions. Vibration can damage the burner and its components.



Keep boiler doors closed while starting burner and during burner operation.



Check combustion values to be correct by using flue gas analyzer at the whole adjustment range between minimum, full load, and ignition load.



Use lifting device or belt for lifting fan motor, if necessary



During the first commissioning of the burner or in case of any revision carried out in the electrical system or motor cables by any reason, direction of the fan rotation must certainly be checked by the authorized technical service.



For products that have not been commissioned or started more than 6 months, before activating the servomotor;

In gas and air dampers, servomotor and air damper connections must be checked to ensure that they are free running in spite of immobility and oil freezing.



BURNER ROOM

Install the burner in a suitable room/floor with minimum external air openings and sufficient to ensure perfect combustion, in compliance with current regulations.

Never obstruct air openings of the burner room, burner fan intake vents or air ducts in order to prevent:

- a. The build up of toxic / explosive gas mixtures in the burner room,
- b. Combustion with insufficient air, resulting in hazardous, anti-economical and polluting operation.

The burner must be always protected from rain, snow and frost to prevent corrosion and paint deformations.

Keep the burner room clean and free of solid volatile substances, which could be sucked into the fan and clog the internal burner or combustion head air ducts.

2. TERMS OF WARRANTY

Main and auxiliary equipment and all components used in Ecostar gas burners are guaranteed for 1 year by TERMO ISI SİST. A.Ş starting from the date of commissioning under the maintenance, adjustment, operating conditions and relevant mechanic, chemical and thermal effects explained herein.



Please note that this warranty is only valid if the device(s) is commissioned and maintained by our authorized services.



Our company reserves the right to make any modifications on the product and all instructions thereof for improvement purposes.

2.1. Out of Warranty Conditions

- Any damage arising out of or in relation to customers' non-compliance to their responsibilities with regards to installation, commissioning, operation and maintenance,
- Any damage arising out of or in relation to commissioning, repairs and maintenance carried out by unauthorized services,
- Any damage that may occur during transportation or storage of the product,
- Not preserving the product in its original packaging until the installation stage,
- Incorrect and poor electrical connections, Failures due to incorrect voltage applications, frequent repetition of voltage fluctuations,
- Any damage that may occur as a result of incorrect fuel usage or, foreign substances in the fuel used or using of the product without any fuel,
- Any damage that may occur due to foreign particles entered into the product during installation and operation,
- Failures due to incorrect device selection,
- Any damage to unit due to natural disasters,
- Devices without any warranty certificates,
- Warranty Certificates without the stamp and signature of the authorized dealer or service,
- Devices with any falsification on the warranty certificate or without an original serial number.
- The risks during transportation of device under the responsibility of customer belong to the customer.
- Presence of misuse faults are indicated in the reports issued by authorized service stations or our authorized agent, dealer, representative or our factory in case of unavailability of authorized service stations.
- Customers may apply consumer protection arbitrator committee with regards to this report and request for an expert report.

3. BURNER'S GENERAL FEATURES

ECOSTAR gas burners are manufactured such that they operate in gas pressure of min. 20 mbar and max. 300 mbar. at 15%...+10% of nominal voltage, between the ambient temperature range of -15°C....+60°C and declared capacity and boiler pressure ranges with Natural Gas and Liquid Petrol Gas.

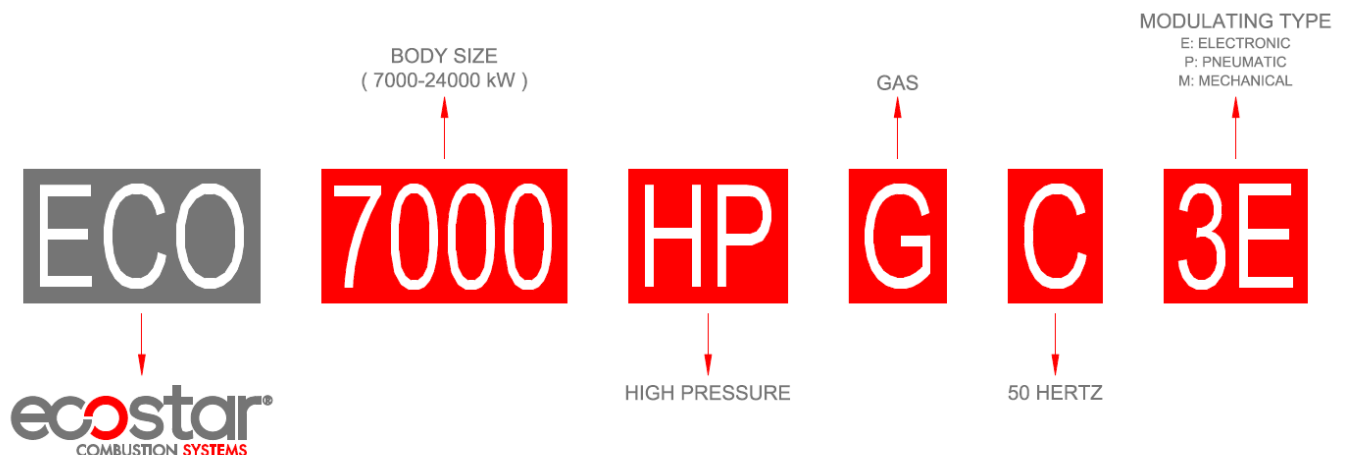
3.1. Purpose of Use and Work Limits of Burners

- This product works at any load value equivalent to its max. capacity or covered by its capacity range;
 - In hot water and steam boilers,
 - In direct and indirect hot air generators,
 - Industrial appliances operating at temperature below 600 °C,
 - -15 °C...+60 °C ambient temperature range,
 - 1N 230 VAC/3N 380VAC /50 Hz feed voltage (-%15...+%10) values,
 - Max. 95% relative humidity,
 - In well-ventilated open and closed spaces compatible with protection class IP 40.
 - Operation with Natural gas and LPG.



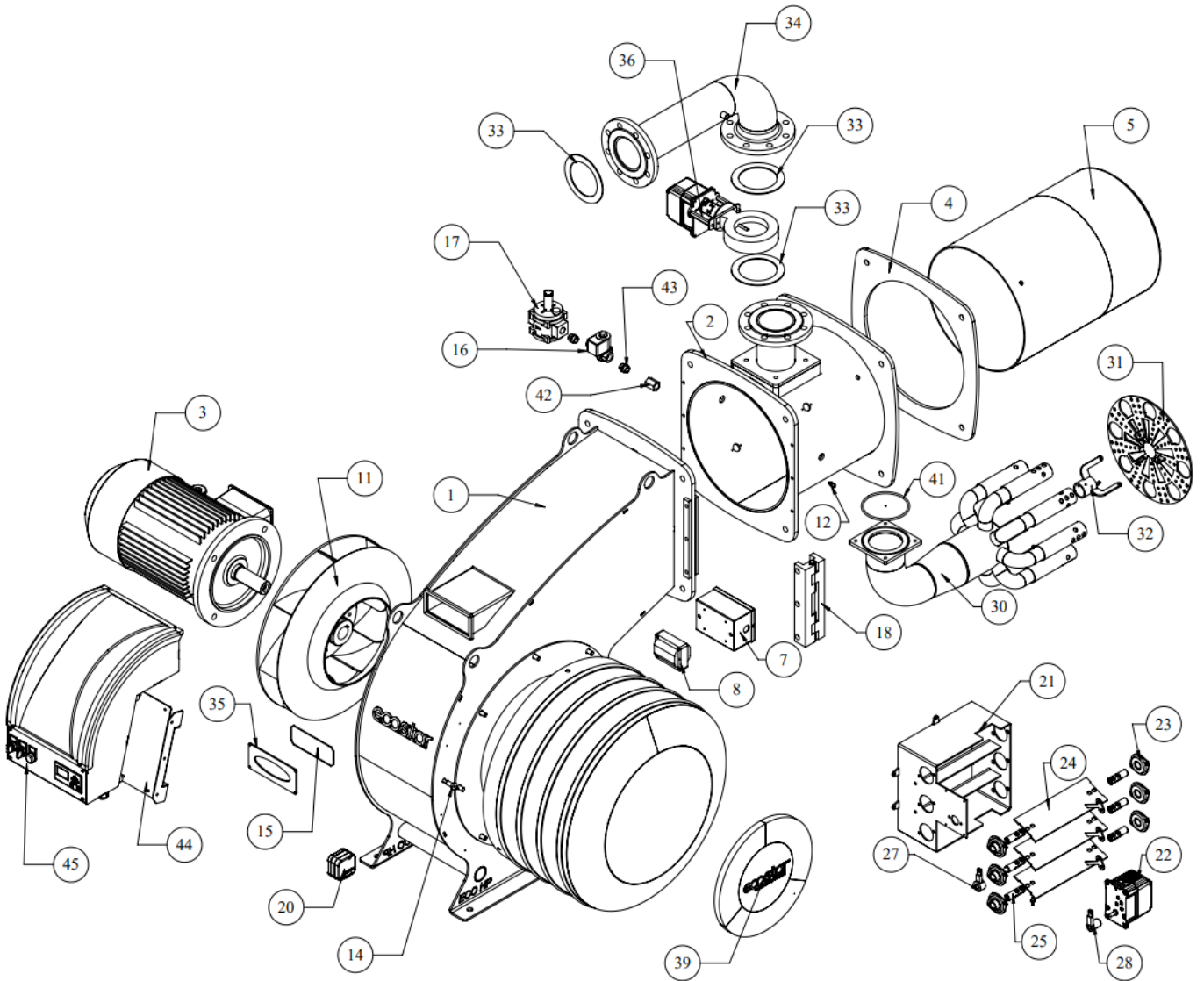
This device must never be operated with open flame!

3.2. Code Key



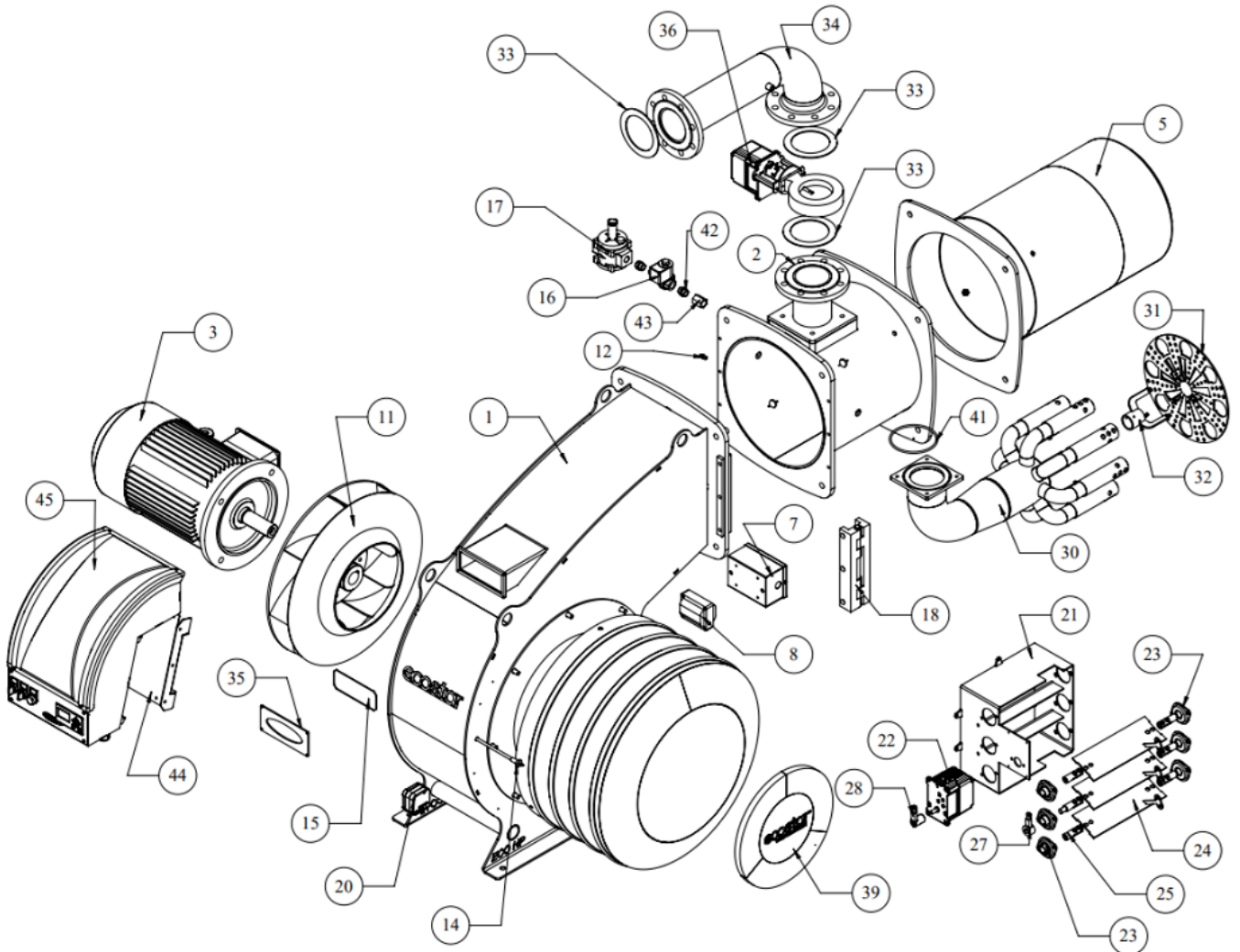
3.3. Burner Components

ECO 7000 HP



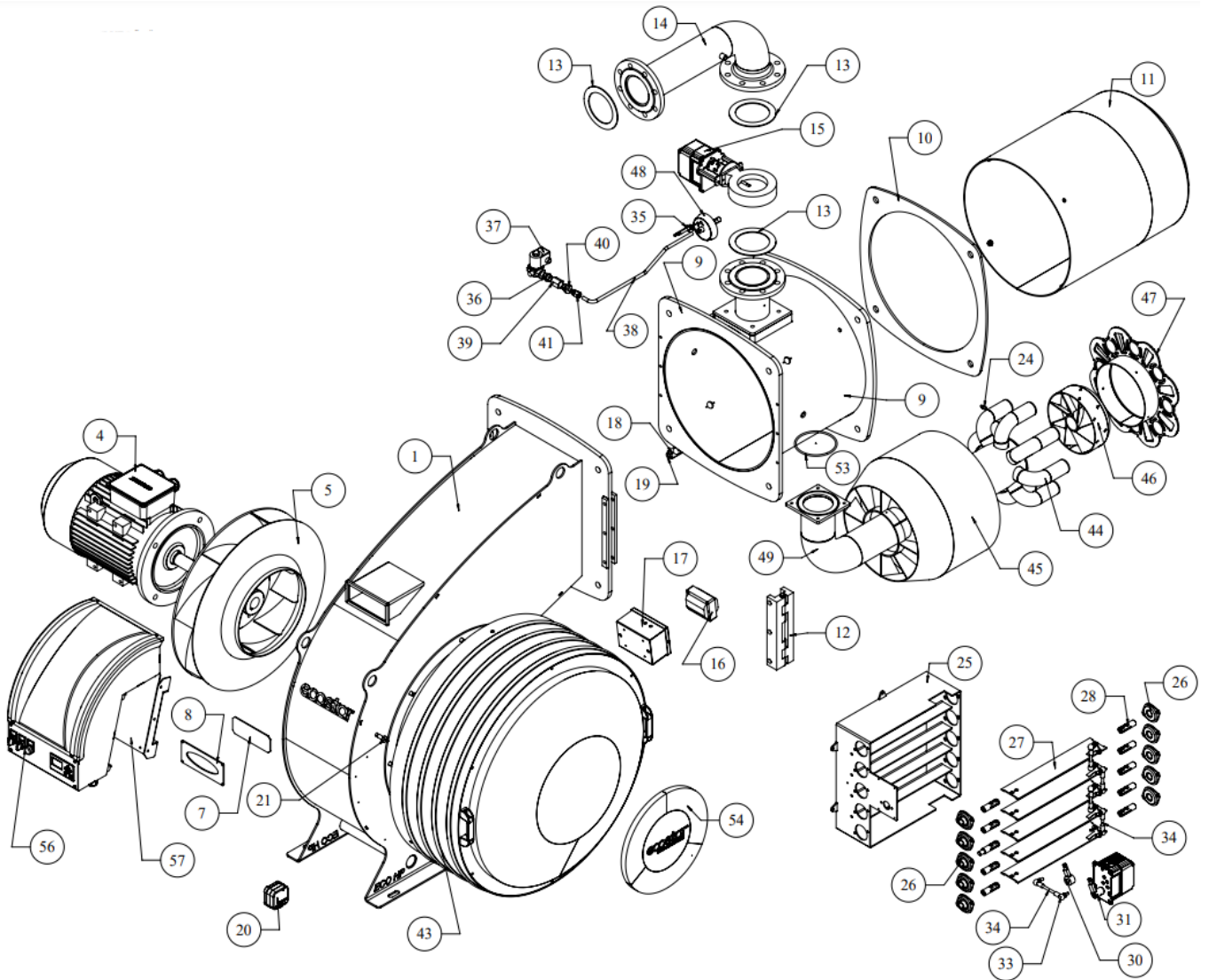
NO.	PART NUMBER	TANIM	DESCRIPTION	PIECES
1	5001020210013	GÖVDE	BODY	1
2	5001370210099	GAZ BASLIGI	GAS HEAD	1
3	200115020115	MOTOR	MOTOR	1
4	200056010732	CONTA	GASKET	1
5	5001360210095	ALEV BORUSU	FLAME PIPE	1
6	2 032 005 0001	FOTOSEL	PHOTOCELL	1
7	200113010241	TRAFO KUTUSU	TRANSFORMER BOX	1
8	2 022 073 0001	ATEŞLEME TRAFOSU	IGNITION TRANSFORMER	1
9	5000530210029	HAVA EMİŞ HUNİSİ	AIR INLER CONE	1
10	5001030210040	BAĞLANTI FLANŞI	CONNECTION FLANGE	1
11	1 116 358 0001	FAN	FAN	1
12	200058010001	PURJÖR	PURGER	1
13	2 058 491 0001	PRESOSTAT PURJÖRÜ	AIR SWITCH PURGER	1
14	2 058 494 0001	PRESOSTAT ADAPTÖRÜ	AIR SWITCH ADEPTER	1
15	2 060 058 0001	GÖZETLEME CAMI	OBSERVATION GLASS	1
16	200119010241	GAZ VENTİLİ	GAS VALVE	1
17	200026010281	REGÜLATÖR	REGULATOR	1
18	5008000100001	MENTEŞE	HINGE	1
19	5000530110002	MENTESE EK SACI	HINGE ADDITIONAL SHEET	2
20	200023010013	PRESOSTAT 3	PRESOSTAT 3	1
21	5 103 180 0315	HAVA KAFESİ	AIR CAGE	1
22	200025010097	SERVOMOTOR	AIR DAMPER (SERVOMOTOR)	1
23	200040010036	RULMAN+YATAĞI	BEARING+HOUSING	6
24	2 044 381 0315	HAVA KLAPESİ	AIR CLAMP	3
25	200049010035	KLAPE HAREKET MILİ KISA	CLAMP MOVEMENT SHAFT	5
26	200125010043	SERVO KLAPE HAREKET KOLU	SERVO CLAMP MOVEMENT ARM	1
27	2 125 177 0040	HAREKET MİLİ KAPLİNİ	MOVEMENT SHAFT COUPLING	1
28	200043010077	KAPLİN	COUPLING	1
29	5001030210041	SUSTURUCU	SILENCER	1
30	200135020166	YANMA BAŞLIĞI	COMBUSTION HEAD	1
31	5001340210026	TÜRBÜLATÖR	TURBULAOR 1	1
32	5000340210002	TÜRBÜLATÖR	TURBULATOR 2	1
33	200056010192	KLİNGRİT CONTA	KLINGRITE GASKET	3
34	5000350100051	GAZ YOLU BORUSU	GAS PATH PIPE	1
35	5000600200004	GÖZETLEME CAMI ÇERÇEVESİ	OBSERVATION GLASS PLATE	1
36	5009700100129	ORANSAL KONTROL EKİPMANI	PROPARTIONAL CONTROL EQUIPMENT	1
39	3000370021	ETİKET	LABEL	1
41	200056010340	ORING Ø133,4 X 5,34	ORING Ø133,4 X 5,34	1
42	2 074 015 0001	MANSON 1/2"	MUFF 1/2"	1
43	2 069 053 0001	CELİK NİPEL 1/2"	STEEL NIPPEL 1/2"	2
44	5000530210040	PANO BAĞLANTI SACI	PANEL CONNECTION SHEET	1
45	58101010310070007	ELEKTRİKSEL PANO	ELECTRICAL PANEL	1

ECO 8000 HP



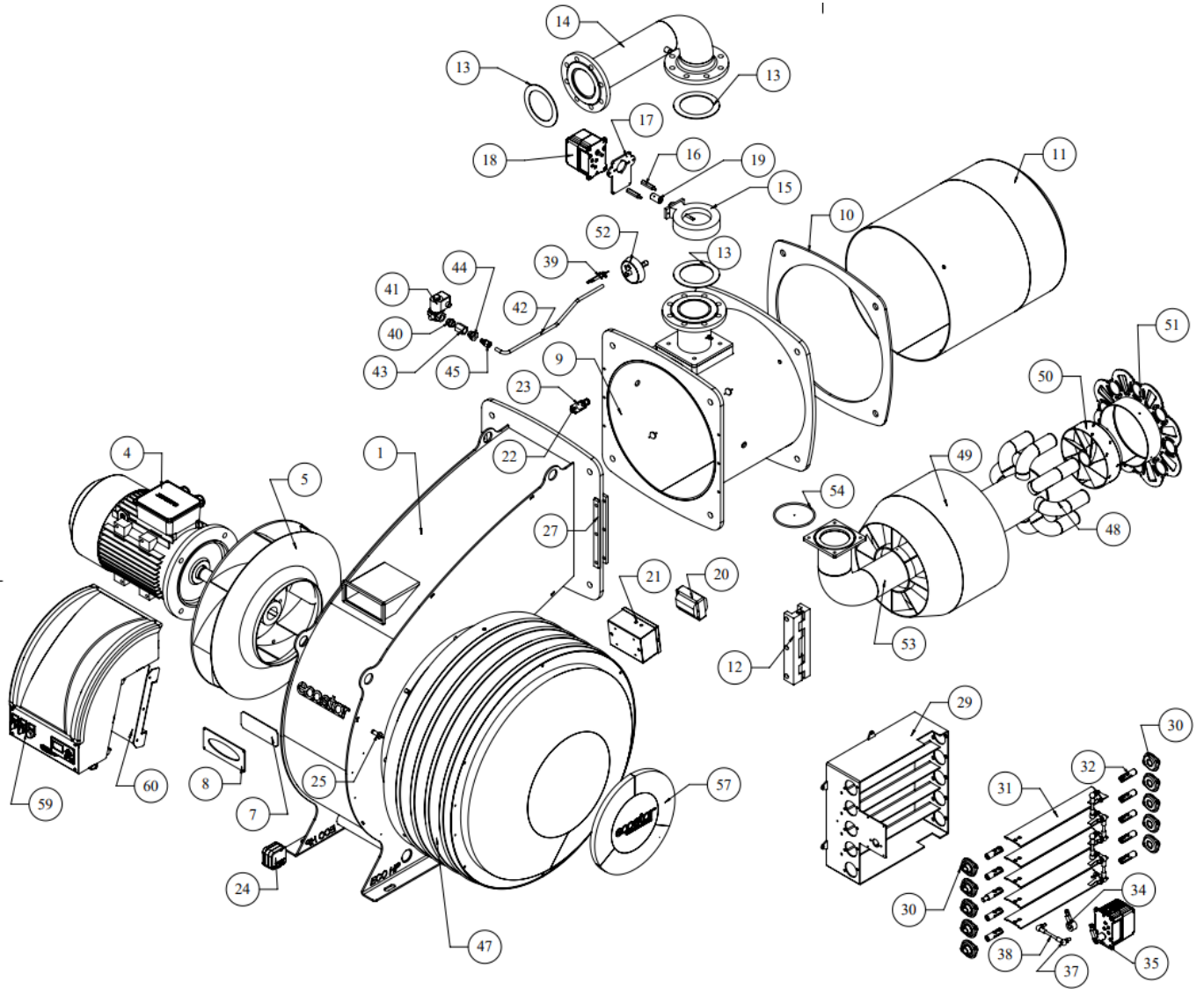
NO.	PART NUMBER	TANIM	DESCRIPTION	PIECES
1	5001020210013	GÖVDE	BODY	1
2	5001370210099	GAZ BASLIGI	GAS HEAD	1
3	1 115 195 0001	MOTOR	MOTOR	1
4	200056010732	CONTA	GASKET	1
5	5001360210095	ALEV BORUSU	FLAME PIPE	1
6	2 032 005 0001	FOTOSEL	PHOTOCELL	1
7	200113010241	TRAFO KUTUSU	TRANSFORMER BOX	1
8	2 022 073 0001	ATEŞLEME TRAFOSU	IGNITION TRANSFORMER	1
9	5000530210029	HAVA EMİŞ HUNİSİ	AIR INLER CONE	1
10	5001030210036	BAĞLANTI FLANŞI	CONNECTION FLANGE	1
11	1 116 358 0001	FAN	FAN	1
12	200058010001	PURJÖR	PURGER	1
13	2 058 491 0001	PRESOSTAT PURJÖRÜ	AIR SWITCH PURGER	1
14	2 058 494 0001	PRESOSTAT ADAPTÖRÜ	AIR SWITCH ADEPTER	1
15	2 060 058 0001	GÖZETLEME CAMI	OBSERVATION GLASS	1
16	200119010241	GAZ VENTİLİ	GAS VALVE	1
17	200026010281	REGÜLATÖR	REGULATOR	1
18	5008000100001	MENTEŞE	HINGE	1
19	5000530110002	MENTESE EK SACI	HINGE ADDITIONAL SHEET	2
20	200023010013	PRESOSTAT	AIR SWITCH	1
21	5 103 180 0315	HAVA KAFESİ	AIR CAGE	1
22	200025010097	SERVOMOTOR	AIR DAMPER (SERVOMOTOR)	1
23	200040010036	RULMAN+YATAĞI	BEARING+HOOSING	6
24	2 044 381 0315	HAVA KLAPESİ	AIR CLAMP	3
25	200049010035	KLAPE HAREKET MILİ	CLAMP MOVEMENT SHAFT	5
26	200125010043	SERVO KLAPE HAREKET KOLU	SERVO CLAMP MOVEMENT ARM	1
27	2 125 177 0040	HAREKET MİLİ KAPLINİ	MOVEMENT SHAFT COUPLING	1
28	200043010077	KAPLİN	COUPLING	1
29	5001030210016	SUSTURUCU	SILENCER	1
30	200135020166	YANMA BAŞLIĞI	COMBUSTION HEAD	1
31	5001340210026	TÜRBÜLATÖR	TURBULATOR	1
32	5000340210002	TÜRBÜLATÖR - 2	TURBULATOR - 2	1
33	200056010192	KLİNGRİT CONTA	KLINGRITE GASKET	3
34	5000350100051	GAZ YOLU BORUSU	GAS PATH PIPE	1
35	5000600200004	GÖZETLEME CAMI CERCEVESİ	OBSERVATION GLASS PLATE	1
36	5009700100129	ORANSAL KONTROL EKİPMANI	PROPORTIONAL CONTROL EQUIPMENT	1
39	3000370021	ETİKET	LABEL	1
41	200056010340	ORING Ø133,4 X 5,34	ORING Ø133,4 X 5,34	1
42	2 069 053 0001	CELİK NİPEL 1/2"	STEEL NIPPEL 1/2"	3
43	2 074 015 0001	MANSON 1/2"	MUFF 1/2"	1
44	5000530210040	PANO BAĞLANTI SACI	PANEL CONNECTION SHEET	1
45	58101010310070007	ELEKTRİKSEL PANO	ELECTRICAL PANEL	1

ECO 9000 HP



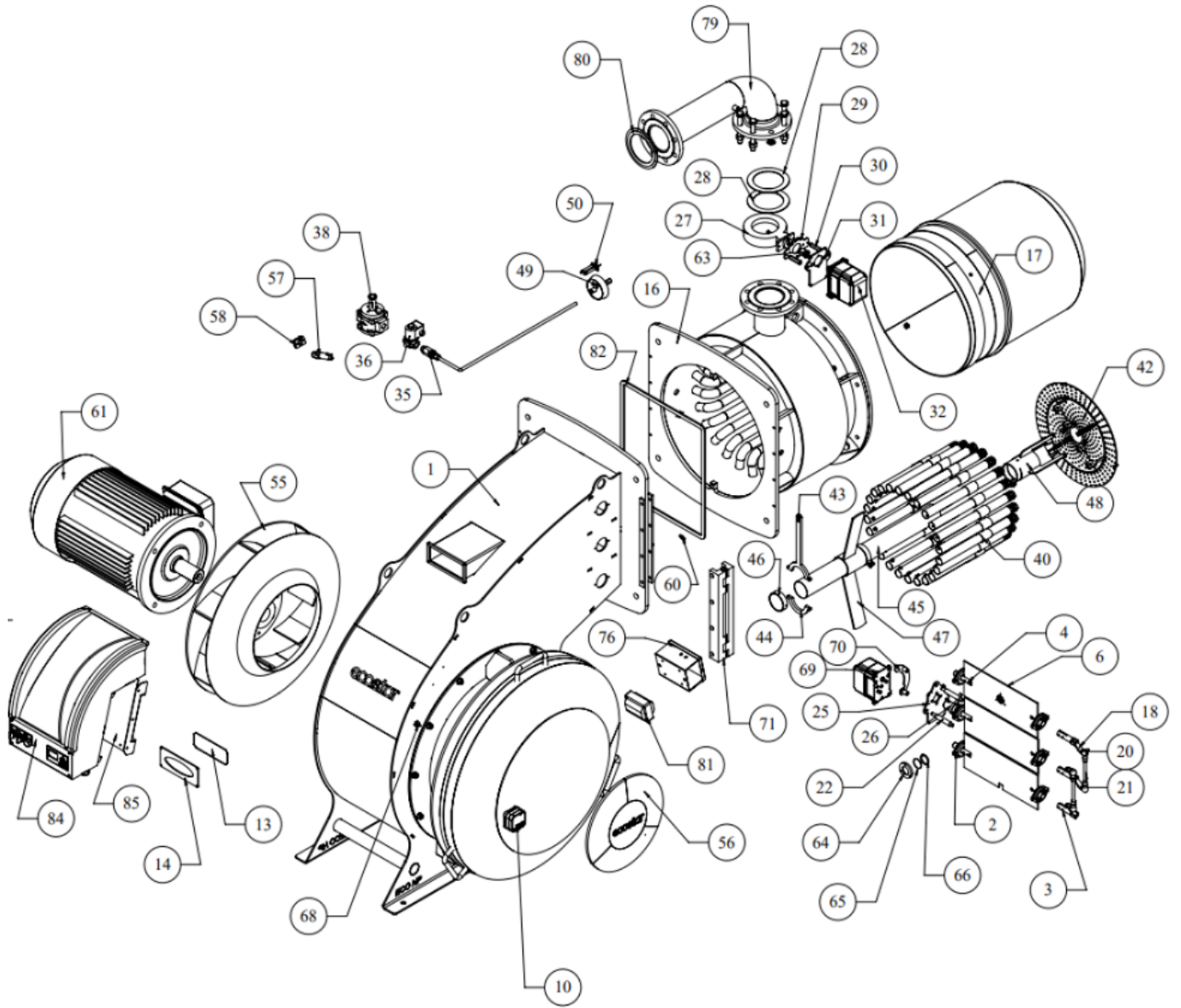
NO.	PART NUMBER	TANIM	DESCRIPTION	PIECES
1	5001020210011	GÖVDE	BODY	1
2	5000520210001	HAVA KAFESİ BAĞLANTI FLANŞI	AIR DAMPER MOUNTING FLANGE	1
3	2 053 370 0001	HAVA EMİŞ HUNİSİ	AIR INLER CONE	1
4	1 115 196 0001	MOTOR	MOTOR	1
5	1 116 361 0001	FAN	FAN	1
6	2 067 430 0001	FAN SABİTLEME PULU	FAN CONNECTION WASHER	1
7	2 060 058 0001	GÖZETLEME CAMI	OBSERVATION GLASS	1
8	5000600200004	GÖZETLEME CAMI ÇERÇEVESİ	OBSERVATION GLASS PLATE	1
9	5001370210098	GAZ BAŞLIĞI	COMBUSTION HEAD	1
10	200056010720	CONTA	GASKET	1
11	5001360210101	ALEV BORUSU	FLAME PIPE	1
12	5008000100001	MENTEŞE	HINGE	1
13	200056010192	KLİNGRİT CONTA	KLINGRITE GASKET	3
14	5000350100051	GAZ YOLU BORUSU	GAS PATH PIPE	1
15	5009700100129	ORANSAL KONTROL EKİPMANI	PROPARTIONAL CONTROL EQUIPMENT	1
16	2 022 073 0001	ATEŞLEME TRAFOSU	IGNITION TRANSFORMER	1
17	200113010241	TRAFO KUTUSU	TRANSFORMER BOX	1
18	2 032 005 0001-01	FOTOSEL BAĞLANTI PLAKASI	PHOTOCELL CONNECTION PLATE	1
19	2 032 005 0001	FOTOSEL	PHOTOCELL	1
20	200023010013	PRESOSTAT	AIR SWITCH	1
21	2 058 494 0001	PRESOSTAT ADAPTÖRÜ	AIR SWITCH ADAPTER	1
22	2 058 491 0001	PRESOSTAT PURJÖRÜ	AIR SWITCH PURGER	1
23	5000530110002	MENTESE EK SACI	HINGE ADDITIONAL SHEET	2
24	200058010001	PURJÖR	PURGER	1
25	5 103 190 0001	HAVA KAFESİ	AIR CAGE	1
26	200040010036	RULMAN+YATAĞI	BEARING + HOUSING	10
27	2 044 391 0001	HAVA KLAPESİ	AIR CLAMP	5
28	200049010035	KLAPE HAREKET MILİ KISA	CLAMP MOVEMENT SHAFT	9
29	200125010043	SERVO KLAPE HAREKET KOLU	SERVO CLAMP MOVEMENT ARM	1
30	2 125 177 0040	HAREKET MİLİ KAPLİNİ	MOVEMENT SHAFT COUPLING	1
31	200043010077	KAPLİN	COUPLING	1
32	200025010098	SERVOMOTOR	AIR DAMPER (SERVOMOTOR)	1
33	2 059 005 0001	MAFSAL M 8	JOINT M8	10
34		M8 SAPLAMA	M8 BOLT	5
35	5 133 130 0001	ELEKTROT ATEŞLEME PİLOT	ELECTRODE IGNITION PILOT	2
36	2 069 053 0001	CELİK NİPEL	STEEL NIPPLE	1
37	200119010241	GAZ VENTİLİ	GAS VALVE	1
39	2 074 015 0001	MANSON 1/2"	MUFF 1/2"	1
40	200070010056	REDUKSIYON	REDUCTION	1
41	2 072 014 0001	RAKOR	RAKOR	1
42	5000930210006	SUSTURUCU KAPAĞI	SILENCER COVER	1
43	5001030210007	SUSTURUCU	SILENCER	1
44	5001350210023	YANMA BAŞLIĞI	COMBUSTION HEAD	1
45	5001360210035	ALEV BORUSU HAVA KESİCİ	FLAME PIPE AIR CUTTER	1
46	5001340210013	TÜRBÜLATÖR 1	TURBULATOR 1	1
47	5001340210015	DIŞ TÜRBÜLATÖR	OUTER TURBULATOR	1
48	5001340210029	TÜRBÜLATÖR 2	TURBULATOR 2	1
49	5001350200017	AHTAPOT DİRSEĞİ	OCTOPUS ELBOW	1
50	200078070004	KAPAK KULPU	COVER HANDLE	2
53	200056010340	ORING Ø133,4 X 5,34	ORING Ø133,4 X 5,34	1
54	3000370021	ETİKET	LABEL	1
56	58101010310070007	ELEKTRİKSEL PANO	ELECTRICAL PANEL	1
57	5000530210040	PANO BAĞLANTI SACI	PANEL CONNECTION SHEET	1

ECO 11000 HP



NO.	PART NUMBER	TANIM	DESCRIPTION	PIECES
1	5001020210011	GÖVDE	BODY	1
2	5000520210001	HAVA KAFESİ BAĞLANTI FLANŞI	AIR DAMPER MOUNTING FLANGE	1
3	2 053 370 0001	HAVA EMİŞ HUNİSİ	AIR INLER CONE	1
4	200115020118	MOTOR	MOTOR	1
5	200116020019	FAN	FAN	1
6	2 067 430 0001	FAN SABİTLEME PULU	FAN CONNECTION WASHER	1
7	2 060 058 0001	GÖZETLEME CAMI	OBSERVATION GLASS	1
8	5000600200004	GÖZETLEME CAMI ÇERÇEVESİ	OBSERVATION GLASS PLATE	1
9	5001370210098	GAZ BAŞLIĞI	COMBUSTION HEAD	1
10	200056010720	CONTA	GASKET	1
11	5001360210101	ALEV BORUSU	FLAME PIPE	1
12	5008000100001	MENTEŞE	HINGE	1
13	200056010192	KLİNGRİT CONTA	KLINGRITE GASKET	3
14	5000350100051	GAZ YOLU BORUSU	GAS PATH PIPE	1
15	200020010107	KELEBEK VANA	THE BUTTERFLY VALVE	1
16	200025010122	SERVOMOTOR BAĞLAMA MILİ	SERVOMOTOR CONNECTION SHAFT	2
17	5000970100014	SERVOMOTOR BAĞLANTI SACI	SERVOMOTOR CONNECTION SHEET	1
18	200025010049	SERVOMOTOR	AIR DAMPER (SERVOMOTOR)	1
19	2 043 062 0003	SERVOMOTOR KAPLINI	SERVOMOTOR COUPLING	1
20	2 022 073 0001	ATEŞLEME TRAFU	IGNITION TRANSFORMER	1
21	200113010241	TRAFU KUTUSU	TRANSFORMER BOX	1
22	2 032 005 0001-01	FOTOSEL BAĞLANTI PLAKASI	PHOTOCELL CONNECTION PLATE	1
23	2 032 005 0001	FOTOSEL	PHOTOCELL	1
24	200023010013	PRESOSTAT	AIR SWITCH	1
25	2 058 494 0001	PRESOSTAT ADAPTÖRÜ	AIR SWITCH ADAPTER	1
26	2 058 491 0001	PRESOSTAT PURJÖRÜ	AIR SWITCH PURGER	1
27	5000530110002	MENTESE EK SACI	HINGE ADDITIONAL SHEET	2
28	200058010001	PURJÖR	PURGER	1
29	5 103 190 0001	HAVA KAFESİ	AIR CAGE	1
30	200040010036	RULMAN+YATAĞI	BEARING + HOUSING	10
31	2 044 391 0001	HAVA KLAPESİ	AIR CLAMP	5
32	200049010035	KLAPE HAREKET MILİ KISA	CLAMP MOVEMENT SHAFT	9
33	200125010043	SERVO KLAPE HAREKET KOLU	SERVOMOTOR CLAMP MOVEMENT ARM	1
34	2 125 177 0040	HAREKET MILİ KAPLINİ	MOVEMENT SHAFT COUPLING	1
35	200043010077	KAPLİN	COUPLING	1
36	200025010098	SERVOMOTOR	AIR DAMPER (SERVOMOTOR)	1
37	2 059 005 0001	MAFSAL M 8	JOINT M8	10
39	5 133 130 0001	ELEKTROT ATEŞLEME PİLOT	ELECTRODE IGNITION PILOT	2
40	2 069 053 0001	CELİK NİPEL 1/2"	STEEL NIPPEL 1/2"	1
41	200119010241	GAZ VENTİLİ	GAS VALVE	1
43	2 074 015 0001	MANSON 1/2"	MUFF 1/2"	1
44	200070010056	REDUKSIYON	REDUCTION	1
45	2 072 014 0001	RAKOR	RAKOR	1
46	5000930210006	SUSTURUCU KAPAĞI	SILENCER COVER	1
47	5001030210007	SUSTURUCU	SILENCER	1
48	5001350210023	YANMA BAŞLIĞI	COMBUSTION HEAD	1
49	5001360210035	ALEV BORUSU HAVA KESİCİ	FLAME PIPE AIR CUTTER	1
50	5001340210013	TÜRBÜLATÖR 1	TURBULATOR 1	1
51	5001340210015	DIŞ TÜRBÜLATÖR	OUTER TURBULATOR	1
52	5001340210029	TÜRBÜLATÖR 2	TURBULATOR 2	1
53	5001350200017	GAZ YOLU BORUSU DİRSEĞİ	GAS PATH PIPE ELBOW	1
54	200056010340	ORING Ø133,4 X 5,34	ORING Ø133,4 X 5,34	1
57	3000370021	ETİKET	LABEL	1
59	58101010310070007	ELEKTRİKSEL PANO	ELECTRICAL PANEL	1
60	5000530210040	PANO BAĞLANTI SACI	PANEL CONNECTION SHEET	1

ECO 13000 HP

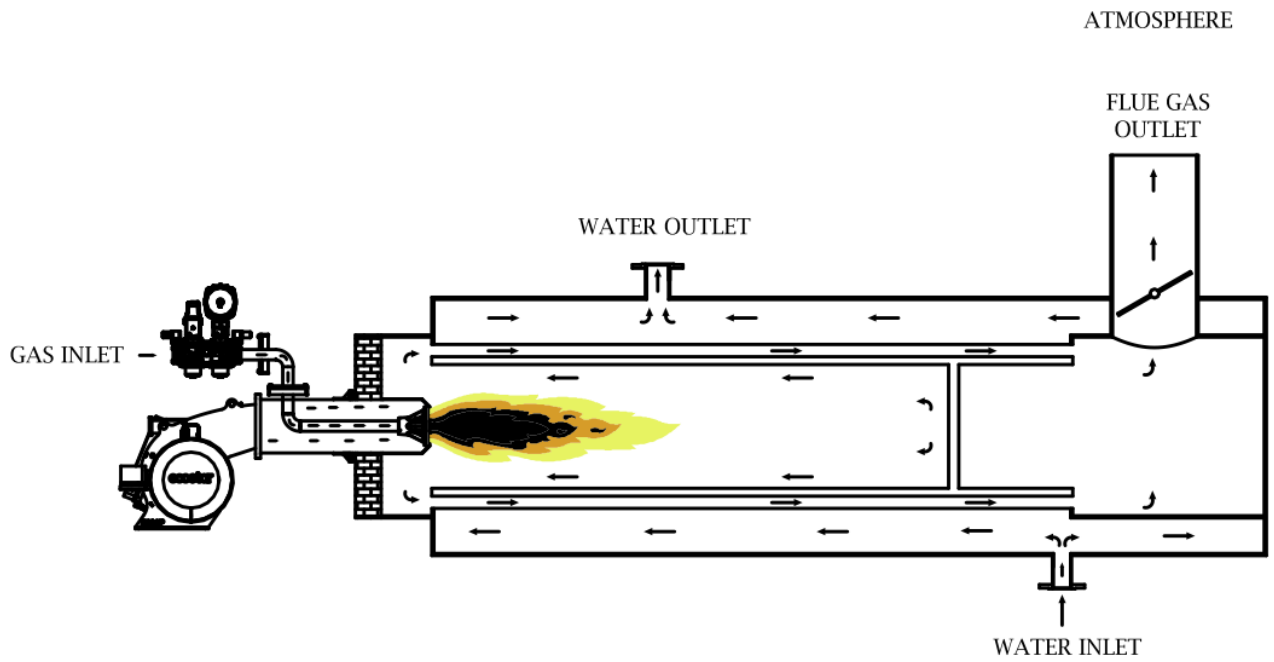


NO.	PART NUMBER	TANIM	DESCRIPTION	PIECES
1	5001020210002	GÖVDE	BODY	1
2	200040010036	RULMAN+YATAĞI	BEARING + HOUSING	6
3	200049010063	KLAPE HAREKET MILI UZUN	CLAMP MOVEMENT SHAFT LONG	3
4	200049010037	KLAPE HAREKET MILI KISA	CLAMP MOVEMENT SHAFT SHORT	2
5	2 125 178 0001	SERVO MOTOR KLAPE HAREKET KOLU	SERVOMOTOR CLAMP MOVEMENT HANDLE	1
6	500044020068	HAVA KLAPESİ	AIR CLAMP	1
8	5001030210034	HAVA KAFESİ	AIR CAGE	1
9	5001030210035	SUSTURUCU	SILENCER	1
10	200023010013	HAVA PRESOSTATI	AIR SWITCH	1
11	5001530210029	HUNI	FUNNEL	1
12	5001040210001	MOTOR BAĞLANTI FLANŞI	MOTOR CONNECTION FLANGE	1
13	2 060 058 0001	GÖZETLEME CAMI	OBSERVATION GLASS	1
14	5000600200004	GÖZETLEME CAMI ÇERÇEVESİ	OBSERVATION GLASS FRAME	1
15	5000570300001	ETİKET	LABEL	1
16	5001370210067	GAZ BAŞLIĞI	GAS HEAD	1
17	5001360210049	ALEV BORUSU	FLAME PIPE	1
18	5000440300014	KLAPE HAREKET KOLU KISA	CLAMP MOVEMENT HANDLE SHORT	2
19	200049010083	KLAPE HAREKET KOLU UZUN	CLAMP MOVEMENT HANDLE LONG	1
20	200059010009	MAFSAL	JOINT	4
21	5005020200006	KLAPE HAREKET KOLU BAĞLANTI SAPLAMASI M10X170MM	CLAMP MOVEMENT HANDLE CONNECTION BOLT M10 X 170MM	2
23	5050440300045	KLAPE HAREKET KOLU BAĞLANTI SAPLAMASI	CLAMP MOVEMENT HANDLE CONNECTION BOLT	3
24	200043010121	KAPLIN	COUPLING	1
25	5000970100012	SERVOMOTOR BAĞLANTI PLAKASI	SERVOMOTOR CONNECTION PLATE	1
26	5000440100019	HAVA KLAPESİ SKALA KADRANI	AIR CLAMP SCALE DIAL	1
27	200056010192	KLİNGRİT CONTA	KLINGRITE GASKET	2
28	2 072 014 0001	RAKOR 10 1/4"	RAKOR 10 1/4"	1
29	2000700100056	REDUKSIYON 1/2"-1/4"	REDUCTION 1/2" - 1/4"	1
30	2 074 015 0001	MANSON 1/2"	MUFF 1/2"	1
31	200119010241	PILOT GAZ VENTİLİ	PILOT GAS VALVE	1
32	2 069 053 0001	CELİK NİPEL 1/2"	STEEL NIPPEL 1/2"	2
33	2 026 806 0001	REGULATOR	REGULATOR	1
35	5001380300008	GAZ NOZULLARI	GAS NOZZLES	24
36	5001340310032	DİŞ TÜRBÜLATÖR	OUTER TURBULATOR	1
37	5001340300011	İÇ TÜRBÜLATÖR	INNER TURBULATOR	1
38	5001530300030	LANS MERKEZLEME KONSOLU 1	LANCE CENTERING CONSOLE 1	1
39	5001530300029	LANS MERKEZLEME KONSOLU 2	LANCE CENTERING CONSOLE 2	1
40	2 053 090 0001	LANS MERKEZLEME KAPAGI	LANCE CENTERING COVER	1
41	5005020300010	LANS MERKEZLEME BORUSU	LANCE CENTERING PIPE	1
42	5000540210002	LANS MERKEZLEME SACI	LANCE CENTERING SHEET	1
43	2 034 772 0001	TÜRBÜLATÖR MERKEZLEME PARÇASI	TURBULATOR CENTERING PART	1
44	5001340210029	TÜRBÜLATÖR	TURBULATOR	1
45	5 133 130 0001	ELEKTROT ATEŞLEME SIVI YAKIT	ELECTRODE IGNITION LIQUID FUEL	2
50	200116030028	FAN	FAN	1
51	200057010257	ETİKET	LABEL	1
52	2 032 005 0001	FOTOSEL	PHOTOCELL	1
53	2 032 005 0001-01	FOTOSEL BAĞLANTI PLAKASI	PHOTOCELL CONNECTION PLATE	1
54	2 032 005 0001-02	FOTOSEL KELEPÇE	PHOTOCELL CLAMP	1
55	200058010001	PURJÖR	PURGER	2
56	1 115 199 0001	MOTOR	MOTOR	1
58	5000600100002	GÖZETLEME ÇERÇEVESİ	OBSERVATION FRAME	1
59	200060010012	GÖZETLEME CAMI	OBSERVATION GLASS	1
60	200056010165	CONTA GÖZETLEME CAM	GASKET OBSERVATION GLASS	1
61	5000440200032	HAVA KLAPESİ	AIR CLAMP	1
62	2 058 494 0001	PRESOSTAT ADAPTÖRÜ	AIR SWITCH ADAPTER	1
63	200025010098	SERVOMOTOR	AIR DAMPER (SERVOMOTOR)	1
64	5000440310005	HAVA KLAPESİ SKALA SACI 0-90°	AIR CLAMP SCALE SHEET 0-90°	1
65	5008000100002	MENTEŞE	HINGE	1
66	5000530200042	MENTEŞE EK SACI	HINGE ADDITIONAL SHEET	2
69	5000440200069	HAVA KLAPESİ	AIR CLAMP	1
70	200113010241	TRAF0 KUTUSU	TRANSFORMER BOX	1
71	5 103 106 0001-03	ALT BURÇ	LOWER BUSH	1
72	5 103 106 0001-04	UST PABUÇ	TOP WEDGE	2
73	5000350210030	GAZ YOLU BORUSU	GAS LINE PIPE	1
74	200056010183	KLİNGRİT CONTA	KLINGRITE GASKET	1
75	2 022 073 0001	ATEŞLEME TRAFOSU	IGNITION TRANSFORMER	1
76	200056010062	FİTİL 6X15	WICK	1
77	200056010104	CONTA 815*660 MM.MIB 450	GASKET 815*660 MM.MIB 450	2
79	5009700100129	ORANSAL KONTROL EKİPMANI	PROPORTIONAL CONTROL EQUIPMENT	1
83	2 058 491 0001	PRESOSTAT PURJÖRÜ	AIR SWITCH PURGER	1
84	5000530210040	PANO BAĞLANTI SACI	PANEL CONNECTION SHEET	1
85	58101010310070007	ELEKTRİKSEL PANO	ELECTRICAL PANEL	1



Termo Isı Sistemleri San. Ve Tic. A.Ş. reserves the right to change the brand and specifications of the mentioned equipments. Therefore, please obtain confirmation from the sales and after-sales service department regarding the product code.

4. GAS, FLUE GAS AND HEATING WATER SCHEMA



5. TECHNICAL DATA

5.1. Capacity Table

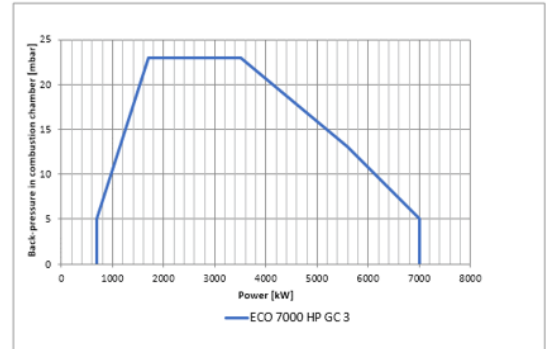
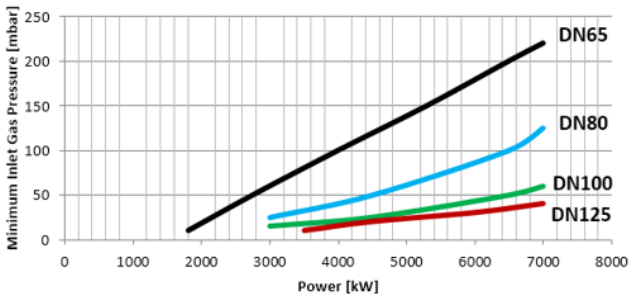
HIGH FAN PRESSURE MODULATING GAS BURNERS CAPACITY TABLE										
BURNER TYPE	CAPACITY		CAPACITY		NATURAL GAS CONSUMPTION		FAN MOTOR POWER	MAIN SUPPLY	GAS INLET DIAMETER	
	Min. kcal/h	Max. kcal/h	Min. kW	Max. kW	Min. Nm ³ /h	Max. Nm ³ /h	kW	VAC	Gas valve	Gas Inlet Diameter
ECO 7000 HP G C3	602.000	6.020.000	700	7.000	72,97	729,70	11	3N 400	VGD 40.065	DN65
									VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
ECO 8000 HP G C3	688.000	6.880.000	800	8.000	83,39	833,94	15	3N 400	VGD 40.065	DN65
									VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
ECO 9000 HP G C3	516.000	7.740.000	600	9.000	62,55	938,18	18,5	3N 400	VGD 40.065	DN65
									VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
ECO 11000 HP G C3	774.000	9.460.000	900	11.000	93,82	1146,67	22	3N 400	VGD 40.065	DN65
									VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
ECO 13000 HP G C3	1.548.000	11.180.000	1.800	13.000	188	1.355	37	3N 400	VGD 40.065	DN65
									VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
ECO 16000 HP G C3	774.000	13.760.000	900	16.000	93,82	1667,88	37	3N 400	VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
									VGD 40.150	DN150
ECO 17000 HP G C3	1.548.000	14.620.000	1.800	17.000	188	1.772	55	3N 400	VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
									VGD 40.150	DN150
ECO 23000 HP G C3	774.000	19.780.000	900	23.000	94	2.398	45	3N 400	VGD 40.080	DN80
									VGD 40.100	DN100
									VGD 40.125	DN125
ECO 24000 HP G C3	1.548.000	20.640.000	1.800	24.000	188	2.502	75	3N 400	VGD 40.100	DN100
									VGD 40.125	DN125
									VGD 40.150	DN150

H_u Natural Gas =8250 kcal/Nm³

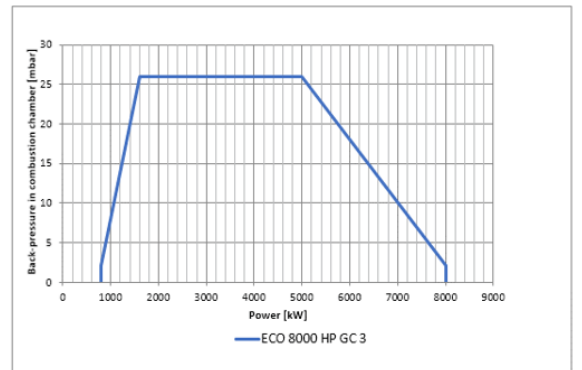
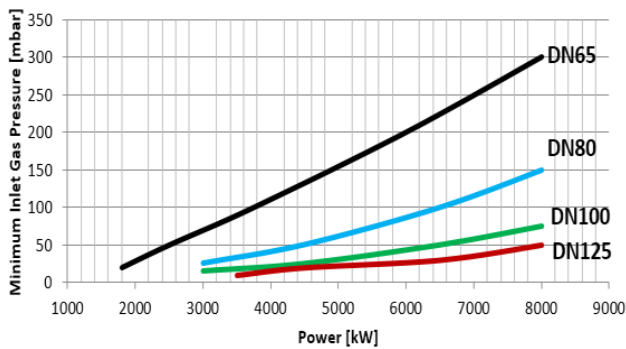
H_u LPG=22500 kcal/Nm³

5.2. Back Pressure and Gas Line Selection Table

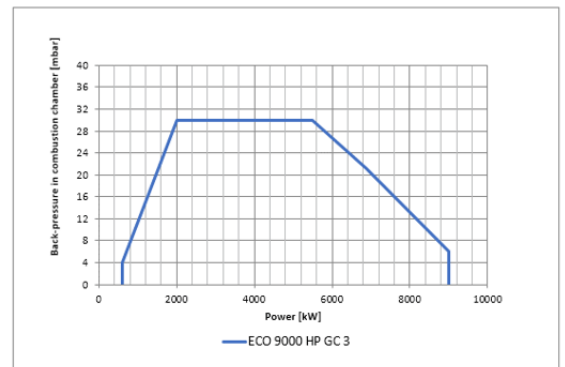
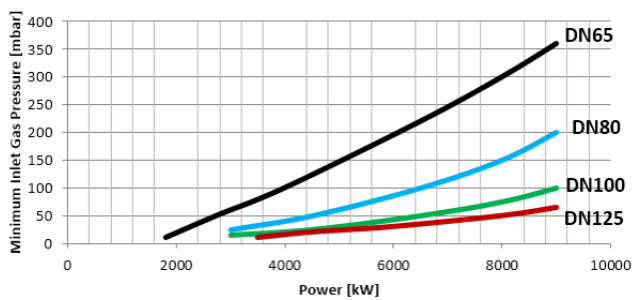
ECO 7000 HP G C3



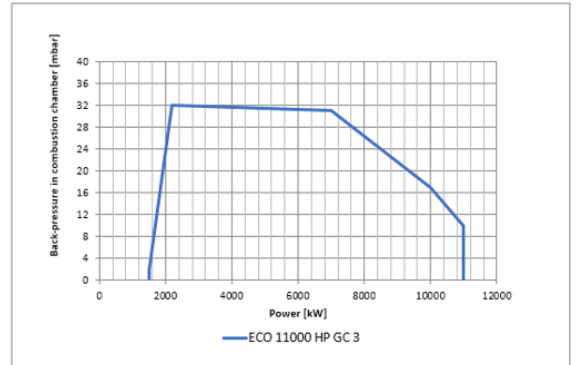
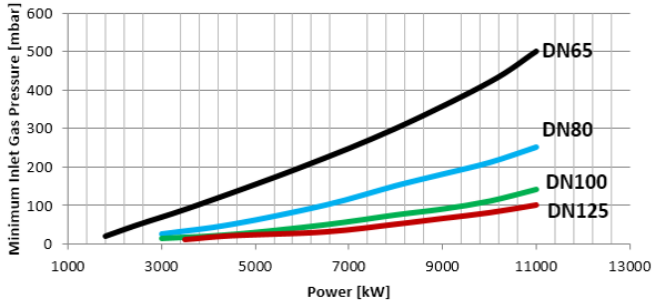
ECO 8000 HP G C3



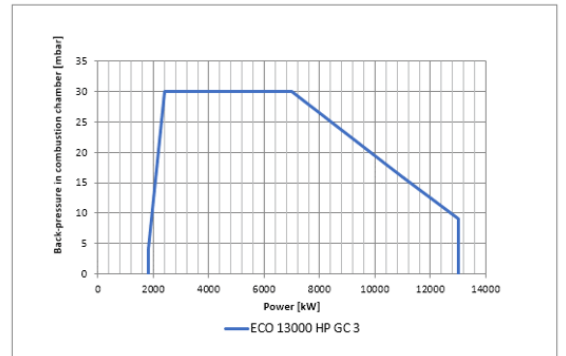
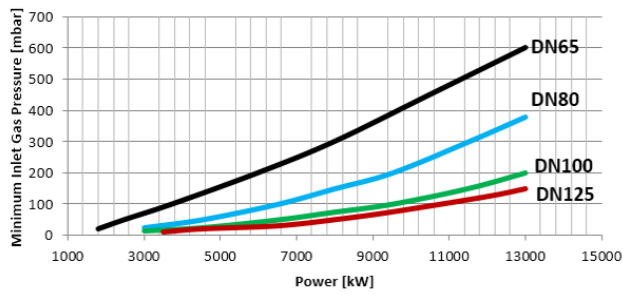
ECO 9000 HP G C3



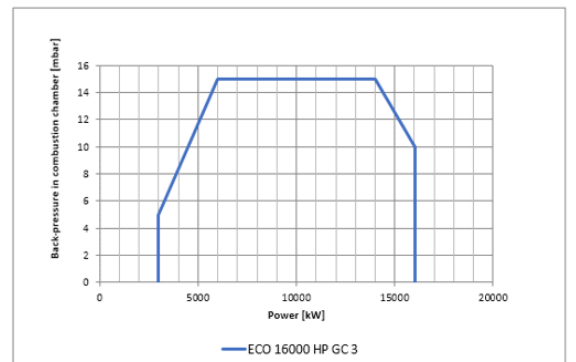
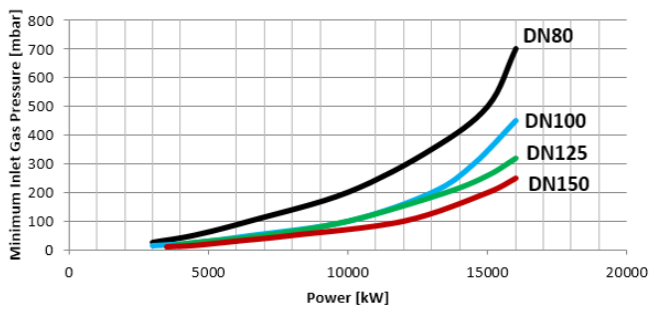
ECO 11000 HP G C3



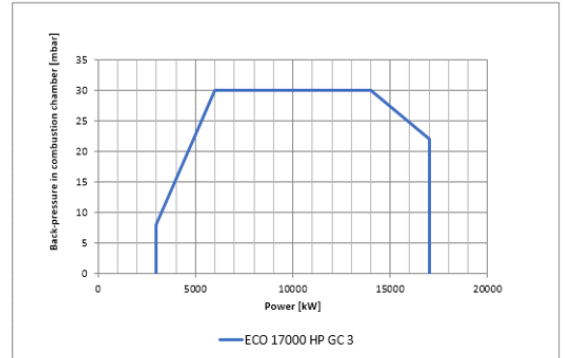
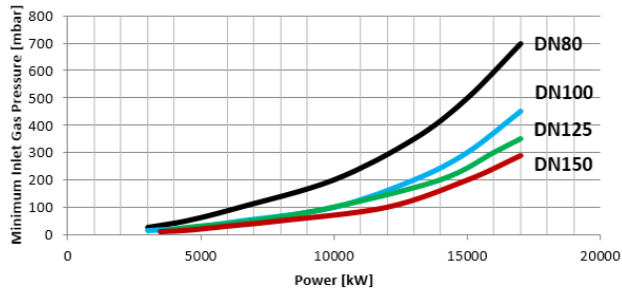
ECO 13000 HP G C3



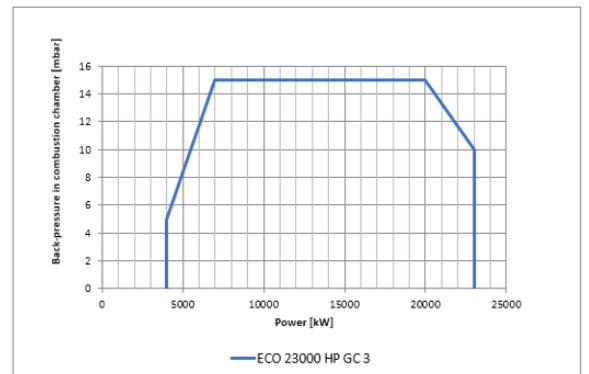
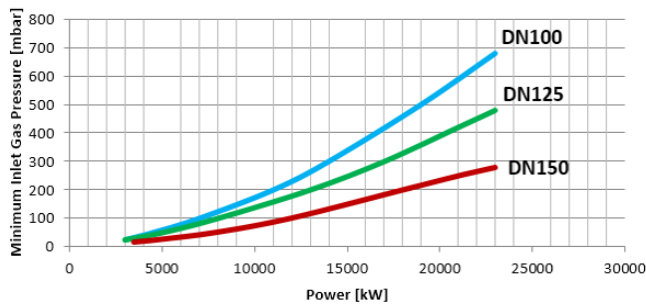
ECO 16000 HP G C3



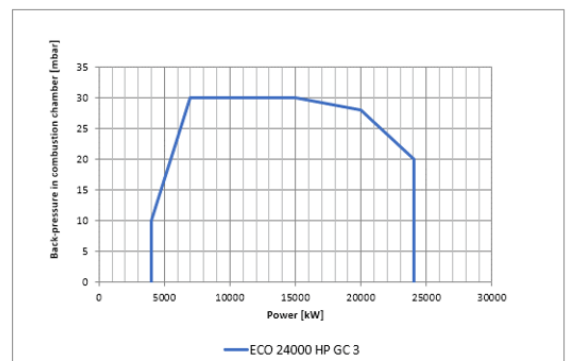
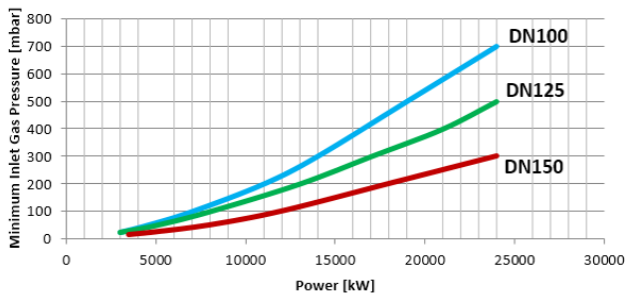
ECO 17000 HP G C3



ECO 23000 HP G C3

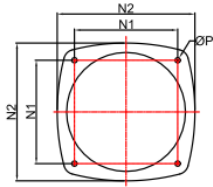


ECO 24000 HP G C3

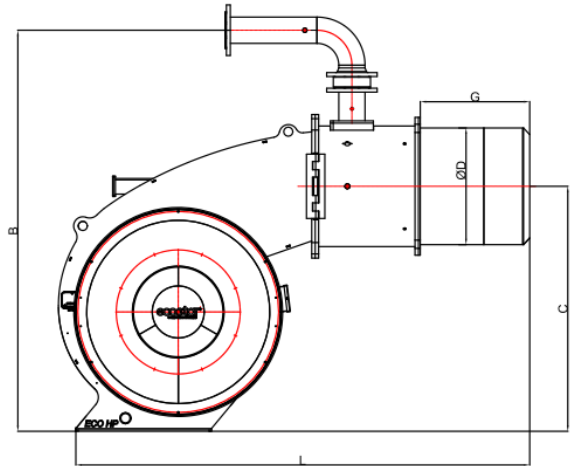
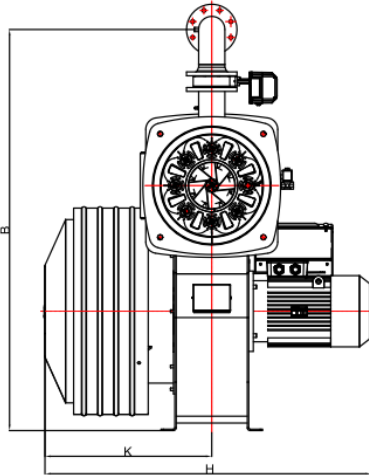
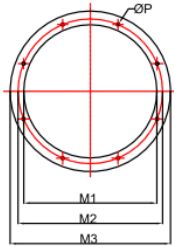


5.3. Burner Dimensions

Eco 7000 HP GC3 - Eco 11000 HP GC3
Burner Connection Flange Dimensions



Eco 13000 HP GC3 - Eco 24000 HP GC3
Burner Connection Flange Dimensions



	L	G	H	K	B	C	ØP	N1	N2	M1	M2	M3	ØD
ECO 7000 HP G C3 E	1851	472	1385	690	1560	930	18	400	525	-	-	-	408
ECO 8000 HP G C3 E	1851	472	1385	690	1560	930	18	400	525	-	-	-	408
ECO 9000 HP G C3 E	1980	480	1420	727	1750	1066	22	450	600	-	-	-	508
ECO 11000 HP G C3 E	1980	480	1420	727	1750	1066	22	450	600	-	-	-	508
ECO 13000 HP G C3 E	2260	480	1420	565	1840	1115	15	-	-	580	630	730	540
ECO 16000 HP G C3 E	2635	475	1420	565	1750	1330	15	-	-	740	792	860	670
ECO 17000 HP G C3 E	2635	475	1420	565	1750	1330	15	-	-	740	792	860	670
ECO 23000 HP G C3 E	2635	475	1420	565	1750	1330	15	-	-	740	792	860	700
ECO 24000 HP G C3 E	2635	475	1420	565	1750	1330	15	-	-	740	792	860	700

5.4. Gas Hood Pressure Loss Diagram



Gas hood pressure loss measurements are conducted in atmospheric pressure. Consider the below data while conducting measurement in counter pressure boilers.

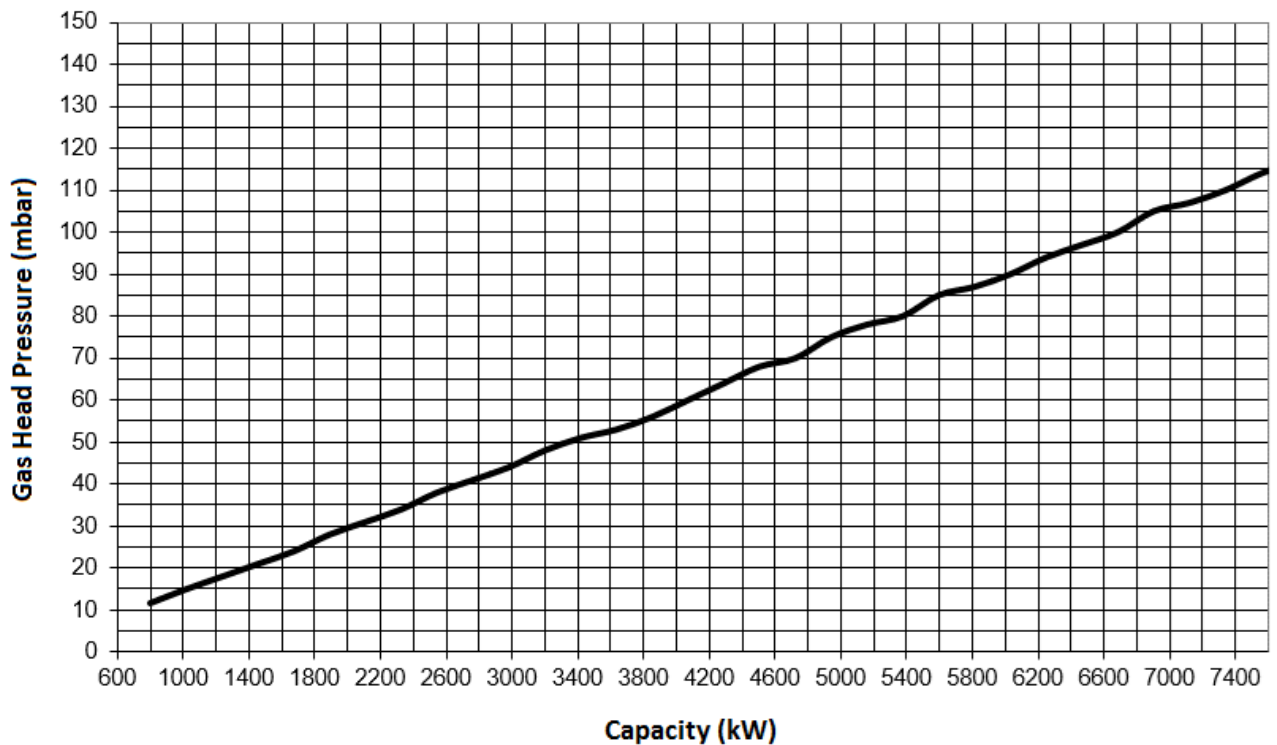
P_m : Gas hood pressure while burner is connected to the boiler and working

P_F : Combustion chamber pressure

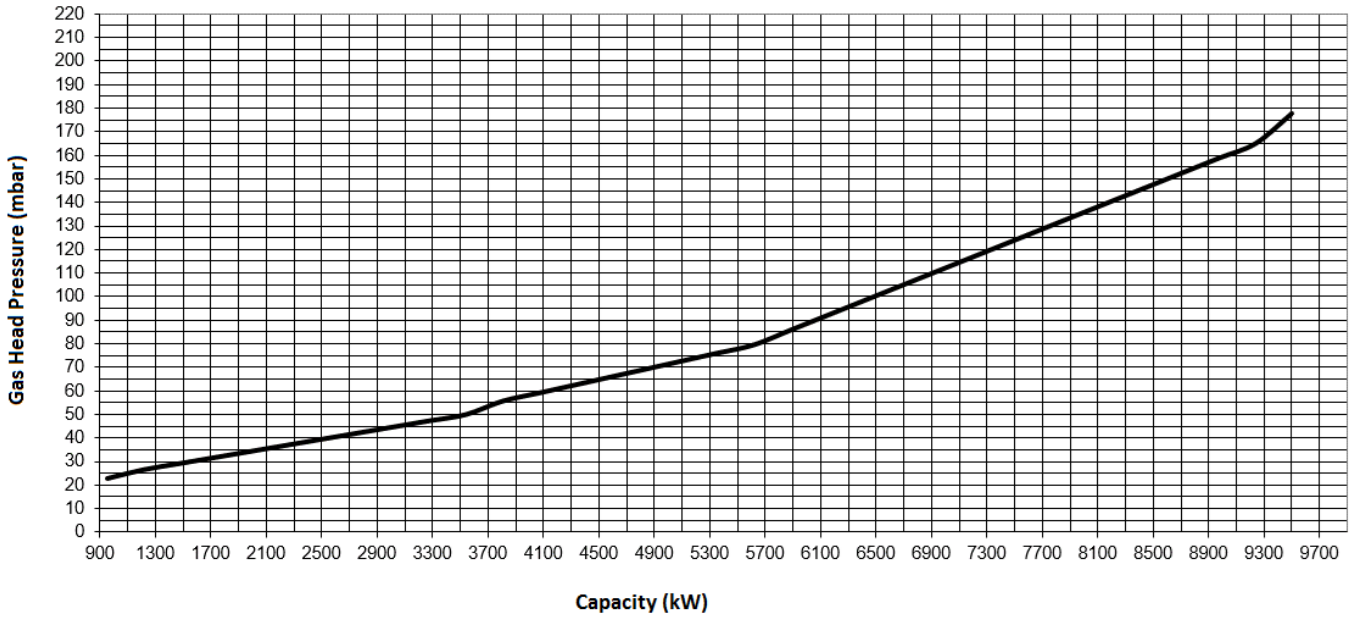
P_{Br} : Burner net gas hood pressure

$$P_{Br} = P_m - P_F$$

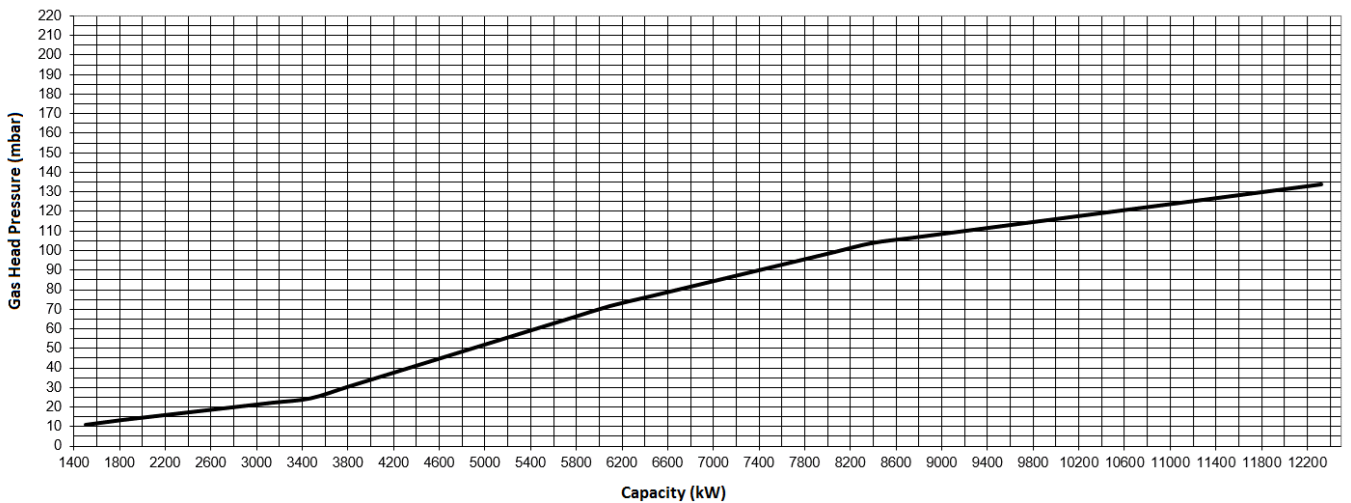
ECO 7000 HP



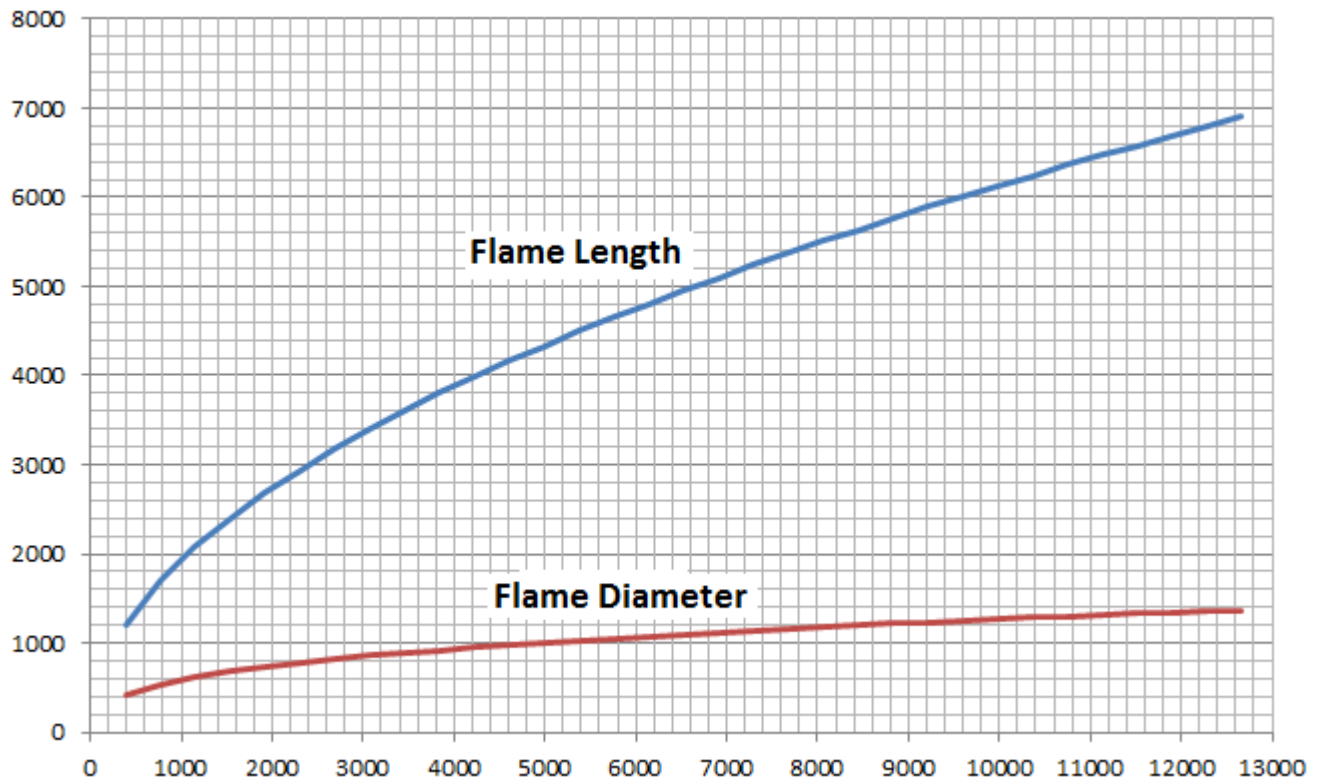
ECO 8000 HP/ECO 9000 HP



ECO 11000 HP

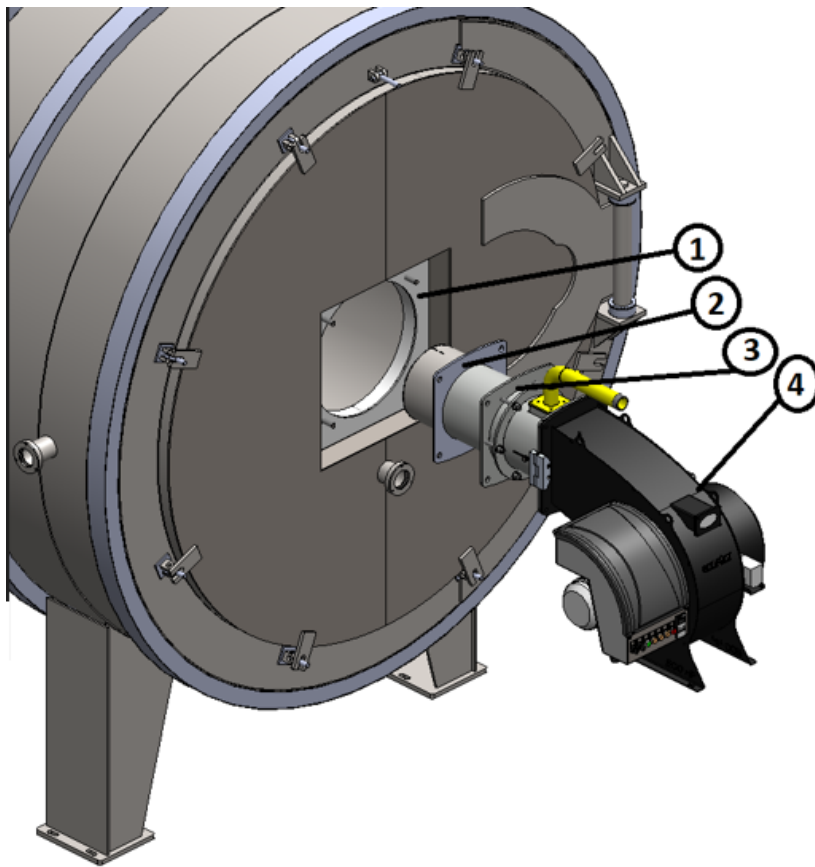


5.5. Flame Length and Diameter



6. INSTALLATION

6.1. Burner Installation Picture



- 1- Boiler Flange
- 2- Gasket
- 3- Boiler Connection Flange
- 4- Burner



You must definitely ensure sealing between boiler and burner!



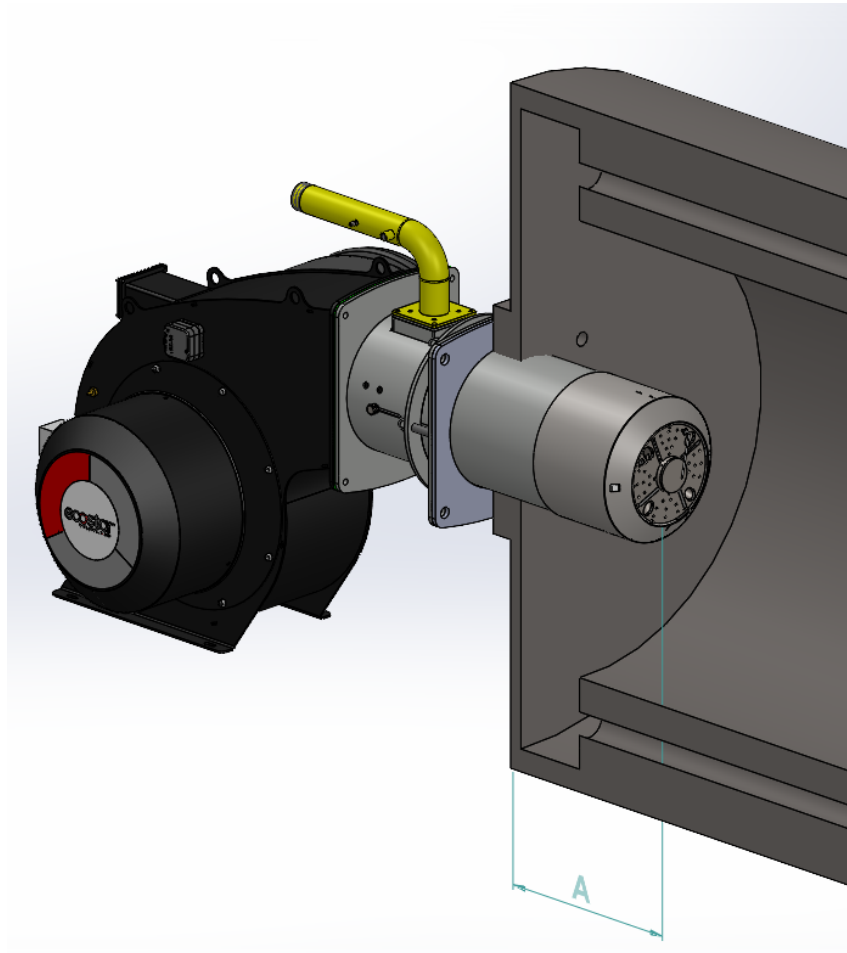
Device must be shipped in original packaging!



Do not lift the device holding from servomotor, gas valve, impulse pipes or pressure switch during installation!



Clean the inside of fuel line thoroughly before installing the burner to the fuel line. Any damage that may occur due to solid objects and metal particles from the fuel line shall not be covered by our company.



While installing the burner in reverse flame front mirror boilers, flame tube tip must be adjusted such that it gets inside by 50 mm-100 mm from flue pipes ($50\text{mm} \leq A \leq 100\text{mm}$). Otherwise flue gas temperature will rise and fuel consumption will increase.

7. COMMISSIONING

7.1. Before Commissioning



Electrical connection

Perform electrical connections according to the diagram provided with the burner. Follow general security rules during installation of electric wiring and making connections. Connect the earthing terminal in electric panel to the earthing installation.

7.2. General Controls



Make sure to perform the following controls before commissioning the burner.

- Are the electrical connections correct?
- Is there electricity current?
- Is there gas?
- Has the heating system been filled with water?
- Is the thermostat set at the required temperature?
- Has the boiler explosion lid been controlled?
- Is there sufficient air in boiler room (ventilation section $\text{cm}^2 = \text{boiler capacity kW} \times 7$)
- Has the boiler been installed correctly? Has the boiler cover been closed properly?
- Has the air of the gas line been removed? Has a sealing test been made?

Operation of a modulating burner

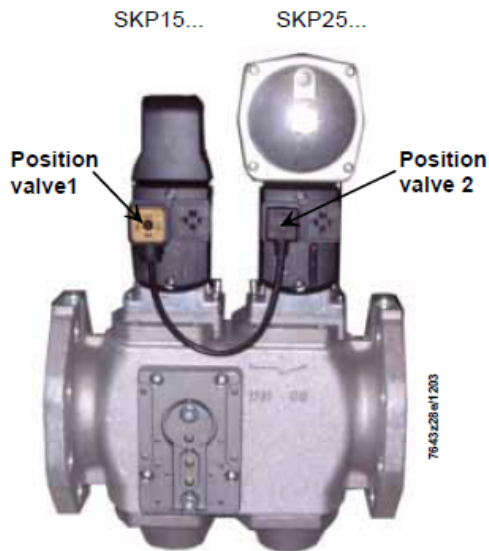
- Open the main gas valve; check max 300 mbar gas pressure from the manometer.
- Open operating switch on the burner panel.
- Switch on the modulating control switch.
- Switch automatic-hand switch to automatic.
- Check the temperature and pressure set values from the modulating control unit.
- Ignition will take place at the end of pre-purge process.
- 3 sec. later, the gas valve will be opened and combustion will occur.
- Flame control system (ionization) will start flame control.
- In modulating burner, the burner goes into max. capacity according to the signal from the modulating control unit.
- When the boiler water temperature or steam pressure increase, the modulating control unit will cause burner to run with min. capacity.
- If the boiler water temperature or steam pressure increases despite the operation of burner with min. capacity, the modulating control unit will stop the burner.

7.3. Combustion Adjustment

7.3.1. Gas Adjustment

Follow the instructions of the valve manufacturer during installation, dismantling and adjustment of the gas valve

7.3.1.1. VGD 40... Series Gas Valve



7.4. Air pressure switch adjustment

While the burner is working without any problem, the air pressure switch is adjusted to desired minimum pressure as follows.

- Unscrew the screw of the transparent cover and remove the cover.
- Turn the adjustment wheel in the direction to increase the pressure, note the pressure value at which the burner is failed.
- Set the pressure switch to a value 1 mbar lower than the pressure value at which the burner failed and close the pressure switch lid.
- It is recommended that this adjustment is carried out when the burner is at minimum load.

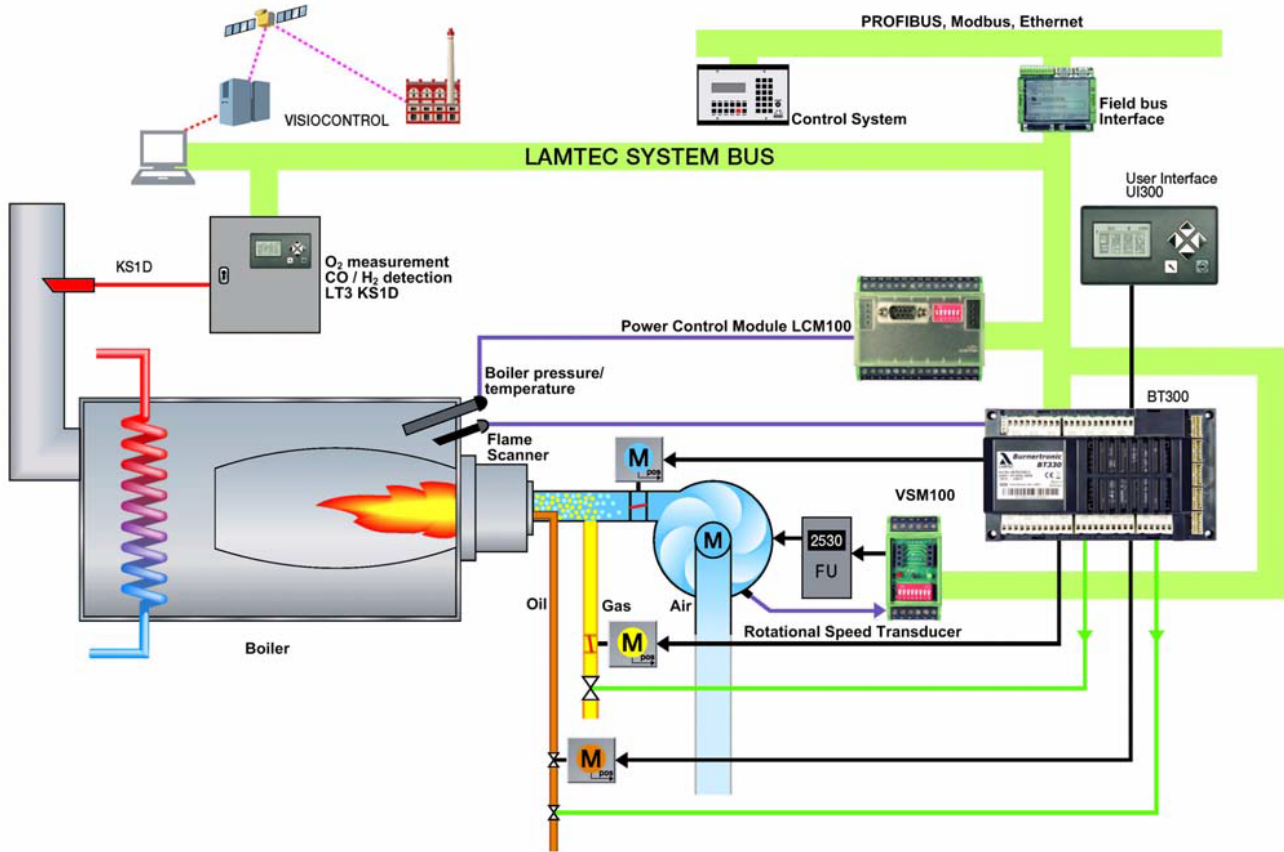


7.5. Photocell

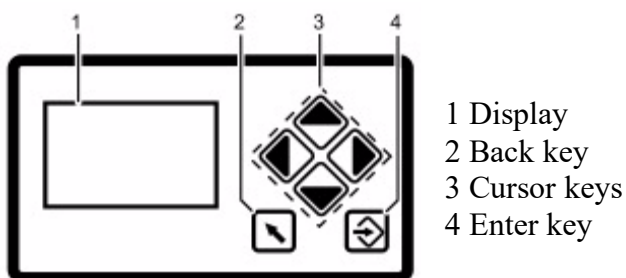
- QRA2



7.6. BT 300



7.6.1. Operating Control and Displays



Display: The display shows in pictograms:

- 1 - the menu structure
- 2 - operating status
- 3 - parameters
- 4 - error messages



Back key: Jump to previous window.



Cursor keys: You navigate in the menu using the cursor keys. You use the "left" and "right" keys to move step by step to the selected row. At the end of the selected row, the cursor jumps to the next row down, if possible. If the menu has multiple rows, you can use the "up" and "down" keys to switch rows. To display the parameters, switch between the individual fields.



Enter key: Press ENTER to call up the menu on the start screen. You open the selected submenu from a menu window. By pressing the ENTER key, you transfer the setting values from a parameter window.

7.6.2. Menu Functions

The menu is divided into three paths:



INFO



MANUAL



SETTINGS

INFO



Select the INFO path for information about the following:

- the burner
- errors that have occurred
- the software version
- display of check sums
- the serial number
- actuating drive positions (current damper position for each channel)
- digital inputs/outputs

MANUAL



Select the MANUAL to

- start and stop the burner manually
- adjust the internal burner firing-rate

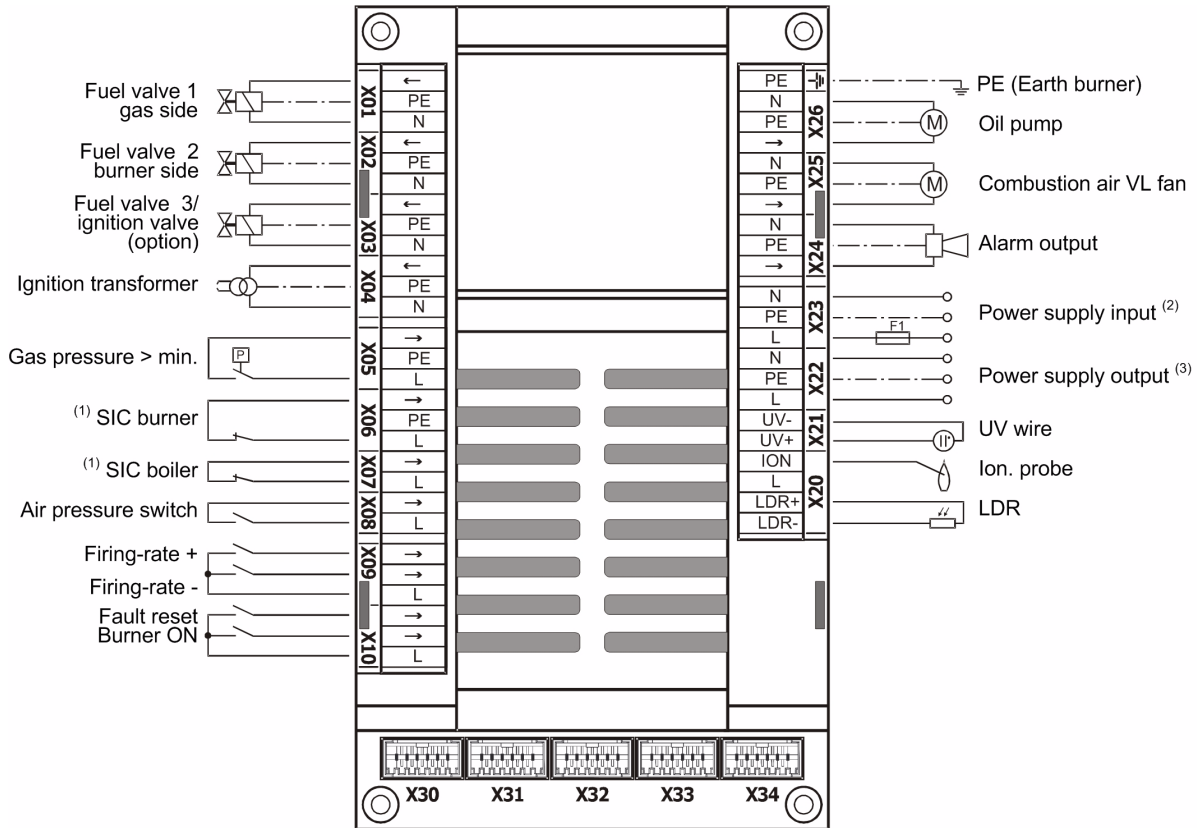
SETTINGS



Select the SETTINGS path for information on, and to make settings for, the following:

- the password
- the burner settings (display and settings)
- the actuator device settings (display)
- the air/fuel control system
- the "delete" curve
- the display settings

7.6.3. BT300 Connecting Diagram



X30 = User Interface UI 300

X31 = LSB Option

X32 = continuous output 1, e.g. air damper

X33 = continuous output 2, e.g. gas damper

X34 = continuous output 3 (optional)

(1) SIC = safety interlock chain

(2) 230V AC 47 - 63Hz external fuse protection required (max 10A slow-blow)

(3) 230V AC for power supply to external devices

Maximum Cable Length:

X01-X10: 10m

X30: 1m

X20-X21: 3m

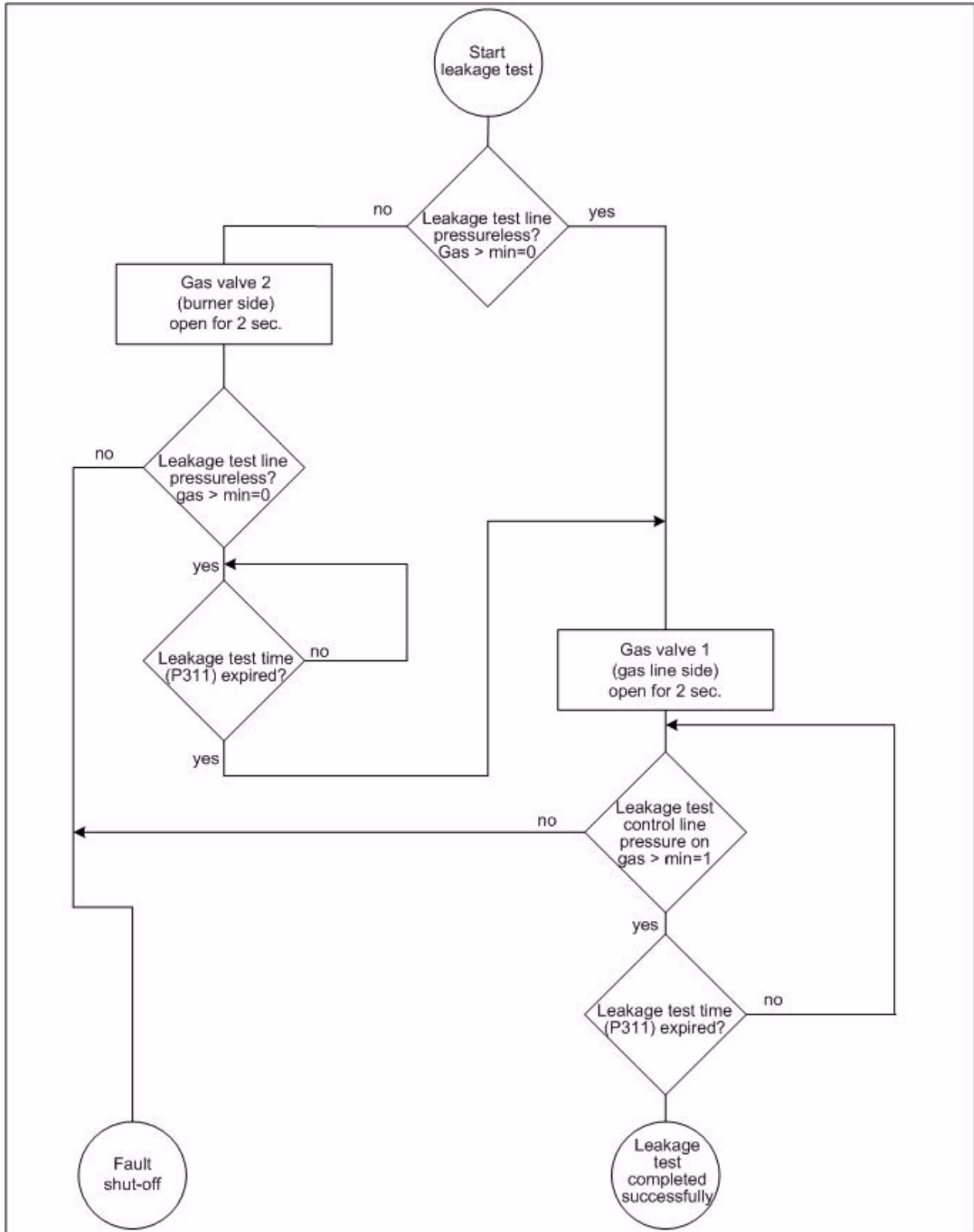
X31: 1m

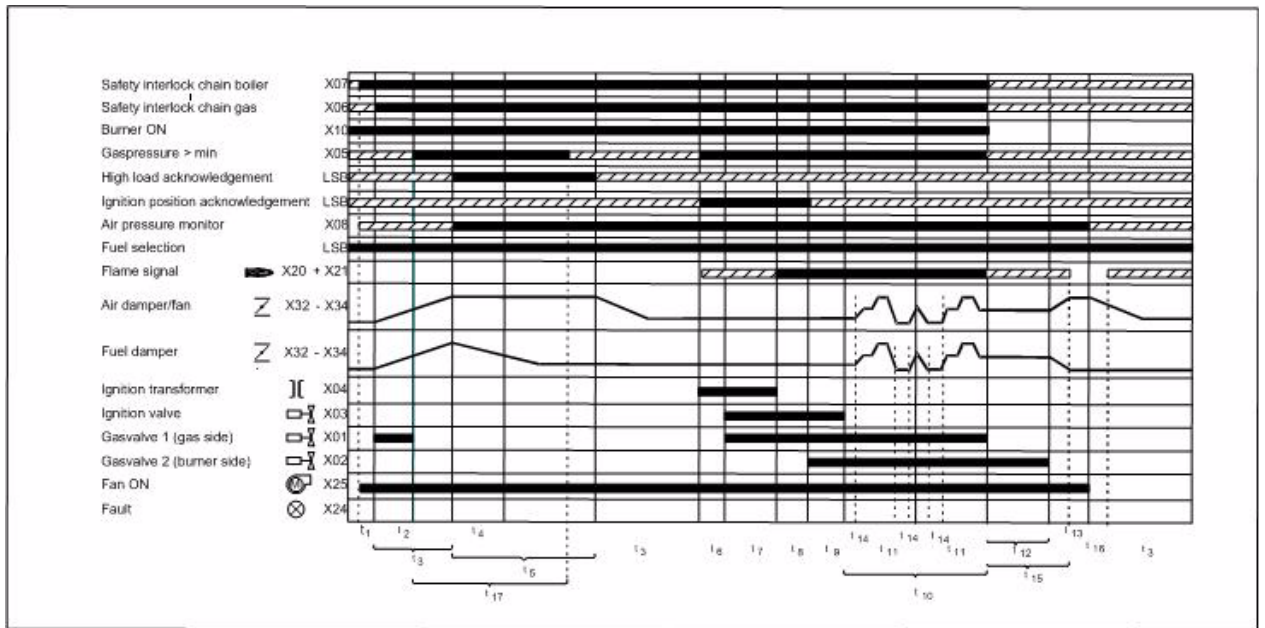
X22-X23: unlimited

X32-X34: 3m

X24-X26: 10m

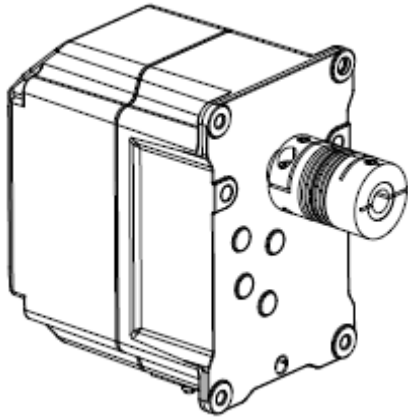
7.7. Leakage Test for Main Gas Valves





Gas with pilot burner and leakage test BT300

7.8. Servomotors



Lamtec motor ver. 2

Servomotors drive air dampers, gas butterfly valve and oil regulator. With the help of servomotors electronic air and fuel ratio control is carried out, controlled by burner control.



- Static electricity can damage servomotor.
- Do not open servomotor. Do not interfere with or modify unit or equipment connected to it. It may damage servomotor or change burner settings.
- Completely isolate equipment from the main supply before performing any wiring changes in servomotor connection area.
- Check that wiring is in an orderly state.
- Protect equipment from condensation, water and ice.
- Fall or shock can adversely affect safety functions. Such servomotors may not be put into operation.



Do not open servomotor. Do not interfere with. It may damage servomotor or change burner settings.

7.9. Function Controls and Adjustments

The BT300 combines the benefits of an electronic fuel-air ratio control system with up to three motorised actuating devices and an optional modules like an analogue output for speed control of the combustion air fan with an electronic burner control unit. The leakage test, flame monitoring system, power control unit and (optional) CO/O₂ controller for control and optimisation of an oil or gas-fired forced-draught burner are all integrated. The BT300 is suitable for virtually all combustion plants. Safety interlock chains, monitors (e.g. gas and air pressure) and sensors are wired directly to the BT300. This greatly reduces the cost of additional relays and wiring. The BT300 was designed to be attached to the burner. The short wiring paths also save money. As a result, the BT300 is particularly suitable as standard equipment for monoblock burners. The compact design of the BT300 burner control system also has its advantages during commissioning. Standardising the wiring and the unified operator interface minimises sources of errors from the start, while intelligent information in the display makes searching for errors much easier.

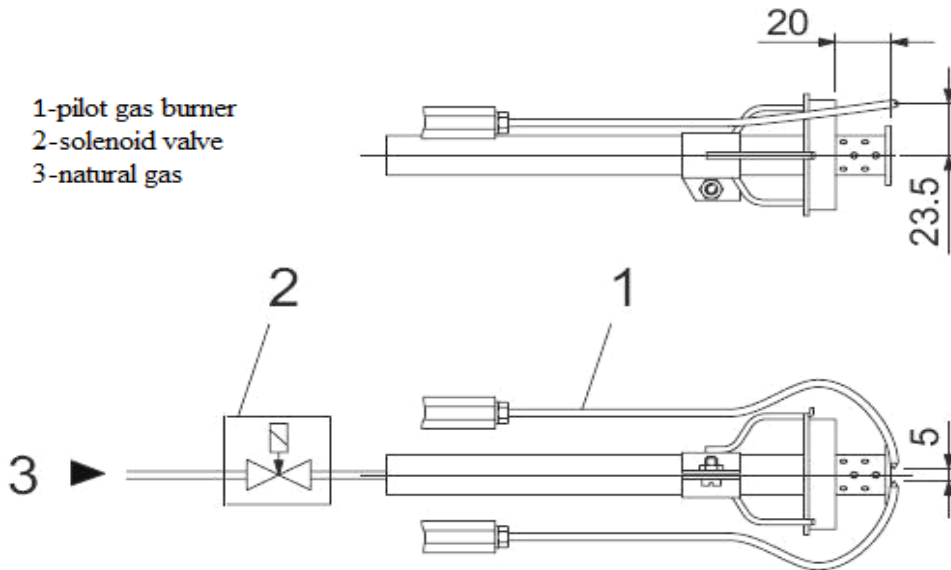


Magnetic valves must not be energized during pre-purge. Check if valves are in closed position!

7.10. Final Checks

- Switch of all purges after completion of all necessary measurements.
- Start and stop the burner at least 3 times to check the operation of the program.
- Make sure that all safety circuits on the burner and boiler operate properly before leaving the installation site.

7.11. Pilot Ignition System



Pilot gas burner inlet pressure $P_{max} = 200$ mbar

7.12. Emission Measurement

In emission measurements, the following values are accepted as reference according to TS EN 676 +A2 standard.

- $CO < 100$ mg/ kWh
- $\%3 \leq O_2 \leq \%5$
- $NO_x < 120$ mg/ kWh
- Excess air ratio $1,2 \leq \lambda \leq 1,3$

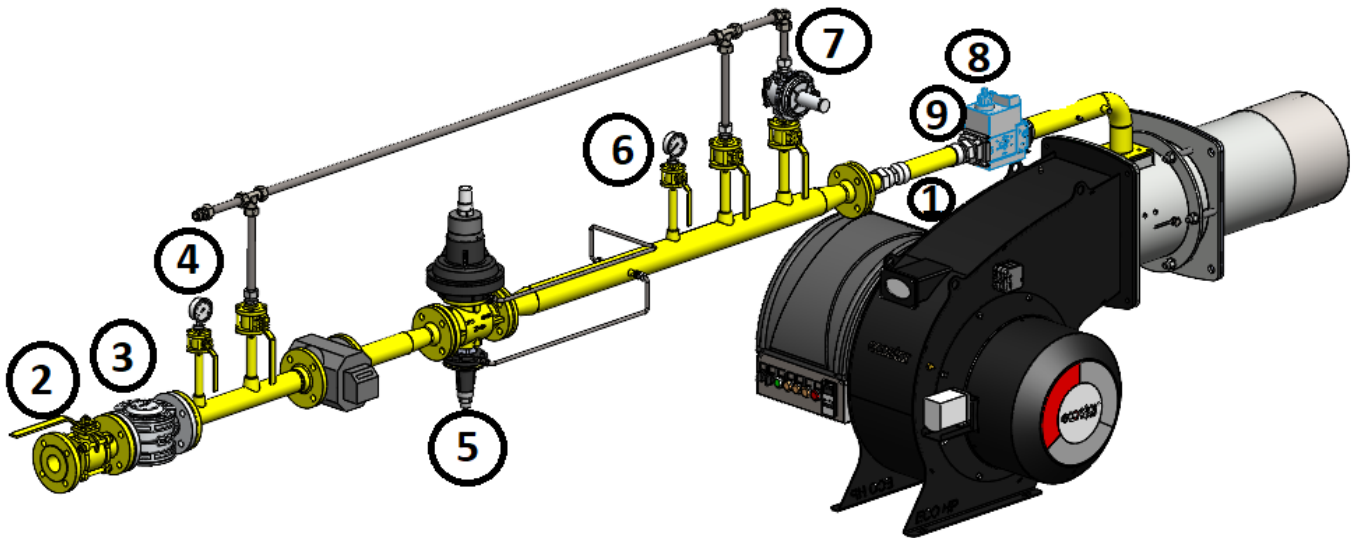


It is important for the boiler to be sealed in order to avoid incorrect measurements during emission measurements.



Boiler temperature must be between 40 C° and 80 C° while making emission measurement in hot water boilers.

7.13. Gas Pass Equipment Required in Gas Line



Pe < 300 mbar Q<1200kW	Pe > 300 mbar Q<1200kW	Pe < 300 mbar Q>1200kW	Pe > 300 mbar Q>1200kW
1- Compensator	1- Compensator	1- Compensator	1- Compensator
2- Ball valve	2- Ball valve	2- Ball valve	2- Ball valve
3- Gas filter	3- Gas filter	3- Gas filter	3- Gas filter
4- Inlet manometer + valve	4- Inlet manometer + valve	4- Inlet manometer + valve	4- Inlet manometer + valve
8 – Multi-block (safety and operation solenoids)	5- Regulator	8 – Multi-block (safety and operation solenoids))	5- Regulator
9- Sealing Control Set	6- Outlet manometer + valve	9- Sealing Control Set	6- Outlet manometer + valve
	7- Safety discharge valve		7- Safety discharge valve
	8 – Multi-block (safety and operation solenoids)		8 – Multi-block (safety and operation solenoids)
	9- Sealing Control Set		9- Sealing Control Set



Threaded and flanged connections may vary depending on the gas pressure and consumption.

8. MAINTENANCE

8.1. Monthly Maintenance

Monthly maintenance is a comprehensive process where general checks of burner and peripheral components are performed to prevent possible faults. After completion of maintenance and adjustment processes, make sure to perform an emission analysis.

- Clean the filters on the main line and multiblock.
- Check the burner gas tip.
- Perform insulation measurements of ignition and ionization electrodes, replace electrodes should there be leakage to the body.
- Check ignition cables and sockets.
- Check all wiring points. Tighten loose connections.
- Clean the dust and layers accumulated on the fan and air klappes.
- Check gas line pressure, it must be the same with the first adjusted pressure, otherwise burner load and emission values will also have changed.
- Check all bolts of the burner. Tighten loose bolts.
- After starting the burner and adjusting air klappe, perform flue gas emission measurement and check if there is an ideal combustion.

8.2. Seasonal Maintenance

Comprehensive maintenance work when the burner is re-started after long periods of shut-down or interruptions. After completion of maintenance and adjustment processes, make sure to perform a combustion analysis.

- Check insulation resistance of electric motor.
- Replace ignition and ionization electrodes with new ones.
- Clean air fan and clamps.
- Check the operating function.
- Check boiler thermostats.
- Check cleanliness of boiler inside and clean if necessary.



Follow installation directions during maintenance.

9. FAULT HISTORY

Reading fault situation from the control panel

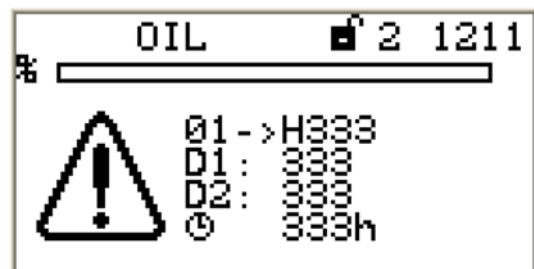
Active fault situation is shown on display. Enter-button is lit. Fault history can be read from the control panel.

See more precise fault codes in the brochure on burner control.

Resetting fault

Example

- 01: fault code H333
- D1: diagnostic code (additional information)
- D2: diagnostic code (additional information)
- clock: running hours counter in fault situation



Burner control can be reset immediately after lockout. After resetting the actuators drive to stand by position. In stand by position control unit allows burner to restart.

10. PERIODICAL FLUE GAS MEASUREMENT REPORT								
Fuel Consumption (m³/h)	CO (ppm)	O₂ (%)	CO₂ (ppm)	NO_x (ppm)	Yield (%)	Flue Temp. (°C)	Date	Signature

11. AFTER-SALES SERVICES

Dear Customer,

We believe that providing a good service is as important as providing a good product. Therefore, we continue offering wide range of comprehensive services to our conscious customers.

For your suggestions, complaints and service requests

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Please observe the following recommendations.

- Use the product in accordance with the principles of this manual.
- For any service demands regarding the product, please contact our Service Center from the abovementioned phone numbers.
- Upon your purchase, register your warranty certificate during installation.

