VIESMANN

VITOMAX 200-HS

High pressure steam boiler
Three-pass boiler
Combustion output 3.8 to 18.2 MW
Steam output 5 to 26 t/h

Technical guide

VITOMAX 200-HS Type M75A

Oil/gas high pressure steam boiler
Compliant with the requirements of the Pressure Equipment Directive 97/23/EC and the TRD regulations, in conjunction with the [German] trade association agreements.
Three-pass boiler
With or without economiser
Permissible operating pressure 6 to 25 bar

5442 026 GB 11/2009

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5442 026 GB

Specification

1.1 Specification without integral economiser

Boiler size			1	2	3	4	5	6	7	8	9	A
Combustion output[*1]												
- for natural gas		MW	3.8	4.5	5.3	6.4	7.5	9.0	10.5	12.7	15.7	18.2
- for fuel oil EL		MW	3.8	4.5	5.3	6.4	7.5	9.0	10.5	12.3	14.0	14.0
- output portion		%	100	100	100	100	100	100	100	96.6	89.2	76.9
Max. steam output with gas combustion												
5 bar working pressure **without** turbulator[*2]		t/h	5.09	6.06	7.17	8.69	10.19	12.33	14.34	17.42	21.79	25.21
Max. working pressure **without** turbulator[*2]		t/h	4.86	5.78	6.84	8.28	9.71	11.78	13.70	16.70	20.88	24.26
5 bar working pressure **with** turbulator		t/h	5.28	6.25	7.39	8.93	10.45	12.51	14.60	17.66	–	–
Max. working pressure **with** turbulator		t/h	5.03	5.95	7.03	8.50	9.94	11.94	13.94	16.91	–	–
Max. flue gas temperature with gas combustion												
5 bar working pressure **without** turbulator		°C	296	288	280	275	274	259	265	258	236	239
Max. working pressure **without** turbulator		°C	345	337	330	326	324	307	313	301	282	279
5 bar working pressure **with** turbulator		°C	229	231	226	224	228	233	233	233	–	–
Max. working pressure **with** turbulator		°C	284	285	280	279	283	283	283	278	–	–
Max. steam output with oil combustion												
5 bar working pressure **without** turbulator[*2]		t/h	5.15	6.13	7.25	8.78	10.30	12.45	14.45	17.03	19.71	19.76
Max. working pressure **without** turbulator[*2]		t/h	4.92	5.85	6.92	8.38	9.83	11.91	13.83	16.34	18.90	19.04
5 bar working pressure **with** turbulator		t/h	5.32	6.30	7.45	9.00	10.52	12.61	14.68	17.22	–	–
Max. working pressure **with** turbulator		t/h	5.08	6.01	7.10	8.58	10.03	12.06	14.04	16.52	–	–
CE designation			in accordance with Pressure Equipment Directive 97/23/EC									
Shipping dimensions incl. packaging												
Total length		m	5.38	5.61	5.85	6.04	6.28	6.72	7.04	7.46	8.30	8.99
Total width		m	2.55	2.73	2.85	3.00	3.05	3.20	3.40	3.60	3.85	3.95
Total height		m	2.90	3.08	3.20	3.35	3.40	3.55	3.75	3.95	4.26	4.36
Total weight[*3] Boiler with thermal insulation for permissible operating pressure	6 bar	t	9.1	10.8	12.8	14.4	16.2	19.0	22.8	28.9	35.0	40.6
	8 bar	t	9.9	11.8	13.9	15.8	17.9	20.4	24.9	29.2	37.1	41.7
	10 bar	t	10.7	13.1	15.0	17.2	19.2	22.4	26.1	31.8	41.8	46.6
	13 bar	t	11.9	14.5	17.2	18.6	20.3	24.1	28.8	33.7	43.0	49.2
	16 bar	t	13.3	14.5	17.3	20.0	22.0	26.6	32.1	37.5	48.4	54.1
	18 bar	t	12.7	15.9	18.1	21.4	23.8	28.6	32.3	40.0	51.9	58.3
	20 bar	t	13.4	16.6	19.9	23.0	24.1	28.6	34.2	41.8	–	–
	22 bar	t	14.1	18.2	21.0	23.1	25.3	30.3	35.9	–	–	–
	25 bar	t	15.3	18.5	21.8	24.5	26.9	32.3	–	–	–	–
Boiler water content												
overall		m^3	11.2	13.4	15.0	17.6	18.3	21.9	25.8	30.9	39.0	44.8
average operating range[*4]		m^3	9.82	11.46	12.82	15.07	15.66	18.49	21.78	26.15	32.38	36.51
Steam chamber volume[*4]		m^3	1.38	1.94	2.18	2.53	2.64	3.41	4.02	4.75	6.62	8.29
Steam level surface area[*4]		m^2	6.58	7.78	8.44	9.28	9.72	11.29	12.53	14.19	17.42	19.95
Boiler connections												
Steam connector												
for permissible operating pressure	6 bar	PN 16 DN	200	200	200	250	250	250	300	300	350	400
	8 bar	PN 16 DN	150	200	200	200	200	250	250	300	300	350
	10 bar	PN 16 DN	150	150	150	200	200	200	250	250	300	300
	13 bar	PN 40 DN	125	150	150	150	–	–	–	–	–	–
	13 bar	PN 25 DN	–	–	–	–	200	200	200	250	250	250
	16 bar	PN 40 DN	125	125	150	150	150	–	–	–	–	–
	16 bar	PN 25 DN	–	–	–	–	–	200	200	200	250	250
	18 bar	PN 40 DN	125	125	125	150	150	–	–	–	–	–
	18 bar	PN 25 DN	–	–	–	–	–	200	200	200	200	250
	20 bar	PN 40 DN	125	125	125	150	150	200	200	200	–	–
	22 bar	PN 40 DN	100	125	125	125	150	150	150	–	–	–
	25 bar	PN 40 DN	100	100	125	125	125	150	–	–	–	–
Safety valve connector												
for permissible operating pressure	6 bar	PN 40 DN	65	65	65	80	80	100	100	100	125	150

*[*1] The maximum combustion output varies subject to the required emission values and the fuel used. Check with the burner manufacturer.*

*[*2] If using a downstream or on-site economiser.*

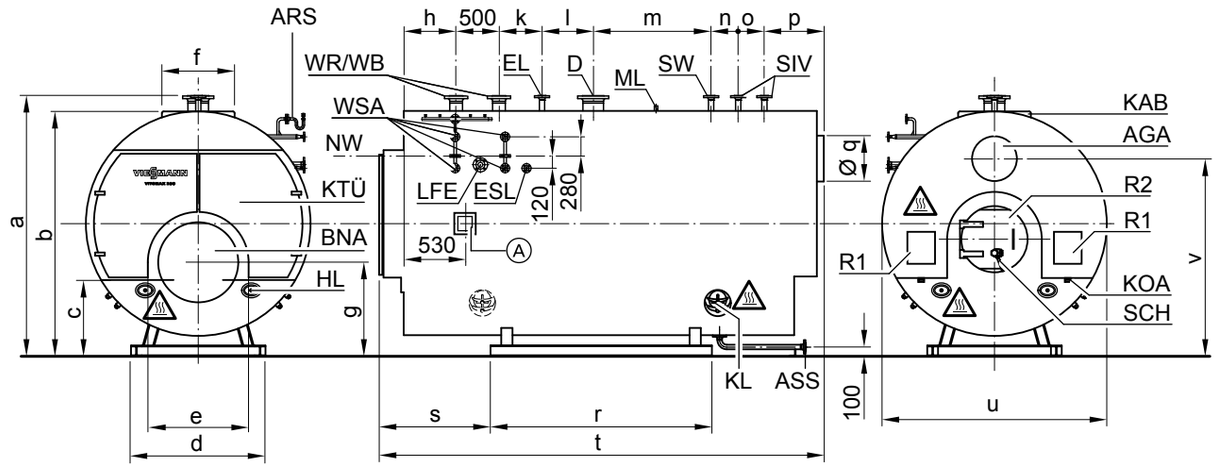
*[*3] Because of production methods, the weight of the boiler can vary by up to 10 %.*

*[*4] Average water level between pump ON and pump OFF.*

Specification (cont.)

Boiler size			1	2	3	4	5	6	7	8	9	A
	8 bar	PN 40 DN	50	65	65	65	80	80	100	100	100	125
	10 bar	PN 40 DN	50	50	65	65	65	80	80	80	100	100
	13 bar	PN 40 DN	40	50	50	65	65	65	65	80	80	100
	16 bar	PN 40 DN	40	40	50	50	50	65	65	65	80	80
	18 bar	PN 40 DN	40	40	40	50	50	65	65	65	80	80
	20 bar	PN 40 DN	32	40	40	50	50	50	65	65	–	–
	22 bar	PN 40 DN	32	40	40	40	50	50	65	–	–	–
	25 bar	PN 40 DN	32	32	40	40	50	50	–	–	–	–
Connector for feedwater pumps		PN 40 DN	40	40	40	50	50	50	65	65	65	80
Flue gas mass flow rate												
- for natural gas		t/h	1.5225 x combustion output in MW									
- for fuel oil EL		t/h	1.5 x combustion output in MW									
Flue gas volume		m^3	4.9	6.1	7.3	8.5	9.6	11.8	14.7	18.4	24.7	28.7

1.2 Dimensions without integral economiser



⚠ Caution - hot surface

Ⓐ	Type plate
AGA	Flue outlet
ARS	Fitting assembly
ASS	Connector for blow-down valve DN 40 PN 40
BNA	Burner connection
D	Steam connector
EL	Vent connector DN 15 PN 40
ESL	Connector for T.D.S. line with dummy flange, DN 20 PN 40
HL	Hand hole
KAB	Boiler cover
KL	Head hole
KOA	Condensate drain R 2"
KTÜ	Boiler door
LFE	Connector for conductivity electrode with dummy flange, DN 50 PN 40
ML	Manhole
NW	Lowest water level
R1	Cleaning port, flue gas collector
R2	Cleaning port, combustion chamber
SIV	Connector for safety valve with 1x dummy flange
SCH	Inspection port R 2"
SW	Feedwater connector
WR/WB	Connector for water level controller/limiter
WSA	Connector for water level indicator with 1x dummy flange

Dimensions *8

Boiler size		1	2	3	4	5	6	7	8	9	A
a	mm	2880	3055	3180	3330	3380	3530	3730	3930	4240	4340
b	mm	2725	2900	3035	3175	3225	3375	3575	3775	4085	4185
c	mm	755	813	825	840	830	835	850	865	945	965
d	mm	1800	1950	2000	2100	2200	2300	2400	2500	2870	2920
e	mm	905	1030	1105	1155	1205	1275	1380	1530	1680	1680
f	mm	800	800	800	900	900	900	1000	1000	1100	1100
g	mm	1003	1070	1108	1160	1178	1240	1265	1342	1455	1455
h	mm	530	530	530	530	530	530	530	530	530	530
k	mm	575	575	650	650	675	825	875	975	1300	1400
l	mm	475	525	550	565	725	925	875	1075	800	1100
m	mm	1530	1660	1685	1860	1825	1860	2025	2040	2500	2600
n	mm	300	325	325	325	325	350	350	400	450	500
o	mm	300	325	325	325	325	350	350	400	450	500

*8 *Nominal dimensions, subject to modification.*

Specification (cont.)

Boiler size		1	2	3	4	5	6	7	8	9	A
p	mm	660	660	760	760	810	810	910	960	1110	1160
q*6	mm	500	550	600	650	700	750	850	900	1000	1100
r	mm	2550	2790	2875	2965	3165	3380	3485	3700	4290	4590
s	mm	1230	1225	1270	1320	1335	1445	1530	1630	1720	1910
t	mm	5105	5335	5560	5750	5990	6425	6720	7185	7975	8665
u	mm	2500	2675	2800	2950	3000	3150	3350	3550	3800	3900
v	mm	2240	2390	2490	2615	2640	2765	2915	3090	3350	3400

1.3 Specification with integral economiser

Boiler size			1	2	3	4	5	6	7	8	9	A
Combustion output*1												
- for natural gas		MW	3.8	4.5	5.3	6.4	7.5	9.0	10.5	12.7	15.7	18.2
- for fuel oil EL		MW	3.8	4.5	5.3	6.4	7.5	9.0	10.5	12.3	14.0	14.0
- output portion		%	100	100	100	100	100	100	100	96.6	89.2	76.9
Max. steam output with gas combustion												
5 bar working pressure **with** ECO 100		t/h	5.41	6.41	7.55	9.11	10.68	12.81	14.95	18.08	22.35	25.90
Max. working pressure **with** ECO 100		t/h	5.31	6.28	7.40	8.94	10.48	12.57	14.67	17.76	21.95	25.47
5 bar working pressure **with** ECO 200		t/h	5.56	6.58	7.75	9.36	10.97	13.16	15.35	18.57	22.95	26.61
Max. working pressure **with** ECO 200		t/h	5.45	6.45	7.60	9.18	10.76	12.92	15.07	18.24	22.54	26.17
Max. flue gas temperature with gas combustion												
5 bar working pressure **with** ECO 100		°C	171	173	173	175	172	169	174	169	162	166
Max. working pressure **with** ECO 100		°C	188	191	192	195	191	189	195	187	182	184
5 bar working pressure **with** ECO 200		°C	125	127	128	130	128	128	124	125	129	124
Max. working pressure **with** ECO 200		°C	130	133	135	138	135	136	130	131	138	131
Max. steam output with oil combustion												
5 bar working pressure **with** ECO 100		t/h	5.41	6.41	7.55	9.11	10.68	12.81	14.90	17.46	20.03	20.03
Max. working pressure **with** ECO 100		t/h	5.31	6.28	7.40	8.94	10.47	12.57	14.63	17.15	19.67	19.70
5 bar working pressure **with** ECO 200		t/h	5.56	6.58	7.75	9.36	10.97	13.16	15.31	17.94	20.58	20.58
Max. working pressure **with** ECO 200		t/h	5.45	6.45	7.60	9.18	10.76	12.92	15.02	17.62	20.21	20.24
CE designation			in accordance with Pressure Equipment Directive 97/23/EC									
Shipping dimensions*7 incl. packaging												
Total length with ECO 100, 200		m	5.77	6.00	6.19	6.38	6.72	7.16	7.44	8.00	8.74	9.38
Total width with ECO 100, 200		m	2.59	2.77	2.88	3.01	3.05	3.20	3.40	3.60	3.85	3.95
Total height with ECO 100		m	2.90	3.08	3.20	3.35	3.40	3.55	3.75	3.95	4.26	4.36
Total height with ECO 200		m	3.02	3.14	3.25	3.38	3.43	3.58	3.89	4.03	4.25	4.38
Total weight*3 Boiler with thermal insulation												
with ECO 100												
for permissible operating pressure	6 bar	t	9.9	11.7	13.8	15.4	17.4	20.2	24.1	30.5	36.8	42.5
	8 bar	t	10.7	12.7	14.9	16.8	19.1	21.6	26.2	30.8	38.9	43.6
	10 bar	t	11.5	14.0	16.0	18.2	20.4	23.6	27.4	33.4	43.6	48.5
	13 bar	t	12.7	15.4	18.2	19.6	21.5	25.3	30.1	35.3	44.8	51.1
	16 bar	t	14.1	15.4	18.3	21.0	23.2	27.8	33.4	39.1	50.2	56.0
	18 bar	t	13.5	16.8	19.1	22.4	25.0	29.8	33.6	41.6	53.7	60.2
	20 bar	t	14.2	17.5	20.9	24.0	25.3	29.8	35.5	43.4	–	–
	22 bar	t	14.9	19.1	22.0	24.1	26.5	31.5	37.2	–	–	–
	25 bar	t	16.1	19.4	22.8	25.5	28.1	33.5	–	–	–	–
with ECO 200												
for permissible operating pressure	6 bar	t	10.4	12.2	14.3	16.0	18.0	21.0	25.3	31.7	37.8	44.1
	8 bar	t	11.2	13.2	15.4	17.4	19.7	22.4	27.4	32.0	39.9	45.2
	10 bar	t	12.0	14.5	16.5	18.8	21.0	24.4	28.6	34.6	44.6	50.1
	13 bar	t	13.2	15.9	18.7	20.2	22.1	26.1	31.3	36.5	45.8	52.7
	16 bar	t	14.6	15.9	18.8	21.6	23.8	28.6	34.6	40.3	51.2	57.6
	18 bar	t	14.0	17.3	19.6	23.0	25.6	30.6	34.8	42.8	54.7	61.8
	20 bar	t	14.7	18.0	21.4	24.6	25.9	30.6	36.7	44.6	–	–
	22 bar	t	15.4	19.6	22.5	24.7	27.1	32.3	38.4	–	–	–
	25 bar	t	16.6	19.9	23.3	26.1	28.7	34.3	–	–	–	–
Boiler water content												

*6 *Internal diameter; for external diameter +10 mm*

*1 *The maximum combustion output varies subject to the required emission values and the fuel used. Check with the burner manufacturer.*

*7 *Flue gas hood and feedwater line are delivered separately.*

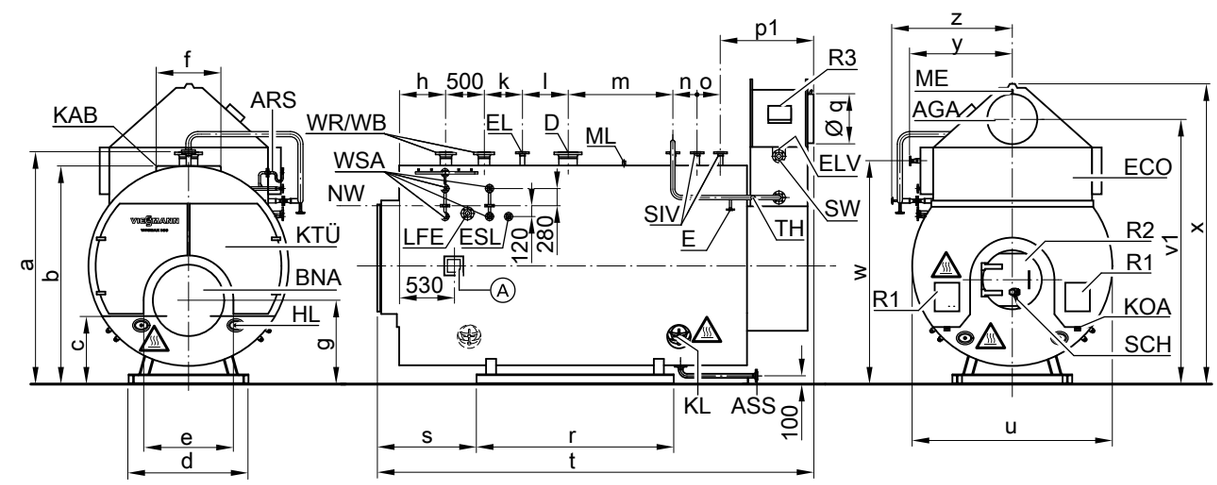
*3 *Because of production methods, the weight of the boiler can vary by up to 10 %.*

Specification (cont.)

Boiler size			1	2	3	4	5	6	7	8	9	A
total with ECO 100		m^3	11.3	13.5	15.1	17.7	18.4	22.0	25.9	31.0	39.2	45.0
total with ECO 200		m^3	11.3	13.5	15.1	17.7	18.5	22.1	26.0	31.2	39.3	45.2
average operating range*4 with ECO 100		m^3	9.89	11.53	12.89	15.15	15.75	18.59	21.89	23.29	32.53	36.70
average operating range*4 with ECO 200		m^3	9.94	11.59	12.96	15.22	15.84	18.68	22.03	26.44	32.72	36.87
Steam chamber volume*4		m^3	1.38	1.94	2.18	2.53	2.64	3.41	4.02	4.75	6.62	8.29
Steam level surface area*4		m^2	6.58	7.78	8.44	9.28	9.72	11.29	12.53	14.19	17.42	19.95
Boiler connections												
Steam connector												
for permissible operating pressure	6 bar	PN 16 DN	200	200	200	250	250	250	300	300	350	400
	8 bar	PN 16 DN	150	200	200	200	200	250	250	300	300	350
	10 bar	PN 16 DN	150	150	150	200	200	200	250	250	300	300
	13 bar	PN 40 DN	125	150	150	150	–	–	–	–	–	–
	13 bar	PN 25 DN	–	–	–	–	200	200	200	250	250	250
	16 bar	PN 40 DN	125	125	150	150	150	–	–	–	–	–
	16 bar	PN 25 DN	–	–	–	–	–	200	200	200	250	250
	18 bar	PN 40 DN	125	125	125	150	150	–	–	–	–	–
	18 bar	PN 25 DN	–	–	–	–	–	200	200	200	200	250
	20 bar	PN 40 DN	125	125	125	150	150	200	200	200	–	–
	22 bar	PN 40 DN	100	125	125	125	150	150	150	–	–	–
	25 bar	PN 40 DN	100	100	125	125	125	150	–	–	–	–
Safety valve connector												
for permissible operating pressure	6 bar	PN 40 DN	65	65	65	80	80	100	100	100	125	150
	8 bar	PN 40 DN	50	65	65	65	80	80	100	100	100	125
	10 bar	PN 40 DN	50	50	65	65	65	80	80	80	100	100
	13 bar	PN 40 DN	40	50	50	65	65	65	65	80	80	100
	16 bar	PN 40 DN	40	40	50	50	50	65	65	65	80	80
	18 bar	PN 40 DN	40	40	40	50	50	65	65	65	80	80
	20 bar	PN 40 DN	32	40	40	50	50	50	65	65	–	–
	22 bar	PN 40 DN	32	40	40	40	50	50	65	–	–	–
	25 bar	PN 40 DN	32	32	40	40	50	50	–	–	–	–
Connector for feedwater pumps		PN 40 DN	40	40	40	50	50	50	65	65	65	80
Flue gas mass flow rate												
- for natural gas		t/h	1.5225 x combustion output in MW									
- for fuel oil EL		t/h	1.5 x combustion output in MW									
Flue gas volume												
- with ECO 100		m^3	6.4	8.0	9.3	10.7	12.4	15.0	18.4	23.4	30.6	35.1
- with ECO 200		m^3	6.5	8.2	9.5	10.9	12.5	15.0	18.6	23.8	31.0	35.5

*4 *Average water level between pump ON and pump OFF.*

1.4 Dimensions with integral economiser



⚠ Caution - hot surface

Ⓐ	Type plate
AGA	Flue outlet
ARS	Fitting assembly
ASS	Connector for blow-down valve DN 40 PN 40
BNA	Burner connection
D	Steam connector
E	Drain connector DN 15 PN 40
ECO	Economiser
EL	Vent connector DN 15 PN 40
ELV	Fem. connection R ½" for air vent valve
ESL	Connector for T.D.S. line with dummy flange, DN 20 PN 40
HL	Hand hole
KAB	Boiler cover
KL	Head hole
KOA	Condensate drain R 2"
KTÜ	Boiler door
LFE	Connector for conductivity electrode with dummy flange, DN 50 PN 40
ME	Test port R ½"
ML	Manhole
NW	Lowest water level
R1	Cleaning port, flue gas collector
R2	Cleaning port, combustion chamber
R3	Cleaning port, ECO
SIV	Connector for safety valve with 1x dummy flange
SCH	Inspection port R 2"
SW	Feedwater connector
TH	Thermometer
WR/WB	Connector for water level controller/limiter
WSA	Connector for water level indicator with 1x dummy flange

Dimensions[*8]

Boiler size		1	2	3	4	5	6	7	8	9	A
a	mm	2880	3055	3180	3330	3380	3530	3730	3930	4240	4340
b	mm	2725	2900	3035	3175	3225	3375	3575	3775	4085	4185
c	mm	755	813	825	840	830	835	850	865	945	965
d	mm	1800	1950	2000	2100	2200	2300	2400	2500	2870	2920
e	mm	905	1030	1105	1155	1205	1275	1380	1530	1680	1680
f	mm	800	800	800	900	900	900	1000	1000	1100	1100
g	mm	1003	1070	1108	1160	1178	1240	1265	1342	1455	1455
h	mm	530	530	530	530	530	530	530	530	530	530
k	mm	575	575	650	650	675	825	875	975	1300	1400
l	mm	475	525	550	565	725	925	875	1075	800	1100
m	mm	1530	1660	1685	1860	1825	1860	2025	2040	2500	2600
n	mm	300	325	325	325	325	350	350	400	450	500
o	mm	300	325	325	325	325	350	350	400	450	500
p1 (ECO 100/200)	mm	1120	1120	1170	1170	1320	1330	1380	1530	1630	1630
q[*9]	mm	500	550	600	650	700	750	850	900	1000	1100
r	mm	2550	2790	2875	2965	3165	3380	3485	3700	4290	4590
s	mm	1230	1225	1270	1320	1335	1445	1530	1630	1720	1910
t (ECO 100/200)	mm	5565	5795	5970	6160	6500	6945	7190	7755	8495	9435
u (ECO 100/200)	mm	2530	2712	2822	2955	3000	3150	3350	3550	3800	3900
v1 (ECO 100)	mm	3038	3240	3390	3565	3640	3815	4065	4290	4650	4800
v1 (ECO 200)	mm	3293	3440	3570	3733	3795	3978	4337	4500	4725	4955
w (ECO 100)	mm	2565	2685	2790	2920	2965	3115	3305	3487	3730	3775
w (ECO 200)	mm	2890	3010	3115	3245	3290	3440	3757	3877	4052	4227
x (ECO 100)	mm	3458	3683	3858	4058	4158	4358	4658	5118	5318	5518

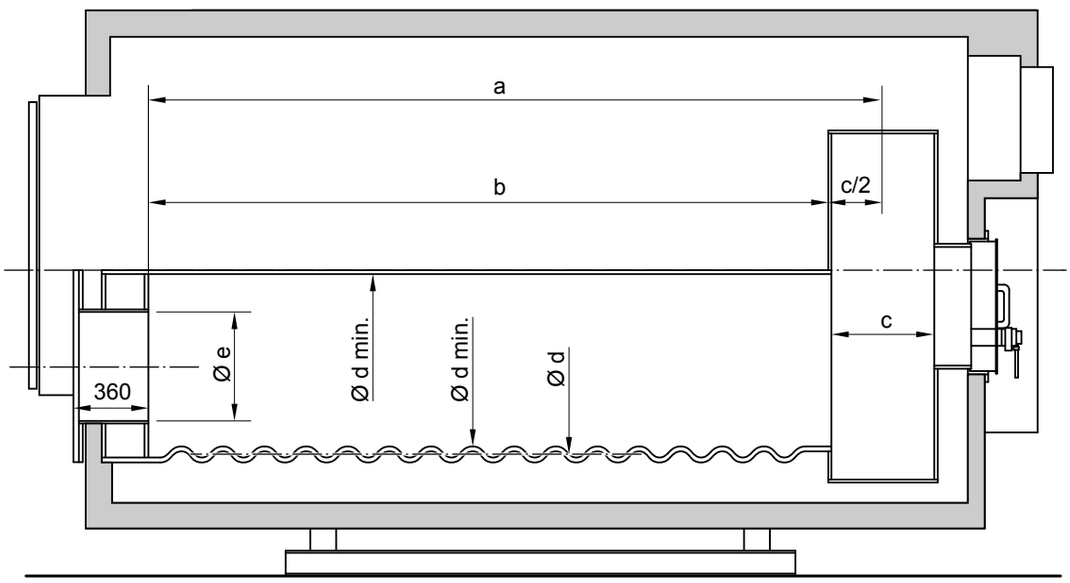
*[*8] Nominal dimensions, subject to modification.*

*[*9] Internal diameter; for external diameter +10 mm*

Specification (cont.)

Boiler size		1	2	3	4	5	6	7	8	9	A
x (ECO 200)	mm	3711	3883	4038	4226	4313	4521	4930	5118	5393	5673
y (ECO 100/200)	mm	1285	1380	1428	1480	1495	1530	1612	1682	1797	1867
z (ECO 100/200)	mm	1430	1527	1575	1633	1648	1683	1837	1907	2022	2039

1.5 Specification, for burner selection



Boiler size			1	2	3	4	5	6	7	8	9	A
			Max. permissible combustion output									
Natural gas		MW	3.8	4.5	5.3	6.4	7.5	9.0	10.5	12.7	15.7	18.2
Max. flue gas pressure drop **without** turbulators		hPa	8.1	8.8	8.8	9.7	10.9	12.4	11.3	13.7	14.7	13.6
Max. flue gas pressure drop **with** turbulators		hPa	17.2	16.2	15.0	16.6	17.8	16.7	16.6	18.3	–	–
Max. flue gas pressure drop **with** ECO 100		hPa	9.1	9.8	10.3	11.2	12.4	14.4	13.3	15.7	16.7	15.8
Max. flue gas pressure drop **with** ECO 200		hPa	9.6	10.6	10.8	12.0	13.1	15.2	14.8	16.9	18.2	18.1
Fuel oil EL		MW	3.8	4.5	5.3	6.4	7.5	9.0	10.5	12.3	14.0	14.0
Output portion		%	100	100	100	100	100	100	100	96.6	89.2	76.9
Max. flue gas pressure drop **without** turbulators		hPa	7.4	8.0	8.0	8.8	9.9	11.3	10.2	11.5	10.2	6.8
Max. flue gas pressure drop **with** turbulators		hPa	15.9	14.9	13.8	15.2	16.3	15.2	15.1	15.5	–	–
Max. flue gas pressure drop **with** ECO 100		hPa	8.4	9.0	9.5	10.3	11.3	13.2	12.1	13.3	11.6	8.0
Max. flue gas pressure drop **with** ECO 200		hPa	8.8	9.7	9.9	10.9	12.0	13.9	13.5	14.3	12.8	9.2
			Combustion chamber dimensions									
Length												
– Approved for flames	Dimension a	mm	3793	4023	4198	4388	4538	4973	5188	5603	6313	7050
– Flame tube	Dimension b	mm	3543	3773	3948	4138	4288	4723	4938	5353	6063	6800
– Reversing chamber	Dimension c	mm	500									
Diameter												
– Corrugated pipe, internal	Dimension $d_{min.}$	∅mm	825	925	1000	1050	1100	1155	1275	1405	1555	1555
– Corrugated pipe, average	Dimension d	∅mm	875	1000	1075	1125	1175	1250	1350	1500	1650	1650
– Smooth pipe, internal	Dimension $d_{min.}$	∅mm	835	960	1035	1085	1135	1210	1310	1460	1610	1610
			Burner connection dimensions									
Minimum burner head length		mm	360									
Max. burner head diameter	Dimension e	∅mm	522	597	718	718	718	768	768	918	1018	1018
			Combustion chamber volume									
Flame tube (corrugated pipe)		m^3	2.13	2.96	3.58	4.11	4.65	5.80	7.07	9.46	12.96	14.25
Flame tube and reversing chamber depth		m^3	2.30	3.20	3.90	4.50	5.00	6.20	7.60	10.10	13.70	15.20

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Note
*Details regarding **diameter** refer to the maximum depth of corrugations and the smallest internal diameter. The type of flame tube depends on the pressure stages employed. Product-dependent tolerances are not taken into consideration.*

1.6 Flame tube temperature limiter (FTÜ)

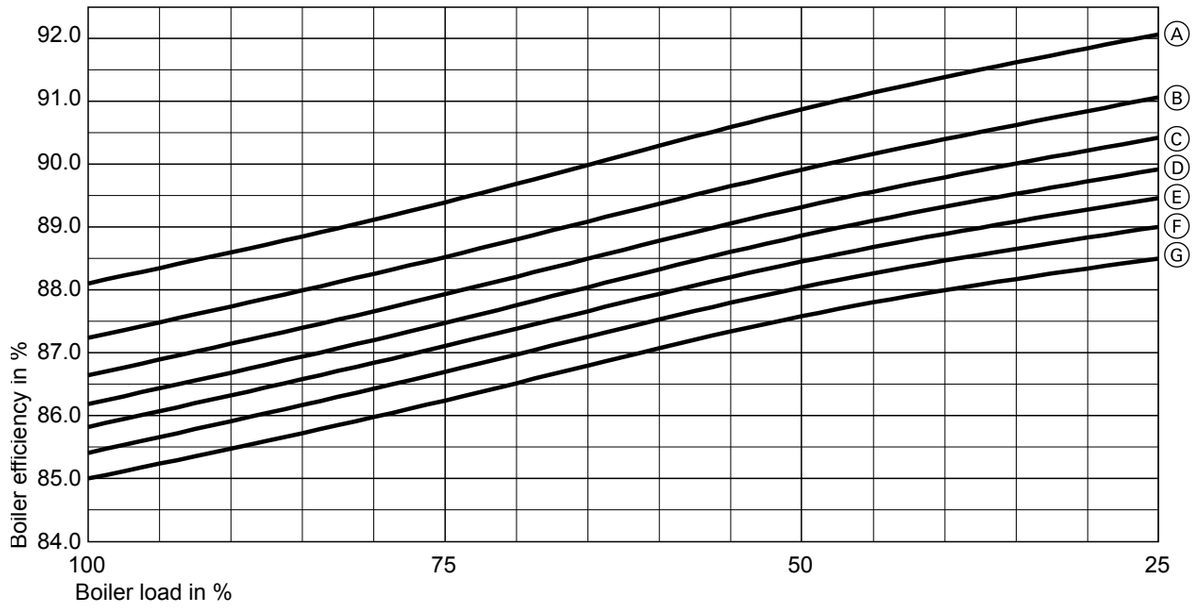
EN 12953 part 3 / point 5.4 refers to national regulations, i.e. that a temperature measuring system (= flame tube temperature limiter) may be required, subject to the internal diameter of the flame tube and the combustion output.
For Germany, the use of flame tube temperature limiters is regulated by the agreement of the trade associations 2003/1 as follows.

FTÜ required:
- for flame tube internal diameter
  > 1400 mm
  and/or
- for combustion output
  > 12000 kW (oil combustion)
  > 15600 kW (gas combustion)

Boiler selection diagrams

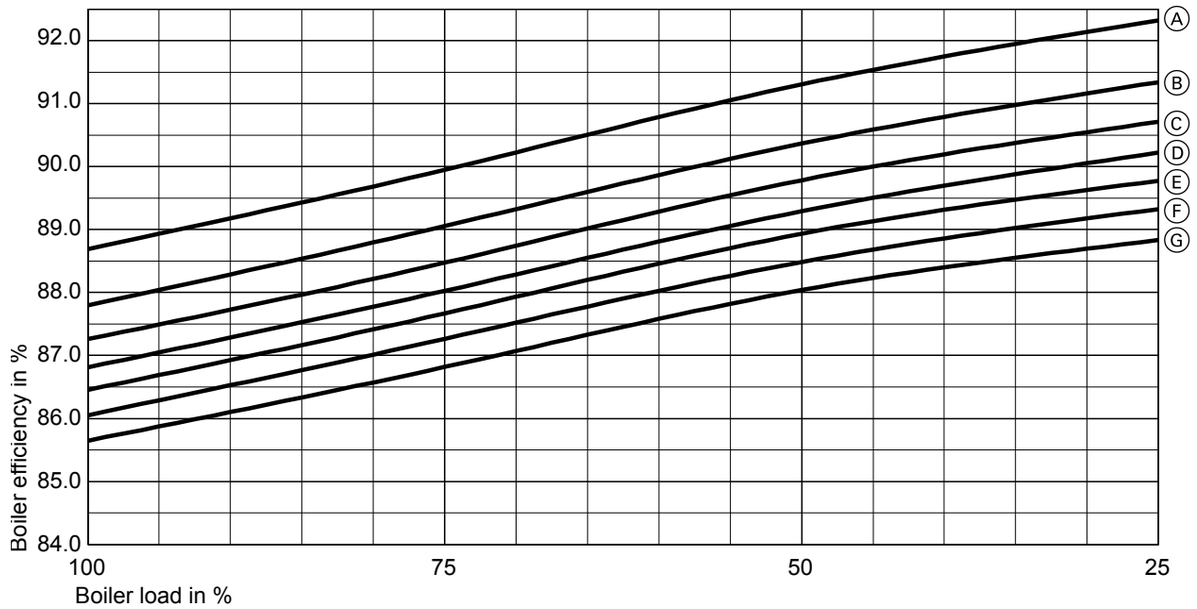
2.1 Boiler size 1, max. combustion output 3.8 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max. 3.8 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 3.8 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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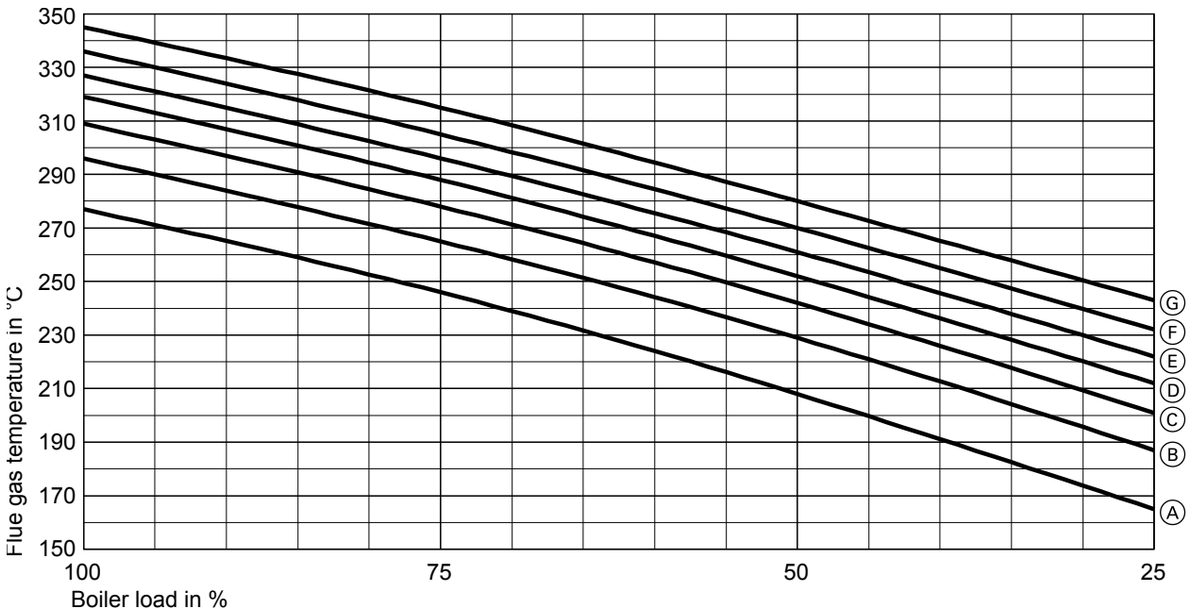
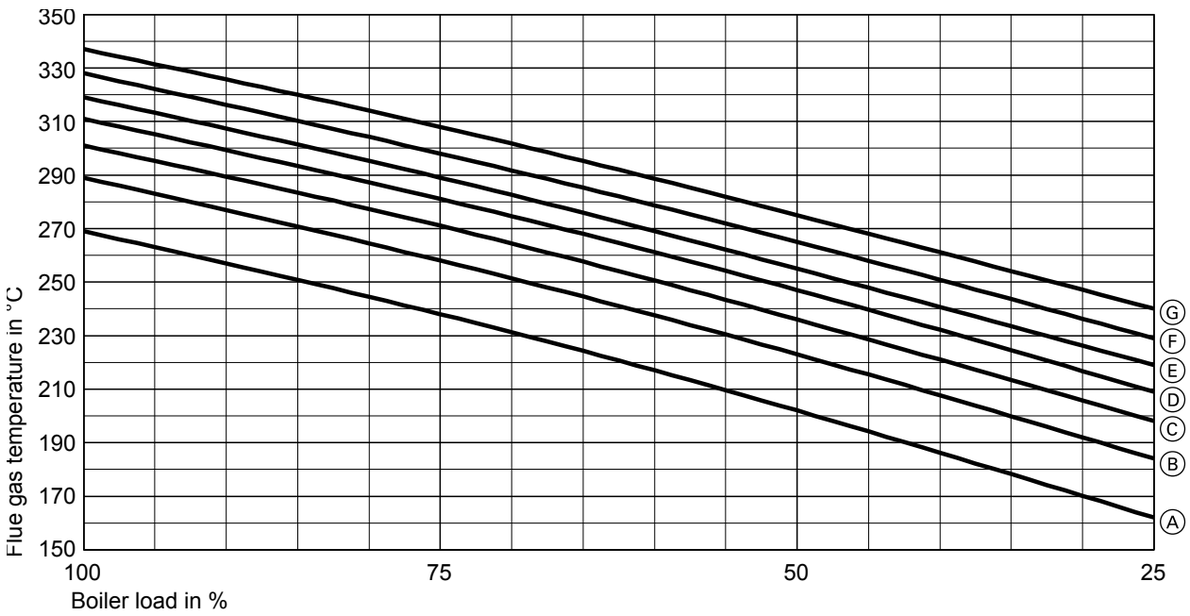
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 3.8 MW, standard (without turbulators)

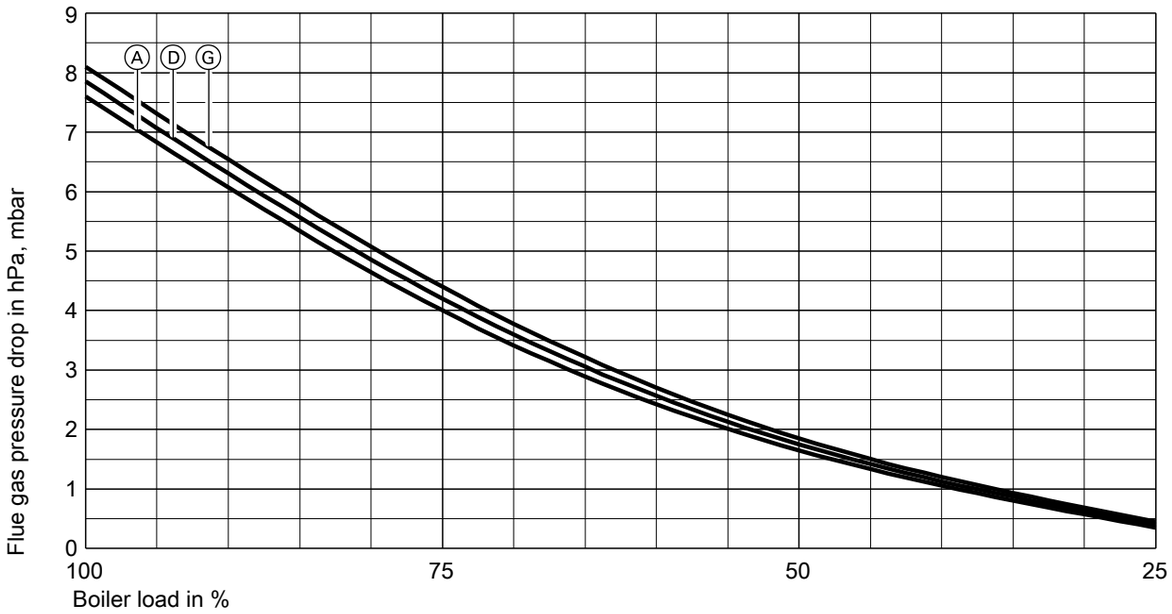
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 3.8 MW, standard (without turbulators)

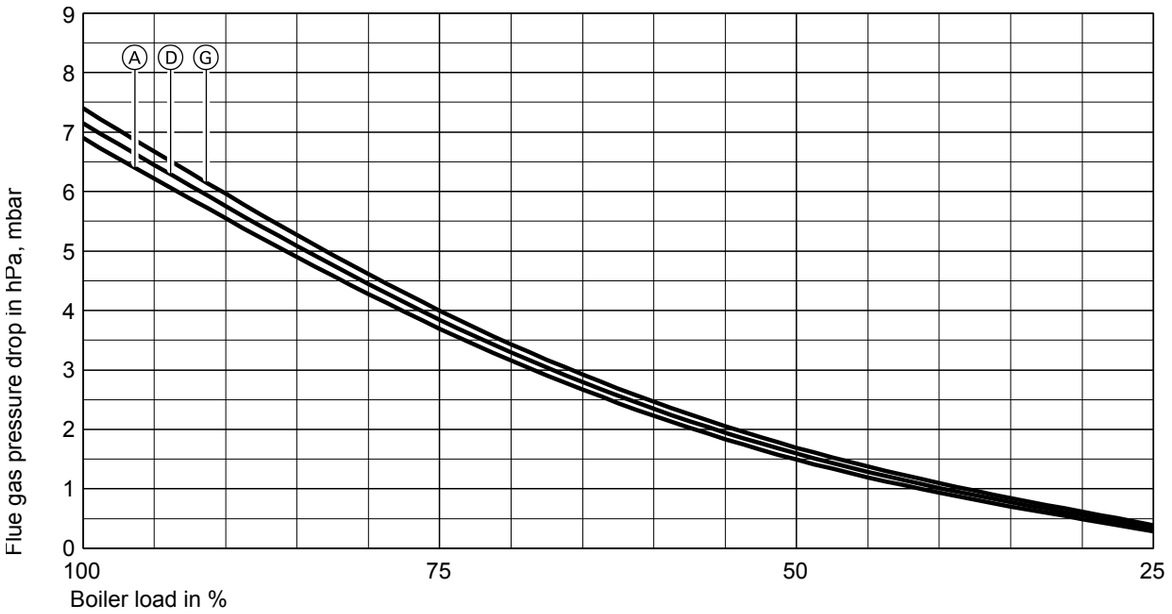
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 3.8 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

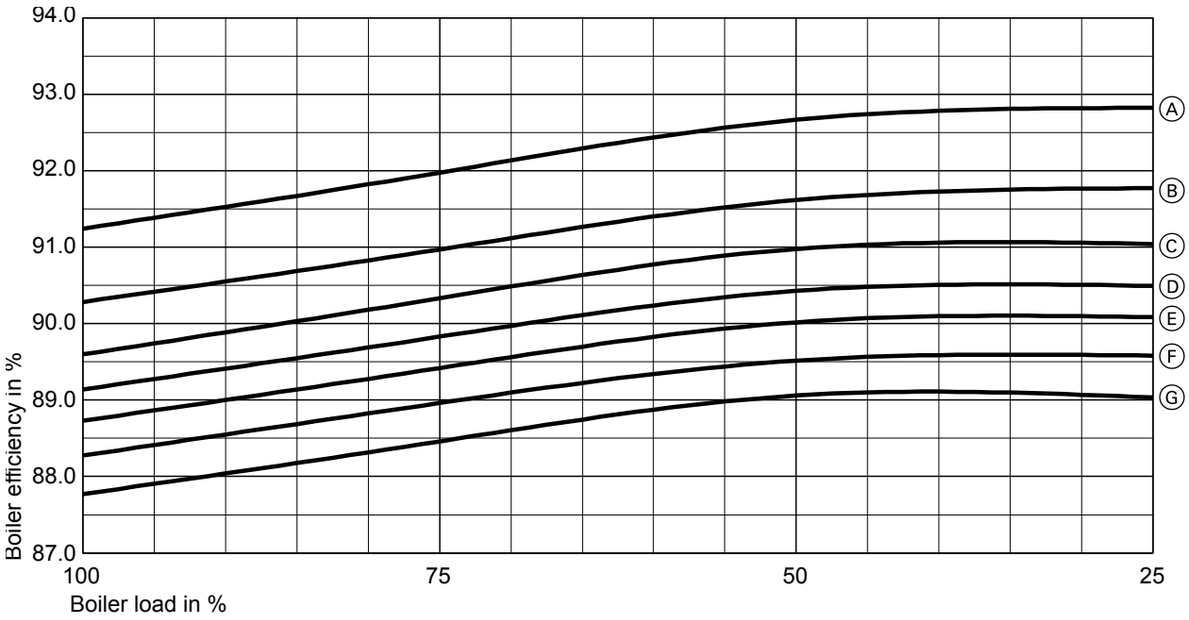


Flue gas pressure drop, fuel oil, max. 3.8 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

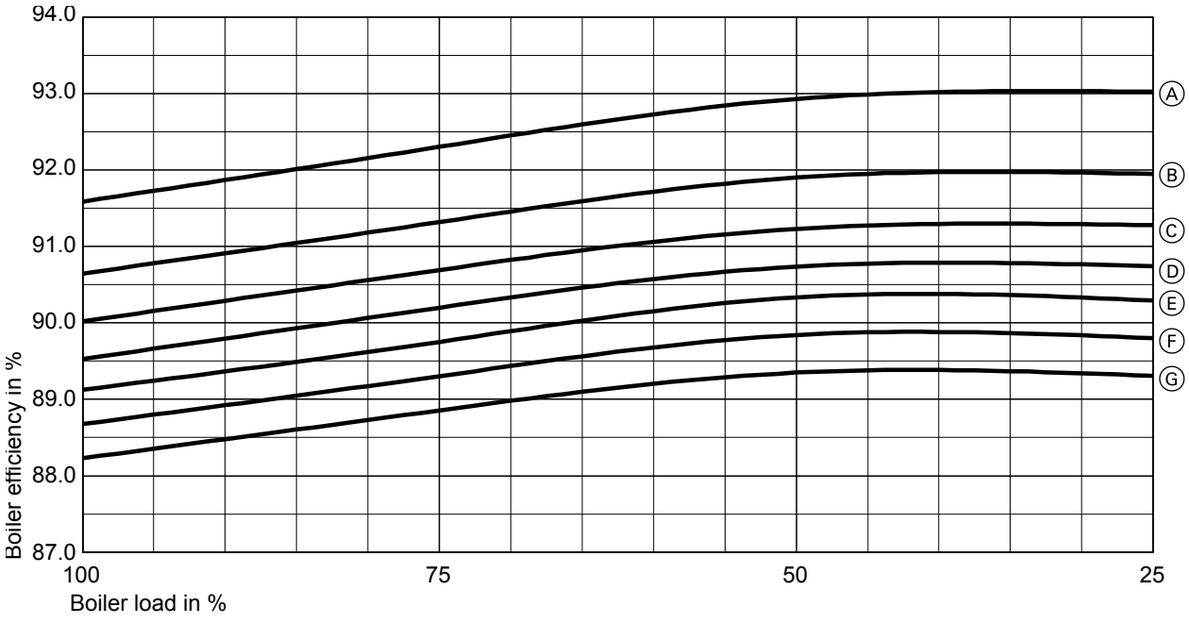
Boiler selection diagrams (cont.)

Version with turbulators (2000 mm)



Boiler efficiency, natural gas, max. 3.8 MW, with turbulators (2000 mm), taking into account boiler radiation losses

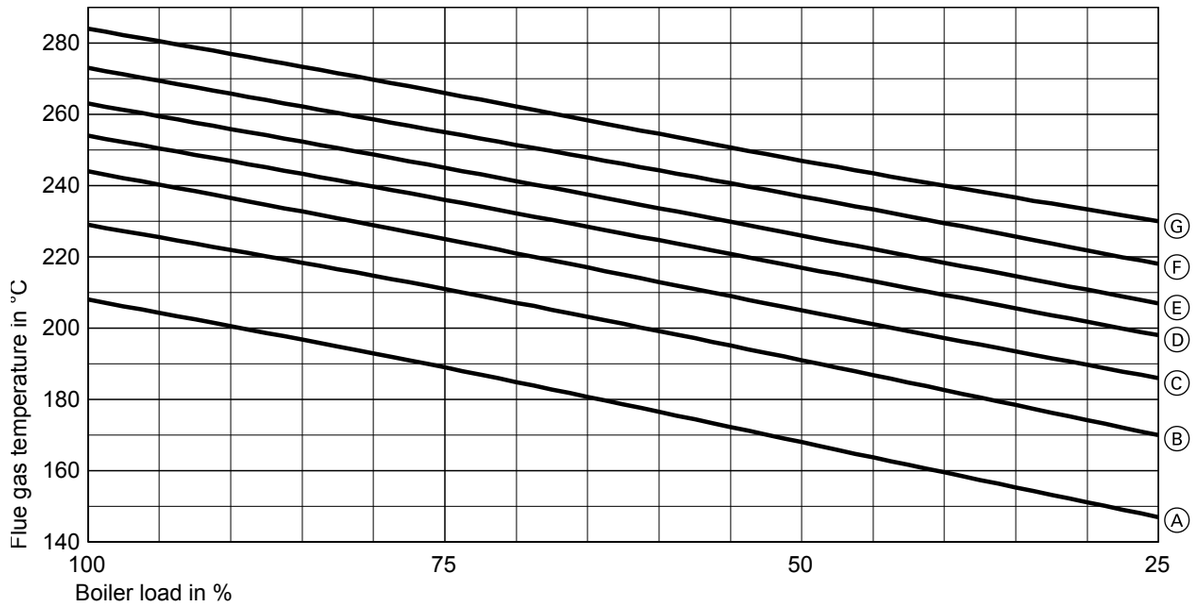
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 3.8 MW, with turbulators (2000 mm), taking into account boiler radiation losses

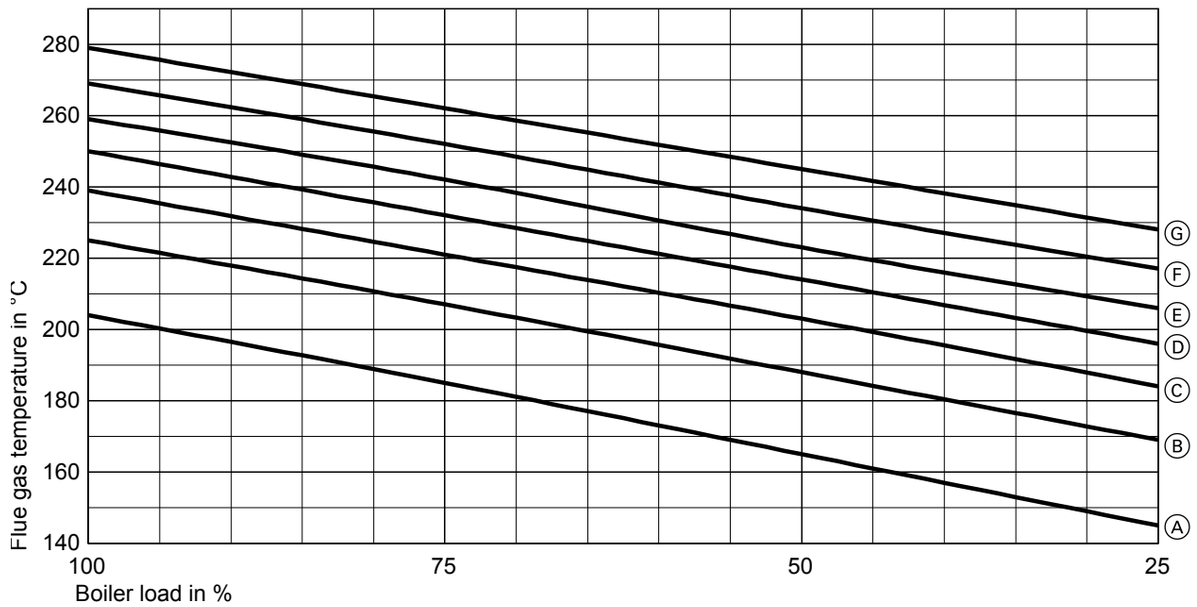
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 3.8 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 3.8 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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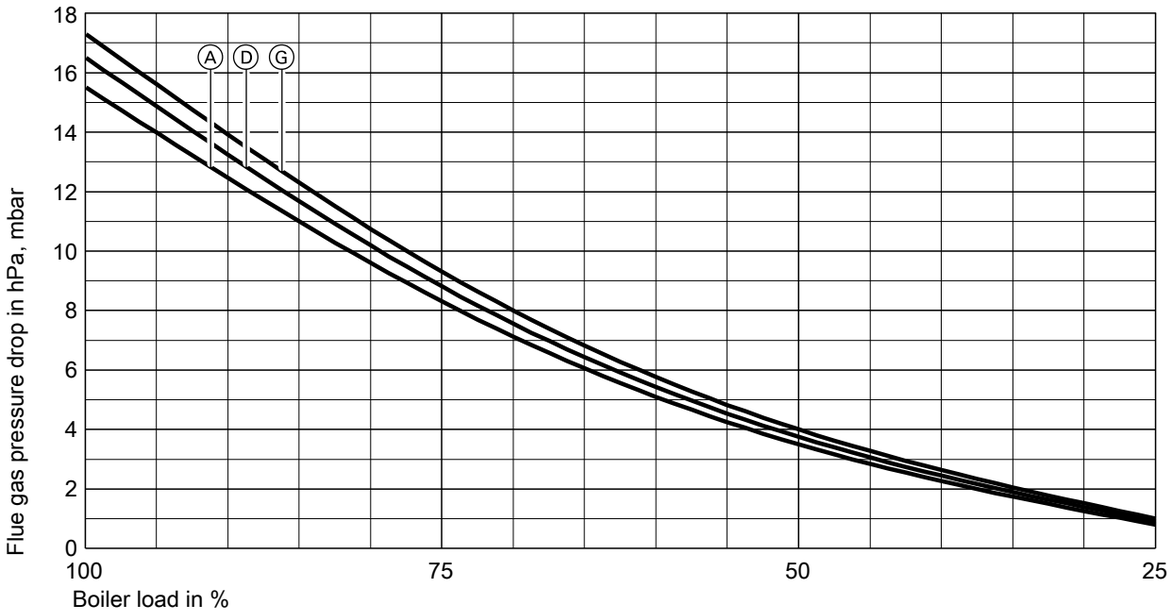
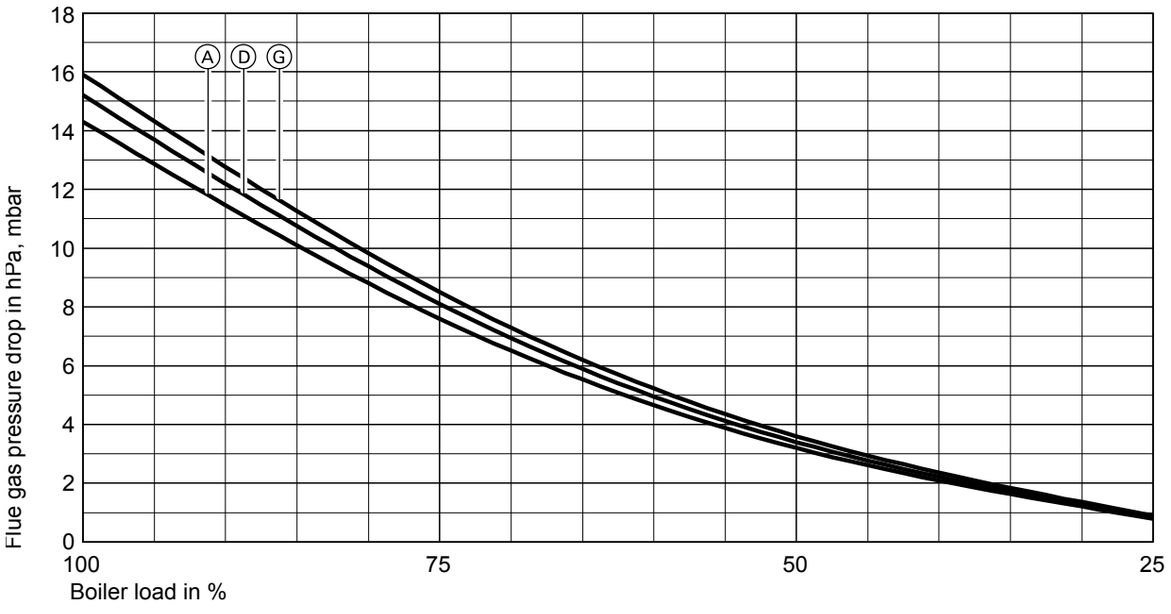
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 3.8 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

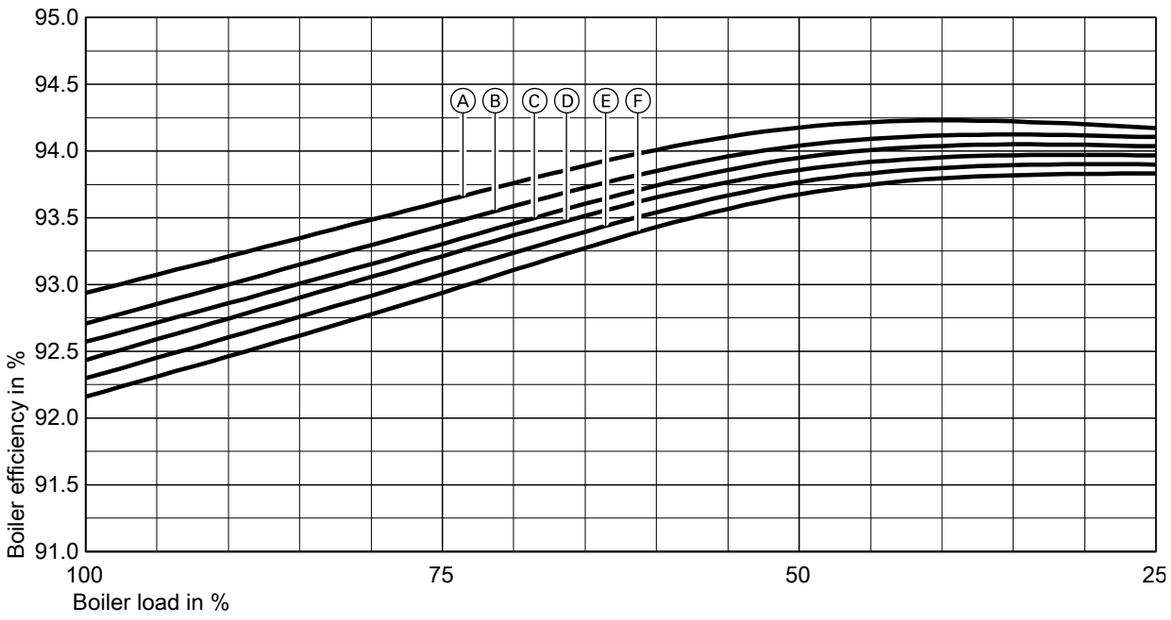


Flue gas pressure drop, fuel oil, max. 3.8 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

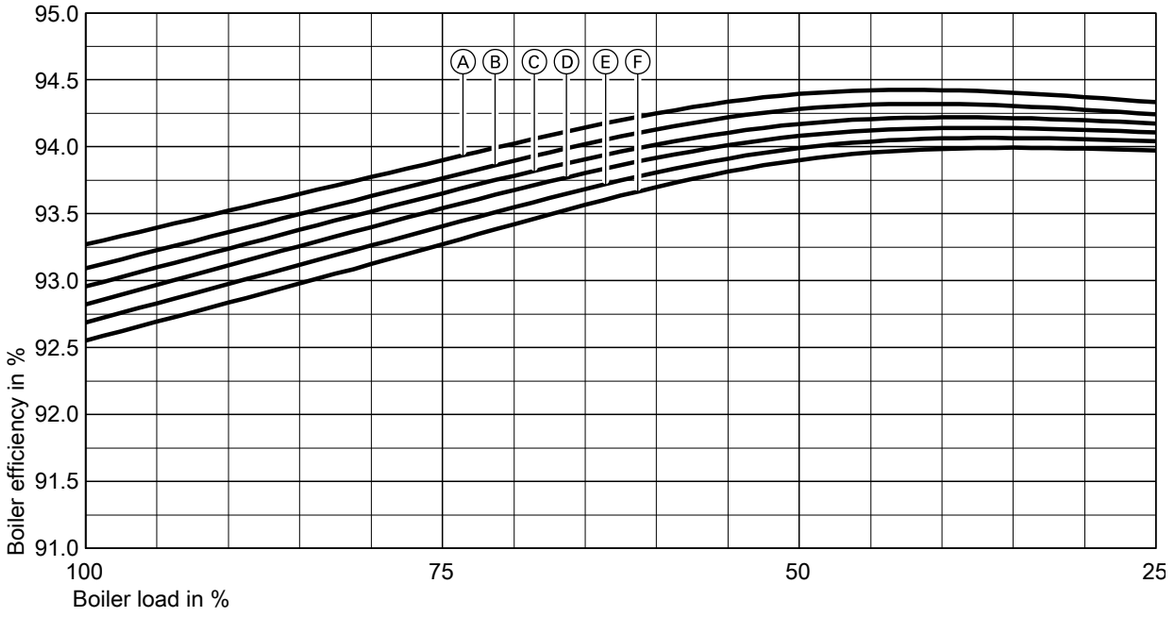
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 3.8 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 3.8 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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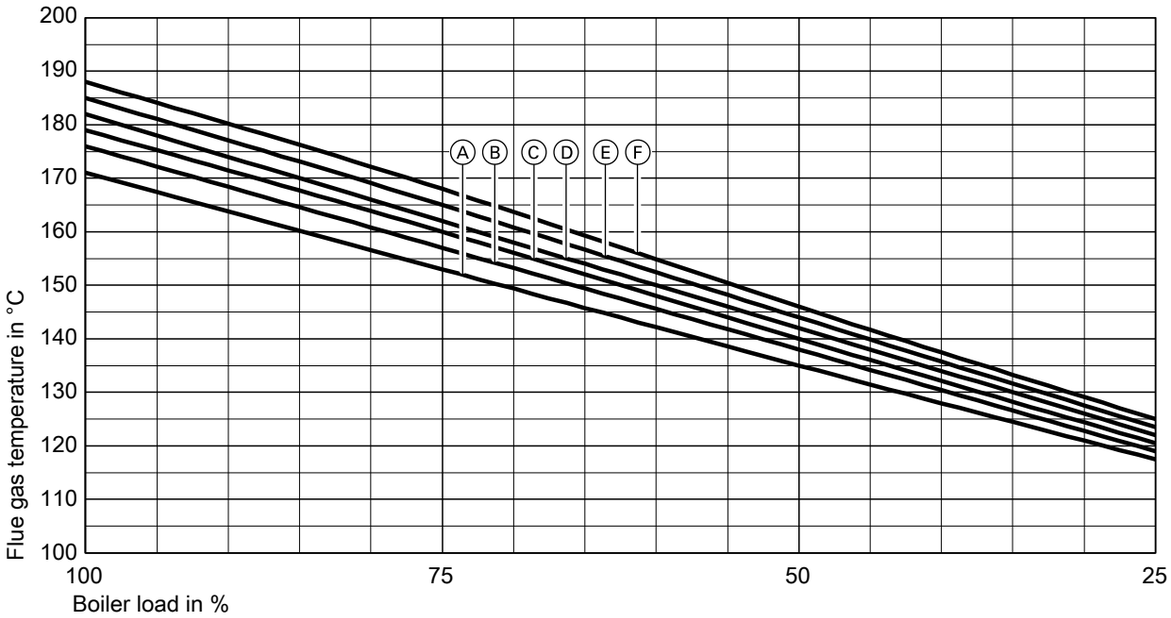
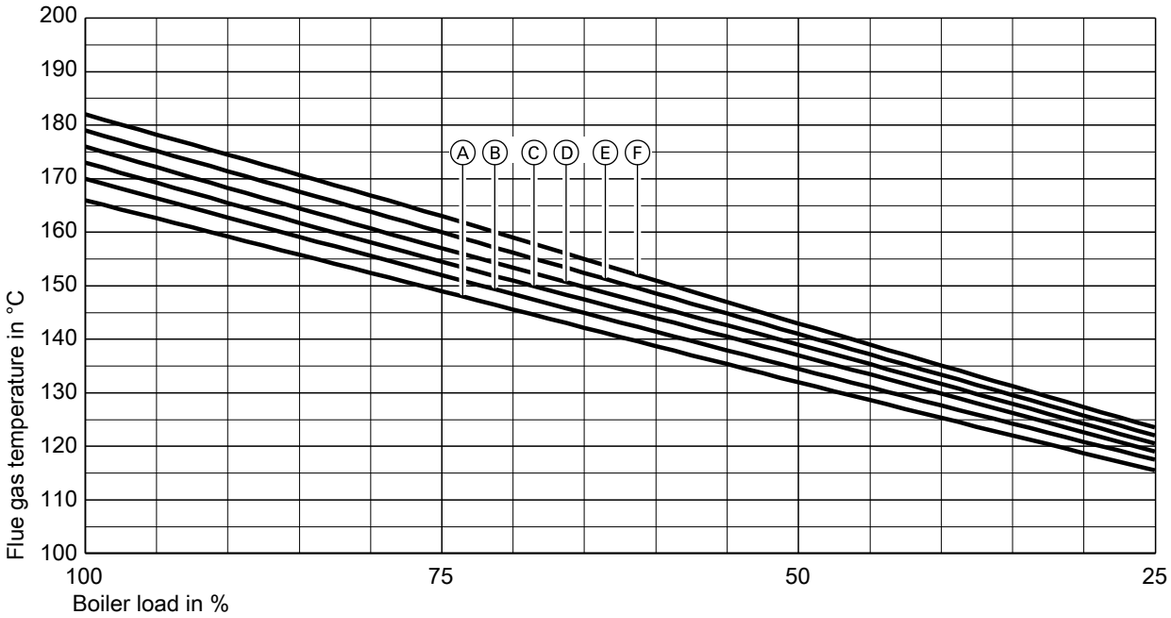
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 3.8 MW, without turbulators, with ECO 100

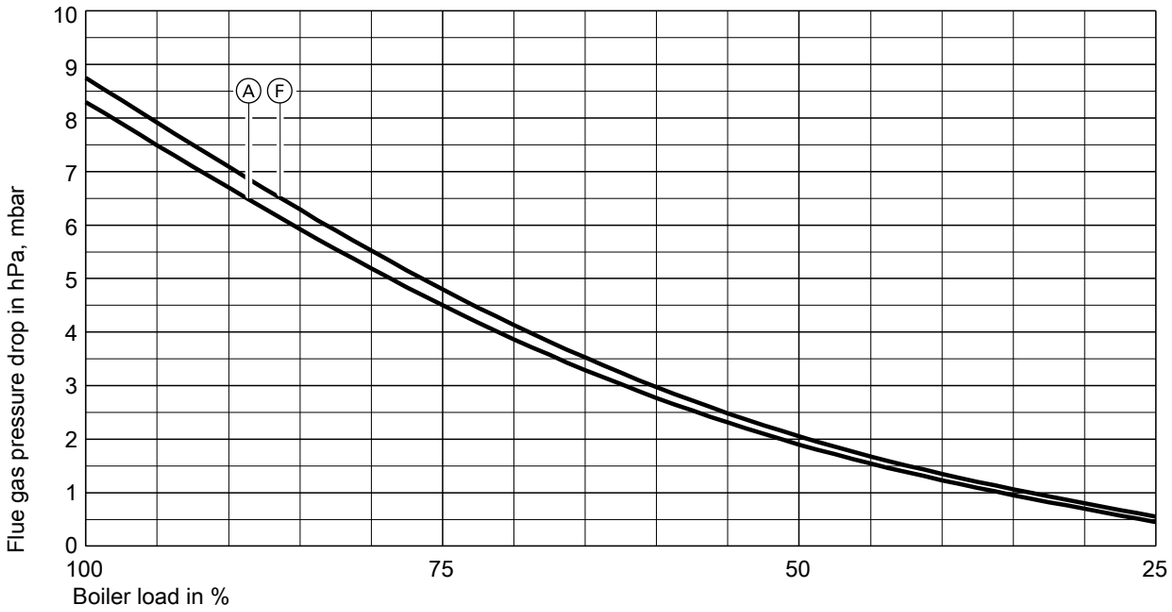
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 3.8 MW, without turbulators, with ECO 100

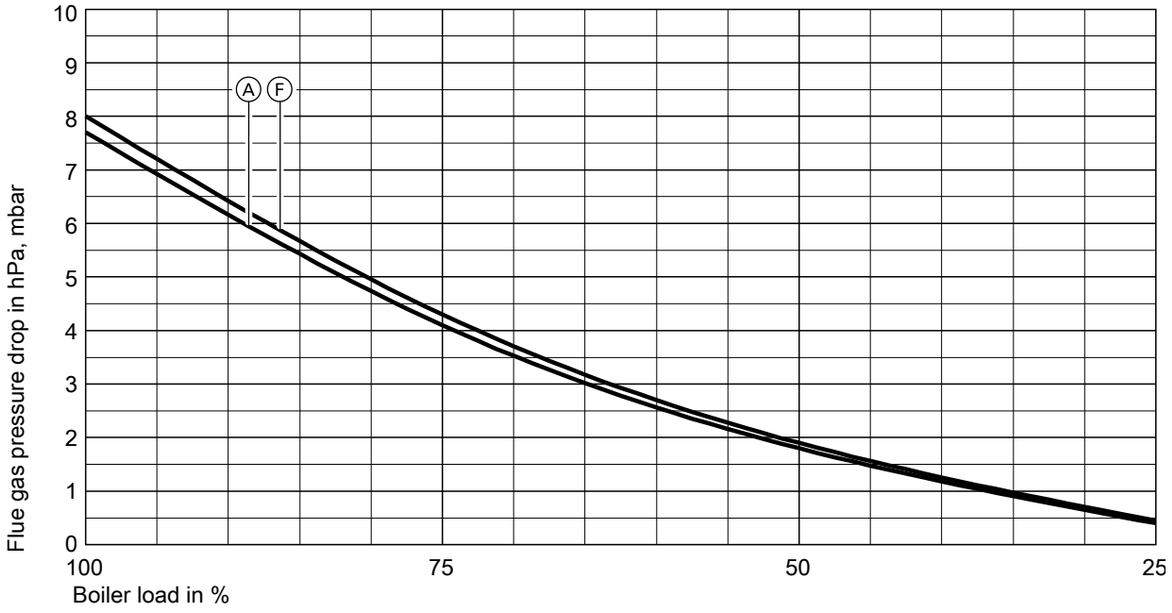
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 3.8 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max. 3.8 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

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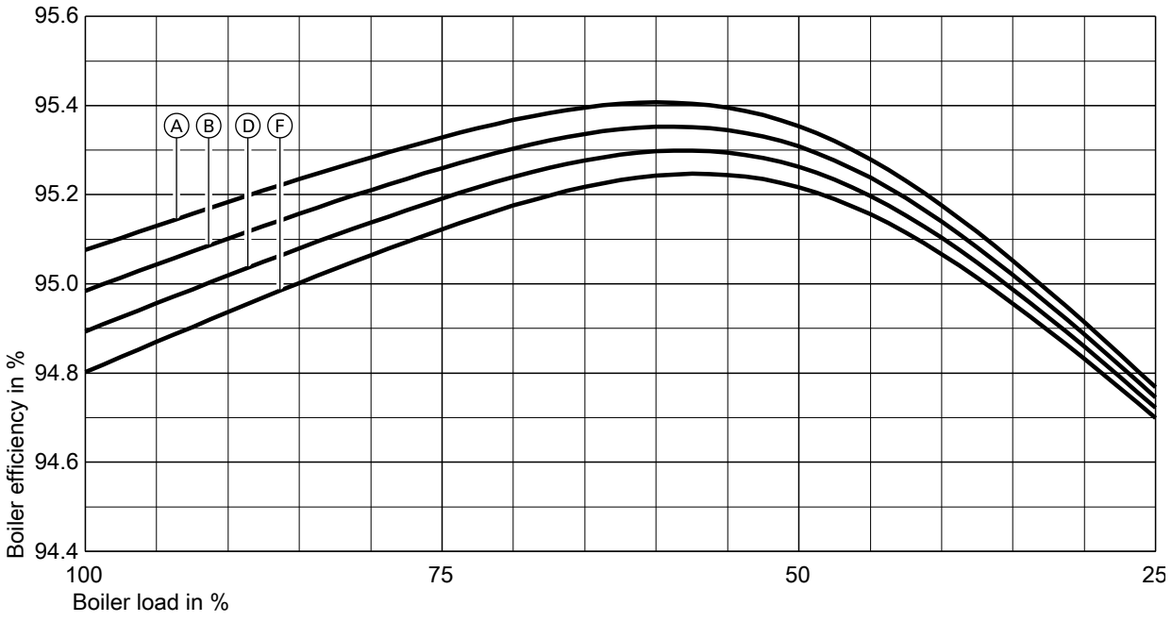
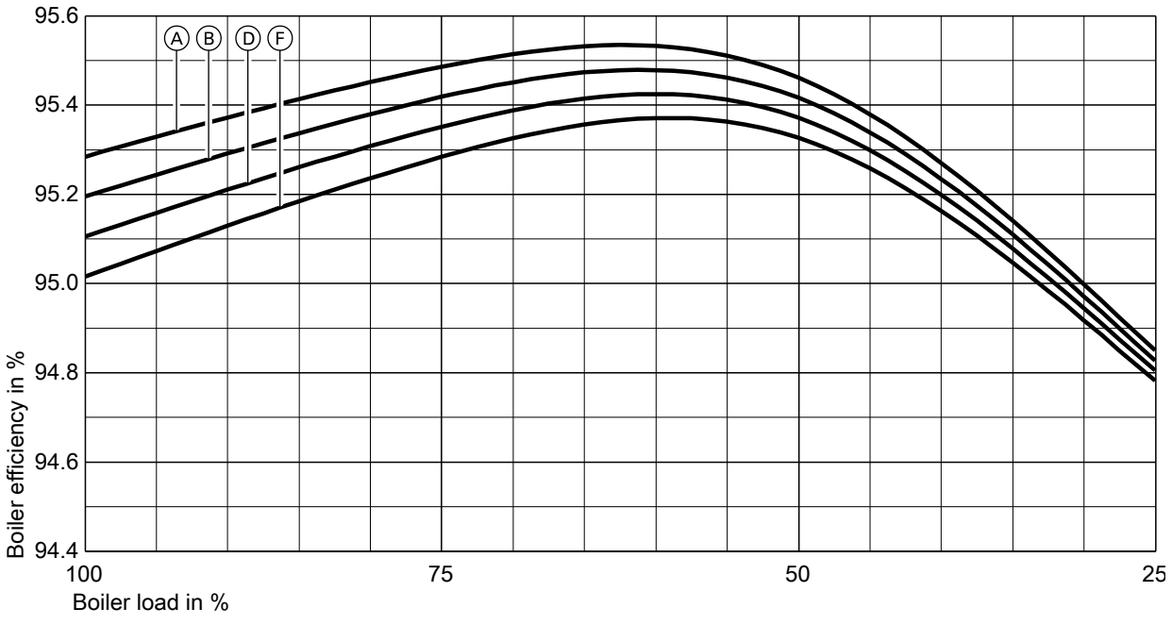
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 3.8 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

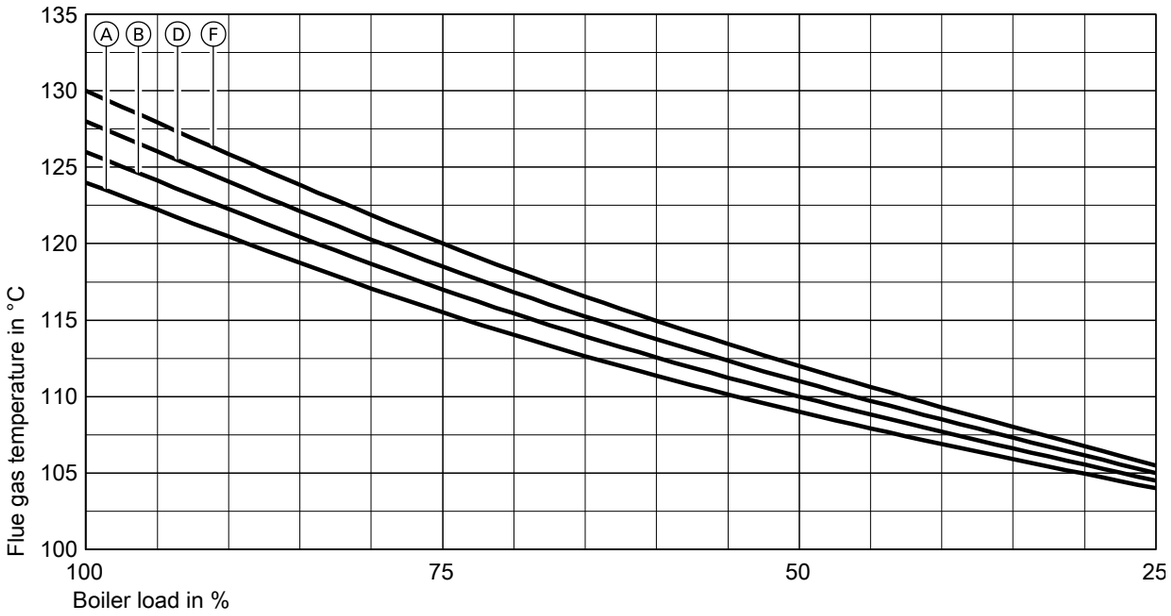
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 3.8 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

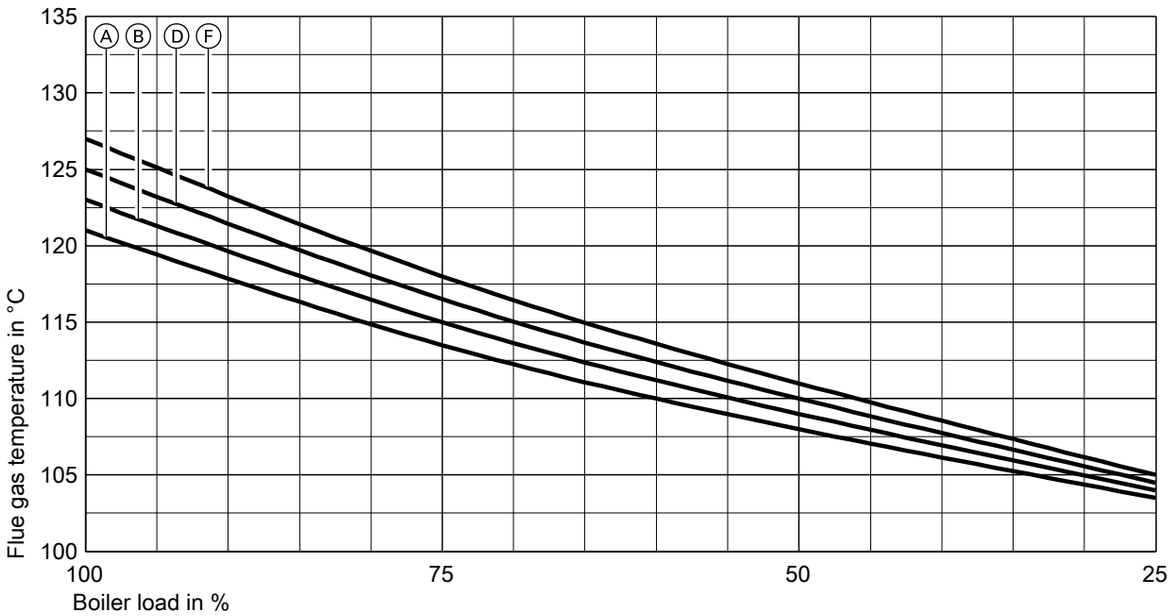
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 3.8 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 3.8 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

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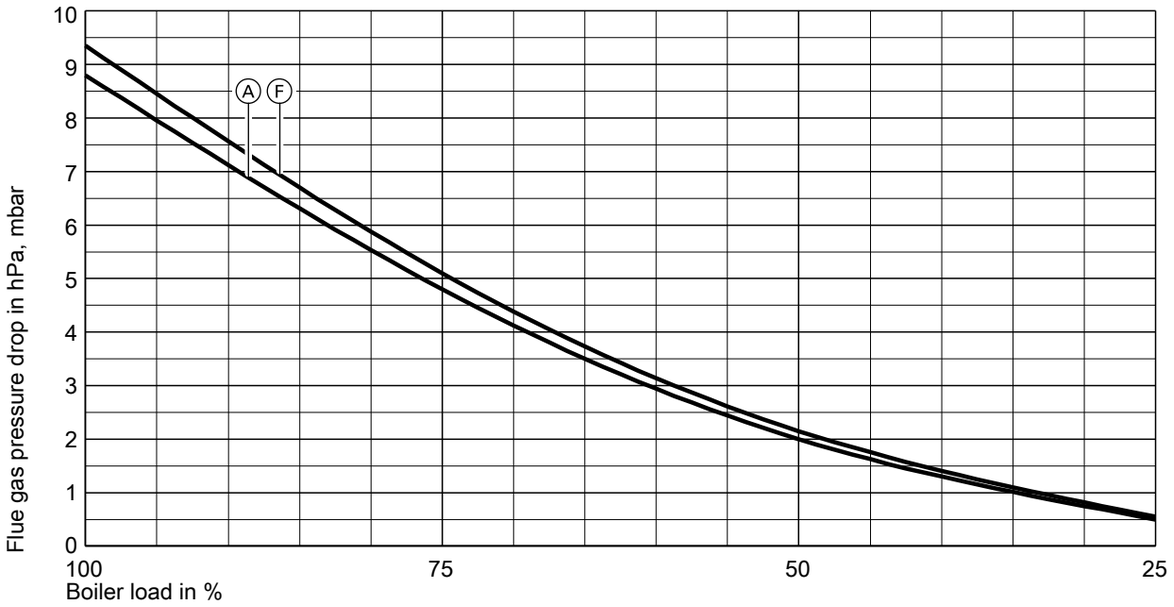
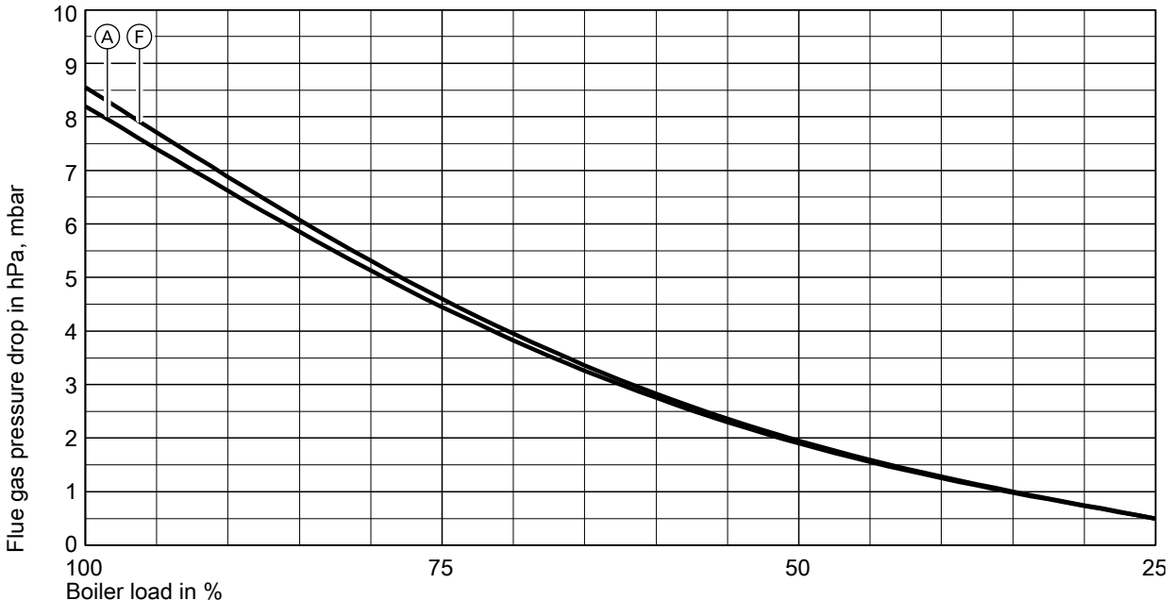
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 3.8 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

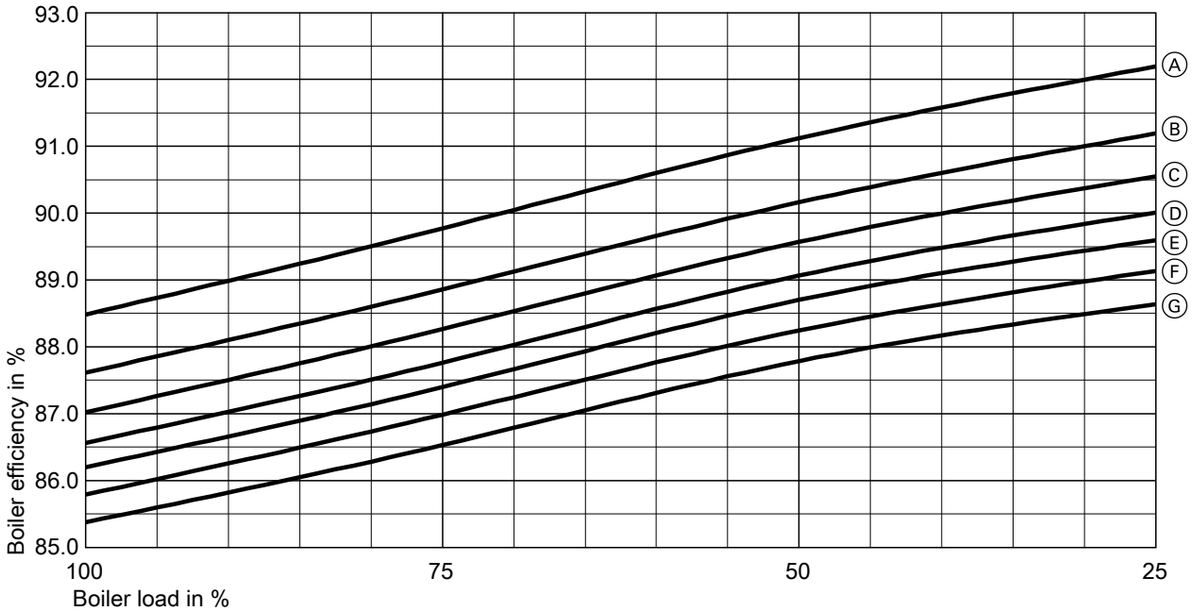


Flue gas pressure drop, fuel oil, max. 3.8 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

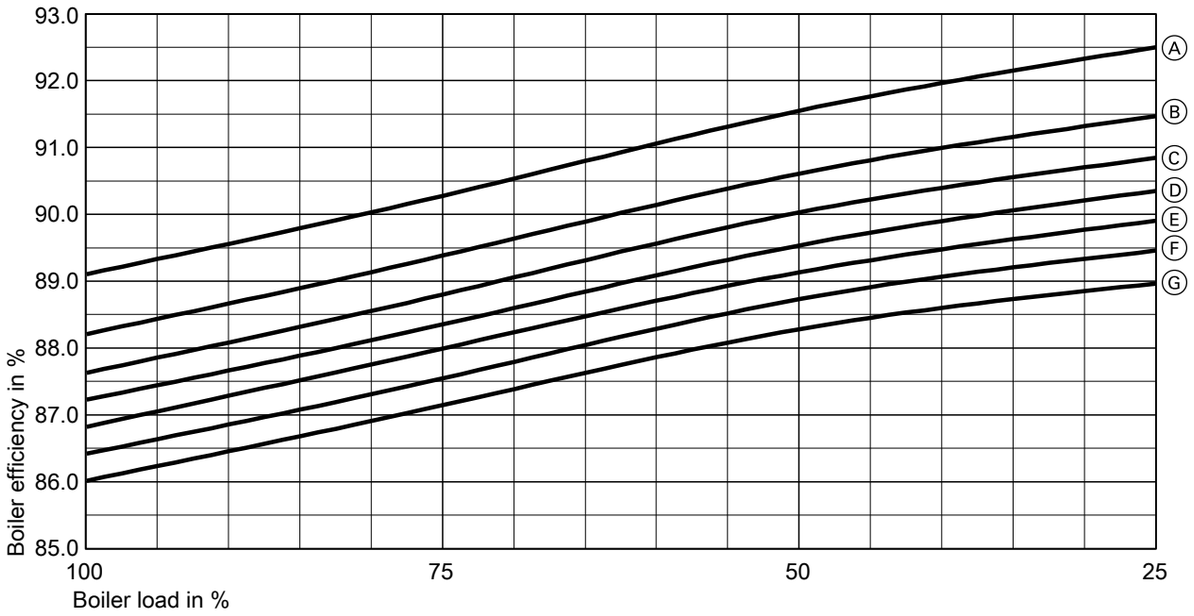
2.2 Boiler size 2, max. combustion output 4.5 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 4.5 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 4.5 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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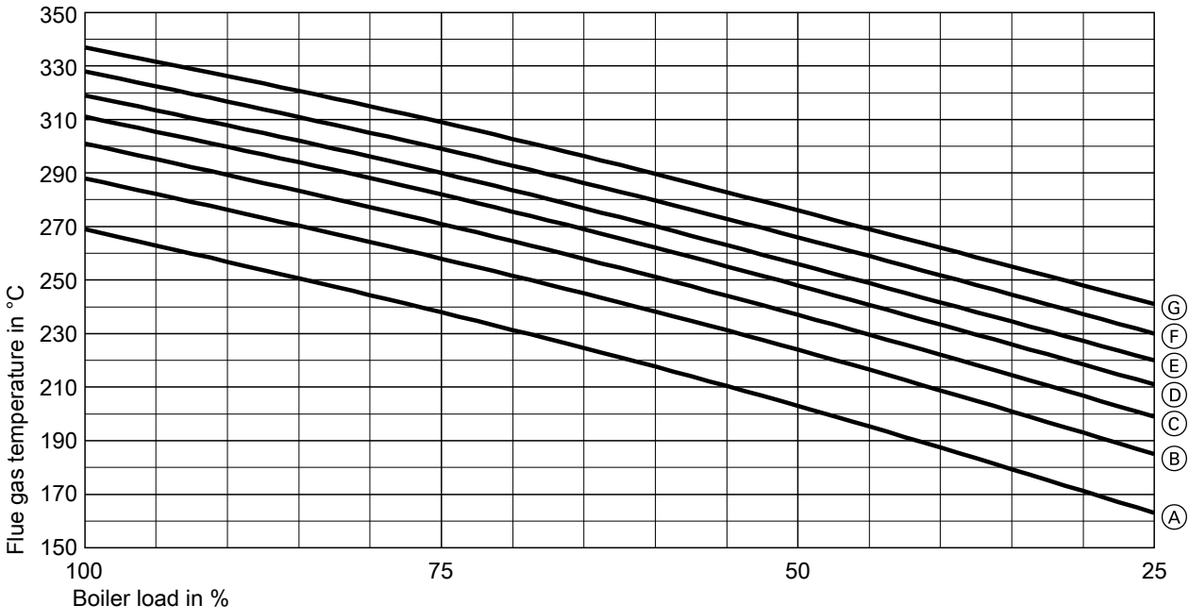
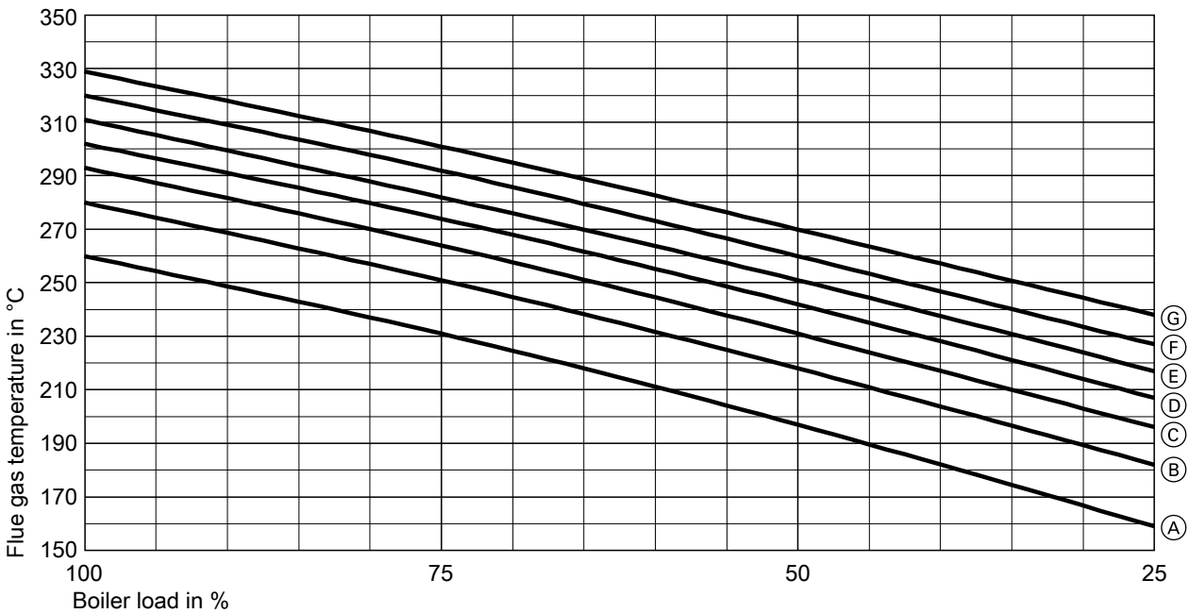
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 4.5 MW, standard (without turbulators)

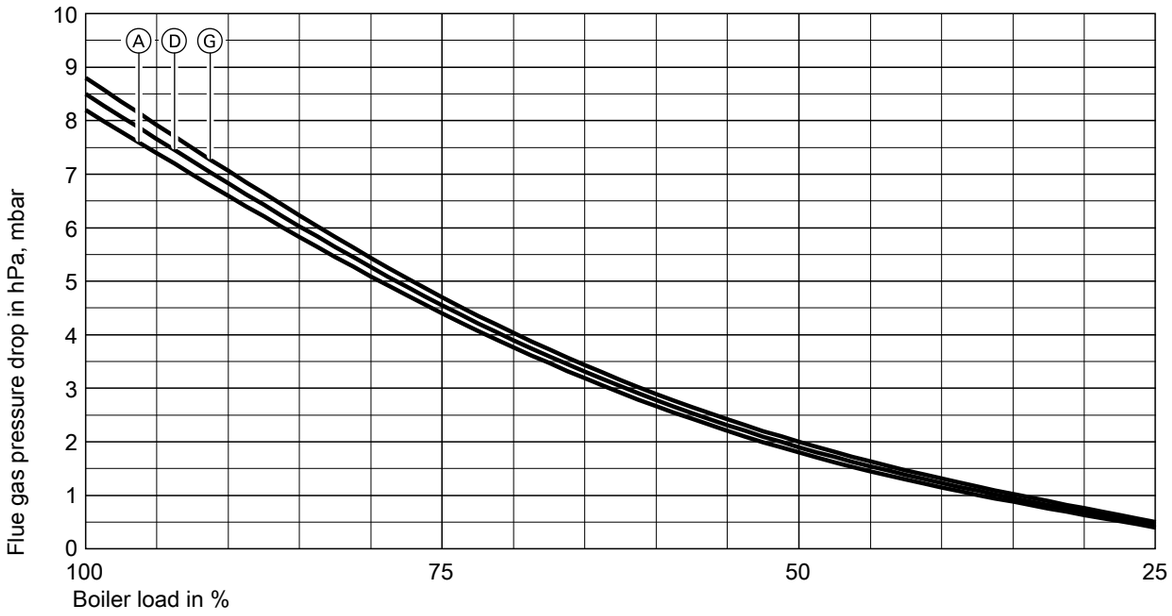
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 4.5 MW, standard (without turbulators)

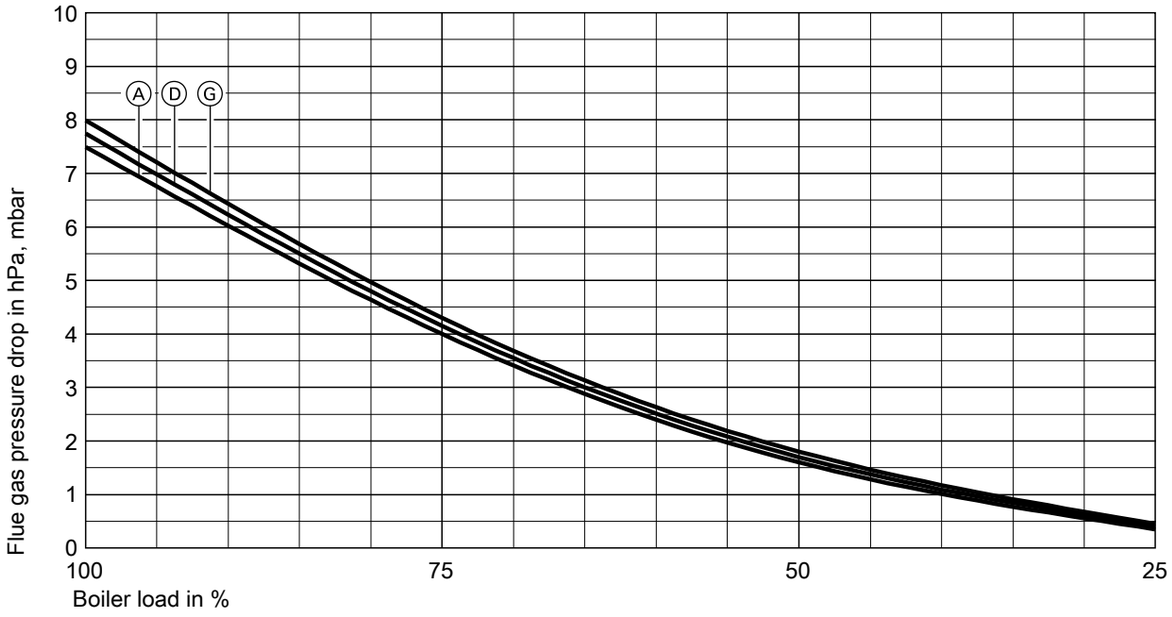
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 4.5 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max 4.5 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

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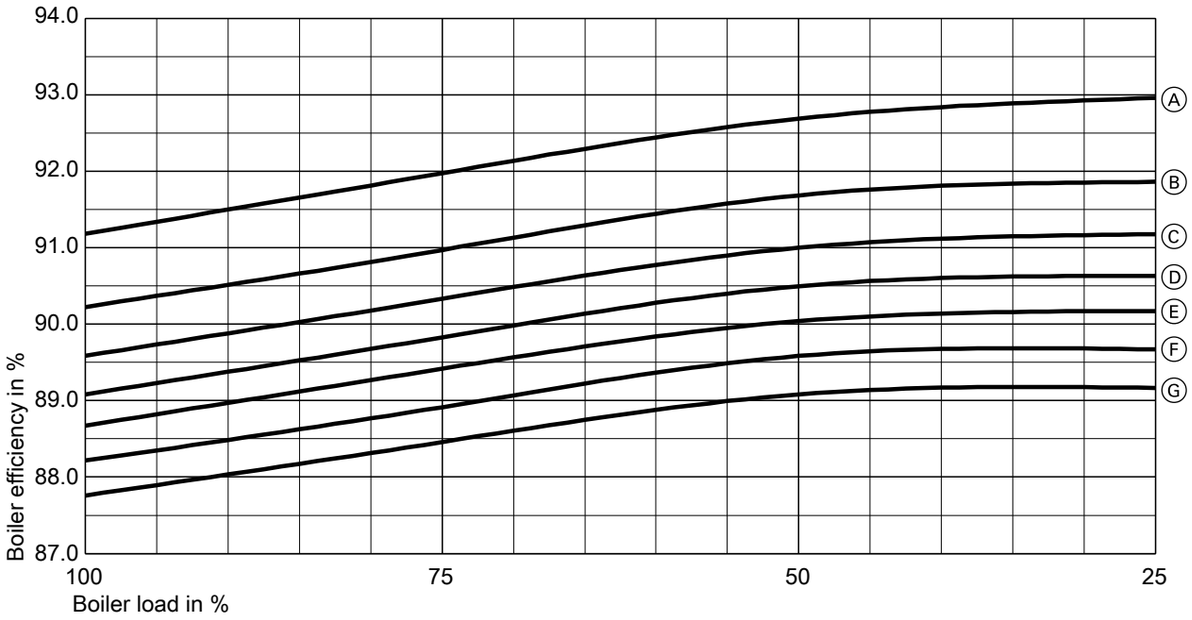
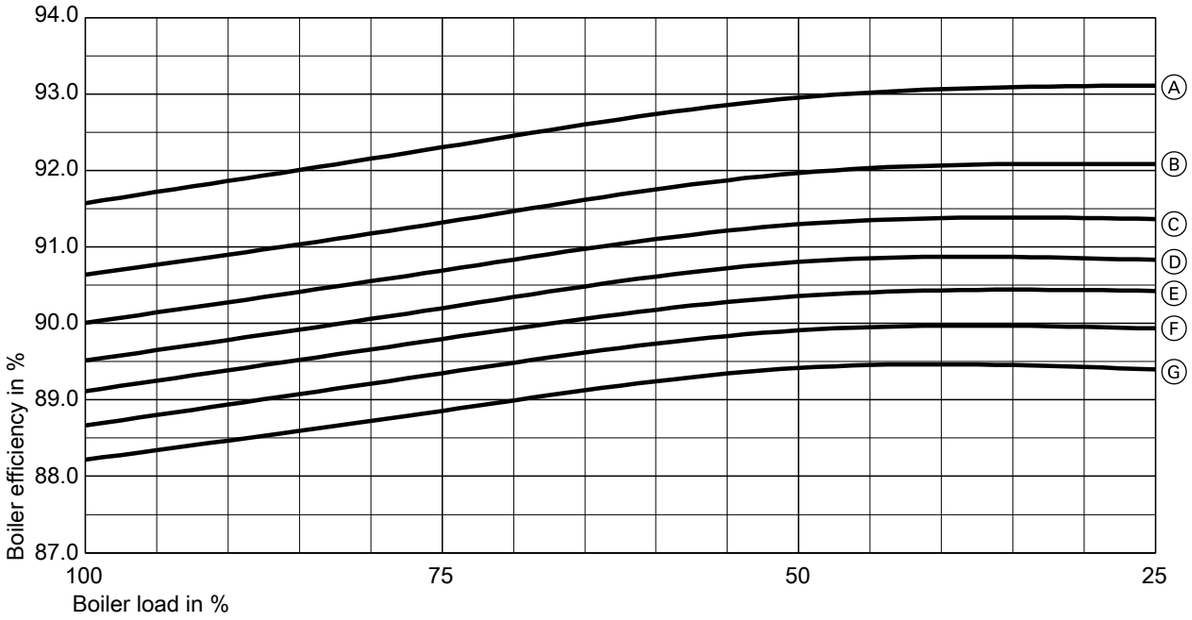
Boiler selection diagrams (cont.)

Version with turbulators (2000 mm)



Boiler efficiency, natural gas, max. 4.5 MW, with turbulators (2000 mm), taking into account boiler radiation losses

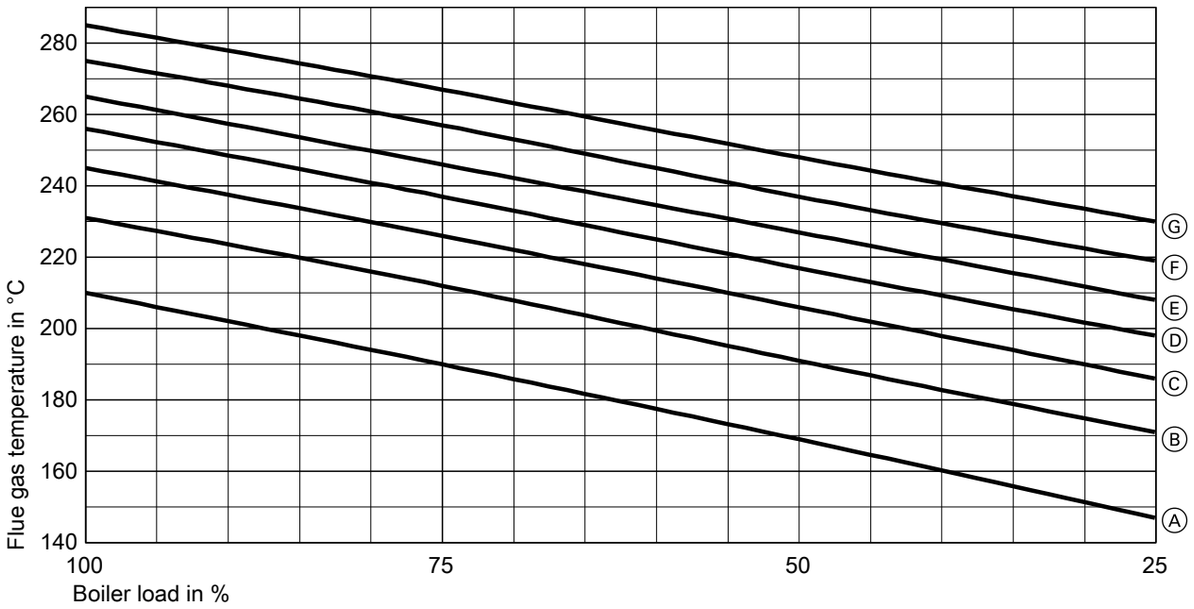
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 4.5 MW, with turbulators (2000 mm), taking into account boiler radiation losses

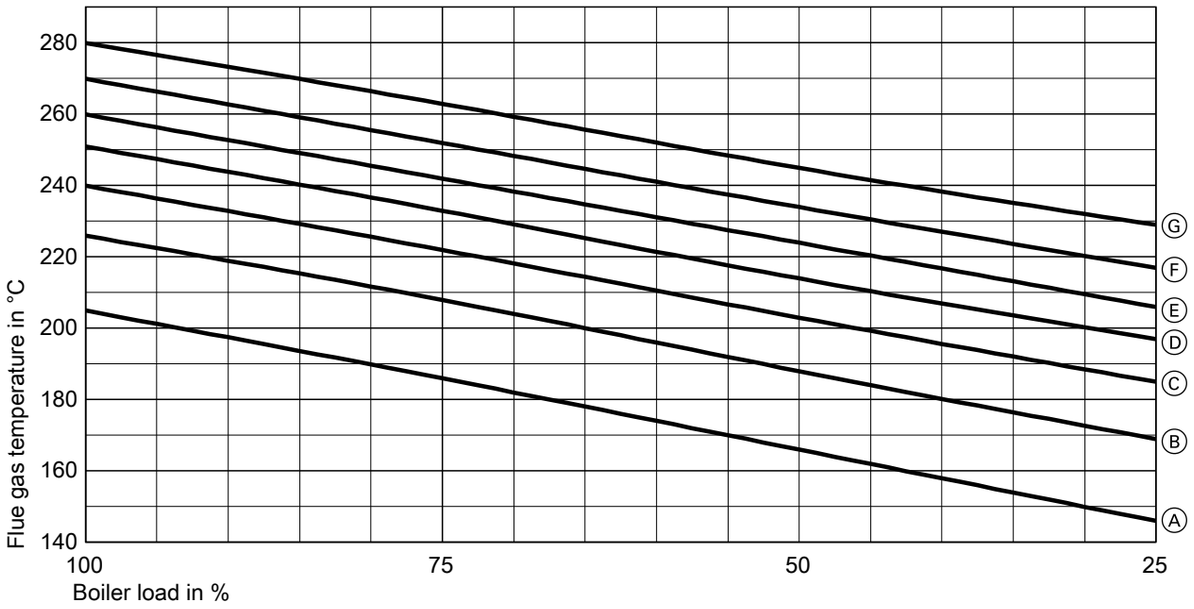
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 4.5 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 4.5 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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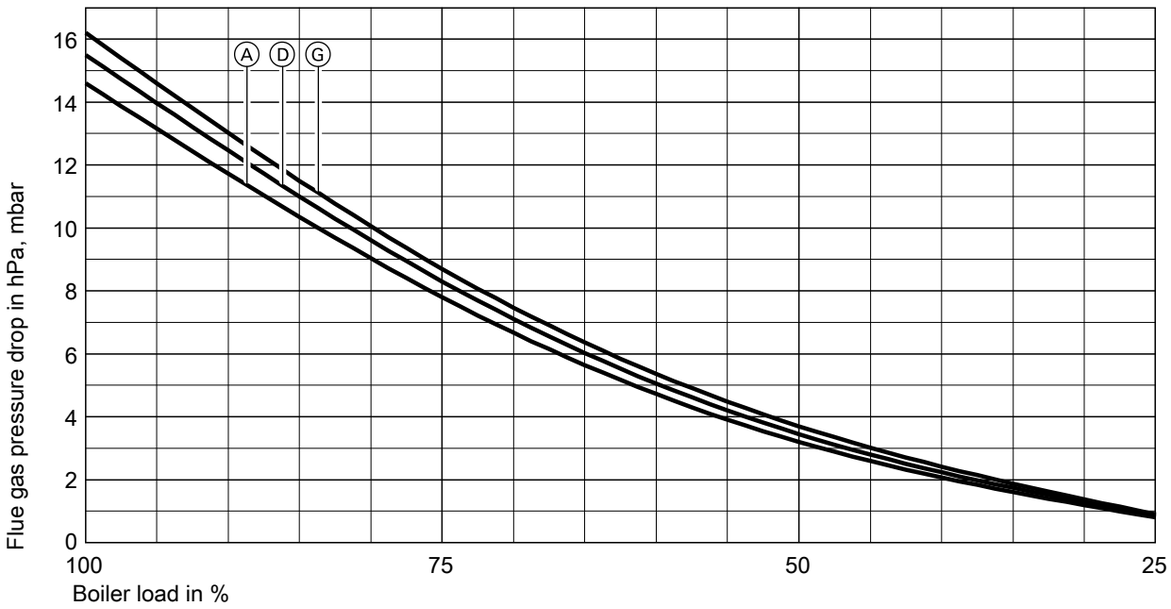
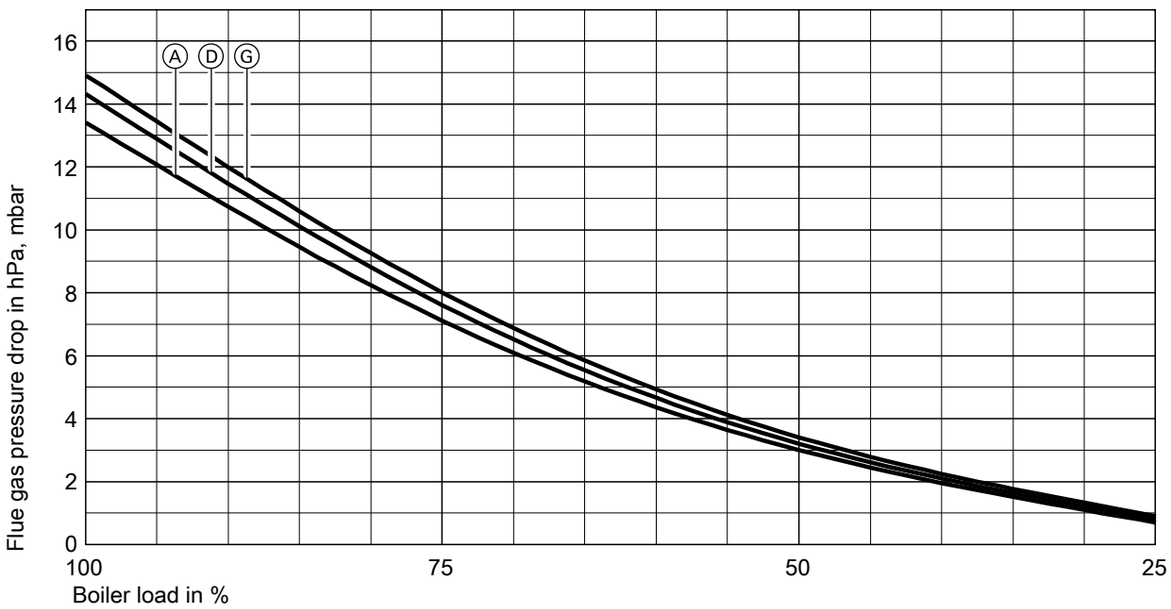
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 4.5 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

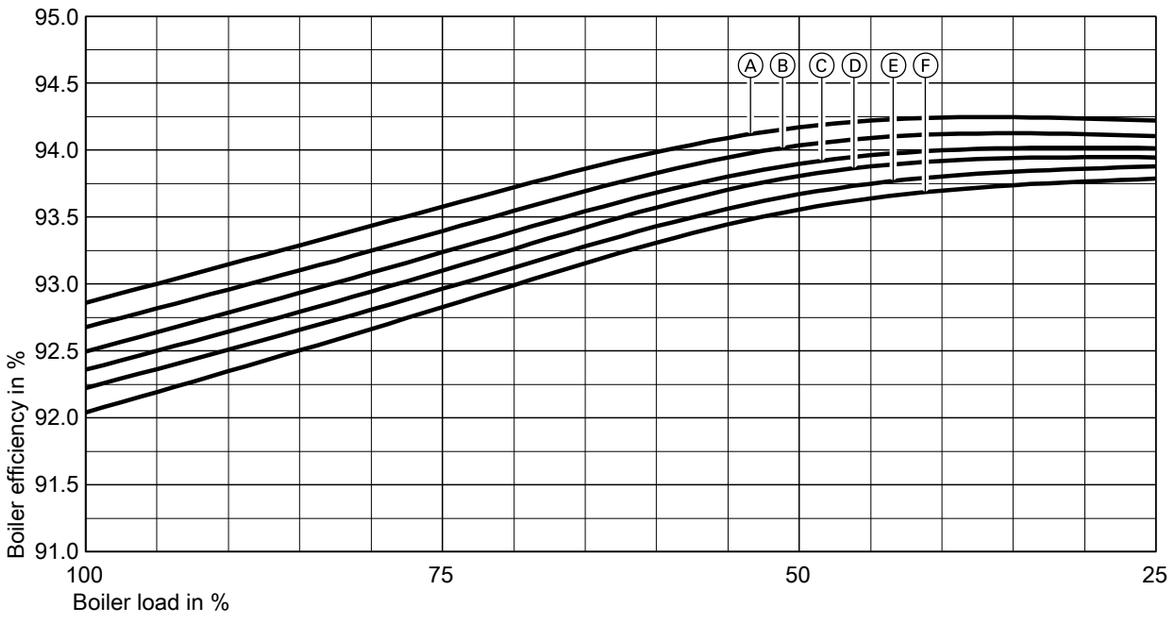


Flue gas pressure drop, fuel oil, max. 4.5 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

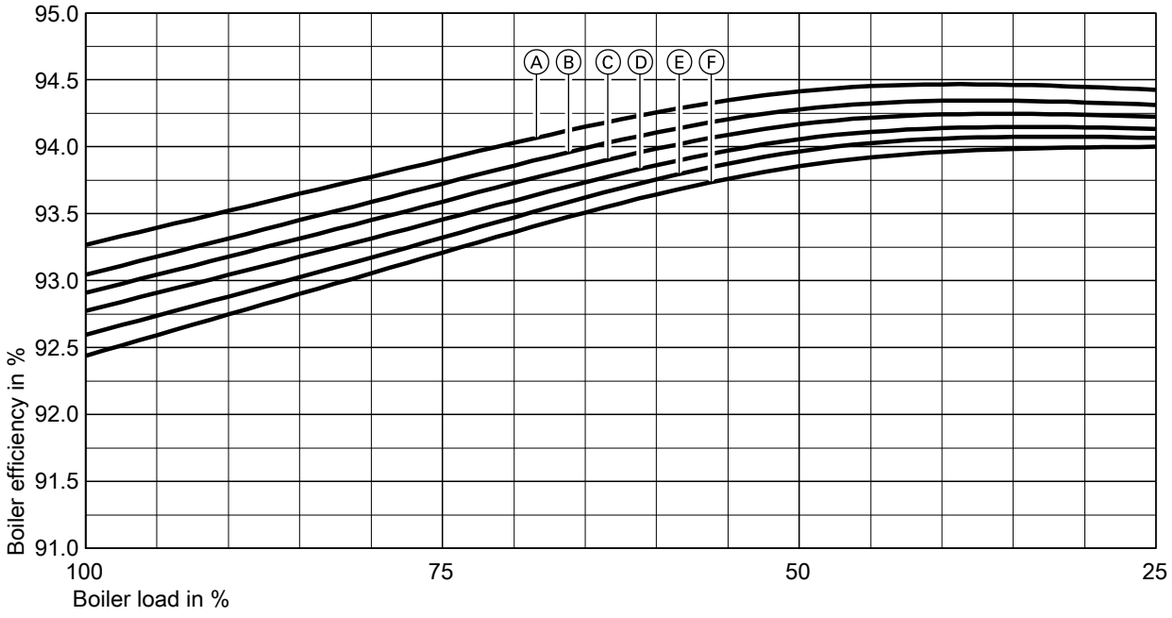
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 4.5 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 4.5 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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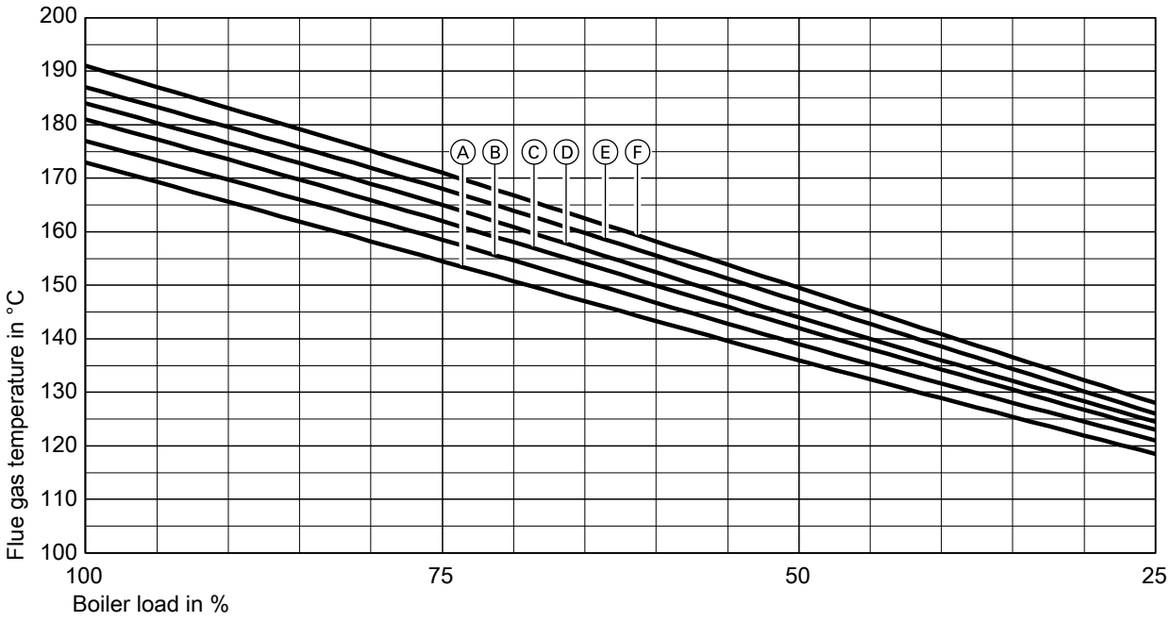
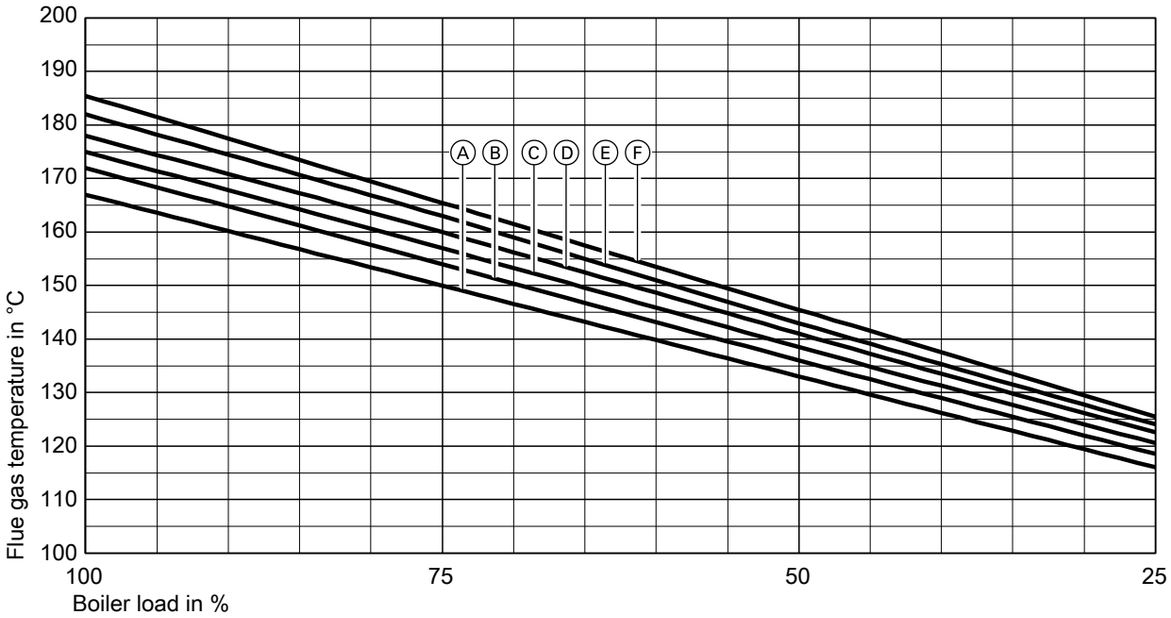
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 4.5 MW, without turbulators, with ECO 100

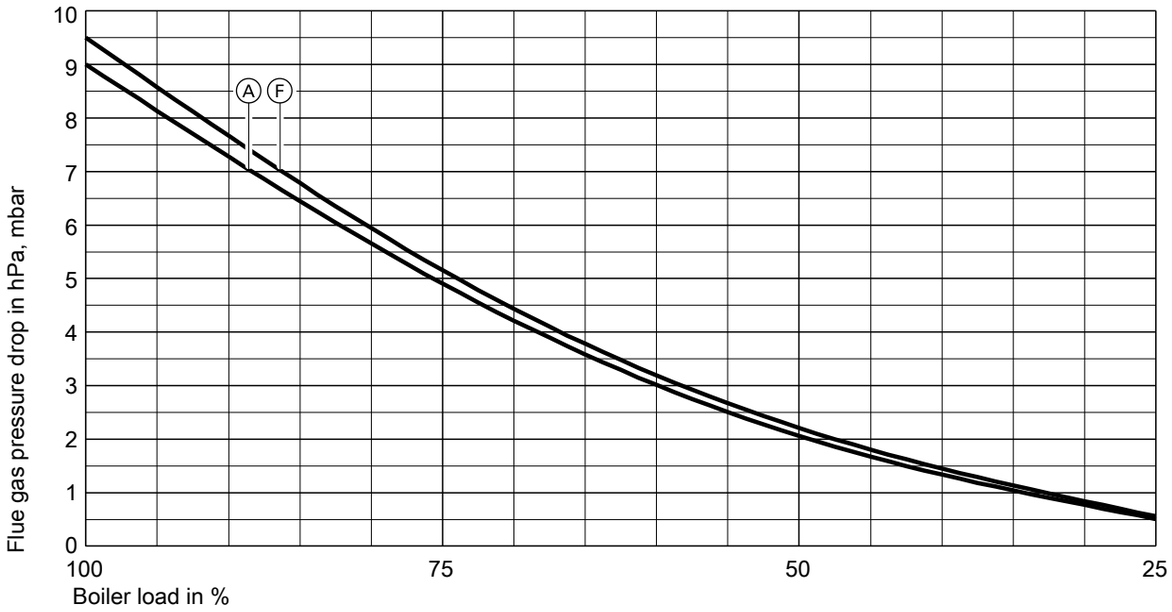
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 4.5 MW, without turbulators, with ECO 100

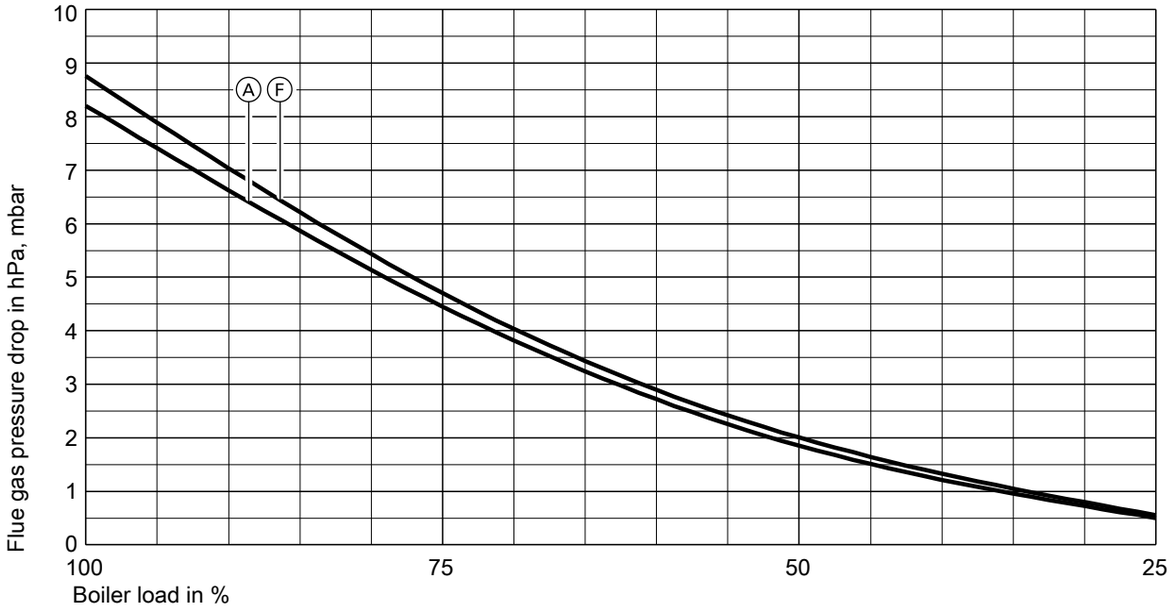
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 4.5 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max. 4.5 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

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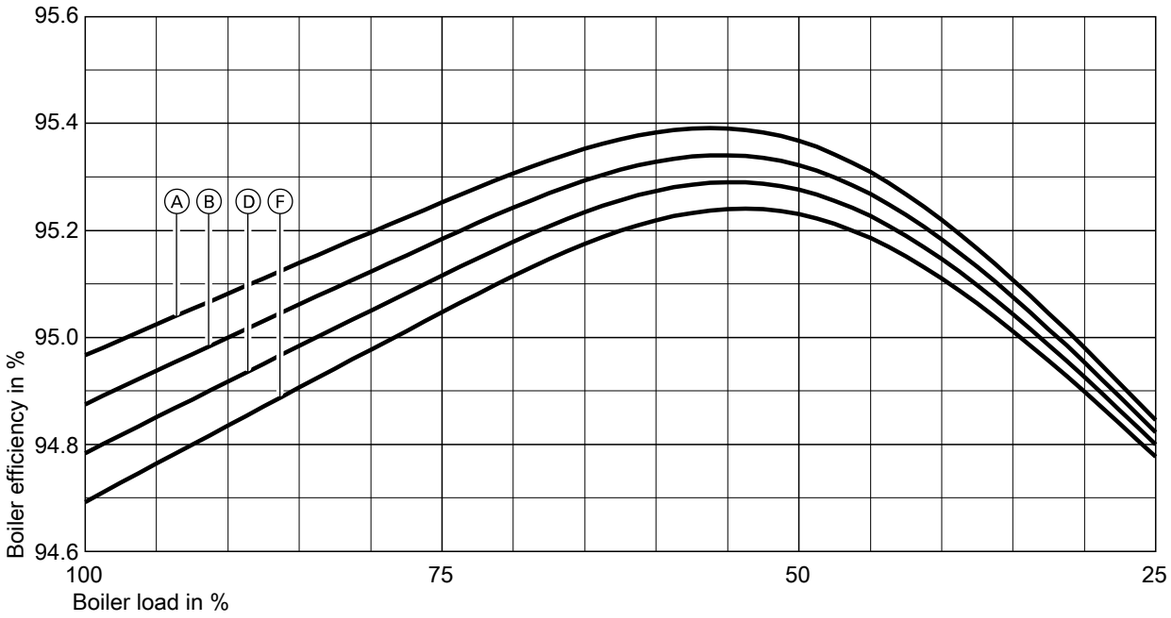
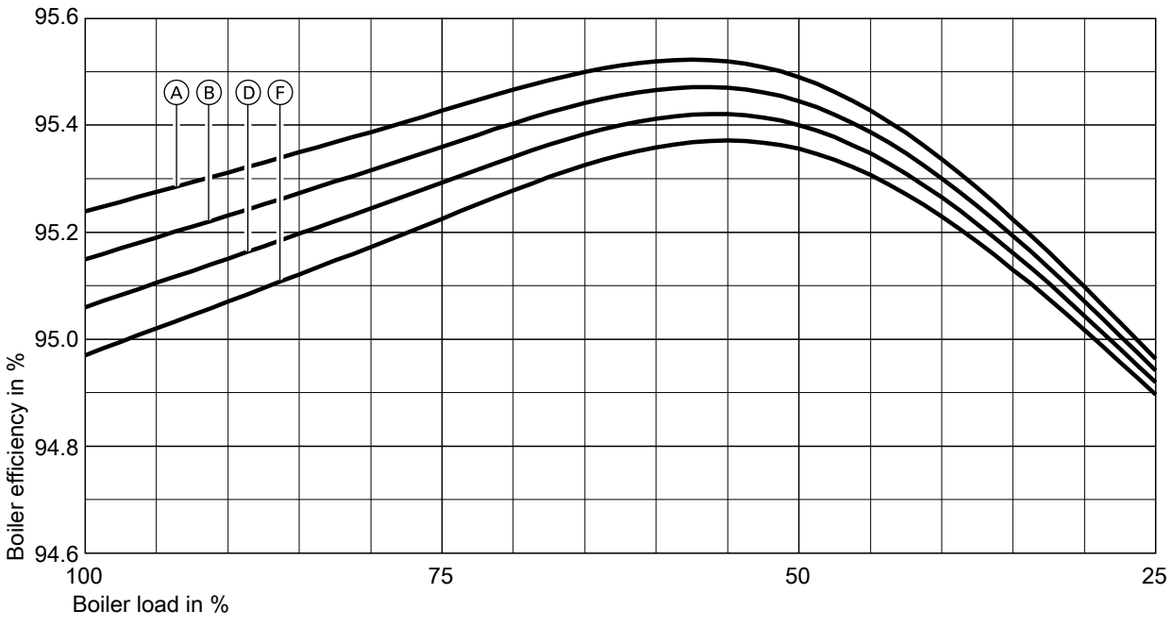
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 4.5 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

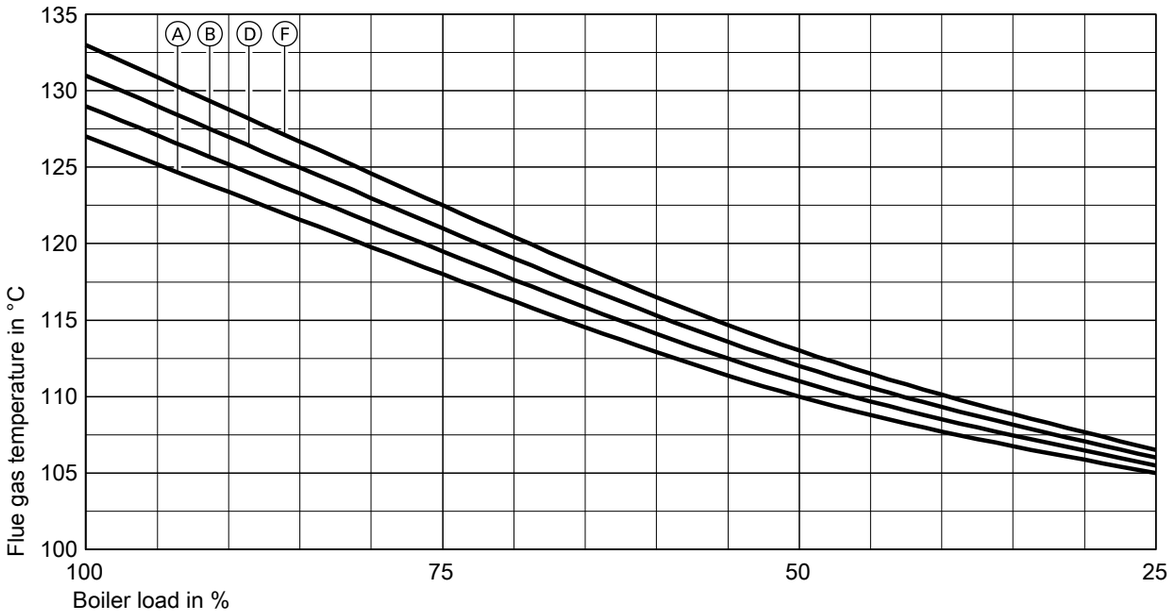
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 4.5 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

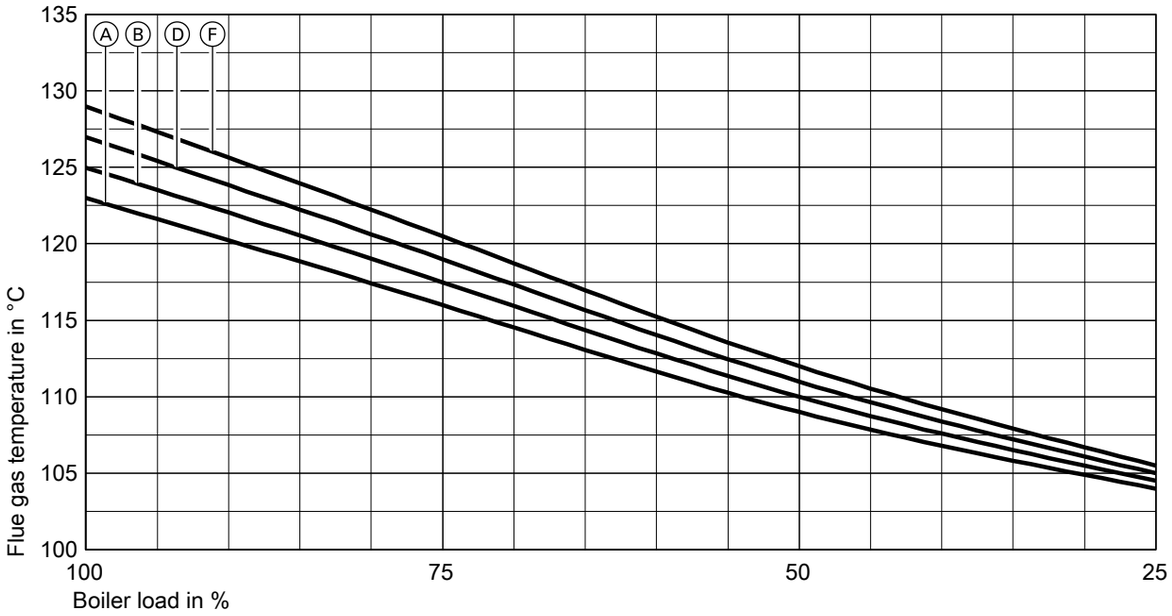
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 4.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 4.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

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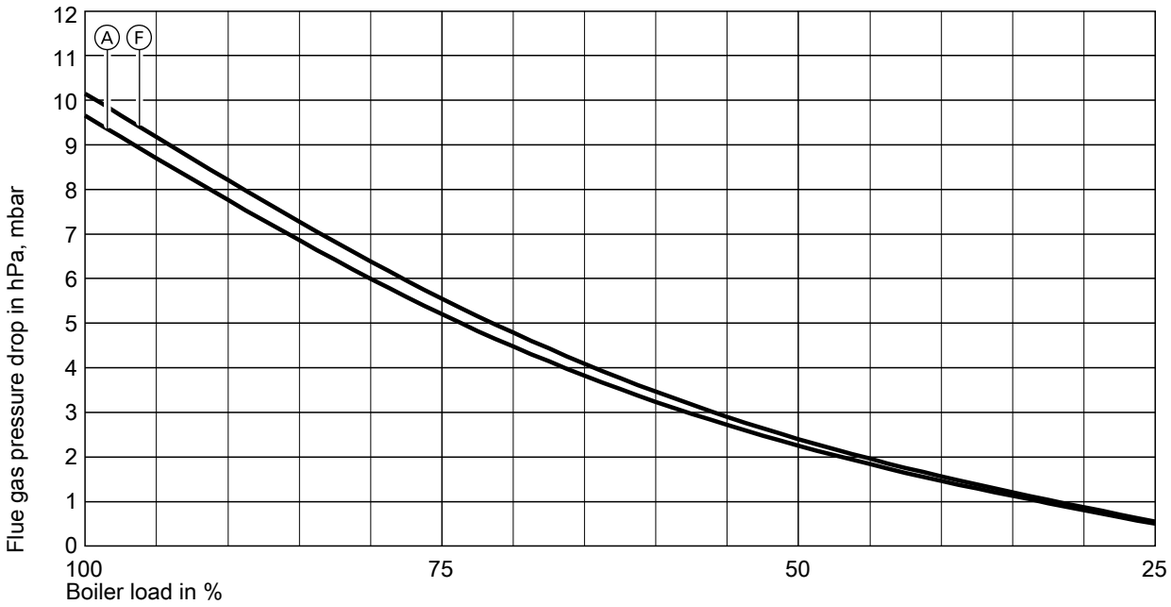
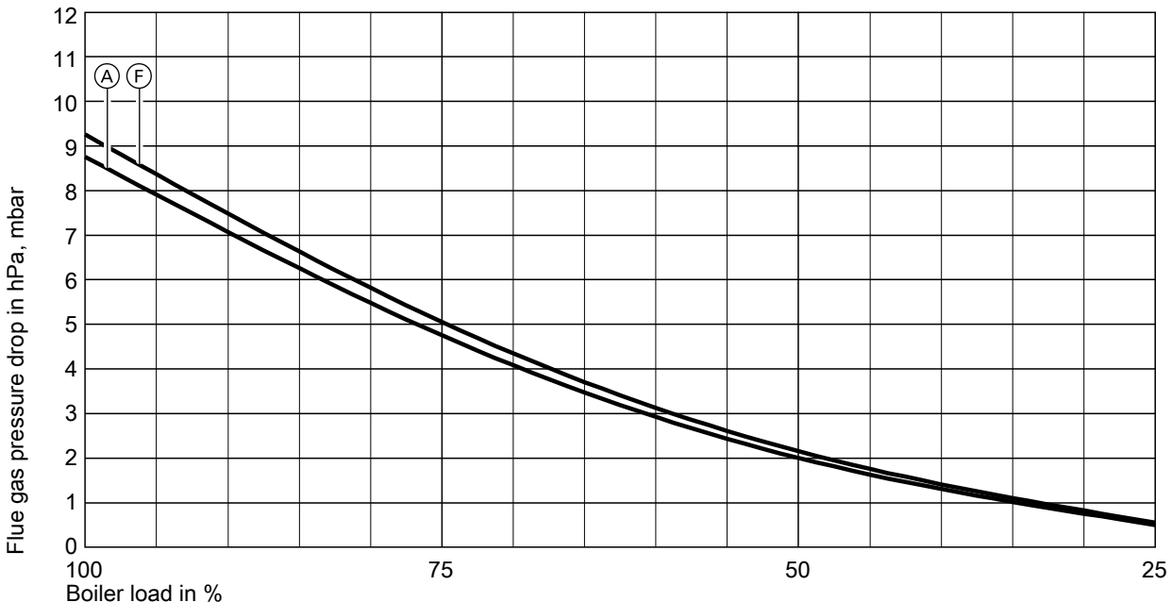
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 4.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

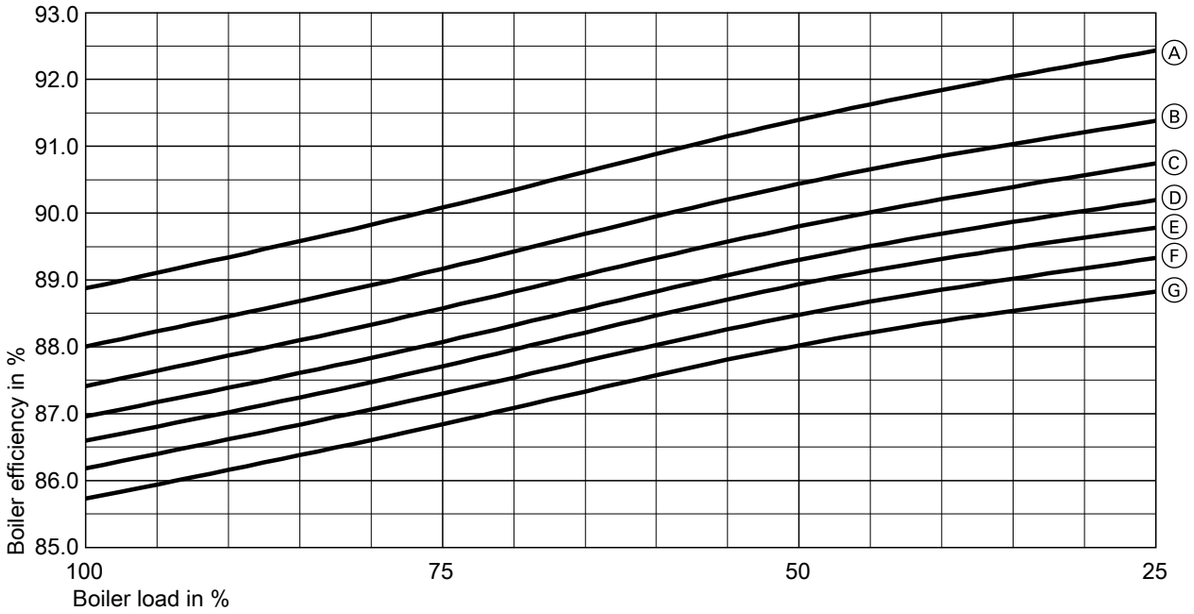


Flue gas pressure drop, fuel oil, max. 4.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

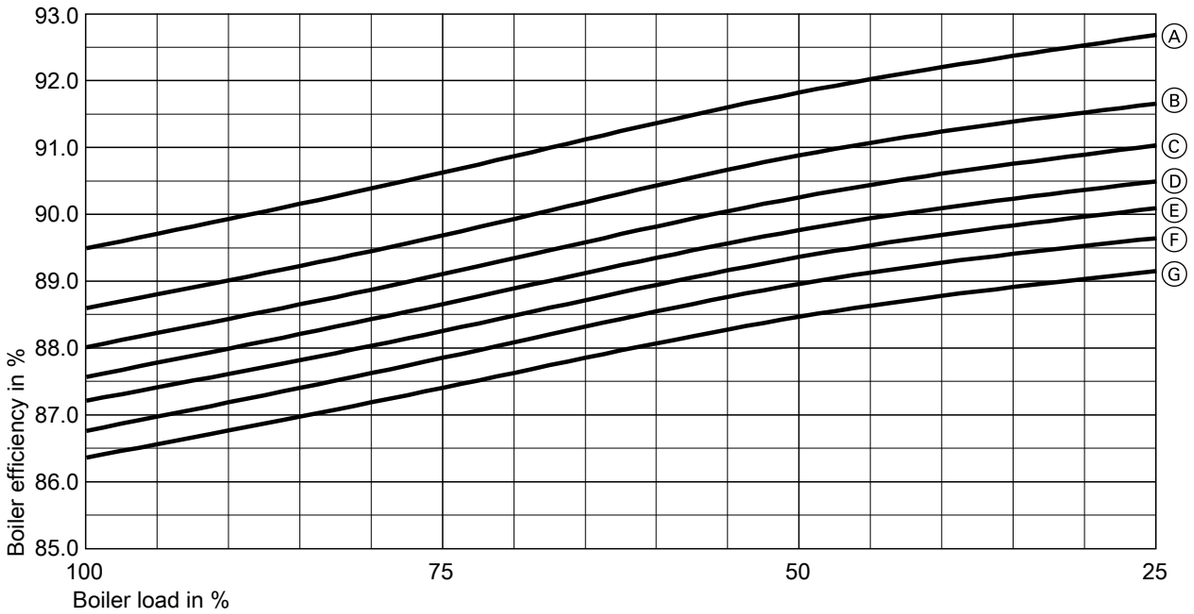
2.3 Boiler size 3, max. combustion output 5.3 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 5.3 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 5.3 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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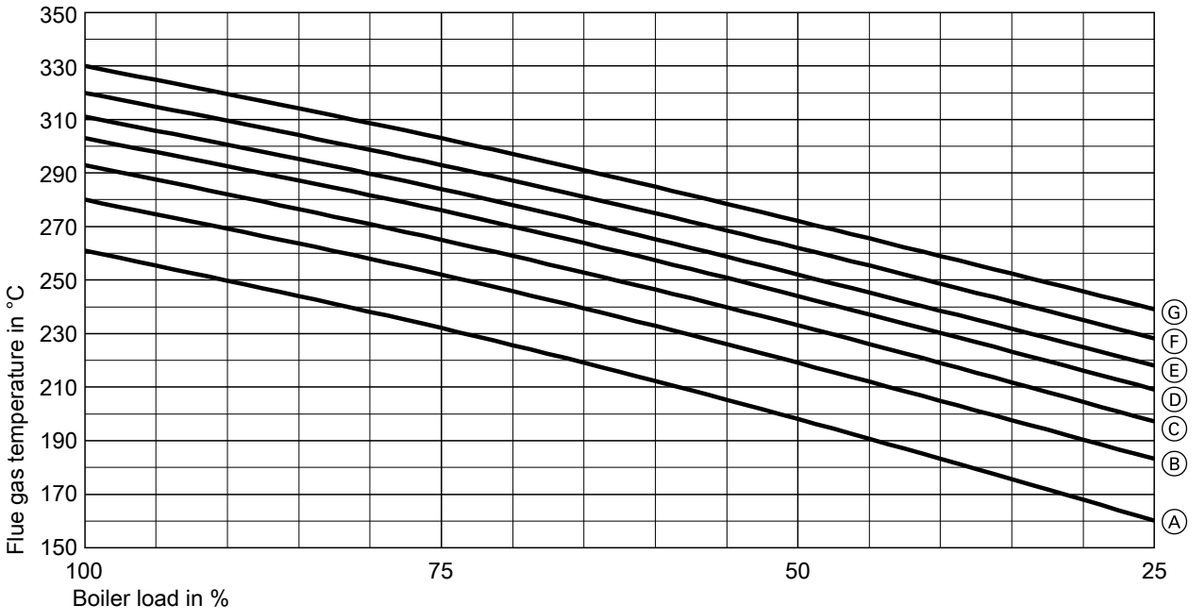
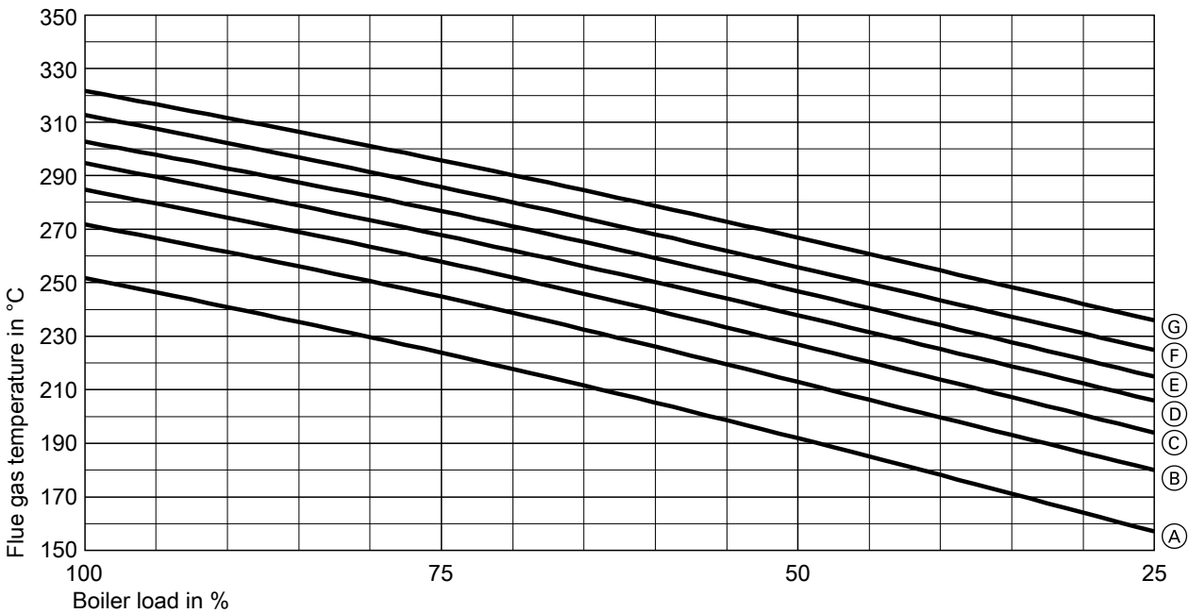
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 5.3 MW, standard (without turbulators)

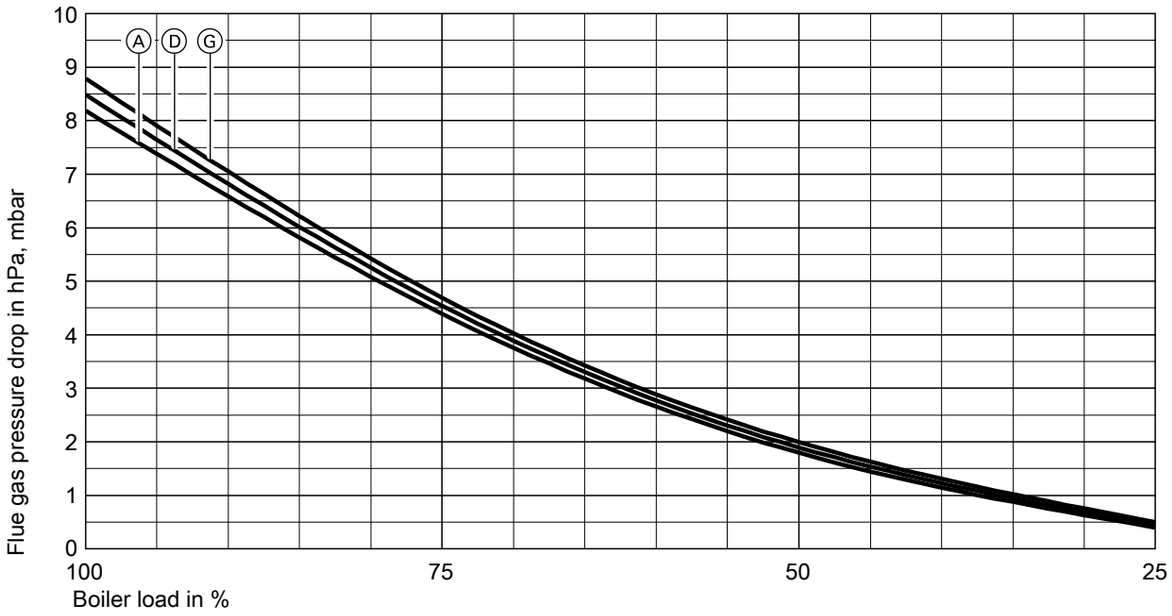
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 5.3 MW, standard (without turbulators)

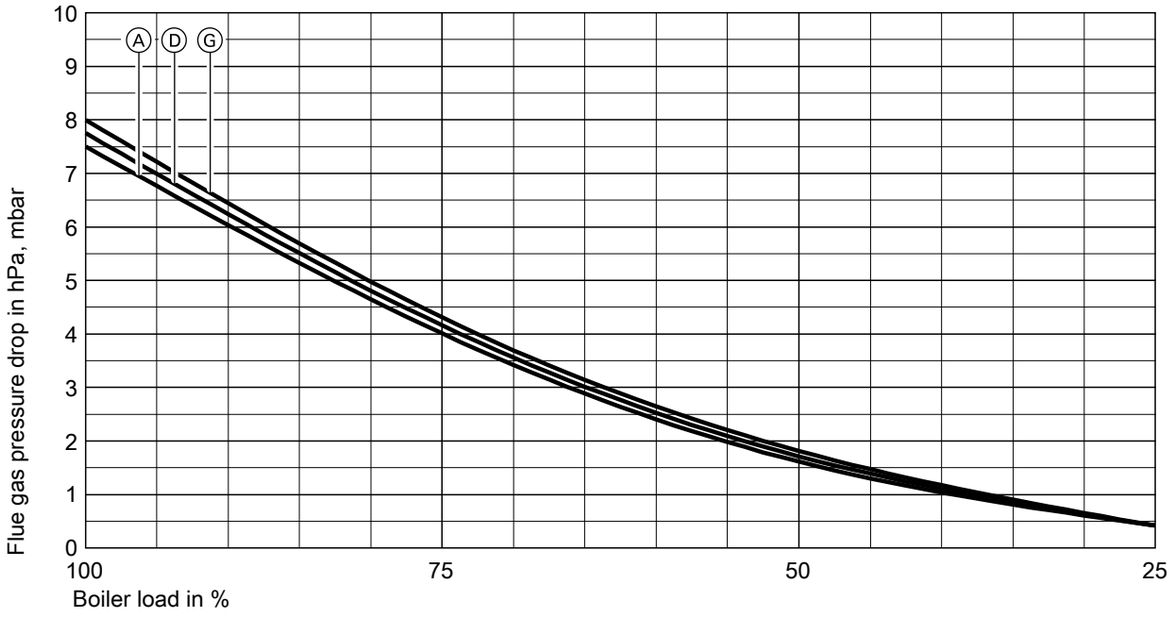
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 5.3 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max 5.3 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

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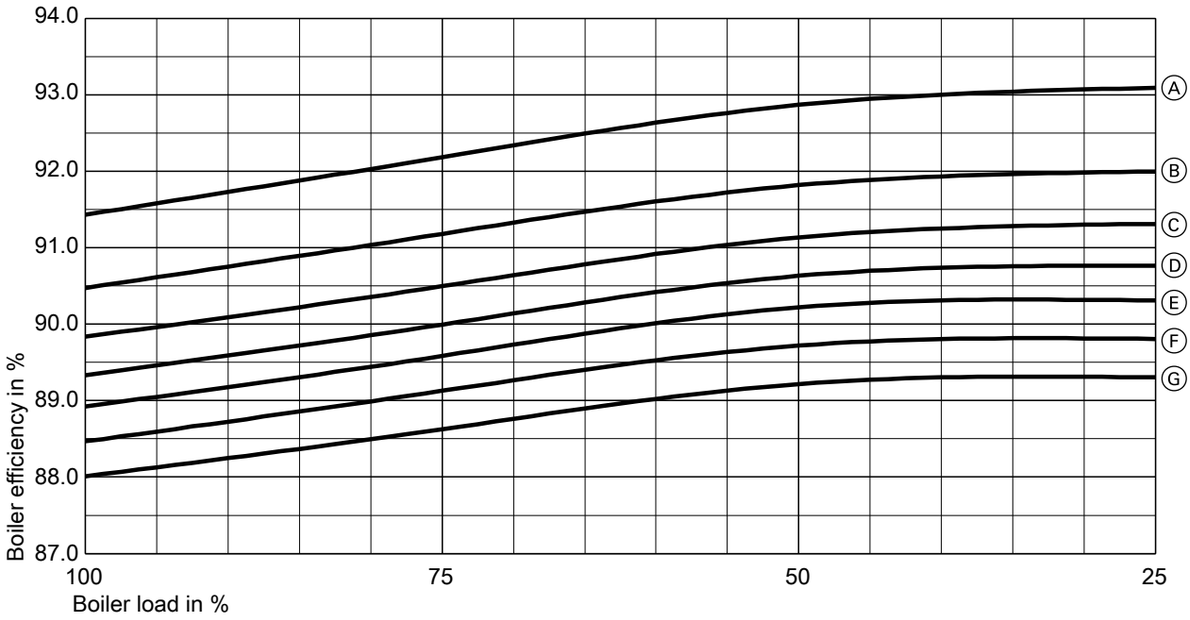
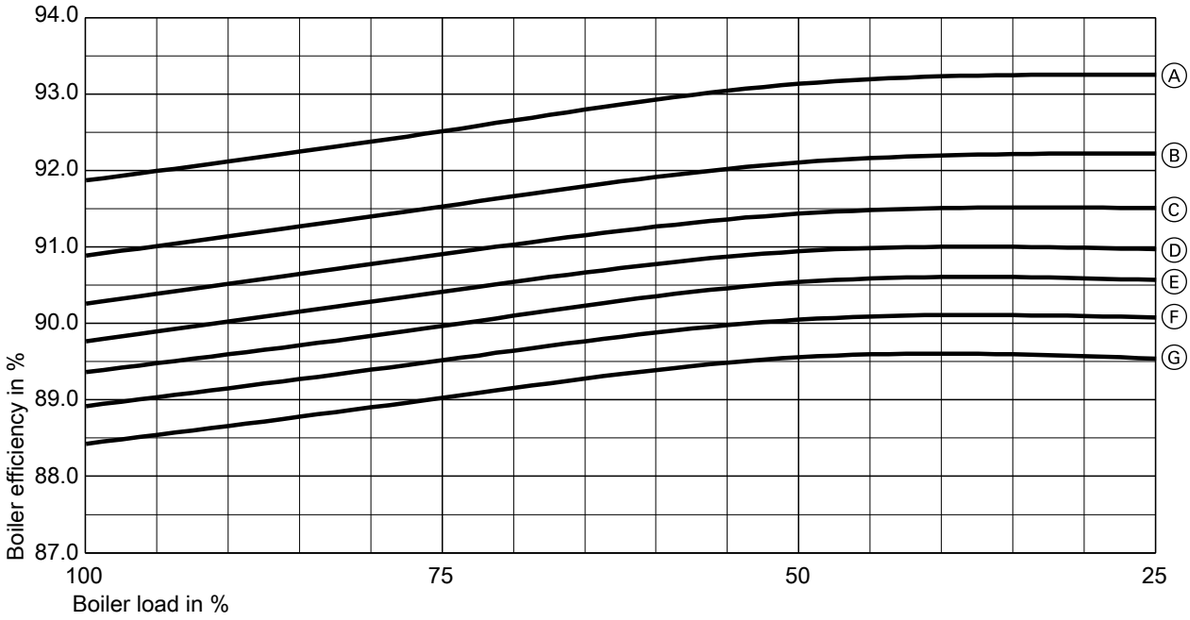
Boiler selection diagrams (cont.)

Version with turbulators (2000 mm)



Boiler efficiency, natural gas, max. 5.3 MW, with turbulators (2000 mm), taking into account boiler radiation losses

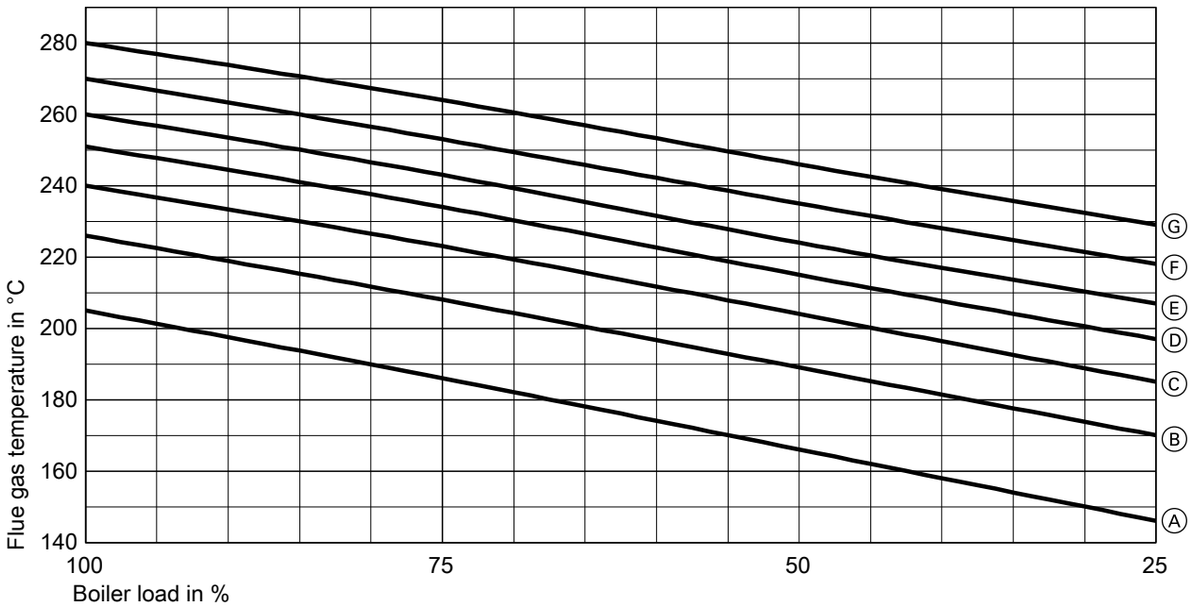
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 5.3 MW, with turbulators (2000 mm), taking into account boiler radiation losses

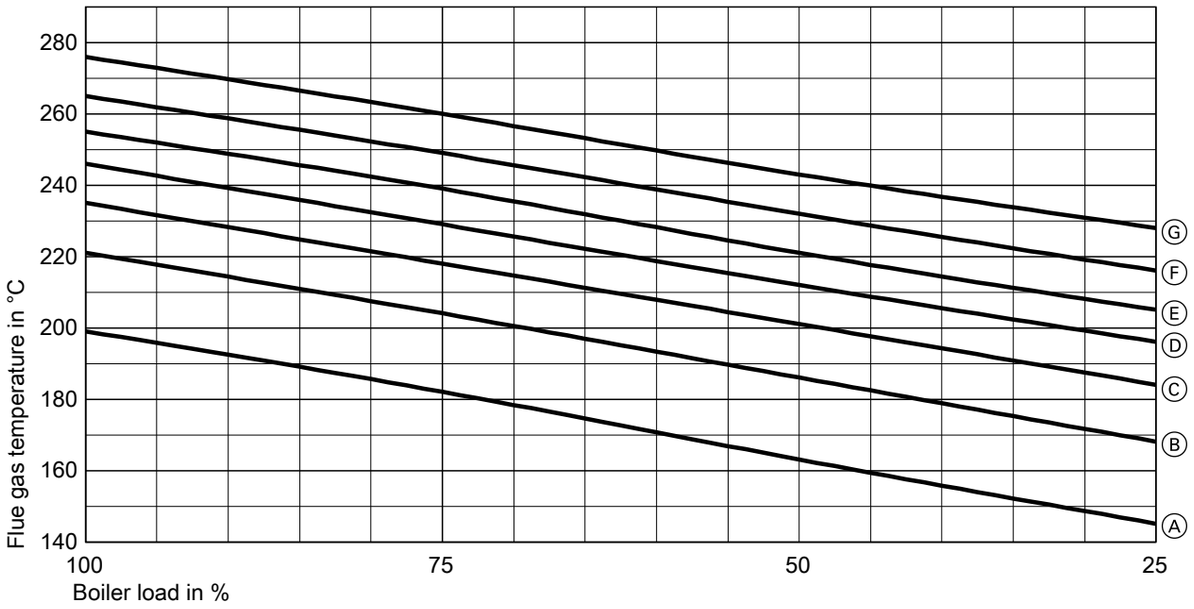
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 5.3 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 5.3 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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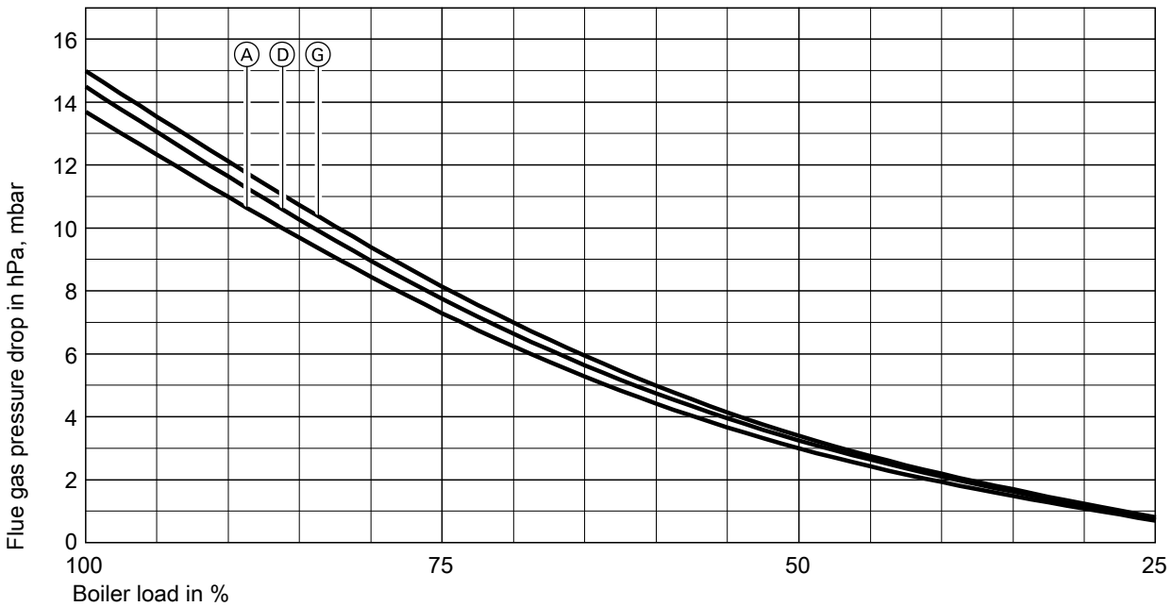
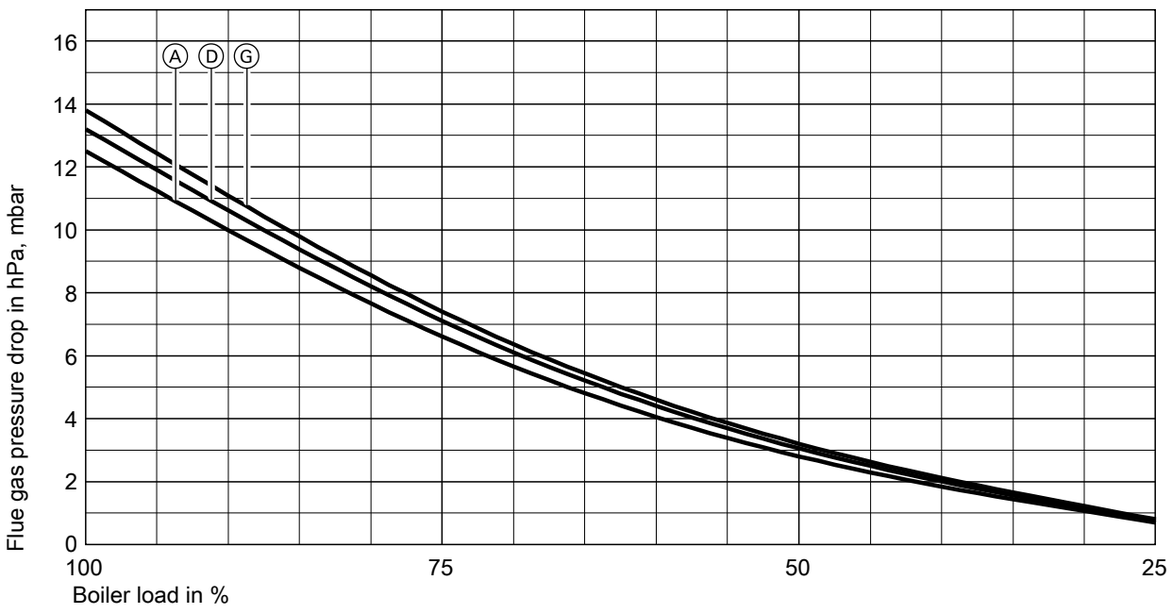
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 5.3 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

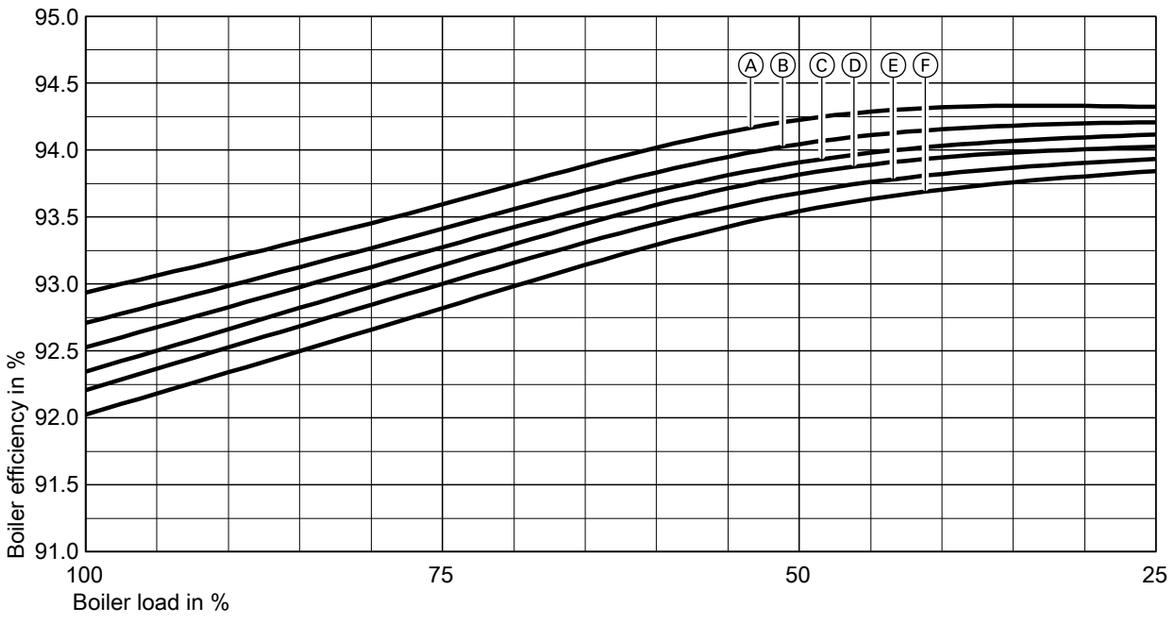


Flue gas pressure drop, fuel oil, max. 5.3 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

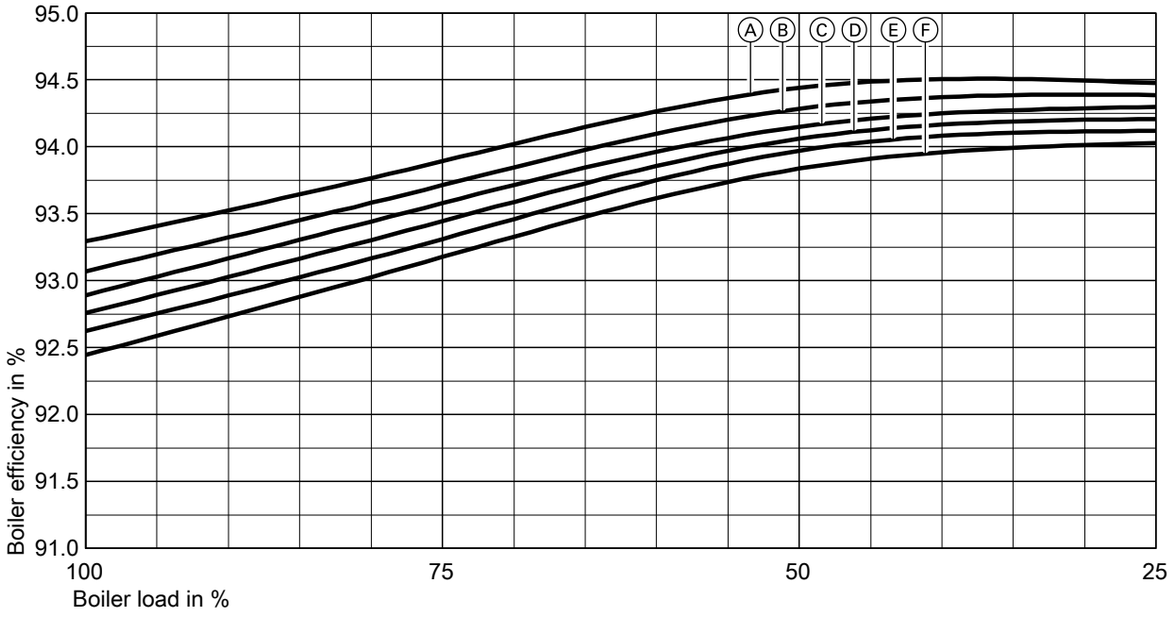
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 5.3 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 5.3 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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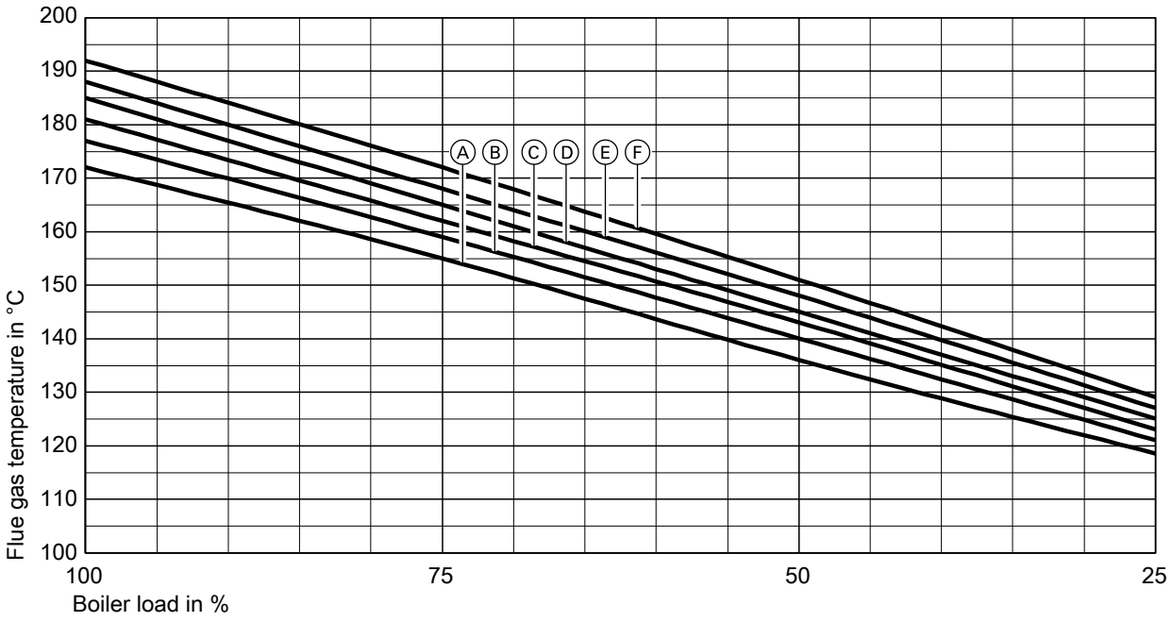
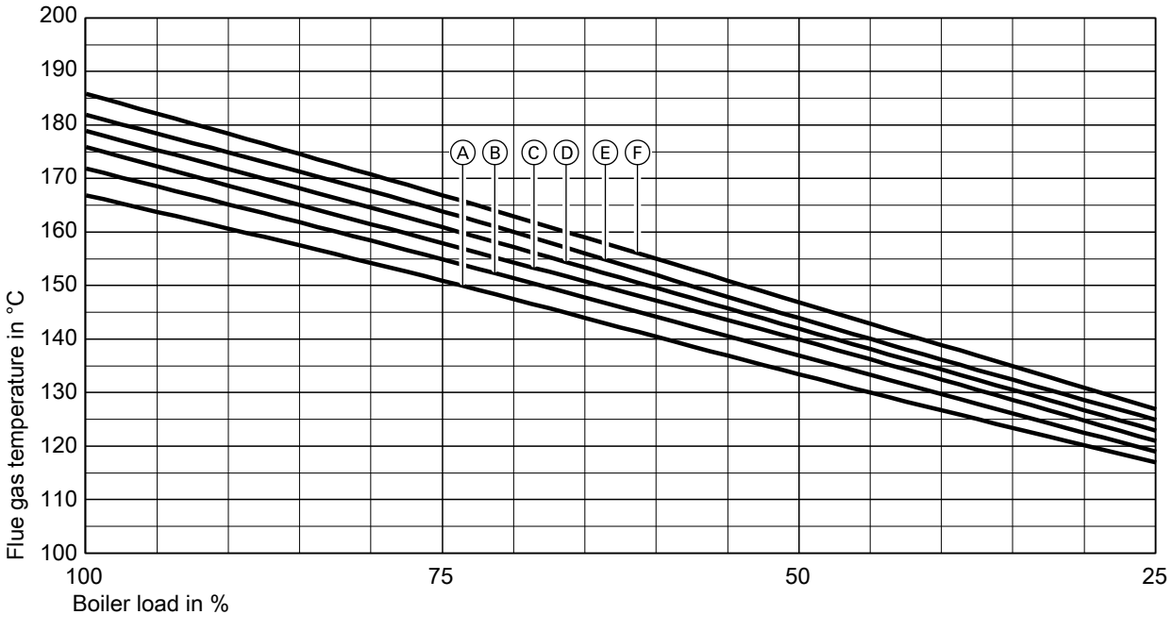
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 5.3 MW, without turbulators, with ECO 100

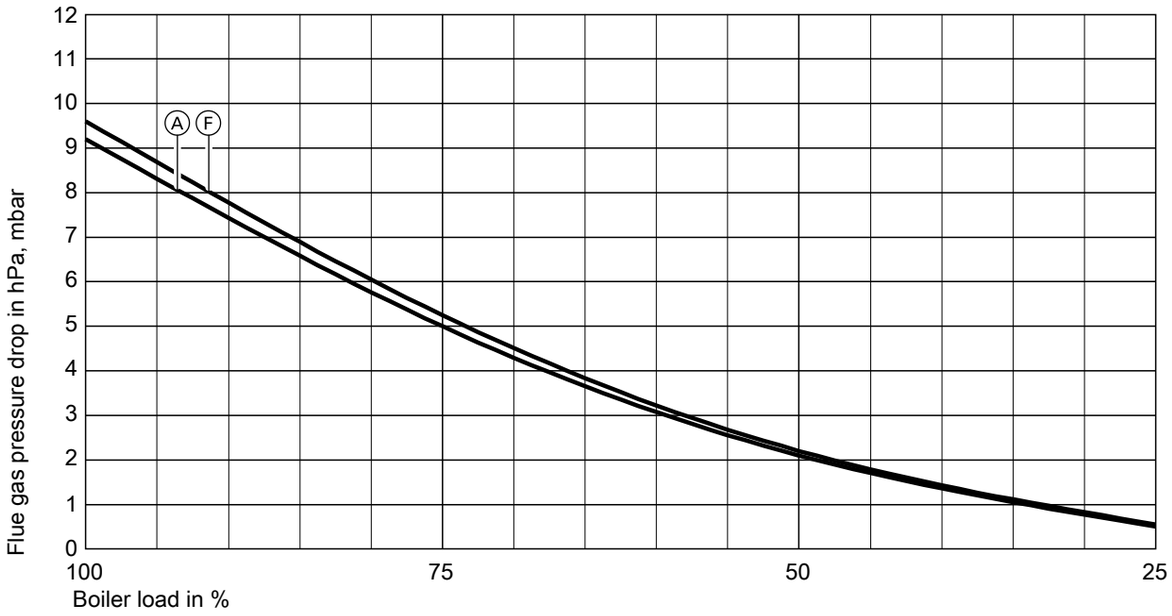
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 5.3 MW, without turbulators, with ECO 100

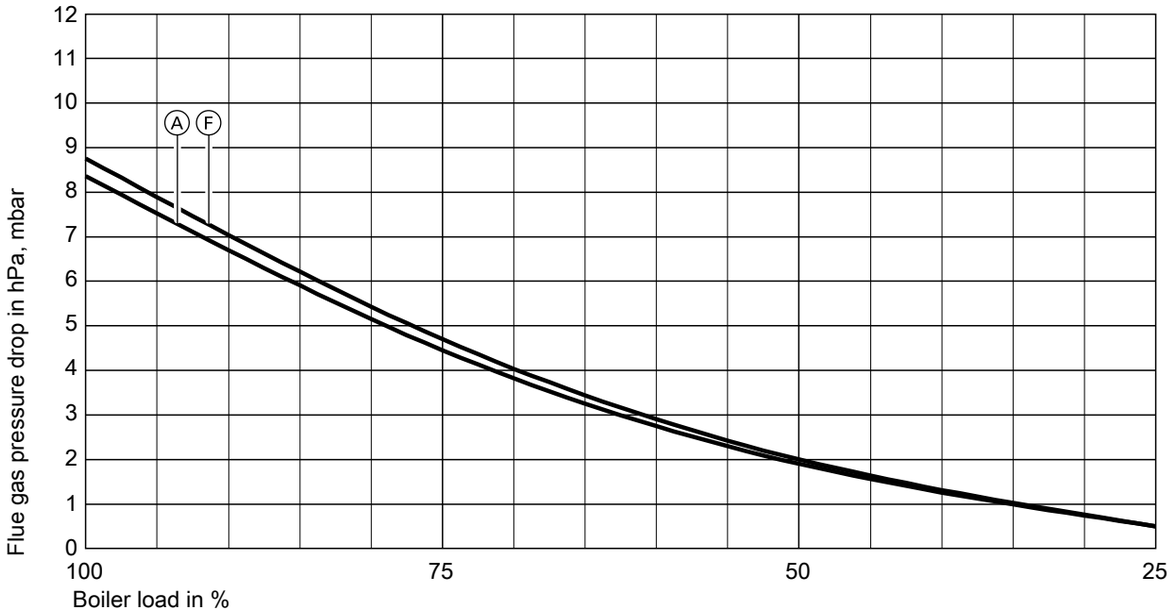
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 5.3 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

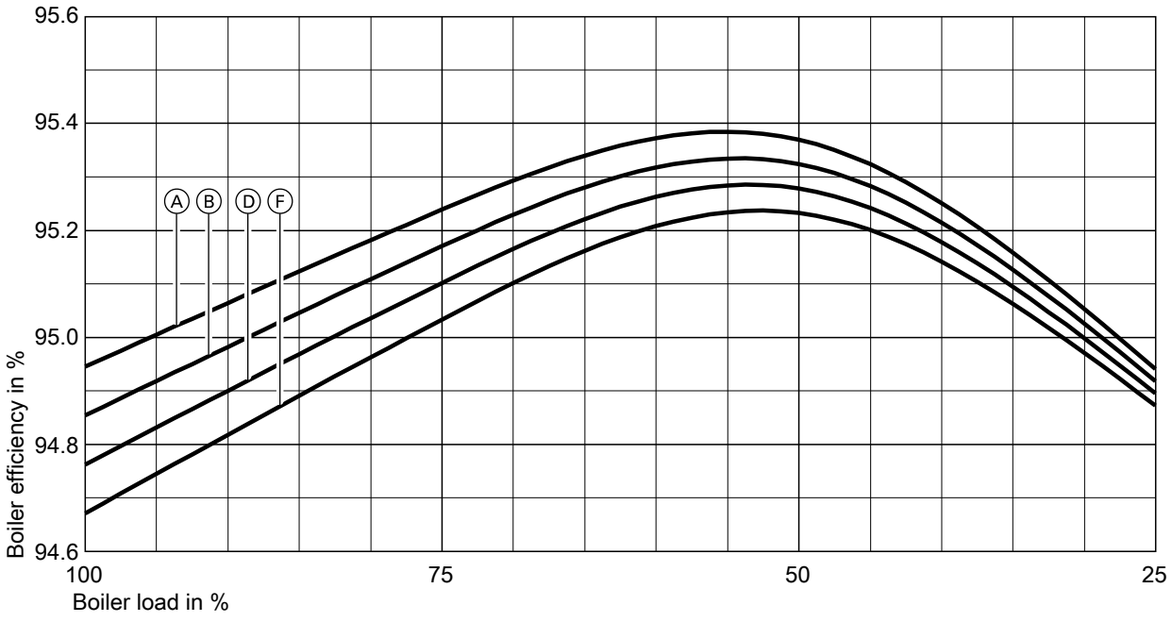


Flue gas pressure drop, fuel oil, max. 5.3 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

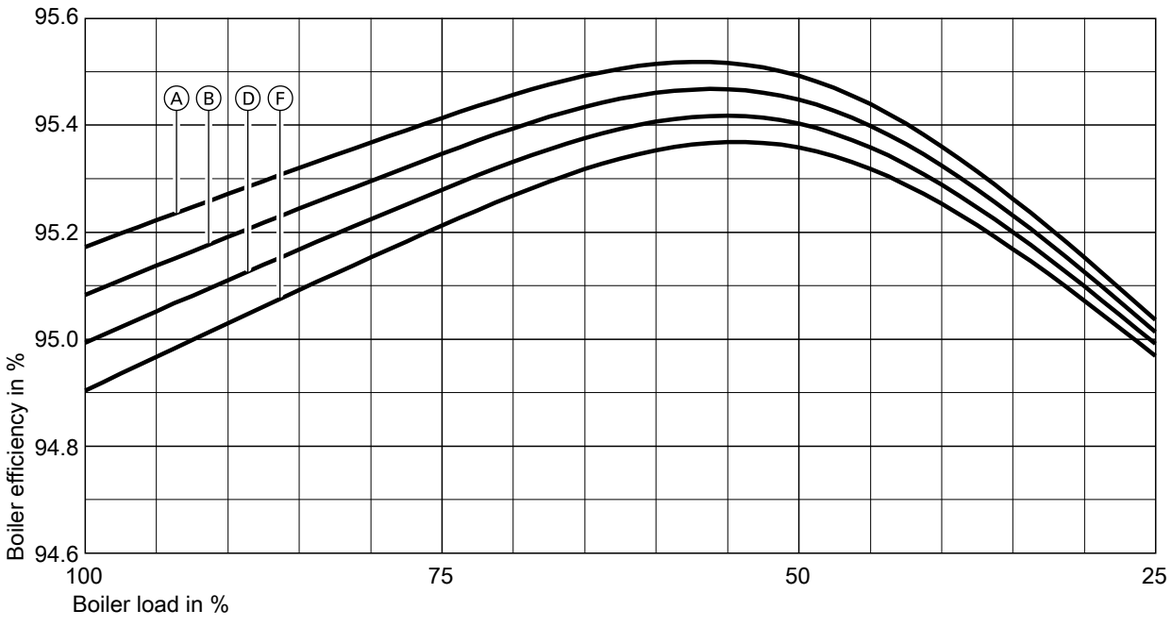
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 5.3 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

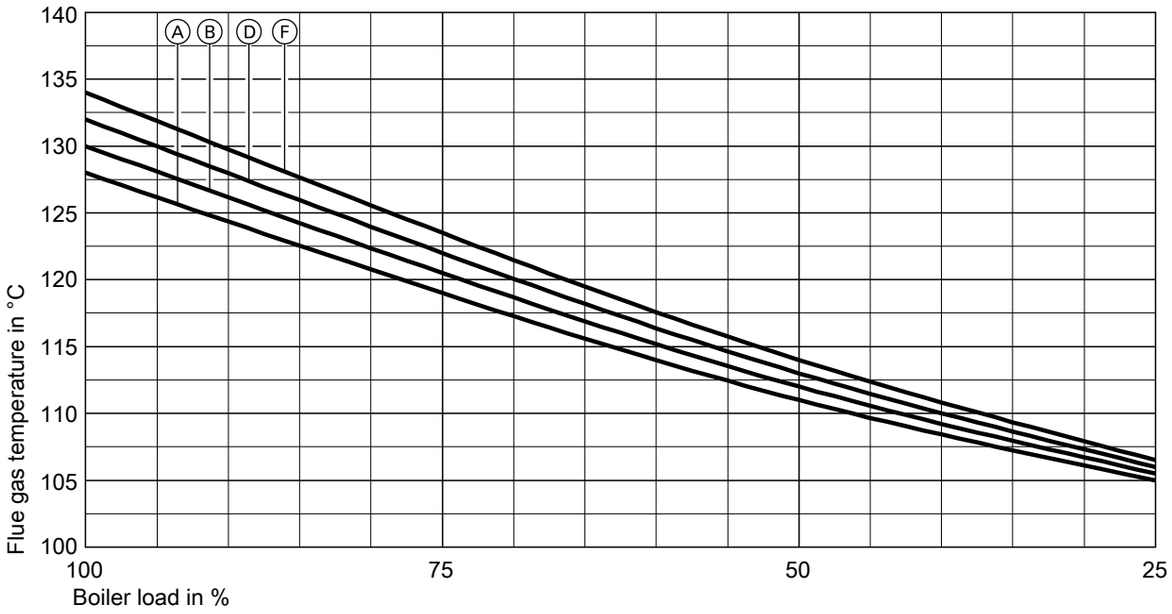
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 5.3 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

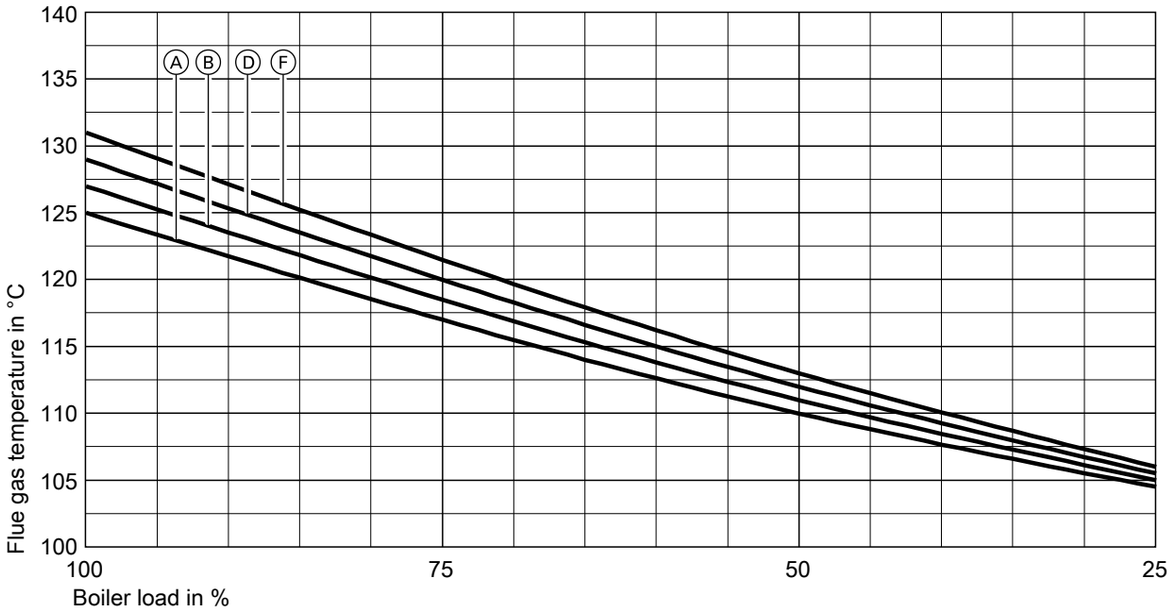
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 5.3 MW, without turbulators, with ECO 200

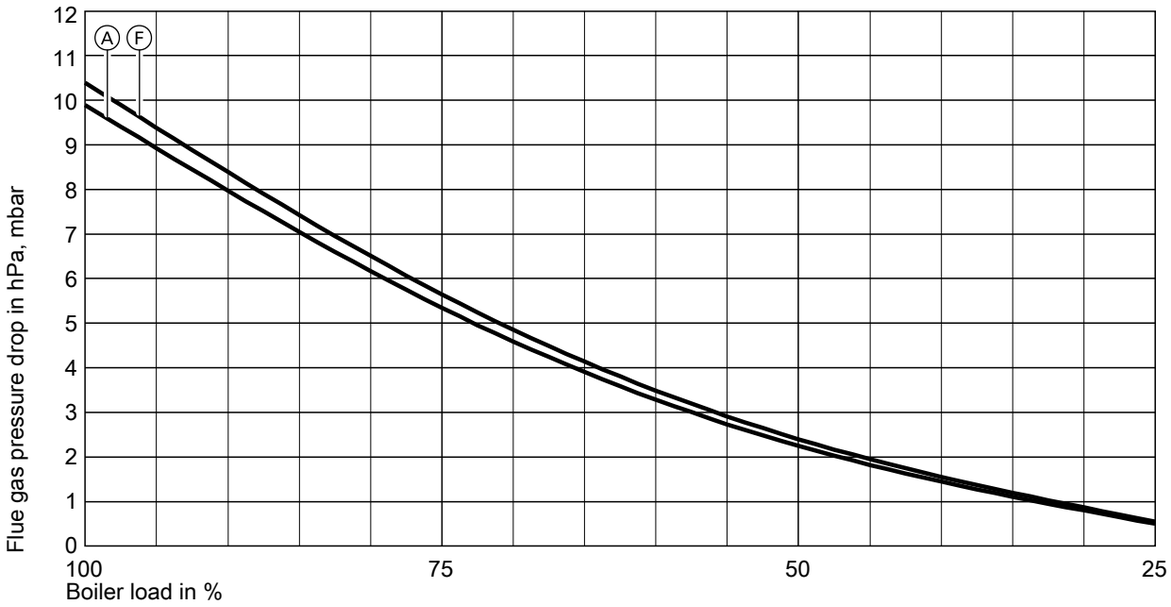
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 5.3 MW, without turbulators, with ECO 200

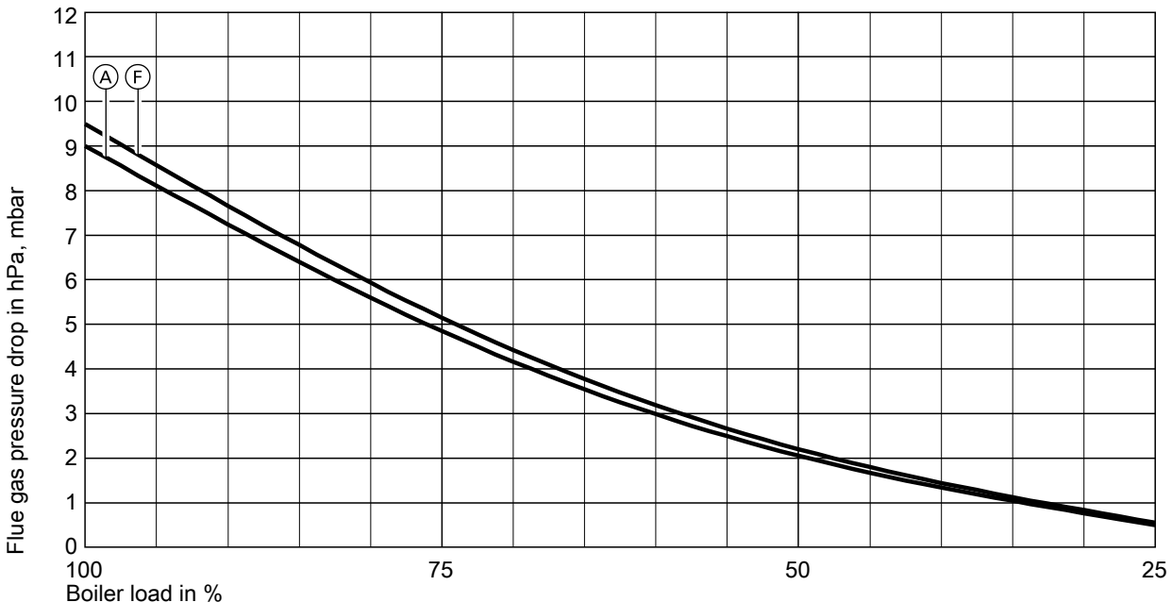
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 5.3 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

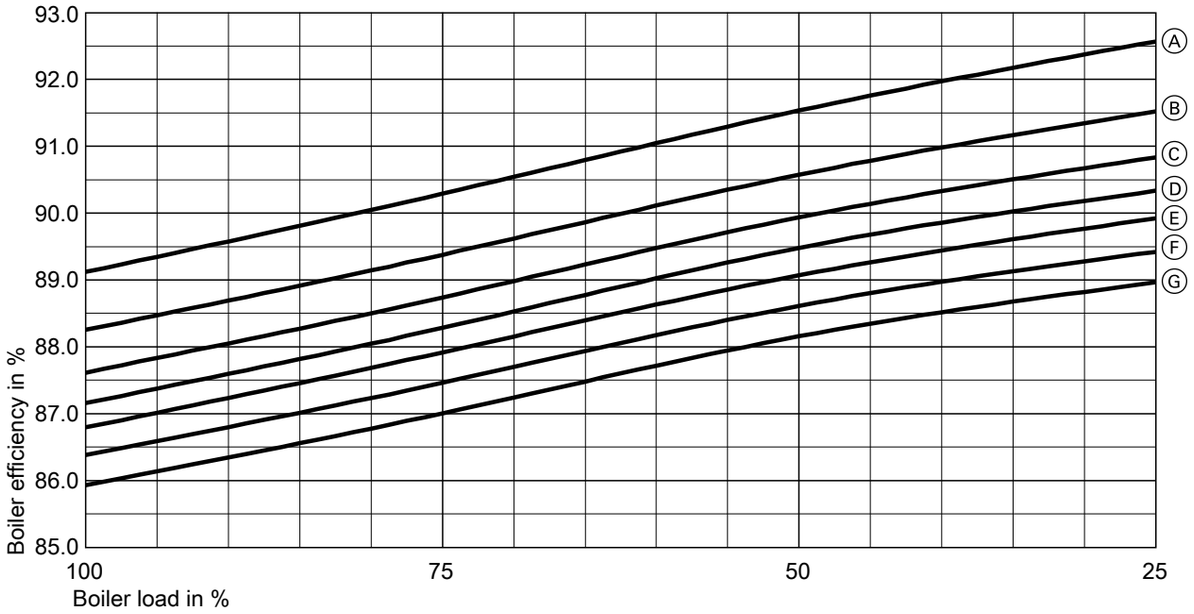


Flue gas pressure drop, fuel oil, max. 5.3 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

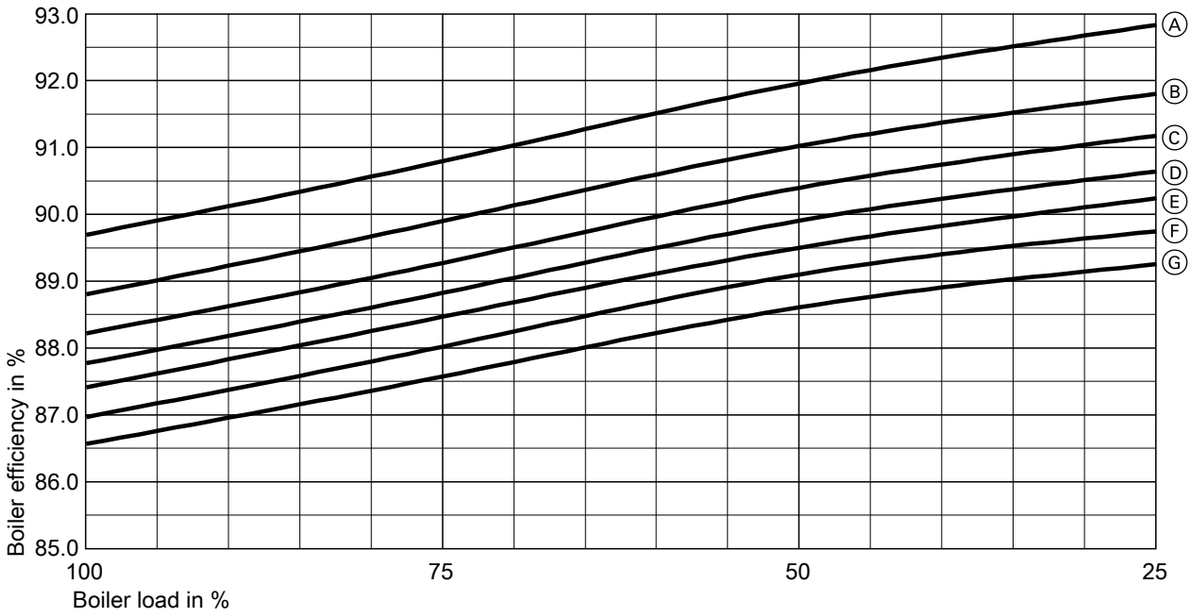
2.4 Boiler size 4, max. combustion output 6.4 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 6.4 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 6.4 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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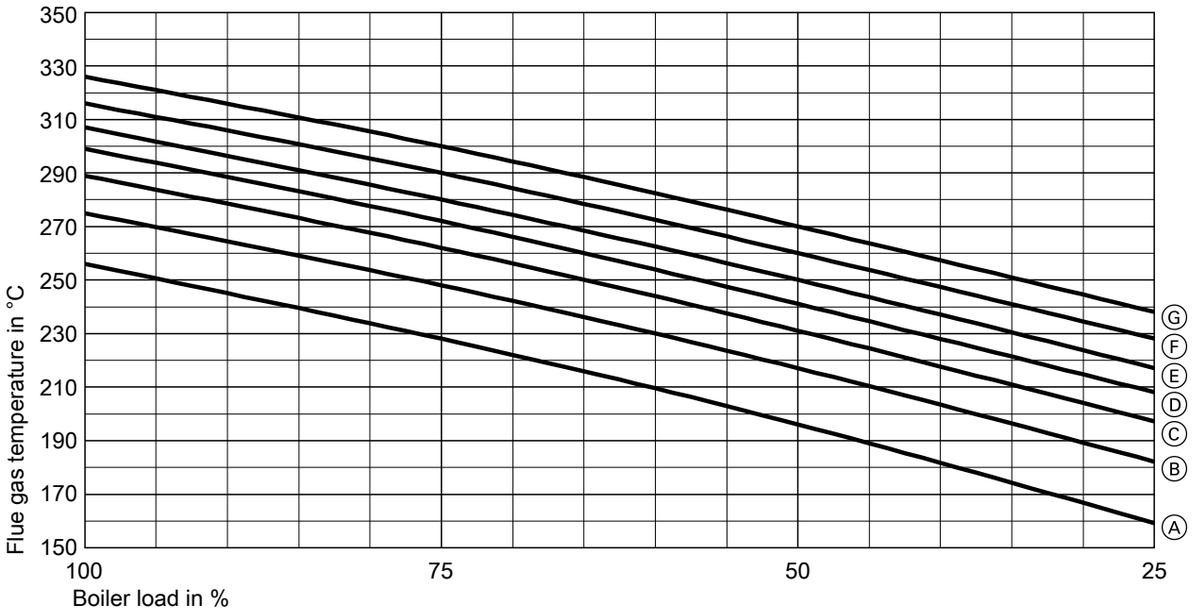
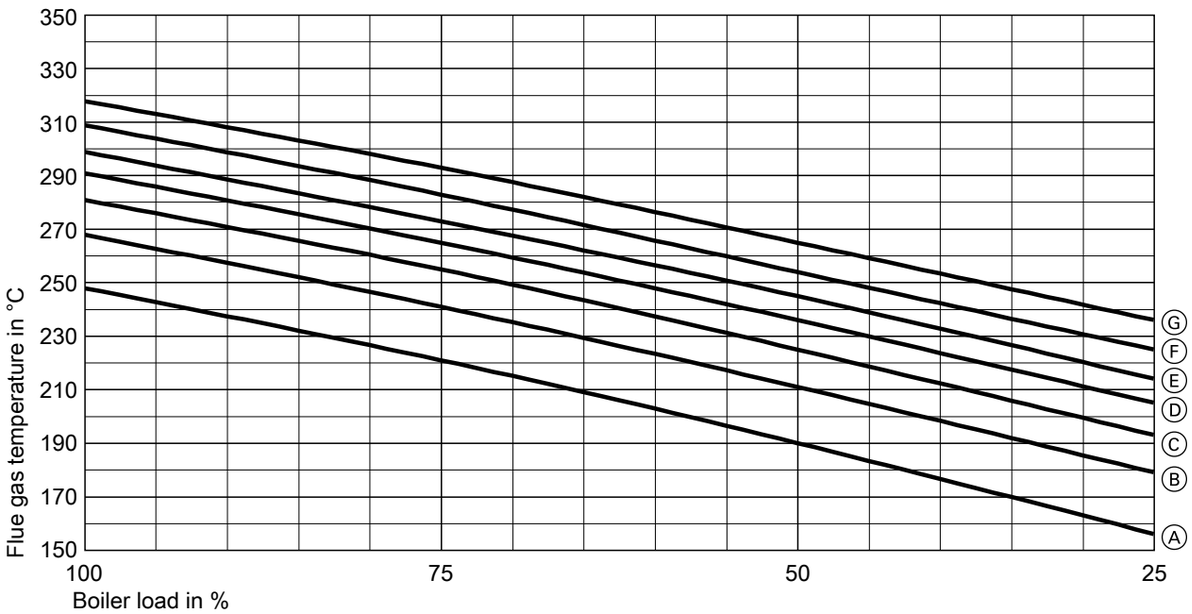
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 6.4 MW, standard (without turbulators)

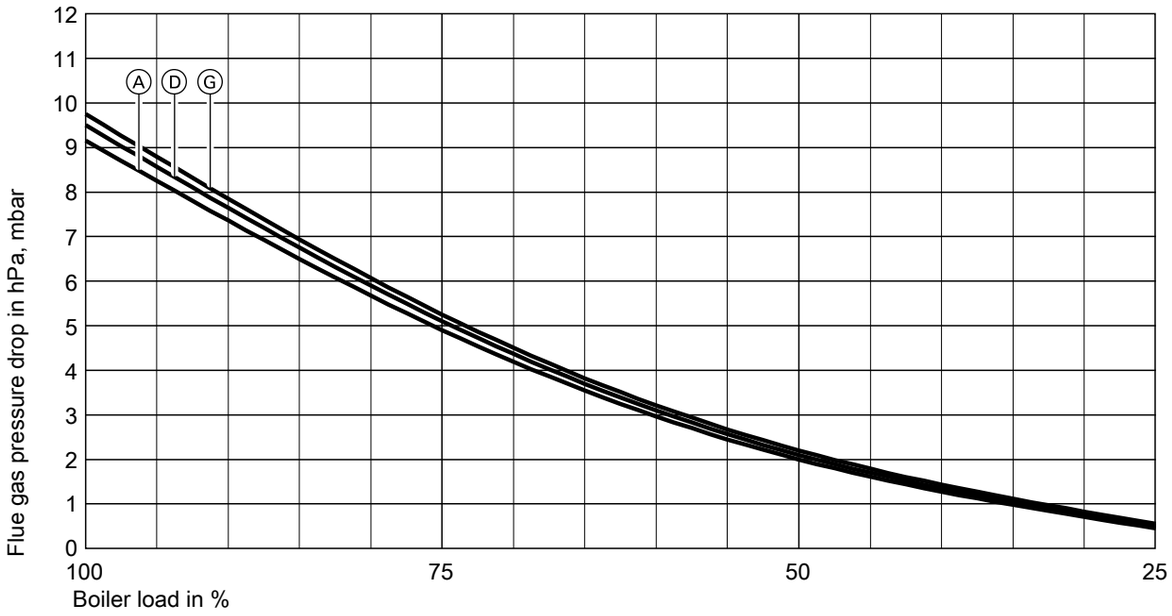
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 6.4 MW, standard (without turbulators)

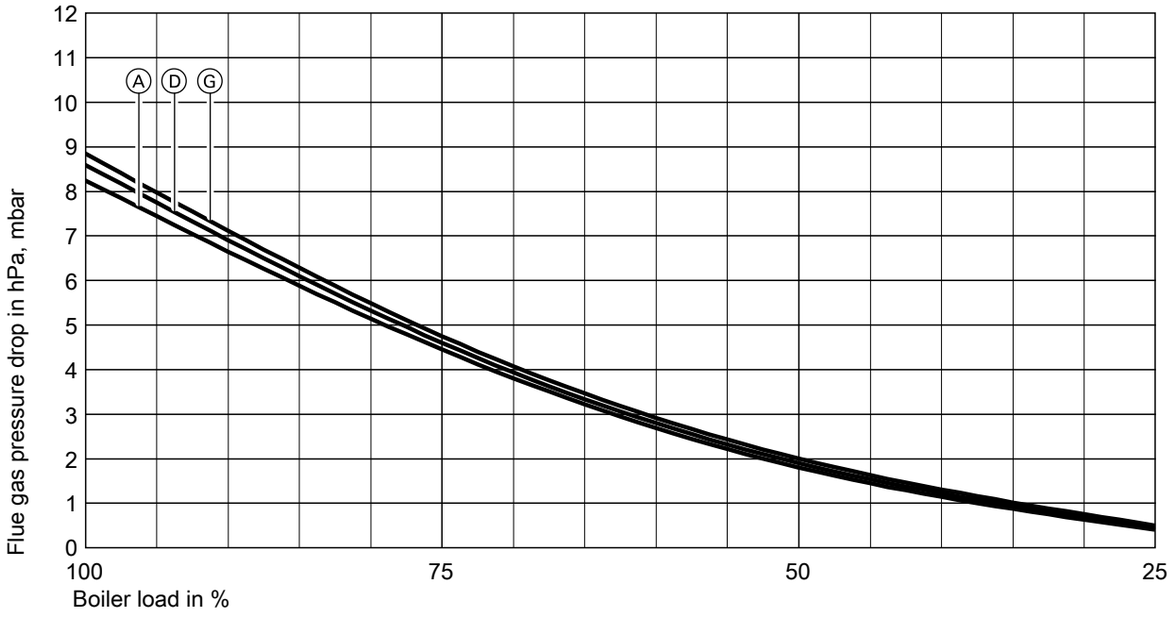
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 6.4 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max 6.4 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

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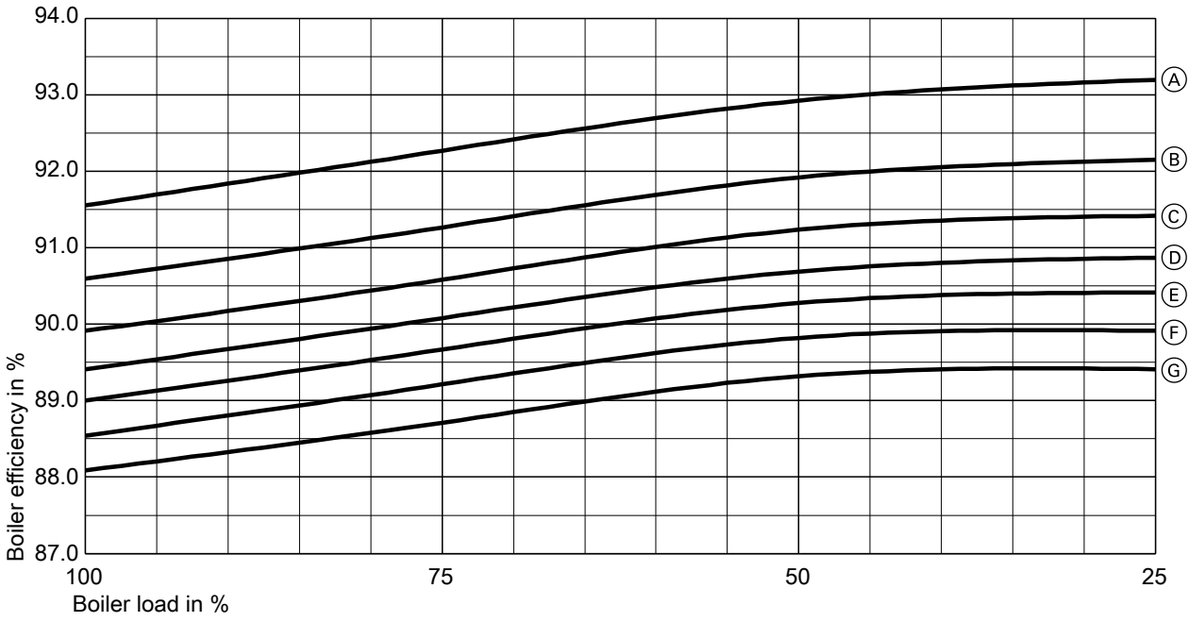
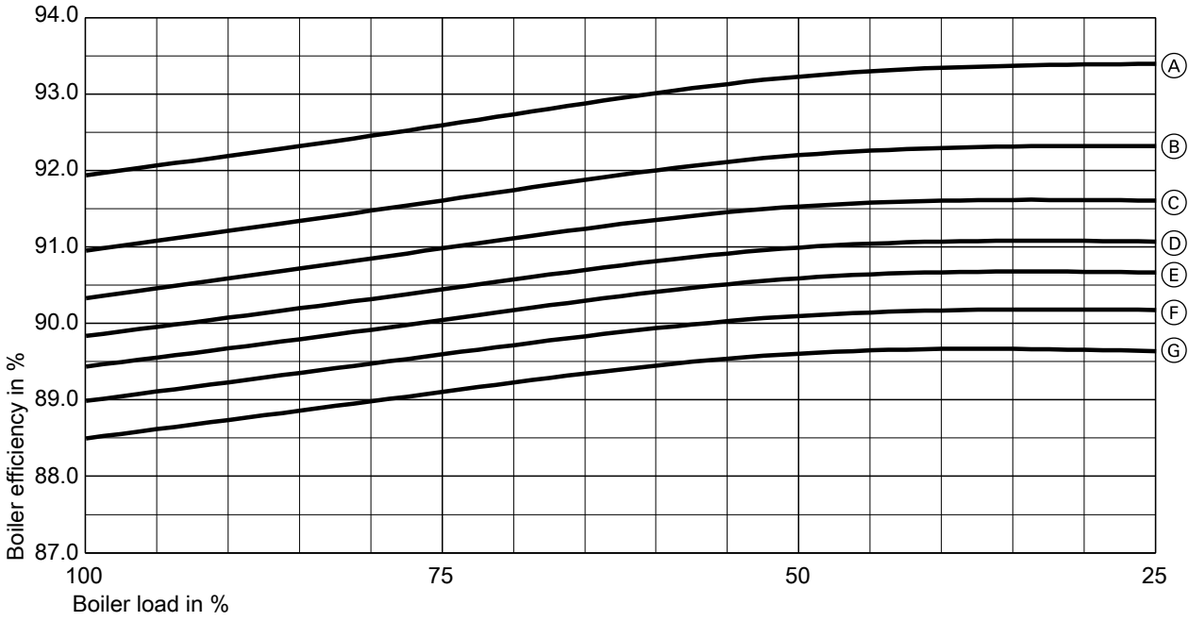
Boiler selection diagrams (cont.)

Version with turbulators (2000 mm)



Boiler efficiency, natural gas, max. 6.4 MW, with turbulators (2000 mm), taking into account boiler radiation losses

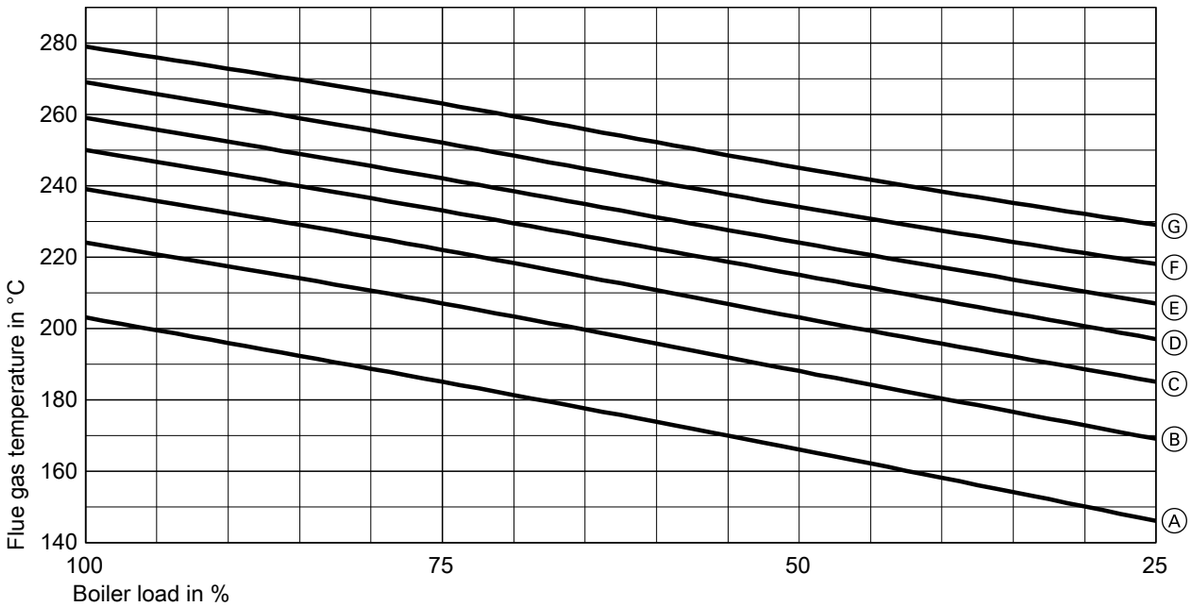
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 6.4 MW, with turbulators (2000 mm), taking into account boiler radiation losses

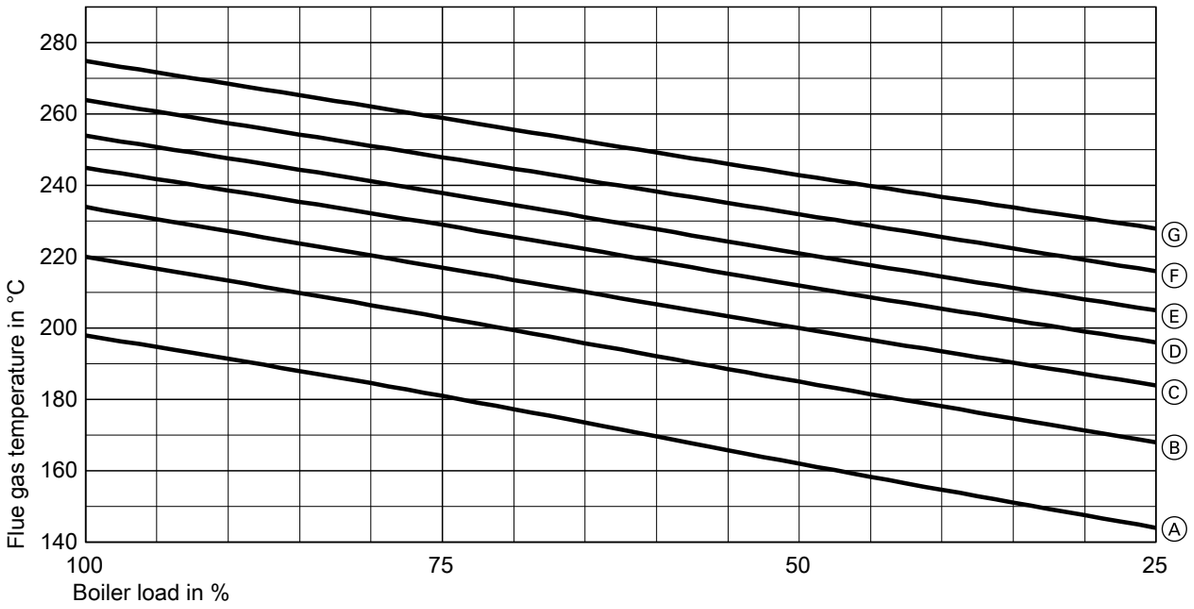
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 6.4 MW, with turbulators (2000 mm)

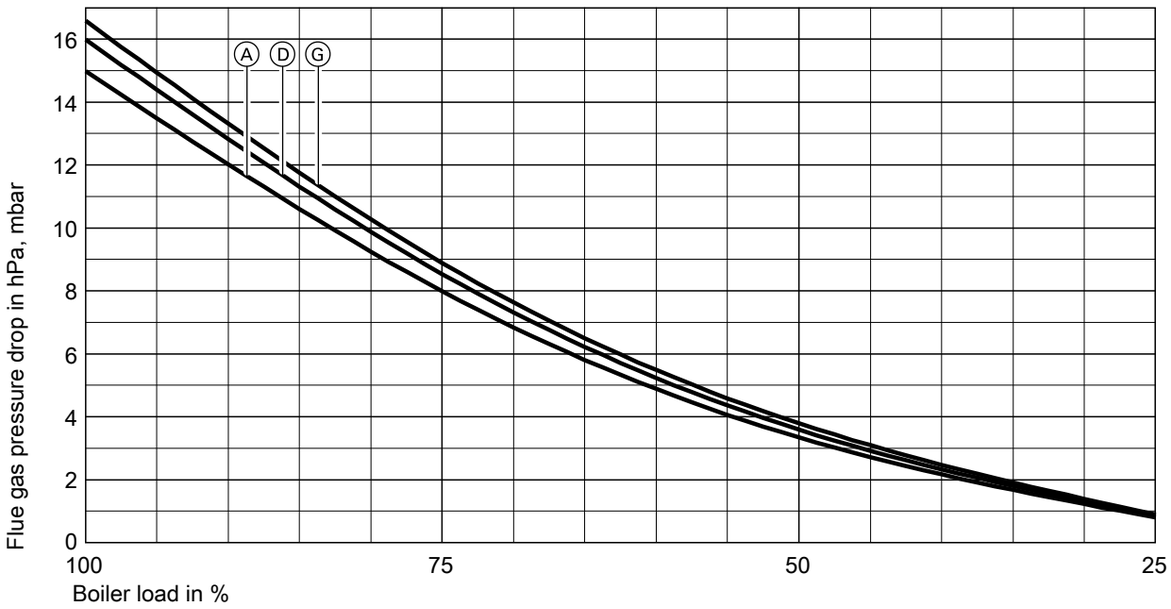
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 6.4 MW, with turbulators (2000 mm)

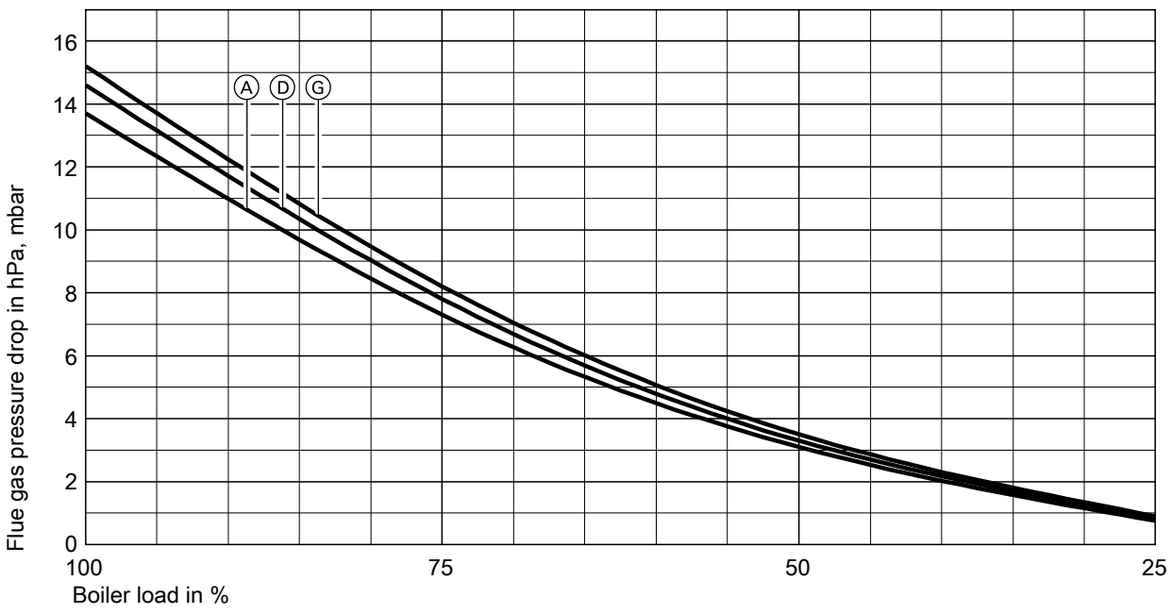
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 6.4 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

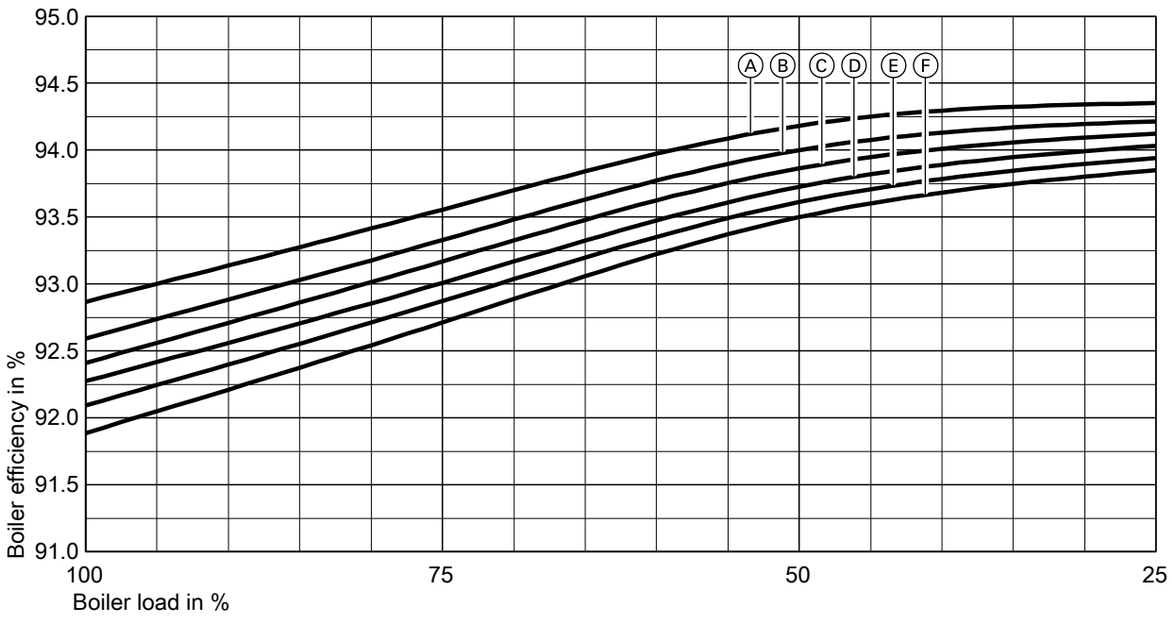


Flue gas pressure drop, fuel oil, max. 6.4 MW, with turbulators (2000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

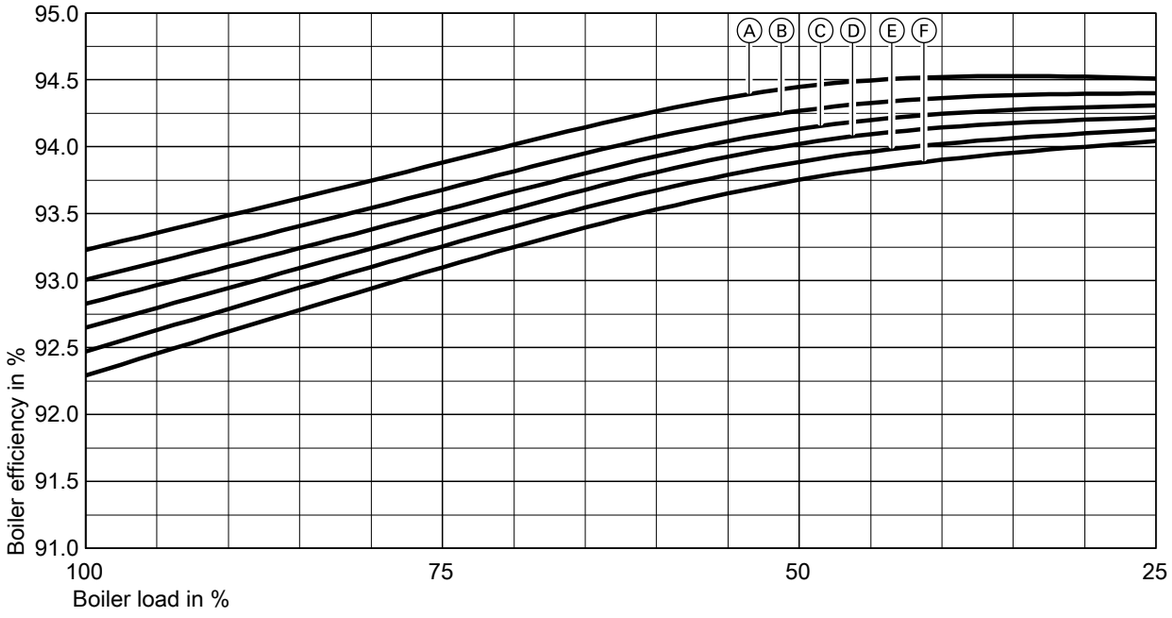
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 6.4 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 6.4 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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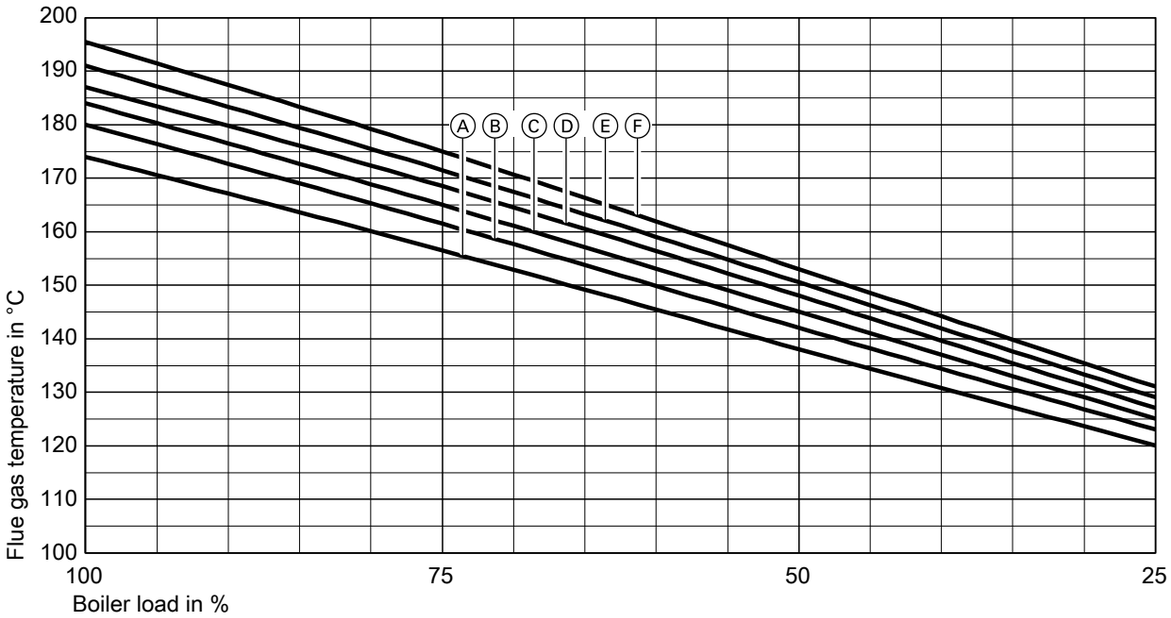
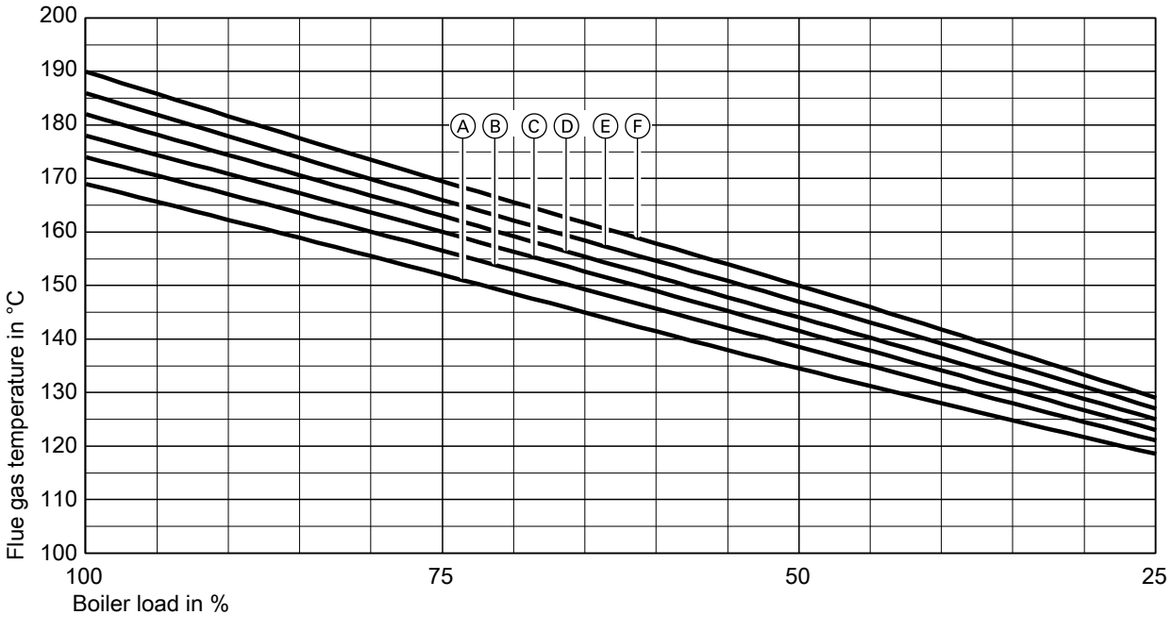
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 6.4 MW, without turbulators, with ECO 100

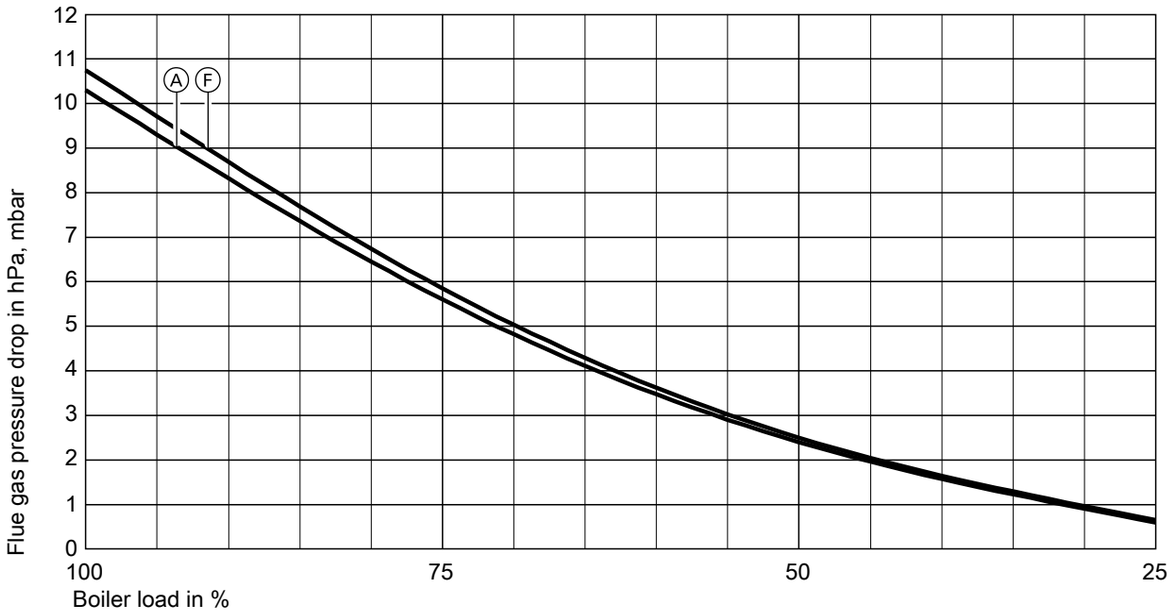
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 6.4 MW, without turbulators, with ECO 100

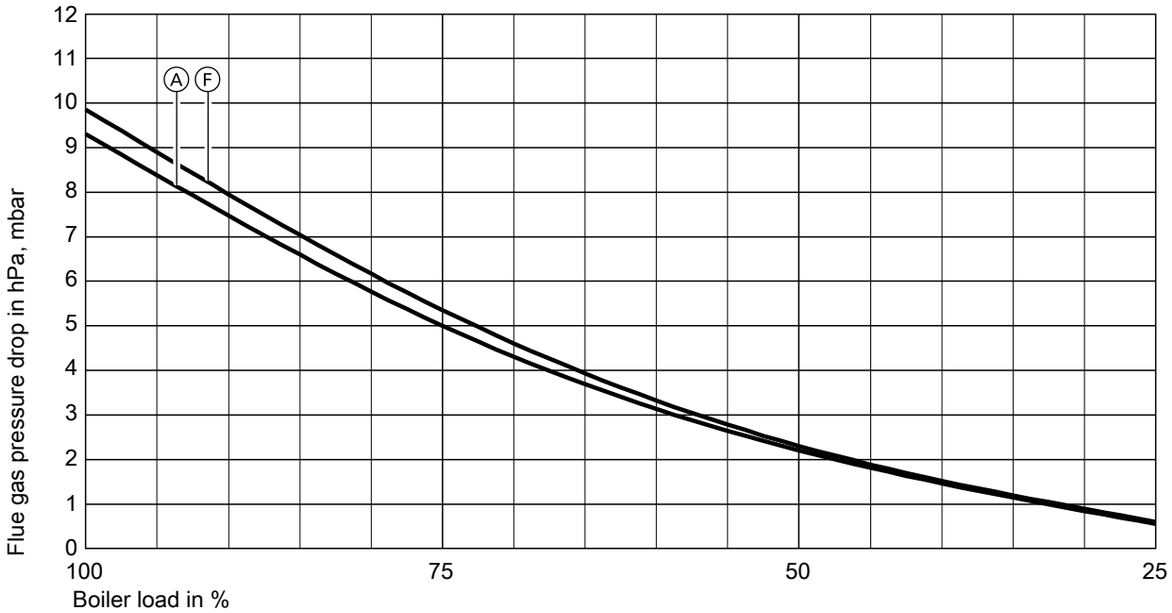
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 6.4 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

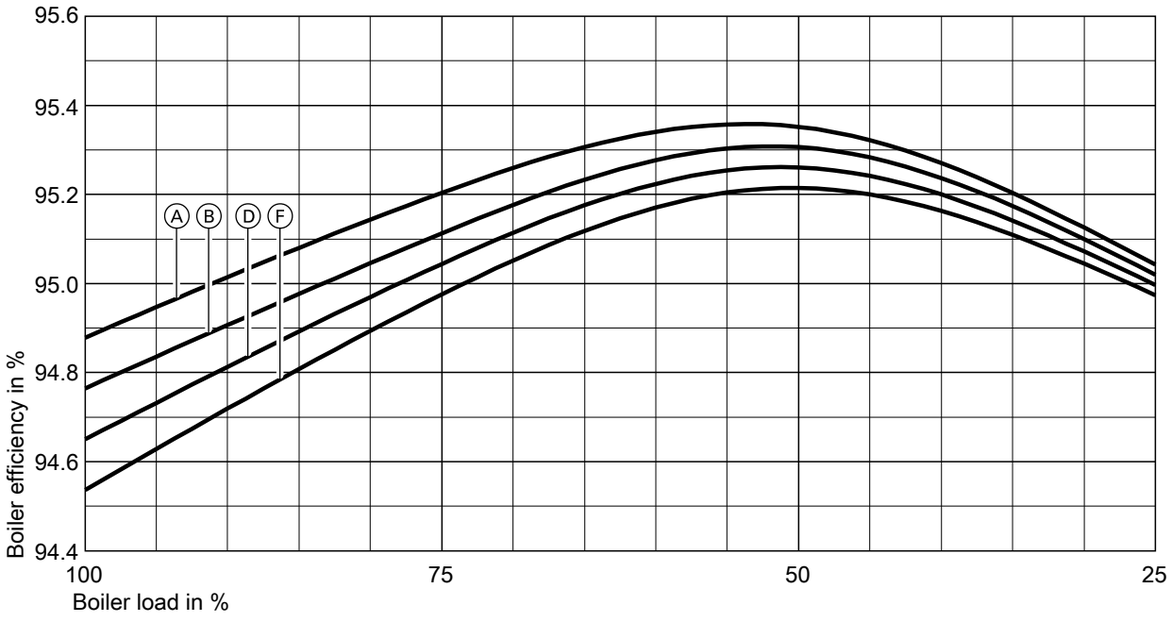


Flue gas pressure drop, fuel oil, max. 6.4 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

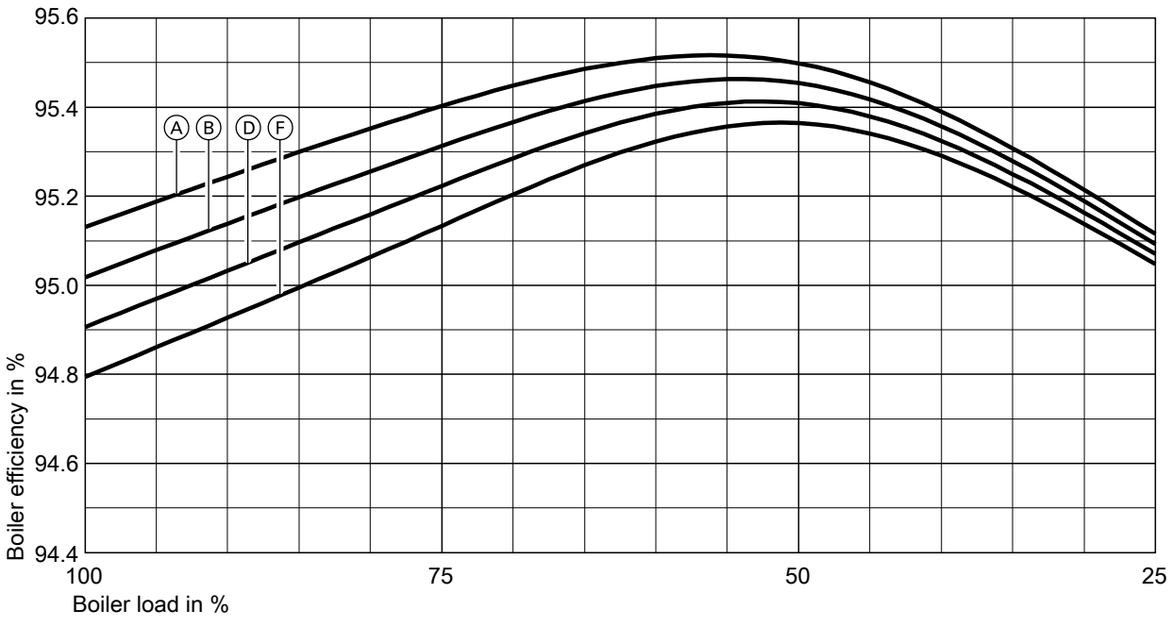
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 6.4 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

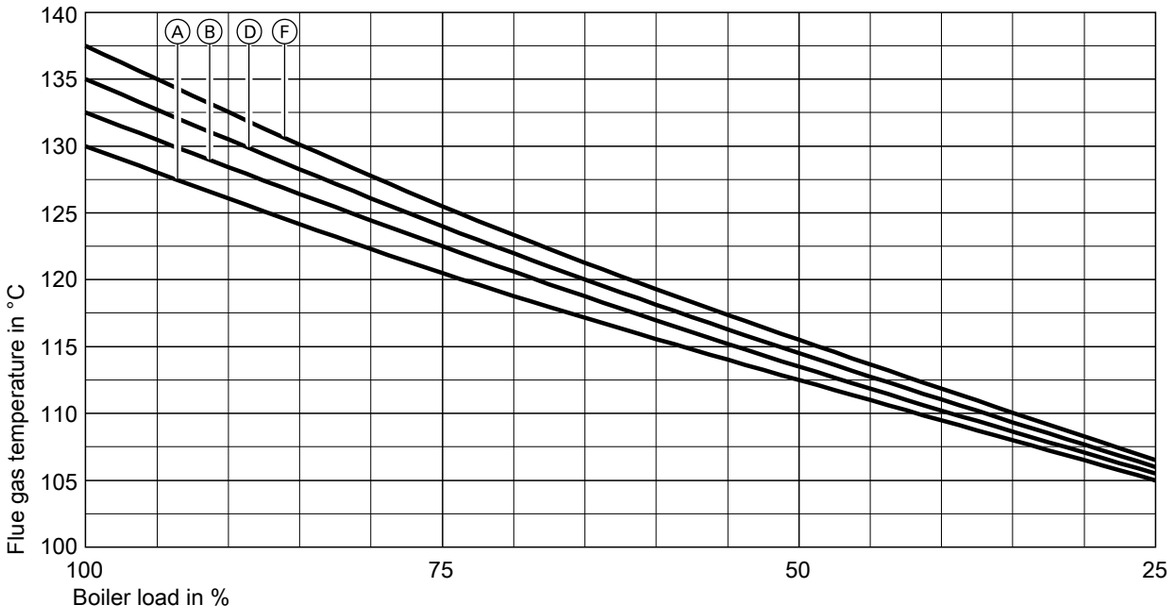
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 6.4 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

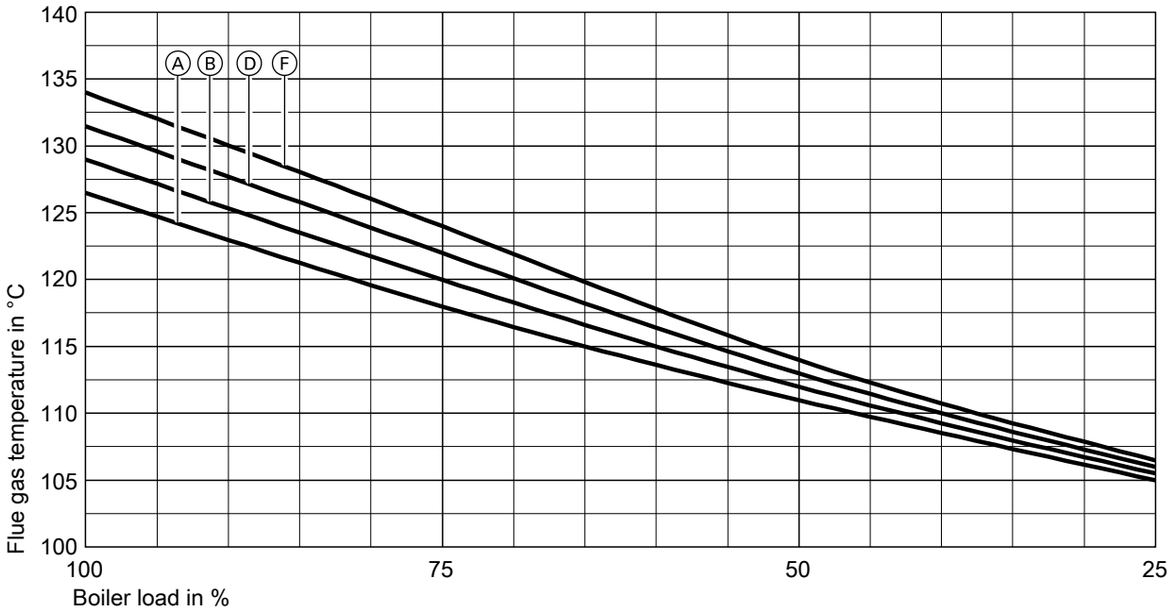
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 6.4 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 6.4 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

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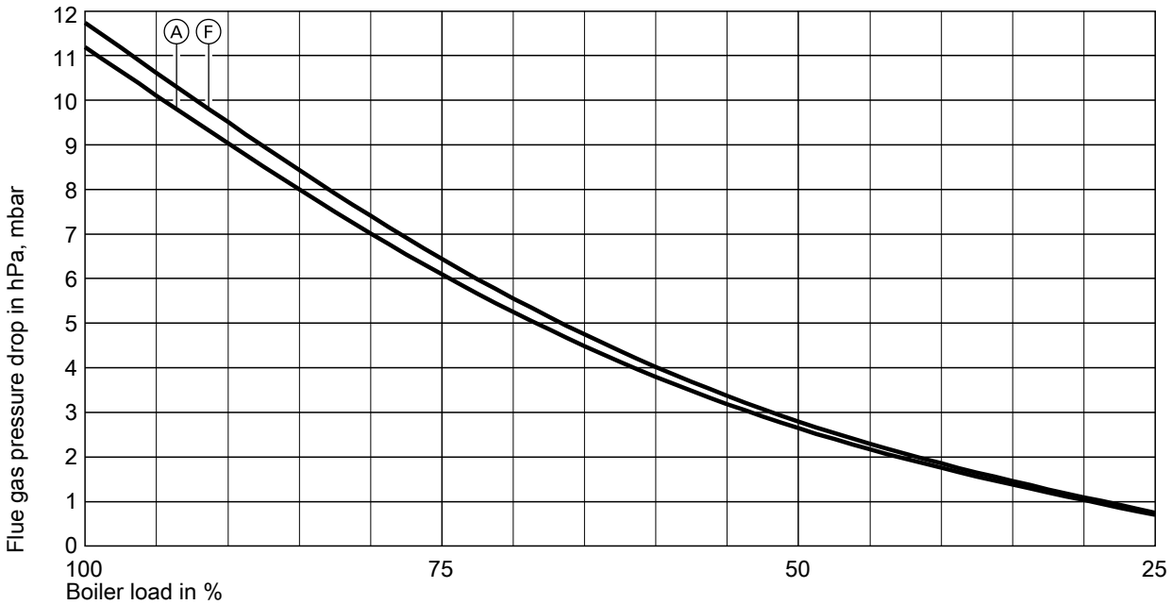
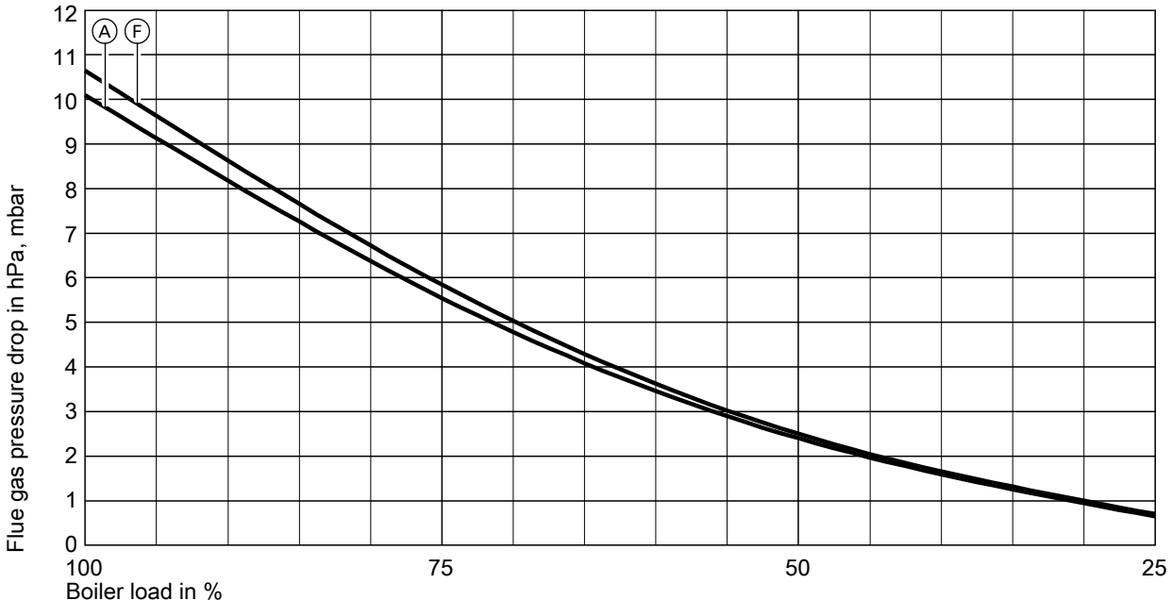
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 6.4 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

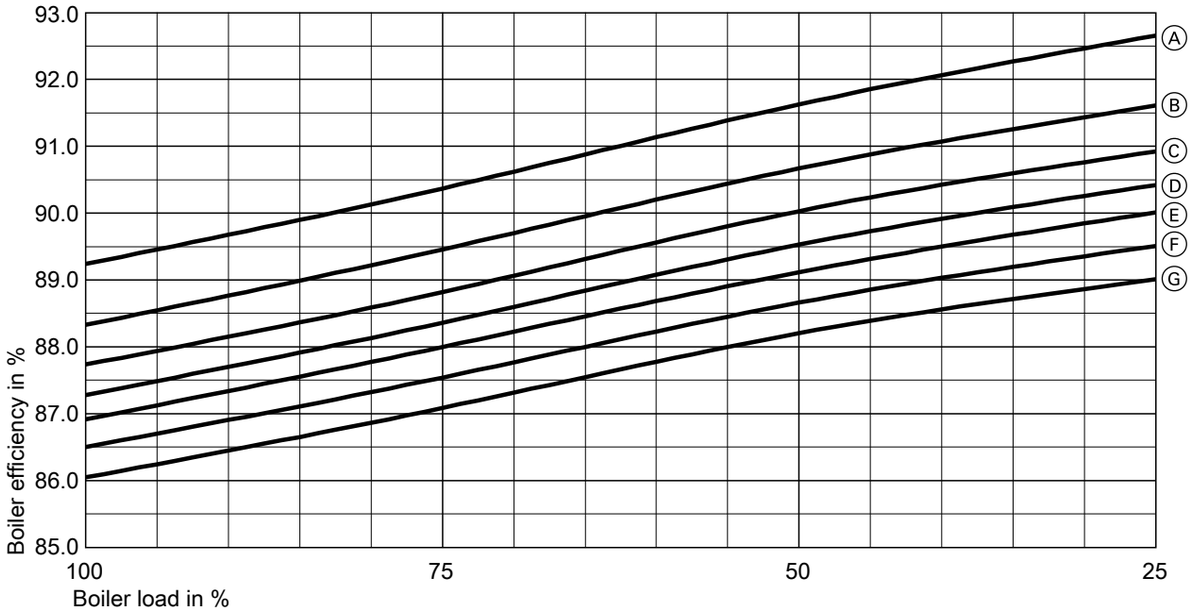


Flue gas pressure drop, fuel oil, max. 6.4 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

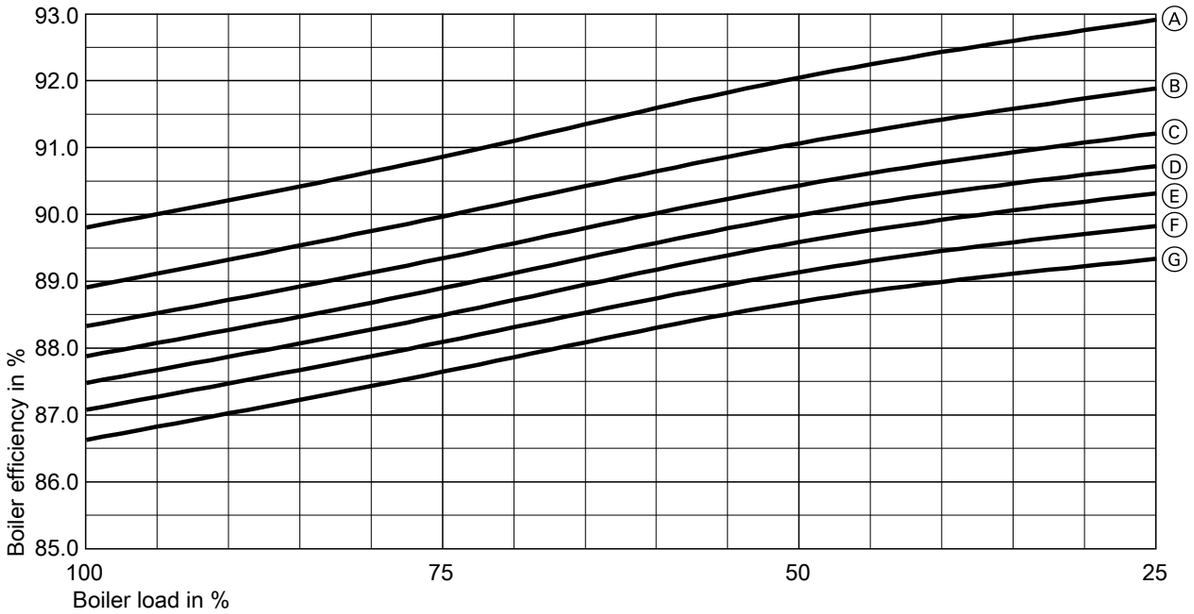
2.5 Boiler size 5, max. combustion output 7.5 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 7.5 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 7.5 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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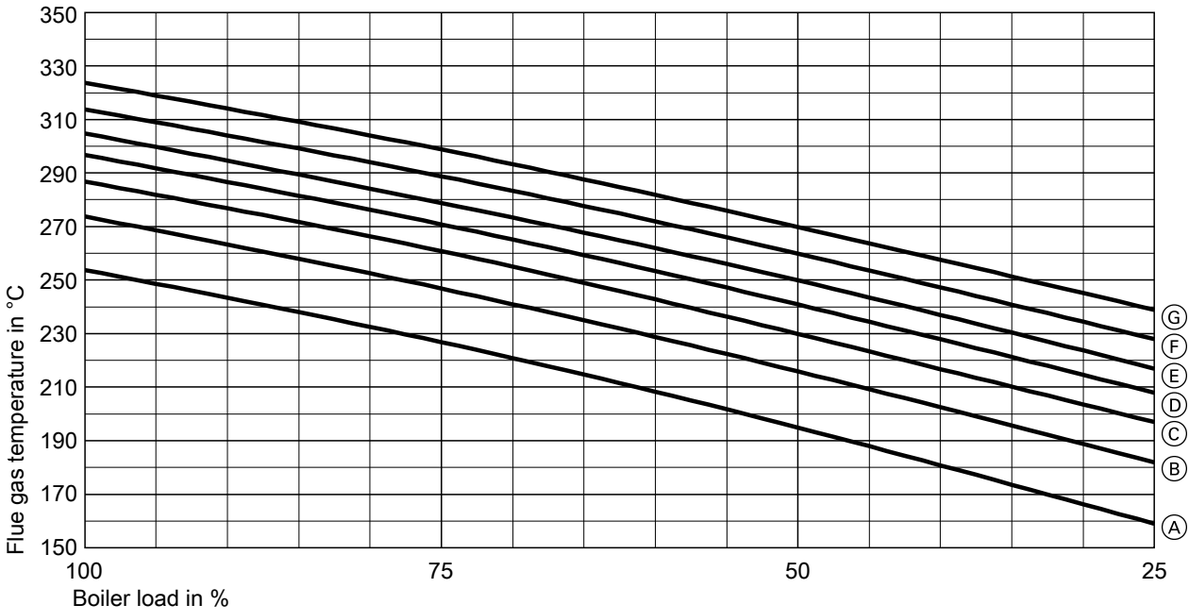
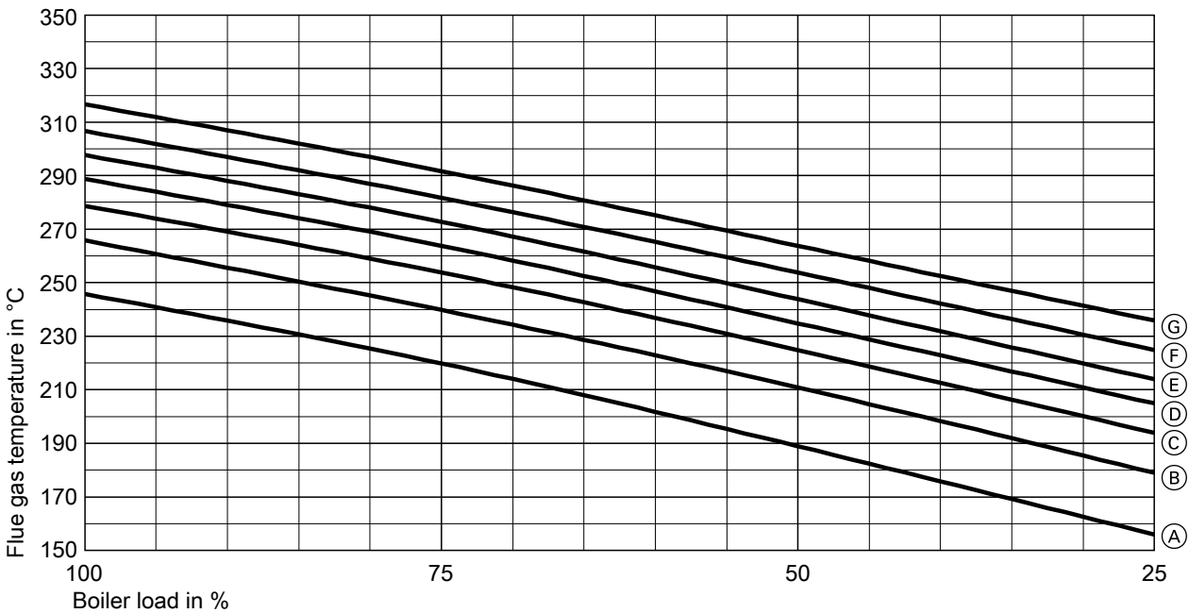
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 7.5 MW, standard (without turbulators)

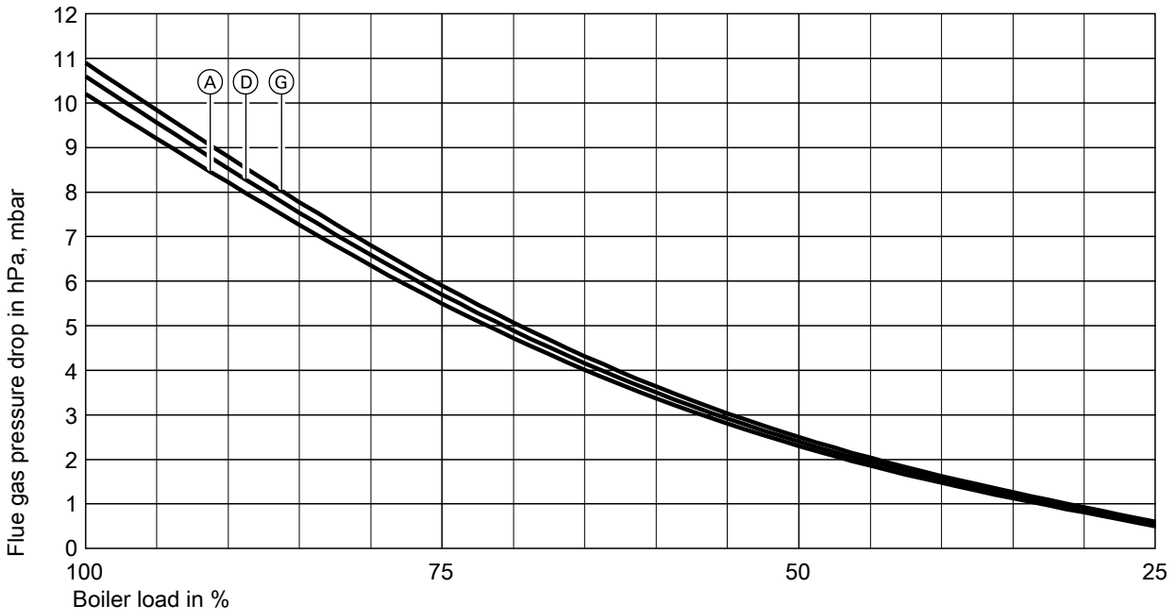
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 7.5 MW, standard (without turbulators)

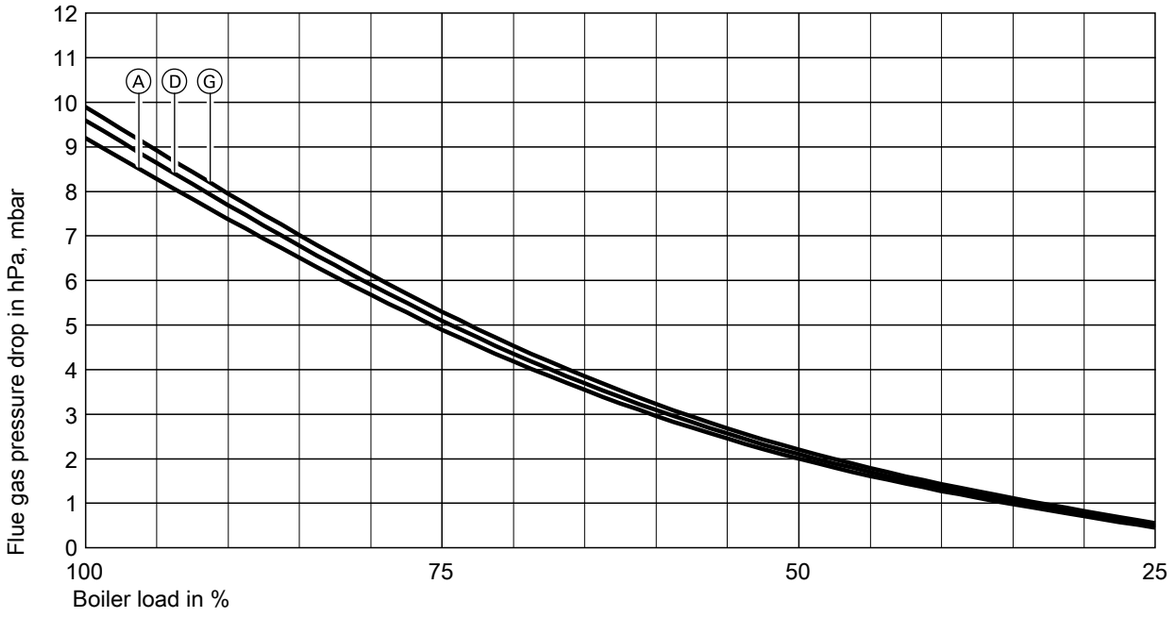
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 7.5 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max 7.5 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

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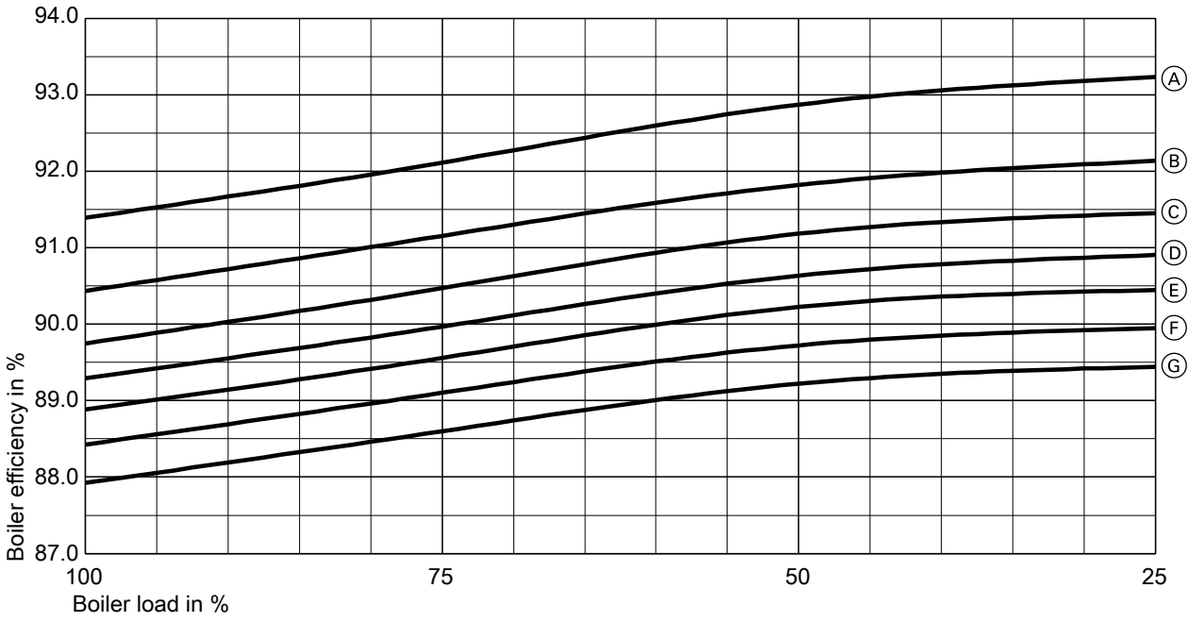
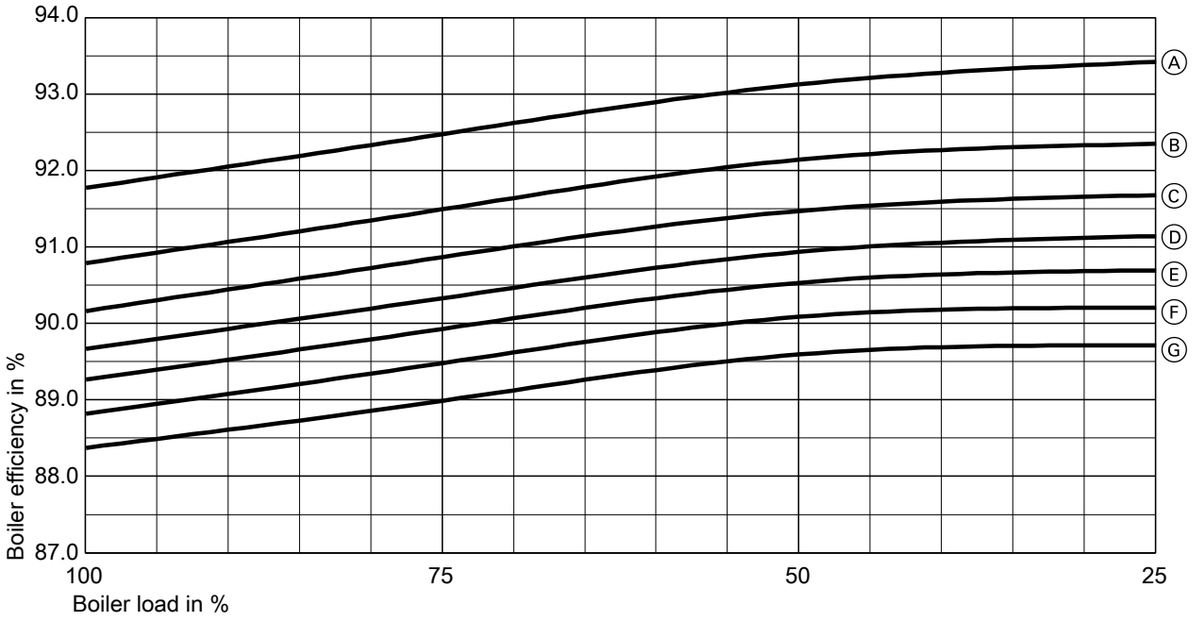
Boiler selection diagrams (cont.)

Version with turbulators (1750 mm)



Boiler efficiency, natural gas, max. 7.5 MW, with turbulators (1750 mm), taking into account boiler radiation losses

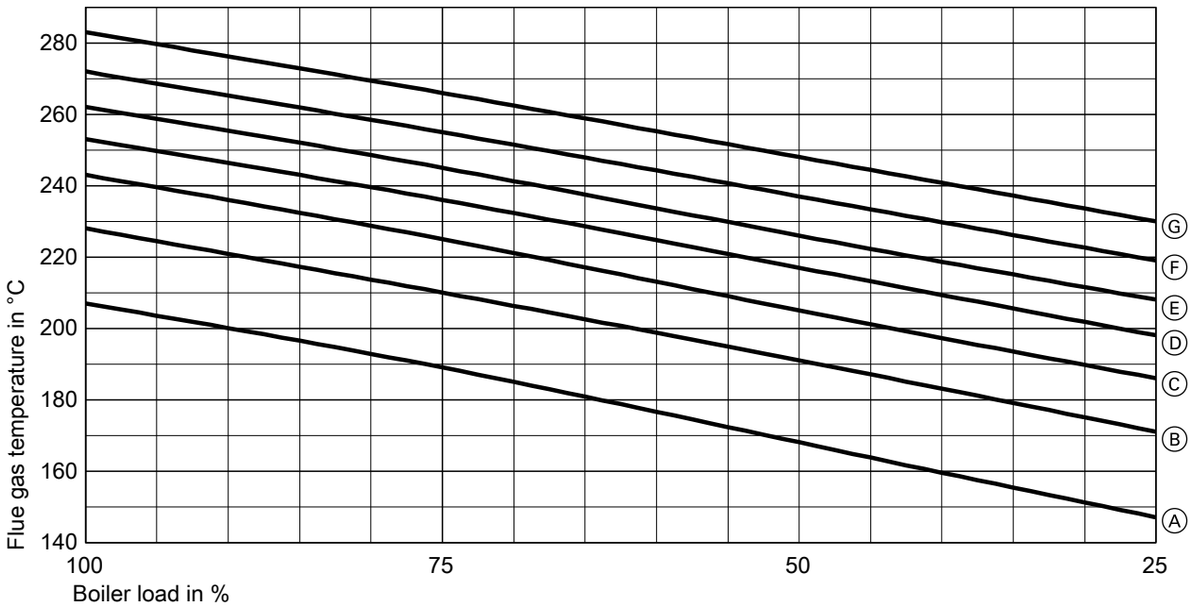
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 7.5 MW, with turbulators (1750 mm), taking into account boiler radiation losses

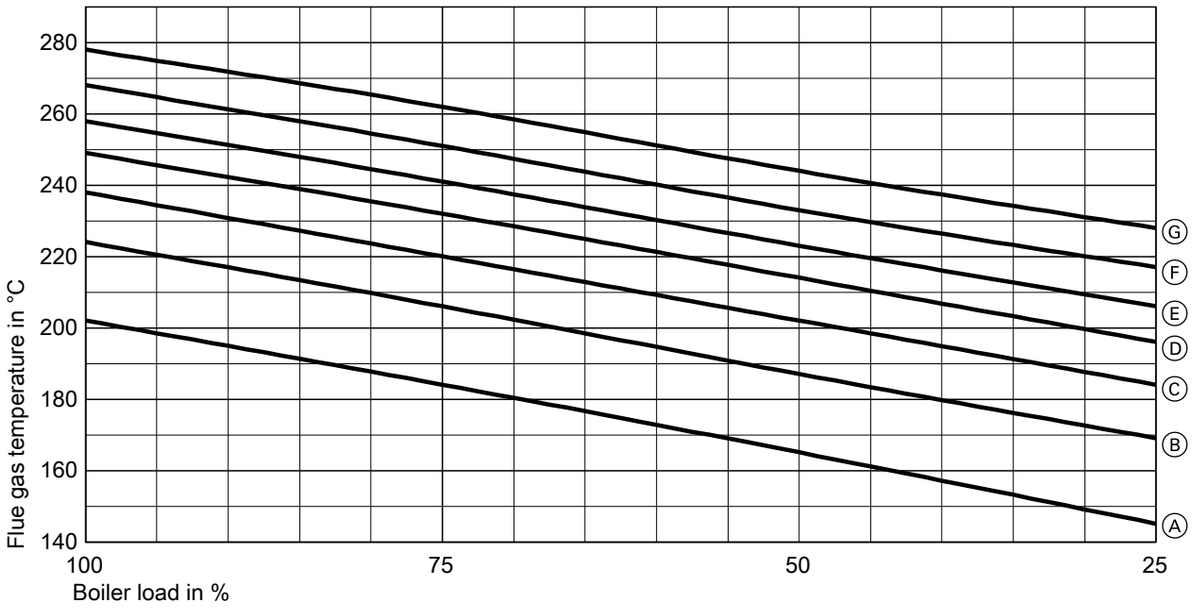
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 7.5 MW, with turbulators (1750 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 7.5 MW, with turbulators (1750 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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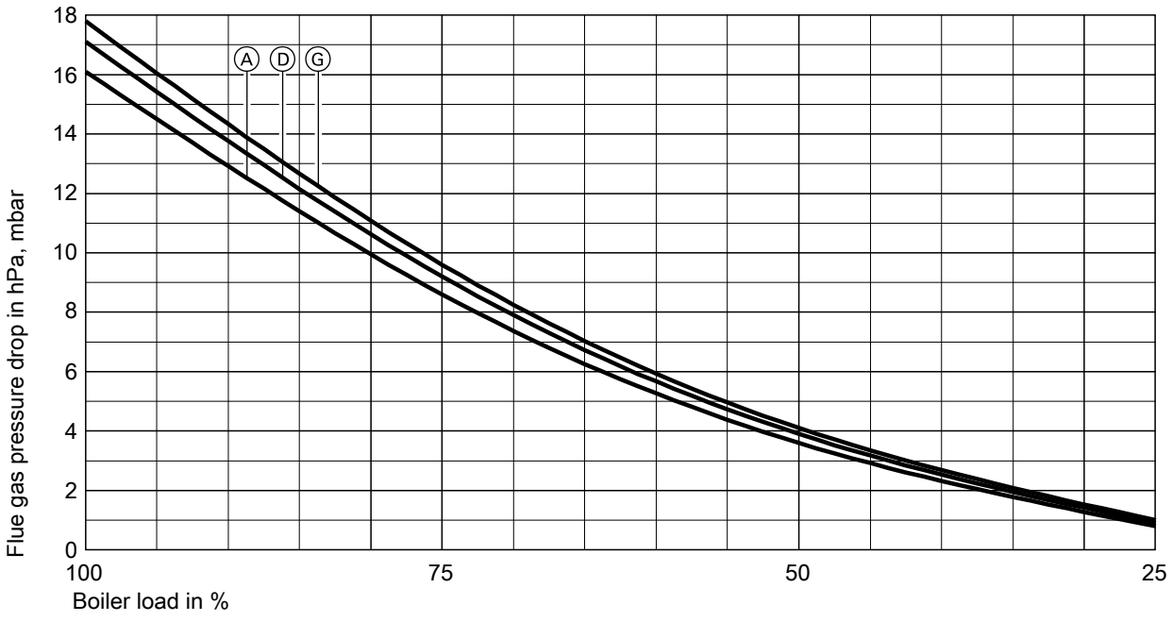
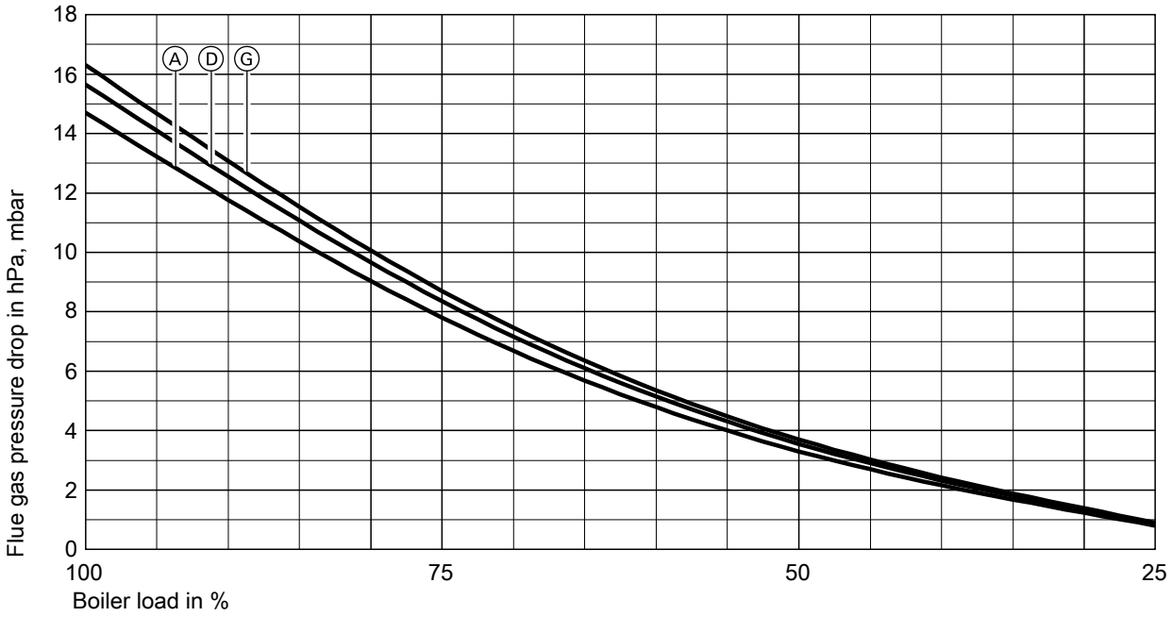
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 7.5 MW, with turbulators (1750 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

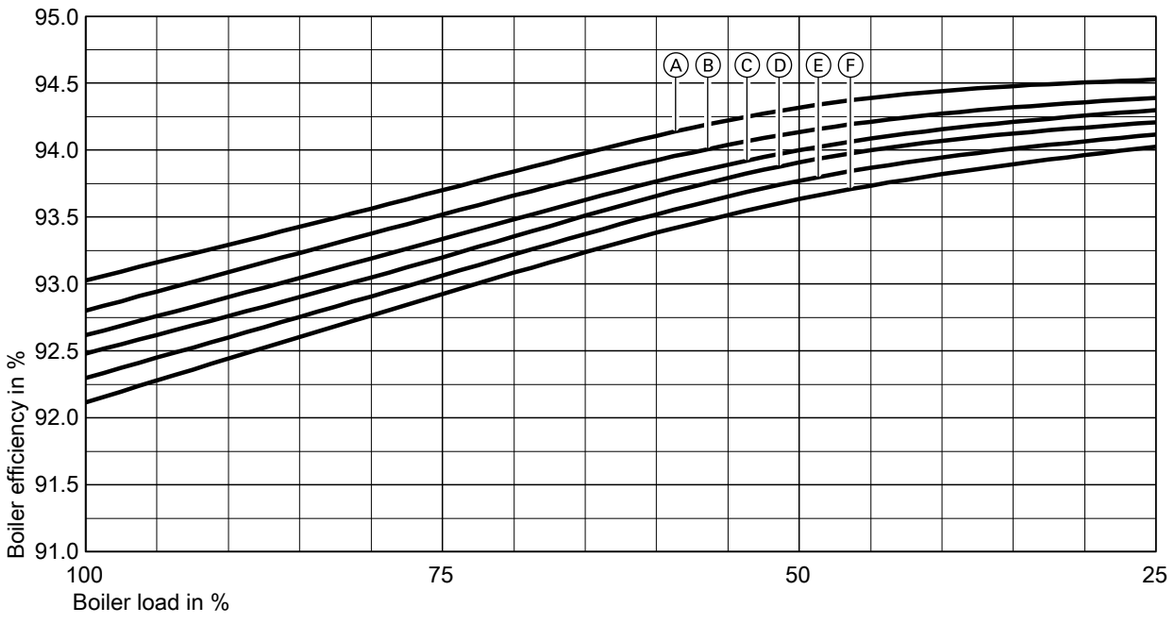


Flue gas pressure drop, fuel oil, max. 7.5 MW, with turbulators (1750 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

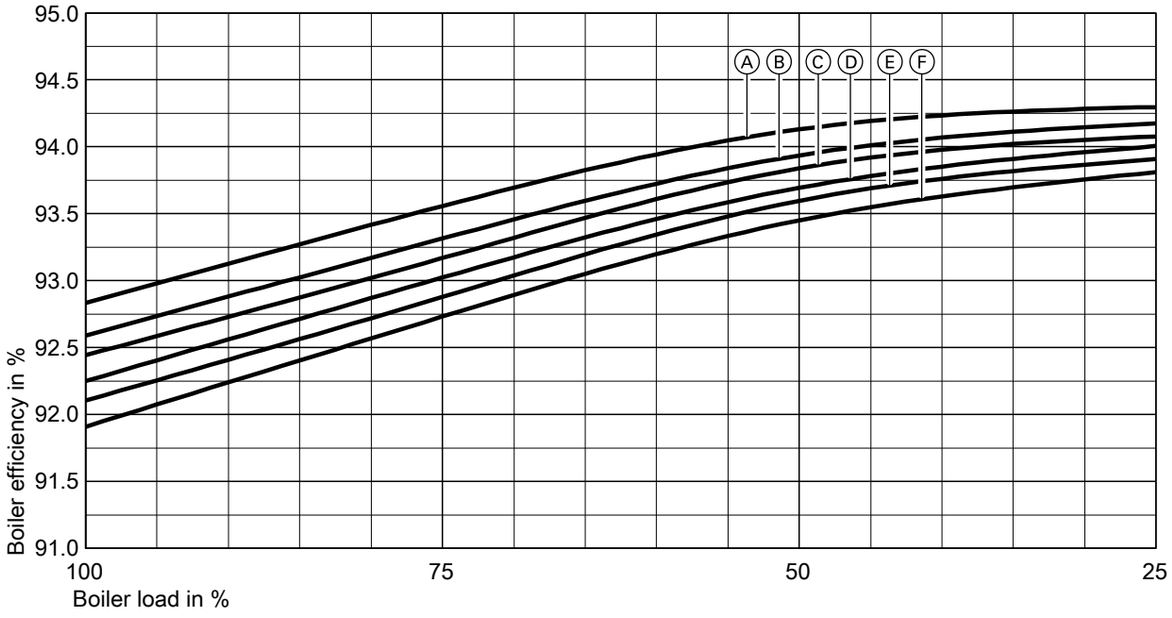
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 7.5 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 7.5 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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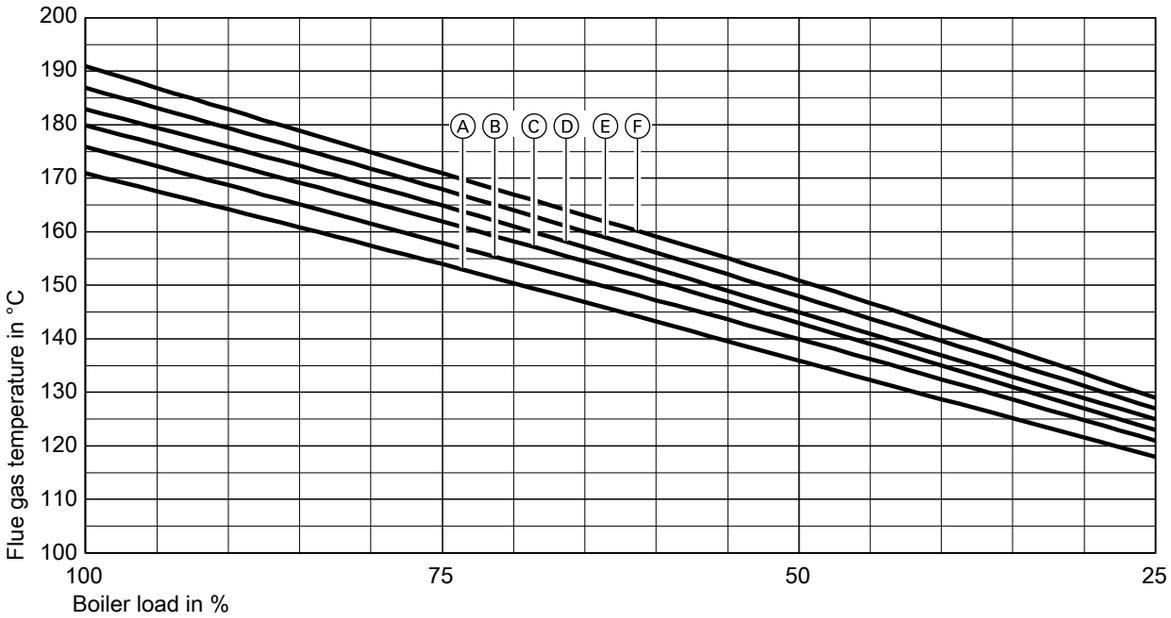
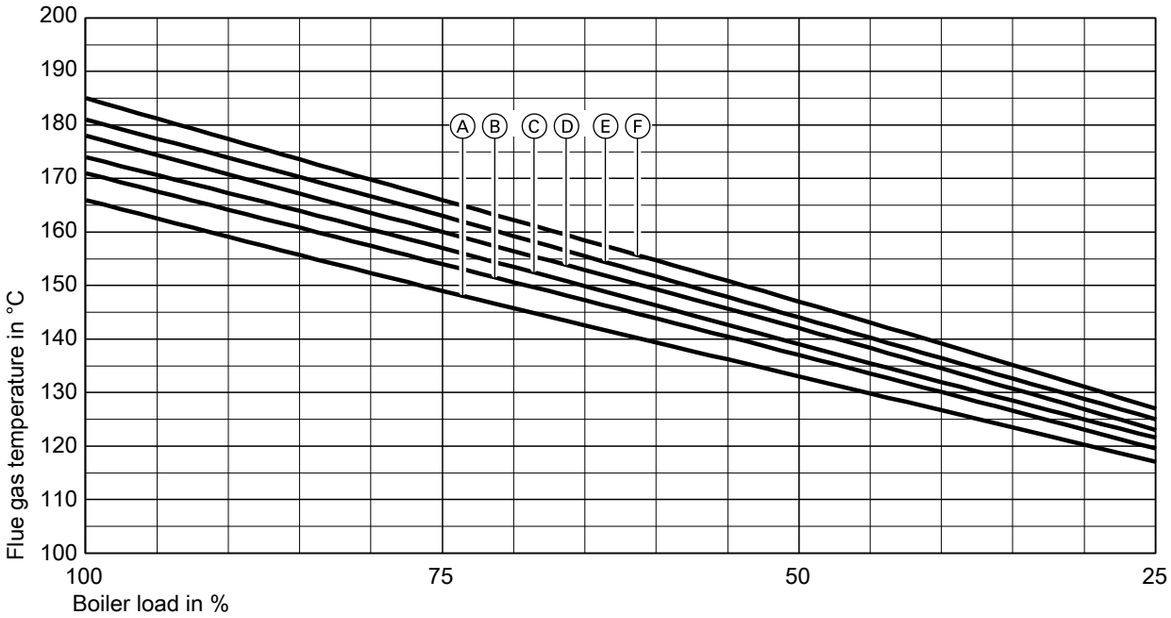
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 7.5 MW, without turbulators, with ECO 100

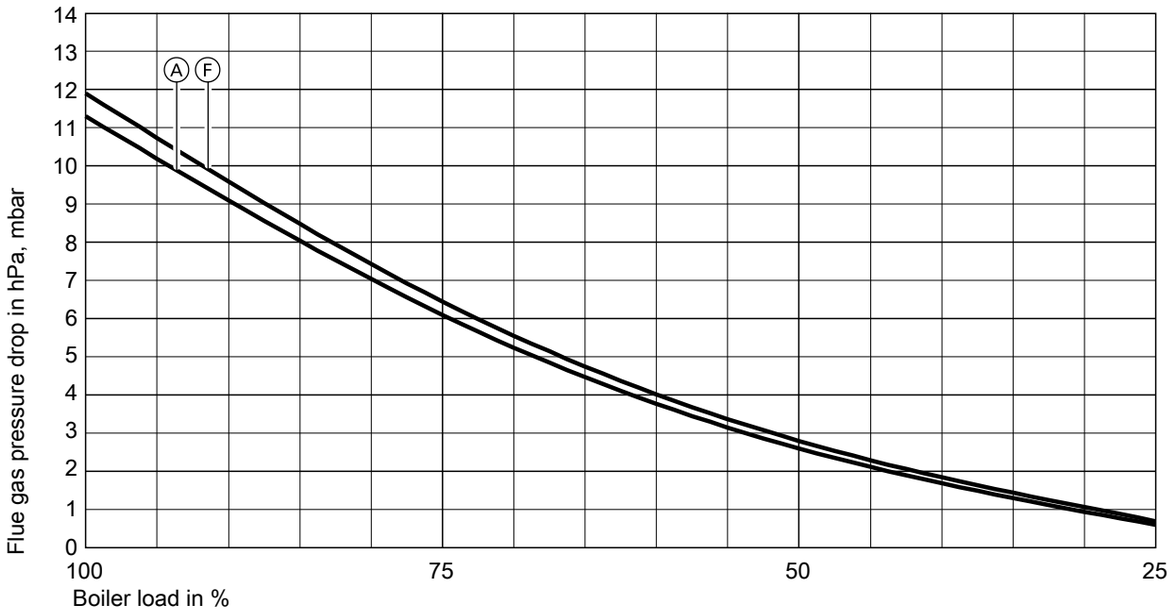
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 7.5 MW, without turbulators, with ECO 100

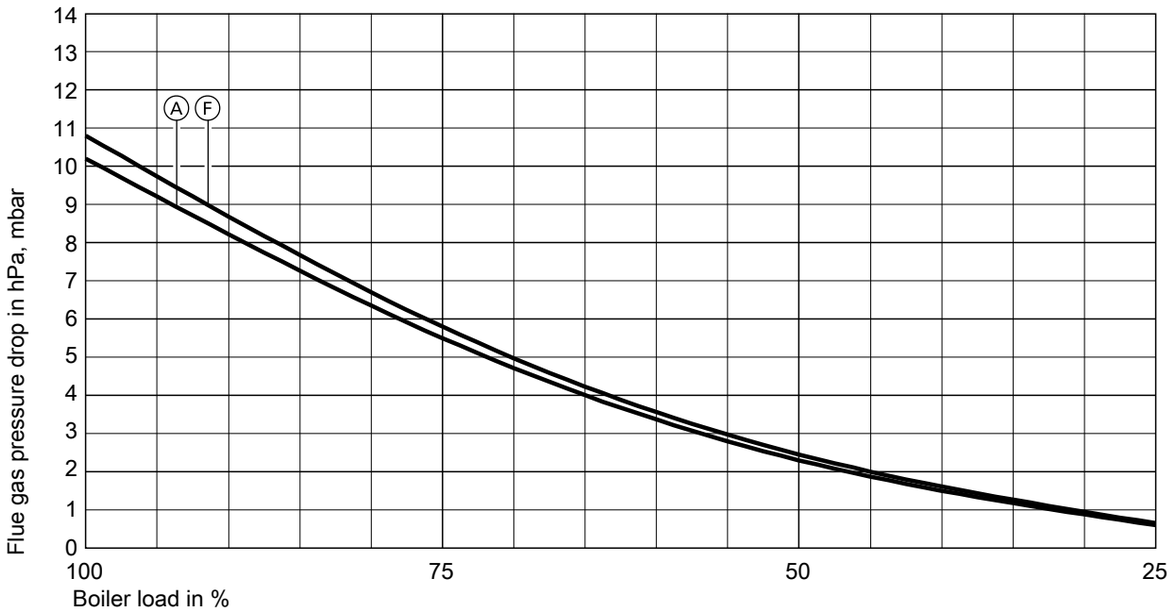
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 7.5 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max. 7.5 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

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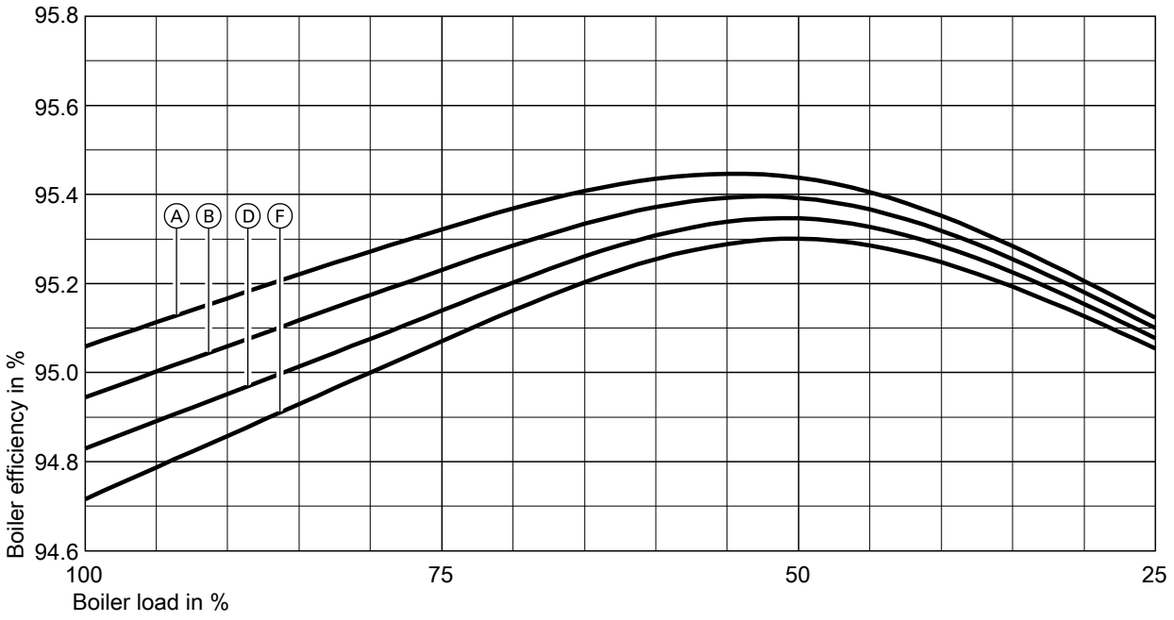
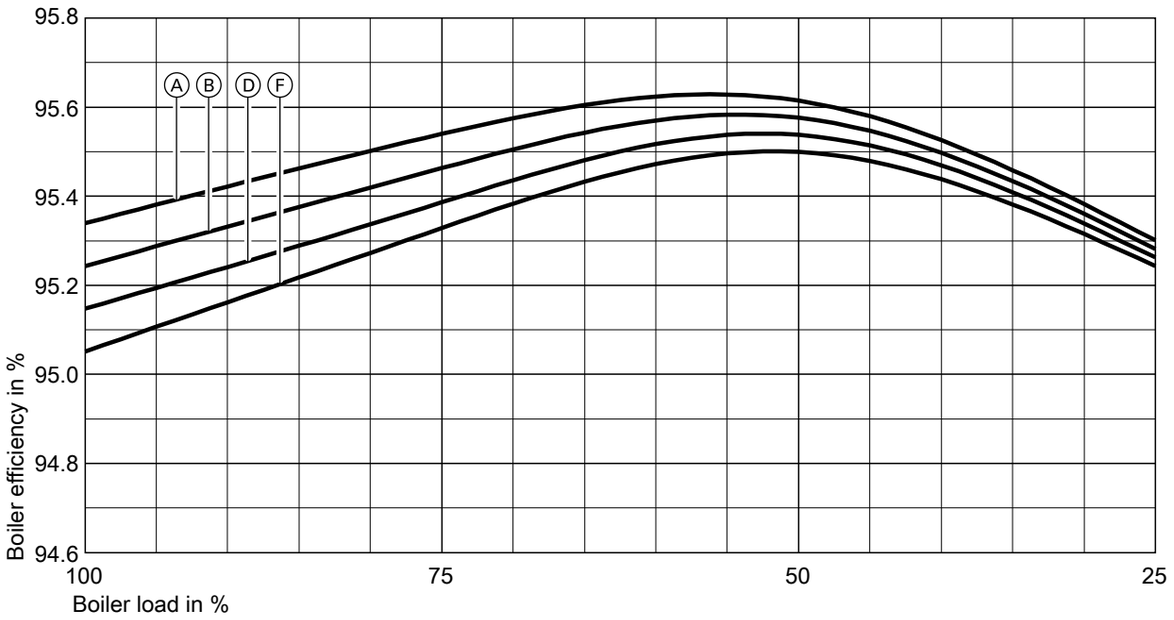
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 7.5 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

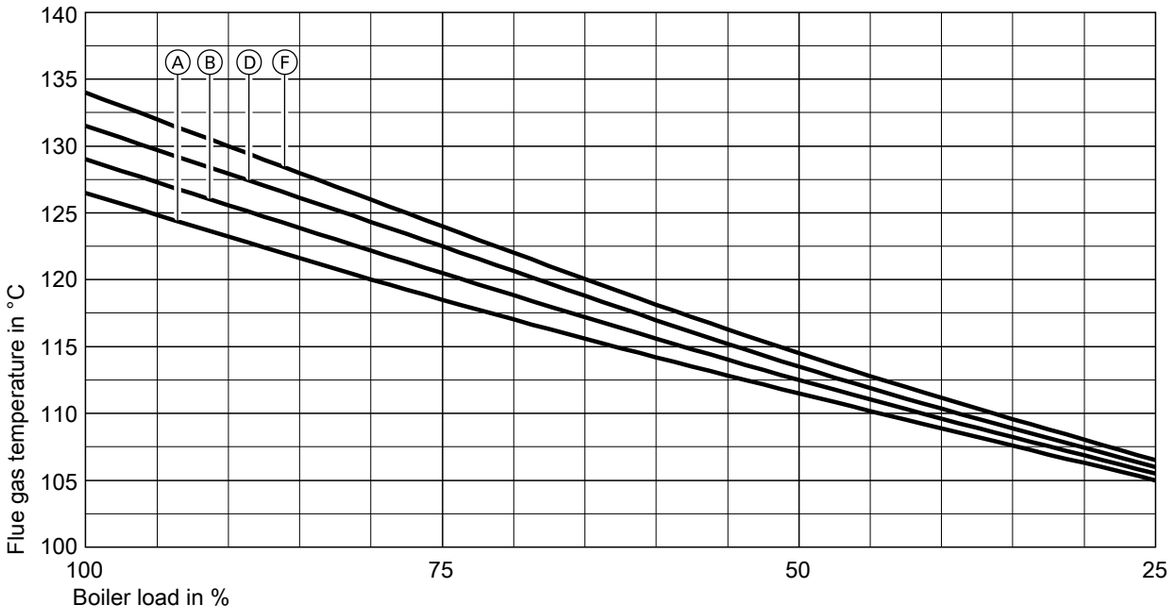
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 7.5 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

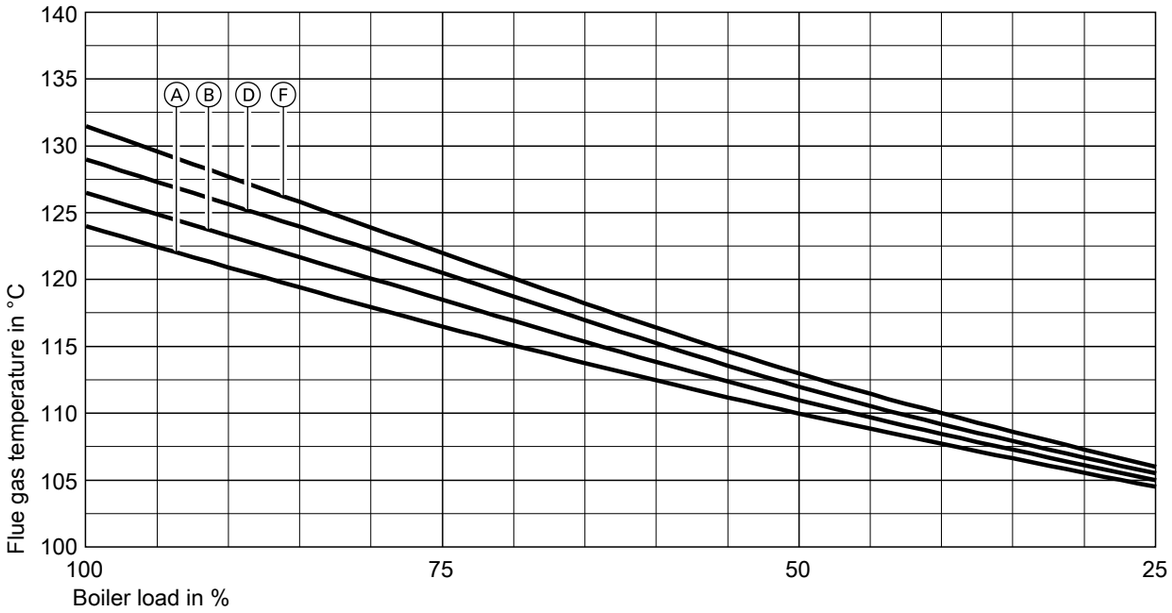
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 7.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 7.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

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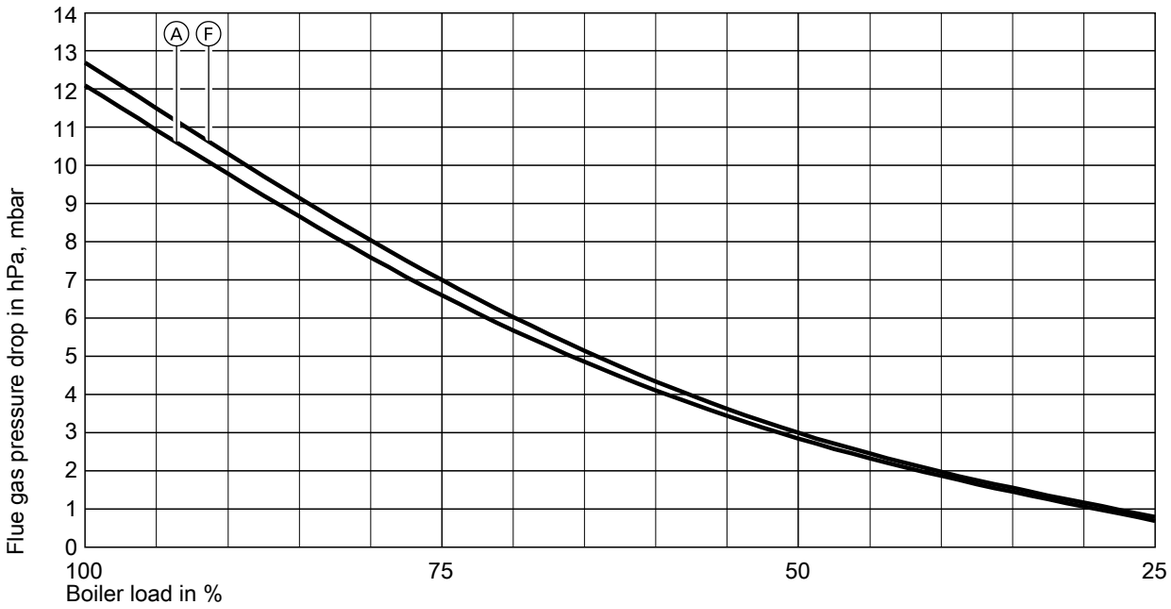
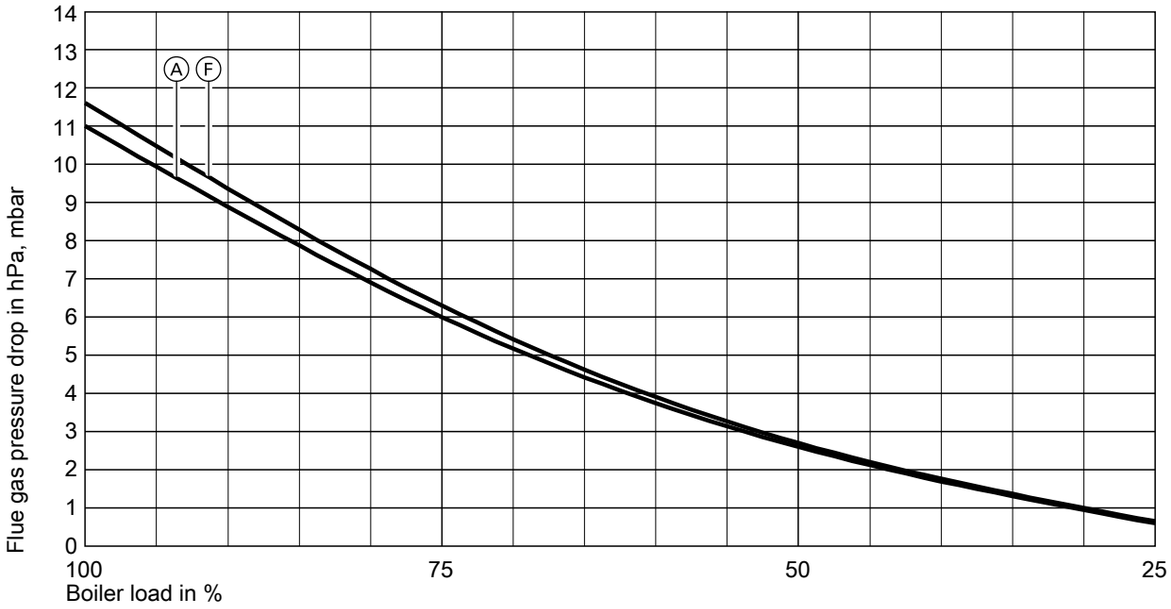
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 7.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

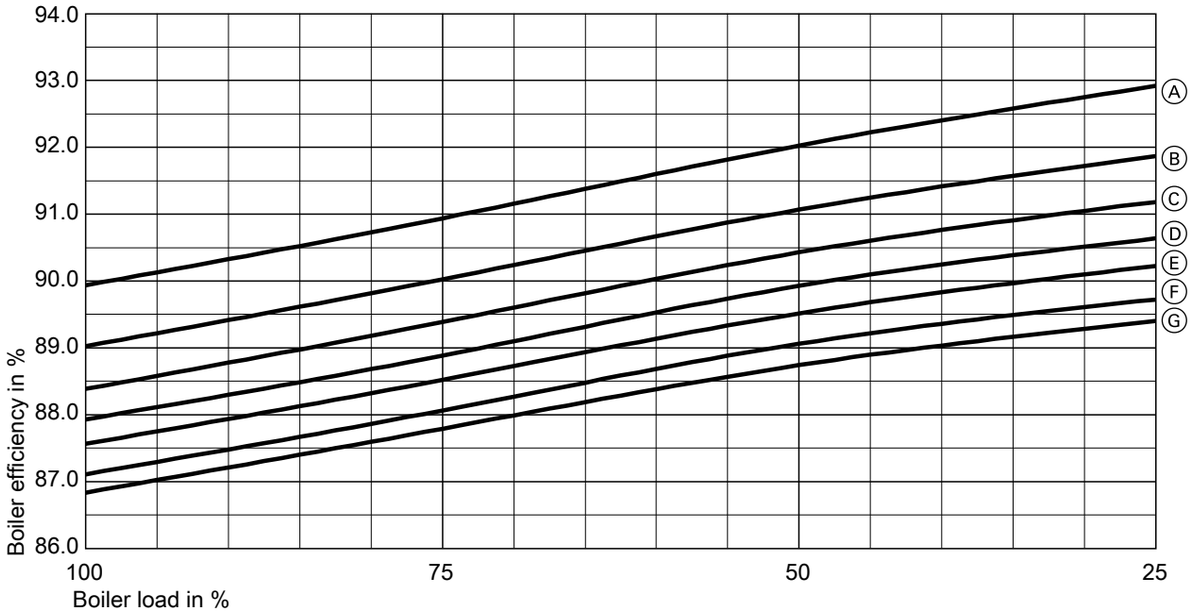


Flue gas pressure drop, fuel oil, max. 7.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

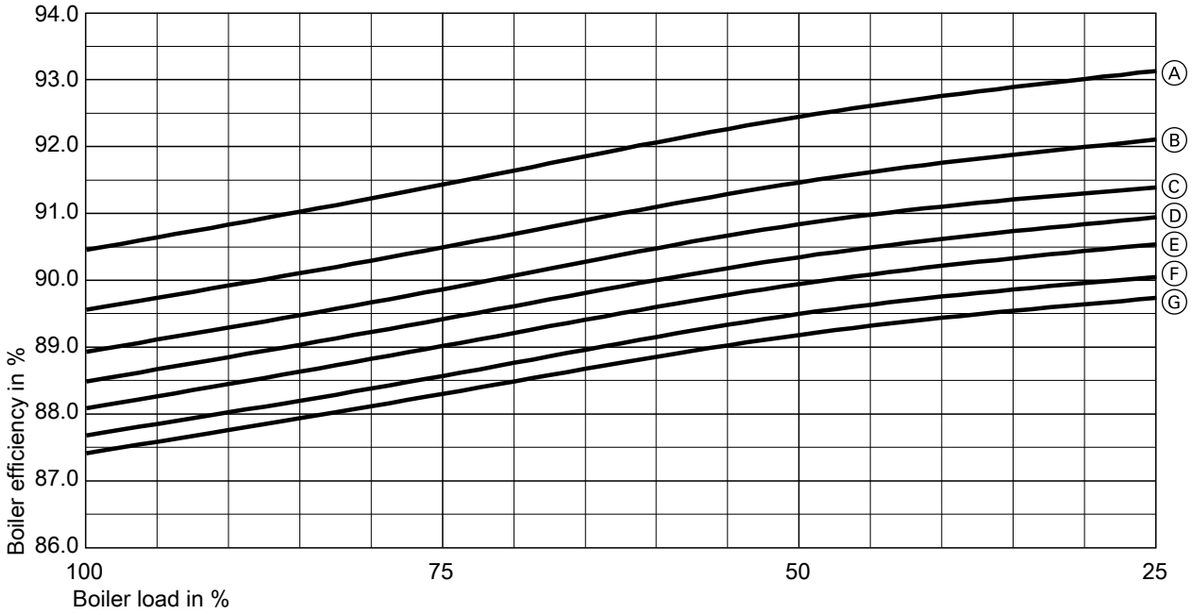
2.6 Boiler size 6, max. combustion output 9.0 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 9.0 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 9.0 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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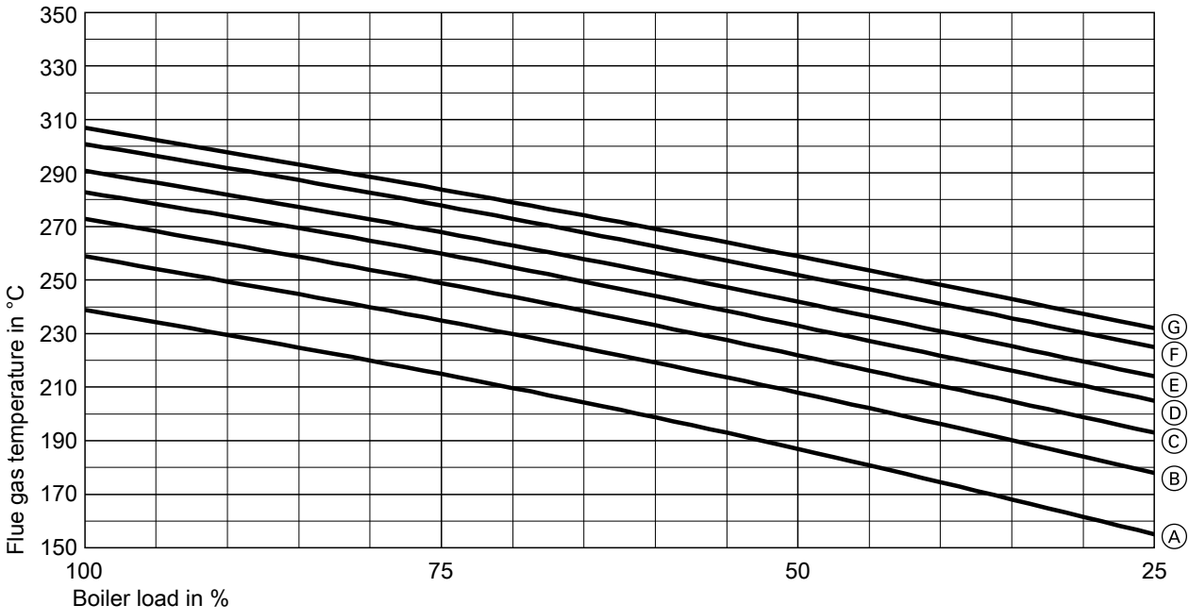
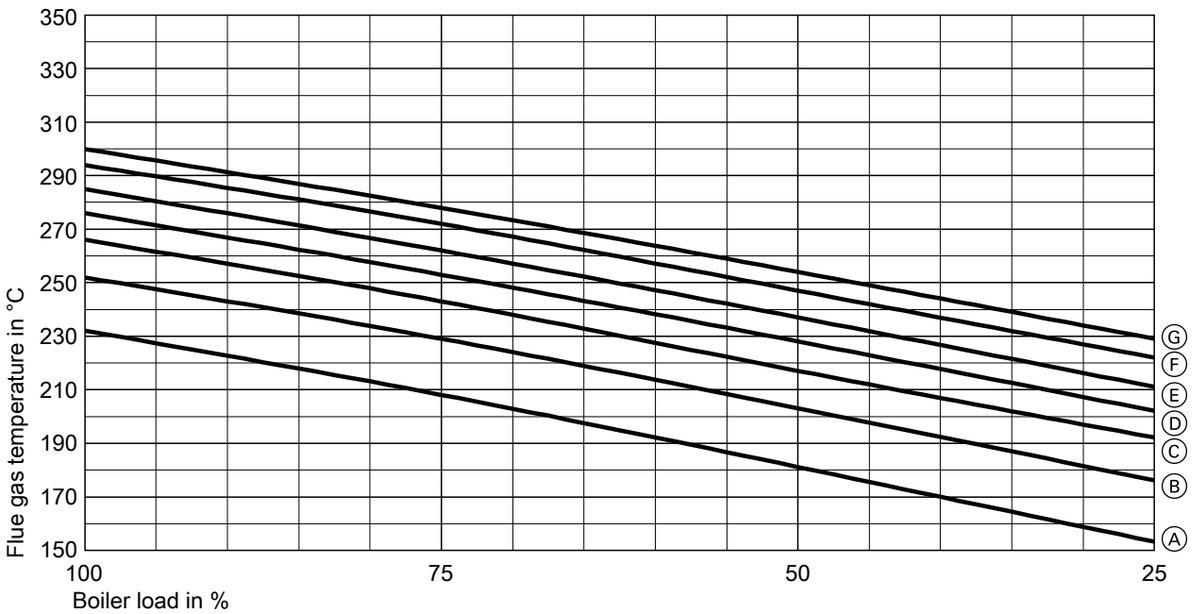
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 9.0 MW, standard (without turbulators)

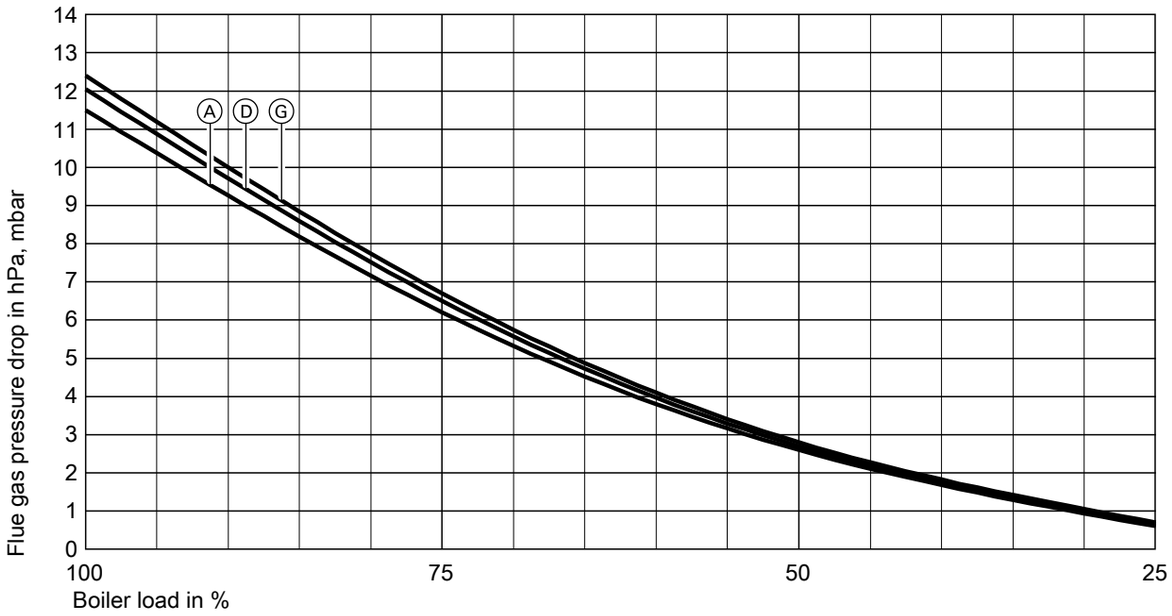
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 9.0 MW, standard (without turbulators)

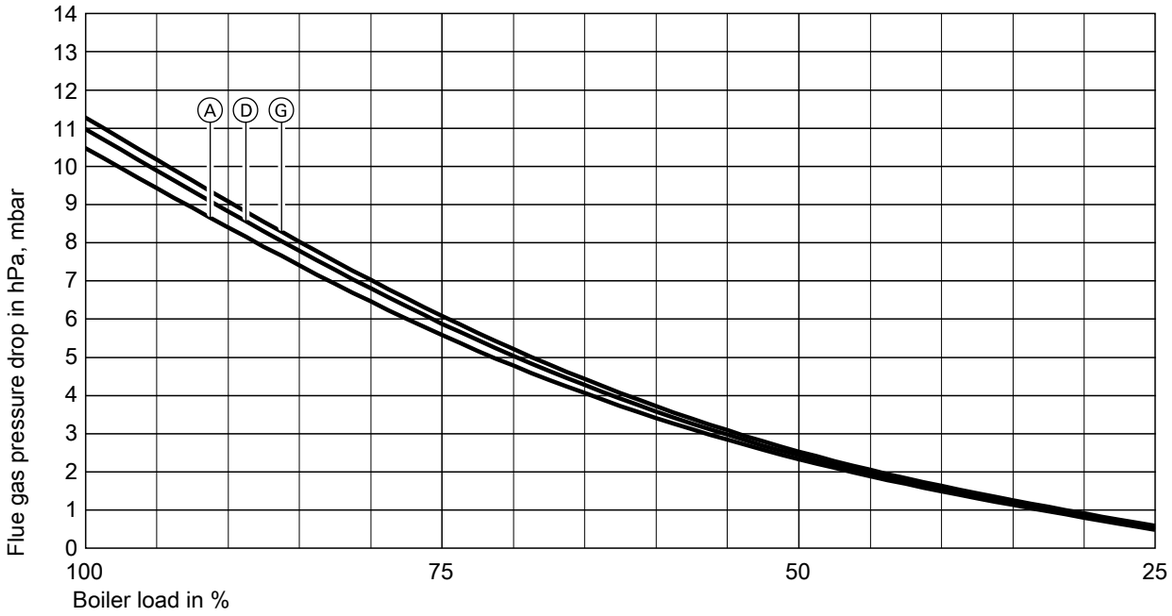
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 9.0 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max 9.0 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

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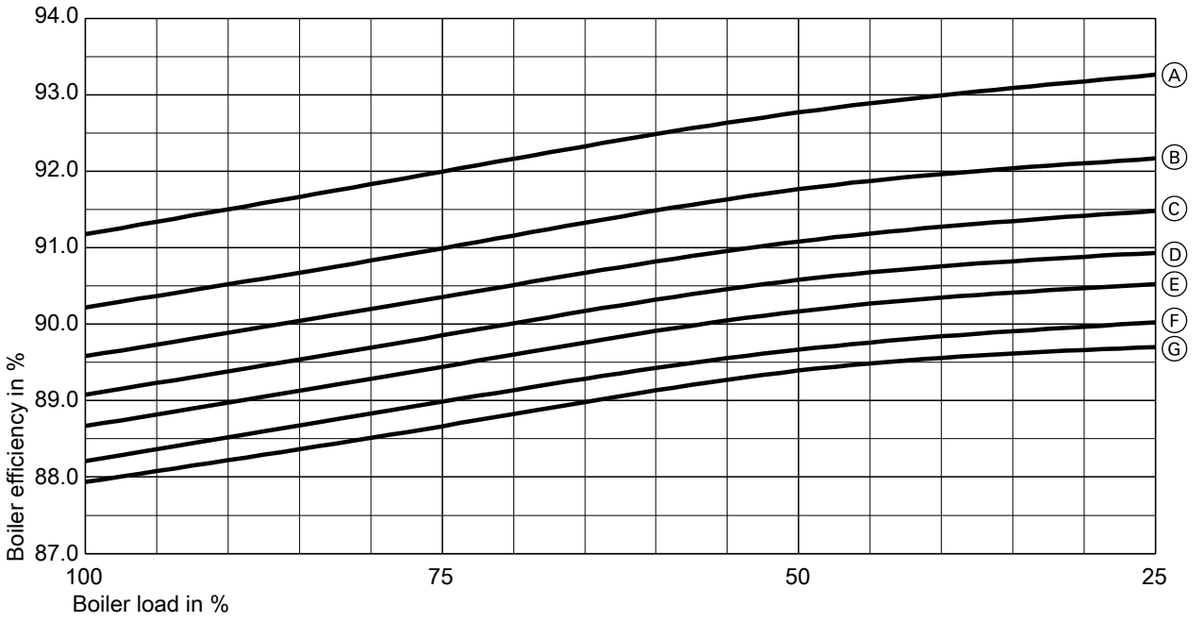
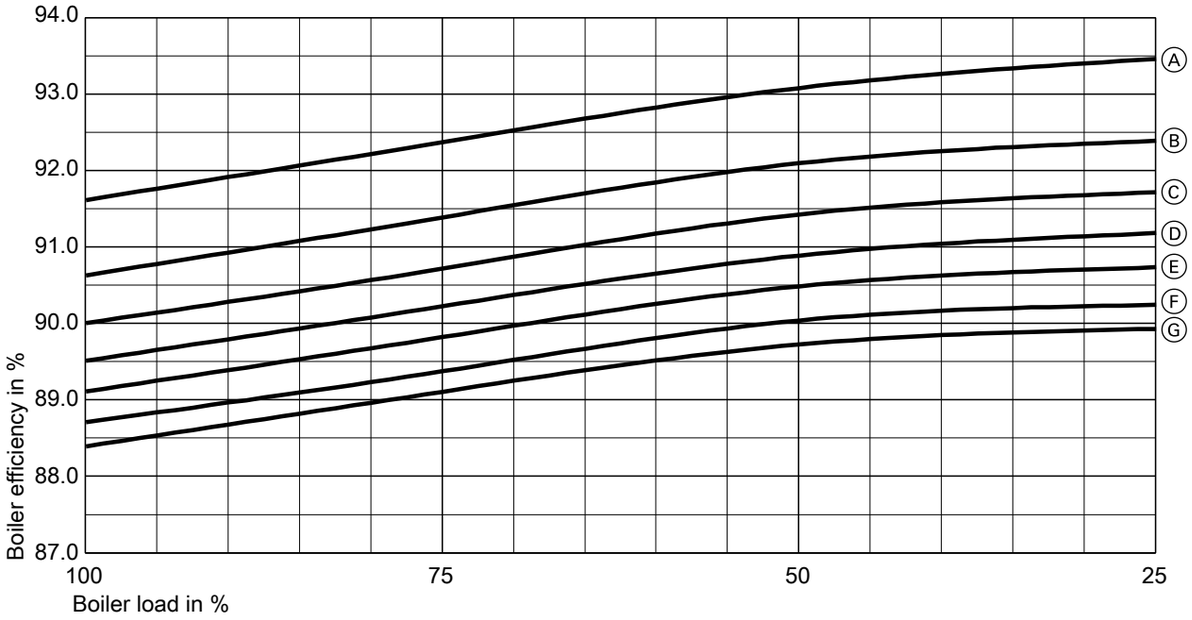
Boiler selection diagrams (cont.)

Version with turbulators (1000 mm)



Boiler efficiency, natural gas, max. 9.0 MW, with turbulators (1000 mm), taking into account boiler radiation losses

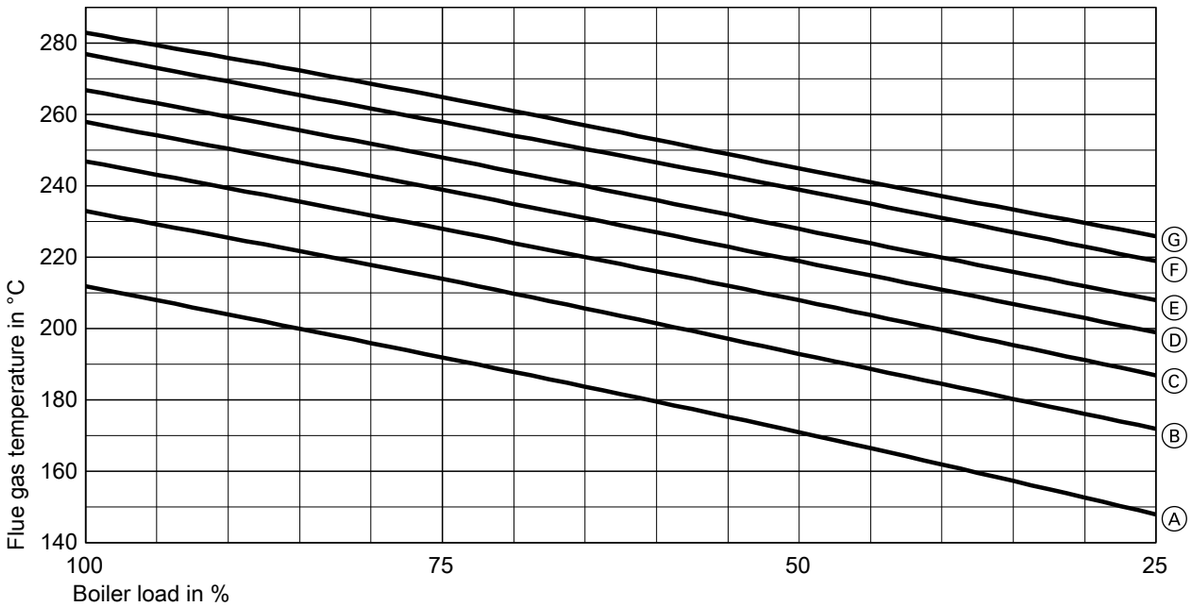
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 9.0 MW, with turbulators (1000 mm), taking into account boiler radiation losses

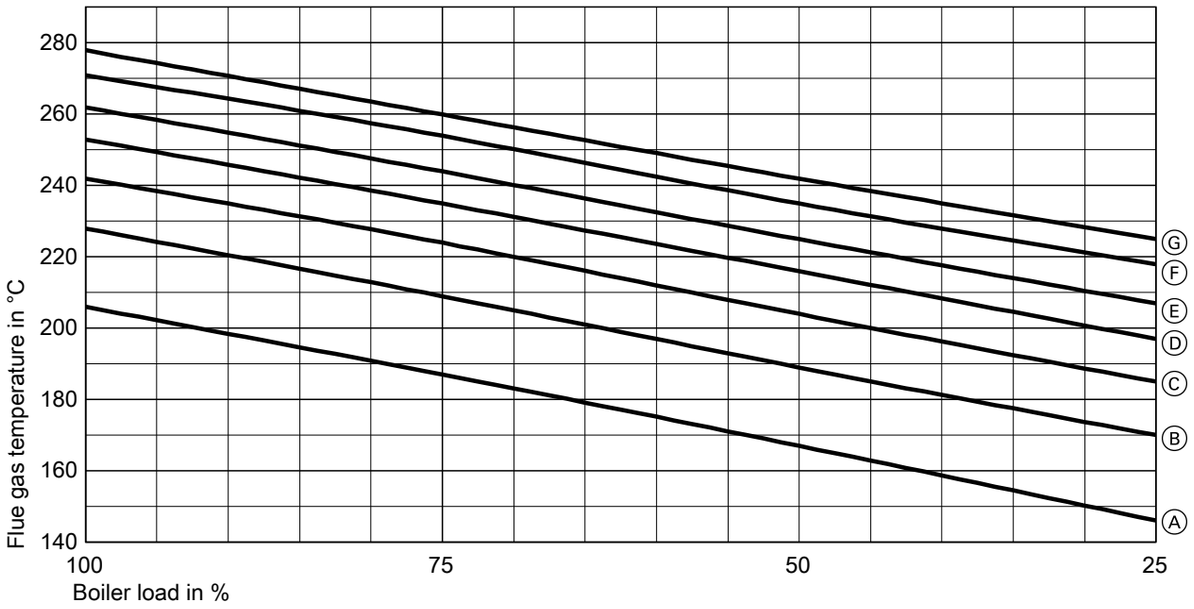
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 9.0 MW, with turbulators (1000 mm)

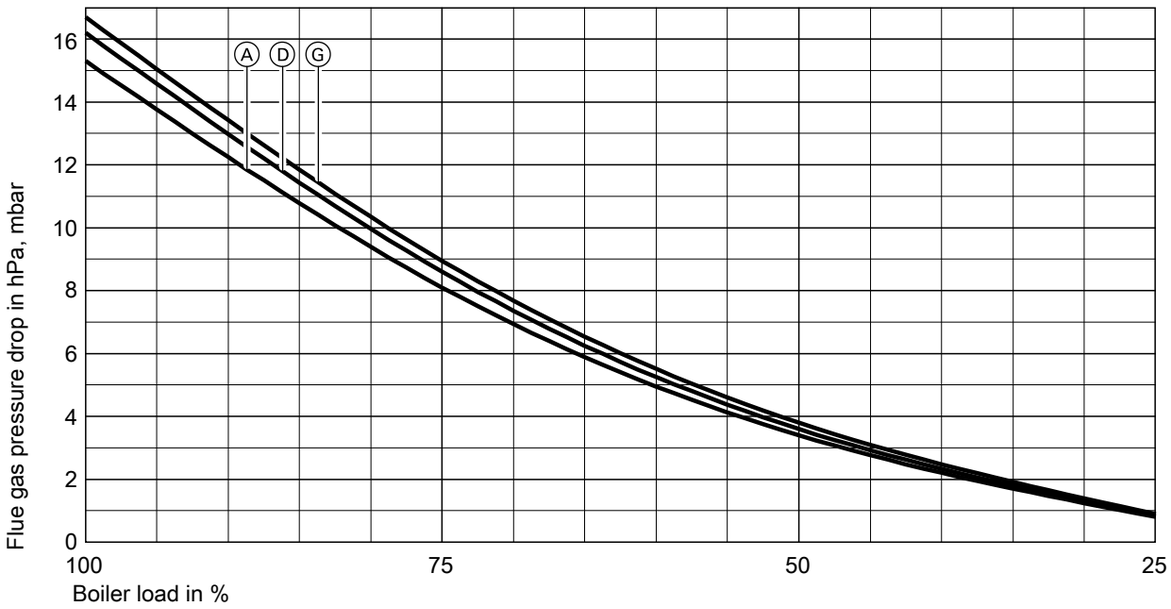
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 9.0 MW, with turbulators (1000 mm)

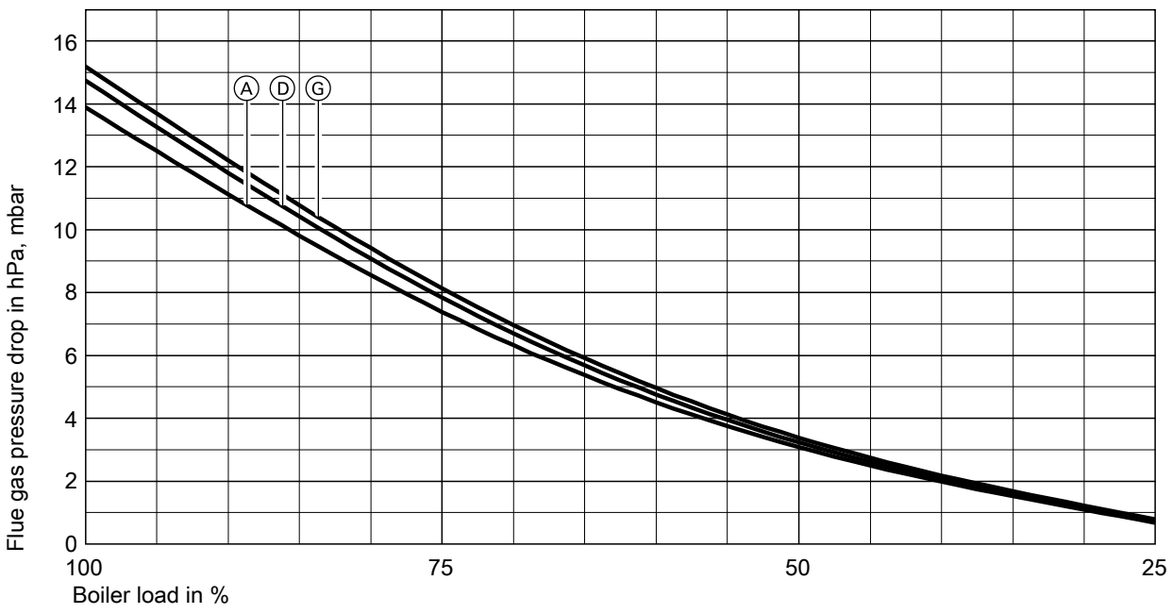
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 9.0 MW, with turbulators (1000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

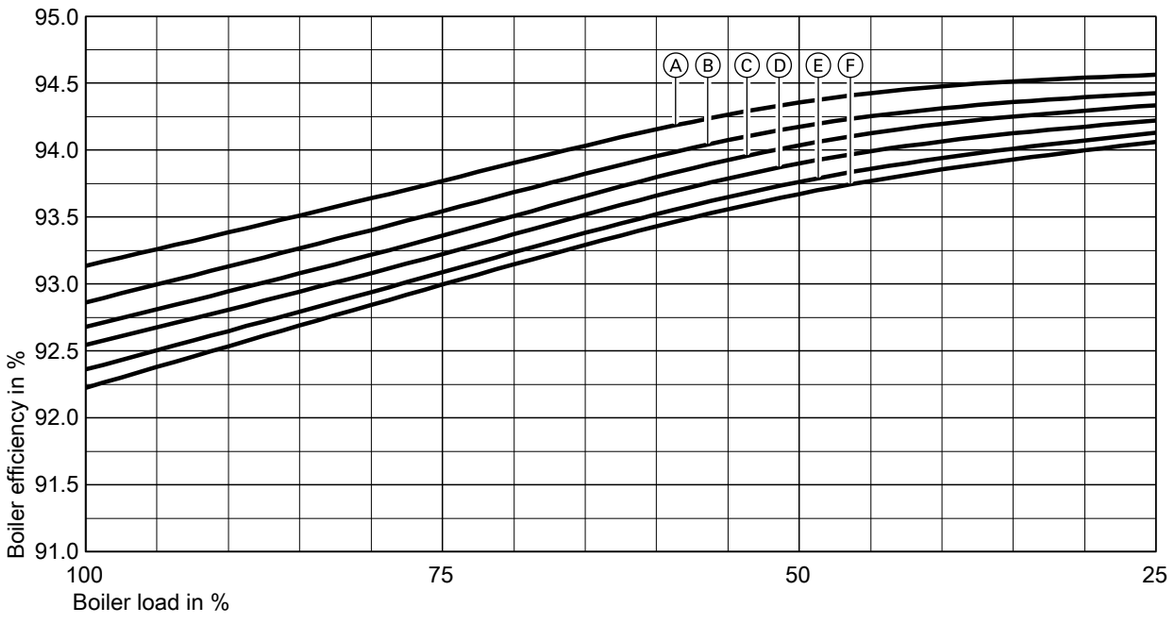


Flue gas pressure drop, fuel oil, max. 9.0 MW, with turbulators (1000 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

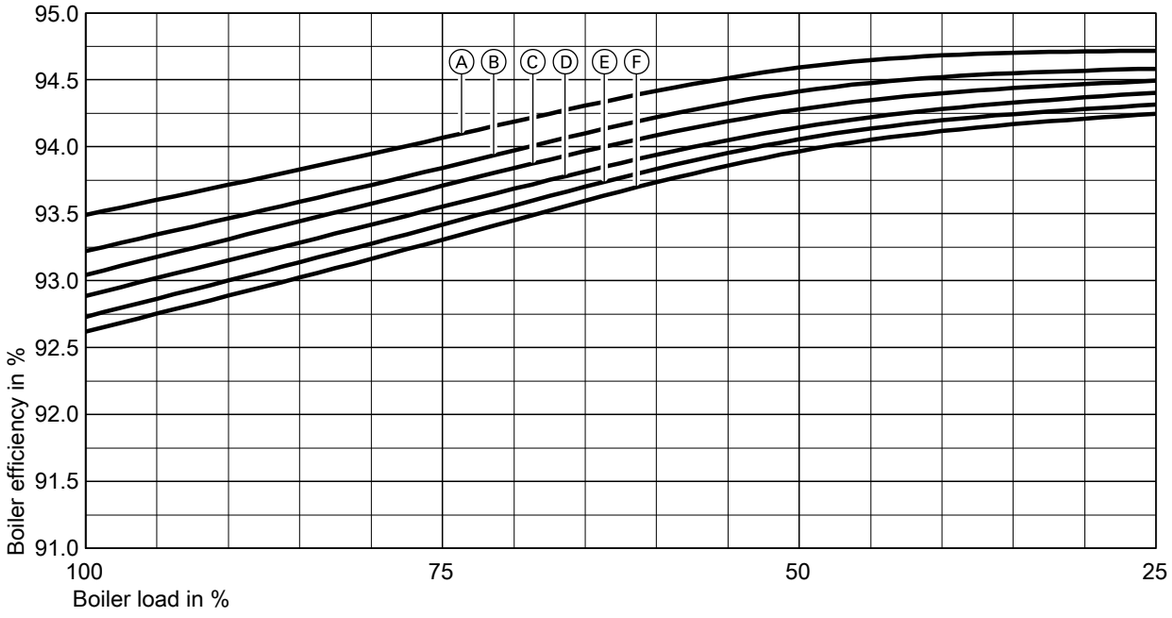
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 9.0 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 9.0 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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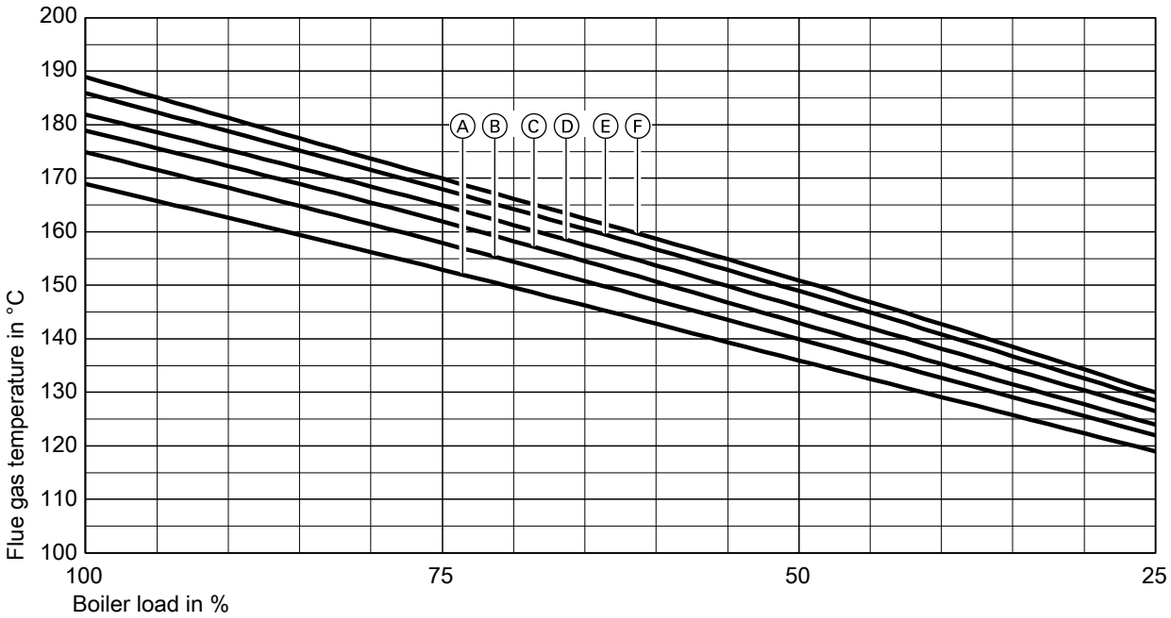
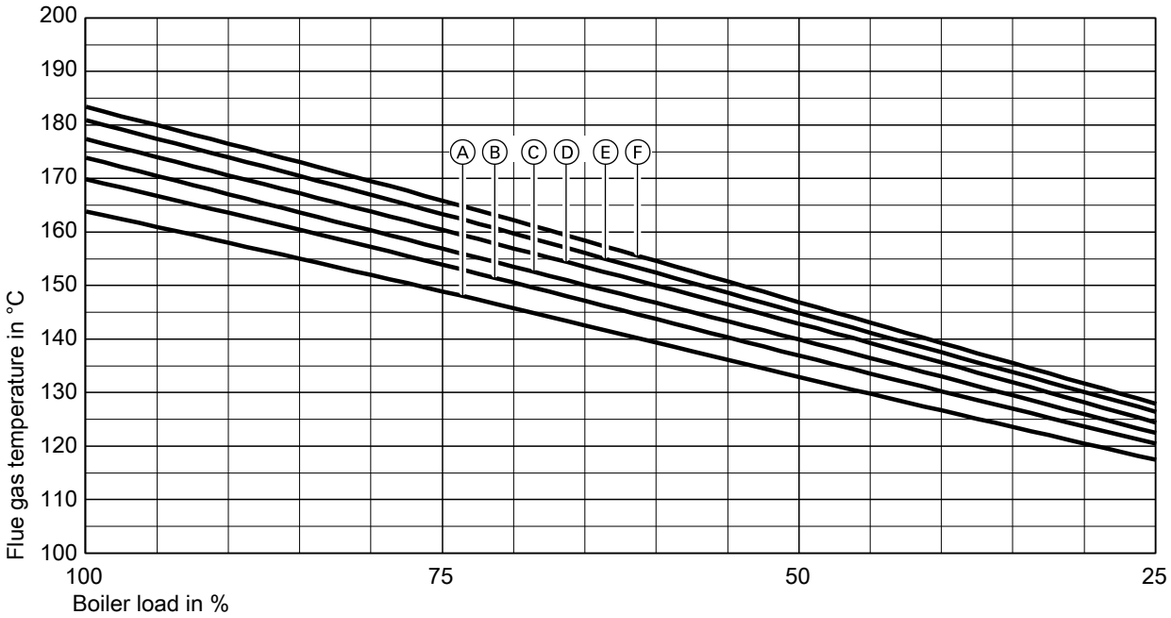
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 9.0 MW, without turbulators, with ECO 100

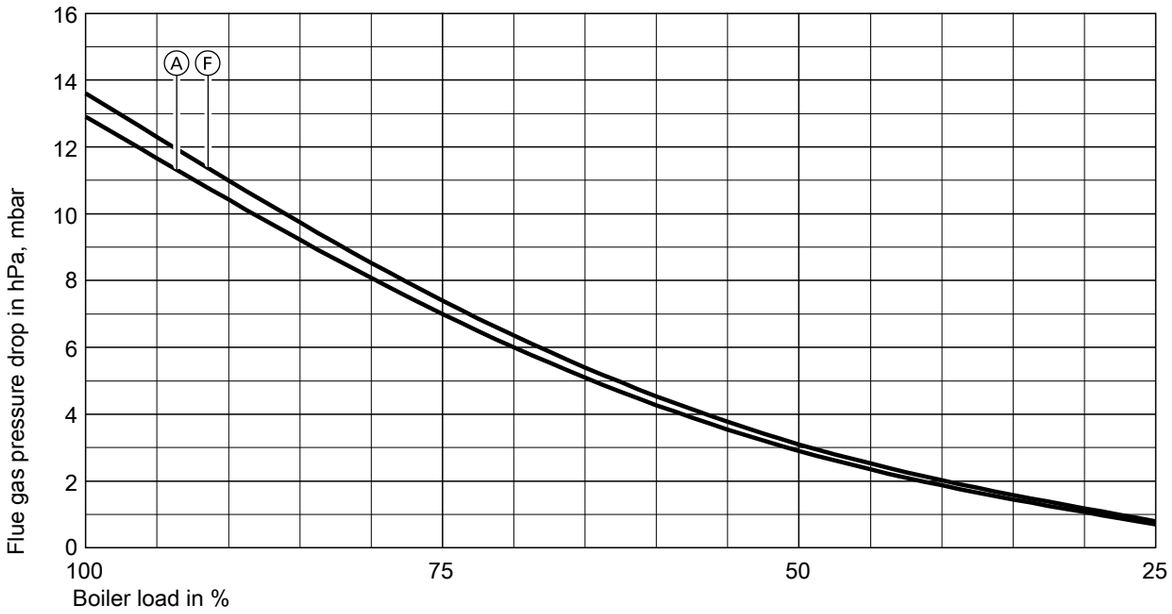
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 9.0 MW, without turbulators, with ECO 100

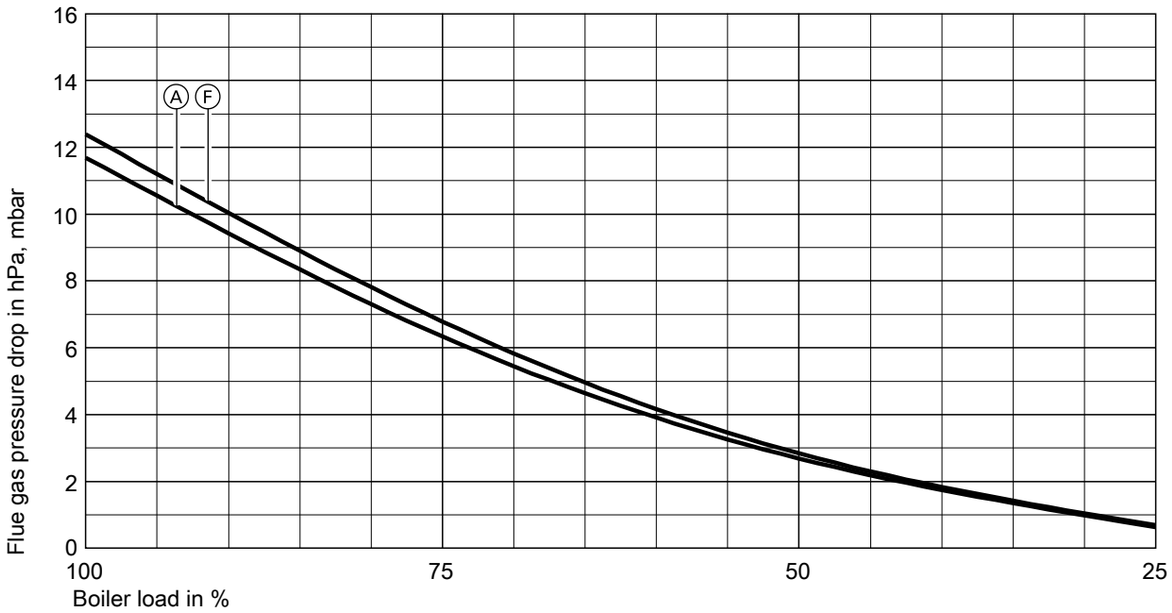
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 9.0 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

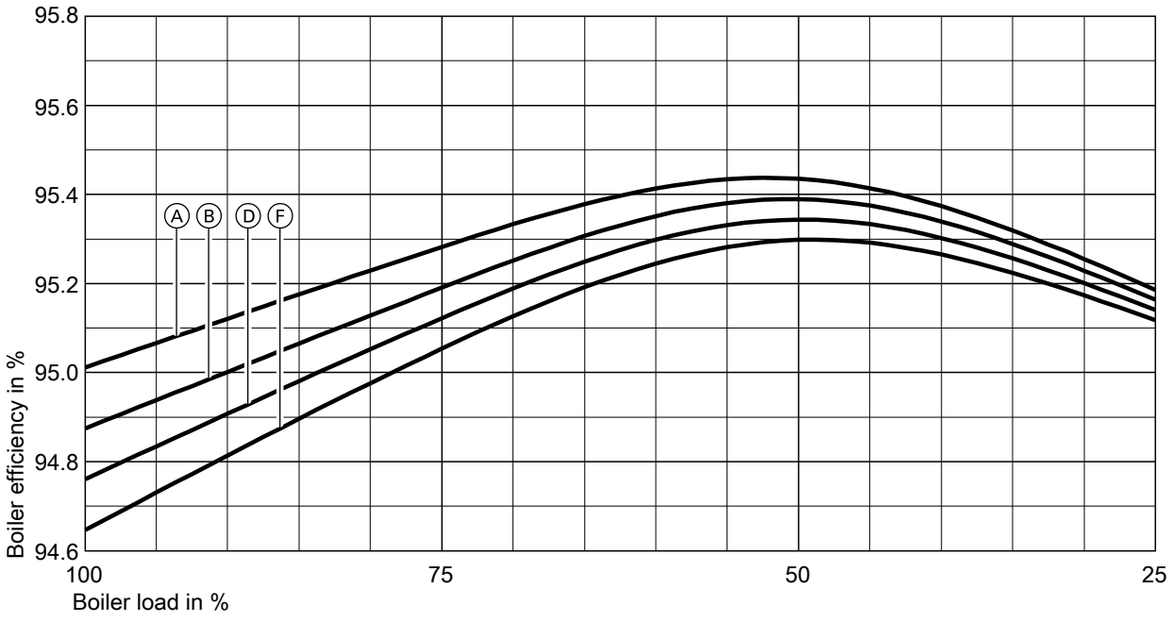


Flue gas pressure drop, fuel oil, max. 9.0 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

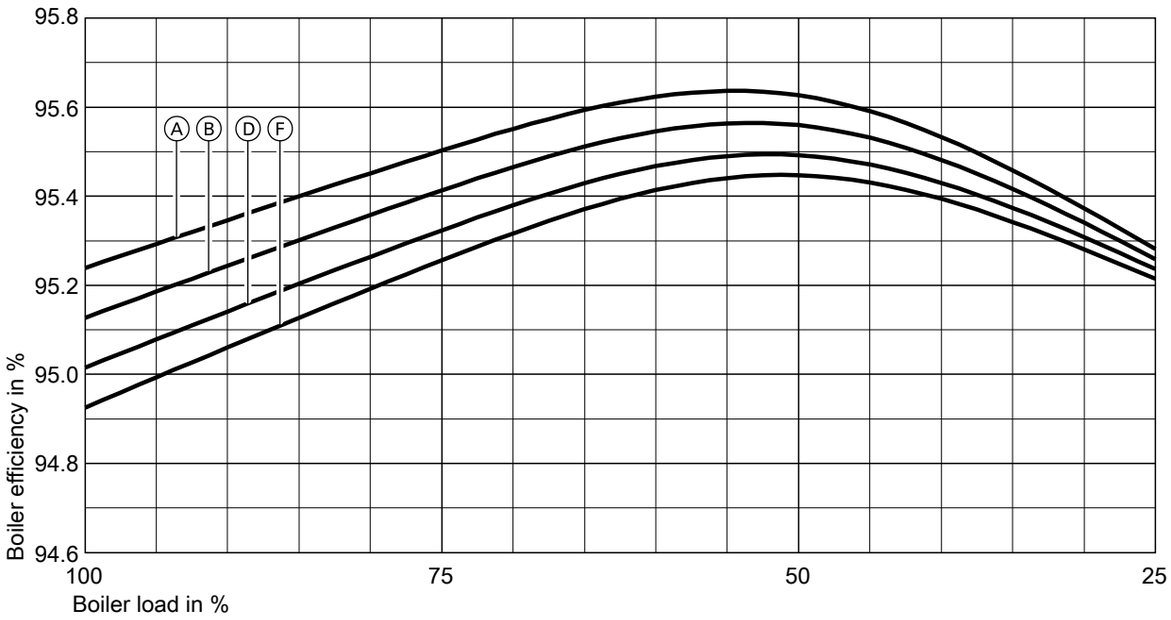
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 9.0 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

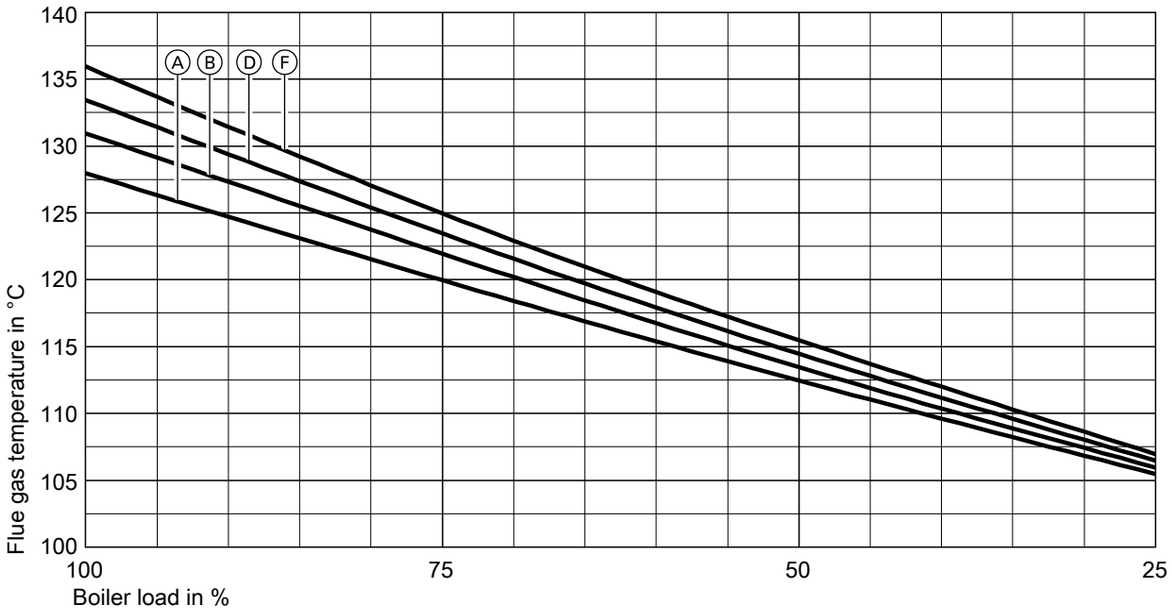
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 9.0 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

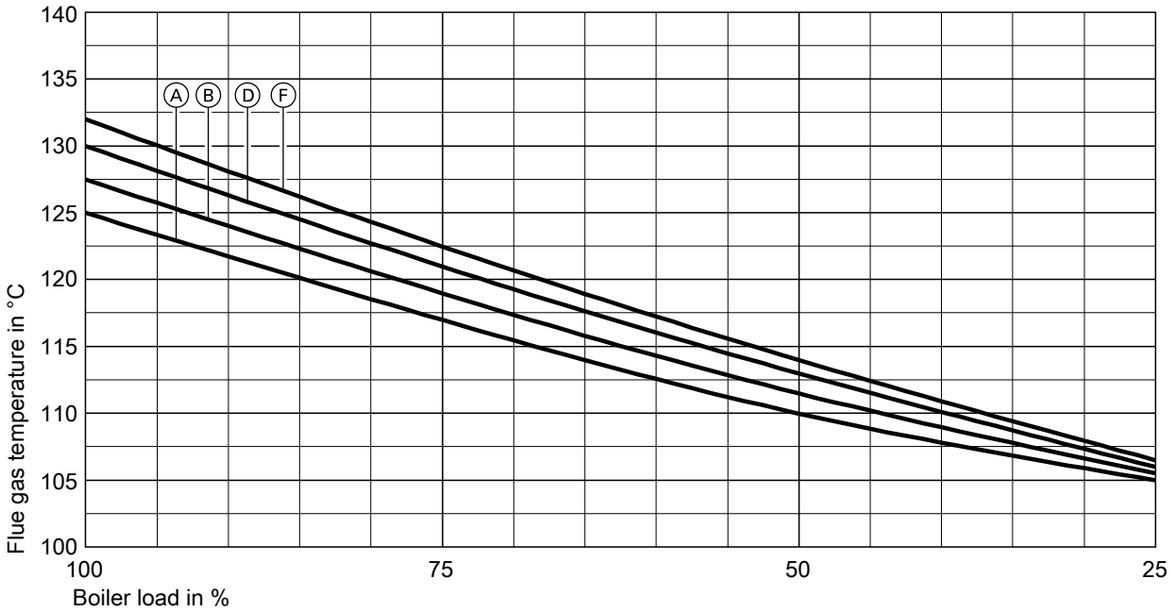
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 9.0 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 9.0 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

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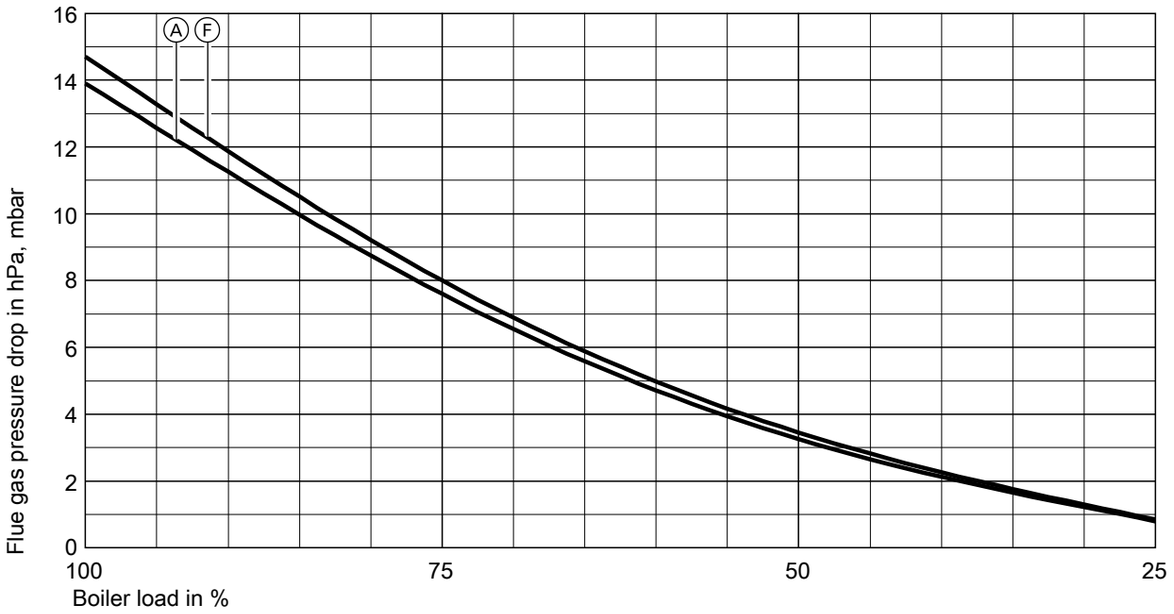
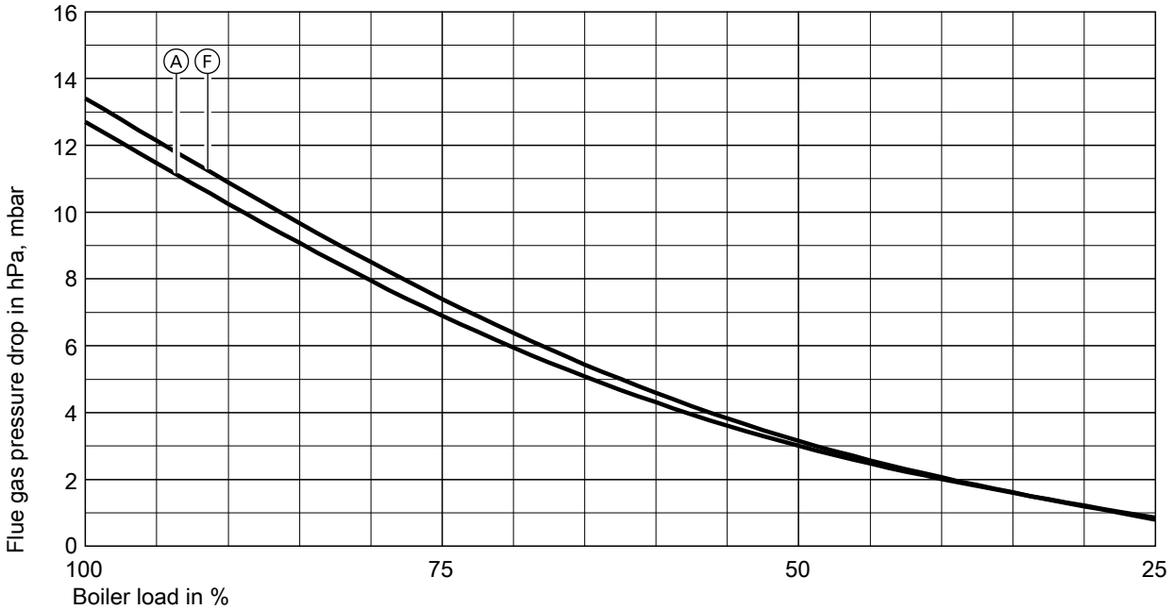
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 9.0 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

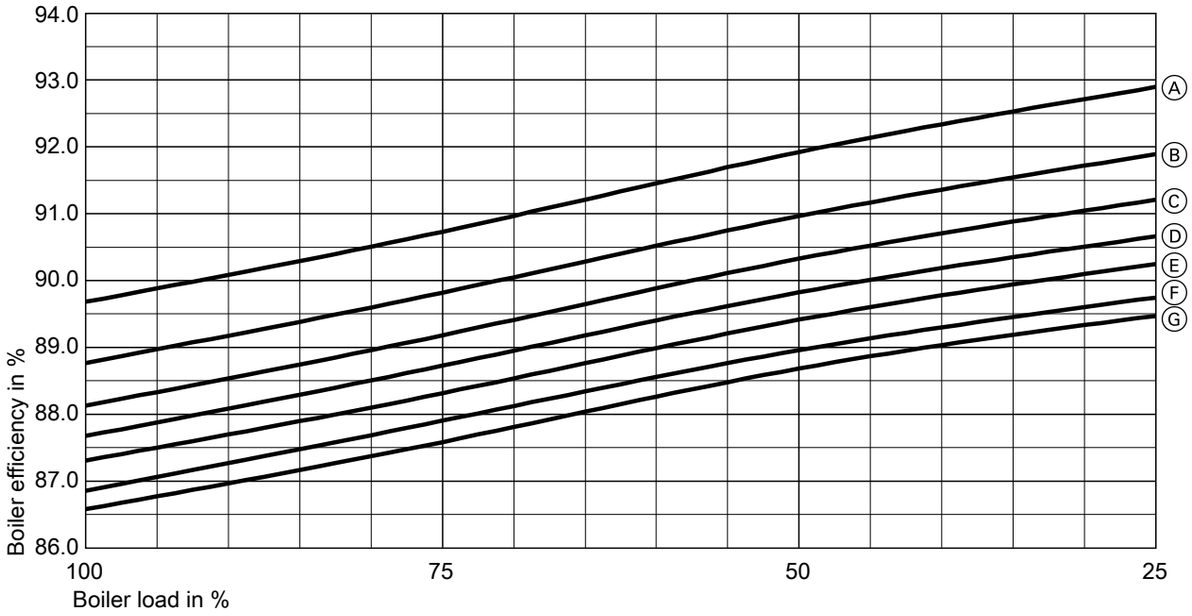


Flue gas pressure drop, fuel oil, max. 9.0 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

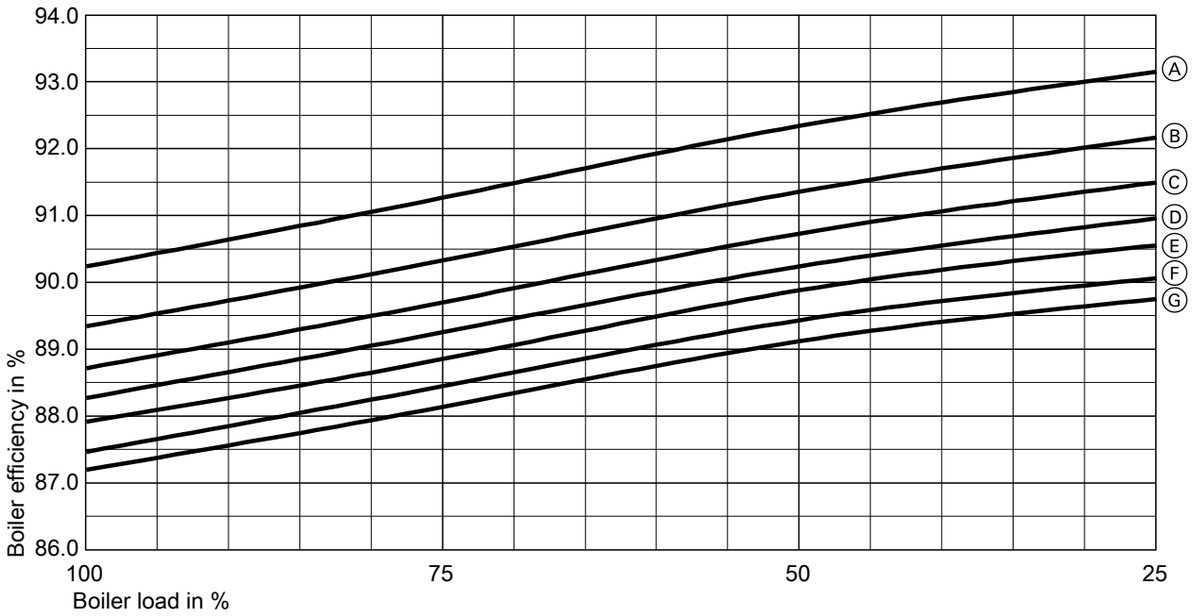
2.7 Boiler size 7, max. combustion output 10.5 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 10.5 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 10.5 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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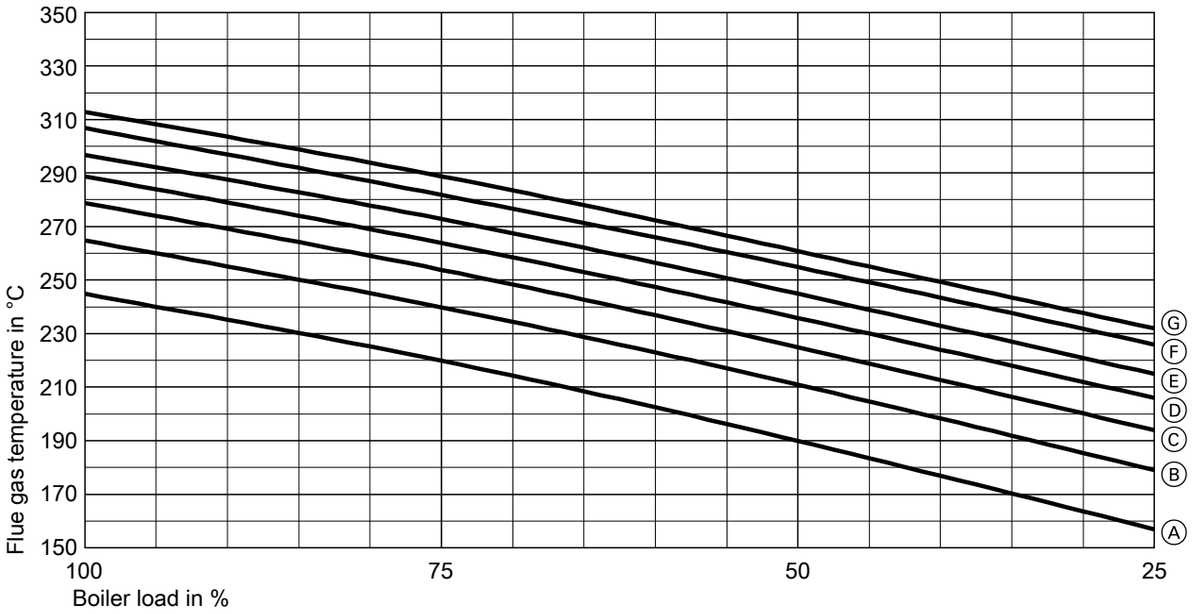
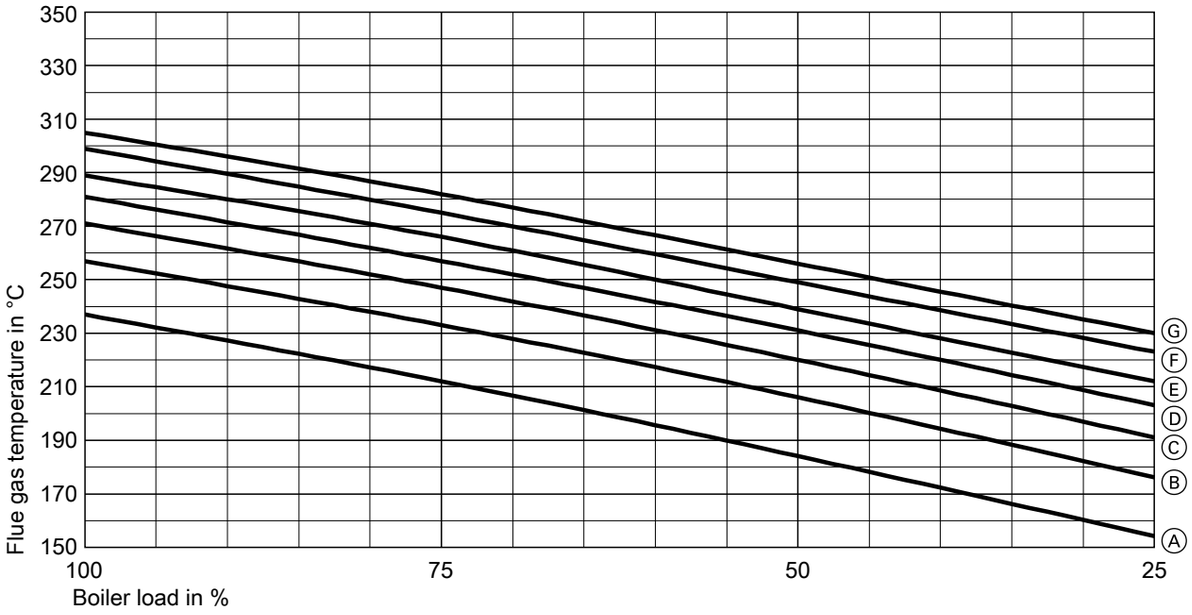
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 10.5 MW, standard (without turbulators)

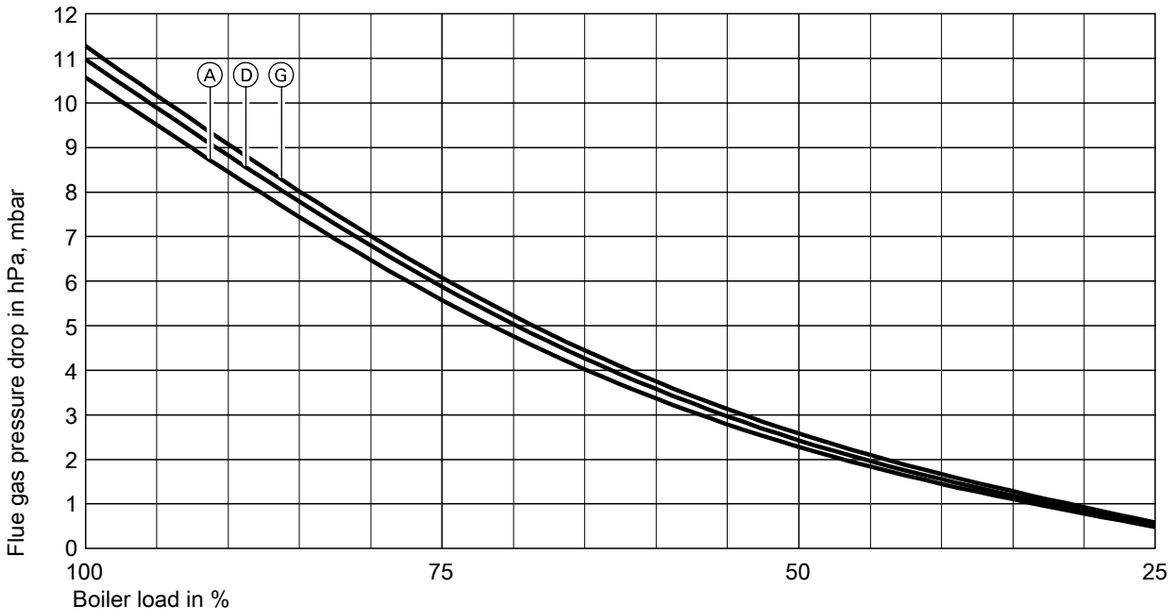
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 10.5 MW, standard (without turbulators)

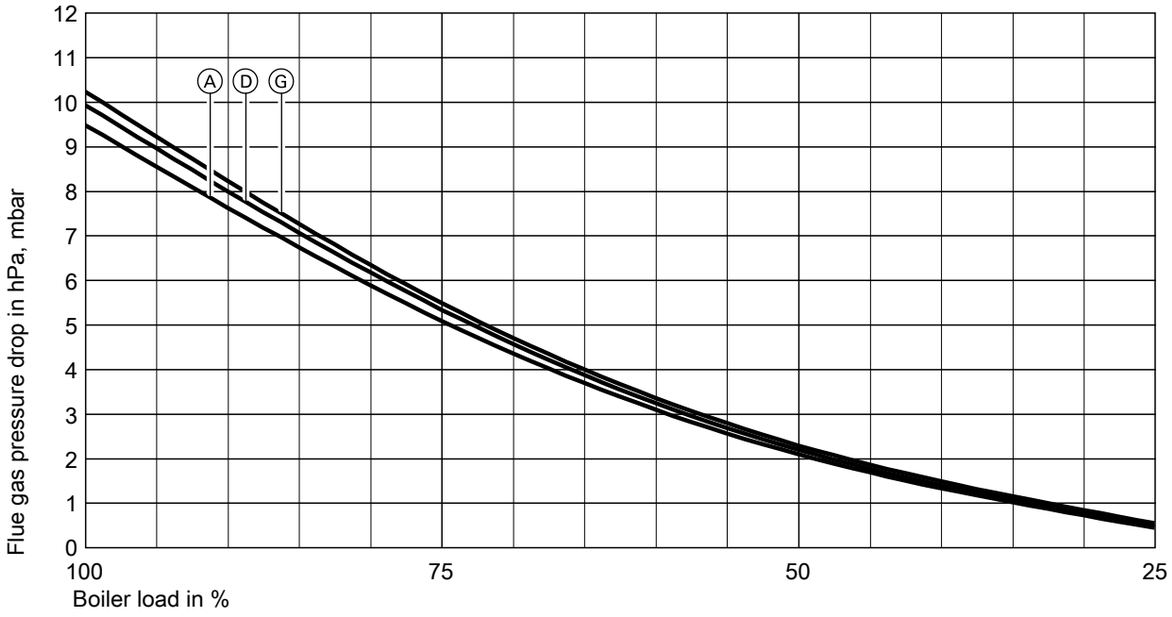
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 10.5 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max 10.5 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

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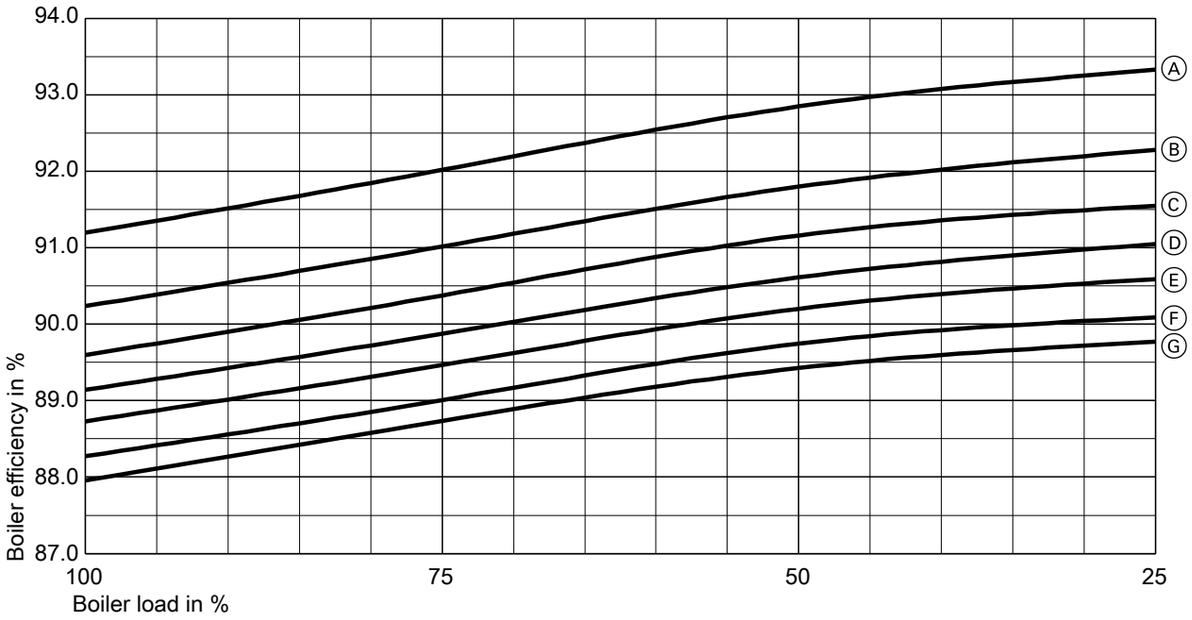
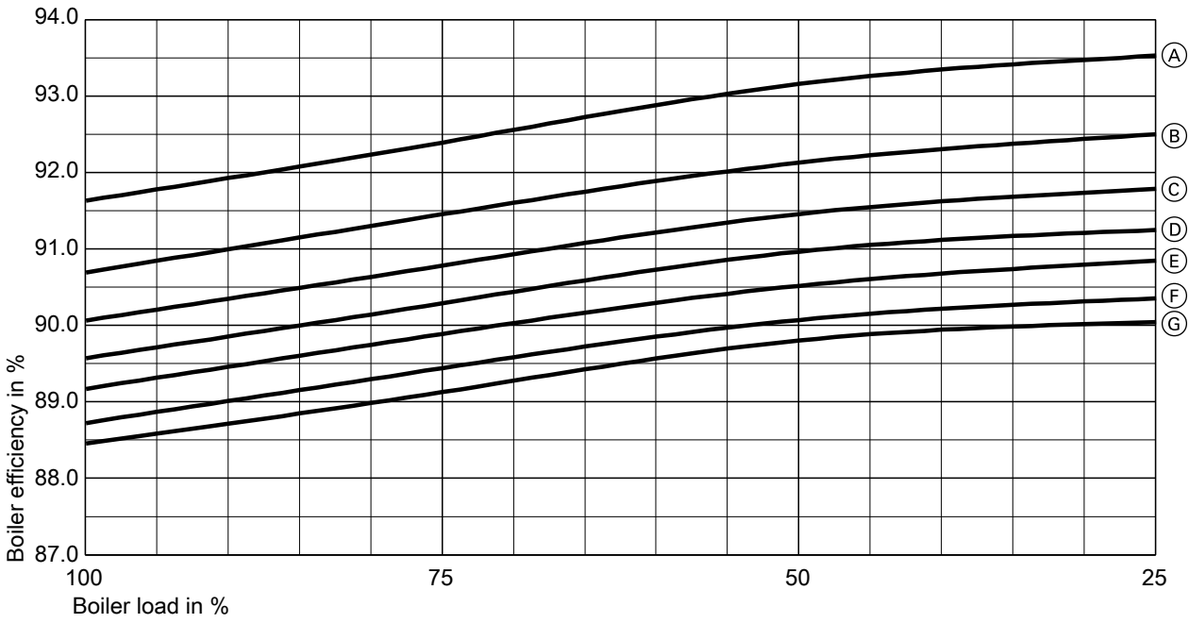
Boiler selection diagrams (cont.)

Version with turbulators (1250 mm)



Boiler efficiency, natural gas, max. 10.5 MW, with turbulators (1250 mm), taking into account boiler radiation losses

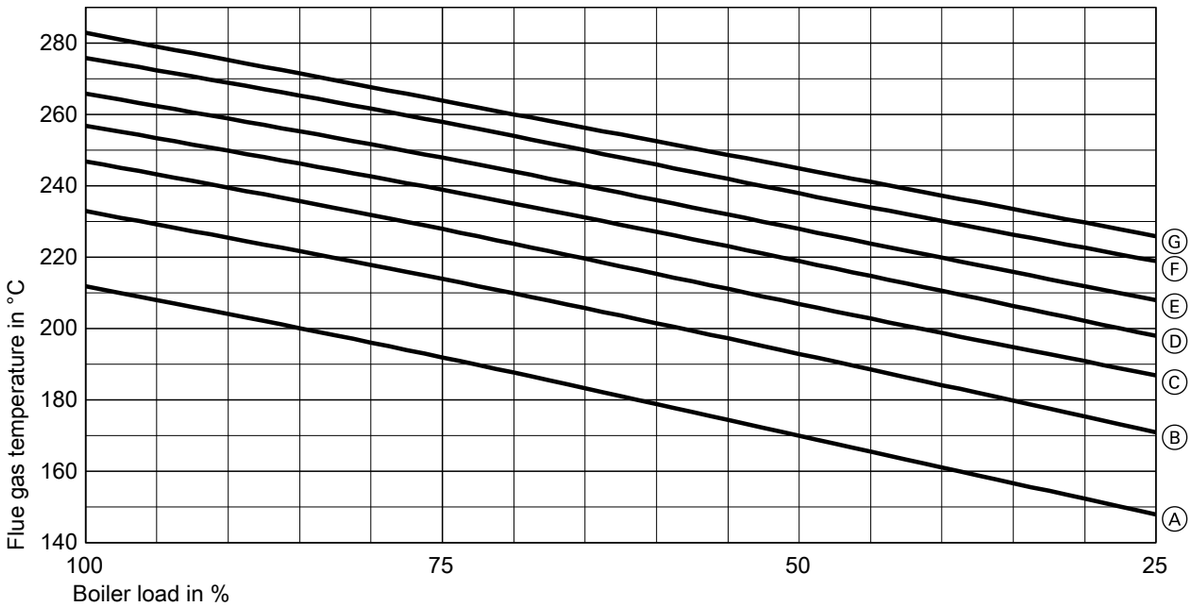
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 10.5 MW, with turbulators (1250 mm), taking into account boiler radiation losses

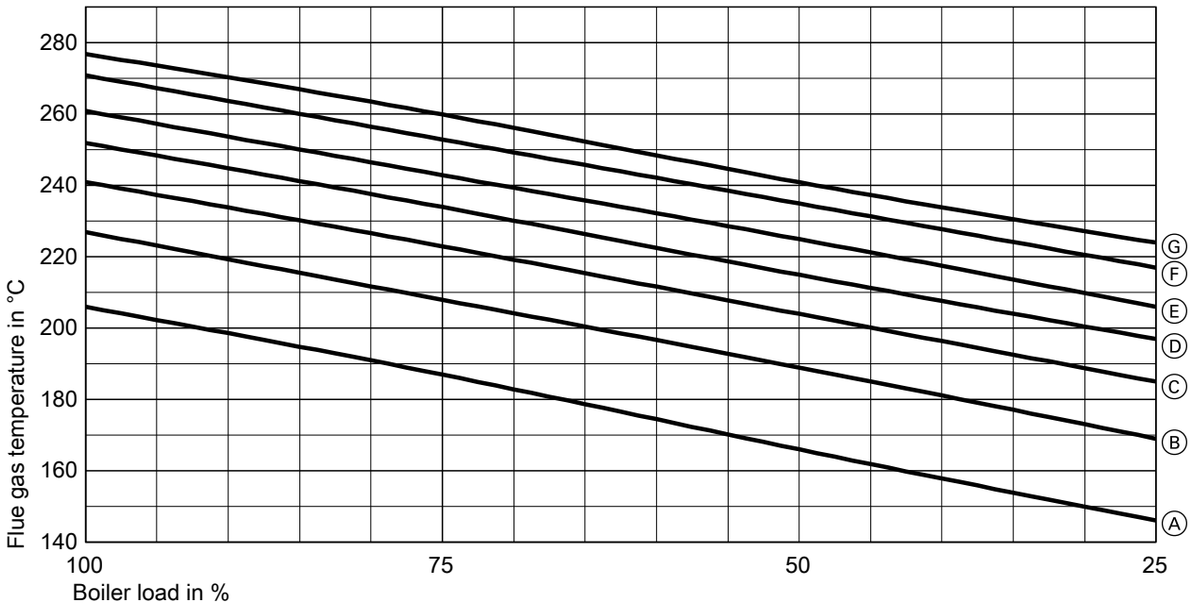
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 10.5 MW, with turbulators (1250 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 10.5 MW, with turbulators (1250 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 18 bar
Ⓖ Working pressure 23 bar

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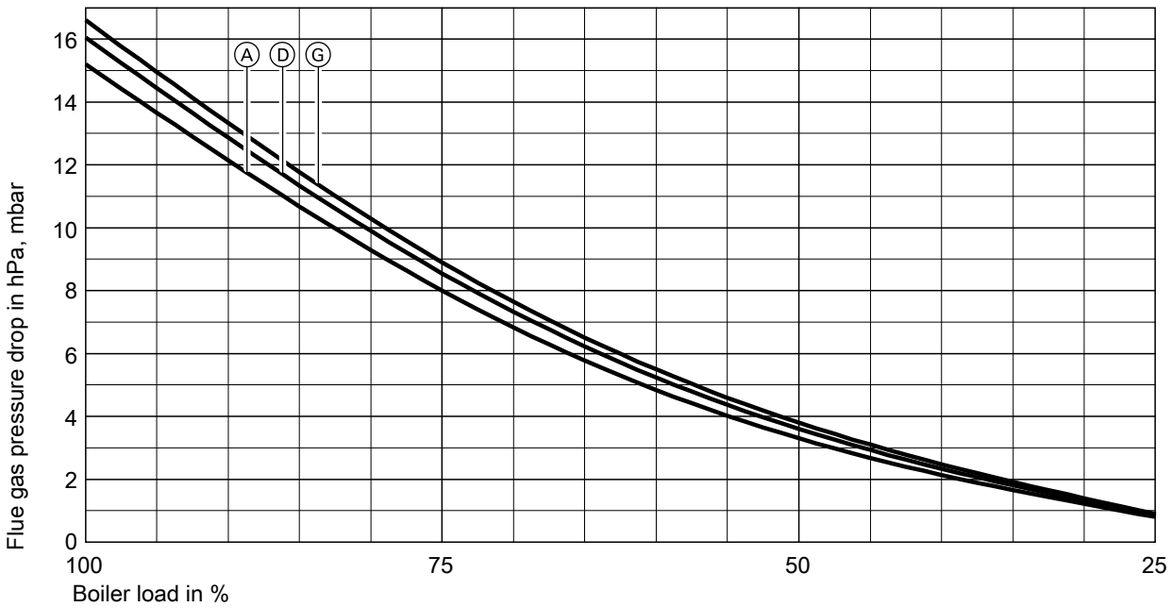
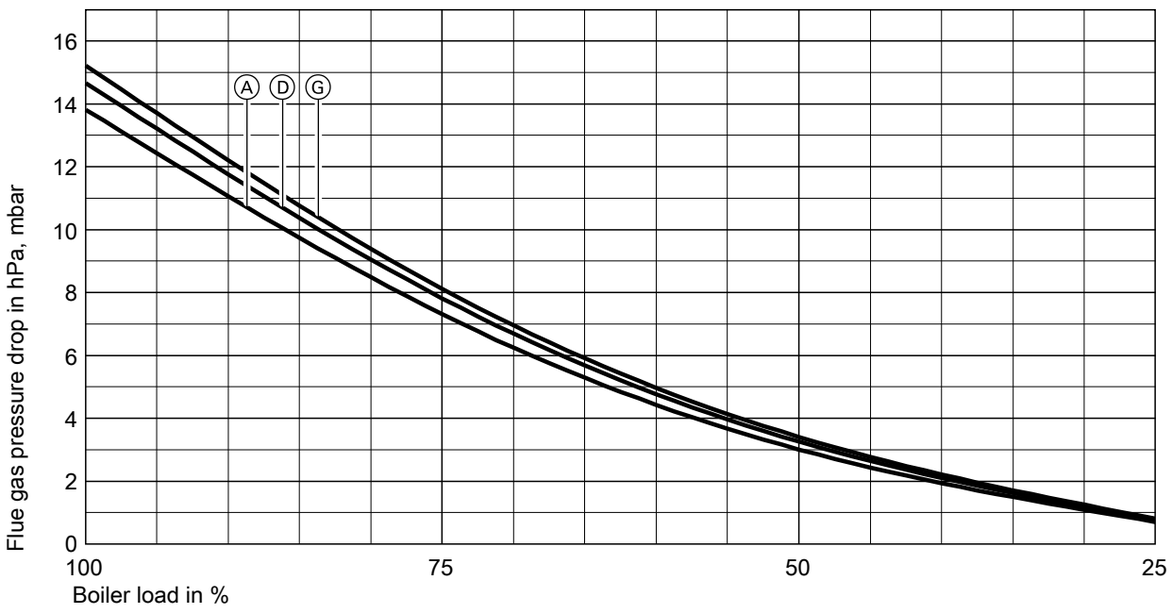
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 10.5 MW, with turbulators (1250 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

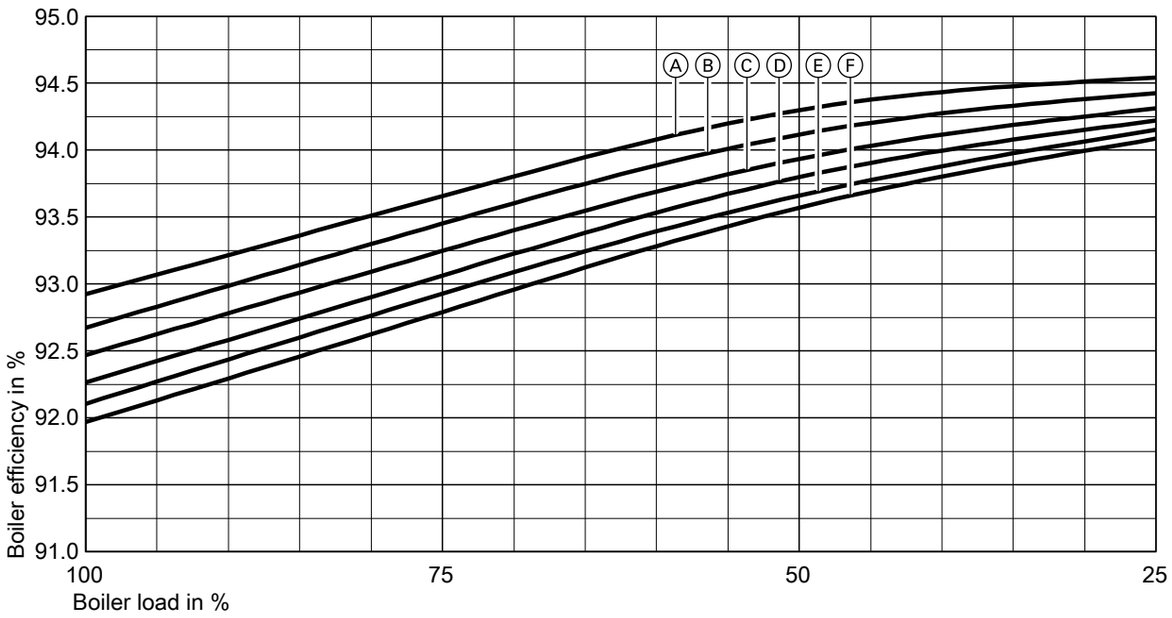


Flue gas pressure drop, fuel oil, max. 10.5 MW, with turbulators (1250 mm)

Ⓐ Working pressure 2 bar
Ⓓ Working pressure 11 bar
Ⓖ Working pressure 23 bar

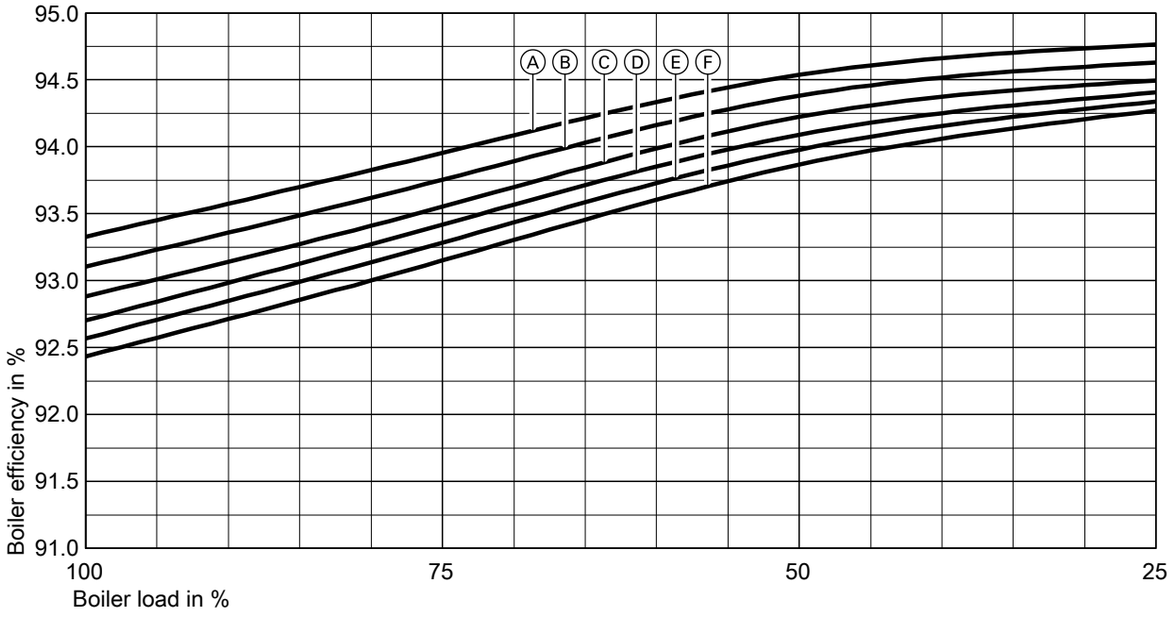
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 10.5 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 10.5 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

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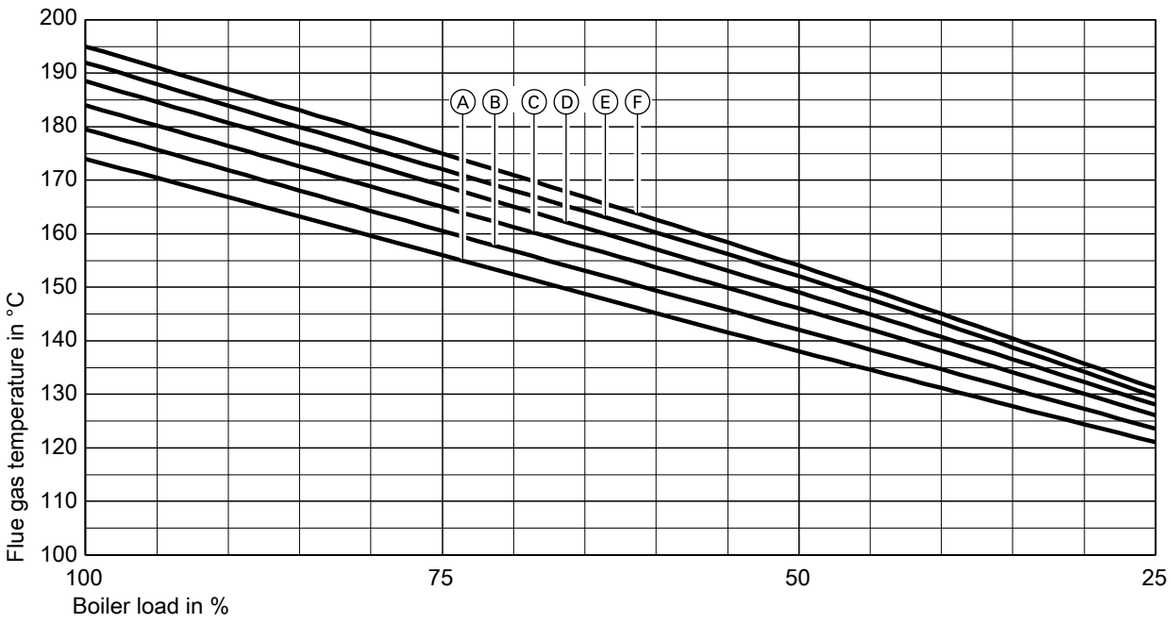
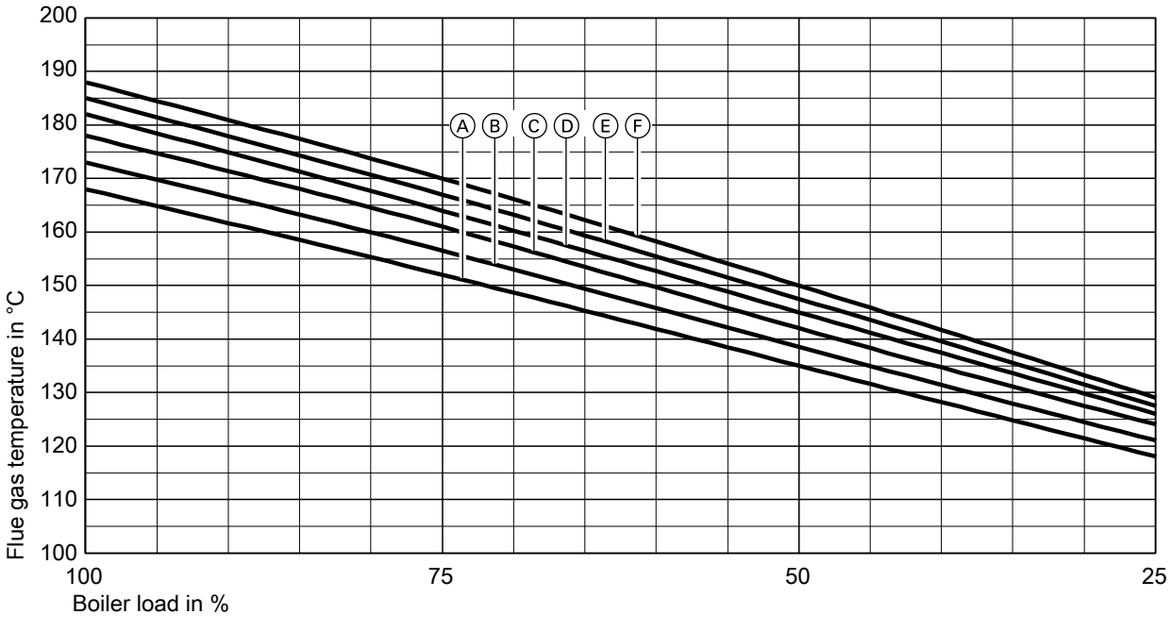
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 10.5 MW, without turbulators, with ECO 100

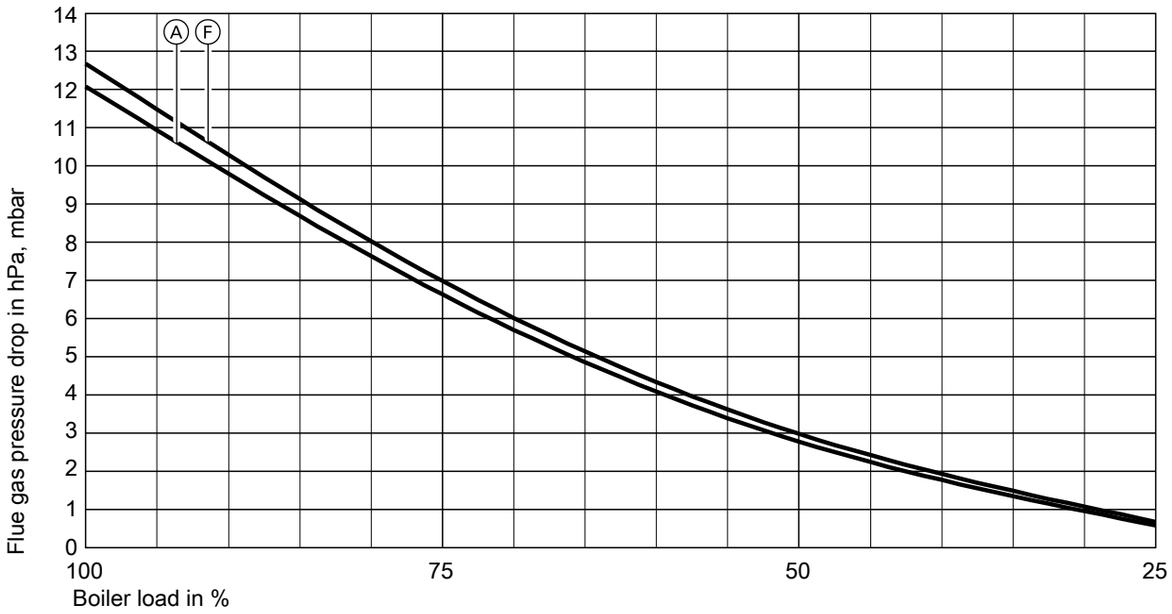
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 10.5 MW, without turbulators, with ECO 100

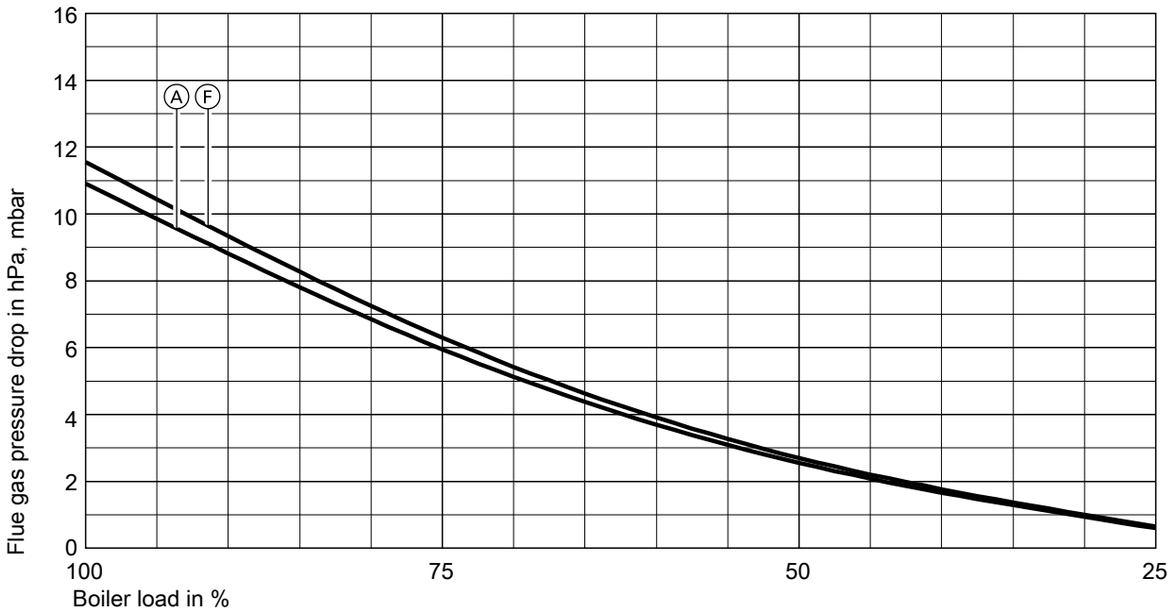
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 18 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 10.5 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar



Flue gas pressure drop, fuel oil, max. 10.5 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

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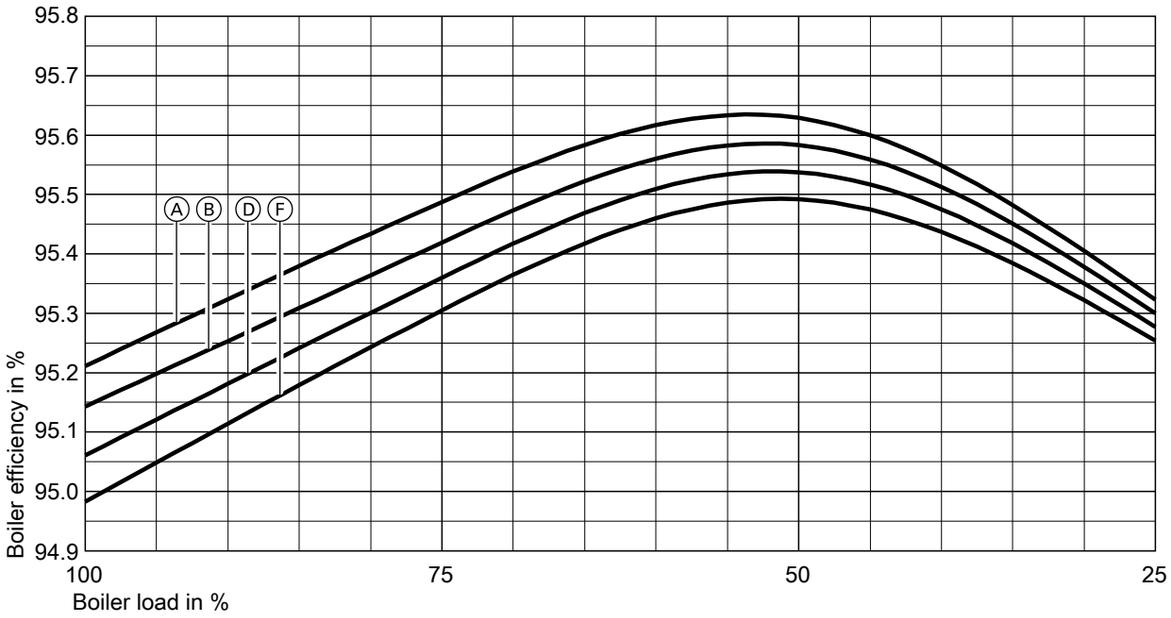
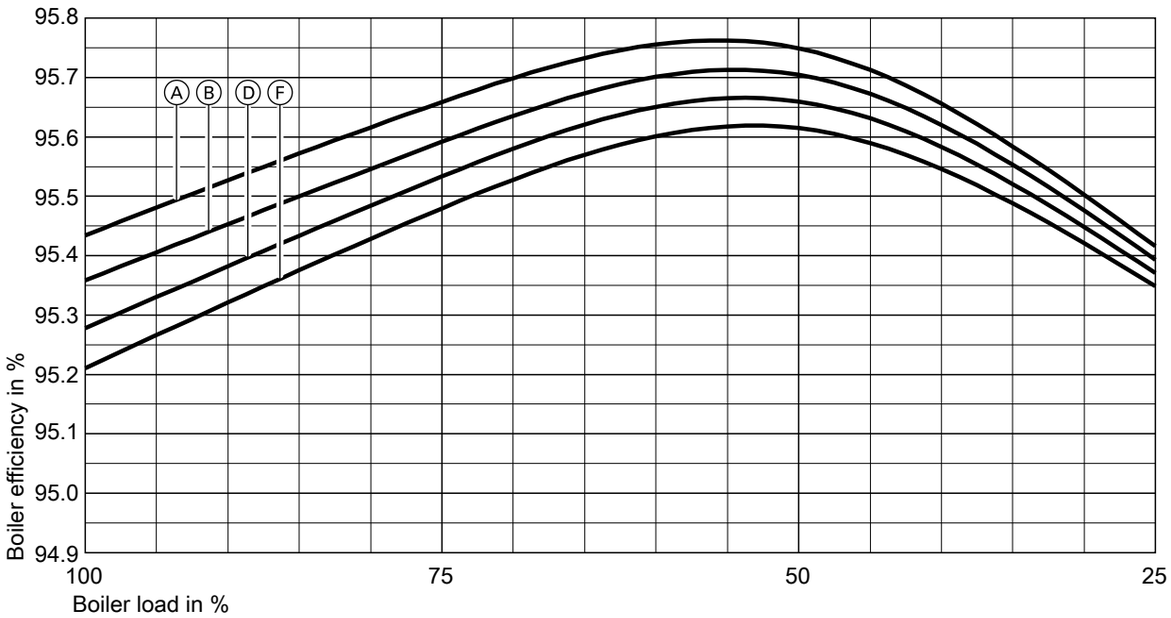
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 10.5 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

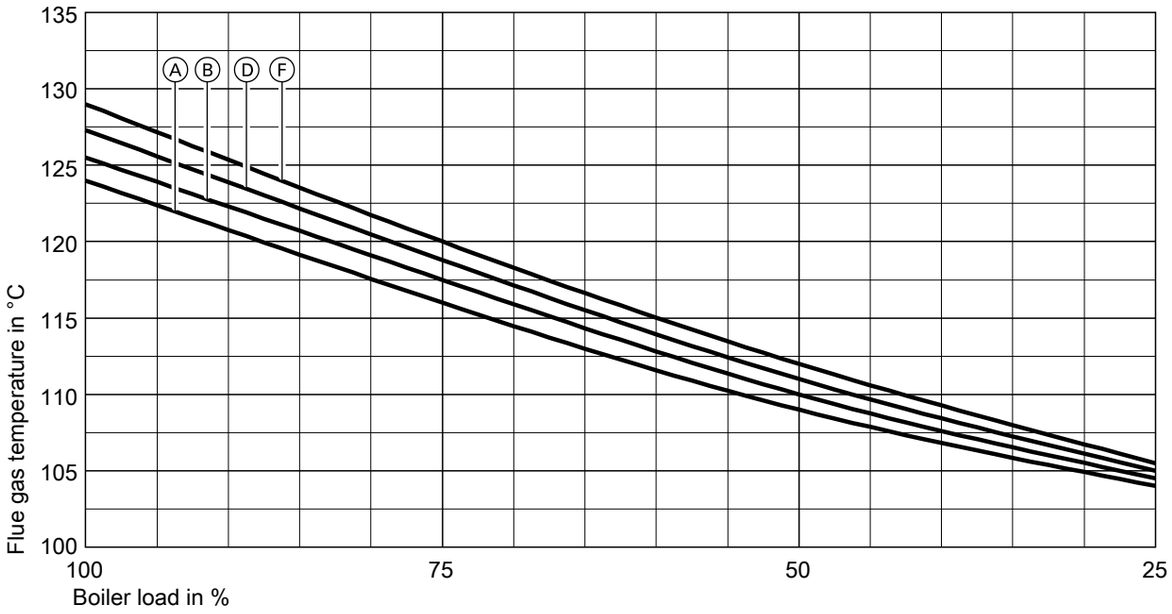
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Boiler efficiency, fuel oil, max. 10.5 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

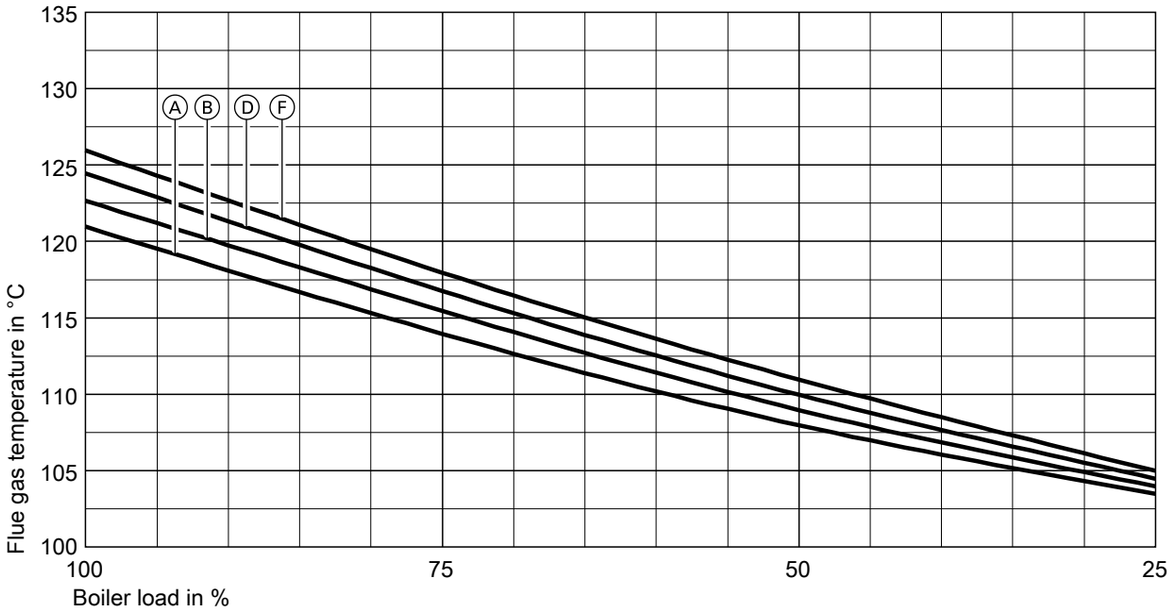
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 10.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar



Flue gas temperature, fuel oil, max. 10.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓓ Working pressure 14 bar
Ⓕ Working pressure 23 bar

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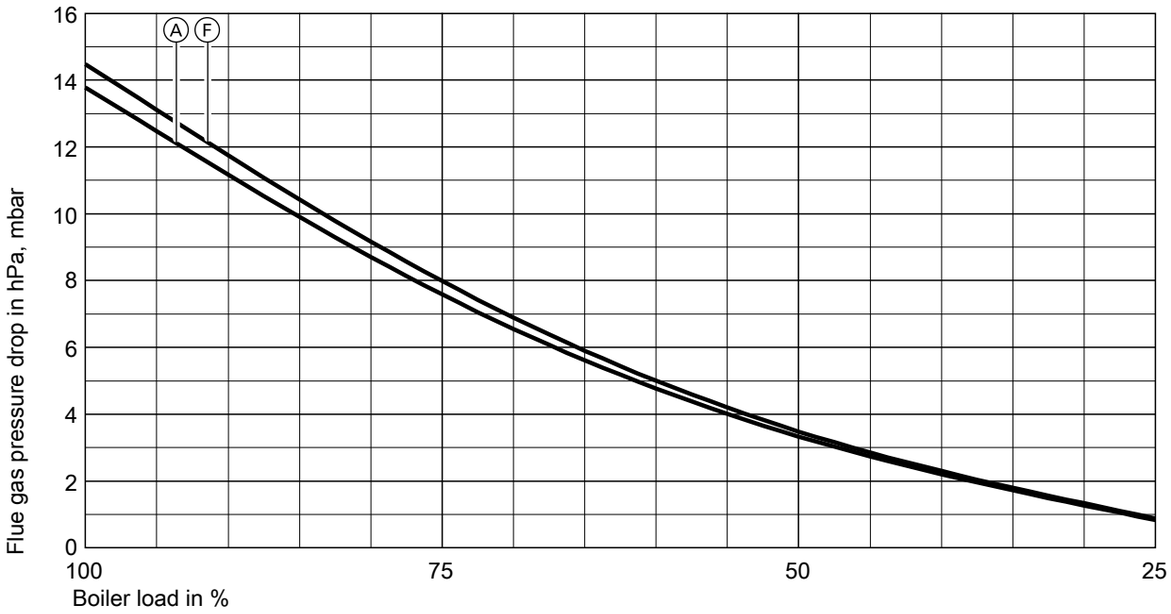
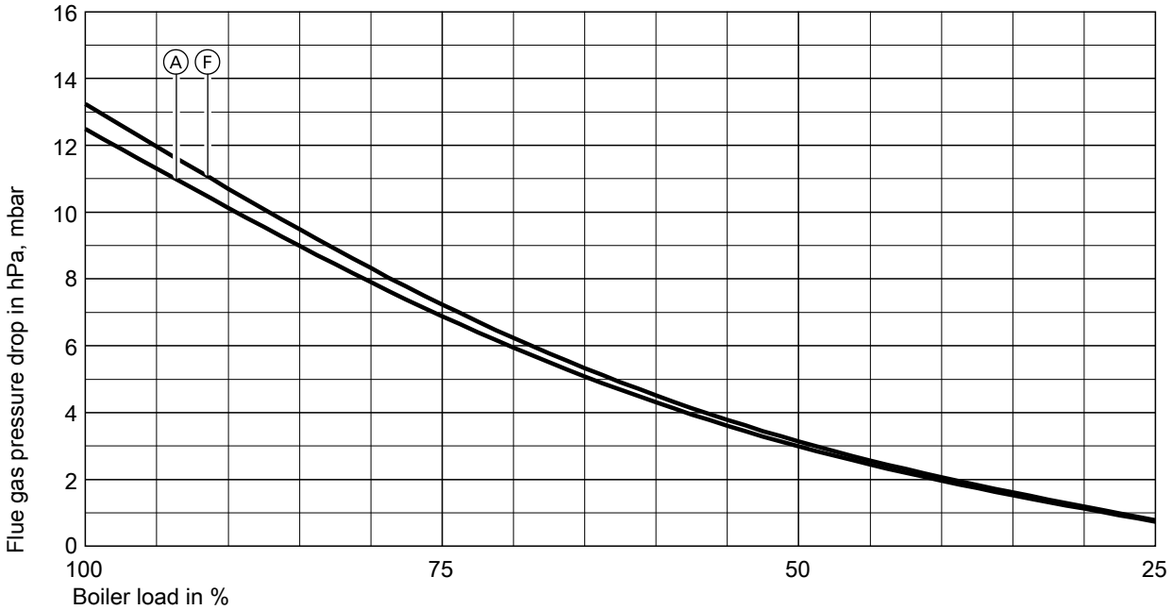
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 10.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

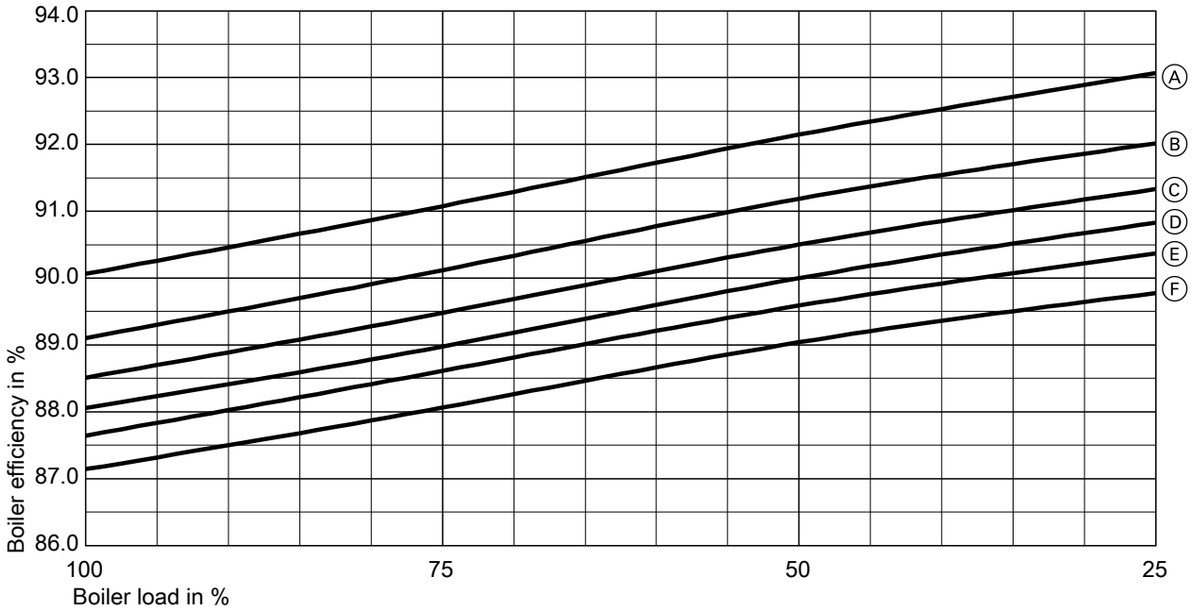


Flue gas pressure drop, fuel oil, max. 10.5 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓕ Working pressure 23 bar

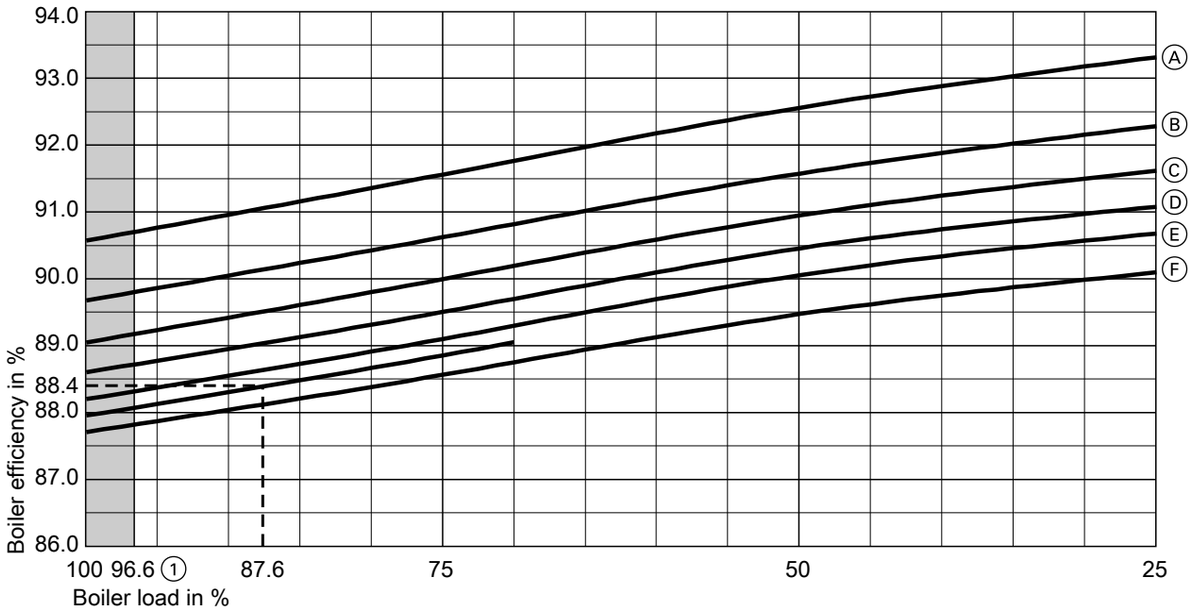
2.8 Boiler size 8, max. combustion output 12.7 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 12.7 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 12.3 MW, standard (without turbulators), taking into account boiler radiation losses

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar

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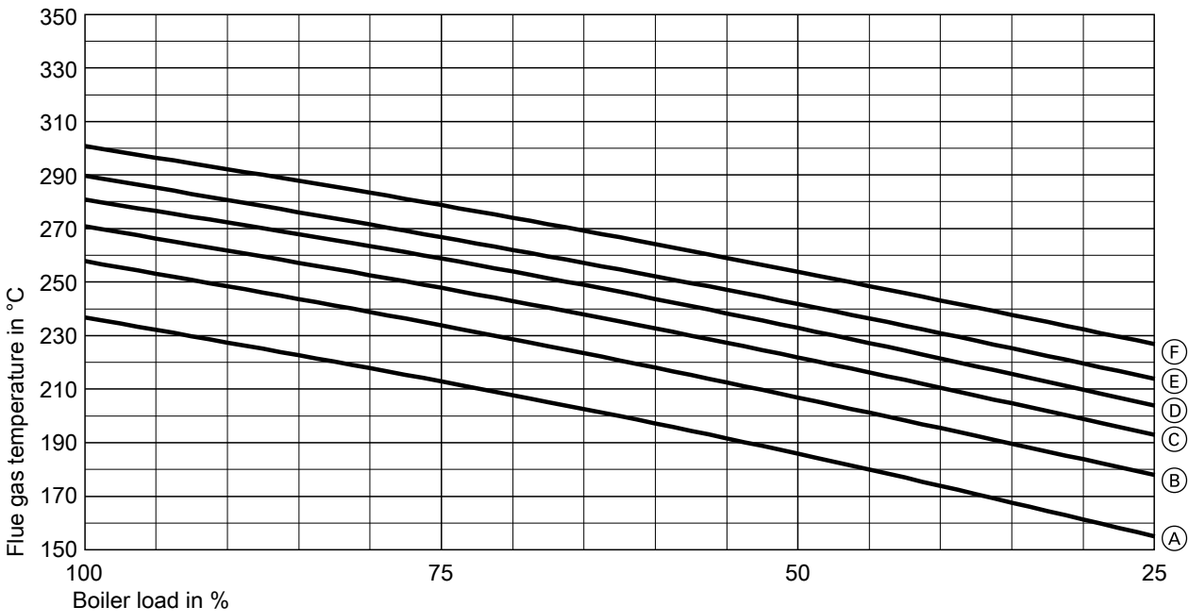
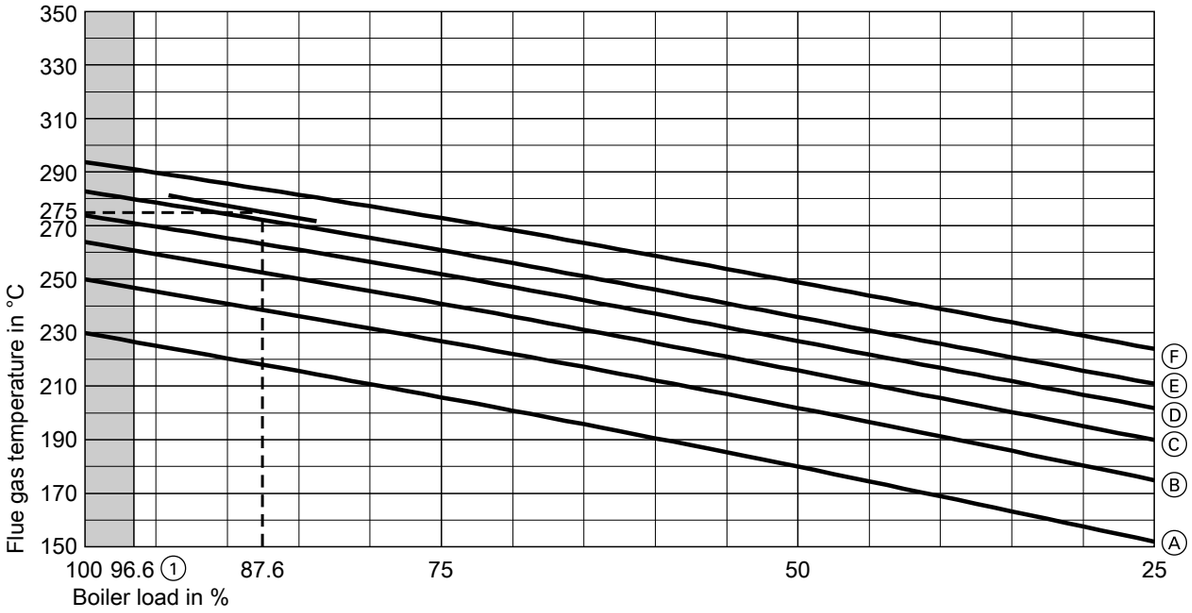
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 12.7 MW, standard (without turbulators)

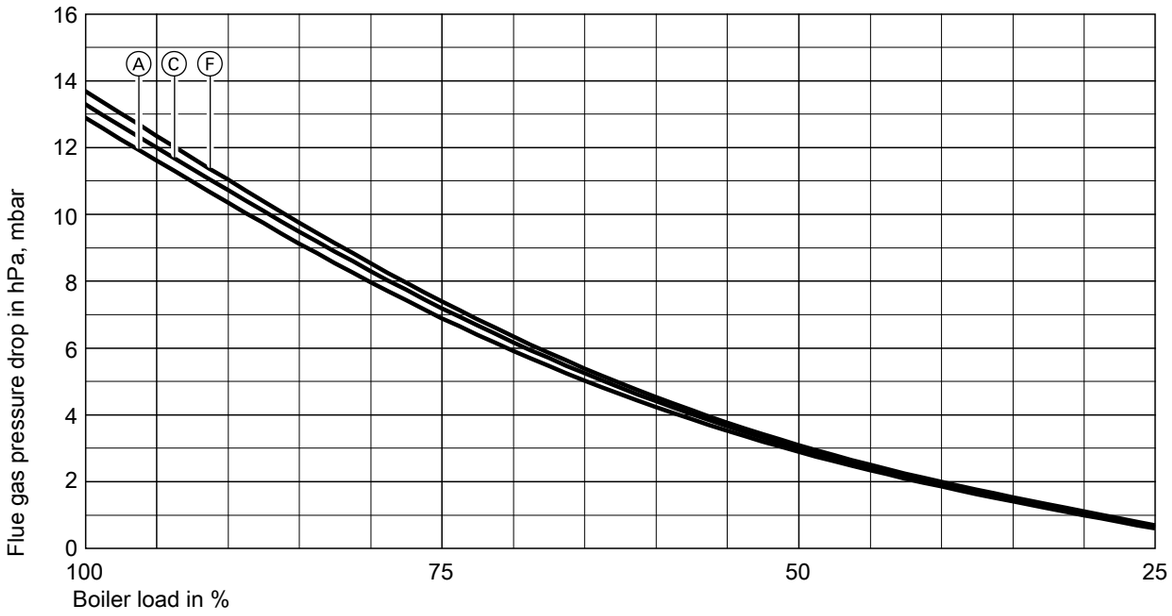
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 12.3 MW, standard (without turbulators)

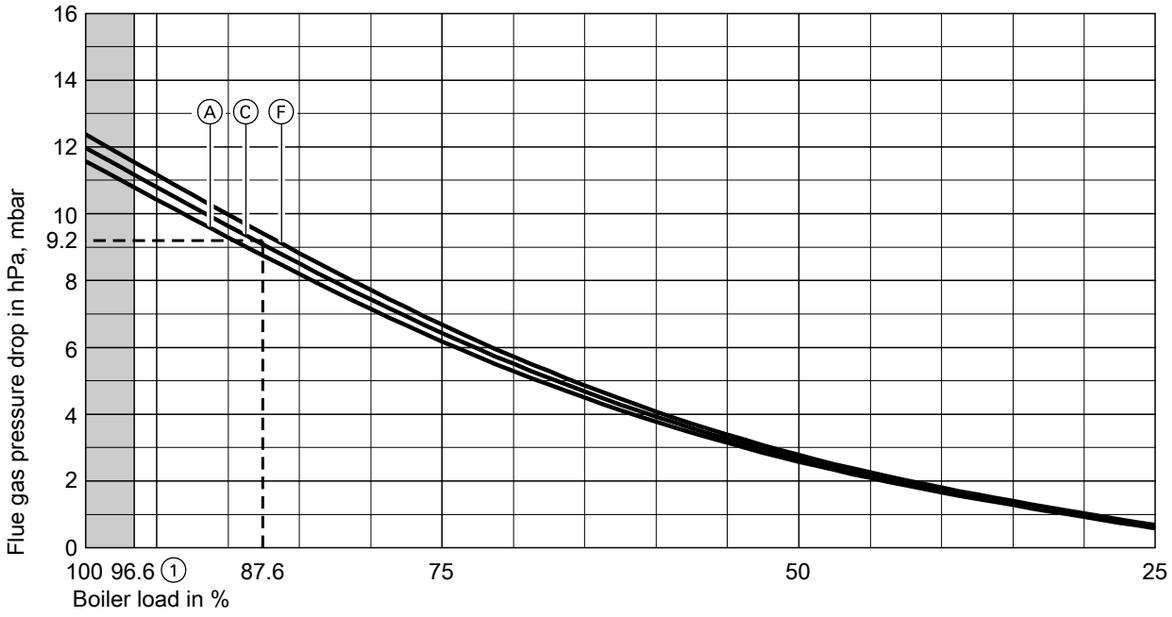
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 12.7 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓕ Working pressure 19 bar



Flue gas pressure drop, fuel oil, max 12.3 MW, standard (without turbulators)

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓕ Working pressure 19 bar

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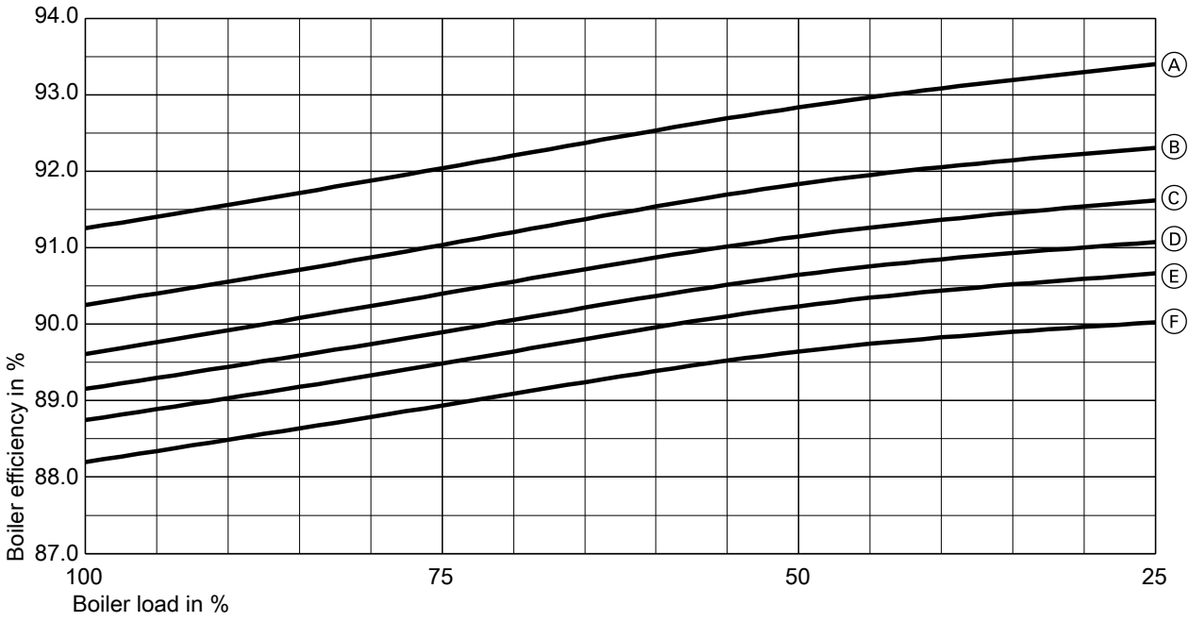
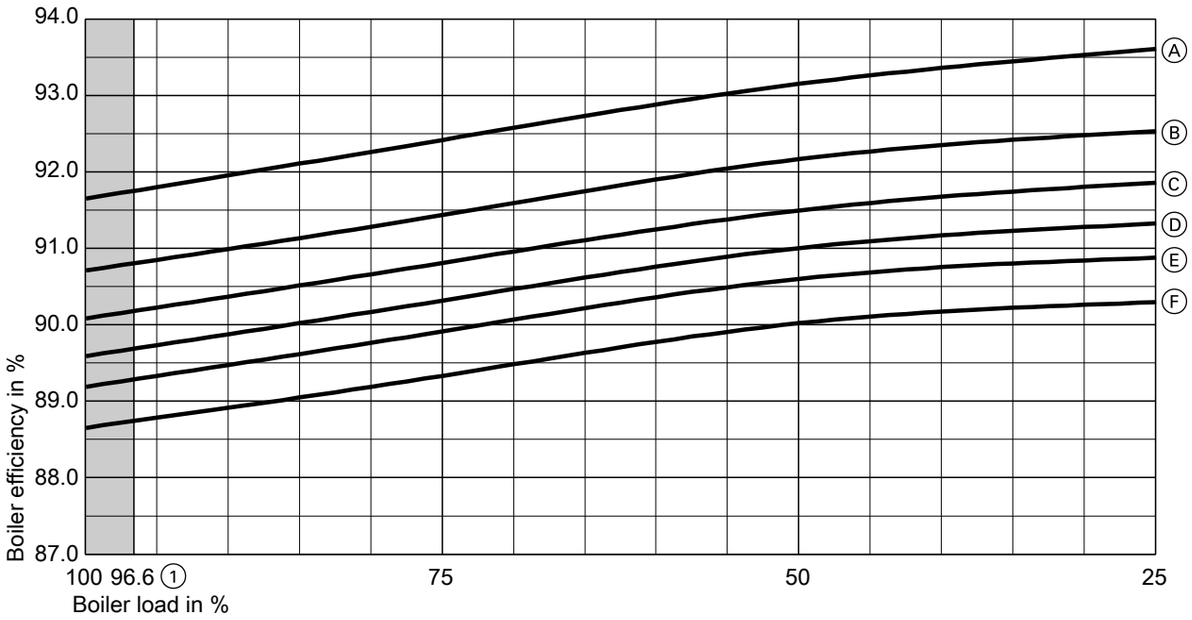
Boiler selection diagrams (cont.)

Version with turbulators (1000 mm)



Boiler efficiency, natural gas, max. 12.7 MW, with turbulators (1000 mm), taking into account boiler radiation losses

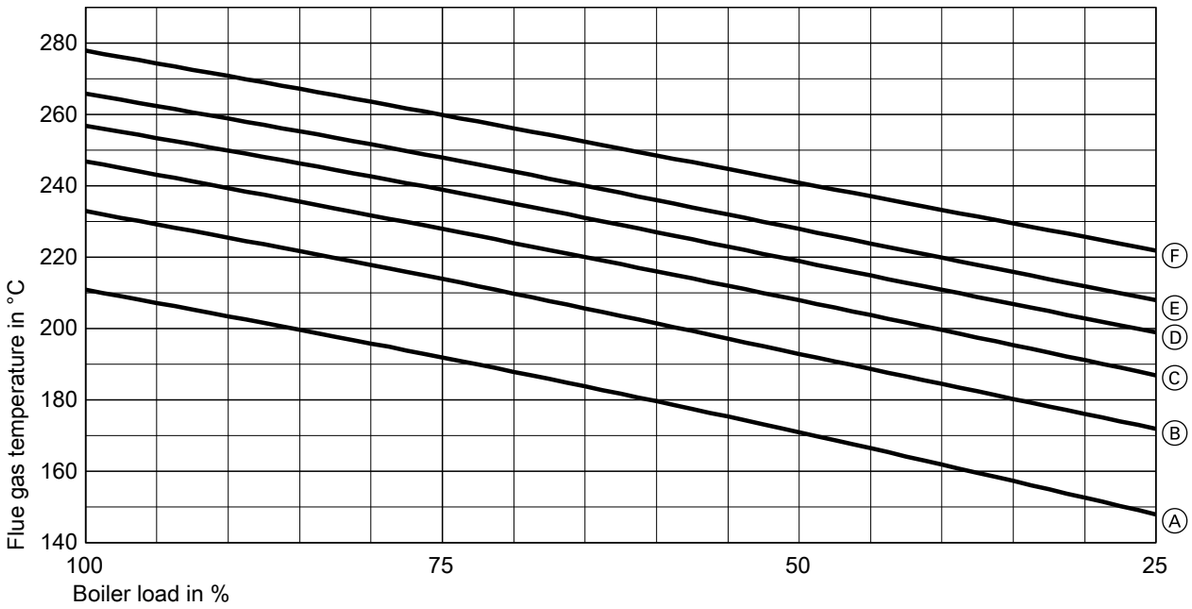
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 12.3 MW, with turbulators (1000 mm), taking into account boiler radiation losses

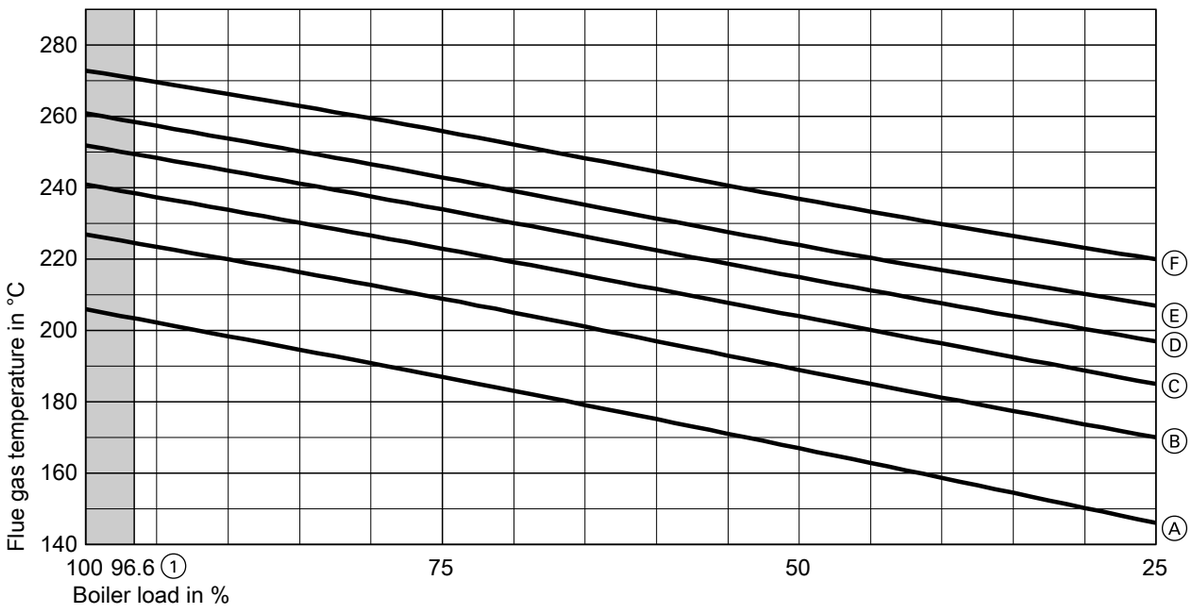
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 12.7 MW, with turbulators (1000 mm)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 12.3 MW, with turbulators (1000 mm)

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar

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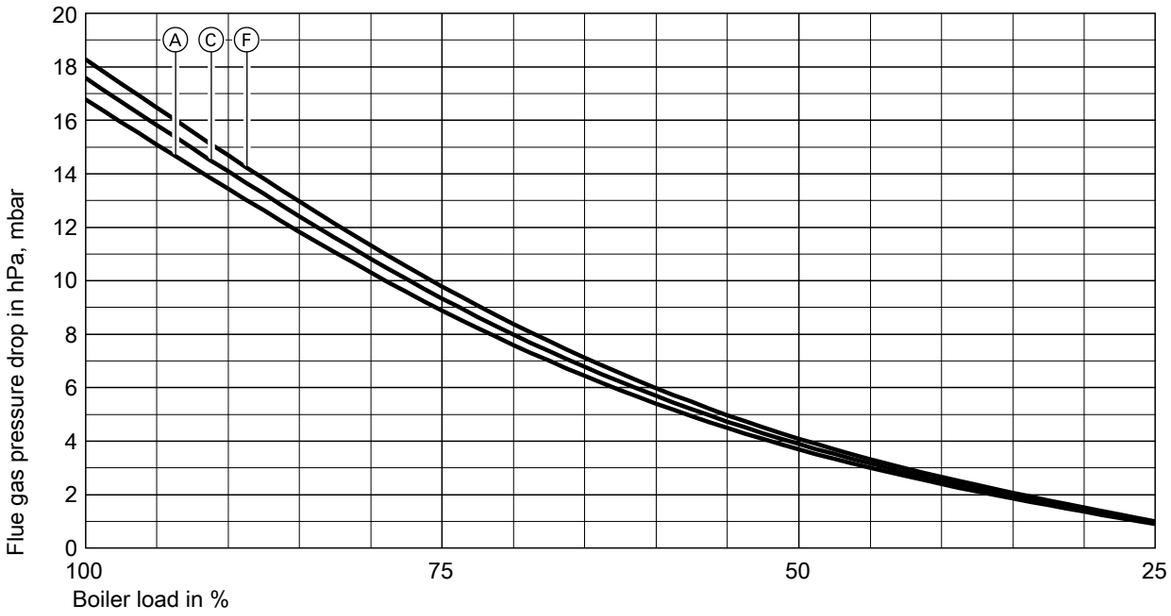
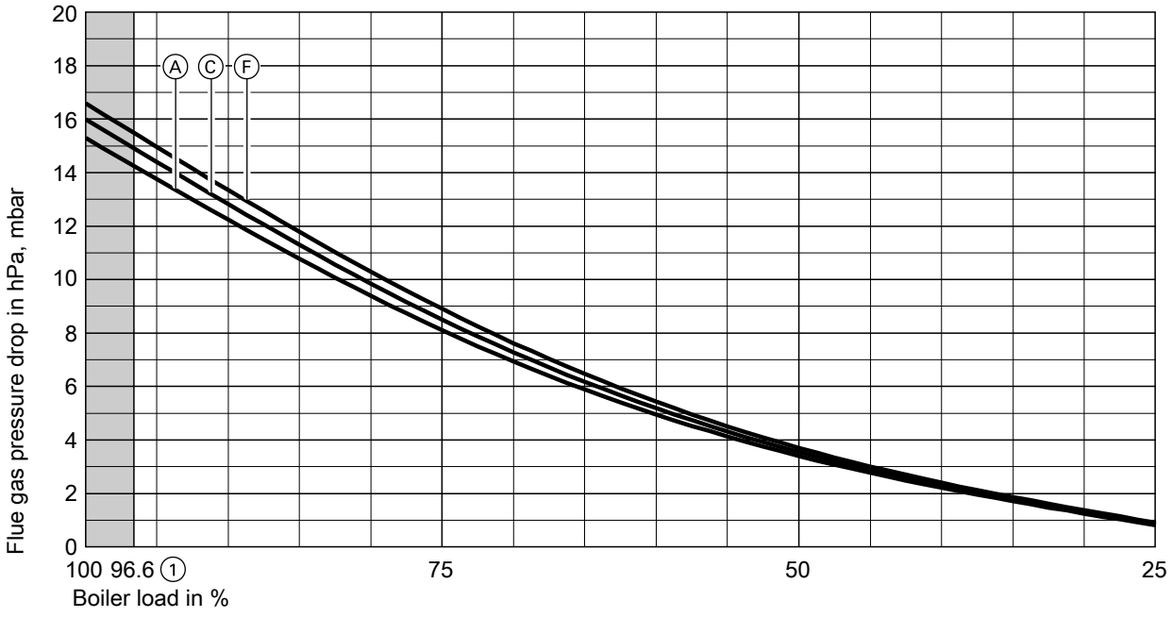
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 12.7 MW, with turbulators (1000 mm)

Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓕ Working pressure 19 bar

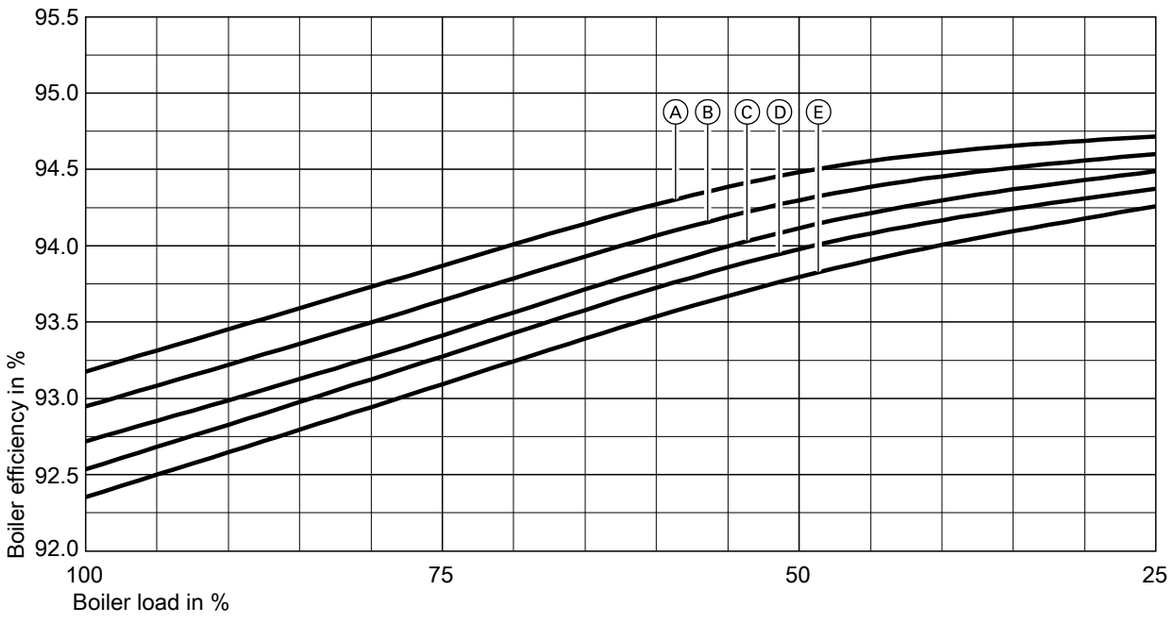


Flue gas pressure drop, fuel oil, max. 12.3 MW, with turbulators (1000 mm)

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓕ Working pressure 19 bar

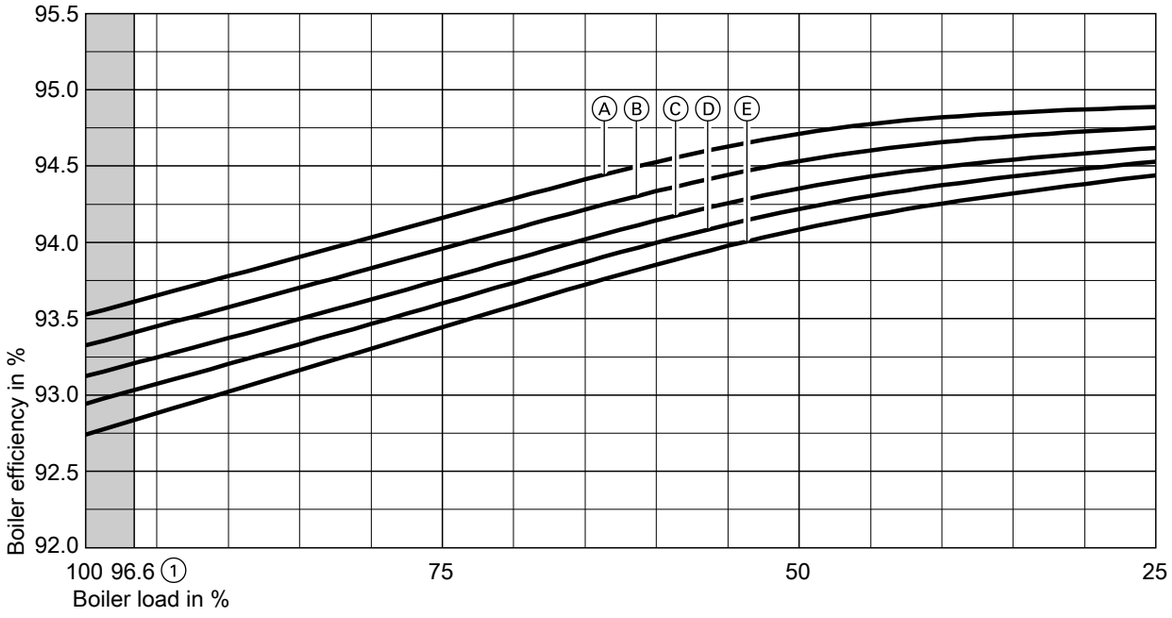
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 12.7 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 12.3 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

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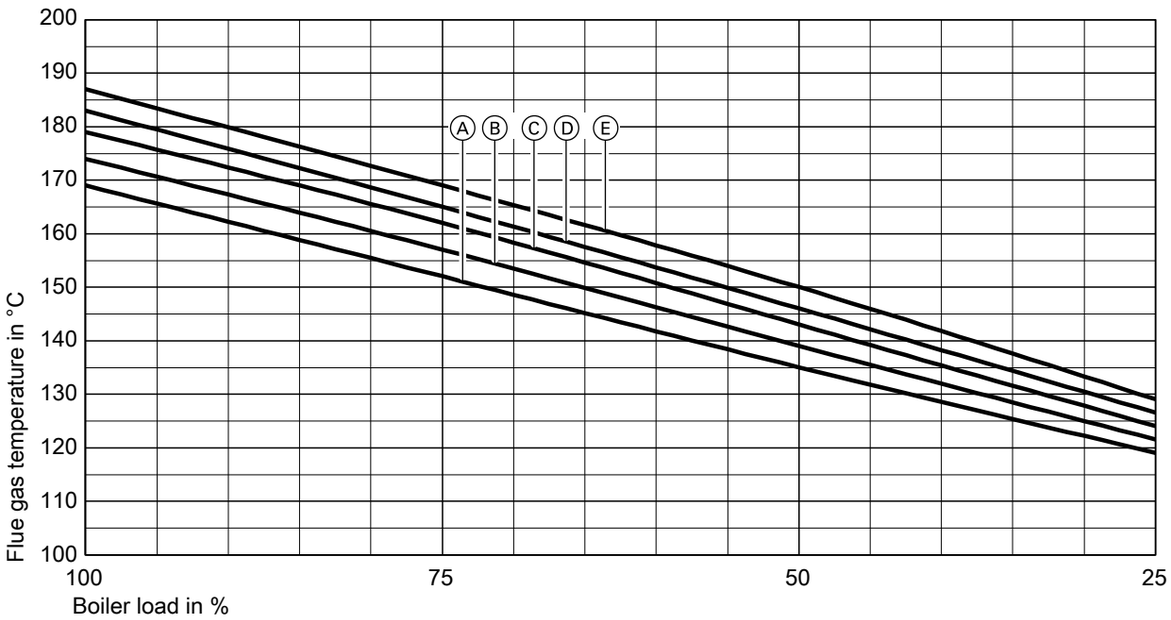
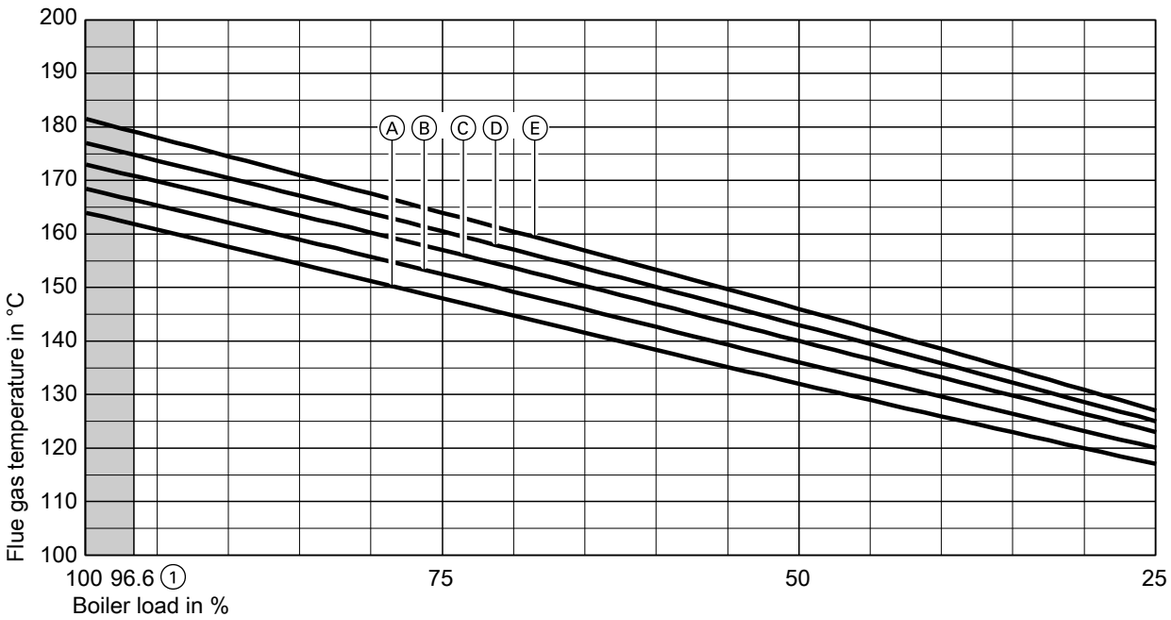
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 12.7 MW, without turbulators, with ECO 100

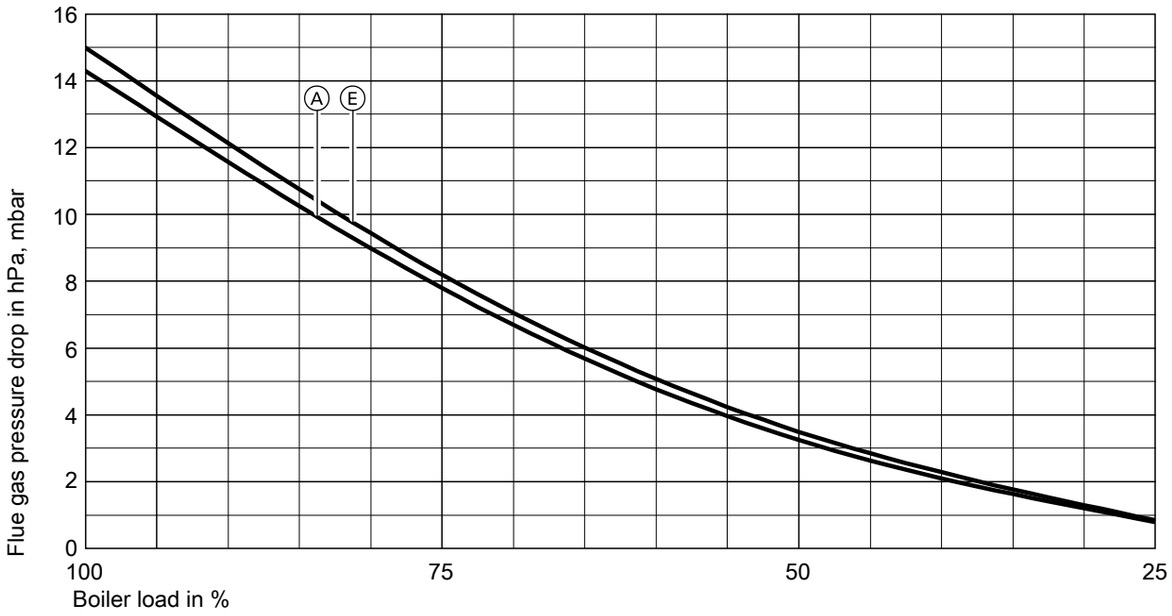
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 12.3 MW, without turbulators, with ECO 100

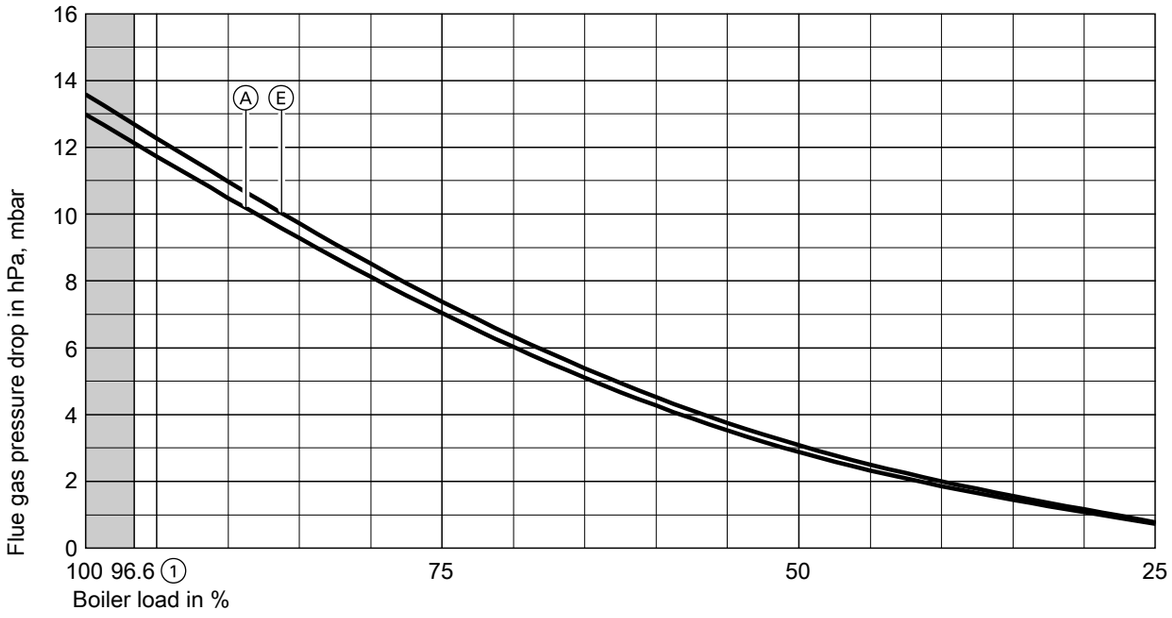
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 12.7 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar



Flue gas pressure drop, fuel oil, max. 12.3 MW, without turbulators, with ECO 100

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar

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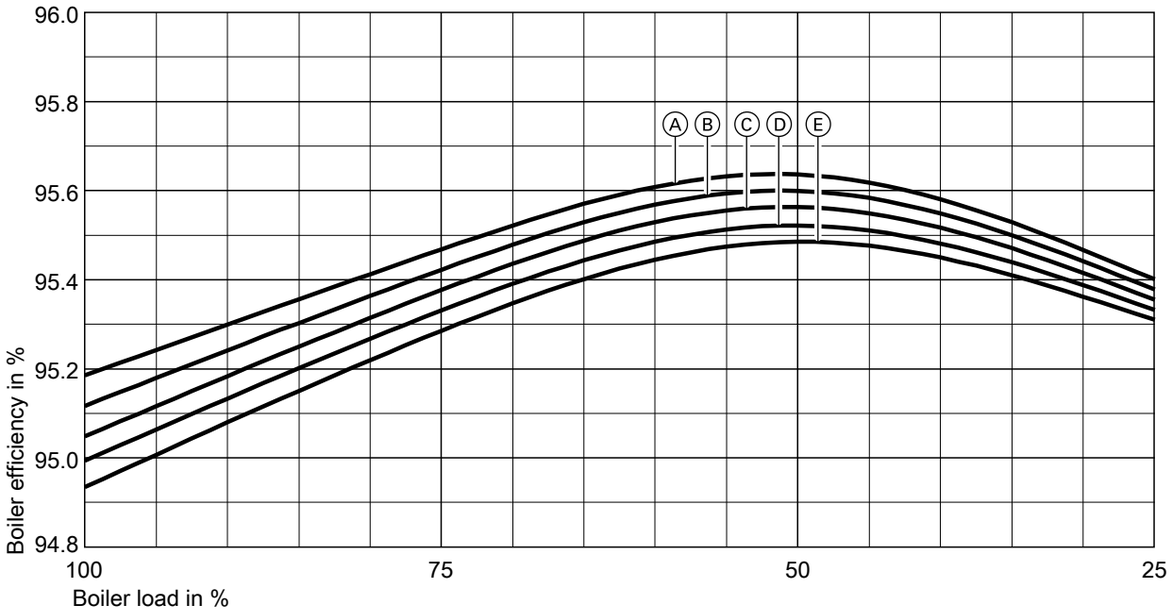
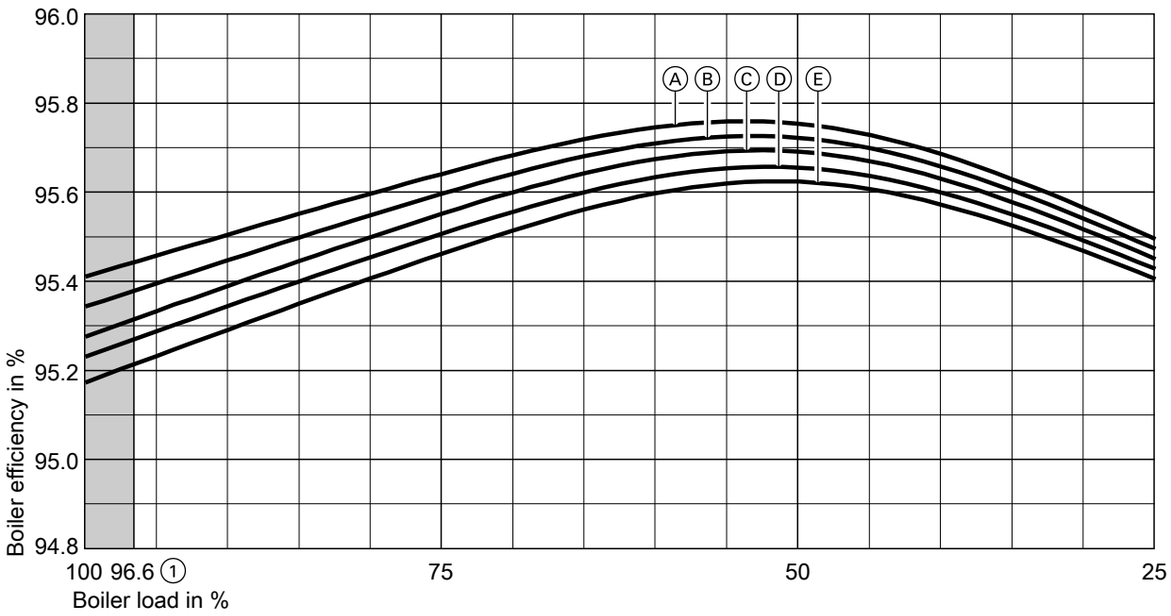
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 12.7 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

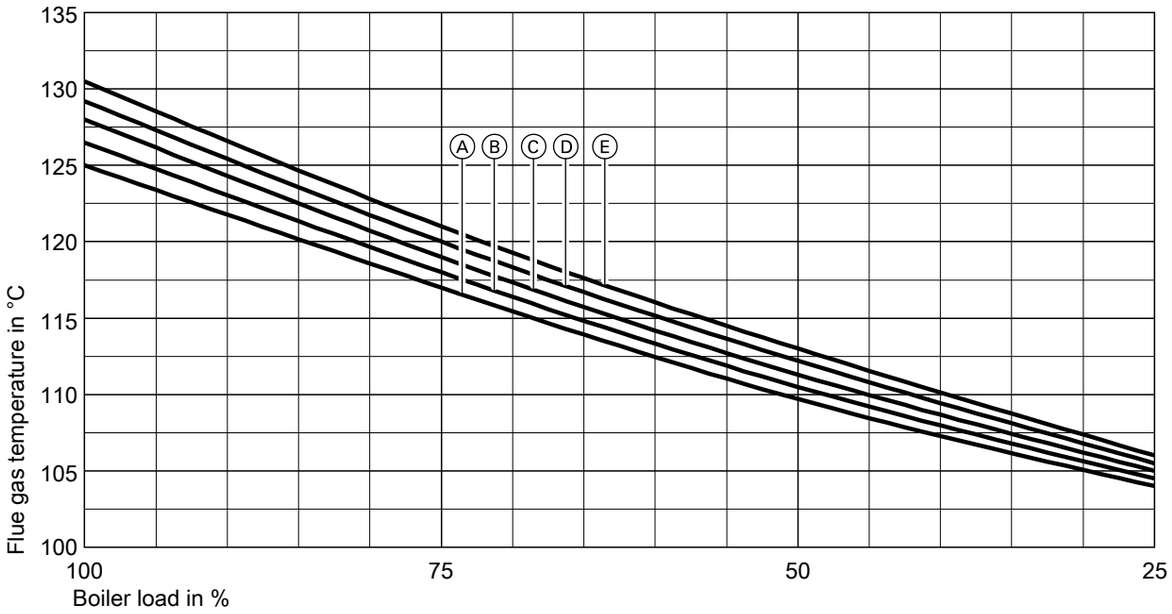
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 12.3 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

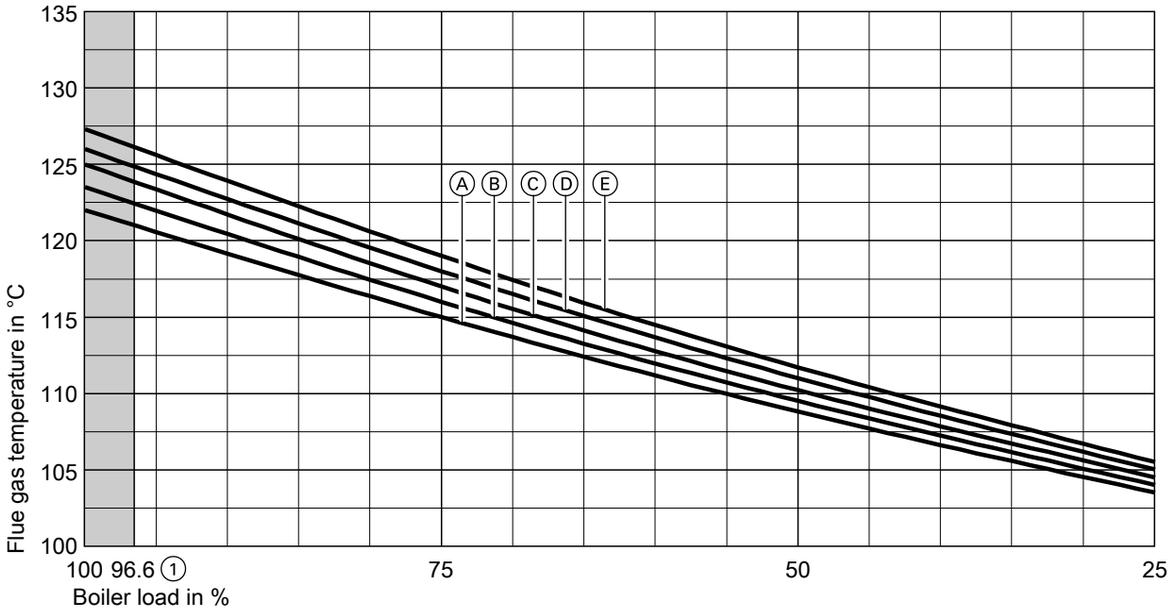
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 12.7 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 12.3 MW, without turbulators, with ECO 200

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

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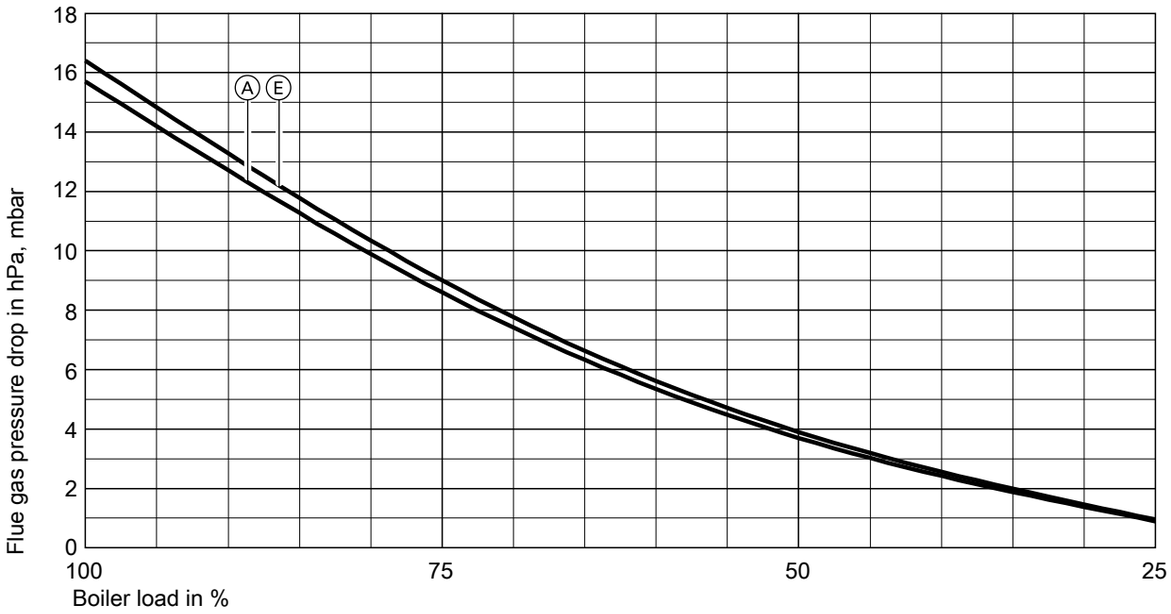
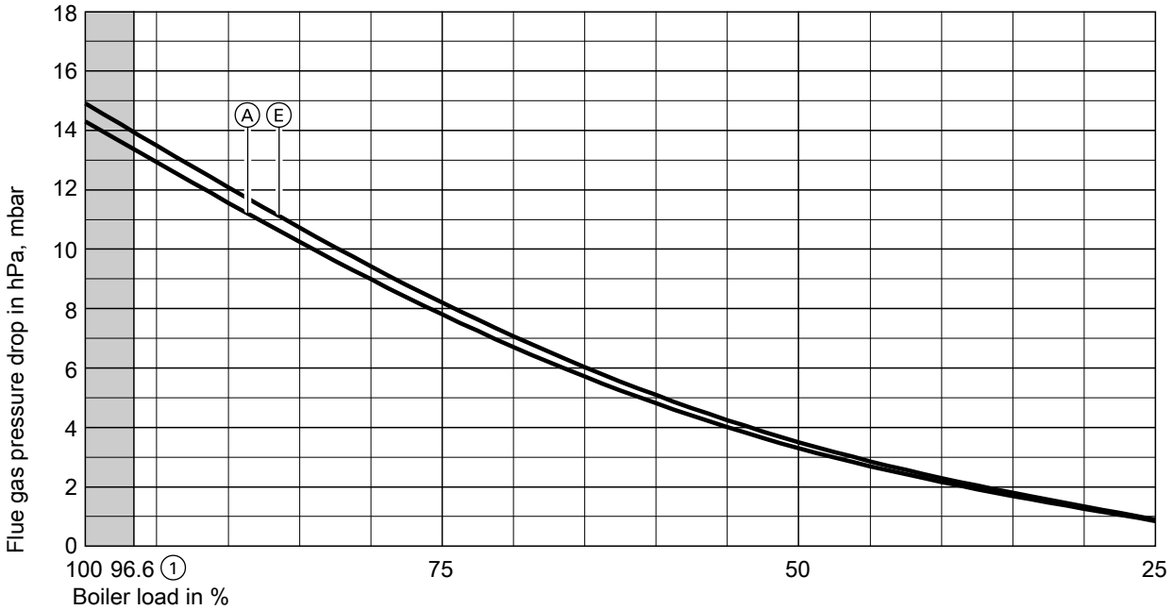
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 12.7 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar

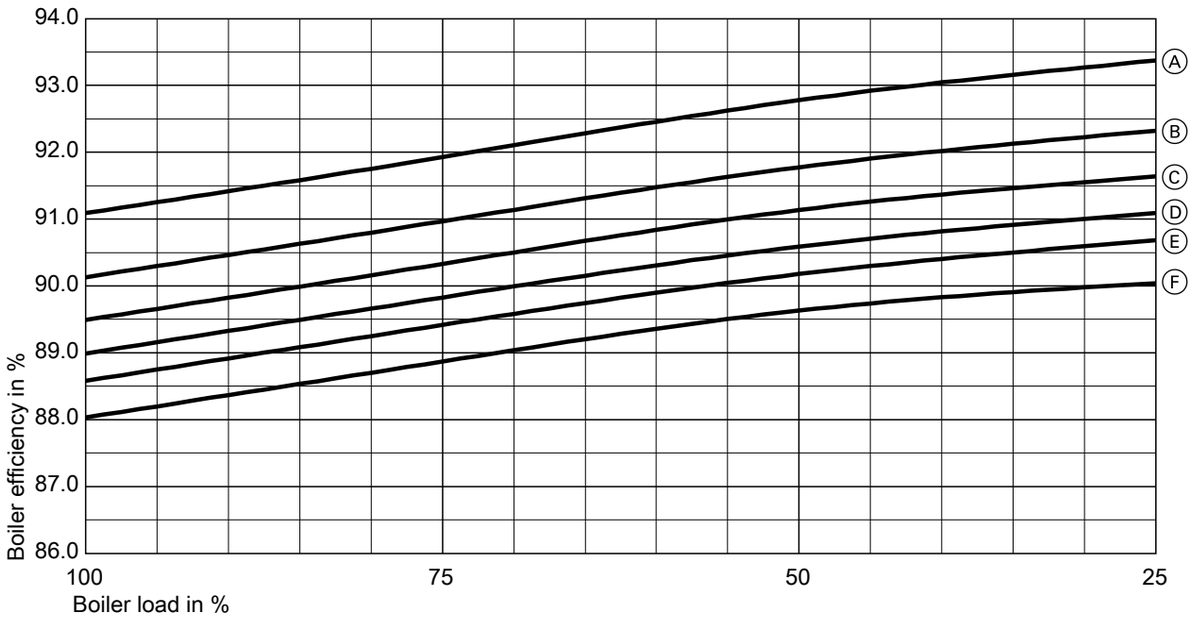


Flue gas pressure drop, fuel oil, max. 12.3 MW, without turbulators, with ECO 200

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar

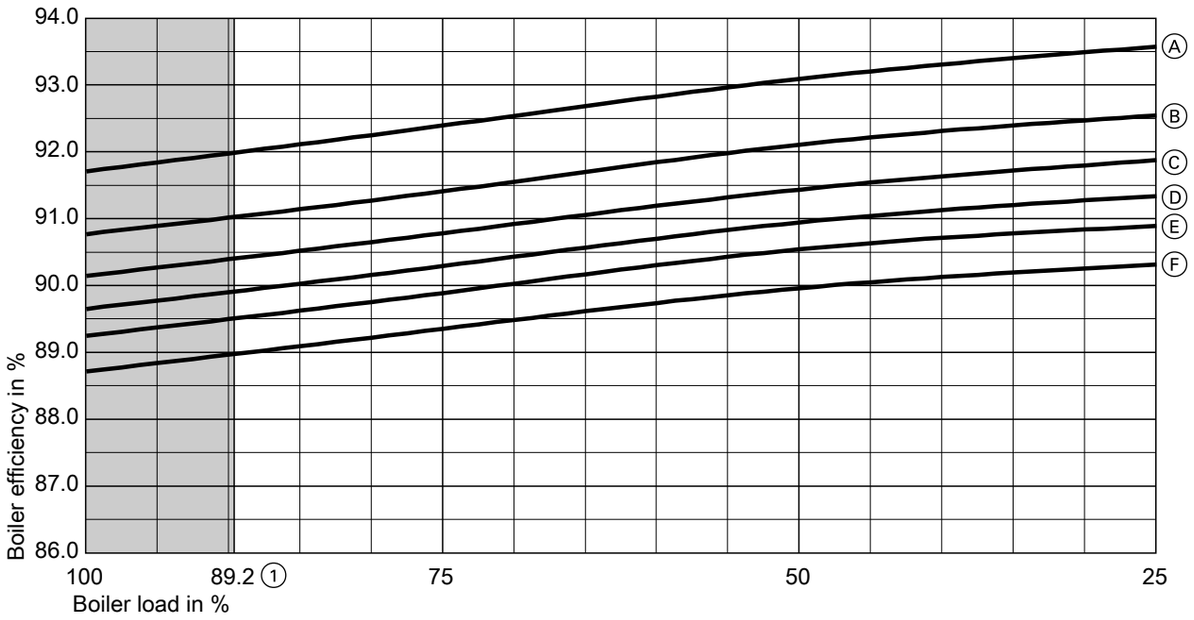
2.9 Boiler size 9, max. combustion output 15.7 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 15.7 MW, standard (without turbulators), taking into account boiler radiation losses

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 14.0 MW, standard (without turbulators), taking into account boiler radiation losses

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar

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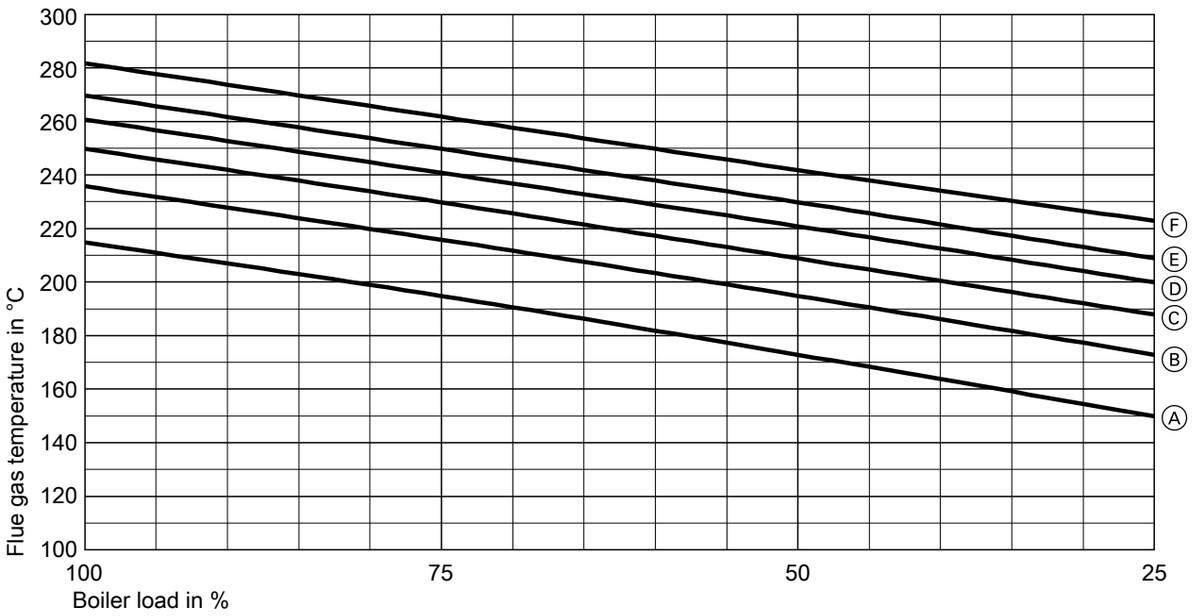
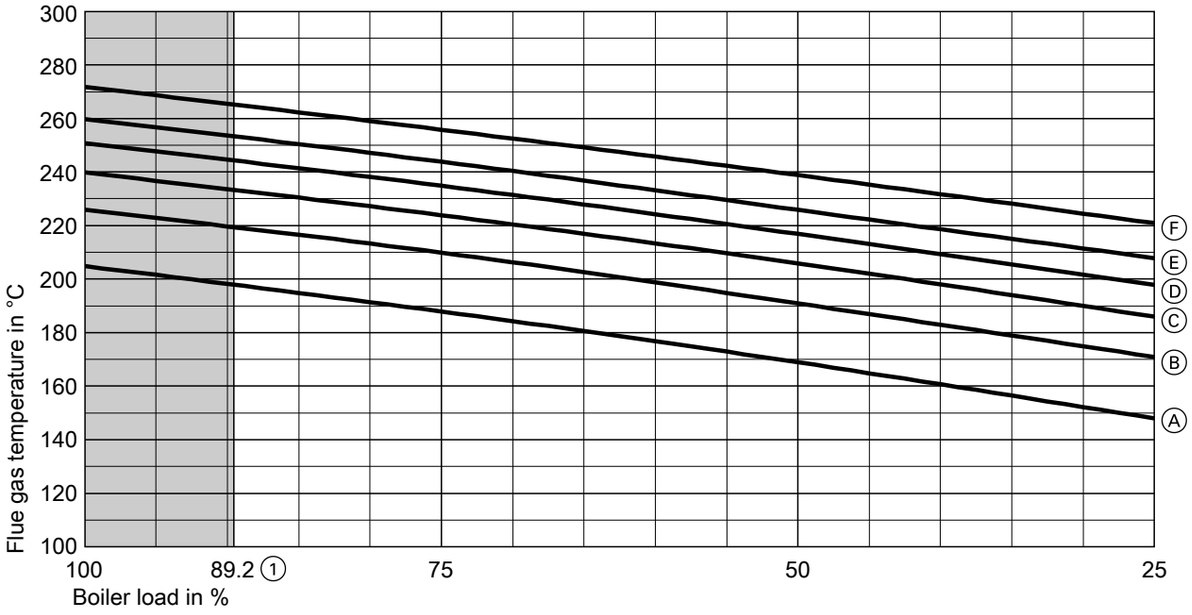
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 15.7 MW, standard (without turbulators)

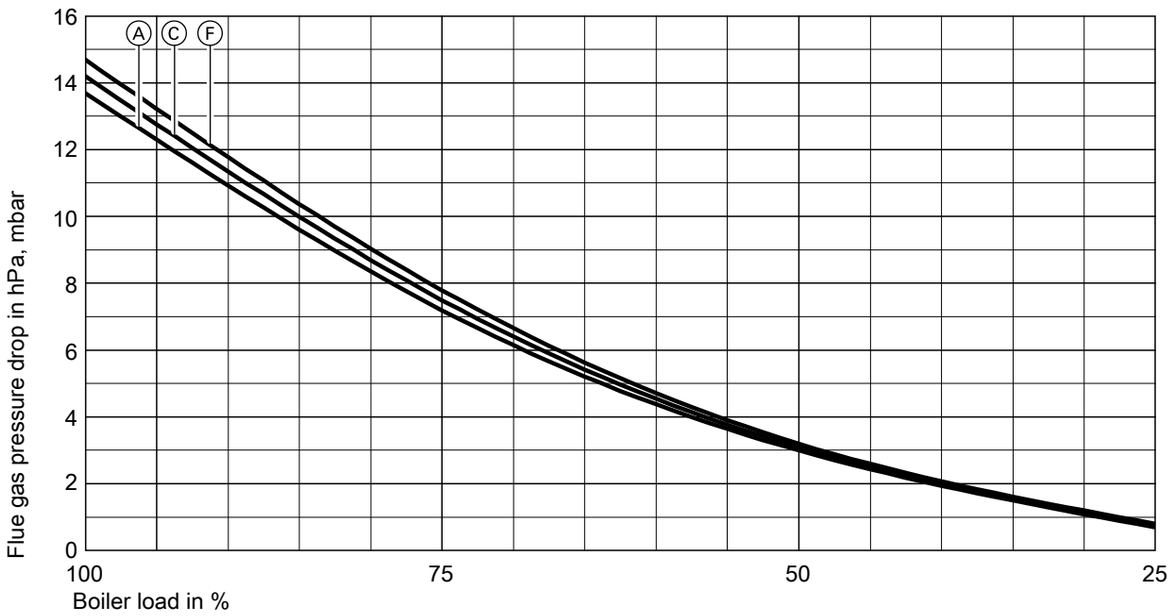
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 14.0 MW, standard (without turbulators)

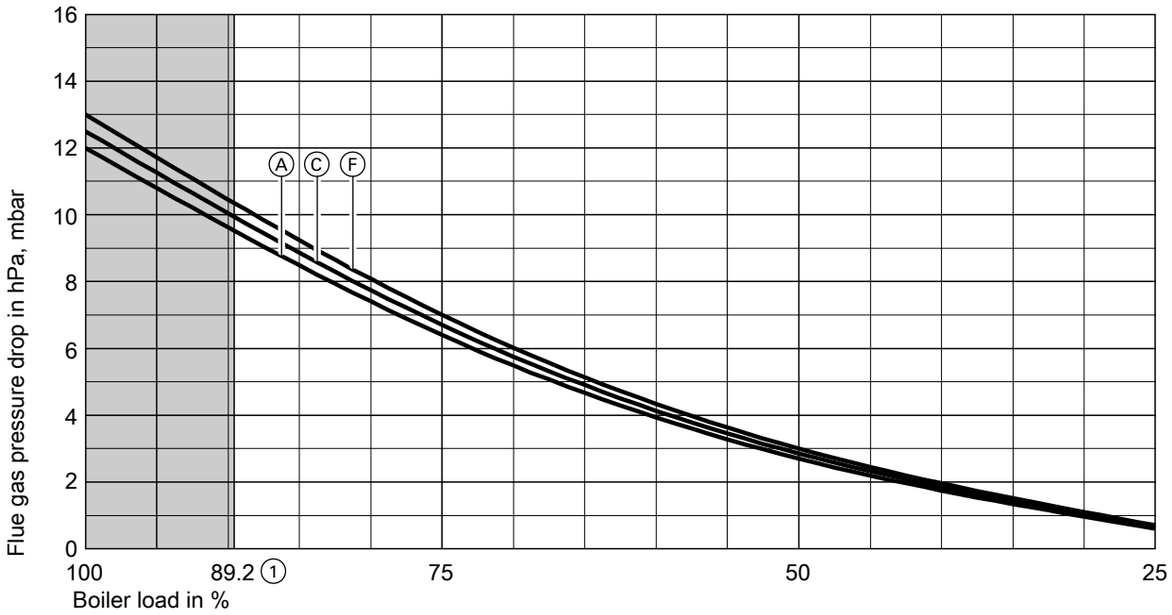
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 14 bar
Ⓕ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 15.7 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓕ Working pressure 19 bar



Flue gas pressure drop, fuel oil, max 14.0 MW, standard (without turbulators)

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓕ Working pressure 19 bar

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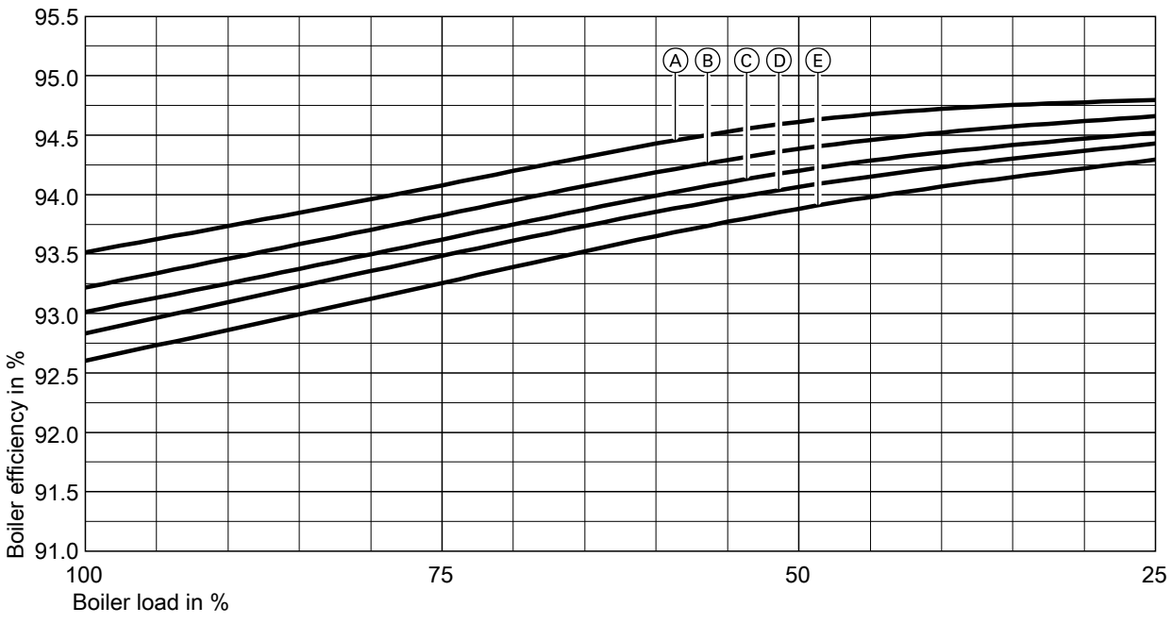
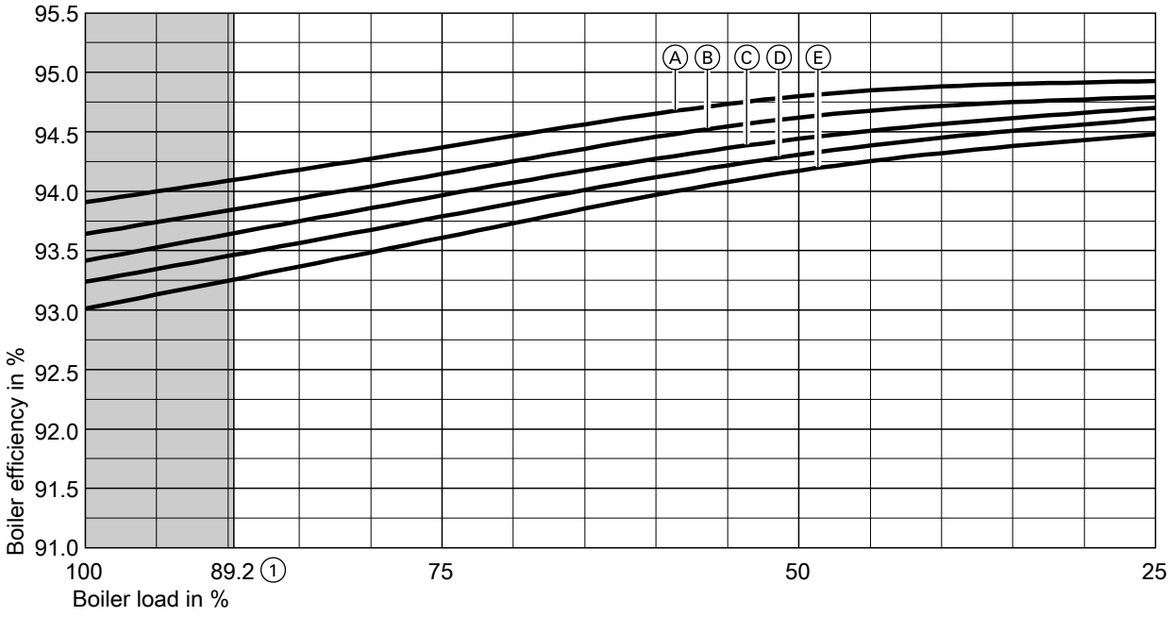
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 15.7 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

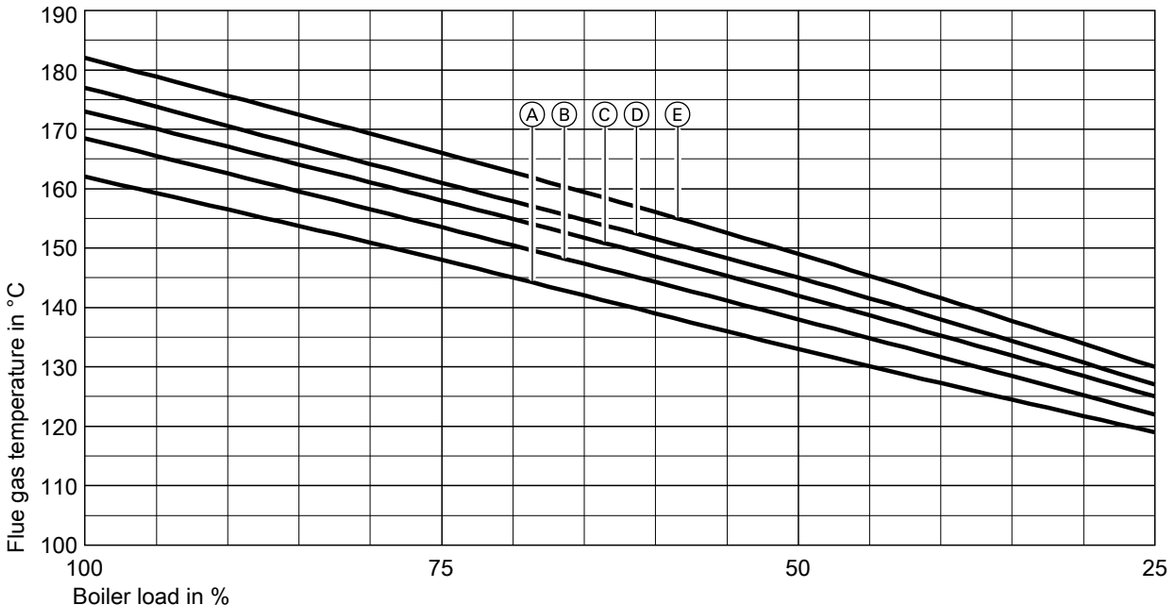
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 14.0 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

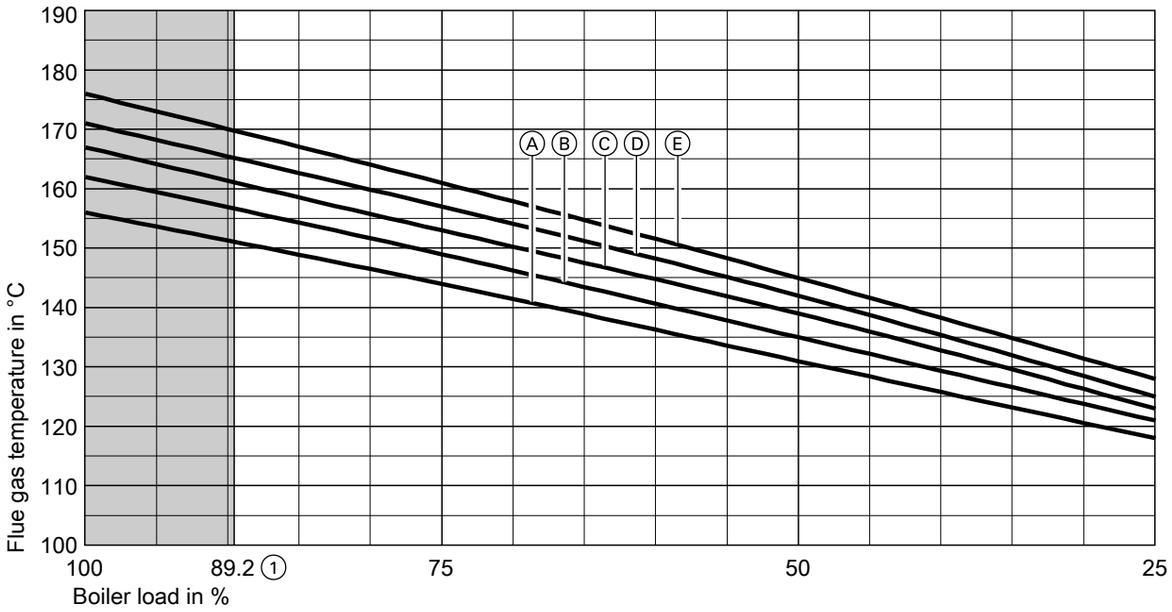
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 15.7 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 14.0 MW, without turbulators, with ECO 100

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

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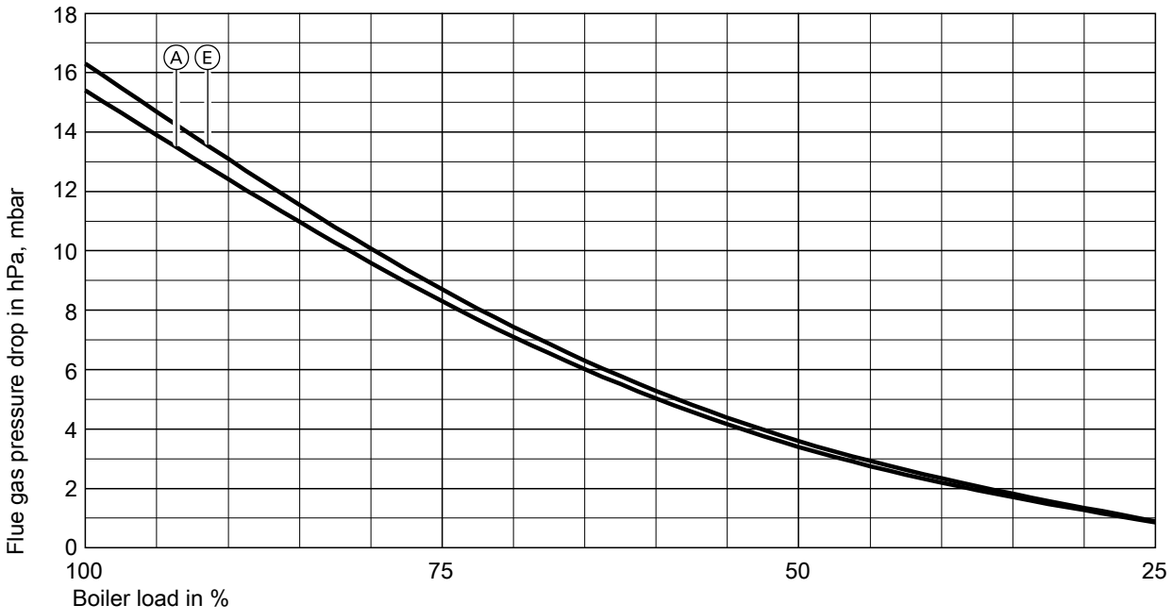
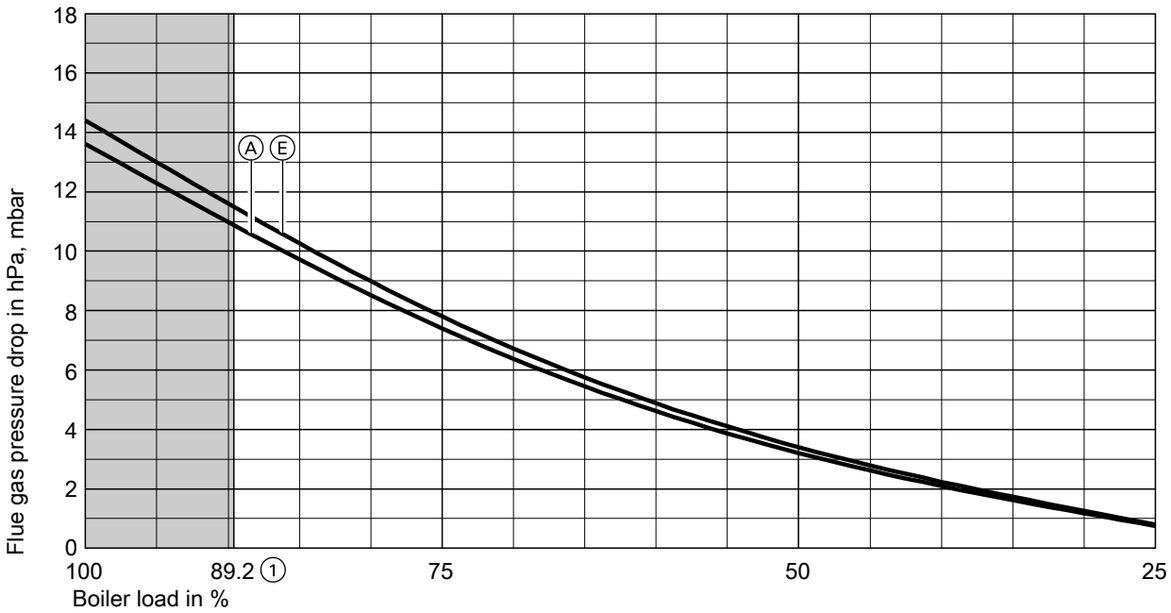
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 15.7 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar

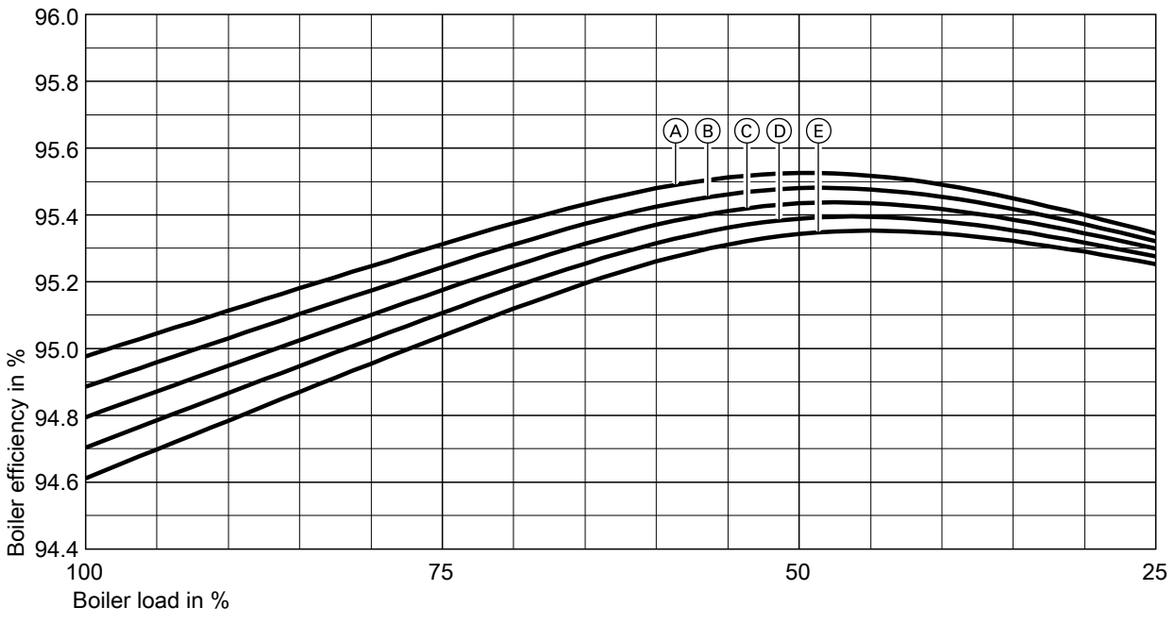


Flue gas pressure drop, fuel oil, max. 14.0 MW, without turbulators, with ECO 100

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar

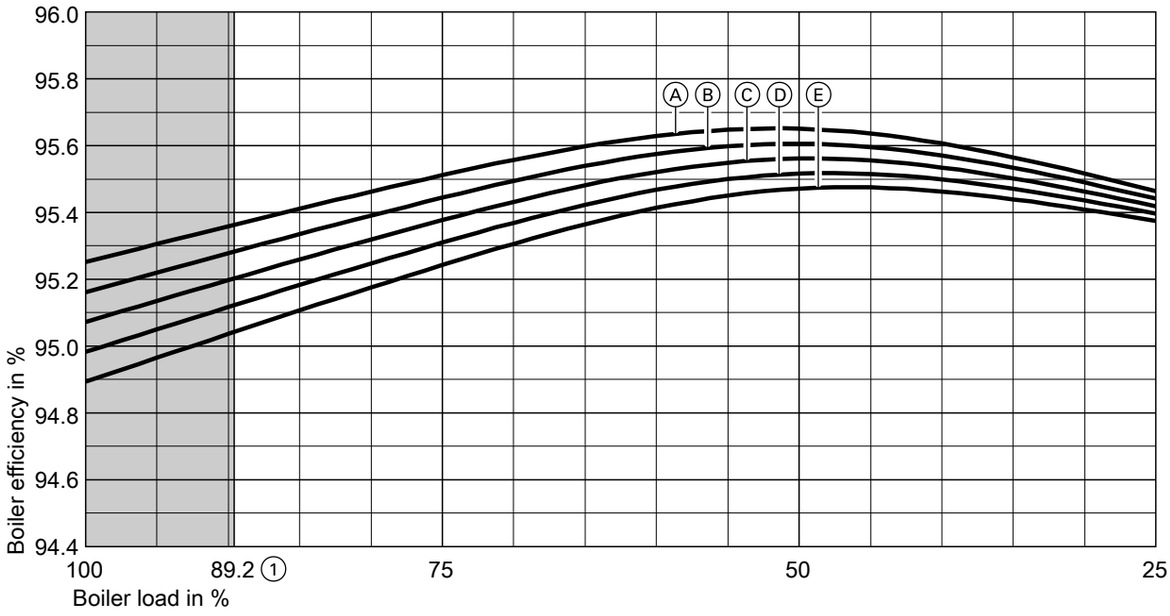
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 15.7 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Boiler efficiency, fuel oil, max. 14.0 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

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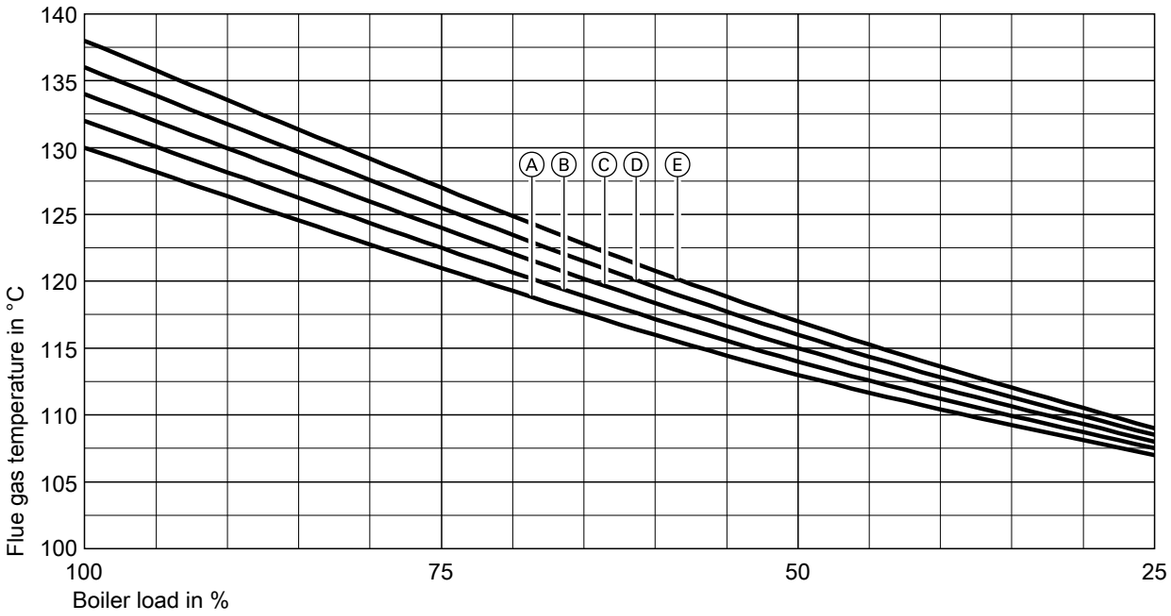
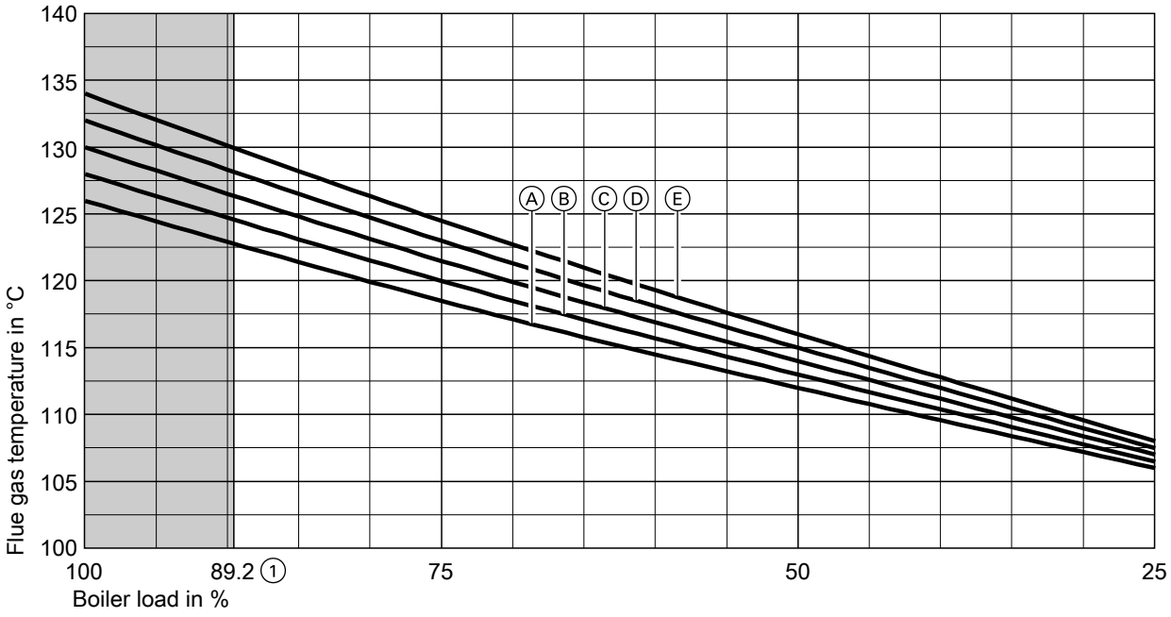
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 15.7 MW, without turbulators, with ECO 200

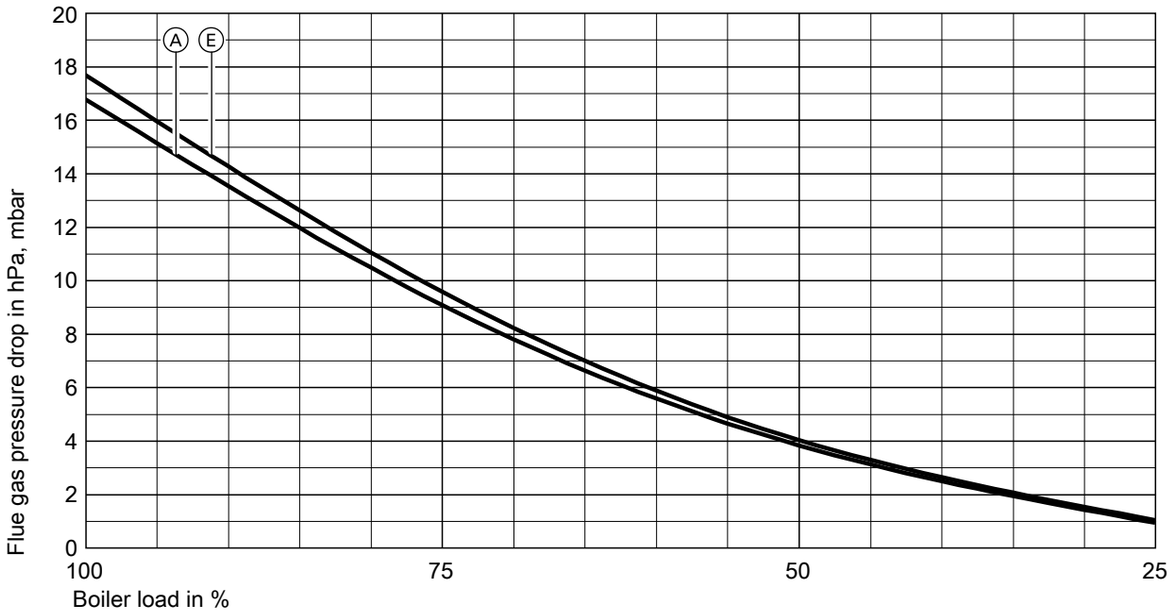
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar



Flue gas temperature, fuel oil, max. 14.0 MW, without turbulators, with ECO 200

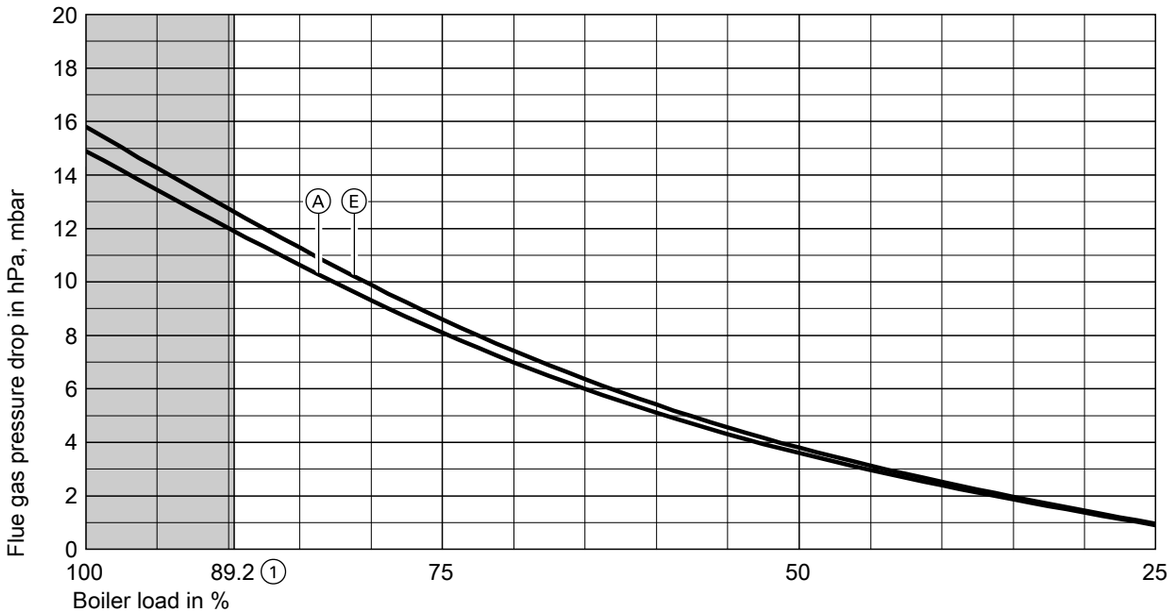
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 14 bar
Ⓔ Working pressure 19 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 15.7 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar



Flue gas pressure drop, fuel oil, max. 14.0 MW, without turbulators, with ECO 200

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓔ Working pressure 19 bar

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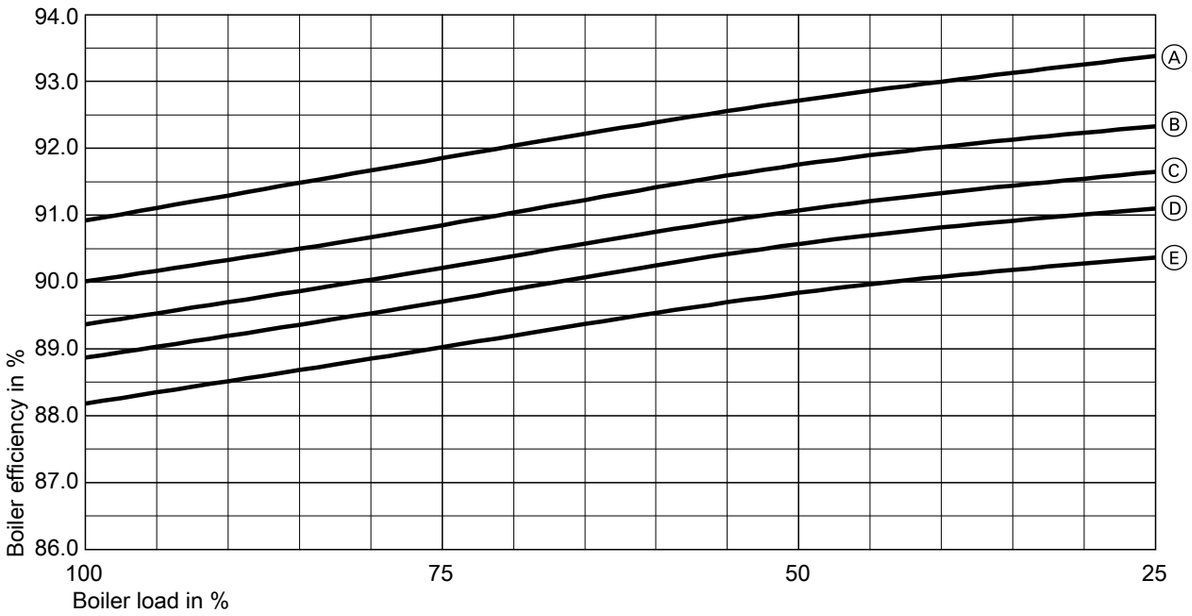
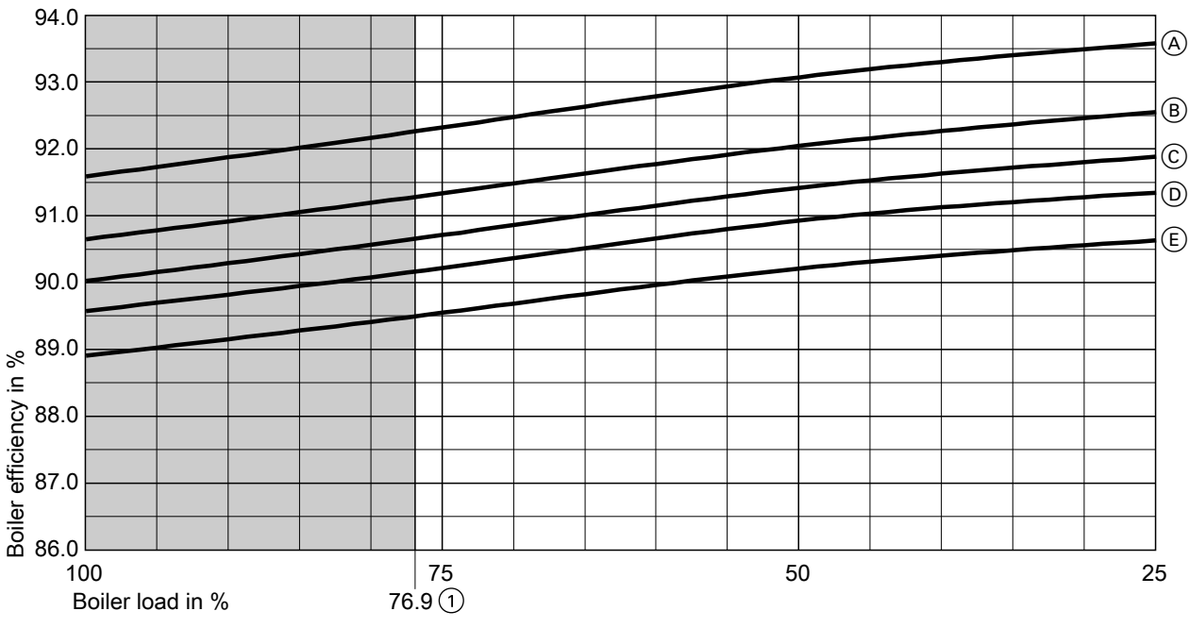
2.10 Boiler size A, max. combustion output 18.2 MW

Standard version (without turbulators)



Boiler efficiency, natural gas, max 18.2 MW, standard (without turbulators), taking into account boiler radiation losses

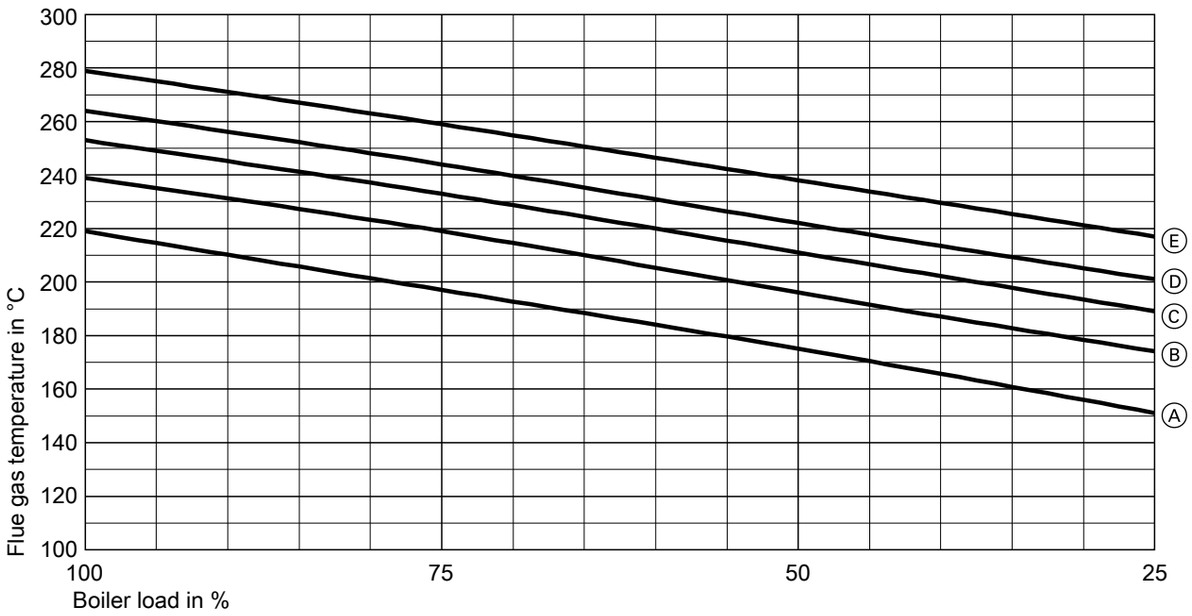
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 16.5 bar



Boiler efficiency, fuel oil, max. 14.0 MW, standard (without turbulators), taking into account boiler radiation losses

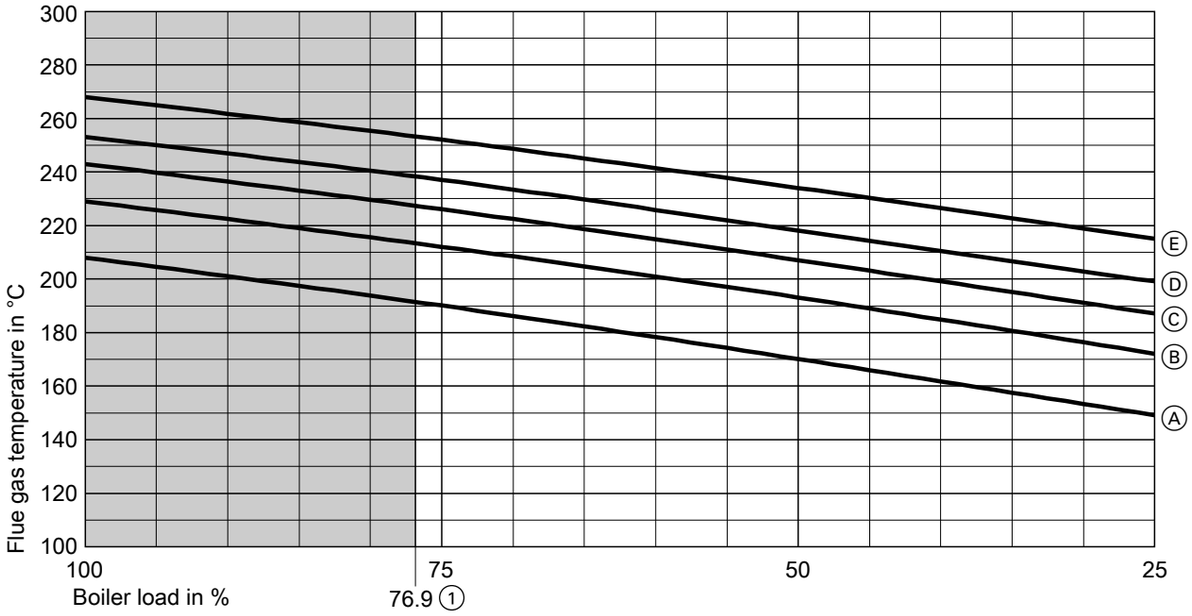
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 16.5 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 18.2 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 16.5 bar



Flue gas temperature, fuel oil, max. 14.0 MW, standard (without turbulators)

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓑ Working pressure 5 bar
Ⓒ Working pressure 8 bar
Ⓓ Working pressure 11 bar
Ⓔ Working pressure 16.5 bar

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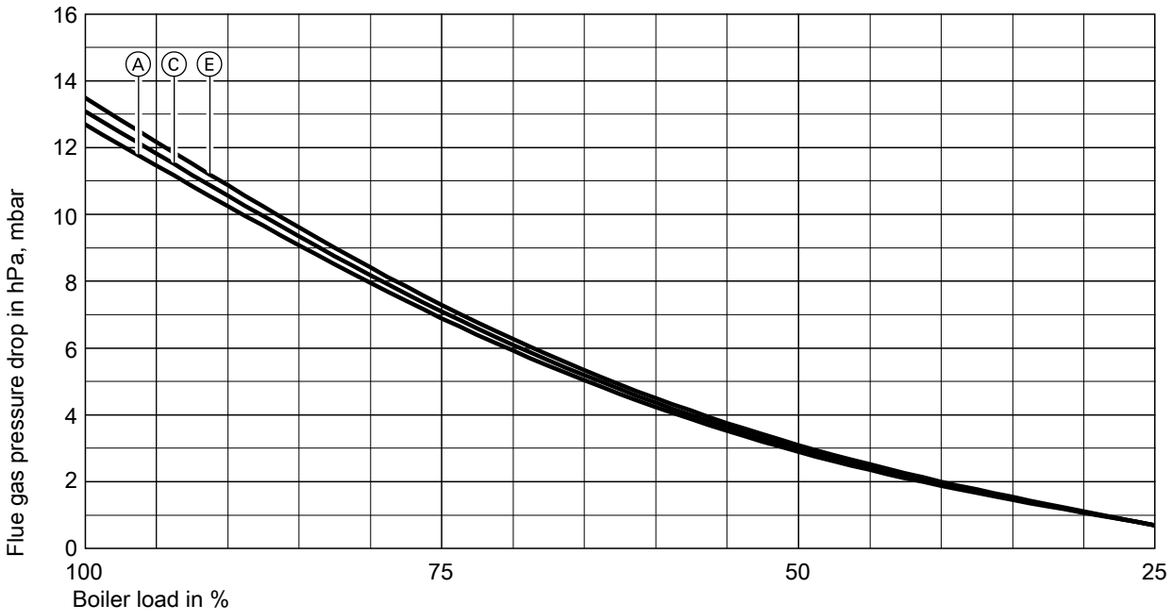
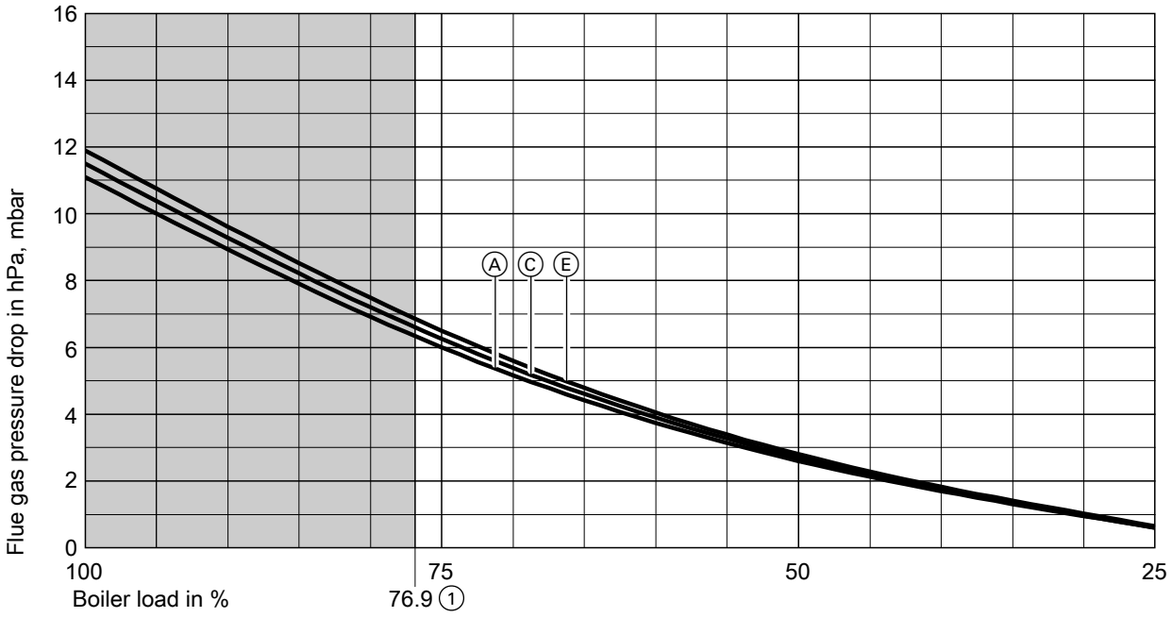
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 18.2 MW, standard (without turbulators)

Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓔ Working pressure 16.5 bar

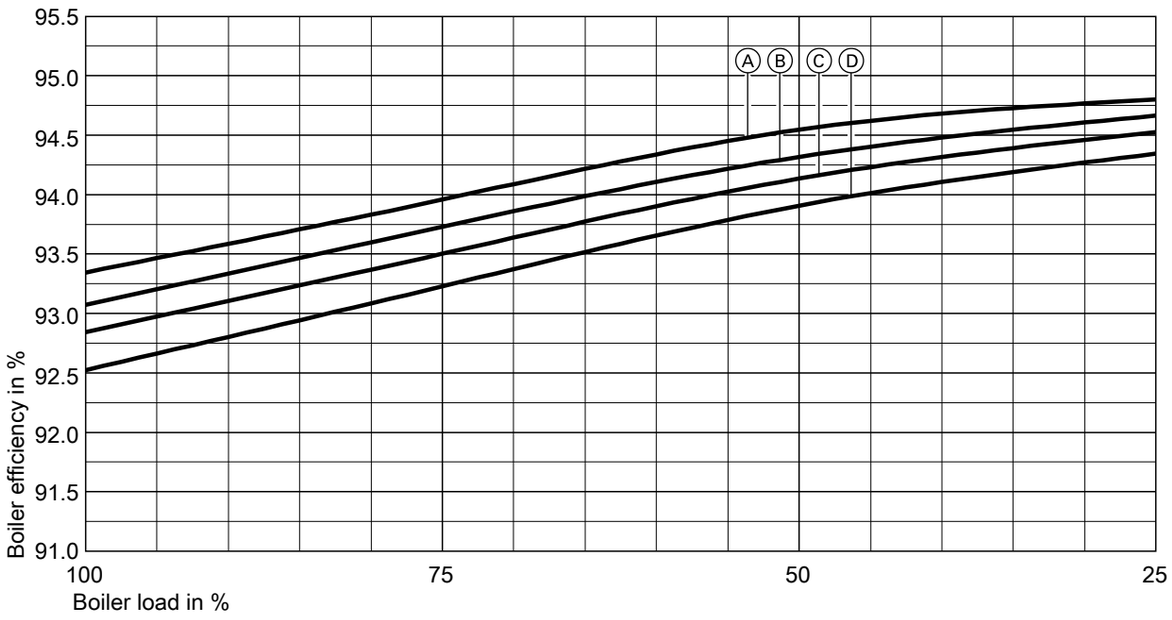


Flue gas pressure drop, fuel oil, max 14.0 MW, standard (without turbulators)

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 2 bar
Ⓒ Working pressure 8 bar
Ⓔ Working pressure 16.5 bar

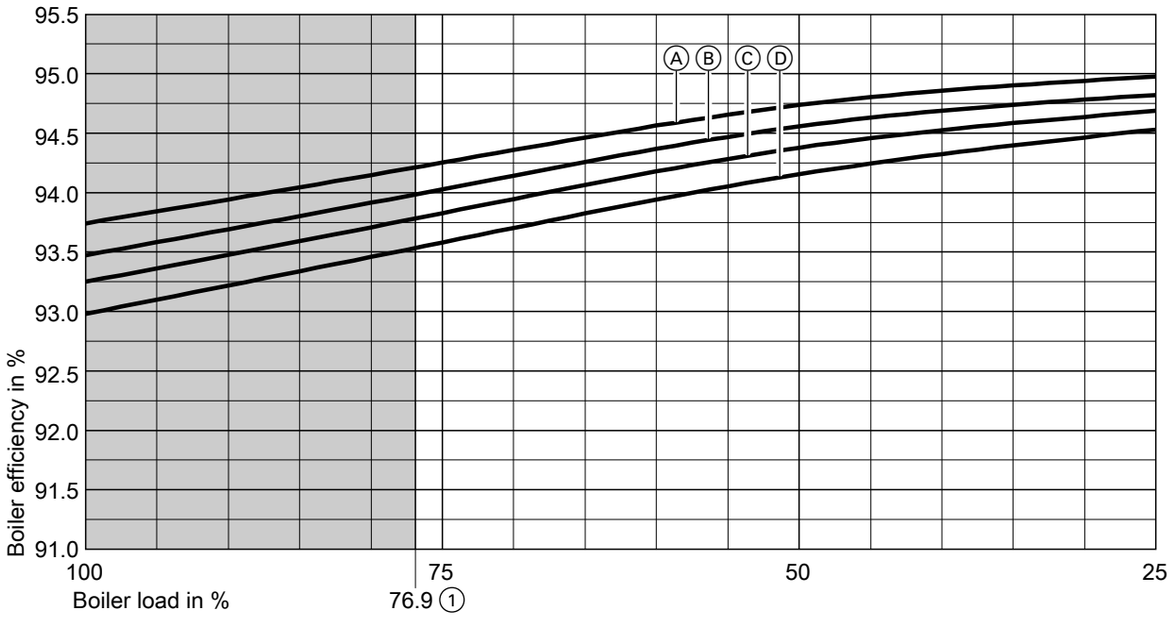
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 100



Boiler efficiency, natural gas, max. 18.2 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar



Boiler efficiency, fuel oil, max. 14.0 MW, without turbulators, with ECO 100, taking into account boiler radiation losses

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar

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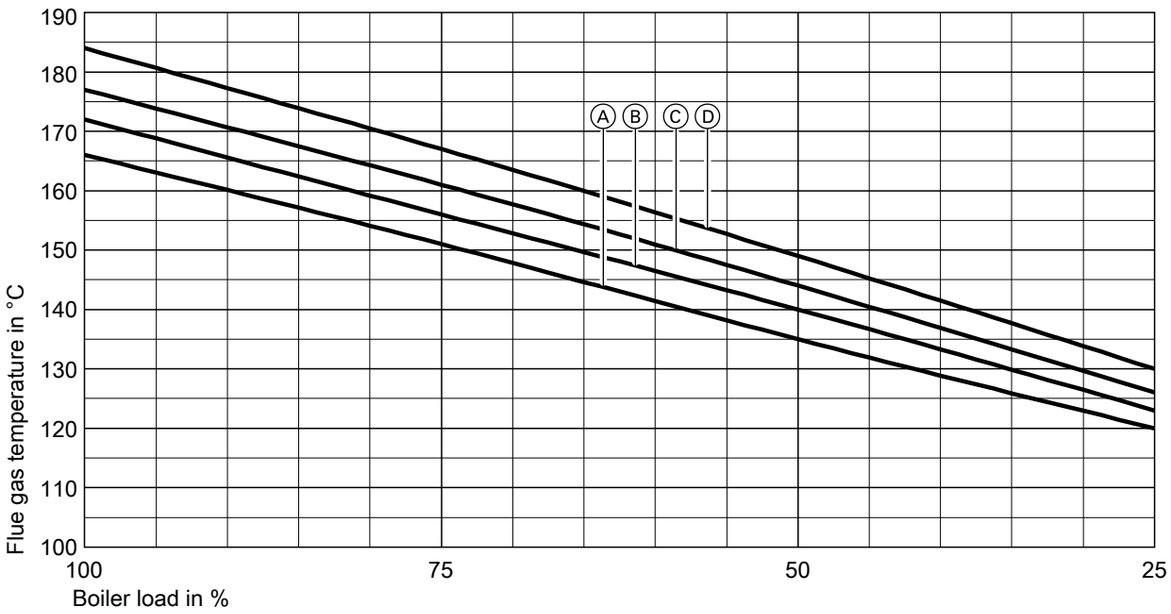
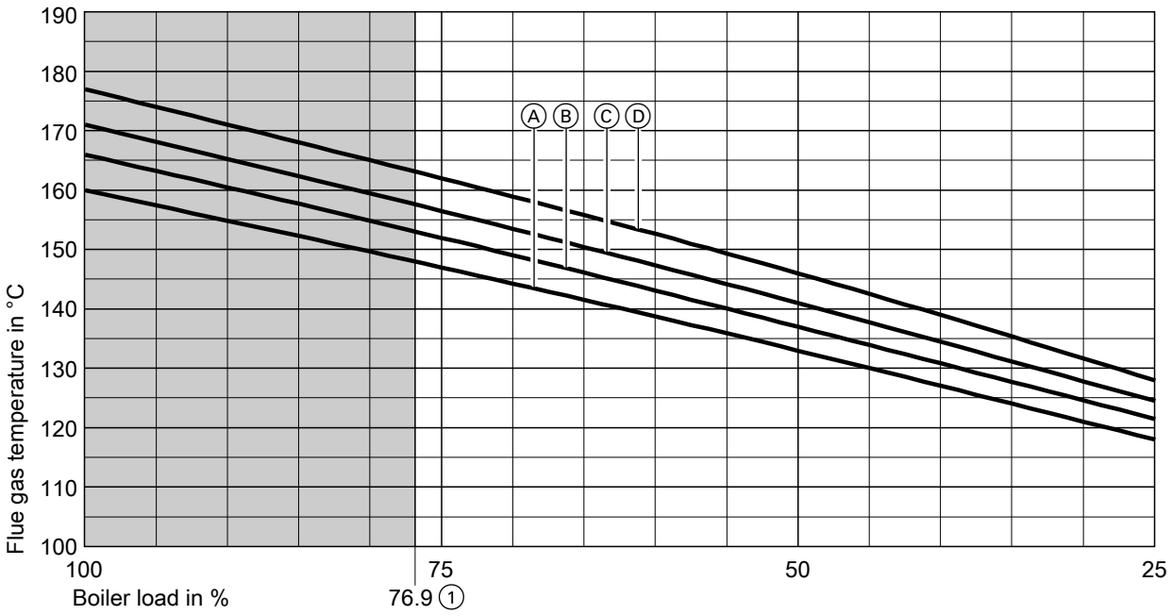
Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 18.2 MW, without turbulators, with ECO 100

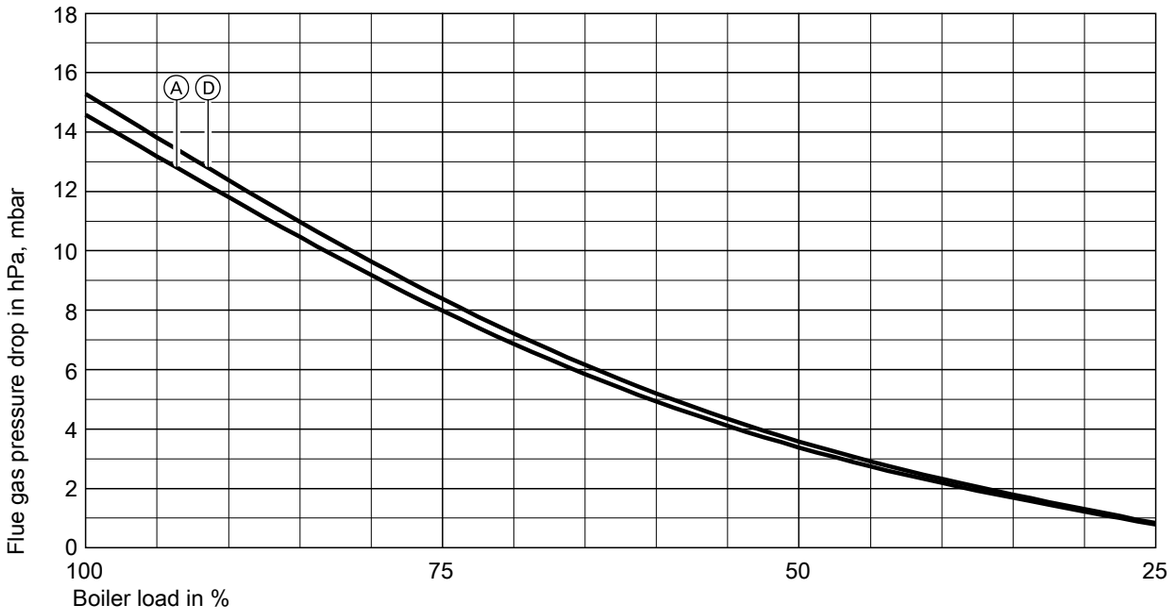
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar



Flue gas temperature, fuel oil, max. 14.0 MW, without turbulators, with ECO 100

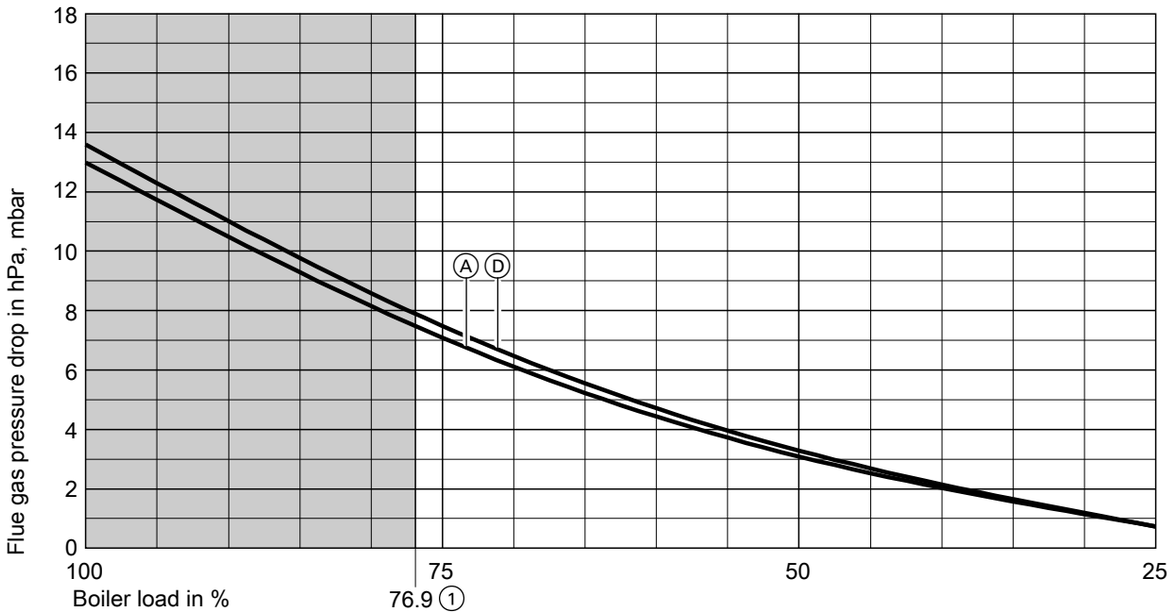
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar

Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 18.2 MW, without turbulators, with ECO 100

Ⓐ Working pressure 5 bar
Ⓓ Working pressure 16.5 bar

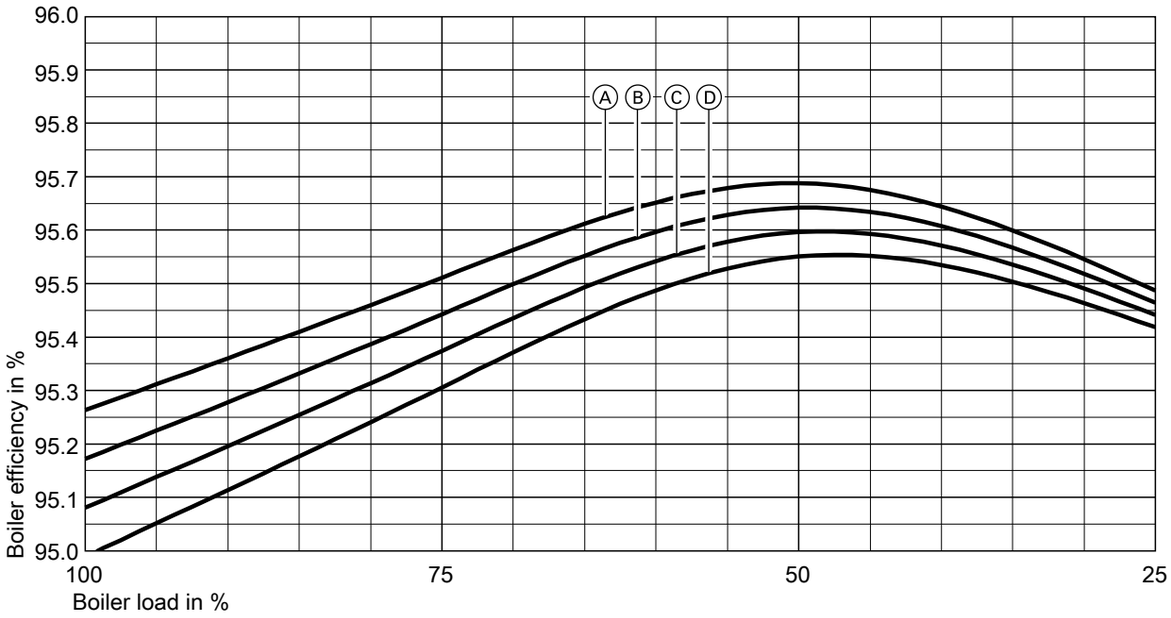


Flue gas pressure drop, fuel oil, max. 14.0 MW, without turbulators, with ECO 100

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓓ Working pressure 16.5 bar

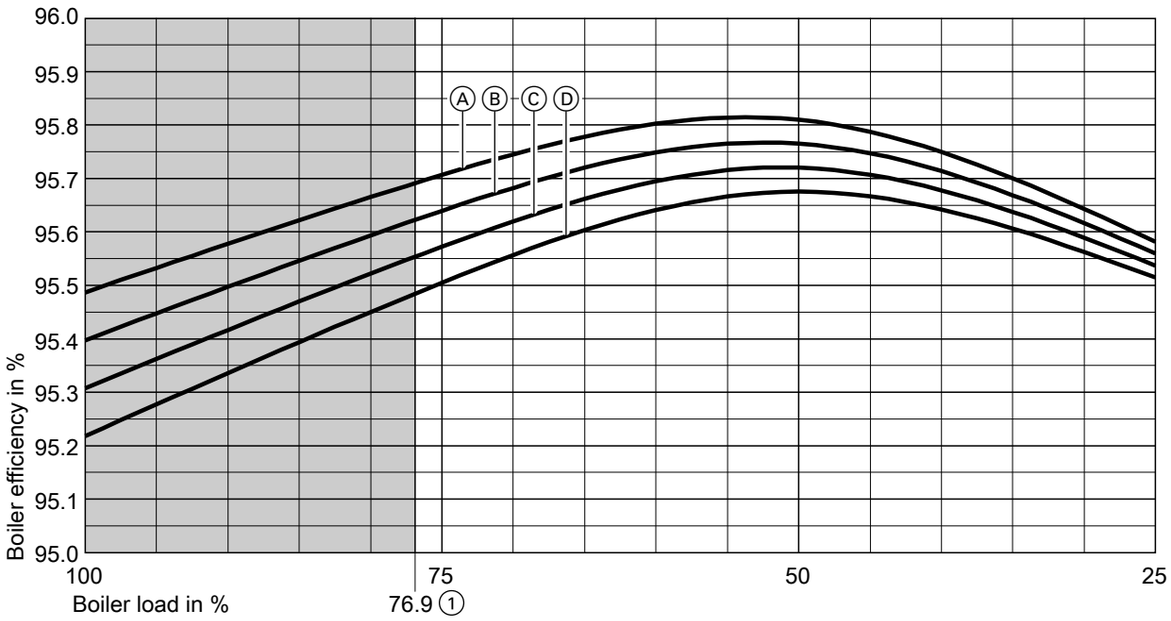
Boiler selection diagrams (cont.)

Version without turbulators, with ECO 200



Boiler efficiency, natural gas, max. 18.2 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

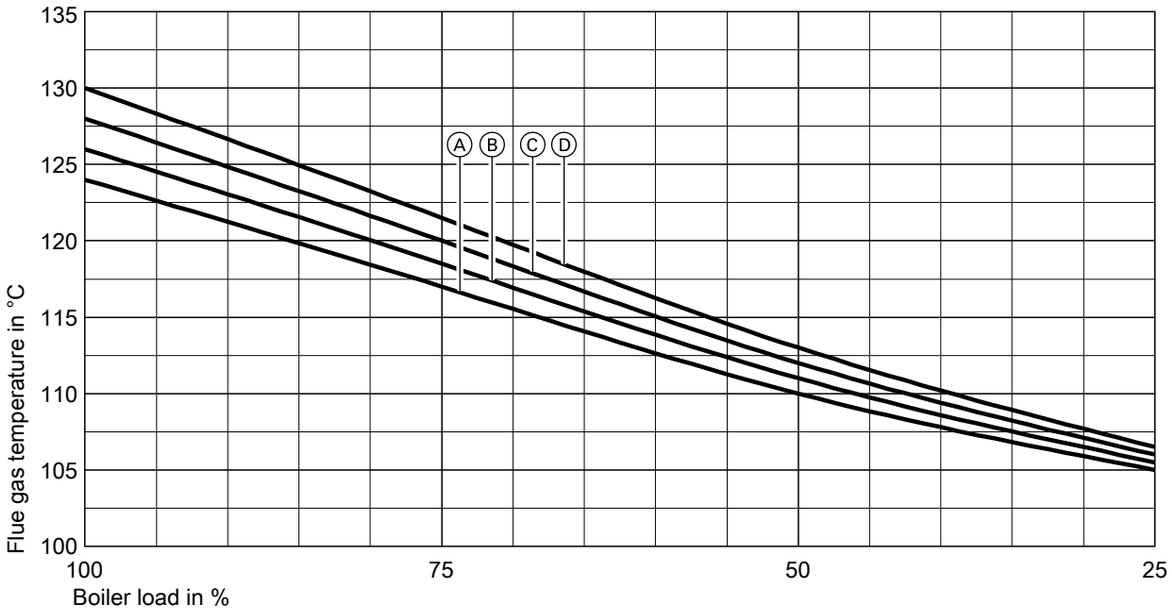
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar



Boiler efficiency, fuel oil, max. 14.0 MW, without turbulators, with ECO 200, taking into account boiler radiation losses

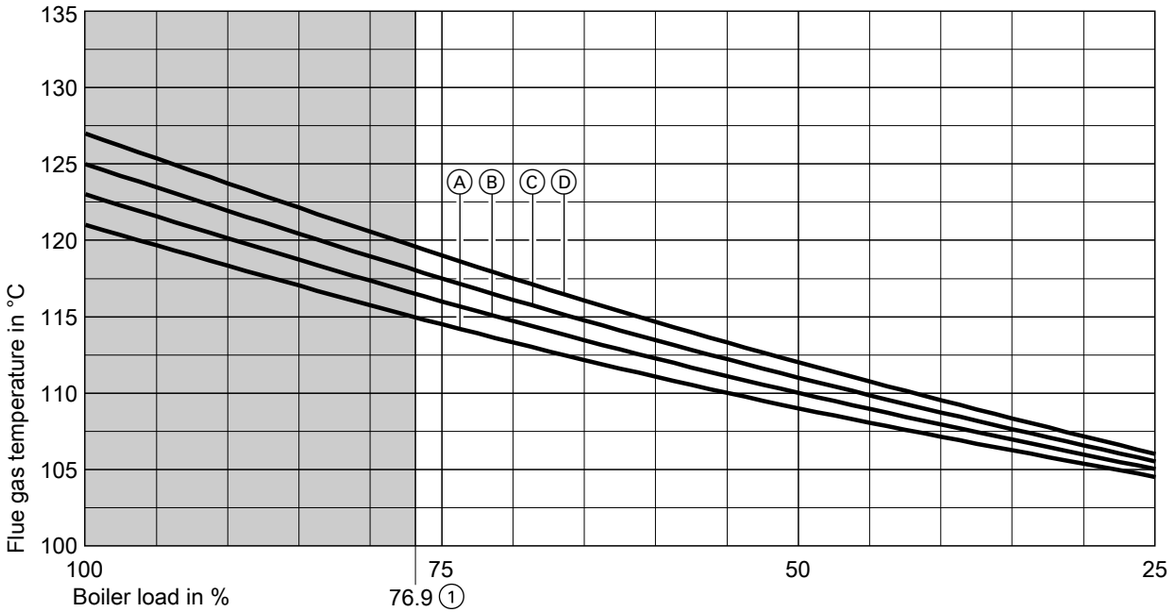
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar

Boiler selection diagrams (cont.)



Flue gas temperature, natural gas, max. 18.2 MW, without turbulators, with ECO 200

Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar



Flue gas temperature, fuel oil, max. 14.0 MW, without turbulators, with ECO 200

① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓑ Working pressure 8 bar
Ⓒ Working pressure 11 bar
Ⓓ Working pressure 16.5 bar

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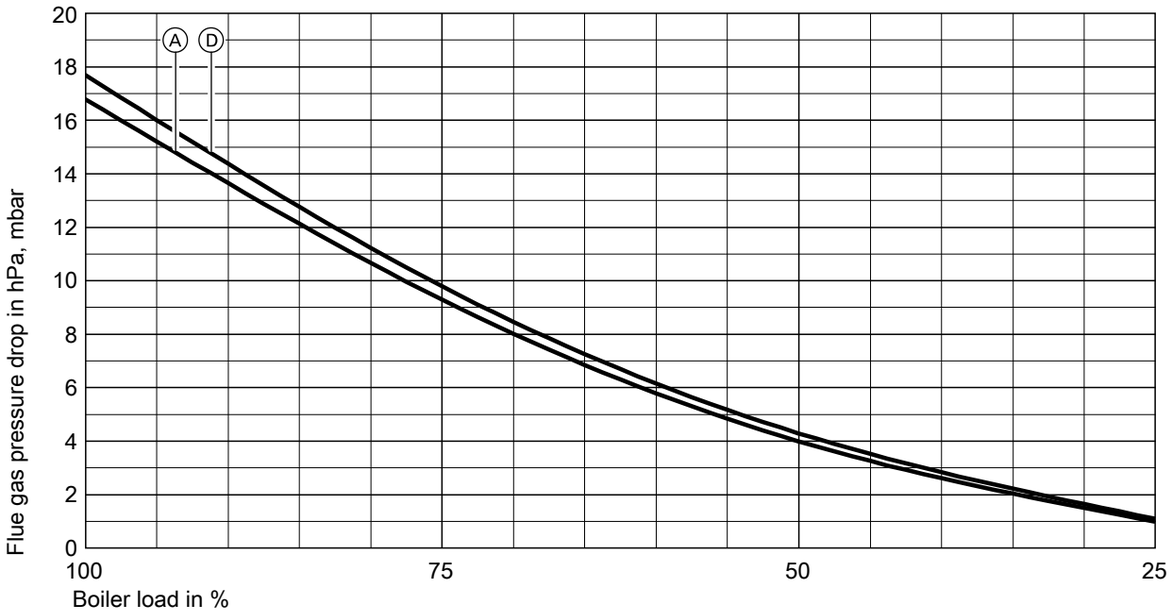
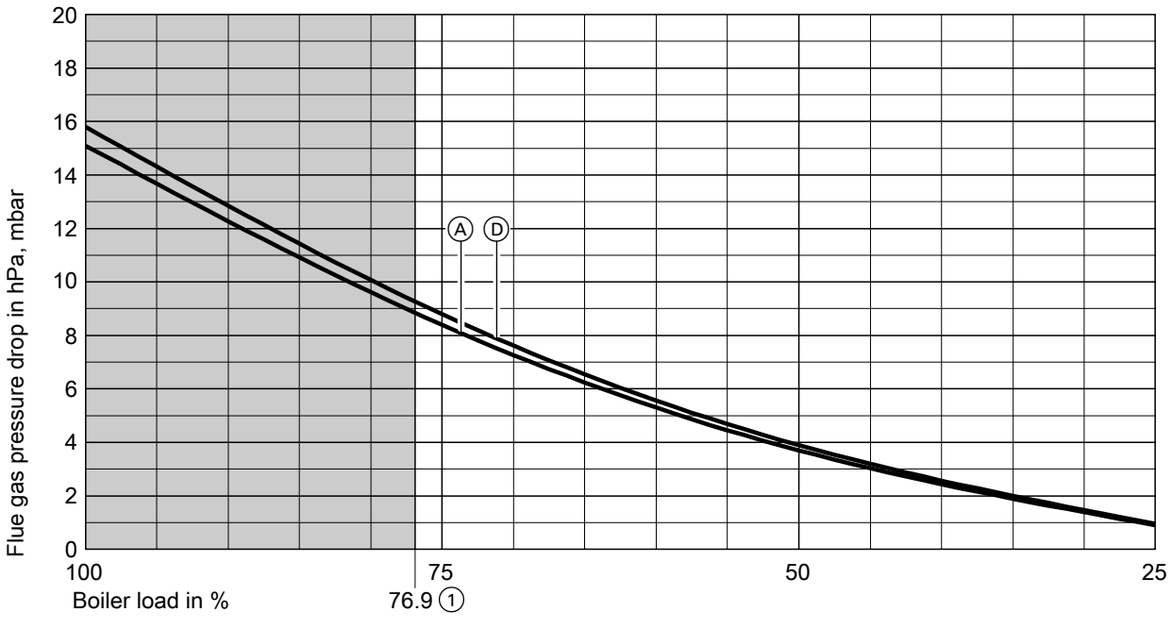
Boiler selection diagrams (cont.)



Flue gas pressure drop, natural gas, max. 18.2 MW, without turbulators, with ECO 200

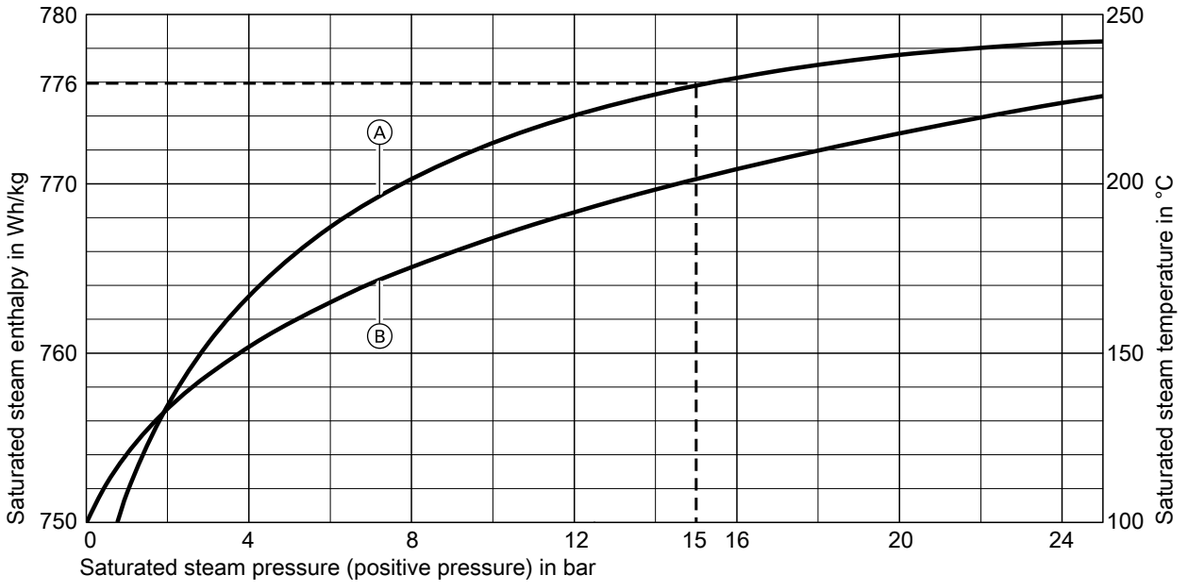
Ⓐ Working pressure 5 bar
Ⓓ Working pressure 16.5 bar



Flue gas pressure drop, fuel oil, max. 14.0 MW, without turbulators, with ECO 200

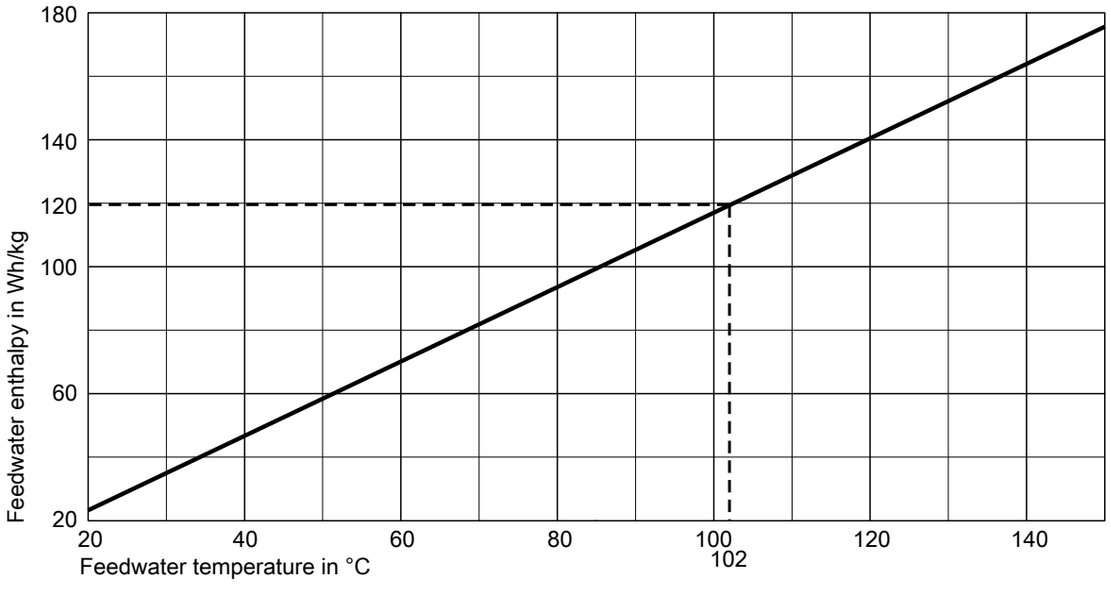
① Boiler load limit to EN 12953 for fuel oil EL
Ⓐ Working pressure 5 bar
Ⓓ Working pressure 16.5 bar

2.11 Saturated steam enthalpy



Ⓐ Saturated steam enthalpy
Ⓑ Saturated steam temperature

2.12 Feedwater enthalpy



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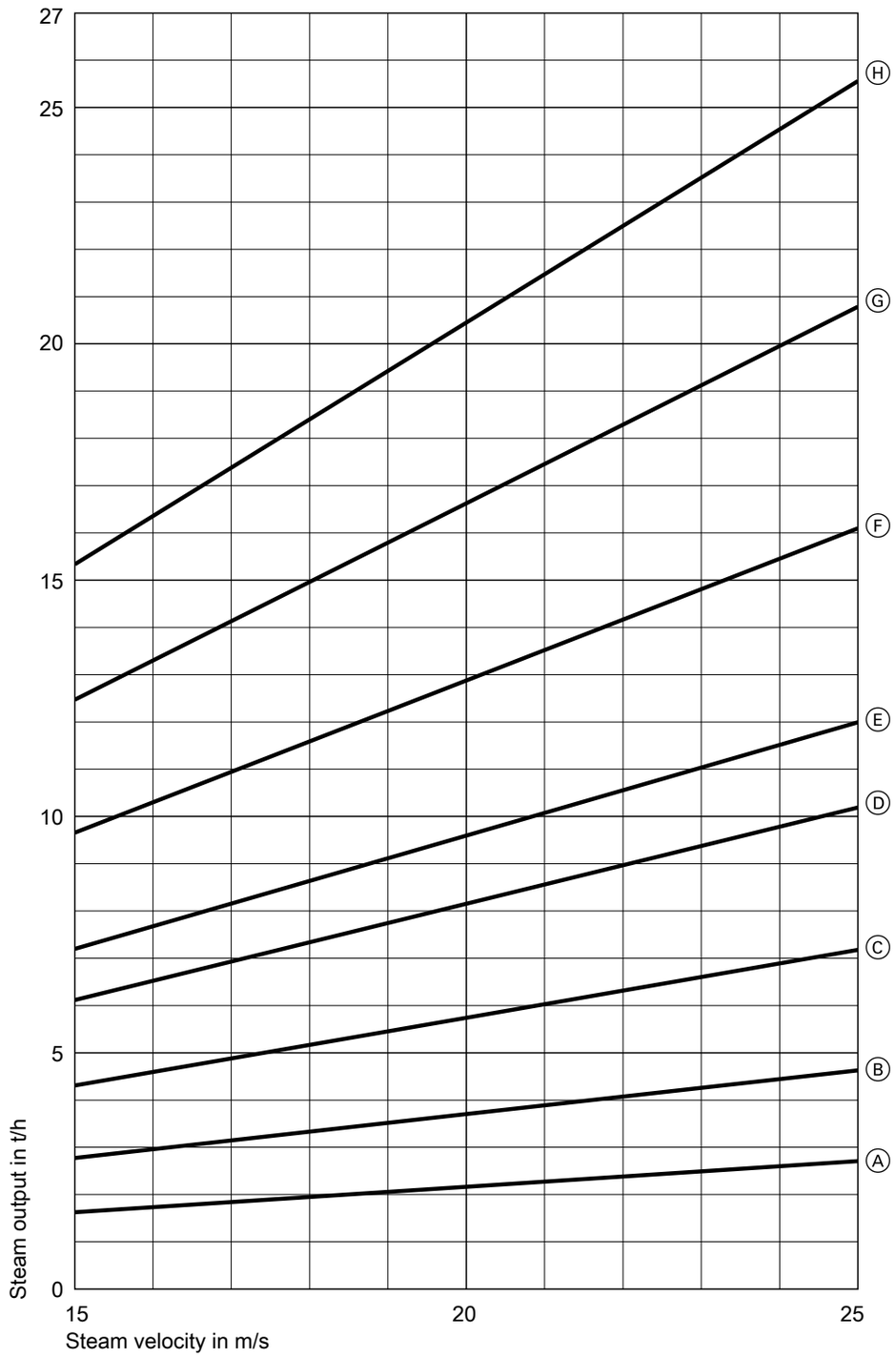
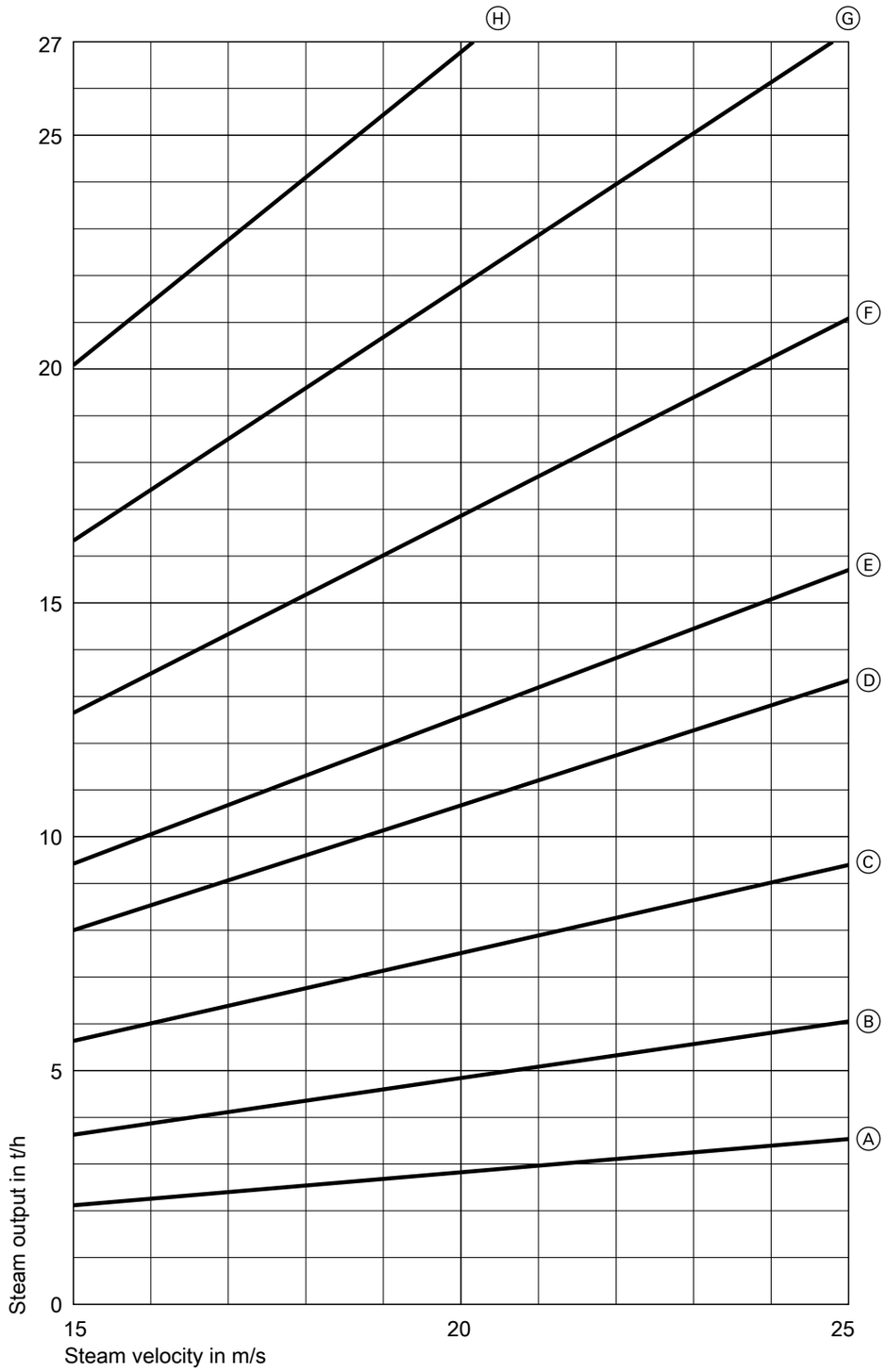
2.13 Sizing the steam connector subject to the working pressure



Steam connector size, working pressure 2 bar

Ⓐ Internal diameter DN 150
Ⓑ Internal diameter DN 200
Ⓒ Internal diameter DN 250
Ⓓ Internal diameter DN 300
Ⓔ Internal diameter DN 350
Ⓕ Internal diameter DN 400
Ⓖ Internal diameter DN 450
Ⓗ Internal diameter DN 500

Boiler selection diagrams (cont.)



Steam connector size, working pressure 3 bar

Ⓐ Internal diameter DN 150
Ⓑ Internal diameter DN 200
Ⓒ Internal diameter DN 250
Ⓓ Internal diameter DN 300
Ⓔ Internal diameter DN 350
Ⓕ Internal diameter DN 400
Ⓖ Internal diameter DN 450
Ⓗ Internal diameter DN 500

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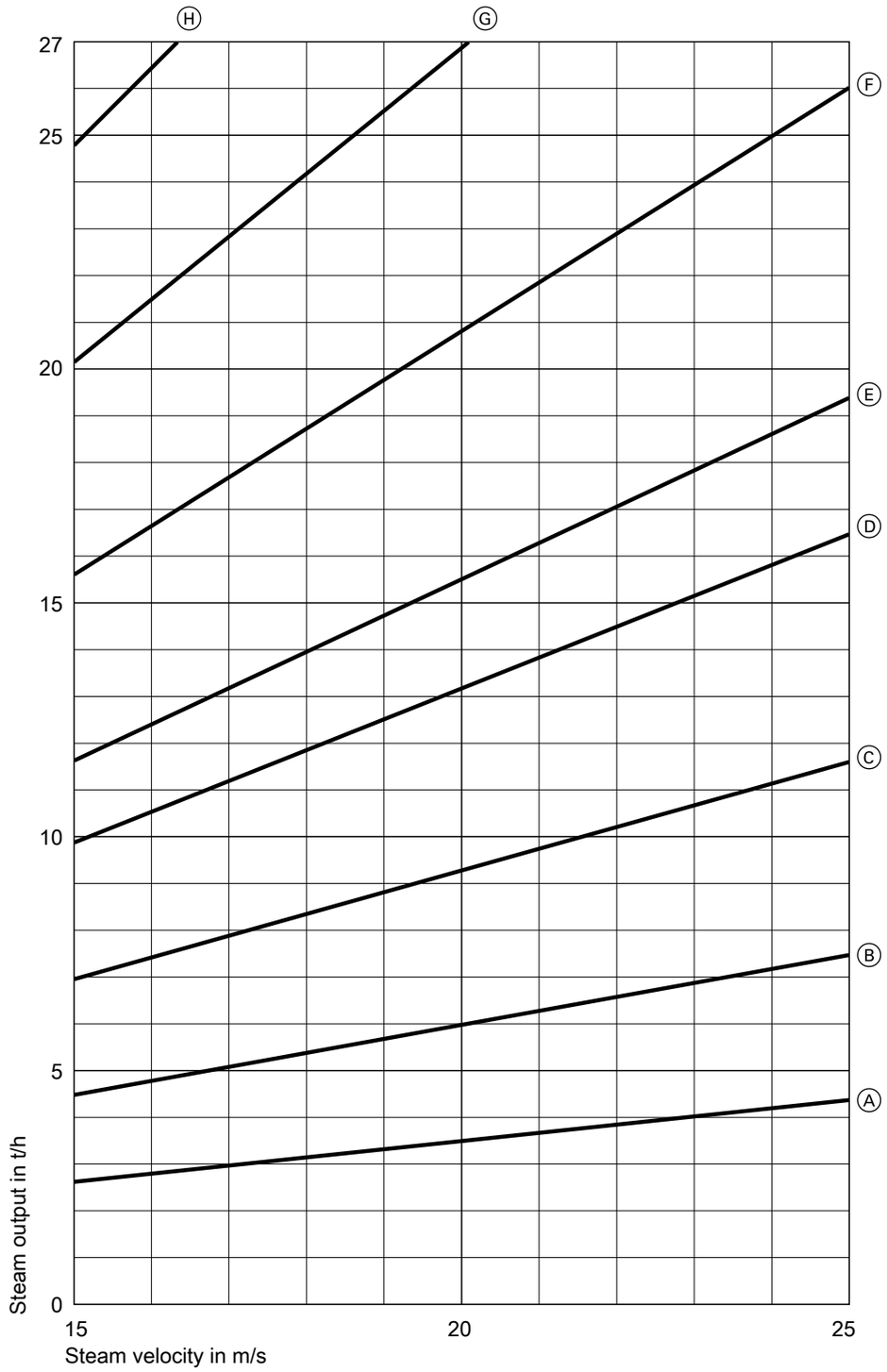
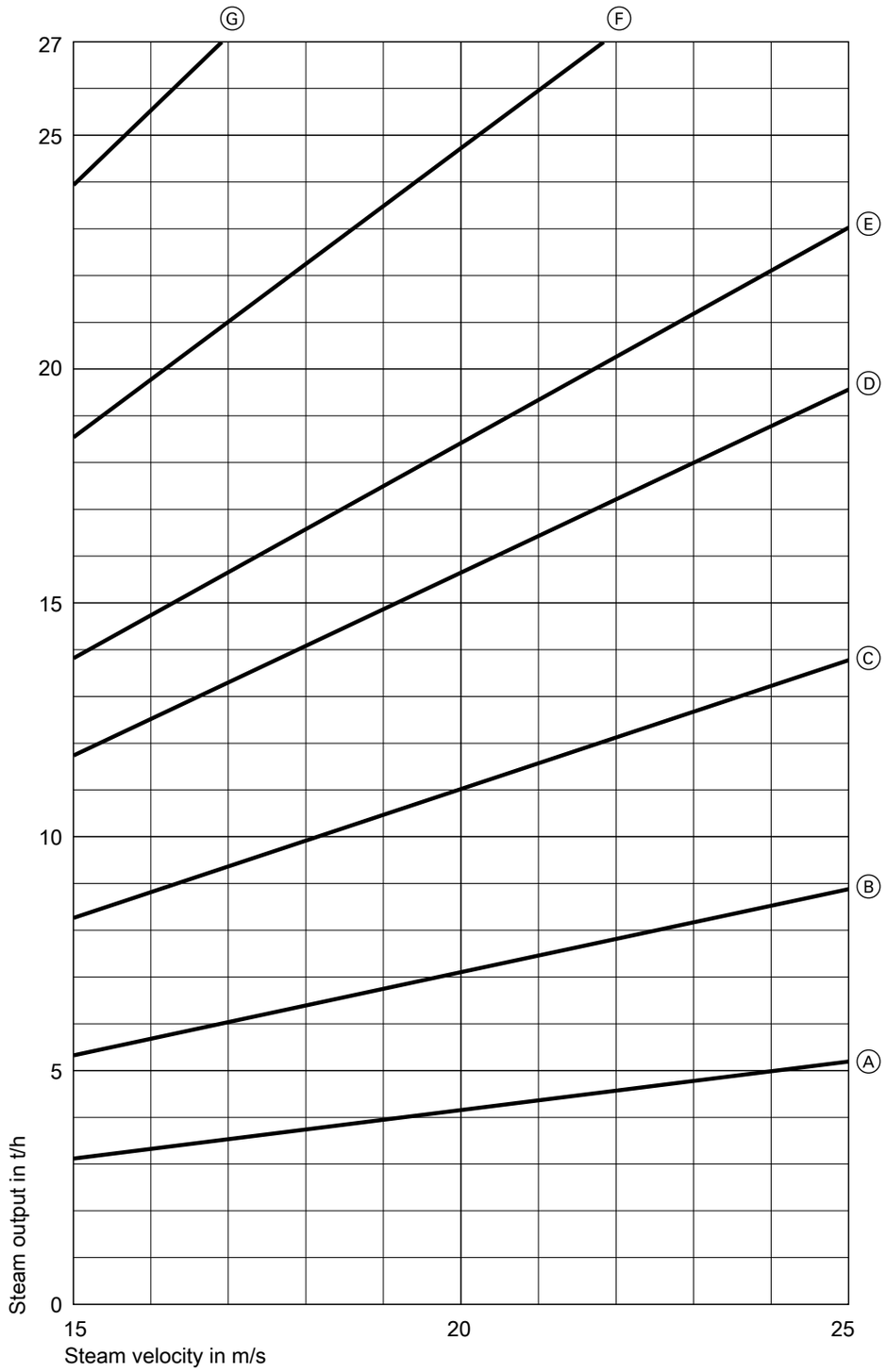
Boiler selection diagrams (cont.)



Steam connector size, working pressure 4 bar

Ⓐ Internal diameter DN 150
Ⓑ Internal diameter DN 200
Ⓒ Internal diameter DN 250
Ⓓ Internal diameter DN 300
Ⓔ Internal diameter DN 350
Ⓕ Internal diameter DN 400
Ⓖ Internal diameter DN 450
Ⓗ Internal diameter DN 500

Boiler selection diagrams (cont.)



Steam connector size, working pressure 5 bar

Ⓐ Internal diameter DN 150
Ⓑ Internal diameter DN 200
Ⓒ Internal diameter DN 250
Ⓓ Internal diameter DN 300
Ⓔ Internal diameter DN 350
Ⓕ Internal diameter DN 400
Ⓖ Internal diameter DN 450

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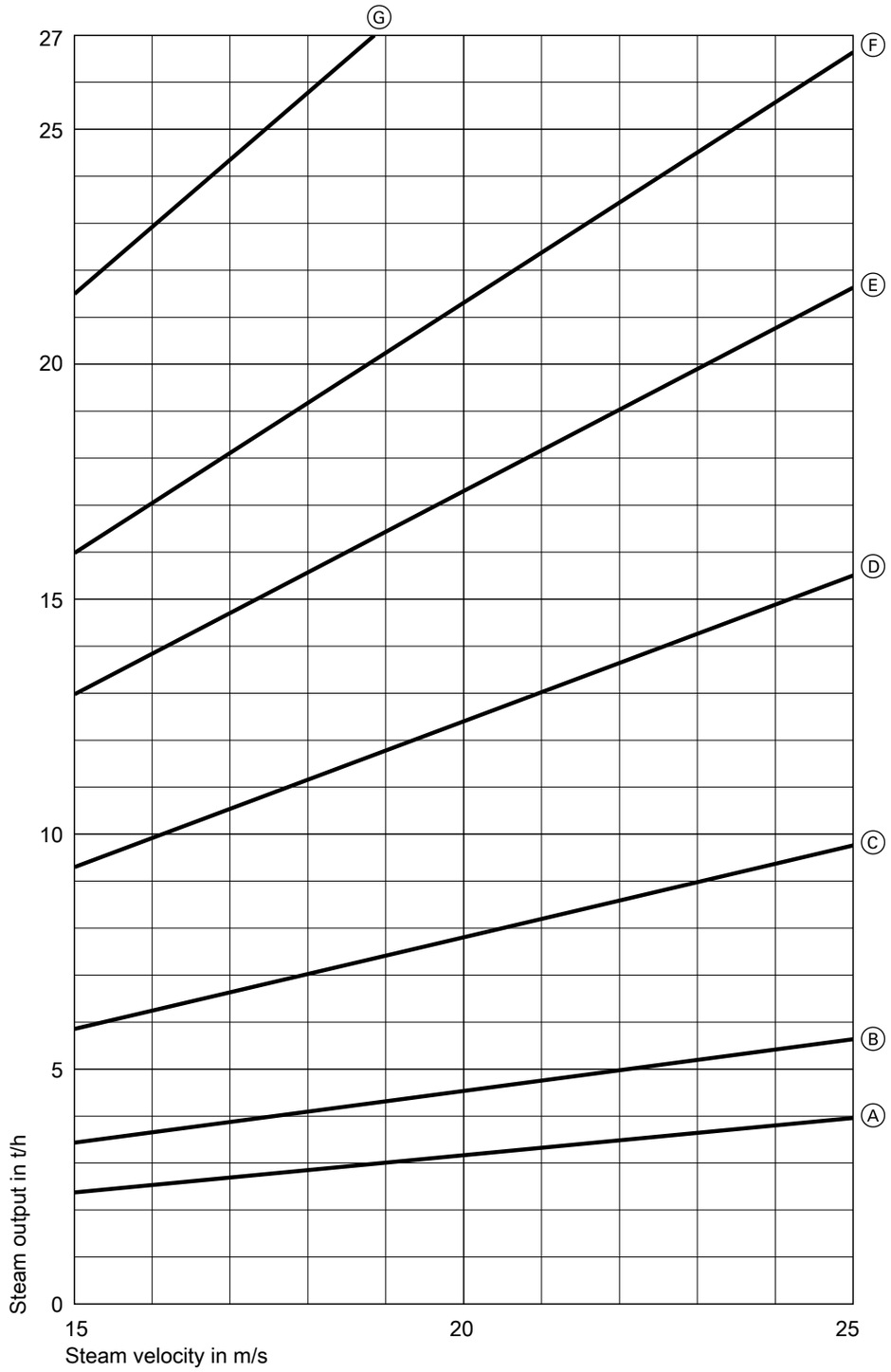
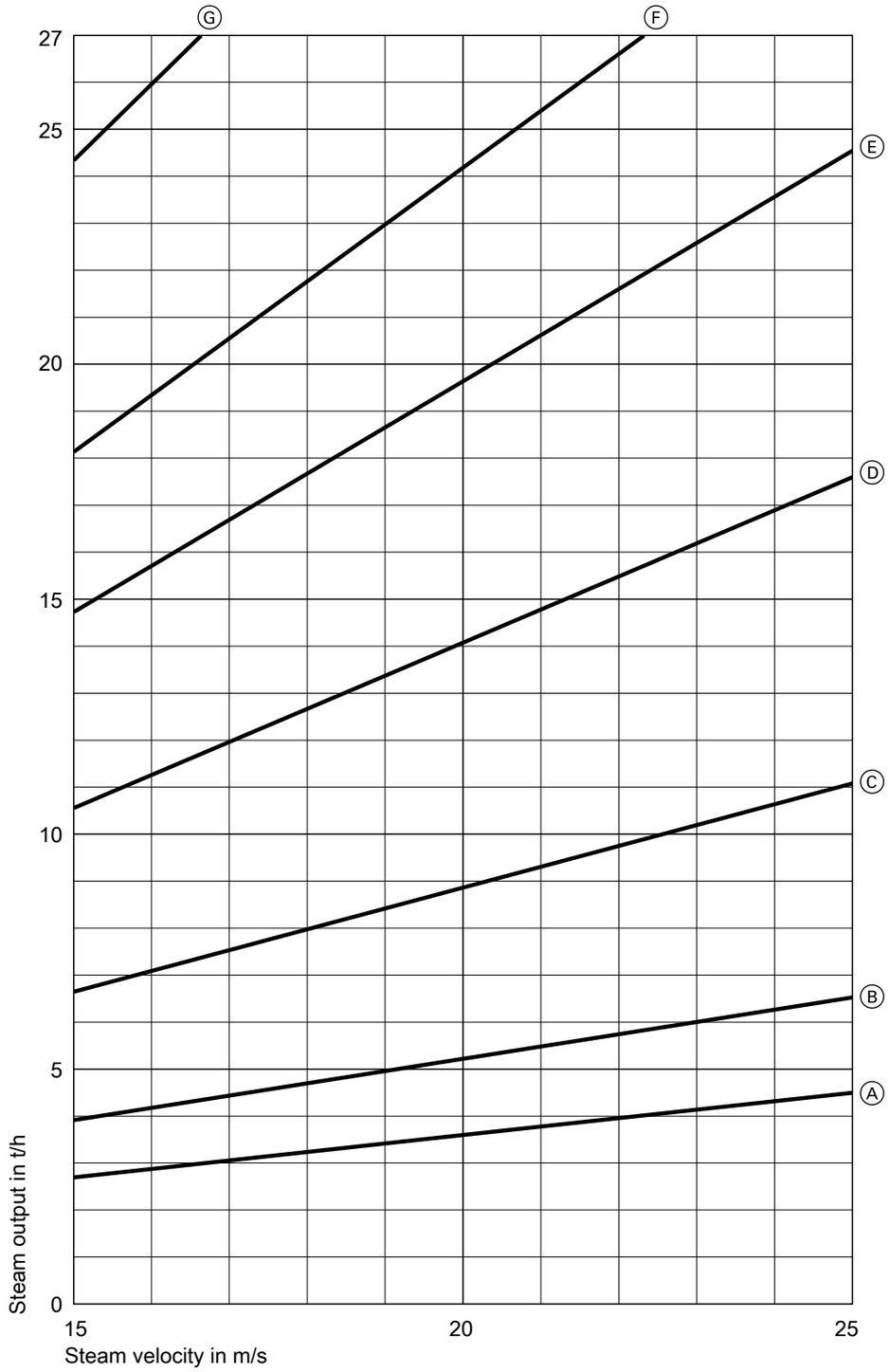
Boiler selection diagrams (cont.)



Steam connector size, working pressure 6 bar

Ⓐ Internal diameter DN 125
Ⓑ Internal diameter DN 150
Ⓒ Internal diameter DN 200
Ⓓ Internal diameter DN 250
Ⓔ Internal diameter DN 300
Ⓕ Internal diameter DN 350
Ⓖ Internal diameter DN 400

Boiler selection diagrams (cont.)



Steam connector size, working pressure 7 bar

Ⓐ Internal diameter DN 125
Ⓑ Internal diameter DN 150
Ⓒ Internal diameter DN 200
Ⓓ Internal diameter DN 250
Ⓔ Internal diameter DN 300
Ⓕ Internal diameter DN 350
Ⓖ Internal diameter DN 400

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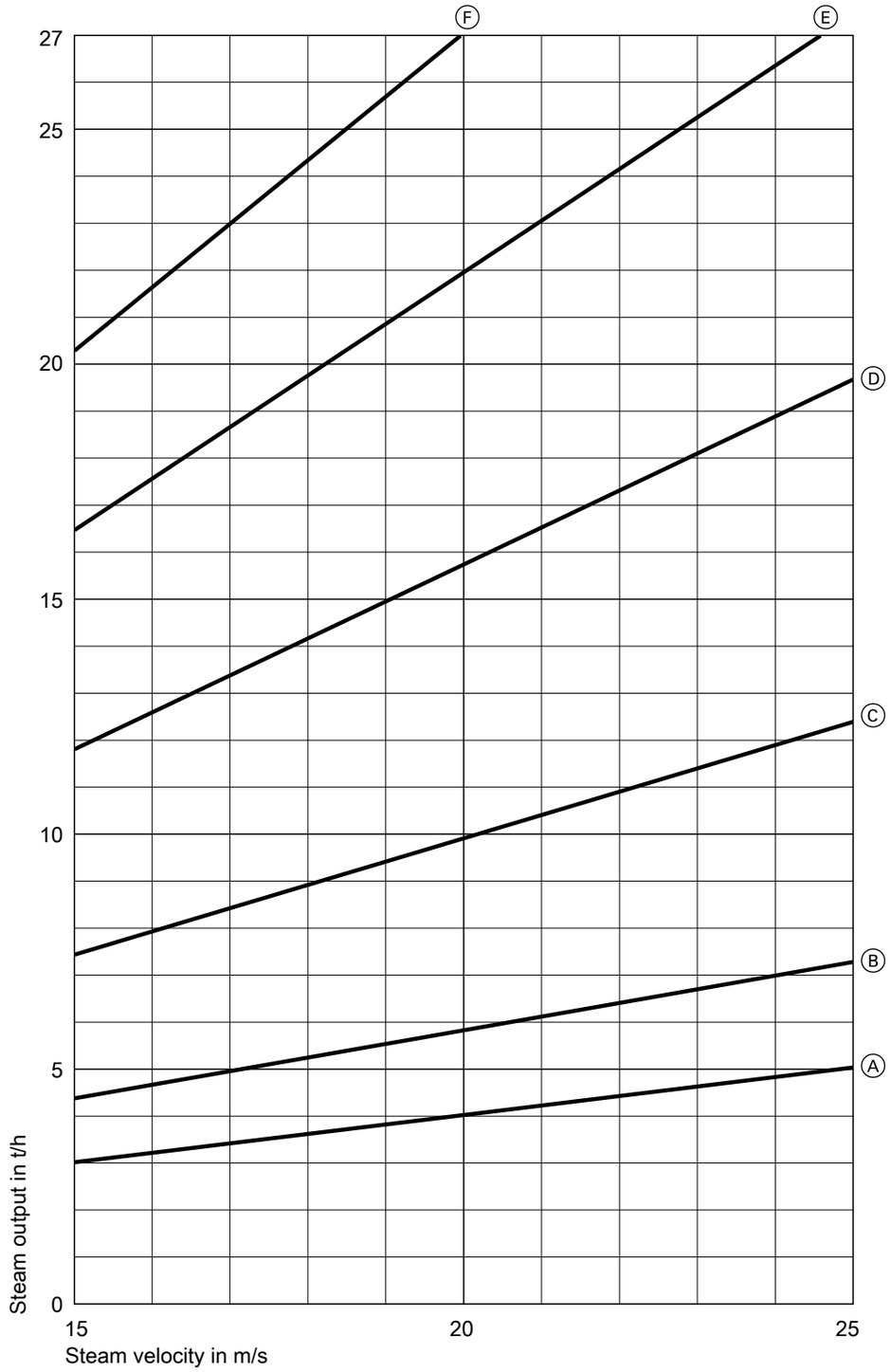
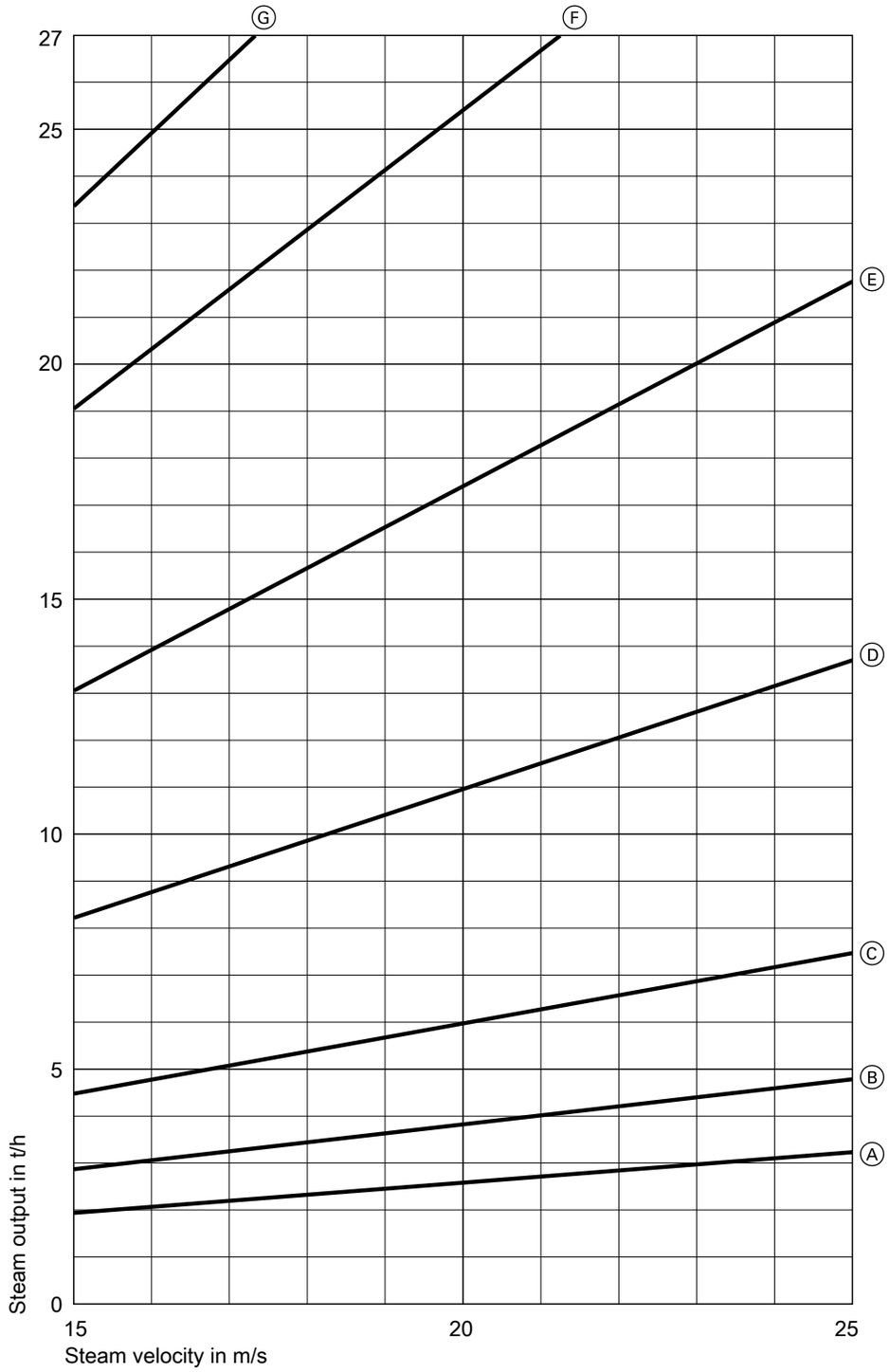
Boiler selection diagrams (cont.)



Steam connector size, working pressure 8 bar

Ⓐ Internal diameter DN 125
Ⓑ Internal diameter DN 150
Ⓒ Internal diameter DN 200
Ⓓ Internal diameter DN 250
Ⓔ Internal diameter DN 300
Ⓕ Internal diameter DN 350

Boiler selection diagrams (cont.)



Steam connector size, working pressure 9 bar

Ⓐ Internal diameter DN 100
Ⓑ Internal diameter DN 125
Ⓒ Internal diameter DN 150
Ⓓ Internal diameter DN 200
Ⓔ Internal diameter DN 250
Ⓕ Internal diameter DN 300
Ⓖ Internal diameter DN 350

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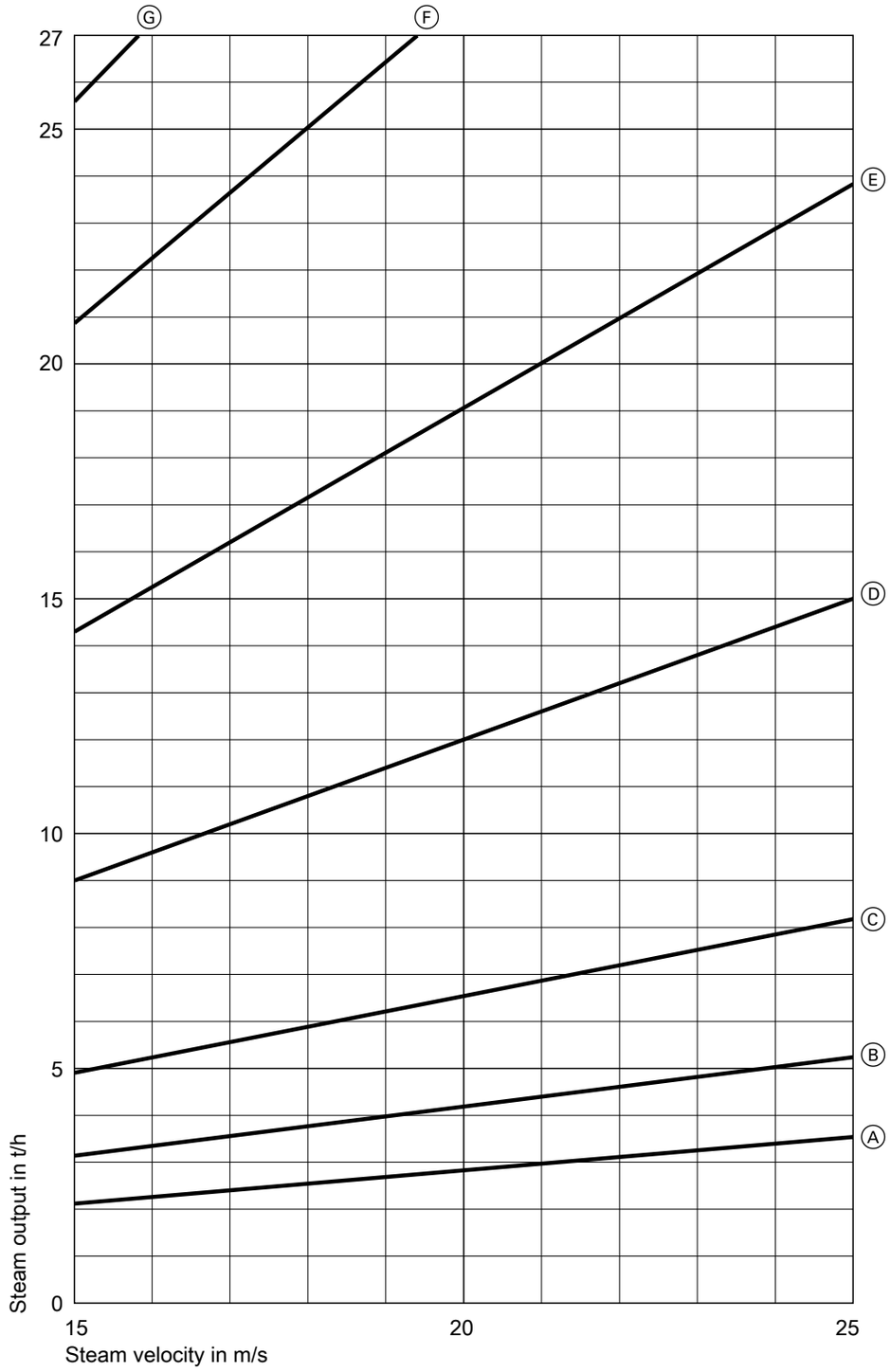
Boiler selection diagrams (cont.)



Steam connector size, working pressure 10 bar

Ⓐ Internal diameter DN 100
Ⓑ Internal diameter DN 125
Ⓒ Internal diameter DN 150
Ⓓ Internal diameter DN 200
Ⓔ Internal diameter DN 250
Ⓕ Internal diameter DN 300
Ⓖ Internal diameter DN 350

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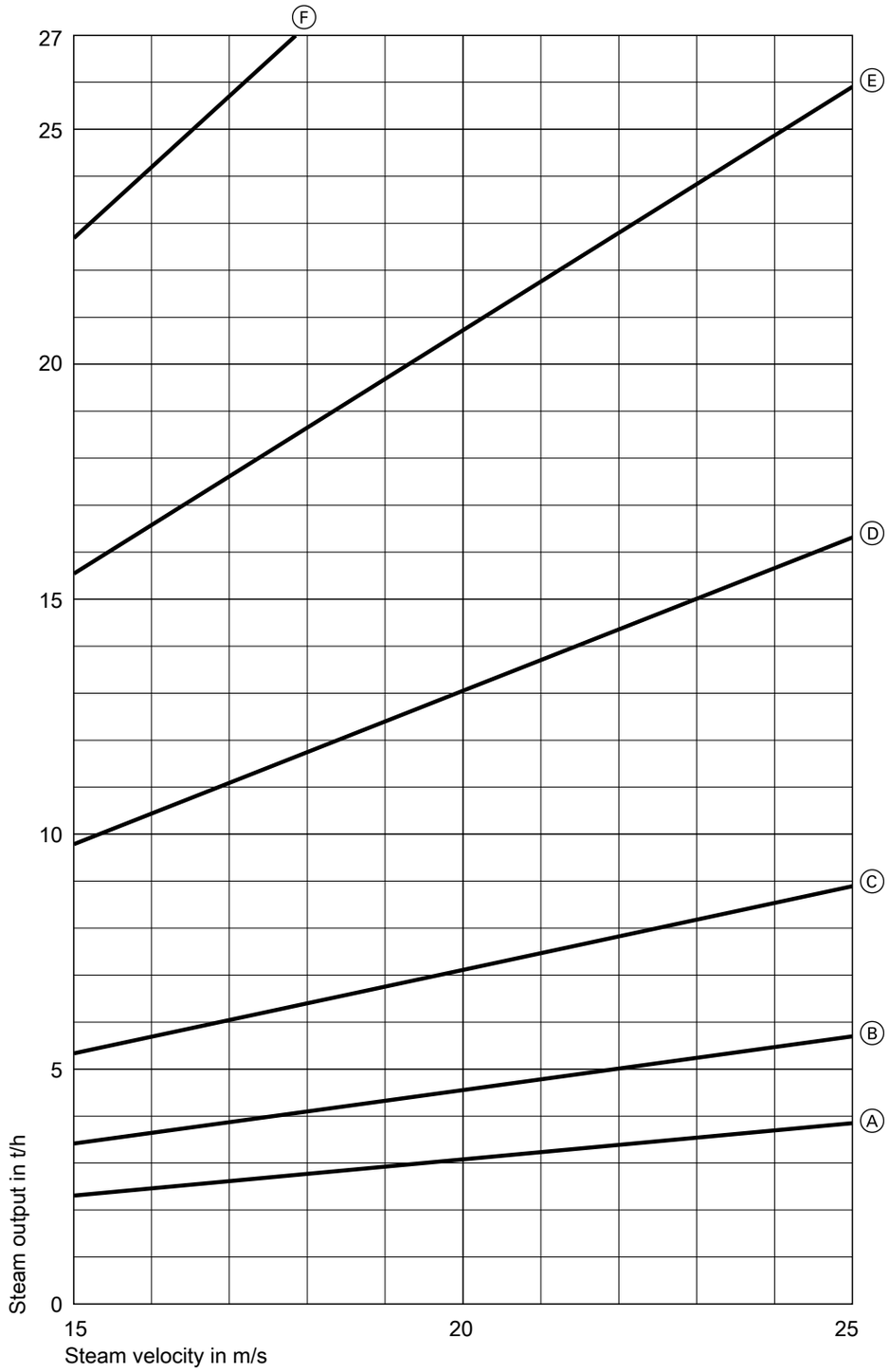
Boiler selection diagrams (cont.)



Steam connector size, working pressure 11 bar

Ⓐ Internal diameter DN 100
Ⓑ Internal diameter DN 125
Ⓒ Internal diameter DN 150
Ⓓ Internal diameter DN 200
Ⓔ Internal diameter DN 250
Ⓕ Internal diameter DN 300

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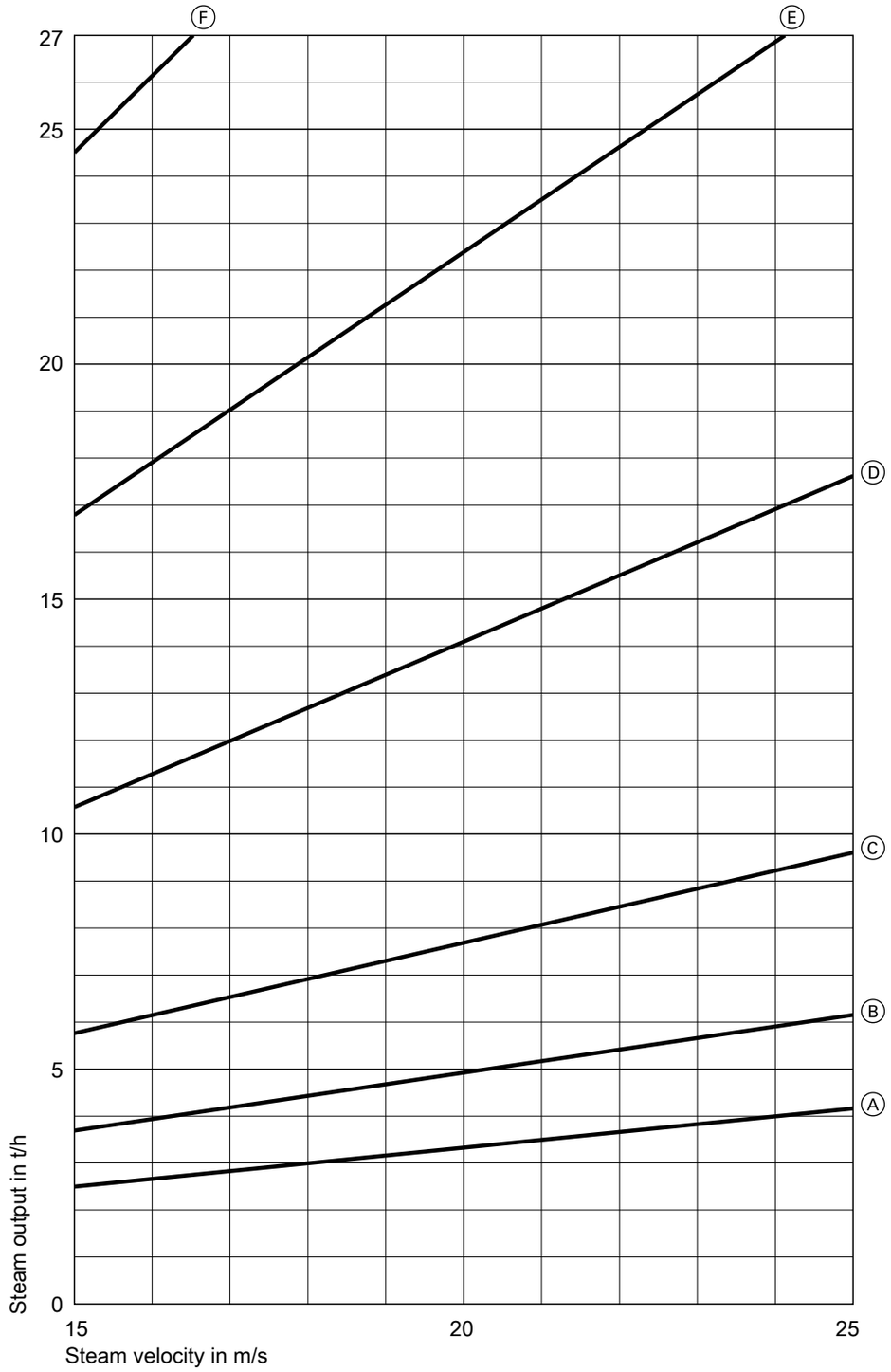
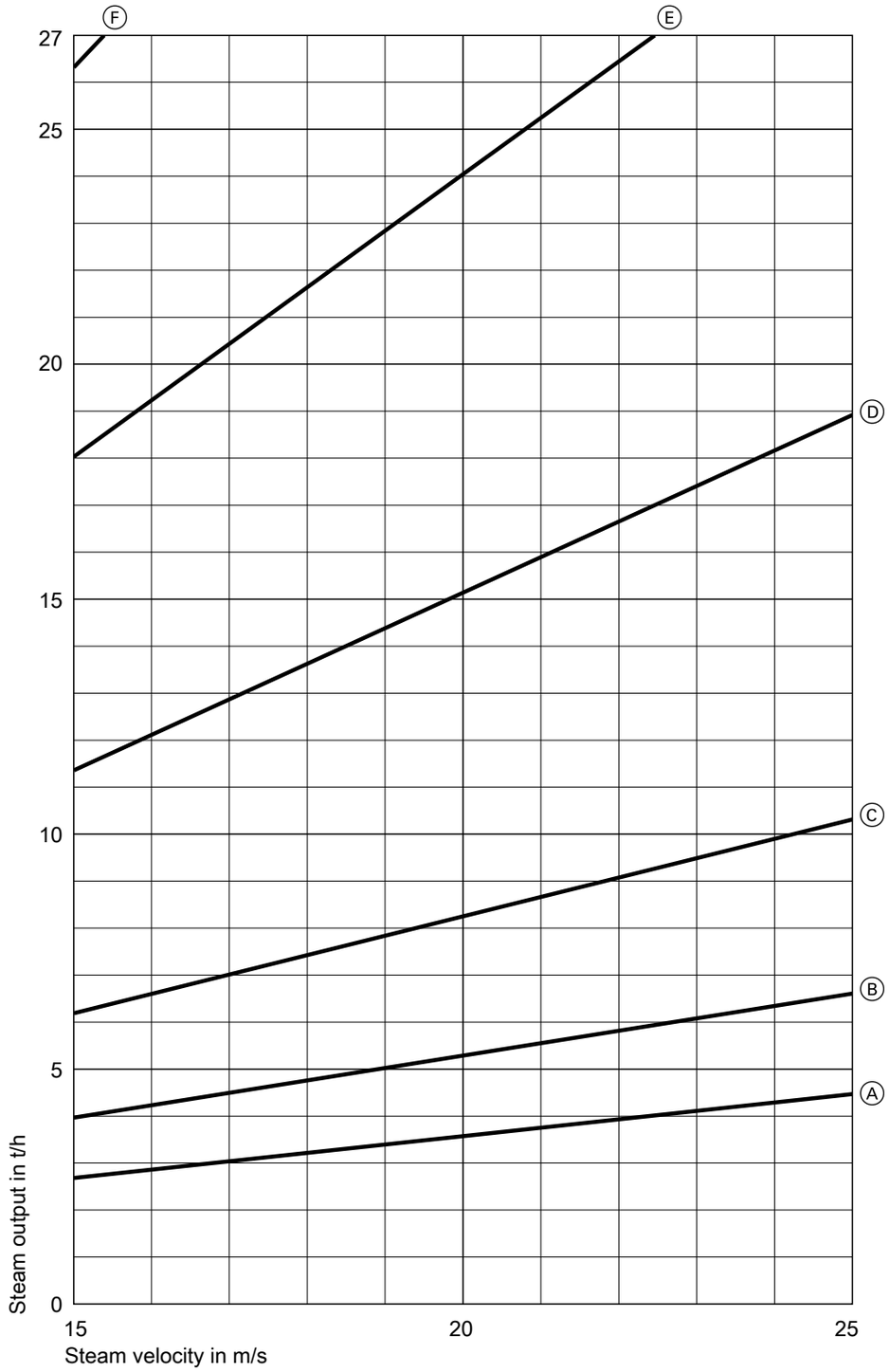
Boiler selection diagrams (cont.)



Steam connector size, working pressure 12 bar

Ⓐ Internal diameter DN 100
Ⓑ Internal diameter DN 125
Ⓒ Internal diameter DN 150
Ⓓ Internal diameter DN 200
Ⓔ Internal diameter DN 250
Ⓕ Internal diameter DN 300

Boiler selection diagrams (cont.)



Steam connector size, working pressure 13 bar

Ⓐ Internal diameter DN 100
Ⓑ Internal diameter DN 125
Ⓒ Internal diameter DN 150
Ⓓ Internal diameter DN 200
Ⓔ Internal diameter DN 250
Ⓕ Internal diameter DN 300

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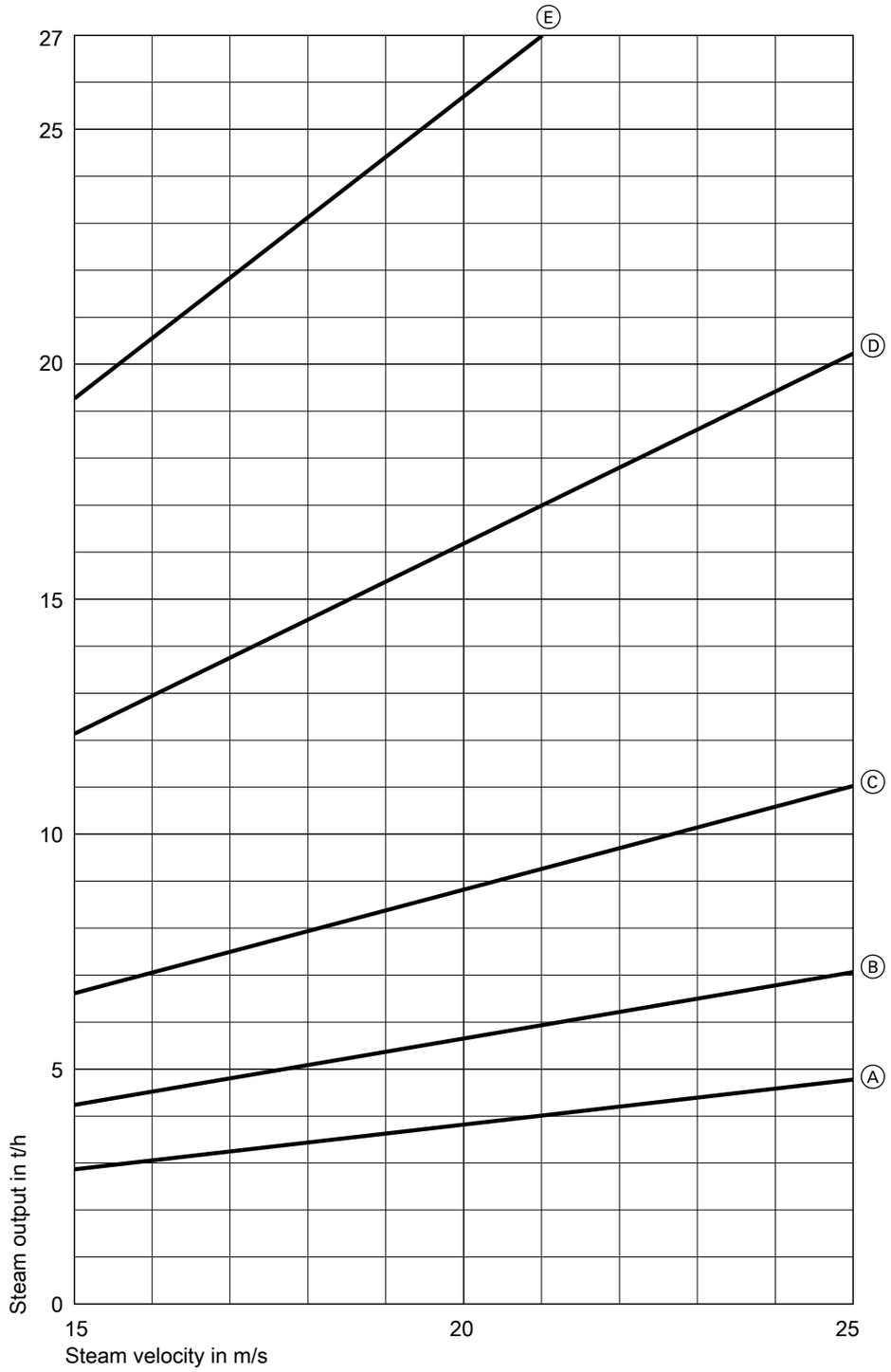
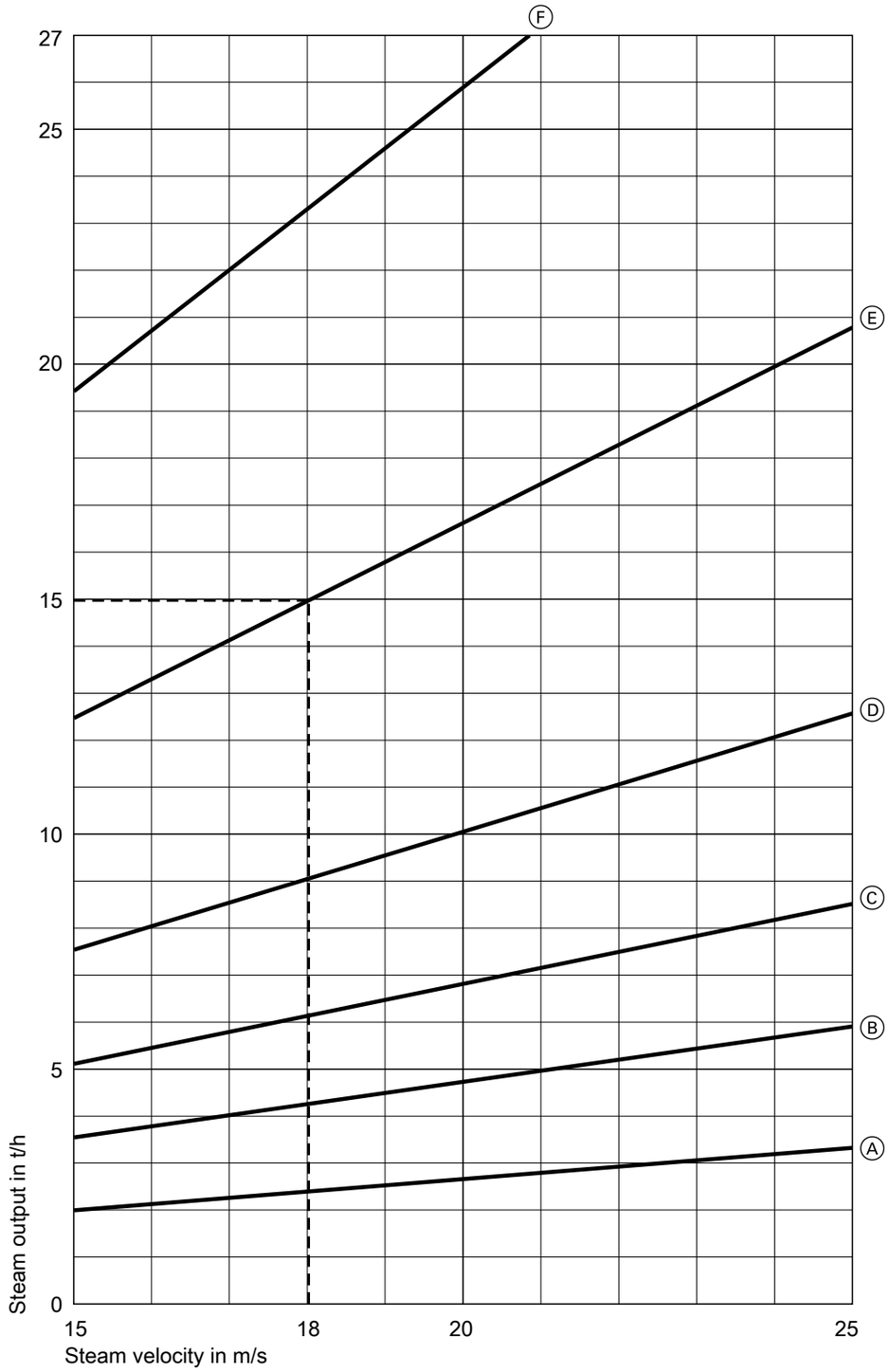
Boiler selection diagrams (cont.)



Steam connector size, working pressure 14 bar

Ⓐ Internal diameter DN 100
Ⓑ Internal diameter DN 125
Ⓒ Internal diameter DN 150
Ⓓ Internal diameter DN 200
Ⓔ Internal diameter DN 250

Boiler selection diagrams (cont.)



Steam connector size, working pressure 15 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

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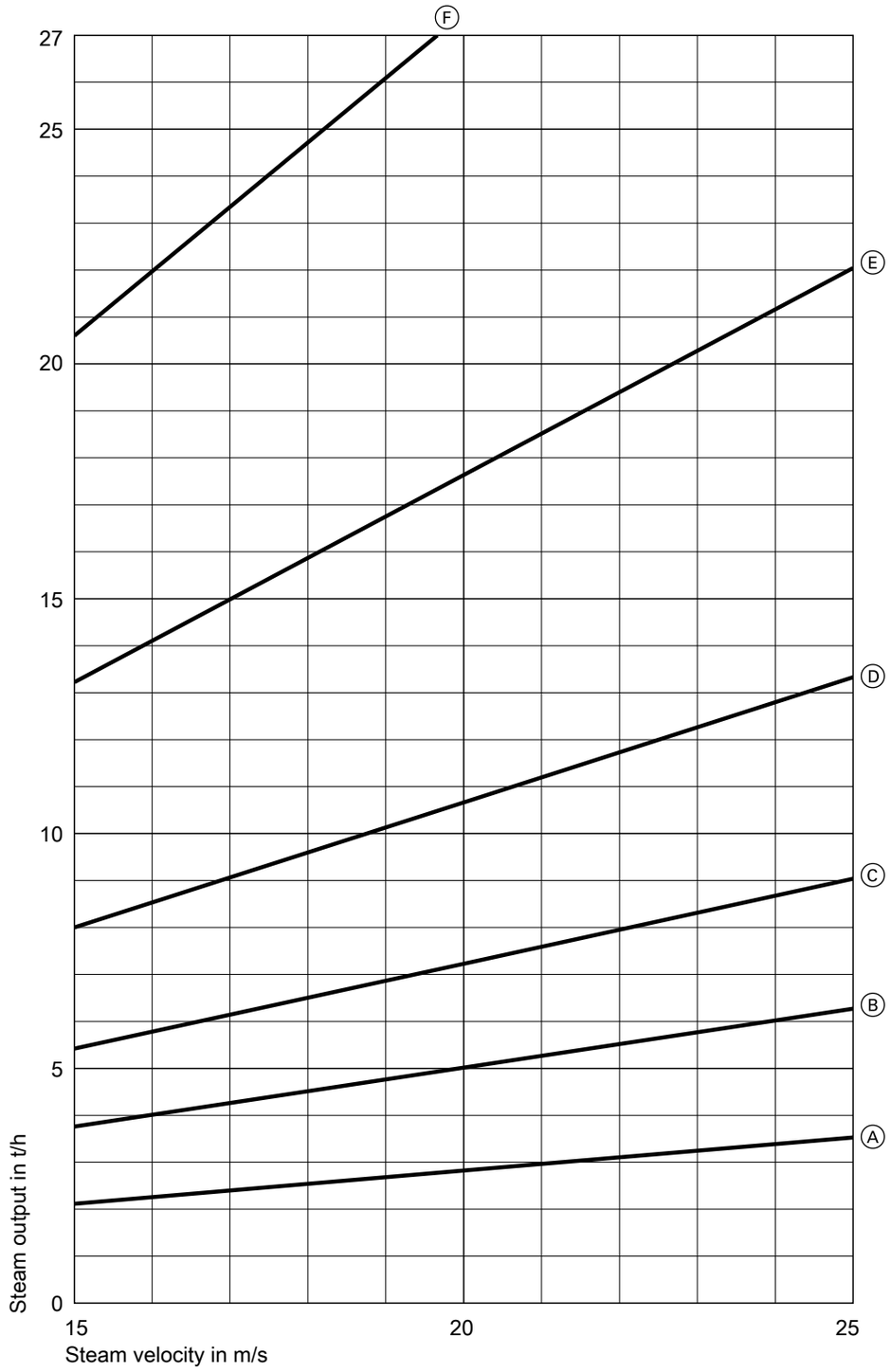
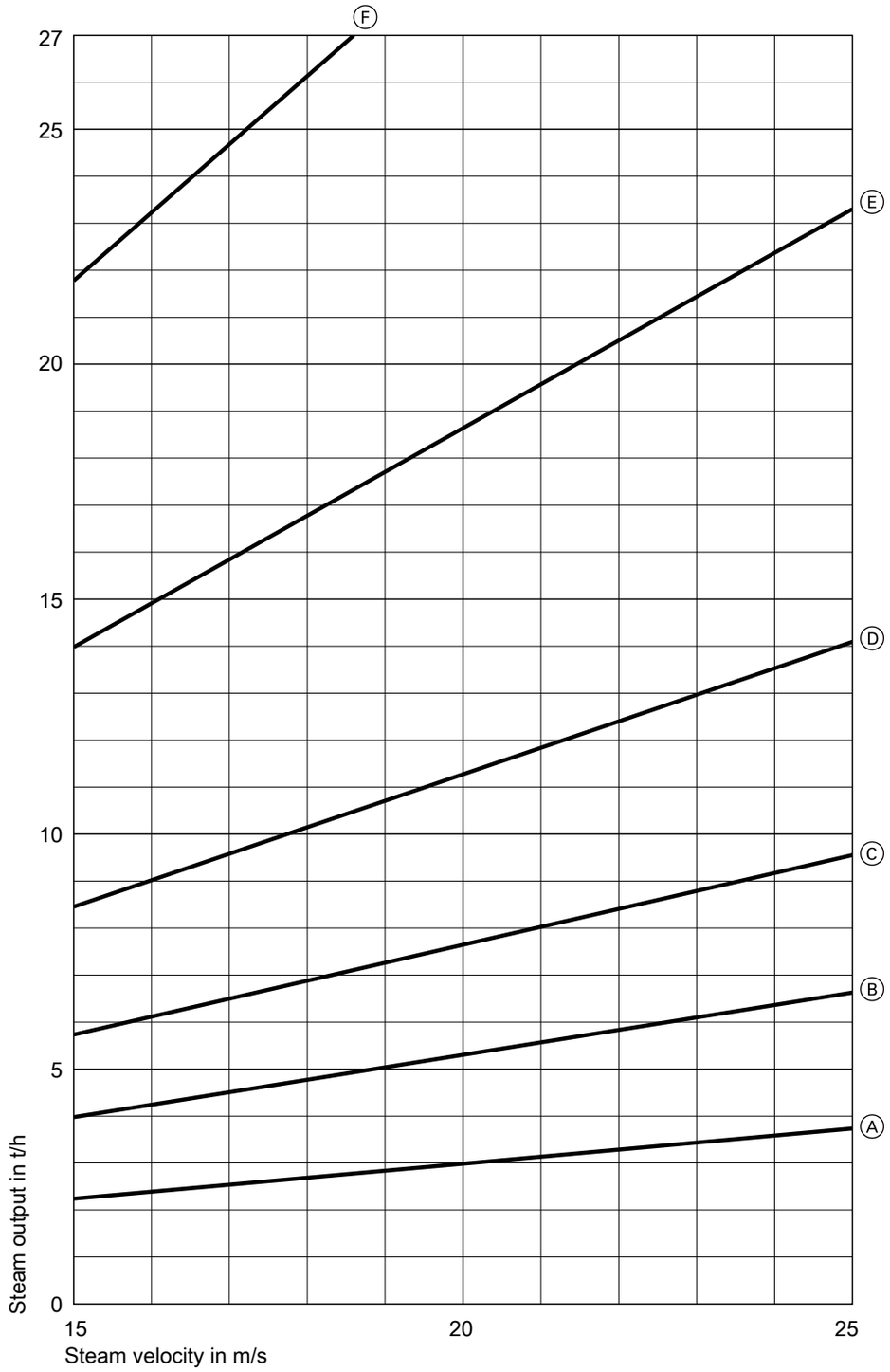
Boiler selection diagrams (cont.)



Steam connector size, working pressure 16 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

Boiler selection diagrams (cont.)



Steam connector size, working pressure 17 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

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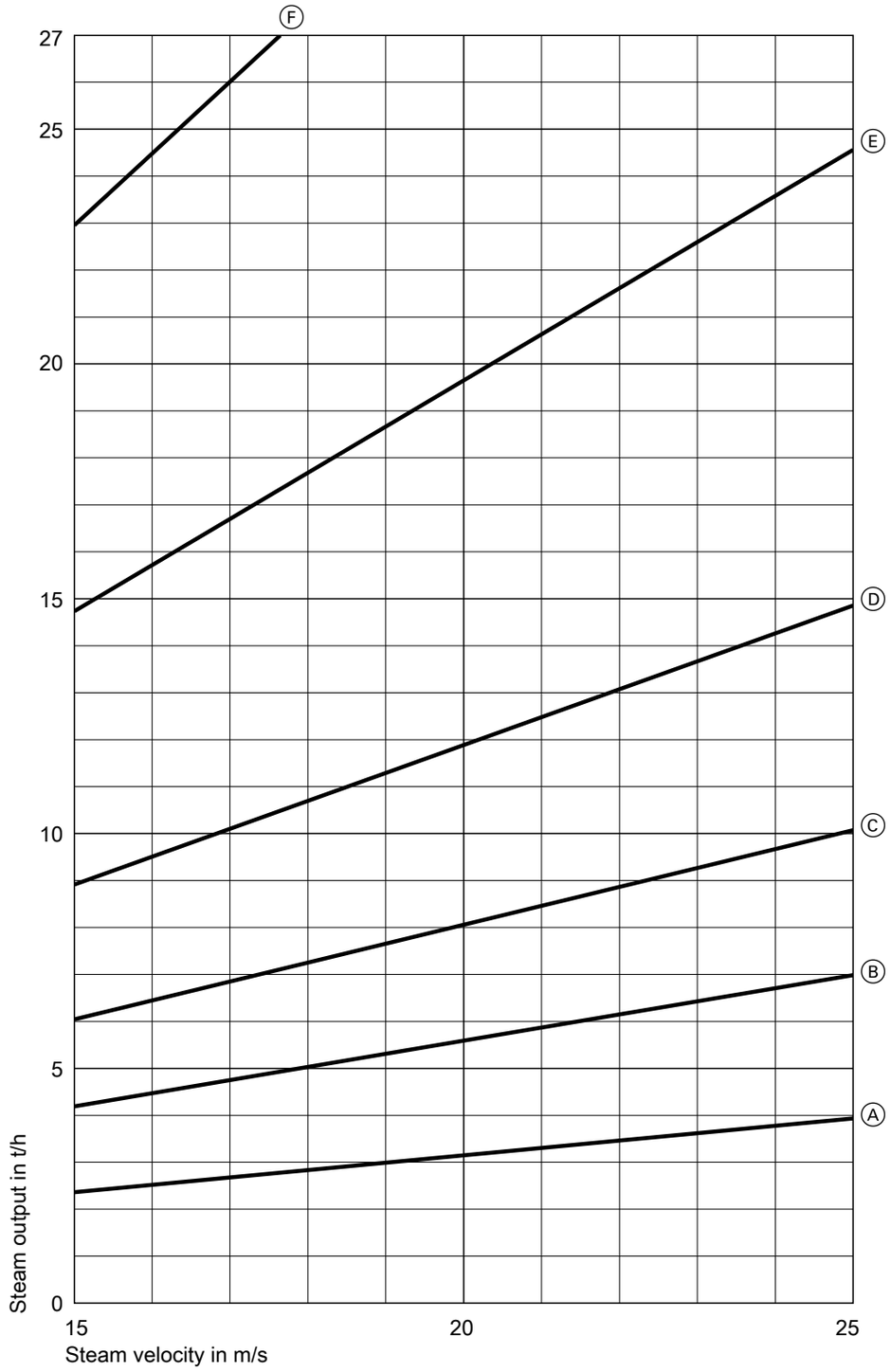
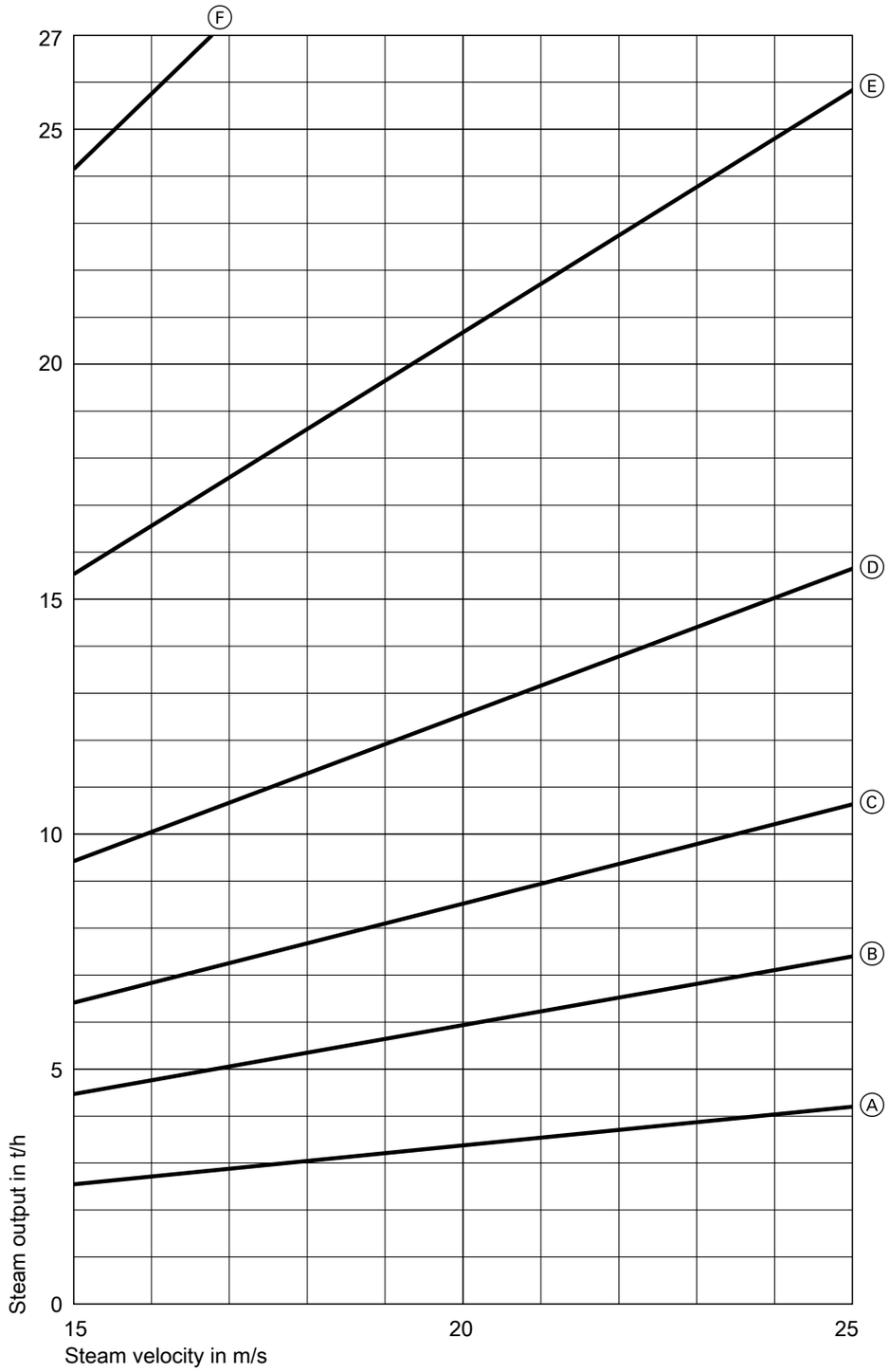
Boiler selection diagrams (cont.)



Steam connector size, working pressure 18 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

Boiler selection diagrams (cont.)



Steam connector size, working pressure 19 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

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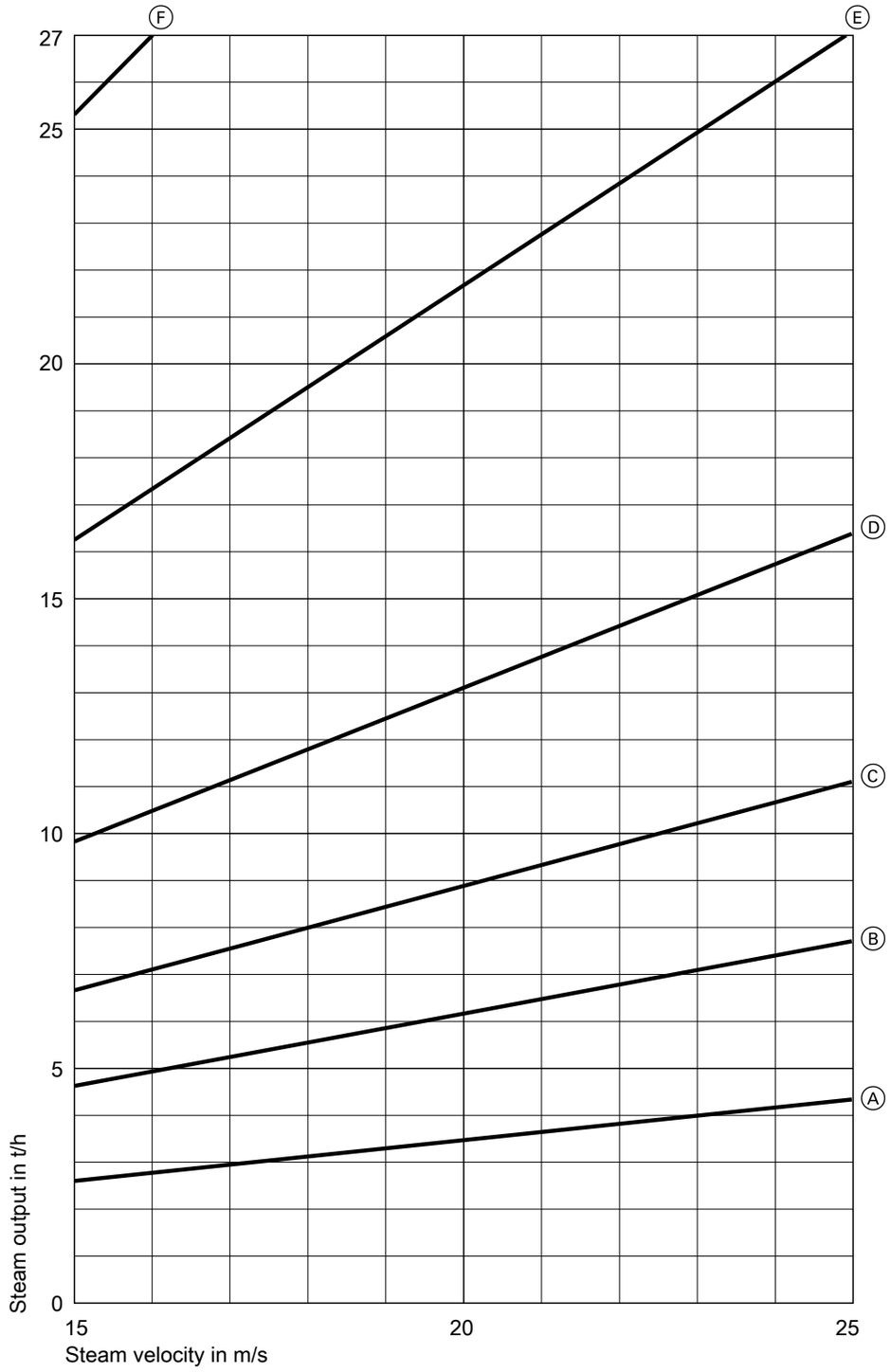
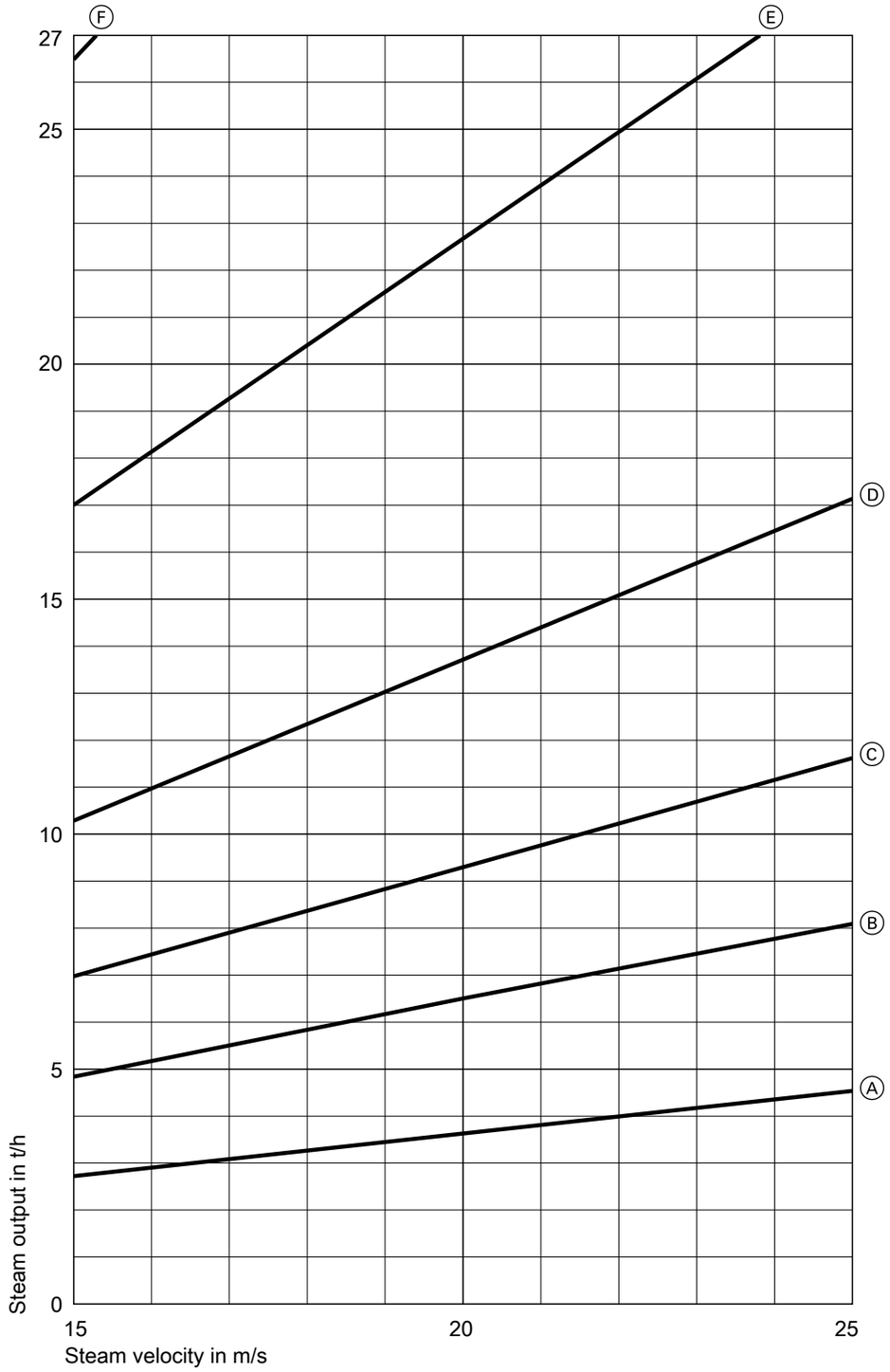
Boiler selection diagrams (cont.)



Steam connector size, working pressure 20 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

Boiler selection diagrams (cont.)



Steam connector size, working pressure 21 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200
Ⓕ Internal diameter DN 250

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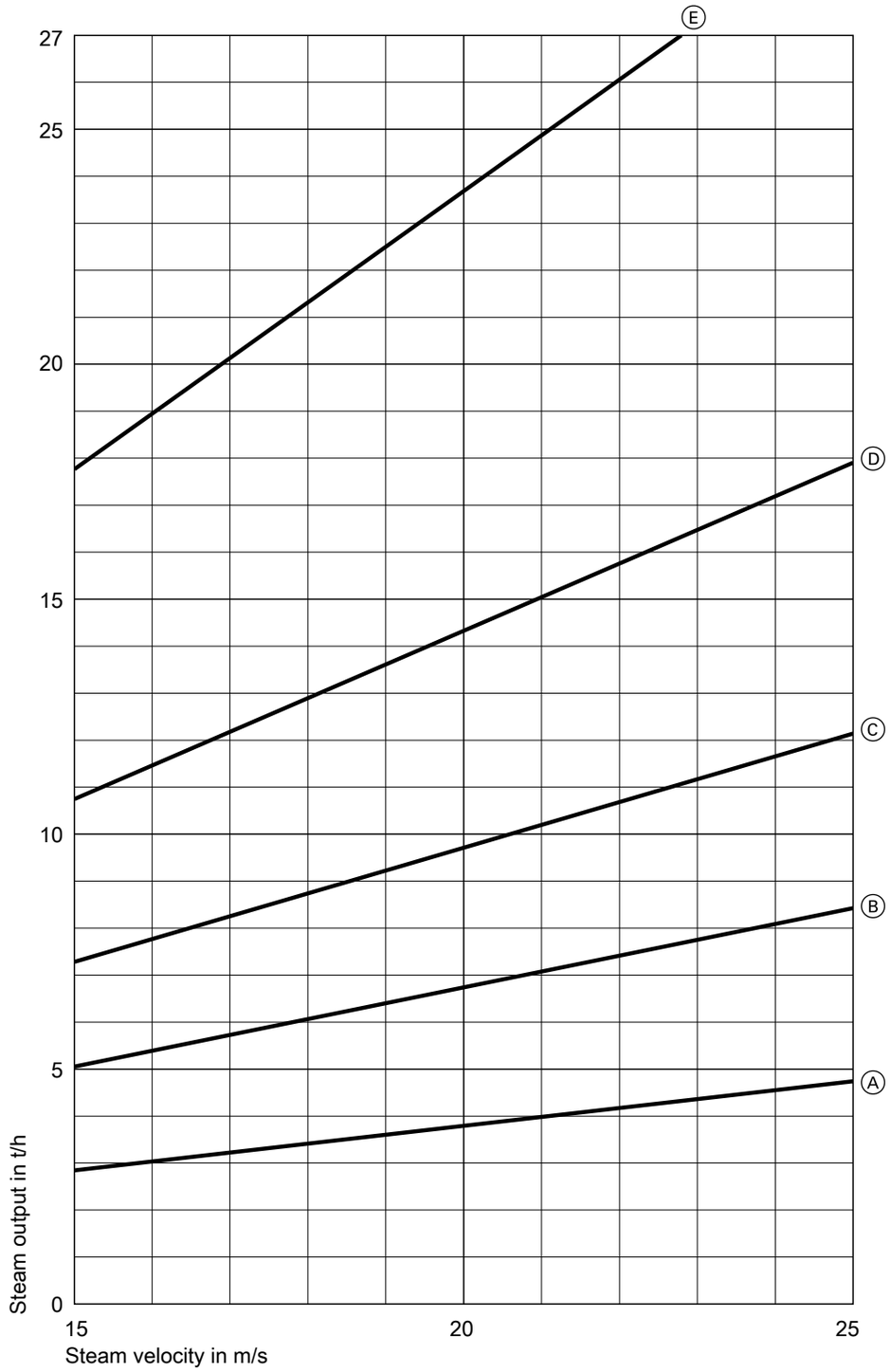
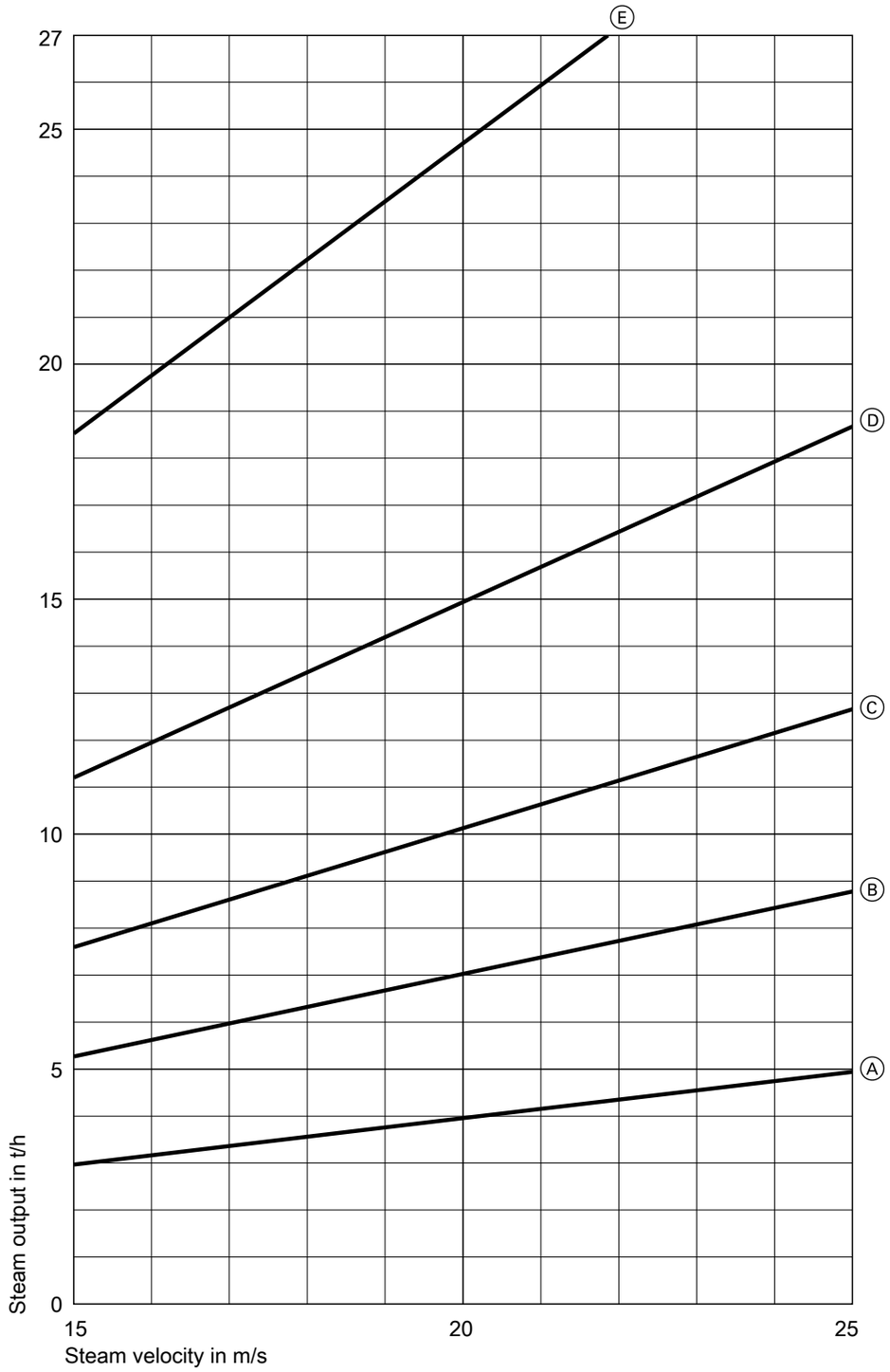
Boiler selection diagrams (cont.)



Steam connector size, working pressure 22 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200

Boiler selection diagrams (cont.)



Steam connector size, working pressure 23 bar

Ⓐ Internal diameter DN 80
Ⓑ Internal diameter DN 100
Ⓒ Internal diameter DN 125
Ⓓ Internal diameter DN 150
Ⓔ Internal diameter DN 200

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3.1 Schematic diagram to assist in selecting a boiler and determining parameters

Pos.	Procedure	Example	Customer		Notes
	Required parameters				
a	Steam output	15 t/h			Inclusive of all losses (desalination, blow-down, deaeration)
b	Working pressure	15 bar			Relative to the boiler
c	Feedwater temperature	102 °C			
d	Fuel quality	Fuel oil			Attach DIN or fuel analysis
e	Emission constraints	none			
f	Burner manufacturer/burner type				Option
	Selecting a boiler according to required steam output*10 and version				
1	Permiss. boiler operating pressure	18 bar			Approx. 1.5 to 2 bar above working pressure. Available pressure stages, see page 3 or 5.
2	Select boiler version	Standard (without turbulators)			- Standard - With ECO (feedwater preheating)
3	Estimate boiler size	Size 8 (16.34 t/h)			"Specification" table, see page 3 or 5. Observe reduced output for oil combustion to EN 12953-3.
	Check the required combustion chamber geometry				
4	Required output: Saturated steam enthalpy – Feedwater enthalpy x required steam output	 (776 Wh/kg – 120 Wh/kg) x 15,000 kg/h = 9840 kW			Diagrams on page 124
5	Estimate boiler efficiency	Approx. 88 %			Diagrams at 100 % load and existing working pressure, from page 10
6	Required combustion output	9840 kW ÷ 0.88 = 11182 kW			Pos. 4 ÷ Pos. 5
7	Determine the required combustion chamber geometry	Fuel oil L = 5500 mm D = 1300 mm			See burner technical guide or Send table on page 149 and Fig. on page 8 to the burner manufacturer
8	Required boiler size	Size 8 (L = 5603 mm, D = 1405 mm)			Table on page 149 and Fig. on page 8 Maintain dimensions a and $d_{min.}$
	Boiler details after boiler selection				
9	Calculate the boiler load	11182 kW ÷ 12700 kW = 88 %			Pos. 6 ÷ max. combustion output
10	Check boiler efficiency and, if required, recalculate combustion output and boiler load Repeat, if required	Approx. 88.4 % 9840 kW ÷ 0.884 = 11131 kW 11131 kW ÷ 12700 kW = 87.6 %			Repeat calculation steps several times, if required. Diagrams of the respective boiler, from page 10

*10 *The maximum steam output is subject to the permissible combustion output, operating conditions and achievable boiler efficiency.*

Boiler selection (cont.)

Pos.	Procedure	Example	Customer		Notes
	Parameters for peripheral equipment				
11	Read off flue gas temperature (observe version and fuel)	Approx. 275 °C without turbulator			Diagram boiler or ECO Diagrams from page 11
12	Read off flue gas pressure drop (observe version and fuel)	9.2 mbar without turbulator			Diagrams from page 12
13	Blow-off capacity, safety valve	DN 65 at 15,000 kg/h and 18 bar			See note on page 148
14	Internal diameter, steam connector	Max. operating pressure 15 bar, max. 25 m/s			Diagrams from page 125
	Optimisation options				
15	Insert heat exchanger*11 and continue the calculation with the higher feedwater temperature	ECO 200 Boiler efficiency >95.2 %			ECO datasheet Continue with pos. 2

Note
Selection of a safety valve
Safety valves are sized in accordance with EN 12953, sheet 8, section 4.2.2, paragraph 2.
To select a safety valve, please use the pricelist.

*11 *It may be more economical to install a heat exchanger downstream. By using a heat exchanger it may be possible to install the next boiler size down.*

3.2 Details for burner selection by the burner manufacturer

In conjunction with the details on page 8.

System parameters

Height above sea level	up to 500 m		m
	above 500 m		m
Inlet air temperature, if preheated			°C
Working pressure / system temperature			bar / °C
Additional flue gas pressure drop due to heat exchanger, silencer etc.			mbar
Fuel	Natural gas	E / LL	
	Fuel oil EL		
	Fuel oil S		Attach fuel analysis
	Other		Attach fuel analysis
Emission requirements	Burnout free of soot		
	4. BImSchV		
	LRV (CH)		
	Other		Attach limit values

Burner manufacturer's details

Burner type		
Required boiler size		
Max. combustion output	kW	

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Subject to technical modifications.

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