

TECHNICAL BOOK
2022



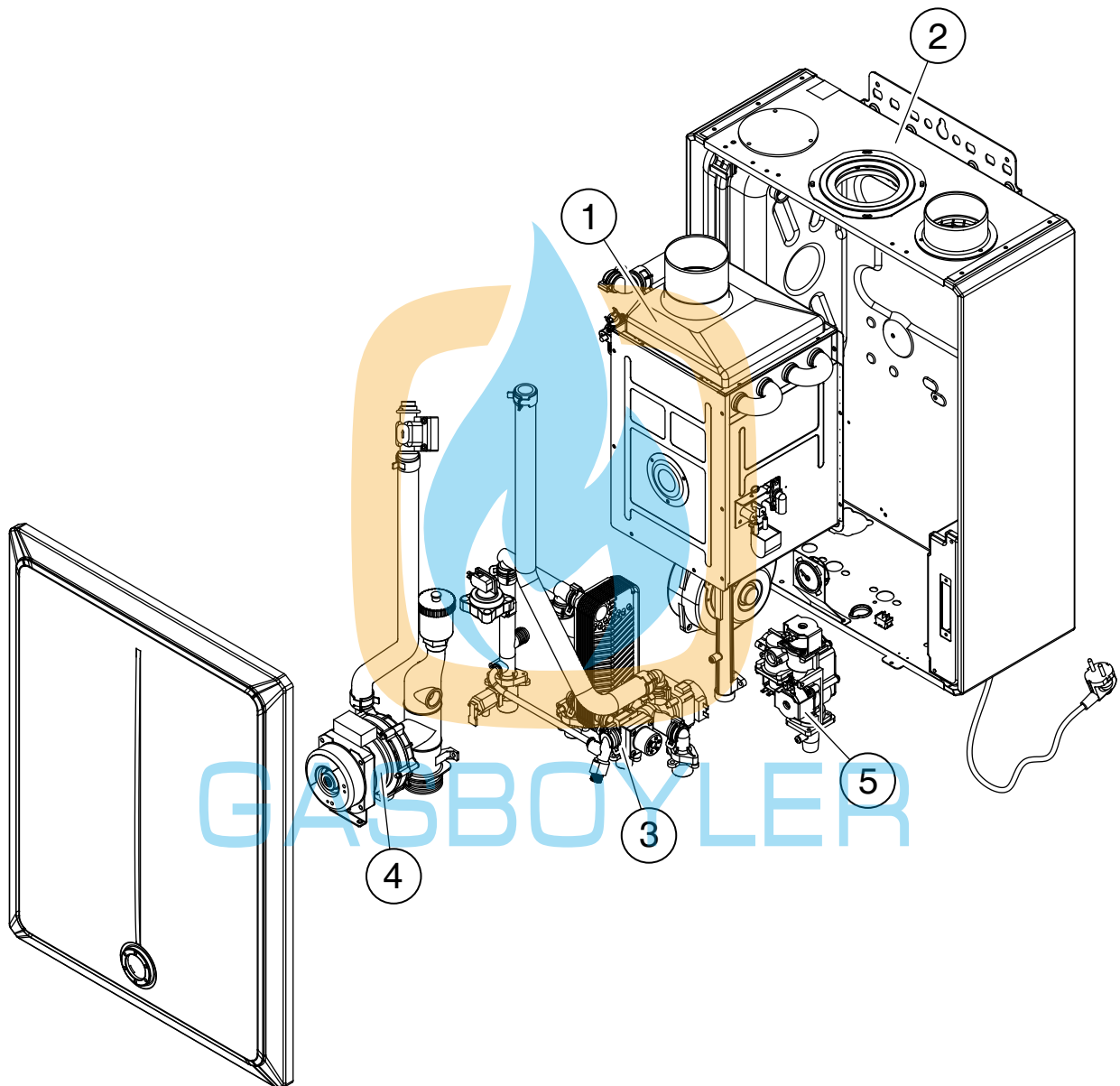
GASBOYLER



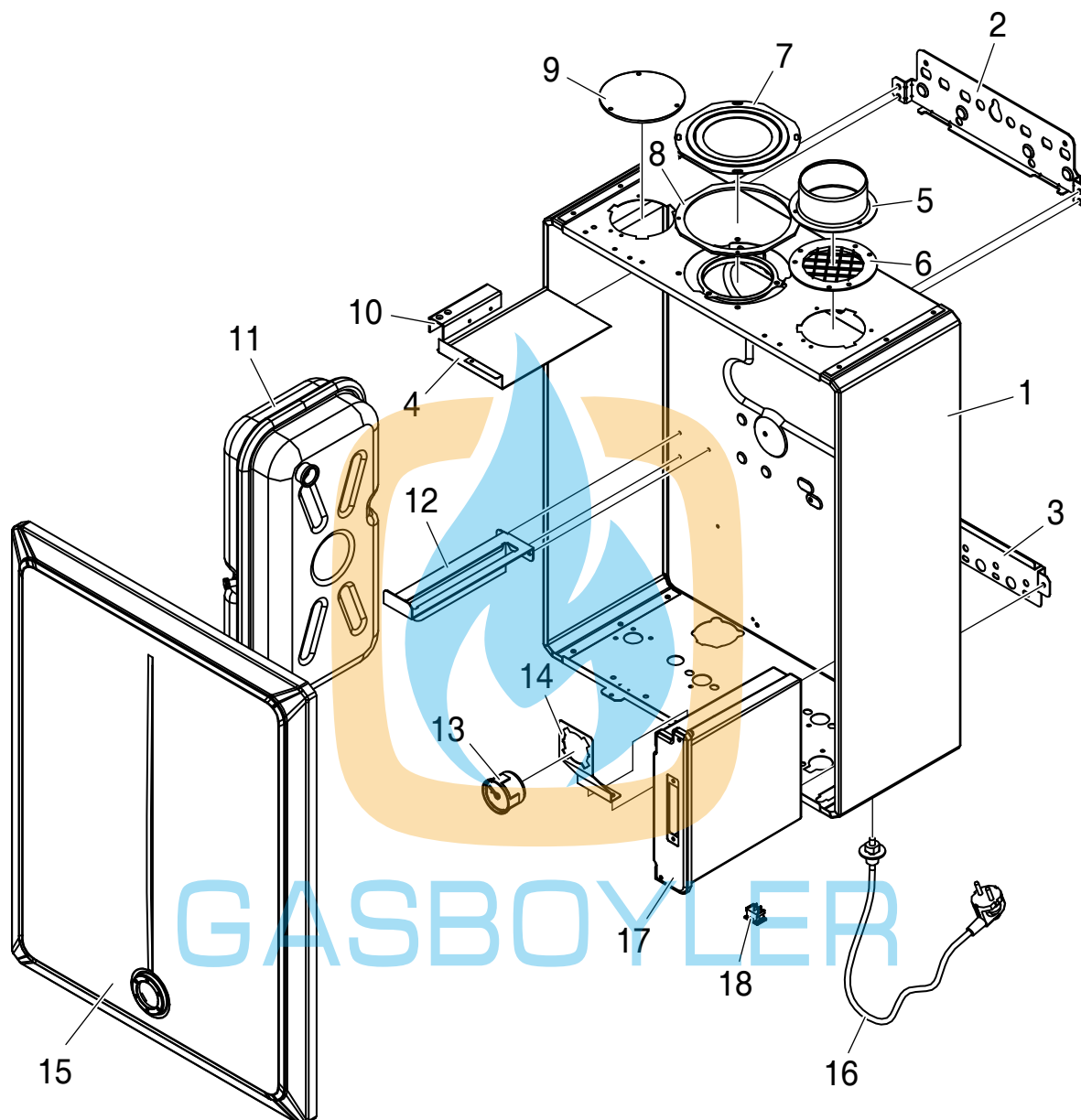
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DAEWOO STANDARD GAS BOILER

(Model No. DGB-100MSC/130MSC/160MSC/200MSC)



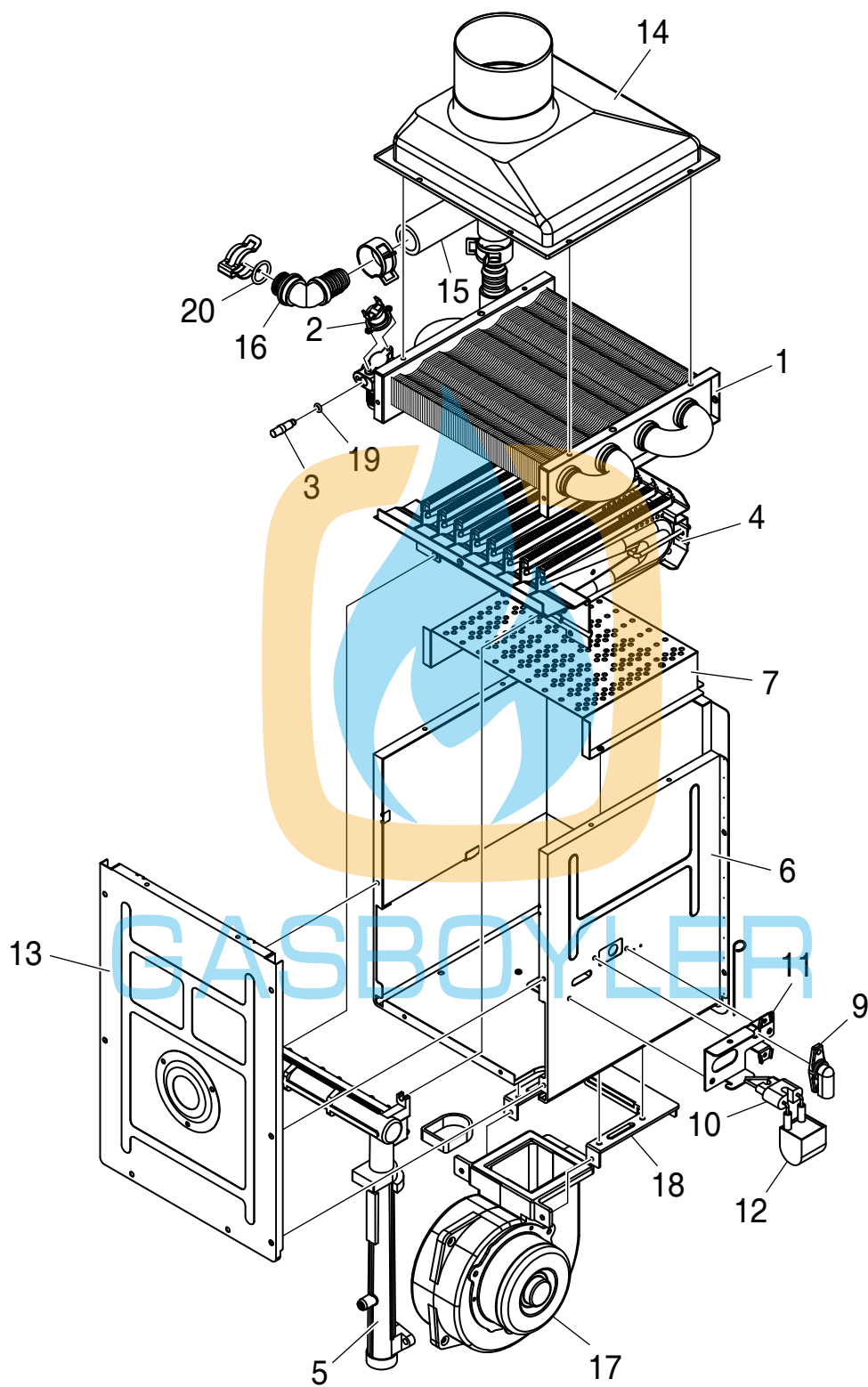
1. BODY PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL				REMARK
					100 MSC	130 MSC	160 MSC	200 MSC	
1	1	FRAME ASS'Y	3312214310	1	■	■	■	■	
1	2	FRAME INSTALL	3312200840	1	■	■	■	■	
1	3	FRAME BRACKET	3312203100	1	■	■	■	■	
1	4	AIR GUIDE PLATE	3314506500	1	■	■	■	■	
1	5	DUCT IN FLUE	3316600600	1	■	■	■	■	
1	6	GRILL	3312400200	1	■	■	■	■	
1	7	COVER IN FLUE	3311409600	1	■	■	■	■	
1	8	PACKING DUCT IN	3314005700	1	■	■	■	■	
1	9	DUCT IN COVER	3311406600	1	■	■	■	■	R100DMN
1	10	BRACKET EXPANSION VESSEL	3310607000	1	■	■	■	■	
1	11	EXPANSION TANK	3317502900	1	■	■	■	■	6L
1	12	BRACKET EXPANSION VESSEL LOW	3310603900	1	■	■	■	■	
1	13	GAUGE PRESSURE	3317732300	1	■	■	■	■	
1	14	BRACKET PRESSURE	3310605600	1	■	■	■	■	
1	15	CABINET WHOLE ASS'Y	3310815320	1	■	■	■	■	
1	16	CORD POWER	WUK43K7356	1	■	■	■	■	
1	17	M-PCB WHOLE AS	331439J650	1	■	■	■	■	
1	18	ROCKER SW	331SW02300	1	■	■	■	■	
1	19	ROOMCON ASS'Y	3317616B31	1	■	■	■	■	

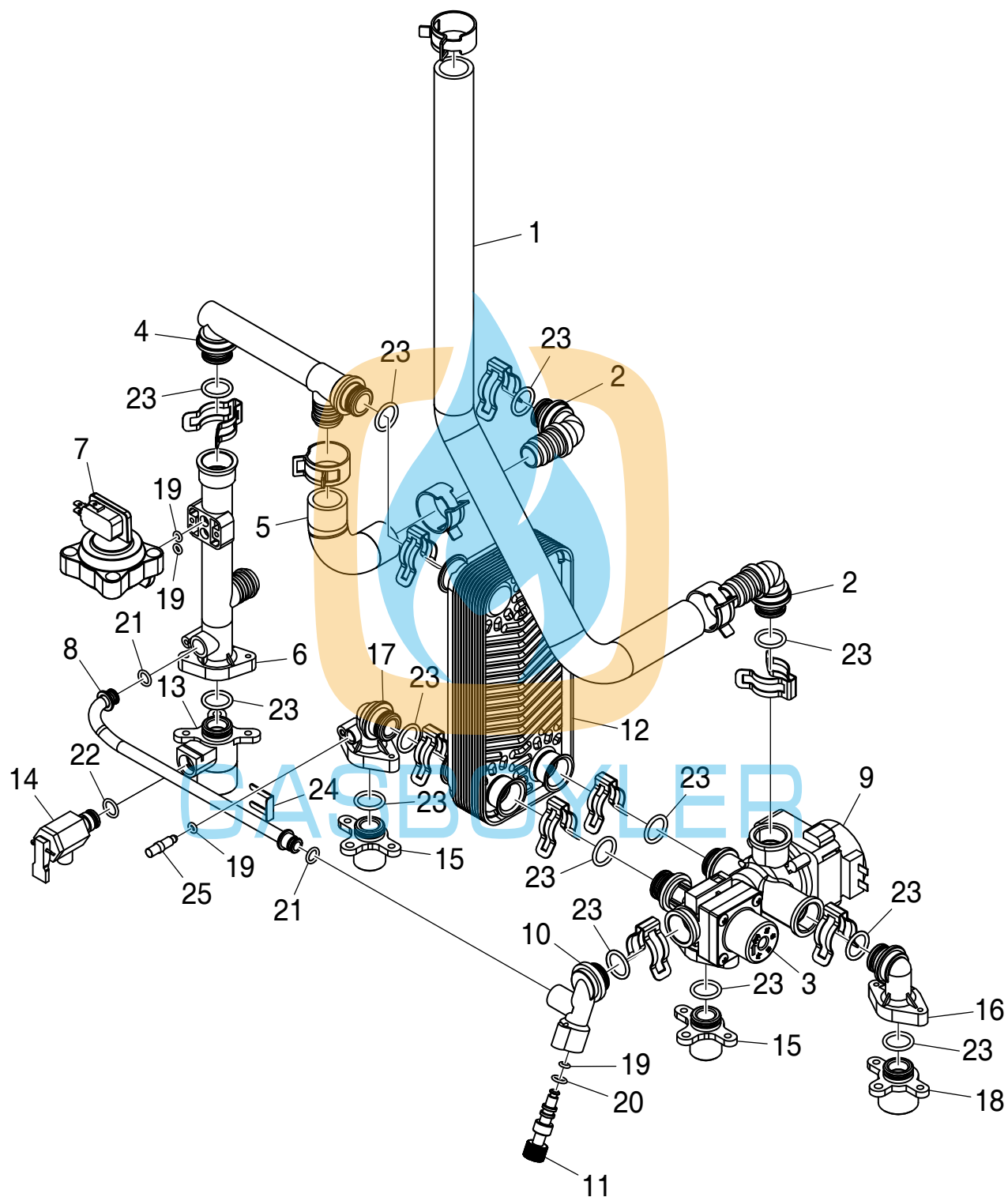
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2. HEATING PART



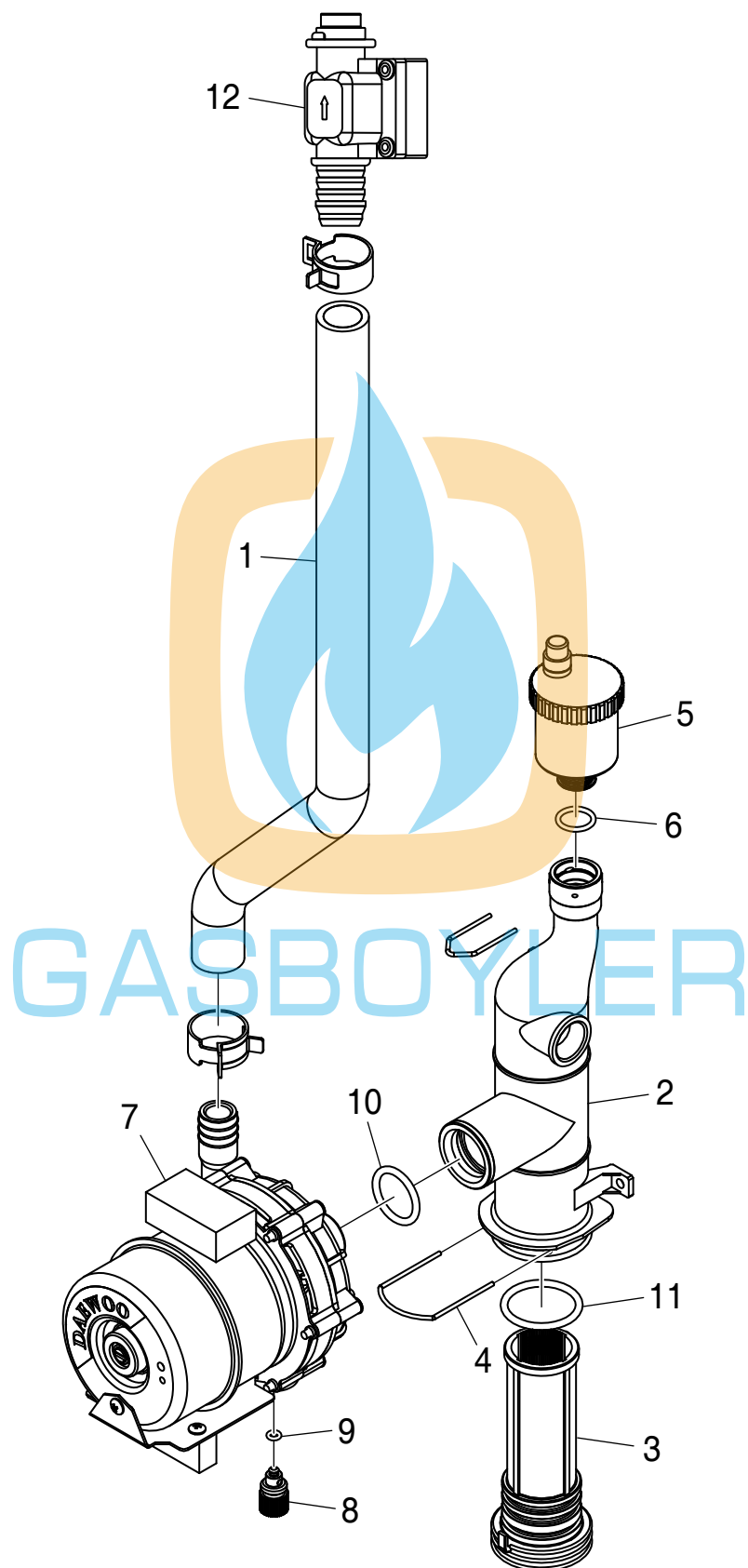
NO		PART NAME	PART CODE	PCS	APPLIED MODEL				REMARK
					100 MSC	130 MSC	160 MSC	200 MSC	
2	1	MAIN AS(ZS) HEAT EXCHANER	331811100	1	■				67FIN
2	1	MAIN AS(ZS) HEAT EXCHANER	3318108620	1		■	■	■	85FIN
2	2	SWITH TEMP O/H	3317904500	1	■	■	■	■	AUTO 95℃
2	3	SENSOR TEMP HEAT- HOT- OUT	3314805A00	1	■	■	■	■	
2	4	BURNER WHOLE ASS'Y	3316124300	1	■				6FIN
2	4	BURNER WHOLE ASS'Y	3316110100	1		■	■	■	8FIN
2	5	BURNER MANIFOLD	3316124200	1	■				NOZZLE 6EA
2	5	BURNER MANIFOLD	3316110400	1		■	■	■	NOZZLE 8EA
2	5-1	NOZZLE	3317301200	-	■	■	■	■	Φ 1.76(LNG)
2	5-2	NOZZLE	3317300700	-	■	■	■	■	Φ 1.12(LPG)
2	6	CHAMBER SIDE AS	3316316300	1	■				
2	6	CHAMBER SIDE AS	3316308700	1		■	■	■	
2	7	DISTRIBUTE UP	3318006900	1	■	■	■	■	
2	9	SENSOR FLAME AS	3314805100	1	■	■	■	■	
2	10	IGNITOR PLUG	3317101000	1	■	■	■	■	
2	11	HOLDER PIN SPARK PLUG	3313001900	1	■	■	■	■	
2	12	IGNITOR TRANS AS	3317102600	1	■	■	■	■	
2	13	CHAMBER FRONT ASS'Y	3316309300	1	■				
2	13	CHAMBER FRONT ASS'Y	3316309310	1		■	■	■	
2	14	HOOD ASS'Y	3310059810	1	■				
2	14	HOOD ASS'Y	3310059800	1		■	■	■	
2	15	HOSE EXP	3313204200	1	■	■	■	■	
2	16	NIPPLE HOSE CONNECT	3318400800	1	■	■	■	■	
2	17	FAN ASS'Y	3311852201	1	■	■	■	■	
2	18	FAN BRACKET	3310601500	1	■	■	■	■	
2	19	O-RING(P-4)	3314600300	1	■	■	■	■	SILICONE
2	20	O-RING(P-16)	3314601500	1	■	■	■	■	SILICONE

3. HOT WATER HEATING PART

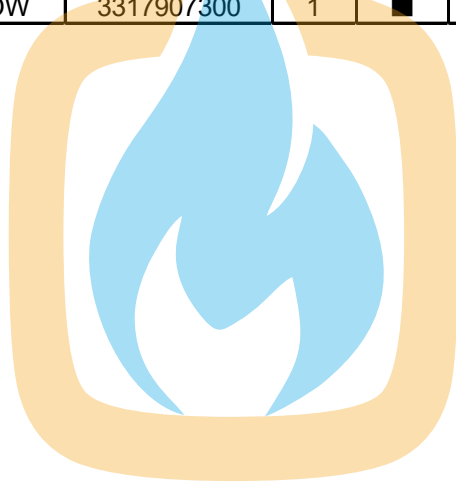


NO		PART NAME	PART CODE	PCS	APPLIED MODEL				REMARK
					100 MSC	130 MSC	160 MSC	200 MSC	
3	1	SUPPLY HOSE	3313205400	1	■	■	■	■	
3	2	HOSE NIPPLE CONNECT	3318400800	2	■	■	■	■	
3	3	FLOW SWITCH	3317904600	1	■	■	■	■	
3	4	RETURN PIPE UP	3314425800	1	■	■	■	■	
3	5	CLOSED HOSE	3313205800	1	■	■	■	■	
3	6	RETURN PIPE LOW	3314425700	1	■	■	■	■	
3	7	SAFETY WATER FLOW SWITCH	3317905000	1	■	■	■	■	20kPA (0.2bar)
3	8	REPLENISH PIPE ASS'Y	3314425900	1	■	■	■	■	
3	9	3-WAY VALVE	3315435000	1	■	■	■	■	
3	10	REPLENISH VALVE BODY	3315433300	1	■	■	■	■	
3	11	REPLENISH VALVE COCK	3312600100	1	■	■	■	■	
3	12	HOT WATER HEAT EXCHANGER ASS'Y	3318112300	1	■	■	■	■	12FIN
3	13	RETURN UNION	3318504700	1	■	■	■	■	
3	14	PRESSURE RELIEF VALVE	3315404400	1	■	■	■	■	
3	15	U C/W. H/W	3318505000	2	■	■	■	■	
3	16	NIPPLE H/W & SUPPLY	3319000800	1	■	■	■	■	
3	17	HOT WATER NIPPLE	3319001800	1	■	■	■	■	
3	18	SUPPLY UNION	3318504900	1	■	■	■	■	
3	19	O-RING(P-4)	3314600300	4	■	■	■	■	SILICONE
3	20	O-RING(P-7)	3314603600	1	■	■	■	■	SILICONE
3	21	O-RING(P-8)	3314602000	2	■	■	■	■	SILICONE
3	22	O-RING(P-10)	3314602300	1	■	■	■	■	SILICONE
3	23	O-RING(P-16)	3314601500	13	■	■	■	■	SILICONE
3	24	EXPASION PIPE SPRING	3315101200	1	■	■	■	■	
3	25	SENSOR TEMP HEAT- HOT- MOT	3314805A00	1	■	■	■	■	

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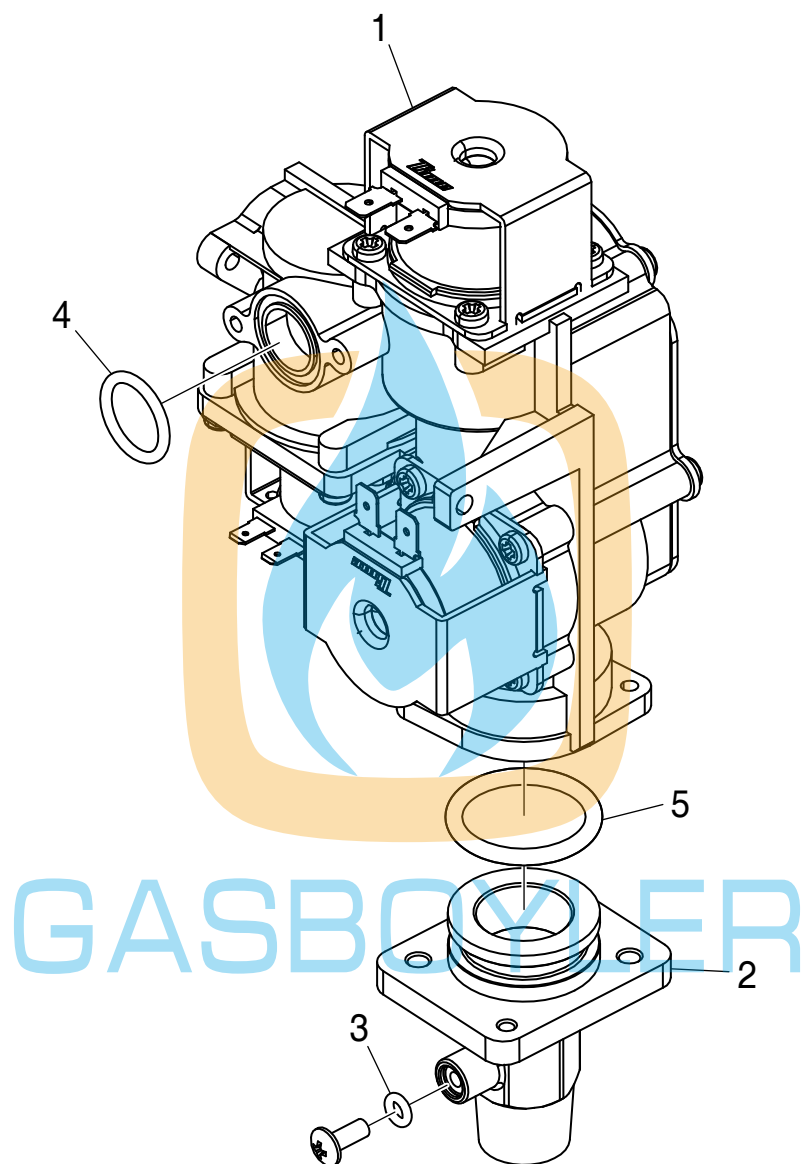


NO		PART NAME	PART CODE	PCS	APPLIED MODEL				REMARK
					100 MSC	130 MSC	160 MSC	200 MSC	
4	1	RETURN HOSE	3313211300	1	■	■	■	■	
4	2	STRAINER AIR VENT BODY	33180072200	1	■	■	■	■	
4	3	STRAINER HOLDER	3313002300	1	■	■	■	■	
4	4	STRAINER PIN	3318001800	1	■	■	■	■	
4	5	AIR VENT ASS'Y	3310089710	1	■	■	■	■	
4	6	O-RING(P-16)	3314601500	1	■	■	■	■	SILICONE
4	7	PUMP ASS'Y	3317418700	1	■	■	■	■	
4	8	DRAIN COCK	3316500100	1	■	■	■	■	
4	9	O-RING(P-4)	3314600300	1	■	■	■	■	SILICONE
4	10	O-RING(P-25)	3314602500	1	■	■	■	■	SILICONE
4	11	O-RING(P-34)	3314602400	1	■	■	■	■	SILICONE
4	12	SWITCH HEAT FLOW	3317907300	1	■	■	■	■	



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5. GAS SUPPLY PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL				REMARK
					100 MSC	130 MSC	160 MSC	200 MSC	
5	1	GAS VALVE	3315434700	1	■	■	■	■	
5	2	GAS VALVE UNION	3318504400	1	■	■	■	■	
5	3	O-RING(P-4)	3314600300	1	■	■	■	■	SILICONE
5	4	O-RING(P-16)	3314600600	1	■	■	■	■	NBR
5	5	O-RING(P-26)	3314000500	1	■	■	■	■	NBR



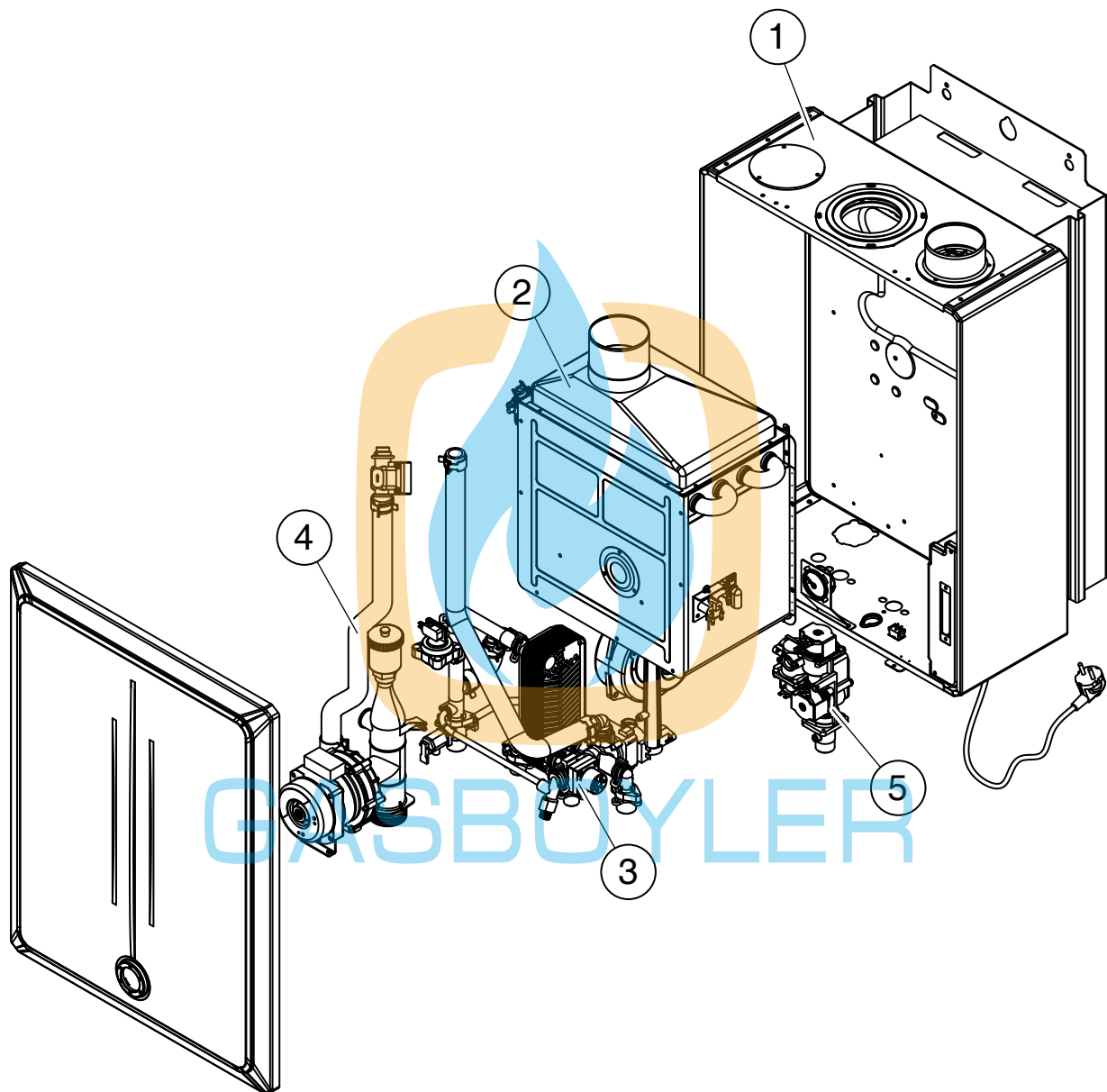
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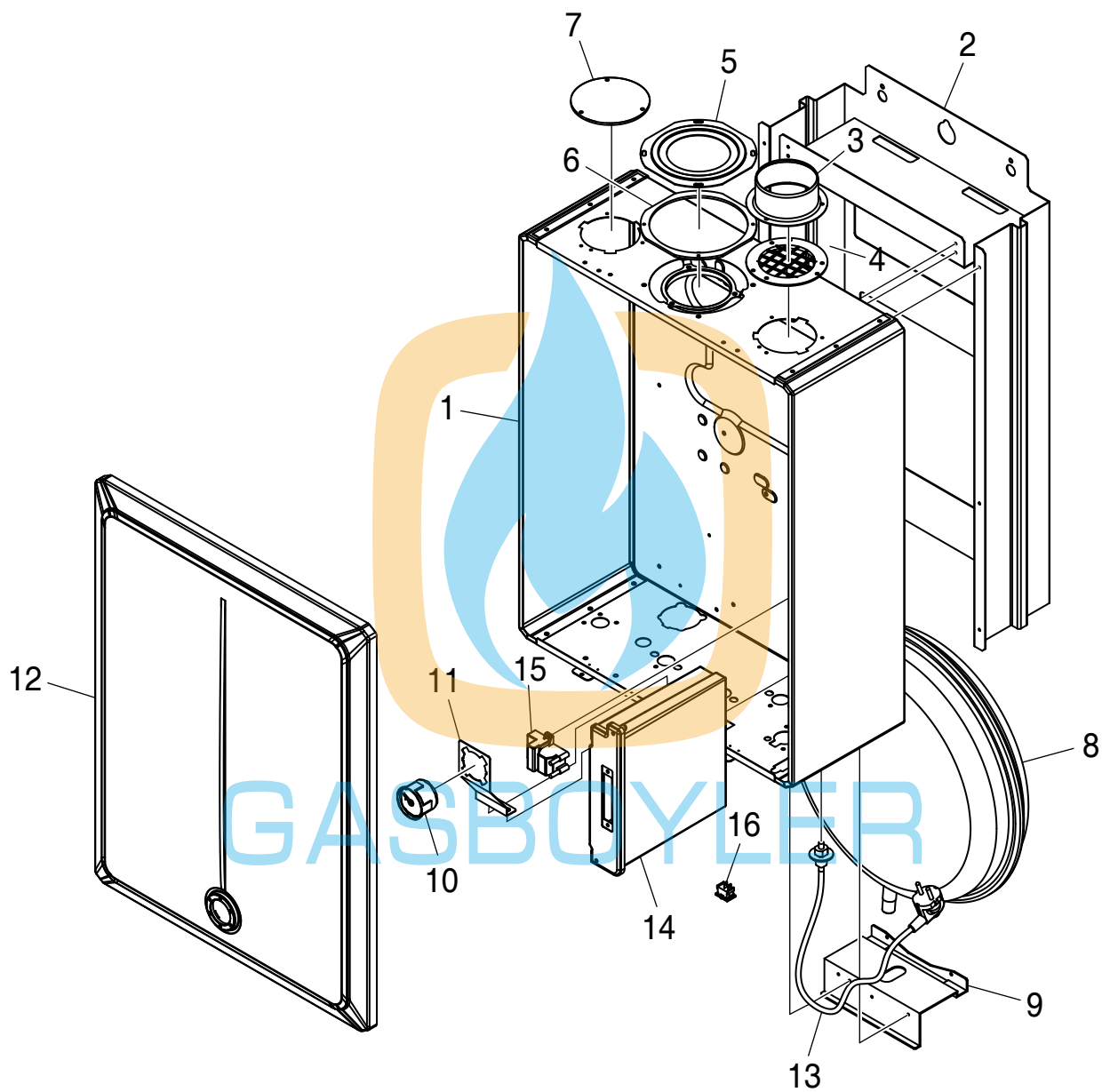
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DAEWOO STANDARD GAS BOILER

(Model No. DGB-250MSC/300MSC)



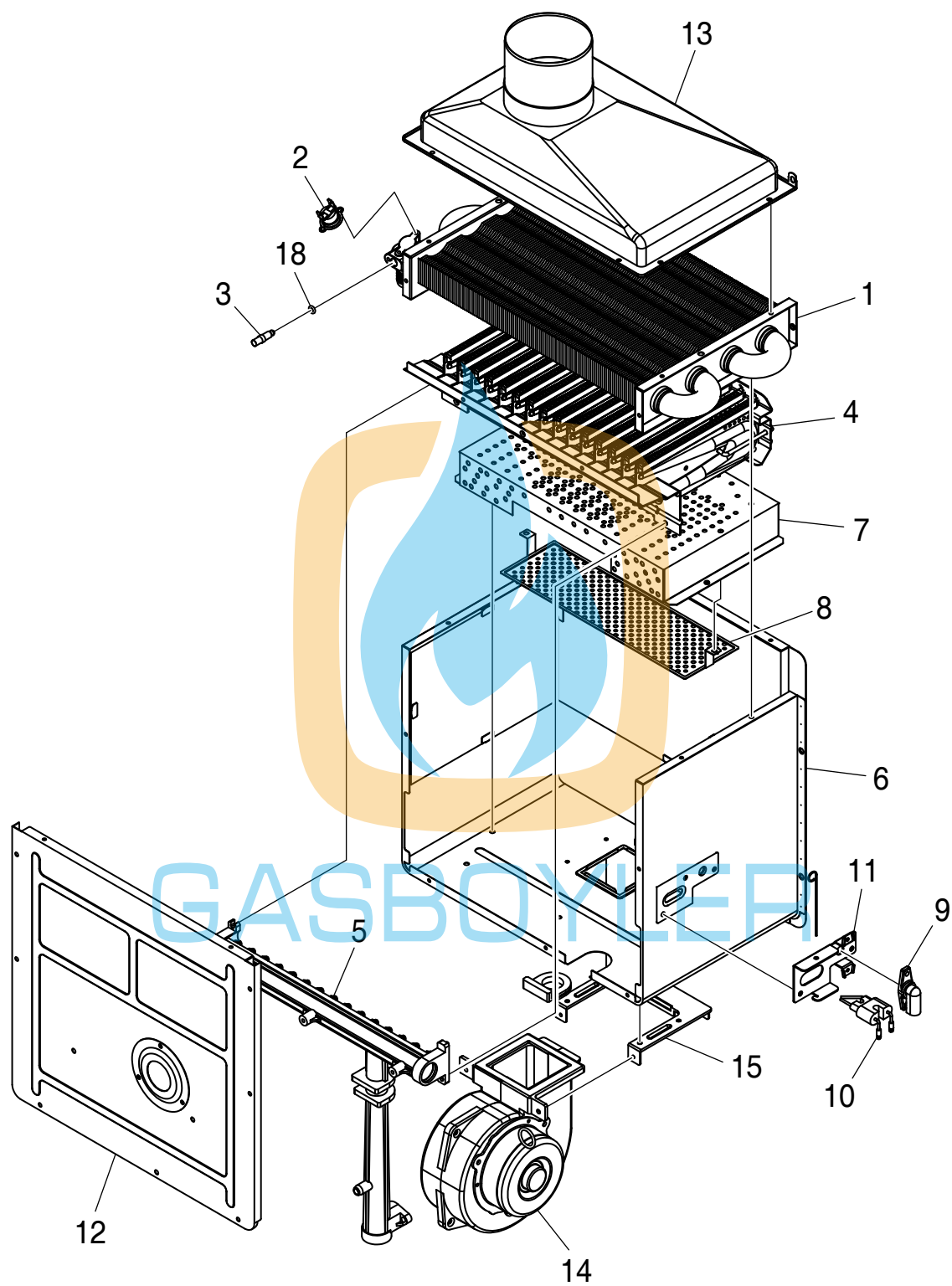
1. BODY PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					250 MSC	300 MSC	
1	1	FRAME ASS'Y	3312214110	1	■	■	
1	2	FRAME REAR	3312203500	1	■	■	
1	3	DUCT IN FLUE	3316600600	1	■	■	
1	4	GRILL	3312400200	1	■	■	
1	5	COVER IN FLUE	3311409600	1	■	■	
1	6	PACKING DUCT IN	3314005700	1	■	■	
1	7	DUCT IN COVER	3311406600	1	■	■	
1	8	EXPANSION TANK	4448F52003	1	■	■	8L
1	9	EXPANSION TANK BRACKET LOWER	3310603300	1	■	■	
1	10	PRESSURE GAUGE	3317732300	1	■	■	
1	11	PRESSURE BRACKET	3310605600	1	■	■	
1	12	CABINET WHOLE ASS'Y	3310815320	1	■	■	
1	13	POWER CORD	WUK43K7356	1	■	■	
1	14	MAIN PCB BOX ASS'Y	331439BB00	1	■	■	
1	15	IGNITOR TRANS AS	3317102800	1	■	■	
1	16	ROCKER SW	331SW02300	1	■	■	
1	17	ROOMCON ASS'Y	33176161331	1	■	■	

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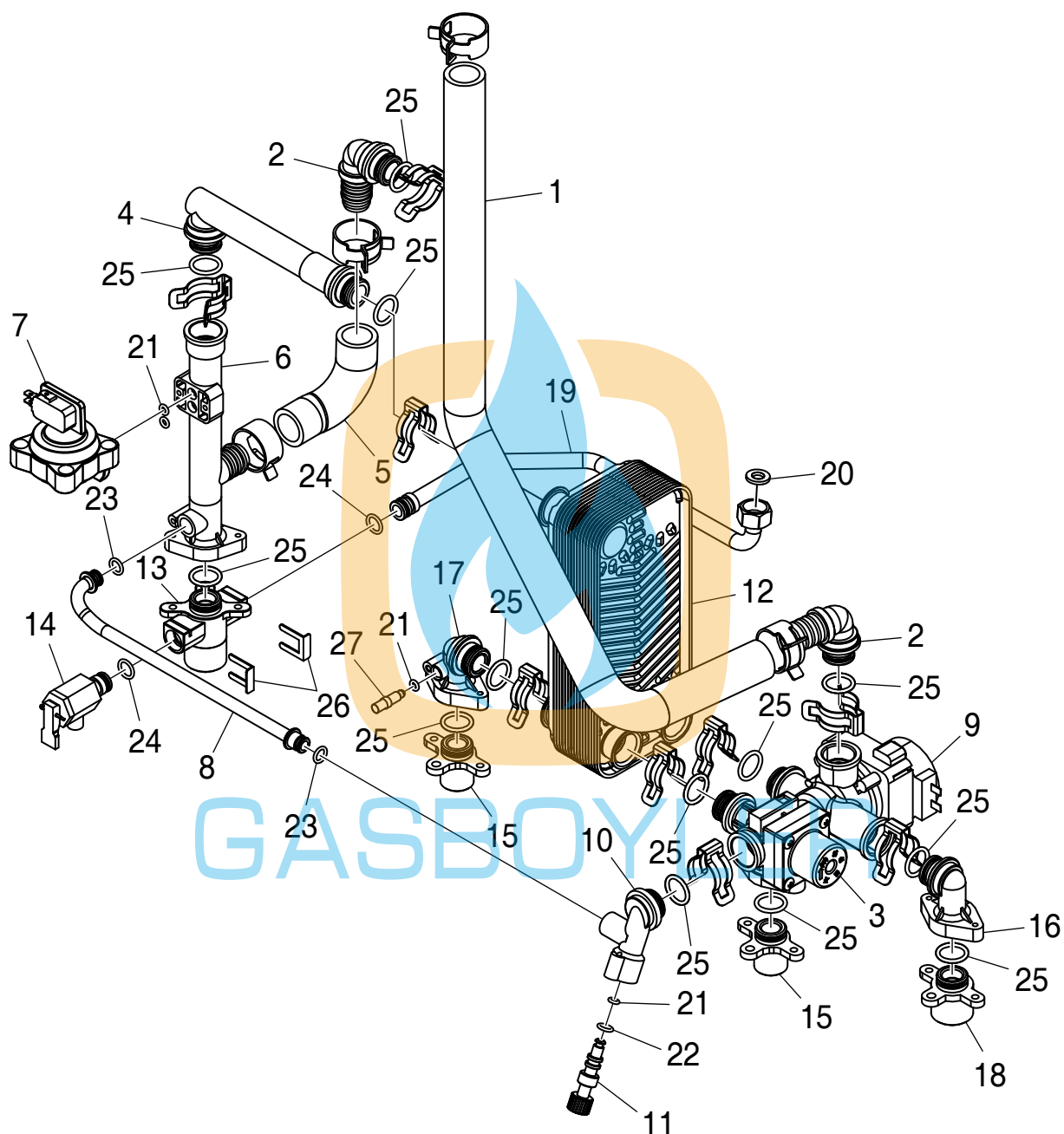
2. HEATING PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					250 MSC	300 MSC	
2	1	HEAT EX MAIN AS(ZS)	3318114910	1	■	■	122FIN
2	2	SWITH TEHP O/H	3317904500	1	■	■	AUTO 95°C
2	3	SENSOR TEMP HEAT- HOT- OUT	3314805A00	1	■	■	
2	4	BURNER WHOLE ASS'Y	3316123700	1	■	■	15FIN
2	5	BURNER MANIFOLD	3316109500	1	■	■	
2	5-1	NOZZLE	3317303200	15	■	■	Φ1.55(LNG)
2	5-2	NOZZLE	331730300	15	■	■	Φ1.1(LPG)
2	6	CHAMBER SIDE AS	3316315700	1	■	■	
2	7	DISTRIBUTE UP	3318402900	1	■	■	
2	8	DISTRIBUTE LOW	3314506300	1	■	■	
2	9	FLAME SENSOR AS	3314805200	1	■	■	
2	10	IGNITOR PLUG	3317100700	1	■	■	
2	11	HOLDER PIN SPARK PLUG	3313001900	1	■	■	
2	12	CHAMBER FRONT ASS'Y	3316303900	1	■	■	
2	13	HOOD ASS'Y	3310059900	1	■	■	
2	14	FAN ASS'Y	3311852201	1	■	■	
2	15	FAN BRACKET	3310601500	1	■	■	
2	18	O-RING(P-4)	3314600300	1	■	■	SILICONE

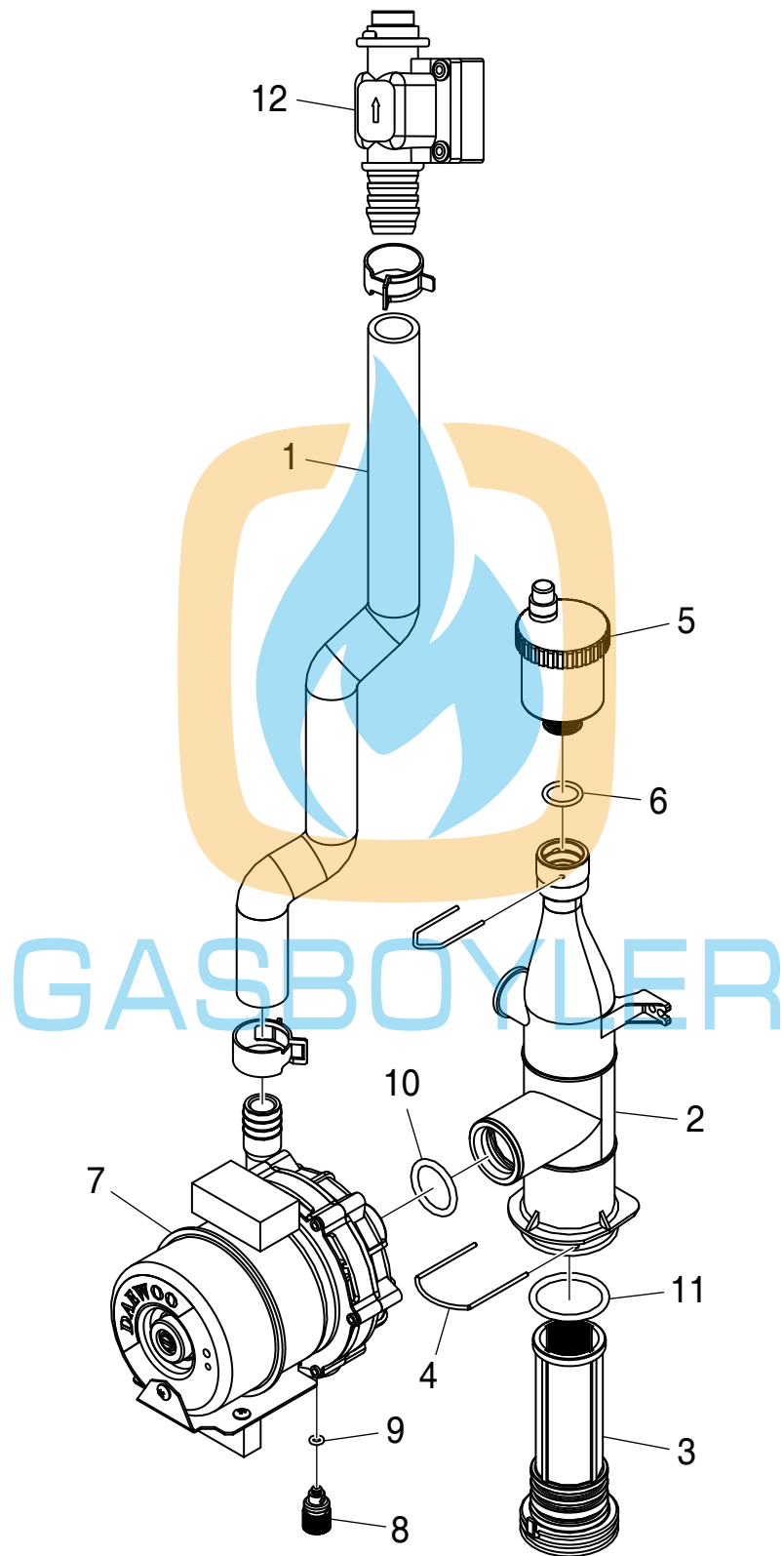
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3. HOT WATER HEATING PART

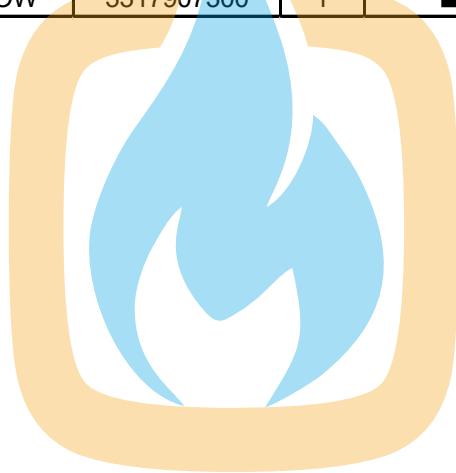


NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					250 MSC	300 MSC	
3	1	SUPPLY HOSE	3313205500	1	■	■	
3	2	HOSE NIPPLE CONNECT	3318400800	2	■	■	
3	3	FLOW SWITCH	3317904600	1	■	■	
3	4	RETURN PIPE UP	3314426500	1	■	■	
3	5	CLOSED HOSE	3313205800	1	■	■	
3	6	RETURN PIPE LOW	3314426400	1	■	■	
3	7	SAFETY WATER FLOW SWITCH	3317905000	1	■	■	20kPA (0.2bar)
3	8	REPLENISH PIPE ASS'Y	3314426000	1	■	■	
3	9	3-WAY VALVE	3315435000	1	■	■	
3	10	REPLENISH VALVE BODY	3315433300	1	■	■	
3	11	REPLENISH VALVE COCK	3312600100	1	■	■	
3	12	HOT WATER HEAT EXCHANGER ASS'Y	3318112400	1	■	■	16FIN
3	13	RETURN UNION	3318504800	1	■	■	
3	14	SAFETY VALVE	3315404400	1	■	■	
3	15	UNION C/W. H/W	3318505000	2	■	■	
3	16	NIPPLE H/W & SUPPLY	3319000800	1	■	■	
3	17	HOT WATER NIPPLE	3319001800	1	■	■	
3	18	SUPPLY UNION	3318504900	1	■	■	
3	19	EXPANSION TANK PIPE ASS'Y	3314426100	1	■	■	
3	20	EXPANSION TANK PIPE PACKING	3314003600	1	■	■	
3	21	O-RING(P-4)	3314600300	4	■	■	SILICONE
3	22	O-RING(P-7)	3314603600	1	■	■	SILICONE
3	23	O-RING(P-8)	3314602000	2	■	■	SILICONE
3	24	O-RING(P-10)	3314602300	2	■	■	SILICONE
3	25	O-RING(P-16)	3314601500	13	■	■	SILICONE
3	26	EXPANSION PIPE SPRING	3315101200	2	■	■	
3	27	SENSOR TEMP HEAT- HOT- HOT	3314805A00	1	■	■	

4. CIRCULATION PART

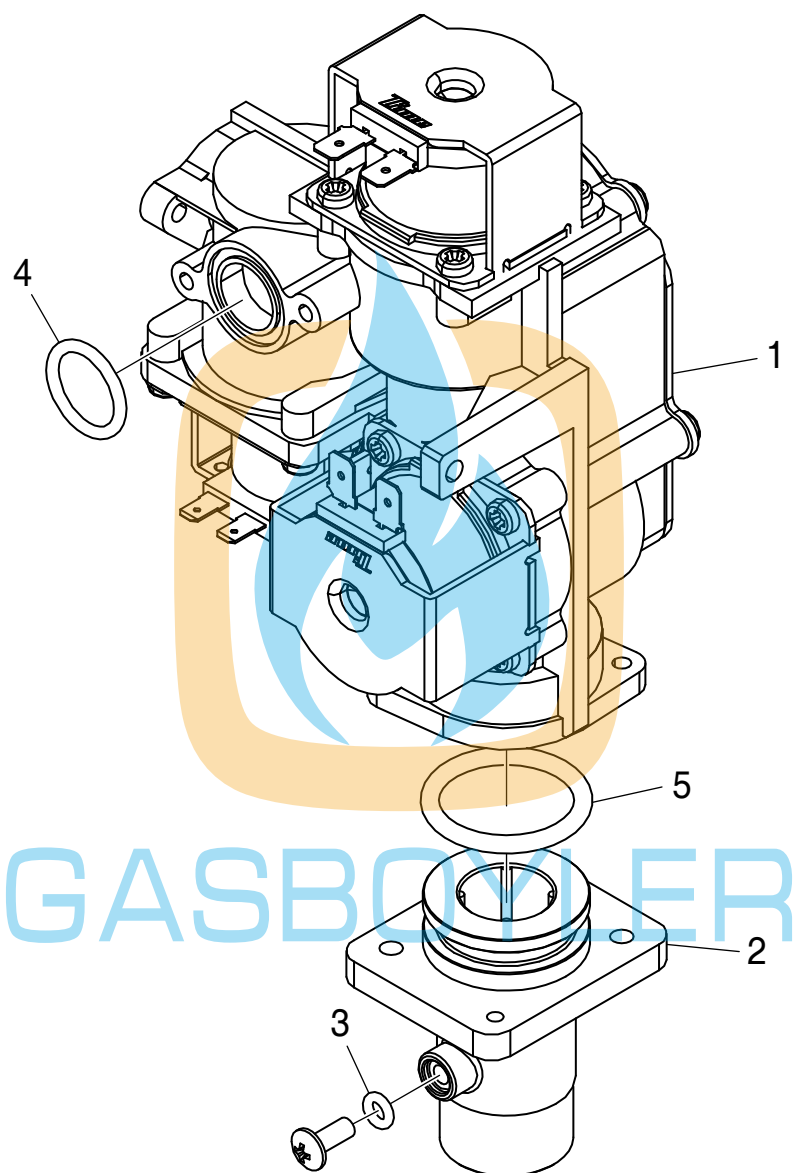


NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					250 MSC	300 MSC	
4	1	RETURN HOSE	3313211400	1	■	■	
4	2	STRAINER AIR VENT BODY	3318007200	1	■	■	
4	3	STRAINER HOLDER	3313002300	1	■	■	
4	4	STRAINER PIN	3318001800	1	■	■	
4	5	AIR VENT ASS'Y	3310089710	1	■	■	
4	6	O-RING(P-16)	3314601500	1	■	■	SILICONE
4	7	PUMP ASS'Y	3317418700	1	■	■	
4	8	DRAIN COCK	3316500100	1	■	■	
4	9	O-RING(P-4)	3314600300	1	■	■	SILICONE
4	10	O-RING(P-25)	3314602500	1	■	■	SILICONE
4	11	O-RING(P-34)	3314602400	1	■	■	SILICONE
4	12	SWITCH HEAT FLOW	3317907300	1	■	■	



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5. GAS SUPPLY PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					250 MSC	300 MSC	
5	1	GAS VALVE	331434700	1	■	■	
5	2	GAS VALVE UNION	3318504300	1	■	■	
5	3	O-RING(P-4)	3314600300	1	■	■	SILICONE
5	4	O-RING(P-16)	3314600600	1	■	■	NBR
5	5	O-RING(P-26)	3314000500	1	■	■	NBR



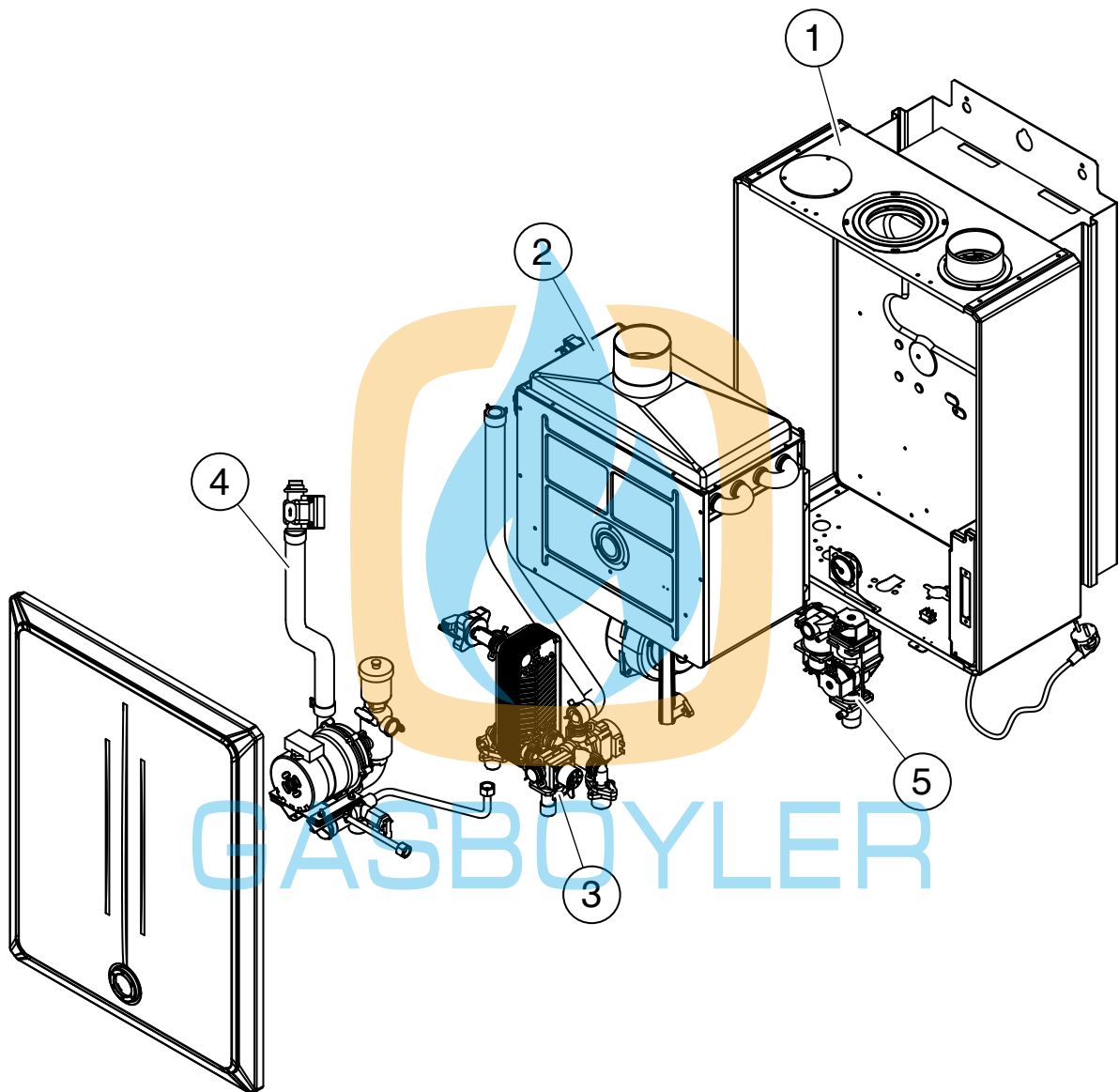
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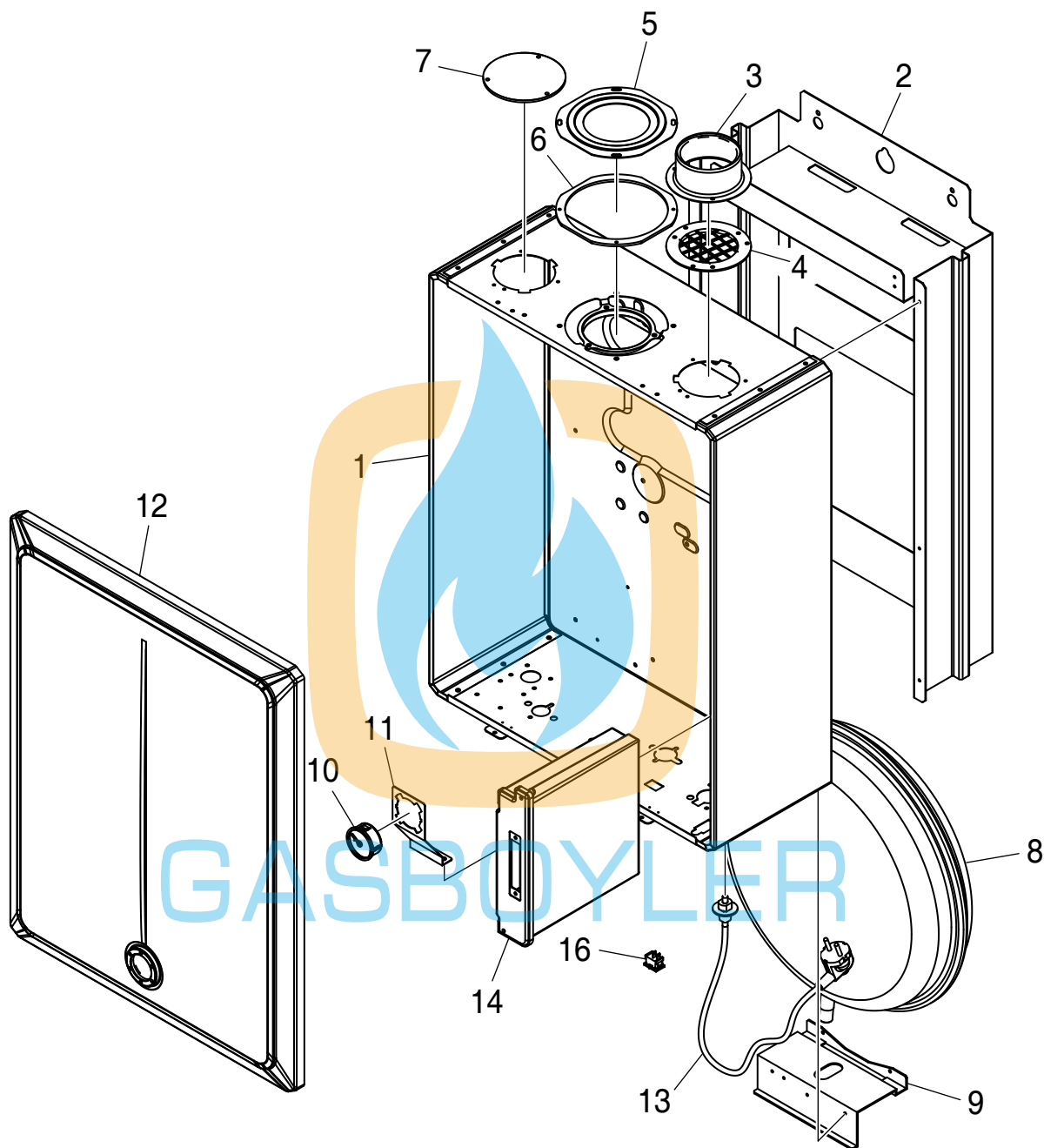
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DAEWOO STANDARD GAS BOILER

(Model No. DGB-350MSC/400MSC)



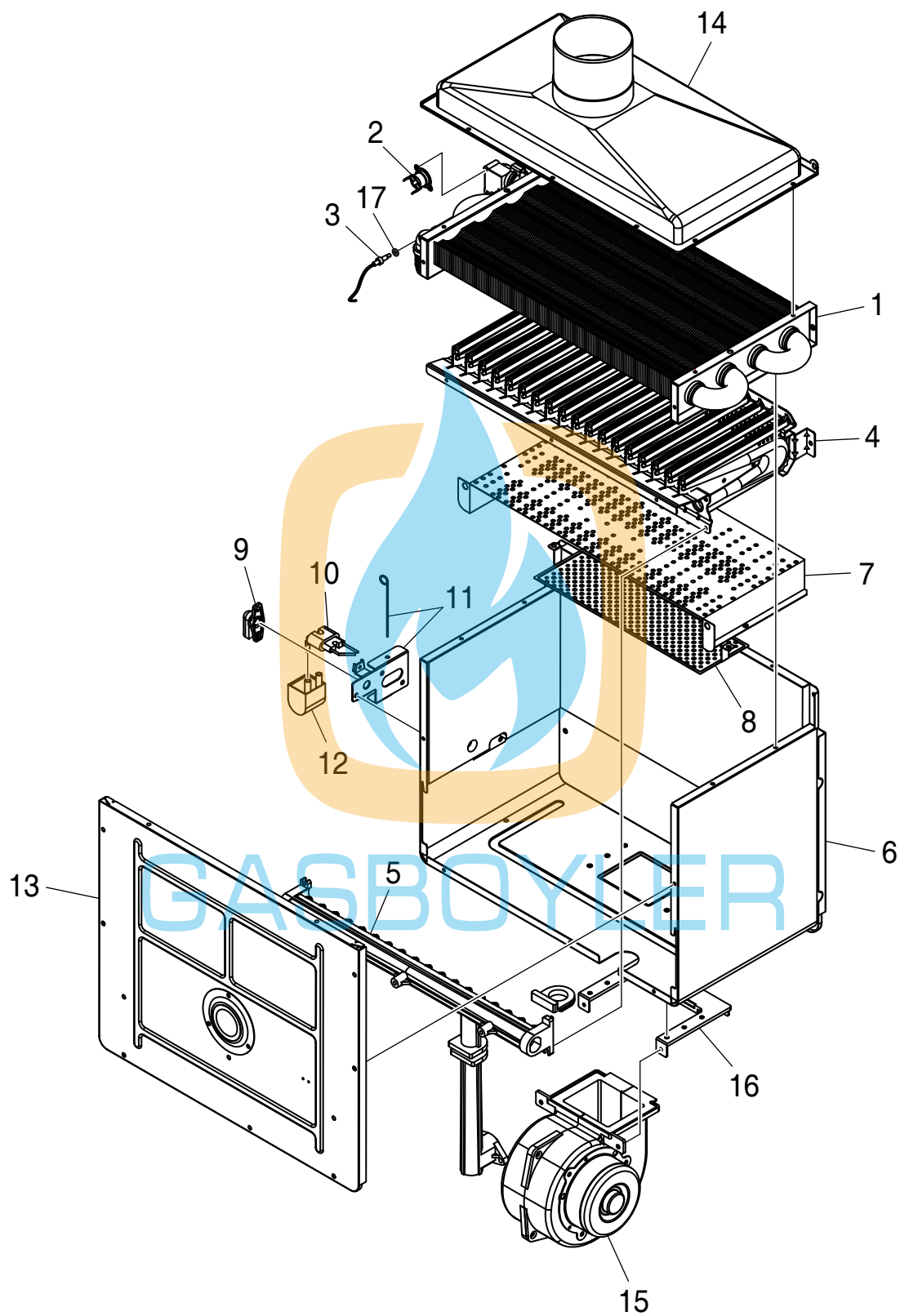
1. BODY PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					350 MSC	400 MSC	
1	1	FRAME ASS'Y	3312214320	1	■	■	
1	2	FRAME REAR	3312203500	1	■	■	
1	3	DUCT IN FLUE	3316600600	1	■	■	
1	4	GRILL	3312400200	1	■	■	
1	5	COVER IN FLUE	3311409600	1	■	■	
1	6	PACKING DUCT IN	3314005700	1	■	■	
1	7	DUCT IN COVER	3311406600	1	■	■	
1	8	EXPANSION TANK	4448F52003	1	■	■	8L
1	9	EXPANSION TANK BRACKET LOW	3310603300	1	■	■	
1	10	PRESSURE GAUGE	3317732300	1	■	■	
1	11	PRESSURE GAUGE BRACKET	3310605600	1	■	■	
1	12	CABINET WHOLE ASS'Y	3310815320	1	■	■	
1	13	POWER CORD	WUK43K7356	1	■	■	
1	14	MAIN PCB BOX ASS'Y	331439BB00	1	■	■	
1	15	ROCKER SW	331SW02300	1	■	■	
1	16	ROOMCON ASS'Y	33176161331	1	■	■	

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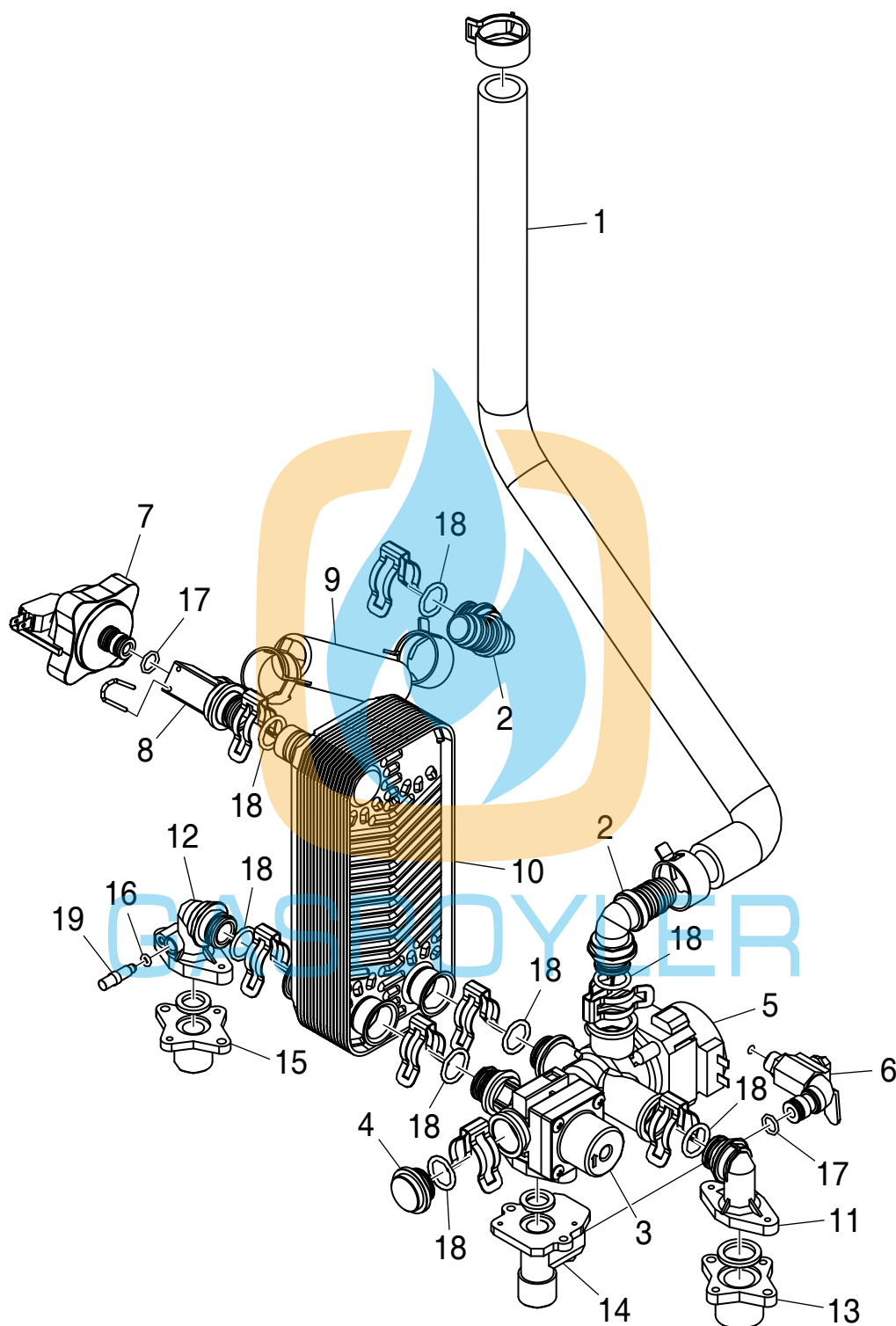
2. HEATING PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					350 MSC	400 MSC	
2	1	HEAT EX MAIN AS(ZS)	3318113010	1	■	■	
2	2	SWITCH TEMP O/H	3317904500	1	■	■	AUTO 95℃
2	3	SENSOR TEMP HEAT- HOT- OUT	3314805A00	1	■	■	
2	4	BURNER WHOLE ASS'Y	3316124600	1	■	■	
2	5	BURNER MANIFOLD ASS'Y	3316124700	1	■	■	
2	5-1	NOZZLE	3317303200	18	■	■	Φ1.55(LNG)
2	6	CHAMBER SIDE ASS'Y	3310064000	1	■	■	
2	7	DISTRIBUTE UP	3318402400	1	■	■	
2	8	DISTRIBUTE LOW	3314600300	1	■	■	
2	9	FLAME SENSOR AS	3314805200	1	■	■	
2	10	IGNITOR PLUG	3317100700	1	■	■	
2	11	HOLDER PIN SPARK PLUG	3313001900	1	■	■	
2	12	IGNITOR TRANS	3317101400	1	■	■	
2	13	CHAMBER FRONT ASS'Y	3316315000	1	■	■	
2	14	HOOD ASS'Y	3310059910	1	■	■	
2	15	FAN ASS'Y	3311852300	1	■	■	
2	16	FAN BRACKET	3310605100	1	■	■	
2	17	O-RING(P-4)	3314600300	1	■	■	SILICONE

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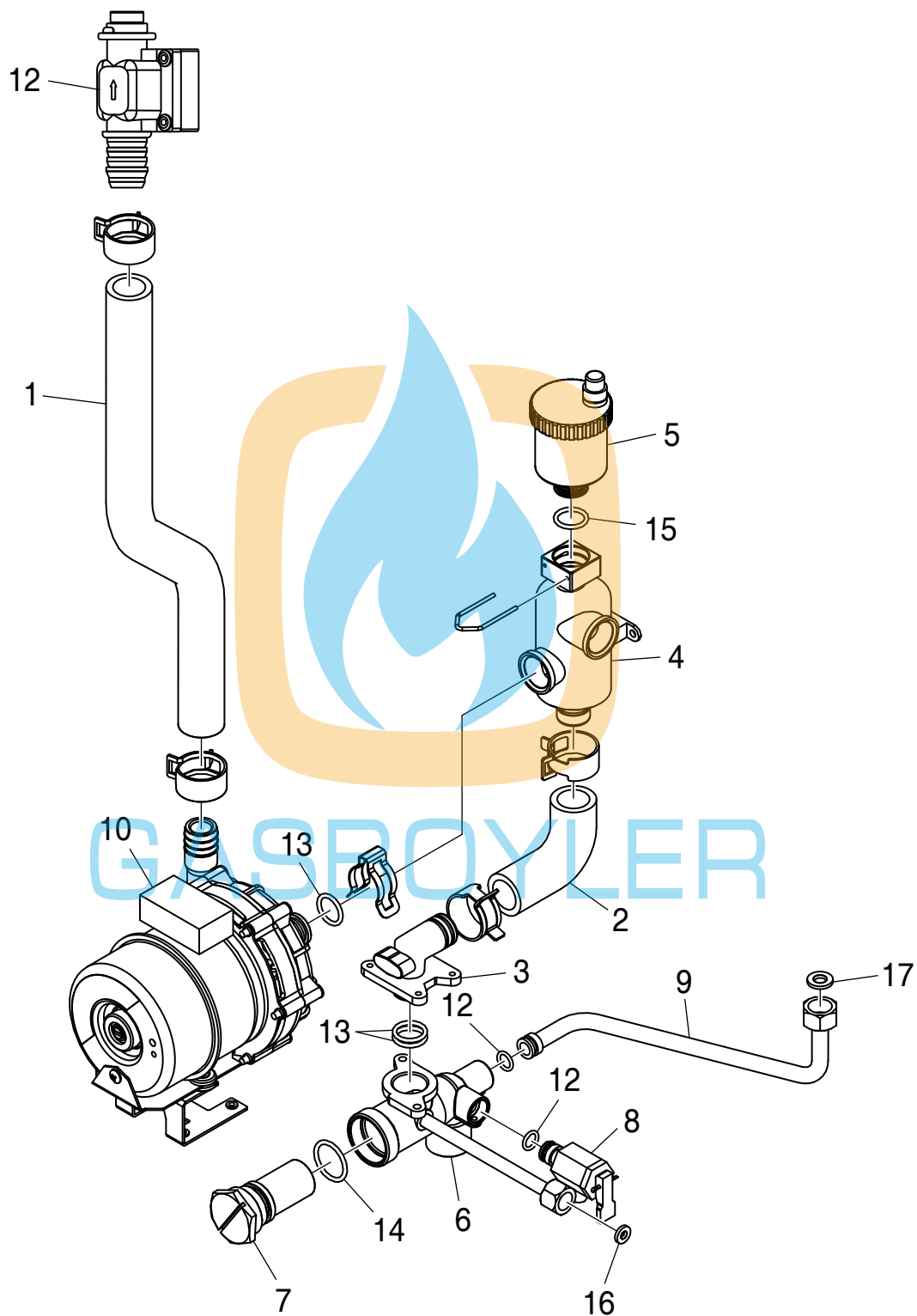
3. HOT WATER HEATING PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					350 MSC	400 MSC	
3	1	SUPPLY HOSE	3313204500	1	■	■	
3	2	HOSE NIPPLE CONNECT	3318400800	2	■	■	
3	3	FLOW SWITCH	334804000	1	■	■	
3	4	FLOW SWITCH CAP	3310901000	1	■	■	
3	5	3-WAY VALVE	3315435000	1	■	■	
3	6	REPLENISH VALVE ASSY	3315433200	1	■	■	
3	7	SAFETY WATER FLOW SWITCH	3317904900	1	■	■	20kPA (0.2bar)
3	8	SAFETY FLOW NIPPLE	3319001300	1	■	■	
3	9	CONNECT HOSE	3313206000	1	■	■	
3	10	HOT WATER HEAT EXCHANGER ASS'Y	3318112100	1	■	■	18FIN
3	11	NIPPLE H/W	3318401400	1	■	■	
3	12	HOT WATER NIPPLE LONG	3319001900	1	■	■	
3	13	SUPPLY UNION ASS'Y	3318503800	1	■	■	
3	14	UNION C/W. H/W	3318503500	1	■	■	
3	15	UNION H/W	3318501900	1	■	■	
3	16	O-RING(P-4)	3314600300	1	■	■	SILICONE
3	17	O-RING(P-10)	3314602300	2	■	■	SILICONE
3	18	O-RING(P-16)	3314601500	8	■	■	SILICONE
3	19	SENSOR TEMP HEAT- HOT- HOT	3314805A00	1	■	■	

GASBOILER

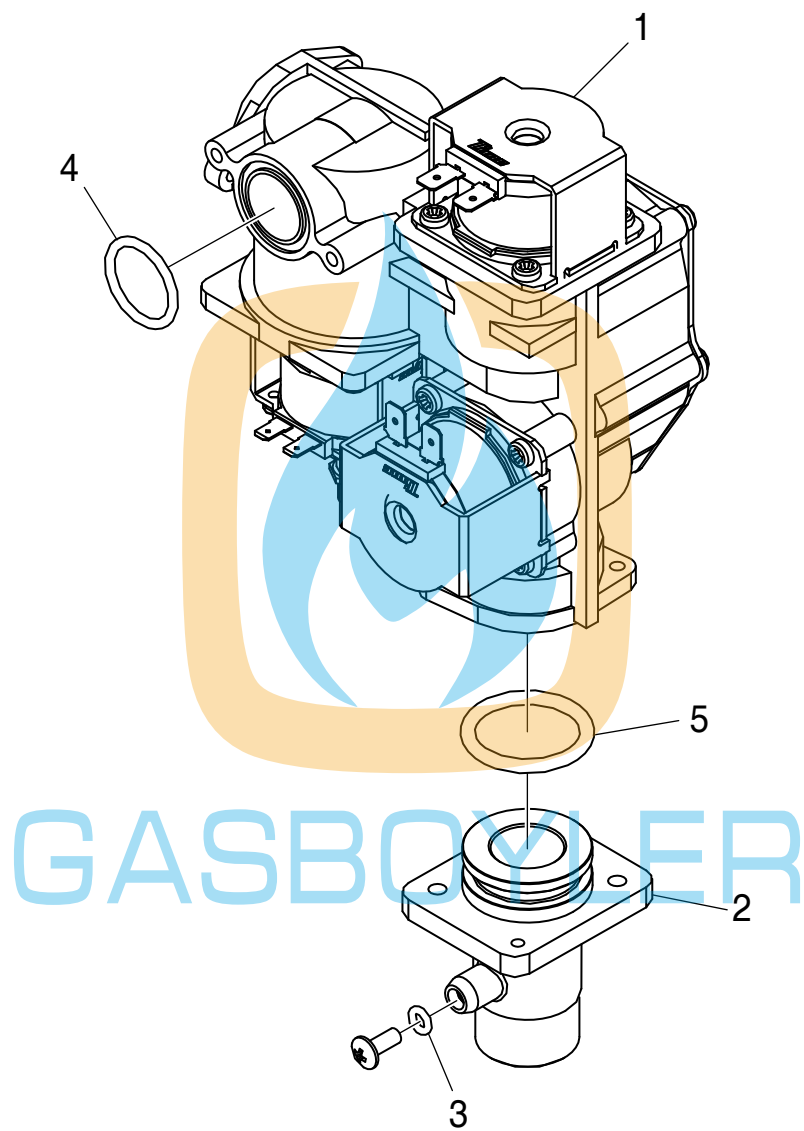
4. CIRCULATION PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					350 MSC	400 MSC	
4	1	RETURN HOSE	3313211500	1	■	■	
4	2	PUMP IN HOSE	3313204700	1	■	■	
4	3	RETURN UNION	3318503600	1	■	■	
4	4	AIR VENT BODY ASS'Y	3310401010	1	■	■	
4	5	AIR VENT ASS'Y	3310089710	1	■	■	
4	6	STRAINER BODY ASS'Y	3310401450	1	■	■	
4	7	STRAINER CAP	3318007000	1	■	■	
4	8	PRESSURE RELIEF SAFETY	3315404400	1	■	■	
4	9	EXPANSION TANK PIPE	3317421420	1	■	■	
4	10	PUMP ASS'Y	3317413700	1	■	■	
4	11	O-RING(P-4)	3314600300	1	■	■	SILICONE
4	12	O-RING(P-10)	3314602300	2	■	■	SILICONE
4	13	O-RING(P-16)	3314601500	3	■	■	SILICONE
4	14	O-RING(P-22)	3314601000	1	■	■	SILICONE
4	15	O-Ring(P-16)	3314601500	1	■	■	SILICONE
4	16	REPLENISH VALVE PACKING	3314007400	1	■	■	
4	17	EXPANSION TANK PACKING	3314007500	1	■	■	
4	18	SWITCH HEAT FLOW	3317907300	1	■	■	

GASBOYLER

5. GAS SUPPLY PART



NO		PART NAME	PART CODE	PCS	APPLIED MODEL		REMARK
					350 MSC	400 MSC	
5	1	GAS VALVE	3315431310	1	■	■	
5	2	GAS VALVE UNION	3318504300	1	■	■	
5	3	O-RING(P-4)	3314600300	1	■	■	SILICONE
5	4	O-RING(P-20)	3314602700	1	■	■	NBR
5	5	O-RING(P-26)	3314000500	1	■	■	NBR



GASBOYLER



GASBOYLER

Content

1. Gas Boiler(Specifications)
2. General Description
3. Appearance of boiler
 - 3.1 DGB-100MSC/130MSC/160MSC/200MSC
 - 3.2 DGB-250MSC/300MSC/350MSC/400MSC
 - 3.3 Installation
4. Heating & Hot Water System
 - 4.1 Heating System(DGB-100MSC/130MSC/160MSC/200MSC)
 - 4.2 Hot Water System(DGB-100MSC/130MSC/160MSC/200MSC)
 - 4.3 Heating System(DGB-250MSC/300MSC/350MSC/400MSC)
 - 4.4 Hot Water System(DGB-250MSC/300MSC/350MSC/400MSC)



GASBOYLER

1. Gas Boiler(Specifications)

Table 1.1

Model No.			Standard Type	
			DGB-100MSC	DGB-130MSC
Type			Instantaneous Gas fired boiler	
Use			Central heating/ Domestic hot water	
Gas control type			Proportional gas control system	
Heating circulation type			Hermetic tank type(Using for radiator heating system)	
Heating output(max.)			11.6kW(10,000kcal/h)	15.1kW(13,000kcal/h)
Range of Heating output			7.0kW~11.6kW	10.5kW~15.1kW
Hot water output(max.)			18.6kW(16,000kcal/h)	18.6kW(16,000kcal/h)
Range of Hot water output			7.0kW~18.6kW	10.5kW~18.6kW
Hot water supply		Increased dT75	10.7ℓ/min	
		Increased dT40	6.7ℓ/min	
Min. water pressure on hot water			20kPa(0.2bar)	
Range of gas pressure			1~2.5kPa(10~25mbar)	
Gas input(max.)	Heating	LPG	12.7kW(1.0kg/h)	16.8kW(1.33kg/h)
		LNG	12.7kW(1.14m³/h)	16.8kW(1.52m³/h)
	Hot water	LPG	21.1kW(1.67kg/h)	
		LNG	21.1kW(1.9m³/h)	
Heating efficiency			91%	91%
Power supply			AC 220V 50Hz	
Electrical input			110W	100W
Size(WxHxD)			490 x 626 x 242mm	
Weight			26Kg	27Kg
Duct diameter			Air inlet 110mm/Gas flue 80mm	
Piping	Gas		15mm	
	Water in/ Hot water out		15mm	
	Heating water in/ Heating water out		20mm	

Table 1.2

Model No.			Standard Type	
			DGB-160MSC	DGB-200MSC
Type			Instantaneous Gas fired boiler	
Use			Central heating/ Domestic hot water	
Gas control type			Proportional gas control system	
Heating circulation type			Hermetic tank type(Using for radiator heating system)	
Heating output(max.)			18.6kW(16,000kcal/h)	23.3kW(20,000kcal/h)
Range of Heating output			10.5kW~18.6kW	10.5kW~23.3kW
Hot water output(max.)			23.3kW(20,000kcal/h)	
Range of Hot water output			10.5kW~23.3kW	
Hot water supply		Increased dT25	13.3ℓ/min	
		Increased dT40	8.3ℓ/min	
Min. water pressure on hot water			20kPa(0.2bar)	
Range of gas pressure			1~2.5kPa(10~25mbar)	
Gas input(max.)	Heating	LPG	21.1kW(1.67kg/h)	26.5kW(2.1kg/h)
		LNG	21.1kW(1.9m³/h)	26.5kW(2.4m³/h)
	Hot water	LPG	26.5kW(2.1kg/h)	
		LNG	26.5kW(2.4m³/h)	
Heating efficiency			91%	91%
Power supply			AC 220V 50Hz	
Electrical input			105W	
Size(WxHxD)			490 x 626 x 242mm	
Weight			27Kg	
Duct diameter			Air inlet 110mm / Gas flue 80mm	
Piping	Gas		15mm	
	Water in/ Hot water out		15mm	
	Heating water in/ Heating water out		20mm	

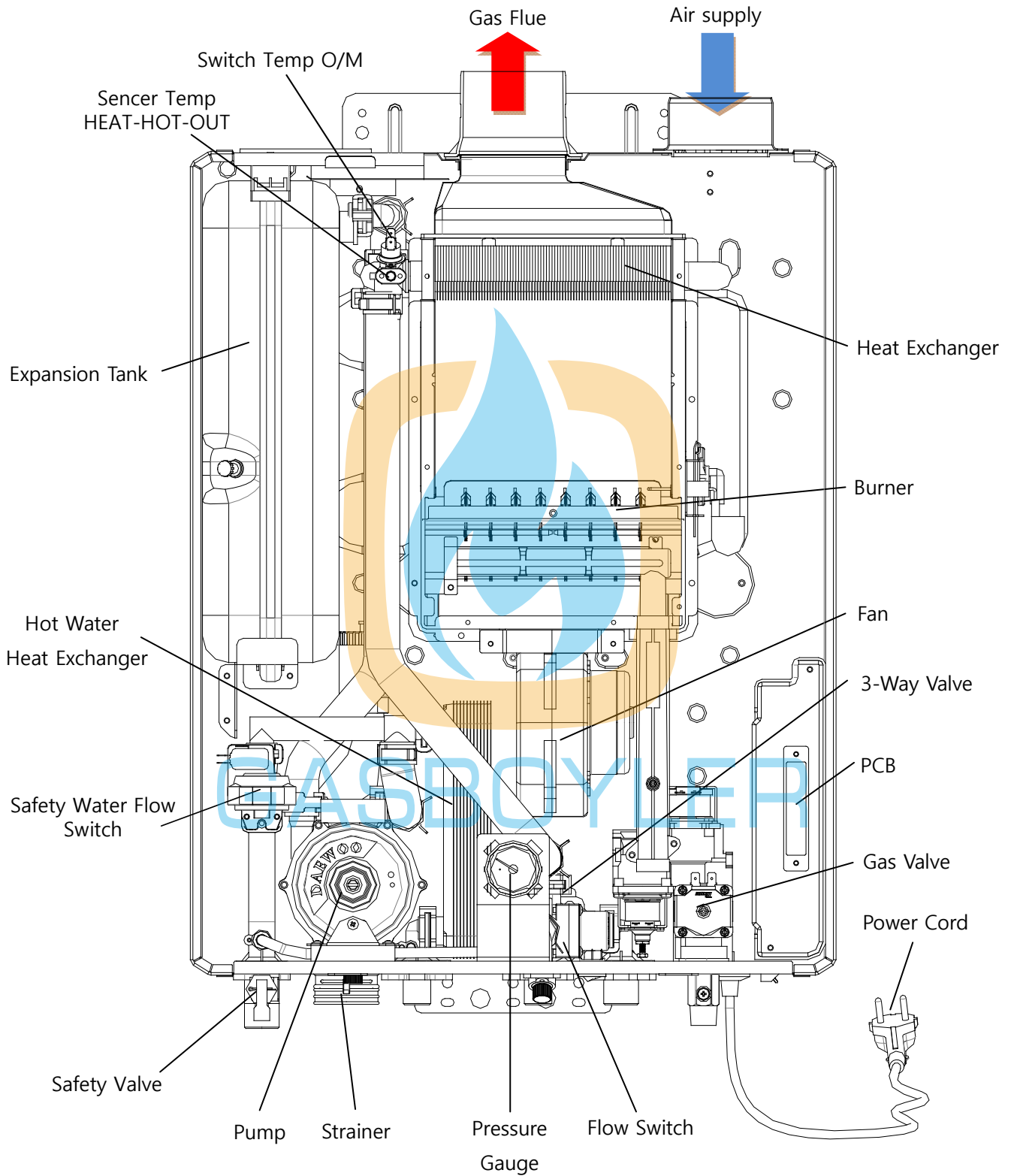
Table 1.3

Model No.			Standard Type	
			DGB-250MSC	DGB-300MSC
Type			Instantaneous Gas fired boiler	
Use			Central heating/ Domestic hot water	
Gas control type			Proportional gas control system	
Heating circulation type			Hermetic tank type(Using for radiator heating system)	
Heating output(max.)			29.1kW(25,000kcal/h)	34.9kW(30,000kcal/h)
Range of Heating output			15.1kW~29.1kW	15.1kW~34.9kW
Hot water output(max.)			29.1kW(25,000kcal/h)	34.9kW(30,000kcal/h)
Range of Hot water output			15.1kW~29.1kW	15.1kW~34.9kW
Hot water supply		Increased dT25	16.7ℓ/min	20.0ℓ/min
		Increased dT40	10.4ℓ/min	12.5ℓ/min
Min. water pressure on hot water			20kPa(0.2bar)	
Range of gas pressure			1~2.5kPa(10~25mbar)	
Gas input(max.)	Heating	LPG	32.8kW(2.6kg/h)	37.8kW(3.0kg/h)
		LNG	32.8kW(2.97m³/h)	37.8kW(3.43m³/h)
	Hot water	LPG	32.8kW(2.6kg/h)	37.8kW(3.0kg/h)
		LNG	32.8kW(2.97m³/h)	37.8kW(3.43m³/h)
Heating efficiency			91%	91%
Power supply			AC 220V 50Hz	
Electrical input			105W	110W
Size(WxHxD)			490 x 626 x 369mm	
Weight			33Kg	
Duct diameter			Air inlet 110mm / Gas flue 80mm	
Piping	Gas		20mm	
	Water in/ Hot water out		15mm	
	Heating water in/ Heating water out		20mm	

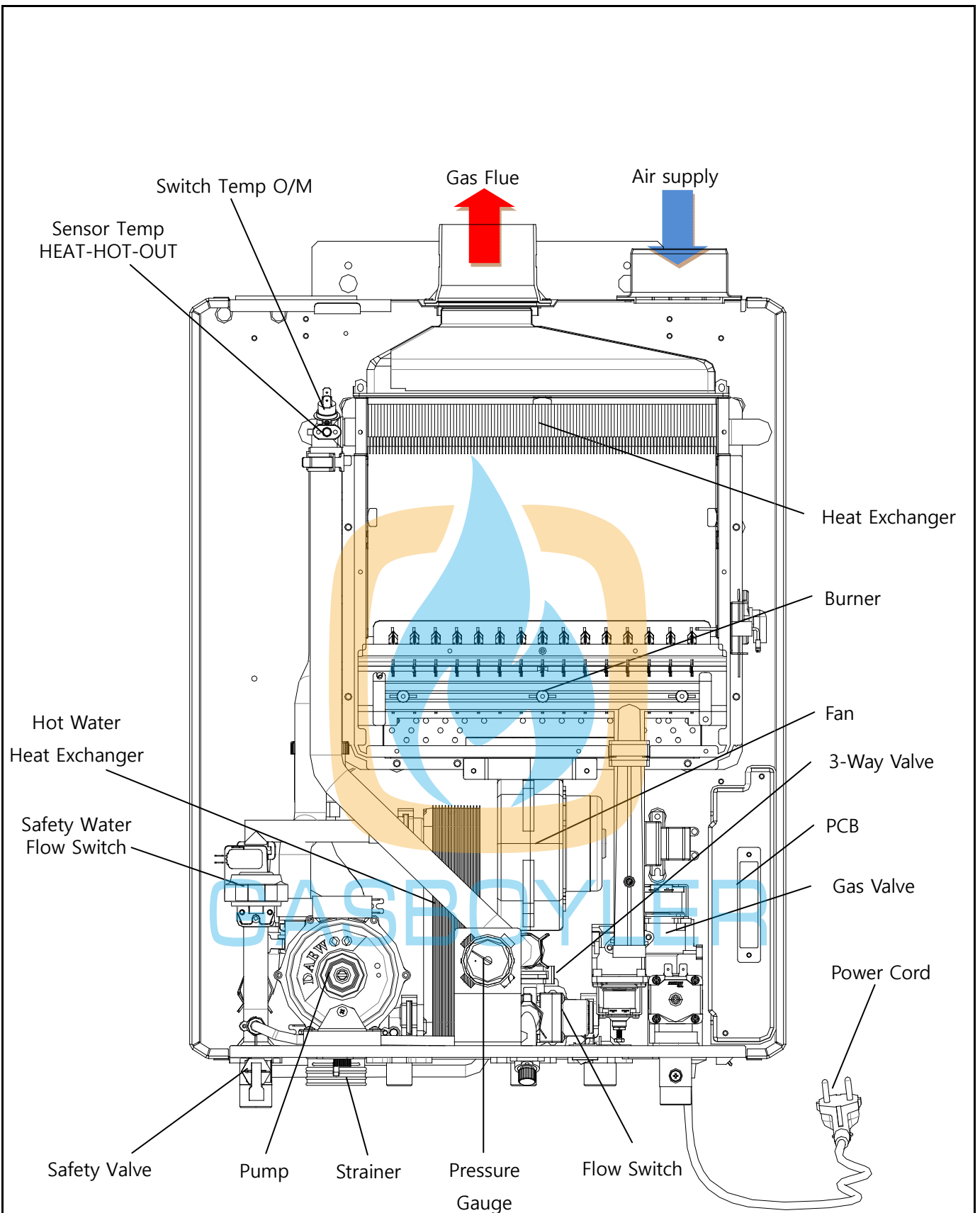
Table 1.4

Model No.			Standard Type	
			DGB-350MSC	DGB-400MSC
Type			Instantaneous Gas fired boiler	
Use			Central heating/ Domestic hot water	
Gas control type			Proportional gas control system	
Heating circulation type			Hermetic tank type(Using for radiator heating system)	
Heating output(max.)			40.7kW(35,000kcal/h)	46.5kW(40,000kcal/h)
Range of Heating output			16.9kW~40.7kW	16.9kW~46.5kW
Hot water output(max.)			40.7kW(35,000kcal/h)	46.5kW(40,000kcal/h)
Range of Hot water output			16.9kW~40.7kW	16.9kW~46.5kW
Hot water supply		Increased dT25	23.3ℓ/min	26.7ℓ/min
		Increased dT40	14.6ℓ/min	16.7ℓ/min
Min. water pressure on hot water			20kPa(0.2bar)	
Range of gas pressure			1~2.5kPa(10~25mbar)	
Gas input(max.)	Heating	LPG	41.8kW(3.3kg/h)	46.7kW(3.7kg/h)
		LNG	42.0kW(3.76m³/h)	46.7kW(4.23m³/h)
	Hot water	LPG	41.8kW(3.3kg/h)	46.7kW(3.7kg/h)
		LNG	42.0kW(3.76m³/h)	46.7kW(4.23m³/h)
Heating efficiency			91%	91%
Power supply			AC 220V 50Hz	
Electrical input			130W	140W
Size(WxHxD)			490 x 626 x 369mm	
Weight			35Kg	
Duct diameter			Air inlet 110mm / Gas flue 80mm	
Piping	Gas		20mm	
	Water in/ Hot water out		15mm	
	Heating water in/ Heating water out		20mm	

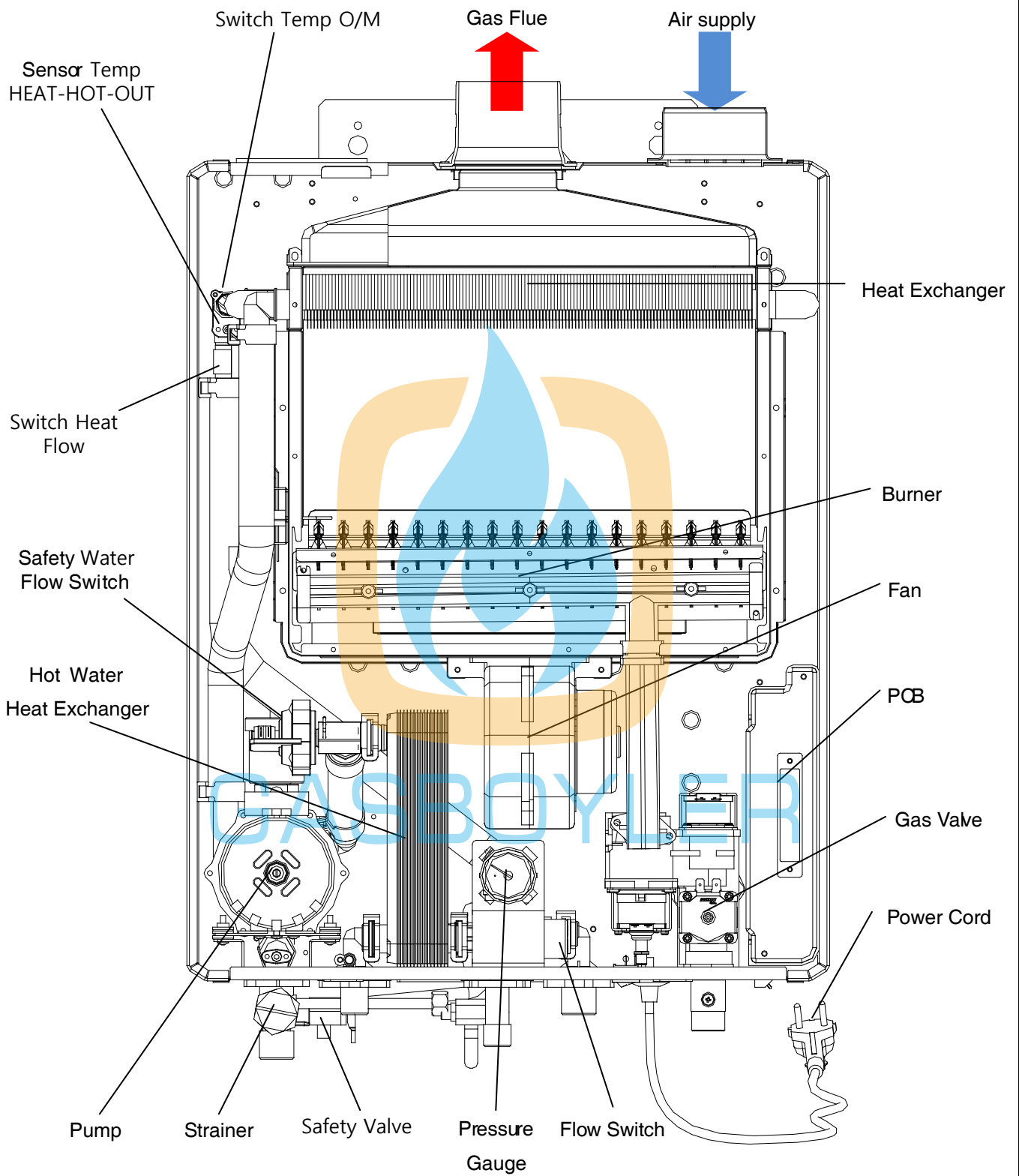
2. General Description



Pic. 2.1 DGB-100MSC/130MSC/160MSC/200MSC



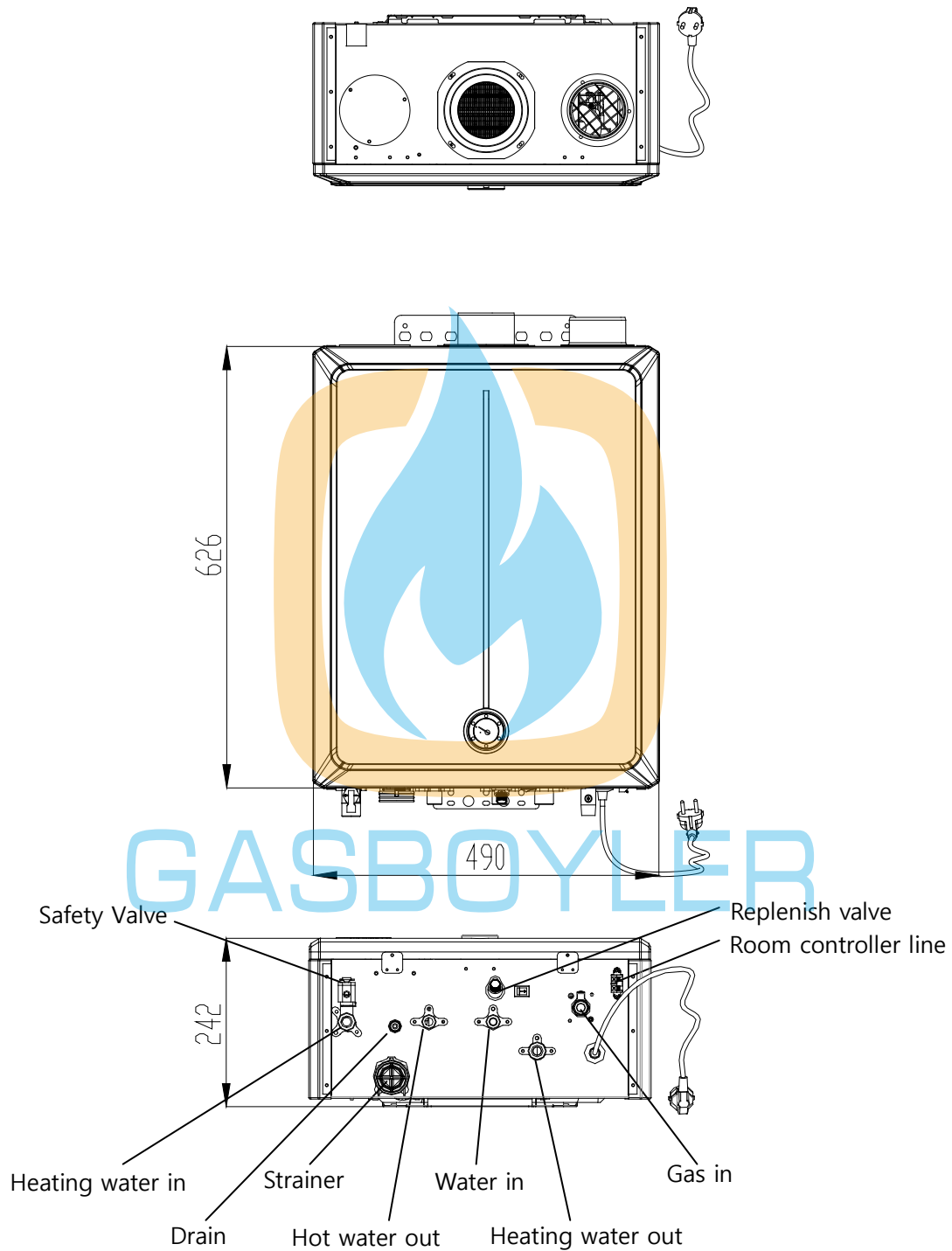
Pic. 2.2 DGB-250MSC/300MSC



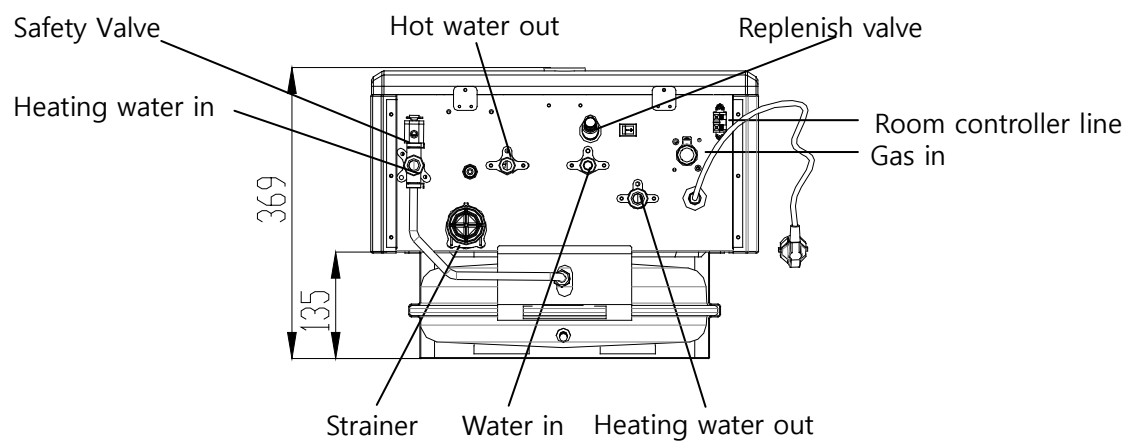
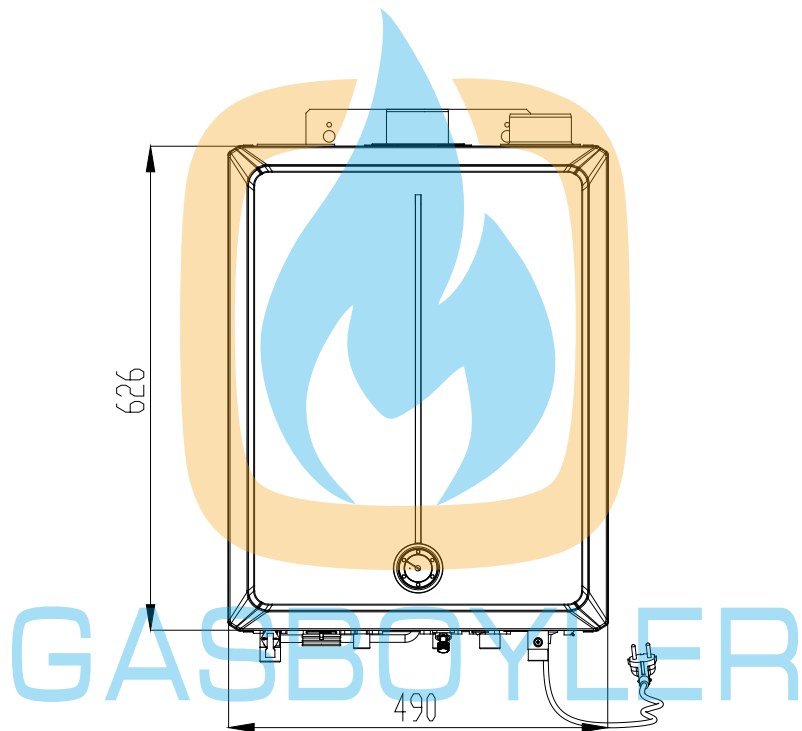
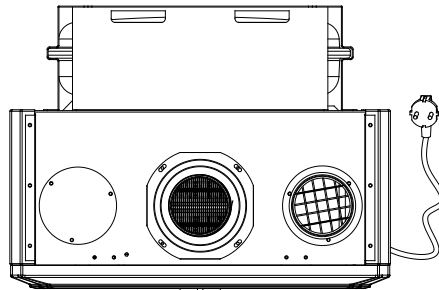
Pic. 2.3 DGB-350MSC/400MSC

3. Appearance of boiler

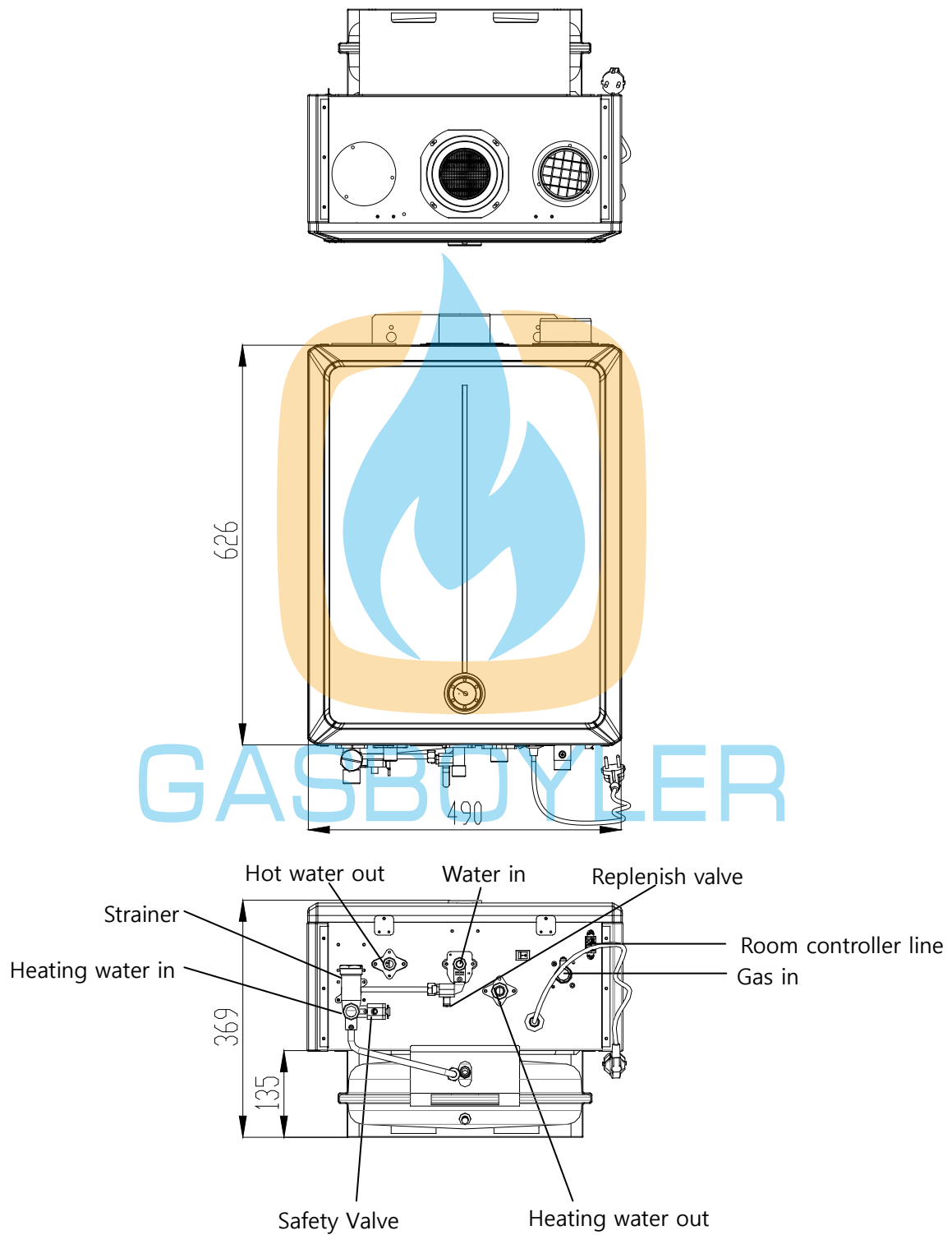
3.1. Model : DGB-100MSC/130MSC/160MSC/200MSC



3.2. Model : DGB-250MSC/300MSC



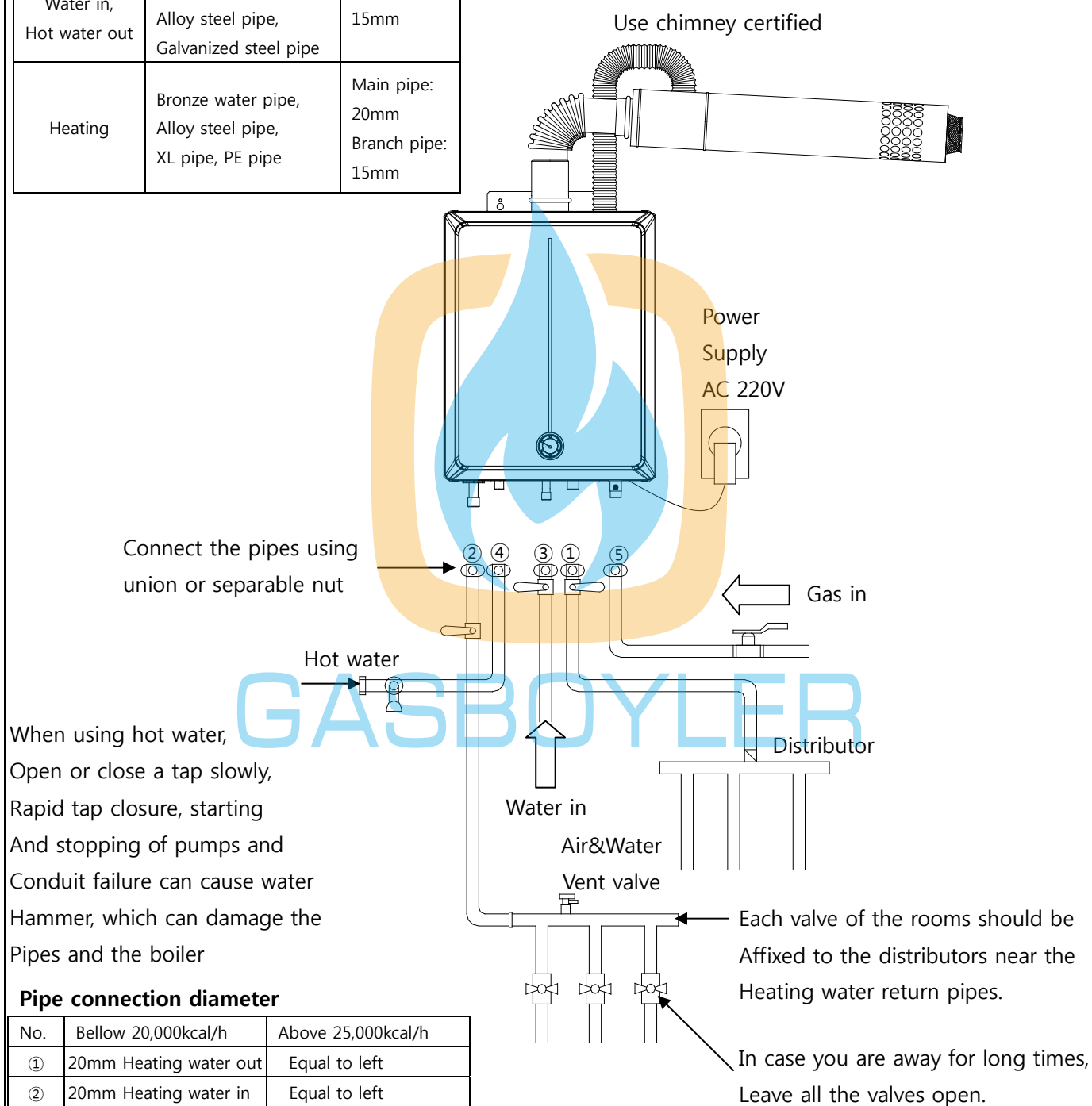
3.3. Model : DGB-350MSC/400MSC



3.4 Installation

Components & Size

Sort	Components	Size
Gas	Metal pipes, Gasware, Metal flexible hose tested & certified	15mm, 20mm
Water in, Hot water out	Bronze water pipe, Alloy steel pipe, Galvanized steel pipe	15mm
Heating	Bronze water pipe, Alloy steel pipe, XL pipe, PE pipe	Main pipe: 20mm Branch pipe: 15mm

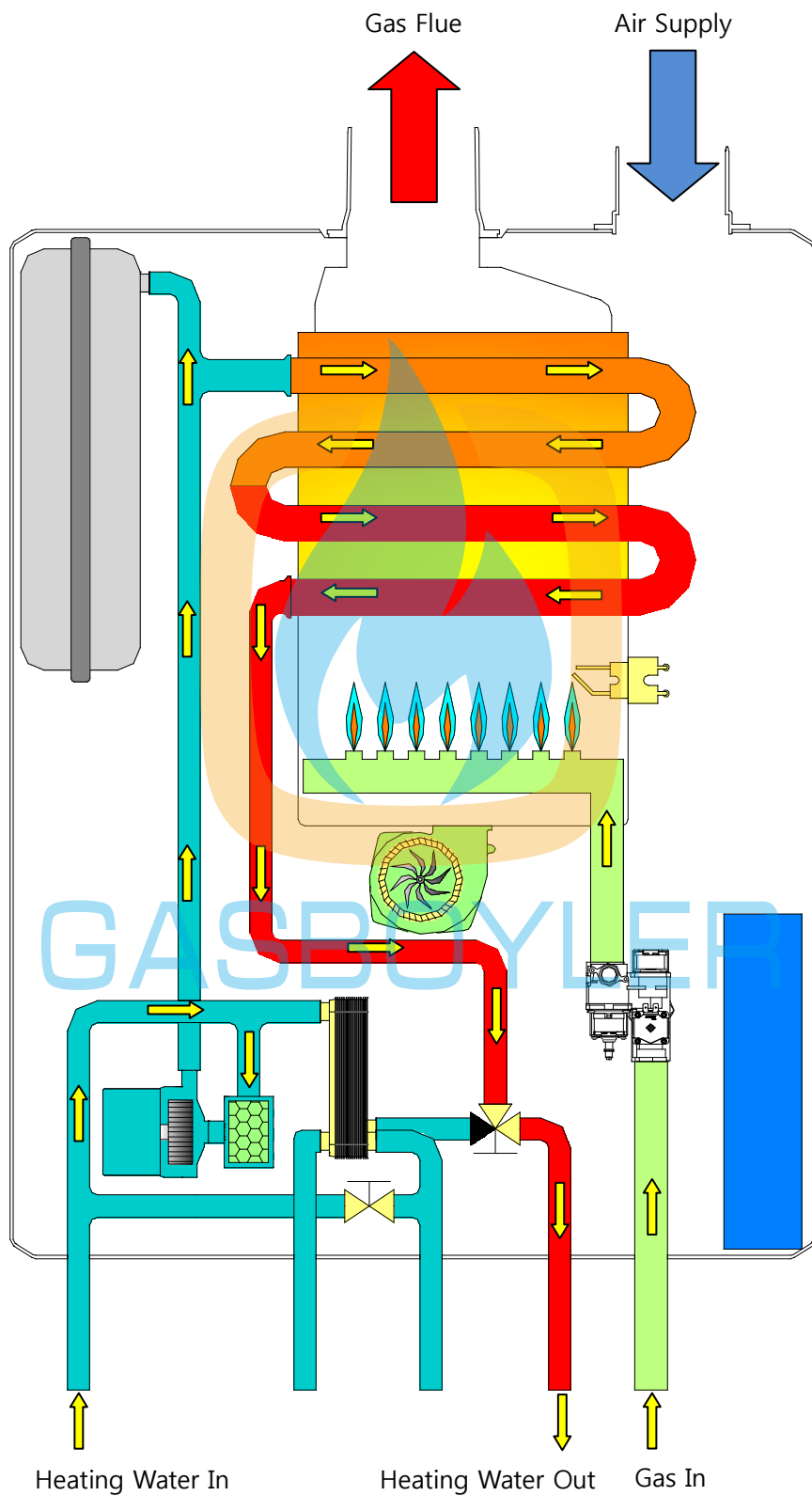


Pipe connection diameter

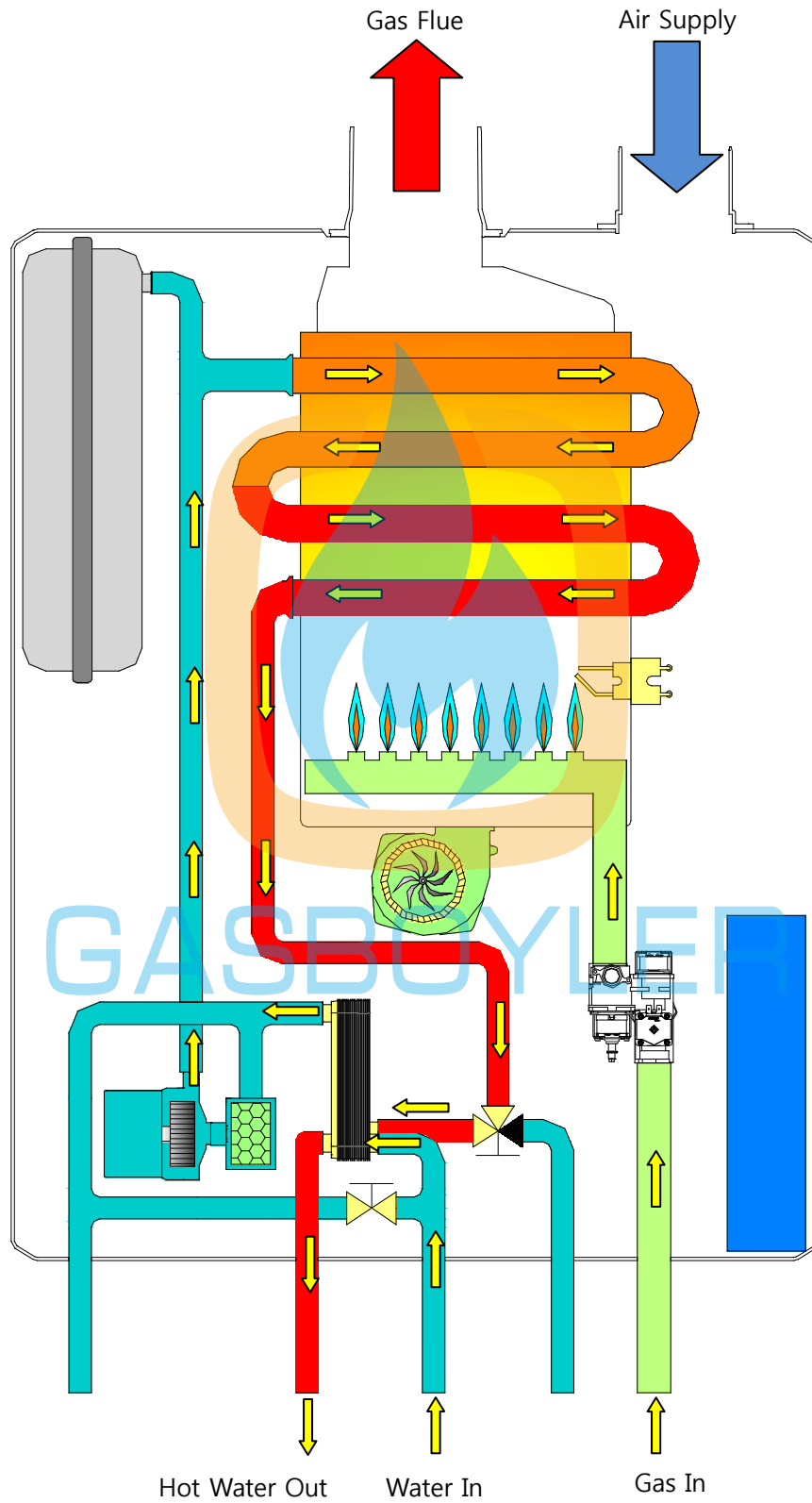
No.	Bellow 20,000kcal/h	Above 25,000kcal/h
①	20mm Heating water out	Equal to left
②	20mm Heating water in	Equal to left
③	15mm Water in	Equal to left
④	15mm Hot water out	Equal to left
⑤	15mm Gas in	20mm Gas in

4. Heating & Hot Water System

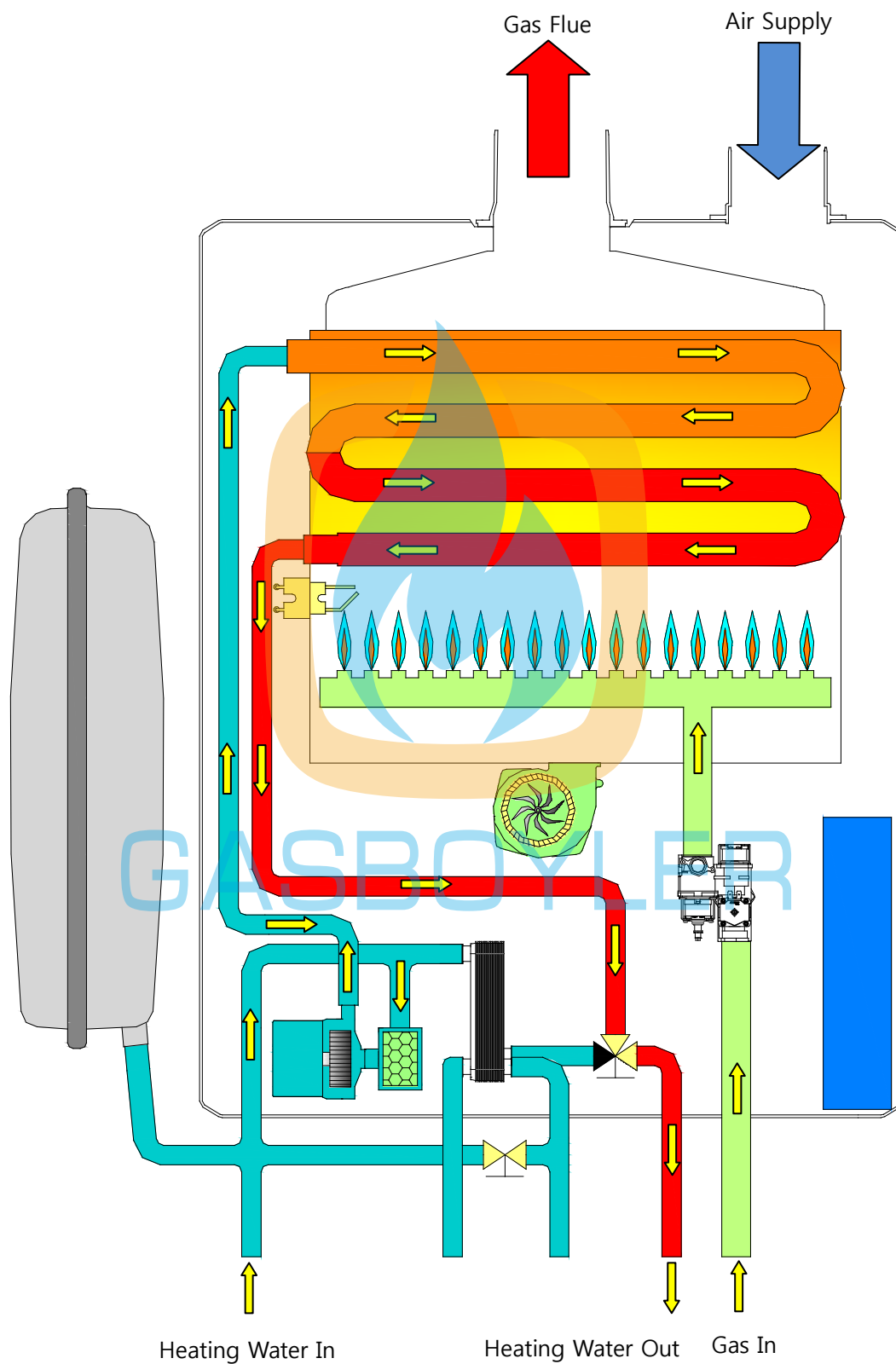
4.1. Heating System(Model : DGB-100MSC/130MSC/160MSC/200MSC)



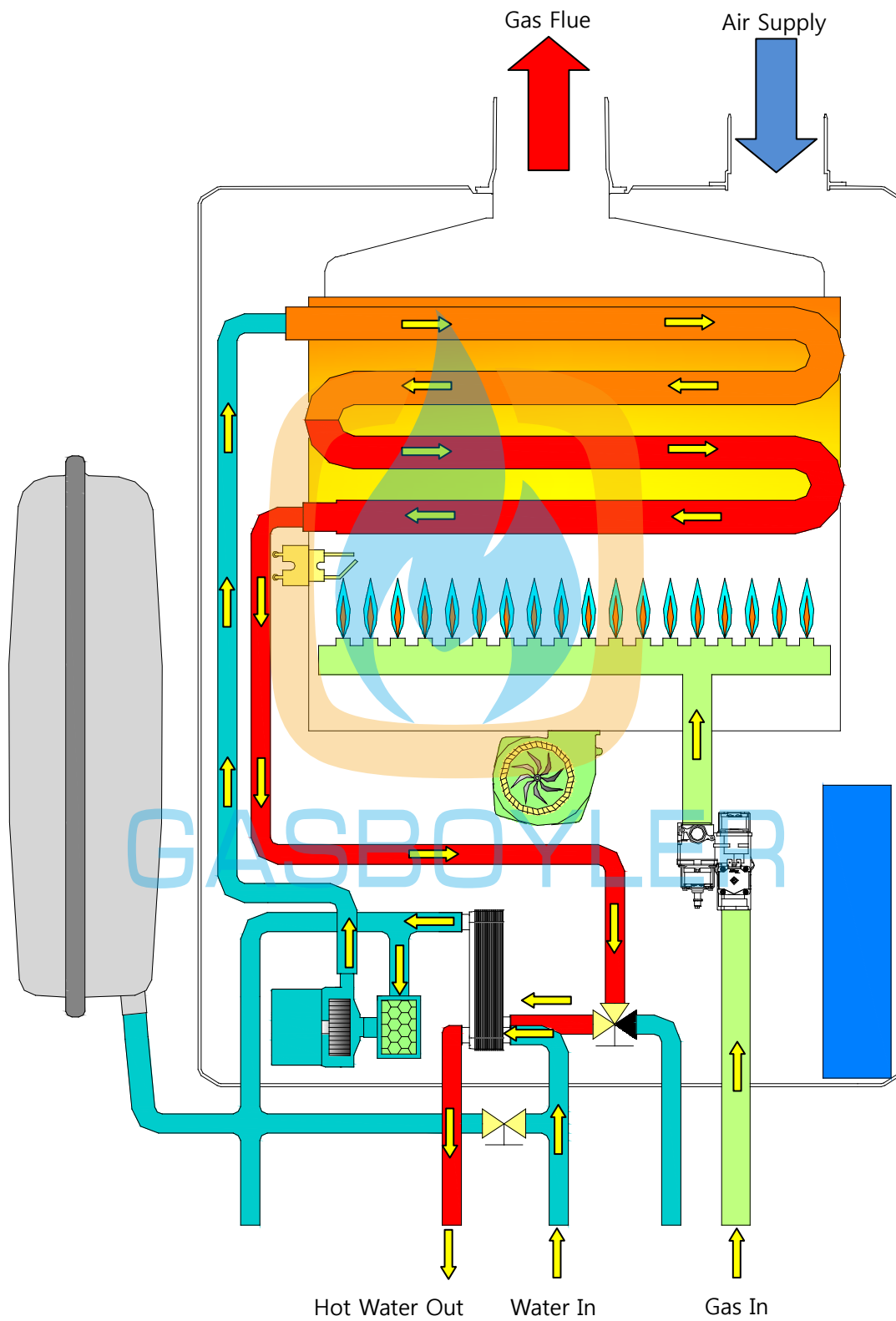
4.2. Hot Water System(Model : DGB-100MSC/130MSC/160MSC/200MSC)



4.3. Heating System(Model : DGB-250MSC/300MSC/350MSC/400MSC)

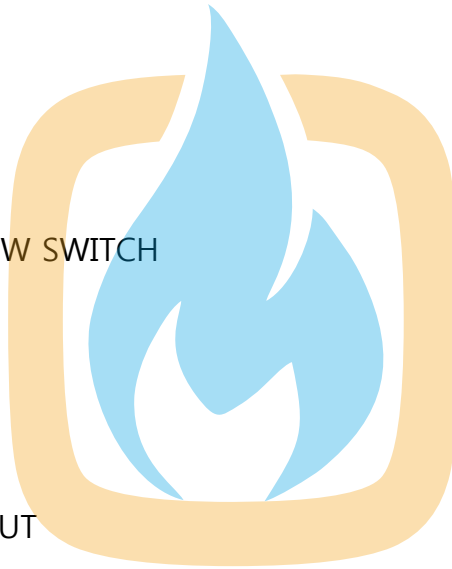


4.4. Hot Water System(Model : DGB-250MSC/300MSC/350MSC/400MSC)



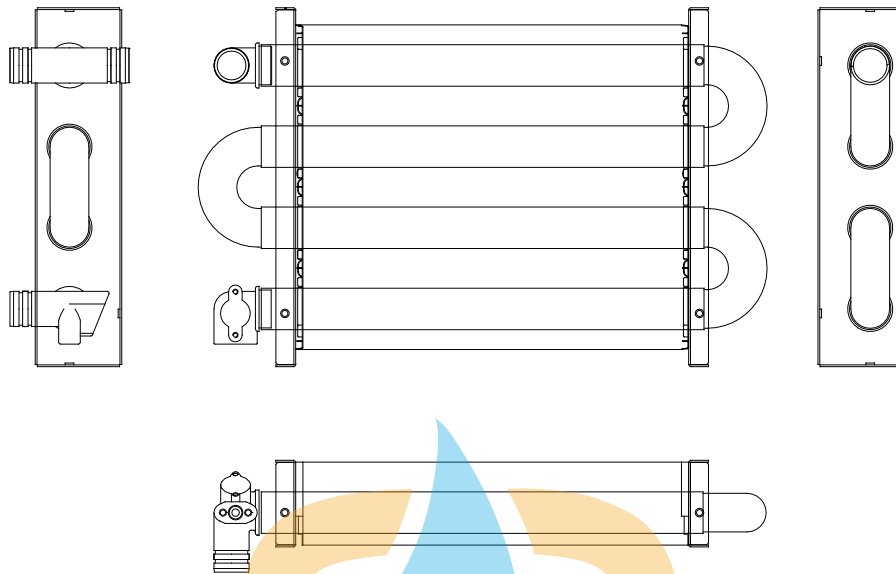
MAIN PARTS

1. MAIN HEAT EXCHANGER ASS'Y
2. HOT WATER HEAT EXCHANER ASS'Y
3. BURNER ASS'Y
4. MANIFOLD ASS'Y
5. FAN
6. PUMP
7. GAS VALVE
8. 3-WAY VALVE
9. SAFETY VALVE
10. SAFETY WATER FLOW SWITCH
11. FLOW SWITCH
12. SWITCH TEMP O/M
13. IGNITOR TRANS
14. FLAME SENSOR
15. TEMP HEAT-HOT-OUT
16. EXPANSION TANK
17. CHIMNEY
18. SWITCH HEAT FLOW



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1. MAIN HEAT-EXCHANGER ASS'Y

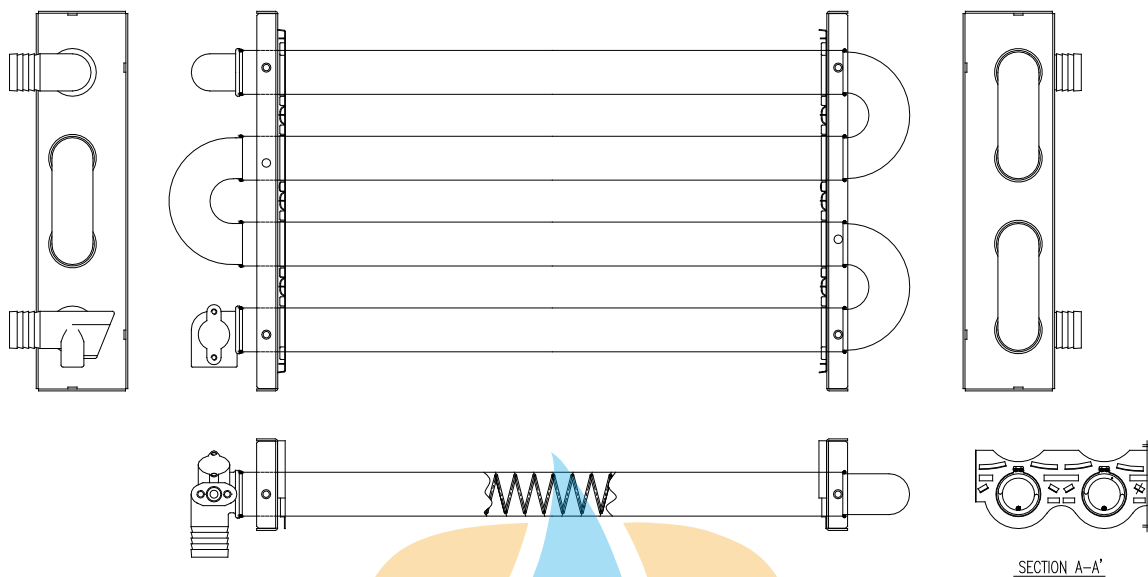


Pic 1.1

Table 1.1

Bolier Model	100MSC	130/160/200MSC
FIN Q'TY	67	85
Material	FIN : C1220R PIPE : C1220T	
PART CODE	3318111100	3318108610

GASBOYLER

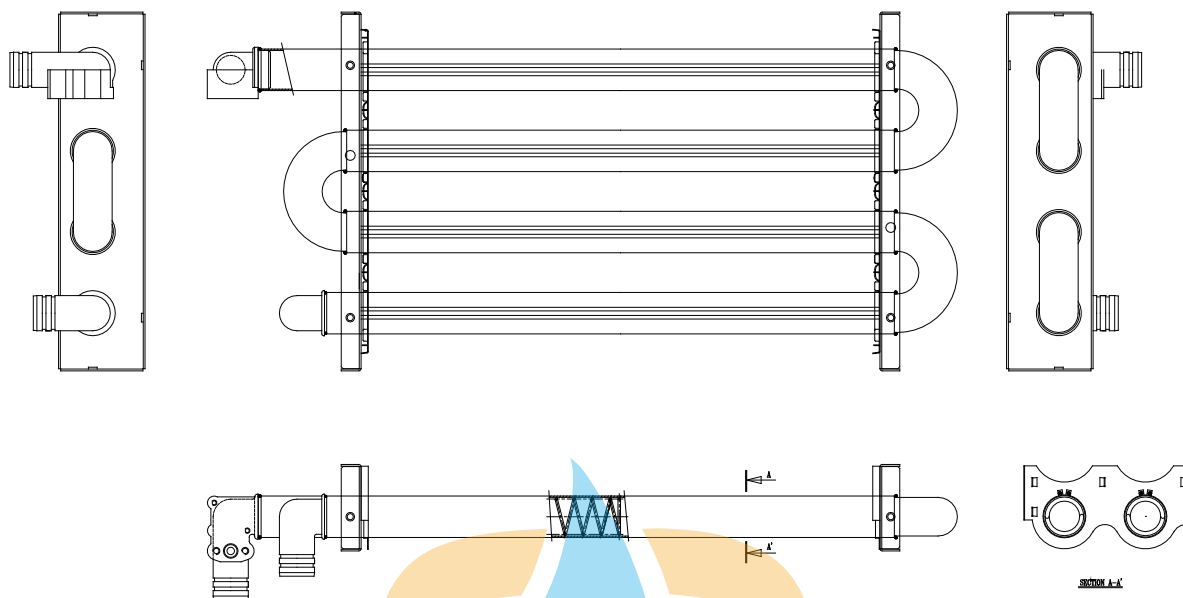


Pic 1.2

Table 1.2

Bolier Model	250/300MSC
FIN Q'TY	122
Material	FIN : C1220P PIPE : C1220T
PART CODE	3318112200

GASBOYLER



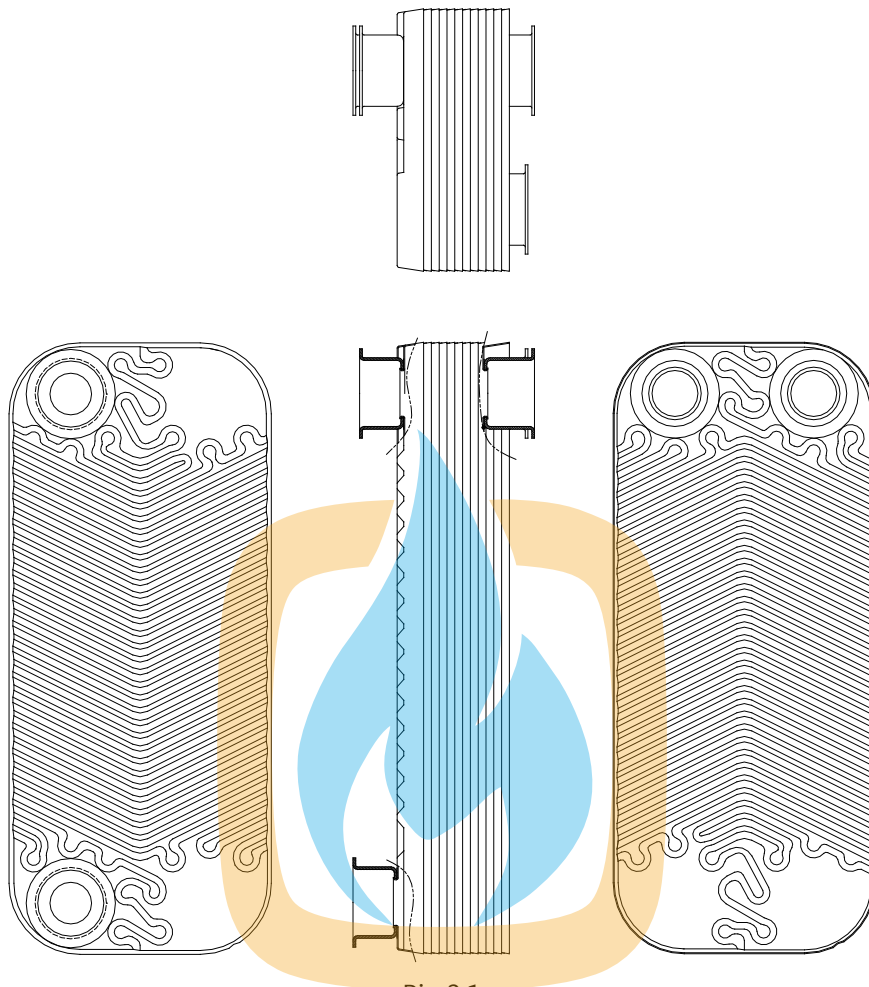
Pic 1.3

Table 1.3

Bolier Model	350/400MSC
FIN Q'TY	147
Material	FIN : C1220R PIPE : C1220T
PART CODE	3318113010

GASBOYLER

2. HOT WATER HEAT EXCHANGER ASS'Y

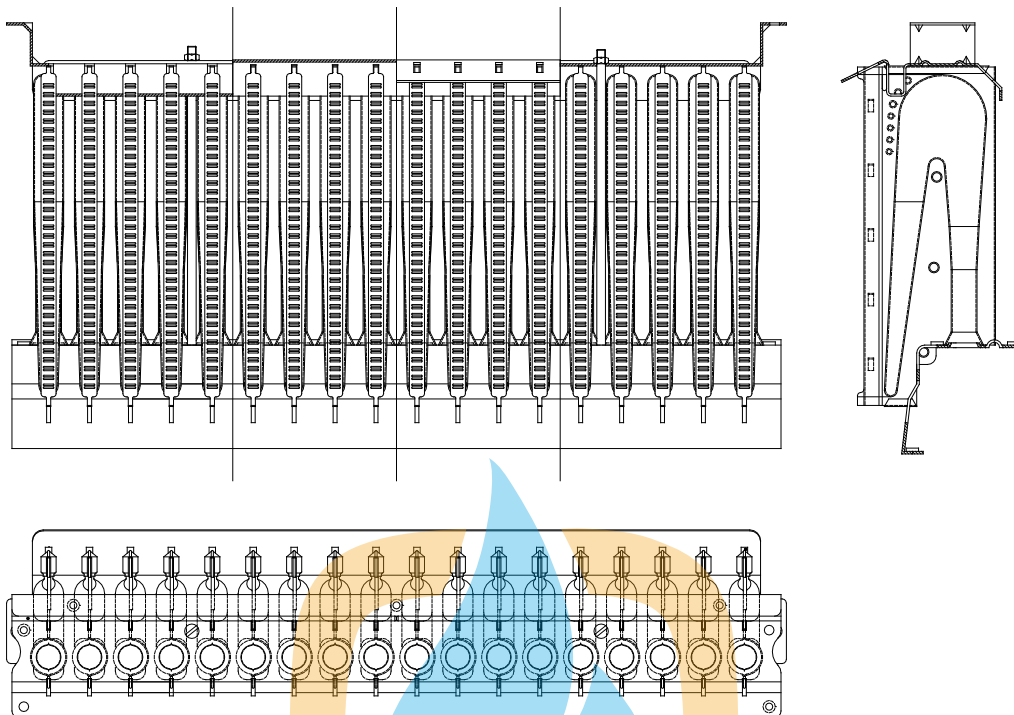


Pic 2.1

Table 2.1

Bolier Model	100/130/160/200MSC	250/300MSC	350/400MSC
FIN Q'TY	12	16	18
Material	STS304		
PART CODE	3318112300	3318112400	3318112100

3. BURNER WHOLE ASS'Y

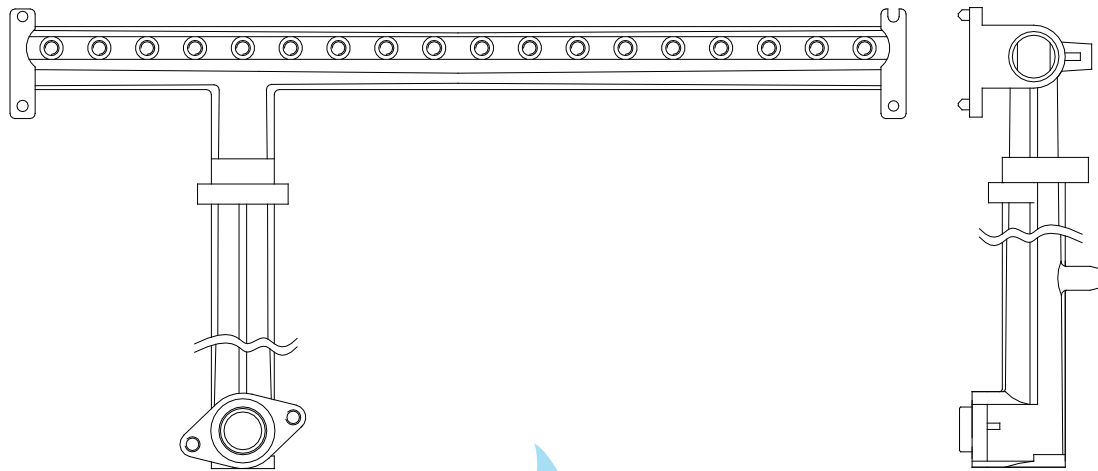


Pic 3.1

Table 3.1

Bolier Model	100MSC	130/160/200MSC	250/300MSC	350/400MSC
FIN Q'TY	6	8	15	18
Material	BURNER FIN : SA1D 40 BURNER COVER : STS304 FRONT PLATE : SBHAZ-1 REAR PALTE : SBHAZ-1			
PART CODE	3316124300	33161110100	3316123700	3316124600

4. MANIFOLD ASS'Y



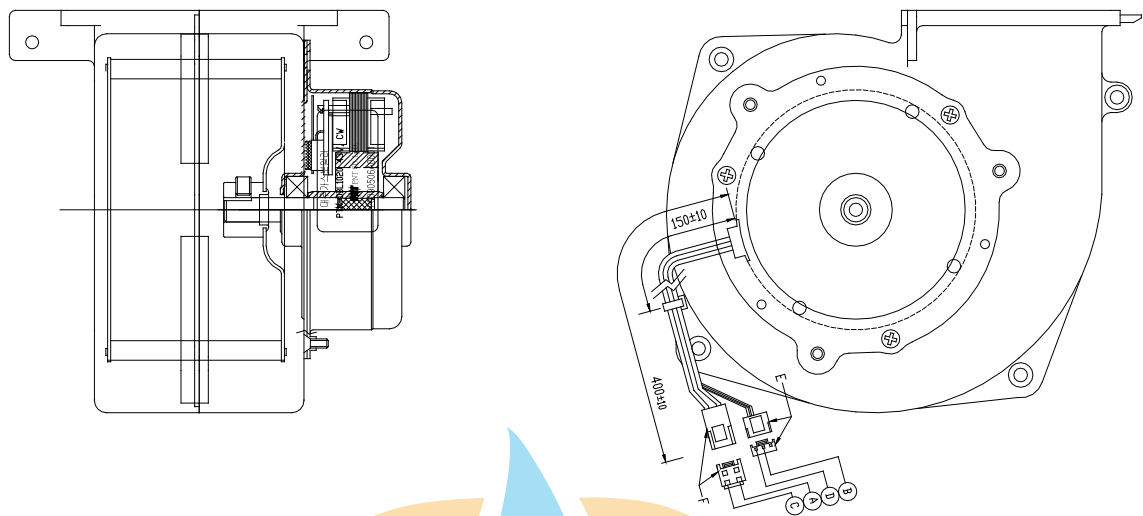
Pic 4.1

Table 4.1

Bolier Model		100MSC	130/160/200MSC	250/300MSC	350/400MSC
Nozzle Q'TY		6	8	15	18
NOZZLE Material		C3604BD			
MANIFOLD Material		ALDC12			
NOZZLE	LNG	Φ1.76	Φ1.76	Φ1.55	Φ1.55
	LPG	Φ1.12	Φ1.12	Φ1.10	Φ1.10
PART CODE		3316124200	3316110400	3316109500	3318300600

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5. FAN

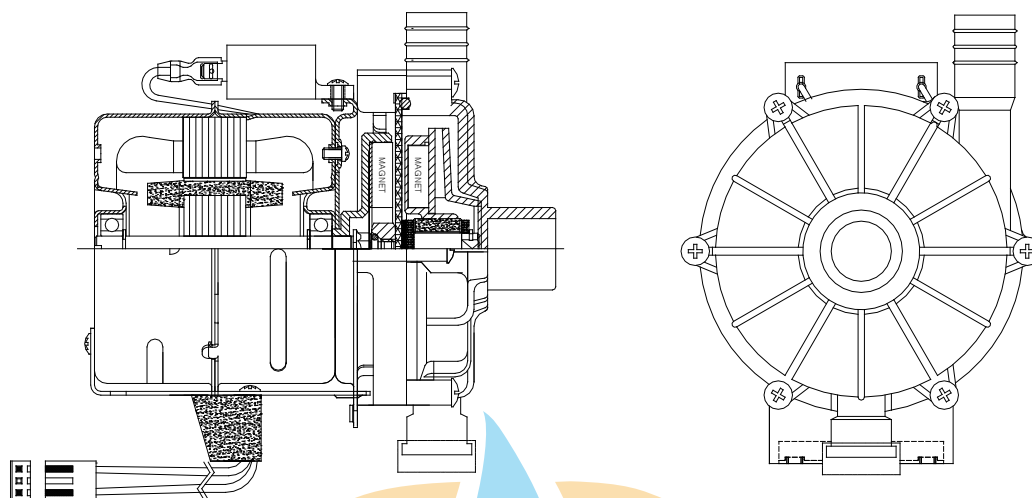


Pic 5.1

Table 5.1

Bolier Model	100/130/160/200/250/300MSC	350/400MSC
FAN Model no.	DF300	DF400
Voltage	DC43V	
R . P . M .	3466±200ppm	
Starting voltage	Less than DC5V	
Electric current	Less than DC2A	
R . P . M . (at closed)	5110±200ppm	
PART CODE	3311852201	3311852300

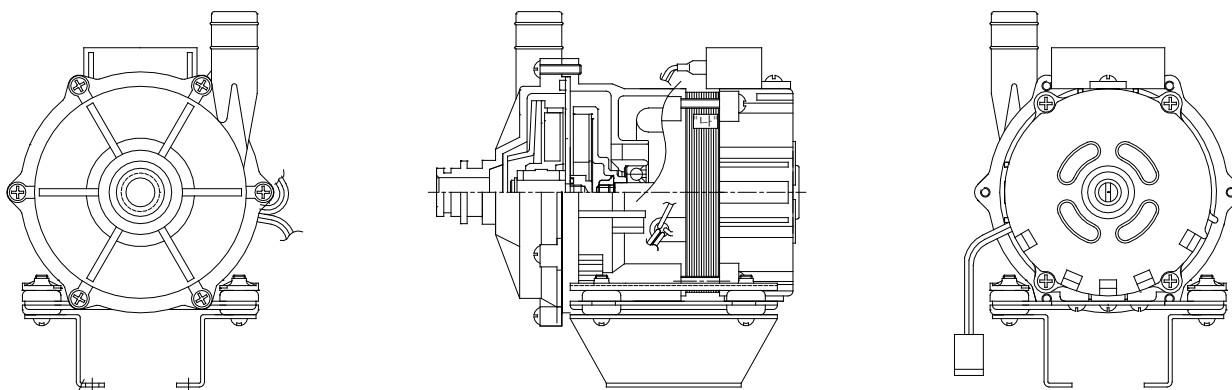
6. PUMP



Pic 6.1

Table 6.1

Bolier Model	100/130/160/200/250/300MSC
Pump model no.	DWMG5070PL
Voltage	AC 220V 50Hz
Electrical Input	80W
Flow rate (max.)	30 l/min
Head (max.)	7m
PART CODE	3317418700



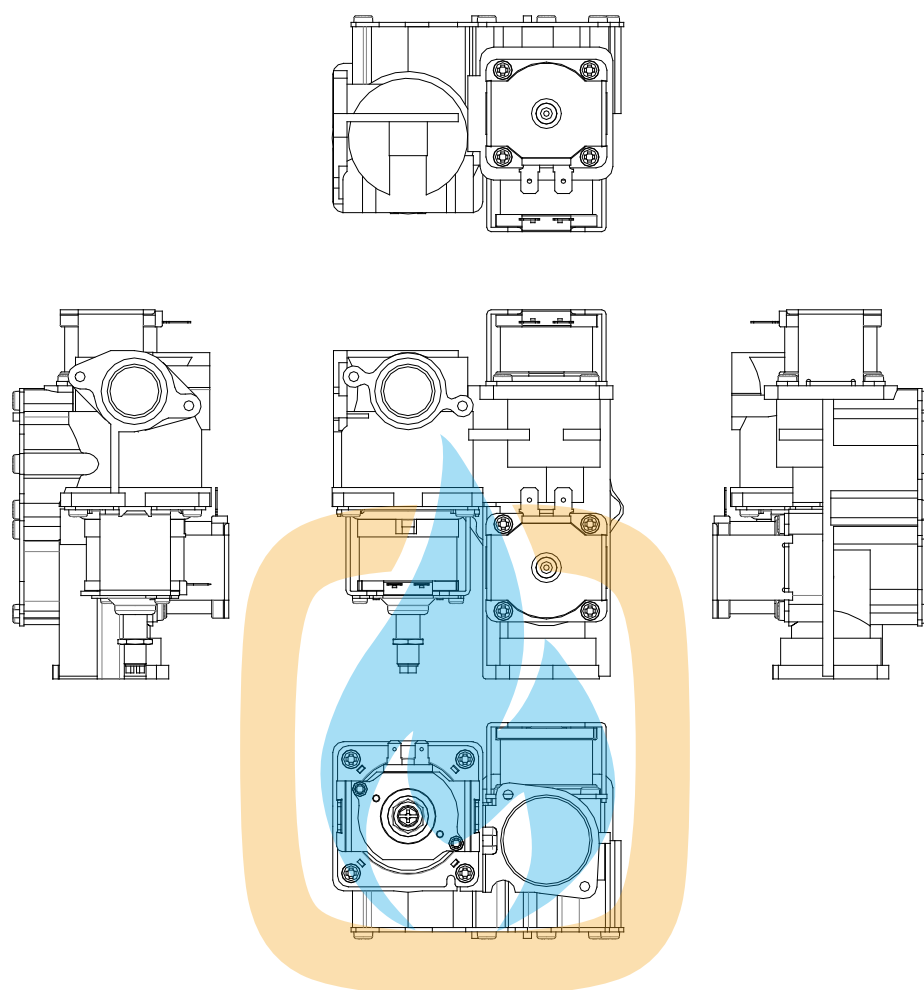
Pic 6.2

Table 6.2

Bolier Model	350/400MSC
Pump model no.	DWMG-5100PL
Voltage	AC 220V 50Hz
Electrical Input	94W
Flow rate (max.)	25 l/min
Head (max.)	10m
PART CODE	3317421420

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7. GAS VALVE



Pic 7.1

Table 7.1

Bolier Model	100/130/160/200/250/300MSC	350/400MSC
Gas Valve Model No.	GRV301	TK33A201
Voltage	DC200V	
Applied Gas	LNG, LPG	
Using gas pressure	Less than 5 kPa	Less than 4.9 kPa
Gas resisting pressure(max.)	10 kPa	9.8 kPa
Coil resistance	75Ω±10%	79Ω±10%
Permissible temperature	-20~60℃	
PART CODE	3315434700	3315435310

8. 3-WAY VALVE

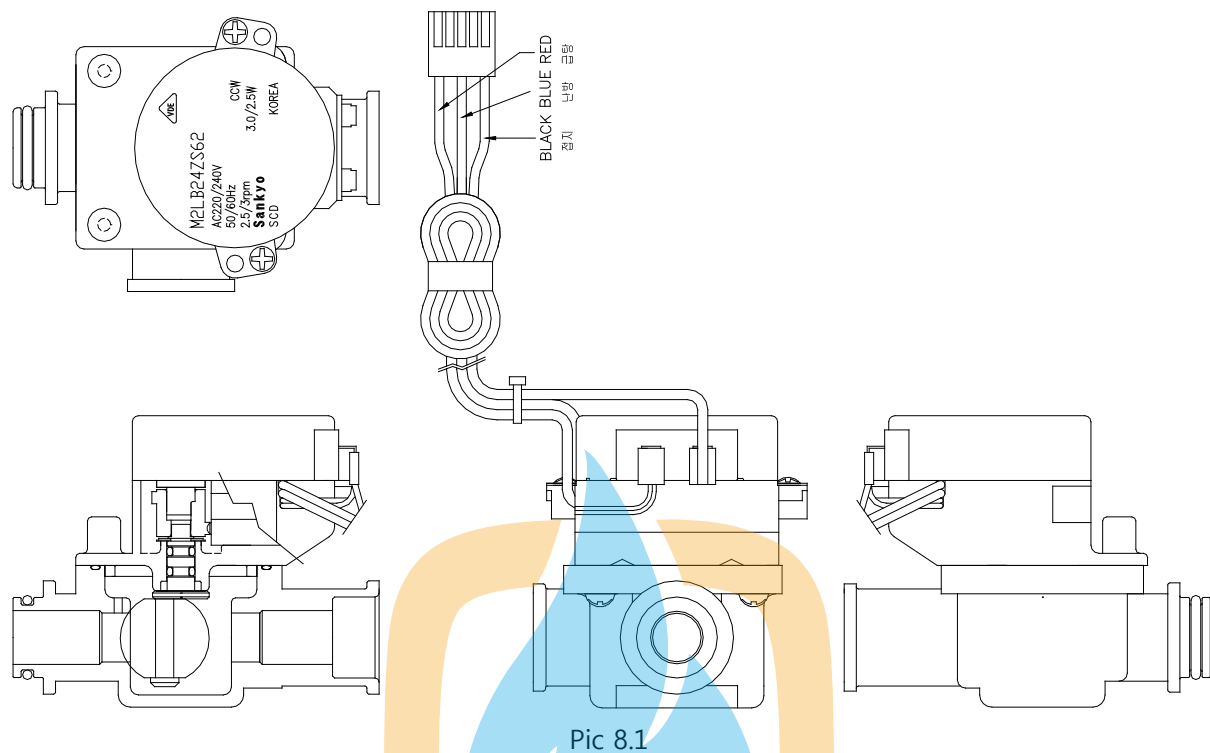
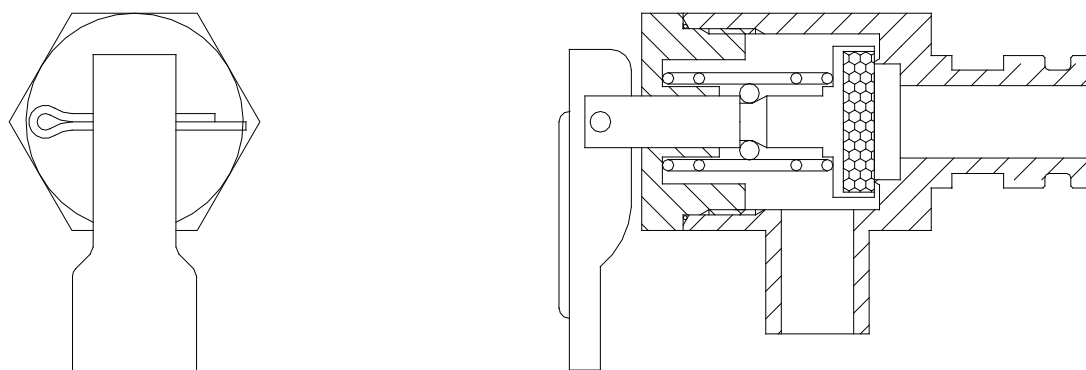


Table 8.1

Bolier Model	100/130/160/200/250/300/350/400MSC
Voltage	AC 220V 60Hz
Power input	Less than 3.0W
Pressure (max.)	5kgf/cm ²
Permissible temperature	1~95°C
PART CODE	3315435000

9. SAFETY VALVE



Pic. 9.1

Table. 9.1

Boiler Model	100/130/160/200/250/300/350/400MSC
Pressure resistance	4.5 kgf/cm ² or higher
Opening pressure	2.7~3.0 kgf/cm ²
Stop pressure	Less than opening pressure – 0.5 kgf/cm ²
Thermal resistance	120°C
RART CODE	3315404400

GASBOYLER

10. SAFETY WATER FLOW SWITCH

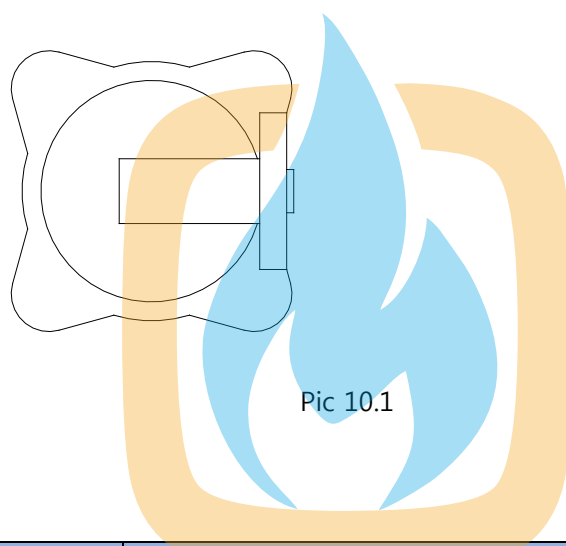
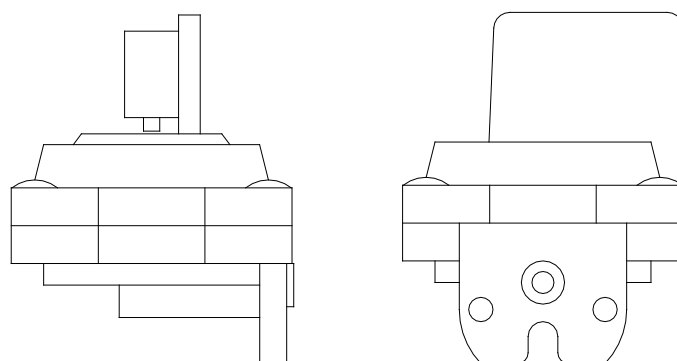
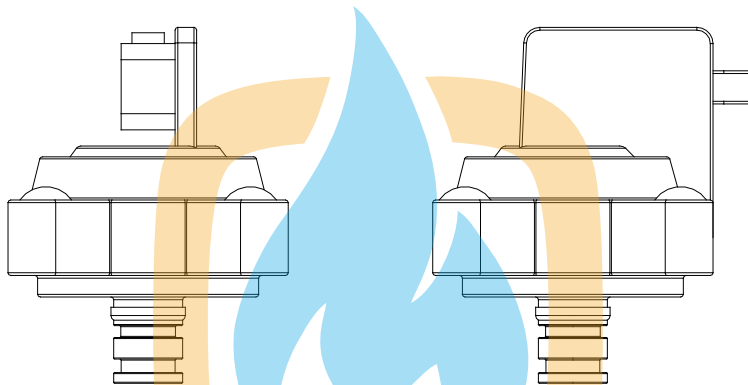
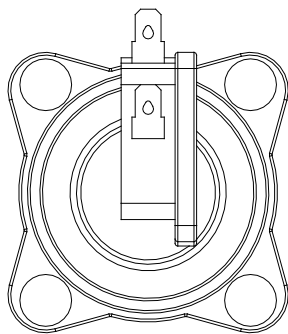


Table 10.1

Bolier Model	100/130/160/200/250/300MSC
Type	Pressure Sensing
Operating pressure	ON point $0.2 \pm 0.05 \text{ kgf/cm}^2$
Sealing test	No leak apply air with 6.0 kgf/cm^2 for 2minutes.
PART CODE	3317905000

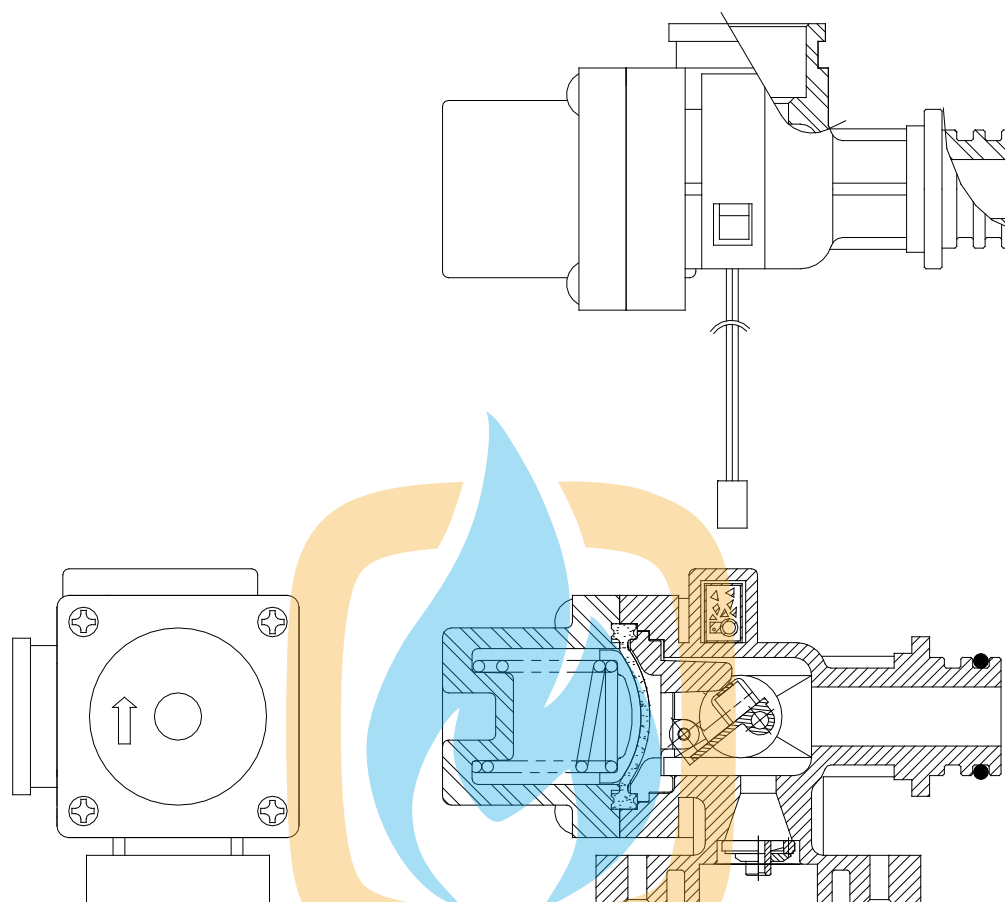


Pic 10.2

Table 10.2

Bolier Model	350/400MSC
Type	Pressure Sensing
Operating pressure	ON point $0.2 \pm 0.05 \text{ kgf/cm}^2$
Sealing test	No leak apply air with 6.0 kgf/cm^2 for 2minuites
PART CODE	3317904900

11. FLOW SWITCH

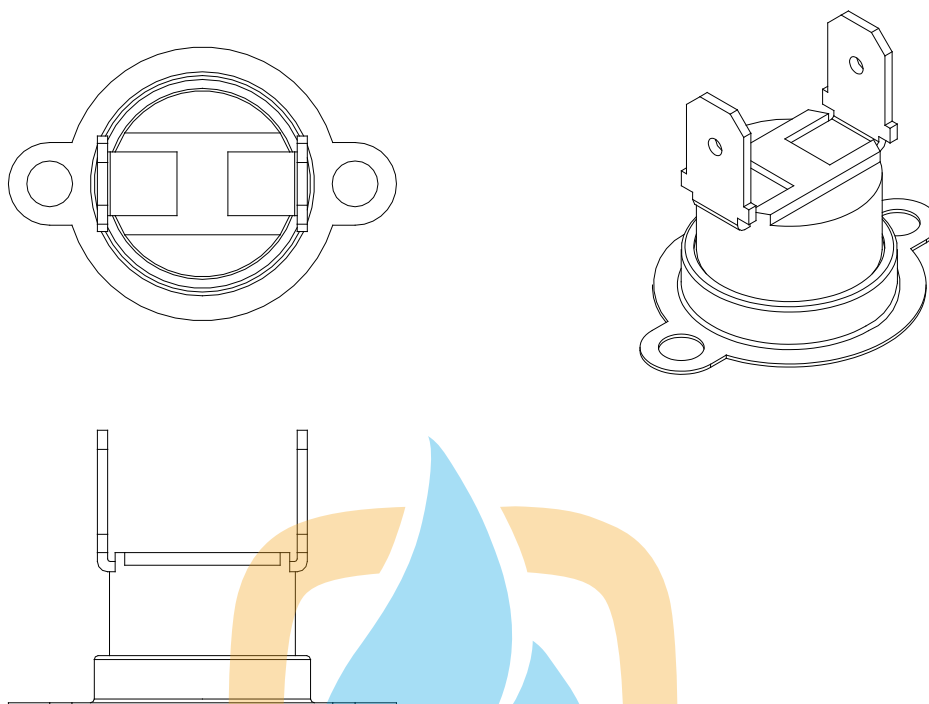


Pic 11.1

Table 11.1

Bolier Model	100/130/160/200/250/300/350/400MSC
Operation flow rate	ON : $1.6 \pm 0.3 \text{ l/min}$, OFF : $1.6 \pm 0.3 \text{ l/min}$
Pressure (max.)	17.5 kgf/cm^2
Insulation resistance	More than $100 \text{ M } \Omega$
PART CODE	3317904600

12. SWITCH TEMP O/M



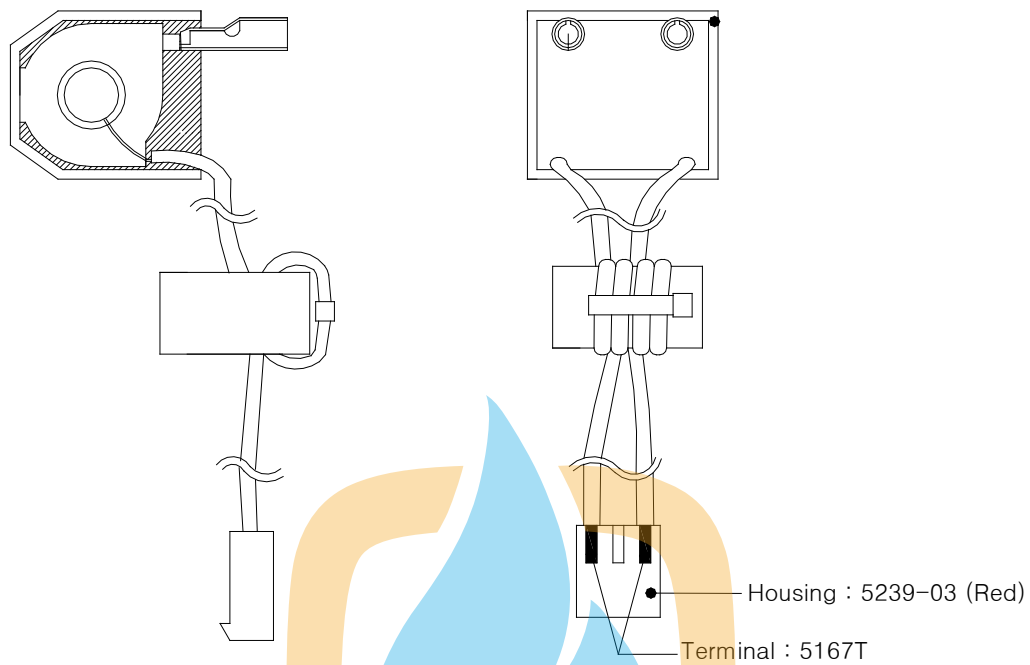
Pic 12.1

Table 12.1

Bolier Model	100/130/160/200/250/300/350/400MSC
Operation temperature	More than 95°C
PART CODE	3317904500

GASBOYLER

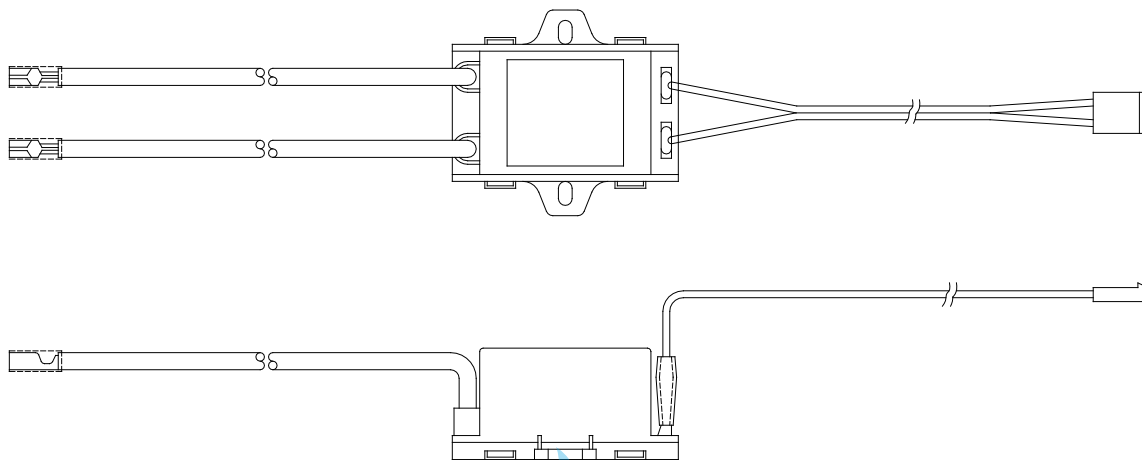
13. IGNITOR TRANS



Pic. 13.1

Table. 13.1

Boiler Model	100/130/160/200/MS
Ignition Trans Model No.	DCI-7900
Output Voltage	15,000V
PART CODE	331702600



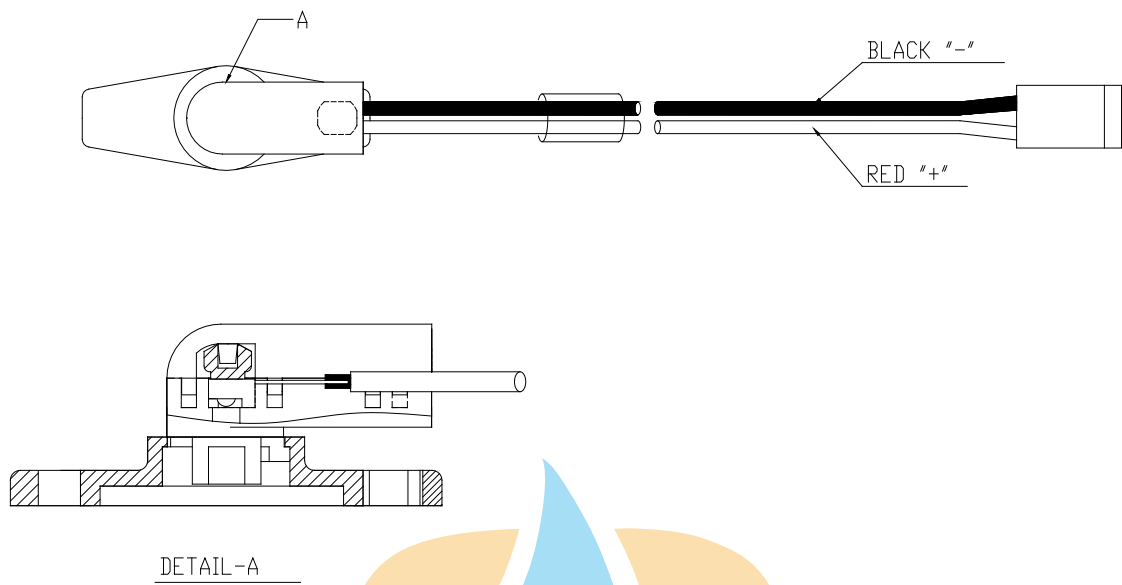
Pic. 13.2

Table. 13.2

Boiler Model	250/300MSC	350/400MSC
Ignition Trans Model No.	DCI-7100NP	DCI-7910
Output Voltage	15,000V	15,000V
PART CODE	3317102800	3317102700

GASBOYLER

14. FLAME SENSOR



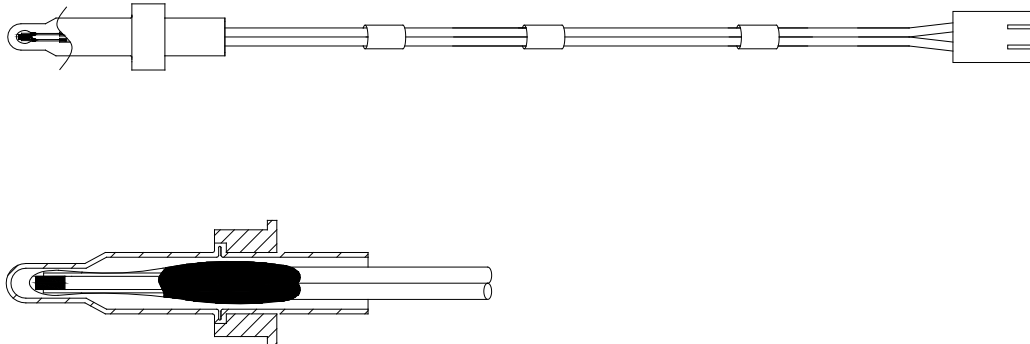
Pic. 14.1

Table. 14.1

Boiler Model	100/130/160/200/250/300/350/400MSC
Flame sensor Model No.	SST553R-01
PART CODE	3314805100

GASBOYLER

15. TEMP HEAT-HOT-OUT



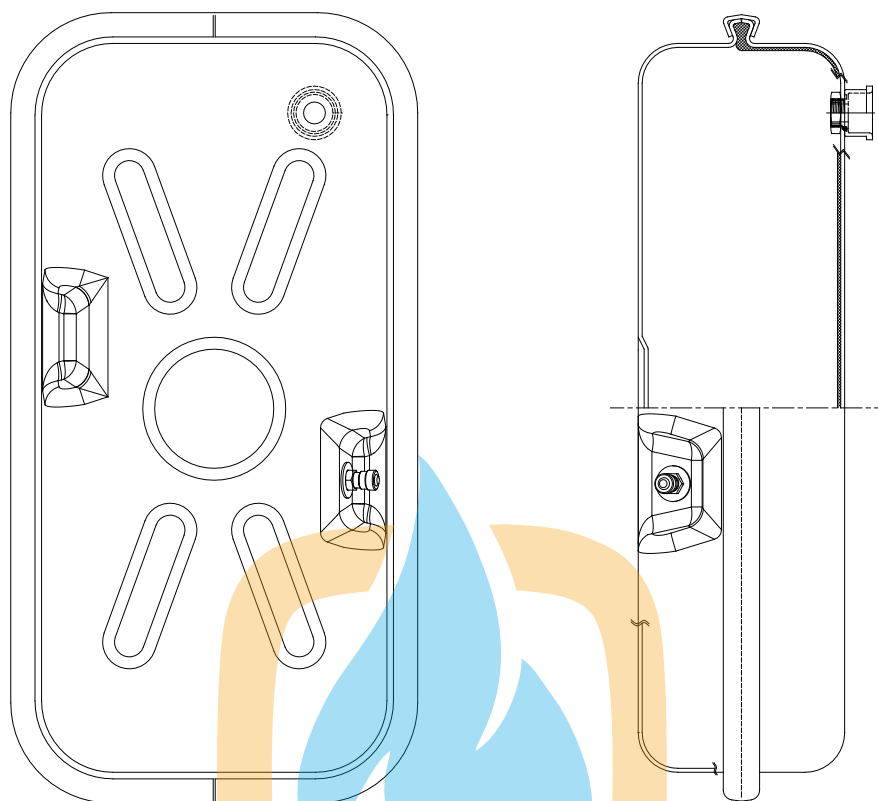
Pic. 15.1

Table. 15.1

Boiler Model	100/130/160/200/250/300/350/400MSC
Temp. sensor Model No.	GSB-DYG-2C07-0
Resistance	$R_{50} = 17.6 \text{ K}\Omega \pm 3\%$
B-Constant	$B(0/100) = 3970\text{K} \pm 3\%$
Withstanding Voltage	AC 1800V, 1 Sec. (At room temp)
Insulation Resistance	DC 500V 100M Ω . (At room temp)
Operating Temperature	-40°C ~ 110°C
PART CODE	33144805A00

GASBOYLER

16. EXPANSION TANK



Pic. 16.1

Table. 16.1

Boiler Model	100/130/160/200MSC
Capacity	6L
Size(mm)	205W x 398H x 104D
Test Pressure	4.5 Kgf/cm ²
Pre-Change Pressure	0.8 Kgf/cm ²
Category Temperature Range	0~100°C
PART CODE	3317502900

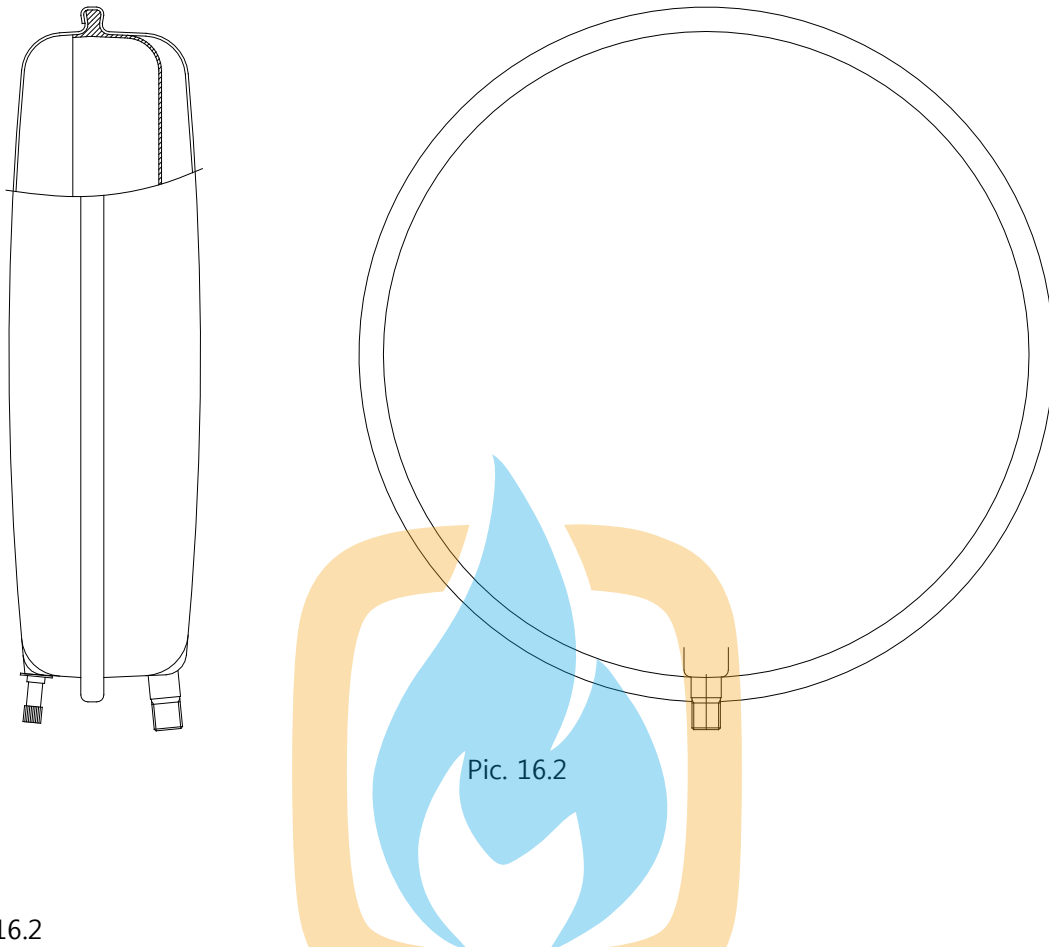
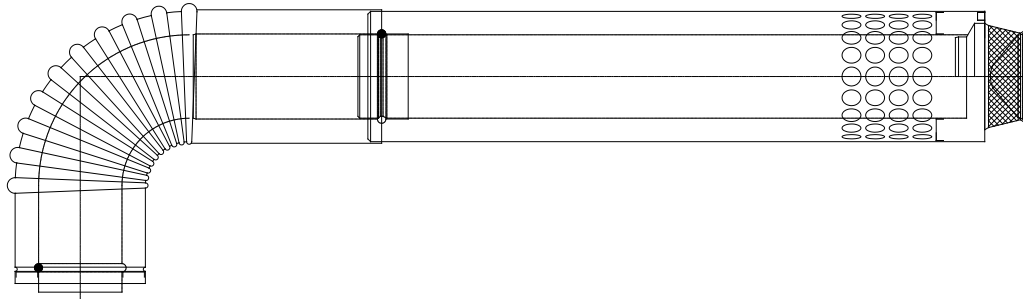


Table. 16.2

Boiler Model	250MSC/300MSC/350MSC/400MSC
Capacity	8L
Size(mm)	Φ391.5 x 108
Test Pressure	4.5 Kgf/cm ²
Pre-Change Pressure	1.0 Kgf/cm ²
Category Temperature Range	0~100°C
PART CODE	4448F52003

17. CHIMNEY

17.1 DGB-80C (CO-AXIAL TYPE)

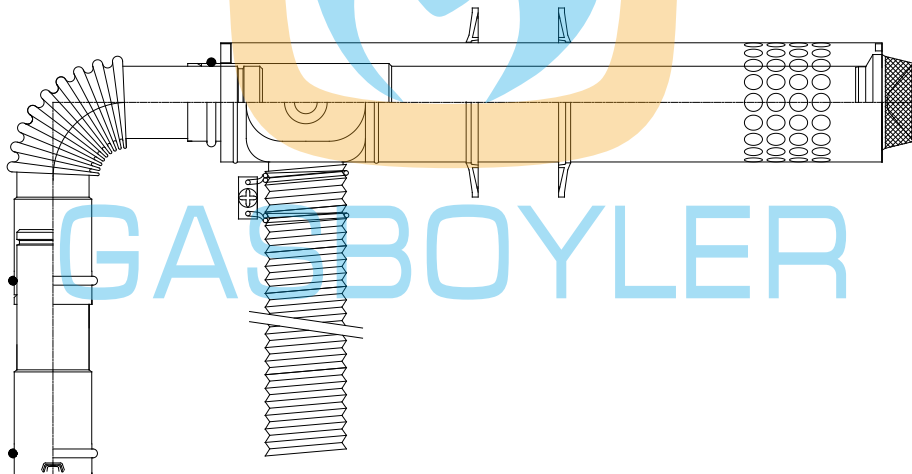


Pic. 17.1

Table. 17.1

Boiler Model	100/130/160/200/250/300/350/400MSC
Chimney Model No.	DGB-80C
Type	CO-AXIAL
Size	In pipe : $\Phi 80\text{mm}$, Out pipe : $\Phi 110\text{mm}$

17.2 DGB-80L (TWIN TYPE)

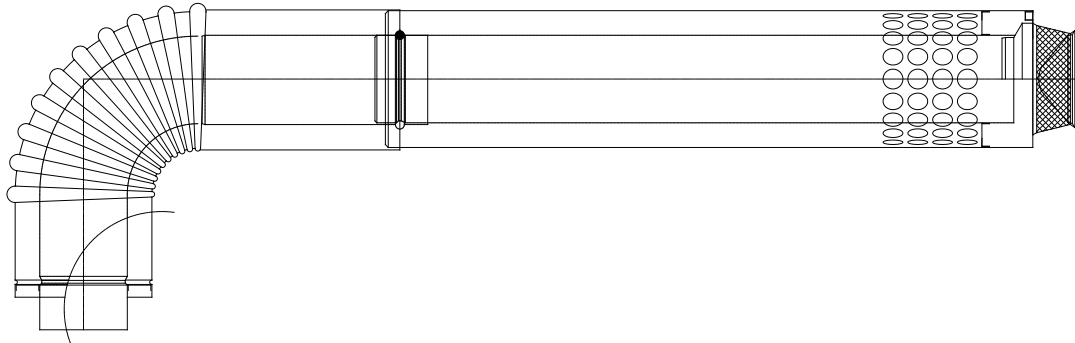


Pic. 17.2

Table. 17.2

Boiler Model	100/130/160/200/250/300/350/400MSC
Chimney Model	DGB-80L
Type	TWIN PIPE
Size	In pipe : $\Phi 80\text{mm}$, Out pipe : $\Phi 110\text{mm}$

17.3 DGB-80EC (CO-AXIAL TYPE)

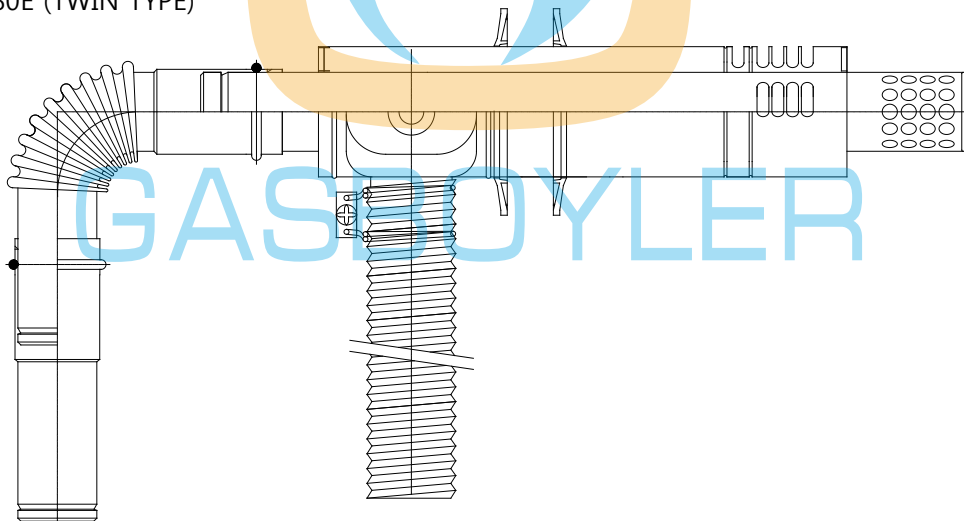


Pic. 17.3

Table. 17.3

Boiler Model	160/200/250/300/350MES
Chimney Model	DGB-80EC
Type	CO-AXIAL
Size	In pipe : $\Phi 80\text{mm}$, Out pipe : $\Phi 110\text{mm}$

17.4 DGB-80E (TWIN TYPE)

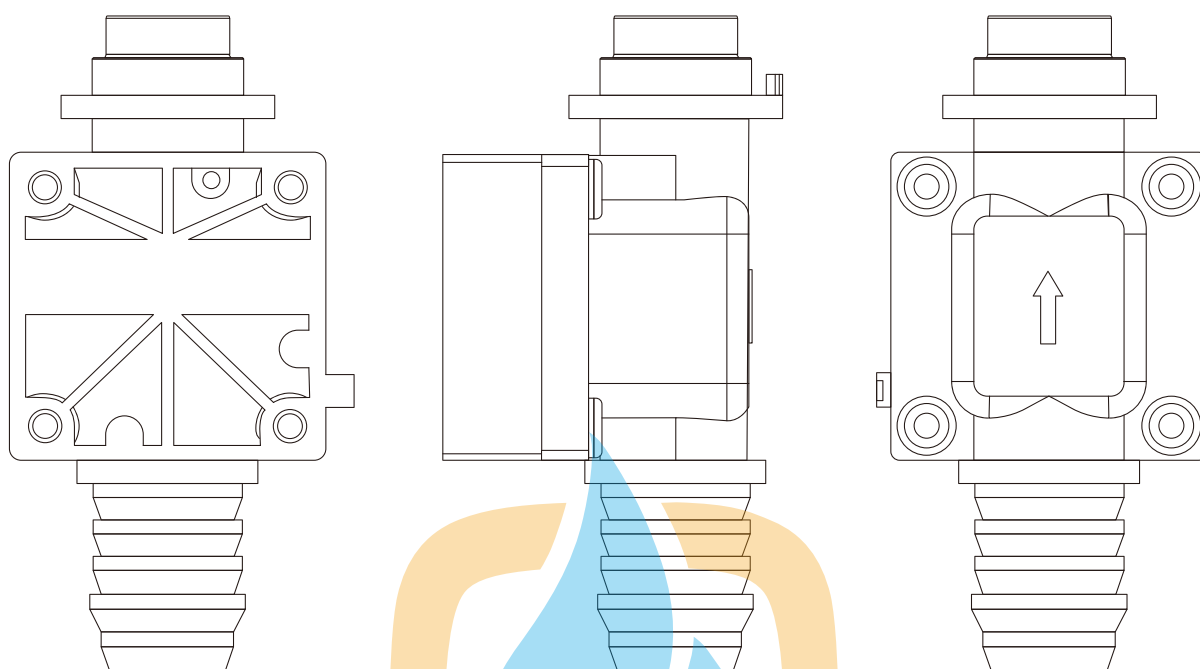


Pic. 17.4

Table. 17.4

Boiler Model	160/200/250/300/350MES
Chimney Model	DGB-80E
Type	TWIN PIPE
Size	In pipe : $\Phi 80\text{mm}$, Out pipe : $\Phi 110\text{mm}$

18. SWITCH HEAT FLOW



Pic. 18.1

Table. 18.1

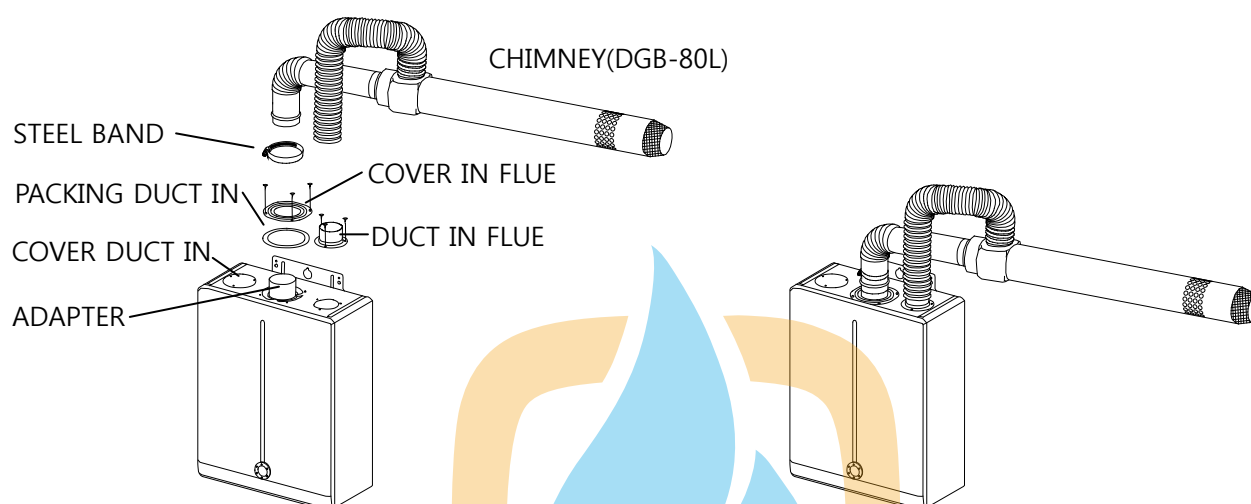
Boiler Model	100/130/160/200/250/300/350/400MSC
PART CODE	3317907300

* SWITCH HEAT FLOW OPERATION STATUS DISPLAY

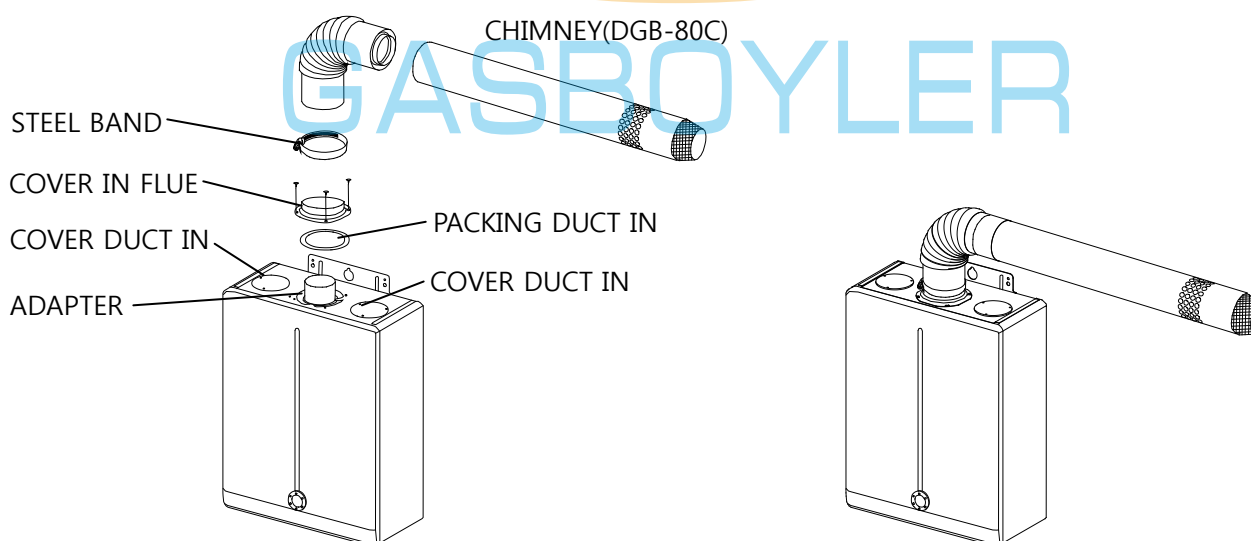
DIP_SW 10 ON			
HEAT FLOW S/W	LED2	PUMP ON	PUMP OFF
ON		NORMAL OPERATION	ERROR CORD : UE
OFF		ERROR CORD : Ud	NORMAL OPERATION

CHIMNEY-DUAL TYPE & CO-AXIAL TYPE

1. DUAL CHIMNEY TYPE(DGB-80L)

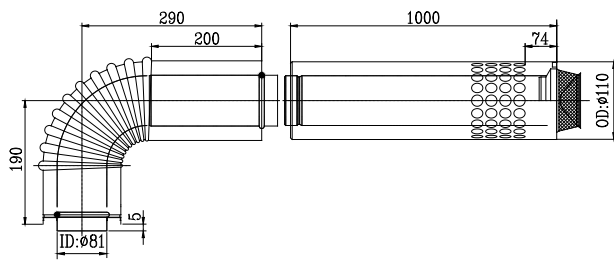


2. CO-AXIAL CHIMNEY TYPE(DGB-80C)

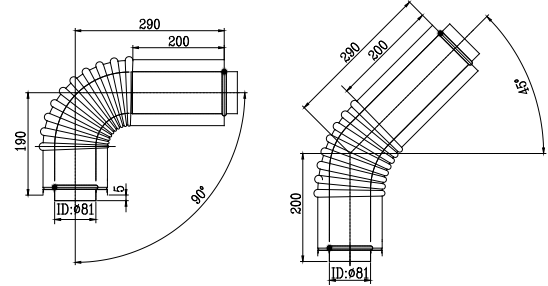


CO-AXIAL TYPE

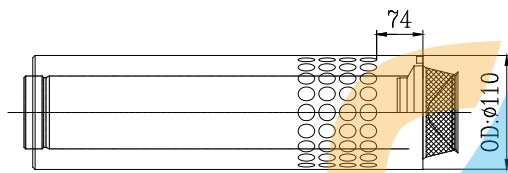
1. DGB-80C



DGB-80C



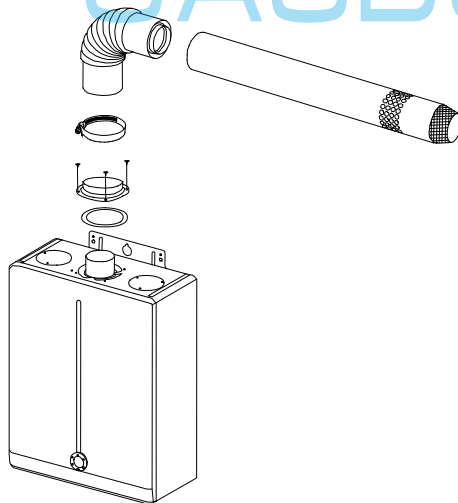
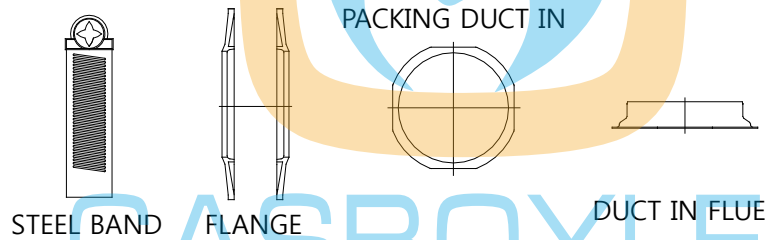
DGB-80C-EL90 / DGB-80C-EL45



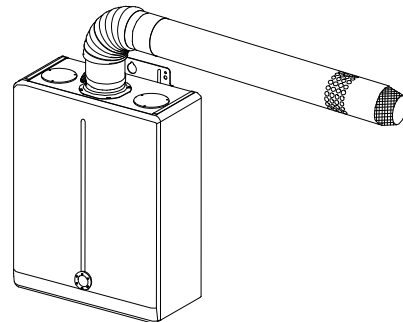
DGB-80C-TOP(L500)
DGB-80C-TOP(L1500)
DGB-80C-TOP(L2000)



DGB-80C(L500)
DGB-80C(L1500)
DGB-80C(L2000)

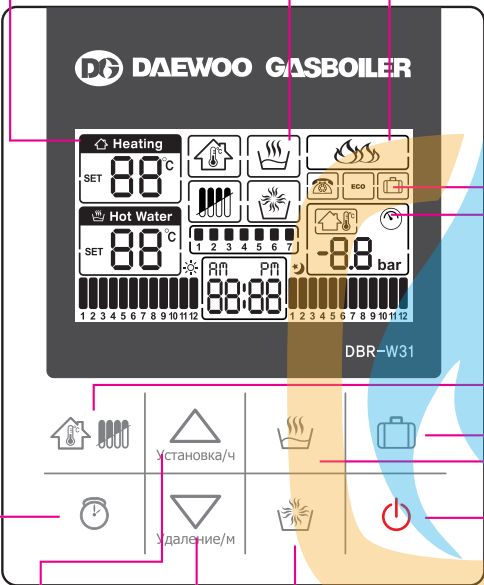


ASSEMBLY



Room Controller (DBR-W31)

■ Controls and Functions

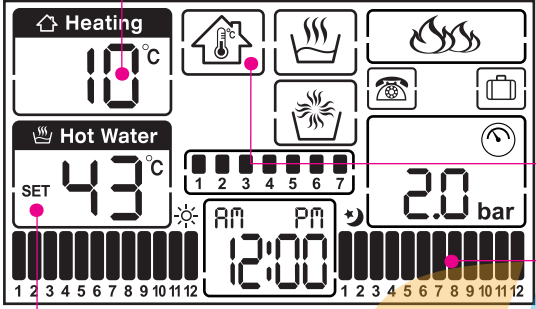
- **Room controller display**
- 
- **Rapid hot water icon**
This icon is showing when you select 'rapid hot water'
- **Combustion icon**
This icon is showing when flame is on in the combustion chamber.
- **Going-out icon**
This icon is showing when you select 'going-out'
- **Outdoor temperature and heating water pressure**
- **Heating button**
1) Touch this button to turn on and off your heating. When you turn on, the heating icon will flicker and then be lighten.
2) You can controll your heating condition by room temperature and heating water temperature. You can switch 'room temperature mode' or 'heating water temperature mode' by touching this button long.
- **Going-out button**
Please touch this button to prevent the boiler from freezing when you go out. Also turning the hot water faucet slightly on will help to prevent the hot water pipe from freezing.
- **Power button**
Please touch this button to turn the room controller on and off.
- **Hot water button**
Touch this button to turn on and off hot water using. When you turn on, the hot water Icon will flicker and then be lighten.
- **Rapid hot water button**
Please touch this button whety you need to use hot water quickly. You can enjoy hot water within 1 minute.
- **(Set/Hour/Increase) button**
- **(Cancle/Minute/Decrease) button**
- **Timer / Clock button**
You can set the timer houly and by the days of week, and adjust the clock.

Caution!

- After a power outage, the clock of room controller will initialized at 12:00 and start to operate. So please reset the heating timer and the clock.
- The other options you set before an outage is saved.

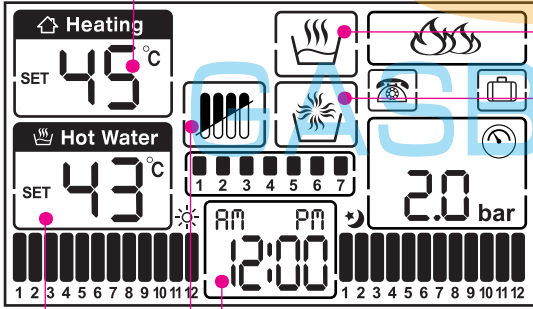
Room Controller Display (DBR-W31)

■ When you controll your heating by room temperature.



- **Heating temperature section**
The room temperature is showing when you use heating.
(Room temperature setting range : 5°C ~ 40°C)
- This icon is showing when you select 'Room temperature' control mode.
- **Heating timer section**
You can set the timer hourly and it is showing in black.
- **Hot water temperature section**
When you select hot water, the temperature of hot water you set is showing.
When you are using hot water, the current temperature of hot water is showing. (Hot water temperature setting range : 35°C ~ 60°C)

■ When you controll your heating by heating water temperature.



- **Heating temperature section**
The heating water temperature you set is showing when you use heating. When the combustion is on, the current heating water temperature is showing. (Heating water temperature setting range : 45°C ~ 80°C)
- This icon is showing when you select 'Hot water'
- This icon is showing when you select 'Rapid hot water'
- **Clock**
You can see the present time.
- This icon is showing when you select 'Heating water temperature' control mode
- **Hot water temperature section**
When you select hot water, the temperature of hot water you set is showing.
When you are using hot water, the current temperature of hot water is showing. (Hot water temperature setting range : 35°C ~ 60°C)

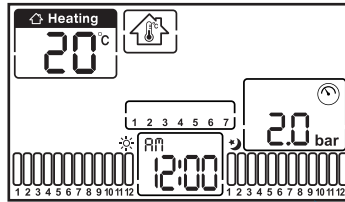
How to use (DBR-W31)

When using both heating and hot water

Touch Power button
(Lights will be on)



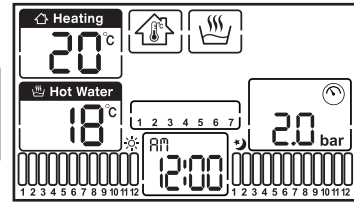
Touch Heating
button



Heating only



Touch hot water
button



Both heating and hot water

When using both heating and hot water

1. Heating operation

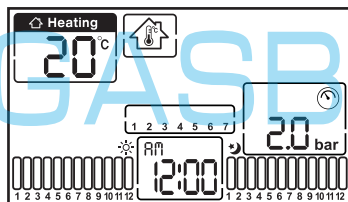
Heating stops when you use hot water, then heating works again after using hot water.

2. Hot water operation

When you use hot water, boiler works only for hot water and stop heating, After using hot water, boiler works for heating again automatically.

Heating only mode

Touch the
heating button
to turn heating
on, and touch
hot water
button to turn
off.

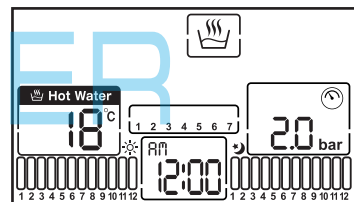


Heating only

Please set this mode when you want to use heating only.

Hot water only mode

Touch the hot
water button
to turn hot
water on, and
touch heating
button to turn
off.



Hot water only

1. Boiler works only for hot water and the heating is unable.

2. Please set this mode when you want to use hot water in summer.

1. Heating temperature setting

Set the temperature with $\Delta \nabla$ buttons, then the display will flicker for 10 seconds and complete.

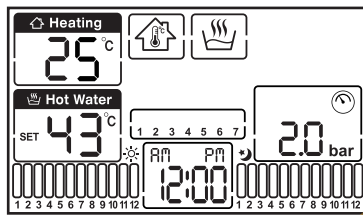
2. Hot water temperature setting

Touch the hot water button and set the temperature with $\Delta \nabla$ buttons. The display will flicker for 10 seconds and complete.

How to use (DBR-W31)

Room temperature Mode / Heating water temperature Mode

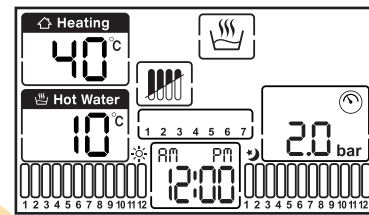
- You can controll your heating by room temperature or heating water temperature.



Room temperature Mode



Touch the heating button long when the heating is on.



Heating water temperature Mode

- Touch the heating button more than 3 seconds and you can switch room temperature mode and heating water temperature mode. The display will flicker for 10 seconds and complete.
- The room temperature mode will not work well by the installed environment of room controller. If so, please use heating water mode.

Notes

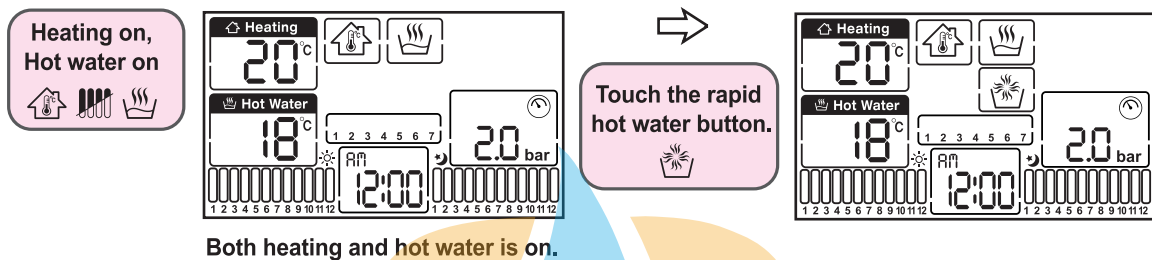
- This boiler is designed with propotional control system which is control the flame by differences between set temperature and current temperature. So you can enjoy pleasant heating and constant hot water.
- The combustion will stop or start when the room temperature or the heating water temperature is over the ignition-extinguishment limit. (below chart for references)

	Ignittion	Extinguishment
Room temperature mode	1°C lower than the set temperature	Higher than the set tneperature
Heating water temperature mode	12~18°C lower than the set temperature	7°C higher than the set temperature

How to use (DBR-W31)

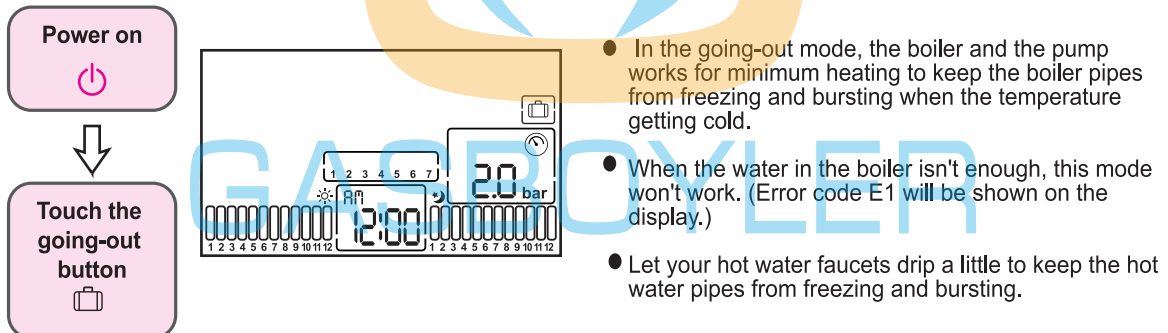
Rapid hot water mode

- You can enjoy hot water faster by Rapid hot water mode. Please set this mode 1 minute before using hot water.
- Touch the rapid hot water button to turn on and off.



- When the rapid hot water mode is on, boiler works for preheat, though you don't use hot water.
- This mode is automatically off after using hot water or a period of time.

Going-out mode(Anti-freezing mode)

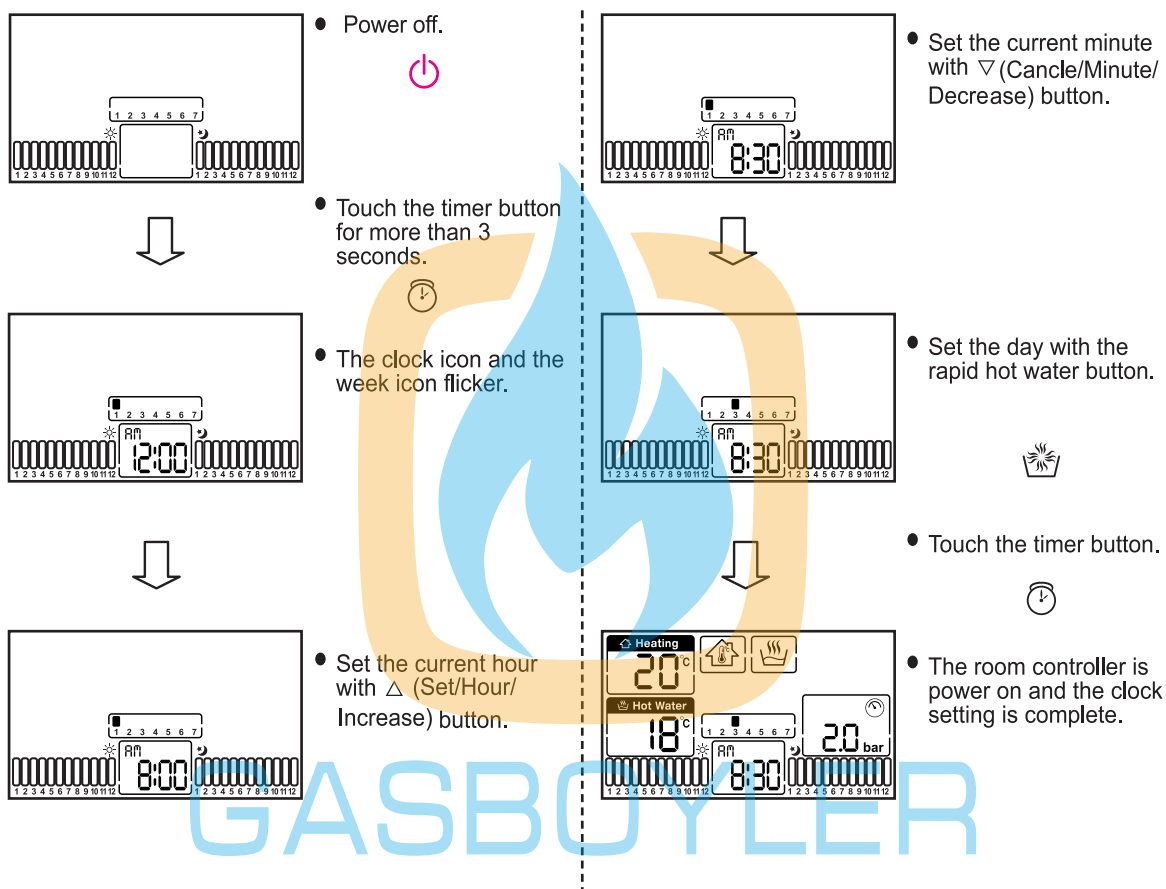


Cautions on using hot water!

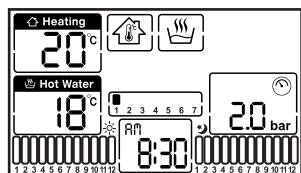
- When the volum of hot water usage is large, the temperature of hot water won't be high enough though the set temperature is high. If so, please reduce the usage.
- When the volum of hot water usage is small, the temperature of hot water will be high eazily though the set temperature is low. If so, please turn on the cold water to make moderate water.
- During hot water use, it is unable to set the hot water temperature over 50°C(to prevent the danger of burn)

How to use (DBR-W31)

Clock and Week setting



Caution!

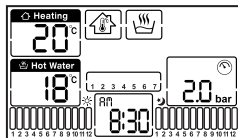


During the power outage, the room controller works with the internal battery for 2 hours. In case of the power outage for more than 2 hours, please reset the clock and the week.

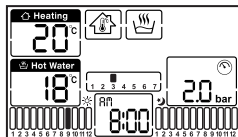
How to use (DBR-W31)

Timer setting

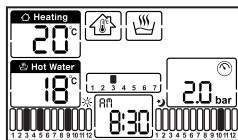
- You can set the timer hourly and by days of the week.
- The boiler works on time you set, so you can save the gas and electric charge.
- When the heating timer section is in white, the boiler works for continuous heating. When the heating timer section is in black, the boiler works only for the hours you set.
- **Timer setting(Weekly mode is set as the factory setting)**
 - 1) Weekly mode : You can set the timer hourly and by days at the same time. A week setting will be repeat.
 - 2) 24 Hour mode : You can set the timer hourly and it repeats every 24 hour.
- **How to change the timer mode**
 - Power on the room controller and touch the timer button for 3 seconds to switch between the weekly mode and 24 hour mode.
 - When the weekly mode is set, week section is on. When the 24 hour mode is on, week section is off.



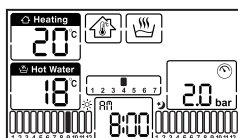
← Touch Timer button.



- **The clock flickers.**
- **Cancel**
 - By touching the ▽ (Candle/Minute/Decrease) button, The heating timer moves clockwise and cancels the any previously set heating timer. (marked white)
- **Setting**
 - By touching the △, (Set/Hour/Increase) button, the heating timer moves clockwise and set the timer hourly. (marked black)



- **The days of week setting(only for the weekly mode)**
 - You can change the days of week with the rapid hot water button when the timer flickers. Please set the timer hourly and change the days also.
- **Complete**
 - Touch the timer button.



- **The set heating times are marked black.**
- **Heating lasts for 30 minutes and stops 30 minutes in every 1 hour.**

How to use (DBR-W31)

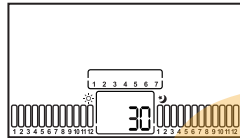
Heating duration setting

- You can controll the heating duration when the timer is on.
- The heating lasts for 30 minutes in 1 hour as the factory setting. You can change it for 15, 30, 45, 60 minutes in 1 hour.

Power off




Touch the
going-out
button for
3 seconds.

1. "30"(factory setting) will flicker on the display.

2. Choice the duration with the Δ (Set/Hour/Increase) button, and touch the power button to complete. (The duration changes 45→60→15→30.)

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Error sign in Room controller

ERROR SIGN	TROUBLES	CHECK POINTS
E0	Room controller's temperature sensor failure	Room controller's temperature sensor
E1	No water in boiler	Safety flow switch, Main PCB, Replenish valve, Stop the supply of the water
E2	Incomplete combustion : The yellow tip of flame is occurred when the boiler is burning	Flue, Combustion condition
E3	Boiling : No circulation of heating water	Pump, Distributer, The condition of heating water circulation
E4	Flue duct clogged or Fan failure	Flue, Fan, Main PCB
E5	Abnormal flame detected	Infrared flame sensor, Main PCB
E6	Gas leakage detected(optional) : The E6 is displayed when the gas detector is installed with boiler only.	Check gas leakage, Gas detector, Main PCB
E7	The communication failure between Room controller and Main PCB	Room controller, Main PCB
E8	Heating water temperature sensor failure	Heating water temperature sensor, Main PCB
E9	Water leakage is detected in Heating pipe of boiler (Open type of boiler only)	Check water leakage in Heating pipe of boiler
EA	When the replenish valve is operating over 5 times for 1 min. (Open type of boiler only)	Check no water in Heating pipe of boiler
EC	Boiler's model number failure	Check the boiler's model number in SW1 of Main PCB
Ed	The power frequency is not correct	Check the power frequency is 50Hz
EE	Fan failure : Fan is not rotating	Fan, Main PCB
EF	When the flow switch is sensing for over 30 min.	Flow switch, Main PCB
Uo	Re-operation : Ignition failure	Kind of gases, Ignition transformer, Infrared flame sensor, Main PCB, Gas valve, Check gas supply and shortage
U1	Room controller's buttons failure	Room controller's buttons
U2	Clock IC failure	Room controller's
U8	Hot water temperature sensor failure	Hot water temperature sensor, Main PCB
Ud	Heat flow switch failure	Check pump operation
UE	Heat flow switch failure	Check heat flow switch for heat switch malfunction

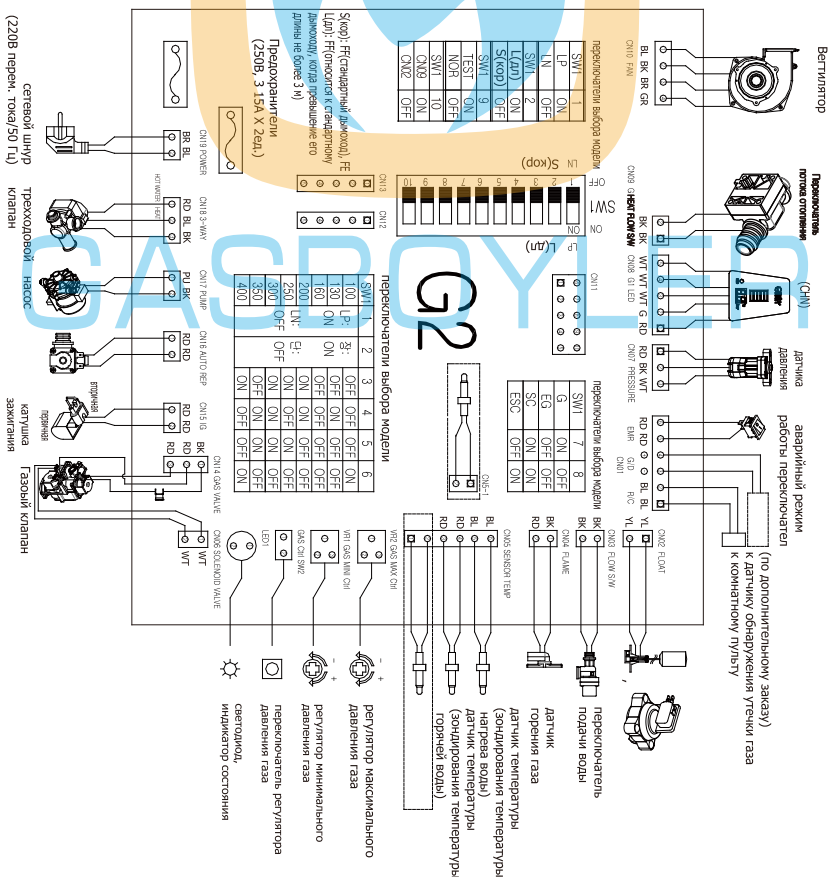
● When error sign appears in the display, exercise useful tips. If you still have trouble, call our service center.

Electric Diagram (DCSC-G2)

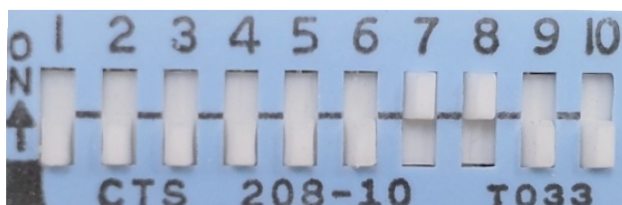
ЭЛЕКТРИЧЕСКАЯ СХЕМА ОБОГРЕВАТЕЛЯ

НОРМАЛЬНЫЕ ЗНАЧЕНИЯ ПАРАМЕТРОВ В СХЕМЕ ПРИ СЕТИ ПЕРЕМЕННОГО ТОКА 220В 50, Гц

CN	Цвета проводов	Нормальные значения параметров
кР-кР	при включенном аварийный переключатель : около DC 0В	
01	бел-бел син-син	при включенном аварийный переключатель : около DC 5В при обнаружении утечки газа: около 12В пост. тока
02	желт-желт	около 12В пост. тока
03	черн-черн	при запитанной системе: от 0,5В до 5В пост. тока при дефште воды в системе: ниже 0,5В пост. тока
04	кР-черн	переключатель подачи воды включен: около 0В пост. тока при зажатой горелке: ниже 4,5В пост. тока
05	син-син кР-кР	при поташенной горелке: около 5В пост. тока при отключении сети: сопротивление в цепи в пределах 0°C: 159,4кОм, 30°C: 39,5кОм, 60°C: 12,1 кОм, 100°C: 3,3 кОм
06	бел-бел кР-черн	в процессе порения: от 3В до 20В пост. тока около 5В пост. тока
07	черн-бел	при запитанной системе: от 0,5В до 4,5В пост. тока при дефште воды в системе: ниже 0,5В пост. тока
08	кР-бел	при включенном индикатор : ниже 5В пост. тока
09	бел черн-черн	индикатор 1-3 : зеленый, индикатор 4 : красный переключатель подачи воды включен: около 0В пост. тока отключен: около 5В пост. тока
	черн-бел	при включенном вентиляторе: ниже 4,5В пост. тока
10	кР-син	при включенном вентиляторе: ниже 5В пост. тока
11	кР-син	при работе вентилятора : около DC 10-14В, G: DC заземление когда вентилятор останавливается: около DC 0В, G: DC заземление
12	-	DR-R10
14	кР-кР черн-черн	при открытой газовой малаан: около 200В пост. тока (черн-кР) при закрытой газовой малаан: около 0В пост. тока (черн-кР)
15	кР-кР	сопротивление катушки зажигания: первичное около 1 Ом вторичное около 1 кОм
17	черн-бел	при включенном насос: более 220В перемен, тока
18	черн-син черн-кР	при остановленном насос: около 0В перемен, тока при обнаружении помехений: чуть больше 220В перемен, тока при работе насоса: около 0В перемен, тока
19	кР-син	при обнаружении помехений: около 0В перемен, тока при работе водоснабжения: чуть больше 220В перемен, тока около 220В перемен, тока



PCB DIP Setting



SW1	1	2	3	4	5	6	7	8	9	10
MODEL	GAS (FIX)	CHIMNEY	CAPACITY SETTING				SC (FIX)		TEST (FACTORY ONLY)	HEATER FLOW S/W
100	OFF: LN	OFF: Standard ON: Longer	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF: CN02 SAFETY WAREER FLOW SWITCH ON: CN09 HEATER FLOW SWITCH
130			OFF	ON	OFF	OFF	ON	ON	OFF	
160			OFF	OFF	OFF	OFF	ON	ON	OFF	
200			ON	ON	OFF	OFF	ON	ON	OFF	
250			ON	OFF	ON	OFF	ON	ON	OFF	
300			ON	ON	ON	OFF	ON	ON	OFF	
350			OFF	ON	ON	OFF	ON	ON	OFF	
400			ON	OFF	OFF	ON	ON	ON	OFF	
NOTE	1. CHIMNEY 1) STANDARD : FF/FE 2) LONGER : FF ONLY (THE CHIMNEY'S LENGTH IS LONGER THAN STANDARD CHIMNEY AND SHORTER THAN 3m) 2. SW 7, 8, 9 1) FACTORY SHIPMENT FIXED VALUE									

GASBOYLER
GAS Pressure (GAS:LNG)

(mmH ₂ O)								
MODEL	100	130	160	200	250	300	350	400
MIN	21	20	20	20	22	22	22	22
MAX	47	36	61	82	64	86	92	111

Operational Principles

1. Normal heating operation

1. Power on

Status LED in Main PCB will be turned on.

2. Power button “on”, “heating + hot water” cycle

Pump operates, and the 3-way valve is in Heating mode.

3. Heating ignition temperature $\geq$ Current Heating water supply temperature

Heating ignition temperature is depending on the selected heating temperature.

Heating water supply temperature (ranging from 50 °C to 80 °C)

- 1) 50 °C - 12 °C = Ignition temperature
- 2) 51 °C - 13 °C = Ignition temperature
- 3) 52 °C - 14 °C = Ignition temperature
- 4) 65 °C - 15 °C = Ignition temperature
- 5) more than 56 °C - 16 °C = Ignition temperature
- 6) 75 °C - 17 °C = Ignition temperature
- 7) more than 76 °C - 18 °C = Ignition temperature

- ① After 0.5 seconds, Fan rotates high speed. (Fan pre-purge)
- ② After 7.5 seconds, SV-1 (Safety valve 1) of Gas valve is ON.
- ③ After 0.5 seconds, Ignition transformer is ON.
- ④ After 0.5 seconds, SV-2 (Safety valve 2) of Gas valve is ON.
- ⑤ After 0.1 seconds, PSV (Proportional valve) of Gas valve is ON.

* Ignition cycle should last for 7 seconds of maximum discharging time until detection of ignition is detected by the system. During the detection, ignition gas pressure should be constant and Fan should be decreased its rpm from high to low.

* If ignition cycle is failed more than 3 times, the system should be switched to “Re-operation” status.

* Ignition gas pressure = 1st < 2nd < 3rd

4. Detection of ignition

- ① Combustion Lamp is on.
- ② Immediately → Ignition transformer is off.
- ③ The Heating temperature should be controlled, according to the between selected heating temperature and current heating water supply temperature.

5. Heating ignition temperature $\geq$ Current Heating water supply temperature

(Heating extinguishment temperature = Heating selected temperature + 5 °C)

- ① Immediately, Gas valve (SV-1, SV-2, PSV) is turned off, Fan rotates mid-speed and combustion ramp is turned off.
- ② After 30 seconds, Fan stops and Pump is in continuous operation status.

6. Selecting power button “off”

- ① Immediately, Gas valve is turned off, Fan rotates high speed and combustion ramp is turned off.
- ② After 30 seconds, Fan and Pump stops.

2. Hot water operation

1. For using hot water (input Flow switch)

- ① Pump rotates and 3-way valve is switch to Hot water mode.
- ② 3-way valve is switch to Hot water mode.

2. Current Heating water supply temperature $\leq 88^{\circ}\text{C}$

- ① After 0.5 seconds, Fan rotates high speed. (Fan pre-purge)
- ② After 0.7 seconds, SV-1 (Safety valve 1) of Gas valve is ON.
- ③ After 0.5 seconds, Ignition transformer is ON.
- ④ After 0.5 seconds, SV-2 (Safety valve 2) of Gas valve is ON.
- ⑤ After 0.1 seconds, PSV (Proportional valve) of Gas valve is ON.

* Ignition cycle should last for 7 seconds of maximum discharging time until detection of ignition is detected by the system. During the detection, ignition gas pressure should be constant and Fan should be decreased its rpm from high to low.

* If ignition cycle is failed more than 3 times, the system should be switched to "Re-operation" status.

* Ignition gas pressure = $1^{\text{st}} < 2^{\text{nd}} < 3^{\text{rd}}$

* If hot water is used more than one and half hour, the boiler is turned off automatically.

3. Detection of ignition

- ① Combustion Lamp is on.
- ② Immediately → Ignition transformer is off.
- ③ The boiler is controlled proportionally, according to the between selected hot water temperature and heating water supply temperature.

4. Current Heating water supply temperature $\leq 90^{\circ}\text{C}$

- ① Immediately, Gas valve turned off, Fan rotates mid-speed and combustion ramp is turned off.
- ② After 30 seconds, Fan rotates low speed.
- ③ After 90 seconds, Fan stops.
- ④ After 120 seconds, Pump stops.

3. Re-operation Inspection

1. If detection of ignition is failed for 3 ignition cycles for heating and hot water.

- ① The ramp of state in Main PCB is flickering in a period of 1 Hz.
- ② Gas valve and Ignition transformer are turned off.
- ③ After 30 seconds, Fan and Pump stop.

2. The requirement of Re-operational inspection cancellation

- If Room controller's power button is turned off and on by force, inspection will be cancelled.
- If Flow switch is turned off and on, inspection will be cancelled.

4. The others for safety function

1. Freezing prevention

① Freezing preventing Pump operation

In case that heating water temperature is below 7 °C for 3 seconds, Pump rotates clock-wise for 1 minute heating mode and counter clock-wise for 30 seconds hot water mode repeatedly, and it stops when the temperature is above 9 °C for 3 seconds.

② Combustion function for freezing prevention

In case that heating water temperature in below 2 °C, the boiler is burning, and it will be extinguished when the temperature is above 30 °C.

- Freezing preventing Pump operation can function if the power is on, but freezing preventing combustion can occur only in condition that Room controller is connected and inspection hasn't occurred.
- It cannot function in condition of "No water in boiler" or "Temperature sensor failure".

	Operation Temp.	Stop Temp.
Pump	7 °C	9 °C
Combustion	2 °C	30 °C

2. Pump sticking prevention

① Pump rotates for 5 minutes in heating mode, if Pump stops for 24 hours.

② Pump doesn't rotate in condition of "No water in boiler".

3. Overheating prevention (Hot water mode)

① The boiler is extinguished if heating water temperature is above 90 °C at hot water mode.

② The boiler is ignited and burning automatically, if heating water temperature is below 88 °C at hot water mode.

4. Exhaust closing (excess air pressure) prevention (FE type only)

During combustion cycle, if yellow flame is produce due to exhaust closing (excess air pressure), the flame voltage becomes less than 0.3V then the condition is understood by the system as exhaust closing (excess air pressure) condition. Then the system goes into extinguishment cycle immediately and Fan high speed revolution is performed as pre-purge and re-ignition is performed.

5. Going out function

When you select "Going out" on Room controller

① Freezing preventing Pump operation

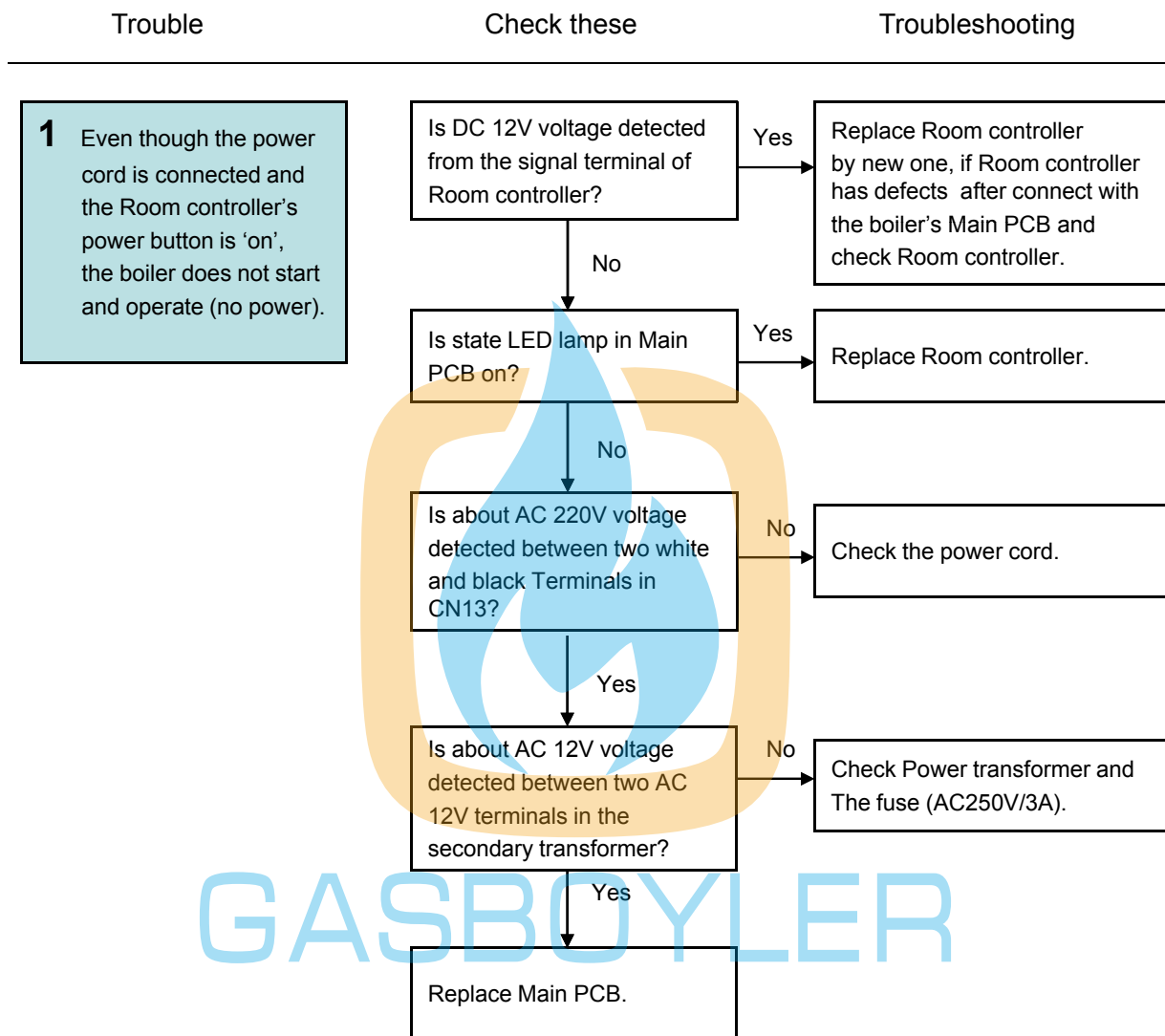
In case that heating water temperature is below 12 °C, Pump rotates , and it stops when the temperature is above 13 °C.

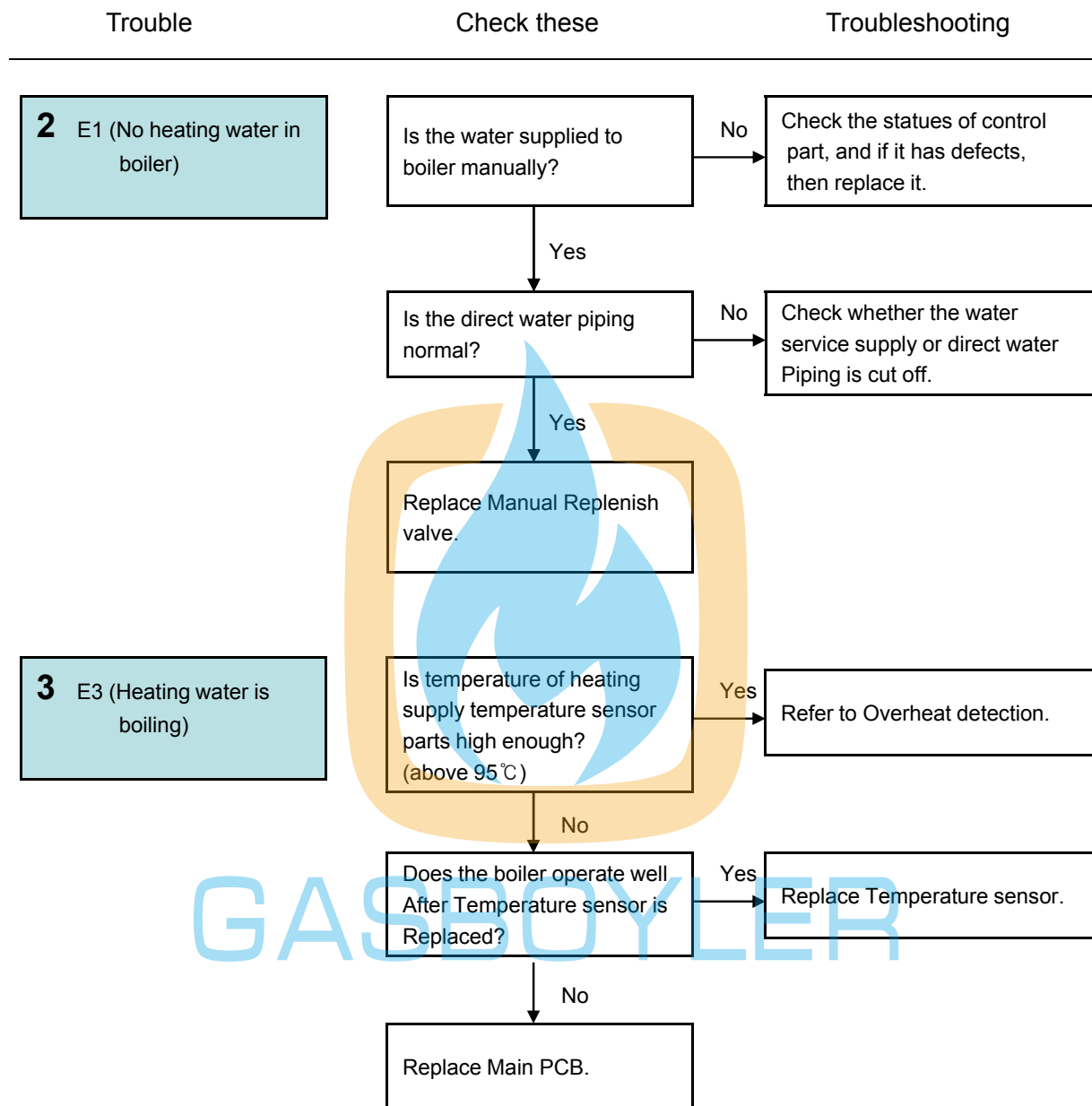
② Combustion function for freezing prevention

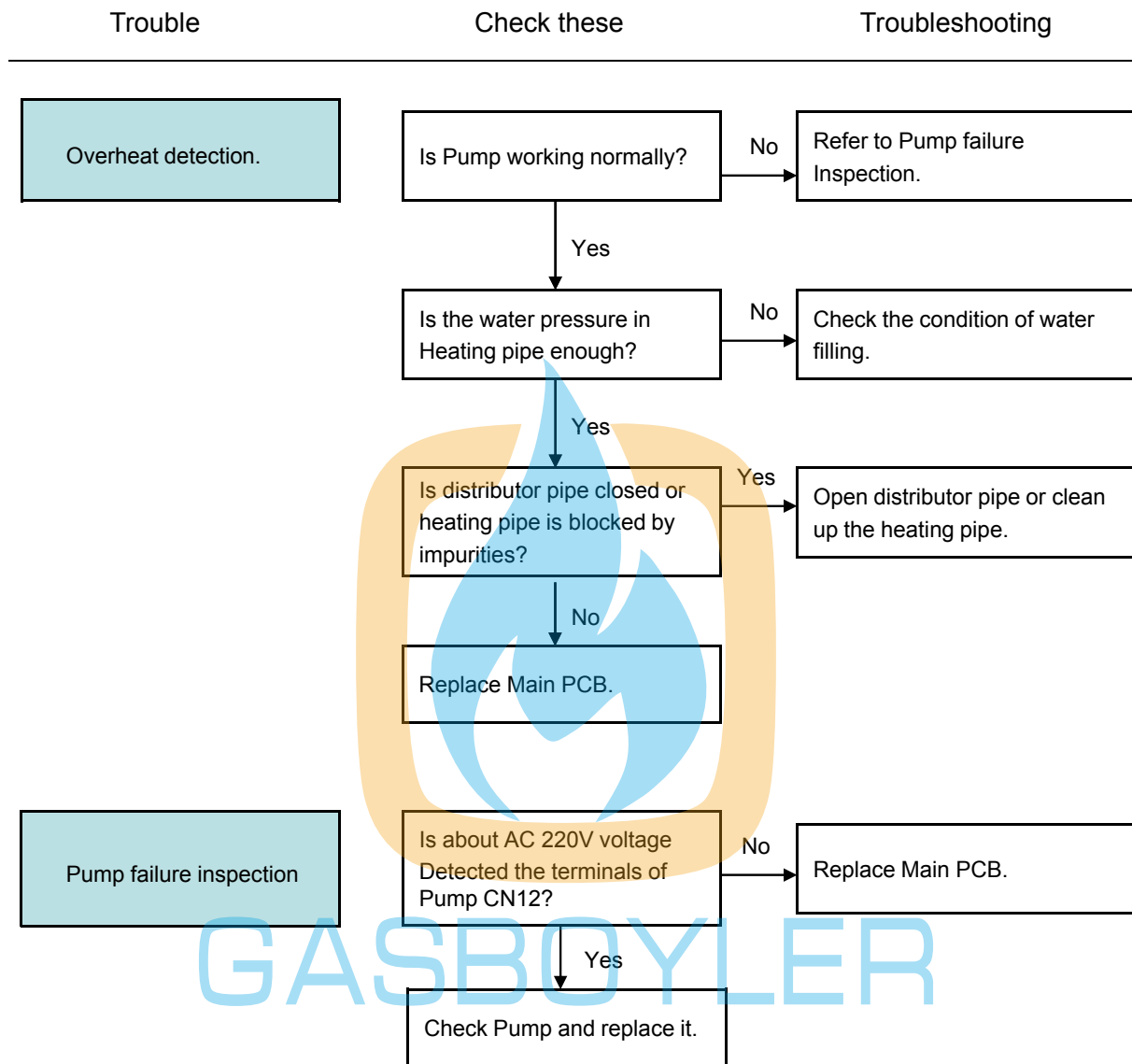
In case that heating water temperature in below 10 °C, the boiler is burning, and it will be extinguished when the temperature is above 30 °C.

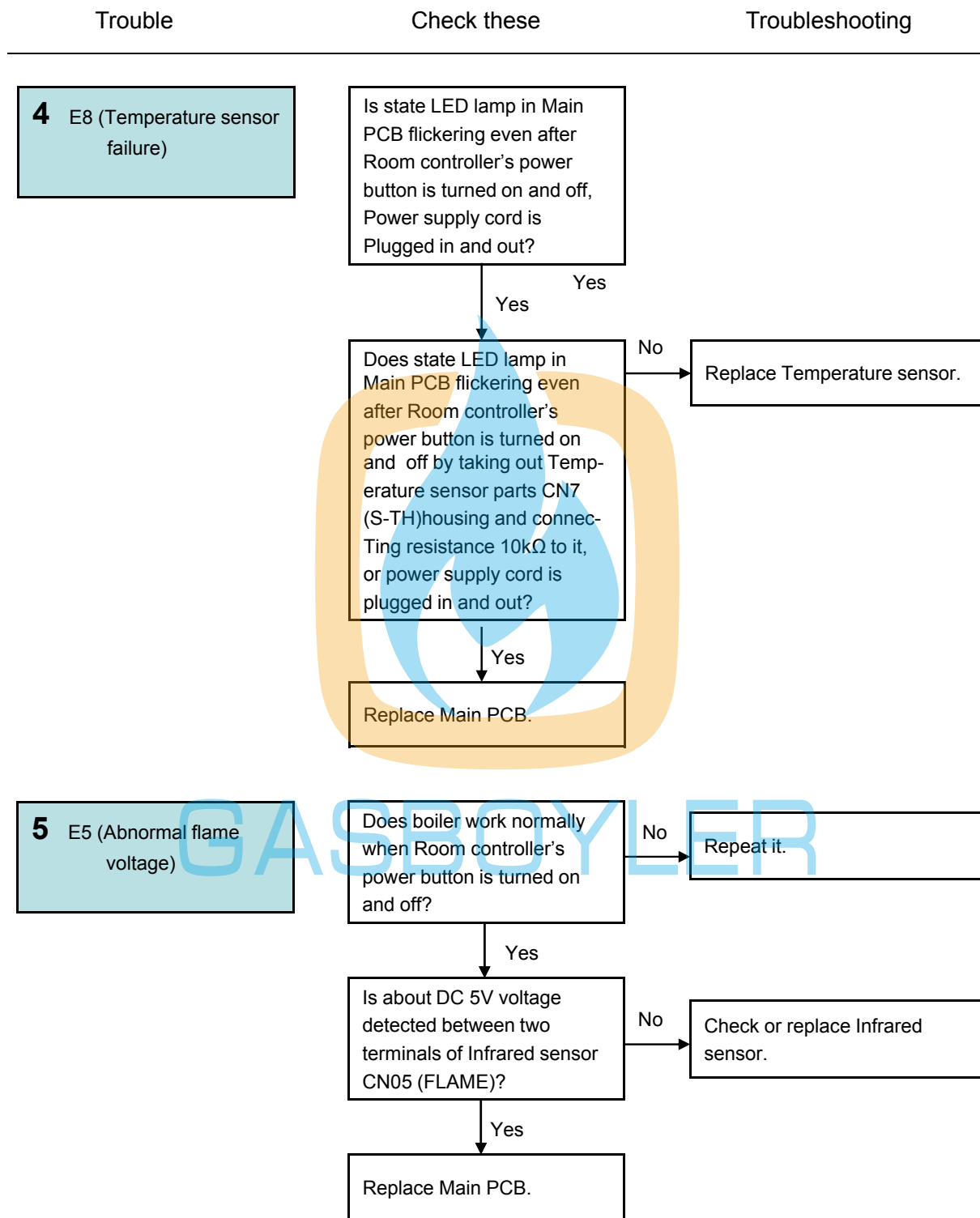
	Operation Temp.	Stop Temp.
Pump	12 °C	13 °C
Combustion	10 °C	30 °C

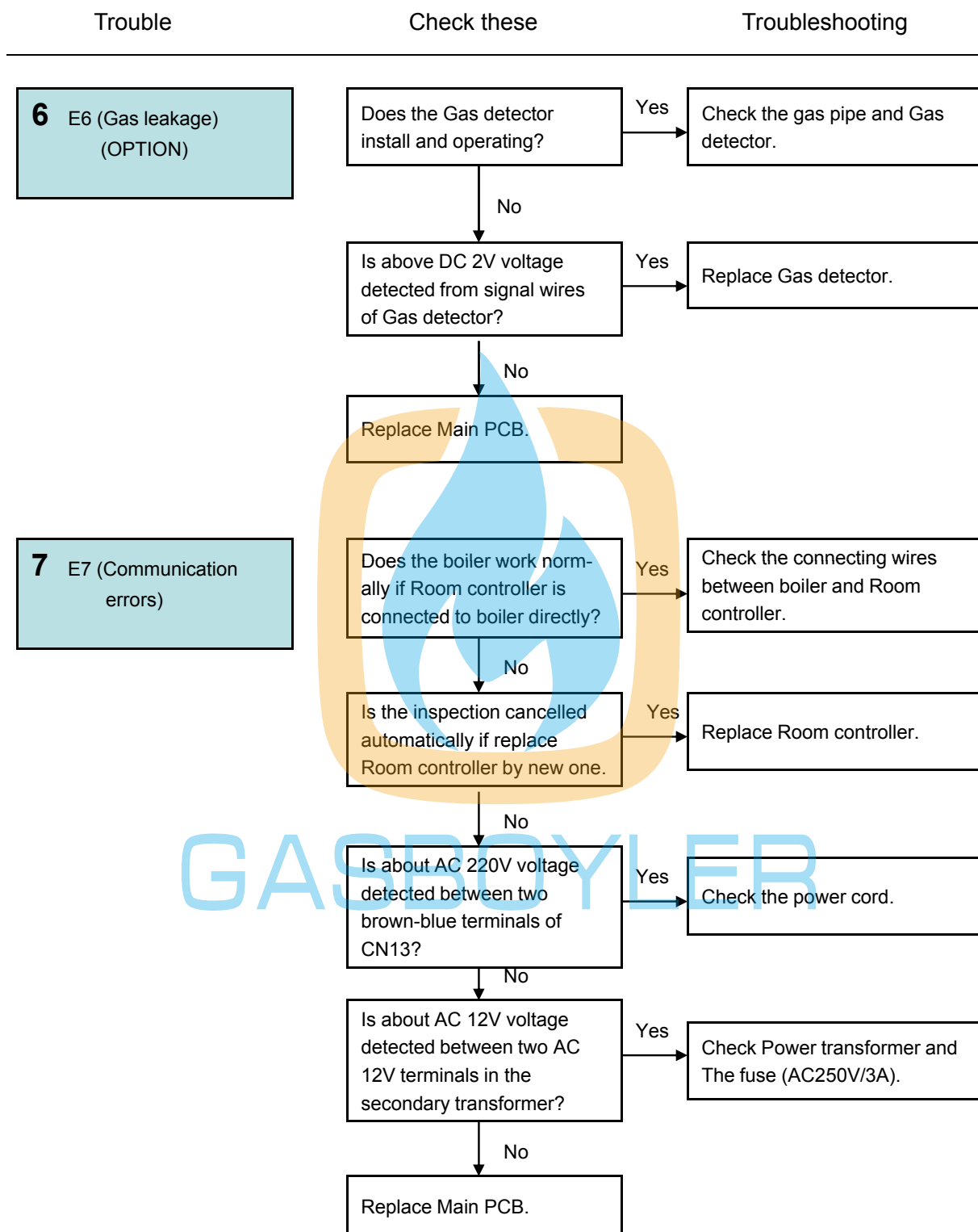
Troubleshooting

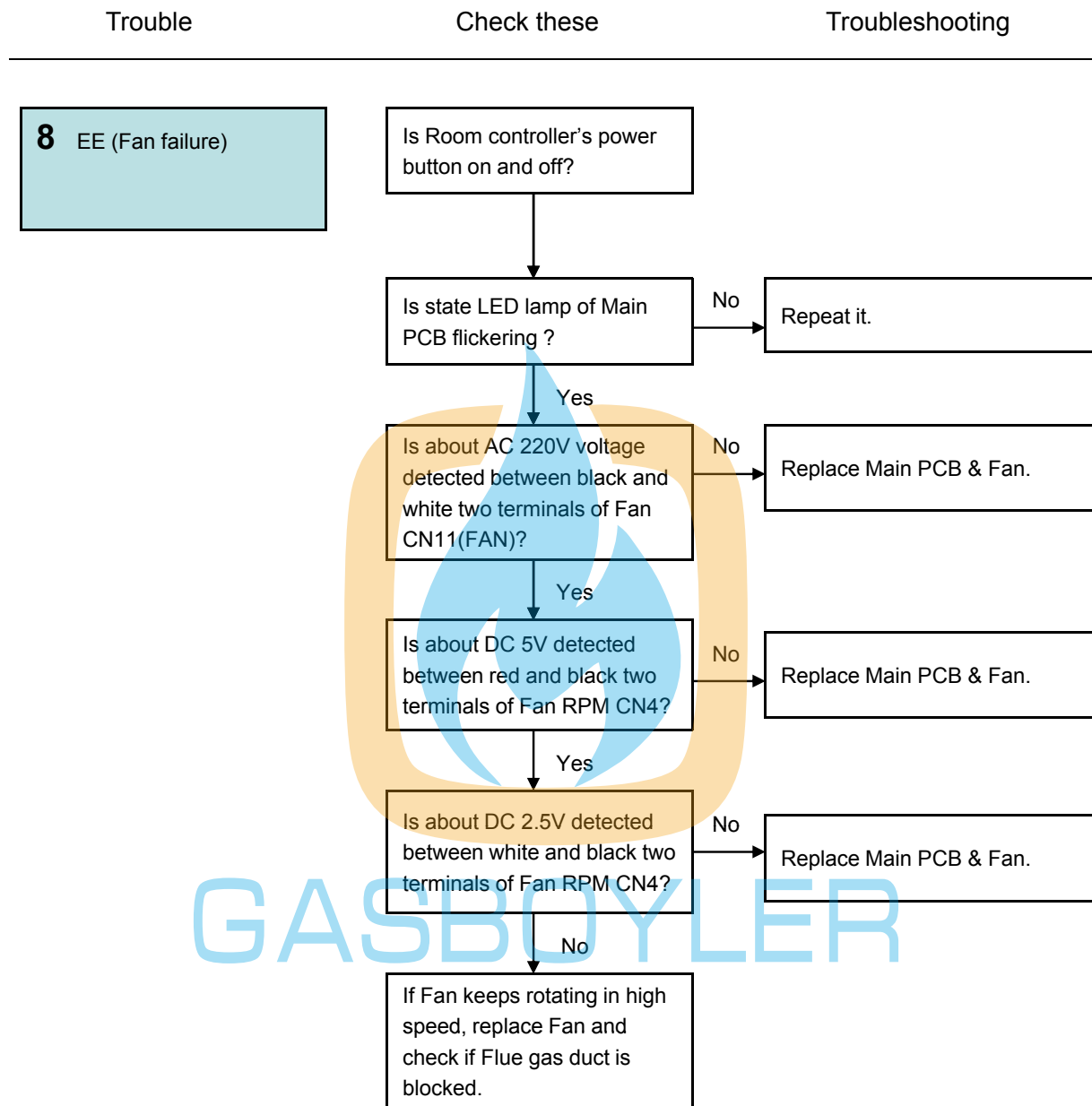


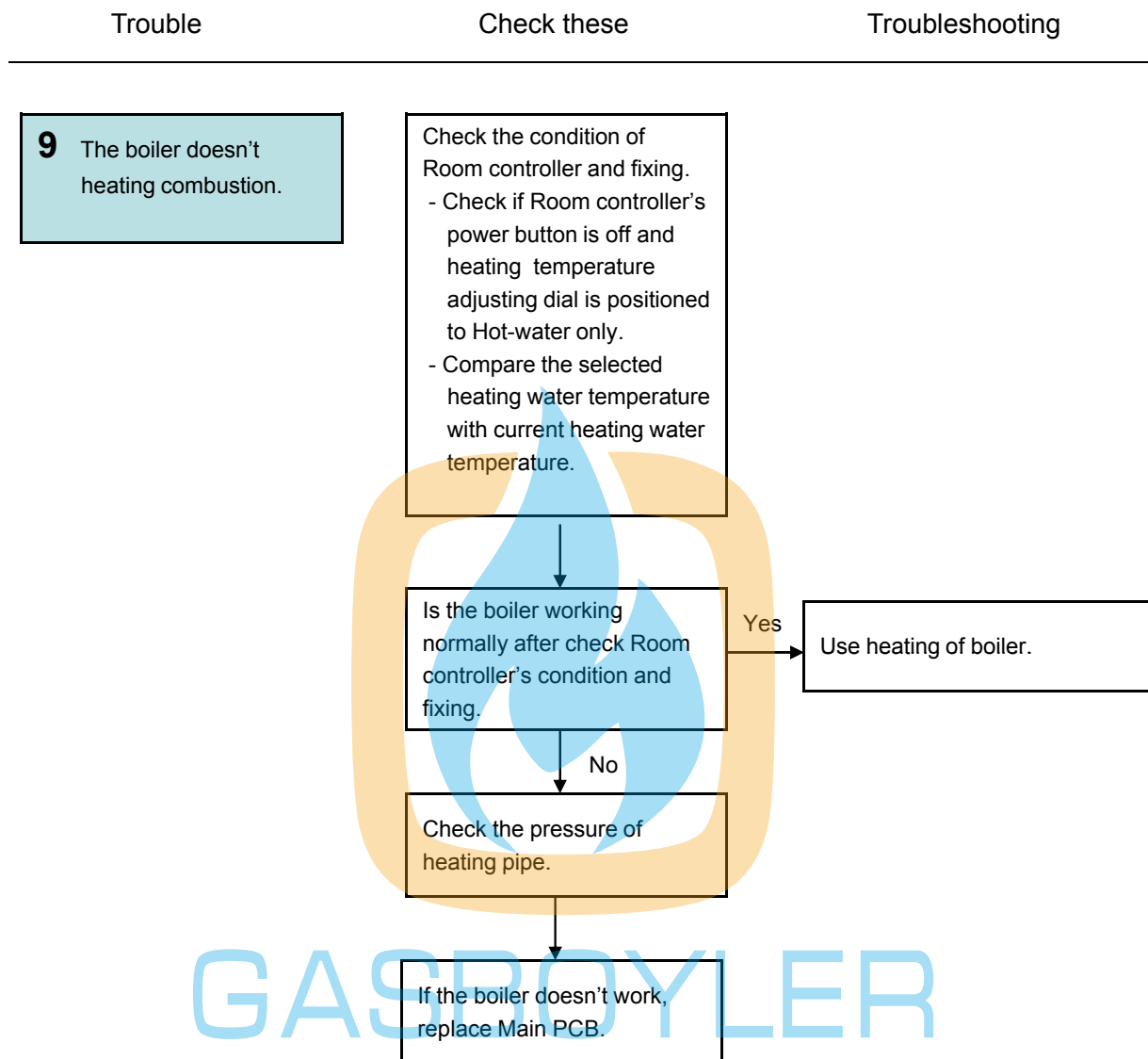


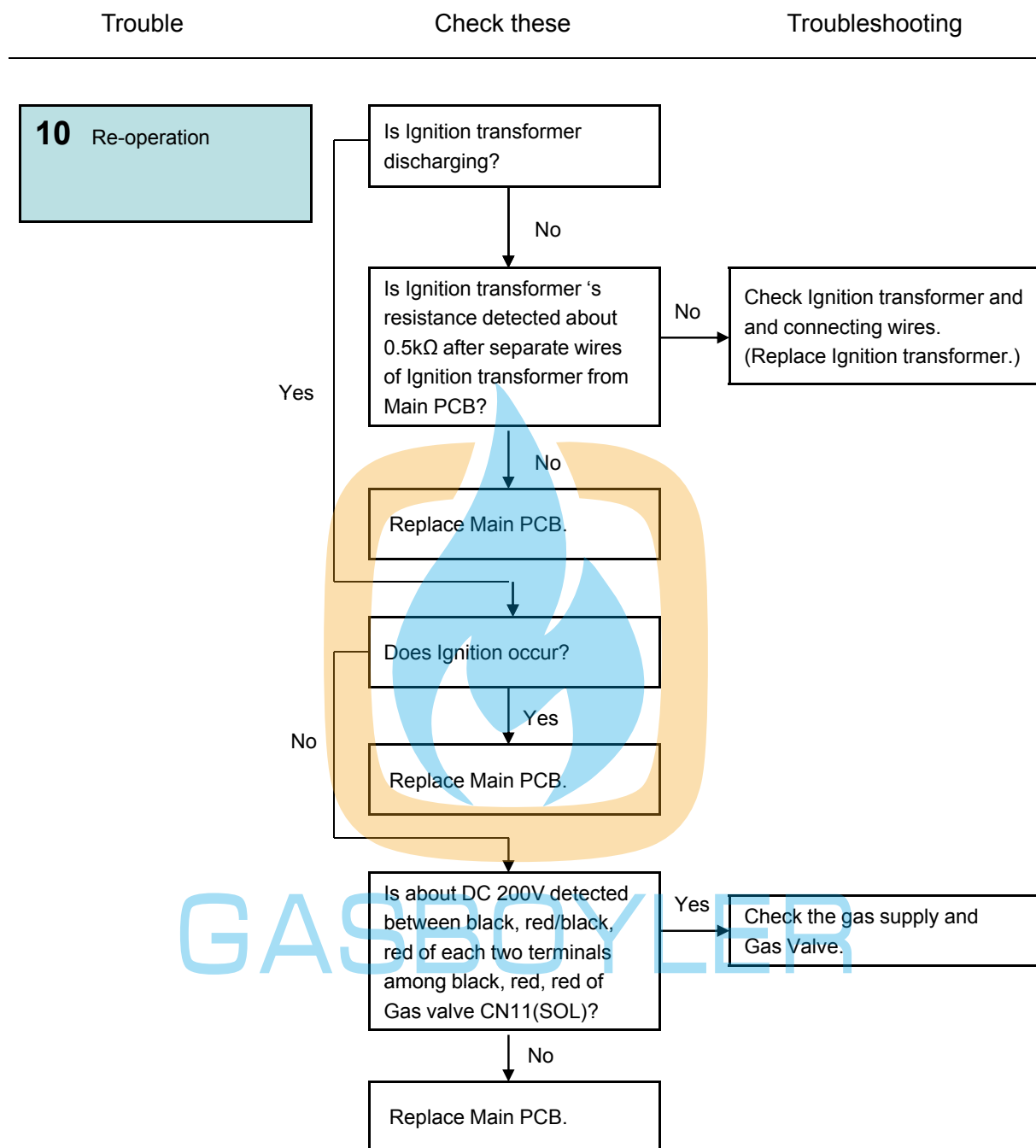














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