BIEMMEDUE

OIL FIRED STATIONARY HEATER DATASHEET

agg. 15/02/2022

SP 235 oil ERP 2021
500Pa 220-400V 50Hz

Thermoelectric specifications

ERP 2018		
Seasonal space heating energy efficiency > 72%		
74,195%		
In conformity with Reg. UE 2016/2281		
NOx seas GCV EN267		*Limit 180 mg/kWh*
123,32 mg/kWh		
In conformity with EN 267:2020		
Max power output		
Fuel consumption	Kg/h	**18,720**
@ 0°C	L/h	21,77
	UK gal/h	4,79
Max efficiency	%	**90,32**
Higher cal. Value		
Power	kcal/h	203476
input	kW	**236.60**
	BTU/h	813904
Power	kcal/h	183780
Output	kW	**213,70**
	BTU/h	735118
Lower cal. Value		
Power	kcal/h	190905
input	kW	**221,98**
	BTU/h	763621
Power	kcal/h	172426
Output	kW	**200,49**
	BTU/h	689702
Pump pressure		
1° stage setting	[bar]	10,00
2° stage setting	[bar]	15,00
Smoke Bacharach		
index		0,00
Smoke CC turbolator		**type 2**
ECOFLAM BURNER SETTING		
Setting for altitude 0 ÷ 1000m s.l.		
Head position setting		
index	[index]	235kw
Air setting max efficiency		
Index		2,2
Air setting production		
Index		2,7
Oil lower calorific value MJ/kg		42,689
Oil higher calorific value MJ/kg		45,50
In conformity to EN 13842:2002		
Nozzle		
Type	DELAVAN	60° B
oilflow	GPH	4,00

ERP 2018		
Seasonal space heating energy efficiency > 72%		
74,866%		
In conformity with Reg. UE 2016/2281		
NOx seas GCV EN267		*Limit 180 mg/kWh*
82,29 mg/kWh		
In conformity with EN 267:2020		
Max power output		
Fuel consumption	Kg/h	**5,600**
@ 0°C	L/h	6,51
	UK gal/h	1,43
Max efficiency	%	**93,20**
Higher cal. Value		
Power	kcal/h	60869
input	kW	**70,78**
	BTU/h	243476
Power	kcal/h	56730
Output	kW	**65,96**
	BTU/h	226919
Lower cal. Value		
Power	kcal/h	57108
input	kW	**66,41**
	BTU/h	228434
Power	kcal/h	53225
Output	kW	**61,89**
	BTU/h	212900
Pump pressure		
1° stage setting	[bar]	14,00
2° stage max setting	[bar]	
2° stage factory setting	[bar]	8,00
Smoke Bacharach		
index		0,00
Smoke CC turbolator		**type 2**
RIELLO BURNER SETTING		
Setting for altitude 0 ÷ 1000m s.l.		
Head position setting		
index		1,0
Air setting max efficiency		
Index		1,0
Air setting production		
Index		2,5
Oil lower calorific value MJ/kg		42,689
Oil higher calorific value MJ/kg		45,50
In conformity to EN 13842:2002		
Nozzle		
Type	DELAVAN	60° B
oilflow	GPH	4,00

Burner calibration for ALTITUDE 1000 ÷ 3000m s.l.

In order to set up a good combustion:
1) open the air gate first,
2) open the combustion head.

Thermoelectric specifications

ERP 2021		
Seasonal space heating energy efficiency > 78%		
78,292%		
In conformity with Reg. UE 2016/2281		
NOx seas GCV EN267		*Limit 150 mg/kWh*
86,77 mg/kWh		
In conformity with EN 267:2020		
Max power output		
Fuel consumption	Kg/h	**15,530**
@ 0°C	L/h	18,06
	UK gal/h	3,97
Max efficiency	%	**92,86**
Higher cal. Value		
Power	kcal/h	168802
input	kW	**196,28**
	BTU/h	675210
Power	kcal/h	156750
Output	kW	**182,27**
	BTU/h	627000
Lower cal. Value		
Power	kcal/h	158374
input	kW	**184,16**
	BTU/h	633495
Power	kcal/h	147066
Output	kW	**171,01**
	BTU/h	588264
Pump pressure		
1° stage setting	[bar]	10,00
2° stage setting	[bar]	15,50
Smoke Bacharach		
index		0,00
Smoke CC turbolator		**type 2**
ECOFLAM BURNER SETTING		
Setting for altitude 0 ÷ 1000m s.l.		
Head position setting		
Measure	[index]	190kw
Air setting max efficiency		
Index		2,5
Air setting production		
Index		3,0
Oil lower calorific value MJ/kg		42,689
Oil higher calorific value MJ/kg		45,50
In conformity to EN 13842:2002		
Nozzle		
Type	DELAVAN	60° W
oilflow	GPH	3,50

ERP 2021		
Seasonal space heating energy efficiency > 78%		
78,599%		
In conformity with Reg. UE 2016/2281		
NOx seas GCV EN267		*Limit 150 mg/kWh*
68,47 mg/kWh		
In conformity with EN 267:2020		
Max power output		
Fuel consumption	Kg/h	**15,690**
@ 0°C	L/h	18,24
	UK gal/h	4,01
Max efficiency	%	**93,91**
Higher cal. Value		
Power	kcal/h	170542
input	kW	**198,30**
	BTU/h	682166
Power	kcal/h	160156
Output	kW	**186,23**
	BTU/h	640622
Lower cal. Value		
Power	kcal/h	160005
input	kW	**186,05**
	BTU/h	640022
Power	kcal/h	150261
Output	kW	**174,72**
	BTU/h	601045
Pump pressure		
1° stage setting	[bar]	9,50
2° stage setting	[bar]	10,00
Smoke Bacharach		
index		0,00
Smoke CC turbolator		**type 2**
RIELLO BURNER SETTING		
Setting for altitude 0 ÷ 1000m s.l.		
Head position setting		
Index		7,0
Air setting max efficiency		
Index		4,5
Air setting production		
Index		4,8
Oil lower calorific value MJ/kg		42,689
Oil higher calorific value MJ/kg		45,50
In conformity to EN 13842:2002		
Nozzle		
Type	STEINEN	60° S
oilflow	GPH	4,00

Burner calibration for altitude upper than 3000m s.l.

Change the oil nozzle to DANFOSS 3,50gph 60° H
Set up the burner to follow the combustion parameters

Thermoelectric specifications

Regione Piemonte		
Efficiency		*limit 93,46 %*
93,480%		
NOx		*Limit 80+20 mg/kWh*
78 mg/kWh		
Legge Regione Piemonte 28 maggio 2017, n.13		
Max power output		
Fuel consumption	Kg/h	**14,240**
@ 0°C	L/h	16,56
	UK gal/h	3,64
Max efficiency	%	**94,48**
Higher cal. Value		
Power	kcal/h	154781
input	kW	**179,98**
	BTU/h	619124
Power	kcal/h	146237
Output	kW	**170,04**
	BTU/h	584948
Lower cal. Value		
Power	kcal/h	145218
input	kW	**168,86**
	BTU/h	580874
Power	kcal/h	137202
Output	kW	**159,54**
	BTU/h	548810
Pump pressure		
1° stage setting	[bar]	10,00
2° stage setting	[bar]	12,50
Smoke Bacharach		
index		0,00
Smoke CC turbolator		**type 2**
ECOFLAM BURNER SETTING		
Setting for altitude 0 ÷ 1000m s.l.		
Head position setting		
Measure	[index]	190kw
Air setting max efficiency		
Index		2,0
Air setting production		
Index		2,5
Oil lower calorific value MJ/kg		42,689
Oil higher calorific value MJ/kg		45,50
In conformity to EN 13842:2002		
Nozzle		
Type	DELAVAN	60° W
oilflow	GPH	3,50

Regione Piemonte		
Efficiency		*limit 94,44 %*
94,560%		
NOx		*Limit 80+20 mg/kWh*
82 mg/kWh		
Legge Regione Piemonte 28 maggio 2017, n.13		
Max power output		
Fuel consumption	Kg/h	**7,550**
@ 0°C	L/h	8,78
	UK gal/h	1,93
Max efficiency	%	**94,00**
Higher cal. Value		
Power	kcal/h	82064
input	kW	**95,42**
	BTU/h	328257
Power	kcal/h	77140
Output	kW	**89,70**
	BTU/h	308562
Lower cal. Value		
Power	kcal/h	76994
input	kW	**89,53**
	BTU/h	307977
Power	kcal/h	72375
Output	kW	**84,16**
	BTU/h	289499
Pump pressure		
1° stage setting	[bar]	9,50
2° stage setting	[bar]	10,00
Smoke Bacharach		
index		0,00
Smoke CC turbolator		**type 2**
RIELLO BURNER SETTING		
Setting for altitude 0 ÷ 1000m s.l.		
Head position setting		
Index		3,0
Air setting max efficiency		
Index		2,9
Air setting production		
Index		3,1
Oil lower calorific value MJ/kg		42,689
Oil higher calorific value MJ/kg		45,50
In conformity to EN 13842:2002		
Nozzle		
Type	DELAVAN	60° B
oilflow	GPH	3,50

COMBUSTION PARAMETERS		
Always check and setting the burner to have the combustion parameters below:		
Index Bacharach		0 - white color
CO_2		11 ÷ 12,5 %
Oxigen O_2		4,5 ÷ 6 %
CO max		500 ppm

Ventilation specifications

Air flow		
m³/h		21.000
Available static pressure		50 mmH_2O
		500 Pa

Temperature rise		
ERP 2018	[°C]	39,00
ERP 2021	[°C]	33,00
Regione Piemonte	[°C]	26,00

Noise level	at 1 m	at 2 m
Average dBA	70	68

Components specifications

Burner		
Manufacturer		RIELLO
Type		RG4F
Data sheet n.		20
voltage		230V 50/60 Hz
power		370 W

Burner		
Manufacturer		ECOFLAM
Type		MAX 20 TC
voltage		230V 50/60 Hz
Data sheet n.		005
power		270 W
Electronic control burner		Brahma
Type		GF2

Centrifugal fan		
type		AT 18/18

Motor pulley		
diameter		Øp = 112 x 2
Speed		1410 rpm

Ventilator pulley		
diameter		Øp = 200 x 2
Speed		800 rpm

Transmission belt		
Type		SPA
n. of belt		2,00
Lenght		1582 mm

Three phase motor		
Tension / frequency		230/400 V ~ 3ph / 50Hz
Power		4,0 kW
Current		15,9 - 9,20 A
Speed		1.400
Class		F
Approval		CE
Water protection		IP55

Motor thermal protection @400V		
Type	ABB	MS 116
Range		8 ÷ 12 A
Set point		10,5 A

Motor thermal protection @230V		
Type	ABB	MS 116
Range		16 ÷ 20 A
Set point		17 A

Motor contactor		
Type	ABB	AF 26-30-00-14
Rated control circuit voltage		250-500V
Max current		25 A

Overheat thermostat	
Fixed setting Manual reset	120 °C

Fan thermostat 0-60°C	
Adjustable setting	30 °C

Limit thermostat 60-90°C	
Adjustable setting	90 °C

Connectable flexible ducts specifications and limits

Snorkel flexible duct		
Diameter		150 mm
Max lenght		6 m
Increase the diameter in case of longer duct		

One way outlet flexible duct		
Diameter		700 mm
Max lenght		50 m

Two ways outlet flexible duct		
Diameter		600 mm
Max lenght		30 m

Four ways outlet flexible duct		
Diameter		400 mm
Max lenght		25 m

Five ways outlet flexible duct		
Diameter		350 mm
Max lenght		15 m

Inlet flexible duct		
Diameter		750 mm
Max lenght		10 m

Electric specifications

Voltage supply	
230/400 V ~ 3ph	50Hz

SP 235 equipped with Ecoflam burner			
Electric power and amperage draw			
400 V	5407 W	9,9 A	Fuse 6,3A "T"
230 V	5500 W	17,5 A	Fuse 6,3A "T"

SP 235 equipped with RIELLO burner			
Electric power and amperage draw			
400 V	5170 W	9,4 A	Fuse 6,3A "T"
230 V	5200 W	17,2 A	Fuse 6,3A "T"

Weight and dimensions

SP 235			
Net weight		Wide	
kg	385	mm	911
Length		Height	
mm	1446	mm	2.118
Stack diameter			
mm	200		
SHIPPING DIMENSIONS [mm]			
Length	1.500	Height	2.150
Wide	960	Weight	395
CONTAINER [n° of heaters]			
Container 20'			6
Container 40'			16
Container 40' High Cube			16
T.I.R. H=2,4m			18

Optionals specifications

Plenum			
Dimensions	mm		1410 x 910 x h= 545
net weight	kg		35,00
SHIPPING DIMENSIONS			
Dimensions	mm		1450 x 930 x h=350
gross weight	kg		38,00

Burner carter			
Dimensions	mm		930 x 380 x h= 540
net weight	kg		21,00
SHIPPING DIMENSIONS			
Dimensions	mm		1180 x 605 x h=460
gross weight	kg		22,50

KIT connection TITAN 235 outlet accessories			
Dimensions	mm		1416 x 916 x h= 160
net weight	kg		28,00
SHIPPING DIMENSIONS *(inclinato)*			
Dimensions	mm		1555 x 920 x h=345
gross weight	kg		31,00

One way Ø = 700mm AIR ADAPTER			
Dimensions	mm		923 x707 x h= 351
net weight	kg		11,50
SHIPPING DIMENSIONS			
Dimensions	mm		1030 x 930 x h=400
gross weight	kg		13,50

Two ways Ø = 600mm AIR ADAPTER kit			
Dimensions	mm		923 x 862 x h= 652
net weight	kg		12,50
SHIPPING DIMENSIONS			
Dimensions	mm		1030 x 930 x h=400
gross weight	kg		14,50

Four ways Ø = 400mm AIR ADAPTER kit			
Dimensions	mm		990 x 880 x h= 671
net weight	kg		14,00
SHIPPING DIMENSIONS			
Dimensions	mm		1030 x 930 x h=400
gross weight	kg		16,00

One way Ø = 750mm INLET AIR ADAPTER			
Dimensions	mm		952 x 742 x h= 331
net weight	kg		12,00
SHIPPING DIMENSIONS CAD44BIT			
Dimensions	mm		1030 x 930 x h=400
gross weight	kg		14,00

Fire damper and heater adapter		
Model	EI120 CU2 600 x700	With manual reset
Dimensions with heater adapter [mm]		840 x 825 x h= 924
SHIPPING DIMENSIONS		
Fire damper dimensions [mm]		650x750x h=350
adapter dimension [mm]		1200 x 800 x h=630
Total gross weight [kg]		29,00

REVISIONATO
16.01 , 15/02/2022

Dario Cavarero

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