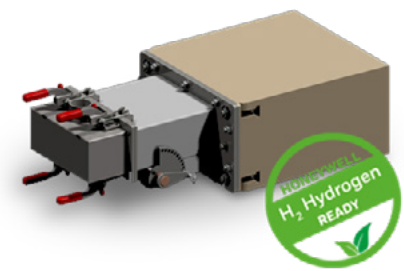
Honeywell

MAXON

Dual-Fuel Oxygen Burners OXY-THERM® FHR

TECHNICAL INFORMATION

- Industry lowest NO_X levels
- Adjustable staged oxygen design to optimize heat transfer, flame volume and emissions
- Burns any gaseous fuel, including an up to 20% hydrogen/80% natural gas fuel blend
- Fuel oil capability ranges from light to heavy fuel oils
- Quickly convert between gas and oil service by changing the fuel nozzle only
- Capacities to 0.5–24 MBTU/h (132–6346 kW)
- Increase available heat by burning fuels with oxygen
- Patented fuel nozzle design provides high aspect ratio flat flame for greater furnace coverage
- Four block sizes, custom gas and oil nozzles sized for each burner location



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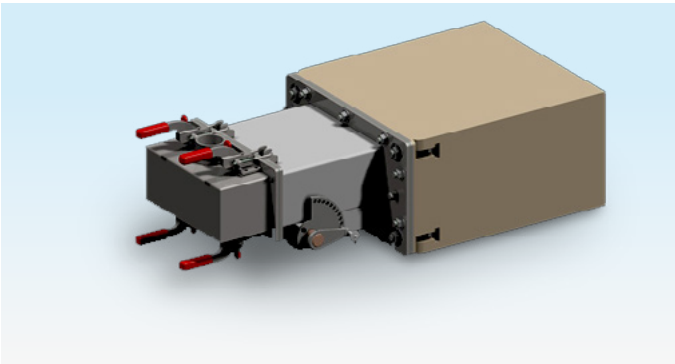
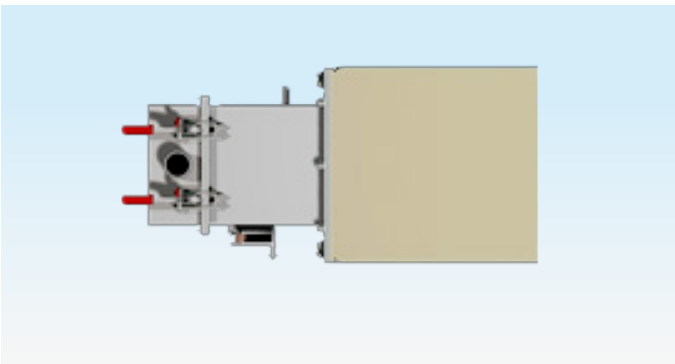




OXY-THERM FHR burners have been successfully applied to glass furnaces, day tanks, incinerators, metal melting furnaces, linear and rotary hearth furnaces, reheat furnaces, kilns, and many other types of high temperature (>1400°F (760°C)) applications.

OXY-THERM FHR burners can be used in furnaces and melters, steel reheat furnaces, linear hearth furnaces, rotary hearth furnaces, reverberatory furnaces, and other high temperature applications.

OXY-THERM FHR burners have a unique design which allows fuel interchangeability and easy maintenance. They are able to operate on fuel gas, light fuel oils or heavy fuel oils. Each fuel requires the use of separate nozzle inserts. Following plant safety procedures, the burner fuel inserts can be removed while the furnace is still in operation. In some cases, fuel oils may be atomized by fuel gases allowing simultaneous firing of two fuels.

The burners reduce fuel consumption in high temperature (>1400°F (760°C)) applications. The higher flame temperature of oxy-fuel firing increases the available heat and radiant heat transfer to most applications. Typical improve-

ments include increased thermal efficiency, increased processing rates, higher product quality, reduced flue gas volumes and reduced pollutant emissions.

When OXY-THERM FHR burners are fired with gas, fuel gas and oxygen for combustion enter the burner housing and mix at the nozzle exit.

For oil firing, the oil enters through the nozzle, is atomized with compressed air, then combines with the combustion oxygen as it exits the burner block.

The oxygen-fuel flame discharges through the refractory block tunnel to create a high aspect ratio, flat flame pattern.

OXY-THERM FHR fuel inserts are custom designed for specific flame sizes and capacities. Contact Honeywell Maxon with information on your furnace dimensions, process, and capacity requirements.

2 Function

2.1 Expected emissions

OXY-THERM FHR burners utilize a patented oxygen staging technology to reduce the formation of NO_X in high temperature furnaces. Through deep staging of the oxidant flow, NO_X is controlled to levels typically lower than less advanced oxy-fuel burners. By reduction in total flue gas volume, the total mass of NO_X created is often lower than air fuel firing.

Best results are achieved in furnaces which are sealed tight from ambient air infiltration or running a slight positive pressure to prevent the infiltation of nitrogen compounds. Results will vary widely by application. Contact Honeywell Maxon for estimates and consultation on best practice.

Exact emissions performance may vary in your application. Contact Honeywell Maxon for information on installation-specific estimates and guaranteed values. No guarantee of emissions is intended or implied without specific, written guarantee from Honeywell Maxon.

3 Selection

3.1 OXY-THERM FHR gas burners

3.1.1 Capacities gas burners

Type	Fuel flow	Max. Capacity	
	m³/h	MBTU/h[1)]	kW[2)]
OTFHRSG-N036	36	1.3	344
OTFHRSG-N043	43	1.5	397
OTFHRSG-N050	50	1.8	476
OTFHRSG-N056	56	2.0	529
OTFHRSG-N065	65	2.3	608
OTFHRSG-N082	82	2.9	767
OTFHRMG-N081	81	2.9	767
OTFHRMG-N103	103	3.6	952
OTFHRMG-N113	113	4.0	1058
OTFHRMG-N124	124	4.4	1163
OTFHRMG-N161	161	5.7	1507
OTFHRLG-N170	170	6.0	1586
OTFHRLG-N187	187	6.6	1745
OTFHRLG-N204	204	7.2	1904
OTFHRLG-N266	266	9.4	2485
OTFHRLG-N339	339	12.0	3173
OTFHRXG-N281	281	9.9	2618
OTFHRXG-N365	365	12.9	3411
OTFHRXG-N466	466	16.5	4363
OTFHRXG-N566	566	20.0	5288
OTFHRXG-N667	667	24.0	6346

1) Capacities in BTU/h refer to the higher heating value HHV (gross calorific value).

2) Capacities in kW refer to the lower heating value LHV.

3.1.2 Imperial burner data

Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality.

Type	Maximum capacity range	Turndown
	MBTU/h[1)]	
Small (S)	1.3–2.9	3:1
Medium (M)	2.9–5.7	3:1
Large (L)	6.0–12.0	3:1
Extra Large (X)	10.0–24.0	3:1

1) Capacities in BTU/h refer to the higher heating value HHV (gross calorific value).

Natural gas/Propane

- Natural gas at 60 °F
  with 1000 BTU/ft^3 (st) HHV – sg = 0.6[2)]
- Propane at 60 °F
  with 2500 BTU/ft^3 HHV – sg = 1.57[2)]

Type	Pressures required to burner inlet for maximum capacities			Typical oxygen to fuel volumetric ratios	
	Oxygen (@ 50 % staged)	Natural gas	Propane	To natural gas	To propane
	psig	psig	psig		
Small (S)	< 1.0	1.2	2.5	2.05–1	5.1–1
Medium (M)	< 1.0	1.2	2.5	2.05–1	5.1–1
Large (L)	< 1.0	1.2	2.5	2.05–1	5.1–1
Extra Large (X)	< 1.4	1.2	2.5	2.05–1	5.1–1

Natural gas/Propane mixed with Hydrogen

- 80 % Natural gas/20 % Hydrogen at 60 °F with 863 BTU/ft³ (st) HHV – sg = 0.49[2)]
- 80 % Propane/20 % Hydrogen at 60 °F with 2070 BTU/ft³ HHV – sg = 1.232[2)]

Type	Pressures required to burner inlet for maximum capacities			Typical oxygen to fuel volumetric ratios	
	Oxygen (@ 50 % staged)	80 % NG/20 % H_2	80 % Propane/20 % H_2	To 80 % NG/20 % H_2	To 80 % Propane/20 % H_2
	psig	psig	psig		
Small (S)	< 0.97	1.32	2.967	1.74–1	4.18–1
Medium (M)	< 0.97	1.32	2.967	1.74–1	4.18–1
Large (L)	< 0.97	1.32	2.967	1.74–1	4.18–1
Extra Large (X)	< 0.97	1.32	2.967	1.74–1	4.18–1

2) sg (specific gravity) = relative density to air (density air = 0.0763 lb/ft³) (st))

Approximate flame size, see page 20 (4.6 Staging ratio control)

3.1.3 Metric burner data

Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality.

Type	Maximum capacity range	Turndown
	kW[1)]	
Small (S)	344–767	3:1
Medium (M)	767–1507	3:1
Large (L)	1586–3173	3:1
Extra Large (X)	2644–6346	3:1

[1)] Capacities in kW refer to the lower heating value LHV.

Natural gas/Propane

- Natural gas at 15 °C
  with 10.9 kWh/m^3 (st) HHV – sg = 0.6[2)]
- Propane at 15 °C
  with 26.8 kWh/m^3 (st) HHV – sg = 1.57[2)]

Type	Pressures required to burner inlet for maximum capacities			Typical oxygen to fuel volumetric ratios	
	Oxygen (@ 50 % staged)	Natural gas	Propane	To natural gas	To propane
	mbar	mbar	mbar		
Small (S)	< 69	82	172	2.05–1	5.1–1
Medium (M)	< 69	82	172	2.05–1	5.1–1
Large (L)	< 69	82	172	2.05–1	5.1–1
Extra Large (X)	< 96	82	172	2.05–1	5.1–1

Natural gas/Propane mixed with Hydrogen

- 80 % Natural gas/20 % Hydrogen at 15 °C with 8.933 kWh/m³ (st) HHV – sg = 0.49[2)]
- 80 % Propane/20 % Hydrogen at 15 °C with 21.498 kWh/m³ (st) HHV – sg = 1.232[2)]

Type	Pressures required to burner inlet for maximum capacities			Typical oxygen to fuel volumetric ratios	
	Oxygen (@ 50 % staged)	80 % NG/20 % H_2	80 % Propane/20 % H_2	To 80 % NG/20 % H_2	To 80 % Propane/20 % H_2
	mbar	mbar	mbar		
Small (S)	< 67	90	204	1.74–1	4.18–1
Medium (M)	< 67	90	204	1.74–1	4.18–1
Large (L)	< 67	90	204	1.74–1	4.18–1
Extra Large (X)	< 67	90	204	1.74–1	4.18–1

2) sg (specific gravity) = relative density to air (density air = 1.293 kg/Nm³) (st))

Approximate flame size, see page 20 (4.6 Staging ratio control)

3.1.4 Selection table gas burners

Description	Code	Availability				Remark
		OTFHRSG	OTFHRMG	OTFHRLG	OTFHRXG	
Burner size						
Small	**S**	•				
Medium	**M**		•			
Large	**L**			•		
Extra large	**X**				•	
Medium type						
Gas	**G**	•	•	•	•	
Fuel						
Natural gas	**N**	•	•	•	•	
Fuel flow						
36–667 m^3/h	**036–667**	036, 043, 050, 056, 065, 082	081, 103, 113, 124, 161	170, 187, 204, 266, 339	281, 365, 466, 566, 667	Please work with your sales and application engineering to determine proper fuel flow for your application.
Block material						
Tank AZS 35-HP	**T**	•	•	•	•	
Zedpave	**Z**	•	•	•	•	
Burner block						
Yes	**1**	•	•	•	•	
No	**0**	•	•	•	•	
Oil conversion kit						
None	**000**	•	•	•	•	
41–569 liters/h	**041–569**	041, 058, 068	099, 134, 193	217, 251, 313, 358	462, 500, 569	

Example

OTFHRSG-N036T1000

Options

- Tagging: You can select a wire on tag with burner information etched into it in either carbon or stainless steel.
- EAC: If you wish EAC documents are shipped with the burner.

3.1.5 Gas to oil conversion kit

Description	Code	Availability			
		OTFHRCNVS	OTFHRCNVM	OTFHRCNVL	OTFHRCNVX
Burner size					
Small	**S**	•			
Medium	**M**		•		
Large	**L**			•	
Extra large	**X**				•
Original Fuel					
Gas	**G**	•	•	•	•
New Fuel					
Light fuel oil	**L**	•	•	•	•
Heavy fuel oil	**H**	•	•	•	•
Gas to Oil conversion					
41–569 liters/h	**041–569**	041, 058, 068	099, 134, 193	217, 251, 313, 358	462, 500, 569
Oil to Gas conversion					
None	**000**	•	•	•	•

Example

OTFHRCNV-SGH058000

Options

- EAC: If you wish EAC documents are shipped with the burner.

3.2 OXY-THERM FHR oil burners

3.2.1 Capacities oil burners

Type	Fuel flow	Max. Capacity	
	liters/h	MBTU/h	MW
OTFHRSO-L041	41	1.5	0.45
OTFHRSO-L058	58	2.2	0.64
OTFHRSO-L068	68	2.6	0.75
OTFHRSO-H041	41	1.7	0.49
OTFHRSO-H058	58	2.3	0.69
OTFHRSO-H068	68	2.7	0.81
OTFHRMO-L099	99	3.7	1.09
OTFHRMO-L134	134	5.0	1.47
OTFHRMO-L193	193	7.2	2.12
OTFHRMO-H099	99	4.0	1.17
OTFHRMO-H134	134	5.4	1.59
OTFHRMO-H193	193	7.8	2.29
OTFHRLO-L217	217	8.1	2.39
OTFHRLO-L251	251	9.4	2.76
OTFHRLO-L313	313	11.7	3.44
OTFHRLO-L358	358	13.4	3.94
OTFHRLO-H217	217	8.8	2.57
OTFHRLO-H251	251	10.1	2.97
OTFHRLO-H313	313	12.7	3.71
OTFHRLO-H358	358	14.5	4.24
OTFHRXO-L462	462	17.3	5.08
OTFHRXO-L500	500	18.8	5.50
OTFHRXO-L569	569	21.3	6.26
OTFHRXO-H462	462	18.7	5.47
OTFHRXO-H500	500	20.2	5.92
OTFHRXO-H569	569	23.0	6.74

3.2.2 Imperial burner data

Fuel: LFO = Light Fuel Oil, HFO = Heavy Fuel Oil

Heavy fuel oils require heating to obtain proper viscosity (less than 100 SSU or 21 cs) for optimal atomization. Temperature of HFO should be measured at burner inlet, not HFO storage tank or oil heater outlet.

Type	Oil nozzle	Max. flow	Fuel oil pressure @ maximum		Turndown	Atomizing pressure		Flame length range
			LFO	HFO		LFO	HFO	@ maximum
		gallons/h	psig	psig		psig	psig	feet
OT FHR S O..41	115	10.8	75	95	3:1	60	80	4–5.5
OT FHR S O..58	125	15.4	75	95	3:1	60	80	4–5.5
OT FHR S O..68	156	17.9	75	95	3:1	60	80	4.5–6
OT FHR M O..99	188	26.2	75	95	3:1	60	80	5–6.5
OT FHR M O..134	218	35.3	75	95	3:1	60	80	5–6.5
OT FHR M O..193	250	50.9	75	95	3:1	60	80	8–10
OT FHR L O..217	281	57.4	75	95	3:1	60	80	10–12
OT FHR L O..251	312	66.4	75	95	3:1	60	80	10–12
OT FHR L O..313	328	82.7	75	95	3:1	60	80	11–13
OT FHR L O..358	344	94.6	75	95	3:1	60	80	12–14
OT FHR XL O..462	391	122.2	75	95	3:1	60	80	13–15
OT FHR XL O..500	422	132.2	75	95	3:1	60	80	14–16
OT FHR XL O..569	438	150.3	75	95	3:1	60	80	15–17

Burner fuel oil insert and oil piping near the fuel inlet should be purged with compressed air after shut down to clear any remaining fuel oil. Failure to do so may cause plugging of oil atomizer and nozzle, and cause poor or improper performance.

3.2.3 Metric burner data

Fuel: LFO = Light Fuel Oil, HFO = Heavy Fuel Oil

Heavy fuel oils require heating to obtain proper viscosity (less than 100 SSU or 21 cs) for optimal atomization. Temperature of HFO should be measured at burner inlet, not HFO storage tank or oil heater outlet.

Type	Oil nozzle	Max. flow	Fuel oil pressure @ maximum		Turndown	Atomizing pressure		Flame length range
			LFO	HFO		LFO	HFO	@ maximum
		liters/h	mbar	mbar		mbar	mbar	m
OT FHR S O..41	115	41	5171	6550	3:1	4137	5515	1.2–1.7
OT FHR S O..58	125	58	5171	6550	3:1	4137	5515	1.2–1.7
OT FHR S O..68	156	68	5171	6550	3:1	4137	5515	1.4–1.8
OT FHR M O..99	188	99	5171	6550	3:1	4137	5515	1.5–2
OT FHR M O..134	218	134	5171	6550	3:1	4137	5515	1.5–2
OT FHR M O..193	250	193	5171	6550	3:1	4137	5515	2.4–3
OT FHR L O..217	281	217	5171	6550	3:1	4137	5515	3–3.7
OT FHR L O..251	312	251	5171	6550	3:1	4137	5515	3–3.7
OT FHR L O..313	328	313	5171	6550	3:1	4137	5515	3.3–4
OT FHR L O..358	344	358	5171	6550	3:1	4137	5515	3.7–4.3
OT FHR XL O..462	391	462	5171	6550	3:1	4137	5515	4–4.6
OT FHR XL O..500	422	500	5171	6550	3:1	4137	5515	4.3–4.9
OT FHR XL O..569	438	569	5171	6550	3:1	4137	5515	4.6–5.2

Burner fuel oil insert and oil piping near the fuel inlet should be purged with compressed air after shut down to clear any remaining fuel oil. Failure to do so may cause plugging of oil atomizer and nozzle, and cause poor or improper performance.

3.2.4 Selection table oil burners

Description	Code	Availability				Remark
		OTFHRSO	OTFHRMO	OTFHRLO	OTFHRXO	
Burner size						
Small	**S**	•				
Medium	**M**		•			
Large	**L**			•		
Extra large	**X**				•	
Medium type						
Oil	**O**	•	•	•	•	
Fuel						
Light fuel oil	**L**	•	•	•	•	
Heavy fuel oil	**H**	•	•	•	•	
Fuel flow						
41–569 liters/h	**041–569**	041, 058, 068	099, 134, 193	217, 251, 313, 358	462, 500, 569	Please work with your sales and application engineering to determine proper fuel flow for your application.
Block material						
Tank AZS 35-HP	**T**	•	•	•	•	
Zedpave	**Z**	•	•	•	•	
Burner block						
Yes	**1**	•	•	•	•	
No	**0**	•	•	•	•	
Gas conversion kit						
None	**000**	•	•	•	•	
36–667 m^3/h	**036–667**	036, 043, 050, 056, 065, 082	081, 103, 113, 124, 161	170, 187, 204, 266, 339	281, 365, 466, 566, 667	

Example

OTFHRMO-L099T1000

Options

- Tagging: You can select a wire on tag with burner information etched into it in either carbon or stainless steel.
- EAC: If you wish EAC documents are shipped with the burner.

3.2.5 Oil to gas conversion kit

Description	Code	Availability			
		OTFHRCNVS	OTFHRCNVM	OTFHRCNVL	OTFHRCNVX
Burner size					
Small	**S**	•			
Medium	**M**		•		
Large	**L**			•	
Extra large	**X**				•
Original Fuel					
Oil	**O**	•	•	•	•
New Fuel					
Natural gas	**N**	•	•	•	•
Gas to Oil conversion					
None	**000**	•	•	•	•
Oil to Gas conversion					
36–667 m^3/h	**036–667**	036, 043, 050, 056, 065, 082	081, 103, 113, 124, 161	170, 187, 204, 266, 339	281, 365, 466, 566, 667

Example

OTFHRCNV-SON000043

Options

- EAC: If you wish EAC documents are shipped with the burner.

3.3 Burner blocks

Zedpave or Tank AZS 35-HP burner blocks are used with gas firing and oil firing. Burner blocks are available in standard lengths. See page 21 (5 Technical data).

Block material

Type	Zedpave	Tank AZS 35-HP
Maximum temperature	3050 °F (1680 °C)	3050 °F (1680 °C)

In addition to maximum furnace temperatures, temperature variations and furnace atmosphere (chemical composition) can also be factors used to determine the appropriate block material.

4 Project planning information

4.1 Process temperatures

OXY-THERM FHR burners may be applied to furnace temperatures up to 3050 °F (1680 °C) with standard block materials. For higher temperatures, special block materials are available. Refer to “Burner blocks” for more details.

Cooling flow, either clean, dry air or oxygen, must be used whenever the burner assembly is in a high temperature atmosphere and is not firing. See installation and operating instructions for more details.

4.2 Process flows and oxygen content

The OXY-THERM FHR burner requires no additional oxygen for complete, clean combustion beyond the oxygen fed through the burner.

In applications with heavy drafts or process flows, the burner flame will be moved by the atmosphere motion. Do not allow oxy-fuel flames to contact furnace walls or product as this may damage refractories and other materials.

4.3 Ratio control

Correct fuel/oxygen ratio control valves should be selected. Trims should be selected to enable the use with oxygen. MAXON’s MICRO-RATIO valves are available with oxygen trim. For more accurate ratio control, use MAXON SMARTLINK MRV valves, or for best performance, use SMARTFIRE Intelligent Combustion Control System. Calibrated flowmeters in the fuel and the oxygen lines are recommended for establishing accurate volumetric flow rates.

4.4 Combustion oxygen pressure vs. flow

OXY-THERM FHR burners may be adjusted to operate on ratio, with excess oxygen (oxidizing environment) or with excess fuel (reducing environment). Typical applications will operate with 1-2% excess oxygen.

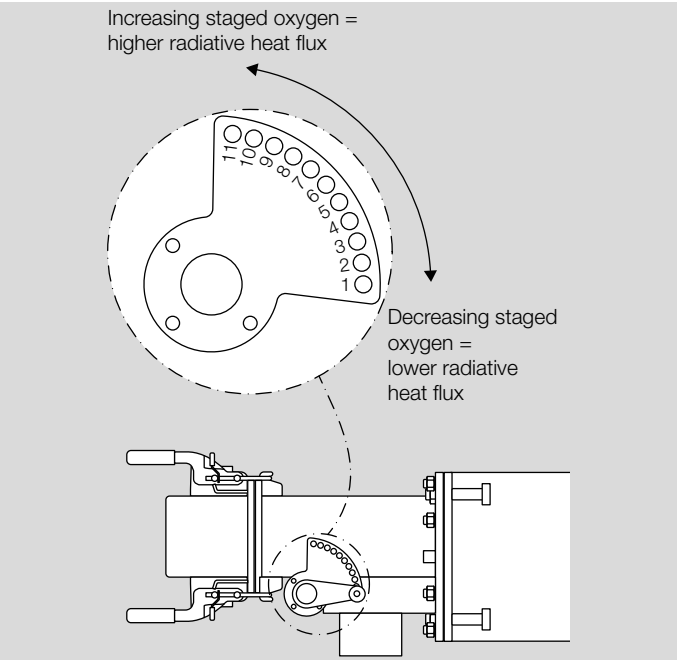
If burners are shut down while the furnace remains hot, it is recommended to continue a small flow of oxygen for cooling of the burner. Alternatively, air or nitrogen can be used for burner cooling during burner shut down. Total elimination of oxygen flow in hot furnaces can thermally damage burner fuel inserts and other parts. For extended shutdowns in hot furnaces, it is recommended that the fuel insert be removed and the burner fuel pathway be sealed with the service nut shipped with each burner.

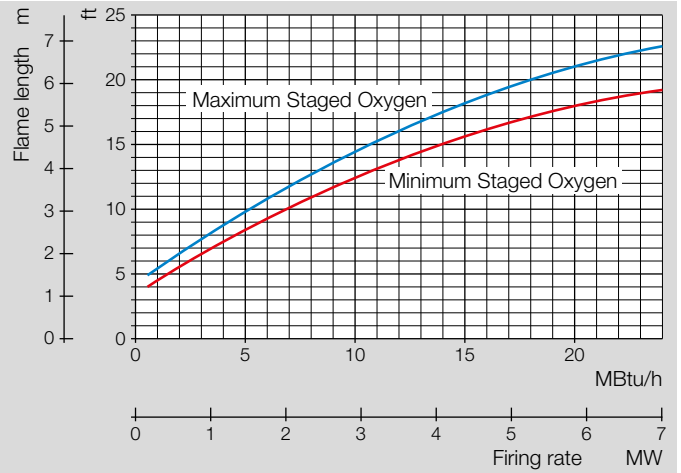
4.5 Fuels

OXY-THERM FHR burners are designed for firing on any clean fuel gas or light and heavy oils.

4.6 Staging ratio control

OXYTHERM FHR burners feature an adjustable staged oxygen design to optimize heat transfer, flame volume and emissions. Increasing the staged oxygen produces higher radiative heat flux, larger flame volume and lower NO_X emissions; decreasing staged oxygen produces lower radiative heat flux, smaller flame volume and higher NO_X emissions. The numbered hole positions (1-11) shown on the drawing below correspond with the hole positions indicated on the primary/staged oxygen valve adjustment graphs available from your Honeywell Maxon sales representative.





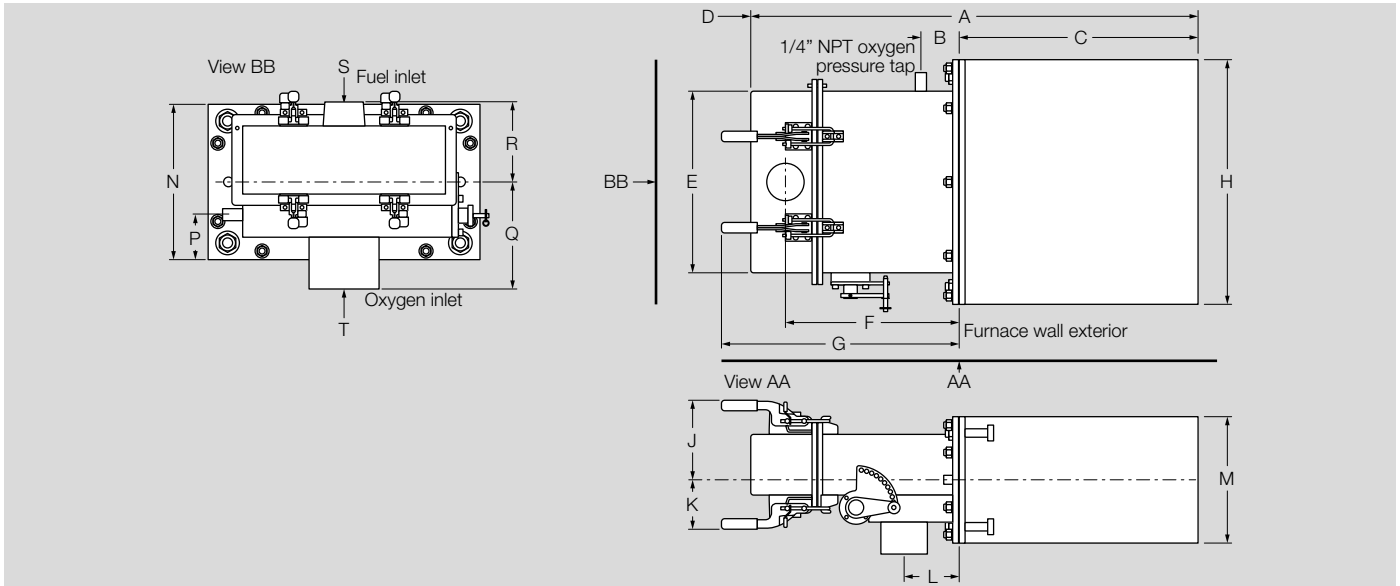
Flame lengths shown are typical for burners sized and operating at maximum design conditions. Flame lengths per unit of heat input will vary from these values when burners are operated below maximum design.

5 Technical data

5.1 Materials of construction

Burner part	Material
Burner housing	304 stainless steel
Block	Zedpave (default) or Tank AZS 35-HP
Gas nozzle	446 stainless steel
Oil nozzle	446 stainless steel
Mounting gasket	COGEMICANITE 132-1P

5.2 Dimension Gas burners [inch]

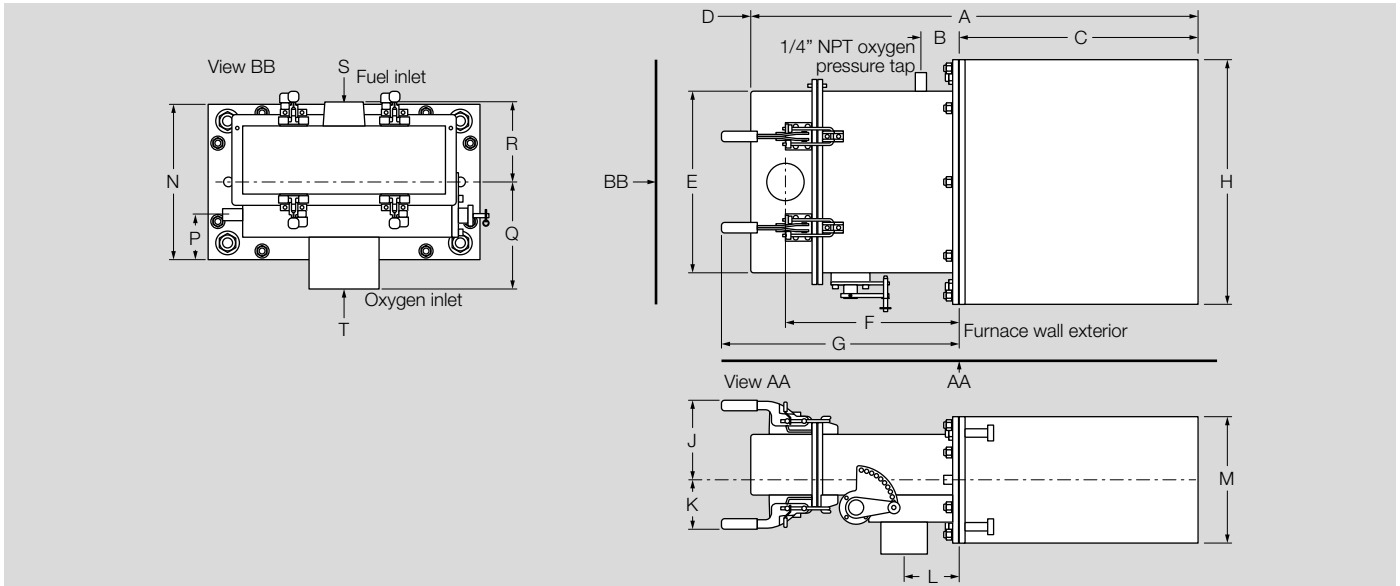


Size	A	B	C	D[1)]	E	F	G	H	J	K
	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
S	23.7	2.72	12.28	14.12	5.96	9.41	13.47	10.0	4.26	2.62
M	26.54	2.82	14.28	14.62	8.21	10.22	14.0	13.25	4.73	2.93
L	30.17	3.56	14.28	15.12	11.71	13.12	16.5	15.75	5.26	2.73
X	33.23	4.22	14.28	16.5	15.65	14.75	18.95	21.75	6.66	3.85

Size	L	M	N	P	Q	R	S	T	Burner weight	Block weight
	inch	inch	inch	inch	inch	inch	NPT	NPT	lbs	lbs
S	3.03	6.0	6.0	1.81	3.78	3.48	1-1/2	2	80	55
M	3.16	7.5	7.5	2.1	4.4	4.02	1-1/2	2	135	100
L	4.03	9.0	9.0	2.61	6.2	4.64	2	3	195	130
X	4.62	11.88	11.88	2.93	7.57	6.66	3	4	335	245

1) Clearance required to remove nozzle

5.3 Dimension Gas burners [mm]

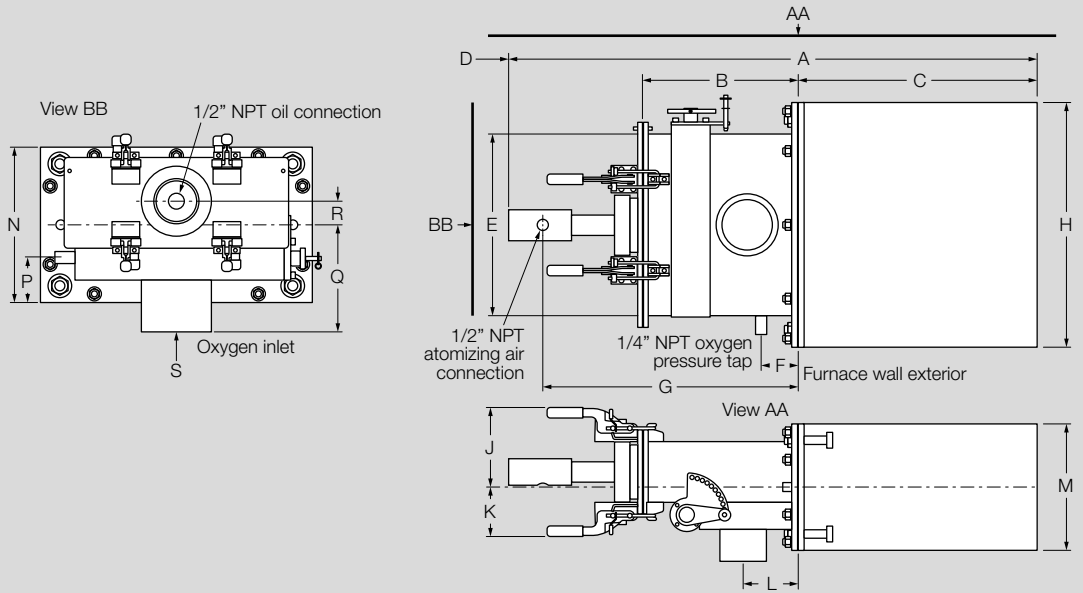


Size	A	B	C	D[1)]	E	F	G	H	J	K
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
S	602	70	312	358	150	240	342	254	108	66
M	674	72	362	372	208	260	356	336	120	74
L	766	90	362	384	298	333	420	400	134	70
X	844	107	362	420	398	375	480	552	170	98

Size	L	M	N	P	Q	R	S	T	Burnerweight	Blockweight
	mm	mm	mm	mm	mm	mm	mm	NPT	kg	kg
S	76	152	152	46	96	88	1-1/2	2	36	25
M	80	190	190	53	112	102	1-1/2	2	61	45
L	102	228	228	66	158	118	2	3	88	59
X	118	302	302	74	192	170	3	4	152	111

1) Clearance required to remove nozzle

5.4 Dimension Oil burners [inch]

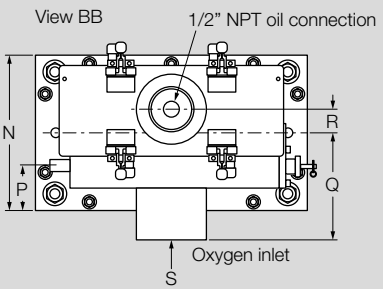


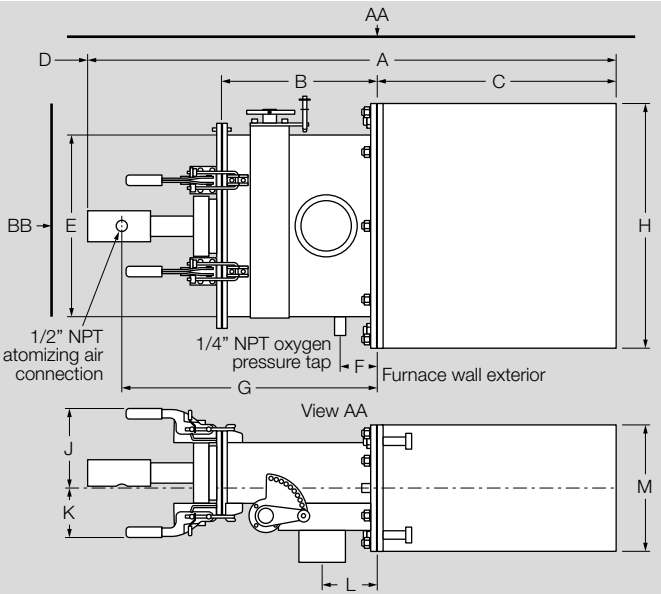
Size	A	B	C	D[1)]	E	F	G	H	J	K
	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
S	29.11	7.84	12.28	19.5	5.96	2.72	14.17	10.0	4.27	2.63
M	31.63	8.34	14.28	21.5	8.21	2.82	14.7	13.25	3.54	4.11
L	34.15	10.84	14.28	24.0	11.71	3.56	17.25	15.75	5.27	2.74
X	35.46	12.16	14.28	24.5	15.65	4.22	18.56	21.75		

Size	L	M	N	P	Q	R	S	Burnerweight	Blockweight
	inch	inch	inch	inch	inch	inch	NPT	lbs	lbs
S	3.03	6.0	6.0	1.81	3.78	.90	2	85	55
M	3.16	7.5	7.5	2.1	4.4	1.19	2	140	100
L	4.03	9.0	9.0	2.61	6.20	1.38	3	200	130
X	4.62	11.88	11.88	2.93	7.57	1.67	4	335	245

1) Clearance required to remove nozzle

5.5 Dimension Oil burners [mm]





Size	A	B	C	D[1)]	E	F	G	H	J	K
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
S	740	200	312	495	150	69	360	254	108	66
M	803	212	362	546	208	72	373	336	90	104
L	867	275	362	610	297	90	438	400	134	70
X	900	308	362	622	397	107	470	552		

Size	L	M	N	P	Q	R	S	Burner weight	Block weight
	mm	mm	mm	mm	mm	mm	NPT	kg	kg
S	76	152	152	46	96	22	2	38	25
M	80	190	190	53	112	30	2	64	45
L	102	228	228	66	158	35	3	90	59
X	117	302	302	74	192	42	4	152	111

[1)] Clearance required to remove nozzle

For more information

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschröder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

Honeywell MAXON branded products
201 E 18th Street
Muncie, IN 47302
USA
ThermalSolutions.honeywell.com

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