

XPO™

Ultra Low NOx Indirect Burner

超低排放氮氧化物間接燃燒器



- Low temperature burner for use with clean fuel gases
使用清潔燃氣的低溫燃燒器
- Single digit NOx emissions at 30% excess air
在 30%的過剩空氣下，氮氧化物排放只有個位數
- High efficiency with low excess air requirements
低過剩空氣要求下，高效率
- Capacities up to 2250KW.
高達 2250KW 的燃燒效率
- For use in indirect fired solution backed heaters
用作間接液體加熱

I · Product description 產品介紹

MAXON XPO™ burners are low temperature burners for use in liquid backed applications, including:

麥克森 XPO™ 低溫燃燒器，適用於液體應用，包含：

- Water back heater 回水鍋爐
- Fire tube boiler 火管鍋爐
- Thermal oil heater 導熱油爐
- Direct contact water heater 直接接觸熱水加熱器
- Solution heating/tanks 液體加熱器/罐
- Snow melter 雪熔爐

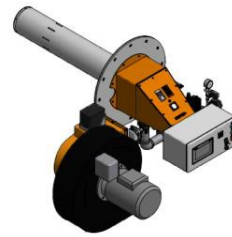
XPO™ burners provide high efficiency operation with low excess air requirements. They are designed for ease of retrofitting into existing liquid backed applications. XPO™ 燃燒器對過剩空氣的要求低，但運行效率高。其設計旨在更方便地對現有的液體加熱應用進行改造。

The packaged XPO™ burners are intergrated with flame supervision, safety interlock and flow control function, with user freindly interface for operator. The Standard configuration include:

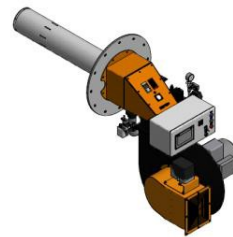
- 1: Intergrated Double safety shut-off valve with pressure regulating function.
- 2: SLATE burner control unit with electrical parral actuator with air dampler+ gas BV.
- 3: UV sensor
- 4: Gas high/low pressure switch+ pressure switch for valve tightness test+ air pressure switch.
- 5: package blower or separate blower to be installed on-site(depends on burner model)

Note:

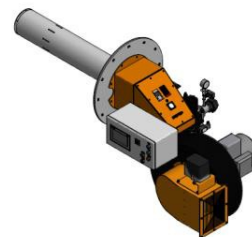
It's customer's responsibility to install the gas filter and manual shut-off valve upstream of the gas inlet.



Layout 1: remote blower



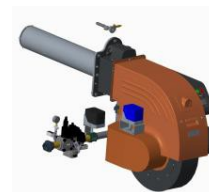
Layout 2: back installed control panel



Layout 3 Side installed control panel



Layout 4 Packaged control panel



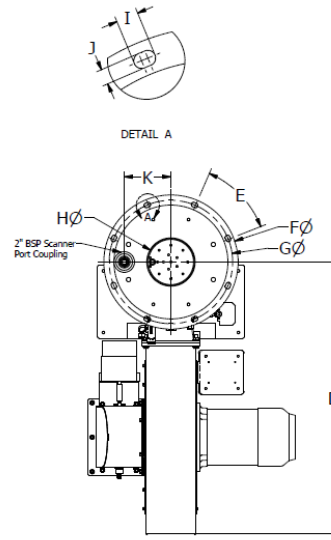
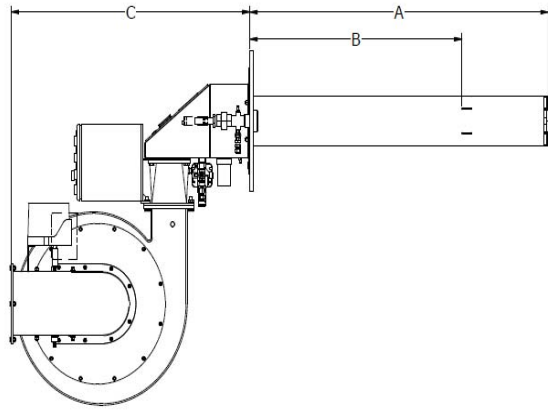
Layout 5 Packaged control panel
UV breakaway type

Typical Burner Data 燃燒器數據								
燃料：天然氣，LHV=8500 kcal/Nm ³ ，壓力一個大氣壓，溫度 0 °C				空氣：壓力一個大氣壓，溫度 15 °C				
	XPO 1PB	XPO 2PB	XPO 3PB	XPO 4PB	XPO 5PB	XPO 5PB+	XPO 3PAK	XPO 5PAK
Based on 18% excess air 基於 18% 的過剩空氣測得的結果								
燃燒器最大功率 KW	400	525	960	1260	1700	2000	960	1700
調節比	4:1	4:1	4:1	4:1	4:1	4:1	4:1	4:1
額定助燃風量 m ³ /hr	625	850	1260	1870	2340	2920	1260	2340
助燃風機功率 KW	1.1	2.2	4	4	5.5	11	4	5.5
助燃風壓力 mbar	30	28	40	40	40	56	40	40
燃燒管外徑 mm	152	152	152	203	203	203	152	203
鍋爐燃燒管內徑 mm	355-457	406-560	457-610	560-812	560-864	560-914	457-610	560-864
燃氣壓力 mbar	100-350	100-350	100-350	100-350	150-350	200-350	100-350	150-350
爐膛背壓 mbar	適用鍋爐 (熱水或蒸汽) 噸/小時							
0	0.5 W/S	0.5 W/S	1.0 W/S	1.5 W/S	2 W/S	2.5 W/S	1.0 W/S	2 W/S
5	0.5 W/ 0.45 S	0.5 W/S	1.0 W/S	1.5 W/1.47 S	2 W/S	2.5 W/ 2.4 S	1.0 W/S	2 W/S
7.5	0.5 W	0.5 W/S	1.0 W/S	1.5W/1.42 S	2 W/ 1.9 S	2.5W/ 2.3S	1.0 W/S	2 W/ 1.9 S
10	0.47 W	0.5 W/0.48 S	1.0 W/S	1.5 W/1.35 S	2W /1.84 S	2.5W/ 2.3S	1.0 W/S	2W/ 1.84 S

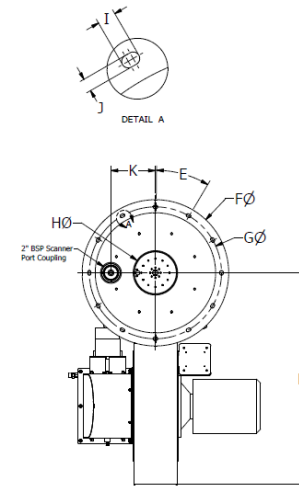
注意：

1. 燃燒器最大功率受燃料及爐膛背壓的影響。
2. W 表示熱水鍋爐，S 表示蒸汽鍋爐。
3. 夏季 (氣溫 30 ° C-35 ° C) 測試功率會減少 3%

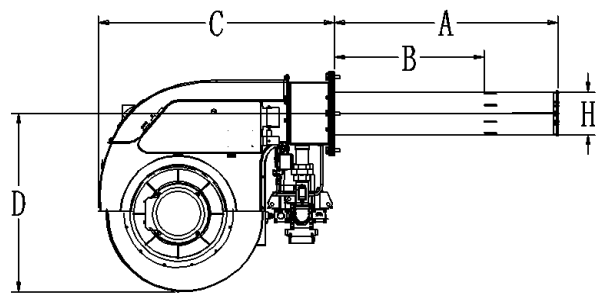
III · Dimensions for installaiton 安裝尺寸



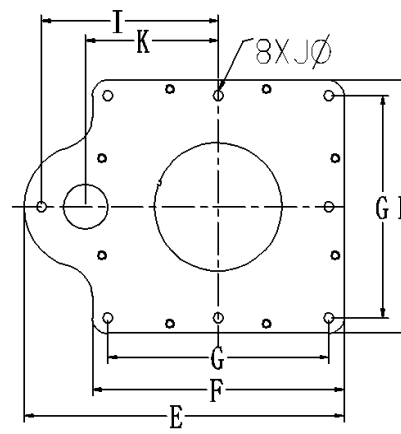
XPO 1,2&3PB



XPO 4&5PB



XPO 3&5PAK



Burner Size	XPO 1PB	XPO 2PB	XPO 3PB	XP O	XPO 5PB	XPO 5PB+	XPO 3 PAK	XPO 5 PAK
A	1145	1145	1145	1096	1096	1096	1147	1096
B	848	838	810	756	736	736	813.6	736
C	The dimension will be different based on layout. Ask layout drawing from HTS sales.							
D	高度和長度根據佈置的不同會有變化，請參照 Honeywell 單獨提供的組裝圖尺寸							
E	45°	45°	45°	30°	30°	30°	399.6	521
F	457	457	457	711	711	711	321	410
G	420	420	420	641	641	641	281	360
H	160	160	160	209	209	209	160.1	209
I	23	23	23	23	23	23	220.2	288
J	16	16	16	16	16	23	17.5	17.5
K*note	159	159	159	216	216	216	159.1	216

Note: The flange for XPO1,2,3 and 4,5 are different. Both on bolts position and quantity, please see the drawing.

IV · Burner mounting instructions 燃燒器安裝指導

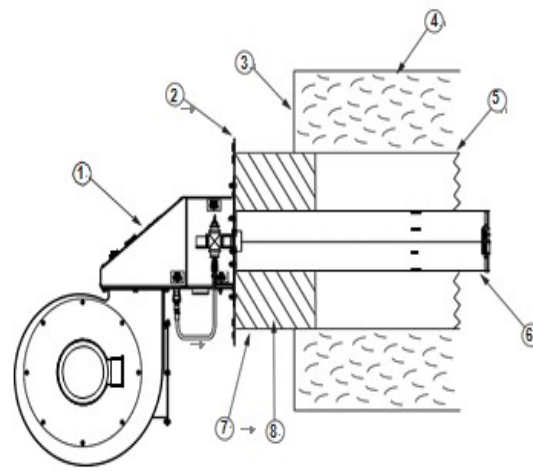
FLANGE THE BURNER TO THE INSTALLATION

Bolt the burner to the installation's burner mounting flange. Use proper gasketing. Tighten the flange bolting with correct torque. Retighten all bolts after first firing and regularly after commissioning.

All non-liquid cooled surfaces must be insulated as shown in burner mounting diagram. Area(s) between fire tube wall and outside of burner blast tube must be completely filled with insulation as shown below. Customer-supplied scanner tube must not extend beyond the blast tube insulation.

*Recommended insulation properties: minimum density of 16 kg/m³ or greater with minimum thermal conductivity of 12 W/m.K at 980°C.

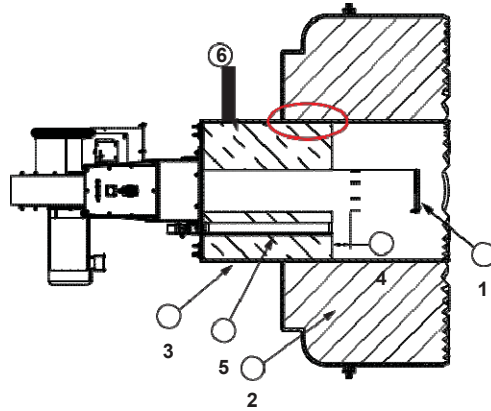
- 1) XPO™ burner XPO™ 燃燒器
 - 2) Mounting flange 固定法蘭
 - 3) Unit wall 單元牆
 - 4) Liquid solution 液體溶液
 - 5) Fire tube 煙管
 - 6) Burner blast tube 燃燒器排氣管
 - 7) Non-cooled fire tube wall 非冷卻煙管壁
 - 8) Customer-supplied insulation* 客戶提供的隔熱材料*
- *All non-liquid cooled surfaces **must be insulated** as shown above.
*所有非液體冷卻面必須按如圖所示方式進行隔熱



Correct installation

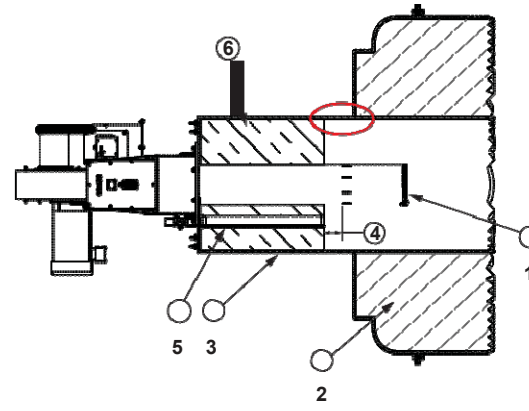
Blast tube is completely insulated beyond point where fire tube is solution backed. Minimum of 3" insulation into liquid.

- 1) Blast tube
- 2) Liquid solution
- 3) Fire tube
- 4) 152 mm gap required from insulation to slots
- 5) Customer-supplied scanner tube
- 6) Customer-supplied insulation (minimum 152 mm depth from blast tube flange) *



Incorrect application/installation

Blast tube cannot be completely insulated due to protrusion length of fire tube out of solution.



V · SAFETY 安全

Sufficient safe access should be present to allow work on the relevant components. This manual is compiled to a level which assumes that personnel employed on the operating and maintenance work are familiar with the principles and techniques used in the type of equipment described, and are aware of the hazards associated with the equipment and its working environment. The information given is intended to support operating and maintenance procedures and should not be taken as a contractual specification.

提供充足的空間以保證對相關元件進行安全操作。此手冊只適用於熟悉所描述設備的操作方法和技術並具有相關知識的操作和維修員工，並且要意識到設備誤操作可能帶來的相關的危害。本手冊所提供的資訊用於支持操作和維修步驟，不可作為合同條件。

Inquires relating to this manual should be made to the address on the cover sheet.

與此手冊內容有關的問題請參照首頁上的位址進行詢問。

All work and operation of the plant should be carried out by trained/qualified operators, tradesmen or engineers.

車間的所有工作和操作必須由培訓過或有資格的操作員，技術工人或工程師完成。

Before undertaking maintenance work on any item of the equipment it must be made safe.

在對設備任何專案進行維修工作前，必須保證設備處於安全狀態。

- Fuel supply should be manually isolated and fuel isolating valve locked in the “OFF” position.
燃料供應必須手動隔離，燃料隔離閥鎖定在“關閉”位置。
- Any pneumatic component to be worked on should be pneumatically isolated and drained of any pressure, and drains left open with caution notices if necessary.
要維修的任何氣動元件必須隔離氣源和排出所有剩餘空氣，必要時打開排放口，在排放口打開時要有警示標誌
- Any electrical components to be worked on should be electrically isolated at the control panel, the fuses removed and the isolator locked in the “OFF” position.
要維修的任何電氣元件必須在控制台上切斷電源，移除保險絲，開關鎖定在“關斷”位置。

VI · INSTALLATION 安裝

It is the responsibility of the Customer to install all of the equipment.

客戶對設備的安裝負責。

Piping weight should be independently supported. Do not use the burner as a piping support or hang weight from the burner's flange connections. 管路必須單獨設置支撐，不能把燃燒器的法蘭盤當作管路支撐或者在法蘭盤處懸掛重物。

Any damage caused by the improper installation, handling or improper use of the equipment is the responsibility of the Customer. Prior to installation of the equipment the following is suggested.

由於安裝不當，處理和使用不當對設備造成的損壞應由客戶負責。因此，設備安裝前應遵循以下建議：

1. Inspect all components upon arrival. Insure quality and quantity of components is correct. Report any missing or damaged equipment to Eclipse Combustion (Suzhou) immediately.

設備到達後，檢查所有部件，確保品質和數量正確。如有丟失或損壞部件，立即通知天時公司。

2. During installation insure the following:

安裝過程中確保以下要求：

- All valve handles can rotate to full open or full close position.
所有閥門手柄能夠開關自如。
- All elements are piped in the proper flow direction.
所有部件安裝方向正確。
- Interconnecting piping should be installed in such a manner that undue stress will not be imposed on the Main Gas Train.
連接管道不應對燃氣盤產生應力。
- Insure the piping system is pressure tested and blown clean before final connection to any equipment.
確保管路系統在連接到任何設備之前，已進行試壓並吹掃乾淨。
- When pressure testing insure all pressure gauges and are isolated, high pressure will damage the gauges. Keep all pressure gauges closed until start-up to insure they are not damaged.
在試壓時，關閉所有壓力錶的隔離閥，以防高壓損壞表頭。保證所有壓力錶隔離閥關閉，直到啟動前。
- Eclipse Combustion (Suzhou) will not be responsible for any damage caused by excessive pressure.
蘇州天時燃燒公司不對壓力過高對設備產生的損壞負責。
- Insure all wiring is checked prior to energizing the system. Damage caused by improper wiring is not the responsibility of Eclipse combustion (Suzhou).
在系統上電之前，檢查所有接線。蘇州天時燃燒不對由於接線問題產生的損壞負責。

VII · OPERATION AND MAINTENANCE 運行和維護

Eclipse burner equipment is designed to minimize maintenance.

天時燃燒設備設計的主要目的是把維修減少到最小化。

1. Interlocks

安全聯鎖裝置

- a. With burner and process operating normally check all control and safety interlocks for correct operation and system reaction.

在燃燒器運行正常的情況下，檢查所有的控制器和安全聯鎖裝置是否正確運作以及系統的反應正常。

2. Operating Data

運行資料

- a. With burner and process operating normally and satisfactorily, optimize and record operating range parameters, including:

在燃燒器運行正常情況下，完善和記錄以下工作參數：

- i. Pressures; 壓力
- ii. Flows; 流量
- iii. Temperatures; 溫度
- iv. Settings; 設置
- v. Combustion analysis. 燃燒廢氣分析

3. To ensure continuing trouble free operation the following areas should be addressed at the intervals shown.

為了保證連續無故障運行，以部件見需在顯示的時間間隔中進行週期性的檢查。

	INTERVAL 時間間隔			
	1 Months 1 個月	3 Months 3 個月	6 Months 6 個月	12 Months 12 個月
Check Flame Detection Signal 檢查火焰信號	X			
Clean Spark Plug 清潔火花塞		X		
Clean UV Scanner/Flame Rod 清潔紫外線探頭/火焰棒		X		

Clean Fan Impeller 清潔風扇葉輪			X	
Clean Fan Filter Element (add clean times according to actual situation) 清潔風扇泡棉(根據實際情況可以增加清洗次數)	X			
Grease Fan Motor Bearings (See component section for details) 給風機馬達軸承上潤滑油 (詳細參照部分)			X	
Clean Burner Working Surfaces 清潔燃燒器工作表面			X	
Compare Gas Pressure At Burner Inlet With Commissioning Data 將燃燒器進氣口處燃氣壓力和調試資料 進行比較			X	
Confirm Correct Operation Of Pressure Switches 確認壓力開關正確運行			X	
Replace Spark Plug 更換火花塞				X
Replace UV Scanner/Flame Rod 更換紫外線探頭/火焰棒				X
Check & Clean Air & Gas Ports In Pilot Burner Casting 檢查和清潔點火管路燃燒器鑄件上的空 氣和燃氣口				X
Clean Seats on Pilot & Main Gas Safety Shut-Off Valves				X

清潔點火管路和主燃氣管路上燃氣安全截止閥的底座				
Check Gas Pipe Work Joints For Tightness 檢查燃氣管介面處的氣密性				X

VIII · TROUBLE SHOOTING 故障檢修

SYMPTOM 故障現象	POSSIBLE CAUSE 故障原因	REMEDY 補救措施
Pilot fails to light. Burner locks out at pilot. 點火失敗，燃燒器在點火時報警。	a) No spark 沒有火花 b) HT lead loose 高壓線脫落 c) Spark gap incorrect 火花塞間隙不正確 d) Transformer failed 點火變壓器燒壞	a) Tighten lead ends 擰緊線接頭 b) Adjust spark gap 調節火花塞間隙 c) Replace transformer 更換變壓器
Pilot fails to light. Burner locks out at pilot. 點小火失敗，燃燒器在點小火時報警。	a) No gas 沒有燃氣 b) Too much gas 燃氣過多 c) Pilot valve not open 小火閥未打開	a) Restore gas supply 恢復燃氣供應 b) Adjust gas pilot rate 調節燃氣比率 c) Change valve 替換閥門 d) Clear open circuit 修復斷路的線路
Pilot fails to light. Burner locks out at pilot. 點火失敗，燃燒器在點小火時報警。	a) UV Scanner/Flame Rod not detecting flame UV 探頭/火焰棒探測不到火焰 b) Bad ground 接地回路斷開	a) Reposition UV Scanner/Flame Rod 重新放置 UV 探頭/火焰棒 b) Repair ground 修理接地線路
Pilot lights but extinguishes. Burner locks out at main flame. 點著火後熄滅，燃燒器在主火焰處報警。	a) Main valves not open 主閥未打開	a) Restore main valve operation 使主閥恢復運行

SYMPTOM 故障現象	POSSIBLE CAUSE 故障原因	REMEDY 補救措施
<p>Main flame lights but extinguishes. Burner locks out at main flame.</p> <p>主火焰點燃後熄滅，燃燒器在 主火焰時報警。。</p>	<p>a) Low gas pressure switch set high 低燃氣壓力開關設定太高</p> <p>b) High gas pressure switch set low 高燃氣壓力開關設置太低</p> <p>c) Pilot setting high 點火火焰太大</p> <p>d) Flame undetected 火焰未被探測到</p>	<p>a) Reset gas pressure switch 重新設置燃氣壓力開關</p> <p>b) Adjust pilot rate 點火火焰調節</p> <p>c) Reposition flame detection 改變火焰探測位置</p>
<p>Main flame reaches high fire but extinguishes. No lockout.</p> <p>主火焰到達高火後熄滅，沒有 報警。</p>	<p>a) High or low gas pressure switch faulty 高/低燃氣壓力開關失靈</p> <p>b) Process pressure switch faulty 工藝空氣壓力開關失靈</p> <p>c) Process pressure low 工程空氣壓力過低</p> <p>d) Interlock circuit broken 聯鎖回路斷路</p>	<p>a) Replace gas pressure switch 更換燃氣壓力開關</p> <p>b) Check process fan 檢查工藝風機</p> <p>c) Reinststate interlock 修理聯鎖裝置</p>
<p>Main flame extinguishes during steady fire. Burner locks out at normal run.</p> <p>在火焰穩定期間，主火焰熄滅。燃燒器在正常運行時報警 切斷。</p>	<p>a) Loss of gas supply 燃氣供應不足</p> <p>b) Loss of combustion air 燃燒空氣不足</p> <p>c) Failure of flame detector 火焰探測器故障</p>	<p>a) Restore gas supply 恢復燃氣供應</p> <p>b) Restore combustion air 恢復燃燒空氣</p> <p>c) Replace flame detector 更換火焰探測器</p>
<p>Burner locks out at normal shutdown</p> <p>燃燒器在正常停機時報警</p>	<p>a) Automatic gas shutoff valves not closing fully 自動燃氣安全關斷閥沒有關斷到位</p>	<p>a) Isolate gas at manual valve repair or replace automatic valve 用手動閥隔離燃氣。修理或更換安全關斷閥</p>

SYMPTOM 故障現象	POSSIBLE CAUSE 故障原因	REMEDY 補救措施
Heat output not maintained 不能持續供熱	a) Gas pressure fall 燃氣壓力下降 b) Burner head dirty 燃燒器頂端髒汙	a) Restore gas pressure 恢復燃氣壓力 b) Clean burner 清潔燃燒器

瞭解更多資訊

欲瞭解更多霍尼韋爾熱能解決方案的產品及服務，
 請訪問 ThermalSolutions.honeywell.com 或與
 您當地的銷售代表聯絡。

