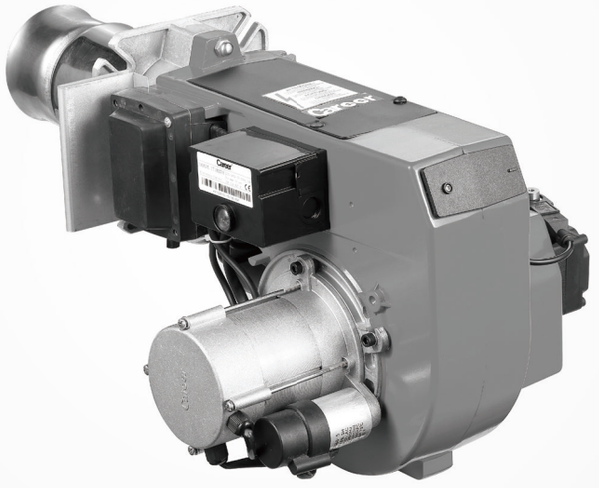
安装、使用和维护说明手册
Installation,
Operation, and Maintenance Manual

CX20



ISO9001:2015
Quality System
Certification

该目录仅供参考。保留根据技术进步进行更改的权利。
This directory is for reference only. Reserves the right to change to accommodate technological advances.
ISO 9001认证：符合国际质量管理体系标准，确保产品的高品质与可靠性。
ISO 9001 Certification: Complies with international quality management system standards, ensuring high quality and reliability of the product.

目录

1.安全警告 ⚠

风险类型	操作禁令	强制措施
电气安全	×超10A保险丝	√独立断路器+每月接地检测
高温防护	×＞40℃接触燃烧器	√停机后风机持续散热
燃料泄漏	×明火/通电状态检修	√立即关阀→通风→肥皂水检漏/吸附
无人值守	×未装双保险恒温器运行	√主控+保险温控串联安装

致命项：带电维护点火电极=触电风险！

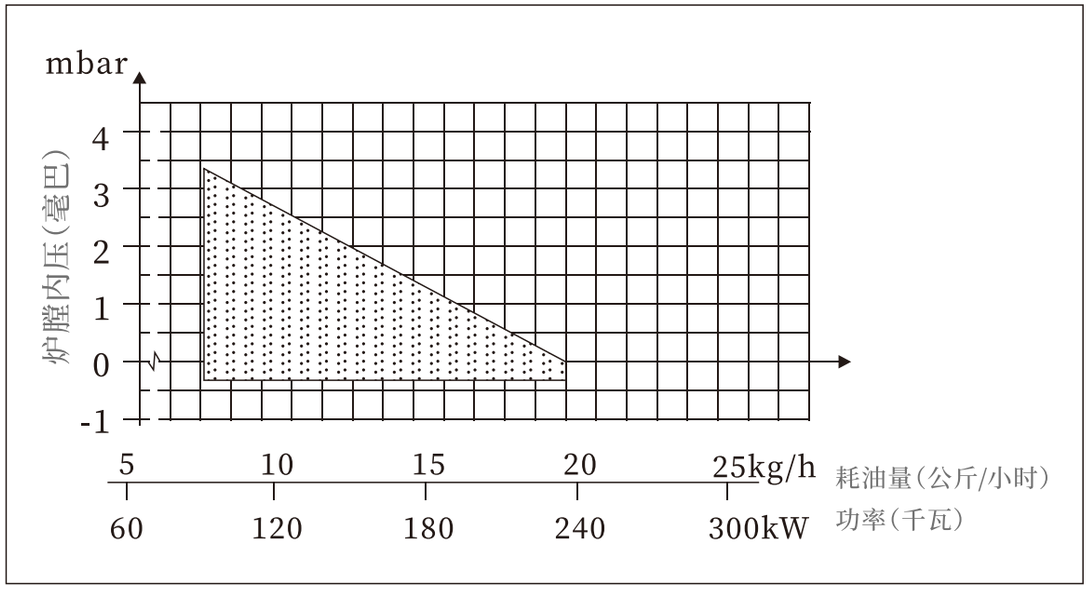
2.产品参数与技术规范

项目	参数值
型号	CX20
额定热功率	71~237 kW
燃料类型	轻柴油（黏度3-6cSt@20℃），兼容： ➢煤油（需采用双油管系统） ➢符合 DIN V 51603-6 EL A Bio-10 标准的生物燃油（最大 10% FAME）
耗油量	6-17.3 kg/h （炉膛内压0时）
电源规格	220V±10%, 50Hz, IP55
调节方式	开关式

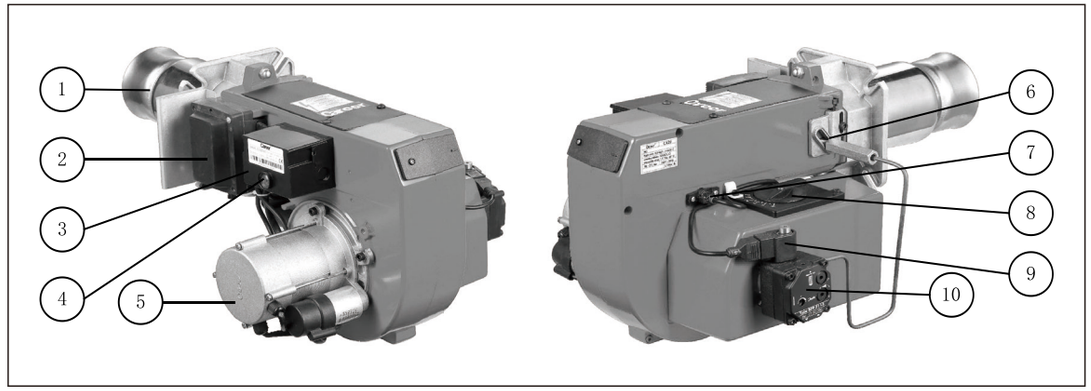
注：

➢ 使用煤油或生物燃油时需采用双油管系统；
➢ 长期使用生物燃油可能缩短油泵寿命，建议定期检查过滤器。

工作曲线图

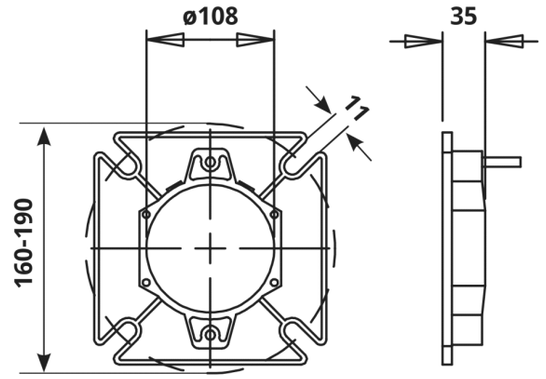


组件

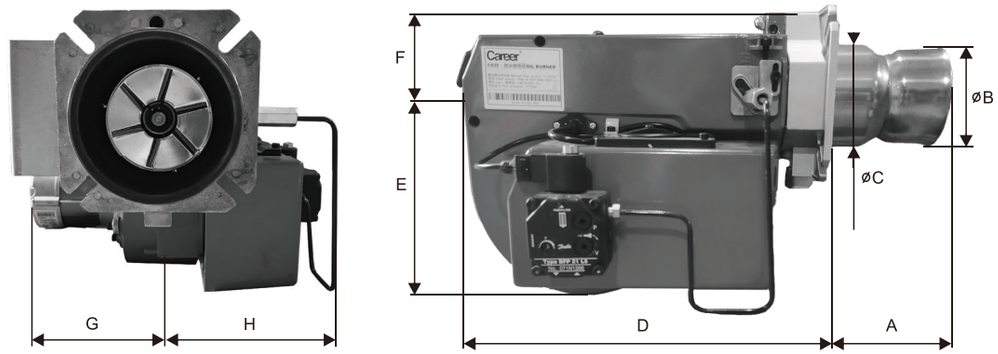


序号	部件名称	技术规格/位置	功能说明与维护指引
1	火通	Φ108mm	火焰通道｜注意高温，禁止触碰
2	点火变压器	输出2*5kV｜50Hz	高压电弧点火
3	控制器	工作温度-10~50°C	系统逻辑控制
4	故障复位按钮	-	手动复位报警
5	电机	220V/0.18kW|2800rpm	驱动风机
6	喷嘴油枪组合	雾化角60°	燃油雾化核心｜ 每3000小时强制更换
7	火焰检测器	感光电眼	实时监测火焰｜每月清洁
8	风门执行器	开度0-90°	空气流量调节｜高/低负荷需重新标定（参考“强制鼓风与空燃比原理理➔点火准备”P16章节）
9	电磁阀	常闭型	燃油通断控制
10	油泵	最大压力14bar｜单双油管适配	燃油加压｜禁止空转（单油管系统需手动排气）

安装尺寸



CX20安装法兰



单位mm	A	B	C	D	E	F	G	H	到地板最小距离
标准型	115	Φ104	Φ108	372	220	83	175	207	200
加长型1	187								

包装参数

型号		包装尺寸（长×宽×高）	净重	毛重
CX20	标准型	545×455×360mm	14kg	17kg
	加长型1	625×455×360mm	15kg	18kg

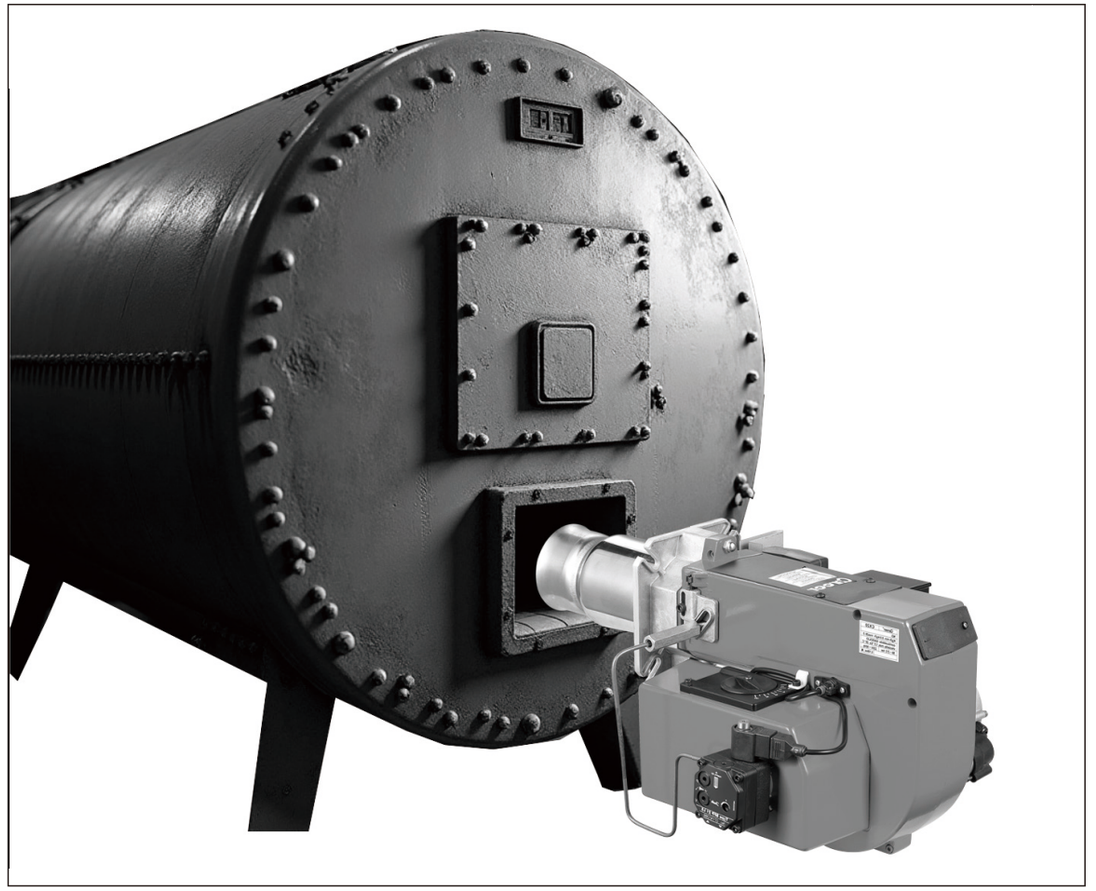
3.安装与调试

安装前准备

- 检查运输完整性，报告损坏。
- 确保安装环境干燥、无化学品，相对湿度≤80%。
- 准备工具（标配工具随机附带，其余需客户自备）：

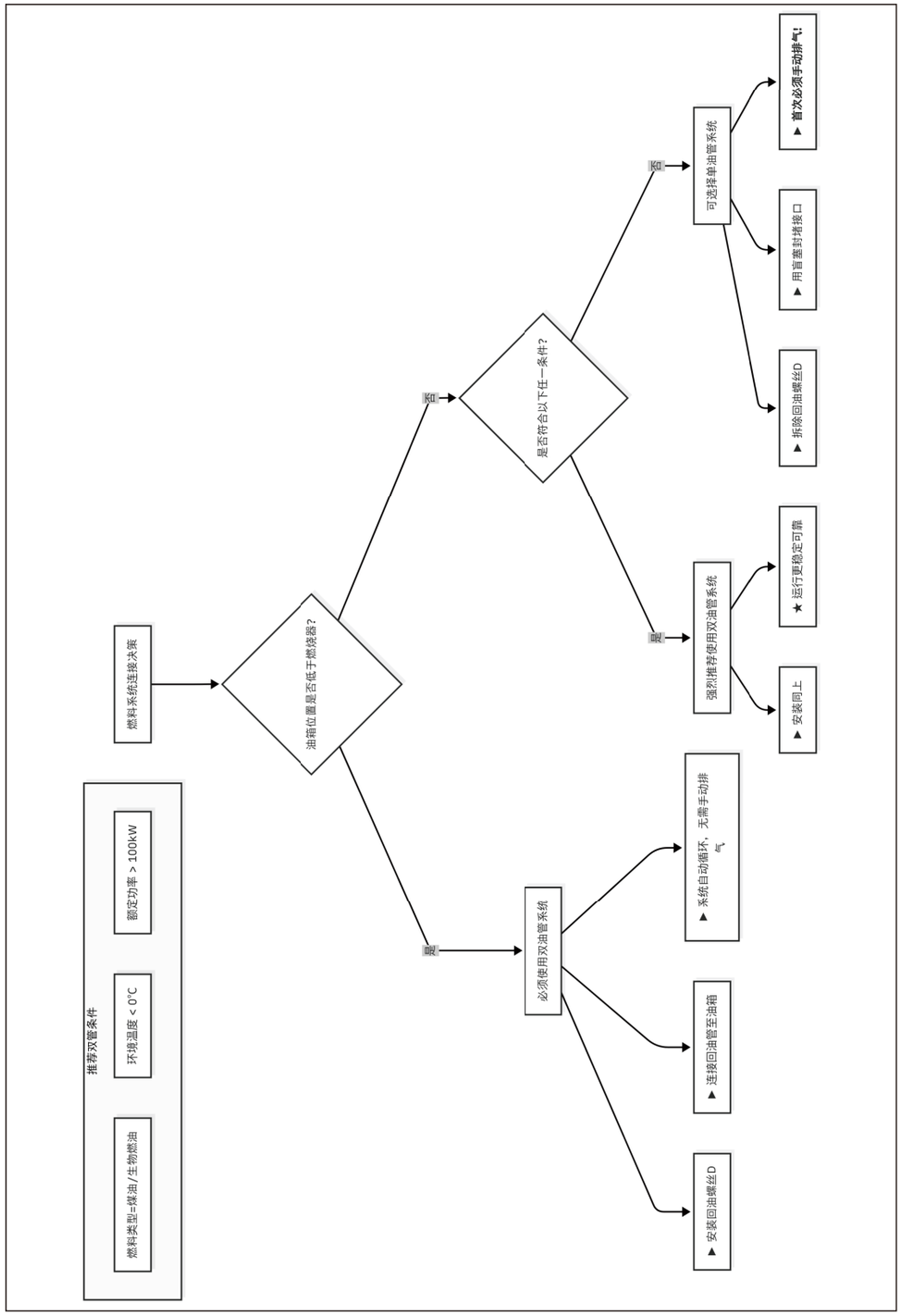
工具名称	属性	用途
六角扳手	自备	安装法兰螺栓紧固 （请根据所选螺栓尺寸配置相应扳手）
8-10mm六角螺丝及配套垫片	自备	安装法兰螺栓紧固（请根据实际炉口尺寸选择）
17号六角扳手	自备	软油管接口连接
5mm六角匙	自备	风门-喷嘴位置调节
1号一字螺丝刀	自备	控制器接线座脱离（推弹簧）/油泵排气螺钉操作
4mm六角匙	标配	安装法兰固定/油泵调压/风门调整
油压表 扬程0-20bar, G1/8接口	自备	油泵压力监测
绝缘胶带 PVC电工胶带	自备	电气接线绝缘
密封胶耐油型	自备	油管接口密封

燃烧器安装



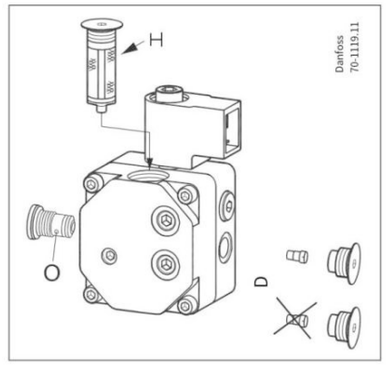
- 将法兰与石棉垫固定在锅炉接口。
- 燃烧器主体对准法兰，用螺栓紧固。
- 连接油管、电源线（按接线图操作）。

燃料系统连接



系统类型	适用场景	核心区别	油泵操作
单油管	油箱位置高于燃烧器	无回油管， 首次使用必须手动排气。	拆除油泵内部回路螺丝D， 安装铁塞。
双油管	油箱位置低于燃烧器 或使用煤油	含供油管+回油管， 自动循环。	保留油泵内部回路螺丝D， 连接回油管。

油泵内部调整



操作工具：

➢4mm六角钥匙（随机附带）

强制要求：回油管需高于油箱最高液面，避免虹吸倒流。 ⚠

1.排气说明

单油管系统：在首次启动前，打开油泵压力表接口（G1/8）排气，直至燃油无泡沫流出。

2.安装顺序

3.密封性检查

(1)打开球阀，启动油泵（不点火），观察各接口是否渗油。
(2)若泄漏，重新拧紧或更换密封垫片。

4.关键注意事项

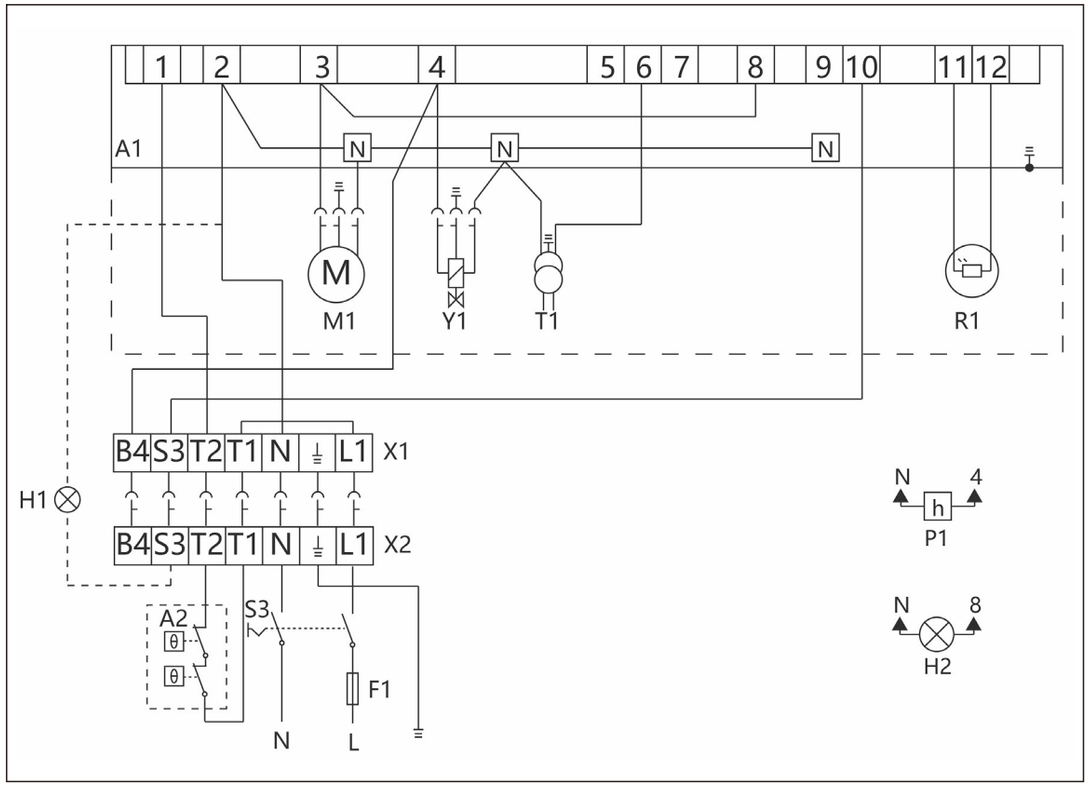
➢安装顺序不可逆：燃油必须先经过球阀控制流量，再通过过滤器净化，最后经软油管进入油泵。
➢垫片强制安装：软油管连接油泵端接口必须安装密封垫片，否则可能引发泄漏。

5.维护提示

过滤器每1个月清洁一次，每年更换滤芯（参考“服务与维护”P20章节）。

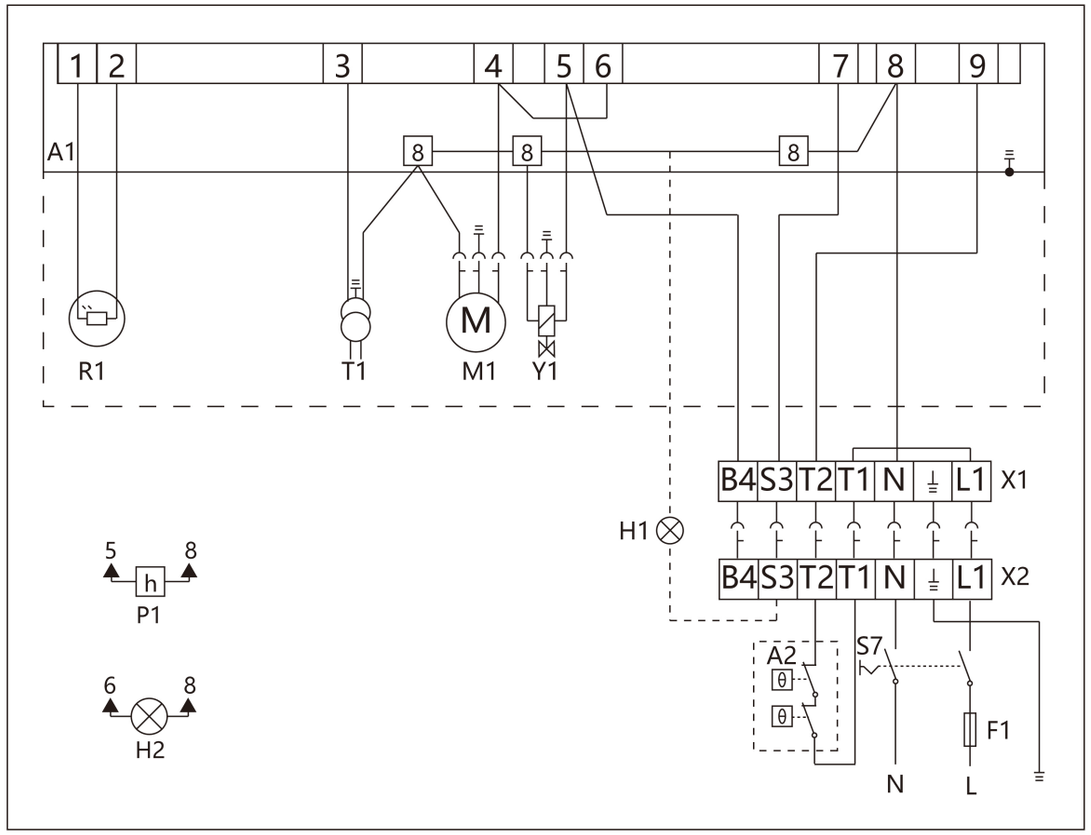
电气接线图

控制盒接线图（凯利 *KYLOA24.171B27H 电子式）



标识	名称	标识	名称
A1	*KYLOA24.171B27H电子式	P1	操作时间记录计
A2	恒温器	H1	故障信号灯
S3	电源开关	H2	操作信号灯
R1	火焰检测(感光电眼)	F1	保险丝
T1	点火变压器	X1	接线插座
M1	燃烧器电机	X2	电源插头
Y1	油泵电磁阀		

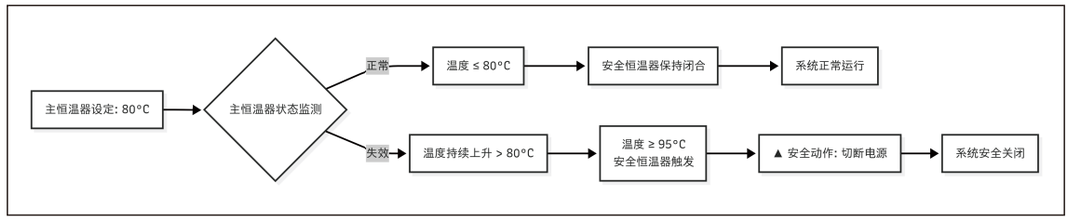
控制盒接线图(霍尼韦尔 TF834E.3)



标识	名称	标识	名称
A1	TF834E.3控制器	P1	操作时间记录计
A2	恒温器	H1	故障信号灯
S3	电源开关	H2	操作信号灯
R1	火焰检测(感光电眼)	F1	保险丝
T1	点火变压器	X1	接线插座
M1	燃烧器电机	X2	电源插头
Y1	油泵电磁阀		

重点安全配置说明

双保险恒温器



结构原理:

内置串联的两个独立温控单元:

- **主恒温器:**设定工作温度(例:80°C)。
- **保险恒温器:**设定安全温度(=主设定+15~20°C,例:95°C)。

安全逻辑:当主恒温器失效时,炉温升至安全温度自动切断电源。

保险丝规格

最大电流:

- 10A

违规后果:

过流可能导致控制器烧毁引发火灾。

故障信号灯

安装位置:

- 操作间醒目墙面(非控制盒指示灯)。

核心价值:

- 即时识别E01-E10故障代码,避免事故扩大。

操作信号灯

功能:

- 绿色常亮=运行中,熄灭=停机。

接线端:

- 凯利 KYLOA24.171B27H 电子式控制器:端子 N和 8
- 霍尼韦尔 TF834E.3 控制器:端子 6 和 8

操作时间记录计

作用:

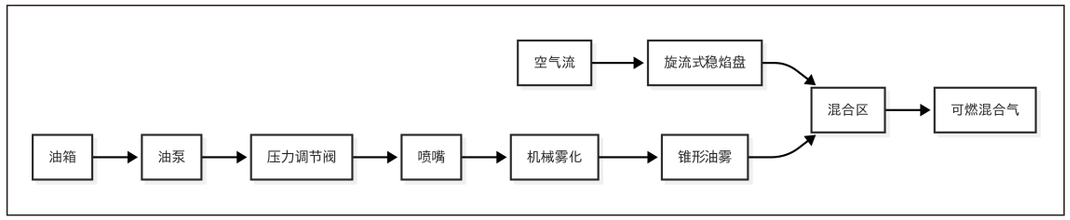
- 累计燃烧小时数(维护周期依据)。

数据应用:

- 每500小时清洁油泵滤网
- 每3000小时更换喷嘴。

燃料供给与雾化原理➔启动准备

工作原理

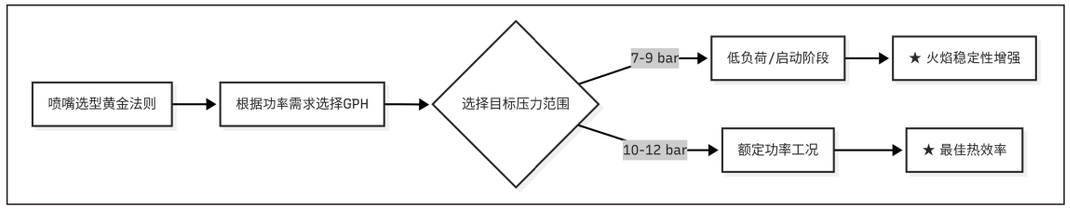


燃油经油泵加压至10bar，通过机械雾化喷嘴形成锥形油雾，与空气充分混合后形成可燃混合气。

喷嘴选型与热功率优化指南

喷嘴选型黄金法则

喷嘴尺寸（GPH值）直接决定燃油雾化质量和燃烧强度：



➢GPH定义：美加仑/小时（1 GPH = 3.785升/小时）（7bar油压下）

➢核心影响：每增加0.25 GPH，功率提升约11kW（10bar油压下）

喷嘴选型对照表

GPH	7 bar		8 bar		9 bar		10 bar		11 bar		12 bar		13 bar		14 bar	
	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW
1.75	5.15	61/60	5.51	65/64	5.85	69/68	6.15	73/72	6.45	76/75	6.73	80/78	7.01	83/82	7.28	86/85
2.00	5.89	70/69	6.29	75/73	6.68	79/78	7.03	83/82	7.37	87/86	7.69	91/90	8.01	95/93	8.32	99/98
2.25	6.62	78/77	7.08	84/82	7.52	89/88	7.91	94/93	8.29	98/97	8.65	103/101	9.01	107/105	9.36	111/109
2.50	7.36	87/86	7.87	93/92	8.36	99/97	8.79	104/103	9.21	109/107	9.61	114/112	10.11	119/117	10.411	123/121
2.75	8.10	96/95	8.66	103/101	9.20	109/107	9.68	115/113	10.14	120/118	10.58	125/123	11.02	131/128	11.46	136/133
3.00	8.83	105/104	9.44	112/110	10.03	119/117	10.55	125/123	11.06	131/129	11.54	137/134	12.02	143/140	12.49	148/145
3.50	10.3	122/121	11.02	131/128	11.71	139/136	12.31	146/143	12.9	153/150	13.46	160/157	14.02	166/163	14.57	173/170
4.00	11.78	140/137	12.59	149/147	13.38	159/156	14.07	167/164	14.74	167/164	15.39	182/179	16.03	190/187	16.66	198/194
4.50	13.25	157/154	14.17	168/165	15.06	179/175	15.83	188/184	16.59	197/193	17.32	205/202	17.32	214/210	18.74	222/218

注：

➢ **GPH：** 美制加仑/小时。1 GPH = 3.785 升/小时 (在 7 bar 油压下)。

➢ 功率格式： 柴油功率 / 煤油功率 (例: 64/59 = 柴油64 kW, 煤油59 kW)。

➢ 热值计算基础：

■ 柴油： 11.86 kWh/kg

■ 煤油： 11.75 kWh/kg (约为柴油的0.92倍)。

➢ 流量-压力关系： 流量与压力的平方根成正比。

➢ 计算公式： $Q_2=Q_1\times\sqrt{(P_2/P_1)}$

➢ 重要提示： 实际使用中请根据炉膛背压、烟囱阻力、燃油品质等因素适当调整喷嘴选型。实际功率可能存在 ±5% 的浮动。

首次启动操作

油路系统检查

➢ 单油管系统：

1.拆除回油螺丝→安装铁塞

2.打开压力表接口

3.启动油泵至无泡沫燃油流出

➢ 双油管系统：保留回油螺丝→连接回油管至油箱顶部。

油压调节

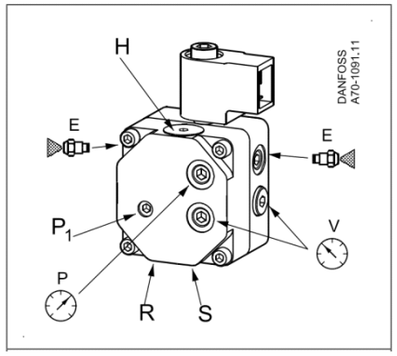
➢ 重要警示：油泵出厂预设10±0.5bar，仅当安装环境特殊（如超高/低温）或更换喷嘴后允许微调。违规操作将导致保修失效！

调节流程

步骤	操作	精度要求	风险控制措施
1	4mm六角匙微调节螺钉	单次调节≤1/4圈	调节后稳定运行30秒再检测
	顺时针（增压）	每1/4圈≈+0.5bar	严禁超过14bar红线
	逆时针（减压）	每1/4圈≈-0.5bar	严禁低于燃烧器最小设计压力
2	10±0.5bar锁定	波动值≤0.3bar	-

特殊工况补偿表（参考）

环境条件	建议油压补偿值	依据
海拔>1000m	+0.3bar/500m	大气压衰减补偿
油温<0℃	+0.2bar/5℃	黏度增加补偿
使用生物燃油/煤油	-0.3bar	降低喷嘴磨损
长油管>5m	+0.5bar	管路压损补偿

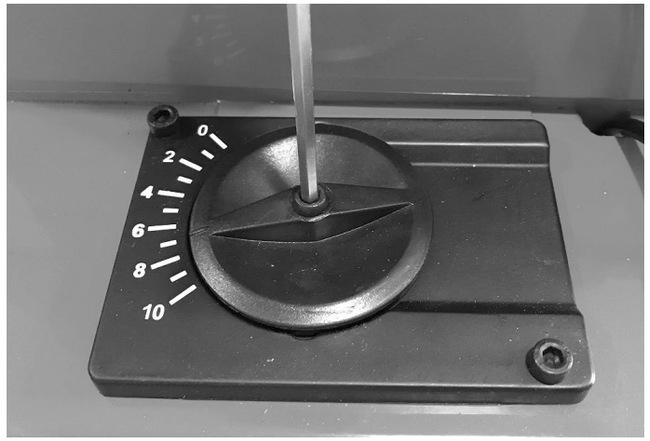


符号	功能	接口尺寸
S	吸油口管路	G 1/4
R	回程管路	G 1/4
E	喷嘴出口	G1/8
P	压力表接	G1/8
V	真空表端口	G1/8
P1	压力调整	用4mm内六角操作
H	过滤器	-

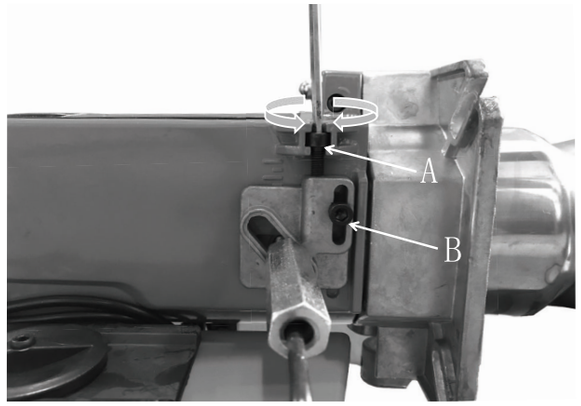
强制鼓风与空燃比原理→点火准备

首次点火设置

风门—喷嘴协同位置校准



风门调校



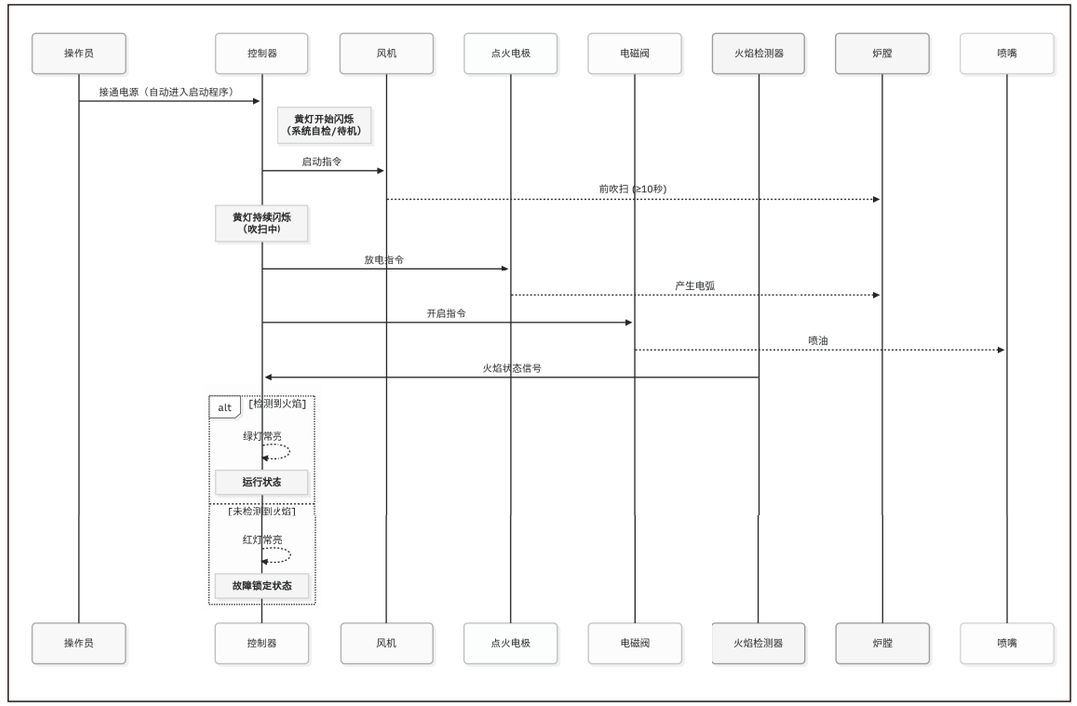
喷嘴油枪组合调校

请松开螺丝（B），并通过螺丝（A）调整喷嘴油枪组合的位置，以确保良好燃烧。

负荷工况	喷嘴位置	风门位置	验证火焰
高负荷	前移	逐步增大开度	亮白色无黑烟
低负荷	后移	逐步减小开度	橙黄色不闪烁
50%负荷	保持基准位	开度调至50%（旋转刻度盘至"8"位）	火焰平稳过渡无突变

点火与稳焰原理➔首次点火执行

工作原理



标准点火序列

步骤	操作	等待/验证	成功标志
1	电源接通	风机运转	黄灯闪烁
2	前吹扫阶段	≥10秒	排气风声稳定
3	电极放电	"啪啪"声	蓝色电弧可见
4	燃油喷射	柴油味	喷嘴油雾喷出
5	火焰建立	持续10秒	橙黄色稳定火焰

点火失败处理

故障现象	立即操作	根本原因排查
无电弧	急停→等待50秒	1. 检查点火变压器接线 2. 测量高压包输出
有电弧无火焰	急停→等待50秒	1. 油压检测（≥8bar） 2. 喷嘴堵塞检查
爆燃	急停→通风	1. 风门开度过小 2. 前吹扫时间不足

安全守则 故障复位后操作：
必须等待50秒才能重启燃烧器，确保燃烧室内残余油气完全散逸

4.操作与维护

启动步骤

步骤1：预检
➢ 检查油箱油量（≥1/3容量），油路阀门处于开启状态。
➢ 确认电源线连接牢固，无裸露线头。

步骤2：通电启动
➢ 打开燃烧器电源开关，燃烧器自动执行以下流程：
(1)风机启动，运行≥10秒基础送风；
(2)点火电极放电，油泵通电喷油；
(3)火焰稳定后进入持续运行状态。

➢ 观察控制盒指示灯：
控制器状态指示灯说明

指示灯	状态	含义
绿灯常亮	燃烧器正常运行	火焰稳定，系统无故障
红灯常亮	故障报警（需处理）	查看故障代码并排除
黄灯闪烁	吹扫或分控模式运行中	无需干预，待流程结束自动切换

*只适用于：控制器 (Career *KYLOA24.171B27H 电子式)*

火焰调节与安全监控

➢火焰观察：通过观测孔确认火焰呈橙黄色，稳定无黑烟，根部无飘动。
➢异常处理：
■火焰闪烁：可能因风门开度不匹配或喷嘴堵塞；
■黑烟：需检查风门开度或更换喷嘴；
■若运行中红灯亮起，立即切断电源与油路。

燃烧调节黄金法则

升负荷操作
1.风门调整：逐步增大开度（每次+1刻度）；
2.喷嘴位置：向后滑动2-3mm；
3.验证标准：
● 火焰呈亮白色
● 烟囱无黑烟
4.稳定时间：每次调整后需稳定运行30秒

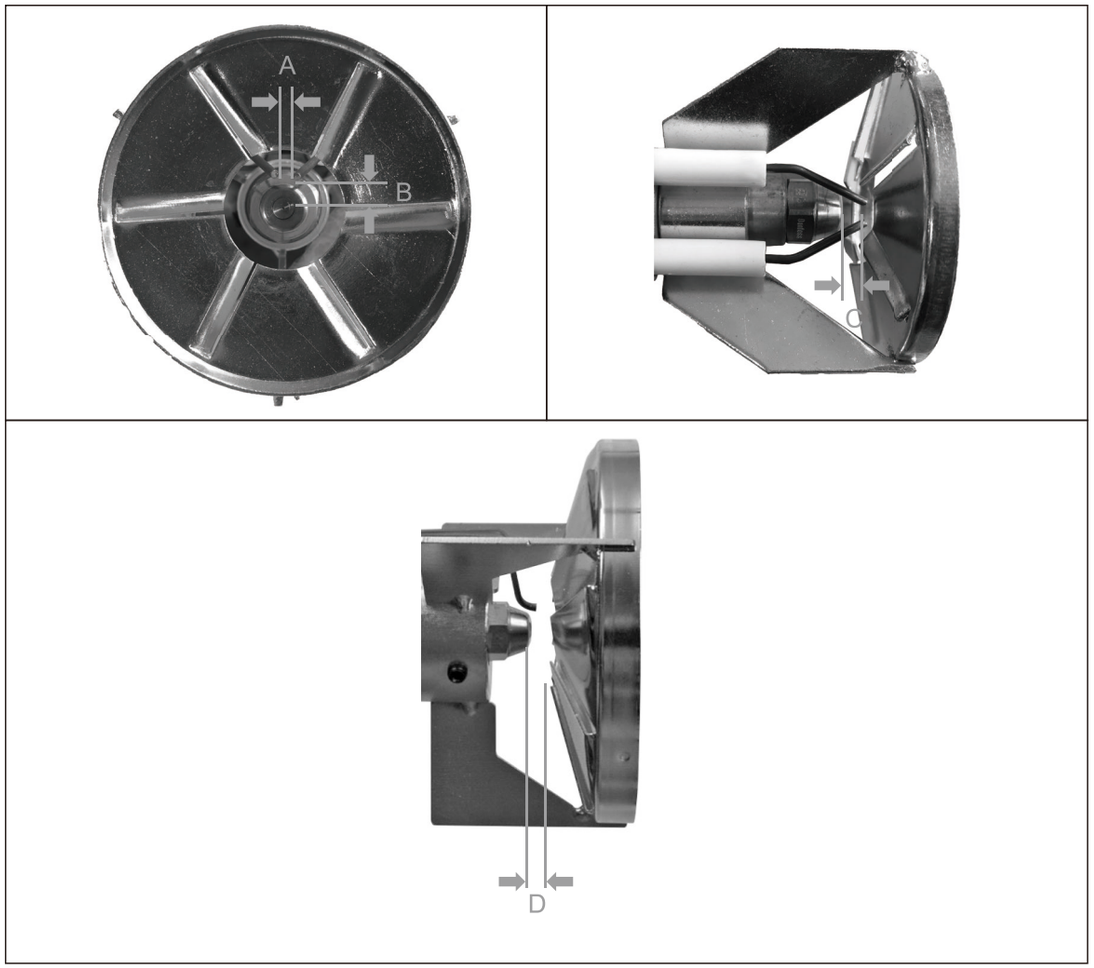
降负荷操作
1.风门调整：逐步减小开度（每次-1刻度）
2.喷嘴位置：向前滑动1-2mm
3.验证标准：
● 火焰呈橙黄色
● 无闪烁现象
4.稳定时间：每次调整后需稳定运行30秒

停机操作

1.关闭燃烧机电源总开关；
2.长期停用时，关闭油路阀门。

5.服务与维护

点火电极与稳焰盘设置



标识	说明	尺寸值	备注
A	点火电极间隙	3.0 - 4.0 mm	确保火花稳定（火花不接触稳焰盘）
B	电极至喷嘴距离	9.0 mm	
C	电极至喷嘴前端	4.0 - 6.0 mm	影响火焰根部稳定性
D	稳焰盘至喷嘴前端	5.0 mm	确保油雾在最佳位置点燃

日常注意事项

- 定期清洗油过滤器（每1000小时或每月）。
- 保持火焰传感器清洁，避免误报故障。
- 每月检查油箱底部水分与杂质。

维修周期表

部件	每天	每月	每年
过滤器	检查渗漏	清洗滤网	更换滤芯
点火电极	观察放电火花	清除积碳	更换电极
喷嘴	-	检查雾化形状	强制更换
油压	启动前看表显	校准压力表	-

燃烧器内部清洁

- 清洁风扇叶轮、电极区域、喷嘴残留。
- 使用软布擦拭，避免损坏绝缘部件。

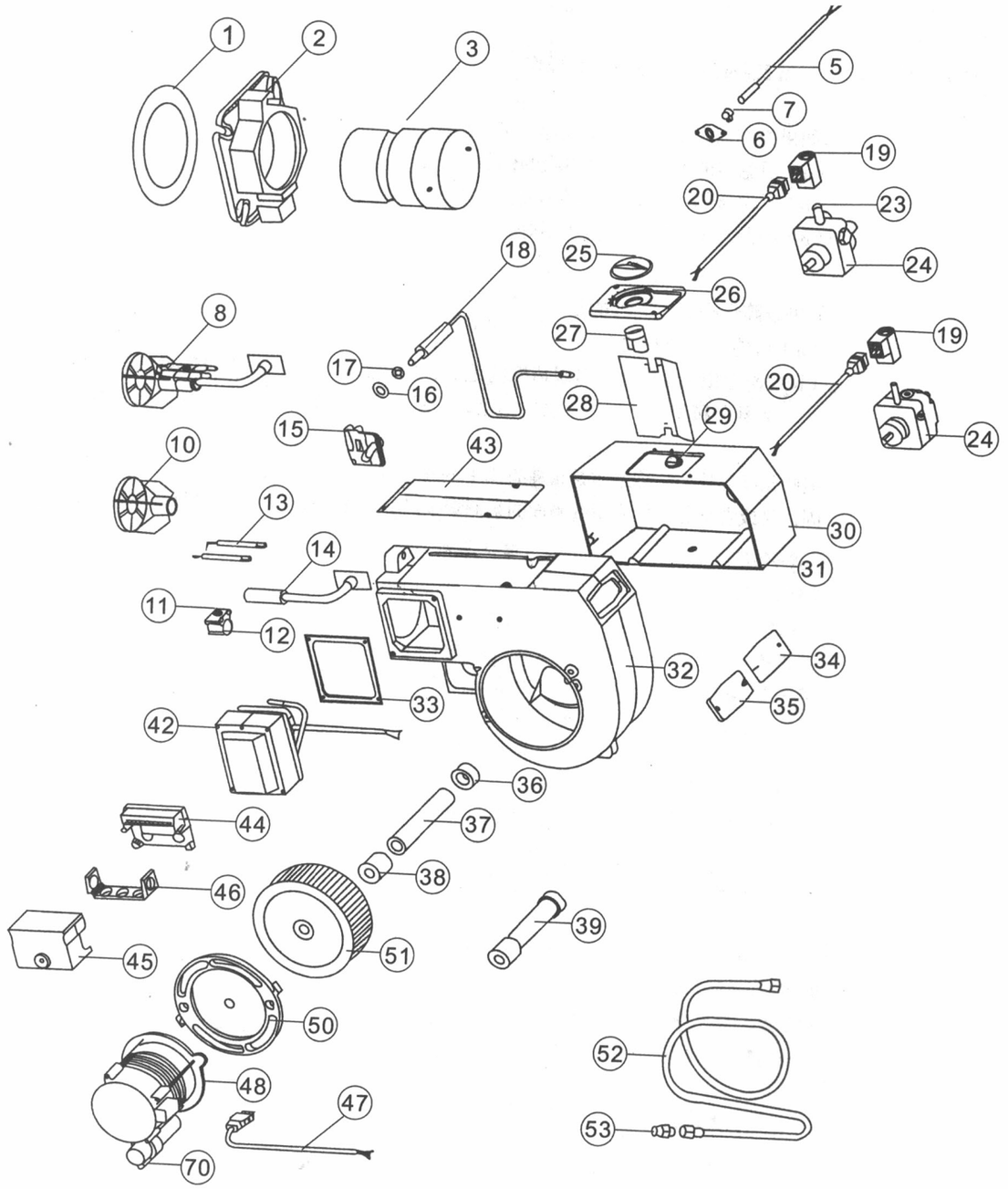
6.故障与排除方法

故障代码	现象	可能原因	解决方案
E01	**点火失败**	油压不足、 电极偏移	检查油泵压力（10 bar）， 调整电极
E02	**燃烧黑烟**	风门过小、 喷嘴堵塞	增大风门，清洁/更换喷嘴。 检查风门开度与喷嘴位置匹配性
E03	**频繁停机**	火焰信号不稳定	检查传感器线路与控制盒
E04	**无燃油喷出**	油管/喷嘴堵塞、 泵故障、 电磁阀卡死	清理过滤器，检修油泵
E05	**噪音过大**	风门过大、 联动轴偏心、 电机损坏	调小风门，更换联动轴组件， 更换电机
E06	**风门刻度指示 与开度不符**	刻度盘松动、 机械连杆磨损、 长期使用导致标记褪色	紧固刻度盘固定螺丝，更换 磨损连杆部件，重新标记刻度
E07	**油压异常**	油泵磨损、 调节阀松动、 过滤器堵塞	执行P15校准流程
E08	**油压高于14 bar**	调节阀过紧、 回油管堵塞	逆时针调整压力调节阀， 清理回油管路
E09	**风机电源无响应**	断路器跳闸	复位断路器，检查线路
E10	**黄灯常常亮**	控制盒程序错误	断电重启，检修控制器

7.装箱清单

序号	名称	数量
1	燃烧器	1台
2	安装法兰	1个
3	石棉垫	1块
4	喷嘴匙	1个
5	油管（1米，接口2分）	2条
6	螺丝	若干
7	4mm六角钥匙	1把
8	过滤器	1个
9	说明书	1本

8.零件图



Contents

1.Safety Warnings ⚠

Risk Type	Prohibited Actions	Mandatory Measures
Electrical Safety	× Exceeding 10A fuse	√ Dedicated circuit breaker + monthly ground test
High-Temp Protection	× Touching burner >40℃	√ Post-shutdown continuous fan cooling
Fuel Leakage	× Repair with open flame/ power on	√ Shut valve → Ventilate → Soap water leak test/ adsorption
Unattended Operation	× Running without dual-safety thermostat	√ Install main + backup thermostat in series

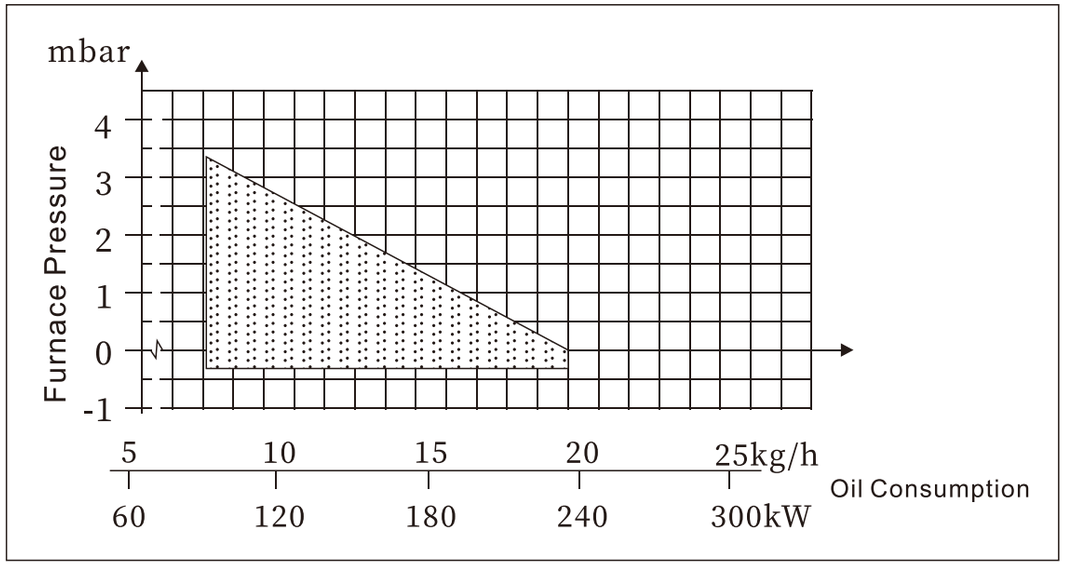
Fatal risk: Live maintenance of ignition electrodes = electric shock hazard!

2.Product Parameters and Technical Specifications

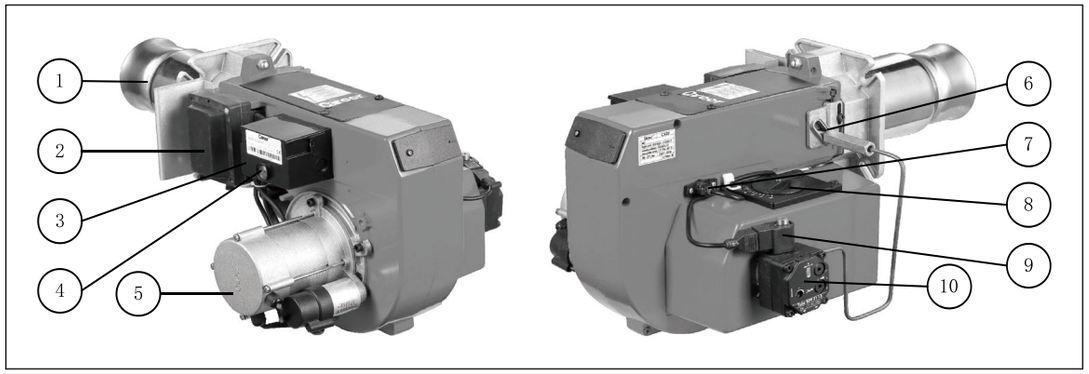
Item	Specification
Model	CX20
Rated Thermal Power	71~237 kW
Fuel Type	Light diesel (viscosity 3–6cSt@20°C), compatible with: ➢ Kerosene (requires double-pipe system) ➢ Biofuel meeting DIN V 51603-6 EL A Bio-10 (max 10% FAME)
Fuel Consumption	6-17.3 kg/h (at 0 furnace pressure)
Power Supply	220V±10%, 50Hz, IP55
Control Mode	On/Off

Notes:
➢ Double-pipe system required for kerosene/biofuel.
➢ Long-term biofuel use may shorten pump life; inspect filters regularly.

Performance Curve Diagram

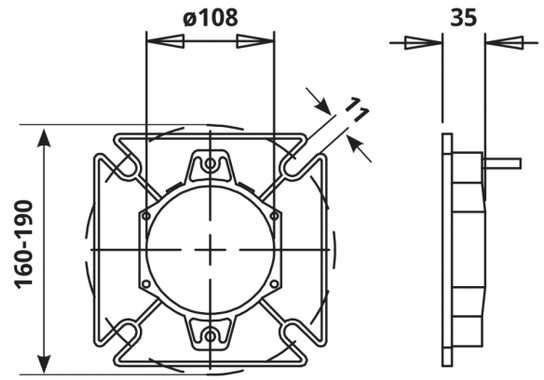


Components

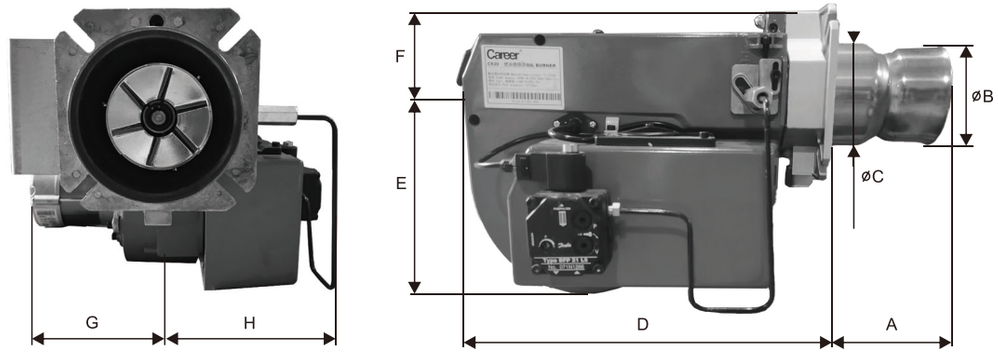


No.	Component	Specs/Location	Function & Maintenance
1	**Flame Tube**	Φ108mm	Flame channel|High temp; no touch
2	**Ignition Transformer**	Output 2×5kV|50Hz	High-voltage arc ignition
3	**Controller**	Operating temp -10~50℃	System logic control
4	**Fault Reset Button**	–	Manual alarm reset
5	**Motor**	220V/0.18kW|2800rpm	Drives fan
6	**Nozzle Assembly**	60° spray angle	Fuel atomization core | Replace every 3000 hours
7	**Flame Detector**	Photocell sensor	Real-time flame monitoring |Clean monthly
8	**Damper Actuator**	0–90° opening	Airflow adjustment | Recalibrate for high/low load (see P40)
9	**Solenoid Valve**	Normally closed	Fuel on/off control
10	**Fuel Pump**	Max 14bar | Double-pipe / Single-pipe line	Fuel pressurization | No dry run (bleed Single-pipe line system)

Installation Dimensions



CX20 Mounting Flange



Unit mm	A	B	C	D	E	F	G	H	Min. Floor Distance
Standard	115	Φ104	Φ108	372	220	83	175	207	200
Extended 1	187								

Packaging Specifications

Model		Packaging dimensions (length × width × height)	Net weight	Gross weight
CX20	Standard	545×455×360mm	14kg	17kg
	Extended 1	625×455×360mm	15kg	18kg

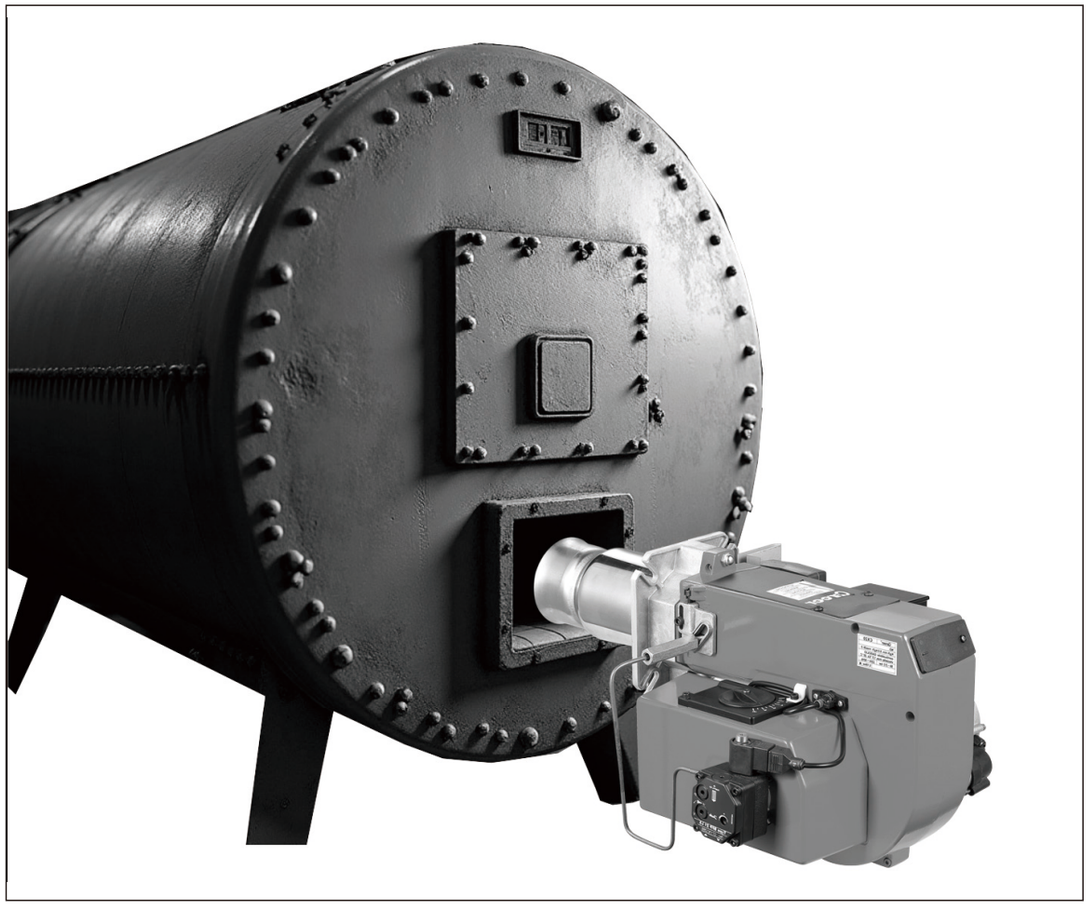
3.Installation and Commissioning

Pre-Installation Preparation

- Inspect shipment integrity; report damage.
- Ensure dry, chemical-free environment; humidity ≤80%.
- Prepare tools (standard tools provided with burner, others require user preparation):

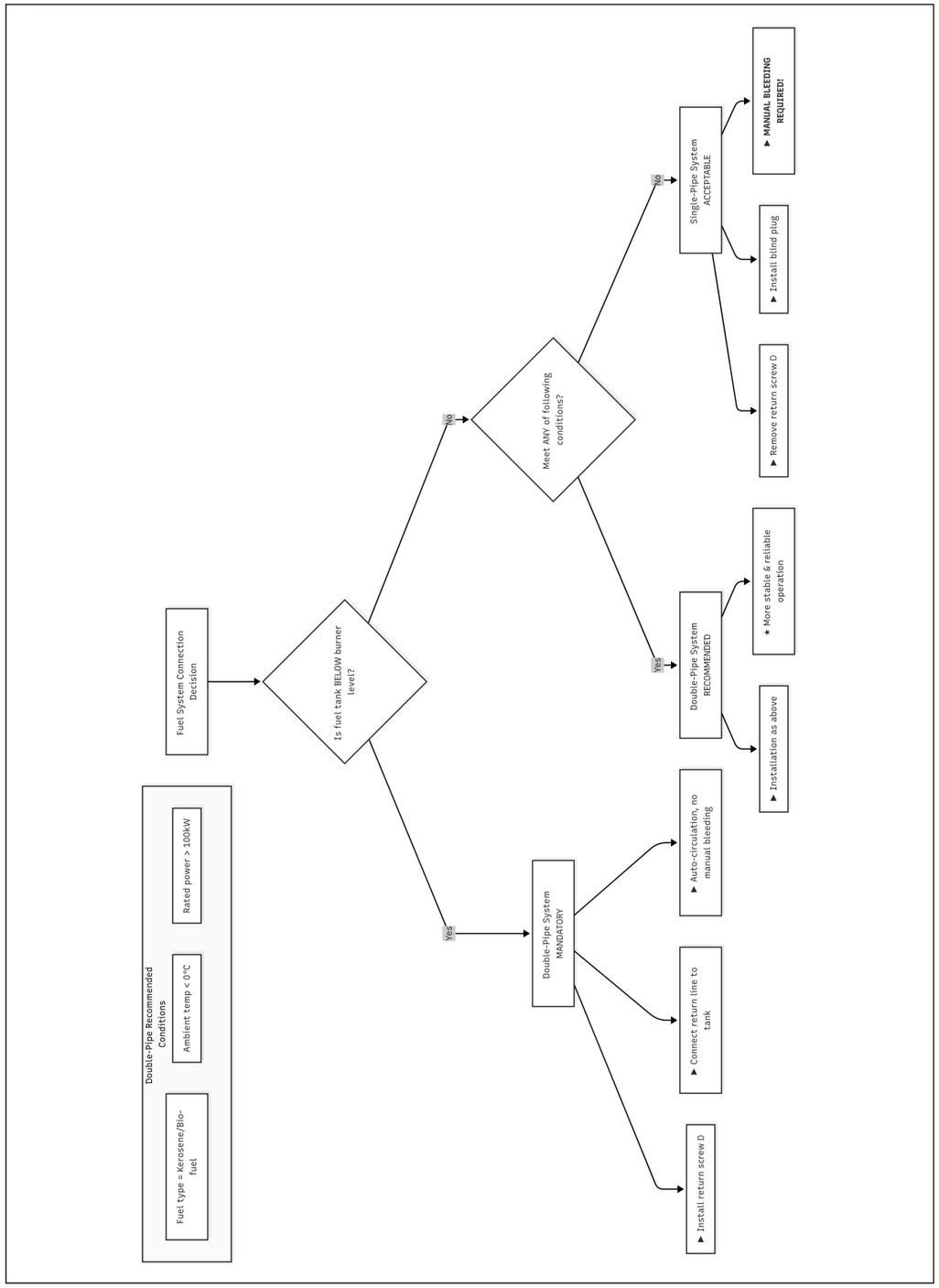
Tool	Source	Purpose
hex wrench	User	Flange bolt tightening (Please configure the corresponding wrench according to the selected bolt size)
Hex Screws (8-10mm) and Matching Washers	User	Mounting flange bolt tightening (Please select based on the actual furnace opening size)
17mm hex wrench	User	Soft fuel line connection
5mm hex key	User	Nozzle position adjustment
Flathead screwdriver (No.1)	User	Controller terminal release / pump bleed screw
4mm hex key	Standard	Flange fixing / pump pressure adjustment / Damper adjustment
Pressure gauge (0–20bar, G1/8)	User	Pump pressure monitoring
Insulating tape	User	Electrical insulation
Oil-resistant sealant	User	Fuel line sealing

Burner Installation



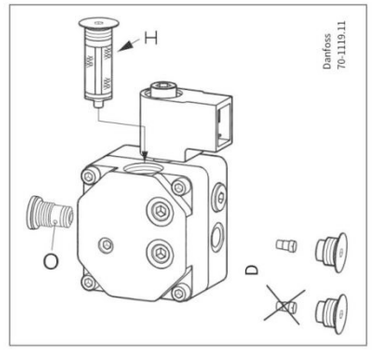
- Secure flange and gasket to boiler interface.
- Align burner body; fasten with bolts.
- Connect fuel lines and power cables (follow wiring diagrams).

Fuel System Connection



System	Scenario	Key Difference	Pump Operation
Single-Pipe	Tank above burner level	● No return line ● Manual bleeding MUST be performed during initial startup.	● Remove internal bypass screw D, install blind plug.
Double-Pipe	Tank below burner or kerosene fuel	● Supply + return lines ● Auto-circulation	● Keep internal bypass screw D, connect fuel line.

Pump Internal Adjustment



Tools Required:

➢ 4mm hex key (provided with burner)

Mandatory Requirement: ⚠

The return line MUST be installed above the tank's maximum liquid level to prevent siphoning backflow.

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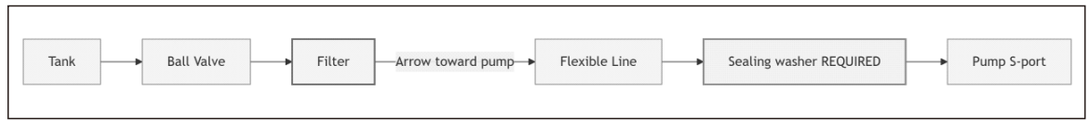
1.Bleeding Instructions

Single-pipe system: Bleed by opening pressure gauge port (G1/8), before initial startup until bubble-free fuel flows.

2.Installation Sequence



3.Leak Test

(1)Open ball valve; run pump (no ignition); check for leaks.
(2)If leaking, retighten or replace gasket.

4.Critical Installation Notes

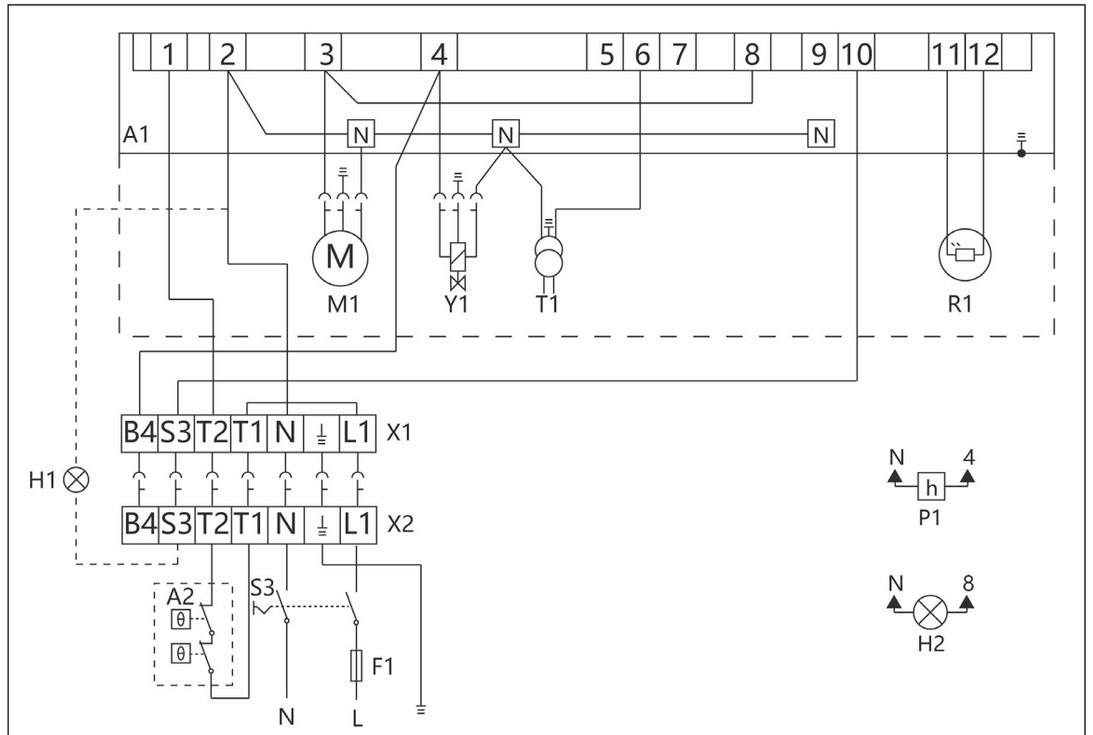
➢ Installation sequence is NON-INTERCHANGEABLE Ball valve (flow control) → Filter (purification) → Flexible hose → Oil pump
➢ Gasket Requirement: Sealing washers MUST be installed at pump-flexible hose junctions. Omission causes leakage risks

5.Maintenance tips

➢ The filter should be cleaned once a month and the filter element replaced annually (refer to the "Service and Maintenance" P45 section)

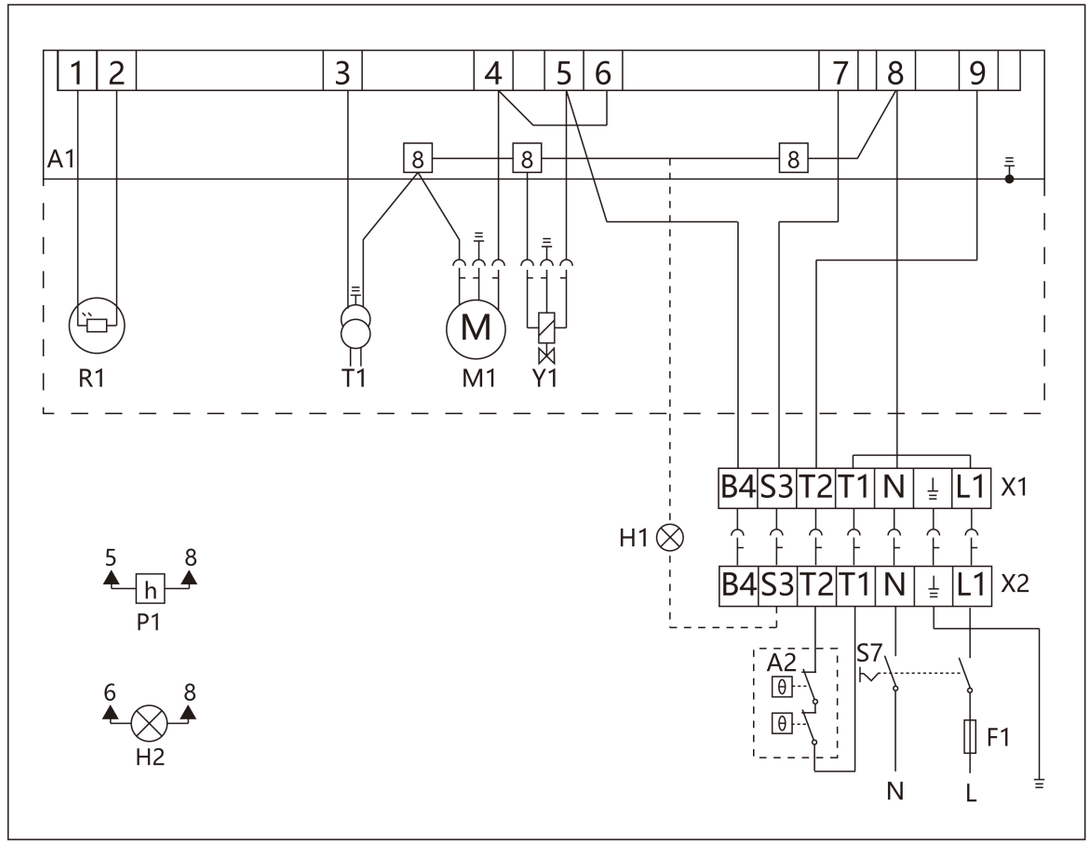
Electrical Wiring Diagrams

Control Box (Career*KYLOA24.171B27H电子式)



Label	Component	Label	Component
A1	Controller*KYLOA24.171B27H电子式	**P1**	Operation hour counter
A2	Thermostat	**H1**	Fault indicator
S3	Power switch	**H2**	Operation indicator
R1	Flame detector (photocell)	**F1**	Fuse
T1	Ignition transformer	**X1**	7-Pin Connector (Burner Side)
M1	Burner motor	**X2**	7-Pin Connector (Boiler Side)
Y1	Pump solenoid valve		

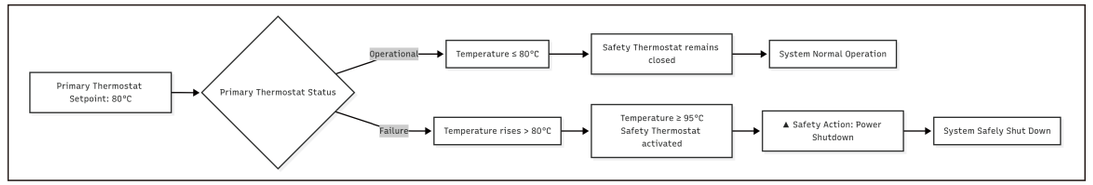
Control Box (Honeywell TF834E.3)



Label	Component	Label	Component
A1	Controller TF834E.3	**P1**	Operation hour counter
A2	Thermostat	**H1**	Fault indicator
S3	Power switch	**H2**	Operation indicator
R1	Flame detector	**F1**	Fuse
T1	Ignition transformer	**X1**	7-Pin Connector (Burner Side)
M1	Burner motor	**X2**	7-Pin Connector (Boiler Side)
Y1	Pump solenoid valve		

Key Safety Configuration Specifications

Dual-Safety Thermostat



Design Principle:
Two independent thermal units wired in series:
- **Primary:** Operating temperature (e.g. 80°C)
- **Safety:** Trip temperature = Primary +15-20°C (e.g. 95°C)

Safety Logic: Activates power cutoff when primary fails and temperature exceeds safety threshold.

Fuse Specifications

Critical Parameters:
- 10A

Violation Consequences:
- Controller burnout lead to fire

Fault Signal Light

Installation:
- On a conspicuous wall in the operating room (not the control box indicator light)
- Separate from control box indicators

Critical Function:
Immediate visual identification of E01-E10 faults to prevent cascading failures

Operation Signal Light

Status Indicators:
- Constant green = Normal operation
- Dark = System shutdown

Wiring:
- Career KYLOA24.171B27H Electronic Controller: terminals N and 8
- Honeywell TF834E.3 Controller: terminals 6 and 8

Maintenance Triggers:

- 500 hours: Oil pump filter cleaning
- 3000 hours: Nozzle mandatory replacement

Data Application:
Records total burner runtime for predictive maintenance

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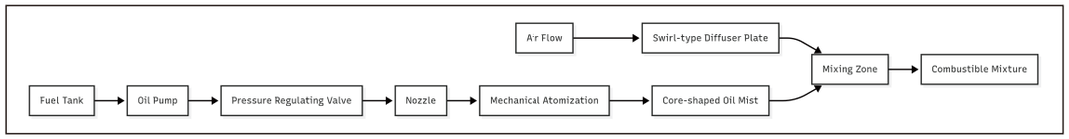
Fuel Supply and Atomization Principles → Startup Preparation

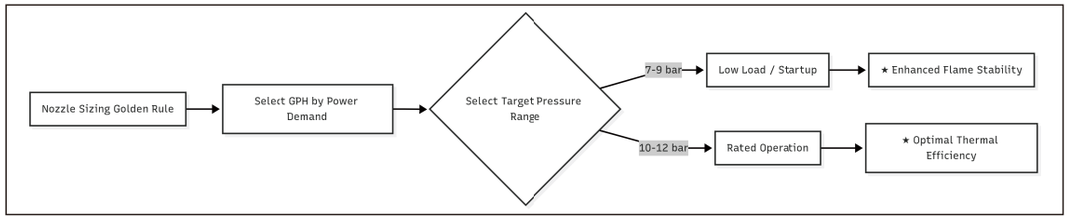
Working Principle



Fuel is pressurized to 10bar by the pump, forming a conical mist via mechanical atomization nozzle, fully mixing with air to create combustible mixture.

Nozzle Selection & Thermal Power Optimization

Golden Rule for Nozzle Sizing:



➢ GPH Definition: Gallons/hour (1 GPH = 3.785 L/h @ 7bar)
➢ Critical Impact: Every +0.25 GPH ≈ +11kW power (@10bar)

Nozzle Selection Reference Table

GPH	7 bar		8 bar		9 bar		10 bar		11 bar		12 bar		13 bar		14 bar	
	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW	kg/h	kW
1.75	5.15	61/60	5.51	65/64	5.85	69/68	6.15	73/72	6.45	76/75	6.73	80/78	7.01	83/82	7.28	86/85
2.00	5.89	70/69	6.29	75/73	6.68	79/78	7.03	83/82	7.37	87/86	7.69	91/90	8.01	95/93	8.32	99/98
2.25	6.62	78/77	7.08	84/82	7.52	89/88	7.91	94/93	8.29	98/97	8.65	103/101	9.01	107/105	9.36	111/109
2.50	7.36	87/86	7.87	93/92	8.36	99/97	8.79	104/103	9.21	109/107	9.61	114/112	10.11	119/117	10.411	123/121
2.75	8.10	96/95	8.66	103/101	9.20	109/107	9.68	115/113	10.14	120/118	10.58	125/123	11.02	131/128	11.46	136/133
3.00	8.83	105/104	9.44	112/110	10.03	119/117	10.55	125/123	11.06	131/129	11.54	137/134	12.02	143/140	12.49	148/145
3.50	10.3	122/121	11.02	131/128	11.71	139/136	12.31	146/143	12.9	153/150	13.46	160/157	14.02	166/163	14.57	173/170
4.00	11.78	140/137	12.59	149/147	13.38	159/156	14.07	167/164	14.74	167/164	15.39	182/179	16.03	190/187	16.66	198/194
4.50	13.25	157/154	14.17	168/165	15.06	179/175	15.83	188/184	16.59	197/193	17.32	205/202	17.32	214/210	18.74	222/218

Notes:
➢ GPH: U.S. Gallons Per Hour. 1 GPH = 3.785 L/h (at 7 bar).
➢ Power Format: Diesel / Kerosene (e.g., 64/59 = 64 kW on diesel, 59 kW on kerosene).
➢ Calorific Value Basis:
- ■ Diesel: 11.86 kWh/kg
- ■ Kerosene: 11.75 kWh/kg (≈ 0.92 × Diesel value).

➢ Flow-Pressure Relationship: Flow rate is proportional to the square root of pressure.
➢ Formula: $Q_2 = Q_1 \times \sqrt{(P_2 / P_1)}$
➢ Advisory: Nozzle selection must be adjusted based on actual conditions (furnace back pressure, flue draft, fuel quality). Actual power may vary ±5%.

Initial Startup Operation

Fuel System Check

➢ Single-pipe system:
1.Remove the return screw → Install blind plug
2.Open pressure gauge port
3.Run oil pump until bubble-free fuel flows
➢ Double-pipe system: Keep return screw → Connect return line to tank top

Pressure Adjustment

➢ Critical Notice: Oil pump factory preset is 10±0.5 bar. Minor adjustment is permitted ONLY for special installation conditions (e.g. extreme altitude/temperature) or after nozzle replacement. Unauthorized adjustment voids warranty!

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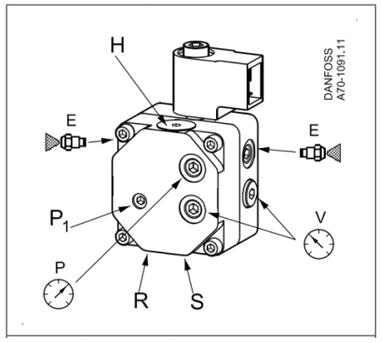
Adjustment Procedure

Step	Action	Precision	Safety Control
1	Adjust with 4mm hex key	⩽¼ turn/step	Stabilize 30s after adjustment
	Clockwise	+0.5bar/¼ turn	Never exceed 14bar
	Counterclockwise	-0.5bar/¼ turn	Never below min. design pressure
2	Lock at 10±0.5bar	Fluctuation ≤0.3bar	-

Environmental Compensation (Reference)

Condition	Pressure Adjustment	Basis
Altitude >1000m	+0.3bar/500m	Atmospheric compensation
Oil temp <0°C	+0.2bar/5°C	Viscosity compensation
Biofuel/ Kerosene usage	-0.3bar	Reduce nozzle wear
Fuel line >5m	+0.5bar	Pipeline loss

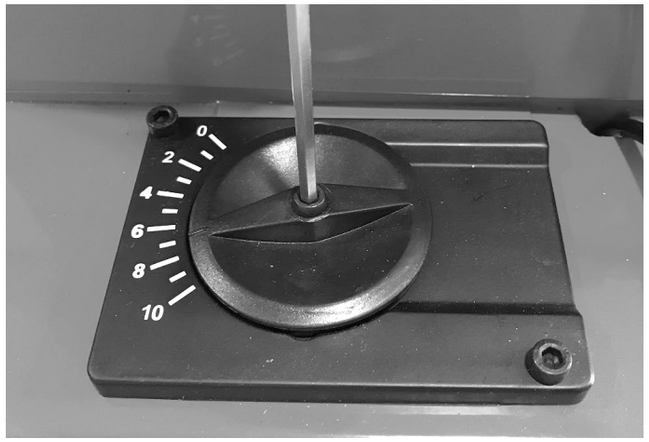


Symbol	Function	Interface Size
S	Suction	G 1/4
R	Return port	G 1/4
E	Nozzle outlet	G1/8
P	Pressure gauge	G1/8
V	Vacuum	G1/8
P1	Pressure Adjustment	Operate with 4mm hex key
H	Filter	-

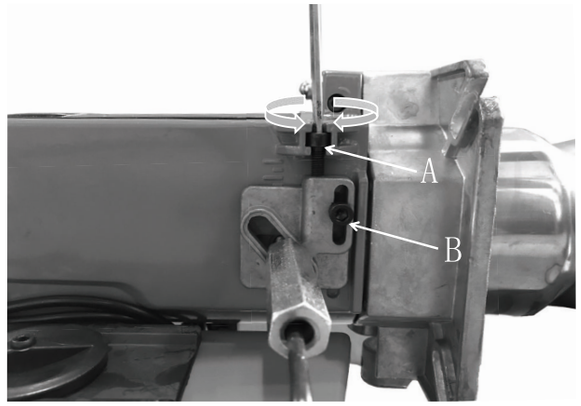
Forced Draft & Air-Fuel Ratio → Ignition Prep

Initial Ignition Setup

Damper and Nozzle Collaborative Position Calibration



Damper Adjustment



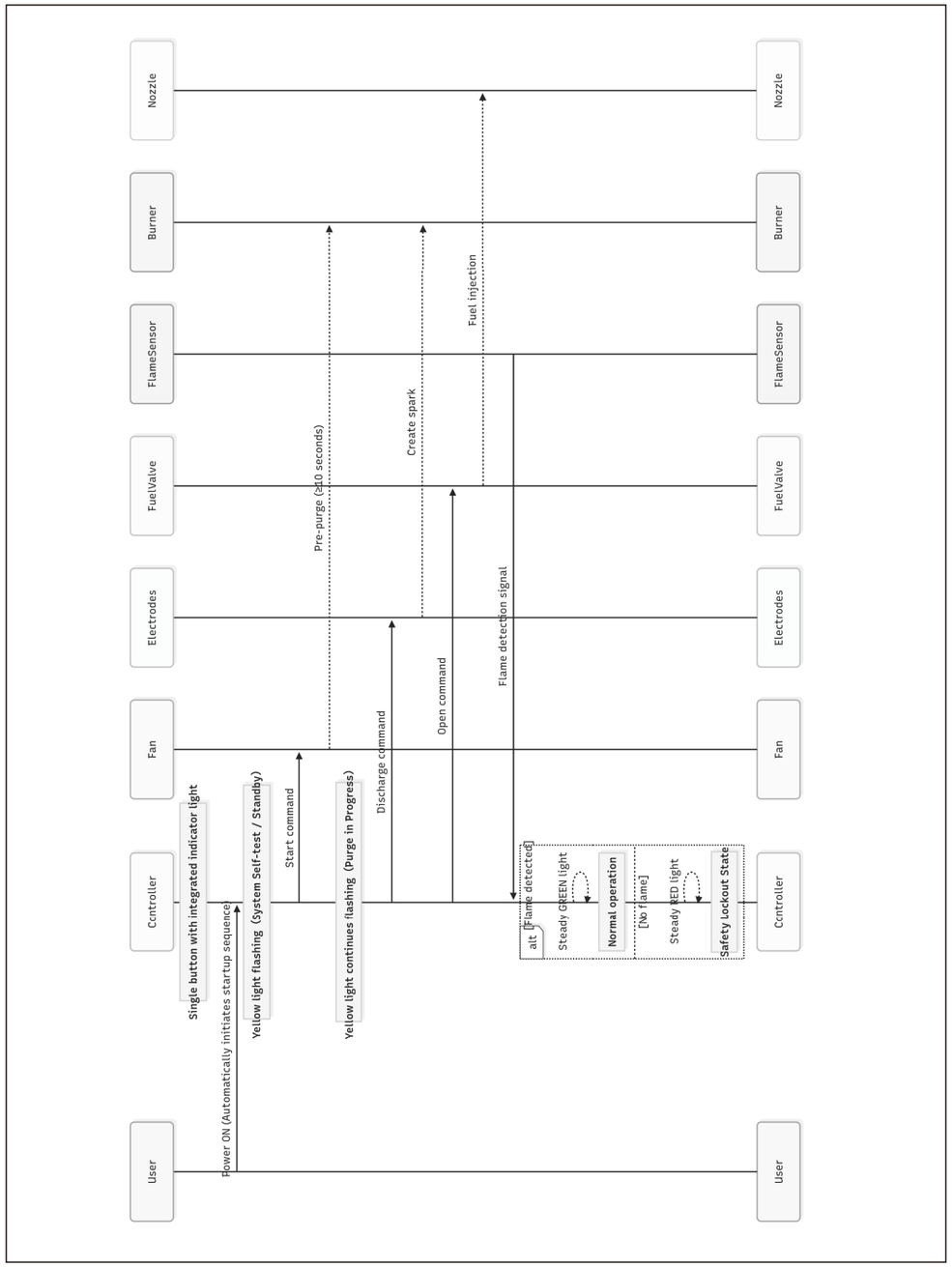
Nozzle Position

Loosen screw (B) and adjust the position of the nozzle position with screw (A) for good combustion.

Load Condition	Nozzle Position	Damper Position	Flame Verification
High load	Advance	Gradual opening	Bright white, no smoke
Low load	Retract	Gradual closing	Orang-yellow, stable
50% load	Default	50% open (“8” mark)	Smooth transition

Ignition & Flame Stabilization → Initial Ignition

Working Principle



Standard Ignition Sequence

Step	Action	Verification	Success Indicator
1	Power ON	Fan operation	Yellow light flashing
2	Pre-purge	≥10 sec	Stable exhaust sound
3	Electrode discharge	"Crackling" sound	Blue arc visible
4	Fuel injection	Diesel odor	Oil mist visible
5	Flame establishment	10-sec hold	Stable orange-yellow flame

Troubleshooting Failed Ignition

Failure	Immediate Action	Root Cause Check
No arc	Emergency stop → Wait 50s	1. Electrode wiring 2. Transformer output
Arc but no flame	Emergency stop → Wait 50s	1. Oil pressure (≥8bar) 2. Nozzle clog
Explosion	Emergency stop → Ventilate	1. Damper too closed 2. Insufficient purge

Safety Protocol After Fault Reset:
Wait 50s after failure before restart. Ensure complete dissipation of residual fuel vapors in combustion chamber.

4.Operation & Maintenance

Startup Procedure

Step 1: Pre-check
➢Verify fuel level (≥1/3 tank)
➢Confirm valves open, cables secure

Step 2: Power ON
➢ Turn on burner power switch, automatic execution sequence:
(1) Fan starts → Operates ≥10 sec for basic air supply
(2) Ignition electrodes discharge → Oil pump energized for fuel injection
(3) Enters continuous operation after flame stabilization

➢Controller indicator Lights:

Light	State	Meaning	
Green	Steady ON	Normal operation: Stable flame, no system faults	–
Red	Steady ON	Fault (check error code)	Check error code & resolve
Yellow	Flashing	Purging or staged control mode active	No intervention needed. Automatically switches after procedure completion

Applicable ONLY to: Control Box (Career＊KYLOA24.171B27H电子式)

Flame Adjustment & Safety Monitoring

➢ Normal Flame: Orange-yellow, no flickering/black smoke
➢ Abnormal Handling:
■ Flickering: Adjust damper or clean nozzle
■ Black smoke: Increase air supply
■ EMERGENCY: Cut off the power supply and oil circuit if red light activates

Optimum Combustion Adjustment Protocol

Load Increase Procedure:
1.Damper: Gradually increase opening (+1 notch/step)
2.Nozzle position: Slide backward 2-3 mm
3.Verification:
● Flame: Bright white
● Exhaust: Zero black smoke
4.Stabilization: Maintain operation for 30 sec after each adjustment

Load Decrease Procedure:
1.Damper: Gradually reduce opening (-1 notch/step)
2.Nozzle position: Slide forward 1-2 mm
3.Verification:
● Flame: Orange-yellow
● No flickering
4.Stabilization: Maintain operation for 30 sec after each adjustment

Shutdown Procedure

1.Turn off main power switch
For extended shutdown: Close main fuel valve

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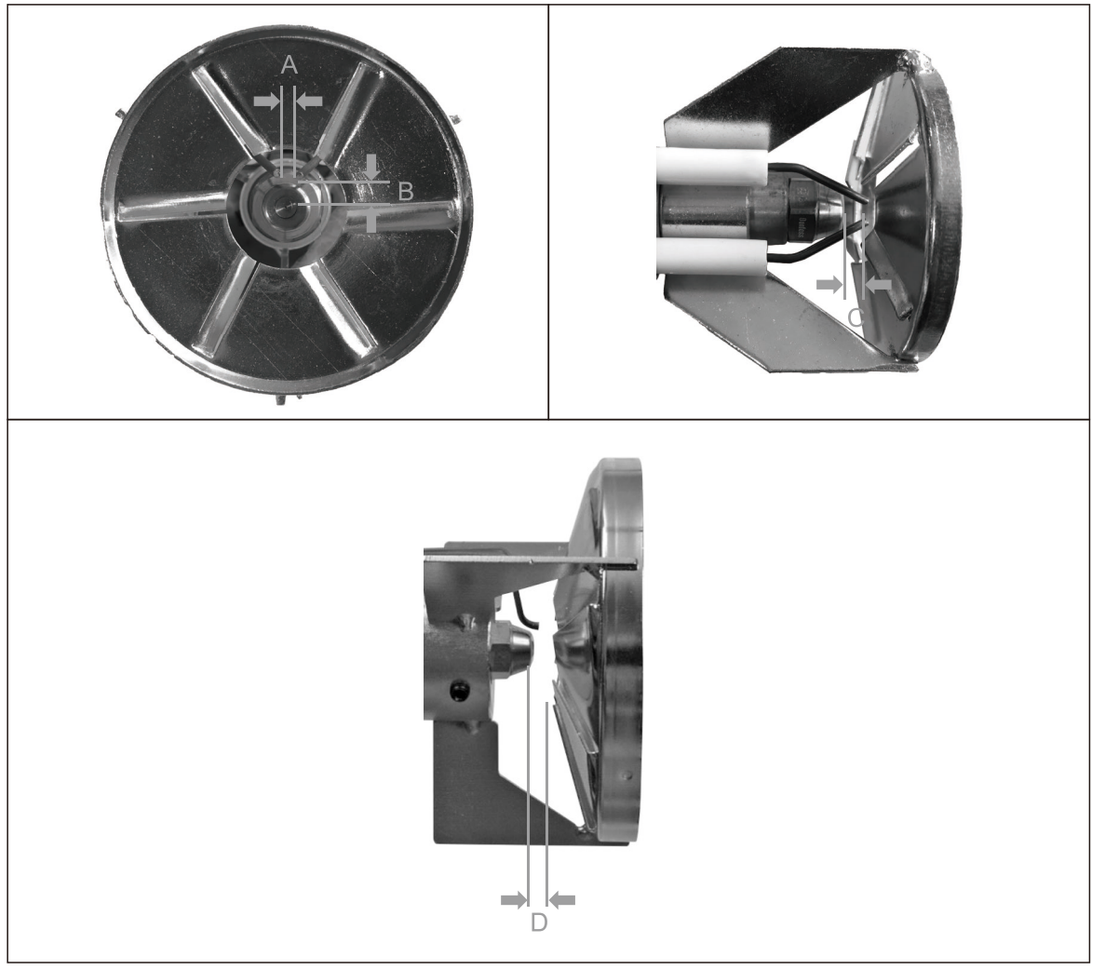
5.Service & Maintenance

Ignition Electrode & Brake Plate Settings



Identifier	Description	Dimension	Remarks / Notes
A	Ignition Electrode Gap	3.0 - 4.0 mm	Ensure stable spark (Spark must not strike brake plate)
B	Electrode to Nozzle Distance	9.0 mm	Affects flame root stability
C	Electrode to Nozzle Tip	4.0 - 6.0 mm	
D	Brake Plate to Nozzle Tip	5.0 mm	Ensures atomized fuel is ignited at the optimal position

Routine Maintenance Notes

- Clean oil filter regularly (every 1000 hours or monthly).
- Keep flame sensor clean to prevent false alarms.
- Check tank bottom for water/sediment monthly.

Maintenance Schedule

Component	Daily	Monthly	Yearly
Filter	Leak check	Clean	Replace
Electrodes	Spark check	Clean carbon	Replace
Nozzle	-	Spray check	Replace
Oil pressure	Check gauge at startup	Calibrate gauge	-

Burner Internal Cleaning

- Clean fan impeller, electrode area, and nozzle residues.
- Wipe with soft cloth. Avoid damaging insulation components.

6.Troubleshooting

Code	Symptom	Possible Cause	Solution
E01	**Ignition failure**	Low oil pressure, Electrode misalignment	Check pump pressure (10bar)
E02	**Black smoke**	Air damper opening too small, Nozzle clogged	Increase air damper opening, Clean/replace nozzle. Check damper/nozzle alignment
E03	**Frequent Shutdown**	Unstable flame signal	Check sensor wiring & control box
E04	**No Fuel Injection**	Clogged fuel line/nozzle, Pump failure, Solenoid valve stuck	Clean filter, Service oil pump
E05	**Excessive Noise**	Air damper too open, Coupling shaft eccentricity, Motor damage	Reduce damper opening, Replace coupling assembly, Replace motor
E06	**Damper Scale Mismatch**	Loose dial, Worn linkage, Faded markings	Tighten dial screws, Replace worn linkage parts, Re-mark scale
E07	**Abnormal pressure**	Pump wear, Loose regulator valve, Clogged filter	Perform P44 calibration procedure
E08	**Oil Pressure >14 bar**	Over-tightened regulator valve, Clogged return line	Turn pressure regulator counterclockwise, Clean return line
E09	**Fan Power Failure**	Tripped circuit breaker	Reset circuit breaker, Check wiring
E10	**Yellow Light On**	Control box program error	Power cycle unit, Service controller

7.Packing List

No.	Item	Qty
1	Burner	1
2	Mounting flange	1
3	Gasket	1
4	Nozzle tool	1
5	Fuel lines (1m Rp1/4)	2
6	Screws	Assorted
7	4mm hex key	1
8	Filter	1
9	Manual book	1

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8.Parts Diagram