Career®

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

FX10A
FX20

Career®

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.

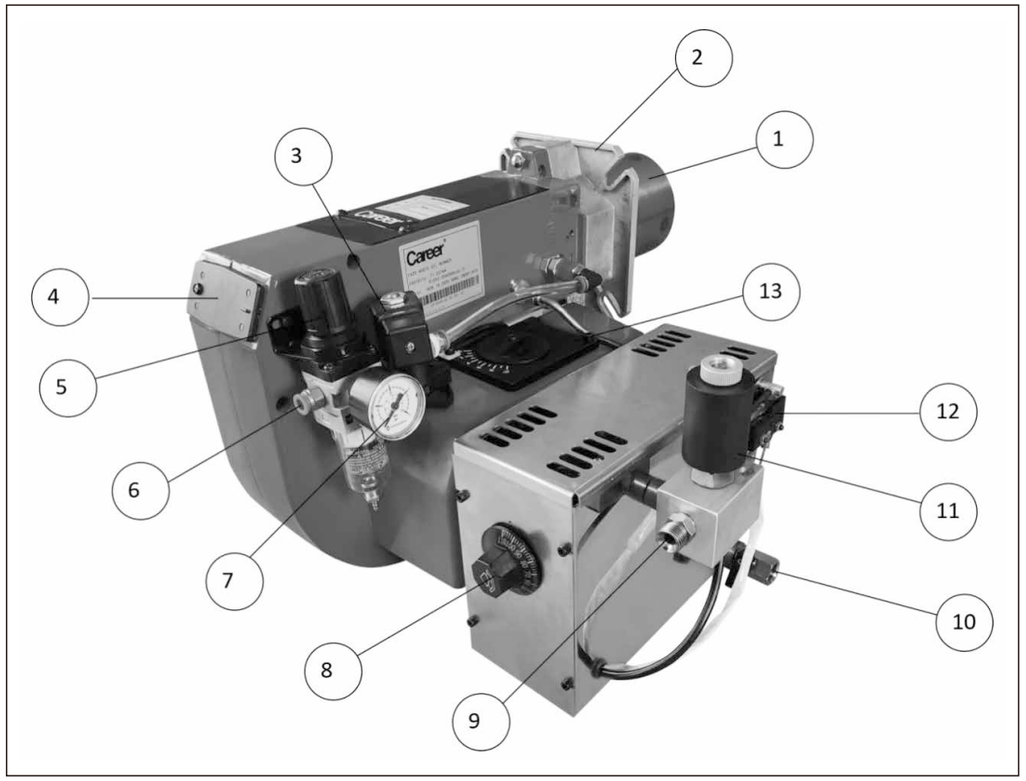
目录

1.产品参数与技术规范

型号	耗油量 (kg/h)	功率范围 (kW)	喷嘴 (US gal/hr)	电机功率 (W)	工作电压	工作压力 (bar)
FX10A	2-10	24-119	3.3	90	220V/50Hz	2
FX20	4-20	24-237	3.3×2个	180	220V/50Hz	2

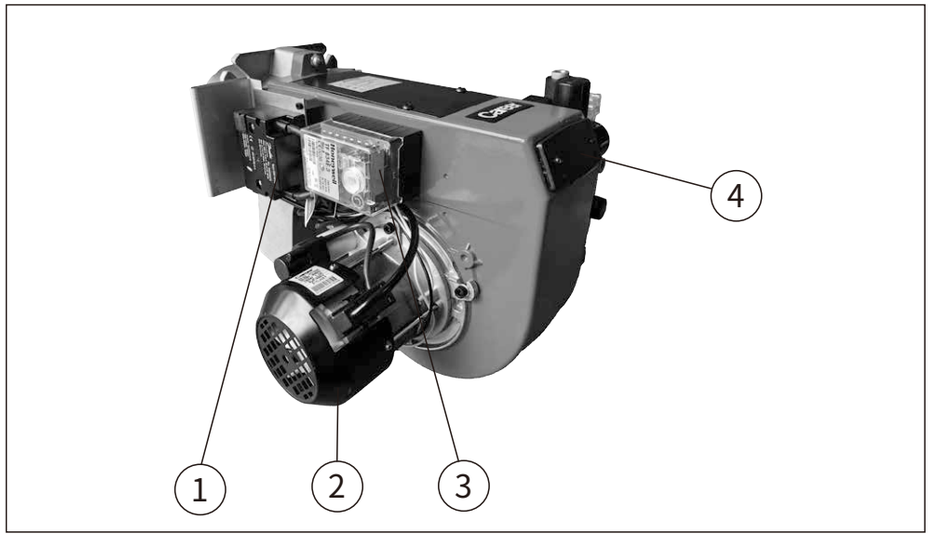
适用条件：
适用油品：废机油、植物油等（需预热至120℃）。
空气压力调节范围：0-3bar（出厂预设2-2.5bar）。

组件



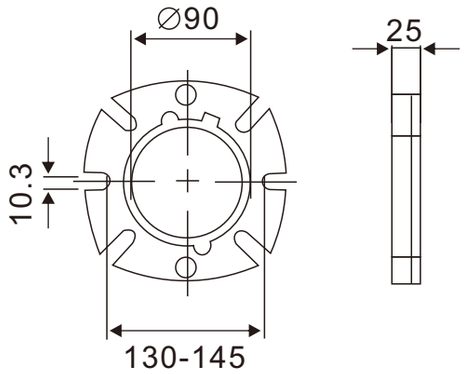
序号	名称	序号	名称
1	火通	8	温控器
2	安装法兰	9	燃料输入口（3分，连接油箱，输入温度要求60°C）
3	电磁阀	10	放油阀
4	观火镜	11	电磁阀
5	压力调节器（功率调节）	12	液面高度控制
6	空气输入接口（8mm，连接空压机）	13	风门
7	空气压力表		

序号	名称
1	火焰检测

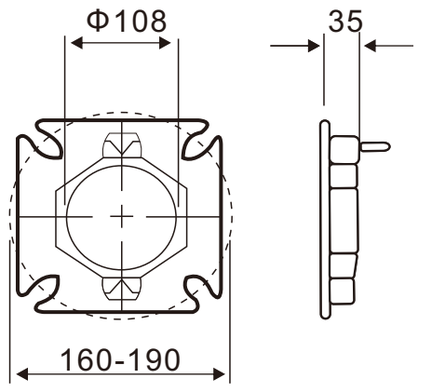


序号	名称	序号	名称
1	点火变压器	3	电机
2	控制器	4	观火镜

安装尺寸



FX10A



FX20

2.安装与调试

安装前准备

1.检查包装完整性，确认配件齐全（法兰、密封垫、过滤器、油管及接头等）。
2.确保安装环境通风良好，远离易燃物，预留≥1m检修空间。

燃料供给系统安装

用户自备组件：

1.储油箱端：

储油箱需配置：

- 预热器（用户自备，功率匹配油箱容量，建议380V/≥4kW）
- 温控器（预设60°C，用户自备）
- 手动球阀（用户自备）

油箱安装高度要求：

- 储油箱需高于燃烧机本体 1-2米，利用重力自流供油（无需输送油泵）。
- 强制供油：若油箱高度不足1米，需用户自备输送油泵（压力范围0.5-1.0bar）。

2.空压机：

- 输出压力范围：0-3bar（建议匹配燃烧机工作压力2bar）。
- 接口规格：8mm快接插头（与燃烧机空气输入接口匹配）。

凯利燃烧机标配组件：

2.燃烧机端：

- 过滤器 → 油管（含发热丝） → 燃烧机本体

防干烧保护：

⚠
- 燃烧机油箱内的燃油**必须完全覆盖油管发热丝**，否则可能导致发热丝干烧损坏！
- 每日启动前检查液面高度，确保液位不低于发热丝。

1.关键部件说明

部件	功能	配置方	备注
储油箱温控器	控制预热器加热至60°C，确保燃油流动性	用户自备	需预设60°C，超温保护70°C
油管发热丝	防凝固设计（220V）	凯利标配	无需外接温控器：发热丝内置自限温保护装置，表面温度恒定在60-80°C，防止过热
过滤器	过滤杂质（精度120目）	凯利标配	安装于油泵前，每月清洁一次
燃烧机本体	集成点火、喷嘴、控制模块	凯利标配	法兰对接，标配法兰垫片
输送油泵	强制供油时提供燃油压力（0.5-1.0bar）	用户自备	仅用于油箱高度不足1米的场景

2.安装核心要点

1.供油模式选择：
自流式供油（油箱高度1-2米）：
• 油管倾斜角度建议≥5°，避免燃油滞留或气阻。
强制供油（油箱高度＜1米）：
• 油泵需安装在过滤器与燃烧机之间，电源接独立回路。
2.发热丝接线：
• 直接接入用户独立提供的 220V。
3.温控联动设置：
• 储油箱温控器需设定为60°C启动预热，超温保护阈值设为70°C。
4.密封性测试：
• 所有接口使用密封。

3.示意图

自流式供油

[储油箱]（高度1-2米）→ [过滤器] → [油管+发热丝] → [燃烧机]
（用户自备） （凯利标配） （凯利标配） （凯利标配）

强制供油

[储油箱]（高度＜1米）→ [过滤器] → [油泵] →[油管+发热丝] → [燃烧机]
（用户自备） （凯利标配）（用户自备） （凯利标配） （凯利标配）

• 储油箱温控器预设60°C ，电源需为三相380V，接地电阻≤4Ω，严禁与发热丝共用电源！

4.安全警示

禁止操作：
• 自流式供油时，油箱高度不足1米或超过2米时，禁止启动燃烧机！
• 强制供油时，未安装油泵或油泵压力＞1.0bar，禁止启动燃烧机！
• 未接发热丝电源或温控器失效时，禁止启动燃烧机！
• 油管泄漏或过滤器堵塞时，立即停机检修！
• 禁止在运行中大幅调节气压！每次调整幅度≤0.2bar。
• 燃烧机油箱内的燃油没有完全覆盖油管发热丝，禁止启动燃烧机！
维护要求：
• 每月检查发热丝绝缘层。
• 每次启动前检查液面高度，确保液位不低于发热丝。

供风系统连接

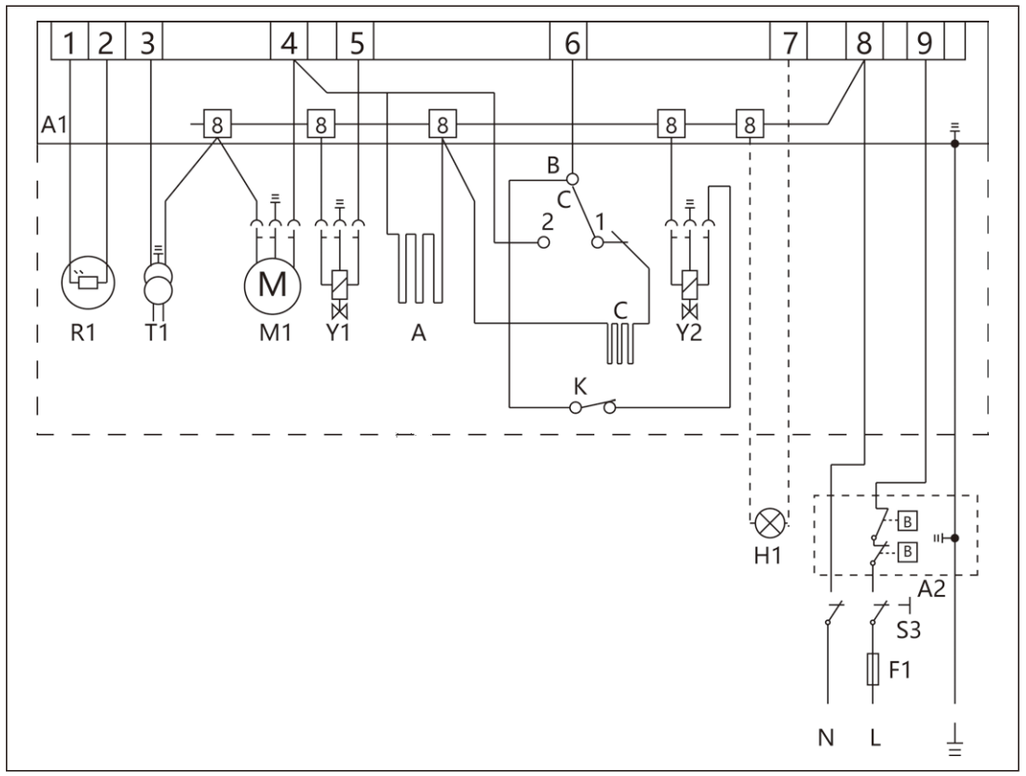
1.空压机输出压力不得超过2.5bar，否则可能导致点火失败或雾化不良。

燃烧机安装

1.法兰对接时使用耐高温石棉垫片，螺栓均匀紧固。

首次启动前

1.预热油箱油温至≥60°C，避免冷启动损伤。
2.发热丝电源：220V独立电源；储油箱预热器：380V三相电源。
3.检查电气接地可靠性，接线参考下图：



标识	名称	标识	名称
A1	TF834E.3	Y1	燃烧机电磁阀（空气电磁阀）
A2	恒温器	A	喷嘴预热器
H1	故障灯信号	B	温控器
S3	电源开头	C	油箱预热器
R1	火焰检测（感光电眼）	K	油量控制模块
T1	点火变压器	Y2	液面电磁阀
M	燃烧机电机	F1	保险丝

3.操作与维护

启动步骤

1.开启空压机，调压至2bar。
2.当燃烧机油箱油温预热至设定温度（120°C）后，燃烧机将自动启动，无需手动操作。
3.系统执行点火吹扫（清除燃烧室内残留气体），持续约15秒。
4.吹扫完成后，点火电极激活，完成燃料点火。
5.吹扫失败处理：若吹扫超时，系统自动停机并点亮H1故障灯，需检查风门开度或气压传感器。

火焰调节与安全监控

火焰调节

调节原理：
- 空气压力与火力正相关：气压越高，火焰越大；气压越低，火焰越小。
- 调节范围：1.5-2.5bar（建议工作压力2bar）。

安全提示：
- 禁止在运行中大幅调节气压！每次调整幅度≤0.2bar。
- 若火焰发红或冒黑烟，立即调低气压并检查油路。

运行监控

1.火焰状态：无黑烟为佳，通过风门调节空气流量（首次启动时，将风门开度调至50%，根据火焰状态微调）。
2.油温异常：立即停机，检查温控探头及加热系统（油温异常指超过130°C或低于100°C（燃烧阶段））。
3.运行期间禁止触碰高温部件（如加热管、燃烧室）。⚠

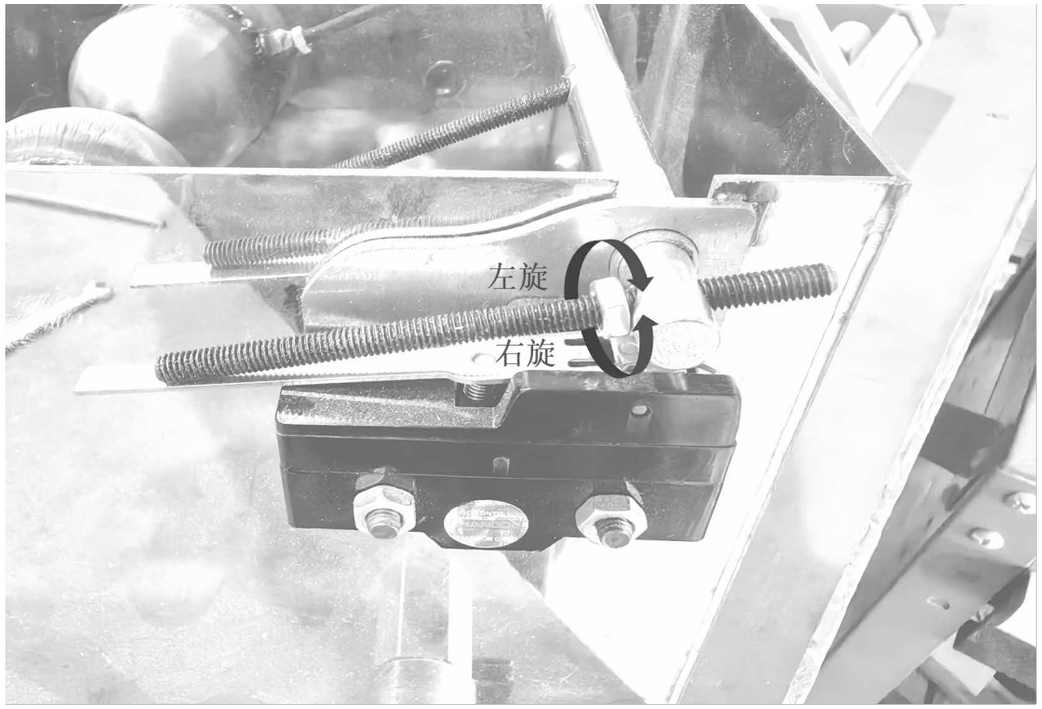
液面高度调节

调节原理

通过旋转液位调节螺杆，改变浮球机构的机械位置，从而精准控制油箱内液面高度，确保燃油供应稳定性。

调节方向说明

操作方向	液面变化	液面变化
左旋螺杆	浮球上移	液面升高 ▲
右旋螺杆	浮球下移	液面降低 ▼



安全提示：

- 调节前务必关闭燃烧机并断电！⚠

4.服务

点火电极与稳焰盘设置

1.电极间隙：3-4mm；稳焰盘距离喷嘴5-8mm。

日常操作注意事项

1.每日检查油路密封性及空气压力表数值。
2.预热油箱温度未达标时禁止强制启动。

维修时间表

1.每日检查油路密封性及空气压力表数值。
2.预热油箱温度未达标时禁止强制启动。

周期	维护内容
每周	清洁油滤、检查喷嘴堵塞
每月	清理燃烧室积碳、校准电极间隙。检查发热丝绝缘层
每半年	更换密封垫、全面检测电气系统

燃烧机内部清洁

1.关闭电源，拆卸喷嘴、电极，用软刷清除积碳。
2.严禁使用水或腐蚀性溶剂清洗。

5.故障及排除方法

序号	故障原因	可能原因	解决方案
1	**点火失败**	电极间隙偏差/油温不足	调整间隙至3-4mm，检查预热系统。
2	**火焰不稳定**	风门开度不当/油路堵塞	重新调节风门，清洁油滤及喷嘴。
3	**雾化不良**	空气压力>2.5bar	调低空压机输出压力至2bar以下。
4	**H1指示灯亮**	火焰丢失	检查火焰检测电眼（FR）污染、点火变压器（TA）输出、电磁阀（VE1/VE2）通电状态。
5	**液面无法稳定**	螺杆螺纹磨损/浮球卡死	清洁浮球导轨，更换调节螺杆。
6	**液面调节无响应**	机械联动部件松动	紧固连杆螺丝，重新校准零点。

6.装箱清单

序号	名称	数量	序号	名称	数量
1	**燃烧器**	1台	5	防凝油管发热丝（3米，220V）	1条
2	**安装法兰**	1个	6	油管（3米，接口三分）	1条
3	**法兰垫片**	1块	7	空气管（1米，8mm）	1条
4	**喷嘴匙**	1个	8	螺丝	若干

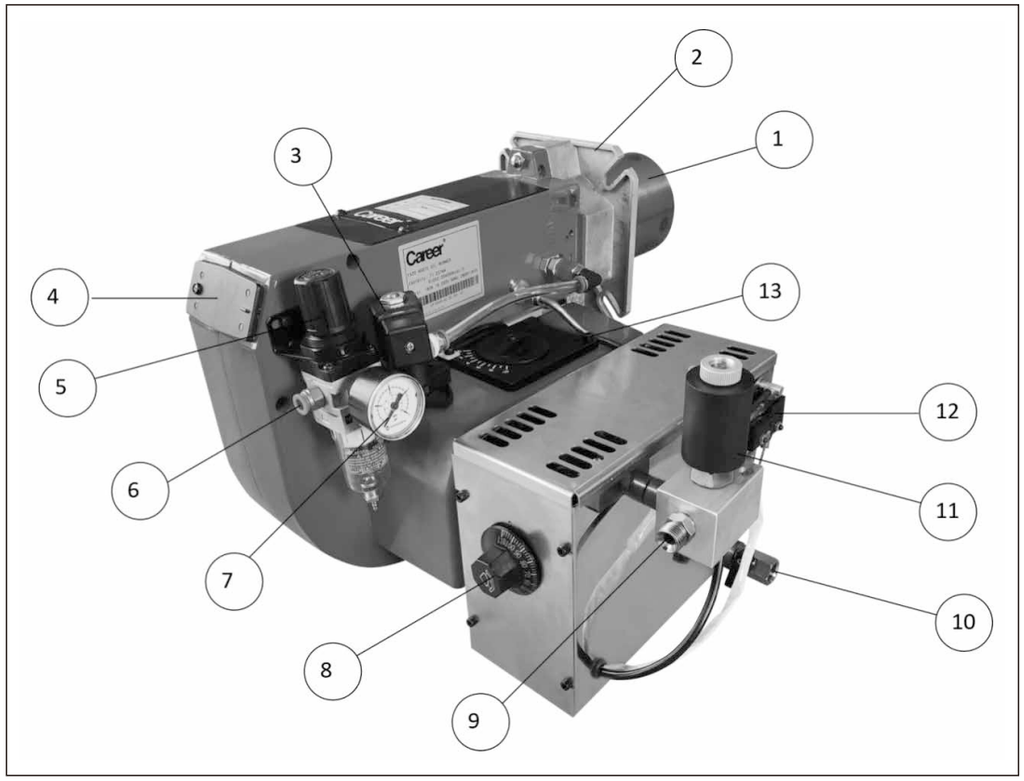
Contents

1.Product Parameters & Technical Specifications

Model	Fuel Consumption (kg/h)	Power Range (kW)	Nozzle (US gal/hr)	Motor Power (W)	Voltage	Working Pressure (bar)
FX10A	2-10	24-119	3.3	90	220V/50Hz	2
FX20	4-20	24-237	3.3×2	180	220V/50Hz	2

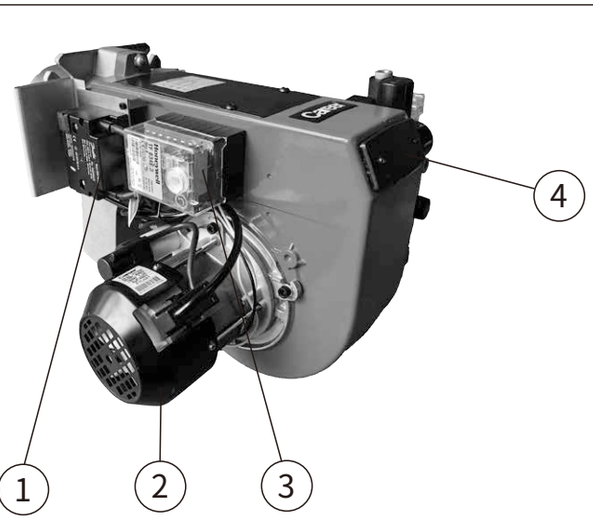
Operating Conditions:
Applicable Fuels: Waste engine oil, vegetable oil (preheated to 120°C).
Air Pressure Range: 0-3bar (factory preset: 2-2.5bar).

Components



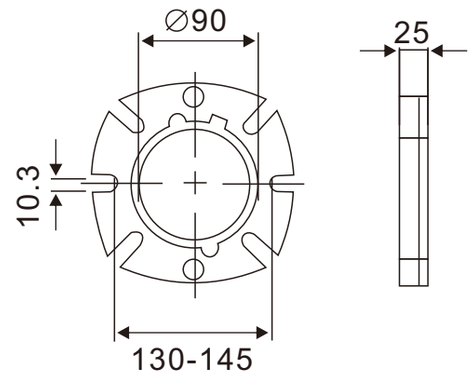
No.	Component	No.	Component
1	Flame Tube	**8**	Thermostat
2	Mounting Flange	**9**	Fuel Inlet (3/8", requires 60°C input)
3	Solenoid Valve	**10**	Drain Valve
4	Viewing Window	**11**	Solenoid Valve
5	Air pressure regulator (power adjustment)	**12**	Liquid Level Control
6	Air Inlet (8mm, to compressor)	**13**	Air Damper
7	Air Pressure Gauge		

No.	Component
1	Flame Detection



No.	Component	No.	Component
1	Ignition Transformer	3	Controller
2	Motor	4	Sight Glass

Installation size



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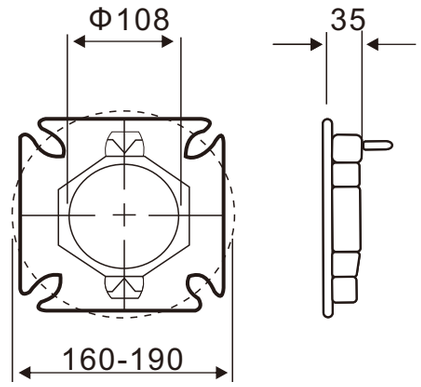


FX20

2.Installation & Commissioning

Pre-Installation Requirements

1.Verify packaging integrity and ensure all accessories are present (flanges, gaskets, filters, etc.).
2.Ensure the installation environment is well-ventilated and free from flammable materials and reserve at least 1 meter of maintenance space.

Fuel Supply System Connection

User-Supplied Components

1.Oil Tank End:
Oil Tank Requirements:
- Preheater (user-supplied, power matched to tank capacity, recommended 380V/≥4kW).
- Temperature controller (preset 60°C, user-supplied).
- Manual ball valve (user-supplied).

Tank Installation Height Requirements:
- **Gravity Feed Mode:** The oil storage tank must be installed 1-2 meters above the burner body for gravity-fed operation (no transfer pump required).
- **Forced Feed Mode:** If the tank height is less than 1 meter, a transfer pump (user-supplied, pressure range: 0.5-1.0bar) is required.

2.Air Compressor Specifications:
- Output Pressure Range: 0-3bar (recommended to match burner working pressure: 2bar).
- Interface Specification: 8mm quick-connect plug (compatible with the burner's air inlet).

Career Burner Standard Components:

3.Burner End:
- Filter → Oil hose (with heating wire) → Burner.

Dry Burning Protection

- Critical Requirement:
  - ⚠ The fuel in the burner tank must fully submerge the oil tube heating wire; otherwise, dry burning may damage the heating wire.
- Daily Check:
  - ⚠ Before startup, verify the liquid level is never below the heating wire.

1.Key Components

Component	Function	Supplier	Remarks
Oil Tank Temperature Controller	Controls preheater to maintain oil at 60°C	User-supplied	Must be preset to 60°C with over-temperature protection at 70°C.
Oil Hose Heating Wire	Anti-freeze design (220V)	Career Standard	Built-in self-limiting temperature protection (surface temp: 60-80°C).
Filter	Filters impurities (120 mesh)	Career Standard	Installed upstream of the pump; clean monthly.
Burner	Integrated ignition, nozzle, control module	Career Standard	Flange connection with flange gasket.
Transfer Pump	Provides fuel pressure (0.5-1.0bar) for forced feed	User-supplied	Required only for tank heights <1 meter.

2.Key Installation Guidelines

1.Fuel Supply Mode Selection:
Gravity Feed Mode (Tank height: 1-2 meters):
- Oil tube tilt angle must be ≥5° to avoid fuel stagnation or airlocks.

Forced Feed Mode (Tank height <1 meter):
- Install the transfer pump between the filter and burner; connect to an independent power circuit.

2.Heating Wire Wiring:
- Connect directly to a user-provided 220V independent power supply.

3.Temperature Control Settings:
- Set the oil tank temperature controller to start preheating at 60°C, with over-temperature protection at 70°C.

4.Sealing Test:
- Ensure all connections are sealed using high-temperature-resistant materials.

3.Diagrams

Gravity Feed Mode

[Oil Tank] (Height: 1-2m) → [Filter] → [Oil Hose + Heating Wire] → [Burner]
(User-supplied) (Career Standard) (Career Standard) (Career Standard)

Forced Feed Mode

[Oil Tank] (Height <1m) → [Filter] → [Transfer Pump] → [Oil Hose + Heating Wire] → [Burner]
(User-supplied) (Career Standard) (User-supplied) (Career Standard) (Career Standard)

Oil Tank Temperature Controller critical Safety Notes:

- Preset to 60°C; power supply must be 3-phase 380V with grounding resistance ≤4Ω.
- Prohibited: Sharing power supply with the heating wire (220V)!

4.Safety Warnings

Prohibited Actions:
Do NOT operate the burner under the following conditions:

- Gravity Feed Mode: If the oil tank height is <1 meter or >2 meters.
- Forced Feed Mode: If the transfer pump is not installed or its pressure exceeds 1.0bar.
- Heating wire power supply is disconnected or the temperature controller fails.
- Oil tube leakage or filter blockage occurs – immediately shut down and perform maintenance.
- Make large adjustments to air pressure during operation! Each adjustment should be ≤0.2bar.
- If the fuel in the oil tank fails to fully submerge the oil tube heating wire! Otherwise, dry burning may damage the heating wire.

Maintenance Requirements:

- Monthly inspection: Check the insulation layer of the heating wire for damage.
- Daily Check: Before startup, verify the liquid level MUST cover heating wire.

Air Supply System Connection

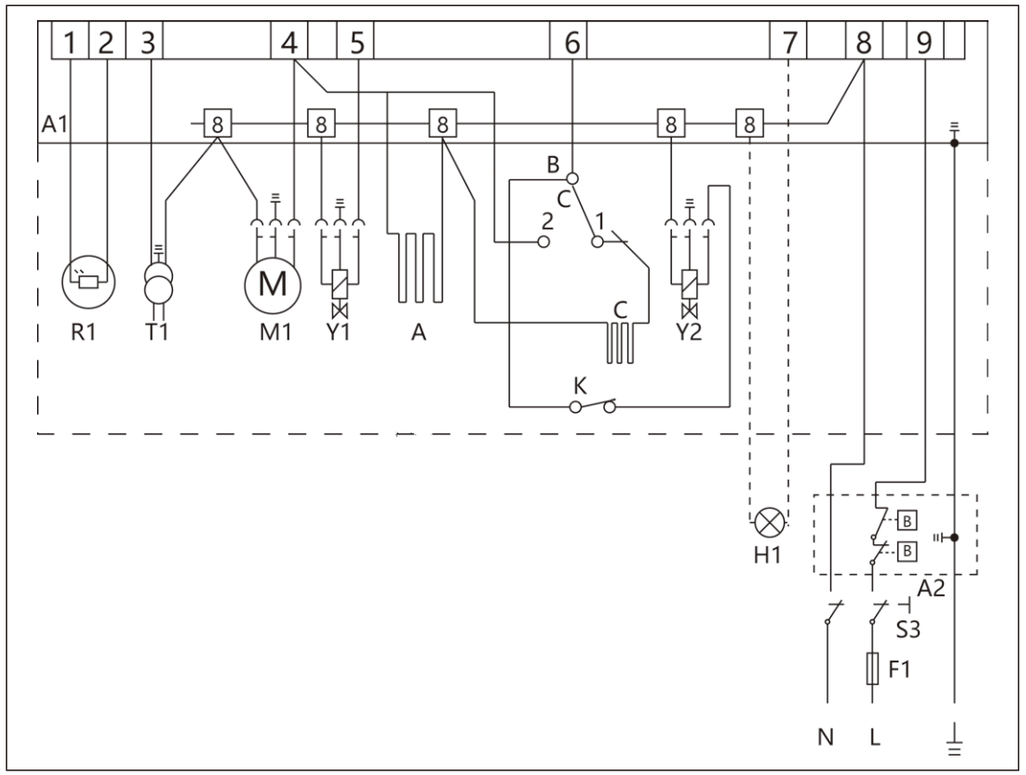
1.The output pressure of the air compressor must not exceed 2.5bar, otherwise it may cause ignition failure or poor atomization.

Burner Installation

1.Use high-temperature-resistant flange gaskets during flange alignment, and ensure bolts are evenly tightened.

Pre-Startup Checklist

1.Preheat the oil in the tank to ≥60°C to avoid cold-start damage.
Power Requirements:
1.Heating wire: 220V independent power supply.
2.Oil tank preheater: 380V three-phase power supply.
3.Verify electrical grounding reliability. Refer to the wiring diagram below:



ID	Component	ID	Component
A1	TF834E.3 Controller	Y1	Burner Solenoid Valve (Air Solenoid Valve)
A2	Thermostat	A	Nozzle Preheater
H1	Fault Indicator Light	B	Temperature Controller
S3	Main Power Switch	C	Oil Tank Preheater
R1	Flame Detection Photocell	K	Oil Flow Control Module
T1	Ignition Transformer	Y2	Liquid Level Solenoid Valve
M	Burner Motor	F1	Fuse

3.Operation & Maintenance

Startup Procedures

(1)Turn on the air compressor and adjust the pressure to 2bar.
(2)Automatic Ignition:
• The burner will automatically start once the oil temperature in the tank reaches the preset 120°C (no manual intervention required).
(3)Ignition Purge:
• The system performs a 15-second purge to remove residual gases from the combustion chamber.
(4)Fuel Ignition:
• After purge completion, the ignition electrodes activate to ignite the fuel.
(5)Purge Failure Handling:
• If the purge exceeds 15 seconds, the system will auto-shutdown and illuminate the H1 fault indicator. Check damper opening or air pressure sensor.

Flame Adjustment & Safety Monitoring

Flame Adjustment

(1)Adjustment Principle:
• Air pressure is positively correlated with flame intensity:
  ▪ Higher air pressure → Larger flame.
  ▪ Lower air pressure → Smaller flame.
• Adjustment Range: 1.5-2.5bar (recommended working pressure: 2bar).
(2)Safety Precautions:
• Prohibited: Make large adjustments to air pressure during operation! Each adjustment should be ≤0.2bar.
• If the flame turns red or emits black smoke, immediately reduce air pressure and inspect the fuel system.

Safety Monitoring

(1)Flame Status:
• Ideal Flame: With no black smoke.
• Adjust air flow via the damper (set to 50% opening during initial startup, then fine-tune).
(2)Oil Temperature Alarms:
Immediately shut down if oil temperature:
• Exceeds 130°C or drops below 100°C (during combustion phase).
• Inspect the temperature control probe and heating system.
(3)Safety Warning:
• Do NOT touch high-temperature components (e.g., heating pipes, combustion chamber) during operation.⚠

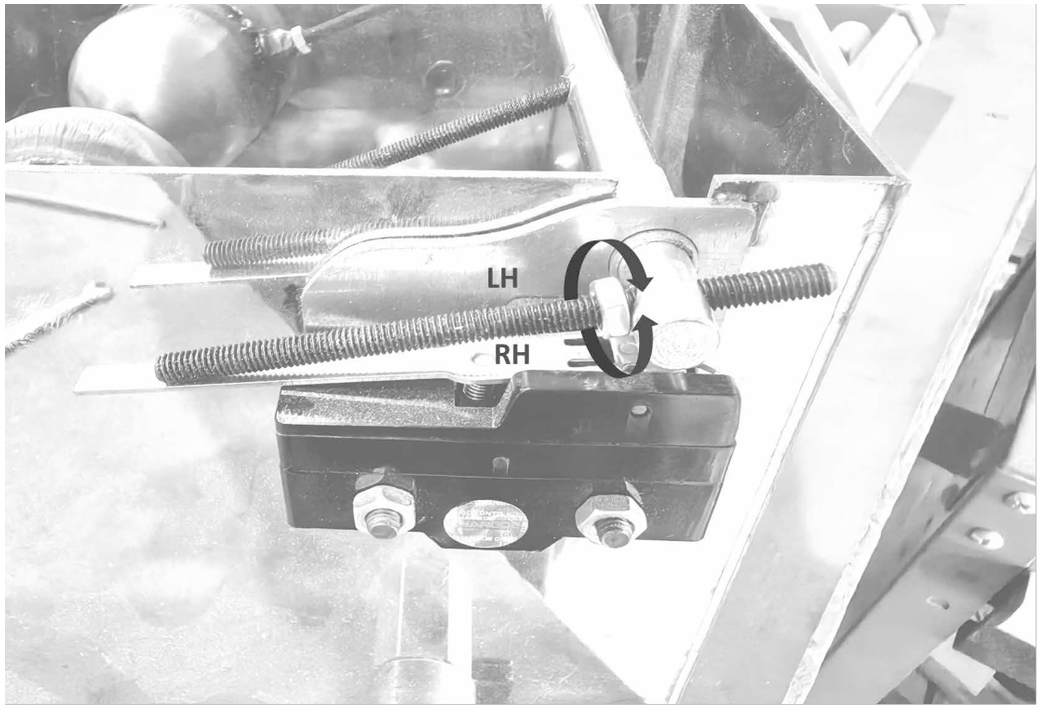
Liquid Level Adjustment

Adjustment Principle

By rotating the level adjustment screw, the mechanical position of the float mechanism is altered, allowing precise control of the oil tank's liquid level to ensure stable fuel supply.

Adjustment Directions

Operation	Float Movement	Liquid Level Change
Rotate screw counterclockwise (left)	Float rises	Liquid level increases ▲
Rotate screw clockwise (right)	Float descends	Liquid level decreases ▼



Safety Precautions
• WARNING: Always turn off the burner and disconnect the power supply before adjusting the liquid level! ⚠

4.Service

Ignition Electrode & Flame Stabilizer Setup

1.Electrode Gap: 3-4mm; Flame Stabilizer Distance from Nozzle: 5-8mm.

Daily Operation Notes

1.Check fuel line seals and air pressure gauge readings daily.
2.Prohibit forced startup if the preheating tank temperature is below the required threshold.

Maintenance Schedule

1.Check fuel line seals and air pressure gauge readings daily.
2.Prohibit forced startup if the preheating tank temperature is below the required threshold.

Frequency	Tasks
Weekly	Clean fuel filter; inspect nozzle for clogs.
Monthly	Remove combustion chamber carbon deposits; calibrate electrode gap; inspect heating wire insulation.
Biannually	Replace seals; perform comprehensive electrical system inspection.

Burner Internal Cleaning

1.Power off the burner, remove the nozzle and electrodes, and clean carbon deposits with a soft brush.
2.Prohibited: Use water or corrosive solvents for cleaning.

5.Troubleshooting Guide

No.	Issue	Possible Cause	Solution
1	**Ignition failure**	Incorrect electrode gap /low oil temp	Adjust gap to 3-4mm; verify preheating system.
2	**Unstable flame**	Damper misadjustment /fuel blockage	Recalibrate damper; clean filter & nozzle.
3	**Poor atomization**	Air pressure >2.5bar	Reduce compressor output pressure to <2bar.
4	**HI indicator illuminated**	Flame loss	Check FR photocell, TA transformer, VE1/VE2 valves.
5	**Unstable liquid level**	Screw thread wear /float stuck	Clean float guide rail; replace adjustment screw.
6	**No response to level adjustment**	Loose mechanical linkage	Tighten linkage screws; recalibrate zero point.

6.Packing List

No.	Item	Qty	No.	Item	Qty
1	**Burner Unit**	1	5	Anti-freeze oil tube heating wire (3m, 220V)	1
2	**Mounting Flange**	1	6	Oil Tube (3m, 3/8" interface)	1
3	**Flange Gasket**	1	7	Air Tube (1m, 8mm)	1
4	**Nozzle Wrench**	1	8	Screws	As needed