

Munters SIAL®

# Mobile Diesel Heaters
# GRY-D / GRY-I

## *Service Training Course*

Munters



Rev. No. 3 January 24, 2011

# GRY-I
# Indirect-fired Diesel Heaters



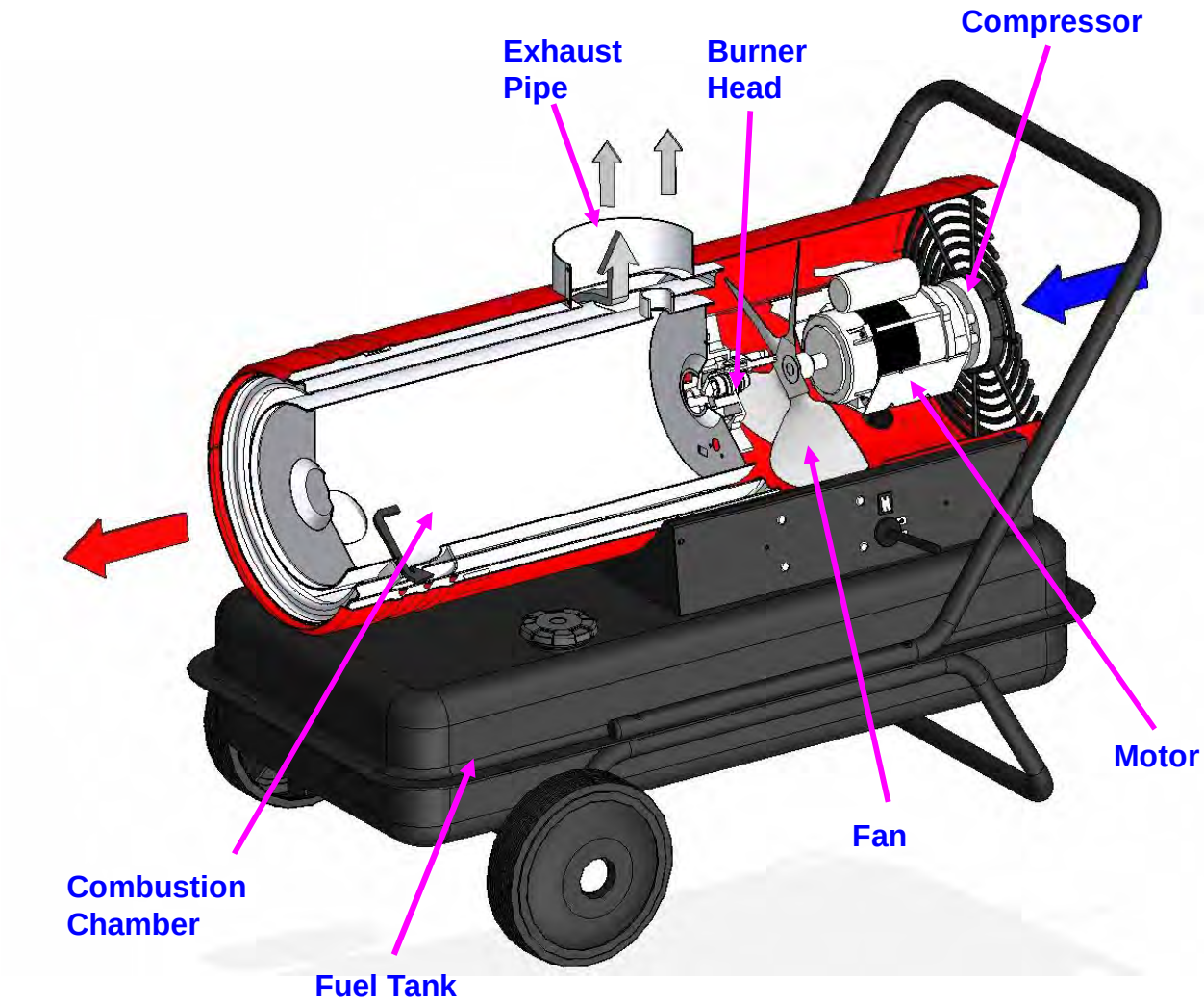

- GRY-I 15 WE GRYP 15 AP
- GRY-I 25 WE GRYP 25 AP
- GRY-I 40 WE GRYP 40 AP

# GRY-D
# Direct-fired Diesel Heaters

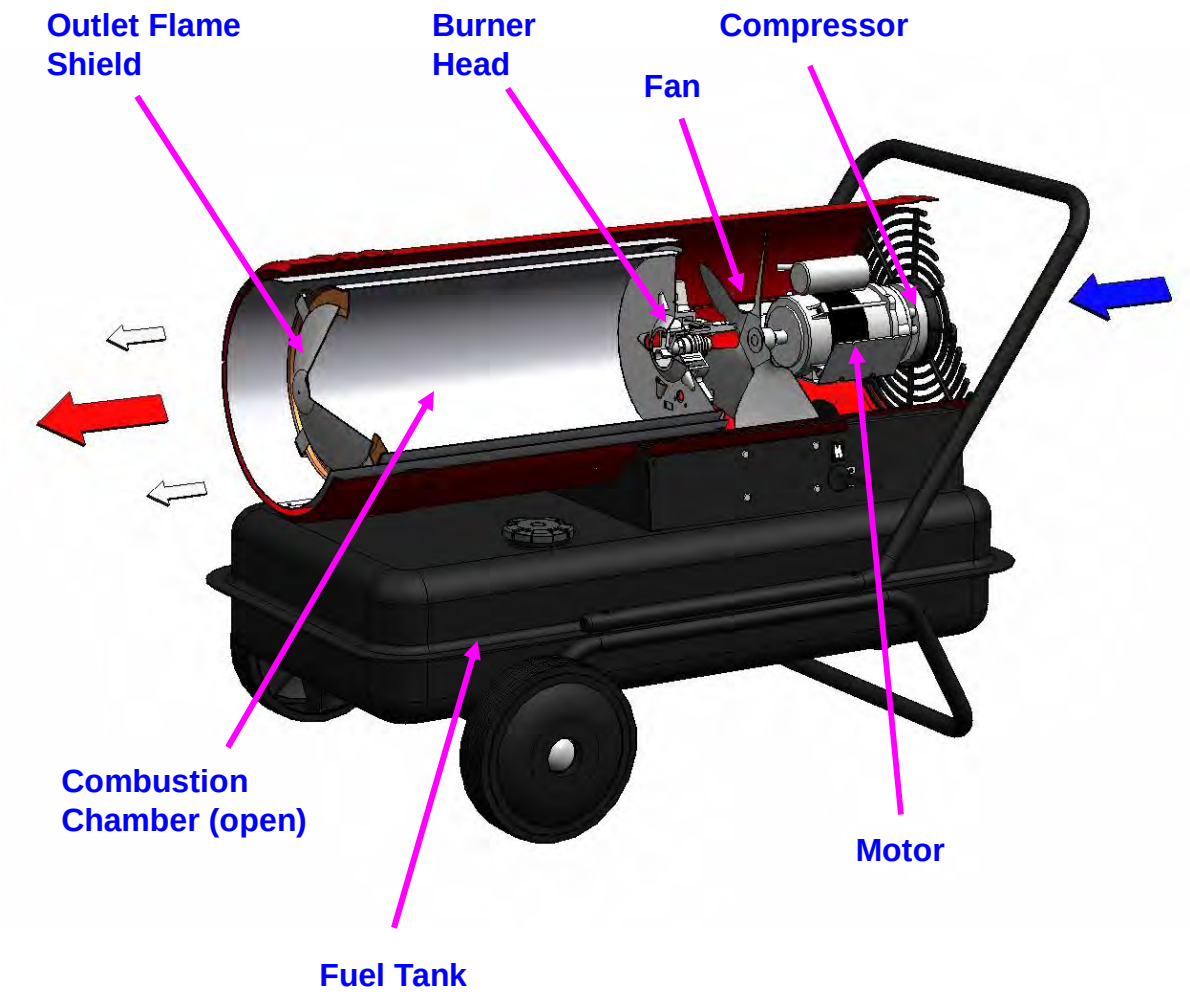



- GRY-D 15 WE — GRYP 15
- GRY-D 20 HE — GRYP 20 M
- GRY-D 20 WE — GRYP 20
- GRY-D 28 WE — GRYP 28
- GRY-D 40 WE — GRYP 40
- GRY-D 60 WE — GRYP 60 PV

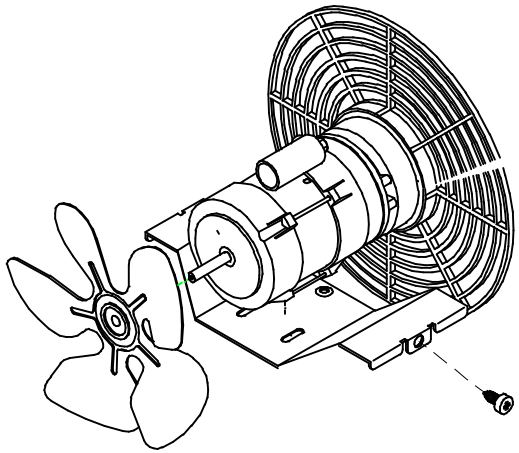
# GRY-I
## General Assembly



# GRY-D
## General Assembly



# Fan Motor Assembly



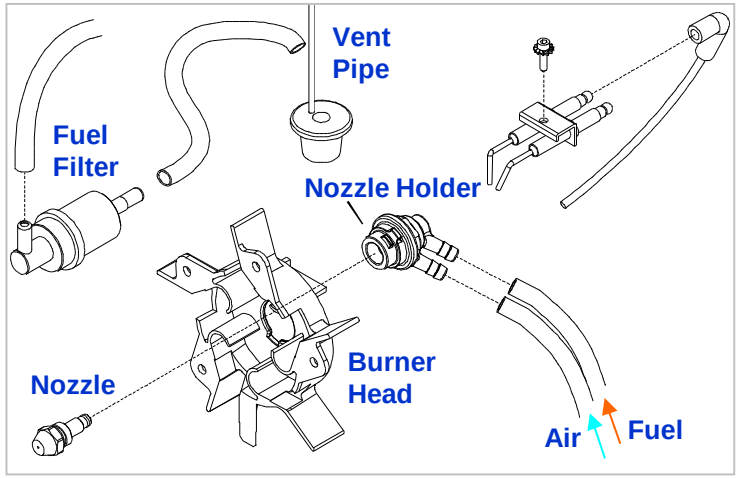
**Motors**

| | | | |
|---|---|---|---|
| **70 W** | **2800 rpm** | **2 poles** | **GRY-D 15** |
| **100 W** | **2800 rpm** | **2 poles** | **GRY-D 20** |
| **150 W** | **2800 rpm** | **2 poles** | **GRY-D 28 GRY-I 15** |
| **250 W** | **2800 rpm** | **2 poles** | **GRY-D 40/60 GRY-I 25/40** |

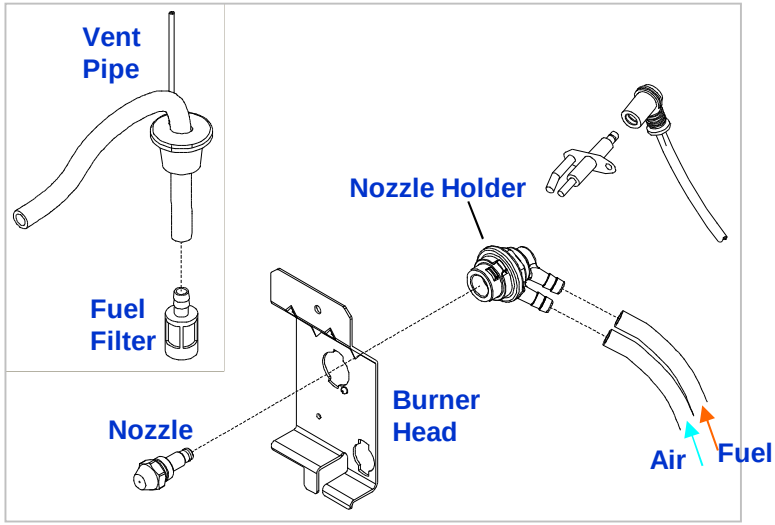
# Fuel Circuit

The fuel circuit is composed of :

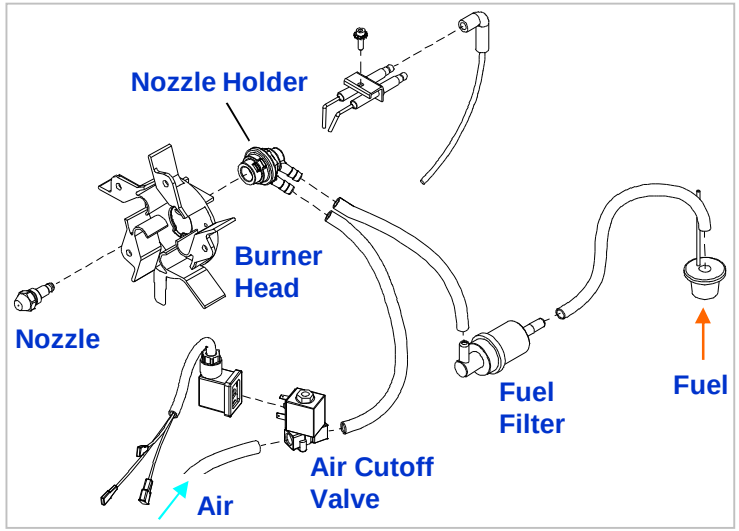
- fuel tank
- fuel suction hose
- fuel filter
- (air compressor)
- (air valve)
- (air hoses)
- nozzle holder (combustion head)
- nozzle




GRY-D Models (except 15 and 60)

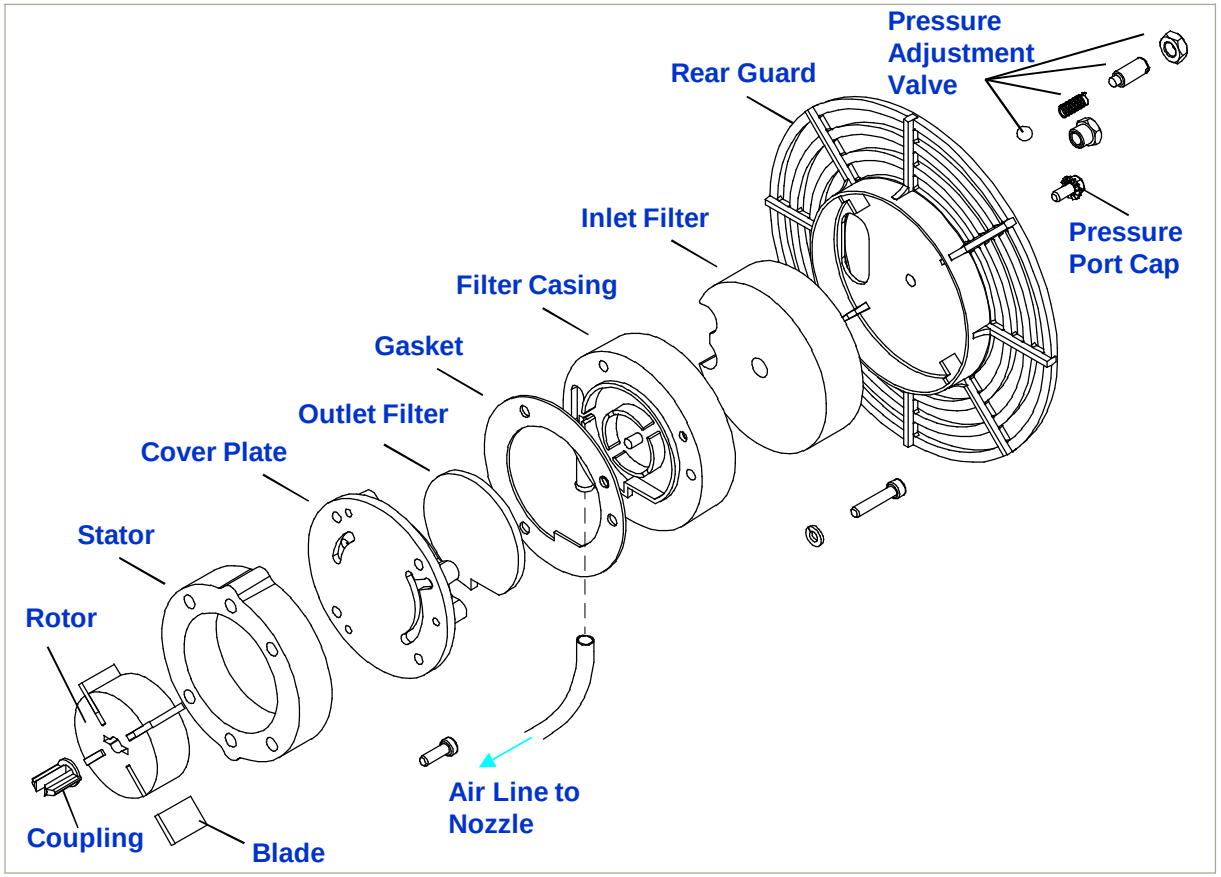



GRY-D 15 WU

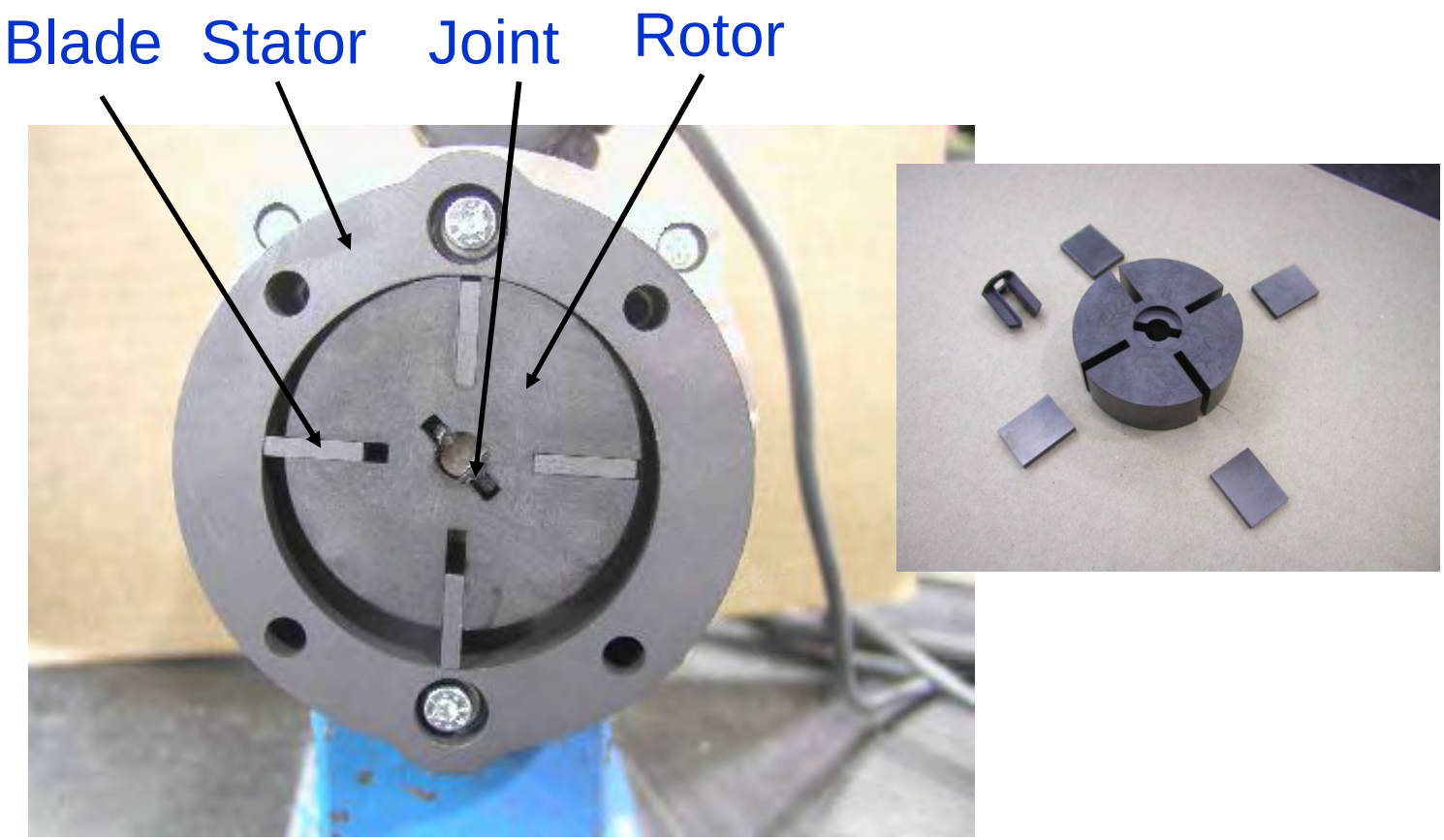



GRY-I Models & GRY-D 60

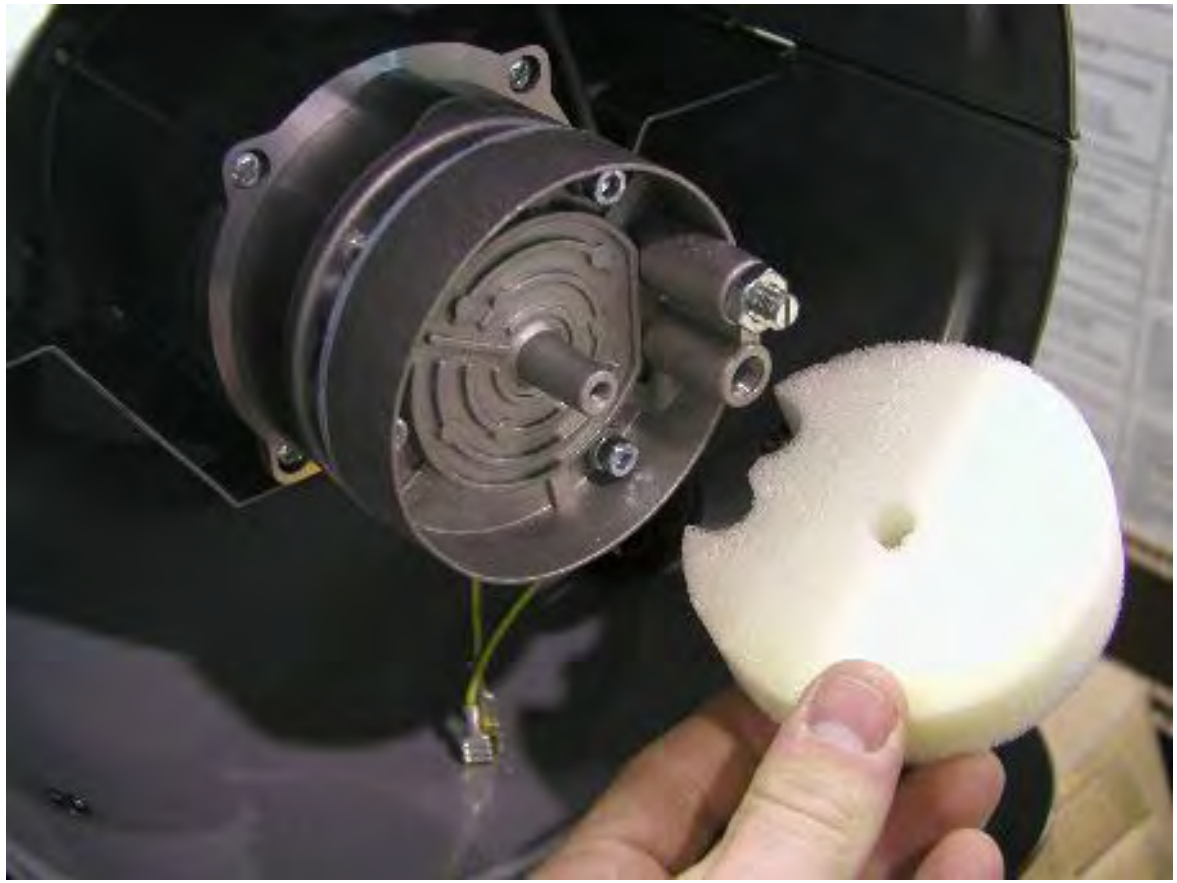
# Air Compressor Assembly



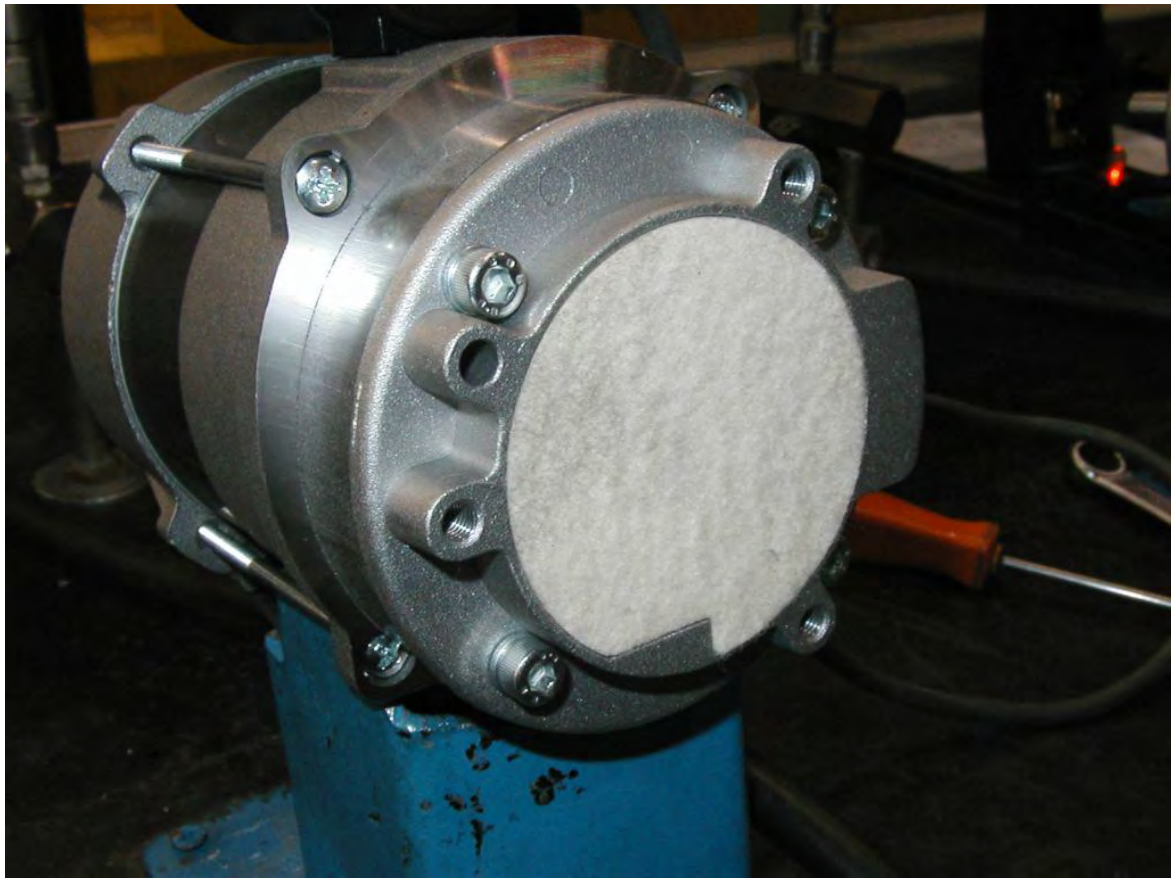
# Rotary Compressor



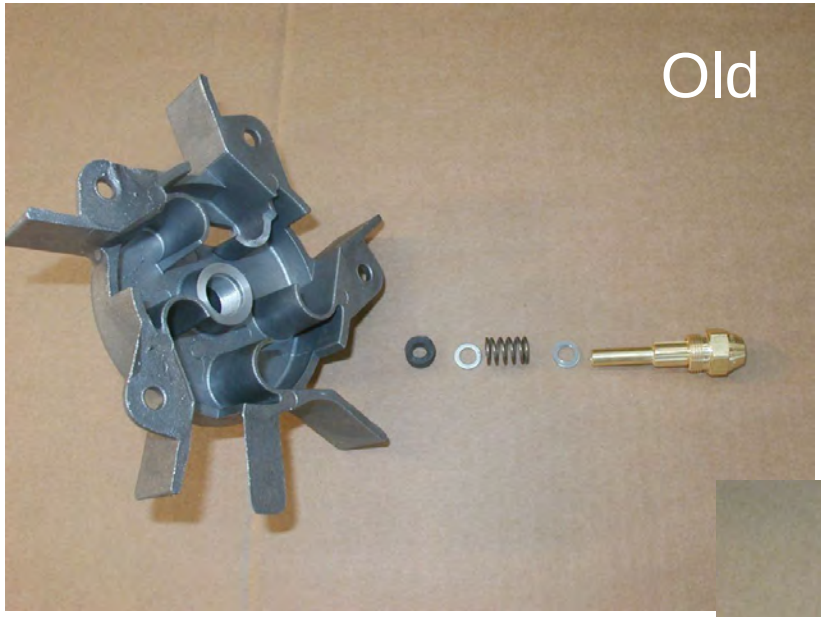
# **Air compressor**
## Inlet (Low Pressure) Filter

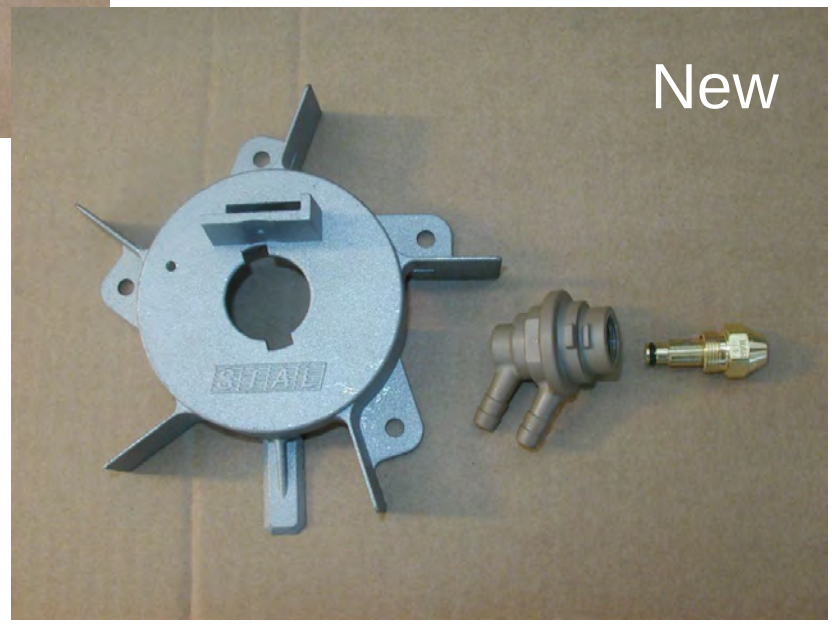


# **Air compressor**
## Outlet (High Pressure) Filter

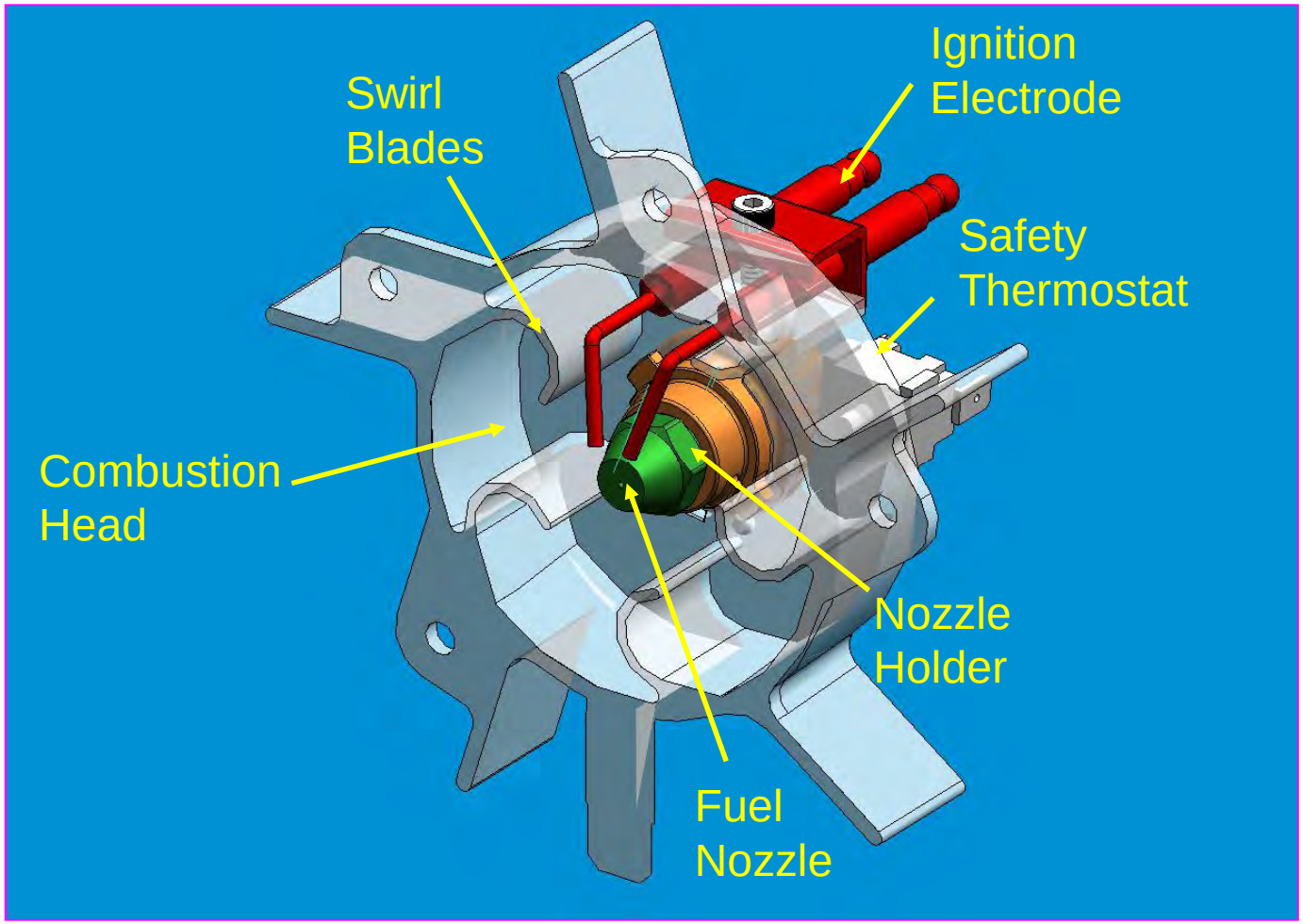


# Burner Assembly
# (old and new design)

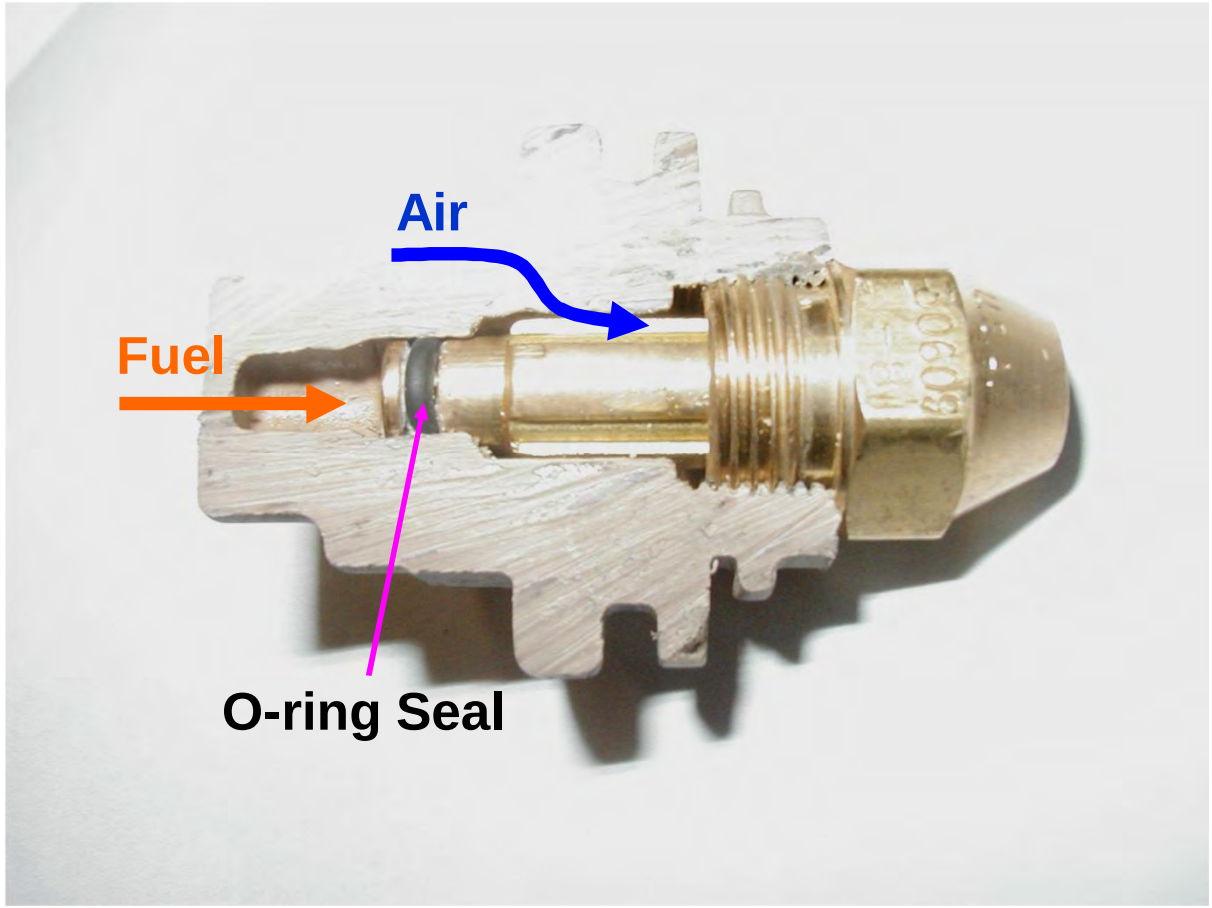


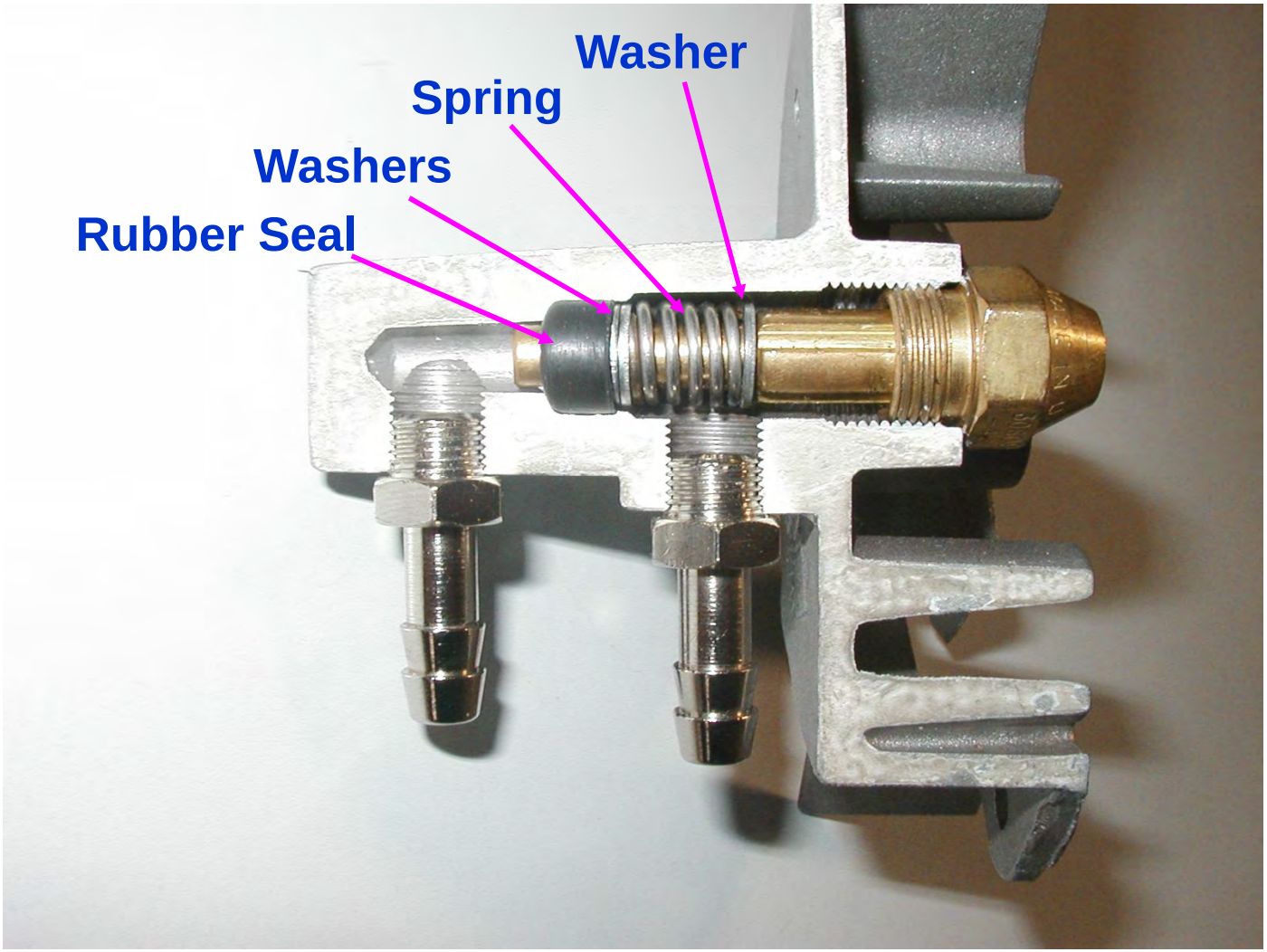
# Burner Assembly



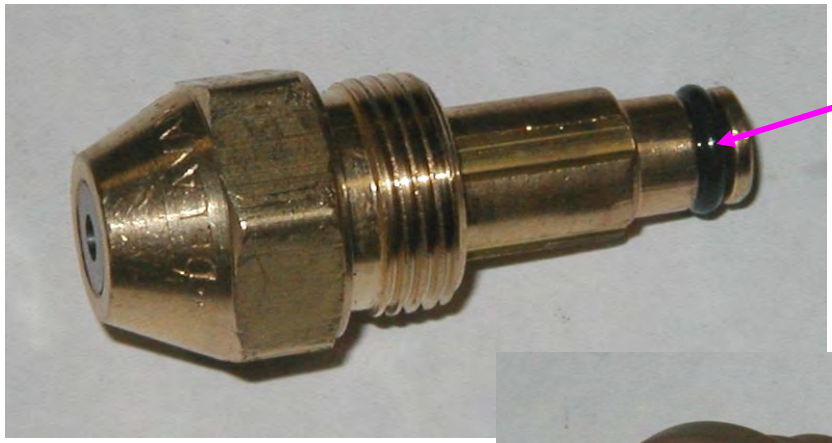
# Combustion Head (current design)



# Combustion Head (old design)



# Nozzle & Nozzle Holder



O-ring

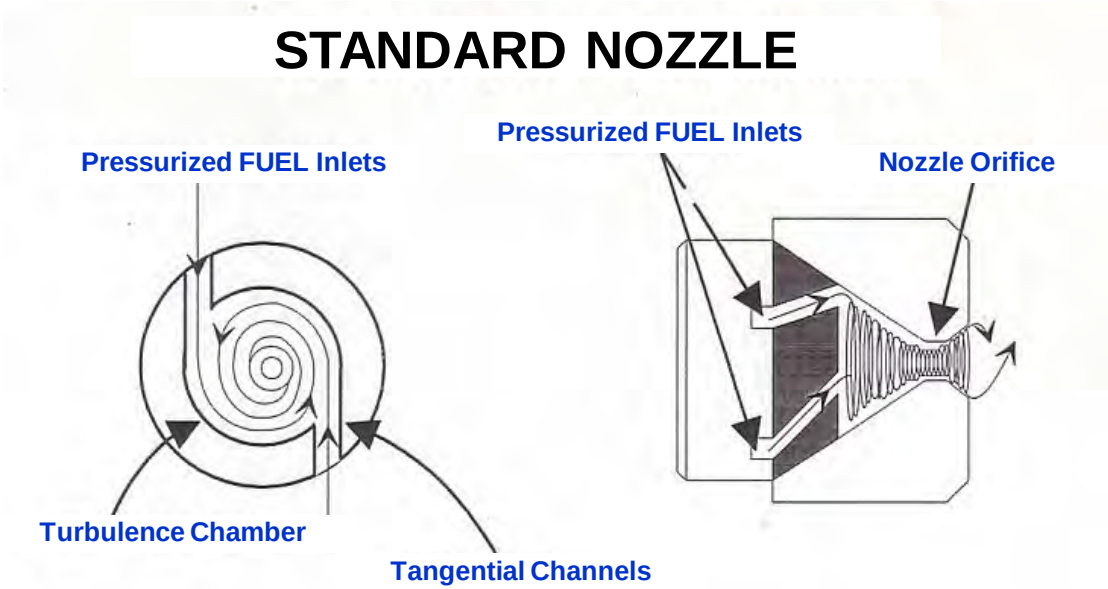


Fuel Inlet

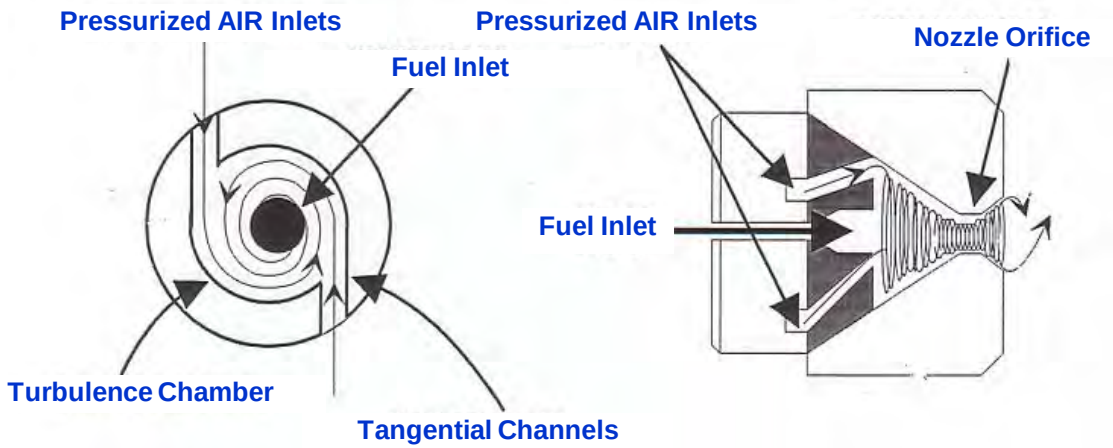
Air Inlet

# Syphon Nozzle vs. Standard Nozzle

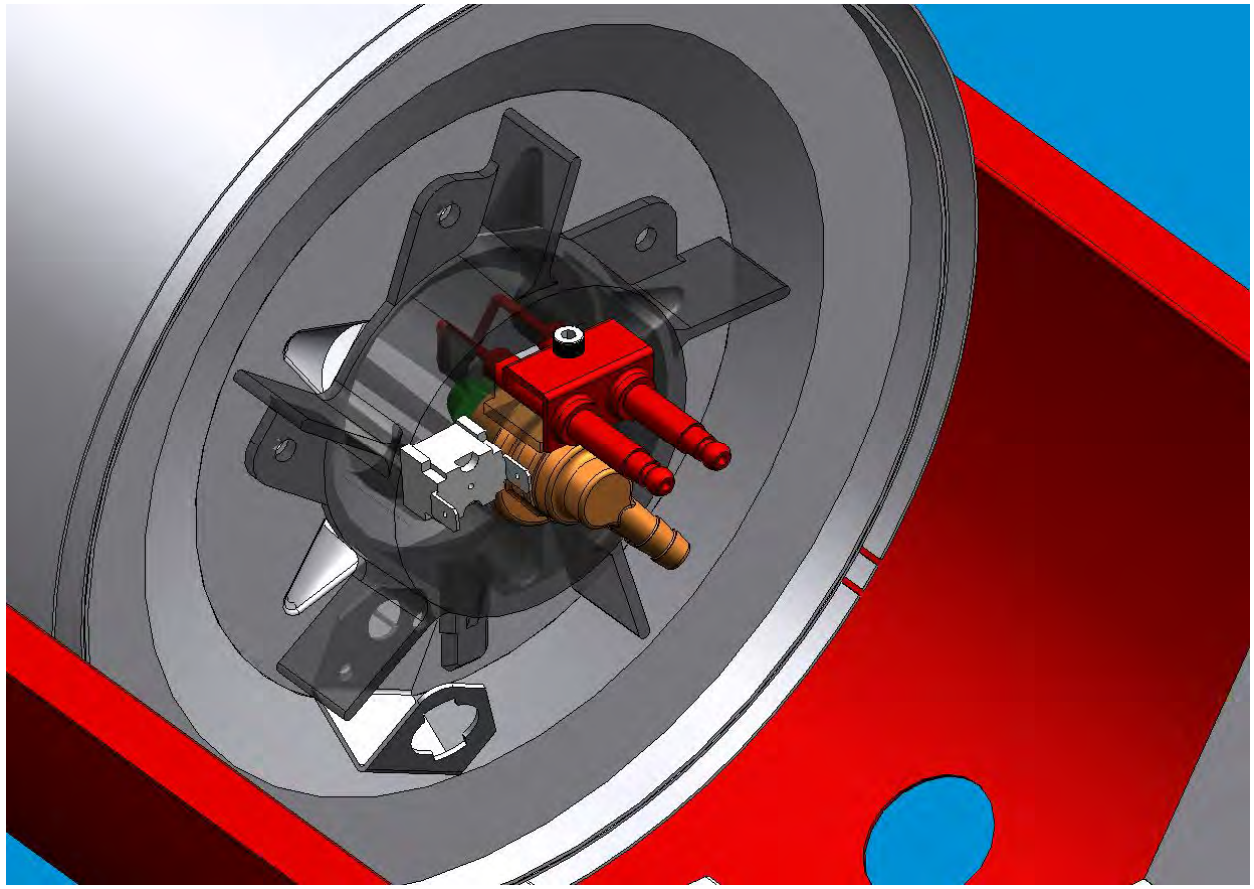
## STANDARD NOZZLE



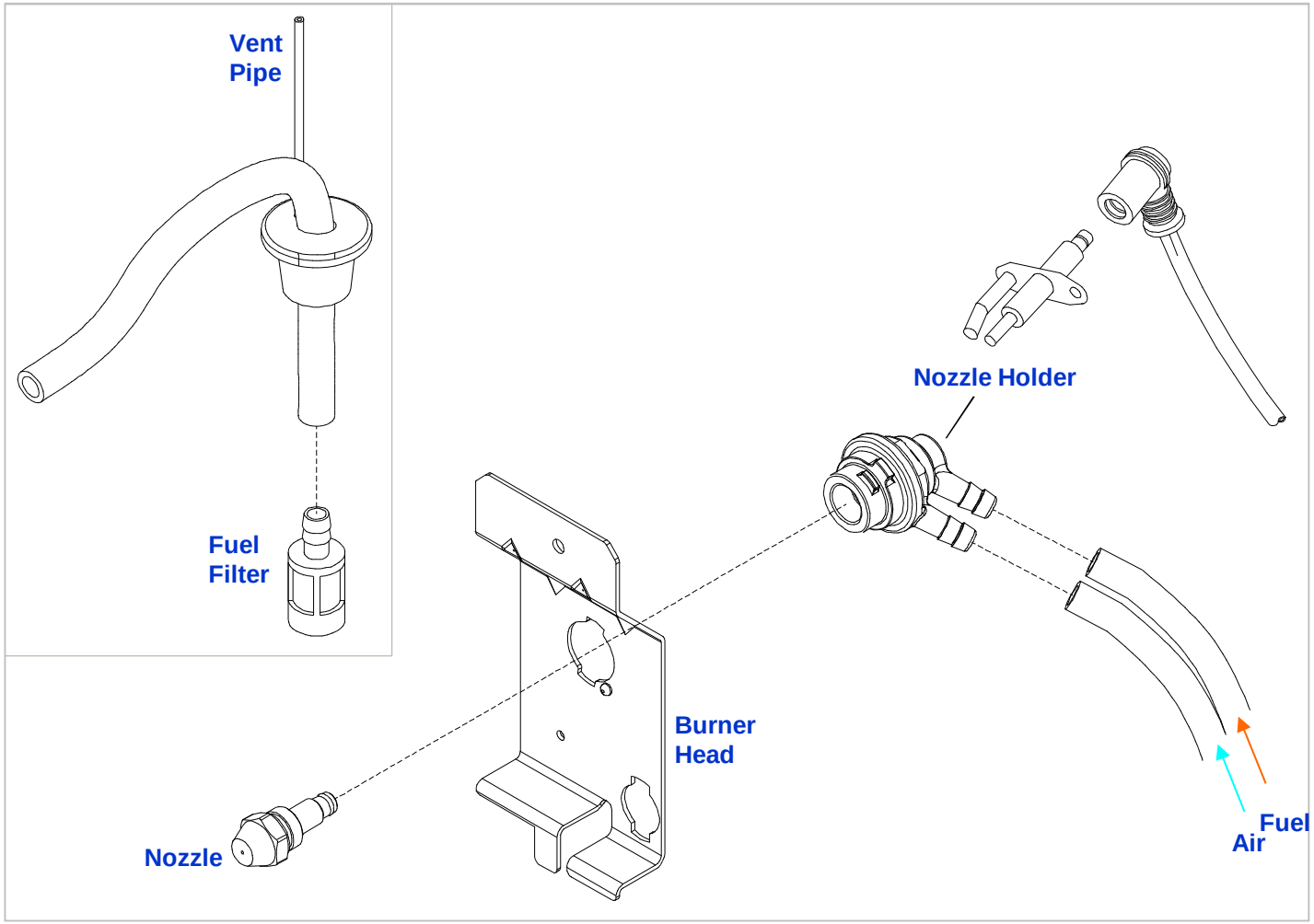

## SYPHON NOZZLE



# Burner Head
# on Combustion Chamber



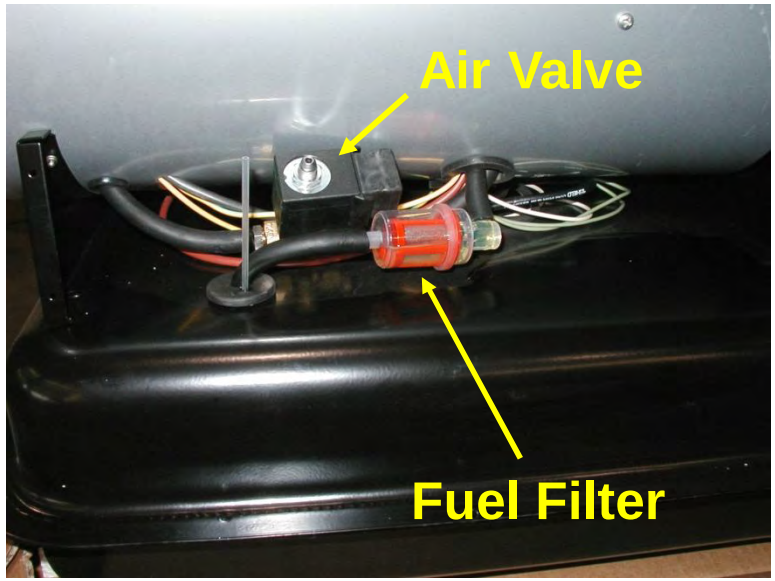
# GRY-D 15
# Combustion Head



# GRY-I
# Combustion chamber detail



# GRY-I
# Fuel Filter and Air Valve





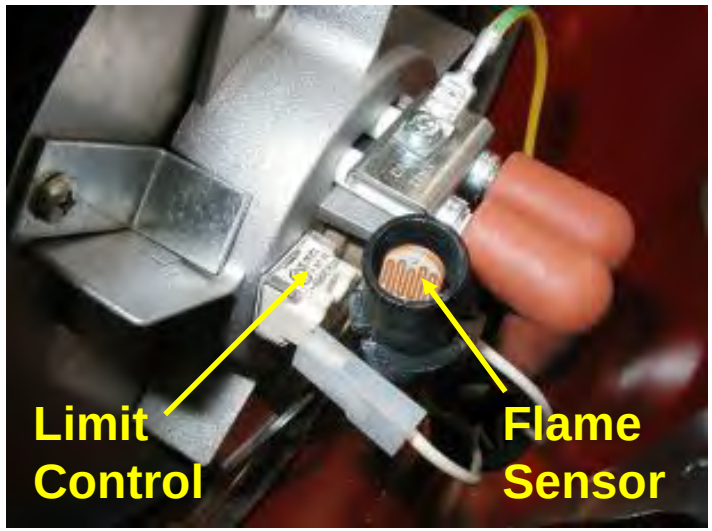




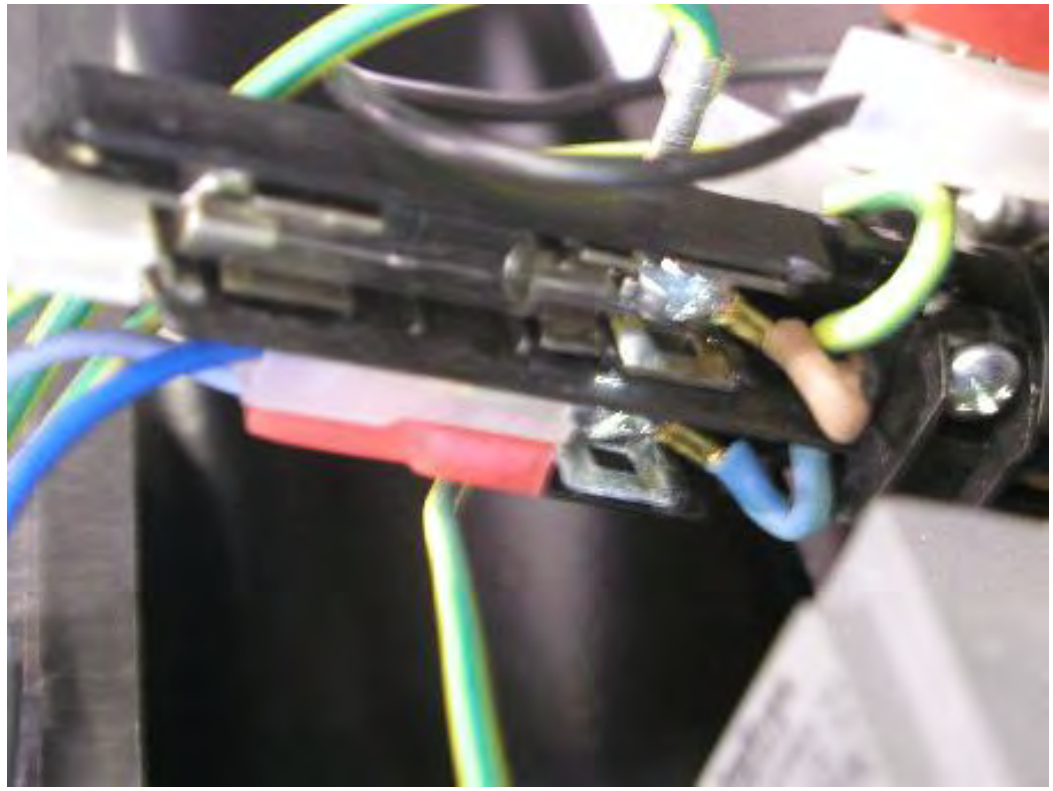
# Safety Controls
# Flame Sensor and Thermostat

- **Flame Sensor (Photoresistor)**
  - Detects false flame signals or anticipated ignition
  - Checks flame failure at ignition
  - Checks flame failure during operation

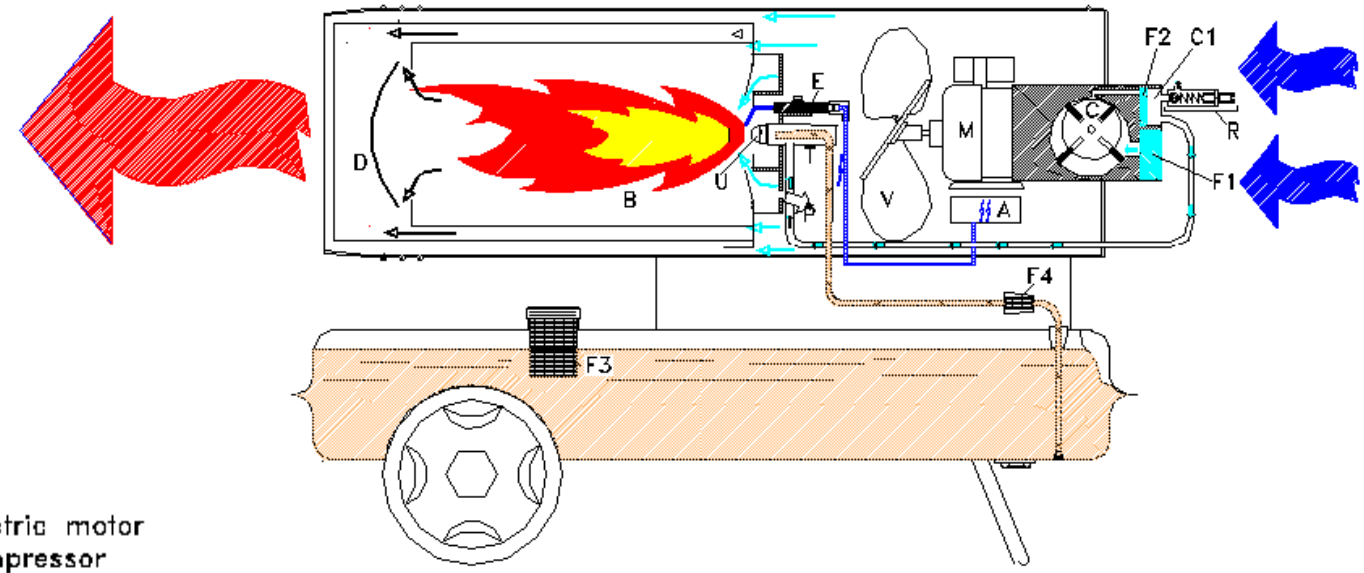
- **Safety thermostat (Limit Control, OPTIONAL for USA models)**



# Line Fuse

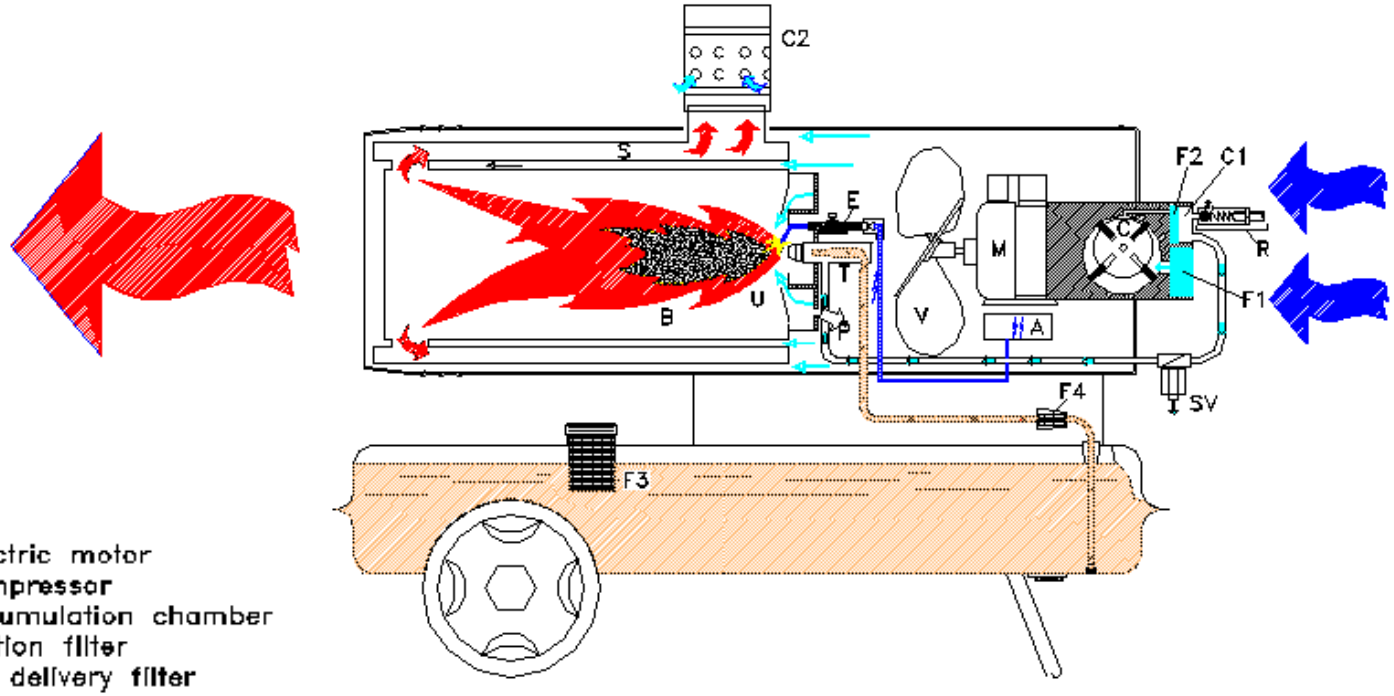


# Principle of Operation
# GRY-D




M electric motor
C compressor
C1 accumulation chamber
F1 suction filter
F2 felt delivery filter
F3 tank filter
F4 fuel filter
R air regulation valve
A ignition transformer
V fan
P photocell
T combustion head
E electrode
U nozzle
B combustion chamber
D flame protecting plate

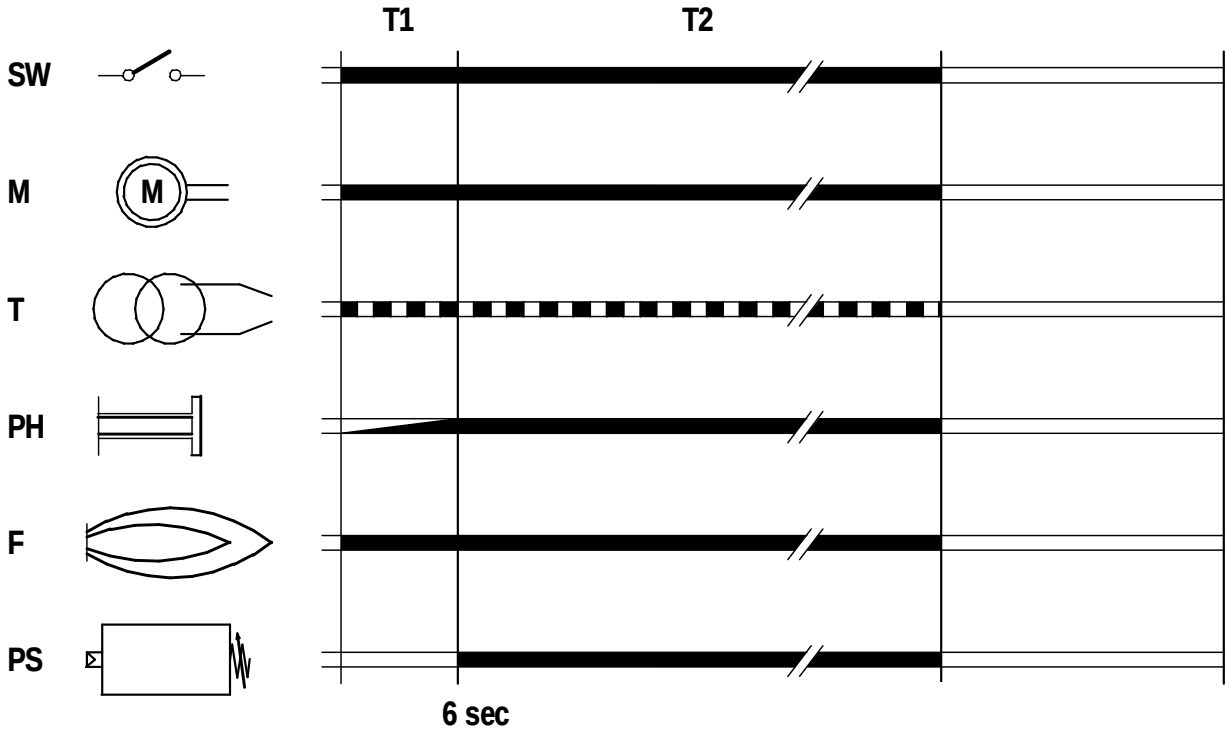
# Principle of Operation
# GRY-I




M electric motor
C compressor
C1 accumulation chamber
F1 suction filter
F2 felt delivery filter
F3 tank filter
F4 fuel filter
R air regulation valve
A ignition transformer
V fan
P photocell
T combustion head
E electrode
U nozzle
B combustion chamber
EV air solenoid valve
C2 adapter chimney
S exchanger

# Ignition Sequence

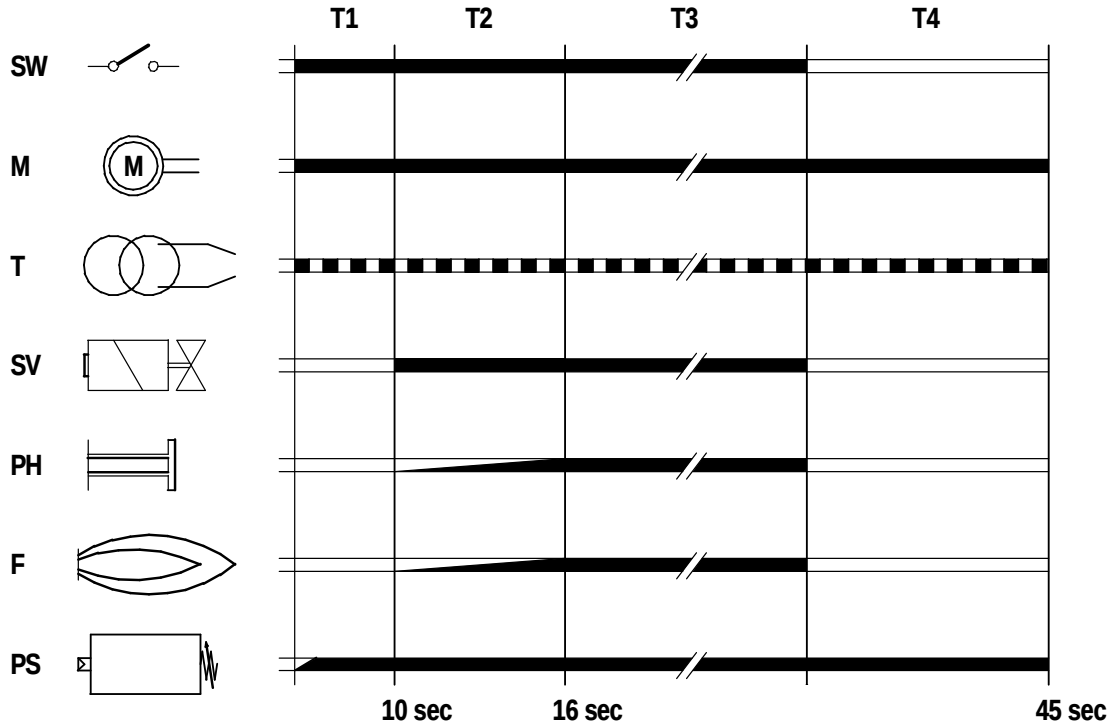
## GRY-D 15/20/28/40




| | |
|---|---|
| **SW** | SWITCH |
| **M** | MOTOR |
| **T** | TRANSFORMER |
| **PH** | PHOTOCELL |
| **F** | FLAME |
| **PS** | AIR PRESSURE SWITCH |
| **T1** | START TIME |
| **T2** | WORK TIME |

# Ignition Sequence

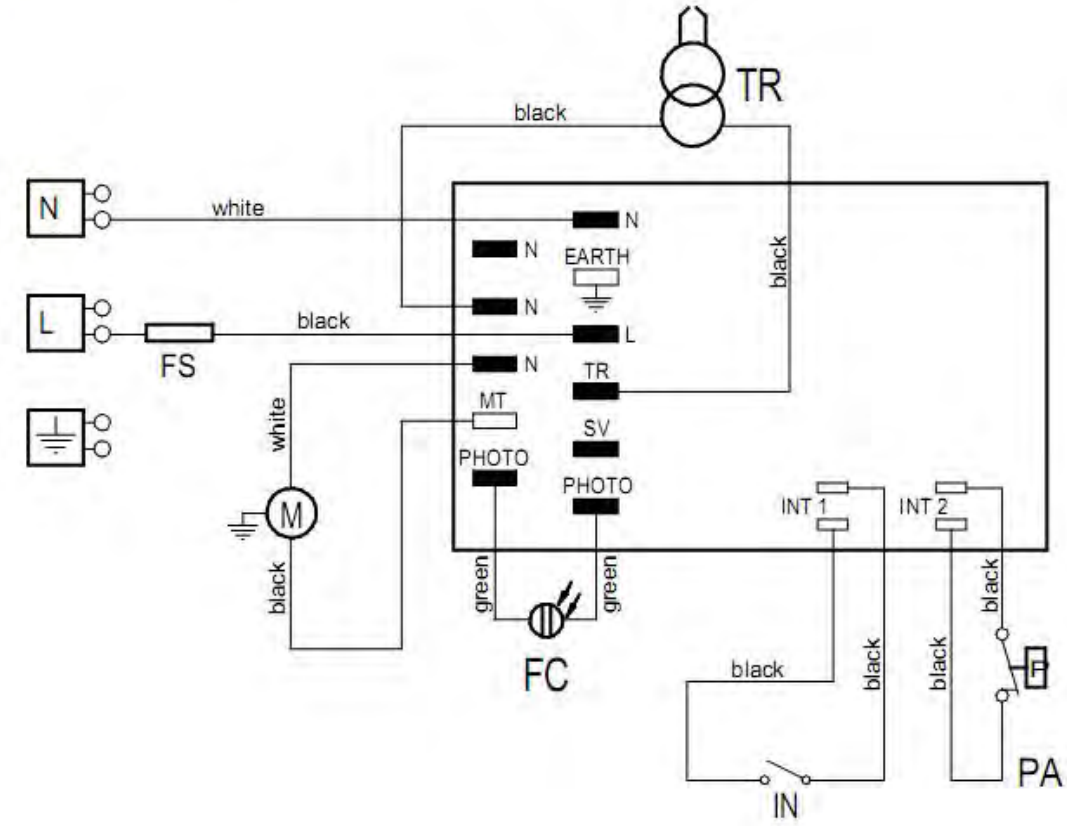
## GRY-D 60 & GRY-I 15/25/40




| | |
|---|---|
| **SW** | SWITCH |
| **M** | MOTOR |
| **T** | TRANSFORMER |
| **SV** | AIR SOLENOID VALVE |
| **PH** | PHOTOCELL |
| **F** | FLAME |
| **PS** | AIR PRESSURE SWITCH |
| **T1** | PREVENTILATION TIME |
| **T2** | START TIME |
| **T3** | WORK TIME |
| **T4** | POST-VENTILATION TIME |

# Wiring Diagrams

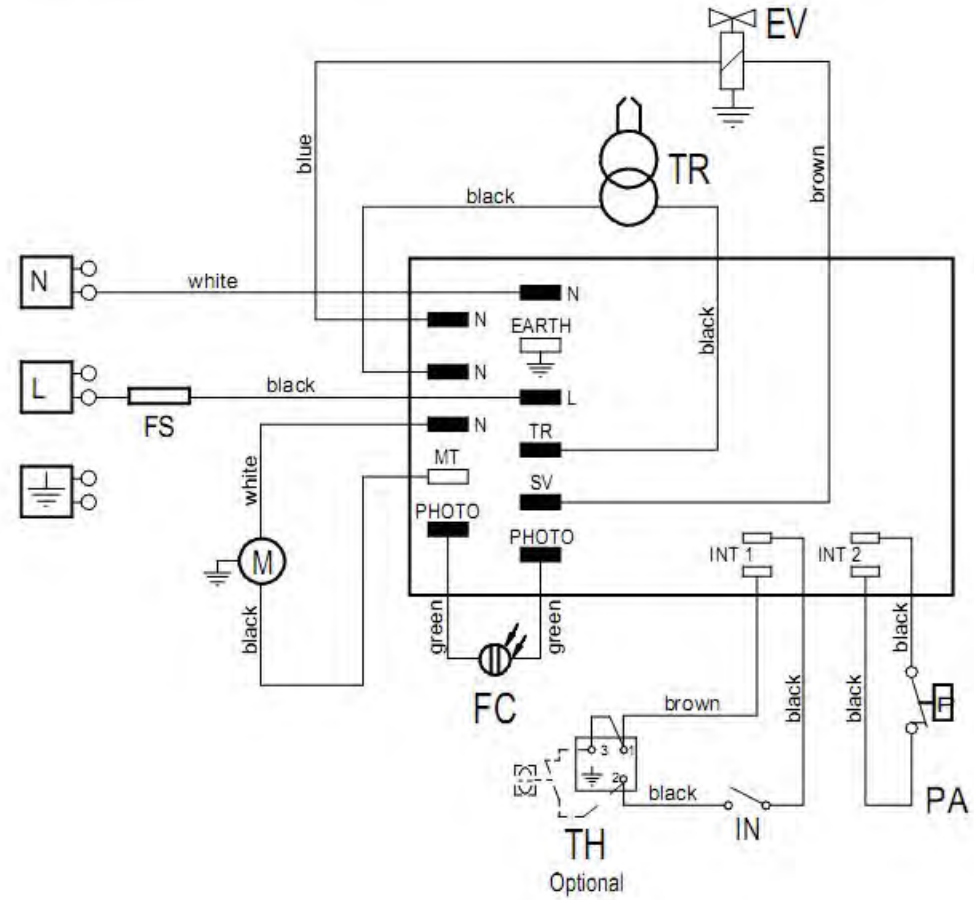
**GRY-D 15HU / 20WU-HU / 28WU / 40WU**




| | |
|---|---|
| FC | Photocell |
| FS | Fuse |
| IN | Switch |
| M | Motor |
| TR | Transformer |
| PA | Air pressure switch |

# Wiring Diagrams

**GRY-I 15 WU / 25WU / 40WU**
**GRY-D 60WU**

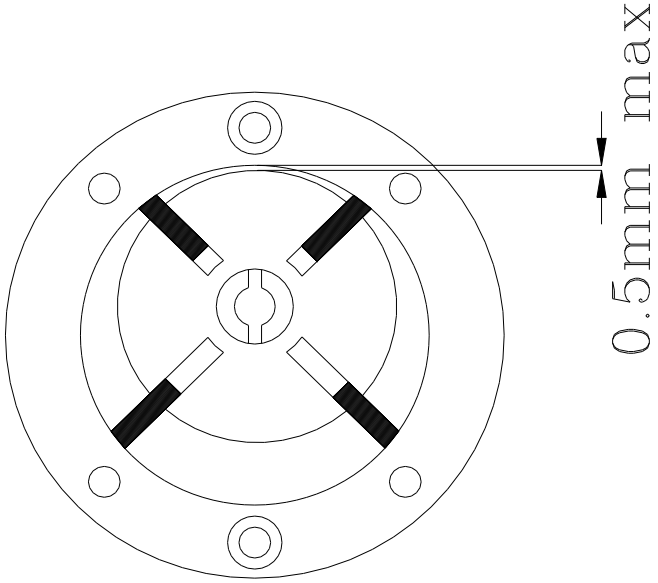


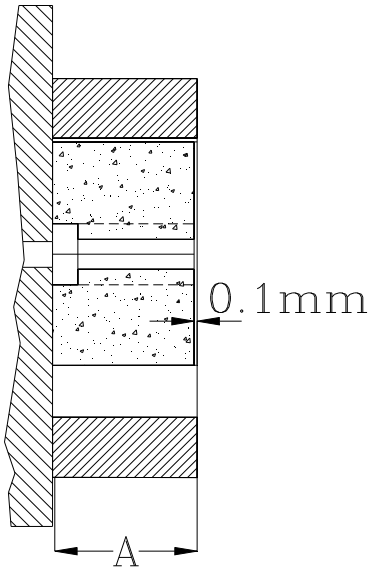

| | |
|---|---|
| EV | Air solenoid valve |
| FC | Photocell |
| FS | Fuse |
| IN | Switch |
| M | Motor |
| TH | Remote thermostat (optional) |
| TR | Transformer |
| PA | Air pressure switch |

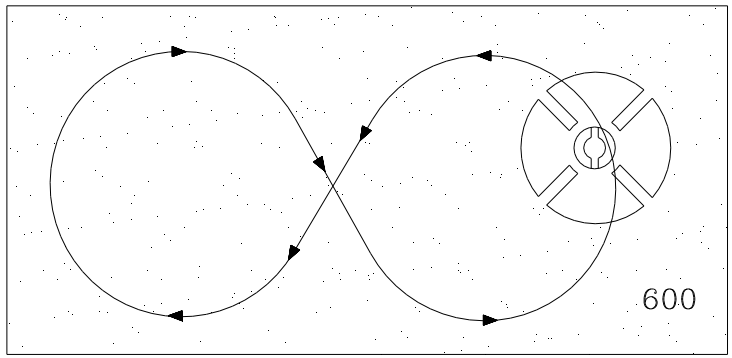


# GRY-D GRY-I Service Procedures

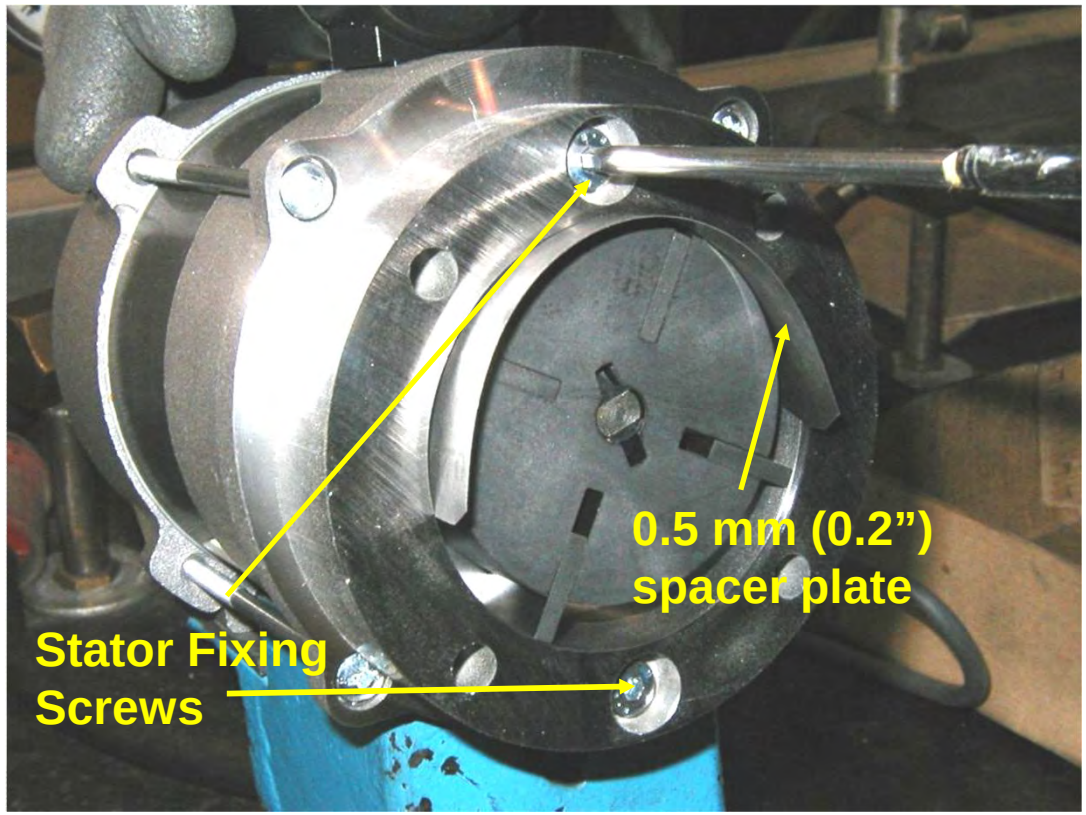
# Rotor-Stator Clearances



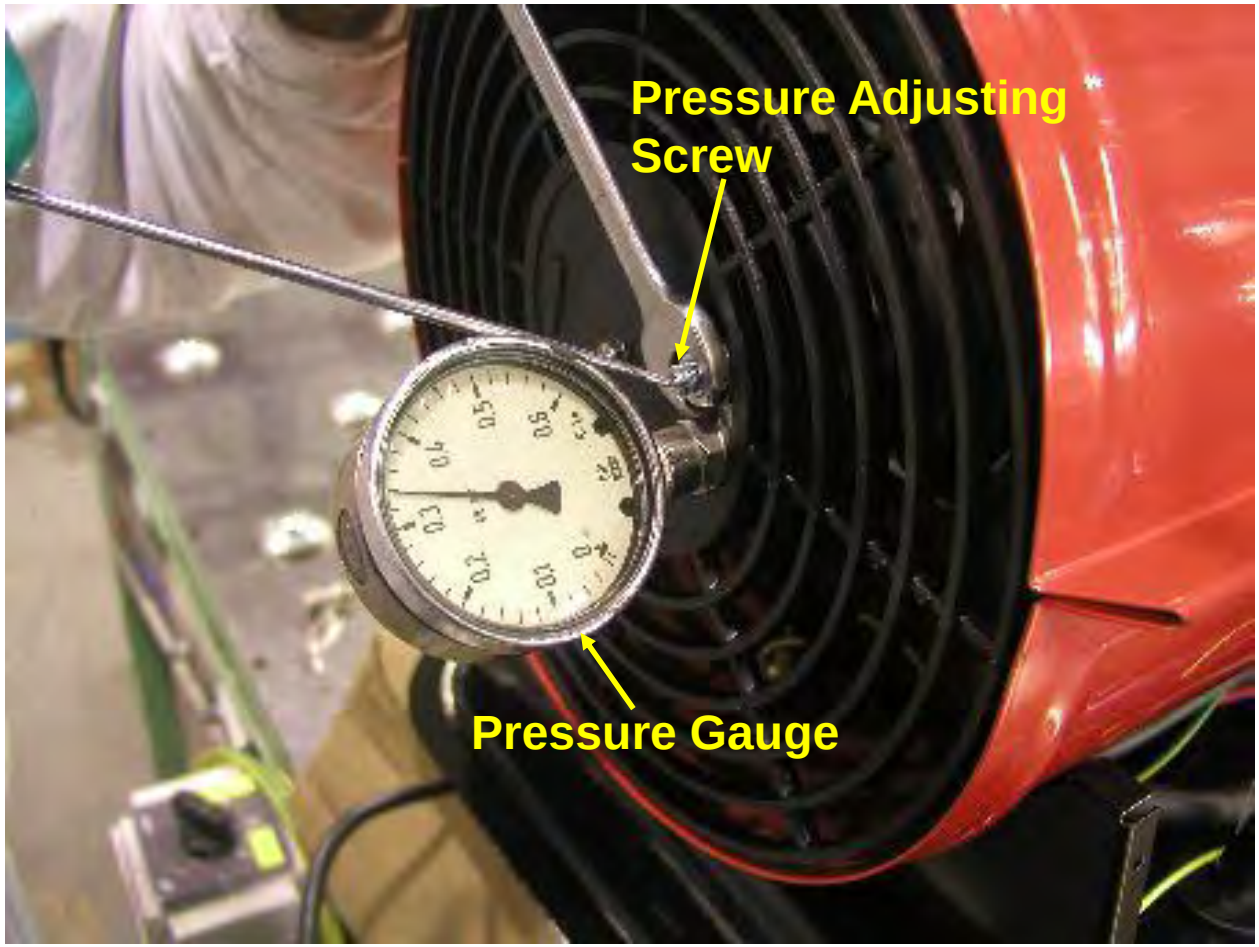



# Correct Stator vs. Rotor Positioning



# Air pressure adjustment



# GRY-D
# Appearance of front disc

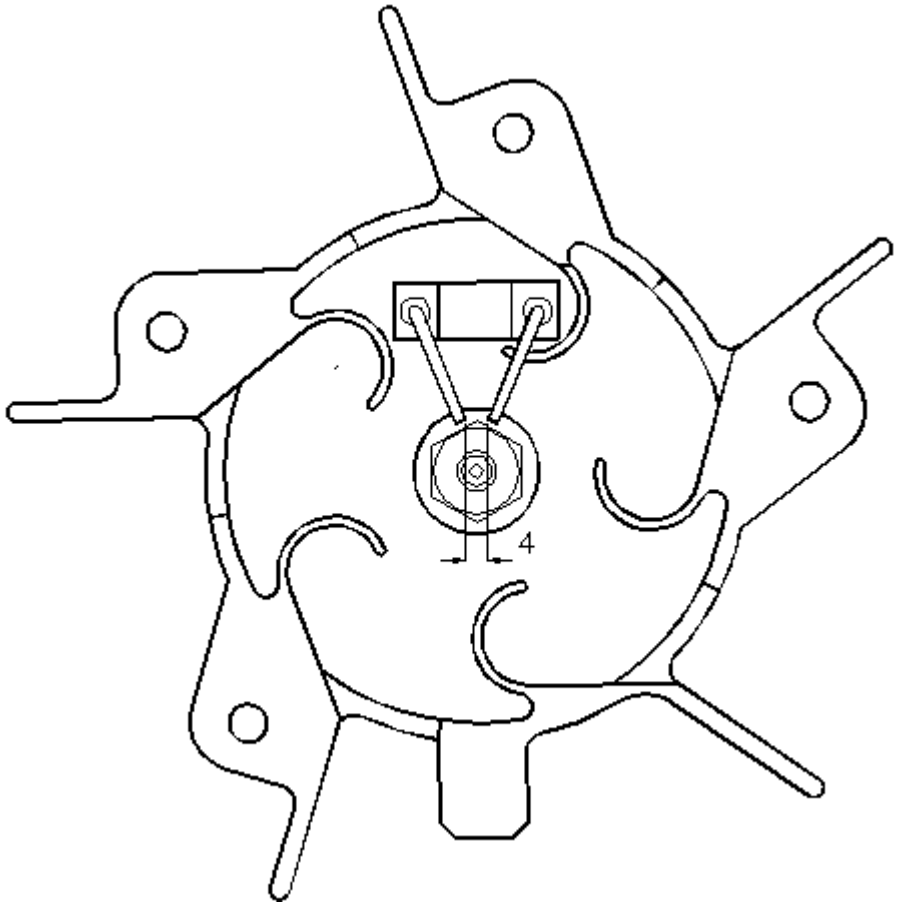


BAD COMBUSTION

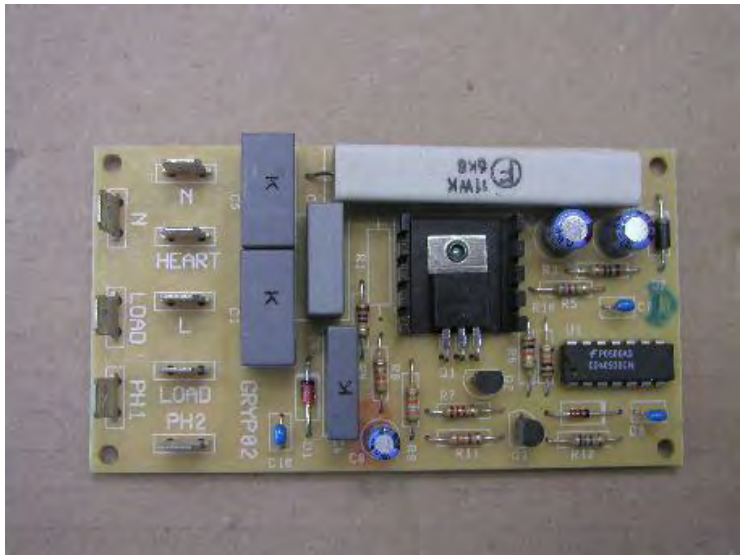


GOOD COMBUSTION

# Ignition Electrode Gap

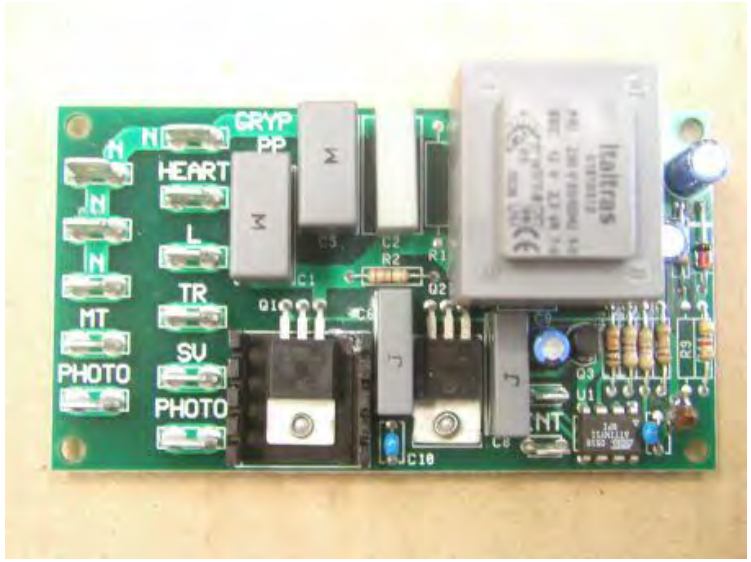


# Electronic control boards

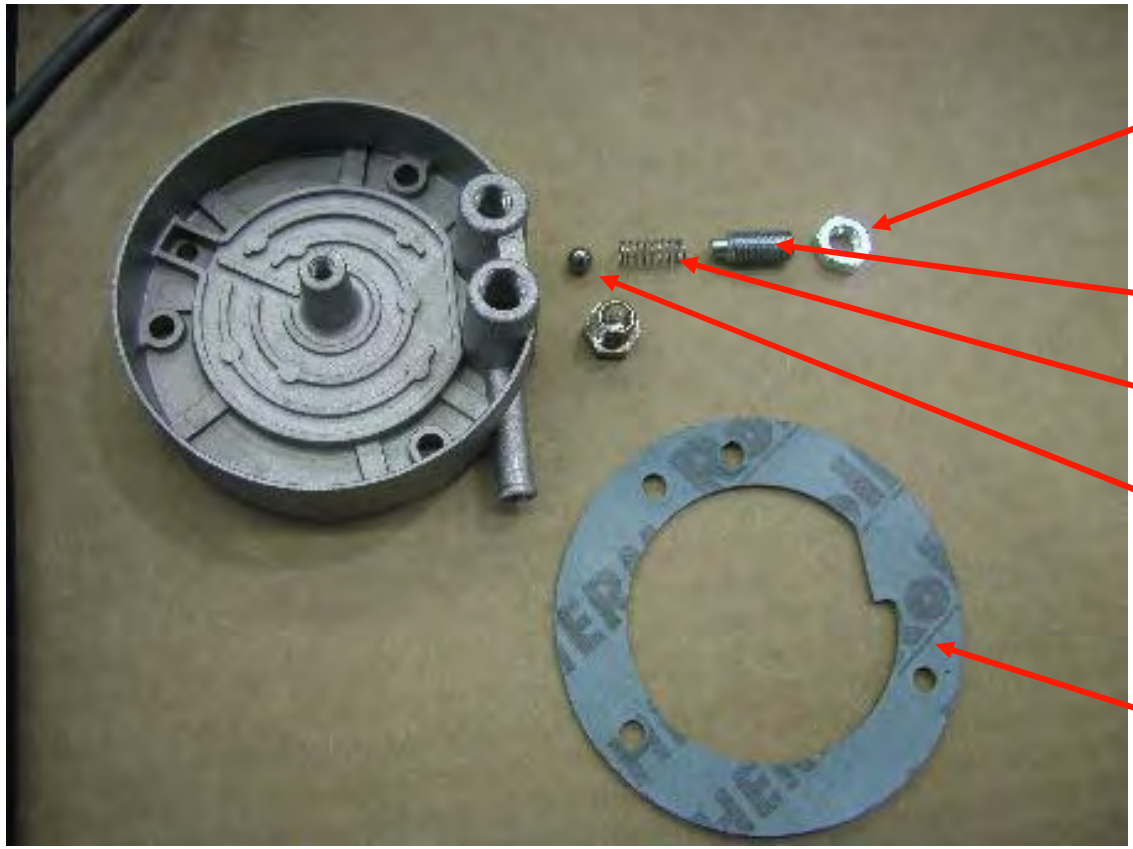



GRY-D

GRY-I



# Pressure Adjustment Valve



# Air Ducting
# (Indirect Heaters only)

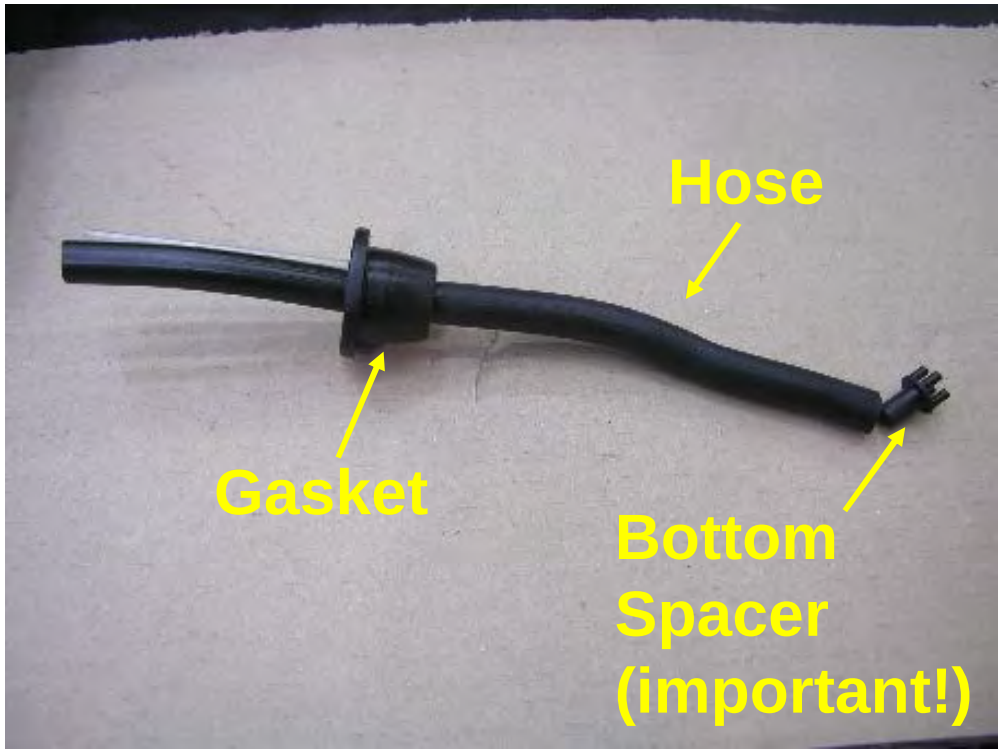


| | |
|---|---|
| **GRY-I 25&40 WU** | **Max Duct Lenght ~ 8 m (25 ft)** |
| **GRY-I 15 WU** | **Max Duct Lenght ~ 6 m (20 ft)** |

# Draining Fuel from Tank



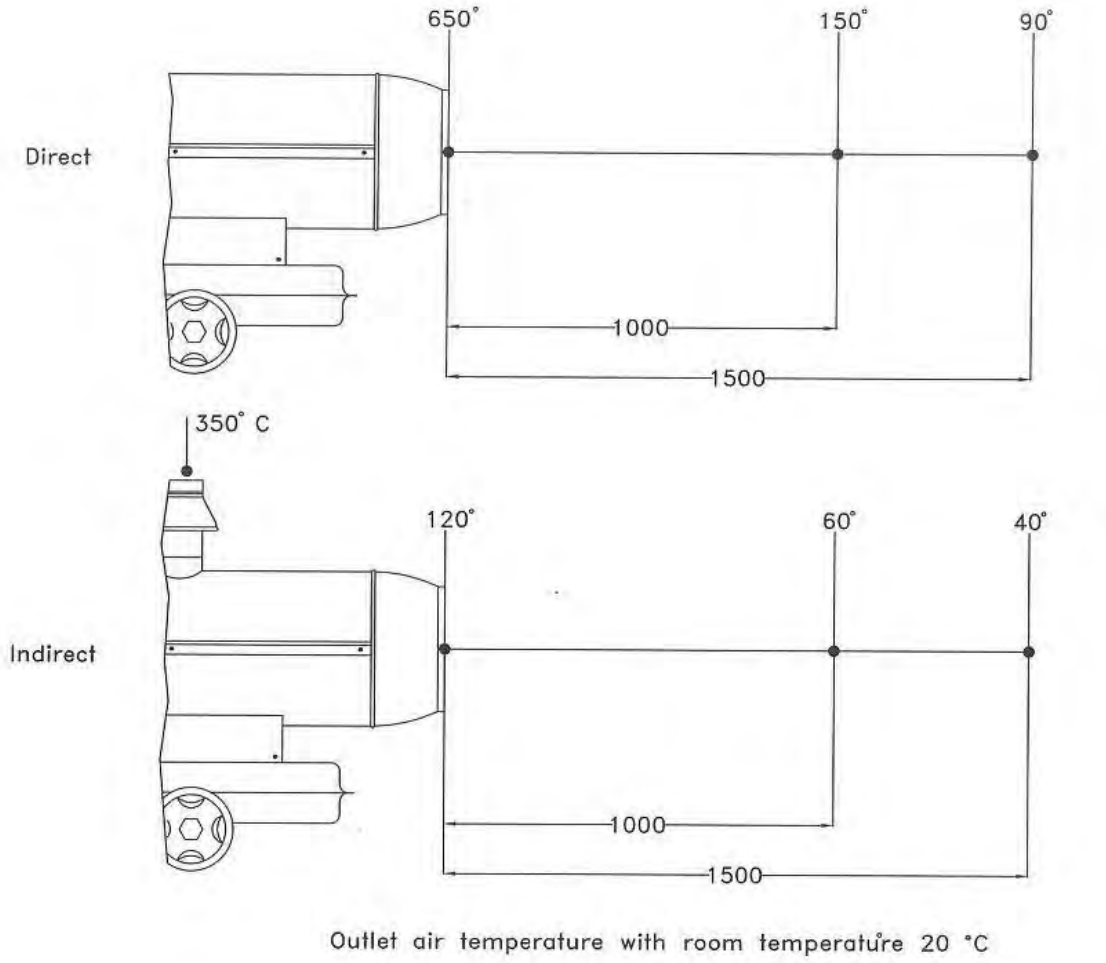
# Fuel Suction Hose



# Tank Cap



# Typical Air Temperatures on Direct and Indirect Heaters




Outlet air temperature with room temperature 20 °C

# Service & Maintenance Equipment





## Measuring devices

Electric Multimeter (V, A, Ω)

PC Flame Sensor Tester Kit

Pressure Gauge Kit
(incl. hose and fitting)

Smoke Index Tester