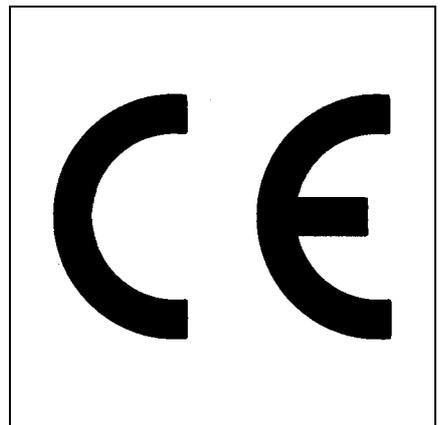
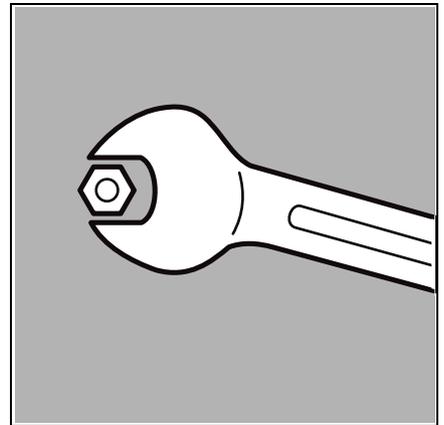


**Operating Instructions**  
for Authorized Experts

**Heavy Oil Burners**  
**EK 5... S-R**

**ELCO  
KLOCKNER**

Heiztechnik



# Survey

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### General information

The EK 5... S-R series of ELCO heavy oil burners is designed for the combustion of medium or heavy fuel oil.

Design and performance of the burners comply with currently applicable guidelines and regulations. Installation and start-up of the burner must be performed by a qualified expert who is responsible for the proper execution of these tasks. Observe the relevant standards to ensure safe, environmentally friendly and energy-saving operation of the burner.

### Burner description

The monobloc burners feature fully automatic modulating control. They are suitable for connection to all standard heat generators within their performance range.

### Site of installation

The burner must not be operated in rooms with aggressive fumes, dust-laden air or high atmospheric humidity.

### ELCO rejects all warranty claims for damage resulting from one of the following reasons:

- **Improper use**
- **Inexpert installation or maintenance by the purchaser or third persons, including the installation of parts other than genuine parts supplied by the manufacturer.**

### Start-up

Initial start-up of the oil burning installation must be performed by the installer, manufacturer, or by another expert designated by them.

### Delivery and Operating Instructions

At the time of delivery at the latest, the manufacturer of the oil burner must supply the user with a set of Operating and Service Instructions. These should be kept in the room where the heating unit is installed.

The address and telephone number of the nearest service representative must be entered in the Instructions.

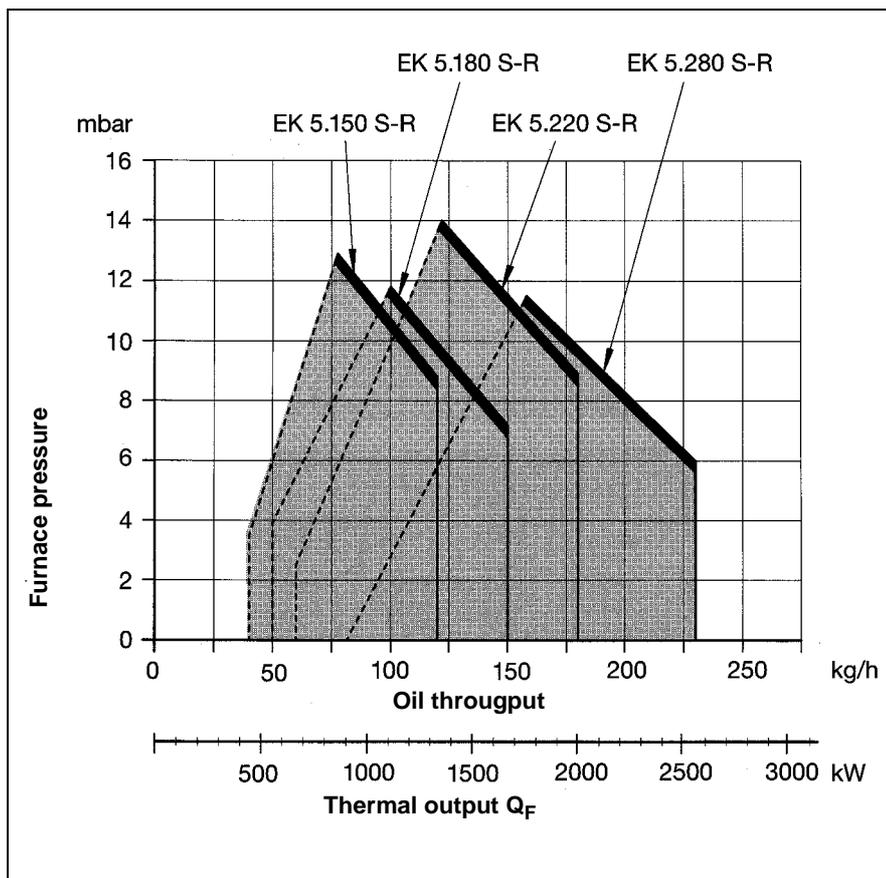
### Note for the user

The system should be serviced by an expert at least once a year. To ensure maintenance at regular intervals, we recommend you to conclude a service contract.

# Survey

## Technical Data Performance Chart

Burner type	EK 5.150 S-R	EK 5.180 S-R	EK 5.220 S-R	EK 5.280 S-R
<b>Technical Data</b>				
Thermal output	min 446 kW	558 kW	670 kW	893 kW
Thermal output	max. 1339 kW	1674 kW	2009 kW	2567 kW
Fuel oil	max. 350 mm <sup>2</sup> /sec 50 °C*	350 mm <sup>2</sup> /sec 50 °C*	350 mm <sup>2</sup> /sec 50 °C*	350 mm <sup>2</sup> /sec 50 °C*
Hydraulic system	modulating Return nozzle	Return nozzle	Return nozzle	Return nozzle
Air regulation	suction side Air cut-off valve	Air cut-off valve	Air cut-off valve	Air cut-off valve
Air regulation	pressure side in burner head	in burner head	in burner head	in burner head
Control ratio	max. 50/100 %	50/100 %	50/100 %	50/100 %
Voltage	230/400 V, 50 Hz	230/400 V, 50 Hz	230/400 V, 50 Hz	400/690 V, 50 Hz
Power consumption	Burner 3,7 kW	4,7 kW	4,7 kW	6,5 kW
Power consumption	Oil preheater 8,1 kW	8,1 kW	10,8 kW	10,8 kW
Weight approx.	145 kg	145 kg	160 kg	170 kg
<b>Burner equipment</b>				
Electric motor, 50 Hz, 2800 min. <sup>-1</sup>	3 kW	4 kW	4 kW	5,5 kW
Electric motor, 60 Hz, 2800 min. <sup>-1</sup>	4 kW	4 kW	5,5 kW	5,5 kW
Automatic burner control unit	LAL 1.25	LAL 1.25	LAL 1.25	LAL 1.25
Flame monitor	QRB 3	QRB 3	QRB 3	QRB 3
Ignition transformer	ZM 30/14	ZM 30/14	ZM 30/14	ZM 30/14
Solenoid valves	Nozzle control 2-way	2-way	2-way	2-way
Air damper servomotor electric	EA 6	EA 6	EA 6	EA 6
Flow heater	8,1 kW	8,1 kW	10,8 kW	10,8 kW
Oil pressure pump	E7-NC	TA2-C	TA2-C	TA3-C
* Heaters for pump and oil flow controller are required from 180 mm <sup>2</sup> /sec./50°C				



### Performance charts

The performance charts reflect the values approved during official homologation.

Determining the required thermal output:

$$Q_F = \frac{Q_N}{\eta_K}$$

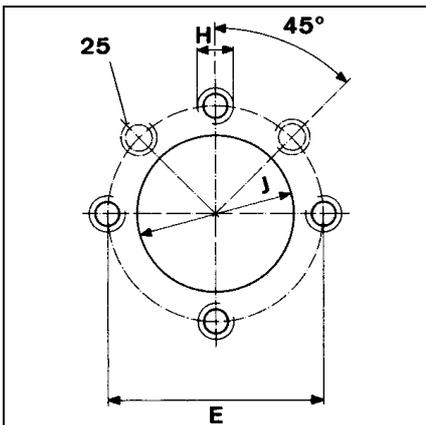
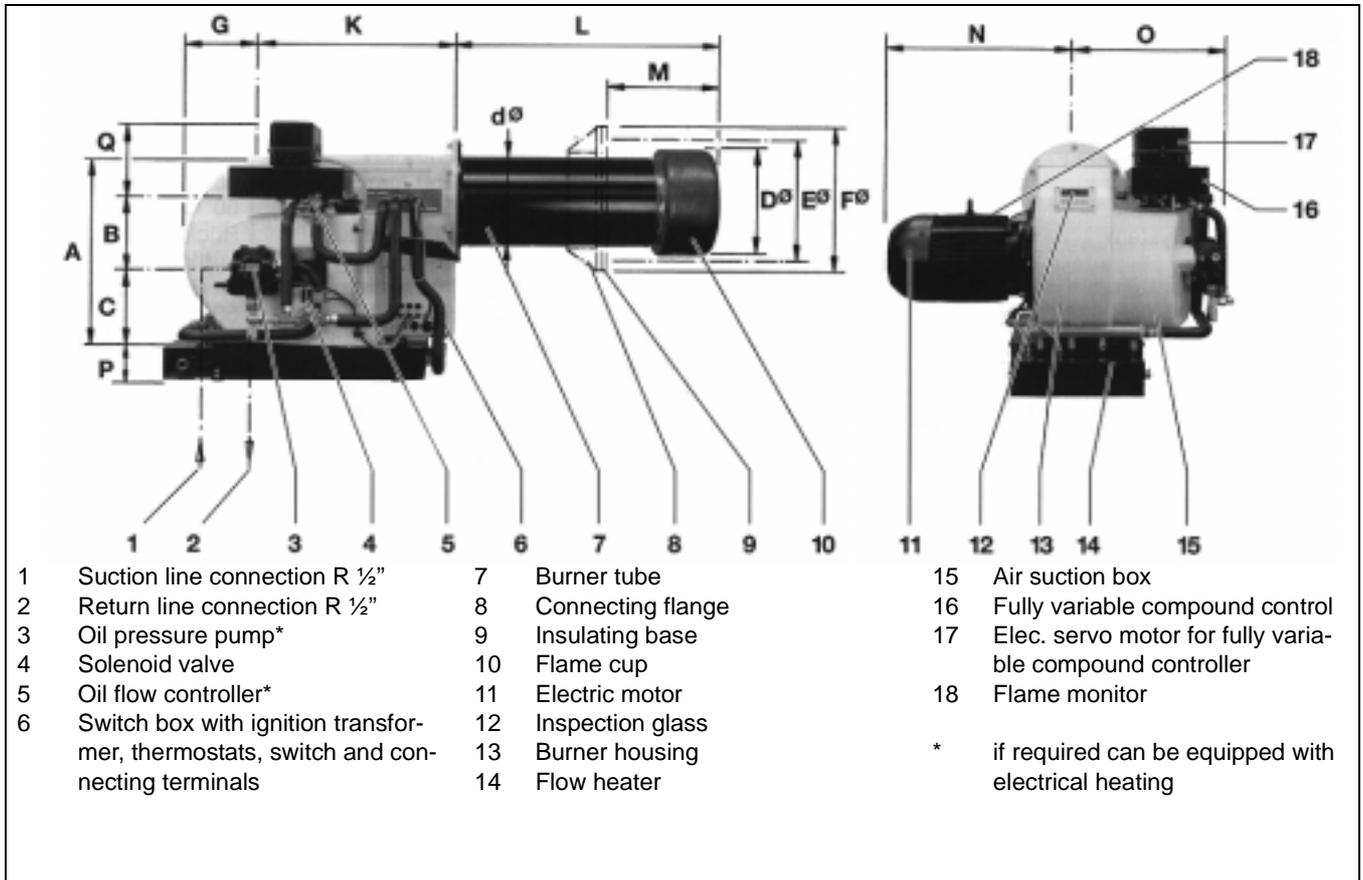
$Q_F$  = Thermal output (kW)

$Q_N$  = Rated boiler capacity (kW)

$\eta_K$  = Boiler efficiency (%)

# Survey

## Dimensions



Boreholes in boiler connecting plate

### Key

- EK = Manufacturer
- 5 = Size
- 150 = Performance rating
- S = Heavy oil
- R = Modulating, with mechanical compound control

25 additional thread for EK 5.220 and EK 5.280

Burner type	Thermal output kW	A	B	C	dφ	Dφ	Eφ	Fφ
EK 5.150 S-R	446 - 1339	490	173	206	185	220	280	310
EK 5.180 S-R	558 - 1674	490	173	206	185	220	280	310
EK 5.220 S-R	670 - 2009	490	173	206	220	261	340	370
EK 5.280 S-R	893 - 2567	490	173	206	220	261	340	370

Customized designs and voltages on request											
Burner type	G	H	J	K	L	M	N	O	P	Q	
EK 5.150 S-R	242	M 12	250	500	630	140 - 545	420	380	130	220	
EK 5.180 S-R	242	M 12	250	500	630	140 - 545	420	380	130	220	
EK 5.220 S-R	242	M 12	290	500	650	170 - 565	430	380	130	220	
EK 5.280 S-R	242	M 12	290	500	650	170 - 565	470	380	130	220	

# Burner Functions

## Functional Description Functional Diagram

### Switching on the burner

If heat is required by the system and the burner is switched on via a controller, only the heating system of the flow heater (6) is in operation at first to heat the stationary oil.

Upon reaching the set temperature, the locking switch of the double thermostat (4) switches on the burner motor, thereby activating the fan and the pump. The oil is prepurged and is transferred by unpressurized pumping from the pump (3) to the flow heater (6), the nozzle rod (10) and the servo solenoid

valve (9).

This process heats all hydraulic elements and prepares the burner for trouble-free starting.

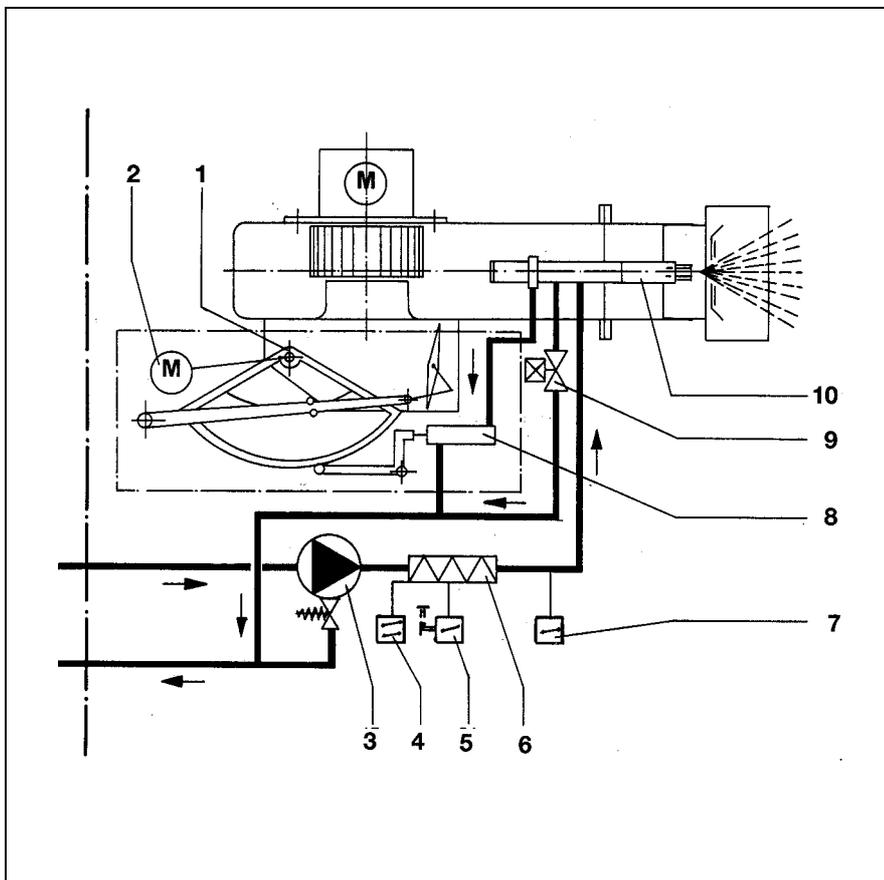
Once the oil in the system has reached the temperature required for combustion, the locking thermostat (7) switches, thereby closing the control cycle and initiating the program sequence of the automatic burner control unit.

### Starting the burner

The program starts with a preventing period of about 20 seconds, during which the ignition is already in operation.

The servo solenoid valve (9) then closes; the purging cycle is interrupted, the oil pressure builds up and opens the two cut-off valves of the nozzle rod. The oil is atomized through the nozzle and ignited by means of the electric ignition (20 kV).

The burner is operating at low load.



### Functional diagram

- 1 Continuous compound control
- 2 Electric servomotor for compound control
- 3 Burner pump
- 4 Double Thermostat
- 5 Excess temperature cut-out
- 6 Electric flow heater
- 7 Locking Thermostat
- 8 Oil flow controller
- 9 Servo solenoid valve
- 10 Return nozzle rod

### Continuous burner control

On account of the continuous oil control system with return nozzle, part of the supply oil, whose pressure is kept constant by the pressure regulator in the pump, is fed back through the jet chamber and is thus not involved in the combustion process. The amount of return oil is continuously controlled by the oil flow controller (8). The minimum return oil pressure is about 5 bar; the performance increases as the return oil pressure rises.

Continuous air regulation is effected by air dampers which are controlled by an adjustable segment.

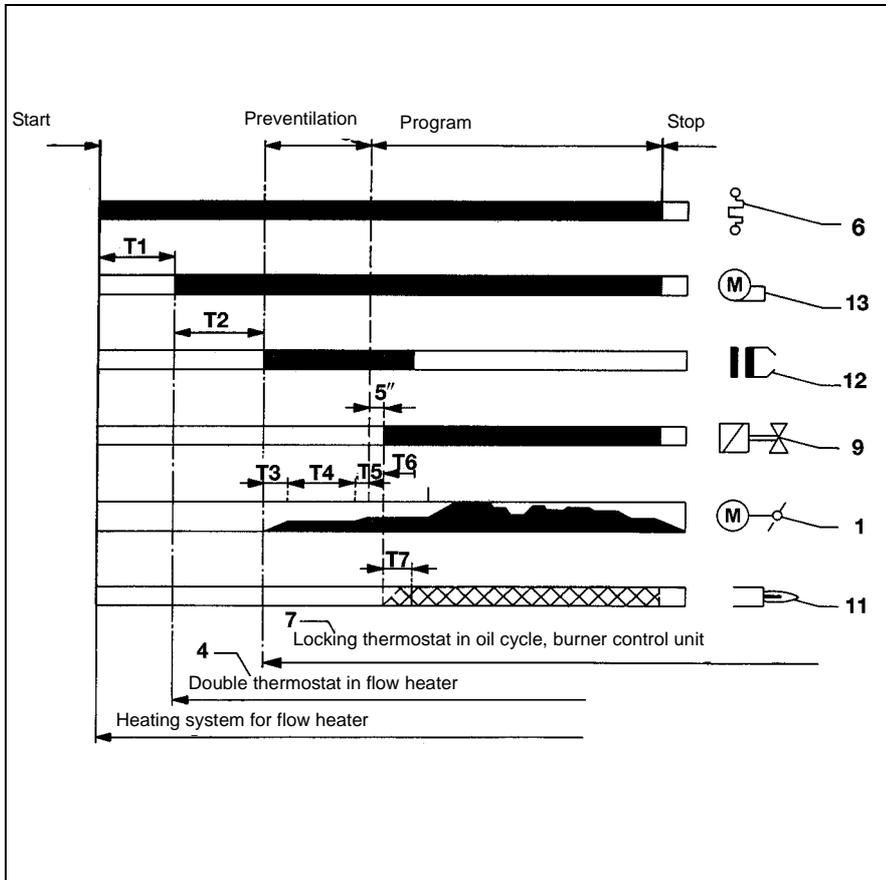
The air regulator and the progressive oil flow controller are interconnected by a lever system in such a way that oil and air regulation are mutually dependent. The continuous compound control system is driven by a power drive (2) which is controlled by an electric PI controller.

### Oil temperature regulation

The oil temperature is controlled via the regulating switch of the double Thermostat (4), i.e. it is maintained at a constant value for optimum combustion.

# Burner Functions

## Program Sequence Diagram Safety functions



Program diagram

- T1 Preheating time
- T2 Purging time
- T3 Interval between opening of air damper and preventing position
- T4 Preventing time (22.5 sec.)
- T5 Interval between opening of air damper and low load
- T6 Release of control load (10 sec.)
- T7 Safety time

- 1 Continuous compound control
- 4 Double thermostat
- 6 Flow heater
- 7 Locking thermostat
- 9 Servo solenoid valve
- 11 Flame monitor
- 12 Ignition transformer
- 13 Burner motor

### Safety functions

#### Fault shutdown

If no flame occurs after starting the burner and closing of the servo solenoid valve (9), the burner switches off upon expiry of the safety time (fault shutdown). If a flame failure occurs during burner operation, the starting program including preventilation, ignition and oil release is repeated or a fault shutdown is effected, depending on the setting of the automatic burner control unit. If the ignition attempt fails after repeating the starting program, the

burner switches to malfunction (fault shutdown) when the safety time has elapsed.

A fault shutdown is indicated by the flashing malfunction lamp. Press the reset button to release the shutdown.

#### Shutdown because oil temperature is too low

If for any reason, the oil temperature falls below the value set on the locking thermostat (7), the burner switches off automatically and initiates another starting program.

#### Shutdown because oil temperature is too high

If the oil temperature is too high, the excess temperature cut-out (5) incorporated in the flow heater switches the burner off and locks itself. The lock can be released manually.

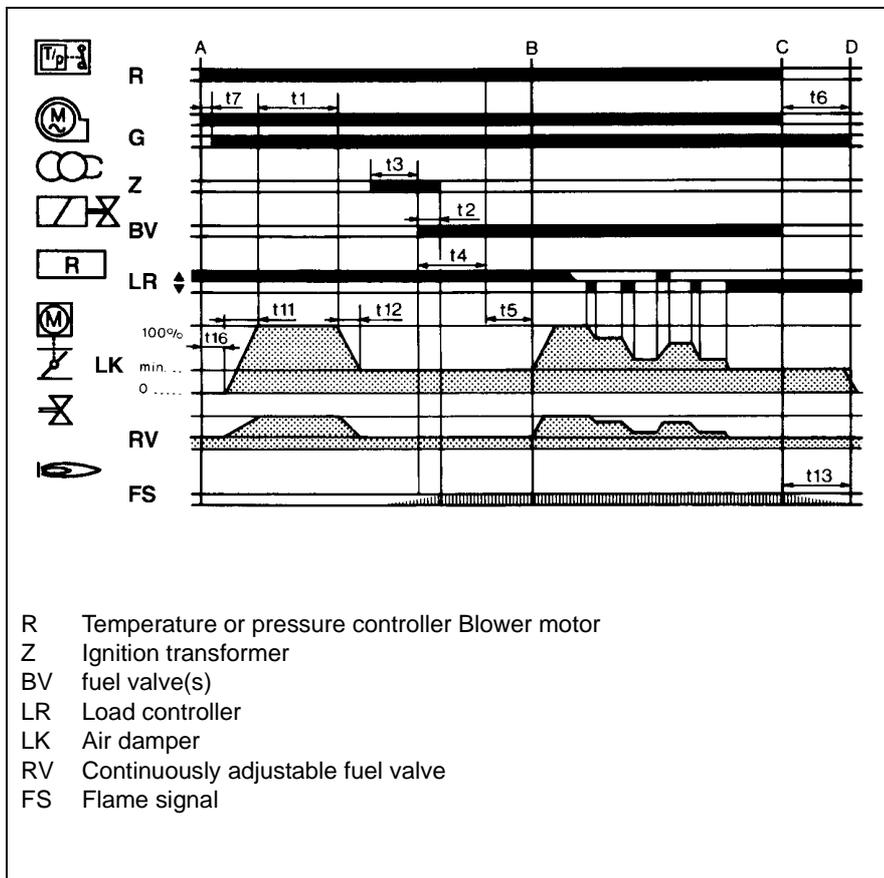
# Burner Functions

## Functional Sequence of Burner Control Units LAL 1... RWF 32



The burner control units LAL 1... are designed for controlling and monitoring burners with multi-stage or modulating control systems. For a detailed functional description of the burner control units, including technical data and planning information, refer to

**Technical Documentation**  
LAL 1 L&G 715 D



Burners with modulating control systems come equipped with the Universal Controller RWF 32 and its appropriate modules.

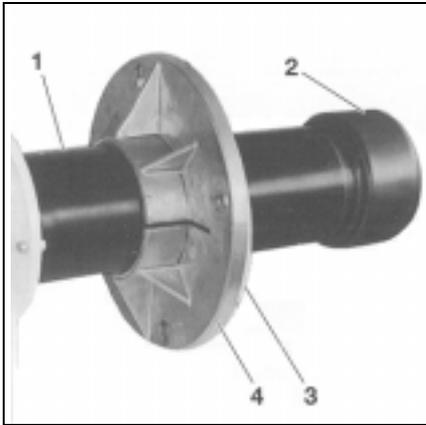
This controller has been designed specifically for use with burner installations, in particular for controlling the temperature or pressure of burners with continuously adjustable fuel throughput. The actual values (i. e. the resistance values) for temperature, pressure or furnace pressure are measured by means of a detector and a range connector.

The controller is adjusted to the control magnitude and the desired setting range by means of the range connector bridge on the detector side. The set-point scale is mounted to the range connector. The unit itself is an integral part of the controller. It can be switched over to an external setting unit.

**Technical Documentation**  
RWF 32 L&G 7863 E

# Installation

## Mounting the Burner to the Heat Generator Electrical Connection Setting the Oil Temperature



### Mounting the burner to the heat generator

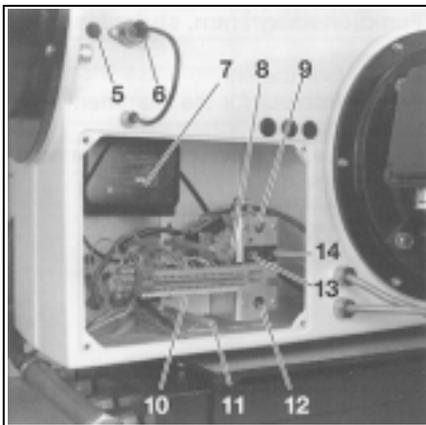
To mount the burner connecting flange to the heat generator, prepare the connecting plate according to the dimensions given on page 4.

- Fit the included connecting flange (4) with the insulating base (3) on the burner tube.

- Set the desired burner tube length in the furnace by moving the flange on the burner tube
- Insert the burner into the opening of the heat generator and secure it.

If required, the flame cup (2) can be removed or displaced.

- Release the screw (1).



### Electrical connection

Electric wiring of the burner must be carried out by an authorized electrician according to the enclosed wiring diagram.

For cable connection, ensure the following:

- Connect to terminal strip (10).
- Provide sufficient length of cable so that the burner and the boiler door can be opened.
- Do not install the sensor lead in the multi-conductor cable.

After making the connections, check all system components for correct wiring. Start the motor for a short time to check the sense of rotation.

### Inspection glass cooling

To keep the boiler inspection glass cool and clean, a cooling line may be connected to connection (5) R1/2".

The cooling line can be either a hose or a copper pipe.

A hose union is enclosed with the burner.

To connect a copper pipe, a suitable clamping ring connection is required.

- 5 Connection for inspection glass cooling
- 6 Flame monitor
- 7 Ignition transformer
- 8 Double thermostat
- 9 Thermostat (excess temperature)
- 10 Connecting terminals
- 11 Lock nut
- 12 Control thermostat
- 13 Pushbutton Higher/Lower
- 14 Pushbutton On/Off
- 15 thermometer

The electric module can be removed for connection, replacement or adjustment of components.

### Disassembling the electric module

- Set the main switch to Off, remove the fuse
- Release the lock nuts (11)
- Carefully remove the electric module.

### Caution!

Never apply voltage to the electric module after disassembly.

### Setting the oil temperature

The oil temperature is set on the two Thermostats 8 and 12. Select the temperature to ensure a viscosity of about 6 mm<sup>2</sup>/s at 20°C, depending on the oil quality.

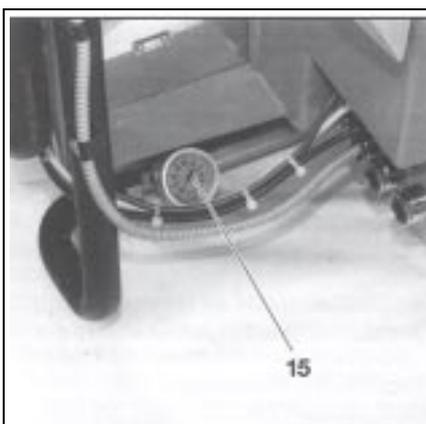
Standard values:

- for medium oil Double thermostat (8): ca. 110°C
- Locking thermostat (12): ca. 80°C

for heavy oil

- Double thermostat (8): ca. 150°C
- Locking thermostat (12): ca. 130°C

As the scale values differ slightly compared with the actual oil temperature, use the thermometer (15) to check the temperature.

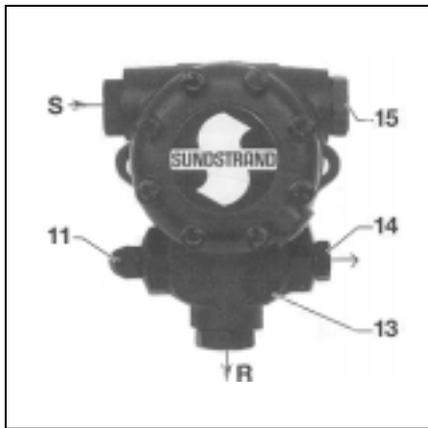


# Installation

## Oil Connection Oil Pressure Regulation (Supply Oil) Start-up

### Oil connection

Hoses or pipes are used for connecting the oil pipes and the valve system. The hoses must be properly installed (suspended if possible) to avoid kinking and the risk of fracture. For the dimensions of the supply and return pipes from the valve system to the tank, please consult the relevant technical data sheets.



- 11 Supply oil pressure regulator
- 13 Pressure gauge connection (supply oil)
- 14 Pressure output
- 15 Vacuum gauge connection (suction line)

S Suction line connection

R Return line connection

### Start-up and ventilation

Switch on the burner for a short while and check whether the direction of rotation is correct. Loosen the oil pipe union at the pressure output (14), switch on the burner and run the burner until bubble-free oil emerges. Then reconnect the oil pipe.

### Important!

The hydraulic system has been filled with test oil at the factory. This may cause ignition problems when starting the burner for the first time.

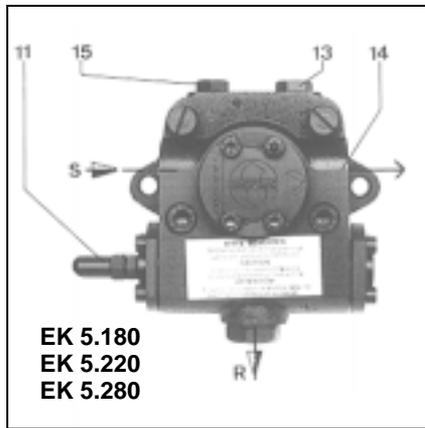
### Oil filters

To protect the oil pressure pump and the hydraulic system, a suitable filter must be installed upstream of the pump.

### Supply oil regulation

The supply oil pressure is regulated by the pressure regulator incorporated in the pump. The correct setting is approx. 20-28 bar, depending on burner capacity and make of nozzle.

The pressure regulator is adjusted by turning the screw (11).



EK 5.180  
EK 5.220  
EK 5.280

### The following checks must be performed before the system is first put into operation:

- Observe the operating instructions of the boiler manufacturer; the boiler must be installed ready for operation.
- Fill the heating system with sufficient water.
- Check the entire system for correct electric wiring of all components and fittings.
- Check the sense of rotation of the burner motor.
- Check the settings of the temperature and pressure controllers, limiters,

### Adjustment sequence

- Start burner
- Adjust supply oil pressure (23-30 bar)
- Adjust minimum return oil pressure
- Adjust air for minimum capacity
- Slowly actuate the pushbutton "Higher" to bring the burner to full load while observing the flame; readjust the air supply if soot forms
- Adjust maximum return oil flow
- Regulate the air for maximum capacity according to the combustion values

### Mounting options

- Two-pipe installation
- Dynamic pressure operation via vent assembly

### Connecting measuring instruments

- Vacuum gauge for supply oil to connection (15)
- Oil pressure gauge to connection (13)
- Return oil pressure gauge to flow controller

### Vacuum test (suction line)

The maximum permissible vacuum is **0.4** bar. A higher vacuum will cause the heating oil to vaporize and may cause malfunctions.

With dynamic pressure operation, the oil pressure at the pump must not exceed:

for pump type E **1.5** bar

for pump type TA **5** bar.

Fill the pump with oil **before starting** it for the first time.

To protect the pump, the oil pressure regulator is delivered with the pressure removed.

When starting the burner for the first time, slowly increase the oil pressure to the required rating (25-28 bar).

safety devices and electric limit switches.

- Make sure that there is oil in the tank, in the lines and in the oil pump and that the appropriate oil nozzle has been installed.
- Make sure that the fuel lines are free from air; vent them, if necessary.
- Ensure unobstructed flue gas paths and adequate fresh air supply.
- Burner in starting position; air damper closed.
- Burner control unit reset and in start-up position.

- Actuate the pushbutton "Lower" to bring the burner to minimum capacity; interrupt the regulation process at intervals of 1-2 bar return flow pressure to readjust the air supply for optimum combustion
- Adjust the electric P-controller (see technical documentation for Controller RWF 32)

# Start-up

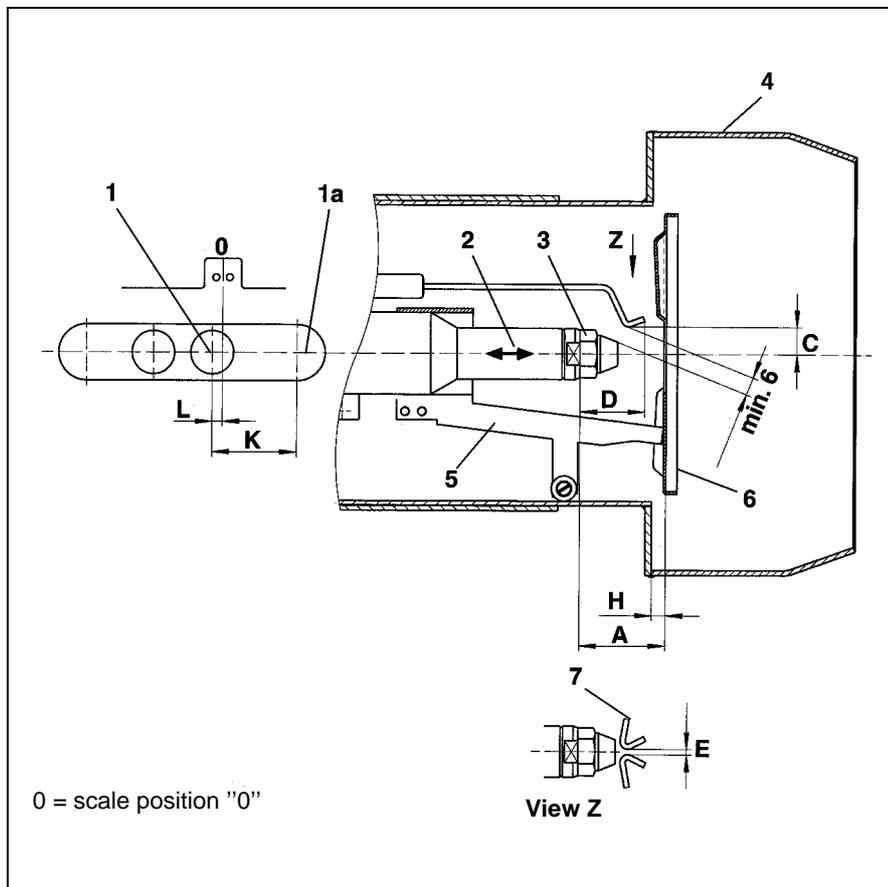
## Burner Head Setting Dimensions

### Setting dimensions

The setting dimensions are standard values which refer to approx. 80% of the maximum burner capacity. They can be readjusted depending on operating conditions, flue gas analysis and combustion behaviour.

### Important!

Check the settings by means of the table below before starting the burner for the first time. Remove the nozzle connection for this purpose.



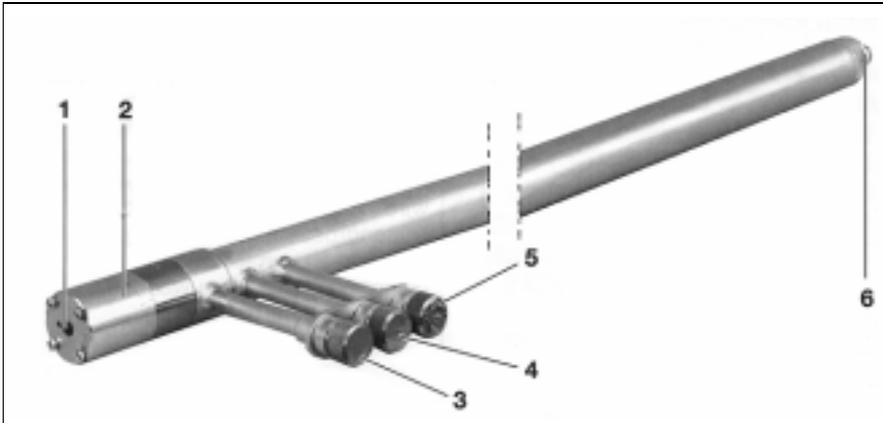
Burner head

- 1 Oil connection, minimum low load
- 1a Oil connection, maximum full load
- 2 Nozzle rod
- 3 Return nozzle
- 4 Flame cup
- 5 Baffle plate holder
- 6 Baffle plate
- 7 Ignition electrodes

Burner type	Standard settings						
	A	C	D	E	H	K	L
	Baffle plate/ nozzle rod	Electrode/ axis	Electrode/ nozzle rod	Electrode gap	Baffle plate/ flame cup	max. longitudinal adjustment	Oil filler neck / scale plate 0
EK 5.150 S-R	47	15	31	3	25	40	
EK 5.180 S-R	47	15	31	3	28	40	
EK 5.220 S-R	47	15	31	3	25	40	
EK 5.280 S-R	47	15	31	3	28	40	

# Start-Up

## Return Nozzle Rod RDN



Return nozzle rod RDN

- 1 Lift adjustment (control needle)
- 2 Hydraulic piston system
- 3 Return oil connection
- 4 Oil connection, purging
- 5 Supply oil connection
- 6 Return nozzle Fluidics W-50°

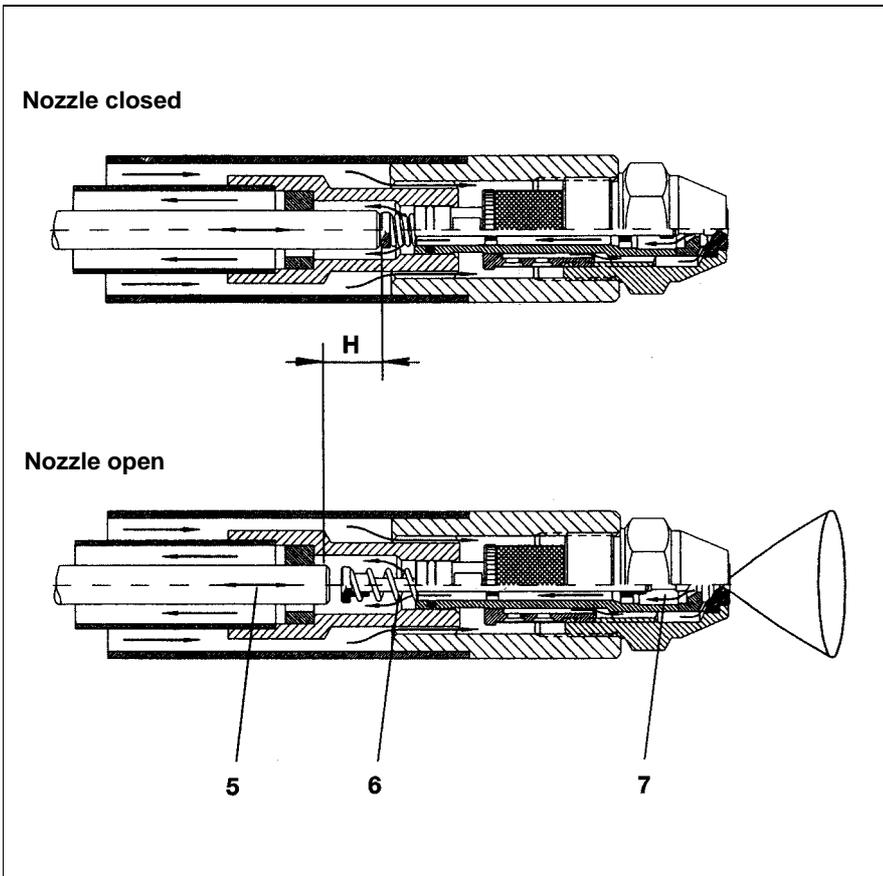
### Description

The return nozzle rod RDN is suitable for operation only in combination with the Fluidics return nozzle W-50°. This nozzle has an integrated spring-loaded locking system with a locking needle for direct locking of the nozzle bore. The locking needle is operated by the control needle which is connected to the hydraulic piston system of the nozzle rod.

The length of lift of the control needle has been adjusted in such a way that the nozzle has some play between the spring plate and the head of the control needle when the needle is open and the maximum lifting height is reached. If the pump pressure is too low (<20 bar), thereby preventing the control needle from opening all the way, variations in throughput are to be expected as the needle position will affect the return oil flow.

### Important!

**Lift adjustment (1) is made at the factory and must not be changed on the system.** An appropriate hydraulic test stand is required to set the correct lifting height (H) of 9 mm.



### Functional description of nozzle W-50°

#### Opening the nozzle

- The supply oil pressure causes the piston in the hydraulic system and the control needle (7) to retract.
- The spring (8) incorporated in the nozzle opens the locking needle (9).

#### Closing the nozzle

- The burner stops, the hydraulic piston system is depressurized.
- The spring-loaded control needle (7) exerts pressure on the locking needle until the nozzle closes.

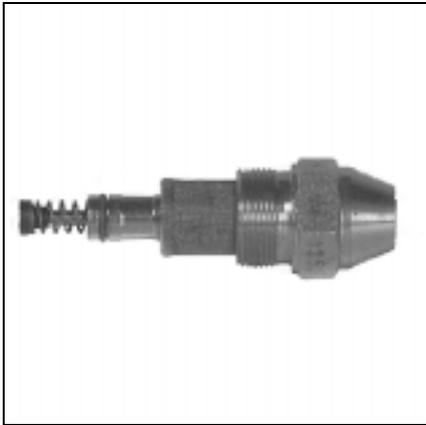
Opening pressure=13 bar (fully open at 20 bar)

Closing pressure =10 bar

- 7 Control needle
- 8 Nozzle opening spring
- 9 Locking needle

# Start-up

## Nozzle Selection, Typ W-50°



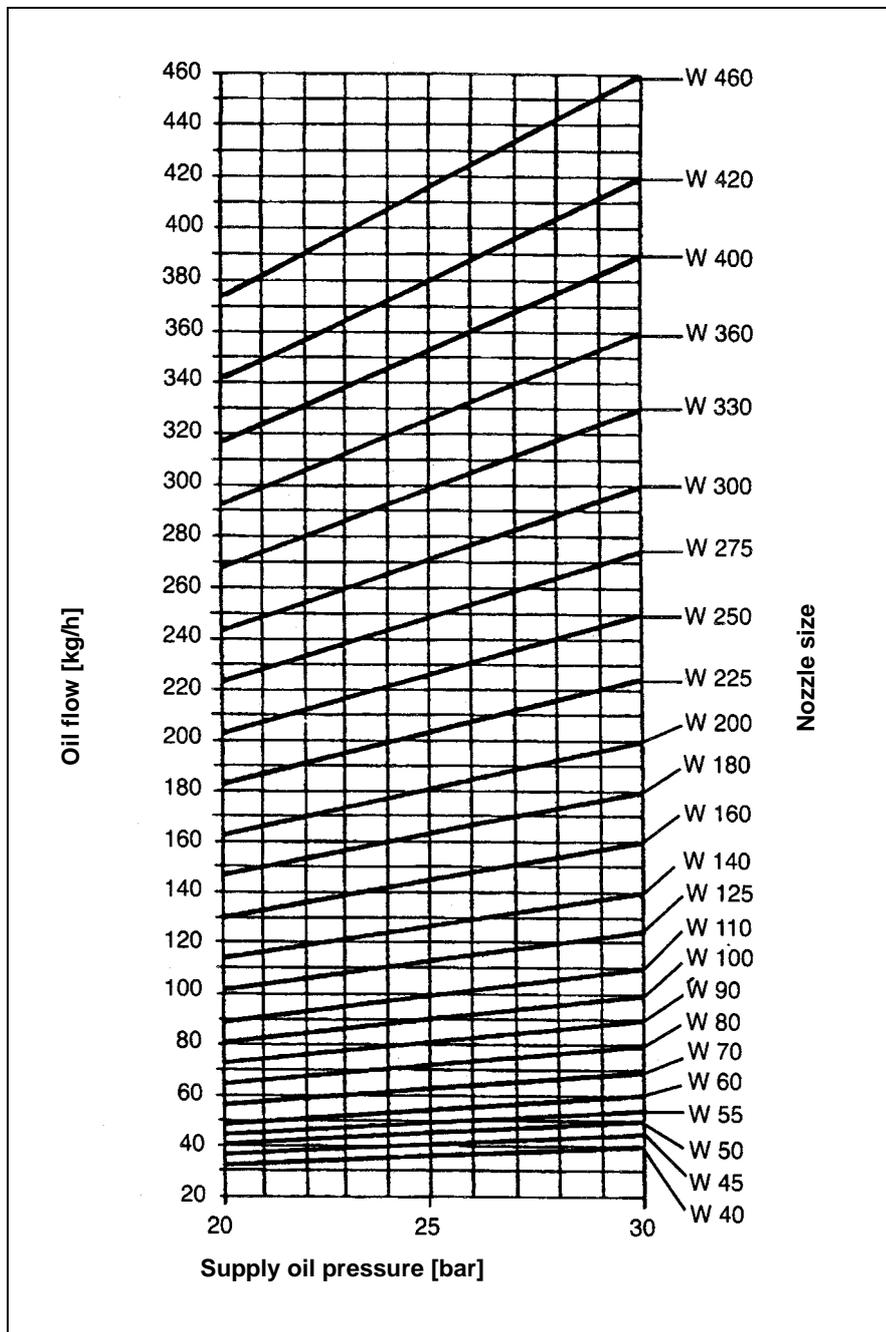
### Return nozzle

The Fluidics nozzle W is a return nozzle with an integrated spring-loaded locking needle. The throughput is regulated by changing the return pressure while the supply pressure is kept constant. Prior to start-up, compare the nozzle size with the required performance and change the nozzle, if necessary (see Nozzle selection diagram).

### Nozzle selection diagram

The diagram shows the flow rates of the return nozzles as a function of the supply oil pressure.

Supply oil pressure: min. 20 bar  
 max. 30 bar  
 Return oil pressure: min. 10 bar

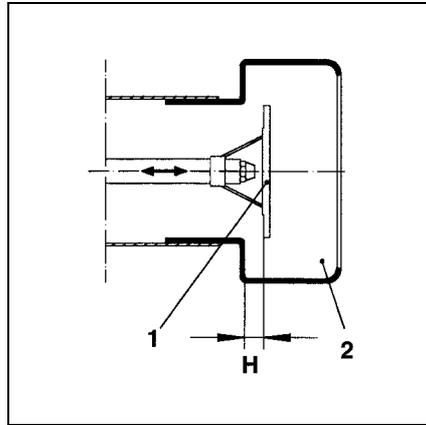
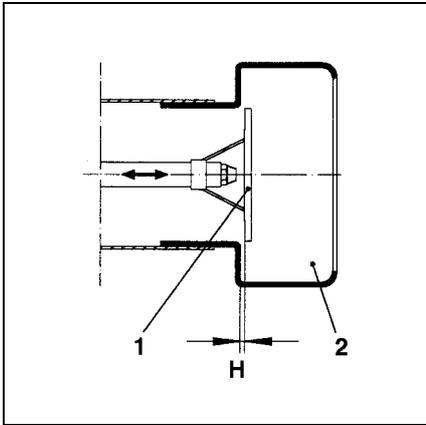


### Example:

Required oil flow  
 160 kg/h  
 Nozzle size according to diagram  
 W 160  
 Supply oil pressure according to diagram  
 30 bar

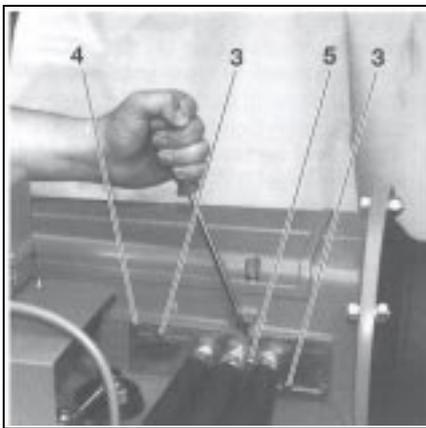
# Adjustments

## Combustion Air



### Air regulation (pressure side)

The air flow on the pressure side is regulated by means of the flame cup (2) and the baffle plate (1) mounted on the nozzle rod. Moving the nozzle rod changes the available sectional area (H) in the flame cup.

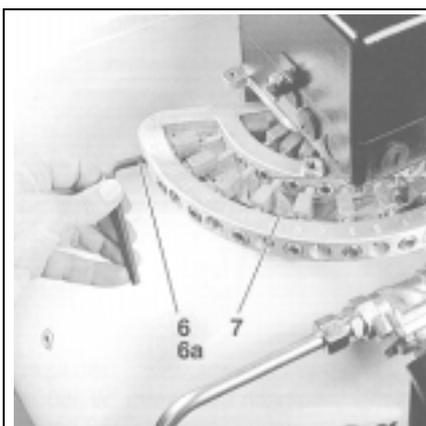


### Moving the nozzle rod

To adjust the nozzle rod, release the two screws (3). For fine adjustment, use a screwdriver as shown in the illustration. The position of the nozzle rod is indicated on the scale (4) on the nozzle rod connection.

The burners are designed in such a way that the scale setting is about 0 at minimum burner capacity and about maximum at maximum burner capacity, with intermediate settings for intermediate values.

- 1 Baffle plate
- 2 Flame cup
- 3 Locking screws
- 4 Scale
- 5 Fixing screw (nozzle rod removal)
- 6 Adjusting screws (steel regulating segment)
- 7 Regulating segment



### Air regulation (suction side)

The air is regulated via the regulating steel segment (7). To adjust the segment, release the hexagon socket screws (6) a quarter turn using a 6 mm Allen key. The locking screws (6a) are now accessible for adjusting the segment with a 5 mm Allen key.

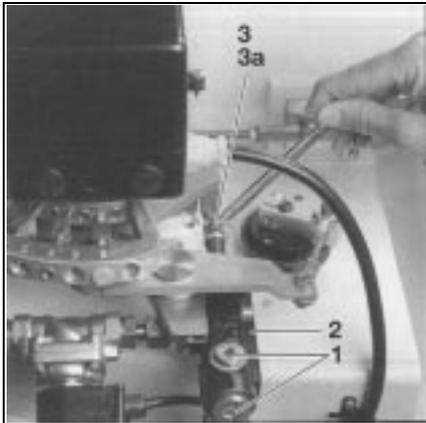
Greater changes in air flow require additional adjustment of the adjacent screws. After adjustment, retighten the screws (6) to secure the settings.

**Turn clockwise = more air**  
**Turn anti-clockwise = less air**

# Adjustments

## Oil Flow (Return Oil Regulation)

---



### Adjusting the return oil flow

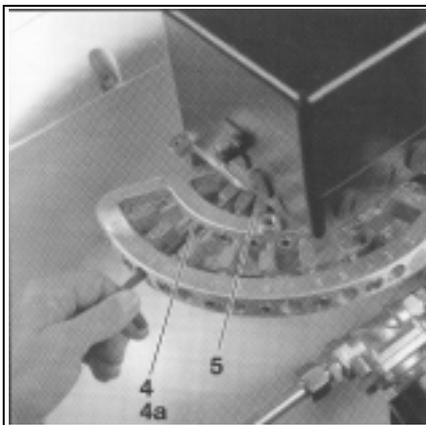
The flow controller (2) is used for adjusting the return oil flow.

- Connect the return oil pressure gauge to the measuring point (1).

### Minimum return oil flow

Burner in low-load position

- Release the lock nut (3)
- Adjust for desired return oil pressure using the set screw (3a)
- Retighten the lock nut (3).



### Maximum return oil flow

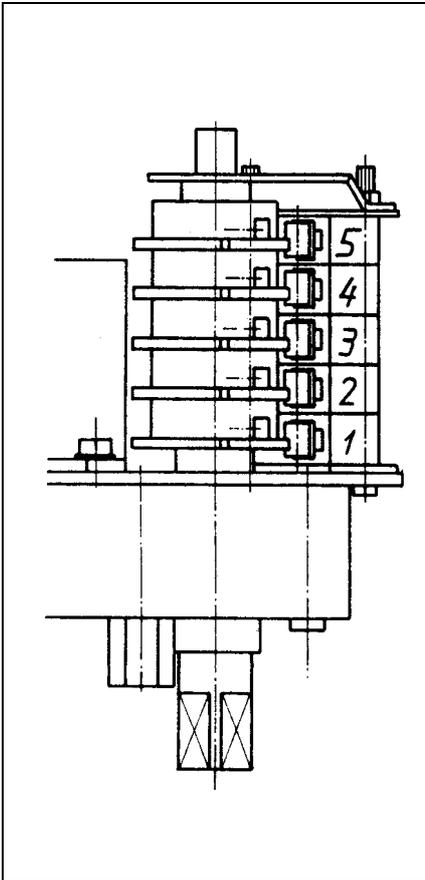
The return oil flow is adjusted by means of the regulating segment (5).

- Manually bring the burner to full load.
- Check return oil pressure, compare with nozzle chart, measure nozzle throughput, if possible.

- Readjust, if necessary. Release the hexagon socket screws (4) a quarter turn using a 6 mm Allen key. The locking screws (4a) are now accessible for adjusting the steel segment with a 5 mm Allen key.
- Retighten the screws (4) after adjustment.

# Adjustments

## Adjusting the Limit Switches at the Electric Servomotor



### Limit switches

The limit switches are actuated by trip cams which are factory-set to standard values.

Limit switch 1  
**Air damper closed**

Limit switch 2  
**Full load**

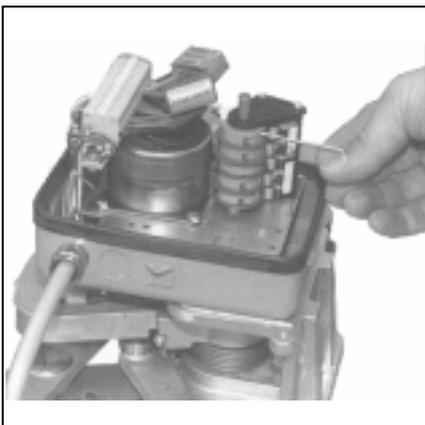
Limit switch 3  
**Low load**

Limit switch 4  
**Preventilation**

Limit switch 5  
**unassigned**

### Note

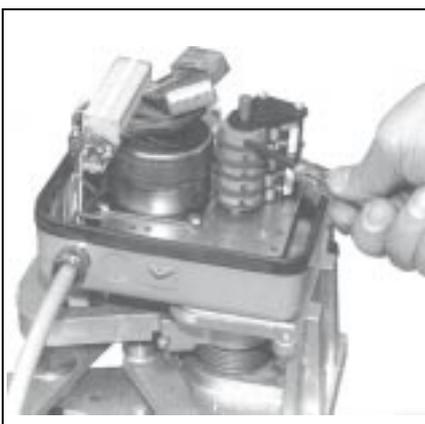
- **Limit switch 1** indicates that the **air damper** is **CLOSED** when the burner is idle; it is factory-set to scale position 0.
- Limit switch 4 for preventilation can be adjusted according to individual system requirements in compliance with applicable regulations. The top switching point of this limit switch must always be set below the switching point for full load. During preventilation, the air damper must be fully open for at least 20 seconds.



### Adjusting the trip cams

If necessary, the trip cams can be readjusted during burner adjustment.

To facilitate access to the locking screw, the complete cam can be adjusted after releasing the setscrew with the Allen key incorporated in the servomotor.



**Adjustment** is made by means of a screwdriver.

## Maintenance Troubleshooting

### Maintenance

Burner installations should be serviced once a year. The combustion and emission values should be checked and readjusted, if necessary. All mechanical and hydraulic functions should also be checked and wearing parts should be replaced, if necessary. **Any maintenance and repair jobs may be carried out by authorized experts only.**

### Check for operating ability

If a malfunction occurs, check first whether all requirements for troublefree operation have been met.

1. Check fuel level.
2. Check power supply.
3. Check if all control and safety features, such as thermostat, safety limiter, low-water cutout, electric limit switches etc. are operative and properly adjusted.

### Burner malfunction, electric

Burner malfunctions are indicated by a malfunction lamp. The automatic burner control unit LAL 1 is equipped with a malfunction indicator that is very useful for locating the cause of a malfunction.

#### Malfunction control program and malfunction indicator

Automatic burner control unit LAL 1; for detailed information, see L and G 7153.

Basically, the program timer and the malfunction indicator stop whenever a malfunction occurs. The symbol displayed above the reading mark indicates type of malfunction:

- ◀ **No Start**, e. g. because the CLOSED signal from limit reversing switch "Z" (or from auxiliary switch "M") is missing on terminal 8, or because a contact is open between terminals 4 and 5.
- ▲ **Start aborted** because the OPEN signal from limit reversing switch "A" is missing on terminal 8. Terminals 6, 7 and 15 remain energized until the fault is eliminated!

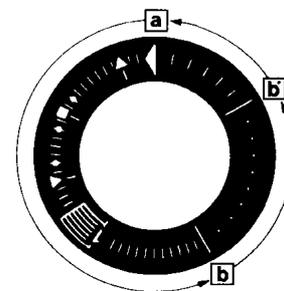
■ **Fault shutdown** because the flame supervising circuit is defective.

▼ **Start aborted** because the position signal from auxiliary switch "M" for the small flame position is missing on terminal 8. Terminals 6, 7 and 15 remain energized until the fault is eliminated!

1 **Fault shutdown** because no flame signal is present upon expiry of the safety time.

| **Fault shutdown** because the flame signal has failed during burner operation.

◀ **Fault shutdown on or after completion of the control program** because of extraneous light (e.g. flame not extinguished, leaky fuel valves or shutoff elements in the nozzle rod, defective flame supervising circuit, etc.).



- a-b Starting program
- b-b' „Blank spaces“ (no contacts actuated)
- b(b')-a Post-venting program

The automatic control unit can be **reset** immediately after a fault shutdown. After resetting (as well as after a power failure or after eliminating a malfunction which caused a fault shutdown), the program timer will always return to its starting position, supplying voltage to terminals 7, 9, 10 and 11 only, as determined by the control program. Only then will the control unit initiate another starting sequence of the burner.

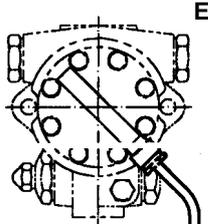
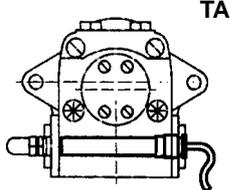
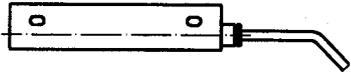
**Note:**  
Operate the reset button for 20 seconds at the most.

### Burner malfunction, general

In the event of any burner malfunction whose cause is not immediately identifiable, check the program sequence by means of the applicable wiring diagram and the hydraulic system description until you locate the fault.

# Accessories

## Oil hoses Auxiliary heaters

	Remark	Designation	Art. No.
<b>Oil hoses for suction- and return-connection</b>			
	for pump type <b>E or TA</b>	Complete set consisting of: 2 hoses DN 16, 850 mm 1 square screwing 4 connections 5 O-ring seals 4 Cu-ring seals	28748
<b>Auxiliary heaters</b>			
 <p><b>E</b></p>  <p><b>TA</b></p> 	for pump type <b>E or TA</b> 80 W, 230 V  For oil flow controller 50 W, 230 V	Complete set suitable for burner type EK 5... S-R EK 6... S-R	28752

Customer service: