Enertech Group

Installation & Maintenance Manual

MGN 420 – 530 LN
(DWG 972)

Gas Burner

11/12

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1 General information

The installation of a gas-fired system must conform to extensive regulations and requirements. It is therefore the duty of the installer to be familiar with all applicable regulations and requirements. Installation, start-up and maintenance must be performed with utmost care.

The burner must not be operated in rooms with high levels of air humidity (laundry rooms), dust or corrosive vapours. The boiler room must be ventilated accordingly with ventilation air.

Nu-Way MG420/530 LN T/MS1 series gas burners are suitable for burning natural gas or liquefied petroleum gas in conformity with EN 437 and comply with the European standard EN 676.

2 Checking scope of delivery and connection data

Before installing the Nu-Way gas burner, please check that all items included in the scope of delivery are present.

Scope of delivery:
burner housing, gas jacket with burner pipe, mounting kit, documentation and gas train.

Gas installation and commissioning are subject to the applicable national regulations. The gas pipe must be designed to conform to the flow rate and the available gas flow pressure and routed with the lowest pressure loss over the shortest distance to the burner.

The loss of gas pressure via the gas train and the burner and the resistance on the fuel gas side of the heat generator must be less than the connection flow pressure.

Caution !
Observe sequence and throughflow direction of valves and fittings.

3 Maintenance and customer service

The complete system should be checked once a year for correct functioning and leaks by a representative of the manufacturer or other suitably qualified person.

We accept no liability for consequential damage in cases of incorrect installation or repair, the fitting of non-genuine parts or where the equipment has been used for purposes for which it was not intended.

4 Operating instructions

The operating instructions together with this technical information leaflet must be displayed in a clearly visible position in the boiler room. It is important that the address of the nearest customer service centre is written on the back page of the Operating Instructions.

5 Instruction of operating personnel

Faults are often caused by operator errors. The operating personnel must be properly instructed in how the burner works. In the event of recurring faults, Customer Service should be notified.

6 Filter/Strainer

According EN 676 a filter/strainer shall be fitted at the inlet of the safety shut-off valve to prevent the ingress of foreign elements.

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7 Key for code designation

MGN(L)420-LN

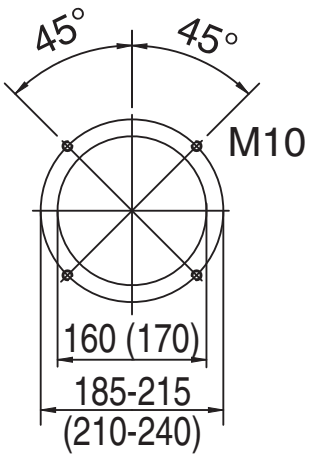
- LowNox
- Burner output max.
- Natural gas LL + E ="N", LPG = "L"
- Series

8 Technical specifications

	Burner type	
Technical data	**MG420-LN**	**MG530-LN**
Burner output in kW	95 - 420	125 - 530
Gas type	Natural gas LL + E = „N“, LPG = „L“	
Method of operation	2-level sliding, modulating	
Voltage	1 / N / PE ~ 50 Hz 230 V	
max. current consumption start / operation	4.0 A max. / 2.3 A eff.	6.5 A max. / 3.5 A eff.
Electric motor power (at 2800 rpm) in kW	0.370	0.750
Flame failure controller	Ionisation	
Control box	DMG 972	
Air pressure monitor	LGW 50	
Weight in kg	45	46
Noise emission in dB(A)	≤ 78	≤ 78

9 Boiler connection measures

All dimensions in mm (dimensions in brackets MG530-LN)



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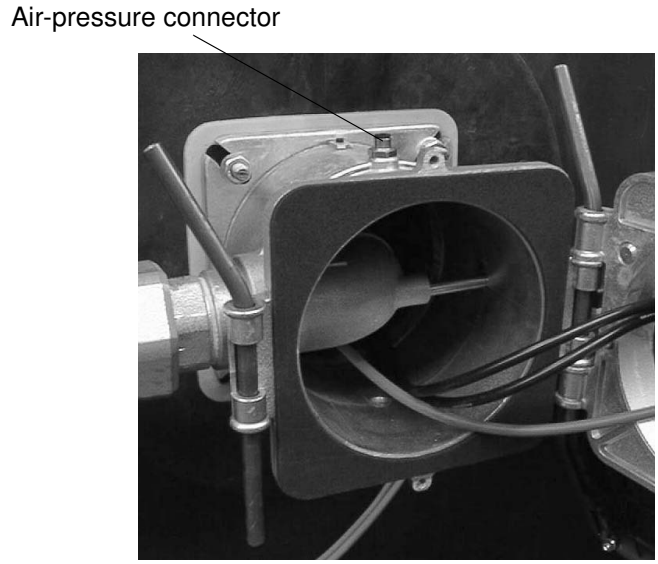
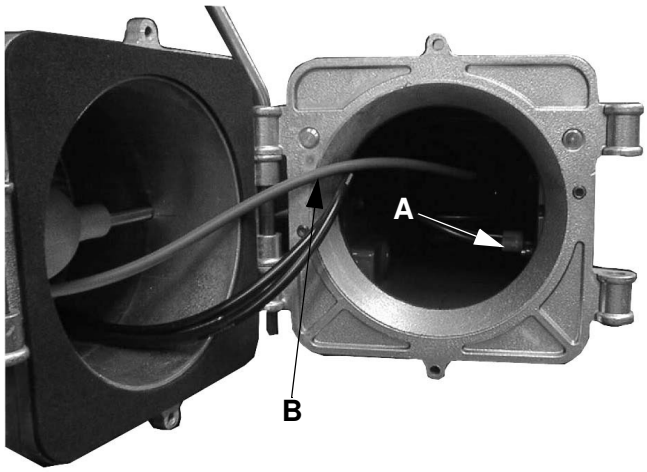
10 Installing the gas jacket on the boiler



Use adhesive to affix the gasket to the gas jacket.

The boiler connection plate must be prepared in accordance with the dimensions specified in "9 Boiler connection dimensions".
You can use the gas-jacket gasket as a scribing template.
Using an 8 mm socket-head wrench, secure the gas jacket to the boiler with the 4 M 10 securing screws and washers.
Screw the air pressure connection into the top of compact unit KEV.

11 Mounting the burner housing on the gas jacket (service position)



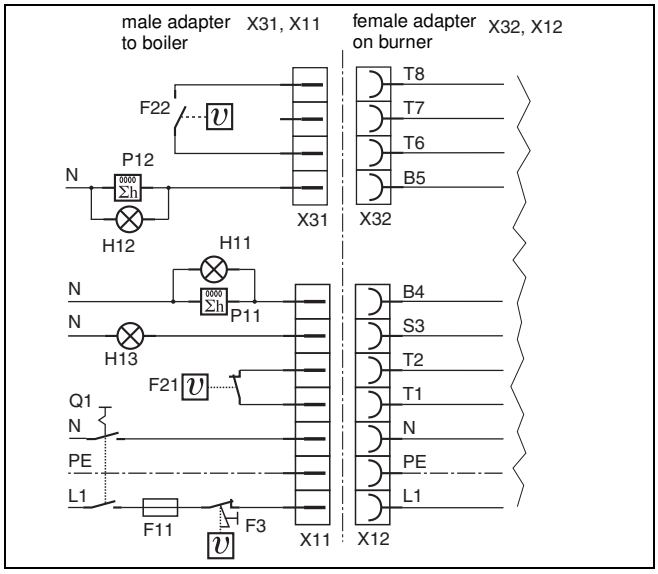
Position the burner housing in the gas-jacket hinge and secure it with a rod. The burner is now in the service position.

Connect ignition cable "A" to the ignition transformer.
Connect the plug for ionisation "B"

Make sure that the gasket is correctly seated between gas jacket and burner housing.

Swing the burner closed and insert the second securing rod into the hinge. Tighten the screw at the top to secure the burner in position.

12 Electrical connection



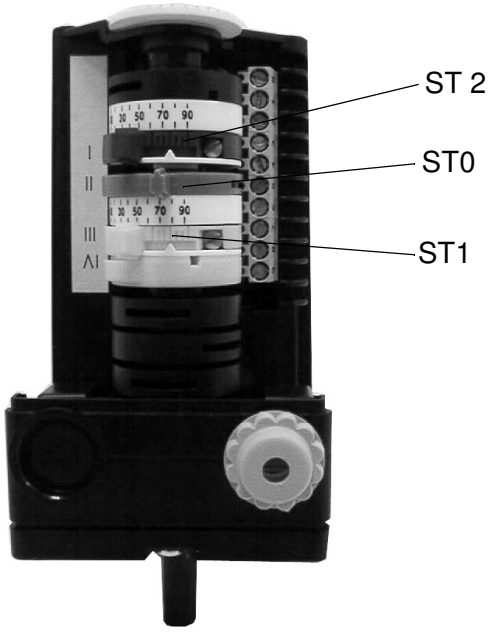
If the terminal box is already wired up, check that the connections match the circuit diagram shown here.

Effect the electrical connection in the plug unit in accordance with the wiring diagram and taking into consideration local regulations.

Protect the feed line with a 10 A fuse max. (recommended) and lay flexible cable.

For explanation of switching symbols, see page 15, 16

13 Air flap positioning motor



Construction -Z-L, -M-L
The air valve positioning motor is for the purpose of adjusting the air flaps only with an oil-burner solenoid valve circuit on two-level burners with an air cutoff. Adjustment is via limit switch cams on the positioning drive roller.

The cam positions for adjusting the burner to the required boiler output are given on the Adjustment Table.

To do so:
Remove cover from air valve positioning motor. Change the cam positions on the levers and do so with a standard screwdriver (cam retainer precision adjustment).
If necessary, switching cams can be adjusted when setting the burner.

Higher setting = More air, pressure increases
Lower setting = Less air, pressure decreases

Colour-coding of switch cams:

blue	(II)	= ST0 (closed position)
yellow	(III/IV)	= ST1 (level 1 position))
red	(I)	= ST2 (level 2 position)

Please note the following when adjusting the switch cams:

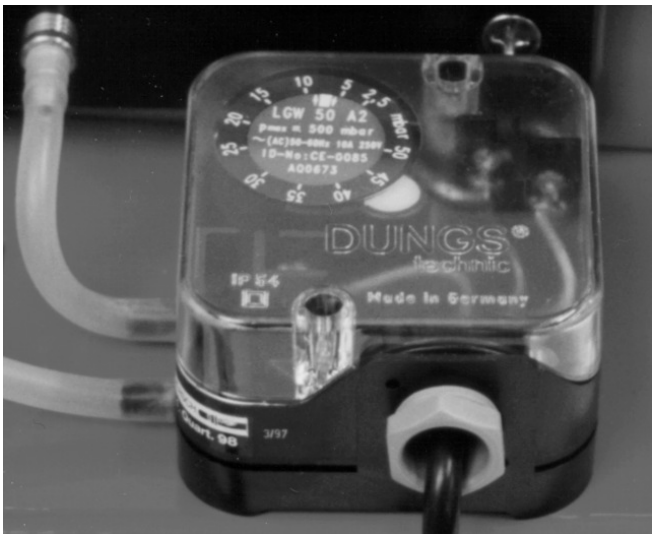
– Do not set cam position for ST1 higher than ST2.

– After adjusting ST1 and ST2 it is necessary to switch over to the next level and then switch back again for the adjustment to become effective.

– When adjustment of the burner is complete, refit positioning motor cover and set level selector switch to position for Level 2.

Important:
Do not set cam position ST2 over the marking 88.

14 Air pressure switch



The air pressure switch is a differential pressure monitor and monitors pressure at the blower burner.

The air pressure switch is set ex-works to 4 mbar.

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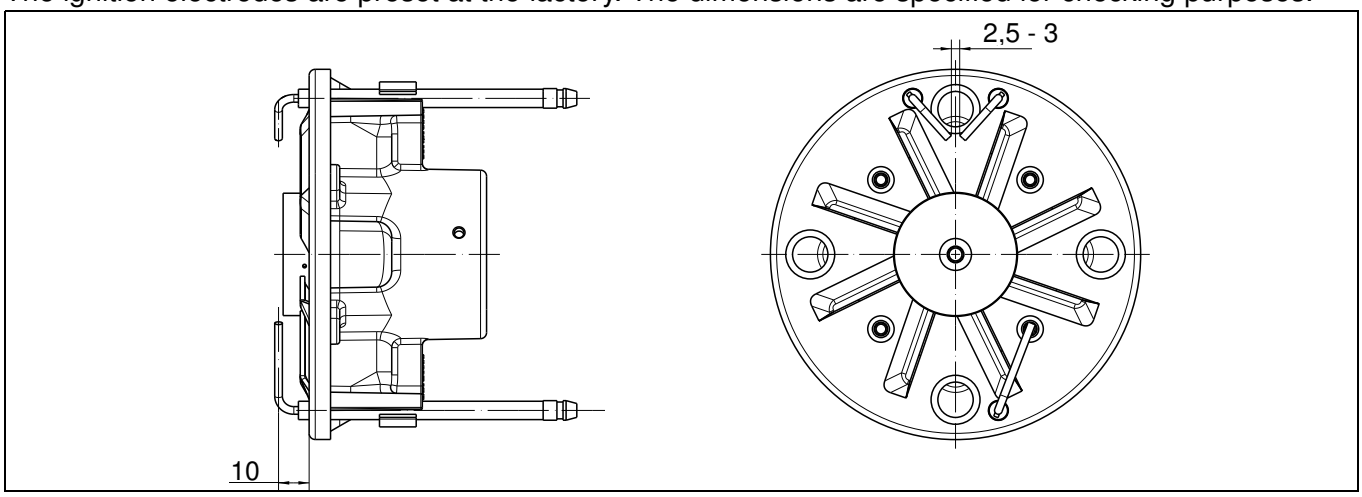
15 Gas pressure switch

The gas pressure switch serves to monitor the gas inlet pressure. The burner is shut down if the gas inlet pressure drops below the set minimum value (preset at factory to 12 mbar). The burner starts up automatically when the minimum pressure is exceeded.

16 Adjusting the ignition electrodes

The ignition electrodes are preset at the factory. The dimensions are specified for checking purposes.



17 Flame control with ionisation monitor

In the presence of an alternating-current voltage between burner and ionisation rod, the rectifying effect of the flame causes a direct current to flow. This ionisation current is the flame signal and is amplified before being output to the control box. A flame cannot be simulated, because the rectifying effect collapses if there is a short-circuit between sensor electrode and burner.

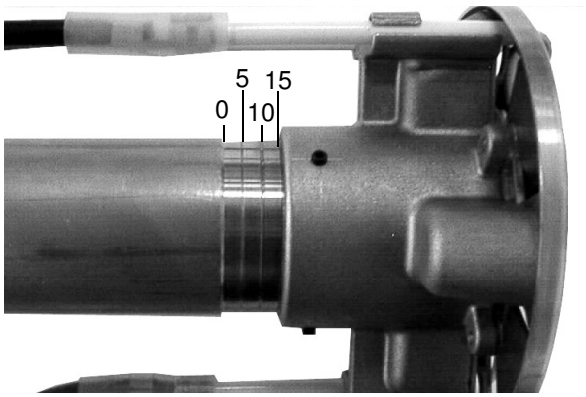
Measuring ionisation current

The ionisation current must be measured during burner start-up and maintenance or after a fault indication in the control box. Disconnect the plug of the ionisation cable and connect the ionisation measuring cable.

Perform measurement straight after the post-ignition time during the safety time period !

The ionisation current must be at least 1.5 µA. Currents lower than 1.5 µA cause unstable operation or shutdown. If the current is too low clean the ionisation rod and the inside of the burner tube. It may be necessary to correct the shape of the ionisation rod. If the ionisation rod is defective, replace the electrode. Reverse the polarity of the ignition transformer, if necessary. Check the cables for moisture formation and dry if necessary.

18 Adjustment of the burner head



Set the position of the burner head according to burner output in accordance with the table on page 13-14.

19 Control box DMG 972

Function test of control box

Carry out the following checks after commissioning and each time after the burner has been serviced:
Start-up with closed ball valve and jumpered gas pressure monitor: device must go into fault mode after safety time has elapsed.
Close ball valve during operation with jumpered gas pressure monitor: device must go into fault mode immediately after flame failure.
Interrupt air pressure monitor contact: The device goes into fault mode.
Jumper air pressure monitor before start-up: Burner must not go into operation.

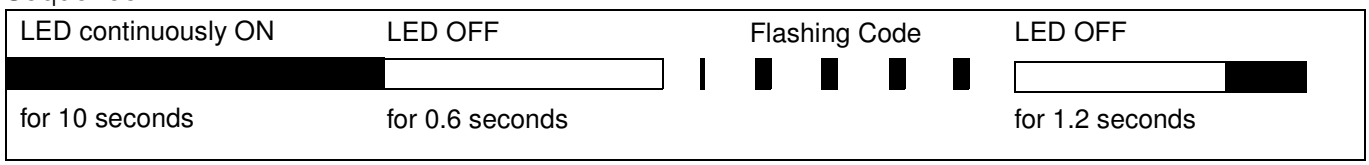
Safety and switching functions

In the event of a flame failure during operation, the fuel supply is immediately switched off and the control box goes into fault mode within 1 sec.
A restart takes place in all cases following a mains power failure.
A fault is triggered immediately if there is flame detection during pre-ventilation.
The position of the air pressure monitor is continuously checked. There can be no start-up if it is not in its neutral position. A fault is triggered if the working contact fails to close during pre-ventilation, or reopens.
In the event of a lack of air during operation, the air pressure monitor contact opens and the valves close immediately. The device goes into fault mode within 1 sec.

Fault diagnosis

In the event of a fault, the LED remains continuously lit. Every 10 seconds, this is interrupted by the flashing code indicating the fault that has occurred.
Thus the following sequence can be observed which repeats itself continually until the fault is acknowledged, i.e. the appliance is reset.

Sequence:



Fault Indication	Flashing Code	Fault Cause
Automatic cut-out		No flame detected withinsafety period
External light fault		External light during monitored phase,sensor possibly defective
Air controller in working position		Air controller contact welded
Air controller time-out		Air controller does not close within a defined time span
Air controller opens		Air controller contact opens during start-up or operation
Flame failure		Flame failure signal in operation

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20 Calculation principles for gas burner adjustment

The values given in the tables are setting values for start-up.
The necessary system adjustment must be newly determined in each case.

General:
The calorofic value ($H_{i,n}$) of fuel gasses is usually given for normal atmospheric conditions (0°C, 1013 mbar).

Natural gas type E	$H_{i,n}$ = 10.4 kWh/m^3
Natural gas type LL	$H_{i,n}$ = 9.3 kWh/m^3
LPG gas (propane)	$H_{i,n}$ = 25.9 kWh/m^3

Gas counters measure the volume of gas in the operational state.

Specifying throughput:
To allow correct setting of the heat generator load, the gas throughput must be determined in advance.

Example:

Height above sea level	230 m
Atmospheric pressure B (according to table)	989 mbar
Gas pressure P_G at counter	20 mbar
Gas temperature ϑ_G	16°C
Boiler rating Q_n	220 kW
Efficiency η_K (assumed)	92%
Calorific value $H_{i,n}$	10.4 kWh/m^3

Gas flow in standard state (V_n)

$$V_n = \frac{Q_n}{\eta_k \times H_{i,n}} = \frac{220kW}{0,92 \times 10,4 \frac{kWh}{m^3}} = 23 \frac{m^3}{h}$$

Gas flow in operating state (V_B)

$$V_B = \frac{V_n}{f} = \frac{23 \frac{m^3}{h}}{0,94} = 24 \frac{m^3}{h}$$

Conversion factor (f)

$$f = \frac{B + P_G}{1013} \times \frac{273}{273 + \vartheta_G}$$

Annual average air pressure

Mean geodesic height of supplied region ASL [m]	from		1	51	101	151	201	251	301	351	401	451	501	551	601	651	701
	to	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750
Annual average of air pressure	(mbar)	1016	1013	1007	1001	995	989	983	977	971	965	959	953	947	942	936	930

Key:
Q_n = boiler rating [kW]
η_K = efficiency [%]
$H_{i,n}$ =lower standard calorific value [kWh/m^3]
f = conversion factor
B = barometric pressure [mbar]
p_G = gas pressure at gas counter [mbar]
ϑ_G = gas temperature at gas counter [°C]

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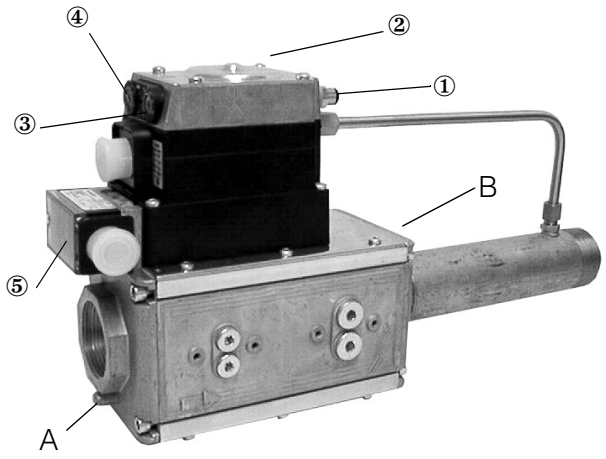
21 Two-level continuous or modulating gas burner with compact unit KEV25 1" and KEV30 1 ½" (gas/air proportional pressure regulator)

Installation of compact unit	
Installation position	only in horizontal line, not tilted
Minimum distance to walling:	20 mm
Screw each air pressure measuring nipple into the top of the gas jacket (see "10 Installing gas jacket on boiler). Route the connecting hose between the measuring nipple for air pressure and the compact unit in a loose loop.	



A Measuring point A

B Measuring point B

①Measuring point pF

②Measuring point pL

③pG1 = pressure, level (N)

④pG2 = pressure, level 2 (V)

⑤pw = pressure, gas pressure monitor

- Connect the air control line between the compact unit at measuring point pL and the measuring point on the gas jacket.
- Connect the combustion-chamber control line between the compact unit at measuring point pF and the measuring point on the combustion chamber. Route the control line in such a way that condensate cannot flow into the compact unit and must flow back into the combustion chamber.
- Adjust the combustion air for level 2 or max. load and for level 1 or min. load at the air valve positioning motor in accordance with the table.
- Adjust the flue-gas values at the compact unit using a 2.5 mm Allen key to turn adjusting screw V (ex-works default setting is 3 mbar nozzle pressure).

  CO_2 too high => decrease V

  CO_2 too low => increase V

- After adjusting, switch the burner from level 2 to level 1.
- Adjust the flue-gas values for 1st. level or min. load using a 2.5 mm Allen key to turn adjusting screw N (ex-works default setting is 2 mbar nozzle pressure).

  CO_2 too high => decrease N

  CO_2 too low => increase N

- Recheck the values at low load and high load and correct the settings if necessary.
- Check burner output by checking reading on gas meter or comparing gas pressures.

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22 Leak check device (accessory)

The leak check device is an automatic valve monitor. Both the gas solenoid valves in the gas line are chekked for leaks. Following a controlled shutdown of the burner and before restart of the purging time, the gas pressure in the test section between the two gas solenoid valves is increased. The contacts for the control box are enabled if the test time expires and the test section is leaktight. The leak check device is checked for leaks before each start.

If there is a leak (pressure in the test section drops), the leak check device goes into fault mode and blocks the signal enabling the contacts for the control box.

23 Start-up

The burner can be put into operation once the gas and electrical installation and assembly work has been completed.

- Prepare the flue-gas analyser.
- Adjust the air valve positioning motor as described in point 13.
- Prepare the compact unit as described in Section 21.
- Switch on the burner.
- Once the burner has started, set the switch to 2nd level.
- Adjust the gas pressure to suit the requisite burner output.
- Check the flue-gas emission values (CO_2, CO, O_2) and adjust the combustion air accordingly. The CO_2 content of the flue gas should be 9-10% for natural gas, or 11-12% for LPG.
- After correct adjustment on the 2nd level the switch is changed over to 1st level. Adjust the gas pressure and gas flow rate in accordance with the table.
  Check the flue-gas emission values and adjust the combustion air accordingly.
- After adjusting, switch the burner from level 1 to level 2.
- After completion of adjustment, check the setting data.
- Check the gas pressure monitor after start-up.
  To do so, close ball valve slowly; burner must shut down but not go into fault mode.
- Recheck the values at low load and full load and correct the settings.
- If the inlet pressures are higher than 20 mbar, set the gas pressure monitor to approx. 70-80% of the inlet pressure.

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24 Troubleshooting

Defect determined:	Blink code DMG972	Cause:	Remedy:
Burner motor does not start up	-	Electric supply lead faulty	Rectify faults in electricalinstallation
	-	Fuse faulty	Replace
	-	Safety thermostat locked	Unlock
	-	Temperature of controller setting is exceeded	Renewed start attempt after temperature drop
	-	Control box faulty	Replace
	-	Leak	Rectify leak
	-	No gas	Safeguard gas supply
	-	Gas pressure monitor faulty	Replace compact unit
	-	Filter in compact unit dirty	Clean or replace
	-	Air pressure monitor not in idle position	Check air pressure switch (s. page 6)
		Burner motor faulty	Replace
	-	No load at terminal 5	Check plug connection and current path of solenoid valve
		Mains voltage < 187 V	Rectify faults in electrical installation
Burner starts up and switches to fault mode before or after expiry of safety period		Ionisation message	Solenoid valve leaky, replace KE
		Air pressure monitor does not switch through during pre-ventilation	See page 6
		Ignition influencing of ionization monitor	See page 7
		Gas solenoid valve does not open	Replace compact unit
		Starting gas quantity set too low	Increase starting gas quantity
		No ignition	Check ignition electrode and setting, ignition transformer and cable (see page 5)
		Phase and zero mixed up	Connect connector unit in correct phase sequence
		Ionisation monitor faulty	Check according to page 7
		Air pressure switch opens during operation	See page 6
		Gas nozzle dirty or faulty	Replace gas nozzle
Flame extinguishes during operation	-	No gas	Safeguard gas supply
	-	Filter in compact unit soiled	Clean or replace
		Flame blow-off	Incorrect burner setting (see page 13)
		Air pressure monitor contact opens	Check/replace air pressure monitor (see page 6)
		Flame signal too weak	Measure flame signal, check ionisation electrode (see page 7)
Burner motor starts up briefly. Control box goes over to fault again	random error blink code	Control box has not been fault-cleared	Release fault on control boxes
		Air pressure switch not in idle position	Check air pressure switch (s. page 6)
Control box resets automatically	Intermittent fault (10 sec.)	intermittent (1-5 sec.) gas pressure fluctuations trigger gas pressure monitor.	Safeguard gas supply. If necessary, lower starting point of gas pressure monitor.

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25 Adjustment tables

The values given in the tables are only setting values for start-up. The system settings required in each case must be redefined if values such as boiler output, calorific value and altitude deviate. **A correction is required in any case.**

The maximal burner output can only be achieved in mixing head position 0. Due to the variable mixing head position, the operating behaviour of the burner can be optimized for different heat generators.

MG420-LN Burner output		Boiler output at η = 92%	Position air flap		Burner head position	**Natural gas LL: $H_{i,n}$ = 9.3 [kWh/m³]**			
St. 2	St. 1	St. 2	St. 2	St. 1		Gas nozzle pressure St. 2	Gas nozzle pressure St. 1	Gas throughput St. 2	Gas throughput St. 1
[kW]	[kW]	[kW]	[°]	[°]	[mm]	[mbar]	[mbar]	[m³/h]	[m³/h]
180	95	166	15	6	**15**	3.8	1.2	20.0	10.5
240	120	221	23	7	**15**	7.2	2.0	26.6	13.3
280	150	258	36	9	**15**	10.0	2.7	31.0	16.6
330	170	304	90	12	**15**	13.0	3.2	36.6	18.8
280	140	256	27	10	**0**	8.6	1.7	31.0	15.7
360	180	331	40	15	**0**	12.0	2.8	39.9	20.0
380	200	350	50	17	**0**	13.8	3.8	42.1	22.2
420	220	386	90	18	**0**	16.7	4.6	46.6	24.4

MG420-LN Burner output		Boiler output at η = 92%	Position air flap		Burner head position	**Natural gas E: $H_{i,n}$ = 10.4 [kWh/m³]**			
St. 2	St. 1	St. 2	St. 2	St. 1		Gas nozzle pressure St. 2	Gas nozzle pressure St. 1	Gas throughput St. 2	Gas throughput St. 1
[kW]	[kW]	[kW]	[°]	[°]	[mm]	[mbar]	[mbar]	[m³/h]	[m³/h]
180	95	166	15	6	**15**	3.0	0.9	17.8	9.4
240	120	221	23	7	**15**	5.6	1.6	23.8	11.9
280	150	258	36	9	**15**	7.8	2.1	27.8	14.9
330	170	304	90	12	**15**	10.2	2.5	32.7	16.9
280	140	256	27	10	**0**	6.7	1.3	27.8	13.9
360	180	331	40	15	**0**	9.4	2.2	35.7	17.8
380	200	350	50	17	**0**	10.6	3.0	37.7	19.8
420	220	386	90	18	**0**	13.1	3.6	41.6	21.8

MG420-LN Burner output		Boiler output at η = 92%	Position air flap		Burner head position	**LPG: $H_{i,n}$ = 25.89[kWh/m³]**			
St. 2	St. 1	St. 2	St. 2	St. 1		Gas nozzle pressure St. 2	Gas nozzle pressure St. 1	Gas throughput St. 2	Gas throughput St. 1
[kW]	[kW]	[kW]	[°]	[°]	[mm]	[mbar]	[mbar]	[m³/h]	[m³/h]
180	95	166	15	6	**15**	4.8	1.0	7.2	3.8
240	120	221	23	7	**15**	7.2	1.6	9.6	4.8
280	150	258	36	9	**15**	9.8	2.8	11.1	6.0
330	170	304	90	12	**15**	13.8	3.6	13.1	6.8
280	140	256	27	10	**0**	8.5	2.0	11.1	5.6
360	180	331	40	15	**0**	13.0	3.8	14.3	7.2
380	200	350	50	17	**0**	15.8	4.2	15.1	8.0
420	220	386	90	18	**0**	18.6	5.0	16.7	8.8

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MG530-LN Burner output		Boiler output at η = 92%	Position air flap		Burner head position	**Natural gas LL: $H_{i,n}$ = 9.3 [kWh/m³]**			
						Gas nozzle pressure		Gas throughput	
St. 2	St. 1	St. 2	St. 2	St. 1		St. 2	St. 1	St. 2	St. 1
[kW]	[kW]	[kW]	[°]	[°]	[mm]	[mbar]	[mbar]	[m³/h]	[m³/h]
250	125	230	19	9	**5**	3,8	1,5	27,7	13,9
300	150	276	26	9	**5**	5,9	2,0	33,3	16,6
400	200	368	53	13	**5**	10,2	2,8	44,3	22,2
440	220	405	90	16	**5**	12,8	3,2	48,2	24,4
360	180	331	33	14	**0**	7,7	3,1	39,9	20,0
440	220	405	52	20	**0**	12,0	4,2	48,8	24,4
500	250	460	70	23	**0**	14,4	5,0	55,4	27,7
530	270	488	90	24	**0**	15,5	5,2	58,8	29,9

MG530-LN Burner output		Boiler output at η = 92%	Position air flap		Burner head position	**Natural gas E: $H_{i,n}$ = 10.4[kWh/m³]**			
						Gas nozzle pressure		Gas throughput	
St. 2	St. 1	St. 2	St. 2	St. 1		St. 2	St. 1	St. 2	St. 1
[kW]	[kW]	[kW]	[°]	[°]	[mm]	[mbar]	[mbar]	[m³/h]	[m³/h]
250	125	230	19	9	**5**	3.0	1.2	24.8	12.4
300	150	276	26	9	**5**	4.6	1.6	29.7	14.9
400	200	368	53	13	**5**	8.0	2.2	39.7	19.8
440	220	405	90	16	**5**	10.0	2.5	43.6	21.8
360	180	331	33	14	**0**	6.0	2.4	35.7	17.8
440	220	405	52	20	**0**	9.4	3.3	43.6	21.8
500	250	460	70	23	**0**	11.3	3.9	49.6	24.8
530	270	488	90	24	**0**	12.1	4.1	52.5	26.8

MG530-LN Burner output		Boiler output at η = 92%	Position air flap		Burner head position	**LPG : $H_{i,n}$ = 25.89 [kWh/m³]**			
						Gas nozzle pressure		Gas throughput	
St. 2	St. 1	St. 2	St. 2	St. 1		St. 2	St. 1	St. 2	St. 1
[kW]	[kW]	[kW]	[°]	[°]	[mm]	[mbar]	[mbar]	[m³/h]	[m³/h]
250	125	230	19	9	**5**	6.3	1.5	10.0	5.0
300	150	276	26	9	**5**	9.1	2.2	11.9	6.0
400	200	368	53	13	**5**	16.2	4.0	15.9	8.0
440	220	405	90	16	**5**	19.8	4.9	17.5	8.8
360	180	331	33	14	**0**	11.3	2.8	14.3	7.2
440	220	405	52	20	**0**	16.8	4.2	17.5	8.8
500	250	460	70	23	**0**	22.0	5.5	19.9	10.0
530	270	488	90	24	**0**	24.5	6.3	21.1	10.8

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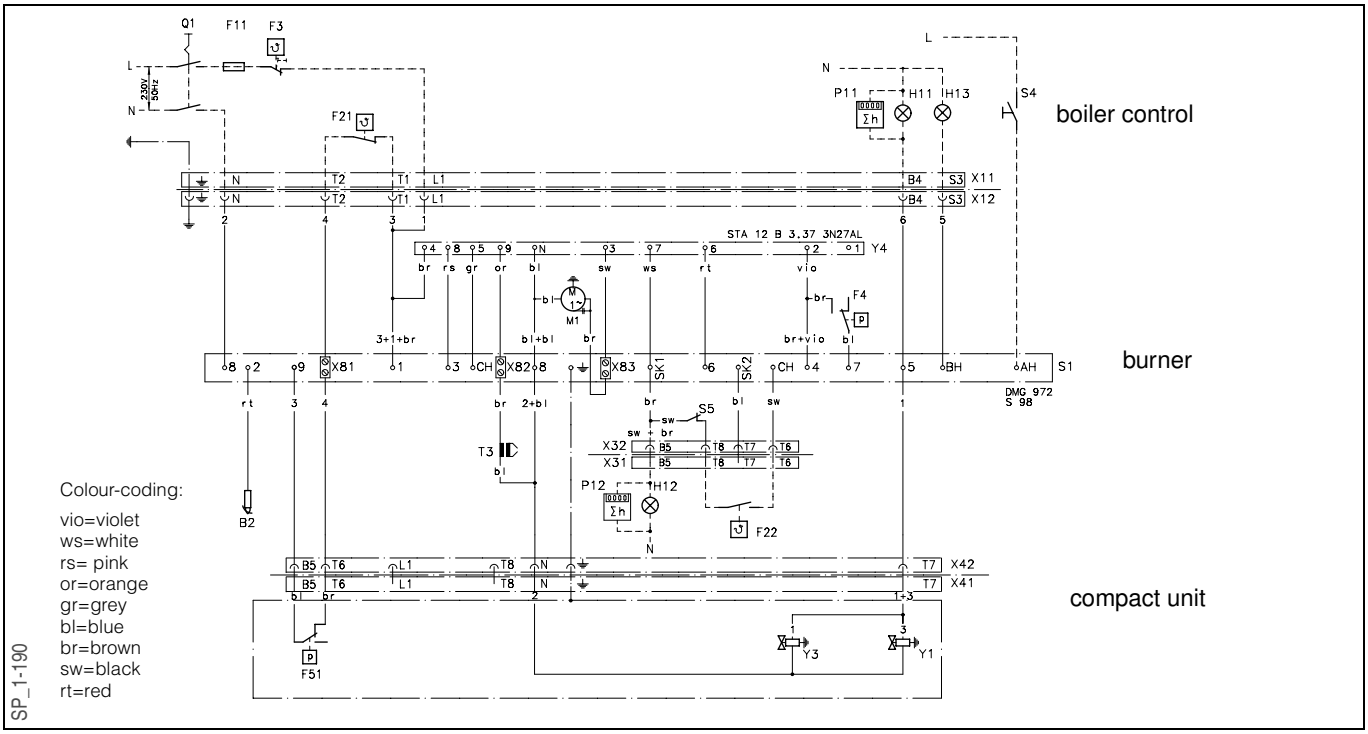
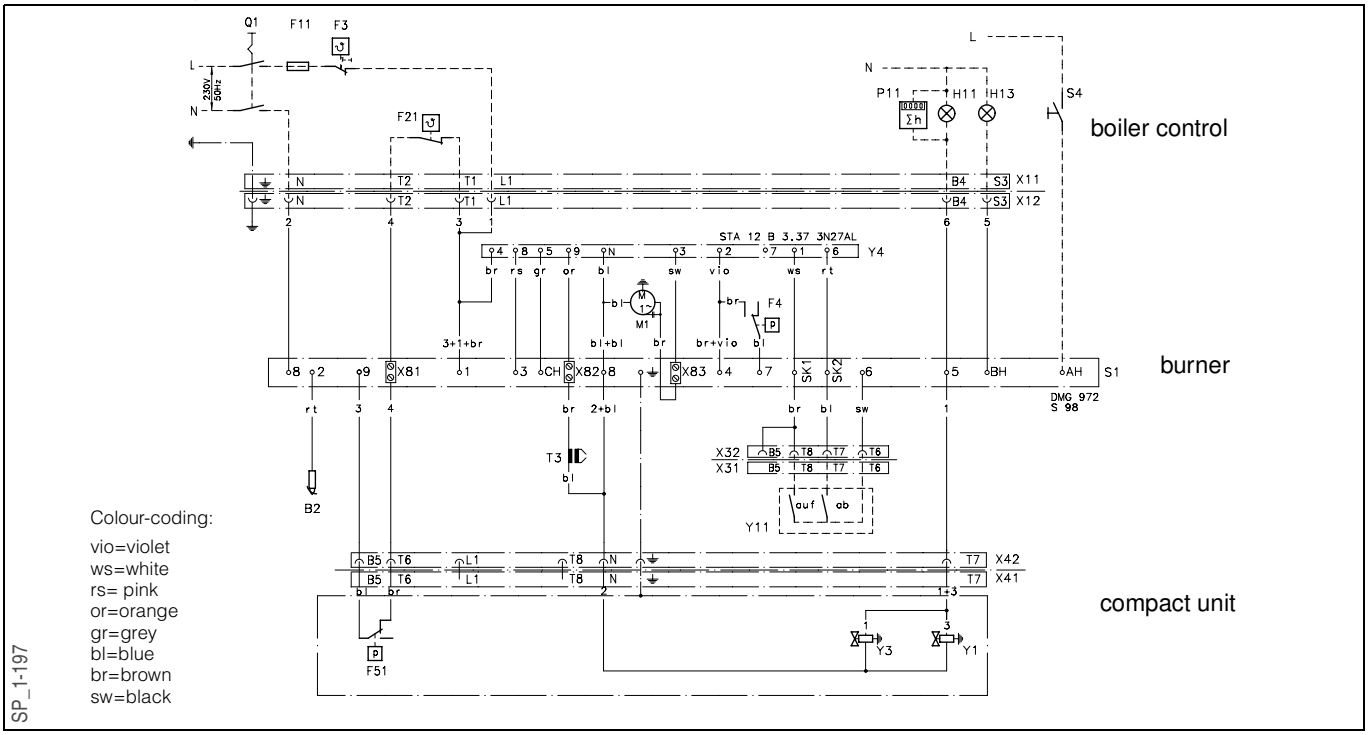
26 Circuit diagram MG420-LN T1

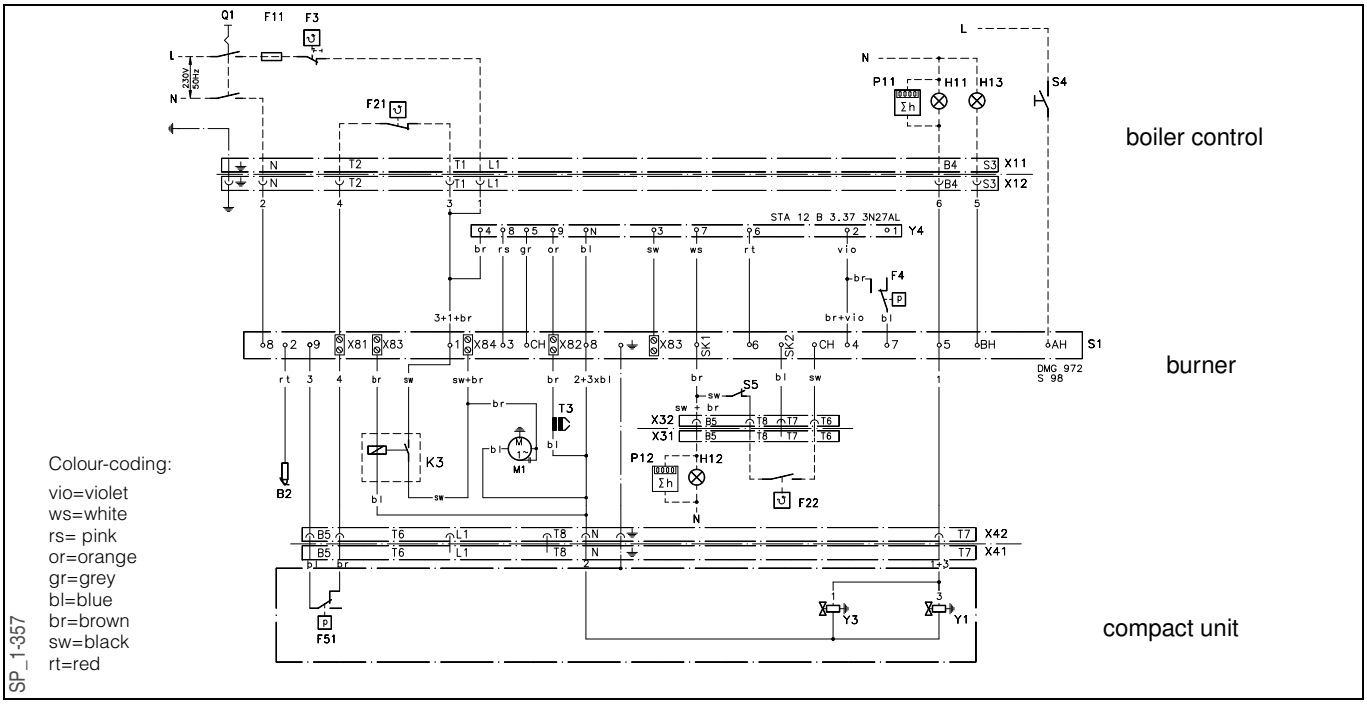


Circuit diagram MG420-LN M1

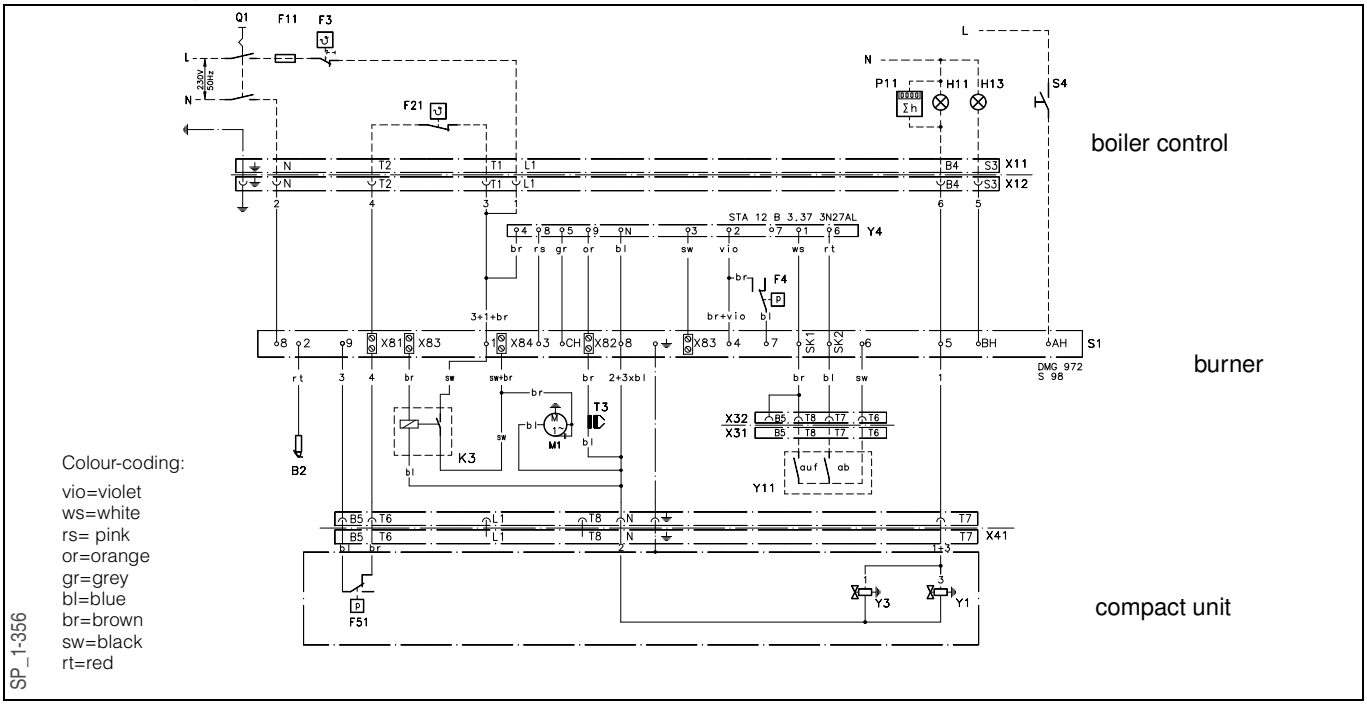


AH	High terminal A
BH	High terminal B
B2	Ionization electrode
CH	High terminal C
F11	Ext. fuse boiler control
F21, F22	Ext. temp. controller 1st level / 2nd level
F3	Safety temperature limiter
F4	Air-pressure monitor
F51	Gas-pressure monitor
H11, H12	Ext. pilot lamp 1st level / 2nd level
H13	Ext. fault message lamp
M1	Burner motor
P11, P12	Time meter 1st level / 2nd level
Q1	Main heating switch
S1	Control box
S4	Push-button ext. fault release
S5	Switch 1st / 2nd level
SK1, SK2	Loop terminal S1 / S2
T3	Ignition transformer
X11, X31	Male adapter boiler control 7-pin bl./br.
X12, X32	Female adapter burner 4-pin bl./br.
X41	Male adapter compact unit 7-pin bl./green
X42	Female adapter burner 7-pin bl./green
X81,X82,X83	Single-pin terminal block
Y1	Solenoid valve
Y3	Safety solenoid valve
Y4	Actuating drive
Y11	Ext. output regulator

27 Circuit diagram MG530-LN T1



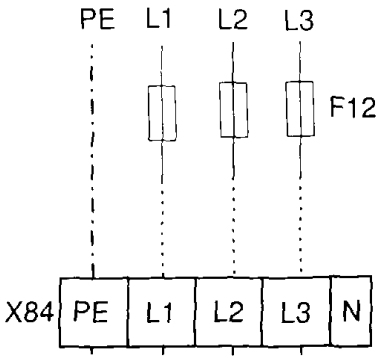
Circuit diagram MG530-LN M1



AH	High terminal A
BH	High terminal B
B2	Ionization electrode
CH	High terminal C
F11	Ext. fuse boiler control
F21, F22	Ext. temp. controller 1st level / 2nd level
F3	Safety temperature limiter
F4	Air-pressure monitor
F51	Gas-pressure monitor
H11, H12	Ext. pilot lamp 1st level / 2nd level
H13	Ext. fault message lamp
K3	Relay
M1	Burner motor
P11, P12	Time meter 1st level / 2nd level
Q1	Main heating switch
S1	Control box
S4	Push-button ext. fault release
S5	Switch 1st / 2nd level
SK1, SK2	Loop terminal S1 / S2
T3	Ignition transformer
X11, X31	Male adapter boiler control 7-pin bl./br.
X12, X32	Female adapter burner 4-pin bl./br.
X41	Male adapter compact unit 7-pin bl./green
X42	Female adapter burner 7-pin bl./green
X81,X82,X83	Single-pin terminal block
Y1	Solenoid valve
Y3	Safety solenoid valve
Y4	Actuating drive
Y11	Ext. output regulator

EXTERNAL WIRING CONNECTIONS FOR MGN SERIES BURNERS

3PH SUPPLY



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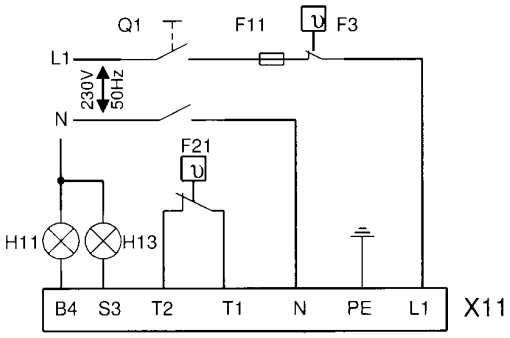
MPA HIGH/LOW



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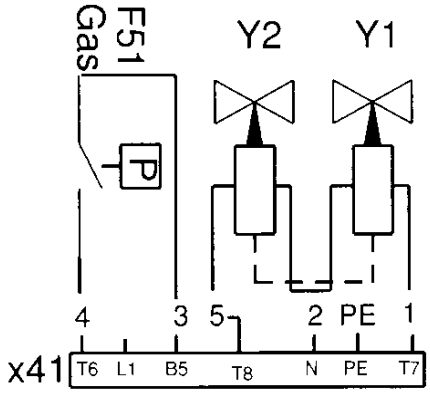
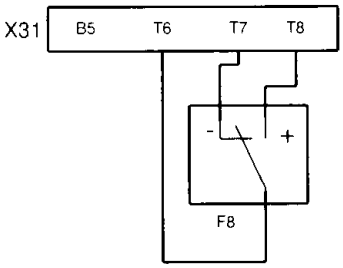
GAS TRAIN

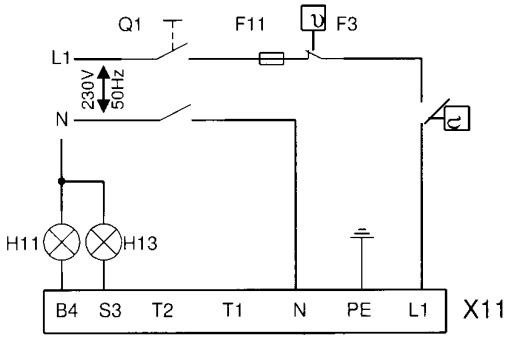


GREEN



BROWN

MPA TLK MOD



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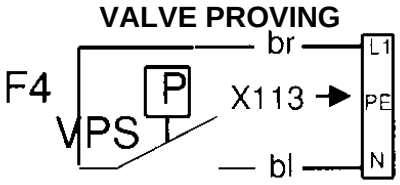
VALVE PROVING



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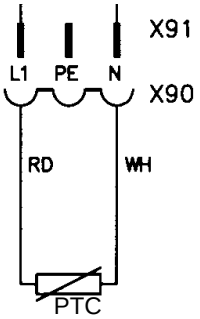
MODULATING

Note:
Control Loop is via Alarm 1 in TLK Control

For Modulating remove plug-in loose connector on control pack



WATER TEMP. SENSOR
KTY 81 - 121

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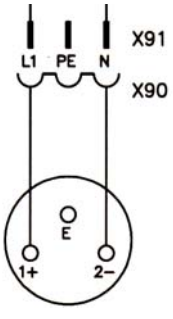
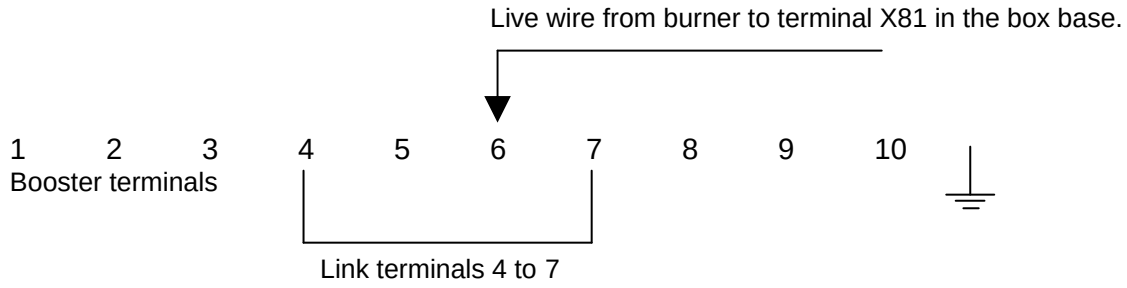


B8
PRESSURE TRANSMITTER
0-20 mA OUTPUT
MIDAS JP 401001

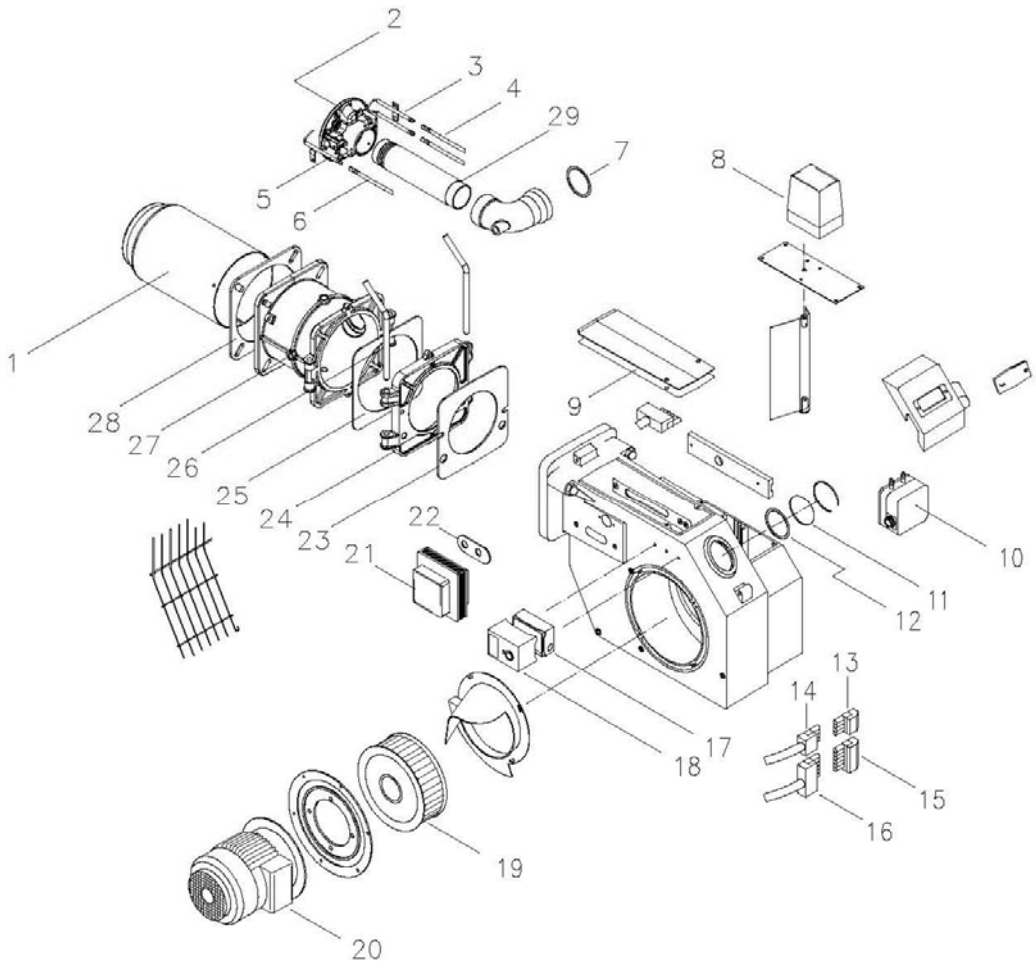
Booster Wiring Details

Please note: To facilitate the wiring connection to the control box, this burner will require an auxiliary panel to be fitted to the burner body.

This applies to a Nu-way single booster wired to drawing numbers WA4-6278 or WA4-6770 only. For further details please refer to Nu-way.



28 Exploded drawing / spare parts list



Position	Designation	PU	Art. no. MG420	Art. no MG530
1	Burner pipe	1	47-90-22479	47-90-24879
1	Burner pipe, extension 100 mm	1	47-90-24630	47-90-24908
1	Burner pipe, extension 200 mm	1	47-90-24633	47-90-24909
2	Burner head kpl. with Ignition electrode	1	47-90-24457	47-90-24873
3	Ignition electrode	5	47-50-24455	
4	Ignition cable	5	47-50-11806	
4	Ignition cable, extension 100 mm	5	47-50-11805	
4	Ignition cable, extension 200 mm	5	47-50-12057	
5	Ionisation probe	5	47-50-24456	
6	Ionisation cable	1	47-90-24903	
6	Ionisation cable, extended by 100 mm	1	47-90-24904	
6	Ionisation cable, extended by 200 mm	1	47-90-24497	
7	Gasket for gas nozzle	10	37-50-20111	47-50-24882
8	Server motorSTA 12 B3	1	47-90-22471	
9	Sealing ring for cover	5	47-50-10668	
10	Pressure switch	1	44-90-20793	
11	Sight glass	5	36-50-11544	
12	Gasket for sight glass	20	46-50-10330	
13	4-pole male connector	5	37-50-11143	
14	4-pole female connector kpl.	1	47-30-11840	
15	7-pole male connector	5	37-50-11015	
16	7-pole female connector kpl.	1	47-50-11243	
17	Lower section, control box	1	31-90-22393	
18	Control box DMG 972	1	47-90-22232	
19	Fan wheel ∅ 180 x 75	1	46-90-12997	47-90-24190
20	Motor 230 V / 50 Hz	1	47-90-12998	47-90-24976
21	Ignition transformer	1	47-90-12767	
22	Seal for ignition transformer	10	46-50-10304	
23	Housing flanget gasket	5	36-50-11761	
24	Gas jacket part 2 kpl.	1	47-30-22181	46-30-20209
25	Gas-jacket gasket	5	47-50-22433	46-50-11903
26	Securing rod	1	47-10-22367	46-10-21085
27	Gas jacket part 1 kpl.	1	47-30-22182	47-30-24953
28	Gas-jacket boiler gasket	5	47-50-22560	46-50-10305
29	Gas nozzle tube	1	47-10-24263	47-10-24883
29	Gas nozzle tube, extended by 100 mm	1	47-10-24628	47-10-24906
29	Gas nozzle tube, extended by 200 mm	1	47-10-24629	47-10-24907
-	Relais	1	-	47-90-21671

E. 06.99• G.06.12.07

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