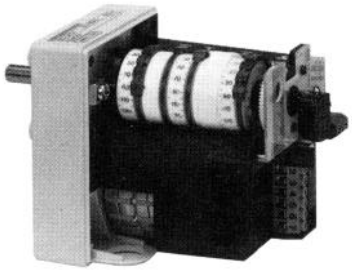
Air Damper Actuators

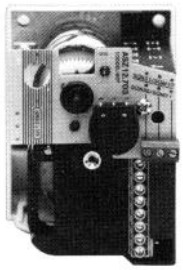
**for burner air dampers,
air / gas ratio control, etc.**

SQN...

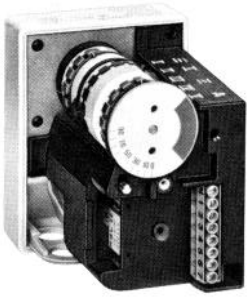
Quality Assurance Services
FM739, QAS34/61

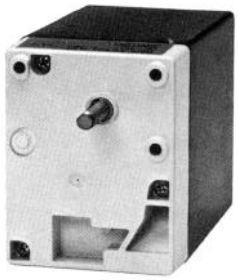


Variant with built-in potentiometer



Front view
with potentiometer





Basic version

Description

The electric actuators of the SQN... range have been designed specifically for the control of burner air dampers or for fuel/air ratio control of oil or gas burners. The following versions are available:
SQN30... anti-clockwise rotation, up to 3 Nm
SQN31... clockwise rotation, up to 3 Nm
SQN41... clockwise rotation, up to 6 Nm

- Variants for fitting potentiometers
- Running times from 4.5 s to 120 s
- All versions are provided with:
  - auxiliary switches and built-in relays (optional)
  - reduction gears which can be disengaged
  - internal and external position indicators
  - easily adjustable limit and auxiliary switches

Application

The SQN... actuators are suitable for the control of air dampers required for oil or gas burners of small to medium capacity. They are used specifically for the control of the amount of combustion air, load dependent in connection with P/PI- or PID-controllers (e.g. RWF31/32), or directly with the burner control (e.g. LOA..., LFM...).

Design Features

The robust housing made of impactproof and heat resistant plastic accommodates the reversible synchronous motor with the reduction gears **which can be disengaged,** the cam stack of the control section, the relays (depending on type), as well as the switches which, via a printed circuit board, are connected to the connecting terminals.

Scales adjacent to the cams facilitate adjustment of the switching points. An additional scale at the end of the cam stack serves for internal position indication.

A potentiometer which can be subsequently fitted (to the variants prepared for it) provides an electrical signal giving the respective position of the driving spindle.
Normally, coiled rotary type potentiometers (ASZ...7...) are to be used, as they provide protection against dust and dirt.
However, if the actuators are for use with electronic fuel/air ratio control, conductive plastic potentiometers (ASZ...8...) must be fitted (also refer to Data Sheet 7921).
A disk provided with a groove is fitted to the head of the cam stack, or to the potentiometer, thus making the position of the driving spindle visible from outside through a viewing slot (see illustrations).
The actuator has two openings for cable entry glands.

Ordering

When ordering, please give type references of actuator and accessories as indicated under «Summary of Types».
Example: Actuator with clockwise rotation, spindle version no. 3, running time 20 s, internal diagram no. 2, 220 V a.c. and suitable for fitting a potentiometer, with potentiometer 220 Ω / 90°∢ / triple pole:

Actuator	**SQN31.412A2730**
Potentiometer	**ASZ8.703**

If the user himself wants to convert the actuator (same example as above), the following items are required:

Actuator	**SQN31.411A2730**
Conversion set	**AGA32**
Potentiometer	**ASZ8.703**

The items are supplied unassembled.

Technical Data

Power supply	AC
Operating voltage and frequency	see «Summary of Types»
Power consumption	6 VA
Radio interference protection	N to VDE 0875
Angular rotation	max. 160° (scale range)
Mounting position	optional
Protection standard	IP 40
Cable entry	1x Pg9, 1x Pg11, threaded (lock nut not required)
Permissible ambient temperature	
– Operation	–20... +60°C
– Transport and storage	–50... +60°C
Weight (average)	approx. 800 g
Limit and auxiliary switches:	
– Make	SAIA
– Type reference	XCF8Z76
– Switching voltage	24 V...250 V a.c.
– Switching capacity	
– Under load ON, with no load OFF cos φ = 0.9:	
– Starting current	14 A
– Operating current	2 A
– Under load ON-OFF, cos φ = 0.9:	
– Starting current	7 A
– Operating curent	1 A

Summary of Types

Basic versions (not suitable for fitting potentiometers)

Diagram No	Spindle number[1] No	Direction of rotation when facing spindle, and voltage at terminal ①	Running time at 50 Hz[2] for 90° travel s	Operating torque (max.) Nm	Holding torque Nm	Built-in relay(s) Pieces	Auxiliary switch(es)[4] (in addition to 2 limit switches) Pieces	220 V −15%... 240 V +10% 50...60 Hz: Type reference (basic version)[5]	100 V −15%... 110 V +10% 50...60 Hz: Type reference
2	0	Anti-clockwise	4.5	1	0.8	1	2	**SQN30.111A2700**	
2	0	Anti-clockwise	4.5	1.5	0.8	1	2	**SQN30.111A3500[3])**	
3[7])	0	Anti-clockwise	4.5	1	0.8	2	1[4])	**SQN30.121A2700**	
3[7])	0	Anti-clockwise	4.5	1.5	0.8	2	1[4])	**SQN30.121A3500[3])**	
4	0	Anti-clockwise	4.5	1	0.8	2	1[4])	**SQN30.131A2700**	**SQN30.131A1700[6])**
1	3	Anti-clockwise	30	3	3	—	3	**SQN30.401A2730**	
1	0	Clockwise	4.5	1	0.8	—	3	**SQN31.101A2700**	**SQN31.101A1700**
2	0	Clockwise	4.5	1	0.8	1	2	**SQN31.111A2700**	
3[7])	0	Clockwise	4.5	1	0.8	2	1[4])	**SQN31.121A2700**	
3[7])	3	Clockwise	4.5	1	0.8	2	1[4])	**SQN31.121A2730**	
3[7])	6	Clockwise	4.5	1	0.8	2	1[4])	**SQN31.121A2760**	
—	3	Clockwise	4.5	1	0.8	2	1	**SQN31.151A2730**	
3[7])	0	Clockwise	12	1.8	1.8	2	1[4])	**SQN31.221A2700**	
—	3	Clockwise	12	1.8	1.8	2	1	**SQN31.251A2730**	
1	0	Clockwise	30	3	3	—	3	**SQN31.401A2700**	
1	2	Clockwise	30	3	3	—	3	**SQN31.401A2720**	
1	3	Clockwise	30	3	3	—	3	**SQN31.401A2730**	
1	6	Clockwise	30	3	3	—	3	**SQN31.401A2760**	
2	0	Clockwise	30	3	3	1	2	**SQN31.411A2700**	
2	3	Clockwise	30	3	3	1	2	**SQN31.411A2730**	
5	0	Clockwise	120	6	6	1	2	**SQN41.941A2700**	

Versions for fitting potentiometers

All basic versions listed under «Summary of Types» are also available for the incorporation of a potentiometer while the technical data remain unchanged.

These actuators differ from the basic versions **only in that the housing is higher** and that they are prepared to accept the potentiometer. Additional items are not required. Only the necessary potentiometer must be ordered as a separate item (refer to «Accessories»).

The third digit after the dot in the **type reference** of the actuator will change from **1** to **2.**

Example: SQN31.**1**11A2700 = basic version
SQN31.1**1**2A2700 = execution for incorporation of potentiometer

Conversion by user

Users themselves have the option of converting a basic version into a version for fitting a potentiometer. For this purpose a **conversion set type AGA32** has been made available (refer to «Accessories» and example under «Ordering»).

Air damper actuators from stock for fitting potentiometers

The versions suitable for mounting a potentiometer are not available ex stock, but will be supplied to order.

Exception:

The following types are available **ex stock:**

Diagram No	Spindle number[1] No	Direction of rotation when facing spindle, and voltage at terminal ①	Running time at 50 Hz[2] for 90° travel s	Operating torque (max.) Nm	Holding torque Nm	Built-in relay(s) Pieces	Auxiliary switch(es) (in addition to 2 limit switches) Pieces	220 V −15%... 240 V +10% 50...60 Hz: Type reference	100 V −15%... 110 V +10% 50...60 Hz: Type reference
1	0	Anti-clockwise	30	3	3	—	3	**SQN30.402A2700**	
1	6	Anti-clockwise	30	3	3	—	3	**SQN30.402A2760**	
1	0	Clockwise	30	3	3	—	3	**SQN31.402A2700**	
1	0	Clockwise	4.5	1	0.8	—	3	**SQN31.102A2700**	

Accessories

(To be ordered separately)

Conversion set AGA32

Used for the conversion of a basic version into a variant for fitting a potentiometer.
For details refer to Data Sheet 7921

The correction of the type designation as indicated under «Versions for fitting potentiometers» must be made by the user himself using a watersoluble felt-tip pen (important for service work).

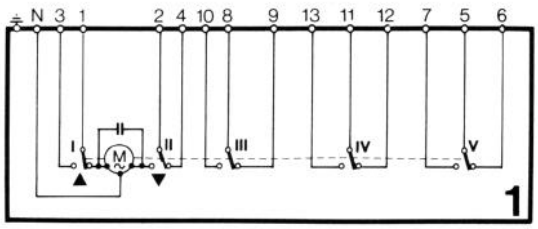
Potentiometers: See Data Sheet 7921

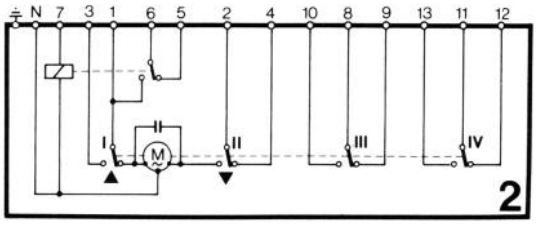
AGA33 service set:

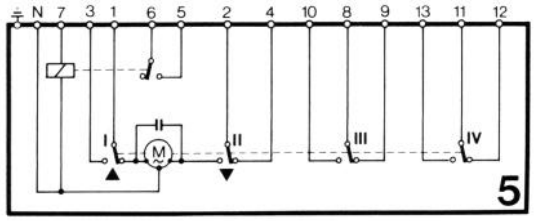
For the conversion of old potentiometers type ASZ... into new potentiometers type ASZ...7... and ASZ...8...
For details refer to Data Sheet 7921

[1]) Refer to «Dimensions» on page 4
[2]) Valid for 50 Hz frequency. At 60 Hz frequency running times are approx. 17% shorter
[3]) On time at:
220 V −15%/+10% and 50 Hz: max. 50%
240 V −15%/+10% and 50 Hz: max. 35%
[4]) For special circuits refer to «Diagrams»
[5]) For actuators suitable for potentiometers, refer to «Versions for fitting potentiometers»
[6]) Only on request
[7]) Air damper actuators with diagram no 3 may not be used with LOA26...

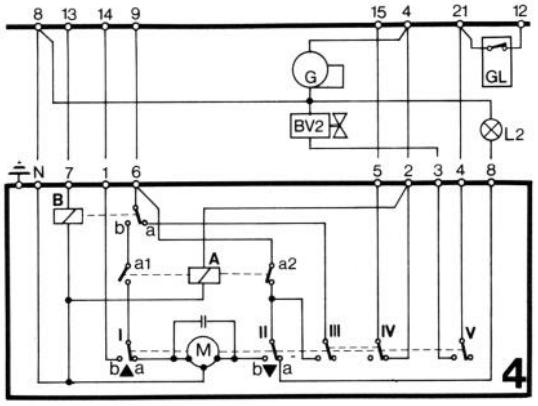
Basic Diagrams



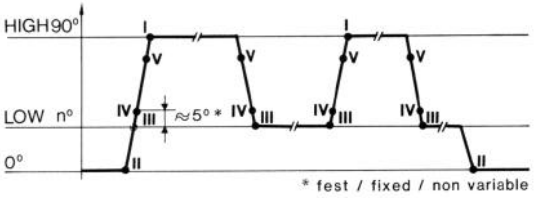




TMG740-2



Sequence of functions according to diagram 4



* LOA...

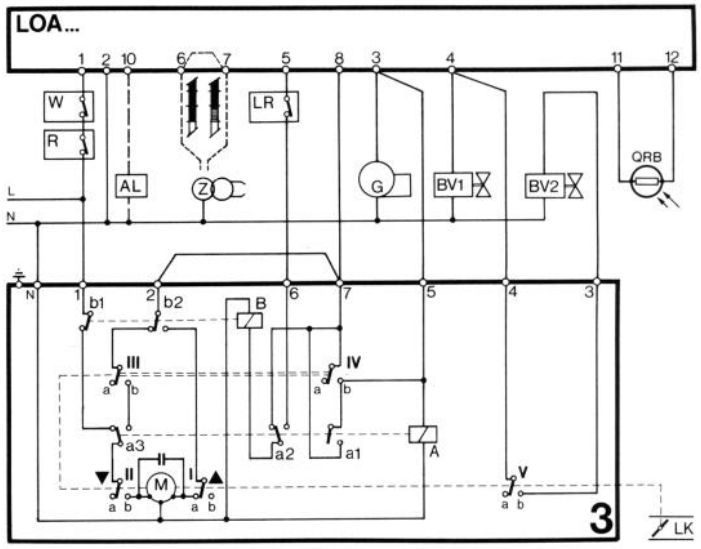
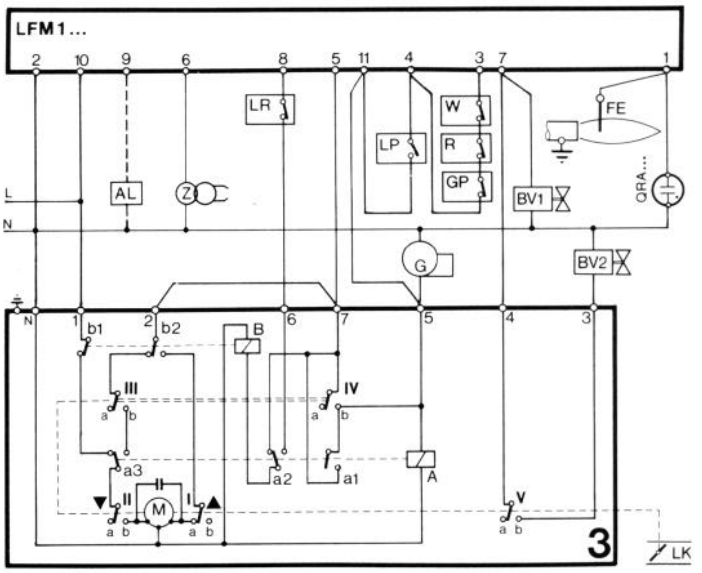


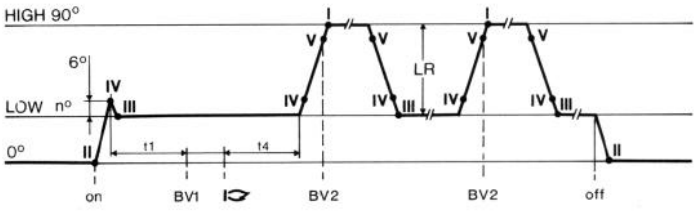
*Diagram no 3 **not** applicable to LOA26...

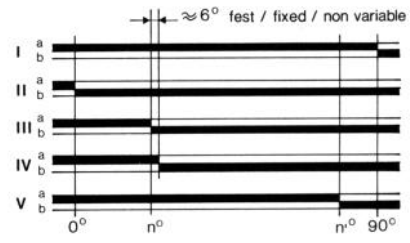


In connection with burner control type **LFM1**, diagram no 3 is valid only for actuators having a running time of ≤4.5 s, e.g. types SQN30.**1**..A... / SQN31.**1**..A...

The internal wiring of the motor according to diagram no 3 ensures accurate approach of the low-flame position set by double auxiliary switch III/IV, either from the CLOSED position or from the OPEN position (not affected by the switching differential of the auxiliary switch).

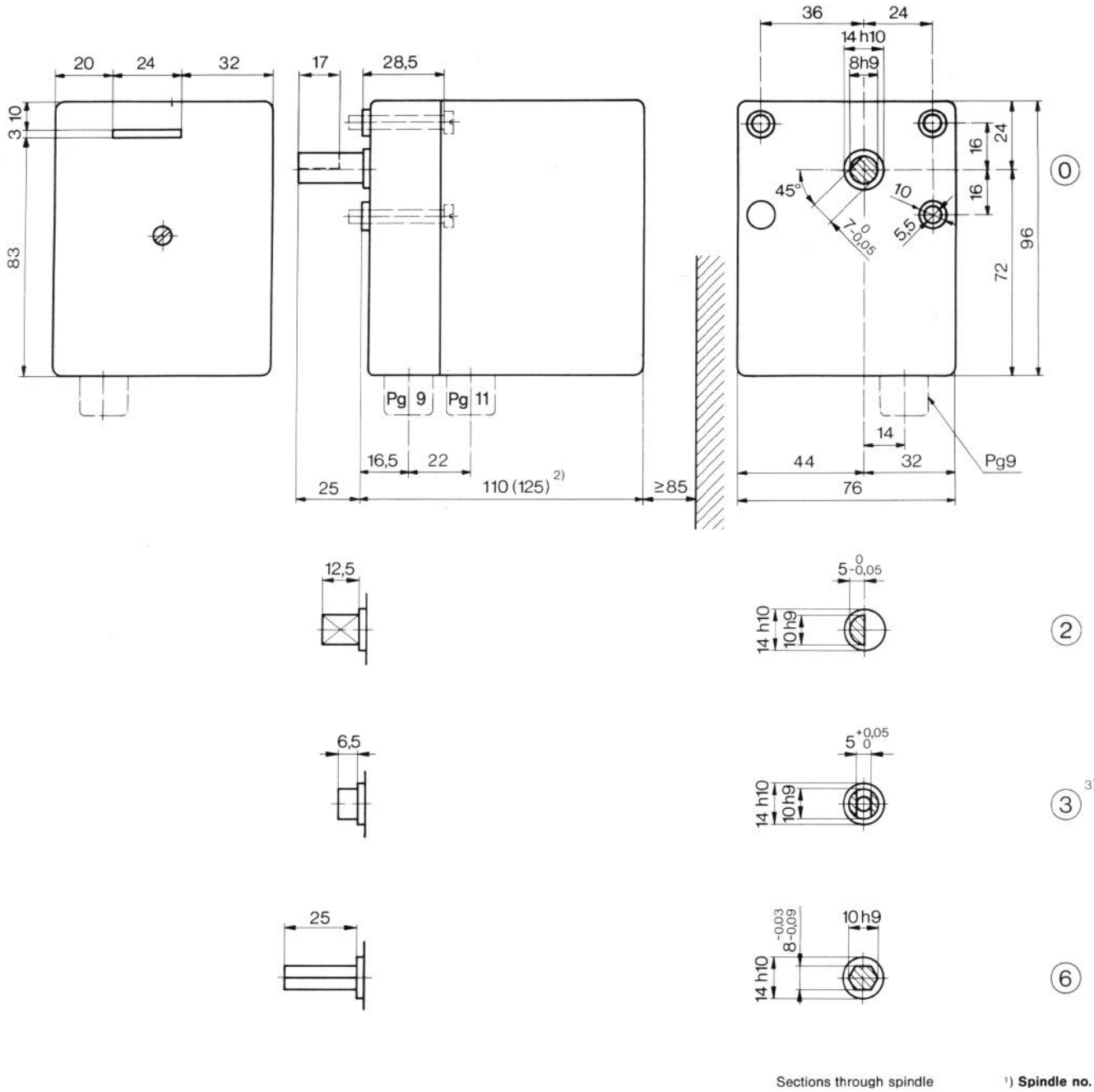
Sequence of functions according to diagram no 3





BV.. Fuel valve
High Nominal load
Low Partial load

Dimensions



Sections through spindle

[1]) **Spindle no.**

[1]) Spindles are shown in their CLOSED position (voltage at terminal 2).
The spindle number is identical with the last ut one digit of the type reference.

Example:
SQN31.401A27**6**0 = spindle version no. 6

[2]) Housing dimension of actuators for fitting potentiometer (SQN30...**2**A...)

[3]) Centre groove:: 6.3 mm deep
Hole dia. 5.1 mm: 16.5 mm deep
(including depth of centre groove)

Landis & Gyr Building Control AG, Gubelstrasse, CH-6301 ZUG
Landis & Gyr Building Control (UK) Ltd. 2 Dukes Meadow, Millboard Road, Bourne End, GB-BUCKS SL8 5XP
Landis & Gyr (Australia) Pty. Ltd., 411 Ferntree Gully Road, AUS-MT. WAVERLEY, Vic. 3149
Landis & Gyr Intersystem Corporation, 4-3-1 Tsuchihashi, Miyamaeku, Japan-KAWASAKISHI 213