



SQM5..., gear train side
with drive shaft no. 7



SQM5..., rear, version without
second drive shaft end



SQM5..., rear, version with
2 drive shaft ends

Actuators for Air and Gas Dampers

SQM5...

with electronic modules

- Reversible electromotoric actuators delivering torques up to 40 Nm
- Running times from 10 to 90 seconds
- With 1 or 2 drive shaft ends; drive shafts are available as separate items and can be exchanged
- Can be equipped with electronic modules for control and position indication
- Internal and external position indication
- Drive shaft and cam shaft can be separately disengaged
- Choice of UL-listed types for use in the U.S. and Canada
- Supplementary Data Sheets: N7921 and N7922

The SQM5... and this Data Sheet are intended for use by OEMs which integrate the air damper actuators in their products!

Use

The SQM5... actuators are used to drive air or gas dampers of oil and gas burners of medium to large capacity.

They are used primarily for load-dependent control of the amounts of gas, oil and combustion air:

- In connection with 3-position or modulating controllers (e.g. 4...20 mA), or
- Directly by burner controls

Warning notes



To avoid injury to persons, damage to property or the environment, the following warning notes should be observed!

Only qualified staff may open, interfere with or modify the actuators!

- All activities (mounting, installation and service work, etc.) must be performed by qualified staff
- Before performing any wiring changes in the connection area of the actuator, completely isolate the equipment from the mains supply (all-polar disconnection)
- Ensure protection against electric shock hazard by providing adequate protection for the connection terminals
- Protection against electric shock hazard is ensured by a hinged plastic cover, allowing safe setting of the cams when mains voltage is present
- Each time work has been carried out (mounting, installation, service work, etc.), check to ensure that wiring is in an orderly state
- Fall or shock can adversely affect the safety functions. Such actuators must not be put into operation even if they do not exhibit any damage

Mounting notes

- Ensure that the relevant national safety regulations are complied with

Standards and certificates



Conformity to EEC directives

- Electromagnetic compatibility EMC (immunity)
- Low-voltage directive

89 / 336 / EEC
73 / 23 / EEC



ISO 9001: 2000
Cert. 00739



ISO 14001: 2004
Cert. 38233



For use in the U.S. / Canada, the actuators carry type suffix «R» (see example) and are



UL-



CSA-listed.

Example: SQM50.480**R**1

Disposal notes



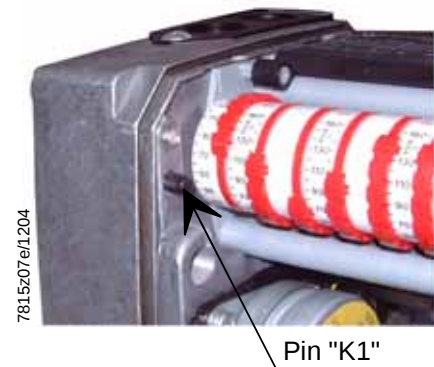
The actuator contains electrical and electronic components and must not be disposed of together with domestic waste.

Local and currently valid legislation must be observed.

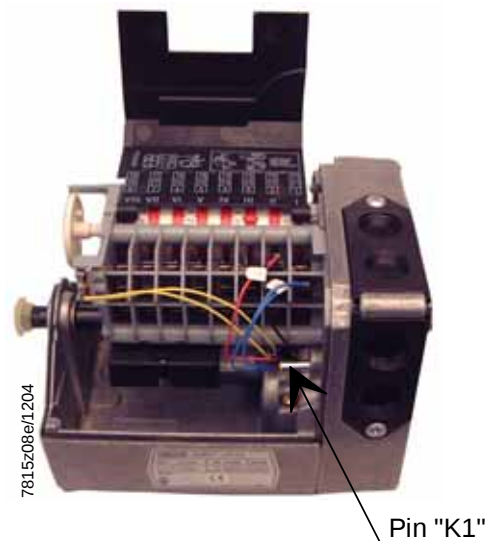
Mechanical design

- | | |
|-------------|---|
| Housing | <ul style="list-style-type: none">• Housing sections made of die-cast aluminium• Covers made of impact-proof and heat-resistant plastic |
| Drive motor | <ul style="list-style-type: none">• Reversible and locking-proof synchronous motor |
| Couplings | <ul style="list-style-type: none">• Drive shaft and cam shaft can be adjusted separately, independent of the gear train• Drive shaft can be disengaged from gear train and motor by pressing pin «K» (refer to «Technical data»)• Automatic reengagement• Pin «K...» |

- Disengagement of gear train / cam shaft by pressing pin «K1»



- Disengagement of gear train / cam shaft by pressing pin «K2»



- | | |
|--------------------------------|--|
| Cam shaft drive | <ul style="list-style-type: none">• Nearly backlash-free |
| Adjustment of switching points | <ul style="list-style-type: none">• With adjustable cams• Scales beside the cams indicate the angle of the switching point |
| Position indication | <ul style="list-style-type: none">• Internally:<ul style="list-style-type: none">– Scale at the end of the drive shaft– Black scale for counterclockwise rotation, single arrow on the cam– Red scale for clockwise rotation, double arrow on the cam• Externally:<ul style="list-style-type: none">– Scale in viewing window |

Mechanical design (cont'd)

Electrical connections	• Micro switch with tabs • Screw terminals for «N» and «PE» • Possibility of premounting and fixing wiring by means of removable Pg plastic insert • Easy introduction of cables through large openings in the housing • Fixing of Pg insert with all cables by means of a screw
Gear train	• Maintenance-free gearwheels and bearings
Drive shaft	• Secured with a removable circlip • Easily exchangeable • Choice of drive shaft on both sides
Actuator fixing	• Fixing holes on the front of the housing and at the bottom • Front fixing also possible from inside the housing • Variable mounting height through the use of an extra adapter

Type summary (other types of actuators are available on request)

When ordering, please give type reference according to «Type summary».

Accessories are to be ordered separately.

Actuators with premounted accessories are only available on request.

AC 220 V -15 %...AC 240 V+10 %, 50...60 Hz ±6 %

Standard types! (other versions on request)	Torque and holding torque 3)	Running time at 50 Hz and angular rotation 1)		Auxiliary switches incl. 2 end switches	Type of drive shaft	Electronic module (integrated ex works) 5)	Potentiometer (integrated ex works) 6)
Type reference	max. Nm 2)	90°	130°	Piece	AGA...	AGA...	ASZ...
SQM50.260A2G4	10	10 s	14 s	4	--- ⁴⁾	56.41A27	12.33
SQM50.341A2	10	15 s	22 s	4	58.1	---	---
SQM50.341A2G3	10	15 s	22 s	4	58.1	56.41A27	12.30
SQM50.341A2K3	10	15 s	22 s	4	58.1	56.43A27	12.30
SQM50.381A2	10	15 s	22 s	8	58.1	---	---
SQM50.441A2	10	30 s	43 s	4	58.1	---	---
SQM50.441A2G3	10	30 s	43 s	4	58.1	56.41A27	12.30
SQM50.480A2	15	30 s	43 s	8	--- ⁴⁾	---	---
SQM50.480A2Z3	15	30 s	43 s	8	--- ⁴⁾	56.9A27	12.30
SQM50.481A2	10	30 s	43 s	8	58.1	---	---
SQM50.481A2G3	10	30 s	43 s	8	58.1	56.41A27	12.30
SQM50.481A2Z3	10	30 s	43 s	8	58.1	56.9A27	12.30
SQM50.482A2	15	30 s	43 s	8	58.2	---	---
SQM50.482A2Z3	15	30 s	43 s	8	58.2	56.9A27	12.30
SQM50.483A2Z3	15	30 s	43 s	8	58.3	56.9A27	12.30
SQM50.681A2	10	60 s	87 s	8	58.1	---	---
SQM53.482A2	20	30 s	43 s	8	58.2	---	---
SQM53.482A2Z3	20	30 s	43 s	8	58.2	56.9A27	12.30
SQM53.489A2	25	30 s	43 s	8	58.9	---	---
SQM54.480A2	25	30 s	43 s	8	--- ⁴⁾	---	---
SQM54.482A2	20	30 s	43 s	8	58.2	---	---
SQM54.482A2	20	30 s	43 s	8	58.2	---	---
SQM54.580A2Z3	25	45 s	65 s	8	--- ⁴⁾	56.9A27	12.30
SQM56.680A2	40	60 s	87 s	8	--- ⁴⁾	---	---
SQM56.684A2G4	30	60 s	87 s	8	58.4	56.41A27	12.33
SQM56.684A2Z3	30	60 s	87 s	8	58.4	56.9A27	12.30
SQM56.687A2	40	60 s	87 s	8	58.7	---	---
SQM56.687A2G3	40	60 s	87 s	8	58.7	56.41A27	12.30
SQM56.687A2Z3	40	60 s	87 s	8	58.7	56.9A27	12.30

Type summary (other types of actuators are available on request) [cont'd]

AC 100 V -15 %...AC 110 V+10 %, 50...60 Hz ±6 %

Standard types! (other versions on request)	Torque and holding torque 3)	Running time at 50 Hz and angular rotation 1)		Auxiliary switches incl. 2 end switches	Type of drive shaft	Electronic module (integrated ex works) 5)	Potentiometer (integrated ex works) 6)
Type reference	max. Nm 2)	90°	130°	Piece	AGA...	AGA...	ASZ...
SQM50.454A1	15	30 s	43 s	5	58.4	---	---
SQM50.480A1	15	30 s	43 s	8	--- ⁴⁾	---	---
SQM50.480A1Z3	15	30 s	43 s	8	--- ⁴⁾	56.9A17	12.30
SQM50.483A1Z3	15	30 s	43 s	8	58.3	56.9A17	12.30
SQM53.480A1	25	30 s	43 s	8	--- ⁴⁾	---	---
SQM53.482A1Z3	20	30 s	43 s	8	58.2	56.9A17	12.30
SQM56.687A1	40	60 s	87 s	8	58.7	---	---
SQM56.687A1Z3	40	60 s	87 s	8	58.7	56.9A17	12.30

AC 24 V -15 / +10 %, 50...60 Hz ±6 %

Standard types! (other versions on request)	Torque and holding torque 3)	Running time at 50 Hz and angular rotation 1)		Auxiliary switches incl. 2 end switches	Type of drive shaft	Electronic module (integrated ex works) 5)	Potentiometer (integrated ex works) 6)
Type reference	max. Nm 2)	90°	130°	Piece	AGA...	AGA...	ASZ...
SQM50.380A8	10	15 s	22 s	8	--- ⁴⁾	---	---
SQM50.443A8	15	30 s	43 s	4	58.3	---	---
SQM50.444A8	15	30 s	43 s	4	58.4	---	---
SQM50.454A8	15	30 s	43 s	5	58.4	---	---
SQM50.483A8	15	30 s	43 s	8	58.3	---	---
SQM50.483A8Z3	15	30 s	43 s	8	58.3	56.9A87	12.30

- 1) At 60 Hz frequency, running times are about 17 % shorter
2) Based on 250,000 position changes
3) Refer to «Drive shafts» and «Torques», depending on voltage
4) Drive shaft to be ordered separately
5) For details, refer to Data Sheet N7922
6) For details, refer to Data Sheet N7921

Potentiometers

- ASZxx.3x refer to Mounting Instruction M7921
- ASZxx.7xx refer to Mounting Instruction M7806 / M7808 / M7812
- ASZxx.8xx refer to Mounting Instruction M7806 / M7808 / M7812
- ASZxx.9xx refer to Mounting Instruction M7806 / M7808 / M7812

Mounting kit

ASK33.9

- For fitting the SQM5... to butterfly valves VKF41... , always with drive shaft AGA58.1
- Refer to Mounting Instruction M7815.4

Spacer

AGA57.1

- Adapter for SQM10... / SQM20...
- Refer to Mounting Instructions M7815.1

Adapter for actuator ME8

AGA57.2

Adapter for Honeywell Mod. III actuator

AGA57.3

Electronic modules

AGA56...

- For control of the actuator
- For integration into the actuator, complete with mounting frame and fixing screws
- Refer to Data Sheet N7922

Drive shafts

Type of drive shaft	Max. torque	Part no.	Type reference
10 mm dia., single-sided , Woodruff key to DIN 6888, drive shaft of SQM10...	10 Nm	1	AGA58.1
10 mm dia., single-sided , Woodruff key to DIN 6888, drive shaft of SQM10... Packs of 10 pieces	10 Nm	1	AGA58.1(10)
12 mm dia., single-sided , Woodruff key to DIN 6888, drive shaft of SQM20...	20 Nm	2	AGA58.2
9 mm square, double-sided , drive shaft of ME8	25 Nm	3	AGA58.3
9.5 mm square, double-sided , drive shaft of Honeywell Mod. III	30 Nm	4	AGA58.4
9,5 mm square, double-sided , drive shaft of Honeywell Mod. III, Packs of 10 pieces	30 Nm	4	AGA58.4(10)
14 mm dia., single-sided , parallel key to DIN 6885, mandatory with SQM56...	40 Nm	7	AGA58.7
14 mm dia., single-sided , parallel key to DIN 6885, mandatory with SQM56..., Packs of 10 pieces	40 Nm	7	AGA58.7(10)
12 mm square, single-sided	30 Nm	9	AGA58.9

Technical data

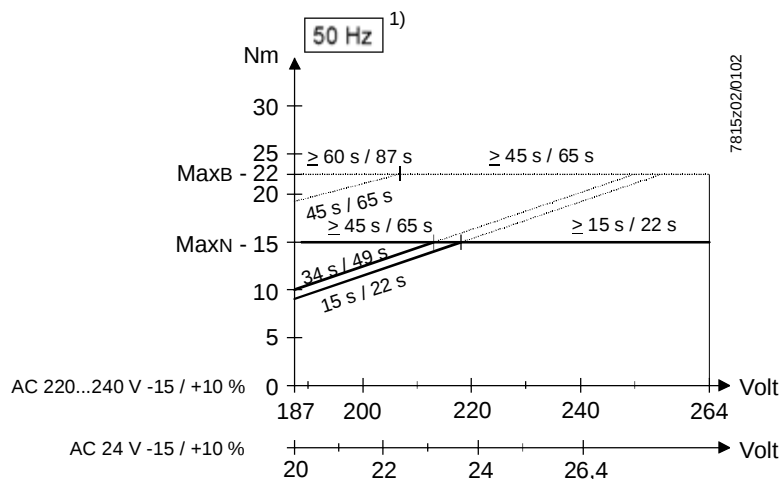
General data	Current	AC
	Operating voltage and frequency	refer to «Type summary»
	Type of drive motor	synchronous motor
	Power consumption	20 VA
	Angular rotation	adjustable between 0 and max. 160° (scale range)
	Mounting position	optional
	Degree of protection	IP 54 (provided knockout holes remain closed for mounting or are closed off, with adequate cable entries)
	Cable entry	4 x Pg13.5 (threaded) 2 x Pg13.5 (unthreaded)
	Direction of rotation	facing the gear train side: counterclockwise or clockwise (selectable), standard: counterclockwise
	Torque	refer to torque charts and drive shafts
	Holding torque	max. torque
	Running time	10...90 s (refer to «Type summary»)
	End and auxiliary switches	
	- Type	to DIN 41636
	- Breaking voltage	AC 24...250 V
	- Switching capacity	to CEE 24 / VDE 0630 7.5 (3) A, AC 250 V
	Number of end switches	2
	Number of auxiliary switches	max. 6
	Drive shaft	exchangeable
	Weight	approx. 3.3 kg
Environmental conditions	Storage	DIN EN 60 721-3-1
	Climatic conditions	class 1K2
	Mechanical conditions	class 1M2
	Temperature range without integrated AGA56...	-50...+60 °C
	Humidity	< 95 % r.h.
	Transport	DIN EN 60 721-3-2
	Climatic conditions	class 2K2
	Mechanical conditions	class 2M2
	Temperature range without integrated AGA56...	-50...+60 °C
	Humidity	< 95 % r.h.
	Operation	DIN EN 60 721-3-3
	Climatic conditions	class 3K3
	Mechanical conditions	class 3M3
	Temperature range without integrated AGA56...	-20...+60 °C
	Humidity	< 95 % r.h.



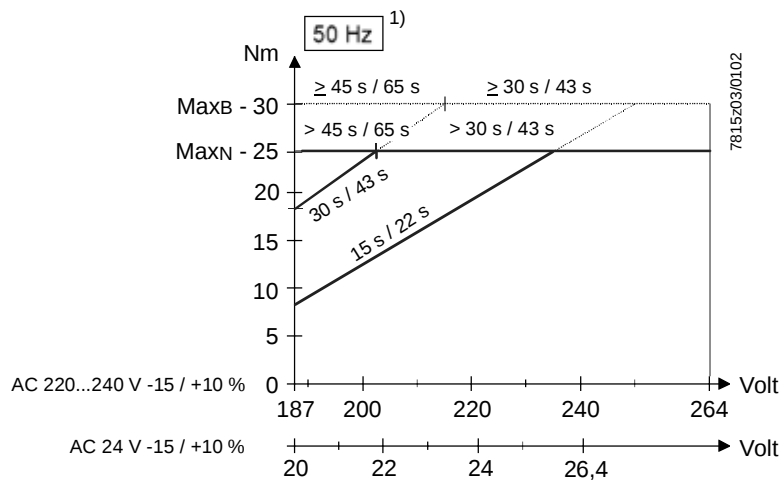
Condensation, formation of ice and ingress of water are not permitted!

Torques

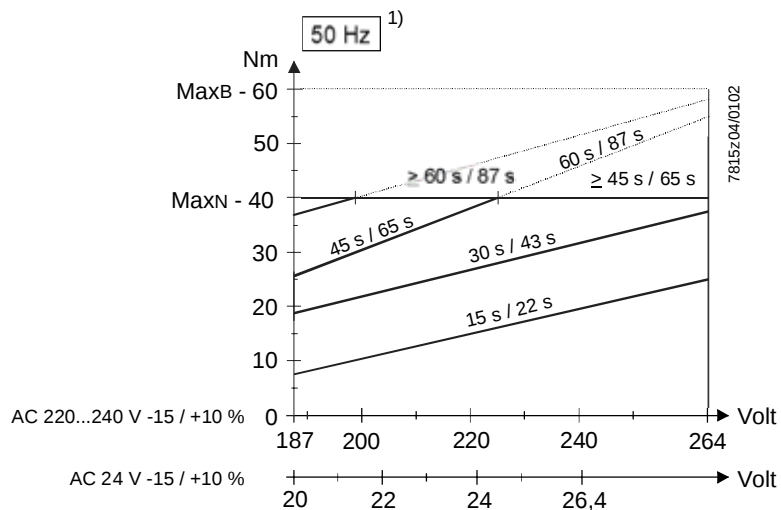
SQM50...



SQM53... / 54...



SQM56...



Legend

1) At 60 Hz frequency, running times are about 17 % shorter and torques are proportionally lower



Each drive side is capable of delivering the maximum torque, but the total torque of both sides must not exceed the maximum permissible torque.

With appropriate running time for 90° / 130°:

— Torque in continuous operation

----- Release or starting torque = short-time torque

MaxN Max. permissible torque in continuous operation for all running times

MaxB Max. permissible release or starting torque for all running times

Connection terminals

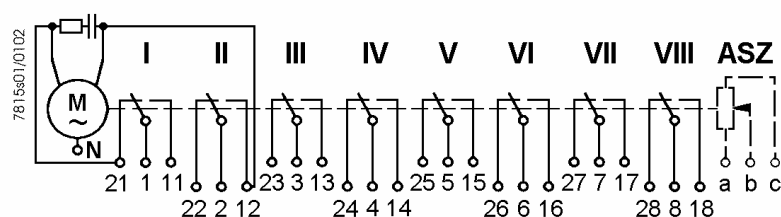
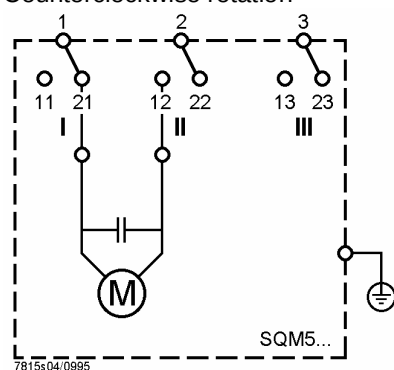


Diagram shows the maximum number of switches (2 end and 6 auxiliary switches). On versions with fewer than 6 auxiliary switches, the higher numbers are not used. For example, the actuator version with 2 end and 2 auxiliary switches does not use switches V, VI, VII and VIII.

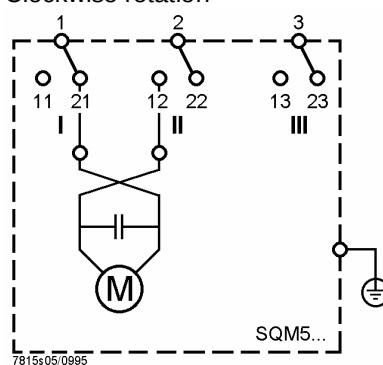
Direction of rotation

By exchanging the 2 motor connecting cables, the actuator's direction of rotation can be changed from counterclockwise to clockwise, or vice versa.

Counterclockwise rotation



Clockwise rotation



Note

When changing the direction of rotation from counterclockwise to clockwise, the cams must be readjusted.

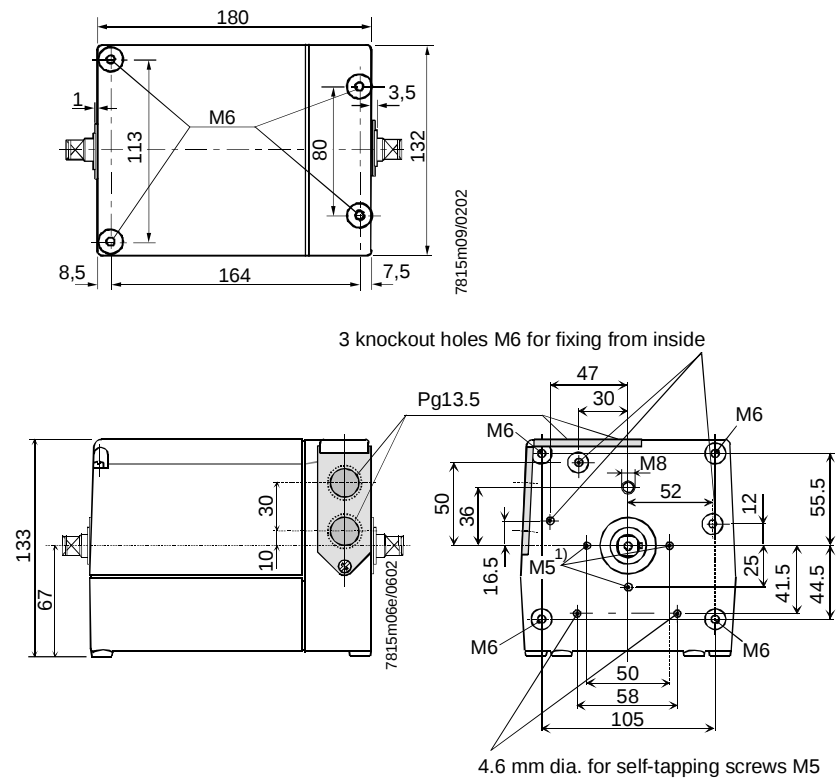
Clockwise rotation: Red scales on the cam shaft, double arrow on the cams.

Counterclockwise rotation: Black scales on the cam shaft, single arrow on the cams.

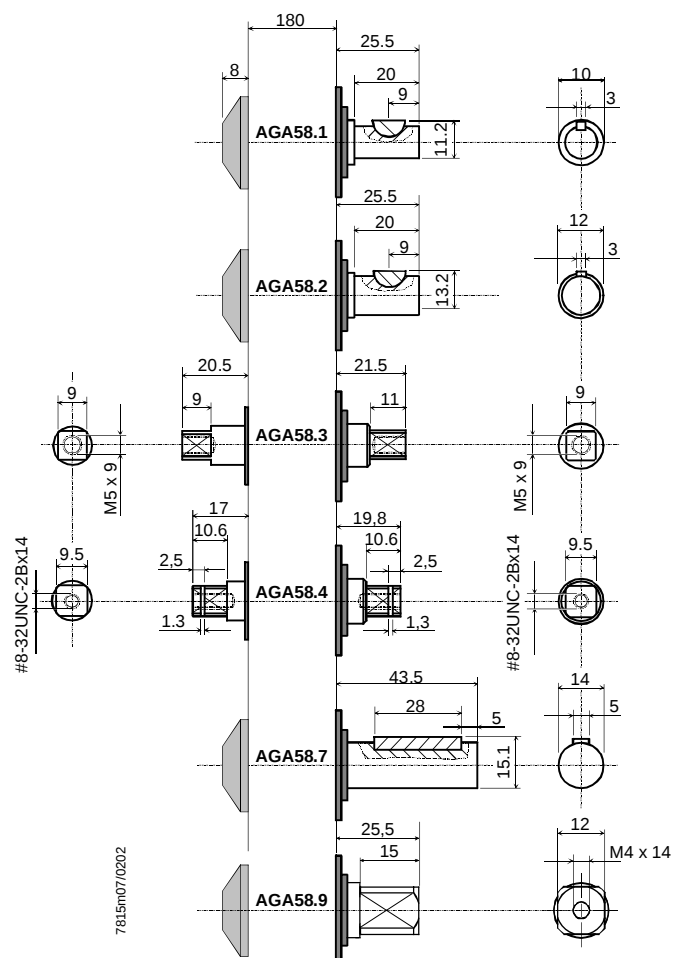
Dimensions

Dimensions in mm

SQM5...



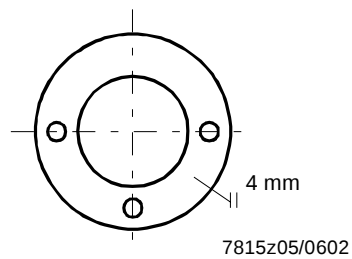
1) Identical with fixing points SQM1... / SQM2...



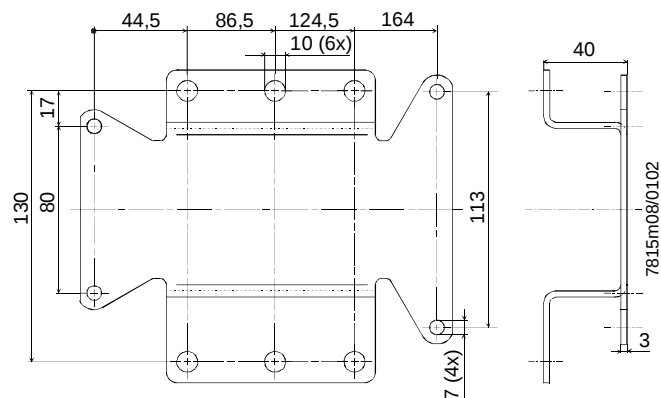
Dimensions (cont'd)

Dimensions in mm

AGA57.1



AGA57.2



AGA57.3

