

Actuator Frese OPTIMA

Application

Proportional or 3-position modulating control of Frese OPTIMA valves in heating, ventilating and air conditioning systems.

Features actuator DN15-DN32

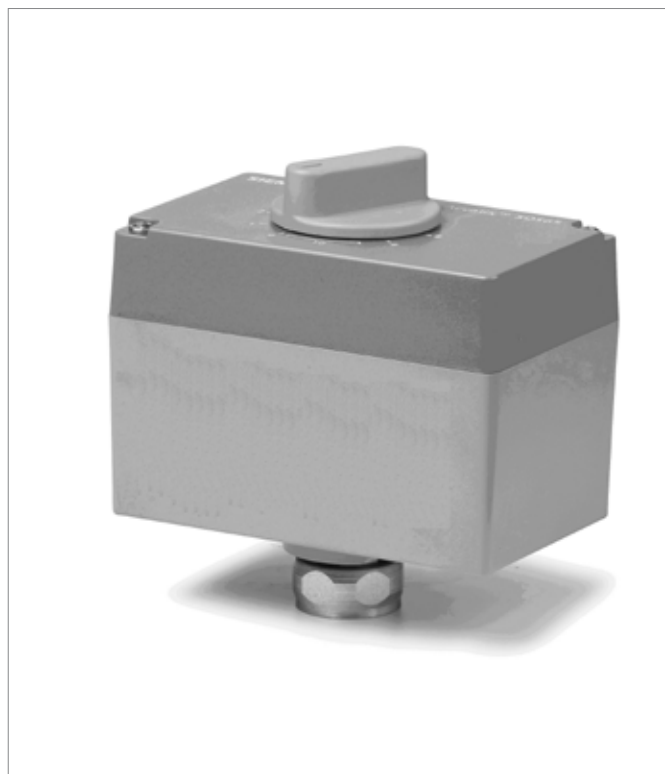
- Nominal stroke range 2.0...5.5 mm.
- 3-position or 0..10 V DC control signal.
- The stroke is adapted automatically to the valve.
- Direct assembly with union nut to the neck of the valve - no tools required.
- Manual operation by using a standard 3 mm hexagonal key.
- The actuator is short-circuit-proof and protected against polarity reversal.
- Plug-in cable for supply voltage and control signal.



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Features actuator DN40-DN50

- Nominal stroke 6.5 mm.
- 3-position or 0..10 V DC control signal
- Direct assembly with union nut to the neck of the valve.
- Manual operation by using adjusting handle.



Approval

- Conformity to: EMC directive
89/336/EEC, 93/68/EEC
- Low voltage directive
73/23/EEC



Actuator Frese OPTIMA

Technical data actuator DN15-DN32

Supply voltage:	See "Types and Operation data"
Frequency:	50/60 Hz
Manual operation:	3 mm Hexagonal key
Cable lenght:	1,5m
Protection class:	IP 40 acc. EN60529
Ambient conditions:	+1°C...50°C - Storage -5°C...50°C - Humidity 5...85% r.F.
Weight:	350 g
Nominal force:	>250N
Input impedance:	> 100 k Ohm (DC 0...10v)
Nominal stroke:	5,5mm

Technical data actuator DN40-DN50

Supply voltage:	See "Types and Operation data"
Frequency:	50 Hz
Manual operation:	Adjusting handle
Cable lenght:	No cable
Protection class:	IP 54 acc. EN60529
Ambient conditions:	-5°C...50°C - Storage -5°C...50°C - Humidity 5...95% r.F.
Weight:	600 g
Nominal force:	>400N
Input impedance:	> 100 k Ohm (DC 0...10v)
Nominal stroke:	6,5mm

Types and Operation Data

Types	Valve Dim.	Function	Running time (50 Hz)	Supply voltage	Power Consumption	Parallel operation No. of actuator
53-1045	DN15-DN32	DC 0..10 V	75s	AC/DC 24 V +/- 25%	2,5 VA	Max. 10
53-1046	DN15-DN32	3 - position	150s/5,5mm	AC 24 V +/- 20%	0,8 VA	Max. 24
53-1047	DN15-DN32	3 - position	150s/5,5mm	AC 230 V +/- 15%	6 VA	Max. 6
53-1052	DN40-DN50	DC 0..10 V	43s/6,5mm	AC 24 V +/- 20%	4,5 VA	Max. 10
53-1053	DN40-DN50	3 - position	43s/6,5mm	AC 24 V +/- 20%	2,0 VA	-
53-1054	DN40-DN50	3 - position	170s/6,5mm	AC 230 V +/- 15%	2,5 VA	-

Ordering

When ordering, please give quantity, designation and type code. **Example** - 1pc, 3-position valve actuator, 24V-150, 53-1046.

Actuator Frese OPTIMA DN15-DN32

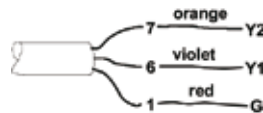
Connection cables

**SSD31FRS
(53-1047)**



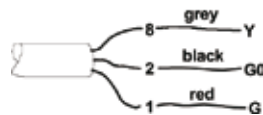
Control signal CLOSE (AC 230 V)
Control signal OPEN (AC 230 V)
Neutral

**SSD81FRS
(53-1046)**



Control signal CLOSE (AC 24 V)
Control signal OPEN (AC 24 V)
System potential AC 24 V

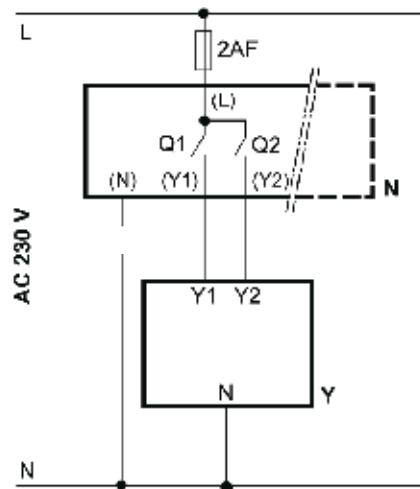
**SSD61FRS
(53-1045)**



Control signal DC 0 ... 10 V
System neutral (- at DC 24 V)
System potential AC 24 V (+ at DC 24 V)

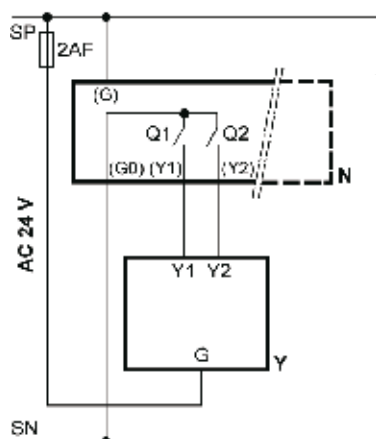
Connection diagrams

**SSD31FRS
(53-1047)**



N Controller
Y Actuator
L System potential AC 230V
N System neutral
Y1, Y2 Control signal OPEN, CLOSE
Q1, Q2 Controller contacts

**SSD81FRS
(53-1046)**



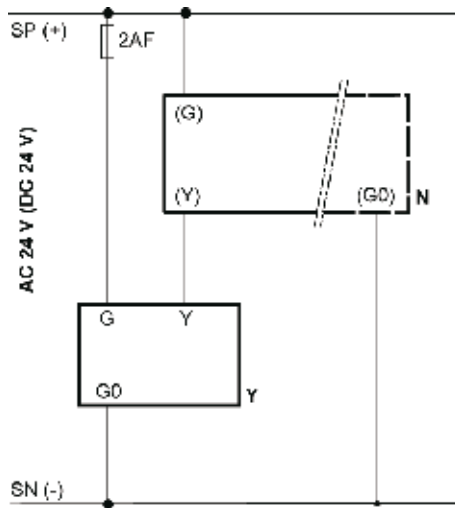
N Controller
Y Actuator
SP, G System potential AC 24V
SN, G0 System neutral
Y1, Y2 Control signal OPEN, CLOSE
Q1, Q2 Controller contacts

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Actuator Frese OPTIMA DN15-DN32

Connection diagrams

**SSD61FRS
(53-1045)**

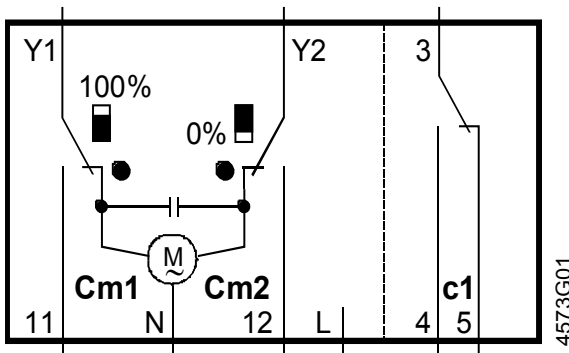


- N Controller
- Y Actuator
- SP, G System potential AC/DC 24V
- SN, G0 System neutral
- Y Control signal

Actuator Frese OPTIMA DN40-DN50

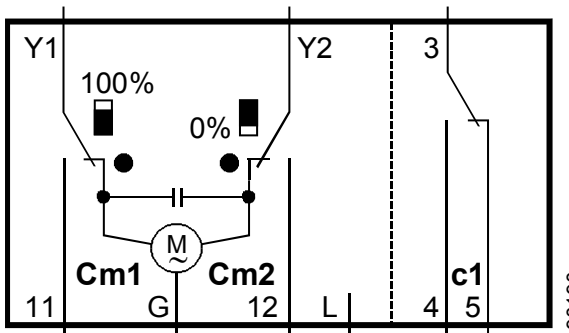
Internal diagrams

**SQD35.00FRS
(53-1054)**



- AC 230 V, 3-Position
- Cm1 End switch 100 % stroke
- Cm2 End switch 0 % stroke
- c1 Auxiliary switch ASC9.6 can be fitted
- L Potential free auxiliary terminal

**SQD85.03FRS
(53-1053)**



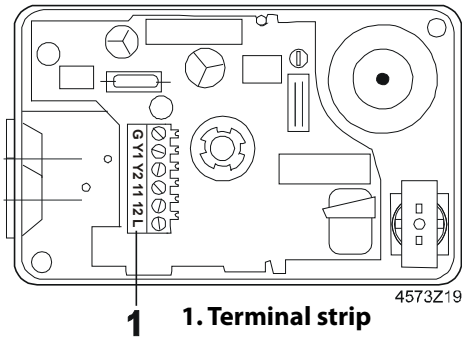
- AC 24 V, 3-Position
- Cm1 End switch 100 % stroke
- Cm2 End switch 0 % stroke
- c1 Auxiliary switch ASC9.6 can be fitted
- L Potential free auxiliary terminal

Actuator Frese OPTIMA DN40-DN50

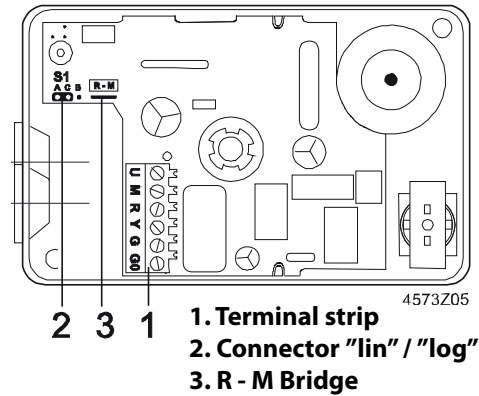
Function /mechanical design

The reversible synchronous motor is driven by a 3-position or a proportional DC 0...10 V, DC 2...10 V or 0...1000 Ω control signal. The stroke is generated via an antilocking gear train.

SQD35.00FRS (53-1054) & SQD85.03FRS (53-1053)



SQD65FRS (53-1052)



3-position control signal:

Voltage at Y1	Stem extends, valve opens
Voltage at Y2	Stem retracts, valve closes
No voltage at Y1 or Y2	Actuator hold the current position

DC 0/2...10 V or 0...1000 Ω control signal:

The valve opens / closes in proportion to the control signal at Y or R.
At DC 0 V or 0 Ω the valve is closed (A --> AB).
When power supply is removed, the actuator maintains its current position.

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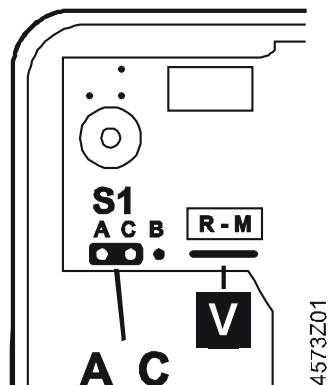
SQD65FRS (53-1052)

Selecting the flow characteristic-position control signal:

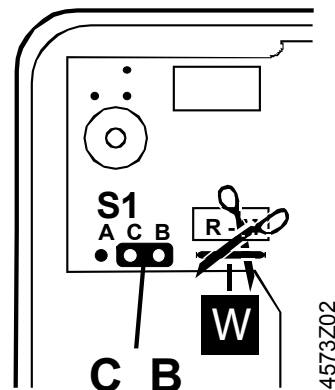
Position of S1

Connector S1 (under the cover, on the printed circuit board) can be repositioned to change the flow characteristic of valves from «equal percentage» to «linear»; in all cases the flow characteristic relates to the through-port of the valve.

S1 connected to A and C:
equal-percentage flow characteristic (factory setting)



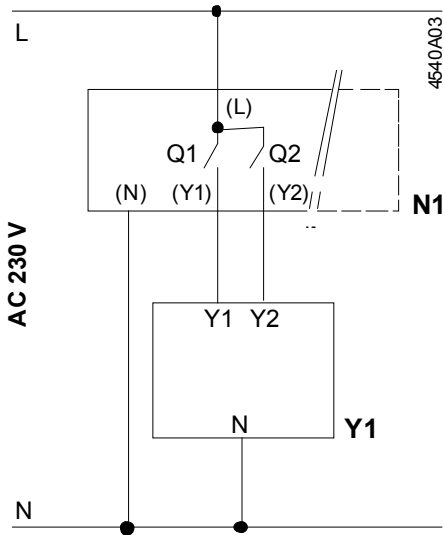
S1 connected to B and C: linear flow characteristic



Actuator Frese OPTIMA DN40-DN50

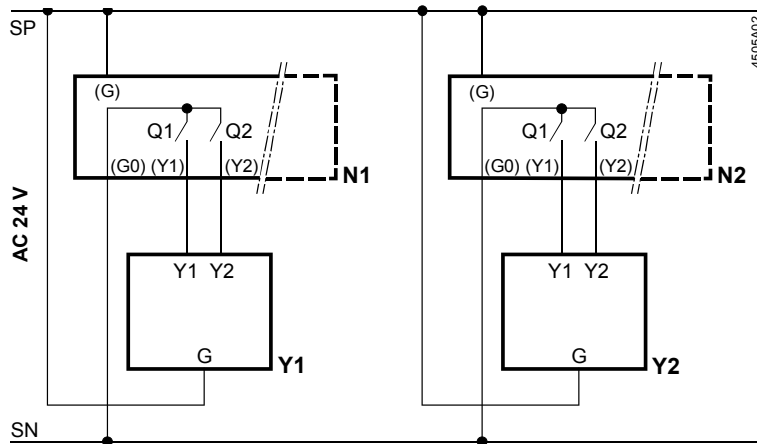
Connection diagrams

SQD35.00FRS (53-1054)



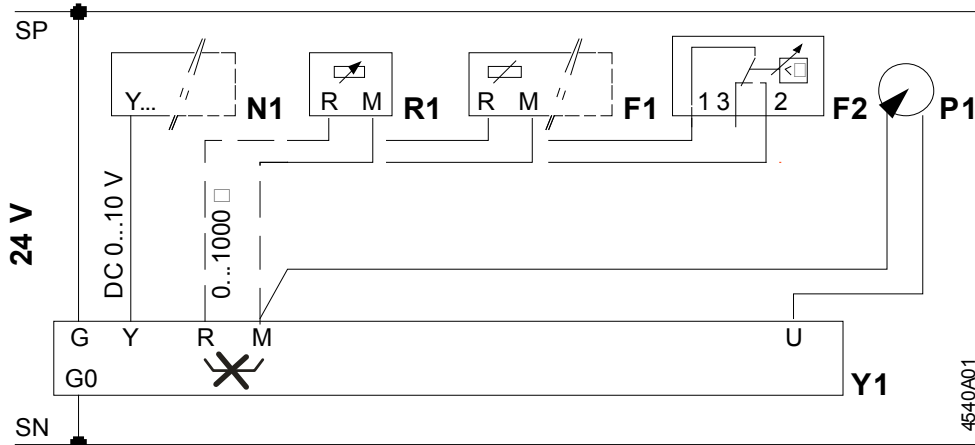
- N1 Controller
- Y1 Actuator SQD35.00FRS
- Q1, Q2 Controller contacts
- L System potential AC 230 V
- N System neutral

SQD85.03FRS (53-1053)



- N1, N2 Controller
- Y1, Y2 Actuator SQD85.03FRS
- Q1, Q2 Controller contacts
- SP System potential AC 24 V
- SN System neutral

SQD65FRS (53-1052)

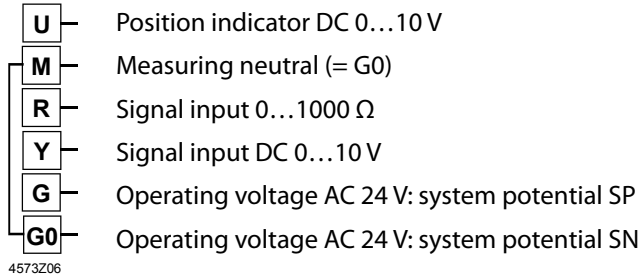


- N1 Controller
- Y1 Actuator SQD65FRS
- R1 Position indicator 0...1000 Ω
- F1 Frost protection 0...1000 Ω
- F2 Frost protection thermostat
- Terminals 1-3 Frost danger
- Terminals 1-2 Normal operation
- P1 Position transmitter DC 0...10V
- SP System potential AC 24 V
- SN System neutral

Actuator Frese OPTIMA

Connection diagrams

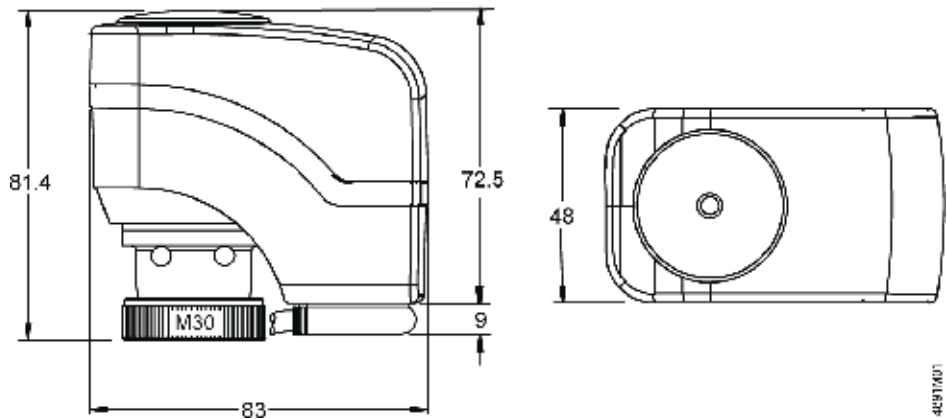
Connection terminals SQD65FRS (53-1052)



Dimensions

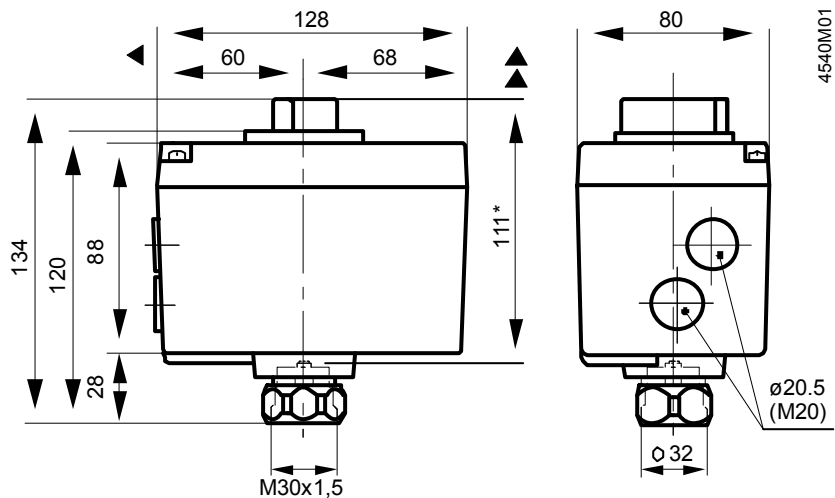
Actuator DN15-DN32

- SSD31FRS (53-1047)
- SSD81FRS (53-1046)
- SSD61FRS (53-1045)



Actuator DN40-DN50

- SQD35.00FRS (53-1054)
- SQD85.03FRS (53-1053)
- SQD65FRS (53-1052)



All dimensions in mm

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