APPLICATION AND USE

Electric actuators are suitable to drive VFS/VFSF/VFF valve body series in HVAC systems. Two action types are available:
- floating (3-point)
- modulating (see schedule input signal)

The assembly actuator/valve body is done directly and easily without any tool.
The actuator can be adapted automatically to the valve (proportional model).

Actuator is fitted with manual override by a hexagonal key to move the motor and so the stem.
Actuator is equipped with torque limit device, to power off when actuator reaches the end-strokes. The SE6M24 has an additional feedback signal output.
A LED indicates the current state of the actuator: adjustment, control, end stroke position, error condition.

Electric actuators for VFS/VFF_65/VFSF valve body series

TYPE	FORCE N	STROKE mm	POWER SUPPLY Vac 50/60 Hz	ACTION	POWER CONSUMPTION VA
SE6M24	600	16.5	24	modulating 0...10 Vdc 4...20 mA	6.0
SE6F24	600	16.5	24	2-, 3-point (floating)	4.0
SE6F24S	600	16.5	24	2-, 3-point (floating)	4.0
SE6F230	600	16.5	110…240	2-, 3-point (floating)	6.0
SE6F230S	600	16.5	110…240	2-, 3-point (floating)	6.0

Accessory:

ADV1	adapter for valves Industrietechnik series 2S e 3S
ADV2	adapter for valves Industrietechnik series 2S- e 3S-
ADV3	adapter for valves Controlli series VMB/VSB
ADV4	adapter for valves Neptronik series GS/GM
ADV5	adapter for valves SEC (Siebe/Invensys) series VB 7000

At the request adapters for valves of other brands.

TECHNICAL FEATURES

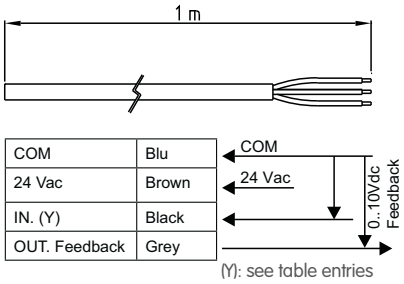
Power supply:
- SE6M24 24 Vac ± 10% 50/60 Hz
- SE6F24 24 Vac ± 10% 50/60 Hz
- SE6F230 110...240 Vac ± 10% 50/60 Hz
Auxiliary switches: 3(1) A 230 Vac
Running time: 70 sec.
Manual override: by 3 mm hexagonal key
Action: direct / reverse selectable by jumper
Working conditions: 0...50 °C
Storage temp.: -20...70 °C
Humidity range: 10..90 % r.h. (without condensing)
Connections: cable section 1 mm² length 1 m
Housing: transparent in polycarbonate
Base: PA6 V0
Bracket: PA6 30 GF V0
Max working temp.: -30/+140 °C (Bracket)
Traction breaking load: 1500kg/cm² (Bracket)
Protection class: IP54, class II (SE6F230), class III (SE6M24, SE6F24)
Dimensions: see drawing
Weight: 470 g

SE6M24:

INPUT SIGNAL (Y)	IMPEDANCE (R_{in})
0...10 Vdc	~ 65 kOhm
0...4 Vdc	~ 65 kOhm
6...10 Vdc	~ 65 kOhm
2...10 Vdc	~ 65 kOhm
4...20 mA	~ 500 Ohm

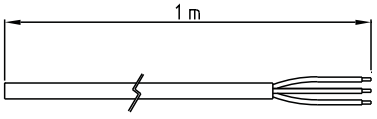
WIRING DIAGRAM

SE6M24



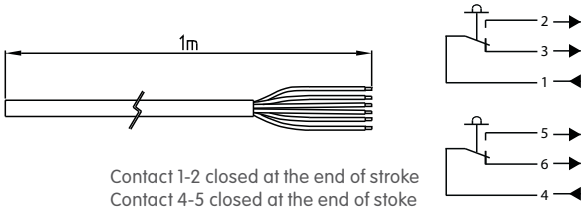
(Y): see table entries

SE6F24(S) - SE6F230(S)



COM.	Blue
DOWN	Black
UP	Brown

auxiliary switches for models SE6F24S - SE6F230S



Contact 1-2 closed at the end of stroke
Contact 4-5 closed at the end of stoke

STATUS INDICATION BY LEDS

GREEN slowly blinking: self-adjusting in upper position (SE6M24)
RED SLOWLY blinking: self-adjusting in bottom position (SE6M24).
GREEN FAST blinking: modulating to upper position.
RED FAST blinking: modulating to bottom position.
GREEN lighted: motor on upper end stroke or is moving toward upper end stroke (SE6M24).
RED lighted: motor on bottom end stroke or is moving toward bottom end stroke (SE6M24).

ORANGE lighted: error to move on stroke, the motor tries 3 times to unlock and then 3 times to self-adjust (SE6M24).
ORANGE blinking: permanent error after tries to do the stroke done (SE6M24).
RED and GREEN blinking: jumpers setting not correct (SE6M24)
All LEDS OFF: control position reached

Slow blinking: 2 flashing / second
Fast blinking: 8 flashing / second

DIRECT / REVERSE ACTION (SE6M24)

On direct action if signal is equal to 0 V, the shaft reaches the up position (way A - AB closed). By applying 10 V signal, the shaft reaches down position (way A - AB opened).
On reverse action, operating mode is reversed.
The servomotor is supplied from factory with direct action with 0..10 Vdc input signal.
If input signal is missing, the motor moves the stem upwards if jumper J4 is on "direct action" position, or downwards if jumper J4 is on "reverse action".

INPUT SIGNAL	J1	J2	J3	J5	J4
0...10 Vdc	▯	▮	▯	▯	
0...4 Vdc	▮	▯	▯	▯	
6...10 Vdc	▮	▮	▯	▯	
2...10 Vdc	▯	▯	▮	▯	
4...20 mA	▯	▯	▯	▮	
DIRECT ACTION					▯
REVERSE ACTION					▮

▯ Jumper unmounted
▮ Jumper mounted

Self-adaption stroke:

When the unit is powered on at the first time, it is necessary to do a cycle to adapt the motor to the real stroke. To do so the motor must be mounted on the valve and it must be powered on. To begin the cycle take away the cover, push the key (fig. 1) until the motor turns (red led flashing) then release it. On this phase the motor moves downwards in order the stem can couple automatically to the valve. When this phase has been completed the motor moves upwards to close the valve completely (green led flashing). The two end stops of the valve stroke have been then memorized and they will be used during regulation. If the motor is unmounted from the valve and then mounted again, the cycle for adapting the motor to the valve stroke must be repeated again.

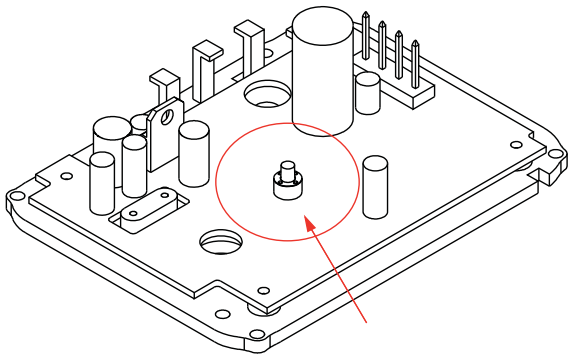


fig. 1

Mounting

Control that the clips for automatic coupling is inserted on the seat fig. 2 / fig. 4 and the motor shaft is on the upper position.
Put the motor on the valve and screw the nut present on the valve body fig. 3.
Power on the motor (see paragraph regarding self-adaptation stroke) to allow automatic coupling on the valve stem. To take away the motor from the valve put the shaft on lower position, extract the clips, unscrew the fixing nut and remove the motor vertically.

fig. 2

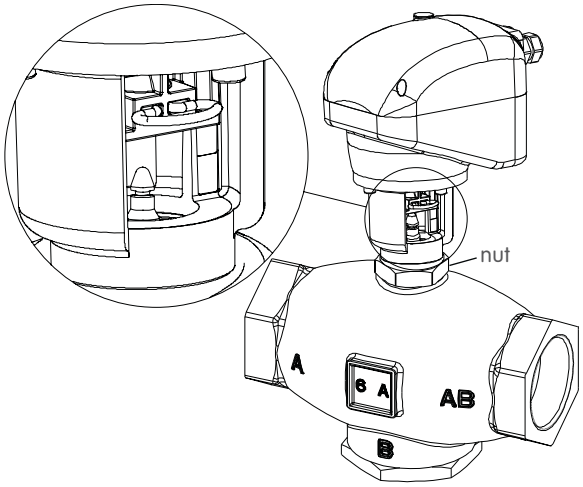


fig. 3

Microswitch setup:

Put the motor on lower position. Position the two cams on snap-on point of microswitches (cams must be perpendicular to micro-switches, fig. 5).
Put the motor on upper position. Position the cam 1 on the snap-on point of microswitch on top position (cam perpendicular to micro-switch on top position, fig. 6), take care to not change the position of cam 2.

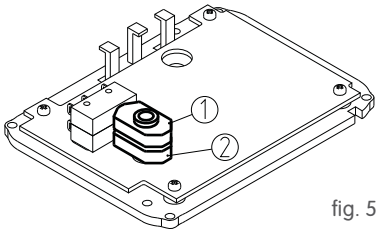


fig. 5

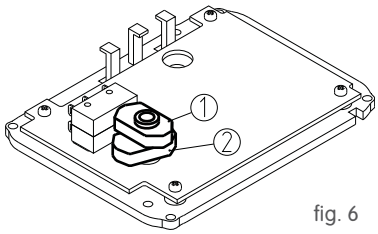


fig. 6

Note: microswitches are used only for end stroke detection. The microswitches can't be set on position different from end stroke.

Manual override:

In order to open or close the valve manually, it is necessary to remove the plug fig. 4, insert a 3 mm hexagonal key. Push the hexagonal key downwards and turn clockwise to extract the motor shaft and counterclockwise to retract it. Such operation must done when power supply is off!

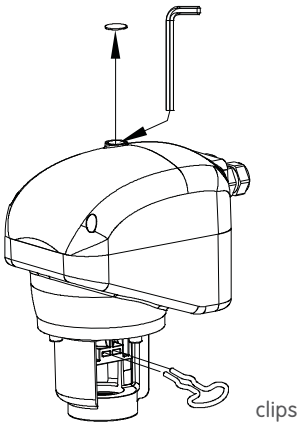


fig. 4

OVERALL DIMENSIONS (mm)