RedRun Valve Actuator On-Off, 3 Pos, 3 Pos-P, 3 Pos-U

Electrical, explosion proof linear actuator – from 500 N to 10.000 N
24...240 VAC/DC, 5-60 mm stroke
PTB-tested in acc. with ATEX 94/9/EC for zone 2, 22.

RedRun - 5.10
RedRun - 25.50
RedRun - 75.100
RedRun - ... - X
RedRun - ... - P
RedRun - ... - S
RedRun - ... - U
RedRun - ... - CTS

Subject to change!

Compact. Easy installation. Universal. Cost effective. Safe.

Type	Force	Supply	Motor running time	Control mode	Feedback	Wiring diagram
RedRun - 5.10	0,5 kN / 1,0 kN	24..240 VAC/DC	2 / 3 / 6 / 9 / 12 s/mm	On-Off, 3-Pos	-	SB 1.0
RedRun - 25.50	2,5 kN / 5,0 kN	24..240 VAC/DC	2 / 3 / 6 / 9 / 12 s/mm	On-Off, 3-Pos	-	SB 1.0
RedRun -75.100	7,5 kN / 10 kN	24..240 VAC/DC	4 / 6 / 9 / 12 / 15 s/mm	On-Off, 3-Pos	-	SB 1.0
RedRun - ... - X	Type as above but without possibillity to assemble external aux. switches (RedSwitch-R)					SB 1.0
RedRun - ... - P	Type as above but with addionally feedback potentiometer			On-Off, 3-Pos	Potentionmeter 1000 Ohm	SB 4.0
RedRun - ... - U	Type as above but with addional feedback 0..10V / 4..20 mA			On-Off, 3-Pos	0..10 V / 4..20 mA	SB 5.0
RedRun - ... - S	Type as above but with addionally 2 integrated potential free aux. switches (fix set points), max.24 V/1 A, 240 VAC/0,25 A					SB 3.5
RedRun - ... - CTS	Type as above but with amercoat painting, outside parts in stainless steel, cable glands nickel-plated					

Product views / Application


Side view


Back view with terminal box


Front view


Actuator mounted on valve


Compact body

Description size S

The new RedRun valve actuators are a revolution for safety, control valve and other motorized applications for HVAC systems, in chemical, pharmaceutical, industrial and Offshore-/Onshore plants, for use in Ex-areas zone 2 (gas) and zone 22 (dust).
Highest protection class (ATEX) and IP66 protection, small dimensions, only 7 kg weight, universal functions and technical data, an integrated heater guarantee safe operation even under difficult environmental conditions. High quality brushless motors guarantee long life.
All actuators are programmable and adjustable on site. Special tools or equipment are not required. 5 motor running times and 2 forces as - according to the actuator type - are selectable or adjustable on site. The integrated universal power supply is self adaptable to input voltages in the range of 24 to 240 VAC / DC.
The actuators are 100% overload protected and self locking.
The modular concept offers the possibility to mount adjustable end switches for signalization (except version **RedRun -...- X**).
RedRun -...- P actuators are additionally equipped with a feedback potentiometer. **RedRun -...- U** is a 3-Pos. actuator but additionally equipped with an analogue output 0..10 V / 4..20 mA.
The **RedRun -...-S** has integrated aux. switches (fix positions).

Highlights

- For all type of gas, mixtures, vapours and dust for use in zone 2 and 22
- Universal supply unit from 24 to 240 VAC/DC
- Selectable forces (0,5 - 1,0 kN) (2,5 - 5 kN) (7,5 - 10 kN), acc. to type
- Selectable motor running times (2-3-6-9-12 s/mm) resp. (4-6-9-12-15 s/mm) acc. to type
- On-Off, 3-Pos, 3-Pos-P with potentiometer, 3-Pos-U with 0..10 V / 4..20 mA feedback
- 0,5 - 1,0 - 2,5 - 5,0 - 7,5 - 10 kN actuator in only one housing (size S)
- 100 % overload protected, self locking
- Mechanical stroke limitation, 5…60 mm adjustable
- Adjustable feedback gear unit for strokes 10 / 20 / 30 / 60 mm
- integrated junction box
- Compact design and small dimension (L × W × H = 298 × 208 × 115 mm)
- Robust aluminium housing (optional marine painting „Amercoat“)
- IP66 protection
- Manual override included
- Only 7 kg weight
- Integral safety temperature sensor
- Status indication by LED

D.RR-01.03-S-en-3P
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Technical data	RedRun-5.10 (basic type)	RedRun-25.50 (basic type)	RedRun-75.100 (basic type)
Force (nominal)	0,5 / 1,0 kN selectable	2,5 / 5,0 kN selectable	7,5 / 10 kN selectable
Force (blockade) approx.	0,8 / 1,5 kN	4,0 / 7,5 kN	12 / 16 kN
Dimension of external force	0,4 / 0,8 kN	2,0 / 4,0 kN	6,0 / 8,0 kN
Supply voltage/Frequency	24...240 VAC/DC +/- 10 %, 50...60 Hz ± 20 %		
Power consumption	max. starting currents see table "EL" (in acc. with voltage, $I_{start} >> I_{rated}$), 2 A inrush current!		
Heater consumption	approx. 16 W, (motor is not running in this moment)		
Stoke	5…60 mm adjustable		
Motor running time	2 / 3 / 6 / 9 / 12 s/mm selectable	2 / 3 / 6 / 9 / 12 s/mm selectable	4 / 6 / 9 / 12 / 15 s/mm selectable
Motor	Brushless DC Motor	Brushless DC Motor	Brushless DC Motor
Control mode	On-Off and 3 Pos.		
Electrical connection	Junction box incl. terminals 0,14…4 mm²		
Cable gland	M20 × 1,5 II2GD approved, cable diameter Ø 6…13 mm		
Manual override	Change from auto to hand mode with sidewise (red) switch and turn with the allen key top side, max. 5 Nm		
Housing material	Aluminium die cast housing, painted (optional marine coating type **...-CTS**)		
Dimensions	L × W × H = 298 × 208 × 115 mm, for diagram see extra information „ME-R“		
Weight	ca. 7 kg Standard version without adaption		
Ambient temperature	-20…+ 40°C at T6 / -20…+ 50°C at T5		
Ambient temperature -30°C	-30…+ 40°C at T6 / -30…+ 50°C at T5, reduced force approx. 60 % of rated value e.g. 5 kN = 3 kN (max.) avoid icing!		
Storage temperature	-40…+ 70°C,		
Humidity	0…90 %rF non condensing		
Operation mode	S3/50 % ED = duty cycle (max. 300 operating cycles / h)		
Accuracy mechanically	< 1 mm stroke (hysteresis)		
Accuracy electrically	approx. 200 steps acc. to adjusted stroke		
Parameter at delivery	500 N, 6 s/mm	2,5 kN, 6 s/mm	7,5 kN, 9 s/mm
Delivery	Actuator with integrated junction box, allen key for manual override		
Wiring diagrams (SB)	**SB 1.0**	**SB 1.0**	**SB 1.0**

Deviate Data	RedRun-5.10-X	RedRun-25.50-X	RedRun-75.100-X
Actuator RedRun-...-X	as basic type, but without possibility to assemble exernal aux. switches		
Wiring diagrams (SB)	**SB 1.0**	**SB 1.0**	**SB 1.0**

Deviate Data	RedRun-5.10-S	RedRun-25.50-S	RedRun-75.100-S
Actuator RedRun-...-S	as basic type, but incl. two fix adjusted aux. switch switch points at 0 - 10 - 20 - 30 - 60 mm acc. to gear belt setting		
Max values aux. switches	24 V / 1 A 250 V / 0,25 A (min. 10 mA)		
Wiring diagrams (SB)	**SB 3.5 aux. switch setting acc. to stroke, note page 4**		

Deviate Data	RedRun-5.10-P	RedRun-25.50-P	RedRun-75.100-P
Actuator RedRun-...-P	as basic type, but incl. feedback potentiometer by gear belt adjustable for max. resolution at 10 - 20 - 30 - 60 mm		
Potentiometer	1 kOhm	1 kOhm	1 kOhm
Wiring diagrams (SB)	**SB 4.0 Feedback signal potentiometer acc. to stroke setting, note page 4**		

Deviate Data	RedRun-5.10-U	RedRun-25.50-U	RedRun-75.100-U
Actuator RedRun-...-U	as basic type, but incl. feedback signal U by gear belt, adjustable for max. resolution at 10 - 20 - 30 - 60 mm		
Feedback signal U	0..10 VDC, 4...20 mA acc. on wiring selectable on site, Uu 0…10 VDC @ 1.000…∞ Ω, Ui 4…20 mA @ 0…800 Ω		
Wiring diagrams (SB)	**SB 5.0 Feedback signal V / mA acc. to stroke setting, note page 4**		

Approvals

PTB-tested	PTB 09 ATEX 2009 in acc. with ATEX 94/9/EC	
Approval for gas	II3G Ex nC II T6	Zone 2
Approval for dust	II3D Ex tD A22 IP66 T80°C	Zone 22
CE-Mark	CE Nr. 0158	
EMC	Directive 2004/108/EC	
Low voltage	Directive 2006/95/EC	
Protaction class	Protection class I (grounded)	
IP-Protection	IP 66, in acc. with EN 60529	

Accessories or special solutions

..-CTS	marine coating (Amercoat), parts in stainless steel, cable gland nickel plated
RedSwitch-R	external auxilliary switch with 2 adjustable contacts, mounting on top of the RedRun-.. housing
RedBox-SW	Junction box for aux switches RedSwitch-R zone 2, 22
MKK-S	mounting bracket in VA for terminal boxes type RedBox-... direct on actuator
GMB-1	Rubber bellow
Adaptions	for fittings and manufactuer on request

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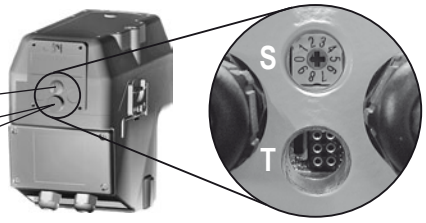
Electrical connection

All actuators are equipped with an universial supply unit working at a voltage from 24 to 240 VAC/DC. The supply unit is self adjustable to the connected voltage!
Device must be fuse protected max. 5 AT. Note current consumption acc. to running time and applied voltage. Do not open the junction box when circuit alive.

Parameter, Adjustment – Failure indication

Switch – Push button – Lamp for adjustment, behind the blancking plug



Parameter selection

Example:
RedRun-25.50

Requested parameter:
Force 5000 N
stroke/s 6 s/mm

Result:
switch position (S) 07

Type	Forces			Forces	
..Run -5.10 ▶	500 N	1.000 N			
..Run-25.50 ▶	2.500 N	5.000 N			
..Run-75.100 ▶				7.500 N	10.000 N
Running times	**Pos. of switch**		**Running times**	**Pos. of switch**	
2 s/mm ▶	00	05	4 s/mm	00	05
3 s/mm ▶	01	06	6 s/mm	01	06
6 s/mm ▶	02	07	9 s/mm	02	07
9 s/mm ▶	03	08	12 s/mm	03	08
12 s/mm ▶	04	09	15 s/mm	04	09

Function, adjustment and parameter

A) Self adjustment:
Push button T for min. 3 seconds. The actuator will drive into both end positions to be adjusted. LED indicates green blinking. The adjustment drive could be applied in any switch position (S).

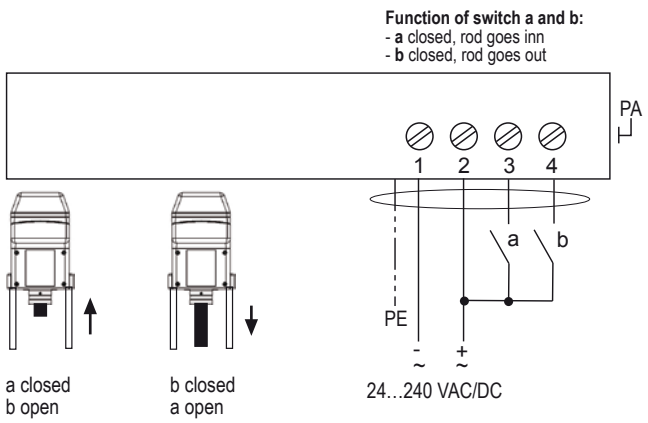
B) Selection of running time and force:
Put 10 position switch (S) into the correct/selected position in acc. to above table. The selected parameter will work at next operation of the actuator. Adjustment can be done even without supply voltage. If supply voltage is available turn switch only if actuator is not running.

C) Additional information for 3-pos operation:
a closed, b open = rod goes IN
b closed, a open = rod goes OUT
a and b closed = Motor doesn't work, No function
a and b opened = Motor doesn't work, No function

D) Force in blocking position:
The force in the end position could be much more than the nominal force.
Generally the valve is to check together with actuator and construed accordingly.

Wiring diagram RedRun- / RedRun-…-X

On-Off / 3 Pos. SB 1.0

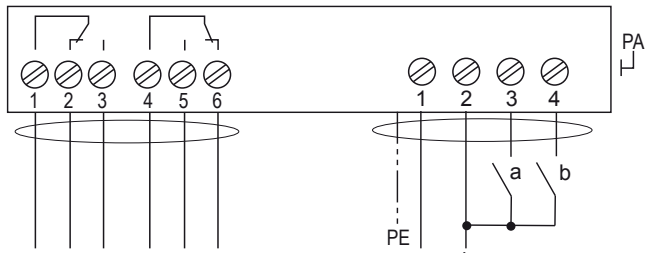


Wiring diagram RedRun-…-S

Wiring internal switches SB 3.5

Wiring internal potential free switches.
switchpoints acc. to gear belt adjustment
10/20/30/60 mm

Function of switch a and b:
- **a** closed, rod goes inn
- **b** closed, rod goes out



Integrated fix adjusted switches (change over contact)
max 24V/1A, 250V/0,25A potential free. Switch points
acc.to gear belt setting 0 - 10 - 20 - 30 - 60 mm
(see capter gear belt setting)

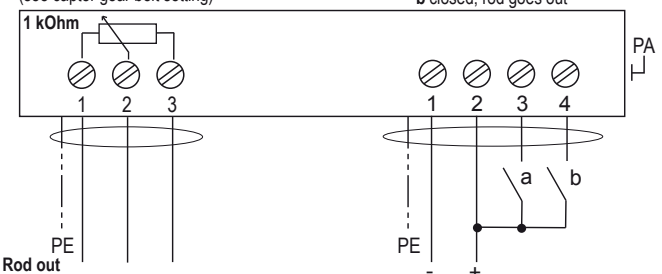
24…240 VAC/DC

Wiring diagram RedRun-…-P

Potentiometer SB 4.0

Note gear belt setting 0, 10, 20, 30, 60 mm
(see capter gear belt setting)

Function of switch a and b:
- **a** closed, rod goes inn
- **b** closed, rod goes out



Rod out
approx. 0 Ω (terminal 1-2) resp. 1 kΩ (terminal 2-3)
Rod in
approx. 1 kΩ (terminal 1-2) resp. 0 Ω (terminal 2-3)
Setting stroke to feedback signal see capter gear belt setting

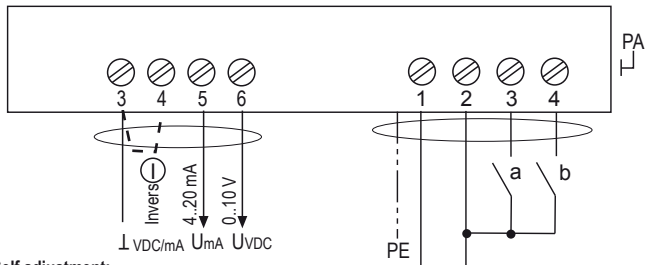
24…240 VAC/DC

Wiring diagram RedRun-…-U

Wiring feedback signal V / mA SB 5.0

Note gear belt setting 0 - 10 - 20 - 30 - 60 mm
(see capter gear belt setting)

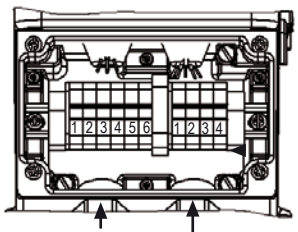
Function of switch a and b:
- **a** closed, rod goes inn
- **b** closed, rod goes out



Self adjustment:
To adjust the signal input/output to the stroke of the valve the button T must be pushed for minimum 3 sec.

24…240 VAC/DC

Junction Box



1. Switch off the power
2. Open cover junction box
3. Put cable through cable gland into junction box
4. Strip wires approx. 7 mm
5. Connect wires acc to wiring diagram and type
   Note : wrong wiring expires warranty and guarantee
6. Connect protection earth PE
7. Fix wires, screw terminals
8. Close cable entries tighten (IP66)
9. Close cover junction box regard gasget

int. switches (1-6)
resp. potentiometer (1-3)
resp. feedback V/mA (3-6)

Supply (1-2)
IN / OUT control (3-4)

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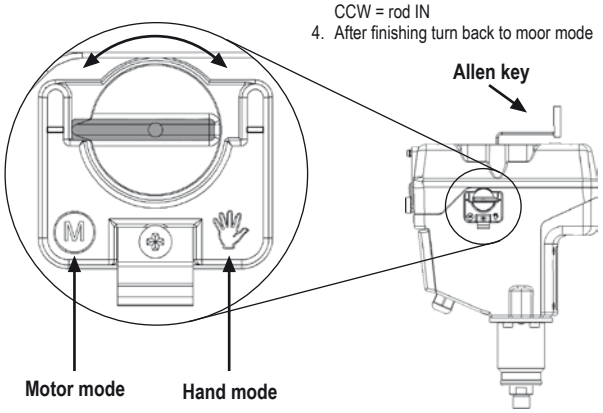
Mounting instructions and important information for operation and installation

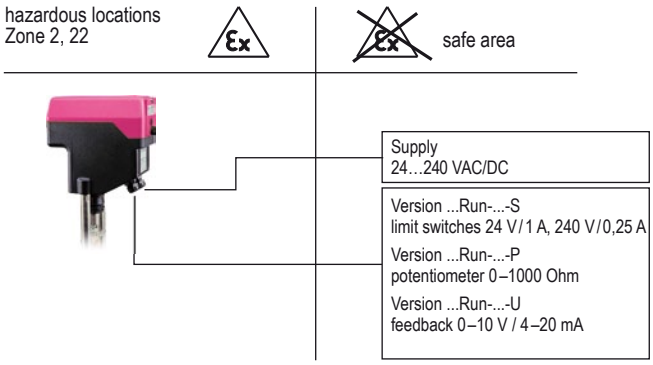
Manual Override

1. Actuator must be in stop position
2. Turn „red“ switch from motor to mand mode
3. Turn with allen key to needed stroke (top side)
   CW = rod OUT
   CCW = rod IN
4. After finishing turn back to moor mode



When operating the manual override in case of failure it is possible that the gear decouples. It can be seen that the selector switch is turned on motor, the actuator when controlled does not execute any stroke movement.
The blockade is resolved by simultaneously rotating the motor-hand switch and turning the Allen key in the hexagon shaft. The gear engages.

Safety notes Ex



- Do not open the cover when circuit alive
- The cable must be installed in a fixed position and protected against damage
- Connect potential earth
- Avoid temperature transfer from valve to actuator (note max. ambient temperature !)
- Ambient temperature -20…+40 °C at T6, -20…+ 50°C at T5
- Close all openings with min IP66
- Regard all regional standards, rules and regulations
- For outdoor installation a protective housing against rain, snow and sun should be applied to the actuator, as well as a constant supply at terminal 1 and 2 for the integral heater
- Use for wiring the integrated junction box
- Actuators are maintenance free

Accessory „RedSwitch-R-L“ (see separate data sheet)

adaptable external Ex-d aux. switch for mounting on spindle of ExRun-..

Accessory „RedSwitch-R“ (see separate data sheet)

adaptable external Ex-d aux. switch for mounting on top of the ExRun-.. housing

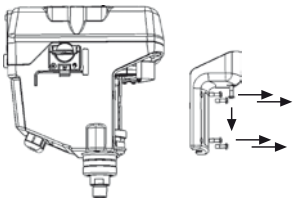
Extra information „EL-R“ (see additional data sheet)

extra technical information, versions of circuit diagrams and failure indication

Extra information „ME-R“ (see additional data sheet)

extra technical information, dimensions, installation instruction and illustration

1. Demounting cover for stroke adjustment / limitation

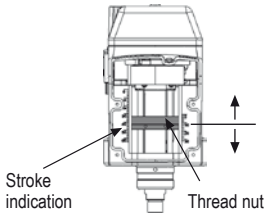


Switch off power.

5 × open screw before remove cover.

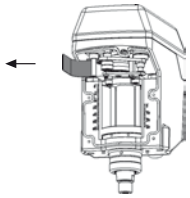
Note cover gasget must be fit in the groove after remounting.

2. Adjust stroke



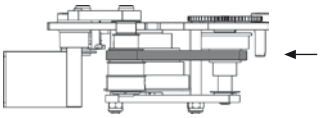
Stroke can be adjusted by thread nut from min 5 mm to 60 mm.

3. Open cover bracket feedback gear



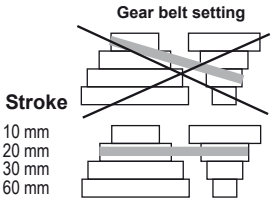
If open cover bracket gear belt is removed from tensions after this choose the right setting acc. to stroke by hand – not use any tools.
Due to repeatedly move of the red bar the setting of the gear belt gear can be changed. The position is corrected by closing the cover and starting a re-adjustment drive.

4. Gear belt adjustment for internal switches resp. potentiometer



If open cover bracket gear belt is removed from tension after this choose the rigth setting acc. to stroke by hand – not not use any tools.

Internal switches acc to. gear belt setting adjust the switch points lower / higher limit.

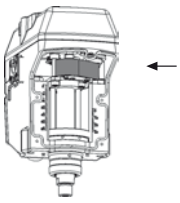


setting	switch points at	
10 mm	0-1 mm	10-11 mm
20 mm	0-1 mm	19-20 mm
30 mm	0-1 mm	28-30 mm
60 mm	0-1 mm	55-60 mm

Note: there is no possibility to adjust interim values only with RedSwitch-R (accessory).

Potentiometer
adjust the feedback signal (0-1000 Ohm) to stroke

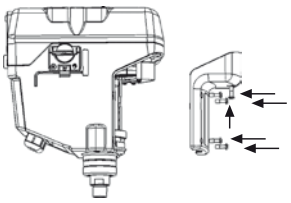
5. Close cover bracket for feedback gear setting



Note right position of gear belt.

Close bracket thereby the gear belt is automatically tensioned.

6. Remounting cover



5 × fix screws tighten.

Note cover gasget must be fit in the groove after remounting.

Switch on power.

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