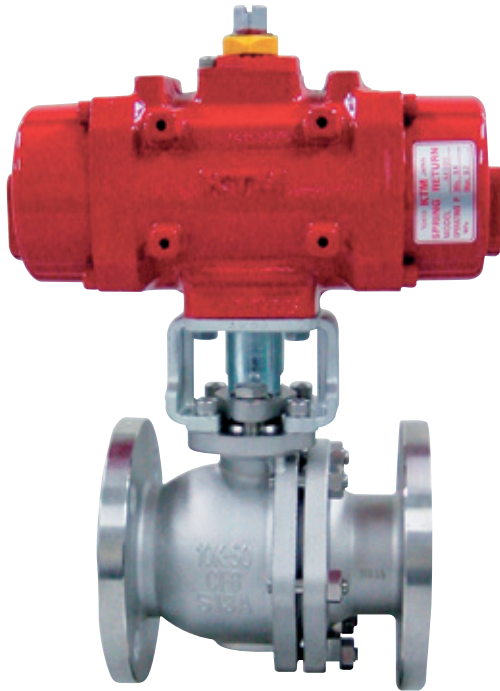


## KTM PNEUMATIC ACTUATORS

### AK SERIES (FOR SMALL AND MIDDLE SIZED VALVES)

Compact and light-weight actuator, equipped with a guide rod for smooth operation and extended durability



#### FEATURES

- Double acting and single acting type are of the same shape and dimension
- Double rack and pinion gear construction produces a smooth uniform stroke throughout the whole range
- Guide rod eliminates side loading of the piston for smooth actuation and greater durability
- Double rack design allows for a larger cylinder bore and shorter piston stroke, resulting in a more compact unit and high torque
- ISO 5211 mounting pattern to provide the greatest flexibility for valve adaptation
- Air supply port (piping seat) and stem top conform to NAMUR standards for simple and direct mounting of accessories
- Interchangeable spring return sets according to each operating pressure/torque:
 

|                    |      |                |
|--------------------|------|----------------|
| Standard:          | AK-S | 0.4 to 0.7 MPa |
| Low pressure type: | AK-L | 0.3 to 0.7 MPa |
| High torque type:  | AK-H | 0.5 to 0.7 MPa |

#### GENERAL APPLICATION

- Suitable for actuation of several types of quarter-turn valves
- Available for using at limited space because of its lightweight compact design
- Adequate for small to middle size valves

#### TECHNICAL DATA

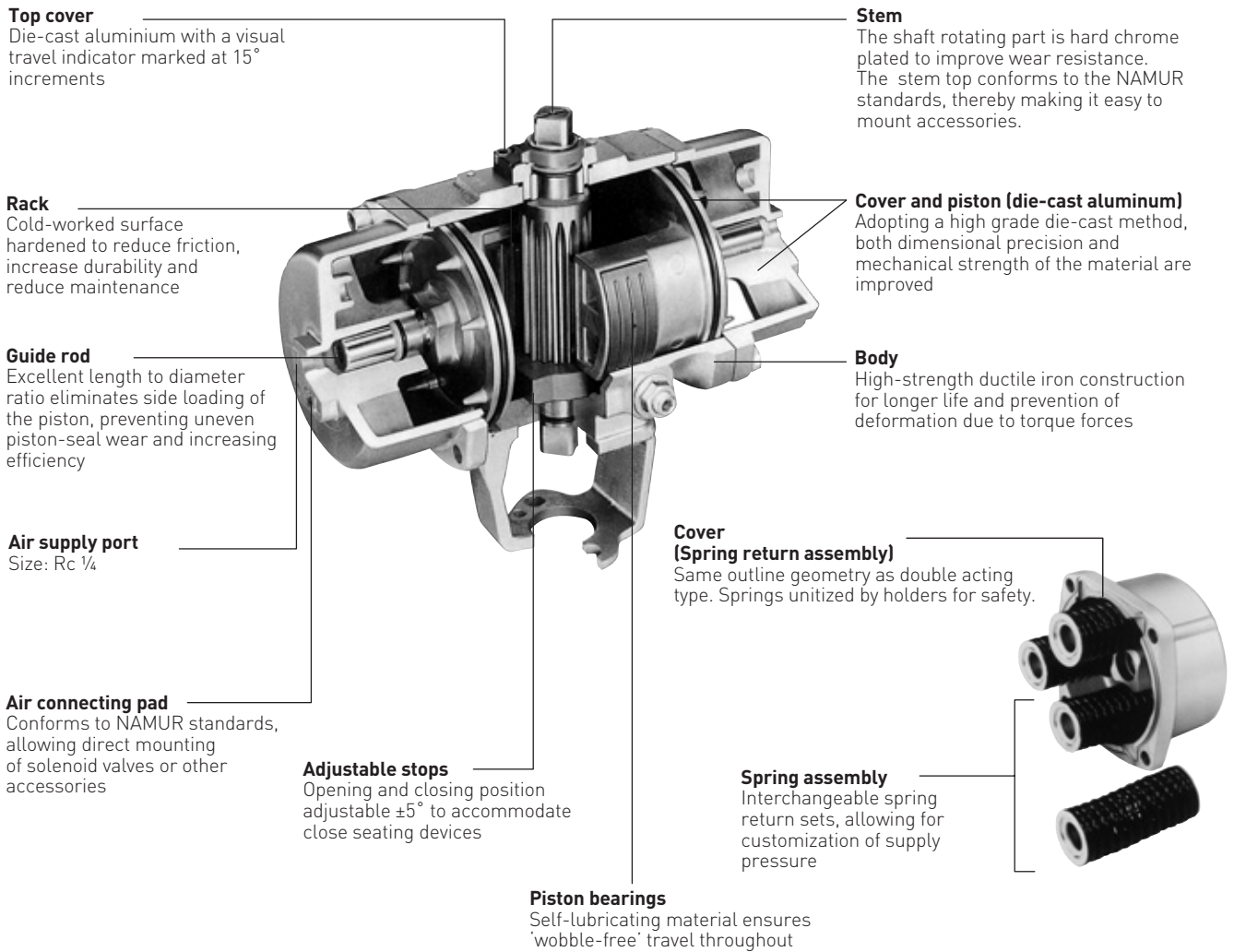
|                  |  |
|------------------|--|
| Actuator model   |  |
| Double acting:   | AK05*, 07, 09, 12, 15                  |
| Spring return**: | AK07S, 09S, 12S, 15S                   |
| Supply pressure  |  |
| Double acting:   | 0.3 to 0.7 MPa                         |
| Spring return**: | 0.4 to 0.7 MPa                         |
| Temperature:     | -20°C to 80°C<br>(ambient temperature) |
| Output torque    |  |
| Double acting:   | 23.5 to 270 Nm                         |
| Spring return**: | 14.7 to 162 Nm                         |

\* Model AK05 is not available as spring return

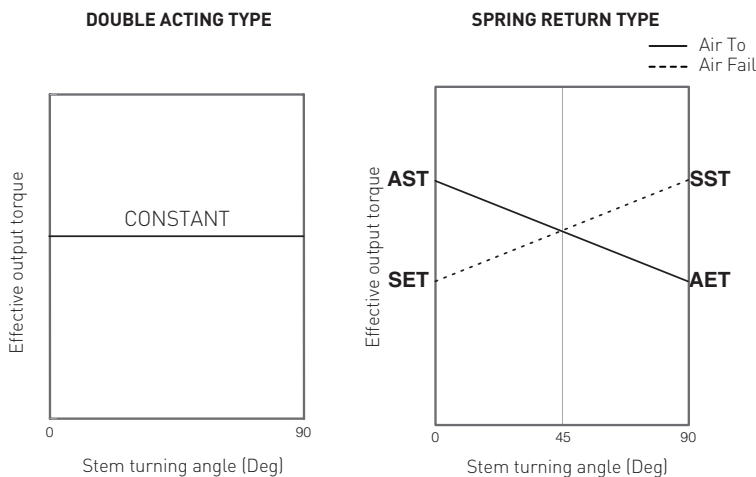
\*\* Available also for low pressure type (L) and high torque type (H). For more details please consult us.

# KTM PNEUMATIC ACTUATORS

## AK SERIES (FOR SMALL AND MIDDLE SIZED VALVES)



### OUTPUT TORQUE TABLE



|      | Double acting |       | Spring return |         |
|------|---------------|-------|---------------|---------|
|      | Nm            |       | Nm            |         |
|      |               |       | AET/SET       | AST/SST |
| AK05 | 23.5          | -     | -             | -       |
| AK07 | 37.3          | AK07S | 14.7          | 22      |
| AK09 | 68.7          | AK09S | 28.0          | 42      |
| AK12 | 141.0         | AK12S | 57.0          | 85      |
| AK15 | 270.0         | AK15S | 108.0         | 162     |

**NOTE**  
The above table shows output torque at the standard supply pressure of 0.4 MPa

- AET:** Air End Torque
- SET:** Spring End Torque
- AST:** Air Start Torque
- SST:** Spring Start Torque

# KTM PNEUMATIC ACTUATORS

## AK SERIES (FOR SMALL AND MIDDLE SIZED VALVES)

### Air consumption $V_D$ , $V_S$

The air consumption  $V_D$  and  $V_S$  show the volume of air consumed in a certain time period. For the same size cylinder, air consumption increases in direct proportion to the operating time. The consumption is determined by the formula as shown below. The total air consumption is equivalent to the sum obtained for the total units.

Air consumption of double acting cylinder ( $N_c$ ):

$$V_D = (A+B) \{(P+0.1)/0.1\} n$$

Air consumption of spring return cylinder ( $N_c$ ):

$$V_S = B \{(P+0.1)/0.1\} n$$

### [Remarks]

$V_D$ : Air consumption of double acting cylinder ( $N_c$ )

$V_S$ : Air consumption of spring return cylinder ( $N_c$ )

A, B: Cylinder capacity ( $\ell$ )

P: Supply pressure (MPa)

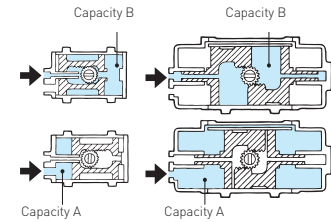
n: Operating cycles in a time period

(One cycle means one reciprocating action)

### CYLINDER CAPACITY ( $\ell$ )

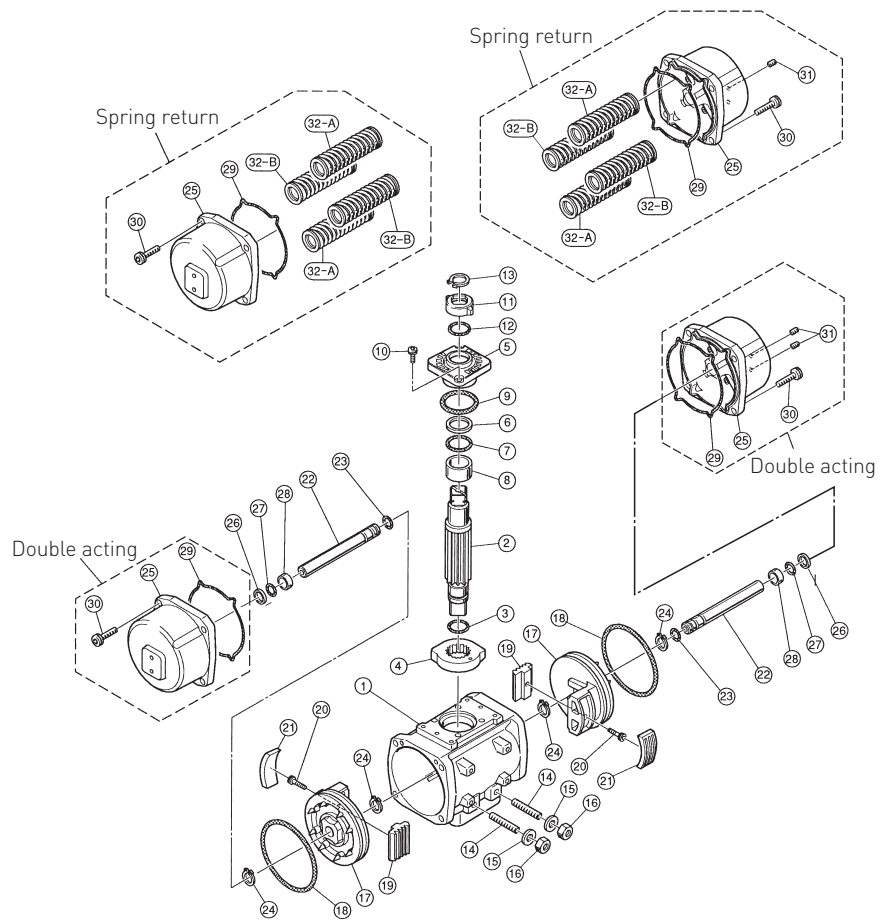
| Model | A    | B    | A + B |
|-------|------|------|-------|
| AK05  | 0.14 | 0.34 | 0.48  |
| AK07  | 0.45 | 0.29 | 0.74  |
| AK09  | 0.88 | 0.52 | 1.40  |
| AK12  | 1.70 | 1.05 | 2.75  |
| AK15  | 3.30 | 2.30 | 5.60  |

For spring return type please refer to value B



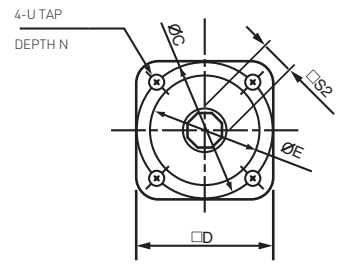
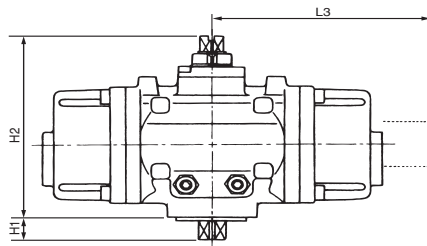
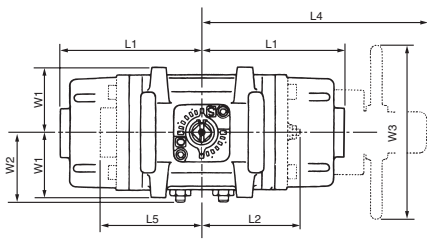
### PARTS LIST

| No. | Parts name     |
|-----|----------------|
| 1   | Body           |
| 2   | Stem           |
| 3   | O-ring         |
| 4   | Stopper        |
| 5   | Top cover      |
| 6   | Back-up ring   |
| 7   | O-ring         |
| 8   | Stem bearing   |
| 9   | O-ring         |
| 10  | Cap screw      |
| 11  | Indicator      |
| 12  | O-ring         |
| 13  | Snap ring      |
| 14  | Stopper bolt   |
| 15  | Seal washer    |
| 16  | Nut            |
| 17  | Piston         |
| 18  | O-ring         |
| 19  | Rack           |
| 20  | Cap screw      |
| 21  | Piston bearing |
| 22  | Guide rod      |
| 23  | O-ring         |
| 24  | Snap ring      |
| 25  | Cover          |
| 26  | Back-up ring   |
| 27  | O-ring         |
| 28  | Rod bearing    |
| 29  | O-ring         |
| 30  | Cap screw      |
| 31  | Plug           |
| 32A | Spring unit A  |
| 32B | Spring unit B  |



# KTM PNEUMATIC ACTUATORS

## AK SERIES (FOR SMALL AND MIDDLE SIZED VALVES)



Bottom works

- L2, L5: For AK05
- L3: For lift-limiting device
- L4, W3: For manual override (spring return only)

### DIMENSIONS (mm)

| Model    | H1 | H2  | W1 | W2 | W3  | L1    | L2   | L3    | L4    | L5   | D  | ØC  | ØE | S2 | U   | N  | ISO 5211 | Weight (kg) |        |
|----------|----|-----|----|----|-----|-------|------|-------|-------|------|----|-----|----|----|-----|----|----------|-------------|--------|
| AK05     | 18 | 142 | 50 | -  | -   | -     | 80.5 | -     | -     | 84.5 | 50 | 50  | 35 | 14 | M6  | 9  | F05      | 3.4         | -      |
| AK07 (S) | 18 | 142 | 50 | 49 | 120 | 115.5 | -    | 150.5 | 182.5 | -    | 50 | 50  | 35 | 14 | M6  | 9  | F05      | 4.2         | (4.7)  |
| AK09 (S) | 21 | 165 | 60 | 60 | 160 | 131.5 | -    | 168.5 | 205.5 | -    | 70 | 70  | 55 | 17 | M8  | 12 | F07      | 6.4         | (7.4)  |
| AK12 (S) | 29 | 202 | 75 | 77 | 200 | 157.0 | -    | 197.0 | 245.0 | -    | 96 | 102 | 70 | 24 | M10 | 15 | F10      | 11.9        | (13.9) |
| AK15 (S) | 29 | 231 | 90 | 94 | 300 | 195.0 | -    | 238.0 | 305.0 | -    | 96 | 102 | 70 | 24 | M10 | 15 | F10      | 19.0        | (23.0) |

### NOTES

1. Data in parenthesis ( ) apply to spring return type.
2. Available for spring return in low pressure type (L) and high pressure type (H). For more details please consult us.

### SELECTION GUIDE

| Example:                                    | AK   | 07 | L | A | HW |
|---|--|----|---|---|----|
| <b>Actuator type</b>                        |  |    |   |   |    |
| <b>AK</b>                                   |  |    |   |   |    |
| <b>Actuator size</b>                        |  |    |   |   |    |
| <b>05*</b>                                  |  |    |   |   |    |
| <b>07</b>                                   |  |    |   |   |    |
| <b>09</b>                                   |  |    |   |   |    |
| <b>12</b>                                   |  |    |   |   |    |
| <b>15</b>                                   |  |    |   |   |    |
| *Model 05 is not available as spring return |  |    |   |   |    |
| <b>Operation type</b>                       | <b>Description (Supply pressure)</b>   |    |   |   |    |
| <b>Blank</b>                                | Double acting type (0.3 to 0.7 MPa)  |    |   |   |    |
| <b>S</b>                                    | Spring return type – Standard (0.4 to 0.7 MPa)   |    |   |   |    |
| <b>L</b>                                    | Spring return type – Low pressure type (0.3 to 0.7 MPa)                                |    |   |   |    |
| <b>H</b>                                    | Spring return type – High torque type (0.5 to 0.7 MPa)                                 |    |   |   |    |
| <b>Specials (Option)</b>                    | <b>Description</b>   |    |   |   |    |
| <b>Blank</b>                                | No specials  |    |   |   |    |
| <b>A</b>                                    | Direct-acting spring return<br>(Counter-clockwise rotation under supply pressure loss) |    |   |   |    |
| <b>B</b>                                    | Stainless steel external bolts and nuts  |    |   |   |    |
| <b>K</b>                                    | For high temperature (0°C to 120°C)  |    |   |   |    |
| <b>T</b>                                    | For low temperature (-45°C to 60°C)  |    |   |   |    |
| <b>N</b>                                    | Air connection port; NPT   |    |   |   |    |
| <b>Accessories (Option)</b>                 | <b>Description</b>   |    |   |   |    |
| <b>Blank</b>                                | Without any accessories  |    |   |   |    |
| <b>L</b>                                    | With lift-limiting unit  |    |   |   |    |
| <b>HW</b>                                   | For spring return type with manual override handle                                     |    |   |   |    |

### OPTIONS

- Direct-acting spring return
- Stainless steel external bolts and nuts
- For control valves
- High temperature service (0°C to 120°C)
- Low temperature service (-45°C to 60°C)
- Air connection port; NPT
- Lift-limiting unit
- Manual override (for spring return type)
- Limit switch / proximity switch mounting
- Solenoid valve mounting
- Positioner mounting
- Partial stroke test