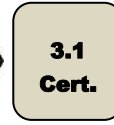


# 702-703 VALVE WITH AP-RE PNEUMATIC ACTUATOR

## FEATURES

The 702+AP-RE ball valve is designed for the automatic opening / closing of pipes with non-loaded industrial fluids, up to a pressure of 100 bar, and up to 40 bar for the flanged 703s. The 3-part tie-bolt or embedded pin construction with double-sealing, antistatic device and fire safety device enables it to be used in the oil and gas industries. It is a full-bore, fire safe, EC- and ATEX-certified valve. The ISO 5211 mounting pad allows the actuator to be easily assembled. The pneumatic motorisation is available in double and spring-return with numerous options.



## AVAILABLE MODELS

**702:** carbon steel body.

**703:** stainless steel body.

1/4" to 2" diameters.

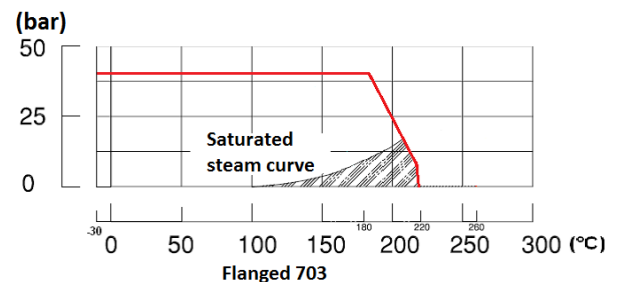
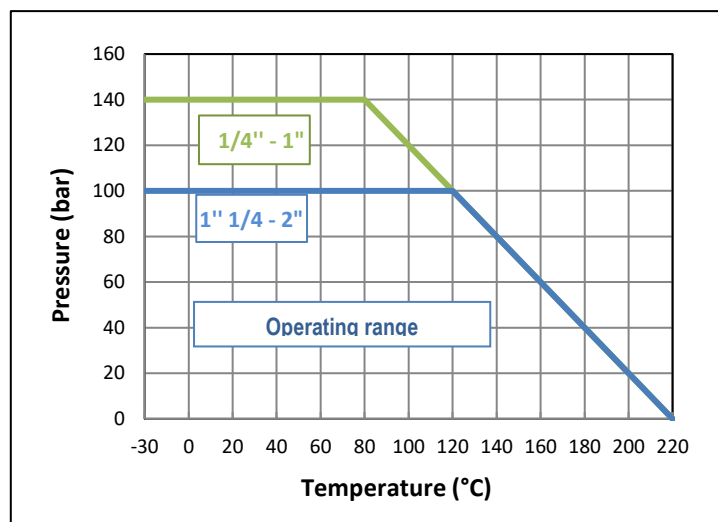
**Connections:** G threaded, and NPT, SW and BW to be welded.

**Flanged 703:** DN15 to DN50, R.F. PN40 flanges

Double and spring-return actuators.

## LIMITS OF USE

|                              |                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Fluid pressure: PS</b>    | <u>1/4" ' to 1"</u> : 140 bar (20°C)<br><u>1" 1/4 to 2"</u> : 100 bar<br>DN15 to DN50: 40 bar |
| <b>Fluid temperature: WT</b> | <u>Steel</u> : -20°C / +218°C<br><u>Stainless steel</u> : -30°C / +218°C                      |
| <b>Ambient temperature</b>   | -20°C / +80°C                                                                                 |
| <b>Motor compressed air</b>  | mini 4 bar / maxi 10 bar                                                                      |



Information given as an indication only, and subject to possible modifications

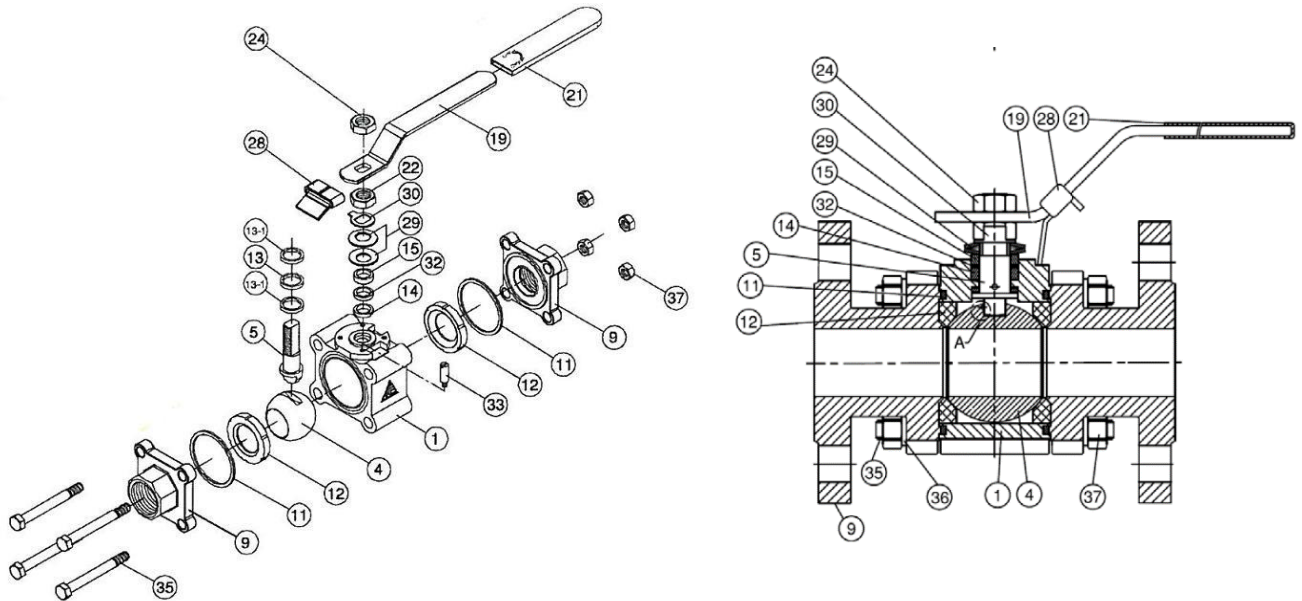
|  |                                                                                                                                                                                                                                                                                  |       |                 |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------|
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|  |                                                                                                                                                                                                                                                                                  | Ref.  | FT702+AP-RE ENG |
|  |                                                                                                                                                                                                                                                                                  | Rev.  | 01              |
|  |                                                                                                                                                                                                                                                                                  | Date  | 10/2023         |

# 702-703 VALVE WITH AP-RE PNEUMATIC ACTUATOR

## DIRECTIVES AND MANUFACTURING STANDARDS

| OBJECT                                  | Standard                       | ON       | OBJECT                           | Standard     |
|-----------------------------------------|--------------------------------|----------|----------------------------------|--------------|
| Pressure Equipment Directive 2014/68/EC | 1/4" to 1": not subject        |          | Final test                       | API 598      |
|                                         | 1"1/4 to 2': category III      | TÜV 0035 | Material certificate             | NKS 10204    |
| Design                                  | ANSI B16.34                    |          | Fire safe                        | API 607      |
| Size                                    | EN 12516-1                     |          | Connection Motorisation          | ISO 5211:    |
| Steel grades                            | EN 1503-2                      |          | Actuator pilot connection        | NAMUR        |
| G Connection                            | ISO 228-1                      |          | NPT connection                   | ANSI B1.20   |
| ATEX Directive                          | II 2G/D Tx zones 1,2,21 and 22 |          | Switch box connection            | VDI/VDE 3845 |
|                                         | EN 13463-1                     |          | SIL 3 level (the actuator alone) | NKS 61508    |

## CONSTRUCTION



| No.  | Name          | Steel                    | Stainless steel | No. | Name              | Steel | Stainless steel          |
|------|---------------|--------------------------|-----------------|-----|-------------------|-------|--------------------------|
| 1    | Body          | ASTM A216 WCB            | ASTM A351 CF8M  | 21  | Handle sheath     |       | PVC                      |
| 4    | Ball          | ASTM A351 CF8M           |                 | 22  | CG nut            |       | 304 SS                   |
| 5    | Stem          | A182 F 316 SS            |                 | 24  | Grip nut          |       | 304 SS                   |
| 9    | Ends          | ASTM A216 WCB            | ASTM A351 CF8M  | 28  | Padlocking        |       | 304 SS                   |
| 11   | Body gasket   | Graphite                 |                 | 29  | Belleville spring |       | 301 SS                   |
| 12   | Seat          | Loaded PTFE 15% graphoil |                 | 30  | Lock washer       |       | 304 SS                   |
| 13   | Ring          | Graphite                 |                 | 32  | CG gasket         |       | Loaded PTFE 15% graphoil |
| 13.1 | Ring          | Loaded PTFE 15% graphoil |                 | 33  | Pointer           |       | 304 SS                   |
| 14   | Packing gland | Graphite                 |                 | 35  | Tie-bolt or pin   |       | 304 SS                   |
| 15   | Spacer        | 304 SS                   |                 | 37  | Tie-bolt nut      |       | 304 SS                   |
| 19   | Handle        | 304 SS                   |                 |     |                   |       |                          |

Information given as an indication only, and subject to possible modifications

|                                                                                     |                                                                                                                                                                                                                                             |       |                 |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------|
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|                                                                                     |                                                                                                                                                                                                                                             | Ref.  | FT702+AP-RE ENG |
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|                                                                                     |                                                                                                                                                                                                                                             | Date  | 10/2023         |

|                                                                                     |                                                                                                                                                                                                                                                                                  |       |                 |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------|
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|                                                                                     |                                                                                                                                                                                                                                                                                  | Ref.  | FT702+AP-RE ENG |
|                                                                                     |                                                                                                                                                                                                                                                                                  | Rev.  | 01              |
|                                                                                     |                                                                                                                                                                                                                                                                                  | Date  | 10/2023         |

# 702-703 VALVE WITH AP-RE PNEUMATIC ACTUATOR

## AP-RE PNEUMATIC MOTORISATION

The ALPHAIR motorisation proposed as standard comprises:

- rack and pinion actuator of anodised aluminium.
- a safety coefficient of 1.3 minimum compared to the nominal torque of the valve.
- air non-lubricated dry motor.
- an upstream / downstream pressure difference  $\Delta P=10$  bar max.

The actuator mount is a yoke + stainless steel driver according to EN 15081.

## ACTUATOR DESIGN FOR 6 BAR MOTOR AIR

| DN     | Double-effect | V (litres) | Time (s)* | Single-effect | V (litres) | Time (s)* |
|--------|---------------|------------|-----------|---------------|------------|-----------|
| 1/4"   | RE 51         | 0.23       | 1         | RES 51/6      | 0.23       | 1         |
| 3/8"   | RE 51         | 0.23       | 1         | RES 51/6      | 0.23       | 1         |
| 1/2"   | RE 51         | 0.23       | 1         | RES 64/6      | 0.45       | 1         |
| 3/4"   | RE 51         | 0.23       | 1         | RES 64/6      | 0.45       | 1         |
| 1"     | RE 51         | 0.23       | 1         | RES 76/6      | 0.61       | 1         |
| 1" 1/4 | RE 64         | 0.45       | 1         | RES 76/6      | 0.61       | 1         |
| 1" 1/2 | RE 64         | 0.45       | 1         | RES 86/6      | 0.98       | 1         |
| 2"     | RE 76         | 0.61       | 1         | RES 101/6     | 1.80       | 2         |

\*indicative time of the no-load actuator for opening or closing.

## MOTORISATION OPTIONS

There are many options, so please contact our sales service for more information on these:

|    |                                                                                                               |
|----|---------------------------------------------------------------------------------------------------------------|
| 1  | actuators dimensioned for a compressed air pressure of 3 bar                                                  |
| 2  | actuator dimensioned for an upstream / downstream pressure difference $\Delta P$ greater than 10 bar          |
| 3  | actuator with special coatings, stainless steel actuator                                                      |
| 4  | Actuator for very low ( $-60^{\circ}\text{C}$ ) or very high ( $+150^{\circ}\text{C}$ ) ambient temperatures. |
| 5  | Automatic safety valve with a reinforced safety coefficient and closing time $< 1\text{s}$ ,                  |
| 6  | thermal dispersion yoke for high temperature fluids                                                           |
| 7  | 100mm high steel height adjustment for installing heat-insulation                                             |
| 8  | special version for ATEX zones                                                                                |
| 9  | manual override with declutchable gear box                                                                    |
| 10 | compressed air filter regulator                                                                               |
| 11 | All types of piloting solenoid valves                                                                         |
| 12 | all types of switch boxes                                                                                     |
| 13 | all types of positioner                                                                                       |
| 14 | quick exhaust                                                                                                 |
| 15 | flow-rate limiters - exhaust brakes                                                                           |
| 16 | air lock                                                                                                      |

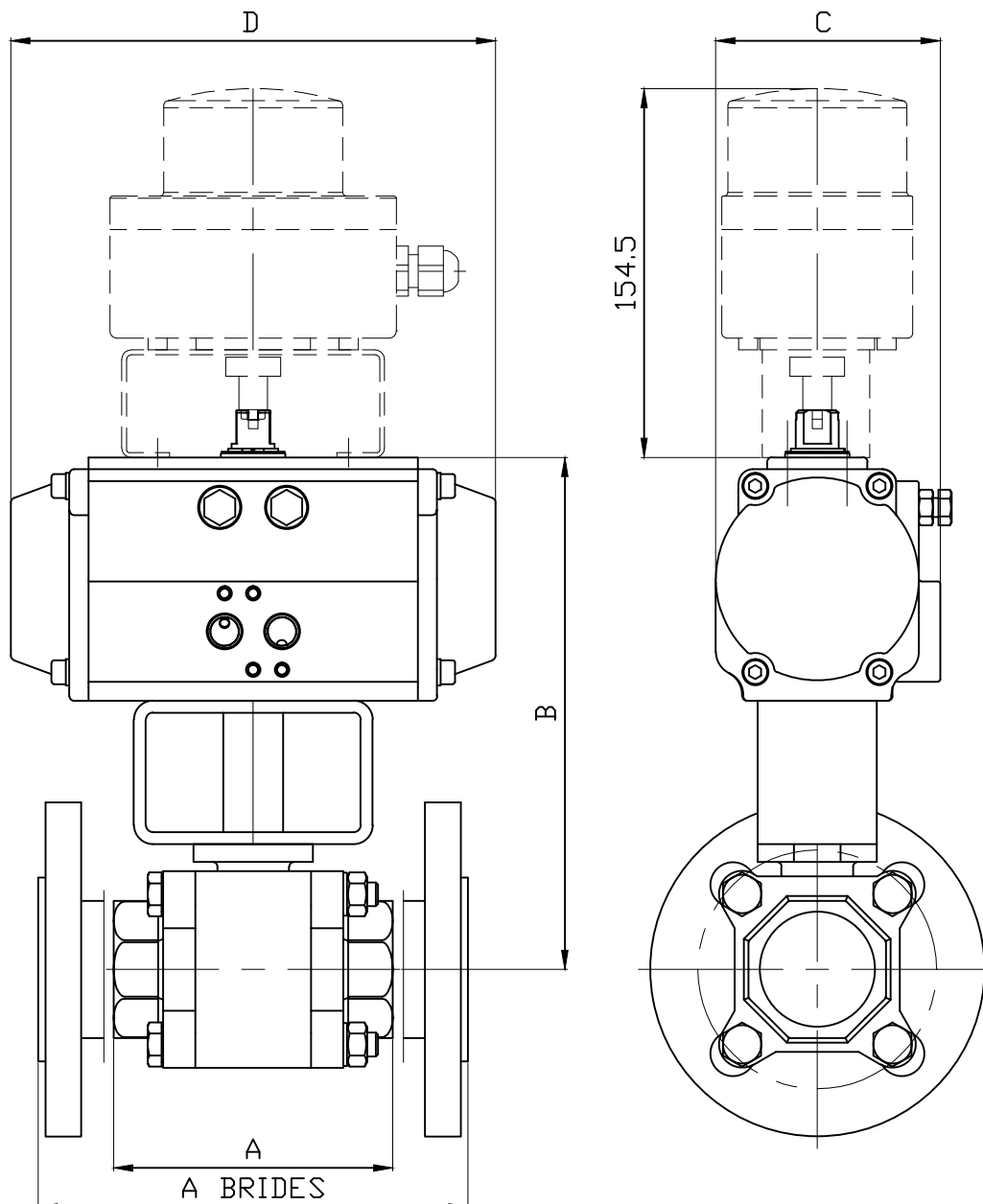


## INSTALLATION IN AN ATEX ZONE

For 702-703+AP-RE automatic valves to be installed in ATEX 1, 2, 21 or 22 zones, this has to be specified when ordering. Our services will check of the assembly, the installation of an earthing braid, and will issue an assembly certificate. Our authorised technicians carry out these operations in the workshop. Please contact us. The special assembly instructions for valves must also be followed.

Information given as an indication only, and subject to possible modifications

|                                                                                     |                                                                                                                                                                                                                                                                                  |       |                 |
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|                                                                                     |                                                                                                                                                                                                                                                                                  | Rev.  | 01              |
|                                                                                     |                                                                                                                                                                                                                                                                                  | Date  | 10/2023         |



| DN        | 1/4" - 3/8" |       | 1/2" |       | 3/4" |       | 1"    |       | 1 1/4" |       | 1 1/2" |       | 2"    |        |
|-----------|-------------|-------|------|-------|------|-------|-------|-------|--------|-------|--------|-------|-------|--------|
| ALPHAIR   | RES1        | RES51 | RES1 | RES64 | RES1 | RES64 | RES1  | RES76 | RE64   | RES76 | RE64   | RES86 | RE76  | RES101 |
| A         | 65          |       | 72   |       | 86   |       | 105   |       | 111    |       | 127    |       | 145   |        |
| A Brides  | /           |       | 130  |       | 150  |       | 160   |       | 180    |       | 200    |       | 230   |        |
| B         | 158.8       |       | 158  | 175   | 162  | 179   | 165.2 | 198.2 | 186    | 202   | 191.6  | 217.6 | 233.3 | 258.3  |
| C         | 75          |       | 75   | 86    | 75   | 86    | 75    | 94    | 75     | 94    | 86     | 104   | 94    | 120    |
| D         | 138         |       | 138  | 155   | 138  | 155   | 138   | 203   | 155    | 203   | 155    | 239   | 203   | 261    |
| KG        | 2.37        | 2.47  | 2.49 | 3.22  | 3    | 3.73  | 3.64  | 5.78  | 4.9    | 6.52  | 6.14   | 9.14  | 10.53 | 14.3   |
| KG Brides | /           |       | 3.86 | 4.98  | 4.96 | 5.68  | 6.16  | 8.3   | 8.69   | 10.37 | 10.36  | 13.36 | 16.42 | 20.4   |

Informations données à titre indicatif et sous réserve de modifications éventuelles

|                                                                                                                                            |                  |                    |                                |                   |      |      |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------|--------------------------------|-------------------|------|------|
| Ech: /                                                                                                                                     | Date :12/07/2019 | Dessiné par : F.G. | Tolérances générales : +/- 0.2 | Modifications     | Date | REV. |
| ROBINET A TOURNANT SPHERIQUE 702-703/BALL VALVE<br>702-703 + ACTIONNEUR ALPHAIR RE/PNEUMATIC<br>ACTUATOR ALPHAIR RE + BFC/LIMIT SWITCH BOX |                  |                    |                                | Matière :         |      |      |
|                                                                                                                                            |                  |                    |                                | Poids <Kg> :      |      |      |
|                                                                                                                                            |                  |                    |                                | Traitement : SANS |      |      |
|  45, Rue du Ruisseau<br>38297 SAINT QUENTIN FALLAVIER   |                  |                    |                                | Plan n° Ens 1364  |      |      |



# RE SERIES

**PNEUMATIC ACTUATORS  
WITH EXTERNAL ADJUSTMENT**

**ROTATION 90°**



English edition



**Alphaair**



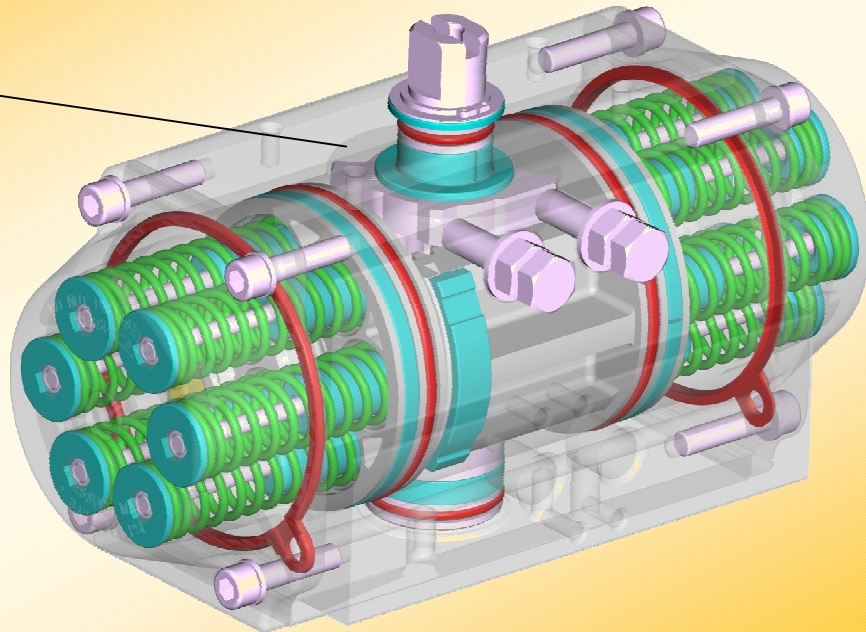
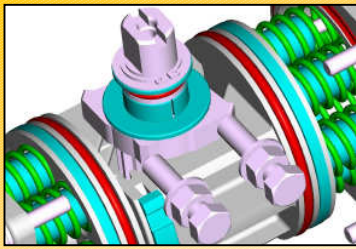
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**2017**

# ALPHAIR PNEUMATIC ACTUATORS

## EXTERNAL ADJUSTMENT

### New "RE" SERIES



The new series of ALPHAIR Pneumatic Actuators with special "External Adjustment" system meets every quality and precision requirement.

The new "External Adjustment" system guarantees maximum precision on rotation adjusting, for normal and heavy conditions, in any application field.

Suitable for every requirement, ALPHAIR Pneumatic Actuators with special "External Adjustment" system are carefully designed for maximum torque rating and maximum lifetime.

More compact, heavy and reliable, ALPHAIR Pneumatic Actuators with special "External Adjustment" system can be easily assembled on every kind of valve.

#### STANDARD VERSION FEATURES

- **EN AW 6063 extruded aluminium Body**, inside surface finishing Ra= 0,4-0,6. 25 µ Hard Anodizing.
- **EN AB 46100 die-cast aluminium alloy Pistons**, 15 micron Anodizing.
- **EN AB 46100 die-cast aluminium alloy Covers**, painted with 60-80 µ polyester powder.
- **Carbon steel Shaft**, 20 µ nickel-plated. Stainless Steel AISI 304 (A2) or AISI 316 (A4) as Optional.
- **External adjusting gear, made of Stainless Steel AISI 316 (A4).**
- **AISI 316 (A4) Stainless Steel Screws.**
- **NBR nitrile rubber seals.** FPM/FKM or SILICONE on request.
- Acetalic resin + 20% PTFE bearings, for low friction, easily replaceable for maintenance. PA66 or LEXAN on request.
- Pre-compressed Spring Cartridges, easily replaceable for maintenance, 60-80 micron polyester painted.
- High performances Syntetic Grease as standard grease. Special grease supplied for HIGH/LOW/VERY LOW temperatures.
- Several special protections available for chemical, pharmaceutical, food and industrial environments.
- Rotation adjustment  $\pm 5^\circ$  in both opening and closing position. Assembly precision  $\pm 1^\circ$ , made by electronic devices.
- Double lower drilling for valve fastening and centering, according to ISO 5211-DIN 3337 Standards.
- Double square lower female shaft key (starlike), according to ISO 5211-DIN 3337 Standards for assembly on valves with square key on line ( $0^\circ$ ) and diagonal key ( $45^\circ$ ).
- Solenoid connections according to NAMUR VDI/VDE-3845 Standards.
- Top drilling for accessories fastening, and upper shaft end according to NAMUR VDI/VDE-3845 Standards.
- Position indicator on request, enabling switch-box assembly on top.
- Aluminium adhesive nameplates, with progressive serial number punched.
- Lubrication carried out by the manufacturer, guaranteed for min. 1.000.000 operations.
- Running test and 100% seal test carried out with electronic equipment and certification of every individual product.
- Standard execution for temperatures from  $-20^\circ\text{C}$  to  $+80^\circ\text{C}$  (optional, special execution for extreme temperatures).
- Conformity for use in explosive environment; Ex II 2 GD "c" protection type.
- According to EN 15714-3 design and manufacture standard requirements.

| FEEDING                                               | TEMPERATURE RANGE                                                                                                                                                                                                                                                                                                  | SUPPLY PRESSURE                                                  | ROT. ADJUSTMENT                                          |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------|
| Dry or lubricated<br>50 um filtered<br>compressed air | Standard $-20^\circ +80^\circ\text{C}$ ( $-4 +175^\circ\text{F}$ )<br>HIGH Temperature $-20^\circ +150^\circ\text{C}$ ( $-4 +300^\circ\text{F}$ )<br>LOW Temperature $-40^\circ +80^\circ\text{C}$ ( $-40 +175^\circ\text{F}$ )<br>VERY LOW Temperature $-60^\circ +80^\circ\text{C}$ ( $-76 +175^\circ\text{F}$ ) | 8 bar/120 psi<br>Continuous working<br>10 bar/142 psi<br>MAXIMUM | $\pm 5^\circ$<br>in both OPENING<br>and CLOSING position |

# DOUBLE ACTING TORQUES IN Nm

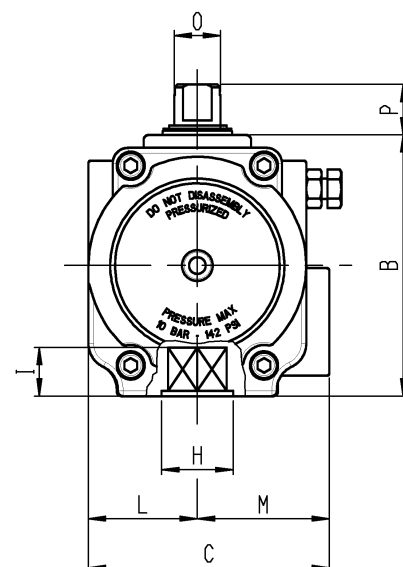
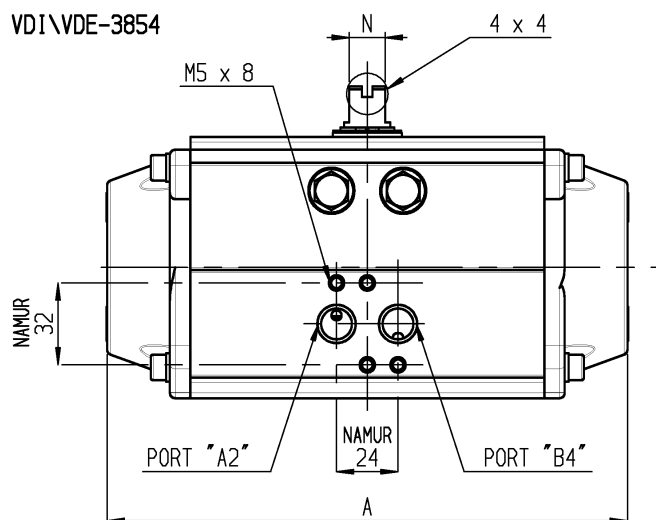
| TYPE   | AIR SUPPLY PRESSURE (bar) |       |       |       |       |       |       |       |       |       |
|--------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|        | 1                         | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| RE 043 | -                         | -     | 6,5   | 8,7   | 10,9  | 13,0  | 15,2  | 17,3  | 19,5  | 21,7  |
| RE 051 | 3,3                       | 6,7   | 10,0  | 13,4  | 16,7  | 20,1  | 23,4  | 26,8  | 30,1  | 33,5  |
| RE 064 | 5,9                       | 11,8  | 17,8  | 23,7  | 29,6  | 35,5  | 41,4  | 47,4  | 53,3  | 59,2  |
| RE 076 | 11,8                      | 23,5  | 35,3  | 47,1  | 58,9  | 70,6  | 82,4  | 94,2  | 105,9 | 117,7 |
| RE 086 | 17,2                      | 34,5  | 51,7  | 68,9  | 86,1  | 103,4 | 120,6 | 137,8 | 155,0 | 172,3 |
| RE 101 | 27,5                      | 54,9  | 82,4  | 109,8 | 137,3 | 164,8 | 192,2 | 219,7 | 247,1 | 274,6 |
| RE 116 | 43,7                      | 87,4  | 131,1 | 174,9 | 218,6 | 262,3 | 306,0 | 349,7 | 393,4 | 437,1 |
| RE 126 | 56,6                      | 113,3 | 169,9 | 226,5 | 283,2 | 339,8 | 396,4 | 453,0 | 509,7 | 566,3 |
| RE 146 | 88,4                      | 176,7 | 265,1 | 353,4 | 441,8 | 530,1 | 618,5 | 706,9 | 795,2 | 883,6 |
| RE 161 | 114,9                     | 229,7 | 344,6 | 459,5 | 574,3 | 689,2 | 804,1 | 918,9 | 1034  | 1149  |
| RE 181 | 156,6                     | 313,1 | 469,7 | 626,3 | 782,9 | 939,4 | 1096  | 1253  | 1409  | 1565  |
| RE 201 | 215,3                     | 430,6 | 646,0 | 861,3 | 1077  | 1292  | 1507  | 1723  | 1938  | 2153  |
| RE 241 | 372,5                     | 745,0 | 1118  | 1490  | 1863  | 2235  | 2608  | 2980  | 3353  | 3725  |
| RE 271 | 539,2                     | 1078  | 1617  | 2157  | 2696  | 3235  | 3774  | 4314  | 4853  | 5392  |
| RE 331 | 911,5                     | 1823  | 2734  | 3646  | 4558  | 5469  | 6385  | 7292  | 8204  | 9115  |
| RE 421 | 1671                      | 3342  | 5013  | 6684  | 8354  | 10025 | 11696 | 13367 | -     | -     |

# SINGLE ACTING TORQUES IN Nm

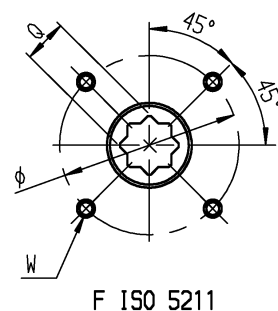
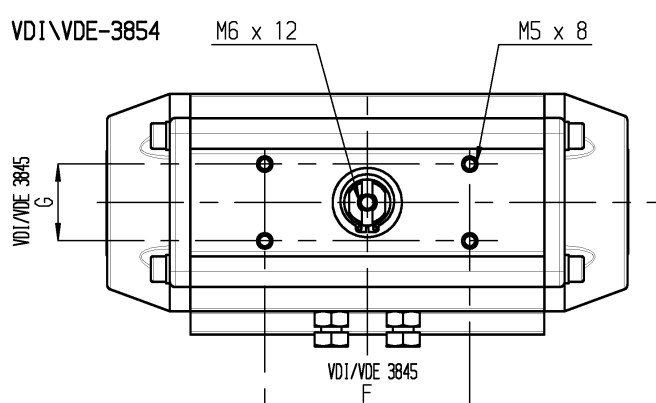
| TYPE          | SPRING SET | AIR SUPPLY PRESSURE (bar) |       |       |        |       |       |       |       |       |       |       |       | SPRING TORQUE     |       |
|---------------|------------|---------------------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|-------|
|               |            | 3                         |       | 4     |        | 5     |       | 6     |       | 7     |       | 8     |       |                   |       |
|               |            | 0°                        | 90°   | 0°    | 90°    | 0°    | 90°   | 0°    | 90°   | 0°    | 90°   | 0°    | 90°   | 90°               | 0°    |
| RE 043        | SR 3/3     | -                         | -     | -     | -      | 7,1   | 4,1   | 9,3   | 6,3   | 11,5  | 8,5   | 13,7  | 10,7  | 6,8               | 3,8   |
|               | SR 4/4     | -                         | -     | -     | -      |       |       | 8,1   | 4,1   | 10,2  | 6,2   | 12,4  | 8,4   | 9,0               | 5,0   |
| RE 051        | SR 3/3     | 5,8                       | 4,3   | 9,1   | 7,6    | 12,5  | 10,9  | 15,8  | 14,3  | 19,2  | 17,6  | 22,5  | 21,0  | 5,8               | 4,3   |
|               | SR 4/4     | 4,4                       | 2,3   | 7,8   | 5,7    | 11,1  | 9,0   | 14,4  | 12,3  | 17,8  | 15,7  | 21,1  | 19,0  | 7,8               | 5,7   |
|               | SR 5/5     |                           |       | 6,3   | 3,7    | 9,7   | 7,1   | 13,0  | 10,4  | 16,4  | 13,8  | 19,7  | 17,1  | 9,7               | 7,1   |
|               | SR 6/6     |                           |       |       |        | 8,2   | 5,1   | 11,6  | 8,5   | 14,9  | 11,8  | 18,3  | 15,2  | 11,6              | 8,5   |
| RE 064        | SR 3/3     | 10,7                      | 7,1   | 16,6  | 13,0   | 22,5  | 18,9  | 28,5  | 24,8  | 34,4  | 30,8  | 40,3  | 36,7  | 10,7              | 7,1   |
|               | SR 4/4     | 8,4                       | 3,5   | 14,3  | 9,4    | 20,2  | 15,4  | 26,1  | 21,3  | 32,0  | 27,2  | 38,0  | 33,1  | 14,3              | 9,4   |
|               | SR 5/5     |                           |       | 11,9  | 5,9    | 17,8  | 11,8  | 23,8  | 17,7  | 29,7  | 23,6  | 35,6  | 29,6  | 17,8              | 11,8  |
|               | SR 6/6     |                           |       |       |        | 15,5  | 8,2   | 21,4  | 14,1  | 27,3  | 20,1  | 33,2  | 26,0  | 21,4              | 14,1  |
| RE 076        | SR 3/3     | 21,1                      | 14,3  | 32,8  | 26,0   | 44,6  | 37,8  | 56,4  | 49,6  | 68,1  | 61,3  | 79,9  | 73,1  | 21,1              | 14,3  |
|               | SR 4/4     | 16,3                      | 7,2   | 28,1  | 19,0   | 39,8  | 30,8  | 51,6  | 42,5  | 63,4  | 54,3  | 75,2  | 66,1  | 28,1              | 19,0  |
|               | SR 5/5     |                           |       | 23,3  | 12,0   | 35,1  | 23,8  | 46,9  | 35,5  | 58,6  | 47,3  | 70,4  | 59,1  | 35,1              | 23,8  |
|               | SR 6/6     |                           |       |       |        | 30,3  | 16,7  | 42,1  | 28,5  | 53,9  | 40,3  | 65,6  | 52,0  | 42,1              | 28,5  |
| RE 086        | SR 3/3     | 33,8                      | 17,8  | 51,1  | 35,1   | 68,3  | 52,3  | 85,5  | 69,5  | 102,7 | 86,7  | 120,0 | 104,0 | 33,8              | 17,8  |
|               | SR 4/4     | 27,9                      | 6,6   | 45,1  | 23,8   | 62,3  | 41,0  | 79,6  | 58,2  | 96,8  | 75,5  | 114,0 | 92,7  | 45,1              | 23,8  |
|               | SR 5/5     |                           |       | 39,2  | 12,5   | 56,4  | 29,7  | 73,6  | 47,0  | 90,8  | 64,2  | 108,1 | 81,4  | 56,4              | 29,7  |
|               | SR 6/6     |                           |       |       |        | 50,4  | 18,5  | 67,7  | 35,7  | 84,9  | 52,9  | 102,1 | 70,1  | 67,7              | 35,7  |
| RE 101        | SR 3/3     | 50,1                      | 32,3  | 77,5  | 59,7   | 105,0 | 87,2  | 132,5 | 114,7 | 159,9 | 142,1 | 187,4 | 169,6 | 50,1              | 32,3  |
|               | SR 4/4     | 39,3                      | 15,6  | 66,8  | 43,0   | 94,2  | 70,5  | 121,7 | 98,0  | 149,2 | 125,4 | 176,6 | 152,9 | 66,8              | 43,1  |
|               | SR 5/5     |                           |       | 56,0  | 26,4   | 83,5  | 53,8  | 110,9 | 81,3  | 138,4 | 108,7 | 165,9 | 136,2 | 83,5              | 53,8  |
|               | SR 6/6     |                           |       |       |        | 72,7  | 37,1  | 100,2 | 64,6  | 127,6 | 92,0  | 155,1 | 119,5 | 100,2             | 64,6  |
| RE 116        | SR 3/3     | 80,7                      | 50,5  | 124,4 | 94,2   | 168,1 | 137,9 | 211,8 | 181,6 | 255,5 | 225,3 | 299,3 | 269,0 | 80,7              | 50,5  |
|               | SR 4/4     | 63,9                      | 23,5  | 107,6 | 67,3   | 151,3 | 111,0 | 195,0 | 154,7 | 238,7 | 198,4 | 282,4 | 242,1 | 107,6             | 67,3  |
|               | SR 5/5     |                           |       | 90,8  | 40,4   | 134,5 | 84,1  | 178,2 | 127,8 | 221,9 | 171,5 | 265,6 | 215,2 | 134,5             | 84,1  |
|               | SR 6/6     |                           |       |       |        | 117,7 | 57,2  | 161,4 | 100,9 | 205,1 | 144,6 | 248,8 | 188,3 | 161,4             | 100,9 |
| RE 126        | SR 3/3     | 105,0                     | 64,9  | 161,6 | 121,5  | 218,2 | 178,2 | 274,9 | 234,8 | 331,6 | 291,4 | 388,1 | 348,0 | 105,0             | 64,9  |
|               | SR 4/4     | 83,3                      | 29,9  | 140,0 | 86,5   | 196,6 | 143,2 | 253,2 | 199,8 | 309,9 | 256,4 | 366,5 | 313,0 | 140,0             | 86,6  |
|               | SR 5/5     |                           |       | 118,3 | 51,5   | 175,0 | 108,2 | 231,6 | 164,8 | 288,2 | 221,4 | 344,8 | 278,1 | 175,0             | 108,2 |
|               | SR 6/6     |                           |       |       |        | 153,3 | 73,2  | 210,0 | 129,8 | 266,6 | 186,4 | 323,2 | 243,1 | 210,0             | 129,8 |
| RE 146        | SR 3/3     | 162,5                     | 102,6 | 250,8 | 190,9  | 339,2 | 279,3 | 427,5 | 367,7 | 515,9 | 456,0 | 604,3 | 544,4 | 162,5             | 102,6 |
|               | SR 4/4     | 128,3                     | 48,4  | 216,6 | 136,8  | 305,0 | 225,1 | 393,3 | 313,5 | 481,7 | 401,9 | 570,1 | 490,2 | 216,6             | 136,8 |
|               | SR 5/5     |                           |       | 182,4 | 82,6   | 270,8 | 171,0 | 359,1 | 259,3 | 447,5 | 347,7 | 535,9 | 436,0 | 270,8             | 171,0 |
|               | SR 6/6     |                           |       |       |        | 236,6 | 116,8 | 324,9 | 205,2 | 413,3 | 293,5 | 501,7 | 381,9 | 325,0             | 205,2 |
| RE 161        | SR 3/3     | 202,7                     | 141,9 | 317,5 | 256,8  | 432,4 | 371,6 | 547,3 | 486,5 | 662,1 | 601,4 | 777,0 | 716,2 | 202,7             | 141,9 |
|               | SR 4/4     | 155,3                     | 74,3  | 270,2 | 189,2  | 385,1 | 304,1 | 499,9 | 418,9 | 614,8 | 533,8 | 729,7 | 648,7 | 270,2             | 189,2 |
|               | SR 5/5     |                           |       | 222,9 | 121,6  | 337,8 | 236,5 | 452,6 | 351,4 | 567,5 | 466,2 | 682,4 | 581,1 | 337,8             | 236,5 |
|               | SR 6/6     |                           |       |       |        | 290,4 | 168,9 | 405,3 | 283,8 | 520,2 | 398,6 | 635,0 | 513,5 | 405,3             | 283,8 |
| RE 181        | SR 3/3     | 281,6                     | 188,2 | 438,1 | 344,7  | 594,7 | 501,3 | 751,3 | 657,9 | 907,8 | 814,5 | 1064  | 971,0 | 281,5             | 188,2 |
|               | SR 4/4     | 218,8                     | 94,3  | 375,4 | 250,9  | 532,0 | 407,5 | 688,5 | 564,0 | 845,1 | 720,6 | 1002  | 877,2 | 375,4             | 250,9 |
|               | SR 5/5     |                           |       | 312,7 | 157,0  | 469,3 | 313,6 | 625,8 | 470,2 | 782,4 | 626,8 | 939,0 | 783,3 | 469,3             | 313,6 |
|               | SR 6/6     |                           |       |       |        | 406,5 | 219,8 | 563,1 | 376,3 | 719,7 | 532,9 | 876,2 | 689,5 | 563,1             | 376,3 |
| RE 201        | SR 3/3     | 386,2                     | 259,8 | 601,5 | 475,13 | 816,8 | 690,5 | 1032  | 905,8 | 1247  | 1121  | 1436  | 1336  | 386,2             | 259,8 |
|               | SR 4/4     | 299,6                     | 131,1 | 514,9 | 46,4   | 730,2 | 561,8 | 945,5 | 777,1 | 1160  | 992,4 | 1376  | 1208  | 514,9             | 346,4 |
|               | SR 5/5     |                           |       | 428,3 | 217,7  | 643,6 | 433,0 | 858,9 | 648,4 | 1074  | 863,7 | 1290  | 1079  | 643,6             | 433,0 |
|               | SR 6/6     |                           |       |       |        | 557,0 | 304,3 | 772,3 | 519,6 | 987,6 | 735,0 | 1203  | 950,3 | 772,3             | 519,6 |
| RE 241        | SR 3/3     | 664,0                     | 453,6 | 1037  | 826,2  | 1409  | 1199  | 1782  | 1571  | 2154  | 1944  | 2527  | 2316  | 664,0             | 453,6 |
|               | SR 4/4     | 521,8                     | 232,3 | 885,4 | 604,8  | 1258  | 977,4 | 1630  | 1350  | 2003  | 1722  | 2376  | 2095  | 885,4             | 604,8 |
|               | SR 5/5     |                           |       | 734,2 | 383,5  | 1107  | 756,0 | 1479  | 1129  | 1852  | 1501  | 2224  | 1874  | 1107              | 756,0 |
|               | SR 6/6     |                           |       |       |        | 955,5 | 534,7 | 1328  | 907,2 | 1701  | 1280  | 2073  | 1653  | 1328              | 907,2 |
| RE 271        | SR 3/3     | 912,5                     | 705,1 | 1452  | 1244   | 1991  | 1783  | 2530  | 2323  | 3069  | 2862  | 3608  | 3401  | 912,5             | 705,1 |
|               | SR 4/4     | 677,5                     | 400,8 | 1217  | 940,2  | 1756  | 1479  | 2295  | 2019  | 2834  | 2558  | 3373  | 3097  | 1217              | 940,1 |
|               | SR 5/5     |                           |       | 981,7 | 635,8  | 1521  | 1175  | 2060  | 1714  | 2599  | 2144  | 3138  | 2793  | 1521              | 1175  |
|               | SR 6/6     |                           |       |       |        | 1286  | 871,0 | 1825  | 1410  | 2364  | 1954  | 2903  | 2489  | 1825              | 1410  |
| RE 331        | SR 3/3     | 1626                      | 1108  | 2538  | 2020   | 3450  | 2931  | 4361  | 3843  | 5273  | 4755  | 6184  | 5666  | 1626              | 1108  |
|               | SR 4/4     | 1257                      | 565,8 | 2168  | 1477   | 3080  | 2389  | 3992  | 3301  | 4903  | 4212  | 5815  | 5123  | 2168              | 1477  |
|               | SR 5/5     |                           |       | 1799  | 935,2  | 2711  | 1847  | 3622  | 2759  | 4534  | 3670  | 5445  | 4582  | 2711              | 1847  |
|               | SR 6/6     |                           |       |       |        | 2341  | 1305  | 3253  | 2216  | 4165  | 3128  | 5076  | 4040  | 3253              | 2216  |
| RE 421        | SR 3/3     | 2999                      | 2014  | 4670  | 3685   | 6340  | 5356  | 8011  | 7026  | 9682  | 8697  | 11353 | 10368 | 2999              | 2014  |
|               | SR 4/4     | 2327                      | 1014  | 3998  | 2685   | 5669  | 4356  | 7340  | 6027  | 9011  | 7698  | 9369  | 8369  | 3998              | 2685  |
|               | SR 5/5     |                           |       | 3327  | 1685   | 4998  | 3356  | 6669  | 5027  | 8340  | 6698  | 8369  | 8369  | 4998              | 3356  |
|               | SR 6/6     |                           |       |       |        | 4327  | 2357  | 5997  | 4028  | 7668  | 5698  | 7369  | 7369  | 5997              | 4028  |
| Torque by air |            |                           |       |       |        |       |       |       |       |       |       |       |       | Torque by springs |       |

# DIMENSIONS – European Sizes in millimetres

VDI/VDE-3854



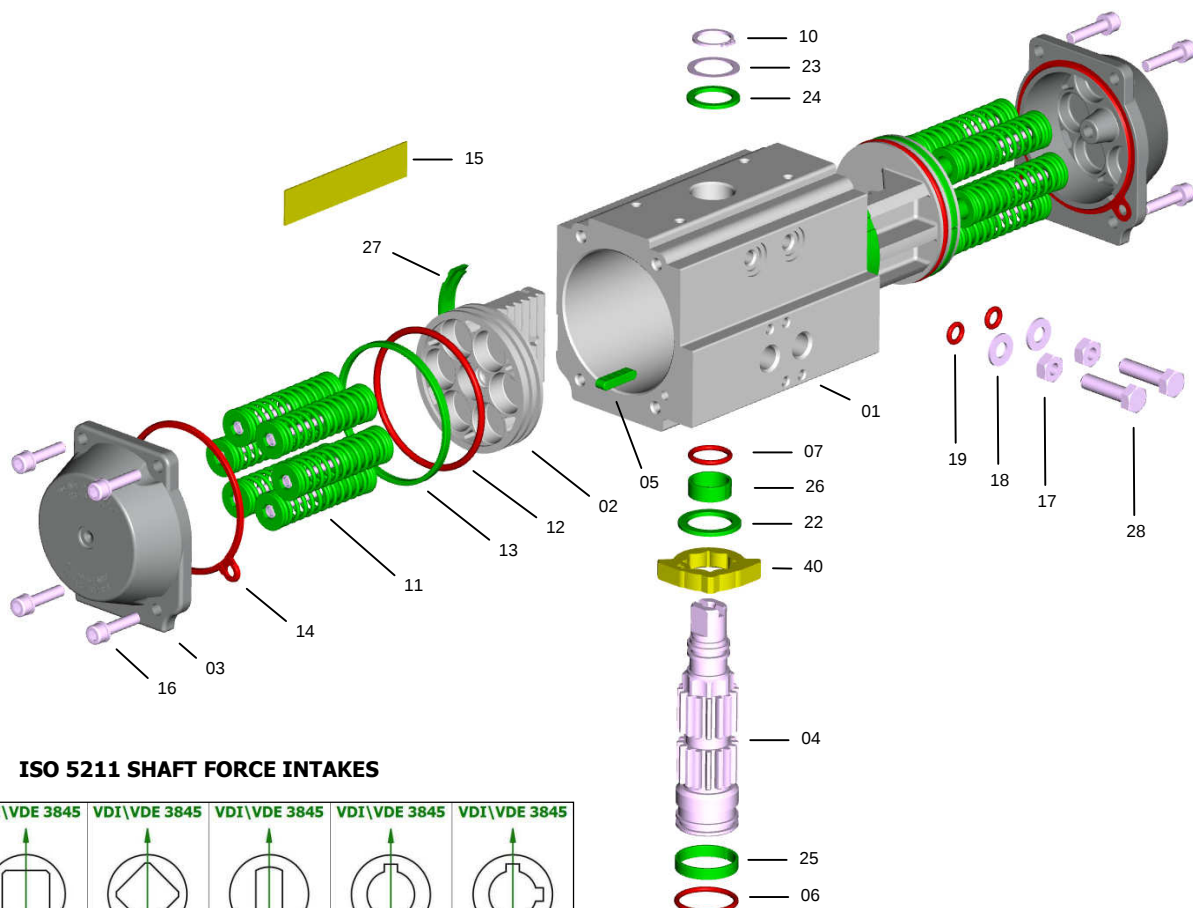
VDI/VDE-3854



| POSITION                    | TYPE               |                   |                              |                               |                    |                               |                     |                               |                    |                    |                    |                    |                    |                    |                     |                     |
|-----------------------------|--------------------|-------------------|------------------------------|-------------------------------|--------------------|-------------------------------|---------------------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|
|                             | RE 043             | RE 051            | RE 064                       | RE 076                        | RE 086             | RE 101                        | RE 116              | RE 126                        | RE 146             | RE 161             | RE 181             | RE 201             | RE 241             | RE 271             | RE 331              | RE 421              |
| A                           | 141                | 138               | 155                          | 203                           | 239                | 261                           | 304                 | 333                           | 398                | 424                | 482                | 528                | 604                | 684                | 850                 | 940                 |
| B                           | 62                 | 69                | 86                           | 102                           | 112                | 127                           | 145,5               | 157,5                         | 177                | 196                | 220                | 246                | 298                | 332                | 414                 | 542                 |
| C                           | 63,5               | 75                | 86                           | 94                            | 104                | 120                           | 133,5               | 144,5                         | 164,5              | 182                | 203,5              | 222                | 300                | 352                | 400                 | 528                 |
| VDI/VDE<br>3845<br>F x G    | 80 x 30<br>50 x 25 | 80 x 30           |                              |                               |                    |                               | 80 x 30<br>130 x 30 |                               | 130 x 30           |                    |                    |                    |                    |                    |                     | 200 x 50            |
| L                           | 27                 | 33,5              | 38                           | 42,5                          | 49                 | 55                            | 63,5                | 69,5                          | 80,5               | 89                 | 99,5               | 110                | 150                | 176                | 190                 | 234                 |
| M                           | 36,5               | 41,5              | 48                           | 51,5                          | 55                 | 65                            | 70                  | 75                            | 84                 | 93                 | 104                | 112                | 150                | 176                | 210                 | 294                 |
| Port A<br>Port B<br>DIN 259 | 1/8" GAS-NPT       |                   | 1/4" GAS-NPT                 |                               |                    |                               |                     |                               |                    |                    |                    |                    | 1/2" GAS-NPT       |                    |                     |                     |
| N x O                       | 8 x 12             |                   |                              | 14 x 18                       |                    |                               | 27 x 36             |                               |                    |                    | 32 x 42            |                    | 42 x 60            | 55 x 80            |                     |                     |
| P                           | 20                 |                   |                              |                               |                    |                               | 30                  |                               |                    | 50                 |                    |                    |                    |                    |                     | 80                  |
| Q x I                       | 9 x 10<br>11 x 13  | 9 x 10<br>11 x 13 | 9 x 10<br>11 x 13<br>14 x 16 | 11 x 13<br>14 x 16<br>17 x 20 | 14 x 16<br>17 x 20 | 14 x 16<br>17 x 20<br>22 x 25 | 17 x 20<br>22 x 25  | 17 x 20<br>22 x 25<br>27 x 29 | 22 x 25<br>27 x 29 | 22 x 25<br>27 x 29 | 27 x 29<br>36 x 39 | 27 x 29<br>36 x 39 | 36 x 39<br>46 x 50 | 36 x 39<br>46 x 50 | *46 x 50<br>55 x 60 | *55 x 60<br>75 x 80 |
| F ISO 5211                  | F04                | F04               | F05/07                       | F05/07                        | F05/07             | F07/10                        | F07/10              | F07/10                        | F10/12             | F10/12             | F10/12             | F14                | F14                | F16                | F16/25              | F25/30              |
| Optional                    | F03/05             | F03/05            | F3/5/7                       |                               |                    | F5/7/10                       |                     | F7/10/12                      |                    |                    | F14                | F10/12             | F(12)/16           | F(12)/16           |                     | F(16)               |
| Volume DE                   | 0,180 lt           | 0,300 lt          | 0,500 lt                     | 0,700 lt                      | 1,000 lt           | 1,800 l                       | 2,900 lt            | 3,700 lt                      | 6,100 lt           | 7,900 lt           | 11,2 lt            | 14,4 lt            | 19,2 lt            | 32,2 lt            | 62,8 lt             | 131 lt              |
| Volume SE                   | 0,072 lt           | 0,120 lt          | 0,200 lt                     | 0,280 lt                      | 0,400 lt           | 0,720 l                       | 1,160 lt            | 1,480 lt                      | 2,440 lt           | 3,160 lt           | 4,480 lt           | 5,760 lt           | 7,680 lt           | 12,9 lt            | 25,1 lt             | 52,4 lt             |

| POSITION     | F ISO 5211     |                |                                  |                |                                   |                                                        |                                      |                                        |                   |                   |                               |                               |
|--------------|----------------|----------------|----------------------------------|----------------|-----------------------------------|--------------------------------------------------------|--------------------------------------|----------------------------------------|-------------------|-------------------|-------------------------------|-------------------------------|
|              | F03            | F04            | F03/05                           | F05            | F05/07                            | F5/7/10                                                | F07/10                               | F10/12                                 | F14               | F16               | F25                           | F30                           |
| <b>Ø (W)</b> | Ø 36<br>(M5x8) | Ø 42<br>(M5x8) | Ø 36<br>(M5x8)<br>Ø 50<br>(M6x9) | Ø 50<br>(M6x9) | Ø 50<br>(M6x9)<br>Ø 70<br>(M8x12) | Ø 50<br>(M6x9)<br>Ø 70<br>(M8x12)<br>Ø 102<br>(M10x15) | Ø 70<br>(M8x12)<br>Ø 102<br>(M10x15) | Ø 102<br>(M10x15)<br>Ø 125<br>(M12x18) | Ø 140<br>(M16x24) | Ø 165<br>(M20x30) | Ø 254<br>(M16x24)<br>N°8 FORI | Ø 298<br>(M20x35)<br>N°8 FORI |
| <b>H</b>     | 25             | 30             | 25                               | 35             | 35<br>(RE 086=40)                 | 40                                                     | 55                                   | 85<br>(RE 161=75)                      | 100               | 130               | 200                           | 200                           |

# CONSTRUCTION PARTS – SPECIFICATIONS



## ISO 5211 SHAFT FORCE INTAKES

| VDI\UDE 3845                   | VDI\UDE 3845 | VDI\UDE 3845 | VDI\UDE 3845 | VDI\UDE 3845 | VDI\UDE 3845 |
|--------------------------------|--------------|--------------|--------------|--------------|--------------|
|                                |              |              |              |              |              |
| STANDARD<br>ALPHAIR<br>S = L\D | L            | D            | H            | V            | W            |

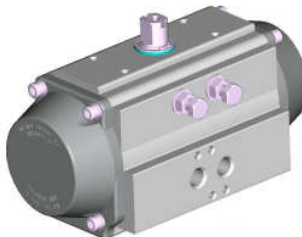
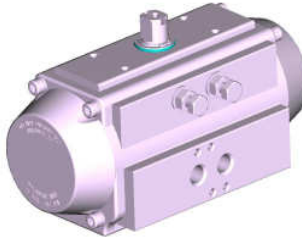
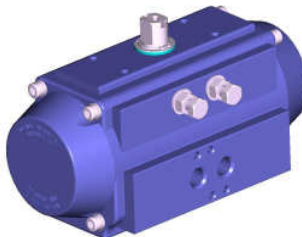
| PART | QUANTITY | DESCRIPTION               | MATERIAL                                   | SPECIFICATION                                | PROTECTION |
|------|----------|---------------------------|--------------------------------------------|----------------------------------------------|------------|
| 1    | 1        | Body                      | Extruded aluminium alloy                   | EN AW 6063 T6                                | A - N - TF |
| 2    | 2        | Piston                    | Aluminium alloy                            | EN AB 46100 T6                               | A          |
| 3    | 2        | Cover                     | Aluminium alloy                            | EN AB 46100 T6                               | N - V - TF |
| 4    | 1        | Shaft                     | Carbon steel<br>Stainless Steel – optional | ASTM A-105<br>AISI 304 (A2)<br>AISI 316 (A4) | N          |
| 5 *  | 2        | Antiejection key          | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 6 *  | 1        | Lower shaft O-Ring        | NBR – FPM\FKM – Silicone – Silicone        |                                              |            |
| 7 *  | 1        | Upper shaft O-Ring        | NBR – FPM\FKM – Silicone – Silicone        |                                              |            |
| 10 * | 1        | Seeger ring               | Carbon steel                               |                                              | N          |
| 11   | 0 ... 12 | Spring cartridge          | Carbon steel, PA 66, Stainless Steel       | C-98                                         | V          |
| 12 * | 2        | Piston O-Ring             | NBR – FPM\FKM – Silicone – Silicone        |                                              |            |
| 13 * | 2        | Piston head bearing       | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 14 * | 2        | Cover gasket              | NBR – FPM\FKM – Silicone – Silicone        |                                              |            |
| 15   | 1        | Nameplate                 | Aluminium                                  |                                              |            |
| 16   | 4 + 4    | Cover fastening screw     | Stainless Steel                            | AISI 304 (A2)                                |            |
| 17   | 2        | Nut                       | Stainless Steel                            | AISI 304 (A2)                                |            |
| 18   | 2        | Washer                    | Stainless Steel                            | AISI 304 (A2)                                |            |
| 19 * | 2        | O-Ring                    | NBR – FPM\FKM – Silicone – Silicone        |                                              |            |
| 22 * | 1        | Gear antifriction washer  | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 23 * | 1        | Shaft thrust washer       | Stainless Steel                            | AISI 304 (A2)                                |            |
| 24 * | 1        | Shaft antifriction washer | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 25 * | 1        | Lower shaft pilot ring    | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 26 * | 1        | Upper shaft pilot ring    | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 27 * | 2        | Piston bearing            | Acetalic resin – PA66 – PA66 – LEXAN       |                                              |            |
| 28   | 2        | Adjusting gear screw      | Stainless Steel                            | AISI 304 (A2)                                |            |
| 40   | 1        | Adjusting gear            | Stainless Steel                            | AISI 316 (A4)                                |            |

\* SPARE PARTS SET: Standard, Special HIGH Temperatures, Special LOW Temperatures, Special EXTRA LOW Temperatures

## PROTECTIONS

A = Anodizing N = chemical Nickel-plating V = Painting TF = Anodizing+PTFE

## COATINGS – MATERIAL TREATMENTS

|                                                                                   |                       | DESCRIPTION                           |                                       |           |                                                                                   | APPLICATION FIELD                                                                                                    |
|-----------------------------------------------------------------------------------|-----------------------|---------------------------------------|---------------------------------------|-----------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
|                                                                                   |                       | Body                                  | Covers                                | Pistons   | Shaft                                                                             |                                                                                                                      |
|  | <b>AV</b><br>standard | Anodizing                             | Polyester painting                    | Anodizing | High phosphorous nickel-plating (12%)<br>opt. AISI 304 (A2)<br>opt. AISI 316 (A4) | - Industry, general use.                                                                                             |
|                                                                                   | Colour                | Gray                                  | Gray                                  | Brown     | Polished steel                                                                    |                                                                                                                      |
|                                                                                   | Thickness             | 25 µ                                  | 60/80 µ                               | 15 µ      | 20 µ                                                                              |                                                                                                                      |
|  | <b>NN</b>             | DESCRIPTION                           |                                       |           |                                                                                   | APPLICATION FIELD                                                                                                    |
|                                                                                   |                       | Body                                  | Covers                                | Pistons   | Shaft                                                                             |                                                                                                                      |
|                                                                                   |                       | High phosphorous nickel-plating (12%) | High phosphorous nickel-plating (12%) | Anodizing | High phosphorous nickel-plating (12%)<br>opt. AISI 304 (A2)<br>opt. AISI 316 (A4) |                                                                                                                      |
|  | Colour                | Polished steel                        | Polished steel                        | Brown     | Polished steel                                                                    | - Industry, general use.<br>- Caustic soda.<br>- Detergents.<br>- Low alkaline solutions.                            |
|                                                                                   | Thickness             | 20 µ                                  | 20 µ                                  | 15 µ      | 20 µ                                                                              |                                                                                                                      |
|                                                                                   | <b>TF TF</b>          | DESCRIPTION                           |                                       |           |                                                                                   | APPLICATION FIELD                                                                                                    |
|                                                                                   |                       | Body                                  | Covers                                | Pistons   | Shaft                                                                             |                                                                                                                      |
|                                                                                   |                       | Anodizing + PTFE coating              | Anodizing + PTFE coating              | Anodizing | High phosphorous nickel-plating (12%)<br>opt. AISI 304 (A2)<br>opt. AISI 316 (A4) |                                                                                                                      |
|                                                                                   | Colour                | Blue                                  | Blue                                  | Brown     | Polished steel                                                                    | - Industry, general use.<br>- Low alkaline and low acid solutions.<br>- Marine environments.<br>- High temperatures. |
|                                                                                   | Thickness             | Anodizing 25 µ<br>PTFE 15 µ           | Anodizing 15 µ<br>PTFE 15 µ           | 15 µ      | 20 µ                                                                              |                                                                                                                      |

### ANODIZING

Anodizing is an electrolytic process that produces anodic coating on aluminum, called alumine, with high thickness. Alumine is one of the most hard known materials, with resistance values up to 400-600 HV (45-65 HRC); properties and features of Anodizing (alumine thickness 25 micron) are well known and appreciated both for mechanical and chemical resistance.

- **Best friction and corrosion resistance, best surface hardness, good thermic and electrical insulation.**

### ELECTROLESS NICKEL-PLATING

Chemical nickel-plating is an electroless coating process that gives nickel layers at extremely constant thickness also on sharp angles, blind-holes, threads and grooves recess. During the process, nickel is combined with phosphor at a percentage of 12% (high-phosphor). The obtained surface hardness is about 400-480 HV (45-55 HRC).

- **Best friction and corrosion resistance, best surface hardness, best external appearance similar to S.S., increased resistance to alkali and detergents in sanitary and food applications.**

### POLYESTER PAINTING

Polyester painting is obtained through powder coatings on polarized parts, by means of light differences in electrical potentials. After applications, parts are baked in order to polymerize and let the painting be spread to avoid micro-porosity. The best elasticity can be obtained at 60/80 micron thickness; a satisfactory adhesion can be assured by sandblasting or brushing, and by special degreasing baths of the rough pieces to be treated.

- **Better corrosion resistance, protection against crashes, better external appearance and several available colours, resistance to chemicals.**

### ANODIZING + PTFE COATING

As further improvement of the hard anodising treatment on aluminium alloys, protective coatings made of PTFE are used; this material is known for its particular chemical and physical features. On these double treated surfaces, oxide hardness and low roughness (internal slipping parts) is summed to the chemical resistance and the excellent qualities as a thermic barrier of PTFE (external surface, subject to corrosion).

- **Better corrosion resistance, protection against high temperatures and crashes, extreme resistance to chemicals and in marine environments.**

### AISI 304 (A2) OR AISI 316 (A4) STAINLESS STEEL SHAFT - OPTIONAL

AISI 304 (A2) and AISI 316 (A4) Stainless Steel shafts, with their great corrosion resistance, are recommended for special applications such as: marine and chemical environments, food and pharmaceutical industry, high temperature applications.



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Tous droits réservés - Annule et remplace toutes les versions précédentes - Les données sont sujettes à changement sans préavis - Non garantie l'exactitude

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