

## AVENTICS Series RTC Rodless cylinders

The AVENTICS Series RTC rodless cylinders offer optimized stroke length in a compact size. The unique oval piston shape and one-piece slide/piston unit are just two characteristic features of RTC Series rodless cylinders besides their many common equipment options. They are available in four variants: as a basic version, slide bearing, compact guide and heavy duty versions for large loads. With different key strengths, they cover a large range of movements and positions. This saves space and facilitates machine design. The range of applications extends from piston diameters of 16 mm up to 80 mm and stroke lengths up to 9900 mm. The cylinders feature extreme repeatability and cover a large speed range from 0.01 m/s to >20 m/s.



## Technical data

|  |  |
|--|--|
| Industry                               | Industrial                               |
| Piston Ø                               | 25 mm                                    |
| Stroke                                 | 1371.6 mm                                |
| Functional principle                   | Double-acting                            |
| Magnetic piston                        | with magnetic piston                     |
| Guide                                  | ball rail guide                          |
| Version rodless cylinder               | Heavy Duty                               |
| Easy2Combine                           | Easy2Combine capable with connection kit |
| Piston force                           | 309 N                                    |
| Pressure for determining piston forces | 6,3 bar                                  |
| Cushioning length                      | 20 mm                                    |
| Cushioning energy                      | 4 J                                      |
| Cushioning                             | Pneumatically                            |
| Cushioning                             | adjustable                               |
| Max. speed                             | 2 m/s                                    |
| Stroke max.                            | 4300 mm                                  |
| Min. working pressure                  | 4 bar                                    |
| Max. working pressure                  | 8 bar                                    |
| Min. ambient temperature               | -10 °C                                   |

|                                    |                     |
|------------------------------------|---------------------|
| Max. ambient temperature           | 60 °C               |
| Medium                             | Compressed air      |
| Min. oil content of compressed air | 0 mg/m <sup>3</sup> |
| Max. oil content of compressed air | 1 mg/m <sup>3</sup> |
| Max. particle size                 | 5 µm                |
| Weight 0 mm stroke                 | 2.96 kg             |
| Weight +10 mm stroke               | 0.071 kg            |

## Material

|                         |                                 |
|-------------------------|---------------------------------|
| Material cylinder tube  | Aluminum                        |
| Surface cylinder tube   | anodized                        |
| Material front cover    | Aluminum                        |
| Surface cover           | anodized                        |
| Seal material           | Polyurethane                    |
| Material sealing strips | Polyurethane<br>Stainless Steel |
| Material guide rail     | Aluminum                        |
| Surface ball rail table | anodized                        |
| Material guide rail     | Steel, chrome-plated            |
| Surface guide rail      | hardened                        |
| Part No.                | R480676541                      |

## Technical information

The pressure dew point must be at least 15 °C less than ambient and medium temperature and may not exceed 3 °C.

The delivered product is lubricated for lifetime.

Use hydraulic shock absorbers for precise end position adjustment.

These pneumatic components with NPT or inch thread dimensions are only available from our US sales organization.

Thread depth: 0.47 inch for piston Ø 5/8 - 1, 0.63 inch for piston Ø 5/8 - 1 1/2, 0.55 inch for piston Ø 5/8 - 3

Thread depth: 0.50 inch for piston Ø 5/8 - 3

Thread depth: 0.35 inch for piston Ø 5/8 - 1 1/2, 0.47 inch for piston Ø 5/8 - 3

Thread depth: 0.40 inch for piston Ø 5/8 - 3

Can be selected in the configurator (M7 for high-speed applications)

The pressure dew point must be at least 15 °C less than ambient and medium temperature and may not exceed 3 °C.

The oil content of compressed air must remain constant during the life cycle.

Use only the approved oils from AVENTICS. Further information can be found in the "Technical information" document (available in <https://www.emerson.com/en-us/support>).

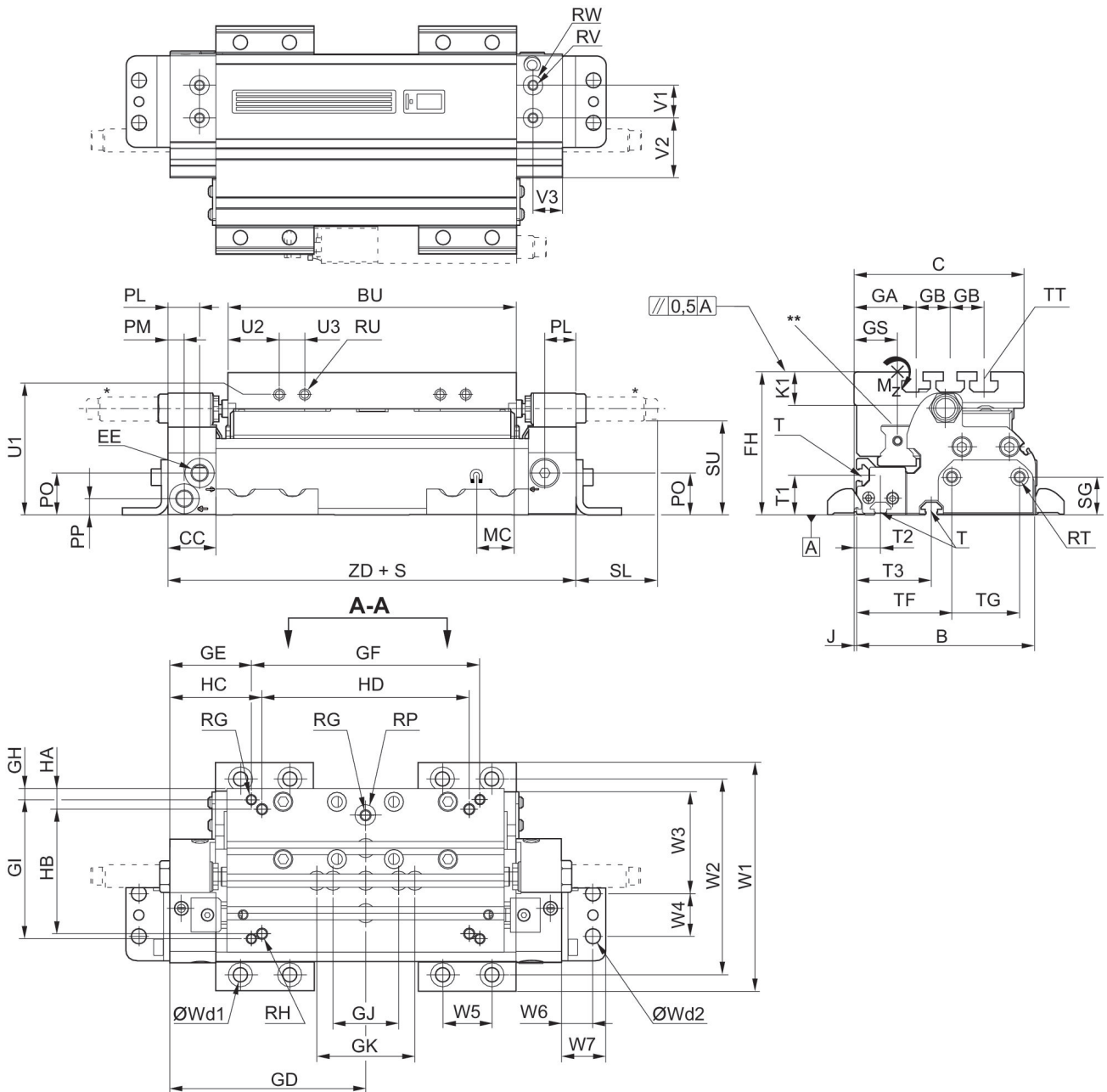
# Rodless cylinders, Series RTC-HD

R480676541

RTC

2024-05-14

## Dimensions in inches



S = stroke

T = Type of t-groove nut

TT = Type of t-groove nut

\* Shock absorber optional in end cover for diameters 16-40

\*\* RTC-HD 16 & 25: funnel type lube nipple with thread M3, RTC-HD 32 - 63: lube nipple DIN 71412 with thread M6

## Dimensions in inches

| Piston Ø | Part No.   | Ø [inch] | B    | C    | BU   | CC  | EE       | EF | EG |
|----------|------------|----------|------|------|------|-----|----------|----|----|
| 25 mm    | R480676537 | 1        | 4.6  | 3.92 | 5.79 | 1.1 | 1/8 NPTF | -  | -  |
| 25 mm    | R480676527 | 1 1/4    | 4.13 | 3.94 | 6.69 | 1.1 | 1/8 NPTF | -  | -  |
| 25 mm    | R480676548 | 1 1/2    | 5.2  | 4.8  | 7.32 | 1.1 | 1/4 NPTF | -  | -  |

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| Piston Ø | Part No.   | Ø [inch] | B    | C    | BU   | CC  | EE       | EF     | EG     |
|----------|------------|----------|------|------|------|-----|----------|--------|--------|
| 25 mm    | R480636524 | 2        | 5.69 | 5.22 | 8.07 | 1.1 | 1/4 NPTF | Ø 4,59 | Ø 0,91 |
| 25 mm    | R480676533 | 2 1/2    | 6.34 | 5.47 | 9.17 | 1.1 | 3/8 NPTF | Ø 0,59 | Ø 1,04 |

| Piston Ø | FH   | GA   | GB   | GD   | GE   | GF   | GH   | GI    | GJ   |
|----------|------|------|------|------|------|------|------|-------|------|
| 25 mm    | 2.76 | 1.02 | 0.79 | 4.23 | 4.23 | 4.33 | 0.63 | 20/40 | 1.57 |
| 25 mm    | 3.3  | 1.44 | 0.79 | 4.72 | 4.72 | 5.51 | 0.26 | 85    | 1.57 |
| 25 mm    | 3.85 | 1.44 | 0.79 | 5.18 | 5.18 | 6.69 | 0.47 | 100   | 1.57 |
| 25 mm    | 4.7  | 1.22 | 0.79 | 5.8  | 5.8  | 7.48 | 0.39 | 100   | 1.57 |
| 25 mm    | 5.09 | 1.22 | 0.79 | 6.56 | 6.56 | 7.48 | 0.39 | 100   | 1.57 |

| Piston Ø | GK   | GS   | HA   | HB  | HC    | HD  | J    | K1   | MC   |
|----------|------|------|------|-----|-------|-----|------|------|------|
| 25 mm    | –    | 1.46 | 0,25 | 3,3 | 1,732 | 5   | 0.06 | 0.84 | 0.59 |
| 25 mm    | 2.36 | 1    | 0,5  | 3   | 2,224 | 5   | 0.06 | 0.78 | 0.79 |
| 25 mm    | 2.36 | 1.24 | 0,5  | 4   | 2,181 | 6   | 0.06 | 1.01 | 0.67 |
| 25 mm    | 2.36 | 1.24 | 0,6  | 3,9 | 2,598 | 6.4 | 0.06 | 1.3  | 0.91 |
| 25 mm    | 2.36 | 1.24 | 0,6  | 4   | 2,354 | 8.4 | 0.06 | 1.3  | 0.98 |

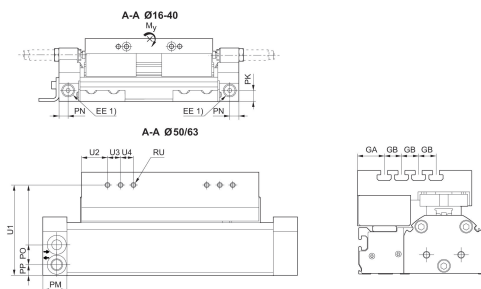
| Piston Ø | PK   | PL   | PM   | PN   | PO   | PP   | PR   | PQ   | RG 1) |
|----------|------|------|------|------|------|------|------|------|-------|
| 25 mm    | 0.4  | 0.79 | 0.31 | 0.35 | 0.85 | 0.37 | –    | –    | M5    |
| 25 mm    | 0.59 | 0.73 | 0.37 | 0.47 | 0.96 | 0.37 | –    | –    | M6    |
| 25 mm    | 0.71 | 0.71 | 0.39 | 0.43 | 1.24 | 0.41 | –    | –    | M6    |
| 25 mm    | –    | 0.63 | 0.63 | –    | 1.38 | 0.47 | 0.84 | 1.22 | M8    |
| 25 mm    | –    | 0.55 | 0.55 | –    | 1.79 | 0.57 | 1.06 | 0.98 | M8    |

| Piston Ø | RH 2)            | RP   | RQ | RT 3) | RU 4) | SG   | SL   | SU   | T  |
|----------|------------------|------|----|-------|-------|------|------|------|----|
| 25 mm    | 4xUNC<br>1/4-20  | Ø 9  | M6 | M5    | M6    | 0.68 | 1.94 | 1.85 | N6 |
| 25 mm    | 4xUNC<br>1/4-20  | Ø 12 | M6 | M6    | M6    | 0.87 | 1.9  | 2.19 | N6 |
| 25 mm    | 4xUNC<br>1/4-20  | Ø 12 | M8 | M6    | M6    | 0.87 | 1.78 | 2.89 | N6 |
| 25 mm    | 4xUNC<br>5/16-18 | Ø 12 | M8 | M8    | M5    | 0.87 | –    | –    | N8 |
| 25 mm    | 4xUNC<br>5/16-18 | Ø 12 | M8 | M8    | M5    | 1.18 | –    | –    | N8 |

| Piston Ø | TT | W1   | W2   | W3   | W4   | W5   | W6   | W7   | Wd1 |
|----------|----|------|------|------|------|------|------|------|-----|
| 25 mm    | N6 | 5.17 | 4.5  | 2.83 | 0.71 | 0.05 | 0.53 | 0.78 | M6  |
| 25 mm    | N8 | 5.49 | 4.7  | 2.48 | 1.02 | 0.05 | 0.75 | 1.06 | M8  |
| 25 mm    | N8 | 6.55 | 5.76 | 3.31 | 1.02 | 0.05 | 0.75 | 1.06 | M8  |
| 25 mm    | N8 | 7.56 | 6.57 | 2.5  | 2.76 | 0.06 | 0.87 | 1.29 | M12 |
| 25 mm    | N8 | 8.21 | 7.22 | 3.15 | 1.97 | 0.06 | 0.87 | 1.29 | M12 |

| Piston Ø | Wd2 | T1   | T2   | T3   | TF   | TG   | U1   | U2   | U3   |
|----------|-----|------|------|------|------|------|------|------|------|
| 25 mm    | M6  | 0.79 | 0.55 | 2.13 | 2.81 | 0.75 | 2.24 | 0,7  | 0.85 |
| 25 mm    | M8  | 0.91 | 0.55 | 1.73 | 2.2  | 1.57 | 2.8  | 1.18 | 0,83 |
| 25 mm    | M8  | 0.97 | 1.16 | 2.34 | 3.03 | 1.57 | 3.26 | 1.18 | 1,14 |
| 25 mm    | M12 | 1.4  | 0.73 | 1.71 | 3.09 | 1.57 | 4,1  | 1.18 | 0.59 |
| 25 mm    | M12 | 1.8  | 0.67 | 1.56 | 2.56 | 3.15 | 4.5  | 1.18 | 0.59 |

| Piston Ø | U4   | ZD    | Moving mass [lbs] |
|----------|------|-------|-------------------|
| 25 mm    | 0.59 | 8.46  | 2.75              |
| 25 mm    | 0.59 | 9.45  | 3.09              |
| 25 mm    | 0.59 | 9.3   | 5.67              |
| 25 mm    | 0.59 | 11.6  | 7.03              |
| 25 mm    | 0.59 | 13.11 | 7.63              |



## Permissible forces $F_x, F_y, F_z$ and torques $M_x, M_y, M_z$

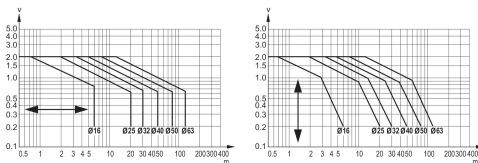
$$\frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} \leq 1$$

With simultaneously moments on the cylinder this equation must be used in addition to the maximum moments check. In the cushioning phase of the movement additional forces occur and must be considered. Please use our calculation tool for rodless cylinders on the <http://www.aventics.com>.

### 1) Auxiliary air feeding

An example configuration is illustrated. The delivered product may thus deviate from the illustration.

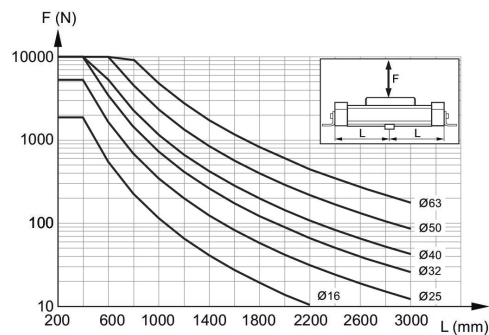
## Limit diagram for pneumatic cushioning for horizontal or vertical mounting



$v_t$  = Piston velocity [m/s]  $m$  = Cushionable mass [kg]

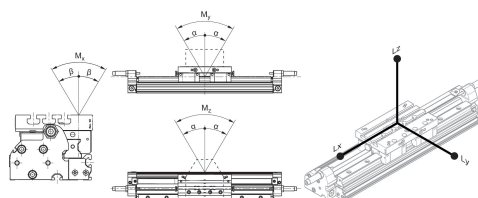
The values for the cushionable mass  $m$  and piston velocity  $v$  must be on or below the graph for the selected piston diameter.

## Support span



Max. support span L [mm] as a function of F [N] at a deflection of 0.5 mm

## Max. play and recommended max. lever arm length



L = lever arm

M = moment (Nm)

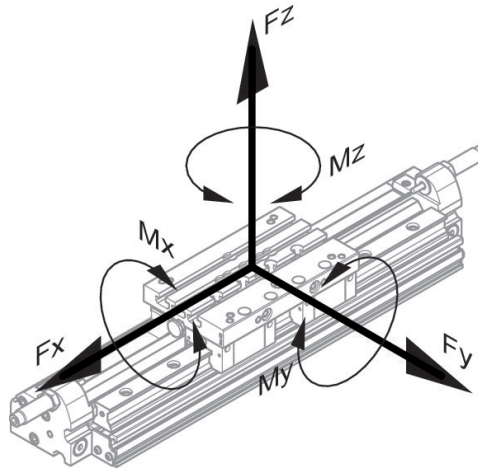
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R480676541

RTC

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| Part No.   | Piston Ø | Ø [inch] | $\alpha$ | $\beta$ | Lx  | Ly  | Lz  |
|------------|----------|----------|----------|---------|-----|-----|-----|
| R480676537 | 25 mm    | 1        | <0,1°    | <0,2°   | 344 | 344 | 344 |
| R480676527 | 25 mm    | 1 1/4    | <0,1°    | <0,2°   | 404 | 404 | 404 |
| R480676548 | 25 mm    | 1 1/2    | <0,1°    | <0,2°   | 440 | 440 | 440 |
| R480636524 | 25 mm    | 2        | <0,1°    | <0,2°   | 532 | 532 | 532 |



## static

| Part No.   | Piston Ø | Ø [inch] | Fx [N] | Fy [N] | Fz [N] | Mx [Nm] | My [Nm] | Mz [Nm] |
|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| R480676537 | 25 mm    | 1        | 2640   | 2640   | 7810   | 100     | 336     | 114     |
| R480676527 | 25 mm    | 1 1/4    | 3760   | 3760   | 9952   | 154     | 502     | 190     |
| R480676548 | 25 mm    | 1 1/2    | 6840   | 6840   | 13922  | 254     | 764     | 376     |
| R480636524 | 25 mm    | 2        | 6840   | 6840   | 13922  | 254     | 924     | 455     |

## dynamic

| Part No.   | Piston Ø | Ø [inch] | Mx [Nm] | My [Nm] | Mz [Nm] |
|------------|----------|----------|---------|---------|---------|
| R480676537 | 25 mm    | 1        | 100     | 336     | 114     |
| R480676527 | 25 mm    | 1 1/4    | 154     | 502     | 190     |
| R480676548 | 25 mm    | 1 1/2    | 254     | 764     | 376     |
| R480636524 | 25 mm    | 2        | 254     | 924     | 455     |