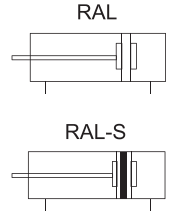


## RAL Series Mini Type Cylinder



RAL Series 1.18



### How to Order ?

| Series No | Cushion Type                            | Type No                                                                                                                                                   | Bore                       | X | Stroke                | Adjustable stroke                       | Magnet No                          | Tail type                                               | Mounting type                                          | Thread type                 |
|-----------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---|-----------------------|-----------------------------------------|------------------------------------|---------------------------------------------------------|--------------------------------------------------------|-----------------------------|
| RAL       | C: Air cushion<br>Blank: Rubber cushion |                                                                                                                                                           | 16<br>20<br>25<br>32<br>40 |   | 25<br>50<br>75<br>... | 10<br>20<br>30<br>40<br>50<br>75<br>100 | Blank: No Magnet<br>S: With Magnet | Blank: Swiveling tail<br>U: Flat tail<br>CM: Round tail | Blank: No<br>LB<br>FA<br>SDB<br>IJ<br>YJ<br>BJ<br>.... | Blank: G<br>P: PT<br>T: NPT |
|           |                                         | Blank: Basic type<br>D: Double shaft type<br>J: Double shaft and adjustable stroke type<br>SA: Single action extend type<br>SB: Single action return type |                            |   |                       |                                         |                                    |                                                         |                                                        |                             |

#### Order Example:

RAL series, Double shaft and adjustable stroke type, air cushion, Bore 32mm, stroke 25mm, Adjustable stroke 20, with magnet, No Mounting type, Round tail, PT thread.  
ERP code is: RALCJ32\*25-20-S-CM-P

Note: If cylinder with several different mounting accessories, pls with this sequential coding: LB/FA/SDB /IJ/YJ/BJ

### Specifications

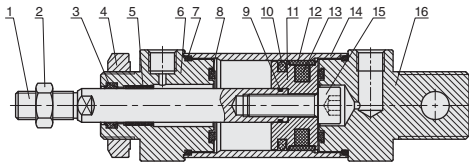
| Bore size(mm)             | 16                                               | 20                                              | 25 | 32 | 40   |
|---------------------------|--------------------------------------------------|-------------------------------------------------|----|----|------|
| Acting type               | Double Acting/Single Acting                      |                                                 |    |    |      |
| Working medium            | Clean Air(40 μ m filtration)                     |                                                 |    |    |      |
| Working pressure (MPa)    | 0.1-0.7(Double Acting)<br>0.2-0.7(Single Acting) | 0.1~1.0(Double Acting) / 0.2~1.0(Single Acting) |    |    |      |
| Guaranteed pressure (MPa) | 1.5                                              |                                                 |    |    |      |
| Working temperature (℃)   | -20~80(Dry air)                                  |                                                 |    |    |      |
| Speed range (mm/s)        | 50~800                                           |                                                 |    |    |      |
| Cushion type              | Fixed cushion / Air cushion                      |                                                 |    |    |      |
| Barrel material           | Aluminum alloy                                   |                                                 |    |    |      |
| Mounting type             | LB FA SDB                                        |                                                 |    |    |      |
| Port size                 | M5×0.8                                           | G1/8                                            |    |    | G1/4 |

● NPT、PT port size is optional.

### Stroke

|               | Bore (mm) | Standard stroke (mm)                                        | Max. stroke (mm) |
|---------------|-----------|-------------------------------------------------------------|------------------|
| Double Acting | 16~20     | 25 50 75 80 100 125 150 160 175 200 250 300                 | 800              |
|               | 25~40     | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 1500             |
| Single Acting | 16        | 25 50 75 100                                                | 100              |
|               | 20~40     | 25 50 75 100 125 150                                        | 150              |

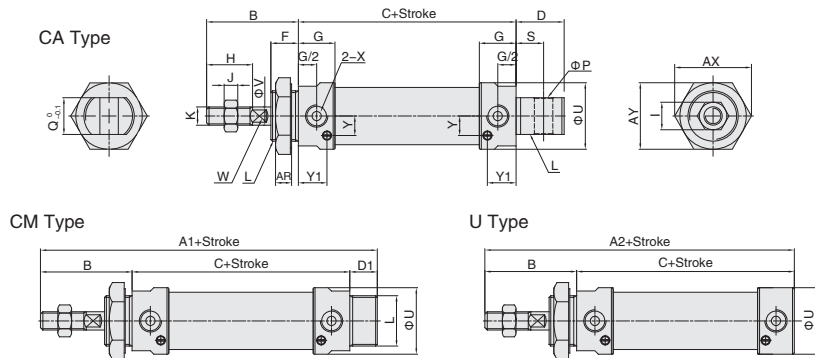
### Internal Structure



| NO. | Part name                | Material                      |
|-----|--------------------------|-------------------------------|
| 1   | Piston rod               | S45C hard chrome carbon steel |
| 2   | Nut                      | Carbon steel                  |
| 3   | Piston rod seal          | NBR                           |
| 4   | Nut                      | Carbon steel                  |
| 5   | Self lubricating bearing | Bronze powder                 |
| 6   | Head cover               | Aluminum alloy                |
| 7   | O-ring                   | NBR                           |
| 8   | Anti-bump cushion        | TPU                           |
| 9   | O-ring                   | NBR                           |
| 10  | Piston seal              | NBR                           |
| 11  | Piston                   | Aluminum alloy                |
| 12  | Wear ring                | PTFE                          |
| 13  | Magnet                   | Plastic                       |
| 14  | Barrel                   | Aluminum alloy                |
| 15  | Hexagon screw            | Carbon steel                  |
| 16  | Rear cover               | Aluminum alloy                |

### Main dimensions

#### RAL Φ16-Φ40

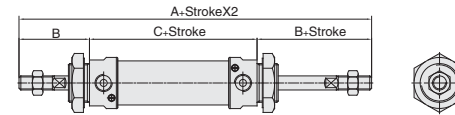


| Bore\Sign | A1  | A2  | B  | C  | D  | D1 | F  | G  | H  | I  | J | K        | L       | P  | Q  | S  | U    | V  | W  | X      | AR | AX | AY | Y   | Y1   |
|-----------|-----|-----|----|----|----|----|----|----|----|----|---|----------|---------|----|----|----|------|----|----|--------|----|----|----|-----|------|
| 16        | 102 | 92  | 36 | 56 | 14 | 10 | 14 | 11 | 16 | 10 | 5 | M6X1.0   | M16X1.5 | 6  | 12 | 7  | 20   | 6  | 5  | M5X0.8 | 6  | 25 | 22 | 6.3 | 8    |
| 20        | 122 | 110 | 40 | 70 | 21 | 12 | 12 | 16 | 20 | 12 | 6 | M8X1.25  | M22X1.5 | 8  | 16 | 12 | 29   | 8  | 6  | 1/8"   | 7  | 33 | 29 | 8.5 | 12.5 |
| 25        | 128 | 114 | 44 | 70 | 21 | 14 | 14 | 16 | 22 | 17 | 6 | M10X1.25 | M22X1.5 | 8  | 16 | 12 | 34   | 10 | 8  | 1/8"   | 7  | 33 | 29 | 10  | 12.5 |
| 32        | 128 | 114 | 44 | 70 | 27 | 14 | 14 | 16 | 22 | 17 | 6 | M10X1.25 | M24X2.0 | 10 | 16 | 15 | 39.5 | 12 | 10 | 1/8"   | 8  | 37 | 32 | 12  | 12   |
| 40        | 152 | 138 | 46 | 92 | 27 | 14 | 14 | 22 | 24 | 17 | 7 | M12X1.25 | M30X2.0 | 12 | 20 | 15 | 49.5 | 16 | 14 | 1/4"   | 9  | 47 | 41 | 16  | 18   |

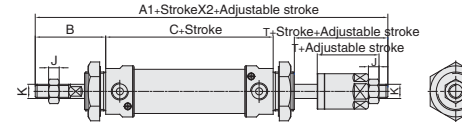
Note: With magnet and without magnet, the dimensions are same.

### Main dimensions

#### RALD Φ16-Φ40



#### RALJ Φ16-Φ40



| Bore\Sign | A   | A1  | B  | C  | J | K        | T  |
|-----------|-----|-----|----|----|---|----------|----|
| 16        | 128 | 127 | 36 | 56 | 5 | M6X1.0   | 21 |
| 20        | 150 | 147 | 40 | 70 | 6 | M8X1.25  | 25 |
| 25        | 158 | 155 | 44 | 70 | 6 | M10X1.25 | 27 |
| 32        | 158 | 155 | 44 | 70 | 6 | M10X1.25 | 27 |
| 40        | 184 | 180 | 46 | 92 | 7 | M12X1.25 | 28 |

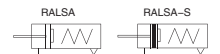
Note: Unlabeled the same size as standard type.

### Main dimensions

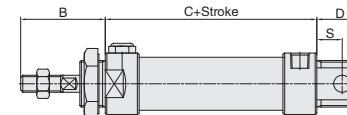
#### RALSB Φ16-Φ40



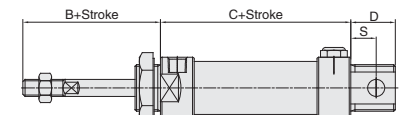
#### RALSA Φ16-Φ40



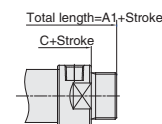
#### CA Type



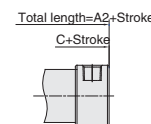
#### CA Type



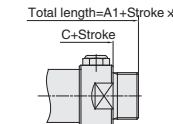
#### CM Type



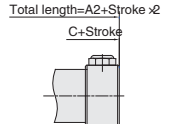
#### U Type



#### CM Type



#### U Type



| Bore\Sign | A1   |        |         | A2   |        |         | C    |        |         | B  | D  | S  |
|-----------|------|--------|---------|------|--------|---------|------|--------|---------|----|----|----|
|           | 0-50 | 51-100 | 101-150 | 0-50 | 51-100 | 101-150 | 0-50 | 51-100 | 101-150 |    |    |    |
| 16        | 127  | 152    | —       | 117  | 142    | —       | 81   | 106    | —       | 36 | 14 | 7  |
| 20        | 147  | 172    | 197     | 135  | 160    | 185     | 95   | 120    | 145     | 40 | 21 | 12 |
| 25        | 153  | 178    | 203     | 139  | 164    | 189     | 95   | 120    | 145     | 44 | 21 | 12 |
| 32        | 153  | 178    | 203     | 139  | 164    | 189     | 95   | 120    | 145     | 44 | 27 | 15 |
| 40        | 177  | 202    | 227     | 163  | 188    | 213     | 117  | 142    | 167     | 46 | 27 | 15 |

Note: Unlabeled the same size as standard type.



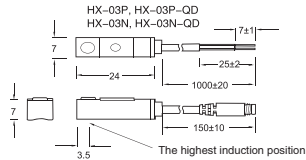
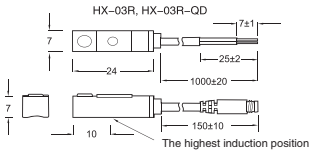
### How to Order?

|                        |   |            |   |                        |   |                        |   |                 |   |                       |
|------------------------|---|------------|---|------------------------|---|------------------------|---|-----------------|---|-----------------------|
| HX                     | - | 03         | - | R                      | - | H                      | - | 2M              | - | QD8                   |
| Product code           |   | Series No. |   | Special model          |   | No.:Standard sensitive |   | Wire length     |   | Connection            |
| Switch type            |   |            |   | No.:Standard sensitive |   | B: NC type             |   | No: Standard 1M |   | QD8: QD8 Male fitting |
| R:Two wire reed switch |   |            |   | H: High sensitive type |   | L: Low sensitive type  |   | 1.5M: 1.5M      |   |                       |
| N: NPT type            |   |            |   | X: No indicator type   |   |                        |   | 2M: 2M          |   |                       |
| P: PNP type            |   |            |   |                        |   |                        |   | 5M: 5M          |   |                       |

- Note: 1. Testing with standard magnet:  $\Phi 15.5 \times \Phi 8 \times 5$  ( Plastic magnet ) ;  
 2. Sine wave/X、Y、Z3 axial direction/ each axial direction three times/ each time 11ms;  
 3. complex amplitude 1.5mm/10Hz~55Hz sweep frequency, last one minute/ each time X、Y、Z axial direction for one hour;  
 4. 1-No/2-output short circuit protection/3=Power reverse connection protection/4=Surge absorption protection

1

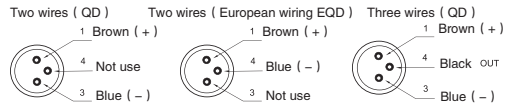
### Dimensions



### HX-03 be fixed by PBK steel belt

For  $\Phi 6$ – $\Phi 63$  round air cylinder

### QD fitting wiring



### Specification

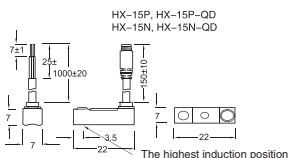
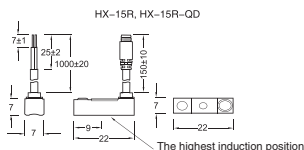
| Type                     | HX-03R                                   | HX-03N                                                               | HX-03P                                    |
|--------------------------|------------------------------------------|----------------------------------------------------------------------|-------------------------------------------|
| Connect Diagram          |                                          |                                                                      |                                           |
| Parameter                |                                          |                                                                      |                                           |
| Wiring method            | 2-Wire Type                              | 3-Wire Type                                                          |                                           |
| Switching logic          | SPST Normally Open                       | Solid State Output, Normally Open                                    |                                           |
| Sensor type              | Reed switch                              | NPN type ( Input )      PNP type ( Output )                          |                                           |
| Operating voltage        | 5 – 240V DC/AC                           | 5 – 30V DC                                                           |                                           |
| Max. switching current   | 100mA                                    | 200mA                                                                |                                           |
| Contact rating           | 10W                                      | 6W                                                                   |                                           |
| Current consumption      | None                                     | 20mA max @ 24V                                                       |                                           |
| Voltage drop             | 3.0V                                     | 0.5V max @ 200mA                                                     |                                           |
| Leakage current          | None                                     | 0.01mA                                                               |                                           |
| Indicator                | Red LED                                  | Red LED                                                              | Green LED                                 |
| Max. exchange frequency  | 200Hz                                    | 1000Hz                                                               |                                           |
| Temperature range        |                                          | -10 – 70℃                                                            |                                           |
| Shock                    | 30G                                      |                                                                      | 50G                                       |
| Vibration                |                                          | 9G                                                                   |                                           |
| Enclosure classification |                                          | IEC 529 IP67 ( NEMA 6 )                                              |                                           |
| Protection circuit       | None                                     | Power reverse connection protection      Surge absorption protection |                                           |
| Cable                    | 2.8Φ, 2C, Gray color, oil resistance PVC |                                                                      | 2.8Φ, 3C, Black color, oil resistance PVC |

## How to Order?

|              |   |                         |   |                         |   |   |                  |    |                       |     |
|--------------|---|-------------------------|---|-------------------------|---|---|------------------|----|-----------------------|-----|
| HX           | - | 15                      | - | R                       | - | H | -                | 2M | -                     | QD8 |
| Product code |   | Series No.              |   | Special model           |   |   | Wire length      |    | Connection            |     |
| Switch type  |   | R: Two wire reed switch |   | No.: Standard sensitive |   |   | No.: Standard 1M |    | QD8: QD8 Male fitting |     |
| N: NPT type  |   | P: PNP type             |   | B: NC type              |   |   | 1.5M: 1.5M       |    |                       |     |
|              |   |                         |   | H: High sensitive type  |   |   | 2M: 2M           |    |                       |     |
|              |   |                         |   | L: Low sensitive type   |   |   | 5M: 5M           |    |                       |     |
|              |   |                         |   | X: No indicator type    |   |   |                  |    |                       |     |

Note: 1. Testing with standard magnet:  $\Phi 15.5 \times \Phi 8 \times 5$  ( Plastic magnet ) ;  
 2. Sine wave/X, Y, Z3 axial direction/ each axial direction three times/ each time 11ms;  
 3. complex amplitude 1.5mm/10Hz~55Hz sweep frequency, last one minute/ each time X, Y, Z axial direction for one hour;  
 4. 1=No/2=output short circuit protection/3=Power reverse connection protection/4=Surge absorption protection

## Dimensions

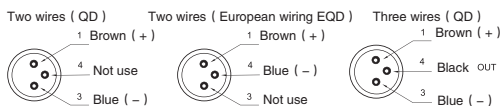


HX-15 be fixed by PBK steel belt



For  $\Phi 6-\Phi 63$  round air cylinder

## QD fitting wiring



## Specification

| Type                     | HX-15R                                   | HX-15N                                                          | HX-15P              |
|--------------------------|------------------------------------------|-----------------------------------------------------------------|---------------------|
| Connect Diagram          |                                          |                                                                 |                     |
| Parameter                |                                          |                                                                 |                     |
| Wiring method            | 2-Wire Type                              | 3-Wire Type                                                     |                     |
| Switching logic          | SPST Normally Open                       | Solid State Output, Normally Open                               |                     |
| Sensor type              | Reed switch                              | NPN type ( Input )                                              | PNP type ( Output ) |
| Operating voltage        | 5 - 240V DC/AC                           | 5 - 30V DC                                                      |                     |
| Max. switching current   | 100 mA max.                              | 200 mA max.                                                     |                     |
| Contact rating           | 10 W max.                                | 6 W max.                                                        |                     |
| Current consumption      | None                                     | 20mA @ 24V DC max                                               |                     |
| Voltage drop             | 3.0V max.                                | 0.5V @ 200mA max                                                |                     |
| Leakage current          | None                                     | 0.01mA max.                                                     |                     |
| Indicator                | Green LED                                | Red LED                                                         |                     |
| Max. exchange frequency  | 200Hz                                    | 1000Hz                                                          |                     |
| Temperature range        |                                          | -10 ~ 70℃                                                       |                     |
| Shock                    | 30G                                      |                                                                 | 50G                 |
| Vibration                |                                          | 9G                                                              |                     |
| Enclosure classification |                                          | IEC 529 IP67 (NEMA 6)                                           |                     |
| Protection circuit       | None                                     | Power reverse connection protection Surge absorption protection |                     |
| Cable                    | 2.8Φ, 2C, Gray color, oil resistance PVC | 2.8Φ, 3C, Black color, oil resistance PVC                       |                     |