

Series Compatible with Secondary Batteries

Material restriction

Copper metal, Zinc, Nickel
Nickel plating, Zinc chromate

90-Series

Copper metal restriction

Copper metal, Nickel plating

25-Series

For longer life,
low dew point

Material restriction + Lub-retainer

Service life has been improved
with a lub-retainer compared
with SMC's standard models.
Compatible with a low dew
point (-40°C).

91-Series

Low dust

Material restriction + Vacuum port for vacuum suction

Using a vacuum port for
vacuum suction enables
reducing more dust particles
than 90-series.

92-MSQB Series

Dust-tight

Material restriction + Lub-retainer + Heavy-duty scraper

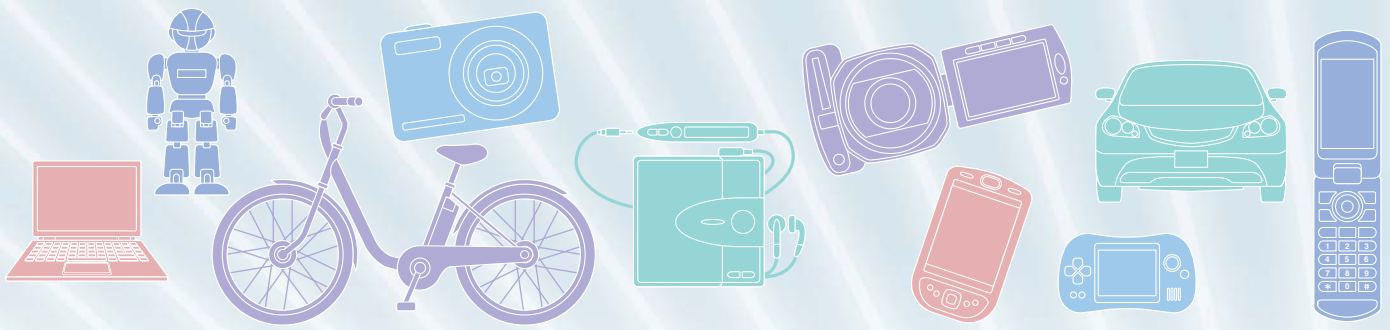
Dustproofing has been
improved with a lub-retainer
and heavy-duty scraper.

91-□-XC4 Series

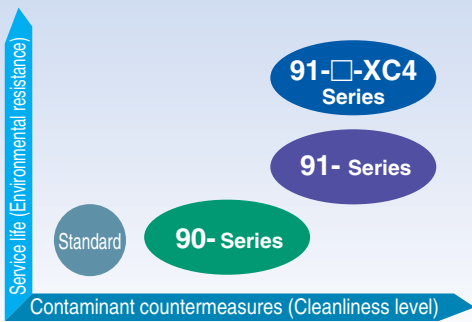
Compatible with
main products
to terminal devices



C-E08-6A [Ⓐ]



Secondary battery manufacturing process



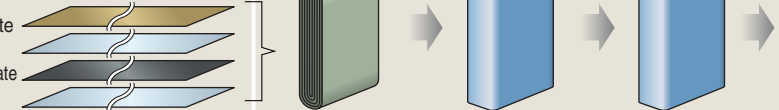
Electrode production

Environment
Copper-free (prohibited materials)/
Dust

| Weighing | Kneading | Coating |
|----------|----------|---------|
| Dry | Roll | Press |

Winding
Layering

Anode plate
Separator
Cathode plate
Separator



Material restriction

90- Series

Restricting material prevents contamination by foreign matter.

90- Series

Material restriction: 90- + Lub-retainer

91- Series

Service life has been improved with a lub-retainer compared with SMC's standard models. Compatible with a low dew point (-40°C).

91- Series

Material restriction: 90- + Lub-retainer: 91- + Heavy-duty scraper

91-XC4 Series

Dustproofing has been improved with a lub-retainer and heavy-duty scraper.

91-XC4 Series

Material restriction: 90- + Vacuum port for vacuum suction

92- Series

Using a vacuum port for vacuum suction enables reducing more dust particles than 90- series.

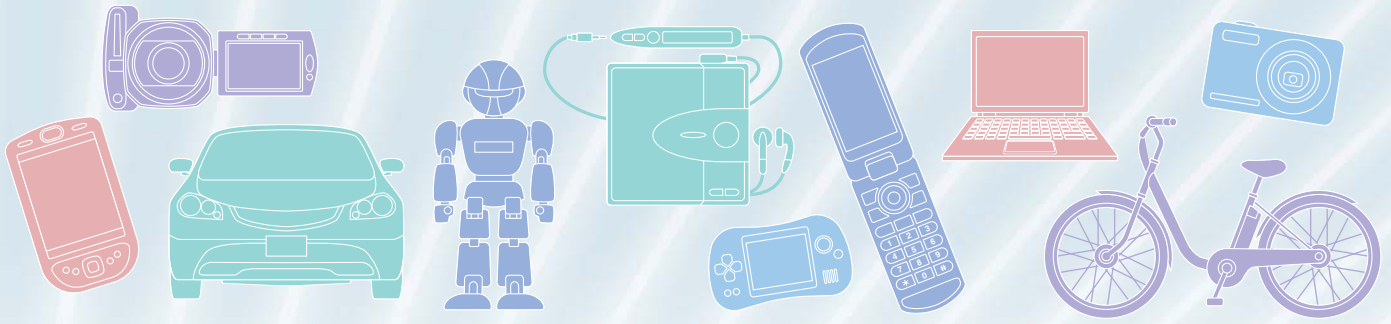
92- Series

Copper metal restriction

25- Series

25- Series

*Depending on the device, some products are not for. See device introduction pages.



Cell assembly

Environment

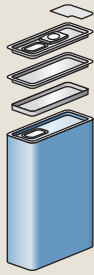
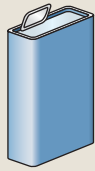
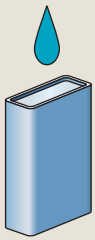
Copper-free (prohibited materials)/Low dew point/Chemical resistant/
High-speed, high-frequency specifications

Inspection/Packaging

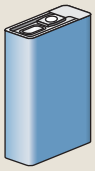
Environment

High-temperature/Long-loading time

Liquid injection



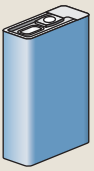
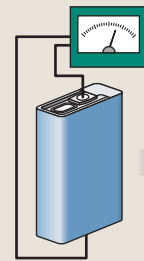
Sealing



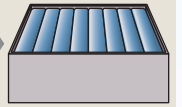
Activation



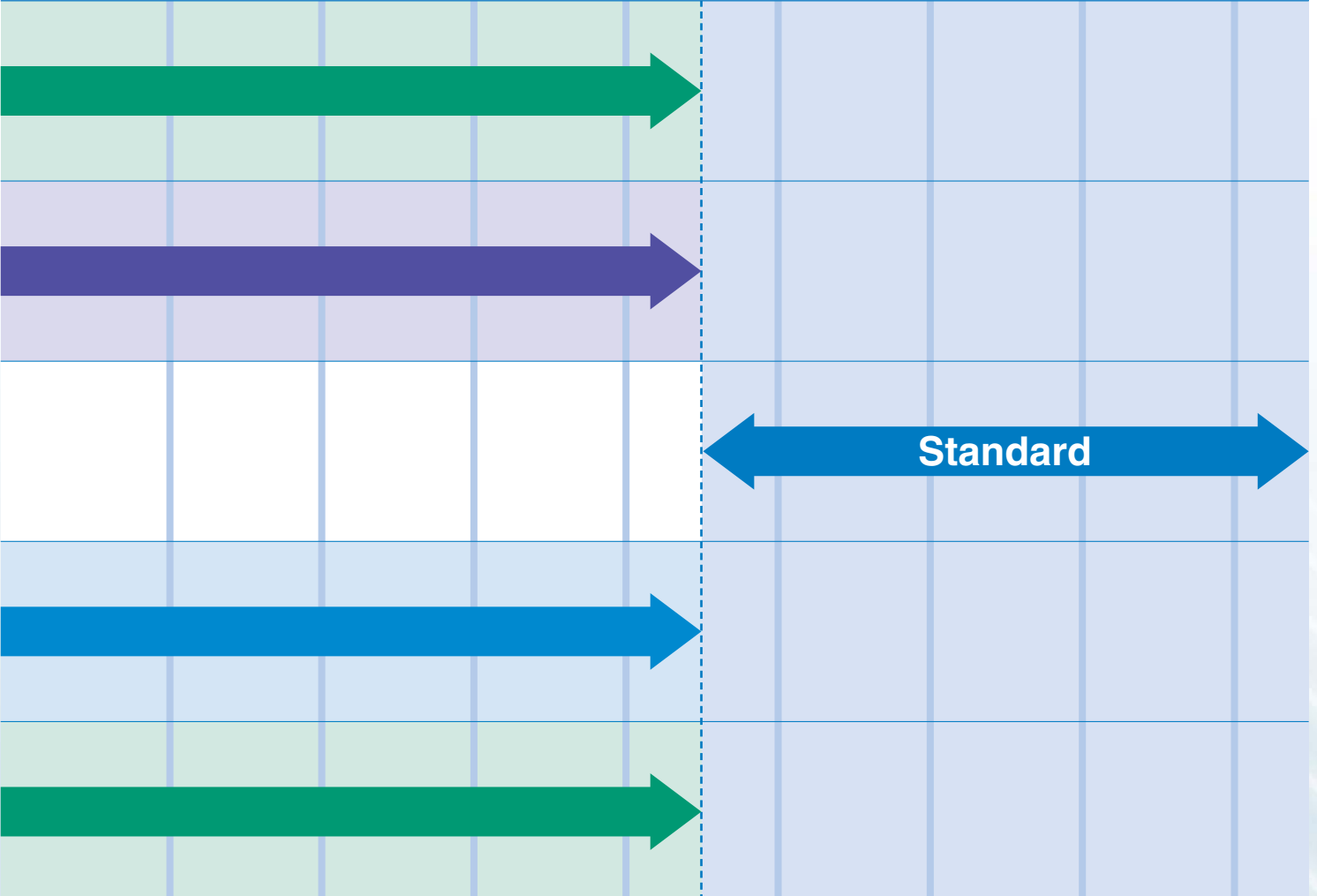
Inspection



Package

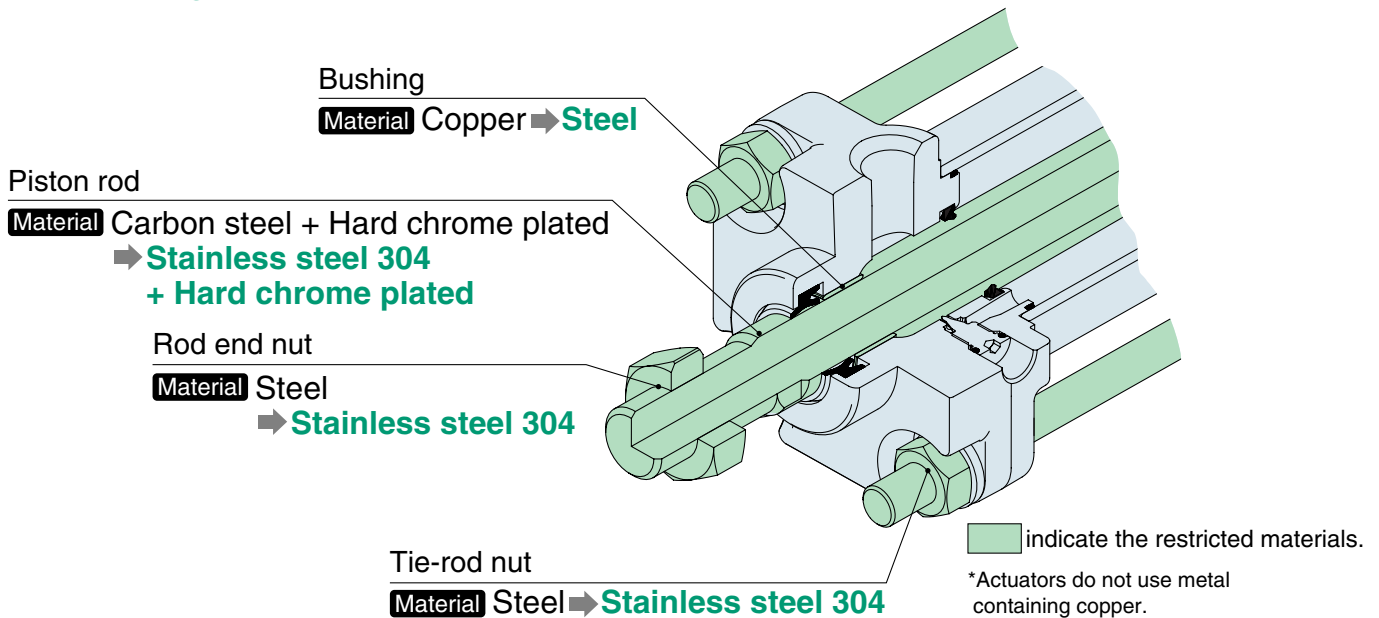


Recommended devices



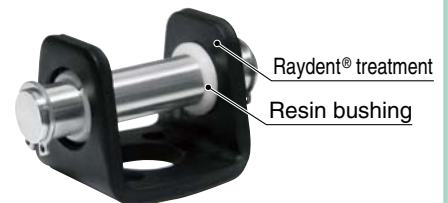
Material restriction 90- Series

Mounting dimensions are the same as those of the standard series.



Mounting Bracket
(Foot style, Trunnion style, Flange style etc.)
Steel + **Raydent® treatment**

Pivot bracket
Resin bushing + Steel + **Raydent® treatment**



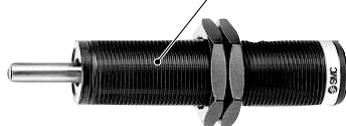
90-91- CDG1 Series Double clevis style

Material Change (Related Products)

Shock Absorber

The outer tube surface treatment has been changed to Raydent® treatment. Using low-dust fluorine grease.

Change of outer tube surface treatment



90-RB Series

Floating Joint

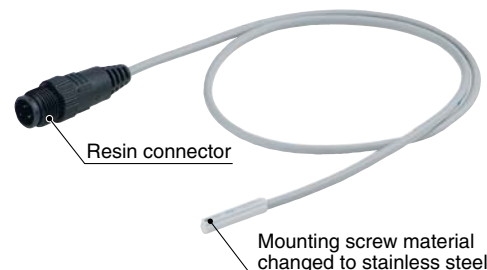
External parts such as casings, studs, threads, and nuts are changed to stainless steel.



90-J□ Series

Auto Switch

The connector material of the auto switch with pre-wired connector has been changed to resin, and the auto switch mounting screw material has been changed to stainless steel.



D-M9BWS DPC-900 Series

*The lead wires and connector pins are made of copper.

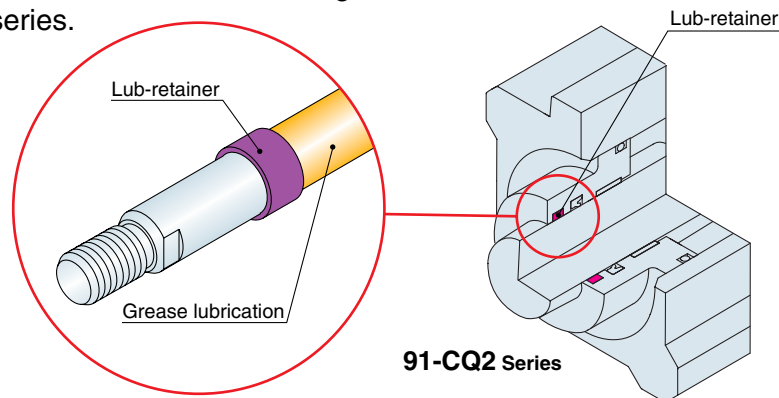
Improved service life 91-Series

Material restriction + Lub-retainer

Service life has been improved with a lub-retainer compared with SMC's standard models. Compatible with a low dew point (-40°C).

Air Cylinder

Mounting dimensions are not interchangeable with the 90-series.



For use in dusty environment 91-□-XC4 Series

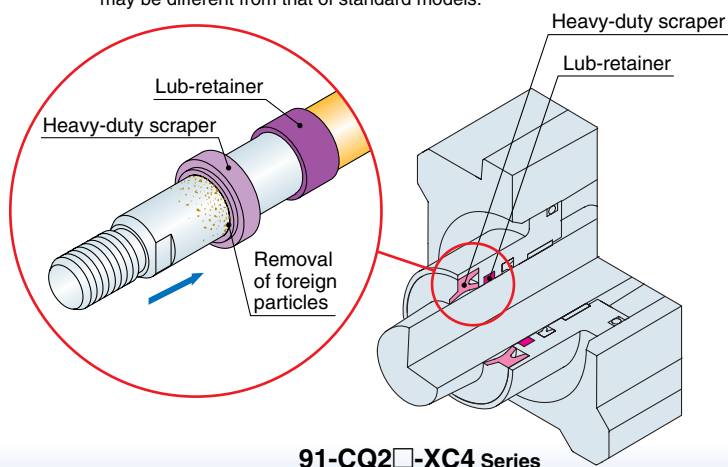
Material restriction + Lub-retainer + Heavy-duty scraper

Dustproofing has been improved with a lub-retainer and heavy-duty scraper.

Air Cylinder

Mounting dimensions are not interchangeable with the 90- and 91-series.

Note) For some models, the minimum operating pressure may be different from that of standard models.



Mounting Dimension Comparison

90-spec.

Mounting dimensions are the same as those of standard models.

5 to 7 mm longer

91-spec.

3 to 5 mm longer

91-XC4 spec.

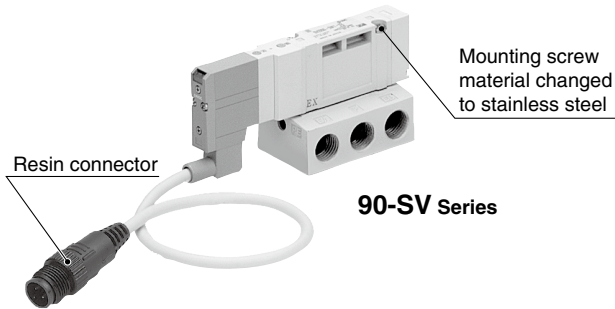
90- Series

Pneumatic equipment material restriction

Mounting dimensions are the same as those of the standard series.

Solenoid Valve

Changed to with resin pre-wired connector.



Mounting screw material has been changed to stainless steel.



* Coils for solenoid valves, connector pins, and lead wires are made of copper.

Mist Separator



Regulator

Valve (wetted parts) material has been changed to stainless steel.



Flow Switch

Fluid-contact material (metal) has been changed to stainless steel.



Fittings/Speed Controller

Stainless steel specifications (Stainless steel 303)



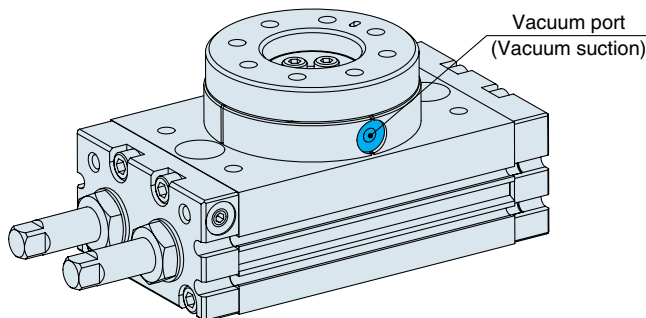
92-MSQB Series

Material restriction + Vacuum port for vacuum suction

Using a vacuum port for vacuum suction enables reducing more dust particles than 90- series.

Rotary Actuator

A vacuum port for vacuum suction has been added to reduce the number of dust particles being emitted from the bearing part.

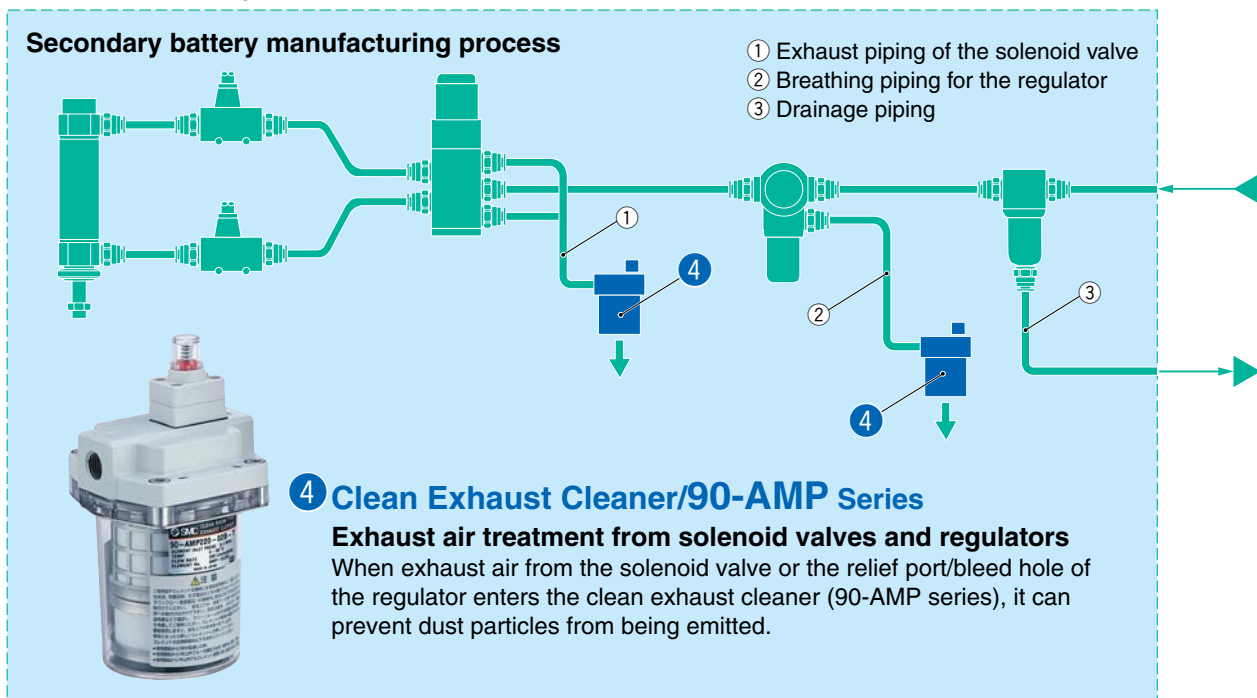


92-MSQB Series

Recommended System Circuit for the Secondary Battery Manufacturing Process




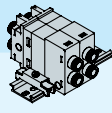




When the pneumatic equipment is used in the secondary battery manufacturing process, the system circuit shown below is recommended for dust particle generation countermeasures.

Recommended System Circuit








Directional Control Valves

● : Available as standard
 ▲ : Consult your SMC sales representative.

| Description | | Series | 90- | 25- | Remarks |
|---|----------------------------------|----------------|-----|-----|---------|
|  | 5 Port Solenoid Valve | SY5000, 7000 | ▲ | ● | |
|  | | SV2000, 4000 | ● | ▲ | |
|  | | VQ1000Y, 2000Y | ▲ | ● | |
|  | Separate Type Double Check Block | VQ1000 | ● | ▲ | |
| | | VQ2000 | ● | ● | |
|  | 3 Port Solenoid Valve | VP342, 542 | ● | ▲ | |
| | | VP742 | ▲ | ● | |
|  | 3 Port Solenoid Valve | VT317 | ● | ▲ | |
|  | | VG342 | ● | ▲ | |
|  | Finger Valve | VHK2 | ● | ▲ | |

Actuators

● : Available as standard
 ▲ : Consult your SMC sales representative.
 ○ : Made-to-Order

| Description | | Series | 90- | 91- | 91-XC4 | 25- | Remarks |
|---|-------------------------------|-------------------------|-----|-----|-----------------|-----|---|
|  | Standard (Double acting only) | CDJ2 | ● | — | — | ● | ø10, ø16 |
|  | Standard | CDM2 | ▲ | — | — | ● | ø20 to ø40 |
|  | Standard (Double acting only) | Rubber Bumper CDG1□N | ● | ● | ○ ^{*1} | ● | 90- series for ø20 to ø50 25- series for ø20 to ø100 |
| | | Air Cushion CDG1□A | ▲ | — | — | ● | 25- series for ø25 to ø100 |
|  | Standard | MDB | ▲ | — | — | ● | ø40 to ø100 |
|  | Standard | CDA2 | ● | ● | ○ | ▲ | ø40 to ø100 |

*Refer to the auto switches (Front matter 13) for the models that can be mounted on actuators.

*1 Not compatible with ø20 and ø25.

Actuators







● : Available as standard
 ▲ : Consult your SMC sales representative.
 ○ : Made-to-Order

| Description | | | Series | 90- | 91- | 91-XC4 | 25- | Remarks |
|---|---------------------------------------|--|---------|-----|-----------------|-----------------|-----|---|
|  | Free Mount Cylinder | Standard | CDU | ● | ● | ○ ^{*1} | ▲ | ø10 to ø32 |
|  | | Non-rotating rod | CDUK | ▲ | ● ^{*2} | ○ ^{*1} | ▲ | ø10 to ø32 |
|  | Compact Cylinder | Standard (Double acting only) | CDQS | ● | ● | ○ ^{*3} | ● | ø12 to ø25 |
|  | | Anti-lateral load (Double acting only) | CDQS□S | ● | ● | — | ▲ | ø12 to ø25 |
|  | | Standard (Double acting only) | CDQ2 | ● | ● | ○ ^{*4} | ● | ø12 to ø100 |
|  | Mechanically Jointed Rodless Cylinder | Basic | MY1B | ● | ● | — | ▲ | ø20 to ø63 |
|  | | Linear guide 1-axis | MY1H | ● | ● | — | ▲ | ø16 to ø40 |
|  | | Linear guide 1-axis | MY2H | ● | ● | — | ▲ | ø16, ø25 |
|  | Magnetically Coupled Rodless Cylinder | Basic | CY3B | ▲ | ● | — | ▲ | ø15 to ø40 |
|  | | Direct mount | CY3R(G) | ▲ | ● | — | ▲ | ø15 to ø40 |
|  | Air Slide Table | Cross roller guide | MXS | ● | ● | ○ ^{*5} | ▲ | ø16, ø20, ø25 (Basic only) |
|  | | Recirculating linear guide | MXQ | ● | ● | ○ ^{*5} | ● | 90- series for ø6 to ø25 (Basic only) 25- series for ø6 to ø25 (Stopper) |
|  | Compact Guide Cylinder | Slide bearing | MGPM | ● | ● | ○ ^{*4} | ● | 90- series for ø12 to ø63 25- series for ø12 to ø100 |
| | | Ball bushing bearing | MGPL | ● | ● | ○ ^{*4} | ● | ø12 to ø63 |
|  | Dual Rod Cylinder | Slide bearing | CXSM | ▲ | — | — | ● | ø15 to ø25 |
| | | Ball bushing bearing | CXSL | ▲ | — | — | ● | ø6 to ø32 |

*Refer to the auto switches (Front matter 13) for the models that can be mounted on actuators.

*1 Not compatible with ø10 and ø16.
 *2 Not compatible with ø10.
 *3 Not compatible with ø12.
 *4 Not compatible with ø12 and ø16.
 *5 Not compatible with ø6, ø8, ø12 or ø16.

Actuators



| Description | | | Series | 90- | 91- | 91-XC4 | 25- | Remarks |
|---|-----------------------------|-------------------------------|--------|-----|-----|-----------------|-----|-------------|
|  | Guide Cylinder | Ball bushing bearing | MGGL | ● | ● | ○ | ▲ | ø20 to ø50 |
|  | Cylinder with Lock | Standard | CDNG□N | ▲ | ● | ○ ^{*1} | ▲ | ø20 to ø40 |
|  | Cylinder with Lock | Standard | CDNA□N | ▲ | ● | ○ | ▲ | ø40 to ø100 |
|  | Compact Cylinder with Lock | Standard (Double acting only) | CDLQ | ▲ | ● | ○ | ▲ | ø20 to ø100 |
|  | Stopper Cylinder | Standard | RSDQ | ● | — | — | ▲ | ø20 to ø50 |
|  | Heavy Duty Stopper Cylinder | Standard | RSH | ● | — | — | ▲ | ø20, ø32 |
| | | Standard | RS1H | ● | — | — | ▲ | ø50 to ø63 |

*Refer to the auto switches (Front matter 13) for the models that can be mounted on actuators.

*1 Not compatible with ø20 and ø25.


Related Products

● : Available as standard

| Description | | | Series | 90- | 25- | Remarks |
|---|----------------|----------------------|--------|-----|-----|---|
|  | Floating Joint | Standard | JA | ● | — | 90- series for applicable cylinders ø80 and ø100 25- series for applicable cylinders ø6 to ø15 (JS) 25- series for applicable cylinders ø20 to ø160 (Standard) |
| | | For compact cylinder | JB | ● | — | 90- series for applicable cylinders ø12 to ø100 25- series for applicable cylinders ø12 and ø16 (JS) 25- series for applicable cylinders ø20 to ø160 (Standard) |
| | | Stainless steel | JS | ● | — | 90- series for applicable cylinders ø10 to ø63 25- series available as standard |
|  | Shock Absorber | Standard | RB | ● | ● | M8 to M27 |
| | | Standard | RBC | ● | ● | M8 to M27 |

Rotary Actuator







- : Available as standard
- ▲ : Consult your SMC sales representative.

| Description | | | Series | 92- | 25- | Remarks |
|---|--------------|---------------|--------|-----|-----|-----------------|
|  | Rotary Table | Rack & Pinion | MSQB | ● | ▲ | Size: 20 to 100 |

*Refer to the auto switches (Front matter 13) for the models that can be mounted on rotary actuators.

- : Available as standard
- ▲ : Consult your SMC sales representative.
- : Made-to-Order

Air Grippers







| Description | | Series | 90- | 91- | 91-XC4 | 25- | Remarks |
|--|-------------------------------|--------|-----|-----|--------|-----------------|--|
|  | Standard | MHZ2 | — | — | — | ● | ø16 to ø40 |
| | Long stroke | MHZL2 | — | — | — | ▲ | ø10 to ø25 |
|  | With dust cover | MHZJ2 | ● | — | — | ▲ | ø10 to ø25 |
| | Long stroke (with dust cover) | MHZL2 | ● | — | — | ▲ | ø10, ø16, ø20 |
|  | Wide | MHL2 | ● | ● | ○ | ● ^{*1} | 90- series, 91- series, and 91- XC4 series are for ø20 and ø25. 25- series is for ø10 and ø32. |
|  | Low Profile Air Gripper | MHF2 | ▲ | — | — | ● | ø8, ø12, ø16, ø20 |
|  | 3-finger air gripper | MHS3 | ● | — | — | ▲ | ø16, ø20, ø25 |
|  | 4-finger air gripper | MHS4 | ● | — | — | ▲ | ø16, ø20, ø25 |

*Refer to the auto switches (Front matter 13) for the models that can be mounted on air grippers.

*1 Please contact SMC for ø40.



Vacuum Equipment

- : Available as standard
- ▲ : Consult your SMC sales representative.

| Description | | Series | 90- | 25- | Remarks |
|---|--|--------|-----|-----|---|
|  | Ejector unit | ZR | — | ▲ | |
| | Manifold | ZZR | — | ▲ | |
|  | Ejector unit | ZQ | ● | ▲ | With connector cover |
| | Manifold | ZZQ | ● | ▲ | With connector cover -X125: Port exhaust |
|  | Vacuum Ejector | ZH | — | — | Compatible with standard models |
|  | Air Suction Filter | ZFC | — | — | Compatible with standard models |
|  | Vertical vacuum entry (without buffer) | ZPT | ● | — | Pad material: Fluororubber |
| | Vertical vacuum entry (with buffer) | ZPT | ● | — | Pad material: Fluororubber |
|  | Pad | ZP | ● | ▲ | Mounting on a special adapter Pad material: Fluororubber |



Air Preparation Equipment

● : Available as standard

| Description | | Series | 90- | Remarks |
|---|----------------------|---------------------------|-----|--|
|  | Membrane Air Dryer | IDG50L to 100L | ● | With fittings for purge air discharge |
|  | Main Line Filter | AFF4C to 22C, 37B, 75B | ● | Drain discharge is possible only manually. |
| | Mist Separator | AM250C to 550C, 650, 850 | ● | Drain discharge is possible only manually. |
| | Micro Mist Separator | AMD250C to 550C, 650, 850 | ● | Drain discharge is possible only manually. |




Clean Air Filters

● : Available as standard

| Description | | Series | 90- | Remarks |
|---|---------------------------------|------------------|-----|---|
|  | Clean Air Filter | SFD100 | — | Compatible with standard models |
| | | SFD200 | ● | |
|  | Exhaust Cleaner for Clean Rooms | AMP220, 320, 420 | ● | With element service indicator |
| | | AMP420-06□-T-X1 | ● | With element service indicator [1500 ℓ/min (ANR)] |

Air Filters/Pressure Control Equipment






● : Available as standard
▲ : Consult your SMC sales representative.

| Description | | Series | 90- | 25- | Remarks |
|---|----------------------------------|--------------|-----|-----|---|
|  | Air Filter | AF30 to 60 | ● | ● | 25- series is for AF20 to AF60. Drain discharge is possible only manually. |
| | Mist Separator | AFM30, 40 | ● | ▲ | Drain discharge is possible only manually. |
| | Micro Mist Separator | AFD30, 40 | ● | ▲ | Drain discharge is possible only manually. |
|  | Regulator | AR20 to 50 | ▲ | ● | |
|  | Regulator with Backflow Function | AR25K to 60K | ● | ● | 25- series is for AR20K to AR50K. 90- series is with a joint at the relief port. Order a pressure gauge separately. |

*Please contact SMC for pressure gauges.

Air Filters/Pressure Control Equipment





●: Available as standard

| Description | | Series | 90- | Remarks |
|---|--|--------------------------|-----|--|
|  | Filter Regulator with Backflow Function | AW30K to 60K | ● | <ul style="list-style-type: none"> With fitting for relief port Drain discharge is possible only manually. Order a pressure gauge separately. |
|  | For Air Combination (Modular connection bracket) | Y30 to 60 Y30T to 60T | ● | <ul style="list-style-type: none"> Spacer T-bracket spacer For 30 to 60 |
|  | Precision Regulator | IR1000 to 3000 | ● | Order a pressure gauge separately. |
|  | Electro-Pneumatic Regulator | ITV2000 | ● | This is not completely copper-free since the electric circuit is included. (Wetted parts are copper-free.) |
|  | Residual Pressure Indicator | CB-97XH | — | Compatible with standard models |

*Please contact SMC for pressure gauges.

Fittings/Flow Control Equipment



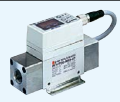
●: Available as standard

| Description | | Series | 90- | Remarks |
|---|--|--------------|-----|---------------------------------|
|  | Quick Exhaust Valve with Built-in One-touch Fittings | AQ240F, 340F | ● | |
|  | Check Valve with One-touch Fittings | AKH4 to 12 | ● | |
|  | Speed Controller with One-touch Fittings Stainless Steel Specifications | AS-FG | — | Compatible with standard models |
|  | One-touch Fittings Stainless Steel Specifications | KG | — | Compatible with standard models |



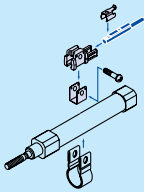
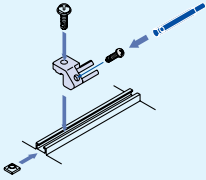
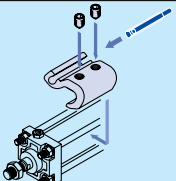
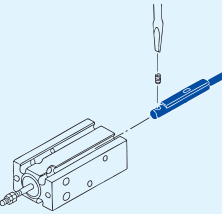
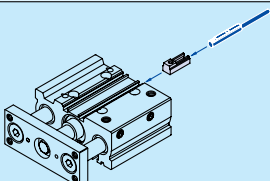

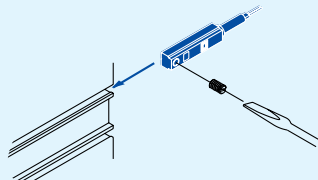

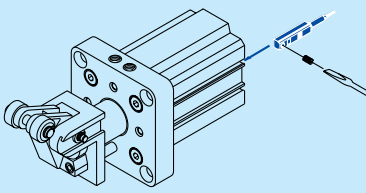
Detection Switches

●: Available as standard

▲: Consult your SMC sales representative.

| Description | | Series | 90- | 25- | Remarks |
|---|--|-----------------|-----|-----|--|
|  | 2-Color Display High-Precision Digital Pressure Switch | ZSE30A / ISE30A | ▲ | ● | |
|  | 2-Color Display Digital Flow Switch | PFM | ● | ▲ | Note) Copper will be exposed when the connector cover moves. |
|  | Digital Flow Switch for Water | PF2W | ● | — | 90- series covers 25- series. |

Auto Switches

| Series | Applicable cylinder | Mounting | | |
|--|---|--|---|--|
| 2-Color Display Solid State Switch D-M9BWSDDPC-900 D-M9BWSVDDPC-900 D-M9BWL-900 D-M9BWVL-900  Reed Switch D-A90L-900  | CDJ2 Series CDG1 Series MGG Series | Band mounting ^{*1} |  | |
| | CDQ2 Series RSQ Series | Rail mounting ^{*1} |  | |
| | ^{*2} | CDA2 Series CDNA Series | Tie-rod mounting ^{*1} |  |
| | ^{*2} | CDU Series CQ Series MY Series CY3R Series RSQ Series MSQ Series MHZJ Series ^{*4} MHZL Series ^{*4} MHS Series ^{*4} MX Series | Direct mounting (Round groove) |  |
| | MY Series ^{*3} CY3R Series MGP Series MLGP Series RSH Series MHL Series ^{*4} | Direct mounting ^{*1} (Square groove) |  | |
| 2-Color Display Solid State Switch D-Y7BWL-900 D-Y7BWVL-900  | MY1B50 Series | Direct mounting |  | |
| Reed Switch D-Z80L-900  | RSH Series MY1B25 to 63 | Direct mounting |  | |

^{*1} Can be mounted on the products by using an auto switch mounting bracket. ^{*2} The auto switch mounting bracket material is also restricted.

^{*2} The D-A90L-900 cannot be mounted on the RSH, RS1H, MY1B25 to 63, CDNA□50.

^{*3} The D-M9BW(V)□-900 cannot be mounted on the MY1B50.

^{*4} Reed switches (D-A90L-900 and D-Z80L-900) cannot be mounted on the MHZJ, MHZL, MHS, MHL series.

Table Comparing Materials and Treatment of Components

| Product, Series | Parts | | Standard | 25 series | 90 series |
|--------------------------------------|--|---------------------------------------|---|--|--|
| Cylinder CQ2 | Bushing ($\phi 50$ to $\phi 100$) | Material | Copper metal | Iron metal | Iron metal |
| | | Treatment | — | — | — |
| | Piston | Material | Aluminum | Aluminum | Aluminum |
| | | Treatment | Chromate | Chromate | Anodized ($\phi 12$ to $\phi 40$) |
| | Rod | Material | S45C | S45C | SUS304 |
| | | Treatment | Hard-chrome-plated | Hard-chrome-plated | Hard-chrome-plated |
| Mounting bracket | Material | Iron | Iron | Iron | |
| | Treatment | Ni-plated (Copper base) | Raydent®-treated | Raydent®-treated | |
| Cylinder MGPM | Bushing | Material | Copper metal | Iron metal | Iron metal |
| | | Treatment | — | — | — |
| | Guide bushing | Material | Lead bronze casting | Iron metal | Iron metal |
| | | Treatment | — | — | — |
| | Guide rod | Material | Iron | Iron | SUS440C |
| | | Treatment | Hard-chrome-plated | Hard-chrome-plated | Hard-chrome-plated |
| Plate | Material | Iron | SUS304 | SUS304 | |
| | Treatment | Ni-plated (Copper base) | — | — | |
| Air slide table MXQ | Piston | Material | Brass ($\phi 6$ and $\phi 8$) Aluminum ($\phi 12$ and up) | SUS304 ($\phi 6$ and $\phi 8$) Aluminum ($\phi 12$ and up) | SUS304 ($\phi 6$ and $\phi 8$) Aluminum ($\phi 12$ and up) |
| | | Treatment | Electroless Ni-plated ($\phi 6$ and $\phi 8$) Chromate ($\phi 12$ and up) | — Chromate ($\phi 12$ and up) | — Anodized ($\phi 12$ and up) |
| | Piston spacer | Material | Brass | SUS304 | SUS304 |
| | | Treatment | Electroless Ni-plated | — | — |
| | Packing support | Material | Brass | SUS303 | SUS303, SUS304 |
| | | Treatment | Electroless Ni-plated | — | — |
| Bolts and screws | Material | Iron | Iron | Iron | |
| | Treatment | Ni-plated (Copper base) | Black dyeing | Raydent®-treated | |
| Solenoid valve | Bolts and screws | Material | Iron | SUS | SUS |
| | | Treatment | Ni-plated (Copper base) | — | — |
| Filter AF30 to 60 | Drain plug | Material | Brass | SUS303 | SUS303 |
| | | Treatment | Electroless Ni-plated | — | — |
| | Rod | Material | Brass | SUS303 | SUS303 |
| | | Treatment | — | — | — |
| | Bracket | Material | Steel belt | Steel belt | Steel belt |
| | | Treatment | Electrodeposition painted (Black) | Electrodeposition painted (Black) | Raydent®-treated |
| Regulator AR25K to 60K | Check valve plug | Material | Brass | SUS303 | SUS303 |
| | | Treatment | — | — | — |
| | Packing retainer | Material | AR50, 60: Brass | AR50, 60: Aluminum | AR50, 60: Aluminum |
| | | Treatment | — | — | — |
| | Valve | Material | Brass | SUS303 | SUS303 |
| | | Treatment | — | — | — |
| | Stem | Material | Brass | SUS303 | SUS303 |
| | | Treatment | — | — | — |
| | Bonnet | Material | AR25 to 40: POM AR50, 60: ADC | AR25 to 40: POM AR50, 60: ADC | ADC |
| | | Treatment | AR25 to 40: — AR50, 60: Chromate, black painted | AR25 to 40: — AR50, 60: Chromate, black painted | Chromate, black painted |
| Bracket | Material | Steel belt | Steel belt | Steel belt | |
| | Treatment | Electro-deposition painted (Black) | Electro-deposition painted (Black) | Raydent®-treated | |

1 Clean

■ Clean Room Products

Products for use in clean rooms. Particle reducing products.
Assembled inside a clean room and shipped in double packaging.

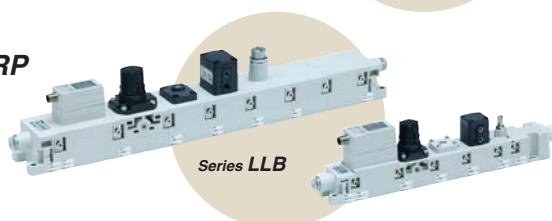
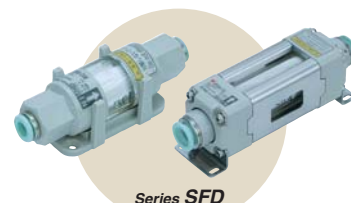
- Clean Series *10-/11-/12-/13-*
- Clean Rodless Cylinder *Series CYP*
- Clean One-touch Fittings
for Driving Air Piping *Series KPQ/KPG*
- Clean Speed Controller
with One-touch Fitting *Series AS-FPQ/FPG*
- Exhaust Cleaner for Clean Room *Series AMP*
- Non-Metallic Pump/
Double Acting Pump *Series PAF*
- High Vacuum Equipment
- Clean Regulator *Series SRH*
- Precision Clean Regulator *Series SRP*
- Fluoropolymer Equipment
- Polyolefin Tubing *Series TPH*
- Soft Polyolefin Tubing *Series TPS*



■ Clean Blow Products

Products for clean air lines.
Assembled inside a clean room and double packaging.

- Clean Gas Filter *Series SF*
- Clean Air Filter/
Hollow Fiber Element *Series SFD*
- Clean Air Module *Series LLB*
- Clean Regulator *Series SRH/SRP*
- Clean Regulator/
Fluoropolymer Type *Series SRF*
- Clean One-touch Fittings
(for Blowing) *Series KP*
- Polyolefin Tubing *Series TPH/TPS*
- Air Operated Chemical Valve/
Threaded Type *Series LVA*
- High Vacuum Straight
Solenoid Valve *Series XSA*



Consult SMC about "Material restriction".

2 Fluoropolymer

Equipment made with fluoropolymer excels in corrosion resistance and heat resistance.

Pressure Control Equipment

- Clean Regulator/
Fluoropolymer Type *Series SRF*

Fittings and Tubings

- Fluoropolymer Fittings
Hyper Fitting *Series LQ1/LQ3*
- Fluoropolymer Tubing *Series TL/TIL*
- FEP Tubing (Fluoropolymer) *Series TH/TIH*
- Soft Fluoropolymer Tubing *Series TD/TID*

Flow Sensor

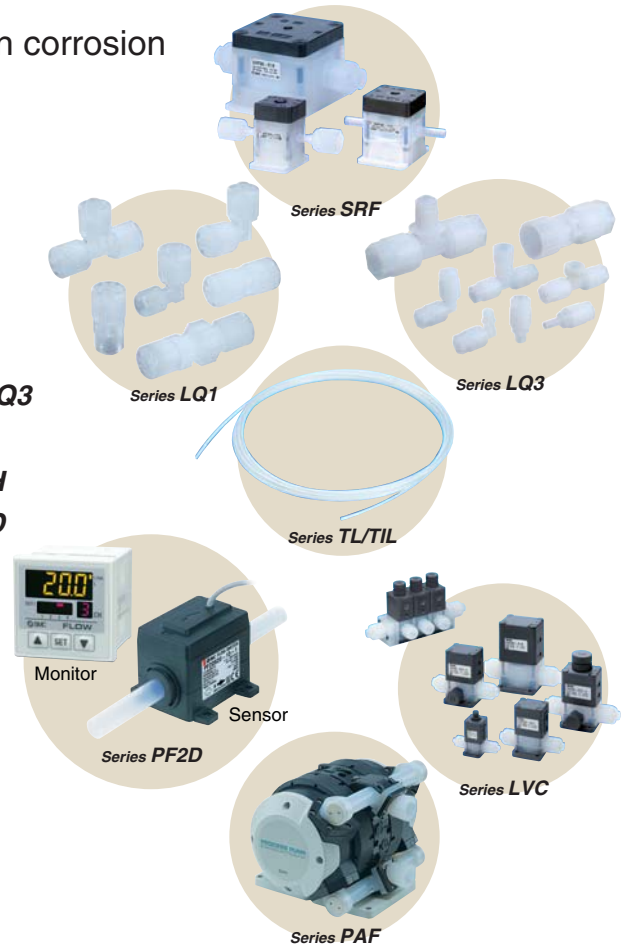
- Digital Flow Switch for Deionized
Water and Chemicals *Series PF2D*

Fluid Control Equipment

- Air Operated Chemical Valve *Series LV*

Pump

- Non-Metallic Pump/
Double Acting Pump *Series PAF*



Consult SMC about "Material restriction".

3 Antistatic Equipment

Antistatic performance achieved through conductive measures for a reduction in static-related trouble.

Actuators

- Antistatic Air Cylinder
(Made to Order) *CM2-X1051*

Vacuum Equipment

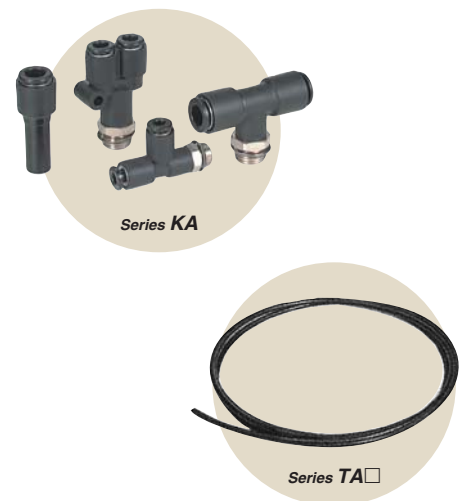
- Vacuum Pad *Series ZP*

Fittings and Tubings

- Antistatic One-touch Fittings *Series KA*
- Miniature Fittings/Stainless Steel 316 *Series MS*
- Miniature Fittings *Series M*
- Antistatic Tubing *Series TA* □

Flow Control Equipment

- Antistatic Speed Controller
(Made to Order) *AS-X260*

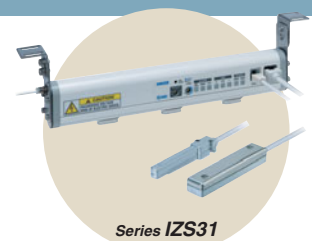


Consult SMC about "Material restriction".

4 Static Neutralization Equipment

Ions generated by corona discharge neutralize static electricity.

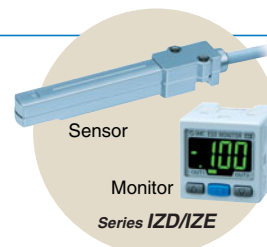
- Ionizer *Series IZS31*
- Ionizer/Nozzle Type *Series IZN10*



■ Measurement Equipment

Measures the electrostatic potential.

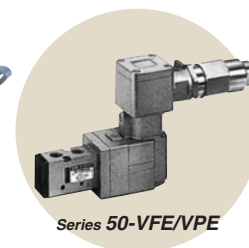
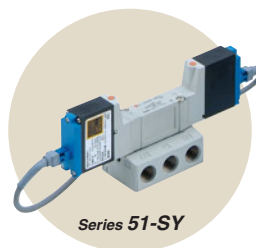
- Electrostatic Sensor *Series IZD10/IZE11*
- Handheld Electrostatic Meter *Series IZH10*



5 Explosion Proof Equipment

Consult SMC about "Material restriction".

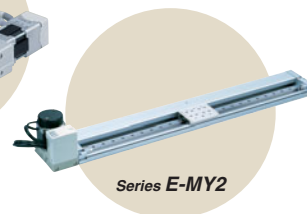
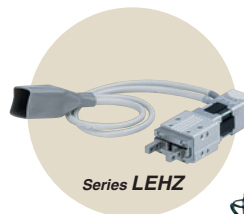
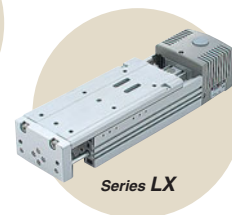
- Intrinsically Safe Explosion-proof System
5 Port Solenoid Valve *Series 51-SY*
- Explosion Proof Solenoid Valve *Series 50-VFE/VPE*





6 Electric Actuators/Cylinders


Consult SMC about "Material restriction".

- Electric Actuator *Series LJ1/LG1*
- Electric Actuator with
Integrated Guide *Series LTF*
- Short Stroke Electric Actuator *Series LX*
- Electric Cylinder *Series LZB/LDZB/LZC/LDZC*
- Electric Gripper *Series LEHZ/LEHF*
- Electric Slide Table *Series LES*
- e-Rodless Actuator *Series E-MY2*



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| Product name | Series | Page |
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Air Preparation Equipment

| | | |
|--------------------------------|---------------|------|
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Air Filters/Pressure Control Equipment

| | | |
|---|-----------------------------|------|
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Flow Control Related Products

| | | |
|---|-----------------------|------|
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Vacuum Equipment

| | | |
|----------------------------------|---------------|------|
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Detection Switches

| | | |
|---|-----------------------------------|------|
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Auto Switches

| | | |
|---|--------------------------|------|
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Single Valve/Sub-plate Type IP67 Compliant 90-SV Series

How to Order



90 - SV 2 1 00 - 5 W1 U D -

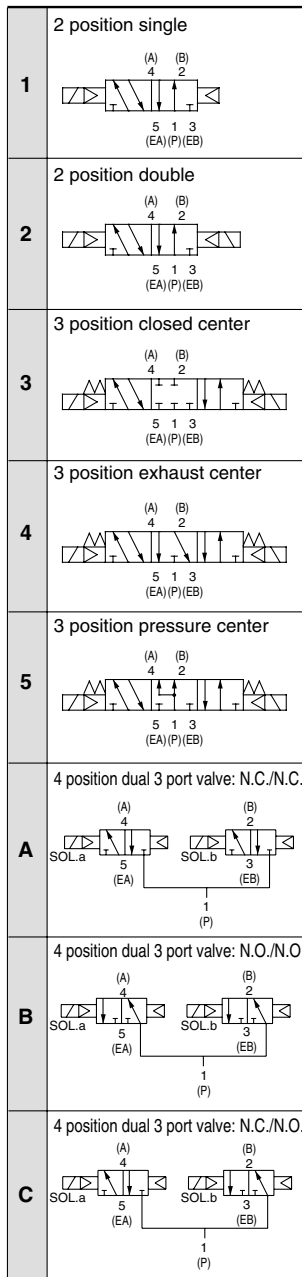
Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Series

| | |
|---|-----------|
| 2 | 90-SV2000 |
| 4 | 90-SV4000 |

Type of actuation



Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

Port size

| Symbol | Port size | Applicable series |
|--------|-----------|-------------------|
| Nil | | Without sub-plate |
| 02 | 1/4 | 90-SV2000 |
| 03 | 3/8 | 90-SV4000 |
| 04 | 1/2 | 90-SV4000 |

Manual override

| | |
|-----|--------------------------------|
| Nil | Non-locking push type |
| D | Push-turn locking slotted type |

Light/Surge voltage suppressor

| | |
|---|---|
| U | With light/surge voltage suppressor(Non-polar type) |
| R | With surge voltage suppressor(Non-polar type) |

M12 waterproof connector

| Symbol | Cable length (mm) |
|--------|-------------------|
| W1 | 300 |
| W2 | 500 |
| W3 | 1000 |
| W4 | 2000 |
| W7 | 5000 |

Rated voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

Pilot type

| | |
|-----|----------------|
| Nil | Internal pilot |
| R | External pilot |

*External pilot specifications is not available for 4 position dual 3 port valves.

*Specifications and dimensions for the 90-series are the same as standard products.

*4 position dual 3 port valve is not available for the 90-SV4000.

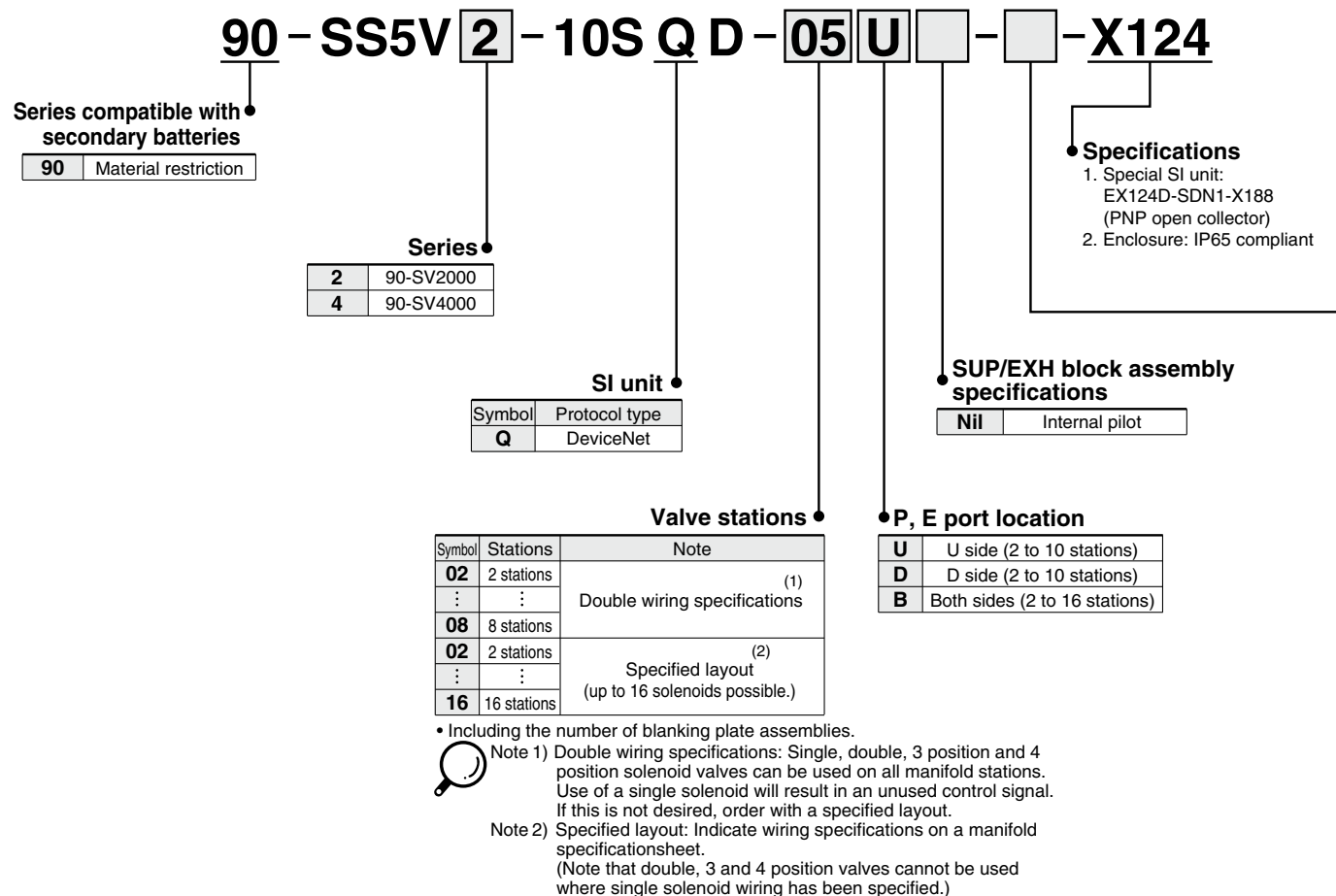
EX124 Integrated Type (for Output) Serial Transmission System

90-SV-X124 Series

IP65 Compliant

How to Order Manifold

● Tie-rod base



SI Unit Part No.

| Symbol | Protocol type | SI unit part no. | CE-certified |
|--------|-----------------------------|------------------|--------------|
| Q | DeviceNet (Negative common) | EX124D-SDN1-X188 | ○ |

A, B port size (Metric)

| Symbol | A, B port | P, E port | Applicable series |
|--------|--------------------------|---------------------------|-------------------|
| C4 | One-touch fitting for ø4 | One-touch fitting for ø10 | 90-SV2000 |
| C6 | One-touch fitting for ø6 | | |
| C8 | One-touch fitting for ø8 | | |
| M | A, B ports mixed | | |

*In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

*Specifications and dimensions for the 90-series are the same as standard products.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

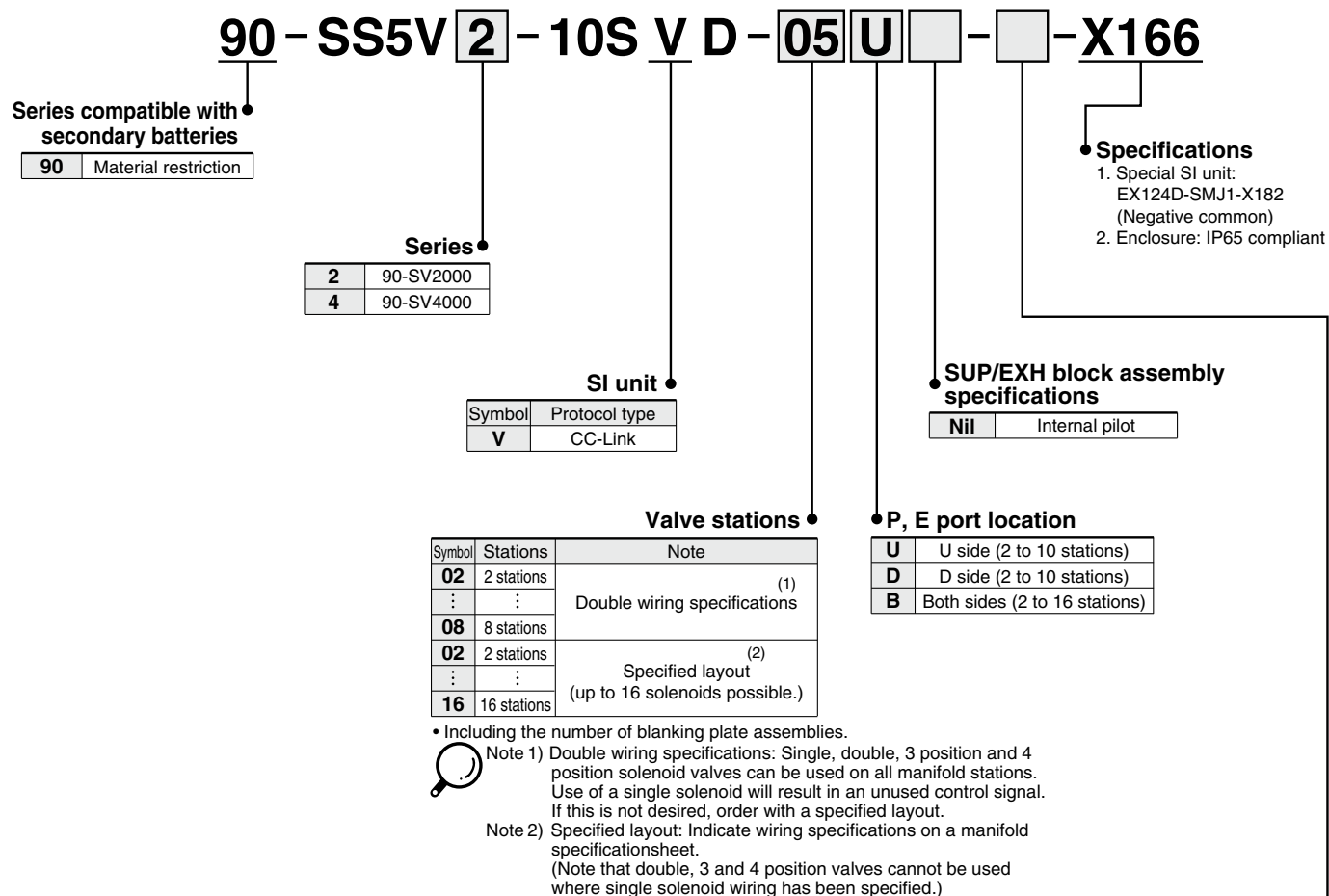
EX124 Integrated Type (for Output) Serial Transmission System

90-SV-X166 Series

IP65 Compliant

How to Order Manifold

● Tie-rod base



SI Unit Part No.

| Symbol | Protocol type | SI unit part no. | CE-certified |
|--------|------------------------------|------------------|--------------|
| V | CC-Link (Negative common) | EX124D-SMJ1-X182 | ○ |

A, B port size (Metric)

| Symbol | A, B port | P, E port | Applicable series |
|--------|---------------------------|---------------------------|-------------------|
| C4 | One-touch fitting for ø4 | One-touch fitting for ø10 | 90-SV2000 |
| C6 | One-touch fitting for ø6 | | |
| C8 | One-touch fitting for ø8 | | |
| C8 | One-touch fitting for ø8 | One-touch fitting for ø12 | 90-SV4000 |
| C10 | One-touch fitting for ø10 | | |
| C12 | One-touch fitting for ø12 | | |
| M | A, B ports mixed | | |

*In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

*Specifications and dimensions for the 90-series are the same as standard products.

D-sub Connector

90-SV Series

How to Order Manifold

● Tie-rod base

90 - SS5V 2 - 10FD 1 - 05 U - -

● Series

| | |
|---|-----------|
| 2 | 90-SV2000 |
| 4 | 90-SV4000 |

● Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

● Connector entry direction

| | |
|---|---------|
| 1 | Upward |
| 2 | Lateral |

● Valve stations

| Symbol | Stations | Note |
|--------|-------------|---|
| 02 | 2 stations | Double wiring specifications ⁽¹⁾ |
| ⋮ | ⋮ | |
| 11 | 11 stations | |
| 02 | 2 stations | Specified layout ⁽²⁾ (Up to 23 solenoids possible.) |
| ⋮ | ⋮ | |
| 20 | 20 stations | |



Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used at all of the manifold stations. Use of a single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 and 4 position valves cannot be used where single solenoid wiring has been specified.)

● P, E port location

| | |
|---|-------------------------------|
| U | U side (2 to 10 stations) |
| D | D side (2 to 10 stations) |
| B | Both sides (2 to 20 stations) |

● Pilot type

| | |
|-----|----------------|
| Nil | Internal pilot |
|-----|----------------|

● A, B port size (metric)

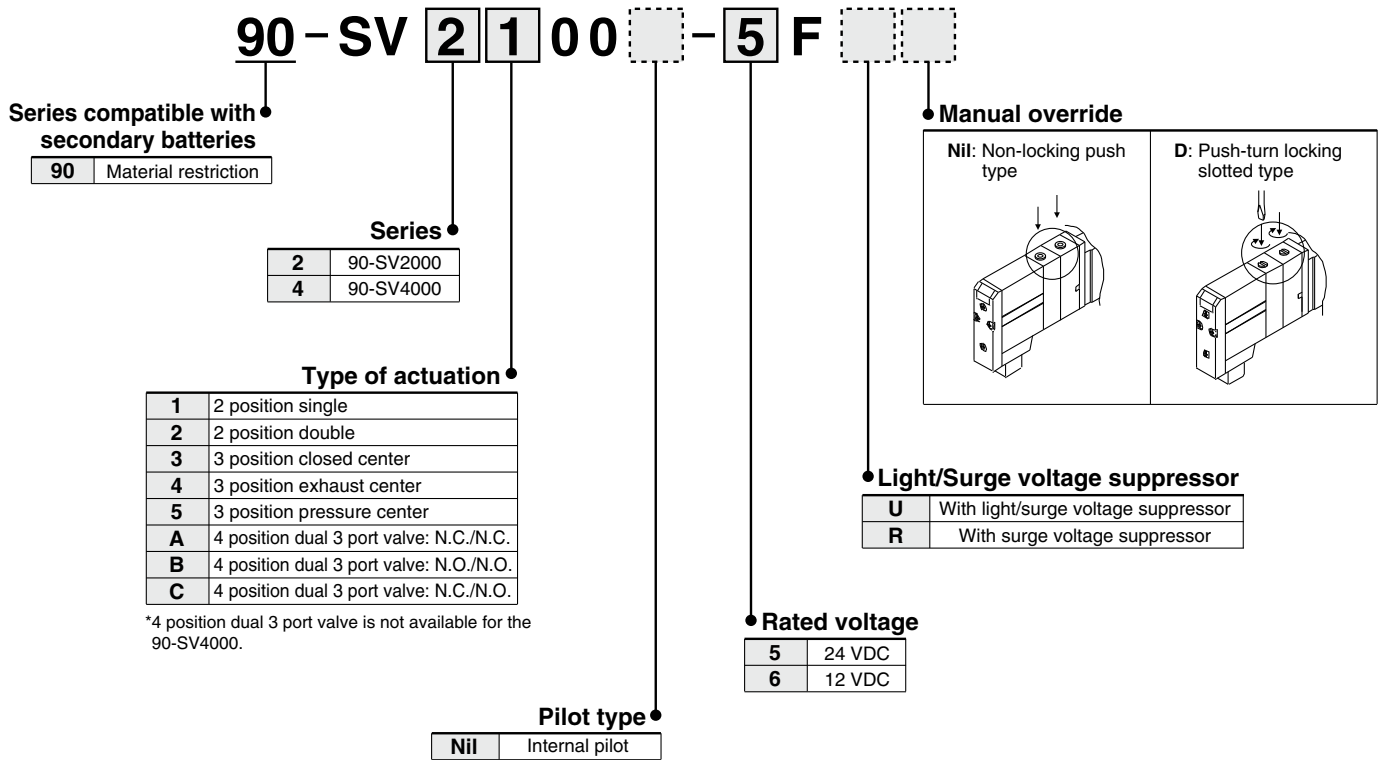
| Symbol | A, B port | P, E port | Applicable series |
|--------|---------------------------|---------------------------|-------------------|
| C4 | One-touch fitting for ø4 | One-touch fitting for ø1 | 90-SV2000 |
| C6 | One-touch fitting for ø6 | | |
| C8 | One-touch fitting for ø8 | | |
| C8 | One-touch fitting for ø8 | One-touch fitting for ø12 | 90-SV4000 |
| C10 | One-touch fitting for ø10 | | |
| C12 | One-touch fitting for ø12 | | |
| M | A, B ports mixed | | |

*In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

*Specifications and dimensions for the 90-series are the same as standard products.

90-SV Series

How to Order Solenoid Valves



*Specifications and dimensions for the 90-series are the same as standard products.

Plug-in Unit
Base Mounted

90-VQ1000-X121 Series

90-VQ2000-X121 Series

Double Check Block (Separated Type)

How to Order

90-VQ1000

90 - VQ1000 - FPG - C6 C6 - X121

• Series compatible with secondary batteries

90 Material restriction

• For blanking manual specification

• OUT side port size

| | |
|----|--------------------------|
| C4 | One-touch fitting for ø4 |
| C6 | One-touch fitting for ø6 |

• IN side port size

| | |
|----|--------------------------|
| C4 | One-touch fitting for ø4 |
| C6 | One-touch fitting for ø6 |

*Specifications and dimensions for the 90-series are the same as standard products.

90-VQ2000

90 - VQ2000 - FPG - 01 01 - X121

• Series compatible with secondary batteries

90 Material restriction

• For blanking manual specification

• OUT side port size

| | |
|----|--------|
| 01 | Rc 1/8 |
|----|--------|

• IN side port size

| | |
|----|--------|
| 01 | Rc 1/8 |
|----|--------|

*Specifications and dimensions for the 90-series are the same as standard products.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches


Auto Switches

3 Port Solenoid Valve Pilot Operated Poppet Type

90-VP300/500 Series

Rubber Seal

How to Order



90 - VP 3 4 2 [] - 5 D Z [] - 02 [] A

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Series VP solenoid valve

Body size

| | |
|---|--------------|
| 3 | 1/4 standard |
| 5 | 3/8 standard |

Type of actuation

| | |
|---|---|
| 4 | Common use to normally closed and normally open (Pilot) |
|---|---|

Body type

| | |
|---|-------------|
| 2 | Body ported |
|---|-------------|

Valve option

| | |
|-----|---------------------------|
| Nil | Standard (Internal pilot) |
| R | External pilot |

Rated voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

Passage symbol

| | |
|---|------------------------|
| A | N.C. (Normally closed) |
| B | N.O. (Normally open) |

Only "A" is available for external pilot type.

Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

Port size

| Symbol | Port size Rc | 90-VP342 | 90-VP542 |
|--------|--------------|----------|----------|
| 02 | 1/4 | ● | ● |
| 03 | 3/8 | | ● |

Manual override

| | |
|-----|------------------------|
| Nil | Push type |
| B | Locking type (Slotted) |
| C | Locking type (Manual) |

Light/Surge voltage suppressor

| | |
|-----|-------------------------------------|
| Nil | None |
| Z* | With light/surge voltage suppressor |

*Option

Electrical entry

| | |
|---|--------------|
| D | DIN terminal |
|---|--------------|

How to Order Pilot Valve Assembly

90 - SF4 - 5 D Z [] - 50

Rated voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Manual override

| | |
|-----|------------------------|
| Nil | Push type |
| B | Locking type (Slotted) |
| C | Locking type (Manual) |

Light/Surge voltage suppressor

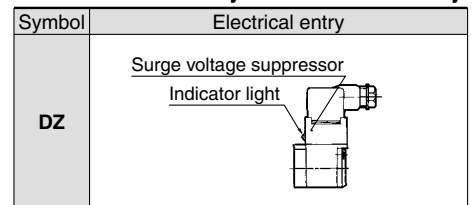
| | |
|-----|-------------------------------------|
| Nil | None |
| Z* | With light/surge voltage suppressor |

*Option

Electrical entry

| | |
|---|--------------|
| D | DIN terminal |
|---|--------------|

Pilot Valve Assembly and Electrical Entry



*Specifications and dimensions for the 90-series are the same as standard products.

3 Port Solenoid Valve Pilot Operated Poppet Type

90-VG342 Series

Rubber Seal



How to Order

90 - VG342 - 5 D Z - 04 - A -

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Valve option

| | |
|-----|----------------|
| Nil | Internal pilot |
| R | External pilot |

Rated voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

Electrical entry

| | |
|---|--------------|
| D | DIN terminal |
|---|--------------|

Light/Surge voltage suppressor

| | |
|-----|-------------------------------------|
| Nil | None |
| Z | With light/surge voltage suppressor |

Port size

| | |
|----|-----|
| 04 | 1/2 |
| 06 | 3/4 |
| 10 | 1 |

Pilot valve option

| | |
|-----|------------------------------|
| Nil | Standard type |
| Y | Energy-saving type (DC only) |
| E | Continuous duty type |

Passage symbol

| | |
|-----|------------------------|
| Nil | External pilot |
| A | N.C. (Normally closed) |
| B | N.O. (Normally open) |

Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

*Specifications and dimensions for the 90-series are the same as standard products.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

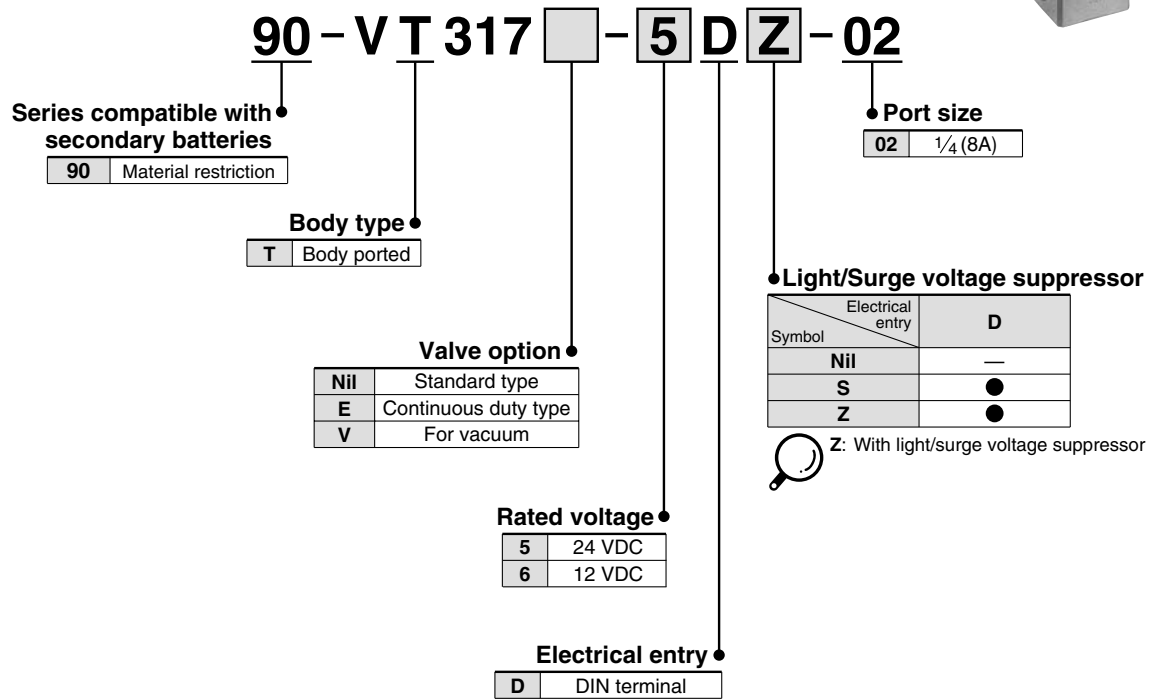
Detection Switches

Auto Switches

3 Port Solenoid Valve Direct Operated Poppet Type **90-VT317 Series** Rubber Seal



How to Order



*Specifications and dimensions for the 90-series are the same as standard products.

Finger Valve

90-VHK Series

How to Order



Standard type 90 - VHK 2 - 02S - 06F [] []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Valve model

| | |
|---|--------------|
| 2 | 2 port valve |
|---|--------------|

1(P) port size

| | |
|-----|-------|
| 04F | ø4 |
| 06F | ø6 |
| 08F | ø8 |
| 01S | R 1/8 |
| 02S | R 1/4 |
| 03S | R 3/8 |

Bracket

| | |
|-----|----------------|
| Nil | None |
| L | With L-bracket |

*Bracket and screws are attached.

Knob color

| | |
|----------------|------|
| Nil (Standard) | Gray |
| R (Option) | Red |

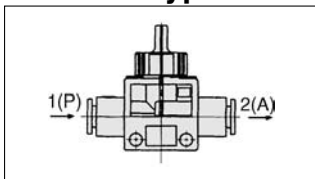
2(A) port size

| | |
|-----|----|
| 04F | ø4 |
| 06F | ø6 |
| 08F | ø8 |

*Specifications and dimensions for the 90-series are the same as standard products.

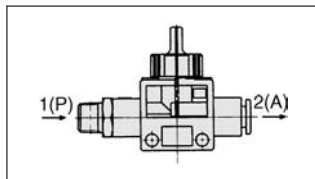
Applicable Series

Standard Type



1(P): One-touch fitting
2(A): One-touch fitting

| | | 2(A) Applicable tubing O.D. (mm) | | |
|-----------------------------|----|----------------------------------|----|----|
| | | ø4 | ø6 | ø8 |
| Applicable tubing O.D. (mm) | ø4 | ● | — | — |
| | ø6 | ● | ● | — |
| | ø8 | — | ● | ● |



1(P): Male thread
2(A): One-touch fitting

| | | 2(A) Applicable tubing O.D. (mm) | | |
|-------------|-----|----------------------------------|----|----|
| | | ø4 | ø6 | ø8 |
| Port size R | 1/8 | ● | ● | ● |
| | 1/4 | — | ● | ● |
| | 3/8 | — | ● | ● |

L Type Bracket Part No.

1(P): One-touch fitting · 2(A): One-touch fitting

| Applicable tubing O.D. (mm) | | Bracket assembly no. |
|-----------------------------|------|----------------------|
| 1(P) | 2(A) | |
| ø4 | ø4 | 90-VHK-B1A |
| ø6 | ø4 | 90-VHK-B1A |
| | ø6 | |
| ø8 | ø6 | 90-VHK-B1A |
| | ø8 | |

1(P): Male thread · 2(A): One-touch fitting

| Connection thread R | Applicable tubing O.D. (mm) | Bracket assembly no. |
|---------------------|-----------------------------|----------------------|
| 1(P) | 2(A) | |
| 1/8 | ø4 | 90-VHK-B1A |
| | ø6 | |
| | ø8 | |
| 1/4 | ø6 | 90-VHK-B1A |
| | ø8 | |
| 3/8 | ø6 | 90-VHK-B1A |
| | ø8 | |

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Air Cylinder: Standard Type Double Acting, Single Rod

90-CDJ2 Series

ø10, ø16

How to Order



Mounting style

| | |
|----------|---------------------------------|
| B | Basic style |
| L | Axial foot style |
| F | Rod side flange style |
| D | Double clevis style (Except ø6) |

Bore size

| | |
|-----------|-------|
| 10 | 10 mm |
| 16 | 16 mm |

Cylinder standard stroke (mm)

| | |
|-----------|---|
| 10 | 15, 30, 45, 60, 75, 100, 125, 150 |
| 16 | 15, 30, 45, 60, 75, 100, 125, 150, 175, 200 |

*Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Built-in Magnet Cylinder Model

Suffix the symbol "B" (Band mounting style) to the end of part number for cylinder with auto switch.

Example | Band mounting style | 90-CDJ2B16-60-B

With auto switch

90-CDJ2 L 16-60 - M9BWL

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
|-----------|----------------------|

With auto switch (Built-in magnet)

Head cover port location

| | |
|----------------|-----------------------|
| Bore size (mm) | ø10, ø16 |
| Symbol | |
| Nil | Perpendicular to axis |
| R | Axial |

*Double clevis is only available for being perpendicular to axis.

Number of auto switches

| | |
|------------|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|------------|---------------------|
| Nil | Without auto Switch |
|------------|---------------------|

*For the applicable auto switch model, refer to the table below.

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | Lead wire length (m) | Pre-wired connector | Applicable load | |
|---------------------------|--|------------------|-----------------|-----------------|--------------|---------------|-------------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | | Yes | 2-wire | 24 V | 12 V | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | Grommet | No | | | 100 V or less | A90 | ● | — | IC circuit | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSNPC

*Order part numbers for auto switches alone are D-M9BWL-900, D-M9BWSNPC-900 and D-A90L-900.

*Models D-M9BWL-900 or M9BWSNPC-900 cannot be mounted.

*The auto switch is shipped together but not assembled. (Only auto switch mounting brackets are assembled before shipment.)

*Refer to pages 66 to 68 for details on auto switch mounting brackets.

Mounting Bracket Part No.

| Mounting bracket | Bore size (mm) | | |
|------------------|----------------|-------------|-------------|
| | 6 | 10 | 16 |
| Foot bracket | 90-CJ-L006B | 90-CJ-L010B | 90-CJ-L016B |
| Flange bracket | 90-CJ-F006B | 90-CJ-F010B | 90-CJ-F016B |

Air Cylinder: Standard Type Double Acting, Single Rod

90-91-CDG1 Series

∅20, ∅25, ∅32, ∅40, ∅50

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches



How to Order

With auto switch **90-CDG1 L N 25-100-M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | |
|---|--------------------------|
| B | Basic style |
| L | Axial foot style |
| F | Rod side flange style |
| G | Head side flange style |
| U | Rod side trunnion style |
| T | Head side trunnion style |
| D | Clevis style |

*91-series foot and rod side flange are assembled before shipment.

Type

| | |
|---|---------------|
| N | Rubber bumper |
|---|---------------|

Bore size

| | |
|----|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*For the applicable auto switch model, refer to the table below.

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke ⁽¹⁾ (mm) | Long stroke ⁽²⁾ (mm) | Maximum manufacturable stroke (mm) |
|----------------|--|---------------------------------|------------------------------------|
| 20 | 25, 50, 75, 100, 125, 150, 200 | 201 to 350 | 1500 |
| 25 | 25, 50, 75, 100, 125, 150, 200, 250, 300 | 301 to 400 | |
| 32 | | 301 to 450 | |
| 40 | | 301 to 800 | |
| 50 | | 301 to 1200 | |

Note 1) Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)
Note 2) Long stroke is compatible with the axial foot and rod side flange types. When other mounting brackets are used or the long stroke exceeds the limit, the allowable maximum stroke length is determined using the stroke selection table.

*Specifications and dimensions for the 90-series are the same as standard products.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example)⁹⁰CDG1FN32-100

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|---------------|------|-------------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | 100 V or less | A90 | ● | — | IC circuit | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BWL-900, D-M9BWS DPC-900 and D-A90L-900.
*Models D-M9BWL-900 or M9BWS DPC-900 cannot be mounted.
*The auto switch is shipped together but not assembled. (Only auto switch mounting brackets are assembled before shipment.)
*Refer to pages 66 to 68 for details on auto switch mounting brackets.

Mounting Bracket Part No.

| Mounting bracket | Min. order | Bore size (mm) | | | | | Description |
|------------------|------------|----------------|---------------|---------------|---------------|---------------|---|
| | | 20 | 25 | 32 | 40 | 50 | |
| Foot | 1 | 90-CG-L020 | 90-CG-L025 | 90-CG-L032 | 90-CG-L040 | 90-CG-L050 | Foot x 2, Mounting bolt x 8 |
| Flange | 1 | 90-CG-F020 | 90-CG-F025 | 90-CG-F032 | 90-CG-F040 | 90-CG-F050 | Flange x 1, Mounting bolt x 4 |
| Trunnion pin | 1 | 90-CG-T020 | 90-CG-T025 | 90-CG-T032 | 90-CG-T040 | 90-CG-T050 | Trunnion pin x 2, Trunnion bolt x 2, Flat washer x 2 |
| Clevis | 1 | 90-CG-D020 | 90-CG-D025 | 90-CG-D032 | 90-CG-D040 | 90-CG-D050 | Clevis x 1, Mounting bolt x 4, Clevis pin x 1, Retaining ring x 2 |
| Pivot bracket | 1 | 90-CG-020-24A | 90-CG-025-24A | 90-CG-032-24A | 90-CG-040-24A | 90-CG-050-24A | Pivot bracket x 1 |

Air Cylinder: Standard Type Double Acting, Single Rod

90-*CDA2* Series

91-*CDA2* Series

∅40, ∅50, ∅63, ∅80, ∅100



How to Order

With auto switch

90 - **CDA2** **L** **50** - **100** - **M9BWL** **□**

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch
(Built-in magnet)

Mounting style

| | |
|----------|------------------------|
| B | Basic style |
| L | Axial foot style |
| F | Rod side flange style |
| G | Head side flange style |
| C | Single clevis style |
| D | Double clevis style |
| T | Center trunnion style |

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) ⁹⁰CDA2L40-100

Bore size

| | |
|------------|--------|
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |

Number of auto switches

| | |
|------------|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| 3 | 3 pcs. |
| n | "n" pcs. |

Auto switch

| | |
|------------|---------------------|
| Nil | Without auto switch |
|------------|---------------------|

*Refer to the table below for the applicable auto switch model.

Cylinder stroke (mm)

| | |
|----------------|---|
| 40 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500 |
| 50, 63 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 500, 600 |
| 80, 100 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700 |

*Intermediate strokes not listed above are produced upon receipt of order.

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|---------------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | 100 V or less | — | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L
With pre-wired connector.....SDPC Example: M9BWL M9BWS DPC

**Models D-A90L-900 cannot be mounted on cylinders of ∅50.

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled. (Only auto switch mounting brackets are assembled before shipment.)

*Refer to pages 66 to 68 for details on auto switch mounting brackets.

Mounting Bracket Part No.

| Bore size (mm) | 40 | 50 | 63 | 80 | 100 |
|-----------------|------------|------------|------------|------------|------------|
| Axial foot* | 91-CA2-L04 | 91-CA2-L05 | 91-CA2-L06 | 91-CA2-L08 | 91-CA2-L10 |
| Flange | 91-CA2-F04 | 91-CA2-F05 | 91-CA2-F06 | 91-CA2-F08 | 91-CA2-F10 |
| Single clevis | 91-CA2-C04 | 91-CA2-C05 | 91-CA2-C06 | 91-CA2-C08 | 91-CA2-C10 |
| Double clevis** | 91-CA2-D04 | 91-CA2-D05 | 91-CA2-D06 | 91-CA2-D08 | 91-CA2-D10 |

*When axial foot brackets are used, two pieces should be ordered for each cylinder.

**Double clevis type is packed with clevis pin, flat washer and cotter pin.

Free Mount Cylinder Double Acting, Single Rod 90-*CDU* Series ø10, ø16, ø20, ø25, ø32

How to Order



With auto switch

90 - CDU 16 - [] D - M9BWL []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Built-in magnet

Bore size

| | |
|----|-------|
| 10 | 10 mm |
| 16 | 16 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |

Action

| | |
|---|---------------|
| D | Double acting |
|---|---------------|

Standard stroke (mm)

| | |
|---------------|-------------------------------|
| ø6, ø10, ø16 | 5, 10, 15, 20, 25, 30 |
| ø20, ø25, ø32 | 5, 10, 15, 20, 25, 30, 40, 50 |

Number of auto switches

| | |
|-----|--------|
| Nil | 2 pcs. |
| S | 1 pc. |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*Refer to the table below for applicable auto switches.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example)⁹⁰₉₁.CDU20-25D

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switches/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | 100 V or less | — | A90 | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSRPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

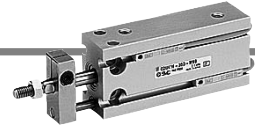
Auto Switches

Free Mount Cylinder: Non-rotating Rod Type Double Acting, Single Rod

90-*CDUK* Series

ø10, ø16, ø20, ø25, ø32

How to Order



With auto switch

90-**CDUK****16**-**30****D**-**M9BWL**

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Built-in magnet

Non-rotating rod type

Bore size

| | |
|-----------|-------|
| 10 | 10 mm |
| 16 | 16 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |

Action

| | |
|----------|---------------|
| D | Double acting |
|----------|---------------|

Standard stroke (mm)

| | |
|----------------------|-------------------------------|
| ø10, ø16 | 5, 10, 15, 20, 25, 30 |
| ø20, ø25, ø32 | 5, 10, 15, 20, 25, 30, 40, 50 |

Number of auto switches

| | |
|------------|--------|
| Nil | 2 pcs. |
| S | 1 pc. |

Auto switch

| | |
|------------|---------------------|
| Nil | Without auto switch |
|------------|---------------------|

*Refer to the table below for applicable auto switches.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.

(Example)⁹⁰CDUK20-25D

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switches/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|--------------|---------------|-------------------|--------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWV | M9BW | 3(L) | SDPC | — |
| | | | | | | | | — | A90 | | | |
| Reed switch | — | | No | | | 100 V or less | — | A90 | ● | — | IC circuit | Relay, PLC |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSRPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

Compact Cylinder: Standard Type Double Acting, Single Rod

90-91-CDQS Series

∅12, ∅16, ∅20, ∅25

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches



How to Order

With auto switch **90**-CDQS **B** **20**-**30** **D** - **M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | |
|---|---|
| B | Through-hole/Both ends tapped common (Standard) |
| L | Foot style |
| F | Rod side flange style |
| G | Head side flange style |
| D | Double clevis style |

*In the case of long strokes, use either ends tapped mounting or bracket mounting.
*Mounting brackets are shipped together, (but not assembled).

Bore size

| | |
|----|-------|
| 12 | 12 mm |
| 16 | 16 mm |
| 20 | 20 mm |
| 25 | 25 mm |

Cylinder stroke (mm)

| Bore size | Standard stroke | Long stroke |
|-----------|---------------------------------------|---|
| 12, 16 | 5, 10, 15, 20, 25, 30 | 35, 40, 45, 50, 75, 100, 125, 150, 175, 200 |
| 20 | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 | 75, 100, 125, 150, 175, 200 |
| 25 | | 75, 100, 125, 150, 175, 200, 250, 300 |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*Refer to the table below for the applicable auto switch model.

Body option

<Standard stroke>

| | |
|-----|---------------------|
| Nil | Standard |
| C | With rubber bumper |
| M | Rod end male thread |

*Combination of body options is available.

<Long stroke>

| | |
|----|--|
| C | With rubber bumper Rod end female thread (Standard) |
| CM | With rubber bumper Rod end male thread |

*Rubber bumper is standard equipment for long stroke type.

Action

| | |
|---|---------------|
| D | Double acting |
|---|---------------|

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch. (Example)⁹⁰-CDQSL25-30D

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | Relay, PLC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | | M9BWW | M9BW | ● | ● | — | |
| Reed switch | — | | No | | | | | — | A90 | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

Note) Auto switches of models D-M9BWWL-900 or M9BWWSDPC-900 cannot be mounted on the port depending on cylinder stroke and fitting size. Consult SMC.

Mounting Brackets for 90-series/Part No.

| Bore size (mm) | Foot (1) | Flange | Double clevis |
|----------------|-------------|-------------|---------------|
| 12 | 90-CQS-L012 | 90-CQS-F012 | 90-CQS-D012 |
| 16 | 90-CQS-L016 | 90-CQS-F016 | 90-CQS-D016 |
| 20 | 90-CQS-L020 | 90-CQS-F020 | 90-CQS-D020 |
| 25 | 90-CQS-L025 | 90-CQS-F025 | 90-CQS-D025 |

Mounting Brackets for 91-series/Part No.

| Bore size (mm) | Foot (1) | Flange | Double clevis |
|----------------|-------------|-------------|---------------|
| 12 | 91-CQS-L012 | 91-CQS-F012 | 90-CQS-D012 |
| 16 | 91-CQS-L016 | 91-CQS-F016 | 90-CQS-D016 |
| 20 | 91-CQS-L020 | 91-CQS-F020 | 90-CQS-D020 |
| 25 | 91-CQS-L025 | 91-CQS-F025 | 90-CQS-D025 |

Note1) When ordering foot bracket, order 2 pieces per cylinder.

Note2) Parts belonging to each bracket are as follows.

Foot or Flange style: Body mounting bolt

Double clevis style: Clevis pin, Type C snap ring for axis, Body mounting bolt

Compact Cylinder: Anti-lateral Load Type

90-**CDQS**□**S** Series

ø12, ø16, ø20, ø25



How to Order

With auto switch **90-CDQSBS20-30DC-M9BWL** □

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | |
|---|---|
| B | Through-hole/Both ends tapped common (Standard) |
| L | Foot style |
| F | Rod side flange style |
| G | Head side flange style |
| D | Double clevis style |

Type

| | |
|---|------------------------|
| S | Anti-lateral load type |
|---|------------------------|

Bore size

| | |
|----|-------|
| 12 | 12 mm |
| 16 | 16 mm |
| 20 | 20 mm |
| 25 | 25 mm |

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke (mm) |
|----------------|---------------------------------------|
| 12, 16 | 5, 10, 15, 20, 25, 30 |
| 20, 25 | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*Refer to the table below for the applicable auto switch model.

Body option

| | |
|----|--|
| C | With rubber bumper Rod end female thread (Standard) |
| CM | With rubber bumper Rod end male thread |

Action

| | |
|---|---------------|
| D | Double acting |
|---|---------------|

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example)⁹⁰⁻CDQSLS12-25D
Only for models with cushions

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — |
| Reed switch | — | | No | | | | — | A90 | ● | — | IC circuit | |

*Additional symbols for auto switch: Lead wire length 3 m.....L
With pre-wired connector.....SDPC
Example: M9BWL
M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

Note) Auto switches of models D-M9BWWL-900 or M9BWWSDPC-900 cannot be mounted on the port depending on cylinder stroke and fitting size. Consult SMC.

Mounting Brackets for 90-series/Part No.

| Bore size (mm) | Foot (1) | Flange | Double clevis |
|----------------|-------------|-------------|---------------|
| 12 | 90-CQS-L012 | 90-CQS-F012 | 90-CQS-D012 |
| 16 | 90-CQS-L016 | 90-CQS-F016 | 90-CQS-D016 |
| 20 | 90-CQS-L020 | 90-CQS-F020 | 90-CQS-D020 |
| 25 | 90-CQS-L025 | 90-CQS-F025 | 90-CQS-D025 |

Mounting Brackets for 91-series/Part No.

| Bore size (mm) | Foot (1) | Flange | Double clevis |
|----------------|-------------|-------------|---------------|
| 12 | 91-CQS-L012 | 91-CQS-F012 | 90-CQS-D012 |
| 16 | 91-CQS-L016 | 91-CQS-F016 | 90-CQS-D016 |
| 20 | 91-CQS-L020 | 91-CQS-F020 | 90-CQS-D020 |
| 25 | 91-CQS-L025 | 91-CQS-F025 | 90-CQS-D025 |

Note1) When ordering foot bracket, order 2 pieces per cylinder.

Note2) Parts belonging to each bracket are as follows.

Foot or Flange style: Body mounting bolt

Double clevis style: Clevis pin, type C retaining ring for axis, Body mounting bolt

Compact Cylinder: Standard Type Double Acting, Single Rod

90-91-CDQ2 Series

∅12, ∅16, ∅20, ∅25, ∅32, ∅40, ∅50, ∅63, ∅80, ∅100



How to Order

With auto switch **90-CDQ2 B 20-30 D Z-M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | | | |
|---|-------------------------|---|------------------------|
| B | Through-hole (Standard) | F | Rod side flange style |
| A | Both ends tapped style | G | Head side flange style |
| L | Foot style | D | Double clevis style |

*Mounting brackets are shipped together, (but not assembled).

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*Refer to the table below for the applicable auto switch model.

Auto switch mounting groove

| | | |
|---|-------------|---------|
| Z | ∅12 to ∅25 | 2 sides |
| | ∅32 to ∅100 | 4 sides |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Body option

| | |
|-----|----------------------------------|
| Nil | Standard (Rod end female thread) |
| C | With rubber bumper |
| M | Rod end male thread |

*Combination of body options is available.

Action

| | |
|---|---------------|
| D | Double acting |
|---|---------------|

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) 90-CDQ2L32-25DZ

Bore size

| | | | |
|----|-------|-----|--------|
| 12 | 12 mm | 40 | 40 mm |
| 16 | 16 mm | 50 | 50 mm |
| 20 | 20 mm | 63 | 63 mm |
| 25 | 25 mm | 80 | 80 mm |
| 32 | 32 mm | 100 | 100 mm |

Cylinder stroke (mm)

| | |
|-----------|--|
| 12, 16 | 5, 10, 15, 20, 25, 30 |
| 20, 25 | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 |
| 32, 40 | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100 |
| 50 to 100 | 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100 |

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | | | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSDDPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*When mounting the D-M9BW(V)L-900, D-M9BW(V)SDPC-900 or A90L-900 on cylinders with ∅32 to ∅50 other than on the port face, order the auto switch mounting bracket separately. Refer to pages 66 to 68 for details.

Mounting Brackets for 90-series/Part No.

| Bore size (mm) | Foot ⁽¹⁾ | Flange | Double clevis |
|----------------|---------------------|------------|---------------|
| 12 | 90-CQ-L012 | 90-CQ-F012 | 90-CQ-D012 |
| 16 | 90-CQ-L016 | 90-CQ-F016 | 90-CQ-D016 |
| 20 | 90-CQ-L020 | 90-CQ-F020 | 90-CQ-D020 |
| 25 | 90-CQ-L025 | 90-CQ-F025 | 90-CQ-D025 |
| 32 | 90-CQ-L032 | 90-CQ-F032 | 90-CQ-D032 |
| 40 | 90-CQ-L040 | 90-CQ-F040 | 90-CQ-D040 |
| 50 | 90-CQ-L050 | 90-CQ-F050 | 90-CQ-D050 |
| 63 | 90-CQ-L063 | 90-CQ-F063 | 90-CQ-D063 |
| 80 | 90-CQ-L080 | 90-CQ-F080 | 90-CQ-D080 |
| 100 | 90-CQ-L100 | 90-CQ-F100 | 90-CQ-D100 |

Mounting Brackets for 91-series/Part No.

| Bore size (mm) | Foot ⁽¹⁾ | Flange | Double clevis |
|----------------|---------------------|------------|---------------|
| 12 | 91-CQ-L012 | 91-CQ-F012 | 90-CQ-D012 |
| 16 | 91-CQ-L016 | 91-CQ-F016 | 90-CQ-D016 |
| 20 | 91-CQ-L020 | 91-CQ-F020 | 90-CQ-D020 |
| 25 | 91-CQ-L025 | 91-CQ-F025 | 90-CQ-D025 |
| 32 | 90-CQ-L032 | 90-CQ-F032 | 90-CQ-D032 |
| 40 | 90-CQ-L040 | 90-CQ-F040 | 90-CQ-D040 |
| 50 | 90-CQ-L050 | 90-CQ-F050 | 90-CQ-D050 |
| 63 | 90-CQ-L063 | 90-CQ-F063 | 90-CQ-D063 |
| 80 | 90-CQ-L080 | 90-CQ-F080 | 90-CQ-D080 |
| 100 | 90-CQ-L100 | 90-CQ-F100 | 90-CQ-D100 |



Note 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows. Foot, Flange: Body mounting bolt/Double clevis: Clevis pin, Type C retaining ring for axis, body mounting bolt

Compact Cylinder: Long Stroke Type Double Acting, Single Rod

90-*CDQ2* Series

ø32, ø40, ø50, ø63, ø80 ø100



How to Order

With auto switch **90-CDQ2 A 32-200 DC Z-M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | |
|---|------------------------|
| A | Both ends tapped style |
| L | Foot style |
| F | Rod side flange style |
| G | Head side flange style |
| D | Double clevis style |

Bore size

| | | | |
|----|-------|-----|--------|
| 32 | 32 mm | 63 | 63 mm |
| 40 | 40 mm | 80 | 80 mm |
| 50 | 50 mm | 100 | 100 mm |

Cylinder stroke (mm)

| | |
|-------------|---------------|
| 32, 40, 50 | 125, 150, 175 |
| 63, 80, 100 | 200, 250, 300 |

Action

| | |
|---|---------------|
| D | Double acting |
|---|---------------|

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*Refer to the table below for the applicable auto switch model.

Auto switch mounting groove

| | | |
|---|-------------|---------|
| Z | ø12 to ø25 | 2 sides |
| | ø32 to ø100 | 4 sides |

Body option

| | |
|-----|----------------------------------|
| Nil | Standard (Rod end female thread) |
| M | Rod end male thread |

Cushion

| | |
|---|---------------|
| C | Rubber bumper |
|---|---------------|

*Mounting brackets are shipped together, (but not assembled).

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) ⁹⁰91-CDQ2L40-200DCZ

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | — | A90 | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSGPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*When mounting the D-M9BW(V)L-900, D-M9BW(V)SDPC-900 or A90L-900 on cylinders with ø32 to ø50 other than on the port face, order the auto switch mounting bracket separately. Refer to pages 66 to 68 for details.

Mounting Brackets for 90- and 91-series/Part No.

| Bore size (mm) | Foot (1) | Flange | Double clevis |
|----------------|------------|------------|---------------|
| 32 | 90-CQ-L032 | 90-CQ-F032 | 90-CQ-D032 |
| 40 | 90-CQ-L040 | 90-CQ-F040 | 90-CQ-D040 |
| 50 | 90-CQ-L050 | 90-CQ-F050 | 90-CQ-D050 |
| 63 | 90-CQ-L063 | 90-CQ-F063 | 90-CQ-D063 |
| 80 | 90-CQ-L080 | 90-CQ-F080 | 90-CQ-D080 |
| 100 | 90-CQ-L100 | 90-CQ-F100 | 90-CQ-D100 |



Note 1) When ordering foot bracket, order 2 pieces per cylinder.

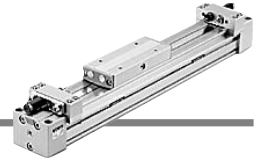
Note 2) Parts belonging to each bracket are as follows.

Foot or Flange style: Body mounting bolt, Double clevis/Clevis pin, Type C retaining ring for axis, Body mounting bolt

Mechanically Jointed Rodless Cylinder Basic Type

90-MY1B Series

∅20, ∅25, ∅32, ∅40, ∅50, ∅63



How to Order

Basic type **90**-**MY1B****20** - **300** - **M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Basic type

| | |
|----|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |

Bore size (mm)

Piping

| | |
|-----|-------------------------|
| Nil | Standard type |
| G | Centralized piping type |

Cylinder stroke (mm)

| | |
|------------------------|---|
| 20, 25, 32, 40, 50, 63 | 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000 |
|------------------------|---|

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

Applicable auto switches vary depending on the bore size. Select an applicable one referring to the table below.

Suffix for stroke adjusting unit

| | |
|-----|------------|
| Nil | Both sides |
| S | One side |

Note) "S" is applicable for stroke adjusting units L and H.

Stroke adjusting unit

| | |
|-----|--|
| Nil | Without adjusting unit |
| L | With low load shock absorber + Adjusting bolt |
| H | With high load shock absorber + Adjusting bolt |
| LH | With one L unit and one H unit each |

No stroke adjustment units are used for ∅50 and ∅63.

*The cylinder stroke is used every one millimeter up to the maximum stroke. When exceeding 2,000 mm, consult SMC.

No stroke adjustment units are used for ∅50 and ∅63.

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|---------------|------|--------------------|------------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | Relay, PLC | IC circuit |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | M9BWW** [Y7BWW] | M9BW** [Y7BW] | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | 100 V or less | — | Z80 | ● | — | IC circuit | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L
With pre-wired connector.....SDPC

Example: M9BWL
M9BWSL

**Models D-M9BW(V)L-900 or D-M9BW(V)SDPC-900 cannot be mounted on cylinders of ∅50.
Select auto switches from those specified in brackets [].

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900, D-Y7BW(V)L-900, D-Y7BW(V)SDPC-900 and D-Z80L-900.

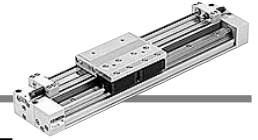
*The auto switch is shipped together but not assembled.

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Mechanically Jointed Rodless Cylinder Linear Guide Type

90-MY1H Series

∅16, ∅20, ∅25, ∅32, ∅40



How to Order

Linear guide type **90** - **MY1H** **25** - **300** - **M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Linear guide type

Bore size

| | |
|----|-------|
| 16 | 16 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Piping

| | |
|-----|-------------------------|
| Nil | Standard type |
| G | Centralized piping type |

Cylinder stroke (mm)

| | |
|------------|--|
| 16, 20 | 50, 100, 150, 200 |
| 25, 32, 40 | 250, 300, 350, 400 450, 500, 550, 600 |

Stroke adjusting unit

| | |
|-----|--|
| Nil | Without adjusting unit |
| L | With low load shock absorber + Adjusting bolt |
| H | With high load shock absorber + Adjusting bolt |
| LH | With one L unit and one H unit each |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

Suffix for stroke adjusting unit

| | |
|-----|-----------|
| Nil | Both ends |
| S | One end |

Note) "S" is applicable for stroke adjusting units L and H.

*Refer to the table below for the applicable auto switch model.

Note) ⁹⁰⁻₉₁₋MY1H16 is not available with H unit.

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|---------------|------|-------------------|---------|----------------------|---------------------|-----------------|---|
| | | | | | DC | AC | Perpendicular | In-line | | | | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWV | M9BW | 3(L) | SDPC | — |
| | | | | | 100 V or less | — | | | | | | |
| Reed switch | — | — | No | — | — | — | — | — | — | — | IC circuit | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSLSDPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Mechanically Jointed Rodless Cylinder Linear Guide Type

90-MY2H Series

ø16, ø25



How to Order

Linear Guide Type **90** - **MY2H** **16G** - **300L** - **M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Guide type

| | |
|---|---------------------------|
| H | Linear guide, Single axis |
|---|---------------------------|

Bore size

| | |
|----|-------|
| 16 | 16 mm |
| 25 | 25 mm |

Piping

| | |
|---|------------------------------------|
| G | Centralized piping type (Standard) |
|---|------------------------------------|

Stroke (mm)

| | |
|----|-----------------------------------|
| 16 | 50, 100, 150, 200, 250, 300, 350, |
| 25 | 400, 450, 500, 550, 600 |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch type

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

*Refer to the table below for the applicable auto switch model.

Stroke adjusting unit position

| | |
|-----|-----------|
| Nil | Both ends |
| S | One end |

Note) "S" is applicable for stroke adjusting units L and H.

Stroke adjusting unit

| | |
|-----|-------------------------------------|
| Nil | Without adjusting unit |
| L | With low load shock absorber |
| H | With high load shock absorber |
| LH | With one L unit and one H unit each |

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for the detailed specifications of auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWV | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | — | A90 | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Magnetically Coupled Rodless Cylinder/ Basic Type

90-*CY3B* Series

Ø15, Ø20, Ø25, Ø32, Ø40

How to Order



Basic type

90 - **CY3B** **25** - **300**

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Basic type

Bore size

| | |
|-----------|-------|
| 15 | 15 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Standard stroke

| Bore size (mm) | Standard stroke (mm) | Maximum available stroke (mm) |
|----------------|---|-------------------------------|
| 15 | 50, 100, 150, 200, 250, 300, 350, 400, 450, 500 | 1000 |
| 20 | 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800 | 1500 |
| 25 | | 2000 |
| 32 | | |
| 40 | 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000 | |

*Specifications and dimensions for the 90-series are the same as standard products.

Note 1) For strokes exceeding the maximum, consult SMC.

Note 2) The longer the stroke, the larger the amount of deflection in a cylinder tube. Pay attention to the mounting bracket and clearance value.

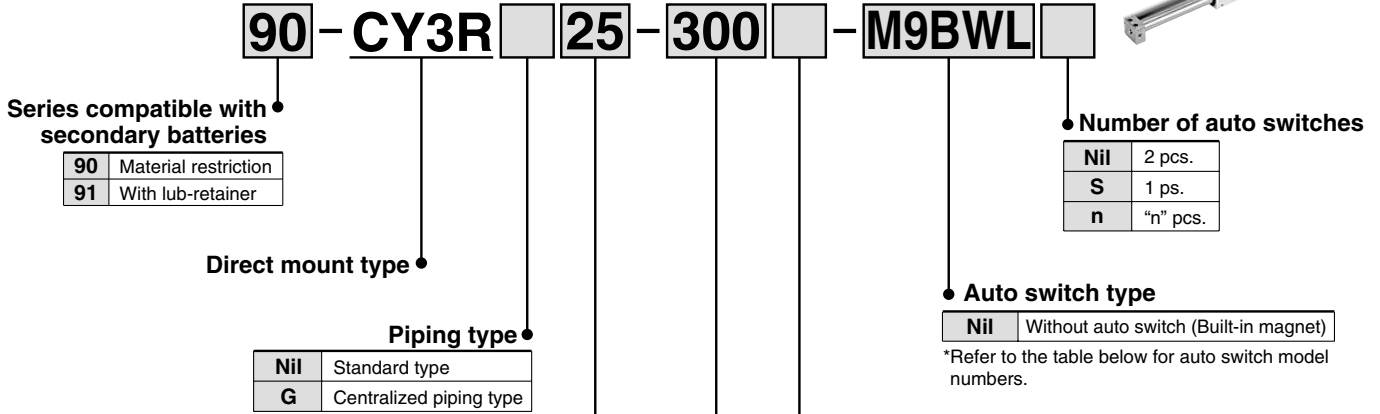
Note 3) Intermediate stroke is available by the 1 mm interval.

Magnetically Coupled Rodless Cylinder/ Direct Mount Type

90-**CY3R** Series

∅15, ∅20, ∅25, ∅32, ∅40

How to Order



Bore size

| | |
|----|-------|
| 15 | 15 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Switch rail

| | |
|-----|---------------------|
| Nil | With switch rail |
| N | Without switch rail |

Note) A type with switch rail has built-in auto switch magnets.

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke (mm) | Max. stroke without switch (mm) | Max. stroke with switch (mm) |
|----------------|---|---------------------------------|------------------------------|
| 15 | 50, 100, 150, 200, 250, 300, 350 400, 450, 500 | 1000 | 750 |
| 20 | 100, 150, 200, 250, 300, 350, 400 450, 500, 600, 700, 800 | 1500 | 1000 |
| 25 | | | 1200 |
| 32 | 100, 150, 200, 250, 300, 350, 400 450, 500, 600, 700, 800, 900, 1000 | 2000 | 1500 |
| 40 | | | 1500 |

Note 1) The longer the stroke, the larger the amount of deflection in a cylinder tube.

Pay attention to the mounting bracket and clearance value.

Note 2) Intermediate stroke is available by the 1 mm interval.

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switches/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (output) | Load voltage | | Auto switch model | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|---|------------------|-----------------|-----------------|--------------|------|-------------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color display) | Grommet | Yes | 2-wire | 24 V | 12 V | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSRPC

*Order part numbers for auto switches alone are D-M9BWL-900, D-M9BWSRPC-900 and D-A90L-900.

*Models D-M9BWL-900 or M9BWSRPC-900 cannot be mounted.

*The auto switch is shipped together but not assembled.

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Air Slide Table

90-MXS Series

How to Order



Air slide table **90** - **MXS** **16** - **50** **AS** - **M9BWL**

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Port thread type

| | | |
|------------|----------|----------|
| Nii | M thread | ø16 |
| | Rc | ø20, ø25 |
| TN | NPT | |
| TF | G | |

Symmetric type

| | |
|------------|----------------|
| Nii | Standard type |
| L | Symmetric type |

Bore size (Stroke (mm))

| | |
|------------|---------------------------------------|
| ø16 | 10, 20, 30, 40, 50, 75, 100, 125 |
| ø20 | 10, 20, 30, 40, 50, 75, 100, 125, 150 |
| ø25 | 10, 20, 30, 40, 50, 75, 100, 125, 150 |

Number of auto switches

| | |
|------------|----------|
| Nii | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|------------|---------------------------------------|
| Nii | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

*For the applicable auto switch models, refer to the table below.

Adjuster option

| | |
|-------------|--|
| Nii | Without adjuster |
| AS | Adjuster on extension end |
| AT | Adjuster on retraction end |
| A | Adjuster on both ends |
| BS | Absorber on extension end |
| BT | Absorber on retraction end |
| B | Absorber on both ends |
| ASBT | Adjuster on extension end + Absorber on retraction end |
| BSAT | Absorber on extension end + Adjuster on retraction end |

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switches/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|---------------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | 100 V or less | — | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.
*The auto switch is shipped together but not assembled.

Air Slide Table

90-91-MXQ Series

ø6, ø8, ø12, ø16, ø20, ø25

How to Order



90 - MXQ 16 [] [] - 50 AS - M9BWL []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Port thread type

| | | |
|-----|----------|-----------|
| Nil | M thread | ø6 to ø16 |
| | Rc | |
| TN | NPT | ø20, ø25 |
| TF | G | |

Symmetric type

| | |
|-----|----------------|
| Nil | Standard type |
| L | Symmetric type |

Bore size (Stroke mm)

| | |
|-----|---------------------------------------|
| ø6 | 10, 20, 30, 40, 50 |
| ø8 | 10, 20, 30, 40, 50, 75 |
| ø12 | 10, 20, 30, 40, 50, 75, 100 |
| ø16 | 10, 20, 30, 40, 50, 75, 100, 125 |
| ø20 | 10, 20, 30, 40, 50, 75, 100, 125, 150 |
| ø25 | 10, 20, 30, 40, 50, 75, 100, 125, 150 |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

*For the applicable auto switch model, refer to the table below.

Adjuster option

| | |
|------|---|
| Nil | Without adjuster |
| AS | Extension end adjuster |
| AT | Retraction end adjuster |
| A | Double end adjuster |
| BS | Extension end absorber |
| BT | Retraction end absorber |
| B | Double absorber |
| CS | Extension end metal stopper |
| CT | Retraction end metal stopper |
| C | Double metal stopper |
| ASBT | Extension end adjuster + Retraction end absorber |
| ASCT | Extension end adjuster + Retraction end metal stopper |
| BSAT | Extension end absorber + Retraction end adjuster |
| BSCT | Extension end absorber + Retraction end metal stopper |
| CSAT | Extension end metal stopper + Retraction end adjuster |
| CSBT | Extension end metal stopper + Retraction end absorber |

*90- and 91-series MXQ6 products do not have shock absorbers.

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for the detailed specifications of auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | — | A90 | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.
*The auto switch is shipped together but not assembled.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

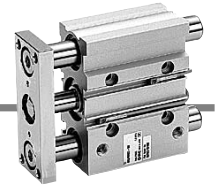
Detection Switches

Auto Switches

Compact Guide Cylinder

90-MGP Series

Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63



How to Order

Compact Guide Cylinder **90-MGP M 25-30-M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Compact Guide Cylinder

Bearing type

| | |
|---|----------------------|
| M | Slide bearing |
| L | Ball bushing bearing |

Bore size

| | | | |
|----|-------|----|-------|
| 12 | 12 mm | 32 | 32 mm |
| 16 | 16 mm | 40 | 40 mm |
| 20 | 20 mm | 50 | 50 mm |
| 25 | 25 mm | 63 | 63 mm |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

*For the applicable auto switch model, refer to the table below.

Cylinder stroke (mm)

| | |
|----------|---|
| 12, 16 | 10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250 |
| 20, 25 | 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400 |
| 32 to 63 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400 |

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | — | A90 | ● | — | IC circuit | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*The auto switch is shipped together but not assembled.

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Minimum Operating Pressure for Products for 91-series Specifications

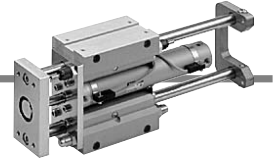
| Bore size (mm) | 12, 16, 20, 25 | 32, 40, 50, 63 |
|----------------------------|----------------|----------------|
| Minimum operating pressure | 0.2MPa | 0.15MPa |

Guide Cylinder

90-91-MGG Series

∅20, ∅25, ∅32, ∅40, ∅50

How to Order



90 - **MGG** **L** **B** **32** - **100** - **M9BWL**

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

Guide Cylinder

Bearing type

| | |
|----------|----------------------|
| L | Ball bushing bearing |
|----------|----------------------|

Mounting style

| | |
|----------|-----------------------------|
| B | Basic style |
| F | Front mounting flange style |

Bore size

| | |
|-----------|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |

Number of auto switches

| | |
|------------|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|------------|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

*For the applicable auto switch model, refer to the table below.

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke (mm) | Long stroke (mm) |
|----------------|----------------------------------|--|
| 20 | 75, 100, 125, 150, 200 | 250, 300, 350, 400 |
| 25 | 75, 100, 125, 150, 200 | 350, 400, 450, 500 |
| 32 | | 350, 400, 450, 500, 600 |
| 40 | 75, 100, 125, 150, 200, 250, 300 | 350, 400, 450, 500, 600, 700, 800 |
| 50 | | 350, 400, 450, 500, 600, 700, 800, 900, 1000 |

*Intermediate strokes and short strokes other than the above are produced upon receipt of order.

*Specifications and dimensions for the 90-series are the same as standard products. Specifications for the 91-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BWL-900, D-M9BWS DPC-900 and D-A90L-900.

*Models D-M9BWL-900 or M9BWS DPC-900 cannot be mounted.

*The auto switch is shipped together but not assembled. (Only auto switch mounting brackets are assembled before shipment.)

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Cylinder with Lock

Double Acting, Single Rod

90-91-CDNG Series

∅20, ∅25, ∅32, ∅40



How to Order

With auto switch **90** - **CDNG** **L** **N** **32** - **100** - **D** - **M9BWL** **□**

Series compatible with secondary batteries

| | |
|-----------|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | |
|----------|--------------------------|
| B | Basic style |
| L | Axial foot style |
| F | Rod side flange style |
| G | Head side flange style |
| U | Rod side trunnion style |
| T | Head side trunnion style |
| D | Clevis style |

*Mounting brackets are shipped together, (but not assembled).

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) 90-CDNGLN40-100-D

Cushion type

| | |
|----------|---------------|
| N | Rubber bumper |
|----------|---------------|

Bore size

| | |
|-----------|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Locking direction

| | |
|----------|-----------------|
| D | Both directions |
|----------|-----------------|

Number of auto switches

| | |
|------------|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|------------|---------------------|
| Nil | Without auto switch |
|------------|---------------------|

*For the applicable auto switch model, refer to the table below.

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke (mm) ⁽¹⁾ | Long stroke (mm) | Max. manufacturable stroke (mm) |
|----------------|--|------------------|---------------------------------|
| 20 | 25, 50, 75, 100, 125, 150, 200 | 201 to 350 | 1500 |
| 25 | 25, 50, 75, 100, 125, 150, 200, 250, 300 | 301 to 400 | |
| 32 | | 301 to 450 | |
| 40 | | 301 to 800 | |

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.

Note 2) Long strokes are applicable to the axial foot style and rod side flange style.

In the case of other mounting brackets or when long stroke limits are exceeded, the maximum useable stroke is determined by the stroke selection table (information edition).

*Specifications and dimensions for the 90-series are the same as standard products.
Specifications for the 91-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | Lead wire length (m) | Pre-wired connector | Applicable load | |
|---------------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | | 3(L) | SDPC | | |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L
With pre-wired connector.....SDPC
Example: M9BWL
M9BWSNPC

*Order part numbers for auto switches alone are D-M9BWL-900, D-M9BWSNPC-900 and D-A90L-900.

*Models D-M9BWL-900 or M9BWSNPC-900 cannot be mounted.

*The auto switch is shipped together but not assembled. (Only auto switch mounting brackets are assembled before shipment.)

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Mounting Bracket Part No.

| Mounting bracket | Bore size (mm) | | | |
|-------------------------|----------------|---------------|---------------|---------------|
| | 20 | 25 | 32 | 40 |
| Axial foot * | 91-CNG-L020 | 91-CNG-L025 | 91-CNG-L032 | 91-CNG-L040 |
| Flange | 91-CNG-F020 | 91-CNG-F025 | 91-CNG-F032 | 91-CNG-F040 |
| Trunnion pin | 90-CG-T020 | 90-CG-T025 | 90-CG-T032 | 90-CG-T040 |
| Clevis ** | 90-CG-D020 | 90-CG-D025 | 90-CG-D032 | 90-CG-D040 |
| Rod side pivot bracket | 91-CNG-020-24 | 91-CNG-025-24 | 91-CNG-032-24 | 91-CNG-040-24 |
| Head side pivot bracket | 90-CG-020-24A | 90-CG-025-24A | 90-CG-032-24A | 90-CG-040-24A |

*When ordering foot bracket, order 2 pieces per cylinder.

**Clevis pin, retaining ring, and mounting bolt are shipped together with clevis style.

***Mounting bolts are included with the foot and flange styles.

Cylinder with Lock

Double Acting, Single Rod

90-91-CDNA Series

∅40, ∅50, ∅63, ∅80, ∅100



How to Order

With auto switch **90** - CDNA **L** **N** **50** - **100** - **D** - **M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| | |
|---|------------------------|
| B | Basic style |
| L | Axial foot style |
| F | Rod side flange style |
| G | Head side flange style |
| C | Single clevis style |
| D | Double clevis style |
| T | Center trunnion style |

Type

| | |
|---|----------|
| N | Non-lube |
|---|----------|

Bore size

| | |
|-----|--------|
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |

Locking direction

| | |
|---|-----------------|
| D | Both directions |
|---|-----------------|

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke (mm) ⁽¹⁾ | Long stroke (mm) ⁽²⁾ |
|----------------|---|---------------------------------|
| 40 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500 | 800 |
| 50, 63 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600 | 1000 |
| 80, 100 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700 | ∅80: 1000 ∅100: 1000 |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
| S | 1 pc. |
| n | "n" pcs. |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

*For the applicable auto switch model, refer to the table below.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) ⁹⁰CDNALN40-100-D

*Specifications and dimensions for the 90-series are the same as standard products.
Specifications for the 91-series are the same as standard products.

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.
Note 2) Long stroke applies to the axial foot style and the rod side flange style.
When exceeding the stroke range for each bracket, determine the maximum strokes referring to the Selection Table (front matter 29 in Best Pneumatics No. 2).

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — |
| Reed switch | — | | No | | | | | — | A90** | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L
With pre-wired connector.....SDPC
Example: M9BWL M9BWSGPC
**Models D-A90L-900 cannot be mounted on cylinders of ∅50.

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.
*The auto switch is shipped together but not assembled. (Only auto switch mounting brackets are assembled before shipment.)
*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Mounting Bracket Part No.

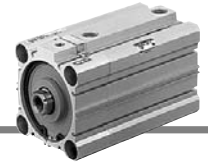
| Bore size (mm) | 40 | 50 | 63 | 80 | 100 |
|------------------|------------|------------|------------|------------|------------|
| Foot * | 90-CA1-L04 | 90-CA1-L05 | 90-CA1-L06 | 90-CA1-L08 | 90-CA1-L10 |
| Flange | 90-CA1-F04 | 90-CA1-F05 | 90-CA1-F06 | 90-CA1-F08 | 90-CA1-F10 |
| Single clevis | 90-CA1-C04 | 90-CA1-C05 | 90-CA1-C06 | 90-CA1-C08 | 90-CA1-C10 |
| Double clevis ** | 90-CA1-D04 | 90-CA1-D05 | 90-CA1-D06 | 90-CA1-D08 | 90-CA1-D10 |

* When ordering foot bracket, order 2 pieces per cylinder.
**Clevis pin, plain washer, and cotter pin are shipped together with double clevis style.

Compact Cylinder with Lock Double Acting, Single Rod

90-91-CDLQ Series

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100



How to Order

With auto switch **90** - **CDLQ** **B** **40** - **30D** - **F** - **M9BWL**

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
| 91 | With lub-retainer |

With auto switch (Built-in magnet)

Mounting style

| ø20, ø25 | | ø32 to ø100 | |
|----------|--|-------------|-------------------------|
| B | Through-hole/ Both ends tapped common (Standard) | B | Through-hole (Standard) |
| L | Foot style | A | Both ends tapped style |
| F | Rod side flange style | L | Foot style |
| G | Head side flange style | F | Rod side flange style |
| D | Double clevis style | G | Head side flange style |
| | | D | Double clevis style |

*Mounting bracket is shipped together, (but not assembled).

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) 90-CDLQL32-30D-B

*Specifications and dimensions for the 90-series are the same as standard products.
Specifications for the 91-series are the same as standard products.

Bore size

| | |
|-----|--------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|-----|---------------------|
| Nil | Without auto switch |
|-----|---------------------|

*For the applicable auto switch model, refer to the table below.

Locking direction

| | |
|---|--------------------|
| F | Extension locking |
| B | Retraction locking |

Body option

| | |
|-----|---|
| Nil | Standard (Rod end female thread) |
| C | With rubber bumper |
| M | Rod end male thread |
| CM | With rubber bumper, Rod end male thread |

Action

| | |
|---|---------------|
| D | Double acting |
|---|---------------|

Cylinder stroke (mm)

| Bore size (mm) | Standard stroke (mm) |
|-------------------------|---|
| 20, 25 | 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 |
| 32, 40, 50, 63, 80, 100 | 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100 |

Applicable Auto Switch/Refer to pages 62 to 65 for detailed specifications of auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|--------------|---------------|-------------------|---------|----------------------|---------------------|-----------------|------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — |
| | | | | | | | | | | | | |
| Reed switch | — | | No | | | 100 V or less | — | A90 | ● | — | IC circuit | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*When mounting the D-M9BW(V)L-900, M9BW(V)SDPC-900, or A90L-900 on cylinders with ø32 to ø50 other than on the port face, order the auto switch mounting brackets separately. Refer to page 66 for details.

*When using mounting brackets (foot, head side flange, or double clevis), an auto switch may or may not be mounted later. Confirm specifications.

Mounting Bracket Part No.

| Bore size (mm) | Foot ⁽¹⁾ | Flange | Double clevis ⁽³⁾ | Bore size (mm) | Foot ⁽¹⁾ | Flange | Double clevis ⁽³⁾ |
|----------------|---------------------|-------------|------------------------------|----------------|---------------------|-------------|------------------------------|
| 20 | 91-CLQ-L020 | 91-CLQ-F020 | 91-CLQ-D020 | 50 | 91-CLQ-L050 | 91-CLQ-F050 | 91-CLQ-D050 |
| 25 | 91-CLQ-L025 | 91-CLQ-F025 | 91-CLQ-D025 | 63 | 91-CLQ-L063 | 91-CLQ-F063 | 91-CLQ-D063 |
| 32 | 91-CLQ-L032 | 91-CLQ-F032 | 91-CLQ-D032 | 80 | 91-CLQ-L080 | 91-CLQ-F080 | 91-CLQ-D080 |
| 40 | 91-CLQ-L040 | 91-CLQ-F040 | 91-CLQ-D040 | 100 | 91-CLQ-L100 | 91-CLQ-F100 | 91-CLQ-D100 |

Note1) When ordering foot bracket, order 2 pieces per cylinder.

Note2) Parts belonging to each bracket are as follows. Foot, Flange: Body mounting screws, Double clevis: Clevis pin, type C retaining ring for shaft, Body mounting screws, Flat washer.

Note3) Clevis pin and retaining ring are included with the double clevis style.

Stopper Cylinder / Fixed Mounting Height

90-RSDQ Series

∅20, ∅32, ∅40, ∅50



How to Order

With auto switch

90-RSDQ B 20 - 15 D - M9BWL

Series compatible with secondary batteries
90 Material restriction

With auto switch (Built-in magnet)

Mounting bracket

| | |
|---|-------------------------|
| B | Through-hole (Standard) |
| A | Both ends tapped style |

Bore size

| | |
|----|-------|
| 20 | 20 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |

Port thread type

| | | |
|-----|-----|------------|
| Nil | Rc | ∅20 to ∅50 |
| TN | NPT | |
| TF | G | |

Note) TF for ∅20 indicates M5.

Cylinder stroke (mm)

| | |
|----|------------|
| 20 | 10, 15, 20 |
| 32 | 10, 15, 20 |
| 40 | 20, 25, 30 |
| 50 | 20, 25, 30 |

Number of auto switches

| | |
|-----|--------|
| Nil | 2 pcs. |
| S | 1 pc. |

Auto switch
Nil Without auto switch
*For the applicable auto switch model, refer to the table below.

Rod end configuration

| Symbol | Configuration | Application |
|--------|---------------------------------|-------------|
| Nil | Round bar type | — |
| K | Chamfered type | — |
| R | Roller type | — |
| L | Lever type (Non-adjustable) (1) | Basic style |

Note 1) The lever types are applicable only to ∅32, ∅40 and ∅50.

Action

| | |
|---|----------------------------------|
| D | Double acting |
| B | Double acting with spring loaded |
| T | Single acting (Spring extend) |

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) 90-RSQB32-15D

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWB | M9BW | ● | ● | — |
| Reed switch | — | | No | | | | | — | A90 | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L
With pre-wired connector.....SDPC
Example: M9BWL
M9BWSLSDPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.

*When mounting the D-M9BW(V)L-900, M9BW(V)SDPC-900, or A90L-900 on cylinders with ∅32 to ∅50 other than on the port face, order the auto switch mounting brackets separately. Refer to page 66 for details.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches


Auto Switches

Heavy Duty Stopper Cylinder

90-RSH/RS1H Series

∅20, ∅32 ∅50, ∅63

How to Order



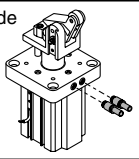
Bore size

| | |
|----|-------|
| 20 | 20 mm |
| 32 | 32 mm |

Piping direction

Flange side

Nil

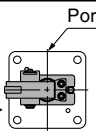


Positional relationship of lever and port

90-RSH20

Port

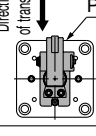
Direction of transfer



90-RSH32

Port

Direction of transfer



Heavy Duty Stopper Cylinder ∅20, ∅32

Heavy Duty Stopper Cylinder ∅50, ∅63

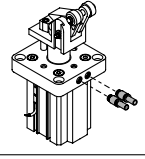
Series compatible with secondary batteries

90 Material restriction

Piping direction

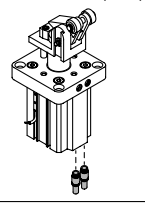
Flange side

Nil



Axial direction (tube)

A



Bore size

| | |
|----|-------|
| 50 | 50 mm |
| 63 | 63 mm |

Cylinder stroke

| | |
|----|-----------------------|
| 30 | 30 mm (90-RS1H50, 63) |
|----|-----------------------|

Action

| | |
|---|-------------------------------|
| D | Double acting type |
| B | Double acting spring type |
| T | Single acting/Spring extended |

Roller material

| | |
|---|--------------|
| L | Resin |
| M | Carbon steel |

Option Note 1)

| | |
|-----|---------------------|
| Nil | Without option |
| D | With lock mechanism |
| C | With cancel cap |

Note 1) Options can be combined. Indicate the part No. according to the priority order of D.C.

Number of auto switches
(auto switch number mounted)

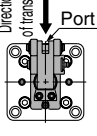
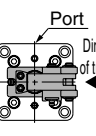
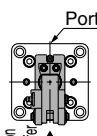
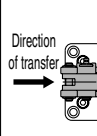
| | |
|-----|--------|
| Nil | 2 pcs. |
| S | 1 pc. |

Auto switch

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

*For the applicable auto switch model, refer to the table below.

Positional relationship of lever and port

| | | | | | | | |
|-----|---|---|---|---|---|---|---|
| Nil |  | P |  | Q |  | R |  |
|-----|---|---|---|---|---|---|---|

*Specifications and dimensions for the 90-series are the same as standard products.

Applicable auto switches/Refer to pages 62 to 65 for detailed auto switch specifications.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|--|------------------|-----------------|-----------------|---------------|------|-------------------|---------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | — | — |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWV | M9BW | ● | ● | — |
| Reed switch | — | | No | | 100 V or less | — | Z80 | ● | — | — | — | IC circuit |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWS DPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-Z80L-900.

*The auto switch is shipped together but not assembled.

*Refer to pages 66 to 68 for details on the auto switch mounting brackets.

Floating Joint 90-J□ Series

How to Order

Standard Type

90 - JA 80 - 22-150

Series compatible with secondary batteries

90 Material restriction

Applicable bore size (mm)

| Model | Symbol | Applicable bore size (mm) |
|----------|--------|---------------------------|
| Standard | 80 | 80 |
| | 100 | 100 |

Thread nominal size (Standard)

| Nominal thread size | Applicable cylinder nominal thread size |
|---------------------|---|
| 22-150 | M22 x 1.5 |
| 26-150 | M26 x 1.5 |

*Specifications and dimensions for the 90-series are the same as standard products.



How to Order

For Compact Cylinders

90 - J B 40 - 8-125

Series compatible with secondary batteries

90 Material restriction

For compact cylinders/Female thread

Applicable bore size (mm)

| Symbol | Applicable bore size (mm) |
|--------|---------------------------|
| 12 | 12 |
| 16 | 16 |
| 20 | 20 |
| 25 | 25 |
| 40 | 32, 40 |
| 63 | 50, 63 |
| 80 | 80 |
| 100 | 100 |

Thread nominal size

| Nominal thread size | Applicable cylinder nominal thread size |
|---------------------|---|
| 3-050 | M3 x 0.5 |
| 4-070 | M4 x 0.7 |
| 5-080 | M5 x 0.8 |
| 6-100 | M6 x 1 |
| 8-125 | M8 x 1.25 |
| 10-150 | M10 x 1.5 |
| 16-200 | M16 x 2 |
| 20-250 | M20 x 2.5 |

*Specifications and dimensions for the 90-series are the same as standard products.



How to Order

Stainless Steel Type

90 - J S 32 - 10-125

Series compatible with secondary batteries

90 Material restriction

Stainless steel type

Applicable bore size (mm)

| Symbol | Applicable bore size (mm) |
|--------|---------------------------|
| 10 | 10 |
| 16 | 10, 16 |
| 20 | 20 |
| 32 | 25, 32 |
| 40 | 40 |
| 63 | 50, 63 |

Nominal thread size

| Symbol | Applicable cylinder nominal thread size |
|--------|---|
| 4-070 | M4 x 0.7 |
| 5-080 | M5 x 0.8 |
| 8-125 | M8 x 1.25 |
| 10-125 | M10 x 1.25 |
| 14-150 | M14 x 1.5 |
| 18-150 | M18 x 1.5 |

*Specifications and dimensions for the 90-series are the same as standard products.



Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

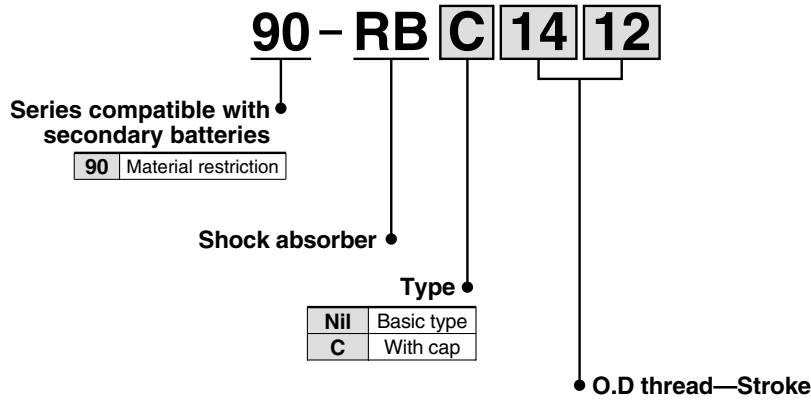
Detection Switches

Auto Switches

Shock Absorber

90-RB/RBC Series

How to Order



| | | |
|--|------------------|----------------------|
| Replacement part no./Cap (Resin part only) | | RBC 08 C |
| | | Applicable model |
| 08 | 90-RBC0805, 0806 | 20 90-RBC2015 |
| 10 | 90-RBC1006, 1007 | 27 90-RBC2725 |
| 14 | 90-RBC1411, 1412 | |

Cap

Cap cannot be mounted for basic type. Please place an order with cap type from the beginning.

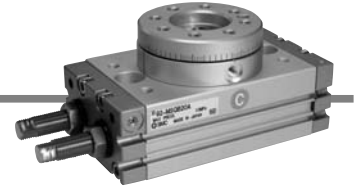
*Specifications and dimensions for the 90-series are the same as standard products.

Rotary Table/Rack & Pinion Style

92-MSQ Series

Size: 10, 20, 30, 50, 70, 100, 200

How to Order



Basic type

92-MSQ B 10 A - M9BWL

Series compatible with secondary batteries

| | |
|-----------|---|
| 92 | Material restriction + Vacuum port for vacuum suction |
|-----------|---|

Note) Restricted material is used in part.

Size

| |
|-----|
| 10 |
| 20 |
| 30 |
| 50 |
| 70 |
| 100 |
| 200 |

Number of auto switches

| | |
|-----|----------|
| Nil | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch type

| | |
|-----|---------------------------------------|
| Nil | Without auto switch (built-in magnet) |
|-----|---------------------------------------|

*Refer to the table below for auto switch types.

| | |
|----------|----------------------|
| A | With adjustment bolt |
|----------|----------------------|

Applicable Auto Switch

Refer to pages 62 to 65 for detailed auto switch specification.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | | |
|--------------------|---|------------------|-----------------|-----------------|--------------|------|-------------------|---------|----------------------|---------------------|-----------------|------|------------|
| | | | | | DC | AC | Perpendicular | In-line | | | 3(L) | SDPC | |
| Solid state switch | Diagnostic indication (2-color display) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWV | M9BW | ● | ● | — | Relay, PLC |
| Reed switch | — | | No | | | | 100 V or less | — | A90 | | | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSRPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and D-A90L-900.
*The auto switch is shipped together but not assembled.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

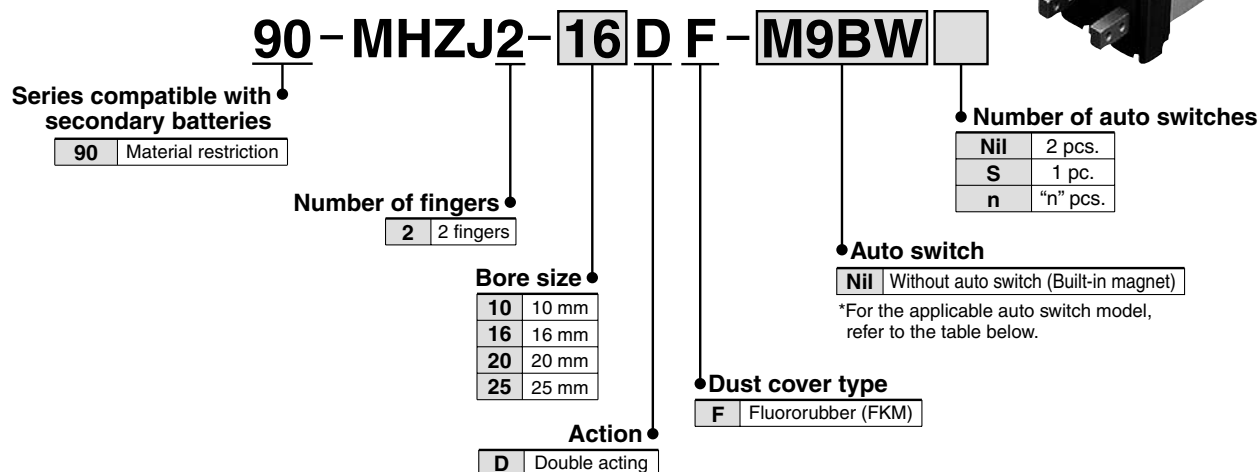
Detection Switches

Auto Switches

Parallel Style Air Gripper with Dust Cover

90-MHZJ2 Series

How to Order



*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on the auto switch.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | | Auto switch model | | Lead wire length (m) | Applicable model | Applicable load | |
|--------------------|-------------------------------|------------------|-----------------|-----------------|--------------|------|---|-------------------|---------|----------------------|------------------|-----------------|------------|
| | | | | | DC | AC | — | Perpendicular | In-line | | | | |
| Solid state switch | Diagnosis (2-color indicator) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | 3(L) | SDPC | — | Relay, PLC |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSGPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900 and D-M9BW(V)SDPC-900.

*The auto switch is shipped together but not assembled.

Note) Take note of hysteresis with 2-color indication type auto switches. Refer to page 438 in "Best Pneumatic No.4" for auto switch specifications.

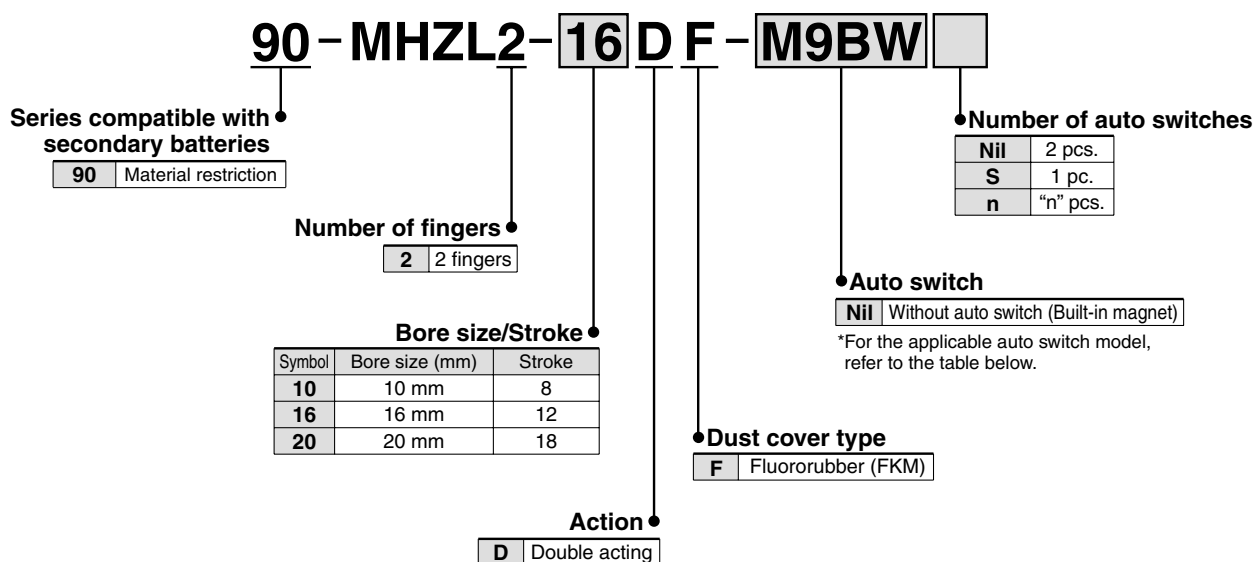
If an auto switch is mounted where the green light is lit and the air gripper has a short stroke, the auto switch may detect an unnecessary portion due to its operating range. Check that auto switch mounting is correct and adjust if necessary. This also applies to when the red light is lit.

*Through-hole mounting is not used when mounting the auto switch for the 90-MHZJ2-10D.

*When using the perpendicular auto switch for $\phi 10$, the fitting and auto switch could mutually interfere. Use the extension fitting shipped in the package to avoid interference.

Parallel Style Air Gripper/Long Stroke Type 90-MHZL2 Series

How to Order



Applicable Auto Switch/Refer to pages 62 to 65 for further information on the auto switch.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|---------------------------------|------------------|-----------------|-----------------|--------------|------|---|-------------------|---------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | — | Perpendicular | In-line | | | 3(L) | SDPC |
| Solid state switch | Diagnostic (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSRPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900 and D-M9BW(V)SDPC-900.

*The auto switch is shipped together but not assembled.

Note) Take note of hysteresis with 2-color indication type auto switches. Refer to page 438 in "Best Pneumatic No.4" for auto switch specifications.

If an auto switch is mounted where the green light is lit and the air gripper has a short stroke, the auto switch may detect an unnecessary portion due to its operating range. Check that auto switch mounting is correct and adjust if necessary. This also applies to when the red light is lit.

*When using the perpendicular auto switch for $\phi 10$, the fitting and auto switch could mutually interfere. Use the extension fitting shipped in the package to avoid interference.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

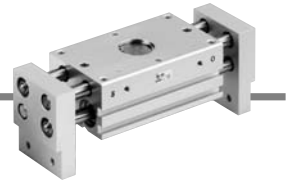
Detection Switches

Auto Switches

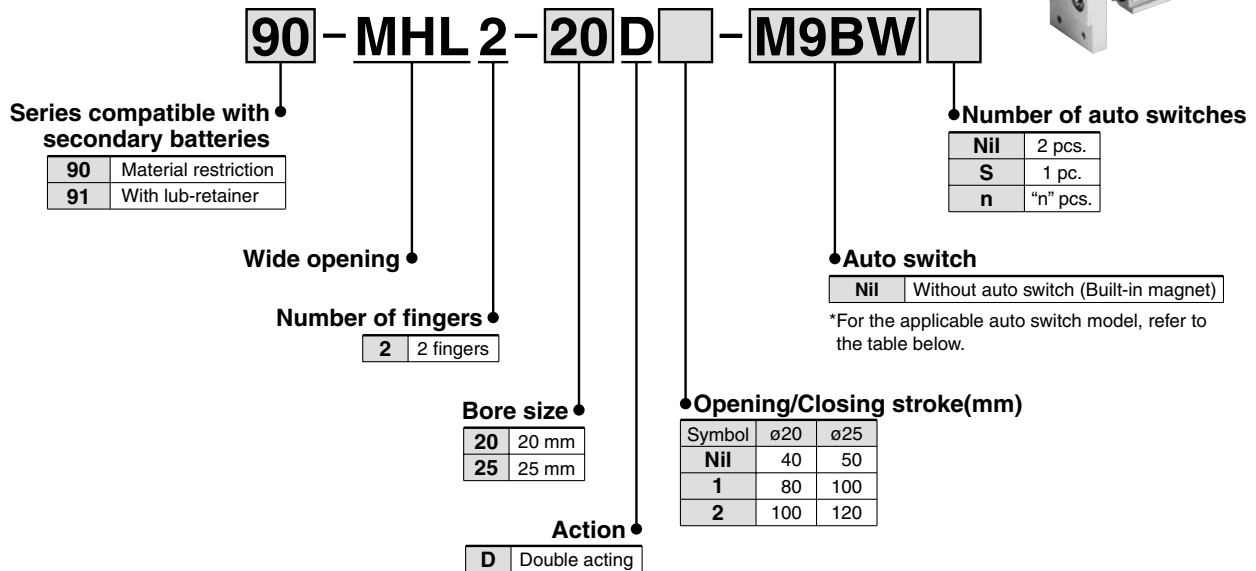
Parallel Style Air Gripper: Wide Type

90-MHL2 Series

ø20, ø25



How to Order



*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on the auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|---------------------------------|------------------|-----------------|-----------------|--------------|------|---|-------------------|---------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | | Perpendicular | In-line | | | | |
| Solid state switch | Diagnostic (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWW | M9BW | ● | ● | — | Relay, PLC |
| | | | | | | | | Y7BWW | Y7BW | ● | — | | |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSDDPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900, D-M9BW(V)SDPC-900 and DY7BW(V)L-900.

*The auto switch is shipped together but not assembled.

*For the M9 auto switch, the auto switch mounting bracket model 90-BMG2-012 is shipped with one for each auto switch.

Note 1) Take note of hysteresis with 2-color indication type auto switches. Refer to page 487 in "Best Pneumatic No.4" for auto switch specifications.

If an auto switch is mounted where the green light is lit and the air gripper has a short stroke, the auto switch may detect an unnecessary portion due to its operating range. Check that auto switch mounting is correct and adjust if necessary. This also applies to when the red light is lit.

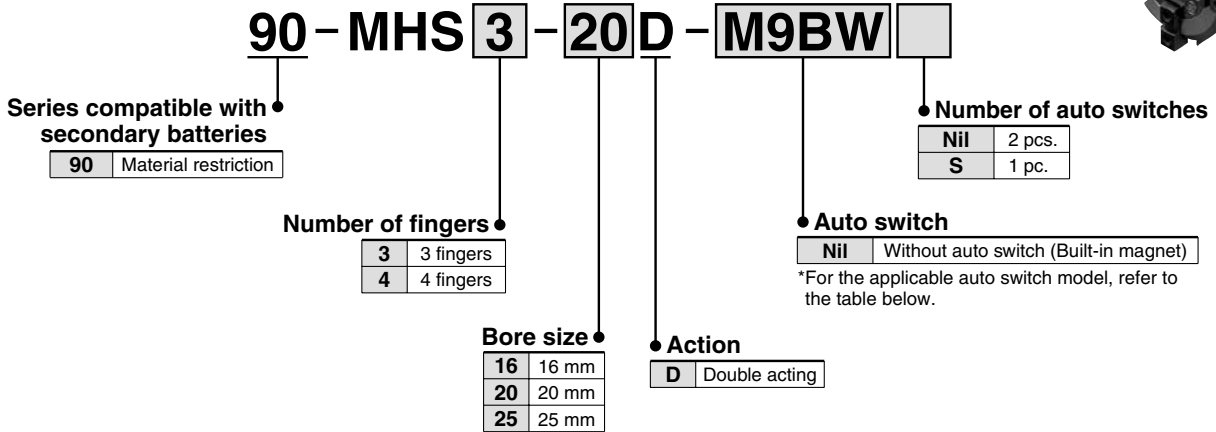
Note 2) The mounting bracket (90-BMG2-012) is required to mount the M9 auto switch.

Parallel Style Air Gripper

90-MHS Series

∅16, ∅20, ∅25

How to Order



*Specifications and dimensions for the 90-series are the same as standard products.

Applicable Auto Switch/Refer to pages 62 to 65 for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | | Auto switch model | | Lead wire length (m) | Pre-wired connector | Applicable load | |
|--------------------|---------------------------------|------------------|-----------------|-----------------|--------------|------|---|-------------------|---------|----------------------|---------------------|-----------------|------------|
| | | | | | DC | AC | — | Perpendicular | In-line | | | 3(L) | SDPC |
| Solid state switch | Diagnostic (2-color indication) | Grommet | Yes | 2-wire | 24 V | 12 V | — | M9BWV | M9BW | ● | ● | — | Relay, PLC |

*Additional symbols for auto switch: Lead wire length 3 m.....L Example: M9BWL
With pre-wired connector.....SDPC M9BWSRPC

*Order part numbers for auto switches alone are D-M9BW(V)L-900 and D-M9BW(V)SDPC-900.

*The auto switch is shipped together but not assembled.

Note) Take note of hysteresis with 2-color indication type auto switches. Refer to page 606 in "Best Pneumatic No.4" for auto switch specifications.

If an auto switch is mounted where the green light is lit and the air gripper has a short stroke, the auto switch may detect an unnecessary portion due to its operating range. Check that auto switch mounting is correct and adjust if necessary. This also applies to when the red light is lit.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Main Line Filter

90-AFF Series



How to Order

90-AFF2C to 90-AFF22C

90 - AFF 22C - [] 10 [] - []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Body size

| Symbol | Applicable compressor output (guide) |
|--------|--------------------------------------|
| 2C | 2.2 kW |
| 4C | 3.7 kW |
| 8C | 7.5 kW |
| 11C | 11 kW |
| 22C | 22 kW |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| F | G*1 |
| N | NPT |

*1 Conforms to ISO1179-1.

Option

| Symbol | Description |
|--------|-----------------------------------|
| Nil | — |
| H | For medium air pressure (1.6 MPa) |
| R | IN-OUT reversal direction |

Accessory

| Symbol | Description |
|--------|-------------|
| Nil | — |
| B | Bracket*2 |

*2 Bracket is included, (but not assembled).

Port size

| Symbol | Size | Applicable body size | | | | |
|--------|------|----------------------|----|----|-----|-----|
| | | 2C | 4C | 8C | 11C | 22C |
| 01 | 1/8 | ● | — | — | — | — |
| 02 | 1/4 | ● | — | — | — | — |
| 03 | 3/8 | — | ● | ● | — | — |
| 04 | 1/2 | — | — | ● | ● | — |
| 06 | 3/4 | — | — | — | ● | ● |
| 10 | 1 | — | — | — | — | ● |

90-AFF37B/75B

90 - AFF 37B - [] 10 [] - []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Body size

| Symbol | Applicable compressor output (guide) |
|--------|--------------------------------------|
| 37B | 37 kW |
| 75B | 75 kW |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| F | G |
| N | NPT |

Option

| Symbol | Description |
|--------|---------------------------|
| Nil | — |
| R | IN-OUT reversal direction |

Accessory

| Symbol | Description |
|--------|-------------|
| Nil | — |
| B | Bracket*1 |

*1 Bracket is included, (but not assembled).

Port size

| Symbol | Size | Applicable body size | |
|--------|-------|----------------------|-----|
| | | 37B | 75B |
| 10 | 1 | ● | — |
| 14 | 1 1/2 | ● | ● |
| 20 | 2 | — | ● |

*Specifications and dimensions for the 90-series are the same as standard products.

Bracket Part No.

| Applicable model | 90-AFF2C | 90-AFF4C | 90-AFF8C | 90-AFF11C | 90-AFF22C | 90-AFF37B | 90-AFF75B |
|---|-------------|-------------|-------------|-------------|-------------|-----------|-----------|
| Bracket assembly (with 2 mounting screws) | 90-AM-BM101 | 90-AM-BM102 | 90-AM-BM103 | 90-AM-BM104 | 90-AM-BM105 | 90-BM56 | 90-BM57 |

Mist Separator

90-AM Series



How to Order

90-AM150C to 90-AM550C

90-AM 550C - 10 -

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Body size

| Symbol | Applicable compressor output (guide) |
|--------|--------------------------------------|
| 150C | 2.2 kW |
| 250C | 3.7 kW |
| 350C | 7.5 kW |
| 450C | 11 kW |
| 550C | 22 kW |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| F | G*1 |
| N | NPT |

*1 Conforms to ISO1179-1.

Option

| Symbol | Description |
|--------|-----------------------------------|
| Nil | — |
| H | For medium air pressure (1.6 MPa) |
| R | IN-OUT reversal direction |

Accessory

| Symbol | Description |
|--------|-------------|
| Nil | — |
| B | Bracket*2 |

*2 Bracket is included, (but not assembled).

Port size

| Symbol | Size | Applicable body size | | | | |
|--------|------|----------------------|------|------|------|------|
| | | 150C | 250C | 350C | 450C | 550C |
| 01 | 1/8 | ● | — | — | — | — |
| 02 | 1/4 | ● | ● | — | — | — |
| 03 | 3/8 | — | ● | ● | — | — |
| 04 | 1/2 | — | — | ● | ● | — |
| 06 | 3/4 | — | — | — | ● | ● |
| 10 | 1 | — | — | — | — | ● |

90-AM650/850

90-AM 650 - 10 -

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Body size

| Symbol | Applicable compressor output (guide) |
|--------|--------------------------------------|
| 650 | 37 kW |
| 850 | 75 kW |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| F | G |
| N | NPT |

Option

| Symbol | Description |
|--------|---------------------------|
| Nil | — |
| R | IN-OUT reversal direction |

Accessory

| Symbol | Description |
|--------|-------------|
| Nil | — |
| B | Bracket*1 |

*1 Bracket is included, (but not assembled).

Port size

| Symbol | Size | Applicable body size | |
|--------|-------|----------------------|-----|
| | | 650 | 850 |
| 10 | 1 | ● | — |
| 14 | 1 1/2 | ● | ● |
| 20 | 2 | — | ● |

Bracket Part No.

| Applicable model | 90-AM150C | 90-AM250C | 90-AM350C | 90-AM450C | 90-AM550C | 90-AM650 | 90-AM850 |
|---|-------------|-------------|-------------|-------------|-------------|----------|----------|
| Bracket assembly (with 2 mounting screws) | 90-AM-BM101 | 90-AM-BM102 | 90-AM-BM103 | 90-AM-BM104 | 90-AM-BM105 | 90-BM56 | 90-BM57 |

*Specifications and dimensions for the 90-series are the same as standard products.

Directional Control Valves
Actuators
Air Grippers
Air Preparation Equipment
Air Filters/Pressure Control Equipment
Flow Control Related Products
Vacuum Equipment
Detection Switches
Auto Switches

Micro Mist Separator

90-AMD Series



How to Order

90-AMD150C to 90-AMD550C

90 - AMD 550C - [] 10 [] - []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Body size

| |
|------|
| 150C |
| 250C |
| 350C |
| 450C |
| 550C |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| F | G*1 |
| N | NPT |

*1 Conforms to ISO1179-1.

Option

| Symbol | Description |
|--------|-----------------------------------|
| Nil | — |
| H | For medium air pressure (1.6 MPa) |
| R | IN-OUT reversal direction |

Accessory

| Symbol | Description |
|--------|-------------|
| Nil | — |
| B | Bracket*2 |

*2 Bracket is included, (but not assembled).

Port size

| Symbol | Size | Applicable body size | | | | |
|--------|------|----------------------|------|------|------|------|
| | | 150C | 250C | 350C | 450C | 550C |
| 01 | 1/8 | ● | — | — | — | — |
| 02 | 1/4 | ● | ● | — | — | — |
| 03 | 3/8 | — | ● | — | — | — |
| 04 | 1/2 | — | — | ● | ● | — |
| 06 | 3/4 | — | — | — | ● | ● |
| 10 | 1 | — | — | — | — | ● |

90-AMD650/850

90 - AMD 650 - [] 10 [] - []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Body size

| |
|-----|
| 650 |
| 850 |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| F | G |
| N | NPT |

Option

| Symbol | Description |
|--------|---------------------------|
| Nil | — |
| R | IN-OUT reversal direction |

Accessory

| Symbol | Description |
|--------|-------------|
| Nil | — |
| B | Bracket*1 |

*1 Bracket is included, (but not assembled).

Port size

| Symbol | Size | Applicable body size | |
|--------|-------|----------------------|-----|
| | | 650 | 850 |
| 10 | 1 | ● | — |
| 14 | 1 1/2 | ● | ● |
| 20 | 2 | — | ● |

*Specifications and dimensions for the 90-series are the same as standard products.

Bracket Part No.

| Applicable model | 90-AMD150C | 90-AMD250C | 90-AMD350C | 90-AMD450C | 90-AMD550C | 90-AMD650 | 90-AMD850 |
|---|-------------|-------------|-------------|-------------|-------------|-----------|-----------|
| Bracket assembly (with 2 mounting screws) | 90-AM-BM101 | 90-AM-BM102 | 90-AM-BM103 | 90-AM-BM104 | 90-AM-BM105 | 90-BM56 | 90-BM57 |

Membrane Air Dryer

90-IDG Series

Single Unit/Standard Dew Point -40°C Specifications



How to Order

90 - IDG 50 L - [] 03 [] - P []

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Flow rate by size

| Size | Outlet air flow rate ℓ/min | |
|------|--|--|
| | Purge air flow rate (ANR) | |
| 50 | 110/40 | |
| 75 | 240/80 | |
| 100 | 300/100 | |

Standard dew point temperature

| Symbol | Standard dew point ($^{\circ}\text{C}$) |
|--------|---|
| L | -40 |

Thread type

| Symbol | Type |
|--------|------|
| Nil | Rc |
| N | NPT |
| F | G |

Option

| Symbol | Contents |
|--------|---|
| Nil | Flow direction (Left \rightarrow Right) |
| R | Flow direction (Right \rightarrow Left) |

With fitting for purge air discharge

| Symbol | Contents |
|--------|--------------------------------------|
| P | With fitting for purge air discharge |

Accessory

| Symbol | Description |
|--------|-----------------|
| Nil | None (Standard) |
| B | With bracket |

Note) When symbol B is indicated, a bracket assembly with a part number shown in the table left below is included as an accessory.

Port size

| Symbol | Bore | Size | | |
|--------|------|------|----|-----|
| | | 50 | 75 | 100 |
| 02 | 1/4 | ● | — | — |
| 03 | 3/8 | ● | ● | ● |
| 04 | 1/2 | — | ● | ● |

Bracket Assembly Part No.

| Applicable model | Part no. |
|------------------|----------|
| 90-IDG50L | 90-BM64 |
| 90-IDG75L, 100L | 90-BM65 |

*With cap bolts (2 pcs.) and spring washers (2 pcs.)

*Specifications and dimensions for the 90-series are the same as standard products.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Clean Air Filter

90-SFD Series

How to Order



90 - SFD 2 00 - C08

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Clean air filter

Size

| Symbol | Max. flow rate |
|--------|----------------------------------|
| 1 | 100 ℓ/min (ANR) ^{Note)} |
| 2 | 500 ℓ/min (ANR) |

Note) The SFD100 as standard is compatible with secondary batteries. It is not used for selection with the 90-series.

Case material

| | |
|---|-------|
| 0 | Resin |
|---|-------|

Port size

| Symbol | Connection size | Note |
|--------|-----------------|--------------------------------------|
| C08 | ø8 | Clean One-touch fittings (Series KP) |
| C10 | ø10 | |
| C12 | ø12 | |
| 02 | Rc 1/4 | Female thread |
| N02 | NPT 1/4 | |
| F02 | G 1/4 | |

*Specifications and dimensions for the 90-series are the same as standard products.

Exhaust Cleaner for Clean Room

90-AMP Series



How to Order

90-AMP 2 20-03 [] - [] T

Series compatible with secondary batteries

90 Material restriction

Body size

| Symbol | Size |
|--------|--------------|
| 2 | 1/4 standard |
| 3 | 3/8 standard |
| 4 | 1/2 standard |

Element construction

| Symbol | Stage |
|--------|---------|
| 2 | 2 stage |

Port size

| Symbol | Port size | Body size | | |
|--------|-----------|-----------|---|---|
| | | 2 | 3 | 4 |
| 02 | 1/4 | ● | — | — |
| 03 | 3/8 | ● | ● | — |
| 04 | 1/2 | — | ● | ● |
| 06 | 3/4 | — | — | ● |

With element service indicator

Optional specifications

| Symbol | Description |
|--------|---------------------------|
| Nil | Flow direction Left→Right |
| R | Flow direction Right→Down |

Accessories (optional)

| Symbol | Name |
|--------|--------------|
| Nil | None |
| B | With bracket |

Note) The brackets are shipped together, (but not assembled).

*Specifications and dimensions for the 90-series are the same as standard products.

Models

| Model | 90-AMP220 | 90-AMP320 | 90-AMP420 |
|---|-----------|-----------|-----------|
| Maximum flow capacity ℓ /min (ANR) | 200 | 500 | 1000 |
| Port size (nominal size B) | 1/4, 3/8 | 3/8, 1/2 | 1/2, 3/4 |
| Mass (kg) | 0.43 | 0.68 | 1.15 |

Bracket Part No.

| Applicable model | 90-AMP220 | 90-AMP320 | 90-AMP420 |
|---|-----------|-----------|-----------|
| Bracket assembly (with 2 cap bolts with 2 spring washers) | 90-BM66 | 90-BM67 | 90-BM68 |

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Air Filter

90-AF30 to 90-AF60



How to Order

90 - AF 30 - 03 B -

① ② ③ ④ ⑤

- Option/Semi-standard: Select one each for a to c.
- Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
Example) 90-AF30-N03B-RZ

Series compatible with secondary batteries

90 Material restriction

| | Symbol | Description | ① | | | | | |
|-----------------|-------------|----------------|----------------------|--|----------------------|----------------------|----------------------|----------------------|
| | | | Body size | | | | | |
| | | | 30 | 40 | 50 | 60 | | |
| ② | Thread type | Nil | Rc | ● | ● | ● | ● | |
| | | N | NPT | ● | ● | ● | ● | |
| | | F | G | ● | ● | ● | ● | |
| + | | | | | | | | |
| ③ | Port size | 02 | 1/4 | ● | ● | — | — | |
| | | 03 | 3/8 | ● | ● | — | — | |
| | | 04 | 1/2 | — | ● | — | — | |
| | | 06 | 3/4 | — | ● | ● | — | |
| | | 10 | 1 | — | — | ● | ● | |
| + | | | | | | | | |
| ④ Option | a | Mounting | Nil | Without mounting option | ● | ● | ● | ● |
| | | | B ^{Note 1)} | With bracket | ● | ● | ● | ● |
| + | | | | | | | | |
| ⑤ Semi-standard | b | Flow direction | Nil | Flow direction: Left to right | ● | ● | ● | ● |
| | | | R | Flow direction: Right to left | ● | ● | ● | ● |
| + | | | | | | | | |
| ⑤ Semi-standard | c | Pressure unit | Nil | Name plate and caution plate for bowl in imperial units: MPa | ● | ● | ● | ● |
| | | | Z ^{Note 2)} | Name plate and caution plate for bowl in imperial units: psi, °F | ○ ^{Note 2)} | ○ ^{Note 2)} | ○ ^{Note 2)} | ○ ^{Note 2)} |

Note 1) A bracket is not assembled and supplied loose at the time of shipment. Including 2 mounting screws.

Note 2) ○: For thread type: NPT. This product is for overseas use only according to the new Measurement Law.
(The SI unit type is provided for use in Japan.)

*Specifications and dimensions for the 90-series are the same as standard products.

Bracket Part No.

| | | Model | | | | |
|----------------|----------------|----------------|----------------|----------------|--|--|
| 90-AF30 | 90-AF40 | 90-AF40-06 | 90-AF50 | 90-AF60 | | |
| 90-AF30P-050AS | 90-AF40P-050AS | 90-AF40P-070AS | 90-AF50P-050AS | 90-AF60P-050AS | | |

Note) Assembly of a bracket and 2 mounting screws.

90-AC Series Accessories: Spacer/Bracket

How to Order

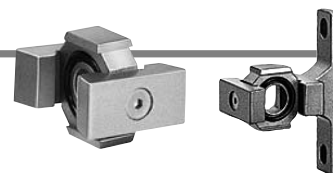
90 - Y 30 T

① ②

Series compatible with secondary batteries

90 Material restriction

Spacer



| | Symbol | Description | ① | | | | | |
|----------|--------|-------------|-----------|-------------------------|---------------------|----|---|---|
| | | | Body size | | | | | |
| | | | 30 | 40 | 50 ^{Note)} | 60 | | |
| ② Option | a | Mounting | Nil | Without mounting option | ● | ● | ● | ● |
| | | | T | With bracket | ● | ● | ● | ● |

Note) Applicable to 90-AF40-06, 90-AFM40-06 and 90-AFD-40-06.

*Specifications and dimensions for the 90-series are the same as standard products.

Mist Separator

90-AFM30/90-AFM40

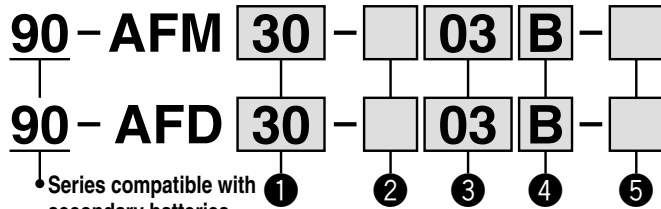
Micro Mist Separator

90-AFD30/90-AFD40



- 90-AFM Series Nominal filtration rating: 0.3 μm
- 90-AFD Series Nominal filtration rating: 0.01 μm

How to Order



• Option/Semi-standard: Select one each for a to c.
 • Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
 Example) 90-AFM30-N03B-RZ

90 Material restriction

| | | Symbol | Description | ① | |
|---|------------------|------------|--|------------|------------|
| | | | | Body size | |
| | | | | 30 | 40 |
| ② | Thread type | Nil | Rc | ● | ● |
| | | N | NPT | ● | ● |
| | | F | G | ● | ● |
| | | + | | | |
| ③ | Port size | 02 | 1/4 | ● | ● |
| | | 03 | 3/8 | ● | ● |
| | | 04 | 1/2 | — | ● |
| | | 06 | 3/4 | — | ● |
| | | + | | | |
| ④ | a Mounting | Nil | Without mounting option | ● | ● |
| | | B (Note 1) | With bracket | ● | ● |
| | | + | | | |
| ⑤ | b Flow direction | Nil | Flow direction: Left to right | ● | ● |
| | | R | Flow direction: Right to left | ● | ● |
| | | | + | | |
| ⑤ | c Pressure unit | Nil | Name plate and caution plate for bowl in imperial units: MPa | ● | ● |
| | | Z (Note 2) | Name plate and caution plate for bowl in imperial units: psi, °F | ○ (Note 2) | ○ (Note 2) |

Note 1) A bracket is not assembled and supplied loose at the time of shipment. Including 2 mounting screws.

Note 2) ○: For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

Bracket Part No.

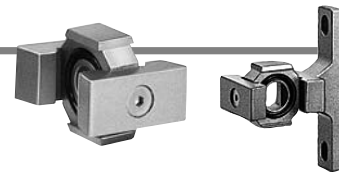
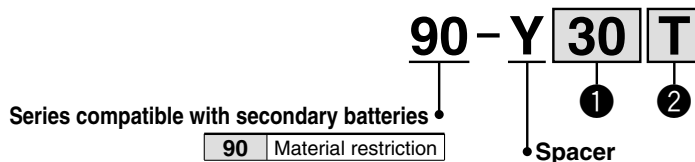
| Model | | |
|----------------------|----------------------|----------------------------|
| 90-AFM30 90-AFD30 | 90-AFM40 90-AFD40 | 90-AFM40-06 90-AFD40-06 |
| 90-AF30P-050AS | 90-AF40P-050AS | 90-AF40P-070AS |

Note) Assembly of a bracket and 2 mounting screws.

*Specifications and dimensions for the 90-series are the same as standard products.

90-AC Series Accessories: Spacer/Bracket

How to Order



| | | Symbol | Description | ① | | | |
|---|------------|--------|-------------------------|-----------|----|-----------|----|
| | | | | Body size | | | |
| | | | | 30 | 40 | 50 (Note) | 60 |
| ② | a Mounting | Nil | Without mounting option | ● | ● | ● | ● |
| | | T | With bracket | ● | ● | ● | ● |

Note) Applicable to 90-AF40-06, 90-AFM40-06 and 90-AFD-40-06.

*Specifications and dimensions for the 90-series are the same as standard products.

Regulator

90-AR30/90-AR40

Regulator with Backflow Function

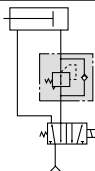
90-AR25K to 90-AR60K



- With the backflow function it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.

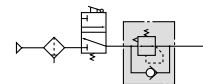
Example 1)

When the pressure in the rear and the front of the cylinder differs:



Example 2)

When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.



How to Order

90-AR **30** **K** - **03** **B** -

- Series compatible with secondary batteries

90 Material restriction

- Option/Semi-standard: Select one each for a to e.
 - Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
- Example) 90-AR30K-03B-1NR

| | Symbol | Description | ① Body size | | | | | | |
|--------------------------|----------------------|--|----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---|
| | | | 25 | 30 | 40 | 50 | 60 | | |
| ② With backflow function | Nil | Without backflow function | — | ● | ● | — | — | | |
| | K | With backflow function | ● | ● | ● | ● | ● | | |
| ③ Thread type | Nil | Rc | ● | ● | ● | ● | ● | | |
| | N | NPT | ● | ● | ● | ● | ● | | |
| | F | G | ● | ● | ● | ● | ● | | |
| ④ Port size | 02 | 1/4 | ● | ● | ● | — | — | | |
| | 03 | 3/8 | ● | ● | ● | — | — | | |
| | 04 | 1/2 | — | — | ● | — | — | | |
| | 06 | 3/4 | — | — | — | ● | — | | |
| | 10 | 1 | — | — | — | ● | ● | | |
| ⑤ Option | a Mounting | Nil | Without mounting option | | ● | ● | ● | ● | ● |
| | | B ^{Note 2)} | With bracket | | ● | ● | ● | ● | ● |
| | | H | With set nut (for panel fitting) | | ● | ● | ● | — | — |
| ⑥ Semi-standard | b Set pressure | Nil | 0.05 to 0.85 MPa setting | | ● | ● | ● | ● | ● |
| | | 1 ^{Note 3)} | 0.02 to 0.2 MPa setting | | ● | ● | ● | ● | ● |
| | c Exhaust mechanism | Nil | Relieving type | | ● | ● | ● | ● | ● |
| | | N | Non-relieving type | | ● | ● | ● | ● | ● |
| | d Flow direction | Nil | Flow direction: Left to right | | ● | ● | ● | ● | ● |
| | | R | Flow direction: Right to left | | ● | ● | ● | ● | ● |
| e Pressure unit | Nil | Name plate and pressure gauge in imperial units: MPa | | ● | ● | ● | ● | ● | |
| | Z ^{Note 4)} | Name plate and pressure gauge in imperial units: psi | | ○ ^{Note 4)} | ○ ^{Note 4)} | ○ ^{Note 4)} | ○ ^{Note 4)} | ○ ^{Note 4)} | |

Note 1) Option B, H are not assembled and supplied loose at the time of shipment.

Note 2) Assembly of a bracket and set nuts (90-AR30 and 90-AR40, 90-AR25(K) to 90-AR40(K)) Including 2 mounting screws for the 90-AR50(K) and 90-AR60(K).

Note 3) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more.

Note 4) ○: For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

*Specifications and dimensions for the 90-series are the same as standard products.

Bracket, Set Nut/Part No.

| Option | Model | 90-AR25K | 90-AR30(K) | 90-AR40(K) | 90-AR50K | 90-AR60K |
|-------------------------------------|-------|----------------|----------------|----------------|-----------------------------------|----------------------|
| Bracket assembly ^{Note 1)} | | 90-AR25P-270AS | 90-AR30P-270AS | 90-AR40P-270AS | 90-AR50P-270AS ^{Note 2)} | |
| Set nut | | AR25P-260S | AR30P-260S | AR40P-260S | — ^{Note 3)} | — ^{Note 3)} |

Note 1) Assembly of a bracket and set nuts.

Note 2) Assembly of a bracket and 2 mounting screws.

Note 3) Please consult with SMC regarding the set nuts for the 90-AR50(K) and 90-AR60(K).

Filter Regulator with Backflow Function

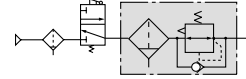
90-AW30K to 90-AW60K

- Integrated filter and regulator units save space and require less piping.
- With the backflow function it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.



Example)

When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.



How to Order

90 - AW 30 K - [] 03 B - []

① ② ③ ④ ⑤ ⑥

Series compatible with secondary batteries

90 Material restriction

- Option/Semi-standard: Select one each for a to e.
 - Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
- Example) 90-AW30K-03B-1N

| | Symbol | Description | ① | | | | |
|--------------------------|----------------|------------------------|---|----------------------------------|----|---|---|
| | | | Body size | | | | |
| | | | 30 | 40 | 60 | | |
| ② With backflow function | K | With backflow function | ● | ● | ● | | |
| | + | | | | | | |
| ③ Thread type | Nil | Rc | ● | ● | ● | | |
| | N | NPT | ● | ● | ● | | |
| | F | G | ● | ● | ● | | |
| | + | | | | | | |
| ④ Port size | 02 | 1/4 | ● | ● | — | | |
| | 03 | 3/8 | ● | ● | — | | |
| | 04 | 1/2 | — | ● | — | | |
| | 06 | 3/4 | — | — | ● | | |
| | 10 | 1 | — | — | ● | | |
| | + | | | | | | |
| ⑤ Option | a | Mounting | Nil | Without mounting option | ● | ● | ● |
| | | | B | With bracket | ● | ● | ● |
| | | | H | With set nut (for panel fitting) | ● | ● | — |
| | + | | | | | | |
| ⑥ Semi-standard | b | Set pressure | Nil | 0.05 to 0.85 MPa setting | ● | ● | ● |
| | | | 1 | 0.02 to 0.2 MPa setting | ● | ● | ● |
| | | + | | | | | |
| | c | Exhaust mechanism | Nil | Relieving type | ● | ● | ● |
| | | | N | Non-relieving type | ● | ● | ● |
| | + | | | | | | |
| d | Flow direction | Nil | Flow direction: Left to right | ● | ● | ● | |
| | | R | Flow direction: Right to left | ● | ● | ● | |
| | + | | | | | | |
| e | Pressure unit | Nil | Name plate, caution plate for bowl, and pressure gauge in imperial units: MPa | ● | ● | ● | |
| | | Z | Name plate, caution plate for bowl, and pressure gauge in imperial units: psi, °F | ○ | ○ | ○ | |

Note 1) Option B, H are not assembled and supplied loose at the time of shipment.

Note 2) Assembly of a bracket and set nuts. (90-AW30(K) and 90-AW40(K)) Including 2 mounting screws for the 90-AW60(K).

Note 3) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more.

Note 4) ○: For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

*Specifications and dimensions for the 90-series are the same as standard products.

Bracket, Set Nut/Part No.

| Optional specifications | Model | | |
|-------------------------------------|----------------|----------------|-----------------------------------|
| | 90-AW30K | 90-AW40K | 90-AW60K |
| Bracket assembly ^{Note 1)} | 90-AR30P-270AS | 90-AR40P-270AS | 90-AW60P-270AS ^{Note 2)} |
| Set nut | AR30P-260S | AR40P-260S | — ^{Note 3)} |

Note 1) Assembly of a bracket and set nuts.

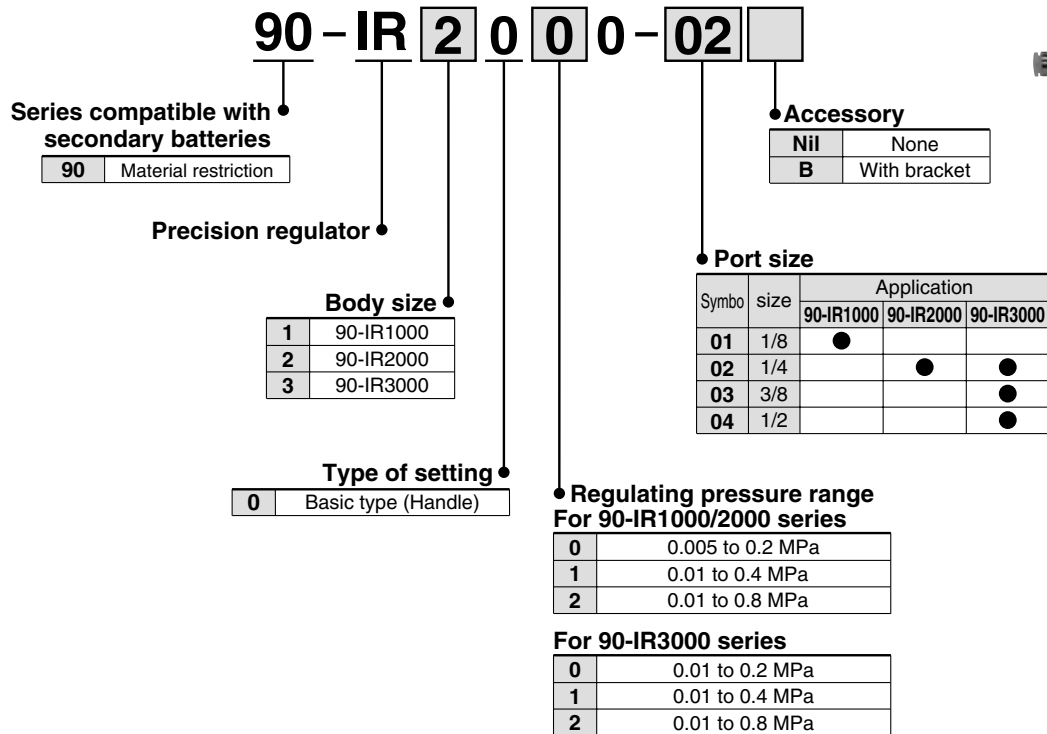
Note 2) Assembly of a bracket and 2 mounting screws.

Note 3) Please consult with SMC regarding the set nuts for the 90-AW60(K).

Precision Regulator

90-IR1000/2000/3000 Series

How to Order



*Specifications and dimensions for the 90-series are the same as standard products.

Bracket Part No.

| Part no. | | | | | | | | |
|---------------|-----------|-----------|---------------|-----------|-----------|---------------|-----------|-----------|
| 90-IR1000 | 90-IR1010 | 90-IR1020 | 90-IR2000 | 90-IR2010 | 90-IR2020 | 90-IR3000 | 90-IR3010 | 90-IR3020 |
| INI-362-0-320 | | | INI-362-0-321 | | | INI-362-0-322 | | |

Electro-Pneumatic Regulator

90-ITV2000 Series

How to Order



90-ITV20010-01□2□N□

Series compatible with secondary batteries

| | |
|----|----------------------|
| 90 | Material restriction |
|----|----------------------|

Model

| | |
|---|-----------|
| 2 | 2000 type |
|---|-----------|

Pressure range

| | |
|---|---------|
| 1 | 0.1 MPa |
| 3 | 0.5 MPa |
| 5 | 0.9 MPa |

Power supply voltage

| | |
|---|--------------|
| 0 | 24 VDC |
| 1 | 12 to 15 VDC |

Input signal

| | |
|---|--------------------------------|
| 0 | Current 4 to 20 mA (Sink type) |
| 1 | Current 0 to 20 mA (Sink type) |
| 2 | Voltage 0 to 5 VDC |
| 3 | Voltage 0 to 10 VDC |
| 4 | Preset input |

Monitor output

| | |
|---|--------------------------------------|
| 0 | None (for preset input) |
| 1 | Analog output 1 to 5 VDC |
| 2 | Switch output/NPN output |
| 3 | Switch output/PNP output |
| 4 | Analog output 4 to 20 mA (Sink type) |

Pressure display unit

| | |
|-----|---------------------|
| Nil | MPa |
| 2 | kgf/cm ² |
| 3 | bar |
| 4 | psi |
| 5 | kPa |

Cable connector type

| | |
|---|-------------------------|
| N | Without cable connector |
|---|-------------------------|

Bracket

| | |
|-----|-----------------|
| Nil | Without bracket |
| B | Flat bracket |
| C | L-bracket |

Port size

| | |
|---|-----|
| 2 | 1/4 |
| 3 | 3/8 |

Thread type

| | |
|-----|------|
| Nil | Rc |
| N | NPT |
| T | NPTF |
| F | G |

*Specifications and dimensions for the 90-series are the same as standard products.

Bracket Part No.

| Description | Part No. |
|--------------|---|
| | |
| Flat bracket | P39802043 (Mounting thread is not included.) |
| L-bracket | P39802044 (Mounting thread is not included.) |

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

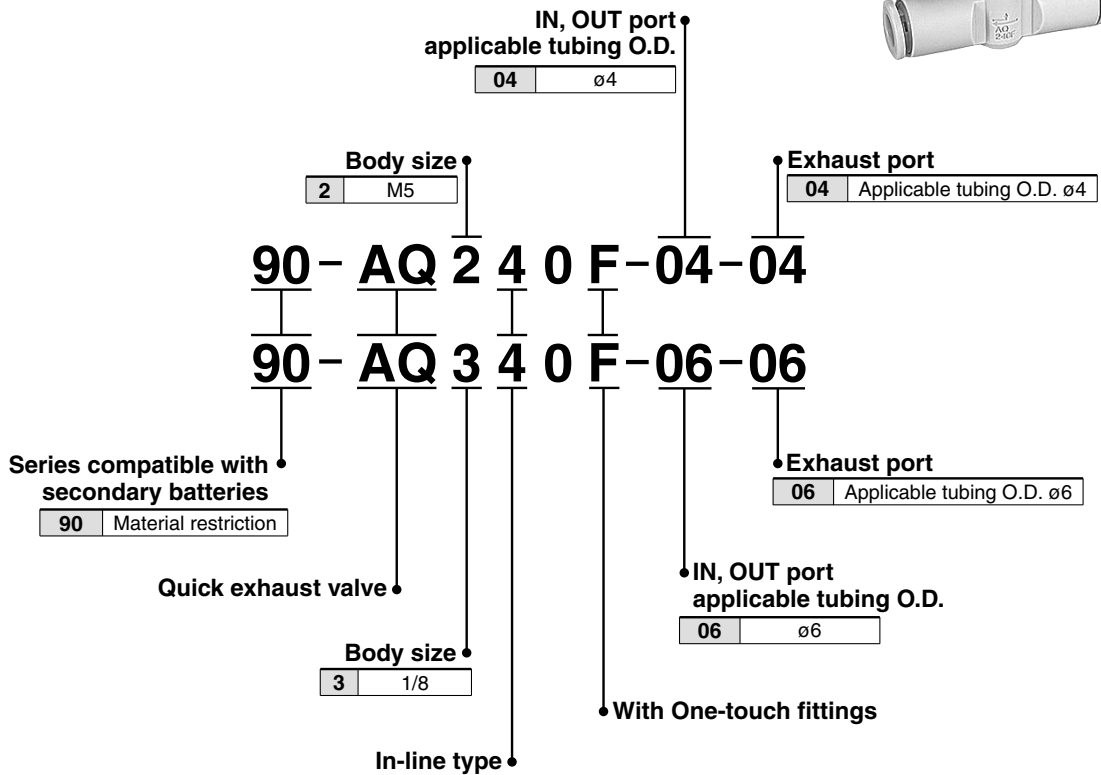
Detection Switches

Auto Switches

Quick Exhaust Valve with One-touch Fittings

90-AQ240F/340F Series

How to Order



*Specifications and dimensions for the 90-series are the same as standard products.

Check Valve with One-touch Fittings **90-AKH Series**

How to Order



Straight type

90 - AKH 04 - 00

Series compatible with secondary batteries •

90 Material restriction

• Applicable tubing O.D.

Metric size

| | |
|-----------|-----|
| 04 | ø4 |
| 06 | ø6 |
| 08 | ø8 |
| 10 | ø10 |
| 12 | ø12 |

*Specifications and dimensions for the 90-series are the same as standard products.

Directional
Control Valves

Actuators

Air Grippers

Air Preparation
Equipment

Air Filters/Pressure
Control Equipment

Flow Control
Related Products

Vacuum
Equipment

Detection
Switches

Auto Switches

Space Saving Vacuum Ejector 90-ZQ Series

How to Order

Single Unit

90 - ZQ1 **05** 3M - K1 **5** G - **D31** CL **9**

• Series compatible with secondary batteries

90 Material restriction

① Nozzle nominal size

| | |
|-----------|------|
| 05 | ø0.5 |
| 07 | ø0.7 |
| 10 | ø1.0 |

② Exhaust type

3M With silencer for manifold

③ Solenoid valve combination

| Symbol | Supply valve | Vacuum release valve |
|-----------|-----------------|----------------------|
| K1 | Normally closed | Normally closed |

④ Pilot valve


| | |
|------------|---------------------------------------|
| Nil | Standard (DC: 1 W) ^{Note 1)} |
| Y | DC low wattage type (0.5 W) |

Note 1) Avoid energizing the solenoid valve for long periods of time.

⑤ Solenoid valve rated voltage

| | |
|----------|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

⑥ Electrical entry

| | | |
|----------|-------------------------------|--|
| G | Grommet, with 0.3 m lead wire |  |
|----------|-------------------------------|--|

⑦ Vacuum pressure switch suction filter ^{Note 2)}

| | |
|------------|---|
| D31 | 1 NPN output + Analog output, with suction filter, Pressure range -100 to 0 kPa |
| D32 | 2 NPN outputs, with suction filter, Pressure range -100 to 0 kPa |
| D51 | 1 PNP output + Analog output, with suction filter, Pressure range -100 to 0 kPa |
| D52 | 2 PNP outputs, with suction filter, Pressure range -100 to 0 kPa |

Note 2) The filter included in this product is of a simple type, and will become clogged quickly in environments with high quantities of dust or particulates. Please make additional use of an air suction filter of the ZFA, ZFB or ZFC series.

⑧ Vacuum switch electrical entry

CL Connector type, with 2 m lead wire

⑨ Check valve ^{Note 3)}

| | |
|------------|------------------|
| Nil | None |
| K | With check valve |

Note 3) The check valve has a function to prevent the exhaust air from the silencer overflowing to the vacuum port side when a manifold is used. However, depending on usage conditions, it does not always suppress air overflow to the desired extent. During usage, please inspect thoroughly with actual machine. Also, in order to completely prevent the overflow of exhaust air, leave plenty of space between the check valve unit and adjacent ejector to avoid interference from the ejector's exhaust unit.

Manifold

90 - ZZQ1 **07** - B 2 B - X125

• Series compatible with secondary batteries

90 Material restriction

• Port exhaust specifications

• Vacuum release pressure supply port (PD port)

B None (Release pressure is supplied from the P port.)

• Exhaust specifications

2 Port exhaust Rc 1/4

• Air pressure supply (P) port position

B Both sides



Maximum Number of Stations in Simultaneous Operation

| Nozzle nominal size | Maximum number of stations in simultaneous operation |
|---------------------|--|
| ø0.5 | 8 stations |
| ø0.7 | 6 stations |
| ø1.0 | 4 stations |

Number of stations ^{Note)}

| | |
|-----------|------------|
| 01 | 1 station |
| 02 | 2 stations |
| ⋮ | ⋮ |
| 08 | 8 stations |

Note) Number of stations varies according to nozzle nominal size during simultaneous operation.

*Specifications and dimensions for the 90-series are the same as standard products.

Vacuum Pad/ Vertical Vacuum Entry **90-ZPT Series**



How to Order

**90-ZPT Series
Without buffer**

90 - ZPT 16 B F - B5

Series compatible with secondary batteries

90 Material restriction

Pad diameter (mm)

16 ϕ 16

Material

F Fluororubber

Pad type

B Bellows

Vacuum entry/Mounting thread diameter

| Connection | Symbol | Thread diameter |
|---------------|--------|-----------------|
| Female thread | B5 | M5 x 0.8 |

Replacement Parts: Pad Unit (With lock ring)

How to Order Pad Unit

90 - ZP 16 B F

Series compatible with secondary batteries

90 Material restriction

Pad diameter (mm)

16 ϕ 16

Material

F Fluororubber

Pad type

B Bellows

*Specifications and dimensions for the 90-series are the same as standard products.

How to Order

**90-ZPT Series
With buffer**

90 - ZPT 06 U F K 6 - B5 - A8

Series compatible with secondary batteries

90 Material restriction

Pad diameter (mm)

06 ϕ 6

Pad type

U Flat

Buffer stroke

6 6 mm

Buffer type

K Non-rotating

Material

F Fluororubber

Mounting thread diameter/
Male thread

A8 M8 x 1

Vacuum entry port

B5 M5 x 0.8



*Specifications and dimensions for the 90-series are the same as standard products.

2-Color Display Digital Flow Switch

Integrated
display



90-PFM7 Series

How to Order



Integrated
display

90 - PFM7 10 - C6 - B - M - []

Series compatible with
secondary batteries

90 Material restriction

Type

7 Integrated display

Rated flow range (Flow rate range)

| | |
|----|---------------------------|
| 10 | 0.2 to 10 (5) ℓ /min |
| 50 | 1 to 50 (25) ℓ /min |
| 11 | 2 to 100 (50) ℓ /min |

* (): Fluid: CO₂

Port size

| Symbol | Description | Flow rate range | | |
|--------|------------------------------------|-----------------|----|----|
| | | 10 | 50 | 11 |
| C6 | ϕ 6 One-touch fitting | ● | ● | ● |
| C8 | ϕ 8 (5/16") One-touch fitting | — | ● | ● |

Output specification

| | |
|---|----------------------------------|
| B | 2 PNP outputs |
| E | 1 PNP output + Analog (1 to 5 V) |

Unit specification

M Fixed SI unit Note)

Note) Fixed unit: Real-time flow rate: ℓ /min
Accumulated flow: ℓ

Option

| | |
|-----|--|
| Nil | None |
| R | Bracket (For without flow adjustment valve) ZS-33-M-X221 |
| T | Panel mount adapter (For without flow adjustment valve) ZS-33-J |

*Specifications and dimensions for the 90-series are the same as standard products.

For Water

Digital Flow Switch

90-PF2W Series



How to Order

Integrated Display Type

90 - PF2W7 20 - 03 - 67 - M

Series compatible with secondary batteries

90 Material restriction

Flow rate range

| | |
|----|----------------|
| 04 | 0.5 to 4 ℓ/min |
| 20 | 2 to 16 ℓ/min |
| 40 | 5 to 40 ℓ/min |

Thread type

| | |
|-----|-----|
| Nil | Rc |
| N | NPT |
| F | G |

Port size

| Symbol | Port size | Flow rate (ℓ/min) | | | Applicable model |
|--------|-----------|-------------------|----|----|------------------------|
| | | 4 | 16 | 40 | |
| 03 | 3/8 | ● | ● | — | 90-PF2W704, 90-PF2W720 |
| 04 | 1/2 | — | ● | ● | 90-PF2W720, 90-PF2W740 |
| 06 | 3/4 | — | — | ● | 90-PF2W740 |

Unit specification

| | |
|-----|------------------------------|
| Nil | With unit switching function |
| M | Fixed SI unit (Note) |

Note) Fixed units:
Real-time flow rate: ℓ/min
Accumulated flow: ℓ

Lead wire

| | |
|-----|----------------------------------|
| Nil | M12 3 m lead wire with connector |
| N | Without lead wire |

Output specification

67 PNP open collector 2 outputs

Remote Type Sensor Unit

90 - PF2W5 20 - 03 - - -

Series compatible with secondary batteries

90 Material restriction

Flow rate range

| | |
|----|----------------|
| 04 | 0.5 to 4 ℓ/min |
| 20 | 2 to 16 ℓ/min |
| 40 | 5 to 40 ℓ/min |

Thread type

| | |
|-----|-----|
| Nil | Rc |
| N | NPT |
| F | G |

Port size

| Symbol | Port size | Flow rate (ℓ/min) | | | Applicable model |
|--------|-----------|-------------------|----|----|------------------------|
| | | 4 | 16 | 40 | |
| 03 | 3/8 | ● | ● | — | 90-PF2W504, 90-PF2W520 |
| 04 | 1/2 | — | ● | ● | 90-PF2W520, 90-PF2W540 |
| 06 | 3/4 | — | — | ● | 90-PF2W540 |

Lead wire

| | |
|-----|----------------------------------|
| Nil | M12 3 m lead wire with connector |
| N | Without lead wire |

Output specification

| Symbol | Specification | Applicable monitor unit (monitor) model |
|--------|--|---|
| 1 | Output for monitor unit + Analog output (1 to 5 V) | Series PF2W300 |
| 2 | Output for monitor unit + Analog output (4 to 20 mA) | |

Note) The monitor is not compatible with 90-series products.

Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

*Specifications and dimensions for the 90-series are the same as standard products.

Solid State Auto Switch D-M9BW(V)SDPC-900

Series Compatible with Secondary Batteries/Material restriction



Auto Switch Specifications



Refer to SMC website for the details of the products conforming to the international standards.

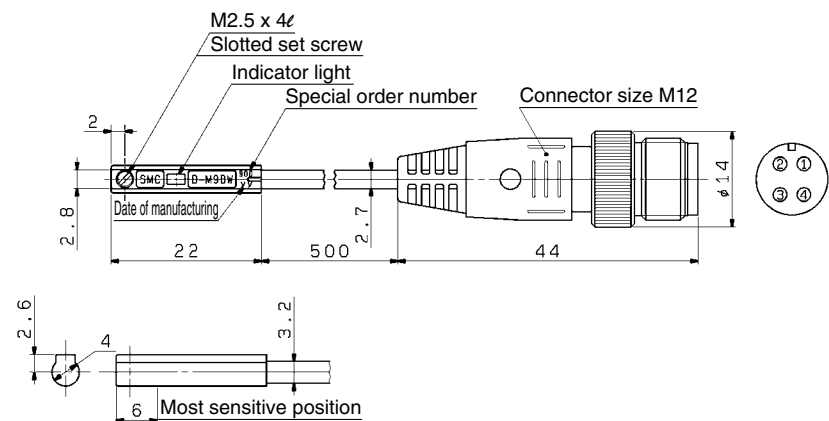
PLC: Programmable Logic Controller

| | |
|-----------------------|---|
| Auto switch model | D-M9BW(V)SDPC-900 |
| Applicable load | 24 VDC relay, PLC |
| Power supply voltage | — |
| Current consumption | — |
| Load voltage | 10 VDC to 28 VDC |
| Load current | 2.5 mA to 40 mA |
| Internal voltage drop | 4 V or less |
| Leakage current | 0.8 mA or less |
| Response time | 1 ms or less |
| Indicator light | Operating position.....Red light is ON. Proper operating position.....Green light is ON. |
| Electrical entry | Grommet |
| Lead wire | Oilproof flexible heavy-duty vinyl cord, $\phi 2.7 \times 3.2$, ellipse |
| Impact resistance | Switch, 1,000 m/s ² |
| | Connector, 300 m/s ² |
| Connector standards | JIS C 4524, JIS C 4525 |
| | IEC 947-5-2, NECA 0402 |
| Enclosure | In compliance with IP 67 when coupled |
| Insulation resistance | 50 M Ω or more (500 VDC Mega) between lead wire and case |
| Withstand voltage | 1,000 VAC for 1 min. (between lead wire and case) |
| Ambient temperature | -10°C to 60°C |
| Standard | CE marking |

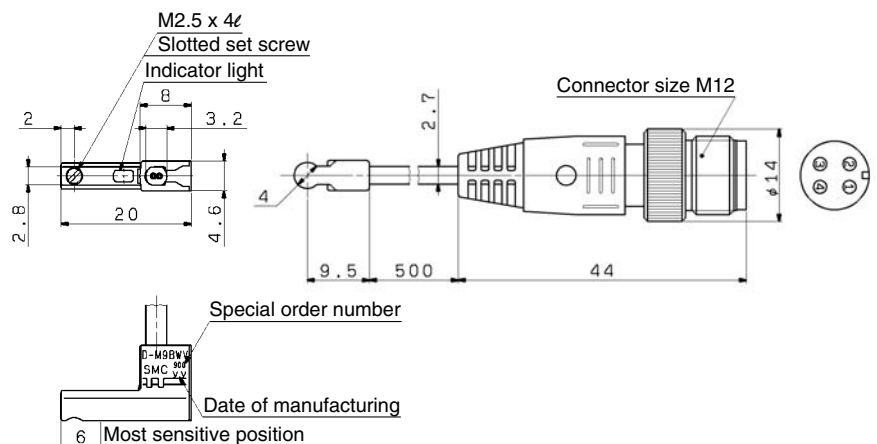
Dimensions

(mm)

D-M9BWSDPC-900



D-M9BWVSDPC-900



Solid State Auto Switch D-M9BW(V)L-900

Series Compatible with Secondary Batteries/Material restriction



Auto Switch Specifications



Refer to SMC website for the details of the products conforming to the international standards.

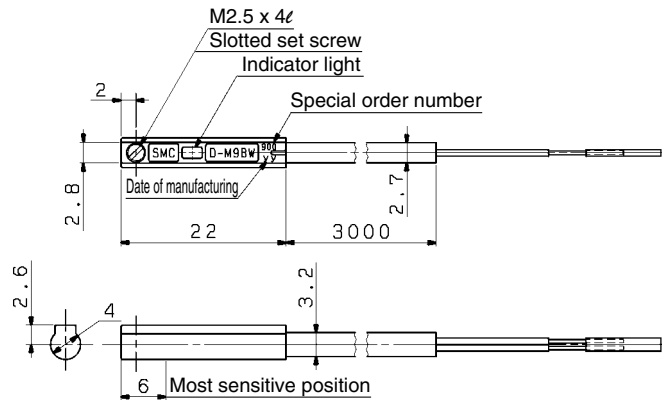
PLC: Programmable Logic Controller

| | |
|-----------------------|---|
| Auto switch model | D-M9BW(V)SDPC-900 |
| Applicable load | 24VDC relay, PLC |
| Power supply voltage | — |
| Current consumption | — |
| Load voltage | 10 VDC to 28 VDC |
| Load current | 2.5 mA to 40 mA |
| Internal voltage drop | 4 V or less |
| Leakage current | 0.8 mA or less |
| Response time | 1 ms or less |
| Indicator light | Operating position.....Red light is ON. Proper operating position.....Green light is ON. |
| Electrical entry | Grommet |
| Lead wire | Oilproof flexible heavy-duty vinyl cord, ø2.7 x 3.2, ellipse, 0.15 mm ² , double core |
| Impact resistance | 1,000 m/s ² |
| Insulation resistance | 50 MΩ or more (500 VDC Mega) between lead wire and case |
| Withstand voltage | 1,000 VAC for 1 min. (between lead wire and case) |
| Ambient temperature | -10°C to 60°C |
| Standard | CE marking |

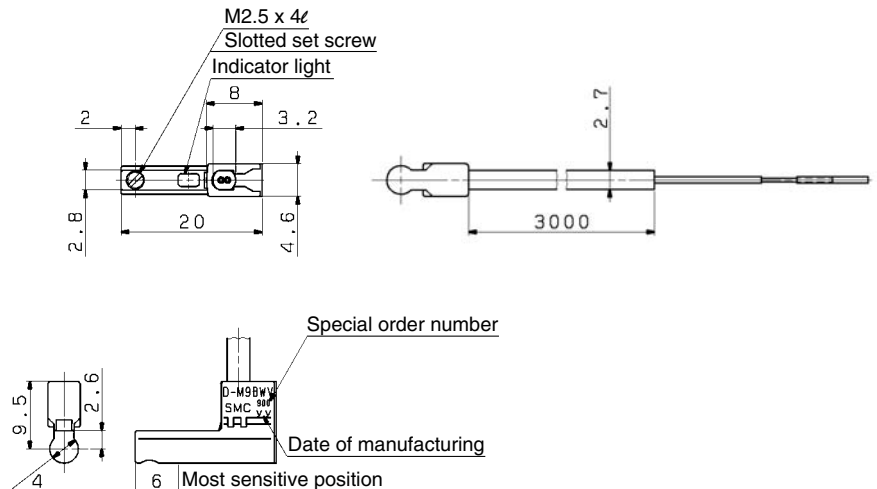
Dimensions

(mm)

D-M9BWL-900



D-M9BWVL-900



Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Solid State Auto Switch D-Y7BW(V)L-900

Series Compatible with Secondary Batteries/Material restriction



Auto Switch Specifications



Refer to SMC website for the details of the products conforming to the international standards.

PLC: Programmable Logic Controller

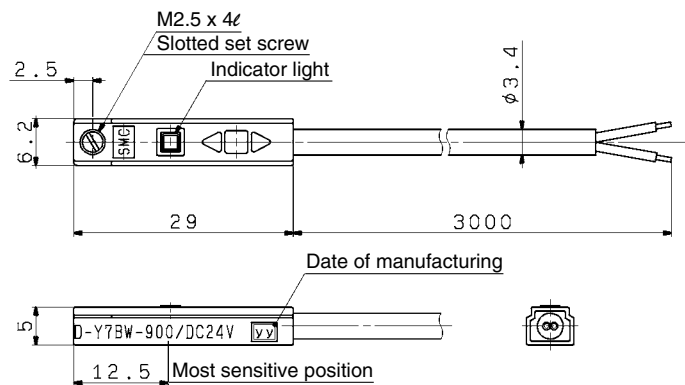
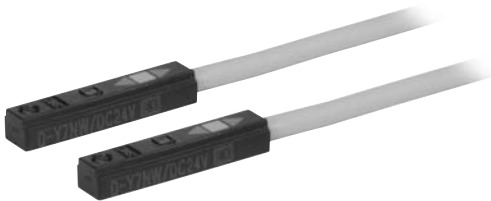
| | |
|-----------------------|---|
| Auto switch model | D-Y7BW(V)L-900 |
| Applicable load | 24 VDC relay, PLC |
| Power supply voltage | — |
| Current consumption | — |
| Load voltage | 10 VDC to 28 VDC |
| Load current | 2.5 mA to 40 mA |
| Internal voltage drop | 4 V or less |
| Leakage current | 0.8 mA or less |
| Response time | 1 ms or less |
| Indicator light | Operating position.....Red light is ON. Proper operating position.....Green light is ON. |
| Electrical entry | Grommet |
| Lead wire | Oilproof flexible heavy-duty vinyl cord, ø3.4, 0.15 mm ² , double core |
| Impact resistance | 1,000 m/s ² |
| Insulation resistance | 50 MΩ or more (500 VDC Mega) between lead wire and case |
| Withstand voltage | 1,000 VAC for 1 min. (between lead wire and case) |
| Ambient temperature | -10°C to 60°C |
| Standard | CE marking |

Dimensions

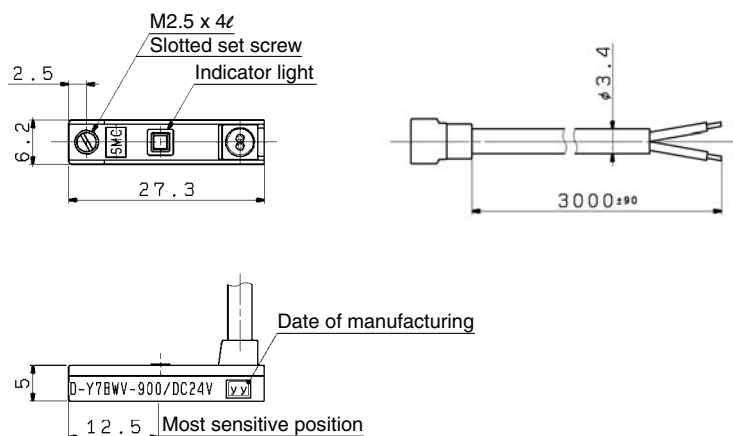
(mm)

D-Y7BWL-900

- Using flexible cable as standard spec.
- The optimum operating position can be determined by the color of the light. (Red → Green ← Red)



D-Y7BWVL-900



Reed Auto Switch Direct Mounting Style D-A90L-900/D-Z80L-900

Series Compatible with Secondary Batteries / Material restriction



Auto Switch Specifications



Refer to SMC website for the details of the products conforming to the international standards.

PLC: Programmable Logic Controller

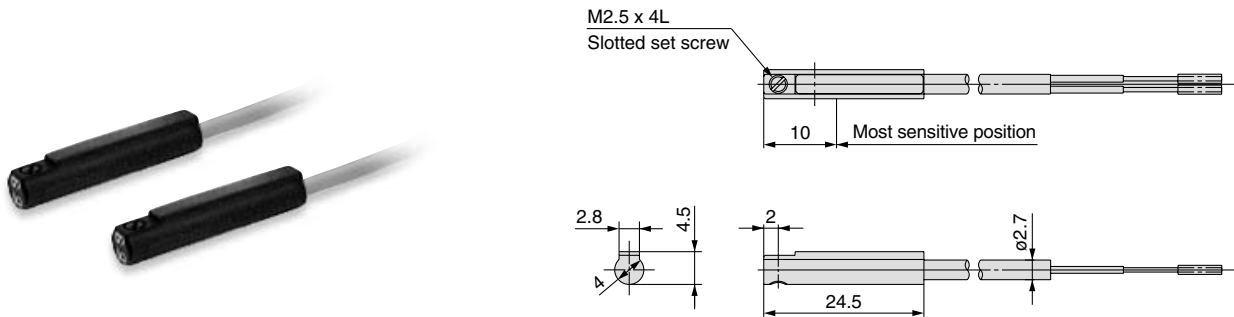
| D-A90L-900 (Without indicator light) | | | |
|--------------------------------------|---|--|---|
| Auto switch model | D-A90L-900 | | |
| Applicable load | IC circuit, Relay, PLC | | |
| Load voltage | 24 V _{DC} ^{AC} or less | 48 V _{DC} ^{AC} or less | 100 V _{DC} ^{AC} or less |
| Maximum load current | 50 mA | 40 mA | 20 mA |
| Contact protection circuit | None | | |
| Internal resistance | 1 Ω or less (Including lead wire length of 3 m) | | |
| Standard | CE marking | | |

• Lead wires—Oilproof heavy-duty vinyl cord, ø2.7, 0.18 mm² x 2 cores (Brown, Blue), 3 m

Dimensions

(mm)

D-A90L-900



Auto Switch Specifications



Refer to SMC website for the details of the products conforming to the international standards.

PLC: Programmable Logic Controller

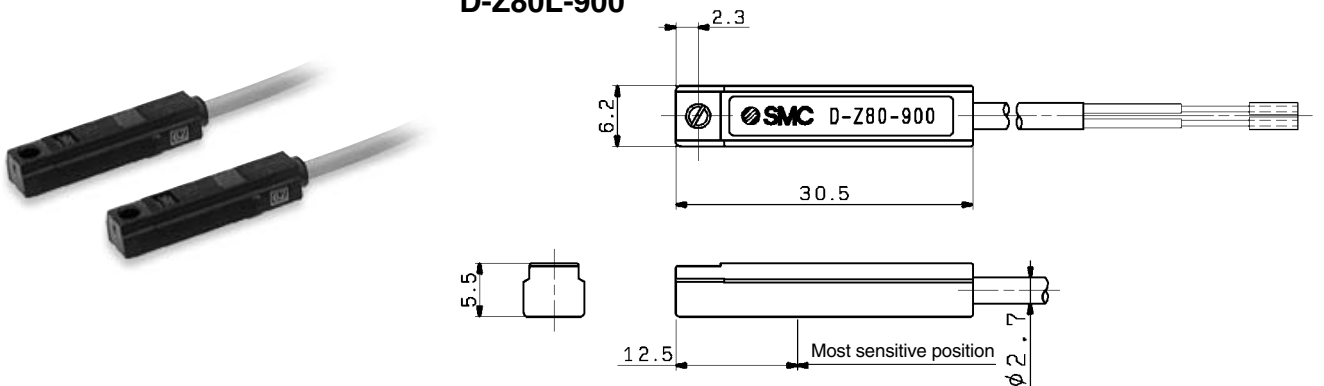
| D-Z80L-900 (Without indicator light) | | | |
|--------------------------------------|--|--|---|
| Auto switch model | D-Z80L-900 | | |
| Applicable load | Relay, PLC, IC circuit | | |
| Load voltage | 24 V _{DC} ^{AC} or less | 48 V _{DC} ^{AC} or less | 100 V _{DC} ^{AC} or less |
| Maximum load current | 50 mA | 40 mA | 20 mA |
| Contact protection circuit | None | | |
| Internal resistance | 1 Ω or less (Including 3 m lead wire) | | |
| Standard | CE marking | | |

• Lead wires—Oilproof heavy-duty vinyl cord, ø2.7, 0.18 mm² x 2 cores (Brown, Blue), 3 m

Dimensions

(mm)

D-Z80L-900



Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

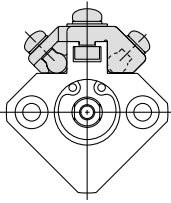
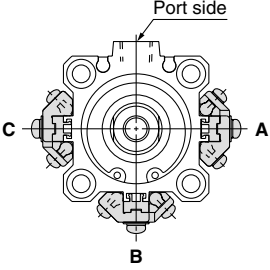
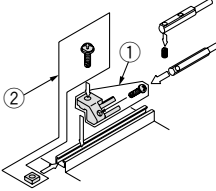
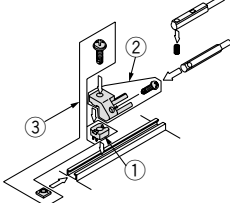
Auto Switches

Auto Switches

Auto Switch Mounting Bracket Part No.

Applicable cylinder series: 90-/91-CDLQ, 90-RSDQ

Applicable auto switches : D-M9BW(V)L-900, D-M9BW(V)SDPC-900, D-A90L-900

| Cylinder series | Applicable bore size (mm) | | | | |
|---|---|---|---|-------------------------------|-------------------------------|
| | 20 | 25 | 32 | 40 | 50 |
| 90-91-CDLQ | Auto switch mounting brackets are not required. | Auto switch mounting brackets are not required. | ①BQ-2 ②90-BQ2-012 ③BBA2 | ①BQ-2 ②90-BQ2-012 ③BBA2 | ①BQ-2 ②90-BQ2-012 ③BBA2 |
| 90-RSDQ | ①90-BQ2-012 ②BBA2 | — | | | |
| Auto switch mounting surface and auto switch mounting bracket used |  | |  | | |
| | Auto switch mounting rail only | | Port side | A, B, C side | |
| ①90-BQ2-012 ②BBA2 (See the table below for screws and nuts.) Two types of auto switch bracket are used as a set.  | | Auto switch mounting brackets are not required. | ①BQ-2 (Only resin spacers are used.) ②90-BQ2-012 ③BBA2 (See the table below for screws and nuts.) Three types of auto switch bracket are used as a set.  | | |

Note 1) When a compact auto switch is mounted on 3 sides (A, B, and C above) other than the port side of each cylinder series with $\phi 32$ to $\phi 50$, auto switch mounting brackets above are required. Order them separately from cylinders.

Order example

90-RSDQB32-20D-M9BWL.....1
BQ22 (Only resin spacers are used.)
90-BQ2-012.....2
BBA22

Note 2) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

Details of stainless steel mounting screw set

| Part No. | Description | | | Applicable bore size |
|-----------------------------------|-----------------------------------|----------------|------------------------|------------------------|
| | Part | Size | Quantity | |
| BBA2 | Auto switch mounting screw | M3 x 0.5 x 6L | 1 | — |
| | | M3 x 0.5 x 8L | 1 | $\phi 20$, $\phi 25$ |
| | | M3 x 0.5 x 10L | 1 | $\phi 32$ to $\phi 50$ |
| | Auto switch mounting nut (square) | M3 x 0.5 | 1 | $\phi 20$, $\phi 25$ |
| Auto switch mounting nut (convex) | M3 x 0.5 | 1 | $\phi 32$ to $\phi 50$ | |

Note 3) A spacer (black resin) for BQ-2 is not included.

Note 4) Use auto switch mounting screws and nuts for lengths applicable to individual bore sizes.

Auto Switch Mounting Bracket Part No.

Applicable cylinder series: 90-CDJ2, 90-/91-CDG1, 90-/91-MGG, 90-/91-CDNG

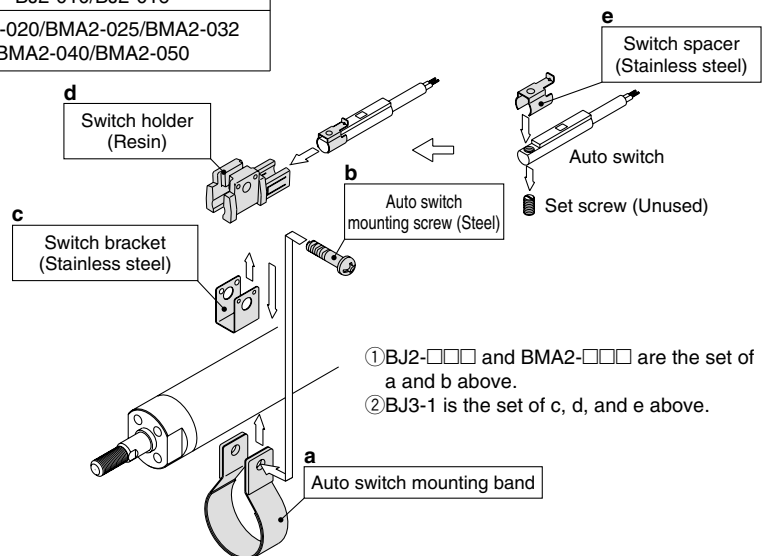
Applicable auto switches : D-M9BWL-900, D-M9BWSNPC-900, D-A90L-900

| Cylinder series | Applicable bore size (mm) | | | | | | |
|-----------------|-----------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| | 10 | 16 | 20 | 25 | 32 | 40 | 50 |
| 90-CDJ2 | ①BJ2-010 ②BJ3-1 ③BBA4 | ①BJ2-010 ②BJ3-1 ③BBA4 | — | — | — | — | — |
| 90-/91-CDG1 | — | — | ①BMA2-020 ②BJ3-1 ③BBA4 | ①BMA2-025 ②BJ3-1 ③BBA4 | ①BMA2-032 ②BJ3-1 ③BBA4 | ①BMA2-040 ②BJ3-1 ③BBA4 | ①BMA2-050 ②BJ3-1 ③BBA4 |
| 90-/91-MGG | — | — | | | | | |
| 90-/91-CDNG | — | — | | | | | — |

Note) Since mounting screws attached to BJ2-□□□ and BMA2-□□□ are made of steel, use stainless steel mounting screw set BBA4.

Details of stainless steel mounting screw set

| Part No. | Description | | | Part No. of applicable auto switch mounting bracket |
|----------|----------------------------|----------------|----------|---|
| | Part | Size | Quantity | |
| BBA4 | Auto switch mounting screw | M3 x 0.5 x 14L | 1 | BJ2-010/BJ2-016 |
| | | | | BMA2-020/BMA2-025/BMA2-032 BMA2-040/BMA2-050 |

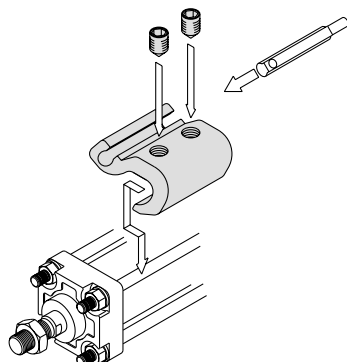


Applicable cylinder series: 90-/91-CDA2, 90-CDNA

Applicable auto switches : D-M9BW(V)L-900, D-M9BW(V)SDPC-900, D-A90L-900

| Cylinder series | Applicable bore size (mm) | | | | |
|-----------------|---------------------------|------------|------------|------------|------------|
| | 40 | 50 | 63 | 80 | 100 |
| 90-/91-CDA2 | 90-BA7-040 | 90-BA7-040 | 90-BA7-063 | 90-BA7-080 | 90-BA7-080 |
| 90-/91-CDNA | | | | | |

Note) D-A90L-900 cannot be mounted on ø50.



Directional Control Valves

Actuators

Air Grippers

Air Preparation Equipment

Air Filters/Pressure Control Equipment

Flow Control Related Products

Vacuum Equipment

Detection Switches

Auto Switches

Auto Switches

Auto Switch Mounting Bracket Part No.

Applicable air gripper series: 90-/91MHL2

Applicable cylinder series : 90-/91-MY1B, 90-/91-MY1H, 90-/91-CY3R, 90-/91-MGP, 90-RS(1)H

Applicable auto switches : D-M9BW(V)L-900, D-M9BW(V)SDPC-900, D-A90L-900

| Air gripper series Cylinder series | Applicable bore size (mm) | | | | | | | | |
|---------------------------------------|---------------------------|---|---|---|-------------|-------------|-------------|-------------|-------------|
| | 12 | 15 | 16 | 20 | 25 | 32 | 40 | 50 | 63 |
| 90-/91-MHL2 | — | — | — | 90-BMG2-012 | 90-BMG2-012 | — | — | — | — |
| 90-/91-MY1B ^{Note 1)} | — | — | — | Auto switch mounting brackets are not required. | 90-BMG2-012 | 90-BMG2-012 | 90-BMG2-012 | — | 90-BMG2-012 |
| 90-/91-MY1H | — | — | — | | | | | — | — |
| 90-/91-CY3R | — | Auto switch mounting brackets are not required. | Auto switch mounting brackets are not required. | 90-BMG2-012 | 90-BMG2-012 | 90-BMG2-012 | 90-BMG2-012 | 90-BMG2-012 | 90-BMG2-012 |
| 90-/91-MGP | 90-BMG2-012 | — | 90-BMG2-012 | | | | | — | — |
| 90-RSH ^{Note 2)} | — | — | — | 90-BMG2-012 | — | — | — | — | — |
| 90-RS1H ^{Note 2)} | — | — | — | — | — | — | — | 90-BMG2-012 | 90-BMG2-012 |

Note 1) 90-/91-MY1B series

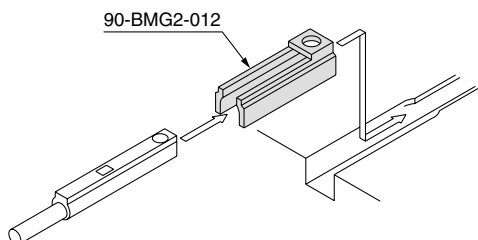
D-M9BW(V)L-900 or D-M9BW(V)SDPC-900 cannot be mounted on ø50.

D-A90L-900 cannot be mounted.

Note 2) 90-RS(1)H series

D-A90L-900 cannot be mounted.

For 90-/91-MY1B and 90-/91-MY1H series



For 90-/91-CY3R, 90-/91-MGP and 90-RS(1)H series

