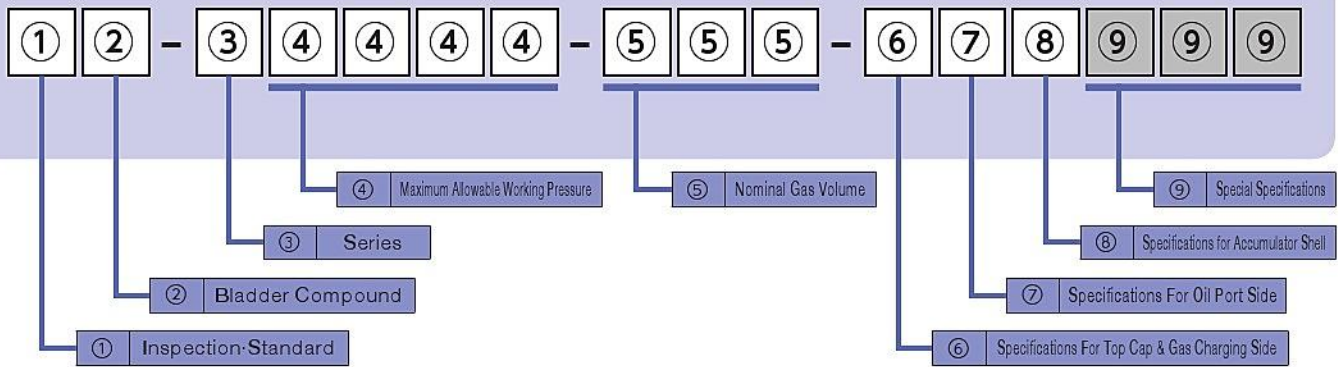


# Explanation of Item Number for Accumulator



## ① Inspection Standard

Select the item number code corresponding to applicable legal requirements. Note that some models may neither be covered by nor support the standards. In Japan, products used in food processing applications are subject to the Food Sanitation Act. For accumulators meeting other inspection/standard requirements or if you have any questions, please contact us.

| Symbol | Area     | Country   | Inspection-Regulation                                                                                                                                                                                                                                                                                                    | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------|----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| H      | Overland | JAPAN     | High Pressure Gas Safety Law, Japan (Authorized Product by Ministry of Economy, Trade and Industry of Japan)<br>Application: Accumulators for pressure higher than 1MPa inclusive, regardless of the gas volume.<br>Related Organization: Ministry of Economy, Trade and Industry / Metropolitan/ prefectural government | ·METI License No.:MAB-374-E (Accumulator, MAB-374-N) Valve<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| P      |          | JAPAN     | High Pressure Gas Safety Law, Japan (Special Facilities)<br>Application: Vessel connected to accumulator by piping etc. (Backup bottle)<br>Related Organization: Ministry of Economy, Trade and Industry / Metropolitan/ prefectural government                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| F      |          | JAPAN     | Industrial Safety and Health Act, Japan (Class-2 Pressure Vessel)<br>Application: Accumulators containing gas higher than 0.2 MPa and the volume more than 40L<br>Related Organization: Labor Standards Inspection Office, Ministry of Health, Labour and Welfare                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M      |          | U.S.A.    | ASME (ASME Boiler and Pressure Vessel Code Section VIII Div.1)<br>Application: Accumulators with an inside diameter more than 152 mm and a pressure exceeding 100 kPa<br>Related Organization: N.B. (NATIONAL BOARD)                                                                                                     | ·ASME Certificate No.: 12594<br>·When ordering an accumulator, specify the customer's name and address as well as the name and address of installation in English, which will be included in a data report.<br>                                                                                                                                                                                                                                                                                                                                        |
| S      |          | CANADA    | B51 (Boiler, Pressure Vessel, and Pressure Piping Code)<br>ASME (ASME Boiler and Pressure Vessel Code Section VIII Div.1)<br>Application: Accumulators with an inside diameter more than 152 mm and a pressure exceeding 100 kPa<br>Related Organization: Minister of Consumer and Commercial Relations                  | ·For use in Canada, type approval from the relevant provincial government is required.<br>·When using an accumulator not covered by the ASME Code in Canada, please contact us in advance.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| R      |          | EUROPE    | P.E.D.(97/23/EC)<br>Application: Accumulators with a maximum allowable working pressure exceeding 0.5 bar<br>Related Organization: CEN (European Committee for Standardization)                                                                                                                                          | ·CE marking: CE0035<br>·CE marked accumulators conforming to the Pressure Equipment Directive (P.E.D.).<br>·These accumulators can circulate freely in Europe.<br><b>CE 0035</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| D      |          | CHINA     | Supervision Administration Regulation for Manufacturer of Boiler and Pressure Vessel, China<br>Application: Accumulators<br>Related Organization: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China                                                             | License No.: TS2200143-2022<br>Unless otherwise specified, the ASME or JIS design code applies.<br>·When ordering an accumulator, specify the name and address of installation in English or Chinese, which will be included in an inspection certificate.<br>·"Supervisory Inspection for Safety Performance of the Products", which may be required after arrival in China, is not supported. It is the responsibility of the exporter to undergo the inspection at the landing place in China. Please contact us for more information.<br>·When you export our products to China, please contact us in advance.<br><b>TS2200143-2022</b> |
| A      |          | AUSTRALIA | AS 1210 (AUSTRALIAN STANDARD)<br>Application: Accumulators with a design pressure exceeding 50 kPa<br>Related Organization: Health and safety authority in the relevant Australian state                                                                                                                                 | ·Design registration is required in the state in which the accumulator will be installed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1      |          | RUSSIA    | By February 2020, the production of accumulators that comply with Russian Regulations has been discontinued.                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| U      |          | MALAYSIA  | Factories and Machinery Act<br>Application: All accumulators<br>Related Organization: Malaysia Government                                                                                                                                                                                                                | ·When ordering an accumulator, specify the name and address of installation in English.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| N      |          | Other     | NACOL (manufacturer's) Inspection                                                                                                                                                                                                                                                                                        | ·These accumulators have passed pressure testing according to internal standards, but do not meet legal requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

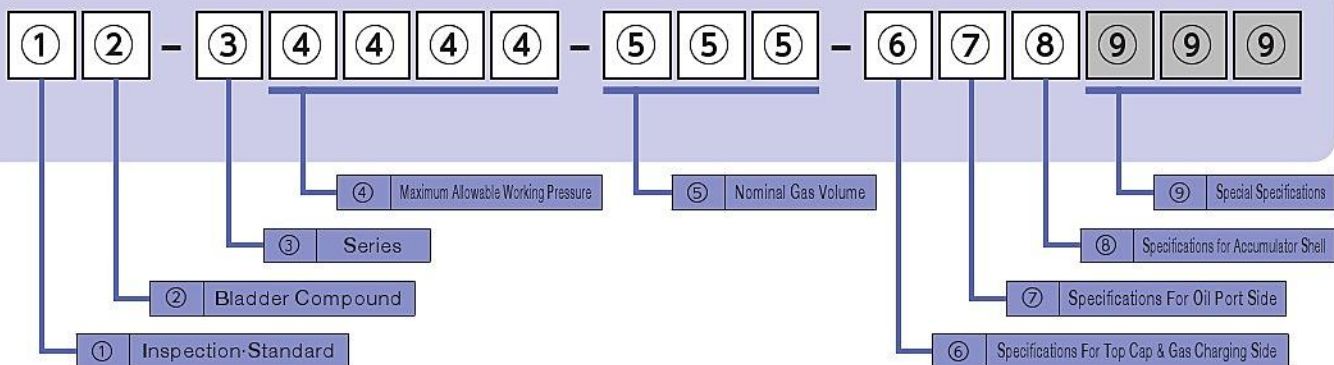
| Symbol   | Area    | Country     | Inspection-Regulation    |                                                                | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|---------|-------------|--------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>B</b> | Marine  | U.S.A.      | ABS                      | American Bureau of Shipping                                    | <p>The ship owner should specify the applicable ship class. When ordering an accumulator, the following information is required (not required for JG).</p> <p>For new ships:<br/> ·Name of Shipyard<br/> ·Hull Number</p> <p>For ships in service:<br/> ·Name of Ship<br/> ·IMO Ship Identification Number</p> <p>For offshore application:<br/> When applying the shipping classification survey for offshore application, please contact us in advance.</p> |
| <b>C</b> |         | TAIWAN      | CR                       | China Corporation Register of Shipping                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>E</b> |         | France      | BV                       | Bureau Veritas                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>G</b> |         | Germany     | GL                       | DNV GL AS                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>J</b> |         | Japan       | JG                       | Ministry of Land, Infrastructure, Transport and Tourism, Japan |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>K</b> |         | Japan       | NK                       | Nippon Kaiji Kyokai                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>L</b> |         | U.K.        | LR                       | Lloyd's Register of Shipping                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Q</b> |         | South Korea | KR                       | Korean Register of Shipping                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>V</b> |         | Norway      | DNV                      | DNV GL AS                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Z</b> |         | China       | CCS                      | China Classification Society                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>X</b> | Special | Special     | Other Special Inspection |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## ② Bladder Compound

Select the item number code corresponding to the material suitable for "service fluid" and "service temperature".

| Symbol   | Bladder Compound                                              |       | Suitable Service Fluid                                             | Allowable Service Temperature (°C) | O-ring Material |
|----------|---------------------------------------------------------------|-------|--------------------------------------------------------------------|------------------------------------|-----------------|
| <b>N</b> | Standard Nitrile Rubber                                       | NBR   | Turbine Oil (jis K2213)                                            | -10 ~ +70                          | NBR             |
| <b>B</b> | Standard Nitrile Rubber bladder with oil port valve molded in | NBR   | Fatty Acid Ester Fluid<br>Water Glycol Fluid<br>W/o Emulsion Fluid |                                    |                 |
| <b>H</b> | Nitrile Rubber for high temperature use                       | H.NBR | O/w Emulsion Fluid<br>Biodegradable Fluid                          | -10 ~ +110                         | FKM             |
| <b>L</b> | Nitrile Rubber for low temperature use                        | L.NBR | Tap Water<br>Sea Water                                             | -35 ~ +70                          | L.NBR           |
| <b>F</b> | Butyl Rubber                                                  | IIR   | Phosphate Ester Fluid                                              | -10 ~ +70                          | FKM             |
| <b>E</b> | Ethylene Propylene Rubber                                     | EPDM  | Phosphate Ester Based Fluid                                        |                                    | EPDM            |
| <b>C</b> | Chloroprene Rubber                                            | CR    | Basic, Water                                                       | -20 ~ +80                          | CR              |
| <b>G</b> | Epichlorohydrin Rubber                                        | CHC   |                                                                    |                                    | FKM             |
| <b>V</b> | Fluorine Rubber                                               | FKM   |                                                                    |                                    |                 |

- \* Use over a long period of time at the maximum allowable service temperature should be avoided since it accelerates bladder deterioration. Use at 80% of the maximum allowable service temperature (70% in the case of horizontal installation) or less is recommended.
- \* Fluorine rubber has excellent chemical resistance. However, be aware that the rubber swells with ether, ester, ketones, or methyl alcohol, hardens with anhydrous ammonia or activated amines, and is eroded by strong alkalis.
- \* Note that use with petroleum based fluids may cause the extraction of unspecified substances from synthetic rubber (bladder and O-ring), resulting in fluid discoloration.
- \* A button is located at the bladder bottom for J series accumulators. The standard bladder designation for the J series is "B".



### ③ Series

Select the item number code corresponding to the series name.

| Symbol | Series   |
|--------|----------|
| A      | A Series |
| E      | E Series |
| G      | G Series |
| H      | H Series |
| J      | J Series |
| N      | N Series |
| P      | P Series |
| R      | R Series |
| S      | S Series |
| U      | U Series |
| Y      | Y Series |

### ④ Maximum Allowable Working Pressure

Select the item number code corresponding to a value exceeding the maximum working pressure (the maximum value of the actual accumulator working pressure).

\* Maximum allowable working pressure: Maximum operable pressure of accumulators

| Symbol  | Maximum Allowable Working Pressure |
|---------|------------------------------------|
| 0 . 0 5 | 0.05 MPa                           |
| 0 . 6 M | 0.6 MPa                            |
| 0 . 9 5 | 0.95 MPa                           |
| 2 M P A | 2 MPa                              |
| 5 M P A | 5 MPa                              |
| 7 M P A | 7 MPa                              |
| 8 M P A | 8 MPa                              |
| 1 0 M P | 10 MPa                             |
| 1 1 . 8 | 11.8 MPa                           |
| 1 3 M P | 13 MPa                             |
| 1 4 M P | 14 MPa                             |
| 1 5 M P | 15 MPa                             |
| 1 6 M P | 16 MPa                             |
| 1 7 . 5 | 17.5 MPa                           |
| 2 0 . 6 | 20.6 MPa                           |
| 2 1 M P | 21 MPa                             |
| 2 2 M P | 22 MPa                             |
| 2 2 . 5 | 22.5 MPa                           |
| 2 3 M P | 23 MPa                             |
| 2 5 M P | 25 MPa                             |
| 2 6 M P | 26 MPa                             |
| 2 8 M P | 28 MPa                             |
| 3 3 M P | 33 MPa                             |
| 3 5 M P | 35 MPa                             |
| 4 5 M P | 45 MPa                             |
| 4 9 . 1 | 49.1 MPa                           |
| 4 9 . 4 | 49.4 MPa                           |

| Symbol  | Maximum Allowable Working Pressure |
|---------|------------------------------------|
| 2 1 0 B | 210 bar                            |
| 2 3 0 B | 230 bar                            |
| 2 5 0 B | 250 bar                            |
| 3 5 0 B | 350 bar                            |

※ For the accumulator with P.E.D. inspection, the maximum allowable working pressure designated in each item number is in units of bar, not MPa (e.g. 21 MP → 210 B).

### ⑤ Nominal Gas Volume

Select the item number code corresponding to a value exceeding the required gas volume (L) calculated by accumulator sizing calculation.

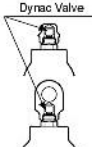
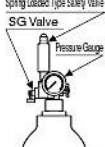
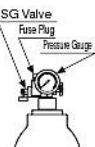
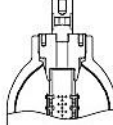
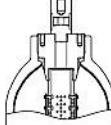
| Symbol | Nominal Gas Volume |
|--------|--------------------|
| 0 0 3  | 0.03 L             |
| L 0 1  | 0.1 L              |
| L 0 3  | 0.3 L              |
| L 0 4  | 0.4 L              |
| L 0 5  | 0.5 L              |
| L 0 6  | 0.6 L              |
| L 0 7  | 0.7 L              |
| L 0 9  | 0.9 L              |
| L L 1  | 1 L                |
| 1 . 6  | 1.6 L              |
| L L 2  | 2 L                |
| 2 . 5  | 2.5 L              |
| L L 3  | 3 L                |
| 3 . 4  | 3.4 L              |
| L L 4  | 4 L                |
| L L 5  | 5 L                |
| 6 . 3  | 6.3 L              |
| 7 . 2  | 7.2 L              |
| L 1 0  | 10 L               |
| L 1 1  | 11 L               |
| L 1 5  | 15 L               |
| L 1 6  | 16 L               |
| L 2 0  | 20 L               |
| R 2 0  | 20 L               |
| L 2 5  | 25 L               |
| L 3 0  | 30 L               |
| L 3 2  | 32 L               |
| R 3 2  | 32 L               |
| L 4 0  | 40 L               |
| R 4 0  | 40 L               |
| L 5 0  | 50 L               |
| R 5 0  | 50 L               |
| Y 5 2  | 52 L               |
| L 6 0  | 60 L               |
| Y 6 0  | 60 L               |
| L 6 3  | 63 L               |
| R 6 3  | 63 L               |
| L 8 0  | 80 L               |
| 1 0 0  | 100 L              |
| 1 2 0  | 120 L              |
| 1 6 0  | 145 ~ 160 L        |

For the S series (Solely), refer to the table below.

| Symbol | Nominal Gas Volume |
|--------|--------------------|
| L 0 2  | 0.1 L              |
| L L 1  | 0.6 L              |

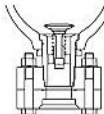
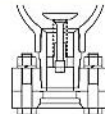
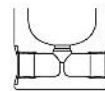
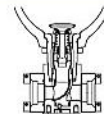
### ⑥ Specifications For Top Cap & Gas Charging Side

Select the item number code corresponding to the accessories, material, and top cap type on the gas charging side.

| Shape Material  | Dynac Valve                                                                       |            | SG Valve<br>Spring Loaded Type<br>Safety Valve<br>Pressure Gauge                  | SG Valve<br>Fuse Plug<br>Pressure Gauge                                           | Core Type<br>Gas Valve                                                            | Transfer Barrier<br>For Fluid                                                       | Transfer Barrier<br>For Gas                                                         | Special<br>Specification |
|-----------------|-----------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|
|                 | G Thread                                                                          | UNF Thread |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                          |
| Standard Type   | A                                                                                 | U          | Q                                                                                 | R                                                                                 | C                                                                                 | T                                                                                   | B                                                                                   | X                        |
| Two Pieces Type | D                                                                                 | K          |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                          |
| Plating         | H                                                                                 | L          |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                          |
| Stainless Steel | P                                                                                 | N          |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                          |
| Image           |  |            |  |  |  |  |  |                          |

### ⑦ Specifications For Oil Port Side

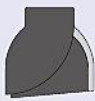
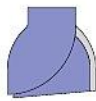
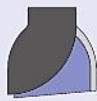
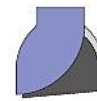
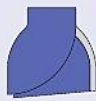
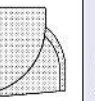
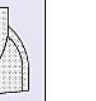
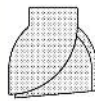
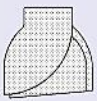
Select the item number code corresponding to the required flow rate and service fluid.

| Shape Material                                 | Standard<br>(Internal Thread)                                                       | High Flow                                                                           | Super<br>High Flow                                                                  | Pulse Damper<br>(IN-LINE Type)                                                      | Super Pulse<br>Damper<br>(IN-LINE Type)                                              | Special<br>Specification | Shape<br>Material of Button | Standard J<br>Series Only                                                             |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------|-----------------------------|---------------------------------------------------------------------------------------|
|                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                          |                             |                                                                                       |
| Carbon Steel                                   | A                                                                                   | E                                                                                   | Y                                                                                   | U                                                                                   | V                                                                                    | X                        | Carbon Steel                | A                                                                                     |
| Stainless Steel                                | D                                                                                   | G                                                                                   | M                                                                                   | Q                                                                                   | T                                                                                    |                          | Stainless Steel             | D                                                                                     |
| Body: Plating<br>Poppet Valve: Stainless Steel | C                                                                                   | F                                                                                   | N                                                                                   | R                                                                                   | S                                                                                    |                          | Aluminum                    | B                                                                                     |
| Image                                          |  |  |  |  |  | —                        | Image                       |  |

### ⑧ Specifications for Accumulator Body

Select the item number code corresponding to the accumulator shell material and inner/outer surface treatment specifications that suit the operating environment and service fluid.

Provide corrosion protection suitable for the installation location.

| Body Material/<br>Paint Specification             | Standard Material                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | Stainless<br>Steel                                                                    | Stainless<br>Steel<br>(Made in<br>China)                                              | Special<br>Specification |
|---------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------|
|                                                   | Inside & Outside Surfaces                                                           | Inside & Outside Surfaces                                                           | Inside Surface                                                                      | Outside Surface                                                                     | Inside Surface                                                                       | Outside Surface                                                                       | Inside & Outside Surfaces                                                             |                                                                                       |                                                                                       |                          |
|                                                   | Zinc<br>Phosphate<br>Treatment                                                      | Paint Coating                                                                       | Paint<br>Coating                                                                    | Zinc<br>Phosphate<br>Treatment                                                      | Zinc<br>Phosphate<br>Treatment                                                       | Paint<br>Coating                                                                      | Plating                                                                               |                                                                                       |                                                                                       |                          |
| Image                                             |  |  |  |  |  |  |  |  |  |                          |
| Petroleum Based<br>Hydraulic Oil &<br>Other Fluid | C                                                                                   | A                                                                                   | B                                                                                   | N                                                                                   |                                                                                      |                                                                                       | H                                                                                     | L                                                                                     | Q                                                                                     | X                        |
| Water + Glycol Fluid                              | D                                                                                   | —                                                                                   | —                                                                                   | W                                                                                   |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                          |

#### Standard Paint Specification

Paint Coating: Heat Hardening Type Acrylic Resin

Coating Color: Munsell hue 5GY9/1

#### Standard Plating Specification

Plating: Electroless nickel plating (repair painting may be applied to the outer surface).

#### Remarks

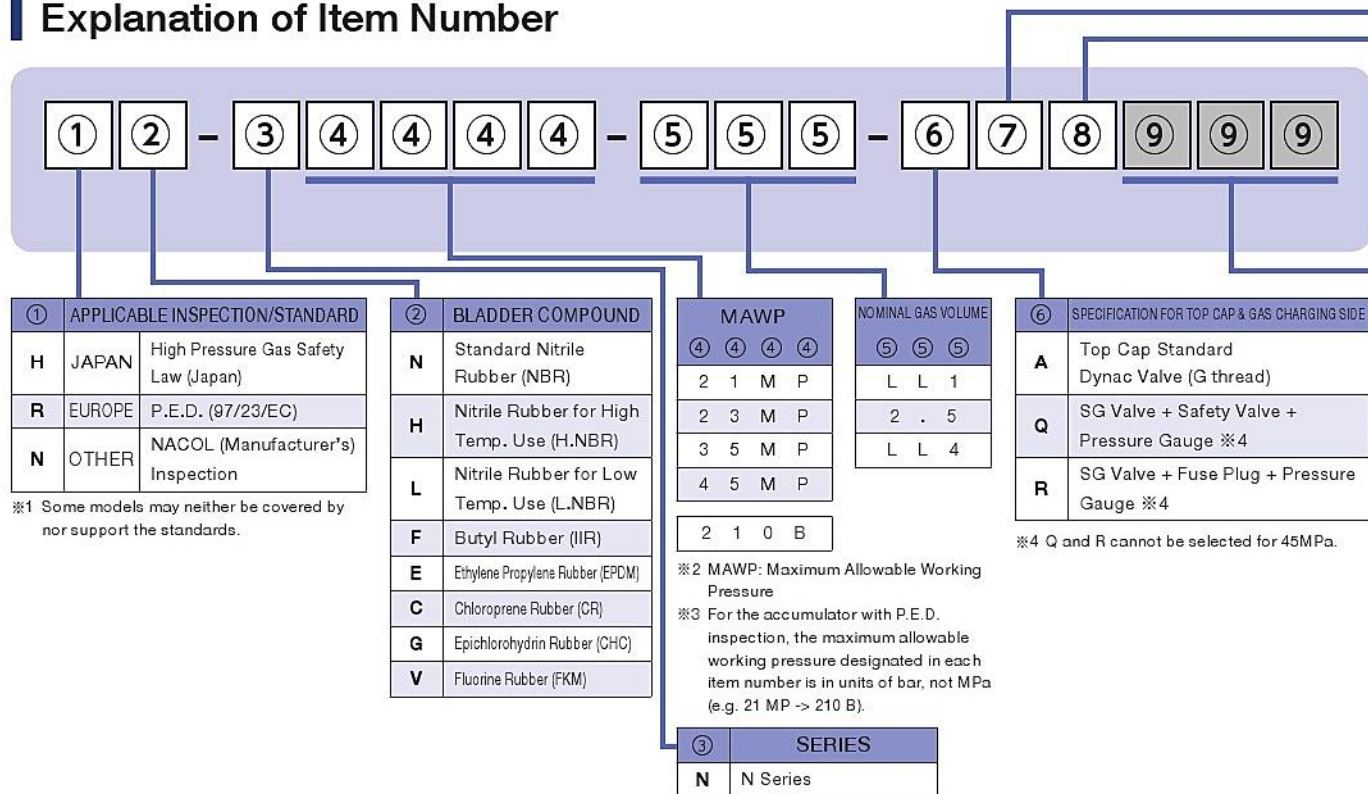
- For J series 0.03 L and G series 0.03 L, accumulators are made of anodized aluminum.
- For standard products in the A, H, J, N, R, and Y series, the inner and outer surfaces are free of painting and treated by chemical conversion coating.
- Except for the E series, inner surface coating is unsuitable when using fire resistant fluids that may cause the paint to peel off, such as phosphate ester based fluids and water glycol fluids.

### ⑨ Special Specifications

For special specifications, the item number designation includes a three-digit number. Please contact us if you have any questions. The three-digit number is omitted when special specifications are not used.

# Accumulator

## Explanation of Item Number



## Dimensional Table

| Maximum Allowable Working Pressure MPa | Item Number                     | Nominal Gas Volume L | Mass kg | A mm                           | A' mm                          | L mm |  |
|----------------------------------------|---------------------------------|----------------------|---------|--------------------------------|--------------------------------|------|--|
| 21                                     | ① ② - N 2 1 M P - L L 1 - ⑥ ⑦ ⑧ | 1                    | 7       | 300 <sup>+8</sup> <sub>0</sub> | 397 <sup>+8</sup> <sub>0</sub> | 264  |  |
|                                        | ① ② - N 2 1 M P - 2 . 5 - ⑥ ⑦ ⑧ | 2.5                  | 13      | 438 <sup>+8</sup> <sub>0</sub> | 502 <sup>+8</sup> <sub>0</sub> | 369  |  |
|                                        | ① ② - N 2 1 M P - L L 4 - ⑥ ⑦ ⑧ | 4                    | 18      | 581 <sup>+8</sup> <sub>0</sub> | 645 <sup>+8</sup> <sub>0</sub> | 512  |  |
| 23                                     | ① ② - N 2 3 M P - L L 1 - ⑥ ⑦ ⑧ | 1                    | 7       | 300 <sup>+8</sup> <sub>0</sub> | 397 <sup>+8</sup> <sub>0</sub> | 264  |  |
| 35                                     | ① ② - N 3 5 M P - L L 1 - ⑥ ⑦ ⑧ | 1                    | 14.5    | 331 <sup>+9</sup> <sub>0</sub> | 424 <sup>+9</sup> <sub>0</sub> | 291  |  |
|                                        | ① ② - N 3 5 M P - 2 . 5 - ⑥ ⑦ ⑧ | 2.5                  | 23      | 523 <sup>+9</sup> <sub>0</sub> | 530 <sup>+9</sup> <sub>0</sub> | 397  |  |
|                                        | ① ② - N 3 5 M P - L L 4 - ⑥ ⑦ ⑧ | 4                    | 30      | 666 <sup>+9</sup> <sub>0</sub> | 673 <sup>+9</sup> <sub>0</sub> | 540  |  |
| 45                                     | ① ② - N 4 5 M P - L L 1 - ⑥ ⑦ ⑧ | 1                    | 14.5    | 331 <sup>+9</sup> <sub>0</sub> | —                              | 291  |  |
|                                        | ① ② - N 4 5 M P - 2 . 5 - ⑥ ⑦ ⑧ | 2.5                  | 23      | 523 <sup>+9</sup> <sub>0</sub> | —                              | 397  |  |
|                                        | ① ② - N 4 5 M P - L L 4 - ⑥ ⑦ ⑧ | 4                    | 30      | 666 <sup>+9</sup> <sub>0</sub> | —                              | 540  |  |

※7 Dimensions without tolerance indication are for reference. Please confirm the dimensions with the actual product.

| ⑦ | SPECIFICATION FOR OIL PORT SIDE |
|---|---------------------------------|
| A | Carbon Steel                    |
| D | Stainless Steel ※5              |

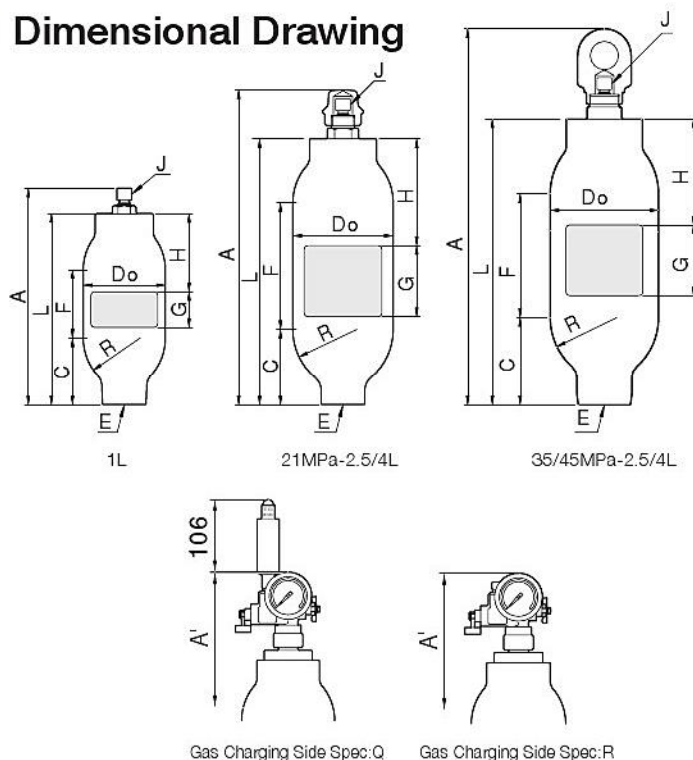
※5 When selecting D, please contact us.

| ⑧ | SPECIFICATION OF SHELL           | SURFACE TREATMENT                                                                     | SERVICE FLUID                                                       |
|---|----------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| C | Standard Material (Carbon Steel) | Inside & Outside Surface : Zinc Phosphate Treatment (Standard)                        | Petroleum Based Hydraulic Oil & Other Fluid                         |
| D |                                  |                                                                                       | Water + Glycol Fluid                                                |
| A |                                  | Inside & Outside Surface : Standard Paint Coating                                     | Petroleum Based Hydraulic Oil & Other Fluid ※6                      |
| B |                                  | Inside Surface : Standard Paint Coating<br>Outside Surface : Zinc Phosphate Treatment | Petroleum Based Hydraulic Oil & Other Fluid ※6                      |
| N |                                  | Inside Surface : Zinc Phosphate Treatment<br>Outside Surface : Standard Paint Coating | Petroleum Based Hydraulic Oil & Other Fluid                         |
| W |                                  |                                                                                       | Water + Glycol Fluid                                                |
| H |                                  | Inside & Outside Surface : Standard Plating                                           | Petroleum Based Hydraulic Oil<br>Water + Glycol Fluid & Other Fluid |

※6 Inner surface coating is unsuitable when using fire resistant fluids that may cause the paint to peel off, such as phosphate ester based fluids and water glycol fluids.

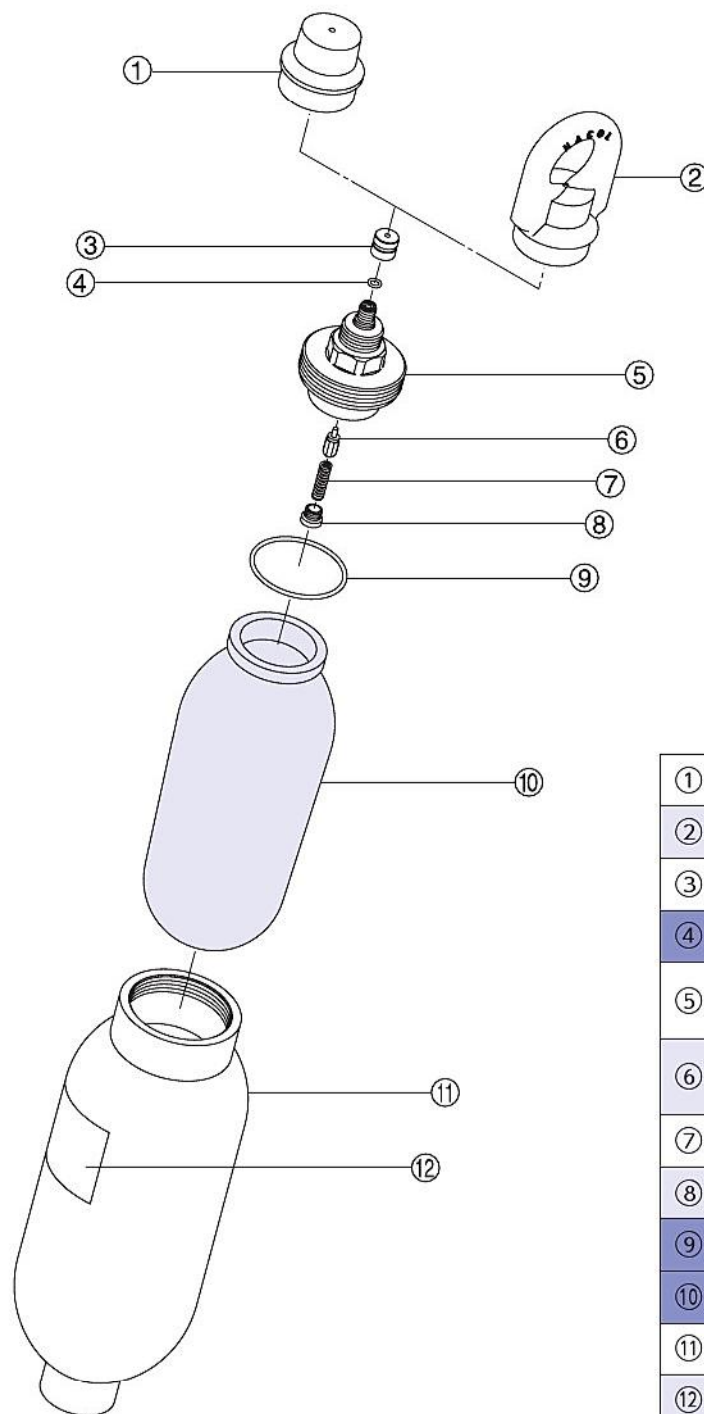
| ⑨⑨⑨ | SPECIAL SPECIFICATION                                                                  |
|-----|----------------------------------------------------------------------------------------|
| *** | For special specifications, the item number designation includes a three-digit number. |

## Dimensional Drawing



Eladder Type - Standard

|  | C<br>mm | F<br>mm | H<br>mm | G<br>mm | φD <sub>o</sub> ±1%<br>mm | R<br>mm | E     | J    | Allowable Oil Flow Rate<br>[When Vertically Installed]<br>16–320cSt |
|--|---------|---------|---------|---------|---------------------------|---------|-------|------|---------------------------------------------------------------------|
|  | 95      | 90      | 110     | 50      | 114.3                     | 80      | M42x2 | G1/4 | 120L/min                                                            |
|  | 107     | 172     | 150     | 90      | 139.8                     | 90      |       |      |                                                                     |
|  |         | 315     |         |         |                           |         |       |      |                                                                     |
|  | 95      | 90      | 110     | 50      | 114.3                     | 80      |       |      |                                                                     |
|  | 112     | 89      |         |         | 127                       |         |       |      |                                                                     |
|  | 125     | 166     | 150     | 90      | 152.4                     | 95      |       |      |                                                                     |
|  |         | 309     |         |         |                           |         |       |      |                                                                     |
|  | 112     | 89      | 110     | 50      | 127                       | 80      |       |      |                                                                     |
|  | 125     | 166     | 150     | 90      | 152.4                     | 95      |       |      |                                                                     |
|  |         | 309     |         |         |                           |         |       |      |                                                                     |

**Typical Exploded View**

|   |                                     |
|---|-------------------------------------|
| ① | Valve Cover                         |
| ② | Eye Nut ※3                          |
| ③ | Valve Cap                           |
| ④ | O-ring                              |
| ⑤ | Top Cap With Dynac Valve            |
| ⑥ | Dynac Valve Packing With Valve Stem |
| ⑦ | Spring                              |
| ⑧ | Spring Nut                          |
| ⑨ | O-ring                              |
| ⑩ | Bladder                             |
| ⑪ | Accumulator Body                    |
| ⑫ | Nameplate                           |

※1 The typical exploded view for this series.

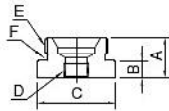
※2 If you purchase ⑩ bladder as the spare parts, ④⑨ O-rings will be attached with the bladder.

※3 Only for 2.5L and 4L accumulator which maximum allowable working pressure is 35MPa or more.

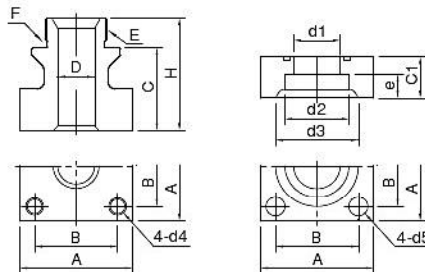
# Piping Connection

## Dimensional Drawing

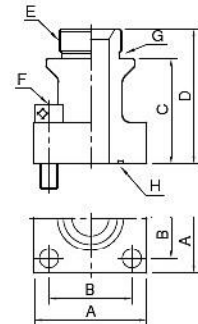
### Bushing



### Flange (with Counter Flange)



### Valve Flange



※1 The above shows the shape of representative model. Confirm the actual shape with the drawing or the actual product.

※2 When there is no indication of maximum allowable working pressure of your accumulator in the column of "Applicable ACC. MAWP" of the following dimensional table, please contact us.

## Dimensional Table

### Bushing

| Applicable<br>ACC.<br>MAWP   | Item Number    | Connection<br>Port Size | A  | B  | C                             | D     | E     | F         |                   |
|------------------------------|----------------|-------------------------|----|----|-------------------------------|-------|-------|-----------|-------------------|
|                              |                |                         |    |    |                               |       |       | O-Ring    | B.U. Ring         |
| <b>21MPa</b><br><b>23MPa</b> | 6FAM42F 02N23M | Rc1/4                   | 28 | 12 | φ53<br>(Width across flat 50) | Rc1/4 | M42x2 | AS568 920 | —                 |
|                              | 6FAM42F 03N23M | Rc3/8                   |    |    |                               | Rc3/8 |       |           |                   |
|                              | 6FAM42F 04N23M | Rc1/2                   |    |    |                               | Rc1/2 |       |           |                   |
|                              | 6FAM42F 06N23M | Rc3/4                   |    |    |                               | Rc3/4 |       |           |                   |
| <b>35MPa</b>                 | 6FAM42F 02N35M | Rc1/4                   | 57 | 22 | φ70<br>(Width across flat 65) | Rc1/4 | M42x2 | AS568 920 | Special B.U. Ring |
|                              | 6FAM42F 03N35M | Rc3/8                   |    |    |                               | Rc3/8 |       |           |                   |
|                              | 6FAM42F 04N35M | Rc1/2                   |    |    |                               | Rc1/2 |       |           |                   |
|                              | 6FAM42F 06N35M | Rc3/4                   |    |    |                               | Rc3/4 |       |           |                   |

### Flange (with Counter Flange)

| Applicable<br>ACC.<br>MAWP | Item Number   | CPS | A   | B  | C  | H  | e  | φD | C1   | φ<br>d1 | φ<br>d2 | φ<br>d3 | φ<br>d4 | φ<br>d5   | E     | F         |           | G         |    |     |
|----------------------------|---------------|-----|-----|----|----|----|----|----|------|---------|---------|---------|---------|-----------|-------|-----------|-----------|-----------|----|-----|
|                            |               |     |     |    |    |    |    |    |      |         |         |         |         |           |       | O-Ring    | B.U. Ring |           |    |     |
| 21MPa                      | 6FAM4215AN21M | 15A | 54  | 36 | 22 | 42 | 11 | 16 | 22   | 16      | 22.2    | 32      | M10     | 11        | M42x2 | AS568 920 | —         | G25       |    |     |
|                            | 6FAM4215LX003 | 15A | 76  | 56 | 56 | 76 | 12 | 25 | 28   | 20      | 27.7    | 38      | M12     | 13        |       |           |           | AS568 920 | —  | G40 |
|                            | 6FAM4220LX005 | 20A |     |    |    |    |    |    |      | 25      | 34.5    | 45      |         |           |       |           |           |           |    |     |
|                            | 6FAM4225LX001 | 25A |     |    |    |    |    |    |      | 31.5    | 43.2    | 56      |         |           |       |           |           |           |    |     |
|                            | 6FAM4232LN21M | 32A |     |    |    |    |    |    |      | 37.5    | 49.1    | 63      |         |           |       |           |           |           |    |     |
|                            | 6FAM4240AX008 | 40A |     |    |    |    |    |    |      | 47.5    | 61.1    | 75      |         |           |       |           |           |           |    |     |
|                            | 6FAM4250AN21M | 50A | 100 | 73 | 36 | 56 | 48 | 36 | 12.3 | 22.2    | 37.5    | M12     | 14      | AS568 920 |       |           | G30       |           |    |     |
| 35MPa                      | 6FAM4215AX009 | 15A | 68  | 48 |    | 71 | 12 | 16 | 28   | 16.2    | 27.7    | 43.5    | M16     |           | 18    | AS568 920 |           | G40       |    |     |
|                            | 6FAM4220AN35M | 20A | 92  | 65 |    | 45 | 80 | 14 | 25   | 36      | 21      | 34.5    | 53      |           | M16   |           |           |           | 18 |     |
|                            | 6FAM4225AX006 | 25A |     |    |    |    |    |    |      |         |         |         |         |           |       |           |           |           |    |     |

### Valve Flange

| Applicable<br>ACC.<br>MAWP | Item Number   | CPS | A   | B  | C  | D   | E     | F      | G         |           | H   |  |
|----------------------------|---------------|-----|-----|----|----|-----|-------|--------|-----------|-----------|-----|--|
|                            |               |     |     |    |    |     |       |        | O-Ring    | B.U. Ring |     |  |
| 21MPa                      | 6FAM4232DN21M | 32A | 76  | 56 | 71 | 91  | M42x2 | M12x45 | AS568 920 | —         | G40 |  |
|                            | 6FAM4250DN21M | 50A | 100 | 73 | 36 | 84  |       | M16x55 |           |           | G60 |  |
| 35MPa                      | 6FAM4225DX020 | 25A | 95  | 65 | 35 | 136 |       | M16x60 |           | AS568 920 | G30 |  |
|                            | 6FAM4232DN35M | 32A | 100 | 70 | 70 | 105 |       |        |           |           | G35 |  |

CPS: Connection Port Size MAWP: Maximum Allowable Working Pressure

## Accessories/Tools

| Maximum Allowable Working Pressure MPa |                            |                                                      |                                                                                          | 21                                                                                                | 23                                                                                                                                                     |  |
|----------------------------------------|----------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Item Number of Accumulator             |                            |                                                      |                                                                                          | ①②-N21MP-LL1-⑥⑦⑧                                                                                  | ①②-N23MP-LL1-⑥⑦⑧                                                                                                                                       |  |
|                                        |                            |                                                      |                                                                                          | ①②-N21MP-2.5-⑥⑦⑧                                                                                  |                                                                                                                                                        |  |
|                                        |                            |                                                      |                                                                                          | ①②-N21MP-LL4-⑥⑦⑧                                                                                  |                                                                                                                                                        |  |
| Optional Parts                         | Gas Charging Tools Kit ※ 1 |                                                      |                                                                                          |  P204            | 6GG <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |  |
|                                        | For Installation           | NACOL Clamp                                          |  P200   | 1L:6K114N<br>2.5/4L:6K139N                                                                        | 6K114N                                                                                                                                                 |  |
|                                        |                            | NORMA Clamp                                          |  P201   | 1L:6081C114<br>2.5/4L:6081C140                                                                    | 6081C114                                                                                                                                               |  |
|                                        |                            | Base Mounting Plate<br>(Exclusively for NACOL Clamp) |  P199   | —                                                                                                 |                                                                                                                                                        |  |
|                                        |                            | Base Mounting Plate<br>(Exclusively for NORMA Clamp) |  P199   | —                                                                                                 |                                                                                                                                                        |  |
| Bladder Replacement                    | Parts                      | Bladder                                              |  P210  | 6.5 ②N⑤⑤⑤A                                                                                        |                                                                                                                                                        |  |
|                                        |                            | Bladder Back Up Ring                                 |       | —                                                                                                 |                                                                                                                                                        |  |
|                                        | Tools                      | Cap Wrench                                           |  P208 | — (Please use a commercially available wrench.)                                                   |                                                                                                                                                        |  |
| Dynac Valve Replacement<br>(DV Spec.)  | Parts                      | Dynac Valve Packing<br>with Valve Stem               |  P212 | 645026400A                                                                                        |                                                                                                                                                        |  |
|                                        |                            | Spring                                               |  P212 | 645045500                                                                                         |                                                                                                                                                        |  |
|                                        |                            | Spring Nut                                           |  P212 | 645048200                                                                                         |                                                                                                                                                        |  |
|                                        | Tools                      | Spring Nut Key                                       |  P212 | 6TWH04                                                                                            |                                                                                                                                                        |  |
| For Oil Port Valve Assembly            | Tools                      | Ring Nut Wrench                                      |  P209 | —                                                                                                 |                                                                                                                                                        |  |
| Separately Available Parts             | Eye Nut (Hanging Tool)     |                                                      |       | 6HTM32<br>(Cannot be installed to 1L)                                                             | —                                                                                                                                                      |  |
|                                        | Valve Cover                |                                                      |       | 645049608<br>(Cannot be installed to 1L)                                                          | —                                                                                                                                                      |  |
|                                        | Exclusively for Q/R Spec.  | SG Valve                                             |  P196 | 6H <input type="text"/> -AV35MP-F03-M32A                                                          |                                                                                                                                                        |  |
|                                        |                            | Pressure Gauge<br>Containing Glycerol                |  P197 | 6018DUF0206 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> G |                                                                                                                                                        |  |
|                                        |                            | Spring Loaded Type<br>Safety Valve                   |  P198 | 6H-SV <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> -03-F03 |                                                                                                                                                        |  |
|                                        |                            | Fuse Plug                                            |  P197 | 6H-FP35MP-03-F03                                                                                  |                                                                                                                                                        |  |

※1 Nitrogen gas charging, inspection, or pressure adjustment requires a gas charging tools kit.  
(Only a hose and an adaptor are required for R or Q specification accumulator with SG valve.)

|  | 35                                                                                                                                                     | 45               |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|  | ①②-N35MP-LL1-⑥⑦⑧                                                                                                                                       | ①②-N45MP-LL1-⑥⑦⑧ |
|  | ①②-N35MP-2.5-⑥⑦⑧                                                                                                                                       | ①②-N45MP-2.5-⑥⑦⑧ |
|  | ①②-N35MP-LL4-⑥⑦⑧                                                                                                                                       | ①②-N45MP-LL4-⑥⑦⑧ |
|  | 6GH <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |                  |
|  | 1L:6K127N<br>2.5/4L:6K152N                                                                                                                             |                  |
|  | 1L:6081C128<br>2.5/4L:6081C152                                                                                                                         |                  |
|  | —                                                                                                                                                      |                  |
|  | —                                                                                                                                                      |                  |
|  | 65 ②N⑤⑤⑤A                                                                                                                                              |                  |
|  | —                                                                                                                                                      |                  |
|  | — (Please use a commercially available wrench.)                                                                                                        |                  |
|  | 645026400A                                                                                                                                             |                  |
|  | 645045500                                                                                                                                              |                  |
|  | 645048200                                                                                                                                              |                  |
|  | 6TWH04                                                                                                                                                 |                  |
|  | —                                                                                                                                                      |                  |
|  | 6HTM42<br>(Cannot be installed to 1L)                                                                                                                  |                  |
|  | 645049705<br>(Cannot be installed to 1L)                                                                                                               |                  |
|  | 6H <input type="text"/> -AV35MP-F03-M42A                                                                                                               | —                |
|  | 6018DUF0206 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> G                                                      | —                |
|  | 6H-SV <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> -03-F03                                                      | —                |
|  | 6H-FP35MP-03-F03                                                                                                                                       | —                |