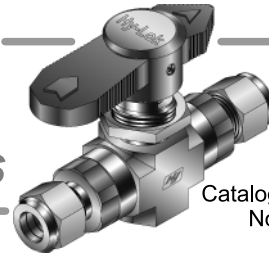


# Hy-Lok 102 Series

## Forged High Pressure Ball Valves



Catalog No. H-102BV  
Nov. 2013

### Packing bolt and Stem packing

- allow easy packing adjustment with valve in-line
- chevron packing standard for positive leak tight

### Handle with arrow

- indicates flow direction
- low torque and quick operation
- available in black (standard) and colored nylon handle (option)

### Retainer seal

- is positive leak tight and prevents to wear for seat

### Panel mounting nut

- allow easy installation (standard)

### Seat retainer

- with PCTFE seats standard
- is standard for easier replacement

### End packing

- is machined PTFE standard

### Variety of End connections

- include Hy-Lok tube fittings, male & female NPT, male & female ISO threads

### Orifice

- is optimized for min. pressure drop
- ranges from 4.2mm (0.16") to 10.3mm (0.4")

### Floating ball design

- ensures leak proof shut-off in pressure and switching (2-way and 3-way)

### Forged body

- is available in straight (2-way) and switching (3-way)

## Features

- **Pressure rating** up to 6000psig (413 Bar) @70°F (21°C) with PCTFE seats
- **Temperature rating** from -65°F to 350°F (-54°C to 177°C) with standard PCTFE seat
- **Compact design**
- **Straight through design** for max flow rate
- **Body materials** available in 316 stainless steel and brass
- **100% factory tested**

## Technical Data

### Seats and Body Materials vs Temperature and Pressure Rating

| Seat Material | Temperature Rating                 | Pressure Rating @ 100°F (38°C) |                        | Pressure Rating @ Max. Temperature |                                |
|---------------|------------------------------------|--------------------------------|------------------------|------------------------------------|--------------------------------|
|               |                                    | Stainless Steel                | Brass                  | Stainless Steel                    | Brass                          |
| PCTFE         | -65°F to 300°F<br>(-54°C to 148°C) | 6000 psig<br>(413 bar)         | 3000 psig<br>(207 bar) | 1000psig@300°F<br>(68.9bar@148°C)  | 700psig@300°F<br>(48bar@148°C) |
| PEEK          | -65°F to 450°F<br>(-54°C to 232°C) | 6000 psig<br>(413 bar)         | 3000 psig<br>(207 bar) | 700psig@400°F<br>(48bar@200°C)     |                                |
| PTFE          | -65°F to 300°F<br>(-54°C to 148°C) | 1500 psig<br>(103 bar)         | 1500 psig<br>(103 bar) | 250psig@300°F<br>(17.2bar@148°C)   |                                |

### ⚠ Caution :

Pressure Rating with 3-way side ports of as inlet : 150 psig (10bar)

### Testing

- Each valve is tested with nitrogen @1000psig (69 bar) to max.leak rate of 0.1SCCM.
- Optional tests are available upon request.

### Material of construction

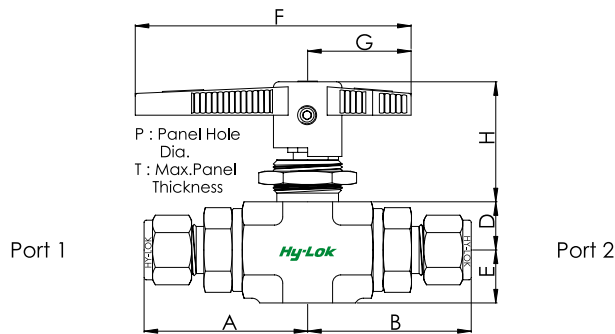
| Description      | Material Grade / ASTM Specification |       |
|------------------|-------------------------------------|-------|
|                  | Stainless Steel                     | Brass |
| * Body           | Gr.316/A182                         | Brass |
| * End Connector  | TP316 / A479                        | Brass |
| * Ball           | TP316 / A479                        |       |
| * Seat Retainer  | TP316 / A479                        |       |
| * Seat           | PCTFE, PEEK, PTFE                   |       |
| * Retainer Seal  | PTFE                                |       |
| * Stem           | TP316 / A479                        |       |
| Packing bolt     | TP316 / A479                        |       |
| Panel Nut        | 316 Stainless Steel                 |       |
| * Stem Washer    | 316 Stainless Steel                 |       |
| * Stem packing   | PTFE                                |       |
| * End Packing    | PTFE                                |       |
| Handle Set Screw | Stainless Steel                     |       |
| Handle           | Black nylon standard                |       |

Note : "\*" marked are wetted parts  
Lubricant is silicone based.



# HY-LOK CORPORATION

## 2-Way (Shut-Off Valve)



## Table of Dimensions

| Basic Part No. | Orifice in. (mm) | Flow Coefficient (Cv) | End Connections | Dimensions, in. (mm) |             |             |             |             |             |             |              |             |            |
|----------------|------------------|-----------------------|-----------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|------------|
|                |                  |                       |                 | Port1 & Port2        |             | A           | B           | D           | E           | H           | G            | F           | P          |
| HB1            | H - 1T           | 0.052 (1.3)           | 0.06            | 1/16" Hy-Lok         | 1.30 (33.0) | 1.30 (33.0) | 0.33 (8.5)  | 0.39 (10.0) | 0.91 (23.2) | 0.71 (18.0) | 1.85 (47.0)  | 0.64 (16.3) | 0.13 (3.3) |
|                | H - 2T           | 0.093 (2.4)           | 0.21            | 1/8" Hy-Lok          | 1.36 (34.5) | 1.36 (34.5) |             |             |             |             |              |             |            |
|                | F - 2N           | 0.165 (4.2)           | 0.93            | 1/8" Female NPT      | 1.07 (27.2) | 1.07 (27.2) |             |             |             |             |              |             |            |
|                | M - 2N           |                       |                 | 1/8" Male NPT        | 1.18 (29.9) | 1.18 (29.9) |             |             |             |             |              |             |            |
|                | H - 4T           |                       |                 | 1/4" Hy-Lok          | 1.48 (37.6) | 1.48 (37.6) |             |             |             |             |              |             |            |
|                | M - 4N           |                       |                 | 1/4" Male            | 1.35 (34.3) | 1.35 (34.3) |             |             |             |             |              |             |            |
|                | H - 3M           | 0.086 (2.2)           | 0.18            | 3mm Hy-Lok           | 1.37 (34.8) | 1.37 (34.8) |             |             |             |             |              |             |            |
| HB2            | H - 2T           | 0.093 (2.4)           | 0.26            | 1/8" Hy-Lok          | 1.65 (41.9) | 1.65 (41.9) | 0.48 (12.3) | 0.55 (14.0) | 1.47 (37.4) | 1.26 (32.0) | 3.15 (80.0)  | 0.77 (19.6) | 0.25 (6.4) |
|                | H - 4T           | 0.189 (4.8)           | 1.04            | 1/4" Hy-Lok          | 1.74 (44.2) | 1.74 (44.2) |             |             |             |             |              |             |            |
|                | F - 4N           | 0.250 (6.4)           | 2.34            | 1/4" Female NPT      | 1.51 (38.4) | 1.51 (38.4) |             |             |             |             |              |             |            |
|                | M - 4N           |                       |                 | 1/4" Male NPT        | 1.62 (41.1) | 1.62 (41.1) |             |             |             |             |              |             |            |
|                | H - 6T           |                       |                 | 3/8" Hy-Lok          | 1.80 (45.7) | 1.80 (45.7) |             |             |             |             |              |             |            |
|                | M - 6N           | 0.188 (4.8)           | 1.04            | 3/8" Male NPT        | 1.62 (41.1) | 1.62 (41.1) |             |             |             |             |              |             |            |
|                | H - 6M           |                       |                 | 6mm Hy-Lok           | 1.75 (44.5) | 1.75 (44.5) |             |             |             |             |              |             |            |
|                | H - 8M           |                       |                 | 8mm Hy-Lok           | 1.78 (45.2) | 1.78 (45.2) |             |             |             |             |              |             |            |
| H - 10M        | 0.250 (6.4)      | 2.34                  | 10mm Hy-Lok     | 1.81 (46.0)          | 1.81 (46.0) |             |             |             |             |             |              |             |            |
| HB3            | F - 6N           | 0.406 (10.3)          | 6.42            | 3/8" Female NPT      | 1.95 (49.5) | 1.95 (49.5) | 0.7 (17.8)  | 0.77 (19.5) | 1.74 (44.2) | 1.50 (38.1) | 4.00 (101.6) | 1.02 (26.0) | 0.38 (9.7) |
|                | F - 8N           |                       |                 | 1/2" Female NPT      | 2.15 (54.6) | 2.15 (54.6) |             |             |             |             |              |             |            |
|                | H - 8T           |                       |                 | 1/2" Hy-Lok          | 2.34 (59.4) | 2.34 (59.4) |             |             |             |             |              |             |            |
|                | M - 8N           | 1/2" Male NPT         | 2.22 (56.4)     | 2.22 (56.4)          |             |             |             |             |             |             |              |             |            |
|                | H - 12T          | 3/4" Hy-Lok           | 2.33 (59.2)     | 2.33 (59.2)          |             |             |             |             |             |             |              |             |            |
|                | H - 12M          | 0.375 (9.5)           | 5.57            | 12mm Hy-Lok          | 2.33 (59.2) | 2.33 (59.2) |             |             |             |             |              |             |            |
|                | H - 16M          | 0.406 (10.3)          | 6.42            | 16mm Hy-Lok          | 2.33 (59.2) | 2.33 (59.2) |             |             |             |             |              |             |            |

Dimensions in inches and (millimeters) are for reference only, subject to change. Dimensions shown with Hy-Lok nuts in finger-tight position, where applicable.

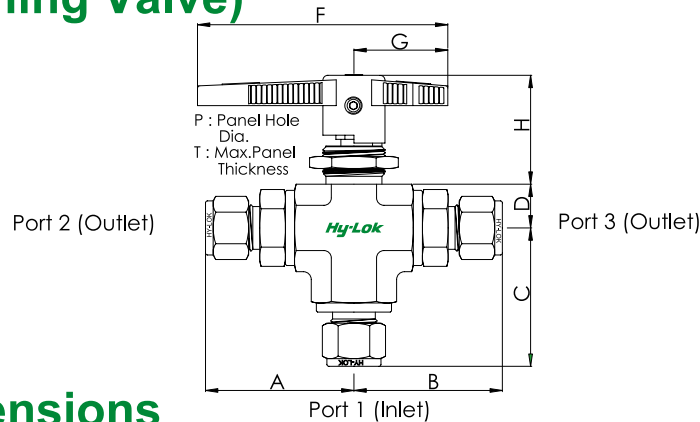
## Flow Rate

| Pressure Drop ( $\Delta p$ ) to Atmosphere in psi | Cv   |      |      |      |      |       |       |       |       |       |       |       |       |        |        |
|---|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
|   | 0.06 | 0.18 | 0.21 | 0.26 | 0.63 | 0.7   | 0.87  | 0.93  | 1.04  | 2.34  | 3.46  | 3.62  | 5.57  | 6.42   |        |
| Air@70°F(21°C)<br>SCFM                            | 10   | 5.9  | 17.7 | 20.7 | 25.6 | 62.0  | 68.9  | 85.6  | 91.5  | 102.4 | 230.3 | 340.6 | 356.3 | 548.2  | 631.9  |
|   | 50   | 13.2 | 39.6 | 46.2 | 57.2 | 138.7 | 154.1 | 191.5 | 204.7 | 228.9 | 515.0 | 761.5 | 796.7 | 1225.9 | 1413.0 |
| Water@60°F<br>(16°C)US GPM                        | 10   | 0.2  | 0.6  | 0.7  | 0.8  | 2.0   | 2.2   | 2.8   | 2.9   | 3.3   | 7.4   | 10.9  | 11.5  | 17.6   | 20.3   |
|   | 50   | 0.4  | 1.3  | 1.5  | 1.8  | 4.5   | 4.9   | 6.2   | 6.6   | 7.4   | 16.5  | 24.5  | 25.6  | 39.4   | 45.4   |
| 100   | 0.6  | 1.8  | 2.1  | 2.6  | 6.3  | 7.0   | 8.7   | 9.3   | 10.4  | 23.4  | 34.6  | 36.2  | 55.7  | 64.2   |        |

\* Flow rate calculated with 1000psig(69bar) inlet pressure.

\* To determine m<sup>3</sup>/hr, multiply GPM by 0.227 and SCFM by 1.69.

## 3-Way (Switching Valve)



## Table of Dimensions

| Basic Part No. | Orifice in. (mm) | Flow Coefficient (Cv) | End Connections       |                 |             | Dimensions, in. (mm) |             |             |             |             |              |             |            |
|----------------|------------------|-----------------------|-----------------------|-----------------|-------------|----------------------|-------------|-------------|-------------|-------------|--------------|-------------|------------|
|                |                  |                       | Port1 & Port2 & Port3 | A               | B           | C                    | D           | H           | G           | F           | P            | T           |            |
| HB1B3          | H - 1T           | 0.052 (1.3)           | 0.06                  | 1/16" Hy-Lok    | 1.30 (33.0) | 1.30 (33.0)          | 1.33 (33.7) | 0.33 (8.5)  | 0.91 (23.2) | 0.71 (18.0) | 1.85 (47.0)  | 0.64 (16.3) | 0.13 (3.3) |
|                | H - 2T           | 0.093 (2.4)           | 0.21                  | 1/8" Hy-Lok     | 1.36 (34.5) | 1.36 (34.5)          | 1.43 (36.4) |             |             |             |              |             |            |
|                | F - 2N           | 0.165 (4.2)           | 0.63                  | 1/8" Female NPT | 1.07 (27.2) | 1.07 (27.2)          | 1.18 (29.9) |             |             |             |              |             |            |
|                | M - 2N           |                       |                       | 1/8" Male NPT   | 1.18 (29.9) | 1.18 (29.9)          | 1.18 (29.9) |             |             |             |              |             |            |
|                | H - 4T           |                       |                       | 1/4" Hy-Lok     | 1.48 (37.6) | 1.48 (37.6)          | 1.46 (37.2) |             |             |             |              |             |            |
|                | M - 4N           |                       |                       | 1/4" Male       | 1.35 (34.3) | 1.35 (34.3)          | 1.18 (29.9) |             |             |             |              |             |            |
|                | H - 3M           |                       |                       | 3mm Hy-Lok      | 1.37 (34.8) | 1.37 (34.8)          | 1.43 (36.4) |             |             |             |              |             |            |
| HB2B3          | H - 2T           | 0.093 (2.4)           | 0.21                  | 1/8" Hy-Lok     | 1.65 (41.9) | 1.65 (41.9)          | 1.56 (39.6) | 0.48 (12.3) | 1.47 (37.4) | 1.26 (32.0) | 3.15 (80.0)  | 0.77 (19.6) | 0.25 (6.4) |
|                | H - 4T           | 0.189 (4.8)           | 0.70                  | 1/4" Hy-Lok     | 1.74 (44.2) | 1.74 (44.2)          | 1.59 (40.3) |             |             |             |              |             |            |
|                | F - 4N           | 0.250 (6.4)           | 0.87                  | 1/4" Female NPT | 1.51 (38.4) | 1.51 (38.4)          | 1.30 (33.0) |             |             |             |              |             |            |
|                | M - 4N           |                       |                       | 1/4" Male NPT   | 1.62 (41.1) | 1.62 (41.1)          | 1.30 (33.0) |             |             |             |              |             |            |
|                | H - 6T           |                       |                       | 3/8" Hy-Lok     | 1.80 (45.7) | 1.80 (45.7)          | 1.59 (40.3) |             |             |             |              |             |            |
|                | M - 6N           | 3/8" Male NPT         | 1.62 (41.1)           | 1.62 (41.1)     | 1.30 (33.0) |                      |             |             |             |             |              |             |            |
|                | H - 6M           | 0.188 (4.8)           | 0.70                  | 6mm Hy-Lok      | 1.75 (44.5) | 1.75 (44.5)          | 1.59 (40.4) |             |             |             |              |             |            |
|                | H - 8M           | 0.250 (6.4)           | 0.87                  | 8mm Hy-Lok      | 1.78 (45.2) | 1.78 (45.2)          | 1.59 (40.5) |             |             |             |              |             |            |
| H - 10M        | 10mm Hy-Lok      |                       |                       | 1.81 (46.0)     | 1.81 (46.0) | 1.60 (40.6)          |             |             |             |             |              |             |            |
| HB3B3          | F - 6N           | 0.406 (10.3)          | 3.62                  | 3/8" Female NPT | 1.95 (49.5) | 1.95 (49.5)          | 1.85 (47.0) | 0.7 (17.8)  | 1.74 (44.2) | 1.50 (38.1) | 4.00 (101.6) | 0.90 (22.9) | 0.38 (9.7) |
|                | F - 8N           |                       |                       | 1/2" Female NPT | 2.15 (54.6) | 2.15 (54.6)          | 1.85 (47.0) |             |             |             |              |             |            |
|                | H - 8T           |                       |                       | 1/2" Hy-Lok     | 2.34 (59.4) | 2.34 (59.4)          | 2.25 (57.1) |             |             |             |              |             |            |
|                | M - 8N           |                       |                       | 1/2" Male NPT   | 2.22 (56.4) | 2.22 (56.4)          | 1.85 (47.0) |             |             |             |              |             |            |
|                | H - 12T          |                       |                       | 3/4" Hy-Lok     | 2.33 (59.2) | 2.33 (59.2)          | 2.25 (57.1) |             |             |             |              |             |            |
|                | H - 12M          | 0.375 (9.5)           | 3.46                  | 12mm Hy-Lok     | 2.33 (59.2) | 2.33 (59.2)          | 2.25 (57.1) |             |             |             |              |             |            |
|                | H - 16M          | 0.406 (10.3)          | 3.62                  | 16mm Hy-Lok     | 2.33 (59.2) | 2.33 (59.2)          | 2.25 (57.1) |             |             |             |              |             |            |

Dimensions in inches and (millimeters) are for reference only, subject to change. Dimensions shown with Hy-Lok nuts in finger-tight position, where applicable.

## Flow Rate

| Pressure Drop ( $\Delta p$ ) to Atmosphere in psi | Cv   |      |      |      |      |       |       |       |       |       |       |        |        |        |        |
|---|------|------|------|------|------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
|   | 0.06 | 0.18 | 0.21 | 0.26 | 0.63 | 0.7   | 0.87  | 0.93  | 1.04  | 2.34  | 3.46  | 3.62   | 5.57   | 6.42   |        |
| Air@70°F(21°C)                                    | 10   | 5.9  | 17.7 | 20.7 | 25.6 | 62.0  | 68.9  | 85.6  | 91.5  | 102.4 | 230.3 | 340.6  | 356.3  | 548.2  | 631.9  |
| SCFM  | 50   | 13.2 | 39.6 | 46.2 | 57.2 | 138.7 | 154.1 | 191.5 | 204.7 | 228.9 | 515.0 | 761.5  | 796.7  | 1225.9 | 1413.0 |
|   | 100  | 18.7 | 56.0 | 65.4 | 80.9 | 196.1 | 217.9 | 270.8 | 289.5 | 323.7 | 728.3 | 1077.0 | 1126.8 | 1733.7 | 1998.3 |
| Water@60°F(16°C) US GPM                           | 10   | 0.2  | 0.6  | 0.7  | 0.8  | 2.0   | 2.2   | 2.8   | 2.9   | 3.3   | 7.4   | 10.9   | 11.4   | 17.6   | 20.3   |
|   | 50   | 0.4  | 1.3  | 1.5  | 1.8  | 4.5   | 4.9   | 6.2   | 6.6   | 7.4   | 16.5  | 24.5   | 25.6   | 39.4   | 45.4   |
|   | 100  | 0.6  | 1.8  | 2.1  | 2.6  | 6.3   | 7.0   | 8.7   | 9.3   | 10.4  | 23.4  | 34.6   | 36.2   | 55.7   | 64.2   |

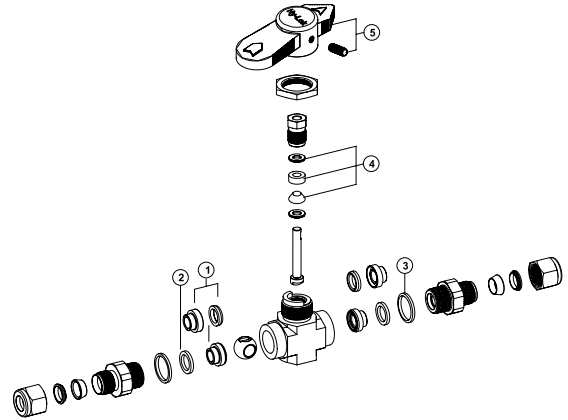
\* Flow rate calculated with 1000psig(69bar) inlet pressure.

\* To determine m<sup>3</sup>/hr, multiply GPM by 0.227 and SCFM by 1.69.

## Spare Kits

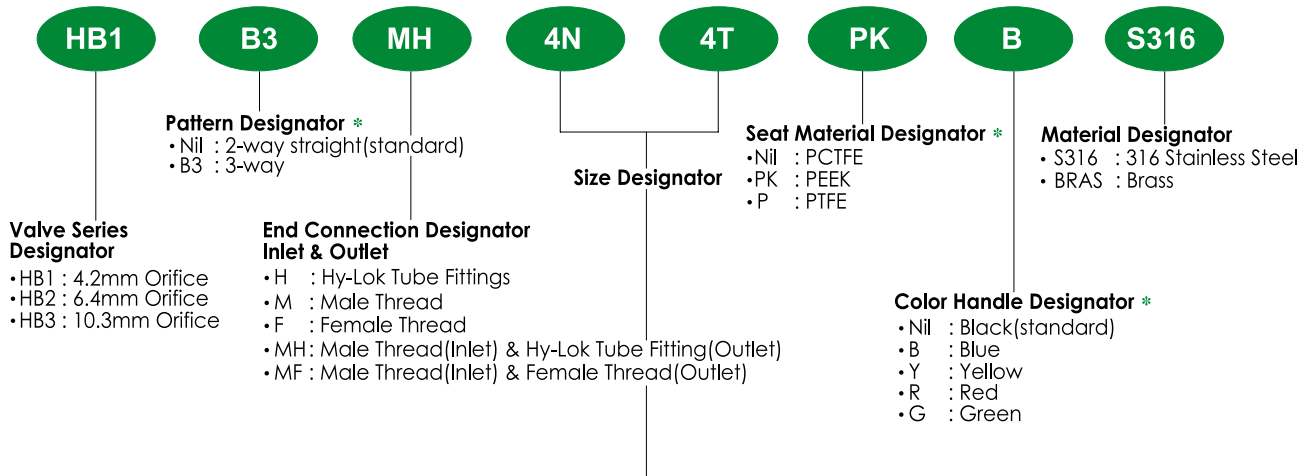
• available for maintenance as below.

| Kits                | Components   | Basic Ordering No. |
|---------------------|--|--------------------|
| HB Set<br>① ② ③ ④ ⑤ | two PTFE end packing and retainer seal,<br>two retainer with PCTFE seats,<br>one set stem packing and stem washer,<br>one handle set | KIT -* - SET       |
| Seat Retainer<br>①  | two retainer with PCTFE seats  | KIT -* - SR - PC   |
|                     | two retainer with PEEK seats   | KIT -* - SR - PK   |
|                     | two retainer with PTFE seats   | KIT -* - SR - P    |
| Retainer Seal<br>②  | two PTFE retainer seal   | KIT -* - RS        |
| End Packing<br>③    | two PTFE end packing   | KIT -* - EP        |
| Stem Packing<br>④   | one PTFE stem packing sets,<br>two stem washer   | KIT -* - SP        |
| Handle<br>⑤         | handle with screw  | KIT -* - HD- **    |



For a complete ordering number, substitute desired valve series and pattern designator for "\*", color handle designator for "\*\*", (see ordering information)  
e.g. KIT - HB2HD - B ( HB2 series blue color handle kit)

## Ordering Information



• Pipe Thread Designation NPT

| Nom. Size   | 1 / 8 | 1 / 4 | 3 / 8 | 1 / 2 | 3 / 4 |
|-------------|-------|-------|-------|-------|-------|
| Designation | 2N    | 4N    | 6N    | 8N    | 12N   |

• Tube O.D. Designation

| Fractional Tube | Tube O.D.   | 1 / 16 | 1 / 8 | 1 / 4 | 3 / 8 | 1 / 2 | 3 / 4 |
|-----------------|-------------|--------|-------|-------|-------|-------|-------|
|                 | Designation |        | 1T    | 2T    | 4T    | 6T    | 8T    |
| Metric Tube     | Tube O.D.   | 3mm    | 6mm   | 8mm   | 10mm  | 12mm  | 16mm  |
|                 | Designation |        | 3M    | 6M    | 8M    | 10M   | 12M   |

\* No designator is required for standard.  
eg. HB1MH-4N4T-S316

### SAFETY in VALVE SELECTION

Proper installation, material compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.