



# FUGITIVE EMISSION SOLUTIONS

HEALTH & SAFETY SERIES



D E D I C A T E D T O I N N O V A T I O N

COMPR4CT II

# FUGITIVE EMISSION SOLUTIONS



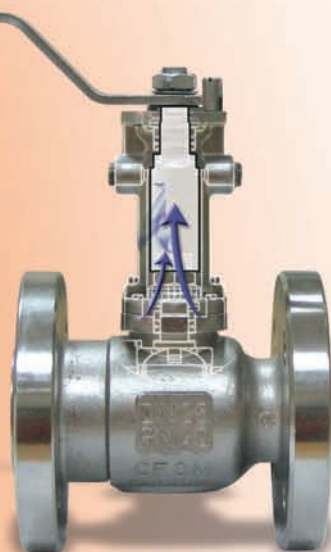
## Background

Industry is making major contributions towards improving our global environment by reducing hazardous emissions, reducing product losses and addressing environmental concerns. Since the advent of the "Clean Air Act Amendment" of 1990 (CAAA), introduced by the U.S. Environmental Protection Agency (EPA),

industrial plants have revised their specifications regarding fugitive emissions.

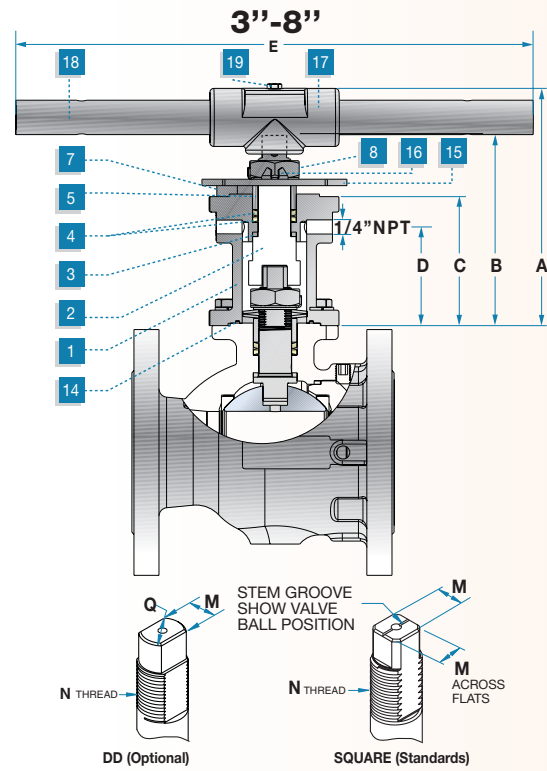
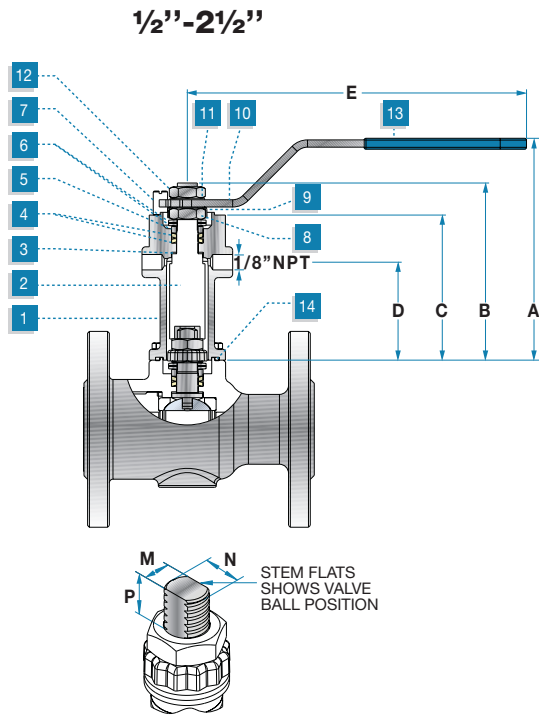
## The Challenge

Eliminating product emissions is one of the most serious challenges for process industry and consequently can be most costly to control. As part of its Health & Safety initiative campaign Habonim has introduced additional Security to the valve stem design for critical applications.



## Design features

- Modular design uses a double defence sealing concept. The first defence line is based on the valve stem seal arrangement, while the second line is integral with the F.E. bonnet.
- A machined lip on the bonnet bottom plane will ensure a safe fit over the valve ISO pad. A static seal will provide security to the atmosphere.
- The bonnet design allows a sensing device to be fitted between the two sealing arrangements, In case of first defence line failure an alert can be immediately identified.
- Any media is contained within the F.E. bonnet until valve maintenance can be safely held.
- Double blowout proof stems.
- Linear alignment between valve stem, extension and actuator to reduce side load.
- Rigid construction.
- Precision stem and packing bore finish.
- Fire-safe valve stem packing and valve connection to bonnet (upon request)
- Stainless steel cast CF8M housing material as standard.
- Exotic materials Alloy-20, Hasteloy-C22, Monel and more (upon request).
- Various solutions are offered by Habonim when sizing F.E. bonnets to customer applications: HC (high cycle), N (Control valves), KG (fire-safe and thermal applications), and the HermetiX™ Habonim patented stem packing.



1/2''-8''

| Item | Description      | Material              | Qty |
|------|------------------|-----------------------|-----|
| 1    | Body             | SS ASTM A351 CF8M     | 1   |
| 2    | Stem             | SS ASTM A276 316/316L | 1   |
| 3    | Stem Thrust Seal | CARBON FILLED PTFE    | 1   |
| 4    | HermetiX™ Seal   | CARBON FILLED PTFE    | 1   |
| 5    | Follower         | SS ASTM A276 316/316L | 1   |
| 6    | Disc Spring      | SS 17-7PH             | 2   |
| 7    | Stop Pin         | SS ASTM A582 303      | 1   |
| 8    | Stem Nut         | SS ASTM A194 316      | 1   |
| 9    | Locking Clip     | SS ASTM A164 304      | 1   |
| 10   | Handle           | SS ASTM A240 430      | 1   |

| Item | Description        | Material               | Qty |
|------|--------------------|------------------------|-----|
| 11   | Serrated Washer    | SS 410                 | 1   |
| 12   | Handle Nut         | SS ASTM A194 316       | 1   |
| 13   | Handle Sleeve      | VINYL PLASTISOL        | 1   |
| 14   | Bonnet Seal        | PTFE / GRAPHITE        | 1   |
| 15   | Stop Plate         | SS ASTM A240 430       | 1   |
| 16   | Tab Lock Washer    | SS ASTM A240 304       | 1   |
| 17   | Wrench Head        | ASTM A47 MALEABLE IRON | 1   |
| 18   | Wrench Handle      | SS 304                 | 1   |
| 19   | Wrench Handle Bolt | SS ISO 4014 A2-70      | 1   |

Dimensions (mm)

| Reduced port Valve size |      | FE size | A      | B     | C     | D     | E      | M     | N          | P     | ISO |
|-------------------------|------|---------|--------|-------|-------|-------|--------|-------|------------|-------|-----|
| 1/2" & 3/4"             | mm   | 05      | 114    | 89.1  | 80    | 55.25 | 150    | 5.5   | 3/8" UNF   | 7.2   | F03 |
|                         | inch |         | 4.488  | 3.508 | 3.150 | 2.175 | 5.906  | 0.217 |            | 0.283 |     |
| 1" & 1 1/4"             | mm   | 10      | 122    | 97.4  | 80    | 54    | 187    | 7.54  | 7/16" UNF  | 7.2   | F04 |
|                         | inch |         | 4.803  | 3.835 | 3.150 | 2.126 | 7.362  | 0.297 |            | 0.283 |     |
| 1 1/2" & 2"             | mm   | 15      | 154    | 129.4 | 100   | 77    | 236    | 8.71  | 9/16" UNF  | 8     | F05 |
|                         | inch |         | 6.063  | 5.094 | 3.937 | 3.031 | 9.291  | 0.343 |            | 0.315 |     |
| 2 1/2"                  | mm   | 25      | 144    | 118.1 | 100   | 76.5  | 236    | 8.71  | 9/16" UNF  | 13.5  | F07 |
|                         | inch |         | 5.669  | 4.650 | 3.937 | 3.012 | 9.291  | 0.343 |            | 0.531 |     |
| 3" & 4"                 | mm   | 30      | 187    | 196.6 | 150   | 76.5  | 401    | 18.9  | 1" UNS     | 16.7  | F10 |
|                         | inch |         | 7.362  | 7.740 | 5.906 | 3.012 | 15.787 | 0.744 |            | 0.657 |     |
| 6" & 8"                 | mm   | 60      | 273    | 219   | 150   | 100   | 916    | 28.45 | 1 1/2" UNF | 26.2  | F12 |
|                         | inch |         | 10.748 | 8.622 | 5.906 | 3.937 | 36.063 | 1.120 |            | 1.031 |     |

F.E. Stem operating torque

| Reduced port Valve size | FE size | HC / HermetiX™ |           | AI packing |           | Control valves (N) / Graphite packing (KG) |           |
|-------------------------|---------|----------------|-----------|------------|-----------|--|-----------|
|                         |         | N*m            | lb*f*inch | N*m        | lb*f*inch | N*m  | lb*f*inch |
| 1/2" & 3/4"             | 05      | 2              | 17.7      | 3          | 26.5      | 4  | 35.4      |
| 1" & 1 1/4"             | 10      | 5              | 44.2      | 7          | 62        | 9  | 79.6      |
| 1 1/2" & 2"             | 15      | 7              | 62        | 11         | 97.3      | 13   | 115       |
| 2 1/2"                  | 25      | 7              | 62        | 11         | 97.3      | 13   | 115       |
| 3" & 4"                 | 30      | 13             | 115       | 18         | 159.3     | 25   | 221.2     |
| 6" & 8"                 | 60      | 32             | 283       | 43         | 380.5     | 60   | 531       |

DD Dimensions

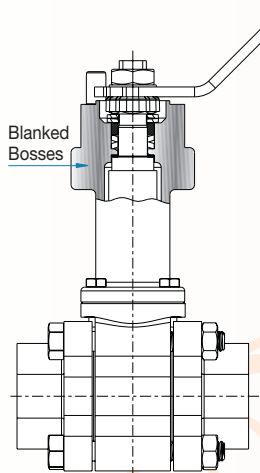
| Reduced port Valve size |      | M     | Q     |
|-------------------------|------|-------|-------|
| 3" & 4"                 | mm   | 15.9  | 22.7  |
|                         | inch | 0.626 | 0.894 |
| 6" & 8"                 | mm   | 23.75 | 35.2  |
|                         | inch | 0.935 | 1.368 |

Note: When sizing an actuator add the above figures to the valve operating torque

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## Additional Options

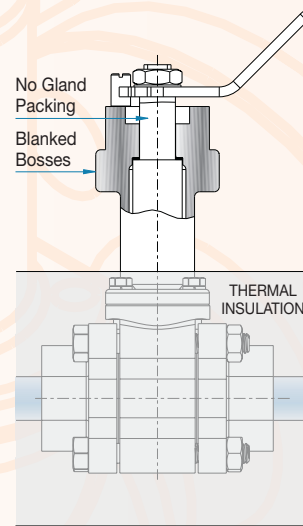


**Media Containment Unit (MCU)**

Suitable for critical applications when:

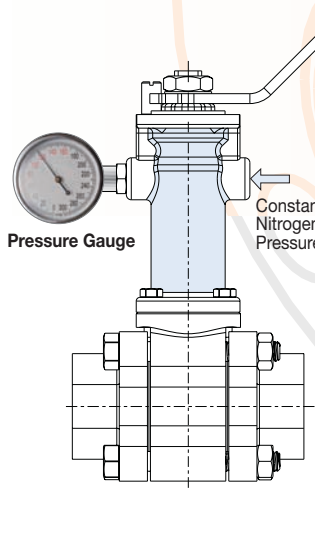
- Valve stem maintenance needs to be programmed.
- A combination of high temperature and high cycle conditions.
- Valve is in low temperature applications. (down to  $-70^{\circ}\text{C}$  /  $-57^{\circ}\text{F}$ )

**Caution!**  
MCU is not to be used with toxic media



**Extended Bonnet (EXT)**

- When valve and pipe lines need to be insulated.
- When valve operation must be elevated from extreme temperature areas.
- When direct mounting of actuator to a valve is not suitable.



**Pressure Box Sealing**

A special F.E. bonnet was designed for a fire safe, high cycle operation within a highly aggressive and explosive application. The chamber between the two seals was pressurized with inert gas, which eliminates the presence of oxygen inside the FE bonnet and the risk of explosive conditions. Constant pressure of inert gas, 1 bar above the line pressure, eliminated any possible stem leak of the aggressive media. A pressure gauge connected to one of the FE tapped holes detect any pressure loss which correlates to the valve stem packing condition.

**Caution!**  
Pressure within the bonnet must not exceed 50 bar!

## How to order

### Fugitive Emission Bonnet (FE)

- **870763xx9** HermetiX™ Habonim patented stem packing.
- **870763xx9-AC** Virgin PTFE Chevron packing
- **870763xx9-N** Control application
- **870763xx9-HC** High cycle
- **870763xx9-KG** Thermal flow

### Media Containment Unit (MCU)

- **870764xx9** (suffix adder as per the above 763 F.E. bonnet)

### Extended Bonnet (EXT)

- **870769xx9** (No suffix required)

| Reduced port Valve size | FE size (xx) |
|-------------------------|--------------|
| 1/2" & 3/4"             | 05           |
| 1" & 1 1/4"             | 10           |
| 1 1/2" & 2"             | 15           |
| 2 1/2"                  | 25           |
| 3" & 4"                 | 30           |
| 6" & 8"                 | 60           |

In accordance with our policy to strive for continuous improvement of the product, we reserve the right to alter the dimensions, technical data and information included in this catalogue when required.

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**Headquarters Habonim ISRAEL**  
Tel: +972-4-6914911, Fax: +972-4-6914902  
sales\_international@habonim.com

**ISRAEL**  
Tel: +972-4-6914903  
Fax: +972-4-6914935  
sales\_israel@habonim.com

[www.habonim.com](http://www.habonim.com)

**North America**  
Toll Free Phone: 1-866-261-8400  
Toll Free Fax: 1-866-243-9959  
sales\_usa@habonim.com

**Europe**  
Habonim Europe  
Tel: +972-4-6914733  
Fax: +972-4-6914703  
sales\_europe@habonim.com

**U.K.**  
Habonim UK  
Tel: +44-1633-484554  
Fax: +44-1633-482252  
sales@habonimuk.com

**China**  
Habonim China  
Tel: +86-21-6473-8523  
Fax: +86-21-6445-3191  
sales\_china@habonim.com

**Asia Pacific**  
Habonim-Vaas  
sales\_asiapacific@vaasval.com

**India**  
Habonim - VAAS  
Tel: +91-44-5224-8500  
Fax: +91-44-5215-2473  
sales@vaasval.com