



H2

Needle-and-seat chokes

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H2 Choke Applications and Service Criteria

The family of H2* needle-and-seat chokes is ideally suited for a broad range of choke applications, including wellhead, production manifolds, choke and kill manifolds, well testing and clean-up operations. The H2 classic choke handles standard, erosive and corrosive service in stride with pressure ratings up to 15,000 psi.

Two configurations are available:

- **Positive choke**—provides a fixed flow condition with a large selection of available bean sizes and types.
- **Adjustable choke**—provides variable flow rates, but can be locked into position if a fixed flow rate is required.

An optional combination bean/seat converts the adjustable choke to a positive/adjustable choke for bringing on the well slowly. Once the desired flow rate is reached, the choke can then be operated as a positive choke. This reduces wear on the wing or master gate valves because they are not used to control flow.

In every application, the H2 classic choke delivers long life and low maintenance.

Available Sizes and Pressures

| Nominal size, in | Model numbers | Available needle/ max orifice sizes, in | Pressure range, psi |
|------------------|------------------------|---|---------------------|
| 2 | H2 classic, H2I, H2IMS | 1 | 2,000–10,000 |
| 2 | H2 classic | 1 | 15,000 |
| 3 | H2 classic, H2I, H2IMS | 2 | 2,000–10,000 |
| 4 | H2 classic | 3 | 2,000–5,000 |

For positive choke beans see trim selection page.

Material Recommendations

| API material class | Body | Bonnet | Choke trim (stem, seat, bean) |
|---|---------------------------|---------------------------|---|
| AA & BB general service | Alloy steel | Alloy steel | Stainless steel or stainless steel and tungsten carbide |
| CC non-sour, high CO ₂ | Stainless steel | Stainless steel | Stainless steel or stainless steel and tungsten carbide |
| DD & EE-0.5 sour, low CO ₂ [†] | Alloy steel | Alloy steel | Stainless steel and tungsten carbide |
| FF-0.5 sour, high CO ₂ [†] | Stainless steel | Stainless steel | Stainless steel and tungsten carbide |
| HH High H ₂ S, High CO ₂ [†] | Corrosion Resistant Alloy | Corrosion Resistant Alloy | Corrosion Resistant Alloy and Tungsten Carbide |

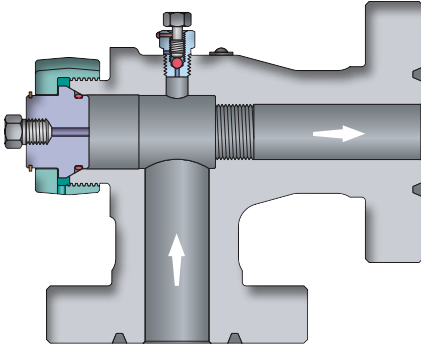
[†] In compliance with NACE Standard MR-01-75.



Bonnet Closures for H2 Chokes

The H2 classic choke has an externally threaded body and is the industry standard for needle and seat chokes.

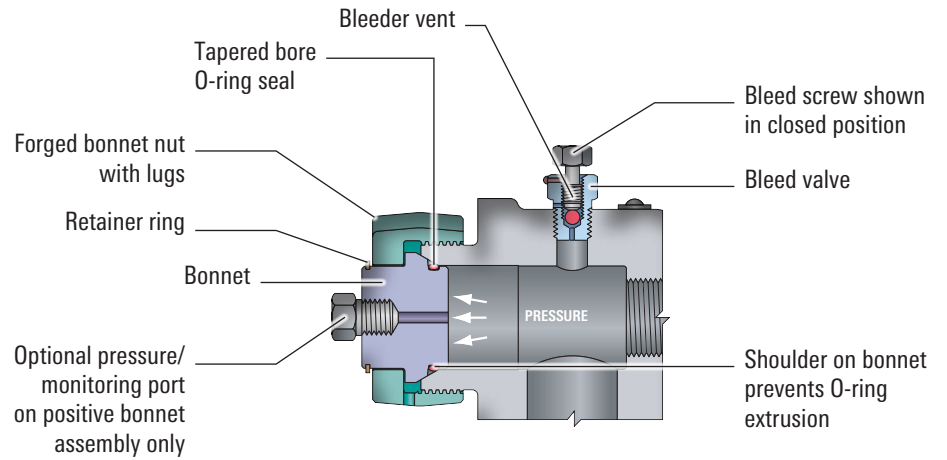
- Body pressure is automatically vented when the operator unscrews the bonnet nut one turn.
- Bleed valve allows the operator to safely vent the body cavity pressure prior to removal of the bonnet assembly.



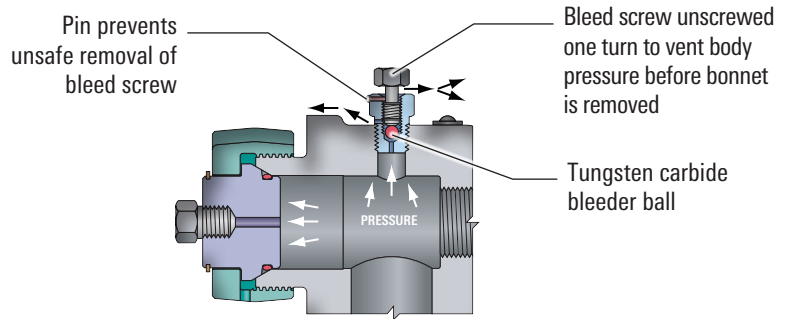
H2 classic choke

H2 classic choke externally threaded bonnet closure

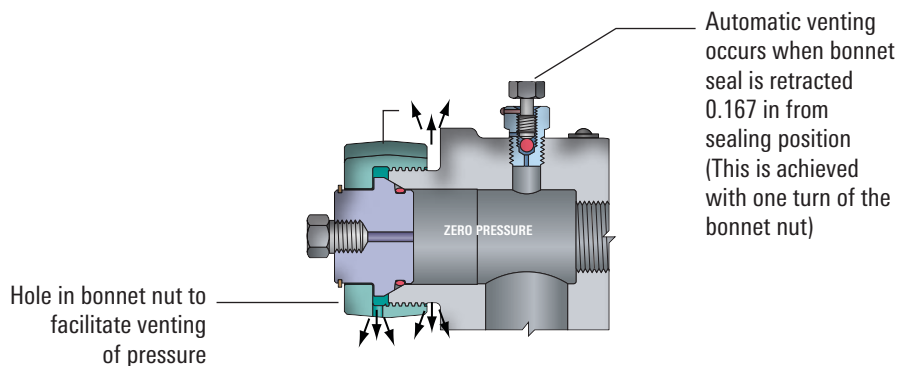
Disassembly safety features



H2 classic choke bonnet assembly shown in closed position



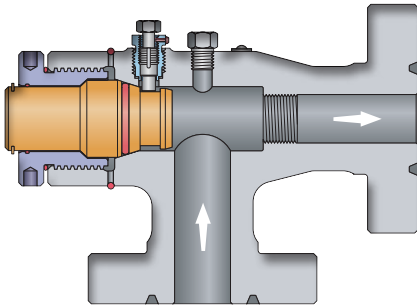
Bleed valve screw unscrewed bore pressure begins to vent



Bonnet nut unscrewed one turn, additional venting occurs, five turns remain before nut can be removed

The H2I internal body needle-and-seat choke has an internally threaded body and features a retained bonnet closure.

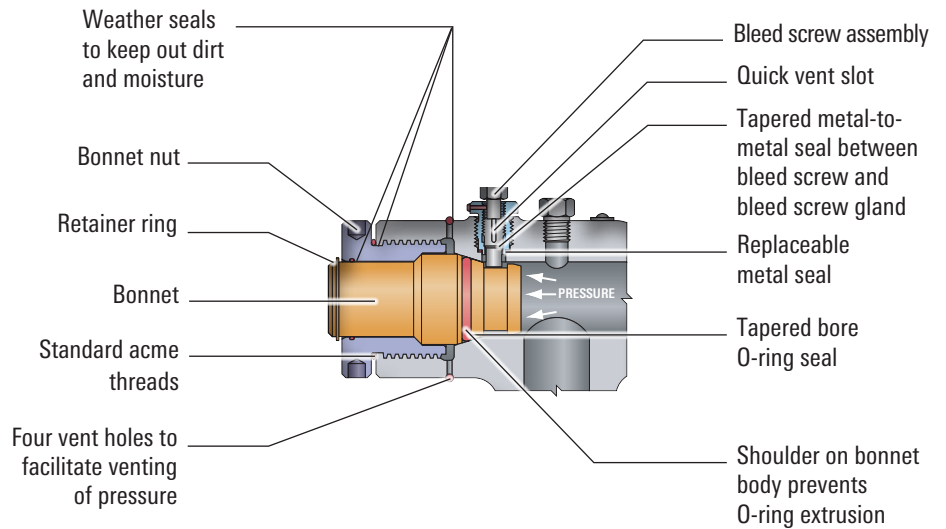
- Patented bleed screw assembly requires the operator to safely vent the body pressure before the bonnet assembly can be removed.
- Each body (positive or adjustable configuration) is equipped with a port for monitoring or venting pressure.
- Acme threads can be cleaned and inspected easily on both the bonnet assembly and body.
- Bleed screw assembly provides metal-to-metal sealing.
- H2IMS option adds a metal-to-metal bonnet seal in addition to the standard features of the H2I adjustable choke.



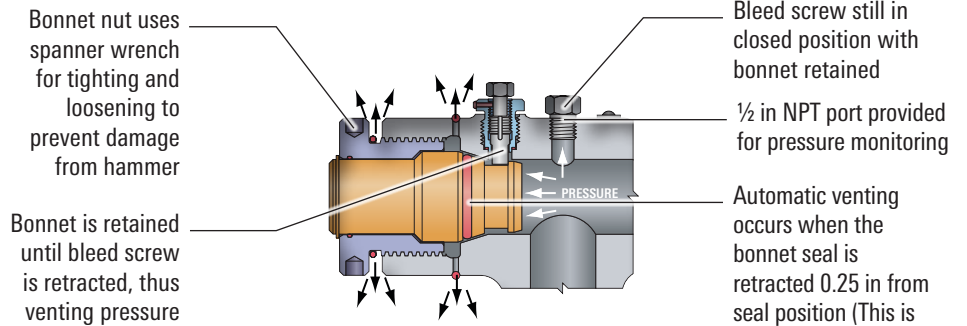
H2I adjustable choke

H2I classic internally threaded bonnet closure

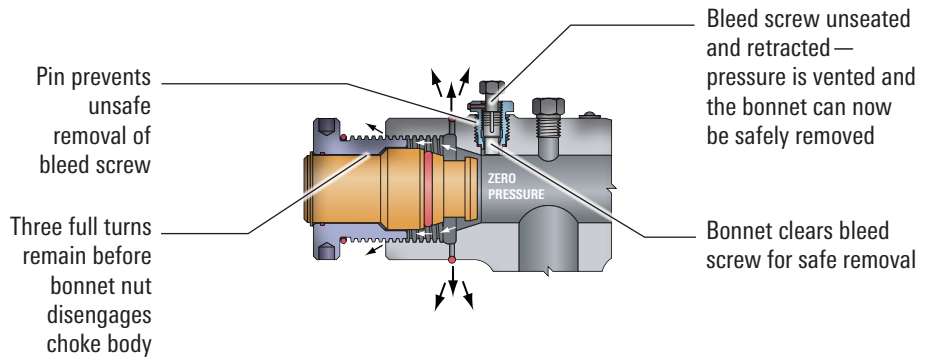
Disassembly safety features



Bonnet assembly shown in closed position



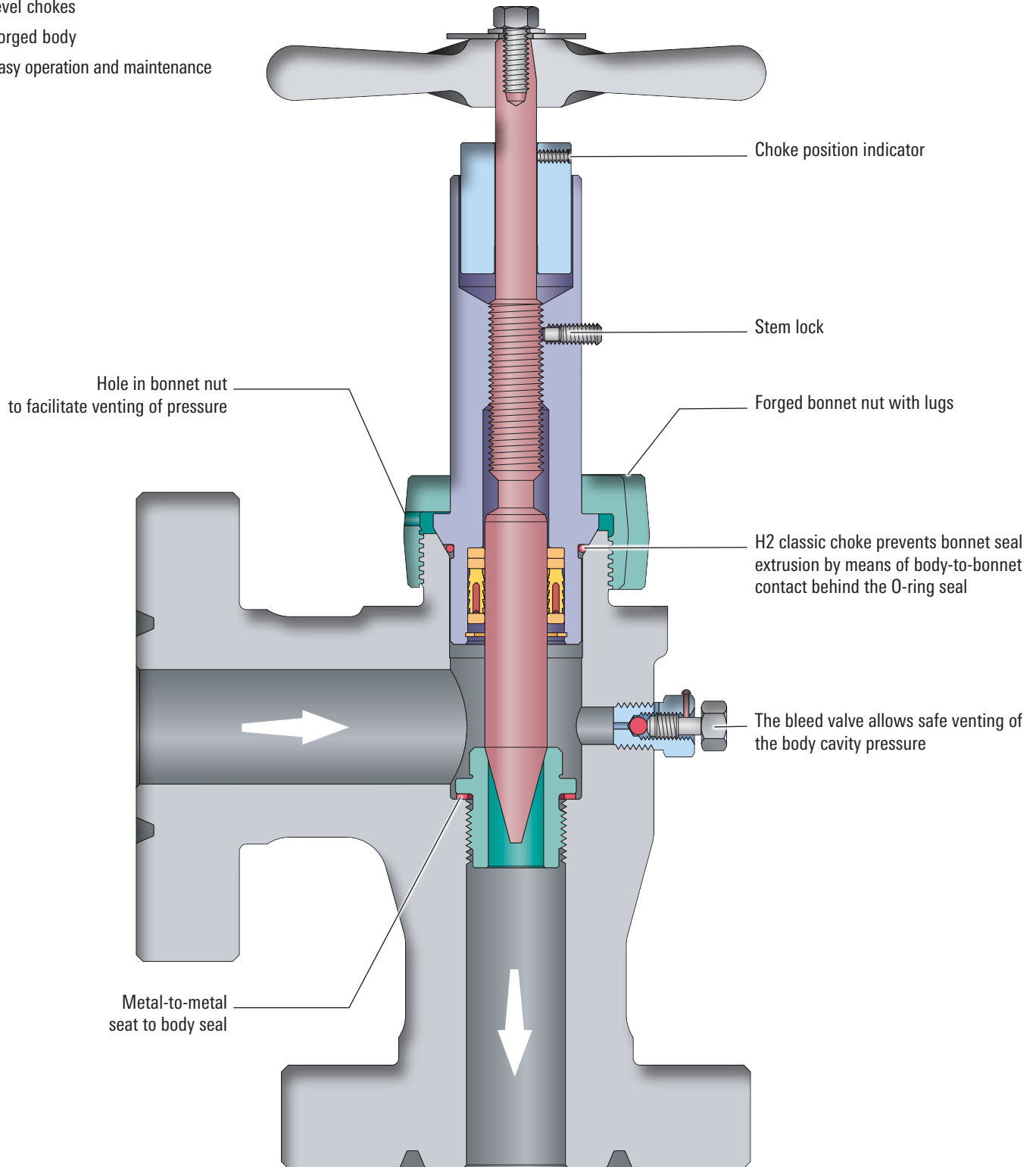
Bonnet nut unscrewed one turn
(bonnet seal unseated and pressure is vented)



Bonnet nut unscrewed six turns

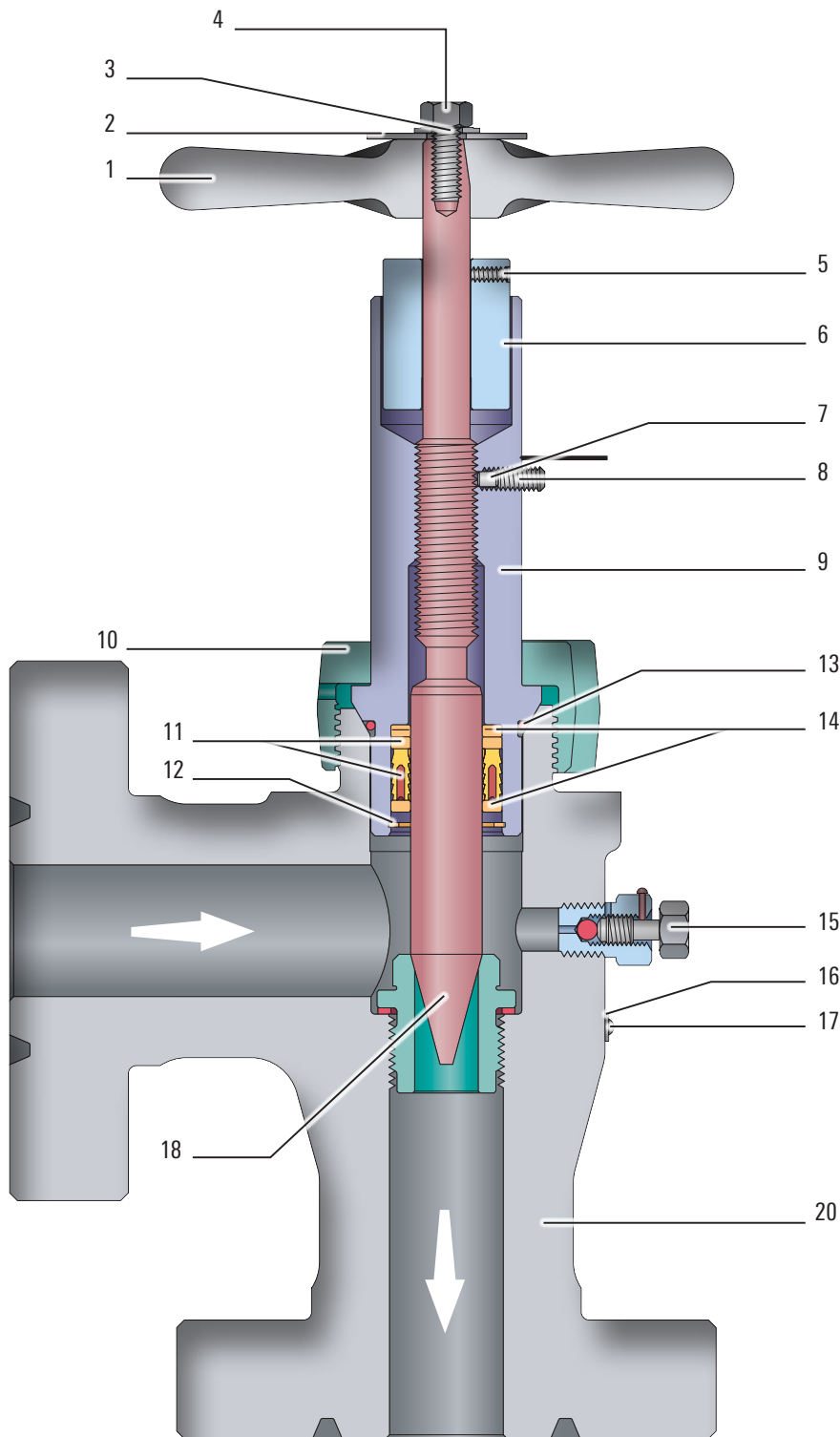
H2 Classic Choke

- H2 choke is designed and manufactured in accordance with API 6A, including performance verification testing for PR2 level chokes
- Forged body
- Easy operation and maintenance



H2 classic adjustable choke 10 ksi assembly

- 2 in nominal (1 in maximum orifice) and 3 in nominal (2 in maximum orifice)
- 2,000–10,000 psi working pressure



| Components | | |
|------------|-------------------------------|----------|
| Item | Description | Quantity |
| 1 | Handwheel | 1 |
| 2 | Instruction plate | 1 |
| 3 | Flat washer | 1 |
| 4 | Hex bolt | 1 |
| 5 | Set screw | 1 |
| 6 | Indicator | 1 |
| 7 | Plug [†] | 1 |
| 8 | Set screw | 1 |
| 9 | Bonnet | 1 |
| 10 | Bonnet nut | 1 |
| 11 | Packing assembly [†] | 1 |
| 12 | Retainer ring | 1 |
| 13 | O-Ring [†] | 1 |
| 14 | Junk ring | 2 |
| 15 | Bleed valve | 1 |
| 16 | Name plate | 1 |
| 17 | Drive screw | 2 |
| 18 | Needle assembly [†] | 1 |
| 19 | Seat assembly [†] | 1 |
| 20 | Body | 1 |

[†] Recommended spare parts

[‡] H2 classic choke needle assemblies are not interchangeable with H21 and H2IMS adjustable chokes.

NOTE: Routine cleaning and inspection of the bonnet closure threads are recommended for longer service life.

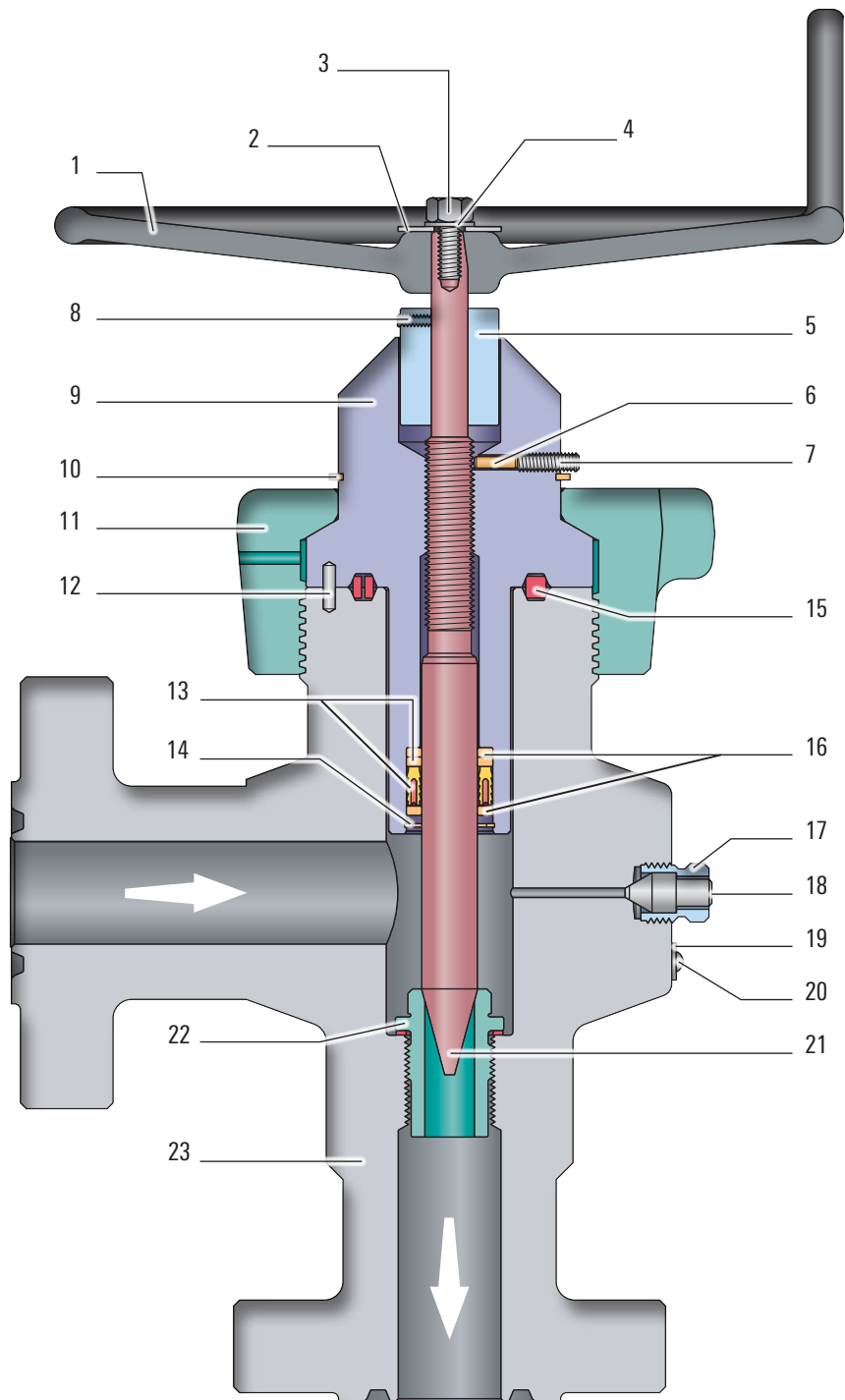
H2 classic adjustable choke 15 ksi assembly

- 2 in nominal (1 in maximum orifice)
- 15,000 psi working pressure

Components

| Item | Description | Quantity |
|------|-------------------|----------|
| 1 | Handwheel | 1 |
| 2 | Instruction plate | 1 |
| 3 | Hex bolt | 1 |
| 4 | Flat washer | 1 |
| 5 | Indicator | 1 |
| 6 | Plug† | 1 |
| 7 | Set screw | 1 |
| 8 | Set screw | 1 |
| 9 | Bonnet | 1 |
| 10 | Retainer ring | 1 |
| 11 | Bonnet nut | 1 |
| 12 | Roll pin | 1 |
| 13 | Packing assembly† | 1 |
| 14 | Retainer ring | 1 |
| 15 | Bonnet gasket† | 1 |
| 16 | Junk ring | 2 |
| 17 | Gland | 1 |
| 18 | Blind plug | 1 |
| 19 | Name plate | 1 |
| 20 | Drive screw | 2 |
| 21 | Needle assembly† | 1 |
| 22 | Seat assembly† | 1 |
| 23 | Body | 1 |

† Recommended spare parts



NOTE: Routine cleaning and inspection of the bonnet closure threads are recommended for longer service life.

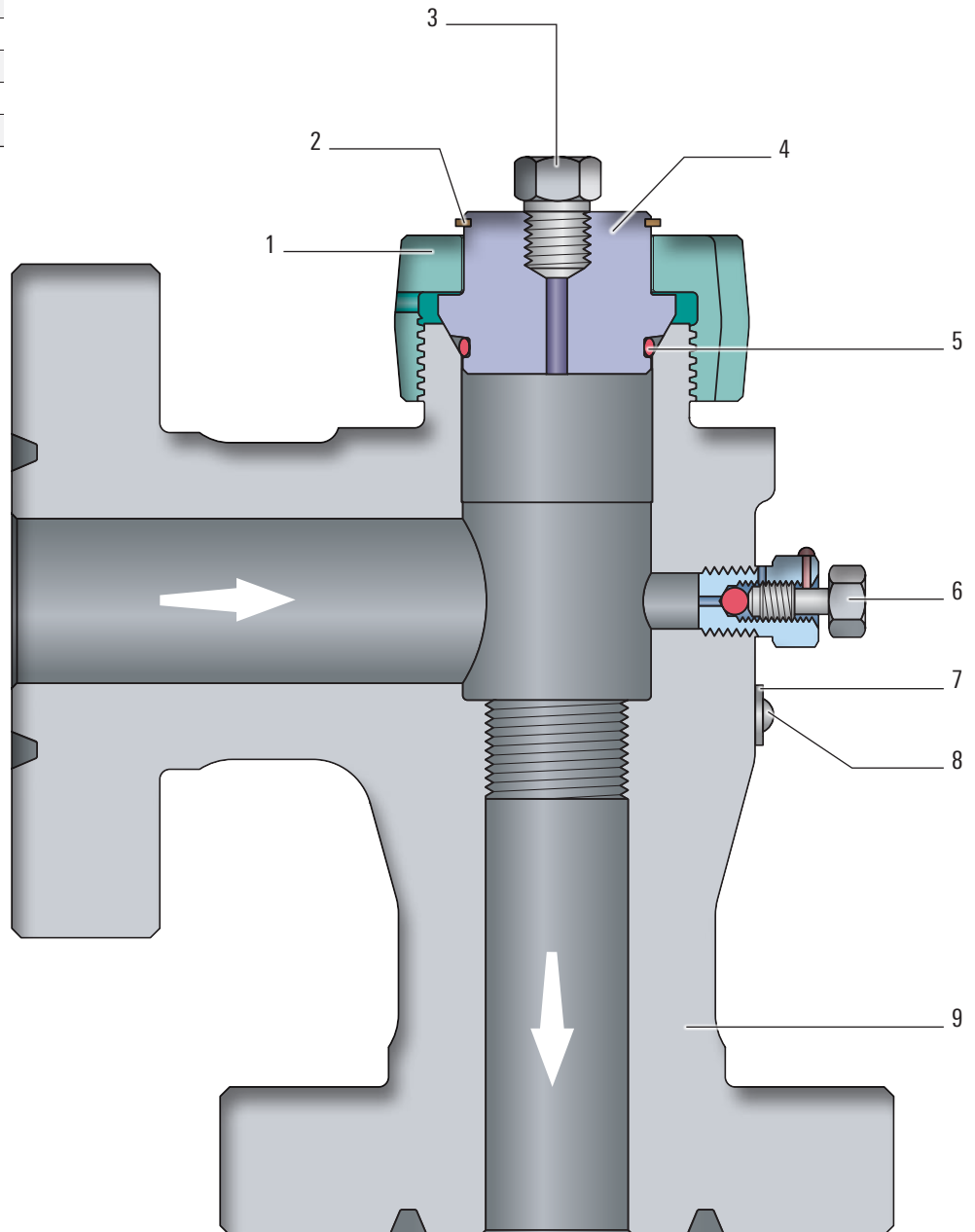
H2 classic positive choke 10 ksi assembly

- 2 in nominal (1 in maximum orifice) and 3 in nominal (2 in maximum orifice)
- 2,000–10,000 psi working pressure

Components

| Item | Description | Quantity |
|------|---------------|----------|
| 1 | Bonnet nut | 1 |
| 2 | Retainer ring | 1 |
| 3 | Pipe plug | 1 |
| 4 | Bonnet | 1 |
| 5 | O-Ring† | 1 |
| 6 | Bleed valve | 1 |
| 7 | Name plate | 1 |
| 8 | Drive screw | 2 |
| 9 | Body | 1 |

† Recommended spare parts



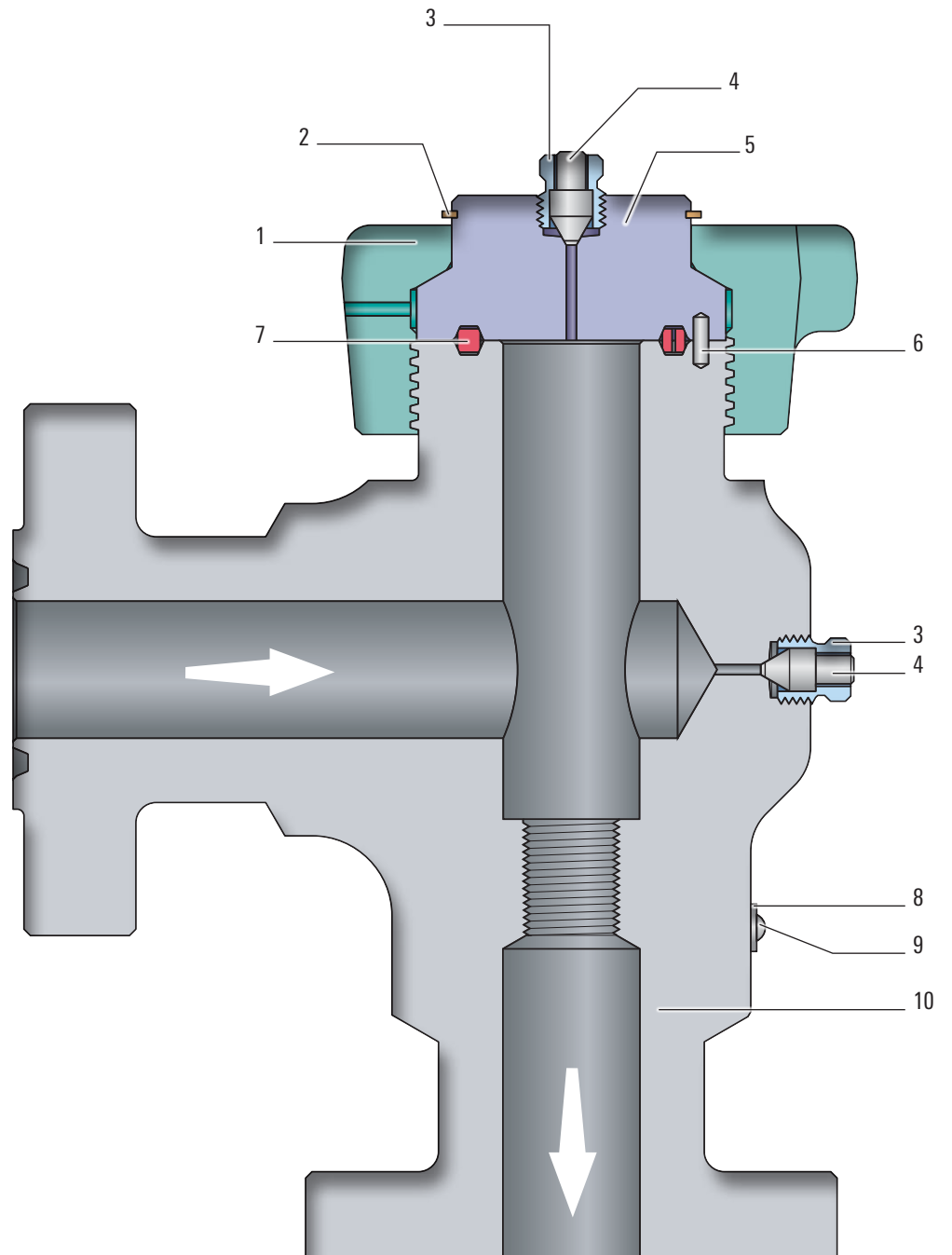
NOTES: Flow beans are sold separately. Routine cleaning and inspection of the bonnet closure threads are recommended for longer service life.

H2 classic positive choke 15 ksi assembly

- 2 in nominal (1 in maximum orifice)
- 15,000 psi working pressure

| Components | | |
|------------|----------------|----------|
| Item | Description | Quantity |
| 1 | Bonnet nut | 1 |
| 2 | Retainer ring | 1 |
| 3 | Gland | 2 |
| 4 | Blind plug | 2 |
| 5 | Bonnet | 1 |
| 6 | Roll pin | 1 |
| 7 | Bonnet gasket† | 1 |
| 8 | Name plate | 1 |
| 9 | Drive screw | 2 |
| 10 | Body | 1 |

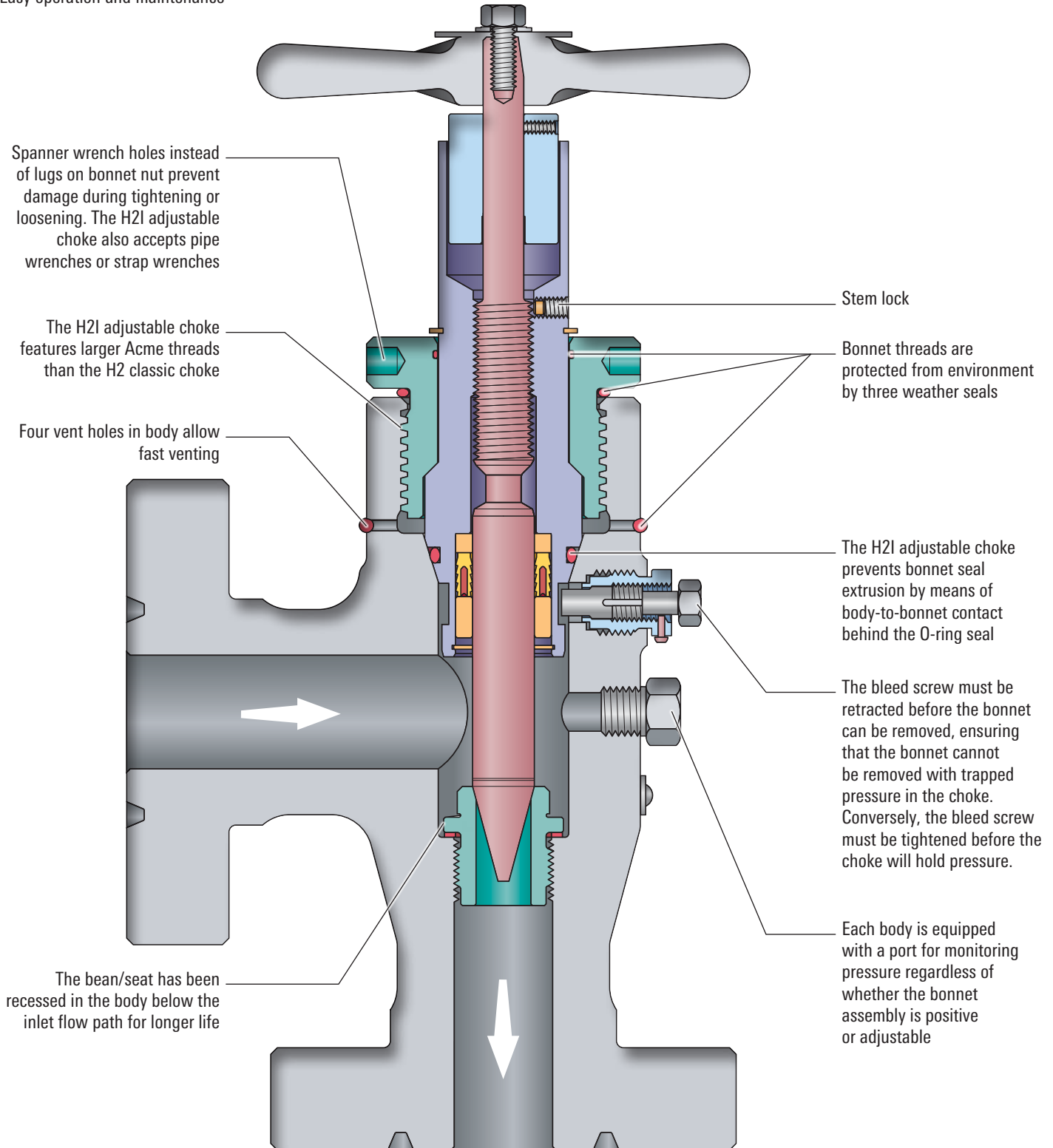
† Recommended spare parts



NOTES: Flow beans are sold separately. Routine cleaning and inspection of the bonnet closure threads are recommended for longer service life.

H2I Adjustable Choke

- The H2I adjustable choke is designed and manufactured in accordance with API 6A, including performance verification testing for PR2 level chokes
- H2IMS adds metal-to-metal bonnet seal in addition to the standard features of the H2I adjustable choke
- Forged body
- “Retained bonnet” closure improves operator safety
- Easy operation and maintenance



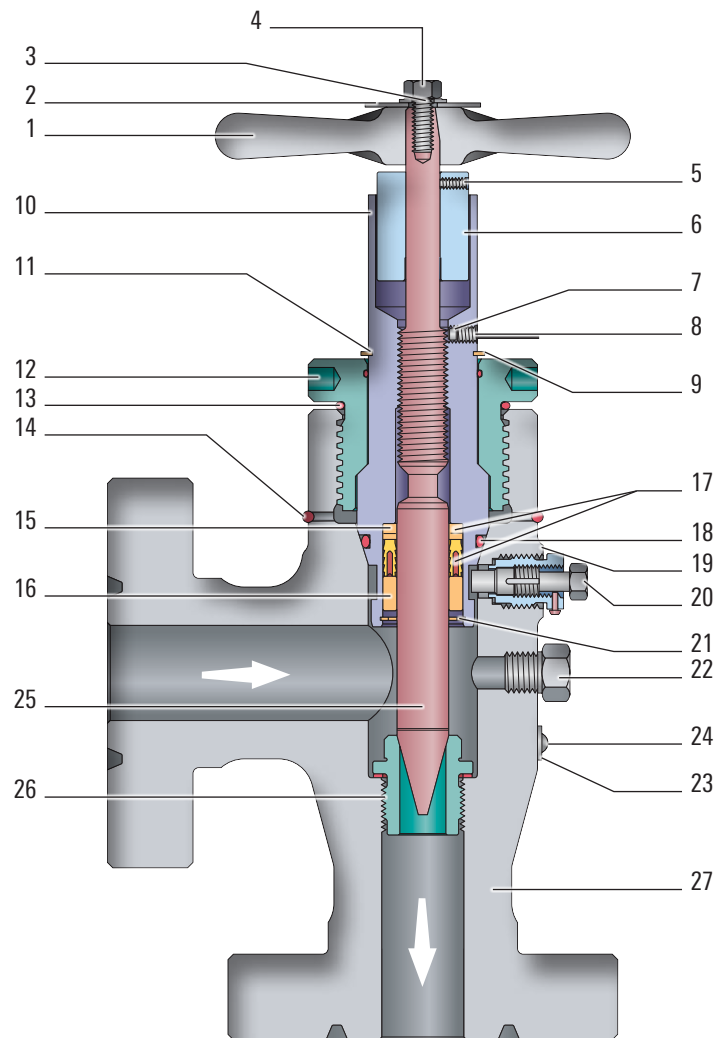
H2I adjustable choke assembly

- 2 in nominal (1 in maximum orifice) and 3 in nominal (2 in maximum orifice)
- 2,000–15,000 psi working pressure

Components

| Item | Description | Quantity |
|------|----------------------|----------|
| 1 | Handwheel | 1 |
| 2 | Instruction plate | 1 |
| 3 | Flat washer | 1 |
| 4 | Hex bolt | 1 |
| 5 | Set screw | 1 |
| 6 | Indicator | 1 |
| 7 | Plug† | 1 |
| 8 | Set screw | 1 |
| 9 | Retaining ring | 1 |
| 10 | Bonnet | 1 |
| 11 | O-Ring† | 1 |
| 12 | Bonnet nut | 1 |
| 13 | O-Ring† | 1 |
| 14 | O-Ring† | 1 |
| 15 | Guide bushing | 1 |
| 16 | Junk ring | 1 |
| 17 | Packing assembly† | 1 |
| 18 | O-Ring† | 1 |
| 19 | Metal seal† | 1 |
| 20 | Bleed screw assembly | 1 |
| 21 | Retainer ring | 1 |
| 22 | Pipe plug | 1 |
| 23 | Name plate | 1 |
| 24 | Drive screw | 2 |
| 25 | Needle assembly† | 1 |
| 26 | Seat assembly† | 1 |
| 27 | Body | 1 |

† Recommended spare parts



NOTES: H2 classic choke needle assemblies are not interchangeable with H2I and H2IMS chokes. Routine cleaning and inspection of the bonnet closure threads are recommended for longer service life. See "Cameron H2I Adjustable Chokes Service and Maintenance Procedures."

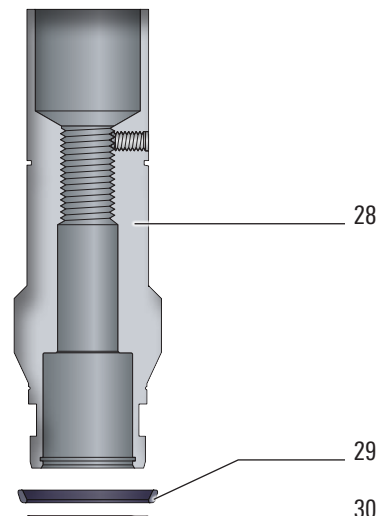
H2IMS Adjustable Choke

- Bonnet conversion kit

Components

| Item | Description | Quantity |
|------|----------------|----------|
| 28 | Bonnet | 1 |
| 29 | Metal seal† | 1 |
| 30 | Retainer ring† | 1 |

† Recommended spare parts



NOTE: The parts list for the H2IMS adjustable choke is the same as the H2I choke with the exception of items 28, 29 and 30. Those items replace items 10 and 18 of the H2I choke. Field conversion of the H2I choke is simple.

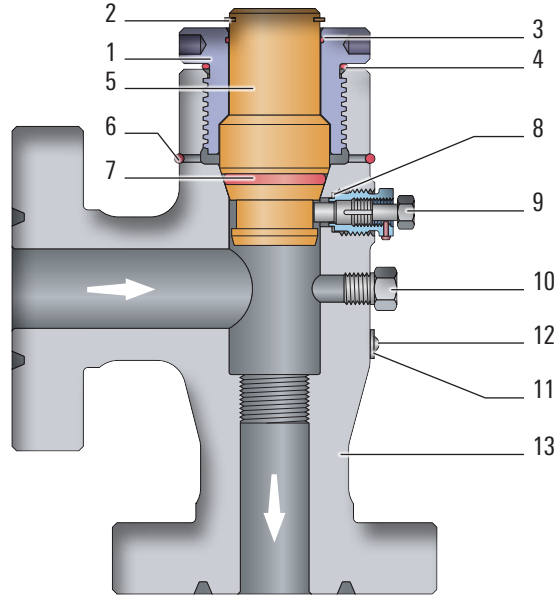
H2I positive adjustable choke assembly

- 2 in nominal (1 in maximum orifice) and 3 in nominal (2 in maximum orifice)
- 2,000–10,000 psi working pressure

Components

| Item | Description | Quantity |
|------|----------------------|----------|
| 1 | Bonnet nut | 1 |
| 2 | Retainer ring | 1 |
| 3 | O-Ring† | 1 |
| 4 | O-Ring† | 1 |
| 5 | Bonnet | 1 |
| 6 | O-Ring† | 1 |
| 7 | O-Ring† | 1 |
| 8 | Metal seat | 1 |
| 9 | Bleed screw assembly | 1 |
| 10 | Pipe plug | 1 |
| 11 | Name plate | 1 |
| 12 | Drive screw | 2 |
| 13 | Body | 1 |

† Recommended spare parts



NOTES: Flow beans are sold separately. Routine cleaning and inspection of the bonnet closure threads are recommended for longer service life.

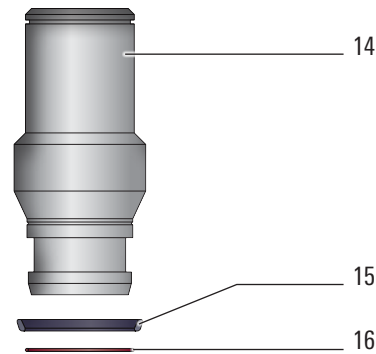
H2IMS positive adjustable choke

- Bonnet conversion kit

Components

| Item | Description | Quantity |
|------|----------------|----------|
| 14 | Bonnet | 1 |
| 15 | Metal seal† | 1 |
| 16 | Retainer ring† | 1 |

† Recommended spare parts

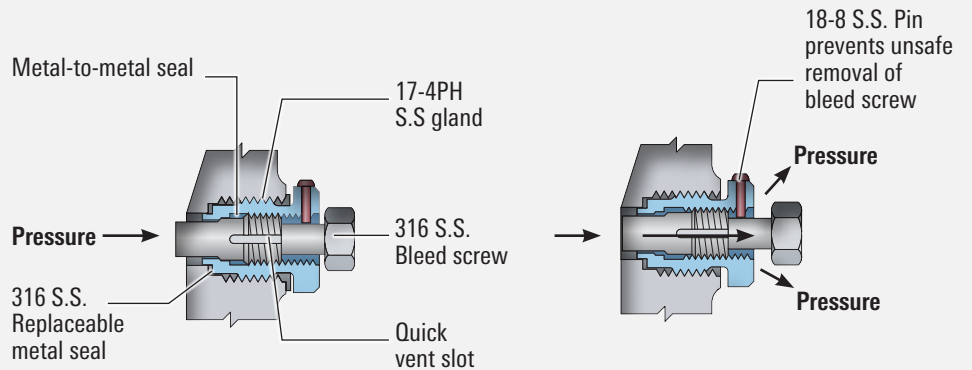


NOTES: The parts list for the H2IMS adjustable choke is the same as the H2I choke with the exception of items 14, 15 and 16. Those items replace items 5 and 7 of the H2I choke. Field conversion of the H2I choke is simple.

Safety features of bleed screw assembly

The gland is secured in the body with thread locking compound to prevent inadvertent removal.

- The bleed screw is the only moving part of the assembly.
- A reseatable metal-to-metal seal between the bleed screw and gland allows venting past the slot in the bleed screw.
- The gland and replaceable metal seal protect the choke body threads from wear.
- The pin prevents the bleed screw from being removed from the gland, thus reducing the chance of unsafe removal or losing the bleed screw.



Bleed screw assembly in closed position

Bleed screw unseated and retracted, pressure is vented, and choke bonnet can now be safely removed

Choke Trim

- All beans and seats are interchangeable with the H2 classic choke, H2I adjustable choke, and H2IMS adjustable choke.
- The H2I adjustable choke and H2IMS adjustable choke utilize the same longer stem/needle assembly to fit the recessed seat feature.
- The H2 classic choke stem/needle assembly is shorter, and therefore, not interchangeable with the H2I adjustable choke and H2IMS adjustable choke needle assemblies.
- Two wear resistant trims are available:
 - Standard trim: Induction hardened stainless steel.
 - Super trim: Stainless steel with tungsten carbide wear surfaces.



*Honest John
bean adapter*



Honest John bean



*Big John
flow bean*



*Big John
combination bean*

Choke beans

| Bean | 2 in positive | 3 in positive |
|---|-------------------------------------|--------------------------------------|
| Honest John stainless steel (to be used with HJC adapter) | $\frac{3}{64}$ – $\frac{49}{64}$ in | $\frac{3}{64}$ – $\frac{49}{64}$ in |
| Honest John ceramic or tungsten carbide lined to be used with HJC adapter | $\frac{3}{64}$ – $\frac{29}{64}$ in | $\frac{3}{64}$ – $\frac{29}{64}$ in |
| Big John | $\frac{3}{64}$ – $\frac{61}{64}$ in | $\frac{3}{64}$ – $\frac{129}{64}$ in |
| Combination bean | 2 in combination | 3 in combination |
| Big John combination bean and seat-standard | $\frac{6}{64}$ – $\frac{61}{64}$ in | $\frac{6}{64}$ – $\frac{129}{64}$ in |

Beans are available in increments of $\frac{1}{64}$ in.

Beans & seats are available with ceramic or tungsten carbide lining.

Flow coefficient, C_v (max.) for the adjustable chokes

| Type of trim and size | 2 in nominal body size 1 in max. orifice | 3 in nominal body size 2 in max. orifice | 4 in nominal body size 3 in max. orifice |
|-----------------------------------|---|---|---|
| Standard trim (maximum C_v) | 26 | 86 | 212 |

C_v values given in table are subject to variation depending on valve geometry and options such as wear sleeves and back pressure beans.

Required Tools

| Choke size | Bean types | Bean wrench P/N | Spanner wrench P/N |
|------------------------|-------------|-----------------|------------------------|
| All sizes | Honest John | 627586-01 | N/A |
| 2 in nom. 1 in orifice | Big John | 626964-01 | 712377 [†] |
| 3 in nom. 2 in orifice | Big John | 626963-01 | 172092-01 [†] |
| 4 in nom. 3 in orifice | Big John | 19892 | N/A |

[†] For H2I and H2IMS chokes bonnet nut removal/assembly.

The H2 choke utilizes a simple needle and seat-type trim to control the flow and/or pressure and is used in many applications. The H2 choke is a development of the "classic" H2 choke that incorporates a device which positively stops the choke from being dismantled without pressure being first vented from the body. The needle and seat chokes feature positive or adjustable trims, hardened steel and tungsten carbide trims, and a lockable trim position for manual chokes.



H2 Chokes



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