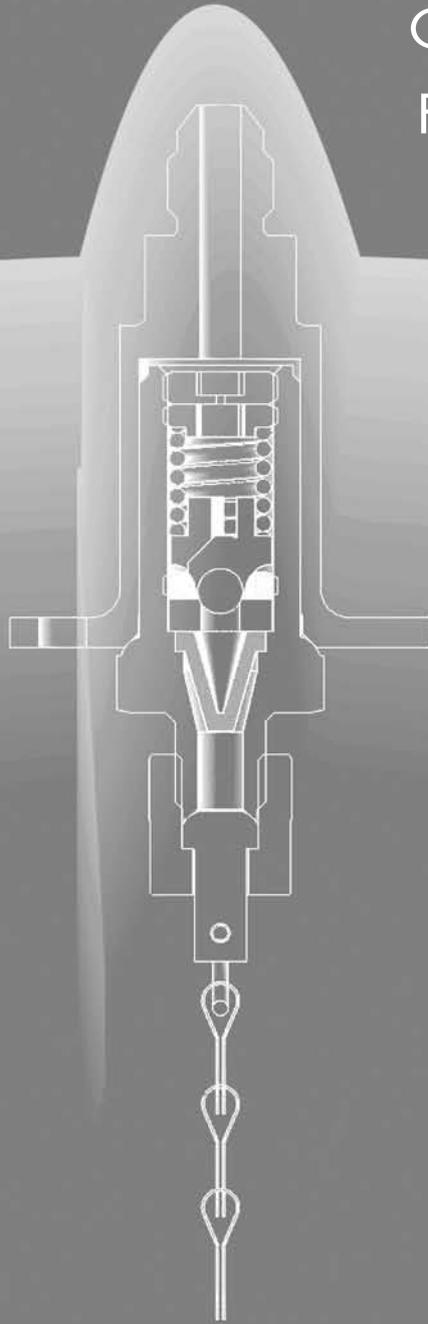
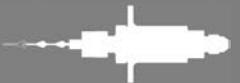


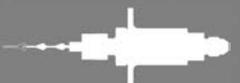


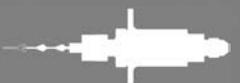
# Oxygen Compatible Flow Control Valves

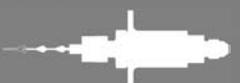


Custom fit 

Non-flammable 

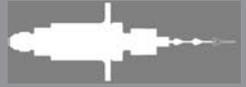
Wide range of options 

All-metallic construction 

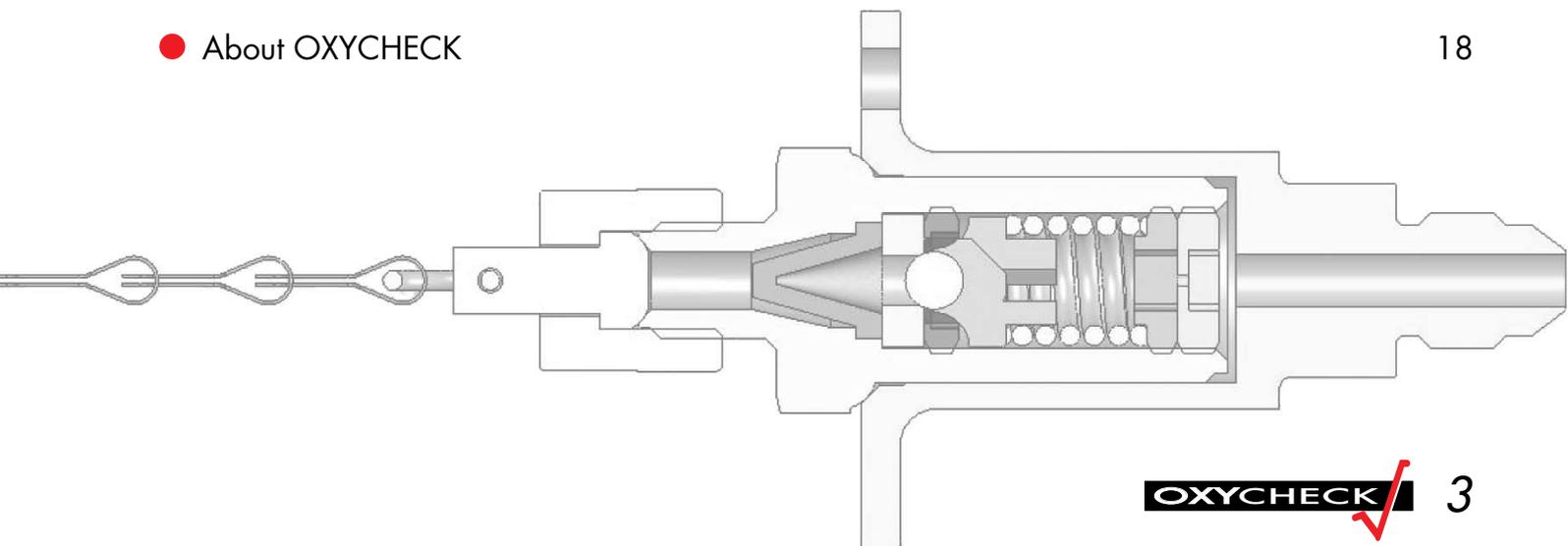
New or existing oxygen systems 

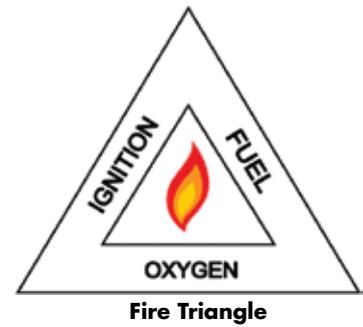
Exceptional fire safety & performance in oxidising environments 





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## ● Fires in Oxygen Systems

For a fire to occur, it is necessary for all three legs of the Fire Triangle to be present: Ignition Source, Fuel and Oxygen. Oxygen systems are unique because it is normally impossible to remove any one of the three legs of the Fire Triangle. Any mechanism that releases heat, such as the impact of high-speed contaminant particles, the burning of lubricants or seal materials, adiabatic compression of the gas – and many others – can be a sufficient ignition source to start a fire in an oxygen system. Further, in pressurised and/or concentrated oxygen, most materials – including many common engineering metals such as stainless steel or aluminum – are fuels that readily support burning. As a result, there is typically an elevated fire risk in oxygen systems and this higher risk is recognised the world over.

When this risk is not appropriately mitigated, such as through correct selection of components and materials, a fire can occur. Fires in oxygen systems release large amounts of energy and, since the oxygen is often subsequently vented, secondary fires commonly occur involving surrounding structures, making these component failures and ignitions especially destructive.

### **\$100 million+ US Navy P3 Orion Fire**

This fire was thought to have started in an oxygen system manifold check valve and then spread throughout the aircraft, destroying the airframe and all onboard systems.

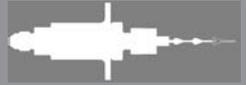


Above: Aircraft fire in progress

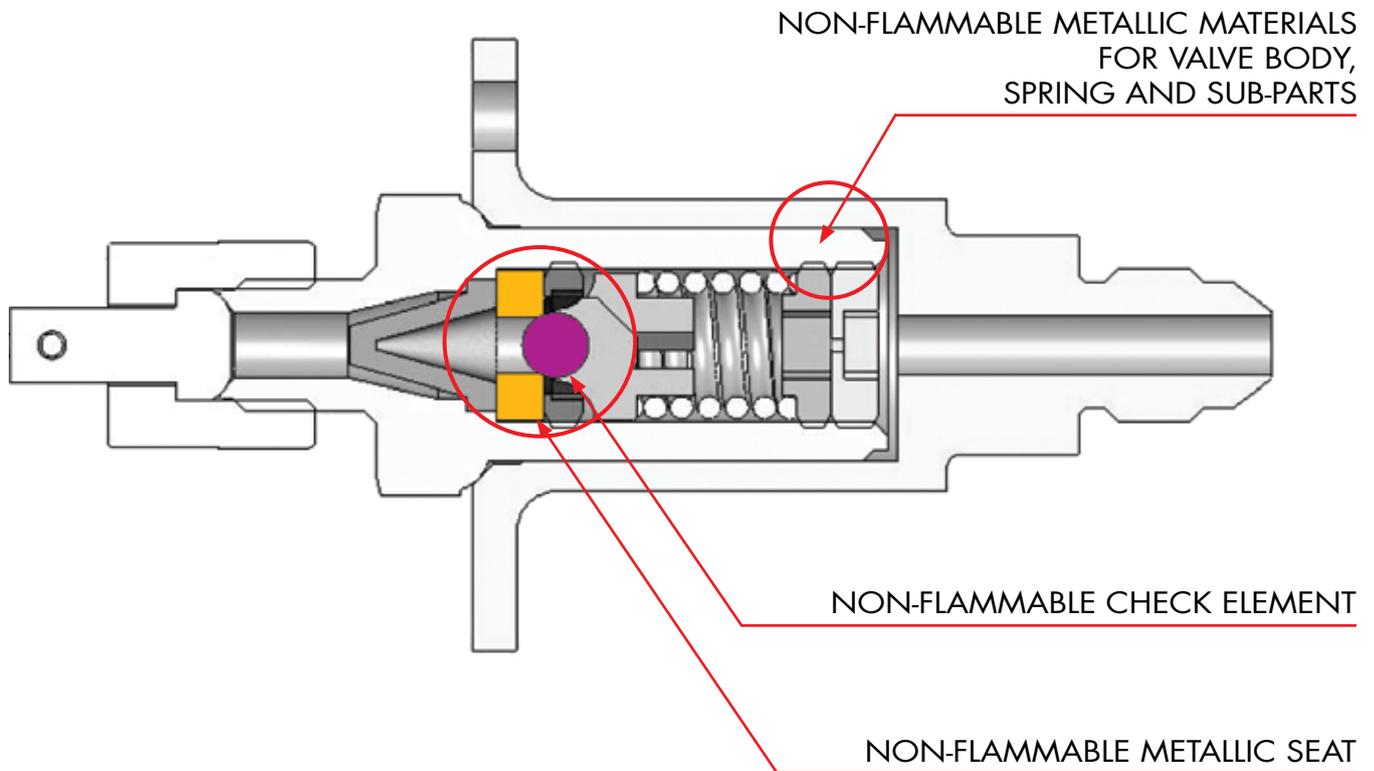
Right: Fire aftermath

Far Right: Oxygen manifold assembly after fire





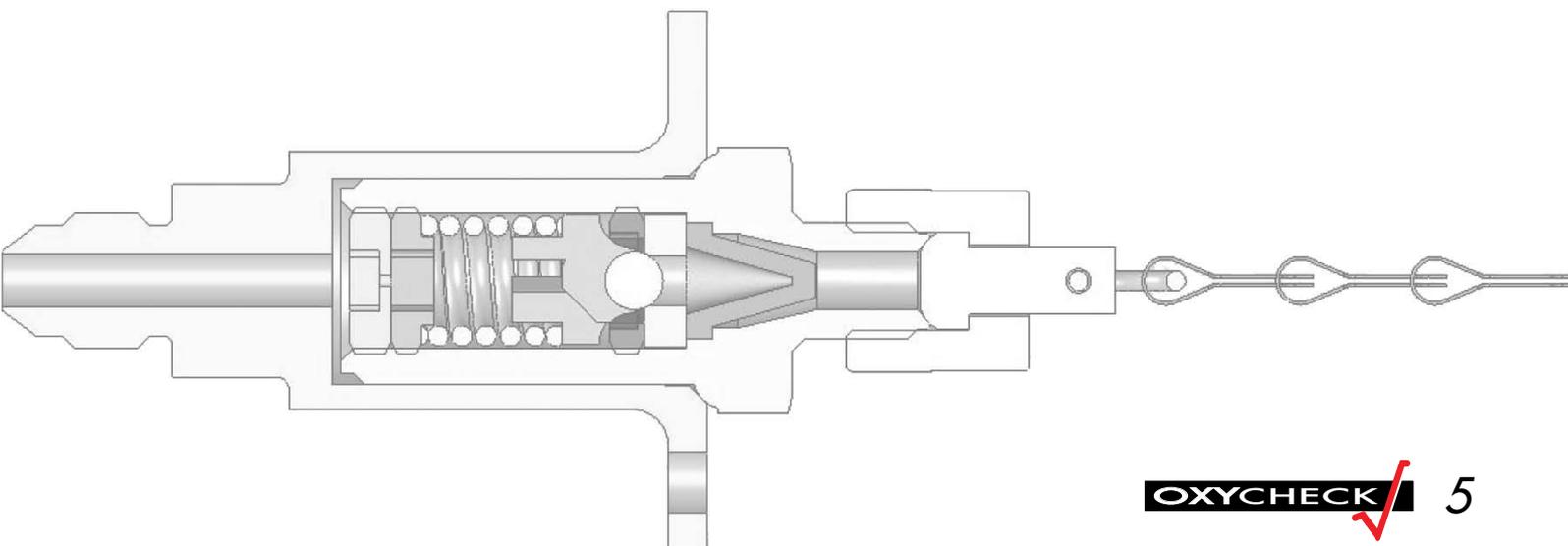
OXYCHECK oxygen system components are made entirely from materials that are non-flammable in oxygen at pressures equal to or greater than the maximum allowable working pressure. This essentially removes the Fuel Leg of the Fire Triangle and greatly reduces both the risk of a fire occurring and the consequences of an unanticipated ignition. This rigorous engineering process results in oxygen system components with an unprecedented level of fire safety.

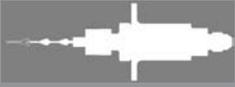


OXYCHECK's patent-pending flow control technology enables a high-quality seal and exceptional performance without any flammable and/or non-metallic seating or sealing materials, thus providing:

- Exceptional levels of fire safety in pressurised/concentrated oxygen
- Excellent performance in extreme, corrosive and/or oxidising environments

OXYCHECK advanced manufacturing capabilities and worldwide network of technical experts ensures the provision of first class components and service for any oxygen system application.





# Applications

## ● Aviation (Civilian and Defence)

When it comes to ensuring the safety of aircrew and passengers, along with protecting high-value aircraft/assets and completing critical missions, OXYCHECK flow control components offer the highest level of performance and safety. Proven in use under conditions of vibration and temperature extremes, OXYCHECK's robust components are superbly suited to aviation applications:



- **Emergency**
- **Crew support**
- **Ground support equipment**
- **Removable/in-place systems**

## ● Medical/Life Support

OXYCHECK flow control components meet stringent cleanliness standards and contain no fluorinated materials, making them especially well suited to life support systems. They represent an extremely safe and cost-effective solution for critical, bio-medical applications including:

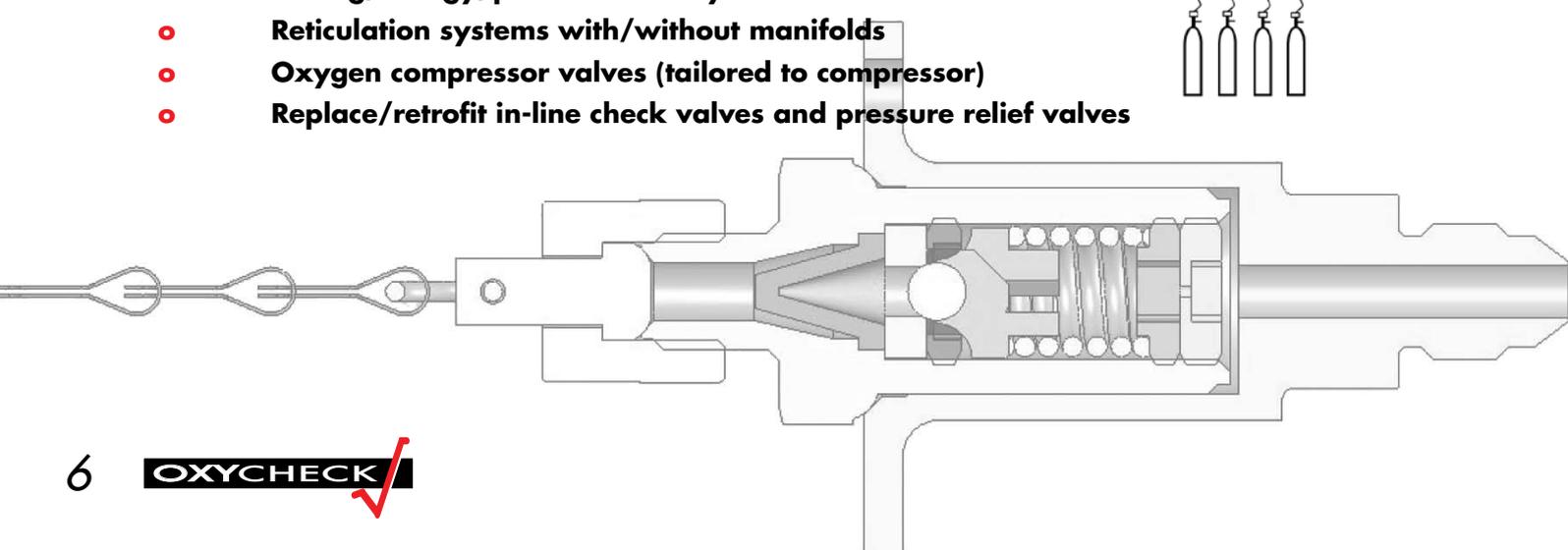
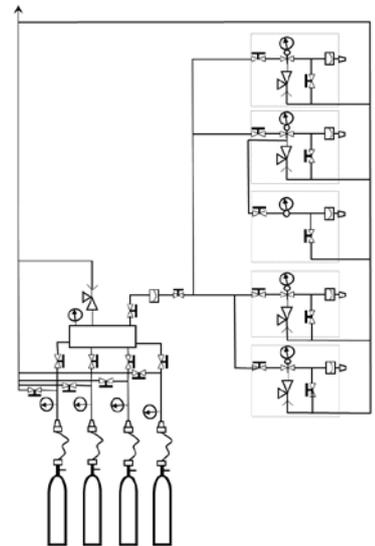


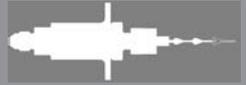
- **Hospital systems**
- **SCUBA/charge systems**
- **Hyperbaric applications**
- **Home health care systems**
- **Emergency medical systems and services**
- **Valve Integrated Pressure Regulator (VIPR) and Integrated Valve Regulator (IVR)**

## ● Industrial

OXYCHECK has a wide range of robust, reliable and competitively priced check valves and pressure relief valves that are well suited for any new or existing industrial systems including:

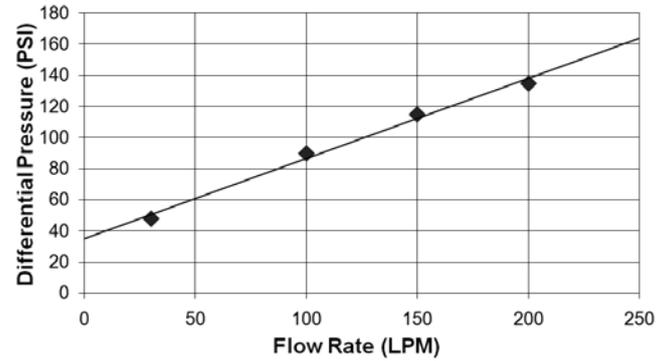
- **High/low pressure systems**
- **Mining/energy/petrochemical systems**
- **Reticulation systems with/without manifolds**
- **Oxygen compressor valves (tailored to compressor)**
- **Replace/retrofit in-line check valves and pressure relief valves**





## ● Performance

- Maximum Allowable Working Pressure (MAWP) variable up to 10 000 psia / 69 MPa / 690 bar
- Burst Pressure: 1.5 to 2.5 MAWP
- Check valve cracking pressure: 15 – 30 psi
- Pressure relief valve set pressure up to 4500 psia / 28 MPa / 280 bar
- Exceptional endurance and lifetime
- Reverse leak rates typically < 0.1 scc/min



Typical Flow Rates vs Pressure

## ● Extreme Conditions

- Proven performance over temperature range -57 °C to 95 °C
- Proven operation in severe aviation vibration environment
- Proven operation in oxidising atmospheres



OXYCHECK component test panel



Extreme environment acceptance testing



Hydrostatic pressure testing

## ● Oxygen Compatibility

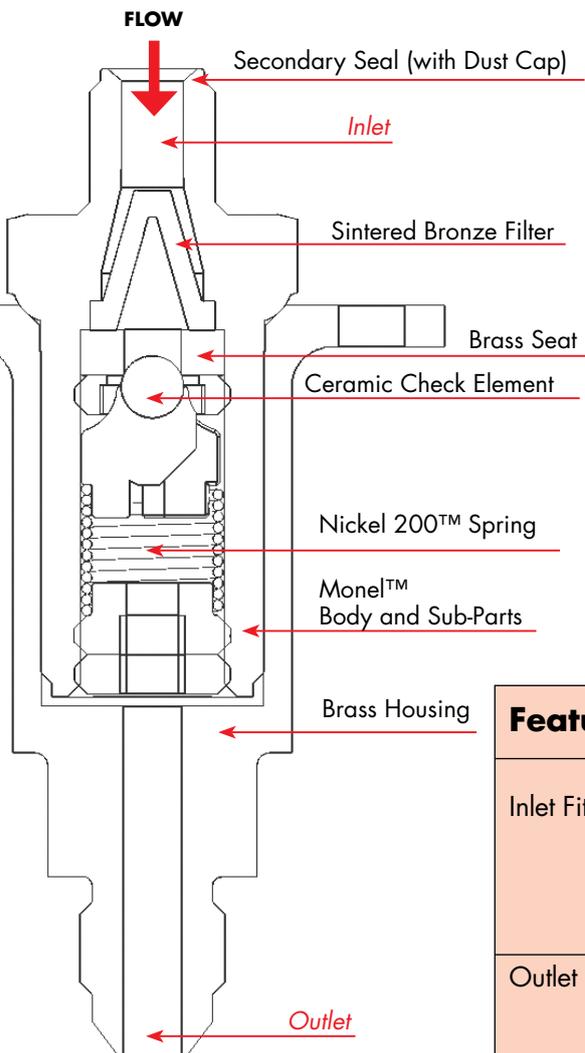
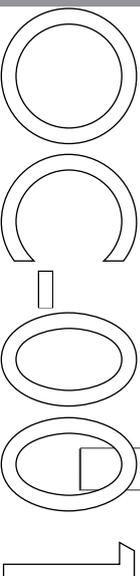
- All parts cleaned in three-stage ultrasonic cleaning process to military specifications (NVR < 33 mg/m<sup>2</sup>, < 3 mg/ft<sup>2</sup>)
- All components supplied oxygen clean and double-bagged
- Materials: Brass, Nickel 200™, Monel K-500™, ceramic – all metals non-flammable in pure oxygen at pressures ≥ 10 000 psia / 69 MPa / 690 bar according to flammability test standard ASTM G 124
- Filtration: 7 micron (nominal), sintered bronze filter (if required)
- No non-metallic materials or lubricants

## ● Customer Satisfaction

OXYCHECK flow control components are designed with your applications in mind. OXYCHECK products are highly compatible with existing systems and can be easily retrofitted. So whether you're setting up a new system or performing routine maintenance, upgrade to an OXYCHECK component.

● **High Pressure Oxygen Fill Valve (HPOFV)**

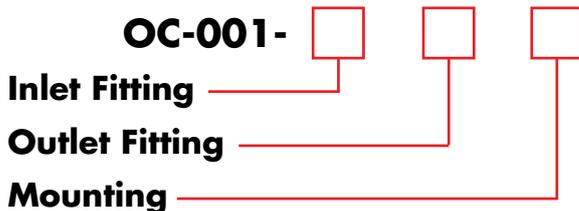
For aircraft and other high pressure oxygen systems



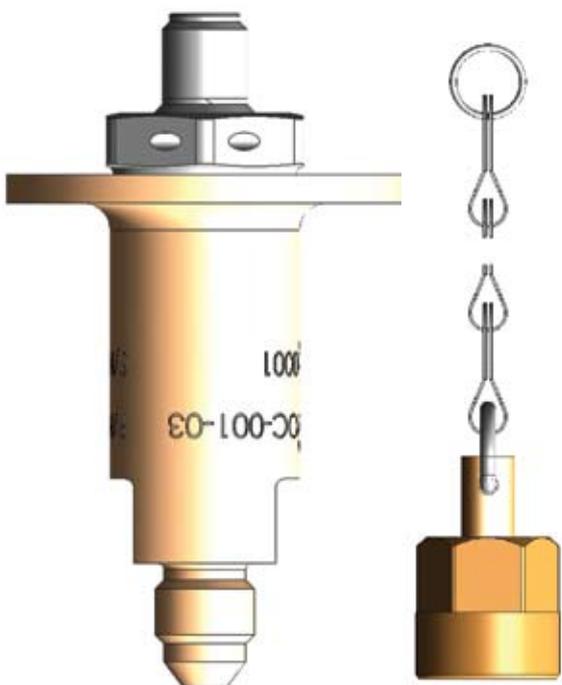
- Optional dust cap and chain for inlet fitting
- Valve body lock-wired to housing
- Custom external housing styles and mounting points available

● **Ordering Code**

Include Option(s) from table below:

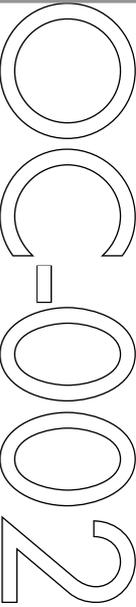


Please specify details for any custom requirements.



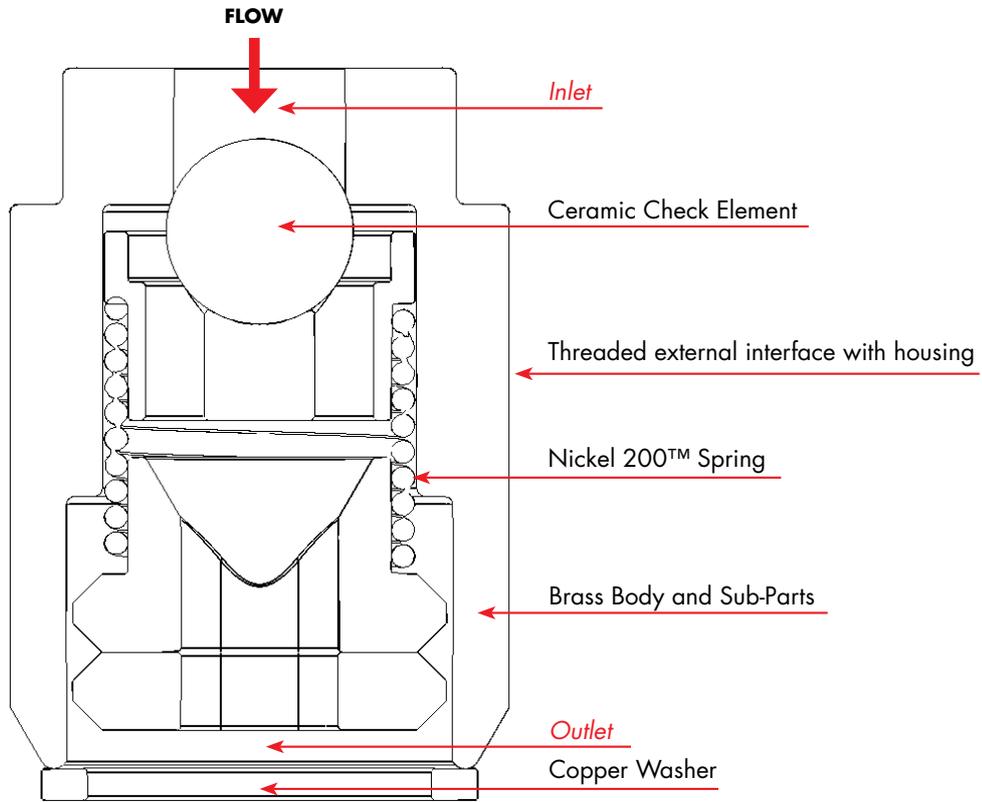
Feature	Option	Description
Inlet Fitting	1	3/8" X 24 UNF -3A thread with 50° female taper, conforms to: AND10089 STYLE E SIZE 3
	C	Custom – Please specify
Outlet Fitting	1	3/8" X 24 UNF -3A thread with 50° female taper, conforms to: AND10089 STYLE E SIZE 3
	2	1/2" X 20 UNJF - 3A thread with 37° male taper, conforms to: MS33656 STYLE G SIZE 5
	3	7/16" X 20 UNJF - 3A thread with 37° male taper, conforms to: MS33656 STYLE G SIZE 4
	4	1/2" X 20 UNJF - 3A thread, non-tapered
	C	Custom – Please specify
Mounting	1	3 X ø 5.1 mm holes in housing flange
	C	Custom – Please specify
Overall Length	...	76 mm (3.0") *
Overall Diameter	...	45 mm (1.8") *
Mass	Check Valve	182 g (0.4 lb) *
	Dust Cap	23 g (0.05 lb) *

\* Depends on end fittings



## ● Oxygen Check Element Insert

For manifold applications in inlet and/or outlet configurations



Feature	Option	Description
Inlet Fitting	1	10 mm (0.4") AF hex flats
	C	Custom – Please specify
Manifold Interface	1	1/2" X 24 UNF thread with copper washer for interface seal
	C	Custom – Please specify
Overall Length	...	18 mm (0.7")
Overall Diameter	...	13 mm (0.5")
Mass	...	15 g (0.03 lb)

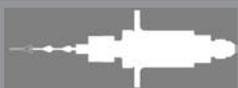
- Custom outer geometry and manifold interface also available
- Manifold cleaning and assembly also available

### ● Ordering Code

Include Option(s) from table above:

**OC-002-**    
**Inlet Fitting** \_\_\_\_\_  
**Manifold Interface** \_\_\_\_\_

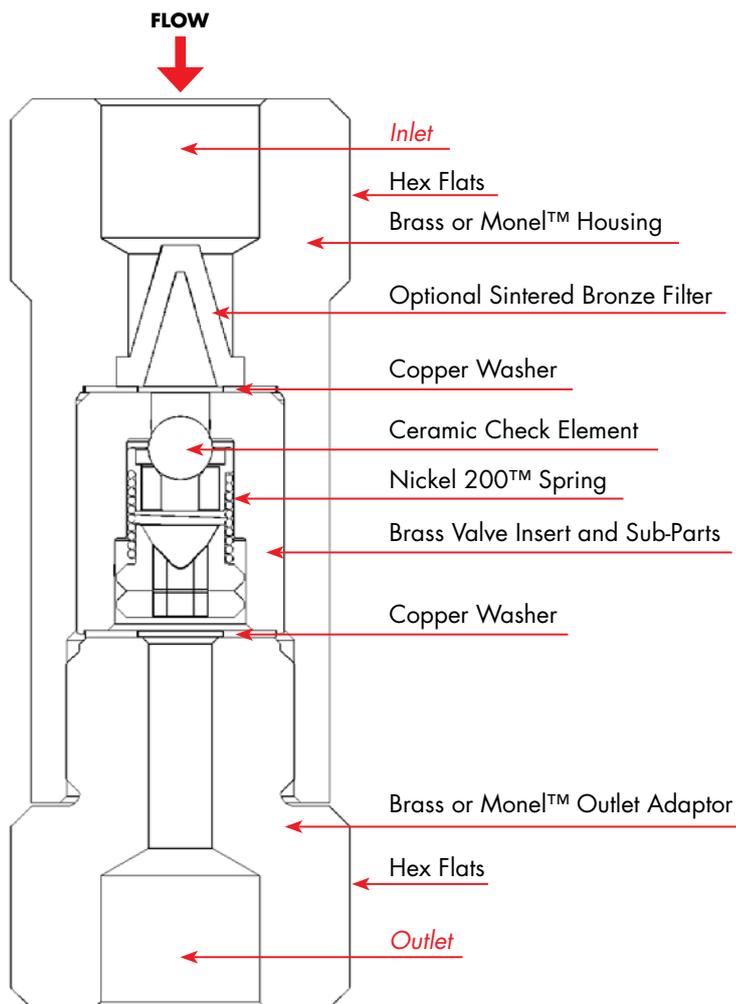
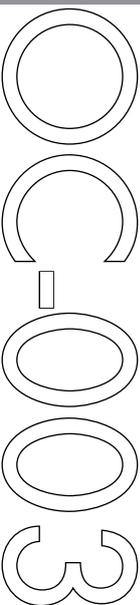
Please specify details for any custom requirements.



OC-003

**● Oxygen In-Line Check Valve**

For all low and high pressure oxygen systems



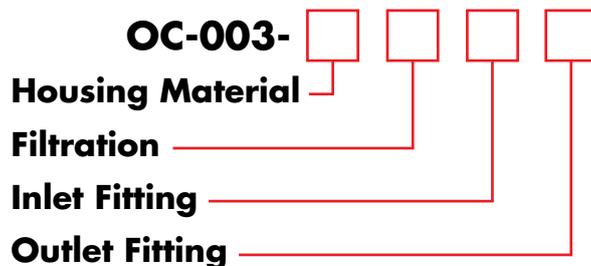
- Wide range of end fittings available: Male / Female, NPT, BSP, Metric, etc
- Easily retrofitted to existing systems
- Brass or Monel™ Housing
- MAWP: 3000–10,000 psia, 21–69 MPa, 210–690 bar

Feature	Option	Description
Housing Material	B	Brass
	M	Monel™
Filtration	F	Filtered – nominal 7 micron, sintered bronze filter
	N	Non-Filtered
Inlet Fitting	1	1/4" Female NPT
	C	Custom – Please specify
Outlet Fitting	1	1/4" Female NPT
	2	1/4" Male NPT
	C	Custom – Please specify
Overall Length	...	70 mm (2.8") *
Hex Flat Size (AF)	...	25 mm (1") *
Mass	...	140 g (0.3 lb) *

\* Depends on end fittings/filtration

**● Ordering Code**

Include Option(s) from table to left:

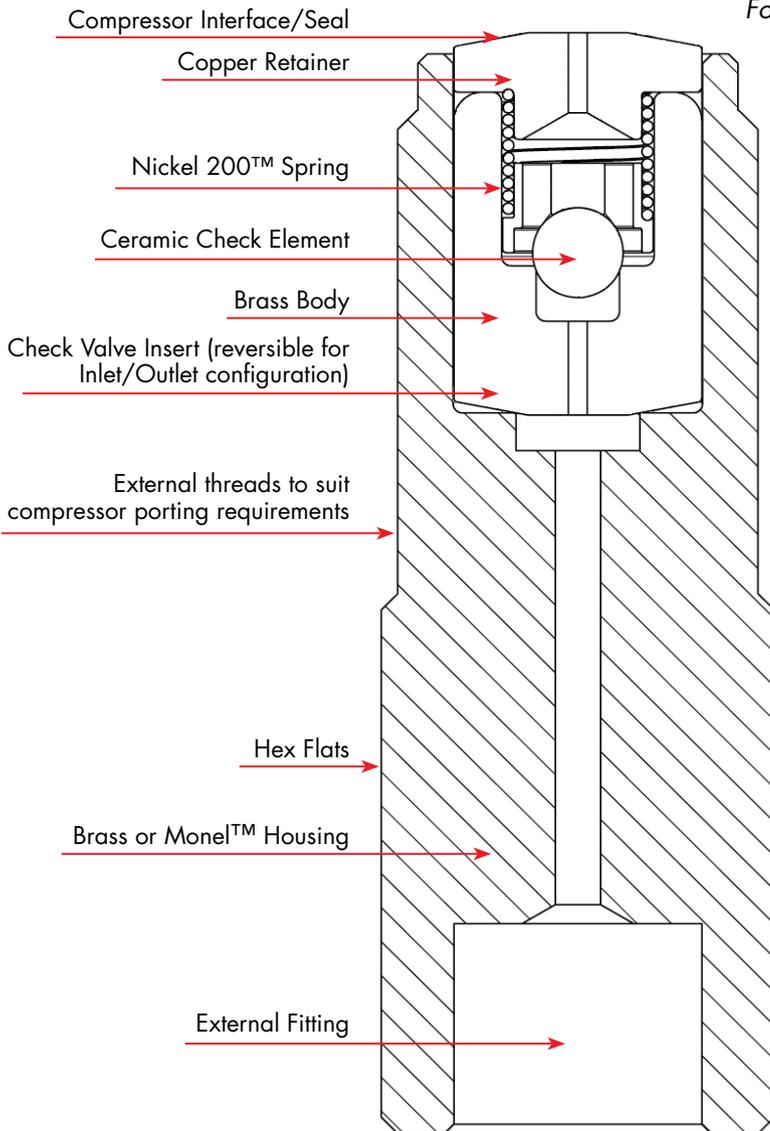
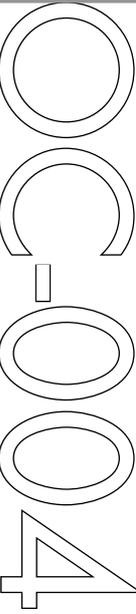


Please specify details for any custom requirements.

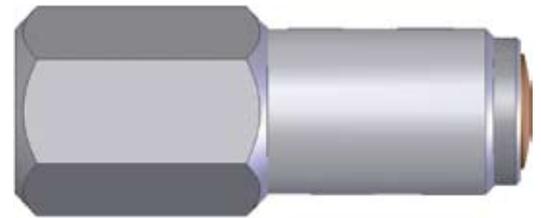


**● Oxygen Compressor Check Valve**

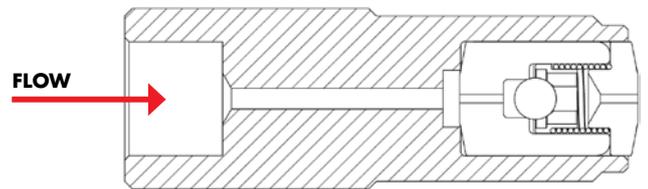
For compressor and other high pressure applications



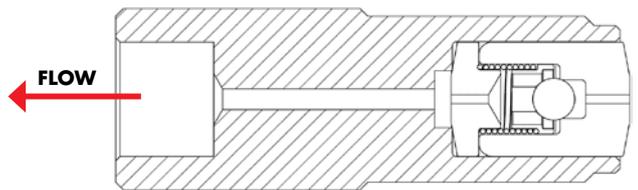
- Interchangeable with current compressor check valves and easily retrofitted to existing systems
- MAWP: Up to 10,000 psia / 69 MPa / 690 bar
- Brass or Monel™ housing
- Reduce compressor operating costs through improved mechanical efficiency and performance



**● Inlet Configuration:**



**● Outlet Configuration:**



**● Ordering Code**

Include Option(s) from table to left:

**OC-004-**

**Configuration** \_\_\_\_\_

**Housing Material** \_\_\_\_\_

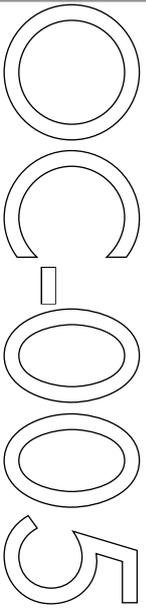
**External Fitting** \_\_\_\_\_

**Compressor Interface** \_\_\_\_\_

Please specify details for any custom requirements.

Feature	Option	Description
Configuration	I	Inlet
	O	Outlet
Housing Material	B	Brass
	M	Monel™
External Fitting	1	Standard HP4 Female high pressure fitting
	C	Custom – Please specify
Compressor Interface	1	3/4" UNF Thread
	C	Custom – Please specify
Overall Length	...	To suit existing system
Overall Diameter	...	To suit existing system
Mass*	...	110 g (0.2 lb)

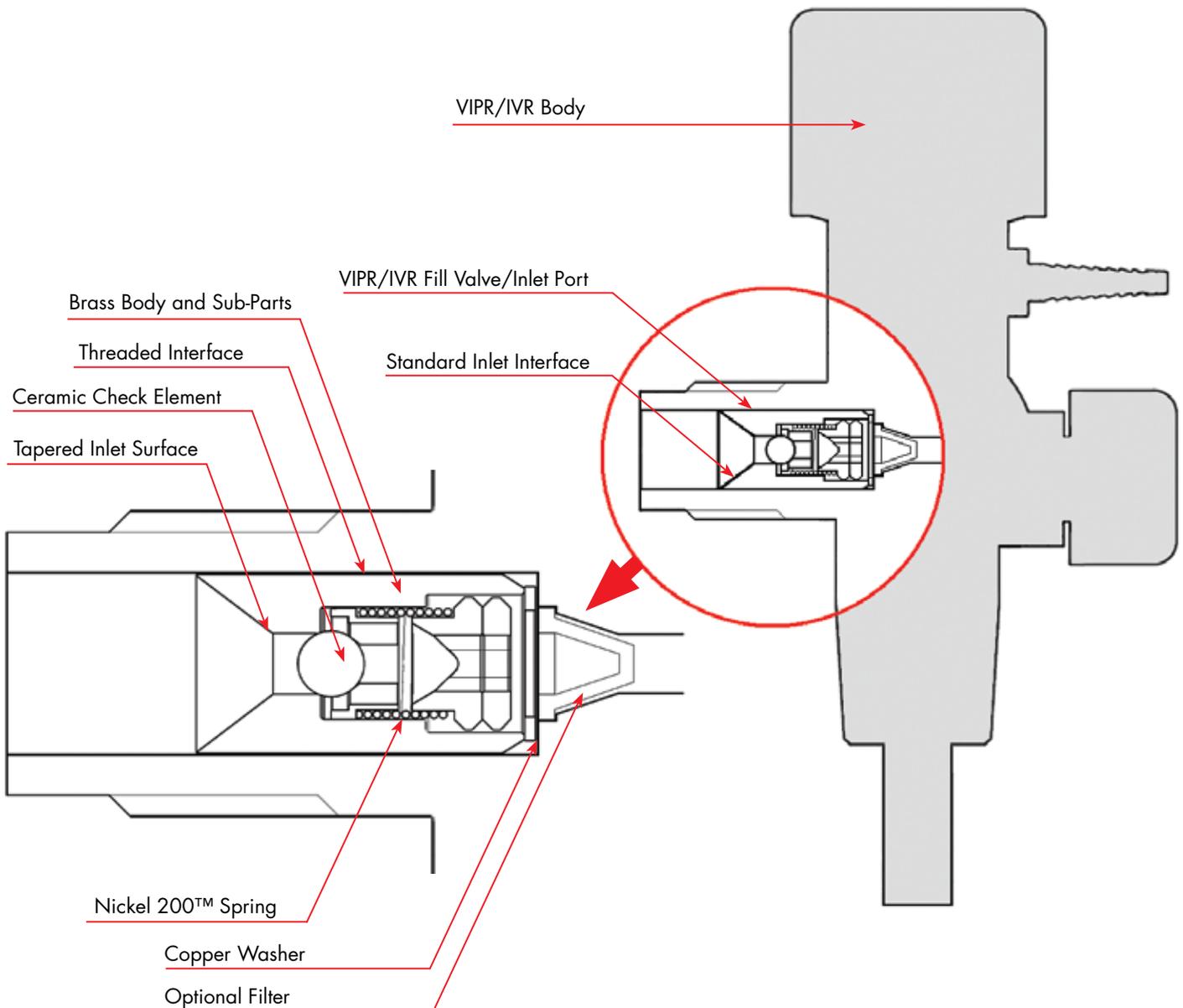
\* Including housing



## ● Valve Integrated Pressure Regulator (VIPR) and Integrated Valve Regulator (IVR) Fill Valve

*For the improved fire safety and performance of VIPR/IVR systems*

- Non-flammable fill valve for increased safety when integrated into VIPR/IVR
- Improved performance with lower leak rates
- Optional sintered bronze filter (nominal 7 micron filtration)
- Interfaces with standard VIPR/IVR fill connector
- Meets standards: ISO 10524-3 (Europe) and CGA E-18 (USA)
- Fill valve external geometry, threaded interface and filtration (if required) customised to meet the requirements of VIPR/IVR manufacturers or distributors



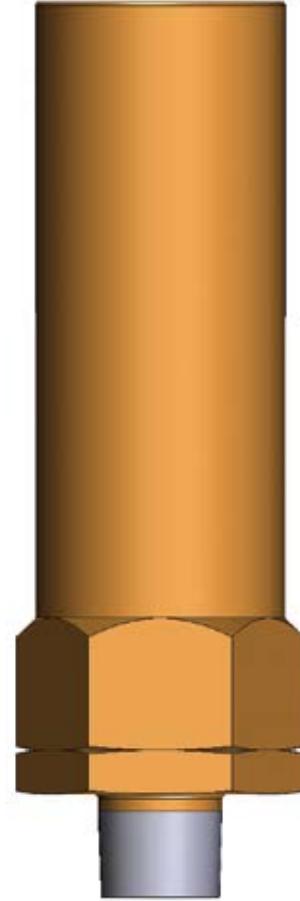
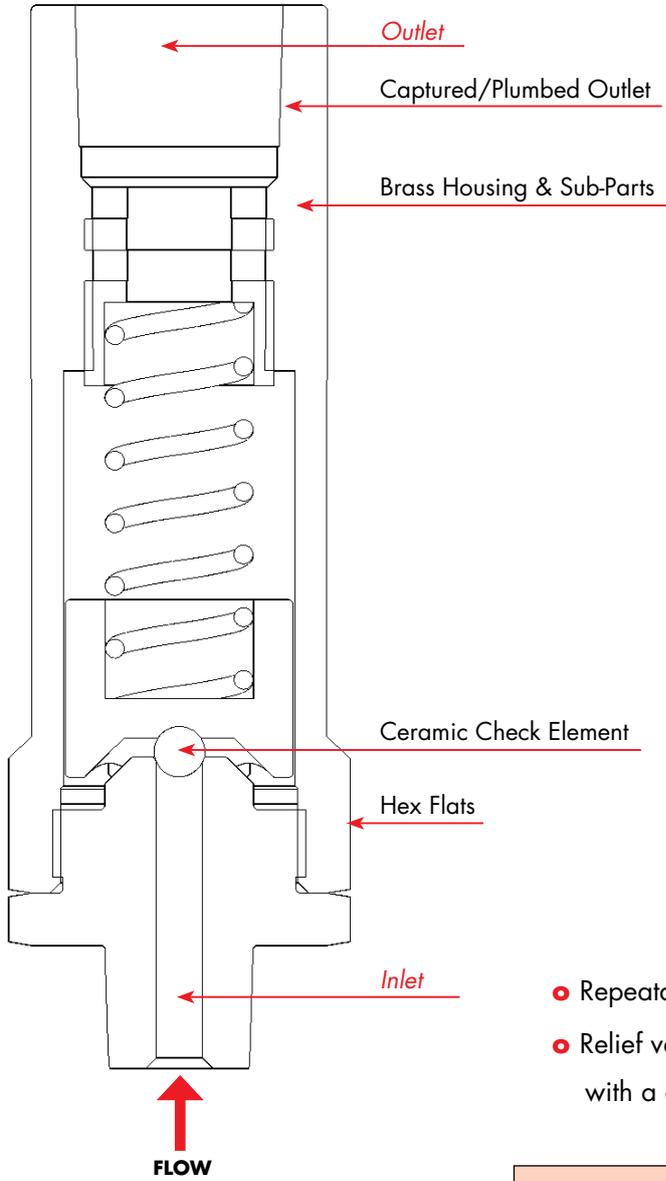
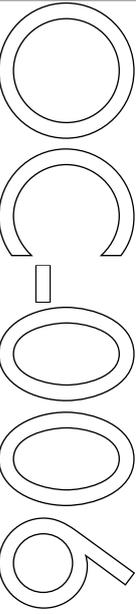
### ● Ordering Information

Please specify VIPR/IVR body interfacing requirements or contact OXYCHECK.



**● Oxygen Pressure Relief Valve**

For the safety and protection of all low and high pressure oxygen systems



- Repeatable and reliable performance
- Relief valve set, sealed, validated and supplied with a certificate of conformance

**● Ordering Code**

Include Option(s) from table to right:

**OC-006-**

**Inlet Fitting** \_\_\_\_\_

**Outlet Fitting** \_\_\_\_\_

**Set Pressure** \_\_\_\_\_

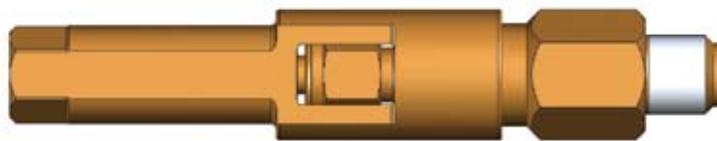
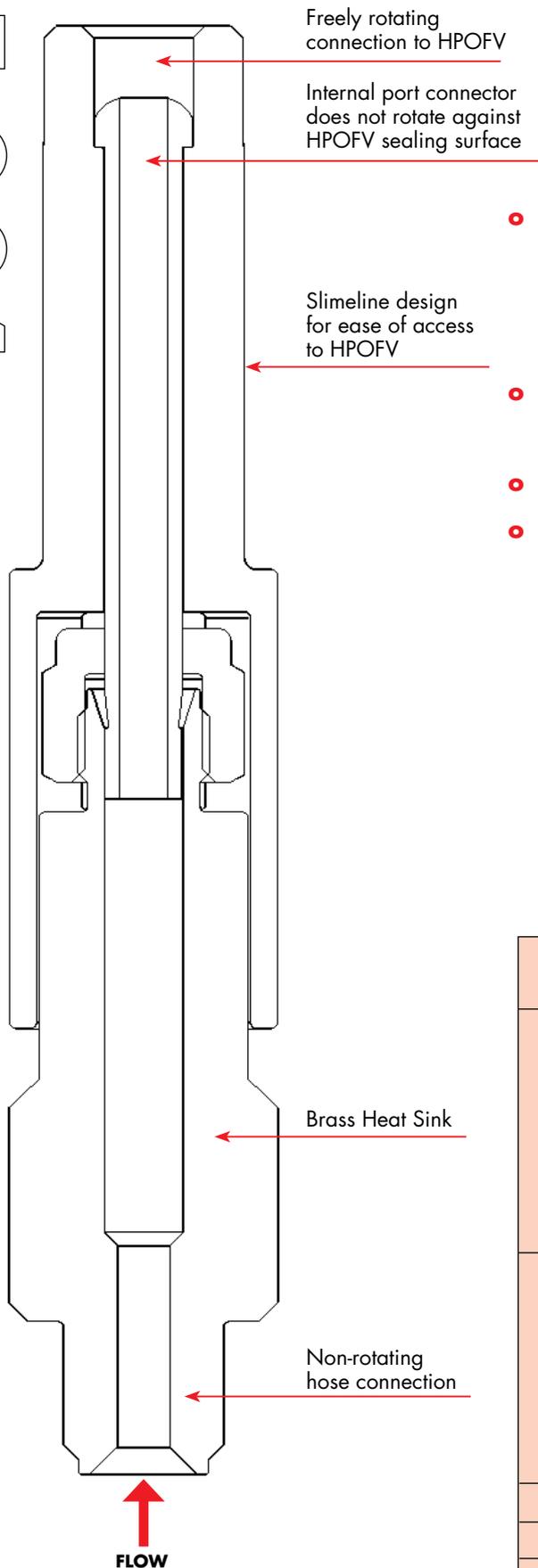
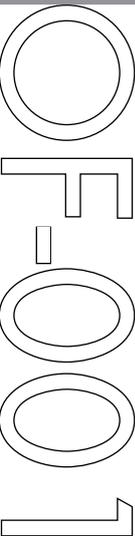
Please specify details for any custom requirements.

Feature	Option	Description
Inlet Fitting	1	1/4" Male NPT
	C	Custom – Please specify
Outlet Fitting	1	1/2" Female NPT
	C	Custom – Please specify
Set Pressure	C	Please specify: Up to 4500 psia, 28 MPa, 280 bar
Overall Length	...	100 mm (4.0")*
Overall Diameter	...	30 mm (1.2")*
Mass	...	190 g (0.4 lb)*

\* Depends on end fittings

**● Oxygen Fill Valve Hose Adaptor**

For use with the OXYCHECK OC-001 HPOFV



- Freely-rotating connection ensures that the internal port connector does not rotate relative to the sealing surface on the oxygen fill valve inlet fitting during connection – preventing damage to the sealing surfaces
- Large brass heat sink to dissipate thermal energy generated in the event of adiabatic compression of the gas in the fill hose
- Custom sizes and end fittings available
- Re-usable brass plug and thread cap available to protect the fitting when it is not in use

**● Ordering Code**

Include Option(s) from table below:

**OF-001-**    
**Fill Valve Fitting**   
**Hose Fitting**

Please specify details for any custom requirements.

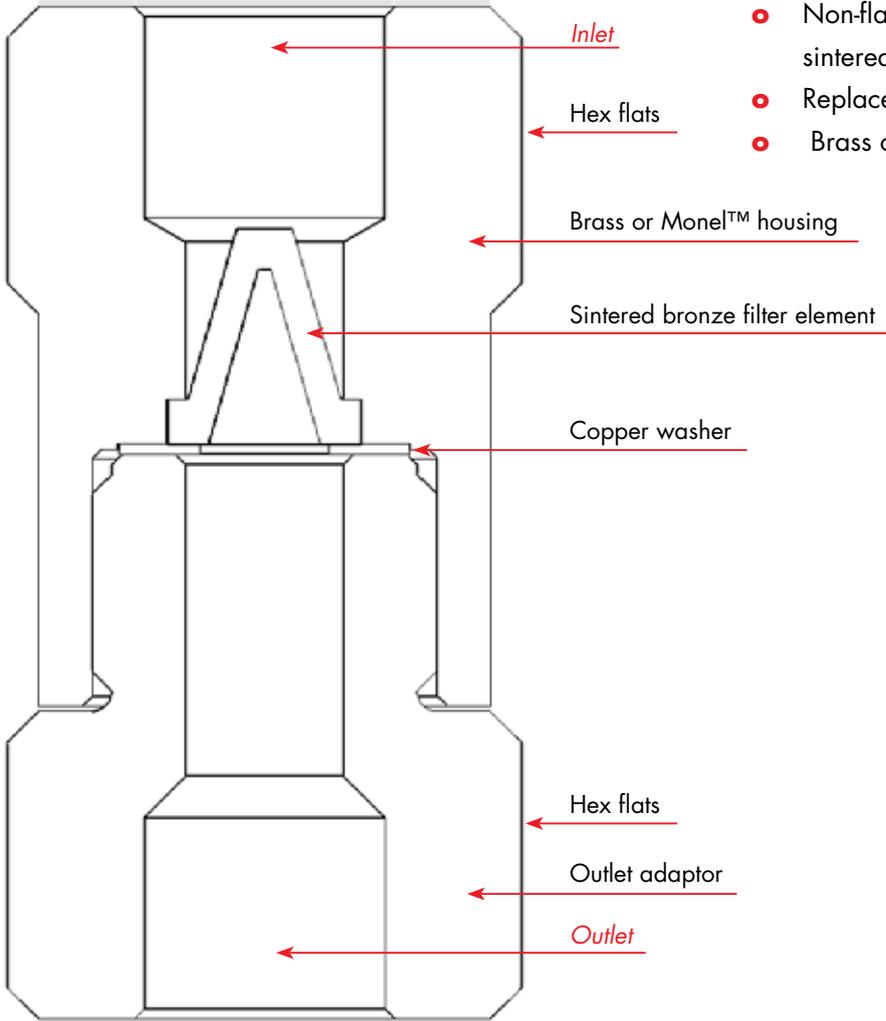
Feature	Option	Description
Fill Valve Fitting	1	Freely-rotating connection with 3/8" X 24 UNF -3A Female thread, internal bull-nose port connector to suit OC-001 HPOFV
	C	Custom – Please specify
Hose Fitting	1	1/4" AN4 fitting: 7/16" X 20 UNJF - 3A thread with 37° male taper, conforms to: MS33656 STYLE G SIZE 4
	2	1/4" -19 BSPF with 90° taper
	C	Custom – Please specify
Overall Length	...	110 mm (4.3")
Overall Diameter	...	15 mm (0.6")
Mass	...	145 g (0.3 lb)



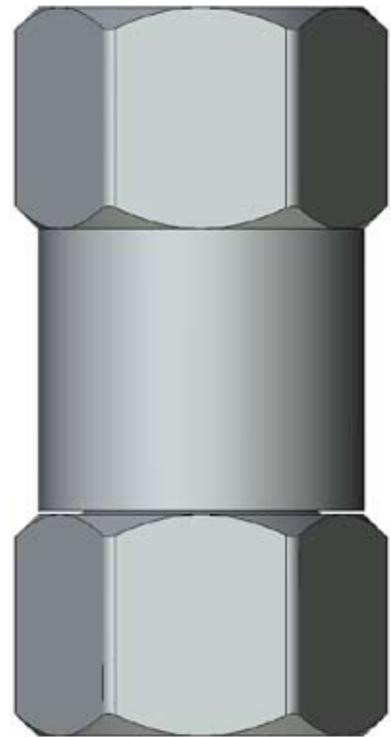
OF-002

**● In-Line Filter for Oxygen Systems**

For gas filtration in low and high pressure oxygen systems



- Non-flammable materials, including sintered bronze filter element
- Replacement filter elements available
- Brass or Monel™ housing

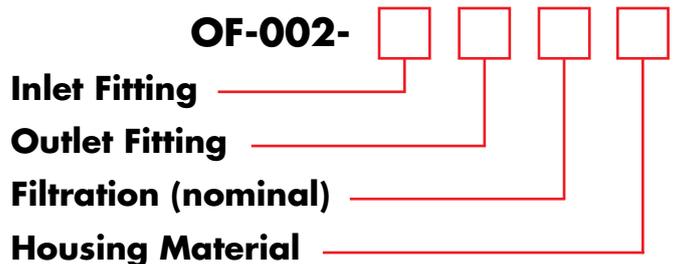


Feature	Option	Description
Inlet Fitting	I	Female ¼ NPT
	C	Custom – please specify
Outlet Fitting	1	Female ¼ NPT
	2	Male ¼ NPT
	C	Custom – please specify
Filtration (nominal)	1	7 micron
	2	5 micron
	3	2 micron
Housing Material	M	Brass
	M	Monel™
Length	...	45 mm (1.8")*
Mass*	...	70 g (0.2 lb) *

\* Depends on end fittings

**● Ordering Code**

Include Option(s) from table to left:



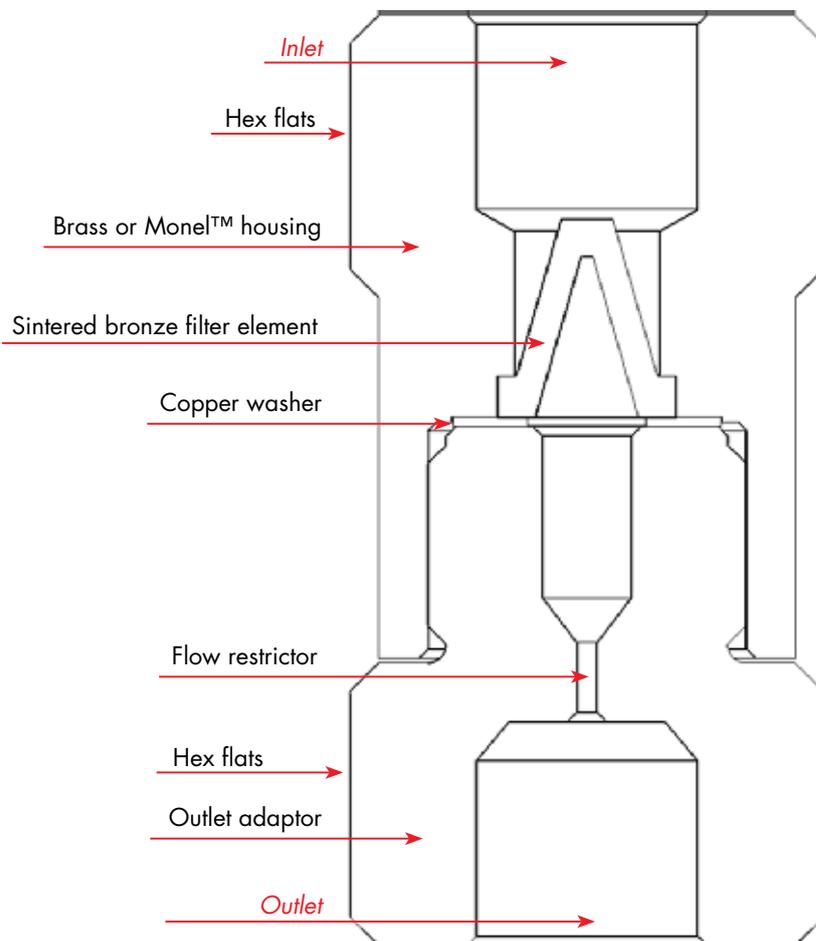
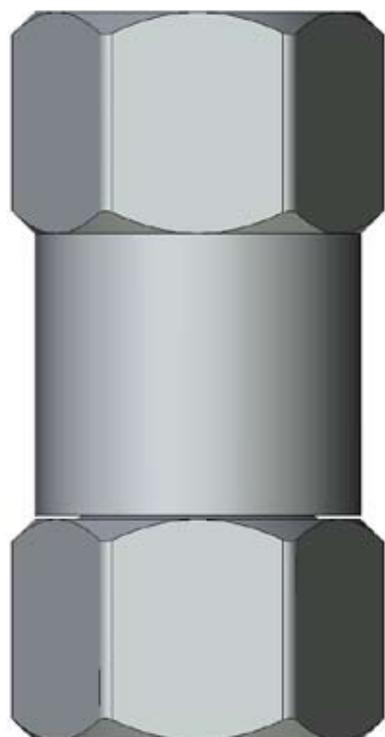
Please specify details for any custom requirements.



OF-003

### ● Flow Restrictor for Oxygen Systems

To prevent rapid pressurisation/adiabatic compression/heating of gas in oxygen systems



- 1mm-diameter flow restrictor channel to prevent rapid pressurisation
- Metallic housing acts as heat sink
- Non-flammable materials, including sintered bronze filter element

Feature	Option	Description
Inlet Fitting	I	Female ¼ NPT
	C	Custom – please specify
Outlet Fitting	1	Female ¼ NPT
	2	Male ¼ NPT
	C	Custom – please specify
Filtration (nominal)	1	7 micron
	2	5 micron
	3	2 micron
Housing Material	M	Brass
	M	Monel™
Length	...	45 mm (1.8")*
Mass*	...	70 g (0.2 lb) *

\* Depends on end fittings

### ● Ordering Code

Include Option(s) from table to left:

**OF-002-**

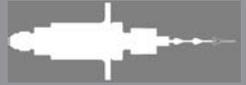
**Inlet Fitting** \_\_\_\_\_

**Outlet Fitting** \_\_\_\_\_

**Filtration (nominal)** \_\_\_\_\_

**Housing Material** \_\_\_\_\_

Please specify details for any custom requirements.



## ● Ordering Information

To place an order, simply contact OXYCHECK (see below) and provide the following information:

- Product ordering code (including suffixes)
- Quantity required
- Specify end fittings and/or interface requirements as appropriate
- Any special requirements or constraints
- Your contact details

If necessary, OXYCHECK has the capability to modify and customize all the products shown in this catalogue for specialized applications.



## ● Contact OXYCHECK

To find out more about any of the products shown in this catalogue, specialty products, or to make a general enquiry, please contact OXYCHECK by:

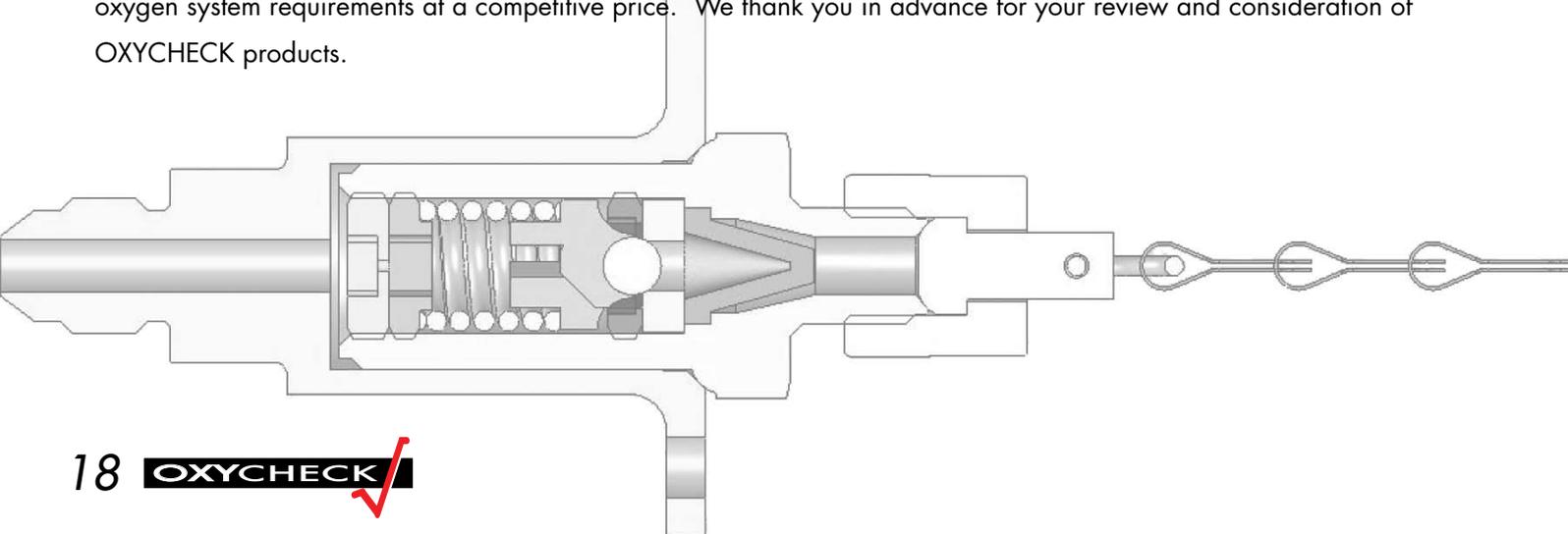
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OXYCHECK is an Australian company with expertise in all aspects of oxygen systems, particularly in relation to the compatibility of materials in oxygen-enriched atmospheres. Dr. Ted Steinberg, Managing Director of OXYCHECK, is a recognized expert in many areas of materials compatibility in oxygen-enriched (oxidizing) atmospheres and material flammability. Dr. Steinberg also provides consulting services to numerous industrial and aerospace organizations, has received several NASA awards, Lockheed's highest scientific award (the Robert E. Gross Award), co-edited five ASTM Special Technical Publications (STP's) and authored numerous papers on the flammability and sensitivity of materials in oxygen-enriched environments. OXYCHECK Engineering Manager, Dr. Nick Ward, has worked closely with Dr. Steinberg in the area of metallic material flammability since 2004. OXYCHECK personnel are active with many international standards and safety organisations, ensuring that the most up-to-date and relevant information, practices and data are incorporated into the ongoing design, development, production and delivery of components.

The need for a range of unique and improved oxygen system flow control valves was identified through the investigation of several significant fires that started within the flow control components of various industrial, medical and aircraft oxygen systems. A thorough evaluation of commercially available oxygen control valves subsequently identified that no products offered both suitable performance and non-flammability. OXYCHECK then began development of a range of control valves that was to contain no flammable metals, no non-metals and no lubricants without sacrificing functionality, endurance or performance. This development process has provided the inherent safety and excellent performance that make OXYCHECK flow control components unique.

All OXYCHECK components undergo an extremely rigorous performance evaluation prior to shipping and only the best oxygen-clean processes are used. Functional performance, including flow parameters, reverse leak rates and resistance to resonance-induced valve chatter, is exceptional and these attributes have been independently validated by leading defence organisations, which has lead the Australian Defence Force to utilise OXYCHECK's valves on their fleets of relevant aircraft including the P3 Orion, Caribou and PC9. OXYCHECK utilises a 'Form-Fit-Function' design philosophy, which typically makes its products interchangeable with existing components and, when required by the customer, valves are customized to enable an easy retrofit to existing systems.

OXYCHECK looks forward to providing you with the world's best and safest oxygen control valves for all your various oxygen system requirements at a competitive price. We thank you in advance for your review and consideration of OXYCHECK products.







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