

Valves, unloaders and actuators



CPI radiused disc compressor valves



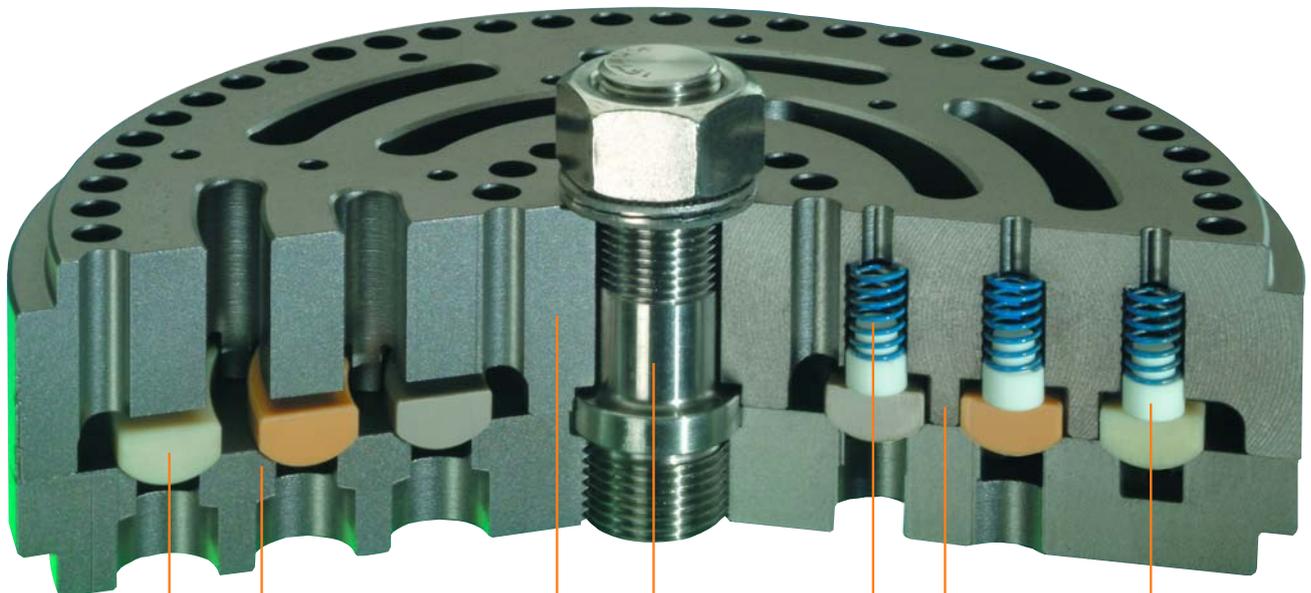
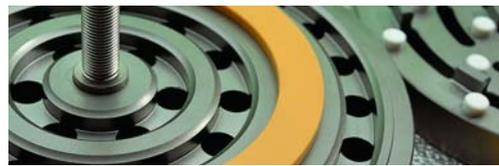
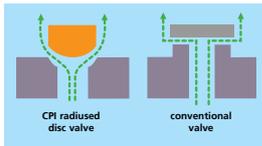
CPI radiused disc compressor valves are recognised as outstandingly reliable in the oil, gas, petrochemical and air separation industries worldwide.

The CPI radiused disc valve is capable of operating across a wide range of parameters reaching temperatures of up to 200°C/390°F and pressures in excess of 400 bar/6000psi, and are suitable for sour gas applications.

Each valve is individually computer designed to match the compressor operating conditions for each application. To achieve this, close co-operation with the operator or compressor manufacturer is involved, including full operating and dimensional data retrieval to ensure complete interchangeability.



The unique radiused profile of the valve discs, which control and seal the process gas as it flows into and from the compressor cylinder, provides a number of important characteristics.



CPI offers a range of engineered thermoplastic disc materials for varying applications

Radiused seating surfaces result in an aerodynamic flow pattern and lower pressure drop

CPI standard seat and guard material is ductile iron. For more corrosive applications the best suited material for the given gas analysis would be selected

Centre-bolt design and nut locking system meets the requirements of API-618

Careful spring selection for reliability and performance

Secondary guidance to prevent excessive lateral disc movement which may occur as liquids or solids pass through the valve

Round section ptfе buttons to guide the springs and to minimise secondary damage to discs

Key features and benefits

- streamlined flow enabling free passage of entrained solids and liquids reducing risk of damage, thereby greatly improving reliability
- flow increase due to good sealing
- conformability with seat - under a wide range of operating conditions
- durable thermoplastic discs with no seat damage or wear
- simple internal design - easy to service
- soft-tempered seat and guard - sour gas (H₂S) service (NACE)
- suitable for both lubricated and non lubricated applications
- increased efficiency and savings on power consumption
- less back-flow and often lower process gas temperatures

Sour gas applications

All materials of the seat, guard, springs and other internal components are heat treated within the hardness ranges specified by NACE, as the most desirable to resist sulphide stress cracking in H₂S - rich gases.

This is made possible due to the low impact loads and wear imparted by the thermoplastic discs, in contrast to metal-plate valves, many of which use hardened plates and seats for wear resistance.



Effective sealing and efficient flow

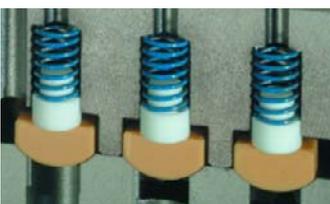
With radiused discs and matching radii on the seat, discs and seats become self aligning ensuring good conformability throughout the variation of operating temperatures. Effective sealing between disc and seat is continually maintained resulting in efficient flow-through.



Thermoplastic discs

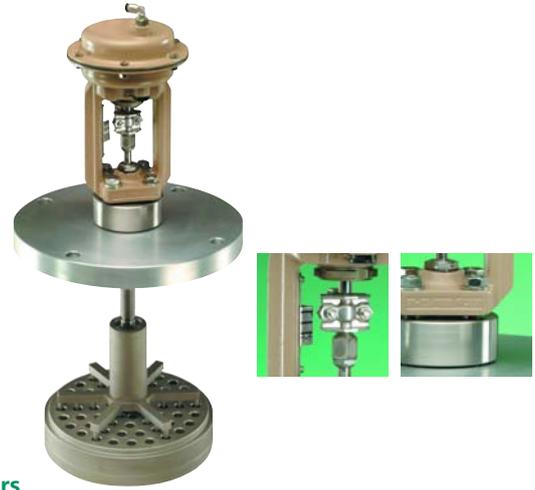
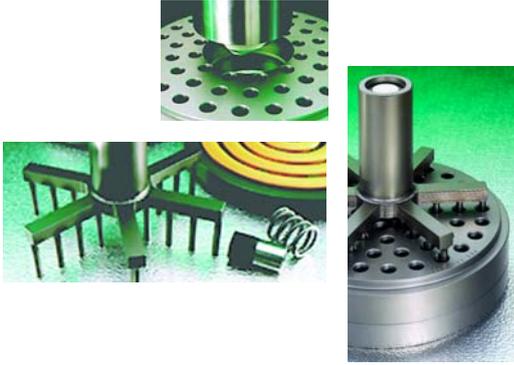
The CPI radiused disc valve incorporates discs selected from a range of engineered thermoplastic materials that effectively deal with intrusion of foreign matter present in some gases. The plastic surface discourages adherence of small particles of metal, sand or salt, while metal seals may become nicked, worn, warped or cracked.

Failure of conventional metal valve plates can result in damage to the cylinder, piston and rings. With CPI thermoplastic discs the risk of secondary failures is greatly reduced, and because of their greater durability results in longer running periods reducing the costs of service downtime and lost production.



Unloaders

CPI valves can be supplied with suction valve unloaders of various types, such as finger-type unloaders and plug-type unloaders.

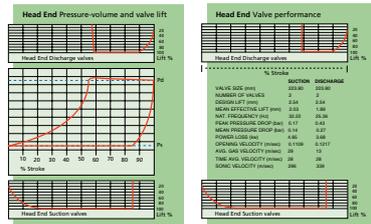


Actuators

CPI also supplies a range of quality valve unloader actuators, designed specifically for each application.

CPI compressor valve dynamics study

When designing new valves CPI is able to study the predicted performance of their valves under known operating conditions and to derive suction and discharge valve motion, PV diagram, pressure drops, power loss, anticipated gas velocities, valve disc opening velocity, volumetric efficiency and piston loadings, to give the optimum design solution.



Typical PV and valve motion graph

Typical valve performance characteristics

Compressor valve trouble-shooting and performance analysis

By using its valve dynamics study capability, CPI is also able to look at existing installations and recommend improvements to existing compressor valves, either of a similar type or involving a change from other valve types, such as ported plate, concentric flat ring, poppet or channel, to the CPI preferred valve, with its emphasis on reliability, performance improvement and power savings.

Backed by the wide field experience accumulated by CPI across a broad variety of compressor applications, and with the predictability available from an effective valve dynamics program.



CPI's technical and scientific approach in developing its unique materials, used in the manufacture of piston and rider rings, packings and valves, together with our vast accumulated expertise, has transformed the performance and reliability of reciprocating compressors for many operators in a wide range of applications around the world. Further information about CPI's specialised products and general product range can be accessed via our website at: www.compressor-products.com



Compressor Products International Ltd.

Corporate Headquarters: Smitham Bridge Road, Hungerford, Berkshire RG17 0QP United Kingdom
Tel: +44 (0)1488 684585 Fax: +44 (0)1488 684001 E-mail: sales@compressor-products.com

CPI France - Z.I. de la Petite Savate, 59600 Maubeuge, France
Tel: +33 (0)3 27 53 13 21 Fax: +33 (0)3 27 53 13 22 E-mail: info@compressor-products.fr

CPI North America - 11160 Westpark Dr., Suite C, Houston, TX 77042, USA
Tel: +1 (713) 789 4274 Fax: +1 (713) 789 4275 E-mail: sales@cp-na.com

CPI Pacific - Unit 7, 24 Poletti Road, Jandakot 6164, Perth - WA, Australia
Tel: +61 8941 784 40 Fax: +61 8941 784 50 E-mail: cpip@cpipacific.com.au

CPI South America - Avenida Santos Dumont, 8011 CEP 42700-000 - Portão-Galpão 07, Lauro de Freitas - Bahia, Brazil
Tel: +55 (0)71 33 69 3552 Fax: +55 (0)71 33 69 3719 E-mail: cpi@cpi-compressores.com.br

CPI Poland - ul. Wilcza 50/52m 230, 00-610 Warszawa, Polska
Tel: +48 (22)623 0240/0241 Fax: +48 (22)623 0242 E-mail: cpiwlodek@o2.pl

CPI Dubai - PO Box 17990, JAFZ, Dubai, UAE
Tel: +97 1488 71446 Fax: +97 1488 71447 E-mail: cpi_mea@eim.ae

CPI China - Room 1506, Wing A, Intelli-Center, No.18 Zhongguancun East Road, Haidian District, Beijing, China, zip code: 100083
Tel: +86 10 8260 1288 Fax: +86 10 8260 1285 E-mail: sales@cpichina.com

CPI also have technical representatives in various locations worldwide.