



RECYCLE AND PRESSURE CONTROL VALVE

The function of the oxygen service valve is to control the pressure of the oxygen during start up procedures. It is used to protect the oxygen compressor from surges that may occur. The valve has to be able to open within two seconds then be able to recycle the full oxygen load. The valve is installed as a recycle bypass valve. The Oxygen compressor is always started up with Nitrogen Gas for safety reasons for about 10 minutes. After this time, the Nitrogen suction valve is closed and the Oxygen suction valve will be opened. A 2" purge valve will open at this stage releasing the Oxygen / Nitrogen mixture until the Oxygen purity reaches 99.4%. The Purge valve will close and the Oxygen service valve will via modular control close slowly against the Oxygen compressor flow to increase the delivery pressure to 3800kPa, which is higher than the header pressure. The Oxygen delivery valve will now open and release the oxygen into the header. The oxygen service valve will stay closed, but has a function of quick opening in less than 2 seconds. If a surge is to occur on the compressor, a signal will be sent to the valve to open to protect the oxygen compressor by recycling the full load.



Customer - SASOL
Date supplied – 2002/05

Customer Application Data

The customer wanted the valve to operate under the following conditions:

◆ Fluid	=	Oxygen
◆ Max flow rate	=	94 000 m ³ /hr
◆ Inlet pressure	=	3590 kPa
◆ Outlet pressure	=	100 kPa
◆ Pressure drop	=	3490 kPa
◆ Temperature	=	112°C
◆ Line size in & out	=	8"

Description of Valve Supplied

Mitech offered to retrofit the existing body with new internals and a new actuator. We supplied a CA300FO actuator with non cage guided trim made from K500 Monel as this has a high titanium content and does not contain carbon. A 1" 2/2 way solenoid was also used to serve as a quick exhaust.



MITECH – Application Bulletin

Application No. 4

Trim

Type	=	Low Noise
Plug material	=	Monel 500
Seat material	=	Monel 500
Seat diameter	=	127
CV selected	=	420
Flow direction	=	Under
Leakage rate	=	ANSI Class IV

Bonnet

Material	=	CF8M
Guide-Upper	=	Bronze
Guide-Lower	=	Bronze
Packing	=	PTFE Braided
Gaskets	=	PTFE
Live Loading	=	Yes

Body

Size	=	8"
Style Valve	=	Globe Control Valve
Material	=	StSt
Flange Type	=	Integral
Flange Rating	=	ANSI 300#

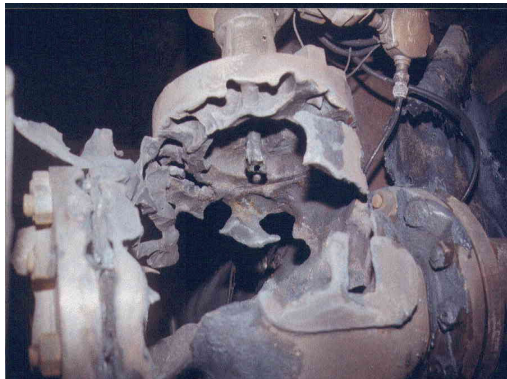
Actuator

Type	=	Piston
Hand wheel	=	No

Positioner

Type	=	Standard
Fail Position	=	Open

Previous Valve Used for Application:

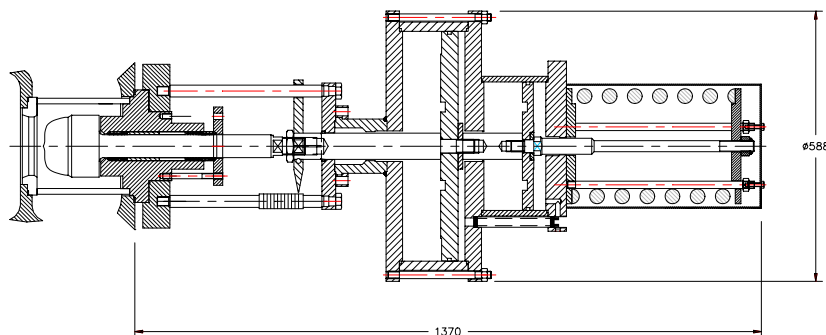


200mm Masoneilan low DB cage guided globe valve

Problems experienced:

The previous valves caught on fire. This was due to friction being caused between the cage guide and some foreign matter in the line (rusted carbon steel piping)

Other references:



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