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(K)JKL44Y-10000psi 井口节流阀说明书

(K) JKL44Y-10000psi Well-head Throttle Valve Technical Manual



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(K) JKL44Y-10000psi 井口节流阀

(K) JKL44Y-10000psi wellhead throttle valve

1. 产品简介 Product Introduction

(K) JKL44Y 型产品是我公司针对石油天然气工业的需要开发的新一代井口节流阀。该阀是一种具有多级节流、降压功能，在高压差条件下同时满足节流和截止，实现气体介质零泄漏的双作用控制阀门。采用低噪音迷宫叠片式结构，是一种流体压力平衡型套筒阀，特别适合于对高压差及含有微粒杂质流体的流量和压力的控制，迷宫套筒起到多级降压作用，可以完全控制流体流经阀内件时的流速，从而大幅度降低高压差气体产生的噪音，能有效防止流体产生汽蚀，提高阀门的使用寿命。可广泛用于石油、天然气井口场站，化工、电力、冶金等行业。

抗硫合金、陶瓷节流部件与特殊密封副结构产品可满足高压差、高含 H₂S、CO₂、Cl⁻ 介质条件下耐冲刷、防腐蚀的使用要求。

(K) JKL44Y is a new generation of well-head throttle for oil and gas industry. The valve has functions of multi-level throttling and pressure relief, which can satisfy the both needs of throttling and cut-off to realize "zero leakage" for gas media. The product with low noise maze laminated structure, is a sleeve valve with balanced fluid pressure, particularly suitable for high differential pressure and control of fluid flow with particulate impurities and pressure. The maze sleeve plays the role of multilevel pressure relief, which can completely control the fluid flow rate while the flow passing through inside the valve, thus substantially reducing the noise generated by pressure differential of gas, effectively preventing fluid cavitation, and extending the service life. The product is widely used in petroleum, gas wellhead station, chemical, electric power, metallurgy and other industries.

The products with anti-sulfur alloy, ceramic seal are anti-eroding and anti-corrosive in the condition of high H₂S、CO₂、Cl⁻.

◆ 应用典型工程: Typical Applications

- 中国石油克拉 II 气田、桑南、吉拉克气田、英买力气田、塔中 6 凝析气田工程；新疆油田呼图壁气田、盆五气田、彩南气田等工程。

CNPC Kela Gas field II, Sangnan Gas Field, Gilake Gas Field, Yingmaili Gas Field, Tazhong 6 Condensate Gas Field Project; Xinjiang Hutubi Oilfield Gas Field, Pengwu gas field, Cainan Gas field, etc.

- 中国四川的五大天然气矿区输气管道工程；

Gas Transferring Pipeline Projects of the Five Major Gas Fields in Sichuan, China

- 中国长庆鄂尔多斯气田采气厂、长北气田工程；青海涩北气田工程。

Gas Recovery Plant of China Changqing Ordos gas field, Changbei Gas Field Project;

2. 性能规格 Performance Specifications

2.1 适用介质：油品、净化天然气、含 H₂S、CO₂、CL⁻天然气及各种腐蚀性气液介质。

Applicable media: Oil, Purified Natural Gas , Gas containing H₂S, CO₂, CL and other corrosive liquid medium.

2.2 额定工作压力 Rated working pressure: 10000psi (70.0MPa)

2.3 公称通径 NPS: 1-1/4"、1-1/2"、2"、2-1/2"

DN (mm): DN32、DN40、DN50、DN65

2.4 额定温度 Rated temperature: -29°C~182°C (P 级 level)。

2.5 产品规范级别 Product Specification Level: PSL3, 性能级别 performance level: PR1。

2.6 抗硫阀按 NACE MR0175、SY/T0599 标准设计制造, 抗硫合金、节流部件与特殊密封副结构产品可满足高压差、高含 H₂S、CO₂、CL⁻介质条件下耐冲刷、防腐蚀的使用要求。

Anti-sulfur valve designed and manufactured from NACE MR0175, SY/T0599 standard, anti-sulfur alloy, throttling parts and special sealing pairs are resistant to erosion and corrosion in the conditions of the high-pressure difference, and high H₂S、CO₂、CL⁻

2.7 材料级别 Material level: EE。

2.8 执行标准: SY/T 5127、GB/T22513 《井口装置和采油树规范》。

Executive Standards: SY/T5127,GB/T22513 "wellhead equipment and christmas tree specification."

3. 型号说明 Model Instruction

(K) JKL44Y—10000psi	字母含义说明 Note the letters
K	类型代号 ("K"表示抗 H ₂ S、CO ₂ 、CL ⁻ 腐蚀) Type code ("K" that anti-H ₂ S, CO ₂ , CL ⁻ corrosion)
JKL	井口节流阀 wellhead throttle valve
4	法兰连接 Flange connection
4	角式 Right-angle connection
Y	硬质合金密封副 Hard alloy seal
10000psi	额定工作压力 Rated working pressure

4. 外形尺寸和连接尺寸 Physical dimension and connection dimension

4.1 结构见图 1 For structure, see Fig.1

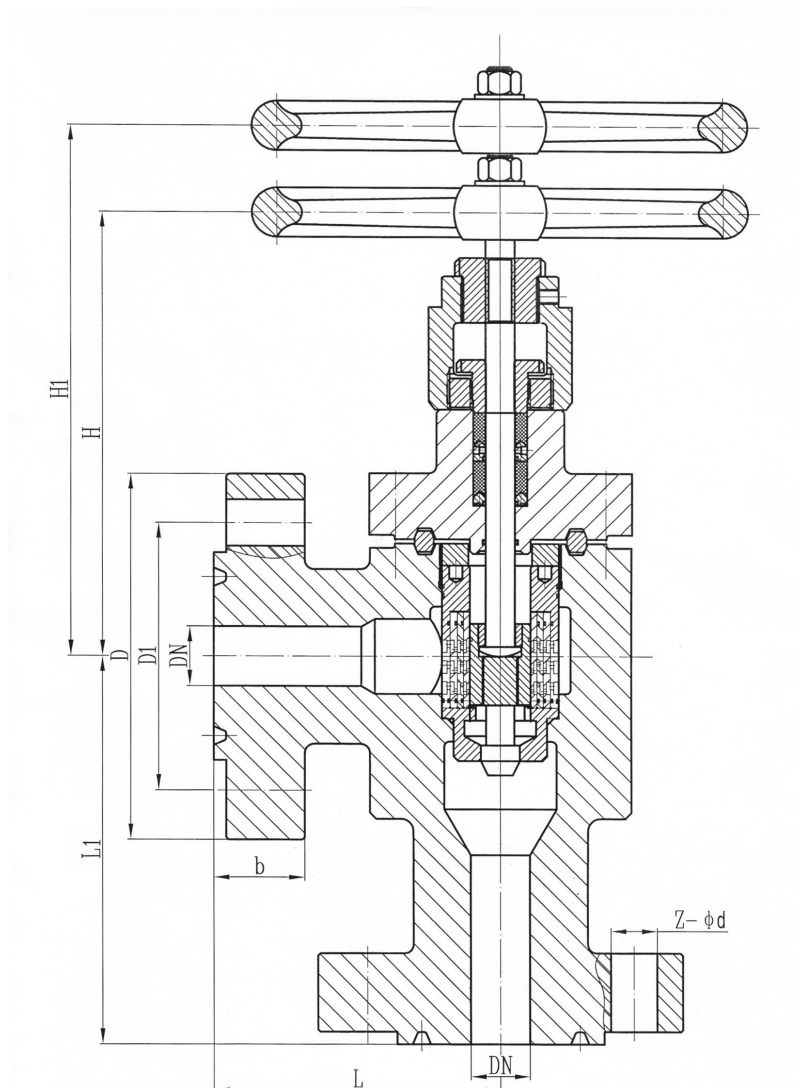


图 1.(K)JKL44Y—10000psi 井口节流阀结构简图
 Figure 1. (K) JKL44Y-10000psi structure diagram for wellhead throttle valve

4.2 阀门安装尺寸 Installation Dimensions

(K)JKL44Y—10000psi

公称通径 Nominal diameter		连接尺寸 (mm) Connection dimension							重量 Weight	
NPS	DN	L×L1	D	D1	b	H	H1	Z-φd	法兰垫环号 Flange ring number pad	≈kg
1-1/4	32	192×225	190	146	46	356	393	8-φ23	BX151	130
1-1/2	40	192×225	190	146	46	356	393	8-φ23	BX151	130
2	50	192×248	200	158.8	49	392	437	8-φ23	BX152	140
2-1/2	65	210×248	230	184.2	58	387	432	8-φ25	BX153	160

注：法兰连接尺寸按 SY/T 5127、GB/T22513 环连接面。

Note: The flange connection dimensions designed by SY/T 5127 , GB/T22513ring joint surface.

5. 工作原理 Working Principle:

该阀由喷嘴、柱塞形阀芯、节流轴、阀体、阀杆等组成。采用阀座喷嘴、笼形阀套节流轴结构，具有多级节流功能，节流压差大。喷嘴装置在阀座下端，阀芯设置有平衡孔，阀芯套开设有节流孔。阀芯与阀座采用硬、软双质密封副，把密封部位与节流部位分开，形成前、后三级节流，提高了节流能力和阀门密封的可靠性。

The valve is consist of nozzle, plunger-shaped spool, throttling axis, valve body, stem and other components. The nozzle on valve seat and throttling axis in caged valve sleeve are well functioning in multilevel throttling with great differential pressure. The nozzle is set on the bottom, the spool has a balance hole, and the spool sleeve has a throttling hole. The soft and hard sealing pairs between spool and the seat separate the sealing from throttling position which functions in three-level throttling to improve the throttling and sealing performance.

5.1 节流状态: 当阀芯在阀杆提升力作用下上移打开阀芯套节流孔时，流体首先被喷嘴和节流轴节流后进入阀座内腔，再通过阀芯套开孔部位与阀芯端部的圆柱面形成的节流孔排出。节流过程中，大部分压力加在喷嘴和节流轴上，节流轴端部斜锥面堆焊耐冲刷、耐腐蚀的硬质合金，小部分压力加在阀芯套节流孔上，高速流体对喷嘴和节流轴的磨损比节流孔严重得多，而磨损的喷嘴和节流轴并不影响节流和密封性能。

Throttling : When the spool forced by stem moves up to open the throttling hole, the fluid first enters into inside seat by the throttling from nozzle and throttling axis, then comes out from the throttling hole formed by the tapping of spool sleeve and cylindrical surface of spool end. During the process, most of the pressure is on the nozzle and throttling axis, hard alloy of anti-eroding and corrosion-resistant on the scalene cone welding of throttling axis end, and part of the pressure is on the throttling hole of spool sleeve. The nozzle and throttling axis are more severely worn by high speed fluid than that on the throttling hole, while the wear and tear on the nozzle and throttling axis has no effect on the throttling and sealing performance.

5.2 硬软双质密封: 该阀除阀座密封面堆焊有硬质合金，阀芯上堆焊硬质合金外，增设有软质密封部件。阀芯在阀杆推力作用下及平衡孔介质反作用力压迫下，紧贴在阀座硬软双质密封副上，形成双质密封，保证了高压气体介质“零泄漏”的使用要求。

Hard and Soft Seal : Except for the hard alloy on the scalene cone welding of seat sealing and spool welding, the valve adds soft sealing pairs. Force by the stem and balance pipe, the spool closely appresses on the hard and soft sealing pairs of the seat to ensure “zero leakage” of gas media in high pressure.

6. 主要零件材料 Major Parts

零件名称 Part name	抗硫型 Sulfur resisting	普通型 Conventional type
阀体、阀盖 Valve body Bonnet	锻钢 35CrMoIII Forged 35CrMo III	锻钢 35CrMoIII Forged 35CrMo III
阀芯、阀座 Needle base	抗硫硬质合金 Sulfur resisting hard alloy	2Cr13 密封面堆焊 stellite 合金 2Cr13 trim overlay Welding stellite alloy
阀杆 Stem	318	2Cr13
阀芯套筒 Spool sleeve	抗硫不锈钢 Sulfur resisting stainless steel	2Cr13
迷宫节流轴 Maze throttle shaft	抗硫不锈钢+stellite 合金 Sulfur resisting stainless steel+stellite alloy	2Cr13+stellite 合金 2Cr13+stellite alloy
软密封 Soft seal	氟橡胶 Viton	耐油橡胶 NBR
填料 Padding	PTFE	PTFE
中法兰螺栓 The flange bolts	35CrMoA	35CrMoA
中法兰螺母 The flange nut	30CrMo	30CrMo
阀杆螺母 Flange nut	铜合金 Aldary	铜合金 Aldary
阀盖密封垫环 Valve cover gasket ring	0Cr18Ni9 (环号 BX154) 0Cr18Ni9 (ring No. BX154)	0Cr18Ni9 (环号 BX154) 0Cr18Ni9 (ring No. BX154)
其余内件 The rest of the internals	抗硫不锈钢 Sulfur resisting stainless steel	不锈钢 Stainless steel

7. 10000psi 井口节流阀出厂压力试验要求

Delivery Test for 10000psi Wellhead Throttle Valve

7.1 本体（阀体）静水压试验：Body hydrostatic pressure test:

按 SY/T5127 规范第 7.5.9.5.4 条规定，额定工作压力为 10000psi (70.0MPa) 的产品，本体静水压试验压力为 103.4MPa。初始保压时间不少于 3min，然后压力降至零，第二次升到试验压力保压期延长至 15min，压力试验下不应有可见渗漏。

According to article 7.5.9.5.4 in SY/T5127-2002, The product with the rated working pressure of 10000psi (70.0MPa), has a body hydrostatic test pressure of 103.4MPa. The initial holding time should not be less than 3 min, and then the pressure is dropped to zero, the second rise to the test pressure maintaining period extends to 15min, and no leakage in the test.

7.2 阀座静水压试验：seat hydrostatic test:

按 SY/T5127 规范第 7.5.9.5.6 条规定，阀门以额定工作压力进行阀座静水压试验，额定工作压力为 10000psi (70.0MPa) 的产品，阀座静水压试验压力为 70.0MPa。初始最短保压时间为 3min，然后压力降至零，第二次升到试验压力保压期延长至 15min，保压期间无任何可见渗漏。

According to article 7.5.9.5.6 in SY/T5127-2002, The product with the rated working pressure of 10000psi (70.0MPa) , has a body hydrostatic test pressure of 70.0MPa. The Initial holding time should not be less than 3 min, and then the pressure is dropped to zero, the second rise to the test pressure maintaining period extends to 15min, and no leakage in the test.

8. 安装使用要求 Installation Requirements

8.1 组装好的本节流阀（70.0MPa）在施工期间进行阀门安装前及安装后的压力试验时，请遵照 SY/T5127 规范附录 F—性能鉴定程序第 F.2.2.2.3.1 条“本体静压试验压力应为阀的额定工作压力”和 F.2.2.2.3.2 条“静压阀座试验压力应等于阀的额定工作压力”条款的规定。

During the pressure tests before and after installation, the operation of assembled the throttle (70.0MPa) valve should follow the instruction of “the static pressure test of product should be the rated working pressure of the valve” in F.2.2.2.3.1 and “ the static test of valve seat should be the rated working pressure” in article F.2.2.2.3.2 in Appendix F-Performance in SY/T5127-2002.

8.2 本阀能适用于高压力条件下的节流和截止，具有减压阀的功能。

The valve can be applied to throttling and cut-off under high pressure with the fuction of pressure relief.

8.3 本阀可在室内外进行安装，安装时注意阀门的介质流动方向，阀体上的介质流动箭头标识应与管道介质流动方向一致。

The valve can be installed in the inside and outside the door, pay attention to the medium flow direction, and media flow arrow marking on the valve should be consistent with the flow direction of pipeline medium.

8.4 安装位置应能保证阀门安装、维修、检查和操作手轮有足够的空间。

The valve location should ensure installation, maintenance, inspection and manipulator and enough space for hand wheel.

8.5 安装、拆卸、调试时注意保护密封件及阀体端法兰连接部位表面不要碰伤、划伤，否则阀门不能满足正常工作。

No bumps and scratches on the sealing pairs and flange connection surface while installing, detaching and testing the valve, othewise it can not work.

8.6 该阀调试时，首先应反时针转动手轮，使阀门达到最大行程，然后顺时针旋转手轮，使阀门达到最小行程，感觉开启是否轻便灵活，密封是否是否可靠。

While commissioning the valve, first, slowly turn the hand wheel in anticlockwise direction until the thread reaches its maximum distance, and then turn hand wheel in clockwise direction to the minimum distance to check whether the opening is flexible and the sealing is reliable.

9. 维修保养 Valve maintenance

9.1 阀门在未开箱前最好不要露天堆放。

Do not put the valve in the open air before unpacking

9.2 在维修保养时，应注意密封副的清洁及检查软密封 O 型圈是否损坏，若软密封损坏，则需更换。

While maintaining the valve, check if there is any damage on O ring, replace one if they are damaged.

9.3 定期在阀杆与螺套梯形螺纹处加注润滑油脂。

Regularly add grease in the stem and trapezoidal thread screw sets .

9.4 阀门在使用中如出现内漏，可旋转手轮连续启闭几次，让介质吹扫阀芯阀座密封面，保证密封面清洁，再投入使用。

If there is internal leakage during operation, turn on and off the hand wheel several times to let the medium flush the sealing surface of spool and valve seat, make sure the sealing surfaces are all clean then put into service again.

9.5 如吹扫后仍然存在内漏，则切断气源，松开拆下上阀盖的紧固螺母，整体将阀芯总成抽出，然后检查阀芯、阀座密封面是否有杂质粘附，阀座软密封 O 形圈是否损坏。如有请及时清洁或更换。

If the internal leakage can not be resolved after the medium blown, cut off the gas, loosen and dismantle clamp nut in roof cover, withdraw the spool, and then check if there are some impurities attached on the sealing surface of valve spool and valve seat, or if there is any damage in O ring of soft sealing, clean and change if necessary.

10. 订货须知 用户订货时请提供以下技术参数：

Purchase Order Instruction: please provide the following technical parameters:

10.1 产品型号规格（公称压力 PN、公称通径 DN）；

Product Specification (nominal pressure PN, nominal diameter DN);

10.2 工作介质及组成成份；

Working media and components;

10.3 实际流量（Nm³/h 或 Nm³/d）、阀门进口压力 P1、出口压力 P2；

The actual work flow (Nm³ / h or Nm³ / d), the valve inlet pressure P1, the outlet pressure P2;

10.4 工作温度，包括介质和环境温度；

Temperature, including the media and environmental temperature;

10.5 材质要求、法兰标准及密封面型式；

Material requirements, standards and the sealing surface of flange type;

10.6 其它特殊要求。 Other special requirements.