

卡箍型快开盲板（立式）安装、使用、维护手册

Clamp Type QOC (Vertical Type) Installation, Use And Maintenance Manuals

提示：在使用快开盲板之前请认真阅读本手册

Kind reminder: Please read this manual carefully before using the quick opening closure.



沈阳益米特管道技术有限公司

SHENYANG EMT PIPING TECHNOLOGY CO.,LTD

地址：辽宁省沈阳市浑南区李相村 521-1 号

Add:No.521-1, Lixiang Village, Hunnan District, Shenyang City, Liaoning Province

电话：+86 13124205692

传真：024-24775966

Tel: +86 13124205692

Fax: 024-24775966

<https://emt-pipe.com>

E-Mail:info@emtpigging.com

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1. 快开盲板介绍 Introduction of QOC

1.1 产品特点 Product Feature

三瓣卡箍型快开盲板咬合面积大，安全可靠，操作简单，更适用于高压大口径设备上安装使用。带有安全联锁机构，充分确保安全可靠。

该产品主要由盲板盖、筒体、三瓣卡箍、安全联锁机构、转臂机构及开闭机构组成。使用专用扳手顺时针或逆时针转动开关丝杠其中一端，三瓣卡箍即可涨开或收缩，从而达到快速开启和关闭的目的。

The triple yoke clamp-type quick opening closure features a large contact area, ensuring high safety and reliability. It is simple to operate, making it especially suitable for use with high-pressure, large-diameter equipment. Equipped with a safety interlock mechanism, it guarantees enhanced safety and reliability.

This product is primarily composed of an end closure, barrel flange, a triple yoke clamp, a safety interlock mechanism, an arm mechanism, and an opening and closing mechanism. To operate, use a specialized wrench to turn one end of the switch screw either clockwise or counterclockwise. This action allows the triple yoke clamp to expand or contract, thereby facilitating quick and efficient opening and closing.

1.2基本结构Basic Structure

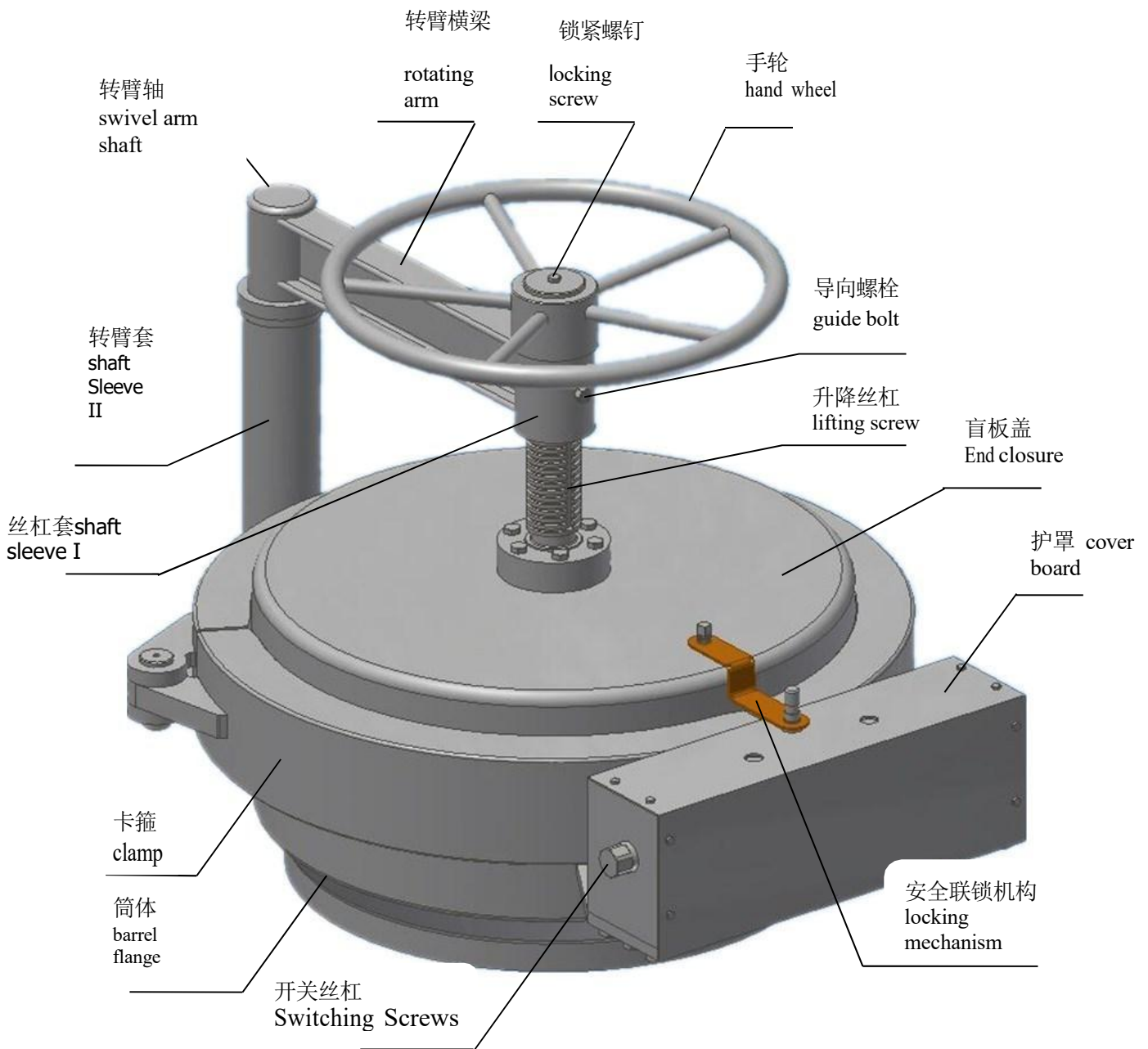


图 1 (picture 1)

1.3应用范围 Application Range

该型式快开盲板广泛应用于天然气管线、化工、医药、冶金等各个领域中的如收发球筒、槽罐、增压釜、过滤分离器、换热器等需要不定期开闭的容器设备上。

This type of quick-opening closure is extensively employed in various sectors such as natural gas pipelines, chemical processing, pharmaceuticals, and metallurgy. It is utilized in equipment that requires intermittent access, including ball receivers and launchers, storage tanks, autoclaves, filtration and separation units, and heat exchangers.

2. 安装 Installation

2.1 初始安装 Initial Installation

快开盲板初始安装，需符合以下要求：

The initial installation of the quick opening closure must meet the following requirements:

1)快开盲板内径应与设备内径一致，焊缝对口间隙应均匀一致，其最大与最小对口间隙之差 ≤ 1.0 毫米，对口错边量应符合 GB150.4-2011 标准中表 1 规定；

1)The inner diameter of the quick opening closure should be consistent with the inner diameter of the equipment. The weld counter gaps should be uniform, with the maximum difference between the largest and smallest counter gaps being ≤ 1.0 mm. The misalignment should comply with the provisions in Table 1 of the GB150.4-2011 standard.

2)快开盲板与设备筒体组对之前，应先确定焊接型式：a.如采用双面焊，需拆下盲板盖（具体操作按本手册 2.2 盲板盖的拆卸）；b.如果采用单面焊，只需拿下密封圈即可，无需拆卸盲板盖；

2)Before aligning the quick opening closure with the equipment cylinder, determine the type of welding to be used: a. If double-sided welding is employed, the end closure must be removed (specific operations follow the disassembly instructions for the end closure in section 2.2 of this manual); b. If single-sided welding is used, simply remove the sealing ring, there is no need to dismantle the end closure;

3)快开盲板与设备筒体焊接之前，请仔细阅读本手册 2.3 焊接及焊后热处理。

3)Before welding the quick opening closure to the equipment barrel flange, please carefully read section 2.3 of this manual regarding welding and post-weld heat treatment.

2.2 盲板盖的拆卸 Removal the End Closure

在快开盲板组装及维护需要拆卸盲板盖时，请按以下步骤进行：

When disassembling the quick opening closure for the assembly and maintenance of the quick opening closure, please follow these steps:

1)将快开盲板合适放置，按本手册 3.1 开门操作，将盲板盖打开；

1)Position the quick opening closure appropriately and open the end closure by following the opening operation described in section 3.1 of this manual.

2)按图 1 所示，a.卸下手轮中心锁紧螺钉 b. 卸下手轮 c. 卸下转臂轴下端螺母 d.拧松导向螺栓；

2)As shown in Figure 1, a. Remove the hand wheel center locking screw b. Remove the hand wheel c. Remove the locking nut on the lower end of the swivel arm shaft d. Loosen the guide bolt.

3)将转臂轴、转臂横梁、丝杠套从转臂套中卸下；

3)Remove the swivel arm shaft, rotating arm, and shaft sleeve I from shaft sleeve II;

4)卸下盲板盖并妥善放置。

4) Remove the end closure and place it properly.

2.3 焊接及焊后热处理 Welding And Post-welding Heat Treatment

由于焊接过程中的焊接应力及焊接操作不当等原因，都可能导致焊接变形的产生，为防止和减小焊接变形，快开盲板与设备筒体组对及焊接时，应遵守以下规定：

Due to welding stress and improper welding operations, deformation may occur during the welding process. To prevent and minimize welding deformation when aligning and welding the quick opening closure to the equipment cylinder, the following guidelines should be adhered to:

1)对口间隙应均匀一致，最大与最小对口间隙之差 ≤ 1.0 毫米，对口错边量应符合 GB 150.4-2011 标准中表 1 规定。

1)The alignment gap should be uniform and consistent, with the difference between the maximum and minimum alignment gaps being ≤ 1.0 mm. The amount of misalignment should comply with the provisions in Table 1 of the GB 150.4-2011 standard.

2)施焊前，需进行坡口预热或按焊接工艺规定执行；

2)Before welding, preheat the bevel or proceed according to the specifications outlined in the welding procedure.

3)施焊时，应采用小直径焊条、小电流、对称焊、多层焊的焊接方法来控制焊接变形，否则可能导致盲板盖无法开启和关闭，甚至使快开盲板报废；

3)During welding, use small diameter electrodes, low current, symmetric welding, and multi-layer welding techniques to control welding deformation. Failure to do so may prevent the end closure from opening and closing properly, and could even result in the scrapping of the quick opening closure.

焊后热处理建议：

Post-weld heat treatment recommendations:

1)对快开盲板与设备筒体之间的环焊缝进行热处理时，应尽量采用局部热处理；

1)When performing heat treatment on the circumferential weld seam between the quick opening closure and the equipment cylinder, local heat treatment should be utilized as much as possible.

2)如果设备制造总图的技术要求中规定设备必须进行整体热处理时，必须用岩棉、硅酸铝或其它保温材料将密封面保护起来，防止过度氧化而影响密封；

2)If the technical requirements in the overall manufacturing blueprint of the equipment specify that the equipment must undergo full heat treatment, it is essential to protect the sealing surfaces using rock wool, aluminum silicate, or other insulating materials to prevent excessive oxidation that could impair the seal.

3)热处理工艺严格按 GB150.4 第 8.2 条或 ASME 标准进行，或按热处理厂家成熟的热

处理工艺进行；

3)The heat treatment process should strictly adhere to Article 8.2 of GB150.4 or the ASME standards, or follow the established heat treatment procedures of the heat treatment provider.

4)请注意： a.如果热处理前头盖已经拆下来，请在热处理之后进行头盖安装； b.如果热处理前头盖未拆卸，请务必将所有密封圈拿下来； c.热处理之后应使用细砂布将密封面轻微擦拭干净，并均匀涂抹润滑脂、甘油或防锈油。

4)Please note:

- a. If the head cover has been removed before heat treatment, reinstall it after the heat treatment.
- b. If the head cover has not been disassembled before heat treatment, be sure to remove all the sealing rings.
- c. After heat treatment, lightly wipe the sealing surfaces with fine sandpaper or cloth to clean them, and then apply lubricating grease, glycerin, or rust-preventive oil evenly.

2.4 涂敷 Coating

快开盲板喷漆之前，必须将安全联锁机构卸下，将所有密封面、内外螺纹、紧固件、焊接坡口、不锈钢零部件、铜质件、电镀处理件等不需要喷漆的部分仔细包覆，以避免影响装配精度、使用性能、外形美观以及防止喷砂和油漆进入。

Before painting the quick opening closure, it is essential to disassemble the safety interlock mechanism and carefully cover all parts that do not require painting. This includes all sealing surfaces, internal and external threads, fasteners, weld bevels, stainless steel components, copper parts, and electroplated items. This is to prevent any impact on assembly precision, functional performance, aesthetic appearance, and to avoid sandblasting media and paint ingress.

2.5 盲板盖的重装 Reset of the End Closure

重新安装盲板盖时，请按以下要求进行：

When reinstalling the end closure, proceed as follows:

1)首先对所有密封面进行保护；

1)First protect all sealing surfaces;

2)将转臂轴插入转臂套中，同时将升降丝杠插入丝杠套中并进行调整，调整后先锁紧转臂轴下端螺母，再将手轮装入升降丝杠，并拧入锁紧螺钉。装配时应注意升降丝杠的导向槽与导向螺栓对正；

2)Insert the swivel arm shaft into the shaft sleeve II, meanwhile, insert the lifting screw into the shaft sleeve I and adjust it, after adjustment, first lock the nut at the lower end of the swivel arm shaft, then install the hand wheel into the lifting screw and screw in the locking screw. When assembling, it should be noted that the guide groove of the lifting screw is aligned with the

guide bolt;

3)全部装配完毕后，将密封面与密封槽彻底清理干净并均匀涂上防锈油脂，检查密封圈有无损坏后将密封圈装入密封槽；

3)After all the assembling is finished, clean the sealing surface and sealing groove thoroughly and apply anti-rust grease evenly, check the sealing ring for any damage and then install the sealing ring into the sealing groove;

4)推动转臂，将盲板盖与筒体中心对正，旋转手轮使盲板盖下落至筒体。

4)Push the swivel arm to align the end closure with the center of the barrel flange, and rotate the hand wheel to make the end closure drop down to the barrel flange.

3. 开关门操作 **Opening and Closing Operation**

3.1 开门操作 **Opening Operation**

注意：严格按以下要求和步骤进行！

Note: Strictly follow the requirements and steps outlined below.

1)开门前必须保证设备内压力为零，并严格遵守安全操作规程；

1)Before opening, ensure that the internal pressure of the equipment is zero and strictly adhere to the safety operating procedures.

2)拧出安全联锁机构上的安全螺栓，此时，若设备内有残压，应立即停止拧出安全螺栓动作，重新检查设备压力，确认设备内部已完全卸压后（设备上压力表指针回零），方可拧出安全螺栓并卸下安全联锁机构；

2)Unscrew the safety bolt on the safety interlock mechanism. At this point, if there is residual pressure inside the equipment, immediately stop unscrewing the safety bolt, recheck the equipment pressure, and confirm that the internal pressure has been completely released (the pressure gauge on the equipment returns to zero) before unscrewing the safety bolt and removing the safety interlock mechanism.

3)用专用扳手按标牌指示方向旋转开关丝杠，使三瓣卡箍缓慢涨开至盲板盖可开启状态，握住拉手打开盲板盖。

3)Use a special wrench to rotate the switch screw in the direction indicated by the label, allowing the three-petal clamp to slowly expand until the end closure can be opened. Then, grasp the handle to open the end closure.

4)旋转手轮，将盲板盖提升后，推动转臂至盲板盖不影响操作的位置，即完成开启。

4)Rotate the hand wheel, lift the end closure, push the rotating shaft to the proper place, that is complete the opening.

3.2 关门操作 **Closing Operation**

1)关门之前应仔细检查密封面、密封槽以及密封圈。密封面应擦拭干净，不允许有任何影响密封的杂物存在。检查密封圈是否有损坏，橡胶是否老化，如有缺陷，必须更换；

1)Before closing the door, should carefully check the sealing surface, sealing groove and sealing ring. The sealing surface should be wiped clean, and no debris affecting the sealing is allowed. Check whether the seal ring is damaged, whether the rubber is aging, if there are defects, it must be replaced;

2)在密封槽和密封面上均匀涂抹润滑油脂，然后将密封圈装入密封槽内（先装入 12、6 点钟方向，再装入 3、9 点钟方向）；

2)Evenly apply lubricating grease to the sealing groove and sealing surface, and then put the sealing ring into the sealing groove (first into the 12, 6 o'clock direction, then into the 3, 9 o'clock direction).

3)推动转臂，使盲板盖置于筒体上方，旋转手轮将盲板盖落下，使用专用扳手，按标牌指示方向旋转开关丝杠，将三瓣卡箍锁紧；

3)push the rotating shaft,Place the end closure over the barrel flange and rotate the hand wheel put down end closure,use the special wrench, rotate the switching screw in the direction indicated by the sign, so that the triple yoke clamp contracts.

4)装入安全联锁机构并缓慢拧紧安全螺栓。

4)Install the locking mechanism and slowly tighten the safety bolt.

4. 维护保养 Maintenance

4.1 存放 Storage

如快开盲板需要储存，需将密封圈卸下，并将密封面、密封槽彻底清理干净，在表面均匀涂抹防锈油，然后将密封圈重新装入，用塑料布或其它覆盖材料将快开盲板整体包裹好，放入包装箱储存于室内。

If the quick opening closure needs to be stored, the sealing ring should be removed and the sealing surface and sealing groove should be thoroughly cleaned, anti-rust oil should be evenly applied to the surface, then the sealing ring should be re-installed, and the quick opening closure should be wrapped up with a plastic sheet or other wrapping materials as a whole, and then put into a packing box for storing indoors.

4.2 检查 Inspection

1)定期或不定期检查密封圈情况，观察密封圈是否有损坏或橡胶老化，如有缺陷必须更换；

1)Regularly or irregularly check the condition of seals, observe whether the seals are damaged or rubber aging, if defective must be replaced;

2)定期或不定期检查安全联锁机构是否完好，安全螺栓是否有断裂，密封圈是否有损坏或老化，如有缺陷必须更换；

2)Regularly or irregularly check whether the safety interlocking mechanism is intact, whether the safety bolt is broken, whether the sealing ring is damaged or aging, if defective must be replaced;

3)定期或不定期检查快开盲板是否开关灵活、可靠。长期使用后盲板盖因自重可能出现垂直位移，可按本手册 2.5 盲板盖的重装相关方法进行调整。

3)Regularly or irregularly check whether the quick opening closure is flexible and reliable. Vertical displacement of the end closure may occur after long-term use due to self-weight, which can be adjusted according to the method related to the reassembly of the end closure in 2.5 of this manual.

4.3 润滑 Lubrication

定期在快开盲板各注油孔加注润滑油以保证快开盲板开关灵活。

Regularly add lubricant to the oiling holes of the quick opening closure to ensure that is flexible.

(实施后请打 ✓) Tick after implementation

沈阳益米特管道技术有限公司

SHENYANG EMT PIPING TECHNOLOGY CO.,LTD

地址：辽宁省沈阳市浑南区李相村 521-1 号

Add:No.521-1, Lixiang Village, Hunnan District, Shenyang City, Liaoning Province

电话：+86 13124205692

传真：024-24775966

Tel: +86 13124205692

Fax: 024-24775966

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E-Mail:info@emtpigging.com