

连云港宇航石化设备制造有限公司

LIANYUNGANG YUHANG PETROCHEMICAL PRODUCTS CO.,LTD

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公司简介

连云港宇航石化设备制造有限公司

位于新亚欧大陆桥的东方桥头堡——连云港。

这里不仅气候舒适、自然风光秀丽，特别是便利的海陆交通条件为企业的发展提供了有利的区域优势。

连云港宇航石化设备制造有限公司是油气储运、装卸设备的专业制造商。我公司技术力量雄厚，生产设备齐全，具完善的生产手段和批量的生产规模。

宇航石化在不断发展的同时，具备强有力的研究和开发投资基础，同时密切追踪国内外储运技术，不断加强新产品，新技术开发运用，使产品日趋成熟，形成系列化，来满足国内外的需要。

公司具有一流的技术、一流人才、一流的设备、一流的管理，具有高级职8人、中级22人。大部分技术生产骨干从事以下产品设计开发及生产近20年，汇聚了本行业精英。

公司成立伊始，始终坚持以客户为中心，严格遵守合同和国际惯例，对产品进行定期回访、跟踪式服务。让客户购买放心，用的安心。

衷心希望广大客户朋友们给予关心和支持，共同地建立起真诚合作、互惠互赢的合作关系。

COMPANY PROFILE

Lianyungang Yuhang Petrochemical Equipment Manufacturing Co., Ltd. is located in the Eastern Bridgehead of the New Eurasian Continental Bridge—Lianyungang.

The climate is comfortable and natural scenery is beautiful. Especially, convenient sea and land transportation condition provides favorable regional advantage to the enterprise development.

Lianyungang Yuhang Petrochemical Equipment Manufacturing Co., Ltd. is a professional manufacturer of oil-gas storage and transportation and handling equipment. Our company has strong technical strength and complete production equipment. Furthermore, we have perfect production means and production scale in a batch. Yuhang Petrochemical Company has strong research and development and investment base during continuous development at the same time. Meanwhile, it tracks storage and transportation technology both at home and abroad closely, strengthens development an application of new product and new technology constantly and makes products become mature gradually and form seriation so as to meet the needs of both at home and abroad.

The company has first-class technology, first-class personnel, first-class equipment and first-class management. There are eight persons with senior title and 22 persons with intermediate title. Most backbone of technical production takes up the following product design development and production for nearly 20 years. The elites in the industry are gathered in the company.

Since the establishment of the company, it has adhered to the customer-oriented idea, strictly observed contracts and international conventions, as well as provided periodic visit and follow-up service. Clients can be assured to buy our products and use them.

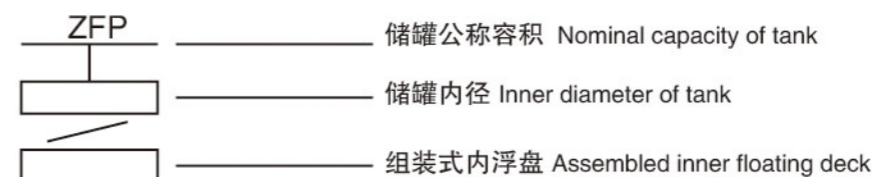
We sincerely hope that all clients and friends can give us concerns and support and establish a partnership of good faith and mutual benefit together with us.

组装式内浮盘 ASSEMBLED INNER FLOATING DECK

组装式内浮盘与储存介质为挥发性液态石油制品的储罐配套使用，能够降低介质自然挥发量，有利于节能、降耗、安全、环境保护，增加经济效益。

The assembled inner floating deck shall be used together with the tank where the storage medium like volatile liquid petroleum products are stored, because it can reduce the natural volatilization of media and is helpful for energy conservation, loss reduction, safety, environmental protection, as well as the increase of economic benefit.

型号说明 INSTRUCTIONS FOR MODEL



示例 EXAMPLE

内径17米，公称容积3000立方米内浮顶储罐安装的铝浮盘型号为：ZFP 17/3000。

The aluminum floating deck installed in the inner floating roof tank with the inner diameter of 17m and nominal capacity of 3000m³ is ZFP 17/3000.

主要浮盘型号一览 LIST OF MAIN MODELS

序号 No.	储罐内径m Inner diameter of tank (m)	公称容积m ³ Nominal capacity of tank (m ³)	浮盘型号 Model of floating deck	重量kg Weight (kg)	浮力kg Buoyancy (kg)
1	5.5	200	ZFP 5.5/200	392	823
2	7.5	300	ZFP 7.5/300	563	1210
3	8.2	500	ZFP 8.2/500	606	1291
4	9	600	ZFP 9/600	672	1447
5	10	800	ZFP 10/800	746	1604
6	11.5	1000	ZFP 11.5/1000	953	2011
7	14.5	2000	ZFP 14.5/2000	1322	2776
8	17	3000	ZFP 17/3000	1661	3588
9	21	5000	ZFP 21/5000	2187	4696
10	30	10000	ZFP 30/10000	4339	9285
11	42	20000	ZFP 42/20000	8835	18288
12	44	30000	ZFP 44/30000	9821	20428

以上储罐参数参照《钢制立式圆筒形内浮顶储罐系列》HG21502.2-92

注：我公司可根据用户要求设计、制造特殊规格浮盘。

The abovementioned parameters of tank are made by reference to the Steel Vertical Cylindrical Inner Floating Roof Tank Series HG21502.2-92.

Note: Our company can design and manufacture floating decks of special specifications as required by users.

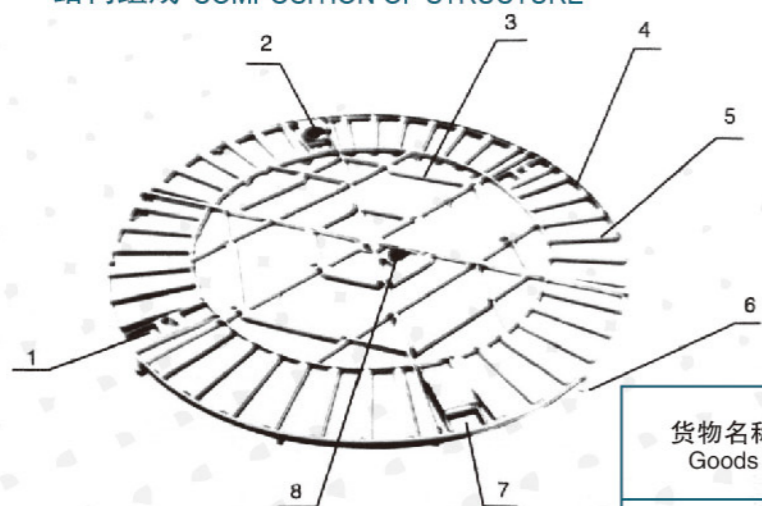
设计制造验收规范/标准 SPECIFICATIONS / STANDARDS FOR DESIGN, MANUFACTURING AND ACCEPTANCE

- 1、浮盘上所有开孔及附件位置根据甲方提供储罐施工图确定
- 2、浮盘的制作、安装遵守《企业产品标准—储罐内浮顶》及《浮盘安装操作规程》
- 3、遵循ISO9001-2012质量管理体系，主要执行标准：

1. All openings on the floating deck and accessory position are determined according to tank construction drawing provided by Party A.
2. The manufacture and installation of the floating deck shall follow Enterprise Product Standard—Internal Floating Roof of the Tank and Installation and Operation Specification of Floating Deck.
3. It follows ISO9001-2012Quality Management System. The main executive standards include:

GB/T3190-96	《铝及铝合金加工产品的化学成分》 Chemical Composition of Aluminum and Aluminum Alloy Processing Products
GB/T6892-96	《工业用铝及铝合金热挤压型材料》 Wrought Aluminium and Aluminium Alloys--Extruded Profiles for Commercial Usage
GB/T3880	《铝及铝合金轧制板材》 Aluminium and Aluminium Alloy Rolled Sheet
GB13348	《液体石油产品静电安全规程》 Safety Rules of Static Electricity with Relation to Liquid Petroleum Products
SH3046-92	《石油化工立式圆筒形钢制储罐设计规范》 Code for Design of Vertical Cylindrical Welded Steel Oil Tanks in Petrochemical Industry
API650	《钢制焊接油罐》附录H部分 Appendix H of Welded Steel Oil Tanks
HG/T2809-96	《浮顶罐软密封装置橡胶密封带》 Rubber Sealing Ribbons of Soft Sealing Device of Floating Roof Tank
Q/320700JAQ,01-2014	《储罐用内浮顶》 Internal floating roof Used for the Tank

结构组成 COMPOSITION OF STRUCTURE



- 1.防转机构 Anti-rotary device
- 2.量油装置 Oil measuring device
- 3.内浮筒 Inner buoy
- 4.骨架 Frame
- 5.外浮筒 Outer buoy
- 6.支腿 Outriggers
- 7.人孔 Manhole
- 8.通气阀 Breather valve

货物名称 Goods	型号 Model	数量(套) Quantity (set)	介质 Medium	密封 Seal
六边形内浮顶 Hexagon internal floating roof	Φ44.3米 Φ44.3m	1台 1 sets	汽油 Gasoline	

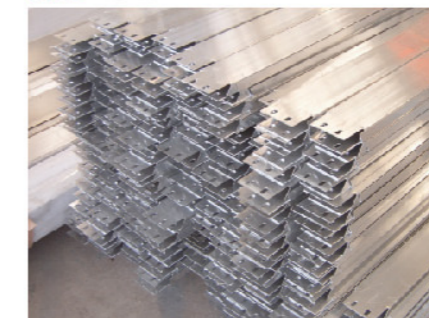
主要部件参数 PARAMETERS OF MAIN COMPONENTS

铝盖板 Aluminum cover plate



铝合金 Aluminum alloy:
厚度 Thickness: 0.5mm
宽度 Width: 1600mm
材质型号 Model: 3A21

骨架 Frame



铝合金 Aluminum alloy:
主梁—工字铝
Main beam: I-shaped aluminum:
92.5 × 50 × 2
副梁—槽铝
Secondary beam—slot aluminum:
92.5 × 26 × 2
材质型号 Model: 6063-T5

浮筒 Buoy



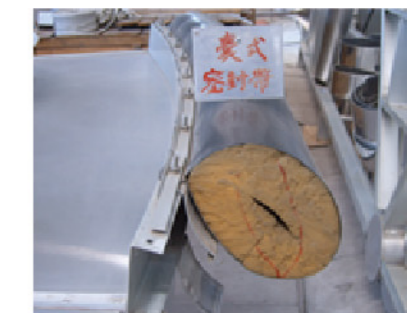
铝合金 Aluminum alloy:
直径 Diameter: φ185mm
厚度 Thickness: 1.5mm
材质型号 Model: 6063-T5

浮筒 Buoy



铝合金 Aluminum alloy:
端盖材料 Material of the end cover
厚度 Thickness: 2.0mm
材质型号 Model: 3A21

密封胶带 Sealing tape

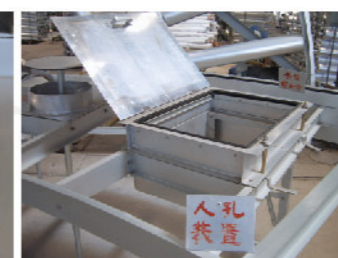


囊式胶带尺寸 Size of bladder-type tape
宽度 Width: 750mm
厚度 Thickness: 1mm
材质型号: 氟橡胶带
Model: Fluorine rubber belt

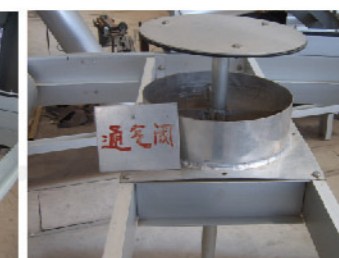
附件 Accessory



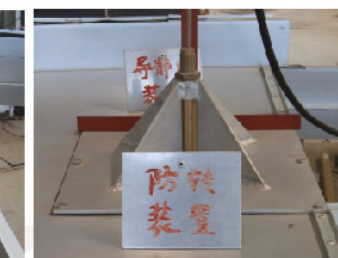
量油
Fuel measuring device



人孔
Manhole



通气阀
Breather valve



防转装置
Anti-rotary device

产品特点

●特有的正三角形单元结构，骨架强度大

浮盘骨架由若干正三角形单元构成，结构梁延伸至骨架边缘，骨架强度大、稳定性好；结构自身产生阻力作用，能迅速降低和吸收浮盘运行过程中储存介质产生的冲击。

●小尺寸浮筒均匀分布，增加运行可靠性

浮筒与骨架采用分体式，数量多，且分布均匀，避免因个别浮筒泄露造成整个浮盘的倾斜、卡盘现象，增大浮盘运行的可靠性。

●外围浮筒环状分布，保证密封运行可靠、平稳

浮盘采用了独特的浮筒布置形式，在外围周边密封带附近均匀设置浮子，呈环状分布使密封带受力均匀，用于克服浮盘在运行过程中产生的密封带与罐壁之间产生的摩擦力，保证浮盘安全运行，不卡盘。

●节能、降耗效果显著，可达98%以上

浮盘设计确保油气空间较小，有效减少了介质的蒸发量，降耗率达到98%以上。具体技术性能见《经济效益分析》。

●储罐利用率高

由于浮盘内部油气空间一般低于120mm，整个结构只有320mm厚，因此相比较其它结构浮盘增加了储油空间，提高储罐的利用率。

●安装简单、迅速，维修方便

浮盘安装采用螺栓链接，无需焊接，特别适用于改造罐；零部件均采用模具化制造，互换性和通用性好，每个零部件由储罐人空进入罐体，可单独撤换，便于安装、维修。

●耐腐蚀，使用寿命长

浮盘主体采用优质材料制作、防腐性能好、使用寿命长，可选铝、碳钢、不锈钢等材料；密封材料根据储存介质不同而异，具有导电耐磨、弹性好、等优良性能。

●安全性好

静电导出完善规范，没有潜在的静电危险，且不需焊接安装，确保浮盘使用安全。

PRODUCT FEATURES

●It has a special equilateral triangle unit structure and a high-strength frame.

The frame of floating deck is constituted by some equilateral triangle units and the girder of the structure extends to the edge of the frame which has high strength and good stability; the structure can produce resistance to quickly reduce and absorb the impact on the storage medium during the operation of floating deck.

●Small-sized buoys are uniformly distributed so as to increase the operational reliability.

The buoys are separated from the frame, with a large number, and they are distributed uniformly so as to avoid the floating deck tilt and jamming due to leakage of individual buoy and increase the operational reliability of floating deck.

●The outer buoys are distributed in the form of ring so as to ensure the sealing reliability and stability during operation.

The floating deck adopts a special form in the arrangement of buoys that floats are uniformly distributed around the peripheral sealing belt in the form of ring so as to make forces uniformly distributed on the sealing belt, overcoming the friction between the sealing belt and the tank wall during the operation of floating deck and ensuring the safety operation of floating deck, without jamming.

●The product has remarkable effects in terms of energy conservation and loss reduction, with the loss reduction ratio above 98%.

The design of floating deck ensures there is a small space for oil and gas, effectively reducing the evaporation amount of the storage medium, with the loss reduction ratio above 98%. For specific performance, see the Economic Benefit Analysis.

●A high utilization ratio of tank.

Since the oil and gas space inside the tank is generally lower than 120mm and the whole structure is only 320mm thick, in comparison with floating decks of other structures, the floating deck increases the oil storage space and improves the utilization ratio of tank.

●It can be easily and quickly installed and repaired.

The floating deck is connected by bolts, not needing welding, especially suitable for transforming tanks; the parts and components are manufactured by adopting the mold method so they have good interchangeability and universality, and all parts and components can be separately replaced by entering in the tank via the tank manhole, which is easy for installation and maintenance.

●With corrosion resistance and long service life.

The main body of floating deck is made of high-quality material, with good antiseptic property and long service life, and aluminum, carbon steel and stainless steel are optional; the sealing material varies with the storage medium, and it shall have such excellent properties as electric conduction and wear resistance, good elasticity.

●Good safety

The static electricity is perfectly and standardly conducted, without potential electrostatic hazards, and there is no need for welding installation to ensure the safety use of floating deck.

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部件及主体材料

●盖板采用3A21材质，厚度为0.5mm的防锈铝卷板；

●骨架均采用6063铝高强度防锈铝型材，其包复厚度为0.0172-0.0116mm；

●浮筒采用无缝铝管，浮筒壁厚1.7mm，两边端盖厚3mm；

●附件采用3A21材质，后抚慰3mm的防锈铝板制作；

●舌型或囊式胶带，根据介质选择橡胶种类。

MATERIAL OF PARTS AND THE MAIN BODY

●The cover plate adopts the 3A21 rust-proof aluminum rolled plate with the thickness of 0.5mm;

●The frame adopts 6063 aluminum high-strength rust-proof aluminum profile, and the coating thickness is 0.0172-0.0116mm;

●The buoy adopts seamless aluminum tubes, and the wall thickness of buoy is 1.7mm;

●The accessory adopts 3A21 material;

●Tongue-shaped or bladder-type tape; the rubber type shall depend on the medium.

经济效益分析 ECONOMIC BENEFIT ANALYSIS

以1000m³拱顶罐与安装ZFP 11/1000型铝质内浮盘的浮顶罐为例：

Examined by the 1000m³ dome-roof tank and the floating-roof tank equipped with ZFP 11/1000 aluminum inner floating deck:

储罐类型 Type of tank	介质 Medium	容积 Capacity	大呼吸损耗 /年 Big breathing loss /year			小呼吸损耗 /年 Small breathing loss /year			年损耗总计 (吨) Total annual loss (ton)
			每次损耗 Loss per time	年周转次数 Annual turnover frequency	合计 Total	每次损耗 Loss per time	年周转次数 Annual turnover frequency	合计 Total	
拱顶罐 Dome-roof tank	汽油 Gasoline	1000m ³	1584kg	20	31.68T	72.9kg	300	21.87T	53.55
浮顶罐 Floating-roof tank			16.7kg		0.334T			1.34kg	0.402T
每年减少损耗 Annual loss reduction								52.48	

注：以上数据按储存能力按680吨，平均气温28℃推算。
Note: The aforesaid data are calculated based on the storage capacity of 680 tons and mean temperature of 28℃.

通过以上对比数据，安装内浮盘的1000m³浮顶罐每年比同体积拱顶罐节油52.48吨，节能降耗率达98%以上。

According to the contrast data above, compared with the dome-roof tank of the same volume, the 1000m³ floating-roof tank equipped with inner floating deck can save oil up to 52.48 tons every year and make the energy conservation and loss reduction ratio above 98%.

技术性能及指标

- 浮盘总浮力大于浮盘总重量的两倍（浮重比 >2 ）；
- 外观质量平整、洁净、无机械损伤，部件组装连接可靠紧固，无有松动现象；
- 浮盘结构设计新颖，在使用相同材料的情况下，浮盘强度大、稳定性好；
- 浮盘在落底或漂浮状况下，所有的梁和浮筒设置的部位均应能承受不小于2200N（三人在上面行走）的集中载荷；
- 采用小尺寸的浮子且分布均匀，避免因个别浮子的损坏导致出现浮盘倾斜、卡盘；
- 所有浮子均采用无缝铝管，浮子均经过0.2Mpa水压试验合格，确保焊缝不渗漏；
- 骨架要求采用厚度 ≥ 2 mm的铝合金型材，外圈边缘侵入储液中 ≥ 100 mm；
- 通气阀要求按API标准H.6.2进行设计，最小开启压力为1000pa；
- 浮盘底部要求设置支腿，浮盘高度1800 mm，储罐底部的附属设备不与浮盘上的部件干涉，支腿承载能力要求大于浮盘的临界刚度值；
- 浮盘人孔开闭自如，翻盖周边密封，下框浸入储液 ≥ 100 mm，并配备供操作人员上下浮盘的梯子；
- 周边密封胶带采用囊式结构，依据罐内所装储液选用相应的橡胶材质，确保正常情况下使用周期15年以上；
- 面板的厚度0.5mm，相邻盖板搭接处加密封条密封，铆接点间距 ≤ 150 mm；
- 浮盘的防转装置在浮盘上下漂浮过程中能有效防止浮盘转动；
- 浮盘周围的密封带在浮盘落底和漂浮最高位置全程中，任何地方外侧均应与罐壁紧密接触而不漏液；
- 浮盘和罐体间应设置静电导出装置，采用3 mm的不锈钢钢丝绳，装置符合GB13348标准规定的要求，对罐体电阻 $<10\Omega$ 。

TECHNICAL PERFORMANCE AND INDEX

- The total buoyancy of the floating deck is more than two times of total weight of the floating deck (buoyancy-weight ratio >2);
- The appearance quality is smooth and clean without mechanical damage. The component assembly connection is reliable and fastening without looseness;
- The structure design of the floating deck is novel. On condition that the same material is used, the floating deck has high strength and good stability;
- When the floating deck drops bottom or floats, all setting positions of the beam and the buoy shall bear concentrated load no less than 2200N (three persons walk on it);
- Adopt small size float and keep uniform distribution so as to avoid the floating deck tilt and jamming due to damage of individual float;
- The aluminum tube is used for all floats. The floats all pass 0.2MPa hydrostatic test. Make sure leakage does not happen to the weld;
- The aluminum alloy profile with thickness more than or equal to 2mm is used for the frame. The depth of outer ring edge immersed in liquid storage is ≥ 100 mm;
- The breather valve is designed according to API Standard H.6.2. The minimum opening pressure is 1000pa; Set up outriggers at the bottom of the floating deck. The height of the floating deck is 1800mm. The accessory equipment at the bottom of the tank does not interfere with the component on the floating deck. Carrying capacity of outriggers shall be more than critical stiffness value of the floating deck;
- The manhole of the floating deck is open and closed freely. The flip surrounding is enclosed. The depth of lower frame immersed in fluid storage is ≥ 100 mm. Besides, provide a ladder to operation personnel for climbing up and down from the floating deck;
- The bladder-type structure is used for surrounding sealing tape. Select corresponding rubber material according to liquid storage in the tank. Make sure using period in normal condition is more than 15 years;
- The panel thickness is 0.5mm. Implement sealing of lapping zone of adjacent cover plates with sealing strip. The distance between riveting points is ≤ 150 mm;
- Anti-rotary device of the floating deck can prevent the floating deck from rotating effectively when it floats up and down;
- The outside of sealing belt around the floating deck shall contact the tank wall closely without leakage when the floating deck drops bottom or floats to the highest position;
- Make sure to set static electricity guiding device between the floating deck and the tank. Use 3mm stainless steel wire rope. The device meets the requirements of GB13348 Standard. The tank resistance is $<10\Omega$.

全接液蜂窝浮盘

全接液蜂窝浮盘采用无梁结构设计，模块单元排列为品字形错位连接，模块单元内部设置蜂巢芯；模块单元采用全焊接工艺，进行气密检测，保证模块单元无任何泄漏点。

标准蜂巢（蜂窝）箱高度 ≥ 140 mm，标准蜂巢（蜂窝）箱宽度尺寸 ≤ 550 mm，可以从人孔出入，蜂巢（蜂窝）箱上板材厚度1.0mm，下板材厚度1.2mm，蜂巢（蜂窝）箱材质 SUS304；蜂巢（蜂窝）芯材质为 3003H18，边长12mm，厚度0.05mm；蜂巢（蜂窝）箱高度满足浮力计算及强度要求，蜂巢（蜂窝）箱每平米高于2000个蜂巢（蜂窝）孔。

全补偿弹性板密封要求。密封由滑动弹力板、密封隔膜、调节板、弹力压板等部件组成。

滑动弹力板一端通过螺栓与浮盘加强边缘板相连，板与板采用搭接方式，环绕浮顶且紧贴罐壁，具有在各种工况情况下的边缘补偿。当罐体变形严重或外力作用浮盘移动造成浮盘与罐壁间距变大时，弹性金属板随浮盘一起运动，此时伸入液相中的弹性金属板向上移动，液体中弹性金属板长度变短，但始终保持弹性金属板在液体中的长度不小于100mm，又由于金属板具有良好弹性，弹性板始终与罐壁保持接触不分离，在环向间距的基础上补偿范围 ± 100 mm以上。

浮盘上下运行顺畅，居中性好，材料弹性适中，阻燃，重量轻，具有耐磨和导静电性强，使用寿命长等优异特性。

侧壁开孔的导波管，需要使用整体包裹伸缩囊套进行密闭处理，阻绝油气散逸，伸缩囊套材质为PU，厚度0.5mm，骨架材质为304不锈钢丝。

全接液蜂窝浮盘耐火试验2小时。不发生泄漏，正常运作。



全接液蜂窝浮盘结构图



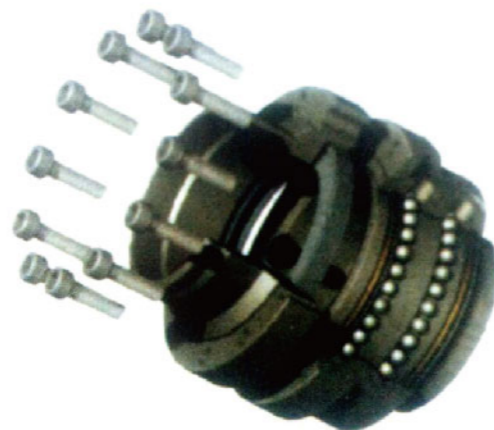
耐火试验图

陆用流体装卸臂 LAND LIQUID LOADING ARM

陆用流体装卸臂（鹤管）是由转动灵活、密封性好的旋转接头与管道串联起来，用于槽车与栈桥储运管线之间，进行液体介质传输作业的设备。

关键部件旋转接头，采用精密数控机床加工，内藏双滚道支撑结构，转动灵活，轻便可靠。外圈选用合金钢、内圈选用不锈钢或衬聚四氟乙烯，保证其能够安全、可靠的用于高温、低温、强腐蚀性的介质。

密封圈采用增强聚四氟乙烯材料，内衬不锈钢弹性支撑环、密封经抛光处理，具有优越的自润滑性及超强的耐腐蚀性。

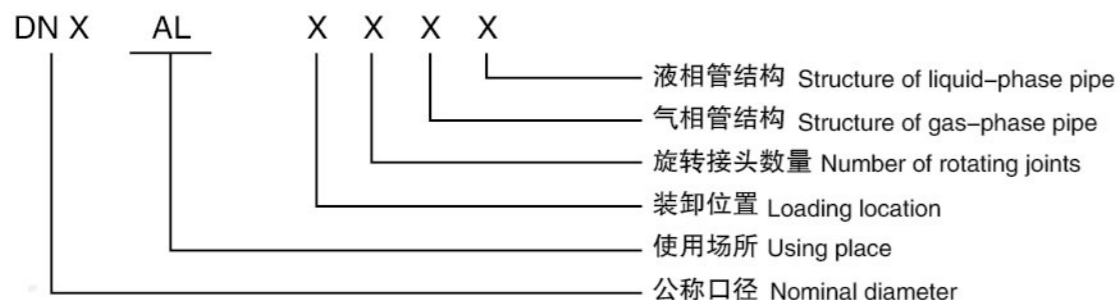


The land liquid loading arm (loading arm) is composed of rotating joints with good rotating flexibility and sealing performance and pipes, and it is a device used between the tank car and the trestle storage and transportation lines for the transmission of liquid medium.

The key parts, i.e. rotating joints, are processed by precision numerically-controlled machine tools and they have the supporting structure with build-in double raceway, which rotates flexibly and is light and reliable. The outer ring adopts alloy steel while the inner ring adopts stainless steel or PTFE liner so as to ensure that the device can safely and reliably apply to high-temperature, low-temperature or highly-corrosive medium.

The sealing ring adopts reinforced PTFE, and the lining stainless steel elastic supporting ring and sealing are polished, having excellent self-lubrication property and corrosion resistance.

型号说明 INSTRUCTIONS FOR MODEL



- 公称口径：按装卸臂液相管口径
- 使用场所代码：用AL字母表示，用于火车或汽车槽车的装卸作业
- 装卸位置代码：1-顶部装卸 2-底部装卸
- 旋转接头数量代码：计算液相管旋转接头 4-4个旋转接头 5-5个旋转接头
- 气相管结构代码：0-无气相管 1-上接式 2-下接式 3-上翻式 4-下翻式
- 液相管结构代码：1-上接式 2-下接式 3-上翻式 4-下翻式
- Nominal diameter: Based on the diameter of the liquid-phase pipe of loading arm.
- Code of using place: Letters AL means the loading and unloading work for train or truck tank.
- Code of loading location: 1-Top loading 2-Bottom loading
- Code of number of rotating joints: Calculating the rotating joints of liquid-phase pipe 4-4 rotating joints 5-5 rotating joints
- Code of structure of gas-phase pipe: 0-No gas-phase pipe 1-Up-connected 2-Down-connected 3-Up-turning 4-Down-turning
- Code of structure of liquid-phase pipe: 1-Up-connected 2-Down-connected 3-Up-turning 4-Down-turning

主要型号及其结构简图 MAIN MODELS AND DIAGRAMS OF THEIR STRUCTURES

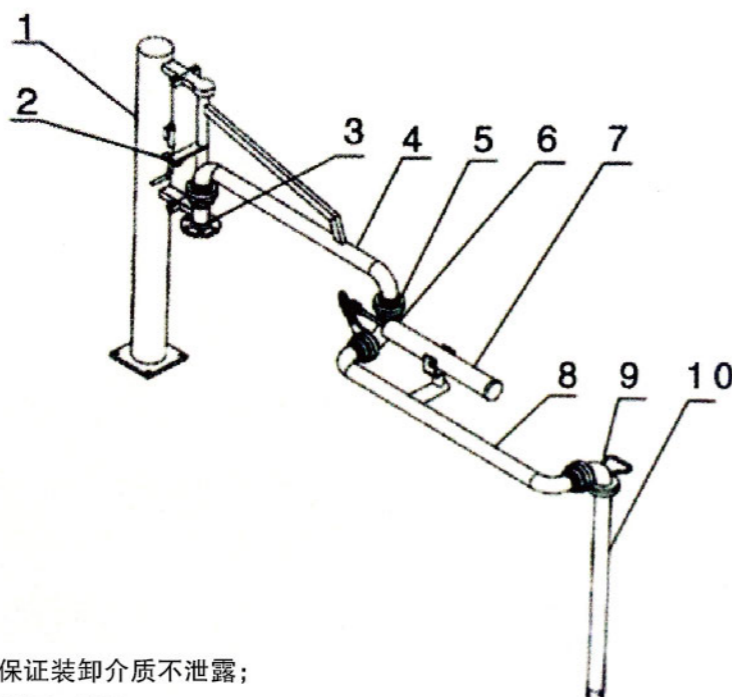
AL1401	AL1402	AL1403	AL1412
AL1501	AL1502	AL1503	AL1512
AL1513	AL2503	AL2504	AL2543

设计制造验收规范/标准 SPECIFICATIONS / STANDARDS FOR DESIGN, MANUFACTURING AND ACCEPTANCE

HG/T21608-96	《液体装卸臂》 Liquid Loading Arm
H/QB1006-93	《流体装载臂》制造部分 Liquid Loading Arm - Manufacturing Part
GB12459-90	《钢制无缝管件》 Steel Butt-Welding Seamless Pipe Fittings
GB 700	《碳素结构钢技术条件》 Standard Specification for Carbon Structural Steel
GB 3077	《合金结构钢技术条件》 Technical Requirements for Alloy Structure Steel
GB 8163	《输送流体用无缝钢管》 Seamless steel Tubes for Liquid Service
JB755-85	《压力容器锻件技术要求》 Technical Requirements for Forgings of Pressure Vessels
GB308	《滚动轴承钢球》 Rolling Bearings -Steel Balls
GB3323-87	《钢熔化焊接接头射线照相和质量分级》 Methods for Radiographic Inspection and Classification of Radiographs for Fusion Welded Butt Joints in Steel
DIN8563 T1	《焊接结构的长度和角度自由公差》 General Tolerances for Welded Constructions - Dimensions for Lengths and Angles
DIN8563 T2	《焊接质量保证，对工厂要求》 Quality Assurance during Welding, Requirements for Factories
DIN8563 T3	《焊接结构的形状和位置自由公差》 General Tolerances for Welded Constructions --- Dimensions for Shapes and Positions
GB985-88	《气焊手工电焊及气体保护焊焊缝坡口的基本形式与尺寸》 Basic Forms and Sizes of Weld Grooves for Gas Welding, Manual Arc Welding and Gas-shielded Arc Welding
GB/T 8923-88	《涂装前钢材表面锈蚀和除锈等级》 Rust Grades and Preparation Grades of Steel Surfaces before Application of Paints and Related Products
GB/T 13384-92	《机电产品包装通用技术条件》 General Specification for Packaging of Mechanical and Electrical Products

结构组成 COMPOSITION OF STRUCTURE

1. 立柱 Column
2. 内臂锁紧 Inner arm lock
3. 连接法兰 Connecting flange
4. 内臂 Inner arm
5. 旋转接头 Rotating joint
6. 中间弯管 Middle elbow
7. 弹簧缸 Spring cylinder
8. 外臂 Outer arm
9. 出口弯管 Outlet elbow
10. 垂管 Drooping pipe



产品特点

双滚道的旋转接头及带弹性卡的密封圈保证装卸介质不泄露；
随遇平衡的弹簧缸平衡器使装卸臂操作轻便、省力；
装卸过程中，在槽车正常移动范围内与槽车随动；
装卸臂收容状态时，锁定与槽车行进方向平行，占用空间小；
结构合理，以最小的臂尺寸，满足最合理的包络范围。

PRODUCT FEATURES

The double-raceway rotating joints and the sealing rings having elastic clamp ensure the medium will not leak during loading;
The spring cylinder balancer equipped with neutral equilibrium makes the loading arm to be operated in a convenient and labor-saving way;
During the loading, it moves along with the tank within the normal moving range of tank;
When the loading arm is recovered, it is locked in the direction in parallel with the travelling direction of tank, occupying small space;
With rational structure, the smallest arm size can meet the most reasonable envelope scope.

主要参数

适用介质：各种液态和气态产品
设计温度：-196℃-250℃
公称口径：DN50-DN150
设计压力：-0.08Mpa-6.0Mpa
管道材质：碳钢、不锈钢、衬管

MAIN PARAMETERS

Applicable medium: Various liquid and gaseous products
Design temperature: -196℃-250℃
Nominal diameter: DN50-DN150
Design pressure: -0.08Mpa-6.0Mpa
Pipe material: Carbon steel, stainless steel, liner pipe

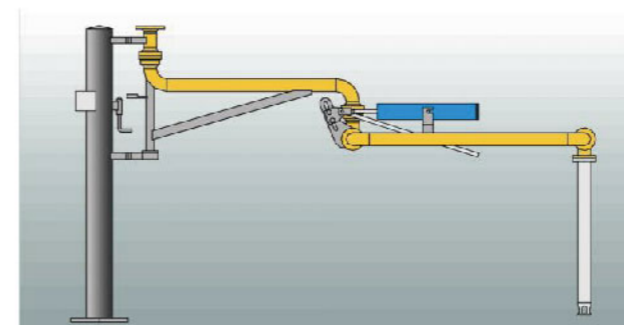
工作包络范围 WORK ENVELOPE SCOPE

定货要点

请业主或业主在我公司技术人员的指导下填写《鹤管设计数据表》，并提供相关图纸。

KEY POINT FOR ORDERING:

Please fill in the Loading Arm Design Data Sheet under the guidance of technicians of our company and provide related drawings.

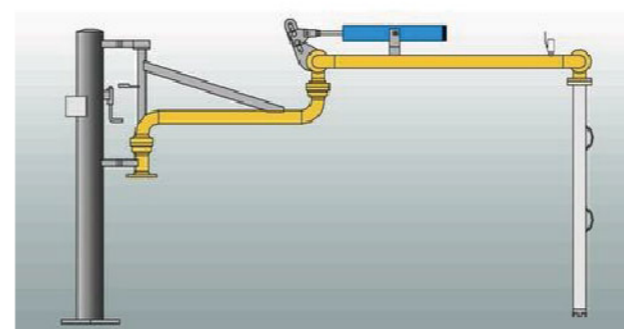


AL1401型

使用场合：槽车顶部敞口装载作业管线接口向下
适用介质：原油、成品油、化工介质
工作压力：0.6Mpa-2.5Mpa
管道材质：20#/304/316/铝

AL1401

Using place: Open loading work at the top of a tank truck; the pipe joint is downward
Applicable medium: Crude oil, refined oil product, chemical medium
Working pressure: 0.6Mpa-2.5Mpa
Pipe material: 20#/304/316/ aluminum

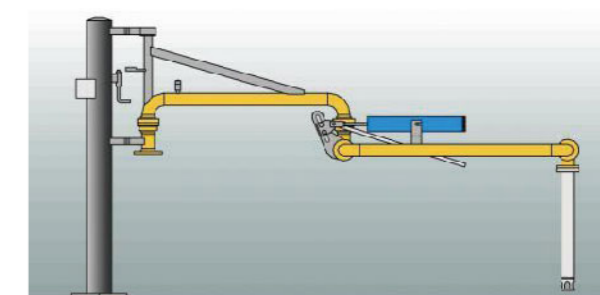


AL1403型

使用场合：槽车顶部敞口装卸作业管线接口向上
适用介质：原油、成品油、化工介质
工作压力：-0.08Mpa-2.5Mpa
管道材质：20#/304/316/铝

AL1403

Using place: Open loading work at the top of a tank truck; the pipe joint is upward
Applicable medium: Crude oil, refined oil product, chemical medium
Working pressure: -0.08Mpa-2.5Mpa
Pipe material: 20#/304/316/ aluminum

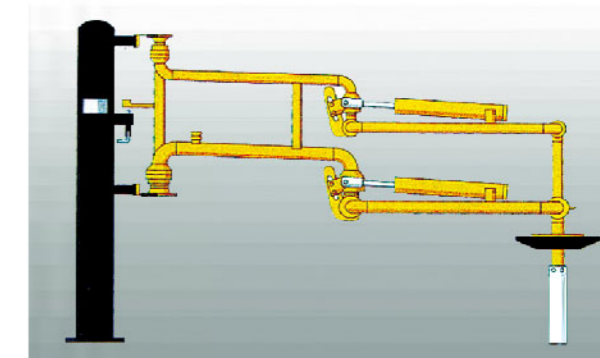


AL1402型

使用场合：槽车顶部敞口装载作业管线接口向下
适用介质：原油、成品油、化工介质
工作压力：0.6Mpa-2.5Mpa
管道材质：20#/304/316/铝

AL1402

Using place: Open loading work at the top of a tank truck; the pipe joint is downward
Applicable medium: Crude oil, refined oil product, chemical medium
Working pressure: 0.6Mpa-2.5Mpa
Pipe material: 20#/304/316/ aluminum

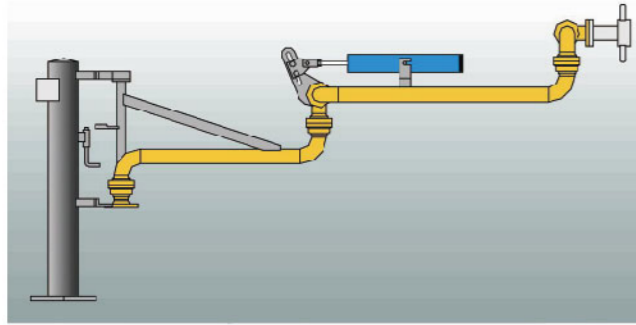


AL1412型

使用场合：槽车顶部敞口装载作业液相管线接口向上
适用介质：易挥发、有毒性的化工介质
工作压力：0.6Mpa-2.5Mpa
管道材质：20#/304/316

AL1412

Using place: Open loading work at the top of a tank truck; the pipe joint is upward
Applicable medium: Volatile and toxicant chemical medium
Working pressure: 0.6Mpa-2.5Mpa
Pipe material: 20#/304/316

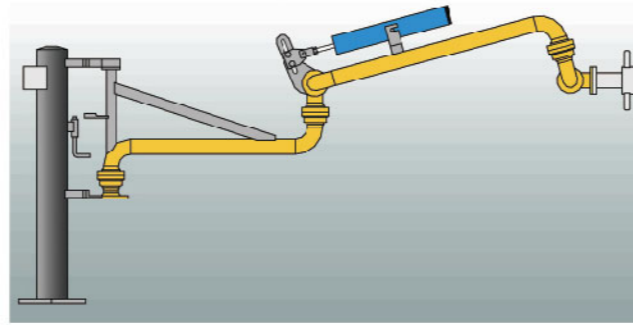


AL2503型

使用场合：火车底部密闭装卸作业管线接口向上或侧向
适用介质：原油等流动性差的介质
工作压力：-0.08Mpa/自流
管道材质：20#/304铝质接头

AL2503

Using place: Closed loading work at the bottom of a train; the pipe joint is upward or sidewise
Applicable medium: Low-fluidity medium, like crude oil
Working pressure: -0.08Mpa/ self-flow
Pipe material: 20#/304 aluminum joint

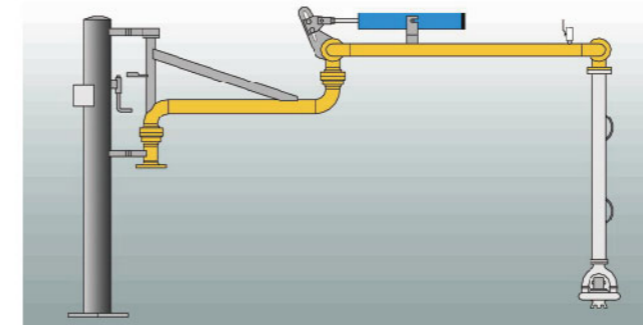


AL2504型

使用场合：火车底部密闭卸载作业管线接口向上或侧向
适用介质：原油等流动性差的介质
工作压力：-0.08Mpa/自流
管道材质：20#/304铝质接头

AL2504

Using place: Closed loading work at the bottom of a train; the pipe joint is upward or sidewise
Applicable medium: Low-fluidity medium, like crude oil
Working pressure: -0.08Mpa/ self-flow
Pipe material: 20#/304 aluminum joint

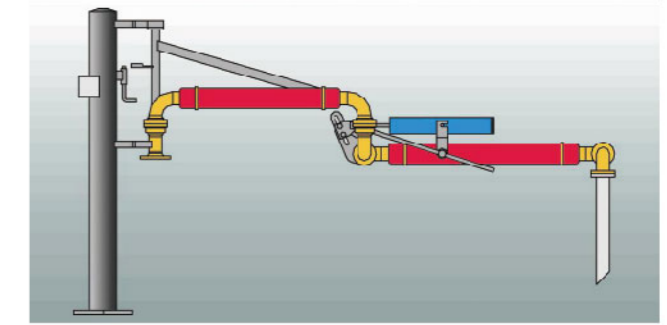


AL1403液动泵型

使用场合：槽车顶部敞口卸载作业气温高、介质易挥发
适用介质：轻质油
工作压力：-0.08Mpa
管道材质：20#/304/铝质泵

AL1403 HYDRAULIC PUMP TYPE

Using place: Open loading work at the top of a tank truck; the temperature is high and the medium is easy to volatilize
Applicable medium: Light oil
Working pressure: -0.08Mpa
Pipe material: 20#/304/ aluminum pump

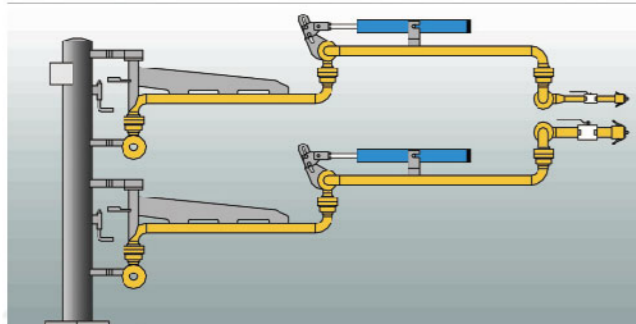


伴热型

使用场合：槽车顶部敞口装卸作业介质流动性差，需加温、保温
适用介质：原油、渣油、沥青等
工作压力：-0.08Mpa-2.5Mpa

HEAT-TRACING TYPE

Using place: Open loading work at the top of a tank truck; the medium has poor fluidity, and it shall be heated and kept warm
Applicable medium: Crude oil, residual oil, pitch, etc.
Working pressure: -0.08Mpa-2.5Mpa

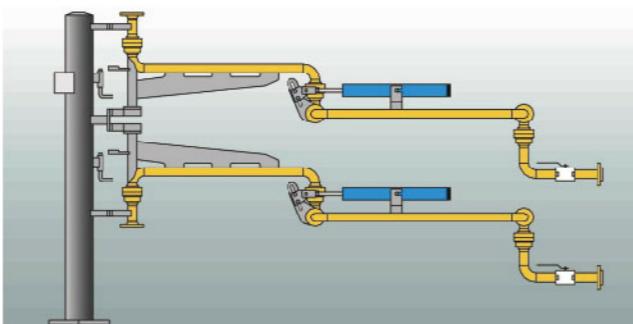


AL2543型

使用场合：汽车底部密闭装卸作业管线接口侧向
适用介质：液化气、液氯、液氨等
工作压力：1.0Mpa-4.0Mpa
管道材质：20#/304/316

AL2543

Using place: Closed loading work at the bottom of a truck; the pipe joint is sidewise
Applicable medium: Liquid gas, liquid chlorine, liquid ammonia, etc.
Working pressure: 1.0Mpa-4.0Mpa
Pipe material: 20#/304/316

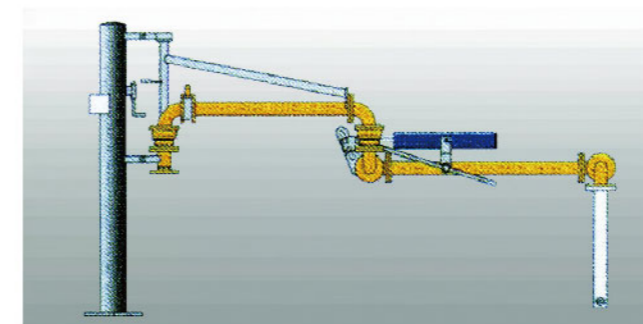


AL1512型

使用场合：火车顶部密闭装卸作业液相管线接口向下或侧向
适用介质：液化气、液氯、液氨等
工作压力：0.6Mpa-2.5Mpa
管道材质：20#/304/316

AL1512

Using place: Closed loading work at the top of a train; the liquid-phase pipe joint is downward or sidewise
Applicable medium: Liquid gas, liquid chlorine, liquid ammonia, etc.
Working pressure: 0.6Mpa-2.5Mpa
Pipe material: 20#/304/316

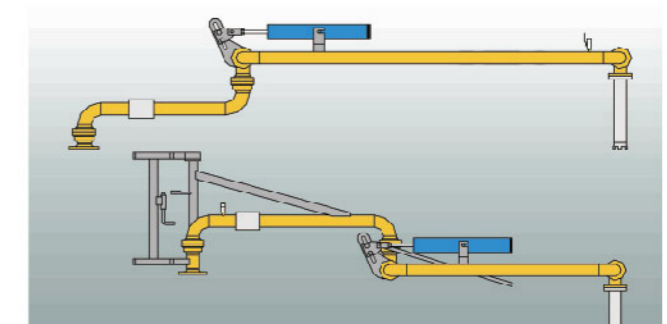


衬管型

使用场合：槽车顶部敞口装卸作业管线接口向上或向下
适用介质：强酸、强碱等强腐蚀性介质
工作压力：-0.08Mpa-2.5Mpa
适用型号：AL1401 AL1402 AL1403

LINER TYPE

Using place: Open loading work at the top of a tank truck; the liquid-phase pipe joint is upward or downward
Applicable medium: Highly-corrosive medium like strong acid or strong alkali
Working pressure: -0.08Mpa-2.5Mpa
Applicable models: AL1401 AL1402 AL1403



无立柱型

使用场合：各种流体装卸环境安装位置狭窄、不停产改造
适用介质：各种液体介质
工作压力：-0.08Mpa-4.0Mpa
管道材质：以上所有形式装卸臂

NON-COLUMN TYPE

Using place: Various fluid loading environment; the installation site is narrow, not stopped or transformed
Applicable medium: Various liquid medium
Working pressure: -0.08Mpa-4.0Mpa
Pipe material: All types of loading arms mentioned above

底部装车鹤管 BOTTOM LOADING ARM



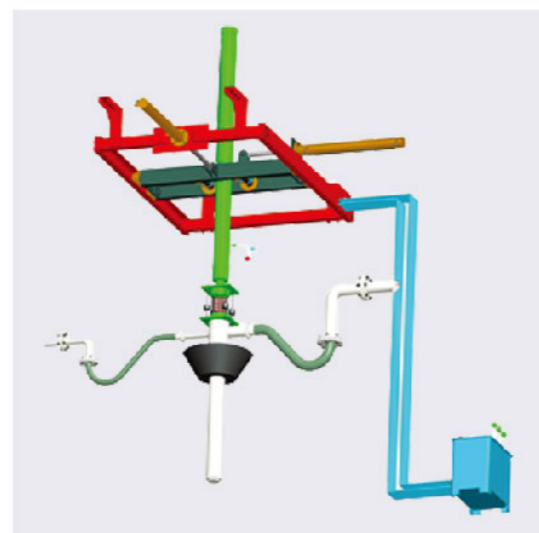
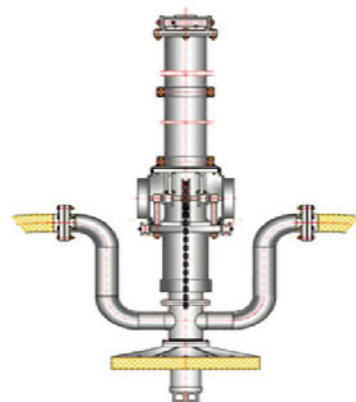
此种鹤管是我公司近年结合国际国内市场最新开发的具有自主知识产权的新型鹤管，满足安全环保要求，可替代国外同类产品。

This loading arm is a new product with proprietary intellectual property rights developed by our company based on the overseas and domestic market in recent years, meeting the safety and environmental protection requirements, and it can replace like products abroad.

桁架式自动装车鹤管 TRUSS-TYPE AUTOMATIC LOADING ARM

此种鹤管是我公司自行开发的全自动型鹤管。它可与自动定量装车系统共用，实现装车作业自动化，具有良好的市场前景。

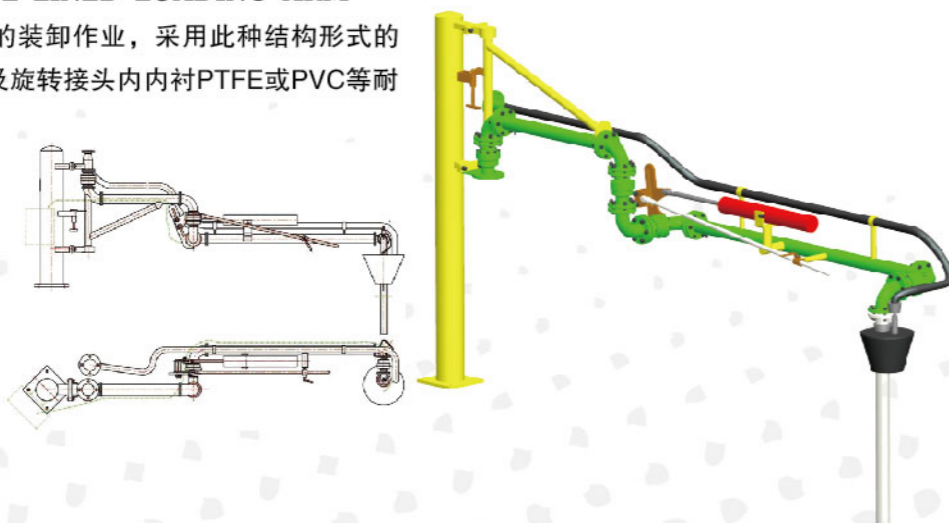
This loading arm is a kind of full-automatic loading arm independently developed by our company. It can be used together with the automatic ration loading system, realizing the automation of loading work, so it has a good market prospect.



衬四氟装车鹤管 PTFE-LINED LOADING ARM

对于盐酸等强腐蚀性介质的装卸作业，采用此种结构形式的鹤管。该鹤管的特点是在钢管及旋转接头内内衬PTFE或PVC等耐腐蚀介质。

It is appropriate to use such a loading arm for the loading work of highly-corrosive medium like hydrochloric acid. The loading arm is featured by the PTFE or PVC anti-corrosion medium lined in the steel pipe or the rotating joint.



陆用低温装卸臂 CRYOGENIC LOADING ARM

设计参数表 DESIGN PARAMETER LIST

型号、数量	最高罐车（船）接口高度
1 输送介质	11 最低罐车（船）接口高度
2 设计温度	12 液相接口高度
3 操作温度	13 气相接口高度
4 设计压力	14 基础台高度
5 操作压力	15 槽车（船）中心到接口中心距离
6 公称通径	16 槽车（船）中心到基础台距离
7 车（船）端连接法兰标准	17 槽车（船）横向偏移量
8 管端连接法兰标准	18 槽车（船）总想偏移量
9 旋向	19 立柱（配）（不配）
10 罐车（船）接口位置	20 基础座

No. Qty	Highest tank truck (vessel) joint height
1 Transmission medium	11 Lowest tank truck (vessel) joint height
2 Design temperature	12 Liquid-phase joint height
3 Operating temperature	13 Gas-phase joint height
4 Design temperature	14 Base deck height
5 Operating pressure	15 Distance from tank truck (vessel) to the center of the joint
6 Nominal diameter	16 Distance from tank truck (vessel) to the base deck
7 Standards for the flange connected at the truck (vessel) end	17 Lateral deviation of tank truck (vessel)
8 Standards for the flange connected at the pipe end	18 Total deviation of tank truck (vessel)
9 Direction of turning	19 Column (matched) (unmatched)
10 Tank truck (vessel) joint position	20 Foundation seat

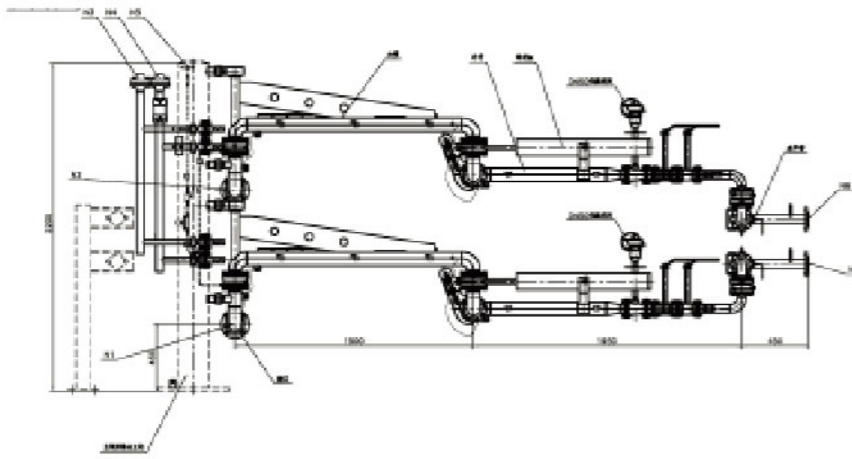
基本配置表

工艺管线：316L或304L，GB/T14976
弯头：316L或304L，GB/T12459
法兰：316L或304L
旋转接头锻件：316L或304L
旋转接头动密封：复合材料（进口密封圈，圣戈班）
旋转接头静密封：PTFE（国产）
不直接与工艺管线连接的结构件：Q235，GB/T700
与工艺管线连接的结构件：304
低温阀2"（液相臂用）：川空
低温阀2"（气相臂用）：川空
低温阀1"（氮气置换用）：川空
旋转接头氮气保护系统：Φ10硬管含减压阀、单向阀
氮气置换系统：DN25金属软管并配两进两出4个低温球阀。

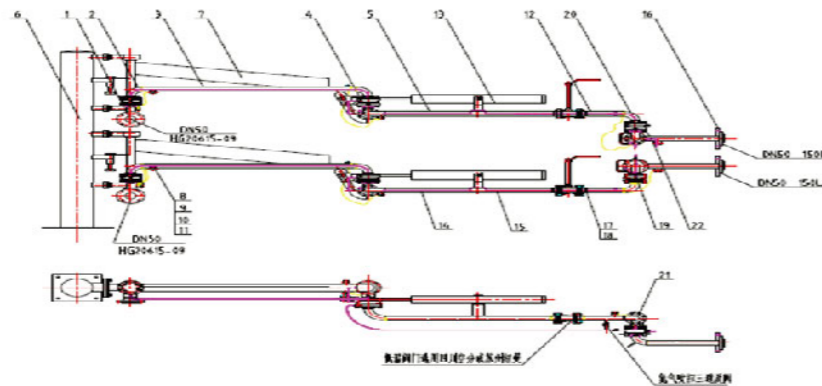
BASIC CONFIGURATION LIST

Process pipe: 316L or 304L, GB/T14976
Elbow: 316L or 304L, GB/T12459
Flange: 316L or 304L
Forging of rotating joint: 316L or 304L
Motive seal of rotating joint: Composite material (Imported sealing ring, Saint-Gobain)
Static seal of rotating joint: PTFE (domestic)
Structural part not directly connected with the process line: Q235, GB/T700
Structural part connected with the process line: 304
Low temperature valve 2" (for liquid-phase arm): Chuankong
Low temperature valve 2" (for gas-phase arm): Chuankong
Low temperature valve 1" (for nitrogen displacement): Chuankong
Nitrogen protection system of rotating joint: Φ10 rigid pipe including reducing valve and one-way valve
Nitrogen displacement system: DN25 flexible metal pipe equipped with 4 cryogenic ball valves with two in and two out

陆用低温流体装卸臂（A型） LAND CRYOGENIC FLUID LOADING ARM (A TYPE)



陆用低温流体装卸臂（B型） LAND CRYOGENIC FLUID LOADING ARM (B TYPE)



B型配置和A型基本相同。不同点：

针对A型氮气置换系统用软管存在的缺陷，并结合液化工厂实际使用当中把余液吹进槽车的现象。把旋转接头氮气保护系统和氮气置换系统合二为一，在旋转接头保护管末端加一个三通，装完车通过两个阀门的转换对余液进行吹扫（吹进槽车）。

The B Type and A Type are basically the same in configuration, but they have the following difference:
Based on the defect that the hose used in A Type for the nitrogen displacement system and the phenomenon that liquefaction plants blow the residual liquid into the tank truck in actual use, the rotating joint nitrogen protection system and the nitrogen displacement system are combined as one so that residual liquid can be blown (into the tank truck) through the conversion of two valves after loading by adding a tee joint to the end of rotating joint protection pipe.

陆用低温撬装系统

CRYOGENIC SKID-MOUNTED LAND LOADING & MEASURING SYSTEM

陆用低温装车撬系统是指将每一个LNG装车鹤位内的仪表和设备集成在一个专用的框架结构内，仪表和设备包括装车鹤管、流量计、静电报警控制器、压力变送器、装车流量控制阀、紧急切断阀、装车泵、批量控制器等；陆用低温装车撬系统在生产厂家进行仪表及设备安装、电气连接，完成系统强度和气密测试，系统功能测试，记录测试数据，系统测试合格后方可出厂，生产厂家出具系统合格证；装车撬到达用户装车现场现场后，连接地角螺栓，连接工艺管线、供电线路和通讯线路后，经过简单的调试就可以直接投入使用；和控制系统就地组装比较，可以节省现场设计和现场施工量，缩短项目工期，同时提高了装车控制系统品质。

The cryogenic skid-mounted land loading & measuring system refers to the integration of all the instruments and devices inside the LNG loading arm in a special frame structure. The instruments and devices include loading arm, flowmeter, static electricity alarm controller, pressure transmitter, loading flow control valve, emergency cut-off valve, loading pump, as well as batch controller. The cryogenic skid-mounted land loading & measuring system leaves factory after going through instrument and device installation, electrical connection, system strength and gas-tightness test, system function test, with the test data recorded and system test qualified, and the manufacturer shall issue the system conformity certificate. After it arrives at the loading site of a user, it can be put into use after the anchor bolts, process pipe, power supply line and communication line are connected and a simple debugging is completed. Compared with the on-site assembling of control system, it can save site design and site construction work, shorten the project duration, as well as improve the quality of loading control system.



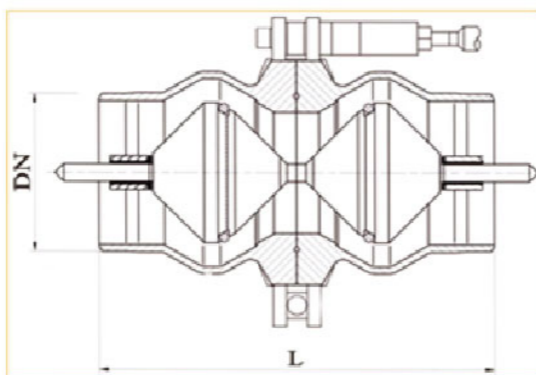
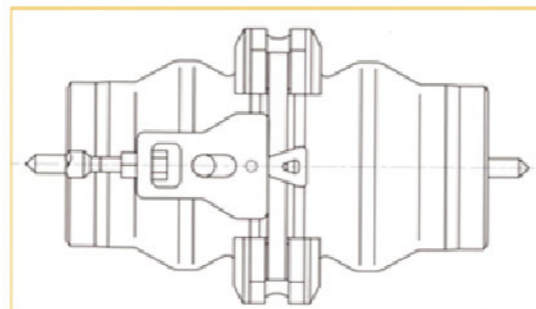
拉断阀 SNAP VALVE

主要用途

HLD1拉断阀设计安装在化工原料（如液态丙烷、氨水、环氧乙烷、液化石油气、丁二烯、工业甲醇、天然气）的装卸软管上，当承受一定拉力时，拉断阀会自动断开，防止因装卸槽车的无意溜车而拉断装卸管引起泄漏，防止意外的发生而造成人员和设备的更大危害。此阀门需人工复位并可重复拉断使用。阀门有：法兰和内螺纹两种连接方式。

Main uses

HLD1 snap valve is designed to install on the loading hose for chemical materials (such as liquid propane, ammonia water, ethylene oxide, liquefied petroleum gas, butadiene, industrial methanol and natural gas), and when the tension force suffered reaches a certain point, the snap valve will automatically disconnect so as to prevent the accidental sliding of loading tank truck from snapping the loading hose to cause leakage and avoid the occurrence of accidents which can cause larger hazards to persons and devices. The valve needs manual reset and it can be snapped repeatedly. The valve has two connecting methods: flange and internal thread.



分散型自动装车控制管理系统

Decentralized Automatic Loading Control and Management System

分散型自动装车控制管理系统，主要用于石化部门油库油料及化工产品的收发过程控制和管理，是实现自动化定量装车的理想设备。能有效地完成装车作业过程中的参数设置、数据采集、流量温度补偿、定量控制、程序操作、防溢防静电联锁控制、运行监视、报表打印等各项工作。

The decentralized automatic loading control and management system is used to control and management the receiving and delivering of oils and chemical products in the oil depot of petrochemical section, and it is an ideal device to realize the automatic ration loading. It can effectively complete the work including parameter setting, data collection, flow and temperature compensation, ration control, procedure operation, anti-overflow and antistatic interconnected control, operation monitoring and report printing during the loading work.

系统功能

该系统具有现场分散操作控制和远程集中控制管理功能。为了确保系统的可靠性，系统具备控制室控制管理的同时，认可采用现场分散控制的功能。在控制室设备出现异常的情况下，操作员可通过现场控制器实现站台单个鹤位的装车工作。

A、现场控制装车

操作人员可以使用现场防爆装车控制器就地装车自动控制

B、控制室集中控制装车

使用与现场控制器相连的计算机系统，可以实现同时对多个鹤位的装车自动控制，并自动生成装车记录。

SYSTEM FUNCTION

The system has site decentralized operating control and remote centralized control and management functions. In order to ensure the system reliability, the system shall have control room control and management function, as well as the site decentralized control function. When the devices in the control room are abnormal, operators can realize the loading work of single loading arm at the site by the site controller.

A. Site control loading

The operator can realize the automatic control of loading on the site by use of the site anti-explosion loading controller.

B. Centralized control

Using the computer system connected with the site controller can realize the automatic control over the loading of several loading arms at the same time and automatically generate load records.

系统特点

- 1、系统采用分散控制、集中管理的方法。
- 2、系统架构灵活，具有很强的可扩充性。
- 3、自动检测、控制现场阀门和泵的启停。
- 4、主-从机自由切换，可靠性高。
- 5、下位机上设有静电接地，溢出保护检测功能，提高油品、化工原料发放的安全作业能力。
- 6、机内重要参数存于I²ROM中，不受电池和掉电保护电路影响。

SYSTEM FEATURES

1. The system adopts the decentralized control and centralized management method.
2. The system has flexible frame and very strong extendibility.
3. Automatic test, control the stop and start of valves and pumps on the site.
4. Automatic master-slave switchover, high reliability.
5. The valve machine has electrostatic grounding and overflow protection and test functions, which improve the safety work during the granting of oil and chemical materials.
6. The main parameters of the machine are saved in I²ROM, not affected by the battery or the power fail protection circuit.

系统软件管理功能

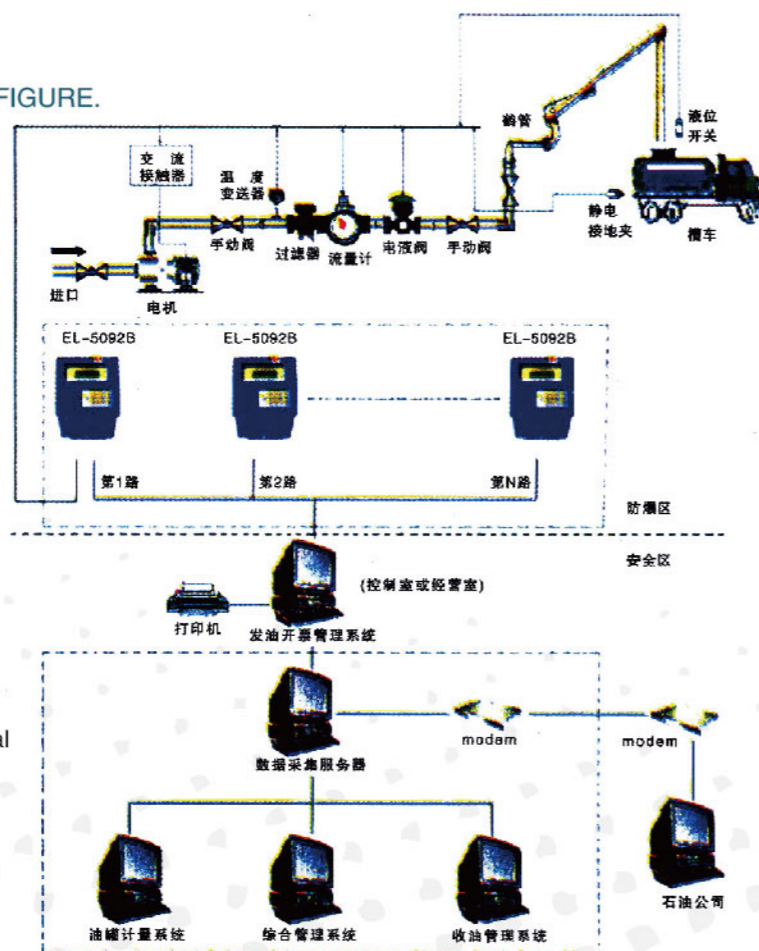
- 1、实时检测、动态显示下位机发货的工作情况。
- 2、具备指定货位提货或同类品种物料任意货位提货方式
- 3、系统功能状态、参数设置可现场组合，并具备库存管理、票单挂失、数据备份等功能，并生成相应日志。
- 4、系统可查询某年、月、日、时或某单位、某车号以及某种物料的发放情况，并可进行组合查询、具备数据分类统计和报表的生成打印。
- 5、系统进行权限分级管理，并设有相应密码锁。
- 6、与上一级系统进行联网，实现公司开票、发货处验单发货的有机组合。
- 7、可以与局域网进行信息数据共享，并具有拓展功能，可以方便地增加货位，并可进行升级更新。

SYSTEM SOFTWARE MANAGEMENT FUNCTION

1. Real-time test and dynamic display of the work condition of slave machine delivery.
2. Picking-up at the designated freight lot or at a random lot for materials of the same kind.
3. The system function status and parameter setting can be combined on the site; it has such functions as inventory management, report for the loss of bill, data backup, as well as generation of corresponding logs.
4. The system enables the query of delivering of some materials on a certain date, by a certain unit, truck number, and combined query, classified data statistic, as well as generation and printing of reports.
5. The system can conduct grading of authority and set corresponding coded locks.
6. It can, through the networking with the upper level system, organically combine the two processes that the company makes invoices and the delivery place verifies documents and delivers goods.
7. It can realize the information and data sharing via the LAN and has extended function, increasing freight lots in a convenient way and upgrading and updating.

系统结构示意图如图所示

THE SYSTEM STRUCTURE IS SHOWN IN THE FIGURE.



应用范围

石化企业轻油、液态烃装车
大型油库轻油、液态烃装车
化工企业液体化工产品装车

Scope of application

Light oil and liquid hydrocarbon loading of petrochemical enterprises
Light oil and liquid hydrocarbon loading of large oil depots
Light chemical products loading of chemical enterprises

油罐浮动出油装置 OIL TANK SWING SWPIES

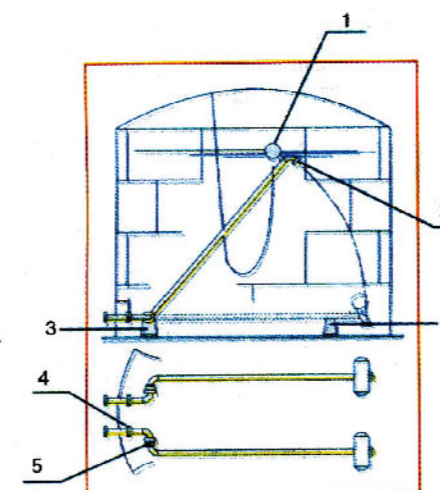
油罐浮动出油装置适用于各类卧式，立式储罐使用，其一端连于油罐底部出油短管上，另一端同浮筒吊在液面下，并随液面升降而浮动，始终抽取表面燃油，由于水分、杂质在重力场的沉降作用，上层燃油的水分和杂质始终低于底部油层。因此，使用油罐浮动出油装置，抽取上层燃油，能保证发出较洁净的燃油，延长下游净化设备的使用寿命。

本设备还具有防涡流措施和自渗罐油功能，既可向油罐内注油，也可向油罐外发油。

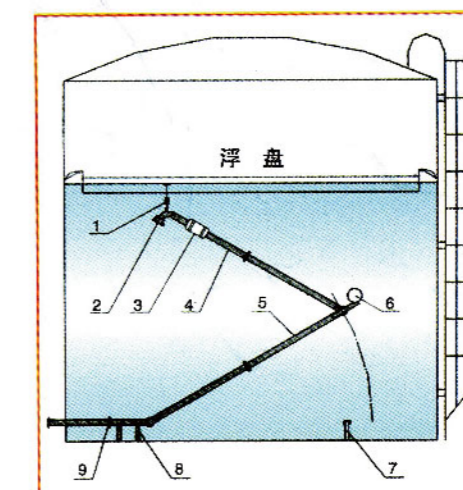
Oil Tank swing line series can be set in various horizontal or vertical fuel oil tanks. In the oil tank, one end of swing line is connected with oil outlet nozzle at the bottom tank shell course another end (the suction of swing line) is hung by float under liquid level. The suction of swing line is floating up and when liquid level is rising and falling, so that the fuel oil supplied from the tank is always in upper layer. As the water and impurity have fallen as gravity, the fuel oil in upper layer is cleaner than that in lower layer. So using the swing line can confirm the cleaner fuel oil to be supplied and the downstream cleaning equipment to be operated longer.

The equipment also has anti-vortex device and self-penetration and oil injecting functions, so that fuel oil can be filled into and sent out of the tank through swing line.

结构组成 COMPOSITION OF STRUCTURE



- | | |
|--------|------------------|
| 1、浮筒 | 1、Buoy |
| 2、吸油口 | 2、Oil suction |
| 3、固定座 | 3、Fixed seat |
| 4、旋转接头 | 4、Rotating joint |
| 5、接口法兰 | 5、Joint flange |



- | | |
|--------|------------------------|
| 1、柔性连接 | 1. Flexible connection |
| 2、吸油口 | 2. Oil suction |
| 3、上端浮筒 | 3. Upper buoy |
| 4、上部臂 | 4. Upper arm |
| 5、下部臂 | 5. Lower arm |
| 6、中间浮筒 | 6. Middle buoy |
| 7、固定座一 | 7. Fixed seat I |
| 8、固定座二 | 8. Fixed seat II |
| 9、接口法兰 | 9. Joint flange |

注：请业主提供以下参数或提供相关图纸

- 油罐类型及内径
- 接管法兰的规格及标准
- 接管口径及伸出长度
- 接管中心距罐底部高度
- 储罐装油最大高度
- 左/右旋结构选择

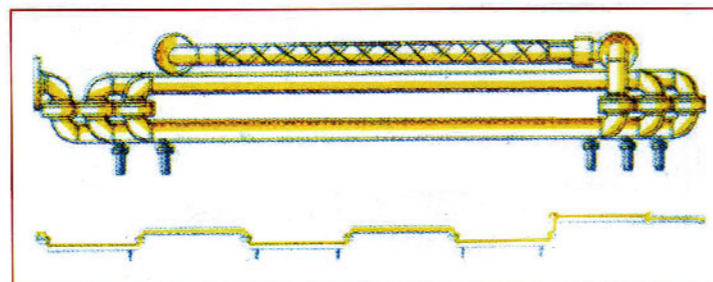
Note: Please provide the following parameters or related drawings

- Type and inner diameter of oil tank
- Specifications and standards of connecting pipe flange
- Diameter and extension length of connecting pipe
- Elevation of connecting pipe
- Max. height of loading oil in the tank
- Left/right rotation construction selection

AL2803飞机加油臂（地爬管）

飞机加油臂的公称口径为DN80或DN65，由几节管道用旋转接头连接组成，配有平衡装置与飞机取油管连接，一人操作，简单方便。

飞机加油臂的公称口径为DN80或DN65



AL2803 AIRCRAFT REFUELING ARM (CREEPING PIPE)

The nominal diameter of aircraft refueling arm is DN80 or DN65. It is composed of several rotating joints for pipes, equipped with a balancing device, and when it is connected with the aircraft extractor, it is easy and convenient for one person to operate.

The nominal diameter of aircraft refueling arm is DN80 or DN65.

油罐浮动出油装置“性能特点”：

- 1、适于介质：航空煤油、汽油、柴油等。
- 2、公称直径：DN50mm-900mm。
- 3、公称压力：PN0.6Mpa- PN2.5Mpa。
- 4、上举摆角：0~75°。
- 5、拆装要求：结构组成部件，能从油罐入孔出入。
- 6、本设备具有防涡流措施和自渗出罐油功。

CHARACTERISTICS

- 1、The swing line used for aviation kerosene, Gasoline, diesel oil and so on.
- 2、DN50-900 Nominal diameter: DN50mm-900mm.
- 3、Nominal pressure: PN0.6Mpa- PN2.5Mpa.
- 4、Max. Up rotating angle 0~75°.
- 5、The swing line can be separated into several Compartments which can be delivered into out of the oil tank through shell manhole.
- 6、The swing line has anti-vortex device and self-Penetration device, so that fuel oil can be filled into and sent out of the tank through swing line.

油罐浮动出油装置“订货参数”：

- 1、油罐类型（立式或卧式）
- 2、出油管口径（外径壁厚）
- 3、出口管法兰的公称压力及标准
- 4、油罐内径
- 5、油罐装油高度
- 6、油罐罐底坡度
- 7、出口管中心距罐底部高度

TECHNICAL PARAMETERS ORDERED BY USER

- 1、Tank type (horizontal or vertical)
- 2、Diameter of oil outlet nozzle (outside diameter & Wall thickness)
- 3、Nominal pressure of the flange of oil outlet nozzle and standards
- 4、Tank inside diameter
- 5、Liquid level in oil tank
- 6、Slope of tank bottom
- 7、Elevation of oil outlet nozzle

油罐浮动出油装置“产品用途”

1. 安装在储油罐内，和罐壁出油管连接达到防止罐底污水及化学、机械杂质与油料混合出罐，保证油罐向外供油的纯净度；
2. 做高位液下进油管使用；
3. 适用于国内外油品储运、油田、石油化工、电力、冶金、航空及轻工、食品等行业各类储罐。

PRODUCT USE

- 1、Is installed in the oil tank, and tank wall outlet connected to prevent the tank bottom water and chemical, mechanical impurities and oil mixing tank, to ensure the purity of outward oil tank;
- 2、Do high liquid inlet pipe use.
- 3、Applies to all domestic and foreign oil storage and transportation, oil, petrochemical, electric power, metallurgy, aviation, light industry, food and other industries of various types of tanks.

油罐浮动出油装置“结构及原理”

1. 设备由回转机构、回转臂（输油管）、浮子、仪表等四个部分组成；
2. 回转机构通过法兰与罐壁接管连接；
3. 回转臂（输油管）一端链接回转机构，另一端链接浮子；
4. 油罐进油或出油时，液位上升或下降，浮子也跟着上升和下降，浮子一端因为链接回转臂（输油管）而带动回转臂（输油管）跟着做上下回转运动；
5. 本装置可在浮顶罐内安装使用，上端与浮顶连接，由浮顶带动实现浮动出油。



STRUCTURE AND PRINCIPLE

- 1、The equipment consists of a rotating mechanism, the rotary arm (pipeline), the four part of the float, instrument etc.
- 2、The rotary mechanism is connected through the flange and pipe wall.
- 3、Rotary arm (pipeline) rotary end link, the other end of the link.
- 4、The tank into the oil or the oil, liquid level rise or fall, the float followed up and down, float end because link rotary arm (pipeline) to drive the rotary arm (pipeline) follow up and down motion.
- 5、The device can be installed and used in floating roof tank, and the upper end of the floating roof connected by floating roof to achieve floating oil.

油罐浮动出油装置“主要技术指标”

产品型号：FD-AB/S
符号含义：FD 产品代号，A为公称直径，B为罐容积，S 带仪表。
产品公称直径：DN50-900 设计温度：液体流动温度——210℃
设计压力：PN0.6Mpa- PN2.5Mpa
浮动出油高度：0.1-32m
法兰标准（可由用户指定）
防腐性能：抗氯离子CL⁻、H₂S腐蚀及酸碱

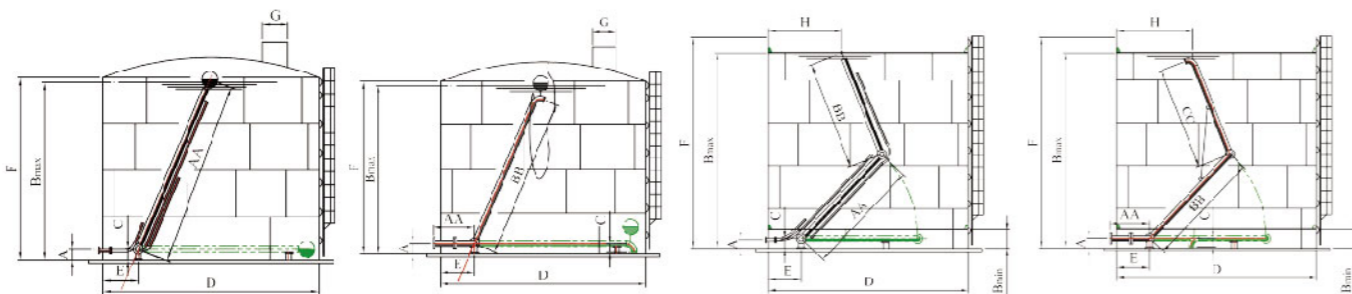
THE MAIN TECHNICAL INDICATORS

Product model: FD-AB/S
Symbolic meaning: FD product code, A nominal diameter, B tank, S instrument.
Product nominal diameter: DN50-900 design temperature: the temperature of 210 °C liquid flow
Design pressure: PN0.6Mpa- PN2.5Mpa
Floating oil height: 0.1-32m
Flange standard (to be specified by the user)
Corrosion resistance: resistance to chloride ion CL⁻, H₂S corrosion and acid.

罐下采样器 TANK UNDER SAMPLER

罐下采样器是指用于采集油品试样的罐下采样设施，包括设在罐内的采样管及其附件和罐外部分的阀门和泵等。

The tank under sampler refers to the tank-under sampling facility for sampling of oils. It consists of sampling pipe and related accessories inside the tank and the valve and pump outside the tank.



特点

- 适用于汽油、煤油、柴油、喷气燃料、石脑油和苯类等液体石油产品的采样。
- 实际采样点误差与设计误差不超过5%。
- 采样管的摆动范围不对罐体及浮盘造成损伤。
- 对罐内油品的三个不同高度点进行采样，采样高度分别为1/6、1/2、5/6处液面高度。
- 主体结构多为三根采样管及一根支撑管（支撑管也可是浮动出液装置的浮管）组成。
- 节省采样时间，提高工作效率。
- 可减少静电效应的危险。
- 介质为喷气燃料时，采样管材质选用不锈钢或铝合金。
- 无特殊要求时，采样管的材质可选用碳钢。
- 罐下采样器分析结果与国际手工采样分析结果一致。
- 采样出口可配备防盗设施

FEATURES

- It applies to the sampling of liquid petroleum products such as gasoline, kerosene, diesel oil, jet fuel, naphtha and benzene.
- The difference between the actual sampling point error and the design error does not exceed 5%.
- The swing of sampling pipe will not damage the tank body or the floating deck.
- Sample the oils in the tank at three different height points, respectively 1/6, 1/2 and 5/6 liquid level.
- The main structure is composed of three sampling pipes and one supporting pipe (the supporting pipe may be a floating pipe of the oil tank swing line series).
- It can save sampling time and improve the work efficiency.
- When the medium is jet fuel, the sampling pipe shall be made of stainless steel or aluminum alloy.
- If no special requirements, the sampling pipe can be carbon steel.
- The analysis result of the tank under sampler is consistent with that of the international manual sampling.
- The sampling outlet can be equipped with a burglar device.

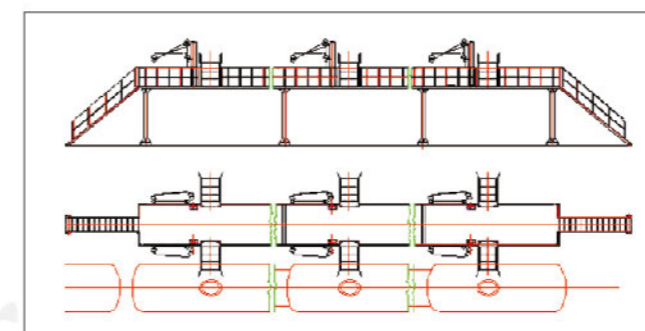
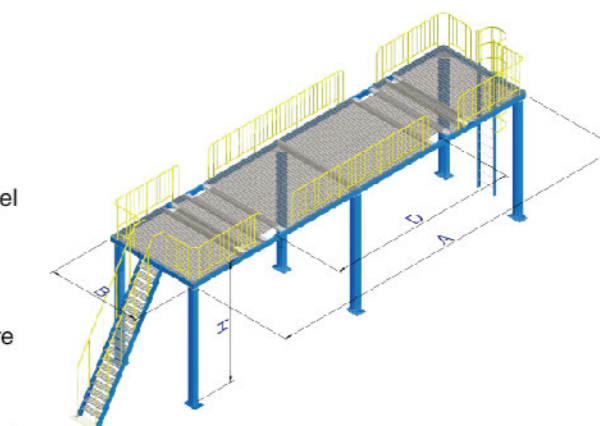
钢制组合栈桥 FABRICATED PLATFORM

用于公路和铁路槽车顶部装卸并供人员行走的综合作业平台。

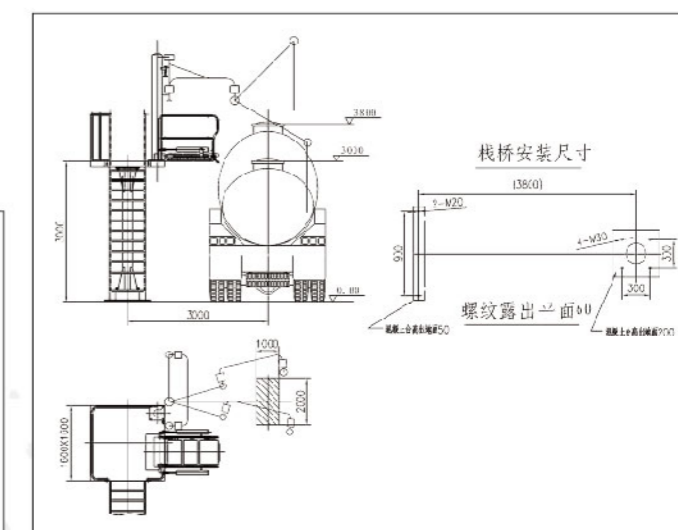
It is a complex work platform used for the loading on the highway or at tr

- 全钢制做，安全美观，承载能力强。
- 分体组装式结构，标准紧固件联接，便于拆装。
- 可以是分别的、单独的，也可以是整体连续的。
- 栈桥表面采用槽钢与钢格板拼装结构。
- 热浸锌处理的钢格板具有良好的耐磨性和高防腐性能。
- 钢格板表面有半圆形防滑齿，保证操作人员的安全性。
- 钢格板结构表面不积雨雪，台面上下通风不积热。
- 栈桥表面亦可选用花纹板。
- 可单侧或双侧作业。
- 可单立柱或双立柱支撑。
- 可根据现场做特殊设计。

- Made of all-steel material, it is reliable and beautiful and has strong bearing capacity.
- With the split assembled structure, it is connected by standard fasteners and is easy to be disassembled.
- It can be separate or single, or continuous in the whole.
- The platform surface adopts the splicing construction of steel channel with steel bar grating.
- The hot-dip galvanizing steel bar grating has good wear resistance and high corrosion resistance.
- The steel bar grating surface has semicircle anti-skid teeth to ensure the safety of operators.
- The rain or snow will not accumulate on the surface of steel bar grating structure, and the top and the bottom of the platform have good ventilation, not accumulating heat.
- The platform surface can adopt checkered plates.
- It supports unilateral or bilateral work.
- It can be supported by single column or double columns.
- It can be specially designed based on the site condition.



汽车单柱栈桥
Truck Single-column Platform



车双侧装卸栈桥
Bilateral Loading Platform for Truck

自旋式喷射器概述 Summary of the Spin Ejector

自旋式喷射器主要用于大型原油储罐和重油储罐的防沉积作业，也是润滑油、燃料油、汽油、柴油、航煤储罐及各种液体储罐的调合作业的专用设备。是传统侧向搅拌机的更新替代产品，解决了以往使用中的噪音大，罐壁渗漏，强电启动等安全隐患。

The spin ejector is mainly used for the sedimentation-preventing job related to large crude oil storage tanks and heavy oil storage tanks and is special equipment for the dispensing of lube, fuel oil, petrol, diesel and jet fuel storage tanks and storage tanks of various liquids. It is a new product used to replace the traditional lateral mixers and which can solve hidden perils such as the problems of big noise, leakage of the tank wall and strong-current start-up.

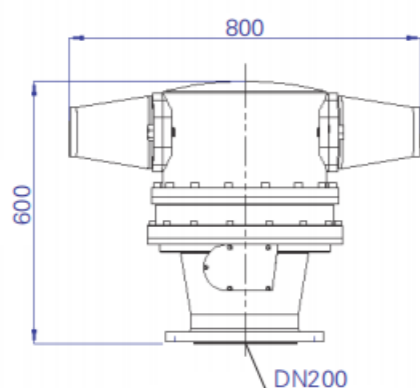
自旋式喷射器工作原理 Working principle of the spin ejector

自旋式喷射器系统本体无任何动力装置，是利用罐区原有流程配套的泵系统，设备由管线与外部循环输送泵相连接，泵将罐内油品抽出，经过泵的压力再打回罐内自旋式喷射器喷出，自旋式喷射器将泵的液体压力转化为液体射流，并以12~25分钟/圈的速度缓慢旋转，对储罐内介质做到全方位喷射调合、防沉积，罐内不留死角，调合速度快，缩短调合时间，节约运行费用。

The spin ejector system itself does not have any power device. Instead, it utilizes the existing matching pump system of the tank area. The equipment is connected with the external circulating conveying pump via a pipeline. The pump pumps out the oil in the tank and then pumps back to the spin ejector under the pressure of the pump before it is ejected out. The spin ejector transforms the liquid pressure of the pump into a liquid jet and slowly revolves at a speed of 12-25m/r, so that the medium in the storage tank is ejected and dispensed in an all-round way, as a result of which sedimentation is prevented, leaving no point in the tank untouched. The dispensing speed is great, so that the dispensing time is shortened, reducing energy consumption during the operation.

● 自旋式喷射防沉积器外型

Appearance of the spin injection sedimentation preventer



1、自旋式喷射调合器选型

Nomenclature of the spin injection dispenser

自旋式喷射调合器因使用的环境不相同，为了设备能达到最理想的效果，需根据储罐技术参数进行精确计算、设计和选型。

Due to different circumstances under which the spin injection dispenser is to be used, precise calculation, designing and production are needed based on the technical parameters of the storage tank in order that the equipment may have the best effect.

罐容量 Tank volume (m ³)	每罐安装台数 Number to be installed on each tank	泵扬程 Pump lift (m)	泵流量 Pump flow (m ³ /h)	设计压力 Designed pressure (Mpa)	材质 MOC	对接法兰 Butt flange (mm)
20000 ~ 50000	1 ~ 4	35 ~ 200	300 ~ 1800	2.0	304	DN200
5000 ~ 20000	1 ~ 3	30 ~ 200	200 ~ 1200	2.0	304	DN200
1000 ~ 5000	1	30 ~ 200	150 ~ 600	2.0	304	DN200

2、自旋式喷射防沉积器选型

Nomenclature of the spin injection sedimentation preventer

自旋式喷射防沉积器因使用的环境不相同，为了设备能达到最理想的效果，需根据储罐技术参数进行精确计算、设计和选型。

Due to different circumstances under which the spin injection sedimentation preventer is used, precise calculation, designing and production are needed based on the technical parameters of the storage tank in order that the equipment may have the best effect.

罐容量 Tank volume (m ³)	每罐安装台数 Number to be installed on each tank	泵扬程 Pump lift (m)	泵流量 Pump flow (m ³ /h)	设计压力 Designed pressure (Mpa)	材质 MOC	对接法兰 Butt flange (mm)
30000 ~ 100000	1 ~ 4	40 ~ 200	500 ~ 2000	2.0	304	DN200
20000 ~ 30000	1 ~ 3	40 ~ 200	300 ~ 1800	2.0	304	DN200
5000 ~ 20000	1 ~ 3	35 ~ 200	200 ~ 1800	2.0	304	DN200
2000 ~ 5000	1	35 ~ 200	150 ~ 600	2.0	304	DN200

船用流体装卸臂 MARINE LOADING ARMS

船用流体装卸臂又称输油臂，用于码头和槽船的管道系统之间传输液态或气态产品，是一种高效、安全的油品码头装卸设备。

The marine loading arm, also called oil transfer arm, is used to transport liquid or gaseous products through the pipe network between wharf and tank vessel, and it is an efficient and safe wharf handling device for oils.

产品特性

- 当处于空载状态时，整个臂在所有位置取得完全平衡，设备操作轻便。
- 介质传输的过程中，装卸臂在槽船正常漂移范围与船随动。
- 可通过范围检测系统，在槽船集管漂移出正常范围时发出声光报警。
- 旋转接头结构设计为可拆卸式，当更换密封圈时无需拆卸整台臂，而可实现轻松更换。
- 液压驱动船用装卸臂系统由装卸臂、电气控制设备、液压控制设备三部分组成。

PRODUCT FEATURES

- When it is in idle state, the whole arm will achieve complete equilibrium in all positions, and the device is convenient and simple in operation.
- During the medium transportation, the loading arm moves along with the vessel within the normal drifting range of tank vessel.
- When the collecting pipe of tank vessel drifts beyond the normal range, sound-light alarm will be sent out through the range detection system.
- The rotating joint structure is designed as detachable type so there is no need to detach the whole arm upon replacing the sealing ring, making it easy to replace.
- The hydraulic drive marine loading arm system consists of three parts: loading arm, electrical control equipment and hydraulic control equipment.

基本参数 BASIC PARAMETERS

序号 No.	参数名称 Name of parameter	数据 Data
1	公称通径 Nominal diameter	DN80-DN600 (3" -24")
2	设计压力 Design pressure	-0.06MPa-10 MPa
3	设计温度 Design temperature	-196℃-250℃
4	管道材质 Pipe material	碳钢、不锈钢、低温钢、衬塑、喷塑等 Carbon steel, stainless steel, low-temperature steel, plastic liner, spraying plastics, etc.
5	适用介质 Applicable medium	油品、液化气体、化工品（含强酸、强碱）、粉状物 Oils, liquefied gas, chemicals (including strong acid and strong alkali), powders
6	操作方式 Operating mode	手动和电液控制 Manual and electrohydraulic control

FB型自支撑式装卸臂 FB SELF-SUPPORT LOADING ARM

操作简便、自重轻、占地空间小、风载荷小。

管道既作为介质的通道，要承受介质的压力，还要承受自身的结构载荷、风载荷和弯矩；采用较大的旋转接头以承担内外部载荷和所有弯矩，立柱、耳轴和高点处旋转接头滚道均进行淬硬处理，在装卸过程中，仅有内、外臂的介质总量和风载荷作用在槽船法兰上。

适用于手动操作较为理想的小吨位码头。

It is featured by easy and simple operation, light dead load, small occupying space, as well as small wind load.

The pipe not only works as the passage of medium, but bears the pressure of medium, as well as its own structural load, wind load and bending moment. Larger rotating joints are used to bear the internal and external loads and all bending moments; the raceways of rotating joints of the column, trunnion and high point have quench hardening process; during the loading, only the total amount of medium of inner and outer arms and wind load act on the tank vessel flange.

It applies to small tonnage wharf which adopts manual operation.



RC型独立支撑式装卸臂

结构合理、经久耐用，具备在线检漏功能，维护保养简便易行、易于更换密封圈，而且旋转接头型号统一，密封件可以互换，减少了备件量。

独立支承结构，采用与旋转接头同轴回转的大直径回转支承来承担结构载荷、风载荷和弯矩，工艺管线、旋转接头只承受介质压力。

符合最严格的设计规范，且在顶部和耳轴箱处安装可拆式弯头，从而不需要使用重型起重设备能够进行密封的更换。适用于几乎所有码头。

RC SELF-SUPPORT LOADING ARM

It is featured by rational structure, durable service, online leak detection function, easy and convenient maintenance, easy replacement of sealing rings. What's more, the rotating joints have a unified model, so the sealing elements can be interchanged, reducing the number of spare parts.

The self-support structure adopts a large-diameter slewing bearing, which revolves on the same axis with the rotating joint, to bear the structural load, wind load and bending moment; the process pipe and rotating joints bears the medium pressure only.

It complies with the most strict design specification and it is allowed to installed detachable elbows at the top and the trunnion box, making it unnecessary to use heavy-duty hoisting equipment to replace the seal. The device applies all wharfs.





电液驱动独立支撑装卸臂
Electro-hydraulic Drive Self-support Loading Arm

电液驱动双管独立支撑装卸臂
Electro-hydraulic Drive Double-barreled
Self-support Loading Arm

电液控制部分 ELECTRO-HYDRAULIC CONTROL PART

装卸臂控制部分由电气和液压两大系统组成，性能安全可靠，易于扩容。

- 电气系统具有内外控制电路检测功能、限位开关状态检测功能、超位声光报警功能，系统配备无线遥控，轻巧、操作简便，可实现在输油臂操作的同时，近距离观察接口情况。
- 液压系统驱动装卸臂在六个方向运动，配备机泵和手动泵，一旦停电或电气方面出现问题可选择手动阀操作。
- 在对接完成后，装卸臂处于自由浮动状态。
- The control part of the loading arm is composed of electrical system and hydraulic system, featured by safe and reliable performance and easy expansion.
- The electrical system has such functions as internal and external control circuit detection, limit switch status detection, as well as overfeeding sound-light alarm. The system is equipped with wireless remote control and it is easy and convenient to operate, making it possible to operate the oil transfer arm and observe the condition of joint from a very close distance.
- The hydraulic system drives the loading arm to move in six directions; it is equipped with a motor pump and a hand pump, so the user can select manual valve to operate in the case of power failure or electrical problems.
- After the completion of butt joint, the loading arm is in free floating state.

软管吊 HYDRAULIC HOSE CRANE

软管吊机是专为油品、化工品码头使用将软管与船舶联接的吊装设备，根据使用的包络范围设计制造，以满足小船满载、大船空载的范围内任意吊装联接多种不同介质不同重量的软管，满足船舶装卸作业的需要。也可用于起吊货物、补给品等各类零星物品。

The hydraulic hose crane is a lifting device specially for connecting the hose with the vessel used at oils and chemicals wharfs. It is designed and manufactured based on the used envelop range so as to freely lift and connect hoses of different weights for different medium within the scope of fully-loaded small vessels and unloaded large vessels and meet the demand of vessel loading work. It also can be used to lift odds and ends such as cargoes and supplies.



结构特点

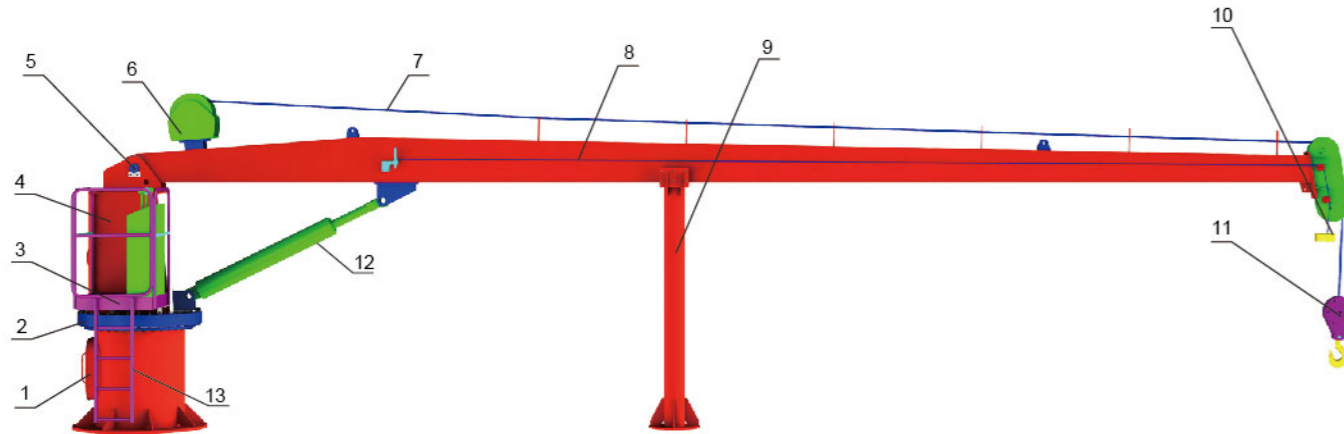
液压软管吊机总体结构分基座、转柱、吊臂、操纵平台四大部分：

- 基座为圆筒体，底板通过预埋件连接在码头平面上。
- 转柱和油箱是合二为一的箱式结构，结构紧凑、体积小。
- 吊臂为箱式结构，用板材焊接成气密结构，内腔不必进行保养。
- 操纵平台固定在转柱上，软管吊机操作点设在操纵台上，进行集中控制。
- 可配置遥控操作系统，实现100米范围内遥控操作。

STRUCTURE FEATURES

- The hydraulic hose crane is composed of four parts: base, rotary column, lifting arm and operating platform.
- The base is cylinder-shaped, and the base plate is connected to the wharf plane by embedded parts.
- The rotary column and the oil tank are combined as a box-type structure, featured by a compact structure and small volume.
- The lifting arm is a box-type structure, with plates welded into an airtight structure, and the inner chamber has no need for maintenance.
- The operating platform is fixed on the rotary column and the operating point of hose crane is set on the operating platform for centralized control.
- It can be equipped with a remote control system so as to realize remote operation within 100m.

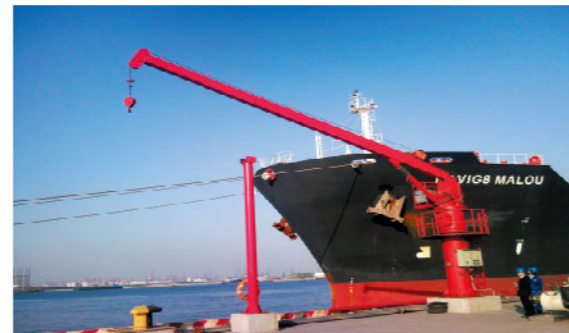
结构示意图 STRUCTURE DIAGRAM



- | | | |
|----------------------------------|------------------------|-------------------------|
| 1、基座 Base | 2、回转支承 Slewing bearing | 3、工作平台 Working platform |
| 4、转柱 Rotary column | 5、转轴 Rotating shaft | 6、液压绞车 Hydraulic winch |
| 7、钢丝绳 Wire rope | 8、吊臂 Lifting arm | 9、支撑柱 Supporting column |
| 10、限位机构 Position-limit mechanism | 11、吊钩 Hook | 12、油缸 Oil cylinder |
| 13、直梯 Vertical ladder | | |

性能特点

- 全液压动作：液压起升、液压回转、液压变幅，运转平稳。
- 灵活、安全、可靠，操作范围大，可实现360度全回转。
- 操作方式为遥控操作，也可根据码头工况要求设置成手动操作。
- 速度等级可调，任两种动作组合都可以在额定负载下工作。
- 可根据需要在吊臂上设置输油管道，实现动与静的连接。
- 电机固定在基座内部，结构紧凑，安全且有效地节约了空间。
- 所有起升、变幅和回转装置均装设有自动保护装置。



PERFORMANCE FEATURES

- Full hydraulic actions: Hydraulic hoisting, hydraulic luffing and hydraulic rotating mechanisms, being stable in operation.
- It is flexible, secure and reliable, with a large operation range, realizing a 360° full circle rotating.
- The operating mode is remote operation, and it is also possible to set manual operation as required by the working conditions at the wharf.
- The velocity grade is adjustable, and the combination of any two actions can work under the rated load.
- It is possible to set an oil pipeline on the lifting arm as required, realizing the association of dynamic and static condition.
- The motor is fixed inside the base, making the structure compact, secure and saving the space.
- All hoisting, luffing and rotating mechanisms are equipped with an automatic safety device.

登船梯 SPECIAL GANGWAY

登船梯是现代大型码头在船舶停靠码头进行作业时，为人员提供码头与船之间安全、快速通道的大型专用设备。
The special gangway is a large special device to provide a secure and fast passage to persons between the wharf and the vessel when a vessel berths and works at a modern large wharf.

基本说明

登船梯的主悬梯整体在回转支承和液压缸的作用下作回转运动。在升降机构作用下，实现上下运动。它的主梯、前梯在液压缸的驱动下能够相对的转动，实现主梯俯仰，前梯变幅调位的功能，能够满足不同潮差，不同船型的登船要求。登船梯具有水平转动功能，可以将整个设备回收在码头内。

为了保证设备的安全可靠，登船梯的设计制造都严格执行了防爆要求和参照了人体工程学的有关参数。设有相应的安全保护和指示装置。登船梯的驱动机构，采用机械和液压驱动系统，为保证各传动结构工作安全，设计中根据需要，设置各种安全保护装置，并根据码头作业油品的闪点对登船梯所有的电气装置决定选用防爆型电气装置。

GENERAL INTRODUCTION

The hanging ladder of the special gangway does rotational motion under the action of slewing bearing and hydraulic cylinder. Under the action of lifting mechanism, it realizes up-and-down motion. Driven by the hydraulic cylinder, the main ladder and the front ladder can do relative motion, realizing the pitching of main ladder and luffing adjusting of front ladder, which can satisfy different tidal ranges and different types of vessels. The special gangway has a horizontal rotation function to recover the whole device in the wharf.

In order to ensure the equipment safety and reliability, the design and manufacturing of the special gangway are in strict accordance with the anti-explosion requirements and reference related parameters of human engineering. It is equipped with corresponding safety protection and indicating devices. The driving mechanism of special gangway adopts the mechanical and hydraulic driving system, and in order to ensure the work safety of all driving structures, various safety protection devices are equipped according to the design requirements. and according to the flash point of oils at the wharf, the explosion-proof electrical device is chosen for all electrical devices of the special gangway.



性能特点

- 梯子主体采用铝合金材料，既轻便又安全，同时踏步面始终保持水平；
- 三角梯与前梯采用单点联接，能适应船舶颠簸和甲板不平等情况；
- 现场无线遥控操作，可在甲板上操作；
- 液压系统布局合理，密封性好又便于维修，同时具有防水和防腐功能；
- 升降机构锁紧性能好并具有防护功能；
- 按钮箱放在回转平台上，操作时直观、方便；
- 先进的回转及升降系统使得梯子的操作平稳可靠；
- 登船梯处于收容状态时具有锁紧装置，梯子还有防护装置；
- 梯子的仰俯、旋转，平台升降的极限位置均设有

PERFORMANCE FEATURES

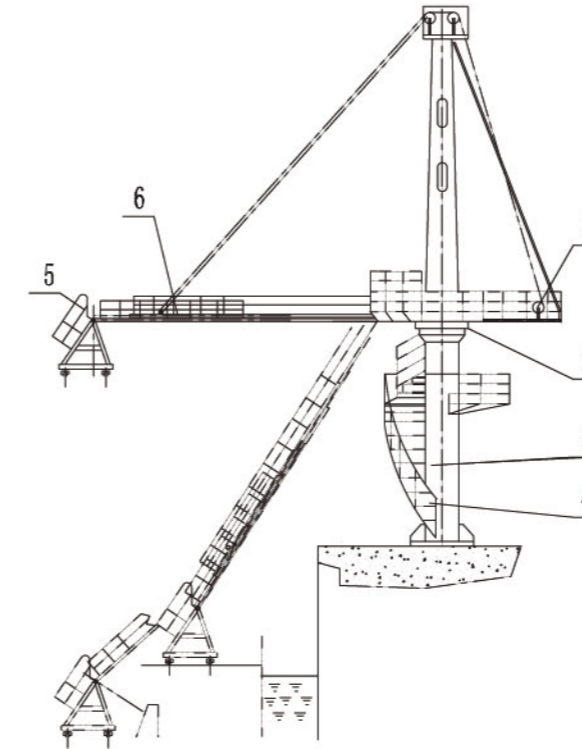
- The main body of ladder is made of aluminum alloy, which is light and safe, and the steps always keep horizontal;
- The connection between the triangle ladder and the front ladder adopts single-point connection, which can adapt to the bumpy vessel and deck;
- The site wireless remote control operation make it possible to operate on the deck;
- The hydraulic system has rational layout, good sealing and easy maintenance, as well as water-proof and anticorrosion function;
- The lifting mechanism has good locking properties and protection function;
- The button box is put on the rotary platform, making it intuitional and convenient to operate;
- The advanced rotating and lifting systems make the ladder become stable and reliable in operation;
- When the special gangway is recovered, it has a locking device and a protection device;
- The pitching and rotating systems of ladder and the platform lifting systems have protection devices.

安全保护装置

- 主梯俯仰机构俯仰角度极限位置设有限制开关；
- 俯仰机构设有收拢锁定装置；
- 前梯变幅机构极限位置设有限制开关；
- 回转机构回转极限位置设有限制开关；
- 液压系统和电气系统设有保护装置；
- 升降机构就位后，使用安全销锁定。
- 塔架具有防雷击功能。

SAFETY PROTECTION DEVICE

- The pitching mechanism of the main ladder has a limit switch at the pitching angle limiting position;
- The pitching mechanism has a recover lock device;
- The luffing mechanism of the front ladder has a limit switch at the limiting position;
- The rotating mechanism has a limit switch at the rotating limiting position;
- The hydraulic system and the electrical system have protection devices;
- When the lifting mechanism is in place, it can be locked by use of safety pins;
- The tower has lightning protection function.



旋转平衡式登船梯

旋转平衡式登船梯液压缸驱动主梯、前梯和三角梯的变幅，液压马达减速后驱动设备回转。主梯油缸具有全自锁功能，无配重，适用于8万吨以下的码头。

SPIRAL BALANCING GANGWAY

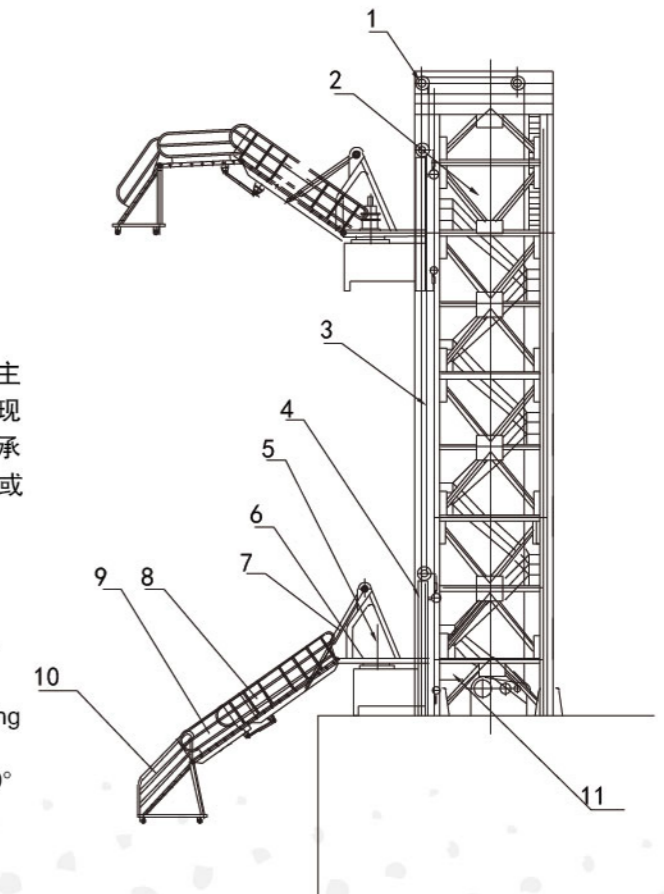
The spiral balancing gangway has the luffing of its main ladder, front ladder and triangle ladder driven by the hydraulic cylinder, and after the hydraulic motor slows down and drives the device to rotate. The main ladder cylinder has a full self-locking function, without balance weight. It applies to wharfs with the tonnage below 80 000 tons.

塔架式登船梯

塔架式登船梯配有多平台与升降机构，三角梯、前梯、主梯呈手臂状分布，有较大的适用范围，由液压缸推动梯子实现仰俯、伸缩、绳轮系统拉动平台升降，液压马达推动回转支承带动平台在水平面 $\pm 90^\circ$ 内作回转，适用于潮差较大的码头或5万吨以上的码头。

TOWER GANGWAY

The tower gangway is equipped with multiple platforms and lifting mechanisms, with its main ladder, front ladder and triangle ladder distributed in an arm shape. It has a large application scope. The hydraulic cylinder pushes the ladder to make the pitching, stretching and rope wheel systems pull the platform lift; the hydraulic motor pushes the slewing bearing to drive the platform rotate within $\pm 90^\circ$ on the plane. It applies to the wharf with large tidal ranges or the wharf with tonnage above 50 000 tons.



绞缆机 MOORING WINCH

绞缆机是将缆绳快速牵引至码头面上，并且挂在系船墩或脱缆钩的绞缆设备。具有电动绞缆、脱缆迅速、安全可靠、操作方便等功能特点。

绞缆机主要由绞盘、减速器、防爆电机、支撑筒及控制箱组成。

The mooring winch is a winch device which can quickly pull the mooring rope to the wharf and hang it on a mooring dolphin or a release mooring hook. It is featured by motor-driven winching, fast release, safety and reliability and convenient operation. The winch is mainly composed of winch, reducer, explosion-proof motor, supporting column and control box.

立式绞缆机

主要由防爆电机、减速机、绞盘、防爆控制箱和脚踏开关组成，采用同轴式齿轮减速机，体积小、噪音低，更适用于石油化工码头。

VERTICAL MOORING WINCH

It is composed of explosion-proof motor, reducer, winch, explosion-proof control box and foot switch. It adopts a coaxial gear reducer, which has small size and low noise. It applies to petrochemical wharf.

卧式绞缆机

主要由（防爆）电机、涡轮蜗杆减速机、绞盘组成，可根据现场情况选配（防爆）脚踏开关、制动器、（防爆）操作柱来控制电机绞缆和制动，其主要特点是耐用、造价低并且变速稳定。

HORIZONTAL MOORING WINCH

It is composed of (explosion-proof) motor, turbo-worm reducer and winch. The devices such as (explosion-proof) foot switch, brake and (explosion-proof) operating column can be selected for control the motor winching and brake. It is featured by durable service, low cost and stable speed change.



快速脱缆钩 RELEASE HOOK

简介

快速脱缆钩由带缆机构和系缆机构两部份组成，具有自动绞缆、系缆安全可靠、解缆迅速等特点，是大型码头不可缺少的新一代系泊设备。

我公司生产的快速脱缆钩在综合了国内处产品优点的基础上加以改进，结构合理，并采用先进的加工工艺，严格和管理方法及检测手段使产品质量可靠，操作方便，使用安全。目前生产单钩、双钩、三钩、四钩等系列产品，其中以双钩和三钩结构的快速脱缆钩应用最为广泛。

INTRODUCTION

The release hook is composed of two parts: mooring mechanism and winching mechanism. It is featured by automatic winching, safe and reliable mooring and fast release, so it is a new generation mooring device which is indispensable for a large wharf.

Improved on the basis of combining the advantages of domestic and overseas products, the quick release hook produced by our company has rational structure and adopts advanced processing technique. With strict management methods and detection methods, the product is featured by reliable quality, easy operation and safety in use. At present, the product has single-hook, double-hook, three-hook and four-hook series, among which the quick releasing hook of double-hook and three-hook structure is most widely applied.



主要技术特点

- 锚钩材料采用优质全金钢，设备整体热喷锌处理，并经无损检测合格。
- 由手动释放操纵杆，脚踏开关控制电动绞缆机，电机带有制动器，具有防止倒转功能。
- 无论是在满载还是空载，锚钩都能快速脱缆。
- 具有自动复位功能。
- 免维修设计，无需日常维护。
- 可根据客户需求专门生产。

MAIN TECHNICAL FEATURES

- The hook is made of high-quality all-steel material, and the device has overall thermal zinc spraying treatment and passes the nondestructive testing.
- The joy stick is released by hand, and the motor-drive mooring winch is controlled by foot switch; the motor has a brake, which has anti-reverse function.
- No matter fully-loaded or unloaded, the hook can be released quickly.
- It has automatic reset function.
- It has maintenance-free design, making it not needing daily maintenance.
- It can be manufactured according to the customer demand.

主要技术参数

- 单钩设计拉力 250-2500KN
- 设计绞缆引力 10KN 15KN 20KN
- 操作手柄作用力小于 150KN
- 绞缆速度 24米 / 分钟
- 电动机额定功率 5.5-11KW，三相交流 380V，50HZ，防爆等级dIIBT4，带盘式制动器 防爆控制盒防爆等级dIIBT4，防护等级IP55，具有短路和过载保护功能，操作次数大于 1 万次。

MAIN TECHNICAL PARAMETERS

- Design tension force of single hook 250-2500KN
- Design stranded cable gravitation 10KN 15KN 20KN
- Acting force of operating handle is smaller than 150KN
- Speed of stranded cable 24m / min
- Rated power of motor 5.5-11KW, three-phase AC 380V, 50HZ, explosive-proof grade dIIBT4; the explosive-proof grade of explosive-proof control box of disk brake dIIBT4, protection grade IP55, having short circuit and overload protection functions; the number of operations is larger than 10 000.